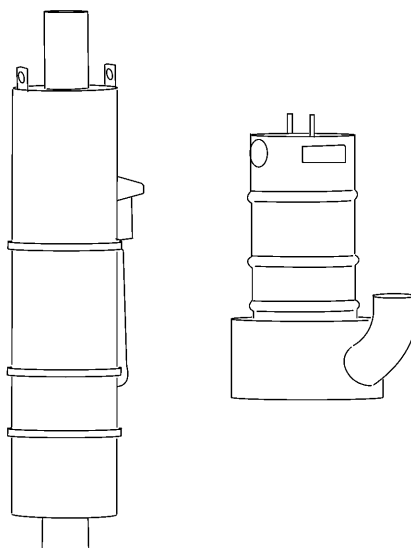


Date	Group	No.	Page
1.2007	254	34	1(23)

Diesel Particulate Filter System
Maintenance
D16F

Diesel Particulate Filter System, Maintenance



W2005786

This information covers the maintenance of the Diesel Particulate Filter (DPF) on a vehicle equipped with a Volvo D16F engine.

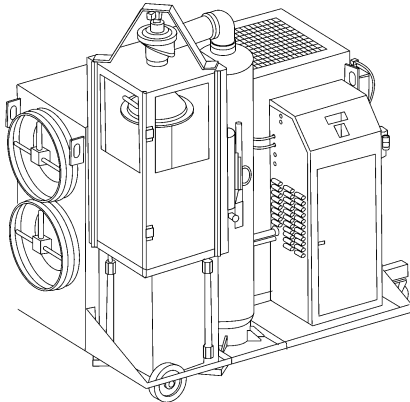
Contents

- "Special Tools" page 2.
- "Particulate Filter, Clean" page 3.

Note: Information is subject to change without notice.
Illustrations are used for reference only, and may differ slightly from the actual vehicle being serviced. However, key components addressed in this information are represented as accurately as possible.

Special Tools

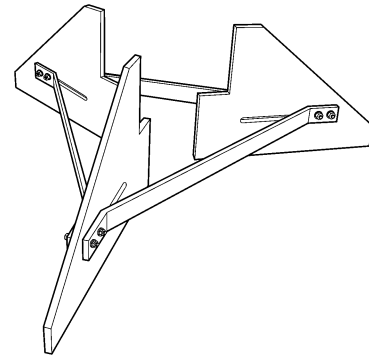
For special tools ordering instructions, refer to Tools Information, group 08.



W0002405

J48112

Diesel Particulate Filter Cleaner



W0002398

85111327

DPF Support Stand

2545-11-02-03

Particulate Filter, Clean

You must read and understand the precautions and guidelines in Service Information, group 20, "General Safety Practices, Engine" before performing this procedure. If you are not properly trained and certified in this procedure, ask your supervisor for training before you perform it.

Filter Maintenance

The ceramic Diesel Particulate Filter (DPF) must be removed from the muffler canister and cleaned to remove the accumulation of particulate matter (PM) which is mostly soot and ash deposits. Special equipment is required to properly clean all the particulate matter from the small surfaces of the ceramic DPF. If the filter is not clean, it will become clogged and increase exhaust back pressure. As back pressure increases, engine power and economy decline as does the ability of the system to remove undesirable emissions.

Volvo uses two different designs for the DPF systems. These include the following:

- Compact
- Vertical Back of Cab

Compact DPF

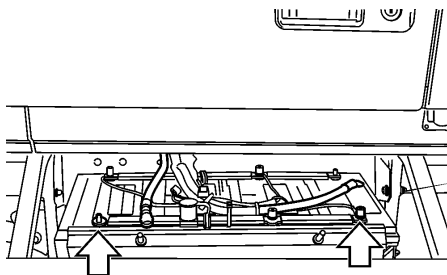
DPF Filter Removal

1

Apply the parking brake and place the shift lever in neutral.

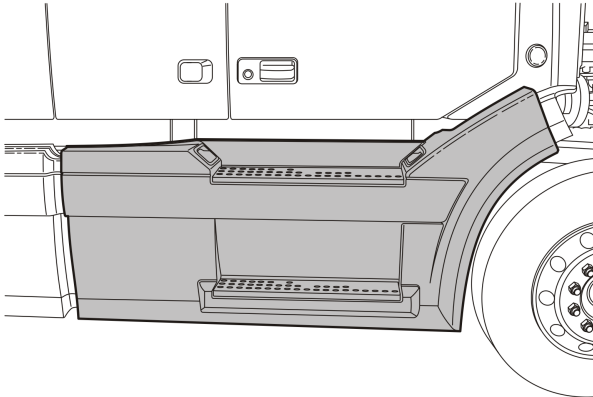
2

Remove all cables from ground (negative) battery terminals to prevent personal injury from electrical shock.



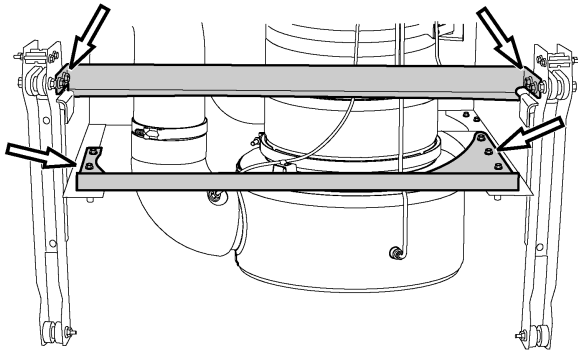
W2003815

- 3**
Remove the right side chassis fairing, if equipped.



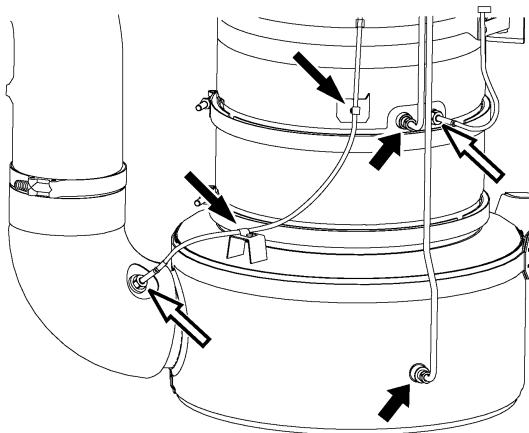
W2005915

- 4**
Remove the bolts and nuts securing braces and/or steps located between the angle wing brackets and remove.



