G - TESTS W/CODES

1998 Mitsubishi Montero

1998 ENGINE PERFORMANCE
Mitsubishi - Self-Diagnostics

Montero & 3000GT

INTRODUCTION

* PLEASE READ THIS FIRST *

NOTE: If no faults were found while performing basic diagnostic procedures in F - BASIC TESTING article, proceed with self-diagnostics in this article. If no Diagnostic Trouble Codes (DTCs) or only pass codes are present after entering self-diagnostics, proceed to H - TESTS W/O CODES article for diagnosis by symptom (i.e., ROUGH IDLE, NO START, etc.).

SYSTEM DIAGNOSIS

NOTE: PCM diagnostic memory is retained by direct power supply from battery. Memory is not erased by turning off ignition, but it will be erased if battery or PCM is disconnected.

System diagnosis can be accomplished using a scan tool. See ENTERING ON-BOARD DIAGNOSTICS. Powertrain Control Module (PCM) monitors several different engine control system circuits. If an abnormal input signal occurs, a Diagnostic Trouble Code (DTC) is stored in PCM memory and assigned a DTC number. Each circuit has its own DTC number and message. A specific DTC indicates a particular system failure, but does not indicate that cause of failure is necessarily within system.

A DTC does not condemn any specific component; it simply points out a probable malfunctioning area. If a DTC is set, PCM will turn on MIL. System failures encountered are identified as either hard failures or intermittent failures as determined by PCM.

Hard Failures

Hard failures cause MIL to come on and remain on until failure is repaired. If MIL comes on and remains on (MIL may flash) during vehicle operation, cause of failure may be determined by using appropriate DTC diagnostic procedure. See TROUBLE CODE DEFINITION. If a sensor fails, PCM will use a substitute value in its calculations to continue engine operation. In this condition (limp-in mode), vehicle is functional, but loss of good driveability may result.

Intermittent Failures

Intermittent failures may cause MIL to flicker, or come on and go out after intermittent DTC goes away. However, corresponding DTC will be retained in PCM memory. If related DTC does not reoccur within a certain time frame, related DTC will be erased from PCM memory. Intermittent failures may be caused by a sensor, connector or wiring problems. See INTERMITTENTS in H - TESTS W/O CODES article.

The PCM also records and stores engine operating conditions when malfunction occurred. This information is referred to as freeze frame data. If malfunction is an engine misfire, or fuel system rich or fuel system lean condition, freeze frame data will be updated with the most current information regarding these failures. Freeze frame data recorded is:

* Fuel System Status

* Load Value (Displayed As Percent)
* Engine Coolant Temperature
* Short Term Fuel Trim (Displayed As Percent)
* Long Term Fuel Trim (Displayed As Percent)
* MAP Vacuum
* Engine RPM
* Vehicle Speed Sensor
* DTC During Data Recording

SELF-DIAGNOSTIC SYSTEM

SERVICE PRECAUTIONS

Before proceeding with diagnosis, following precautions must be observed:

* Ensure vehicle has a fully charged battery and functional charging system.
* Visually inspect connectors and circuit wiring being worked on.
* DO NOT disconnect battery or PCM. This will erase any DTCs stored in PCM.
* DO NOT cause short circuits when performing electrical tests. This will set additional DTCs, making diagnosis of original problem more difficult.
* DO NOT use a test light in place of a voltmeter.
* When checking for spark, ensure coil wire is NOT more than 1/4" from chassis ground. If coil wire is more than 1/4" from chassis ground, damage to vehicle electronics and/or PCM may result.
* DO NOT prolong testing of fuel injectors. Engine may hydrostatically (liquid) lock.
* When a vehicle has multiple DTCs, always repair lowest number DTC first.

VISUAL INSPECTION

Most driveability problems in the engine control system result from faulty wiring, poor electrical connections or leaking air and vacuum hose connections. To avoid unnecessary component testing, perform a visual inspection before beginning self-diagnostic tests.

ENTERING ON-BOARD DIAGNOSTICS

NOTE: DO NOT skip any steps in self-diagnostic tests or incorrect diagnosis may result. Ensure self-diagnostic test applies to vehicle being tested.

DTCs may be retrieved by using a scan tool only. Proceed to DTC retrieval method.

NOTE: Although other scan tools are available, Mitsubishi recommends using Multi-Use Tester II (MUT II) scan tool.

Using Scan Tool

1) Refer to manufacturer’s operation manual for instructions in use of scan tool. Before entering on-board diagnostics, see SERVICE PRECAUTIONS. Locate Data Link Connector (DLC) under instrument panel, near steering column.

2) Turn ignition switch to OFF position. Connect scan tool to DLC. Turn ignition switch to ON position. Read and record scan tool self-diagnostic output. Proceed to TROUBLE CODE DEFINITION.

TROUBLE CODE DEFINITION

When DTC is obtained, refer to appropriate DTC test procedure.

DIAGNOSTIC TROUBLE CODES (DTCS)

NOTE: DTCs can only be retrieved by using a scan tool. Listed DTCs are retrieved using a generic scan tool. MUT II scan tool can be used, but it may not read all DTCs. DTCS listed are not used on all vehicles.

DTC P0100
Volume Airflow (VAF) circuit failure. Possible causes are: connector or harness, or faulty VAF sensor.

DTC P0105
Barometric (BARO) pressure circuit failure. Possible causes are: connector or harness, or faulty BARO pressure sensor.

DTC P0105
Manifold Absolute Pressure (MAP) circuit failure. Possible causes are: connector or harness, or faulty MAP sensor.

DTC P0110
Intake Air Temperature (IAT) circuit failure. Possible causes are: connector or harness, or faulty VAF sensor.

DTC P0115
Engine Coolant Temperature (ECT) circuit failure. Possible causes are: connector or harness, or faulty ECT sensor.

DTC P0120
Throttle Position (TP) circuit failure. Possible causes are: connector or harness, or faulty TP sensor.

DTC P0125
Excessive time to enter closed loop fuel control. Possible causes are: faulty front HO2S, HO2S connector or harness, or faulty fuel injector.

DTC P0130
Front Heated Oxygen Sensor (HO2S) circuit failure. Possible causes are: connector or harness, or faulty HO2S.

DTC P0135
Front Heated Oxygen Sensor (HO2S) heater circuit failure. Possible causes are: connector or harness, or faulty HO2S.

DTC P0136
Rear Heated Oxygen Sensor (HO2S) circuit failure. Possible causes are: connector or harness, or faulty HO2S.

DTC P0141
Rear Heated Oxygen Sensor (HO2S) heater circuit failure. Possible causes are: connector or harness, or faulty HO2S.

DTC P0150
Heated Oxygen Sensor (HO2S) circuit failure (bank 2, sensor 1). Possible causes are: connector or harness, or HO2S.

DTC P0155
Heated Oxygen Sensor (HO2S) heater circuit failure (bank 2, sensor 1). Possible causes are: connector or harness, or HO2S.

DTC P0156
Heated Oxygen Sensor (HO2S) circuit failure (bank 2, sensor 2). Possible causes are: connector or harness, or HO2S.

DTC P0161
Heated Oxygen Sensor (HO2S) heater circuit failure (bank 2, sensor 2). Possible causes are: connector or harness, or HO2S.

DTC P0170
Fuel trim failure (bank 1). Possible causes are: intake air leaks, cracked exhaust manifold, faulty VAF sensor frequency, HO2S, injector, fuel pressure, ECT, IAT or BARO pressure sensor.

DTC P0173
Fuel trim failure (bank 2). Possible causes are: intake air leaks, cracked exhaust manifold, faulty VAF sensor frequency, HO2S, injector, fuel pressure, ECT, IAT or BARO pressure sensor.

DTC P0201
Cylinder No. 1 injector circuit failure. Possible causes are: connector or harness, or faulty injector.

DTC P0202
Cylinder No. 2 injector circuit failure. Possible causes are: connector or harness, or faulty injector.

DTC P0203
Cylinder No. 3 injector circuit failure. Possible causes are: connector or harness, or faulty injector.

DTC P0204
Cylinder No. 4 injector circuit failure. Possible causes are: connector or harness, or faulty injector.

DTC P0205
Cylinder No. 5 injector circuit failure. Possible causes are: connector or harness, or faulty injector.

DTC P0206
Cylinder No. 6 injector circuit failure. Possible causes are: connector or harness, or faulty injector.

DTC P0300
Random misfire detected. Possible causes are: connector or harness, faulty ignition coil, ignition power transistor, spark plug, ignition circuit, injector, HO2S, compression pressure, timing belt, air intake system, fuel pressure, or CKP sensor.

DTC P0301
Cylinder No. 1 misfire detected. Possible causes are: connector or harness, faulty ignition coil, ignition power transistor, spark plug, ignition circuit, injector, HO2S, compression pressure, timing belt, air intake system, fuel pressure, or CKP sensor.

DTC P0302
Cylinder No. 2 misfire detected. Possible causes are: connector or harness, faulty ignition coil, ignition power transistor, spark plug, ignition circuit, injector, HO2S, compression pressure, timing belt, air intake system, fuel pressure, or CKP sensor.

DTC P0303
Cylinder No. 3 misfire detected. Possible causes are: connector or harness, faulty ignition coil, ignition power transistor, spark plug, ignition circuit, injector, HO2S, compression pressure, timing belt, air intake system, fuel pressure, or CKP sensor.

DTC P0304
Cylinder No. 4 misfire detected. Possible causes are: connector or harness, faulty ignition coil, ignition power transistor, spark plug, ignition circuit, injector, HO2S, compression pressure, timing belt, air intake system, fuel pressure, or CKP sensor.

DTC P0305
Cylinder No. 5 misfire detected. Possible causes are: connector or harness, faulty ignition coil, ignition power transistor, spark plug, ignition circuit, injector, HO2S, compression pressure, timing belt, air intake system, fuel pressure, or CKP sensor.

DTC P0306
Cylinder No. 6 misfire detected. Possible causes are: connector or harness, faulty ignition coil, ignition power transistor, spark plug, ignition circuit, injector, HO2S, compression pressure, timing belt, air intake system, fuel pressure, or CKP sensor.

DTC P0325
Knock Sensor (KS) circuit failure. Possible causes are: connector or harness, or faulty KS.

DTC P0335
Crankshaft Position (CKP) sensor circuit failure. Possible causes are: connector or harness, or faulty CKP sensor.

DTC P0340
Camshaft Position (CMP) sensor circuit failure. Possible causes are: connector or harness, or faulty CMP sensor.

DTC P0400
Exhaust Gas Recirculation (EGR) flow failure. Possible causes are: connector or harness, faulty EGR valve, EGR solenoid, EGR valve control vacuum, or manifold differential pressure sensor.

DTC P0403
Exhaust Gas Recirculation (EGR) solenoid failure. Possible causes are: connector or harness, or faulty EGR solenoid.

DTC P0420
Catalyst efficiency below threshold. Possible causes are: cracked exhaust manifold, or faulty catalytic converter.

DTC P0421
Warm-up catalyst efficiency below threshold (bank 1). Possible causes are: faulty exhaust manifold. If exhaust manifold is okay, replace catalytic converter.

DTC P0431
Warm-up catalyst efficiency below threshold (bank 2). Possible causes are: faulty exhaust manifold. If exhaust manifold is okay, replace catalytic converter.

DTC P0442
Evaporative (EVAP) emission control system leak detected. Possible causes are: connector or harness, faulty EVAP purge solenoid,

purge control valve, or vacuum hose routing.

DTC P0443
Evaporative (EVAP) purge control valve circuit failure. Possible causes are: connector or harness, or faulty EVAP solenoid.

DTC P0446
Evaporative (EVAP) emission control system vent control failure. Possible causes are: connector or harness, faulty EVAP vent solenoid.

DTC P0450
Evaporative (EVAP) emission control system pressure sensor failure. Possible causes are: connector or harness, or faulty fuel tank differential pressure sensor.

DTC P0455
Evaporative (EVAP) emission control system large leak detected. Possible causes are: connector or harness, faulty EVAP purge solenoid, purge control valve, or vacuum hose routing.

DTC P0500
Vehicle Speed Sensor (VSS) failure. Possible causes are: connector or harness, or faulty VSS.

DTC P0505
Idle Air Control (IAC) system failure. Possible causes are: connector or harness, or faulty IAC motor.

DTC P0510
Closed Throttle Position (TP) switch failure. Possible causes are: connector or harness, or faulty closed TP switch.

DTC P0551
Power Steering Pressure (PSP) sensor failure. Possible causes are: connector or harness, or faulty PSP sensor.

DTC P0705
Automatic transaxle/transmission range sensor circuit failure. Possible causes are: connector or harness, or faulty PNP switch.

DTC P0710
Automatic transaxle/transmission fluid sensor failure. Possible causes are: connector or harness, or faulty transaxle/transmission sensor.

DTC P0715
Automatic transaxle input/turbine speed sensor circuit failure. Possible causes are: connector or harness, or pulse generator.

DTC P0720
Automatic transaxle input/turbine speed sensor circuit failure. Possible causes are: connector or harness, or pulse generator.

DTC P0725
Engine speed input circuit failure. Possible causes are: connector or harness.

DTC P0740
Torque converter clutch system failure. Possible causes are:

connector or harness, or torque converter clutch solenoid.

DTC P0750
Shift solenoid "A" failure. Possible causes are: connector or harness, or low-reverse solenoid.

DTC P0755
Shift solenoid "B" failure. Possible causes are: connector or harness, or underdrive solenoid.

DTC P0760
Shift solenoid "C" failure. Possible causes are: connector or harness, or second solenoid.

DTC P0765
Shift solenoid "D" failure. Possible causes are: connector or harness, or overdrive solenoid.

DTC P1103
Turbocharger wastegate actuator failure. Possible causes are: connector or harness, faulty wastegate solenoid or actuator, or vacuum hose routing.

DTC P1104
Turbocharger wastegate solenoid failure. Possible causes are: connector or harness, or faulty wastegate solenoid.

DTC P1105
Fuel pressure solenoid failure. Possible causes are: connector or harness, or faulty fuel pressure solenoid.

DTC P1400
Manifold Differential Pressure (MDP) sensor circuit failure. Possible causes are: connector or harness, or faulty MDP sensor.

DTC P1500
Generator FR terminal circuit failure. Possible causes are: connector or harness.

DTC P1600
Serial communication link failure. Possible causes are: connector or harness.

DTC P1715
Pulse Generator (PG) failure. Possible causes are: connector or harness, or faulty PG.

DTC P1750
Solenoid failure. Possible causes are: connector or harness, faulty converter clutch solenoid, shift control solenoid, or pressure control solenoid.

DTC P0751
Automatic transaxle control relay failure. Possible causes are: connector or harness, or automatic transaxle relay.

DTC P1791
Engine coolant temperature level input circuit (to TCM) failure. Possible causes are: connector or harness.

DTC P1795
Throttle position input circuit failure. Possible causes are: connector or harness.

CLEARING DTCS

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle.

To clear DTCs using a scan tool, refer to owners manual supplied with scan tool. If scan tool is not available, DTCs may also be cleared by disconnecting negative battery cable or PCM for at least 15 seconds, allowing PCM to clear DTCs. Reconnect negative battery cable and check for DTCs to confirm repair.

PCM LOCATION

PCM LOCATION TABLE

Application	Location
Montero	Right Front Kick Panel
3000GT	Behind Center Console

SUMMARY

If no hard DTCs (or only pass DTCs) are present, driveability symptoms exist, or intermittent DTCs exist, proceed to H - TESTS W/O CODES article for diagnosis by symptom (i.e., ROUGH IDLE, NO START, etc.) or intermittent diagnostic procedures.

TERMINAL IDENTIFICATION

NOTE: The following terminals are shown as viewed from component side of connector. Vehicles are equipped with different combinations of components. Not all components are used on all models. To determine component usage, see appropriate wiring diagram in L - WIRING DIAGRAMS article.

TERMINAL IDENTIFICATION DIRECTORY TABLE

Connector	See
ASD/Fuel Pump/MFI Relay	Fig. 1 or 2
CKP/CMP Sensor	Fig. 3, 4 or 5
DLC	Fig. 6
ECT Sensor	Fig. 7
EVAP Purge Solenoid	Fig. 8
EVAP Vent Solenoid	Fig. 9
Fuel Injector	Fig. 10, 11, 12 or 13
Fuel Pump	Fig. 14 or 15
Fuel Pump Control/Relay Module	Fig. 16
FTDP Sensor	Fig. 17
Generator Field	Fig. 18
HO2S	Fig. 19
IAC Motor	Fig. 20
Ignition Coil	Fig. 21, 22 or 23
Ignition Failure Sensor	Fig. 24
Ignition Power Transistor	Fig. 25 or 26
KS	Fig. 27
MDP Sensor	Fig. 28
PCM	Fig. 29

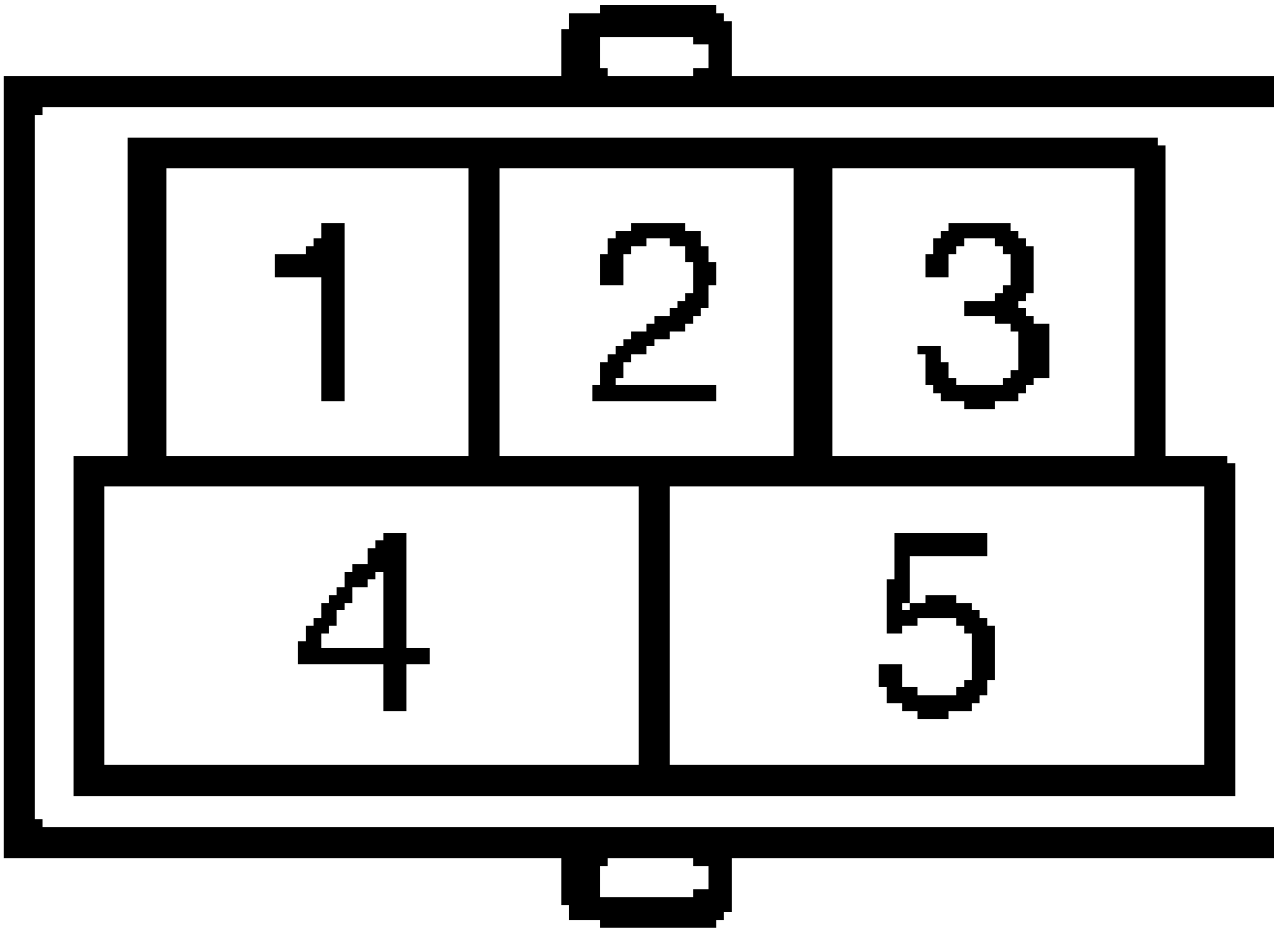

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Fig. 1: ASD/Fuel Pump/MFI Relay Terminals (3000GT DOHC Turbo - Fuel Pump)
Courtesy of Mitsubishi Motor Sales of America

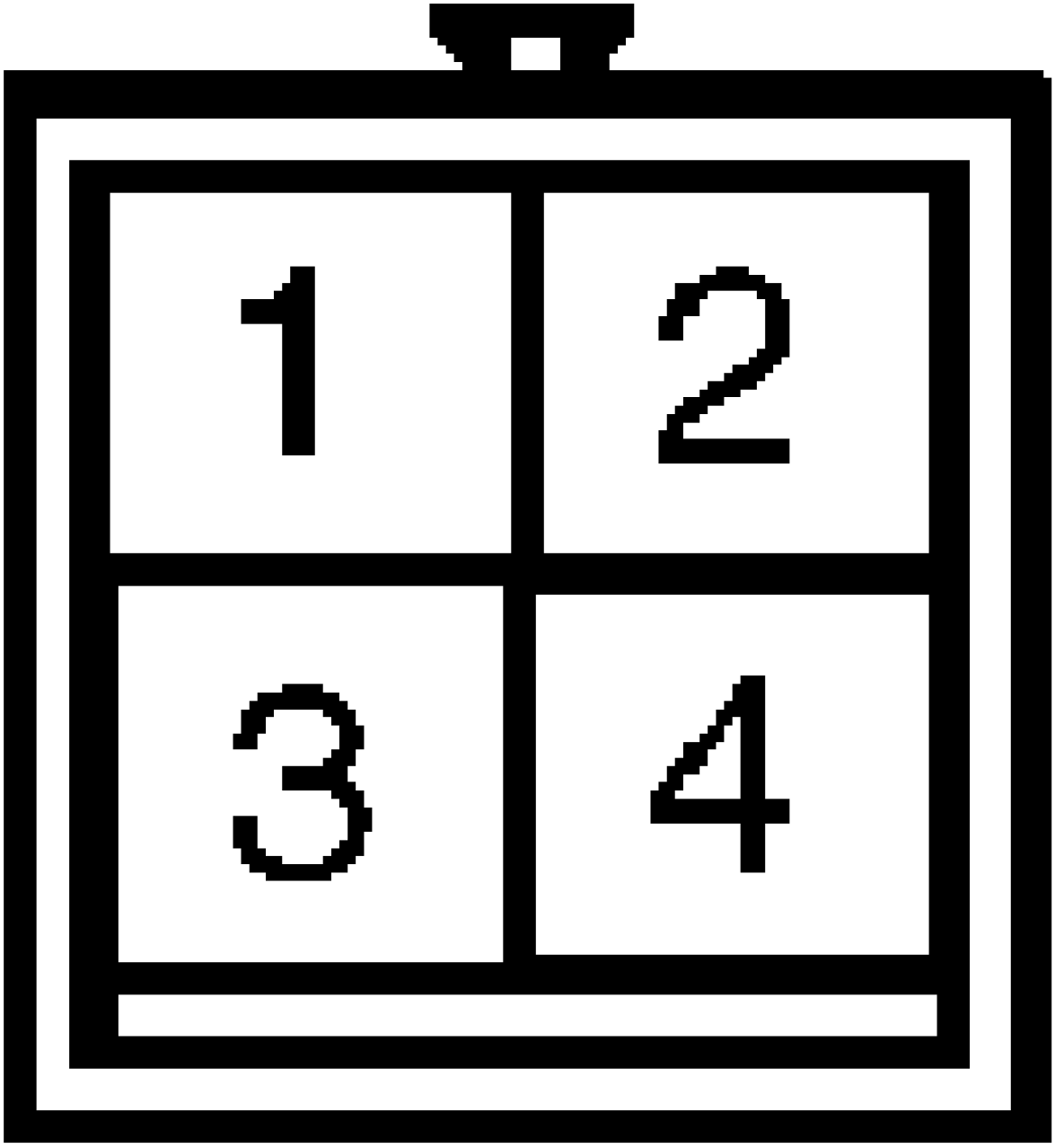

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Fig. 2: ASD/Fuel Pump/MFI Relay Terminals (All Other Models)
Courtesy of Mitsubishi Motor Sales of America

