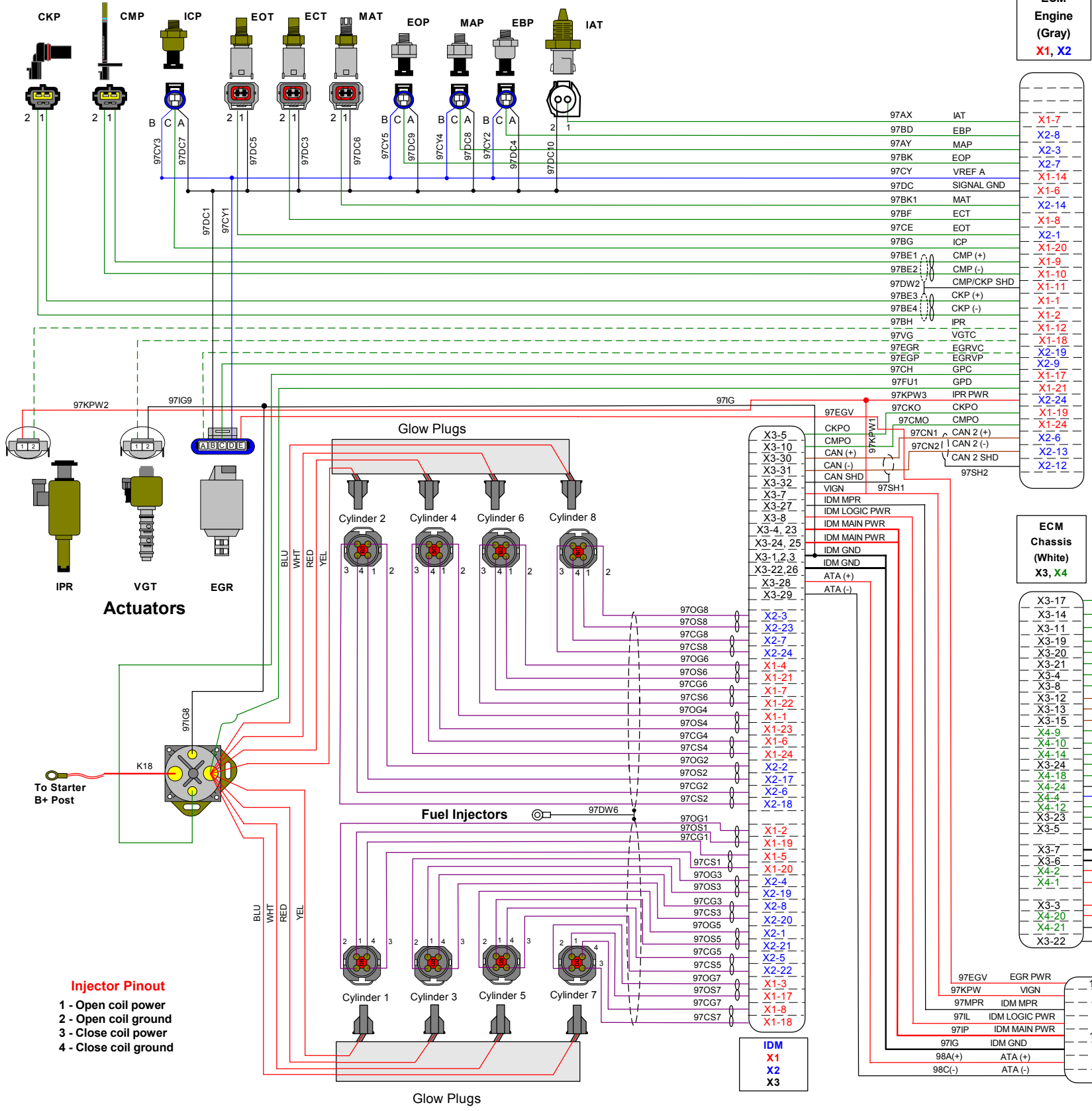
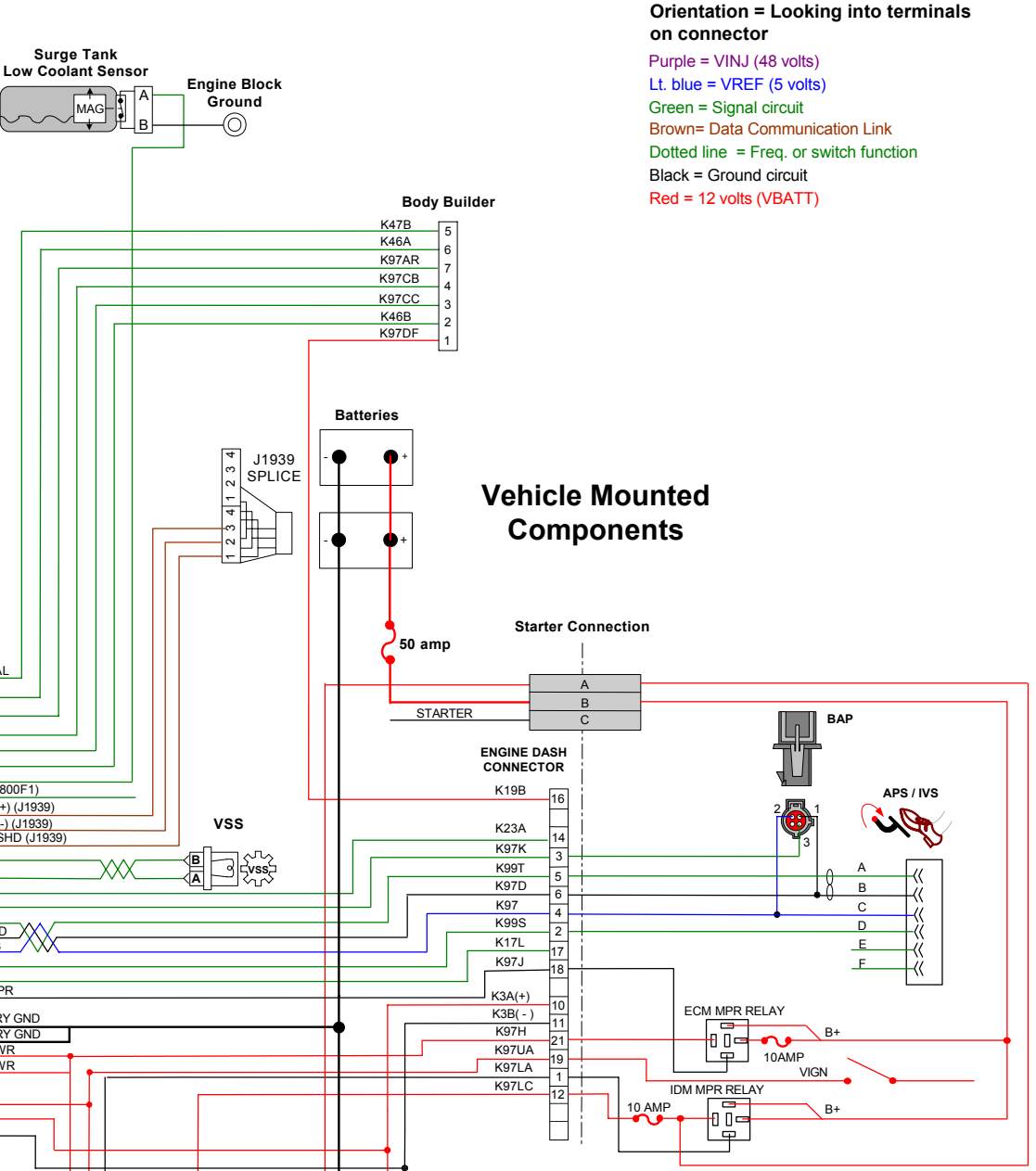


Engine Mounted Components

Sensors



Note: Information on this form, pertaining to vehicle mounted components, was current at the time of publication. Periodic updates may be made to introduce product improvements and technical enhancements. See correct truck service manual for chassis wiring.