W2005956

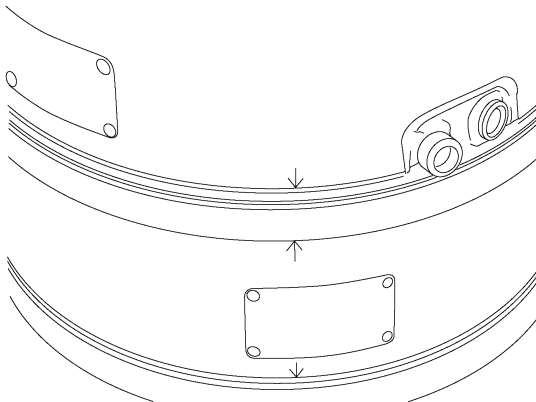
- 5**
Remove outlet and mid-temperature sensors and P-clamps used to secure temperature sensor harnesses. Also, remove both pressure differential sensor tubes.



W2006027

6

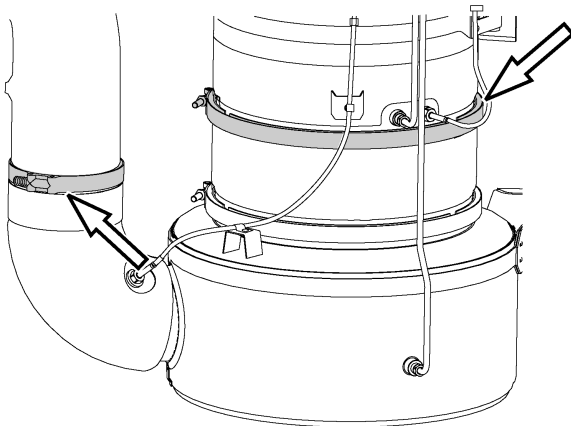
Using a marker, make alignment marks on each of the module sections, above and below each band clamp.



W2005818

7

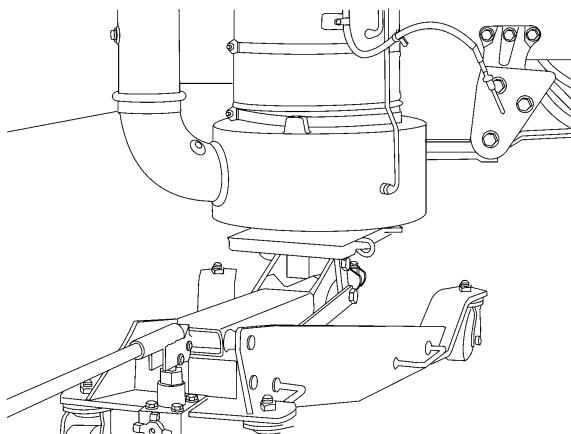
Remove the lower exhaust V-band clamp that connects the DPF outlet module to the exhaust pipe. Also, remove the V-band clamp that connects the catalyst module to the filter module.



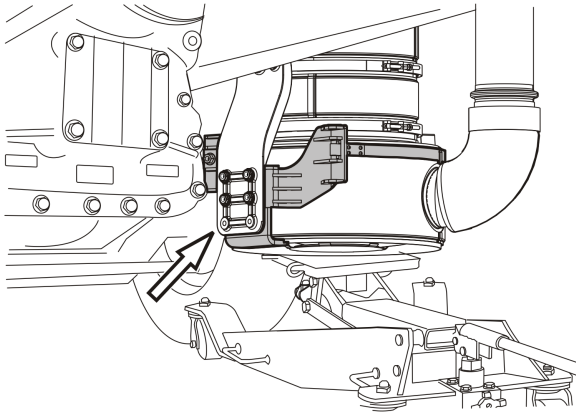
W2006026

8

Position a flat surface jack with a very stable support (such as a transmission jack) under the base of the DPF.



W2005912



W2005908

9

Remove the fasteners which secure the DPF lower supporting bracket to the chassis frame bracket. This will release the weight of the DPF lower portion onto the transmission jack.

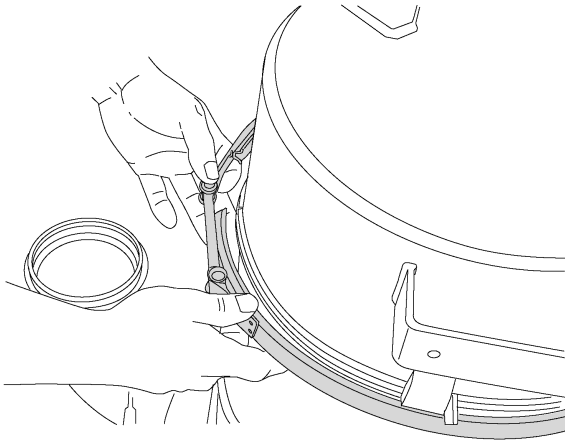
Note: Removing the lower bracket will release the weight. Ensure the transmission jack is properly positioned and level.

10

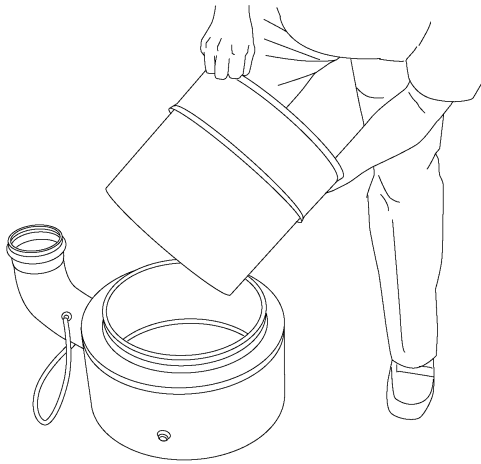
Lower and roll the transmission jack out from the right side of the chassis to remove the lower portion of DPF.

11

Loosen the nut securing the large V-band clamp between the exhaust outlet module and the filter module.



W2005798



W2005810

12

Lift to remove the diesel particulate filter module from the outlet module. Remove and discard the high temperature gasket.