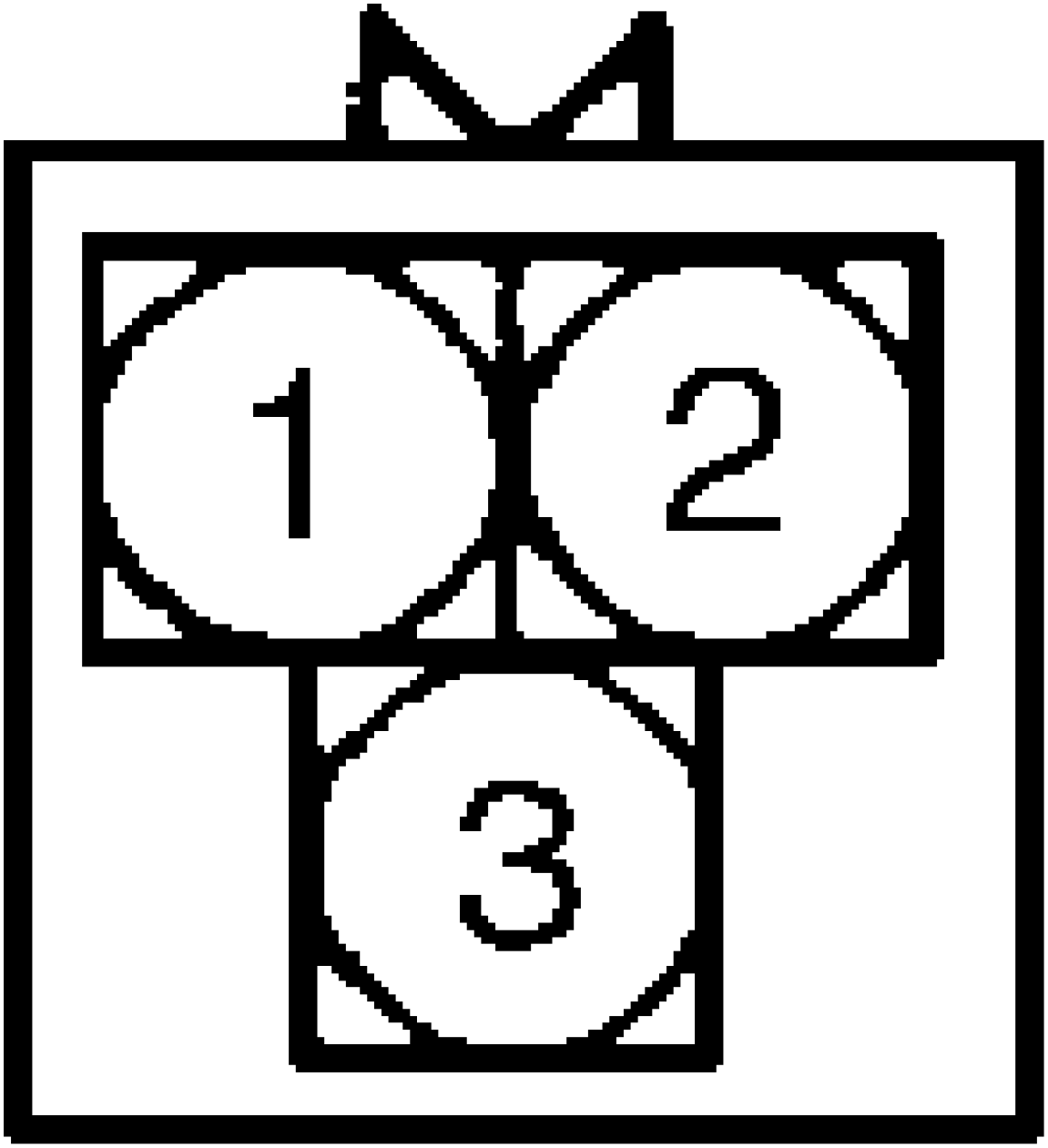

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Fig. 3: Identifying CKP Terminals
Courtesy of Mitsubishi Motor Sales of America

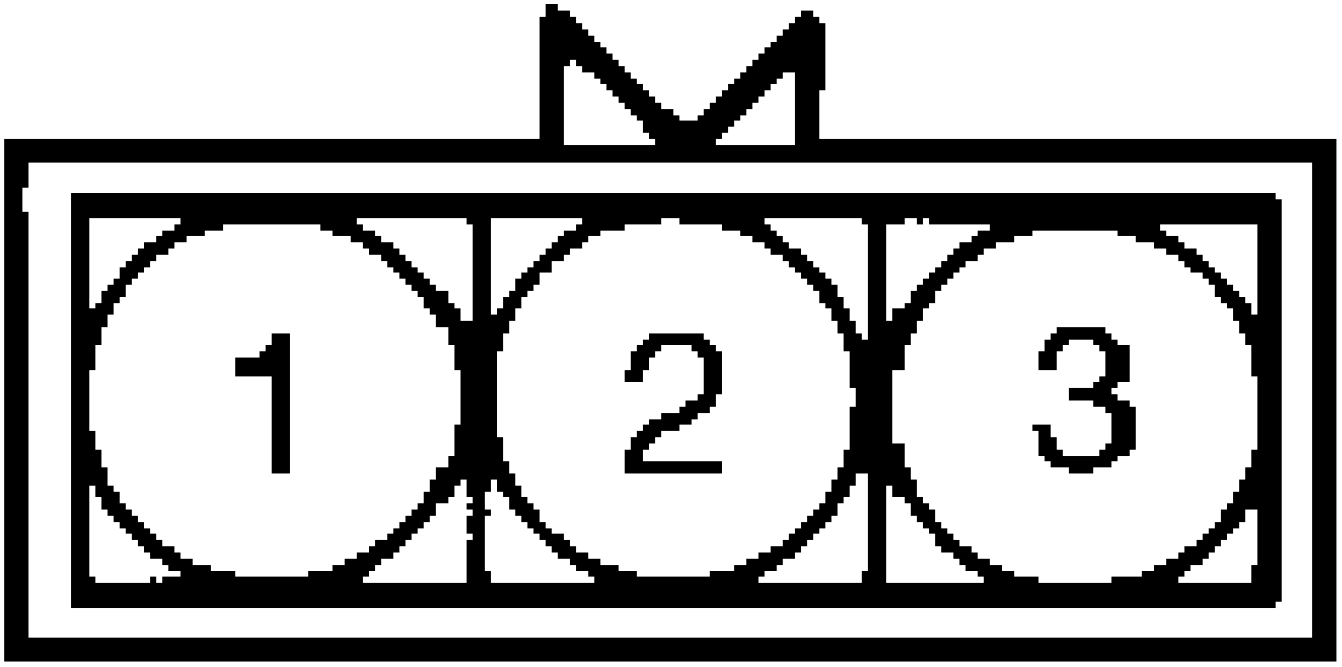

Fig. 4: Identifying CMP Terminals (Montero & 3000GT DOHC)
Courtesy of Mitsubishi Motor Sales of America

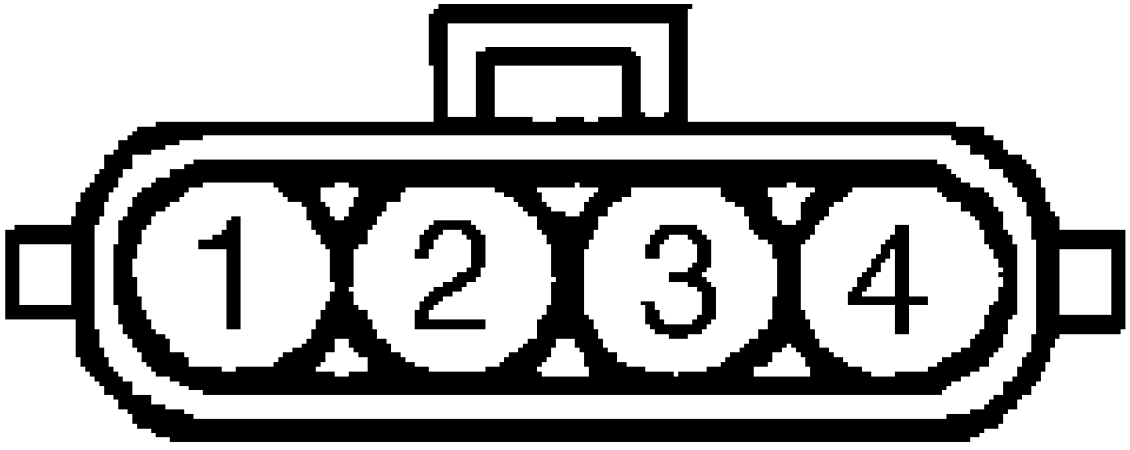

Fig. 5: Identifying CMP Terminals (3000GT SOHC)
Courtesy of Mitsubishi Motor Sales of America

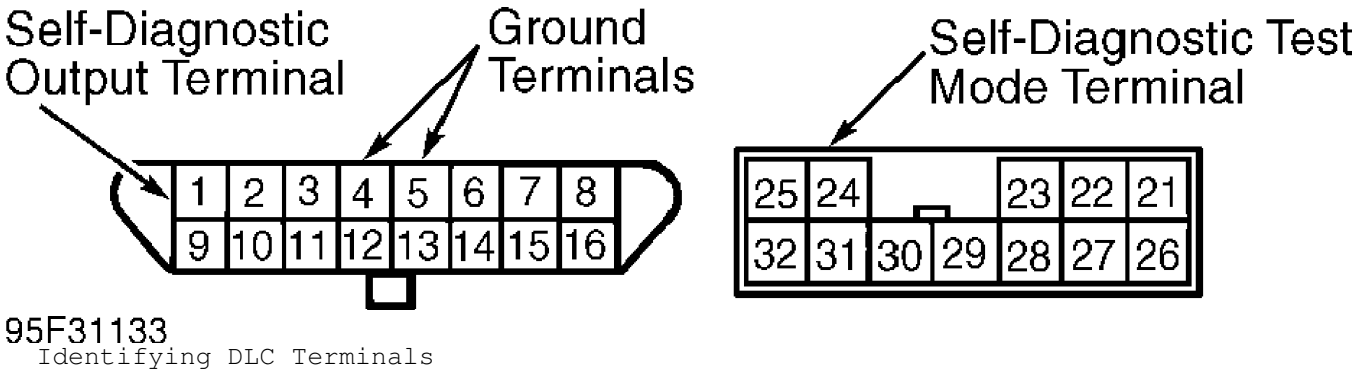

Fig. 6: Identifying DLC Terminals
Courtesy of Mitsubishi Motor Sales of America

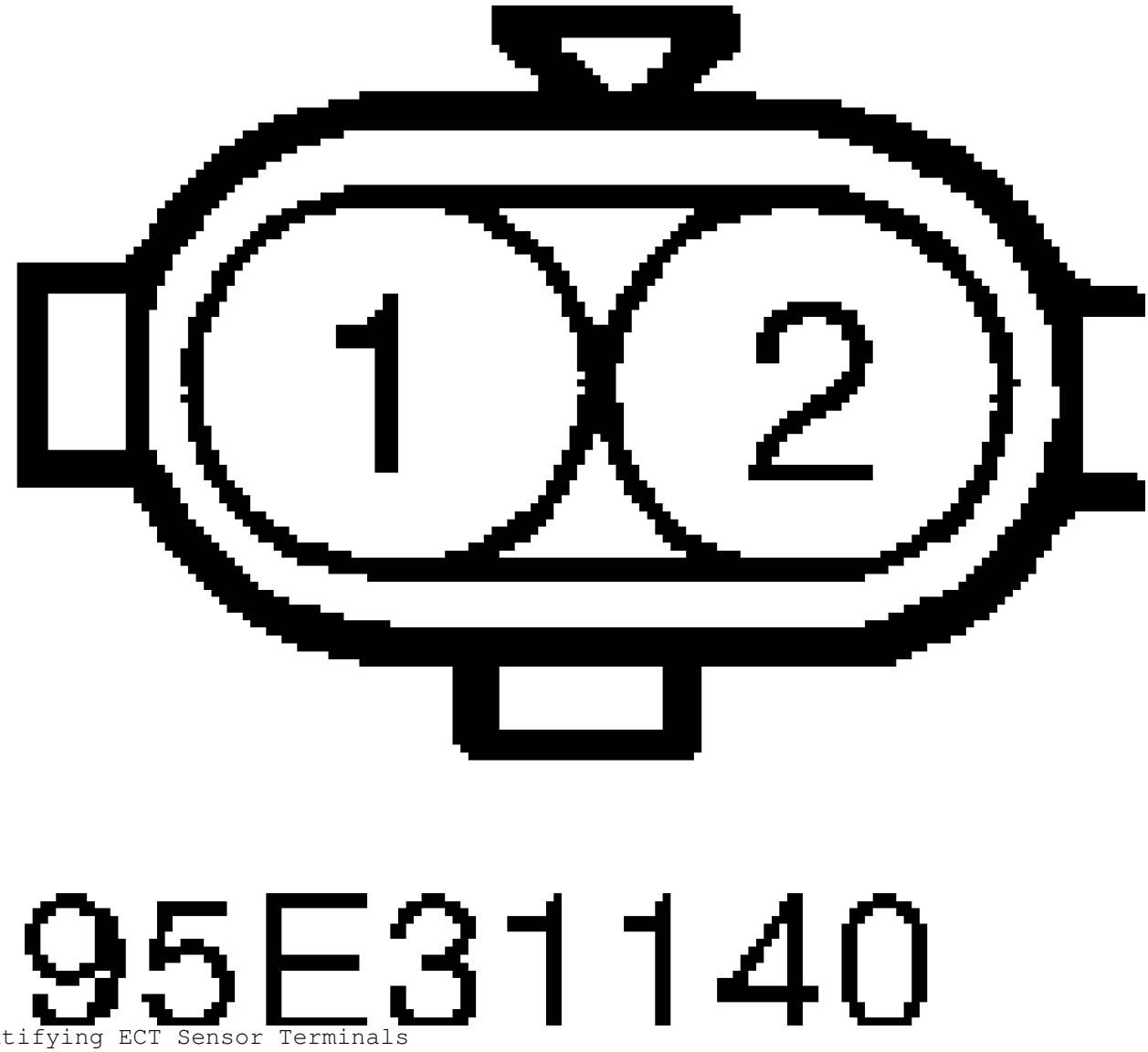

Fig. 7: Identifying ECT Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

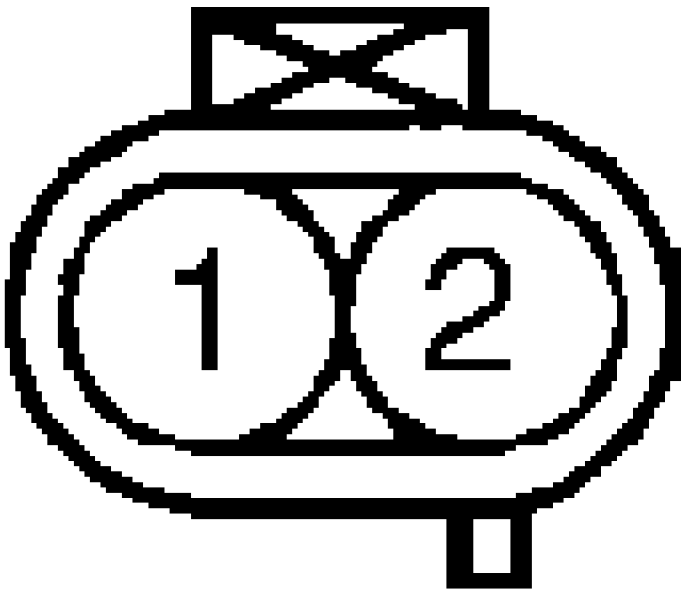

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Fig. 8: Identifying EVAP Purge Solenoid Terminals
Courtesy of Mitsubishi Motor Sales of America

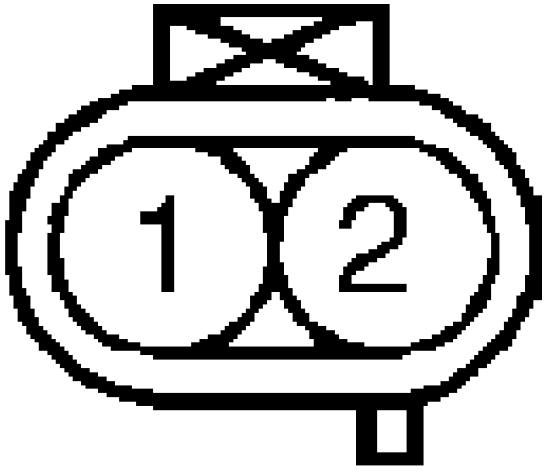

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Fig. 9: Identifying EVAP Vent Solenoid Terminals
Courtesy of Mitsubishi Motor Sales of America

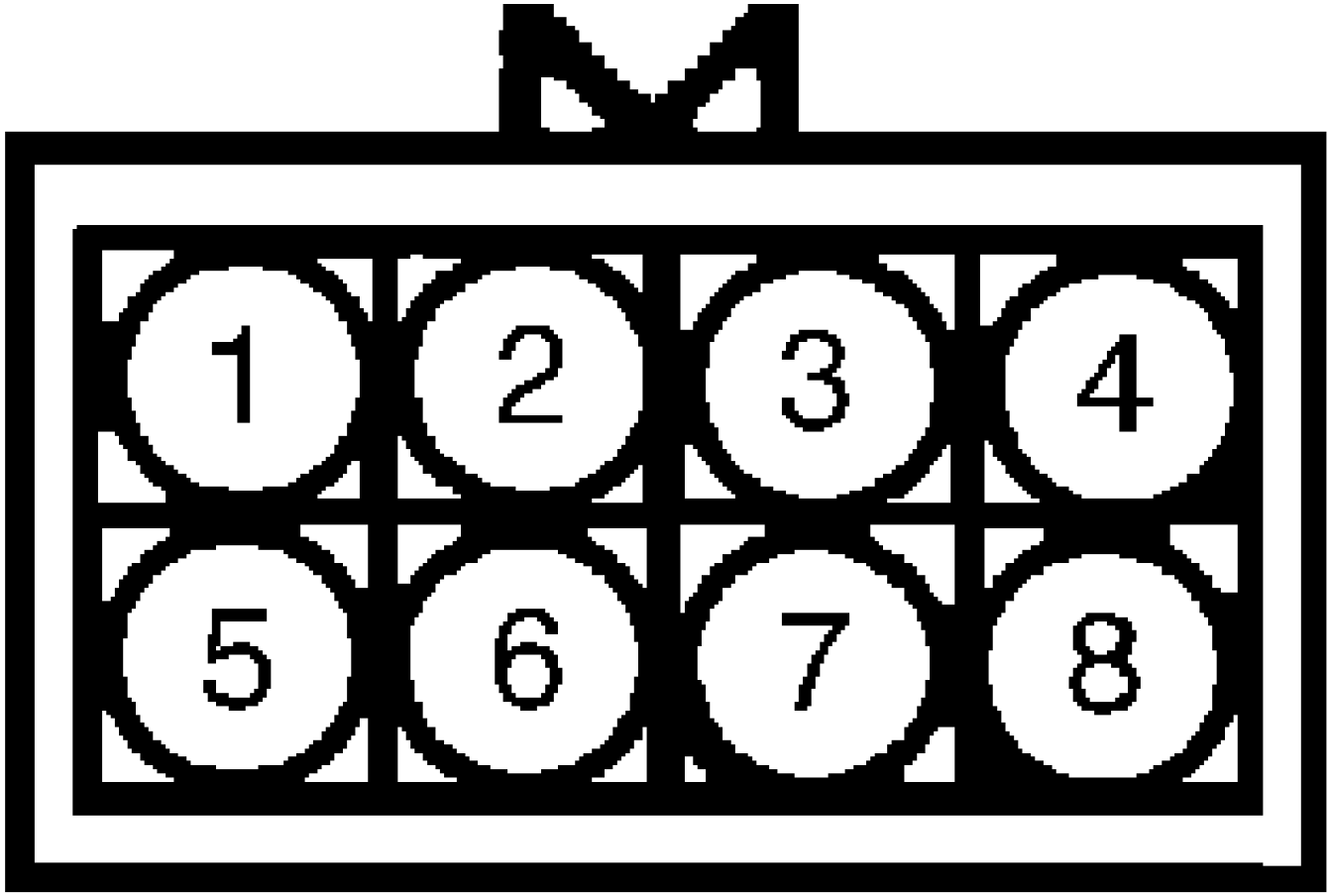

Fig. 10: Fuel Injector Terminals (Montero - Intermediate Connector)
Courtesy of Mitsubishi Motor Sales of America

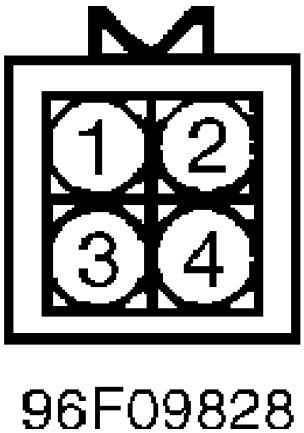

Fig. 11: Fuel Injector Terminals (3000GT Non-Turbo - Rear Injector Bank)
Courtesy of Mitsubishi Motor Sales of America