Pin	Item	Circuit	Circuit No.	Key ON		Low Idle			High Idle			Operating Range	Comments
				Signal	Actual value	Signal	Data List	Actual value	Signal	Data List	Actual value		
X1 ENGINE CONNECTOR (GRAY)													
1	CKP (+)	Crankshaft Position	97BE3	0V		650 - 700Hz	700 RPM		2.75 - 3.0 kHz	2950 RPM		0-Governed speed	DMM set to DCmV - Hz
2	CKP (-)	Crankshaft Position	97BE4										
6	SIGNAL GND	Signal Ground	97DC	0V		0V			0V			0V	Ground for engine sensors
7	IAT	Intake Air Temperature	97AX	Temp. depend.		Temperature dependent			Temperature dependent			-49 - 409.6°F	3.85V = 32°F 0.45V = 212°F
8	ECT	Engine Coolant Temperature	97BF	Temp. depend.		Temperature dependent			Temperature dependent			0 - 255°F	3.86V = 32°F 0.65V = 190°F
9	CMP (+)	Camshaft Position	97BE1	0V		700 RPM [Ⓢ]	700 RPM		2950 RPM [Ⓢ]	2950 RPM		0-Governed speed	DMM set to DCmV - RPM [Ⓢ] Cranking
10	CMP (-)	Camshaft Position	97BE2										DMM set to DCV - RPM [Ⓢ] Running
11	CMP/CKP SHD	CMP/CKP Shield	97DW2	0V		0V			0V			0V	Shield ground for CMP/CKP
12	IPR	Injection Pressure Regulator	97BH									0 - B+	Duty cycle, duty controlled; low side driver
14	VREF A	Voltage Reference A	97CY	5V ± 0.5		5V ± 0.5			5V ± 0.5			5V ± 0.5	VREF for engine sensors
17	GPC	Glow Plug Control	97CH	0V/B+		0V/B+			0V/B+				0V = GPC off 12V = GPC on
18	VGTC	Variable Geometry Turbo Control	97VG									0 - 12V	Duty cycle, duty controlled; high side driver
19	CKPO	Crankshaft Position Out	97CKO	0V		650 - 700Hz	700 RPM		2.75 - 3.0 kHz	2950 RPM		0-Governed speed	DMM set to DCV - Hz
20	ICP	Injection Control Pressure	97BG	0.2V		See Performance Specs			See Performance Specs			0 - 4061 PSI	1.0V = 625 PSI
21	GPD	Glow Plug Diagnostic	97FU1	0V/B+		0V/B+			0V/B+				0V = GPR off 12V = GPR on
24	CMPO	Camshaft Position Out	97CMO	0V		700 RPM [Ⓢ]	700 RPM		2950 RPM [Ⓢ]	2950 RPM		0-Governed speed	DMM set to DCV - RPM [Ⓢ]
X2 ENGINE CONNECTOR (GRAY)													
1	EOT	Engine Oil Temperature	97CE	Temp. depend.		Temperature dependent			Temperature dependent			-49 - 409.6°F	4.35V = 32°F 0.82V = 212°F
3	MAP	Manifold Absolute Pressure	97AY	0.8 - 1.0V		Condition dependent			Condition dependent			0 - 38 PSI	0.8-1.0V = 0 PSI 2.72V = 18 PSI
6	CAN 2 (+)	CAN 2 (Private)	97CN1	1 - 4V		1 - 4V			1 - 4V			1 - 4V	Digital signal communications
7	EOP	Engine Oil Pressure	97BK	0.40V		1.1V min 12 PSI min			2.0V min 30 PSI min			0 - 100 PSI	0.40V = 0 PSI 3.61V = 60 PSI
8	EBP	Exhaust Back Pressure	97BD	0.8 - 1V		Condition dependent			Condition dependent			0 - 38 PSI	0.8-1.0V = 0 PSI 2.72V = 18 PSI
9	EGRP	EGR Valve Position	97EGP	0.4 - 0.9V		Condition dependent			Condition dependent			0 - 100%	0.4-0.9V= 0% open 4.0-4.5V= 100% open
12	CAN 2 Shd	CAN 2 Shield	97SH2	0V		0V			0V			0V	Shield ground for CAN 2
13	CAN 2 (-)	CAN 2 (Private)	97CN2	1 - 4V		1 - 4V			1 - 4V			1 - 4V	Digital signal communications
14	MAT	Manifold Air Temperature	97BK1	Temp. depend.		Temperature dependent			Temperature dependent			0 - 255°F	3.87V = 32°F 2.15V = 104°F