CAUTION

The following precautions should be considered before handling the Diesel Particulate Filter (DPF) muffler components:

- A. Wear suitable eye protection.
- B. Wear suitable overalls or apron and heavy-duty gloves to avoid skin contact.
- C. Wear suitable respirator to avoid inhalation.
- D. Ensure adequate ventilation.

13

Prepare the DPF filter to be air pressure cleaned in special cleaning equipment such as J48112 (Diesel Particulate Filter Cleaner) or equivalent. Follow the cleaning equipment manufacturer's instructions on how to best clean the filter.

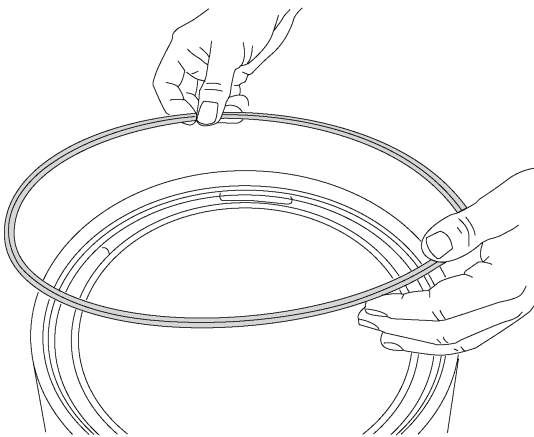
14

Inspect the two band clamps for galled threads, cracks or heat-damaged areas. Replace any clamp found to contain any irregularity.

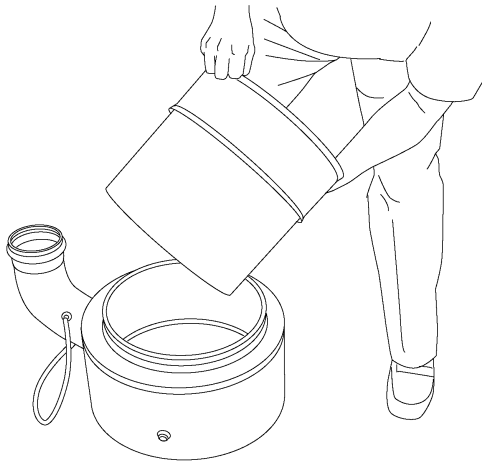
DPF Filter Installation

1

Before installation, clean all gasket sealing surfaces of the filter, catalyst and outlet modules. Place a new high temperature gasket on the clean outlet module sealing surface.



W2005800



W2005810

2

Align the marks made at disassembly and carefully lower the filter module (with new gasket) into the outlet module opening.

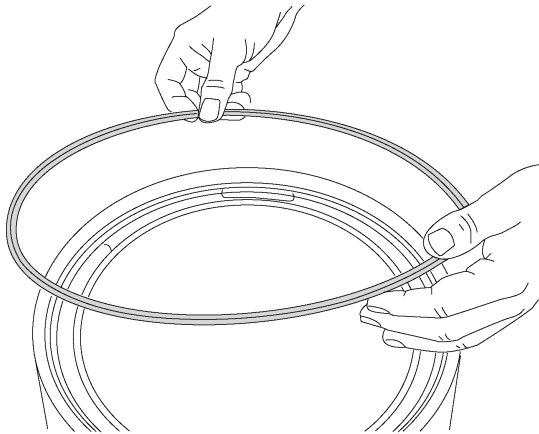
Note: Make sure the high temperature gasket remains in place and has not become dislodged.

3

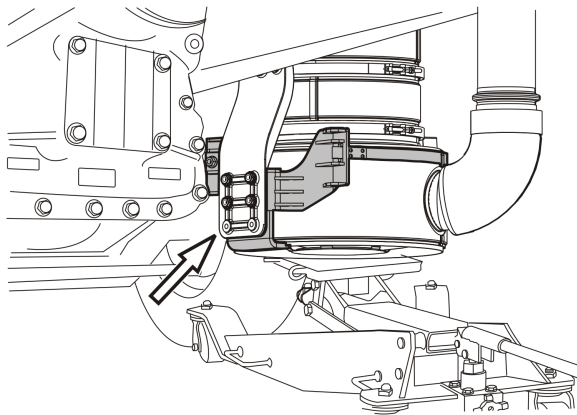
Install the large V-band clamp over the filter module and position the clamp to allow the tightening nut to align with the exhaust outlet port. Allow the V-band clamp to remain loose at this time.

4

Place a new high temperature gasket on top of the filter module.



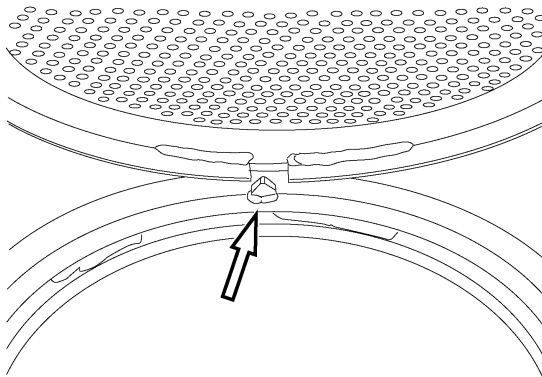
W2005800



W2005908

5

Using the transmission jack, lift the lower section of the DPF muffler into position next to the chassis frame bracket.



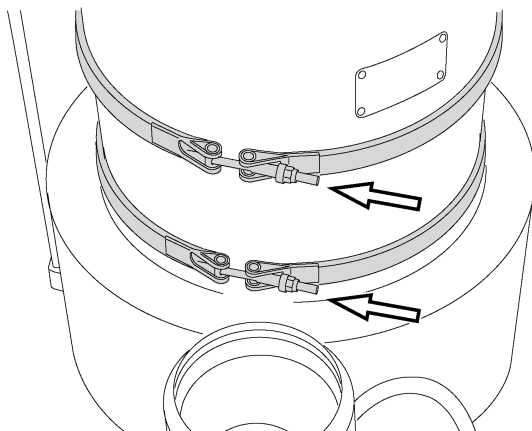
W2005801

6

Perform the following steps to align and lift the filter and outlet module assembly into position:

- Align the outlet module flange to the exhaust pipe.
- Align the locator tab at the top of the filter module with the slot located in the bottom of the catalyst module.
- Start all fasteners that connect the lower supporting bracket to the chassis frame bracket.