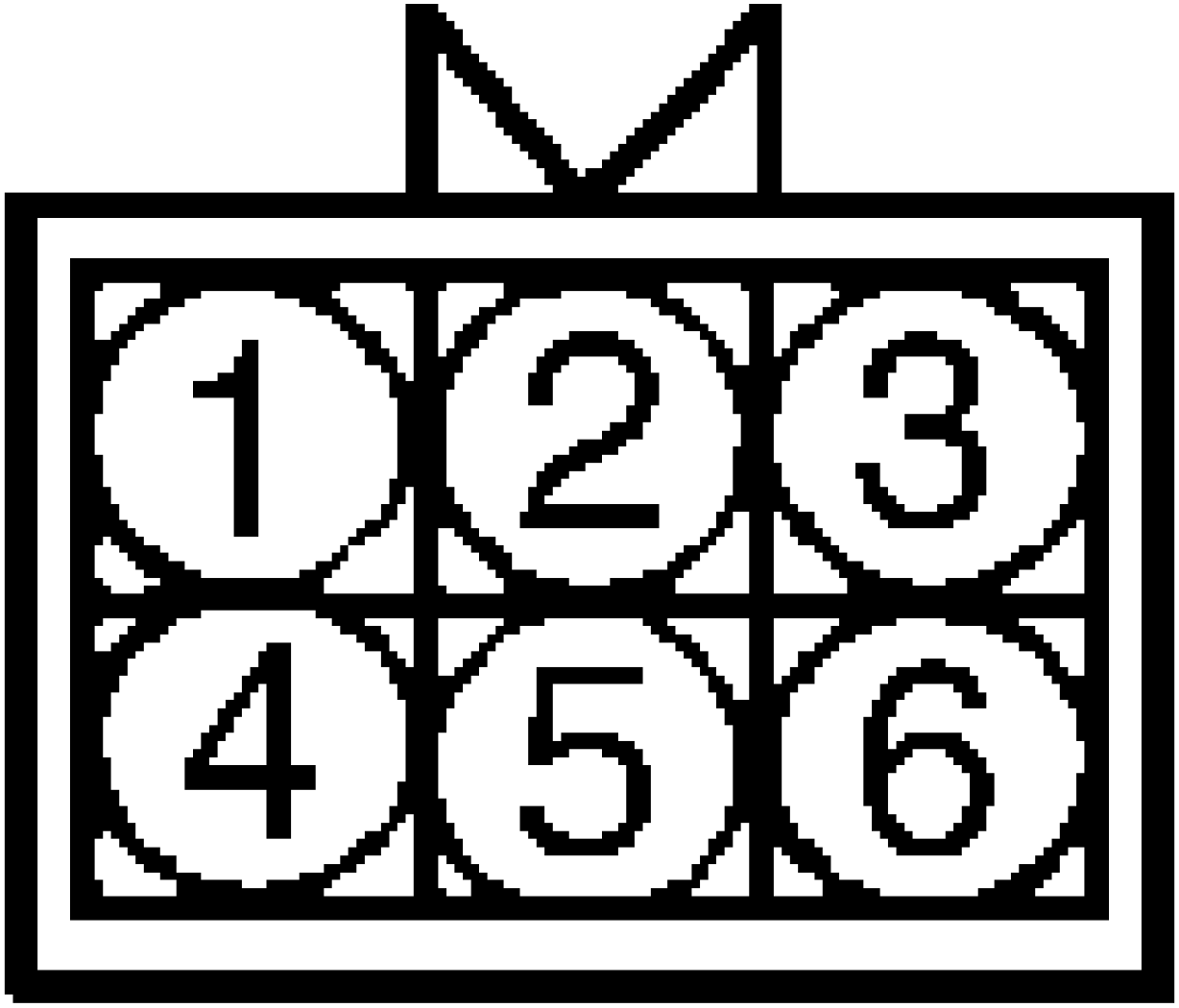

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Fig. 12: Fuel Injector Terminals (3000GT Turbo - Rear Injector Bank)
Courtesy of Mitsubishi Motor Sales of America

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Fig. 13: Fuel Injector Terminals (3000GT - Front Injector Bank)
Courtesy of Mitsubishi Motor Sales of America

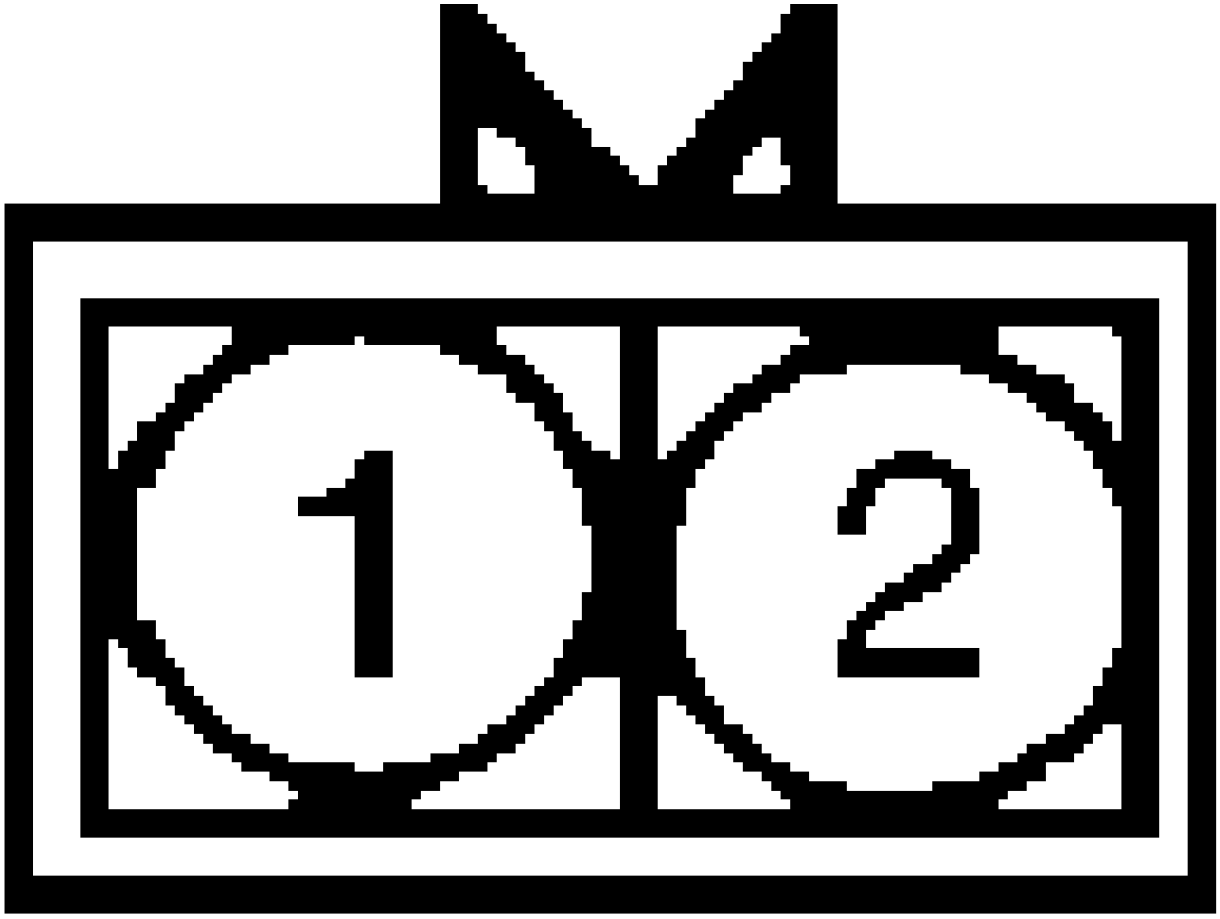

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Fig. 14: Identifying Fuel Pump Terminals (Montero)
Courtesy of Mitsubishi Motor Sales of America

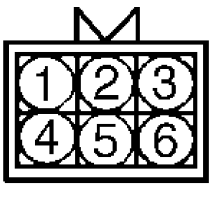

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Fig. 15: Identifying Fuel Pump Terminals (3000GT)
Courtesy of Mitsubishi Motor Sales of America

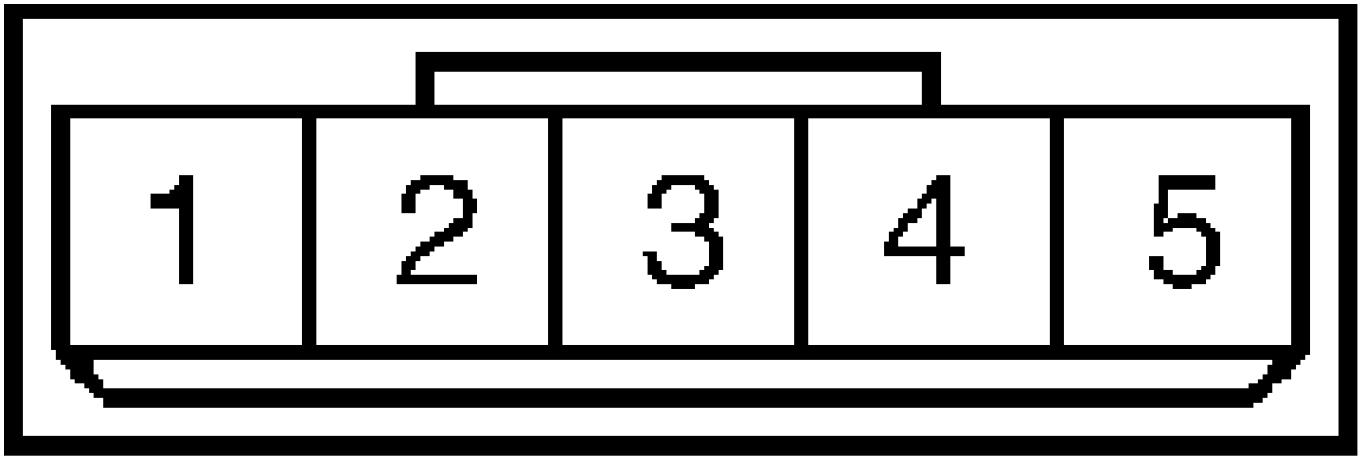

Fig. 16: Identifying Fuel Pump Control/Relay Module Terminals
Courtesy of Mitsubishi Motor Sales of America

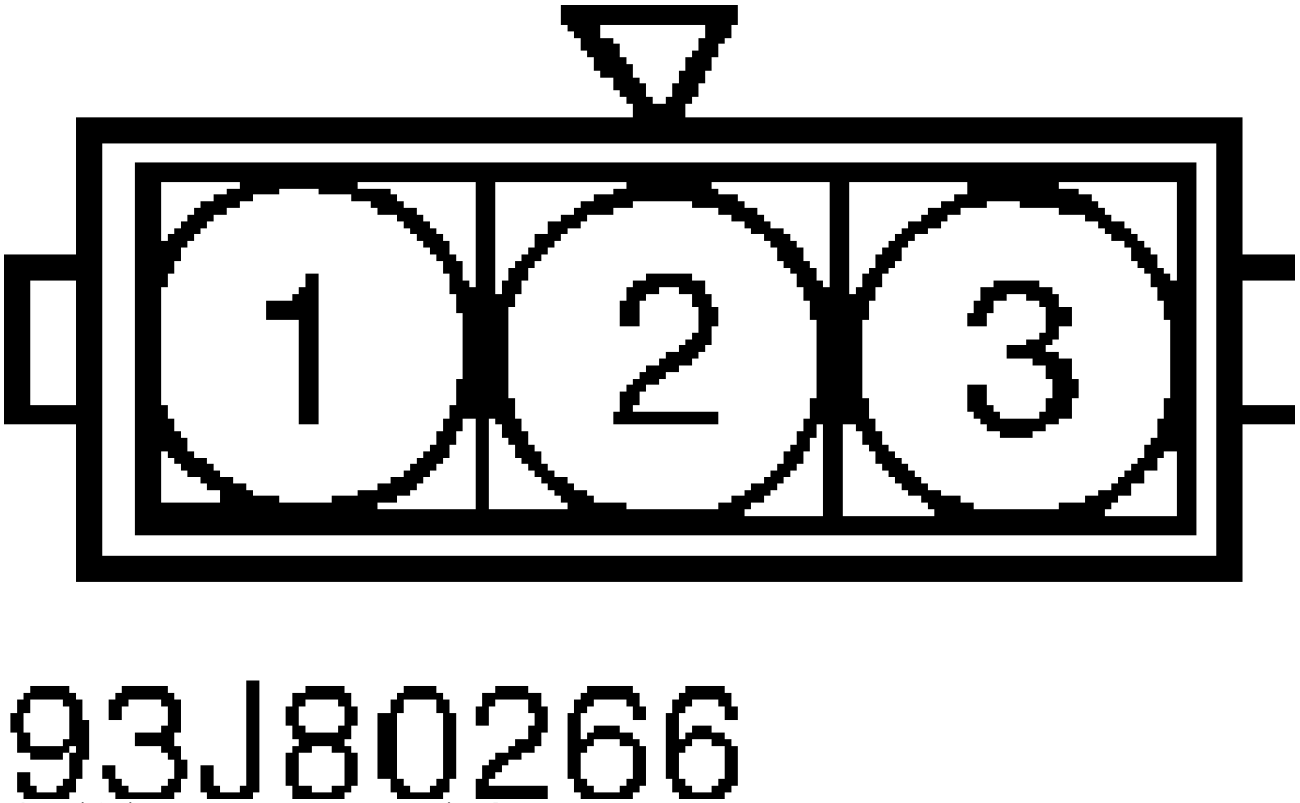

Fig. 17: Identifying FTDP Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

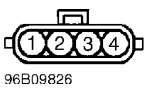

Fig. 18: Identifying Generator Field Terminals
Courtesy of Mitsubishi Motor Sales of America

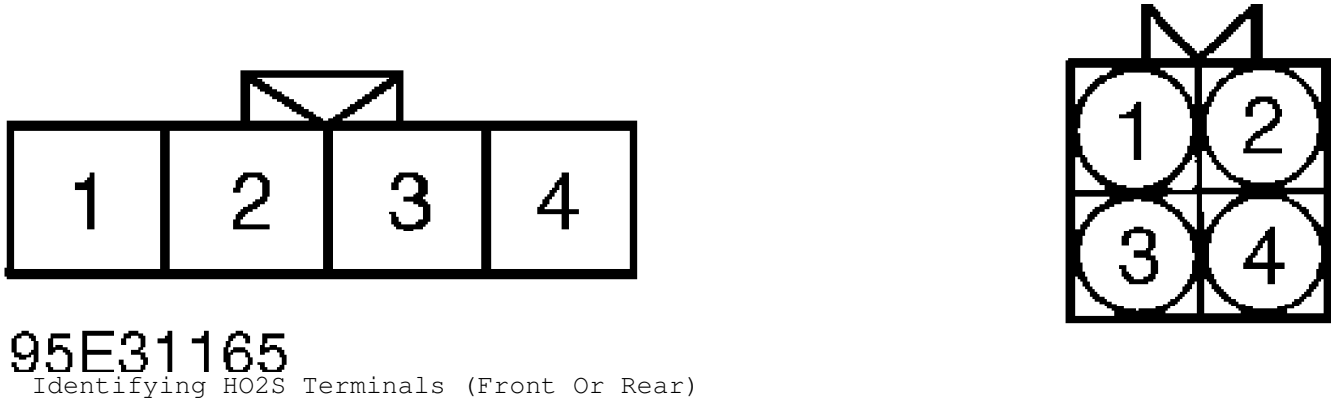

Fig. 19: Identifying HO2S Terminals (Front Or Rear)
Courtesy of Mitsubishi Motor Sales of America

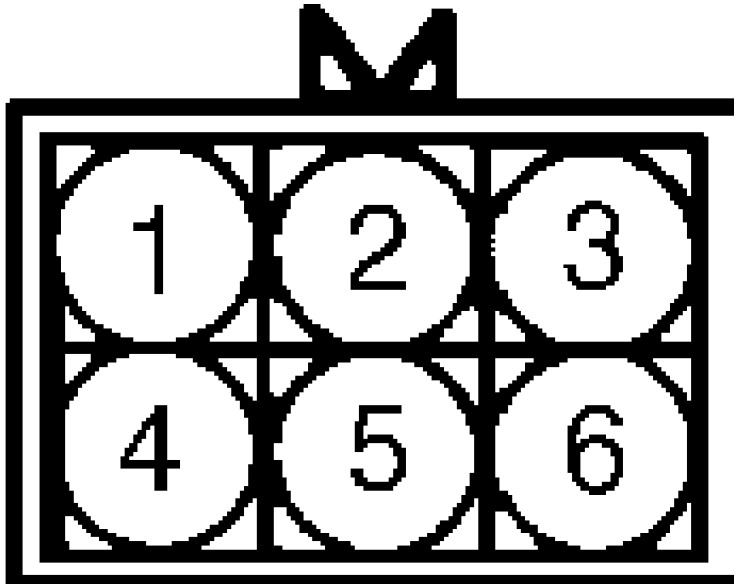

Fig. 20: Identifying IAC Motor Terminals
Courtesy of Mitsubishi Motor Sales of America

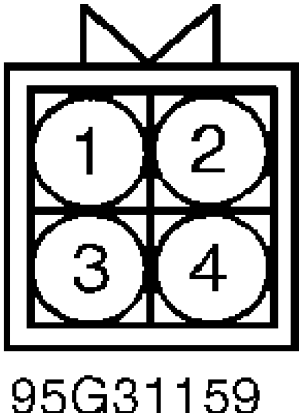

Fig. 21: Identifying Ignition Coil Terminals (3000GT DOHC)
Courtesy of Mitsubishi Motor Sales of America

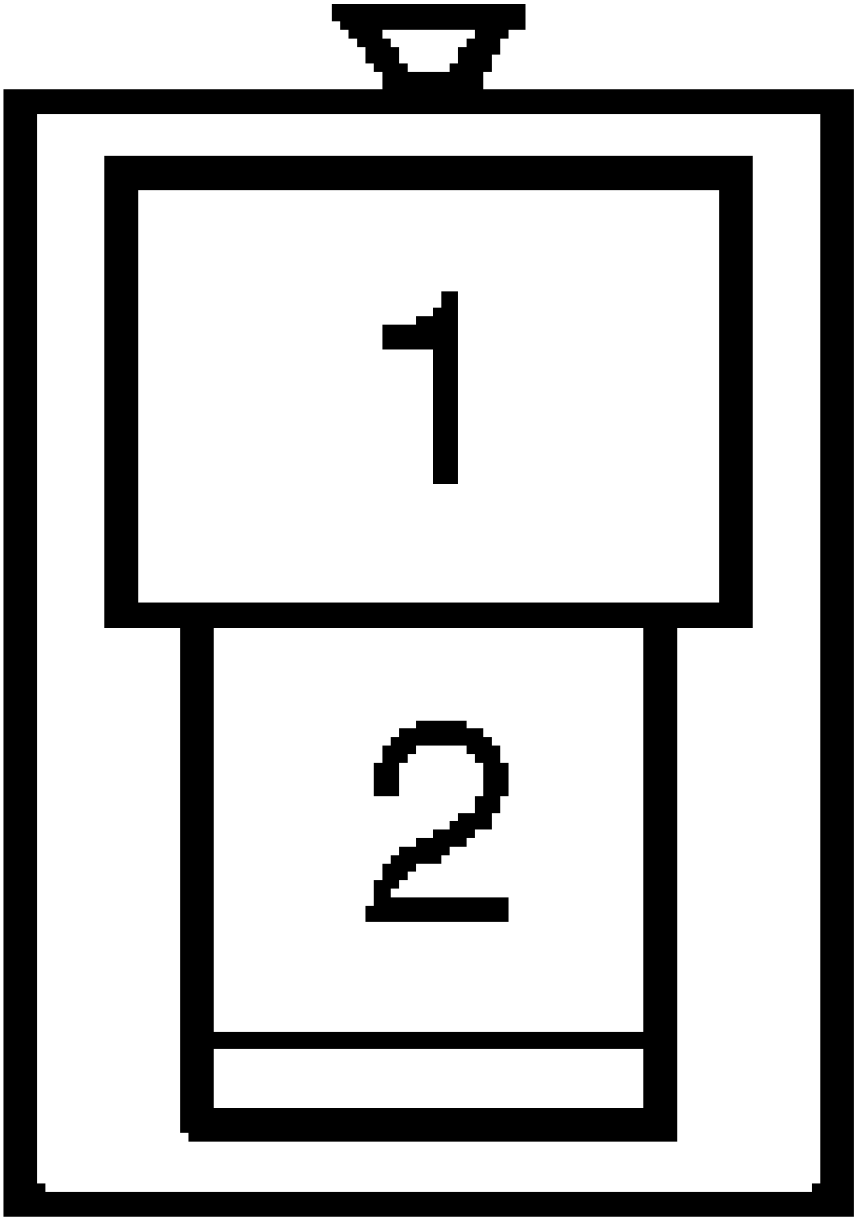

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Fig. 22: Identifying Ignition Coil Terminals (3000GT SOHC)
Courtesy of Mitsubishi Motor Sales of America