19	EGRC	Exhaust Gas Recirculation Control	97EGR									0 - B+	Duty cycle, duty controlled, low side driver
24	IPR PWR	IPR Power	97KPW3	B+		B+			B+			B+	Power supply for IPR valve from VIGN
X3 CHASSIS CONNECTOR (WHITE)													
3	VIGN	ECM Ignition Voltage	97UA	B+		B+	B+		B+	B+		B+	Power from ignition circuit
4	ECL	Engine Coolant Level	K34A	5V = Full coolant		Dependent on coolant level			Dependent on coolant level			0V/5V	0V = Low coolant 5V = Full coolant
5	ECM MPR	ECM Main Power Relay Control	K97J	0.6 - 1.0V		0.6 - 1.0V			0.6 - 1.0V			0.6 - 1.0V/B+	0.6 - 1.0V = MPR on B+ = MPR off
6	Battery Ground	Battery Ground	K97GV	0V		0V			0V			0V	ECM ground from B -
7	Battery Ground	Battery Ground	K97GW	0V		0V			0V			0V	ECM ground from B -
8	DDS	Drive Line Disengagement Switch	K97AD			0V = clutch pedal down 12V = clutch pedal up			0V = trans in gear 12V = trans in neutral				Depends on transmission type
11	TACH	Tachometer Output	K97AR	0V		700 RPM [Ⓢ] 700 RPM			2950 RPM [Ⓢ] 2950 RPM			0-Governed speed	DMM set to DCV - RPM [Ⓢ]
12	CAN 1 (+)	CAN 1 (Public)	K5V	1 - 4V		1 - 4V			1 - 4V			1 - 4V	Digital signal communications
13	CAN 1 (-)	CAN 1 (Public)	K5W	1 - 4V		1 - 4V			1 - 4V			1 - 4V	Digital signal communications
14	RAS	Resume Accel Switch	K46A										Body builder
15	CAN 1 SHD	CAN 1 Shield	K5AE	0V		0V			0V			0V	Shield group for CAN 1
17	VSS CAL	Vehicle Speed Output	K47B										Body builder
19	RPRE	Remote Preset PTO	K97CB										Body builder
20	RVAR	Remote Variable PTO	K97CC										Body builder
21	SCS	Speed Control Switch	K46B										Body builder
22	RSE	Radiator Shutter Enable											0V = Enable 12V = Disable
23	ECI	Engine Crank Inhibit	K17L	0V/4 - 5V		4 - 5V			4 - 5V			0V/4 - 5V	0V allows cranking 4 - 5V inhibits cranking
24	BAP	Barometric Pressure	K97L	Alt. dependent		Altitude dependent			Altitude dependent			2.55V - 4.8V	4.6V = Sea level 2.6V = 10,000 ft. (Approx)
X4 CHASSIS CONNECTOR (WHITE)													
1	ECM PWR	ECM Power	K97F	B+		B+			B+			B+	Power from ECM power relay
2	ECM PWR	ECM Power	K97Z	B+		B+			B+			B+	Power from ECM power relay
4	VREF B	Voltage Reference B	K97	5V ± 0.5		5V ± 0.5			5V ± 0.5			5V ± 0.5	VREF for chassis builder sensors
9	VSS (-)	Vehicle Speed Signal	K47A			2 - 14 VAC	Mph (Km/hr)		2 - 14 VAC	Mph (Km/hr)		2 - 14 VAC	Manual and mechanical transmission
10	VSS (+)	Vehicle Speed Signal	K47			2 - 14 VAC	Mph (Km/hr)		2 - 14 VAC	Mph (Km/hr)		2 - 14 VAC	VSS signal is an AC sine wave
12	IVS	Idle Validation Switch	K99S	0V		0V			B+			0V/B+	0V= APS idle B+ = APS off idle
14	EFAN	Engine Fan	K23A										0V = Solenoid on (fan off) 12V = Solenoid off (fan on)
18	APS	Accelerator Position Sensor	K99T	0.65V		0.65V	0%		4V	102%		10 - 102%	0.64V = 0% 3.84V = 102%
20	ATA (+)	Communication Link	K3A (+1)	2.8 - 4.0V		2.8 - 4.0V			2.8 - 4.0V	Digital data signal			Diagnostic/programming
21	ATA (-)	Communication Link	K3B (-1)	0.2 - 1.8V		0.2 - 1.8V			0.2 - 1.8V	Digital data signal			Diagnostic/programming
24	Signal RTN	Signal Return	K97D	0V		0V			0V			0V	Signal ground for chassis mounted sensors