

POWER STROKE

TURBO DIESEL V8

6.0L Power Stroke Diesel

Direct Injection Turbocharged Diesel Engine



F Series Super Duty Truck



E Series Econoline Van



6.0L Power Stroke Diesel

New 2005 F&E Series

Super Duty

**Features, Descriptions,
and 2004 Running Changes**

2005 6.0L DIT UPDATES

2004 Running Changes

- Fuel supply line includes all associated components.
- During the 2004 MY the rear crankshaft oil seal was redesigned for improved performance. This change applies to both the production seal and the service seal.

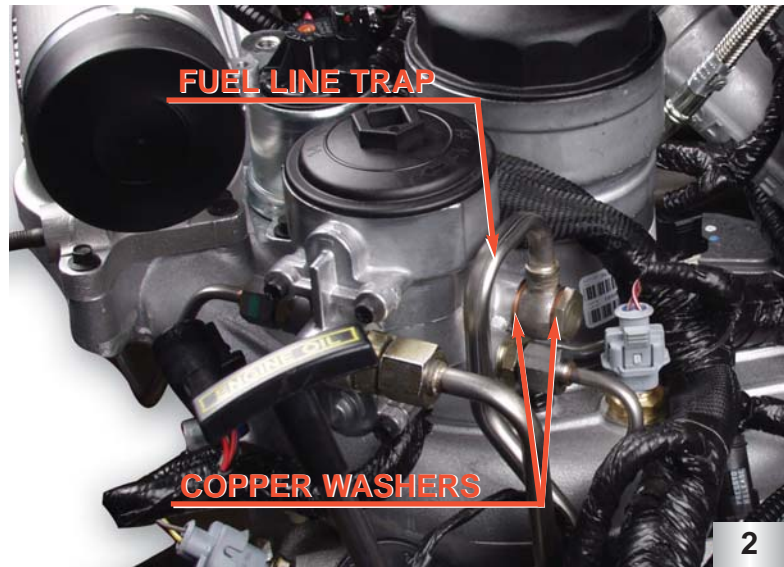
2004 Running Changes

- Fuel Supply Line
- VGT Control Valve
- Turbocharger Bearings
- Rear Crankshaft Oil Seal

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Fuel Supply Line Trap

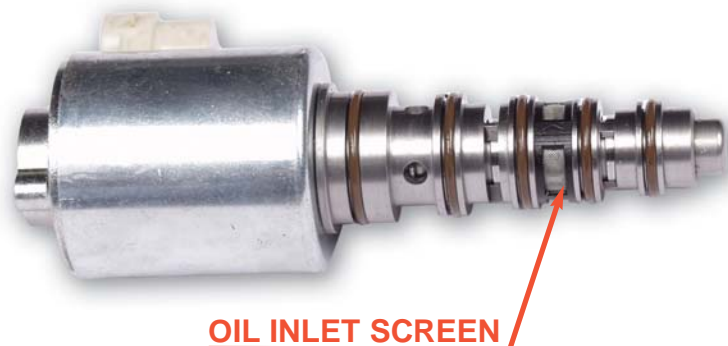
- A trap was added to the fuel supply line to prevent fuel from draining out of the secondary fuel filter housing.
- This new fuel supply line is attached to the fuel filter housing using a banjo bolt and is sealed using two copper washers. These washers must be replaced any time the bolt is loosened.
- **NOTE: This fuel line cannot be retrofitted to earlier versions of the 6.0L engine. The fuel filter housing has been modified to accept the banjo bolt and washers.**



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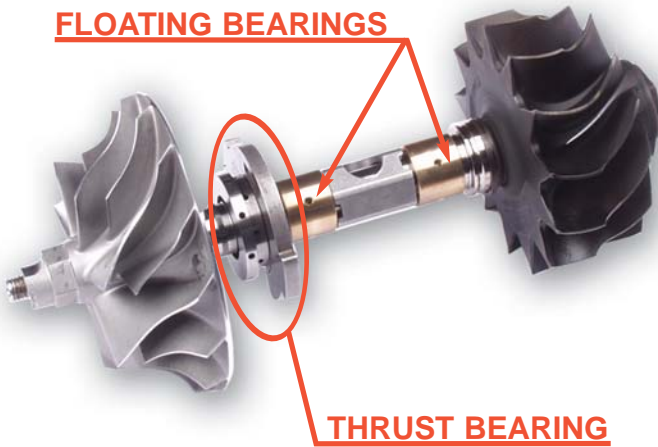
VGT Control Valve

- The updated control valve provides faster response along with improved stability.
- A 200 micron screen has been added to the oil inlet of the control valve.
- **NOTE: The updated VGT control valve can be used on the 2003 and 2004 MY turbochargers.**



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2005 6.0L DIT UPDATES



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Turbocharger Bearings

- The size of the floating bearings in the rotating group of the turbocharger has increased. The two bearings have each increased in length by 1mm.
- The bearing updates make the rotating group more robust and reduce shaft motion effects due to engine vibration inputs.

2005 Hardware Changes

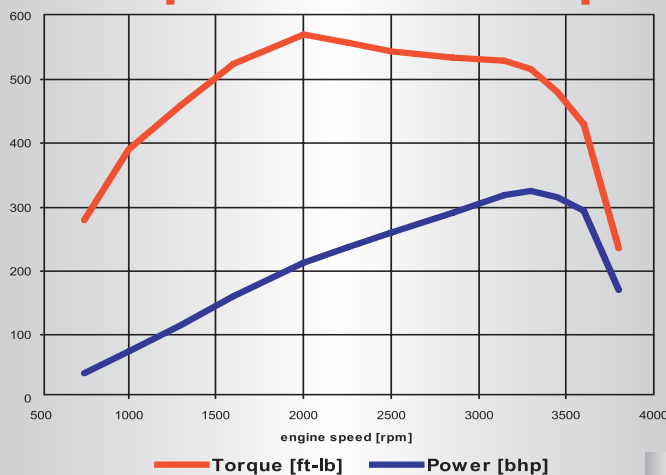
Component	F-Series	E-Series	Excursion
High-Pressure Pump	New V4	New V4	Swash Plate Carryover
Front Cover	Inlet Port	Inlet Port	Carryover
EGR Valve	New Seal	New Seal	Carryover
EGR Throttle	Deleted	Deleted	Carryover

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2005 Hardware Changes

- The Hardware changes for the 2005 MY are for F-Series and E-Series vehicles only unless otherwise noted. The serial number break for Indianapolis built engines is 6344943. Production began June 29, 2004.
- Excursion vehicles carryover the 2004 MY engine for the first part of the 2005 MY.
- EGR Throttle includes all associated components.
- High-pressure pump includes all associated components.

Horsepower and Torque



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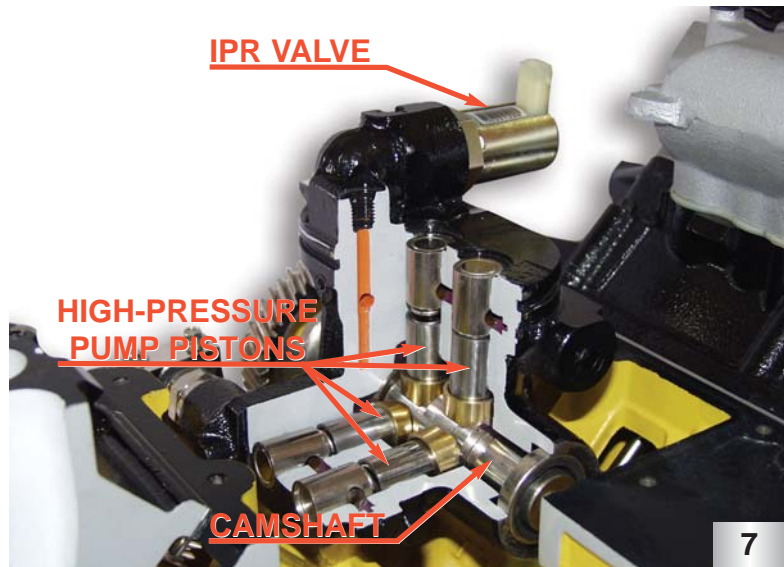
Horsepower and Torque

- Torque has been increased to 570 ft. lbs.
- Horsepower remains the same at 325 HP.
- **Note: Econoline 6.0L diesel engine horsepower and torque will remain the same for 2005 model year (235 HP and 440 ft/lb of torque).**

2005 6.0L DIT UPDATES

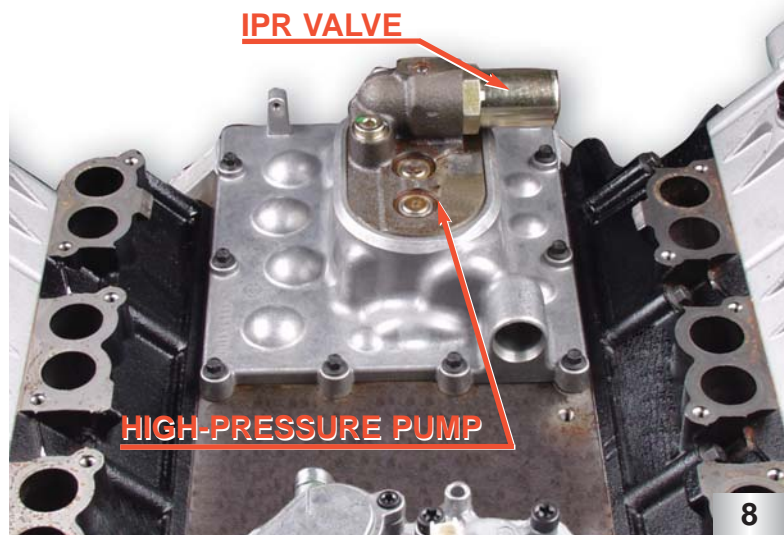
High-Pressure Pump

- The high-pressure pump has changed to a V 4 style piston pump.
- The flow specifications are comparable to the previous (swash plate style) pump.
- The V 4 pump will provide improved high-pressure oil system response at low engine speeds.
- The long term durability of the high-pressure pump has been improved due to less wear area inside of the pump.



