G - TESTS W/CODES - 2.0L TURBO & 2.4L

1998 Mitsubishi Galant

1998 ENGINE PERFORMANCE
Mitsubishi - Self-Diagnostics

Eclipse 2.0L Turbo & 2.4L, Galant

INTRODUCTION

* PLEASE READ THIS FIRST *

NOTE: If no faults were found while performing BASIC DIAGNOSTIC PROCEDURES, 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
Eclipse & Galant	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
CKP/CMP Sensor	Fig. 2, 3 or 4
DLC	Fig. 5
ECT Sensor	Fig. 6
EVAP Purge Solenoid	Fig. 7 or 8
EVAP Vent Solenoid	Fig. 9
Fuel Injector	Fig. 10
Fuel Pump	Fig. 11 or 12
Fuel Pump Control/Relay Module	Fig. 13
FTDP Sensor	Fig. 14
Generator Field	Fig. 15
HO2S	Fig. 16
IAC Motor	Fig. 17 or 18
Ignition Coil	Fig. 19
Ignition Failure Sensor	Fig. 20
Ignition Power Transistor	Fig. 21
KS	Fig. 22
MDP Sensor	Fig. 23
PCM	Fig. 24 or 25
PNP Switch	Fig. 26

Starter Relay	Fig. 27 or 28
TCM	Fig. 29
TP Sensor	Fig. 30
VAF Sensor	Fig. 31
VIC Valve Position Sensor	Fig. 32
VSS	Fig. 33

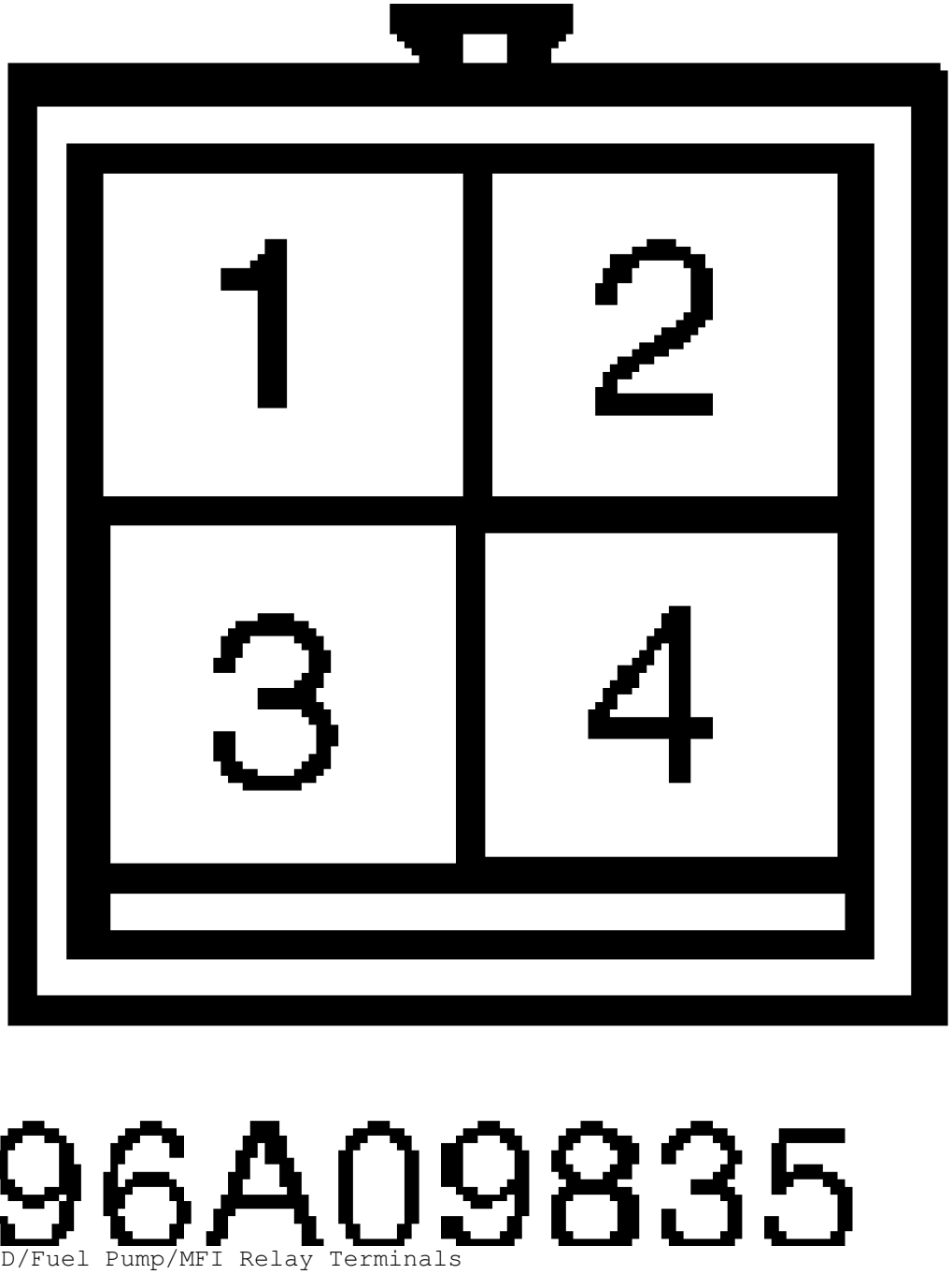

Fig. 1: ASD/Fuel Pump/MFI Relay Terminals
Courtesy of Mitsubishi Motor Sales of America

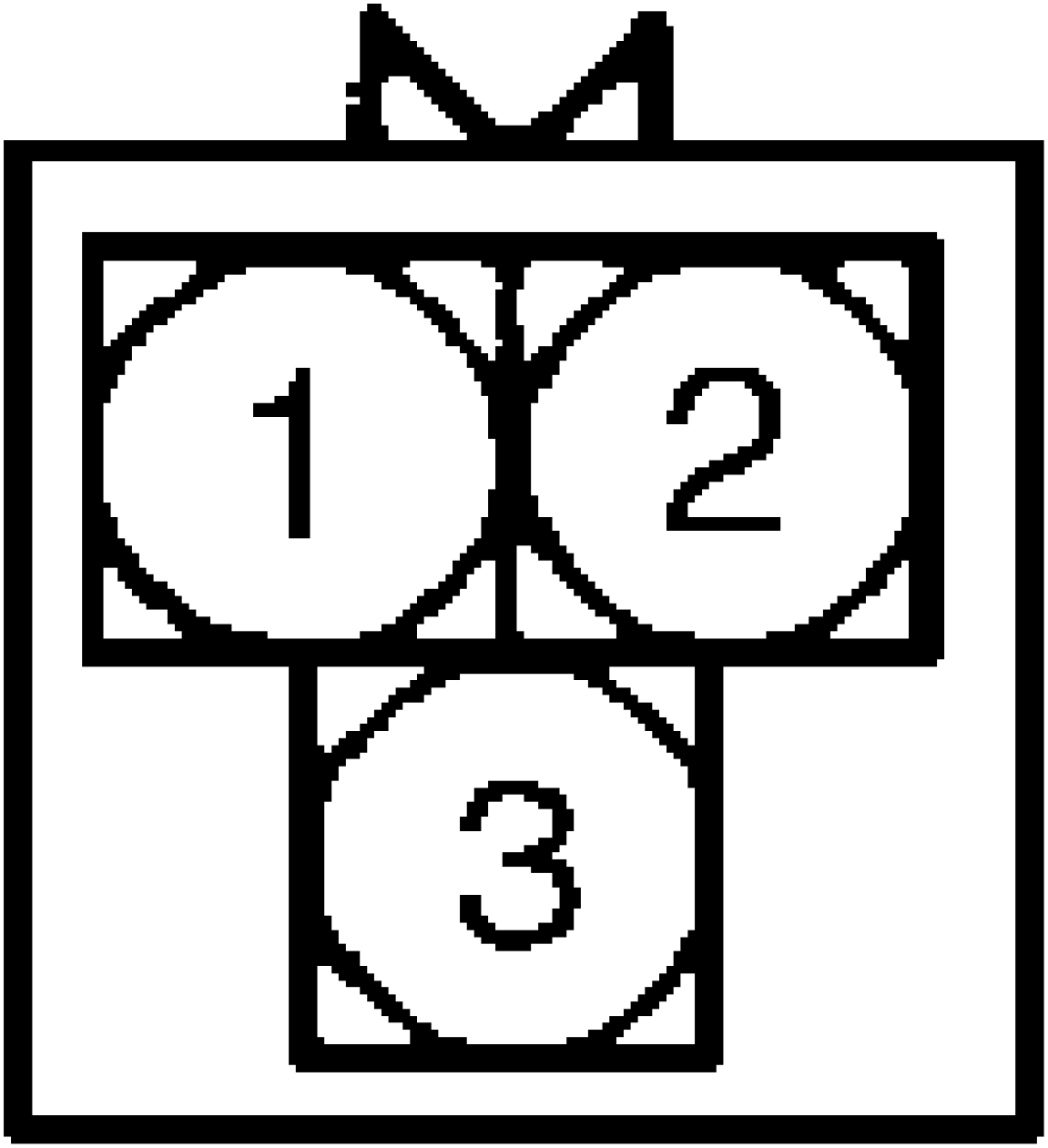

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Fig. 2: CKP Terminals
Courtesy of Mitsubishi Motor Sales of America

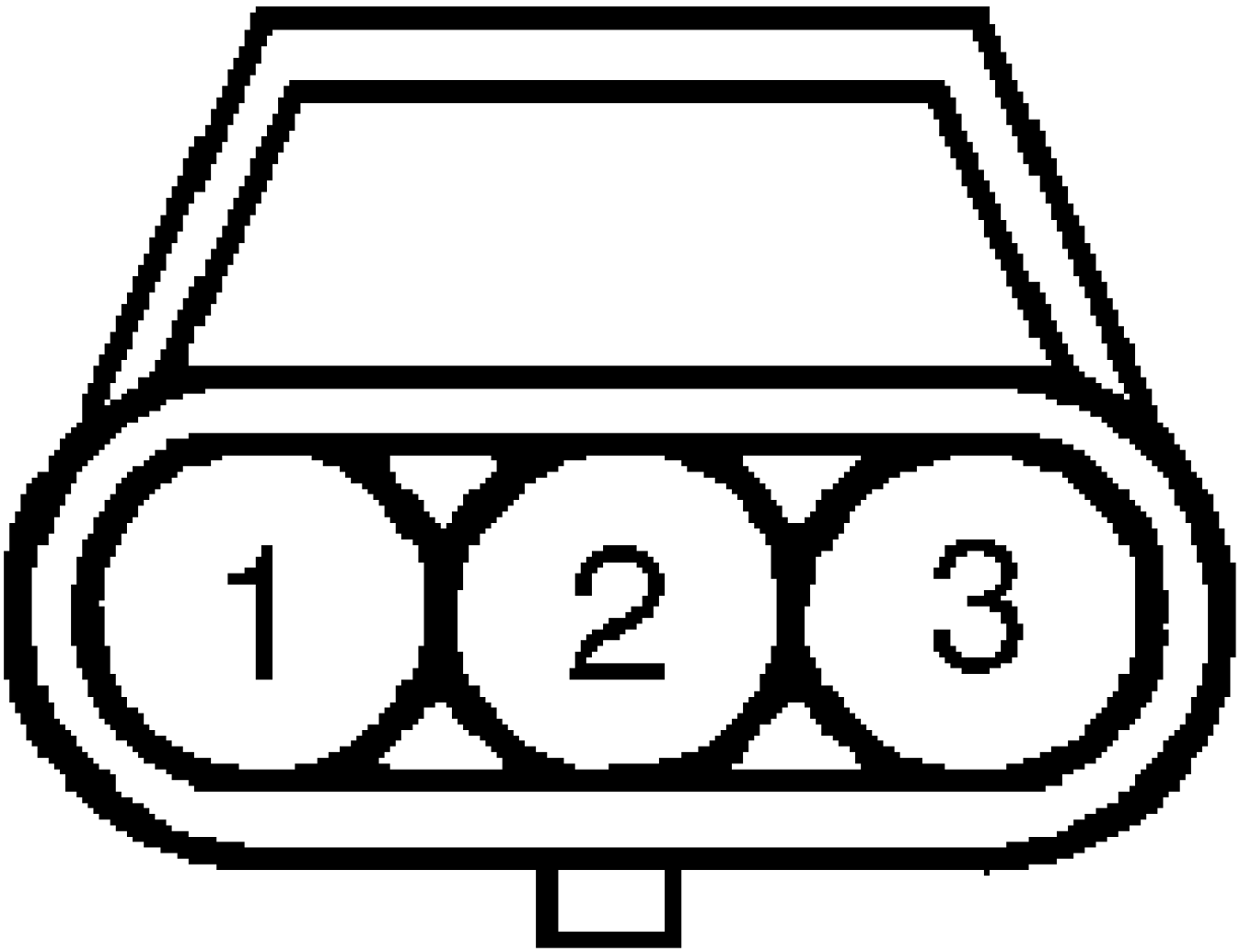

Fig. 3: CMP Terminals (Eclipse 2.0L Turbo & 2.4L)
Courtesy of Mitsubishi Motor Sales of America

