6.0 L Low Power/Cold

STEP 1: VISUAL INSPECTION OF ENGINE COMPARTMENT	OK	NOT OK	COMMENTS
Inspect the cooling hoses and connections			
Inspect the battery cables and connections			
Inspect the wiring harnesses and connections			
Inspect for fluid leaks *(oil/fuel/coolant)*			

STEP 2: CHECK FLUID LEVELS	OK	NOT OK	COMMENTS
Engine oil			
Coolant			
Miles or hours on the oil			
Verify oil viscosity *(10W30 recommended for temps below 35° F)*			

STEP 3: INTAKE AND EXHAUST RESTRICTION	OK	NOT OK	COMMENTS
Inspect the exhaust system for damage			
Observe the air filter restriction gauge or light			
Inspect the air filter and inlet ducts			

STEP 4: FUEL SUPPLY	OK	NOT OK	COMMENTS
Verify the fuel level			
Check for water in fuel light			
Inspect the fuel filter for contamination			

STEP 5: FUEL SUPPLY PUMP ☑ *Check for voltage and ground with the key on* ☑ *Check fuel supply pressure*

TOOL	SPECIFICATION	READING
0–160 psi Fuel Gauge	E SERIES 38 psi min. F–SUPER DUTY/EXCURSION 45 psi min.	

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STEP 6: FUEL SUPPLY INLET RESTRICTION

☑ *Install a 0–30" Hg vacuum gauge* ☑ *Measure fuel restriction at the HFCM inlet*

TOOL	SPECIFICATION	READING
0–30" Hg Vacuum Gauge	6" Hg max.	

STEP 7: CHECK FOR HISTORY AND CURRENT FAULTS

☑ *Using the IDS Scan Tool, retrieve the CMDTCs* ☑ *Perform the KOEO On–Demand Test and Injector Test and record the DTCs*

FAULT CODE	DESCRIPTION

DID ALL SPOOL VALVES "CLICK"?	OK	NOT OK	CYL #'S WITH NO CLICK

STEP 8: PERFORM GLOW PLUG SYSTEM OPERATION

☑ *Turn the key on and measure the voltage to the GPCM (glow plug control module) –Green Connector Pin 3 –Black Connector Pin 3 and 9*

SPECIFICATION	READING
11.5 volts min.	

☑ *Measure each glow plug resistance to battery ground and record*

GLOW PLUG	GPCM CONNECTOR TO GROUND–SPEC 0 TO 5.5 Ω
#1 (Green Connector Pin – 6)	
#3 (Green Connector Pin – 7)	
#5 (Green Connector Pin – 1)	
#7 (Green Connector Pin – 2)	
#2 (Black Connector Pin – 6)	
#4 (Black Connector Pin – 7)	
#6 (Black Connector Pin – 1)	
#8 (Black Connector Pin – 2)	

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STEP 9: SCAN TOOL DATA MONITORING

☑ *Using the IDS Scan Tool, monitor the below parameters with KOEO*

PARAMETER	SPECIFICATION	READING
Battery Voltage	11.5 volts min.	
FICM Voltage		
FICM Main	44 volts min.	
VREF	5 volts	
ECT	Ambient	
IAT		
IAT 2		
EOT		
BARO	14.1 (varies by location)	
EBP_A	Baro	

☑ *Monitor the below parameters with the engine at idle*

Battery Voltage	12 volts min.	
FICM Voltage		
FICM Main	44 volts min.	
FICM Sync	YES/NO (should be yes and stay)	
Sync		
ICP Desired	3.5 Mpa min. (500 psi min.)	
ICP Actual		
ICP Volts	.80 volts min.	
IPR %	Range 0–50%	
Fuel Pulse Width	500 uS–2 mS	
EGRVPA	0%	
VREF	5 volts	
ECT	Ambient	
IAT		
IAT 2		
EOT		
BARO	14.1 (varies by location)	
EBP_A	15–18 psi	
EBP_DSD	1.5–4.5 psi	

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STEP 10: KOER ON–DEMAND TEST

☑ *Using the IDS Scan Tool, perform the KOER On–Demand Test and record the DTCs*

FAULT CODE	DESCRIPTION

STEP 11: FICM/PCM CALIBRATION

☑ *Using the IDS Scan Tool, check for available FICM and PCM updates*

☑ *If updates are available, reflash the modules and reconfirm the complaint*

WAS A LATER VERSION AVAILABLE?	DID IT CORRECT COMPLAINT?	IF NO, PROCEED TO NEXT STEP

STEP 12: EXHAUST RESTRICTION

☑ *Monitor EP with the EOT above 177°F at 3,800 RPM with no load*

PARAMETER	SPECIFICATION	READING
EP/EBP	35 psi max.	

STEP 13: INJECTION PRESSURE REGULATOR TEST

☑ *Check at low idle, EOT above 177 °F at 3,800 RPM with no load*

☑ *Using the IDS Scan Tool, monitor IPR*

☑ *If the duty cycle is below the max., go to next step*

☑ *If the duty cycle is above the max., check for a high–pressure oil system leak*

PARAMETER	SPECIFICATION	READING
IPR	30% max. @ 670 RPM	

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STEP 14: TURBO BOOST TEST

☑ *Inspect the intercooler tubes/connections for leaks* ☑ *Inspect the turbocharger for damage*

VISUAL INSPECTION	OK	NOT OK

☑ *Using the IDS Scan Tool, perform the Powertrain Air Management–Turbo Boost Test*
Note: *There is no Turbo Boost Test on the IDS Scan Tool for an '03*

☑ *Using the Data Logger in the IDS Scan Tool:*
- *Command EGRDC# to 0% and RPM# to 1,200 RPM*
- *Monitor EBP and MAP while actuating VGTDC# from 0% to 85% back to 0%*
- *The graph of the EBP and MAP should mimic the command of the VGTDC#*

RESULTS	OK	NOT OK

STEP 15: EGR SYSTEM TEST

☑ *Check the EGR actuator connections* ☑ *Check the EGR actuator circuitry*

VISUAL INSPECTION	OK	NOT OK

☑ *Using the IDS Scan Tool, perform the EGR System Test*

RESULTS	OK	NOT OK

STEP 16: POWER BALANCE TEST

☑ *Using the IDS Scan Tool, perform the Power Balance Test*
☑ *Disable each cylinder and monitor contribution levels*
☑ *If any cylinders fail, run the Relative Compression Test*

CYLINDER	PASS	FAIL	COMPRESSION %
#1			
#2			
#3			
#4			
#5			
#6			
#7			
#8			

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STEP 17: BUBBLE TEST

☑ *Remove the secondary fuel filter*
☑ *Fill the housing with fuel to cover the stand pipe*
☑ *Crank the engine with the key off using a remote start switch*
☑ *Monitor the fuel in the housing and watch for air bubbles exiting the top of the stand pipe*
☑ *If air bubbles are present, injector removal and inspection is required*

AIR BUBBLES PRESENT	YES	NO

STEP 18: CRANKCASE PRESSURE TEST

☑ *Measure crankcase pressure at the oil fill tube using the 6.0 L Crankcase Pressure Adapter (OTC 303–758) and a 0–60" H_2O manometer*
☑ *Take the measurement with EOT above 158°F at 3,000 RPM with no load*

TOOL	SPECIFICATION	RESULTS
0–60" H_2O Manometer	8" H_2O	

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