High-Pressure Pump Cover

- A redesigned cast aluminum high-pressure pump cover will be used in 2005 MY due to the use of a new style high-pressure pump.
- The IPR valve is now mounted in the top of the high-pressure pump instead of the pump cover.
- If removal of the pump cover is necessary, the IPR valve must be removed first.
- **NOTE: For the purpose of illustration the IPR valve heat shield has been removed. Be sure to reinstall the heat shield after service is performed.**

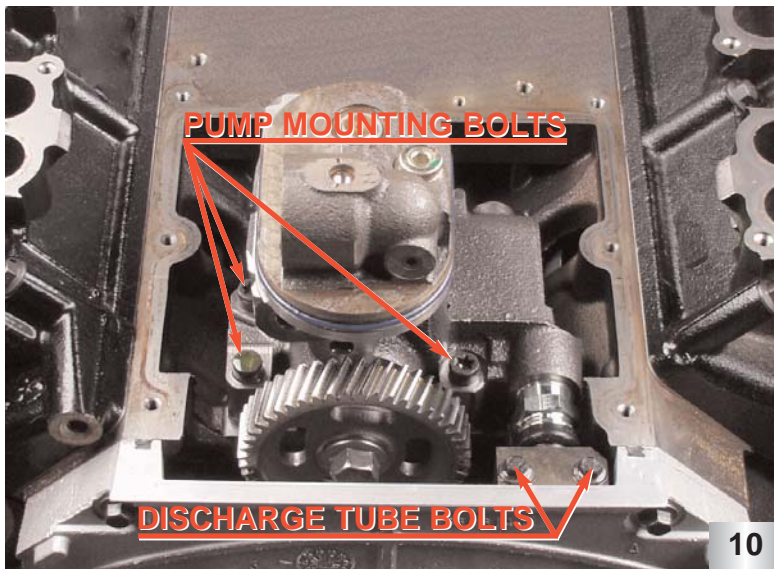


High-Pressure Pump Cover Removal

- The high-pressure pump is sealed to the pump cover with an o-ring around the body of the pump.
- The oil drain for the turbocharger remains in the high-pressure pump cover.
- **NOTE: Be sure to cut the silastic T- joint that seals the high-pressure pump cover, rear cover, and cylinder block together prior to removing the high-pressure pump cover.**

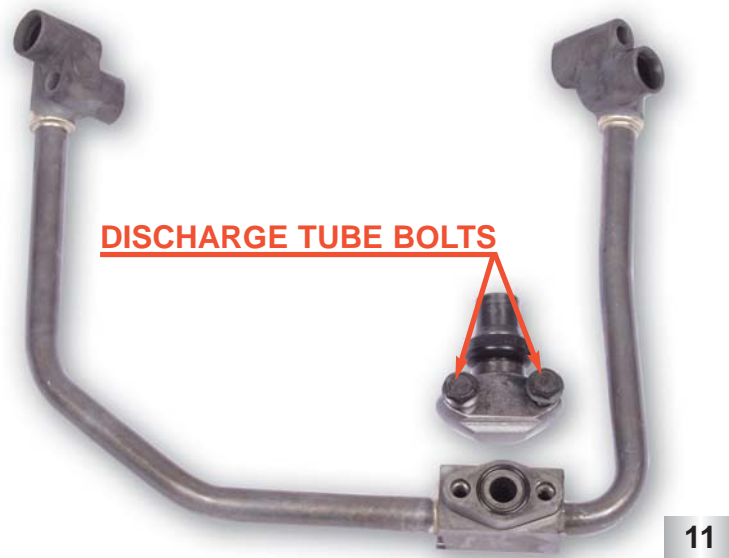


2005 6.0L DIT UPDATES



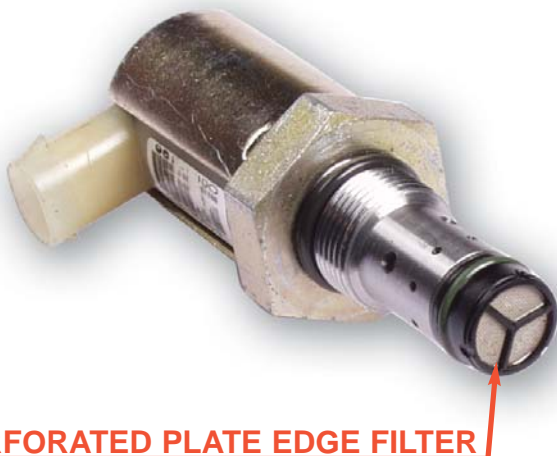
High-Pressure Pump/Discharge Tube

- The pump is driven by the camshaft gear as in previous model years.
- The high-pressure pump discharge tube has been modified to accommodate the new high-pressure pump.



High-Pressure Oil Branch Tube

- The high-pressure pump discharge tube and branch tube have been redesigned to incorporate the new style high-pressure pump.
- The two bolts holding the discharge tube and the branch tube together are removed when removing the high-pressure pump. The discharge tube should be removed with the high-pressure pump.
- **NOTE:** The 2005 MY high-pressure pump, pump cover, discharge tube, and branch tube, are not interchangeable with 2003 and 2004 MY engines. However, the standpipes did not change.



IPR Valve

- The 2005 MY IPR valve uses a 150 micron perforated plate edge filter. This is an improvement from the 200 micron filter on previous models.
- **NOTE:** For the purpose of illustration the IPR valve heat shield has been removed. Be sure to reinstall the heat shield after any service is performed.
- **NOTE:** The IPR valve is not interchangeable with 2003 and 2004 MY engines.

2005 6.0L DIT UPDATES

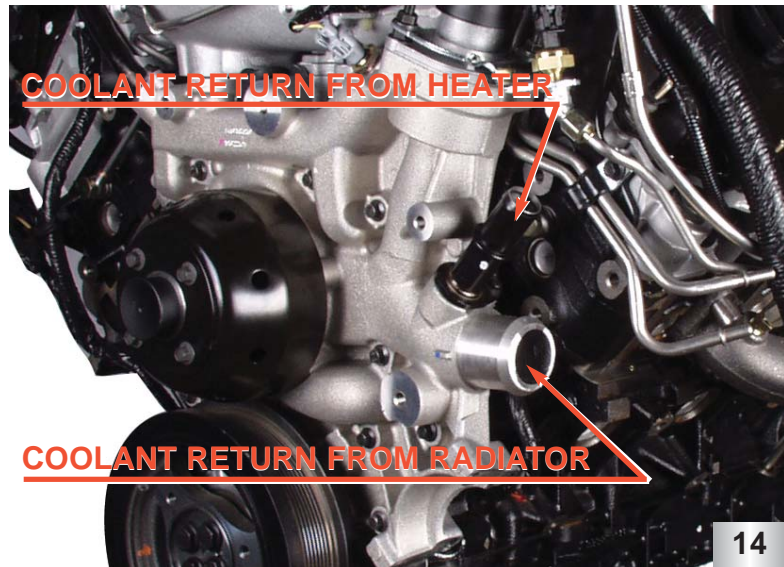
High-Pressure Oil Rail Ball Tubes

- The length of the ball tube has been increased by 2mm to aid in assembly. This is to reduce the potential risk of damaging the upper o-ring during the installation of the high-pressure oil rail.
- **NOTE:** The 2005 MY high-pressure oil rail is not interchangeable with 2004 MY engines.
- **NOTE:** The 2004 MY high-pressure oil rail can be identified by the C1 suffix of the International part number. The 2005 MY high-pressure oil rail can be identified by the number "5" stamped into one of the endcaps of the rail.



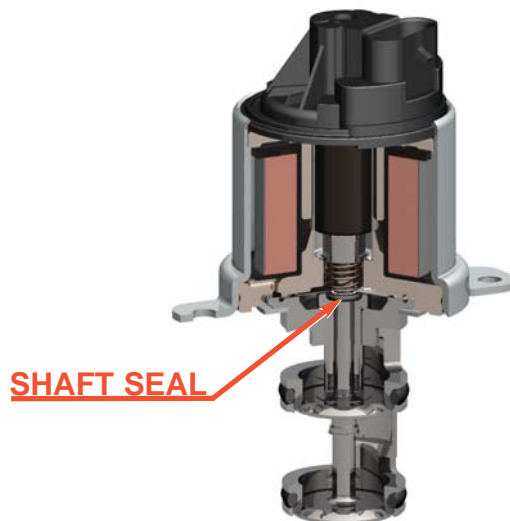
Front Cover

- The coolant inlet ports on the front cover have been repositioned to accommodate the new power steering pump design.
- **NOTE:** The 2005 MY front cover is not interchangeable with 2003 and 2004 MY engines.

