

EEC Engine Supplement - Car

Power - Train Control Module (PCM) Connector Pin Usage

PCM Pin	Breakout Box Pin	Wire Color	Application	Abbreviation
1A	1	BL / R	Keep Alive Power	KAPWR
1B	37,57	Y/ W	Vehicle Power	VPWR
1C	5	BK/ W	Vehicle Start	VST
1D	38	BL/ BK	Switch Monitor Lamp	SML
1E	15	BL	Malfunction Indicator Lamp	MIL
1F	17	W/ BK	Self Test Output	STO
1G	36	BK	Ground (MTX only)	GND
1H	55	W/ Y	Fuel Pump Relay	FPR
1I	35	LG	Daytime Running Lamp (Canada Only)	DRL
1J	54	BL/ O	A/C Relay (A/C only)	ACR
1K	48	BL	Self Test Input	STI
1L	42	BK/ R	Rear Window Defroster Switch	DEF
1M	21	GN/ R	Vehicle Speed Sensor (in Instrument Cluster)	VSS
1N	18	R	Idle Switch	IDL
1O	2	GN	Brake On/Off Switch	BOO
1P	19	BL/Y	Power Steering Pressure Switch (5-door ATX only)	PSP
1Q	10	GN/ W	Clutch Cycling Pressure Switch (A/C Only)	CCPS
1R	22	O/ BL	Blower Motor Switch	BLMT
1S	23	BR	Cooling Fan Relay	CFR
1T	30	BL/ W	Shift Indicator Lamp (MTX Only)	SIL
1U	28	R/ GN	Headlamp Relay	HDLR
1V	43	GN/ BK	Park/ Neutral Position Switch/ Clutch Pedal Position Switch (MTX Only)	PNP/CPP
1V	43	W	Park/ Neutral Position Switch (ATX Only)	PNP
2A	39,40,44,60	BK/ O	Ground	GND
2B	20	BK/ O	Ground	GND
2C	16	BK/ LG	Ground	GND
2D	46,49	Y/ GN	Signal Return	SIGRTN
2E	56	GN/ BK	Crankshaft Position Sensor (In Distributor)	CKP
2F	3	BL/ R	Ignition Control Module (In Distributor)	ICM
2G	24	GN/ R	Cylinder Identification Sensor (In Distributor)	CID
2H	51	R/ BL	Engine Coolant Temperature Sensor	ECT
2I	50	BL	High Pressure Switch (A/C Only)	HPS
2J	6	Y	EGR Valve Position Sensor	EVP
2K	26	LG/ R	Reference Voltage	VREF
2L	27	GN/ R	Intake Air Temperature Sensor	IAT
2M	47	LG/ W	Throttle Position Sensor	TP
2N	29	W	Oxygen Sensor	O2S
2O	25	GN/ BK	Mass Air Flow Sensor	MAF
2P	45	LG	Condenser Fan Relay (A/C Only)	CFAN
2Q	7	-	Not Used	-
2R	13	BL	EGR Vent Solenoid	EGRV
2S	53	R/ Y	EGR Control Solenoid	EGRC
2T	11	-	Not Used	-
2U	58	GN/ Y	Injector #1	INJ1
2V	59	GN/ BK	Injector #2	INJ2
2W	41	R/ W	Idle Control Solenoid	IAC
2X	31	R/ BL	Canister Purge Solenoid	CANP
2Y	33	GN/ R	Injector #3	INJ3
2Z	8	GN/ BL	Injector #4	INJ4

EEC Engine Supplement - Car

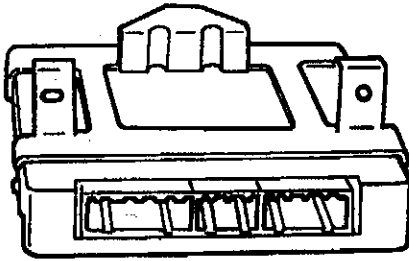
Quick Test Codes and Definitions

PCM Diagnostic Trouble Code	Diagnostic Trouble code Definition
03	Cylinder Identification Sensor (CID)
04	Crankshaft Position Sensor (CKP)
06	Vehicle Speed Sensor (VSS)
08	Mass Air Flow Sensor (MAF)
09	Engine Coolant Temperature Sensor (ECT)
10	Intake Air Temperature Sensor (IAT)
12	Throttle Position Sensor (TP)
14	Barometric Pressure Sensor (BARO)
15	Oxygen Sensor (O2S) Voltage Below 0.55V
16	EGR Valve Position Sensor (EVP)
17	Oxygen Sensor (O2S) Voltage Does Not Change
"STO LO" always on	Not able to initiate diagnostic test mode
"STI LO" always on and no codes (Blank Super Star II screen)	Pass Code

EEC PINPOINT TESTS

POWER TRAIN CONTROL MODULE

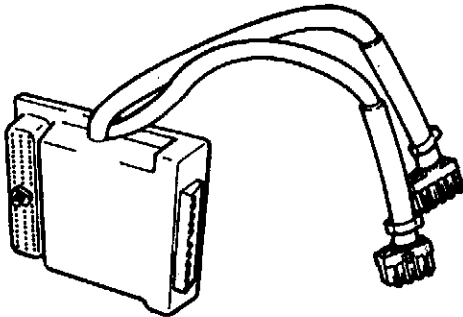
The Power train Control Module (PCM) is the microprocessor of the vehicle. The PCM receives and transmits data to and from relays, sensors, actuators, switches and other electric components. From the information gained, the PCM controls fuel economy, drive ability and optimizes emissions. The PCM performs self-diagnosis and detects failures within the electronic engine control system.



ENGINE	LOCATION
1.3L.	Mounted under instrument panel on driver's side.

BREAKOUT BOX CONNECTION

The Breakout Box is connected to the Power-train Control Module (PCM) harness to pinpoint faults in the Electronic Engine Control (EEC) System. To connect the Breakout Box disconnect the PCM connectors and attach the Breakout Box, with appropriate adapter, to the harness connectors and to the PCM if the test procedure indicates.



ENGINE	NUMBER	DESCRIPTION
All	014-00322	Breakout Box
1.3l.	007-0057	

EEC PINPOINT TESTS

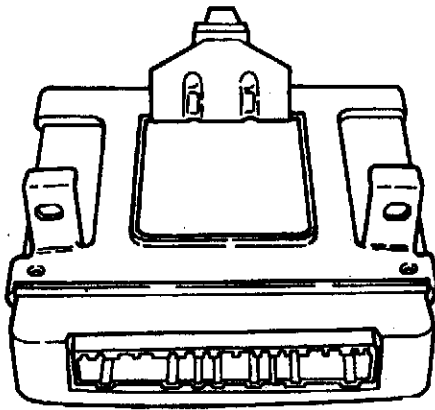
BARO BAROMETRIC PRESSURE SENSOR

The Barometric Pressure (BARO) Sensor detects changes in atmospheric pressure. This information is transferred to the Power-train Control Module (PCM) by an input signal. The PCM will adjust air/fuel ratio, A/C cutoff, idle speed and purge control to compensate for the changing pressure.

Note; You should enter this Pinpoint Test only when diagnostic trouble code 14 is received in Quick Test Steps 7 and 8 or when Quick Test 11 directs you.

Remember; This Pinpoint Test is intended to diagnose only the circuit; BARO.

Special Note; The BARO sensor is located within the PCM and cannot be replaced as a separate item. If a diagnostic trouble code 14 exists and cannot be erased, the PCM must be replaced.



BAROMETRIC PRESSURE SENSOR

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1F	17	W/ BK	Self Test Output	STO
1G	36	BK	Ground (MTX only)	GND
1H	55	W/ Y	Fuel Pump Relay	FPR
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1J	54	BL/ O	A/C Relay (A/C only)	ACR
1K	48	BL	Self Test Input	STI
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1M	21	GN/ R	Vehicle Speed Sensor (in Instrument Cluster)	VSS
1N	18	R	Idle Switch	IDL
1O	2	GN	Brake On/Off Switch	BOO
1P	19	BL/Y	Power Steering Pressure Switch (5-door ATX only)	PSP
1Q	10	GN/ W	Clutch Cycling Pressure Switch (A/C Only)	CCPS
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1T	30	BL/ W	Shift Indicator Lamp (MTX Only)	SIL
1U	28	R/ GN	Headlamp Relay	HDLR
1V	43	GN/ BK	Park/ Neutral Position Switch/ Clutch Pedal Position Switch (MTX Only)	PNP/ CPP
1V	43	W	Park/ Neutral Position Switch (ATX Only)	PNP
2A	39,40,44,60	BK/ O	Ground	GND
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2E	56	GN/ BK	Crankshaft Position Sensor (In Distributor)	CKP
2F	3	BL/ R	Ignition Control Module (In Distributor)	ICM
2G	24	GN/ R	Cylinder Identification Sensor (In Distributor)	CID
2H	51	R/ BL	Engine Coolant Temperature Sensor	ECT
2I	50	BL	High Pressure Switch (A/C Only)	HPS
2J	6	Y	EGR Valve Position Sensor	EVP
2K	26	LG/ R	Reference Voltage	VREF
2L	27	GN/ R	Intake Air Temperature Sensor	IAT
2M	47	LG/ W	Throttle Position Sensor	TP
2N	29	W	Oxygen Sensor	O2S
2O	25	GN/ BK	Mass Air Flow Sensor	MAF
2P	45	LG	Condenser Fan Relay (A/C Only)	CFAN
2Q	7	-	Not Used	-
2R	13	BL	EGR Vent Solenoid	EGRV
2S	53	R/ Y	EGR Control Solenoid	EGRC
2T	11	-	Not Used	-
2U	58	GN/ Y	Injector #1	INJ1
2V	59	GN/ BK	Injector #2	INJ2
2W	41	R/ W	Idle Control Solenoid	IAC
2X	31	R/ BL	Canister Purge Solenoid	CANP
2Y	33	GN/ R	Injector #3	INJ3
2Z	8	GN/ BL	Injector #4	INJ4

EEC Engine Supplement - Car

Quick Test Codes and Definitions

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EEC PINPOINT TESTS

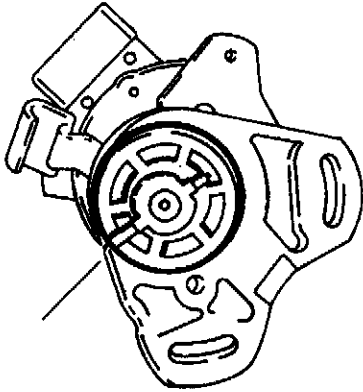
CID CYLINDER IDENTIFICATION SENSOR - 1.3L.

The Cylinder Identification (CID) Sensor detects the number 1 cylinder when it reaches top dead center (TDC) and signals the Power-train Control Module (PCM) to control fuel injection.