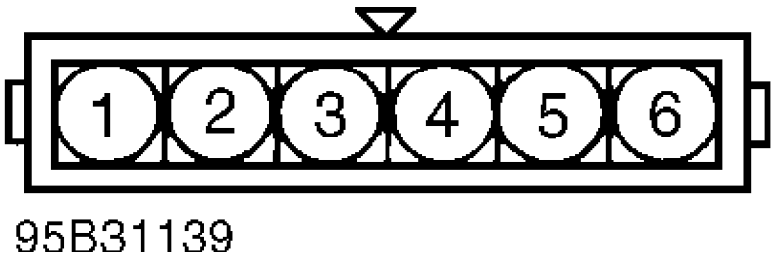

Fig. 4: CMP Terminals (Galant)
Courtesy of Mitsubishi Motor Sales of America

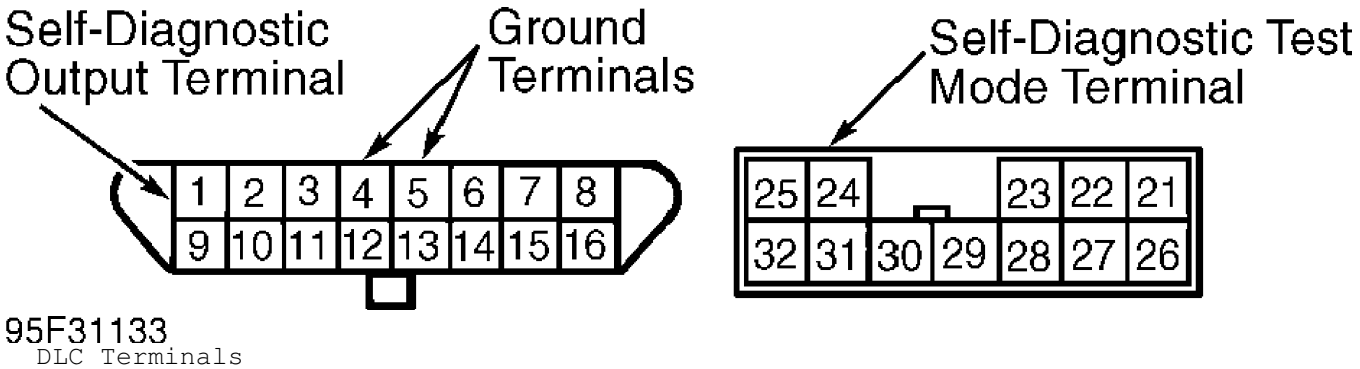

Fig. 5: DLC Terminals
Courtesy of Mitsubishi Motor Sales of America

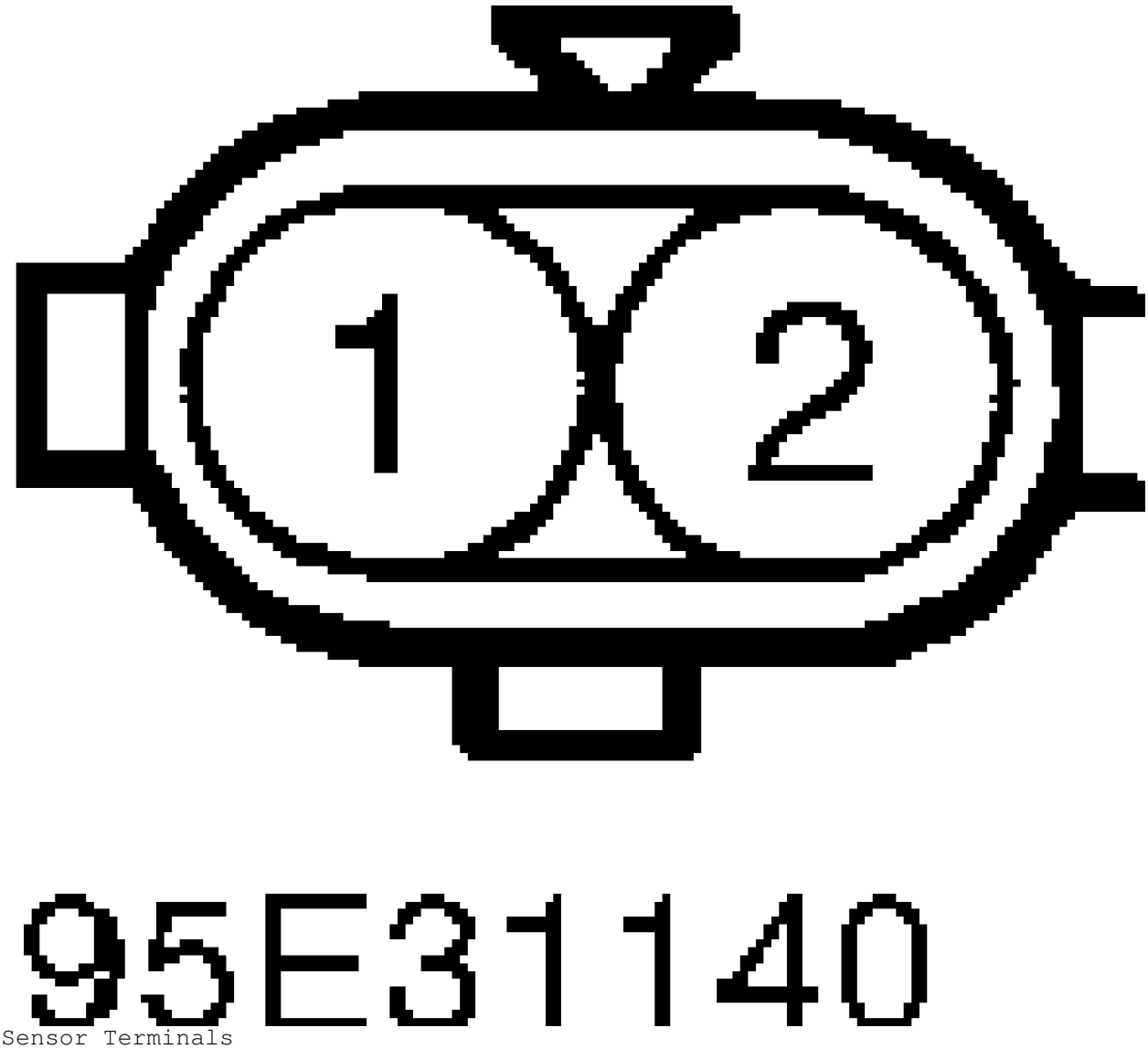

Fig. 6: ECT Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

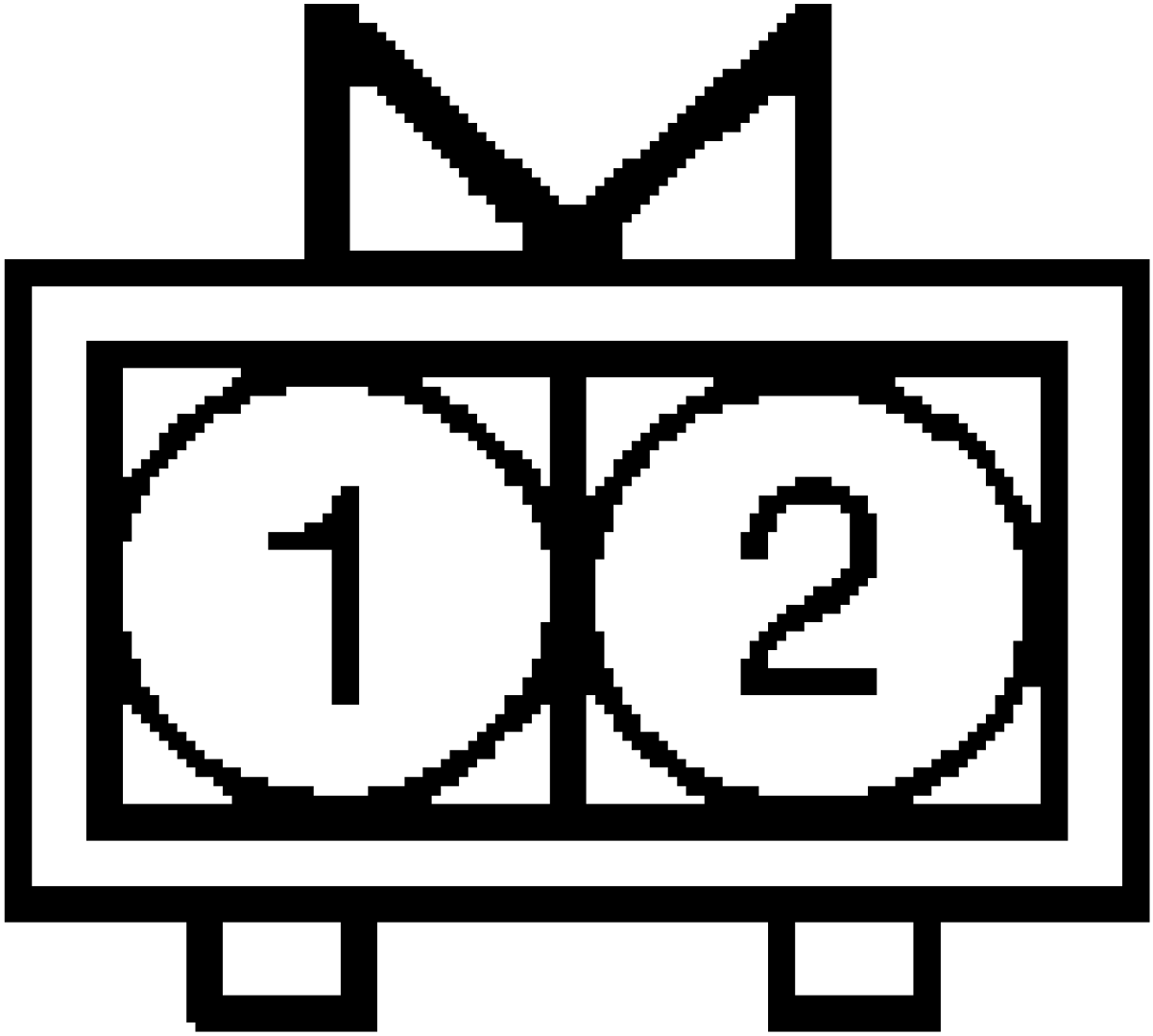

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Fig. 7: EVAP Purge Solenoid Terminals (Galant)
Courtesy of Mitsubishi Motor Sales of America

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Fig. 8: EVAP Purge Solenoid Terminals (Eclipse 2.0L Turbo & 2.4L)
Courtesy of Mitsubishi Motor Sales of America

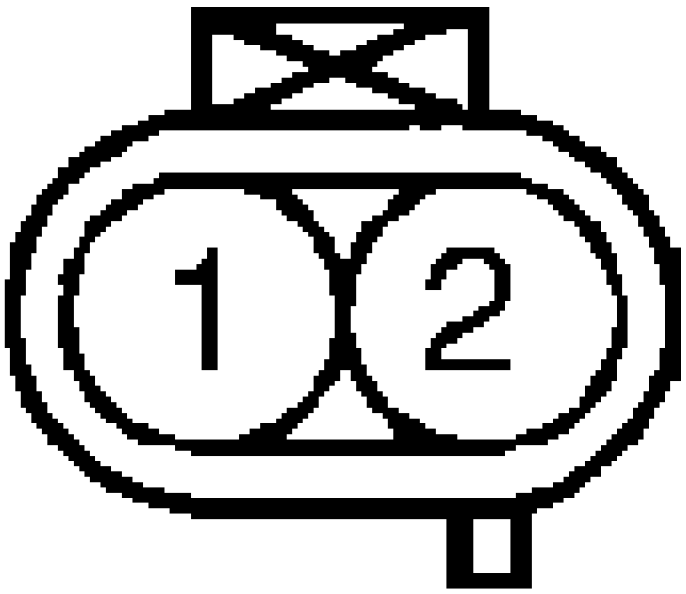

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Fig. 9: EVAP Vent Solenoid Terminals
Courtesy of Mitsubishi Motor Sales of America

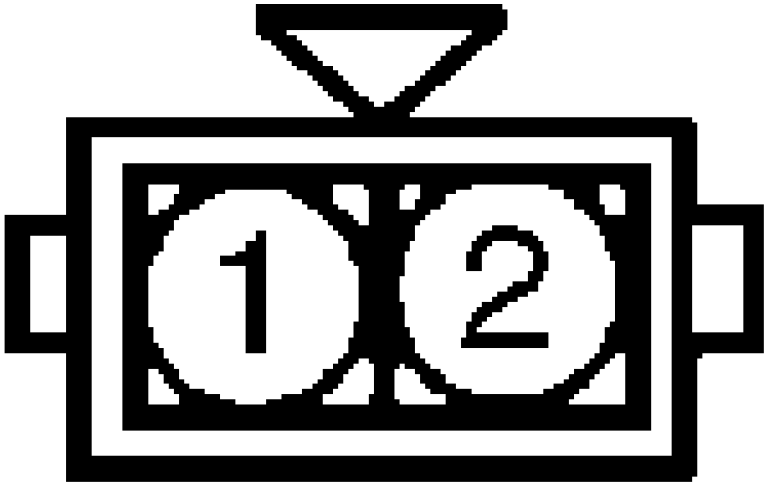

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Fig. 10: Fuel Injector Terminals
Courtesy of Mitsubishi Motor Sales of America

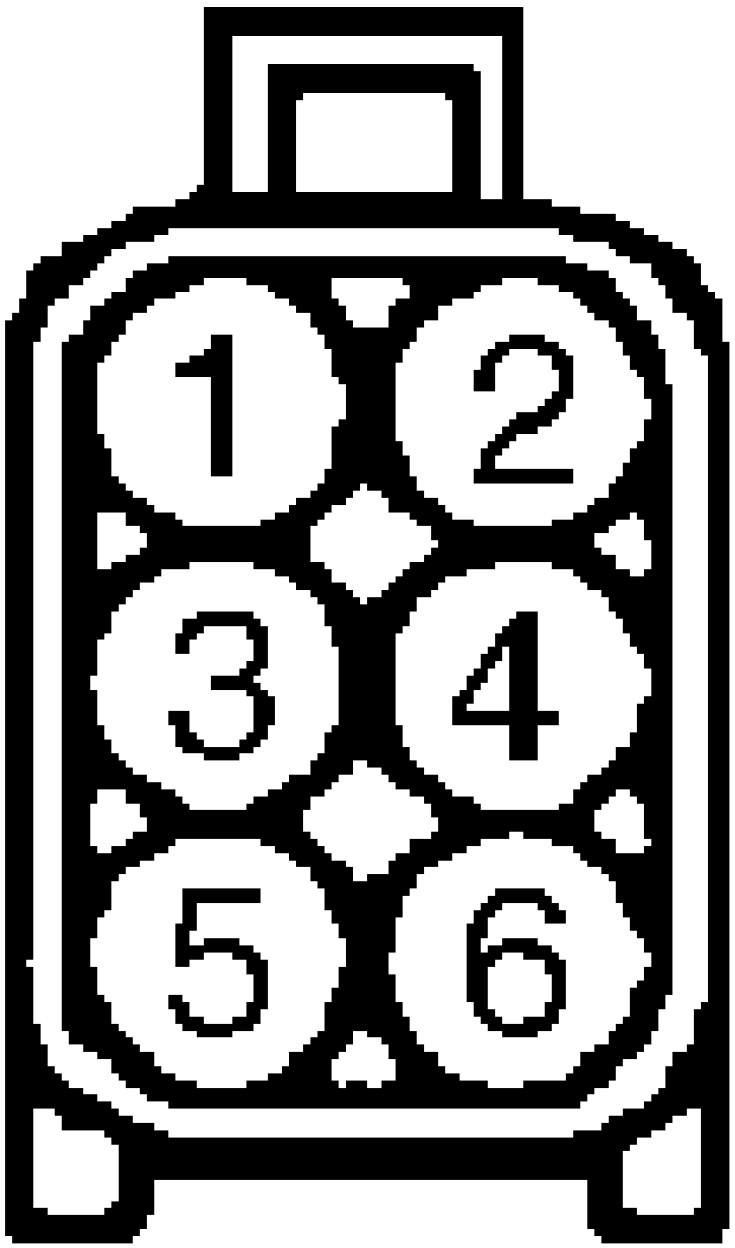

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Fig. 11: Fuel Pump Terminals (Eclipse 2.0L Turbo-AWD)
Courtesy of Mitsubishi Motor Sales of America