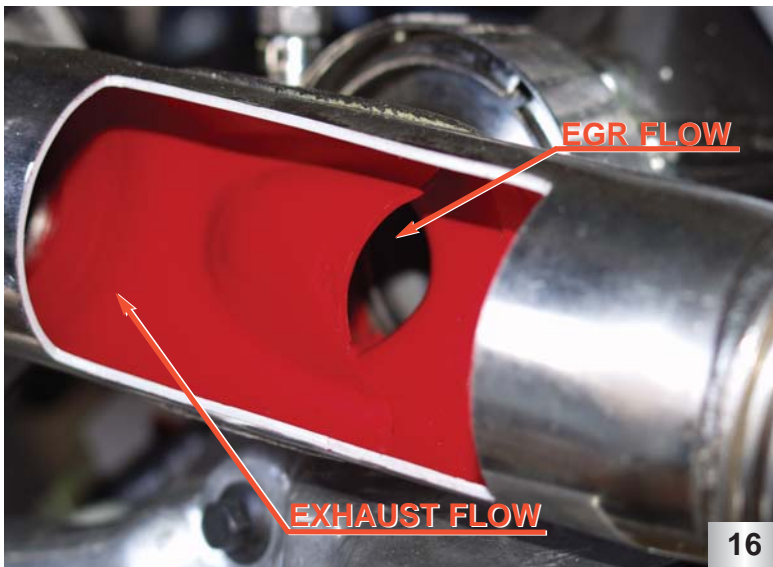


EGR Valve

- The EGR shaft seal has been improved to reduce exhaust gas leaks past the EGR valve vent holes.
- The shaft seal improvement requires an increased return spring tension.
- **NOTE:** The 2005 MY EGR valve and the 2003/2004 MY EGR valves are not interchangeable.
- **NOTE:** The 2005 MY EGR valve can be identified by the part number 4043H located on the top of the valve.

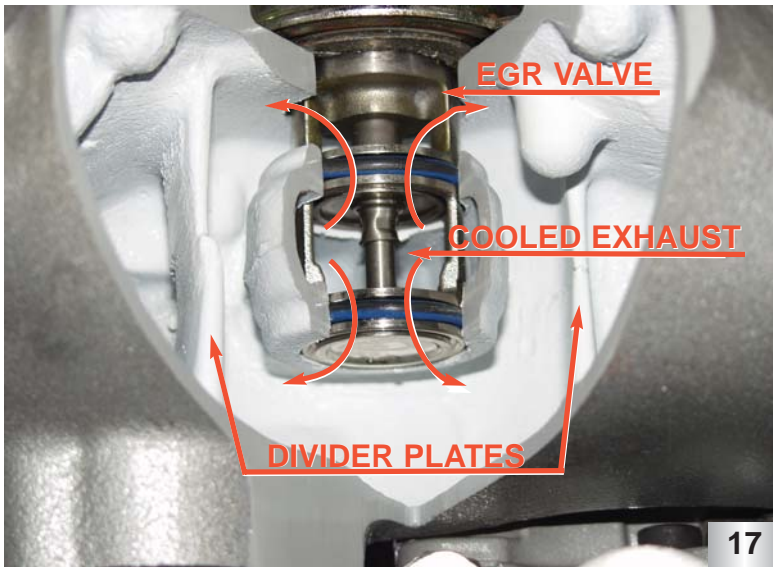


2005 6.0L DIT UPDATES



Exhaust Up-Pipe Scoop

- An exhaust gas scoop in the exhaust up-pipe increases exhaust flow to the EGR cooler.
- This improves the performance of the EGR valve without the use of the throttle plate.

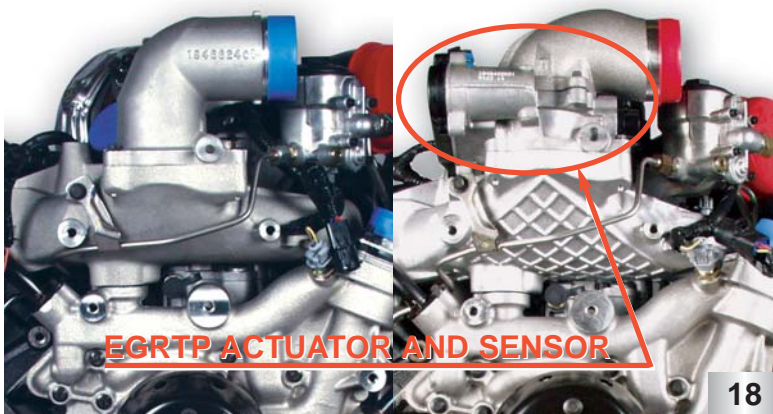


Intake Manifold Divider Plates

- Two divider plates have been incorporated into the intake manifold to provide equal distribution of cooled exhaust gases into both cylinder heads.

2005

2004



EGR Throttle Plate

- EGR throttle plate (EGRTP) has been deleted from the air inlet of the intake manifold for the 2005 MY.
- The 6.0L engine no longer needs the EGR throttle plate to assist the flow of exhaust gases through the EGR valve.

