

2013 PACCAR MX-13

Diagnostic Service Manual

EPA2013

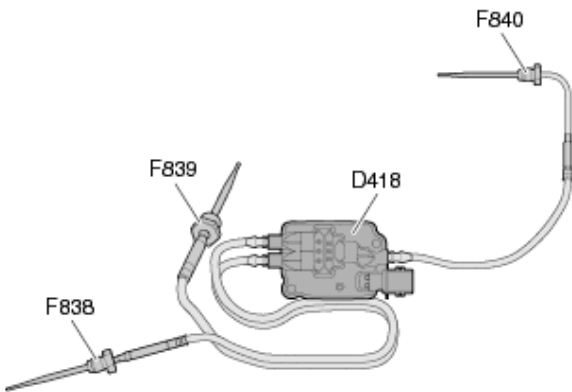
(P3874 to P3997)

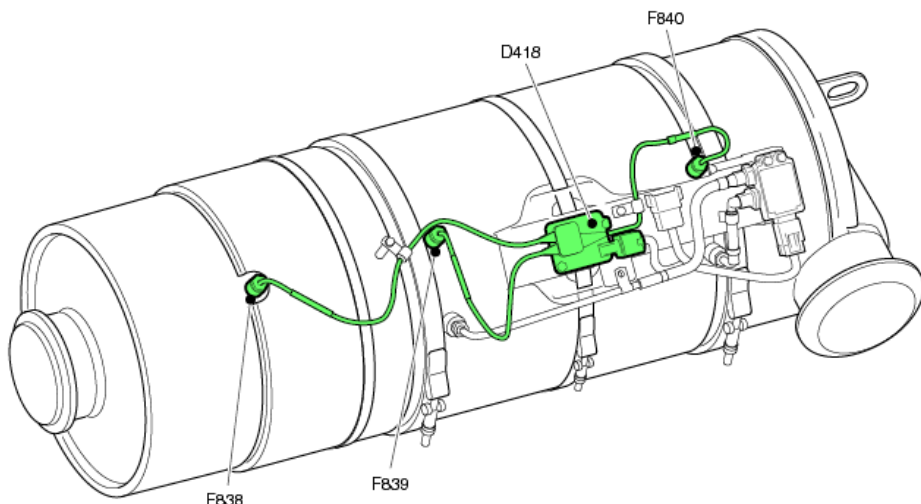
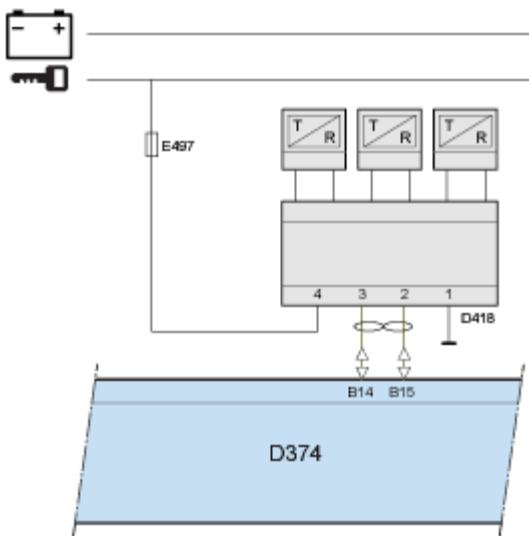


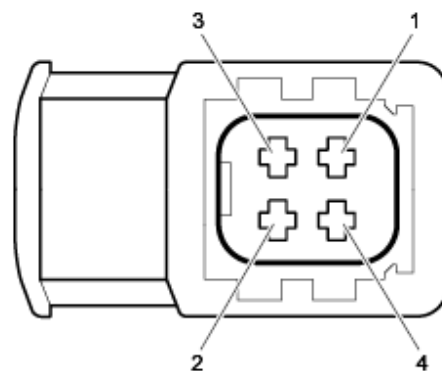
Index

P3874	P3875	P3876	P3877	P3878	P3879	P3880	P3881	P3882	P3883	P3884	P3885	P3886	P3887
P3888	P3889	P3890	P3891	P3892	P3893	P3894	P3895	P3898	P3899	P3900	P3901	P3902	P3903
P3904	P3905	P3906	P3907	P3908	P3909	P3910	P3911	P3912	P3913	P3914	P3915	P3916	P3917
P3918	P3921	P3922	P3923	P3924	P3927	P3928	P3929	P3938	P3942	P3943	P3944	P3945	P3946
P3947	P3948	P3949	P3950	P3951	P3952	P3953	P3954	P3955	P3956	P3957	P3958	P3959	P3960
P3961	P3962	P3963	P3964	P3965	P3966	P3967	P3968	P3969	P3970	P3971	P3972	P3973	P3975
P3976	P3977	P3978	P3979	P3980	P3982	P3983	P3984	P3985	P3986	P3987	P3988	P3989	P3990
P3991	P3992	P3993	P3994	P3995	P3996	P3997							

P3874

Code number	P3874
Fault code description	CAN communication – Message timeout from DOC/DPF temperature sensors ECU
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	General • Thermocouple sensors. • The temperature sensors are connected to the ECU DOC-DPF temperature sensors (D418). The signal of the temperature sensors is transmitted to the A-CAN by the ECU DOC-DPF temperature sensors (D418). • The temperature sensors cannot be disconnected or replaced separately from the ECU DOC-DPF temperature sensors (D418).  1 Exhaust gas temperature sensor before DOC (F838) 2 Exhaust gas temperature sensor before DPF (F839) 3 Exhaust gas temperature sensor after DPF (F840) Exhaust gas temperature sensor before DOC (F838) • Measure the exhaust gas temperature before the DOC. Effect of the output signal on the system • Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DPF (F839) • Determines if a regeneration can be started Calculates the amount of fuel that must be injected • Determines if the heating of the NOx sensor before catalytic converter (F844) is required in order to reach the operating temperature Exhaust gas temperature sensor before DPF (F839) • Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DOC (F838) • Determines whether regeneration has started • Controls the regeneration temperature • Calculates the amount of fuel that must be injected

	- Diagnoses the DOC efficiency Exhaust gas temperature sensor after DPF (F840) - Measure the exhaust gas temperature before the DPF Effect of the output signal on the system: - Protects the DPF against excessively high temperature
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously when the ignition is on.
Set condition of fault code	This DTC is set when the CAN communication from the temperature sensors DPF/DOC ECU (D418) to the EAS-3 (D374) is interrupted.
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes.
Electrical diagram(s)	



Wiring harness connector D418 front view

D374 EAS-3 ECU

D418 DOC-DPF temperature sensors ECU

E497 after treatment CAN fuse

D374	D418	Function
B14	3	A-CAN High
B15	2	A-CAN Low
	1	Ground
	4	Power supply

Technical data

Component & wiring check, Temperature sensors DOC-DPF ECU (D418)

Preparation

- Disconnect connector D418.
- Ignition switched on.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
4	1	Ubat	
1	Battery negative pole	>0.5V	Switch all consumers on

Component & wiring check, A-CAN

Preparation

- Ignition switched off.
- Disconnect connector D418.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	3	$\pm 60 \Omega$	

Possible causes

CAN wiring, see "General troubleshooting - CAN"

Additional information

No additional information available.

Diagnostic Step-by-Step

Please refer "General troubleshooting – CAN"

Verification Drive Cycle

To validate the repair, perform the same procedure outlined for the Steady State cycle:

To validate the repair, using DAVIE, select the following Monitor values to record:

	• Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3875

Code number	P3875														
Fault code description	ECU EAS-3 - Data lost due to incorrect power down														
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive														
Description of component(s)	This information not available in this document. Please refer to truck wiring diagrams														
Location of component(s)	This information not available in this document. Please refer to truck wiring diagrams														
Diagnostic condition	This diagnostic runs continuously when the ignition is on.														
Set condition of fault code	The EAS-3 ECU (D374) lost power supply.														
Reset condition of fault code	This information not available in this document. Please refer to truck wiring diagrams														
Electrical diagram(s)	This information not available in this document. Please refer to truck wiring diagrams														
Technical data	This information not available in this document. Please refer to truck wiring diagrams														
Possible causes	Check the wiring harness.														
Additional information	No Additional information available														
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3875a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3875b</td><td>SRT</td></tr><tr><td colspan="3">Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts). Are measured electrical values outside of expected range or limits?</td></tr></table>			Step 1	Step ID 3875a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3875b	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts). Are measured electrical values outside of expected range or limits?		
Step 1	Step ID 3875a	SRT													
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.															
Step 2	Step ID 3875b	SRT													
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts). Are measured electrical values outside of expected range or limits?															

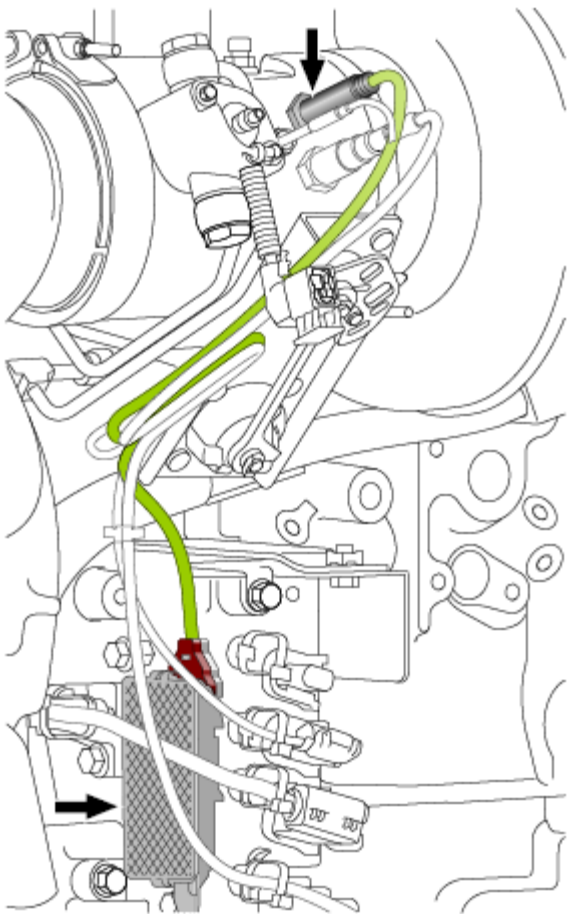
	• Yes - Proceed to step 3 • No - Proceed to step 4		
	Step 3	Step ID 3875c	SRT
	• Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4		
	Step 4	Step ID 3875d	SRT
	General Troubleshooting – CAN For fault codes associated with the controller area network (CAN), refer to the “General Troubleshooting – CAN” instructions in Engine Rapido – Service, linked under the diagnostic trouble code information for this or similar fault codes.		
Verification Drive Cycle	Step 5	Step ID 3875e	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics.		
	Back to Index		

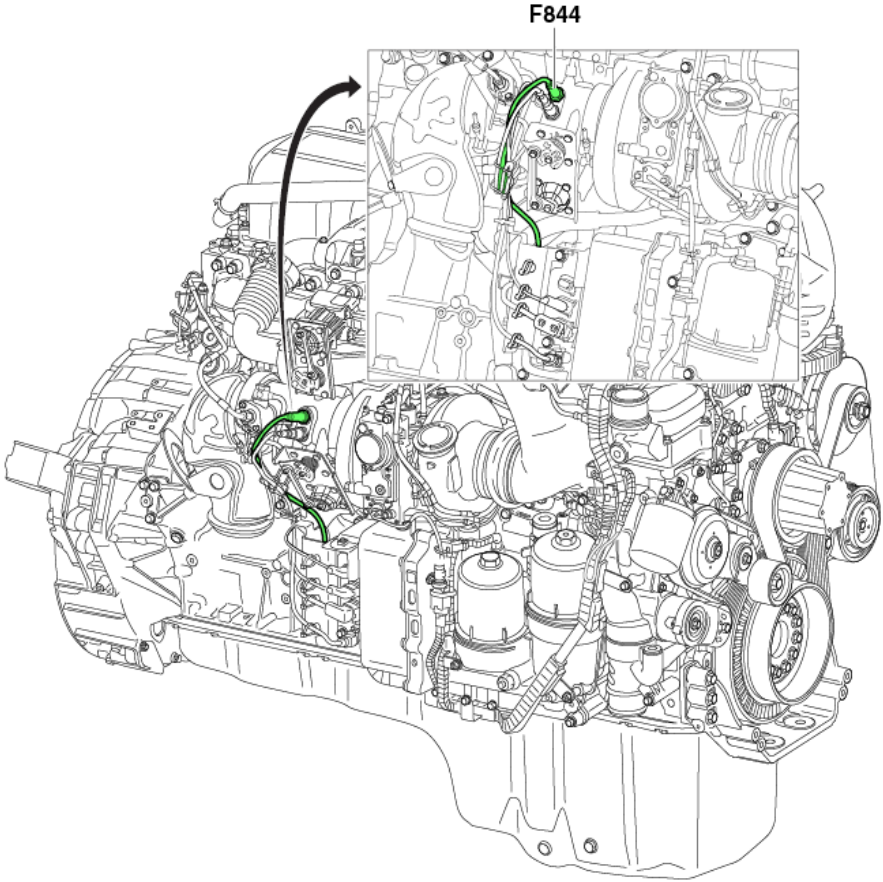
P3876

Code number	P3876													
Fault code description	ECU EAS-3 - Hardware defect error, internal error 1													
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive													
Description of component(s)	This information not available in this document. Please refer to truck wiring diagrams													
Location of component(s)	This information not available in this document. Please refer to truck wiring diagrams													
Diagnostic condition	This diagnostic runs continuously when the ignition is on.													
Set condition of fault code	This DTC is triggered when the internal EAS-3 ECU (D374) diagnostics detect a read or write error internal to the module.													
Reset condition of fault code	To validate the repair, start the engine and let it idle for 1 minute.													
Electrical diagram(s)	This information not available in this document. Please refer to truck wiring diagrams													
Technical data	This information not available in this document. Please refer to truck wiring diagrams													
Possible causes	This DTC can only be caused by an internal EAS-3 ECU (D374) problem.													
Additional information	- The EAS-3 ECU (D374) has internal diagnostics that continuously run and check the internal memory. - The engine may not start.													
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table border="1"> <tr> <td>Step 1</td><td>Step ID 3876a</td><td>SRT</td></tr> <tr> <td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr> </table> <table border="1"> <tr> <td>Step 2</td><td>Step ID 3876b</td><td>SRT</td></tr> <tr> <td colspan="3"> Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cab wires. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: - Supply and signal voltages (12V). - Cable continuity (no opens or shorts). </td></tr> </table>		Step 1	Step ID 3876a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3876b	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cab wires. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: - Supply and signal voltages (12V). - Cable continuity (no opens or shorts).		
Step 1	Step ID 3876a	SRT												
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.														
Step 2	Step ID 3876b	SRT												
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cab wires. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: - Supply and signal voltages (12V). - Cable continuity (no opens or shorts).														

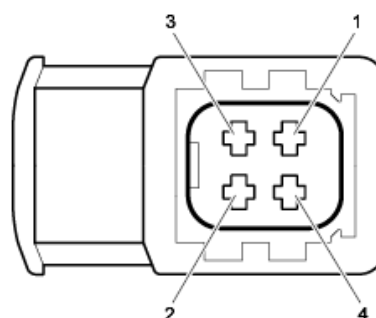
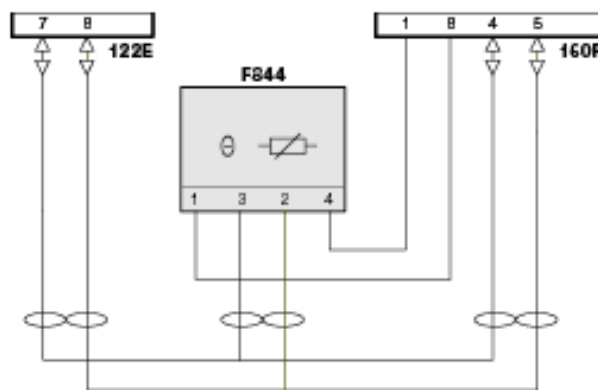
	Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4		
	Step 3	Step ID 3876c	SRT
	• Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4		
	Step 4	Step ID 3876d	SRT
	Replace: Engine Controller Unit (ECU) Contact the PACCAR Engine Support Call Center to confirm replacement of the ECU. Use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 5		
	Step 5	Step ID 3876e	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics.		
	Back to Index		

P3877

Code number	P3877
Fault code description	NOx sensor before catalyst - Persist, not valid
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – Exhaust gas sensors Freeze frame type – Comprehensive
Description of component(s)	 The NOx concentration emitted by the engine is measured in the exhaust gases after the BPV valve. The NOx sensor before catalyst consists of: • Electronic control unit This unit communicates with the PCI ECU and EAS-3 ECU via A-CAN • Sensor element The sensor element contains an internal heater. The sensor cannot be separated from the electronic control unit. Sensor heating control • The first stage starts when the ignition is keyed on. The sensor is heated to approximately 100°C [212°F], and any condensate evaporates from the sensor. • The second stage starts after the 'dew point' message is received from the PCI

	ECU The sensor is heated to its operating temperature of approximately 800°C [1472°F]. The PCI ECU determines the 'dew point' by calculating how much energy (heat by burning fuel in the engine) is pumped through the exhaust. If the 'dew point' message is not/no longer received, the sensor temperature stays at/drops to the standby temperature of approximately 100°C [212°F]. Effect on the system: - Controls the engine NOx emission. - Determines the DEF dosing amount by the EAS-3 system Higher measured engine NOx emission results in higher DEF dosing amount.
Location of component(s)	
Diagnostic condition	This diagnostic runs when the exhaust gas temperature at the NOx sensor before catalyst (F844) is above 150°C and the engine is running.
Set condition of fault code	The NOx sensor before catalyst (F844) reading is not valid.
Reset condition of fault code	- To validate the repair, start the engine and let it idle for 1 minute. - The exhaust gas temperature at the aftertreatment NOx sensor before catalyst (F844) must be above 150°C before the sensor can run its internal diagnostics.

Electrical diagram(s)



Wiring harness connector F844 front view

122E 12-pin interface connector
 160F 8-pin interface connector
 F844 NOx sensor before catalytic convertor

F844	122E	122E	Function
3	7	4	A-CAN high
2	8	5	A-CAN low
1		8	Power supply after ignition
4		1	Ground

Technical data

Component & wiring check, NOx sensor before catalyst (F844)

Preparation

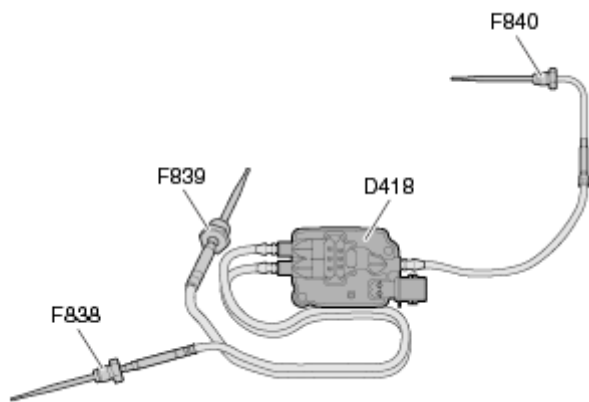
- Ignition keyed off
- Disconnect connector F844.
- Measure on the front side of wiring harness connector F844.

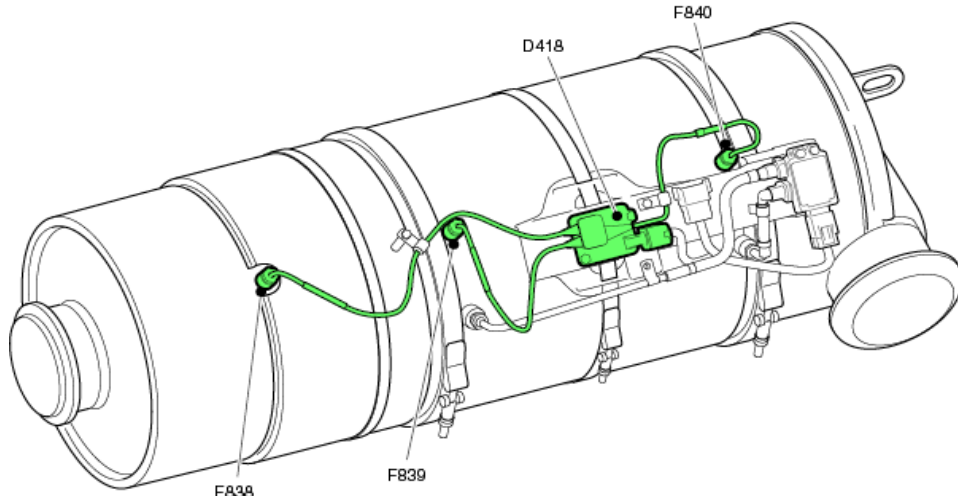
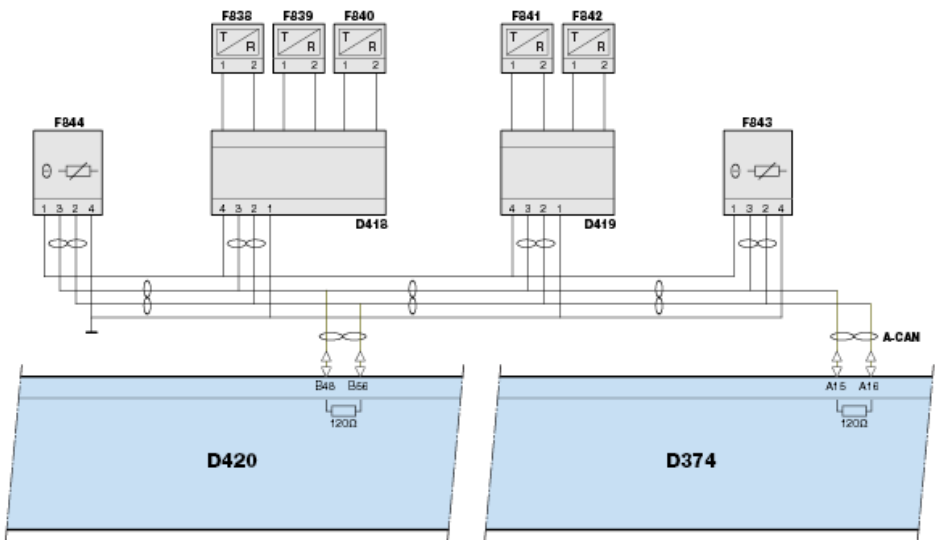
Pin (+ probe)	Pin (- probe)	Value	Additional information
4	1	Ubat	Key on the ignition
1	Battery negative pole	>0.5 V	Key on the ignition and switch on all consumers
2	3	$\pm 60 \Omega$	• Key off the ignition • Disconnect the ground cable from the battery. • Disconnect the vehicle communication interface (VCI) of DAVIE.

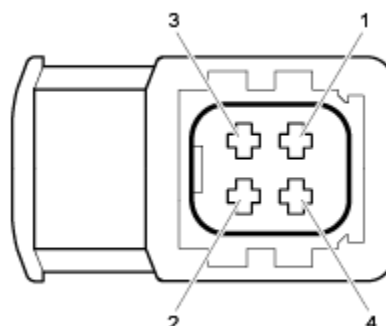
Possible causes	• Troubleshoot the NOx sensor before catalyst (F844) for DTC P3864, P3232, or P3916 before troubleshooting this DTC. • The NOx sensor before catalyst (F844) is not providing valid data.																								
Additional information	• The EAS-3 ECU (D374) has internal diagnostics that continuously run and check the internal memory. • The engine may not start.																								
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3877a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3877b</td><td>SRT</td></tr><tr><td colspan="3">Check for fault codes • Turn the key switch ON. • Use DAVIE to check for fault codes. Is fault code 3864, P3232, or P3916 active? • Yes – Proceed with the appropriate fault code. • No – Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3877c</td><td>SRT</td></tr><tr><td colspan="3">Replace NOx sensor before catalyst • Turn the key switch ON. • Start the engine. • Use DAVIE to check for fault codes. Is fault code 3877 active? • Yes – Proceed to step 4. • No – Repair complete </td></tr></table> <table><tr><td>Step 4</td><td>Step ID 3877d</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3877a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3877b	SRT	Check for fault codes • Turn the key switch ON. • Use DAVIE to check for fault codes. Is fault code 3864, P3232, or P3916 active? • Yes – Proceed with the appropriate fault code. • No – Proceed to step 3			Step 3	Step ID 3877c	SRT	Replace NOx sensor before catalyst • Turn the key switch ON. • Start the engine. • Use DAVIE to check for fault codes. Is fault code 3877 active? • Yes – Proceed to step 4. • No – Repair complete			Step 4	Step ID 3877d	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3877a	SRT																							
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																									
Step 2	Step ID 3877b	SRT																							
Check for fault codes • Turn the key switch ON. • Use DAVIE to check for fault codes. Is fault code 3864, P3232, or P3916 active? • Yes – Proceed with the appropriate fault code. • No – Proceed to step 3																									
Step 3	Step ID 3877c	SRT																							
Replace NOx sensor before catalyst • Turn the key switch ON. • Start the engine. • Use DAVIE to check for fault codes. Is fault code 3877 active? • Yes – Proceed to step 4. • No – Repair complete																									
Step 4	Step ID 3877d	SRT																							
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																									

Verification Drive Cycle	To validate the repair, with the System Initiation cycle complete, proceed to a road with a minimum speed limit of 50 mph, then get to the highest gear possible with the engine speed between 1100-1500 rpm, and set the cruise control. Run this cycle for roughly 3 to 5 miles or in three separate 1-mile increments if a steady 3 to 5 miles is unachievable. This cycle is best performed on a level grade road (least amount of incline possible) and under load using a trailer. If a loaded trailer is unavailable, produce engine load by turning the A/C and fan to ON.
	Back to Index

P3878

Code number	P3878
Fault code description	Hydrocarbon storage - Level too high
Fault code information	3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 - Exhaust gas temperature sensor before DOC (F838) - Exhaust gas temperature sensor before DPF (F839) - Exhaust gas temperature sensor after DPF (F840) General: - Thermocouple sensors. - The temperature sensors are connected to the ECU DOC-DPF temperature sensors (D418). The signal of the temperature sensors is transmitted to the A-CAN by the ECU DOC-DPF temperature sensors (D418). - The temperature sensors cannot be disconnected or replaced separately from the ECU DOC-DPF temperature sensors (D418). Exhaust gas temperature sensor before DOC (F838): - Measure the exhaust gas temperature before the DOC. Effect of the output signal on the system: - Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DPF (F839) - Determines if a regeneration can be started - Calculates the amount of fuel that must be injected - Determines if the heating of the NOx sensor before catalytic converter (F844) is required in order to reach the operating temperature Exhaust gas temperature sensor before DPF (F839): - Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: - Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DOC (F838)

	• Determines whether regeneration has started • Controls the regeneration temperature • Calculates the amount of fuel that must be injected • Diagnoses the DOC efficiency Exhaust gas temperature sensor after DPF (F840): • Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Protects the DPF against excessively high temperature
Location of component(s)	 The diagram shows a side view of a cylindrical Diesel Particulate Filter (DPF) assembly. A green sensor, labeled F840, is mounted on the right side of the assembly. Other sensors are labeled F838 and F839. A component labeled D418 is also shown.
Diagnostic condition	This diagnostic runs continuously when the engine runs.
Set condition of fault code	This diagnostic monitors the exhaust gas temperature sensor before DOC (F838) and the exhaust flow rate. If this condition exists for an extended period of time, hydrocarbon buildup in the after treatment system may be higher than safe levels, resulting in this DTC being set.
Reset condition of fault code	To validate the repair, perform stationary DPF regeneration.
Electrical diagram(s)	 The electrical diagram shows the wiring for the DPF system. It includes sensors F838, F839, and F840, which are connected to a control unit D418. Other sensors F841 and F842 are connected to a control unit D419. Actuators F844 and F843 are also shown. The diagram includes two blue boxes representing the DPF assembly, labeled D420 and D374. The wiring connects the sensors and actuators to the control units and the DPF assembly.



Wiring harness connector D418 front view

D374 EAS-3 ECU

D418 DOC/DPF temperature sensors ECU

D374	D418	Function
B14	3	A-CAN High
B15	2	A-CAN Low
	1	Ground
	4	Power supply

Technical data

Component & wiring check, Temperature sensors DOC-DPF ECU (D418)

Preparation

- Disconnect connector D418.
- Ignition switched on.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
4	1	Ubat	
1	Battery negative pole	>0.5V	Switch all consumers on

Component & wiring check, A-CAN

Preparation

- Ignition switched off.
- Disconnect connector D418.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	3	$\pm 60 \Omega$	

Possible causes

Extended idling duration longer than 10 hours.

Additional information

- Excessive amount of hydrocarbons in the emission after treatment system.
- A (mandatory) request for stationary regeneration is shown on the dashboard's display.

Diagnostic Step-by-Step



Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.



- Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors.
- For specific electrical component information and pinout locations, always refer to the technical data.
- It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors.
- Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.

Step 1	Step ID 3878a	SRT
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.		

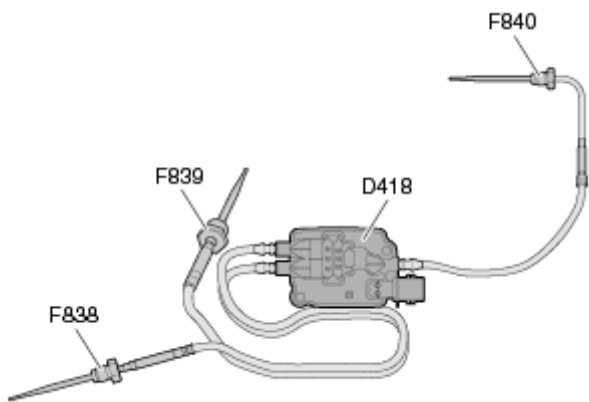
Step 2	Step ID 3878b	SRT
Check for fault codes • Turn the key switch ON. • Use DAVIE to check for fault codes. Is fault code P3878 active? • Yes – Proceed to step 3 • No – Proceed to step 4		

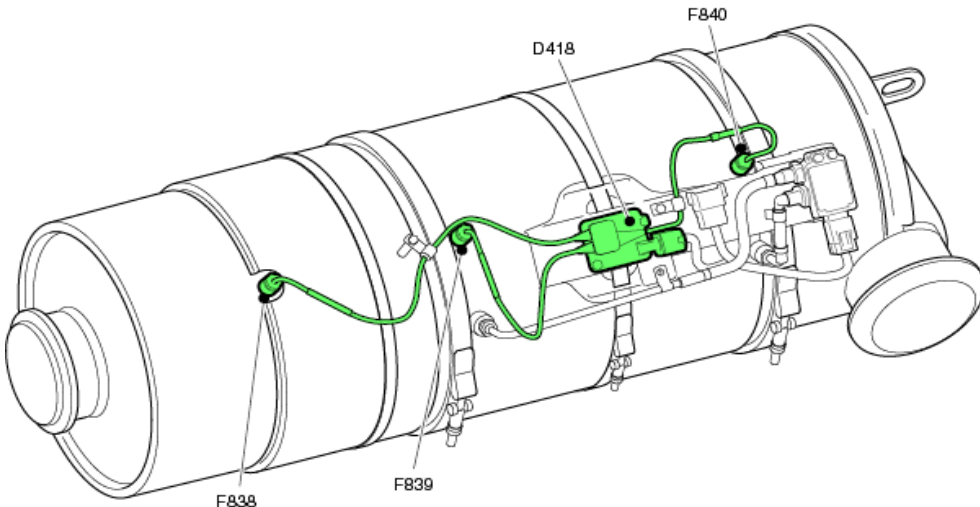
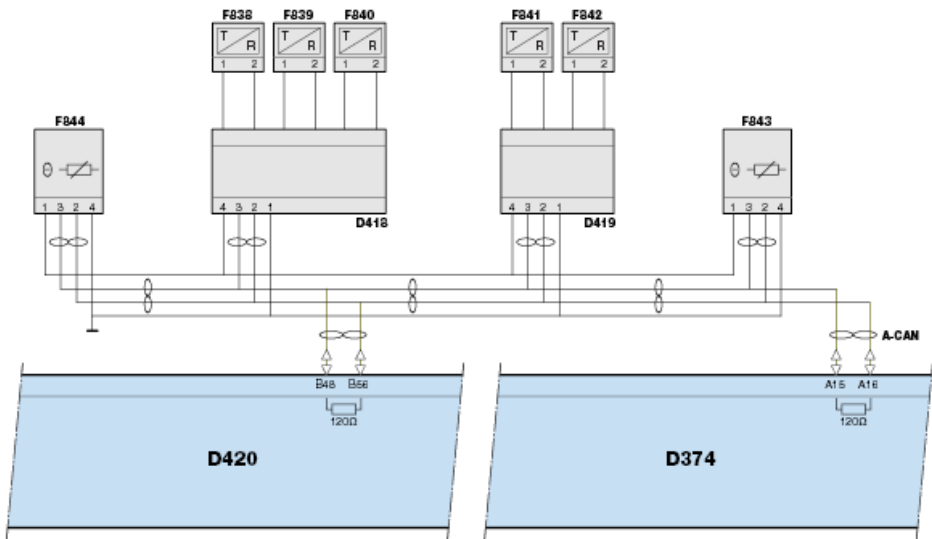
Step 3	Step ID 3878c	SRT
Perform the DPF regeneration test • Turn the key switch ON. • Start the engine. • Perform the 'DPF regeneration test.' For more information, see 'Explanatory notes to DAVIE.' Is fault for 'Hydrocarbon storage - Level too high' active after the regeneration is completed? • Yes – Check for active fault codes that may have become active during the regeneration. Proceed to step 4 • No – Proceed to step 4		

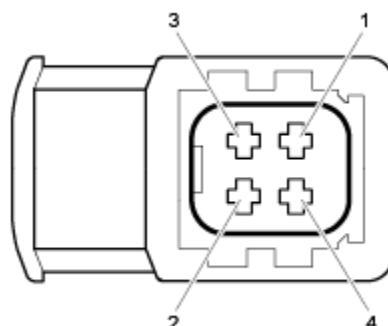
Step 4	Step ID 3878d	SRT
Disable the fault code • Connect all components. • Operate the system within the 'reset condition of the fault code' found in the fault code information.		

	• Use DAVIE to verify that the fault codes are inactive. Is fault code P3878 inactive? • Yes – Proceed to step 5 • No – Return to the troubleshooting steps - Proceed to step 2 If all the steps have been completed and rechecked, contact the Engine Support Center for further instructions.		
	Step 5	Step ID 3878e	SRT
	Clear the inactive fault codes • Connect all components. • Turn the key switch ON. • Use DAVIE to clear the inactive fault codes. Have all the fault codes been cleared? • Yes – Repair complete • No – Troubleshoot any remaining active fault codes		
	Step 6	Step ID 3878f	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	Not available/required for this code.		
	Back to Index		

P3879

Code number	P3879
Fault code description	Hydrocarbon storage - Level too high
Fault code information	3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 4. Exhaust gas temperature sensor before DOC (F838) 5. Exhaust gas temperature sensor before DPF (F839) 6. Exhaust gas temperature sensor after DPF (F840) General: • Thermocouple sensors. • The temperature sensors are connected to the ECU DOC-DPF temperature sensors (D418). The signal of the temperature sensors is transmitted to the A-CAN by the ECU DOC-DPF temperature sensors (D418). • The temperature sensors cannot be disconnected or replaced separately from the ECU DOC-DPF temperature sensors (D418). Exhaust gas temperature sensor before DOC (F838): • Measure the exhaust gas temperature before the DOC. Effect of the output signal on the system: • Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DPF (F839) • Determines if a regeneration can be started • Calculates the amount of fuel that must be injected • Determines if the heating of the NOx sensor before catalytic converter (F844) is required in order to reach the operating temperature Exhaust gas temperature sensor before DPF (F839): • Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DOC (F838)

	• Determines whether regeneration has started • Controls the regeneration temperature • Calculates the amount of fuel that must be injected • Diagnoses the DOC efficiency Exhaust gas temperature sensor after DPF (F840): • Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Protects the DPF against excessively high temperature
Location of component(s)	 The diagram shows a side view of a cylindrical Diesel Particulate Filter (DPF) assembly. Three sensors are highlighted with green lines and labels: F838 is located at the front inlet, F839 is on the side, and F840 is at the rear outlet. The DPF is labeled D418.
Diagnostic condition	This diagnostic runs continuously when the engine runs.
Set condition of fault code	This diagnostic monitors the exhaust gas temperature sensor before DOC (F838) and the exhaust flow rate. If this condition exists for an extended period of time, hydrocarbon buildup in the after treatment system may be higher than normal levels, resulting in this DTC being set.
Reset condition of fault code	To validate the repair, perform stationary DPF regeneration.
Electrical diagram(s)	 The electrical diagram shows the wiring for the DPF system. It includes four sensor modules: F844, F838/F839/F840, F841/F842, and F843. Each module has a 4-pin connector. The F838/F839/F840 module is connected to the D418 DPF. The F841/F842 module is connected to the D419 DPF. The F843 module is connected to the A-CAN. The F844 module is connected to the D420 DPF. The diagram also shows the wiring for the B48/B56 and A15/A16 actuators, which are connected to the D420 and D374 DPFs respectively. The actuators are labeled with their pin numbers (1, 2, 3, 4) and the DPF numbers (D420, D374).



Wiring harness connector D418 front view

D374 EAS-3 ECU

D418 DOC/DPF temperature sensors ECU

D374	D418	Function
B14	3	A-CAN High
B15	2	A-CAN Low
	1	Ground
	4	Power supply

Technical data

Component & wiring check, Temperature sensors DOC-DPF ECU (D418)

Preparation

- Disconnect connector D418.
- Ignition switched on.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
4	1	Ubat	
1	Battery negative pole	>0.5V	Switch all consumers on

Component & wiring check, A-CAN

Preparation

- Ignition switched off.
- Disconnect connector D418.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	3	$\pm 60 \Omega$	

Possible causes

Extended idling duration longer than 5 hours.

Additional information

- Excessive amount of hydrocarbons in the emission after treatment system.
- This DTC is only used by EAS-3 ECU (D374) to delay regeneration start.
- An active DTC shows that the threshold is currently being exceeded; an inactive DTC indicates that the counter is below the threshold.

Diagnostic Step-by-Step



Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.



- Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors.
- For specific electrical component information and pinout locations, always refer to the technical data.
- It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors.
- Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.

Step 1	Step ID 3879a	SRT
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.		

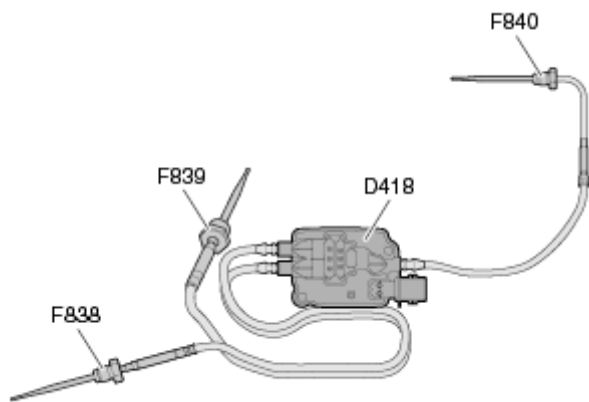
Step 2	Step ID 3879b	SRT
Check for fault codes • Turn the key switch ON. • Use DAVIE to check for fault codes. Is fault code P3879 active? • Yes – Proceed to step 3 • No – Proceed to step 4		

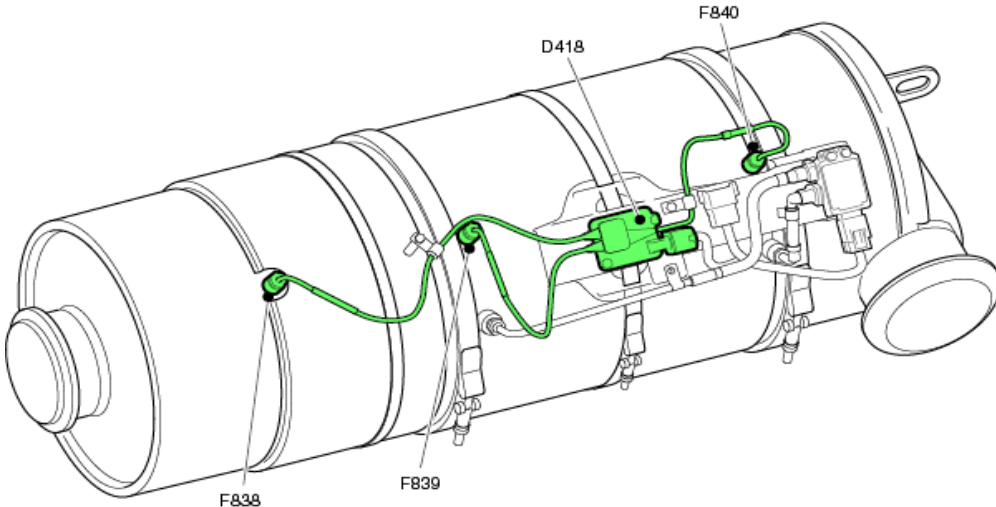
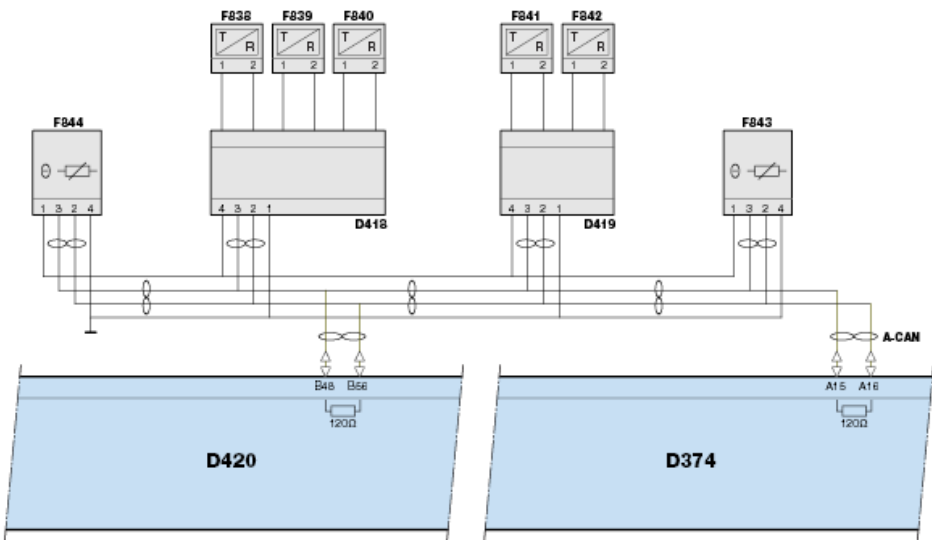
Step 3	Step ID 3879c	SRT
Perform the DPF regeneration test • Turn the key switch ON. • Start the engine. • Perform the 'DPF regeneration test.' For more information, see 'Explanatory notes to DAVIE.' Is fault for 'Hydrocarbon storage - Level too high' active after the regeneration is completed? • Yes – Check for active fault codes that may have become active during the regeneration. Proceed to step 4 • No – Proceed to step 4		

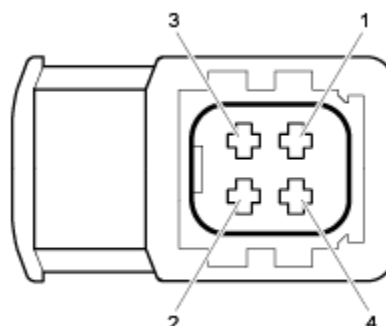
Step 4	Step ID 3879d	SRT
Disable the fault code • Connect all components. • Operate the system within the 'reset condition of the fault code' found in the fault code information.		

	• Use DAVIE to verify that the fault codes are inactive. Is fault code P3879 inactive? • Yes – Proceed to step 5 • No – Return to the troubleshooting steps - Proceed to step 2 If all the steps have been completed and rechecked, contact the Engine Support Center for further instructions.		
	Step 5	Step ID 3879e	SRT
	Clear the inactive fault codes • Connect all components. • Turn the key switch ON. • Use DAVIE to clear the inactive fault codes. Have all the fault codes been cleared? • Yes – Repair complete • No – Troubleshoot any remaining active fault codes		
	Step 6	Step ID 3879f	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	Not available/required for this code.		
	Back to Index		

P3880

Code number	P3880
Fault code description	Hydrocarbon storage - Drive away error
Fault code information	3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 7. Exhaust gas temperature sensor before DOC (F838) 8. Exhaust gas temperature sensor before DPF (F839) 9. Exhaust gas temperature sensor after DPF (F840) General: • Thermocouple sensors. • The temperature sensors are connected to the ECU DOC-DPF temperature sensors (D418). The signal of the temperature sensors is transmitted to the A-CAN by the ECU DOC-DPF temperature sensors (D418). • The temperature sensors cannot be disconnected or replaced separately from the ECU DOC-DPF temperature sensors (D418). Exhaust gas temperature sensor before DOC (F838): • Measure the exhaust gas temperature before the DOC. Effect of the output signal on the system: • Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DPF (F839) • Determines if a regeneration can be started • Calculates the amount of fuel that must be injected • Determines if the heating of the NOx sensor before catalytic converter (F844) is required in order to reach the operating temperature Exhaust gas temperature sensor before DPF (F839): • Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DOC (F838)

	• Determines whether regeneration has started • Controls the regeneration temperature • Calculates the amount of fuel that must be injected • Diagnoses the DOC efficiency Exhaust gas temperature sensor after DPF (F840): • Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Protects the DPF against excessively high temperature
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously when the engine runs.
Set condition of fault code	This DTC is set if P3878 is active and the vehicle speed exceeds 10 km/h [6 mph] for more than 0.5 seconds.
Reset condition of fault code	Perform a stationary DPF regeneration.
Electrical diagram(s)	



Wiring harness connector D418 front view

D374 EAS-3 ECU

D418 DOC/DPF temperature sensors ECU

D374	D418	Function
B14	3	A-CAN High
B15	2	A-CAN Low
	1	Ground
	4	Power supply

Technical data

Component & wiring check, Temperature sensors DOC-DPF ECU (D418)

Preparation

- Disconnect connector D418.
- Ignition switched on.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
4	1	Ubat	
1	Battery negative pole	>0.5V	Switch all consumers on

Component & wiring check, A-CAN

Preparation

- Ignition switched off.
- Disconnect connector D418.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	3	$\pm 60 \Omega$	

Possible causes

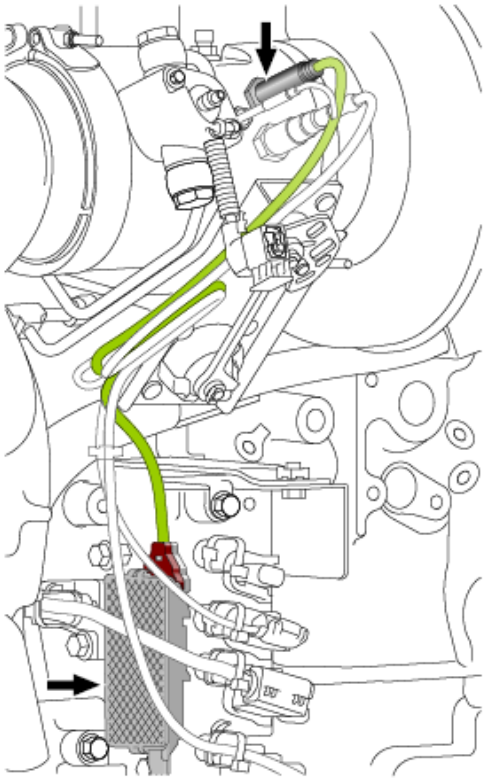
Extended idling duration, longer than 10 hours, followed by the vehicle driving away without performing stationary DPF regeneration.

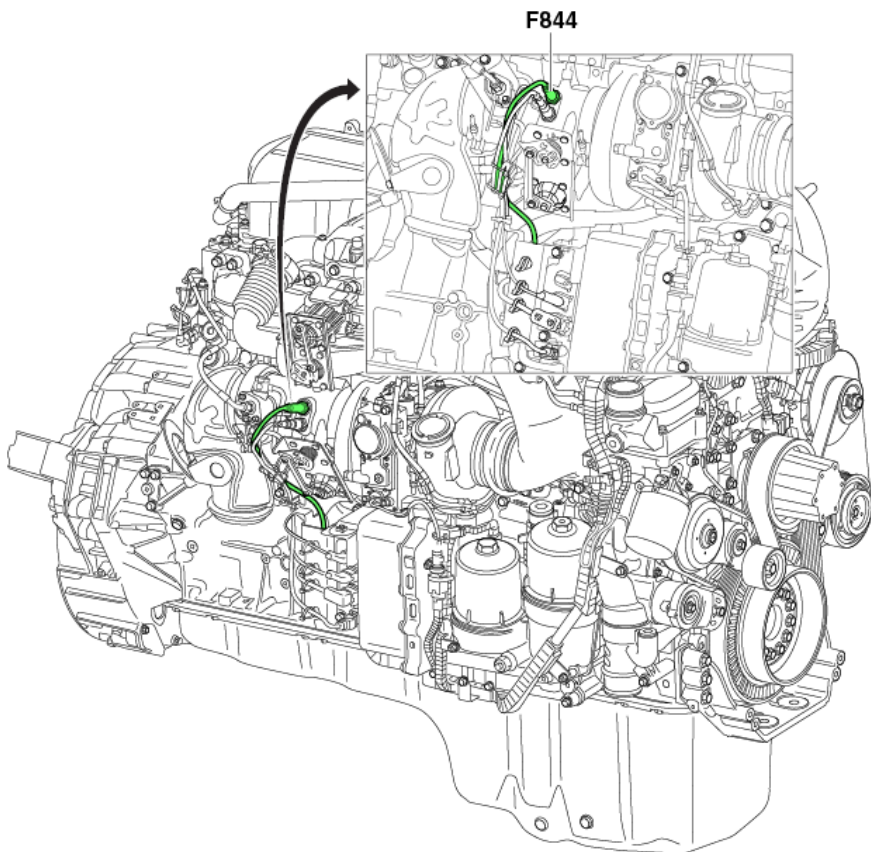
Additional information

- Excessive amount of hydrocarbons in the emission after treatment system.
- A (mandatory) request for stationary regeneration is shown on the dashboard's display.

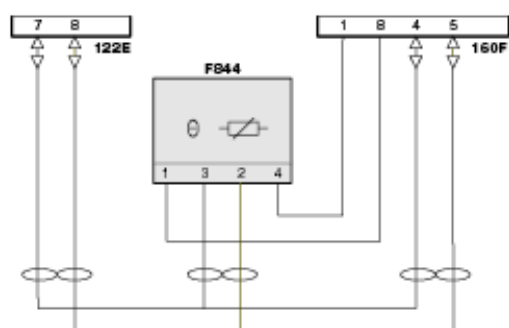
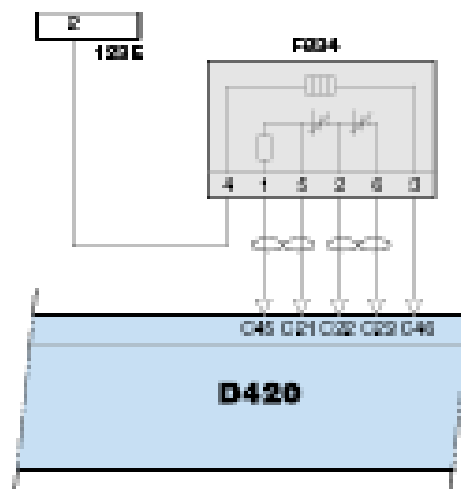
	• The DTC is not erasable.
Diagnostic Step-by-Step	• Fault code P3880 is active due to P3878 is active. • Resolve the P3878 fault • Clear the fault code • Perform the verification as per verification drive cycle of fault code P3878
Verification Drive Cycle	Not available/required for this code.
	Back to Index

P3881

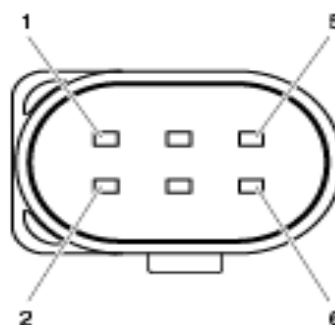
Code number	P3881
Fault code description	EAS-3 ECU - Power interruption
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	The NOx concentration emitted by the engine is measured in the exhaust gases after the BPV valve. The NOx sensor before catalyst consists of: • Electronic control unit This unit communicates with the PCI ECU and EAS-3 ECU via A-CAN • Sensor element The sensor element contains an internal heater. The sensor cannot be separated from the electronic control unit.  Sensor heating control • The first stage starts when the ignition is keyed on. • The sensor is heated to approximately 100°C [212°F], and any condensate evaporates from the sensor. • The second stage starts after the 'dew point' message is received from the PCI ECU • The sensor is heated to its operating temperature of approximately 800°C [1472°F]. The PCI ECU determines the 'dew point' by calculating how much energy (heat by burning fuel in the engine) is pumped through the exhaust.

	- If the 'dew point' message is not/no longer received, the sensor temperature stays at/drops to the standby temperature of approximately 100°C [212°F]. Effect on the system: - Controls the engine NOx emission. - Determines the DEF dosing amount by the EAS-3 system - Higher measured engine NOx emission results in higher DEF dosing amount.
Location of component(s)	 The diagram illustrates the engine layout with a focus on the NOx sensor before catalyst (F844). A green arrow points to the sensor's location on the intake manifold. An inset image provides a detailed view of the sensor area, with a green arrow pointing to the sensor and a black arrow pointing to the catalyst housing.
Diagnostic condition	This diagnostic runs when the exhaust gas temperature at the NOx sensor before catalyst (F844) is above 150° C [302° F] for a minimum of 120 seconds and the engine is running.
Set condition of fault code	The EAS-3 ECU (D374) has detected that the power supply to the intake NOx sensor before catalyst (F844) is intermittent.
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes.

Electrical diagram(s)



Wiring harness connector D420.C front view



Wiring harness connector F834 front view

122E 12-pin interface connector

160F 8-pin interface connector

F844 NOx sensor before catalytic convertor

F844	122E	160F	Function
3	7	4	A-CAN high
2	8	5	A-CAN low
1		8	Power supply after ignition
4		1	Ground

Technical data

Component & wiring check, NOx sensor before catalyst (F844)
Preparation

	• Ignition keyed off • Disconnect connector F844. • Measure on the front side of wiring harness connector F844. <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>4</td><td>1</td><td>Ubat</td><td>Key on the ignition</td></tr><tr><td>1</td><td>Battery negative pole</td><td>>0.5 V</td><td>Key on the ignition and switch on all consumers</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td> • Key off the ignition • Disconnect the ground cable from the battery. • Disconnect the vehicle communication interface (VCI) of DAVIE. </td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	4	1	Ubat	Key on the ignition	1	Battery negative pole	>0.5 V	Key on the ignition and switch on all consumers	2	3	± 60 Ω	• Key off the ignition • Disconnect the ground cable from the battery. • Disconnect the vehicle communication interface (VCI) of DAVIE.
Pin (+ probe)	Pin (- probe)	Value	Additional information														
4	1	Ubat	Key on the ignition														
1	Battery negative pole	>0.5 V	Key on the ignition and switch on all consumers														
2	3	± 60 Ω	• Key off the ignition • Disconnect the ground cable from the battery. • Disconnect the vehicle communication interface (VCI) of DAVIE.														
Possible causes	• Short to the supply or ground in the vehicle harness. • Open circuit in the power supply wiring of the NOx sensor before catalyst (F844). • Incorrect system voltage setup in the electronic service tool. • Malfunctioning NOx sensor before catalyst (F844). • The NOx sensor before catalyst (F844) part number is incorrect.																
Additional information	No Additional information available																
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to electrical components  • This troubleshooting tree is based on the assumption that supply power and ground to the PCI are functioning properly. • Disconnecting the PCI connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data in Rapido. • It is necessary to exit the 'active errors' screen in DAVIE and run the diagnostic test again to identify changes in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive codes. Refer to the 'possible causes' section in Rapido. <table><tr><td>Step 1</td><td>Step ID 3881a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr><tr><td>Step 2</td><td>Step ID 3881b</td><td>SRT</td></tr></table>	Step 1	Step ID 3881a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3881b	SRT							
Step 1	Step ID 3881a	SRT															
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																	
Step 2	Step ID 3881b	SRT															

	Check for electrical values of below: • Supply and signal voltages. • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4 <table><tr><td>Step 3</td><td>Step ID 3881c</td><td>SRT</td></tr></table> Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4 <table><tr><td>Step 4</td><td>Step ID 3881d</td><td>SRT</td></tr></table> For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.	Step 3	Step ID 3881c	SRT	Step 4	Step ID 3881d	SRT
Step 3	Step ID 3881c	SRT					
Step 4	Step ID 3881d	SRT					
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics						
	Back to Index						

P3882

Code number	P3882											
Fault code description	ECU EAS-3 - Voltage too high or short circuit to supply on ECU D374 pin A32											
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive											
Description of component(s)	This information not available in this document. Please refer to truck wiring diagrams											
Location of component(s)	This information not available in this document. Please refer to truck wiring diagrams											
Diagnostic condition	This diagnostic runs continuously.											
Set condition of fault code	The EAS-3 ECU (D374) detects that the battery voltage is higher than a threshold for 4 consecutive seconds.											
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected											
Electrical diagram(s)	This information not available in this document. Please refer to truck wiring diagrams											
Technical data	This information not available in this document. Please refer to truck wiring diagrams											
Possible causes	• Supply voltage to the EAS-3 ECU (D374) too high, higher than 15.8 V. • Check the EAS-3 ECU (D374) power supply wiring harness and battery voltage											
Additional information	DEF injection is disabled.											
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3882a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3882b</td><td>SRT</td></tr></table> Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3			Step 1	Step ID 3882a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3882b	SRT
Step 1	Step ID 3882a	SRT										
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.												
Step 2	Step ID 3882b	SRT										

	No - Proceed to step 4		
	Step 3	Step ID 3882c	SRT
	- Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolve - Fault active - Proceed to step 4		
	Step 4	Step ID 3882d	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics. With the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3883

Code number	P3883														
Fault code description	EAS-3 ECU - Voltage too low or short circuit to ground on ECU D374 on pin A32														
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive														
Description of component(s)	This information not available in this document. Please refer to truck wiring diagrams														
Location of component(s)	This information not available in this document. Please refer to truck wiring diagrams														
Diagnostic condition	This diagnostic runs continuously.														
Set condition of fault code	The EAS-3 ECU (D374) detects that the battery voltage is lower than a threshold for 4 consecutive seconds.														
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected														
Electrical diagram(s)	This information not available in this document. Please refer to truck wiring diagrams														
Technical data	This information not available in this document. Please refer to truck wiring diagrams														
Possible causes	• Supply voltage to the EAS-3 ECU (D374) too low, lower than 6.4 V • Check the EAS-3 ECU (D374) power supply wiring harness and battery voltage.														
Additional information	DEF injection is disabled.														
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3883a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3883b</td><td>SRT</td></tr><tr><td colspan="3">Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits?</td></tr></table>			Step 1	Step ID 3883a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3883b	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits?		
Step 1	Step ID 3883a	SRT													
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.															
Step 2	Step ID 3883b	SRT													
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits?															

	• Yes - Proceed to step 3 • No - Proceed to step 4		
	Step 3	Step ID 3883c	SRT
	• Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4		
	Step 4	Step ID 3883d	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics. With the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3884

Code number	P3884														
Fault code description	EAS-3 ECU power supply DEF pressure sensor - Voltage too high or short circuit to supply on ECU D374 pin B57														
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive														
Description of component(s)	“No component as this error related to ECU part”														
Location of component(s)	“No component as this error related to ECU part”														
Diagnostic condition	This diagnostic runs continuously.														
Set condition of fault code	A short circuit to supply or open circuit is detected for 1 second.														
Reset condition of fault code	To validate the repair, start the engine and let it idle for 1 minute.														
Electrical diagram(s)	“No component as this error related to ECU part”														
Technical data	“No component as this error related to ECU part”														
Possible causes	• Short circuit to supply or a short circuit to ground. • Check with DAVIE if the raw and processed values are the same. • Check for physical damage to the sensor and/or wiring harness. • Key on, check the raw and electrical sensor values • Use the DAVIE to perform the "Fuel dosing system override test," and monitor the pressure. Or check the fuel pressure sensor value with DAVIE.														
Additional information	• Engine runs in protection mode. • Active DPF regeneration will be disabled.														
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3884a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3884b</td><td>SRT</td></tr><tr><td colspan="3">Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. • Supply and signal voltages. </td></tr></table>			Step 1	Step ID 3884a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3884b	SRT	Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. • Supply and signal voltages.		
Step 1	Step ID 3884a	SRT													
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.															
Step 2	Step ID 3884b	SRT													
Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. • Supply and signal voltages.															

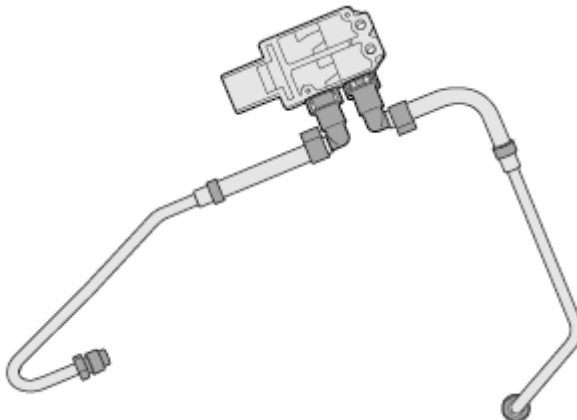
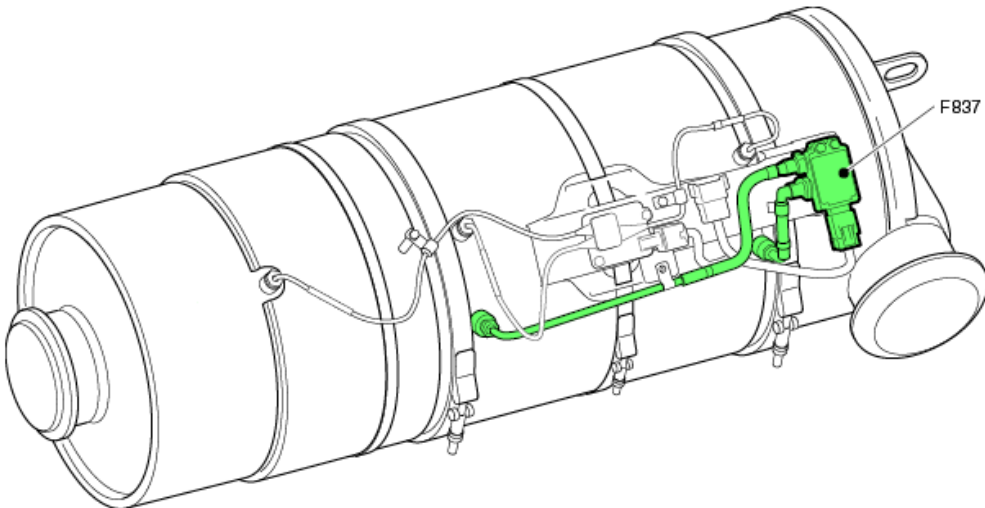
	• Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Continue to the next step 3 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.			
	<table><tr><td>Step 3</td><td>Step ID 3884c</td><td>SRT</td></tr></table> Replace: Engine Control Unit Replace the identified faulty component. Contact the PACCAR Engine Support Call Center to confirm replacement of the ECU. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 4 in the troubleshooting process.	Step 3	Step ID 3884c	SRT
	Step 3	Step ID 3884c	SRT	
	<table><tr><td>Step 4</td><td>Step ID 3884d</td><td>SRT</td></tr></table> For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.	Step 4	Step ID 3884d	SRT
	Step 4	Step ID 3884d	SRT	
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics.			
	Back to Index			

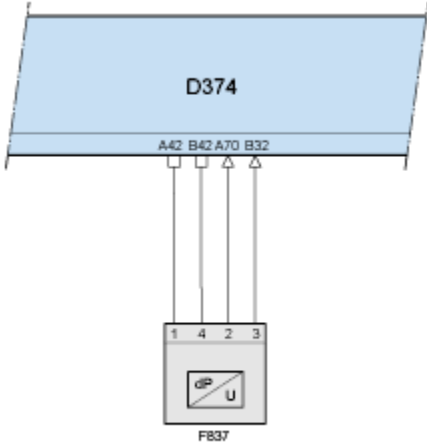
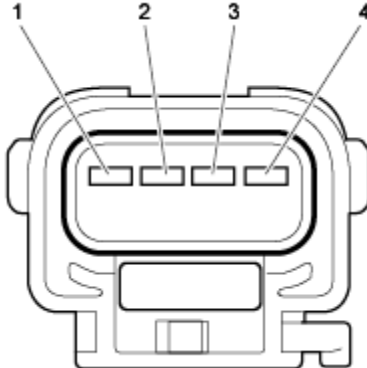
P3885

Code number	P3885												
Fault code description	EAS-3 ECU power supply DEF pressure sensor - Voltage too low or short circuit to ground on ECU D374 pin B57												
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive												
Description of component(s)	“No component as this error related to ECU part”												
Location of component(s)	“No component as this error related to ECU part”												
Diagnostic condition	This diagnostic runs continuously after ignition is keyed on.												
Set condition of fault code	The EAS-3 ECU (D374) detects that the DEF pressure sensor supply signal voltage is less than 4.75V.												
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected.												
Electrical diagram(s)	“No component as this error related to ECU part”												
Technical data	“No component as this error related to ECU part”												
Possible causes	• Short circuit to ground in a supply wiring harness. • Short circuit between a supply wiring and a ground wiring. • Malfunctioning DEF pressure sensor. • Malfunctioning EAS-3 ECU (D374).												
Additional information	• Low voltage detected at 5 VDC sensor supply circuit. • The engine will only idle.												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3885a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3885b</td><td>SRT</td></tr><tr><td colspan="3">Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. • Supply and signal voltages. </td></tr></table>	Step 1	Step ID 3885a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3885b	SRT	Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. • Supply and signal voltages.		
Step 1	Step ID 3885a	SRT											
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.													
Step 2	Step ID 3885b	SRT											
Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. • Supply and signal voltages.													

	• Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Continue to the next step 3 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. If this related fault is still active, continue to the next step 3 in the troubleshooting process. <table><tr><td>Step 3</td><td>Step ID 3885c</td><td>SRT</td></tr></table> Replace: Engine Control Unit Replace the identified faulty component. Contact the PACCAR Engine Support Call Center to confirm replacement of the ECU. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 4 in the troubleshooting process. <table><tr><td>Step 4</td><td>Step ID 3885d</td><td>SRT</td></tr></table> For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.	Step 3	Step ID 3885c	SRT	Step 4	Step ID 3885d	SRT
Step 3	Step ID 3885c	SRT					
Step 4	Step ID 3885d	SRT					
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics.						
	Back to Index						

P3886

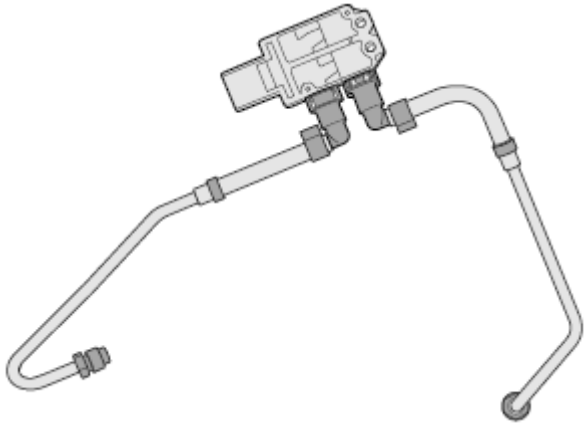
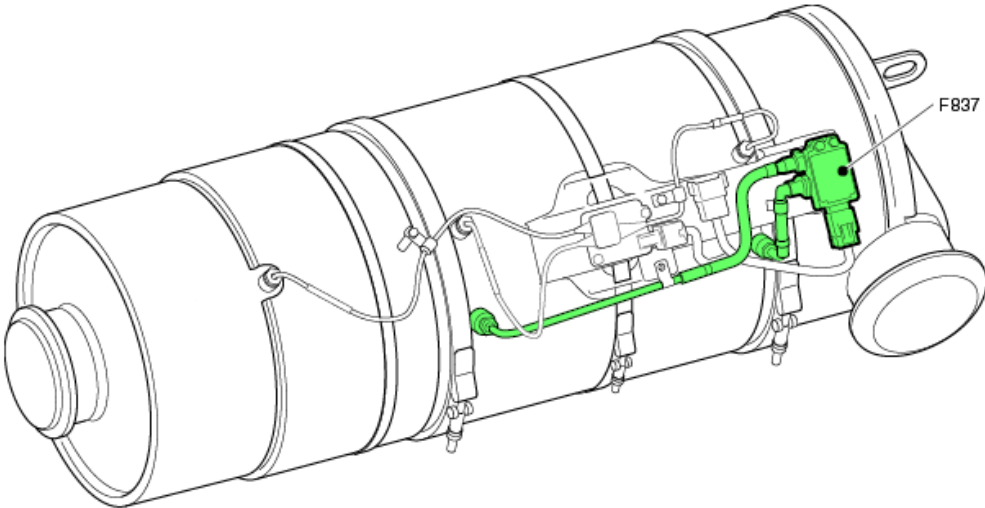
Code number	P3886
Fault code description	EAS-3 ECU power supply DOC/DPF pressure sensor - Voltage too high or short circuit to supply on ECU D374 pin B42
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	- Measures the differential pressure over the DPF. - Measures pressure after the DPF.  Effect of output signal on the system - Determining the soot load of the DPF, which is an indication of how much soot is located inside the DPF. - Calculation of the duration of the regeneration - Diagnostics of DPF
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	A short circuit to supply or short circuit to ground is detected for 1 second.
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes.

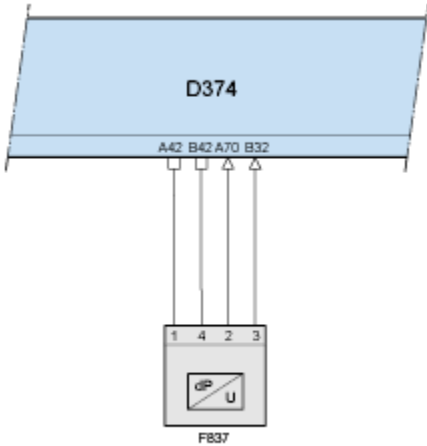
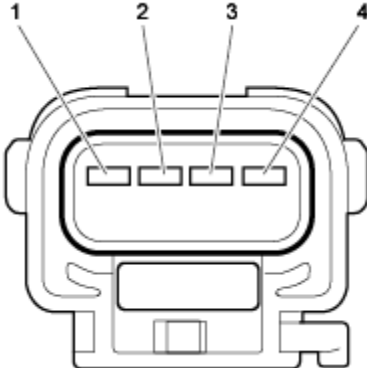
Electrical diagram(s)	  Wiring harness connector F837 front view D374 EAS-3 ECU F837 DPF pressure sensor <table><tr><td>D374</td><td>F837</td><td>Function</td></tr><tr><td>A42</td><td>1</td><td>Ground</td></tr><tr><td>A70</td><td>2</td><td>Signal, delta pressure over DPF</td></tr><tr><td>B32</td><td>3</td><td>Signal, pressure after DPF</td></tr><tr><td>B42</td><td>4</td><td>Supply</td></tr></table>	D374	F837	Function	A42	1	Ground	A70	2	Signal, delta pressure over DPF	B32	3	Signal, pressure after DPF	B42	4	Supply
D374	F837	Function														
A42	1	Ground														
A70	2	Signal, delta pressure over DPF														
B32	3	Signal, pressure after DPF														
B42	4	Supply														
Technical data	Component check, DPF pressure sensor (F837) Preparation • Disconnect connector F837. • Switch the ignition on. • Measure on connector F837. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>Battery negative pole</td><td><0.5V</td><td>Switch all consumers on.</td></tr><tr><td>4</td><td>1</td><td>4.75 - 5.25V</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	Battery negative pole	<0.5V	Switch all consumers on.	4	1	4.75 - 5.25V				
Pin (+ probe)	Pin (- probe)	Value	Condition													
1	Battery negative pole	<0.5V	Switch all consumers on.													
4	1	4.75 - 5.25V														
Possible causes	• Short circuit to supply or a short circuit to ground. • Check with DAVIE if the raw and processed values are the same.															

	• Check for physical damage to the sensor and/or wiring harness. • Check the raw sensor value with DAVIE. • Perform the "DEF pump module prime test," and monitor the pressure, or monitor the DEF pressure with DAVIE.																								
Additional information	• DEF injection is disabled. • DEF priming request is disabled.																								
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3886a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3886b</td><td>SRT</td></tr><tr><td colspan="3"> Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3886c</td><td>SRT</td></tr><tr><td colspan="3"> Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4 </td></tr></table> <table><tr><td>Step 4</td><td>Step ID 3886d</td><td>SRT</td></tr><tr><td colspan="3">Replace the identified component (Engine Controller Unit (ECU)) and use DAVIE to</td></tr></table>	Step 1	Step ID 3886a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3886b	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4			Step 3	Step ID 3886c	SRT	Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4			Step 4	Step ID 3886d	SRT	Replace the identified component (Engine Controller Unit (ECU)) and use DAVIE to		
Step 1	Step ID 3886a	SRT																							
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																									
Step 2	Step ID 3886b	SRT																							
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4																									
Step 3	Step ID 3886c	SRT																							
Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4																									
Step 4	Step ID 3886d	SRT																							
Replace the identified component (Engine Controller Unit (ECU)) and use DAVIE to																									

	re-check for the presence of active faults.		
	- Fault inactive – issue resolved - Fault active - Proceed to step 4		
	Step 5	Step ID 3886e	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics.		
	Back to Index		

P3887

Code number	P3887
Fault code description	EAS-3 ECU power supply DOC/DPF pressure sensor - Voltage too low or short circuit to ground on ECU D374 pin B42
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	- Measures the differential pressure over the DPF. - Measures pressure after the DPF.  Effect of output signal on the system - Determining the soot load of the DPF, which is an indication of how much soot is located inside the DPF. - Calculation of the duration of the regeneration - Diagnostics of DPF
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously after ignition is keyed on.
Set condition of fault code	The EAS-3 ECU (D374) detects that the sensor supply signal voltage is less than 4.75 V.
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes.

Electrical diagram(s)	  Wiring harness connector F837 front view D374 EAS-3 ECU F837 DPF pressure sensor <table><tr><td>D374</td><td>F837</td><td>Function</td></tr><tr><td>A42</td><td>1</td><td>Ground</td></tr><tr><td>A70</td><td>2</td><td>Signal, delta pressure over DPF</td></tr><tr><td>B32</td><td>3</td><td>Signal, pressure after DPF</td></tr><tr><td>B42</td><td>4</td><td>Supply</td></tr></table>	D374	F837	Function	A42	1	Ground	A70	2	Signal, delta pressure over DPF	B32	3	Signal, pressure after DPF	B42	4	Supply
D374	F837	Function														
A42	1	Ground														
A70	2	Signal, delta pressure over DPF														
B32	3	Signal, pressure after DPF														
B42	4	Supply														
Technical data	Component check, DPF pressure sensor (F837) Preparation • Disconnect connector F837. • Switch the ignition on. • Measure on connector F837. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>Battery negative pole</td><td><0.5V</td><td>Switch all consumers on.</td></tr><tr><td>4</td><td>1</td><td>4.75 - 5.25V</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	Battery negative pole	<0.5V	Switch all consumers on.	4	1	4.75 - 5.25V				
Pin (+ probe)	Pin (- probe)	Value	Condition													
1	Battery negative pole	<0.5V	Switch all consumers on.													
4	1	4.75 - 5.25V														
Possible causes	Short circuit to ground in sensor wiring.															
Additional information	Low voltage detected at the DOC-DPF pressure sensor (F837) supply circuit.															

Diagnostic Step-by-Step



Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.



- Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors.
- For specific electrical component information and pinout locations, always refer to the technical data.
- It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors.
- Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.

Step 1	Step ID 3887a	SRT
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.		

Step 2	Step ID 3887b	SRT
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4		

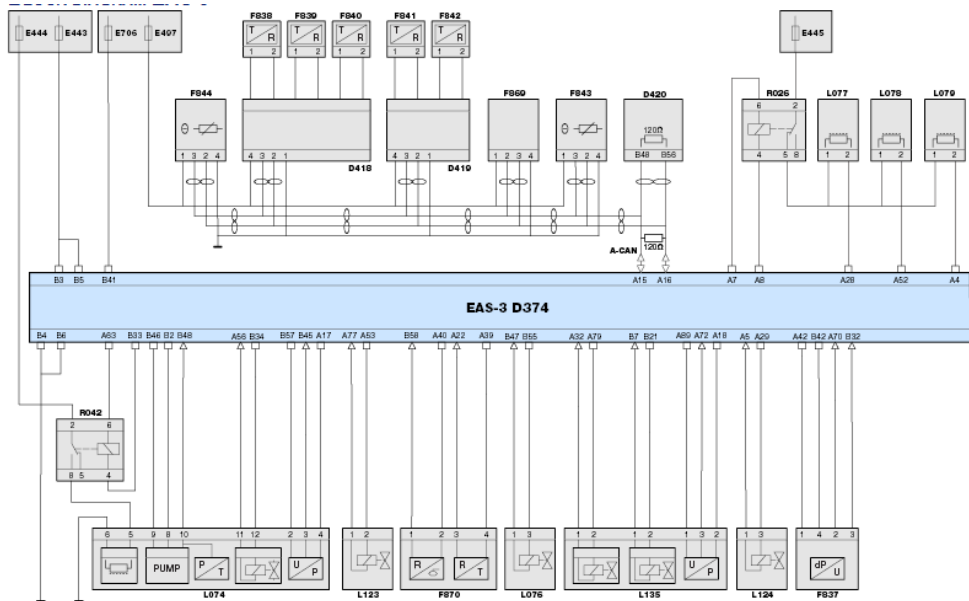
Step 3	Step ID 3887c	SRT
Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4		

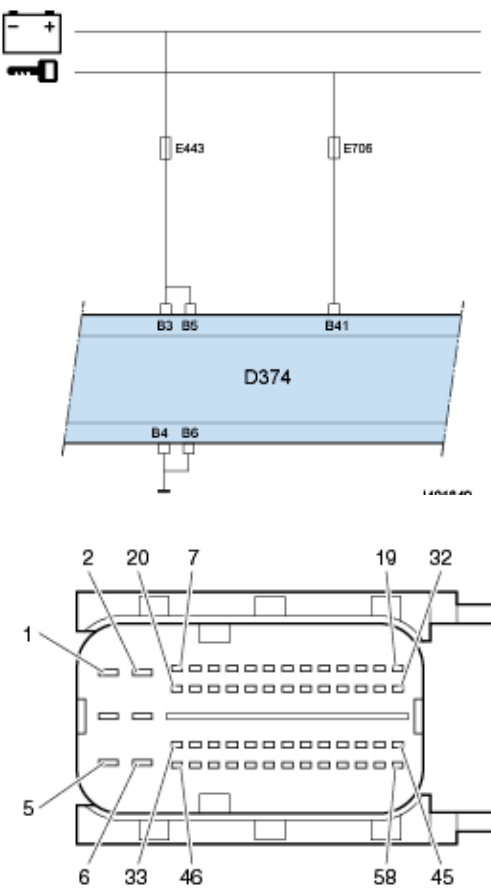
Step 4	Step ID 3887d	SRT
Replace the identified component (Engine Controller Unit (ECU)) and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 4		

Step 5	Step ID 3887e	SRT
For further assistance in diagnosing this issue or for confirmation prior to the		

	replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.	
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics.	
	Back to Index	

P3888

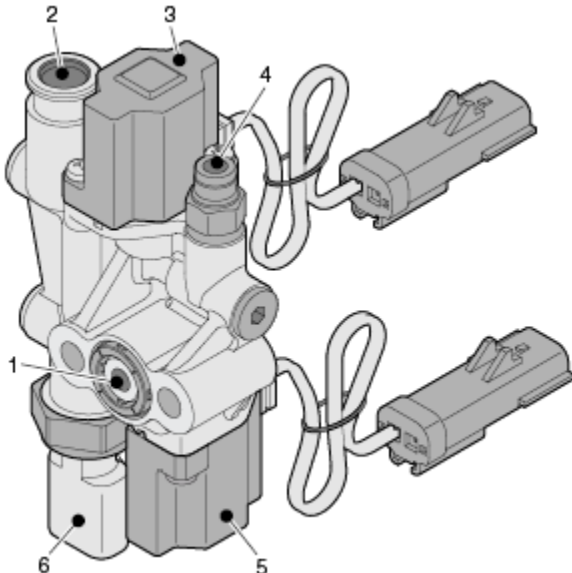
Code number	P3888
Fault code description	EAS-3 ECU power supply fuel intake module - Voltage too high or short circuit to supply on ECU D374 pin A89
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group - None Freeze frame type -Comprehensive
Description of component(s)	 D374 EAS-3 ECU D418 DOC/DPF temperature sensors ECU D419 catalytic convertor temperature sensors ECU D420 PCI ECU E443 fuse, EAS 1st E444 fuse, EAS 2nd E497 fuse, after treatment CAN E706 fuse, electrical systems F837 DPF pressure sensor F838 sensor, exhaust temperature before DOC F839 sensor, exhaust temperature before DPF F840 sensor, exhaust temperature after DPF F841 sensor, exhaust temperature before catalyst F842 sensor, exhaust temperature after catalyst F843 NOx sensor after catalytic convertor F844 NOx sensor before catalytic convertor F869 NH3 sensor F873 urea tank sensor H009 fuse, holder H010 fuse, holder L074 pump module L076 tank heater valve L077 Heater element, DEF pressure line

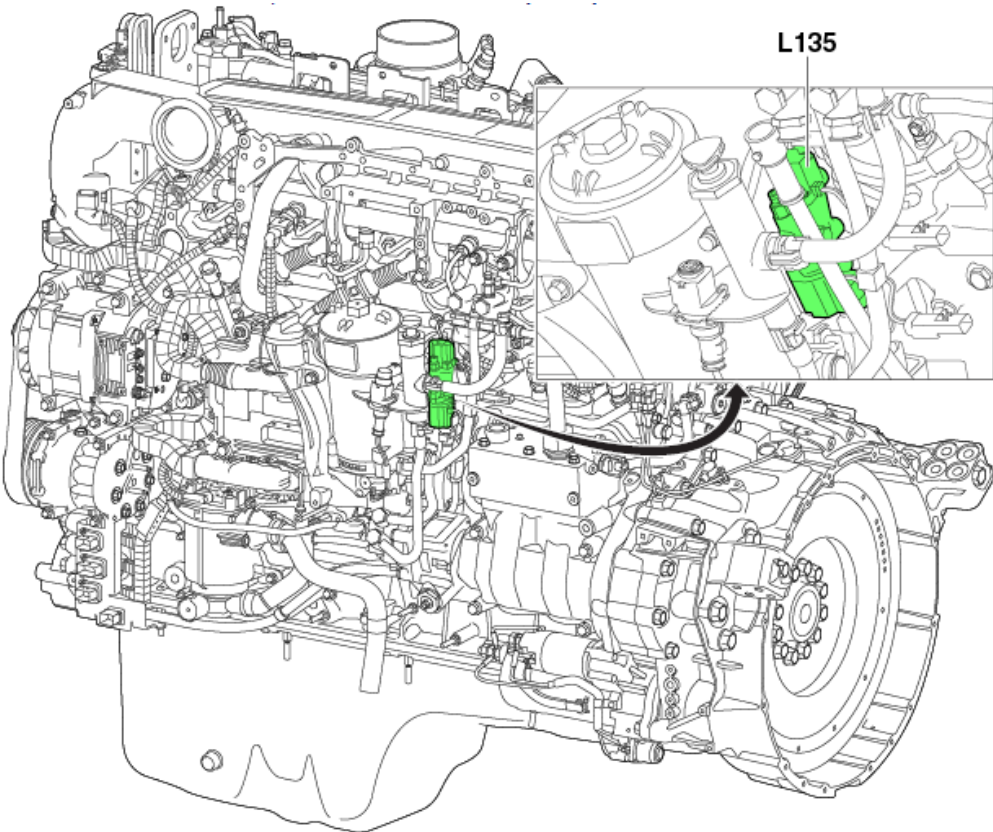
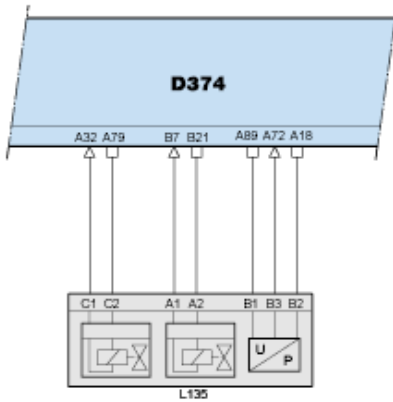
	L078 Heater element, DEF return line L079 Heater element, DEF in line L123 urea dosing valve L124 HC Doser valve L135 fuel intake module R026 Relay, line heating R042 pump heater relay
Location of component(s)	No information present
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	A short circuit to earth is detected for 1 second.
Reset condition of fault code	This DTC will change to inactive as soon as the diagnostic runs and passes.
Electrical diagram(s)	 Wiring harness connector D374.B front view D374 EAS-3 ECU E443 fuse, EAS 1st E706 fuse, electrical systems D374 Function B3 Power supply before ignition B4 ground B5 Power supply before ignition B6 ground B41 Power supply before ignition

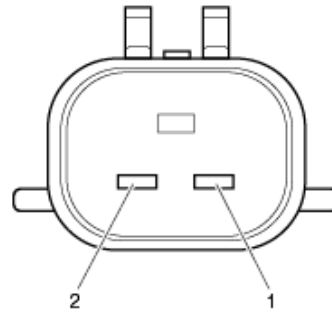
Technical data	Component & wiring check, power supply and ground Preparation Pin (+ probe) B3 B4 B5 B6 B41 Pin (- probe) B4 Battery negative pole B4 Battery negative pole B4 Value Ubat <0.5V Ubat <0.5V Ubat Condition Switch all consumers on Switch all consumers on Switch ignition on
Possible causes	

	are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Proceed to step 3. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 2 in the troubleshooting process.					
	<table><tr><td>Step 3</td><td>Step ID 3888c</td><td>SRT</td></tr></table> Replace the identified faulty component. Contact the PACCAR Engine Support Call Center to confirm replacement of the ECU. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.			Step 3	Step ID 3888c	SRT
	Step 3	Step ID 3888c	SRT			
	<table><tr><td>Step 4</td><td>Step ID 3888d</td><td>SRT</td></tr></table> For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.			Step 4	Step ID 3888d	SRT
Step 4	Step ID 3888d	SRT				
Verification Drive Cycle: Power-Up/Electrical						
	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics.					
	Back to Index					

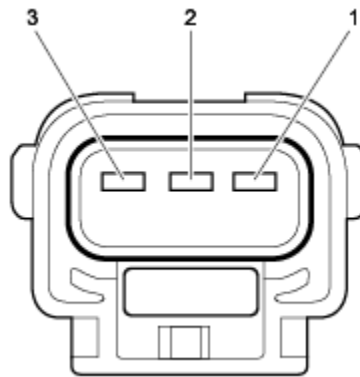
P3889

Code number	P3889
Fault code description	EAS-3 ECU power supply fuel intake module - Voltage too low or short circuit to ground on ECU D374 pin A89
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group - None Freeze frame type - Comprehensive
Description of component(s)	 1 Fuel from fuel filter module 2 Fuel-to-fuel dosing module (L124) 3 Air shutoff valve 4 Air supply 5 Fuel shutoff valve 6 Pressure sensor Fuel pressure sensor • Piezoelectric sensor Effect of output signal on the system: • The fuel pressure sensor measures the fuel pressure after the fuel control valve; • Value used for calculation of the amount of fuel that must be injected; • Diagnosis of clogged and/or leaking dosing system. Fuel shutoff valve • Solenoid valve Effect of output signal on the system: • The fuel shutoff valve supplies fuel from the fuel filter module to the fuel dosing module (L124).

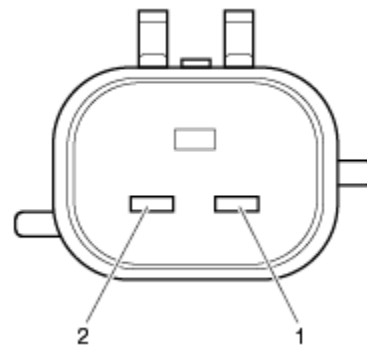
	Air shutoff valve - Solenoid valve Effect of output signal on the system: - The air shutoff valve purges the fuel line of air in order to empty the fuel line to the fuel dosing module after the fuel supply has stopped.
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously when the ignition is on.
Set condition of fault code	The EAS-3 ECU (D374) detects that the sensor supply voltage is lower than 4.75 V.
Reset condition of fault code	This DTC changes to inactive as soon as the diagnostic runs and passes.
Electrical diagram(s)	



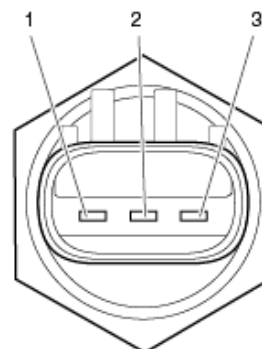
Wiring harness connector L135.A front view



Wiring harness connector L135.B front view



Air shutoff valve connector L135.C front view



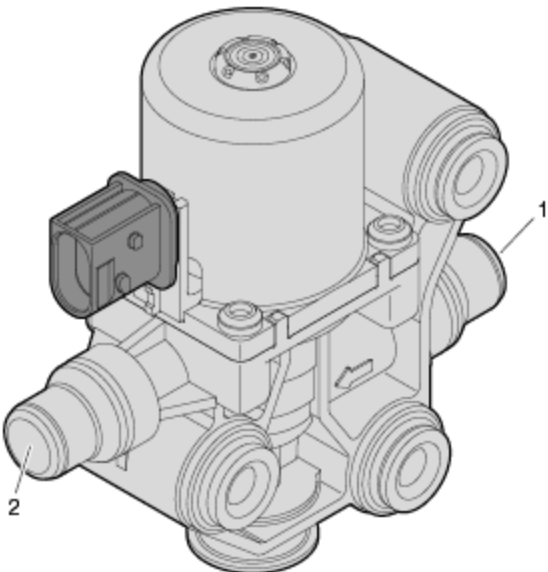
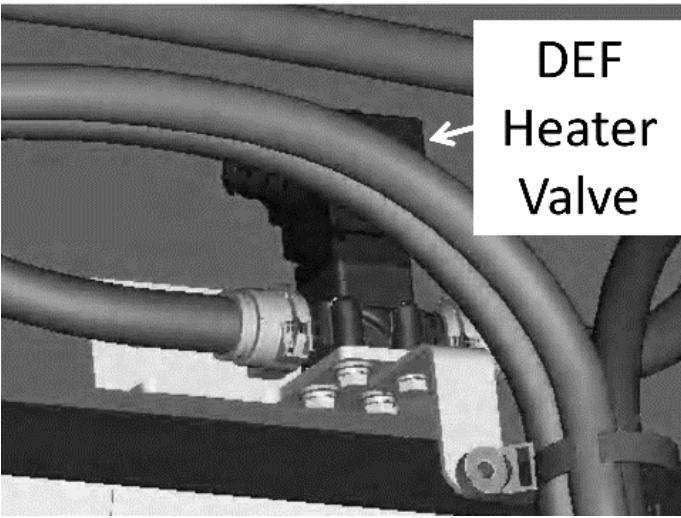
Pressure sensor L135.B front view

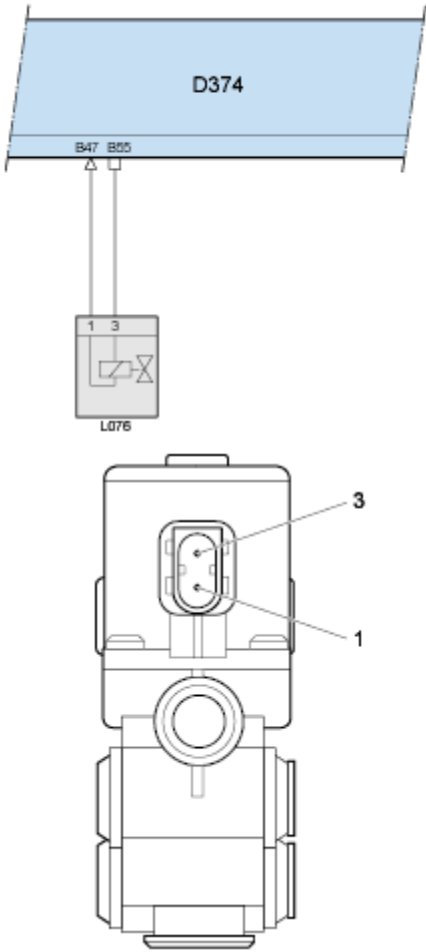
	D374 EAS-3 ECU L135 Fuel intake module D374 L135 Function A18 B3 Ground, fuel pressure sensor A72 B2 Signal, fuel pressure sensor A89 B1 Supply voltage, fuel pressure sensor A32 C1 Signal, air shutoff valve A79 C2 Ground, air shutoff valve B7 A1 Signal voltage, fuel shutoff valve B21 A2 Ground, fuel shutoff valve																																
Technical data	Component and wiring check, pressure sensor Preparation • Disconnect connector L135B. • Switch the ignition on. • Measure on connector L135B. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional Information</td></tr><tr><td>B1</td><td>B2</td><td>5 V ± 0.25 V</td><td></td></tr></table> Component check, pressure sensor Preparation • Switch the ignition off. • Disconnect connector L135.B. • Measure on the pressure sensor connector L135.B. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional Information</td></tr><tr><td>B3</td><td>B1</td><td>37–68 kΩ</td><td>at 20°C</td></tr><tr><td>B3</td><td>B2</td><td>1.4–2.6 kΩ</td><td>at 20°C</td></tr><tr><td>B1</td><td>B2</td><td>46–67 kΩ</td><td>at 20°C</td></tr></table> Component check, air shutoff valve Preparation • Switch the ignition off. • Disconnect connector L135C. • Measure on the air shutoff valve L135.C. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional Information</td></tr><tr><td>C1</td><td>C2</td><td>7.6–8.4 Ω</td><td>at 20°C</td></tr></table> Component check, fuel shutoff valve Preparation • Ignition switched on. • Disconnect connector L135A. • Measure on the fuel shutoff valve L135.A.	Pin (+ probe)	Pin (- probe)	Value	Additional Information	B1	B2	5 V ± 0.25 V		Pin (+ probe)	Pin (- probe)	Value	Additional Information	B3	B1	37–68 kΩ	at 20°C	B3	B2	1.4–2.6 kΩ	at 20°C	B1	B2	46–67 kΩ	at 20°C	Pin (+ probe)	Pin (- probe)	Value	Additional Information	C1	C2	7.6–8.4 Ω	at 20°C
Pin (+ probe)	Pin (- probe)	Value	Additional Information																														
B1	B2	5 V ± 0.25 V																															
Pin (+ probe)	Pin (- probe)	Value	Additional Information																														
B3	B1	37–68 kΩ	at 20°C																														
B3	B2	1.4–2.6 kΩ	at 20°C																														
B1	B2	46–67 kΩ	at 20°C																														
Pin (+ probe)	Pin (- probe)	Value	Additional Information																														
C1	C2	7.6–8.4 Ω	at 20°C																														

	<table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional Information</td></tr><tr><td>A1</td><td>A2</td><td>7.6–8.4 Ω</td><td>at 20°C</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional Information	A1	A2	7.6–8.4 Ω	at 20°C				
Pin (+ probe)	Pin (- probe)	Value	Additional Information										
A1	A2	7.6–8.4 Ω	at 20°C										
Possible causes	• Short circuit to ground in a supply wiring harness. • Short circuit between a supply wiring and a ground wiring. • Malfunctioning fuel intake module (L135). • Malfunctioning EAS-3 ECU (D374).												
Additional information	• Hydro carbon dosing in the after treatment system is disabled. • Engine runs in protection mode												
Diagnostic Step-by-Step	  Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components. • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pin out locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3889a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3889b</td><td>SRT</td></tr><tr><td colspan="3"> Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Proceed to step 3. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process. </td></tr></table>	Step 1	Step ID 3889a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3889b	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Proceed to step 3. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.		
Step 1	Step ID 3889a	SRT											
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.													
Step 2	Step ID 3889b	SRT											
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Proceed to step 3. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.													

	<table><tr><td>Step 3</td><td>Step ID 3889c</td><td>SRT</td></tr><tr><td colspan="3">Replace: Engine Controller Unit (ECU) Replace the identified faulty component. Contact the PACCAR Engine Support Call Center to confirm replacement of the ECU.</td></tr><tr><td colspan="3">Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process. </td></tr><tr><td colspan="3"></td></tr></table>	Step 3	Step ID 3889c	SRT	Replace: Engine Controller Unit (ECU) Replace the identified faulty component. Contact the PACCAR Engine Support Call Center to confirm replacement of the ECU.			Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.					
	Step 3	Step ID 3889c	SRT										
	Replace: Engine Controller Unit (ECU) Replace the identified faulty component. Contact the PACCAR Engine Support Call Center to confirm replacement of the ECU.												
	Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.												
<table><tr><td>Step 4</td><td>Step ID 3889d</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 4	Step ID 3889d	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.									
Step 4	Step ID 3889d	SRT											
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.													
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics. With the brakes set, start the engine and allow it to run at idle for 2 minutes.												
	Back to Index												

P3890

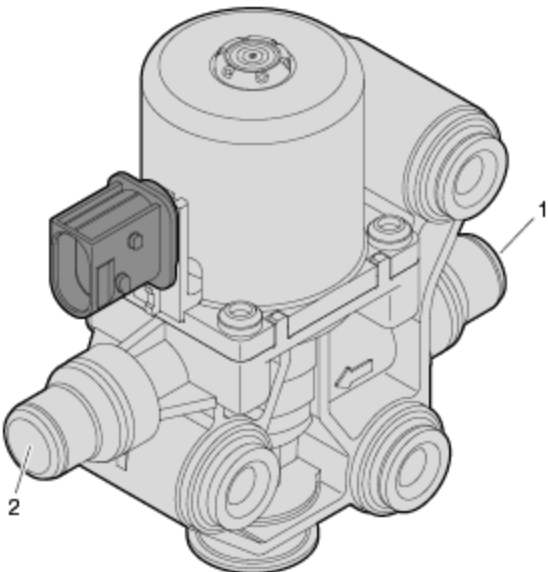
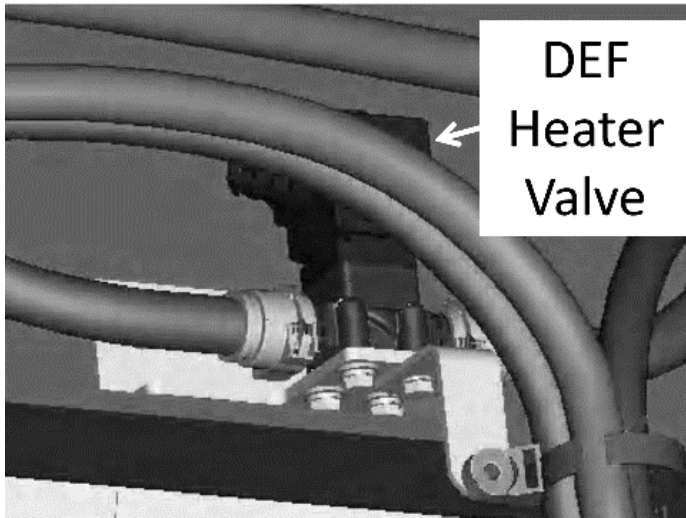
Code number	P3890
Fault code description	Valve tank heater – Voltage too high or short circuit to supply on ECU D374 pin B47.
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	• Solenoid valve • The tank heater valve is actuated by a PWM signal. • Tank heater valve controls the engine coolant flow through the DEF tank. Effect of output signal on the system • The tank is heated by the engine coolant in order to prevent the DEF tank from freezing.  • Coolant supply • Coolant return
Location of component(s)	

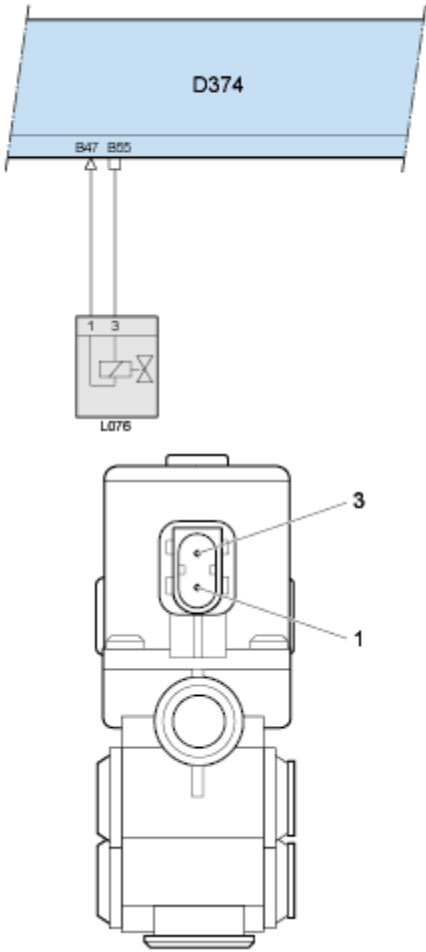
Diagnostic condition	This diagnostic runs continuously when the ignition is keyed on or when the engine is running.															
Set condition of fault code	A short circuit to supply or open circuit is detected for 3 consecutive seconds.															
Reset condition of fault code	To validate the repair, start the engine and let it idle for 1 minute.															
Electrical diagram(s)	 Tank heater valve (L076) front view <table><tr><td>D374</td><td>EAS-3 ECU</td></tr><tr><td>L076</td><td>Tank heater valve</td></tr></table><table><tr><td>D374</td><td>L076</td><td>Function</td></tr><tr><td>B47</td><td>1</td><td>Signal, valve tank heater</td></tr><tr><td>A55</td><td>2</td><td>Ground, valve tank heater</td></tr></table>			D374	EAS-3 ECU	L076	Tank heater valve	D374	L076	Function	B47	1	Signal, valve tank heater	A55	2	Ground, valve tank heater
D374	EAS-3 ECU															
L076	Tank heater valve															
D374	L076	Function														
B47	1	Signal, valve tank heater														
A55	2	Ground, valve tank heater														
Technical data	Component check, tank heater valve Preparation • Switch the ignition off. • Disconnect connector L076. • Measure on component connector L076. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>1</td><td>3</td><td>32 Ω ± 5%</td><td>at 20°C</td></tr></table>			Pin (+ probe)	Pin (- probe)	Value	Additional information	1	3	32 Ω ± 5%	at 20°C					
Pin (+ probe)	Pin (- probe)	Value	Additional information													
1	3	32 Ω ± 5%	at 20°C													

Possible causes	• Short circuit to supply or an open circuit. • Perform the test 'DEF tank heater valve in DAVIE.																									
Additional information	DEF heating is disabled.																									
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table border="1"> <tr> <td>Step 1</td><td>Step ID 3890a</td><td>SRT</td></tr> <tr> <td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr> </table> <table border="1"> <tr> <td>Step 2</td><td>Step ID 3890b</td><td>SRT</td></tr> <tr> <td colspan="3"> This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? • No: Proceed to step 4 • Yes: Proceed to step 3 </td></tr> </table> <table border="1"> <tr> <td>Step 3</td><td>Step ID 3890c</td><td>SRT</td></tr> <tr> <td colspan="3"> Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4 </td></tr> </table> <table border="1"> <tr> <td>Step 4</td><td>Step ID 3890d</td><td>SRT</td></tr> <tr> <td colspan="3"> Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts). </td></tr> </table>		Step 1	Step ID 3890a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3890b	SRT	This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? • No: Proceed to step 4 • Yes: Proceed to step 3			Step 3	Step ID 3890c	SRT	Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4			Step 4	Step ID 3890d	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts).		
Step 1	Step ID 3890a	SRT																								
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																										
Step 2	Step ID 3890b	SRT																								
This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? • No: Proceed to step 4 • Yes: Proceed to step 3																										
Step 3	Step ID 3890c	SRT																								
Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4																										
Step 4	Step ID 3890d	SRT																								
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts).																										

	Are measured electrical values outside of expected range or limits? - No: Proceed to step 6 - Yes: Proceed to step 5		
	Step 5	Step ID 3890e	SRT
	Repair or replace appropriate component and use Davie to recheck for the presence of active faults. - Fault inactive – issue resolve - Fault active - Proceed to step 6		
	Step 6	Step ID 3890f	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3891

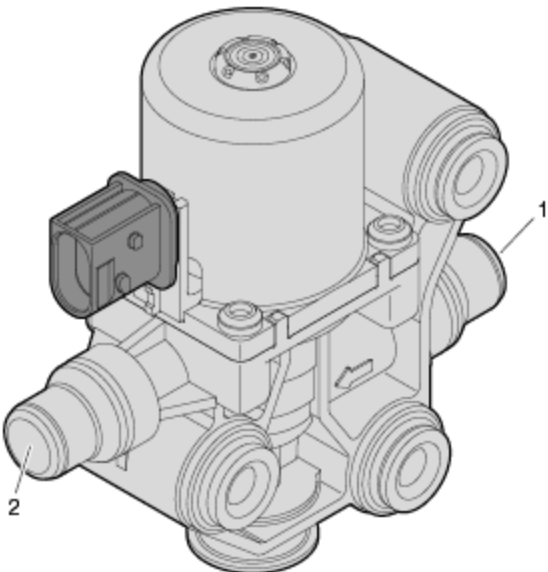
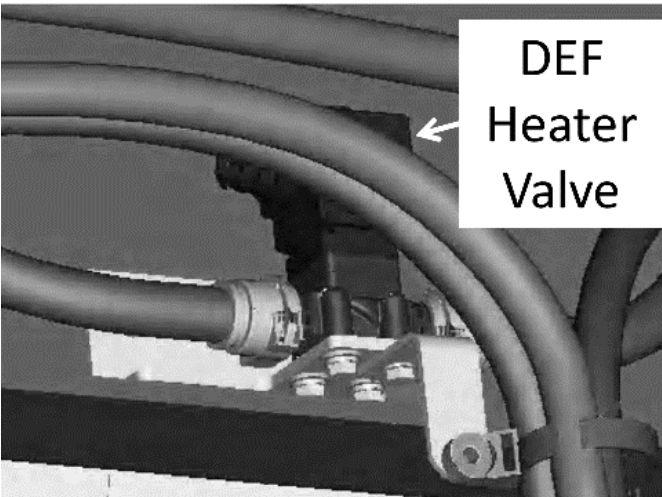
Code number	P3891
Fault code description	Valve tank heater – Voltage too low or short circuit to ground on ECU D374 pin B47.
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	• Solenoid valve • The tank heater valve is actuated by a PWM signal. • Tank heater valve controls the engine coolant flow through the DEF tank. Effect of output signal on the system • The tank is heated by the engine coolant in order to prevent the DEF tank from freezing.  • Coolant supply • Coolant return
Location of component(s)	

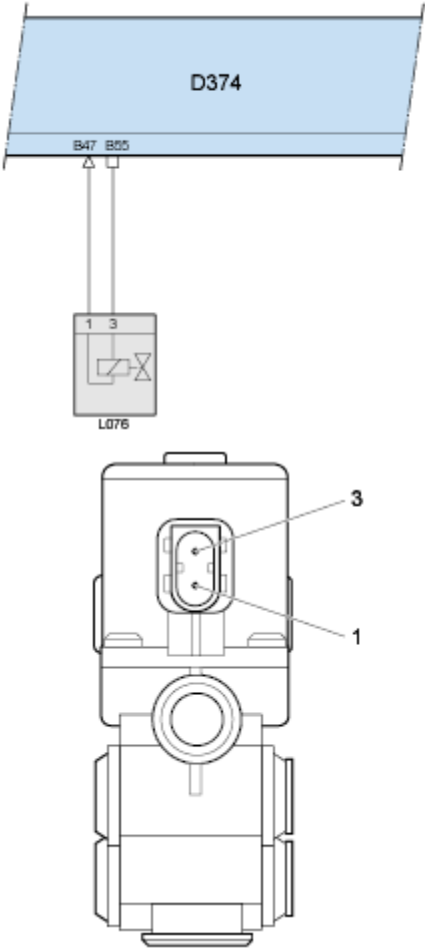
Diagnostic condition	This diagnostic runs continuously when the ignition is on and the tank heater valve (L076) is activated.															
Set condition of fault code	A short circuit to ground is detected for 3 consecutive seconds.															
Reset condition of fault code	To validate the repair, start the engine and let it idle for 1 minute.															
Electrical diagram(s)	 Tank heater valve (L076) front view <table><tr><td>D374</td><td>EAS-3 ECU</td></tr><tr><td>L076</td><td>Tank heater valve</td></tr></table><table><tr><td>D374</td><td>L076</td><td>Function</td></tr><tr><td>B47</td><td>1</td><td>Signal, valve tank heater</td></tr><tr><td>A55</td><td>2</td><td>Ground, valve tank heater</td></tr></table>			D374	EAS-3 ECU	L076	Tank heater valve	D374	L076	Function	B47	1	Signal, valve tank heater	A55	2	Ground, valve tank heater
D374	EAS-3 ECU															
L076	Tank heater valve															
D374	L076	Function														
B47	1	Signal, valve tank heater														
A55	2	Ground, valve tank heater														
Technical data	Component check, tank heater valve Preparation • Switch the ignition off. • Disconnect connector L076. • Measure on component connector L076. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>1</td><td>3</td><td>32 Ω ± 5%</td><td>at 20°C</td></tr></table>			Pin (+ probe)	Pin (- probe)	Value	Additional information	1	3	32 Ω ± 5%	at 20°C					
Pin (+ probe)	Pin (- probe)	Value	Additional information													
1	3	32 Ω ± 5%	at 20°C													

Possible causes	• A short circuit to ground. • Perform the test 'DEF tank heater valve in DAVIE.																									
Additional information	DEF line and DEF tank heating is disabled.																									
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table border="1"> <tr> <td>Step 1</td><td>Step ID 3891a</td><td>SRT</td></tr> <tr> <td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr> </table> <table border="1"> <tr> <td>Step 2</td><td>Step ID 3891b</td><td>SRT</td></tr> <tr> <td colspan="3"> This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? • No: Proceed to step 4 • Yes: Proceed to step 3 </td></tr> </table> <table border="1"> <tr> <td>Step 3</td><td>Step ID 3891c</td><td>SRT</td></tr> <tr> <td colspan="3"> Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4 </td></tr> </table> <table border="1"> <tr> <td>Step 4</td><td>Step ID 3891d</td><td>SRT</td></tr> <tr> <td colspan="3"> Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts). </td></tr> </table>		Step 1	Step ID 3891a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3891b	SRT	This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? • No: Proceed to step 4 • Yes: Proceed to step 3			Step 3	Step ID 3891c	SRT	Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4			Step 4	Step ID 3891d	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts).		
Step 1	Step ID 3891a	SRT																								
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																										
Step 2	Step ID 3891b	SRT																								
This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? • No: Proceed to step 4 • Yes: Proceed to step 3																										
Step 3	Step ID 3891c	SRT																								
Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4																										
Step 4	Step ID 3891d	SRT																								
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts).																										