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Fig. 12: Fuel Pump Terminals (All Other Models)
Courtesy of Mitsubishi Motor Sales of America

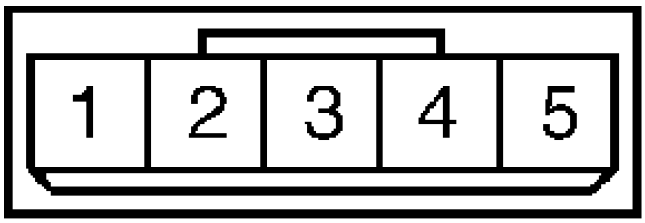

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Fig. 13: Fuel Pump Control/Relay Module Terminals
Courtesy of Mitsubishi Motor Sales of America

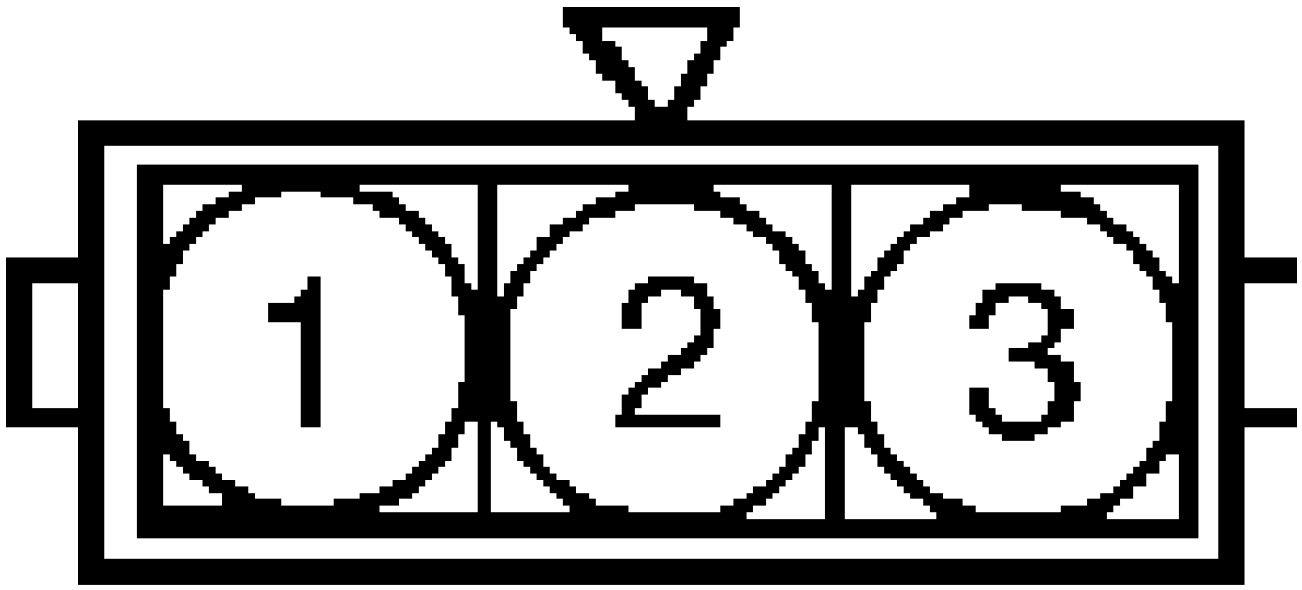

Fig. 14: FTDP Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

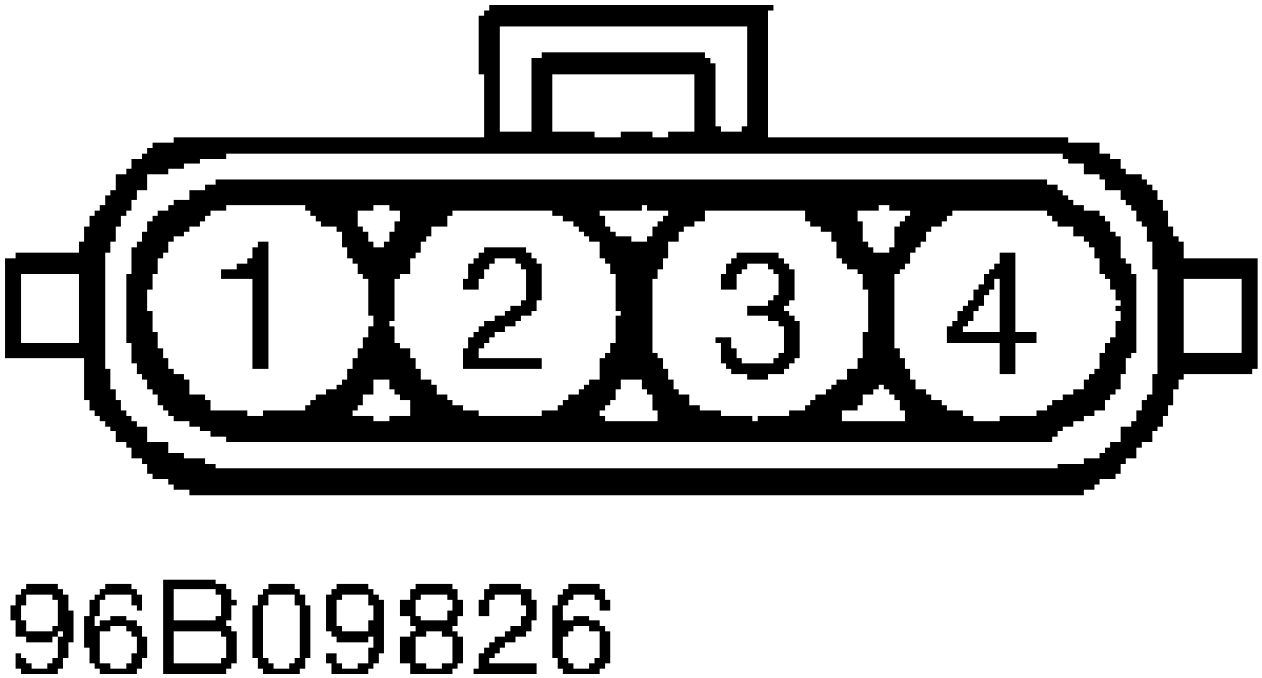

Fig. 15: Generator Field Terminals
Courtesy of Mitsubishi Motor Sales of America

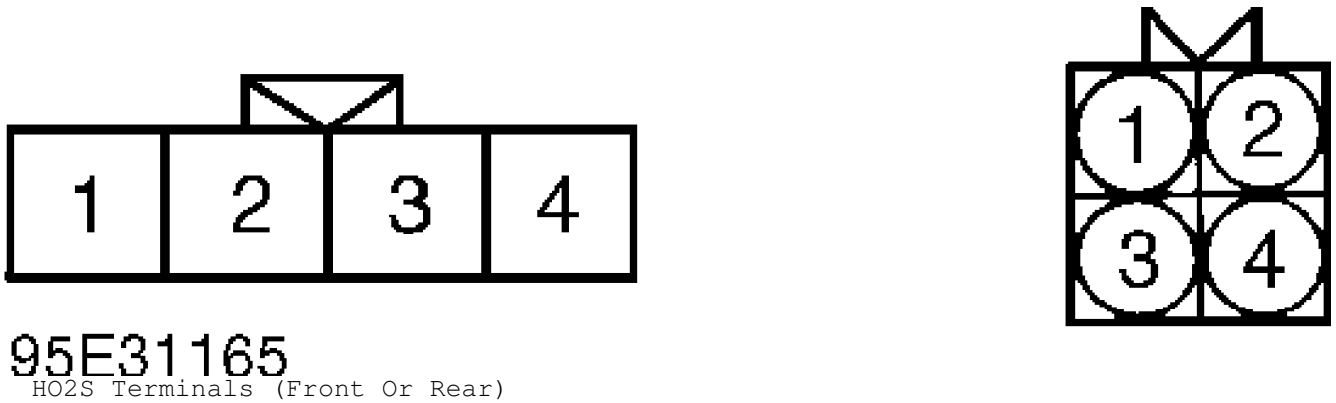

Fig. 16: HO2S Terminals (Front Or Rear)
Courtesy of Mitsubishi Motor Sales of America

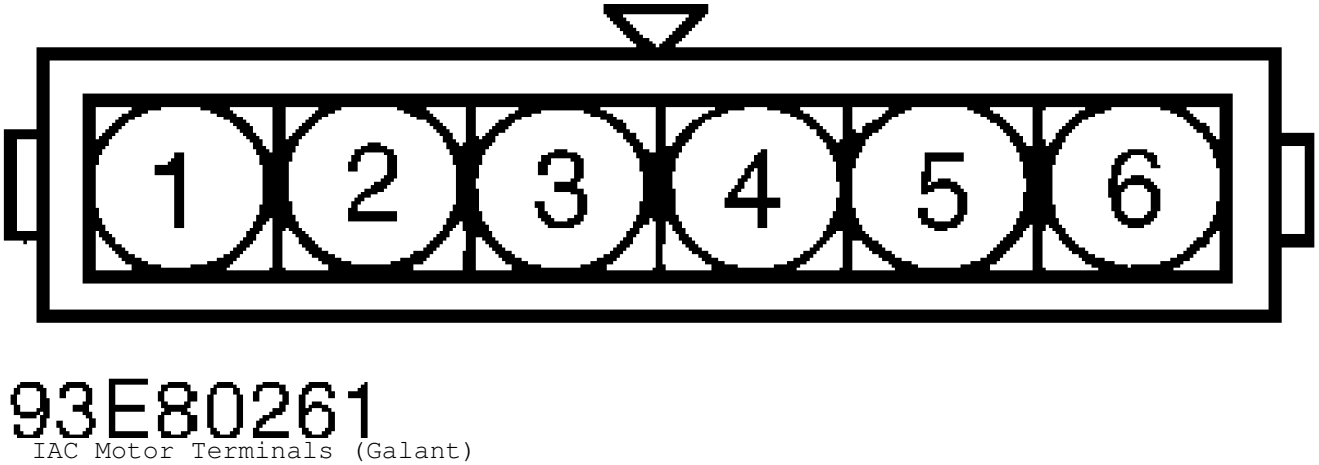

Fig. 17: IAC Motor Terminals (Galant)
Courtesy of Mitsubishi Motor Sales of America

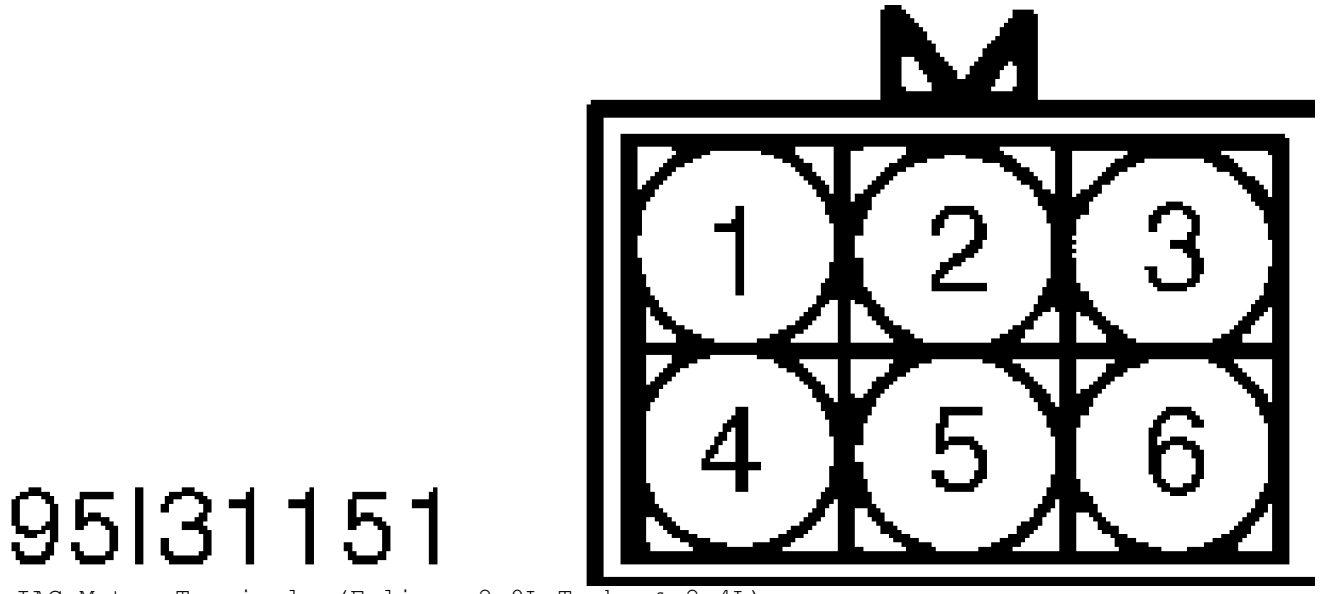

Fig. 18: IAC Motor Terminals (Eclipse 2.0L Turbo & 2.4L)
Courtesy of Mitsubishi Motor Sales of America

