# INTERNATIONAL® | Performance Diagnostics

International® VT 365

		Transmission	A 1: 44	F : 011	ECM calibration
echnician	Miles	Transmission:	Ambient temp.	Engine SN	IDM calibration —
ate	Hours	Man Auto	Coolant temp.	Engine HP	Injector No.
nit No.	VIN	Truck build	Complaint	Engine Femily Deting Code	,
TIIL NO	V IIN	Truck build	Complaint	Engine Family Rating Code	Turbocharger No. —————
		}			

# WARNING

Read safety instructions in Engine Diagnostics Manual EGES-240, before doing any diagnostic procedure on this form.

#### Notes

Fill out the heading on this form.

Do all checks in sequence unless otherwise stated. Doing a check or test out of sequence could cause incorrect results. If a problem was found and corrected, it is not necessary to complete the rest of the form unless a performance concern remains.

Reference figures for procedures are on the back of this form.

See Appendix A in Engine Diagnostics Manual EGES-240, for engine specifications.

See Appendix B in EGES-240, or Form CGE 310 for DiagnosticTrouble Codes (DTCs).

#### 1. Engine Oil

Ш	Le	aks
$\overline{}$	_	

- ☐ Contaminated oil (fuel or coolant)
- ☐ Oil grade, viscosity, and level Miles/hours on oil

Comments
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# 2. Fuel

(Figures A and B)

Fuel	leve

- ☐ Free of water, icing, and clouding
- Free of contaminants ☐ Correct fuel grade
- Comments

# 3. Fuel Pressure

(Figures C and D)

- ☐ Measure (filtered) pressure at fuel filter housing.
- ☐ Measure pressure at low and high idle.

Note: If unit was run out of fuel, make sure the fuel system is primed.

Instrument		Spec	Actual
0-160 PSI Gauge	Low idle High idle		

- If fuel pressure is low, replace fuel filter, clean strainer, and retest.
- If fuel pressure is still low, do Test 4.

#### 4. Fuel Inlet Restriction

Do this test only, if Test 3 or Test 15 failed to meet

- ☐ Measure at fuel pump. (Tool replaces strainer) (Figures E and F)
- ☐ Measure at high idle, no load.

Instrument	Spec	Actual	
0-30 in Hg			
Vac gauge			

- If fuel line is restricted, inspect suction line side and correct problem.
- If fuel system is not restricted, inspect fuel regulator valve for debris
- If fuel regulator valve is not damaged, clean and reinstall regulator valve and retest fuel pressure.
- If fuel pressure is still low, replace fuel regulator and retest fuel pressure.
- If fuel pressure is still low, replace fuel pump.

# 5. Diagnostic Trouble Codes

☐ Install Electronic Service Tool (EST). (Figure G) Do **Test 8** if EST is not available

20 10010 11 201 10 1101 0101010101
Active DTCs
Inactive DTCs

Correct problem causing active DTCs before continuing.

### 6. Key On Engine Off Standard Test

☐ Use EST to run Key On Engine Off Standard Test.

Active DTCs		

Correct problem causing active DTCs before continuing.

# 7. Key On Engine Off Injector Test

- ☐ Do **Test 6** before doing the Key On Engine Off Injector Test.
- ☐ Use EST to run Key On Engine Off Injector Test.

	,	J	,	
DTCs found				

Correct problem causing active DTCs before continuing.

# 8. Diagnostic Trouble Code Access

(Required only if EST is not available)

☐ Set parking brake. Turn ignition key ON.

☐ Press and release CRUISE ON and RESUME / ACCEL switches at the same time, twice within 3 seconds of key ON.

Active DTCs Inactive DTCs

Correct problem causing active DTCs before continuing

#### 9. Intake Restriction

(Figures K and L)

☐ Measure restriction at high idle, no load.

Instrument	Spec	Actual
Manometer or Magnehelic gauge	12.5 in H <sub>2</sub> 0	

Correct problem causing out of spec values, before continuing.