	Are measured electrical values outside of expected range or limits?		
	- No: Proceed to step 6 - Yes: Proceed to step 5		
	Step 5	Step ID 3891e	SRT
	Repair or replace appropriate component and use Davie to recheck for the presence of active faults. - Fault inactive – issue resolve - Fault active - Proceed to step 6		
Verification Drive Cycle	Step 6	Step ID 3891f	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3892

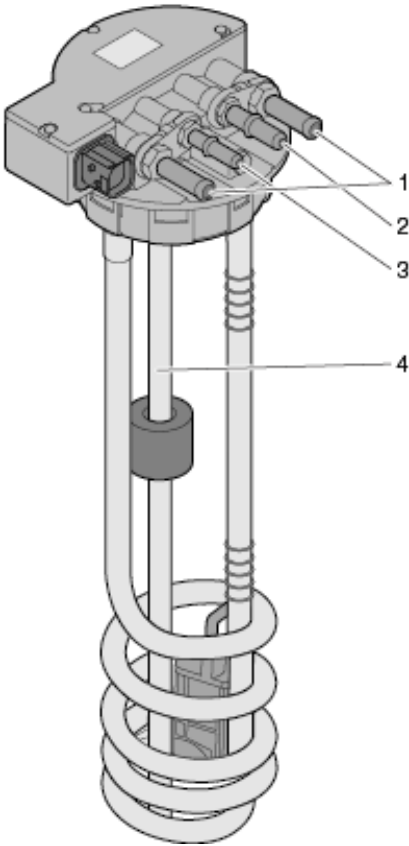
Code number	P3892
Fault code description	DEF tank temperature - Not increased when commanded
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	• Solenoid valve • The tank heater valve is actuated by a PWM signal. • Tank heater valve controls the engine coolant flow through the DEF tank. Effect of output signal on the system • The tank is heated by the engine coolant in order to prevent the DEF tank from freezing.  • Coolant supply • Coolant return
Location of component(s)	

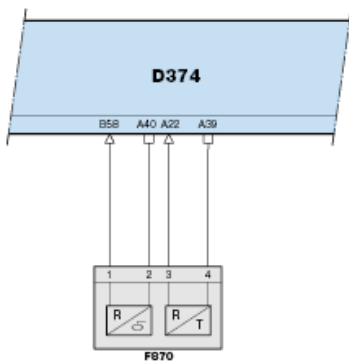
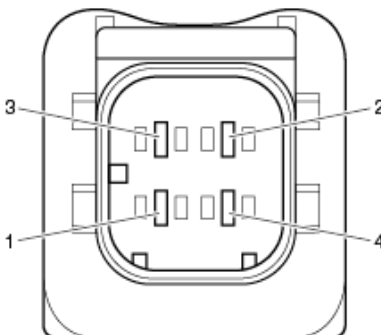
Diagnostic condition	This diagnostic runs a short time after the DEF tank heater is first enabled.
Set condition of fault code	The DEF tank heater receives the command from the EAS-3 ECU (D374), but no corresponding temperature increase in the DEF tank temperature was recorded by the tank temperature sensor.
Reset condition of fault code	The DTC changes to inactive as soon as the DEF tank heater is able to successfully raise the tank temperature when first activated and the diagnostic runs and passes.
Electrical diagram(s)	 Tank heater valve (L076) front view D374 EAS-3 ECU L076 Tank heater valve D374 L076 Function B47 1 Signal, valve tank heater A55 2 Ground, valve tank heater
Technical data	Component check, tank heater valve Preparation • Switch the ignition off. • Disconnect connector L076. • Measure on component connector L076.

	Pin (+ probe) 1	Pin (- probe) 3	Value 32 Ω ± 5%	Additional information at 20°C															
Possible causes	- DEF tank heater valve (L076) stuck closed. - Blockage or restrictions in the coolant plumbing to the DEF heater. - Engine coolant level low. - Malfunctioning DEF tank heater valve (L076). - Malfunctioning EAS-3 ECU (D374) is unable to send request to tank heating.																		
Additional information	- The DEF temperature did not increase when the DEF tank heater was enabled. - DEF into the after treatment system is disabled if the DEF is frozen. - The tank temperature sensor is part of the DEF tank sensor (F873)																		
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components. - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3892a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3892b</td><td>SRT</td></tr><tr><td colspan="3">DAVIE Direct Test: DEF Tank Heater Valve This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? - No: Continue to the next step 3 in the troubleshooting process. - Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step 3 in the troubleshooting process. </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3892c</td><td>SRT</td></tr></table>				Step 1	Step ID 3892a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3892b	SRT	DAVIE Direct Test: DEF Tank Heater Valve This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? - No: Continue to the next step 3 in the troubleshooting process. - Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step 3 in the troubleshooting process.			Step 3	Step ID 3892c	SRT
Step 1	Step ID 3892a	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step ID 3892b	SRT																	
DAVIE Direct Test: DEF Tank Heater Valve This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? - No: Continue to the next step 3 in the troubleshooting process. - Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step 3 in the troubleshooting process.																			
Step 3	Step ID 3892c	SRT																	

	Visual inspection: coolant level and EAS coolant lines Check the coolant level, and check the EAS coolant lines for the following: • Proper connections • Damaged or restricted (kinked or pinched) lines Was there evidence of excessive damage or restriction? • No: Continue to the next step 4 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 4 in the troubleshooting process. <table><tr><td>Step 4</td><td>Step ID 3892d</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 4	Step ID 3892d	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 4	Step ID 3892d	SRT					
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.							
Verification Drive Cycle	To validate the repair, using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes.						
	Back to Index						

P3893

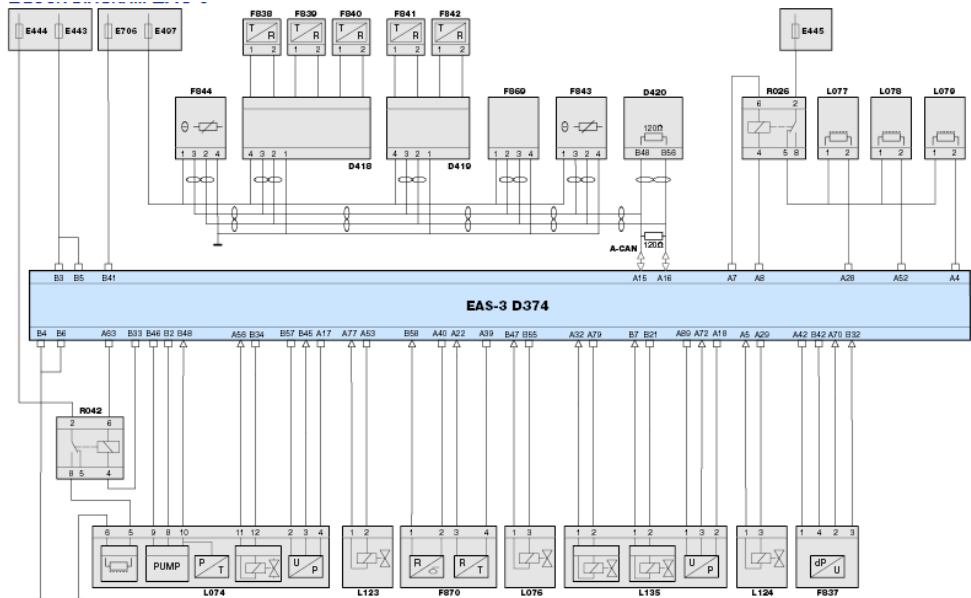
Code number	P3893
Fault code description	DEF level - Data valid but too high on ECU D374 pin B58
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	- Monitor the DEF level by using reed switches. - Measure the temperature of the DEF.  1 Engine coolant 2 DEF 3 DEF 4 Reed switches Effect of the output signal on the system: - The DEF level is displayed on the instrument panel. - DEF switches level that is too low derates the engine power. - Determine if the DEF switches tanks need to be heated.
Location of component(s)	Location of component F873 is missing. No additional information available.
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	A short circuit to battery or open circuit is detected for 10 consecutive seconds. A short circuit to battery or open circuit is detected for 10 consecutive seconds.
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected.

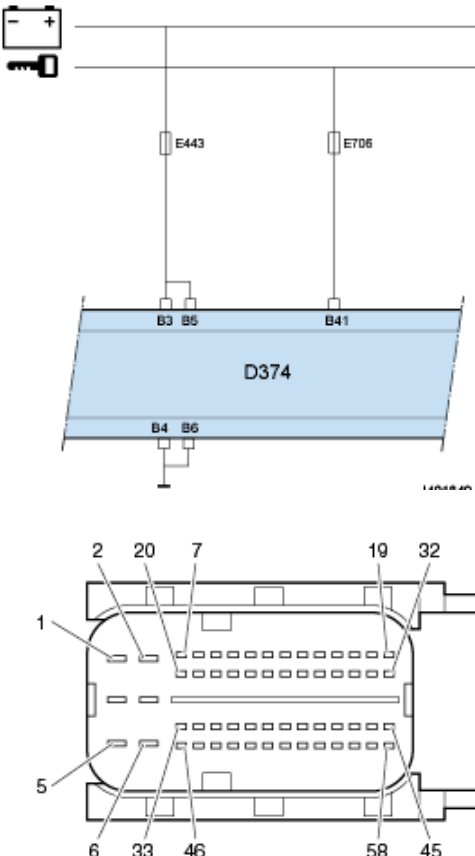
Electrical diagram(s)	  Wiring harness connector F837 front view D374 EAS-3 ECU E497 after treatment CAN fuse F873 urea tank sensor <table><tr><td>D374</td><td>F873</td><td>Function</td></tr><tr><td>B14</td><td>1</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>3</td><td>Ground</td></tr><tr><td></td><td>4</td><td>Power supply</td></tr></table>	D374	F873	Function	B14	1	A-CAN High	B15	2	A-CAN Low		3	Ground		4	Power supply
D374	F873	Function														
B14	1	A-CAN High														
B15	2	A-CAN Low														
	3	Ground														
	4	Power supply														
Technical data	Component and wiring check, urea tank sensor (F873) Preparation • Disconnect connector F843. • Ignition switched on. • Measure on connector F843. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td>at 20°C</td></tr><tr><td>1</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Component & wiring check, A-CAN Preparation • Ignition switched off.	Pin (+ probe)	Pin (- probe)	Value	Additional information	4	1	Ubat	at 20°C	1	Battery negative pole	>0.5V	Switch all consumers on			
Pin (+ probe)	Pin (- probe)	Value	Additional information													
4	1	Ubat	at 20°C													
1	Battery negative pole	>0.5V	Switch all consumers on													

	• Disconnect connector F843. • Measure on connector F843. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	3	± 60 Ω					
Pin (+ probe)	Pin (- probe)	Value	Additional information										
2	3	± 60 Ω											
Possible causes	• Short circuit to supply or an open circuit. • Check with DAVIE if the raw and processed values are the same. • Check for physical damage to the sensor and/or wiring harness. • Refill the DEF tank and check whether the level value is increasing.												
Additional information	• After 36 hours of engine operation with P3893 active, P1518 becomes active. • After 100 hours of engine operation with P3893 active, P151A and/or P151B becomes active.												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3893a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3893b</td><td>SRT</td></tr><tr><td colspan="3">DAVIE Direct Test: DEF Tank Heater Valve This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? • No: Continue to the next step 3 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process. </td></tr></table>	Step 1	Step ID 3893a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3893b	SRT	DAVIE Direct Test: DEF Tank Heater Valve This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? • No: Continue to the next step 3 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.		
Step 1	Step ID 3893a	SRT											
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.													
Step 2	Step ID 3893b	SRT											
DAVIE Direct Test: DEF Tank Heater Valve This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? • No: Continue to the next step 3 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.													

	Step 3	Step ID 3893c	SRT
	Visual inspection: coolant level and EAS coolant lines Check the coolant level, and check the EAS coolant lines for the following: • Proper connections • Damaged or restricted (kinked or pinched) lines Was there evidence of excessive damage or restriction? • No: Continue to the next step 4 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 4 in the troubleshooting process.		
	Step 4	Step ID 3893d	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics. With the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3894

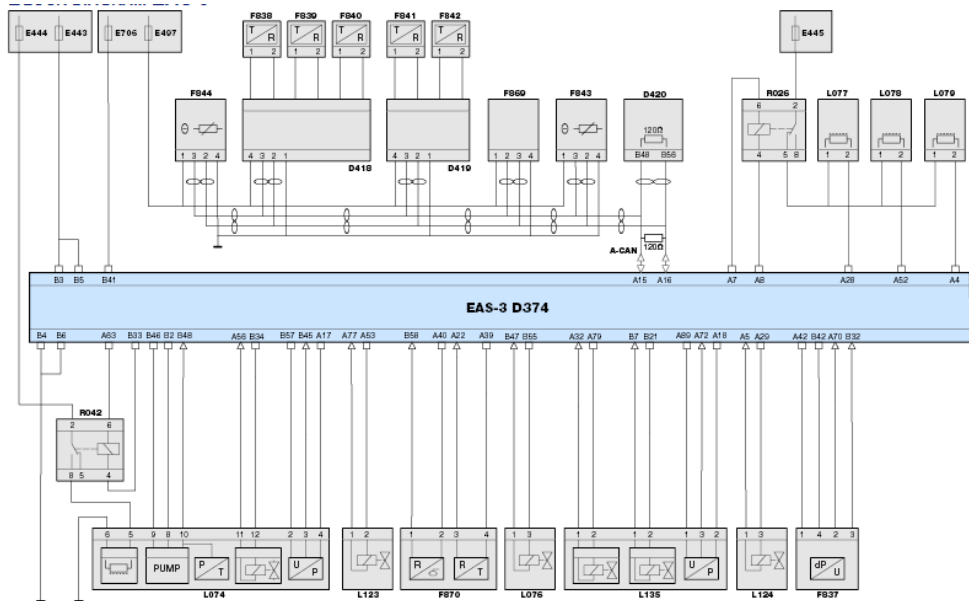
Code number	P3894
Fault code description	DEF level - Voltage too low or short circuit to earth on ECU D374 pin B58
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group - None Freeze frame type -Comprehensive
Description of component(s)	 D374 EAS-3 ECU D418 DOC/DPF temperature sensors ECU D419 catalytic convertor temperature sensors ECU D420 PCI ECU E443 fuse, EAS 1st E444 fuse, EAS 2nd E497 fuse, after treatment CAN E706 fuse, electrical systems F837 DPF pressure sensor F838 sensor, exhaust temperature before DOC F839 sensor, exhaust temperature before DPF F840 sensor, exhaust temperature after DPF F841 sensor, exhaust temperature before catalyst F842 sensor, exhaust temperature after catalyst F843 NOx sensor after catalytic convertor F844 NOx sensor before catalytic convertor F869 NH3 sensor F873 urea tank sensor H009 fuse, holder H010 fuse, holder L074 pump module L076 tank heater valve L077 Heater element, DEF pressure line L078 Heater element, DEF return line

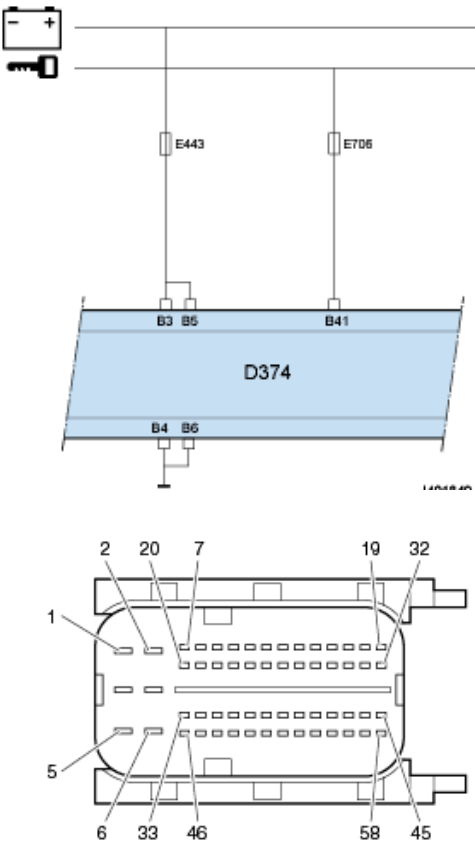
	L079 Heater element, DEF in line L123 urea dosing valve L124 HC Doser valve L135 fuel intake module R026 Relay, line heating R042 pump heater relay
Location of component(s)	No information present
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	A short circuit to earth is detected for 10 consecutive seconds.
Reset condition of fault code	- This fault code will change to inactive immediately after the diagnostic runs and passes. - This fault code cannot be cleared with DAVIE. - To validate the repair, start the engine and let it idle for three minutes.
Electrical diagram(s)	 Wiring harness connector D374.B front view D374 EAS-3 ECU E443 fuse, EAS 1st E706 fuse, electrical systems D374 Function B3 Power supply before ignition B4 ground B5 Power supply before ignition B6 ground B41 Power supply before ignition

Technical data	Component & wiring check, power supply and ground Preparation

	• Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting Process			
	<table><tr><td>Step 3</td><td>Step ID 3894c</td><td>SRT</td></tr></table> Visual Inspection: coolant level and EAS coolant lines Check the coolant level, and check the EAS coolant lines for the following: • Proper connections • Damaged or restricted (kinked or pinched) lines Was there evidence of excessive damage or restriction? • No: Continue to the next step in the troubleshooting process. • Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.	Step 3	Step ID 3894c	SRT
Step 3	Step ID 3894c	SRT		
	<table><tr><td>Step 4</td><td>Step ID 3894d</td><td>SRT</td></tr></table> For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.	Step 4	Step ID 3894d	SRT
Step 4	Step ID 3894d	SRT		
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.			
	Back to Index			

P3895

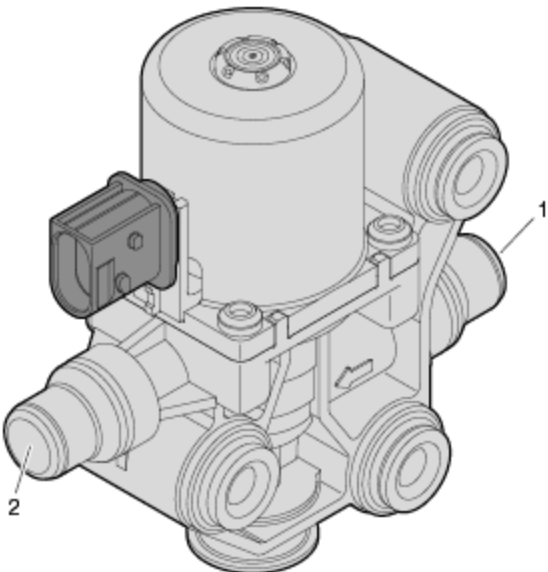
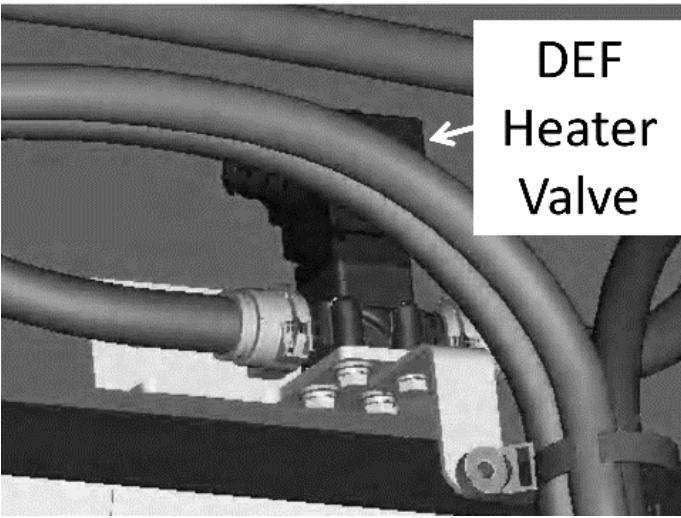
Code number	P3895
Fault code description	DEF tank temperature sensor - Voltage too high or short circuit to supply on ECU D374 pin A22
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group - None Freeze frame type -Comprehensive
Description of component(s)	 D374 EAS-3 ECU D418 DOC/DPF temperature sensors ECU D419 catalytic convertor temperature sensors ECU D420 PCI ECU E443 fuse, EAS 1st E444 fuse, EAS 2nd E497 fuse, after treatment CAN E706 fuse, electrical systems F837 DPF pressure sensor F838 sensor, exhaust temperature before DOC F839 sensor, exhaust temperature before DPF F840 sensor, exhaust temperature after DPF F841 sensor, exhaust temperature before catalyst F842 sensor, exhaust temperature after catalyst F843 NOx sensor after catalytic convertor F844 NOx sensor before catalytic convertor F869 NH3 sensor F873 urea tank sensor H009 fuse, holder H010 fuse, holder L074 pump module L076 tank heater valve L077 Heater element, DEF pressure line

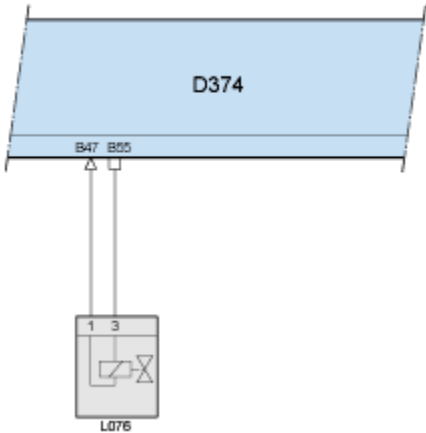
	L078 Heater element, DEF return line L079 Heater element, DEF in line L123 urea dosing valve L124 HC Doser valve L135 fuel intake module R026 Relay, line heating R042 pump heater relay
Location of component(s)	No information present
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	A short circuit to earth is detected for 10 consecutive seconds.
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes. This fault code cannot be cleared with DAVIE. To validate the repair, start the engine and let it idle for three minutes.
Electrical diagram(s)	 Wiring harness connector D374.B front view D374 EAS-3 ECU E443 fuse, EAS 1st E706 fuse, electrical systems D374 Function B3 Power supply before ignition B4 ground B5 Power supply before ignition B6 ground B41 Power supply before ignition

Technical data	Component & wiring check, power supply and ground Preparation Pin (+ probe) B3 B4 B5 B6 B41 Pin (- probe) B4 Battery negative pole B4 Battery negative pole B4 Value Ubat <0.5V Ubat <0.5V Ubat Condition Switch all consumers on Switch all consumers on Switch ignition on
Possible causes	
Additional information	DEF tank heating is based on ambient temperature instead of DEF tank temperature.
Diagnostic Step-by-Step	

	• If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting Process		
	Step 3	Step ID 3894c	SRT
	Visual Inspection: coolant level and EAS coolant lines Check the coolant level, and check the EAS coolant lines for the following: • Proper connections • Damaged or restricted (kinked or pinched) lines Was there evidence of excessive damage or restriction? • No: Continue to the next step in the troubleshooting process. • Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.		
	Step 4	Step ID 3894d	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics. With the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3898

Code number	P3898
Fault code description	DEF tanker heating-failed to thaw.
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	• Solenoid valve • The tank heater valve is actuated by a PWM signal. • Tank heater valve controls the engine coolant flow through the DEF tank. Effect of output signal on the system • The tank is heated by the engine coolant in order to prevent the DEF tank from freezing.  • Coolant supply • Coolant return
Location of component(s)	

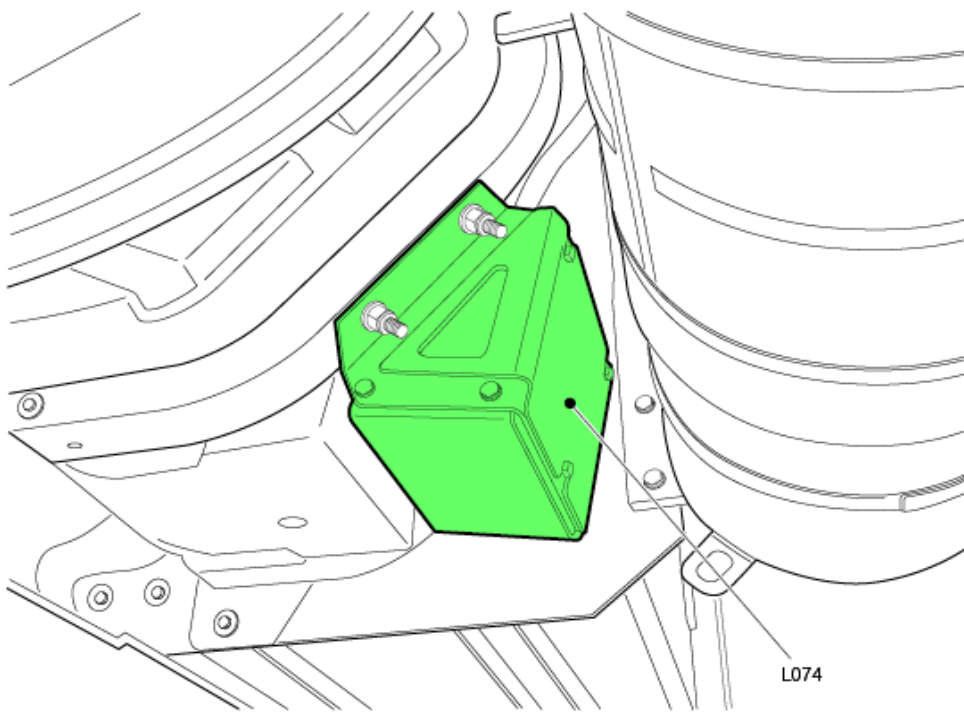
Diagnostic condition	This diagnostic runs when DEF tank heating is first commanded.												
Set condition of fault code	The DEF tank heater has been on long enough to thaw the diesel exhaust fluid, but the SCR dosing system is still unable to prime.												
Reset condition of fault code	To validate the repair, perform the 'DEF tank heater valve test in DAVIE.												
Electrical diagram(s)	 Tank heater valve (L076) front view D374 EAS-3 ECU L076 Tank heater valve <table><tr><td>D374</td><td>L076</td><td>Function</td></tr><tr><td>B47</td><td>1</td><td>Signal, valve tank heater</td></tr><tr><td>A55</td><td>2</td><td>Ground, valve tank heater</td></tr></table>	D374	L076	Function	B47	1	Signal, valve tank heater	A55	2	Ground, valve tank heater			
D374	L076	Function											
B47	1	Signal, valve tank heater											
A55	2	Ground, valve tank heater											
Technical data	Component check, tank heater valve Preparation • Switch the ignition off. • Disconnect connector L076. • Measure on component connector L076. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>1</td><td>3</td><td>32 Ω ± 5%</td><td>at 20°C</td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	1	3	32 Ω ± 5%	at 20°C
Pin	Pin												
(+ probe)	(- probe)	Value	Additional information										
1	3	32 Ω ± 5%	at 20°C										

Possible causes	• DEF tank heater valve (L076) stuck closed. • Blockage or restrictions in the coolant plumbing to the tank heater valve (L076). • Engine coolant level low • Malfunctioning tank heater valve (L076). • Malfunctioning EAS-3 ECU (D374), unable to command tank heating.																		
Additional information	• The DEF tank heater keeps the DEF from freezing in the DEF tank. The tank heater consists of an electrically powered tank heater valve (L076) that controls the flow of engine coolant to a heating coil inside the DEF tank. • DEF injection is disabled if the DEF is frozen.																		
Diagnostic Step-by-Step	  Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components. • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3898a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3898b</td><td>SRT</td></tr><tr><td colspan="3"> Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3898c</td><td>SRT</td></tr><tr><td colspan="3"> Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve </td></tr></table>	Step 1	Step ID 3898a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3898b	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4			Step 3	Step ID 3898c	SRT	Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve		
Step 1	Step ID 3898a	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step ID 3898b	SRT																	
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Wire continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4																			
Step 3	Step ID 3898c	SRT																	
Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve																			

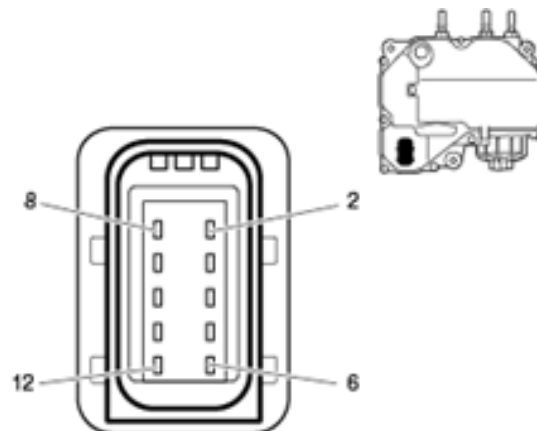
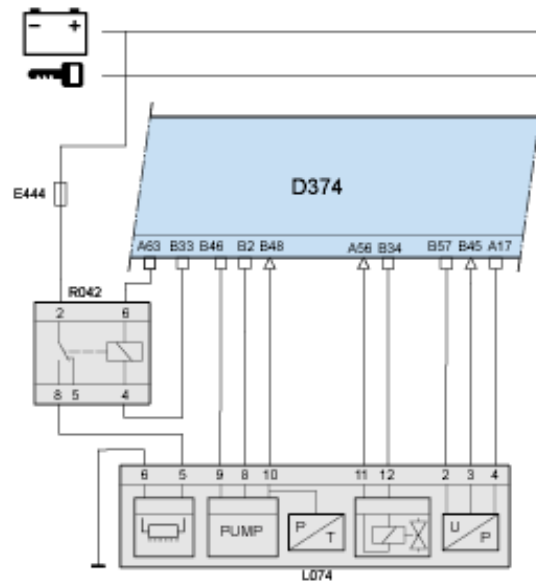
	Fault active - Proceed to step 4		
	Step 4	Step ID 3898d	SRT
	This test will help determine if the DEF Heating Valve is stuck in the open or closed position. Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Verify that the DEF Tank Heater Valve is not stuck in the open or closed position Compare the DEF Tank Heater Valve temperature from DAVIE to an infrared thermometer reading to verify the temperature reading. Does the test fail to complete or result in a failed state? - No: Proceed to step 6 - Yes: Proceed to step 5		
	Step 5	Step ID 3898e	SRT
Verification Drive Cycle	Repair or replace appropriate component and use Davie to recheck for the presence of active faults. - Fault inactive – issue resolve - Fault active - Proceed to step 6		
	Step 6	Step ID 3898f	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics.		
	Back to Index		

P3899

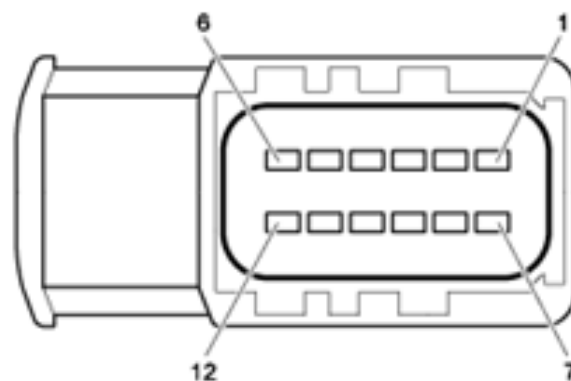
Code number	P3899
Fault code description	DEF tank temperature sensor – Data erratic, intermittent or incorrect.
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Connection points: • Pressure line (A) • Return line (B) • Inlet line (C) Temperature sensor The temperature sensor measures the temperature inside the pump module (L074), and is used as the input valve for defrosting the pump module. Effect of output signal on the system This value is used to determine whether the pump module must be started up or heated. DEF pump motor • The DEF pump is a diaphragm pump that pumps DEF to the dosing module under pressure. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the in line and pressure line is pumped back into the tank. • The EAS-3 ECU (D374) controls the reverting valve. Heater element, pump module

	• The pump module is heated by electrical heating elements. • These heating elements prevent the pump module from pumping frozen DEF. Defrosting of the pump module is closed-loop controlled based on the temperature sensor inside the pump module for temperatures below -4°C. Heating of the pump module is closed-loop controlled based on the ambient temperature sensor for temperatures between 5°C and 10°C. Temperature sensor, heater element • The temperature sensor measures the temperature of the heating element. This value is used to control the heater elements in the pump module. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. DEF filter • DEF is filtered before it is pumped to the dosing module.
Location of component(s)	
Diagnostic condition	The engine must be switched off for a period of 10 hours before this diagnostic will run. This diagnostic runs when the ignition is keyed on after this 10-hour period.
Set condition of fault code	The EAS-3 ECU (D374) detects that the DEF tank temperature differs from the coolant engine coolant temperature and the intake manifold temperature by more than 40°C at initial key on.
Reset condition of fault code	This DTC changes to inactive as soon as the diagnostic runs and passes.

Electrical diagram(s)



Connector pump module (L074)



Wiring harness connector (L074)

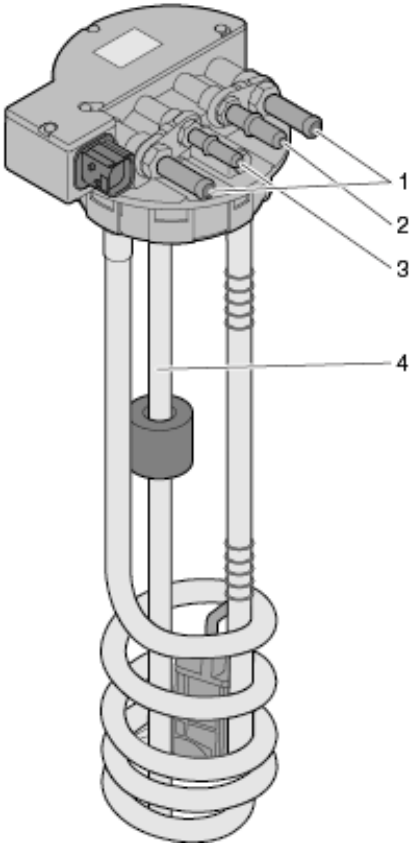
D374 EAS-3 ECU
 E444 Fuse EAS 2nd
 L074 Pump module
 R026 Relay line heating

	<table><tr><td>D374</td><td>L074</td><td>R042</td><td>Function</td></tr><tr><td>A17</td><td>4</td><td></td><td>Ground, DEF pressure sensor</td></tr><tr><td>A56</td><td>11</td><td></td><td>Signal, reverting valve</td></tr><tr><td>A63</td><td></td><td>6</td><td>Ground, relay line heating</td></tr><tr><td>B2</td><td>8</td><td></td><td>Ground, DEF pump motor</td></tr><tr><td>B33</td><td></td><td>4</td><td>Signal, relay line heating</td></tr><tr><td>B34</td><td>12</td><td></td><td>Ground, reverting valve</td></tr><tr><td>B45</td><td>3</td><td></td><td>Signal, DEF pressure sensor</td></tr><tr><td>B46</td><td>9</td><td></td><td>Power supply, DEF pump motor</td></tr><tr><td>B48</td><td>10</td><td></td><td>Signal, DEF pump motor</td></tr><tr><td>B57</td><td>2</td><td></td><td>Power supply, DEF pressure sensor</td></tr><tr><td></td><td>6</td><td></td><td>Ground heater element</td></tr><tr><td></td><td>5</td><td>8</td><td>Power supply, heater element</td></tr></table>	D374	L074	R042	Function	A17	4		Ground, DEF pressure sensor	A56	11		Signal, reverting valve	A63		6	Ground, relay line heating	B2	8		Ground, DEF pump motor	B33		4	Signal, relay line heating	B34	12		Ground, reverting valve	B45	3		Signal, DEF pressure sensor	B46	9		Power supply, DEF pump motor	B48	10		Signal, DEF pump motor	B57	2		Power supply, DEF pressure sensor		6		Ground heater element		5	8	Power supply, heater element
D374	L074	R042	Function																																																		
A17	4		Ground, DEF pressure sensor																																																		
A56	11		Signal, reverting valve																																																		
A63		6	Ground, relay line heating																																																		
B2	8		Ground, DEF pump motor																																																		
B33		4	Signal, relay line heating																																																		
B34	12		Ground, reverting valve																																																		
B45	3		Signal, DEF pressure sensor																																																		
B46	9		Power supply, DEF pump motor																																																		
B48	10		Signal, DEF pump motor																																																		
B57	2		Power supply, DEF pressure sensor																																																		
	6		Ground heater element																																																		
	5	8	Power supply, heater element																																																		
Technical data	Component and wiring check, DEF pressure sensor Preparation • Switch the ignition on. • Disconnect connector L074 • Measure on connector L074. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>4</td><td>12 V</td><td></td></tr></table> Component check, heater element Preparation • Switch the ignition off. • Disconnect connector L074. • Measure on the pump module (L074). <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>6</td><td>5</td><td>6 Ω</td><td></td></tr></table> Component check, reverting valve Preparation • Switch the ignition on. • Disconnect connector L074. • Measure on the pump module (L074). <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>11</td><td>12</td><td>20.6 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	2	4	12 V		Pin (+ probe)	Pin (- probe)	Value	Condition	6	5	6 Ω		Pin (+ probe)	Pin (- probe)	Value	Condition	11	12	20.6 Ω																													
Pin (+ probe)	Pin (- probe)	Value	Condition																																																		
2	4	12 V																																																			
Pin (+ probe)	Pin (- probe)	Value	Condition																																																		
6	5	6 Ω																																																			
Pin (+ probe)	Pin (- probe)	Value	Condition																																																		
11	12	20.6 Ω																																																			
Possible causes	• A malfunctioning DEF tank sensor (F873), data is valid but too high or too low for the ambient conditions. • Malfunctioning intake manifold temperature sensor. • Malfunctioning coolant temperature sensor (F566). • The use of external heaters on the engine block, intake manifold, or coolant																																																				

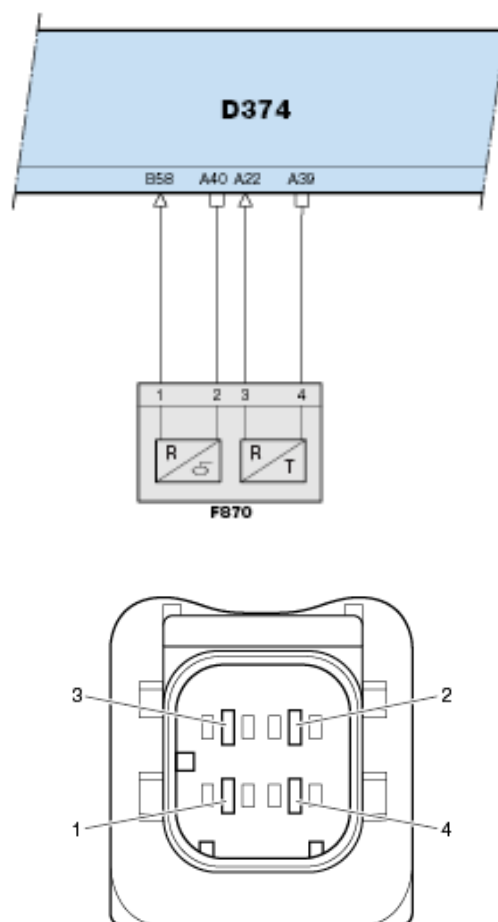
	system. • Damaged wiring between DEF tank sensor (F873) and EAS-3 ECU (D374). • Malfunctioning EAS-3 ECU (D374).																								
Additional information	The tank temperature sensor is part of the DEF tank sensor (F873).																								
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3899a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3899b</td><td>SRT</td></tr><tr><td colspan="3">Run the DAVIE Direct Test DEF Tank Heater Valve to verify the Tank Heating Status value. Does the test fail to complete or result in a failed state? • No: Continue to the next step in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3899c</td><td>SRT</td></tr><tr><td colspan="3">Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4 </td></tr></table> <table><tr><td>Step 4</td><td>Step ID 3899d</td><td>SRT</td></tr><tr><td colspan="3">Using an infrared thermometer check the accuracy of the DEF tank temperature sensor. • Use DAVIE Monitor, select the DEF Tank Temperature Sensor and check the temperature reading. If the temperature between the DAVIE reported value and the infrared thermometer is within 10°F, the sensor is ok Is the compared difference between DAVIE and the infrared thermometer greater than 10°F? • No: A measured difference of <= 10°F is acceptable. Proceed to step 6 • Yes: Proceed to step 5 </td></tr></table>	Step 1	Step ID 3899a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3899b	SRT	Run the DAVIE Direct Test DEF Tank Heater Valve to verify the Tank Heating Status value. Does the test fail to complete or result in a failed state? • No: Continue to the next step in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements.			Step 3	Step ID 3899c	SRT	Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4			Step 4	Step ID 3899d	SRT	Using an infrared thermometer check the accuracy of the DEF tank temperature sensor. • Use DAVIE Monitor, select the DEF Tank Temperature Sensor and check the temperature reading. If the temperature between the DAVIE reported value and the infrared thermometer is within 10°F, the sensor is ok Is the compared difference between DAVIE and the infrared thermometer greater than 10°F? • No: A measured difference of <= 10°F is acceptable. Proceed to step 6 • Yes: Proceed to step 5		
Step 1	Step ID 3899a	SRT																							
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																									
Step 2	Step ID 3899b	SRT																							
Run the DAVIE Direct Test DEF Tank Heater Valve to verify the Tank Heating Status value. Does the test fail to complete or result in a failed state? • No: Continue to the next step in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements.																									
Step 3	Step ID 3899c	SRT																							
Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4																									
Step 4	Step ID 3899d	SRT																							
Using an infrared thermometer check the accuracy of the DEF tank temperature sensor. • Use DAVIE Monitor, select the DEF Tank Temperature Sensor and check the temperature reading. If the temperature between the DAVIE reported value and the infrared thermometer is within 10°F, the sensor is ok Is the compared difference between DAVIE and the infrared thermometer greater than 10°F? • No: A measured difference of <= 10°F is acceptable. Proceed to step 6 • Yes: Proceed to step 5																									

	Step 5	Step ID 3899e	SRT
	Repair or replace appropriate component and use Davie to recheck for the presence of active faults.		
	- Fault inactive – issue resolve - Fault active - Proceed to step 6		
	Step 6	Step ID 3899f	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3900

Code number	P3900
Fault code description	DEF tank temperature sensor - Voltage too low or short circuit to ground on ECU D374 pin A22
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	- Monitor the DEF level by using reed switches. - Measure the temperature of the DEF.  1 Engine coolant 2 DEF 3 DEF 4 Reed switches Effect of the output signal on the system: - The DEF level is displayed on the instrument panel. - DEF switches level that is too low derates the engine power. - Determine if the DEF switches tanks need to be heated.
Location of component(s)	Location of component F873 is missing. No additional information available.
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	A short circuit to ground is detected for 10 consecutive seconds
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected.

Electrical diagram(s)



Wiring harness connector F837 front view

D374 EAS-3 ECU
 E497 after treatment CAN fuse
 F873 urea tank sensor

D374	F873	Function
B14	1	A-CAN High
B15	2	A-CAN Low
	3	Ground
	4	Power supply

Technical data

Component and wiring check, urea tank sensor (F873)

Preparation

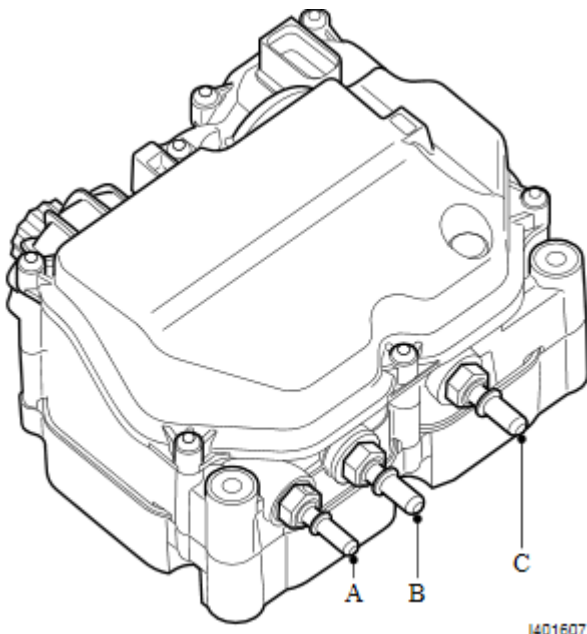
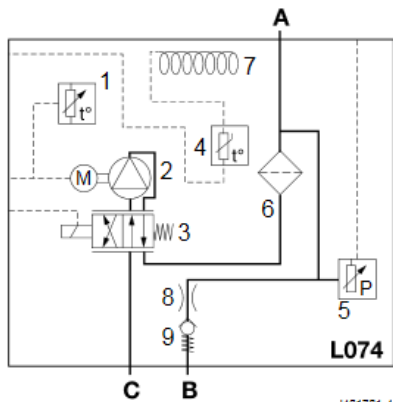
- Disconnect connector F843.
- Ignition switched on.
- Measure on connector F843.

Pin (+ probe)	Pin (- probe)	Value	Additional information
4	1	Ubat	at 20°C
1	Battery negative pole	>0.5V	Switch all consumers on

	Component & wiring check, A-CAN Preparation Pin (+ probe) 2 Pin (- probe) 3 Value ± 60 Ω Additional information
Possible causes	
Additional information	Pump module heating is based on ambient temperature instead of pump module temperature.
Diagnostic Step-by-Step	
Step 1 Step ID 3900a SRT Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.	
Step 2 Step ID 3900b SRT Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Are measured electrical values outside of expected range or limits?	

	Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.						
	<table><tr><td>Step 3</td><td>Step ID 3900c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 3	Step ID 3900c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 3	Step ID 3900c	SRT					
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.							
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics. With the brakes set, start the engine and allow it to run at idle for 2 minutes.						
	Back to Index						

P3901

Code number	P3901
Fault code description	Pump module - Data erratic, intermittent or incorrect, not changing during operation
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group - None Freeze frame type - Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  I401607 The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  I401701-4

Temperature sensor

- The temperature sensor measures the temperature inside the pump module (L074).
- The temperature signal is used to determine whether the pump module must be started or heated.

DEF pump motor

- The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve.
- The DEF pump is controlled with a duty cycle.
- The pump speed depends on the quantity of DEF to be injected.
- The DEF pressure does not depend on the quantity of DEF to inject.

Reverting valve

- This valve is engaged during the purge cycle.
- The DEF inside the inlet line and pressure line is pumped back into the DEF tank.

Temperature switch, heater element

- The temperature sensor measures the temperature of the heater element.
- This switch is used to control the heater elements in the pump module and prevent them from overheating.

DEF pressure sensor

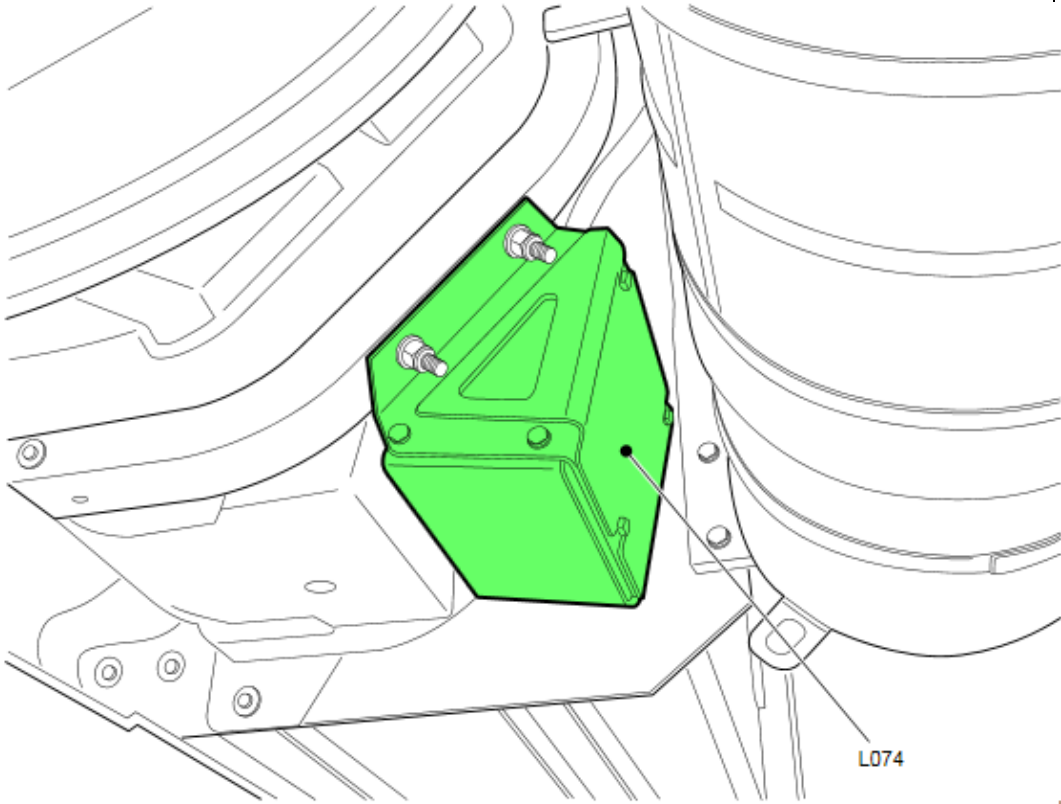
- The pressure sensor measures the pressure of the DEF after the DEF filter.
- The measured pressure is used by the ECU to control the DEF pump speed.

DEF filter

The DEF is filtered before it is pumped to the pump module.

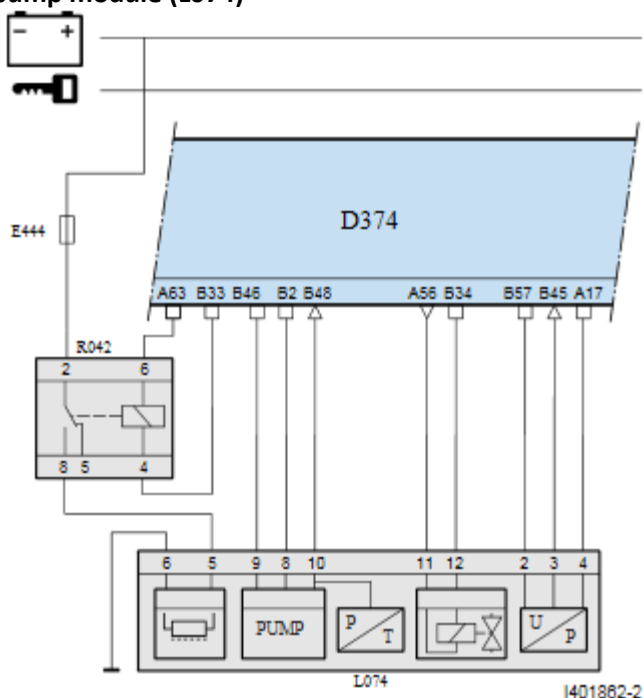
Heater element, pump module

- The pump module is heated and defrosted by electrical heater elements located inside the pump module.
- These heater elements prevent the DEF from freezing during operation of the pump module.
- Defrosting of the pump module is closed-loop controlled based on the **temperature sensor inside the pump module** for temperatures below -4°C.
- Heating of the pump module is open-loop controlled based on the **ambient temperature sensor** with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient

	temperature. Check valve The check valve ensures an overpressure of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs before the pump module (L074) starts priming and before the DEF system is defrosted.
Set condition of fault code	The DEF pressure sensor reading is higher than the maximum threshold or lower than the minimum threshold.
Reset condition of fault code	This DTC changes to inactive as soon as the diagnostic runs and passes.

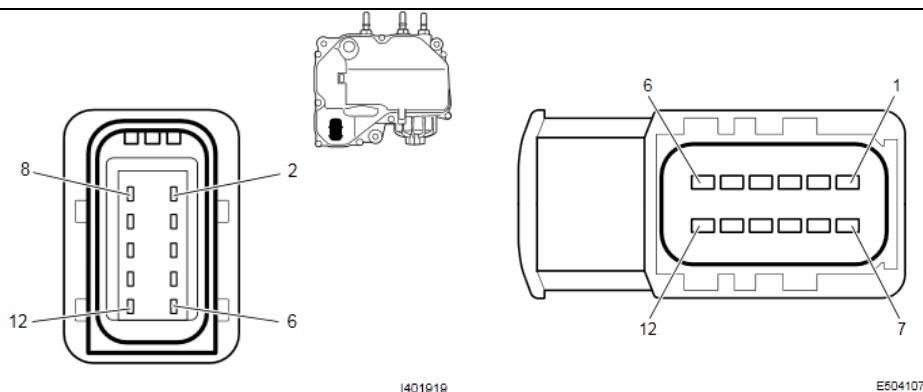
Electrical diagram(s)

Checking data, pump module (L074)



D374 EAS-3 ECU
 E444 Fuse, EAS 2nd
 L074 pump module
 R042 pump heater relay

D374	L074	R042	Function
A17	4		ground, DEF pressure sensor
A56	11		signal, reverting valve
A63		6	ground, relay line heating
B2	8		ground, DEF pump motor
B33		4	signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground heater element
	5	8	Power supply, heater element



Connector pump module (L074)

Wiring harness connector (L074)

Technical data

Component and wiring check, DEF pressure sensor

Preparation

- Switch on the ignition.
- Disconnect connector L074
- Measure on connector L074.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	4	4.75 - 5.25 V	

Component check, heater element

Preparation

- Switch off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
5	6	1.5 Ω $\pm$ 0.5 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Component check, reverting valve

Preparation

- Switch off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
11	12	6.75 Ω $\pm$ 2 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Possible causes	- Blocked or restricted pump module supply pipe. - Blocked or restricted DEF filter. - Malfunctioning DEF pressure sensor. - Damaged wiring of the DEF pressure sensor. - Malfunction in the wiring between pump module (L074) and EAS-3 ECU. - Malfunctioned or malfunctioning pump module (L074). - Malfunctioning EAS-3 ECU (D374).										
Additional information	The DEF pressure sensor is located in the pump module (L074).										
Diagnostic Step-by-Step	 The ignition should always be in the off position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.  - This troubleshooting procedure is based on the assumption that supply power and ground to the PCI are functioning properly. - Disconnecting the PCI connectors during the troubleshooting process will result in multiple errors. - Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes. - It is necessary to use DAVIE to clear all current DTCs from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status. - This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided. Step 1 Investigate Related DTCs Before troubleshooting this DTC, take notice of any other active or inactive DTCs. One or multiple other DTCs could have been the cause for this DTC. <table border="1"> <tr> <td colspan="2">Step 1A Investigate related DTCs</td></tr> <tr> <td colspan="2">Action</td></tr> <tr> <td colspan="2">1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs.</td></tr> <tr> <td colspan="2">Are any of the following related DTCs active in combination with P3901? P3847; P3848</td></tr> <tr> <td>Yes</td><td>No</td></tr> </table>	Step 1A Investigate related DTCs		Action		1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs.		Are any of the following related DTCs active in combination with P3901? P3847; P3848		Yes	No
Step 1A Investigate related DTCs											
Action											
1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs.											
Are any of the following related DTCs active in combination with P3901? P3847; P3848											
Yes	No										

Possible problem with vehicle wiring harness or DEF pump module (L074). Refer to the troubleshooting information for these DTCs before continuing with this procedure.

Go to step 2A

Step 2 DEF Pump Module (L074) Tests

Step 2A DAVIE monitor, DEF pump module (L074) pressure

Action

1. Switch off the ignition.
2. Disconnect the DEF pump module dosing valve supply line from the DEF pump module dosing unit.
3. Switch on the ignition.
4. Use DAVIE to monitor the DEF pump module fluid pressure.

Is the DEF pump module fluid pressure reading equal to 0 ± 69 kPa [0 ± 10 PSI]?

Yes

No

A damaged DEF pump module (L074) has been detected. Replace the DEF pump module.

Go to step 3A

If this DTC is still present, go to step 3A

Step 3 DEF Pump Module (L074) Checks

Step 3A Visual checks, fittings and hoses, DEF fluid system

Action

There are three diesel exhaust fluid lines on the SCR dosing system:

- Dosing unit supply line between the tank and the dosing unit (suction line).
- Dosing valve supply line between the dosing unit and the dosing valve (pressure line).
- Return line between the dosing unit and the tank (return line).

1. Inspect all three diesel exhaust fluid lines and associated fittings/connectors:

- Check the diesel exhaust fluid tank connections (suction and return lines) for cracks and pitting.

	• Check all three dosing unit connections and fittings for loose, leaking, or damaged connections. • Disconnect the suction line, pressure line, and return line dosing unit connectors and look for signs of buildup or blockage. • Check the suction line for signs of leakage or openings which would allow the dosing unit to suck in air with the diesel exhaust fluid. • Verify proper sealing at all connection points, including diesel exhaust fluid tank (2 connections), dosing unit (3 connections), and dosing valve (1 connection).	
	Were any damaged, leaking, or restricted connections found?	
	Yes	No
	Repair or replace the leaking DEF line or fitting as necessary or replace the DEF pump module (L074) as necessary. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	
	If this DTC is still present, go to step 3B	Go to step 3B
	Step 3B Visual check, DEF suction line	
	Action	
	1. Switch off the ignition. 2. Disconnect the DEF supply line from the DEF pump module inlet connection (this is the suction line between the pump module and DEF tank). 3. Disconnect the DEF supply line from the vehicle's DEF tank. 4. Check the DEF supply line for blockage: • Visually check both ends of the supply line for signs of build-up or blockage. • Blow compressed shop air through the supply line to ensure free flow.	
	Is the DEF supply line blocked or restricted?	
	Yes	No
	Try to clean the dosing unit supply line using shop air. If necessary, replace the DEF supply line. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	

	If this DTC is still present, go to step 3C		Go to step 3C	
	Step 3C Visual check, DEF return line			
	Action			
	1. Switch off the ignition. 2. Disconnect the DEF return line from the DEF pump module return connection (this is the return line between the pump module and DEF tank). 3. Disconnect the DEF return line from the vehicle’s DEF tank. 4. Check the DEF return line for blockage: Visually check both ends of the return line for signs of build-up or blockage. Blow compressed shop air through the return line to ensure free flow.			
	Is the DEF return line blocked or restricted?			
	Yes		No	
	Try to clean the dosing unit return line using shop air. If necessary, replace the DEF return line. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.			
	If this DTC is still present, go to step 3D		Go to step 3D	
Step 3D Visual check, DEF supply line and return line fittings				
Action				
1. Switch off the ignition. 2. Remove DEF supply line and return line fittings. 3. Visually check fittings for signs of build-up or blockage.				
Is any fitting blocked or restricted?				
Yes		No		
Try to clean fittings using shop air. If necessary, replace the DEF line fittings. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.				

If this DTC is still present, go to step 3E		Go to step 3E
Step 3E Visual check, DEF tank filter		
Action 1. Switch off the ignition. 2. Remove the sending unit from the vehicle's DEF tank. 3. Inspect the DEF tank filter for signs of blockage or build-up.		
Is the DEF filter blocked or show signs of build-up?		
Yes		No
Clean or replace the DEF tank filter Refer to step 4A to perform the corresponding repair verification cycles and rechecks.		
If this DTC is still present, go to step 3F		Go to step 3F
Step 3F DAVIE test, Check the DEF pump module pressure and DEF output		
 ABORTING A DAVIE-INITIATED DIAGNOSTIC TEST IS NOT RECOMMENDED. However, if aborting a test is required, a key cycle must be performed to reset the engine ECM. Failure to reset the engine ECM in this instance could result in personal injury or damage to the vehicle.		
Action 1. Remove the dosing nozzle and place it in a bucket with a capacity greater than 1.5 liters. 2. Idle the engine for at least 30 seconds. 3. Use DAVIE to perform a DEF pump module override test as described in the maintenance procedure, "test DEF dosing valve (Exhaust System (SRC))", job code J 1179 439605 033 000.		
Does the test fail to complete or result in a failed state?		
Yes		No

Correct any issues found. Replace the DEF dosing valve (L123) if test results indicate a mechanical failure. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.

If all steps have been completed and this DTC is still present, contact the PACCAR Engine Support Center for further assistance.

If all steps have been completed and this DTC is still present, contact the PACCAR Engine Support Center for further assistance.

Step 4 Repair Verification

Step 4A Repair verification cycles

Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the DTC or system being investigated.



Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to clear all current DTCs from the PCI and EAS-3 ECUs.

Action

1. Steady State

Drive the vehicle under steady state conditions and monitor the SCR system with DAVIE. Make sure that the DEF system injects DEF.

Were the identified repair verification cycles able to be completed?

Yes

No

Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.

Go to step 4B

Go to step 4B

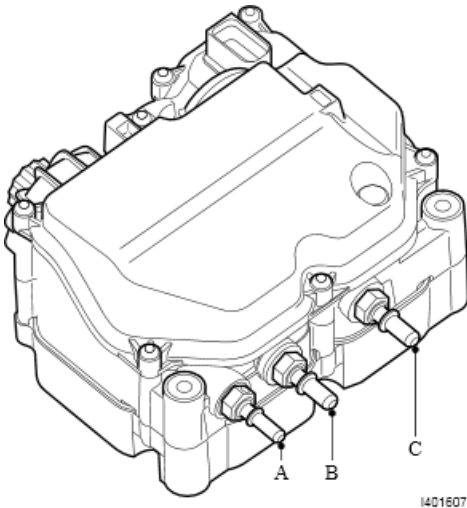
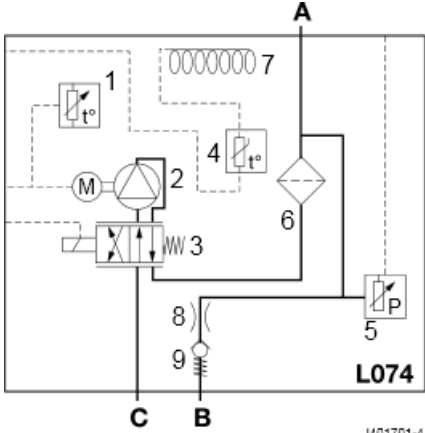
Step 4B DAVIE Diagnostics, Quick Check, OBD Readiness Monitors

Action

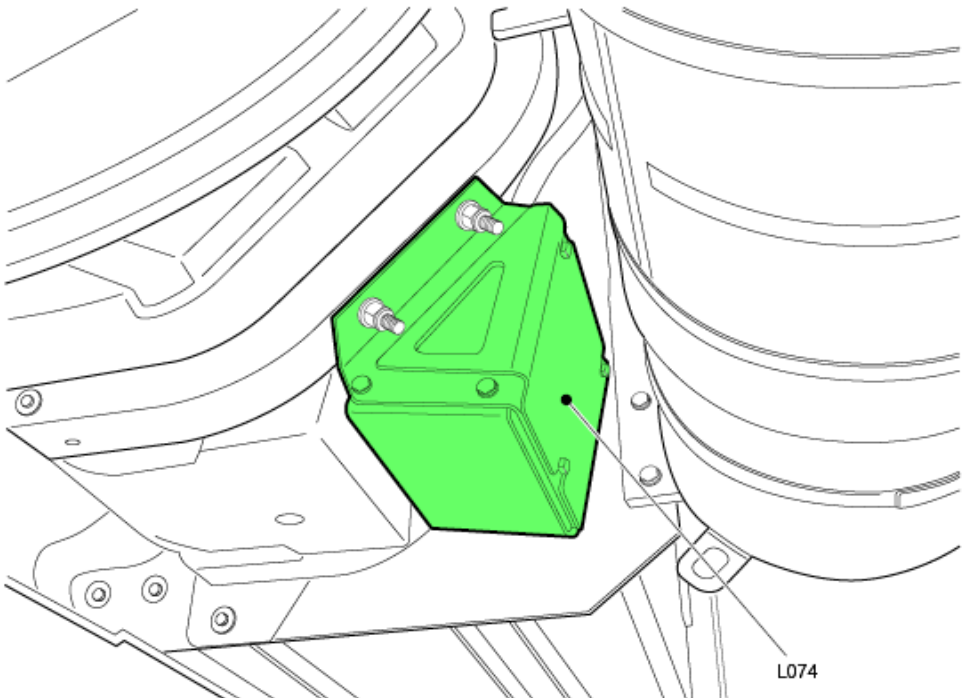
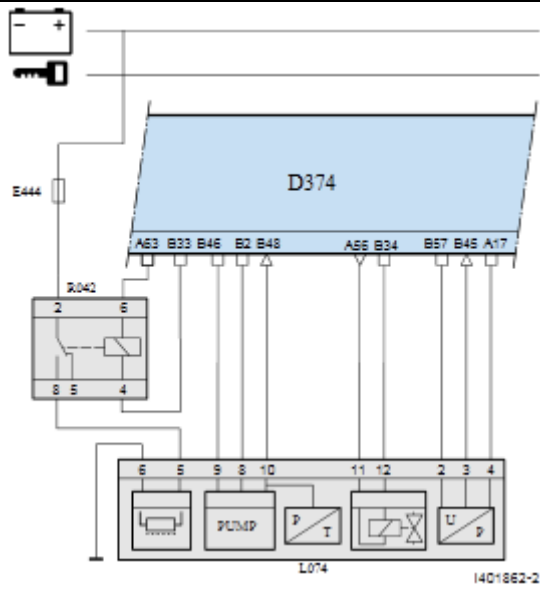
Use DAVIE Diagnostics to perform a Quick Check for current DTCs to determine

	whether the actions taken have cleared this DTC. 1. Confirm that the corresponding OBD Monitor Readiness Status value is displayed as “Ready”. A status of Ready indicates that the corresponding OBD monitor has run successfully and the problem has been resolved—no further action. If the displayed status is “Not ready”, continue to action step 2. 2. View the DTC overview display, and confirm that P3858 has been cleared.		
	Has P3901 been cleared?		
	<table> <tr> <th>Yes</th><th>No</th></tr> </table>	Yes	No
Yes	No		
	<table> <tr> <td>Problem resolved. No further actions.</td><td> Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present: • continue to operate the truck to extend the run time, allowing the corresponding OBD monitor sufficient time to complete • or, return to step 4A and perform this repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine Support Center for further assistance. </td></tr> </table>	Problem resolved. No further actions.	Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present: • continue to operate the truck to extend the run time, allowing the corresponding OBD monitor sufficient time to complete • or, return to step 4A and perform this repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine Support Center for further assistance.
Problem resolved. No further actions.	Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present: • continue to operate the truck to extend the run time, allowing the corresponding OBD monitor sufficient time to complete • or, return to step 4A and perform this repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine Support Center for further assistance.		
	Back to Index		

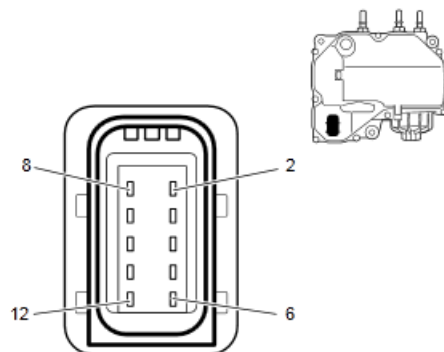
P3902

Code number	P3902
Fault code description	Pump module heater relay - Voltage too low or short circuit to ground on ECU D374 pin (B33)
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: - DEF pressure line (A) - DEF return line (B) - DEF inlet line (C)  The following components are mounted inside the pump module: - Temperature sensor (1) - DEF pump motor (2) - Reverting valve (3) - Temperature sensor, heater element (4) - DEF pressure sensor (5) - DEF filter (6) - Heater element, pump module (7) - Orifice (8) - Check valve (9)  Temperature sensor - The temperature sensor measures the temperature inside the pump module (L074). - The temperature signal is used to determine whether the pump module must be started or heated.

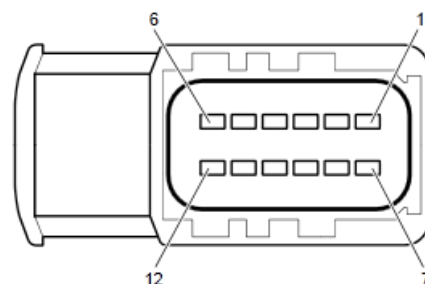
	DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature Switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter • The DEF is filtered before it is pumped into the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump. • Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve • The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.

Location of component(s)	 A line drawing of a vehicle's rear chassis area. A green rectangular component, labeled L074, is mounted on a metal bracket. The bracket is secured with two bolts. The component is positioned near the rear wheel and the rear suspension assembly.
Diagnostic condition	This diagnostic runs continuously when the ignition is on and pump heater relay (R042) is activated.
Set condition of fault code	A short circuit to ground is detected for two consecutive seconds.
Reset condition of fault code	This DTC changes to inactive as soon as the diagnostic runs and passes.
Electrical diagram(s)	 The diagram illustrates the electrical circuit for the pump module. At the top, a battery symbol is connected to a fuse labeled E444. The fuse is connected to the A63 pin of the D374 ECU. The D374 ECU has two rows of pins: the top row (A63, B33, B46, B2, B48) and the bottom row (A66, B34, B57, B45, A17). The bottom row is connected to the L074 pump module. The pump module has pins labeled 6, 5, 9, 8, 10, 11, 12, 2, 3, 4. The 11 and 12 pins are connected to a pump heater relay labeled R042. The R042 relay has four pins: 2, 5, 8, and 4. The 2 and 5 pins are connected to the 11 and 12 pins of the pump module. The 8 and 4 pins are connected to the 6 and 5 pins of the pump module. The pump module is also connected to a component labeled I401862-2. D374 EAS-3 ECU E444 Fuse EAS 2nd L074 Pump module R042 Pump heater relay

D374	L074	R042	Function
A17	4		Ground, DEF pressure sensor
A56	11		Signal, reverting valve
A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground, heater element
	5	8	Power supply, heater element



Connector, pump module (L074)



Wiring harness connector (L074)



Handle connectors and pins with care and use matching measuring probes.

Technical data

Component & wiring check, DEF pressure sensor

Preparation

- Switch on the ignition.
- Disconnect connector L074.
- Measure on connector L074.

	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>4</td><td>4.75–5.25 V</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	4	4.75–5.25 V	
	Pin (+ probe)	Pin (- probe)	Value	Additional information					
	2	4	4.75–5.25 V						
	Component check, heater element								
	Preparation								
	• Switch off the ignition. • Disconnect connector L074. • Measure on the pump module (L074).								
	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>5</td><td>6</td><td>1.5 Ω ± 0.5 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]
	Pin (+ probe)	Pin (- probe)	Value	Additional information					
	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]					
	Component check, reverting valve								
Preparation									
• Switch off the ignition. • Disconnect connector L074. • Measure on the pump module (L074).									
<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>11</td><td>12</td><td>6.75 ± 2 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	11	12	6.75 ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]	
Pin (+ probe)	Pin (- probe)	Value	Additional information						
11	12	6.75 ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]						
Possible causes	• A short circuit to ground. • Malfunctioning pump heater relay (R042).								
Additional information	Pump module heating is based on ambient temperature instead of pump module temperature.								
Diagnostic Step-by-Step	 The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.								



- This troubleshooting procedure is based on the assumption that supply power and ground to the PCI are functioning properly.
- Disconnecting the PCI connectors during the troubleshooting process will result in multiple errors.
- Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes.
- It is necessary to use DAVIE to clear all current trouble codes from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status.
- This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided.

Step 1 Pump Module (L074) Checks

Step 1A Visual inspection, DEF heater relay connections

Action

1. Switch off the ignition.
2. Disconnect the pump heater relay (R042) from the vehicle harness.
3. Visually inspect the associated component connections and wiring for any of the following:
 - Loose connector
 - Corroded pins
 - Bent or broken pins
 - Pushed back or expanded pins
 - Moisture in or on the connector
 - Missing or damaged connector seals
 - Dirt or debris on or in the connector pins
 - Connector shell broken
 - Wire insulation damage
 - Damaged connector locking tab.

Was there evidence of any of the above?

Yes

A damaged connection has been detected in the pump heater relay (R042) or harness connector. Clean the connector and pins. Repair the damaged harness, connector, or pins, if possible. Refer to step 3A to perform the

No

	corresponding repair verification cycles and rechecks.	
	If this DTC is still present, go to step 1B	Go to step 1B
Step 1B Electrical checks, resistance, pump heater relay (R042)		
 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.		
Action 1. Switch off the ignition. 2. Disconnect the pump heater relay (R042) from the vehicle harness. 3. Measure the resistance between the pump heater relay signal pin (pin 4) and the pump heater relay ground pin (pin 6) on the pump heater relay (R042).		
Is the measured value less than 10 Ω?		
Yes		No
		A malfunctioning pump heater relay (R042) has been detected. Replace the pump heater relay (R042). Refer to step 3A to perform the corresponding repair verification cycles and rechecks.
Go to step 2A		If this DTC is still present, go to step 2A
Step 2 EAS-3 ECU (D374) Vehicle Harness Checks		
Step 2A Visual inspection, connections and wiring, pump module (L074)		
Action 1. Switch off the ignition. 2. Disconnect the vehicle harness from the EAS-3 ECU (D374). 3. Visually inspect the associated component connections and wiring for any of the following: • Loose connector • Corroded pins • Bent or broken pins • Pushed back or expanded pins		

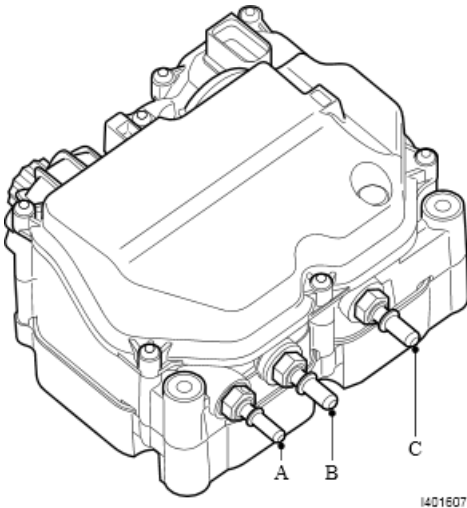
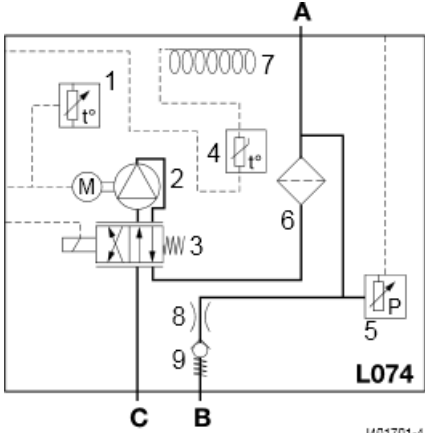
	- Moisture in or on the connector - Missing or damaged connector seals - Dirt or debris on or in the connector pins - Connector shell broken - Wire insulation damage - Damaged connector locking tab.	
	Was there evidence of any of the above?	
	Yes	No
	A damaged connection has been detected in the EAS-3 ECU (D374) connector or the vehicle harness connector. Clean the connector and pins. Repair the damaged harness, connector, or pins if possible. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.	
	If this DTC is still present, go to step 2B	Go to step 2B
	Step 2B Electrical checks, open circuit, EAS-3 ECU	
	 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.	
	Action - Switch off the ignition. - Disconnect the pump heater relay (R042) from the vehicle harness - Disconnect the vehicle harness from the EAS-3 ECU (374). - Measure the resistance between the pump heater relay ground pin (pin 6) in the vehicle harness connector and the pump heater relay ground pin (pin 6) in EAS-3 connector.	
	Is the measured value less than 10 Ω?	
	Yes	No
		An open circuit has been detected in the wiring harness. Repair or replace the vehicle harness, or contact the PACCAR Engine Support Center for further assistance in diagnosing this issue and replacement of the vehicle harness. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.

	Go to step 2C		If this DTC is still present, go to step 2C	
	Step 2C Electrical checks, short circuit to ground, EAS-3 ECU			
	 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.			
	Action			
	1. Switch the ignition to off. 2. Disconnect the pump heater relay (R042) from the vehicle harness 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure the resistance between the pump heater relay ground pin (pin A63) in the EAS-3 connector and ground.			
	Are measured values greater than 100k Ω?			
	Yes		No	
			A short circuit to ground has been detected in the wiring harness. Repair or replace the vehicle harness, or contact the PACCAR Engine Support Center for further assistance in diagnosing this issue and replacement of the harness. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.	
	Go to step 2D		If this DTC is still present, go to step 2D	
	Step 2D Electrical checks, short circuit, pump module (L074) reverting valve			
 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.				

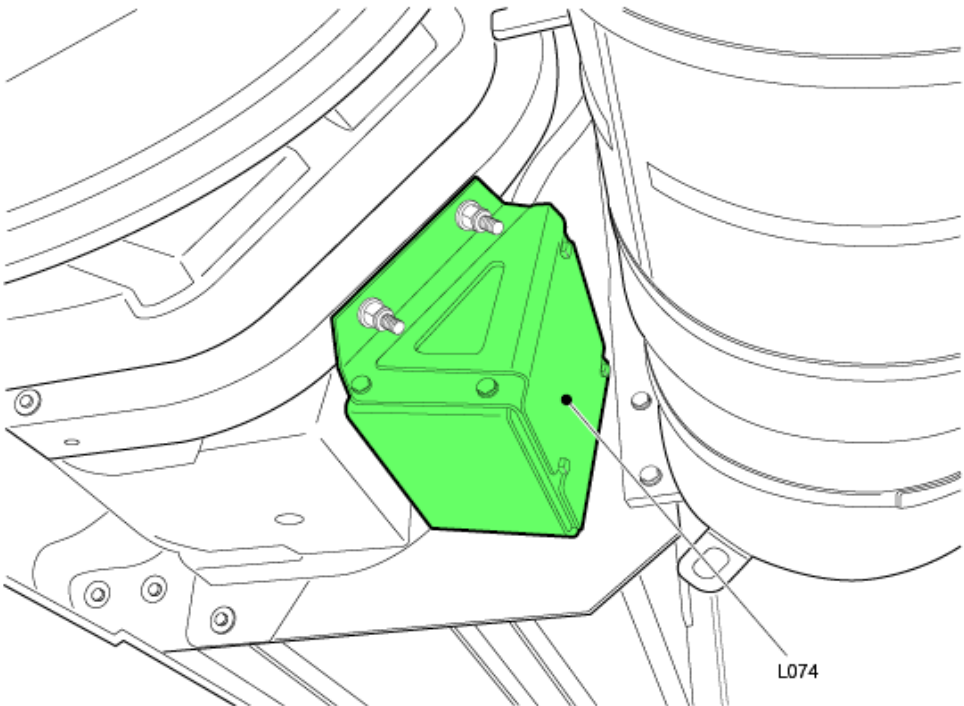
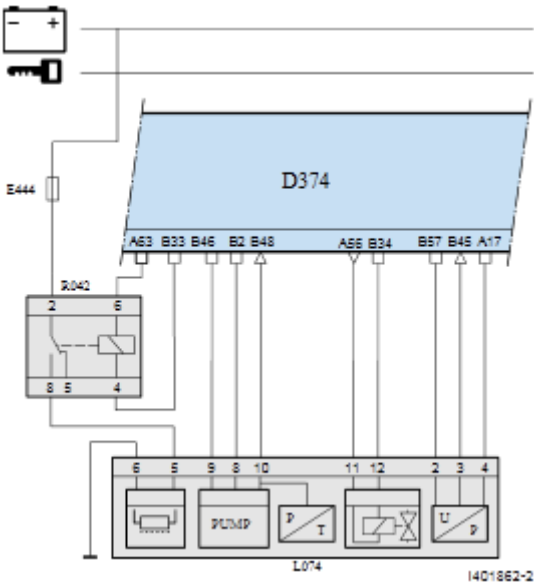
	Action 1. Switch off the ignition. 2. Disconnect the pump heater relay (R042) from the vehicle harness 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure the resistance between the pump heater relay ground pin (pin A63) in the EAS-3 connector and all other pins in the EAS-3 connector.	
	Are measured values greater than 100k Ω ?	
	Yes	No
		A pin to pin short circuit has been detected in the vehicle harness. Repair or replace the vehicle harness, or contact the PACCAR Engine Support Center for further assistance in diagnosing this issue and replacement of the harness. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.
	If all steps have been completed and this DTC is still present, contact the PACCAR Engine Support Center for further assistance.	If all steps have been completed and this DTC is still present, contact the PACCAR Engine Support Center for further assistance.
	Step 3 Repair Verification	
	Step 3A Repair verification cycles	
	Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the DTC or system being investigated.	
	 Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to clear all current DTCs from the PCI and EAS-3 ECUs.	
	Action 1. Start-up With the brakes set, start the engine and allow it to run at idle for 2 minutes.	
	Were the identified repair verification cycles able to be completed?	

	Yes		No	
			Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.	
	Go to step 3B			
	Step 3B DAVIE Diagnostics, Quick Check			
	Action			
	1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs to determine whether the actions taken have cleared this DTC.			
	Has P3902 been cleared?			
	Yes		No	
	Problem resolved. No further actions.		Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present, contact the PACCAR Engine Support Center for further assistance.	
	Back to Index			

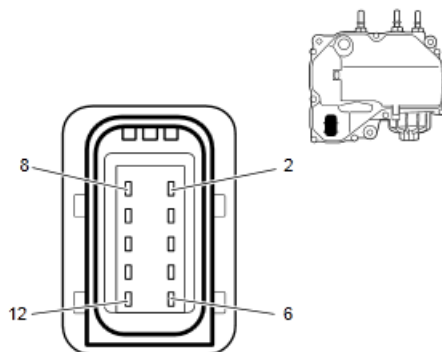
P3903

Code number	P3903
Fault code description	Pump module heater relay - short circuit to supply or open circuit on ECU (D374) pin (B33)
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated.

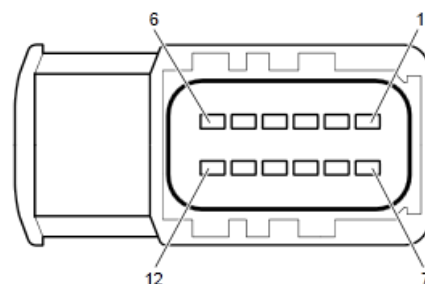
	DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature Switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter • The DEF is filtered before it is pumped into the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump. • Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve • The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.

Location of component(s)	
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	A short circuit to supply or open circuit is detected for two consecutive seconds.
Reset condition of fault code	This DTC changes to inactive as soon as the diagnostic runs and passes.
Electrical diagram(s)	 D374 EAS-3 ECU E444 Fuse EAS 2nd L074 Pump module R042 Pump heater relay

D374	L074	R042	Function
A17	4		Ground, DEF pressure sensor
A56	11		Signal, reverting valve
A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground, heater element
	5	8	Power supply, heater element



Connector, pump module (L074)



Wiring harness connector (L074)



Handle connectors and pins with care and use matching measuring probes.

Technical data

Component & wiring check, DEF pressure sensor

Preparation

- Switch on the ignition.
- Disconnect connector L074.

	Measure on connector L074.								
	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>4</td><td>4.75–5.25 V</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	4	4.75–5.25 V	
	Pin (+ probe)	Pin (- probe)	Value	Additional information					
	2	4	4.75–5.25 V						
	Component check, heater element								
	Preparation								
	- Switch off the ignition. - Disconnect connector L074. - Measure on the pump module (L074).								
	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>5</td><td>6</td><td>1.5 Ω ± 0.5 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]
	Pin (+ probe)	Pin (- probe)	Value	Additional information					
	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]					
Component check, reverting valve									
Preparation									
- Switch off the ignition. - Disconnect connector L074. - Measure on the pump module (L074).									
<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>11</td><td>12</td><td>6.75 Ω ± 2 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]	
Pin (+ probe)	Pin (- probe)	Value	Additional information						
11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]						
Possible causes	- Short circuit to supply or an open circuit. - Malfunctioning pump heater relay (R042).								
Additional information	Pump module heating is based on ambient temperature instead of pump module temperature.								
Diagnostic Step-by-Step	 The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.								



- This troubleshooting procedure is based on the assumption that supply power and ground to the PCI are functioning properly.
- Disconnecting the PCI connectors during the troubleshooting process will result in multiple errors.
- Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes.
- It is necessary to use DAVIE to clear all current DTCs from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in DTC status.
- This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided.

Step 1 Pump Heater Relay (R042) Checks

Step 1A Visual inspection, pump heater relay (R042) connections and wiring

Action

1. Visually inspect the associated component connections and wiring for any of the following:
 - Damaged or loose connectors
 - Bent, broken, corroded or loose connector pins
 - Pushed back or expanded pins
 - Missing or damaged connector seals
 - Moisture or dirt in the connections
 - Damage to the wire harness or insulation
 - Damaged connector locking tab
 - Pump heater relay (R042) is broken or not installed correctly

Was there evidence of any of the above?

Yes

Correct any issues found or replace the pump heater relay (R042) if it was found to be damaged.
Refer to step 4A to perform the corresponding repair verification cycles and rechecks.

No

	If this DTC is still present, go to step 1B		Go to step 1B	
	Step 1B Electrical checks, resistance, pump heater relay (R042)			
	 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.			
	Action			
	1. Switch off the ignition. 2. Disconnect the pump heater relay (R042) from the vehicle harness. 3. Measure the resistance between the signal pin (pin 4) and the ground pin (pin 6) on the pump heater relay.			
	Is the measured value greater than 10 Ω?			
	Yes		No	
			A malfunctioning pump heater relay has been detected. Replace the pump heater relay. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	
	Go to step 2A		If this DTC is still present, go to step 2A	
Step 2 DEF Pump Module (L074) Checks				
Step 2A Visual inspection, connections and wiring, pump module (L074)				
Action				
1. Visually inspect the associated component connections and wiring for any of the following: • Damaged or loose connectors • Bent, broken, corroded or loose connector pins • Moisture or dirt in the connections • Damage to the wire harness or insulation • The correct parts are not installed • ECU connections are damaged or disconnected • Battery not fully charged, contacts not tight				

	• Pump module (L074) is broken or not installed correctly	
	Was there evidence of any of the above?	
	Yes	No
	Correct any issues found. If the pump module (L074) is found to be damaged or broken, replace it. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	
	If this DTC is still present, go to step 2B	Go to step 2B
	Step 2B Electrical checks, resistance, pump module (L074) heater element	
		Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.
	Action	
	1. Measure the resistance as described in the corresponding checking data, “ <u>component check, pump module (L074)</u> ”.	
Are measured values within the expected range?		
Yes	No	
	Correct any issues found, or replace the pump module (L074) if measured values indicate an error. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	
Go to step 3A	If this DTC is still present, go to step 3A	
Step 3 Vehicle Harness Electrical Checks		
Step 3A Visual inspection, vehicle harness connections and wiring		
Action		
1. Switch off the ignition.		
2. Disconnect the vehicle harness from the EAS-3 ECU (D374).		
3. Visually inspect the associated component connections and wiring for any of		

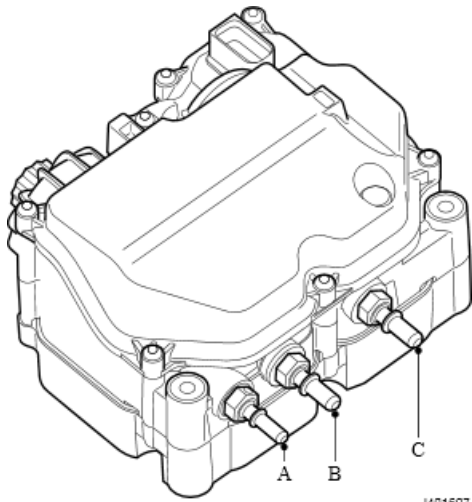
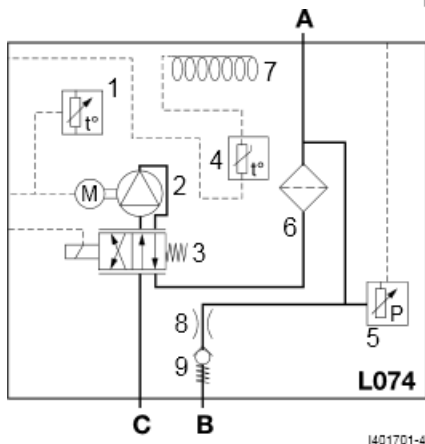
	the following: • Damaged or loose connectors • Bent, broken, corroded or loose connector pins • Pushed back or expanded pins • Missing or damaged connector seals • Moisture or dirt in the connections • Damage to the wire harness or insulation • Damaged connector locking tab • ECU connections are damaged or disconnected	
	Was there evidence of any of the above?	
	Yes	No
	Correct any issues found. Contact the PACCAR Engine Support Center for assistance if the vehicle harness is damaged and must be replaced. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	
	If this DTC is still present, go to step 3B	Go to step 3B
	Step 3B Electrical checks, pin-to-pin short, vehicle harness	
	Action 1. Switch off the ignition. 2. Disconnect the pump heater relay (R042) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure resistance between the pump heater relay ground pin (pin A63) and all other pins in the EAS-3 ECU harness connector.	
	Are the measured values greater than 100k Ω ?	
	Yes	No
		A pin-to-pin short has been detected. Contact the PACCAR Engine Support Center about replacement of the vehicle

		harness. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.
	Go to step 3C	If this DTC is still present, go to step 3C
Step 3C Electrical checks, short circuit to battery, vehicle harness		
Action		
1. Switch off the ignition. 2. Disconnect the pump heater relay (R042) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure resistance between the pump heater relay ground pin (pin A63) in the EAS-3 ECU harness connector and the battery (+) positive terminal.		
Is the measured value greater than 100k Ω ?		
Yes		No
		A short circuit to battery has been detected. Contact the PACCAR Engine Support Center about replacement of the vehicle harness. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.
If all steps have been completed and this DTC is still present, contact the PACCAR Engine Support Center for further assistance.		
Step 4 Repair Verification		
Step 4A Repair verification cycles		
Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the DTC or system being investigated.		
 Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to clear all current DTCs from the PCI and EAS-3 ECUs.		

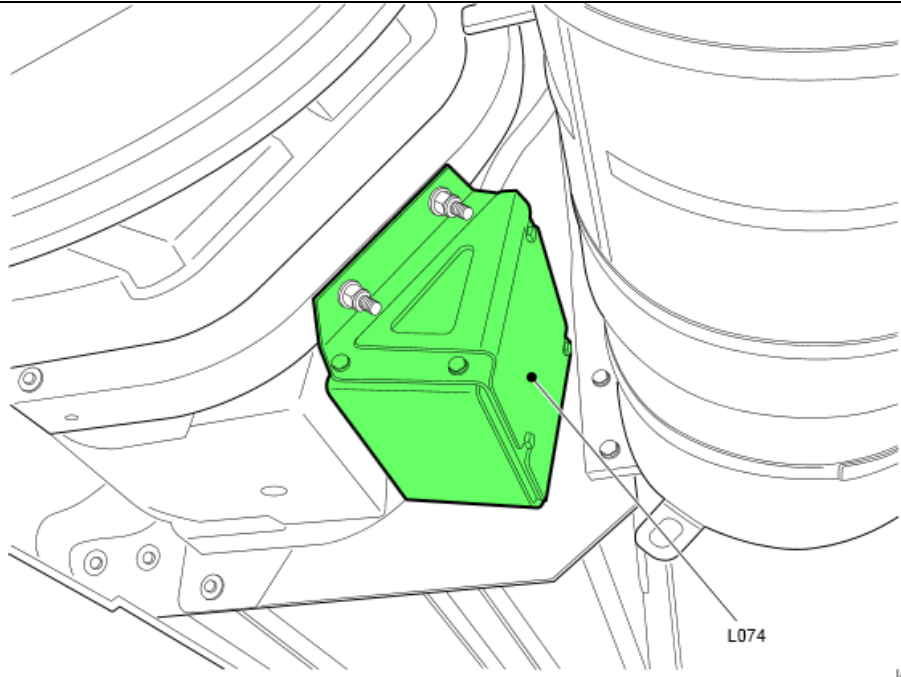
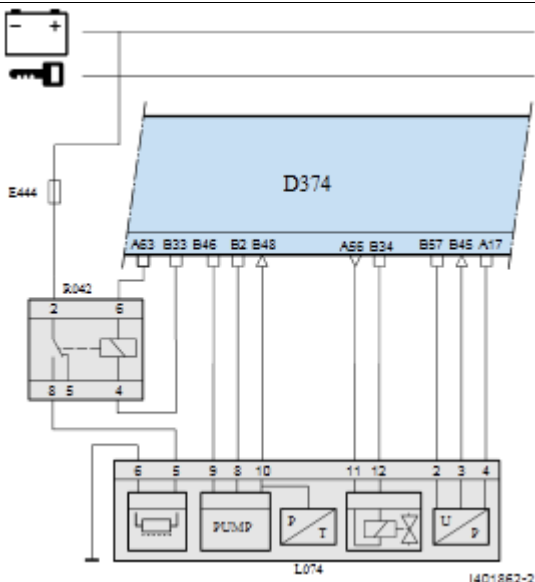
	Action	
	Start-up With the brakes set, start the engine and allow it to run at idle for 2 minutes.	
	Were the identified repair verification cycles able to be completed?	
	Yes	No
		Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.
	Go to step 4B	
	Step 4B DAVIE Diagnostics, Quick Check, OBD Readiness Monitors	
	Action	
	Use DAVIE Diagnostics to perform a Quick Check for current DTCs to determine whether the actions taken have cleared this DTC. - Confirm that the corresponding OBD Monitor Readiness Status value is displayed as “Ready.” A status of Ready indicates that the corresponding OBD monitor has run successfully and the problem has been resolved—no further action. If the displayed status is “Not ready,” continue to action step 2. - View the DTC overview display, and confirm that P3903 has been cleared.	
	Is the related OBD Monitor Readiness Status set to “Ready.” Or, has P3903 been cleared?	
	Yes	No
	Problem resolved. No further actions.	Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present: - continue to operate the truck to extend the run time, allowing the corresponding OBD monitor sufficient time to complete - or, return to step 4A and perform

		this repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine Support Center for further assistance.
	Back to Index	

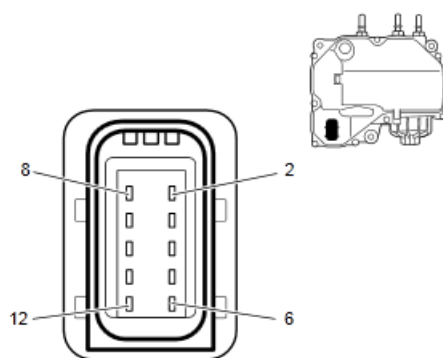
P3904

Code number	P3904
Fault code description	Pump module - Voltage too low or short circuit to ground on ECU (D374) pin (B48)
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated. DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the

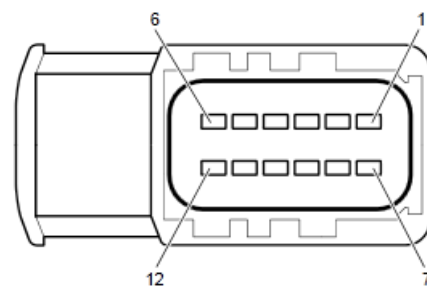
	DEF dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature Switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter • The DEF is filtered before it is pumped into the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump. • Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve • The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.

Location of component(s)	 I402235				
Diagnostic condition	This diagnostic runs continuously.				
Set condition of fault code	A short circuit to ground or open circuit is detected for five consecutive seconds.				
Reset condition of fault code	This DTC changes to inactive as soon as the diagnostic runs and passes.				
Electrical diagram(s)	 I401862-2 D374 EAS-3 ECU E444 Fuse EAS 2nd L074 Pump module R042 Relay line heating <table><tr><th>D374</th><th>L074</th><th>R042</th><th>Function</th></tr></table>	D374	L074	R042	Function
D374	L074	R042	Function		

A17	4		Ground, DEF pressure sensor
A56	11		Signal, reverting valve
A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground, heater element
	5	8	Power supply, heater element



Connector, pump module (L074)



Wiring harness connector (L074)



Handle connectors and pins with care and use matching measuring probes.

Technical data

Component & wiring check, DEF pressure sensor

Preparation

- Switch on the ignition.
- Disconnect connector L074.
- Measure on connector L074.

Pin (+ probe)	Pin (- probe)	Value	Additional information

	<table><tr><td>2</td><td>4</td><td>4.75–5.25 V</td><td></td></tr></table> Component check, heater element Preparation • Switch off the ignition. • Disconnect connector L074. • Measure on the pump module (L074). <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>5</td><td>6</td><td>1.5 Ω ± 0.5 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table> Component check, reverting valve Preparation • Switch off the ignition. • Disconnect connector L074. • Measure on the pump module (L074). <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>11</td><td>12</td><td>6.75 Ω ± 2 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	2	4	4.75–5.25 V		Pin (+ probe)	Pin (- probe)	Value	Additional information	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]	Pin (+ probe)	Pin (- probe)	Value	Additional information	11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]
2	4	4.75–5.25 V																			
Pin (+ probe)	Pin (- probe)	Value	Additional information																		
5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]																		
Pin (+ probe)	Pin (- probe)	Value	Additional information																		
11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]																		
Possible causes	• A short circuit to ground or open circuit. • Damage to the electrical connections and/or wiring of the pump motor.																				
Additional information	• DEF injection is disabled. • DEF priming is disabled. • After 1 hour of engine operation or 50 miles with P3904 active, P1518 becomes active (25% torque derate). • After 4 hours of engine operation or 200 miles with P3904 active, P1518 stays active (40% torque derate). • After 4 hours of engine operation or 200 miles with P3904 active, P151A becomes active (5 MPH vehicle speed limit) after a: ○ key cycle, or ○ vehicle re-fuel (fuel tank volume increase > 16%), or ○ vehicle has been stationary for 1 hour.																				

Diagnostic Step-by-Step



The ignition should always be in the off position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.



- This troubleshooting procedure is based on the assumption that supply power and ground to the PCI are functioning properly.
- Disconnecting the PCI connectors during the troubleshooting process will result in multiple errors.
- Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes.
- It is necessary to use DAVIE to clear all current trouble codes from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status.
- This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided.

Step 1 DEF Pump Module (L074) Checks

Step 1A Visual inspection, connections and wiring, pump module (L074)

Action

1. Visually inspect the associated component connections and wiring for any of the following:
 - Damaged or loose connectors
 - Bent, broken, corroded or loose connector pins
 - Moisture or dirt in the connections
 - Damage to the wire harness or insulation
 - The correct parts are not installed
 - ECU connections are damaged or disconnected
 - Batteries not fully charged or contacts are not tight
 - Pump module (L074) is broken or not installed correctly

Was there evidence of any of the above?

Yes

No

Correct any issues found. If the DEF pump module (L074) is found to be damaged or broken, replace it.
Refer to step 2A to perform the corresponding repair verification cycles and rechecks.

If this DTC is still present, go to step 1B

Go to step 1B

Step 1B Electrical checks, open circuit, pump module (L074) harness



Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.

Action

1. Switch off the ignition.
2. Disconnect the pump module (L074) from the vehicle harness.
3. Disconnect the vehicle harness from the EAS-3 ECU (D374).
4. Measure resistance between the DEF pump module (L074) motor pin 10 in the pump module (L074) vehicle harness connector and the DEF pump module (L074) motor signal pin B48 in the EAS-3 ECU (D374) vehicle harness connector.

Is the measured value less than 10 Ω ?

Yes

No

An open circuit has been detected.
Replace the vehicle harness.
Refer to step 2A to perform the corresponding repair verification cycles and rechecks.

Go to step 1C

If this DTC is still present, go to step 1C

Step 1C Electrical checks, open circuit, pump module (L074) harness



Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.

Action

1. Switch off the ignition.
2. Disconnect the pump module (L074) from the vehicle harness.
3. Disconnect the vehicle harness from the EAS-3 ECU (D374).
4. Measure resistance between the DEF pump module (L074) motor power supply pin 9 in the pump module (L074) vehicle harness connector and the DEF pump module (L074) motor power supply pin B46 in the EAS-3 ECU (D374) vehicle harness connector.

Is the measured value less than 10 Ω ?

Yes

No

	<table> <tr> <td></td><td> An open circuit has been detected. Replace the vehicle harness. Refer to step 2A to perform the corresponding repair verification cycles and rechecks. </td></tr> <tr> <td>Go to step 1D</td><td>If this DTC is still present, go to step 1D</td></tr> </table>		An open circuit has been detected. Replace the vehicle harness. Refer to step 2A to perform the corresponding repair verification cycles and rechecks.	Go to step 1D	If this DTC is still present, go to step 1D																
	An open circuit has been detected. Replace the vehicle harness. Refer to step 2A to perform the corresponding repair verification cycles and rechecks.																				
Go to step 1D	If this DTC is still present, go to step 1D																				
<table> <tr> <td colspan="2">Step 1D Electrical checks, pin-to-pin short circuit, pump module (L074) harness</td></tr> <tr> <td>  </td><td> Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points. </td></tr> <tr> <td colspan="2"> Action 1. Switch off the ignition. 2. Disconnect the pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure resistance between the DEF pump module (L074) motor signal pin 10 in the pump module (L074) vehicle harness connector and engine block ground. </td></tr> <tr> <td colspan="2">Is the measured value greater than 100k Ω?</td></tr> <tr> <td>Yes</td><td>No</td></tr> <tr> <td></td><td> A pin-to-ground short circuit has been detected. Replace the vehicle harness. Refer to step 2A to perform the corresponding repair verification cycles and rechecks. </td></tr> <tr> <td>Go to step 1E</td><td>If this DTC is still present, go to step 1E</td></tr> </table>	Step 1D Electrical checks, pin-to-pin short circuit, pump module (L074) harness			Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.	Action 1. Switch off the ignition. 2. Disconnect the pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure resistance between the DEF pump module (L074) motor signal pin 10 in the pump module (L074) vehicle harness connector and engine block ground.		Is the measured value greater than 100k Ω ?		Yes	No		A pin-to-ground short circuit has been detected. Replace the vehicle harness. Refer to step 2A to perform the corresponding repair verification cycles and rechecks.	Go to step 1E	If this DTC is still present, go to step 1E	<table> <tr> <td colspan="2">Step 1E Electrical checks, pin-to-pin short circuit, pump module (L074) harness</td></tr> <tr> <td>  </td><td> Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points. </td></tr> <tr> <td colspan="2"> Action 1. Switch the ignition to OFF. 2. Disconnect the pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure resistance between the DEF pump module (L074) motor power supply pin 9 in the pump module (L074) vehicle harness connector pin B46 and engine block ground. </td></tr> </table>	Step 1E Electrical checks, pin-to-pin short circuit, pump module (L074) harness			Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.	Action 1. Switch the ignition to OFF. 2. Disconnect the pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure resistance between the DEF pump module (L074) motor power supply pin 9 in the pump module (L074) vehicle harness connector pin B46 and engine block ground.	
Step 1D Electrical checks, pin-to-pin short circuit, pump module (L074) harness																					
	Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.																				
Action 1. Switch off the ignition. 2. Disconnect the pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure resistance between the DEF pump module (L074) motor signal pin 10 in the pump module (L074) vehicle harness connector and engine block ground.																					
Is the measured value greater than 100k Ω ?																					
Yes	No																				
	A pin-to-ground short circuit has been detected. Replace the vehicle harness. Refer to step 2A to perform the corresponding repair verification cycles and rechecks.																				
Go to step 1E	If this DTC is still present, go to step 1E																				
Step 1E Electrical checks, pin-to-pin short circuit, pump module (L074) harness																					
	Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.																				
Action 1. Switch the ignition to OFF. 2. Disconnect the pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure resistance between the DEF pump module (L074) motor power supply pin 9 in the pump module (L074) vehicle harness connector pin B46 and engine block ground.																					

	Is the measured value greater than 100k Ω ?	
	Yes	No
		A pin-to-ground short circuit has been detected. Replace the vehicle harness. Refer to step 2A to perform the corresponding repair verification cycles and rechecks.
	Go to step 1F	If this DTC is still present, go to step 1F
	Step 1F Electrical checks, pin-to-pin short circuit, pump module (L074) harness	
	 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.	
	Action 1. Switch off the ignition. 2. Disconnect the pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure resistance between the DEF pump module (L074) motor signal pin B48 in the EAS-3 ECU (D374) vehicle harness connector and all other pins in the EAS-3 ECU (D374) vehicle harness connector. 5. Measure resistance between the DEF pump module (L074) motor power supply pin B46 in the EAS-3 ECU (D374) vehicle harness connector and all other pins in the EAS-3 ECU (D374) vehicle harness connector.	
	Is the measured value greater than 100k Ω ?	
	Yes	No
		A pin-to-pin short circuit has been detected. Replace the vehicle harness. Refer to step 2A to perform the corresponding repair verification cycles and rechecks.
	Go to step 1G	If this DTC is still present, go to step 1G
	Step 1G DAVIE test, prime the system with the DEF pump module (L074)	
	 ABORTING A DAVIE-INITIATED DIAGNOSTIC TEST IS NOT RECOMMENDED.	
	However, if aborting a test is required, a key cycle must be performed	

to reset the engine ECM.

Failure to reset the engine ECM in this instance could result in personal injury or damage to the vehicle.

Action

1. Use DAVIE to perform a DEF pump module (L074) prime test as described in the maintenance procedure, test DEF dosing valve (Exhaust System(SCR)), job code J 1179 439605 033 000.

Did the test fail to complete or result in a failed state?

Yes

Correct any issues found. Replace the DEF pump module (074) if test results indicate a mechanical failure.
Refer to step 2A to perform the corresponding repair verification cycles and rechecks.

No

If all steps have been completed and this DTC is still present, contact PACCAR Engine Support Center for further assistance.

If all steps have been completed and this DTC is still present, contact PACCAR Engine Support Center for further assistance.

Step 2 Repair Verification

Step 2A Repair verification cycles

Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the DTC or system being investigated.



Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to "Clear all" current DTCs from the PCI and EAS-3 ECUs.

Action

1. Start-up
With the brakes set, start the engine and allow it to run at idle for 2 minutes.

Were the identified repair verification cycles able to be completed?

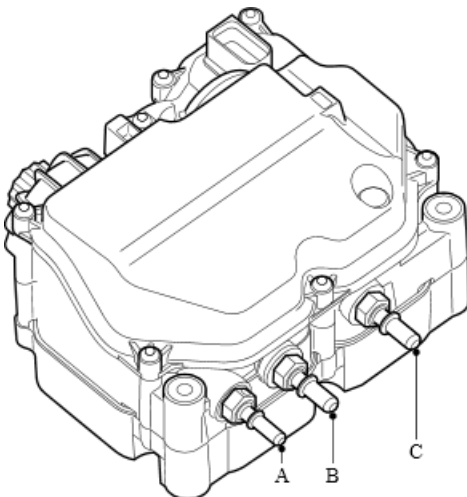
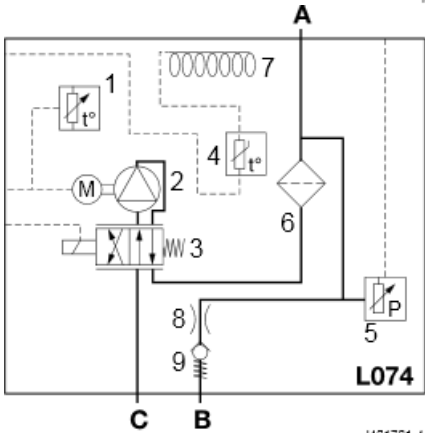
Yes

No

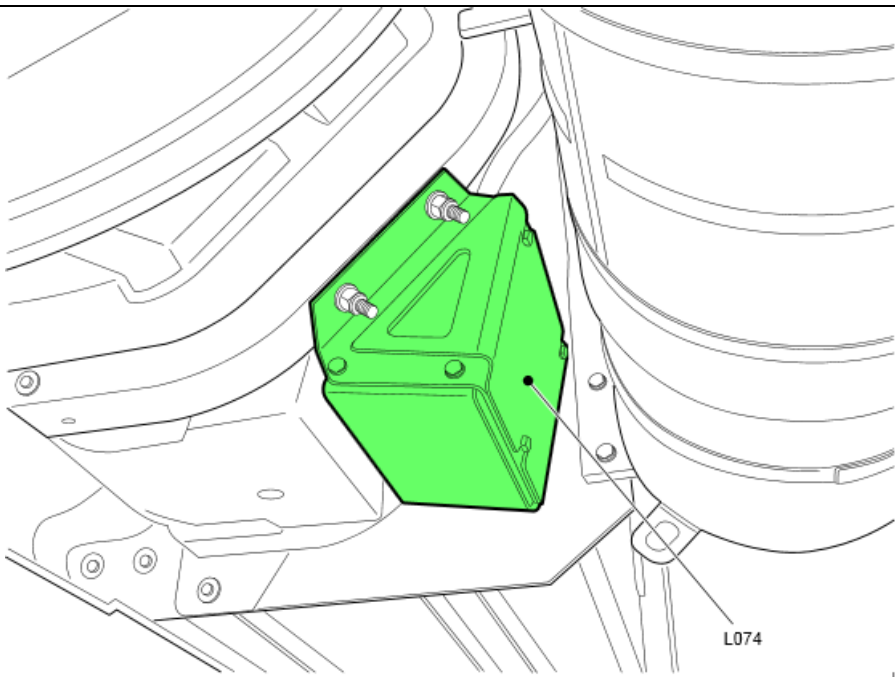
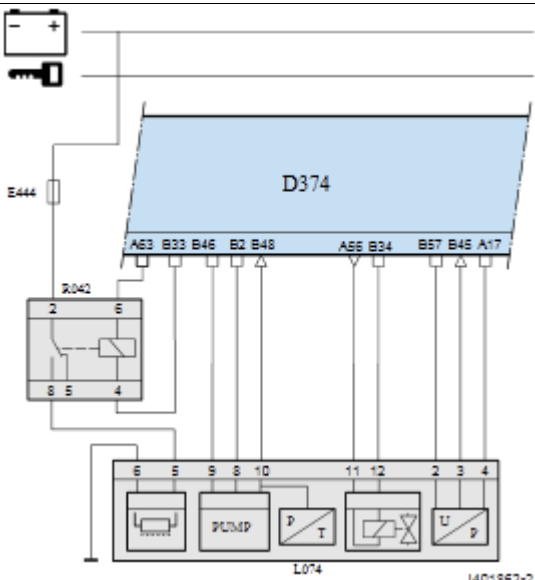
Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For

		additional assistance, contact the PACCAR Engine Support Center.
	Go to step 2B	Go to step 2B
Step 2B DAVIE Diagnostics, Quick Check, OBD Readiness Monitors		
Action Use DAVIE Diagnostics to perform a Quick Check for current DTCs to determine whether the actions taken have cleared this DTC. 1. Confirm that the corresponding OBD Monitor Readiness State value is displayed as “Ready”. A status of Ready indicates that the corresponding OBD monitor has run successfully and the problem has been resolved—no further action. If the displayed status is “Not Ready”, continue to action step 2. 2. View the DTC overview display, and confirm that P3904 has been cleared.		
Is the related OBD Monitor Readiness Status set to “Ready.” Or, has P3904 been cleared?		
Yes		No
Problem resolved. No further actions.		Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present: • continue to operate the truck to extend the run time, allowing the corresponding OBD monitor sufficient time to complete • or, return to step 2A and perform this repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine Support Center for further assistance.
	Back to Index	

P3905

Code number	P3905
Fault code description	Pump module - Voltage too high or short circuit to supply on ECU (D374) pin (B48)
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated.

	DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature Switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter • The DEF is filtered before it is pumped into the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump. • Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve • The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.

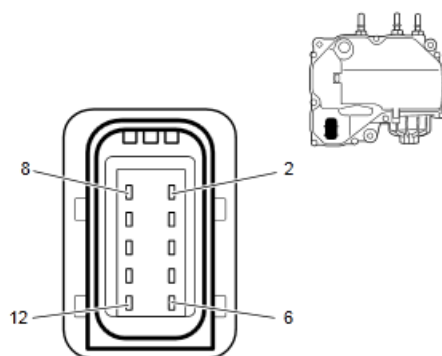
Location of component(s)	 I402235
Diagnostic condition	This diagnostic runs continuously when the ignition is on and the DEF pump is activated.
Set condition of fault code	A short circuit to supply is detected for 5 consecutive seconds.
Reset condition of fault code	This DTC changes to inactive as soon as the diagnostic runs and passes.
Electrical diagram(s)	 D374 EAS-3 ECU

E444 Fuse EAS 2nd

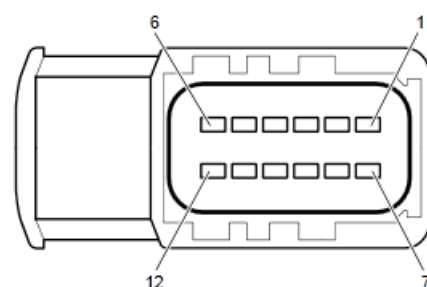
L074 Pump module

R042 Pump heater relay

D374	L074	R042	Function
A17	4		Ground, DEF pressure sensor
A56	11		Signal, reverting valve
A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground, heater element
	5	8	Power supply, heater element



1401919
Connector, pump module (L074)



E504107
Wiring harness connector (L074)



Handle connectors and pins with care and use matching measuring probes.

Technical data	Component & wiring check, DEF pressure sensor Preparation - Key on the ignition - Disconnect connector L074 - Measure on connector L074 <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>4</td><td>4.75–5.25 V</td><td></td></tr></table> Component check, heater element Preparation - Key off the ignition - Disconnect connector L074 - Measure on the pump module (L074) <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>5</td><td>6</td><td>1.5 Ω ± 0.5 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table> Component check, reverting valve Preparation - Key on the ignition - Disconnect connector L074 - Measure on the pump module (L074) <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>11</td><td>12</td><td>6.75 Ω ± 2 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	4	4.75–5.25 V		Pin (+ probe)	Pin (- probe)	Value	Additional information	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]	Pin (+ probe)	Pin (- probe)	Value	Additional information	11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
2	4	4.75–5.25 V																							
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]																						
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]																						

Possible causes	• Short circuit to supply. • Damage to the electrical connections and/or wiring of the pump motor.
Additional information	• DEF injection is disabled. • DEF priming is disabled. • After 1 hour of engine operation or 50 miles with P3905 active, P1518 becomes active (25% torque derate). • After 4 hours of engine operation or 200 miles with P3905 active, P1518 stays active (40% torque derate). • After 4 hours of engine operation or 200 miles with P3905 active, P151A becomes active (5 MPH vehicle speed limit) after a: ○ key cycle, or ○ vehicle re-fuel (fuel tank volume increase > 16%), or ○ vehicle has been stationary for 1 hour.
Diagnostic Step-by-Step	 The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.  ▪ This troubleshooting procedure is based on the assumption that supply power and ground to the PMCI are functioning properly. ▪ Disconnecting the PMCI connectors during the troubleshooting process will result in multiple errors. ▪ Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes. ▪ It is necessary to use DAVIE to clear all current trouble codes from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status. ▪ This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided. Step 1 Pump module (L074) Checks Step 1A Visual inspection, connections and wiring, pump module (L074) Action 1. Visually inspect the associated component connections and wiring for any of the following: • Damaged or loose connectors • Bent, broken, corroded or loose connector pins • Moisture or dirt in the connections • Damage to the wire harness or insulation • The correct parts are not installed • ECU connections are damaged or disconnected

	- Battery not fully charged, contacts not tight - Pump module (L074) is broken or not installed correctly	
	Was there evidence of any of the above?	
	Yes	No
	Correct any issues found. If the pump module (L074) is found to be damaged or broken, replace it. Refer to Step 3A to perform the corresponding repair verification cycles and rechecks.	
	If this code is still present, go to Step 2B	Go to step 2B
	Step 1B Electrical checks, resistance, pump module (L074) heater element	
	 Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.	
	Action Confirm the resistance level as outlined in the corresponding checking data, “<u>Component check, pump module (L074).</u>”	
	Are measured values within expected range?	
	Yes	No
		Correct any issues found, or replace the pump module (L074) if measured values indicate an error. Refer to Step 2.A to perform the corresponding repair verification cycles and rechecks.
	Go to step 1C	If this code is still present, go to step 1C.
	Step 1C Electrical checks, resistance, pump module (L074) reverting valve	
	 Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.	

	Action	
	1. Confirm the resistance level as outlined in the corresponding checking data, " <u>Component check, pump module (L074).</u> "	
	Are measured values within expected range?	
	Yes	No
		Correct any issues found, or replace the pump module (L074) if measured values indicate an error. Refer to Step 2.A to perform the corresponding repair verification cycles and rechecks.
	Go to step 1D	If this code is still present, go to step 1D.
	Step 1D Electrical checks, supply voltage, pump module (L074)	
	 Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.	
	Action	
	1. Confirm the supply voltage level as outlined in the corresponding checking data, " <u>Component check, pump module (L074).</u> "	
	Are measured values within expected range?	
	Yes	No
		Correct any issues found. Refer to Step 2A to perform the corresponding repair verification cycles and rechecks.
	Go to step 1E	If this code is still present, go to step 1E.
	Step 1E DAVIE test, pump module prime	
	Action	
	1. Use DAVIE to test the pump module as described in the maintenance procedure, " <u>test pump module EAS (EAS (DEF system))</u> ," job ID 68120.	
	Did the test fail to complete or result in a failed state?	

	Yes		No	
	Correct any issues found. Replace the pump module (L074), if test results indicate a mechanical failure. Refer to Step 2A to perform the corresponding repair verification cycles and rechecks.			
	If this code is still present, go to step 1F		Go to step 1F.	
	Step 1F Electrical checks, harness, pump module (L074)			
	 Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.			
	Action - Key OFF the ignition. - Disconnect the pump module (L074) from the vehicle harness. - Disconnect the vehicle harness from the EAS-3 ECU. - Use a multimeter to check the resistance between the following engine harness connector pins: - L074, pin 10 to L074, pin 9 (pump module signal to supply) Expected value is > 100K Ω - L074, pin 10 to D374, pin B48 (pump module signal to EAS-3 ECU) Expected value is < 10 Ω			
	Are measured values within expected range?			
	Yes		No	
			Contact the PACCAR Engine Support Center for additional assistance in diagnosing this issue and for possible replacement of the engine harness. Refer to Step 2A to perform the corresponding repair verification cycles and rechecks.	
	If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.		If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.	
Step 2 Repair Verification				

Step 2A Repair verification cycles

Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the trouble code or system being investigated.



Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to clear all current DTCs from the PCI and EAS-3 ECUs.

Action

1. Start-up/electrical

With the brakes set, start the engine and allow it to run at idle for 2 minutes.

Were the identified repair verification cycles able to be completed?

Yes	No
	Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.
Go to step 2B	Go to step 2B

Step 2B DAVIE Diagnostics, Quick Check

Action

1. Use DAVIE Diagnostics to perform a Quick Check for current trouble codes to determine whether the actions taken have cleared this trouble code.

Has P3905 been cleared?

Yes	No
Problem resolved. No further actions.	Continue with the next step in this troubleshooting procedure. If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.

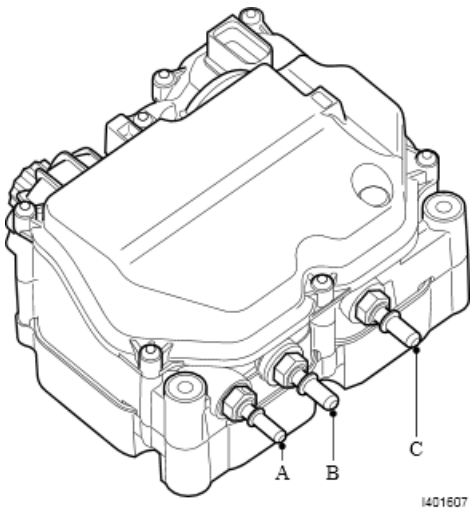
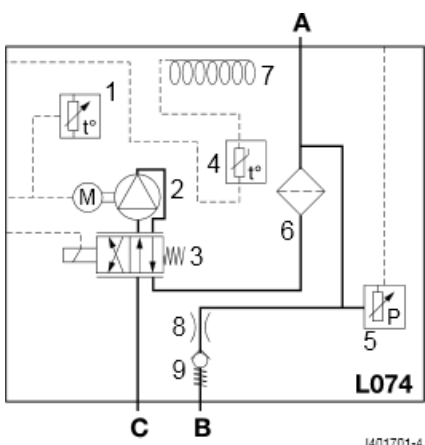


Contacting the PACCAR Engine Support Center

For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center.

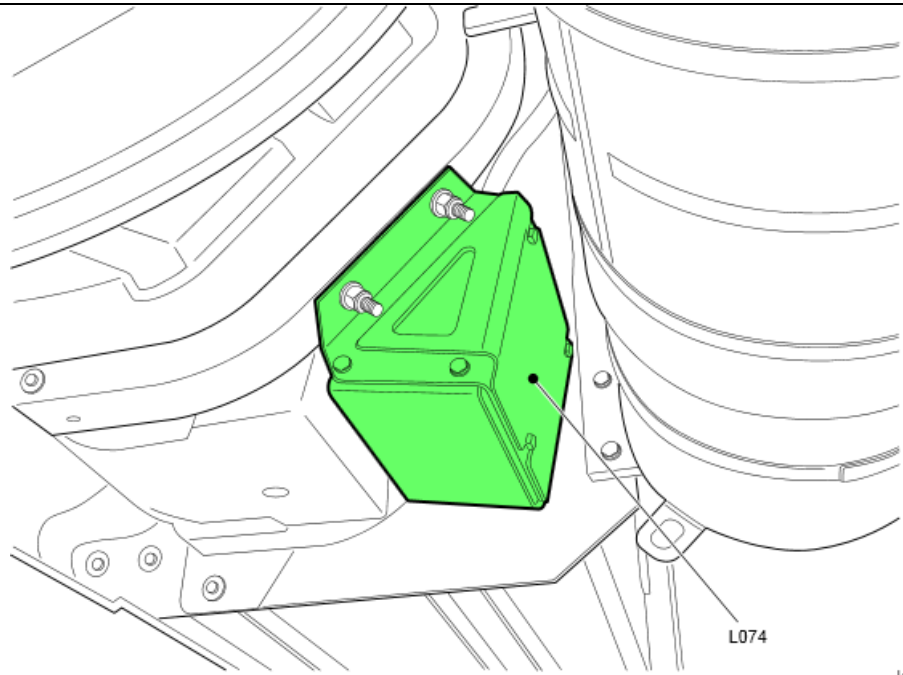
	Back to Index

P3906

Code number	P3906
Fault code description	Pump module temperature – Malfunction on sensor
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group - None Freeze frame type -Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated. DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the

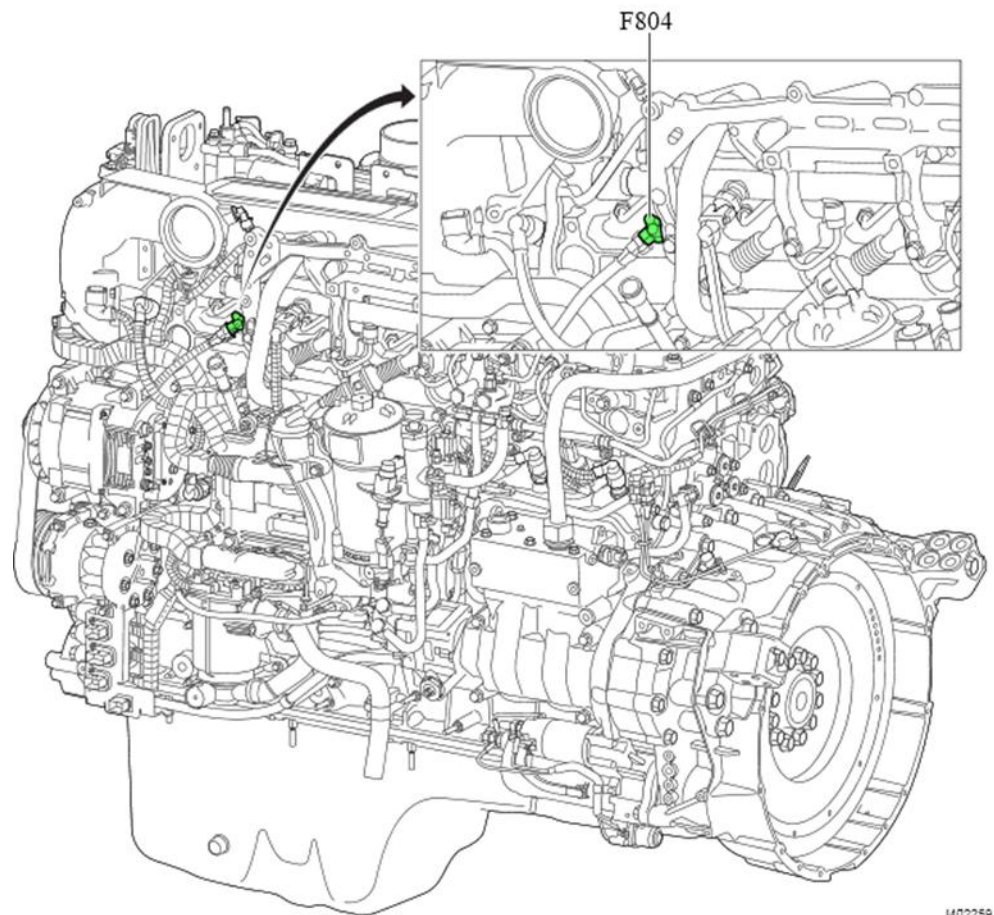
	DEF dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature Switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter • The DEF is filtered before it is pumped into the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump. • Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve • The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected. Boost temperature sensor (F804) The boost temperature is measured in the inlet manifold near cylinder 2. Effect on the system • Determines the smoke limit A higher measured boost temperature results in lower calculated smoke emission by the engine.

	• Determines NOx emissions A higher measured boost temperature results in higher calculated NOx emission by the engine. • Calculates exhaust gas mass flow used for DEF dosing by the EAS-3 system A higher measured boost temperature results in lower calculated exhaust gas mass flow. • Calculates oxygen concentration in the exhaust gas used for the DPF soot collection prediction and regeneration A higher measured boost temperature results in lower calculated oxygen concentration in the exhaust gas. • Calculates exhaust gas temperature before the turbine A higher measured boost temperature results in higher calculated exhaust gas temperature before the turbine. • Controls the BPV valve A higher measured boost temperature results in lower calculated back pressure; therefore, the BPV valve is opened relatively more. Coolant temperature sensor (F566) The coolant temperature is measured in the coolant return gallery at the right rear end of the cylinder block. Effect on the system • Calculates the quantity of fuel to inject and the injection timing • Displays the coolant temperature to the driver • Displays warnings to the driver concerning high coolant temperature • Limits the engine torque when the coolant temperature is too high • Limits the maximum engine speed when the engine is cold • Enables condition for severity of (OBD) diagnostic checks • Fast idle speed control • Cold start aid
Location of component(s)	DEF pump module (L074)

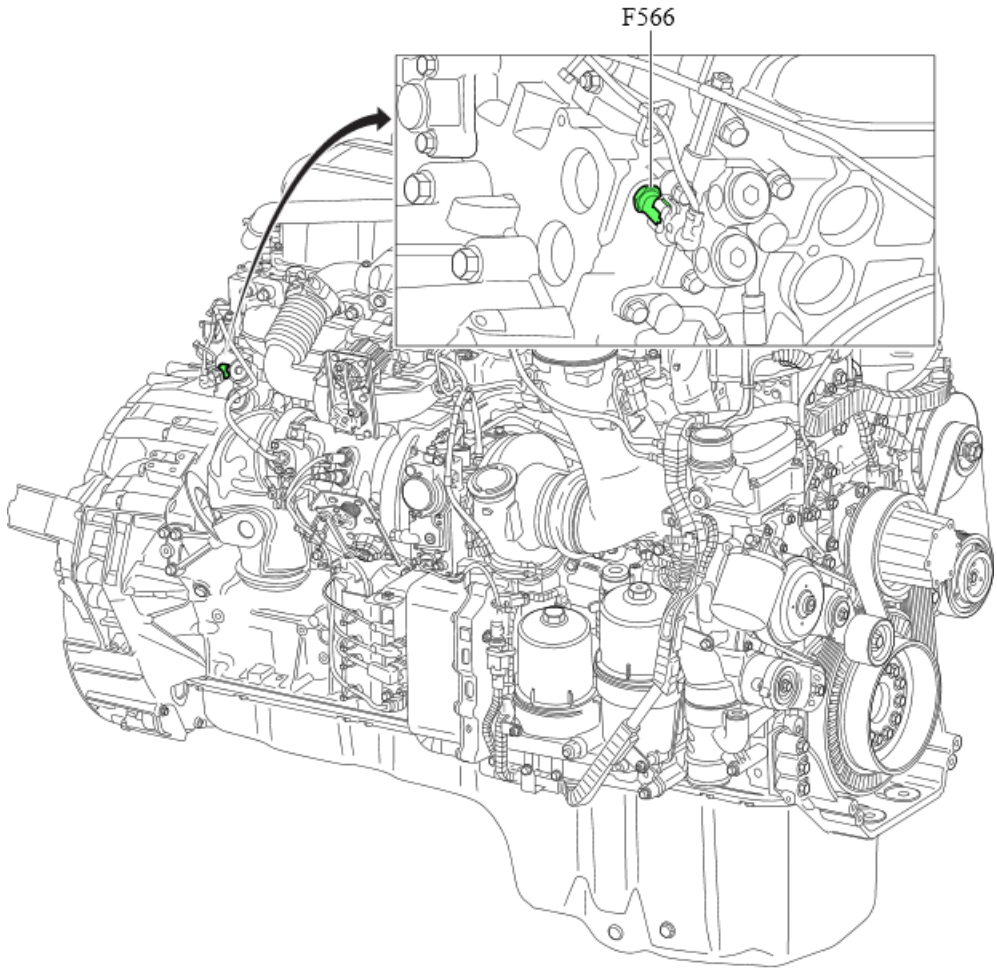


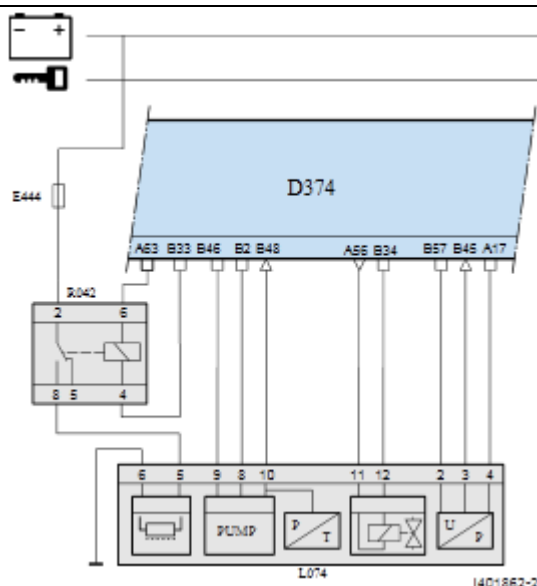
I402235

Boost temperature sensor (F804)



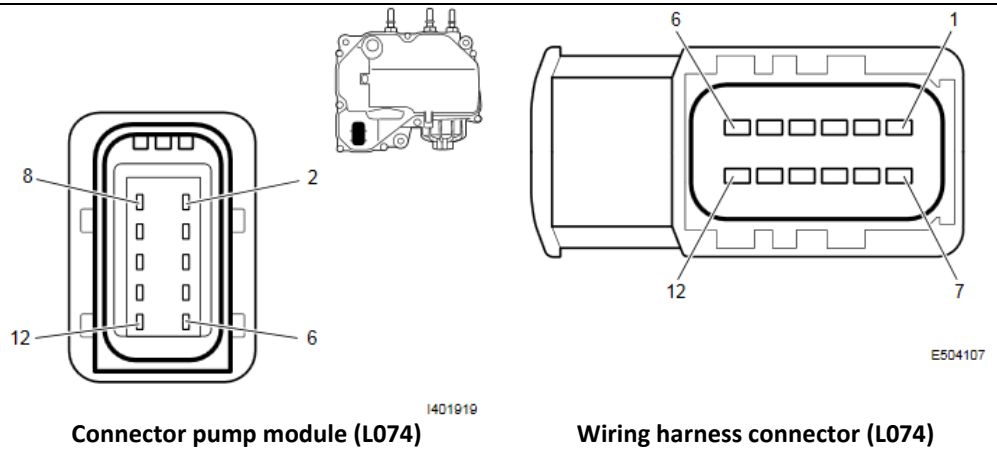
I402259

	Coolant temperature sensor (F566)  1402269
Diagnostic condition	The engine must be switched off for a period of 10 hours before this diagnostic will run. This diagnostic runs when the ignition is keyed on after this 10-hour period.
Set condition of fault code	The EAS-3 ECU (D374) detects that the pump module temperature differs from the coolant temperature sensor (F566) and the boost temperature sensor (F804) by more than 40°C [104°F] when the key is initially switched on.
Reset condition of fault code	This DTC changes to inactive as soon as the diagnostic runs and passes.
Electrical diagram(s)	DEF pump module (L074)

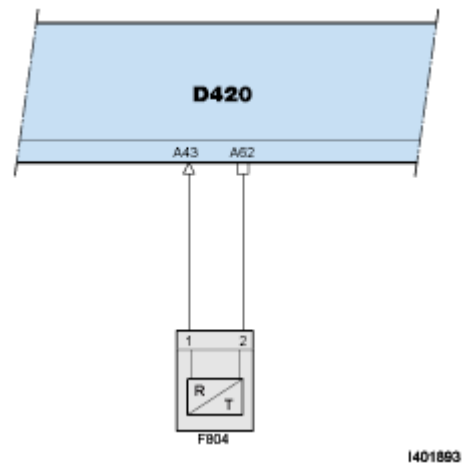


D374 EAS-3 ECU
E444 Fuse, EAS 2nd
L074 Pump module
R042 Pump heater relay

D374	L074	R042	Function
A17	4		Ground, DEF pressure sensor
A56	11		Signal, reverting valve
A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground heater element
	5	8	Power supply, heater element



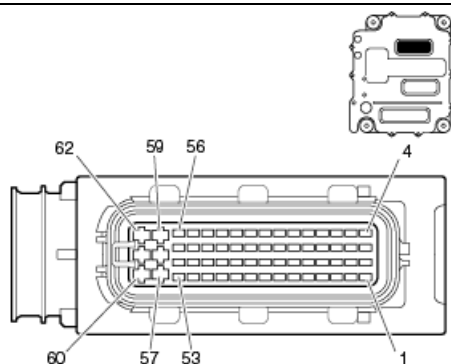
Boost temperature sensor (F804)



D420 PCI ECU

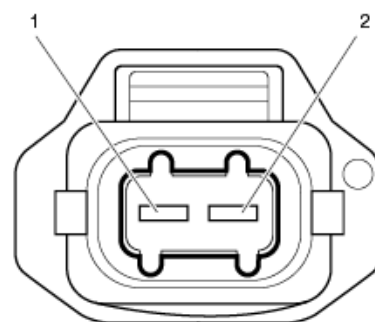
F804 Boost temperature sensor

D420	F804	Function
A43	1	Signal, boost temperature
A62	2	Ground



E504123

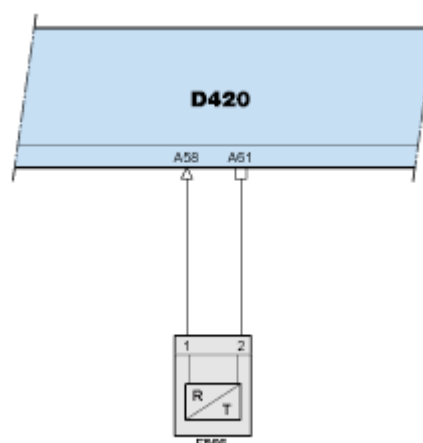
Wiring harness connector D420.A front view



E504117

Wiring harness connector F804 front view

Coolant temperature sensor (F566)

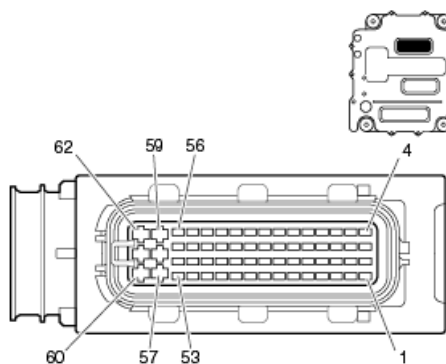


I401896

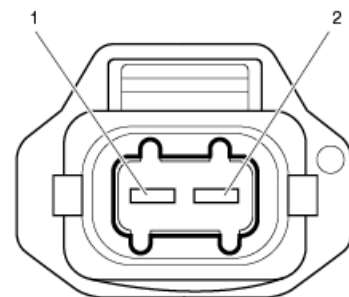
D420 PCI ECU

F566 coolant temperature sensor

D420	F566	Function
A58	1	Signal, coolant temperature
A61	2	Ground



E504123



E504117

	Wiring harness connector D420.A front view Wiring harness connector F566 front view																								
	 Handle connectors and pins with care and use matching measuring probes.																								
Technical data	DEF pump module (L074) Component & wiring check, DEF pressure sensor Preparation - Key on the ignition - Disconnect connector L074 - Measure on connector L074 <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>4</td><td>4.75–5.25 V</td><td></td></tr></table> Component check, heater element Preparation - Key off the ignition - Disconnect connector L074 - Measure on the pump module (L074) <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>5</td><td>6</td><td>1.5 Ω ± 0.5 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table> Component check, reverting valve Preparation - Key on the ignition - Disconnect connector L074 - Measure on the pump module (L074) <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>11</td><td>12</td><td>6.75 Ω ± 2 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	4	4.75–5.25 V		Pin (+ probe)	Pin (- probe)	Value	Additional information	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]	Pin (+ probe)	Pin (- probe)	Value	Additional information	11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
2	4	4.75–5.25 V																							
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]																						
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]																						

Boost temperature sensor (F804)

Component check, boost temperature sensor (F804)

Preparation

- Key off the ignition
- Disconnect connector F804
- Measure on the component connector F804

Pin (+ probe)	Pin (- probe)	Value	Additional information
1	2	5248–5732 Ω	Resistance value at 0°C [32°F]
		2334–2505 Ω	Resistance value at 20°C [68°F]
		1133–1198 Ω	Resistance value at 40°C [104°F]
		593–619 Ω	Resistance value at 60°C [140°F]
		331–341 Ω	Resistance value at 80°C [176°F]
		195–199 Ω	Resistance value at 100°C [212°F]

Component & circuit check, ECU (D420)

Preparation

- Key off the ignition
- Disconnect connector F804
- Measure on the front side of wiring harness connector F804

Pin (+ probe)	Pin (- probe)	Value	Additional information
1	2	5V	Ignition keyed on

Coolant temperature sensor (F566)

Component check, coolant temperature sensor (F566)

Preparation

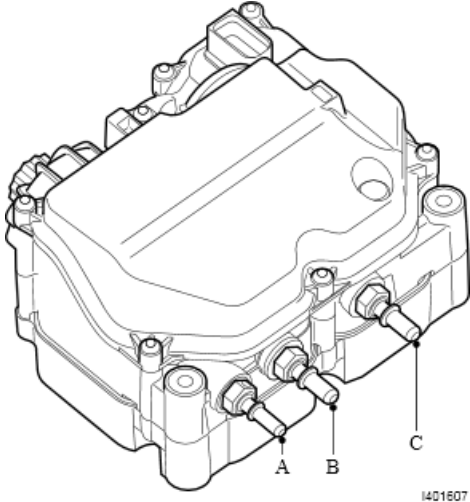
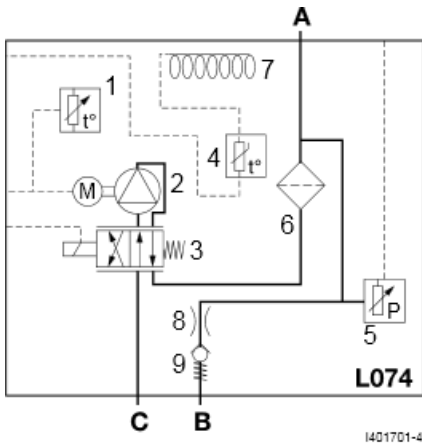
- Key off the ignition

	• Disconnect connector F566 • Measure on the component connector F566 <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td rowspan="8">1</td><td rowspan="8">2</td><td>14936–15961 Ω</td><td>Resistance value at -20°C [-4°F]</td></tr><tr><td>5727–6056 Ω</td><td>Resistance value at 0°C [32°F]</td></tr><tr><td>2439–2557 Ω</td><td>Resistance value at 20°C [68°F]</td></tr><tr><td>1151–1197 Ω</td><td>Resistance value at 40°C [104°F]</td></tr><tr><td>585–604 Ω</td><td>Resistance value at 60°C [140°F]</td></tr><tr><td>318–327 Ω</td><td>Resistance value at 80°C [176°F]</td></tr><tr><td>185–188 Ω</td><td>Resistance value at 100°C [212°F]</td></tr><tr><td>111–114 Ω</td><td>Resistance value at 120°C [248°F]</td></tr></table> Component & circuit check, ECU (D420) Preparation • Key off the ignition • Disconnect connector F566 • Measure on the front side of wiring harness connector F566 <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>1</td><td>2</td><td>5V</td><td>Ignition keyed on</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	1	2	14936–15961 Ω	Resistance value at -20°C [-4°F]	5727–6056 Ω	Resistance value at 0°C [32°F]	2439–2557 Ω	Resistance value at 20°C [68°F]	1151–1197 Ω	Resistance value at 40°C [104°F]	585–604 Ω	Resistance value at 60°C [140°F]	318–327 Ω	Resistance value at 80°C [176°F]	185–188 Ω	Resistance value at 100°C [212°F]	111–114 Ω	Resistance value at 120°C [248°F]	Pin (+ probe)	Pin (- probe)	Value	Additional information	1	2	5V	Ignition keyed on
Pin (+ probe)	Pin (- probe)	Value	Additional information																												
1	2	14936–15961 Ω	Resistance value at -20°C [-4°F]																												
		5727–6056 Ω	Resistance value at 0°C [32°F]																												
		2439–2557 Ω	Resistance value at 20°C [68°F]																												
		1151–1197 Ω	Resistance value at 40°C [104°F]																												
		585–604 Ω	Resistance value at 60°C [140°F]																												
		318–327 Ω	Resistance value at 80°C [176°F]																												
		185–188 Ω	Resistance value at 100°C [212°F]																												
		111–114 Ω	Resistance value at 120°C [248°F]																												
Pin (+ probe)	Pin (- probe)	Value	Additional information																												
1	2	5V	Ignition keyed on																												
Possible causes	• A malfunctioning pump module temperature sensor. • Damaged wiring of the pump module temperature sensor. • Malfunctioning boost temperature sensor (F804). • Malfunctioning coolant temperature sensor (F566). The use of external heaters on the engine block, inlet manifold or coolant system.																														
Additional information	The DEF temperature sensor is part of the pump module (L074) and cannot be replaced separately.																														
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data.																														

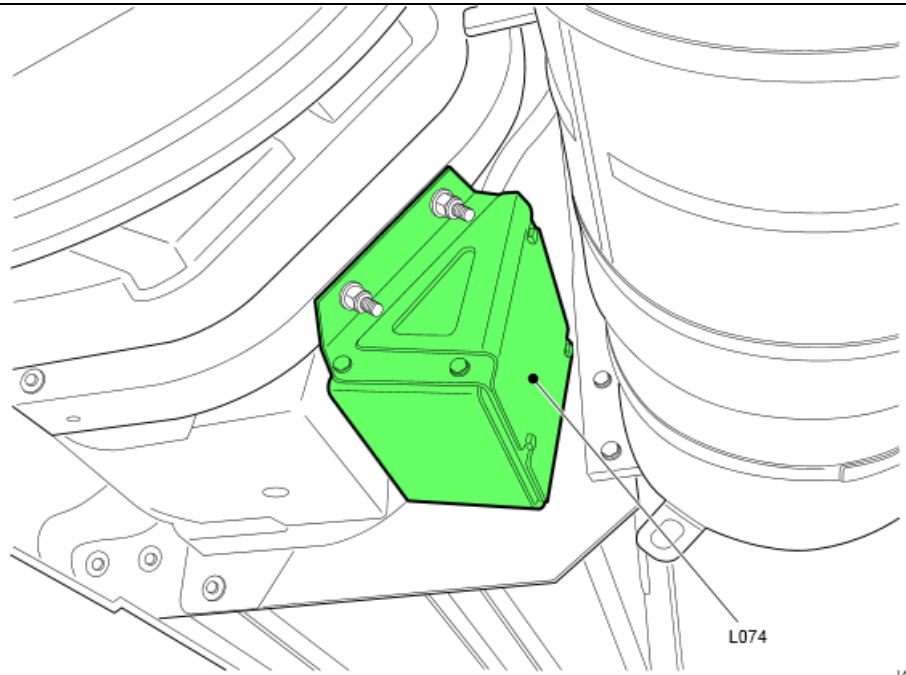
	- It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.						
	<table><tr><td>Step 1</td><td>Step ID 3906a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table>	Step 1	Step ID 3906a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.		
	Step 1	Step ID 3906a	SRT				
	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.						
	<table><tr><td>Step 2</td><td>Step ID 3906b</td><td>SRT</td></tr><tr><td colspan="3"> Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: - Supply and signal voltages (12V). - Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? - No: Proceed to step 3. - Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step 2 in the troubleshooting process. </td></tr></table>	Step 2	Step ID 3906b	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: - Supply and signal voltages (12V). - Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? - No: Proceed to step 3. - Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step 2 in the troubleshooting process.		
Step 2	Step ID 3906b	SRT					
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: - Supply and signal voltages (12V). - Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? - No: Proceed to step 3. - Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step 2 in the troubleshooting process.							
<table><tr><td>Step 3</td><td>Step ID 3906C</td><td>SRT</td></tr><tr><td colspan="3">Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 3	Step ID 3906C	SRT	Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.			
Step 3	Step ID 3906C	SRT					
Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.							
Verification Drive Cycle	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.						

Back to Index

P3907

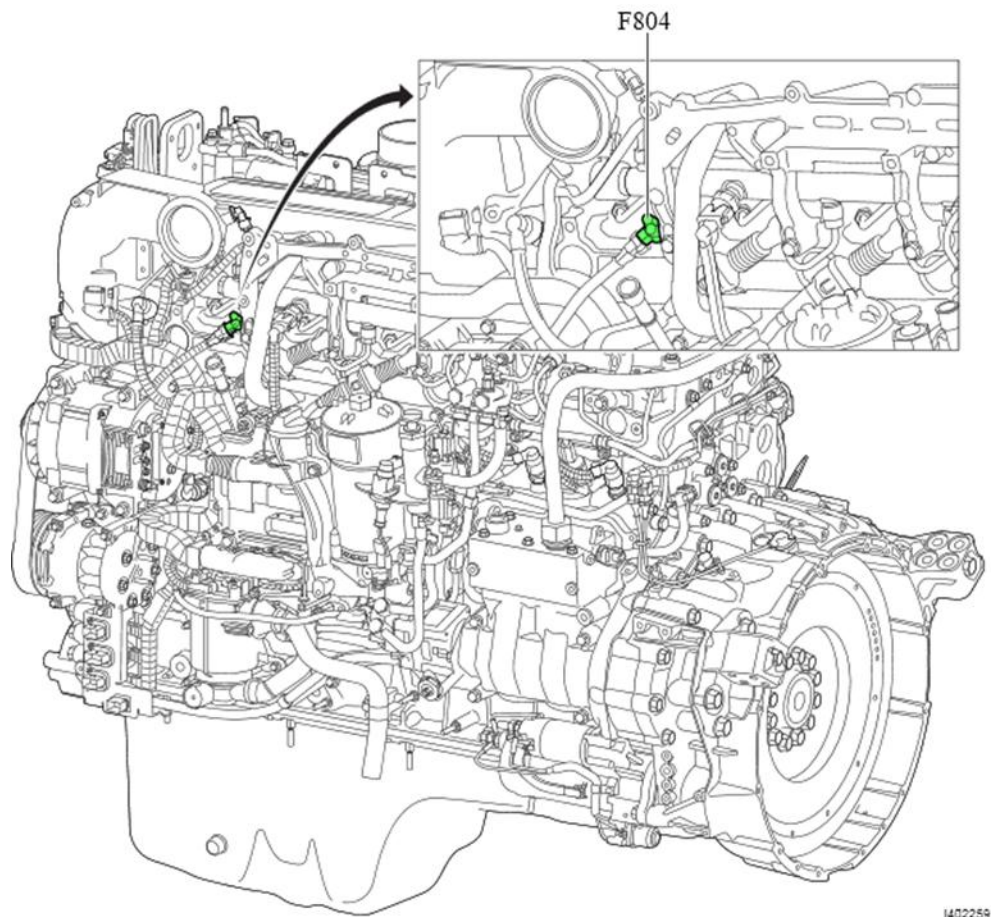
Code number	P3907
Fault code description	Pump module temperature – Malfunction on sensor
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group - None Freeze frame type -Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated. DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to

	the DEF dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature Switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter • The DEF is filtered before it is pumped into the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump. • Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve • The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.
Location of component(s)	DEF pump module (L074)

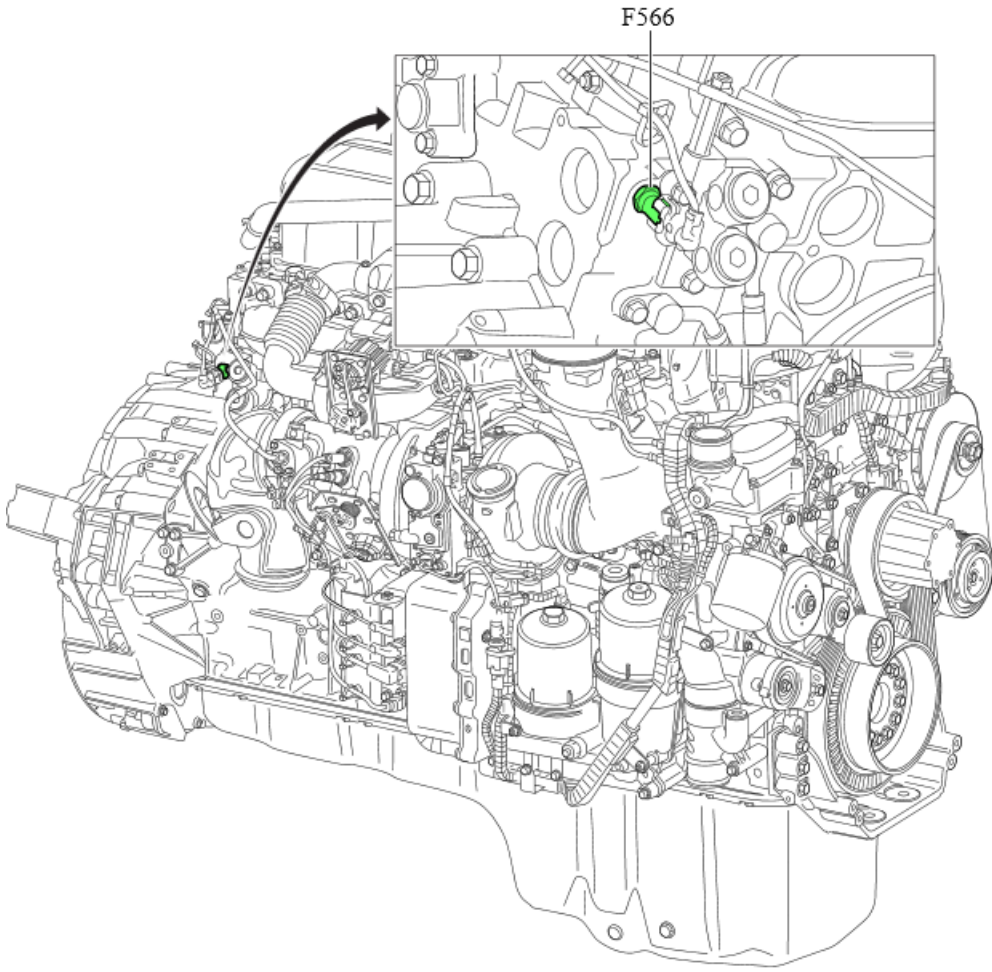


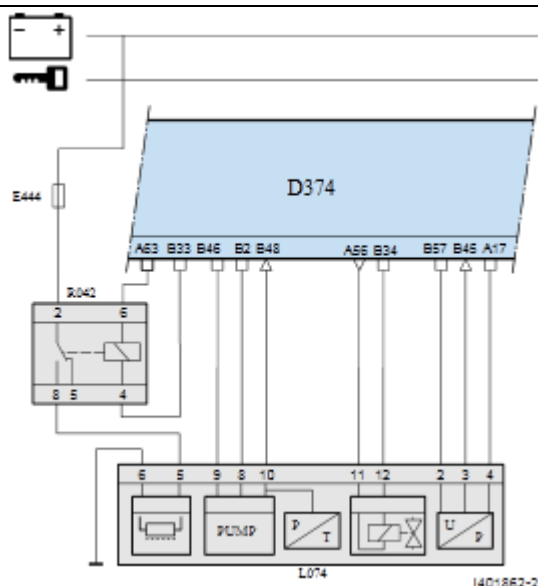
I402235

Boost temperature sensor (F804)



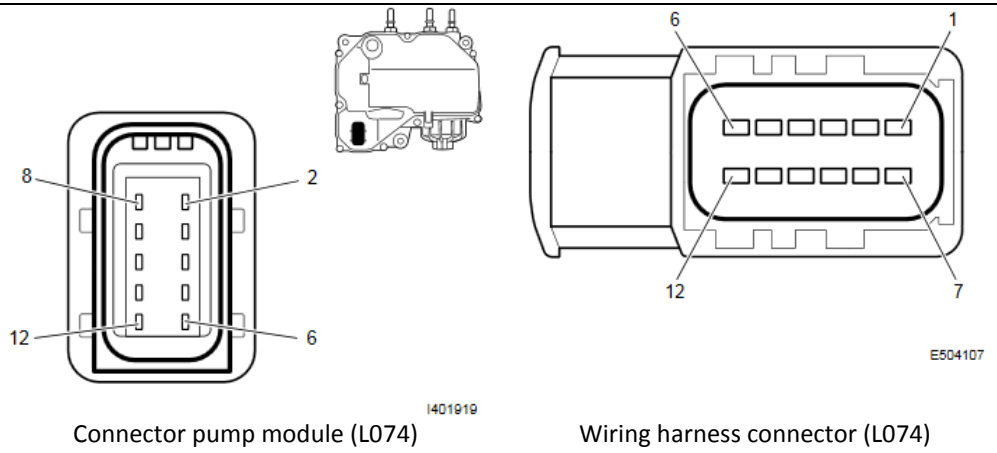
I402259

	Coolant temperature sensor (F566)  1402269
Diagnostic condition	The engine must be switched off for a period of 10 hours before this diagnostic will run. This diagnostic runs when the ignition is keyed on after this 10-hour period.
Set condition of fault code	The EAS-3 ECU (D374) detects that the pump module heater temperature differs from the coolant temperature sensor (F566) and the boost pressure sensor (F802) by more than 40°C [104°F] when the key is initially switched on.
Reset condition of fault code	This DTC changes to inactive as soon as the diagnostic runs and passes.
Electrical diagram(s)	DEF pump module (L074)

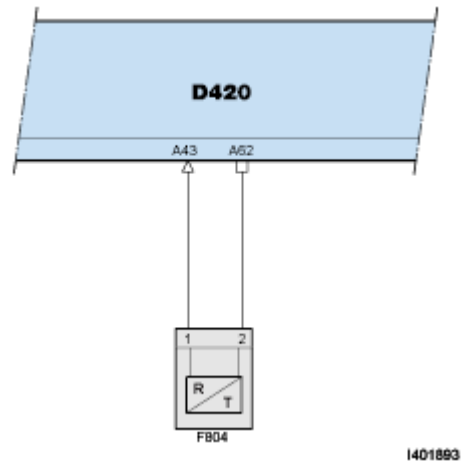


D374 EAS-3 ECU
 E444 Fuse, EAS 2nd
 L074 Pump module
 R042 Pump heater relay

D374	L074	R042	Function
A17	4		Ground, DEF pressure sensor
A56	11		Signal, reverting valve
A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground heater element
	5	8	Power supply, heater element



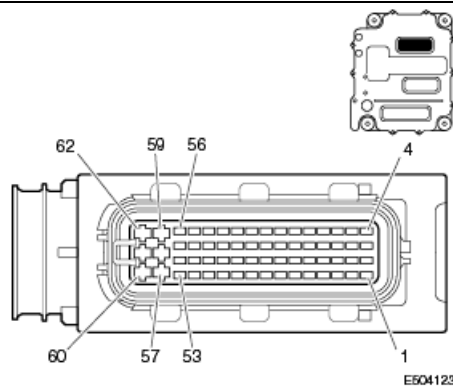
Boost temperature sensor (F804)



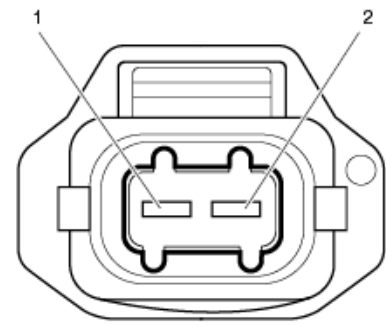
D420 PCI ECU

F804 Boost temperature sensor

D420	F804	Function
A43	1	Signal, boost temperature
A62	2	Ground

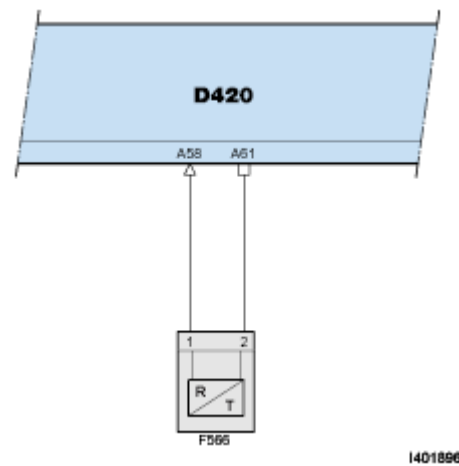


Wiring harness connector D420.A front view



Wiring harness connector F804 front view

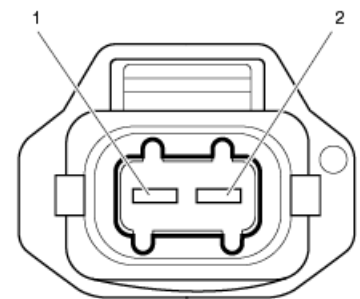
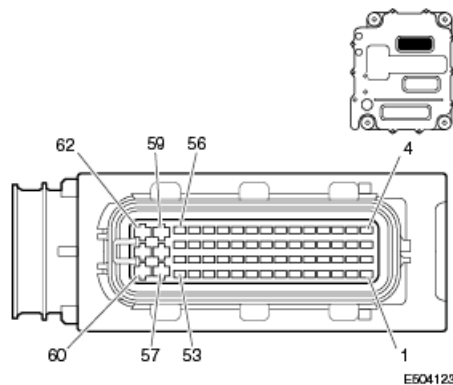
Coolant temperature sensor (F566)



D420 PCI ECU

F566 coolant temperature sensor

D420	F566	Function
A58	1	Signal, coolant temperature
A61	2	Ground



E504123

E504117

	Wiring harness connector D420.A front view Wiring harness connector F566 front view i Handle connectors and pins with care and use matching measuring probes.																				
Technical data	DEF pump module (L074) Component & wiring check, DEF pressure sensor Preparation - Key on the ignition - Disconnect connector L074 - Measure on connector L074 <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>4</td><td>4.75–5.25 V</td><td></td></tr></table> Component check, heater element Preparation - Key off the ignition - Disconnect connector L074 - Measure on the pump module (L074) <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>5</td><td>6</td><td>1.5 Ω ± 0.5 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table> Component check, reverting valve Preparation - Key on the ignition - Disconnect connector L074 - Measure on the pump module (L074) <table><tr><th>Pin (+)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	4	4.75–5.25 V		Pin (+ probe)	Pin (- probe)	Value	Additional information	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]	Pin (+)	Pin (- probe)	Value	Additional information
Pin (+ probe)	Pin (- probe)	Value	Additional information																		
2	4	4.75–5.25 V																			
Pin (+ probe)	Pin (- probe)	Value	Additional information																		
5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]																		
Pin (+)	Pin (- probe)	Value	Additional information																		

probe)			
11	12	6.75 $\Omega \pm 2 \Omega$	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Boost temperature sensor (F804)

Component check, boost temperature sensor (F804)

Preparation

- Key off the ignition
- Disconnect connector F804
- Measure on the component connector F804

Pin (+ probe)	Pin (- probe)	Value	Additional information
1	2	5248–5732 Ω	Resistance value at 0°C [32°F]
		2334–2505 Ω	Resistance value at 20°C [68°F]
		1133–1198 Ω	Resistance value at 40°C [104°F]
		593–619 Ω	Resistance value at 60°C [140°F]
		331–341 Ω	Resistance value at 80°C [176°F]
		195–199 Ω	Resistance value at 100°C [212°F]

Component & circuit check, ECU (D420)

Preparation

- Key off the ignition
- Disconnect connector F804
- Measure on the front side of wiring harness connector F804

Pin (+ probe)	Pin (- probe)	Value	Additional information
1	2	5V	Ignition keyed on

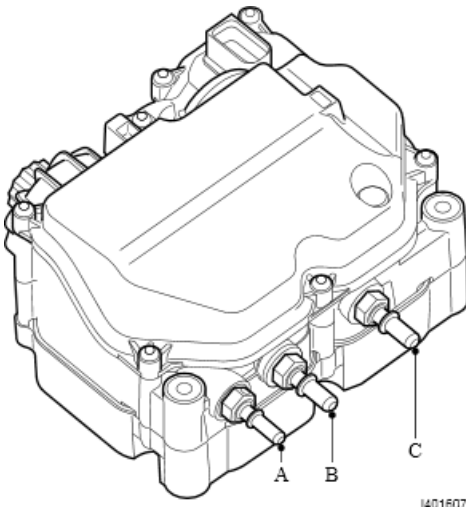
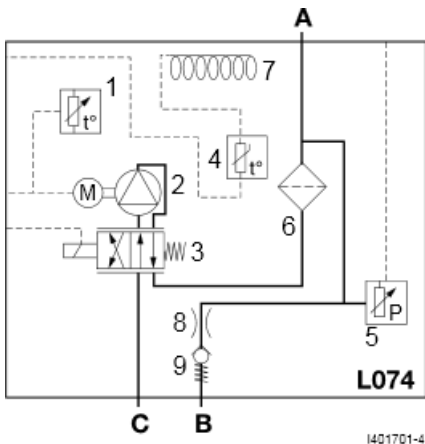
Coolant temperature sensor (F566)

Component check, coolant temperature sensor (F566)

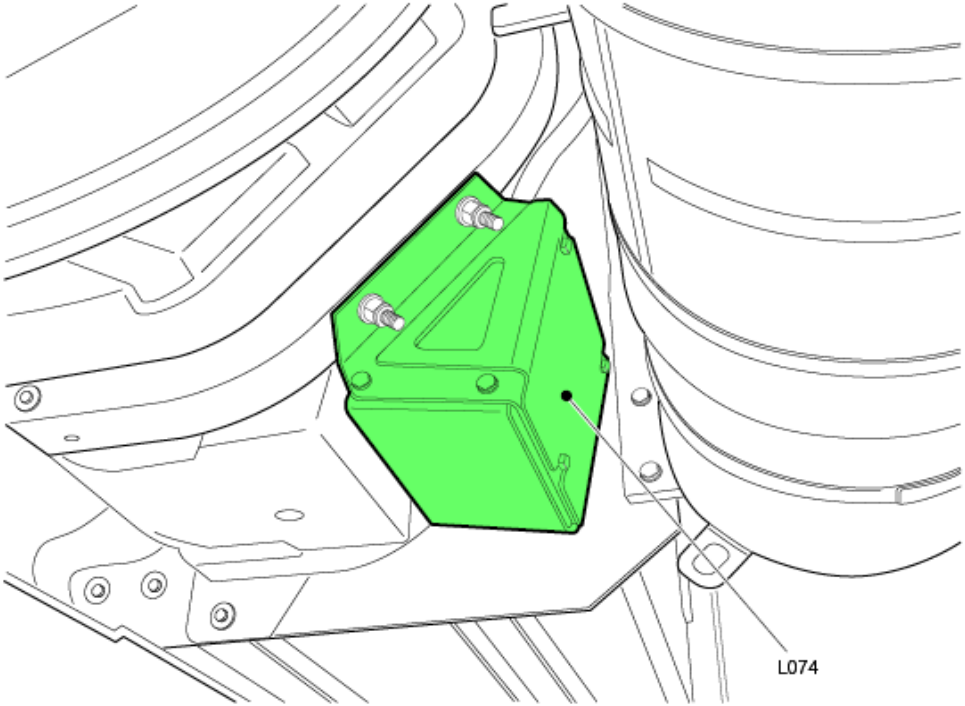
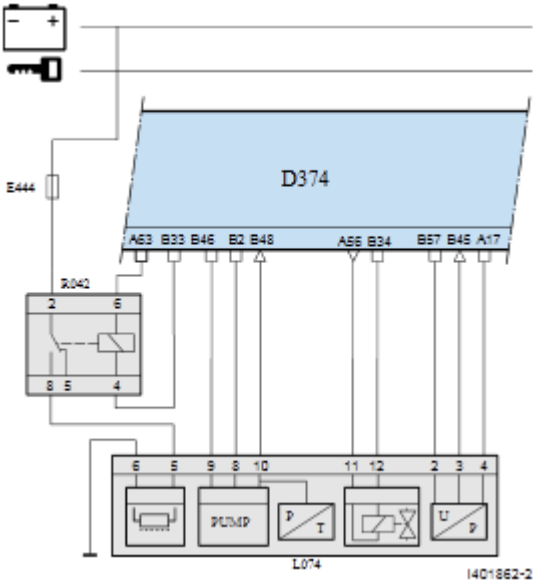
Preparation

	• Key off the ignition • Disconnect connector F566 • Measure on the component connector F566 <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td rowspan="8">1</td><td rowspan="8">2</td><td>14936–15961 Ω</td><td>Resistance value at -20°C [-4°F]</td></tr><tr><td>5727–6056 Ω</td><td>Resistance value at 0°C [32°F]</td></tr><tr><td>2439–2557 Ω</td><td>Resistance value at 20°C [68°F]</td></tr><tr><td>1151–1197 Ω</td><td>Resistance value at 40°C [104°F]</td></tr><tr><td>585–604 Ω</td><td>Resistance value at 60°C [140°F]</td></tr><tr><td>318–327 Ω</td><td>Resistance value at 80°C [176°F]</td></tr><tr><td>185–188 Ω</td><td>Resistance value at 100°C [212°F]</td></tr><tr><td>111–114 Ω</td><td>Resistance value at 120°C [248°F]</td></tr></table> Component & circuit check, ECU (D420) Preparation • Key off the ignition • Disconnect connector F566 • Measure on the front side of wiring harness connector F566 <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>1</td><td>2</td><td>5V</td><td>Ignition keyed on</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	1	2	14936–15961 Ω	Resistance value at -20°C [-4°F]	5727–6056 Ω	Resistance value at 0°C [32°F]	2439–2557 Ω	Resistance value at 20°C [68°F]	1151–1197 Ω	Resistance value at 40°C [104°F]	585–604 Ω	Resistance value at 60°C [140°F]	318–327 Ω	Resistance value at 80°C [176°F]	185–188 Ω	Resistance value at 100°C [212°F]	111–114 Ω	Resistance value at 120°C [248°F]	Pin (+ probe)	Pin (- probe)	Value	Additional information	1	2	5V	Ignition keyed on
Pin (+ probe)	Pin (- probe)	Value	Additional information																												
1	2	14936–15961 Ω	Resistance value at -20°C [-4°F]																												
		5727–6056 Ω	Resistance value at 0°C [32°F]																												
		2439–2557 Ω	Resistance value at 20°C [68°F]																												
		1151–1197 Ω	Resistance value at 40°C [104°F]																												
		585–604 Ω	Resistance value at 60°C [140°F]																												
		318–327 Ω	Resistance value at 80°C [176°F]																												
		185–188 Ω	Resistance value at 100°C [212°F]																												
		111–114 Ω	Resistance value at 120°C [248°F]																												
Pin (+ probe)	Pin (- probe)	Value	Additional information																												
1	2	5V	Ignition keyed on																												
Possible causes	• A malfunctioning pump module heater temperature sensor. • Damaged wiring of the pump module heater temperature sensor. • Malfunctioning boost temperature sensor (F804). • Malfunctioning coolant temperature sensor (F566). The use of external heaters on the engine block, inlet manifold or coolant system.																														
Additional information	The DEF heater temperature sensor is part of the pump module (L074) and cannot be replaced separately.																														
Diagnostic Step-by-Step																															
	Back to Index																														

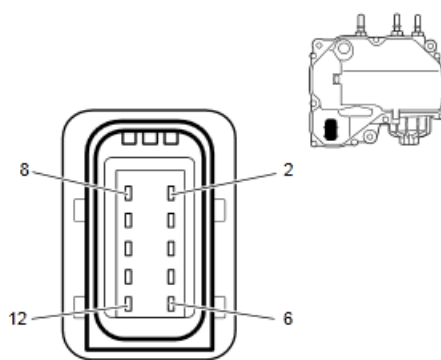
P3908

Code number	P3908
Fault code description	Pump module temperature – Malfunction on sensor
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  Temperature sensor • The temperature sensor measures the temperature inside the pump module

	(L074). - The temperature signal is used to determine whether the pump module must be started or heated. DEF pump motor - The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve. - The DEF pump is controlled with a duty cycle. - The pump speed depends on the quantity of DEF to be injected. - The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve - This valve is engaged during the purge cycle. - The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature Switch, heater element - The temperature sensor measures the temperature of the heater element. - This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor - The pressure sensor measures the pressure of the DEF after the DEF filter. - The measured pressure is used by the ECU to control the DEF pump speed. DEF filter - The DEF is filtered before it is pumped into the pump module. Heater element, pump module - The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump. - Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C. - Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve - The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF. Orifice - The orifice in the return line assists the pump in maintaining the operating pressure. The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.

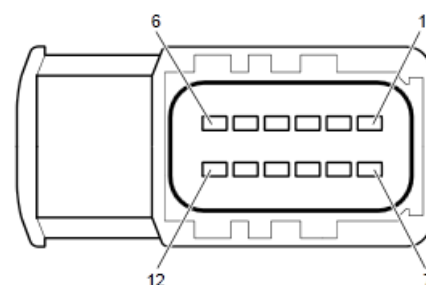
Location of component(s)	
Diagnostic condition	This DTC is set when the ignition is keyed on and before the pump module is primed.
Set condition of fault code	A short circuit to supply of the sensor or wiring is detected.
Reset condition of fault code	This DTC changes to inactive after the diagnostic runs and passes.
Electrical diagram(s)	 D374 EAS-3 ECU E444 Fuse EAS 2nd L074 Pump module R042 Pump heater relay

D374	L074	R042	Function
A17	4		Ground, DEF pressure sensor
A56	11		Signal, reverting valve
A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground, heater element
	5	8	Power supply, heater element



I401919

Connector, pump module (L074)



E504107

Wiring harness connector (L074)



Handle connectors and pins with care and use matching measuring probes.

Technical data

Component & wiring check, DEF pressure sensor

Preparation

- Switch on the ignition.
- Disconnect connector L074.
- Measure on connector L074.

	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>4</td><td>4.75–5.25 V</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	4	4.75–5.25 V	
Pin (+ probe)	Pin (- probe)	Value	Additional information						
2	4	4.75–5.25 V							
	Component check, heater element Preparation • Switch off the ignition. • Disconnect connector L074. • Measure on the pump module (L074). <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>5</td><td>6</td><td>1.5 Ω ± 0.5 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]
Pin (+ probe)	Pin (- probe)	Value	Additional information						
5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]						
	Component check, reverting valve Preparation • Switch off the ignition. • Disconnect connector L074. • Measure on the pump module (L074). <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>11</td><td>12</td><td>6.75 Ω ± 2 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]
Pin (+ probe)	Pin (- probe)	Value	Additional information						
11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]						
Possible causes	• Short circuit to supply. • Malfunctioning of the internal temperature sensor.								
Additional information	The temperature sensor is part of the pump module (L074) and cannot be replaced separately.								
Diagnostic Step-by-Step	 The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.  ▪ This troubleshooting procedure is based on the assumption that supply power and ground to the PCI are functioning properly. ▪ Disconnecting the PCI connectors during the troubleshooting process								

will result in multiple errors.

- Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes.
- It is necessary to use DAVIE to clear all current DTCs from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status.
- This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided.

Step 1 Confirm DTC Status

Step 1A Perform a key-cycle

Action

1. Switch the ignition to OFF for at least 15 seconds, then switch the ignition to ON again.

Is P3908 active?

Yes

No

Refer to step 3A to clear all current DTCs and run the corresponding repair verification cycles and rechecks, to determine if this DTC was an intermittent or random occurrence.

Go to step 2A

If this DTC is still present, go to step 2A

Step 2 DEF pump module (L074) Checks

Step 2A Visual inspection, DEF pump module (L074)

Action

1. Switch off the ignition.
2. Visually inspect the associated component connections and wiring for any of the following:
 - Damaged or loose connectors
 - Bent, broken, corroded or loose connector pins
 - Moisture or dirt in the connections
 - Missing or damaged connector seals
 - Damage to the wire harness or insulation
 - The correct parts are not installed

	- Damaged connector locking tab - ECU connections are damaged or disconnected - Batteries not fully charged or contacts are not tight	
	Was there evidence of any of the above?	
	Yes	No
	Correct any issues found. If the DEF pump module (L074) is found to be damaged or broken, replace it. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.	
	If this DTC is still present, go to step 2B	Go to step 2B
	Step 2B Electrical checks, resistance, DEF pump wiring harness	
	 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.	
	Action - Switch off the ignition. - Disconnect the DEF pump module from the vehicle wiring harness. - Disconnect the vehicle wiring harness from the EAS-3 ECU. - Measure resistance between pin 10 on the L074 connector and pin B48 on the EAS-3 ECU connector.	
	Is the measured value less than 10 Ω?	
	Yes	No
		An open circuit (signal, DEF pump motor) has been detected in the vehicle wiring harness. Replace the vehicle harness. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.
	Go to step 2C	If this DTC is still present, go to step 2C
Step 2C Electrical checks, resistance, DEF pump wiring harness		



Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.

Action

1. Switch off the ignition.
2. Disconnect the DEF pump module from the vehicle wiring harness.
3. Disconnect the vehicle wiring harness from the EAS-3 ECU.
4. Measure resistance between pin 8 on the L074 connector and pin B2 on the EAS-3 ECU connector.

Is the measured value less than 10 Ω ?

Yes

No

An open circuit (ground, DEF pump motor) has been detected in the vehicle wiring harness.
Replace the vehicle harness.
Refer to step 3A to perform the corresponding repair verification cycles and rechecks.

Go to step 2D

If this DTC is still present, go to step 2D

Step 2D Electrical checks, resistance, DEF pump wiring harness



Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.

Action

1. Switch off the ignition.
2. Disconnect the DEF pump module from the vehicle wiring harness.
3. Disconnect the vehicle wiring harness from the EAS-3 ECU.
4. Measure resistance between pin B48 on the EAS-3 ECU connector and all other pins in the EAS-3 ECU connector.

Is the measured value greater than 100k Ω ?

Yes

No

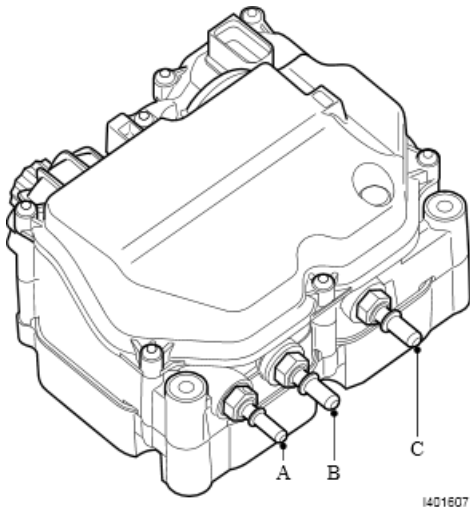
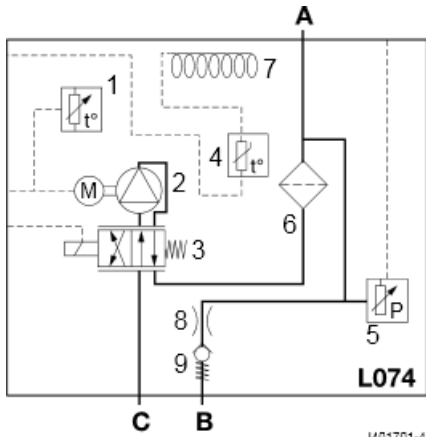
A pin-to-pin short circuit has been detected in the vehicle wiring harness. Replace the vehicle harness.

		Refer to step 3A to perform the corresponding repair verification cycles and rechecks.
	Go to step 2E	If this DTC is still present, go to step 2E
	Step 2E Electrical checks, resistance, DEF pump wiring harness	
	 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.	
	Action 1. Switch off the ignition. 2. Disconnect the DEF pump module from the vehicle wiring harness. 3. Disconnect the vehicle wiring harness from the EAS-3 ECU. 4. Measure resistance between pin 10 on the L074 connector and ground.	
	Is the measured value greater than 100k Ω ?	
	Yes	No
	Contact the PACCAR Engine Support Call Center for authorization to replace the EAS-3 ECU.	A short circuit to ground has been detected in the vehicle wiring harness. Replace the vehicle harness. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.
	Go to step 3A	If all steps have been completed and this DTC is still present, contact the PACCAR Engine Support Center for further assistance.
	Step 3 Repair Verification	
	Step 3A Repair verification cycles	
	Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the DTC or system being investigated.  Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to "Clear all" current DTCs from the PCI and EAS-3 ECUs.	

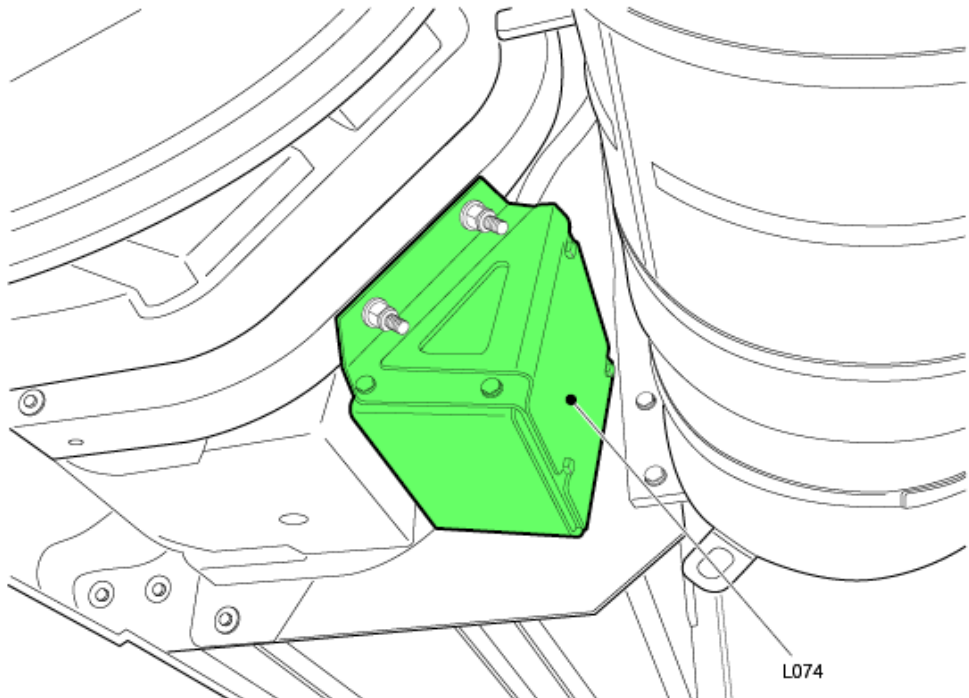
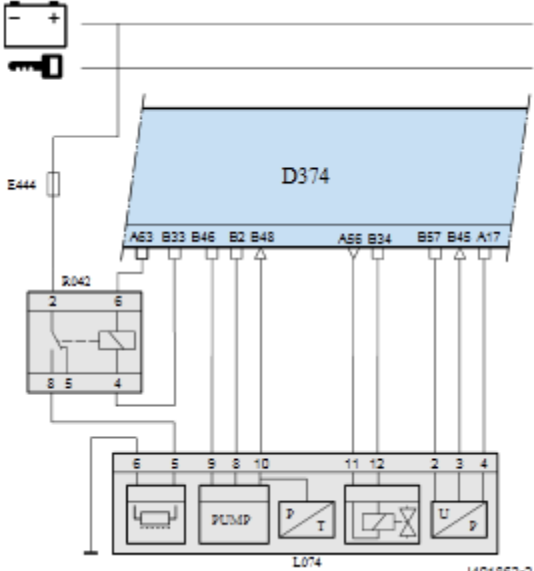
	Action	
	Start-up With the brakes set, start the engine and allow it to idle for 2 minutes.	
	Were the identified repair verification cycles able to be completed?	
	Yes	No
		Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.
	Go to step 3B	Go to step 3B
	Step 3B DAVIE Diagnostics, Quick Check, OBD Readiness Monitors	
	Action	
	Use DAVIE Diagnostics to perform a Quick Check for current DTCs to determine whether the actions taken have cleared this DTC. - Confirm that the corresponding OBD Monitor Readiness Status value is displayed as “Ready.” A status of Ready indicates that the corresponding OBD monitor has run successfully and the problem has been resolved—no further action. If the displayed status is “Not ready,” continue to action step 2. - View the DTC overview display, and confirm that P3908 has been cleared.	
	Is the related OBD Monitor Readiness Status set to “Ready.” Or, has P3908 been cleared?	
	Yes	No
	Problem resolved. No further actions.	Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present: - continue to operate the truck to extend the run time, allowing the corresponding OBD monitor sufficient time to complete - or, return to step 3A and perform this

	repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine Support Center for further assistance.  Contacting the PACCAR Engine Support Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center.
	Back to Index

P3909

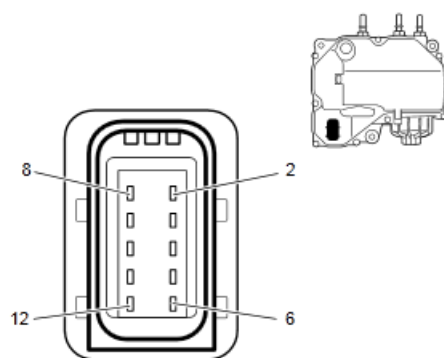
Code number	P3909
Fault code description	Pump module heater - Voltage too high or short circuit to supply
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated.

	DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature Switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter • The DEF is filtered before it is pumped into the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump. • Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve • The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.

Location of component(s)	
Diagnostic condition	This diagnostic runs continuously when the ignition is on and the pump heater is not activated.
Set condition of fault code	The EAS-3 ECU (D374) detects that the pump module heater is activated when not commanded on.
Reset condition of fault code	This DTC changes to inactive after the diagnostic runs and passes.
Electrical diagram(s)	 D374 EAS-3 ECU E444 Fuse EAS 2nd L074 Pump module

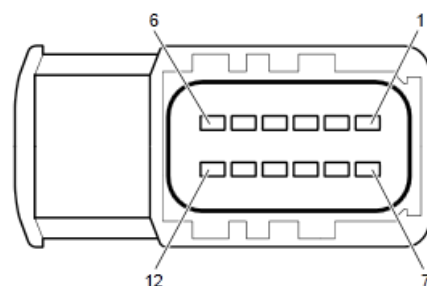
R042 Relay, pump module heater

D374	L074	R042	Function
A17	4		Ground, DEF pressure sensor
A56	11		Signal, reverting valve
A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground, heater element
	5	8	Power supply, heater element



I401919

Connector, pump module (L074)



E504107

Wiring harness connector (L074)



Handle connectors and pins with care and use matching measuring probes.

Technical data

Component & wiring check, DEF pressure sensor

Preparation

- Switch on the ignition.

	• Disconnect connector L074. • Measure on connector L074.								
	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>4</td><td>4.75–5.25 V</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	4	4.75–5.25 V	
	Pin (+ probe)	Pin (- probe)	Value	Additional information					
	2	4	4.75–5.25 V						
	Component check, heater element								
	Preparation								
	• Switch off the ignition. • Disconnect connector L074. • Measure on the pump module (L074).								
	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>5</td><td>6</td><td>1.5 Ω ± 0.5 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]
	Pin (+ probe)	Pin (- probe)	Value	Additional information					
	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]					
Component check, reverting valve									
Preparation									
• Switch off the ignition. • Disconnect connector L074. • Measure on the pump module (L074).									
<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>11</td><td>12</td><td>6.75 Ω ± 2 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]	
Pin (+ probe)	Pin (- probe)	Value	Additional information						
11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]						
Possible causes	• Short circuit to supply on pin 5 of the pump module (L074). • Pump heater relay (R042) stuck closed. • Damage to the electrical connections and/or wiring of the pump module heater. • Malfunctioning pump module (L074).								
Additional information	• Pump module heating is based on ambient temperature instead of pump module								

	temperature. • After 1 hour of engine operation or 50 miles with P3909 active, P1518 becomes active (25% torque derate). • After 4 hours of engine operation or 200 miles with P3909 active, P1518 stays active (40% torque derate). • After 4 hours of engine operation or 200 miles with P3909 active, P151A becomes active (5 MPH vehicle speed limit) after a: ○ key cycle, or ○ vehicle re-fuel (fuel tank volume increase > 16%), or ○ vehicle has been stationary for 1 hour.					
Diagnostic Step-by-Step	 The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.  ▪ This troubleshooting procedure is based on the assumption that supply power and ground to the PCI are functioning properly. ▪ Disconnecting the PCI connectors during the troubleshooting process will result in multiple errors. ▪ Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes. ▪ It is necessary to use DAVIE to clear all current DTCs from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status. ▪ This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided. Step 1 Investigate Related DTCs Before troubleshooting this DTC, take notice of any other active or inactive DTCs. One or multiple other DTCs could have been the cause for this DTC. <table><tr><td>Step 1A Investigate related DTCs</td></tr><tr><td>Action</td></tr><tr><td>1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs.</td></tr><tr><td>Are these or any other related DTCs active?</td></tr><tr><td>P3849; P3850; P3851; P3852; P3860; P3861; P3902; P3903; P3908</td></tr></table>	Step 1A Investigate related DTCs	Action	1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs.	Are these or any other related DTCs active?	P3849; P3850; P3851; P3852; P3860; P3861; P3902; P3903; P3908
Step 1A Investigate related DTCs						
Action						
1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs.						
Are these or any other related DTCs active?						
P3849; P3850; P3851; P3852; P3860; P3861; P3902; P3903; P3908						

	Yes		No	
	Possible problem with pump heater relay (R042). Go to the troubleshooting information for these DTCs before continuing with this procedure.			
			Go to step 1B	
	Step 1B DAVIE monitor, DEF heating components			
	Action			
	1. Use DAVIE to monitor components related to DEF heating (Power source, Emissions, Selective Catalytic Reductions (SCR), Heating).			
	Did the monitor data identify a failed component?			
	Yes		No	
	Go to step 2A for pump module (L074) troubleshooting, or step 3A for pump heater relay (R042) troubleshooting.			
		Go to step 2A		
Step 2 Pump Module (L074) Checks				
Step 2A Visual inspection, connections and wiring, pump module (L074)				
Action				
1. Visually inspect the associated component connections and wiring for any of the following:				
• Damaged or loose connectors • Bent, broken, corroded or loose connector pins • Moisture or dirt in the connections • Damage to the wire harness or insulation • The correct parts are not installed • ECU connections are damaged or disconnected • Battery not fully charged, contacts not tight • Pump module (L074) is broken or not installed correctly • Line heating relay (R026) is broken or not installed correctly • Pump heater relay (R042) is broken or not installed correctly • Tank heater valve (L076) is broken or not installed correctly				

Was there evidence of any of the above?	
Yes	No
Correct any issues found. If the pump module (L074), or pump heater relay (R042) is found to be damaged or broken, replace it. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	
If this DTC is still present, go to step 2B	Go to step 2B

Step 2B Electrical checks, resistance, pump module (L074) heater element	
	Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.
Action	
1. Confirm the resistance level as outlined in the corresponding checking data, " <u>Component check, pump module (L074).</u> "	
Are measured values within expected range?	
Yes	No
	Correct any issues found, or replace the pump module (L074) if measured values indicate an error. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.
Go to step 3A	If this DTC is still present, go to step 3A

Step 3 Pump Heating Relay (R042) Checks

Step 3A Electrical checks, resistance, pump heating relay (R042)	
	Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.
Action	
1. Switch off the ignition.	

	2. Disconnect the pump heating relay (R042) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU. 4. Measure resistance between the pin 6 and all other pins in the pump heating relay connector.	
	Is the measured value less than 100k Ω ?	
	Yes	No
	A pin-to-pin short circuit has been detected. Correct any issues found, or contact the PACCAR Engine Support Center for further assistance in diagnosing this issue and replacement of the vehicle harness. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	
	If this DTC is still present, go to step 3B	Go to step 3B
	Step 3B Electrical checks, resistance, pump heating relay (R042)	
	Action 1. Switch off the ignition. 2. Disconnect the pump heating relay (R042) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU. 4. Measure resistance between the pin 5 and all other pins in the pump heating relay connector.	
	Is the measured value less than 100k Ω ?	
	Yes	No
	A pin-to-pin short circuit has been detected. Correct any issues found, or contact the PACCAR Engine Support Center for further assistance in diagnosing this issue and replacement of the vehicle harness. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	Replace the pump module (L074). Refer to step 4A to perform the corresponding repair verification cycles and rechecks.
	Go to step 3C	If this DTC is still present, go to step 3C

Step 3C DAVIE test, Prime the system with the DEF pump



ABORTING A DAVIE-INITIATED DIAGNOSTIC TEST IS NOT RECOMMENDED.

However, if aborting a test is required, a key cycle must be performed to reset the engine ECM.

Failure to reset the engine ECM in this instance could result in personal injury or damage to the vehicle.

Action

1. Use DAVIE to perform a DEF pump module prime test as described in the maintenance procedure, test DEF dosing valve (Exhaust System(SCR)), job code J 1179 439605 033 000.

Did the test fail to complete or result in a failed state?

Yes	No
Correct any issues found. Replace the DEF pump module (074) if test results indicate a mechanical failure. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	
If all steps have been completed and this DTC is still present, contact PACCAR Engine Support Center for further assistance.	If all steps have been completed and this DTC is still present, contact PACCAR Engine Support Center for further assistance.

Step 4 Repair Verification

Step 4A Repair verification cycles

Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the DTC or system being investigated.



Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to "Clear all" current DTCs from the PCI and EAS-3 ECUs.

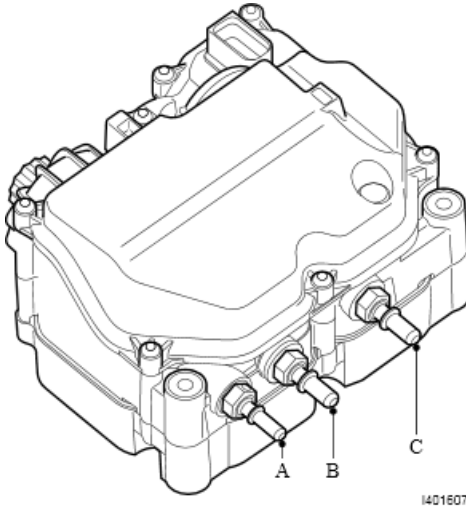
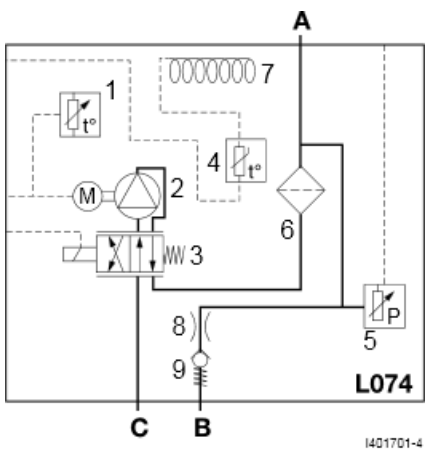
Action

1. Start-up
With the brakes set, start the engine and allow it to run at idle for 2

	minutes.	
	Were the identified repair verification cycles able to be completed?	
	Yes	No
		Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.
	Go to step 4B	Go to step 4B
Step 4B DAVIE Diagnostics, Quick Check, OBD Readiness Monitors		
Action Use DAVIE Diagnostics to perform a Quick Check for current DTCs to determine whether the actions taken have cleared this DTC. - Confirm that the corresponding OBD Monitor Readiness Status value is displayed as “Ready”. A status of Ready indicates that the corresponding OBD monitor has run successfully and the problem has been resolved—no further action. If the displayed status is “Not ready”, continue to action step 2. - View the DTC overview display, and confirm that P3909 has been cleared.		
Has P3909 been cleared?		
Yes		No
Problem resolved. No further actions.		Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present: - continue to operate the truck to extend the run time, allowing the corresponding OBD monitor sufficient time to complete - or, return to step 4A and perform this repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine

	Support Center for further assistance.
	 Contacting the PACCAR Engine Support Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center. Back to Index

P3910

Code number	P3910
Fault code description	Pump module heater - Voltage too low or short circuit to ground
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated. DEF pump motor

- The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve.
- The DEF pump is controlled with a duty cycle.
- The pump speed depends on the quantity of DEF to be injected.
- The DEF pressure does not depend on the quantity of DEF to inject.

Reverting valve

- This valve is engaged during the purge cycle.
- The DEF inside the inlet line and pressure line is pumped back into the DEF tank.

Temperature Switch, heater element

- The temperature sensor measures the temperature of the heater element.
- This switch is used to control the heater elements in the pump module and prevent them from overheating.

DEF pressure sensor

- The pressure sensor measures the pressure of the DEF after the DEF filter.
- The measured pressure is used by the ECU to control the DEF pump speed.

DEF filter

- The DEF is filtered before it is pumped into the pump module.

Heater element, pump module

- The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump.
- Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C.
- Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature.

Check valve

- The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF.

Orifice

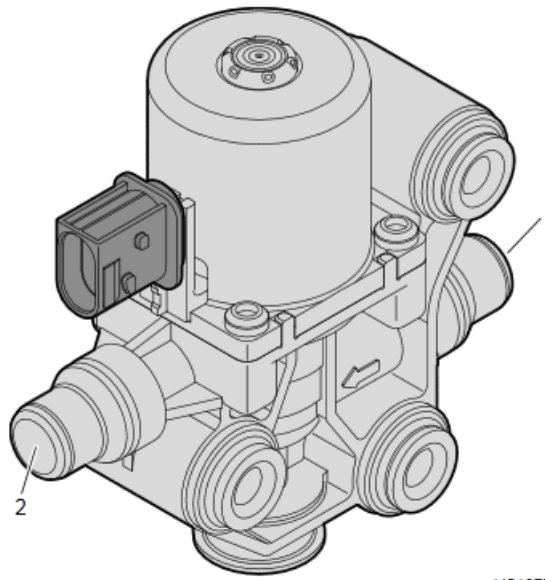
- The orifice in the return line assists the pump in maintaining the operating pressure.
- The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.

Tank heater valve (L076)

The tank heater valve controls the engine coolant flow through the DEF tank.

- The tank heater valve is actuated by a PWM signal.
- The valve is fully opened or fully closed.
- The tank heating is based on the DEF tank temperature sensor value.

- Tank heating can only be engaged if the engine coolant is higher than a programmed value.



- 1 Coolant supply
- 2 Coolant return

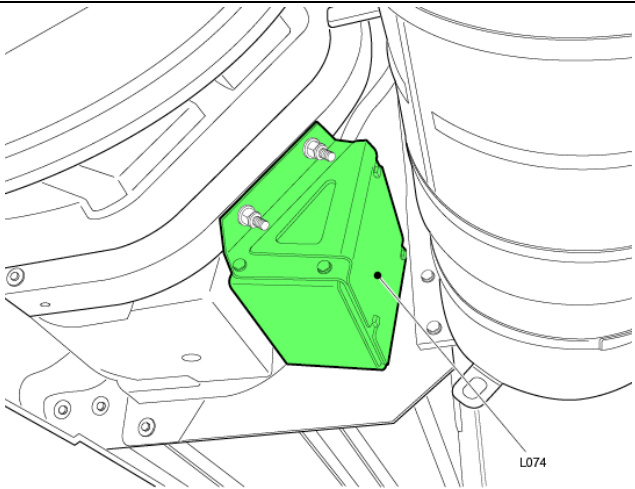
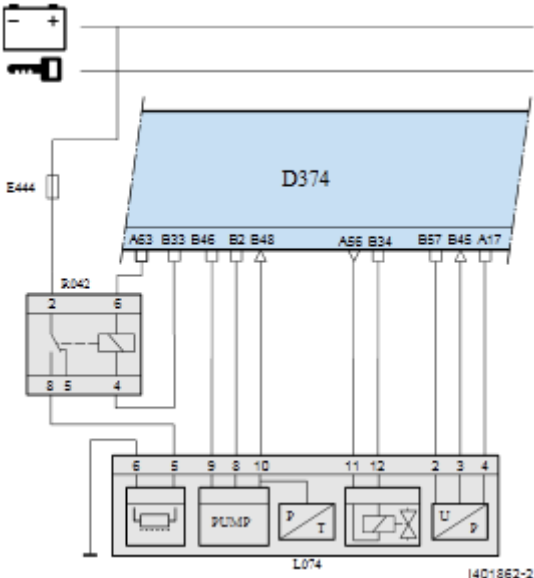
Effect on the system

- The tank is heated to prevent the DEF from freezing or to defrost the DEF.

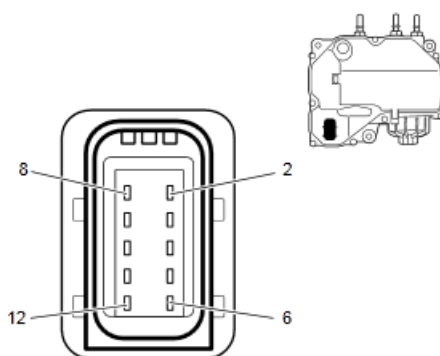
Relay, line heating (R026)

When the line heating relay is energized, voltage is supplied to the line heaters.

- The DEF lines are heated by electrical wires surrounding the lines.
- The heating wires defrost the DEF and prevent it from freezing in the lines.
- Heating the DEF lines is open-loop controlled and based on the ambient temperature.

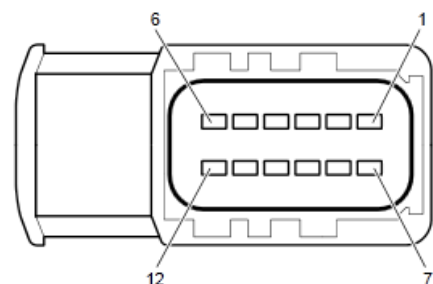
Location of component(s)											
Diagnostic condition	This diagnostic runs continuously when the ignition is on and the pump module heater is activated.										
Set condition of fault code	The EAS-3 ECU (D374) does not detect a temperature increase on the pump module heater when commanded on.										
Reset condition of fault code	This DTC changes to inactive after the diagnostic runs and passes.										
Electrical diagram(s)	 D374 EAS-3 ECU E444 Fuse EAS 2nd L074 Pump module R042 Pump heater relay <table border="1"> <thead> <tr> <th>D374</th><th>L074</th><th>R042</th><th>Function</th></tr> </thead> <tbody> <tr> <td>A17</td><td>4</td><td></td><td>Ground, DEF pressure sensor</td></tr> </tbody> </table>			D374	L074	R042	Function	A17	4		Ground, DEF pressure sensor
D374	L074	R042	Function								
A17	4		Ground, DEF pressure sensor								

A56	11		Signal, reverting valve
A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground, heater element
	5	8	Power supply, heater element



I401919

Connector, pump module (L074)



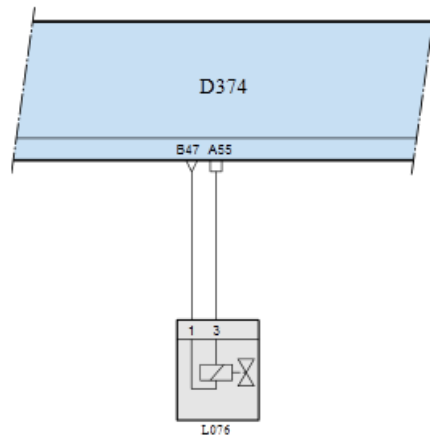
E504107

Wiring harness connector (L074)



Handle connectors and pins with care and use matching measuring probes.

Checking data, tank heater valve (L076)

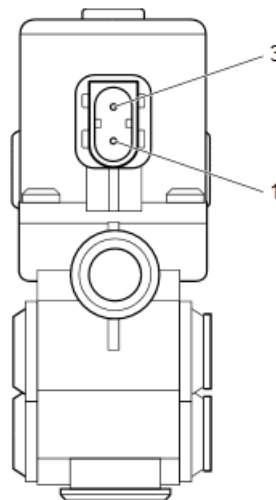


I401886-2

D374 EAS-3 ECU

L076 Tank heater valve

D374	L076	Function
B47	1	Signal, valve tank heater
B55	3	Ground, valve tank heater



I401897

Connector, pump module (L074)

Technical data

Component & wiring check, DEF pressure sensor

Preparation

- Key on the ignition
- Disconnect connector L074
- Measure on connector L074

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	4	4.75–5.25 V	

Component check, heater element

Preparation

- Key off the ignition
- Disconnect connector L074
- Measure on the pump module (L074)

Pin (+ probe)	Pin (- probe)	Value	Additional information
5	6	1.5 Ω $\pm$ 0.5 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Component check, reverting valve

Preparation

- Key on the ignition
- Disconnect connector L074
- Measure on the pump module (L074)

Pin (+ probe)	Pin (- probe)	Value	Additional information
11	12	6.75 Ω $\pm$ 2 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Component check, tank heater valve

Preparation

- Key off the ignition
- Disconnect connector L076
- Measure on the tank heater valve (L076).

Pin (+ probe)	Pin (- probe)	Value	Additional information

	1	3	32 Ω ± 5%	At 20 °C												
Possible causes	• Short circuit to ground on pin 5 of the pump module (L074). • Pump heater relay (R026) stuck closed. • Damage to the electrical connections and/or wiring of the pump module heater. • Malfunctioning pump module (L074).															
Additional information	Pump module heating is based on ambient temperature instead of pump module temperature.															
Diagnostic Step-by-Step	 The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.  ▪ This troubleshooting procedure is based on the assumption that supply power and ground to the PMCI are functioning properly. ▪ Disconnecting the PMCI connectors during the troubleshooting process will result in multiple errors. ▪ Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes. ▪ It is necessary to use DAVIE to clear all current trouble codes from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status. ▪ This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided. Step 1. Investigate Related Trouble Codes Before troubleshooting this code, take notice of any other active or inactive trouble codes. One or multiple other codes could have been the cause for this code. <table><tr><td colspan="2">Step 1.A Investigate related trouble codes</td></tr><tr><td colspan="2">Action</td></tr><tr><td colspan="2">1. Use DAVIE Diagnostics to perform a Quick Check for current trouble codes.</td></tr><tr><td colspan="2">Are these or any other related codes active?</td></tr><tr><td colspan="2"><i>P3902; P3903</i></td></tr><tr><td>Yes</td><td>No</td></tr></table>				Step 1.A Investigate related trouble codes		Action		1. Use DAVIE Diagnostics to perform a Quick Check for current trouble codes.		Are these or any other related codes active?		<i>P3902; P3903</i>		Yes	No
Step 1.A Investigate related trouble codes																
Action																
1. Use DAVIE Diagnostics to perform a Quick Check for current trouble codes.																
Are these or any other related codes active?																
<i>P3902; P3903</i>																
Yes	No															

	Possible <i>heater relay issue</i> . Refer to the troubleshooting information for these codes before continuing with this procedure.	Go to Step 2.A
	Step 2. Pump Module (L074) Checks	
	Step 2.A DAVIE test, pump module prime	
	Action	
	1. Use DAVIE to test the pump module as described in the maintenance procedure, “ <u>test pump module EAS (EAS (DEF system))</u> ,” job ID 68120.	
	Did the test fail to complete or result in a failed state?	
	Yes	No
	Correct any issues found. Replace the pump module (L074), if test results indicate a mechanical failure. Refer to Step 6.A to perform the corresponding repair verification cycles and rechecks.	
	If this code is still present, go to Step 2.B	Go to Step 2.B
	Step 2.B Visual inspection, connections and wiring, pump module (L074)	
Action		
1. Visually inspect the associated component connections and wiring for any of the following:		
• Damaged or loose connectors • Bent, broken, corroded or loose connector pins • Moisture or dirt in the connections • Damage to the wire harness or insulation • The correct parts are not installed • ECU connections are damaged or disconnected • Battery not fully charged, contacts not tight • Pump module (L074) is broken or not installed correctly • Line heating relay (R026) is broken or not installed correctly • Pump heater relay (R042) is broken or not installed correctly		

Tank heater valve (L076) is broken or not installed correctly	
Was there evidence of any of the above?	
Yes	No
Correct any issues found. If the pump module (L074) is found to be damaged or broken, replace it. Refer to Step 6.A to perform the corresponding repair verification cycles and rechecks.	
If this code is still present, go to Step 2.C	Go to Step 2.C

Step 2.C Electrical checks, harness, pump module (L074)	
	Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.
Action - Key OFF the ignition. - Disconnect the pump module (L074) from the vehicle harness. - Disconnect the vehicle harness from the EAS-3 ECU. - Use a multimeter to check the resistance between the following connector pins: - L074, pin 10 to L074, pin 8 (pump module signal to ground) Expected value is > 100K Ω - L074, pin 10 to D374, pin B48 (pump module signal to EAS-3 ECU) Expected value is < 10 Ω	
Are measured values within expected range?	
Yes	No
	Contact the PACCAR Engine Support Center for additional assistance in diagnosing this issue and for possible replacement of the engine harness. Refer to Step 6.A to perform the corresponding

		repair verification cycles and rechecks.
Go to step 2.D	If this code is still present, go to Step 2.C	
Step 2.D Electrical checks, resistance, pump module (L074) heater element		
 Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.		
Action		
1. Confirm the resistance level as outlined in the corresponding checking data, “ <u>Component check, pump module (L074).</u> ”		
Are measured values within expected range?		
Yes	No	
	Correct any issues found, or replace the pump module (L074) if measured values indicate an error. Refer to Step 6.A to perform the corresponding repair verification cycles and rechecks.	
Go to step 2.E	If this code is still present, go to step 2.E.	
Step 2.E Electrical checks, resistance, pump module (L074) reverting valve		
 Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.		
Action		
1. Confirm the resistance level as outlined in the corresponding checking data, “ <u>Component check, pump module (L074).</u> ”		
Are measured values within expected range?		
Yes	No	
	Correct any issues found, or replace the pump module (L074) if measured values indicate an	

		error. Refer to Step 6.A to perform the corresponding repair verification cycles and rechecks.
	Go to Step 2.F	If this code is still present, go to Step 2.F.
Step 2.F Electrical checks, supply voltage, pump module (L074) pressure sensor		
 Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.		
Action		
1. Confirm the supply voltage level as outlined in the corresponding checking data, <u>“Component check, pump module (L074).”</u>		
Are measured values within expected range?		
Yes		No
		Correct any issues found. Refer to Step 6.A to perform the corresponding repair verification cycles and rechecks.
Go to Step 3.A		If this code is still present, go to Step 3.A.
Step 3. Line Heating Relay (R026) Checks		
Step 3.A Electrical checks, resistance, line heating relay (R026)		
 Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.		
Action		
1. Key ON the ignition. 2. Use DAVIE to monitor the DEF line heating relay (R026) 3. Key OFF the ignition. 4. Disconnect the line heating relay (R026) from the vehicle harness. 5. Place a jumper wire between the DEF dosing unit heater relay signal pin and the battery positive.		

6. Place a jumper wire between the diesel exhaust fluid dosing unit heater relay return pin and battery negative.
7. Use a multimeter to check the resistance between the following connector pins:
 - R042, pin 4 to R042, pin 6 (line heating relay supply and ground)
Expected value is $< 10 \Omega$

Are measured values within expected range?

Yes

No

An Open circuit has been detected. Replace the DEF dosing unit line heating relay (R026).

Refer to Step 6.A to perform the corresponding repair verification cycles and rechecks.

Go to Step 4.A

If this code is still present, go to Step 4.A.

Step 4. Pump Heating Relay (R042) Checks

Step 4.A Electrical checks, resistance, pump heating relay (R042)



Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.

Action

1. Key OFF the ignition.
2. Disconnect the line heating relay (R026) from the vehicle harness.
3. Key ON the ignition.
4. Use a multimeter to check the resistance between the following connector pins:
 - D374, pin B47 to L076, pin 1 (DEF dosing unit heater relay supply and ground)
Expected value is $< 10 \Omega$

Are measured values within expected range?

Yes

No

An Open circuit has been detected. Replace the DEF dosing unit line heating relay (R026).

Refer to Step 6.A to perform the corresponding

	repair verification cycles and rechecks.
Go to Step 5.A	If this code is still present, go to Step 5.A.

Step 5. Tank Heater Valve (L076) Checks

Step 5.A Electrical checks, resistance, tank heater valve (L076)	
	Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.
Action 1. Key OFF the ignition. 2. Disconnect the tank heater valve (L076) from the vehicle harness. 3. Key ON the ignition. 4. Use a multimeter to check the resistance between the following connector pins: • L076, pin 1 to L076, pin 3 (tank heater valve signal and ground) Expected value is 30.4 Ω to 33.6 Ω.	
Are measured values within expected range?	
Yes	No
	An open circuit has been detected. Replace the tank heater valve (L076). Refer to Step 6.A to perform the corresponding repair verification cycles and rechecks.
If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.	If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.

Step 6. Repair Verification

Step 6.A Repair verification cycles	
Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the trouble code or system being investigated.	



Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to clear all current DTCs from the PCI and EAS-3 ECUs.

Action

1. Start-up/electrical

With the brakes set, start the engine and allow it to run at idle for 2 minutes.

Were the identified repair verification cycles able to be completed?

Yes

No

Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.

Go to Step 6.B

Go to Step 6.B

Step 6.B DAVIE Diagnostics, Quick Check

Action

1. Use DAVIE Diagnostics to perform a Quick Check for current trouble codes to determine whether the actions taken have cleared this trouble code.

Has P3910 been cleared?

Yes

No

Problem resolved. No further actions.

Continue with the next step in this troubleshooting procedure. If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.

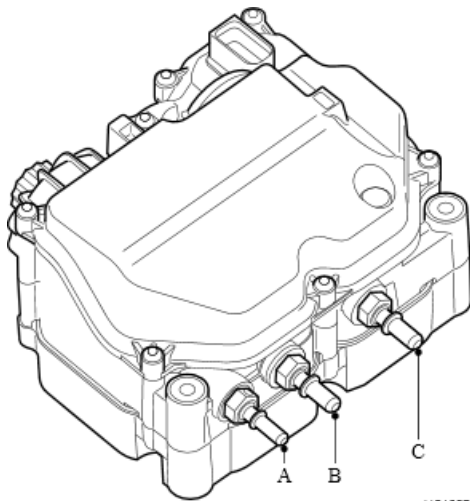
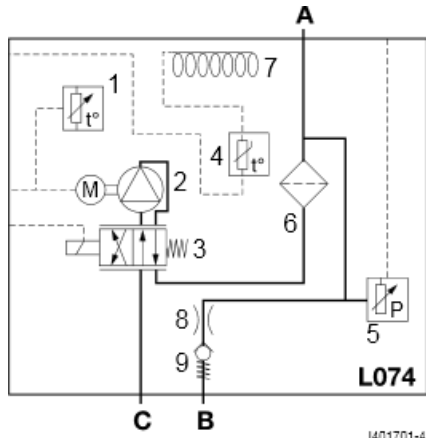


Contacting the PACCAR Engine Support Center

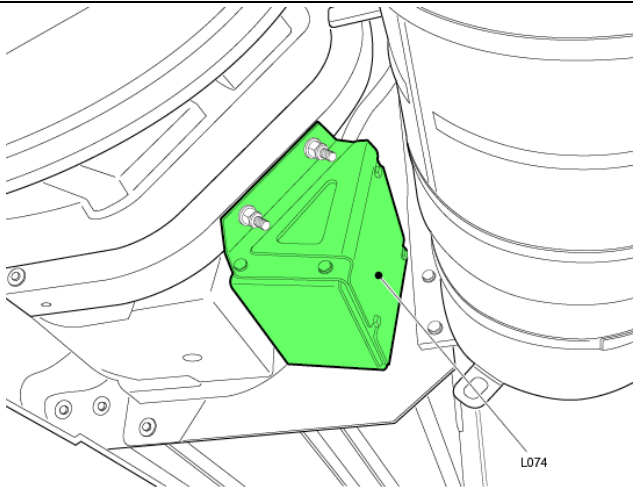
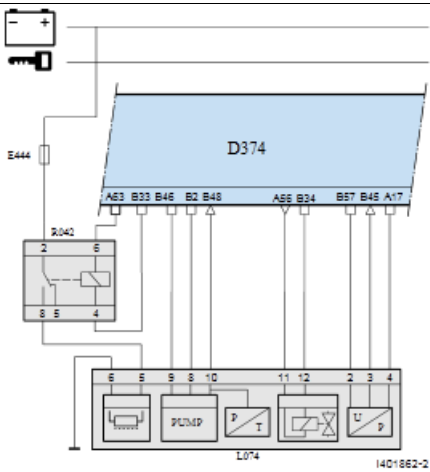
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center.

	Back to Index

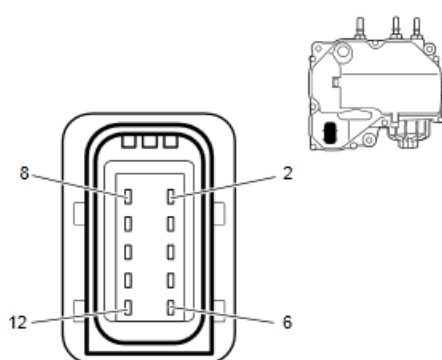
P3911

Code number	P3911
Fault code description	Pump module reverting valve - Malfunction
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	DEF pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  I401607 The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  I401701-4 Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated.

	DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature Switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter • The DEF is filtered before it is pumped into the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump. • Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve • The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.

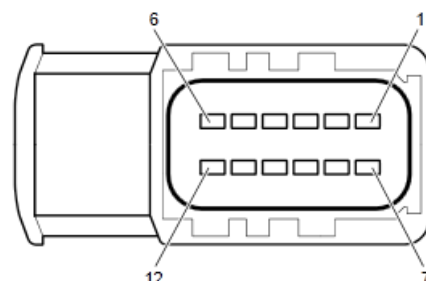
Location of component(s)															
Diagnostic condition	This diagnostic runs when the DEF system is purging.														
Set condition of fault code	The pump module (L074) detects that the DEF pressure did not decrease by 5 bar [72 psi] in 5 seconds.														
Reset condition of fault code	This DTC changes to inactive after the diagnostic runs and passes.														
Electrical diagram(s)	 D374 EAS-3 ECU E444 Fuse EAS 2nd L074 Pump module R042 Pump heater relay <table border="1"> <thead> <tr> <th>D374</th><th>L074</th><th>R042</th><th>Function</th></tr> </thead> <tbody> <tr> <td>A17</td><td>4</td><td></td><td>Ground, DEF pressure sensor</td></tr> <tr> <td>A56</td><td>11</td><td></td><td>Signal, reverting valve</td></tr> </tbody> </table>			D374	L074	R042	Function	A17	4		Ground, DEF pressure sensor	A56	11		Signal, reverting valve
D374	L074	R042	Function												
A17	4		Ground, DEF pressure sensor												
A56	11		Signal, reverting valve												

A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground, heater element
	5	8	Power supply, heater element



I401919

Connector, pump module (L074)



E504107

Wiring harness connector (L074)



Handle connectors and pins with care and use matching measuring probes.

Technical data

Component & wiring check, DEF pressure sensor

Preparation

- Key on the ignition
- Disconnect connector L074
- Measure on connector L074

Pin (+ probe)	Pin (- probe)	Value	Additional information

	<table><tr><td>2</td><td>4</td><td>4.75–5.25 V</td><td></td></tr></table>	2	4	4.75–5.25 V					
	2	4	4.75–5.25 V						
	Component check, heater element								
	Preparation								
	• Key off the ignition • Disconnect connector L074 • Measure on the pump module (L074)								
	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>5</td><td>6</td><td>1.5 Ω ± 0.5 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]
	Pin (+ probe)	Pin (- probe)	Value	Additional information					
	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]					
	Component check, reverting valve								
	Preparation								
• Key on the ignition • Disconnect connector L074 • Measure on the pump module (L074)									
<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>11</td><td>12</td><td>6.75 Ω ± 2 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]	
Pin (+ probe)	Pin (- probe)	Value	Additional information						
11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]						
Possible causes	• Clogged DEF return pipe. • Malfunctioned reverting valve.								
Additional information	• DEF purging is disabled. • The reverting valve is located inside the pump module (L074) and cannot be replaced separately.								

Diagnostic Step-by-Step



The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.



- This troubleshooting procedure is based on the assumption that supply power and ground to the PMCI are functioning properly.
- Disconnecting the PMCI connectors during the troubleshooting process will result in multiple errors.
- Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes.
- It is necessary to use DAVIE to clear all current trouble codes from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status.
- This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided.

Step 1. DEF Pump Module (L074) Checks

Step 1. A Visual inspection, DEF pump module (L074)

Action

1. Visually inspect the associated component connections and wiring for any of the following:
 - Damaged or loose connectors
 - Bent, broken, corroded or loose connector pins
 - Moisture or dirt in the connections
 - Damage to the wire harness or insulation
 - The correct parts are not installed
 - ECU connections are damaged or disconnected
 - Batteries not fully charged, contacts are not tight
 - Check for broken or leaking connection points (pressure line, return line, inlet line) on the DEF pump module.

Was there evidence of any of the above?

Yes

No

Correct any issues found.

Refer to Step 2.A to perform the corresponding repair verification cycles and rechecks.

If this code is still present, go to Step 1.B

Go to step 1.B

Step 1.B Electrical checks, resistance, DEF pump module (L074) reverting valve



Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.

Action

1. Confirm the resistance value for the DEF pump module (L074) as outlined in the corresponding checking data section, “Component check, reverting valve”.

Is the measured value within expected range?

Yes

No

Correct any issues found, or replace the pump module if the measured value indicates an error.

Refer to Step 2.A to perform the corresponding repair verification cycles and rechecks.

Go to step 1.C

If this code is still present, go to step 1.C

Step 1.C Electrical checks, harness short to ground, DEF pump module (L074)



Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.

Action

1. Set the ignition switch to OFF.
2. Disconnect the DEF pump module (L074) from the vehicle harness.
3. Disconnect the vehicle harness from the EAS-3 ECU.
4. Check for a short to ground condition by measuring the resistance between the reverting valve Signal pin on the L074 harness connector and a ground.

Is the measured value greater than 100k Ω ?