Note: Make sure the high temperature gasket remains in place and has not become dislodged.

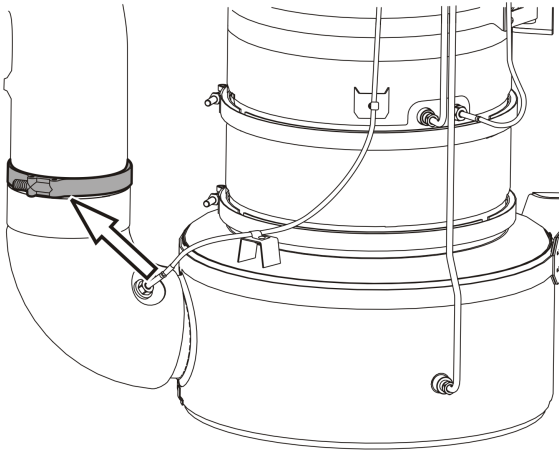


W2005797

7

Install the large V-band clamp onto the catalyst module and secure the catalyst module to the filter module. Position the clamp to allow the tightening nut to align with the exhaust outlet port. Both clamps should now align. Torque-tighten the clamp fastener to 20 Nm (177 in-lb).

20 Nm
(177 in-lb)



W2005911

8

Install the lower exhaust V-band clamp that connects the outlet module to the exhaust pipe. Torque-tighten the clamp fastener to 7 ± 2 Nm (62 ± 18 in-lb).

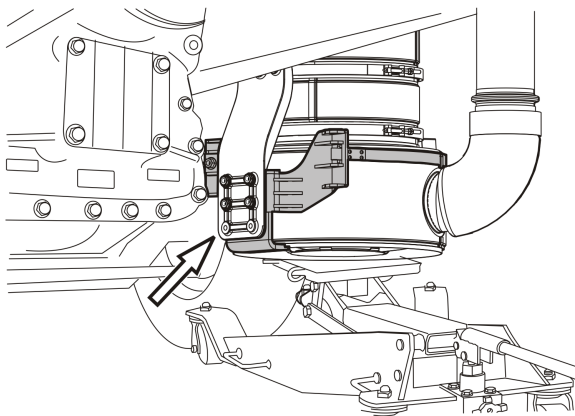
Note: Inspect clamps for galled threads or deformed clamping surfaces. Replace clamps as required.

7 ± 2 Nm
(62 ± 18 in-lb)

9

Secure the DPF bracket to the chassis frame bracket. Torque-tighten the fasteners to 48 ± 8 Nm (35 ± 6 ft-lb). Remove the transmission jack.

48 ± 8 Nm
(35 ± 6 ft-lb)

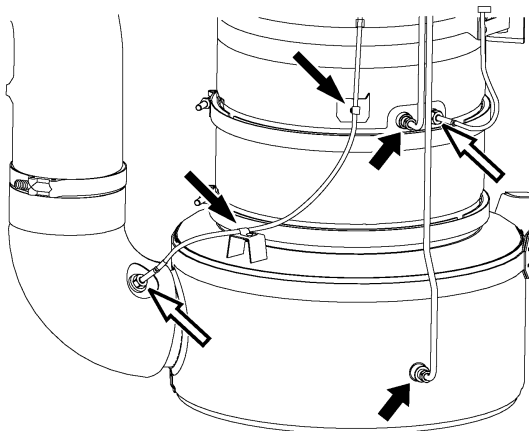


W2005908

10

Install outlet and mid-temperature sensors and P-clamps used to secure temperature sensor harnesses. Also, install both pressure differential sensor tubes. Torque-tighten to specifications.

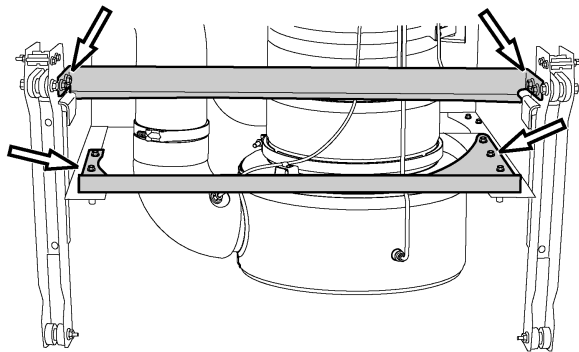
Note: A high temperature anti-seizing compound should always be applied to the threads of sensors, plugs or fittings in the exhaust system to avoid component seizure or corrosion.



W2006027

11

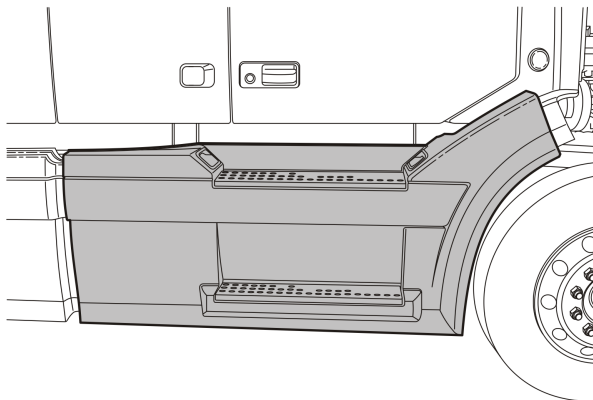
Position the connector braces and/or steps located between the angle wing brackets and secure using bolts and nuts. Torque-tighten to specification.



W2005956

12

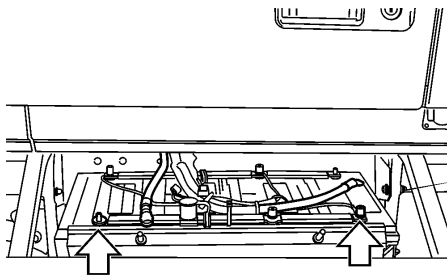
Reinstall the right side chassis fairing, if equipped.



W2005915

13

Install all previously removed cables to the ground (negative) battery terminals.



W2003815

14

Start the engine, check for leaks and proper operation. Fault codes may need to be cleared at this time.