DIAGNOSTIC CODES

C - Continuous Operation O - Self Test - Key On Engine Off (KOEO) R - Self Test - Key On Engine Running (KOER)				* - MIL (Malfunction Indicator Light) Illuminates ^ - O/D cancel flashes [] - Assigned but not used - Added/Changed for 2005 MY - Not Used on 2005 MY - Added/Changed for 2004 MY	
DTC	How Set	Condition Description	Fault Trigger/Comments	Probable Causes	
P0046	C* O R	Turbo/Super Charger Boost Control Solenoid Circuit Range/Performance	Internal to PCM. VGT Actuator Circuit check.	Diagnostic circuit associated with 1 Amp driver checks for open circuit, short to ground, and short to power.	
P0069	C*	MAP/BARO Correlation	30 kPa (4.4 PSI)/Compares BP and MAP at idle.	VGT, BP, MAP, EGR - System Fault, Biased Sensor, Circuit Integrity.	
P0096	C*	Intake Air Temperature Sensor 2 Circuit Range/Performance	5 deg.C (41 deg.F)/Checks for minimum change in IAT2	IAT 2 Biased Sensor, System Fault, PCM.	
P0097	C* O R	Intake Air Temperature Sensor 2 Circuit Low Input	EGR disabled, less than 0.15 volts.	MAT signal circuit, shorted to ground or defective sensor.	
P0098	C* O R	Intake Air Temperature Sensor 2 Circuit High Input	EGR disabled, greater than 4.8 volts.	MAT signal circuit, open, short to power or defective sensor.	
P0101	C*	Mass or Volume Air Flow Circuit Range/Performance	Indicates a MAF range/performance problem was detected during normal driving conditions when MAF is enabled. 4.0 volts when RPM is less than 1500, 4.9 volts when RPM is greater than 1500 RPM.	Damaged MAF sensor-plugged or restricted sensor supply tube-MAF, PCM.	
P0102	C*	Mass or Volume Air Flow Circuit Low Input	Indicates MAF sensor circuit low input was detected during KOEO Self Test or during continuous diagnostic monitoring. MAF voltage less than 0.35 volts.	Open MAF sensor circuit-biased sensor, PCM-short to SIGN RTN or PWR GND on MAF sensor circuit-open in VREF circuit.	
P0103	C* O R	Mass or Volume Air Flow Circuit High Input	Indicates MAF sensor circuit high input detected during KOEO On-Demand Self Test or during continuous diagnostic monitoring. MAF voltage is greater than 4.95V.	Biased sensor, PCM-MAF circuit shorted to VREF.	
P0107	C* O	Manifold Absolute Pressure/BARO Sensor Low Input	Checks BP for a signal lower than a specified barometric pressure expected for normal operations when BP is less than 0.04 volts. Default 101 kpa (14.6 PSI).	Circuit is open, shorted to ground.	
P0108	C* O	Manifold Absolute Pressure/BARO Sensor High Input	Checks BP for a signal greater than a specified barometric pressure expected for normal operations when BP is greater than 4.9 volts. Default 101 kpa (14.6 PSI).	Circuit is shorted to power	
P0112	C* O R	Intake Air Temperature Circuit Low Input	Checks sensor output for a value higher than a maximum probable temperature when IAT voltage is less than 0.15 volts. Default 77deg.F/25deg. C.	Shorted to ground.	
P0113	C* O R	Intake Air Temperature Circuit High Input	Checks sensor output for a value lower than a minimum probable temperature when IAT voltage is greater than 4.9 volts. Default 77deg. F/25deg. C.	Open in circuit, short to power.	
P0117	C O R	Engine Coolant Temperature Circuit Low Input	Checks ECT for a temperature higher than a specified oil temperature expected for normal operation when ECT voltage is greater than 0.15 volts. Default 180deg. F/82deg. C - no fast idle.	Short to ground on the circuit.	
P0118	C O R	Engine Coolant Temperature Circuit High Input	Checks ECT for a temperature lower than a specified oil temperature expected for normal operation when ECT voltage is greater than 4.78 volts. Default 180deg. F/82deg.C - no fast idle.	Open in circuit, short to power.	
P0148	C	Fueling Error	Engine RPM has exceeded requested RPM.	Alternative fuel source, Interference on CKP & CMP, Faulty PCM.	
P0196	C* R	Engine Oil Temperature Sensor Circuit Range/Performance	Checks for an EOT temperature signal which is unable to reach the EOT cold minimum limit within a specified amount of time. Function of initial EOT. (in-range fault based off of a change in EOT and MFDES)	Faulty, Biased sensor, circuit fault, PCM.	
P0197	C* O R	Engine Oil Temperature Sensor Circuit Low Input	Checks EOT for a temperature higher than a specified oil temperature expected for normal operations when EOT voltage is less than 0.15 volts. Default 212deg. F/100deg.C - no fast idle.	Shorted to ground on the circuit.	
P0198	C* O R	Engine Oil Temperature Sensor Circuit High Input	Checks EOT for a temperature lower than a specified oil temperature expected for normal operations when EOT voltage is greater than 4.76 volts. Default 212 deg. F/100 deg. C - no fast idle.	Open in circuit, short to power.	
P0219	C	Engine Overspeed Condition	PCM recorded excessive engine speed greater than 4300 RPM for more than 5 seconds.	Improper downshift, Interference on CKP & CMP, Faulty PCM.	
P0230	O	Fuel Pump Primary Circuit	Fuel Pump Relay driver failure.	Open control circuit, failed fuel pump relay or PCM.	
P0231	C* O	Fuel Pump Secondary Circuit Low	No voltage present at the Fuel Pump monitor circuit when it has been commanded "on" for more than 1 second.	Indicates open, short circuit, relay, inertia switch or fuel pump.	
P0232	O	Fuel Pump Secondary Circuit High	Voltage present at the Fuel Pump monitor circuit when it has NOT been commanded "on" for more than 1 second.	Indicates short to power, sticking relay.	
P0236	C* O	Turbo/Super Charger Boost Sensor A Circuit Range/Performance	Default inferred MAP - low power, slow acceleration, greater than 120kpa(2.7PSI) at low idle.	MAP sensor plugged, defective sensor.	
P0237	C* O R	Turbo/Super Charger Boost Sensor A Circuit Low	Default inferred MAP - low power, slow acceleration, MAP voltage is less than 0.039 volts.	MAP circuit short to ground or open, defective sensor.	
P0238	C* O R	Turbo/Super Charger Boost Sensor A Circuit High	Default inferred MAP - low power, slow acceleration, MAP voltage is greater than 4.91	MAP circuit short to Vref or Vbat, defective sensor.	
P0261	C* O R	Cylinder #1 Injector Circuit Low	FICM detected an open the injector circuit.	Injector circuit open or defective coil.	
P0262	C O R	Cylinder #1 Injector Circuit High	FICM detected a short in the injector circuit to ground.	Injector circuit short to ground, defective coil	
P0263	C	Cylinder #1 Contribution/Balance	When maximum/minimum pulse width adder is exceeded and cylinder does not converge a fault is set.		
P0264	C* O R	Cylinder #2 Injector Circuit Low	FICM detected an open the injector circuit.	Injector circuit open or defective coil.	
P0265	C O R	Cylinder #2 Injector Circuit High	FICM detected a short in the injector circuit to ground.	Injector circuit short to ground, defective coil	
P0266	C	Cylinder #2 Contribution/Balance	When maximum/minimum pulse width adder is exceeded and cylinder does not converge a fault is set.		
P0267	C* O R	Cylinder #3 Injector Circuit Low	FICM detected an open the injector circuit.	Injector circuit open or defective coil.	
P0268	C O R	Cylinder #3 Injector Circuit High	FICM detected a short in the injector circuit to ground.	Injector circuit short to ground, defective coil	
P0269	C	Cylinder #3 Contribution/Balance	When maximum/minimum pulse width adder is exceeded and cylinder does not converge a fault is set.		
P0270	C* O R	Cylinder #4 Injector Circuit Low	FICM detected an open the injector circuit.	Injector circuit open or defective coil.	
P0271	C O R	Cylinder #4 Injector Circuit High	FICM detected a short in the injector circuit to ground.	Injector circuit short to ground, defective coil	
P0272	C	Cylinder #4 Contribution/Balance	When maximum/minimum pulse width adder is exceeded and cylinder does not converge a fault is set.		
P0273	C* O R	Cylinder #5 Injector Circuit Low	FICM detected an open the injector circuit.	Injector circuit open or defective coil.	
P0274	C O R	Cylinder #5 Injector Circuit High	FICM detected a short in the injector circuit to ground.	Injector circuit short to ground, defective coil	
P0275	C	Cylinder #5 Contribution/Balance	When maximum/minimum pulse width adder is exceeded and cylinder does not converge a fault is set.		

DIAGNOSTIC CODES

P0276	C*	O	R	Cylinder #6 Injector Circuit Low	FICM detected an open the injector circuit.	Injector circuit open or defective coil.
P0277	C	O	R	Cylinder #6 Injector Circuit High	FICM detected a short in the injector circuit to ground.	Injector circuit short to ground, defective coil
P0278	C			Cylinder #6 Contribution/Balance	When maximum/minimum pulse width adder is exceeded and cylinder does not converge a fault is set.	
P0279	C*	O	R	Cylinder #7 Injector Circuit Low	FICM detected an open the injector circuit.	Injector circuit open or defective coil.
P0280	C	O	R	Cylinder #7 Injector Circuit High	FICM detected a short in the injector circuit to ground.	Injector circuit short to ground, defective coil
P0281	C			Cylinder #7 Contribution/Balance	When maximum/minimum pulse width adder is exceeded and cylinder does not converge a fault is set.	
P0282	C*	O	R	Cylinder #8 Injector Circuit Low	FICM detected an open the injector circuit.	Injector circuit open or defective coil.
P0283	C	O	R	Cylinder #8 Injector Circuit High	FICM detected a short in the injector circuit to ground.	Injector circuit short to ground, defective coil
P0284	C			Cylinder #8 Contribution/Balance	When maximum/minimum pulse width adder is exceeded and cylinder does not converge a fault is set.	
P0297	C			Vehicle Overspeed Condition	Vehicle has been driven at speeds above limited speeds	Faulty PCM, Interference on VSS.
P0298	C*			Engine Oil Over Temperature Condition	Function of initial EOT	Checks for an EOT temperature signal which is unable to reach the EOT hot minimum limit (EOT_HOT_LMN) within a specified amount of time.
P0299	C*			Turbo / Super Charger Underboost	Fault sets when the difference between EP and commanded EP exceeds the limit for > 30 seconds.	Faulty EP sensor, VGT control valve slow to respond, Stuck VGT valve, faulty PCM.
P0300	C*			Random Misfire Detected	Unknown or random misfire when calculated instantaneous crankshaft acceleration exceeds a specified value a misfire event is detected.	
P0301	C*			Cylinder #1 Misfire Detected	Indicates when cylinder 1 is misfiring due to a loss of compression.	
P0302	C*			Cylinder #2 Misfire Detected	Indicates when cylinder 2 is misfiring due to a loss of compression.	
P0303	C*			Cylinder #3 Misfire Detected	Indicates when cylinder 3 is misfiring due to a loss of compression.	
P0304	C*			Cylinder #4 Misfire Detected	Indicates when cylinder 4 is misfiring due to a loss of compression.	
P0305	C*			Cylinder #5 Misfire Detected	Indicates when cylinder 5 is misfiring due to a loss of compression.	
P0306	C*			Cylinder #6 Misfire Detected	Indicates when cylinder 6 is misfiring due to a loss of compression.	
P0307	C*			Cylinder #7 Misfire Detected	Indicates when cylinder 7 is misfiring due to a loss of compression.	
P0308	C*			Cylinder #8 Misfire Detected	Indicates when cylinder 8 is misfiring due to a loss of compression.	
P0335	C*		R	Crankshaft Position Sensor A Circuit	PCM monitors CKP signal for a unique pattern to indicate piston position. Checks for total absence of the CKP signal.	Poor connection, defective sensor, electrical noise.
P0336	C*		R	Crankshaft Position Sensor Circuit A Range/Performance	CKP signal intermittent.	Poor connection, defective sensor, electrical noise.
P0340	C*		R	Camshaft Position Sensor A Circuit (Bank 1 or single sensor)	PCM monitors CMP signal for a unique pattern to indicate piston position. Checks for total absence of the CMP signal.	Poor connection, defective sensor, electrical noise.
P0341	C*		R	Camshaft Position Sensor A Circuit Range/Performance (Bank 1 or single sensor)	CMP signal intermittent.	Poor connection, defective sensor, electrical noise.
P0381	C*	O		Glow Plug/Heater Indicator Circuit	Indicator Circuit Check - Instrument cluster driver checks for open circuit, or short circuit when lamp turns on and off.	Open/Short circuit, lamp, fuse, PCM.
P0401	C*			Exhaust Gas Recirculation Flow Insufficient Detected	EGR Valve Position does not match desired, limits based on engine speed / load.	EGR Valve stuck or sticking - EGR Valve Position Sensor Bias - EP Sensor bias.
P0402	C*			Exhaust Gas Recirculation Flow Excessive Detected	EGR Valve Position does not match desired, limits based on engine speed / load.	EGR Valve stuck or sticking - EGR Valve Position Sensor Bias - EP Sensor bias.
P0403	C*	O	R	Exhaust Gas Recirculation Control Circuit	EGR actuator circuit check. Diagnostic circuit associated with 1 Amp driver Internal to PCM.	Open circuit, short to ground, and short to power.
P0404	C*			Exhaust Gas Recirculation Control Circuit Range/Performance	+/- 0.10 EGRP error from commanded to actual EGRP during normal driving conditions.	Faulty EGR sensor, valve or PCM integrity of EGR position circuit.
P0405	C*	O	R	Exhaust Gas Recirculation Sensor A Circuit Low	EGR is disabled when EGR voltage is less than 0.30 volts.	EGRP circuit short to ground or open, defective sensor.
P0406	C*	O	R	Exhaust Gas Recirculation Sensor A Circuit High	EGR is disabled when EGR voltage is greater than 4.9 volts.	EGRP circuit short to Vref or Vbat, defective sensor.
P0407	C*	O	R	Exhaust Gas Recirculation Sensor B Circuit Low	Checks EGRP for a lower than a specified position for normal operation.	Circuit is shorted to ground.
P0408	C*	O	R	Exhaust Gas Recirculation Sensor B Circuit High	Checks EGRP for a higher than a specified position for normal operation.	Circuit is shorted to 5V.
P0460	C	O	R	Fuel Level Sensor A Circuit	Fuel Level Indicator (FLI) Circuit Check - Instrument cluster driver checks for open circuit, or short circuit.	
P0462	C	O	R	Fuel Level Sensor A Circuit Low Input		
P0463	C	O	R	Fuel Level Sensor A Circuit High Input		
P0470	C*	O		Exhaust Pressure Sensor	Maximum EP when the engine is not running 150 kpa (21.8 PSI) absolute.	Faulty EP Sensor, PCM.
P0471	C*			Exhaust Pressure Sensor Range/Performance	Minimum EP when the engine is running, Pressure difference of +/-10 kPa (1.5 PSI) from desired.	Faulty EP Sensor, PCM or VGT.
P0472	C*	O	R	Exhaust Pressure Sensor Low Input	EGR disabled, default inferred for VGT operation when EGR voltage is less than 0.03 volts.	EP circuit is short to ground or open, defective sensor.
P0473	C*	O	R	Exhaust Pressure Sensor High Input	EGR disabled, default inferred for VGT operation when EGR voltage is greater than 4.8 volts.	EP circuit is short to Vref or Vbat, defective sensor.
P0478	C*			Exhaust Pressure Control Valve High Input	EP is higher than EP desired by 260 kpa (37.7 PSI) for greater than 30 seconds.	Faulty EP sensor, VGT control valve slow to respond, Stuck VGT valve, faulty PCM.
P0480	C		R	Fan 1 Control Circuit		
P0487	C*	O	R	EGR Throttle Position Control Circuit	EGR actuator circuit check.	open circuit, short to ground, and short to power.
P0488	C*			EGR Throttle Position Control Range/Performance	Checks for a difference in commanded and actual EGRTP	Fault sets when the difference between EGRTP and commanded EGRTP exceeds the limit for a specified time.
P0500	C			Vehicle Speed Sensor A	Vehicle speed sensor malfunction.	Sensor, circuit, PSM, PSOM, low transmission fluid.
P0528	C		R	Fan Speed Sensor Circuit No Signal		
P0562	C*		R	System Voltage Low	PCM voltage less than 7v - cause of no start/misfire.	Low VBAT, loose connections/resistance in circuit, Vref engine concerns.
P0563			R	System Voltage High	PCM voltage continuously more than 23.3v.	Charging system fault.
P0565			R	Cruise Control ON Signal	KOER switch test(code set if cruise not present).	Open/short circuit, switch failure, PCM failure.
P0566			R	Cruise Control OFF Signal	KOER switch test(code set if cruise not present).	Open/short circuit, switch failure, PCM failure.
P0567			R	Cruise Control RESUME Signal	KOER switch test(code set if cruise not present).	Open/short circuit, switch failure, PCM failure.