Yes

No

	Correct any issues found, or contact the PACCAR Engine Support Center for further assistance in diagnosing this issue and replacement of the harness. Refer to Step 2.A to perform the corresponding repair verification cycles and rechecks.
Go to step 1.D	If this code is still present, go to step 1.D

Step 1.D Electrical checks, pin-to-pin short, DEF pump module (L074)	
	Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.
Action 1. Set the ignition switch to OFF. 2. Disconnect the DEF pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU. 4. Check for a pin to pin short circuit condition by measuring the resistance between the reverting valve Signal pin on the L074 harness connector and all other harness connector pins.	
Is the measured value greater than 100k Ω?	
Yes	No
Possible issue in the EAS-3 ECU. Contact the PACCAR Engine Support Center for further assistance in diagnosing this issue and for guidance in replacing EAS-3 ECU.	Correct any issues found, or contact the PACCAR Engine Support Center for further assistance in diagnosing this issue and replacement of the harness. Refer to Step 2.A to perform the corresponding repair verification cycles and rechecks.
If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support	If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support

Center for further assistance.

Center for further assistance.

Step 2. Repair Verification

Step 2.A Repair verification cycles

Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the trouble code or system being investigated.



Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to clear all current DTCs from the PCI and EAS-3 ECUs.

Action

1. DEF doser and SCR

Perform the same driving requirements as the Steady State & Cooling cycle.

Using DAVIE, select the following Monitor values to record:

- Exhaust Temperature Before SCR
- Exhaust Temperature After SCR
- Pump Module

Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.

Were the identified repair verification cycles able to be completed?

Yes

No

Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.

Go to step 2.B

Go to step 2.B

Step 2.B DAVIE Diagnostics, Quick Check

Action

1. Use DAVIE Diagnostics to perform a Quick Check for current trouble codes to determine whether the actions taken have cleared this trouble code.

Has P3911 been cleared?

Yes

Problem resolved. No further actions.

No

Continue with the next step in this troubleshooting procedure. If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.

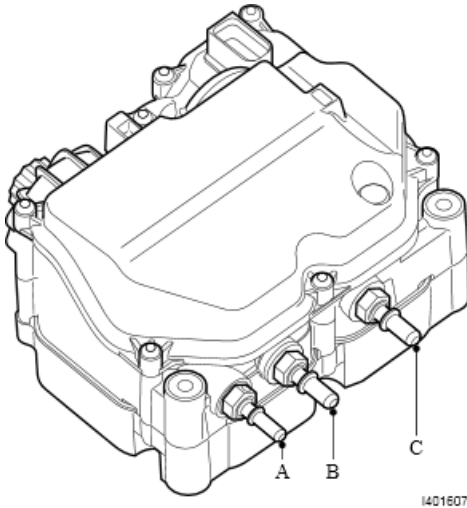
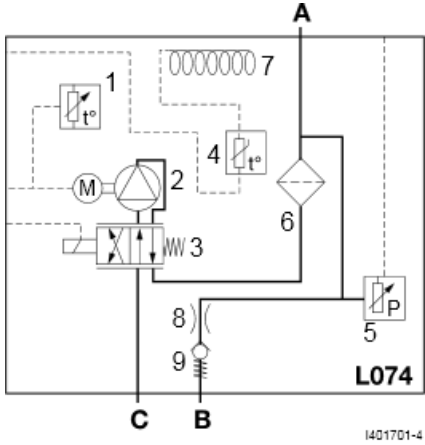


Contacting the PACCAR Engine Support Center

For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center.

[Back to Index](#)

P3912

Code number	P3912
Fault code description	Pump module - Unable to prime
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – NOx Catalyst Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated. DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve.

- The DEF pump is controlled with a duty cycle.
- The pump speed depends on the quantity of DEF to be injected.
- The DEF pressure does not depend on the quantity of DEF to inject.

Reverting valve

- This valve is engaged during the purge cycle.
- The DEF inside the inlet line and pressure line is pumped back into the DEF tank.

Temperature Switch, heater element

- The temperature sensor measures the temperature of the heater element.
- This switch is used to control the heater elements in the pump module and prevent them from overheating.

DEF pressure sensor

- The pressure sensor measures the pressure of the DEF after the DEF filter.
- The measured pressure is used by the ECU to control the DEF pump speed.

DEF filter

- The DEF is filtered before it is pumped into the pump module.

Heater element, pump module

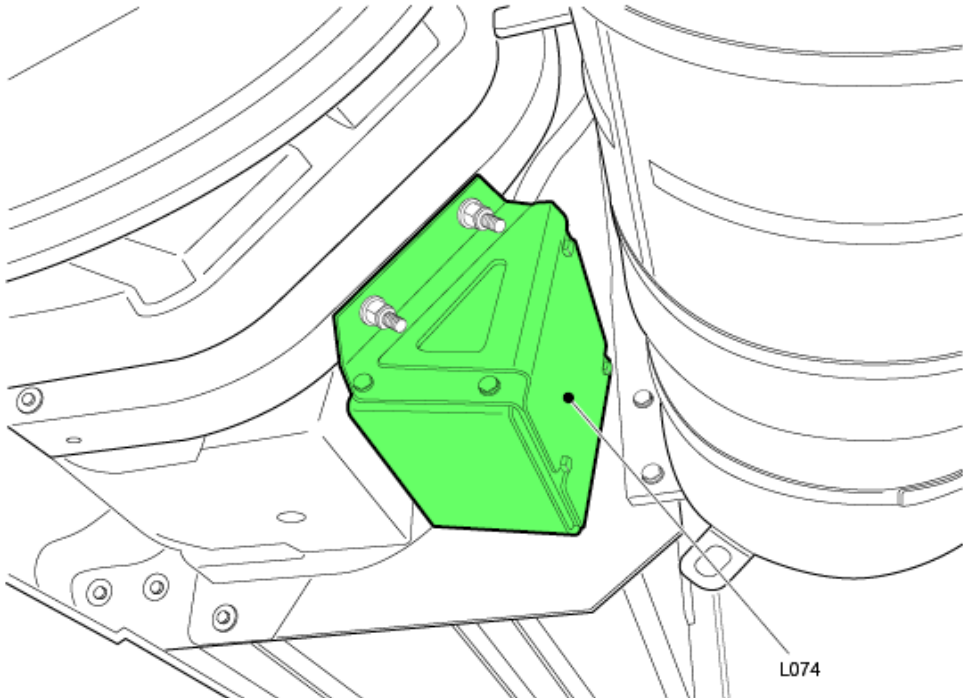
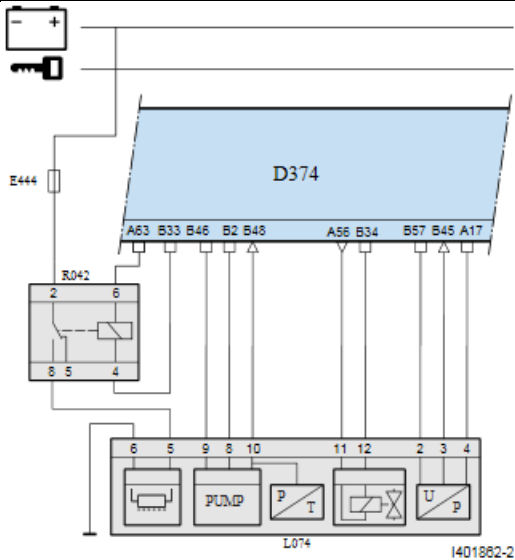
- The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump.
- Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C.
- Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature.

Check valve

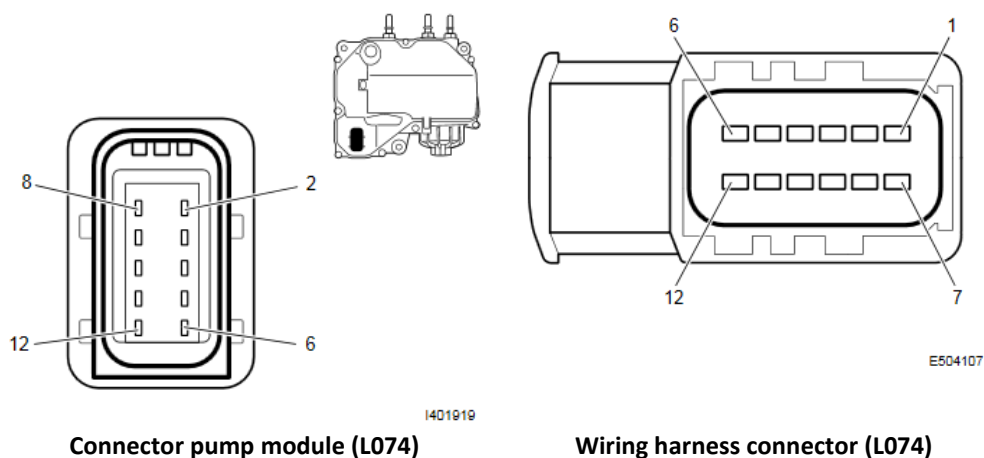
- The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF.

Orifice

- The orifice in the return line assists the pump in maintaining the operating pressure.
- The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.

Location of component(s)	 The diagram shows a green rectangular DEF pump module (L074) mounted on a metal bracket. A leader line points from the label 'L074' to the module.	
Diagnostic condition	This diagnostic runs when the DEF system is priming.	
Set condition of fault code	The pump module (L074) has been unable to successfully prime after multiple attempts.	
Reset condition of fault code	This DTC changes to inactive after the diagnostic runs and passes.	
Electrical diagram(s)	 The diagram shows the electrical connections between the EAS-3 ECU (D374), the DEF pump module (L074), and the pump heater relay (R042). The ECU has pins A63, B33, B46, B2, B48, A56, B34, B57, B45, and A17. The pump module has pins 6, 5, 9, 8, 10, 11, 12, 2, 3, and 4. The pump heater relay has pins 2, 5, 6, 8, and 4. The diagram also shows a fuse E444 and a battery symbol. D374 EAS-3 ECU E444 Fuse, EAS 2nd L074 Pump module R042 Pump heater relay	

D374	L074	R042	Function
A17	4		Ground, DEF pressure sensor
A56	11		Signal, reverting valve
A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground heater element
	5	8	Power supply, heater element



Technical data

Component and wiring check, DEF pressure sensor

Preparation

- Key on the ignition.
- Disconnect connector L074.
- Measure on connector L074.

	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Condition</th></tr><tr><td>2</td><td>4</td><td>4.75 - 5.25 V</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	2	4	4.75 - 5.25 V	
	Pin (+ probe)	Pin (- probe)	Value	Condition					
	2	4	4.75 - 5.25 V						
	Component check, heater element								
	Preparation • Key off the ignition. • Disconnect connector L074. • Measure on the pump module (L074).								
<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Condition</th></tr><tr><td>5</td><td>6</td><td>1.5 Ω ± 0.5 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]	
Pin (+ probe)	Pin (- probe)	Value	Condition						
5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]						
Component check, reverting valve									
Preparation • Key off the ignition. • Disconnect connector L074. • Measure on the pump module (L074).									
<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Condition</th></tr><tr><td>11</td><td>12</td><td>6.75 Ω ± 2 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]	
Pin (+ probe)	Pin (- probe)	Value	Condition						
11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]						
Possible causes	• The DEF pressure pipe between the pump module (L074) and the DEF dosing valve (L123) is kinked, broken or disconnected. • The DEF return pipe between the pump module (L074) and the DEF tank is kinked, broken or disconnected. • Malfunctioning pump module (L074).								
Additional information	• DEF injection is disabled. • After 1 hour of engine operation or 50 miles with P3912 active, P1518 becomes active (25% torque derate). • After 4 hours of engine operation or 200 miles with P3912 active, P1518 stays active (40% torque derate). • After 4 hours of engine operation or 200 miles with P3912 active, P151A becomes active (5 MPH vehicle speed limit) after a: ○ key cycle, or ○ vehicle re-fuel (fuel tank volume increase > 16%), or								

	○ vehicle has been stationary for 1 hour.												
Diagnostic Step-by-Step	 The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.  ▪ This troubleshooting procedure is based on the assumption that supply power and ground to the PMCI are functioning properly. ▪ Disconnecting the PMCI connectors during the troubleshooting process will result in multiple errors. ▪ Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes. ▪ It is necessary to use DAVIE to clear all current trouble codes from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status. ▪ This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided. Step 1. DEF Pump Module (L074) Checks <table border="1"> <tr> <th colspan="2">Step 1. A Visual inspection, DEF pump module (L074)</th></tr> <tr> <td colspan="2"> Action 1. Visually inspect the associated component connections and wiring for any of the following: • Damaged or loose connectors • Bent, broken, corroded or loose connector pins • Moisture or dirt in the connections • Damage to the wire harness or insulation • The correct parts are not installed • ECU connections are damaged or disconnected • Batteries not fully charged, contacts are not tight • Check for broken or leaking connection points (pressure line, return line, inlet line) on the DEF pump module. </td></tr> <tr> <td colspan="2">Was there evidence of any of the above?</td></tr> <tr> <th>Yes</th><th>No</th></tr> <tr> <td> Correct any issues found. Refer to Step 2.A to perform the corresponding repair verification cycles and rechecks. </td><td></td></tr> <tr> <td>If this code is still present, go to Step 1.B</td><td>Go to step 1.B</td></tr> </table>	Step 1. A Visual inspection, DEF pump module (L074)		Action 1. Visually inspect the associated component connections and wiring for any of the following: • Damaged or loose connectors • Bent, broken, corroded or loose connector pins • Moisture or dirt in the connections • Damage to the wire harness or insulation • The correct parts are not installed • ECU connections are damaged or disconnected • Batteries not fully charged, contacts are not tight • Check for broken or leaking connection points (pressure line, return line, inlet line) on the DEF pump module.		Was there evidence of any of the above?		Yes	No	Correct any issues found. Refer to Step 2.A to perform the corresponding repair verification cycles and rechecks.		If this code is still present, go to Step 1.B	Go to step 1.B
Step 1. A Visual inspection, DEF pump module (L074)													
Action 1. Visually inspect the associated component connections and wiring for any of the following: • Damaged or loose connectors • Bent, broken, corroded or loose connector pins • Moisture or dirt in the connections • Damage to the wire harness or insulation • The correct parts are not installed • ECU connections are damaged or disconnected • Batteries not fully charged, contacts are not tight • Check for broken or leaking connection points (pressure line, return line, inlet line) on the DEF pump module.													
Was there evidence of any of the above?													
Yes	No												
Correct any issues found. Refer to Step 2.A to perform the corresponding repair verification cycles and rechecks.													
If this code is still present, go to Step 1.B	Go to step 1.B												

Step 1.B Electrical checks, resistance, DEF pump module (L074) reverting valve



Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.

Action

1. Confirm the resistance value for the DEF pump module (L074) as outlined in the corresponding checking data section, “Component check, reverting valve”.

Is the measured value within expected range?

Yes

No

Correct any issues found, or replace the pump module if the measured value indicates an error.

Refer to Step 2.A to perform the corresponding repair verification cycles and rechecks.

Go to step 1.C

If this code is still present, go to step 1.C

Step 1.C Electrical checks, harness short to ground, DEF pump module (L074)



Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.

Action

1. Set the ignition switch to OFF.
2. Disconnect the DEF pump module (L074) from the vehicle harness.
3. Disconnect the vehicle harness from the EAS-3 ECU.
4. Check for a short to ground condition by measuring the resistance between the reverting valve Signal pin on the L074 harness connector and a ground.

Is the measured value greater than 100k Ω ?

Yes

No

	Correct any issues found, or contact the PACCAR Engine Support Center for further assistance in diagnosing this issue and replacement of the harness. Refer to Step 2.A to perform the corresponding repair verification cycles and rechecks.
Go to step 1.D	If this code is still present, go to step 1.D

Step 1.D Electrical checks, pin-to-pin short, DEF pump module (L074)	
	Refer to the corresponding Checking Data in Engine Service – Rapido for associated supply and signal voltages, resistance values, and related connector pin test points.
Action 1. Set the ignition switch to OFF. 2. Disconnect the DEF pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU. 4. Check for a pin to pin short circuit condition by measuring the resistance between the reverting valve Signal pin on the L074 harness connector and all other harness connector pins.	
Is the measured value greater than 100k Ω ?	
Yes	No
Possible issue in the EAS-3 ECU. Contact the PACCAR Engine Support Center for further assistance in diagnosing this issue and for guidance in replacing EAS-3 ECU.	Correct any issues found, or contact the PACCAR Engine Support Center for further assistance in diagnosing this issue and replacement of the harness. Refer to Step 2.A to perform the corresponding repair verification cycles and rechecks.
If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.	If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.

Step 2. Repair Verification

Step 2.A Repair verification cycles

Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the trouble code or system being investigated.



Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to clear all current DTCs from the PCI and EAS-3 ECUs.

Action

1. DEF doser and SCR

Perform the same driving requirements as the Steady State & Cooling cycle.

Using DAVIE, select the following Monitor values to record:

- Exhaust Temperature Before SCR
- Exhaust Temperature After SCR
- Pump Module

Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.

Were the identified repair verification cycles able to be completed?

Yes

No

Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.

Go to step 2.B

Go to step 2.B

Step 2.B DAVIE Diagnostics, Quick Check

Action

1. Use DAVIE Diagnostics to perform a Quick Check for current trouble codes to determine whether the actions taken have cleared this trouble code.

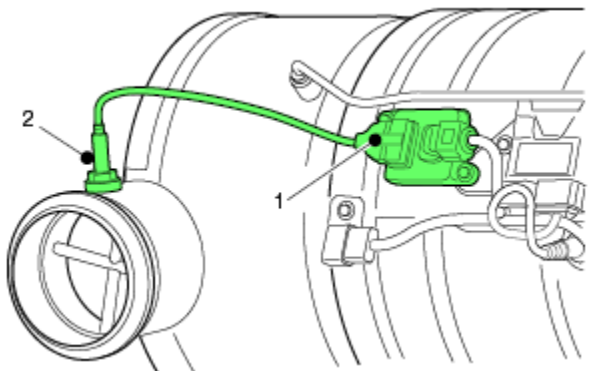
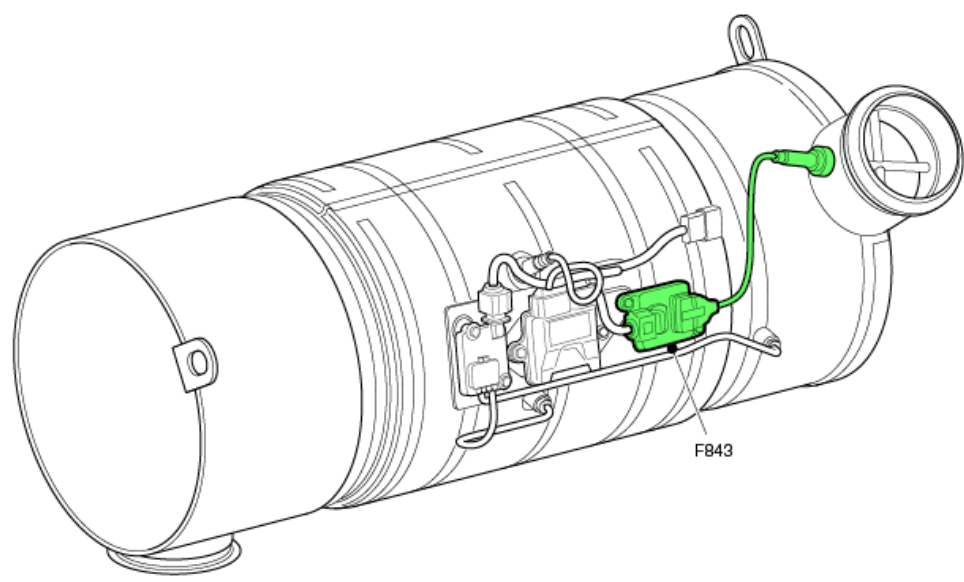
Has P3912 been cleared?

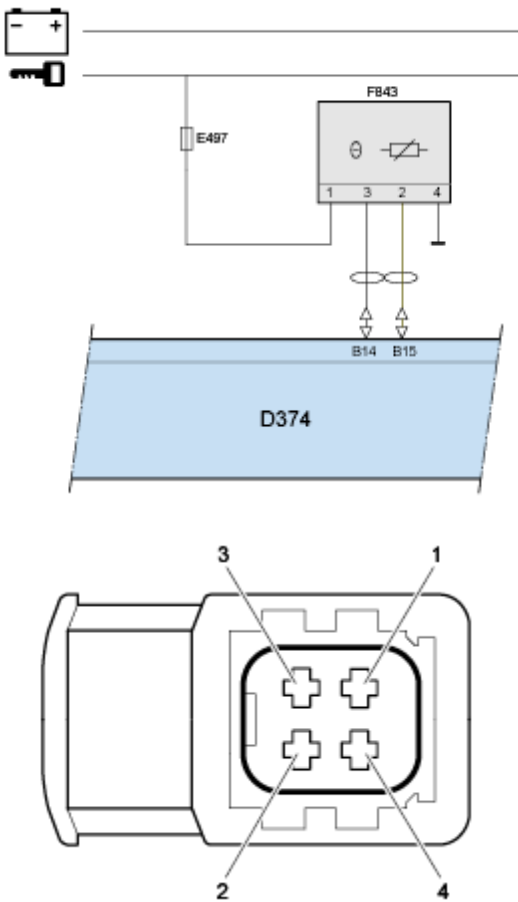
Yes

No

	Problem resolved. No further actions.	Continue with the next step in this troubleshooting procedure. If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.	
	Contacting the PACCAR Engine Support Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center. Back to Index		

P3913

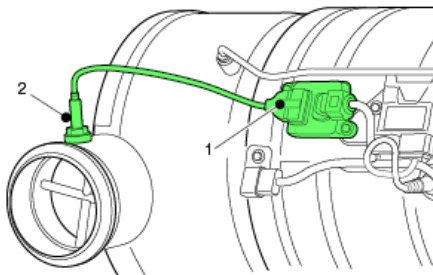
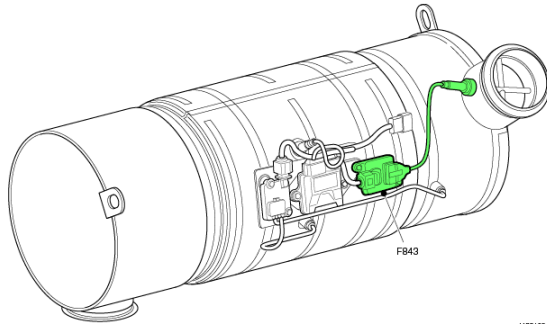
Code number	P3913
Fault code description	NOx sensor after catalyst - Data not rational, drifted low
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – Exhaust gas sensors Freeze frame type – Comprehensive
Description of component(s)	Dosing fuel into the exhaust pipe before the oxidation catalyst, during active regeneration; Ceramic sensor element, heater element, and an electronic control unit; The NOx sensor is connected to the A-CAN.  Effect of the output signal on the system: Measures the amount of NOx after the catalyst in order to determine if the NOx level is within the limits.
Location of component(s)	
Diagnostic condition	This diagnostic consists of two parts: - The first part of the diagnostic runs when the exhaust gas temperature at the NOx sensor after catalyst (F843) is above 150°C and the engine is in a motoring condition. - The second part of the diagnostic runs when the exhaust gas temperature at

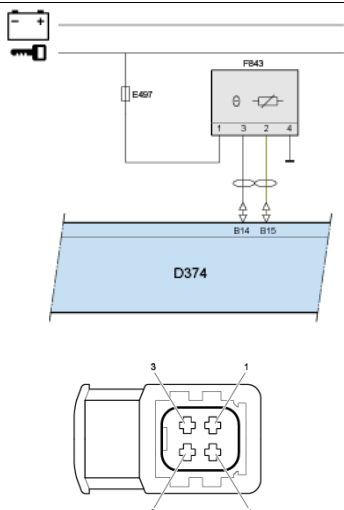
	the NOx sensor after catalyst (F843) is above 150°C and the calculated NOx value is changing.															
Set condition of fault code	• The EAS-3 ECU (D374) has detected that the NOx sensor after catalyst (F843) reading is not zero during motoring conditions for two consecutive trips. • Or the EAS-3 ECU (D374) has detected the NOx sensor after catalyst (F843) reading is not changing with engine conditions for two consecutive trips.															
Reset condition of fault code	• The exhaust gas temperature at the after treatment outlet NOx sensor must be above 150°C before the sensor can run its internal diagnostics. • To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary regeneration using DAVIE.															
Electrical diagram(s)	 Wiring harness connector F843 front view D374 EAS-3 ECU E497 after treatment CAN fuse F843 NOx sensor after catalytic convertor <table><tr><td>D374</td><td>F843</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN high</td></tr><tr><td>B15</td><td>2</td><td>A-CAN low</td></tr><tr><td></td><td>1</td><td>Power supply after ignition</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F843	Function	B14	3	A-CAN high	B15	2	A-CAN low		1	Power supply after ignition		4	Ground
D374	F843	Function														
B14	3	A-CAN high														
B15	2	A-CAN low														
	1	Power supply after ignition														
	4	Ground														

Technical data	Component and wiring check, NOx sensor after catalyst (F843) Preparation - Disconnect connector F843. - Ignition switched on. - Measure on connector F843. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td></td></tr><tr><td>1</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Component & wiring check, A-CAN Preparation - Ignition switched off. - Disconnect connector F843. - Measure on connector F843. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	4	1	Ubat		1	Battery negative pole	>0.5V	Switch all consumers on	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	2	3	± 60 Ω	
Pin	Pin																												
(+ probe)	(- probe)	Value	Additional information																										
4	1	Ubat																											
1	Battery negative pole	>0.5V	Switch all consumers on																										
Pin	Pin																												
(+ probe)	(- probe)	Value	Additional information																										
2	3	± 60 Ω																											
Possible causes	- Malfunctioning NOx sensor after catalyst (F843). - DEF crystallization or deposits. - Improperly installed NOx sensor after catalyst (F843).																												
Additional information	An offset in the outlet NOx sensor after catalyst (F843) reading has been detected.																												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3913a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3913b</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect NOx sensors, NH3 sensor for any buildup on the sensor tips. Was there evidence of excessive buildup?</td></tr><tr><td colspan="3"> - Yes - Proceed to step 3 - No - Proceed to step 4 </td></tr></table>	Step 1	Step ID 3913a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3913b	SRT	Visually inspect NOx sensors, NH3 sensor for any buildup on the sensor tips. Was there evidence of excessive buildup?			- Yes - Proceed to step 3 - No - Proceed to step 4															
Step 1	Step ID 3913a	SRT																											
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																													
Step 2	Step ID 3913b	SRT																											
Visually inspect NOx sensors, NH3 sensor for any buildup on the sensor tips. Was there evidence of excessive buildup?																													
- Yes - Proceed to step 3 - No - Proceed to step 4																													

	<table><tr><td>Step 3</td><td>Step ID 3913c</td><td>SRT</td></tr><tr><td colspan="3">Repair or replace appropriate component and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 4 </td></tr></table>	Step 3	Step ID 3913c	SRT	Repair or replace appropriate component and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 4		
	Step 3	Step ID 3913c	SRT				
	Repair or replace appropriate component and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 4						
	<table><tr><td>Step 4</td><td>Step ID 3913d</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect decomposition tube for excessive crystallization deposits. Was there evidence of excessive crystallization deposits? - Yes - Proceed to step 5 - No - Proceed to step 6 </td></tr></table>	Step 4	Step ID 3913d	SRT	Visually inspect decomposition tube for excessive crystallization deposits. Was there evidence of excessive crystallization deposits? - Yes - Proceed to step 5 - No - Proceed to step 6		
	Step 4	Step ID 3913d	SRT				
Visually inspect decomposition tube for excessive crystallization deposits. Was there evidence of excessive crystallization deposits? - Yes - Proceed to step 5 - No - Proceed to step 6							
<table><tr><td>Step 5</td><td>Step ID 3913e</td><td>SRT</td></tr><tr><td colspan="3">Repair or replace appropriate component and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 6 </td></tr></table>	Step 5	Step ID 3913e	SRT	Repair or replace appropriate component and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 6			
Step 5	Step ID 3913e	SRT					
Repair or replace appropriate component and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 6							
<table><tr><td>Step 6</td><td>Step ID 3913f</td><td>SRT</td></tr><tr><td colspan="3">Replace the NOx sensor after catalyst and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 7 </td></tr></table>	Step 6	Step ID 3913f	SRT	Replace the NOx sensor after catalyst and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 7			
Step 6	Step ID 3913f	SRT					
Replace the NOx sensor after catalyst and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 7							
<table><tr><td>Step 7</td><td>Step ID 3913g</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 7	Step ID 3913g	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.			
Step 7	Step ID 3913g	SRT					
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.							
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: - Exhaust Temperature Before SCR - Exhaust Temperature After SCR - Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check						
	Back to Index						

P3914

Code number	P3914
Fault code description	NOx sensor after catalyst - Data not rational, drifted high
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – Exhaust Gas Sensors Freeze frame type – Comprehensive
Description of component(s)	 DESCRIPTIONS COMPONENTS, NOx SENSOR AFTER CATALYST (F843) - Measures the amount of NOx after the catalyst in order to determine if the NOx level is within the limits. - Ceramic sensor element, heater element and an electronic control unit; - The NOx sensor is connected to the A-CAN. Effect of the output signal on the system: - Provides feedback to produce dosing level into the exhaust pipe before the oxidation catalyst during active regeneration.
Location of component(s)	
Diagnostic condition	This diagnostic consists of two parts: - The first part of the diagnostic runs when the exhaust gas temperature at the NOx sensor after catalyst (F843) is above 150°C and the engine is in a motoring condition. - The second part of the diagnostic runs when the exhaust gas temperature at the NOx sensor

	after catalyst (F843) is above 150°C and the calculated NOx value is changing.												
Set condition of fault code	The EAS-3 ECU (D374) has detected that the NOx sensor after catalyst (F843) reading is not zero during motoring conditions for two consecutive trips. Or the EAS-3 ECU (D374) has detected the NOx sensor after catalyst (F843) reading is not changing with engine conditions for two consecutive trips.												
Reset condition of fault code	- To validate the repair, start and run the engine to raise the exhaust temperature. This may be done by either driving the vehicle or initiating a stationary regeneration using DAVIE. - The exhaust gas temperature after the SCR catalyst must be above 302°F (150°C) before the sensor can run its internal diagnostic. - In order for this internal diagnostic to run, it will be necessary to induce Fuel Inhibit Coasting or an Engine Brake Event for a minimum of 18 seconds. - This fault code will change to inactive immediately after the diagnostic runs and passes.												
Electrical diagram(s)	 Wiring harness connector F843 front view D374 EAS-3 ECU E497 Fuse after treatment CAN F943 NOx sensor after catalytic convertor												
Technical data	<table><tr><td>D374</td><td>F843</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr></table>	D374	F843	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply
D374	F843	Function											
B14	3	A-CAN High											
B15	2	A-CAN Low											
	1	Power supply											

	4Earth Component & wiring check, NOx sensor after catalyst (F843) Preparation • Disconnect connector F843. • Ignition switched on. • Measure on connector F843 <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Addition information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td>at 20°C</td></tr><tr><td>1</td><td>Battery negative pole</td><td>>0.5v</td><td>Switch all consumer on</td></tr></table> Component & wiring check, A-CAN Preparation • Ignition switched off. • Disconnect connector F843. • Measure on connector F843 <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Addition information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td>at 20°C</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Addition information	4	1	Ubat	at 20°C	1	Battery negative pole	>0.5v	Switch all consumer on	Pin (+ probe)	Pin (- probe)	Value	Addition information	2	3	± 60 Ω	at 20°C
Pin (+ probe)	Pin (- probe)	Value	Addition information																		
4	1	Ubat	at 20°C																		
1	Battery negative pole	>0.5v	Switch all consumer on																		
Pin (+ probe)	Pin (- probe)	Value	Addition information																		
2	3	± 60 Ω	at 20°C																		
Possible causes	Ammonia released during motoring/coasting being read as NOx – can be caused by: • Leaking DEF doser • DEF deposits/crystallization releasing ammonia during motoring • SCR Catalyst releasing excessive stored ammonia – can be caused by • Incorrect measurement of NOx into catalyst causing excessive dosing • Above normal DEF concentration • Poor DEF atomization from doser causing some parts of catalyst to receive more DEF than other parts • Exhaust leak before DEF doser reducing NOx in catalyst • Drifted NOx after catalyst sensor																				
Additional information	• The NOx sensor is permanently attached to the NOx control module and reports continuously to the EAS-3 unit. The NOx sensor assembly is serviced as a single component and individual components cannot be replaced. • The signal value was detected to be higher than expected during a fuel inhibit coasting or engine brake event. • The signal from this sensor is monitored only when the conditions listed in 'set conditions of fault code' are met. • This fault may result in engine torque reduction or vehicle speed limiting.																				

Diagnostic Step-by-Step



Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.



- Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors.
- For specific electrical component information and pinout locations, always refer to the technical data.
- It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors.
- Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.

Step 1	Step ID 3914a	SRT

Check for Fault Codes

1. Turn the key switch ON.
2. Use DAVIE to check for fault codes.

Is fault code P3914 active?

- Yes – Proceed with the appropriate fault code.
- No – Proceed to step 2.

Step 2	Step ID 3914b	SRT

Check for related fault codes

1. Turn the key switch ON.
2. Use DAVIE to check for fault codes.

Is fault code P3917, P3918, P3921, P3873, P3915, P3927, P3916, or P1711 active?

- Yes – Stop troubleshooting P3914. Proceed with the appropriate fault code.
- No – Proceed to step 3.

Step 3

Step ID 3914c

SRT

Check for Deposits in the Decomposition Pipe

1. Turn the key switch OFF.
2. Engine off.
3. Remove the decomposition pipe from the vehicle.
4. Inspect for excessive DEF deposits and crystallization.

Are excessive deposits/crystallization found inside the decomposition pipe?

- Yes – Clean the decomposition pipe - Proceed to step 4.
- No –Proceed to step 4.

Step 4

Step ID 3914d

SRT

Check for poor DEF spray atomization and distribution

1. Inspect decomposition pipe and SCR inlet pipe for evidence of liquid DEF accumulating and running through exhaust pipe towards the catalyst.

Is there evidence of liquid DEF accumulating and running in the pipe toward the catalyst?

- Yes – Check doser tip for debris and crystallization. Clean and reinstall doser and reinstall decomposition pipe- Proceed to step 5.
- No –Reinstall decomposition pipe. Proceed to step 5.

	Step 5	Step ID 3914e	SRT
	Check for exhaust leakage 1. Inspect all exhaust connections between engine outlet and decomposition pipe inlet for loose/missing clamps and broken pipes. Are there loose clamps or broken exhaust pipes? • Yes – Repair leak - Proceed to step 6. • No – Proceed to step 6.		
	Step 6	Step ID 3914f	SRT
	Check DEF Concentration 1. Remove a DEF sample from the DEF tank. 2. Use a refractometer to measure the DEF concentration. Is the DEF concentration between 32% and 33%? • Yes – Proceed to step 7. • No – Replace DEF. Proceed to step 7.		
	Step 7	Step ID 3914g	SRT
	Check for crystallization, blockage, exhaust leaks, and incorrect DEF concentration 1. If crystallization, doser blockage, exhaust leaks, or incorrect DEF concentration has been found and corrected then confirm repair Have crystallization, doser blockage, exhaust leaks, or incorrect DEF concentration been found and corrected? • Yes – Proceed to step 12 to confirm repair. • No –Proceed to step 8.		

	Step 8	Step ID 3914h	SRT
	Check DEF Doser Accuracy 1. Perform the DEF Pump Module Override Test as described in “Explanatory Notes to DAVIE” Does the amount of collected DEF meet the specifications displayed by DAVIE? • Yes – Reinstall DEF doser. Proceed to step 9. • No – Replace DEF doser. Repeat DEF Pump Module Override Test. If amount is still incorrect then contact the Engine Support Center. Otherwise continue to step 12 to confirm repair.		
	Step 9	Step ID 3914i	SRT
	Check for physical damage 1. Turn the key switch OFF. 2. Disconnect the NOx after catalyst sensor from the harness. 3. Inspect the NOx after catalyst sensor harness and connector for: ○ corroded or dirty pins, ○ damaged pins, ○ pushed back or expanded pins, ○ loose connector, ○ moisture in or on the connector, ○ connector shell damage, ○ missing or damaged connector seals and/or ○ wire insulation damage. 4. Remove the NOx after catalyst sensor. 5. Inspect the NOx after catalyst sensor tip for: ○ corrosion ○ blockages, and/or ○ physical damage. Has any damage been found? • Yes – Repair damage. Proceed to step 12. • No – Proceed to step 10.		
	Step 10	Step ID 3914j	SRT

Check for sensor contamination

Troubleshooting steps



This test can be negatively affected by truck exhaust inside the shop.

1. Move the truck outside or make efforts to vent the exhaust outside the shop.
2. Remove NOx After Catalyst Sensor from exhaust system, leaving it connected to the wiring harness.
3. Install another NOx Sensor or other plug into the NOx Sensor mounting hole.

Lubricate the NOx sensor or plug threads with high temperature lubricant to aid in sealing and removal. If using a plug, the mating thread is M20x1.5-6e and the total threaded length must not exceed ¾ inch.

4. Ensure that the removed NOx Sensor is not in contact with non-metallic parts as it will become hot during this procedure.
5. Initiate a stationary regeneration.



DAVIE must report as stable prior to valid concentration readings.

6. Use DAVIE Aftertreatment System EAS-3\Individual Component\NOx Sensor Monitor to monitor the NOx Sensor Before Catalyst.

It is normal for any of the following fault codes to trip during this test and they do not indicate a problem. If codes P3818 and/or P3820 are tripped they should be cleared before proceeding.

Is the NOx Concentration (NOx PPM) between -20 and 40?

- Yes – Abort regeneration and Reinstall the NOx Sensor and proceed to Step 11. Use caution during installation, NOx Sensor is hot.
- No – Contact Engine Support Center for further instruction.

Step 11

Step ID 3914k

SRT

Confirm operation and check accuracy

1. Connect all components.
2. Move electrical and DEF connections from truck-mounted DEF doser to spare DEF doser.
3. Put spare DEF doser in a bucket to catch dosed DEF.
4. Perform a stationary regeneration and record an SCR Overview. For more information, go to 'Explanatory notes to DAVIE'.
5. Compare the NOx after catalyst sensor value to the NOx before catalyst sensor value shortly before the end of the regeneration. The NOx after catalyst sensor value should be within 40 ppm of the NOx before catalyst sensor value.
6. It is normal for fault codes P3818 and/or P3820 to trip during this test and they do not indicate a problem. If they are tripped they can be cleared.
7. Return the DEF doser to its original configuration.

Shortly before the end of the stationary regeneration is the NOx after catalyst sensor value within 40 ppm of the NOx before catalyst sensor value?

- Yes – Contact the Engine Support Center for further instruction.
- No – Replace the NOx after catalyst sensor. Proceed to step 12 to confirm repair.

Step 12	Step ID 3914l	SRT

Disable the fault code

1. Connect all components.
2. Drive the truck for 30 minutes at freeway speed.
3. Check for active faults upon completion of the drive.

Is fault code P3914 inactive?

- Yes – Proceed to step 13.
- No – Return to last completed troubleshooting step.

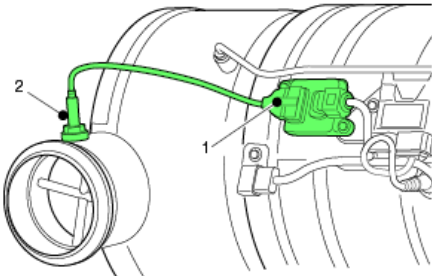
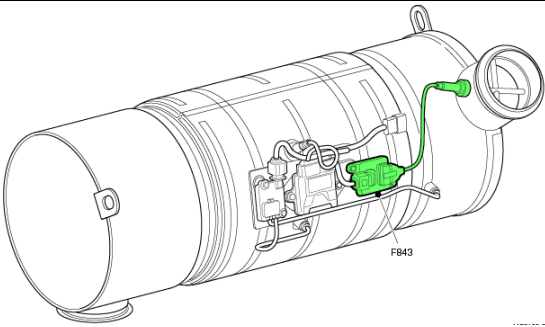
If all the steps have been completed and rechecked, contact the Engine Support Center for further instructions.

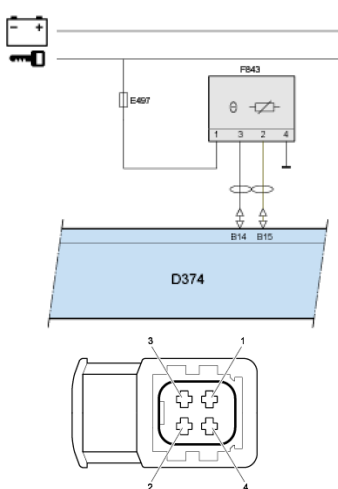
Step 13	Step ID 3914m	SRT

Clear the inactive fault codes

	1. Connect all components. 2. Turn the key switch ON. 3. Use DAVIE to clear the inactive fault codes. Have all the fault codes been cleared? • Yes – Repair complete. • No – Troubleshoot any remaining active fault codes.	
Verification Drive Cycle	Perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes.	
		Back to Index

P3915

Code number	P3915
Fault code description	Heater element NOx sensor after catalyst - Warm-up failed
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – Exhaust Gas Sensors Freeze frame type – Comprehensive
Description of component(s)	 DESCRIPTIONS COMPONENTS, NOx SENSOR AFTER CATALYST (F843) • Dosing fuel into the exhaust pipe before the oxidation catalyst, during active regeneration; • Ceramic sensor element, heater element and an electronic control unit; • The NOx sensor is connected to the A-CAN. Effect of the output signal on the system: • Measures the amount of NOx after the catalyst in order to determine if the NOx level is within the limits.
Location of component(s)	
Diagnostic condition	The diagnostic runs when the exhaust gas temperature at the NOx sensor after catalyst (F843) is above 150°C.
Set condition of fault code	The EAS-3 ECU (D374) detects that the NOx sensor heater is unable to maintain its normal operating temperature.
Reset condition of fault code	• The exhaust gas temperature at the NOx sensor after catalyst (F843) must be above 150°C before the sensor can run its internal diagnostics. • To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary regeneration using DAVIE.

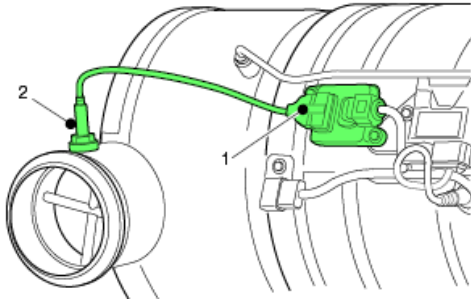
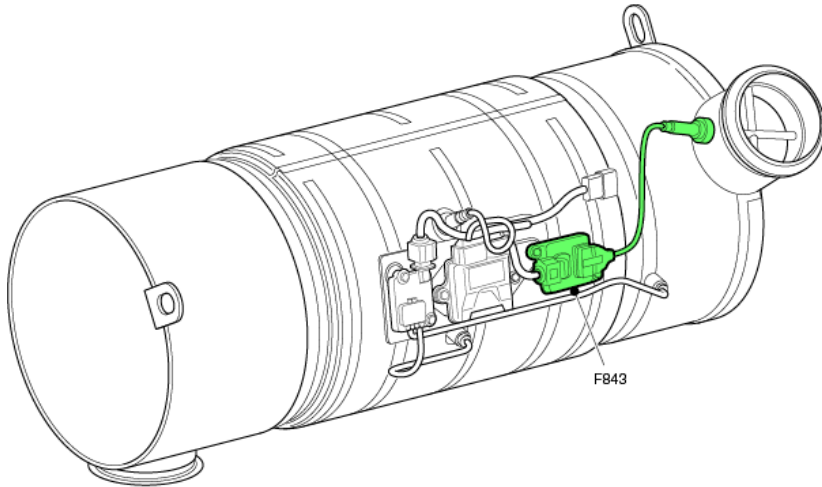
Electrical diagram(s)	 Wiring harness connector F843 front view D374 EAS-3 ECU E497 Fuse after treatment CAN F943 NOx sensor after catalytic convertor
Technical data	D374 F843 Function B14 3 A-CAN High B15 2 A-CAN Low 1 Power supply 4 Earth Component & wiring check, NOx sensor after catalyst (F843) Preparation • Disconnect connector F843. • Ignition switched on. • Measure on connector F843 Pin (+ probe) Pin (- probe) Value Addition information 4 1 Ubat at 20°C 1 Battery negative pole >0.5v Switch all consumer on Component & wiring check, A-CAN Preparation • Ignition switched off. • Disconnect connector F843. • Measure on connector F843 Pin (+ probe) Pin (- probe) Value Addition information 2 3 ± 60 Ω at 20°C

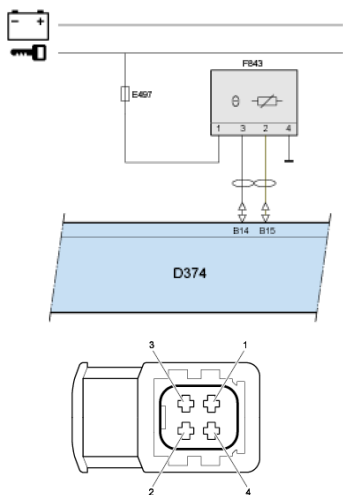
Possible causes	• Damaged NOx sensor after catalyst (F843). • Intermittent power connection to the NOx sensor after catalyst (F843).					
Additional information	• The heater for the NOx sensor after catalyst (F843) is unable to maintain its normal operating temperature.					
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3915a</td><td>SRT</td></tr></table> Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, SCR not properly installed, ACM connections damaged or disconnected and Batteries not okay, contacts not tight and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 2 in the troubleshooting process.			Step 1	Step ID 3915a	SRT
Step 1	Step ID 3915a	SRT				

	Step 2	Step ID 3915b	SRT
	Check fault codes 1. Turn the key switch ON. 2. Use DAVIE to check for fault codes. Is fault code P3915 active? • Yes – Proceed to step 3 • No – Proceed to step 5.		
	Step 3	Step ID 3915c	SRT
	Check fault codes 1. Turn the key switch ON. 2. Use DAVIE to check for fault codes. Is fault code P3917, P3918, P3921, P3873, or P3916 active or inactive? • Yes – Proceed with the appropriate fault code • No – Proceed to step 4		
	Step 4	Step ID 3915d	SRT
	Check fault codes 1. Turn the key switch ON. 2. Use DAVIE to check for related fault codes. Is fault code P3810, P3816, P3812, P3813, or P3814 active? • Yes – Proceed with the appropriate fault code • No – An internal error has been detected in the NOx sensor heater. Replace the NOx sensor. Proceed to step 2A		
	Step 5	Step ID 3915e	SRT
	Disable the fault code 1. Connect all components. 2. Operate the system within the 'reset condition of the fault code' found in the fault code information. 3. Use DAVIE to verify whether the fault codes are inactive.		

	Is fault code P3915 inactive? • Yes – Proceed to step 6 • No – Return to the troubleshooting steps. Proceed to step 1 If all the steps have been completed and rechecked, contact the Engine Support Center for further instructions.				
	<table><tr><td>Step 6</td><td>Step ID 3915f</td><td>SRT</td></tr></table> Clear the inactive fault codes 1. Connect all components 2. Turn the key switch ON. 3. Use DAVIE to clear the inactive fault codes. Have all the fault codes been cleared? • Yes – Repair complete • No – Troubleshoot any remaining active fault codes	Step 6	Step ID 3915f	SRT	
Step 6	Step ID 3915f	SRT			
Verification Drive Cycle	Perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes.				
		Back to Index			

P3916

Code number	P3916
Fault code description	NOx sensor after catalyst - Data erratic, intermittent or incorrect
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group - None Freeze frame type -Comprehensive
Description of component(s)	 DESCRIPTIONS COMPONENTS, NOX SENSOR AFTER CATALYST (F843) - Dosing fuel into the exhaust pipe before the oxidation catalyst, during active regeneration; - Ceramic sensor element, heater element and an electronic control unit; - The NOx sensor is connected to the A-CAN. Effect of the output signal on the system: - Measures the amount of NOx after the catalyst in order to determine if the NOx level is within the limits.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NOx sensor after catalyst (F843) reaches the dew point. The dew point is reached 5 seconds after the temperature after the SCR is higher than 150°C [302°F].
Set condition of fault code	The DTC is set when the sensor is not powered correctly or if there is a

	problem with the power supply for 10 consecutive seconds.			
Reset condition of fault code	- Run a stationary regeneration with DAVIE to raise temperatures and reach dew point of the NOx sensor after catalyst (F843). - Monitor the NOx sensor after catalyst (F843) operation until NOx indicates a stable value.			
Electrical diagram(s)	 Wiring harness connector F843 front view D374 EAS-3 ECU E497 Fuse after treatment CAN F943 NOx sensor after catalytic convertor			
Technical data	D374	F843	Function	
	B14	3	A-CAN High	
	B15	2	A-CAN Low	
		1	Power supply	
		4	Earth	
Component & wiring check, NOx sensor after catalyst (F843)				
Preparation				
- Disconnect connector F843. - Ignition switched on. - Measure on connector F843				
	Pin (+ probe)	Pin (- probe)	Value	Addition information
	4	1	Ubat	at 20°C
	1	Battery negative pole	>0.5v	Switch all consumer on
Component & wiring check, A-CAN				

	Preparation • Ignition switched off. • Disconnect connector F843. • Measure on connector F843 <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Addition information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td>at 20°C</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Addition information	2	3	± 60 Ω	at 20°C
Pin (+ probe)	Pin (- probe)	Value	Addition information						
2	3	± 60 Ω	at 20°C						
Possible causes	• Open power supply circuit of the NOx sensor after catalyst (F843). • Internal malfunction of the NOx sensor after catalyst (F843). • Check if the sensor is powered correctly • Check the wiring harness for short circuits								
Additional information	• The NOx sensor after catalyst (F843) is not operational • AdBlue injection is based on pre-programmed values.								
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pin out locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3916a</td><td>SRT</td></tr><tr><td colspan="3"> Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 2 in the troubleshooting process. </td></tr></table>	Step 1	Step ID 3916a	SRT	Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 2 in the troubleshooting process.				
Step 1	Step ID 3916a	SRT							
Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 2 in the troubleshooting process.									

	<table><tr><td>Step 2</td><td>Step ID 3916b</td><td>SRT</td></tr><tr><td colspan="3"> 1. Turn the key switch ON. 2. Use DAVIE to check fault codes. Is fault code P3916 active? • Yes – Proceed to step 3 • No – Proceed to step 8 </td></tr></table>	Step 2	Step ID 3916b	SRT	1. Turn the key switch ON. 2. Use DAVIE to check fault codes. Is fault code P3916 active? • Yes – Proceed to step 3 • No – Proceed to step 8		
	Step 2	Step ID 3916b	SRT				
	1. Turn the key switch ON. 2. Use DAVIE to check fault codes. Is fault code P3916 active? • Yes – Proceed to step 3 • No – Proceed to step 8						
	<table><tr><td>Step 3</td><td>Step ID 3916c</td><td>SRT</td></tr><tr><td colspan="3"> 1. Turn the key switch OFF. 2. Disconnect the NOx after catalyst sensor from the harness. 3. Inspect the NOx after catalyst sensor harness and connector for: 1. Corroded or dirty pins 2. Damaged pins 3. Pushed back or expanded pins 4. Loose connector 5. Moisture in or on the connector 6. Connector shell damaged 7. Missing or damaged connector seals 8. Wire insulation damage Dirty or damaged pins/connector? • Yes – A dirty or damaged connection has been detected. Clean, repair or replace the damaged connection or harness if possible - Proceed to step 8 • No – Proceed to step 4 </td></tr></table>	Step 3	Step ID 3916c	SRT	1. Turn the key switch OFF. 2. Disconnect the NOx after catalyst sensor from the harness. 3. Inspect the NOx after catalyst sensor harness and connector for: 1. Corroded or dirty pins 2. Damaged pins 3. Pushed back or expanded pins 4. Loose connector 5. Moisture in or on the connector 6. Connector shell damaged 7. Missing or damaged connector seals 8. Wire insulation damage Dirty or damaged pins/connector? • Yes – A dirty or damaged connection has been detected. Clean, repair or replace the damaged connection or harness if possible - Proceed to step 8 • No – Proceed to step 4		
	Step 3	Step ID 3916c	SRT				
1. Turn the key switch OFF. 2. Disconnect the NOx after catalyst sensor from the harness. 3. Inspect the NOx after catalyst sensor harness and connector for: 1. Corroded or dirty pins 2. Damaged pins 3. Pushed back or expanded pins 4. Loose connector 5. Moisture in or on the connector 6. Connector shell damaged 7. Missing or damaged connector seals 8. Wire insulation damage Dirty or damaged pins/connector? • Yes – A dirty or damaged connection has been detected. Clean, repair or replace the damaged connection or harness if possible - Proceed to step 8 • No – Proceed to step 4							
<table><tr><td>Step 4</td><td>Step ID 3916d</td><td>SRT</td></tr><tr><td colspan="3"> 1. Turn the key switch OFF. 2. Disconnect the NOx after catalyst sensor from the harness. 3. Turn the key switch ON. 4. Check the power supply and return circuit to the NOx after catalyst sensor. 5. Measure the voltage between the NOx after catalyst sensor supply circuit and return circuit at the NOx sensor harness connector. i Check the voltage at key ON, while cranking the engine and with the engine running at idle. Is the voltage within 1 VDC of the battery voltage? • Yes – Proceed to step 5 • No – Proceed to step 6 </td></tr></table>	Step 4	Step ID 3916d	SRT	1. Turn the key switch OFF. 2. Disconnect the NOx after catalyst sensor from the harness. 3. Turn the key switch ON. 4. Check the power supply and return circuit to the NOx after catalyst sensor. 5. Measure the voltage between the NOx after catalyst sensor supply circuit and return circuit at the NOx sensor harness connector. i Check the voltage at key ON, while cranking the engine and with the engine running at idle. Is the voltage within 1 VDC of the battery voltage? • Yes – Proceed to step 5 • No – Proceed to step 6			
Step 4	Step ID 3916d	SRT					
1. Turn the key switch OFF. 2. Disconnect the NOx after catalyst sensor from the harness. 3. Turn the key switch ON. 4. Check the power supply and return circuit to the NOx after catalyst sensor. 5. Measure the voltage between the NOx after catalyst sensor supply circuit and return circuit at the NOx sensor harness connector. i Check the voltage at key ON, while cranking the engine and with the engine running at idle. Is the voltage within 1 VDC of the battery voltage? • Yes – Proceed to step 5 • No – Proceed to step 6							
<table><tr><td>Step 5</td><td>Step ID 3916e</td><td>SRT</td></tr><tr><td colspan="3"> 1. Turn the key switch OFF. 2. Connect the NOx after catalyst sensor to the harness. 3. Turn the key switch ON. 4. Start and idle the engine. </td></tr></table>	Step 5	Step ID 3916e	SRT	1. Turn the key switch OFF. 2. Connect the NOx after catalyst sensor to the harness. 3. Turn the key switch ON. 4. Start and idle the engine.			
Step 5	Step ID 3916e	SRT					
1. Turn the key switch OFF. 2. Connect the NOx after catalyst sensor to the harness. 3. Turn the key switch ON. 4. Start and idle the engine.							

5. Operate the engine until the NOx after catalyst sensor is above 302°F (150°C).
6. Check the appropriate circuit response.

Is fault code P3916 active?

- Yes – Replace the NOx after catalyst sensor - Proceed to step 8
- No – The removal and reinstallation of the connector corrected the fault. Proceed to step 8

Step 6	Step ID 3916f	SRT

1. Turn the key switch OFF.
2. Check the positive and negative battery terminals.

Are the connections tight and corrosion-free?

- Yes – Proceed to step 7
- No – Tighten and/or clean the connections. Refer to the OEM manual. Proceed to step 8

Step 7	Step ID 3916g	SRT

1. Turn the key switch OFF.
2. Disconnect the NOx after catalyst sensor from the harness.
3. Turn the key switch ON.
4. Check for an open circuit.
5. Measure the voltage between the NOx after catalyst sensor battery supply pin and the engine block ground.

Is the voltage within 1 VDC of the battery voltage?

- Yes – An open circuit has been detected in the NOx after catalyst sensor ground circuit. Repair or replace the wiring. Proceed to step 8
- No – An open circuit has been detected in the NOx after catalyst sensor supply circuit. Check for an open circuit, short circuit or blown fuses in the power supply circuit. Repair or replace the wiring/fuse. Proceed to step 8

Step 8	Step ID 3916h	SRT

1. Connect all components.
2. Operate the system within the 'reset condition of the fault code' found in the fault code information.
3. Use DAVIE to verify whether the fault codes are inactive.

Is fault code P3916 inactive?

- Yes – Proceed to step 9
- No – Return to the troubleshooting steps - Proceed to step 1

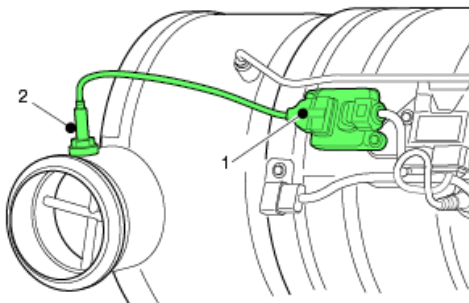
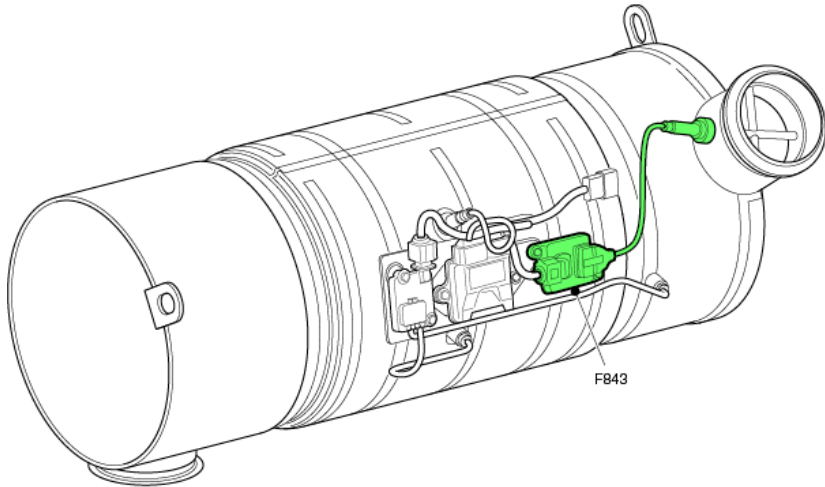
If all the steps have been completed and rechecked, contact the Engine Support Center for further instructions.

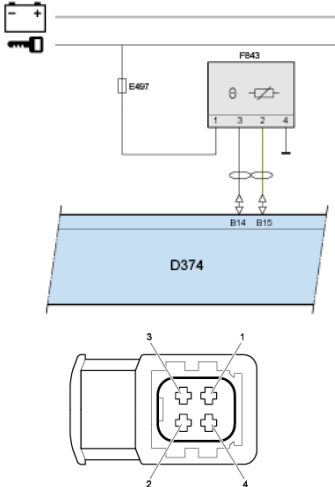
Step 9	Step ID 3916i	SRT

1. Connect all components
2. Turn the key switch ON.

	3. Use DAVIE to clear the inactive fault codes. Have all the fault codes been cleared? • Yes – Repair complete • No – Troubleshoot any remaining active fault codes
Verification Drive Cycle	Perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3917

Code number	P3917
Fault code description	NOx sensor after catalyst - Heater element error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group - None Freeze frame type -Comprehensive
Description of component(s)	 DESCRIPTIONS COMPONENTS, NOX SENSOR AFTER CATALYST (F843) • Dosing fuel into the exhaust pipe before the oxidation catalyst, during active regeneration; • Ceramic sensor element, heater element and an electronic control unit; • The NOx sensor is connected to the A-CAN. Effect of the output signal on the system: • Measures the amount of NOx after the catalyst in order to determine if the NOx level is within the limits.
Location of component(s)	
Diagnostic condition	• This diagnostic runs after the NOx sensor after catalyst (F843) reaches the dew point. The dew point is reached 5 seconds after the temperature after the SCR is higher than 150°C [302°F].
Set condition of fault code	• The DTC is set when the sensor is not powered correctly or if there is a

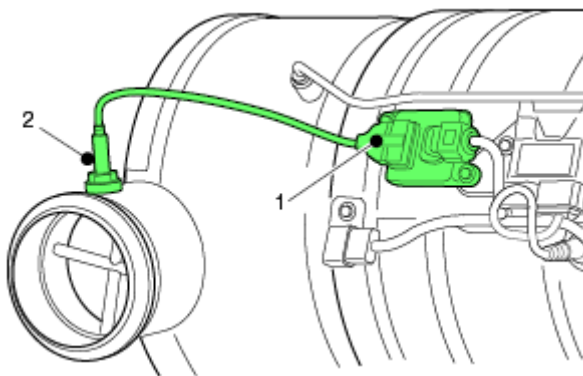
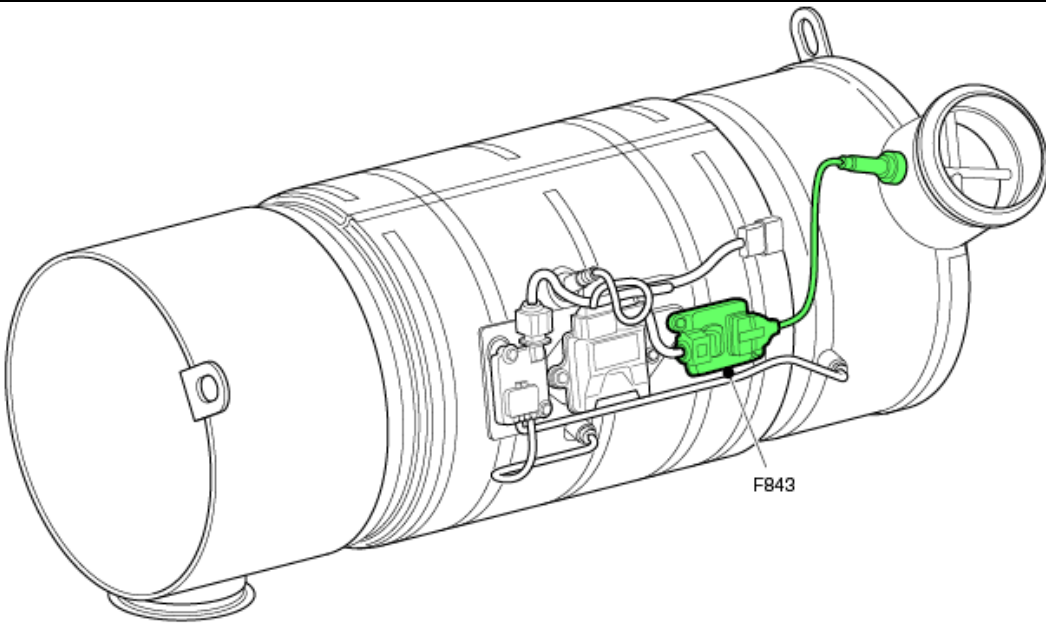
	problem with the power supply for 10 consecutive seconds.																																			
Reset condition of fault code	- Run a stationary regeneration with DAVIE to raise temperatures and reach dew point of the NOx sensor after catalyst (F843). - Monitor the NOx sensor after catalyst (F843) operation until NOx indicates a stable value.																																			
Electrical diagram(s)	 Wiring harness connector F843 front view D374 EAS-3 ECU E497 Fuse after treatment CAN F943 NOx sensor after catalytic convertor																																			
Technical data	<table><tr><td>D374</td><td>F843</td><td>Function</td><td></td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td><td></td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td><td></td></tr><tr><td></td><td>1</td><td>Power supply</td><td></td></tr><tr><td></td><td>4</td><td>Earth</td><td></td></tr></table> Component & wiring check, NOx sensor after catalyst (F843) Preparation - Disconnect connector F843. - Ignition switched on. - Measure on connector F843 <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Addition information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td>at 20°C</td></tr><tr><td>1</td><td>Battery negative pole</td><td>>0.5v</td><td>Switch all consumer on</td></tr></table> Component & wiring check, A-CAN				D374	F843	Function		B14	3	A-CAN High		B15	2	A-CAN Low			1	Power supply			4	Earth		Pin (+ probe)	Pin (- probe)	Value	Addition information	4	1	Ubat	at 20°C	1	Battery negative pole	>0.5v	Switch all consumer on
D374	F843	Function																																		
B14	3	A-CAN High																																		
B15	2	A-CAN Low																																		
	1	Power supply																																		
	4	Earth																																		
Pin (+ probe)	Pin (- probe)	Value	Addition information																																	
4	1	Ubat	at 20°C																																	
1	Battery negative pole	>0.5v	Switch all consumer on																																	

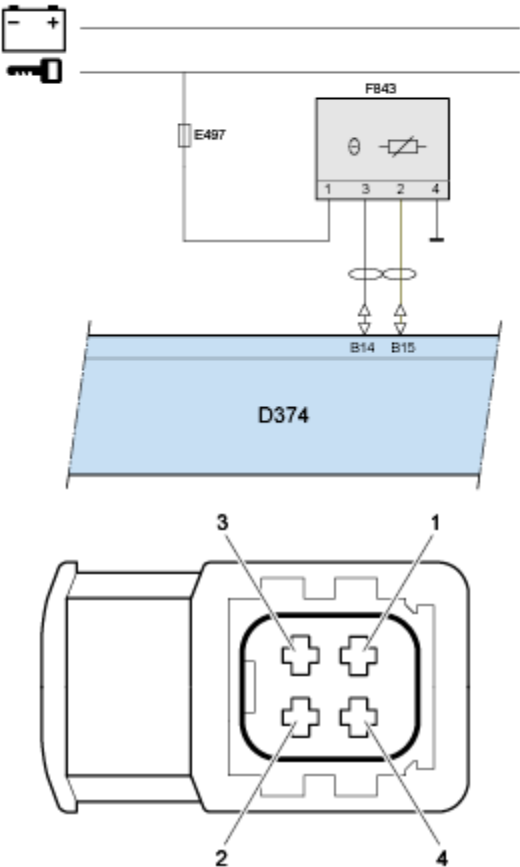
	Preparation • Ignition switched off. • Disconnect connector F843. • Measure on connector F843 <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Addition information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td>at 20°C</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Addition information	2	3	± 60 Ω	at 20°C	
Pin (+ probe)	Pin (- probe)	Value	Addition information							
2	3	± 60 Ω	at 20°C							
Possible causes	• Open power supply circuit of the NOx sensor after catalyst (F843). • Internal malfunction of the NOx sensor after catalyst (F843). • Check if the sensor is powered correctly • Check the wiring harness for short circuits									
Additional information	• The NOx sensor after catalyst (F843) is not operational • DEF injection is based on pre-programmed values.									
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pin out locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3917a</td><td>SRT</td></tr><tr><td colspan="3"> Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 2 in the troubleshooting process. </td></tr><tr><td>Step 2</td><td>Step ID 3917b</td><td>SRT</td></tr></table>	Step 1	Step ID 3917a	SRT	Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 2 in the troubleshooting process.			Step 2	Step ID 3917b	SRT
Step 1	Step ID 3917a	SRT								
Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 2 in the troubleshooting process.										
Step 2	Step ID 3917b	SRT								

	1. Turn the key switch ON. 2. Use DAVIE to check for fault codes. Is fault code P3921, P3873, or P3816 active? • Yes – Proceed with the appropriate fault code • No – Proceed to step 3		
	Step 3	Step ID 3917c	SRT
	1. Turn the key switch ON. 2. Use DAVIE to check for line heating fault codes. Is fault code P3917 active? • Yes – An internal error has been detected in the NOx sensor. Replace the NOx sensor. Proceed to step 4 • No – Proceed to step 4		
	Step 4	Step ID 3917d	SRT
	1. Connect all components. 2. Operate the system within 'reset condition of the fault code' found in the fault code information. 3. Use DAVIE to verify if the fault codes are inactive. Is fault code P3917 inactive? • Yes – Proceed to step 5 • No – Return to the troubleshooting steps Proceed to step 1 If all the steps have been completed and rechecked, contact the Engine Support Center for further instructions.		
	Step 5	Step ID 3917e	SRT
	1. Connect all components. 2. Turn the key switch ON. 3. Use DAVIE to clear the inactive fault codes. Have all the fault codes been cleared? • Yes – Repair complete • No – Troubleshoot any remaining active fault codes		
Verification Drive Cycle	Perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record:		

	• Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3918

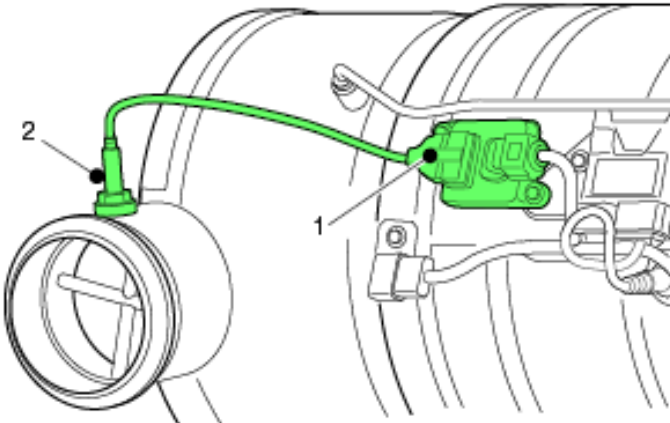
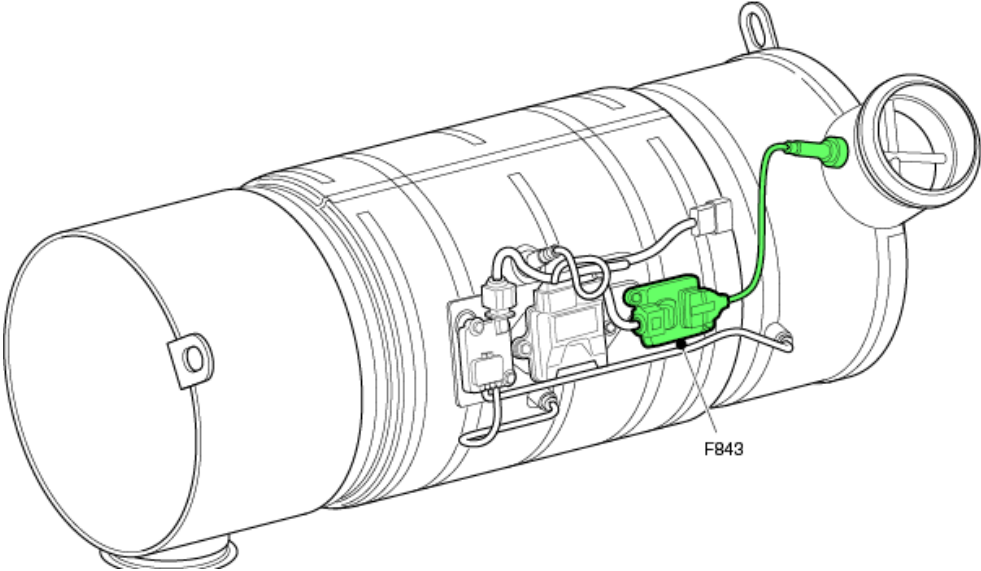
Code number	P3918
Fault code description	NOx sensor after catalyst - NOx signal error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Dosing fuel into the exhaust pipe before the oxidation catalyst, during active regeneration; Ceramic sensor element, heater element, and an electronic control unit; The NOx sensor is connected to the A-CAN.  Effect of the output signal on the system: Measures the amount of NOx after the catalyst in order to determine if the NOx level is within the limits.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached 105 seconds after the temperature before the DOC is higher than 150°C [302°F].
Set condition of fault code	The DTC is set when the sensor is reporting a short circuit to supply, or when an open circuit is detected for 10 consecutive seconds.
Reset condition of fault code	Run a stationary regeneration with DAVIE to raise temperatures and reach dew point of the NOx sensor after catalyst (F843).

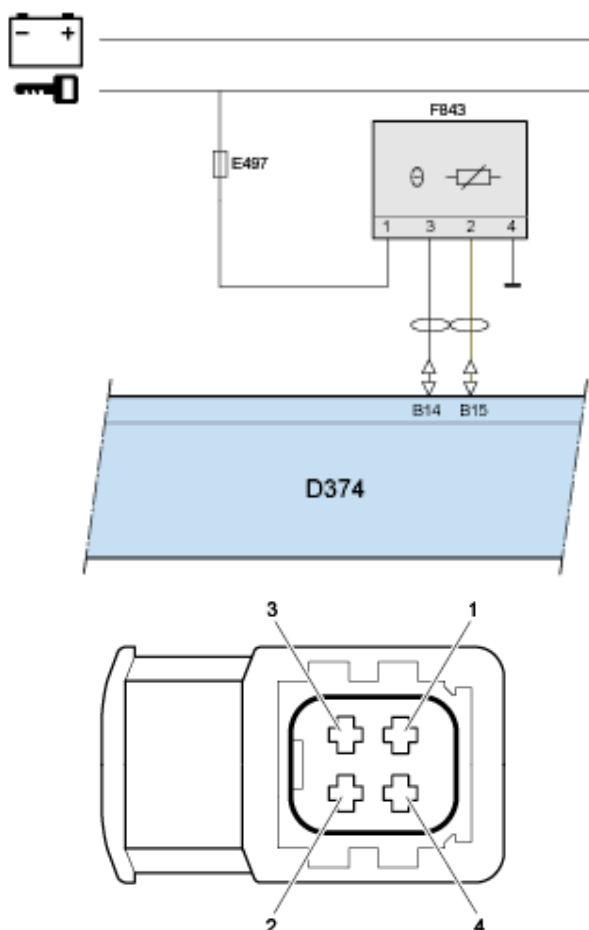
	Monitor the NOx sensor after catalyst (F843) operation until NOx indicates a stable value.															
Electrical diagram(s)	 Wiring harness connector F843 front view D374 EAS-3 ECU E497 aftertreatment CAN fuse F843 NOx sensor after catalytic convertor <table><tr><td>D374</td><td>F843</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN high</td></tr><tr><td>B15</td><td>2</td><td>A-CAN low</td></tr><tr><td></td><td>1</td><td>Power supply after ignition</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F843	Function	B14	3	A-CAN high	B15	2	A-CAN low		1	Power supply after ignition		4	Ground
D374	F843	Function														
B14	3	A-CAN high														
B15	2	A-CAN low														
	1	Power supply after ignition														
	4	Ground														
Technical data	Component and wiring check, NOx sensor after catalyst (F843) Preparation - Disconnect connector F843. - Ignition switched on. - Measure on connector F843. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td></td></tr><tr><td>1</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Component & wiring check, A-CAN	Pin (+ probe)	Pin (- probe)	Value	Additional information	4	1	Ubat		1	Battery negative pole	>0.5V	Switch all consumers on			
Pin (+ probe)	Pin (- probe)	Value	Additional information													
4	1	Ubat														
1	Battery negative pole	>0.5V	Switch all consumers on													

	Preparation • Ignition switched off. • Disconnect connector F843. • Measure on connector F843. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	3	± 60 Ω											
Pin (+ probe)	Pin (- probe)	Value	Additional information																
2	3	± 60 Ω																	
Possible causes	• Damaged NOx sensor after catalyst (F843). • Short circuit to supply or an open circuit.																		
Additional information	• The NOx sensor after catalyst (F843) is not operational. • DEF injection is based on preprogrammed values.																		
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3918a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3918b</td><td>SRT</td></tr><tr><td colspan="3">1. Turn the key switch ON. 2. Use DAVIE to check for fault codes. Is fault code P3921, P3873, or P3916 active? • Yes – Proceed with the appropriate fault code • No – Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3918c</td><td>SRT</td></tr><tr><td colspan="3">1. Turn the key switch ON. 2. Use DAVIE to check for related fault codes. Is fault code P3918 active? • Yes – An internal error has been detected in the NOx sensor. Replace the NOx sensor. Proceed to step 4 </td></tr></table>	Step 1	Step ID 3918a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3918b	SRT	1. Turn the key switch ON. 2. Use DAVIE to check for fault codes. Is fault code P3921, P3873, or P3916 active? • Yes – Proceed with the appropriate fault code • No – Proceed to step 3			Step 3	Step ID 3918c	SRT	1. Turn the key switch ON. 2. Use DAVIE to check for related fault codes. Is fault code P3918 active? • Yes – An internal error has been detected in the NOx sensor. Replace the NOx sensor. Proceed to step 4		
Step 1	Step ID 3918a	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step ID 3918b	SRT																	
1. Turn the key switch ON. 2. Use DAVIE to check for fault codes. Is fault code P3921, P3873, or P3916 active? • Yes – Proceed with the appropriate fault code • No – Proceed to step 3																			
Step 3	Step ID 3918c	SRT																	
1. Turn the key switch ON. 2. Use DAVIE to check for related fault codes. Is fault code P3918 active? • Yes – An internal error has been detected in the NOx sensor. Replace the NOx sensor. Proceed to step 4																			

	No – Proceed to step 4						
	<table><tr><td>Step 4</td><td>Step ID 3918d</td><td>SRT</td></tr><tr><td colspan="3"> 1. Connect all components. 2. Operate the system within 'reset condition of the fault code' found in the fault code information. 3. Use DAVIE to verify if the fault codes are inactive. Is fault code P3918 inactive? - Yes – Proceed to step 5 - No – Return to the troubleshooting steps Proceed to step 1 If all the steps have been completed and rechecked, contact the Engine Support Center for further instructions. </td></tr></table>	Step 4	Step ID 3918d	SRT	1. Connect all components. 2. Operate the system within 'reset condition of the fault code' found in the fault code information. 3. Use DAVIE to verify if the fault codes are inactive. Is fault code P3918 inactive? - Yes – Proceed to step 5 - No – Return to the troubleshooting steps Proceed to step 1 If all the steps have been completed and rechecked, contact the Engine Support Center for further instructions.		
Step 4	Step ID 3918d	SRT					
1. Connect all components. 2. Operate the system within 'reset condition of the fault code' found in the fault code information. 3. Use DAVIE to verify if the fault codes are inactive. Is fault code P3918 inactive? - Yes – Proceed to step 5 - No – Return to the troubleshooting steps Proceed to step 1 If all the steps have been completed and rechecked, contact the Engine Support Center for further instructions.							
	<table><tr><td>Step 5</td><td>Step ID 3918e</td><td>SRT</td></tr><tr><td colspan="3"> 1. Connect all components. 2. Turn the key switch ON. 3. Use DAVIE to clear the inactive fault codes. Have all the fault codes been cleared? - Yes – Repair complete - No – Troubleshoot any remaining active fault codes </td></tr></table>	Step 5	Step ID 3918e	SRT	1. Connect all components. 2. Turn the key switch ON. 3. Use DAVIE to clear the inactive fault codes. Have all the fault codes been cleared? - Yes – Repair complete - No – Troubleshoot any remaining active fault codes		
Step 5	Step ID 3918e	SRT					
1. Connect all components. 2. Turn the key switch ON. 3. Use DAVIE to clear the inactive fault codes. Have all the fault codes been cleared? - Yes – Repair complete - No – Troubleshoot any remaining active fault codes							
Verification Drive Cycle	Perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: - Exhaust Temperature Before SCR - Exhaust Temperature After SCR - Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check						
	Back to Index						

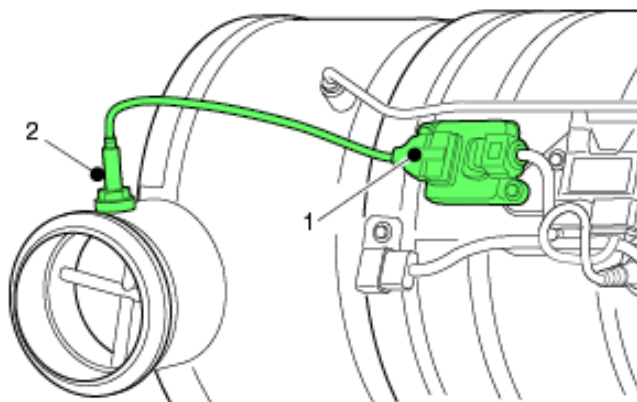
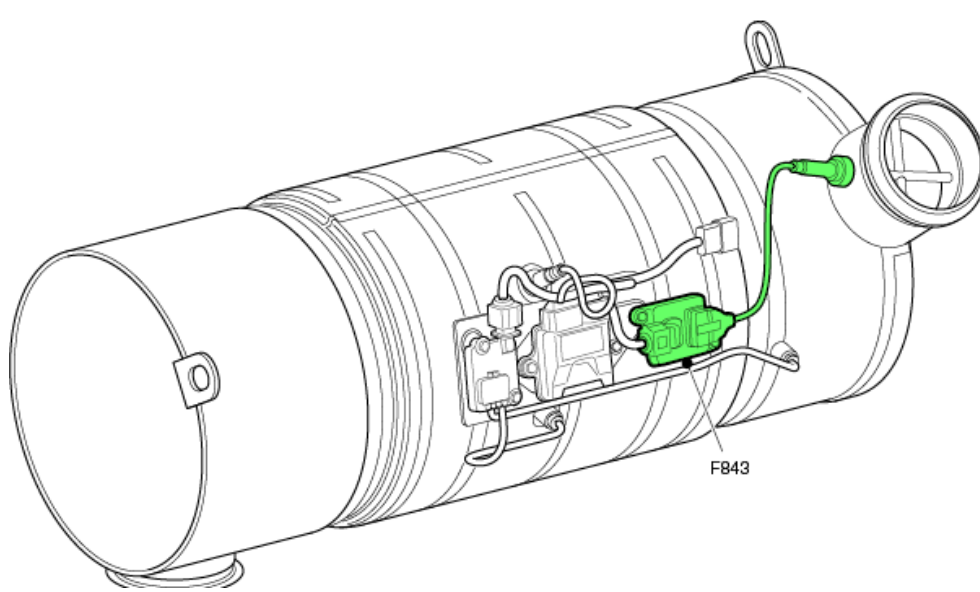
P3921

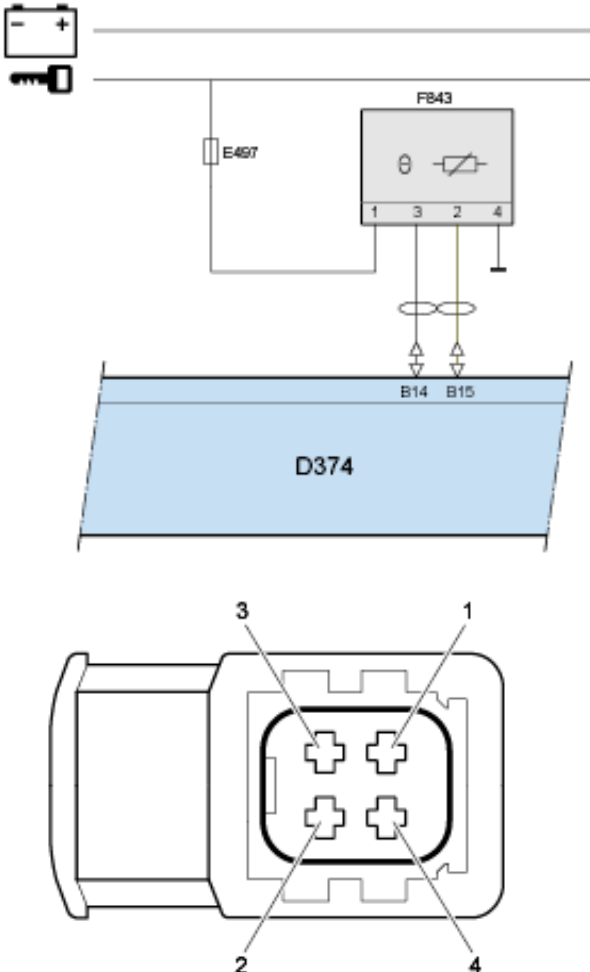
Code number	P3921
Fault code description	CAN communication - Timeout from NOx sensor after catalyst
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – SCR Catalyst
Description of component(s)	- Dosing fuel into the exhaust pipe before the oxidation catalyst, during active regeneration; - Ceramic sensor element, heater element, and an electronic control unit; - The NOx sensor is connected to the A-CAN.  Effect of the output signal on the system: - Measures the amount of NOx after the catalyst in order to determine if the NOx level is within the limits.
Location of component(s)	
Diagnostic condition	No information available.
Set condition of fault code	No information available.
Reset condition of fault code	No information available.

Electrical diagram(s)	 Wiring harness connector F843 front view D374 EAS-3 ECU E497 after treatment CAN fuse F843 NOx sensor after catalytic convertor <table><tr><td>D374</td><td>F843</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN high</td></tr><tr><td>B15</td><td>2</td><td>A-CAN low</td></tr><tr><td></td><td>1</td><td>Power supply after ignition</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F843	Function	B14	3	A-CAN high	B15	2	A-CAN low		1	Power supply after ignition		4	Ground
D374	F843	Function														
B14	3	A-CAN high														
B15	2	A-CAN low														
	1	Power supply after ignition														
	4	Ground														
Technical data	Component and wiring check, NOx sensor after catalyst (F843) Preparation • Disconnect connector F843. • Ignition switched on. • Measure on connector F843. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td></td></tr><tr><td>1</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	4	1	Ubat		1	Battery negative pole	>0.5V	Switch all consumers on			
Pin (+ probe)	Pin (- probe)	Value	Additional information													
4	1	Ubat														
1	Battery negative pole	>0.5V	Switch all consumers on													

	Component & wiring check, A-CAN Preparation - Ignition switched off. - Disconnect connector F843. - Measure on connector F843. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	3	± 60 Ω	
Pin (+ probe)	Pin (- probe)	Value	Additional information						
2	3	± 60 Ω							
Possible causes	- Breakdown in communication in the CAN network - Interruption, short circuit to ground, or short circuit to supply in the CAN network wiring								
Additional information	- The NOx sensor after catalyst (F843) is not operational. - DEF injection is based on preprogrammed values. - After 36 hours of engine operation with P3921 active, P1518 becomes active. - After 100 hours of engine operation with P3921 active, P151A and/or P151B becomes active.								
Diagnostic Step-by-Step	- Please refer “General troubleshooting – CAN” - After 36 hours of engine operation with P3921 active, P1518 becomes active - Resolve the P1518 fault - Clear the fault code - Perform the verification as per verification drive cycle of P1518 - After 100 hours of engine operation with P3921 active, P151A and/or P151B becomes active - Resolve the , P151A/P151B fault - Clear the fault code - Perform the verification as per verification drive cycle of P151A/P151B								
Verification Drive Cycle	To validate the repair: - Check as per verification drive cycle of P1518 if P1518 is active - Check as per verification drive cycle of P151A/P151B if P151A/P151B is active								
	Back to Index								

P3922

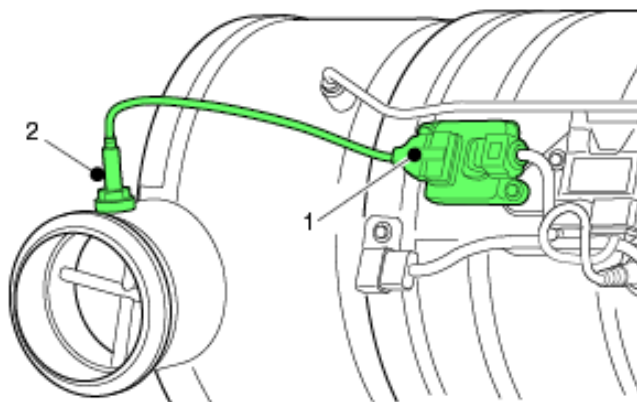
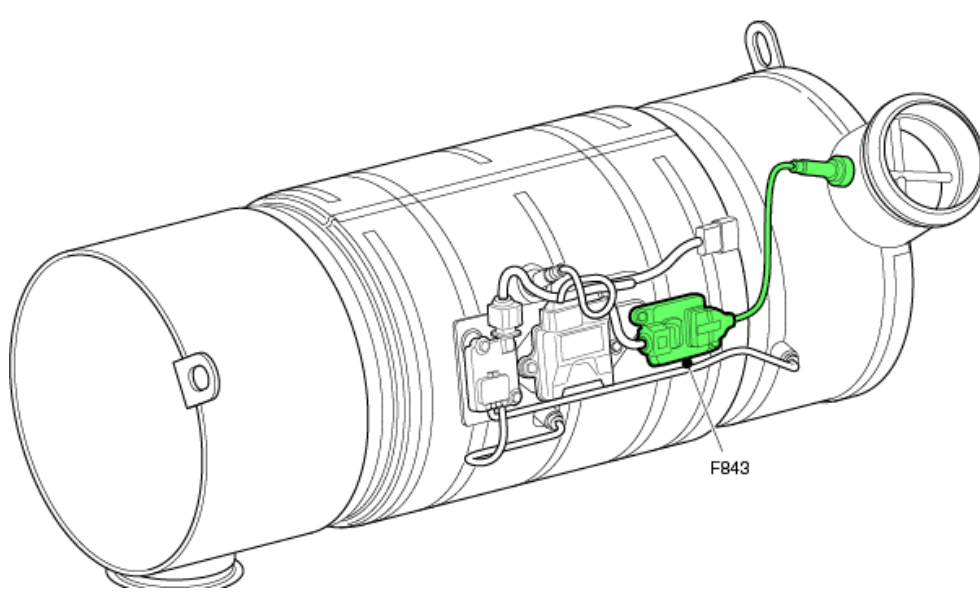
Code number	P3922
Fault code description	NOx sensor after catalyst - Value not changing when expected on ECU D374 pin 1
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – Exhaust gas sensors Freeze frame type –SCR catalyst
Description of component(s)	 Descriptions components, NOx sensor after catalyst (F843) • Dosing fuel into the exhaust pipe before the oxidation catalyst, during active regeneration; • Ceramic sensor element, heater element and an electronic control unit; • The NOx sensor is connected to the A-CAN. Effect of the output signal on the system: Measures the amount of NOx after the catalyst in order to determine if the NOx level is within the limits.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NOx sensor after catalyst (F843) reaches the dew point. The dew point is reached 5 seconds after the temperature after the SCR is higher than

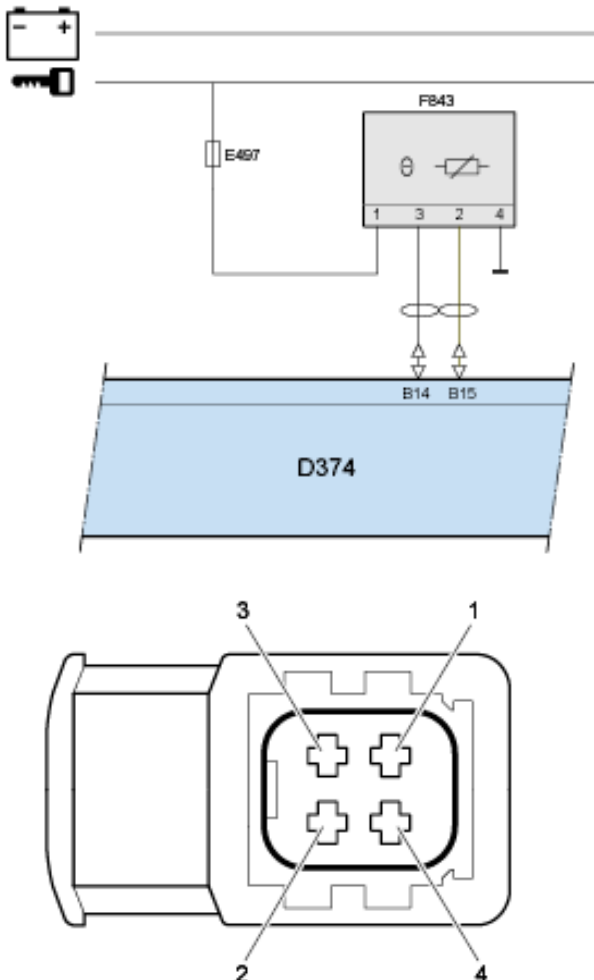
	150°C [302°F].															
Set condition of fault code	The DTC is set when the sensor is not powered correctly or if there is a problem with the power supply for 10 consecutive seconds.															
Reset condition of fault code	- Run a stationary regeneration with DAVIE to raise temperatures and reach dew point of the NOx sensor after catalyst (F843). - Monitor the NOx sensor after catalyst (F843) operation until NOx indicates a stable value.															
Electrical diagram(s)	 Wiring harness connector F843 front view D374 EAS-3 ECU E497 Fuse after treatment CAN F843 NOx sensor after catalytic convertor <table><tr><td>D374</td><td>F843</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F843	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F843	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Component & wiring check, NOx sensor after catalyst (F843) Preparation - Disconnect connector F843. - Ignition switched on.															

	- Measure on connector F843 <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td>at 20°C</td></tr></table> Battery <table><tr><td>1</td><td>negative pole</td><td>>0.5 V</td><td>Switch all consumers on</td></tr></table> Component & wiring check, A-CAN Preparation - Ignition switched off. - Disconnect connector F843. - Measure on connector F843 <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td>at 20°C</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	4	1	Ubat	at 20°C	1	negative pole	>0.5 V	Switch all consumers on	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	3	± 60 Ω	at 20°C
Pin (+ probe)	Pin (- probe)	Value	Additional information																		
4	1	Ubat	at 20°C																		
1	negative pole	>0.5 V	Switch all consumers on																		
Pin (+ probe)	Pin (- probe)	Value	Additional information																		
2	3	± 60 Ω	at 20°C																		
Possible causes	- Malfunctioning NOx sensor after catalyst (F843). - DEF crystallization or deposits. - Improperly installed NOx sensor after catalyst (F843).																				
Additional information	- The NOx sensor after catalyst (F843) is not operational - DEF injection is based on pre-programmed values.																				
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pin out locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3922a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3922b</td><td>SRT</td></tr><tr><td colspan="3">Visual Inspection: NOx sensors, NH3 sensor Remove the NOx sensors and the NH3 Sensor, and visually inspect for buildup on the sensor tips.</td></tr><tr><td colspan="3">Was there evidence of excessive buildup?</td></tr></table>	Step 1	Step ID 3922a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3922b	SRT	Visual Inspection: NOx sensors, NH3 sensor Remove the NOx sensors and the NH3 Sensor, and visually inspect for buildup on the sensor tips.			Was there evidence of excessive buildup?							
Step 1	Step ID 3922a	SRT																			
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																					
Step 2	Step ID 3922b	SRT																			
Visual Inspection: NOx sensors, NH3 sensor Remove the NOx sensors and the NH3 Sensor, and visually inspect for buildup on the sensor tips.																					
Was there evidence of excessive buildup?																					

	• No: Continue to the next step in the troubleshooting process. • Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.			
	<table><tr><td>Step 3</td><td>Step ID 3922c</td><td>SRT</td></tr></table> Visual Inspection: decomposition tube Remove the decomposition tube and check for excessive crystallization deposits. Was there evidence of excessive crystallization deposits? • No: Continue to the next step in the troubleshooting process. • Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.	Step 3	Step ID 3922c	SRT
Step 3	Step ID 3922c	SRT		
	<table><tr><td>Step 4</td><td>Step ID 3922d</td><td>SRT</td></tr></table> Replace: NOx sensor after catalyst Replace the NOx sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.	Step 4	Step ID 3922d	SRT
Step 4	Step ID 3922d	SRT		
	<table><tr><td>Step 5</td><td>Step ID 3922e</td><td>SRT</td></tr></table> Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.	Step 5	Step ID 3922e	SRT
Step 5	Step ID 3922e	SRT		
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.			
	Back to Index			

P3923

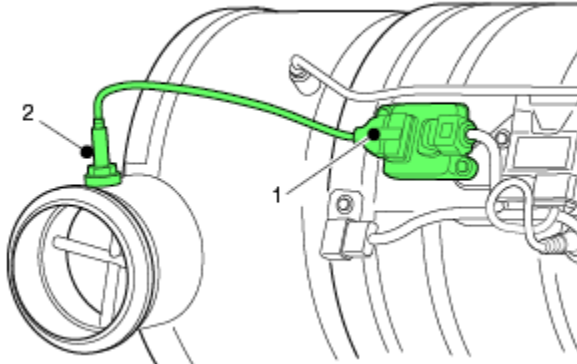
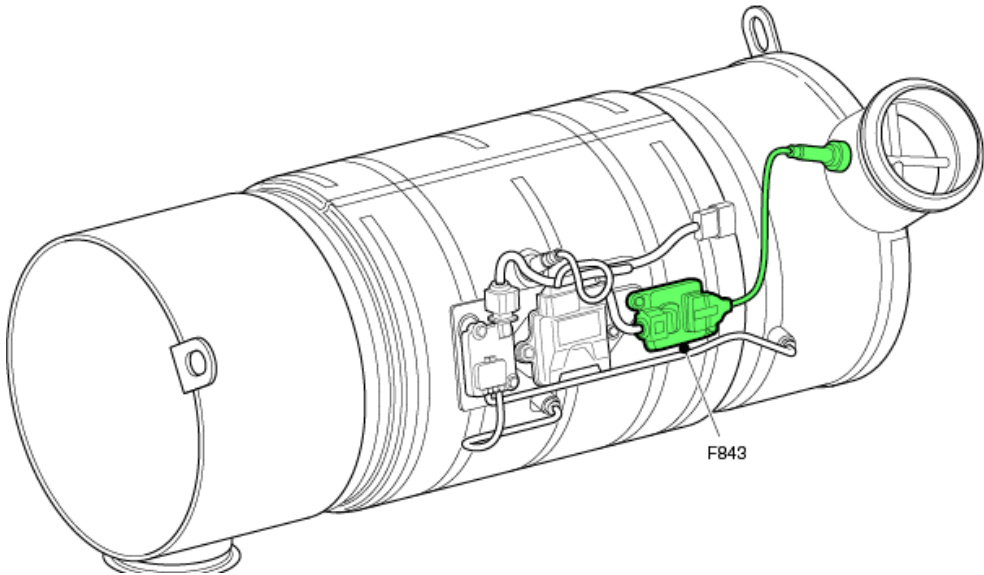
Code number	P3923
Fault code description	NOx sensor after catalyst power supply – Interrupted
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – none Freeze frame type –SCR catalyst
Description of component(s)	 Descriptions components, NOx sensor after catalyst (F843) • Dosing fuel into the exhaust pipe before the oxidation catalyst, during active regeneration; • Ceramic sensor element, heater element and an electronic control unit; • The NOx sensor is connected to the A-CAN. Effect of the output signal on the system: Measures the amount of NOx after the catalyst in order to determine if the NOx level is within the limits.
Location of component(s)	
Diagnostic condition	The diagnostic runs when the exhaust gas temperature at the NOx sensor after catalyst (F843) is above 150°C.

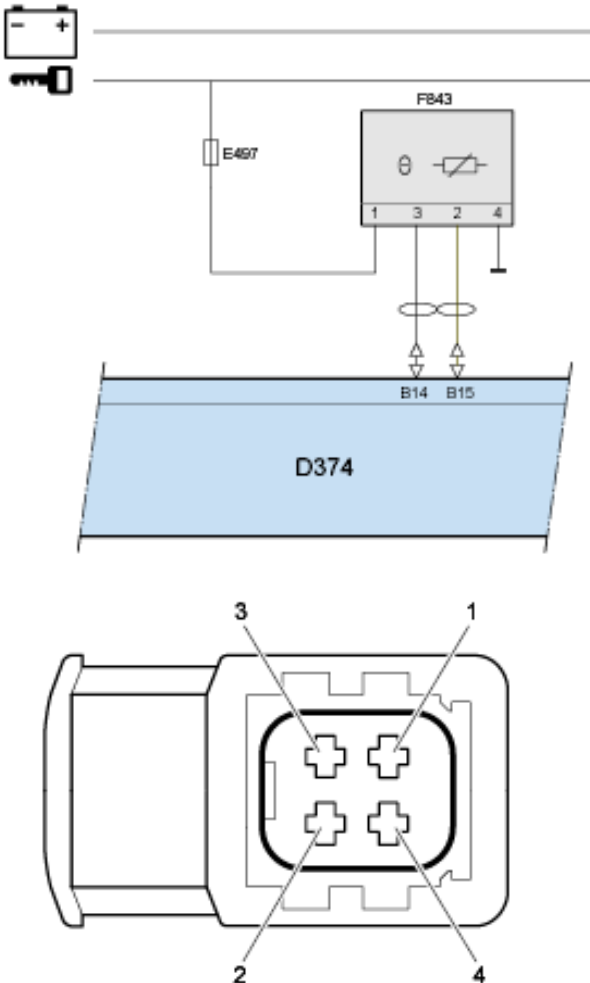
Set condition of fault code	The EAS-3 ECU (D374) detects that the power supply to the NOx sensor after catalyst (F843) is above or below a threshold.															
Reset condition of fault code	- The exhaust gas temperature at the after treatment outlet NOx sensor must be above 150°C before the sensor can run its internal diagnostics. - To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary regeneration using DAVIE.															
Electrical diagram(s)	 Wiring harness connector F843 front view D374 EAS-3 ECU E497 Fuse after treatment CAN F843 NOx sensor after catalytic convertor <table><tr><td>D374</td><td>F843</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F843	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F843	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Component & wiring check, NOx sensor after catalyst (F843) Preparation - Disconnect connector F843. - Ignition switched on.															

	- Measure on connector F843 <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td>at 20°C</td></tr></table> Battery <table><tr><td>1</td><td>negative pole</td><td>>0.5 V</td><td>Switch all consumers on</td></tr></table> Component & wiring check, A-CAN Preparation - Ignition switched off. - Disconnect connector F843. - Measure on connector F843 <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td>at 20°C</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	4	1	Ubat	at 20°C	1	negative pole	>0.5 V	Switch all consumers on	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	3	± 60 Ω	at 20°C
Pin (+ probe)	Pin (- probe)	Value	Additional information																		
4	1	Ubat	at 20°C																		
1	negative pole	>0.5 V	Switch all consumers on																		
Pin (+ probe)	Pin (- probe)	Value	Additional information																		
2	3	± 60 Ω	at 20°C																		
Possible causes	- Short circuit to earth in the vehicle harness. - Open circuit in the NOx sensor after catalyst (F843) power supply circuit. - Internal malfunction of the NOx sensor after catalyst (F843).																				
Additional information	No additional information available																				
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pin out locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3923a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3923b</td><td>SRT</td></tr><tr><td colspan="3">Electrical Checks</td></tr><tr><td colspan="3">Ensure that the ignition key/switch has been set to OFF before disconnecting related cables.</td></tr><tr><td colspan="3">Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits:</td></tr></table>	Step 1	Step ID 3923a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3923b	SRT	Electrical Checks			Ensure that the ignition key/switch has been set to OFF before disconnecting related cables.			Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits:				
Step 1	Step ID 3923a	SRT																			
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																					
Step 2	Step ID 3923b	SRT																			
Electrical Checks																					
Ensure that the ignition key/switch has been set to OFF before disconnecting related cables.																					
Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits:																					

	• Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Proceed to step 3. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process. <table><tr><td>Step 3</td><td>Step ID 3923d</td><td>SRT</td></tr></table> Replace: NOx sensor after catalyst Replace the NOx sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process. <table><tr><td>Step 4</td><td>Step ID 3923e</td><td>SRT</td></tr></table> Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.	Step 3	Step ID 3923d	SRT	Step 4	Step ID 3923e	SRT
Step 3	Step ID 3923d	SRT					
Step 4	Step ID 3923e	SRT					
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.						
	Back to Index						

P3924

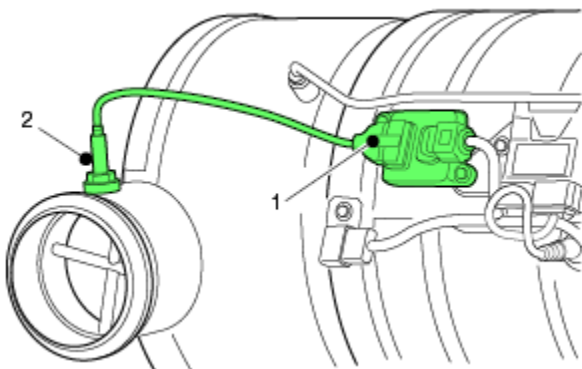
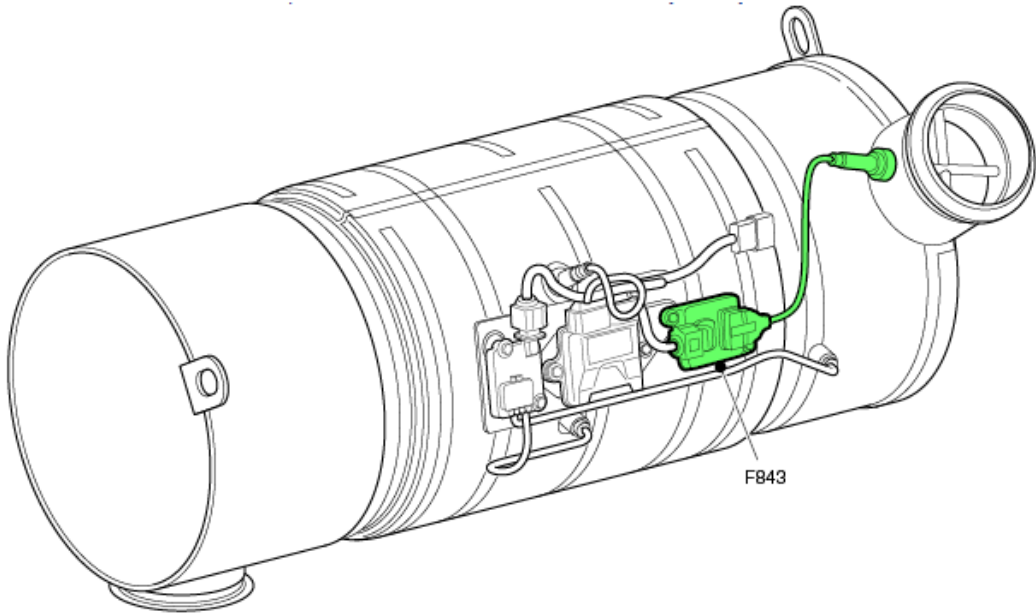
Code number	P3924
Fault code description	NOx sensor after catalyst – Out of calibration
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – SCR Catalyst
Description of component(s)	• Dosing fuel into the exhaust pipe before the oxidation catalyst, during active regeneration; • Ceramic sensor element, heater element, and an electronic control unit; • The NOx sensor is connected to the A-CAN.  Effect of the output signal on the system: • Measures the amount of NOx after the catalyst in order to determine if the NOx level is within the limits.
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously when the ignition is on.
Set condition of fault code	The fault is set when the power supply does not correspond to the sensor type.
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes.