Vertical Back of Cab

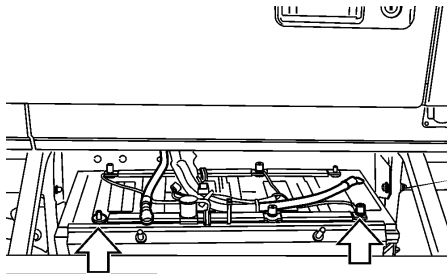
DPF Filter Removal

1

Apply the parking brake and place the shift lever in neutral.

2

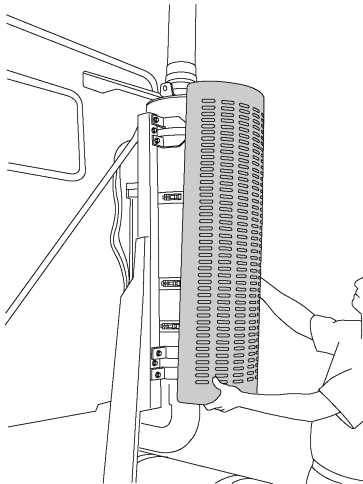
Remove all cables from ground (negative) battery terminals to prevent personal injury from electrical shock.



W2003815

3

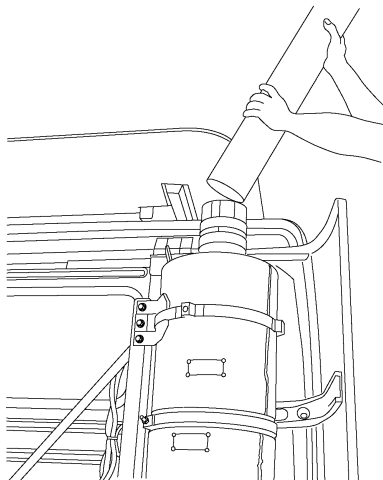
Remove the heat shield from the Diesel Particulate Filter (DPF) muffler.



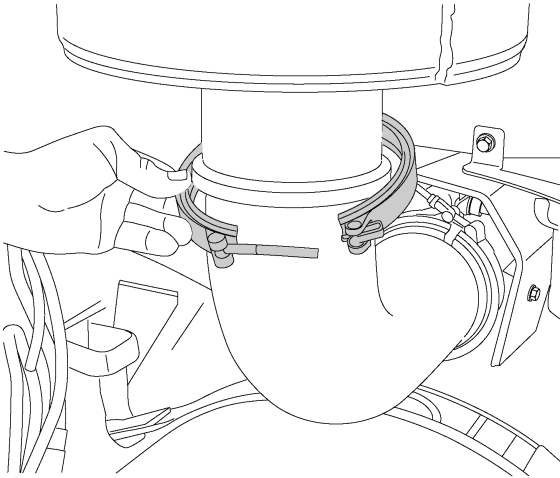
W2005986

4

Loosen the clamps and remove the exhaust stack from the DPF muffler outlet.



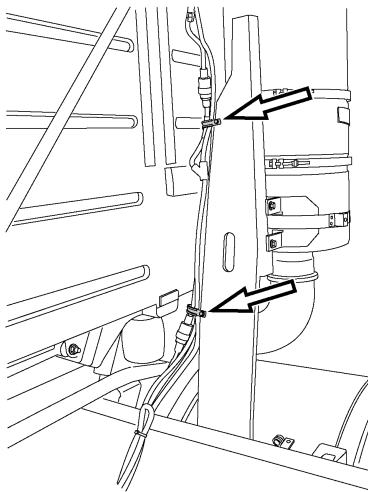
W2005987



W2005988

5

Remove the lower exhaust V-band clamp at the exhaust elbow.



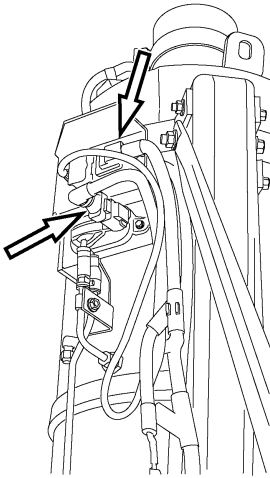
W2005989

6

Remove the P-clamp fasteners that secure the DPF muffler harness to the muffler stanchion and release the harness from the stanchion.

7

Cut all tie straps securing the DPF muffler harness.



W2005990

8

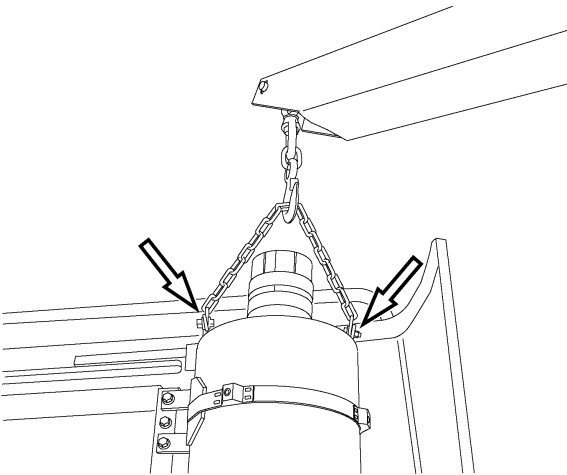
Disconnect the harness connectors from the pressure differential and NO_x sensors.

9

Disconnect the harness connectors from all temperature sensors on the DPF muffler.

10

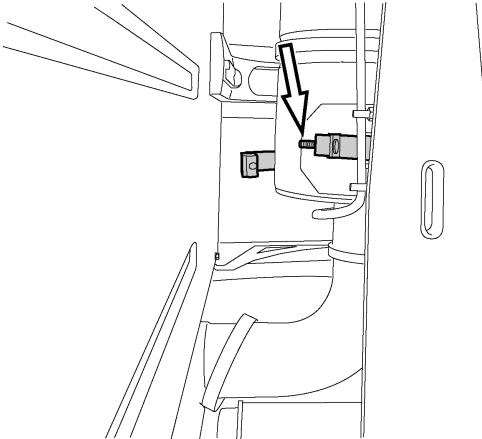
Support the weight of the DPF muffler using a mobile floor crane such as OTC 16-1815 or equivalent crane capable of safely lifting the muffler. Position the crane and attach a chain using bolts, nuts and washers to the lifting eyes of the muffler.



W2005991

11

Remove the lower support band clamp from the DPF muffler.