DIAGNOSTIC CODES

P0568		R	Cruise Control SET Signal	KOER switch test(code set if cruise not present).	Open/short circuit, switch failure, PCM failure.
P0569		R	Cruise Control COAST Signal	KOER switch test(code set if cruise not present).	Open/short circuit, switch failure, PCM failure.
P0571	O		Brake Switch A Circuit	Brake switch A circuit malfunction	Cruise control code will be set on every switch test on vehicles not equipped with cruise control.
P0603	C		Powertrain Control Module Keep Alive Memory (KAM) Error	No historical faults output during self test.	Disconnected/Discharged Battery, Open PCM pin, faulty PCM.
P0605	O		Powertrain Control Module Read Only Memory (ROM) Error	PCM failure	Defective PCM.
P0606	C*	R	ECM / PCM Processor		
P0611	C*	O R	Fuel Injector Control Module Performance	FICM memory fault will set if a RAM or ROM fault exists.	Loss of FICM power or other internal FICM failure.
P0620	C	O R	Generator 1 Control Circuit		
P0623	C	O R	Generator Lamp Control Circuit		
P0645	C	O R	A/C Clutch Relay Control Circuit		
P0649	C	O R	Cruise Control Lamp Control Circuit		
P0670	C*	O R	Glow Plug Module Control Circuit	Glow plug control module control line failure	Open/grounded circuit, open/shorted GPCM, failed PCM
P0671	C*	O R	Cylinder 1 Glow Plug Circuit	Glow plug #1 failure	Open/shorted circuit, faulty glow plug, failed GPCM
P0672	C*	O R	Cylinder 2 Glow Plug Circuit	Glow plug #2 failure	Open/shorted circuit, faulty glow plug, failed GPCM
P0673	C*	O R	Cylinder 3 Glow Plug Circuit	Glow plug #3 failure	Open/shorted circuit, faulty glow plug, failed GPCM
P0674	C*	O R	Cylinder 4 Glow Plug Circuit	Glow plug #4 failure	Open/shorted circuit, faulty glow plug, failed GPCM
P0675	C*	O R	Cylinder 5 Glow Plug Circuit	Glow plug #5 failure	Open/shorted circuit, faulty glow plug, failed GPCM
P0676	C*	O R	Cylinder 6 Glow Plug Circuit	Glow plug #6 failure	Open/shorted circuit, faulty glow plug, failed GPCM
P0677	C*	O R	Cylinder 7 Glow Plug Circuit	Glow plug #7 failure	Open/shorted circuit, faulty glow plug, failed GPCM
P0678	C*	O R	Cylinder 8 Glow Plug Circuit	Glow plug #8 failure	Open/shorted circuit, faulty glow plug, failed GPCM
P0683	C*	O R	Glow Plug Control Module to PCM Communication Circuit	GPCM glow plug control module communication line failure	Open/shorted circuit, failed GPCM, failed PCM
P0700	C	O R	Transmission Control System (MIL Request)		
P0703		R	Brake Switch B Input Circuit	KOER switch test.	Open/short circuit, switch, PCM, failed to activate during KOER switch test.
P0704	C	R	Clutch Switch Input Circuit	KOER switch test.	Open/short circuit, switch, PCM, failed to activate during KOER switch test.
P0830		R	Clutch Pedal Switch A Circuit		
P0833		R	Clutch Pedal Switch B Circuit		
P1000	C	O R	OBD Systems Readiness Test Not Complete	Drive cycle is not complete.	
P1001		R	KOER not able to complete, KOER aborted	Conditions not met.	A/C, Parking Brake, Clutch, PRNDL, (EOT, ETC.)
P1102	C*		Mass Air Flow Sensor In Range But Lower Than Expected		
P1139	C	O R	Water in Fuel Indicator Circuit	Indicates fault in circuit.	Faulty sensor, Open or Short in circuit.
P1148	C	O R	Generator 2 Control Circuit		
P1149	C*	O R	Generator 2 Control Circuit High		
P1184		R	Engine Oil Temperature Sensor Out Of Self Test Range	Engine not warm enough to run KOEO CCT - aborts test.	Engine not warm enough, leaking thermostat, circuit failure.
P1260	C		Theft Detected, Vehicle Immobilized		
P1284		R	Aborted KOER - Injector Control Pressure Regulator	ICP failure--Aborts KOER CCT test	See codes P2284, P2285, P2286, P2288, P2623
P1334	C	R	EGR Throttle Position Sensor Minimum Stop Performance	Checks for a maximum closed and a minimum open position voltage.	
P1335	C	R	EGR Position Sensor Minimum Stop Performance	Fault sets when the EGRP closed position exceeds the maximum limit at initial key on.	
P1378	C	O R	FICM Supply Voltage Circuit Low	FICM detects logic power low, less than 7 volts.	Low batteries, loose connections/resistance in circuit, defective relay.
P1379	C	O R	FICM Supply Voltage Circuit High	FICM detects excessive voltage, greater than 16 volts.	Charging system fault.
P1397		R	System Voltage Out Of Self Test Range		Voltage too high or low for glow plug monitor test.
P1408		R	EGR Flow Out Of Self Test Range	EGRC output circuit check - engine off test only	EGR Control circuit open, short to Vref, Vbat, ground, defective coil.
P1464	O	R	A/C Demand Out Of Self Test Range	Aborts KOER Test.	A/C switch not in "off" position, A/C circuit short to power.
P1501	O	R	Vehicle Speed Sensor Out Of Self Test Range	Aborts test - KOER on demand, CCT, or switch test.	Vehicle speed detected during test, faulty VSS, PCM.
P1502	O	R	Invalid Test - Auxiliary Power Control Module Functioning	Aborts test - KOER on demand, CCT, or switch test.	APCM active while KOER test is running.
P1531		R	Invalid Test - Accelerator Pedal Movement	Aborts test - KOER on demand, CCT test.	Accelerator pedal incorrect position during test, faulty AP, PCM.
P1536		R	Parking Brake Switch Circuit	KOER switch test.	Failed to activate switch during test, circuit, switch, PCM.
P1633	C*	O R	Keep Alive Power Voltage Too Low		
P1635	C*	O R	Tire/Axle Out of Acceptable Range		
P1639	C*	O R	Vehicle ID Block Corrupted, Not Programmed		
P1703	O	R	Brake Switch Out Of Self Test Range		
P1705	O	R	Transmission Range Circuit Not Indicating Park/Neutral During Self Test	Not in park during KOEO or KOER.	Operator error, circuit failure, faulty sensor, PCM.
P1725		R	Insufficient Engine Speed Increase During Self Test		
P1726		R	Insufficient Engine Speed Decrease During Self Test		
P2067	C	O R	Fuel Level Sensor B Circuit Low Input		
P2068	C	O R	Fuel Level Sensor B Circuit High Input		
P2104	C		Throttle Actuator Control System - Forced Idle		
P2122	C	O R	Throttle/Pedal Position Sensor/Switch D Circuit Low Input		
P2123	C	O R	Throttle/Pedal Position Sensor/Switch D Circuit High Input		
P2127	C	O R	Throttle/Pedal Position Sensor/Switch E Circuit Low Input		
P2128	C	O R	Throttle/Pedal Position Sensor/Switch E Circuit High Input		
P2132	C	O R	Throttle/Pedal Position Sensor/Switch F Circuit Low Input		
P2133	C	O R	Throttle/Pedal Position Sensor/Switch F Circuit High Input		
P2138	C	O R	Throttle/Pedal Position Sensor/Switch D / E Voltage Correlation		Pedal Sensors will use SAE D,E,F codes
P2139	C	O R	Throttle/Pedal Position Sensor/Switch D / F Voltage Correlation		Pedal Sensors will use SAE D,E,F codes
P2140	C	O R	Throttle/Pedal Position Sensor/Switch E / F Voltage Correlation		Pedal Sensors will use SAE D,E,F codes