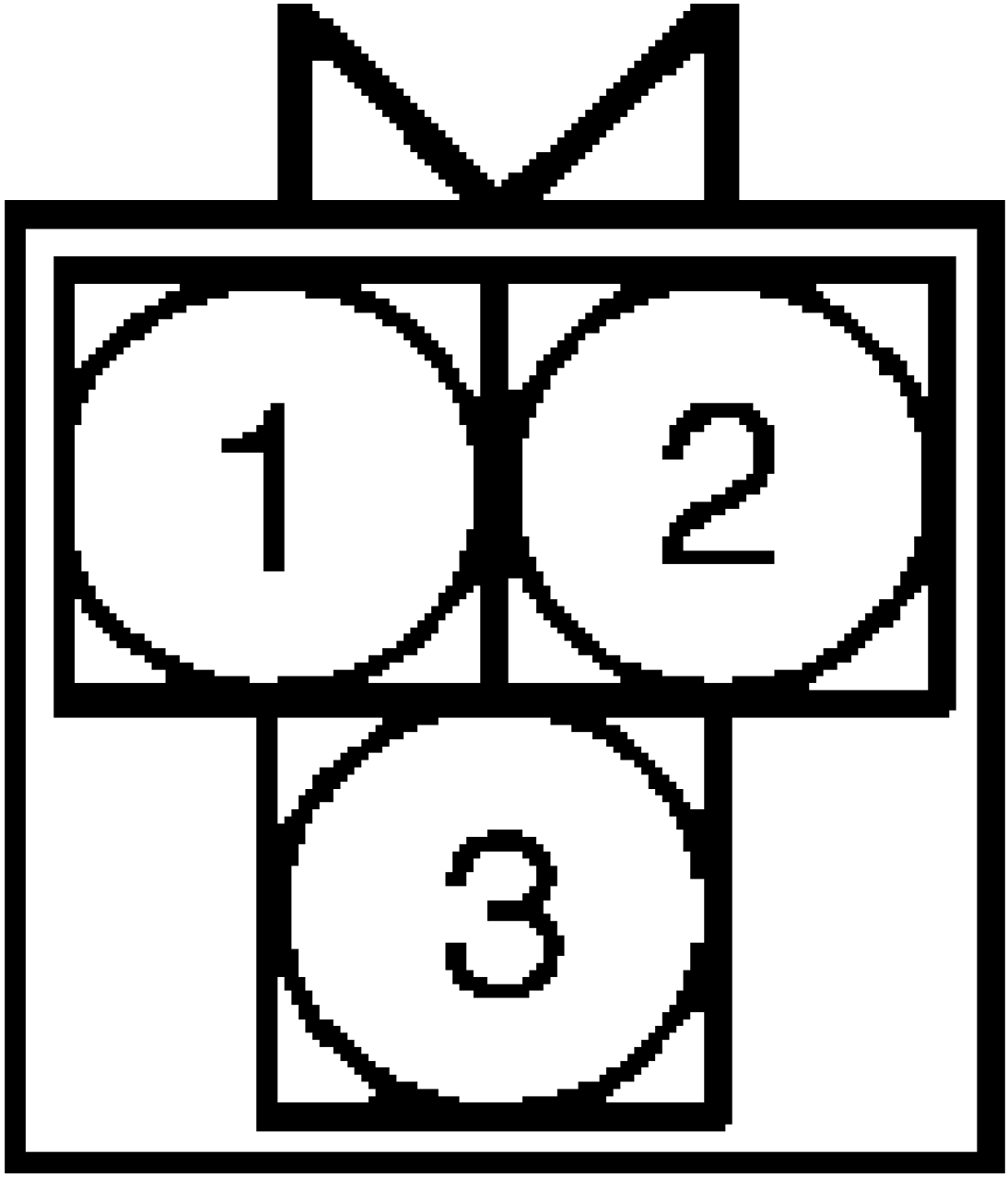

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Fig. 23: Identifying Ignition Coil Terminals (Montero)
Courtesy of Mitsubishi Motor Sales of America

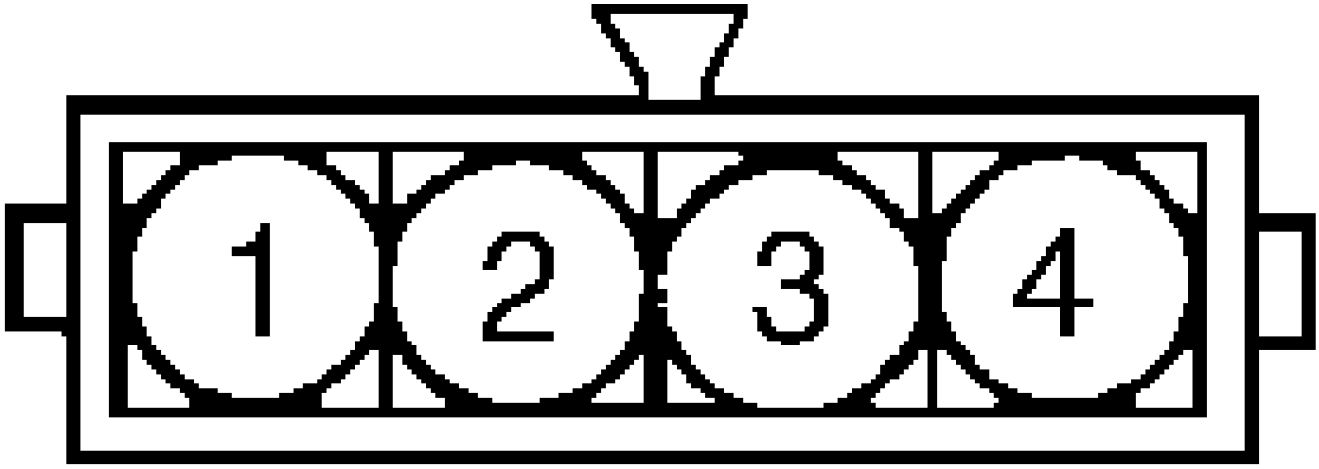


Fig. 24: Identifying Ignition Failure Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

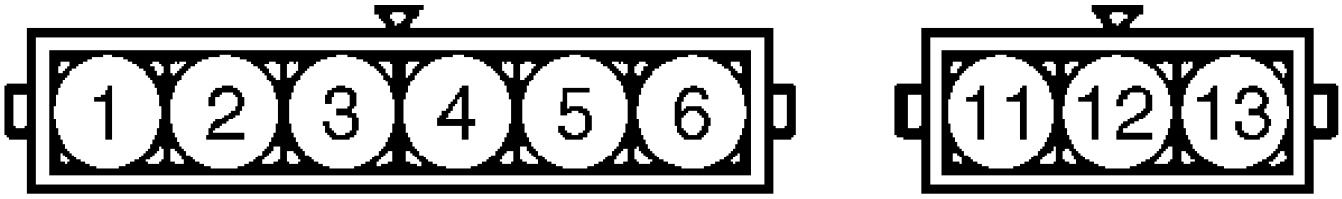


Fig. 25: Identifying Ignition Coil Terminals (Montero & 3000GT DOHC)
Courtesy of Mitsubishi Motor Sales of America

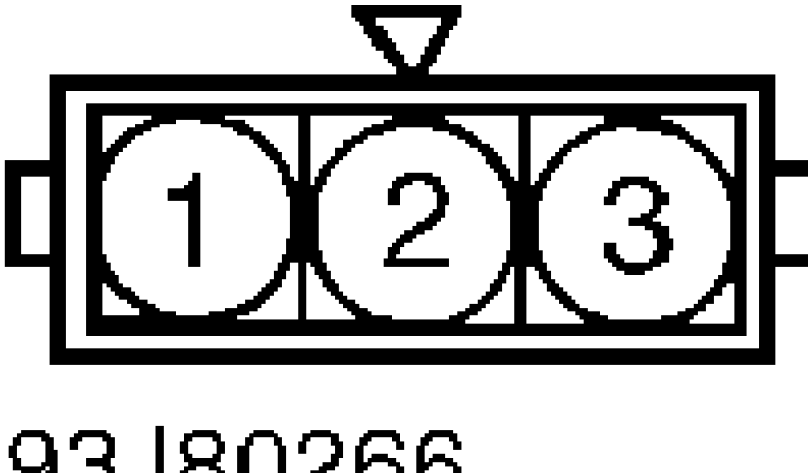
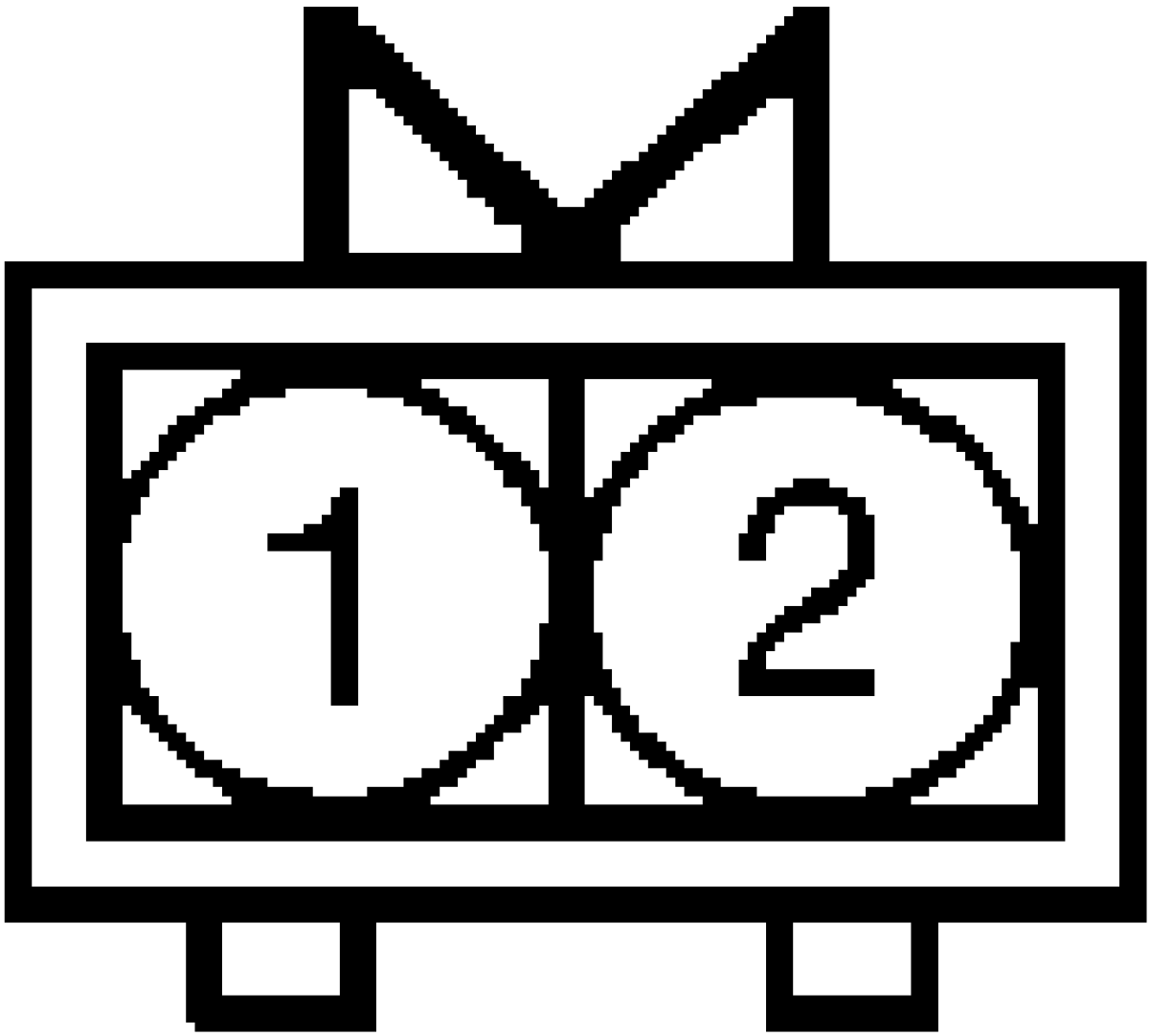


Fig. 26: Identifying Ignition Coil Terminals (3000GT SOHC)
Courtesy of Mitsubishi Motor Sales of America



93I80265

Fig. 27: Identifying KS Terminals
Courtesy of Mitsubishi Motor Sales of America

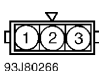
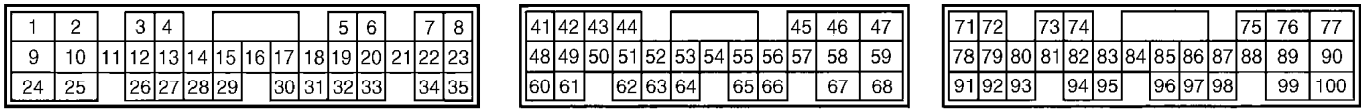
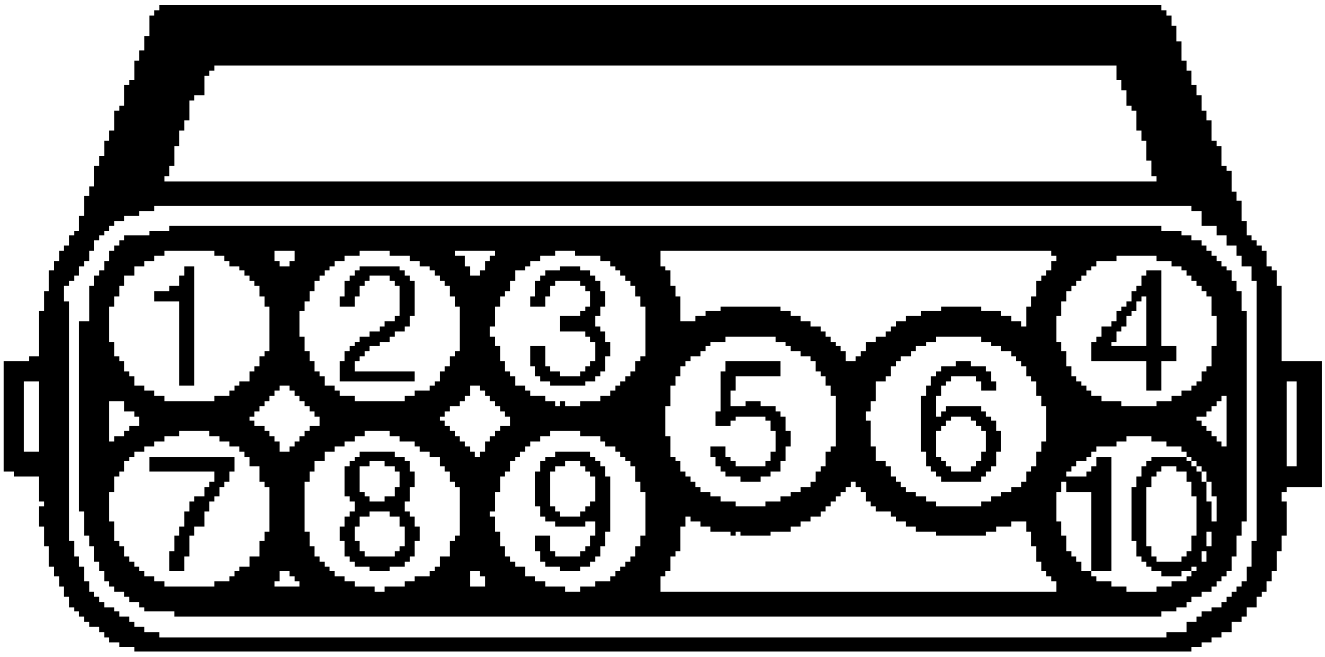


Fig. 28: Identifying MDP Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America



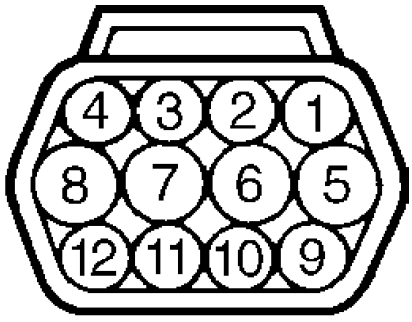
98G12431

Fig. 29: Identifying PCM Terminals
Courtesy of Mitsubishi Motor Sales of America



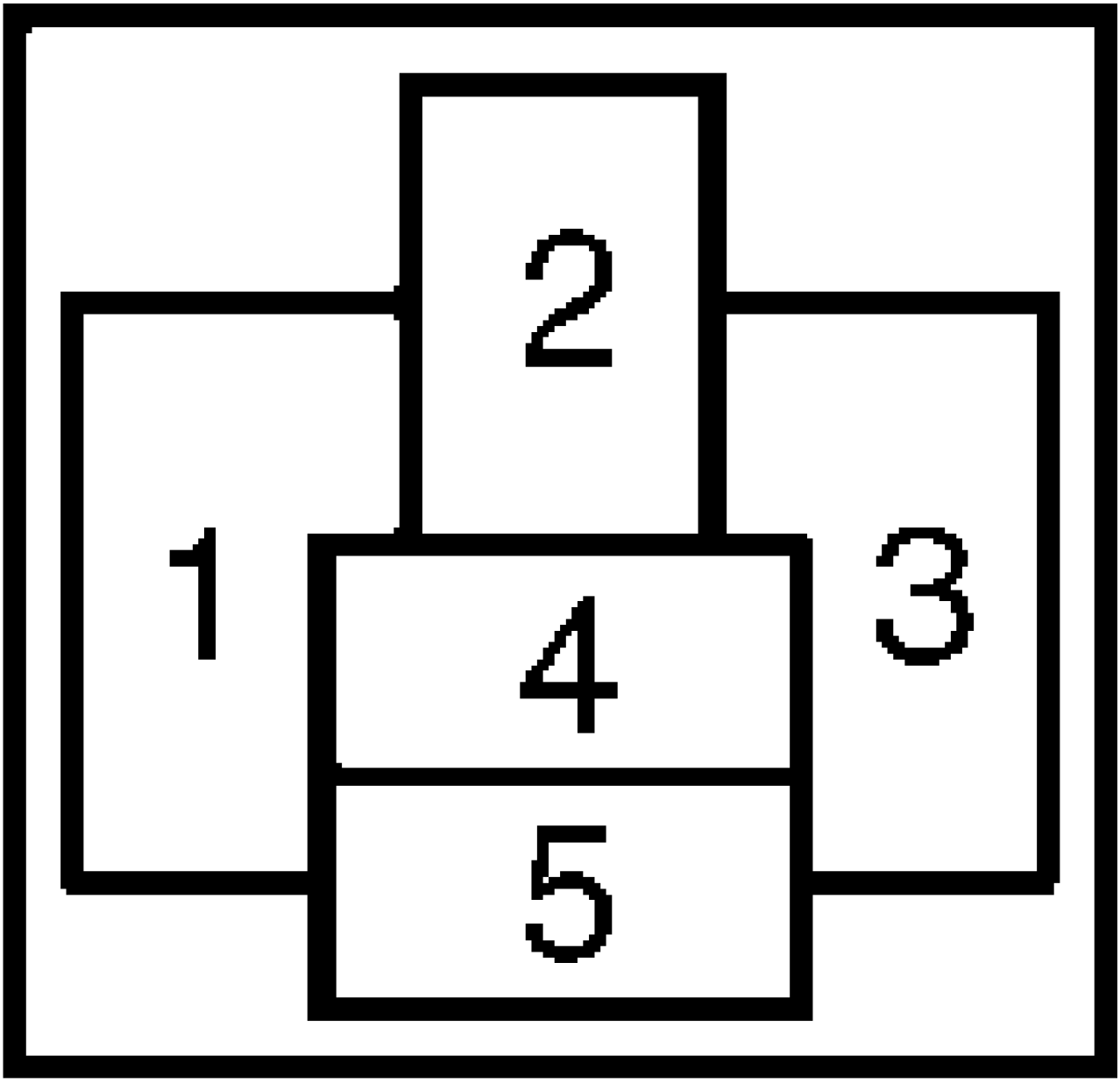
95G31548

Fig. 30: Identifying PNP Switch Terminals (Montero)
Courtesy of Mitsubishi Motor Sales of America



95F31166

Fig. 31: Identifying PNP Switch Terminals (3000GT)
Courtesy of Mitsubishi Motor Sales of America



98J12434

Fig. 32: Identifying Starter Relay Terminals
Courtesy of Mitsubishi Motor Sales of America