On 1.3L. engines a single rotor cap is mounted to the distributor shaft, below the crankshaft position rotor cap, where it spins according to camshaft speed. As it rotates through a magnetic hall effect pickup switch, the sensor detects the opening on the rotor cap and sends an input signal to the PCM.

Note; You should enter this Pinpoint Test only when diagnostic trouble code 03 is received in Quick Test Steps 7 or 8, or when Quick Test 11 directs you here.

Remember; This Pinpoint Test is intended to diagnose only the Circuit; CID.



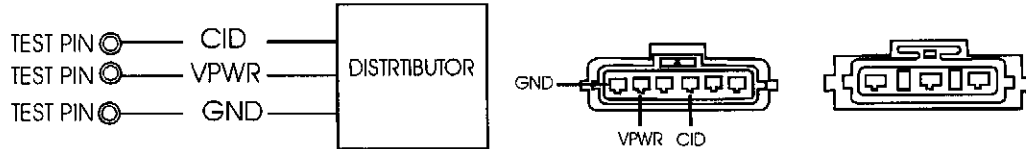
CYLINDER IDENTIFICATION (CID) SENSOR

ENGINE	LOCATION
1.3L.	Integrated in the Distributor

EEC PINPOINT TESTS

CID CYLINDER IDENTIFICATION SENSOR

PINPOINT TEST SCHEMATIC



DATA SHEET

ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIRE #
1.3L	CID	2G	24	108
	VPWR	1B	37, 57	47G
	GND	2C	16	45S

TEST STEP	RESULT	ACTION TAKEN
CID 1 - CHECK CID SIGNAL -Key OFF -Install Breakout Box (Connect PCM) -Measure the voltage at Test Pin CID while bumping the starter. -Does the voltage alternate between approximately 0 and 5 volts?	YES NO	CID circuit OK. If sent to this test by Quick Test Step QT11 in Section 5, return to Section 2; Diagnostic Routines. Otherwise, replace PCM. Go to CID2.
CID 2 - CHECK VPWR TO DISTRIBUTOR -Key OFF. -Disconnect the distributor connectors (1.3L - 6 pin connector). -Key ON. -Measure the voltage at the VPWR wire on the distributor harness connector and ground. -Is the voltage greater than 10 volts?	YES NO	Go to CID3. Go to EEC Pinpoint Test VPWR in this section. If VPWR is okay, service VPWR wire to distributor.

EEC PINPOINT TESTS

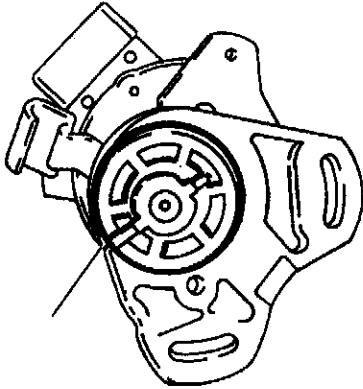
CID CYLINDER IDENTIFICATION SENSOR

<p>CID 3 CHECK GROUND AT DISTRIBUTOR</p> <ul style="list-style-type: none"> - Key OFF. -Disconnect the distributor connectors (1.3L.- 6 pin connector). -Measure the resistance of the ground wire between the distributor harness connector and ground. -Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to CID4.</p> <p>Service the distributor GND wire.</p>
<p>CID4 - CHECK CID WIRE FOR OPEN</p> <ul style="list-style-type: none"> -Key OFF. -Install Breakout Box (leave the PCM disconnected). -Disconnect the distributor connectors (1.3L. - 6 pin connector). -Measure the resistance of the CID wire between BOB test pin and the CID wire at the distributor harness connector. -Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to CID5.</p> <p>Service the CID wire for open.</p>
<p>CID5 - CHECK CID WIRE FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the distributor connectors (1.3L. - 6 pin connector). - Measure the resistance of the CID wire between BOB test pin CID and ground. - Is the resistance greater than 10,000 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to CID6.</p> <p>Service the CD wire for short to ground.</p>
<p>CID6 - CHECK FORSHORTS IN HARNESS.</p> <ul style="list-style-type: none"> - Key OFF. - Disconnect the distributor connectors (1.3L. - 6 pin connector). - PCM disconnected. - Measure the resistance between the CID wire and all the other wire terminals on the distributor connector. - Are all resistance greater than 10,000 ohms? 	<p>YES</p> <p>NO</p>	<p>Replace the distributor.</p> <p>Service the wire(s) in question.</p>

EEC PINPOINT TESTS

CKP CRANKSHAFT POSITION SENSOR

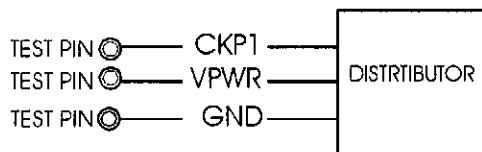
The Crankshaft Position Sensor (CKP) is mounted inside the distributor housing. A six-vane rotor is mounted to the distributor shaft and spins at the speed of the crankshaft. As the rotor passes through a magnetic Hall effect pickup switch, the six vanes are detected and sent to the Power-train Control Module (PCM) in a pulse wave form. The crankshaft position can be determined at 60 degrees intervals for fuel injection timing, ignition timing and emission control.



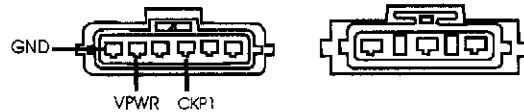
CID / CKP SENSOR

ENGINE	LOCATION
1.3L.	Integrated in the Distributor.

PINPOINT TEST SCHEMATIC DATA SHEET



DISTRIBUTOR HARNESS CONNECTORS



ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIRE #
1.3L.	CKP	2E	56	63
	VPWR	1B	37, 57	47G
	GND	2C	16	45I

EEC PINPOINT TESTS

CKP CRANKSHAFT POSITION SENSOR

<p>CKP1 CHECK CKP SIGNAL</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (connect PCM). - Measure the voltage at BOB test pin CKP while bumping the starter. - Does the voltage alternate between approximately CHECK VPWR TO DISTRIBUTOR 0 and 5 volts? 	<p>YES</p> <p>NO</p>	<p>CKP circuit okay. If sent to this test by Quick Test Step QT11 in Section 5, return to Section 2; Diagnostic Routines. Otherwise, replace the PCM.</p> <p>Go to CKP2.</p>
<p>CKP2</p> <ul style="list-style-type: none"> - Key OFF. - Disconnect the 6-pin connector. - Key ON. - Measure the voltage at the VPWR wire on the 6-pin distributor harness connector. - Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to CKP3.</p> <p>Go to EEC Pinpoint Test VPWR in this section. If VPWR is okay, service the VPWR wire to distributor.</p>
<p>CKP3 CHECK GROUND AT DISTRIBUTOR</p> <ul style="list-style-type: none"> -Key OFF. -Disconnect the 6 pin distributor connector. - Measure the resistance of the GND wire between the 6 pin distributor harness connector and ground. - Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to CKP4.</p> <p>Service the distributor GND wire.</p>
<p>CKP4 CHECK CKP WIRE FOR OPEN</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the 6-pin distributor connector. - Measure the resistance of the CKP wire between BOB test pin CKP and the CKP wire at the 6-pin distributor harness connector. - Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to CKP5.</p> <p>Service the CKP wire for open.</p>
<p>CKP5 CHECK CKP WIRE FOR SHORT</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the 6-pin distributor connector. - Measure the resistance of the CKP wire between BOB test pin CKP and ground. - Measure the resistance between the CKP wire and all the other wire terminals on the 6-pin distributor connector. - Are the resistance greater than 10,000 ohms? 	<p>YES</p> <p>NO</p>	<p>Replace the distributor.</p> <p>Service the CKP wire for short.</p>

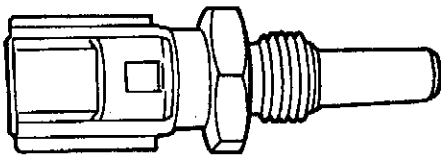
EEC PINPOINT TESTS

IAT INTAKE AIR TEMPERATURE SENSOR

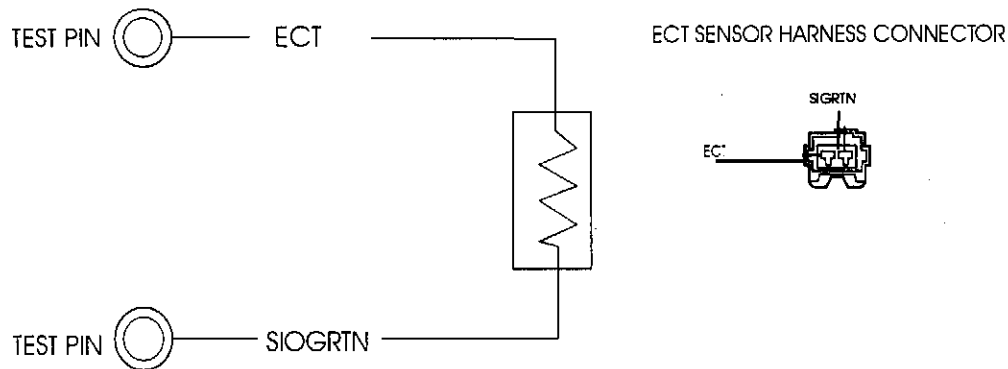
The Intake Air Temperature (IAT) Sensor detects the incoming air flow temperature. As the air temperature decreases, the resistance of the sensor increases. The resistance, sent to the Power-train Module (PCM) as an input signal, is used as a temperature to density calculation. The PCM can then determine the air density and cold enrichment fuel flow. The 1.3L. engine uses an IAT Sensor mounted to the air filter housing.

Note; You should enter this Pinpoint Test only when diagnostic trouble code 10 is received in Quick Test Steps 7 or 8, or when Quick Test Step 11 directs you here.

Remember; This Pinpoint Test is intended to diagnose only the circuit, IAT.