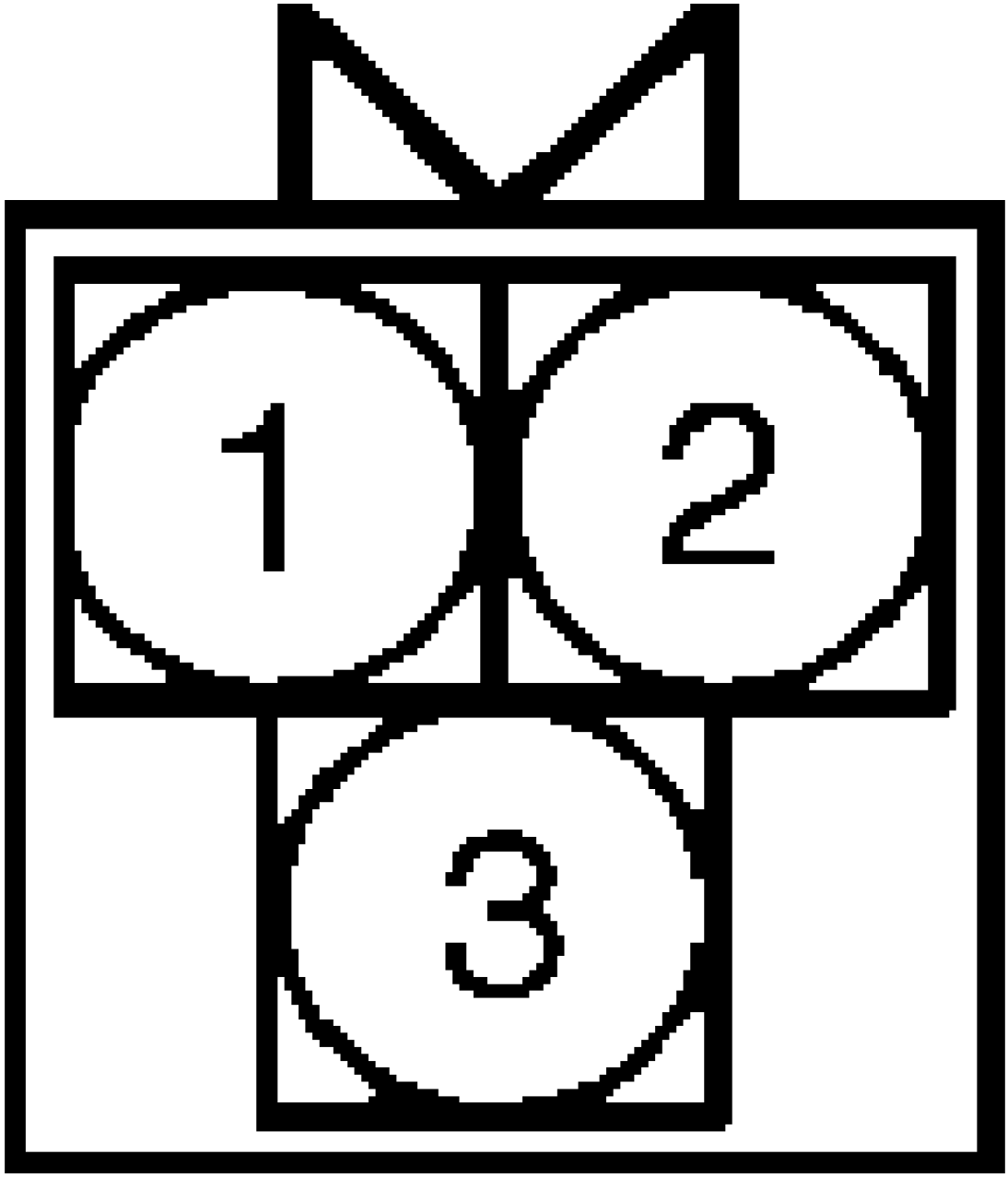

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Fig. 19: Ignition Coil Terminals
Courtesy of Mitsubishi Motor Sales of America

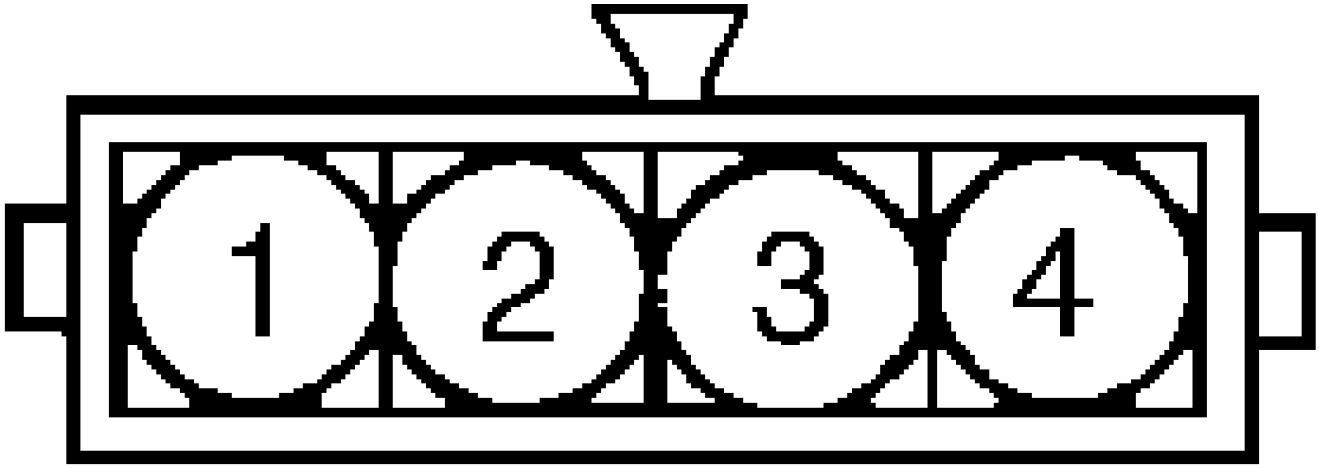


Fig. 20: Ignition Failure Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

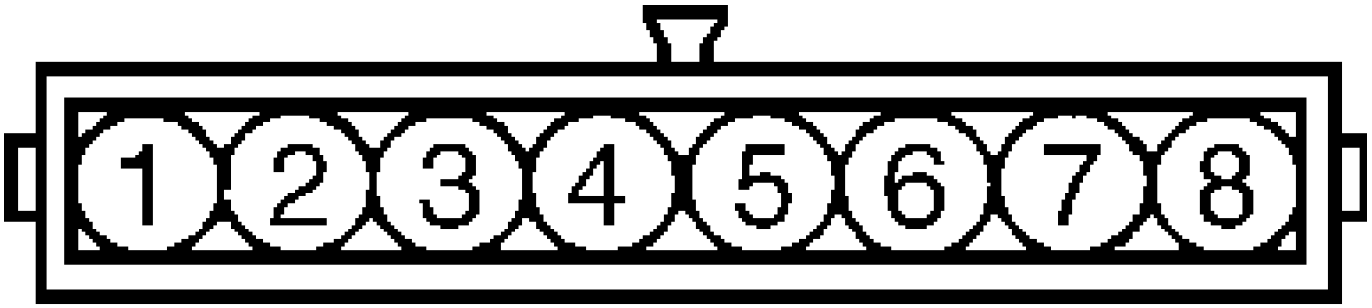


Fig. 21: Ignition Coil Terminals (Eclipse 2.0L Turbo & 2.4L)
Courtesy of Mitsubishi Motor Sales of America

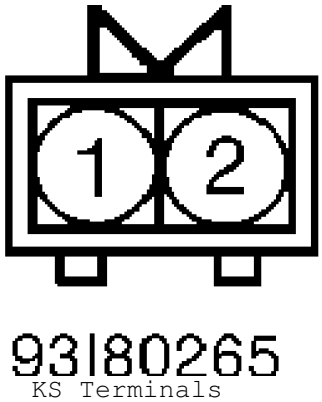


Fig. 22: KS Terminals
Courtesy of Mitsubishi Motor Sales of America

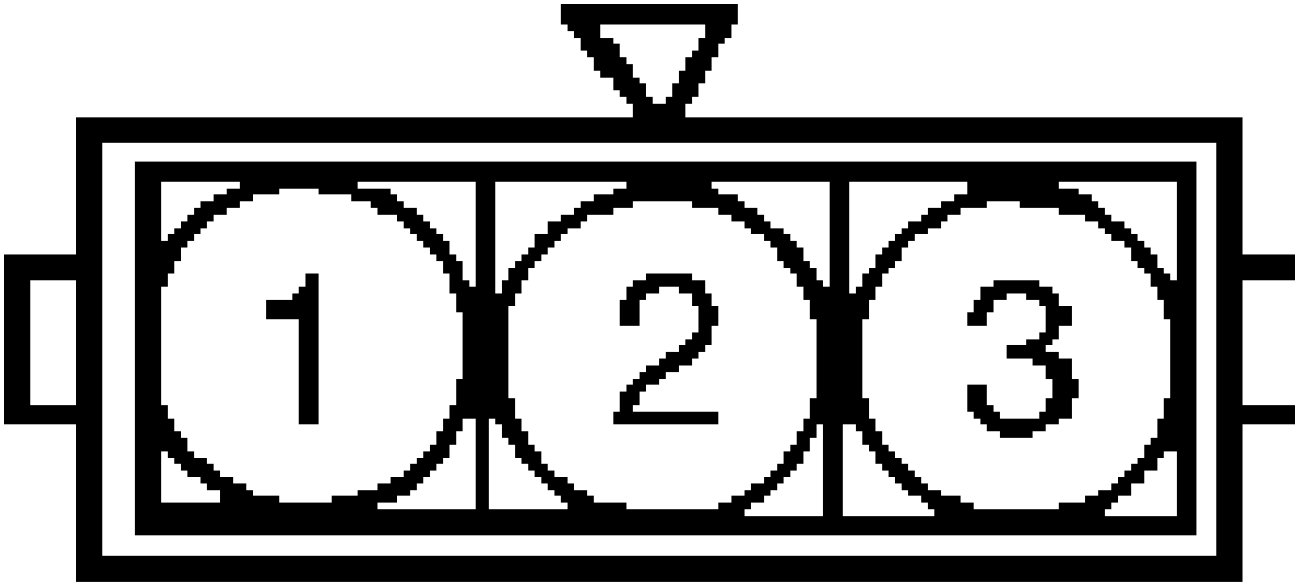


Fig. 23: MDP Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

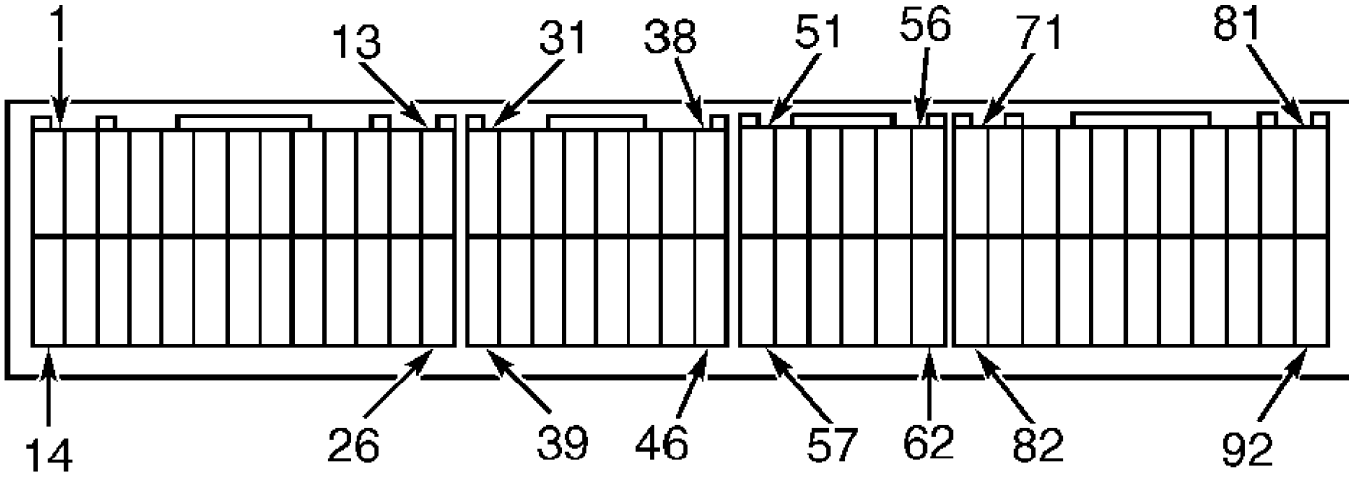


Fig. 24: PCM Terminals (Eclipse 2.0L Turbo & 2.4L)
Courtesy of Mitsubishi Motor Sales of America

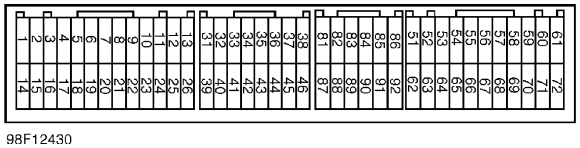
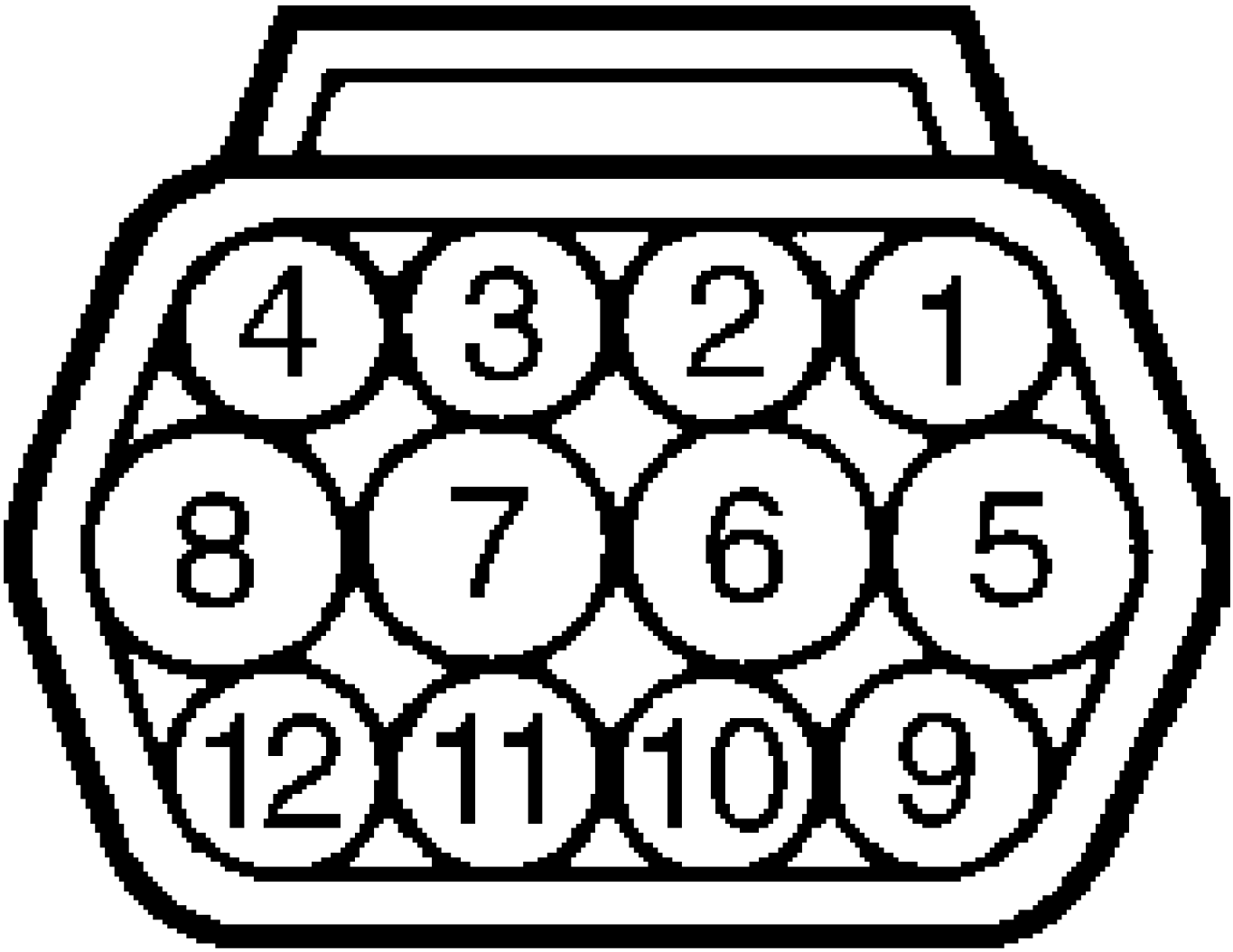
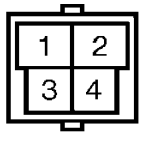