#### 10. EGR Position

	Use EST to monitor EGR position. (Key on	
_	engine off)	

- ☐ Use EGR breakout harness and DMM to measure EGRP voltage.
- ☐ Record EST value for closed EGR position.
- Record voltage closed EGR position. ☐ Use EST to run Output State Low Test to energize
- coil and open EGR valve.

Ш	Record EST value for open EGR position.
	Record voltage open EGR position.

Instrum	nent Spec % / v	Actual % / v
EST	% v Closed	% v Closed
	<u> </u>	<u> </u>
	v_ Travel	<u> </u>

Correct problem causing out of spec values, before continuing.

# 11. Exhaust Restriction

- ☐ Inspect exhaust system.
- ☐ Disconnect EGR valve.
- ☐ Use EST to monitor EBP at high idle, no load.

Instrument Spec		Actual
EST		
DMM		

- If pressure is above spec, remove turbo outlet exhaust pipe and retest.
- If pressure is good with pipe removed, correct problem from turbocharger to tail pipe.
- If EBP is still high with turbo outlet exhaust pipe removed, do Test 20.

#### 12. Key On Engine Running Standard Test

**Note**: Engine coolant temperature must be above 160°F. ☐ Use EST to run Key On Engine Running Standard Test.

DTCs found		_

Correct problem causing active DTCs before continuing.

# 13. Torque Converter Stall (Automatic only)

- $\hfill \square$  Set parking brake and apply service brake.
- ☐ Put transmission in drive. ☐ Push accelerator to the floor, begin timing and
- monitor tachometer until tachometer stops moving. ☐ Record RPM and time.

Condition	Spec	Actual
Stall RPM		
Time (Idle to stall in seconds)		

- If minimum RPM is reached within specified time, do not continue with Performance Diagnostics.
- If RPM is low, or was not reached within specified time, continue with Performance Diagnostics.

# Do Full Load Tests 14, 15, and 16 at the same time.

# 14. Boost Pressure (Full load)

☐ Use EST to monitor boost pressure and engine speed

Test	Spec	Spec	Actual
	Engine speed	Boost	EST boost reading
Peak HP			
Peak Torq	ue		

- If boost pressure is not to spec continue with Performance Diagnostics.
- If boost pressure is to spec do not continue with Performance Diagnostics.

### 15. Fuel Pressure (Full load)

(Figures C and D)

- Measure fuel pressure at filter housing.
- ☐ Check fuel pressure at full load, rated speed.

Instrument	Spec	Actual
0-160 psi gauge		

- If fuel pressure is low, replace fuel filter, clean fuel strainer and retest
- If pressure is still low do Test 4 at full load, rated speed

# 16. Injection Control Pressure

Use EST to monitor ICP and engine speed.

Condition	Spec	Actual
Low idle High idle Full load		

- If ICP is high or unstable, hold at high idle for 2
- Return to idle, take oil sample, check for foam, and correct condition if oil is aerated. (Figures M and N)
- If oil is not aerated, disconnect ICP sensor and check for engine stability. • If problem is corrected, see Operational Voltage Checks for ICP Sensor in Section 7 of Engine
- If still high or unstable, replace IPR and retest.

Diagnostics Manual EGES -240.

#### 17. Crankcase Pressure

- ☐ Measure at oil fill tube with crankcase pressure test adapter. (Figures P and R)
- ☐ Clamp off recirculation tube for crankcase breather.
- ☐ Measure at high idle, no load.

strument	Spec	Actual	
lanometer or			
lagnehelic gauge			

### 18. Injector Disable

- ☐ Use EST to monitor EOT while running injector disable diagnostics
- ☐ Collect and record Base Line values.
- Disable one cylinder at a time, collect, and record data. ☐ Calculate deviation from Base Line for each injector.
- Establish cut-off value to identify suspect cyinders.
- Selected Average engine load Deviation EOT Average fuel rate Deviation Cylinder Base Line 2 3 5 6

Engine load

If any cylinder is suspect, do Test 19.