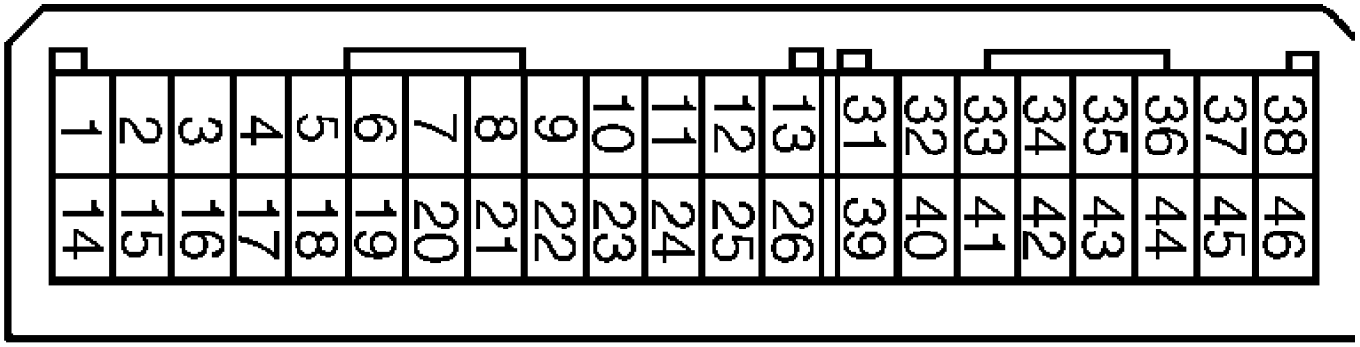


Fig. 33: Identifying TCM Terminals
Courtesy of Mitsubishi Motor Sales of America

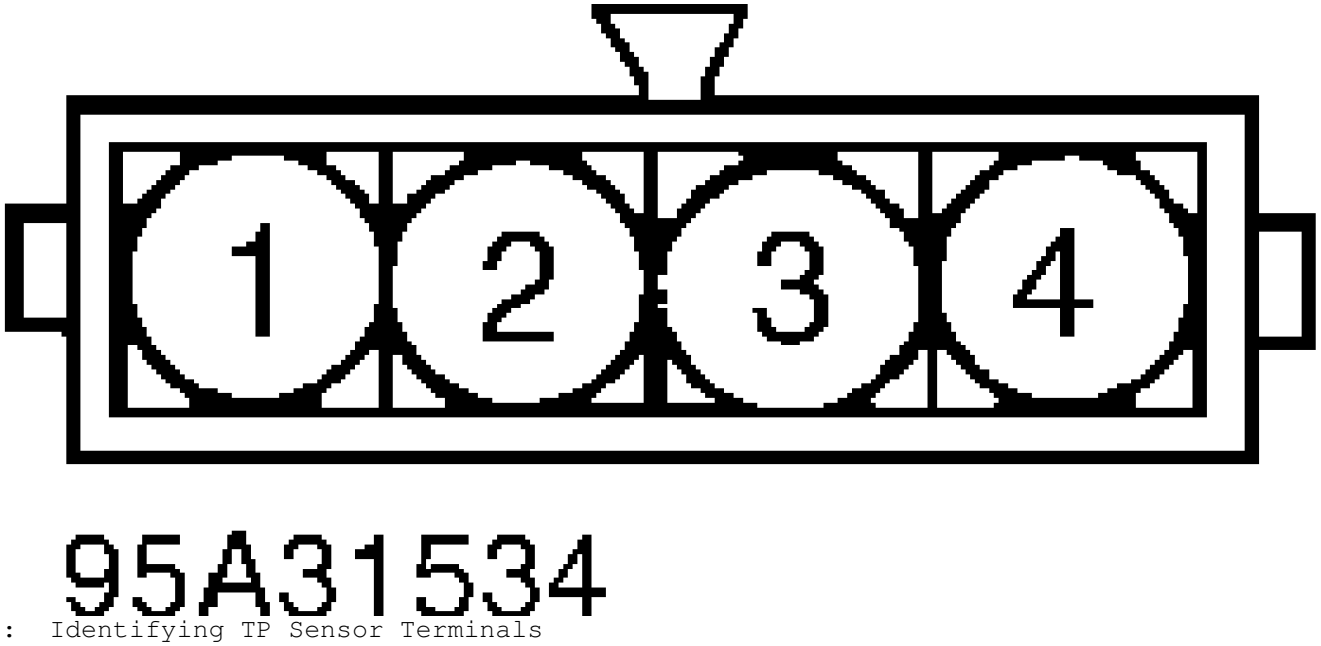


Fig. 34: Identifying TP Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

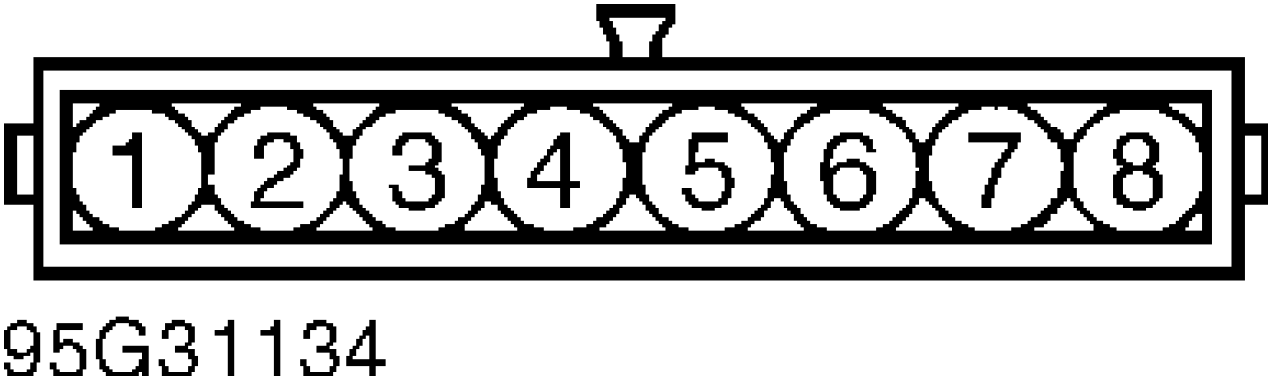


Fig. 35: Identifying VAF Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

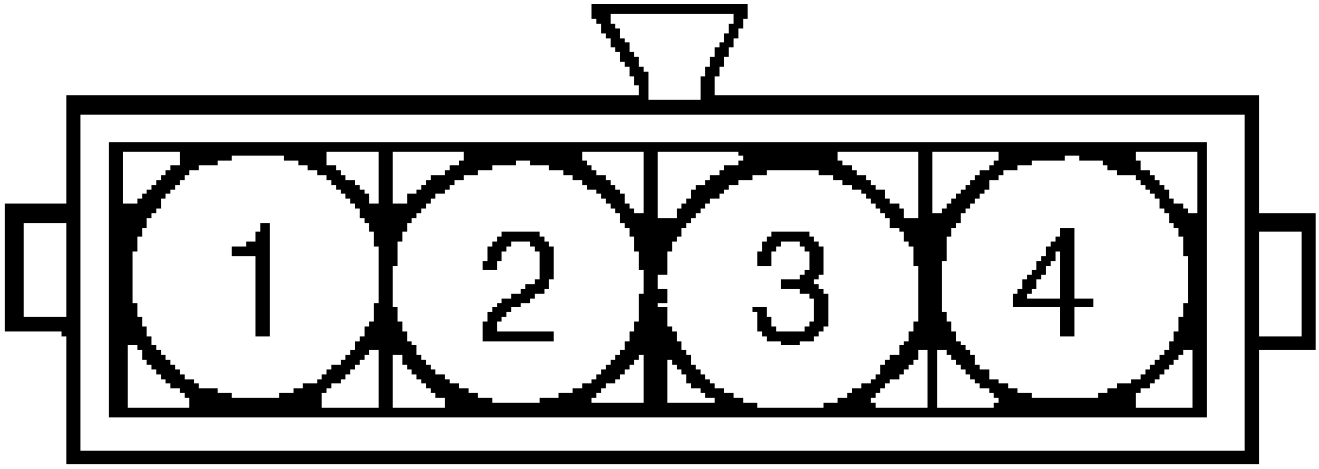


Fig. 36: Identifying VIC Valve Position Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

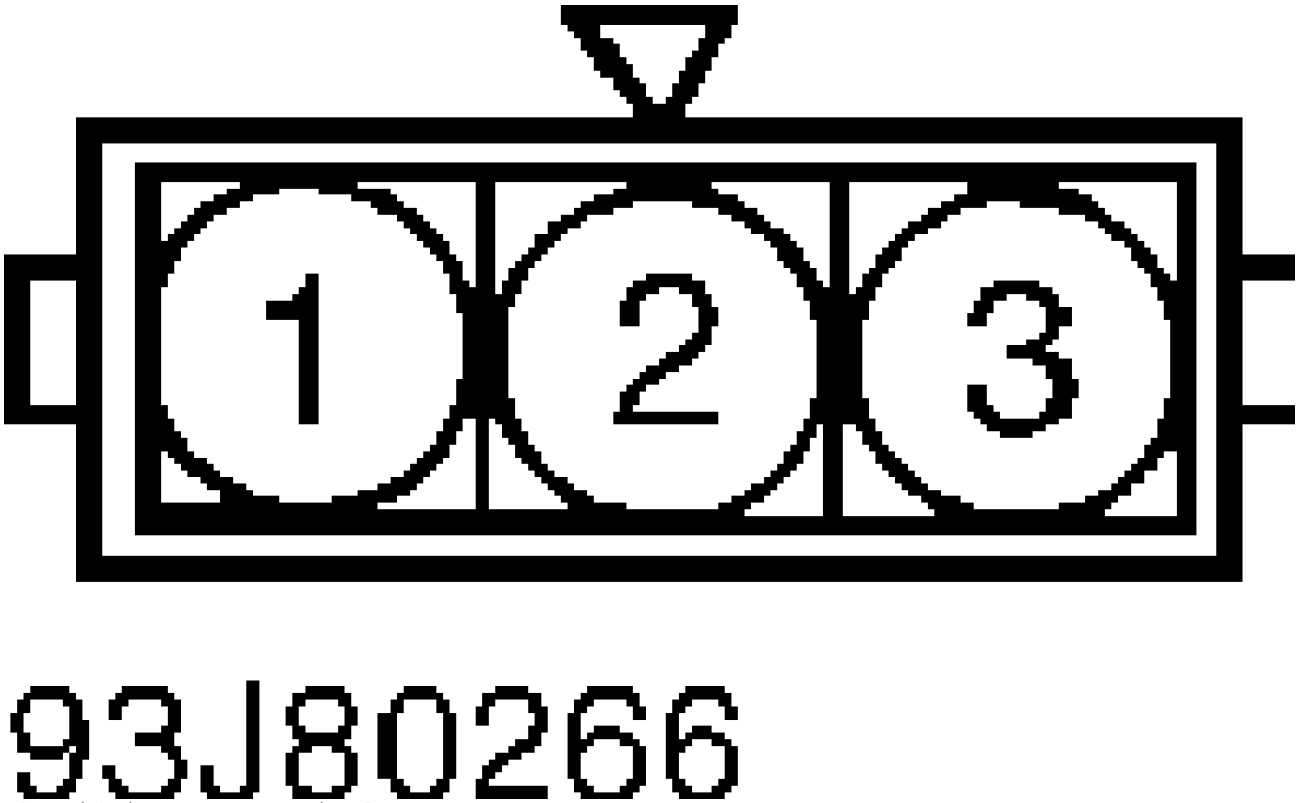


Fig. 37: Identifying VSS Terminals
Courtesy of Mitsubishi Motor Sales of America

DIAGNOSTIC TESTS

CAUTION: Ensure ignition switch is in OFF position when disconnecting

PCM or performing resistance tests.

NOTE: Perform all resistance and voltage tests using a Digital Volt-Ohmmeter (DVOM) with a minimum 10-megohm impedance, unless stated otherwise in test procedures.

Using scan tool, display and record Diagnostic Trouble DTCs (DTCs). See ENTERING ON-BOARD DIAGNOSTICS under SELF-DIAGNOSTIC SYSTEM. If scan tool is blank, see SCAN TOOL WILL NOT COMMUNICATE. If no DTCs are displayed, see H - TESTS W/O CODES article.

Clear DTCs. See CLEARING DTCS under SELF-DIAGNOSTIC SYSTEM. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS. If one or more DTCs are displayed, repair DTCs in order, starting with lowest numbered DTC. Clear DTCs after each repair. Recheck for DTCs to confirm repair.

SCAN TOOL WILL NOT COMMUNICATE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) Using DVOM, check voltage between Data Link Connector (DLC) terminal No. 16 and chassis ground. If battery voltage does not exist, check and repair junction connectors and wiring harness between DLC and power supply.

2) If battery voltage exists, check for continuity between DLC terminal No. 4 and chassis ground, and between DLC terminal No. 5 and chassis ground. If continuity does not exist, check and repair wiring harness between DLC and chassis ground. If continuity exists, go to next step.

3) Try a different scan tool adapter cable. If scan tool does not communicate, try scan tool on a known-good vehicle. If scan tool still does not communicate, replace scan tool.

INTERMITTENT DTCS

This procedure applies if you have been sent here from diagnostic tests and have just attempted to simulate the condition that initially set DTC. The following additional checks may assist in identifying a possible intermittent problem:

* Visually inspect related wiring harness connectors for broken, bent, pushed out or corroded terminals.
* Visually inspect related wiring harness for chafed, pierced or partially broken wires.
* Check all pertinent technical service bulletins.

DTC P0100: VOLUME AIRFLOW (VAF) SENSOR CIRCUIT FAILURE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

NOTE: Procedures are provided by manufacturer for component testing using an engine analyzer with oscilloscope capability. Refer to manufacturer's operation manual for instructions in use of oscilloscope.

1) If using scan tool, go to step 3). Disconnect VAF sensor connector. Install Test Harness (MB991348) between VAF sensor and connector. Using engine analyzer with oscilloscope capability, connect

special patterns probe to VAF sensor connector terminal No. 3 or to PCM connector terminal No. 61.

2) Start engine. Verify waveform high frequency and low frequency patterns are of about the same length (time). Verify wavelength decreases and frequency increases as engine RPM increases. If conditions are not as specified, replace VAF sensor. If conditions are as specified, go to step 4).

3) Warm vehicle to normal operating temperature. Ensure headlights and accessories are off. Using scan tool, read VAF sensor frequency value (item 12). See VOLUME AIRFLOW SENSOR VALUES table. Frequency should increase when engine is raced. If values are not as specified, replace VAF sensor. If values are as specified, turn ignition switch to off position and disconnect VAF sensor connector. Go to next step.

VOLUME AIRFLOW SENSOR VALUES TABLE

Application	Hz @ 700 RPM	Hz @ 2500 RPM
Montero	25-51	80-120
3000GT		
DOHC		
Non-Turbo	24-50	71-111
Turbo	26-52	93-133
SOHC	21-47	57-97

4) On 3000GT, go to next step. On Montero, disconnect MFI relay connector. Using DVOM, check for continuity between VAF sensor connector terminal No. 4 and MFI relay connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

5) Using DVOM, check for continuity between chassis ground and VAF sensor connector terminal No. 5. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

6) Ensure ignition switch is in OFF position. Disconnect PCM connector. Ground PCM connector terminal No. 19. Using DVOM, check for continuity between chassis ground and VAF sensor connector terminal No. 7. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

7) On 3000GT, go to next step. On Montero, ground PCM connector terminal No. 61. Using DVOM, check for continuity between chassis ground and VAF sensor connector terminal No. 3. If continuity does not exist, repair wiring harness as necessary. If continuity exists, turn ignition switch to ON position and go to step 9).

8) Turn ignition switch to ON position. Using DVOM, check voltage between chassis ground and VAF sensor connector terminal No. 4. If battery voltage does not exist, repair wiring harness as necessary. If battery voltage exists, go to next step.

9) Using DVOM, check voltage between chassis ground and VAF sensor connector terminal No. 3. If voltage is not 4.8-5.2 volts, replace PCM. If voltage is as specified, condition required to set DTC is not present at this time. Go to next step.

10) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0105: BAROMETRIC (BARO) PRESSURE SENSOR CIRCUIT FAILURE

NOTE: BARO pressure sensor is built into Volume Airflow (VAF) sensor. For DTC P0105 test purposes, VAF sensor will be

referred to as BARO pressure sensor. For terminal identification, see VAF sensor under TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) Component testing procedure without using scan tool not available from manufacturer at time of publication. Turn ignition switch to ON position. Using scan tool, read BARO sensor pressure (item 25). See BARO PRESSURE SENSOR SPECIFICATIONS table. If pressure is not as specified, replace BARO pressure sensor. If pressure is as specified, go to next step.

BARO PRESSURE SENSOR SPECIFICATIONS TABLE

Altitude in Ft. (M)	Pressure in kPa (mmHg)
0 (0)	101 (768)
1969 (600)	95 (710)
3937 (1200)	88 (660)
5906 (1800)	81 (610)

2) Disconnect BARO pressure sensor connector. Using DVOM, check for continuity between chassis ground and BARO pressure sensor connector terminal No. 5. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

3) Turn ignition switch to OFF position. With BARO pressure sensor disconnected, disconnect PCM connector. Ground PCM connector terminal No. 51. Using DVOM, check for continuity between chassis ground and BARO pressure sensor connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists on Montero, go to next step. On 3000GT, go to step 5).

4) Ground PCM connector terminal No. 42. Check for continuity between chassis ground and BARO pressure sensor connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

5) Reconnect PCM connector. With BARO pressure sensor connector disconnected, turn ignition switch to ON position. Using DVOM, check for voltage between chassis ground and BARO pressure sensor connector terminal No. 1. If voltage is not 4.8-5.2 volts, replace PCM. If voltage is as specified, condition required to set DTC is not present at this time. Go to next step.

6) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0110: INTAKE AIR TEMPERATURE (IAT) SENSOR CIRCUIT FAILURE

NOTE: IAT sensor is built into Volume Airflow (VAF) sensor. For DTC P0110 test purposes, VAF sensor will be referred to as IAT sensor. For terminal identification, see VAF sensor under TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) If using scan tool, go to step 3). Disconnect IAT sensor connector. Using a thermometer, check engine compartment ambient temperature. Using DVOM, check resistance between IAT sensor terminals No. 5 and 6. Resistance should be 6000 ohms at 32°F (0°C), 2700 ohms at 68°F (20°C) or 400 ohms at 176°F (80°C). If resistance is not as specified, replace IAT sensor. If resistance is as specified, go to

next step.

2) Using a hair dryer, warm IAT sensor while monitoring DVOM. Resistance should decrease evenly as temperature rises. If resistance remains unchanged, replace IAT sensor. If resistance changes, go to step 4).

3) Turn ignition switch to ON or RUN position. Using a thermometer, check engine compartment ambient temperature. Using scan tool, read IAT sensor temperature (item 13). Compare both readings. If readings are not about the same, replace IAT sensor. If readings are about the same, turn ignition off and go to next step.

4) Disconnect IAT sensor connector. Using DVOM, check for continuity between chassis ground and IAT sensor connector terminal No. 5. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

5) On 3000GT, go to next step. On Montero, turn ignition switch to OFF position. With IAT sensor connector disconnected, disconnect PCM connector. Ground PCM connector terminal No. 62. Check for continuity between IAT sensor connector terminal No. 6 and chassis ground. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

6) Reconnect PCM connector. Turn ignition switch to ON position. Check voltage between IAT sensor connector terminal No. 6 and chassis ground. If voltage is not 4.5-4.9 volts, replace PCM. If voltage is as specified, replace IAT sensor.

DTC P0115: ENGINE COOLANT TEMPERATURE (ECT) SENSOR FAILURE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) If using scan tool, go to step 2). Disconnect ECT sensor connector. Remove ECT sensor from intake manifold. Submerge temperature sensing portion of ECT sensor in hot water. Using DVOM, check resistance across ECT sensor terminals. See ECT SENSOR RESISTANCE SPECIFICATIONS table. If resistance is not as specified, replace ECT sensor. If resistance is as specified, go to step 3).

ECT SENSOR RESISTANCE SPECIFICATIONS TABLE

Water Temperature	Approximate Resistance in Ohms
32°F (0°C)	5800
68°F (20°C)	2400
104°F (40°C)	1100
176°F (80°C)	300

2) Turn ignition switch to ON or RUN position. Using a thermometer, check engine compartment ambient temperature. Using scan tool, read ECT SENSOR TEMPERATURE (item 21). Compare both readings. If readings are not about the same, replace ECT sensor. If readings are about the same go to next step.

3) Disconnect ECT sensor connector. Using DVOM, check continuity between chassis ground and ECT sensor connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists on 3000GT, go to step 5). On Montero, go to next step.

4) Turn ignition switch to OFF position. With ECT sensor connector disconnected, disconnect PCM connector. Ground PCM connector terminal No. 44. Check continuity between chassis ground and ECT sensor connector terminal No. 1. If continuity does not exist, repair

wiring harness as necessary. If continuity exists, go to next step.

5) Reconnect PCM connector. Turn ignition switch to ON position. Check voltage between chassis ground and ECT sensor connector terminal No. 1. If voltage is not 4.5-4.9 volts, replace PCM. If voltage is as specified, condition required to set DTC is not present at this time. Go to next step.

6) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0120: THROTTLE POSITION (TP) SENSOR CIRCUIT FAILURE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) If using scan tool, go to step 3). Disconnect TP sensor connector. Using DVOM, check resistance between TP sensor terminals No. 1 and No. 4. If resistance is not 3500-6500 ohms, replace TP sensor. If resistance is as specified, go to next step.

2) Check resistance between TP sensor terminals No. 1 and 3 on Montero or No. 2 and 4 on 3000GT. While monitoring DVOM, slowly open throttle from idle to fully open position. If resistance does not change smoothly, replace TP sensor. If resistance changes smoothly, go to step 4).

3) Turn ignition switch to ON position. Using scan tool, read TP sensor voltage value (item 14). With throttle at idle, value should read 300-1000 mV. Value should increase while slowly opening throttle. At wide open throttle, value should read 4500-5500 mV. If value is not as specified, replace TP sensor. If value is as specified, go to next step.

4) Disconnect TP sensor connector. Using DVOM, check continuity between chassis ground and TP sensor connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists on 3000GT, go to next step. On Montero, go to step 6).

5) Check continuity between chassis ground and TP sensor connector terminal No. 4. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

6) Turn ignition switch to OFF position. Disconnect PCM connector. Ground specified PCM connector terminal. See TP SENSOR-TO-PCM WIRING HARNESS TERMINAL IDENTIFICATION table. Check for continuity between chassis ground and specified TP sensor connector terminal. If continuity does not exist, repair wiring harness as necessary. If continuity exists on 3000GT, go to step 8). On Montero, go to next step.

TP SENSOR-TO-PCM WIRING HARNESS TERMINAL IDENTIFICATION TABLE

Application	TP Sensor Terminal No.	PCM Terminal No.
Montero	3	78
	4	42
3000GT	2	78

7) Reconnect PCM connector. Turn ignition switch to ON position. Check voltage between chassis ground and TP sensor connector terminal No. 4 on Montero or No. 1 on 3000GT. If voltage is not 4.8-5.2 volts, replace PCM. If voltage is as specified, condition required to set DTC is not present at this time. Go to next step.

8) Test is complete. Intermittent problem may exist. Road

test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0125: EXCESSIVE TIME TO ENTER CLOSED LOOP FUEL CONTROL

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

Specific self-diagnostic test not available from manufacturer at time of publication. Check front heated oxygen sensor, fuel injectors, and related connectors and harnesses. Also, see F - BASIC TESTING article.

DTC P0130, P0135, P0150 & P0155: FRONT HEATED OXYGEN SENSOR (HO2S) CIRCUIT FAILURE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) If using scan tool, go to step 3). Disconnect front HO2S connector. Install Test Harness (MB998464) between HO2S and HO2S connector. Using DVOM, check resistance between specified HO2S connector heater terminals. See FRONT HO2S CONNECTOR TERMINAL IDENTIFICATION table. HO2S resistance should be 11-18 ohms at 68°F (20°C). If resistance is not as specified, replace HO2S. If resistance is as specified, go to next step.

2) Start and warm engine to operating temperature. Using jumper wires, apply 12 volts and ground to specified HO2S connector heater terminals. See FRONT HO2S CONNECTOR TERMINAL IDENTIFICATION table. Using DVOM, check voltage between specified HO2S connector output terminals, while repeatedly racing engine. If voltage is not .6-1.0 volt, replace HO2S. If voltage is .6-1.0 volt, go to step 5).

FRONT HO2S CONNECTOR TERMINAL IDENTIFICATION TABLE

Application	(1) Heater Terminals No.	Output Terminals No.
Montero & 3000GT	1 & 3	2 & 4

(1) - First terminal listed is positive. Second terminal listed is negative.

3) Start and warm engine to operating temperature. Using scan tool, read HO2S voltage. See HO2S ITEM LIST IDENTIFICATION table for appropriate scan tool item number. While monitoring scan tool, accelerate to 4000 RPM. Suddenly decelerate. Scan tool should read 0.2 volt or less. Suddenly accelerate. Scan tool should read 0.6-1.0 volt. If voltage is not as specified, replace HO2S. If voltage is as specified, go to next step.

HO2S ITEM LIST IDENTIFICATION TABLE

Application	Item No.
Montero - Federal	
Front	11
Rear	59
Except Montero - Federal	

Front	
Left	39
Right	11
Rear	
Left	69
Right	59

4) While monitoring scan tool, accelerate to 2500 RPM and decelerate to 700 RPM (idle). Scan tool should switch from 0.6-1.0 volt to 0.4 volt or less. If voltage is not as specified, replace HO2S. If voltage is as specified, go to next step.

5) On 3000GT, go to next step. On Montero, disconnect HO2S connector and MFI relay connector. Using DVOM, check for continuity between HO2S connector terminal No. 1 and MFI relay connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to step 7).

6) Disconnect HO2S connector. Turn ignition switch to ON position. Using DVOM, check voltage between chassis ground and HO2S connector terminal No. 1. If battery voltage does not exists, repair wiring harness as necessary. If battery voltage exists, go to next step.

7) Turn ignition switch to OFF position. With HO2S connector disconnected, disconnect PCM connector. Using DVOM, check for open or short circuit between specified HO2S connector terminal and PCM connector terminal. See FRONT HO2S-TO-PCM HARNESS TERMINAL IDENTIFICATION table. If open or short circuit exists, repair wiring harness as necessary. If open or short circuit does not exist, go to next step.