PINPOINT TEST SCHEMATIC



DATA SHEET

ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIRE #
1.3L.	ECT SIGRTN	2H 2D	51 46	61 45J

ECT RESISTANCE DATA SHEET

COOLANT TEMPERATURE C (F)	ECT SENSOR RESISTANCE (KOHMS)
-20 (-4)	14.6 - 17.8
20 (68)	2.2 - 2.7
80 (176)	0.25 - 0.35

EEC PINPOINT TESTS

ECT ENGINE COOLANT TEMPERATURE SENSOR

TEST STEP	RESULT	ACTION TAKEN
ECT1 - CHECK ECT SENSOR RESISTANCE <ul style="list-style-type: none">- Run engine until coolant reaches temperatures specified in Data Sheet. Monitor temperature at ECT sensor using Rotunda Digital Thermo Pyrometer 055-00100 or equivalent.- Key OFF.- Install Breakout Box (leave PCM disconnected).- Measure the resistance between BOB Test Pins ECT and SIGRTN (1.3L.) .- Are the resistance values within specified ranges shown on the Data Sheet?	YES NO	ECT circuit okay. If directed here from Quick Test Step QT11 in Section 5, then return to Section 2; Diagnostic Routines. Otherwise replace PCM. Go to ECT2 .
ECT2 - CHECK ECT CIRCUIT <ul style="list-style-type: none">- Key OFF.- Install Breakout Box (leave PCM disconnected).- Disconnect the ECT sensor connector.- Measure the resistance between BOB Test Pin ECT and ECT terminal at the ECT sensor harness connector (resistance should be greater than 5 ohms).- Measure the resistance between ECT Test Pin and SIGRTN Test Pin (resistance should be greater than 10,000 ohms).- Are the resistance okay?	YES NO	Go to ECT3 . Service the ECT wire between PCM and ECT sensor.
ECT3 CHECK SIGRTN CIRCUIT <ul style="list-style-type: none">- Key OFF.- Install Breakout Box (leave PCM0 disconnected).- Disconnect the ECT sensor connector.- Measure the resistance between BOB Test Pin SIGRTN and SIGTRN terminal at the ECT sensor harness connector.- Is the resistance less than 5 Ohms?	YES NO	Replace the ECT sensor. Service the SIGRTN wire between PCM and ECT sensor connector.

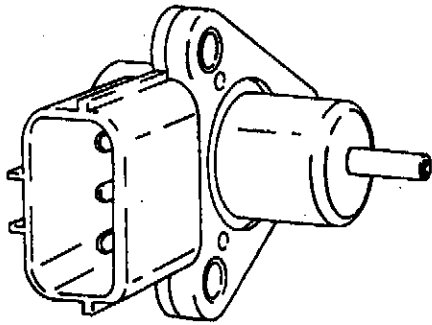
EEC PINPOINT TESTS

EVP EXHAUST GAS RECIRCULATION VALVE POSITION SENSOR

The Exhaust Gas Re-circulation Valve Position (EVP) sensor provides information to the Power-train Control Module (PCM) reflecting the Exhaust Gas Re-circulation (EGR) valve position. There are two purposes for the EVP sensor. The sensor indicates the amount of exhaust gas flowing into the engine monitoring the EGR valve movement and also notifies the PCM of electrical failure in the EGR valve.

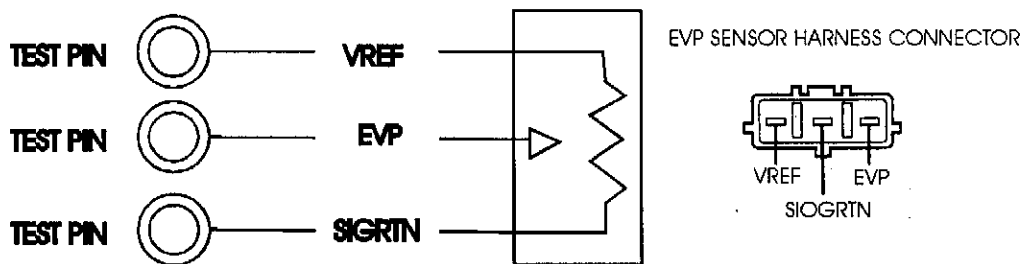
Note; You should enter this Pinpoint Test only when diagnostic trouble code 16 is received in Quick Test Steps 7 or 8, or when Quick Test Step 11 directs you here.

Remember; This Pinpoint Test is intended to diagnose only Circuit; EVP.



ENGINE	LOCATION
1.3L	Mounted to the top of the EGR valve.

PINPOINT TEST SCHEMATIC



DATA SHEET

ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIRE #
1.3L.	EVP	2J	6	97
	VREF	2K	26	66
	SIGRTN	2D	46	45J

EEC PINPOINT TESTS

<p>EVP5 CHECK GROUND AT EVP SENSOR</p> <ul style="list-style-type: none"> - Key OFF. - Disconnect the EVP sensor connector. - Measure the resistance between the SIGRTN at the EVP sensor harness connector and ground. - Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to EVP6.</p> <p>Service the EVP sensor SIGRTN.</p>
<p>EVP6 CHECK EVP WIRE FOR OPEN</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the EVP sensor connector. - Measure the resistance of the EVP wire between BOB Test Pin EVP and the EVP terminal on the EVP sensor harness connector. - Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to EVP7.</p> <p>Service the EVP wire for open(s).</p>
<p>EVP7 CHECK EVP WIRE FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the EVP sensor connector. - Measure the resistance of the EVP wire between BOB Test Pin EVP and ground. - Is the resistance greater than 10,000 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to EVP8.</p> <p>Service the EVP wire for short(s) to ground.</p>
<p>EVP8 CHECK EVP WIRE FOR SHORT TO VREF</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the EVP sensor connector. - Measure the resistance between BOB Test Pin EVP and BOB Test Pin VREF. - Is the resistance greater than 10,000 ohms? 	<p>YES</p> <p>ON</p>	<p>Replace the EVP sensor.</p> <p>Service the EVP and/or VREF wire(s).</p>

EEC PINPOINT TESTS

EVP EXHAUST GAS RECIRCULATION VALVE POSITION SENSOR

EVP VACUUM / VOLTAGE DATA SHEET

VACUUM MM-HG (in HG)	VOLTAGE (VOLTS)
0 (0)	Approx. 0.8
150 (5.9)	Approx. 5.0

<p>EVP1 CHECK VACUUM LINES AND CONNECTIONS TO EGR VALVE</p> <ul style="list-style-type: none"> - Visually check all vacuum hoses and connections between EGR valve and the intake manifold. Refer to Section 3B for EGR system routing diagrams. - Do the hoses and connections appear to be okay? 	<p>YES</p> <p>NO</p>	<p>Go to EVP2.</p> <p>Service the hoses and/or connections as necessary.</p>
<p>EVP2 CHECK VACUUM AT EGR VALVE.</p> <ul style="list-style-type: none"> - Key OFF. - Connect a Rotunda Vacuum Gauge 059-00008, or equivalent, between the EGR valve and the vacuum hose leading to the EGR valve. - Key on, engine running. - Warm the engine until it is at normal operating temperature. - Drive the vehicle while observing the vacuum gauge. <p>Normal Cruising; 126mm-Hg, 5 in-Hg Idle, Deceleration or High Speed; 0mm-Hg, 0in-Hg</p> <ul style="list-style-type: none"> - Are the vacuum readings okay? 	<p>YES</p> <p>NO</p>	<p>Go to EVP3.</p> <p>Check the vacuum hoses and connections for splits, blockage, leaks or damage. If okay, refer to Section 10, Exhaust Gas Recirculation (EGR) Systems.</p>
<p>EVP3 CHECK EVP SIGNAL TO PCM</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (connect PCM). - Connect Rotunda Vacuum Tester 021-00014 or equivalent to the EGR valve vacuum port. - Key on. - Measure the voltage between Test Pins EVP and SIGRTN - Compare the voltage readings to the Data Sheet as vacuum is increased. - Are the voltages okay? 	<p>YES</p> <p>NO</p>	<p>EVP circuit okay. If directed her from Quick Test Step QT11 in Section 5, then return to Section 2, Diagnostic Routines. Otherwise replace the PCM.</p> <p>Go to EVP4.</p>
<p>EVP4 CHECK VREF AT EVP SENSOR.</p> <ul style="list-style-type: none"> - Key OFF. - Disconnect the EVP sensor connector. - Key on. - Measure the voltage at the VREF terminal on the EVP sensor harness connector. - Are the voltages okay? 	<p>YES</p> <p>NO</p>	<p>Go to EVP5.</p> <p>Go to EEC Pinpoint Test VREF in this section.</p>

EVP EXHAUST GAS CIRCULATION VALVE POSITION SENSOR

EEC PINPOINT TESTS

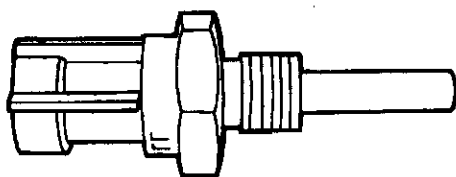
Intake Air Temperature (IAT) Sensor

Note; You should enter this Pinpoint Test only when diagnostic trouble code 10 is received in Quick Test Steps 7 or 8, or when Quick Test Step 11 directs you here.

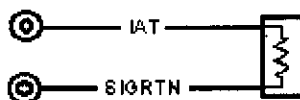
Remember; This Pinpoint Test is intended to diagnose only the following:

- Circuit: IAT

Description; The intake Air Temperature (IAT) sensor detects the incoming air flow temperature. As the air temperature decreases, the resistance of the sensor increases. The resistance, sent to the Power-train Control Module (PCM) as an input signal, is used as a temperature-to-density calculation. The PCM can then determine the air density and cold enrichment fuel flow. The 1.3L engine uses an IAT sensor mounted to the air filter housing.



Pinpoint Test Schematic



Engine	Circuit	PCM Pin	BOB Pin	Wire Color
1.3L	IAT	2L	27	104
	SIGRTN	2D	46	45J

EEC PINPOINT TESTS

Intake Air Temperature (IAT) Sensor

TEST STEP	RESULT	ACTION TO TAKE
IAT 3 Check Wire For Short To Ground <ul style="list-style-type: none"> • Key Off. • Install Breakout Box (Leave PCM disconnected.) • Disconnect the IAT sensor in the air cleaner assembly. • Measure the resistance of the IAT wire between BOB Test Pin IAT and ground. Is the resistance greater than 10,000 ohms?	<p>Yes</p> <p>No</p>	<p>Go to IAT4</p> <p>SERVICE the IAT wire for short(s) to ground.</p>
IAT 4 Check IAT Sensor SIGRTN <ul style="list-style-type: none"> • Key Off. • Install Breakout Box (Leave PCM disconnected.) • Disconnect the IAT sensor in the air cleaner assembly. • Measure the resistance of the SIGRTN wire between BOB Test Pin SIGRTN and the SIGRTN terminal on the IAT sensor harness connector. Is the resistance less than 5 ohms?	<p>Yes</p> <p>No</p>	<p>REPLACE the IAT sensor.</p> <p>SERVICE the IAT SIGRTN wire.</p>