Cut-off values: Fuel rate

- 19. Relative Compression
- ☐ Turn ignition key ON.
- ☐ Use EST to run Relative Compression Test. ☐ Crank engine for 15 seconds.

Cylinder Compression Test Value Cylinder 1 Relative Compression Cylinder 2 Relative Compression Cylinder 3 Relative Compression Cylinder 4 Relative Compression Cylinder 5 Relative Compression Cylinder 6 Relative Compression Cylinder 7 Relative Compression Cylinder 8 Relative Compression

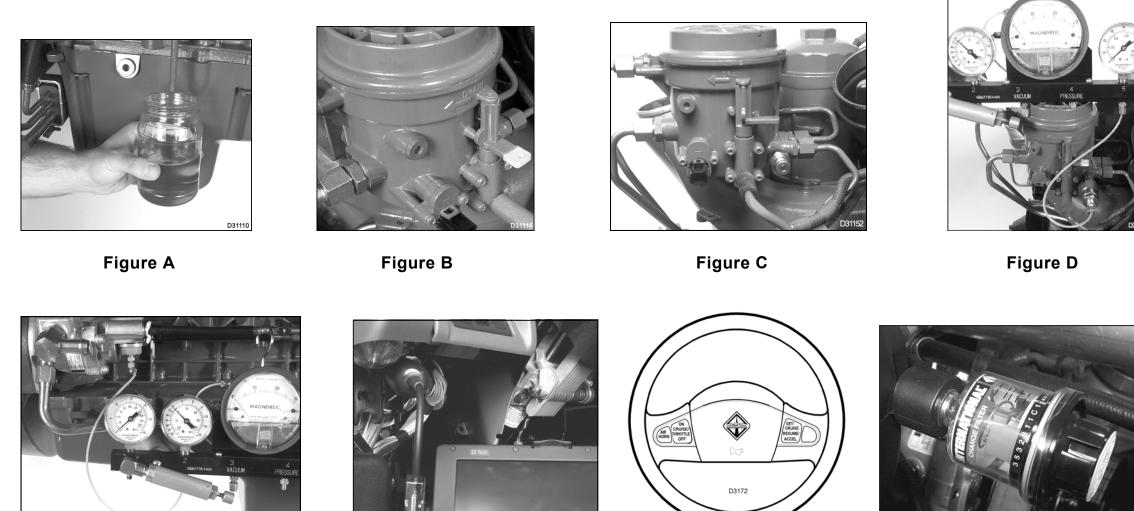
- If a Relative Compression Test and Injector Disable Test identify a suspect cylinder, check for a mechanical
- If a Relative Compression Test does not identify a suspect cylinder, but the Injector Disable Test does, replace suspect injector(s).

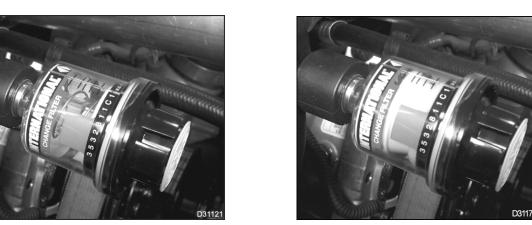
#### 20. Air Management

☐ Use EST to monitor data while running Air Management

DTCs found

Correct problem causing active DTCs before continuing





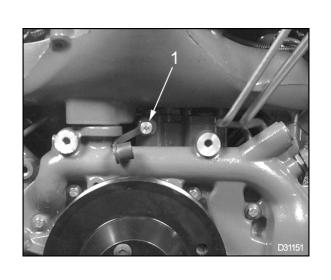


Figure F



Figure G



Figure K



Figure E

Figure L

Figure M Figure N Figure P Figure R

Figure H