FRONT HO2S-TO-PCM HARNESS TERMINAL IDENTIFICATION TABLE

Application	HO2S Terminal No.	PCM Terminal No.
Montero - Federal	3	3
	4	71
All Others	(1) 3	3
	(2) 3	4
	(1) 4	71
	(2) 4	72

(1) - Left front HO2S.
(2) - Right front HO2S.

8) Using DVOM, check for continuity between chassis ground and HO2S connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

9) Condition required to set DTC is not present at this time. Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0136, P0141, P0156 & P0161: REAR HEATED OXYGEN SENSOR (HO2S) CIRCUIT FAILURE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) If using scan tool, go to next step. Disconnect rear HO2S

connector. Install Test Harness (MB998464) between HO2S and HO2S connector. Using DVOM, check resistance between specified HO2S connector terminals. See REAR HO2S HEATER CONNECTOR TERMINAL IDENTIFICATION table. HO2S resistance should be 12 ohms at 68°F (20°C). If resistance is not as specified, replace HO2S. If resistance is as specified, go to step 3).

REAR HO2S HEATER CONNECTOR TERMINAL IDENTIFICATION TABLE

Application	Terminals No.
Montero	1 & 3
3000GT	2 & 4

2) Raise and support drive wheels. Start and warm engine to operating temperature. Place A/T in Low (M/T in 2nd). Using scan tool, read HO2S voltage (item 59 for right side or 69 for left side). While monitoring scan tool, accelerate to 3500 RPM. Scan tool should read 0.6-1.0 volt. If voltage is not as specified, replace HO2S. If voltage is as specified, go to next step.

3) On 3000GT, go to next step. On Montero disconnect HO2S connector and MFI relay connector. Using DVOM, check for continuity between HO2S connector terminal No. 1 and MFI relay connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

4) Using DVOM, check for open or short circuit between specified HO2S connector terminal and PCM connector terminal(s). See REAR HO2S-TO-PCM WIRING HARNESS TERMINAL IDENTIFICATION table. If open or short circuit exists, repair wiring harness as necessary. If open or short circuit does not exist, go to next step.

REAR HO2S-TO-PCM WIRING HARNESS TERMINAL IDENTIFICATION TABLE

Application	HO2S Terminal No.	PCM Terminal No.
Montero - Federal	3	26
	4	73
All Others	(1) 3	26
	(2) 3	27
	(1) 4	73
	(2) 4	74

(1) - Left rear HO2S.
(2) - Right rear HO2S.

5) Using DVOM, check for continuity between chassis ground and specified HO2S connector terminal. See REAR HO2S CONNECTOR GROUND CIRCUIT IDENTIFICATION table. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

REAR HO2S CONNECTOR GROUND CIRCUIT IDENTIFICATION TABLE

Application	Terminal No.
Montero & 3000GT	2

6) Condition required to set DTC is not present at this time. Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused

original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0170 & P0173: FUEL TRIM FAILURE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) Specific self-diagnostic test not available from manufacturer at time of publication. Check volume airflow sensor, fuel injectors, engine coolant temperature sensor, intake air temperature sensor, barometric or manifold absolute pressure sensor, heated oxygen sensor. See appropriate DTC test. Check related connectors and harnesses. See L - WIRING DIAGRAMS article.

2) Also check fuel pressure, check for intake air leaks, and for cracked manifold. See F - BASIC TESTING article.

DTC P0201-P0206: FUEL INJECTOR CIRCUIT FAILURE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) If using scan tool, go to step 3). Using a stethoscope or long-bladed screwdriver, listen for clicking sound from each fuel injector while engine is running or being cranked. If no sound is heard from fuel injector(s), check fuel injector connections. Repair connections as necessary. If connections are okay, go to next step.

2) Ensure engine coolant temperature is at 68°F (20°C). Disconnect fuel injector connector. Using DVOM, check resistance between specified fuel injector terminals. See FUEL INJECTOR TERMINAL IDENTIFICATION table. If resistance is not 2.0-3.0 3000GT turbo or 13-16 ohms on all other models, replace fuel injector(s). If resistance is as specified, go to step 6).

FUEL INJECTOR TERMINAL IDENTIFICATION TABLE

Application	Terminals No.
Montero (1)	8 & 1
	8 & 2
	8 & 3
	8 & 5
	8 & 6
	8 & 7
3000GT - Rear Bank (2)	
Non-Turbo	1 & 2
	1 & 5
	1 & 6
Turbo	1 & 4
	2 & 8
	4 & 5
	4 & 6
	4 & 7
	4 & 8

(1) - Check resistance at intermediate fuel injector connector (component side).
(2) - Check resistance at rear fuel injector connector (component side).

3) Using scan tool, read FUEL INJECTOR DRIVE TIME (item 41) while cranking engine. See INJECTOR CRANKING DRIVE TIME SPECIFICATIONS table. Go to next step.

INJECTOR CRANKING DRIVE TIME SPECIFICATIONS TABLE

Coolant Temperature	Drive Time (ms)
32°F (0°C)	
Montero	11.0-17.0
3000GT	
DOHC	
Non-Turbo	12.9-19.3
Turbo	8.4-12.6
SOHC	13.8-16.8
68°F (20°C)	
Montero	28.0-42.0
3000GT	
DOHC	
Non-Turbo	36.1-54.1
Turbo	23.3-34.9
SOHC	40.0-48.8
176°F (80°C)	
Montero	7.4-11.2
3000GT	
DOHC	
Non-Turbo	8.2-12.4
Turbo	5.4-8.2
SOHC	8.6-10.6

4) Ensure engine coolant temperature is at 176-205°F (80-95°C), all accessories are off and A/T is in Park or M/T is in Neutral. Using scan tool, read FUEL INJECTOR DRIVE TIME (item 41) under specified engine conditions. See INJECTOR OPERATING DRIVE TIME SPECIFICATIONS table. Go to next step.

INJECTOR OPERATING DRIVE TIME SPECIFICATIONS TABLE

Engine Speed	Drive Time (ms)
700 RPM	
Montero	2.1-3.3
3000GT	
DOHC	
Non-Turbo	2.5-3.7
Turbo	1.7-2.9
SOHC	2.3-3.5
2000-2500 RPM	
Montero	1.9-3.1
3000GT	
DOHC	
Non-Turbo	2.2-3.4
Turbo	1.5-2.7
SOHC	2.1-3.3
Suddenly Accelerated	
Montero & 3000GT	(1)

(1) - Drive time should increase.

5) Allow engine to idle after warm up. Using scan tool, shut off fuel injectors in sequence. Idle should change when good fuel

injectors are shut off. If idle state does not change, check fuel injector connection, spark plug and cable, and cylinder compression. If conditions are not as specified in preceding steps, go to next step.

6) On 3000GT, go to next step. On Montero, disconnect MFI relay connector and fuel injector connector at faulty fuel injector. Using DVOM, check for continuity between MFI relay connector terminal No. 1 fuel injector intermediate connector terminal No. 8. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to step 9).

7) Disconnect fuel injector connector. Using DVOM, check voltage between chassis ground and fuel injector connector terminal No. 1. If battery voltage does not exist, repair wiring harness as necessary. If battery voltage exists, go to next step.

8) Ground specified PCM connector terminal for appropriate fuel injector. See INJECTOR-TO-PCM CIRCUIT IDENTIFICATION (3000GT) table. Using DVOM, check for continuity between chassis ground and terminal No. 2 of each fuel injector connector. If continuity does not exist, repair appropriate circuit as necessary. If continuity exists, condition required to set DTC is not present at this time. Go to step 10).

INJECTOR-TO-PCM CIRCUIT IDENTIFICATION (3000GT) TABLE

Injector No.	PCM Terminal No.
1	1
2	14
3	2
4	15
5	3
6	16

9) Ground specified PCM connector terminal. See INJECTOR-TO-PCM CIRCUIT IDENTIFICATION (MONTERO) table. Using DVOM, check for continuity between chassis ground and specified fuel injector connector terminal. If continuity does not exist, repair appropriate circuit as necessary. If continuity exists, condition required to set DTC is not present at this time. Go to next step.

INJECTOR-TO-PCM CIRCUIT IDENTIFICATION (MONTERO) TABLE

Injector No.	Injector Connector Terminal No.	PCM Terminal No.
1	3	1
2	2	14
3	1	2
4	7	15
5	6	3
6	5	16

10) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0300-P0306: CYLINDER MISFIRE DETECTED

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see

L - WIRING DIAGRAMS article.

1) Specific self-diagnostic test is not available from manufacturer at time of publication. Check ignition coil, power transistor, spark plugs, fuel injectors, heated oxygen sensor, crankshaft position sensor, and related connectors and harnesses.
2) Also check compression pressure, timing belt, fuel pressure, and for intake air leaks. See F - BASIC TESTING article.

DTC P0325: KNOCK SENSOR (KS) NO. 1 CIRCUIT FAILURE

NOTE: This test applies to 3000GT equipped with DOHC engine only. For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) Component or scan tool testing procedure not available from manufacturer at time of publication. Turn ignition switch to OFF position. Disconnect KS connector and PCM connector. Ground PCM connector terminal No. 91. Go to next step.
2) Using DVOM, check for continuity between chassis ground and KS connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.
3) Remove jumper wire from PCM connector terminal No. 1. Check for continuity between chassis ground and KS connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.
4) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0335: CRANKSHAFT POSITION (CKP) SENSOR CIRCUIT FAILURE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

NOTE: Procedures are provided by manufacturer for component testing using an engine analyzer with oscilloscope capability. Refer to manufacturer's operation manual for instructions in use of oscilloscope.

1) If using scan tool, go to step 3). Disconnect CKP sensor connector. Install Test Harness (MB991348) between CKP sensor and connector. Using engine analyzer with oscilloscope capability, connect special patterns probe to CKP sensor connector terminal No. 2. Go to next step.
2) Start engine. Compare oscilloscope wave pattern with known-good wave pattern. See Fig. 38. Verify wavelength (time) decreases as engine RPM increases. If wave pattern fluctuates to left or right, check for loose timing belt or an abnormality in sensor pick-up disc. If a rectangular wave pattern is generated even when engine is not started, substitute known-good CKP sensor. Repeat test. If wave pattern is still abnormal, go to step 6).

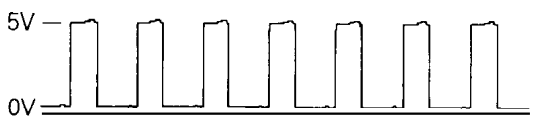


Fig. 38: Identifying Known-Good CKP Sensor Wave Pattern
Courtesy of Mitsubishi Motor Sales of America

3) Connect an engine tachometer. Crank engine. Ensure ignition coil primary current toggles on and off. Using scan tool, read engine cranking speed (item 22). Compare tachometer and scan tool RPM display. Go to next step.

4) If engine fails to start and tachometer reads zero RPM when engine is cranked, check for broken timing belt or faulty CKP sensor. If CKP sensor is suspected, substitute known-good CKP sensor. Repeat test procedure. If engine fails to start, tachometer reads zero RPM, and ignition coil primary current fails to toggle on and off, check for faulty ignition coil, ignition circuit or power transistor. If engine starts and readouts agree, go to next step.

5) Ensure A/C switch is in ON position to activate closed throttle position switch. Allow engine to idle. Using scan tool, check engine coolant temperature and read idle speed. See IDLE RPM SPECIFICATIONS table. If RPM is not to specification, check for faulty ECT sensor, basic idle speed adjustment, or idle air control motor. If RPM is within specifications, go to next step.

IDLE RPM SPECIFICATIONS TABLE

Engine Coolant Temperature	Engine RPM
-4°F (-20°C)	
Montero	1300-1500
3000GT	
Non-Turbo	1275-1475
Turbo	1300-1500
32°F (0°C)	
Montero	1300-1500
3000GT	
Non-Turbo	1225-1425
Turbo	1300-1500
68°F (20°C)	
Montero	1300-1500
3000GT	
Non-Turbo	1100-1300
Turbo	1300-1500
104°F (40°C)	
Montero	1040-1240
3000GT	
Non-Turbo	950-1150
Turbo	1050-1250
176°F (80°C)	
Montero & 3000GT	600-800

6) On 3000GT, go to next step. On Montero, disconnect CKP sensor connector and MFI relay connector. Using DVOM, check for continuity between CKP sensor connector terminal No. 3 and MFI relay connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

7) With CKP sensor connector disconnected, check for continuity between chassis ground and CKP sensor connector terminal No. 1 on Montero or No. 2 on 3000GT. If continuity does not exist, repair wiring harness as necessary. If continuity exists on 3000GT, go to next step. On Montero, go to step 9).

8) Check for voltage between chassis ground and CKP sensor connector terminal No. 3. If battery voltage does not exist, repair wiring harness as necessary. If battery voltage exists, go to step 10).

9) Turn ignition switch to OFF position. With CKP sensor connector disconnected, disconnect PCM connector. Check for continuity

between CKP sensor connector terminal No. 2 and PCM connector terminal No. 43. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

10) With ignition switch in ON position, check for voltage between chassis ground and CKP sensor connector terminal No. 2. If 4.8-5.2 volts do not exist, replace PCM. If voltage is to specification and CKP sensor is suspected, go to next step.

11) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0340: CAMSHAFT POSITION (CMP) SENSOR CIRCUIT FAILURE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

NOTE: Procedures are provided by manufacturer for component testing using an engine analyzer with oscilloscope capability. Refer to manufacturer's operation manual for instructions in use of oscilloscope.

1) If using scan tool, go to step 3). Disconnect CMP sensor connector. Install Test Harness (MB991348) between CMP sensor and connector. Using engine analyzer with oscilloscope capability, connect special patterns probe to CMP sensor connector terminal No. 2. Go to next step.

2) Start engine. Compare oscilloscope wave pattern with known-good wave pattern. See Fig. 39. Verify wavelength (time) decreases as engine RPM increases. If wave pattern fluctuates to left or right, check for loose timing belt or an abnormality in sensor pick-up disc. If a rectangular wave pattern is generated even when engine is not started, substitute known-good CMP sensor. Repeat test. If wave pattern is still abnormal, go to next step.

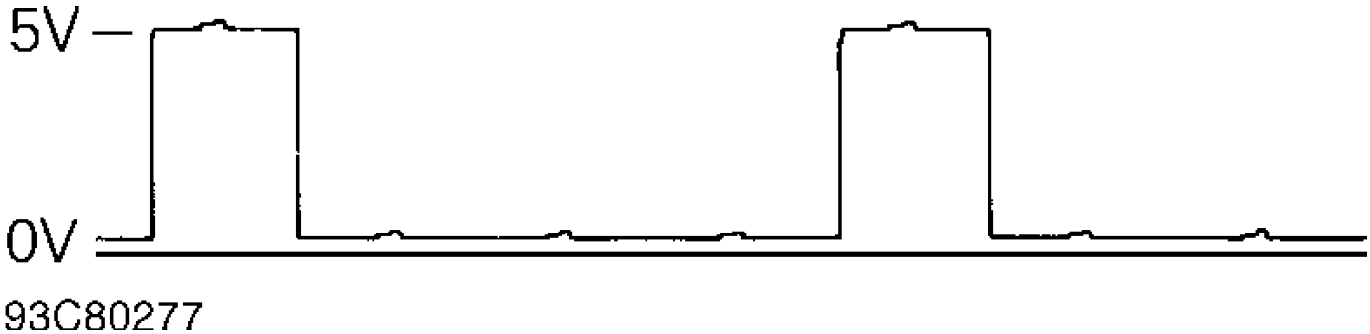


Fig. 39: Identifying Known-Good CMP Sensor Wave Pattern
Courtesy of Mitsubishi Motor Sales of America

3) On Montero, go to next step. On 3000GT, disconnect CMP sensor connector. Turn ignition switch to ON position. Check voltage between chassis ground and CMP sensor connector terminal No. 3. If battery voltage does not exist, repair wiring harness as necessary. If battery voltage exists, go to step 5).

4) Disconnect CMP sensor connector and MFI relay connector. Using DVOM, check for continuity between CMP sensor connector terminal No. 3 and MFI relay connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

5) Check for continuity between chassis ground and CMP sensor connector terminal No. 4 on 3000GT equipped with DOHC engine or 1 on

all other models. If continuity does not exist, repair wiring harness as necessary. If continuity exists, on Montero, go to next step. On 3000GT, go to step 7).

6) Turn ignition switch to OFF position. With CMP sensor connector disconnected, disconnect PCM connector. Check for continuity between PCM connector terminal No. 50 and CMP sensor connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

7) Turn ignition switch to ON position, check voltage between chassis ground and CMP sensor connector terminal No. 2. If voltage is not 4.8-5.2 volts, replace PCM. If voltage is as specified, condition required to set DTC is not present at this time. Go to next step.

8) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0400 & P0403: EXHAUST GAS RECIRCULATION (EGR) VALVE SYSTEM FAILURE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) If using scan tool, go to step 8). Remove EGR valve. Inspect valve for sticking or carbon deposits. Clean or replace EGR valve as necessary. If EGR valve is okay, go to next step.

2) Connect a vacuum pump to EGR valve. Apply 19.7-19.8 in. Hg of vacuum. If vacuum does not hold, replace EGR valve. If vacuum holds, go to next step.

3) Apply 1.2-1.8 in. Hg to EGR valve. Blow air through one side of EGR valve passage. If air blows through, replace EGR valve. If air does not blow through, go to next step.

4) Apply 9.1 in. Hg to EGR valve. Blow air through one side of EGR valve passage. If air does not blow through, replace EGR valve. If air blows through, reinstall EGR valve and go to next step.

5) Mark and disconnect striped vacuum hoses and wiring connector from EGR solenoid. Install vacuum pump to EGR solenoid white-striped vacuum hose port on turbo, or Green-striped vacuum hose port on all other models. Apply vacuum to EGR solenoid. Go to next step.

6) Apply and remove 12 volts across EGR solenoid terminals. Vacuum should hold with voltage applied. Vacuum should leak without voltage applied. If EGR solenoid does not test as specified, replace solenoid. If solenoid tests as specified, go to next step.

7) Using DVOM, check resistance across EGR solenoid terminals. If resistance is not 36-44 ohms at 68°F (20°C), replace solenoid. If resistance is as specified, go to step 9).

8) Turn ignition switch to ON position. Using scan tool, turn EGR solenoid on and off (item 10). Listen for clicking sound from EGR solenoid. If no sound is heard, replace EGR solenoid. If sound is heard, go to next step.

9) On 3000GT, go to next step. On Montero, disconnect EGR solenoid connector and MFI relay connector. Using DVOM, check continuity between EGR solenoid connector terminal No. 1 and MFI relay connector terminal No. 3. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to step 11).

10) Disconnect EGR solenoid connector. Using DVOM, check voltage between chassis ground and EGR solenoid connector terminal No. 1. If battery voltage does not exist, repair wiring harness as necessary. If battery voltage exists, go to next step.

11) Turn ignition switch to OFF position. Disconnect PCM connector. Ground PCM connector terminal No. 6. Using DVOM, check for

continuity between chassis ground and EGR solenoid connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, condition required to set DTC is not present at this time. Go to next step.

12) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0420, P0421 & P0431: CATALYST EFFICIENCY BELOW THRESHOLD

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

Specific self-diagnostic test not available from manufacturer at time of publication. Check catalytic converter and check for cracked exhaust manifold. Also, see F - BASIC TESTING article.

DTC P0442: EVAPORATIVE (EVAP) EMISSION CONTROL SYSTEM LEAK DETECTED

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) Remove fuel cap. Push fuel pipe restrictor to operate On-board Fuel Vent Valve (OFLV). Install and tighten fuel cap. Remove fuel cap and ensure distance between filler tube and OFLV is 1.1" (28 mm). If distance is as specified, go to next step. If distance is not as specified, replace fuel tank filler tube assembly. Go to step 24).

2) Disconnect and plug air filter-to-EVAP vent solenoid hose at air filter. Disconnect intake manifold plenum-to-EVAP purge solenoid at intake manifold plenum. Install a "T" fitting between vacuum hose and intake manifold plenum. Connect a hand-held pressure/vacuum pump to "T" fitting. Go to next step.

CAUTION: DO NOT apply more than 0.57 psi in following step. Applying more than specified psi can crack fuel tank.

NOTE: Ensure fuel tank is at least 1/4 full. The lower the fuel level in fuel tank, the longer it takes to pressurize fuel system.

3) Using scan tool, read Fuel Tank Differential Pressure (FTDP) sensor (item 73). Using hand-held pressure/vacuum pump, apply 0.42 psi. If scan tool reading reaches 0.42 psi, go to next step. If reading does not reach 0.42 psi, go to step 9).

4) Wait 20 seconds and read scan tool. If scan tool reading increases 0.06 psi or less, go to next step. If scan tool reading increases more than 0.06 psi, go to step 21).

5) Disconnect EVAP canister purge hose. Connect Purge Flow Indicator (MB995061) between EVAP canister and disconnected hose. Turn engine on and allow it to reach operating temperature. Turn all lights and accessories off. Place transmission in Park or Neutral. Observe purge flow indicator while increasing engine RPM several times. If purge flow indicator reads less than 2.5 SCFH (20 cm(3)/sec), check EVAP canister purge hose and EVAP canister port for clogging. If hose and port are okay, check EVAP purge solenoid. See DTC P0443. If solenoid is okay, replace EVAP canister. Go to step 24).

6) Using scan tool, read Engine Coolant Temperature (ECT) sensor temperature (item 21). Compare scan tool reading with

temperature gauge reading. If readings are about the same, go to next step. If readings are not about the same, go to DTC P0115 test.

7) Using a thermometer, check engine compartment ambient temperature. Using scan tool, read Intake Air Temperature (IAT) sensor temperature (item 13). Compare IAT sensor and thermometer readings. If readings are not about the same, go to DTC P0110 test. If readings are about the same, go to next step.

8) Using scan tool, read Power Steering Pressure (PSP) switch status (item 27). Switch status should read ON when steering wheel is turned. If switch status is as specified, go to step 24). If switch status is not as specified, go to DTC P0551 test.

9) Remove fuel cap. Install a fuel tank filler tube adapter in place of fuel cap. Plug fuel filler tube adapter hose. Disconnect and plug air filter-to-EVAP vent solenoid hose at air filter. Disconnect intake manifold plenum-to-EVAP purge solenoid at intake manifold plenum. Install a "T" fitting between vacuum hose and intake manifold plenum. Connect hand-held pressure/vacuum pump to "T" fitting. Go to next step.

CAUTION: DO NOT apply more than 0.57 psi in following step. Applying more than specified psi can crack fuel tank.

NOTE: Ensure fuel tank is at least 1/4 full. The lower the fuel level in fuel tank, the longer it takes to pressurize fuel system.