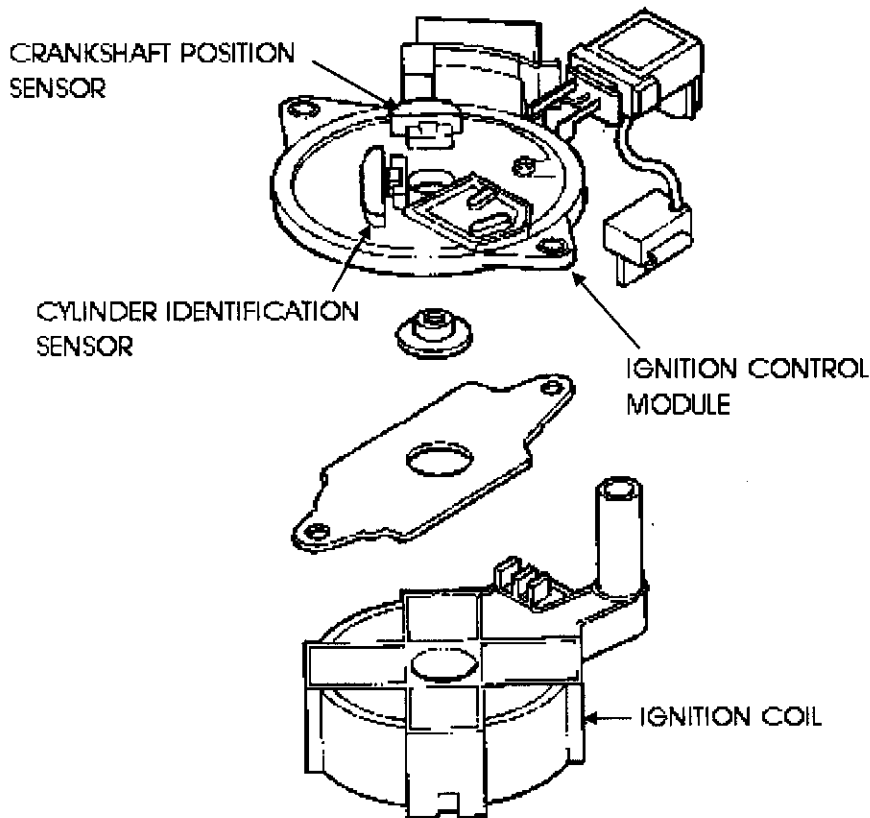
EEC PINPOINT TESTS

ICM IGNITION CONTROL MODULE

The Ignition Control Module (ICM) is an output device controlled by the Power-train Control Module (PCM). The PCM sends a signal to the ICM, which transfers the signal to the ignition coil where it is generated into a high voltage spark to the spark plug.

Note; You should enter this Pinpoint Test only when Quick Test Step 11, or Test Step IGN 14 in Section 8, Ignition System directs you here.

Remember; The Pinpoint Test is intended to diagnose only the circuit, ICM.

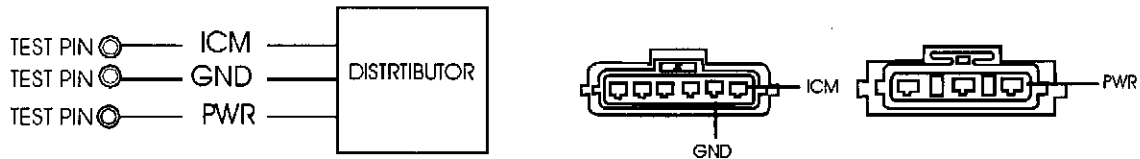


ENGINE	LOCATION
1.3L.	Integrated into the distributor.

EEC PINPOINT TESTS

ICM IGNITION CONTROL MODULE

PINPOINT TEST SCHEMATIC



DATA SHEET

ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIRE COLOUR
1.3L.	ICM	2F	3	107
	GND	NA	NA	45K
	PWR	NA	NA	112

TEST STEP	RESULT	ACTION TO TAKE
ICM1 CHECK FOR CONTINUOUS SPARK - Key OFF. - Disconnect a spark plug wire. - Connect Air Gap Spark Tester D81P-6666-A to disconnected spark plug wire. - Crank the engine. - Is a continuous strong blue spark produced while cranking the engine?	YES NO	ICM circuit okay, return to Section 2B, Diagnostic Routines. Go to ICM2.
ICM2 CHECK ICM SIGNAL FROM PCM. - Key OFF. - Install Breakout Box (connect PCM). - Disconnect the 3-pin distributor connector. - Crank the engine - Measure the voltage between BOB Test Pin ICM and ground. - Is the voltage greater than 0.6 volts?	YES NO	Go to ICM3. Go to EEC Pinpoint Tests CID and CKP or CKP1 in this section. If okay, replace the PCM.
ICM3 CHECK ICM WIRE FOR OPEN - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the 6-pin distributor connector. - Measure the resistance between BOB Test Pin ICM and the ICM terminal at the 6-pin distributor connector. - Is the resistance less than 5 ohms?	YES NO	Go to ICM4. Service the ICM wire for open(s).

EEC PINPOINT TESTS

ICM IGNITION CONTROL MODULE

<p>ICM4 CHECK ICM WIRE FOR SHORT</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the 6-pin distributor connector. - Measure the resistance between BOB Test Pin ICM and ground. - Measure the resistance between Test Pin ICM and Test Pin PWR. - Are the resistance greater than 10,000 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to ICM4.</p> <p>Service the ICM wire for short(s).</p>
<p>ICM5 CHECK GROUND AT DISTRIBUTOR</p> <ul style="list-style-type: none"> - Key OFF. - Disconnect the 3-pin distributor connector. - Measure the resistance between the GND terminal at the harness connector and ground. - Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to ICM6.</p> <p>Service the distributor GND wire for opens.</p>
<p>ICM6 CHECK PWR TO DISTRIBUTOR</p> <ul style="list-style-type: none"> - Key OFF. - Disconnect the 3-pin distributor connector. - Key on. - Measure the voltage on the PWR terminal at the harness connector. - Is the voltage greater than 10 volts? 	<p>YES</p> <p>NO</p>	<p>Replace the distributor.</p> <p>Service the PWR wire between the distributor and the ignition switch.</p>

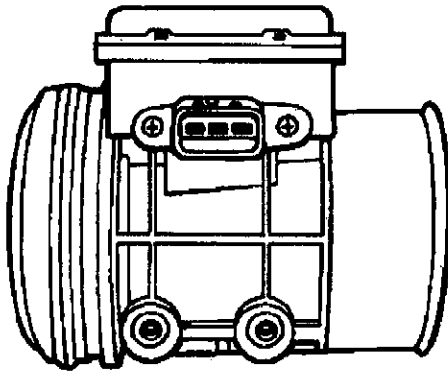
EEC PINPOINT TESTS

MAF MASS AIR FLOW SENSOR

The Mass AirFlow Sensor measures the amount of airflow passing into the throttle body. The internal element detects the amount of air and notifies the Power-train Control Module (PCM) with a varying voltage input signal. This input signals helps determine injector pulse width timing.

Note; You should enter this Pinpoint Test only when diagnostic trouble code 08 is received in Quick Test Steps 7 or 8, or when Quick Test Step 11 directs you here.

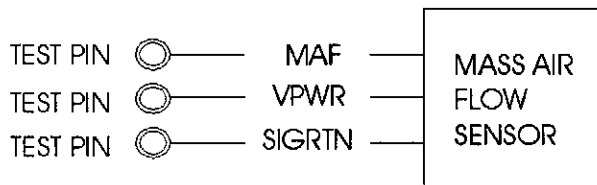
Remember; This Pinpoint Test is intended to diagnose the circuit, MAF.



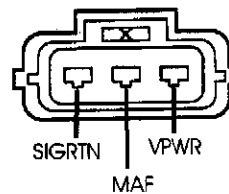
AIR FLOW →

ENGINE	LOCATION
1.3L	Located between the air cleaning element and the throttle body.

PINPOINT TEST SCHEMATIC



MASS AIR FLOW SENSOR HARNESS CONNECTOR



ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIRE #
1.3L.	MAF	20	27	103
	VPWR	1B	37,57	47G
	SIGRTN	2C	16	45I

EEC PINPOINT TESTS

MAF MASS AIR FLOW SENSOR

TEST STEP	RESULT	ACTION TO TAKE
MAF1 CHECK MAF SENSOR INPUT VOLTAGE TO PCM - Key OFF. - Install Breakout Box (connect PCM). - Measure the voltage between BOB Test Pin MAF and BOB Test Pin SIGRTN. - Compare the voltage readings to the MAF sensor Voltage Data Sheet under given conditions. - Are the voltages okay?	YES NO	MAF circuit okay. If directed here from Quick Test Step QT11 in Section 5, the return to Section 2, Diagnostic Routines. Otherwise replace the PCM. Go to MAF2 .
MAF2 CHECK MAF WIRE FOR OPEN. - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the MAF sensor connector. - Measure the resistance of the MAF wire between BOB Test Pin and the MAF terminal on the MAF sensor harness connector. - Is the resistance less than 5 ohms?	YES NO	Go to MAF3 . Service the MAF wire for open(s).
MAF3 CHECK MAF WIRE FOR SHORT. - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the MAF sensor connector. - Measure the resistance of the MAF wire between BOB Test Pin MAF and ground. - Measure the resistance between Test Pin MAF and Test Pin VPWR. - Are the resistance greater than 10,000 ohms?	YES NO	Go to MAF4 . Service the MAF wire for short(s).
MAF4 CHECK VPWR AT MAF SENSOR - Key OFF. - Disconnect the MAF sensor connector. - Key on, - Measure the voltage between MAF sensor harness connector VPWR wire and ground. - Is the voltage approximately battery voltage?	YES NO	Go to MAF5 . Go to EEC Pinpoint Test VPWR in this section. If VPWR is okay, service the VPWR wire to MAF sensor.
MAF5 CHECK GROUND AT MAF SENSOR - Key OFF. - Disconnect the MAF sensor connector. - Measure the resistance between the MAF sensor harness connector GND wire and ground. - Is the resistance less than 5 ohms?	YES NO	Replace the MAF sensor. Service the MAF sensor GND wire.

EEC PINPOINT TESTS

MIL MALFUNCTION INDICATOR LAMP

DATA SHEET

ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIRE #
1.3L.	MIL	1E	15	86

TEST STEP	RESULT	ACTION TO TAKE
MIL1 CHECK MIL OPERATION - Key OFF. - Install Breakout Box (leave PCM disconnected). - Key on. - Ground BOB Test Pin MIL. - Does Malfunction Indicator Lamp (Check engine lamp.) illuminate?	YES NO	MIL circuit okay. If diagnostic trouble codes do not flash on MIL during Quick Test or MIL never comes on, replace the PCM. Go to MIL2.
MIL2 CHECK MIL BULB. - Key OFF. - Remove the instrument cluster. - Remove the MIL (Check engine lamp.) bulb. - Apply 12 volts between terminals of the MIL (Check engine lamp.) bulb. - Does the MIL (Check engine lamp.) illuminate?	YES NO	Go to MIL3. Replace the MIL (Check engine lamp.) bulb.
MIL3 CHECK MIL WIRE FOR OPEN. - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the instrument cluster connector; 14-pin black connector . - Measure the resistance between BOB Test Pin MIL and the MIL terminal at the instrument cluster harness connector. - Is the resistance less than 5 ohms?	YES NO	Go to MIL4. Service the MIL wire for open.