Fig. 25: PCM Terminals (Galant)
Courtesy of Mitsubishi Motor Sales of America



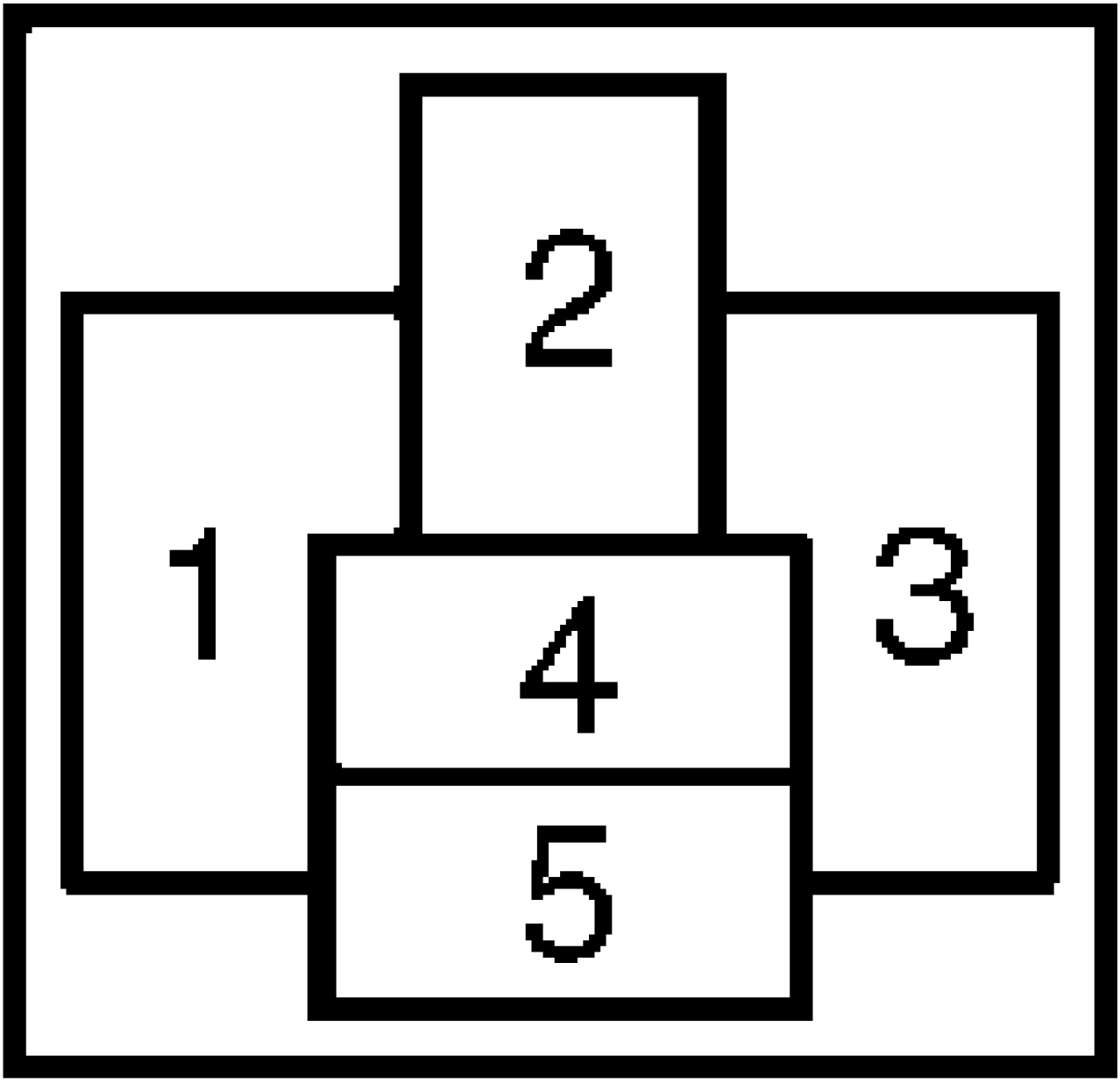
95F31166

Fig. 26: PNP Switch Terminals
Courtesy of Mitsubishi Motor Sales of America



98I12433

Fig. 27: Starter Relay Terminals (Galant)
Courtesy of Mitsubishi Motor Sales of America



98J12434

Fig. 28: Starter Relay Terminals (Eclipse 2.0L Turbo & 2.4L)
Courtesy of Mitsubishi Motor Sales of America

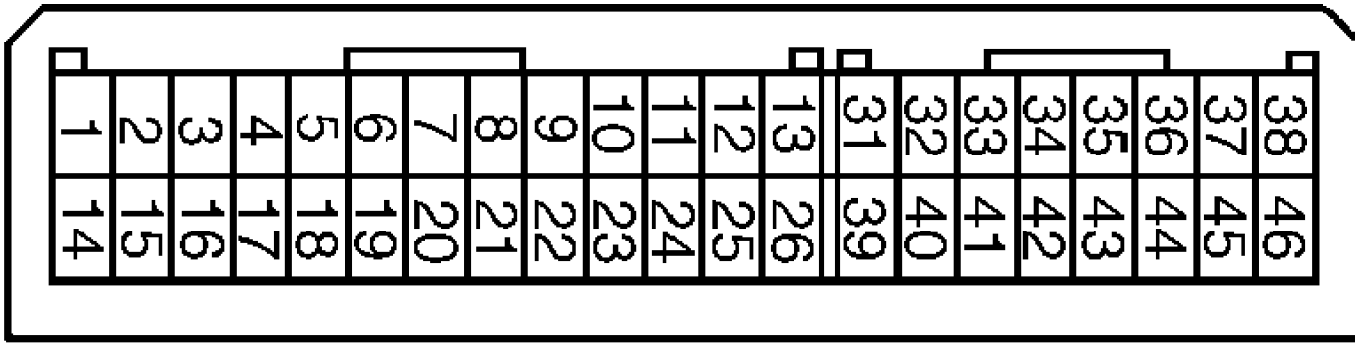


Fig. 29: TCM Terminals
Courtesy of Mitsubishi Motor Sales of America

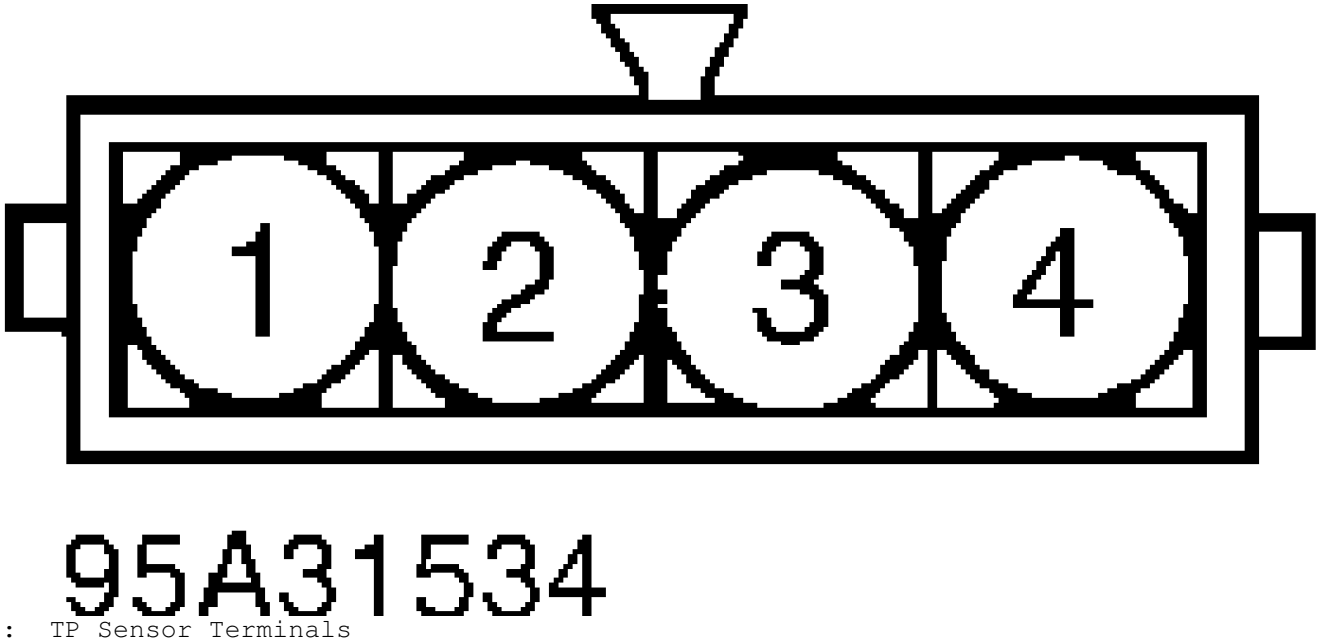


Fig. 30: TP Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

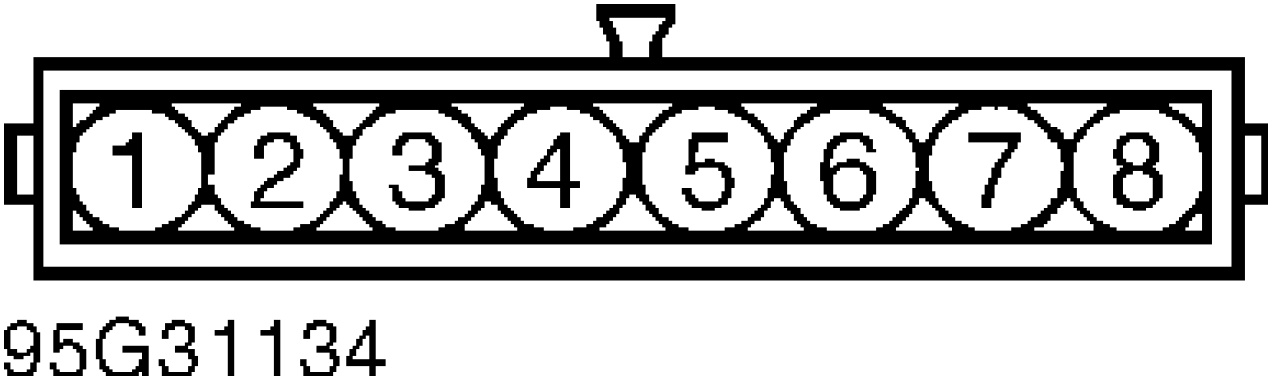


Fig. 31: VAF Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

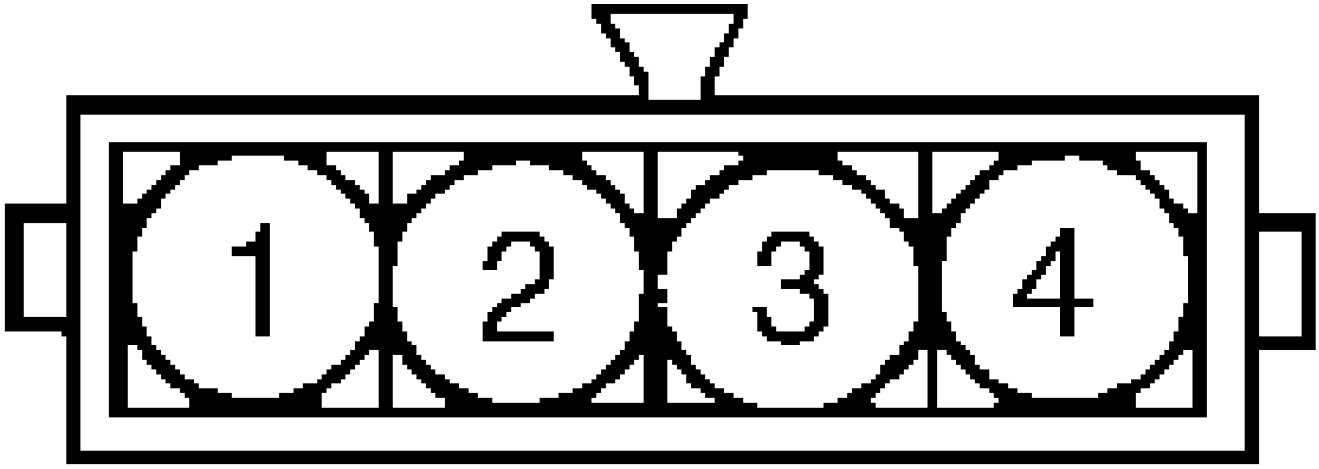


Fig. 32: VIC Valve Position Sensor Terminals
Courtesy of Mitsubishi Motor Sales of America

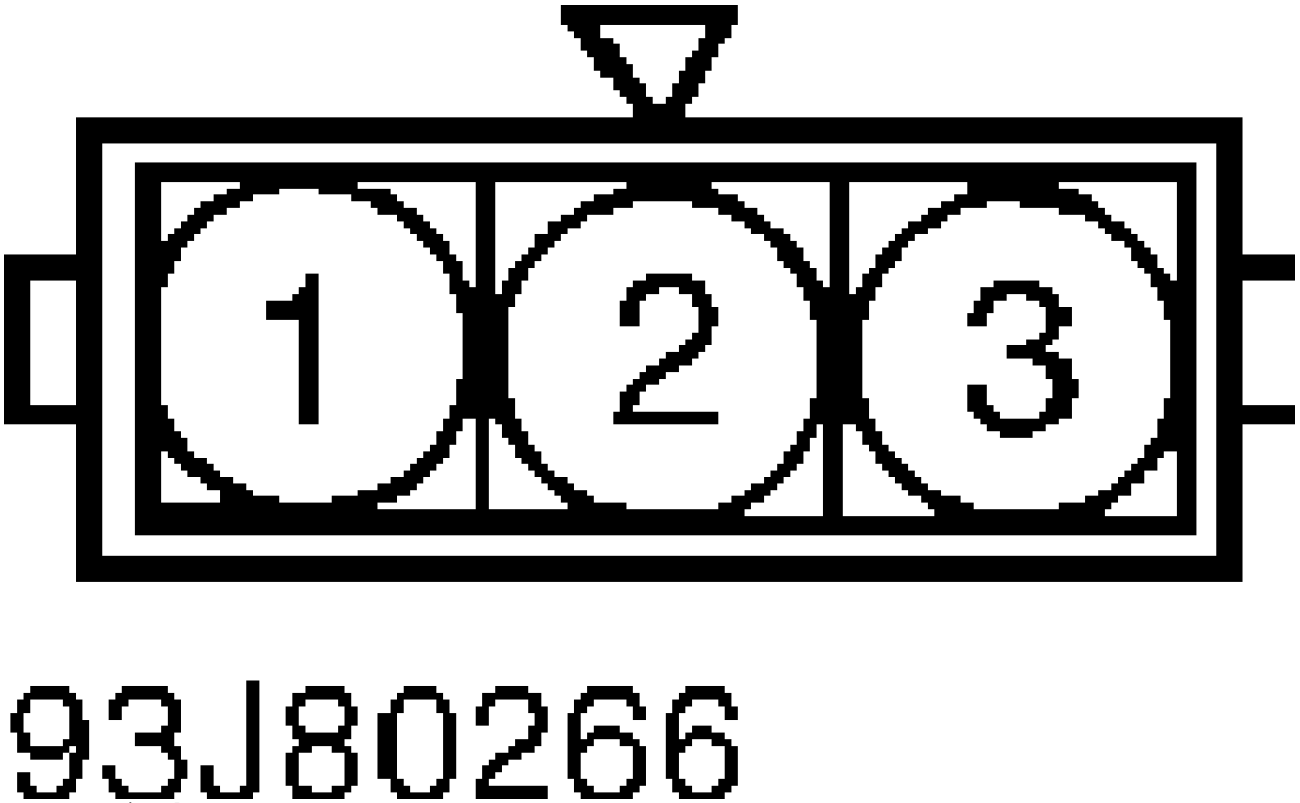


Fig. 33: VSS Terminals
Courtesy of Mitsubishi Motor Sales of America

CIRCUIT TESTS

CAUTION: Ensure ignition switch is in OFF position when performing

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

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.