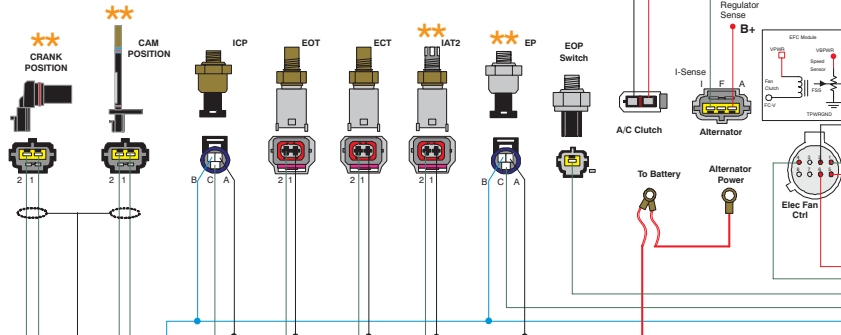
DIAGNOSTIC CODES

P2199	C*			Intake Air Temperature 1/2 Correlation	Correlation between IAT1 and IAT2 are not at expected values.	Open/shorted circuit, bias sensor, PCM
P2262	C*			Turbo/Super Charger Boost Pressure not Detected - Mechanical	No boost pressure increase was detected.	MAP hose, MAP sensor, CAC system leaks, Intake leaks, EP sensor, exhaust restriction.
P2263	C*			Turbo/Super Charger System Performance		MAP hose, MAP sensor, CAC system leaks, Intake leaks, EP sensor, exhaust restriction, exhaust leaks.
P2269	C	O	R	Water in Fuel Condition	Indicates water in fuel.	Drain water in fuel separator, defective WIF sensor, circuit integrity.
P2284	C		R	Injector Control Pressure Sensor Circuit Range/Performance	Default inferred ICP, ICP desired does not equal ICP signal, difference of 362psi/2.5mpa.	See diagnostic manual - ICP system.
P2285	C	O	R	Injector Control Pressure Sensor Circuit Low	Default open loop control - underrun at idle, ICP is less than 0.04 volts.	ICP circuit short to ground or open, defective sensor.
P2286	C	O	R	Injector Control Pressure Sensor Circuit High	Default open loop control - underrun at idle, ICP is greater than 4.91 volts.	ICP circuit short, Vref or Vbat, defective sensor.
P2288	C		R	Injector Control Pressure Too High	Default inferred ICP is used, ICP is greater than 3675psi/25mpa.	See diagnostic manual - ICP system.
P2289	C	O		Injector Control Pressure Too High - Engine Off	Default inferred ICP, KOEO ICP is greater than 1161psi/8mpa.	ICP signal ground, circuit open, defective sensor.
P2290	C	O		Injector Control Pressure Too Low	Default inferred ICP is used, ICP is below desired pressure	See diagnostic manual - ICP system.
P2291	C			Injector Control Pressure Too Low - Engine Cranking	No start ICP is less than 725psi/5mpa.	See diagnostic manual - ICP system
P2457	C*			Exhaust Gas Recirculation Cooler System Performance		
P2552	C	O	R	FICMM Circuit - Throttle/Fuel Inhibit Circuit	No signal from the FICM Monitor circuit	Circuit open/short, FICM, PCM
P2614	C	O	R	Camshaft Position Output Circuit / Open	CMPO signal intermittent	Poor connection, electrical noise. In CMPO from PCM
P2617	C	O	R	Crankshaft Position Output Circuit / Open	CKPO signal intermittent	Poor connection, electrical noise. In CKPO from PCM
P2623	C*	O	R	Injector Control Pressure Regulator Circuit	IPR circuit failure	Open/grounded circuit, stuck IPR, loose connection
U0101	C	O	R	Lost Communication with TCM		
U0105	C	O	R	Lost Communication with FICM		Check CAN2H/CAN2L circuits, PCM, or FICM issue.
U0155	C	O	R	Lost Communication with Instrument Cluster		
U0306	C	O	R	Software Incompatibility with FICM		

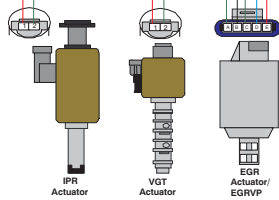
F-SERIES(SINGLE ALT.)

Engine Mounted Components

SENSORS



ACTUATORS



(Orientation = Looking into terminals on connector)

PURPLE = V inj (48 VOLTS)

Lt. BLUE = V ref (5 VOLTS)

GREEN = SIGNAL CIRCUIT

Dk Blue = Data Communication Link

BLACK = GROUND CIRCUIT

RED = 12 VOLTS (V Batt)

★ Gold Plated Pins

The following pins in the PCM are tin plated:

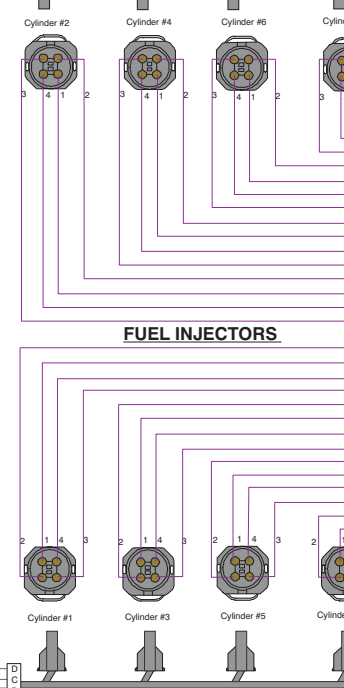
J1-C1: 01,11,12,23,24,34,35,46

J1-C2: 01,11,12,23,24,34,35,46

J1-C3: 01,07,08,15,16,22,23,30

All of the other pins are gold plated

FUEL INJECTORS



Injector Pinout
 1 - Open Coil Power
 2 - Open Coil Ground
 3 - Close Coil Power
 4 - Close Coil Ground