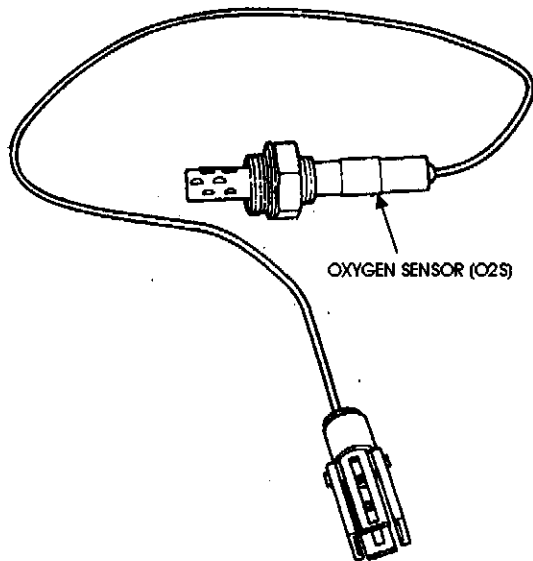
EEC PINPOINT TESTS

MIL MALFUNCTION INDICATOR LAMP

MIL4 CHECK MIL WIRE FOR SHORT - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the instrument cluster connector; 14-pin black connector. - Measure the resistance between BOB Test Pin MIL and ground. - Is the resistance greater than 10,000 ohms?	YES	Replace the instrument cluster printed circuit board.
	NO	Service the MIL wire for short.

O2S OXYGEN SENSOR

The Oxygen Sensor (O2S) generates and supplies a signal to the Power-train Control Module (PCM) which reflects oxygen content in the exhaust system. The oxygen content in the exhaust gas reflects whether the fuel mixture is rich or lean. The PCM uses this information to regulate the fuel injectors for the proper air/fuel mixture.

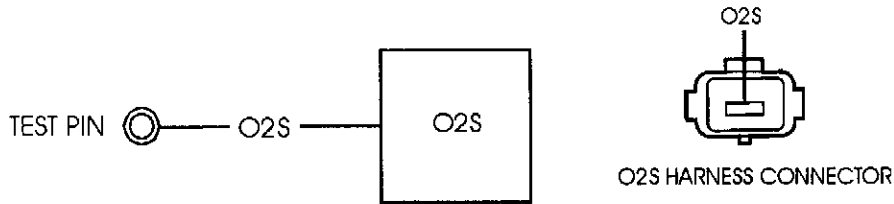


ENGINE	LOCATION
1.3L.	Threaded into exhaust manifold.

EEC PINPOINT TESTS

O2S OXYGEN SENSOR

PINPOINT TEST SCHEMATIC



ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIRE #
1.3L.	O2S	2N	29	54

TEST STEP	RESULT	ACTION TO TAKE
<p>O2S1 CHECK O2S VOLTAGE</p> <ul style="list-style-type: none"> - Engine at normal operating temperature. - Key OFF. - Disconnect O2S connector. - Measure the voltage on the O2S wire at the O2S connector with Key ON and engine running as shown below; <p>Increasing engine speed- increase voltage Decreasing engine speed- Decrease voltage Engine at idle- 0.2-0.8 volts</p> <p>Note; Voltage that remains above 0.55 volts indicates a continuously rich condition while below 0.55 volts indicates a continuously lean condition. Rich or lean conditions could be an indication of another problem.</p> <ul style="list-style-type: none"> - Are the voltages okay? 	<p>YES</p> <p>NO</p>	<p>Go to O2S2.</p> <p>Go to O2S3.</p>
<p>O2S2 CHECK O2S CIRCUIT ISOLATION</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the O2S connector. - Measure the resistance between BOB Test Pin O2S and O2S wire at the O2S connector. - Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>O2S circuit okay. If directed here form Quick Test Step QT11 in Section 5, then return to Section 2; Diagnostic Routines. Otherwise replace the PCM.</p> <p>Service the O2S wire to the PCM.</p>

EEC PINPOINT TESTS

O2S OXYGEN SENSOR

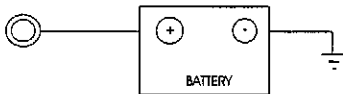
<p>O2S3 CHECK O2S CIRCUIT FOR SHORTS</p> <ul style="list-style-type: none">- Key OFF.- Install Breakout Box (leave PCM disconnected).- Disconnect the O2S connector.- Measure the resistance between BOB Test Pin O2S and ground (should read greater than 10,000 ohms).- Key on.- Measure the voltage on BOB Test Pin O2S (should be 0V).- Are the measurements correct?	<p>YES</p> <p>NO</p>	<p>Replace the O2S.</p> <p>Service the O2S wire to the PCM.</p>
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PGC POWER AND GROUND CONNECTIONS

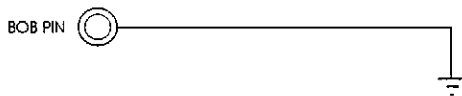
Note; You should enter this Pinpoint Test only when Quick Step 11, EEC Pinpoint Test VREF or STO in this Section or when 4EAT Pinpoint Test VREF in this section directs you here.

Remember; This Pinpoint Test is intended to diagnose only circuits KAPWR and GRD.

POWER CONNECTION



GROUND CONNECTION



EEC PINPOINT TESTS

PGC POWER AND GROUND CONNECTION

CIRCUIT	ABBR.	ENGINE	PCM PIN	BOB PIN	PCM WIRE #	CONNECTION TO
Keep alive power	KAPWR	1.3L.	1A	1	85	(Battery +)
Ground	GND	1.3L.	2A 2B 2C	39,40,44,60 20 16	45H 45K 45I	Ground
Manual/ Automatic Trans-axle Applications	MT/AT (GND)	1.3L. MTX	1G	36	65	Ground

TEST STEP	RESULT	ACTION TO TAKE
PGC1 CHECK VOLTAGE - Key OFF. - Install Breakout Box (leave PCM disconnected). - Key OFF. - Measure the voltage on BOB Test Pin KAPWR. - Is the voltage approximately battery voltage?	YES NO	Go to PGC2. Service the wire in question.
PGC2 CHECK GROUNDS - Key OFF. - Install Breakout Box (leave PCM disconnected). - Measure the resistance between BOB Test Pin GND and around. Repeat for each BOB Test Pin GND to ground. - Are the resistance less than 5 ohms?	YES NO	If sent here from EEC Pinpoint Test VREF or SRO or 4EAT Pinpoint Test VREF in this section, replace the PCM. Otherwise return to Section 2; Diagnostic Routines. Service the wire in question.

EEC PINPOINT TESTS

ROC RELAY OUTPUT CHECK

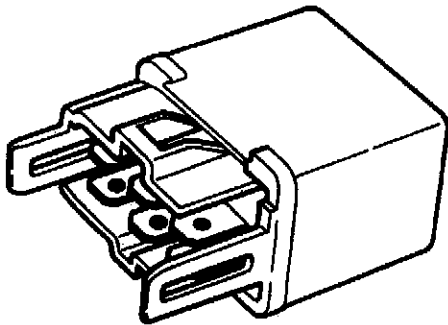
A/C RELAY

The A/C Relay (ACR) is controlled by the Power-train Control Module (PCM) with an output signal. The signal acts as a circuit on/off switch for the compressor magnetic clutch. The PCM will cut off the ACR during wide open throttle conditions, thus the relay sometimes referred to as the wide open throttle air conditioning cutoff (WAC) relay.

Note; You should enter this Pinpoint Test only when diagnostic trouble code 67 Low Cooling Fan Relay (LFAN) is received in Quick Test Step 7 or 8. Or when Quick Test Step 11, or Group 03, 12 or 13 of the service manual directs you here.

Remember; This Pinpoint Test is intended to diagnose only the following circuits;

- ACR (A/C Relay)
- FPR (Fuel Pump Relay)
- CFAN (Condenser Fan Relay)
- HCFAN (High Condenser Fan Relay)
- HFAN (High Cooling Fan Relay)
- LCFAN (Low Condenser Fan Relay)
- LFAN (Low Cooling Fan Relay)
- WAC (Wide-Open Throttle A/C Cutoff Relay)



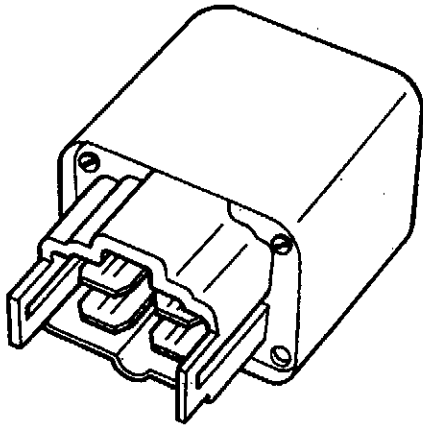
ENGINE	LOCATION
1.3L.	Located under hood, right hand corner (with other relays in A/C harness).

EEC PINPOINT TESTS

ROC RELAY OUTPUT CHECK

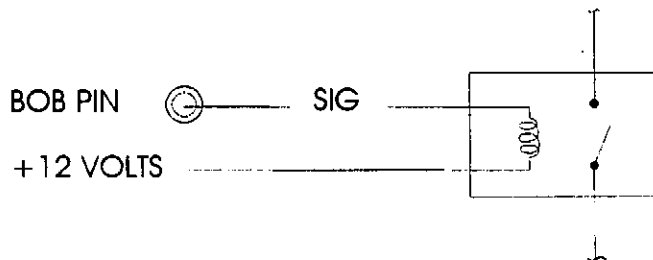
FUEL PUMP RELAY

The Fuel Pump Relay (FPR) supplies voltage to the pump when activated. On the 1.3L., the FPR is controlled by the PCM and is activated while the engine is cranking and running.



ENGINE	LOCATION
1.3L.	Located in engine compartment on engine harness wiring tray.

PINPOINT TEST SCHEMATIC



EEC PINPOINT TESTS

ROC RELAY OUTPUT CHECK

<p>ROC2 CHECK RELAY WIRE TO PCM FOR OPEN</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the relay in question. - Measure the resistance between relay BOB Test Pin and relay terminal to PCM at relay harness connector. - Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to ROC3.</p> <p>Service the wire in question for opens.</p>
<p>ROC3 CHECK RELAY WIRE TO PCM FOR SHORT.</p> <p>NOTE; When checking HFAN or HCFAN relays you must disconnect both the HFAN and the HVFAN relay.</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the relay in question. - Measure the resistance between relay BOBN Test Pin and ground. - Is the resistance greater than 10,000 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to ROC4.</p> <p>Service the wire in question for shorts.</p>
<p>ROC4 CHECK POWER TO RELAY IN QUESTION.</p> <ul style="list-style-type: none"> - Key OFF. - Disconnect the relay in question. - Key on. - Measure the voltage on PWR wire at relay harnesses connector. - Is the voltage greater than 10 volts? 	<p>YES</p> <p>NO</p>	<p>Replace the relay in question.</p> <p>Service the PWR wire in question.</p>

EEC PINPOINT TESTS

SCG SOLENOID CONTROLLED BY GROUND

Note; You should enter this Pinpoint Test only when a diagnostic trouble code 25, 26, 28, 29, 34, 41 or 46 is received in Quick Test Steps 7 or 8. Or when Quick Test Step 11 directs you here.