NOTE: For component locations, see N - REMOVE/INSTALL/OVERHAUL article.

Multi-Use Tester II (MUT II) scan tool has 2 modes of operation; generic scan tool mode and MUT II mode. Perform all Diagnostic Trouble Code (DTC) tests using generic scan tool mode, unless stated otherwise in test procedures. All DTC tests are listed using generic scan tool DTCs.

Using scan tool, display and record DTCs. See ENTERING ON-BOARD DIAGNOSTICS under SELF-DIAGNOSTIC SYSTEM. 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.

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 the 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.

SCAN TOOL WILL NOT COMMUNICATE

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

No Communication With All Systems

1) Check voltage between ground and DLC terminal No. 16. If battery voltage does not exist, check connectors and wiring harness between DLC and power supply. If battery voltage exists, go to next step.

2) Check continuity between ground and DLC terminal No. 4, and between ground and terminal No. 5. If continuity exists, replace scan tool. If continuity does not exist, check wiring harness between ground and DLC.

No Communication With PCM

1) Check connectors and wiring harness between PCM and DLC, and between PCM and power supply. If wiring and connectors are okay, check MFI relay. See RELAYS in I - SYSTEM/COMPONENT TESTS article. If MFI relay is okay, go to next step.

2) Remove MFI relay. Check voltage between ground and MFI relay connector terminal No. 3. If battery voltage exists, go to next

step. If battery voltage does not exist, check wiring harness between MFI relay and battery.

3) On Galant, go to next step. On Eclipse, check voltage between ground and MFI relay connector terminal No. 4. If battery voltage exists, go to step 5). If battery voltage does not exist, check wiring harness between MFI relay and battery.

4) Turn ignition on. Check voltage between ground and MFI relay connector terminal No. 4. If battery voltage exists, go to next step. If battery voltage does not exist, check connectors and wiring harness between ignition switch and MFI relay. If connectors and wiring are okay, check ignition switch.

5) On all models, disconnect PCM connector. On 2.4L engine, go to next step. Turn ignition on. Check voltage between ground and PCM connector terminal No. 82. If battery voltage exists, go to next step. If battery voltage does not exist, check junction connector between MFI relay connector and PCM and wiring harness between ignition switch connector and PCM. If wiring and connectors are okay, check ignition switch.

6) On Galant, go to next step. On Eclipse, check voltage between ground and PCM connector terminal No. 38. If battery voltage exists, go to next step. If battery voltage does not exist, check connectors and wiring harness between PCM and MFI relay.

7) On all models, turn ignition on. Ground PCM terminal No. 38. Check voltage between ground and PCM connector terminals No. 12 and 25. If battery voltage exists, go to next step. If battery voltage does not exist, check MFI relay connector and PCM and wiring harness between MFI relay connector and PCM.

8) Check continuity between ground and PCM connector terminals No. 13 and 26. If continuity exists, go to next step. If continuity does not exist, check wiring harness between ground and PCM.

9) Check voltage between ground and PCM connector terminal No. 80 on Eclipse, or No. 60 on Galant. If battery voltage exists, check PCM connector. If PCM connector is okay, replace PCM. If battery voltage does not exist, check wiring harness between PCM and battery.

MALFUNCTION INDICATOR LIGHT (MIL)

MIL Does Not Come On

1) Using scan tool in MUT II mode, read SERVICE DATA No. 16 (PCM power supply voltage). If battery voltage exists, go to step 8). If battery voltage does not exist, go to next step.

2) On Galant, go to next step. On Eclipse, Check MFI relay. See RELAYS in I - SYSTEM/COMPONENT TESTS article. If MFI relay is okay, remove MFI relay. Check voltage between ground and MFI relay connector terminals No.3 and 4. If battery voltage exists, go to next step. If battery voltage does not exist, check wiring harness between MFI relay and battery.

3) On all models, disconnect PCM connector. On 2.4L engine, go to next step. Turn ignition on. Check voltage between ground and PCM connector terminal No. 82. If battery voltage exists, go to next step. If battery voltage does not exist, check junction connector between MFI relay connector and PCM and wiring harness between ignition switch connector and PCM. If wiring and connectors are okay, check ignition switch.

4) On Galant, go to next step. On Eclipse, check voltage between ground and PCM connector terminal No. 38. If battery voltage exists, go to next step. If battery voltage does not exist, check connectors and wiring harness between PCM and MFI relay.

5) On all models, turn ignition on. Connect a jumper wire between ground and PCM connector terminal No. 38. Check voltage between ground and PCM connector terminals No. 12 and 25. If battery voltage exists, go to next step. If battery voltage does not exist,

check MFI relay connector and PCM and wiring harness between MFI relay connector and PCM.

6) Check continuity between ground and PCM connector terminals No. 13 and 26. If continuity exists, go to next step. If continuity does not exist, check wiring harness between ground and PCM.

7) Check voltage between ground and PCM connector terminal No. 80 on Eclipse, or No. 60 on Galant. If battery voltage exists, check PCM connector. If PCM connector is okay, replace PCM. If battery voltage does not exist, check wiring harness between PCM and battery.

8) Turn ignition off. Disconnect PCM connector. Connect jumper wire between ground and PCM connector terminal No. 36. Turn ignition on. If MIL comes on, check PCM connector. If PCM connector is okay, replace PCM. If MIL does not come on, go to next step.

9) Check for open bulb. If bulb is okay, disconnect combination meter connector C06 on Eclipse, or D02 on Galant. Turn ignition on. Check voltage between ground and combination meter connector C06 terminal No. 10, or D02 terminal No. 24. If battery voltage exists, check junction connectors and wiring harness between combination meter connector and PCM. If battery voltage does not exist, check power supply circuit to MIL.

Malfunction Indicator Light (MIL) Stays On

1) Using scan tool, check for stored DTCs. See ENTERING ON-BOARD DIAGNOSTICS under SELF-DIAGNOSTIC SYSTEM. If no DTCs are displayed, go to next step. If DTCs are displayed, record all DTCs and go to appropriate test(s) under CIRCUIT TESTS.

2) Disconnect PCM connector. Disconnect combination meter connector C04 on Eclipse or D02 on Galant. Check continuity between ground and combination meter connector C04 terminal No. 51, or D02 terminal No. 28. If continuity exists, check wiring harness between combination meter connector and PCM. If continuity does not exist, replace PCM.

DIAGNOSTIC TESTS

DTC P0100: VOLUME AIRFLOW (VAF) CIRCUIT MALFUNCTION

1) Install Test Harness MB991348 between VAF sensor harness connector and sensor. Start engine and allow it to idle. Check voltage between ground and VAF sensor connector terminal No. 3. If voltage is 2.2-3.2 volts, go to next step. If voltage is not as specified, go to step 3).

2) Check voltage between ground and VAF sensor connector terminal No. 7. Voltage should be 0-1 volt at idle and 6-9 volts at 2000 RPM. If voltage is as specified, replace PCM. If voltage is not as specified, go to step 6).

3) Disconnect VAF sensor connector. Turn ignition on. Check voltage between ground and VAF sensor connector terminal No. 4. If battery voltage exists, go to next step. If battery voltage does not exist, check wiring harness between VAF sensor, fuel pump relay connector and MFI relay connector.

4) Check voltage between ground and VAF sensor connector terminal No. 3. Voltage should be 4.8-5.2 volts. Check continuity between ground and VAF sensor connector terminal No. 5. If voltage is as specified and continuity exists, check VAF sensor connector. If connector is okay, replace VAF sensor. If voltage is not as specified or continuity does not exist, go to next step.

5) Check VAF sensor connector and wiring harness between PCM and VAF sensor connector. If connector and wiring are okay, replace PCM.

6) Turn ignition on. With PCM connector connected, check

voltage between ground and PCM terminal No. 19. If voltage is 6-9 volts, check PCM connector. If PCM connector is okay, replace PCM. If voltage is not as specified, check VAF sensor connector. If VAF sensor connector is okay, replace, VAF sensor.

DTC P0105: BAROMETRIC PRESSURE CIRCUIT MALFUNCTION

1) Barometric pressure sensor is located in Volume Airflow (VAF) sensor. Install Test Harness MB991348 between VAF sensor harness connector and VAF. Check voltage between ground and VAF sensor connector terminal No. 2. Voltage should be 3.7-4.3 volts at 0 ft. (0 m) to 3.2-3.8 volts at 3937 ft. (1200 m). If voltage is as specified, go to next step. If voltage is not as specified, go to step 3).

2) Turn ignition on. With PCM connector connected, check voltage between ground and PCM terminal No. 85 on Eclipse or No. 65 on Galant. Voltage should be 3.7-4.3 volts at 0 ft. (0 m) to 3.2-3.8 volts at 3937 ft. (1200 m). If voltage is as specified, check PCM connector. If PCM connector is okay, replace PCM. If voltage is not as specified, check wiring harness between PCM and VAF sensor.

3) Disconnect VAF sensor connector. Turn ignition on. Check voltage between ground and VAF sensor connector terminal No. 1. Voltage should be 4.8-5.2 volts. Turn ignition off. Check continuity between ground and VAF sensor connector terminal No. 1. If voltage is as specified and continuity exists, go to next step. If voltage is not as specified or continuity does not exist, go to step 5).

4) Check VAF sensor connector and wiring harness between PCM and VAF sensor. If connector and wiring are okay, replace VAF sensor.

5) Check PCM connector and wiring harness between PCM and VAF sensor connector. If connector and wiring are okay, replace PCM.

DTC P0110: INTAKE AIR TEMPERATURE (IAT) CIRCUIT MALFUNCTION

1) Intake Air Temperature (IAT) sensor is located in Volume Airflow (VAF) sensor. Disconnect VAF sensor connector. Check resistance between VAF sensor terminals No. 5 and 6. Resistance should be 5.3-6.7 k/ohms at 32°F (0°C), 2.3-3.0 k/ohms at 68°F (20°C) and 0.30-0.42 k/ohms at 176°F (80°C). Check resistance while heating sensor with hair dryer. If resistance remains unchanged or increases as temperature is increased, replace VAF sensor. If resistance decreases, go to next step.

2) Disconnect VAF sensor connector. Turn ignition on. Check voltage between ground and VAF sensor connector terminal No. 6. Voltage should be 4.5-4.9 volts. Check continuity between ground and VAF sensor connector terminal No. 5. If voltage is not as specified or continuity does not exist, go to next step. If voltage is as specified and continuity exists, check VAF sensor connector. If connector is okay, replace PCM.

3) Check PCM connector and wiring harness between PCM and VAF sensor connector. If connector and wiring are okay, replace PCM.

DTC P0115: ENGINE COOLANT TEMPERATURE (ECT) CIRCUIT MALFUNCTION

1) Remove ECT sensor. Immerse ECT sensor probe in hot water and check resistance between ECT sensor terminals, while heating ECT sensor. Resistance should be 5.1-6.5 k/ohms at 32°F (0°C), 2.1-2.7 k/ohms at 68°F (20°C), 0.9-1.3 k/ohms at 104°F (40°C) and 0.26-0.36 k/ohms at 176°F (80°C). If resistance is as specified, go to next step. If resistance is not as specified, replace ECT sensor.

2) Turn ignition on. Check voltage between ground and ECT sensor connector terminal No. 1. Voltage should be 4.5-4.9 volts. Check for continuity between ground and ECT sensor connector terminal No. 2. If voltage is not as specified or continuity to ground does not

exist at terminal No. 2, go to next step. If voltage is as specified and continuity exists, check ECT sensor connector. If ECT sensor connector is okay, replace PCM.

3) Check PCM connector and wiring harness between PCM and ECT sensor connector. If connector and wiring are okay, replace PCM.

DTC P0120: THROTTLE POSITION (TP) CIRCUIT MALFUNCTION

1) Using scan tool in MUT II mode, read SERVICE DATA No. 26 (closed throttle position switch). Scan tool display should switch between ON (throttle at idle) and OFF (throttle open slightly). If display is as specified, go to step 3). If display is not as specified, go to next step.

2) Disconnect TP sensor connector. Check continuity between TP sensor terminals No. 3 and 4. Continuity should exist with throttle at idle. Continuity should not exist when throttle is opened. If continuity is as specified, go to next step. If continuity is not as specified, replace TP sensor.

3) Disconnect TP sensor connector. Check resistance between ground and TP sensor terminals No. 1 and 4. Resistance should be 3.5-6.5 k/ohms. Check resistance between ground and TP sensor terminals No. 2 and 4. Slowly open and close throttle. If resistance is not as specified or does not change smoothly in proportion to throttle opening, replace TP sensor. If resistance is as specified, go to next step.