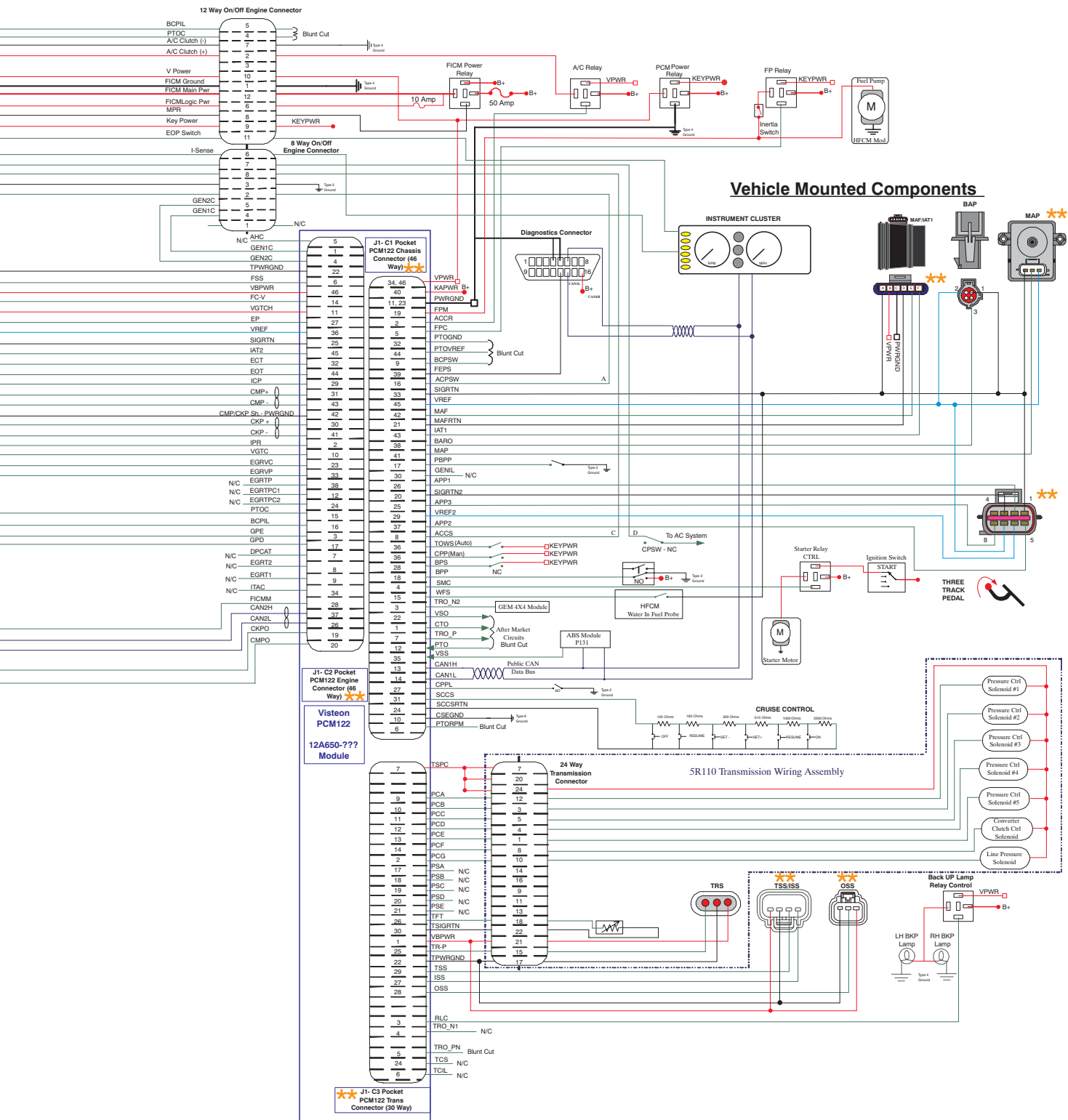
NOTE: For clarity of the print all three FICM connectors are shown together as one. The pin numbers are color coded, blue for X1, red for X2, and black for X3

Siemens FICM Module

- X3 - Pin 7
- X3 - Pin 27
- X3 - Pin 8
- X2 - Pin 4, 23
- X3 - Pins 24, 25
- X3 - Pins 1, 2, 3
- X3 - Pins 22, 28
- X3 - Pin 9
- X3 - Pin 30
- X3 - Pin 31
- X3 - Pin 32
- X3 - Pin 29
- X2 - Pin 5
- X2 - Pin 23
- X2 - Pin 7
- X2 - Pin 24
- X1 - Pin 4
- X1 - Pin 21
- X1 - Pin 7
- X1 - Pin 22
- X1 - Pin 1
- X1 - Pin 23
- X1 - Pin 6
- X1 - Pin 24
- X2 - Pin 2
- X2 - Pin 17
- X2 - Pin 6
- X2 - Pin 18
- X1 - Pin 2
- X1 - Pin 19
- X1 - Pin 5
- X1 - Pin 20
- X2 - Pin 4
- X2 - Pin 19
- X2 - Pin 5
- X2 - Pin 20
- X2 - Pin 1
- X2 - Pin 21
- X2 - Pin 5
- X2 - Pin 22
- X1 - Pin 3
- X1 - Pin 17
- X1 - Pin 6
- X1 - Pin 18
- X3 - Pin 5
- X3 - Pin 10

- TPWRGND
- FSS
- VBPWR
- FCV
- VGTC
- EP
- VREF
- SIGRTN
- IAT2
- ECT
- EOT
- ICP
- CMP+
- CMP-
- CMP/CKP S_B - PWRGND
- OKP+
- OKP-
- VGTC
- EGRVC
- EGRVP
- GPE
- GPD
- KEYPWR
- MPR
- FICM Logic Pwr
- FICM Main Pwr
- FICM Main Pwr
- FICM Per Gnd
- FICM Per Gnd
- FICM Per Gnd
- FICM
- CAN2H
- CAN2L
- OKPO
- CMPO

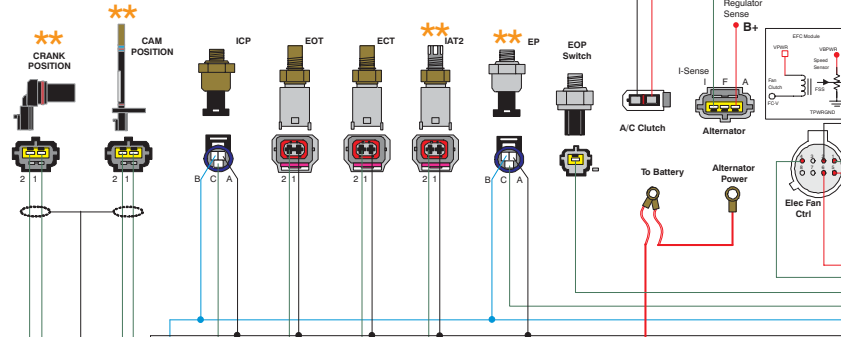
F-SERIES(SINGLE ALT.)



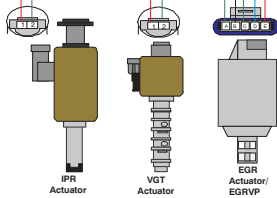
F-SERIES(DUAL ALT.)

Engine Mounted Components

SENSORS



ACTUATORS



(Orientation = Looking into terminals on connector)

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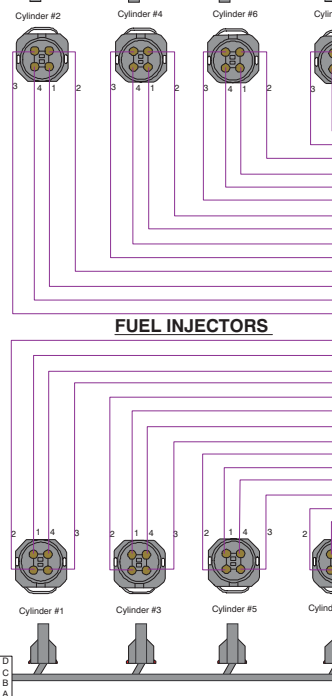
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J1-C2: 01,11,12,23,24,34,35,46

J1-C3: 01,07,08,15,16,22,23,30

All of the other pins are gold plated

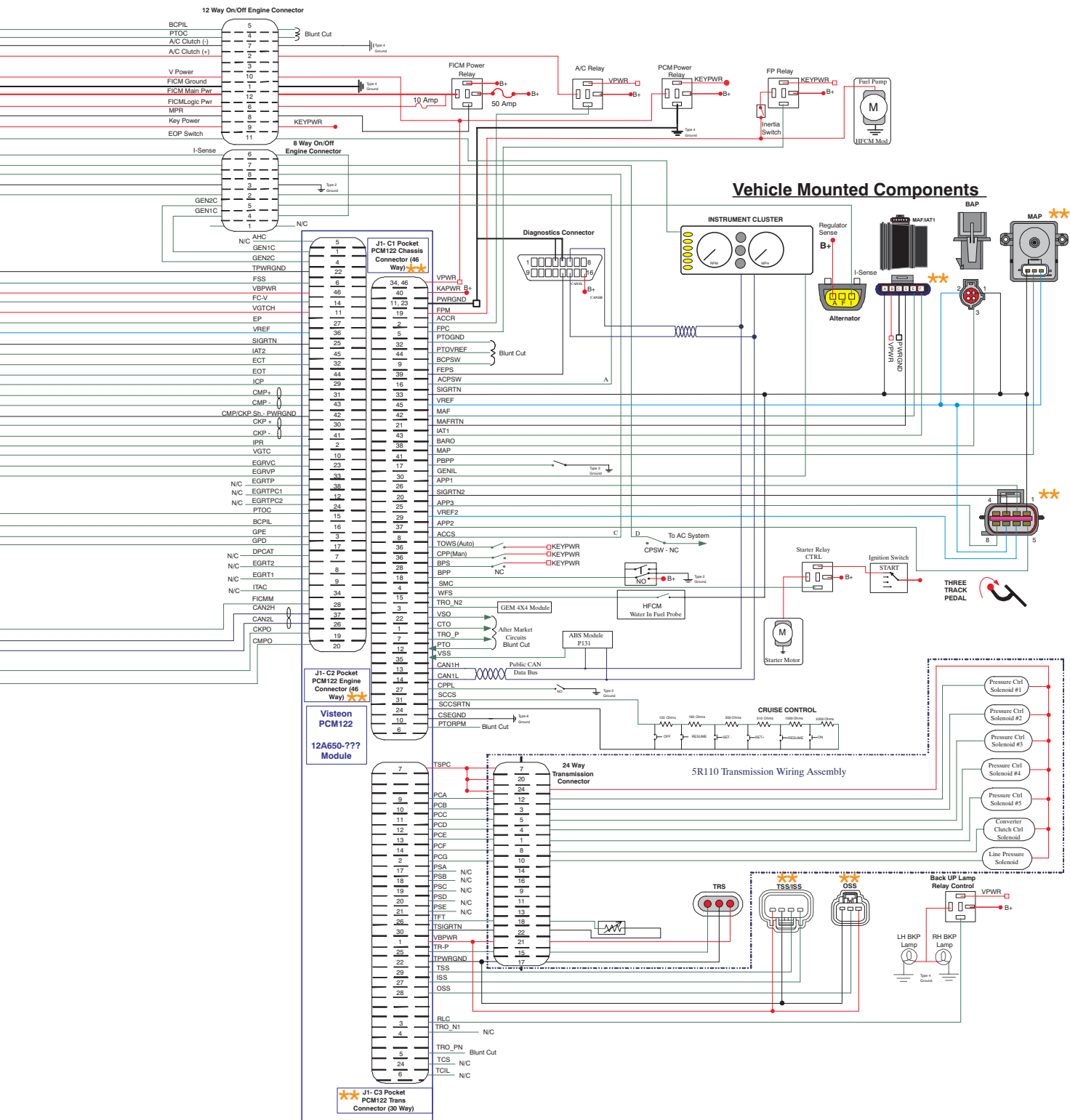
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 4 - Close Coil Ground