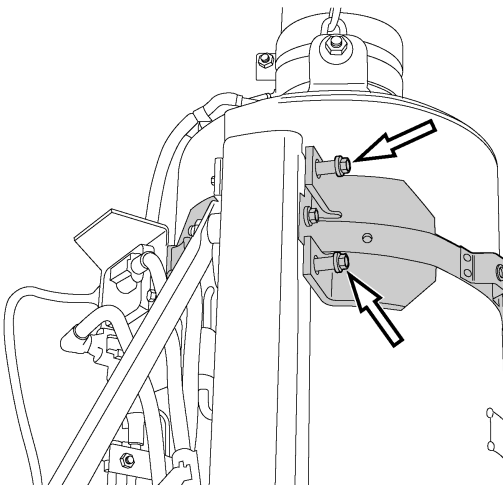


W2005992

12

Remove the upper band clamp mounting bolts and remove the mounting bracket from the stanchion.

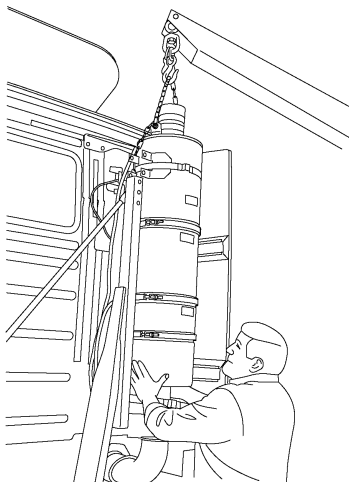
Note: Removing the upper band clamp mounting bracket will release the weight of the DPF. Ensure the floor crane and chain are properly positioned.



W2005993

13

With assistance, lift and remove the DPF muffler assembly from the truck

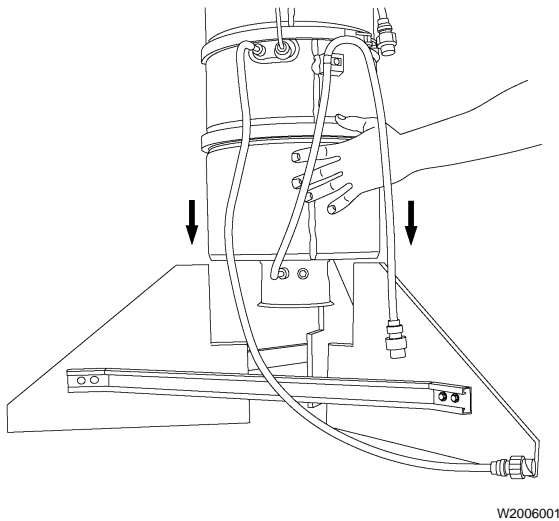


W2006002

14

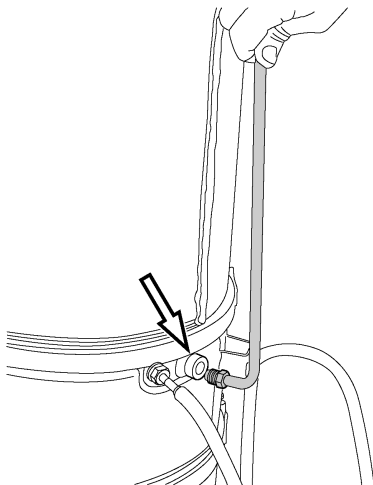
With assistance, place the muffler assembly in muffler support stand 85111327.

85111327



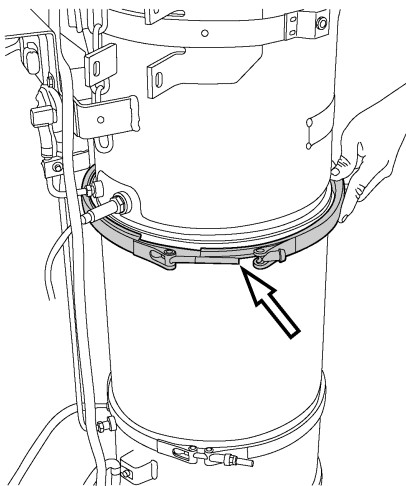
15

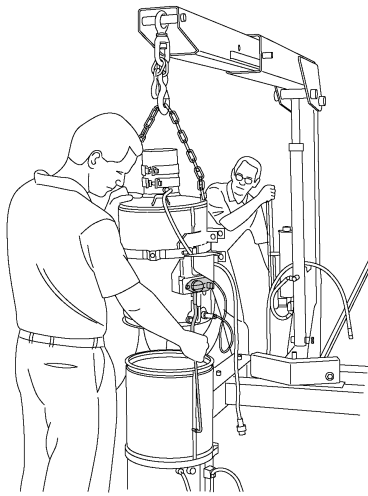
Remove the pressure differential tube from the catalyst.



16

Remove the V-band clamp securing the outlet module to the filter module.

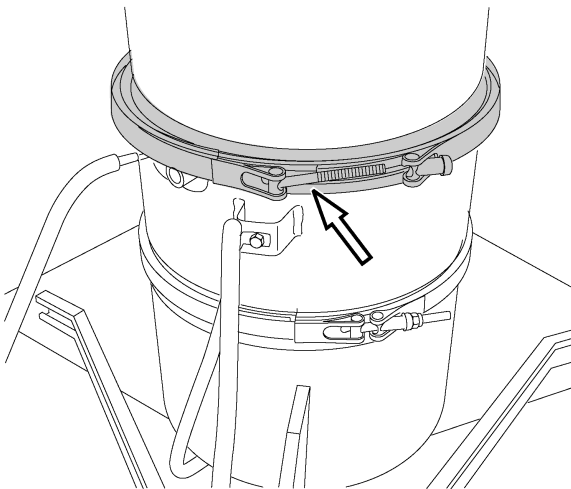




W2006000

17

With assistance, use a mobile floor crane to remove the outlet module from the DPF filter.



W2005998

18

Remove the V-band clamp securing the filter module to the catalyst module.

19

Remove the DPF filter module from the catalyst module.



CAUTION

The following precautions should be considered before handling the Diesel Particulate Filter (DPF) muffler components:

- A. Wear suitable eye protection.
- B. Wear suitable overalls or apron and heavy-duty gloves to avoid skin contact.
- C. Wear suitable respirator to avoid inhalation.
- D. Ensure adequate ventilation.