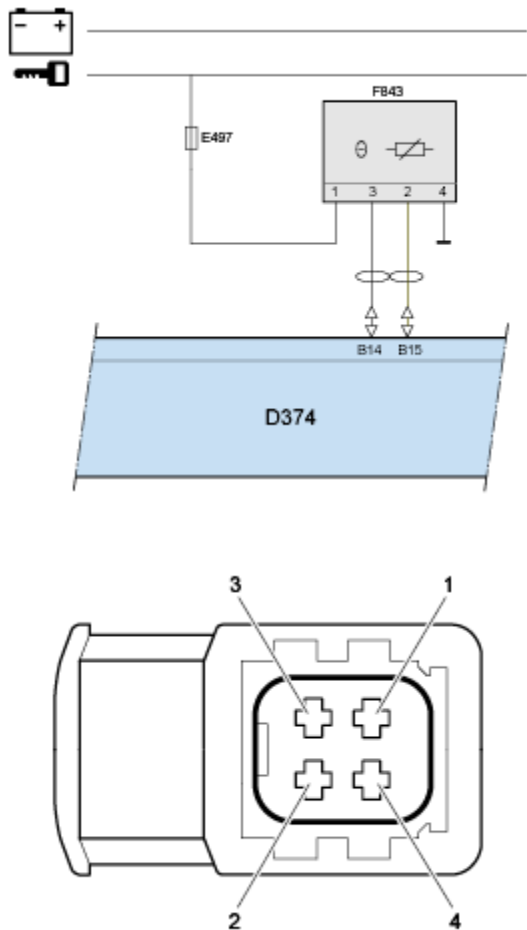
Electrical diagram(s)	 Wiring harness connector F843 front view D374 EAS-3 ECU E497 Fuse after treatment CAN F843 NOx sensor after catalytic convertor <table><tr><td>D374</td><td>F843</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F843	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground					
D374	F843	Function																			
B14	3	A-CAN High																			
B15	2	A-CAN Low																			
	1	Power supply																			
	4	Ground																			
Technical data	Component & wiring check, NOx sensor after catalyst (F843) Preparation • Disconnect connector F843. • Ignition switched on. • Measure on connector F843 <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td>at 20°C</td></tr><tr><td></td><td>Battery</td><td></td><td></td></tr><tr><td>1</td><td>negative pole</td><td>>0.5 V</td><td>Switch all consumers on</td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	4	1	Ubat	at 20°C		Battery			1	negative pole	>0.5 V	Switch all consumers on
Pin	Pin																				
(+ probe)	(- probe)	Value	Additional information																		
4	1	Ubat	at 20°C																		
	Battery																				
1	negative pole	>0.5 V	Switch all consumers on																		

	Component & wiring check, A-CAN Preparation - Ignition switched off. - Disconnect connector F843. - Measure on connector F843 <table><thead><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr></thead><tbody><tr><td>2</td><td>3</td><td>± 60 Ω</td><td>at 20°C</td></tr></tbody></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	3	± 60 Ω	at 20°C										
Pin (+ probe)	Pin (- probe)	Value	Additional information																
2	3	± 60 Ω	at 20°C																
Possible causes	- Wrong NOx sensor after catalyst (F843) installed. - Monitor the NOx sensor after catalyst (F843) with DAVIE.																		
Additional information	- The NOx sensor after catalyst (F843) is not operational. - DEF injection is based on preprogrammed values.																		
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3924a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3924b</td><td>SRT</td></tr><tr><td colspan="3">Replace the identified NOx Sensor, after Catalyst component. Use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolve - Fault active - Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3924c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3924a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3924b	SRT	Replace the identified NOx Sensor, after Catalyst component. Use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolve - Fault active - Proceed to step 3			Step 3	Step ID 3924c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3924a	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step ID 3924b	SRT																	
Replace the identified NOx Sensor, after Catalyst component. Use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolve - Fault active - Proceed to step 3																			
Step 3	Step ID 3924c	SRT																	
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																			
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: - Exhaust Temperature Before SCR - Exhaust Temperature After SCR																		

	• Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes.
	Back to Index

P3927

Code number	P3927
Fault code description	Heater element NOx sensor after catalyst – Performance error
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – EGS heater Freeze frame type – SCR Catalyst
Description of component(s)	 • Dosing fuel into the exhaust pipe before the oxidation catalyst, during active regeneration; • Ceramic sensor element, heater element, and an electronic control unit; • The NOx sensor is connected to the A-CAN. Effect of the output signal on the system: Measures the amount of NOx after the catalyst in order to determine if the NOx level is within the limits.
Location of component(s)	
Diagnostic condition	This diagnostic runs when the exhaust gas temperature at the after treatment outlet NOx sensor is above 150°C.
Set condition of fault code	The EAS-3 ECU (D374) detects that the NOx sensor after catalyst (F843) heater is unable to maintain its normal operating temperature.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary regeneration

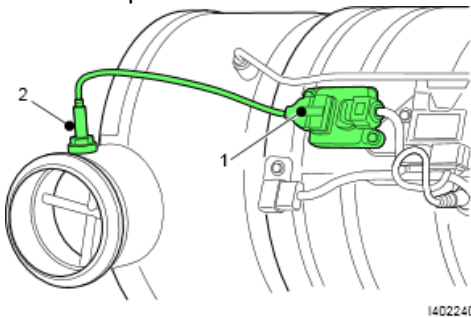
	with DAVIE.																					
Electrical diagram(s)	 Wiring harness connector F843 front view <table><tr><td>D374</td><td>EAS-3 ECU</td></tr><tr><td>E497</td><td>after treatment CAN fuse</td></tr><tr><td>F843</td><td>NOx sensor after catalytic convertor</td></tr></table><table><tr><td>D374</td><td>F843</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN high</td></tr><tr><td>B15</td><td>2</td><td>A-CAN low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	EAS-3 ECU	E497	after treatment CAN fuse	F843	NOx sensor after catalytic convertor	D374	F843	Function	B14	3	A-CAN high	B15	2	A-CAN low		1	Power supply		4	Ground
D374	EAS-3 ECU																					
E497	after treatment CAN fuse																					
F843	NOx sensor after catalytic convertor																					
D374	F843	Function																				
B14	3	A-CAN high																				
B15	2	A-CAN low																				
	1	Power supply																				
	4	Ground																				
Technical data	Component and wiring check, NOx sensor after catalyst (F843) Preparation • Disconnect connector F843. • Ignition switched on. • Measure on connector F843. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional Information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional Information	4	1	Ubat														
Pin (+ probe)	Pin (- probe)	Value	Additional Information																			
4	1	Ubat																				

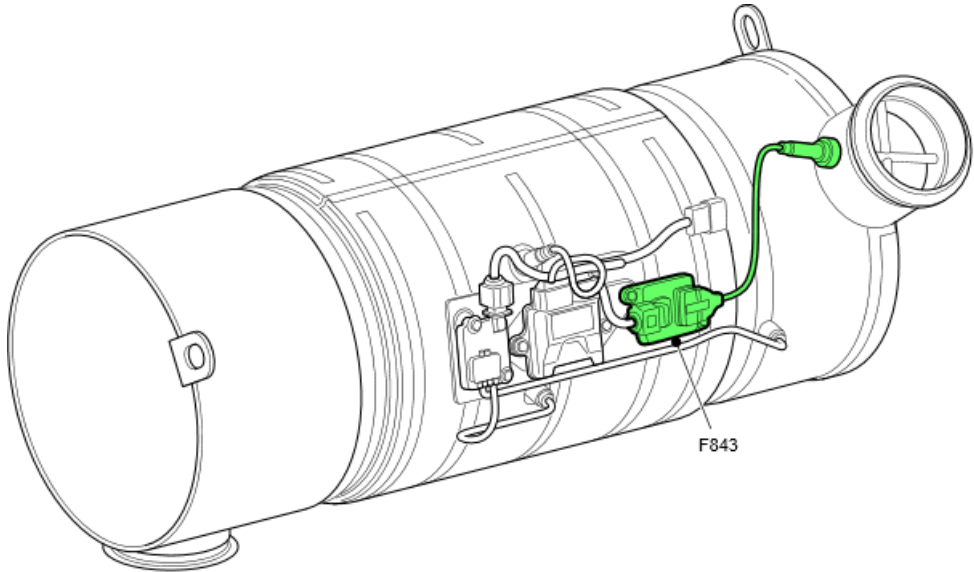
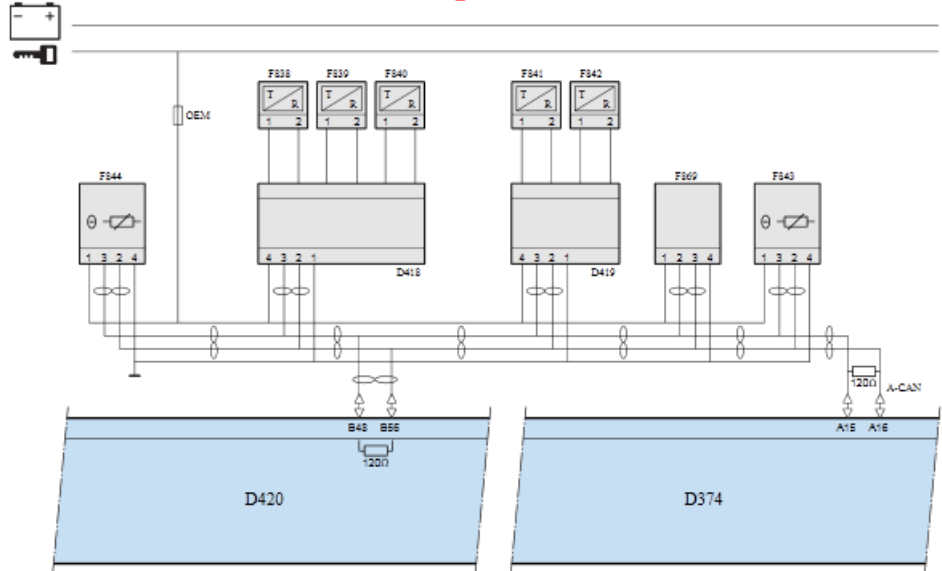
	1 Battery >0.5V switch on all consumers on Negative Pole Component & wiring check, A-CAN Preparation - Ignition switched off. - Disconnect connector F843. - Measure on connector F843. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional Information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional Information	2	3	± 60 Ω					
Pin (+ probe)	Pin (- probe)	Value	Additional Information										
2	3	± 60 Ω											
Possible causes	- A damaged NOx sensor after catalyst (F843). - Intermittent power supply to the NOx sensor after catalyst (F843).												
Additional information	No Additional information available												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3927a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3927b</td><td>SRT</td></tr><tr><td colspan="3"> 1. Turn the key switch ON. 2. Use DAVIE to check for fault codes. Is fault code P3927 active? - Yes – Proceed to step 3 - No – Proceed to step 5 </td></tr></table>	Step 1	Step ID 3927a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3927b	SRT	1. Turn the key switch ON. 2. Use DAVIE to check for fault codes. Is fault code P3927 active? - Yes – Proceed to step 3 - No – Proceed to step 5		
Step 1	Step ID 3927a	SRT											
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.													
Step 2	Step ID 3927b	SRT											
1. Turn the key switch ON. 2. Use DAVIE to check for fault codes. Is fault code P3927 active? - Yes – Proceed to step 3 - No – Proceed to step 5													

	<table><tr><td>Step 3</td><td>Step ID 3927c</td><td>SRT</td></tr><tr><td colspan="3"> 1. Turn the key switch ON. 2. Use DAVIE to check for fault codes. Is fault code P3917, P3918, P3921, P3873, or P3816 active or inactive? • Yes – Proceed with the appropriate fault code • No – Proceed to step 4 </td></tr></table>	Step 3	Step ID 3927c	SRT	1. Turn the key switch ON. 2. Use DAVIE to check for fault codes. Is fault code P3917, P3918, P3921, P3873, or P3816 active or inactive? • Yes – Proceed with the appropriate fault code • No – Proceed to step 4		
	Step 3	Step ID 3927c	SRT				
	1. Turn the key switch ON. 2. Use DAVIE to check for fault codes. Is fault code P3917, P3918, P3921, P3873, or P3816 active or inactive? • Yes – Proceed with the appropriate fault code • No – Proceed to step 4						
	<table><tr><td>Step 4</td><td>Step ID 3927d</td><td>SRT</td></tr><tr><td colspan="3"> 1. Turn the key switch ON. 2. Use DAVIE to check for related fault codes. Is fault code P3810, P3816, P3812, P3813, P3814 active? • Yes – Proceed with the appropriate fault code • No – An internal error has been detected in the NOx sensor heater. Replace the NOx sensor. Proceed to step 5 </td></tr></table>	Step 4	Step ID 3927d	SRT	1. Turn the key switch ON. 2. Use DAVIE to check for related fault codes. Is fault code P3810, P3816, P3812, P3813, P3814 active? • Yes – Proceed with the appropriate fault code • No – An internal error has been detected in the NOx sensor heater. Replace the NOx sensor. Proceed to step 5		
	Step 4	Step ID 3927d	SRT				
1. Turn the key switch ON. 2. Use DAVIE to check for related fault codes. Is fault code P3810, P3816, P3812, P3813, P3814 active? • Yes – Proceed with the appropriate fault code • No – An internal error has been detected in the NOx sensor heater. Replace the NOx sensor. Proceed to step 5							
<table><tr><td>Step 5</td><td>Step ID 3927e</td><td>SRT</td></tr><tr><td colspan="3"> 1. Connect all components. 2. Operate the system within the 'reset condition of the fault code' found in the fault code information. 3. Use DAVIE to verify whether the fault codes are inactive. Is fault code P3927 inactive? • Yes – Proceed to step 6 • No – Return to the troubleshooting steps. Proceed to step 1 If all the steps have been completed and rechecked, contact the Engine Support Center for further instructions. </td></tr></table>	Step 5	Step ID 3927e	SRT	1. Connect all components. 2. Operate the system within the 'reset condition of the fault code' found in the fault code information. 3. Use DAVIE to verify whether the fault codes are inactive. Is fault code P3927 inactive? • Yes – Proceed to step 6 • No – Return to the troubleshooting steps. Proceed to step 1 If all the steps have been completed and rechecked, contact the Engine Support Center for further instructions.			
Step 5	Step ID 3927e	SRT					
1. Connect all components. 2. Operate the system within the 'reset condition of the fault code' found in the fault code information. 3. Use DAVIE to verify whether the fault codes are inactive. Is fault code P3927 inactive? • Yes – Proceed to step 6 • No – Return to the troubleshooting steps. Proceed to step 1 If all the steps have been completed and rechecked, contact the Engine Support Center for further instructions.							
<table><tr><td>Step 6</td><td>Step ID 3927f</td><td>SRT</td></tr><tr><td colspan="3"> 1. Connect all components 2. Turn the key switch ON. 3. Use DAVIE to clear the inactive fault codes. Have all the fault codes been cleared? • Yes – Repair complete • No – Troubleshoot any remaining active fault codes </td></tr></table>	Step 6	Step ID 3927f	SRT	1. Connect all components 2. Turn the key switch ON. 3. Use DAVIE to clear the inactive fault codes. Have all the fault codes been cleared? • Yes – Repair complete • No – Troubleshoot any remaining active fault codes			
Step 6	Step ID 3927f	SRT					
1. Connect all components 2. Turn the key switch ON. 3. Use DAVIE to clear the inactive fault codes. Have all the fault codes been cleared? • Yes – Repair complete • No – Troubleshoot any remaining active fault codes							
Verification Drive Cycle	Perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record:						

	• Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

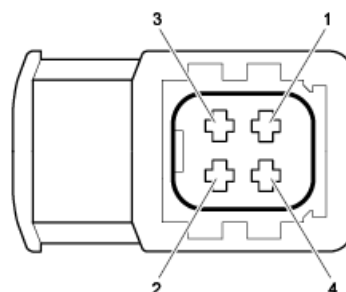
P3928

Code number	P3928
Fault code description	NOx sensor after catalyst - Data not rational, drifted high
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – Exhaust Gas Sensors Freeze frame type – SCR Catalyst
Description of component(s)	NOx sensor after catalyst (F843) The NOx sensor after catalyst consists of: - Electronic control unit This unit communicates with the PCI ECU and EAS-3 ECU via A-CAN - Sensor element The sensor element contains an internal heater. The sensor cannot be separated from the electronic control unit.  I402240 Sensor heating control - The first stage starts when the ignition is keyed on. The sensor is heated to approximately 100° C [212° F], and any condensate evaporates from the sensor. - The second stage starts after the 'dew point' message is received from the PCI ECU The sensor is heated to its operating temperature of approximately 800° C [1472° F]. The PCI ECU determines the dew point by calculating how much energy (heat by burning fuel in the engine) is pumped through the exhaust. If the dew point message is not/no longer received, the temperature sensor stays at/drops to the standby temperature of approximately 100° C [212° F]. - It is possible to read out the NOx sensor value with DAVIE, but only when the dew point has been reached. Until then a default value of 3000 ppm is displayed in DAVIE. Effect on the system - Measures the amount of NOx after the catalyst in order to determine if the NOx

	level is within the limits. - Used to determine the DEF quantity to be injected. - To diagnose the SCR efficiently.
Location of component(s)	NOx sensor after catalyst (F843)  1402109-2
Diagnostic condition	The diagnostic runs during coasting when the exhaust gas mass flow is medium or high.
Set condition of fault code	The NOx sensor after catalyst (F843) response is slower than expected.
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected.
Electrical diagram(s)	 1402361-4 D374 EAS-3 ECU D418 DOC/DPF temperature sensors ECU D419 Catalytic convertor temperature sensors ECU

D420 PCI ECU
 F838 Sensor, exhaust temperature before DOC
 F839 Sensor, exhaust temperature before DPF
 F840 Sensor, exhaust temperature after DPF
 F841 Sensor, exhaust temperature before catalyst
 F842 Sensor, exhaust temperature after catalyst
 F843 NOx sensor after catalyst
 F844 NOx sensor before catalyst
 F869 NH3 Sensor

D374	F843	Function
A15	3	A-CAN High
A16	2	A-CAN Low
	1	Power supply
	4	Ground



E504061

Wiring harness connector F843 front view



Handle connectors and pins with care and use matching measuring probes.

Technical data

Wiring check, NOx sensor after catalyst (F843)

Preparation

- Disconnect connector F843.
- Switch on the ignition.
- Measure on connector F843.

Pin (+ probe)	Pin (- probe)	Value	Additional information
1	4	Ubat	
4	Battery negative	< 0.5 V	Switch on all consumers

	<table><tr><td></td><td>pole</td><td></td><td></td></tr></table>		pole						
	pole								
	Wiring check, A-CAN Preparation • Switch off the ignition. • Disconnect connector F843. • Measure on connector F843. <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	3	± 60 Ω	
Pin (+ probe)	Pin (- probe)	Value	Additional information						
2	3	± 60 Ω							
Possible causes	• Excessive DEF dosing results in exhaust pipe ammonia (NH3) slip. • Malfunctioning NOx sensor after catalyst (F843).								
Additional information	The NOx sensor after catalyst (F843) reading is not valid.								
Diagnostic Step-by-Step	 The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.  ▪ This troubleshooting procedure is based on the assumption that supply power and ground to the PMCI are functioning properly. ▪ Disconnecting the PMCI connectors during the troubleshooting process will result in multiple errors. ▪ Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes. ▪ It is necessary to use DAVIE to clear all current trouble codes from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status. ▪ This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided. Step 1 Investigate Related DTCs Before troubleshooting this DTC, take notice of any other active or inactive DTCs. One or multiple other DTCs could have been the cause for this DTC. <table><tr><td>Step 1A Investigate related DTCs</td></tr></table>	Step 1A Investigate related DTCs							
Step 1A Investigate related DTCs									

	Action	
	1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs.	
	Are these or any other related DTCs active?	
	• P3873; P3916; P3917; P3918; P3928 • DEF dosing valve (L123) related DTCs: P3844; P3845; P3846; P3847; P3848; P3856; P3857; P3858; P3859; P3882; P3883; P3901; P3904; P3905; P3911; P3912; P3985; P3986; P3996 • Any NOx sensor after catalyst (F843) related DTCs • Any EGR (L095) related DTCs	
	Yes	No
	Refer to the troubleshooting information for these DTCs before continuing with this procedure.	
		Go to step 2A
Step 2 NOx Sensor After Catalyst (F843) Checks		
Step 2 A Visual inspection, NOx sensor after catalyst (F843)		
	Action	
	1. Visually inspect the associated component connections and wiring for any of the following: • Damaged or loose connectors • Bent, broken, corroded or loose connector pins • Moisture or dirt in the connections • Damage to the wire harness or insulation • The correct parts are not installed • ECU connections are damaged or disconnected • DEF tank level is low or empty • Signs of exhaust leaks • Signs of DEF leaking from the dosing valve • NOx sensor after catalyst sensor is broken or not installed correctly	
	Was there evidence of any of the above?	

	Yes		No	
	Correct any issues found. If the NOx sensor after catalyst (F843) is found to be damaged or broken, replace it. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.			
	If this code is still present, go to step 2B		Go to step 2B	
	Step 2B Electrical checks, supply voltage, NOx sensor after catalyst (F843)			
	 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.			
	Action			
	1. Confirm the supply voltage value as outlined in the corresponding checking data, <u>“wiring check, NOx sensor after catalyst (F843).”</u>			
	Are measured values within expected range?			
	Yes		No	
			Check the battery connections and charge level. Correct any issues found.	
Go to step 2C		Go to step 2C		
Step 2C Electrical checks, A-CAN resistance, NOx sensor after catalyst (F843)				
 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.				
Action				
1. Confirm the A-CAN resistance as outlined in the corresponding checking data, <u>“wiring check, NOx sensor after catalyst (F843).”</u>				
Are measured values within expected range?				

	Yes	No
		Possible issues in EAS-3 ECU. Contact the PACCAR Engine Support Center for additional assistance in diagnosing this issue, and for possible replacement of the EAS-3 ECU. Refer to Step 4A to perform the corresponding repair verification cycles and rechecks.
	Go to step 3A	If this code is still present, go to step 3A
	Step 3 DEF Dosing System Checks	
	Step 3A Rapido maintenance, check DEF quality	
	Action - Perform the steps outlined in the procedure, “check DEF,” job ID 69521, to measure the DEF urea concentration and check for oil contamination. - The measured DEF quality should be 32.5% +/- 0.7% (31.8% to 33.2%)	
	Was the measured DEF quality outside of the expected range, or is there an indication of oil contamination?	
	Yes	No
	Drain the DEF tank. Clean and dry the tank if oil contamination was found. Refill the DEF tank with a fresh supply. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	
	If this code is still present, go to step 3B	Go to step 3B

Step 3B Rapido maintenance, check DEF dosing valve	
Action Perform the steps outlined in the procedure, “check DEF dosing valve (Exhaust System (SCR)),” job ID 66448/66465, to check the DEF dosing valve for signs of damage or leaks.	
Was there evidence of any of the above?	
Yes	No
Correct any issues found. If the dosing valve (L123) is found to be damaged, replace it. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	
If this code is still present, go to step 3C	Go to step 3C
Step 3C Rapido maintenance, test DEF dosing valve	
Action Perform the steps outlined in the procedure, “test DEF dosing valve (Exhaust System (SCR)),” job ID 66472, to run the aftertreatment diesel exhaust fluid dosing system through a dosing cycle and check both prime and override performance.	
Did either of the fail to complete or result in a failed condition?	
Yes	No
Correct any issues found. If the dosing valve (L123) is found to be damaged, replace it. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	
If this code is still present, go to step 3D	Go to step 3D
Step 3D Visual inspection, decomposition tube	

	Action 1. Remove the decomposition tube as described in the maintenance procedure, " <u>remove decomposition pipe</u> ," job ID 66016, and check for excessive crystallization deposits.	
	Was there evidence of excessive crystallization?	
	Yes	No
	Clean and reinstall the decomposition pipe.	
	Go to step 3E	Go to step 3E
	Step 3E Rapido maintenance, check catalyst, SCR unit	
	Action 1. Perform the steps outlined in the procedure, "check catalyst, SCR unit (Exhaust System (SCR))," job ID 66606, to check the SCR for signs of damage, DEF leaks or crystallization.	
	Was there evidence of any of the above?	
	Yes	No
	Correct any issues found. If the SCR is found to be damaged, contact the PACCAR Engine Support Center for additional assistance in replacing the SCR. Refer to step 4A to perform the corresponding repair verification cycles and rechecks.	
	If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.	If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.
	Step 4 Repair Verification	

Step 4A Repair verification cycles

Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the trouble code or system being investigated.



Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to clear all current DTCs from the PCI and EAS-3 ECUs.

Action

1. System Initiation

Drive the truck under normal conditions until the coolant temperature reaches a minimum of 150°F. This cycle can be conducted with a loaded trailer or bobtail.

2. Steady State

This cycle is best performed on a level grade road (least amount of incline possible) and under load using a trailer. If a loaded trailer is unavailable, produce engine load by turning the A/C and fan to ON.

With the System Initiation cycle complete, proceed to a road with a minimum speed limit of 50 mph, then get to the highest gear possible with the engine speed between 1100-1500 rpm, and set the cruise control. Run this cycle for roughly 3 to 5 miles or in three separate 1-mile increments if a steady 3 to 5 miles is unachievable.

3. DEF Doser & SCR

This cycle is best performed on a level grade road (least amount of incline possible) and under load using a trailer. If a loaded trailer is unavailable, produce engine load by turning the A/C and fan to ON.

With the System Initiation cycle complete, proceed to a road with a minimum speed limit of 50 mph, then get to the highest gear possible with the engine speed between 1100-1500 rpm, and set the cruise control. Run this cycle for roughly 3 to 5 miles or in three separate 1-mile increments if a steady 3 to 5 miles is unachievable.

Were the identified repair verification cycles able to be completed?

Yes

No

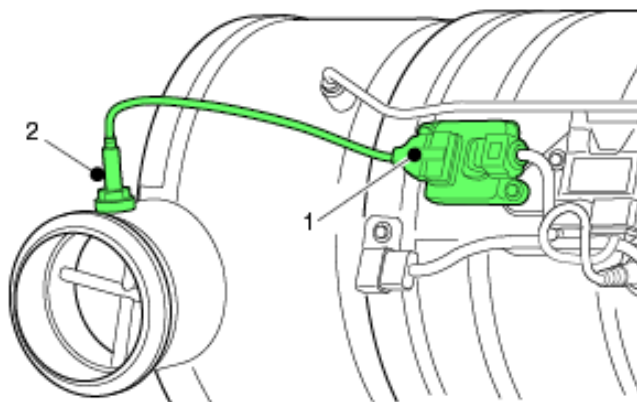
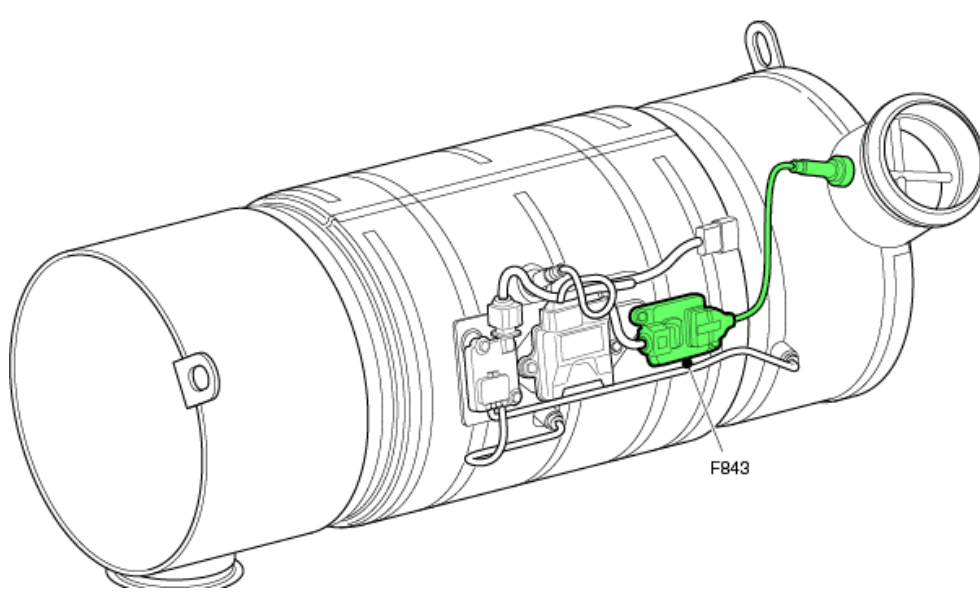
Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.

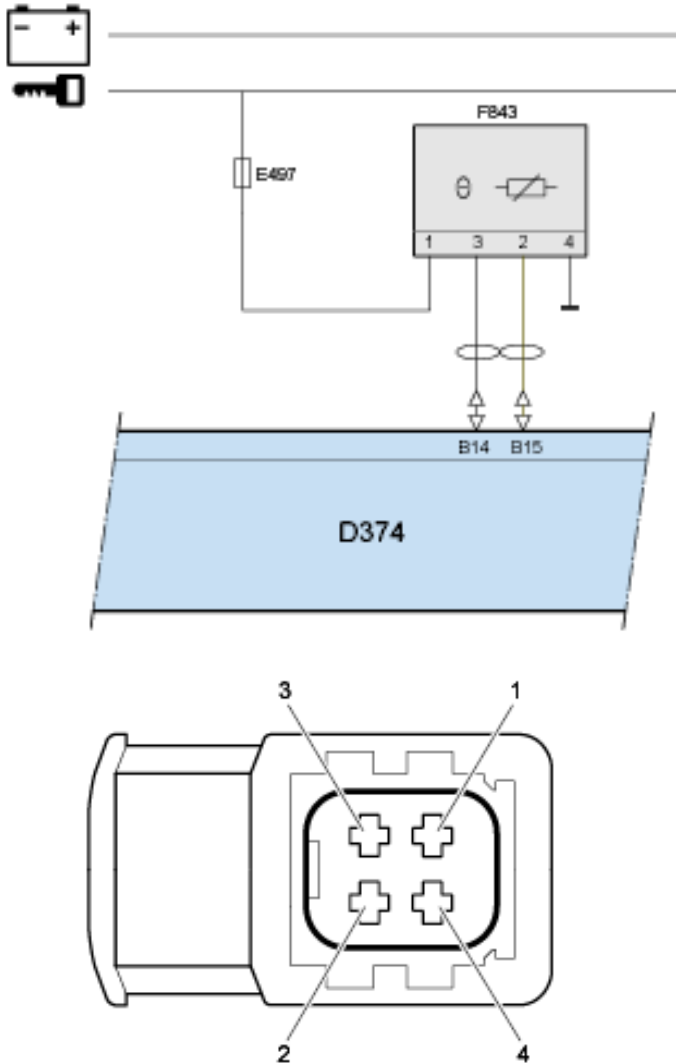
Go to step 4B

Go to step 4B

	Step 4B DAVIE Diagnostics, Quick Check Action 1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs to determine whether the actions taken have cleared this DTC. Has P3928 been cleared? <table> <tr> <th>Yes</th><th>No</th></tr> <tr> <td>Problem resolved. No further actions.</td><td>Continue with the next step in this troubleshooting procedure. If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.</td></tr> </table> Contacting the PACCAR Engine Support Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center.	Yes	No	Problem resolved. No further actions.	Continue with the next step in this troubleshooting procedure. If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.
Yes	No				
Problem resolved. No further actions.	Continue with the next step in this troubleshooting procedure. If all steps have been completed and this trouble code is still present, contact the PACCAR Engine Support Center for further assistance.				
	Back to Index				

P3929

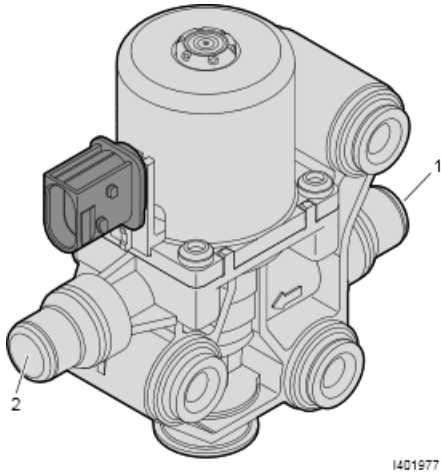
Code number	P3929
Fault code description	NOx sensor after catalyst - Persist, not valid
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – Exhaust Gas Sensors Freeze frame type – SCR Catalyst
Description of component(s)	 Descriptions components, NOx sensor after catalyst (F843) • Dosing fuel into the exhaust pipe before the oxidation catalyst, during active regeneration; • Ceramic sensor element, heater element and an electronic control unit; • The NOx sensor is connected to the A-CAN. Effect of the output signal on the system: Measures the amount of NOx after the catalyst in order to determine if the NOx level is within the limits.
Location of component(s)	
Diagnostic condition	The diagnostic runs when the exhaust gas temperature at the NOx sensor after catalyst (F843) is above 150°C.

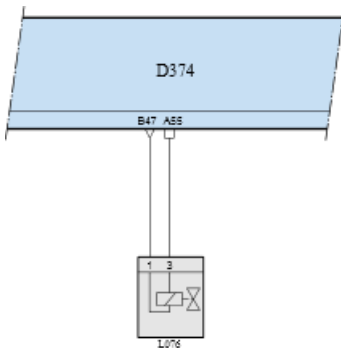
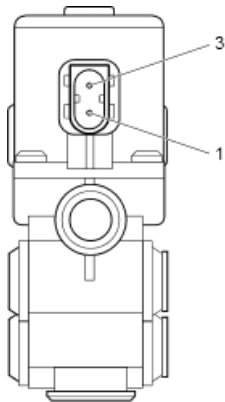
Set condition of fault code	The NOx sensor after catalyst (F843) reading is not valid															
Reset condition of fault code	- To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary regeneration. - Use DAVIE. The exhaust gas temperature at the NOx sensor before catalyst (F844) must be above 150°C before the sensor can run its internal diagnostics.															
Electrical diagram(s)	 Wiring harness connector F843 front view D374 EAS-3 ECU E497 Fuse after treatment CAN F843 NOx sensor after catalytic convertor <table><tr><td>D374</td><td>F843</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F843	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F843	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Component & wiring check, NOx sensor after catalyst (F843) Preparation Disconnect connector F843.															

	- Ignition switched on. - Measure on connector F843 <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td></td></tr><tr><td></td><td>Battery</td><td></td><td></td></tr><tr><td>1</td><td>negative pole</td><td>>0.5 V</td><td>Switch all consumers on</td></tr></table> Component & wiring check, A-CAN Preparation - Ignition switched off. - Disconnect connector F843. - Measure on connector F843 <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	4	1	Ubat			Battery			1	negative pole	>0.5 V	Switch all consumers on	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	2	3	± 60 Ω	
Pin	Pin																																
(+ probe)	(- probe)	Value	Additional information																														
4	1	Ubat																															
	Battery																																
1	negative pole	>0.5 V	Switch all consumers on																														
Pin	Pin																																
(+ probe)	(- probe)	Value	Additional information																														
2	3	± 60 Ω																															
Possible causes	Not Available																																
Additional information	The NOx sensor after catalyst (F843) reading is not valid.																																
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pin out locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3929a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3929b</td><td>SRT</td></tr><tr><td colspan="3">Replace: NOx sensor after catalyst Replace the NOx sensor after catalyst. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step in the troubleshooting process. </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3929c</td><td>SRT</td></tr><tr><td colspan="3">Contact the PACCAR Engine Support Call Center</td></tr></table>	Step 1	Step ID 3929a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3929b	SRT	Replace: NOx sensor after catalyst Replace the NOx sensor after catalyst. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step in the troubleshooting process.			Step 3	Step ID 3929c	SRT	Contact the PACCAR Engine Support Call Center																
Step 1	Step ID 3929a	SRT																															
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																																	
Step 2	Step ID 3929b	SRT																															
Replace: NOx sensor after catalyst Replace the NOx sensor after catalyst. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step in the troubleshooting process.																																	
Step 3	Step ID 3929c	SRT																															
Contact the PACCAR Engine Support Call Center																																	

	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes.
	Back to Index

P3938

Code number	P3938
Fault code description	Tank heater valve – stuck in open position
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – none Freeze frame type –Comprehensive
Description of component(s)	DEF tank heater valve (L076) Connection points: • Coolant supply (1) • Coolant return (2)  The tank heater valve controls the engine coolant flow through the DEF tank. • The tank heater valve is actuated by a PWM signal. • The valve is fully opened or fully closed. • The tank heating is based on the DEF tank temperature sensor value. • Tank heating can only be engaged if the engine coolant is higher than a programmed value. Effect on the system The tank is heated to prevent the DEF from freezing or to defrost the DEF.
Location of component(s)	The DEF tank heater valve is located near the DEF tank on the vehicle.
Diagnostic condition	This diagnostic runs continuously while DEF tank heating is being enabled.
Set condition of fault code	DEF tank heater valve (L076) is determined to be in the ON position when the EAS-3 ECU (D374) is commanding the heater to be in the OFF position. This is done by detecting when the DEF tank temperature is equal to or greater than the DTC threshold value of 77°C [170°F].

Reset condition of fault code	Not available for this DTC									
Electrical diagram(s)	 I401866-2 D374 EAS-3 ECU L076 Tank heater valve R042 Pump heater relay <table><tr><th>D374</th><th>L076</th><th>Function</th></tr><tr><td>B47</td><td>1</td><td>Signal, valve tank heater</td></tr><tr><td>A55</td><td>3</td><td>Ground, valve tank heater</td></tr></table>  I401897 Tank heater valve (L076) front view  Handle connectors and pins with care and use matching measuring probes.	D374	L076	Function	B47	1	Signal, valve tank heater	A55	3	Ground, valve tank heater
D374	L076	Function								
B47	1	Signal, valve tank heater								
A55	3	Ground, valve tank heater								
Technical data	Component check, DEF tank heater valve Preparation • Switch off the ignition. • Disconnect connector L076. • Measure on the tank heater valve (L076).									

	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>1</td><td>3</td><td>32 Ω ± 5%</td><td>At 20°C</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	1	3	32 Ω ± 5%	At 20°C
Pin (+ probe)	Pin (- probe)	Value	Additional information						
1	3	32 Ω ± 5%	At 20°C						
Possible causes	- DEF tank heater valve (L076) installed incorrectly, reversed relative to coolant flow direction. - Malfunctioning DEF tank heater valve (L076), stuck open or leakage past the valve seat. - Malfunctioning EAS-3 ECU (D374) continuously sending requests for tank heating.								
Additional information	- The DEF tank heater is continuously in the on position. - If there is a problem with the DEF tank heater valve (L076), the valve is stuck open, there is coolant leaking past the valve seat, or the valve is incorrectly installed, it can take long periods of operation at high load before the tank temperature gradually increases to the DTC threshold value of 77°C [170.6°F]. - As soon as the temperature drops below 75°C [167°F] due to a stopped engine, overnight parking, reduced coolant temperature, and so forth, the DTC will go inactive while the root cause of the issue is still present.								
Diagnostic Step-by-Step	 The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.  - This troubleshooting procedure is based on the assumption that supply power and ground to the PCI are functioning properly. - Disconnecting the PCI connectors during the troubleshooting process will result in multiple errors. - Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes. - It is necessary to use DAVIE to clear all current DTCs from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status. - This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided. Step 1 Investigate Related DTCs Step 1A Investigate related DTCs Before troubleshooting this DTC, take notice of any other active or inactive DTCs. One or multiple other DTCs could have been the cause for this DTC.								

	Action	
	1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs.	
	Are any of the following related DTCs active in combination with P3938? P3895; P3899; P3900	
	Yes	No
	Possible problem with DEF temperature/level sensor (F870). Go to the troubleshooting information for these DTCs before continuing with this procedure.	
		Go to step 2A
	Step 2 DEF Tank Heater Valve (L076) Checks	
	Step 2A Visual inspection, DEF tank heater valve (L076)	
	Action	
	1. Visually inspect the associated component connections and wiring for any of the following:	
	• Damaged or loose connectors • Bent, broken, corroded or loose connector pins • Moisture or dirt in the connections • Damage to the wire harness or insulation • The correct parts are not installed • ECU connections are damaged or disconnected • Batteries not fully charged or contacts are not tight	
	Was there evidence of any of the above?	
	Yes	No
	Correct any issues found. If the DEF tank heater valve (L076) is found to be damaged or broken, replace it. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.	
	If this DTC is still present, go to step 2B	Go to step 2B
	Step 2B Visual inspection, installation, DEF tank heater valve (L076)	

	Action	
	1. Visually inspect the DEF tank heater valve and verify it is installed correctly, and not reversed according to the coolant flow direction.	
	Is the DEF tank heater valve installed correctly?	
	Yes	No
		Remove the DEF tank heater valve, and install it in the correct position. Make sure the valve is not reversed according to the coolant flow direction (where applicable).
	Go to step 2C	Go to step 2C
	Step 2C Electrical checks, resistance, DEF tank heater valve (L076)	
	 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.	
	Action	
	1. Switch off the ignition. 2. Disconnect the DEF tank heater valve (L076) from the vehicle harness. 3. Measure resistance as outlined in the corresponding checking data, " <u>component check, DEF tank heater valve (L076)</u> ".	
	Are measured values within expected range?	
	Yes	No
		Correct any issues found, or replace the DEF tank heater valve if measured values are not correct. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.
	Go to step 2D	Go to step 2D
	Step 2D DAVIE test, DEF tank heater valve (L076)	
	 ABORTING A DAVIE-INITIATED DIAGNOSTIC TEST IS NOT RECOMMENDED. However, if aborting a test is required, a key cycle must be	

performed to reset the engine ECM.

Failure to reset the engine ECM in this instance could result in personal injury or damage to the vehicle.

Action

1. Use DAVIE to perform the prescribed test, activate the DEF tank heater valve.

Does the test fail to complete or result in a failed state?

Yes

Correct any issues found, or replace the tank heater valve as necessary. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.

No

If all steps have been completed and this DTC is still present, contact the PACCAR Engine Support Center for further assistance.

Step 3 Repair Verification

Step 3A Repair verification cycles

Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the DTC or system being investigated.



Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to "Clear all" current DTCs from the PCI and EAS-3 ECUs.

Action

1. Start-up
With the brakes set, start the engine and allow it to run at idle for 2 minutes.

Were the identified repair verification cycles able to be completed?

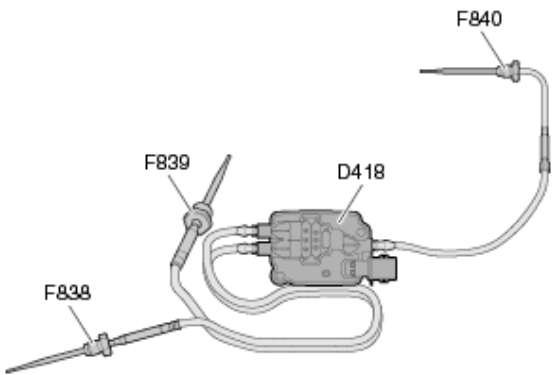
Yes

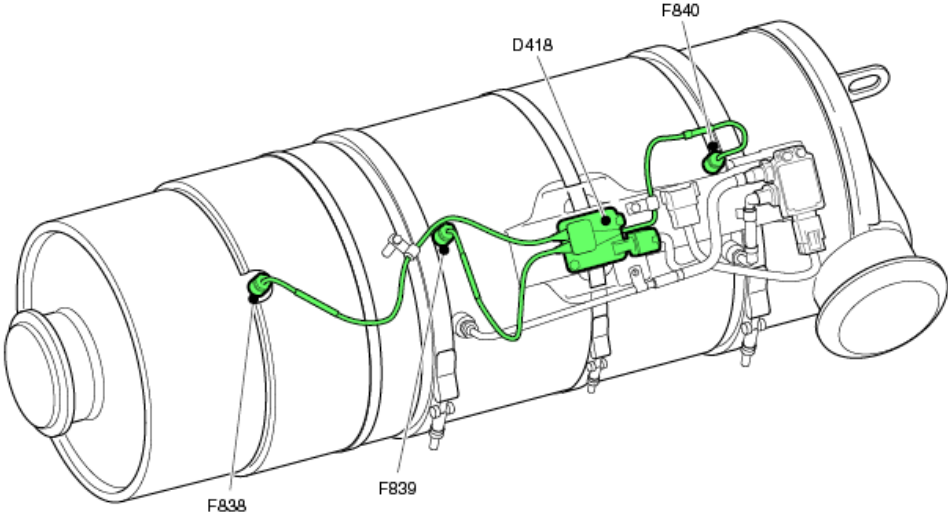
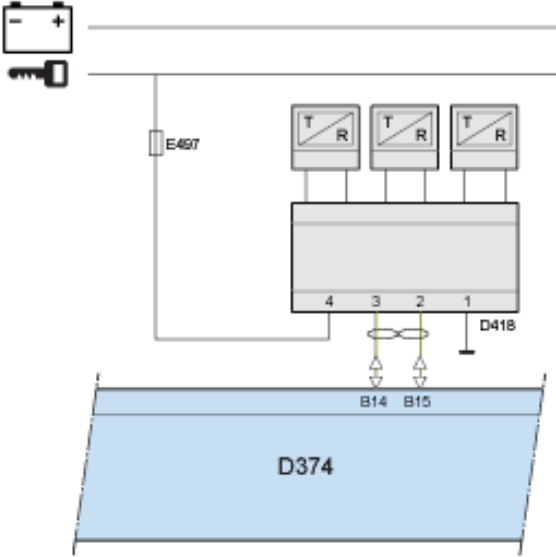
No

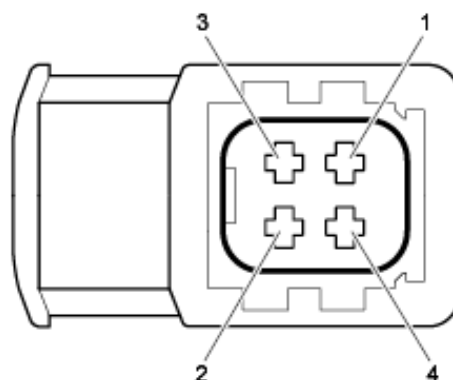
Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.

	Go to step 3B	Go to step 3B				
	Step 3B DAVIE Diagnostics, Quick Check, OBD Readiness Monitors Action Use DAVIE Diagnostics to perform a Quick Check for current DTCs to determine whether the actions taken have cleared this DTC. 1. Confirm that the corresponding OBD Monitor Readiness Status value is displayed as “Ready.” A status of Ready indicates that the corresponding OBD monitor has run successfully and the problem has been resolved—no further action. If the displayed status is “Not ready,” continue to action step 2. 2. View the DTC overview display, and confirm that P3938 has been cleared. Is the related OBD Monitor Readiness Status set to “Ready”, or has P3938 been cleared? <table><tr><td> Yes </td><td> No </td></tr><tr><td> Problem resolved. No further actions. </td><td> Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present: - continue to operate the truck to extend the run time, allowing the corresponding OBD monitor sufficient time to complete - or, return to step 3A and perform this repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine Support Center for further assistance. </td></tr></table>		Yes	No	Problem resolved. No further actions.	Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present: - continue to operate the truck to extend the run time, allowing the corresponding OBD monitor sufficient time to complete - or, return to step 3A and perform this repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine Support Center for further assistance.
Yes	No					
Problem resolved. No further actions.	Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present: - continue to operate the truck to extend the run time, allowing the corresponding OBD monitor sufficient time to complete - or, return to step 3A and perform this repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine Support Center for further assistance.					
	i Contacting the PACCAR Engine Support Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Center.					
	Back to Index					

P3942

Code number	P3942
Fault code description	Exhaust temperature sensors DPF - Voltage too high or short circuit to supply
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – none Freeze frame type –Comprehensive
Description of component(s)	 1 Exhaust gas temperature sensor before DOC (F838) 2 Exhaust gas temperature sensor before DPF (F839) 3 Exhaust gas temperature sensor after DPF (F840) General: • Thermocouple sensors. • The temperature sensors are connected to the ECU DOC-DPF temperature sensors (D418). The signal of the temperature sensors is transmitted to the A-CAN; by the ECU DOC-DPF temperature sensors (D418).The temperature sensors cannot be disconnected or replaced separately from the ECU DOC-DPF temperature sensors (D418). Exhaust gas temperature sensor before DOC (F838) Measure the exhaust gas temperature before the DOC. Effect of the output signal on the system • Calculate the temperature rise over the DOC, in combination with the signal of the exhaust gas temperature sensor before DPF (F839); • determining if a regeneration can be started; • calculation of the amount of fuel that must be injected; • Determining if the heating of the NOx sensor before catalytic converter (F844) is required, in order to reach the operating temperature. Exhaust gas temperature sensor before DPF (F839) Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Calculate the temperature rise over the DOC, in combination with the signal of the exhaust gas temperature sensor before DOC (F838); determining if a

	regeneration is started; - Control the regeneration temperature. - calculation of the amount of fuel that must be injected; - Diagnose the DOC efficiency. Exhaust gas temperature sensor after DPF (F840) Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: Protect the DPF against a too high temperature.
Location of component(s)	 The diagram shows a side view of a cylindrical Diesel Particulate Filter (DPF) assembly. Several sensors are indicated with labels: F838 is at the front flange, F839 is on the side, F840 is at the rear flange, and D418 is a green electronic control unit mounted on the side with multiple wiring connections.
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	The DOC-DPF temperature sensors ECU (D418) report a voltage too high for 2 consecutive seconds.
Reset condition of fault code	To validate the repair, perform a key cycle. Then start the engine and let it idle for 1 minute.
Electrical diagram(s)	 The electrical diagram illustrates the power and signal circuitry. A battery symbol is connected to a main power line. A fuse labeled E467 is connected to this line. The D418 ECU has four terminals labeled 1, 2, 3, and 4. Terminals 1 and 2 are connected to ground. Terminals 3 and 4 are connected to the B14 and B15 pins of a connector labeled D374. Above the D418, three temperature sensor symbols (labeled T/R) are shown, each connected to one of the ECU terminals (1, 2, and 3).



Wiring harness connector D418 front view

D374 EAS-3 ECU

D418 DOC-DPF temperature sensors ECU

E497 fuse, after treatment CAN

D374	D418	Function
B14	3	A-CAN high
B15	2	A-CAN low
	1	Earth
	4	Power supply

Technical data

Component & wiring check, Temperature sensors DOC-DPF ECU (D418)

Preparation

- Disconnect connector D418.
- Ignition switched on.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
4	1	Ubat	
1	Battery negative pole	>0.5V	Switch all consumers on

Component & wiring check, A-CAN

Preparation

- Ignition switched off.
- Disconnect connector D418.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	3	$\pm 60 \Omega$	

Possible causes

- Open circuit in the earth connection.
- Short circuit to supply.
- Check if the sensor is powered correctly
- Check the wiring harness for short circuits

Additional information

Active DPF regeneration is disabled.

Diagnostic Step-by-Step



Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.



- Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors.
- For specific electrical component information and pin out locations, always refer to the technical data.
- It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors.
- Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.

Step 1	Step ID 3942a	SRT

Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.

Step 2	Step ID 3942b	SRT

Electrical Checks

Ensure that the ignition key/switch has been set to OFF before disconnecting related cables.

Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits:

- Supply and signal voltages (12V).
- Cable continuity (no opens or shorts).

Are measured electrical values outside of expected range or limits?

- No: Proceed to step 3.
- Yes: Make the appropriate repairs or component replacements.

Use DAVIE to re-check for the presence of active faults.

- If this related fault is no longer active, then this issue has been resolved.
- If this related fault is still active, continue to the next step in the troubleshooting process.

Step 3	Step ID 3942c	SRT

Replace: DPF Temperature Sensor

Replace the identified component.

NOTE: The DPF Temperature Sensor Module must be replaced as a whole unit; these sensors

Cannot be replaced individually.

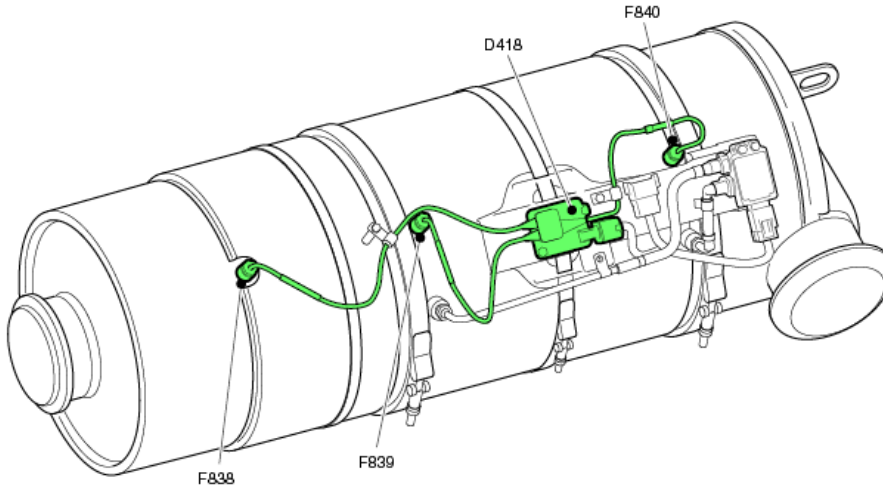
Use DAVIE to re-check for the presence of active faults.

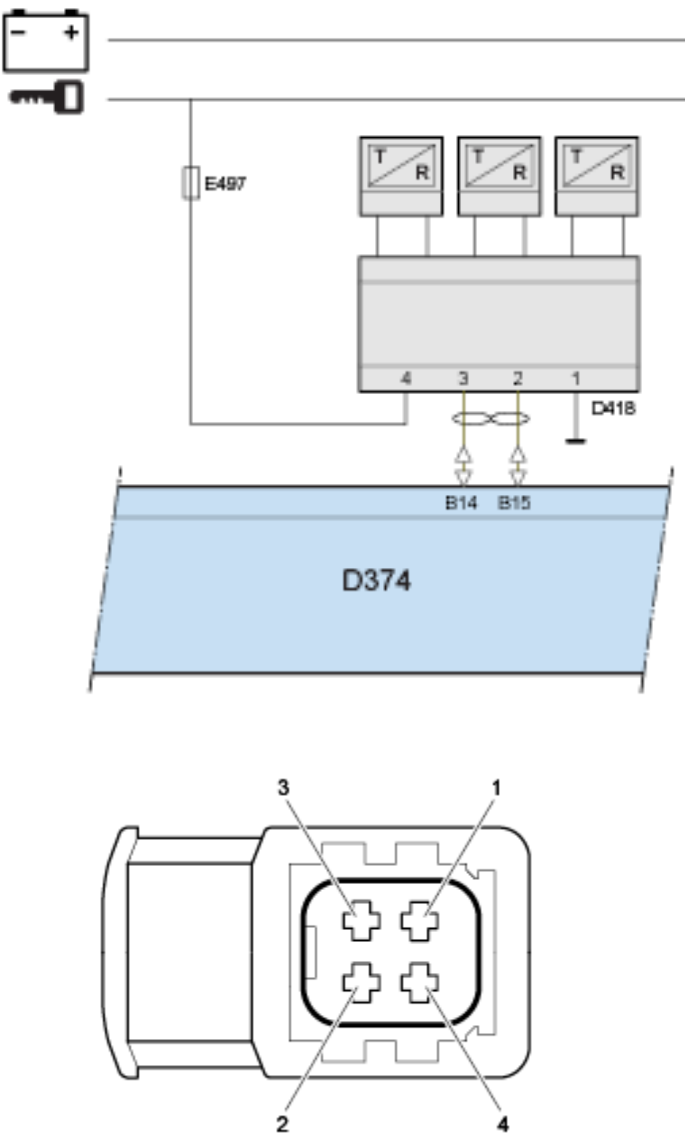
- If this related fault is no longer active, issue has been resolved.
- If this related fault is still active, continue to the next step in the

	troubleshooting process		
	Step 4	Step ID 3942d	SRT
	Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3943

Code number	P3943
Fault code description	Exhaust temperature sensors DPF - Voltage too low or short circuit to ground
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	General: • Thermocouple sensors. • The temperature sensors are connected to the ECU DOC-DPF temperature sensors (D418). The signal of the temperature sensors is transmitted to the A-CAN by the ECU DOC-DPF temperature sensors (D418). The temperature sensors cannot be disconnected or replaced separately from the ECU DOC-DPF temperature sensors (D418). 1 Exhaust gas temperature sensor before DOC (F838) 2 Exhaust gas temperature sensor before DPF (F839) 3 Exhaust gas temperature sensor after DPF (F840) Exhaust gas temperature sensor before DOC (F838) • Measure the exhaust gas temperature before the DOC. Effect of the output signal on the system • Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DPF (F839) • Determines if a regeneration can be started • Calculates the amount of fuel that must be injected • Determines if the heating of the NOx sensor before catalytic converter (F844) is required in order to reach the operating temperature Exhaust gas temperature sensor before DPF (F839) • Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DOC (F838)

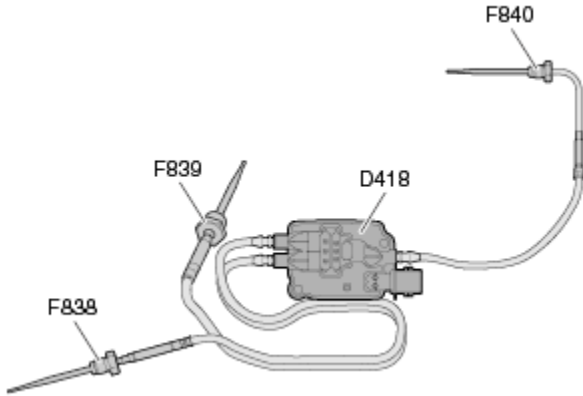
	• Determines whether regeneration has started • Controls the regeneration temperature • Calculates the amount of fuel that must be injected • Diagnoses the DOC efficiency Exhaust gas temperature sensor after DPF (F840) • Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Protects the DPF against excessively high temperature
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	The DOC-DPF temperature sensor ECU (D418) reports a voltage too low for 2 consecutive seconds.
Reset condition of fault code	To validate the repair, perform a key cycle. Then start the engine and let it idle for 1 minute.

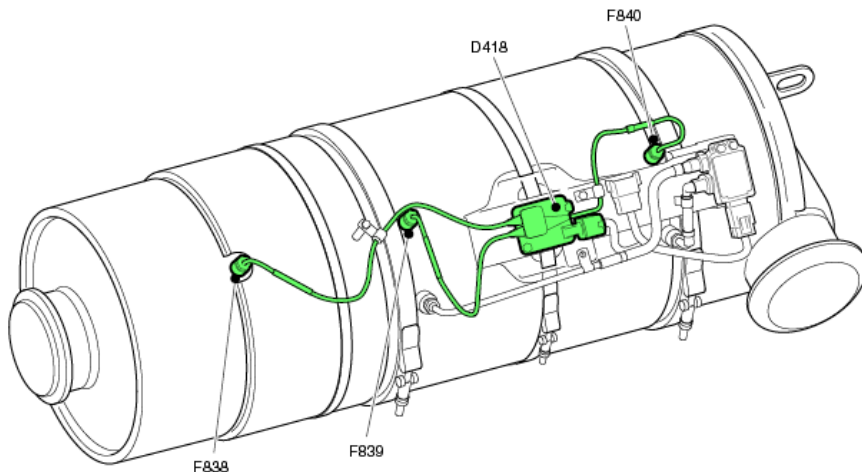
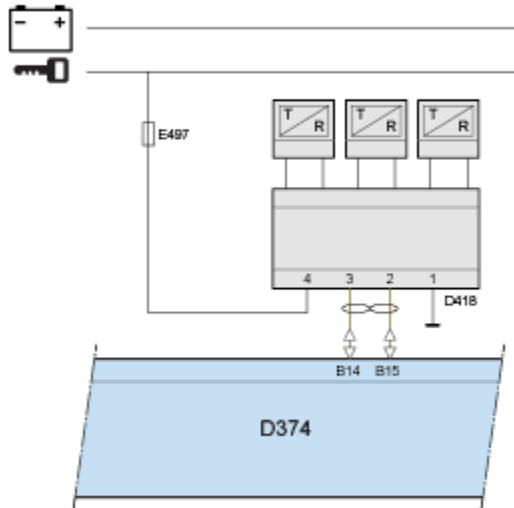
Electrical diagram(s)	 Wiring harness connector D418 front view D374 EAS-3 ECU D418 DOC-DPF temperature sensors ECU E497 after treatment CAN fuse <table><tr><th>D374</th><th>D418</th><th>Function</th></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Ground</td></tr><tr><td></td><td>4</td><td>Power supply</td></tr></table>	D374	D418	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Ground		4	Power supply
D374	D418	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Ground														
	4	Power supply														
Technical data	Component & wiring check, Temperature sensors DOC-DPF ECU (D418) Preparation • Disconnect connector D418. • Ignition switched on. • Measure on connector D418.															

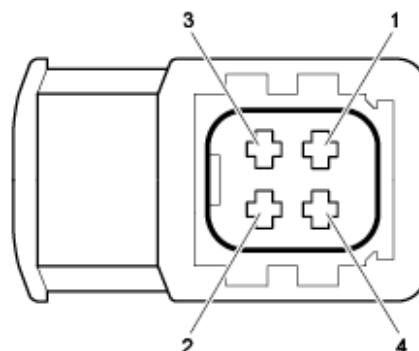
	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>4</td><td>1</td><td>Ubat</td><td></td></tr><tr><td>1</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Component & wiring check, A-CAN Preparation - Ignition switched off. - Disconnect connector D418. - Measure on connector D418. <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	4	1	Ubat		1	Battery negative pole	>0.5V	Switch all consumers on	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	3	± 60 Ω	
Pin (+ probe)	Pin (- probe)	Value	Additional information																		
4	1	Ubat																			
1	Battery negative pole	>0.5V	Switch all consumers on																		
Pin (+ probe)	Pin (- probe)	Value	Additional information																		
2	3	± 60 Ω																			
Possible causes	- Open circuit in the ground connection. - Short circuit to supply. - Check if the sensor is powered correctly - Check the wiring harness for short circuits																				
Additional information	Active DPF regeneration is disabled.																				
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3943a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3943b</td><td>SRT</td></tr><tr><td colspan="3">Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: - Supply and signal voltages (12V). - Wire continuity (no opens or shorts). </td></tr></table>	Step 1	Step ID 3943a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3943b	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: - Supply and signal voltages (12V). - Wire continuity (no opens or shorts).										
Step 1	Step ID 3943a	SRT																			
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																					
Step 2	Step ID 3943b	SRT																			
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: - Supply and signal voltages (12V). - Wire continuity (no opens or shorts).																					

	Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4		
	Step 3	Step ID 3943c	SRT
	Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 4		
	Step 4	Step ID 3943d	SRT
	Replace: DPF Temperature Sensor NOTE: The DPF Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 5		
	Step 5	Step ID 3943e	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics. With the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3944

Code number	P3944
Fault code description	Exhaust temperature sensors DPF - Temperature too high
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 General: • Thermocouple sensors. • The temperature sensors are connected to the ECU DOC-DPF temperature sensors (D418). The signal of the temperature sensors is transmitted to the A-CAN by the ECU DOC-DPF temperature sensors (D418). • The temperature sensors cannot be disconnected or replaced separately from the ECU DOC-DPF temperature sensors (D418). 1 Exhaust gas temperature sensor before DOC (F838) 2 Exhaust gas temperature sensor before DPF (F839) 3 Exhaust gas temperature sensor after DPF (F840) Exhaust gas temperature sensor before DOC (F838) • Measure the exhaust gas temperature before the DOC. Effect of the output signal on the system • Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DPF (F839) • Determines if a regeneration can be started • Calculates the amount of fuel that must be injected • Determines if the heating of the NOx sensor before catalytic converter (F844) is required in order to reach the operating temperature Exhaust gas temperature sensor before DPF (F839) • Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Calculates the temperature rise over the DOC in combination with the signal

	of the exhaust gas temperature sensor before DOC (F838) • Determines whether regeneration has started • Controls the regeneration temperature • Calculates the amount of fuel that must be injected • Diagnoses the DOC efficiency Exhaust gas temperature sensor after DPF (F840) • Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Protects the DPF against excessively high temperature
Location of component(s)	 The diagram shows a cylindrical Diesel Particulate Filter (DPF) assembly. Four sensors are indicated: F838 is located at the front inlet; F839 is located on the side; F840 is located at the rear outlet; and D418 is a control unit mounted on the side, connected to the other sensors by green wires.
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	The DOC-DPF temperature sensors ECU (D418) reports a too high internal temperature value for 2 consecutive seconds.
Reset condition of fault code	To validate the repair, start the engine and let it idle for 2 minutes.
Electrical diagram(s)	 The electrical diagram shows the power supply for the sensors. A battery symbol is connected to a fuse labeled E497. The other side of the fuse connects to a multi-pin connector with terminals 1, 2, 3, and 4. Terminal 1 is connected to the ground (GND) of the D418 ECU. Terminal 2 is connected to the sensor F838. Terminal 3 is connected to the sensor F839. Terminal 4 is connected to the sensor F840. The sensors are represented by boxes with 'T' and 'R' labels. The ECU (D418) is shown as a box with a ground symbol. The entire system is connected to a blue box labeled D374, which represents the vehicle's electrical system.



Wiring harness connector D418 front view

D374 EAS-3 ECU

D418 DOC-DPF temperature sensors ECU

E497 after treatment CAN fuse

D374	D418	Function
B14	3	A-CAN High
B15	2	A-CAN Low
	1	Ground
	4	Power supply

Technical data

Component & wiring check, Temperature sensors DOC-DPF ECU (D418)

Preparation

- Disconnect connector D418.
- Ignition switched on.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
4	1	Ubat	
1	Battery negative pole	>0.5V	Switch all consumers on

Component & wiring check, A-CAN

Preparation

- Ignition switched off.
- Disconnect connector D418.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	3	$\pm 60 \Omega$	

Possible causes

- Exhaust gas leaks.
- Malfunctioning DOC-DPF temperature sensors ECU (D418).
- Check the DOC-DPF temperature sensors ECU (D418) for physical damage, and check the wiring harness.
- Check if surrounding heat shields are correctly installed.
- Check for exhaust leakages near the DOC-DPF temperature sensors ECU (D418).

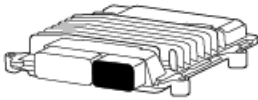
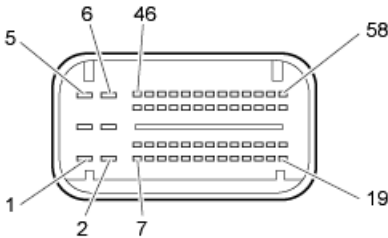
Additional information	Active DPF regeneration is disabled.																									
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table border="1"> <tr> <td>Step 1</td><td>Step ID 3944a</td><td>SRT</td></tr> <tr> <td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr> </table> <table border="1"> <tr> <td>Step 2</td><td>Step ID 3944b</td><td>SRT</td></tr> <tr> <td colspan="3"> DAVIE Direct: Monitor DPF temperature sensors Monitor DPF temperature sensors: • Idle the engine for a minimum of 10 minutes to allow temperatures to stabilize. • While monitoring, no sensor should vary by more than 75°F (24°C). Do any monitored values vary by more than 75°F (24°C)? • No - Proceed to step 3 • Yes - Clean adjust, repair or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 3 </td></tr> </table> <table border="1"> <tr> <td>Step 3</td><td>Step ID 3944c</td><td>SRT</td></tr> <tr> <td colspan="3"> Ancillary Test: EAS DPF-SCR Leak Test Perform the prescribed testing to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? • Yes - Proceed to step 4 • No - Proceed to step 5 </td></tr> </table> <table border="1"> <tr> <td>Step 4</td><td>Step ID 3944d</td><td>SRT</td></tr> <tr> <td colspan="3">Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults.</td></tr> </table>		Step 1	Step ID 3944a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3944b	SRT	DAVIE Direct: Monitor DPF temperature sensors Monitor DPF temperature sensors: • Idle the engine for a minimum of 10 minutes to allow temperatures to stabilize. • While monitoring, no sensor should vary by more than 75°F (24°C). Do any monitored values vary by more than 75°F (24°C)? • No - Proceed to step 3 • Yes - Clean adjust, repair or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 3			Step 3	Step ID 3944c	SRT	Ancillary Test: EAS DPF-SCR Leak Test Perform the prescribed testing to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? • Yes - Proceed to step 4 • No - Proceed to step 5			Step 4	Step ID 3944d	SRT	Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults.		
Step 1	Step ID 3944a	SRT																								
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																										
Step 2	Step ID 3944b	SRT																								
DAVIE Direct: Monitor DPF temperature sensors Monitor DPF temperature sensors: • Idle the engine for a minimum of 10 minutes to allow temperatures to stabilize. • While monitoring, no sensor should vary by more than 75°F (24°C). Do any monitored values vary by more than 75°F (24°C)? • No - Proceed to step 3 • Yes - Clean adjust, repair or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 3																										
Step 3	Step ID 3944c	SRT																								
Ancillary Test: EAS DPF-SCR Leak Test Perform the prescribed testing to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? • Yes - Proceed to step 4 • No - Proceed to step 5																										
Step 4	Step ID 3944d	SRT																								
Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults.																										

	• Fault inactive – issue resolved • Fault active - Proceed to step 5		
	Step 5	Step ID 3944e	SRT
	Replace: DPF Temperature Sensor Replace the identified component. NOTE: The DPF Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 6		
	Step 6	Step ID 3944f	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics. With the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3945

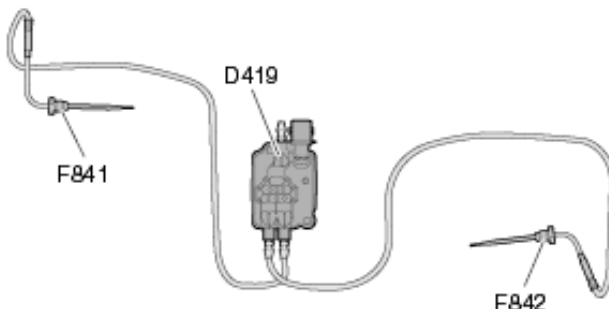
Code number	P3945
Fault code description	CAN communication - Time-out from exhaust temperature sensors DPF/DOC
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	D374 EAS-3 ECU D418 DOC/DPF temperature sensors ECU D419 catalytic converter temperature sensors ECU D420 PCI ECU E443 fuse, EAS 1st E444 fuse, EAS 2nd E497 after treatment CAN fuse E706 fuse, electrical systems F837 DPF pressure sensor F838 sensor, exhaust temperature before DOC F839 sensor, exhaust temperature before DPF F840 sensor, exhaust temperature after DPF F841 sensor, exhaust temperature before catalyst F842 sensor, exhaust temperature after catalyst F843 NOx sensor after catalytic convertor F844 NOx sensor before catalytic convertor F869 NH3 sensor F873 urea tank sensor H009 fuse, holder H010 fuse, holder L074 pump module L076 Tank heater valve L077 Heater element, DEF pressure line L078 Heater element, DEF return line L079 Heater element, DEF in line

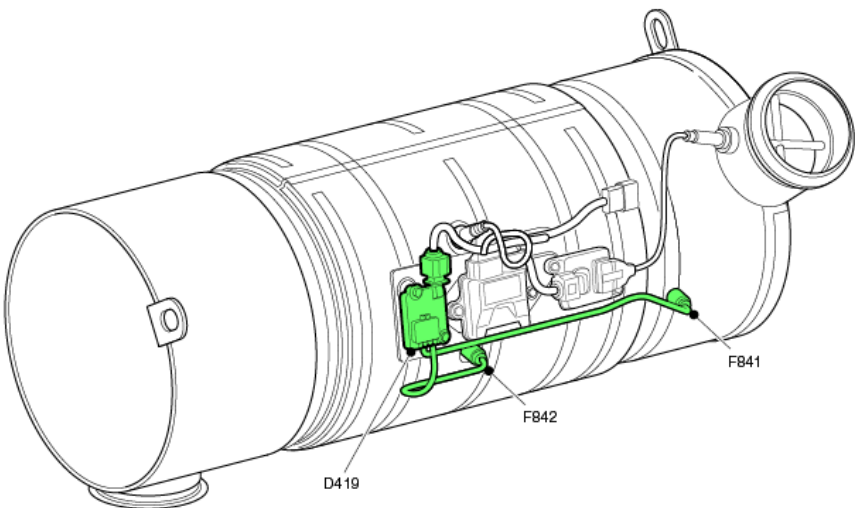
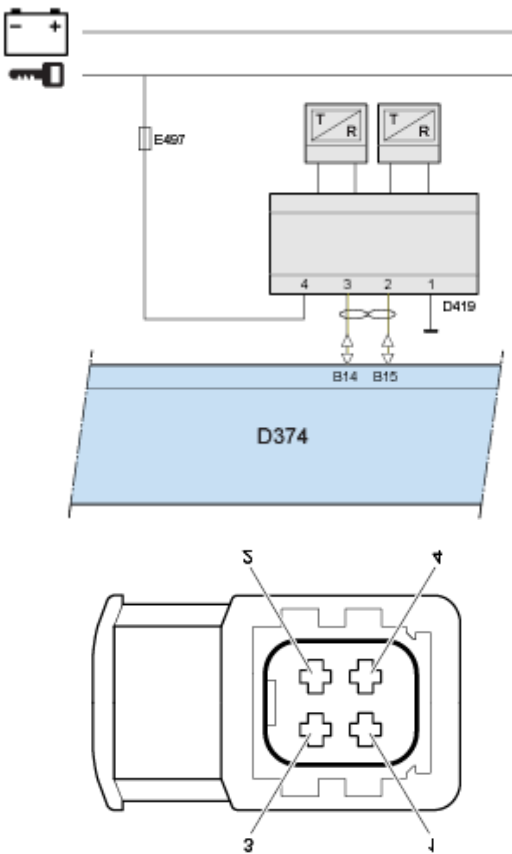
	L123 Urea dosing valve L124 fuel dosing valve L135 Fuel intake module R026 Relay, line heating R042 pump heater relay
Location of component(s)	No information available
Diagnostic condition	This diagnostic runs for the first 30 seconds after the ignition is keyed on
Set condition of fault code	The CAN connection between EAS-3 ECU (D374) and exhaust temperature sensors DPF/DOC ECU (D418) is interrupted
Reset condition of fault code	This DTC changes to inactive as soon as the error is no longer detected.
Electrical diagram(s)	Wiring harness connector D374.A front view

	  Wiring harness connector D374.B front view D374 EAS-3 ECU D420 PCI ECU <table><tr><td>D374</td><td>EAS-3 ECU</td><td>Function</td></tr><tr><td>A15</td><td></td><td>A-CAN high</td></tr><tr><td>A16</td><td></td><td>A-CAN low</td></tr></table>	D374	EAS-3 ECU	Function	A15		A-CAN high	A16		A-CAN low
D374	EAS-3 ECU	Function								
A15		A-CAN high								
A16		A-CAN low								
Technical data	Circuit check, A-CAN Preparation • Switch the ignition off. • Disconnect connector D374.B. • Measure on connector D374.B. • The A-CAN resistor is located inside the EAS-3 ECU (D374). <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>A15</td><td>A16</td><td>± 120 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	A15	A16	± 120 Ω		
Pin (+ probe)	Pin (- probe)	Value	Additional information							
A15	A16	± 120 Ω								
Possible causes	• Breakdown in communication in the CAN network • Interruption, short circuit to ground, or short circuit to supply in the CAN network wiring									
Additional information	No additional information available									
Diagnostic Step-by-Step	  Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components. • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pin out locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.									

	Step 1	Step ID 3945a	SRT
	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.		
	Step 2	Step ID 3945b	SRT
	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Proceed to step 3. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.		
	Step 3	Step ID 3945c	SRT
	General Troubleshooting - CAN For fault codes associated with the controller area network (CAN), refer to the “General Troubleshooting – CAN” instructions in Engine Rapido – Service, linked under the diagnostic trouble code information for this or similar fault codes.		
	Step 4	Step ID 3945d	SRT
	Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle:	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3946

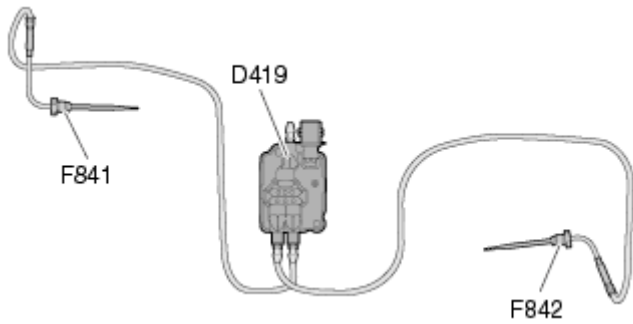
Code number	P3946
Fault code description	Exhaust temperature sensors SCR - Voltage too high or short circuit to supply
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group - None Freeze frame type -Comprehensive
Description of component(s)	 1 Sensor, exhaust temperature before SCR catalyst (F841) 2 Sensor, exhaust temperature after SCR catalyst (F842) General: • Thermocouple sensors • The temperature sensors are connected to the ECU SCR catalyst temperature sensors (D419). The signal of the temperature sensors is transmitted to the A-CAN by the ECU SCR catalyst temperature sensors (D419) The temperature sensors cannot be disconnected or replaced separately from the ECU SCR catalyst temperature sensors (D419). Sensor, exhaust temperature before SCR catalyst (F841) Measure the exhaust gas temperature before the SCR catalytic converter. Effect of the output signal on the system • Determining if DEF injection is required; • determine if the DEF pump can be activated; • determine the start and quantity of DEF dosing; • determining if a SCR catalytic converter is present; • Protect the SCR catalyst from reaching too high a temperature. Sensor, exhaust temperature after SCR catalyst (F842) Measure the exhaust gas temperature before the SCR catalytic converter. Effect of the output signal on the system • Determining if an SCR catalytic converter is present; • Protect the SCR catalyst from reaching too high a temperature. • Determine the dew point of NOx sensor after catalyst (F843).

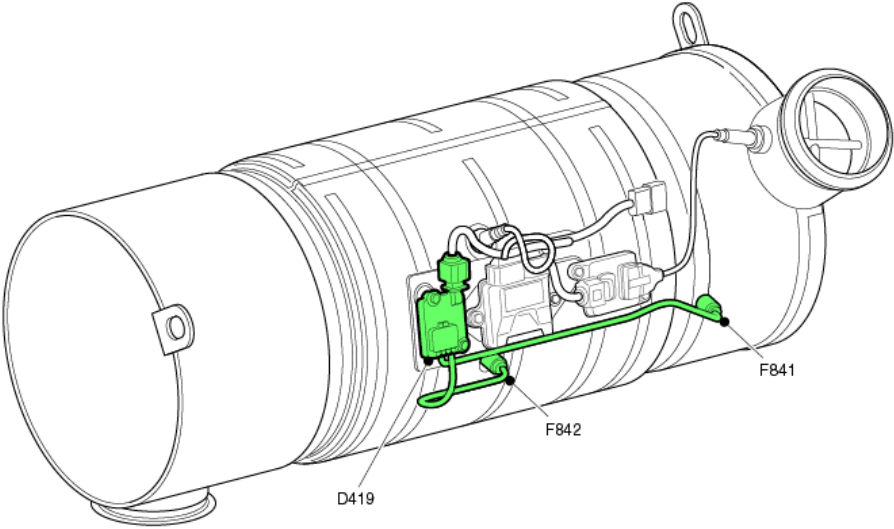
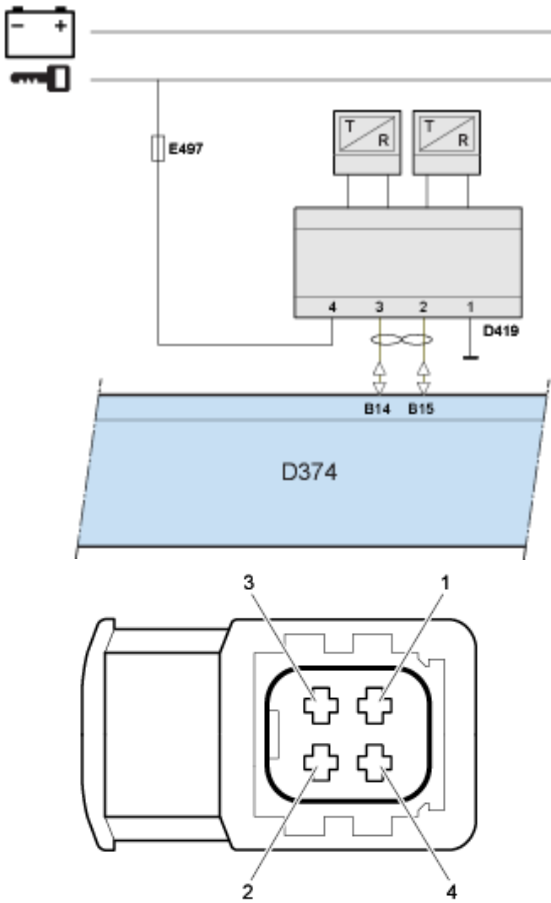
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	The SCR catalyst temperature sensors ECU (D419) report a voltage too high for 2 consecutive seconds.
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes. This fault code cannot be cleared with DAVIE. To validate the repair, start the engine and let it idle for 1 minute.
Electrical diagram(s)	 Wiring harness connector D419 front view

	D374 EAS-3 ECU D419 catalytic convertor temperature sensors ECU E497 fuse, after treatment CAN <table><tr><td>D374</td><td>D418</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN high</td></tr><tr><td>B15</td><td>2</td><td>A-CAN low</td></tr><tr><td></td><td>1</td><td>Ground</td></tr><tr><td></td><td>4</td><td>Power supply</td></tr></table>	D374	D418	Function	B14	3	A-CAN high	B15	2	A-CAN low		1	Ground		4	Power supply																	
D374	D418	Function																															
B14	3	A-CAN high																															
B15	2	A-CAN low																															
	1	Ground																															
	4	Power supply																															
Technical data	Component & wiring check, ECU temperature sensors SCR catalyst (D419) Preparation • Disconnect connector D419. • Ignition switched on. • Measure on connector D419. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td></td></tr><tr><td>1</td><td>Battery</td><td>>0.5V</td><td>Switch all consumers on</td></tr><tr><td></td><td>negative pole</td><td></td><td></td></tr></table> Component & wiring check, A-CAN Preparation • Ignition switched off. • Disconnect connector D419. • Measure on connector D419. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	4	1	Ubat		1	Battery	>0.5V	Switch all consumers on		negative pole			Pin	Pin			(+ probe)	(- probe)	Value	Additional information	2	3	± 60 Ω	
Pin	Pin																																
(+ probe)	(- probe)	Value	Additional information																														
4	1	Ubat																															
1	Battery	>0.5V	Switch all consumers on																														
	negative pole																																
Pin	Pin																																
(+ probe)	(- probe)	Value	Additional information																														
2	3	± 60 Ω																															
Possible causes	• The fault is set when the power supply voltage is higher than the voltage supported by the sensor for normal operation • Check if the sensor is powered correctly • Check the wiring harness for short circuits																																
Additional information	DEF injection is disabled.																																
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pin out locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.																																

	<table><tr><td>Step 1</td><td>Step ID 3946a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table>	Step 1	Step ID 3946a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.		
	Step 1	Step ID 3946a	SRT				
	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.						
	<table><tr><td>Step 2</td><td>Step ID 3946b</td><td>SRT</td></tr><tr><td colspan="3"> Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Proceed to step 3. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process. </td></tr></table>	Step 2	Step ID 3946b	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Proceed to step 3. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.		
Step 2	Step ID 3946b	SRT					
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Proceed to step 3. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.							
<table><tr><td>Step 3</td><td>Step ID 3946c</td><td>SRT</td></tr><tr><td colspan="3"> Replace: SCR Temperature Sensor Module Replace the identified component. The SCR Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced Individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault </td></tr></table>	Step 3	Step ID 3946c	SRT	Replace: SCR Temperature Sensor Module Replace the identified component. The SCR Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced Individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault			
Step 3	Step ID 3946c	SRT					
Replace: SCR Temperature Sensor Module Replace the identified component. The SCR Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced Individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault							
<table><tr><td>Step 4</td><td>Step ID 3946d</td><td>SRT</td></tr><tr><td colspan="3"> Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251. </td></tr></table>	Step 4	Step ID 3946d	SRT	Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.			
Step 4	Step ID 3946d	SRT					
Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.							
Verification Drive Cycle	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.						
	Back to Index						

P3947

Code number	P3947
Fault code description	Exhaust temperature sensors SCR – Voltage too low or short circuit to ground
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 The diagram illustrates the electrical connection between two exhaust temperature sensors, F841 and F842, and the ECU SCR catalyst temperature sensors, D419. Sensor F841 is located before the SCR catalyst, and sensor F842 is located after the SCR catalyst. Both sensors are connected to the D419 module, which then transmits the signal to the ECU via the A-CAN bus. • Sensor, exhaust temperature before SCR catalyst (F841) • Sensor, exhaust temperature after SCR catalyst (F842) General: • Thermocouple sensors; • The temperature sensors are connected to the ECU SCR catalyst temperature sensors (D419). The signal of the temperature sensors is transmitted to the A-CAN by the ECU SCR catalyst temperature sensors (D419). The temperature sensors cannot be disconnected or replaced separately from the ECU SCR catalyst temperature sensors (D419). Sensor, exhaust temperature before SCR catalyst (F841) Measure the exhaust gas temperature before the SCR catalytic converter Effect of the output signal on the system • Determines whether DEF injection is required • Determines whether the DEF pump can be activated • Determines the start and quantity of DEF dosing • Determine whether a DEF catalytic converter is present • Protects the SCR catalyst from reaching excessive temperatures Sensor, exhaust temperature after SCR catalyst (F842) Measure the exhaust gas temperature before the SCR catalytic converter. Effect of the output signal on the system • Determine whether an SCR catalytic converter is present • Protects the SCR catalyst from reaching excessive temperatures • Determines the dew point of NOx sensor after catalyst (F843)

Location of component(s)	
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	The SCR catalyst temperature sensor ECU (D419) reports a voltage too low for 2 consecutive seconds.
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes.
Electrical diagram(s)	 Wiring harness connector D419 front view

	D374 EAS-3 ECU D419 catalytic converter temperature sensors ECU E497 after treatment CAN fuse <table><tr><td>D374</td><td>D419</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Ground</td></tr><tr><td></td><td>4</td><td>Power supply</td></tr></table>	D374	D419	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Ground		4	Power supply																					
D374	D419	Function																																			
B14	3	A-CAN High																																			
B15	2	A-CAN Low																																			
	1	Ground																																			
	4	Power supply																																			
Technical data	Component and wiring check, DEF pressure sensor Preparation - Switch the ignition on. - Disconnect connector L074 - Measure on connector L074. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>4</td><td>12 V</td><td></td></tr></table> Component check, heater element Preparation - Switch the ignition off. - Disconnect connector L074. - Measure on the pump module (L074). <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>6</td><td>5</td><td>6 Ω</td><td></td></tr></table> Component check, reverting valve Preparation - Switch the ignition on. - Disconnect connector L074. - Measure on the pump module (L074) <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>11</td><td>12</td><td>20.6 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Condition	2	4	12 V		Pin	Pin			(+ probe)	(- probe)	Value	Condition	6	5	6 Ω		Pin	Pin			(+ probe)	(- probe)	Value	Condition	11	12	20.6 Ω	
Pin	Pin																																				
(+ probe)	(- probe)	Value	Condition																																		
2	4	12 V																																			
Pin	Pin																																				
(+ probe)	(- probe)	Value	Condition																																		
6	5	6 Ω																																			
Pin	Pin																																				
(+ probe)	(- probe)	Value	Condition																																		
11	12	20.6 Ω																																			
Possible causes	- The DTC is set when the power supply voltage is lower than the voltage supported by the sensor for normal operation. - Check if the sensor is powered correctly - Check the wiring harness for short circuits																																				
Additional information	DEF injection is disabled																																				
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.																																				



- Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors.
- For specific electrical component information and pinout locations, always refer to the technical data.
- It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors.
- Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.

Step 1	Step ID 3947a	SRT

Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.

Step 2	Step ID 3947b	SRT

Electrical Checks

Ensure that the ignition key/switch has been set to OFF before disconnecting related cables.

Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits:

- Supply and signal voltages (12V).
- Wire continuity (no opens or shorts).

Are measured electrical values outside of expected range or limits?

- Yes - Proceed to step 3
- No - Proceed to step 4

Step 3	Step ID 3947c	SRT

Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults.

- Fault inactive – issue resolve
- Fault active - Proceed to step 4

Step 4	Step ID 3947d	SRT

For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.

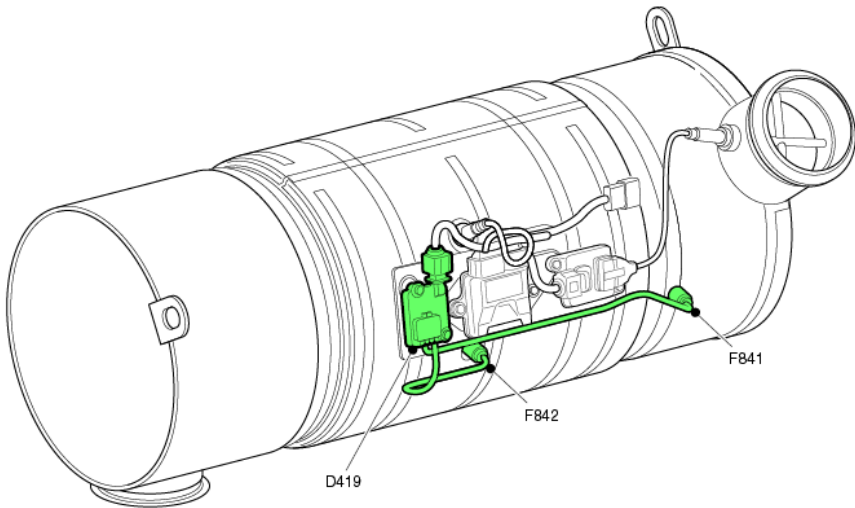
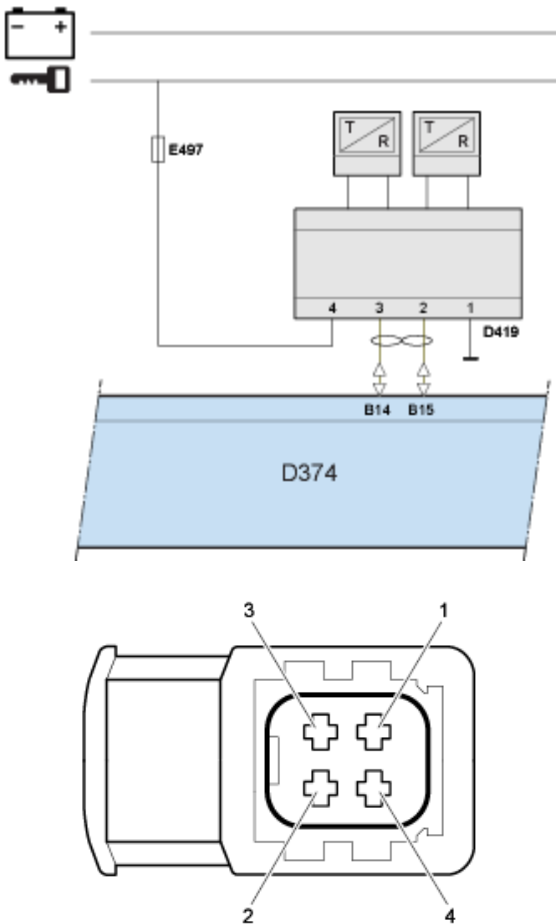
Verification Drive Cycle

To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics. With the brakes set, start the engine and allow it to run at idle for 2 minutes.

[Back to Index](#)

P3948

Code number	P3948
Fault code description	Exhaust temperature sensors SCR – Data valid but too high
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	The diagram illustrates the electrical connection between two exhaust temperature sensors, F841 and F842, and the ECU SCR catalyst temperature sensors, D419. Sensor F841 is located upstream of the SCR catalyst, while sensor F842 is located downstream. Both sensors are connected to the D419 module, which then transmits the data to the ECU. • Sensor, exhaust temperature before SCR catalyst (F841) • Sensor, exhaust temperature after SCR catalyst (F842) General: • Thermocouple sensors; • The temperature sensors are connected to the ECU SCR catalyst temperature sensors (D419). The signal of the temperature sensors is transmitted to the A-CAN by the ECU SCR catalyst temperature sensors (D419). The temperature sensors cannot be disconnected or replaced separately from the ECU SCR catalyst temperature sensors (D419). Sensor, exhaust temperature before SCR catalyst (F841) Measure the exhaust gas temperature before the SCR catalytic converter Effect of the output signal on the system • Determines whether DEF injection is required • Determines whether the DEF pump can be activated • Determines the start and quantity of DEF dosing • Determine whether a DEF catalytic converter is present • Protects the SCR catalyst from reaching excessive temperatures Sensor, exhaust temperature after SCR catalyst (F842) Measure the exhaust gas temperature before the SCR catalytic converter. Effect of the output signal on the system • Determine whether an SCR catalytic converter is present • Protects the SCR catalyst from reaching excessive temperatures • Determines the dew point of NOx sensor after catalyst (F843)

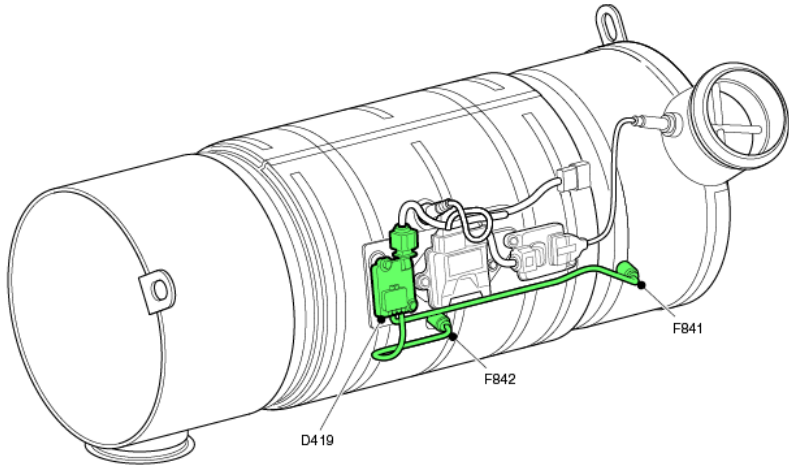
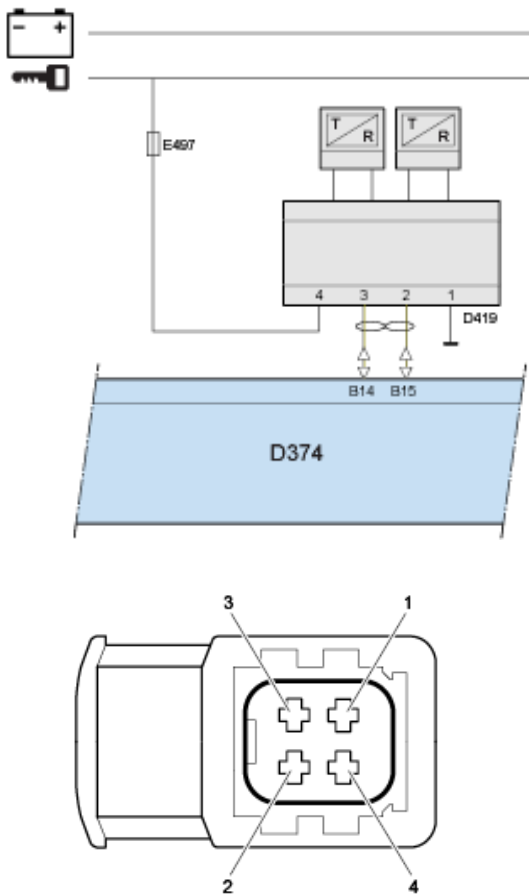
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	The SCR catalyst temperature sensors ECU (D419) report a too high internal temperature value for 2 consecutive seconds.
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes.
Electrical diagram(s)	 Wiring harness connector D419 front view

	D374 EAS-3 ECU D419 catalytic converter temperature sensors ECU E497 after treatment CAN fuse <table><tr><td>D374</td><td>D419</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Ground</td></tr><tr><td></td><td>4</td><td>Power supply</td></tr></table>	D374	D419	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Ground		4	Power supply																					
D374	D419	Function																																			
B14	3	A-CAN High																																			
B15	2	A-CAN Low																																			
	1	Ground																																			
	4	Power supply																																			
Technical data	Component and wiring check, DEF pressure sensor Preparation - Switch the ignition on. - Disconnect connector L074 - Measure on connector L074. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>4</td><td>12 V</td><td></td></tr></table> Component check, heater element Preparation - Switch the ignition off. - Disconnect connector L074. - Measure on the pump module (L074). <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>6</td><td>5</td><td>6 Ω</td><td></td></tr></table> Component check, reverting valve Preparation - Switch the ignition on. - Disconnect connector L074. - Measure on the pump module (L074). <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>11</td><td>12</td><td>20.6 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Condition	2	4	12 V		Pin	Pin			(+ probe)	(- probe)	Value	Condition	6	5	6 Ω		Pin	Pin			(+ probe)	(- probe)	Value	Condition	11	12	20.6 Ω	
Pin	Pin																																				
(+ probe)	(- probe)	Value	Condition																																		
2	4	12 V																																			
Pin	Pin																																				
(+ probe)	(- probe)	Value	Condition																																		
6	5	6 Ω																																			
Pin	Pin																																				
(+ probe)	(- probe)	Value	Condition																																		
11	12	20.6 Ω																																			
Possible causes	- The DTC is set when the internal sensor temperature is higher than normal. - Check the SCR catalyst temperature sensors ECU (D419) for physical damage, and check the wiring harness. - Check if surrounding heat shields are correctly installed. - Check for exhaust leakages near the SCR catalyst temperature sensors ECU (D419).																																				
Additional information	DEF injection is disabled																																				
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce																																				

	the likelihood of damage to electrical components. • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3948a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3948b</td><td>SRT</td></tr><tr><td colspan="3"> Ancillary Test: EAS DPF-SCR Leak Perform the prescribed testing to determine correct operation of the associated after treatment system. Does the test fail to complete or result in a failed state? • No - Issue resolved • Yes - Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3948c</td><td>SRT</td></tr><tr><td colspan="3"> Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 4 </td></tr></table> <table><tr><td>Step 4</td><td>Step ID 3948d</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3948a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3948b	SRT	Ancillary Test: EAS DPF-SCR Leak Perform the prescribed testing to determine correct operation of the associated after treatment system. Does the test fail to complete or result in a failed state? • No - Issue resolved • Yes - Proceed to step 3			Step 3	Step ID 3948c	SRT	Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 4			Step 4	Step ID 3948d	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3948a	SRT																							
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																									
Step 2	Step ID 3948b	SRT																							
Ancillary Test: EAS DPF-SCR Leak Perform the prescribed testing to determine correct operation of the associated after treatment system. Does the test fail to complete or result in a failed state? • No - Issue resolved • Yes - Proceed to step 3																									
Step 3	Step ID 3948c	SRT																							
Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 4																									
Step 4	Step ID 3948d	SRT																							
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																									
Verification Drive Cycle	This test can take up to 45 minutes to 1 hour to complete: • To validate the repair, start the truck and using cruise control, bump and set the idle to 1,500 rpm. • Connect DAVIE, and go to DPF Regeneration test. • Follow the prompts to complete a Stationary Regeneration																								
		Back to Index																							

P3949

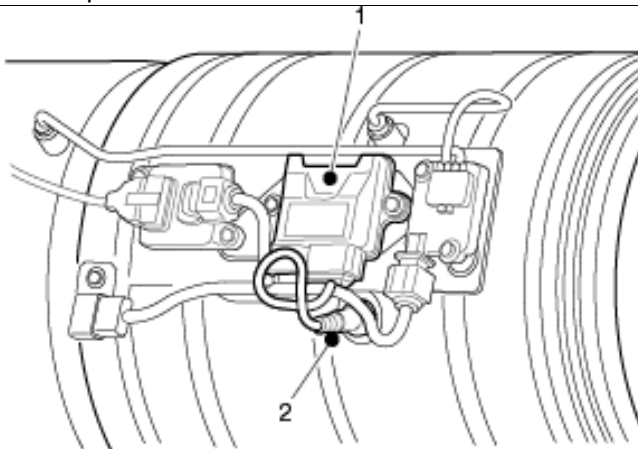
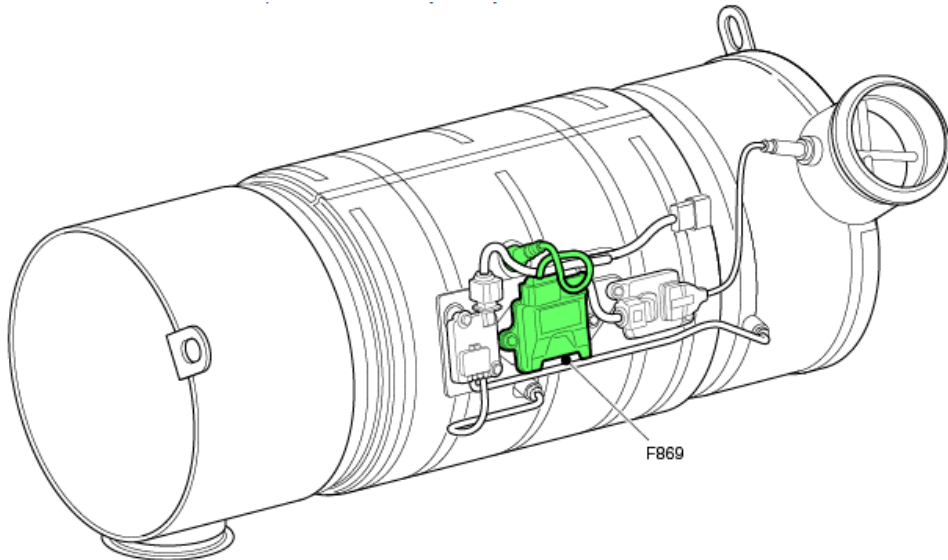
Code number	P3949
Fault code description	CAN communication - Timeout from exhaust temperature sensors SCR
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	The diagram illustrates the electrical connection between two exhaust temperature sensors, F841 and F842, and the ECU SCR catalyst temperature sensors, D419. Sensor F841 is located before the SCR catalyst, and sensor F842 is located after the SCR catalyst. Both sensors are connected to the D419 component, which is the ECU SCR catalyst temperature sensor. The wiring shows F841 connected to one terminal of D419 and F842 connected to another terminal of D419. 1 Sensor, exhaust temperature before SCR catalyst (F841) 2 Sensor, exhaust temperature after SCR catalyst (F842) General: • Thermocouple sensors; • The temperature sensors are connected to the ECU SCR catalyst temperature sensors (D419). The signal of the temperature sensors is transmitted to the A-CAN by the ECU SCR catalyst temperature sensors (D419). • The temperature sensors cannot be disconnected or replaced separately from the ECU SCR catalyst temperature sensors (D419). Sensor, exhaust temperature before SCR catalyst (F841) • Measure the exhaust gas temperature before the SCR catalytic converter. Effect of the output signal on the system • Determines whether DEF injection is required • Determines whether the DEF pump can be activated • Determines the start and quantity of DEF dosing • Determine whether a DEF catalytic converter is present • Protects the SCR catalyst from reaching excessive temperatures Sensor, exhaust temperature after SCR catalyst (F842) • Measure the exhaust gas temperature before the SCR catalytic converter. Effect of the output signal on the system • Determine whether an SCR catalytic converter is present • Protects the SCR catalyst from reaching excessive temperatures • Determines the dew point of NOx sensor after catalyst (F843)

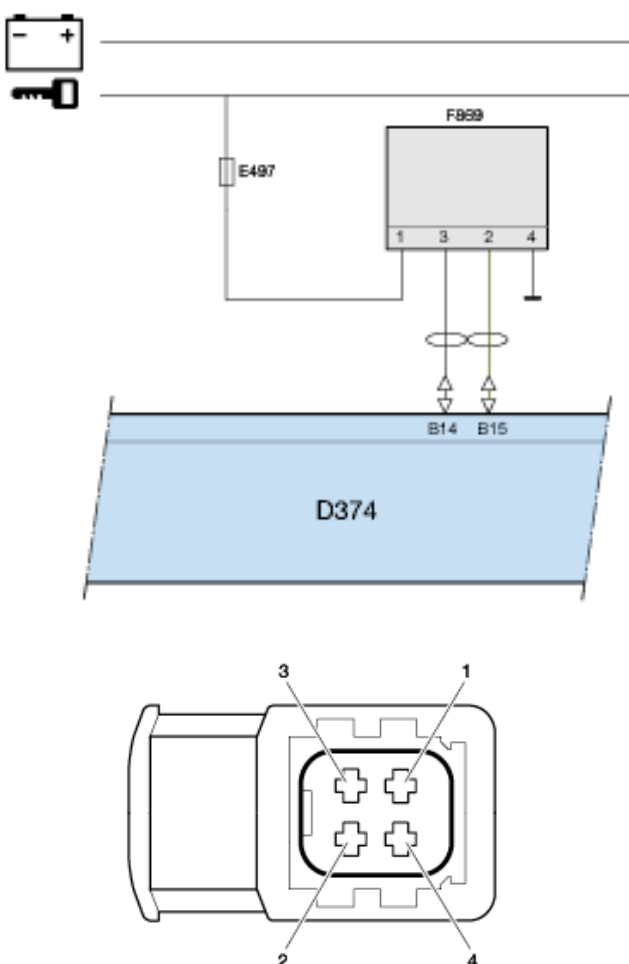
Location of component(s)	
Diagnostic condition	• This diagnostic runs continuously when the key switch is in the ON position. • An internal error has been detected in the EAS-3 actuator and has been communicated to the EAS-3 ECU via CAN.
Set condition of fault code	The DTC sets when the CAN communication from the exhaust temperature sensor SCR ECU (D419) to the EAS-# ECU (D374) is interrupted for 5 consecutive seconds.
Reset condition of fault code	This DTC changes to inactive as soon as the error is no longer detected.
Electrical diagram(s)	 Wiring harness connector D419 front view

	D374 EAS-3 ECU D419 catalytic converter temperature sensors ECU E497 After treatment CAN fuse <table><tr><td>D374</td><td>D418</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Ground</td></tr><tr><td></td><td>4</td><td>Power supply</td></tr></table>	D374	D418	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Ground		4	Power supply													
D374	D418	Function																											
B14	3	A-CAN High																											
B15	2	A-CAN Low																											
	1	Ground																											
	4	Power supply																											
Technical data	Component and wiring check, ECU temperature sensors SCR catalyst (D419) Preparation - Disconnect connector D419. - Ignition switched on. - Measure on connector D419. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td></td></tr><tr><td>1</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Component & wiring check, A-CAN Preparation - Ignition switched off. - Disconnect connector D419. - Measure on connector D419. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	4	1	Ubat		1	Battery negative pole	>0.5V	Switch all consumers on	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	2	3	± 60 Ω	
Pin	Pin																												
(+ probe)	(- probe)	Value	Additional information																										
4	1	Ubat																											
1	Battery negative pole	>0.5V	Switch all consumers on																										
Pin	Pin																												
(+ probe)	(- probe)	Value	Additional information																										
2	3	± 60 Ω																											
Possible causes	Faulty or malfunctioning EAS-3 actuator.																												
Additional information	- DEF injection is disabled. - DEF priming is disabled. - Engine torque is reduced.																												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the																												

	'possible causes' section.		
	Step 1	Step ID 3949a	SRT
	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.		
	Step 2	Step ID 3949b	SRT
	Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. • Supply and signal voltages. • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Continue to the next step 3 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.		
	Step 3	Step ID 3949c	SRT
	General Troubleshooting – CAN For fault codes associated with the controller area network (CAN), refer to the “General Troubleshooting – CAN” instructions in Engine Rapido – Service, linked under the diagnostic trouble code information for this or similar fault codes.		
	Step 4	Step ID 3949d	SRT
	Contact the PACCAR Engine Support Call Center for further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components; contact the PACCAR Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3950

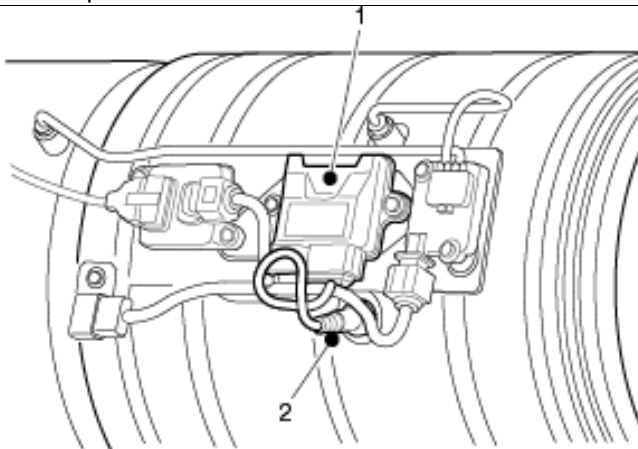
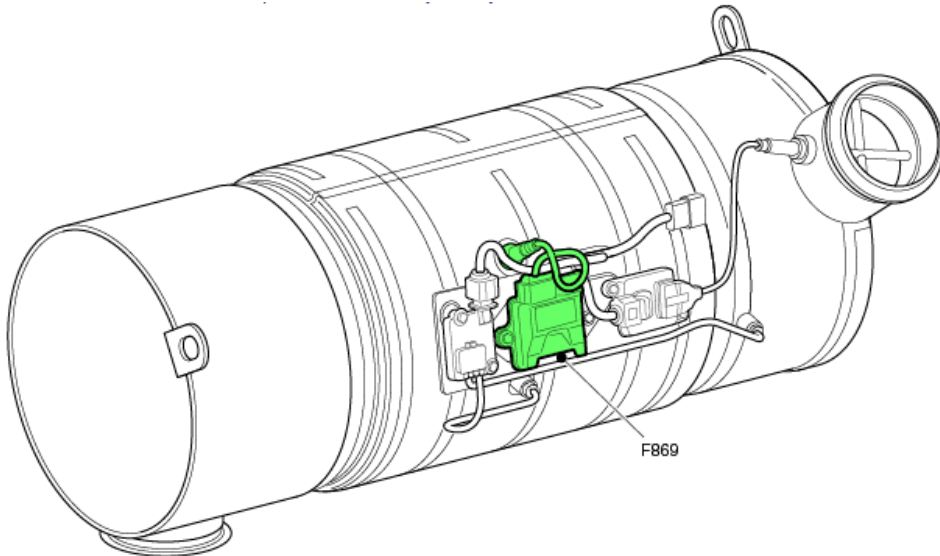
Code number	P3950
Fault code description	Heater element NH3 sensor - Voltage too low or short circuit to ground
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type - Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports a short circuit to supply on the heater positive pin for 5 seconds.

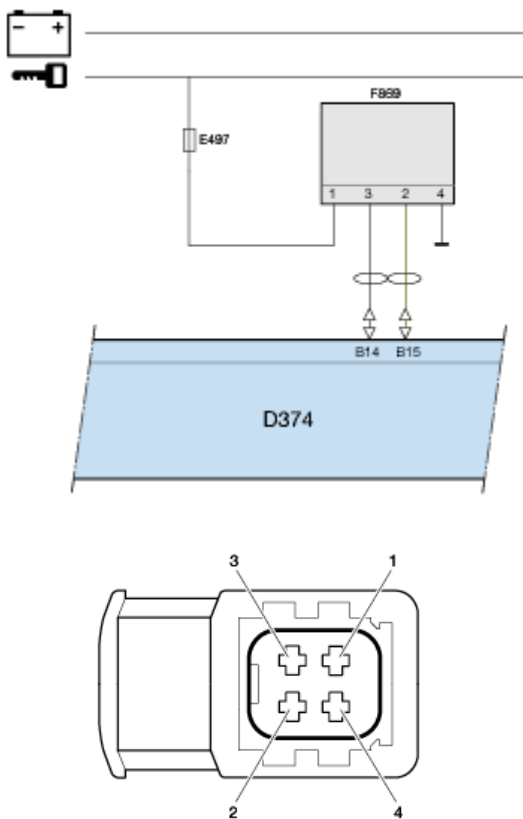
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C before the sensor can run its internal diagnostics.															
Electrical diagram(s)	NH3 sensor (F869)  Wiring harness connector F869 D374 EAS-3 ECU E497 after treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869.															