Remember; This Pinpoint Test is intended to diagnose only the following circuits;

- CANP (Canister Purge)
- EGRC (EGR Control)
- EGRV (EGR Vent)
- EVR (EGR Vacuum Regulator)
- FPRC (Fuel Pressure Regulator Control)
- HSIA (High Speed Inlet Air Control)
- IAC (Idle Air Control)
- INJ (Injectors)
- VRI1 (Variable Resonance Induction System Solenoid #1)
- VRIS2 (Variable Resonance Induction System Solenoid #2)

PINPOINT TEST SCHEMATIC

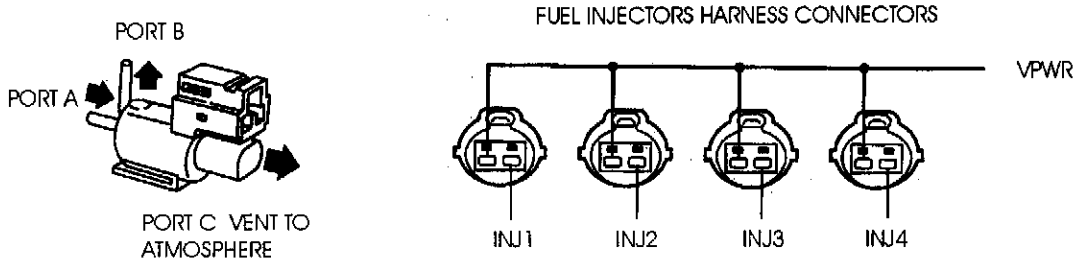


TYPICAL SOLENOID HARNESS CONNECTOR



EEC PINPOINT TESTS

SCG SOLENOID CONTROLLED BY GROUND



DATA SHEET

Note: The Breakout Box Adapter T92C-6000-AH has an A/B position selector switch. Make sure that the switch is in the correct position for each test step, as specified in the Circuit Data Sheet. If no switch position is given then switch can be either position.

CIRCUIT DATA SHEET

ENGINE	SIG	PCM PIN	BOB PIN	WIRE #	DIAGNOSTIC TROUBLE CODE
1.3L.	CANP	2X	31	48	NA
	INJ1	2U	58	57	NA
	INJ2	2V	59	99	NA
	INJ3	2Y	33	100	NA
	Inj4	2Z	8	101	NA
	IAC	2W	41	49	NA
	EGRV	2R	13	113	NA
EGRC	2S	53	114	NA	

Note: Boxed BPB Pin numbers indicate that the position switch on the adapter need to be positioned as indicated (A or B).

SOLENOID DATA SHEET

Install Breakout Box, leave PCM disconnected for all Click Tests (Except the injector Click Test).

SOLENOID	ACTIVATED BY; (PCM GROUND SOLENOID UNDER THESE CONDITIONS)	CLICK TEST METHOD
INJ (Fuel Injectors)	Cranking or running engine.	- Connect PCM. Key on and crank engine. Listen to injector (clicking sound) with stethoscope.
CANP (Canister Purge)	Vehicle in gear, operating temperature above 60C (140F) during cruise and acceleration.	- Key on, apply vacuum from intake manifold, vacuum should hold. - Ground Test Pin with jumper, vacuum should release.

EEC PINPOINT TESTS

SCG SOLENOID CONTROLLED BY GROUND

SOLENOID	ACTIVATED BY; (PCM GROUND SOLENOID UNDER THESE CONDITIONS)	CLICK TEST METHOD
EGRC (EGR Control)	Engine coolant temperature above 40C (104F). EGRC; normal driving (cruising)	- Key on. apply vacuum from intake manifold. Vacuum should not hold. - Ground Test Pin, vacuum should release.
EGRV (EGR Vent)	Engine coolant temperature above 40C (104F). EGRV; during idle, deceleration, or wide-open throttle conditions.	- Key on, apply vacuum from intake manifold. Vacuum should hold. - Ground Test Pin, vacuum should hold.
VRIS (Variable Resonance Induction System)	Engine at low speed, low vacuum condition.	- Disconnect hoses at solenoid. Verify airflow between ports on the solenoid. Refer to diagram of ports shown in the electrical schematic. Ports Air Flow A-B No A-C No B-C Yes - Key on. Ground Test Pin. Verify airflow between ports on the solenoid. Ports Air Flow A-B Yes A-C No B-C No
FPRC (Fuel Pressure Regulator Control)	Engine running, coolant temperature above 90C (190F), intake air temperature above 20C (68F) engine speed less than 1,500 rpm (for approx. 2 minutes after start).	- Key on. Apply vacuum to nipple from intake manifold. Vacuum should hold. - Ground Test Pin, vacuum should slowly release as ground is applied intermittently.
IAC (Idle Air Control)	Cranking and running engine.	- Disconnect the PCM. - Key on. - Ground Test Pin intermittently. - Listen for IAC solenoid (clicking sound).
HSIA (High Speed Inlet Air Control)	Engine speed below 5,000 rpm.	- Key on. Apply vacuum to nipple from reservoir. Vacuum should hold. - Ground Test Pin. Vacuum should release.

EEC PINPOINT TESTS

SCG SOLENOID CONTROLLED BY GROUND

TEST STEP	RESULT	ACTION TO TAKE
<p>SCG1 CHECK SOLENOID FUNCTION</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Check for proper function of the solenoid in question as described in the Data Sheet "Click Test Method" column. - Does the solenoid in question function properly? 	<p>YES</p> <p>NO</p>	<p>Solenoids okay. If directed here by Quick Test Step QT6 or QT7, replace the PCM. If directed here by Quick Test Step QT11 return to Section 2; Diagnostic Routines.</p> <p>Go to SCG2.</p>
<p>SCG2 CHECK POWER TO SOLENOID</p> <ul style="list-style-type: none"> - Key OFF. - Disconnect the connector of the solenoid in question. - Key on. - Measure the voltage on the VPWR wire at the solenoid harness connector. - Is the voltage approximately battery voltage? 	<p>YES</p> <p>NO</p>	<p>Go to SCG3.</p> <p>Go to EEC Pinpoint Test VPWR in this section. If VPWR is okay, service the VPWR wire to solenoid.</p>
<p>SCG3 CHECK SOLENOID WIRE TO PCM FOR OPEN</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the connector of the solenoid in question. - Measure the resistance between solenoid BOB Test Pin and the terminal at the solenoid harness connector. - Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to SCG4.</p> <p>Service the solenoid wire to PCM for opens.</p>
<p>SCG4 CHECK SOLENOID WIRE TO PCM FOR SHORTS</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the connector of the solenoid in question. - Measure the voltage on the solenoid BOB Test Pins. - Are the resistance greater than 10,000 ohms between the solenoid BOB Test Pins and ground, and is the voltage less than 1 volt on the solenoid BOB Test Pins? 	<p>YES</p> <p>NO</p>	<p>Replace the solenoid.</p> <p>Service the solenoid wire to PCM for shorts.</p>

EEC PINPOINT TESTS

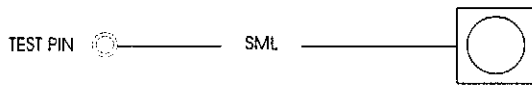
SML SWITCH MONITOR LAMP

The Switch Monitor Lamp (SML) is used to check vehicle switches during switch monitor tests.

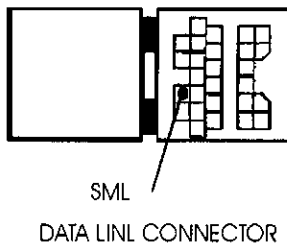
Note: You should enter this Pinpoint Test only when Quick Test Step 9 directs you here. The Switch Monitor Lamp is located on the Super MECS Adapter.

Remember; This Pinpoint test is intended to diagnose only the circuit; SML.

PINPOINT TEST SCHEMATIC



Test Pins are specified in the chart. All harness connectors are viewed into mating surface.



CIRCUIT DATA SHEET

ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIR #
1.3L.	SML	1D	38	83

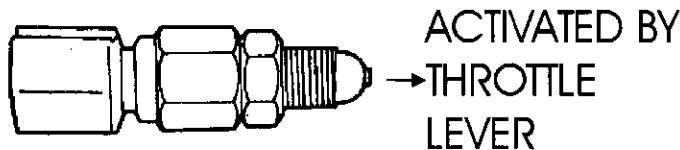
EEC PINPOINT TESTS

SML SWITCH MONITOR LAMP

TEST STEP	RESULT	ACTION TO TAKE
SML1 CHECK SML WIRE FOR OPEN - Key OFF. - Install Breakout Box (leave PCM disconnected). - Measure the resistance between BOB Test Pin SML and data link connector SML terminal. - Is the resistance less than 5 ohms?	YES NO	Go to SML2. Service the data link connector SML wire to PCM for opens.
SML2 CHECK SML WIRE FOR SHORT - Key OFF. - Install Breakout Box (leave PCM disconnected). - Measure the resistance between BOB Test Pin SML and ground. - Is the resistance greater than 10,000 ohms?	YES NO	Test the SML bulb. If okay, replace the PCM. Otherwise replace the SML bulb. Service the PCM SML wire to data link connector for shorts.

STG SWITCH TO GROUND

When the throttle plate is closed, an idle condition occurs. The idle (IDL) switch detects this position and notifies the PCM with an input signal, so adjustments to the engine can be made including air/fuel ratio and idle speed.

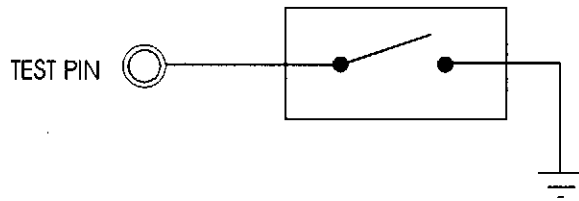


ENGINE	LOCATION
1.3L.	Mounted to the throttle body.