10) Using scan tool, read Fuel Tank Differential Pressure (FTDP) sensor (item 73). Using hand-held pressure/vacuum pump, apply 0.42 psi. If scan tool reading reaches 0.42 psi, replace fuel cap. Go to step 24). If reading does not reach 0.42 psi, go to next step.

11) Disconnect hand-held pressure/vacuum pump from "T" fitting. Install an evaporative emission system tester in place of vacuum held pump and apply 0.49 psi. Wait two minutes. If pressure drops less than 0.20 psi, go to next step. If pressure drops 0.29 psi or more, go to step 14).

12) Disconnect EVAP purge solenoid-to-EVAP canister hose at EVAP canister. Connect hand-held pressure/vacuum pump to hose and apply 0.9 psi. If pressure is not maintained, check EVAP purge solenoid for leak. If EVAP purge solenoid is okay, replace hose. Go to step 24). If pressure is maintained, go to next step.

13) Disconnect EVAP vent solenoid-to-EVAP canister hose at EVAP canister. Connect hand-held pressure/vacuum pump to hose and apply 0.9 psi. If pressure is not maintained, check EVAP vent solenoid for leak. If EVAP vent solenoid is okay, replace hose. Go to step 24). If pressure is maintained, replace EVAP canister. Go to step 24).

14) Ensure hoses are properly routed and connected. See M - VACUUM DIAGRAMS article. Install hoses as necessary and go to step 24). If hoses are okay, go to next step.

15) Disconnect OFLV-to-EVAP canister hose at OFLV and EVAP canister. Plug hose at OFLV end. Connect hand-held pressure/vacuum pump to hose at EVAP canister end. Apply 0.9 psi. If pressure is not maintained, replace hose. Go to step 24). If pressure is maintained, go to next step.

16) Using scan tool, read Fuel Tank Differential Pressure (FTDP) sensor (item 73). Connect hand-held pressure/vacuum pump to OFLV. While monitoring scan tool, apply 0.42 psi. If scan tool reading reaches 0.42 psi, go to next step. If reading does not reach 0.42 psi, go to step 20).

17) Disconnect OFLV-to-EVAP canister hose at EVAP canister. Connect hand-held pressure/vacuum pump to hose and apply 0.9 psi. If pressure is not maintained, go to next step. If pressure is maintained, go to step 19).

18) Disconnect EVAP purge solenoid-to-EVAP canister hose at

EVAP canister. Connect hand-held pressure/vacuum pump to hose. Disconnect intake manifold plenum-to-EVAP purge solenoid at intake manifold plenum. Operate vacuum pump several times to apply vacuum. If vacuum leaks, replace EVAP canister. Go to step 24). If vacuum does not leak, repair clog in hose between EVAP canister and EVAP Purge solenoid. Go to step 24).

19) Disconnect EVAP canister-to-OFLV hose at OFLV. If vacuum does not leak, repair clog in hose between EVAP canister and OFLV. Go to step 24). If vacuum leaks, check fuel tank filler tube assembly. If fuel tank filler tube assembly is okay, repair clog in hose between OFLV and fuel cut-off valve. Go to step 24).

20) Replace fuel tank filler tube and OFLV-to-fuel cut-off valve hose. While monitoring scan tool, apply 0.42 psi with hand-held pressure/vacuum pump. If scan tool reading does not reach 0.42 psi, replace fuel tank. Go to step 24).

21) Remove fuel cap. Install a fuel tank filler tube adapter in place of fuel cap. Disconnect and plug air filter-to-EVAP vent solenoid hose at air filter. Plug fuel filler tube adapter hose. Disconnect intake manifold plenum-to-EVAP purge solenoid at intake manifold plenum. Install a "T" fitting between vacuum hose and intake manifold plenum. Connect hand-held pressure/vacuum pump to "T" fitting. Go to next step.

CAUTION: DO NOT apply more than 0.57 psi in following step. Applying more than specified psi can crack fuel tank.

NOTE: Ensure fuel tank is at least 1/4 full. The lower the fuel level in fuel tank, the longer it takes to pressurize fuel system.

22) Using scan tool, read Fuel Tank Differential Pressure (FTDP) sensor (item 73). Using hand-held pressure/vacuum pump, apply 0.42 psi. If scan tool reading rises 0.06 psi or less, replace fuel cap. Go to step 24). If reading rises more than 0.06 psi, go to next step.

23) Disconnect hand-held pressure/vacuum pump from "T" fitting. Install an evaporative emission system tester in place of vacuum held pump and apply 0.49 psi. Using an ultrasonic leak detector, locate and repair leaks. Go to next step.

24) Road test vehicle and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, test is complete.

DTC P0443: EVAPORATIVE (EVAP) EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT MALFUNCTION

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) Using scan tool, turn EVAP purge solenoid on and off (item 08). Listen for clicking sound from EVAP purge solenoid. If no sound is heard, go to next step. If sound is heard, fault is intermittent. See INTERMITTENT DTCS.

2) Mark and disconnect vacuum hoses, and wiring connector from EVAP purge solenoid. Install vacuum pump to EVAP purge solenoid Black/Red vacuum hose port. Apply vacuum to EVAP purge solenoid. Go to next step.

3) Apply and remove 12 volts across EVAP purge solenoid terminals. Vacuum should hold without voltage applied. Vacuum should leak with voltage applied. If EVAP purge solenoid does not test as specified, replace EVAP purge solenoid. Go to step 8). If EVAP purge solenoid tests as specified, go to next step.

4) Using DVOM, check resistance across EVAP purge solenoid terminals. If resistance is not 36-44 ohms at 68°F (20°C), replace EVAP purge solenoid. Go to step 8). If resistance is as specified, go to next step.

5) On 3000GT, go to next step. On Montero, disconnect EVAP purge solenoid connector and MFI relay connector. Using DVOM, check continuity between EVAP purge solenoid connector terminal No. 1 and MFI relay connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to step 7).

6) Disconnect EVAP purge solenoid connector. Using DVOM, check voltage between chassis ground and EVAP purge solenoid connector terminal No. 1. If battery voltage does not exist, repair wiring harness as necessary. If battery voltage exists, go to next step.

7) Turn ignition switch to OFF position. Disconnect PCM connector. Ground PCM connector terminal No. 16. Using DVOM, check for continuity between chassis ground and EVAP purge solenoid connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, condition required to set DTC is not present at this time. Go to next step.

8) Road test vehicle and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, test is complete.

DTC P0446: EVAPORATIVE (EVAP) EMISSION CONTROL SYSTEM VENT CONTROL MALFUNCTION

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) Using scan tool, turn EVAP vent solenoid on and off (item 29). Listen for clicking sound from EVAP vent solenoid. If no sound is heard, go to next step. If sound is heard, fault is intermittent. See INTERMITTENT DTCS.

2) Disconnect EVAP vent solenoid connector and MFI relay connector. Using DVOM, check continuity between EVAP vent solenoid connector terminal No. 1 and MFI relay connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

3) Turn ignition switch to OFF position. Disconnect PCM connector. Ground PCM connector terminal No. 35. Using DVOM, check for continuity between chassis ground and EVAP vent solenoid connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, condition required to set DTC is not present at this time. Go to next step.

4) Road test vehicle and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, test is complete.

DTC P0450: EVAPORATIVE (EVAP) EMISSION CONTROL SYSTEM PRESSURE SENSOR MALFUNCTION

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) Using scan tool, check Fuel Tank Differential Pressure (FTDP) sensor pressure (item 73). Pressure should be -0.48-0.48 psi. If pressure is not as specified, go to next step. If pressure is as specified, fault is intermittent. See INTERMITTENT DTCS.

2) Remove fuel cap. Install a fuel tank filler tube adapter in place of fuel cap. Connect a hand-held pressure/vacuum pump to fuel

tank filler adapter hose. Go to next step.

CAUTION: DO NOT apply more than 1.0 psi in following step. Applying more than specified psi can crack fuel tank.

NOTE: Ensure fuel tank is at least 1/4 full. The lower the fuel level in fuel tank, the longer it takes to pressurize fuel system.

3) Apply 1.0 psi. Using scan tool, read Fuel Tank Differential Pressure (FTDP) sensor (item 73). If scan tool reads more than 0.86 psi, go to next step. If reading is 0.86 psi or less, fault is intermittent. See INTERMITTENT DTCS.

4) Check On-Board Fuel Vent Valve (OFLV) for clogging. OFLV is located in fuel tank filler tube assembly. If OFLV is clogged, replace fuel tank filler tube assembly. Go to step 10). If OFLV is okay, go to next step.

5) Check EVAP hoses, and purge and vent solenoids for clogging. Repair or replace as necessary. Go to step 10). If hoses and solenoids are okay, go to next step.

6) Disconnect FTDP connector. Ensure ignition is off. Using DVOM, check for continuity between ground and FTDP sensor connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

7) Disconnect PCM connector. Ground PCM connector terminal No. 93. Using DVOM, check for continuity between chassis ground and FTDP sensor connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

8) Turn ignition on. Using DVOM, check voltage between ground and FTDP sensor connector terminal No. 3. Voltage should be 4.8-5.2 volts. If voltage is not as specified, replace PCM. If voltage is as specified, go to next step.

9) Inspect connectors and wiring harness between FTDP sensor and PCM. Repair as necessary. If connectors and wiring harness are okay, go to next step.

10) Road test vehicle and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, test is complete.

DTC P0455: EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM LARGE LEAK DETECTED

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) Remove fuel cap. Push fuel pipe restrictor to operate On-board Fuel Vent Valve (OFLV). Install and tighten fuel cap. Remove fuel cap and ensure distance between filler tube and OFLV is 1.1" (28 mm). If distance is as specified, go to next step. If distance is not as specified, replace fuel tank filler tube assembly. Go to step 20).

2) Disconnect and plug air filter-to-EVAP vent solenoid hose at air filter. Disconnect intake manifold plenum-to-EVAP purge solenoid at intake manifold plenum. Install a "T" fitting between vacuum hose and intake manifold plenum. Connect a hand-held pressure/vacuum pump to "T" fitting. Go to next step.

CAUTION: DO NOT apply more than 0.57 psi in following step. Applying more than specified psi can crack fuel tank.

NOTE: Ensure fuel tank is at least 1/4 full. The lower the fuel level in fuel tank, the longer it takes to pressurize fuel

system.

3) Using scan tool, read Fuel Tank Differential Pressure (FTDP) sensor (item 73). Using hand-held pressure/vacuum pump, apply 0.42 psi. If scan tool reading reaches 0.42 psi, go to next step. If reading does not reach 0.42 psi, go to step 8).

4) Disconnect EVAP canister purge hose. Connect Purge Flow Indicator (MB995061) between EVAP canister and disconnected hose. Turn engine on and allow it to reach operating temperature. Turn all lights and accessories off. Place transmission in Park or Neutral. Observe purge flow indicator while increasing engine RPM several times. If purge flow indicator reads less than 2.5 SCFH (20 cm(3)/sec), check EVAP canister purge hose and EVAP canister port for clogging. If hose and port are okay, check EVAP purge solenoid. See DTC P0443. If solenoid is okay, replace EVAP canister. Go to step 20).

5) Using scan tool, read Engine Coolant Temperature (ECT) sensor temperature (item 21). Compare scan tool reading with temperature gauge reading. If readings are about the same, go to next step. If readings are not about the same, go to DTC P0115 test.

6) Using a thermometer, check engine compartment ambient temperature. Using scan tool, read Intake Air Temperature (IAT) sensor temperature (item 13). Compare IAT sensor and thermometer readings. If readings are not about the same, go to DTC P0110 test. If readings are about the same, go to next step.

7) Using scan tool, read Power Steering Pressure (PSP) switch status (item 27). Switch status should read ON when steering wheel is turned. If switch status is as specified, go to step 20). If switch status is not as specified, go to DTC P0551 test.

8) Remove fuel cap. Install a fuel tank filler tube adapter in place of fuel cap. Plug fuel filler tube adapter hose. Disconnect and plug air filter-to-EVAP vent solenoid hose at air filter. Disconnect intake manifold plenum-to-EVAP purge solenoid at intake manifold plenum. Install a "T" fitting between vacuum hose and intake manifold plenum. Connect hand-held pressure/vacuum pump to "T" fitting. Go to next step.

CAUTION: DO NOT apply more than 0.57 psi in following step. Applying more than specified psi can crack fuel tank.

NOTE: Ensure fuel tank is at least 1/4 full. The lower the fuel level in fuel tank, the longer it takes to pressurize fuel system.

9) Using scan tool, read Fuel Tank Differential Pressure (FTDP) sensor (item 73). Using hand-held pressure/vacuum pump, apply 0.42 psi. If scan tool reading reaches 0.42 psi, replace fuel cap. Go to step 20). If reading does not reach 0.42 psi, go to next step.

10) Disconnect hand-held pressure/vacuum pump from "T" fitting. Install an evaporative emission system tester in place of vacuum held pump and apply 0.49 psi. Wait two minutes. If pressure drops less than 0.20 psi, go to next step. If pressure drops 0.29 psi or more, go to step 13).

11) Disconnect EVAP purge solenoid-to-EVAP canister hose at EVAP canister. Connect hand-held pressure/vacuum pump to hose and apply 0.9 psi. If pressure is not maintained, check EVAP purge solenoid for leak. If EVAP purge solenoid is okay, replace hose. Go to step 24). If pressure is maintained, go to next step.

12) Disconnect EVAP vent solenoid-to-EVAP canister hose at EVAP canister. Connect hand-held pressure/vacuum pump to hose and apply 0.9 psi. If pressure is not maintained, check EVAP vent solenoid for leak. If EVAP vent solenoid is okay, replace hose. Go to step 20). If pressure is maintained, replace EVAP canister. Go to step 24).

13) Ensure hoses are properly routed and connected. See M -

VACUUM DIAGRAMS article. Install hoses as necessary and go to step 20). If hoses are okay, go to next step.

14) Disconnect OFLV-to-EVAP canister hose at OFLV and EVAP canister. Plug hose at OFLV end. Connect hand-held pressure/vacuum pump to hose at EVAP canister end. Apply 0.9 psi. If pressure is not maintained, replace hose. Go to step 20). If pressure is maintained, go to next step.

15) Using scan tool, read Fuel Tank Differential Pressure (FTDP) sensor (item 73). Connect hand-held pressure/vacuum pump to OFLV. While monitoring scan tool, apply 0.42 psi. If scan tool reading reaches 0.42 psi, go to next step. If reading does not reach 0.42 psi, go to step 19).

16) Disconnect OFLV-to-EVAP canister hose at EVAP canister. Connect hand-held pressure/vacuum pump to hose and apply 0.9 psi. If pressure is not maintained, go to next step. If pressure is maintained, go to step 18).

17) Disconnect EVAP purge solenoid-to-EVAP canister hose at EVAP canister. Connect hand-held pressure/vacuum pump to hose. Disconnect intake manifold plenum-to-EVAP purge solenoid at intake manifold plenum. Operate vacuum pump several times to apply vacuum. If vacuum leaks, replace EVAP canister. Go to step 20). If vacuum does not leak, repair clog in hose between EVAP canister and EVAP Purge solenoid. Go to step 20).

18) Disconnect EVAP canister-to-OFLV hose at OFLV. If vacuum does not leak, repair clog in hose between EVAP canister and OFLV. Go to step 20). If vacuum leaks, check fuel tank filler tube assembly. If fuel tank filler tube assembly is okay, repair clog in hose between OFLV and fuel cut-off valve. Go to step 20).

19) Replace fuel tank filler tube and OFLV-to-fuel cut-off valve hose. While monitoring scan tool, apply 0.42 psi with hand-held pressure/vacuum pump. If scan tool reading does not reach 0.42 psi, replace fuel tank. Go to next step.

20) Road test vehicle and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, test is complete.

DTC P0500: VEHICLE SPEED SENSOR (VSS) CIRCUIT FAILURE

NOTE: Speedometer testing procedures for 3000GT are not available from manufacturer at time of publication. For terminal identification, see TERMINAL IDENTIFICATION.
For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) If using scan tool, go to step 4). On 3000GT, go to step 3). On Montero, speedometer testing procedures using DVOM require removal of instrument panel. Removal and installation of instrument panel is basically an unbolt and bolt-on procedure.

2) DO NOT disconnect connectors. Using DVOM, check continuity between indicated speedometer terminals. See Fig. 40. Ensure continuity pulses on and off with speedometer shaft revolution. If continuity is not as specified, replace speedometer. If continuity is as specified, go to next step.

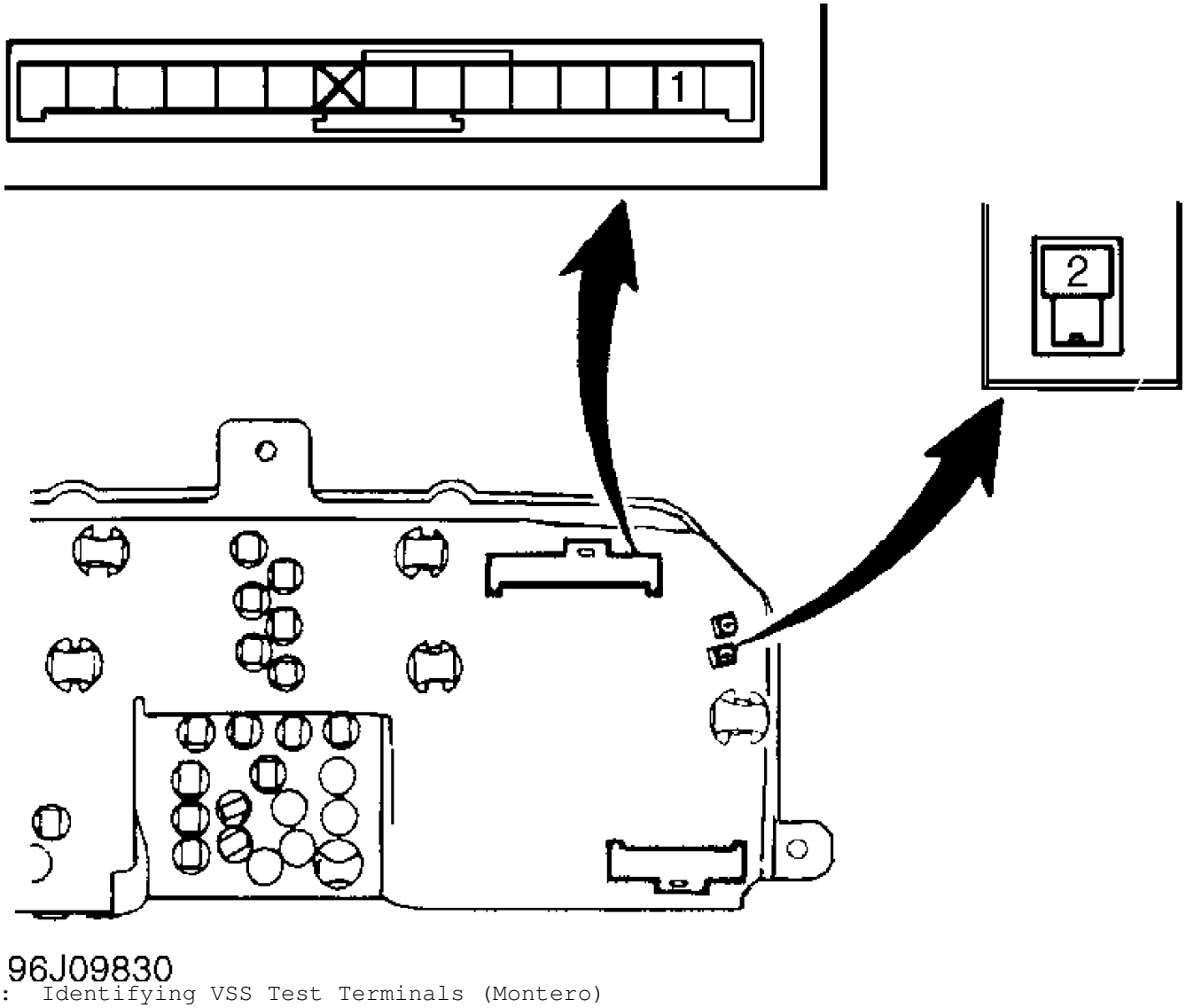


Fig. 40: Identifying VSS Test Terminals (Montero)
Courtesy of Mitsubishi Motor Sales of America

3) VSS is located at end of speedometer cable at transmission. Connect battery, resistor (3-10 ohms) and voltmeter to indicated terminals. See Fig. 41. Ensure voltage pulses 4 times per speedometer shaft revolution. If voltage is not as specified, replace VSS. If voltage is as specified, go to step 5).

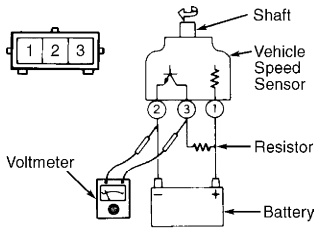


Fig. 41: Testing VSS
Courtesy of Mitsubishi Motor Sales of America

4) With an assistant, road test vehicle. Drive vehicle at 25

MPH. Using scan tool, read vehicle speed (item 24). If scan tool does not read 25 MPH, replace VSS. If scan tool reads 25 MPH, go to next step.

5) Turn ignition switch to OFF position. Disconnect PCM connector. Using DVOM, check continuity between chassis ground and PCM connector terminal No. 80. Move vehicle. Ensure continuity pulses on and off with tire revolution. If continuity is not as specified on 3000GT, go to step 7). On Montero, go to next step. If continuity is as specified, go to step 9).