20

Prepare the DPF filter to be air pressure cleaned in special cleaning equipment such as J48112 (Diesel Particulate Filter Cleaner) or equivalent. Follow the cleaning equipment manufacturer's instructions on how to best clean the filter.

21

Inspect the two band clamps for galled threads, cracks or heat-damaged areas. Replace any clamp found to contain any irregularity.

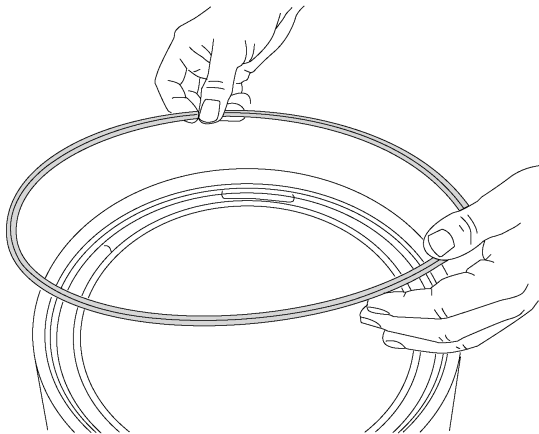
DPF Filter Installation

1

Before installation, clean all gasket surfaces of the filter, catalyst and outlet modules.

2

Install a new gasket onto the top of the catalyst module.

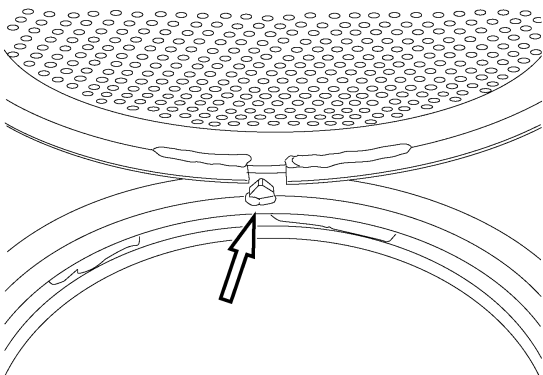


W2005800

3

Align the locator tab located on the bottom of the filter module with the slot located in the top of the catalyst module. Install the DPF filter onto the catalyst and secure the two modules together using a V-band clamp tightened securely.

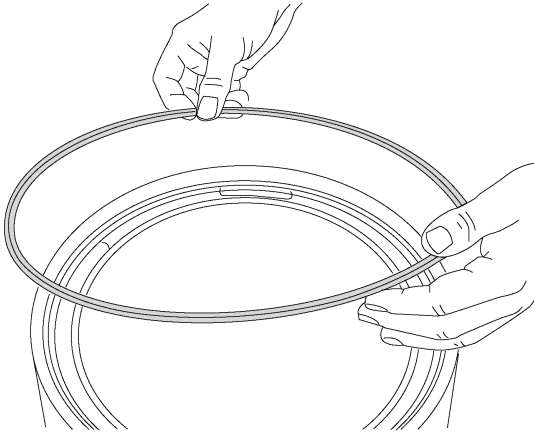
Note: Make sure the high temperature gasket remains in place and has not become dislodged.



W2005801

4

Install a new gasket onto the top of the filter module.

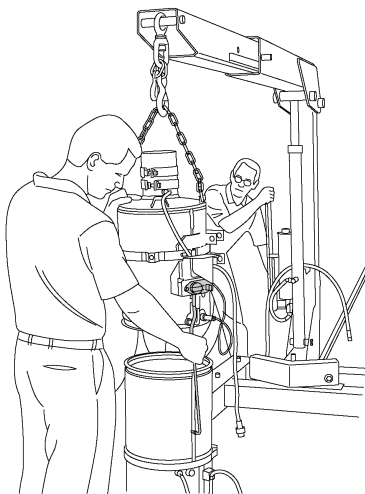


W2005800

5

With assistance, use a mobile floor crane to install the outlet module onto the DPF filter. Ensure that the differential pressure tube does not become damaged during outlet module installation.

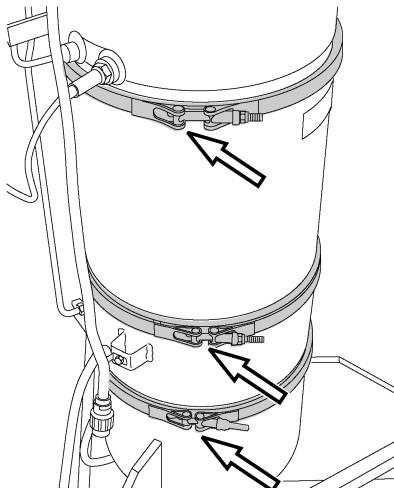
Note: Make sure the high temperature gasket remains in place and has not become dislodged.



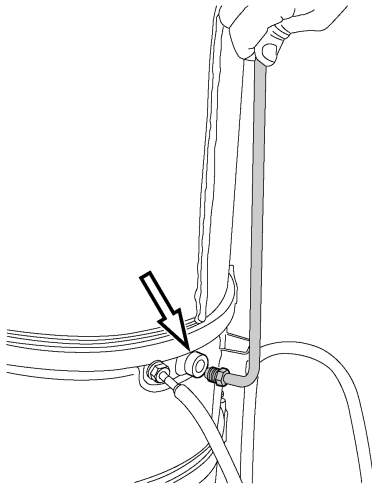
W2006000

6

Install the V-band clamp securing the outlet module to the filter module and tighten clamp fasteners securely. All clamps should now be aligned and tightened.



W2005997

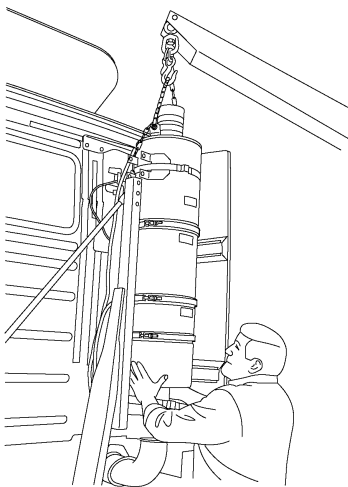


W2005995

7

Install the pressure differential tube to the catalyst port and tighten the fitting securely.