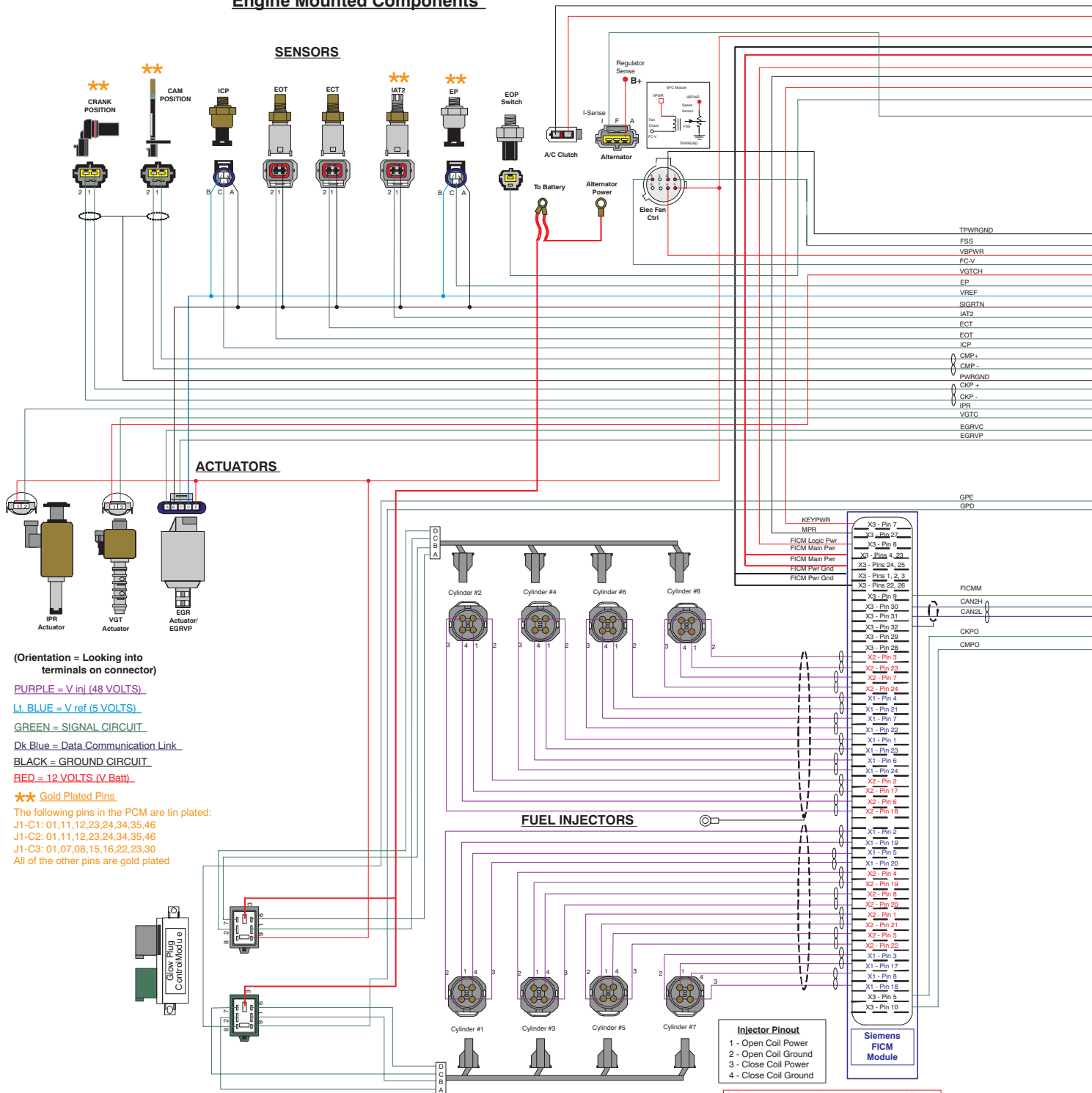
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F-SERIES(DUAL ALT.)



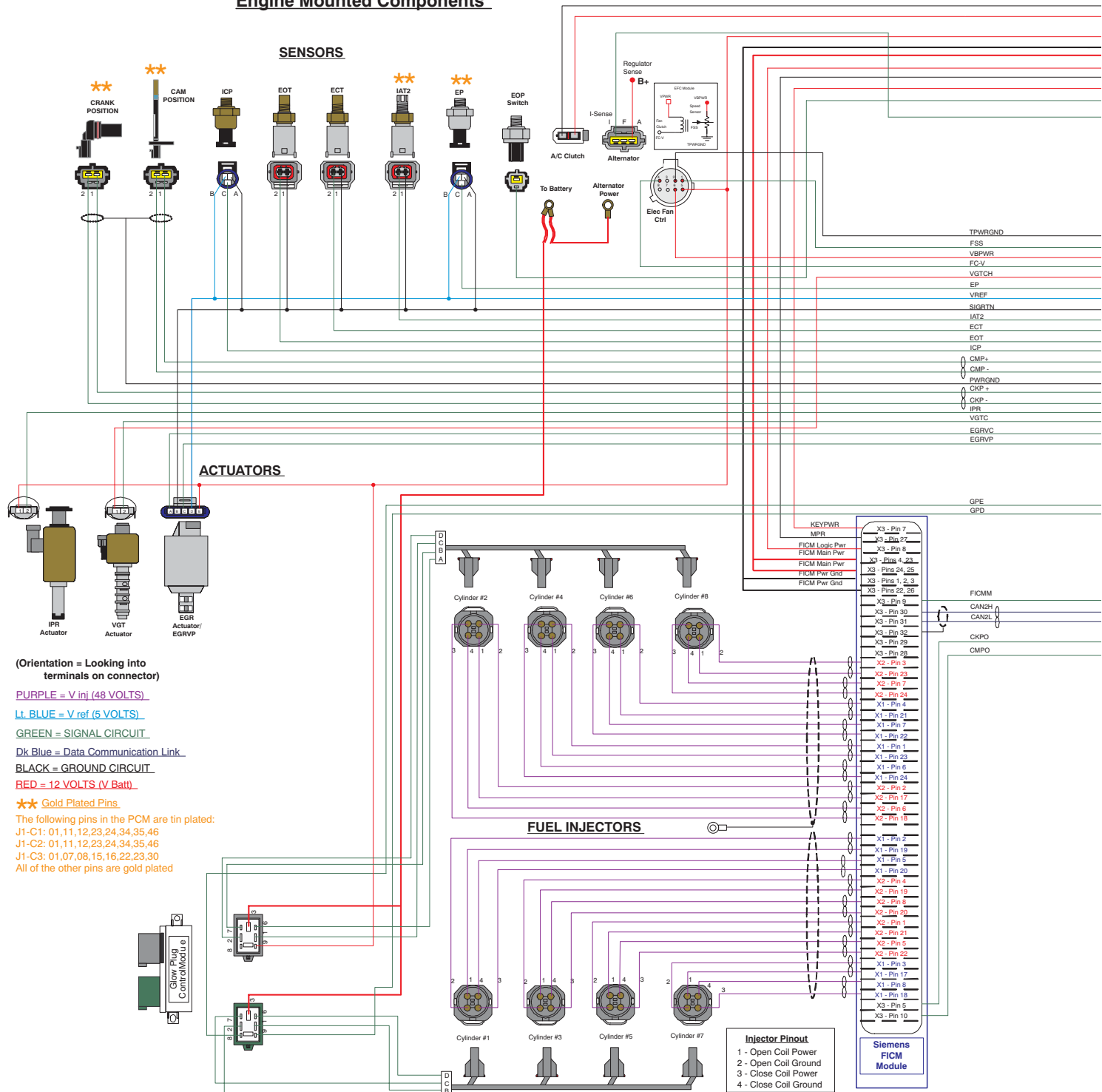
ECONOLINE® (SINGLE ALT.)

Engine Mounted Components



ECONOLINE® (DUAL ALT.)

Engine Mounted Components



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