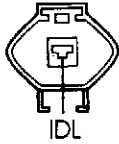
EEC PINPOINT TESTS

SWT SWITCH TO GROUND

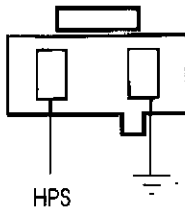
PINPOINT TEST SCHEMATIC



IDLE SWITCH HARNESS CONNECTOR



HIGH PRESSURE SWITCH HARNESS CONNECTOR

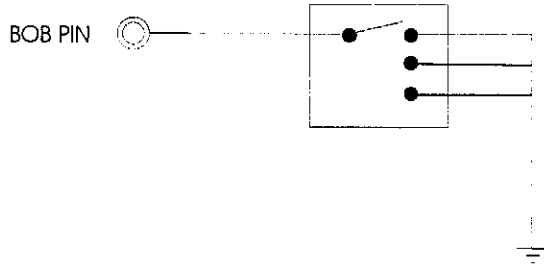


CLUTCH CYCLING PRESSURE SWITCH HARNESS CONNECTOR

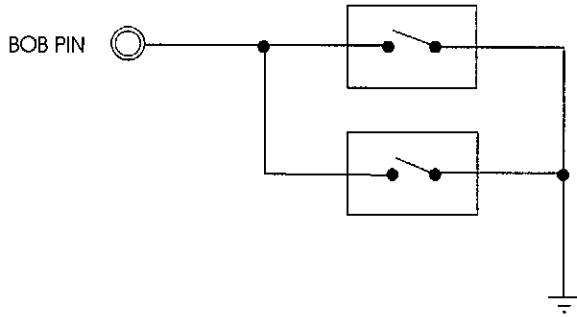


EEC PINPOINT TESTS

STG SWITCH TO GROUND



Test Pins are specified in the chart. All harness connectors are viewed into mating surface.



Test Pins are specified in the chart. All harness connectors are viewed into mating surface.

EEC PINPOINT TESTS

STG SWITCH TO GROUND

CIRCUIT DATA SHEET

SWITCH	ABBR.	ENGINE	PCM PIN	BOB PIN	WIRE #	SWITCH EXERCISE	SWITCH TO GROUND
Clutch Cycling Pressure	CCPS	1.3L.	1Q	10	4	Close switch- A/C selected, A/C pressure within limits (refer to Section 12 of Service Manual; Air Conditioning).	Ground
High Pressure	HPS	1.3L.	2I	50	2A	Close switch- A/C pressure exceeds limits (refer to Section 12 of Service Manual; Air Conditioning).	Ground
Blower Motor Control	BLMT	1.3L.	1R	22	18D	Close switch- blower on 2nd.	Ground
Park/ Neutral Position Clutch Pedal Position	PNP/CP P	1.3L.	1V	43		Close PNP switch- Trans. in neutral.	Ground (either switch closed)
Idle	IDL	1.3L.	1N	18	60	Open switch- depress accelerator pedal	Ground

TEST STEP	RESULT	ACTION TO TAKE
STG1 CHECK SWITCH SIGNAL TO PCM <ul style="list-style-type: none">- Key OFF.- Install Breakout Box (connect PCM).- Key on.- Measure the voltage between the BOB Test Pin of the switch in question and ground.- Exercise switch as indicated in "Switch Exercise" column of Data Sheet. Note; For high-pressure switch voltage should always read approximately 5 volts. Switch Voltage Open Greater than 10 volts. Closed Less than 1 volt.	YES NO	Switch okay, return to Section 2; Diagnostic Routines or Service Manual. Go to STG2.

EEC PINPOINT TESTS

STG SWITCH TO GROUND

<p>STG2 CHECK SWITCH WIRE TO PCM FOR OPEN</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the connector of the switch in question. - Measure the resistance between the switch BOB Test Pin and the terminal at the switch harness connector. - Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>Go to STG3.</p> <p>Service the wire in question for opens.</p>
<p>STG3 CHECK SWITCH WIRE TO PCM FOR SHORT</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the connector of the switch in question. - Measure the resistance between the switch BOB Test Pin and ground. - Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO (PSP and IDL)</p> <p>NO (All others)</p>	<p>Service wire in question for shorts.</p> <p>Replace the switch in question.</p> <p>Go to STG4.</p>
<p>STG4 CHECK GROUND AT SWITCH</p> <ul style="list-style-type: none"> - Key OFF. - Disconnect the connector of the switch in question. - Measure the resistance between the ground terminal on the harness connector of the switch in question and ground. - Is the resistance less than 5 ohms? 	<p>YES</p> <p>NO</p>	<p>Replace the switch in question.</p> <p>Service the wire in question for open(s).</p>

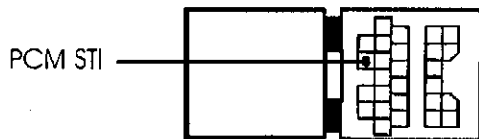
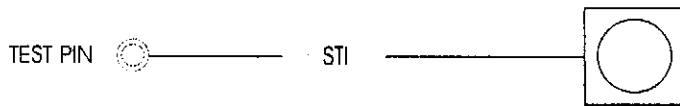
EEC PINPOINT TESTS

STI SELF TEST INPUT

Note; You should enter this Pinpoint Test only when Quick Test Step 6 directs you here.

Remember; This Pinpoint Test is intended to diagnose only the circuit; STI.

PINPOINT TEST SCHEMATIC



DATA LINK CONNECTOR

CIRCUIT DATA SHEET

ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIRE #
1.3L.	STI	1K	48	84

EEC PINPOINT TESTS

STI SELF-TEST INPUT

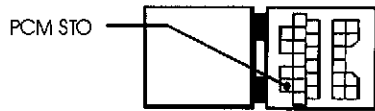
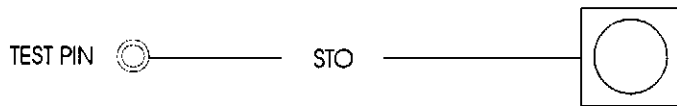
TEST STEP	RESULT	ACTION TO TAKE
STI1 CHECK STI WIRE TO PCM FOR OPEN - Key OFF. - Install Breakout Box (leave PCM disconnected). - Measure the resistance between BOB Test Pin STI data link connector PCM STI (TEN) wire. - Is the resistance less than 5 ohms?	YES NO	Go to STI2. Service the PCM STI wire for opens.
STI2 CHECK STI WIRE TO PCM FOR SHORT - Key OFF. - Install Breakout Box (leave PCM disconnected). - Measure the resistance between BOB Test Pin STI and ground. - Is the resistance greater than 10,000 ohms?	YES NO	Go to EEC Pinpoint Test STO in this section. Service the PCM STI wire for short.

STO SELF-TEST OUTPUT

Note; You should enter this Pinpoint Test only when EEC Pinpoint Test STI in this section directs you here.

Remember; This Pinpoint Test is intended to diagnose only the circuit; STO.

PINPOINT TEST SCHEMATIC



DATA LINK CONNECTOR

CIRCUIT DATA SHEET

ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIRE #
1.3L.	STO	1F	17	81

EEC PINPOINT TESTS

STO SELF-TEST OUTPUT

TEST STEP	RESULT	ACTION TO TAKE
STO1 CHECK STO WIRE TO PCM FOR OPEN - Key OFF. - Install Breakout Box (leave PCM disconnected). - Measure the resistance between BOB Test Pin STO and data link connector PCM STO wire. - Is the resistance less than 5 ohms?	YES	Go to STO2.
	NO	Service the PCM STO wire to data link connector for opens.
STO2 CHECK STO WIRE TO PCM FOR SHORT - Key OFF. - Install Breakout Box (leave PCM disconnected). - Measure the resistance between BOB Test Pin STO and ground (resistance should be greater than 10,000 ohms). - Key on. - Measure the voltage on BOB Test Pin STO (voltage should be 0V). - Are measurements okay?	YES	Go to EEC Pinpoint Test PGC in this section.
	NO	Service the PCM STO wire to data link connector for shorts.

STP SWITCH TO POWER

The brake on/off (BOO) switch detects when the brake pedal is depressed and sends an input signal to the Power-train Control Module (PCM). The PCM uses this information to control fuel injection amount and control idle.

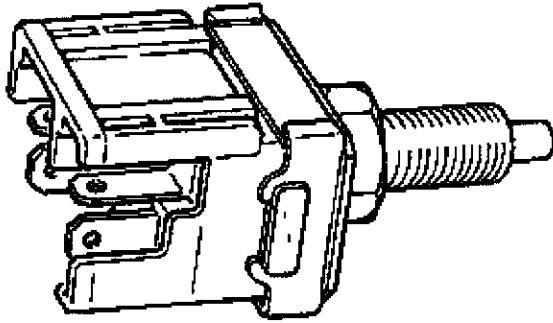
Note; You should enter this Pinpoint Test only when the Switch Test Chart in Quick Test Step 11 directs you here.

Remember; This Pinpoint Test is intended to diagnose only the following circuits;

- BOO (Brake on/off Switch)
- DEF (Rear Window Defrost Switch)
- HDLP (Headlamp Relay)
- VST (Vehicle Start -Ignition- Switch)

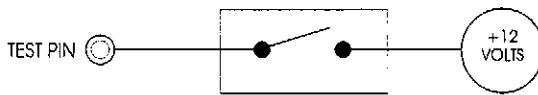
EEC PINPOINT TESTS

STP SWITCH TO POWER



ENGINE	LOCATION
1.3L.	Mounted at top of brake pedal.

PINPOINT TEST SCHEMATIC



CIRCUIT DATA SHEET

SWITCH	ABBR.	ENGIN E	PCM PIN	BOB PIN	WIRE #	SWITCH EXERCISE	SWITCH TO
Brake on/off Switch	BOO	1.3 L.	10	2	12G	Close switch by depressing brake pedal.	Battery voltage with switch closed.
Ignition Switch	VST	1.3L.	1C	5	18C	Close switch by turning ignition switch to start (crank engine).	Approximately 9 volts with switch closed (cranking engine).