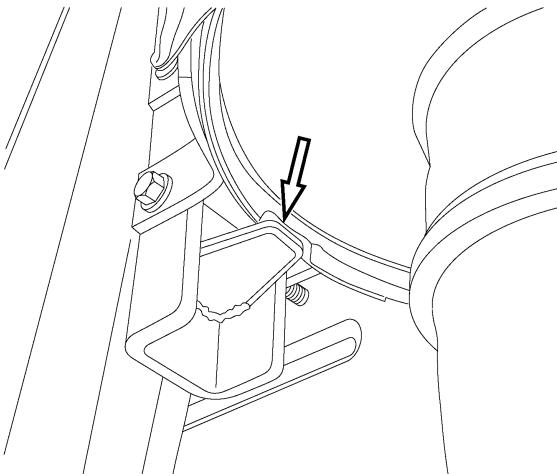
Note: A high temperature anti-seizing compound should always be applied to the threads of sensors, plugs or fittings in the exhaust system to avoid component seizure or corrosion.



W2006002

8

Lift the weight of the DPF muffler using a mobile floor crane and with assistance, position the muffler next to the frame-mounted stanchion, at the back of the cab.



W2006003

9

Align the slot in the muffler bottom with the tab on the stanchion.

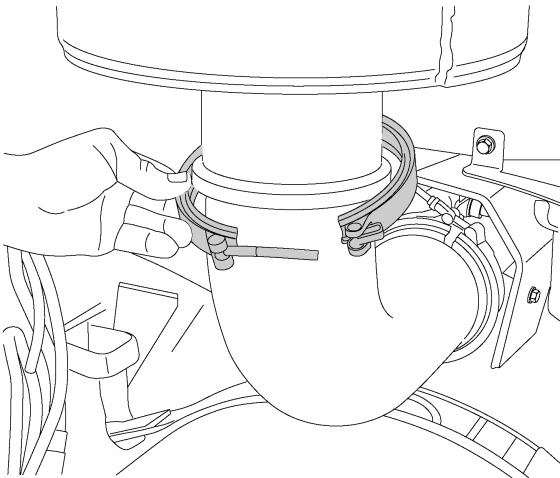
10

Perform the following steps to align the DPF muffler into final position on the muffler stanchion:

- Align the muffler inlet with the exhaust elbow.
- Align the muffler upper supporting bracket to the stanchion and install bolts loose.
- Loosely install the upper supporting band clamp with attached bracket and install bracket bolts into the stanchion.
- Loosely install the lower supporting band clamp.

11

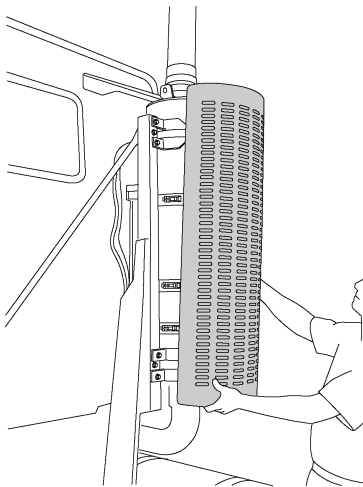
With all components aligned, install and secure the lower V-band clamp at the inlet side of the muffler.



W2005988

12

Install the muffler heat shield onto the DPF muffler.



W2005986

13

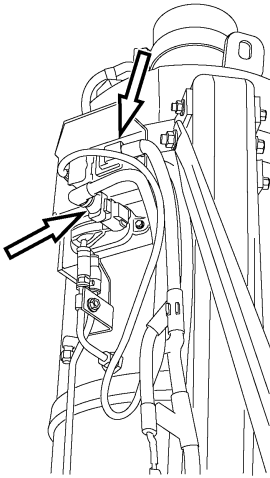
Secure all fasteners and clamps that connect the DPF muffler to the stanchion. Torque-tighten all clamps and muffler fasteners to specifications.

14

Disconnect crane and remove lifting chain from muffler.

15

Reconnect the harness connectors for the pressure differential and NO_x sensors.



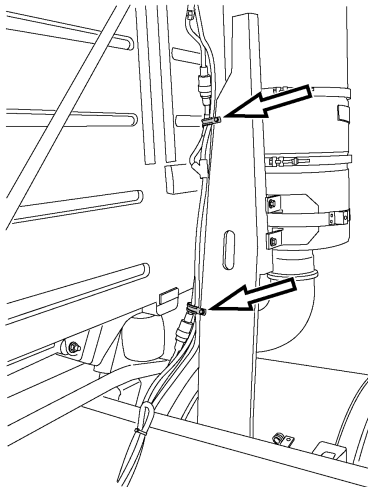
W2005990

16

Reconnect the harness connectors for all temperature sensors on the DPF muffler.

17

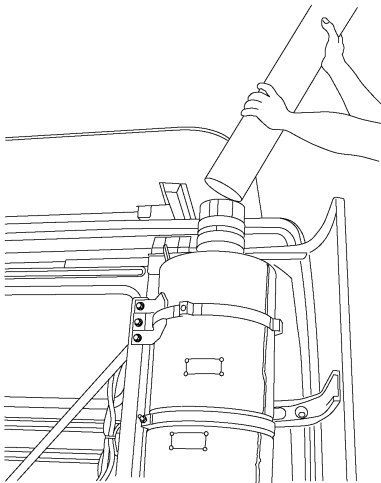
Install the P-clamp fasteners that secure the DPF muffler harness to the muffler stanchion.



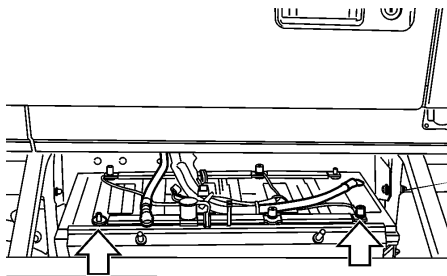
W2005989

18

Secure the harness using tie straps.



W2005987



W2003815

19

Install the exhaust stack onto the DPF muffler and secure using two clamps. Tighten-tighten clamps to specification.

20

Install all previously removed cables to the ground (negative) battery terminals.

21

Start the engine, check for exhaust leaks and proper operation.

22

Clear fault codes if necessary.