6) With PCM connector disconnected, disconnect VSS connector. Ground PCM connector terminal No. 80. Using DVOM, check for continuity between chassis ground and VSS connector terminal No. 1. See Fig. 42. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

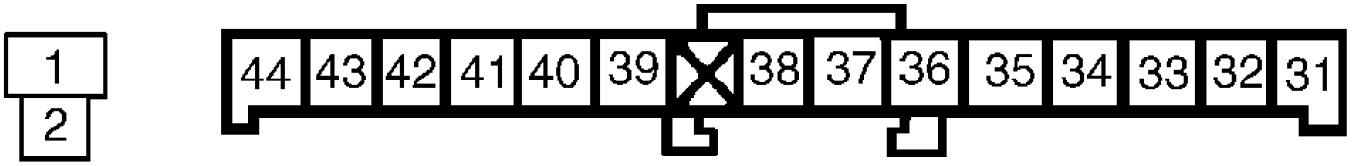


Fig. 42: Identifying VSS Connector Terminals (Montero)
Courtesy of Mitsubishi Motor Sales of America

7) With VSS connector disconnected, check for continuity between chassis ground and specified VSS connector terminal. See Fig. 42 or 43. See VSS GROUND CIRCUIT IDENTIFICATION table. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

VSS GROUND CIRCUIT IDENTIFICATION TABLE

Application	Terminal No.
Montero	43
3000GT	2

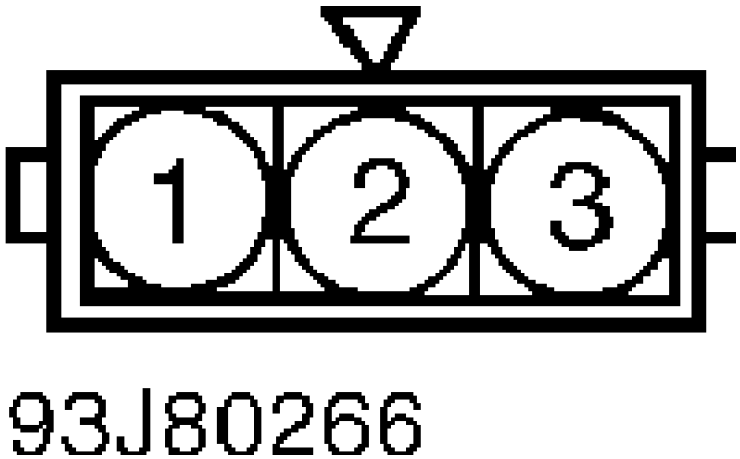


Fig. 43: Identifying VSS Connector Terminals (3000GT)
Courtesy of Mitsubishi Motor Sales of America

8) With VSS connector disconnected, turn ignition switch to ON position. Using DVOM, check for voltage between chassis ground and

specified VSS connector terminal. See VSS VOLTAGE FEED CIRCUIT IDENTIFICATION table. If voltage is not 4.5-4.9 volts, replace PCM. If voltage is as specified, condition required to set DTC is not present at this time. Go to next step.

VSS VOLTAGE FEED CIRCUIT IDENTIFICATION TABLE

Application	Terminal No.
Montero	1
3000GT	3

9) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0505: IDLE CONTROL SYSTEM FAILURE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) Procedures are provided by manufacturer for component testing using an engine analyzer with oscilloscope capability. Refer to manufacturer's operation manual for instructions in use of oscilloscope. If using engine analyzer, go to step 3). If using scan tool, go to next step.

2) Using scan tool, read Idle Air Control (IAC) position sensor step (item 45). See IAC POSITION SENSOR STEP SPECIFICATIONS table. If scan tool does not read as specified, replace IAC position sensor. If readings are as specified, go to step 5).

IAC POSITION SENSOR STEP SPECIFICATIONS TABLE

A/C Switch Position	Standard Step Value
Off	2-25
Off To On	Increase From 10-70
(1)	Increase From 5-50

(1) - Brakes applied. A/C Off on Montero. A/C On on 3000GT. Move gear selector lever to Drive position.

NOTE: Check wave pattern when idle speed increases when A/C is turned on. Wave pattern display lasts less than one second.

3) Disconnect IAC motor connector. Install Test Harness (MB998463) between IAC motor and connector. Using engine analyzer with oscilloscope capability, connect special patterns probe in sequence to test harness terminals No. 1 (Red clip), 3 (Blue clip), 4 (Black clip) and 6 (Yellow clip) or PCM terminals No. 4, 5, 17 and 18 respectively. Start engine and allow it to idle. Turn A/C on. Compare oscilloscope wave pattern with known-good wave pattern. See Fig. 44. Turn engine off. If wave pattern is not normal, go to next step. If wave pattern is normal, fault is intermittent. See INTERMITTENT DTCS.

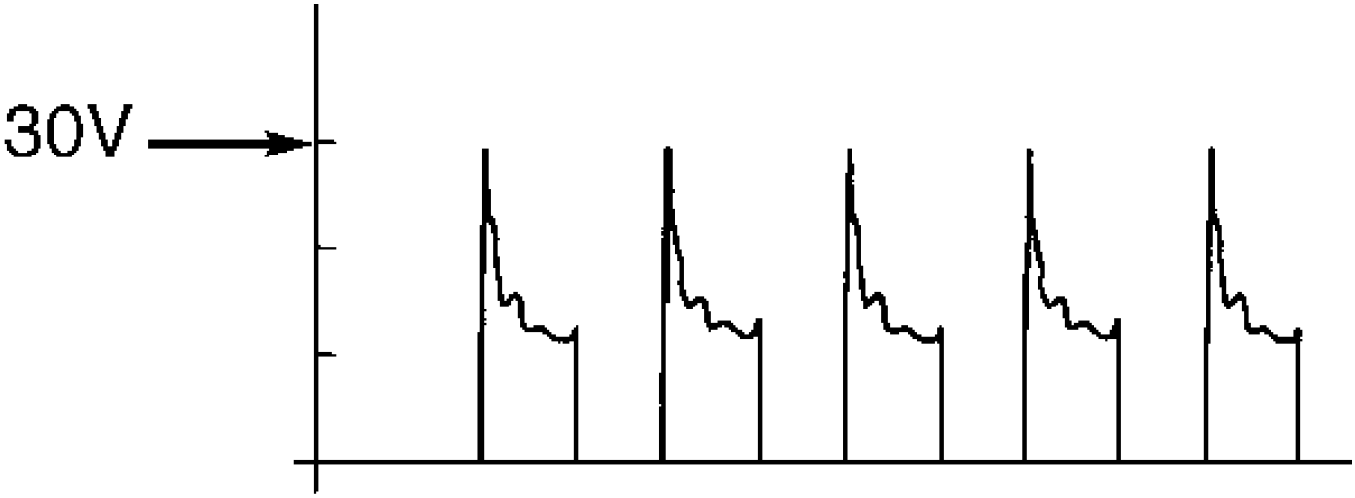


Fig. 44: Identifying Know-Good IAC Motor Wave Pattern
Courtesy of Mitsubishi Motor Sales of America

4) Disconnect IAC motor connector. Leave test harness connected to IAC motor. Using DVOM, check resistance between test harness terminals No. 2 (White clip) and either 1 (Red clip) or 3 (Blue clip), and between test harness terminals No. 5 (Green clip) and either 4 (Black clip) or 6 (Yellow clip). Resistance should be 28-33 ohms at 68°F (20°C). If resistance is as specified, go to next step. If resistance is not as specified, replace IAC motor. Go to step 10).

5) On 3000GT, go to step 7). On Montero, disconnect IAC motor connector and MFI relay connector. Check for continuity between IAC motor connector terminal No. 2 and MFI relay connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

6) Check for continuity between IAC motor connector terminal No. 5 and MFI relay connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

7) Disconnect IAC motor connector. Turn ignition switch to ON position. Check voltage between chassis ground and IAC motor connector terminals No. 2 and 5. If battery voltage does not exist on either circuit, repair wiring harness as necessary. If battery voltage exists on both circuits, go to next step.

8) Turn ignition switch to OFF position. Disconnect PCM connector and IAC motor connector. Ground specified PCM connector terminal and using DVOM, check continuity between chassis ground and specified IAC motor connector terminal. See PCM-TO-IAC MOTOR HARNESS CIRCUIT IDENTIFICATION table. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

PCM-TO-IAC MOTOR HARNESS CIRCUIT IDENTIFICATION TABLE

PCM Terminal No.	IAC Motor Terminal No.
14	1
15	4
28	3
29	6

9) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

10) Road test vehicle and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, test is complete.

DTC P0510: CLOSED THROTTLE POSITION (TP) SWITCH FAILURE

NOTE: Closed TP switch is built into TP sensor. For DTC P0510 test purposes, TP sensor will be referred to as closed TP switch. For terminal identification, see TP sensor under TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) If using scan tool, go to step 3). Disconnect closed TP switch connector. Check for continuity between closed TP switch connector terminals No. 1 and 2 on Montero or No. 3 and 4 on 3000GT. Go to next step.

2) Depress accelerator pedal. Continuity should not exist. Release accelerator pedal. Continuity should exist. If continuity is not as specified, replace TP sensor. If continuity is as specified, go to step 4).

3) Using scan tool, read closed TP switch state (item 26). With accelerator pedal released, scan tool should read ON. With accelerator pedal slightly depressed, scan tool should read OFF. If closed TP switch does not test as specified, replace TP sensor. If closed TP switch tests as specified, disconnect closed TP switch connector and go to next step.

4) On 3000GT, go to next step. On Montero, turn ignition switch to OFF position. Disconnect PCM connector. Ground PCM connector terminal No. 79. Using DVOM, check continuity between chassis ground and closed TP switch connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

5) Check continuity between chassis ground and closed TP switch connector terminal No. 1 on Montero or No. 4 on 3000GT. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

6) Turn ignition switch to ON position. Check voltage between chassis ground and closed TP switch connector terminal No. 2 on Montero or No. 3 on 3000GT. If voltage is less than 4 volts, replace PCM. If voltage is more than 4 volts, condition required to set DTC is not present at this time. Go to next step.

7) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P0551: POWER STEERING PRESSURE (PSP) SENSOR CIRCUIT PERFORMANCE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) Using scan tool, read Power Steering Pressure (PSP) status (item 27). Switch status should read ON when steering wheel is turned. If switch status is as specified, fault is intermittent. See INTERMITTENT DTCS. If switch status is not as specified, go to next step.

2) Disconnect pressure hose from oil pump. See Fig. 45. Install Adapter (MB990993) on oil pump. Install Adapter (MB990994) on disconnected hose. Connect Pressure Gauge (MB990662) and shutoff valve between adapters. Open shutoff valve. Bleed steering hydraulic system. See HYDRAULIC SYSTEM BLEEDING in STEERING SYSTEM article.

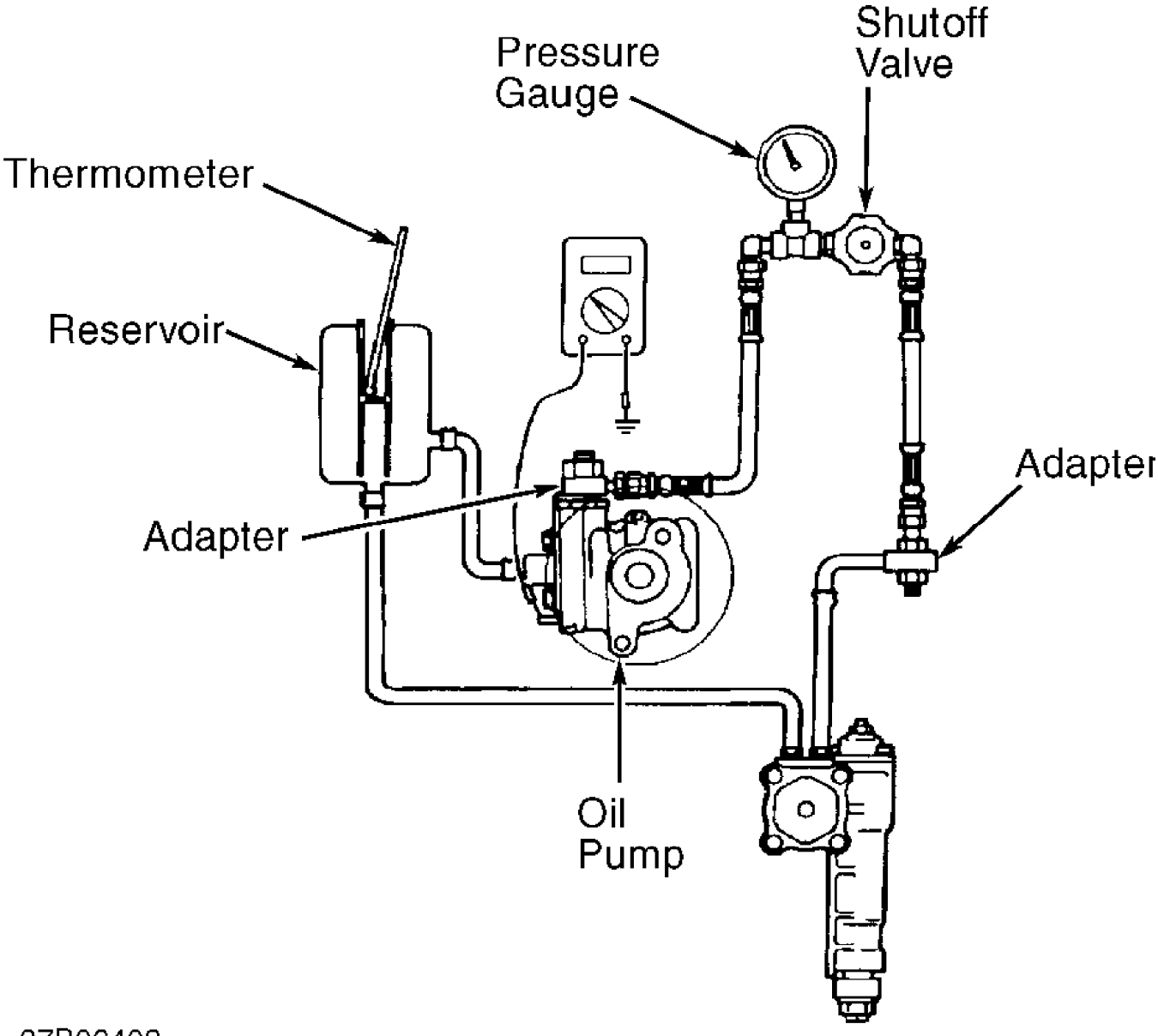


Fig. 45: Testing PSP Sensor Circuit
Courtesy of Mitsubishi Motor Sales of America

3) Install a thermometer in fluid reservoir. Start engine and allow it to idle. Turn steering wheel several times until fluid temperature reaches 122-140°F (50-60°C). Disconnect PSP switch connector. Install a DVOM between ground and PSP switch terminal. See Fig. 45. Note continuity reading on DVOM. Go to next step.

4) With engine idling, gradually close shutoff valve to increase power steering system pressure. Check pressure when PSP switch is actuated by watching for a change in continuity. PSP switch

should be actuated when pressure is 218-290 psi. Gradually open shutoff valve to decrease pressure. Check pressure when PSP switch is de-actuated. PSP switch should de-actuate at 102-174 psi. Turn engine off. If PSP operates as specified, go to next step. If PSP does not operate as specified, replace PSP switch. Go to step 8).

5) Disconnect PSP switch connector. On 3000GT, go to next step. On Montero, turn ignition off. Disconnect PCM connector. Ground PCM connector terminal No. 54. Using DVOM, check continuity between chassis ground and PSP switch connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

6) Turn ignition on. Using DVOM, check voltage between ground and PSP switch connector terminal No. 1. If battery voltage does not exist, replace PCM. If battery voltage exists, go to next step.

7) Road test vehicle and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, test is complete.

DTC P0705: TRANSMISSION RANGE SENSOR CIRCUIT FAILURE

DTC P0705 is related to automatic transmission diagnostics. For diagnostic procedure, see TRANSMISSION SERVICE & REPAIR article.

DTC P1103 & P1104: TURBOCHARGER WASTEGATE SOLENOID CIRCUIT FAILURE

NOTE: This test applies to 3000GT with turbocharger only. For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) If using scan tool, go to step 7). Remove vacuum hoses from turbocharger wastegate solenoid. Disconnect solenoid harness connector. Connect a vacuum pump to solenoid nipple "A". See Fig. 46. Go to next step.

2) Using jumper wires, connect battery voltage and ground to solenoid terminals. Ensure vacuum does not hold with nipple "B" unplugged, and negative jumper wire connected. If solenoid does not test as specified, replace solenoid. If solenoid tests as specified, go to next step.

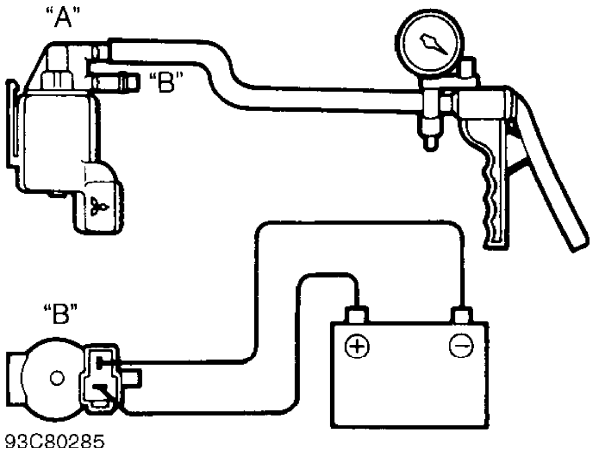


Fig. 46: Testing Turbocharger Wastegate Solenoid
Courtesy of Mitsubishi Motor Sales of America

3) Ensure solenoid holds vacuum with nipple "B" plugged, and negative jumper wire connected. If solenoid does not test as

specified, replace solenoid. If solenoid tests as specified, go to next step.

4) Ensure solenoid holds vacuum with nipple "B" unplugged, and negative jumper wire disconnected. If solenoid does not test as specified, replace solenoid. If solenoid tests as specified, go to next step.

5) Check resistance between solenoid terminals. If resistance is not 36-44 ohms at 68°F (20°C), replace solenoid. If resistance is as specified, go to next step.

6) Remove turbocharger by-pass valve. Connect vacuum pump to by-pass valve nipple. Apply 16 in. Hg of vacuum. Ensure vacuum holds and valve begins to open. If by-pass valve does not test as specified, replace by-pass valve. If by-pass valve tests as specified, go to step 8).

7) Turn ignition switch to ON position. Using scan tool, turn turbocharger wastegate solenoid on and off (item 12). Clicking sound should be heard. If clicking sound is not heard, go to next step. If clicking sound is heard, go to step 10).

8) Disconnect solenoid connector. Turn ignition switch to ON position. Using DVOM, check for voltage between chassis ground and solenoid connector terminal No. 1. If battery voltage does not exist, repair wiring harness as necessary. If battery voltage exists, go to next step.

9) Turn ignition switch to OFF position. Disconnect PCM connector. Ground PCM connector terminal No. 41. Check continuity between chassis ground and solenoid connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

10) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P1105: FUEL PRESSURE SOLENOID FAILURE

NOTE: This test applies to 3000GT turbo only. For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) If using scan tool, go to step 6). Remove vacuum hoses from fuel pressure solenoid. Disconnect solenoid harness connector. Connect a vacuum pump to solenoid nipple "A". See Fig. 47. Apply vacuum and go to next step.

2) Using jumper wires, connect battery voltage and ground to solenoid terminals. Ensure solenoid does not hold vacuum with nipple "B" unplugged, and negative jumper wire disconnected. If solenoid does not test as specified, replace solenoid. If solenoid tests as specified, go to next step.

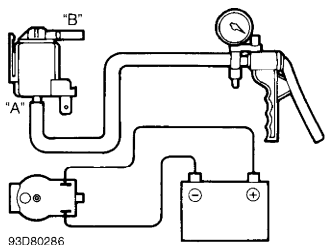


Fig. 47: Testing Fuel Pressure Solenoid
Courtesy of Mitsubishi Motor Sales of America

3) Ensure solenoid holds vacuum with nipple "B" plugged, and negative jumper wire disconnected. If solenoid does not test as

specified, replace solenoid. If solenoid tests as specified, go to next step.

4) Ensure solenoid holds vacuum with nipple "B" unplugged, and negative jumper wire connected. If solenoid does not test as specified, replace solenoid. If solenoid tests as specified, go to next step.

5) Check resistance between solenoid terminals. If resistance is not 36-44 ohms at 68°F (20°C), replace solenoid. If resistance is as specified, go to step 7).

6) Turn ignition switch to ON position. Using scan tool, turn fuel pressure solenoid on and off (item 09). Clicking sound should be heard. If clicking sound is heard, go to step 9). If clicking sound is not heard, go to next step.

7) Disconnect fuel pressure solenoid connector. Using DVOM, check for voltage between chassis ground and fuel pressure solenoid terminal No. 1. If battery voltage does not exist, repair wiring harness as necessary. If battery voltage exists, go to next step.

8) Turn ignition switch to OFF position. Disconnect PCM connector. Ground PCM connector terminal No. 48. Check continuity between chassis ground and fuel pressure solenoid connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

9) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P1400: MANIFOLD DIFFERENTIAL PRESSURE (MDP) SENSOR CIRCUIT FAILURE

NOTE: For terminal identification, see TERMINAL IDENTIFICATION. For circuit and wire color identification, see L - WIRING DIAGRAMS article.

1) Component testing procedure without using scan tool not available from manufacturer at time of publication. Warm vehicle to normal operating temperature and allow engine to idle. Go to next step.

2) Using scan tool, read intake manifold pressure (item 95). See INTAKE MANIFOLD PRESSURE SPECIFICATIONS table. If scan tool does not read as specified, replace MDP sensor. If scan tool reads as specified, go to next step.

INTAKE MANIFOLD PRESSURE SPECIFICATIONS TABLE

Application	psi (kPa)
Montero	3.0-4.9 (20.6-34.0)
3000GT	
DOHC	
Non-Turbo	3.7-5.7 (25.5-38.9)
Turbo	4.2-6.2 (29.0-42.4)
SOHC	3.9-5.8 (26.5-39.9)

3) Disconnect MDP sensor connector. Using DVOM, check continuity between chassis ground and MDP sensor connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

4) Turn ignition switch to OFF position. With MDP sensor connector disconnected, disconnect PCM connector. Ground PCM connector terminal No. 92. Check continuity between chassis ground and MDP sensor connector terminal No. 1. If continuity does not exist, repair

wiring harness as necessary. If continuity exists, go to next step.

5) Reconnect PCM connector. Turn ignition switch to ON position. Check voltage between chassis ground and MDP sensor connector terminal No. 3. If voltage is not 4.8-5.2 volts, replace PCM. If voltage is as specified, condition required to set DTC is not present at this time. Go to next step.

6) Test is complete. Intermittent problem may exist. Road test vehicle (if necessary) and attempt to duplicate conditions that caused original complaint. Recheck for DTCs. If no DTCs are displayed, go to INTERMITTENT DTCS.

DTC P1600: SERIAL COMMUNICATION LINK MALFUNCTION

DTC P1600 is related to automatic transmission diagnostics. For diagnostic procedure, see TRANSMISSION SERVICE & REPAIR article.

DTC P1715: PULSE GENERATOR FAILURE

DTC P1715 is related to automatic transmission diagnostics. For diagnostic procedure, see TRANSMISSION SERVICE & REPAIR article.

DTC P1750: SOLENOID FAILURE

DTC P1750 is related to automatic transmission diagnostics. For diagnostic procedure, see TRANSMISSION SERVICE & REPAIR article.

DTC P1791: ENGINE COOLANT TEMPERATURE LEVEL INPUT TO TCM

DTC P1791 is related to automatic transmission diagnostics. For diagnostic procedure, see TRANSMISSION SERVICE & REPAIR article.

SUMMARY

If no hard DTCs (or only pass DTCs) are present, driveability symptoms exist, or intermittent DTCs exist, proceed to H - TESTS W/O CODES article for diagnosis by symptom (i.e., ROUGH IDLE, NO START, etc.) or intermittent diagnostic procedures.