EEC PINPOINT TESTS

STP SWITCH TO POWER

TEST STEP	RESULT	ACTION TO TAKE						
<p>STP1 CHECK SWITCH SIGNAL TO PCM</p> <ul style="list-style-type: none"> - Key OFF. - Install Breakout Box (leave PCM disconnected). - Key on. - Measure the voltage at the BOB Test Pin of the switch in question. - Exercise the switch as indicated in the Data Sheet. - Are the voltages as indicated in the Data Sheet? 	<p>YES</p> <p>NO</p> <p>Headlamp switch</p> <p>No</p> <p>All Others</p>	<p>If directed here by Quick Test Step QT11 in Section 5, the return to Section 2; Diagnostic Routines. Otherwise, replace the PCM. (Confirm SML circuit is okay before replacing PCM.)</p> <p>If headlamp work, service wire for open(s). If headlamps do not work, go to Service Manual Section 17.</p> <p>Go to STP2.</p>						
<p>STP2 CHECK POWER TO SWITCH</p> <ul style="list-style-type: none"> - Key OFF. - Disconnect the connector of the switch in question. - Key on. - Measure the voltage at the PWR terminal on the harness connector of the switch in question. - Is the voltage approximately battery voltage? 	<p>YES</p> <p>NO</p>	<p>Go to STP3.</p> <p>Service the PWR wire for open(s).</p>						
<p>STP3 CHECK SWITCH CONTINUITY</p> <ul style="list-style-type: none"> - Key OFF. - Disconnect the connector of the switch in question. - Measure the resistance between the terminals of the switch. - Exercise the switch in question. <table border="0" style="width: 100%;"> <tr> <td style="padding-right: 40px;">Switch</td> <td>Resistance (ohms)</td> </tr> <tr> <td>open</td> <td>Greater than 10,000</td> </tr> <tr> <td>closed</td> <td>Less than 5</td> </tr> </table> <ul style="list-style-type: none"> - Is the resistance okay? 	Switch	Resistance (ohms)	open	Greater than 10,000	closed	Less than 5	<p>YES</p> <p>NO</p>	<p>Service the switch wire to PCM.</p> <p>Replace the switch in question.</p>
Switch	Resistance (ohms)							
open	Greater than 10,000							
closed	Less than 5							

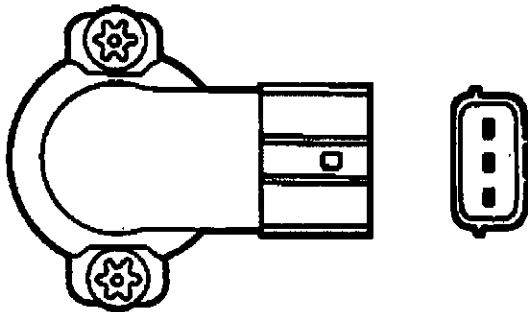
EEC PINPOINT TESTS

TP THROTTLE POSITION SENSOR

The Throttle Position (TP) Sensor detects the throttle plate opening angle and supplies the Power-train Control Module (PCM) with an input signal indicating throttle position. On the 1.3L engine, the TP sensor detects the throttle plate opening angle with a potentiometer and notifies the PCM. The TP sensor also helps determine the air intake if the Mass AirFlow (MAF) sensor fails.

Note; You should enter this Pinpoint Test only when diagnostic trouble code 12 is received in Quick Test Steps 7 or 8. Or when Quick Test Step 11 directs you here.

Remember; This Pinpoint Test is intended to diagnose only the circuit; TP.



ENGINE	LOCATION
1.3L.	Mounted to the throttle body.

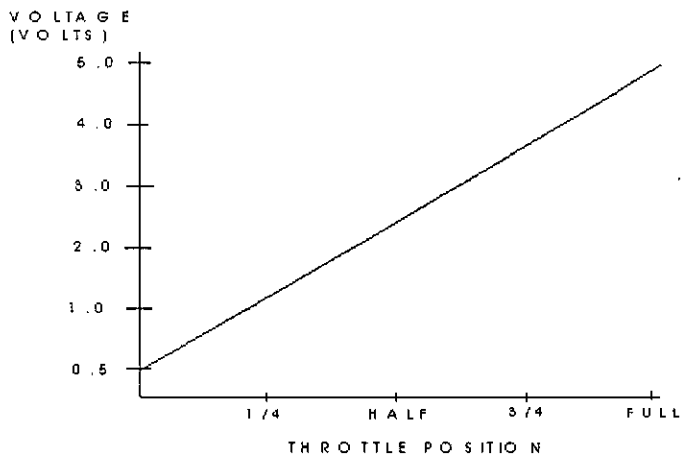
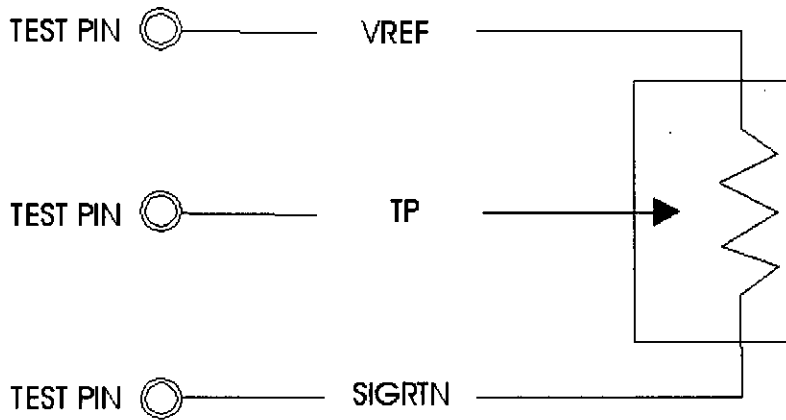
CIRCUIT DATA SHEET

ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIRE #
1.3L.	TP	2M	47	96
	VREF	2K	26	66
	SIGRTN	2D	46	45J

EEC PINPOINT TESTS

TP THROTTLE POSITION SENSOR

PINPOINT TEST SCHEMATIC



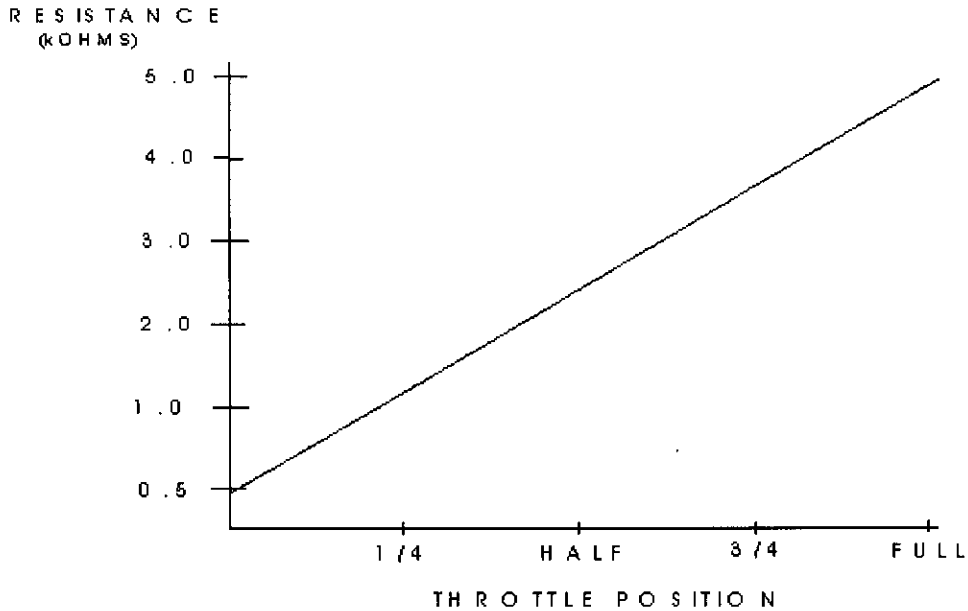
GRAPH DATA VALUES

THROTTLE POSITION	VOLTS
1/4	0.5
HALF	2.75
3/4	3.88
FULL	5.0

Note; Voltage and resistance may vary 15%.

EEC PINPOINT TESTS

TP THROTTLE POSITION SENSOR



GRAPH DATA VALUES

THROTTLE POSITION	kOHMS
1/4	0.5
HALF	2.75
3/4	3.88
FULL	5.0

Note; Voltage and resistance values may vary 15%.

TEST STEPS	RESULT	ACTION TO TAKE
TP2 CHECK VREF - Key off. - Disconnect the TP sensor connector. - Key on. - Measure the voltage on the VREF wire, at the throttle position sensor harness connector. - Is the voltage between 4.5 and 5.5 volts?	YES	Go to TP3.
	NO	Go to EEC Pinpoint Test VREF.
TP2 CHECK WIRES TP PCM - Key OFF. - Install Breakout Box (leave PCM disconnected). - Disconnect the TP sensor connector. - Measure the resistance of the TP wire between	YES	Replace the throttle position sensor.
	NO	Service the wire(s) in question.

EEC PINPOINT TESTS

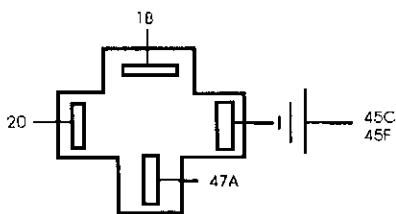
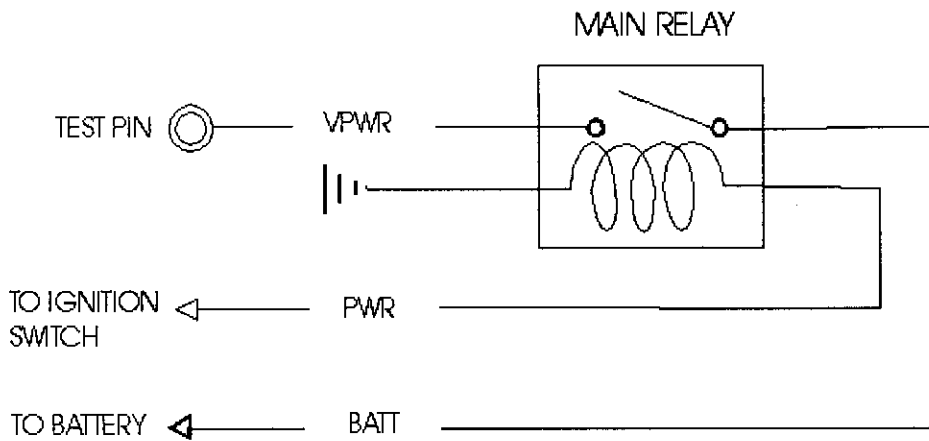
<p>BOB Test Pin TP and ground. - Are the resistance less than 5 ohms between BOB Test Pins and TP sensor harness connector, and greater than 10,000 ohms between BOB Test Pin TP and ground?</p>		
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VPWR VEHICLE POWER (VPWR)

Note; You should enter this Pinpoint Test only when other Pinpoint Tests direct you here.

Remember; This Pinpoint Test is intended to diagnose only the circuits VPWR and GND.

PINPOINT TEST SCHEMATIC



RELAY HARNESS CONNECTOR

DATA SHEET

ENGINE	CIRCUIT	PCM PIN	BOB PIN	WIRE #
1.3L.	VPWR	1B	37,57	47G

EEC PINPOINT TESTS

VREF REFERENCE VOLTAGE

<p>VREF4 CHECK WIRE TO PCM FOR SHORTS</p> <ul style="list-style-type: none">- Key OFF.- Install Breakout Box (leave PCM disconnected).- Disconnect OBARO, EVP, VAF, MC and TP sensor connectors are applicable to vehicle. Refer to Pinpoint Test Schematics.- Measure the resistance between Test Pin VREF and ground.- Is the resistance greater than 10,000 ohms?	<p>YES</p> <p>NO</p>	<p>Service the SIGRTN.</p> <p>Service the wire in question for shorts.</p>
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