	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Condition</th></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Circuit check, A-CAN Conditions - Ignition switched off. - Connector removed from NH3 sensor (F869). - Measurements must be carried out on the wiring harness connector F869. <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Condition</th></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	4	Ubat		4	Battery negative pole	>0.5V	Switch all consumers on	Pin (+ probe)	Pin (- probe)	Value	Condition	2	3	± 60 Ω	
Pin (+ probe)	Pin (- probe)	Value	Condition																		
1	4	Ubat																			
4	Battery negative pole	>0.5V	Switch all consumers on																		
Pin (+ probe)	Pin (- probe)	Value	Condition																		
2	3	± 60 Ω																			
Possible causes	- The NH3 sensor (F869) has a short circuit to supply. - The NH3 sensor (F869) has malfunctioned or is damaged. - The NH3 sensor (F869) internal heater has malfunctioned. - Perform DPF regeneration with DAVIE.																				
Additional information	No additional information																				
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step 3950</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step 3950</td><td>SRT</td></tr><tr><td colspan="3">Replace the NH3 sensor. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to step 3. </td></tr></table> <table><tr><td>Step 3</td><td>Step 3950</td><td>SRT</td></tr><tr><td colspan="3">Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the</td></tr></table>	Step 1	Step 3950	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step 3950	SRT	Replace the NH3 sensor. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to step 3.			Step 3	Step 3950	SRT	Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the				
Step 1	Step 3950	SRT																			
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																					
Step 2	Step 3950	SRT																			
Replace the NH3 sensor. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to step 3.																					
Step 3	Step 3950	SRT																			
Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the																					

	replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.	
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.	
	Back to Index	

P3951

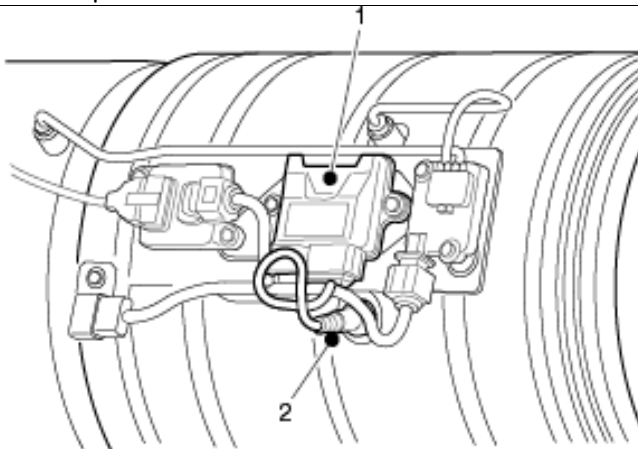
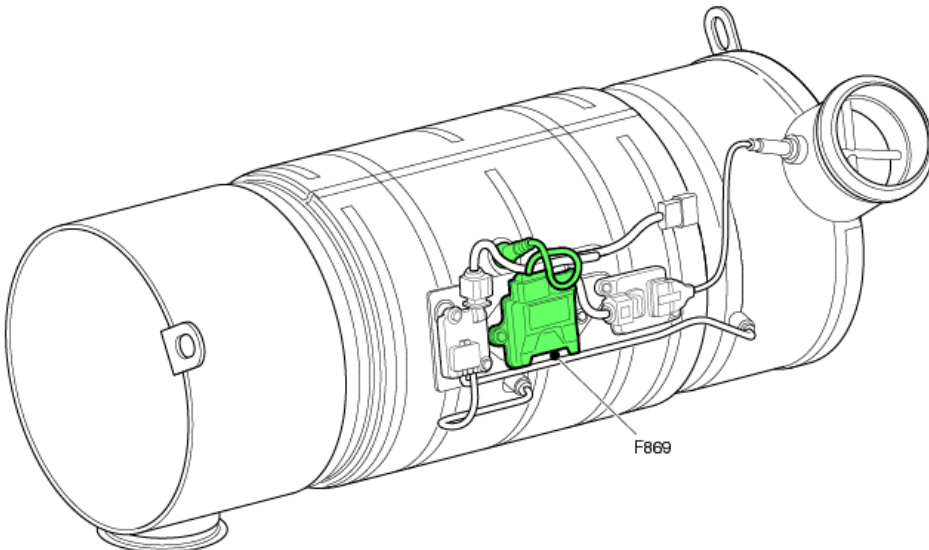
Code number	P3951
Fault code description	Heater element NH3 sensor - Voltage too high or short circuit to supply
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type - Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute
Set condition of fault code	The NH3 sensor (F869) reports a short circuit to ground on the heater positive pin for 5 seconds

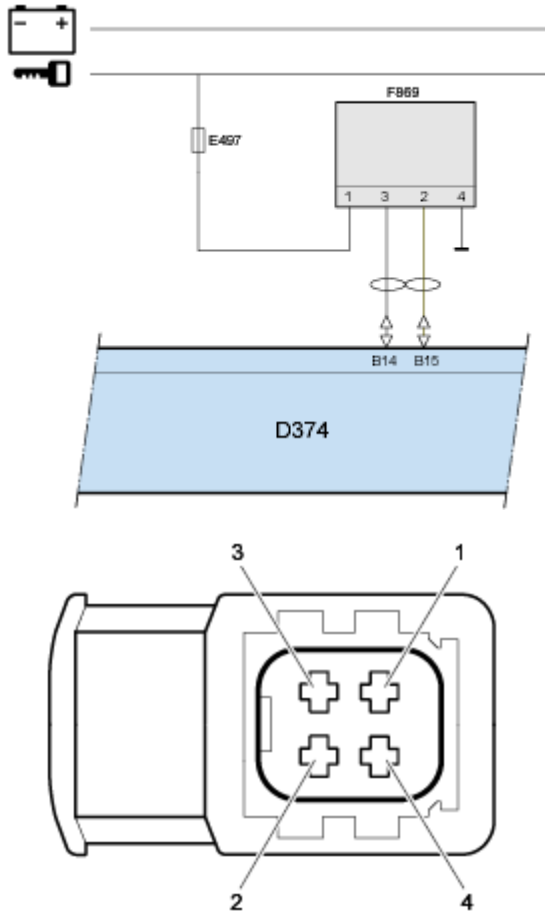
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C before the sensor can run its internal diagnostics.																
Electrical diagram(s)	NH3 sensor (F869)  Wiring harness connector F869 D374 EAS-3 ECU E497 after treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground	
D374	F869	Function															
B14	3	A-CAN High															
B15	2	A-CAN Low															
	1	Power supply															
	4	Ground															
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Condition	1	4	Ubat		4	Battery negative	>0.5V	Switch all consumers on
Pin	Pin																
(+ probe)	(- probe)	Value	Condition														
1	4	Ubat															
4	Battery negative	>0.5V	Switch all consumers on														

	pole Circuit check, A-CAN Conditions - Ignition switched off. - Connector removed from NH3 sensor (F869). - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Condition	2	3	± 60 Ω							
Pin	Pin																		
(+ probe)	(- probe)	Value	Condition																
2	3	± 60 Ω																	
Possible causes	- A short circuit to ground. - Perform DPF regeneration with DAVIE.																		
Additional information	No additional information.																		
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step 3950</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step 3950</td><td>SRT</td></tr><tr><td colspan="3">Replace the NH3 sensor. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to step 3. </td></tr></table> <table><tr><td>Step 3</td><td>Step 3950</td><td>SRT</td></tr><tr><td colspan="3">Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step 3950	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step 3950	SRT	Replace the NH3 sensor. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to step 3.			Step 3	Step 3950	SRT	Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.		
Step 1	Step 3950	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step 3950	SRT																	
Replace the NH3 sensor. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to step 3.																			
Step 3	Step 3950	SRT																	
Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.																			
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle.																		

	Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3952

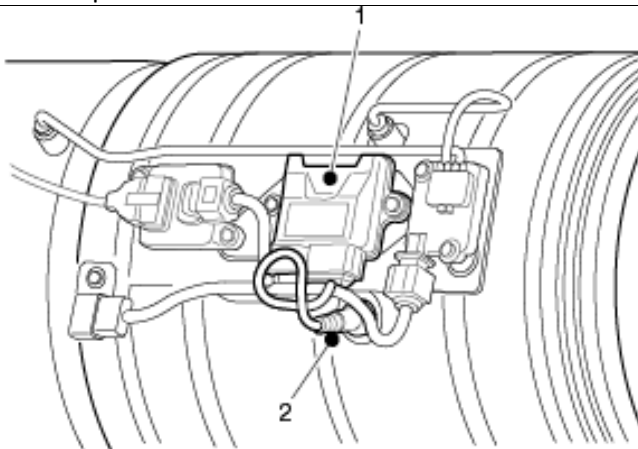
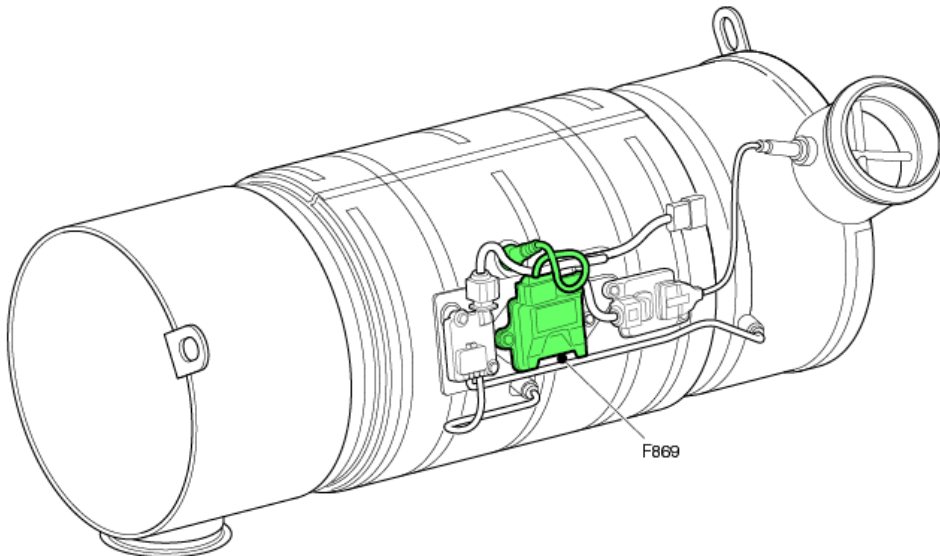
Code number	P3952
Fault code description	Heater element NH3 sensor - Open circuit
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports a short circuit to ground on the heater negative pin for

	5 seconds.															
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.															
Electrical diagram(s)	 Wiring harness connector F869 D374 EAS-3 ECU E497 after treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														

Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Circuit check, A-CAN Conditions - Ignition switched off. - Connector removed from NH3 sensor (F869). - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	4	Ubat		4	Battery negative pole	>0.5V	Switch all consumers on	Pin (+ probe)	Pin (- probe)	Value	Condition	2	3	± 60 Ω	
Pin (+ probe)	Pin (- probe)	Value	Condition																		
1	4	Ubat																			
4	Battery negative pole	>0.5V	Switch all consumers on																		
Pin (+ probe)	Pin (- probe)	Value	Condition																		
2	3	± 60 Ω																			
Possible causes	- An open circuit - Perform DPF regeneration with DAVIE.																				
Additional information	No additional information available																				
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3952a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3952b</td><td>SRT</td></tr><tr><td colspan="3">Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults.</td></tr><tr><td colspan="3"> - Fault inactive – issue resolve - Fault active - Proceed to step 3 </td></tr></table>	Step 1	Step ID 3952a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3952b	SRT	Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults.			- Fault inactive – issue resolve - Fault active - Proceed to step 3							
Step 1	Step ID 3952a	SRT																			
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																					
Step 2	Step ID 3952b	SRT																			
Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults.																					
- Fault inactive – issue resolve - Fault active - Proceed to step 3																					

	Step 3	Step ID 3952c	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: - Exhaust Temperature Before SCR - Exhaust Temperature After SCR - Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing		
	Back to Index		

P3953

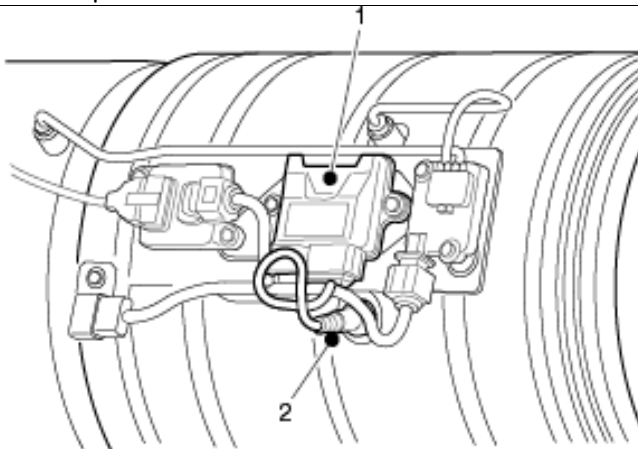
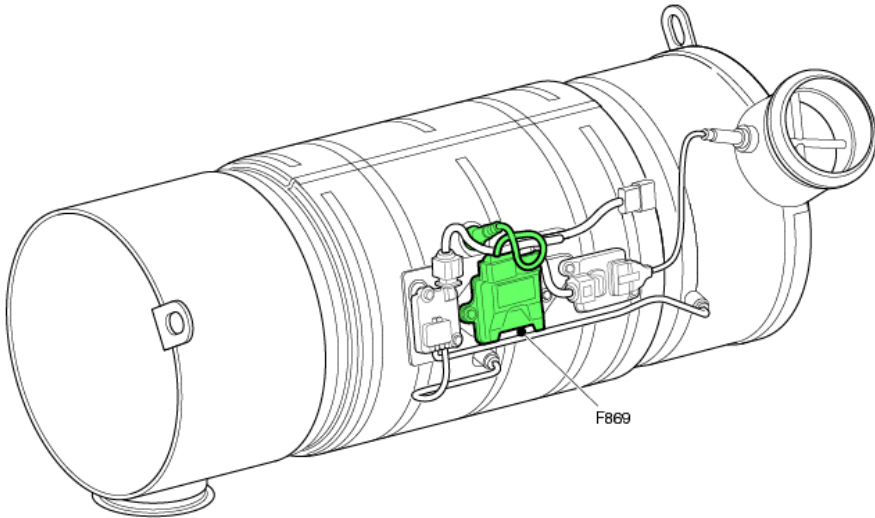
Code number	P3953
Fault code description	Heater element NH3 sensor – Voltage too low or short circuit to ground
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports a short circuit to supply on the heater negative pin for

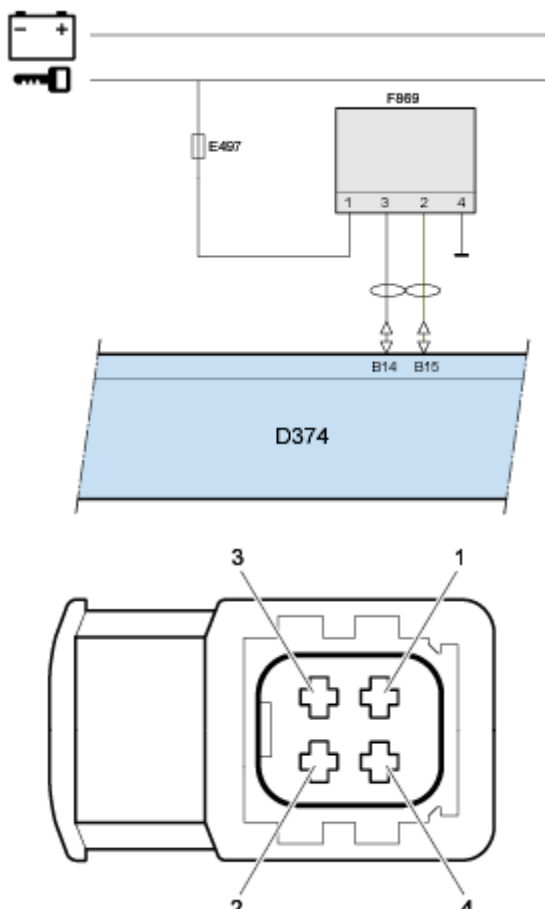
	5 seconds															
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.															
Electrical diagram(s)	Wiring harness connector F869 D374 EAS-3 ECU E497 after treatment CAN fuse F869 NH3 sensor <table><tr><th>D374</th><th>F869</th><th>Function</th></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														

Technical data	Circuit check, ECU & wiring Conditions • Connector removed from NH3 sensor (F869). • Ignition switched on. • Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Circuit check, A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Condition	1	4	Ubat		4	Battery negative pole	>0.5V	Switch all consumers on	Pin	Pin			(+ probe)	(- probe)	Value	Condition	2	3	± 60 Ω	
Pin	Pin																												
(+ probe)	(- probe)	Value	Condition																										
1	4	Ubat																											
4	Battery negative pole	>0.5V	Switch all consumers on																										
Pin	Pin																												
(+ probe)	(- probe)	Value	Condition																										
2	3	± 60 Ω																											
Possible causes	• The NH3 sensor (F869) probe has malfunctioned or is damaged. • The NH3 sensor (F869) has malfunctioned or is damaged. • The NH3 sensor (F869) internal heater has malfunctioned. • Perform DPF regeneration with DAVIE.																												
Additional information	No additional information available																												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3953a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3953b</td><td>SRT</td></tr><tr><td colspan="3">Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults.</td></tr><tr><td colspan="3"> • Fault inactive – issue resolve </td></tr></table>	Step 1	Step ID 3953a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3953b	SRT	Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults.			• Fault inactive – issue resolve															
Step 1	Step ID 3953a	SRT																											
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																													
Step 2	Step ID 3953b	SRT																											
Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults.																													
• Fault inactive – issue resolve																													

	Fault active - Proceed to step 3 <table><tr><td>Step 3</td><td>Step ID 3953c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 3	Step ID 3953c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 3	Step ID 3953c	SRT					
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.							
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: - Exhaust Temperature Before SCR - Exhaust Temperature After SCR - Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing						
	Back to Index						

P3954

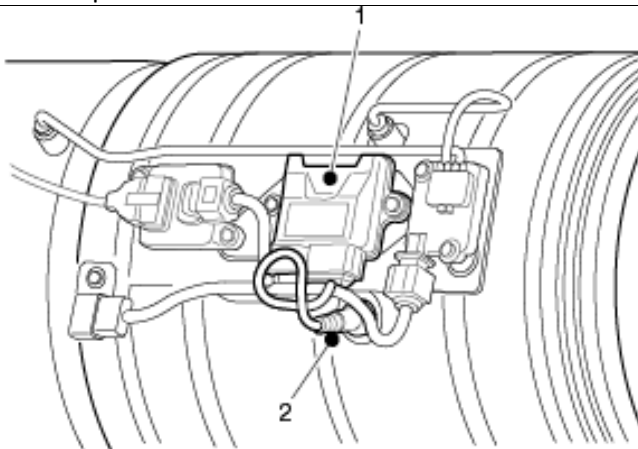
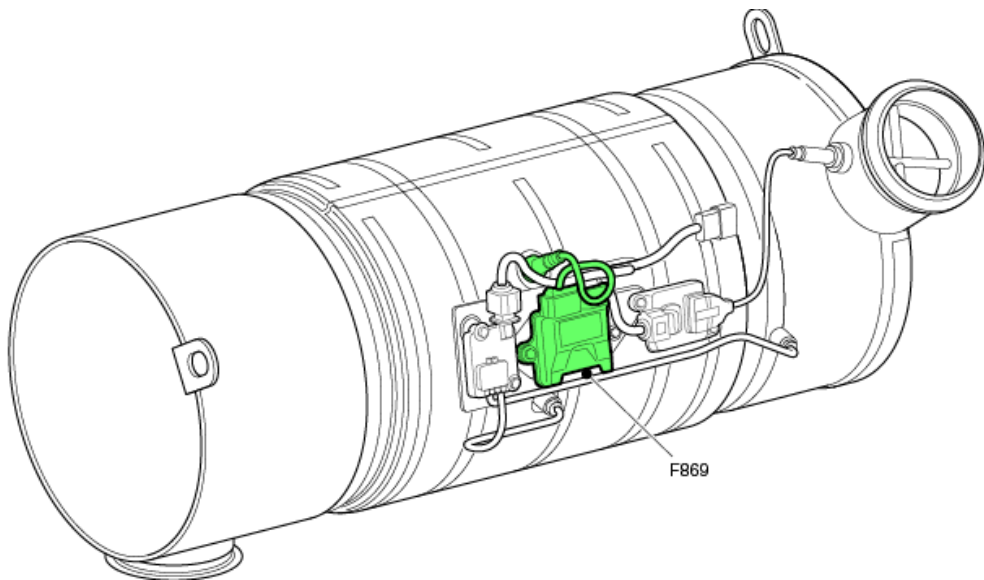
Code number	P3954
Fault code description	Heater element NH3 sensor – Voltage too high or short circuit to supply
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports a short circuit to ground on the heater negative pin for 5 seconds.

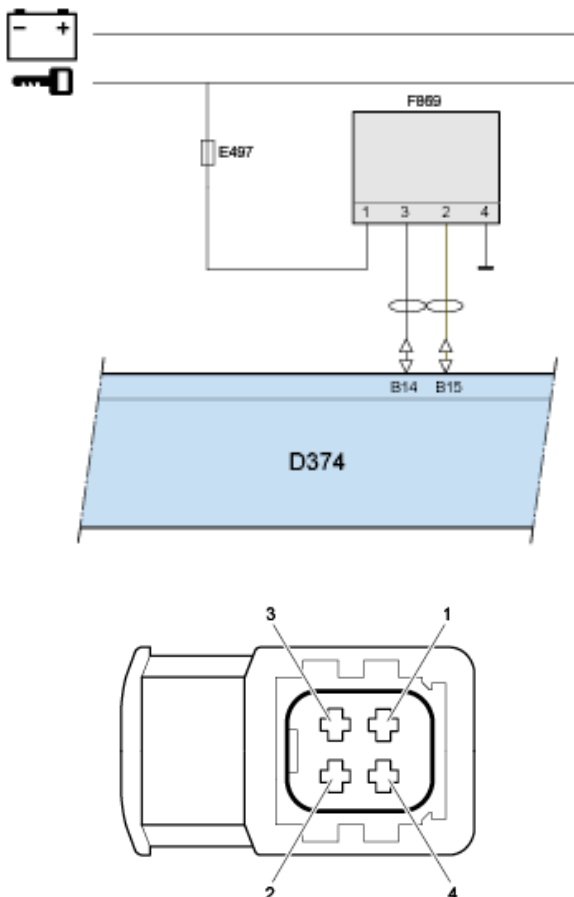
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.															
Electrical diagram(s)	 Wiring harness connector F869 D374 EAS-3 ECU E497 after treatment CAN fuse F869 NH3 sensor <table><tr><th>D374</th><th>F869</th><th>Function</th></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														

Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Circuit check, A-CAN Conditions - Ignition switched off. - Connector removed from NH3 sensor (F869). - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	4	Ubat		4	Battery negative pole	>0.5V	Switch all consumers on	Pin (+ probe)	Pin (- probe)	Value	Condition	2	3	± 60 Ω	
Pin (+ probe)	Pin (- probe)	Value	Condition																		
1	4	Ubat																			
4	Battery negative pole	>0.5V	Switch all consumers on																		
Pin (+ probe)	Pin (- probe)	Value	Condition																		
2	3	± 60 Ω																			
Possible causes	- A short circuit to ground. - Perform DPF regeneration with DAVIE.																				
Additional information	No additional information available																				
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3954a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3954b</td><td>SRT</td></tr><tr><td colspan="3">Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults.</td></tr><tr><td colspan="3"> - Fault inactive – issue resolve - Fault active - Proceed to step 3 </td></tr></table>	Step 1	Step ID 3954a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3954b	SRT	Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults.			- Fault inactive – issue resolve - Fault active - Proceed to step 3							
Step 1	Step ID 3954a	SRT																			
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																					
Step 2	Step ID 3954b	SRT																			
Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults.																					
- Fault inactive – issue resolve - Fault active - Proceed to step 3																					

	Step 3	Step ID 3954c	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: - Exhaust Temperature Before SCR - Exhaust Temperature After SCR - Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.		
	Back to Index		

P3955

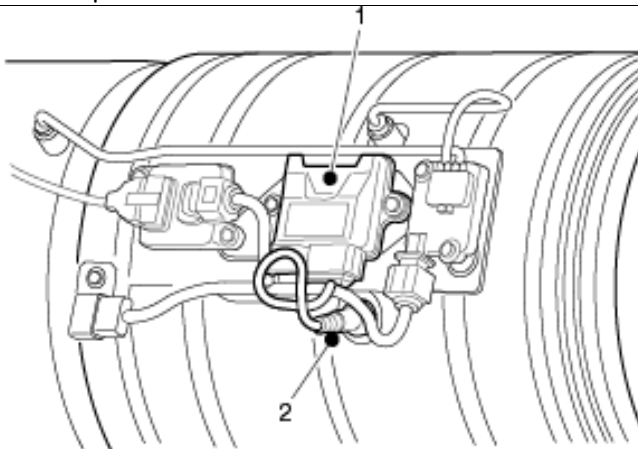
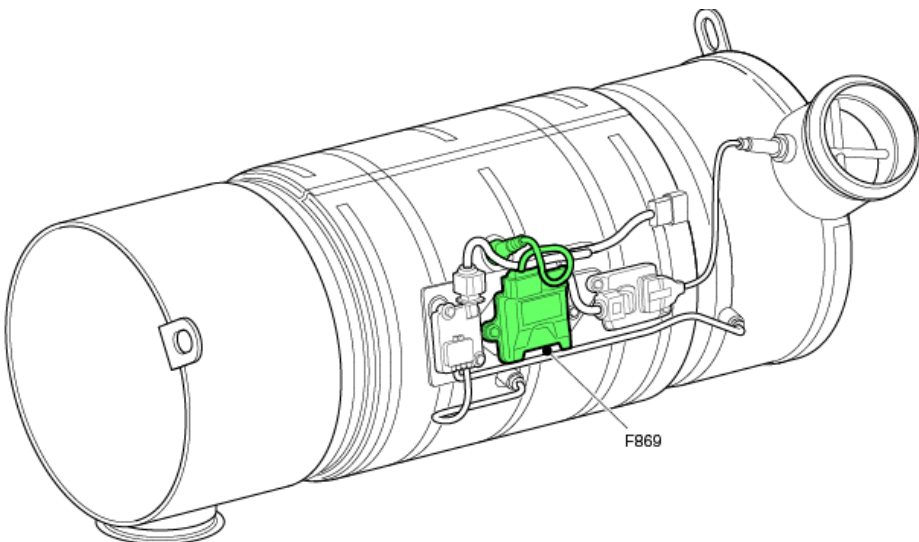
Code number	P3955
Fault code description	Heater element NH3 sensor - Open circuit
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	An internal circuit error has been detected in the NH3 sensor (F869) module.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures.

	This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.															
Electrical diagram(s)	 Wiring harness connector F869 D374 EAS-3 ECU E497 After treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Ground</td></tr><tr><td></td><td>4</td><td>Power supply</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Ground		4	Power supply
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Ground														
	4	Power supply														
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector <table><tr><td>Pin</td><td>Pin</td><td>Value</td><td>Additional information</td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>1</td><td></td><td></td></tr></table>	Pin	Pin	Value	Additional information	(+ probe)	(- probe)	Ubat		4	1					
Pin	Pin	Value	Additional information													
(+ probe)	(- probe)	Ubat														
4	1															

	1Battery>0.5VSwitch all consumers on negative pole Circuit check, A-CAN Conditions - Ignition switched off. - Connector removed from NH3 sensor (F869). - Measurements must be carried out on the wiring harness connector <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	2	3	± 60 Ω							
Pin	Pin																		
(+ probe)	(- probe)	Value	Additional information																
2	3	± 60 Ω																	
Possible causes	- An open circuit. - Perform DPF regeneration with DAVIE.																		
Additional information	No additional information is available.																		
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3955a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3955b</td><td>SRT</td></tr><tr><td colspan="3">Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to step 3. </td></tr></table> <table><tr><td>Step 6</td><td>Step ID 3955c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3955a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3955b	SRT	Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to step 3.			Step 6	Step ID 3955c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3955a	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step ID 3955b	SRT																	
Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to step 3.																			
Step 6	Step ID 3955c	SRT																	
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																			

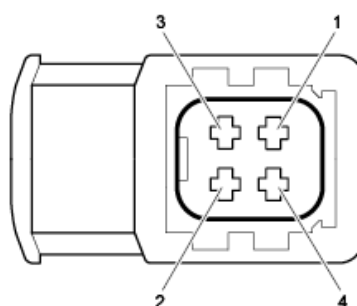
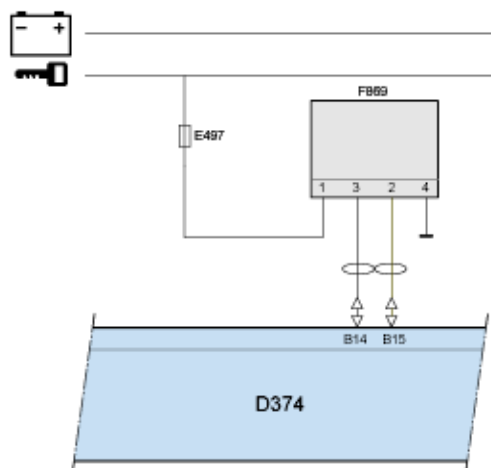
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3956

Code number	P3956
Fault code description	Heater element NH3 sensor - Data valid but too low
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports that the power supply is too high for 5 seconds.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF

regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.

Electrical diagram(s)



Wiring harness connector F869

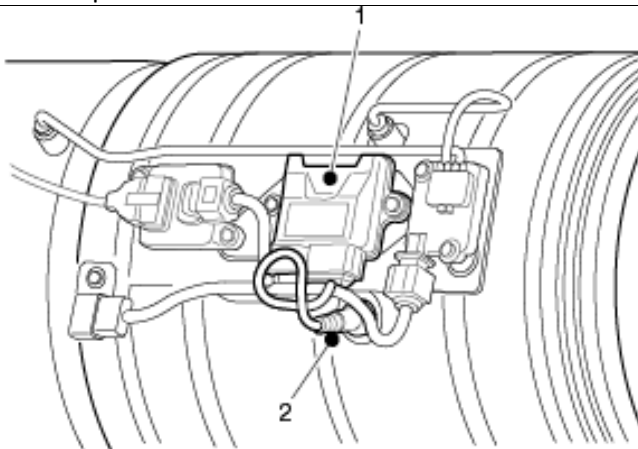
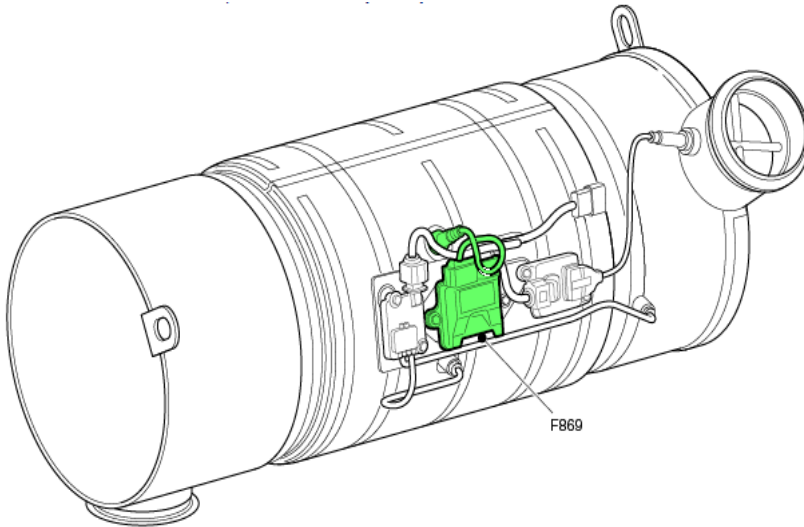
D374 EAS-3 ECU
E497 After treatment CAN fuse
F869 NH3 sensor

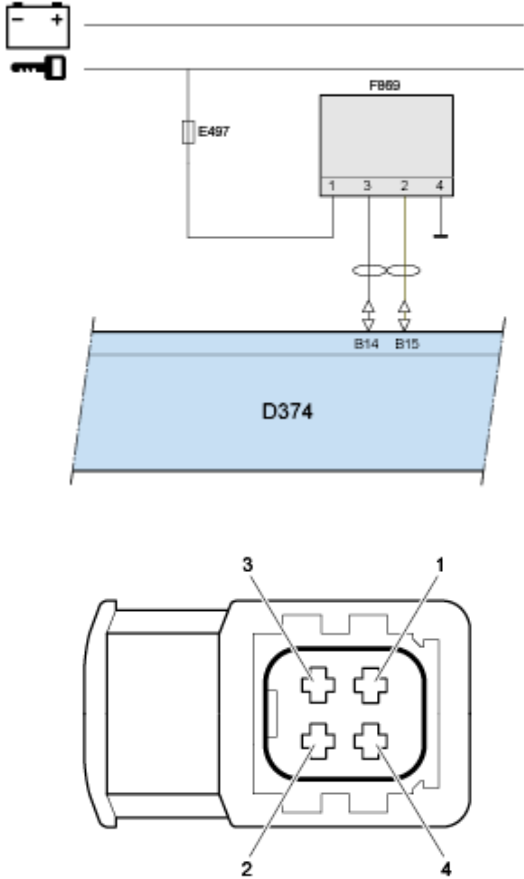
D374	F869	Function
B14	3	A-CAN High
B15	2	A-CAN Low
	1	Ground
	4	Power supply

Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td></td></tr><tr><td>1</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Circuit check, A-CAN Conditions - Ignition switched off. - Connector removed from NH3 sensor (F869). - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	4	1	Ubat		1	Battery negative pole	>0.5V	Switch all consumers on	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	2	3	± 60 Ω	
Pin	Pin																												
(+ probe)	(- probe)	Value	Additional information																										
4	1	Ubat																											
1	Battery negative pole	>0.5V	Switch all consumers on																										
Pin	Pin																												
(+ probe)	(- probe)	Value	Additional information																										
2	3	± 60 Ω																											
Possible causes	- The DTC is set when the power supply voltage is higher than the voltage supported by the sensor for normal operation. - Check if the sensor is powered correctly - Check the wiring harness for short circuits - Perform DPF regeneration with DAVIE.																												
Additional information	No additional information is available.																												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3956a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table>	Step 1	Step ID 3956a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																								
Step 1	Step ID 3956a	SRT																											
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																													

	Step 2	Step ID 3956b	SRT
	Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.		
	Step 3	Step ID 3956c	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.		
	Back to Index		

P3957

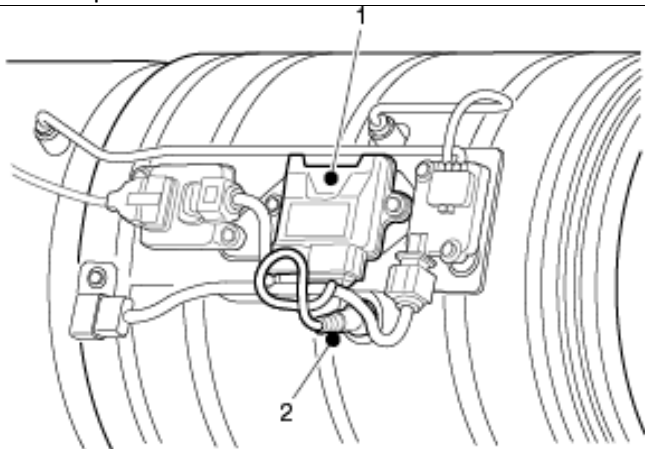
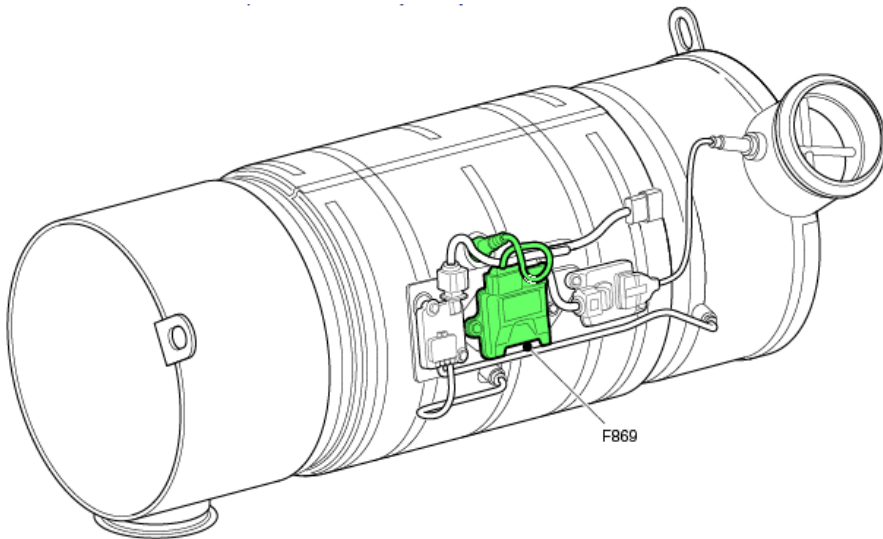
Code number	P3957
Fault code description	Heater element NH3 sensor – Data valid but too high.
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports that power supply is too low for 5 seconds.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF

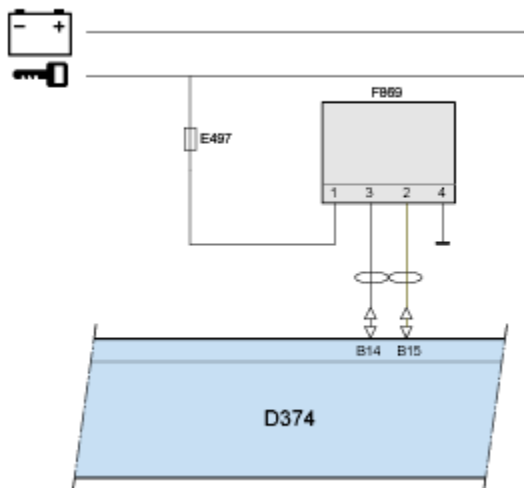
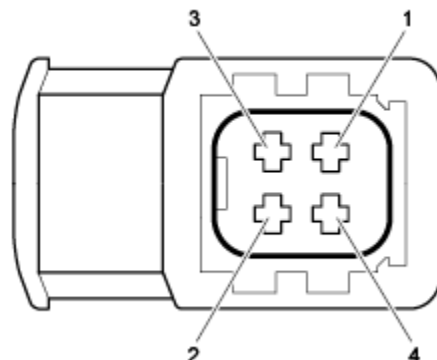
	regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.																					
Electrical diagram(s)	 Wiring harness connector F869 <table><tr><td>D374</td><td>EAS-3 ECU</td></tr><tr><td>E497</td><td>after treatment CAN fuse</td></tr><tr><td>F869</td><td>NH3 sensor</td></tr></table><table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	EAS-3 ECU	E497	after treatment CAN fuse	F869	NH3 sensor	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	EAS-3 ECU																					
E497	after treatment CAN fuse																					
F869	NH3 sensor																					
D374	F869	Function																				
B14	3	A-CAN High																				
B15	2	A-CAN Low																				
	1	Power supply																				
	4	Ground																				
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	4	Ubat		4	Battery	>0.5V	Switch all consumers on									
Pin (+ probe)	Pin (- probe)	Value	Condition																			
1	4	Ubat																				
4	Battery	>0.5V	Switch all consumers on																			

	negative pole Circuit check, A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	2	3	± 60 Ω											
Pin (+ probe)	Pin (- probe)	Value	Condition																
2	3	± 60 Ω																	
Possible causes	• The DTC is set when the power supply voltage is lower than the voltage supported by the sensor for normal operation. • Check if the sensor is powered correctly • Check the wiring harness for short circuits • Perform DPF regeneration with DAVIE.																		
Additional information	No additional information available.																		
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3957a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3957b</td><td>SRT</td></tr><tr><td colspan="3">Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3957c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3957a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3957b	SRT	Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3			Step 3	Step ID 3957c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3957a	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step ID 3957b	SRT																	
Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3																			
Step 3	Step ID 3957c	SRT																	
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																			
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle.																		

	Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3958

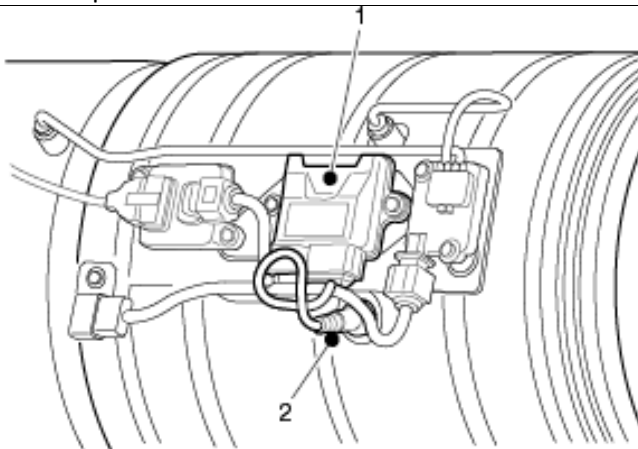
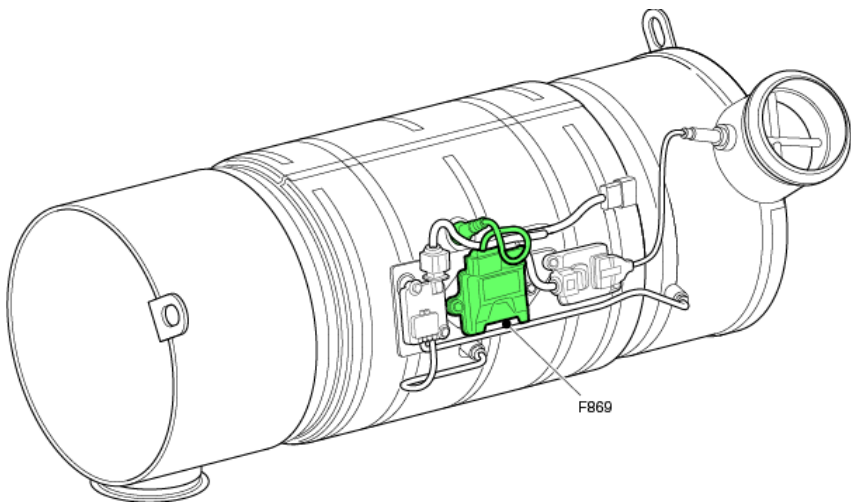
Code number	P3958
Fault code description	NH3 sensor internal trim resistor –Data valid but too high.
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – Exhaust gas sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports that the trim resistor value is too high for 5 seconds.
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes.

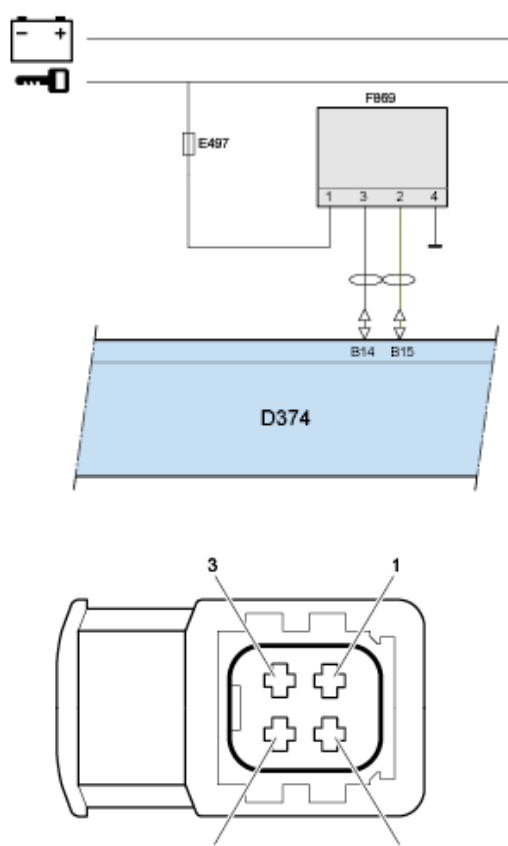
Electrical diagram(s)	  Wiring harness connector F869 D374 E497 F869 EAS-3 ECU after treatment CAN fuse NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	4	Ubat		4	Battery negative pole	>0.5V	Switch all consumers on			
Pin (+ probe)	Pin (- probe)	Value	Condition													
1	4	Ubat														
4	Battery negative pole	>0.5V	Switch all consumers on													

	Circuit check, A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	2	3	± 60 Ω														
Pin (+ probe)	Pin (- probe)	Value	Condition																			
2	3	± 60 Ω																				
Possible causes	• NH3 sensor (F869) internal error. • Check if the sensor is powered correctly • Check the wiring harness for short circuits • Perform DPF regeneration with DAVIE to validate the repair.																					
Additional information	No additional information available.																					
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3958a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3958b</td><td>SRT</td></tr><tr><td colspan="3">Repair or replace appropriate component and use Davie to recheck for the presence of active faults.</td></tr><tr><td colspan="3"> • Fault inactive – issue resolved • Fault active - Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3958c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3958a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3958b	SRT	Repair or replace appropriate component and use Davie to recheck for the presence of active faults.			• Fault inactive – issue resolved • Fault active - Proceed to step 3			Step 3	Step ID 3958c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3958a	SRT																				
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																						
Step 2	Step ID 3958b	SRT																				
Repair or replace appropriate component and use Davie to recheck for the presence of active faults.																						
• Fault inactive – issue resolved • Fault active - Proceed to step 3																						
Step 3	Step ID 3958c	SRT																				
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																						

Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3959

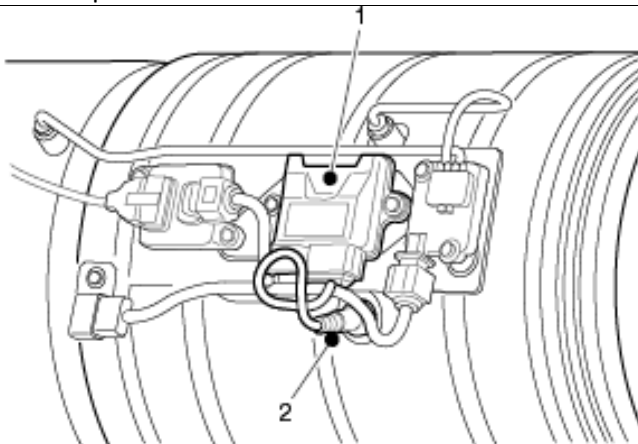
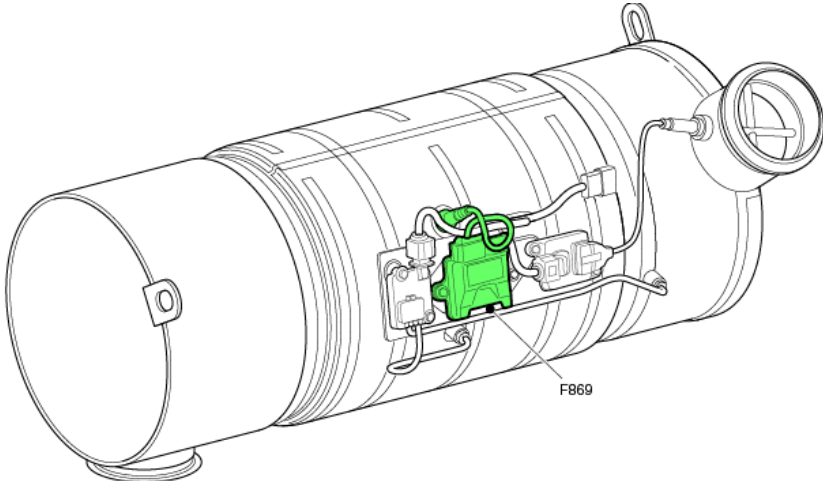
Code number	P3959
Fault code description	NH3 sensor internal trim resistor - Data valid but too low
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – Exhaust Gas Sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports that the trim resistor value is too low for 5 seconds.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above

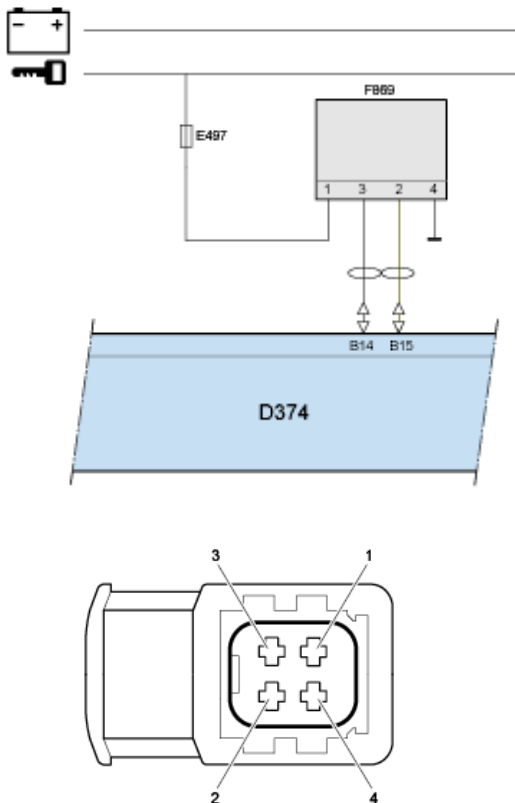
	150°C [302°F] before the sensor can run its internal diagnostics.																
Electrical diagram(s)	 Wiring harness connector F869 D374 EAS-3 ECU E497 After treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Ground</td></tr><tr><td></td><td>4</td><td>Power supply</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Ground		4	Power supply	
D374	F869	Function															
B14	3	A-CAN High															
B15	2	A-CAN Low															
	1	Ground															
	4	Power supply															
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td>Value</td><td>Condition</td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td></td><td></td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table>	Pin	Pin	Value	Condition	(+ probe)	(- probe)			1	4	Ubat		4	Battery negative pole	>0.5V	Switch all consumers on
Pin	Pin	Value	Condition														
(+ probe)	(- probe)																
1	4	Ubat															
4	Battery negative pole	>0.5V	Switch all consumers on														

	Circuit check, A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><th>Pin</th><th>Pin</th><th>Value</th><th>Condition</th></tr><tr><td>(+ probe)</td><td>(- probe)</td><td></td><td></td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin	Pin	Value	Condition	(+ probe)	(- probe)			2	3	± 60 Ω							
Pin	Pin	Value	Condition																
(+ probe)	(- probe)																		
2	3	± 60 Ω																	
Possible causes	• NH3 sensor (F869) internal error. • Check if the sensor is powered correctly • Check the wiring harness for short circuits • Perform DPF regeneration with DAVIE to validate the repair.																		
Additional information	No additional information is available.																		
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3959a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3959b</td><td>SRT</td></tr><tr><td colspan="3">Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process. </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3959c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3959a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3959b	SRT	Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.			Step 3	Step ID 3959c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3959a	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step ID 3959b	SRT																	
Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.																			
Step 3	Step ID 3959c	SRT																	
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																			

Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3960

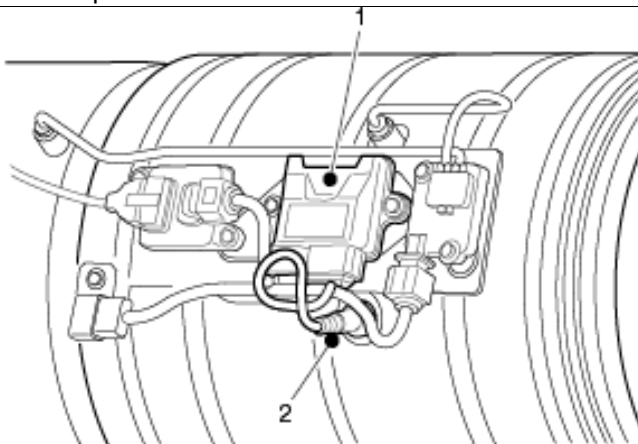
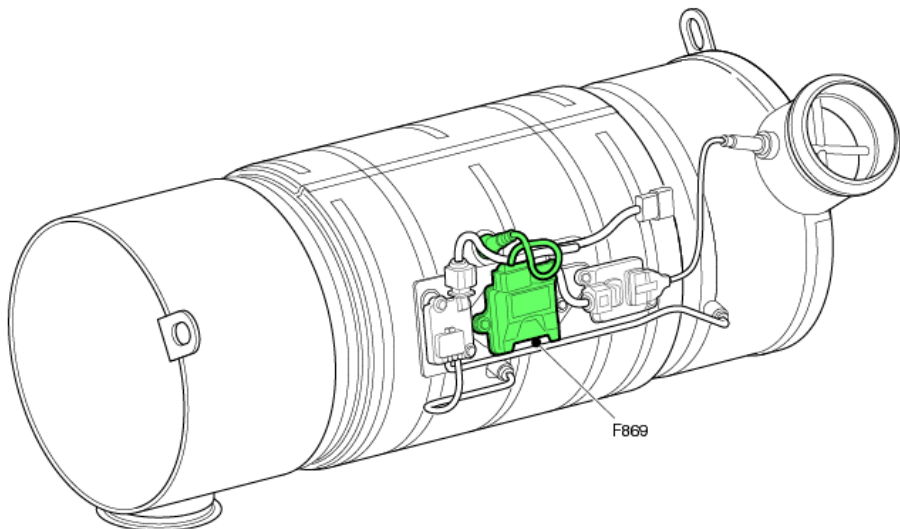
Code number	P3960
Fault code description	NH3 sensor - Internal error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – Exhaust Gas Sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports an internal error for 5 seconds.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above

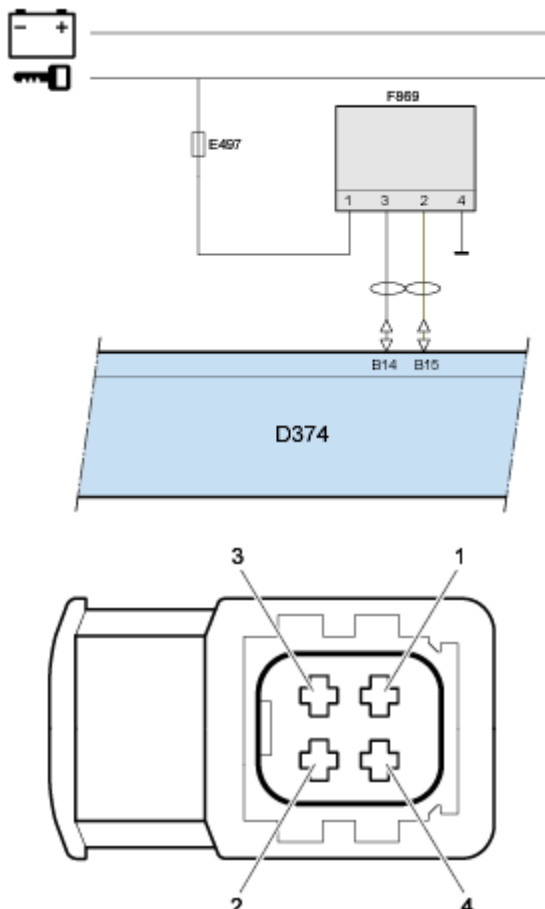
		150°C [302°F] before the sensor can run its internal diagnostics.																					
Electrical diagram(s)	 Wiring harness connector F869 D374 EAS-3 ECU E497 After treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Ground</td></tr><tr><td></td><td>4</td><td>Power supply</td></tr></table>			D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Ground		4	Power supply					
D374	F869	Function																					
B14	3	A-CAN High																					
B15	2	A-CAN Low																					
	1	Ground																					
	4	Power supply																					
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td>Value</td><td>Condition</td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td></td><td></td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery</td><td>>0.5V</td><td>Switch all consumers on</td></tr><tr><td></td><td>negative pole</td><td></td><td></td></tr></table>			Pin	Pin	Value	Condition	(+ probe)	(- probe)			1	4	Ubat		4	Battery	>0.5V	Switch all consumers on		negative pole		
Pin	Pin	Value	Condition																				
(+ probe)	(- probe)																						
1	4	Ubat																					
4	Battery	>0.5V	Switch all consumers on																				
	negative pole																						

	Circuit check, A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	2	3	± 60 Ω													
Pin	Pin																								
(+ probe)	(- probe)	Value	Additional information																						
2	3	± 60 Ω																							
Possible causes	• NH3 sensor (F869) internal error. • Check if the sensor is powered correctly • Check the wiring harness for short circuits • Perform DPF regeneration with DAVIE to validate the repair.																								
Additional information	No additional information is available.																								
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3960a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3960b</td><td>SRT</td></tr><tr><td colspan="3">Replace: NH3 Sensor Replace the NH3 sensor after catalyst.</td></tr><tr><td colspan="3">Use DAVIE to re-check for the presence of active faults.</td></tr><tr><td colspan="3"> • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process. </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3960c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3960a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3960b	SRT	Replace: NH3 Sensor Replace the NH3 sensor after catalyst.			Use DAVIE to re-check for the presence of active faults.			• If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.			Step 3	Step ID 3960c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3960a	SRT																							
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																									
Step 2	Step ID 3960b	SRT																							
Replace: NH3 Sensor Replace the NH3 sensor after catalyst.																									
Use DAVIE to re-check for the presence of active faults.																									
• If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.																									
Step 3	Step ID 3960c	SRT																							
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																									

Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3961

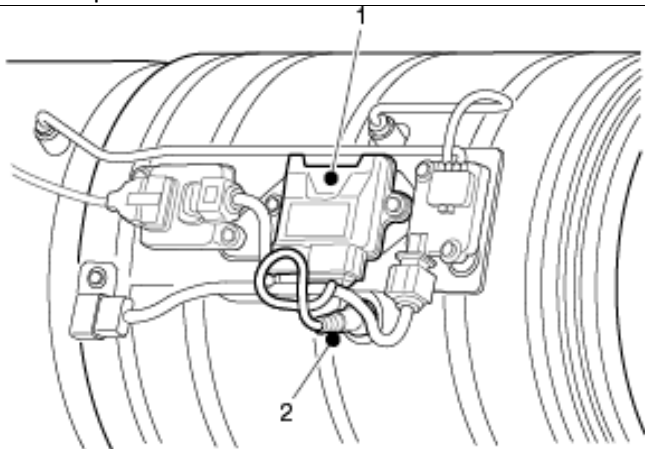
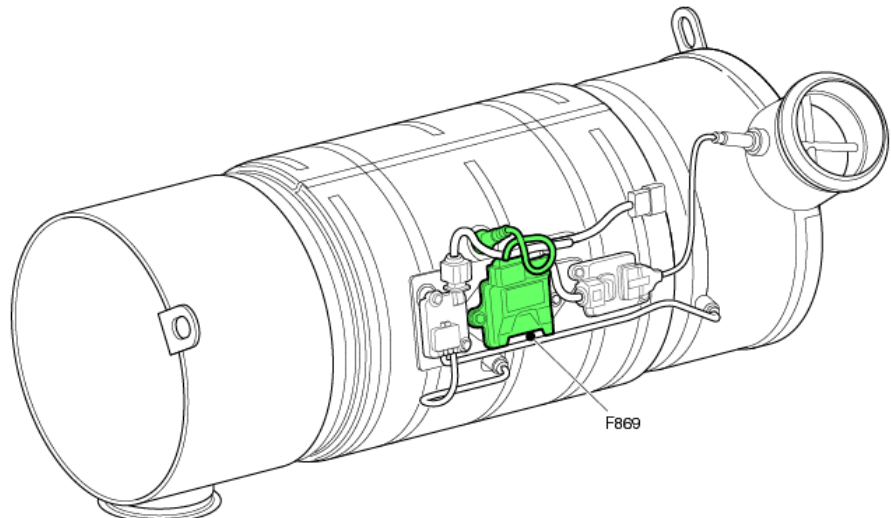
Code number	P3961
Fault code description	NH3 sensor – Internal error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – Exhaust Gas sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports an internal error for 5 seconds.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures.

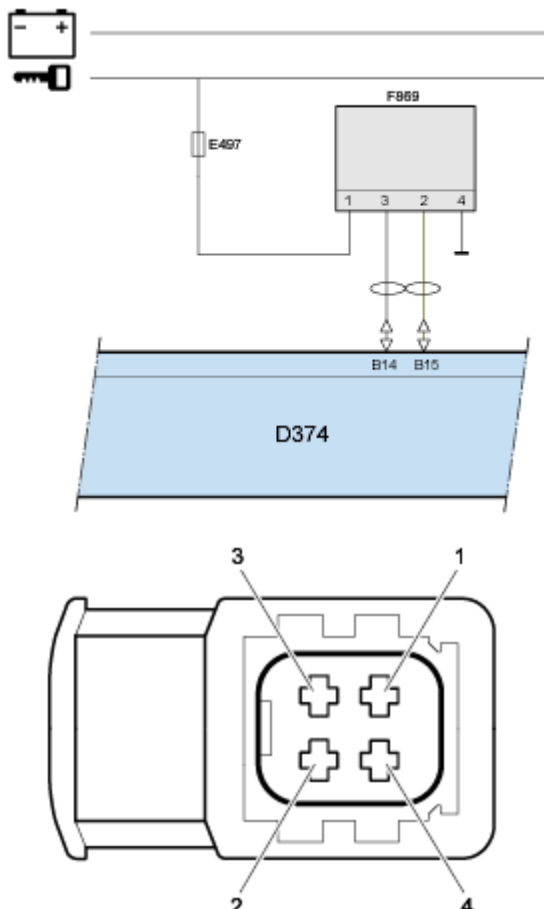
	This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.															
Electrical diagram(s)	 Wiring harness connector F869 D374 EAS-3 ECU E497 after treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	4	Ubat		4	Battery negative	>0.5V	Switch all consumers on			
Pin (+ probe)	Pin (- probe)	Value	Condition													
1	4	Ubat														
4	Battery negative	>0.5V	Switch all consumers on													

	pole Circuit check, A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	2	3	± 60 Ω											
Pin (+ probe)	Pin (- probe)	Value	Condition																
2	3	± 60 Ω																	
Possible causes	• A short circuit to ground or open circuit. • Perform DPF regeneration with DAVIE to validate the repair.																		
Additional information	No additional information																		
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pin out locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3961a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3961b</td><td>SRT</td></tr><tr><td colspan="3">Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3961c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3961a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3961b	SRT	Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3			Step 3	Step ID 3961c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3961a	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step ID 3961b	SRT																	
Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3																			
Step 3	Step ID 3961c	SRT																	
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																			
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR																		

	• Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3962

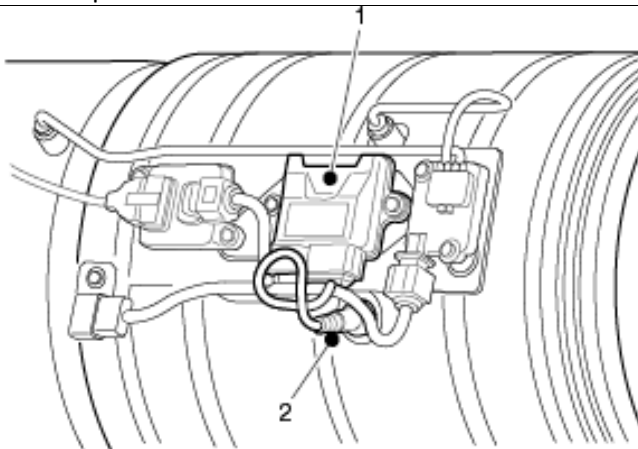
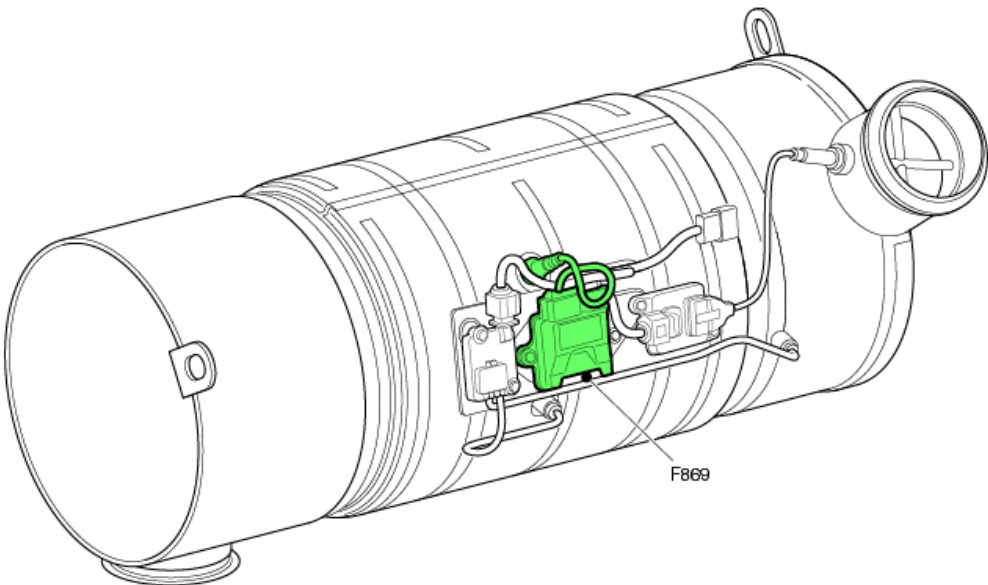
Code number	P3962
Fault code description	NH3 sensor – Internal error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – Exhaust Gas sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports an internal error for 5 seconds.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures.

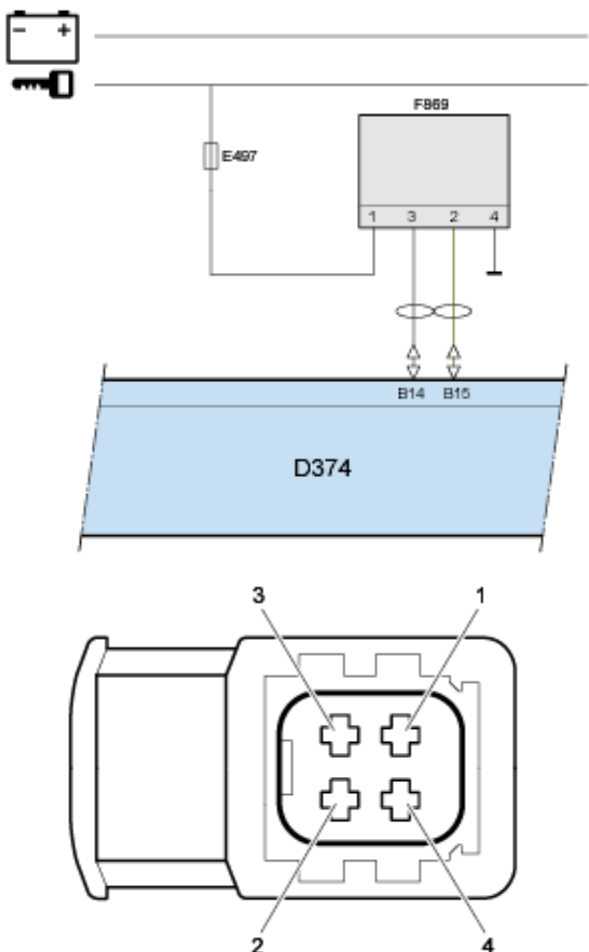
	This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.															
Electrical diagram(s)	 Wiring harness connector F869 D374 EAS-3 ECU E497 after treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	4	Ubat		4	Battery negative	>0.5V	Switch all consumers on			
Pin (+ probe)	Pin (- probe)	Value	Condition													
1	4	Ubat														
4	Battery negative	>0.5V	Switch all consumers on													

	pole Circuit check, A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	2	3	± 60 Ω											
Pin (+ probe)	Pin (- probe)	Value	Condition																
2	3	± 60 Ω																	
Possible causes	• A short circuit to ground or open circuit. • Perform DPF regeneration with DAVIE to validate the repair.																		
Additional information	No additional information																		
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3962a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3962b</td><td>SRT</td></tr><tr><td colspan="3">Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3962c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3962a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3962b	SRT	Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3			Step 3	Step ID 3962c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3962a	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step ID 3962b	SRT																	
Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3																			
Step 3	Step ID 3962c	SRT																	
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																			
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR																		

	• Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

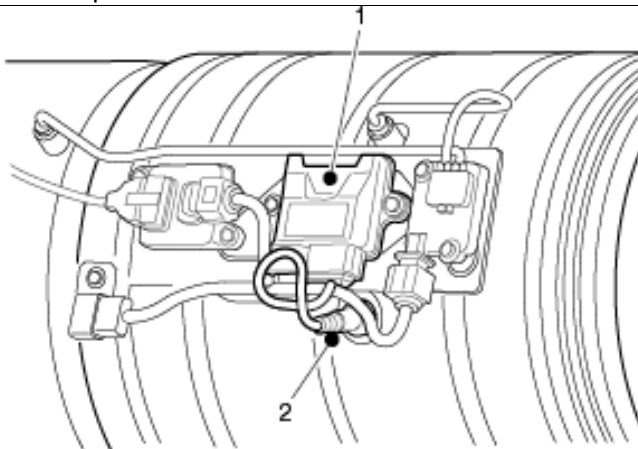
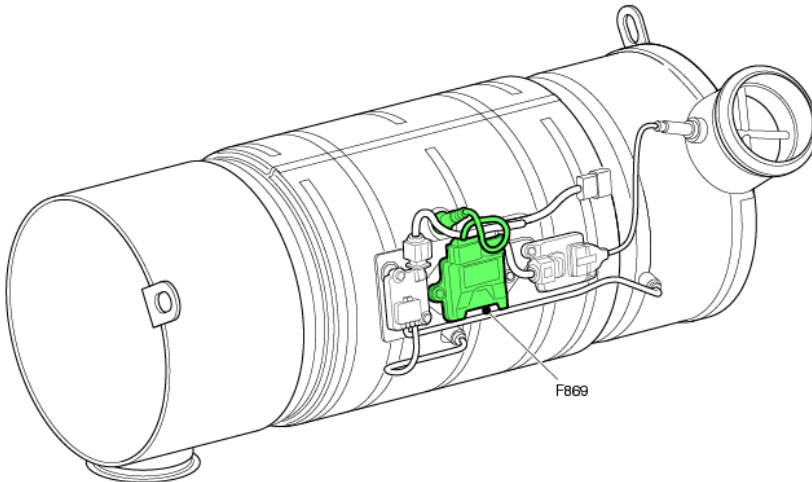
P3963

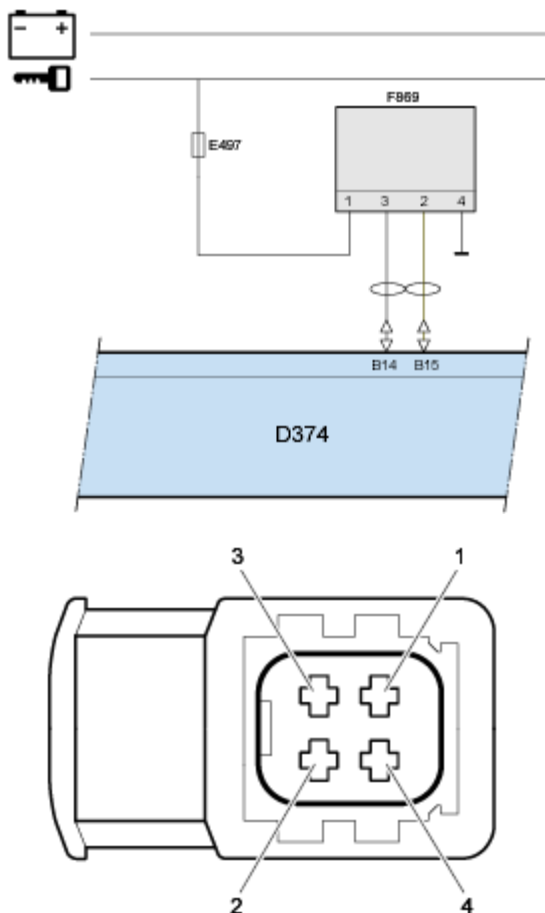
Code number	P3963
Fault code description	CAN communication – Timeout from NH3 sensor
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – Exhaust Gas sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously when the key switch is ON.
Set condition of fault code	The DTC sets when the CAN communication from the NH3 sensor (F869) to the EAS-3 ECU (D374) is interrupted for 5 consecutive seconds.

Reset condition of fault code	To validate the repair, start the engine and let it idle for 1 minute. This fault code will change to inactive immediately after the diagnostic runs and passes.															
Electrical diagram(s)	 Wiring harness connector F869 D374 EAS-3 ECU E497 after treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	4	Ubat								
Pin (+ probe)	Pin (- probe)	Value	Condition													
1	4	Ubat														

	4 Battery negative >0.5V Switch all consumers on pole Circuit check, A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>$\pm 60 \Omega$</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Condition	2	3	$\pm 60 \Omega$	
Pin	Pin												
(+ probe)	(- probe)	Value	Condition										
2	3	$\pm 60 \Omega$											
Possible causes	• Open circuit or power supply too low on the NOx after SCR catalyst sensor. • Open ground connection on the NOx after SCR catalyst sensor. • Open or short circuit to the CAN wire between the EAS-3 unit and the NOx after SCR catalyst sensor. • Interrupted communication between the NOx after SCR catalyst sensor and the EAS-3 unit. • A failed NOx after SCR catalyst sensor. • A failed EAS-3 unit.												
Additional information	Engine torque is reduced.												
Diagnostic Step-by-Step	Please refer “General troubleshooting – CAN”												
Verification Drive Cycle	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.												
	Back to Index												

P3964

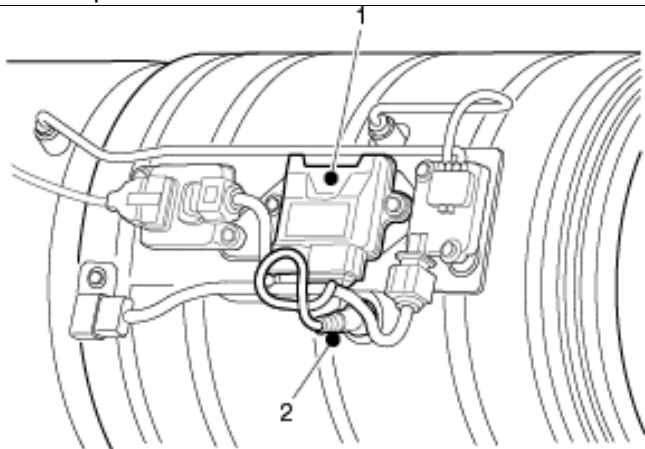
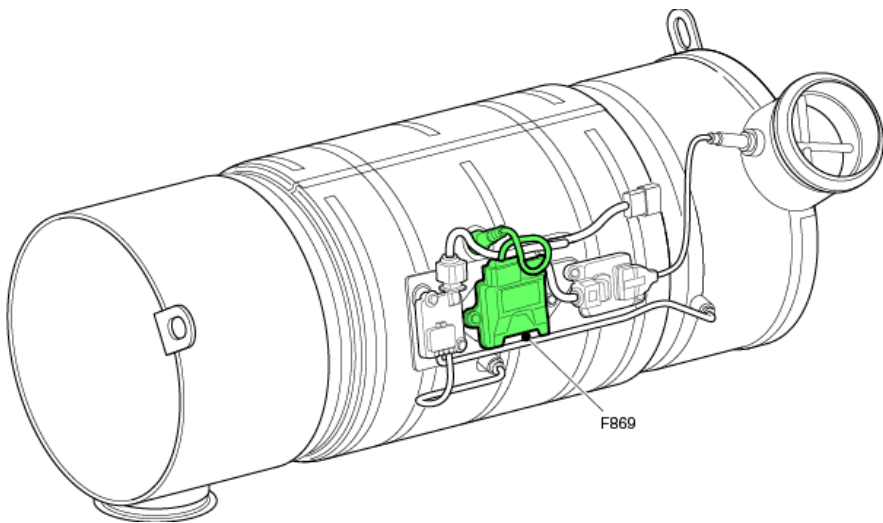
Code number	P3964
Fault code description	NH3 sensor – Internal error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – Exhaust Gas sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports that the sensor ground pin is shorted to ground, or an open circuit is detected for 5 seconds.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF

	regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.															
Electrical diagram(s)	 Wiring harness connector F869 D374 EAS-3 ECU E497 after treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	4	Ubat		4	Battery negative pole	>0.5V	Switch all consumers on			
Pin (+ probe)	Pin (- probe)	Value	Condition													
1	4	Ubat														
4	Battery negative pole	>0.5V	Switch all consumers on													

	Circuit check, A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	2	3	± 60 Ω											
Pin (+ probe)	Pin (- probe)	Value	Condition																
2	3	± 60 Ω																	
Possible causes	• A short circuit to ground or open circuit. • Perform DPF regeneration with DAVIE to validate the repair.																		
Additional information	No additional information available.																		
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3964a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3964b</td><td>SRT</td></tr><tr><td colspan="3">Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3964c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3964a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3964b	SRT	Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3			Step 3	Step ID 3964c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3964a	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step ID 3964b	SRT																	
Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3																			
Step 3	Step ID 3964c	SRT																	
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																			
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module																		

	Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3965

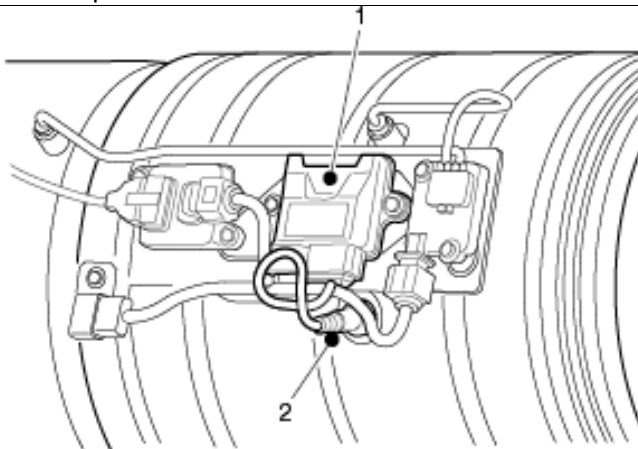
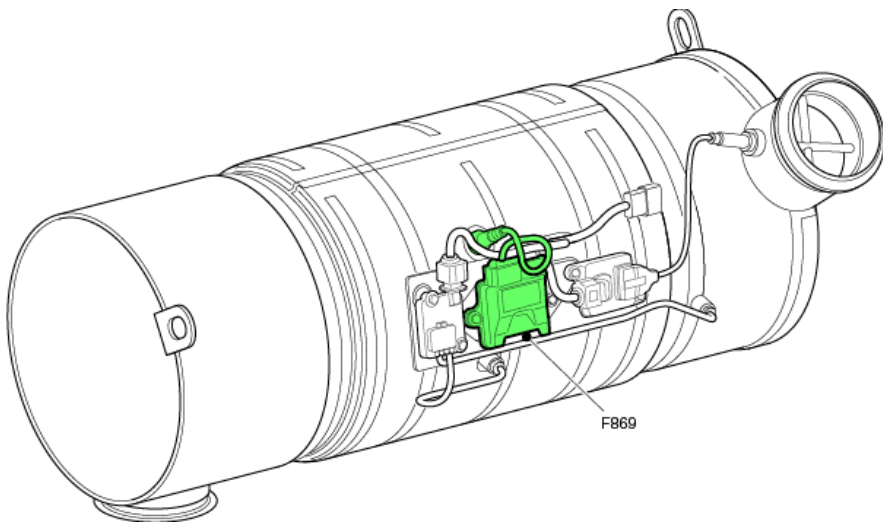
Code number	P3965
Fault code description	NH3 sensor - Internal error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	The NH3 sensor (F869) reports that the sensor ground pin is shorted to supply for 5 seconds.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF

	regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.															
Electrical diagram(s)	The diagram shows a battery connected to a CAN fuse (E497). The fuse is connected to pin 1 of the NH3 sensor (F869). Pin 3 of the sensor is connected to pin B14 of the ECU (D374), and pin 2 is connected to pin B15. Pin 4 is connected to ground. A physical view of the wiring harness connector F869 shows pins 1, 2, 3, and 4. Wiring harness connector F869 D374 EAS-3 ECU E497 After treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td>Value</td><td>Condition</td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td></td><td></td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr></table>	Pin	Pin	Value	Condition	(+ probe)	(- probe)			1	4	Ubat				
Pin	Pin	Value	Condition													
(+ probe)	(- probe)															
1	4	Ubat														

	4 Battery negative pole >0.5V Switch all consumers on
	Circuit check, A-CAN Conditions Ignition switched off. Connector removed from NH3 sensor (F869). Measurements must be carried out on the wiring harness connector F869. Pin (+ probe) 2 Pin (- probe) 3 Value ± 60 Ω Condition
Possible causes	The NH3 sensor (F869) has a short circuit to supply. The NH3 sensor (F869) has malfunctioned or is damaged. The NH3 sensor (F869) internal heater has malfunctioned. Perform DPF regeneration with DAVIE to validate the repair.
Additional information	No additional information is available.
Diagnostic Step-by-Step	Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components. Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. For specific electrical component information and pinout locations, always refer to the technical data. It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. Step 1 Step ID 3965a SRT Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2. Step 2 Step ID 3965b SRT Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. If this related fault is no longer active, then this issue has been resolved. If this related fault is still active, continue to the next step 3 in the troubleshooting process. Step 3 Step ID 3965c SRT For further assistance in diagnosing this issue or for confirmation prior to the

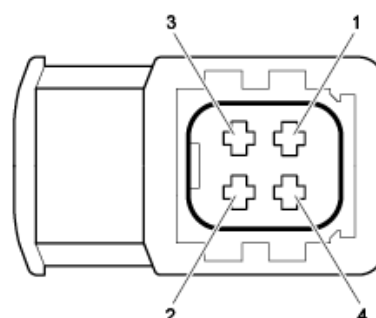
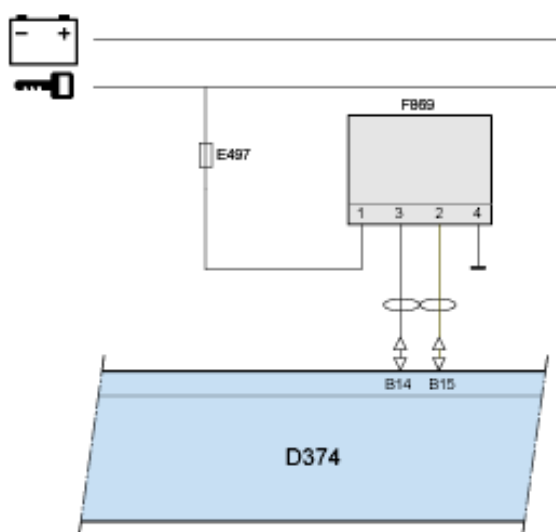
	replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3966

Code number	P3966
Fault code description	NH3 sensor - Internal error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	Sensor voltage too high, or short circuit to supply is detected for 5 consecutive seconds.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF

regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.

Electrical diagram(s)



Wiring harness connector F869

D374 EAS-3 ECU

E497 After treatment CAN fuse

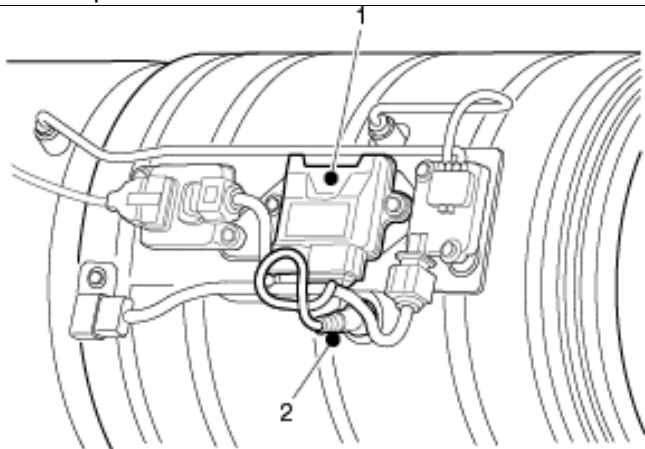
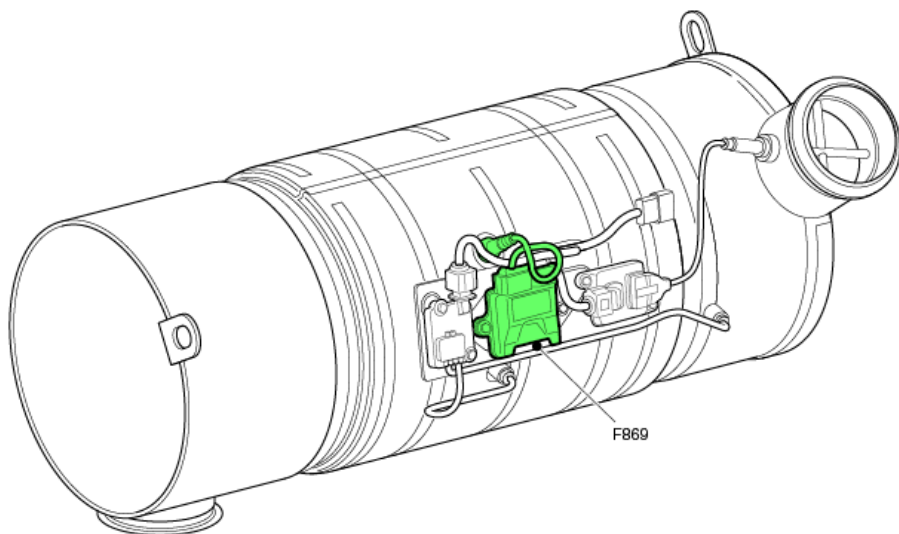
F869 NH3 sensor

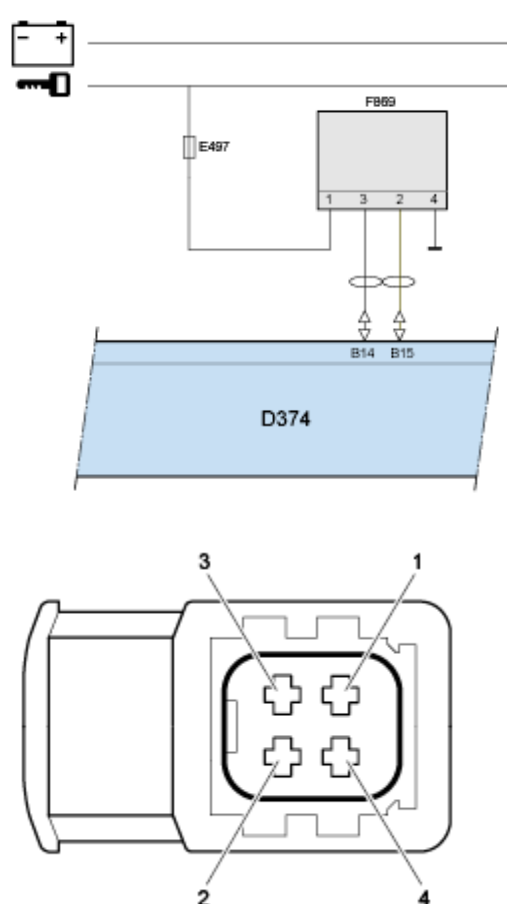
D374	F869	Function
B14	3	A-CAN High
B15	2	A-CAN Low
	1	Power supply
	4	Ground

Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Circuit check, A-CAN Conditions - Ignition switched off. - Connector removed from NH3 sensor (F869). - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Condition	1	4	Ubat		4	Battery negative pole	>0.5V	Switch all consumers on	Pin	Pin			(+ probe)	(- probe)	Value	Condition	2	3	± 60 Ω	
Pin	Pin																												
(+ probe)	(- probe)	Value	Condition																										
1	4	Ubat																											
4	Battery negative pole	>0.5V	Switch all consumers on																										
Pin	Pin																												
(+ probe)	(- probe)	Value	Condition																										
2	3	± 60 Ω																											
Possible causes	- The NH3 sensor (F869) has malfunctioned or is damaged. - The NH3 sensor (F869) internal heater has malfunctioned. - The NH3 sensor (F869) has a short circuit to supply. - Perform DPF regeneration with DAVIE to validate the repair.																												
Additional information	No additional information is available.																												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3966a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr><tr><td>Step 2</td><td>Step ID 3966b</td><td>SRT</td></tr><tr><td colspan="3">Replace: NH3 Sensor</td></tr></table>	Step 1	Step ID 3966a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3966b	SRT	Replace: NH3 Sensor																		
Step 1	Step ID 3966a	SRT																											
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																													
Step 2	Step ID 3966b	SRT																											
Replace: NH3 Sensor																													

	Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.			
	<table><tr><td>Step 3</td><td>Step ID 3966c</td><td>SRT</td></tr></table> For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.	Step 3	Step ID 3966c	SRT
Step 3	Step ID 3966c	SRT		
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.			
	Back to Index			

P3967

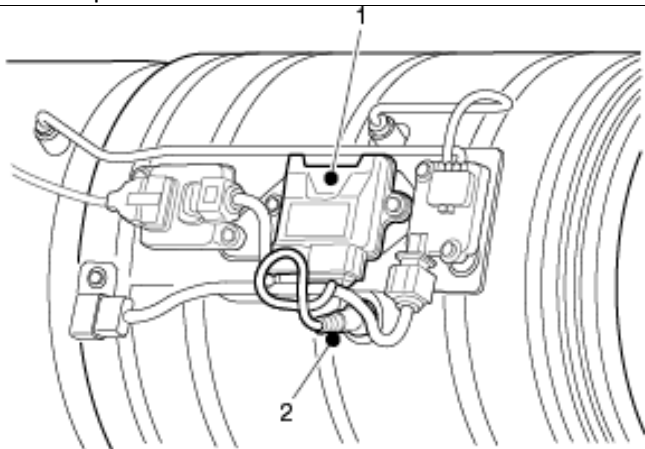
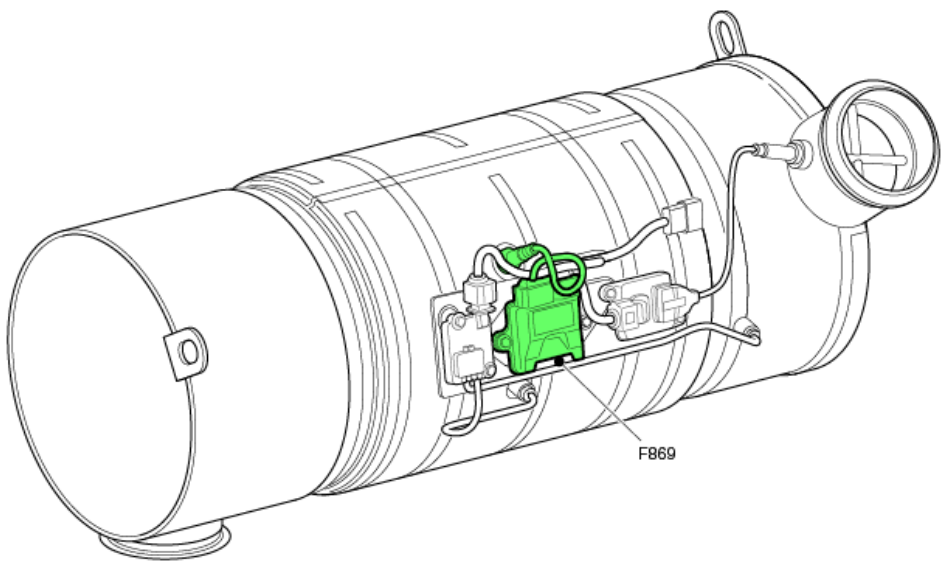
Code number	P3967
Fault code description	NH3 sensor - Internal error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – Exhaust gas sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	Sensor voltage too low, or short circuit to ground is detected for 5 consecutive seconds.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures.

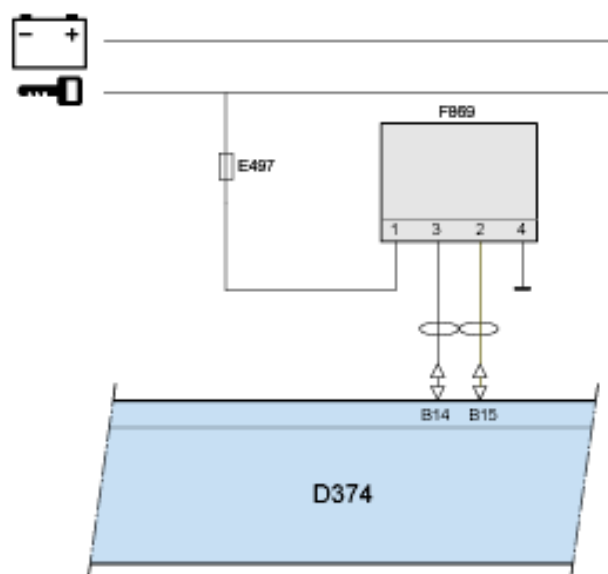
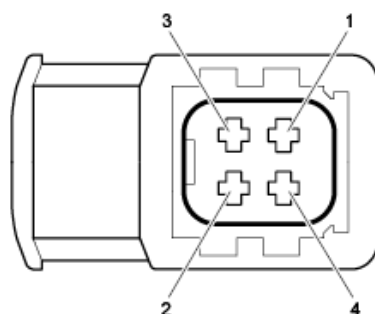
	This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.															
Electrical diagram(s)	 Wiring harness connector F869 D374 EAS-3 ECU E497 after treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	4	Ubat								
Pin (+ probe)	Pin (- probe)	Value	Condition													
1	4	Ubat														

	4 Battery negative pole >0.5V Switch all consumers on Circuit check, A-CAN Conditions Ignition switched off. Connector removed from NH3 sensor (F869). Measurements must be carried out on the wiring harness connector F869. Pin Pin (+ probe) (- probe) Value Condition 2 3 ± 60 Ω																		
Possible causes	The NH3 sensor (F869) has malfunctioned or is damaged. The NH3 sensor (F869) internal heater has malfunctioned. The NH3 sensor (F869) has a short circuit to supply. Perform DPF regeneration with DAVIE to validate the repair.																		
Additional information	No additional information available																		
Diagnostic Step-by-Step	Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components. Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. For specific electrical component information and pinout locations, always refer to the technical data. It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3967a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3967b</td><td>SRT</td></tr><tr><td colspan="3">Replace: NH3 sensor Replace the NH3 sensor and use DAVIE to re-check for the presence of active faults. Fault inactive – issue resolved Fault active - Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3967c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3967a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3967b	SRT	Replace: NH3 sensor Replace the NH3 sensor and use DAVIE to re-check for the presence of active faults. Fault inactive – issue resolved Fault active - Proceed to step 3			Step 3	Step ID 3967c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3967a	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step ID 3967b	SRT																	
Replace: NH3 sensor Replace the NH3 sensor and use DAVIE to re-check for the presence of active faults. Fault inactive – issue resolved Fault active - Proceed to step 3																			
Step 3	Step ID 3967c	SRT																	
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																			
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State																		

	cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3968

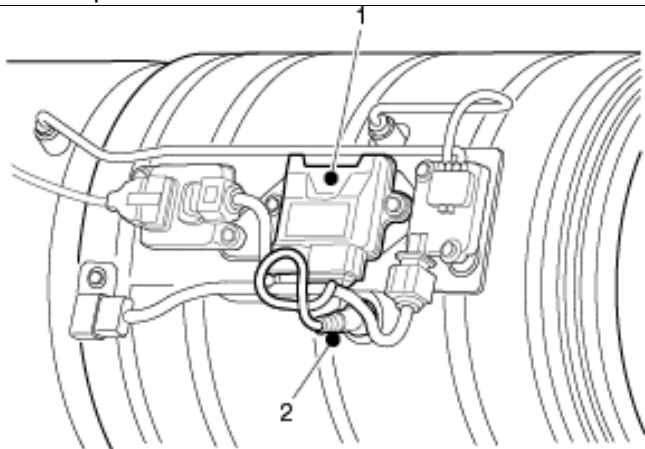
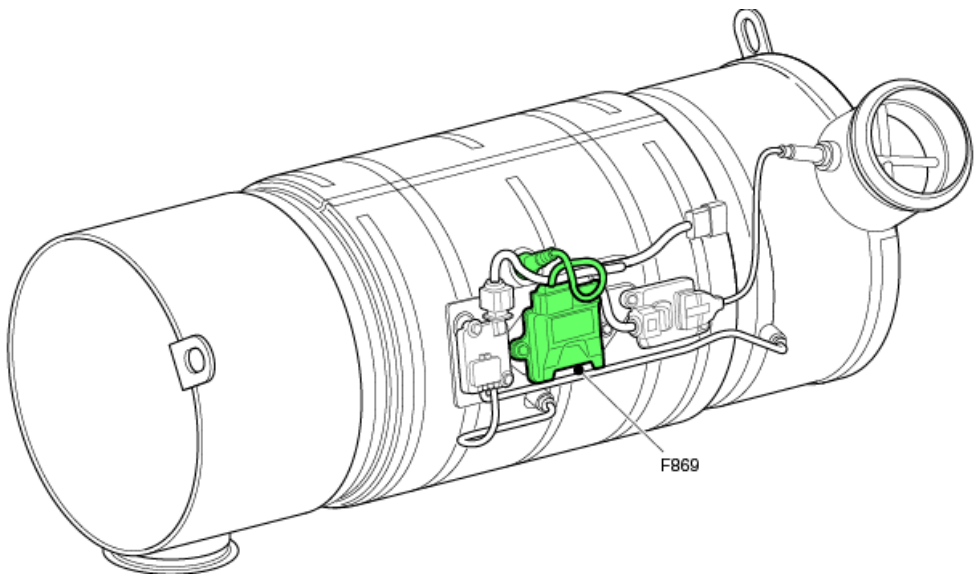
Code number	P3968
Fault code description	NH3 sensor - Internal error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – Exhaust gas sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	Sensor voltage too high, or short circuit to supply is detected for 5 consecutive seconds.

Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.															
Electrical diagram(s)	  Wiring harness connector F869 D374 EAS-3 ECU E497 after treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869.															

	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Condition</th></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Circuit check, A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Condition</th></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	4	Ubat		4	Battery negative pole	>0.5V	Switch all consumers on	Pin (+ probe)	Pin (- probe)	Value	Condition	2	3	± 60 Ω	
Pin (+ probe)	Pin (- probe)	Value	Condition																		
1	4	Ubat																			
4	Battery negative pole	>0.5V	Switch all consumers on																		
Pin (+ probe)	Pin (- probe)	Value	Condition																		
2	3	± 60 Ω																			
Possible causes	• The NH3 sensor (F869) has malfunctioned or is damaged. • The NH3 sensor (F869) internal heater has malfunctioned. • The NH3 sensor (F869) has a short circuit to supply. • Perform DPF regeneration with DAVIE to validate the repair.																				
Additional information	No additional information available																				
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3968a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3968b</td><td>SRT</td></tr><tr><td colspan="3">Replace: NH3 sensor Replace the NH3 sensor and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3968c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at</td></tr></table>	Step 1	Step ID 3968a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3968b	SRT	Replace: NH3 sensor Replace the NH3 sensor and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 3			Step 3	Step ID 3968c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at				
Step 1	Step ID 3968a	SRT																			
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																					
Step 2	Step ID 3968b	SRT																			
Replace: NH3 sensor Replace the NH3 sensor and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 3																					
Step 3	Step ID 3968c	SRT																			
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at																					

	1-800-477-0251.	
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.	
	Back to Index	

P3969

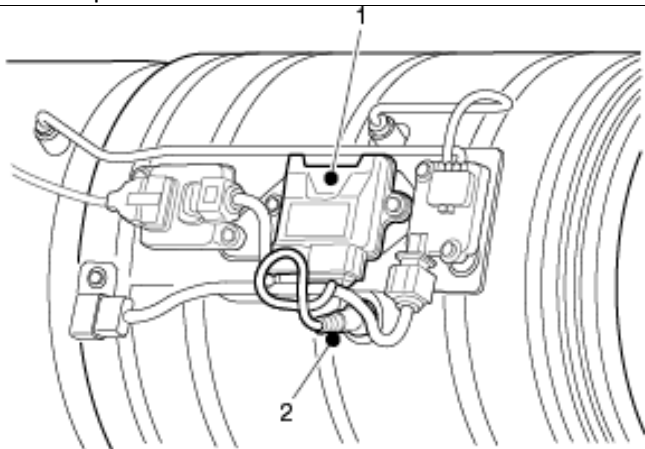
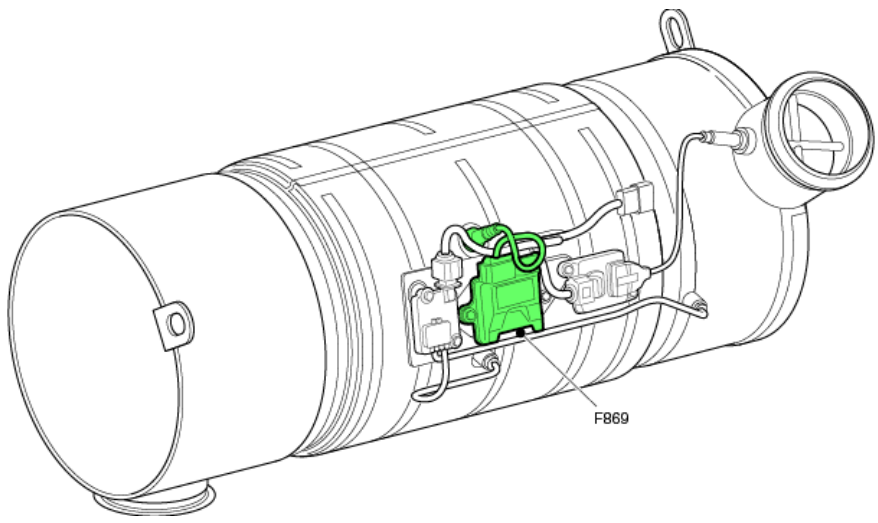
Code number	P3969
Fault code description	NH3 sensor - Internal error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – Exhaust Gas Sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	Sensor voltage too low or short circuit to ground is detected for 5 consecutive seconds.

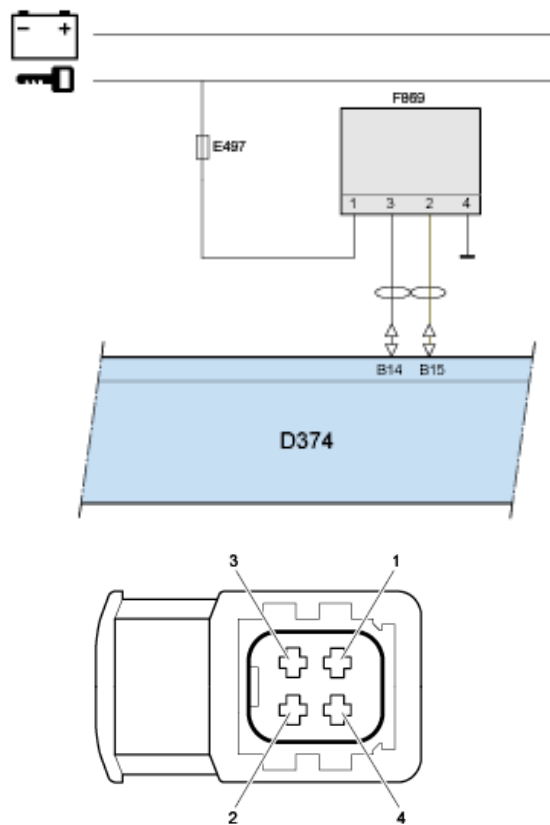
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.															
Electrical diagram(s)	The diagram illustrates the electrical circuit for the NH3 sensor (F869). It shows a battery connected to a fuse E497, which then connects to the ECU (D374). The ECU is connected to the sensor's pin 1 (Power supply). The sensor's pin 2 (A-CAN Low) is connected to pin 3 (A-CAN High) through a resistor. The sensor's pin 4 (Ground) is connected to the ECU's ground. The sensor is also connected to the D374 ECU via pins B14 and B15. Wiring harness connector F869 D374 EAS-3 ECU E497 After treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Circuit check, ECU & wiring Conditions • Connector removed from NH3 sensor (F869). • Ignition switched on. • Measurements must be carried out on the wiring harness connector F869.															

	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td></td><td>Battery</td><td></td><td></td></tr><tr><td>4</td><td>negative pole</td><td>>0.5 V</td><td>Switch all consumers on</td></tr></table> Circuit check A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	1	4	Ubat			Battery			4	negative pole	>0.5 V	Switch all consumers on	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	3	± 60 Ω	
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
1	4	Ubat																							
	Battery																								
4	negative pole	>0.5 V	Switch all consumers on																						
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
2	3	± 60 Ω																							
Possible causes	• The NH3 sensor (F869) has a short circuit to supply. • The NH3 sensor (F869) has malfunctioned or is damaged. • The NH3 sensor (F869) internal heater has malfunctioned. • Perform DPF regeneration with DAVIE to validate the repair.																								
Additional information	No additional information is available.																								
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3969a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3969b</td><td>SRT</td></tr><tr><td colspan="3">Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process. </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3969c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the</td></tr></table>	Step 1	Step ID 3969a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3969b	SRT	Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.			Step 3	Step ID 3969c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the								
Step 1	Step ID 3969a	SRT																							
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																									
Step 2	Step ID 3969b	SRT																							
Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.																									
Step 3	Step ID 3969c	SRT																							
For further assistance in diagnosing this issue or for confirmation prior to the																									

	replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.	
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.	
	Back to Index	

P3970

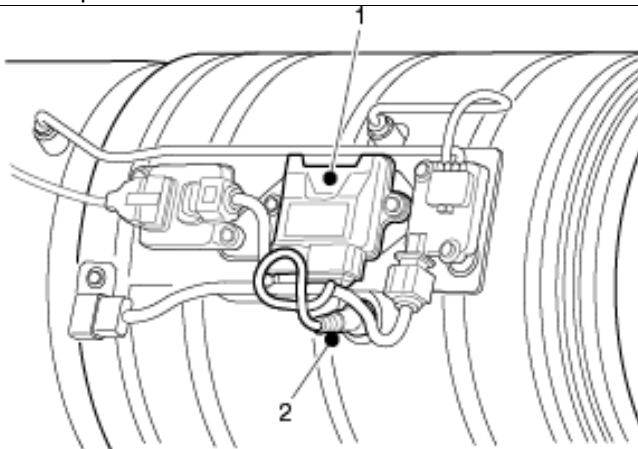
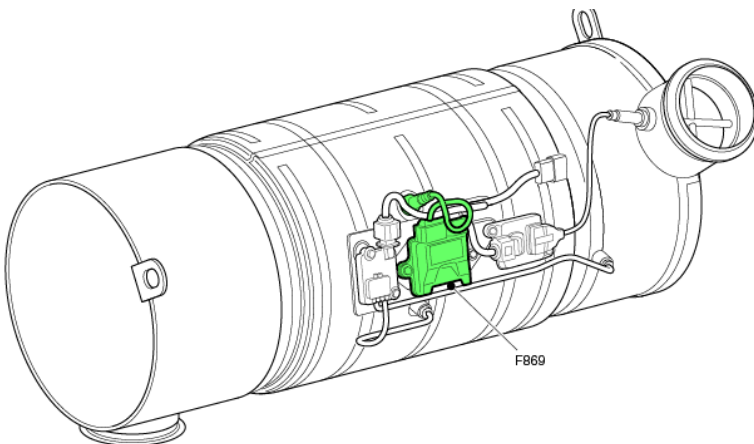
Code number	P3970
Fault code description	NH3 sensor - Power interruption
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – Exhaust Gas Sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs after the NH3 sensor (F869) reaches the dew point. The dew point is reached when the temperature after the SCR is higher than 150°C [302°F] for more than 1 minute.
Set condition of fault code	• The EAS-3 ECU (D374) detects an internal reset of the NH3 sensor. • The DTC is set when the sensor is not powered correctly or if there is a problem with the power supply for 5 minutes.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures.

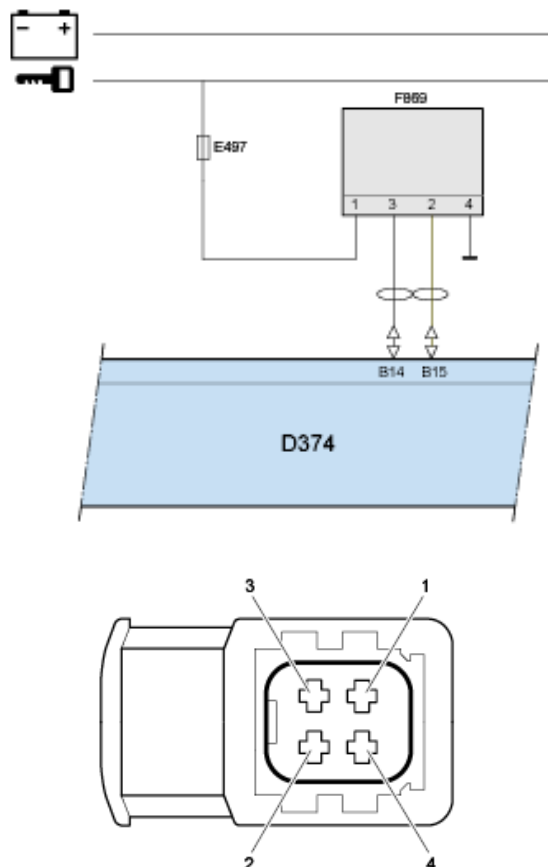
	This can be done by either driving the vehicle or initiating a stationary DPF regeneration. The exhaust gas temperature at the NH3 sensor (F869) must be above 150°C [302°F] before the sensor can run its internal diagnostics.															
Electrical diagram(s)	 Wiring harness connector F869 D374 EAS-3 ECU E497 After treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Circuit check, ECU & wiring Conditions • Connector removed from NH3 sensor (F869). • Ignition switched on. • Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	1	4	Ubat				
Pin	Pin															
(+ probe)	(- probe)	Value	Additional information													
1	4	Ubat														

	Battery 4 negative pole >0.5 V Switch all consumers on Circuit check A-CAN Conditions - Ignition switched off. - Connector removed from NH3 sensor (F869). - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	3	± 60 Ω					
Pin (+ probe)	Pin (- probe)	Value	Additional information										
2	3	± 60 Ω											
Possible causes	- Problem with the supply voltage to the NH3 sensor (F869) or problem with the wiring harness. - Check if the sensor is powered correctly - Check the wiring harness for short circuits - Perform DPF regeneration with DAVIE to validate the repair.												
Additional information	No additional information is available.												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3970a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3970b</td><td>SRT</td></tr><tr><td colspan="3"> Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. - Supply and signal voltages. - Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? - No: Continue to the next step 3 in the troubleshooting process. - Yes: Make the appropriate repairs or component replacements. </td></tr></table>	Step 1	Step ID 3970a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3970b	SRT	Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. - Supply and signal voltages. - Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? - No: Continue to the next step 3 in the troubleshooting process. - Yes: Make the appropriate repairs or component replacements.		
Step 1	Step ID 3970a	SRT											
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.													
Step 2	Step ID 3970b	SRT											
Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. - Supply and signal voltages. - Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? - No: Continue to the next step 3 in the troubleshooting process. - Yes: Make the appropriate repairs or component replacements.													

	Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.			
	<table><tr><td>Step 3</td><td>Step ID 3970c</td><td>SRT</td></tr></table> Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 4 in the troubleshooting process.	Step 3	Step ID 3970c	SRT
Step 3	Step ID 3970c	SRT		
	<table><tr><td>Step 4</td><td>Step ID 3970dc</td><td>SRT</td></tr></table> For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.	Step 4	Step ID 3970dc	SRT
Step 4	Step ID 3970dc	SRT		
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.			
	Back to Index			

P3971

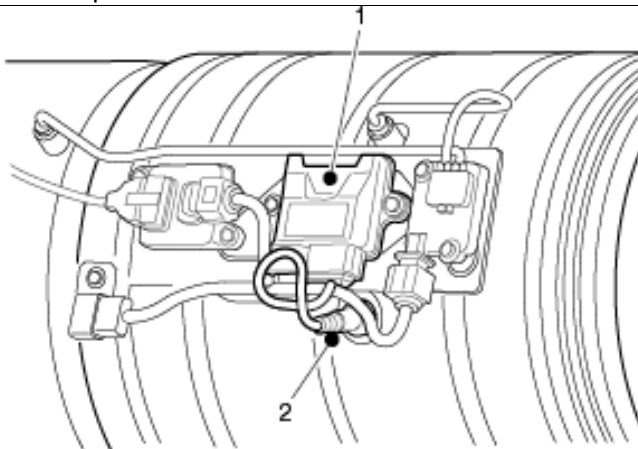
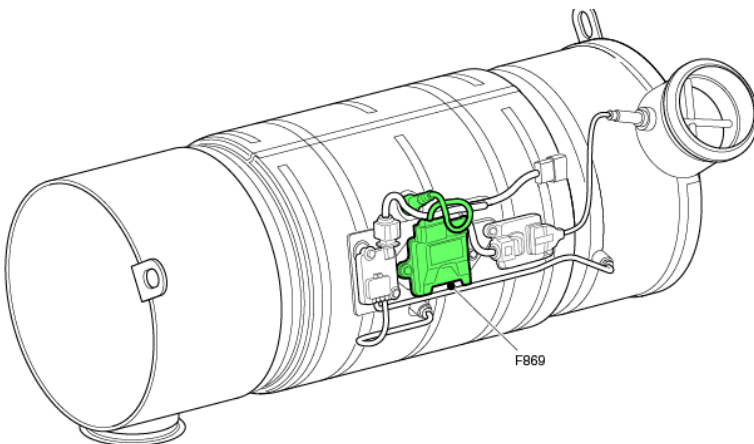
Code number	P3971
Fault code description	Heater element NH3 sensor - Failed to maintain the operating temperature
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – EGS Heater Freeze frame type -Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs when the exhaust gas temperature at the NH3 sensor (F869) is above 170°C and the engine is running.
Set condition of fault code	• The EAS-3 ECU (D374) detects that the NH3 sensor (F869) heater is unable to maintain its normal operating temperature. • The EAS-3 ECU (D374) illuminates the malfunction indicator lamp (MIL) as soon as the diagnostic runs and fails
Reset condition of fault code	• To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a

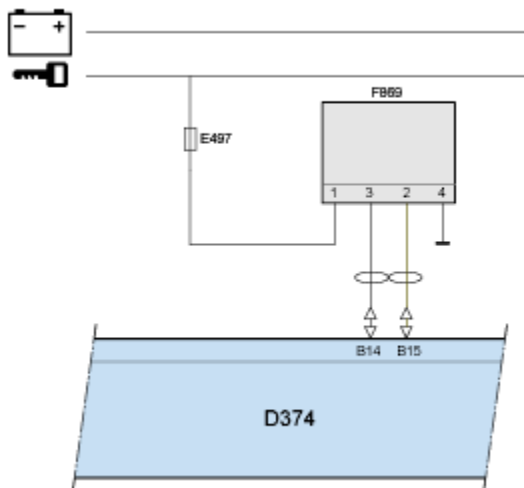
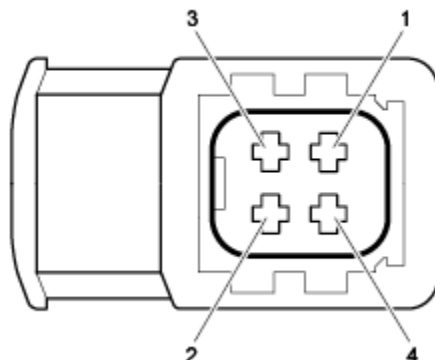
	stationary regeneration using DAVIE. The exhaust gas temperature at the NH3 sensor (F869) must be above 170°C before the sensor can run its internal diagnostics. • The PCI ECU (D420) turns off the malfunction indicator lamp (MIL) after three consecutive trips when the diagnostic has run and passed.																					
Electrical diagram(s)	 Wiring harness connector F869 <table><tr><td>D374</td><td>EAS-3 ECU</td></tr><tr><td>E497</td><td>After treatment CAN fuse</td></tr><tr><td>F869</td><td>NH3 sensor</td></tr></table> <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	EAS-3 ECU	E497	After treatment CAN fuse	F869	NH3 sensor	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	EAS-3 ECU																					
E497	After treatment CAN fuse																					
F869	NH3 sensor																					
D374	F869	Function																				
B14	3	A-CAN High																				
B15	2	A-CAN Low																				
	1	Power supply																				
	4	Ground																				
Technical data	Circuit check, ECU & wiring Conditions • Connector removed from NH3 sensor (F869). • Ignition switched on. • Measurements must be carried out on the wiring harness connector F869.																					

	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td></td><td>Battery</td><td></td><td></td></tr><tr><td>4</td><td>negative pole</td><td>>0.5 V</td><td>Switch all consumers on</td></tr></table> Circuit check A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	1	4	Ubat			Battery			4	negative pole	>0.5 V	Switch all consumers on	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	3	± 60 Ω	
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
1	4	Ubat																							
	Battery																								
4	negative pole	>0.5 V	Switch all consumers on																						
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
2	3	± 60 Ω																							
Possible causes	Damaged NH3 sensor (F869).																								
Additional information	The NH3 sensor (F869) heater is unable to maintain its normal operating temperature.																								
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pin out locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3971a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3970c</td><td>SRT</td></tr><tr><td colspan="3">Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 4 in the troubleshooting process. </td></tr></table> <table><tr><td>Step 4</td><td>Step ID 3970dc</td><td>SRT</td></tr><tr><td colspan="3">Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call</td></tr></table>	Step 1	Step ID 3971a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 3	Step ID 3970c	SRT	Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 4 in the troubleshooting process.			Step 4	Step ID 3970dc	SRT	Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call								
Step 1	Step ID 3971a	SRT																							
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																									
Step 3	Step ID 3970c	SRT																							
Replace: NH3 Sensor Replace the NH3 sensor after catalyst. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 4 in the troubleshooting process.																									
Step 4	Step ID 3970dc	SRT																							
Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call																									

	Center at 1-800-477-0251.	
Verification Drive Cycle: Power-Up/Electrical	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes.	
	Back to Index	

P3972

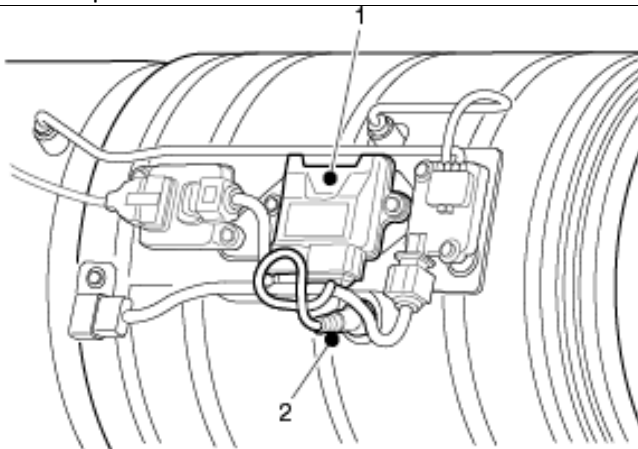
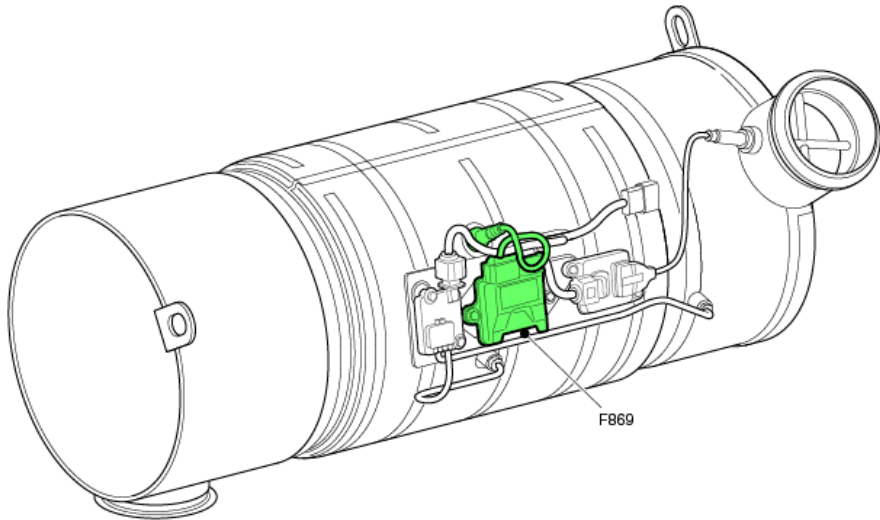
Code number	P3972
Fault code description	Heater element NH3 sensor – Failed to maintain the operating temperature.
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – Exhaust gas sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs when the exhaust gas temperature at the after treatment outlet NH3 sensor is above 170°C (338 F) and the engine is running.
Set condition of fault code	The EAS-3 ECU (D374) detects that the NH3 sensor (F869) heater is unable to maintain its normal operating temperature.
Reset condition of fault code	To validate the repair, start and operate the engine to raise exhaust temperatures. The exhaust gas temperature at the after treatment outlet NH3 sensor must be above 170°C. (338 F) This can be done by either driving the vehicle or initiating a stationary regeneration with DAVIE.

Electrical diagram(s)	  Wiring harness connector F869 D374 E497 F869 EAS-3 ECU after treatment CAN fuse NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground	Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td>Value</td><td>Condition</td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td></td><td></td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table>	Pin	Pin	Value	Condition	(+ probe)	(- probe)			1	4	Ubat		4	Battery negative pole	>0.5V	Switch all consumers on
D374	F869	Function																																
B14	3	A-CAN High																																
B15	2	A-CAN Low																																
	1	Power supply																																
	4	Ground																																
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td>Value</td><td>Condition</td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td></td><td></td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table>	Pin	Pin	Value	Condition	(+ probe)	(- probe)			1	4	Ubat		4	Battery negative pole	>0.5V	Switch all consumers on																	
Pin	Pin	Value	Condition																															
(+ probe)	(- probe)																																	
1	4	Ubat																																
4	Battery negative pole	>0.5V	Switch all consumers on																															

	Circuit check, A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	2	3	± 60 Ω											
Pin (+ probe)	Pin (- probe)	Value	Condition																
2	3	± 60 Ω																	
Possible causes	A damaged after treatment outlet NH3 sensor (F869).																		
Additional information	No additional information available.																		
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3972a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3972b</td><td>SRT</td></tr><tr><td colspan="3">Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3972c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 1	Step ID 3972a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3972b	SRT	Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3			Step 3	Step ID 3972c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 1	Step ID 3972a	SRT																	
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																			
Step 2	Step ID 3972b	SRT																	
Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3																			
Step 3	Step ID 3972c	SRT																	
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.																			
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module																		

	Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.
	Back to Index

P3973

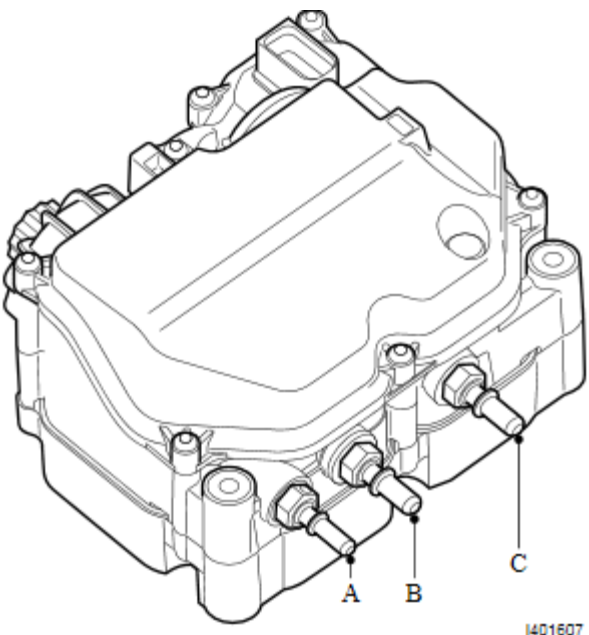
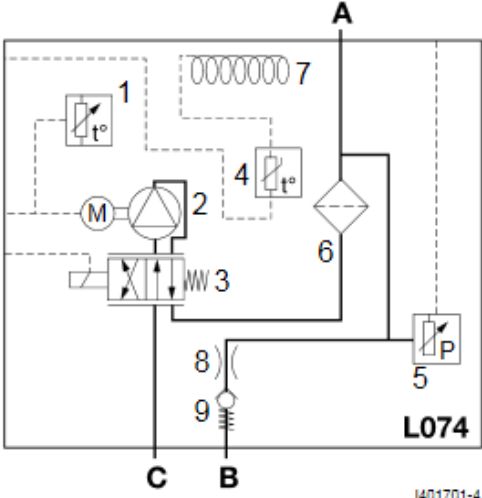
Code number	P3973
Fault code description	Heater element NH3 sensor - Heating failed during warm-up
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – Exhaust gas sensors Freeze frame type – Comprehensive
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs when the exhaust gas temperature at the NH3 sensor (F869) is above 170°C and the engine is running.
Set condition of fault code	• The EAS-3 ECU (D374) detects that the NH3 sensor (F869) heater is unable to maintain its normal operating temperature. • The EAS-3 ECU (D374) illuminates the malfunction indicator lamp (MIL) as soon as the diagnostic runs and fails.

Reset condition of fault code	- To validate the repair, start and operate the engine to raise exhaust temperatures. This can be done by either driving the vehicle or initiating a stationary regeneration using DAVIE. The exhaust gas temperature at the NH3 sensor (F869) must be above 170°C before the sensor can run its internal diagnostics. - The PCI ECU (D420) turns off the malfunction indicator lamp (MIL) after three consecutive trips when the diagnostic has run and passed.															
Electrical diagram(s)	Wiring harness connector F869 D374 EAS-3 ECU E497 after treatment CAN fuse F869 NH3 sensor <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN High</td></tr><tr><td>B15</td><td>2</td><td>A-CAN Low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	F869	Function	B14	3	A-CAN High	B15	2	A-CAN Low		1	Power supply		4	Ground
D374	F869	Function														
B14	3	A-CAN High														
B15	2	A-CAN Low														
	1	Power supply														
	4	Ground														
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on.															

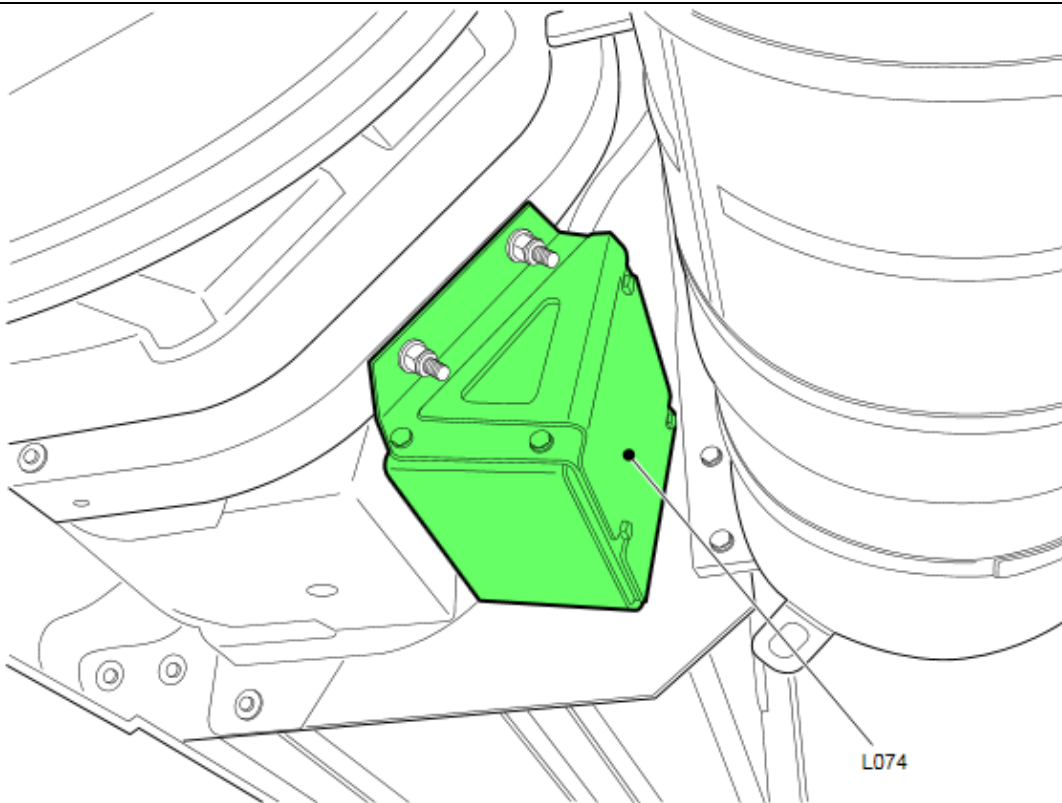
	- Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Circuit check, A-CAN Conditions - Ignition switched off. - Connector removed from NH3 sensor (F869). - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>± 60 Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Condition	1	4	Ubat		4	Battery negative pole	>0.5V	Switch all consumers on	Pin (+ probe)	Pin (- probe)	Value	Condition	2	3	± 60 Ω	
Pin (+ probe)	Pin (- probe)	Value	Condition																		
1	4	Ubat																			
4	Battery negative pole	>0.5V	Switch all consumers on																		
Pin (+ probe)	Pin (- probe)	Value	Condition																		
2	3	± 60 Ω																			
Possible causes	Damaged NH3 sensor (F869).																				
Additional information	The NH3 sensor (F869) heater is unable to maintain its normal operating temperature.																				
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3973a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3973b</td><td>SRT</td></tr><tr><td colspan="3">Replace: NH3 sensor Replace the NH3 sensor and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 3 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3973c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at</td></tr></table>	Step 1	Step ID 3973a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3973b	SRT	Replace: NH3 sensor Replace the NH3 sensor and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 3			Step 3	Step ID 3973c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at				
Step 1	Step ID 3973a	SRT																			
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																					
Step 2	Step ID 3973b	SRT																			
Replace: NH3 sensor Replace the NH3 sensor and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 3																					
Step 3	Step ID 3973c	SRT																			
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at																					

	1-800-477-0251.	
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.	
	Back to Index	

P3975

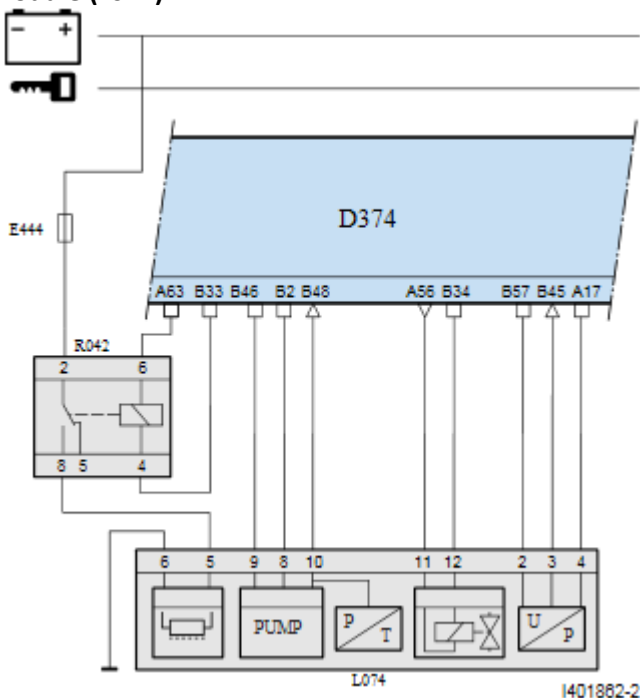
Code number	P3975
Fault code description	Pump heater relay - Voltage too high or short circuit to supply on ECU D374 pin A08
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  I401607 The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  I401701-4

	Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated. DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter The DEF is filtered before it is pumped to the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. • These heater elements prevent the DEF from freezing during operation of the pump module. • Defrosting of the pump module is closed-loop controlled based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature

	sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve The check valve ensures an overpressure of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.
Location of component(s)	 I402235
Diagnostic condition	This diagnostic runs continuously when the ignition is on and when the heater element DEF pressure line (L077) is activated.
Set condition of fault code	Voltage too high or a short circuit to supply is detected for 3 consecutive seconds.
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected.

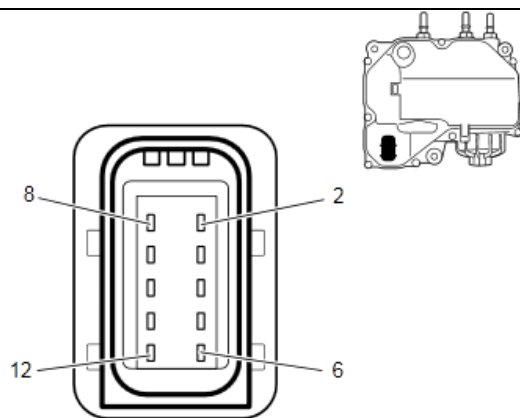
Electrical
diagram(s)

Checking data, pump module (L074)



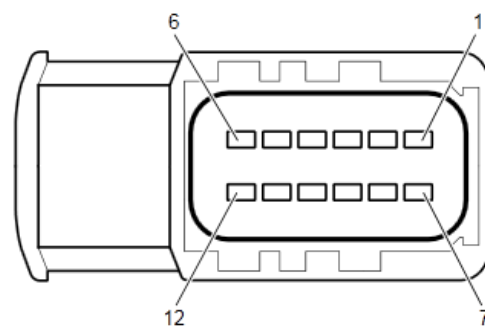
D374 EAS-3 ECU
E444 Fuse, EAS 2nd
L074 pump module
R042 pump heater relay

D374	L074	R042	Function
A17	4		ground, DEF pressure sensor
A56	11		signal, reverting valve
A63		6	ground, relay line heating
B2	8		ground, DEF pump motor
B33		4	signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground heater element
	5	8	Power supply, heater element



Connector pump module (L074)

I4Q1919



Wiring harness connector (L074)

E604107

Technical data

Component and wiring check, DEF pressure sensor

Preparation

- Key on the ignition.
- Disconnect connector L074
- Measure on connector L074.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	4	4.75 - 5.25 V	

Component check, heater element

Preparation

- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
5	6	1.5 Ω $\pm$ 0.5 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Component check, reverting valve

Preparation

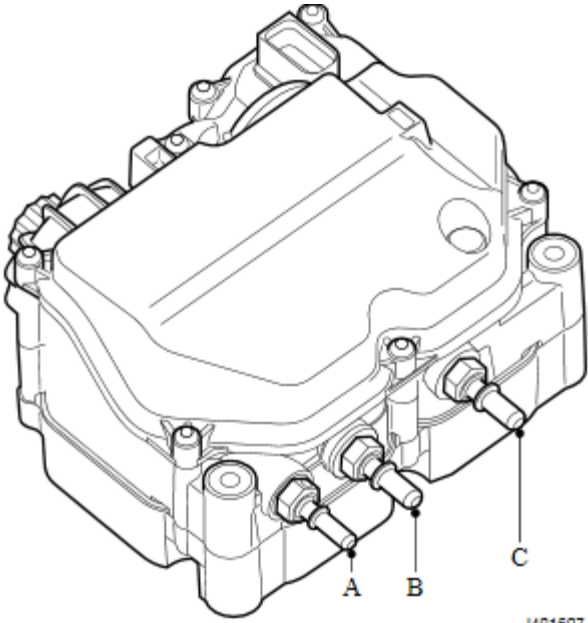
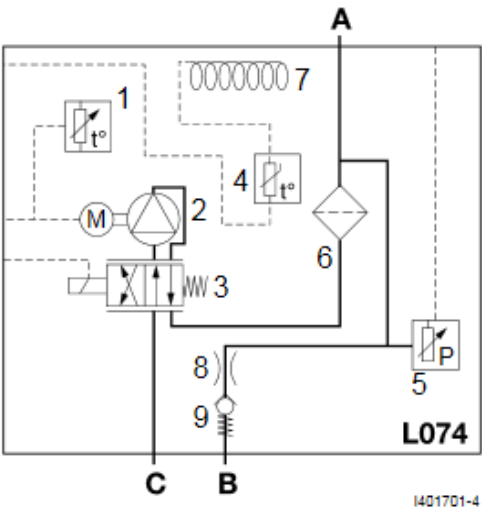
- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
11	12	6.75 Ω $\pm$	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

			2 Ω													
Possible causes	A short circuit to supply.															
Additional information	- Monitor the line heater status with DAVIE. - DEF line heating disabled															
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3975a</td><td>SRT</td></tr><tr><td colspan="3">Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step 2 in the troubleshooting process. </td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3975b</td><td>SRT</td></tr><tr><td colspan="3">Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. </td></tr></table>				Step 1	Step ID 3975a	SRT	Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step 2 in the troubleshooting process.			Step 2	Step ID 3975b	SRT	Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables.		
Step 1	Step ID 3975a	SRT														
Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step 2 in the troubleshooting process.																
Step 2	Step ID 3975b	SRT														
Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables.																

	• Supply and signal voltages. • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Continue to the next step 3 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.						
	<table><tr><td>Step 3</td><td>Step ID 3975c</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 3	Step ID 3975c	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Step 3	Step ID 3975c	SRT					
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.							
Verification Drive Cycle	To verify the repair: Start the engine and let it idle for 2 minutes						
	Back to Index						

P3976

Code number	P3976
Fault code description	Pump heater relay - Voltage too low or short circuit to ground on ECU D374 pin A08.
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  I401607 The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  I401701-4

Temperature sensor

- The temperature sensor measures the temperature inside the pump module (L074).
- The temperature signal is used to determine whether the pump module must be started or heated.

DEF pump motor

- The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve.
- The DEF pump is controlled with a duty cycle.
- The pump speed depends on the quantity of DEF to be injected.
- The DEF pressure does not depend on the quantity of DEF to inject.

Reverting valve

- This valve is engaged during the purge cycle.
- The DEF inside the inlet line and pressure line is pumped back into the DEF tank.

Temperature switch, heater element

- The temperature sensor measures the temperature of the heater element.
- This switch is used to control the heater elements in the pump module and prevent them from overheating.

DEF pressure sensor

- The pressure sensor measures the pressure of the DEF after the DEF filter.
- The measured pressure is used by the ECU to control the DEF pump speed.

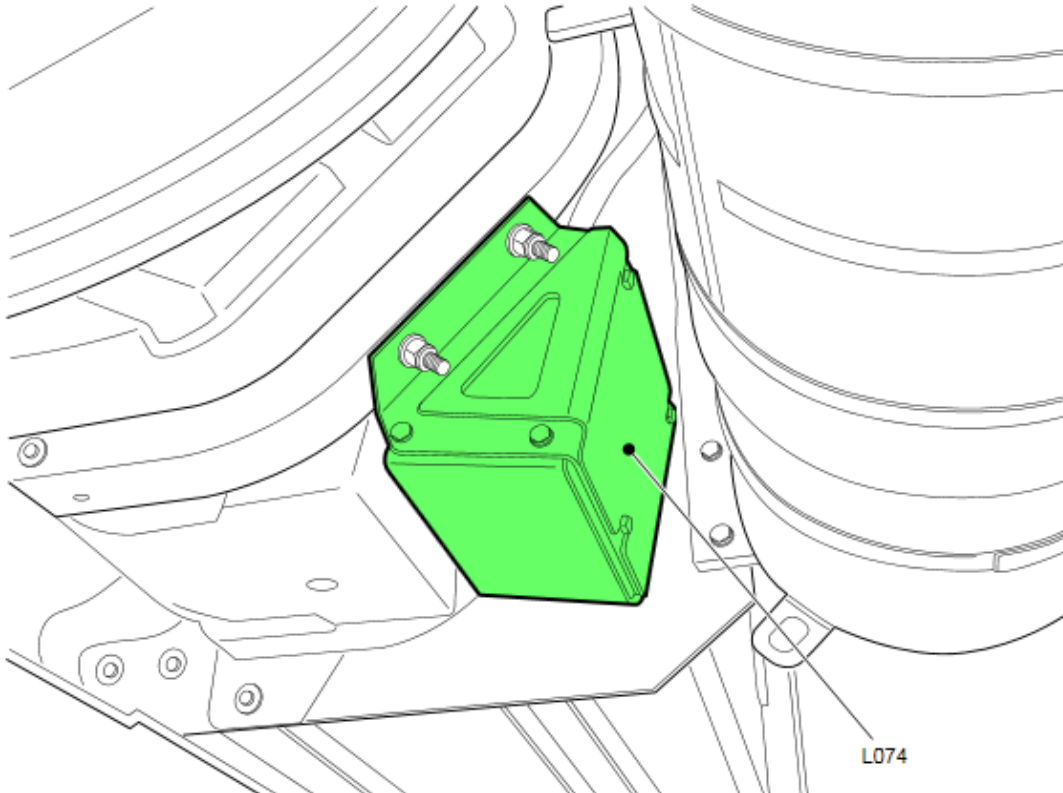
DEF filter

The DEF is filtered before it is pumped to the pump module.

Heater element, pump module

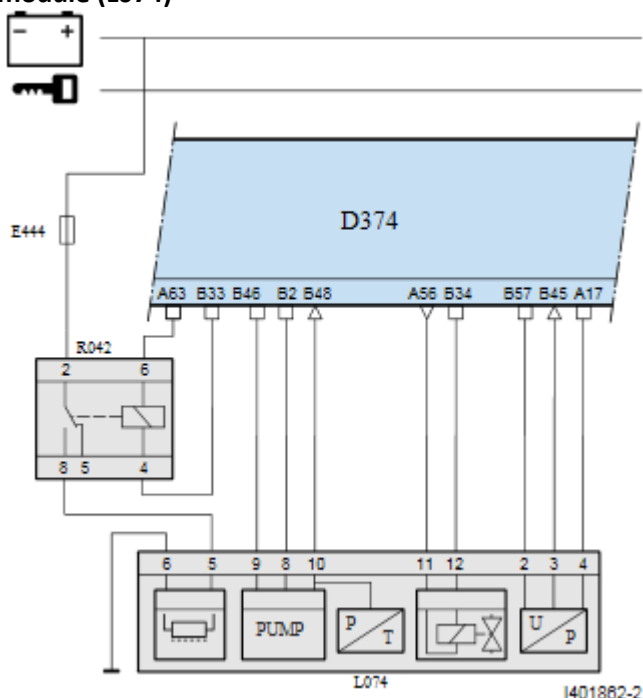
- The pump module is heated and defrosted by electrical heater elements located inside the pump module.
- These heater elements prevent the DEF from freezing during operation of the pump module.
- Defrosting of the pump module is closed-loop controlled based on the **temperature sensor inside the pump module** for temperatures below -4°C.
- Heating of the pump module is open-loop controlled based on the **ambient temperature sensor** with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature.

Check valve

	The check valve ensures an overpressure of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.
Location of component(s)	 I402235
Diagnostic condition	This diagnostic runs continuously when the ignition is on and when the heater element DEF pressure line (L077) is activated.
Set condition of fault code	A low voltage or short circuit to ground is detected for 3 consecutive seconds.
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected

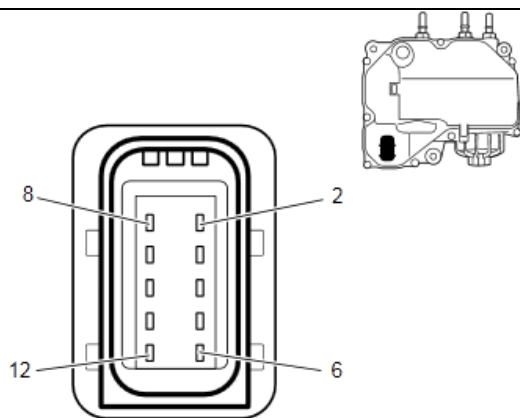
Electrical diagram(s)

Checking data, pump module (L074)



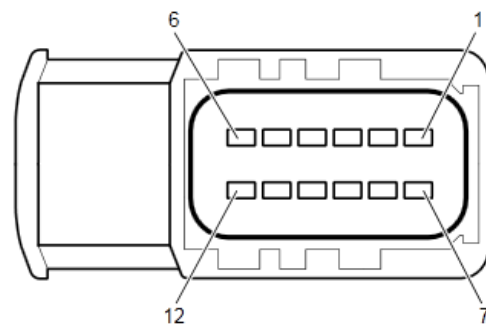
D374 EAS-3 ECU
 E444 Fuse, EAS 2nd
 L074 pump module
 R042 pump heater relay

D374	L074	R042	Function
A17	4		ground, DEF pressure sensor
A56	11		signal, reverting valve
A63		6	ground, relay line heating
B2	8		ground, DEF pump motor
B33		4	signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground heater element
	5	8	Power supply, heater element



Connector pump module (L074)

I401819



Wiring harness connector (L074)

E504107

Technical data

Component and wiring check, DEF pressure sensor

Preparation

- Key on the ignition.
- Disconnect connector L074
- Measure on connector L074.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	4	4.75 - 5.25 V	

Component check, heater element

Preparation

- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
5	6	1.5 Ω $\pm$ 0.5 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Component check, reverting valve

Preparation

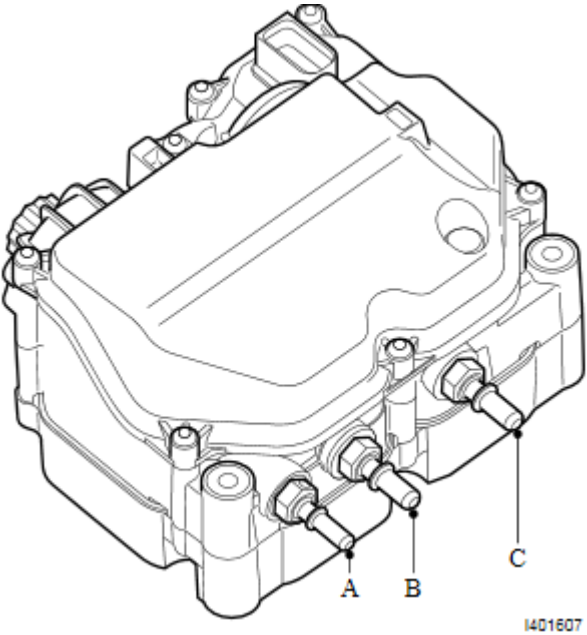
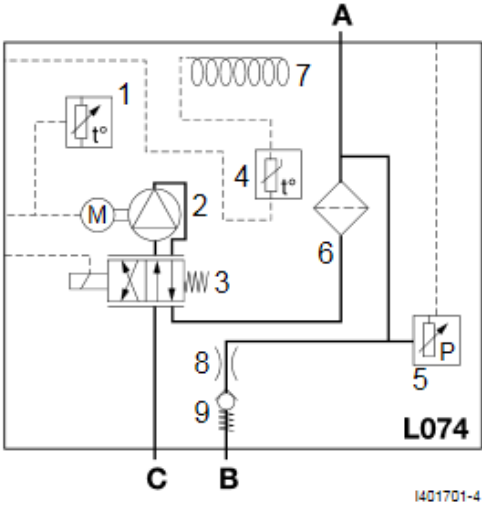
- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
11	12	6.75 Ω $\pm$ 2 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Possible causes	A short circuit to ground.			
Additional information	• Monitor the line heater status with DAVIE. • DEF line heating is disabled.			
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3976a</td><td>SRT</td></tr></table> Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? • No: Continue to the next step 2 in the troubleshooting process. • Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 2 in the troubleshooting process.	Step 1	Step ID 3976a	SRT
Step 1	Step ID 3976a	SRT		

	Step 2	Step ID 3976b	SRT
	Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. • Supply and signal voltages. • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Continue to the next step 3 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.		
	Step 3	Step ID 3976c	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To verify the repair: Start the engine and let it idle for 2 minutes		
	Back to Index		

P3977

Code number	P3977
Fault code description	Heater element DEF pressure line - Short circuit to ground, or open circuit on ECU D374 pin A04.
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  I401607 The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  I401701-4

Temperature sensor

- The temperature sensor measures the temperature inside the pump module (L074).
- The temperature signal is used to determine whether the pump module must be started or heated.

DEF pump motor

- The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve.
- The DEF pump is controlled with a duty cycle.
- The pump speed depends on the quantity of DEF to be injected.
- The DEF pressure does not depend on the quantity of DEF to inject.

Reverting valve

- This valve is engaged during the purge cycle.
- The DEF inside the inlet line and pressure line is pumped back into the DEF tank.

Temperature switch, heater element

- The temperature sensor measures the temperature of the heater element.
- This switch is used to control the heater elements in the pump module and prevent them from overheating.

DEF pressure sensor

- The pressure sensor measures the pressure of the DEF after the DEF filter.
- The measured pressure is used by the ECU to control the DEF pump speed.

DEF filter

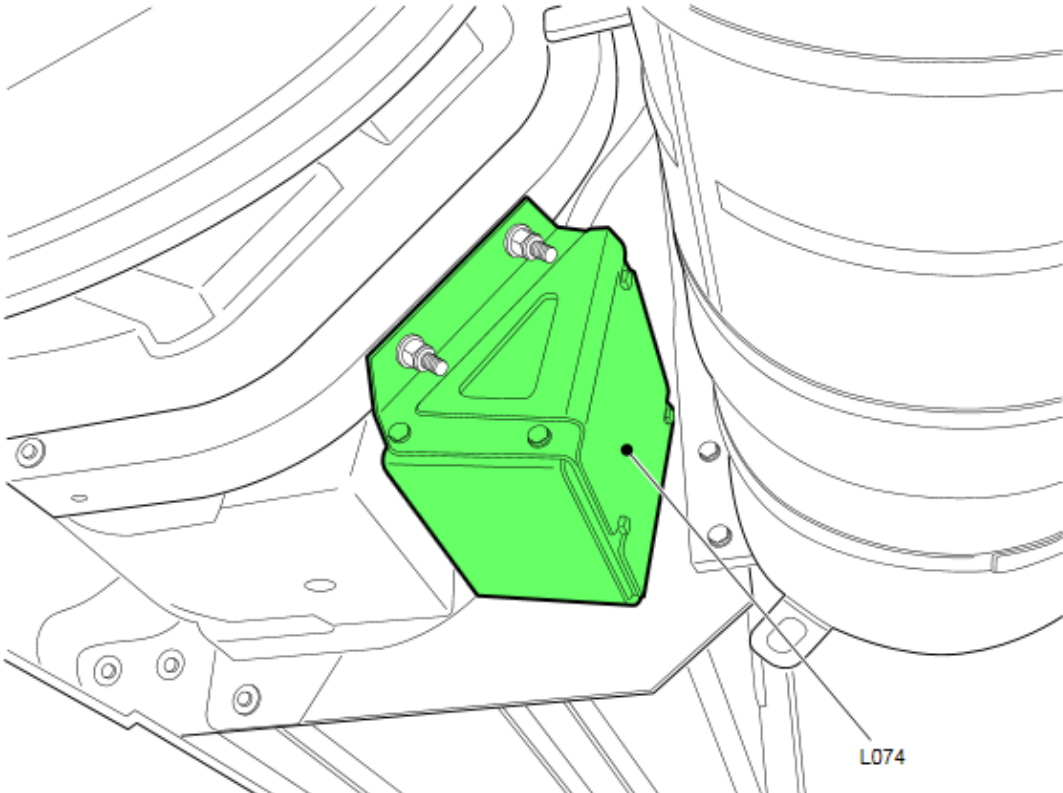
The DEF is filtered before it is pumped to the pump module.

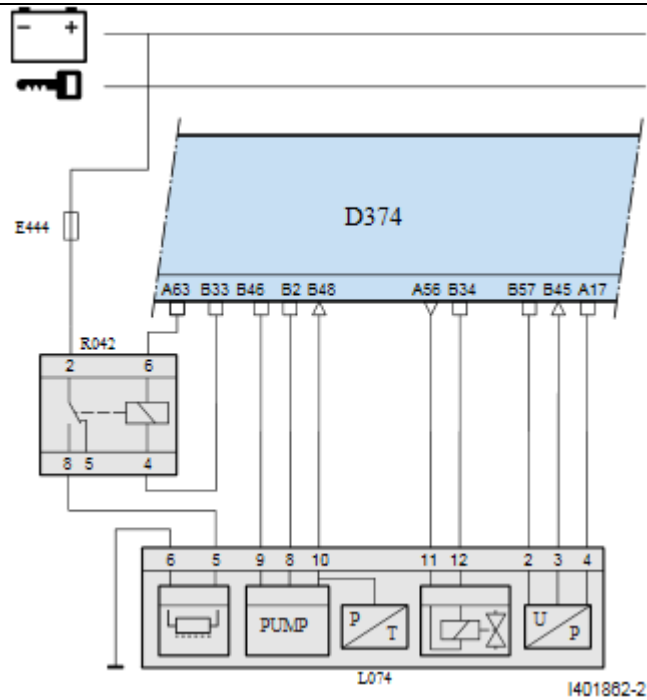
Heater element, pump module

- The pump module is heated and defrosted by electrical heater elements located inside the pump module.
- These heater elements prevent the DEF from freezing during operation of the pump module.
- Defrosting of the pump module is closed-loop controlled based on the **temperature sensor inside the pump module** for temperatures below -4°C.
- Heating of the pump module is open-loop controlled based on the **ambient temperature sensor** with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature.

Check valve

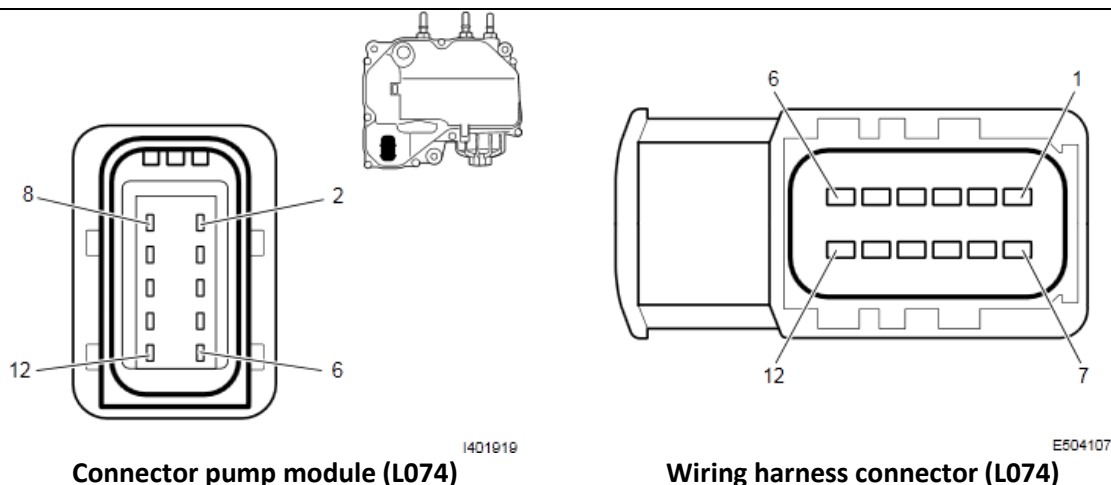
The check valve ensures an overpressure of the DEF in the pump module when the pump module is

	filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously when the ignition is on and the heater element, DEF in line (L079) is activated.
Set condition of fault code	A short circuit to ground or open circuit is detected for three consecutive seconds.
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected.
Electrical diagram(s)	Checking data, pump module (L074)



D374 EAS-3 ECU
 E444 Fuse, EAS 2nd
 L074 pump module
 R042 pump heater relay

D374	L074	R042	Function
A17	4		ground, DEF pressure sensor
A56	11		signal, reverting valve
A63		6	ground, relay line heating
B2	8		ground, DEF pump motor
B33		4	signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground heater element
	5	8	Power supply, heater element



Technical data

Component and wiring check, DEF pressure sensor

Preparation

- Key on the ignition.
- Disconnect connector L074
- Measure on connector L074.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	4	4.75 - 5.25 V	

Component check, heater element

Preparation

- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
5	6	1.5 Ω $\pm$ 0.5 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Component check, reverting valve

Preparation

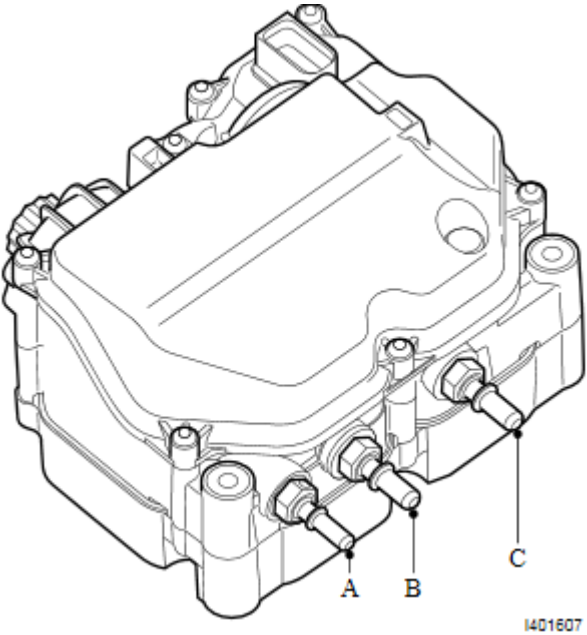
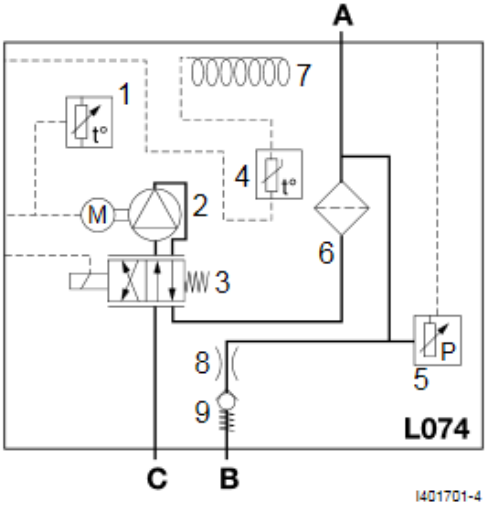
- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
11	12	6.75 Ω $\pm$ 2 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Possible causes	- Malfunctioning heater element, DEF in line (L079). - A short circuit to ground or open circuit.												
Additional information	DEF line heating is disabled.												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pin out locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3977a</td><td>SRT</td></tr></table> Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2. <table><tr><td>Step 2</td><td>Step ID 3977b</td><td>SRT</td></tr></table> Monitor the SCR Heater Element Return Line to confirm this issue. Does the monitored value appear incorrect? - Yes - Proceed to step 3 - No - Proceed to step 4 <table><tr><td>Step 3</td><td>Step ID 3977c</td><td>SRT</td></tr></table> Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolved - Fault active - Proceed to step 4 <table><tr><td>Step 4</td><td>Step ID 3977d</td><td>SRT</td></tr></table> Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: - Supply and signal voltages (12V). - Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? - Yes - Proceed to step 5 - No - Proceed to step 6	Step 1	Step ID 3977a	SRT	Step 2	Step ID 3977b	SRT	Step 3	Step ID 3977c	SRT	Step 4	Step ID 3977d	SRT
Step 1	Step ID 3977a	SRT											
Step 2	Step ID 3977b	SRT											
Step 3	Step ID 3977c	SRT											
Step 4	Step ID 3977d	SRT											

	Step 5		
	Step ID 3977e		SRT
	Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults.		
	- Fault inactive – issue resolved - Fault active - Proceed to step 6		
	Step 6		
	Step ID 3977f		SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes, set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3978

Code number	P3978
Fault code description	Heater element DEF pressure line - Short circuit to supply on ECU D374 pin A04
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9) 

Temperature sensor

- The temperature sensor measures the temperature inside the pump module (L074).
- The temperature signal is used to determine whether the pump module must be started or heated.

DEF pump motor

- The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve.
- The DEF pump is controlled with a duty cycle.
- The pump speed depends on the quantity of DEF to be injected.
- The DEF pressure does not depend on the quantity of DEF to inject.

Reverting valve

- This valve is engaged during the purge cycle.
- The DEF inside the inlet line and pressure line is pumped back into the DEF tank.

Temperature switch, heater element

- The temperature sensor measures the temperature of the heater element.
- This switch is used to control the heater elements in the pump module and prevent them from overheating.

DEF pressure sensor

- The pressure sensor measures the pressure of the DEF after the DEF filter.
- The measured pressure is used by the ECU to control the DEF pump speed.

DEF filter

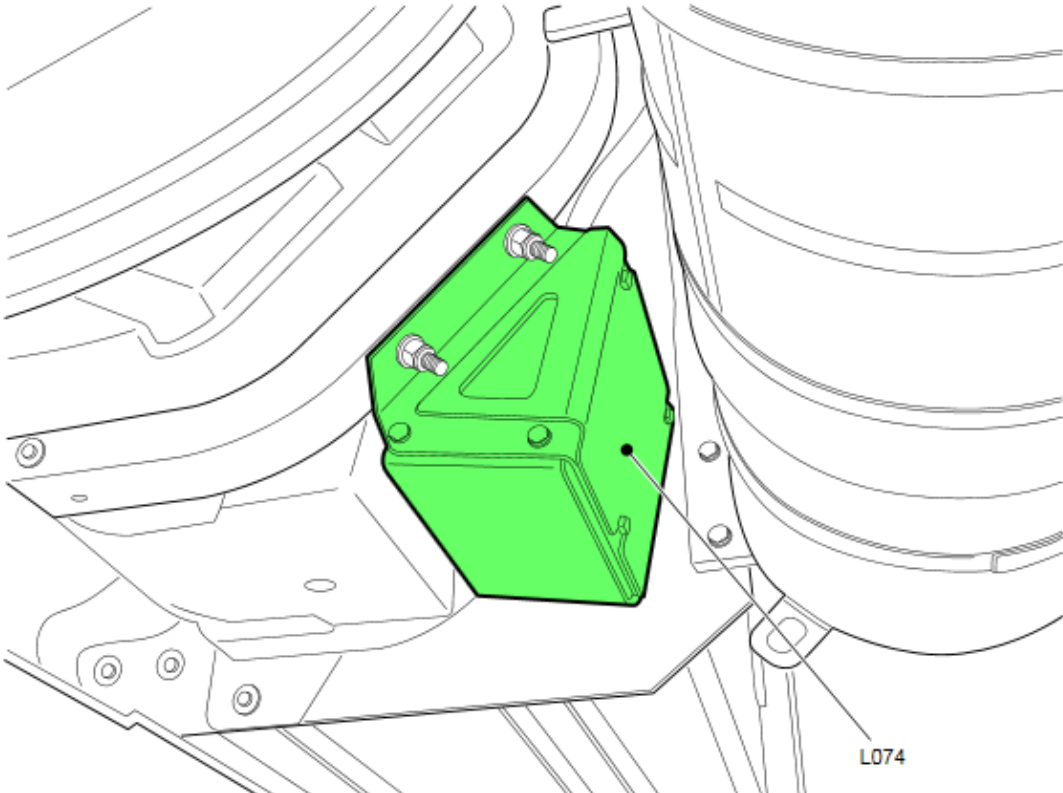
The DEF is filtered before it is pumped to the pump module.

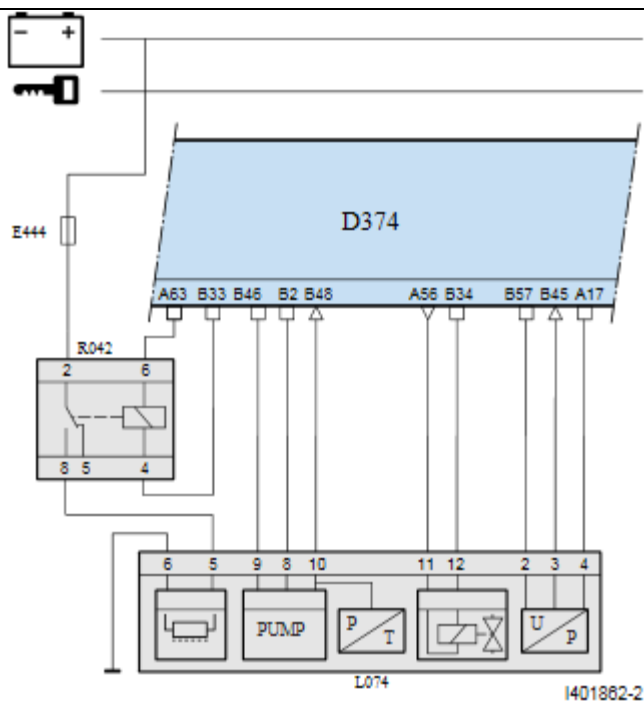
Heater element, pump module

- The pump module is heated and defrosted by electrical heater elements located inside the pump module.
- These heater elements prevent the DEF from freezing during operation of the pump module.
- Defrosting of the pump module is closed-loop controlled based on the **temperature sensor inside the pump module** for temperatures below -4°C.
- Heating of the pump module is open-loop controlled based on the **ambient temperature sensor** with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature.

Check valve

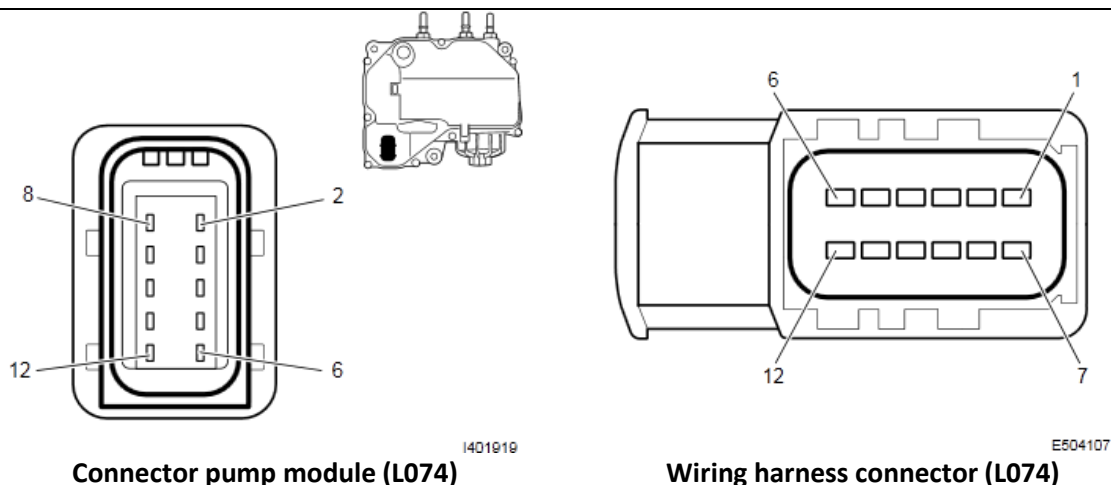
The check valve ensures an overpressure of the DEF in the pump module when the pump module is

	filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.
Location of component(s)	 1402235
Diagnostic condition	This diagnostic runs continuously when the ignition is on and the heater element, DEF in line (L079) is activated.
Set condition of fault code	A short circuit to supply is detected for three consecutive seconds.
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected.
Electrical diagram(s)	Checking data, pump module (L074)



D374 EAS-3 ECU
 E444 Fuse, EAS 2nd
 L074 pump module
 R042 pump heater relay

D374	L074	R042	Function
A17	4		ground, DEF pressure sensor
A56	11		signal, reverting valve
A63		6	ground, relay line heating
B2	8		ground, DEF pump motor
B33		4	signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground heater element
	5	8	Power supply, heater element



Technical data

Component and wiring check, DEF pressure sensor

Preparation

- Key on the ignition.
- Disconnect connector L074
- Measure on connector L074.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	4	4.75 - 5.25 V	

Component check, heater element

Preparation

- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
5	6	1.5 Ω $\pm$ 0.5 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Component check, reverting valve

Preparation

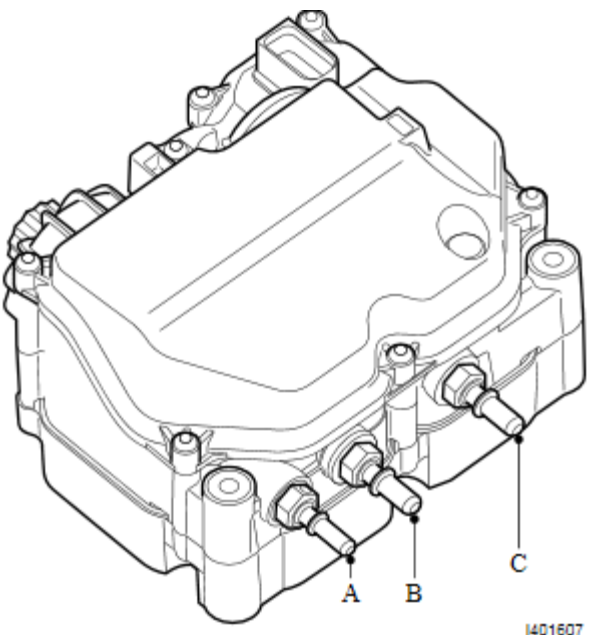
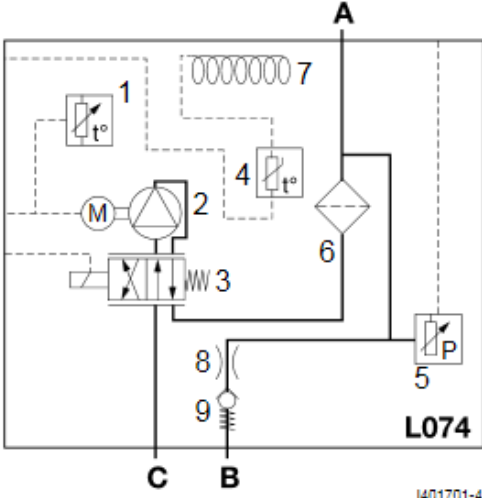
- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
11	12	6.75 Ω $\pm$ 2 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

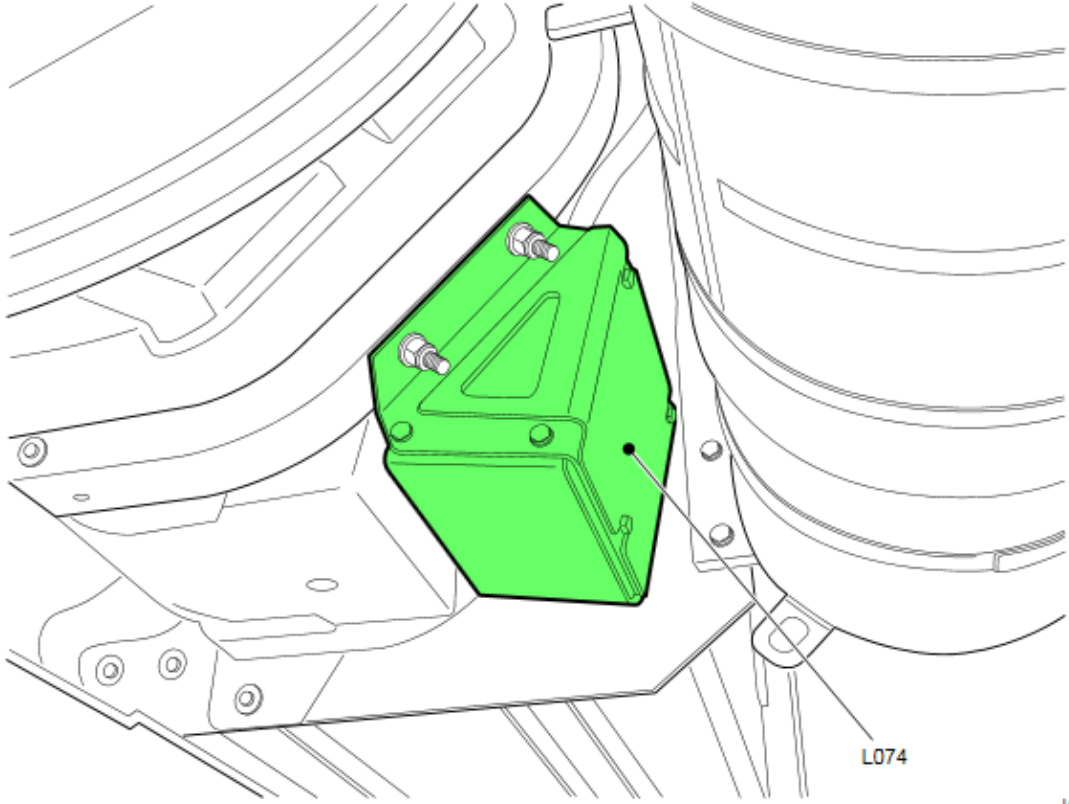
Possible causes	- Malfunctioning heater element, DEF in line (L079). - A short circuit to supply.																								
Additional information	- DEF line heating is disabled. - After 1 hour of engine operation or 50 miles with P3978 active, P1518 becomes active (25% torque derate). - After 4 hours of engine operation or 200 miles with P3978 active, P1518 stays active (40% torque derate). - After 4 hours of engine operation or 200 miles with P3978 active, P151A becomes active (5 MPH vehicle speed limit) after a: - key cycle, or - vehicle re-fuel (fuel tank volume increase > 16%), or - vehicle has been stationary for 1 hour.																								
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3978a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3978b</td><td>SRT</td></tr><tr><td colspan="3">Monitor the SCR Heater Element Return Line to confirm this issue. Does the monitored value appear incorrect?</td></tr><tr><td colspan="3"> - Yes - Proceed to step 3 - No - Proceed to step 4 </td></tr></table> <table><tr><td>Step 3</td><td>Step ID 3978c</td><td>SRT</td></tr><tr><td colspan="3">Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults.</td></tr><tr><td colspan="3"> - Fault inactive – issue resolved - Fault active - Proceed to step 4 </td></tr></table>	Step 1	Step ID 3978a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3978b	SRT	Monitor the SCR Heater Element Return Line to confirm this issue. Does the monitored value appear incorrect?			- Yes - Proceed to step 3 - No - Proceed to step 4			Step 3	Step ID 3978c	SRT	Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults.			- Fault inactive – issue resolved - Fault active - Proceed to step 4		
Step 1	Step ID 3978a	SRT																							
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.																									
Step 2	Step ID 3978b	SRT																							
Monitor the SCR Heater Element Return Line to confirm this issue. Does the monitored value appear incorrect?																									
- Yes - Proceed to step 3 - No - Proceed to step 4																									
Step 3	Step ID 3978c	SRT																							
Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults.																									
- Fault inactive – issue resolved - Fault active - Proceed to step 4																									

	<table><tr><td>Step 4</td><td>Step ID 3978d</td><td>SRT</td></tr><tr><td colspan="3">Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 5 • No - Proceed to step 6 </td></tr></table>	Step 4	Step ID 3978d	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 5 • No - Proceed to step 6		
	Step 4	Step ID 3978d	SRT				
	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 5 • No - Proceed to step 6						
<table><tr><td>Step 5</td><td>Step ID 3978e</td><td>SRT</td></tr><tr><td colspan="3">Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 6 </td></tr></table>	Step 5	Step ID 3978e	SRT	Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 6			
Step 5	Step ID 3978e	SRT					
Make the appropriate repairs or component replacements and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 6							
<table><tr><td>Step 6</td><td>Step ID 3978f</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 6	Step ID 3978f	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.			
Step 6	Step ID 3978f	SRT					
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.							
Verification Drive Cycle	With the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics. With the brakes set, start the engine and allow it to run at idle for 2 minutes.						
	Back to Index						

P3979

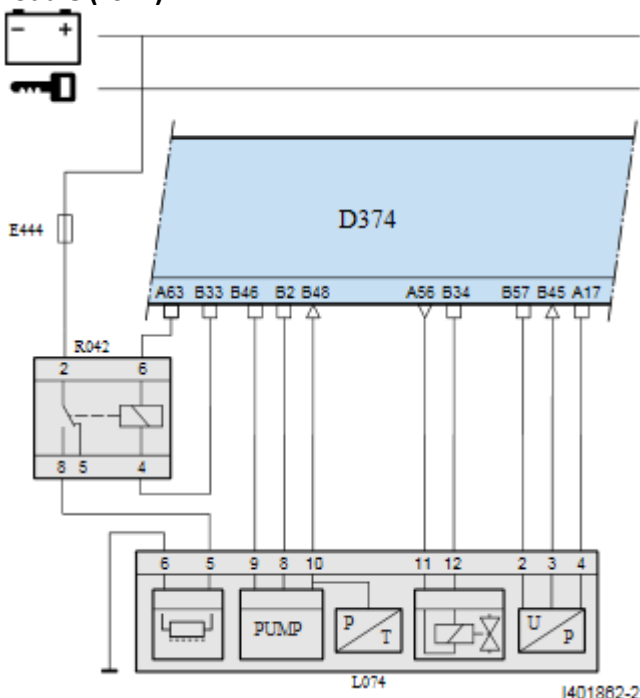
Code number	P3979
Fault code description	Heater element DEF return line - Short circuit to ground or open circuit on ECU D374 pin A52
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  I401607 The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  I401701-4

	Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated. DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter The DEF is filtered before it is pumped to the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. • These heater elements prevent the DEF from freezing during operation of the pump module. • Defrosting of the pump module is closed-loop controlled based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve

	The check valve ensures an overpressure of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.
Location of component(s)	 I402235
Diagnostic condition	This diagnostic runs continuously when the ignition is on and the heater element, DEF return line (L078) is activated.
Set condition of fault code	A short circuit to ground or open circuit is detected for three consecutive seconds.
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected

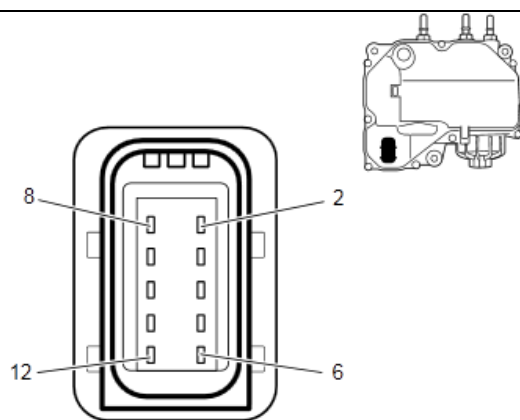
Electrical diagram(s)

Checking data, pump module (L074)

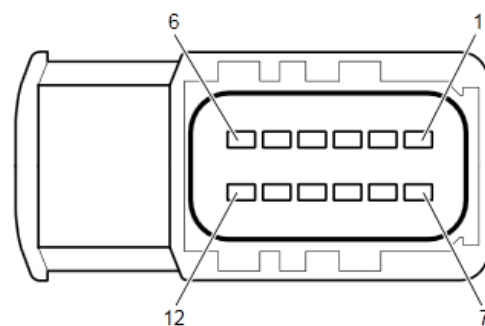


D374 EAS-3 ECU
 E444 Fuse, EAS 2nd
 L074 pump module
 R042 pump heater relay

D374	L074	R042	Function
A17	4		ground, DEF pressure sensor
A56	11		signal, reverting valve
A63		6	ground, relay line heating
B2	8		ground, DEF pump motor
B33		4	signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground heater element
	5	8	Power supply, heater element



Connector pump module (L074) I4Q1919



Wiring harness connector (L074) E604107

Technical data

Component and wiring check, DEF pressure sensor

Preparation

- Key on the ignition.
- Disconnect connector L074
- Measure on connector L074.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	4	4.75 - 5.25 V	

Component check, heater element

Preparation

- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
5	6	1.5 Ω $\pm$ 0.5 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Component check, reverting valve

Preparation

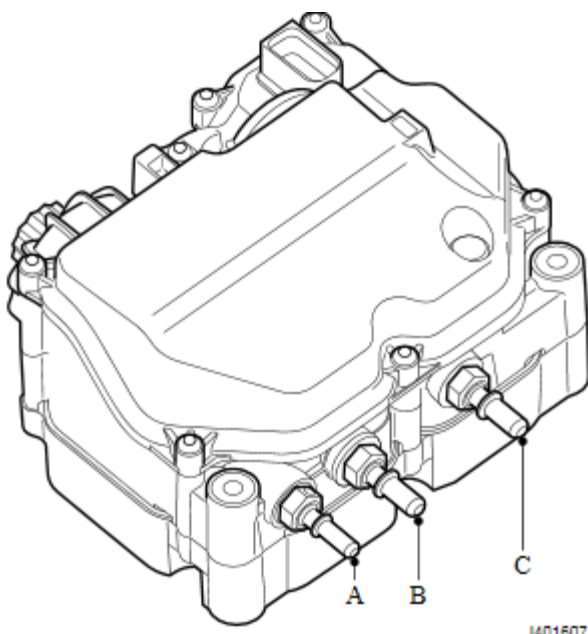
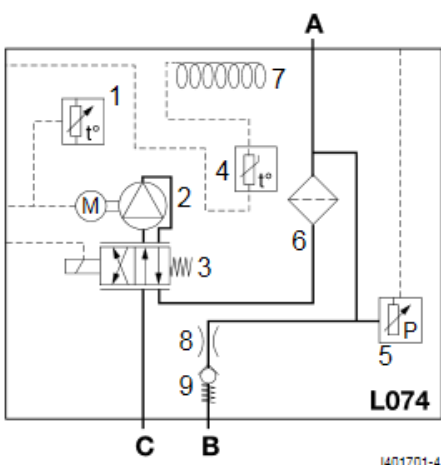
- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
11	12	6.75 Ω $\pm$	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

			2 Ω				
Possible causes	- Malfunctioning heater element, DEF return line (L078). - A short circuit to ground or open circuit.						
Additional information	DEF line heating is disabled.						
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3979a</td><td>SRT</td></tr></table> Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step 2 in the troubleshooting process.				Step 1	Step ID 3979a	SRT
Step 1	Step ID 3979a	SRT					

	Step 2	Step ID 3979b	SRT
	DAVIE Direct Test: DEF Pressure Line Heater Relay Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 2 in the troubleshooting process.		
	Step 3	Step ID 3979c	SRT
	Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. ▪ Supply and signal voltages. ▪ Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? No: Continue to the next step 4 in the troubleshooting process. Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 4 in the troubleshooting process.		
	Step 4	Step ID 3979d	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, perform a key cycle, and let the engine idle for 1 minute.		
	Back to Index		

P3980

Code number	P3980
Fault code description	Heater element DEF return line - Short circuit to supply on ECU D374 pin A52
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  I401607 The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  I401701-4

Temperature sensor

- The temperature sensor measures the temperature inside the pump module (L074).
- The temperature signal is used to determine whether the pump module must be started or heated.

DEF pump motor

- The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve.
- The DEF pump is controlled with a duty cycle.
- The pump speed depends on the quantity of DEF to be injected.
- The DEF pressure does not depend on the quantity of DEF to inject.

Reverting valve

- This valve is engaged during the purge cycle.
- The DEF inside the inlet line and pressure line is pumped back into the DEF tank.

Temperature switch, heater element

- The temperature sensor measures the temperature of the heater element.
- This switch is used to control the heater elements in the pump module and prevent them from overheating.

DEF pressure sensor

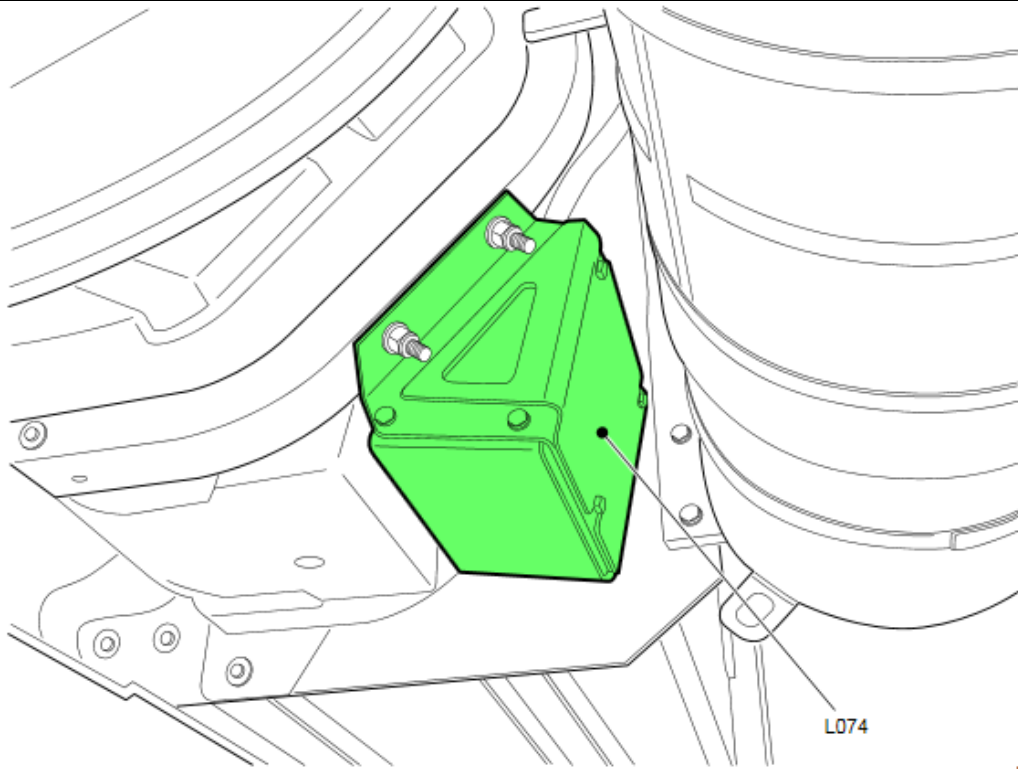
- The pressure sensor measures the pressure of the DEF after the DEF filter.
- The measured pressure is used by the ECU to control the DEF pump speed.

DEF filter

The DEF is filtered before it is pumped to the pump module.

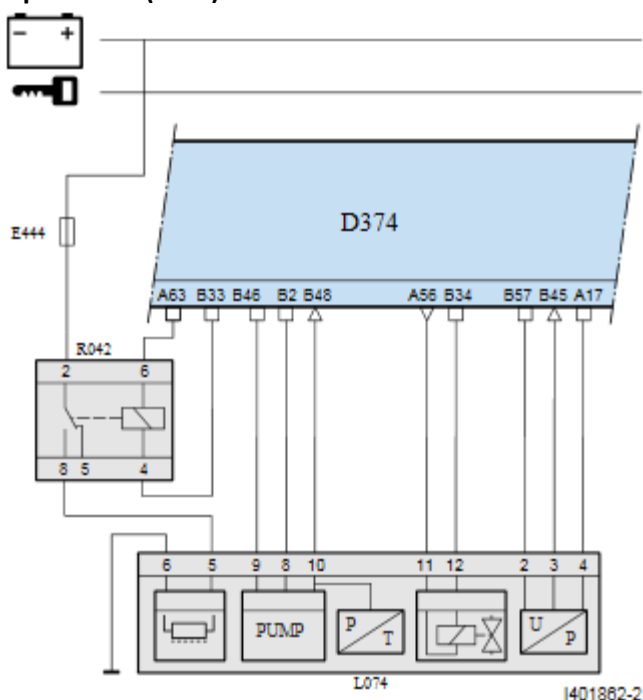
Heater element, pump module

- The pump module is heated and defrosted by electrical heater elements located inside the pump module.
- These heater elements prevent the DEF from freezing during operation of the pump module.
- Defrosting of the pump module is closed-loop controlled based on the **temperature sensor inside the pump module** for temperatures below -4°C.
- Heating of the pump module is open-loop controlled based on the **ambient**

	temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve The check valve ensures an overpressure of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.
Location of component(s)	 I402235
Diagnostic condition	This diagnostic runs continuously when the ignition is on and the heater element, DEF return line (L078) is activated.
Set condition of fault code	A short circuit to supply is detected for three consecutive seconds.
Reset condition of fault code	To validate the repair, perform a key cycle, then perform the DEF line heater test using DAVIE.

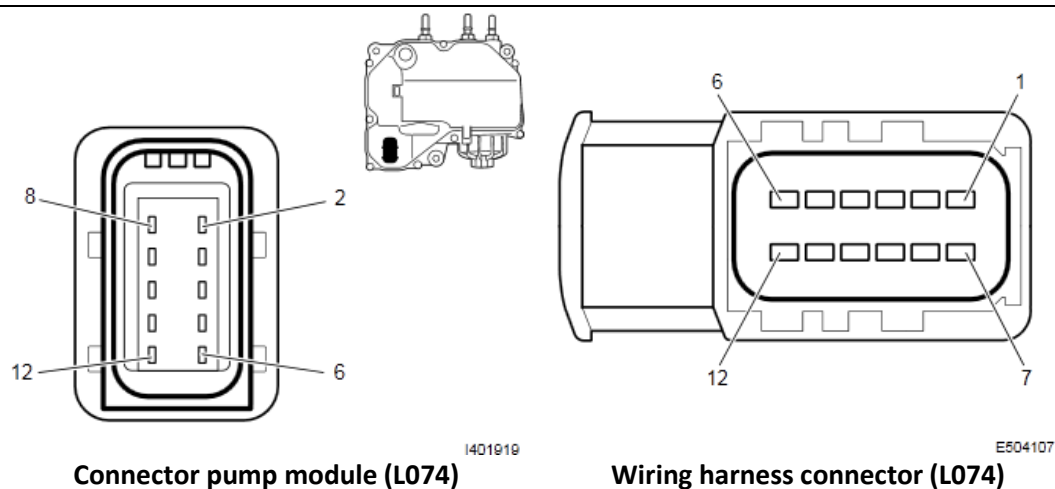
Electrical diagram(s)

Checking data, pump module (L074)



D374 EAS-3 ECU
 E444 Fuse, EAS 2nd
 L074 pump module
 R042 pump heater relay

D374	L074	R042	Function
A17	4		ground, DEF pressure sensor
A56	11		signal, reverting valve
A63		6	ground, relay line heating
B2	8		ground, DEF pump motor
B33		4	signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground heater element
	5	8	Power supply, heater element



Technical data

Component and wiring check, DEF pressure sensor

Preparation

- Key on the ignition.
- Disconnect connector L074
- Measure on connector L074.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	4	4.75 - 5.25 V	

Component check, heater element

Preparation

- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
5	6	1.5 Ω $\pm$ 0.5 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Component check, reverting valve

Preparation

- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information

	11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]			
Possible causes	- Malfunctioning heater element, DEF return line (L078). - A short circuit to supply.						
Additional information	- DEF line heating is disabled. - After 1 hour of engine operation or 50 miles with P3980 active, P1518 becomes active (25% torque derate). - After 4 hours of engine operation or 200 miles with P3980 active, P1518 stays active (40% torque derate). - After 4 hours of engine operation or 200 miles with P3980 active, P151A becomes active (5 MPH vehicle speed limit) after a: - key cycle, or - vehicle re-fuel (fuel tank volume increase > 16%), or - vehicle has been stationary for 1 hour.						
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3980a</td><td>SRT</td></tr></table> Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above?				Step 1	Step ID 3980a	SRT
Step 1	Step ID 3980a	SRT					

No: Continue to the next step 2 in the troubleshooting process.

Yes: Clean, adjust, repair, or replace affected components for any issues identified.

Use DAVIE to re-check for the presence of active faults.

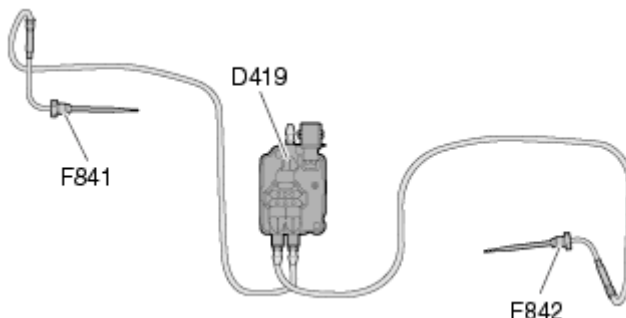
- If this related fault is no longer active, then this issue has been resolved.
- If this related fault is still active, continue to the next step 2 in the troubleshooting process.

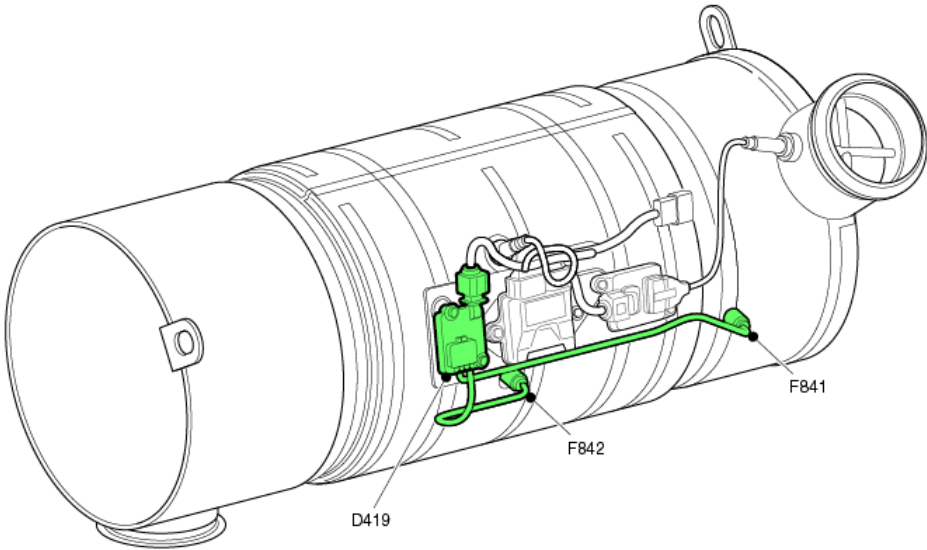
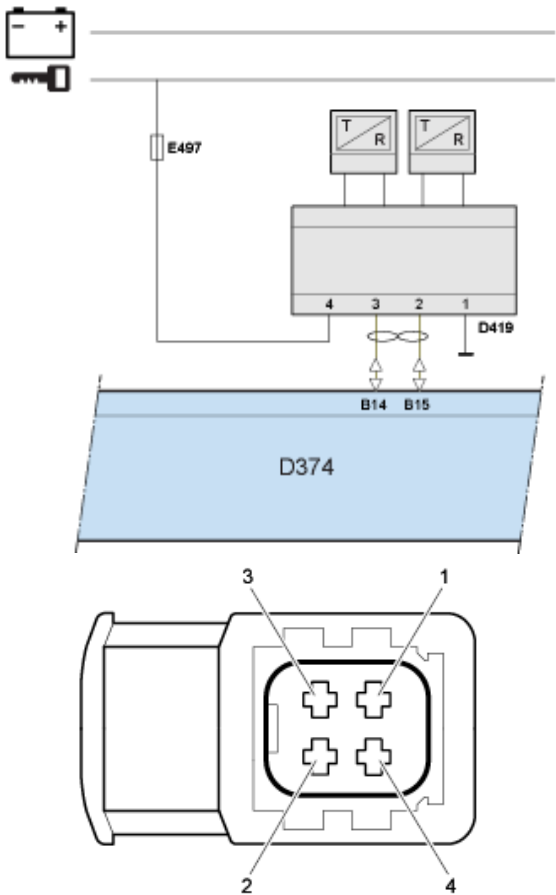
Step 2	Step ID 3980b	SRT
DAVIE Direct Test: DEF Pressure Line Heater Relay Run the prescribed DAVIE Direct test to determine correct operation of the associated engine or aftereffects system. Does the test fail to complete or result in a failed state? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 2 in the troubleshooting process.		

Step 3	Step ID 3980c	SRT
Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. ▪ Supply and signal voltages. ▪ Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? No: Continue to the next step 4 in the troubleshooting process. Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the		

	troubleshooting process.		
	Step 4	Step ID 3980d	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, perform a key cycle, and let the engine idle for 1 minute.		
	Back to Index		

P3982

Code number	P3982
Fault code description	Exhaust temperature sensors SCR power supply – Interrupted.
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 The diagram illustrates the electrical connection between two exhaust temperature sensors, F841 and F842, and the ECU SCR catalyst temperature sensors, D419. Sensor F841 is located before the SCR catalyst, and sensor F842 is located after the SCR catalyst. Both sensors are connected to the D419 module, which then transmits the signal to the ECU. • Sensor, exhaust temperature before SCR catalyst (F841) • Sensor, exhaust temperature after SCR catalyst (F842) General: • Thermocouple sensors; • The temperature sensors are connected to the ECU SCR catalyst temperature sensors (D419). The signal of the temperature sensors is transmitted to the A-CAN by the ECU SCR catalyst temperature sensors (D419). The temperature sensors cannot be disconnected or replaced separately from the ECU SCR catalyst temperature sensors (D419). Sensor, exhaust temperature before SCR catalyst (F841) Measure the exhaust gas temperature before the SCR catalytic converter Effect of the output signal on the system • Determines whether DEF injection is required • Determines whether the DEF pump can be activated • Determines the start and quantity of DEF dosing • Determine whether a DEF catalytic converter is present • Protects the SCR catalyst from reaching excessive temperatures Sensor, exhaust temperature after SCR catalyst (F842) Measure the exhaust gas temperature before the SCR catalytic converter. Effect of the output signal on the system • Determine whether an SCR catalytic converter is present • Protects the SCR catalyst from reaching excessive temperatures Determines the dew point of NOx sensor after catalyst (F843)

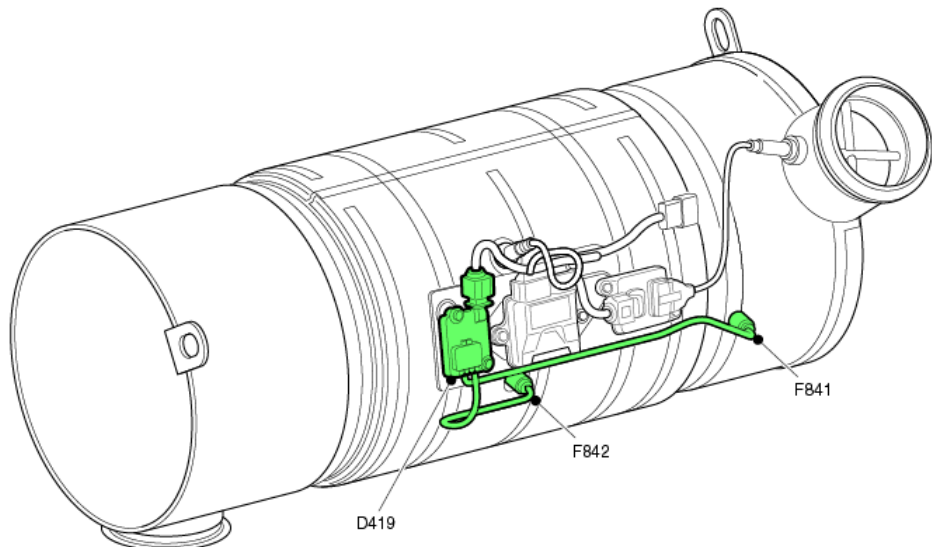
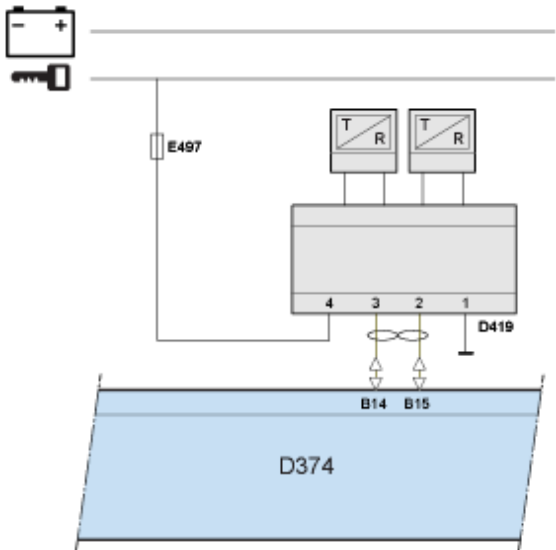
Location of component(s)	 A line drawing of a cylindrical component, likely a catalytic converter or SCR catalyst. It features a circular access panel on the right side. Three components are highlighted in green: D419 (a small rectangular module), F841 (a circular sensor), and F842 (a small rectangular module). Wires connect these components to each other and to the main harness.
Diagnostic condition	This diagnostic runs continuously when the ignition is on.
Set condition of fault code	The EAS-3 ECU (D374) detects that the power supply is intermittently interrupted to the temperature sensors SCR catalyst ECU (D419). Therefore, communication with the temperature sensors SCR catalyst ECU (D419) is not possible.
Reset condition of fault code	This DTC changes to inactive as soon as the diagnostic runs and passes.
Electrical diagram(s)	 The diagram illustrates the electrical circuit for the SCR catalyst ECU (D419). It shows a battery connected to a fuse E497, which then connects to the power input (pin 4) of D419. D419 has two temperature sensors (T and R) connected to pins 3 and 2. The output of D419 (pin 1) connects to the EAS-3 ECU (D374). The ECU (D374) is shown with its own power supply and ground connections. Below the ECU, the wiring harness connector D419 front view is shown with pins 1, 2, 3, and 4 labeled. Wiring harness connector D419 front view

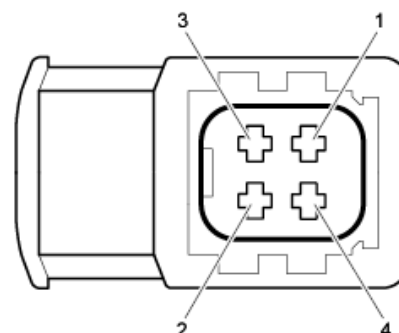
	D374 EAS-3 ECU D419 catalytic converter temperature sensors ECU E497 after treatment CAN fuse D374 D419 Function B14 3 A-CAN High B15 2 A-CAN Low 1 Ground 4 Power supply
Technical data	Component and wiring check, DEF pressure sensor Preparation Pin (+ probe) 2 Pin (- probe) 4 Value 12 V Condition Component check, heater element Preparation Pin (+ probe) 6 Pin (- probe) 5 Value 6 Ω Condition Component check, reverting valve Preparation Pin (+ probe) 11 Pin (- probe) 12 Value 20.6 Ω Condition
Possible causes	Short circuit to supply or ground in the wiring harness to the temperature sensors SCR catalyst ECU (D419). Open circuit in the supply circuit of the temperature sensors SCR catalyst ECU (D419). Malfunctioning temperature sensors SCR catalyst ECU (D419) Incorrect temperature sensors SCR catalyst ECU (D419) installed. Perform the fuel dosing system override test with DAVIE. Check for other PCI DTC's.
Additional information	No additional information available.

Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.						
	<table><tr><td>Step 1</td><td>Step ID 3982a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table>	Step 1	Step ID 3982a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.		
	Step 1	Step ID 3982a	SRT				
	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.						
	<table><tr><td>Step 2</td><td>Step ID 3982b</td><td>SRT</td></tr><tr><td colspan="3"> Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4 </td></tr></table>	Step 2	Step ID 3982b	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4		
Step 2	Step ID 3982b	SRT					
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4							
<table><tr><td>Step 3</td><td>Step ID 3982c</td><td>SRT</td></tr><tr><td colspan="3"> Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4 </td></tr></table>	Step 3	Step ID 3982c	SRT	Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4			
Step 3	Step ID 3982c	SRT					
Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 4							
<table><tr><td>Step 4</td><td>Step ID 3982d</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 4	Step ID 3982d	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.			
Step 4	Step ID 3982d	SRT					
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.							
Verification Drive Cycle	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.						
	Back to Index						

P3983

Code number	P3983
Fault code description	Exhaust temperature sensor before SCR catalyst-Sensor has been tampered with
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	The diagram illustrates the electrical connection between two exhaust temperature sensors, F841 and F842, and the ECU SCR catalyst temperature sensor D419. Sensor F841 is located before the SCR catalyst, and sensor F842 is located after the SCR catalyst. Both sensors are connected to the D419 module, which then transmits the signal to the ECU. • Sensor, exhaust temperature before SCR catalyst (F841) • Sensor, exhaust temperature after SCR catalyst (F842) General: • Thermocouple sensors; • The temperature sensors are connected to the ECU SCR catalyst temperature sensors (D419). The signal of the temperature sensors is transmitted to the A-CAN by the ECU SCR catalyst temperature sensors (D419). The temperature sensors cannot be disconnected or replaced separately from the ECU SCR catalyst temperature sensors (D419). Sensor, exhaust temperature before SCR catalyst (F841) Measure the exhaust gas temperature before the SCR catalytic converter Effect of the output signal on the system • Determines whether DEF injection is required • Determines whether the DEF pump can be activated • Determines the start and quantity of DEF dosing • Determine whether a DEF catalytic converter is present • Protects the SCR catalyst from reaching excessive temperatures Sensor, exhaust temperature after SCR catalyst (F842) Measure the exhaust gas temperature before the SCR catalytic converter. Effect of the output signal on the system • Determine whether an SCR catalytic converter is present • Protects the SCR catalyst from reaching excessive temperatures Determines the dew point of NOx sensor after catalyst (F843)

Location of component(s)	
Diagnostic condition	This diagnostic runs when the exhaust gas temperature sensors are compared with other engine temperatures during engine operation. The engine coolant temperature must be above 60°C (140 F) before the diagnostic will run.
Set condition of fault code	This fault code is logged if the value of the exhaust gas temperature sensor before SCR catalyst (F841) does not match the engine operating conditions for more than 5 minutes.
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes.
Electrical diagram(s)	



Wiring harness connector D419 front view

D374 EAS-3 ECU
D419 catalytic converter temperature sensors ECU
E497 after treatment CAN fuse

D374	D419	Function
B14	3	A-CAN High
B15	2	A-CAN Low
	1	Ground
	4	Power supply

Technical data

Component and wiring check, ECU temperature sensors SCR catalyst (D419)

Preparation

- Disconnect connector D419.
- Ignition switched on.
- Measure on connector D419.

Pin (+ probe)	Pin (- probe)	Value	Additional Information
4	1	Ubat	
1	Battery Negative Pole	>0.5V	Switch all consumers on

Component & wiring check, A-CAN

Preparation

- Ignition switched off.
- Disconnect connector D419.
- Measure on connector D419

Pin (+ probe)	Pin (- probe)	Value	Additional Information
2	3	$\pm 60 \Omega$	

Possible causes

SCR catalyst temperature sensors ECU (D419) has malfunctioned or is damaged

Additional information

- The SCR intake temperature sensor is not changing with engine operating conditions.
- The SCR temperature sensors cannot be replaced individually.
- After 10 hours of engine operation with P3983 active, P1518 becomes active.
- After 20 hours of engine operation with P3983 active, P151A and/or P151B becomes active.

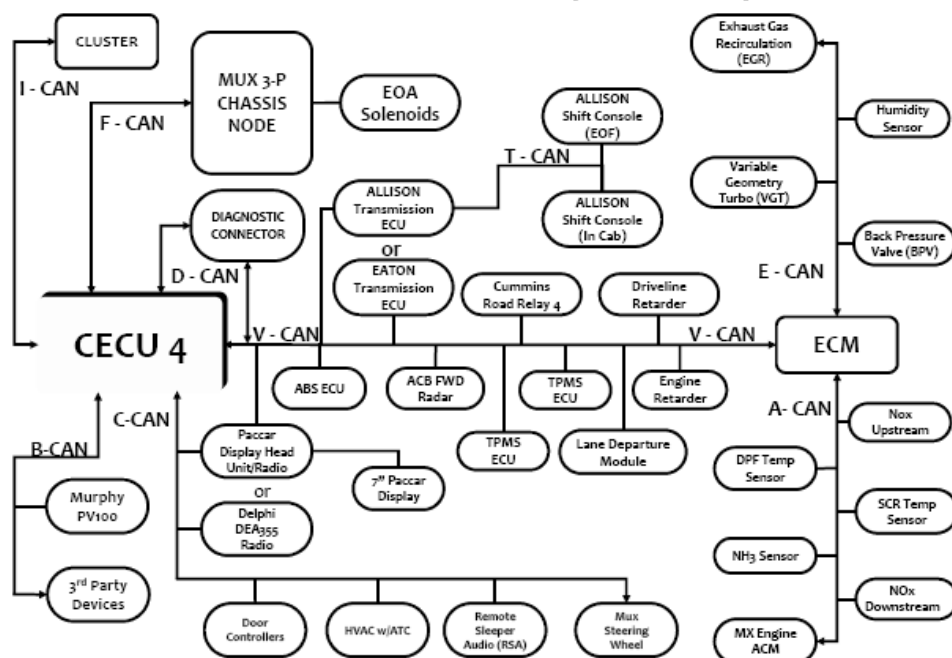
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.						
	<table><tr><td>Step 1</td><td>Step ID 3983a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table>	Step 1	Step ID 3983a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.		
	Step 1	Step ID 3983a	SRT				
	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.						
	<table><tr><td>Step 2</td><td>Step ID 3983b</td><td>SRT</td></tr><tr><td colspan="3">Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3 </td></tr></table>	Step 2	Step ID 3983b	SRT	Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3		
Step 2	Step ID 3983b	SRT					
Repair or replace appropriate component and use Davie to recheck for the presence of active faults. • Fault inactive – issue resolve • Fault active - Proceed to step 3							
<table><tr><td>Step 3</td><td>Step ID 3983d</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 3	Step ID 3983d	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.			
Step 3	Step ID 3983d	SRT					
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.							
Verification Drive Cycle	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.						

Back to Index

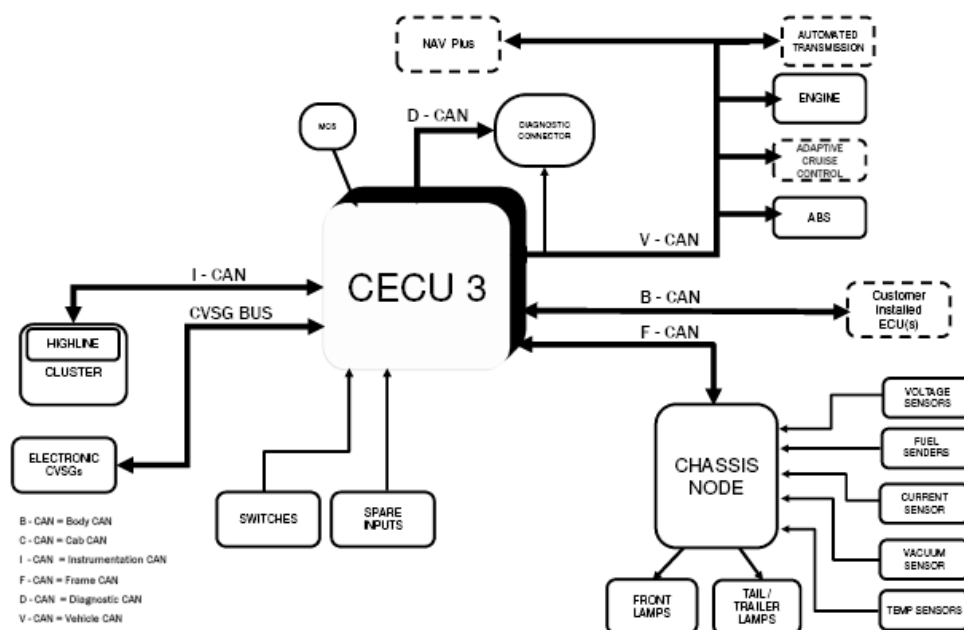
P3984

Code number	P3984
Fault code description	CAN communication - Timeout from vehicle controller
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	This code relates to a communication issue and not to a specific component.
Location of component(s)	This code relates to a communication issue and not to a specific component.
Diagnostic condition	This diagnostic runs continuously when the ignition is on.
Set condition of fault code	This condition will set when Time since last reception is greater than 0.6 sec
Reset condition of fault code	This DTC changes to inactive as soon as the error is no longer detected.
Electrical diagram(s)	<i>NAMUX 3 Architecture: 2010 B-Cab</i> The diagram illustrates the NAMUX 3 Architecture for a 2010 B-Cab. At the center is the CECU 3 (Central Electronic Control Unit). It is connected to several components and networks: Steering Wheel: Connected via Cab CAN. Cluster: Connected via Instrumentation CAN. MCS (Master Control Switch): Connected to CECU 3. Diagnostic CAN: Connected to CECU 3 and the Diagnostic Connector. Diagnostic Connector: Connected to CECU 3 and the Diagnostic CAN. ABS (Anti-lock Braking System): Connected to CECU 3 via Vehicle CAN. PACCAR Display: Connected to CECU 3 via Vehicle CAN. Engine CAN: Connected to CECU 3 and the Engine. Aftertreatment CAN: Connected to CECU 3 and the Aftertreatment DCU. Chassis Node: Connected to CECU 3 via Frame CAN. It manages various sensors and actuators: Front Lamps and Tail/Trailer Lamps: Connected to the Chassis Node. Voltage Sensors, Fuel Senders, Current Sensor, Pressure Sensors, Vacuum Sensor, and Temp Sensors: Connected to the Chassis Node. After-treatment DCU: Connected to the Chassis Node and the Aftertreatment CAN. VGT Actuator: Connected to the Engine CAN. CVSG BUS: Connected to CECU 3 and the Electronic CVSG's. SWITCHES and SPARE INPUTS: Connected to CECU 3. Firewalls are indicated between the Diagnostic CAN and the Vehicle CAN, and between the Vehicle CAN and the Aftertreatment CAN.

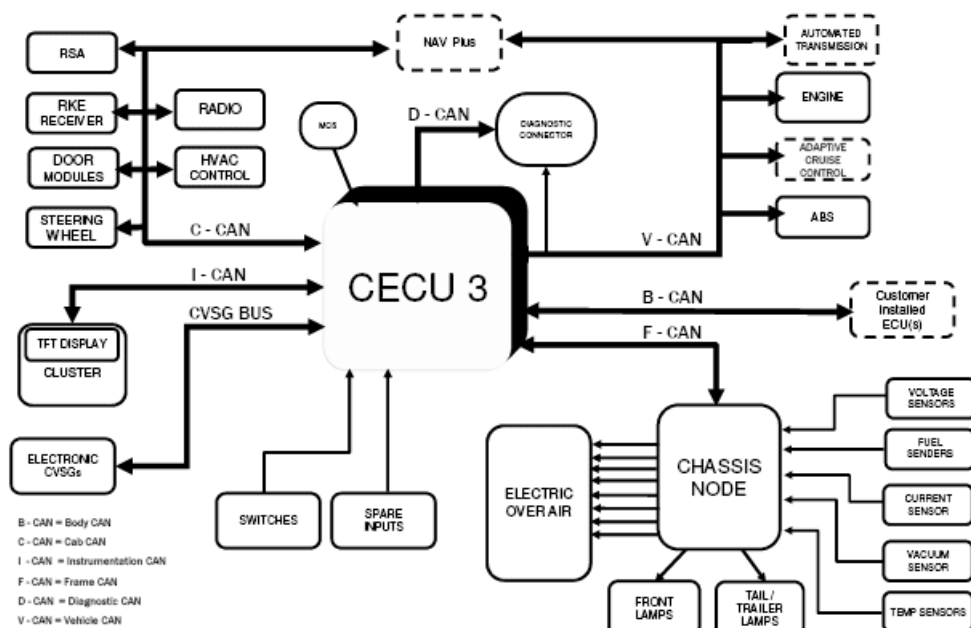
NAMUX 4 Architecture (Phase 1): T680



NAMUX 3 Architecture



NAMUX 4 Architecture



Technical data

This code relates to a communication issue and not to a specific component.

Possible causes

- Breakdown in communication in the CAN network
- Open circuit, short circuit to ground or short circuit to supply in the CAN network wiring

Additional information

No additional information available

Diagnostic Step-by-Step



Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.

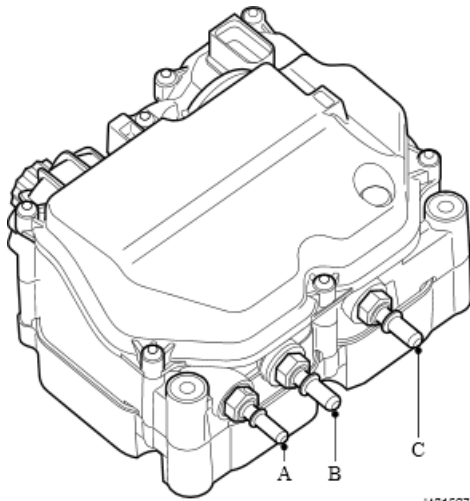
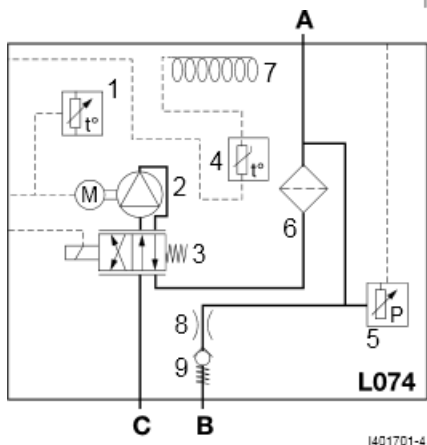


- Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors.
- For specific electrical component information and pinout locations, always refer to the technical data.
- It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors.
- Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.

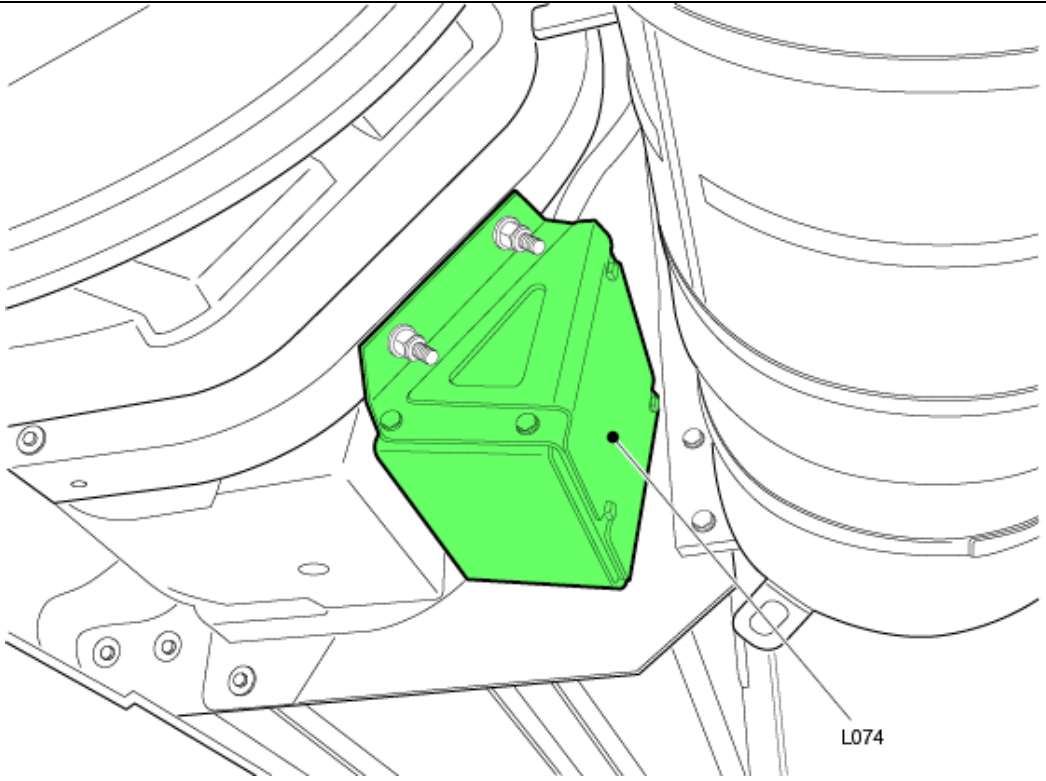
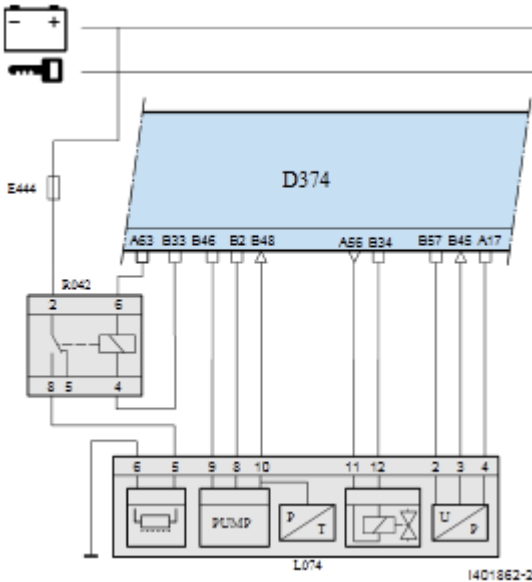
Step 1	Step ID 3984a	SRT
Visual Inspection OFF the ignition key, disconnect the connector from component and ECU. Visually inspect all applicable connectors (bent, broken, corroded or loose pins)		

	damage to wire harness, sign of exhaust leaks during each step of the diagnostic procedure. Was there evidence of any of the above? - No: Proceed to step 2. - Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, Proceed to step 2			
	<table><tr><td>Step 2</td><td>Step ID 3984b</td><td>SRT</td></tr></table> Data check - Lookup the technical data of the specific system - Perform the checking data test of the specific component Is test pass? - No: Proceed to step 3 - Yes : Proceed to step 4	Step 2	Step ID 3984b	SRT
Step 2	Step ID 3984b	SRT		
	<table><tr><td>Step 3</td><td>Step ID 3984c</td><td>SRT</td></tr></table> Repair or replace component - Repair or replace the component, also check for electrical connection and wiring harness. - Reconnect the connector - ON the ignition key Use DAVIE to re-check for the presence of active faults: - Is DTC fault active: Proceed to step 4 - Is DTC fault inactive: Issue resolved. Clear inactive fault	Step 3	Step ID 3984c	SRT
Step 3	Step ID 3984c	SRT		
	<table><tr><td>Step 4</td><td>Step ID 3984d</td><td>SRT</td></tr></table> For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.	Step 4	Step ID 3984d	SRT
Step 4	Step ID 3984d	SRT		
Verification Drive Cycle	To validate the repair: - With the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics. - With the brakes set, start the engine and allow it to run at idle for 2 minutes.			
	Back to Index			

P3985

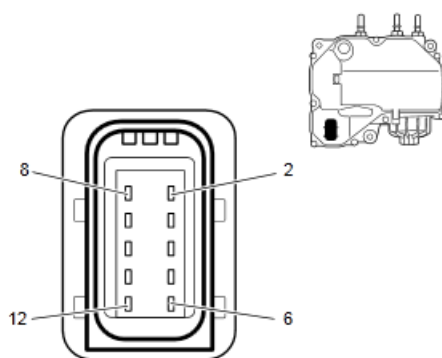
Code number	P3985
Fault code description	Pump module power supply - Voltage too high on ECU (D374) pin (B46)
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated. DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF

	dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature Switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter • The DEF is filtered before it is pumped into the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump. • Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve • The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.
Location of component(s)	

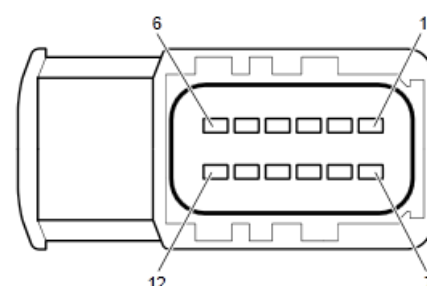
	
Diagnostic condition	This diagnostic runs continuously when the ignition is on and the pump module (L074) is activated.
Set condition of fault code	A short circuit to supply or open circuit is detected for 4 consecutive seconds.
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected.
Electrical diagram(s)	 D374 EAS-3 ECU

E444 Fuse EAS 2nd
L074 Pump module
R042 Pump heater relay

D374	L074	R042	Function
A17	4		Ground, DEF pressure sensor
A56	11		Signal, reverting valve
A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground, heater element
	5	8	Power supply, heater element



1401919
Connector, pump module (L074)



E504107
Wiring harness connector (L074)



Handle connectors and pins with care and use matching measuring probes.