4) Turn ignition on. Check voltage between ground and TP sensor harness connector terminal No. 1. Voltage should be 4.8-5.2 volts. Check for continuity between ground and TP sensor connector terminal No. 4. If voltage is as specified and continuity exists, go to next step. If voltage is not as specified or continuity does not exist, go to step 7).

5) Turn ignition off. Connect TP sensor connector. Turn ignition on. With PCM connector connected, check voltage (backprobe) between ground and PCM connector terminal No. 84 on Eclipse, or No. 64 on Galant. Voltage should be 0.3-1.0 volt with throttle at idle, and 4.5-5.5 volts with throttle full open. Go to next step.

6) If voltage is not as specified, check TP sensor connector and wiring harness between PCM and TP sensor connector. If voltage is as specified, check PCM connector. If PCM connector is okay, replace PCM.

7) Check PCM connector and wiring harness between PCM and TP sensor connector. If connector and wiring are okay, replace PCM.

DTC P0125: EXCESSIVE TIME TO ENTER CLOSED LOOP FUEL CONTROL

1) Disconnect front Heated Oxygen Sensor (HO2S) connector. Connect Test Harness (MD998464) to front HO2S. Check continuity between ground and test harness terminals No. 1 (Red clip) and No. 3 (Blue clip) on Eclipse and Galant (California), or terminals No. 2 (Red clip) and No. 4 (Blue clip) on Galant (Federal). If continuity exists, go to next step. If continuity does not exist, replace front HO2S.

2) Start and warm engine until engine coolant temperature is 176°F (80°C) or more. Connect jumper wires between battery positive terminal and test harness terminal No. 1 (Red clip) and between battery ground and terminal No. 3 (Blue clip). Connect DVOM between test harness terminals No. 2 (Black clip) and No. 4 (White clip) on Eclipse and Galant (California), or terminals No. 1 (Black clip) and No. 3 (White clip) on Galant (Federal). Check front HO2S output voltage while repeatedly racing engine. If voltage is 0.6-1.0 volt, go to next step. If voltage is not as specified, replace front HO2S.

3) Check connectors and wiring harness between front HO2S and PCM. If wiring and connectors are okay, Go to next step.

4) Disconnect fuel injector connector. Check resistance across fuel injector terminals. Resistance at 68°F (20°C) should be 2-3 ohms on turbo engine, or 13-16 ohms on 2.4L engine. If resistance is as specified, go to next step. If resistance is not as specified, replace the fuel injector.

5) Using stethoscope, check injector operating sound during cranking and at idle. Check that frequency of operating sound increases as engine RPM increases. If injectors are okay, go to next step. If no operating sound is heard from an injector, check injector drive circuit. If drive circuit is okay, injector or PCM is suspect.

6) Check fuel injector connectors, PCM connector and wiring harness between PCM and injector connectors. If wiring and connectors are okay, perform fuel pressure test. See FUEL SYSTEM in F - BASIC TESTING article. If fuel pressure is okay, go to next step.

7) Check for air being drawn into air intake or exhaust system. Check for exhaust leaks at HO2S fittings, exhaust manifold or front pipes. Check for fuel filter and/or fuel line blockage. Check fuel pump for poor fuel delivery. If no problems are found, replace PCM.

DTC P0130: FRONT HEATED OXYGEN SENSOR (HO2S) CIRCUIT

MALFUNCTION

1) Disconnect front Heated Oxygen Sensor (HO2S) connector. Connect Test Harness (MD998464) to front HO2S. Check continuity between ground and test harness terminals No. 1 (Red clip) and No. 3 (Blue clip) on Eclipse and Galant (California), or terminals No. 2 (Red clip) and No. 4 (Blue clip) on Galant (Federal). If continuity exists, go to next step. If continuity does not exist, replace front HO2S.

2) Start and warm engine until engine coolant temperature is 176°F (80°C) or more. Connect jumper wires between battery voltage and test harness terminal No. 1 (Red clip) and between ground and terminal No. 3 (Blue clip). Connect DVOM between test harness terminals No. 2 (Black clip) and No. 4 (White clip) on Eclipse and Galant (California), or terminals No. 1 (Black clip) and No. 3 (White clip) on Galant (Federal). Check front HO2S output voltage while repeatedly racing engine. If voltage is 0.6-1.0 volt, go to next step. If voltage is not as specified, replace front HO2S.

3) Check front HO2S connector, PCM connector and wiring harness between front HO2S connector and PCM. If wiring and connectors are okay, replace front HO2S. Clear DTCs. Road test vehicle to verify repairs. If DTC P0130 resets, replace PCM.

DTC P0135: FRONT HEATED OXYGEN SENSOR (HO2S) HEATER CIRCUIT

MALFUNCTION

1) Disconnect front Heated Oxygen Sensor (HO2S) connector. Connect Test Harness (MD998464) to front HO2S. Check continuity between ground and test harness terminals No. 1 (Red clip) and No. 3 (Blue clip) on Eclipse and Galant (California), or terminals No. 2 (Red clip) and No. 4 (Blue clip) on Galant (Federal). If continuity exists, go to next step. If continuity does not exist, replace front HO2S.

2) Start and warm engine until engine coolant temperature is 176°F (80°C) or more. Connect jumper wires between battery voltage and test harness terminal No. 1 (Red clip) and between ground and terminal No. 3 (Blue clip). Connect DVOM between test harness terminals No. 2 (Black clip) and No. 4 (White clip) on Eclipse and Galant (California), or terminals No. 1 (Black clip) and No. 3 (White clip) on Galant (Federal). Check front HO2S output voltage while repeatedly racing engine. If voltage is 0.6-1.0 volt, go to next step. If voltage is not as specified, replace front HO2S.

3) Disconnect test harness. Turn ignition on. Check voltage between rear HO2S connector terminal No. 1 on Eclipse 2.0L and Galant (California), or No. 2 on Eclipse 2.4L and Galant (Federal). If battery voltage exists, go to next step. If battery voltage does not exist, check PCM connector and wiring harness between front HO2S connector and PCM.

4) Disconnect PCM connector. Turn ignition on. Check voltage between ground and PCM connector terminal No. 60 on Eclipse, or No. 90 on Galant. If battery voltage does not exist, check connectors and wiring harness between front HO2S connector and PCM. If battery voltage exists, check PCM connector. If PCM connector is okay, replace PCM.

DTC P0136: REAR HEATED OXYGEN SENSOR (HO2S) CIRCUIT MALFUNCTION

1) Disconnect rear HO2S connector. Check resistance between rear HO2S terminals No. 3 and 4. Resistance at 68°F (20°C) should be about 12 ohms on Eclipse, or 7-40 ohms on Galant. If resistance is as specified, go to next step. If resistance is not as specified, replace rear HO2S.

2) Check rear HO2S connector, PCM connector and wiring harness between rear HO2S connector and PCM. If wiring and connectors are okay, replace rear HO2S. Clear DTCs. Road test vehicle to verify repairs. If DTC P0136 resets, replace PCM.

DTC P0141: REAR HEATED OXYGEN SENSOR (HO2S) HEATER CIRCUIT MALFUNCTION

1) Disconnect rear HO2S connector. Check resistance between rear HO2S terminals No. 3 and 4. Resistance at 68°F (20°C) should be about 12 ohms on Eclipse, or 7-40 ohms on Galant. If resistance is as specified, go to next step. If resistance is not as specified, replace rear HO2S.

2) Turn ignition on. Check voltage between ground and rear HO2S connector terminal No. 3. If battery voltage exists, go to next step. If battery voltage does not exist, check wiring harness between rear HO2S connector and MFI relay connector.

3) Turn ignition off. Disconnect PCM connector. Turn ignition on. Check voltage between ground and PCM connector terminal No. 54 on Eclipse, or No. 84 on Galant. If battery voltage exists, check PCM connector. If PCM connector is okay, replace PCM. If battery voltage does not exist, check rear HO2S connector and wiring harness between PCM and rear HO2S connector.

DTC P0170: FUEL TRIM MALFUNCTION

1) Using scan tool in MUT II mode, read SERVICE DATA No. 13 (intake air temperature). If temperature displayed on scan tool is equal to actual air temperature as measured with a thermometer, go to next step. If temperature displayed on scan tool is not equal to actual air temperature, check air temperature circuit. See DTC P0110: INTAKE AIR TEMPERATURE (IAT) CIRCUIT MALFUNCTION.

2) Using scan tool in MUT II mode, read SERVICE DATA No. 21 (engine coolant temperature). If temperature displayed on scan tool is equal to actual engine coolant temperature as measured with a thermometer, go to next step. If temperature displayed on scan tool is not equal to actual coolant temperature, check engine coolant temperature circuit. See DTC P0115: ENGINE COOLANT TEMPERATURE (ECT) CIRCUIT MALFUNCTION.

3) Using scan tool in MUT II mode, read SERVICE DATA No. 25 (barometric pressure). Reading should be 101 kPa at 0 ft. (0 m), 95 kPa at 1969 ft. (600 m), 88 kPa at 3937 ft. (1200 m) or 81 kPa at 5906

ft. (1800 m). If scan tool reading is as specified, go to next step. If scan tool reading is not as specified, check barometric pressure circuit. See DTC P0105: BAROMETRIC PRESSURE CIRCUIT MALFUNCTION.

4) Disconnect fuel injector connector. Check resistance across fuel injector terminals. Resistance at 68°F (20°C) should be 2-3 ohms on turbo engine, or 13-16 ohms on 2.4L engine. If resistance is as specified, go to next step. If resistance is not as specified, replace the fuel injector.

5) Using stethoscope, check injector operating sound during cranking and at idle. Check that frequency of operating sound increases as engine RPM increases. If injectors are okay, go to next step. If no operating sound is heard from an injector, check injector drive circuit. If drive circuit is okay, injector or PCM is suspect.

6) Check fuel injector connectors, PCM connector and wiring harness between PCM and injector connectors. If wiring and connectors are okay, perform fuel pressure test. See FUEL SYSTEM in F - BASIC TESTING article. If fuel pressure is okay, go to next step.

7) Using scan tool in MUT II mode, read SERVICE DATA No. 81 (long-term fuel compensation). If fuel trim is less than zero (during closed loop), go to next step. If fuel trim is more than zero (during closed loop), go to step 9).

8) Using scan tool in MUT II mode, read SERVICE DATA No. 12 (volume airflow). Reading should be from 18-44 Hz at idle to 63-103 Hz at 2500 RPM on 2.4L, or 22-48 Hz at idle to 60-100 Hz at 2500 RPM on turbo engine. Check that frequency (VAF volume) increases as RPM is increased. If scan tool reading is more than specification or does not increase with RPM increase, replace VAF sensor. If scan tool reading is less than or equal to specification, replace PCM.

9) Check air intake system for leaks or obstructions. If air intake system is okay, use scan tool in MUT II mode to read SERVICE DATA No. 12 (volume airflow). Reading should be from 18-44 Hz at idle to 63-103 Hz at 2500 RPM on 2.4L, or 22-48 Hz at idle to 60-100 Hz at 2500 RPM on turbo engine. Check that frequency (VAF volume) increases as RPM is increased. If scan tool reading is less than specification or does not increase with RPM increase, replace VAF sensor. If scan tool reading is more than or equal to specification, go to next step.

10) Check for air being drawn into air intake or exhaust system. check for exhaust leaks at HO2S fittings, exhaust manifold, or front pipes. Check for fuel filter and/or fuel line blockage. Check fuel pump for poor fuel supply. If no problems are found, replace PCM.

DTC P0201-P0204: INJECTORS NO. 1-4 CIRCUIT MALFUNCTION

1) Disconnect fuel injector connector. Check resistance between fuel injector terminals. If resistance at 68°F (20°C) is 13-16 ohms on 2.4L, or 2-3 ohms on turbo engine, go to next step. If resistance is not as specified), replace fuel injector.

2) Using stethoscope, check injector operating sound during cranking or at idle. Check that frequency of operating sound increases as engine RPM increases. If injectors are okay, go to next step. If no operating sound is heard from an injector, check injector drive circuit. If drive circuit is okay, injector or PCM is suspect.

3) Check fuel injector connectors, PCM connector and wiring harness between PCM and injector connectors. If wiring and connectors are okay on 2.4L, go to step 5). On turbo engine, disconnect injector resistor connector. Check resistance across resistor terminals No. 1 and 3, 4 and 3, 5 and 3, and 6 and 3. If resistance is 5.5-6.5 ohms at 68°F (20°C), go to next step. If resistance is not 5.5-6.5 ohms at 68°F (20°C), replace resistor.

4) Turn ignition on. Check voltage between ground and injector resistor connector terminal No. 3. If battery voltage exists, go to next step. If battery voltage does not exist, check wiring harness between MFI relay and resistor connector.

5) On all engines, disconnect fuel injector connectors. Turn ignition on. Check voltage between ground and each injector connector terminal No. 1. If battery voltage exists at all 4 connectors, go to next step. If battery voltage does not exist at any one or all 4 connectors, check connectors and wiring harness between PCM and fuel injector connectors.

6) Connect fuel injector connectors. Disconnect PCM connector. Turn ignition on. Check voltage between ground and PCM connector terminals No. 1, 2, 14 and 15. If battery voltage exists at all 4 terminals, check PCM connector. If PCM connector is okay, replace PCM. If battery voltage does not exist at any one or all 4 terminals, check fuel injector connectors and wiring harness between PCM and injector connector.

DTC P0300: RANDOM MISFIRE DETECTED

1) Connect external tachometer. Using scan tool in MUT II mode, read SERVICE DATA No. 22 (crankshaft position sensor). Check engine RPM during cranking and at idle. If RPM displayed on scan tool and tachometer are equal, go to next step. If RPM displayed on scan tool and tachometer are not equal, go to step 4).

2) Using oscilloscope, perform crankshaft position sensor wave form check. Connect Test Harness (MD998478) between Crankshaft Position (CKP) sensor and harness connector. Connect analyzer special patterns pickup to CKP sensor terminal No. 2. If test harness is not available, connect analyzer special patterns pickup to PCM terminal No. 89 Eclipse or No. 69 on Galant. Go to next step.

3) With engine idle speed stable, compare CKP sensor wave pattern to that of a known-good wave pattern. See Fig. 34. If wave pattern is okay, go to step 5). If wave pattern is not okay, go to next step.

4) Check CKP sensor connector, PCM connector and wiring harness between PCM and CKP sensor connector. Check CKP sensor and sensing plate for proper installation. If wiring, connectors and sensor installation are okay, replace CKP sensor.