Technical data	Component & wiring check, DEF pressure sensor Preparation - Switch on the ignition. - Disconnect connector L074. - Measure on connector L074. <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>4</td><td>4.75–5.25 V</td><td></td></tr></table> Component check, heater element Preparation - Switch off the ignition. - Disconnect connector L074. - Measure on the pump module (L074). <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>5</td><td>6</td><td>1.5 Ω ± 0.5 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table> Component check, reverting valve Preparation - Switch off the ignition. - Disconnect connector L074. - Measure on the pump module (L074). <table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>11</td><td>12</td><td>6.75 Ω ± 2 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	4	4.75–5.25 V		Pin (+ probe)	Pin (- probe)	Value	Additional information	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]	Pin (+ probe)	Pin (- probe)	Value	Additional information	11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
2	4	4.75–5.25 V																							
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]																						
Pin (+ probe)	Pin (- probe)	Value	Additional information																						
11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]																						

Possible causes	Short circuit to supply or an open circuit.												
Additional information	- DEF injection is disabled. - After 1 hour of engine operation or 50 miles with P3985 active, P1518 becomes active (25% torque derate). - After 4 hours of engine operation or 200 miles with P3985 active, P1518 stays active (40% torque derate). - After 4 hours of engine operation or 200 miles with P3985 active, P151A becomes active (5 MPH vehicle speed limit) after a: - key cycle, or - vehicle re-fuel (fuel tank volume increase > 16%), or - vehicle has been stationary for 1 hour.												
Diagnostic Step-by-Step	 The ignition should always be in the off position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.  - This troubleshooting procedure is based on the assumption that supply power and ground to the PCI are functioning properly. - Disconnecting the PCI connectors during the troubleshooting process will result in multiple errors. - Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes. - It is necessary to use DAVIE to clear all current DTCs from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status. - This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided. Step 1 Confirm DTC Status <table border="1"> <tr> <td colspan="2">Step 1A Perform a key-cycle</td></tr> <tr> <td colspan="2">Action</td></tr> <tr> <td colspan="2">1. Switch the ignition to OFF at least 15 seconds, then switch the ignition ON again.</td></tr> <tr> <td colspan="2">Is P3985 active?</td></tr> <tr> <td>Yes</td><td>No</td></tr> <tr> <td></td><td>Refer to step 3A to clear all current DTCs and run the corresponding repair verification cycles to determine if this DTC was an intermittent or random occurrence.</td></tr> </table>	Step 1A Perform a key-cycle		Action		1. Switch the ignition to OFF at least 15 seconds, then switch the ignition ON again.		Is P3985 active?		Yes	No		Refer to step 3A to clear all current DTCs and run the corresponding repair verification cycles to determine if this DTC was an intermittent or random occurrence.
Step 1A Perform a key-cycle													
Action													
1. Switch the ignition to OFF at least 15 seconds, then switch the ignition ON again.													
Is P3985 active?													
Yes	No												
	Refer to step 3A to clear all current DTCs and run the corresponding repair verification cycles to determine if this DTC was an intermittent or random occurrence.												

	Go to step 1B If this DTC is still present, go to step 1B	
	Step 1B Investigate related DTCs	
	Before troubleshooting this DTC, take notice of any other active or inactive DTCs. One or multiple other DTCs could have been the cause for this DTC.	
	Action 1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs.	
	Are these or any other related DTCs active? P3854	
	Yes	No
	Refer to the troubleshooting information for these codes before continuing with this procedure.	
		Go to step 2A
	Step 2 DEF Pump Module (L074) Checks	
	Step 2A Visual inspection, connections and wiring, pump module (L074)	
Action 1. Visually inspect the associated component connections and wiring for any of the following: - Damaged or loose connectors - Bent, broken, corroded or loose connector pins - Moisture or dirt in the connections - Damage to the wire harness or insulation - The correct parts are not installed - ECU connections are damaged or disconnected - Batteries not fully charged or contacts are not tight - Pump module (L074) broken or not installed correctly		
Was there evidence of any of the above?		
Yes	No	
Correct any issues found. If the DEF pump module (L074) is found to be damaged or broken, replace it. Refer to step 3A to perform the		

	corresponding repair verification cycles and rechecks.	
	If this DTC is still present, go to step 2B	Go to step 2B
Step 2B Electrical checks, vehicle harness, pump module (L074)		
Action 1. Switch off the ignition. 2. Disconnect the pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU. 4. Use a multimeter to check the resistance between the following connector pins: a. L074, pin 10 to L074, pin 8 (pump module signal to ground) Expected value is >100K Ω b. L074, pin 10 to D374, pin B48 (pump module signal to EAS-3 ECU) Expected value is <10 Ω		
Are measured values within expected range?		
Yes	No	
	An open supply circuit has been detected. Replace the vehicle harness. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.	
Go to step 2C	If this DTC is still present, go to step 2C	
Step 2C Electrical checks, vehicle harness, pump module (L074)		
Action 1. Switch off the ignition. 2. Disconnect the pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU. 4. Use a multimeter to check the resistance between L074, pin 9 and all other pins on the L074 connector.		
Are measured resistance values greater than 100K Ω?		

	Yes		No	
			An open supply circuit has been detected. Replace the vehicle harness. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.	
	Go to step 2D		If this DTC is still present, go to step 2D	
	Step 2D Electrical checks, vehicle harness, pump module (L074)			
	Action			
	1. Switch off the ignition. 2. Disconnect the pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU. 4. Use a multimeter to check the resistance between L074, pin 10 and all other pins on the L074 connector.			
	Are measured resistance values greater than 100K Ω?			
	Yes		No	
			A pin-to-pin short circuit has been detected. Replace the vehicle harness. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.	
	Go to step 2E		If this DTC is still present, go to step 2E	
Step 2E Electrical checks, resistance, pump module heater element				
 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.				
Action				
1. Confirm resistance level as outlined in the corresponding checking data, “Component check, pump module (L074).”				
Are the measured values within expected range?				
Yes		No		

		Correct any issues found, or replace the pump module (L074) if measured values indicate an error. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.
	Go to step 2F	If this code is still present, go to step 2F
Step 2F Electrical checks, resistance, pump module reverting valve		
 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.		
Action 1. Confirm resistance level as outlined in the corresponding checking data, " <u>Component check, pump module (L074).</u> "		
Are the measured values within expected range?		
Yes		No
		Correct any issues found, or replace the pump module (L074) if measured values indicate an error. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.
Go to step 2G		If this code is still present, go to step 2G
Step 2G Electrical checks, resistance, pump module pressure sensor		
 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.		
Action 1. Confirm resistance level as outlined in the corresponding checking data, " <u>Component check, pump module (L074).</u> "		
Are the measured values within expected range?		
Yes		No
		Correct any issues found. Refer to step 3A to perform the

		corresponding repair verification cycles and rechecks.
	Go to step 2H	If this DTC is still present, go to step 2H
Step 2H DAVIE test, Prime the system with the DEF pump		
 ABORTING A DAVIE-INITIATED DIAGNOSTIC TEST IS NOT RECOMMENDED. However, if aborting a test is required, a key cycle must be performed to reset the engine ECM. Failure to reset the engine ECM in this instance could result in personal injury or damage to the vehicle. Action 1. Use DAVIE to perform a DEF pump module prime test as described in the maintenance procedure, <u>test DEF dosing valve (Exhaust System(SCR))</u>, job code J 1179 439605 033 000.		
Did the test fail to complete or result in a failed state?		
Yes		No
Correct any issues found. Replace the DEF pump module (074) if test results indicate a mechanical failure. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.		
If all steps have been completed and this DTC is still present, contact PACCAR Engine Support Center for further assistance.		If all steps have been completed and this DTC is still present, contact PACCAR Engine Support Center for further assistance.
Step 3 Repair Verification		
Step 3A Repair verification cycles		
Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the DTC or system being investigated.		



Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to “Clear all” current DTCs from the PCI and EAS-3 ECUs.

Action

1. Start-up

With the brakes set, start the engine and allow it to run at idle for 2 minutes.

Were the identified repair verification cycles able to be completed?

Yes

No

Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.

Go to step 3B

Go to step 3B

Step 3B DAVIE Diagnostics, Quick Check, OBD Readiness Monitors

Action

Use DAVIE Diagnostics to perform a Quick Check for current DTCs to determine whether the actions taken have cleared this DTC.

1. Confirm that the corresponding OBD Monitor Readiness Status value is displayed as “Ready.”
A status of Ready indicates that the corresponding OBD monitor has run successfully and the problem has been resolved—no further action.
If the displayed status is “Not ready,” continue to action step 2.
2. View the DTC overview display, and confirm that P3985 has been cleared.

Is the related OBD Monitor Readiness Status set to “Ready.” Or, has P3985 been cleared?

Yes

No

Problem resolved. No further actions.

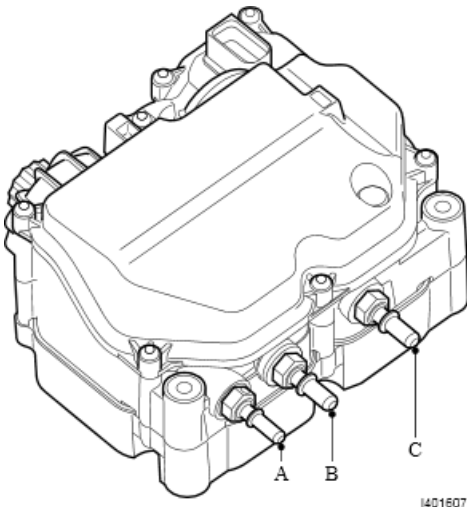
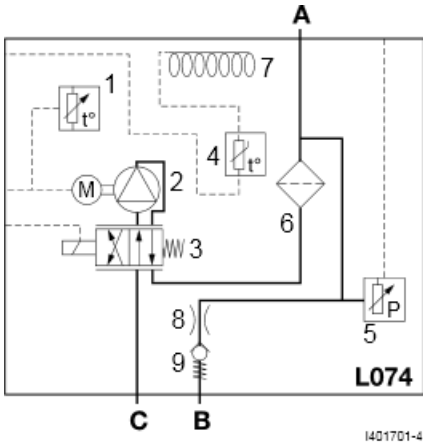
Continue with the next step in this troubleshooting procedure.

If all steps have been completed and this DTC is still present:

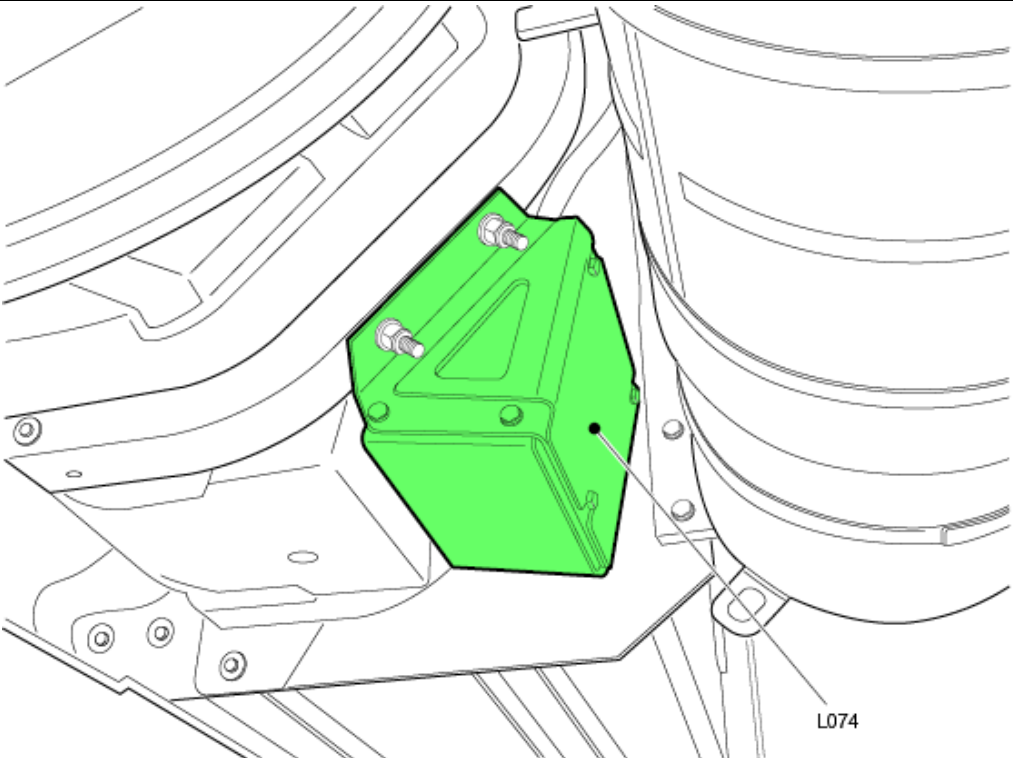
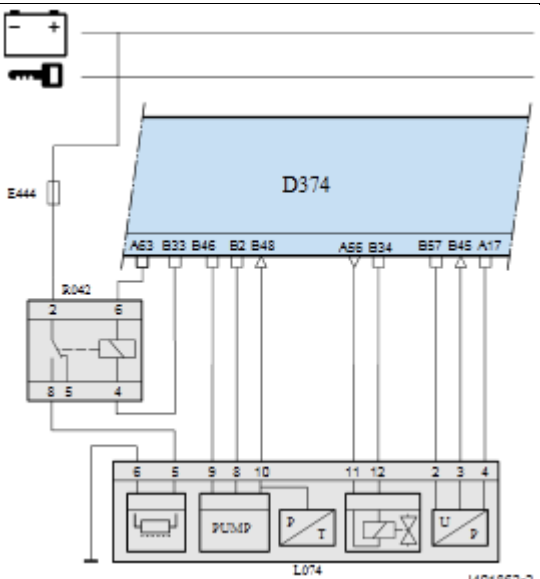
- continue to operate the truck to extend the run time, allowing the corresponding OBD monitor

	sufficient time to complete • or, return to step 3A and perform this repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine Support Center for further assistance.  Contacting the PACCAR Engine Support Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Center.
	Back to Index

P3986

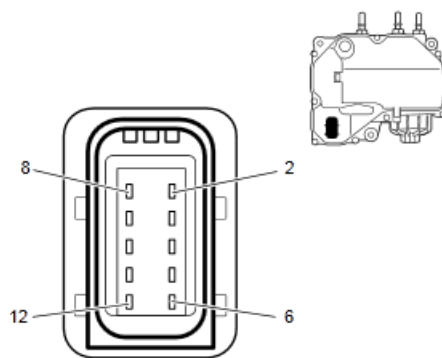
Code number	P3986
Fault code description	Pump module power supply – Voltage too low on ECU (D374) pin (B46)
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  Temperature sensor • The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must

	be started or heated. DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature Switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter • The DEF is filtered before it is pumped into the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. These heater elements prevent the DEF from freezing during operation of the pump. • Defrosting of the pump module is closed-loop controlled, based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve • The check valve prevents over pressurization of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.

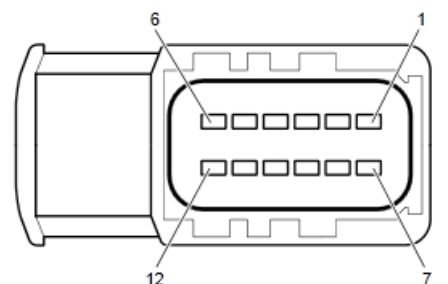
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously when the ignition is on and the pump module (L074) is activated.
Set condition of fault code	A short circuit to ground is detected for 4 consecutive seconds.
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected.
Electrical diagram(s)	 D374 EAS-3 ECU E444 Fuse EAS 2nd L074 Pump module

R042 Pump heater relay

D374	L074	R042	Function
A17	4		Ground, DEF pressure sensor
A56	11		Signal, reverting valve
A63		6	Ground, relay line heating
B2	8		Ground, DEF pump motor
B33		4	Signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground, heater element
	5	8	Power supply, heater element



Connector, pump module (L074)



Wiring harness connector (L074)



Handle connectors and pins with care and use matching measuring probes.

Technical data

Component & wiring check, DEF pressure sensor
Preparation

	• Switch on the ignition. • Disconnect connector L074. • Measure on connector L074.								
	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>2</td><td>4</td><td>4.75–5.25 V</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	2	4	4.75–5.25 V	
	Pin (+ probe)	Pin (- probe)	Value	Additional information					
	2	4	4.75–5.25 V						
	Component check, heater element								
	Preparation								
	• Switch off the ignition. • Disconnect connector L074. • Measure on the pump module (L074).								
	<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>5</td><td>6</td><td>1.5 Ω ± 0.5 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]
	Pin (+ probe)	Pin (- probe)	Value	Additional information					
	5	6	1.5 Ω ± 0.5 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]					
Component check, reverting valve									
Preparation									
• Switch off the ignition. • Disconnect connector L074. • Measure on the pump module (L074).									
<table><tr><th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr><tr><td>11</td><td>12</td><td>6.75 Ω ± 2 Ω</td><td>Cold resistance at 23°C ± 5°C [73°F ± 9°F]</td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional information	11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]	
Pin (+ probe)	Pin (- probe)	Value	Additional information						
11	12	6.75 Ω ± 2 Ω	Cold resistance at 23°C ± 5°C [73°F ± 9°F]						
Possible causes	A short circuit to ground.								
Additional information	• DEF injection is disabled. • After 1 hour of engine operation or 50 miles with P3986 active, P1518 becomes active (25% torque derate).								

	• After 4 hours of engine operation or 200 miles with P3986 active, P1518 stays active (40% torque derate). • After 4 hours of engine operation or 200 miles with P3986 active, P151A becomes active (5 MPH vehicle speed limit) after a: ○ key cycle, or ○ vehicle re-fuel (fuel tank volume increase > 16%), or ○ vehicle has been stationary for 1 hour.
Diagnostic Step-by-Step	 The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.  ▪ This troubleshooting procedure is based on the assumption that supply power and ground to the PCI are functioning properly. ▪ Disconnecting the PCI connectors during the troubleshooting process will result in multiple errors. ▪ Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes. ▪ It is necessary to use DAVIE to clear all current trouble codes from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status. ▪ This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided. Step 1 DEF Pump Module (L074) Checks Step 1A Visual inspection, connections and wiring, pump module (L074) Action 1. Visually inspect the associated component connections and wiring for any of the following: • Damaged or loose connectors • Bent, broken, corroded or loose connector pins • Moisture or dirt in the connections • Damage to the wire harness or insulation • The correct parts are not installed • ECU connections are damaged or disconnected • Batteries not fully charged or contacts are not tight

Pump module (L074) is broken or not installed correctly	
Was there evidence of any of the above?	
Yes	No
Correct any issues found. If the DEF pump module (L074) is found to be damaged or broken, replace it. Refer to step 2A to perform the corresponding repair verification cycles and rechecks.	
If this DTC is still present, go to step 1B	Go to step 1B
Step 1B Electrical checks, open circuit, pump module (L074) harness	
 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.	
Action - Switch off the ignition. - Disconnect the pump module (L074) from the vehicle harness. - Disconnect the vehicle harness from the EAS-3 ECU (D374). - Measure resistance between the DEF pump module (L074) motor pin 10 in the pump module (L074) vehicle harness connector and the DEF pump module (L074) motor signal pin B48 in the EAS-3 ECU (D374) vehicle harness connector.	
Is the measured value less than 10 Ω?	
Yes	No
	An open circuit has been detected. Replace the vehicle harness. Refer to step 2A to perform the corresponding repair verification cycles and rechecks.
Go to step 1C	If this DTC is still present, go to step 1C
Step 1C Electrical checks, open circuit, pump module (L074) harness	



Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.

Action

1. Switch off the ignition.
2. Disconnect the pump module (L074) from the vehicle harness.
3. Disconnect the vehicle harness from the EAS-3 ECU (D374).
4. Measure resistance between the DEF pump module (L074) motor power supply pin 9 in the pump module (L074) vehicle harness connector and the DEF pump module (L074) motor power supply pin B46 in the EAS-3 ECU (D374) vehicle harness connector.

Is the measured value less than 10 Ω ?

Yes

No

An open circuit has been detected.
Replace the vehicle harness.
Refer to step 2A to perform the corresponding repair verification cycles and rechecks.

Go to step 1D

If this DTC is still present, go to step 1D

Step 1D Electrical checks, pin-to-pin short circuit, pump module (L074) harness



Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.

Action

1. Switch off the ignition.
2. Disconnect the pump module (L074) from the vehicle harness.
3. Disconnect the vehicle harness from the EAS-3 ECU (D374).
4. Measure resistance between the DEF pump module (L074) motor signal pin 10 in the pump module (L074) vehicle harness connector and engine block ground.

Is the measured value greater than 100k Ω ?

Yes

No

A pin-to-ground short circuit has been detected. Replace the vehicle harness.
Refer to step 2A to perform the

		corresponding repair verification cycles and rechecks.
	Go to step 1E	If this DTC is still present, go to step 1E
Step 1E Electrical checks, pin-to-pin short circuit, pump module (L074) harness		
 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.		
Action 1. Switch off the ignition. 2. Disconnect the pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure resistance between the DEF pump module (L074) motor power supply pin 9 in the pump module (L074) vehicle harness connector pin B46 and engine block ground.		
Is the measured value greater than 100k Ω?		
Yes		No
		A pin-to-ground short circuit has been detected. Replace the vehicle harness. Refer to step 2A to perform the corresponding repair verification cycles and rechecks.
Go to step 1F		If this DTC is still present, go to step 1F
Step 1F Electrical checks, pin-to-pin short circuit, pump module (L074) harness		
 Refer to the corresponding checking data for associated supply and signal voltages, resistance values, and related connector pin test points.		
Action 1. Switch off the ignition to. 2. Disconnect the pump module (L074) from the vehicle harness. 3. Disconnect the vehicle harness from the EAS-3 ECU (D374). 4. Measure resistance between the DEF pump module (L074) motor signal pin B48 in the EAS-3 ECU (D374) vehicle harness connector and all other pins in		

the EAS-3 ECU (D374) vehicle harness connector.

5. Measure resistance between the DEF pump module (L074) motor power supply pin B46 in the EAS-3 ECU (D374) vehicle harness connector and all other pins in the EAS-3 ECU (D374) vehicle harness connector.

Is the measured value greater than 100k Ω ?

Yes

No

A pin-to-pin short circuit has been detected. Replace the vehicle harness. Refer to step 2A to perform the corresponding repair verification cycles and rechecks.

Go to step 1G

If this DTC is still present, go to step 1G

Step 1G DAVIE test, prime the system with the DEF pump module (L074)



ABORTING A DAVIE-INITIATED DIAGNOSTIC TEST IS NOT RECOMMENDED.

However, if aborting a test is required, a key cycle must be performed to reset the engine ECM.

Failure to reset the engine ECM in this instance could result in personal injury or damage to the vehicle.

Action

1. Use DAVIE to perform a DEF pump module (L074) prime test as described in the maintenance procedure, test DEF dosing valve (Exhaust System(SCR)), job code J 1179 439605 033 000.

Did the test fail to complete or result in a failed state?

Yes

No

Correct any issues found. Replace the DEF pump module (074) if test results indicate a mechanical failure. Refer to step 2A to perform the corresponding repair verification cycles and rechecks.

If all steps have been completed and this DTC is still present, contact PACCAR Engine Support Center for further assistance.

If all steps have been completed and this DTC is still present, contact PACCAR Engine Support Center for further assistance.

Step 2 Repair Verification

Step 2A Repair verification cycles

Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the DTC or system being investigated.



Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to “Clear all” current DTCs from the PCI and EAS-3 ECUs.

Action

1. Start-up

With the brakes set, start the engine and allow it to run at idle for 2 minutes.

Were the identified repair verification cycles able to be completed?

Yes

No

Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.

Go to step 2B

Go to step 2B

Step 2B DAVIE Diagnostics, Quick Check, OBD Readiness Monitors

Action

Use DAVIE Diagnostics to perform a Quick Check for current DTCs to determine whether the actions taken have cleared this DTC.

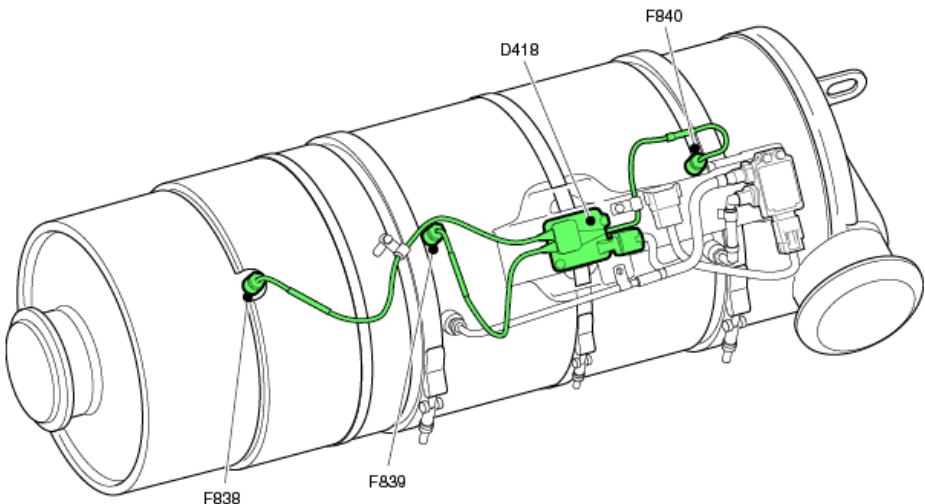
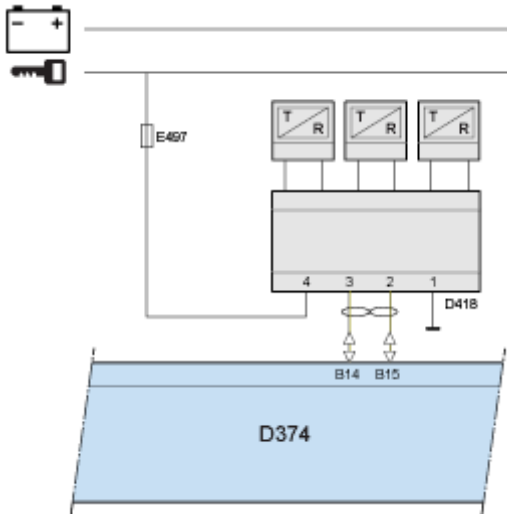
1. Confirm that the corresponding OBD Monitor Readiness State value is displayed as “Ready”.
A status of Ready indicates that the corresponding OBD monitor has run successfully and the problem has been resolved—no further action.
If the displayed status is “Not Ready”, continue to action step 2.
2. View the DTC overview display, and confirm that P3986 has been cleared.

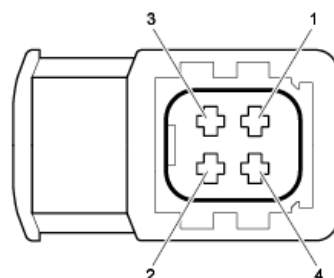
Is the related OBD Monitor Readiness Status set to “Ready.” Or, has P3986 been

	cleared?	
	Yes	No
	Problem resolved. No further actions.	Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present: • continue to operate the truck to extend the run time, allowing the corresponding OBD monitor sufficient time to complete • or, return to step 2A and perform this repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine Support Center for further assistance.
	Back to Index	

P3987

Code number	P3987
Fault code description	Exhaust temperature sensors DPF - Internal error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group - None Freeze frame type -Comprehensive
Description of component(s)	The diagram illustrates the wiring and physical location of three exhaust gas temperature sensors (F838, F839, and F840) connected to a central ECU DOC-DPF temperature sensors (D418) module. Sensor F838 is located before the DOC, F839 is before the DPF, and F840 is after the DPF. Each sensor has a dedicated cable leading to the D418 module. 1 Exhaust gas temperature sensor before DOC (F838) 2 Exhaust gas temperature sensor before DPF (F839) 3 Exhaust gas temperature sensor after DPF (F840) General: Thermocouple sensors. • The temperature sensors are connected to the ECU DOC-DPF temperature sensors (D418). The signal of the temperature sensors is transmitted to the A-CAN, by the ECU DOC-DPF temperature sensors (D418). • The temperature sensors cannot be disconnected or replaced separately from the ECU DOC-DPF temperature sensors (D418). Exhaust gas temperature sensor before DOC (F838) Measure the exhaust gas temperature before the DOC. Effect of the output signal on the system • Calculate the temperature rise over the DOC, in combination with the signal of the exhaust gas temperature sensor before DPF (F839). • determining if a regeneration can be started. • calculation of the amount of fuel that must be injected. • Determining if the heating of the NOx sensor before catalytic converter (F844) is required, in order to reach the operating temperature. Exhaust gas temperature sensor before DPF (F839) Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Calculate the temperature rise over the DOC, in combination with the signal of the exhaust gas temperature sensor before DOC (F838); • determining if a regeneration is started; • Control the regeneration temperature.

	• calculation of the amount of fuel that must be injected; • Diagnose the DOC efficiency. Exhaust gas temperature sensor after DPF (F840) Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: Protect the DPF against a too high temperature.
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	The DOC-DPF temperature sensors ECU (D418) report an internal error for 2 consecutive seconds.
Reset condition of fault code	To validate the repair, start the engine and let it idle for up to 5 minutes.
Electrical diagram(s)	



Wiring harness connector D418 front view

D374 EAS-3 ECU
D418 DOC-DPF temperature sensors ECU
E497 fuse, after treatment CA

D374	D418	Function
B14	3	A-CAN high
B15	2	A-CAN low
	1	Ground
	4	Power supply

Technical data

Component & wiring check, Temperature sensors DOC-DPF ECU (D418)

Preparation

- Disconnect connector D418.
- Ignition switched on.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
4	1	Ubat	
1	Battery negative pole	>0.5V	Switch all consumers on

Component & wiring check, A-CAN

Preparation

- Ignition switched off.
- Disconnect connector D418.
- Measure on connector D418.

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	3	$\pm 60 \Omega$	

Possible causes

- Malfunctioning temperature sensors DOC-DPF ECU (D418).
- Check if the sensor is powered correctly
- Check the wiring harness for short circuits
- Monitor the sensor values with DAVIE.

Additional information

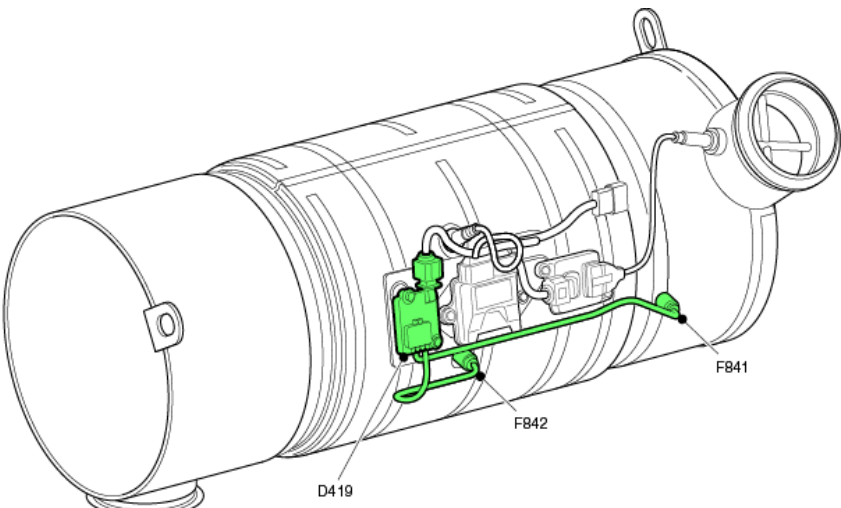
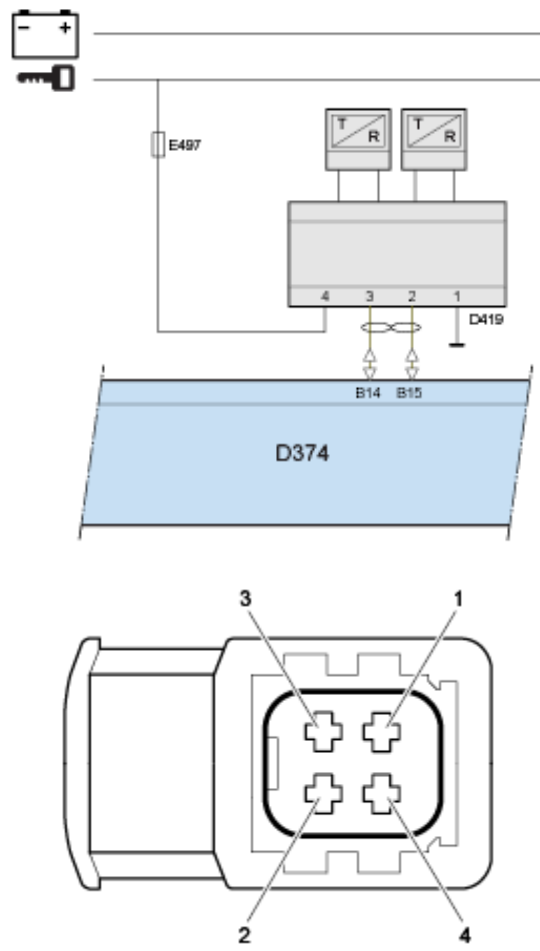
Active DPF regeneration is disabled.

Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pin out locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.						
	<table><tr><td>Step 1</td><td>Step ID 3987a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table>	Step 1	Step ID 3987a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.		
	Step 1	Step ID 3987a	SRT				
	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.						
	<table><tr><td>Step 2</td><td>Step ID 3987b</td><td>SRT</td></tr><tr><td colspan="3">Replace: DPF Temperature Sensor Replace the identified component. NOTE: The DPF Temperature Sensor Module must be replaced as a whole unit; these sensors Cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault is still active, continue to the step 3. </td></tr></table>	Step 2	Step ID 3987b	SRT	Replace: DPF Temperature Sensor Replace the identified component. NOTE: The DPF Temperature Sensor Module must be replaced as a whole unit; these sensors Cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault is still active, continue to the step 3.		
Step 2	Step ID 3987b	SRT					
Replace: DPF Temperature Sensor Replace the identified component. NOTE: The DPF Temperature Sensor Module must be replaced as a whole unit; these sensors Cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, and then this issue has been resolved. • If this related fault is still active, continue to the step 3.							
<table><tr><td>Step 3</td><td>Step ID 3987c</td><td>SRT</td></tr><tr><td colspan="3">Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 3	Step ID 3987c	SRT	Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.			
Step 3	Step ID 3987c	SRT					
Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.							
Verification Drive Cycle	To validate the repair, drive the truck under normal conditions until the coolant temperature minimum of 150°F. This cycle can be conducted with a loaded trailer or bobtail.						

Back to Index

P3988

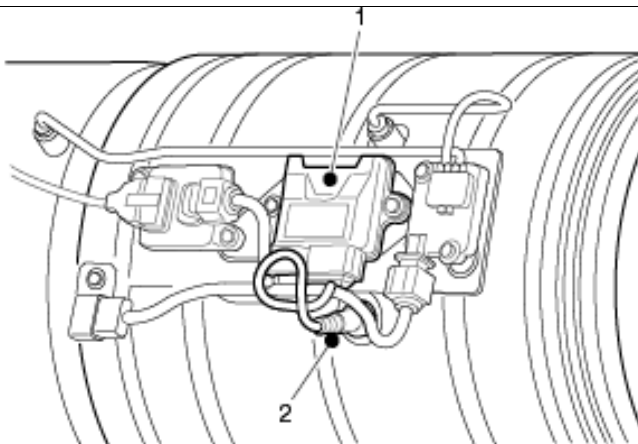
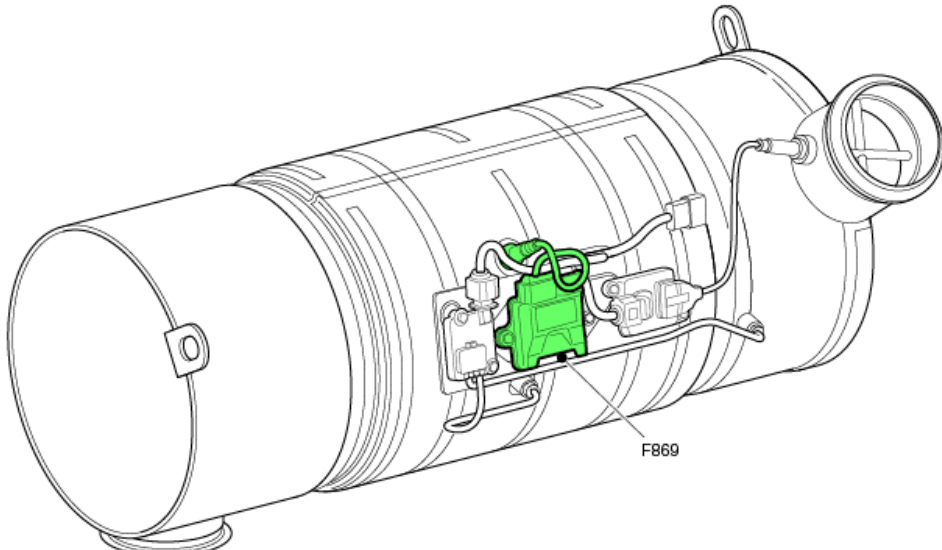
Code number	P3988
Fault code description	Exhaust temperature sensors SCR – Internal error
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	The diagram illustrates the electrical connection between two exhaust temperature sensors, F841 and F842, and the ECU SCR catalyst temperature sensors (D419). Sensor F841 is located upstream of the SCR catalyst, while sensor F842 is located downstream. Both sensors are connected to the D419 module via separate wiring harnesses. The D419 module is shown as a central component with multiple electrical connections. - Sensor, exhaust temperature before SCR catalyst (F841) - Sensor, exhaust temperature after SCR catalyst (F842) General: - Thermocouple sensors; - The temperature sensors are connected to the ECU SCR catalyst temperature sensors (D419). The signal of the temperature sensors is transmitted to the A-CAN by the ECU SCR catalyst temperature sensors (D419). - The temperature sensors cannot be disconnected or replaced separately from the - ECU SCR catalyst temperature sensors (D419). Sensor, exhaust temperature before SCR catalyst (F841) - Measure the exhaust gas temperature before the SCR catalytic converter. Effect of the output signal on the system - Determines whether DEF injection is required - Determines whether the DEF pump can be activated - Determines the start and quantity of DEF dosing - Determine whether a DEF catalytic converter is present - Protects the SCR catalyst from reaching excessive temperatures Sensor, exhaust temperature after SCR catalyst (F842) - Measure the exhaust gas temperature before the SCR catalytic converter. Effect of the output signal on the system - Determine whether an SCR catalytic converter is present - Protects the SCR catalyst from reaching excessive temperatures - Determines the dew point of NOx sensor after catalyst (F843)

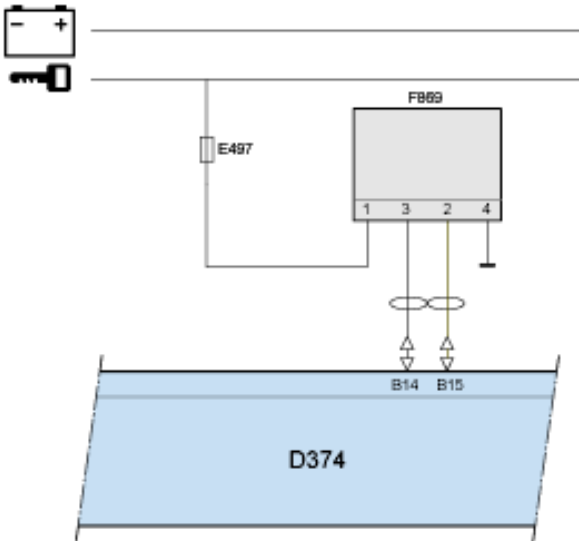
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously.
Set condition of fault code	The SCR catalyst temperature sensor ECU (D419) reports an internal error for 2 consecutive seconds.
Reset condition of fault code	To validate the repair, start the engine and let it idle for up to 5 minutes.
Electrical diagram(s)	 Wiring harness connector D419 front view

	D374 EAS-3 ECU E419 catalytic converter temperature sensors ECU F497 after treatment CAN fuse <table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN high</td></tr><tr><td>B15</td><td>2</td><td>A-CAN low</td></tr><tr><td></td><td>1</td><td>Ground</td></tr><tr><td></td><td>4</td><td>Power supply</td></tr></table>	D374	F869	Function	B14	3	A-CAN high	B15	2	A-CAN low		1	Ground		4	Power supply																	
D374	F869	Function																															
B14	3	A-CAN high																															
B15	2	A-CAN low																															
	1	Ground																															
	4	Power supply																															
Technical data	Component and wiring check, ECU temperature sensors SCR catalyst (D419) Preparation - Disconnect connector D419. - Ignition switched on. - Measure on connector D419. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional Information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td></td></tr><tr><td>1</td><td>Battery</td><td>>0.5V</td><td>switch on all consumers on</td></tr><tr><td></td><td>Negative Pole</td><td></td><td></td></tr></table> Component & wiring check, A-CAN Preparation - Ignition switched off. - Disconnect connector D419. - Measure on connector D419. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional Information</td></tr><tr><td>2</td><td>3</td><td>± 60Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Additional Information	4	1	Ubat		1	Battery	>0.5V	switch on all consumers on		Negative Pole			Pin	Pin			(+ probe)	(- probe)	Value	Additional Information	2	3	± 60Ω	
Pin	Pin																																
(+ probe)	(- probe)	Value	Additional Information																														
4	1	Ubat																															
1	Battery	>0.5V	switch on all consumers on																														
	Negative Pole																																
Pin	Pin																																
(+ probe)	(- probe)	Value	Additional Information																														
2	3	± 60Ω																															
Possible causes	- Malfunctioning SCR catalyst temperature sensors ECU (D419). - Check if the sensor is powered correctly - Check the wiring harness for short circuits - Monitor the sensor values with DAVIE.																																
Additional information	DEF injection is disabled.																																
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.																																

	Step 1	Step ID 3988a	SRT
	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.		
	Step 2	Step ID 3988b	SRT
	Replace the identified SCR temperature module component and use DAVIE to re-check for the presence of active faults. - Fault inactive – issue resolve - Fault active - Proceed to step 3		
	Step 3	Step ID 3988c	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, turn the key to the ON position with the engine off, and allow 10 seconds for the system to initialize and run diagnostics.		
	Back to Index		

P3989

Code number	P3989
Fault code description	NH3 Sensor – Value not changing when expected
Fault code information	trip MIL 1 drive cycle recovery Readiness group – Comprehensive Freeze frame type – Exhaust gas sensors
Description of component(s)	 • Measure the amount of ammonia (NH3) that is leaving the tail pipe. • The NH3 sensor is connected to the A-CAN. • The NH3 sensor (2) can be separated from the NH3 sensor ECU (1). Effect of the output signal on the system: • Adjust the quantity of DEF injected.
Location of component(s)	
Diagnostic condition	Diagnostic runs when engine is running at medium load conditions and the SCR temperature is above 300°C [572°F] while making steady-state transitions to different operating points.
Set condition of fault code	This DTC is set when the EAS-3 ECU (D374) has detected that the NH3 sensor (F869) time response is either static or changes more slowly than expected.

Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected.																					
Electrical diagram(s)	 Wiring harness connector F869 <table><tr><td>D374</td><td>EAS-3 ECU</td></tr><tr><td>E497</td><td>after treatment CAN fuse</td></tr><tr><td>F869</td><td>NH3 sensor</td></tr></table><table><tr><td>D374</td><td>F869</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN high</td></tr><tr><td>B15</td><td>2</td><td>A-CAN low</td></tr><tr><td></td><td>1</td><td>Power supply</td></tr><tr><td></td><td>4</td><td>Ground</td></tr></table>	D374	EAS-3 ECU	E497	after treatment CAN fuse	F869	NH3 sensor	D374	F869	Function	B14	3	A-CAN high	B15	2	A-CAN low		1	Power supply		4	Ground
D374	EAS-3 ECU																					
E497	after treatment CAN fuse																					
F869	NH3 sensor																					
D374	F869	Function																				
B14	3	A-CAN high																				
B15	2	A-CAN low																				
	1	Power supply																				
	4	Ground																				
Technical data	Circuit check, ECU & wiring Conditions - Connector removed from NH3 sensor (F869). - Ignition switched on. - Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin</td><td>Pin</td><td>Value</td><td>Additional Information</td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td></td><td></td></tr><tr><td>1</td><td>4</td><td>Ubat</td><td></td></tr><tr><td>4</td><td>Battery Negative</td><td>>0.5V</td><td>switch on all consumers on</td></tr></table>	Pin	Pin	Value	Additional Information	(+ probe)	(- probe)			1	4	Ubat		4	Battery Negative	>0.5V	switch on all consumers on					
Pin	Pin	Value	Additional Information																			
(+ probe)	(- probe)																					
1	4	Ubat																				
4	Battery Negative	>0.5V	switch on all consumers on																			

	Pole Circuit check, A-CAN Conditions • Ignition switched off. • Connector removed from NH3 sensor (F869). • Measurements must be carried out on the wiring harness connector F869. <table><tr><td>Pin (+ probe)</td><td>Pin (- probe)</td><td>Value</td><td>Additional Information</td></tr><tr><td>2</td><td>3</td><td>± 60Ω</td><td></td></tr></table>	Pin (+ probe)	Pin (- probe)	Value	Additional Information	2	3	± 60Ω					
Pin (+ probe)	Pin (- probe)	Value	Additional Information										
2	3	± 60Ω											
Possible causes	• Exhaust leaks • The NH3 sensor (F869) is incorrectly installed. • Carbon buildup on the tip of the NH3 sensor (F869). • Excessive oil consumption. • Possible engine misfire. • The NH3 sensor (F869) has malfunctioned or is damaged. • Perform DPF regeneration with DAVIE to validate the repair.												
Additional information	No Additional information available												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3989a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3989b</td><td>SRT</td></tr><tr><td colspan="3">Visual Inspection: NH3 sensor tip Remove the NH3 Sensor, and visually inspect for buildup on the sensor tip. Was there evidence of excessive buildup? • No: Continue to the step 3 in the troubleshooting process. • Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. </td></tr></table>	Step 1	Step ID 3989a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3989b	SRT	Visual Inspection: NH3 sensor tip Remove the NH3 Sensor, and visually inspect for buildup on the sensor tip. Was there evidence of excessive buildup? • No: Continue to the step 3 in the troubleshooting process. • Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved.		
Step 1	Step ID 3989a	SRT											
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.													
Step 2	Step ID 3989b	SRT											
Visual Inspection: NH3 sensor tip Remove the NH3 Sensor, and visually inspect for buildup on the sensor tip. Was there evidence of excessive buildup? • No: Continue to the step 3 in the troubleshooting process. • Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved.													

- If this related fault is still active, continue to the step 3

Step 3

Step ID 3989c

SRT

Ancillary Test: EAS DPF-SCR Leak Test

Perform the prescribed testing to determine correct operation of the associated after treatment system.

Does the test fail to complete or result in a failed state?

- No: Continue to the step 4 in the troubleshooting process.
- Yes: Make the appropriate repairs or component replacements.

Use DAVIE to re-check for the presence of active faults.

- If this related fault is no longer active, then this issue has been resolved.
- If this related fault is still active, continue to the step 4

Step 4

Step ID 3989d

SRT

Visual Inspection: decomposition tube

Remove the decomposition tube and check for excessive crystallization deposits.

Was there evidence of excessive crystallization deposits?

- No: Continue to the step 5 in the troubleshooting process.
- Yes: Clean, adjust, repair, or replace affected components for any issues identified.

Use DAVIE to re-check for the presence of active faults.

- If this related fault is no longer active, then this issue has been resolved.
- If this related fault is still active, continue to the step 5

Step 5

Step ID 3989e

SRT

DAVIE Direct Test: DEF Valves, DEF Dosing Module

Use this test to determine if the DEF Dosing Module Valve is stuck in the open or closed position.

Does the test fail to complete or result in a failed state (the dosing volume reported by DAVIE does not match the amount deposited in the bucket)?

- No: Continue to the step 6 in the troubleshooting process.
- Yes: Make the appropriate repairs or component replacements.

Use DAVIE to re-check for the presence of active faults.

- If this related fault is no longer active, then this issue has been resolved.
- If this related fault is still active, continue to the step 6

Step 6

Step ID 3989f

SRT

DAVIE Direct Test: Automated Cylinder Performance

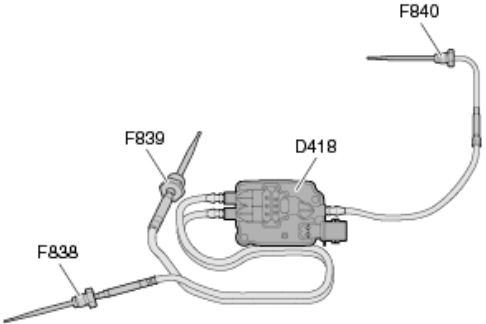
Use this test to determine if a misfire is occurring.

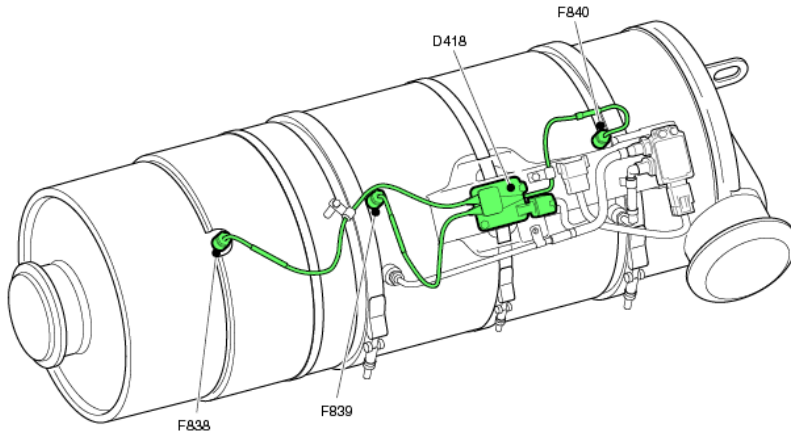
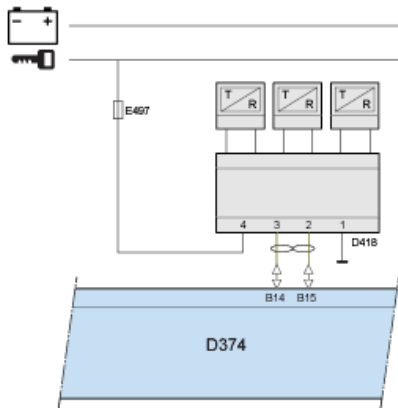
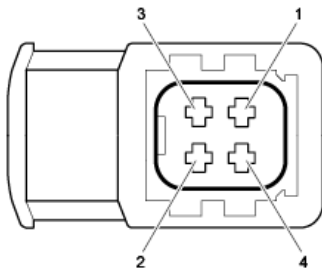
Does the test fail to complete or result in a failed state?

- No: Continue to the step 7 in the troubleshooting process.
- Yes: Replace the injector for the misfiring cylinder.

	Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the step 7 <table border="1"> <tr> <td>Step 7</td><td>Step ID 3989g</td><td>SRT</td></tr> </table> Replace: NH3 sensor Replace the NH3 sensor. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the step 8 <table border="1"> <tr> <td>Step 8</td><td>Step ID 3989h</td><td>SRT</td></tr> </table> For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.	Step 7	Step ID 3989g	SRT	Step 8	Step ID 3989h	SRT	
Step 7	Step ID 3989g	SRT						
Step 8	Step ID 3989h	SRT						
Verification Drive Cycle	To validate the repair, perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.							
		Back to Index						

P3990

Code number	P3990
Fault code description	Exhaust temperature sensors DPF power supply - Interrupted
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 General: • Thermocouple sensors. • The temperature sensors are connected to the ECU DOC-DPF temperature sensors (D418). The signal of the temperature sensor is transmitted to the A-CAN by the ECU DOC-DPF temperature sensors (D418). The temperature sensors cannot be disconnected or replaced separately from the ECU DOC-DPF temperature sensors (D418). Exhaust gas temperature sensor before DOC (F838) Exhaust gas temperature sensor before DPF (F839) Exhaust gas temperature sensor after DPF (F840) Exhaust gas temperature sensor before DOC (F838) • Measure the exhaust gas temperature before the DOC. Effect of the output signal on the system • Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DPF (F839) • Determines if a regeneration can be started • Calculates the amount of fuel that must be injected • Determines if the heating of the NOx sensor before catalytic converter (F844) is required in order to reach the operating temperature Exhaust gas temperature sensor before DPF (F839) • Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: • Calculates the temperature rise over the DOC in combination with the signal of the exhaust gas temperature sensor before DOC (F838) • Determines whether regeneration has started • Controls the regeneration temperature

	- Calculates the amount of fuel that must be injected - Diagnoses the DOC efficiency Exhaust gas temperature sensor after DPF (F840) - Measure the exhaust gas temperature before the DPF. Effect of the output signal on the system: - Protects the DPF against excessively high temperature
Location of component(s)	
Diagnostic condition	This diagnostic runs continuously
Set condition of fault code	Time delay after key on will be greater than or equal to 5 seconds.
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected.
Electrical diagram(s)	  Wiring harness connector D418 front view

	374 EAS-3 ECU 418 DOC-DPF temperature sensors ECU 497 after treatment CAN fuse <table><tr><td>D374</td><td>D418</td><td>Function</td></tr><tr><td>B14</td><td>3</td><td>A-CAN high</td></tr><tr><td>B15</td><td>2</td><td>A-CAN low</td></tr><tr><td></td><td>1</td><td>Ground</td></tr><tr><td></td><td>4</td><td>Power Supply</td></tr></table>	D374	D418	Function	B14	3	A-CAN high	B15	2	A-CAN low		1	Ground		4	Power Supply													
D374	D418	Function																											
B14	3	A-CAN high																											
B15	2	A-CAN low																											
	1	Ground																											
	4	Power Supply																											
Technical data	Component & wiring check, Temperature sensors DOC-DPF ECU (D418) Preparation - Disconnect connector D418. - Ignition switched on. - Measure on connector D418. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Additional information</td></tr><tr><td>4</td><td>1</td><td>Ubat</td><td></td></tr><tr><td>1</td><td>Battery negative pole</td><td>>0.5V</td><td>Switch all consumers on</td></tr></table> Component & wiring check, A-CAN Preparation - Ignition switched off. - Disconnect connector D418 - Measure on connector D418. <table><tr><td>Pin</td><td>Pin</td><td></td><td></td></tr><tr><td>(+ probe)</td><td>(- probe)</td><td>Value</td><td>Condition</td></tr><tr><td>2</td><td>3</td><td>±60 Ω</td><td></td></tr></table>	Pin	Pin			(+ probe)	(- probe)	Value	Additional information	4	1	Ubat		1	Battery negative pole	>0.5V	Switch all consumers on	Pin	Pin			(+ probe)	(- probe)	Value	Condition	2	3	±60 Ω	
Pin	Pin																												
(+ probe)	(- probe)	Value	Additional information																										
4	1	Ubat																											
1	Battery negative pole	>0.5V	Switch all consumers on																										
Pin	Pin																												
(+ probe)	(- probe)	Value	Condition																										
2	3	±60 Ω																											
Possible causes	- Faulty power supply or ground wiring between temperature sensors DOC DPF ECU (D418) and the EAS-3 ECU (D374). - Perform DPF regeneration with DAVIE to validate the repair.																												
Additional information	No additional information available.																												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.																												

	<table><tr><td>Step 1</td><td>Step ID 3990a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table>	Step 1	Step ID 3990a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.		
	Step 1	Step ID 3990a	SRT				
	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.						
	<table><tr><td>Step 2</td><td>Step ID 3990b</td><td>SRT</td></tr><tr><td colspan="3"> Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. • Supply and signal voltages. • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Continue to the next step 3 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 </td></tr></table>	Step 2	Step ID 3990b	SRT	Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. • Supply and signal voltages. • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Continue to the next step 3 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3		
Step 2	Step ID 3990b	SRT					
Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. • Supply and signal voltages. • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • No: Continue to the next step 3 in the troubleshooting process. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3							
<table><tr><td>Step 3</td><td>Step ID 3990c</td><td>SRT</td></tr><tr><td colspan="3"> Replace: DPF Temperature Sensor Replace the identified component. NOTE: The DPF Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 4 </td></tr></table>	Step 3	Step ID 3990c	SRT	Replace: DPF Temperature Sensor Replace the identified component. NOTE: The DPF Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 4			
Step 3	Step ID 3990c	SRT					
Replace: DPF Temperature Sensor Replace the identified component. NOTE: The DPF Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 4							
<table><tr><td>Step 4</td><td>Step ID 3990d</td><td>SRT</td></tr><tr><td colspan="3">For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.</td></tr></table>	Step 4	Step ID 3990d	SRT	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.			
Step 4	Step ID 3990d	SRT					
For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.							
Verification Drive Cycle	To validate the repair, With the brakes set, start the engine and allow it to run at idle for 2 minutes.						
	Back to Index						

P3991

Code number	P3991														
Fault code description	SCR catalyst temperature sensors ECU - Software verification incorrect														
Fault code information	3 drive cycle recovery Readiness group – None Freeze frame type –Comprehensive														
Description of component(s)	No information available														
Location of component(s)	No information available														
Diagnostic condition	This diagnostic runs whenever the engine is running at idle or higher RPM.														
Set condition of fault code	The EAS-3 ECU (D374) detects that the wrong temperature sensors SCR catalyst ECU (D419) is installed.														
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes.														
Electrical diagram(s)	No information available														
Technical data	No information available														
Possible causes	Check the part number														
Additional information	This diagnostic only runs in manufacturing plant.														
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3991a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3991b</td><td>SRT</td></tr><tr><td colspan="3">Replace the SCR temperature sensor module. The SCR Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process. </td></tr></table>			Step 1	Step ID 3991a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3991b	SRT	Replace the SCR temperature sensor module. The SCR Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.		
Step 1	Step ID 3991a	SRT													
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.															
Step 2	Step ID 3991b	SRT													
Replace the SCR temperature sensor module. The SCR Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.															

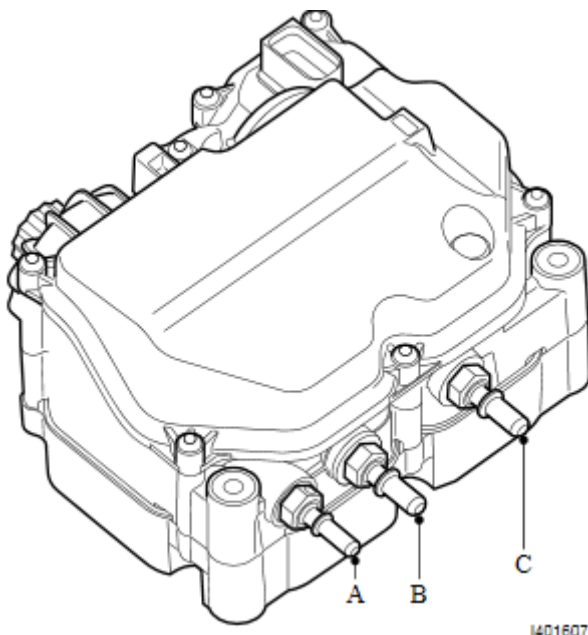
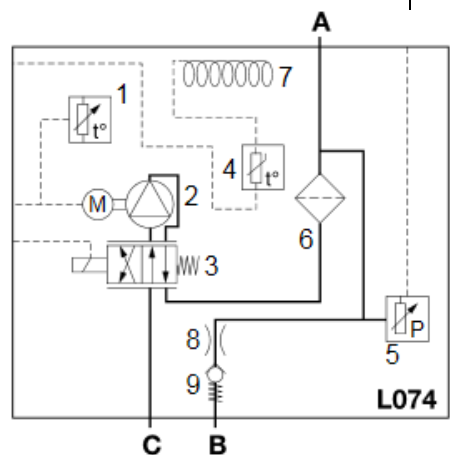
	Step 3	Step ID 3991c	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3992

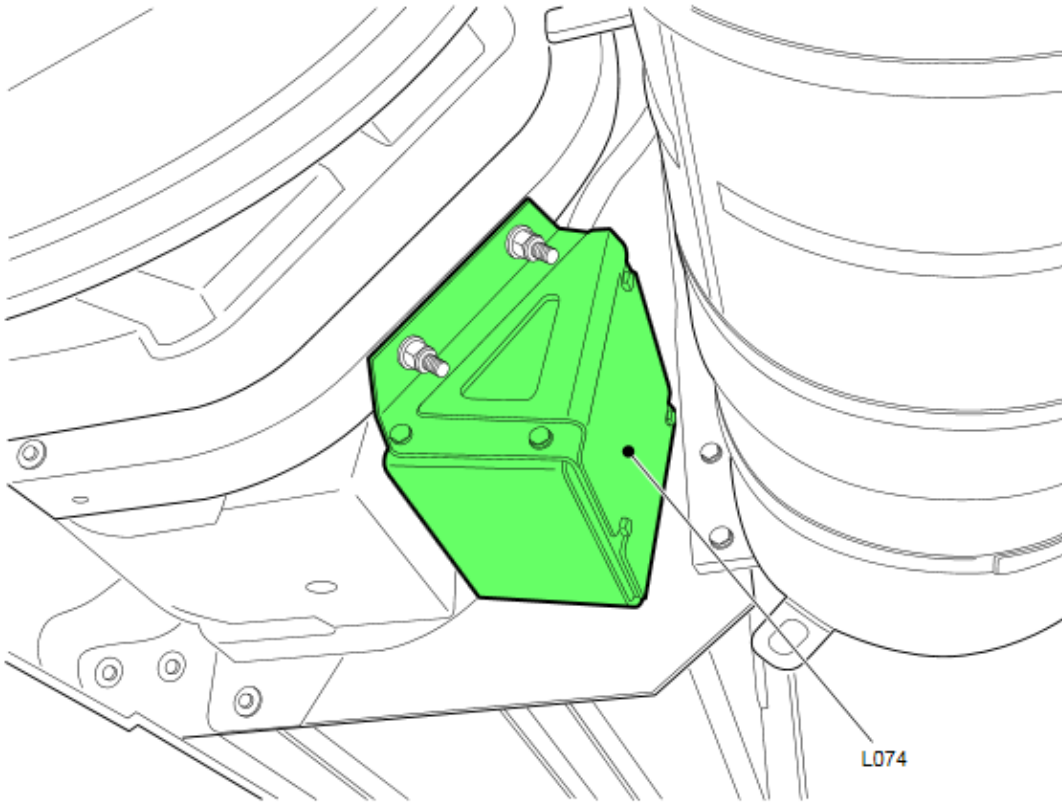
Code number	P3992														
Fault code description	DOC/DPF temperature sensors ECU - Software verification incorrect														
Fault code information	3 drive cycle recovery Readiness group – None Freeze frame type –Comprehensive														
Description of component(s)	No information available														
Location of component(s)	No information available														
Diagnostic condition	This diagnostic runs whenever the engine is running at idle or higher RPM.														
Set condition of fault code	The EAS-3 ECU (D374) detects that the wrong temperature sensors DOC DPF ECU (D418) is installed.														
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes.														
Electrical diagram(s)	No information available														
Technical data	No information available														
Possible causes	Check the part number														
Additional information	This diagnostic only runs in manufacturing plant.														
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section. <table><tr><td>Step 1</td><td>Step ID 3992a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3992b</td><td>SRT</td></tr><tr><td colspan="3">Replace the DPF Temperature Sensor. The DPF Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process. </td></tr></table>			Step 1	Step ID 3992a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3992b	SRT	Replace the DPF Temperature Sensor. The DPF Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.		
Step 1	Step ID 3992a	SRT													
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.															
Step 2	Step ID 3992b	SRT													
Replace the DPF Temperature Sensor. The DPF Temperature Sensor Module must be replaced as a whole unit; these sensors cannot be replaced individually. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step in the troubleshooting process.															

	Step 3	Step ID 3992c	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

P3993

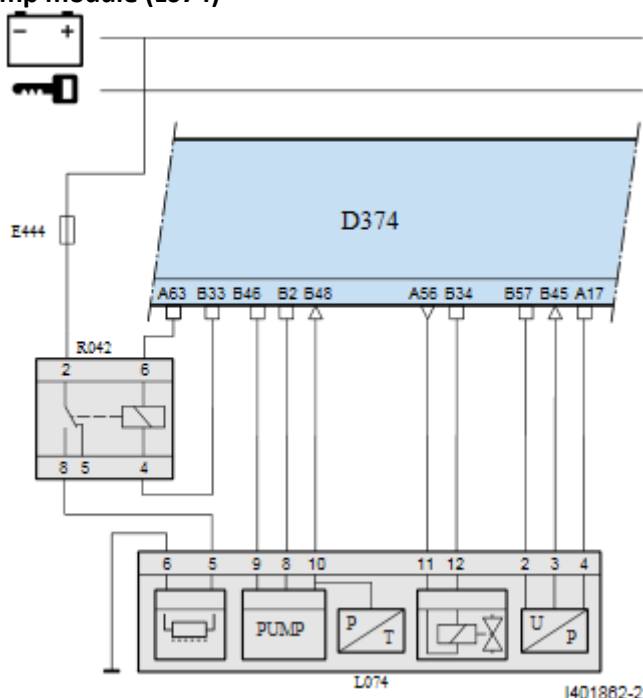
Code number	P3993
Fault code description	Heater element in DEF line - Voltage too high or short circuit to supply on ECU D374 pin A28
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	Pump module (L074) Connection points: • DEF pressure line (A) • DEF return line (B) • DEF inlet line (C)  The following components are mounted inside the pump module: • Temperature sensor (1) • DEF pump motor (2) • Reverting valve (3) • Temperature sensor, heater element (4) • DEF pressure sensor (5) • DEF filter (6) • Heater element, pump module (7) • Orifice (8) • Check valve (9)  Temperature sensor

	• The temperature sensor measures the temperature inside the pump module (L074). • The temperature signal is used to determine whether the pump module must be started or heated. DEF pump motor • The DEF pump is a diaphragm pump that pumps the DEF under pressure to the DEF dosing valve. • The DEF pump is controlled with a duty cycle. • The pump speed depends on the quantity of DEF to be injected. • The DEF pressure does not depend on the quantity of DEF to inject. Reverting valve • This valve is engaged during the purge cycle. • The DEF inside the inlet line and pressure line is pumped back into the DEF tank. Temperature switch, heater element • The temperature sensor measures the temperature of the heater element. • This switch is used to control the heater elements in the pump module and prevent them from overheating. DEF pressure sensor • The pressure sensor measures the pressure of the DEF after the DEF filter. • The measured pressure is used by the ECU to control the DEF pump speed. DEF filter The DEF is filtered before it is pumped to the pump module. Heater element, pump module • The pump module is heated and defrosted by electrical heater elements located inside the pump module. • These heater elements prevent the DEF from freezing during operation of the pump module. • Defrosting of the pump module is closed-loop controlled based on the temperature sensor inside the pump module for temperatures below -4°C. • Heating of the pump module is open-loop controlled based on the ambient temperature sensor with a hysteresis. The heating is switched on below 5°C and is switched off at 10°C. The duty cycle depends on the ambient temperature. Check valve

	The check valve ensures an overpressure of the DEF in the pump module when the pump module is filled with DEF. Orifice • The orifice in the return line assists the pump in maintaining the operating pressure. • The orifice ensures that a constant quantity of DEF flows from the return line to the tank. Backflow of DEF occurs at low injected quantities and when DEF is not injected.
Location of component(s)	 L074 I402235
Diagnostic condition	This diagnostic runs continuously when the ignition is on and the heater element, DEF pressure line (L077) is activated.
Set condition of fault code	A short circuit to ground or open circuit is detected for three consecutive seconds.
Reset condition of fault code	This DTC changes to inactive when the fault is no longer detected.

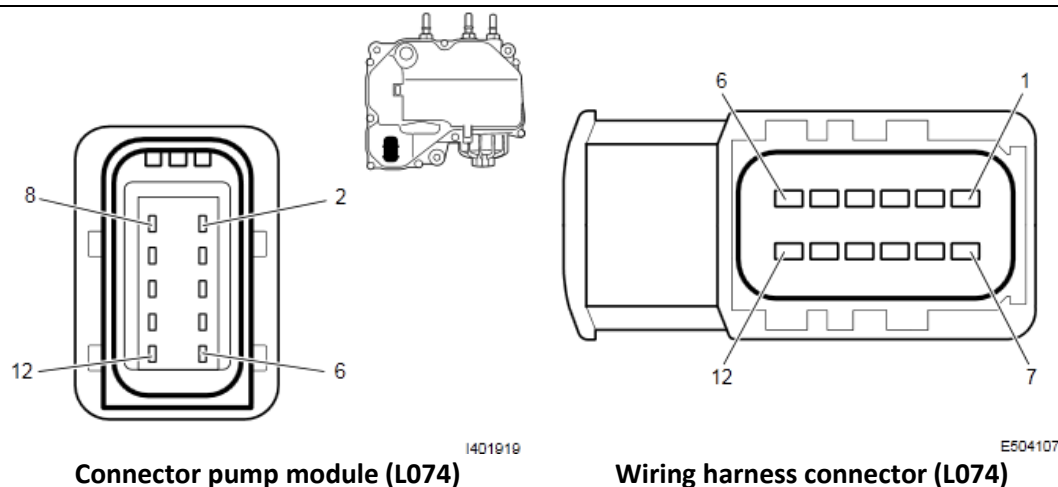
Electrical diagram(s)

Checking data, pump module (L074)



D374 EAS-3 ECU
 E444 Fuse, EAS 2nd
 L074 pump module
 R042 pump heater relay

D374	L074	R042	Function
A17	4		ground, DEF pressure sensor
A56	11		signal, reverting valve
A63		6	ground, relay line heating
B2	8		ground, DEF pump motor
B33		4	signal, relay line heating
B34	12		Ground, reverting valve
B45	3		Signal, DEF pressure sensor
B46	9		Power supply, DEF pump motor
B48	10		Signal, DEF pump motor
B57	2		Power supply, DEF pressure sensor
	6		Ground heater element
	5	8	Power supply, heater element



Technical data

Component and wiring check, DEF pressure sensor

Preparation

- Key on the ignition.
- Disconnect connector L074
- Measure on connector L074

Pin (+ probe)	Pin (- probe)	Value	Additional information
2	4	4.75 - 5.25 V	

Component check, heater element

Preparation

- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
5	6	1.5 Ω $\pm$ 0.5 Ω	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

Component check, reverting valve

Preparation

- Key off the ignition.
- Disconnect connector L074.
- Measure on the pump module (L074).

Pin (+ probe)	Pin (- probe)	Value	Additional information
11	12	6.75 Ω $\pm$	Cold resistance at 23°C $\pm$ 5°C [73°F $\pm$ 9°F]

			2 Ω				
Possible causes	- Malfunctioning heater element, DEF pressure line (L077). - A short circuit to ground or open circuit.						
Additional information	DEF line heating is disabled						
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.						
	 - Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data. - It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.						
	<table><tr><td>Step 1</td><td>Step ID 3993a</td><td>SRT</td></tr></table>				Step 1	Step ID 3993a	SRT
	Step 1	Step ID 3993a	SRT				
Visual Inspection Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Was there evidence of any of the above? No: Continue to the next step 2 in the troubleshooting process. Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, continue to the next step 2 in the troubleshooting process.							
<table><tr><td>Step 2</td><td>Step ID 3993b</td><td>SRT</td></tr></table>				Step 2	Step ID 3993b	SRT	
Step 2	Step ID 3993b	SRT					
Electric Check Ensure that the ignition key/switch has been set to OFF before disconnecting related cables. - Supply and signal voltages. - Cable continuity (no opens or shorts).							

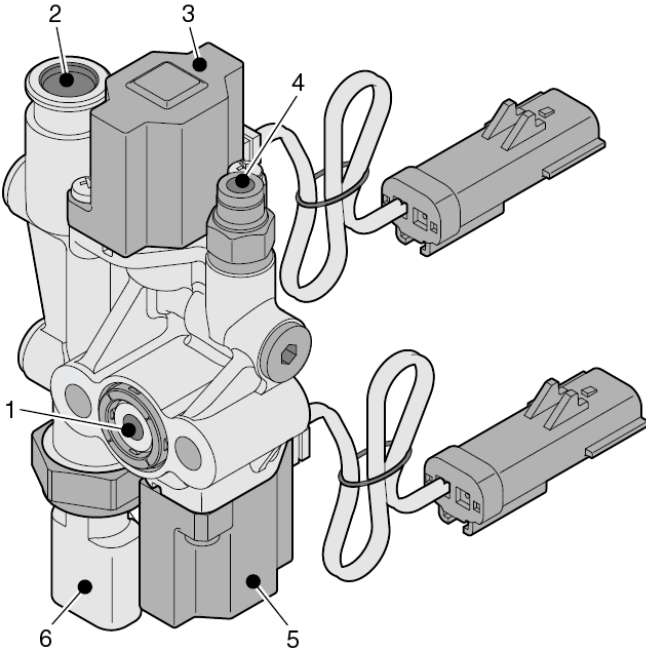
	Are measured electrical values outside of expected range or limits? No: Continue to the next step 3 in the troubleshooting process. Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, continue to the next step 3 in the troubleshooting process.		
	Step 3	Step ID 3993c	SRT
	For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, perform a key cycle, and let the engine idle for 1 minute.		
	Back to Index		

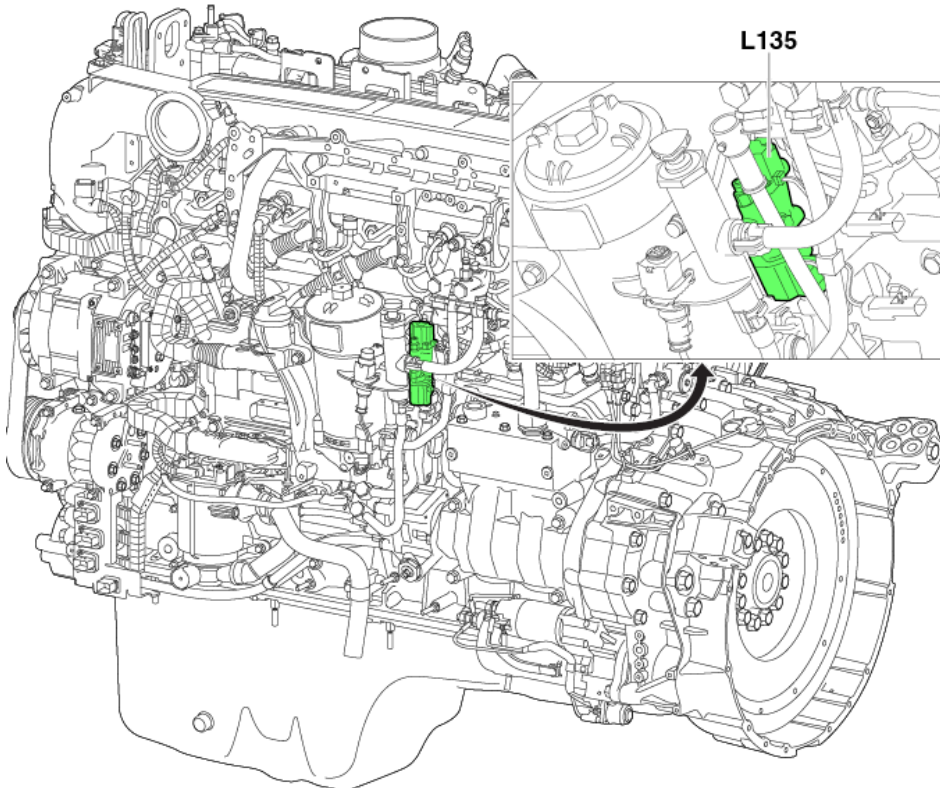
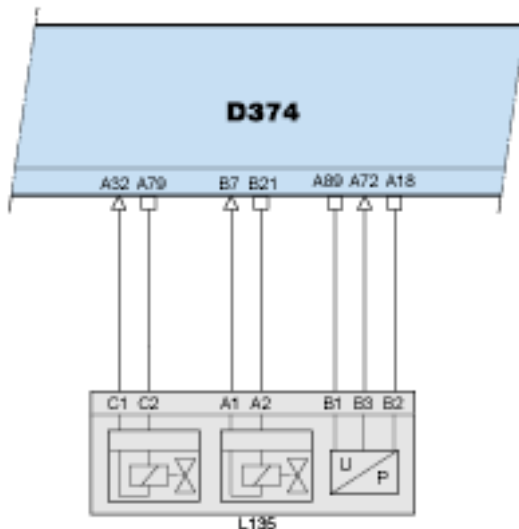
P3994

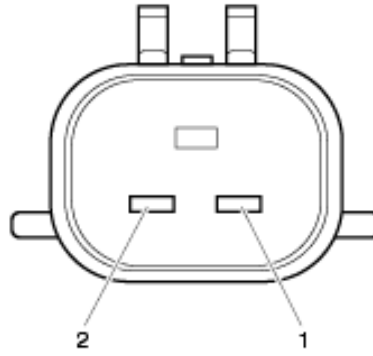
Code number	P3994												
Fault code description	Heater element in DEF line - Voltage too low or short circuit to ground on ECU D374 pin A28												
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive												
Description of component(s)	Information not available												
Location of component(s)	Information not available												
Diagnostic condition	This diagnostic runs continuously when the ignition is on and when the heater element, DEF in line (L079) is activated.												
Set condition of fault code	A short circuit to supply is detected for 3 consecutive seconds.												
Reset condition of fault code	To validate the repair, perform a key cycle, and then perform the DEF doser system heater test using DAVIE.												
Electrical diagram(s)	Information not available												
Technical data	Information not available												
Possible causes	- Malfunctioning heater element, DEF in line (L079). - A short circuit to ground or open circuit.												
Additional information	- DEF line heating is disabled. - Engine torque is reduced.												
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to electrical components  - This troubleshooting tree is based on the assumption that supply power and ground to the PMCI are functioning properly. - Disconnecting the PMCI connectors during the troubleshooting process will result in multiple errors. - For specific electrical component information and pinout locations, always refer to the technical data in Rapido. - It is necessary to exit the 'active errors' screen in DAVIE and run the diagnostic test again to identify changes in errors. - Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive codes. Refer to the 'possible causes' section in Rapido. <table><tr><td>Step 1</td><td>Step ID 3994a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.</td></tr></table> <table><tr><td>Step 2</td><td>Step ID 3994b</td><td>SRT</td></tr><tr><td colspan="3">Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables.</td></tr></table>	Step 1	Step ID 3994a	SRT	Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.			Step 2	Step ID 3994b	SRT	Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables.		
Step 1	Step ID 3994a	SRT											
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Proceed to step 2.													
Step 2	Step ID 3994b	SRT											
Electrical Checks Ensure that the ignition key/switch has been set to OFF before disconnecting related cables.													

	Based on the fault message provided, confirm that the following electrical values are within specified ranges or limits: • Supply and signal voltages (12V). • Cable continuity (no opens or shorts). Are measured electrical values outside of expected range or limits? • Yes - Proceed to step 3 • No - Proceed to step 4		
	Step 3	Step ID 3994c	SRT
	Repairs or component replacements appropriate component and use DAVIE to re-check for the presence of active faults. • Fault inactive – issue resolved • Fault active - Proceed to step 4		
	Step 4	Step ID 3994d	SRT
	Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.		
Verification Drive Cycle	To validate the repair, with the brakes set, start the engine and allow it to run at idle for 2 minutes.		
	Back to Index		

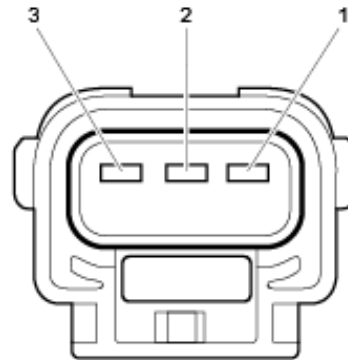
P3995

Code number	P3995
Fault code description	Fuel shutoff valve orifice - Plugged
Fault code information	1 trip MIL 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	 1 Fuel from fuel filter module 2 Fuel-to-fuel dosing module (L124) 3 Air shutoff valve 4 Air supply 5 Fuel shutoff valve 6 Pressure sensor Fuel pressure sensor - Piezoelectric sensor Effect of output signal on the system: - The fuel pressure sensor measures the fuel pressure after the fuel control valve; - value used for calculation of the amount of fuel that must be injected; - Diagnosis of clogged and/or leaking dosing system. Fuel shutoff valve - Solenoid valve Effect of output signal on the system: - The fuel shutoff valve supplies fuel from the fuel filter module to the fuel dosing module (L124). Air shutoff valve - Solenoid valve Effect of output signal on the system:

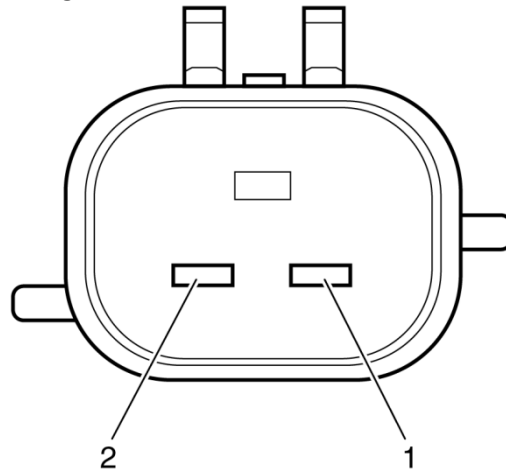
	The air shutoff valve purges the fuel line of air in order to empty the fuel line to the fuel dosing module after the fuel supply has stopped.
Location of component(s)	
Diagnostic condition	This diagnostic runs at the start of DPF regeneration.
Set condition of fault code	The EAS-3 ECU detects that the fuel pressure sensor is reading a value lower than the threshold when the fuel shutoff valve is commanded open.
Reset condition of fault code	To validate the repair, perform the DPF regeneration test in DAVIE. Once the temperatures in the after treatment are high enough to inject diesel fuel into the exhaust, the diagnostic will run.
Electrical diagram(s)	



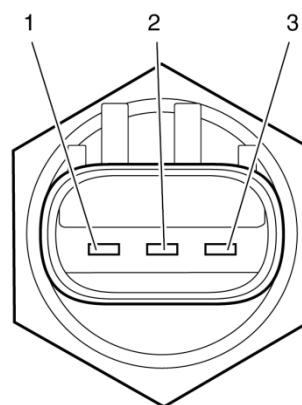
Wiring harness connector L135.A front view



Wiring harness connector L135.B front view



Air shutoff valve connector L135.C front view



Pressure sensor L135.B front view

D374 EAS-3 ECU

L135 Fuel intake module

D374	L135	Function
A17	B3	Ground, fuel pressure sensor
A72	B2	Signal, fuel pressure sensor
A89	B1	Supply voltage, fuel pressure sensor
A32	C1	Signal, air shutoff valve
A79	C2	Ground, air shutoff valve
B7	A1	Signal voltage, fuel shutoff valve
B21	A2	Ground, fuel shutoff valve

Technical data

Component check, fuel shutoff valve

Preparation

- Keyed off the ignition.
- Disconnect connector L135.A.
- Measure on the fuel shutoff valve, connector L135.A.

Pin (+ probe)	Pin (- probe)	Value	Condition
A1	A2	7.6–8.4 Ω	at 20°C

Possible causes

- Internal leakage in the fuel shutoff valve.
- The fuel dosing module (L124) is stuck closed, plugged, or clogged.

Additional information

The fuel shutoff valve is part of the fuel intake module (L135).

Diagnostic Step-by-Step



Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.



- Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors.
- For specific electrical component information and pinout locations, always refer to the technical data.
- It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors.

- Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.

Step 1	Step ID 3995a	SRT
Visually inspect all applicable connectors (bent, broken, corroded or loose pins) and harnesses for corrosion, damage, and rubbing during each step of the diagnostic procedure. Also check for "ECU or ACM connections are damaged or disconnected" and "Signs of fuel leaks around the shut-off valve and doser".		
Was there evidence of any of the above?		
- No: Proceed to step 2. - Yes: Clean, adjust, repair, or replace affected components for any issues identified.		
Use DAVIE to re-check for the presence of active faults.		
- If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, proceed to step 2.		

Step 2	Step ID 3995b	SRT
Visual Inspection of Fuel Shut-off Valve: Remove the fuel shut-off valve and visually inspect for any contamination that could restrict fuel flow. With the valve removed, thoroughly clean the entire valve.		
After cleaning, is there any remaining evidence of damage or contamination?		
- No: Reinstall the Fuel Shut-off Valve, and then use the DAVIE Direct Test: Fuel Dosing System to verify proper dosing. Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, proceed to step 3. - Yes: proceed to step 3.		

Step 3	Step ID 3995c	SRT
Replace the Fuel Shut-off Valve: Replace the identified faulty component, and then use the DAVIE Direct Test: Fuel Dosing System to verify proper dosing.		
Use DAVIE to re-check for the presence of active faults.		
- If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, proceed to step 4		

Step 4	Step ID 3995d	SRT
Perform DAVIE Direct Test of Fuel Dosing System: Run the DAVIE Direct test Fuel Dosing System to verify proper dosing following repair or replacement of the Fuel Shut-off Valve.		

	Does the test fail to complete or result in a failed state? • No: proceed to step 5. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, proceed to step 5.			
	<table><tr><td>Step 5</td><td>Step ID 3995e</td><td>SRT</td></tr></table> Contact the PACCAR Engine Support Call Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Call Center at 1-800-477-0251.	Step 5	Step ID 3995e	SRT
Step 5	Step ID 3995e	SRT		
Verification Drive Cycle	To validate repair, perform the same driving requirements as the Steady State & Cooling cycle. Using DAVIE, select the following Monitor values to record: • Exhaust Temperature Before SCR • Exhaust Temperature After SCR • Pump Module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored Pump Module value will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving has been completed to verify temperatures and dosing.			
	Back to Index			

P3996

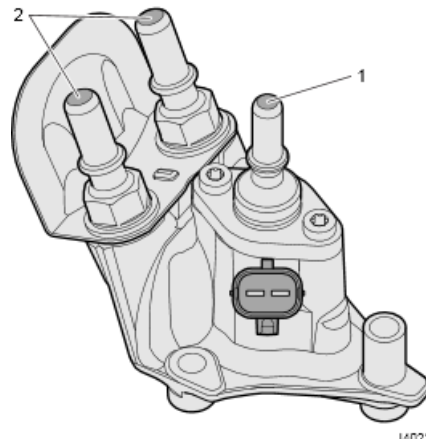
Code number	P3996
Fault code description	DEF - Flow too low
Fault code information	2 trip MIL 3 drive cycle recovery Readiness group – NOx catalyst Freeze frame type –Comprehensive
Description of component(s)	No information available
Location of component(s)	No information available
Diagnostic condition	This diagnostic runs: • When the ignition is on and • Engine is running for more than 60 sec.
Set condition of fault code	This fault set: • DEF Dosing command is ≥ 0.5 ml/sec • $-1\text{ml/sec} < \text{Rate of change of DEF dosing command} < 1$ ml/sec for 1 sec.
Reset condition of fault code	This fault code will change to inactive immediately after the diagnostic runs and passes.
Electrical diagram(s)	No information available
Technical data	No information available
Possible causes	• The DEF tank has been frozen • The DEF supply line has been frozen • The Supply Module has been frozen • DEF Supply Module pump is not enable • The DEF tank requirement for dosing are not satisfied • There are line heater system errors present. • The DEF tank is empty • The DEF Supply Module pressure is not enough to maintain closed loop pressure control. • The DEF Supply Module has not completed priming and is not actively maintaining the target DEF pressure for dosing.
Additional information	DEF into the after treatment system is disabled if the DEF is frozen
Diagnostic Step-by-Step	 Perform the troubleshooting steps below using the breakout harness, if necessary, to check electrical components, such as sensors, electrical control units, and harnesses. Back probing is not recommended, as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components in order to reduce the likelihood of damage to electrical components.  • Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors. • For specific electrical component information and pinout locations, always refer to the technical data. • It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a change in errors. • Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.

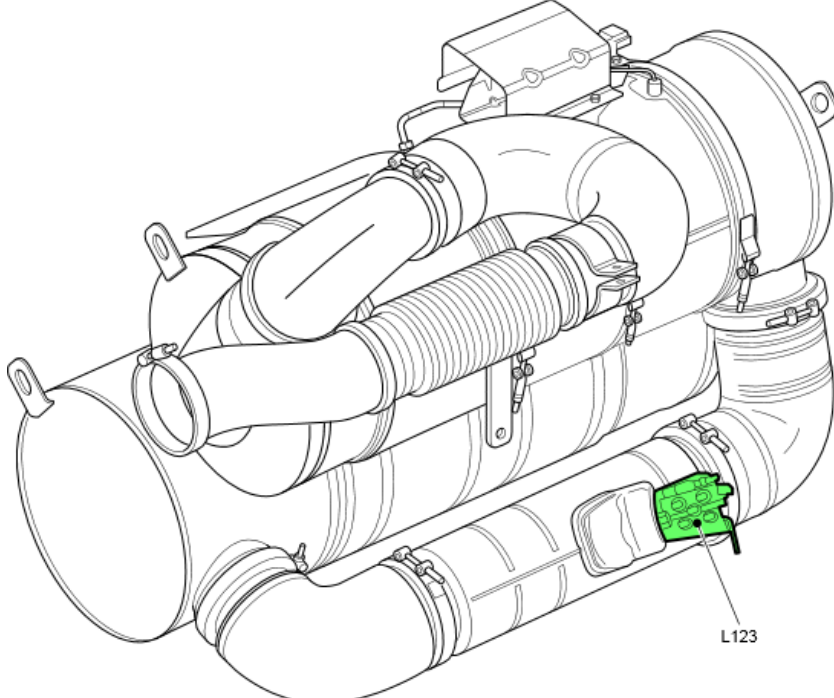
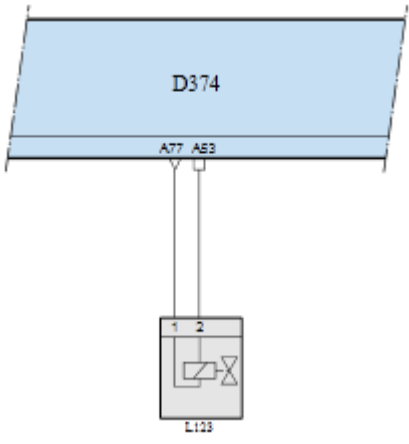
	<table><tr><td>Step 1</td><td>Step ID 3996a</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect the associated component connections and wiring for any of the following: - Damaged or loose connectors - Bent, broken, corroded or loose connector pins - Moisture or dirt in the connections - Check all 3 DEF lines for loose connections, leaks, and are not reversed - Check the dosing unit and Decomposition Tube for any DEF leaks - Check that electrical connections are not disconnected - Check for debris or crystallization build-up in the DEF tank vent tube - Check that the DEF gauge is reading properly and the tank is not empty </td></tr><tr><td colspan="3">Was there evidence of excessive damage or wear? - No: Continue to the next step in the troubleshooting process. - Yes: Clean, adjust, repair, or replace affected components for any issues identified. </td></tr><tr><td colspan="3">Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, proceed to step 2. </td></tr><tr><td colspan="3"></td></tr></table>	Step 1	Step ID 3996a	SRT	Visually inspect the associated component connections and wiring for any of the following: - Damaged or loose connectors - Bent, broken, corroded or loose connector pins - Moisture or dirt in the connections - Check all 3 DEF lines for loose connections, leaks, and are not reversed - Check the dosing unit and Decomposition Tube for any DEF leaks - Check that electrical connections are not disconnected - Check for debris or crystallization build-up in the DEF tank vent tube - Check that the DEF gauge is reading properly and the tank is not empty			Was there evidence of excessive damage or wear? - No: Continue to the next step in the troubleshooting process. - Yes: Clean, adjust, repair, or replace affected components for any issues identified.			Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, proceed to step 2.					
	Step 1	Step ID 3996a	SRT													
	Visually inspect the associated component connections and wiring for any of the following: - Damaged or loose connectors - Bent, broken, corroded or loose connector pins - Moisture or dirt in the connections - Check all 3 DEF lines for loose connections, leaks, and are not reversed - Check the dosing unit and Decomposition Tube for any DEF leaks - Check that electrical connections are not disconnected - Check for debris or crystallization build-up in the DEF tank vent tube - Check that the DEF gauge is reading properly and the tank is not empty															
	Was there evidence of excessive damage or wear? - No: Continue to the next step in the troubleshooting process. - Yes: Clean, adjust, repair, or replace affected components for any issues identified.															
	Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, proceed to step 2.															
<table><tr><td>Step 2</td><td>Step ID 3996b</td><td>SRT</td></tr><tr><td colspan="3">Check for Fault Codes - Turn the key switch ON. - Use DAVIE to check for fault codes related to the after treatment temperature sensors. </td></tr><tr><td colspan="3">Is fault related to “line heater system” active? - Yes – Proceed with the appropriate fault code - No – Proceed to step 3 </td></tr></table>	Step 2	Step ID 3996b	SRT	Check for Fault Codes - Turn the key switch ON. - Use DAVIE to check for fault codes related to the after treatment temperature sensors.			Is fault related to “line heater system” active? - Yes – Proceed with the appropriate fault code - No – Proceed to step 3									
Step 2	Step ID 3996b	SRT														
Check for Fault Codes - Turn the key switch ON. - Use DAVIE to check for fault codes related to the after treatment temperature sensors.																
Is fault related to “line heater system” active? - Yes – Proceed with the appropriate fault code - No – Proceed to step 3																
<table><tr><td>Step 3</td><td>Step ID 3996c</td><td>SRT</td></tr><tr><td colspan="3">Visually inspect DEF lines: Disconnect the DEF supply and return lines at both ends, then use shop air with a nozzle to check for leaks or blockage.</td></tr><tr><td colspan="3">Was there evidence of a leak or blockage? - No: Continue to the next step in the troubleshooting process. - Yes: Clean, adjust, repair, or replace affected components for any issues identified. </td></tr><tr><td colspan="3">Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, proceed to step 3. </td></tr></table>	Step 3	Step ID 3996c	SRT	Visually inspect DEF lines: Disconnect the DEF supply and return lines at both ends, then use shop air with a nozzle to check for leaks or blockage.			Was there evidence of a leak or blockage? - No: Continue to the next step in the troubleshooting process. - Yes: Clean, adjust, repair, or replace affected components for any issues identified.			Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, proceed to step 3.						
Step 3	Step ID 3996c	SRT														
Visually inspect DEF lines: Disconnect the DEF supply and return lines at both ends, then use shop air with a nozzle to check for leaks or blockage.																
Was there evidence of a leak or blockage? - No: Continue to the next step in the troubleshooting process. - Yes: Clean, adjust, repair, or replace affected components for any issues identified.																
Use DAVIE to re-check for the presence of active faults. - If this related fault is no longer active, then this issue has been resolved. - If this related fault is still active, proceed to step 3.																
<table><tr><td>Step 4</td><td>Step ID 3996d</td><td>SRT</td></tr><tr><td colspan="3">DEF Pump Module Prime check: This test will determine if there is an issue with the pump module not allowing proper pressure.</td></tr></table>	Step 4	Step ID 3996d	SRT	DEF Pump Module Prime check: This test will determine if there is an issue with the pump module not allowing proper pressure.												
Step 4	Step ID 3996d	SRT														
DEF Pump Module Prime check: This test will determine if there is an issue with the pump module not allowing proper pressure.																

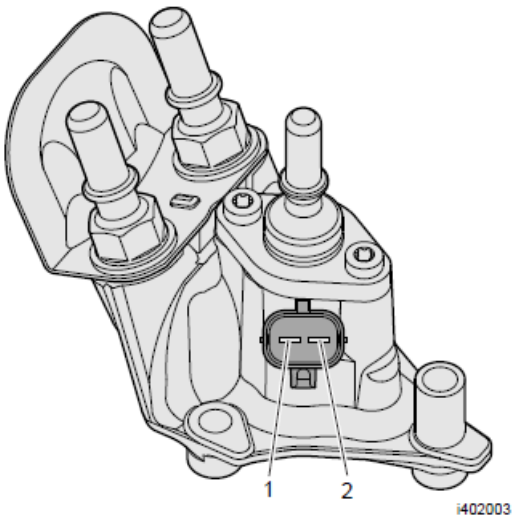
	• The DEF tank has been defrosted • The DEF supply line has been defrosted • The Supply Module has been defrosted • DEF Supply Module pump is defrosted Run the prescribed DAVIE Direct test to determine correct ability of the DEF pump to build and maintain prime. When the test is completed shut the truck off for a minimum of 90 seconds to allow the system to purge. Does the test fail to complete or result in a failed state (leaks or loss of pressure)? • No: Proceed to step 5. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, proceed to step 5			
	<table><tr><td>Step 5</td><td>Step ID 3996e</td><td>SRT</td></tr></table> DEF Pump Module Override test: This test will determine if any component of the pump is not working correctly. Remove the dosing nozzle and place it over a bucket with a capacity greater than 1.5 liters. After more than 30 seconds of engine idle, run the DEF Pump Module Override test to check for proper DEF flow. Does the test fail to complete or result in a failed state (the dosing volume reported by DAVIE does not match the amount deposited in the bucket)? • No: proceed to step 6. • Yes: Make the appropriate repairs or component replacements. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active proceed to step 6.	Step 5	Step ID 3996e	SRT
Step 5	Step ID 3996e	SRT		
	<table><tr><td>Step 6</td><td>Step ID 3996f</td><td>SRT</td></tr></table> Visual inspection of DEF Tank: Inspect the DEF tank for any signs of contaminates or blockage on the sending unit. Was there evidence of any contaminates or blockage on the sending unit? • No: proceed to step 7. • Yes: Clean, adjust, repair, or replace affected components for any issues identified. Use DAVIE to re-check for the presence of active faults. • If this related fault is no longer active, then this issue has been resolved. • If this related fault is still active, proceed to step 7.	Step 6	Step ID 3996f	SRT
Step 6	Step ID 3996f	SRT		
	<table><tr><td>Step 7</td><td>Step ID 3996g</td><td>SRT</td></tr></table> For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the Engine Support Call Center at 1-800-477-0251.	Step 7	Step ID 3996g	SRT
Step 7	Step ID 3996g	SRT		
Verification Drive Cycle	To validate the repair:			

	• This test can take up to 45 minutes to 1 hour to complete. • Start the truck and using cruise control, bump and set the idle to 1,500 rpm. • Connect DAVIE, and go to DPF Regeneration test. Follow the prompts to complete a Stationary Regeneration.
	Back to Index

P3997

Code number	P3997
Fault code description	DEF quality - Incorrect
Fault code information	1 trip Check Engine lamp 3 drive cycle recovery Readiness group – None Freeze frame type – Comprehensive
Description of component(s)	DEF dosing valve (L123) The DEF dosing valve doses DEF into the exhaust system before the SCR catalyst. • The DEF valve is actuated by a PWM signal. • The longer the solenoid is activated, the more DEF is injected. • The dosing valve is connected to the engine cooling system to limit the temperature.  1402241
Location of component(s)	DEF dosing valve (L123)

	 I402133						
Diagnostic condition	• This diagnostic must meet specific engine and aftertreatment conditions to run and complete. • A refill of the DEF tank must have been detected.						
Set condition of fault code	The EAS-3 ECU (D374) has detected that the NOx conversion efficiency of the SCR catalyst is critically low.						
Reset condition of fault code	This DTC changes to inactive as soon as the diagnostic runs and passes.						
Electrical diagram(s)	 I401860-2 L123 DEF dosing valve <table><tr><th>D374</th><th>L123</th><th>Function</th></tr><tr><td></td><td></td><td></td></tr></table>	D374	L123	Function			
D374	L123	Function					

	A77	1	Signal, DEF dosing valve								
	A53	2	Ground, DEF dosing valve								
 DEF dosing valve (L123)											
 Handle connectors and pins with care and use matching measuring probes.											
Technical data	Component check, DEF dosing valve (L123) Preparation • Switch off the ignition. • Remove connector L123. • Measure on the DEF dosing valve L123. <table border="1"> <thead> <tr> <th>Pin (+ probe)</th><th>Pin (- probe)</th><th>Value</th><th>Additional information</th></tr> </thead> <tbody> <tr> <td>1</td><td>2</td><td>11–13 Ω</td><td>At 20° C</td></tr> </tbody> </table>			Pin (+ probe)	Pin (- probe)	Value	Additional information	1	2	11–13 Ω	At 20° C
Pin (+ probe)	Pin (- probe)	Value	Additional information								
1	2	11–13 Ω	At 20° C								
Possible causes	• Malfunctioning DEF dosing system. • Exhaust system leaks. • Malfunctioning SCR catalyst.										

	• Malfunctioning EGR system. • Degraded, diluted, or incorrect DEF. • DEF deposits in decomposition tube. • Malfunctioning NOx sensor before catalyst (F844). • Malfunctioning NOx sensor after catalyst (F843). • Malfunctioning NH3 sensor (F869).
Additional information	 This DTC can be set as a result of multiple related DTCs. Troubleshoot all other active NOx sensor, EGR, and DEF dosing system-related DTCs before diagnosing this fault. • If SCR efficiency fault P3818 was active prior to the DEF tank refill, P3997 does not set. • By comparing the NOx sensor after catalyst (F843) with the NOx sensor before catalyst (F844), the EAS-3 ECU (D374) is able to determine the conversion efficiency of the SCR catalyst and dosing system. • After 1 hour of engine operation or 50 miles with P3997 active, P1518 becomes active (25% torque derate). • After 3 hours of engine operation or 150 miles with P3997 active, P1518 stays active (40% torque derate). • After 3 hours of engine operation or 150 miles with P3997 active, P151A becomes active (5 MPH vehicle speed limit) after a: ○ key cycle, or ○ vehicle re-fuel (fuel tank volume increase > 16%), or ○ vehicle has been stationary for 1 hour.
Diagnostic Step-by-Step	 The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to the components.  ▪ This troubleshooting procedure is based on the assumption that supply power and ground to the PCI are functioning properly. ▪ Disconnecting the PCI connectors during the troubleshooting process will result in multiple errors. ▪ Specific electrical component information and pin out locations are provided in this procedure as a reference only. Always refer to the technical data sections in Rapido for the most up-to-date changes. ▪ It is necessary to use DAVIE to clear all current DTCs from the PCI and EAS-3 ECUs, and then run the Quick Check to identify a change in fault status. ▪ This DTC can be set as a result of multiple failure modes. For proper fault isolation, complete all troubleshooting steps in the sequence provided.

Step 1 Investigate Related DTCs

Before troubleshooting this DTC, take notice of any other active or inactive DTCs. One or multiple other DTCs could have been the cause for this DTC.

Step 1A Investigate related DTCs

Action

1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs.

Are these or any other related DTCs active?

- Any EGR related DTCs
- Any NOx sensor before catalyst related DTCs
- Any NOx sensor after catalyst related DTCs
- Any NH3 sensor related DTCs
- Any DEF pump module related DTCs

Yes

No

Refer to the troubleshooting information for these DTCs before continuing with this procedure.

Go to step 2A

Step 2 DEF Dosing System Checks

Step 2A Visual inspection, connections and wiring, DEF Dosing

Action

1. Visually inspect the associated component connections and wiring for any of the following:
 - Damaged or loose connectors
 - Bent, broken, corroded or loose connector pins
 - Moisture or dirt in the connections
 - Damage to the wire harness or insulation
 - The SCR is not installed correctly or is incorrect for the truck's application
 - The EAS-3 ECU connections are damaged or disconnected

Was there evidence of any of the above?

Yes

No

Correct any issues found.

	Refer to step 3A to perform the corresponding repair verification cycles and rechecks.	
	If this DTC is still present, go to step 2B	Go to step 2B
	Step 2B Visual inspection, DEF tank	
	Action	
	1. Inspect the DEF tank for any of the following: • Debris or other signs of contamination • The DEF tank and related components are not installed correctly	
	Was there evidence of any of the above?	
	Yes	No
	Correct any issues found. Drain, clean, dry, and refill the DEF tank if it was found to be contaminated. Refer to step 3A to perform the corresponding repair verification cycles and rechecks.	
	If this DTC is still present, go to step 2C	Go to step 2C
	Step 2C Special test, DEF quality	
	Action	
	1. Use a diesel exhaust fluid refractometer to test the DEF quality according to the maintenance procedure, " <u>check DEF</u> " (job code J 0000 269100 010 000). Expected results: The measured DEF quality should be 32.5% +/- 0.7% (31.8% to 33.2%)	
	Was the measured DEF quality outside of the expected range?	
	Yes	No
	Drain and refill the DEF tank with a fresh supply Refer to step 3A to perform the corresponding repair verification cycles and rechecks.	

If this DTC is still present, go to step 2D

Go to step 2D

Step 2D DAVIE test, DEF pump module pressure and DEF output



ABORTING A DAVIE-INITIATED DIAGNOSTIC TEST IS NOT RECOMMENDED.

However, if aborting a test is required, a key cycle must be performed to reset the engine ECM.

Failure to reset the engine ECM in this instance could result in personal injury or damage to the vehicle.

Action

1. Use DAVIE to perform the prescribed test; DEF pump module pressure and DEF output (DEF pump module override).

Does this test fail to complete or result in a failed state?

Yes

No

Correct any issues found, or replace the DEF pump module if the test indicates a performance issue.
Refer to step 3A to perform the corresponding repair verification cycles and rechecks.

If this DTC is still present, go to step 2E

Go to step 2E

Step 2E Investigate related DTCs



P1517 can occur with P3997, but P1517 can only clear with three drive cycles.

Action

1. Use DAVIE Diagnostics to perform a Quick Check for current DTCs.

Are these or any other related DTCs active?

P1517

Yes

No

Refer to step 3A to perform the corresponding repair verification cycles

Use DAVIE Diagnostics to clear the DTC.
If the inactive DTC cannot be cleared,

	and rechecks. The verification cycles must be completed 3 times to deactivate P1517.	contact the PACCAR Engine Support Center for further assistance.
	If all steps have been completed and P3997 or P1517 are still present, contact the PACCAR Engine Support Center for further assistance.	If all steps have been completed and this DTC is still present, contact the PACCAR Engine Support Center for further assistance.
	Step 3 Repair Verification Step 3A Repair verification cycles Perform these repair verification cycles following any corrective actions taken, to enable related OBD monitors to reach a readiness state associated with the DTC or system being investigated.  Before beginning these repair verification cycles, use the DAVIE Diagnostics, Quick Check function to clear all current DTCs from the PCI and EAS-3 ECUs. Action 1. System Initiation Drive the truck under normal conditions until the coolant temperature reaches a minimum of 150°F. This cycle can be conducted with a loaded trailer or bobtail. 2. Steady State This cycle is best performed on a level grade road (least amount of incline possible) and under load using a trailer. If a loaded trailer is unavailable, produce engine load by turning the A/C and fan to ON. With the System Initiation cycle complete, proceed to a road with a minimum speed limit of 50 mph, then get to the highest gear possible with the engine speed between 1100-1500 rpm, and set the cruise control. Run this cycle for roughly 3 to 5 miles or in three separate 1-mile increments if a steady 3 to 5 miles is unachievable. 3. DEF Doser & SCR Perform the same procedure outlined for the Steady State cycle. Using DAVIE, select the following Monitor values to record: • Exhaust temperature before SCR • Exhaust temperature after SCR • Pump module Once the SCR temperatures have reached a minimum of 536°F (280°C), continue the remainder of this cycle with the high idle. The monitored pump module valve will indicate when dosing starts. Allow dosing to occur for a minimum of 15 minutes. Check the recorded values after the driving	

	has been completed to verify temperatures and dosing.	
	Were the identified repair verification cycles able to be completed?	
	Yes	No
		Investigate and correct any issues preventing these repair verification cycles from being completed, then re-run. For additional assistance, contact the PACCAR Engine Support Center.
	Go to step 3B	
Step 3B DAVIE Diagnostics, Quick Check, OBD Readiness Monitors		
Action Use DAVIE Diagnostics to perform a Quick Check for current DTCs to determine whether the actions taken have cleared this DTC. - Confirm that the corresponding OBD Monitor Readiness Status value is displayed as "Ready." A status of Ready indicates that the corresponding OBD monitor has run successfully and the problem has been resolved—no further action. If the displayed status is "Not ready," continue to action step 2. - View the DTC overview display, and confirm that P3997 has been cleared.		
Is the related OBD Monitor Readiness Status set to "Ready." Or, has P3997 been cleared?		
Yes		No
Problem resolved. No further actions.		Continue with the next step in this troubleshooting procedure. If all steps have been completed and this DTC is still present: - continue to operate the truck to extend the run time, allowing the corresponding OBD monitor sufficient time to complete - or, return to step 3A and perform this repair verification again. If this issue is still present after extending or re-running the repair verification, contact the PACCAR Engine Support

	<table border="1"> <tr> <td></td><td>Center for further assistance.</td></tr> </table>  Contacting the PACCAR Engine Support Center For further assistance in diagnosing this issue or for confirmation prior to the replacement of suspect components, contact the PACCAR Engine Support Center.		Center for further assistance.
	Center for further assistance.		
	Back to Index		