5) Start and warm engine. Turn all accessories off. Increase engine speed to 2500 RPM. Using scan tool in MUT II mode, read SERVICE DATA No. 81 (long-term fuel compensation). If fuel trim is-12.5-12.5 percent (during closed loop), go to next step. If fuel trim is not as specified, check fuel trim fault. See DTC P0170: FUEL TRIM MALFUNCTION.

6) Using scan tool in MUT II mode, read SERVICE DATA No. 21 (engine coolant temperature). If temperature displayed on scan tool is equal to actual engine coolant temperature as measured with a thermometer, go to next step. If temperature displayed on scan tool is not equal to actual coolant temperature, check ECT circuit. See DTC P0115: ENGINE COOLANT TEMPERATURE (ECT) CIRCUIT MALFUNCTION.

7) Check ignition coil, spark plugs and spark plug wires. Check for broken timing belt teeth. Check engine compression, and EGR system. See F - BASIC TESTING article.

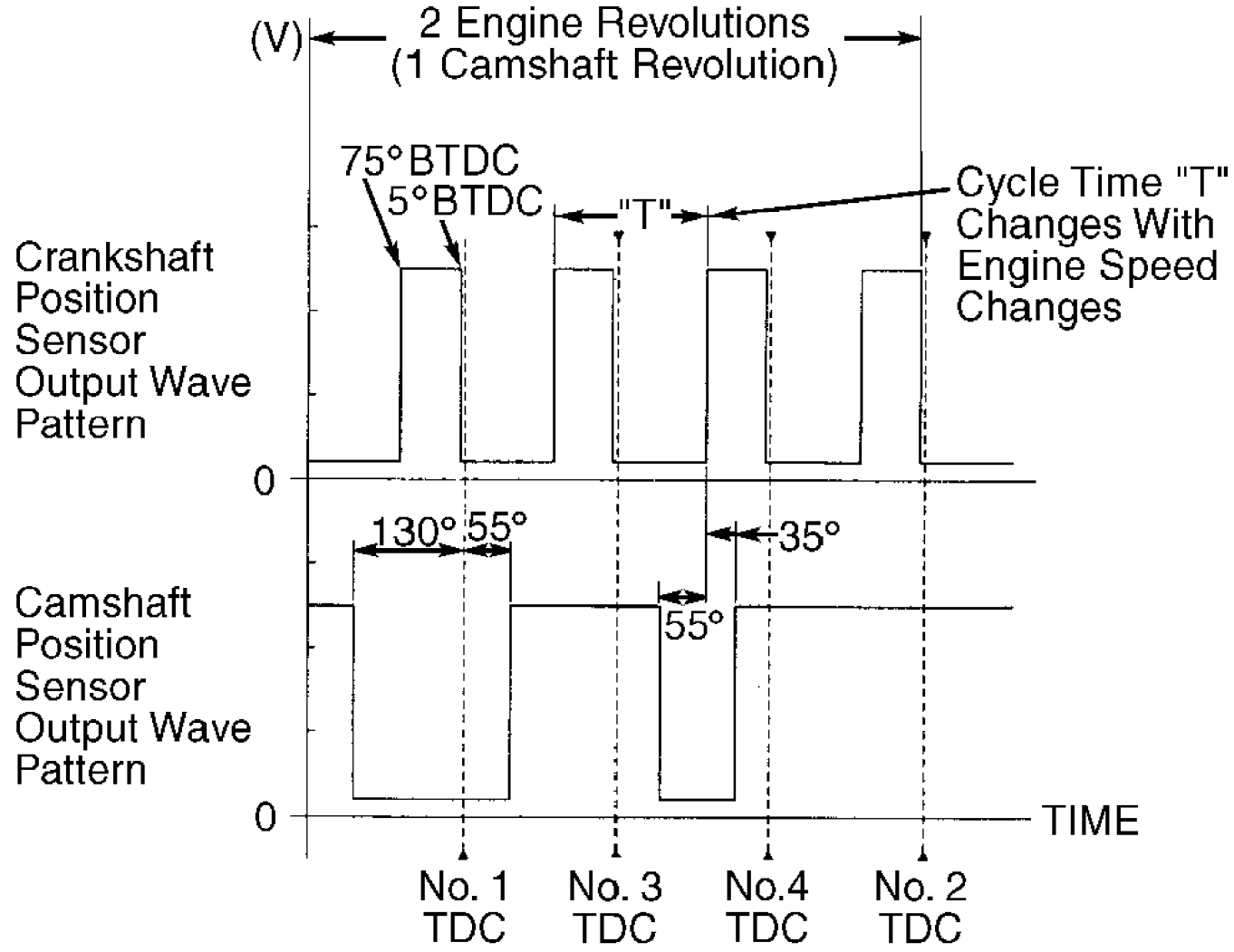


Fig. 34: Identifying Known-Good CMP/CKP Sensor Wave Pattern
Courtesy of Mitsubishi Motor Sales of America

DTC P0301-P0304: CYLINDERS NO. 1-4 MISFIRE DETECTED

1) Disconnect fuel injector connector. Check resistance across fuel injector terminals. If resistance at 68°F (20°C) is 13-16 ohms on 2.4L, or 2-3 ohms on turbo engine, go to next step. If resistance is not as specified, replace fuel injector.

2) Using stethoscope, check injector operating sound during cranking and at idle. Check that frequency of operating sound increases as engine RPM increases. If operating sound is okay, go to next step. If no operating sound is heard from an injector, check injector drive circuit. If drive circuit is okay, injector or PCM is suspect.

3) Check wiring harness between PCM and injector. If wiring harness is okay, go to next step.

4) Check spark plugs and spark plug wires. Check compression pressure. See F - BASIC TESTING article.

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

NOTE: This test applies to Eclipse with 2.0L turbo engine only.

1) Disconnect KS connector. Check continuity between ground and KS connector terminal No. 2. If continuity exists, go to next step. If continuity does not exist, check wiring harness between ground and KS connector.

2) Check KS connector, PCM connector and wiring harness between PCM and KS connector. If wiring and connectors are okay, replace KS. Clear DTCs. Road test vehicle to verify repairs. If DTC P0325 resets, replace PCM.

DTC P0335: CRANKSHAFT POSITION (CKP) SENSOR CIRCUIT MALFUNCTION

1) Connect Test Harness (MD998478) between CKP sensor and harness connector. Check voltage between ground and test harness terminal No. 2 (Black clip). Voltage should be 0.4-4.0 volts while cranking engine, and 1.5-2.5 volts with engine idling. If voltage is not as specified, go to next step. If voltage is as specified, replace PCM.

2) Disconnect CKP sensor connector. Turn ignition on. Check voltage between ground and CKP sensor connector terminal No. 3. If battery voltage exists, go to next step. If battery voltage does not exist, check wiring harness between MFI relay connector and CKP sensor.

3) Check voltage between ground and CKP sensor connector terminal No. 2. If battery voltage exists, go to next step. If battery voltage does not exist, check PCM connector and wiring harness between CKP sensor connector and PCM. If connector and wiring are okay, replace PCM.

4) Check continuity between ground and CKP sensor connector terminal No. 1. If continuity exists, check CKP sensor connector. If connector is okay, replace CKP sensor. If continuity does not exist, check wiring harness between ground and CKP sensor.

DTC P0340: CAMSHAFT POSITION (CMP) SENSOR CIRCUIT MALFUNCTION

1) With CMP sensor connector connected. Check voltage between ground and CMP sensor connector terminal No. 2 on Eclipse, or No. 3 on Galant. Voltage should be 0.4-3.0 volts while cranking engine, and 0.5-2.0 volts with engine idling. If voltage is not as specified, go to next step. If voltage is as specified, replace PCM.

2) Disconnect CMP sensor connector. Turn ignition on. Check voltage between ground and CMP sensor connector terminal No. 3 on Eclipse, or No. 2 on Galant. If battery voltage exists, go to next step. If battery voltage does not exist, check wiring harness between MFI relay connector and CMP sensor.

3) Check voltage between ground and CMP sensor connector terminal No. 2 on Eclipse, or No. 3 on Galant. If voltage is 4.8-5.2 volts, go to next step. If battery voltage is not 4.8-5.2 volts, check PCM connector and wiring harness between CMP sensor connector and PCM. If connector and wiring are okay, replace PCM.

4) Check continuity between ground and CMP sensor connector terminal No. 1. If continuity exists, check CMP sensor connector. If connector is okay, replace CMP sensor. If continuity does not exist, check wiring harness between ground and CMP sensor.

DTC P0400: EXHAUST GAS RECIRCULATION (EGR) FLOW MALFUNCTION

1) Install a "T" fitting between vacuum hose (Green-striped on turbo engine, White-striped on 2.4L) and EGR solenoid nipple. Connect hand vacuum pump to "T" fitting. Start engine. Monitor vacuum while racing engine. If engine coolant temperature is 68°F (20°C) or

less, vacuum should not exist. If engine coolant temperature is 176°F (80°C) or more, vacuum should momentarily rise more than 3.9 in. Hg.

2) If vacuum is as specified, go to step 5). If vacuum is not as specified, disconnect EGR vacuum hose (Green-striped on turbo engine, White-striped on 2.4L) from throttle body nipple. Connect hand-held vacuum pump to nipple. Start engine and gradually increase RPM. Vacuum reading should remain constant as RPM increases. If vacuum is as specified, go to next step. If no vacuum exists, check throttle body purge port for obstructions.

3) Turn engine off. Label and disconnect vacuum hoses from solenoid valve. Disconnect electrical connector. Connect hand vacuum pump to solenoid valve nipple where hose was connected. Apply vacuum to solenoid valve. Vacuum should hold.

4) Apply battery voltage across terminals of solenoid valve. Vacuum should bleed down when voltage is applied to terminals. Using an ohmmeter, check resistance across solenoid valve terminals. If resistance at 68°F (20°C) is 36 to 44 ohms on Eclipse, or 62-74 ohms on Galant, go to next step. If resistance is not as specified, replace solenoid valve.

5) Disconnect "T" fitting and connect hand vacuum pump to EGR solenoid nipple. Apply 7.9 in. Hg of vacuum to EGR solenoid. If idle speed does not change, go to step 8). If idle becomes rough or engine stalls, go to next step.

6) Using scan tool in MUT II mode, read SERVICE DATA No. 95 (manifold differential pressure). Scan tool reading should be 32.8-46.2 kPa on 2.0L engine, 55.3-68.7 kPa on Eclipse 2.4L, or 49.0-75.0 kPa on Galant 2.4L.

7) If scan tool reading is as specified, go to next step. If scan tool reading is not as specified, check Manifold Differential Pressure (MDP) circuit. See DTC P1400: MANIFOLD DIFFERENTIAL PRESSURE (MDP) SENSOR CIRCUIT MALFUNCTION.

8) Remove EGR valve and check for sticking or obstructions. Apply 20 in. Hg of vacuum to EGR valve. Vacuum should hold. Check that EGR valve remains closed with 1.6 in. Hg or less of vacuum applied. Check that EGR valve is full open with 7.9 in. Hg or more of vacuum applied. Replace EGR valve if not okay.

DTC P0403: EXHAUST GAS RECIRCULATION (EGR) FLOW MALFUNCTION

1) Install a "T" fitting between vacuum hose (Green-striped on turbo engine, White-striped on 2.4L) and EGR solenoid nipple. Connect hand-held vacuum pump to "T" fitting. Start engine. Monitor vacuum while racing engine. If engine coolant temperature is 68°F (20°C) or less, vacuum should not exist. If engine coolant temperature is 176°F (80°C) or more, vacuum should momentarily rise over 3.9 in. Hg.

2) If vacuum is as specified, go to step 5). If vacuum is not as specified, disconnect EGR vacuum hose (Green-striped on turbo engine, White-striped on 2.4L) from throttle body nipple. Connect hand vacuum pump to nipple. Start engine and gradually increase RPM. Vacuum reading should remain constant as RPM increases. If vacuum is as specified, go to next step. If no vacuum exists, check throttle body purge port for obstructions.

3) Turn engine off. Label and disconnect vacuum hoses from solenoid valve. Disconnect electrical connector. Connect hand vacuum pump to solenoid valve nipple where White-striped hose was connected. Apply vacuum to solenoid valve. Vacuum should hold.

4) Apply battery voltage across terminals of solenoid valve. Vacuum should bleed down when voltage is applied to terminals. Using an ohmmeter, check resistance across solenoid valve terminals. If resistance at 68°F (20°C) is 36 to 44 ohms on Eclipse, or 62-74 ohms on Galant, go to next step. If resistance is not as specified, replace solenoid valve.

5) Disconnect EGR solenoid connector. Turn ignition on. Check voltage between ground and EGR solenoid connector terminal No. 1. If battery voltage exists, go to next step. If battery voltage does not exist, check wiring harness between MFI relay and EGR solenoid.

6) Turn ignition off. Disconnect PCM connector. Turn ignition on. Check voltage between ground and PCM connector terminal No. 6. If battery voltage exists, check PCM connector. If PCM connector is okay, replace PCM. If battery voltage does not exist, check EGR solenoid connector. If connector is okay, check wiring harness between PCM and EGR solenoid.

DTC P0420: CATALYTIC CONVERTER EFFICIENCY BELOW THRESHOLD

NOTE: This test does not apply to 2.4L engine with California emissions.

1) Check exhaust manifold for cracks. If exhaust manifold is okay, go to next step.

2) Using scan tool in MUT II mode, read SERVICE DATA No. 59 (rear heated oxygen sensor). Drive vehicle with transaxle in 2nd gear (M/T) or Low Range (A/T), and with wide open throttle. If voltage is .6-1.0 volt, go to next step. If voltage is not as specified, check rear Heated Oxygen Sensor (HO2S) circuit. See DTC P0136: REAR HEATED OXYGEN SENSOR (HO2S) CIRCUIT MALFUNCTION.

3) Using scan tool in MUT II mode, read SERVICE DATA No. 11 (front heated oxygen sensor). Monitor rear HO2S output voltage while repeatedly racing engine. If voltage is .6-1.0 volt, go to next step. If voltage is not as specified, check front HO2S circuit. See DTC P0130: FRONT HEATED OXYGEN SENSOR (HO2S) CIRCUIT MALFUNCTION.

4) Using scan tool, perform SENSOR READ TEST No. 11 (front heated oxygen sensor volts). Monitor front HO2S output voltage with engine at idle. Scan tool reading should alternate between 0-.4 volt and .6-1.0 volt. If voltage is as specified, go to next step. If voltage is not as specified, replace front HO2S.

5) Replace rear HO2S. Clear DTCs. Road test vehicle to verify repairs. If DTC P0420 resets, replace catalytic convertor. Clear DTCs. Road test vehicle to verify repairs. If DTC P0420 resets, replace PCM.

DTC P0421: WARM-UP CATALYTIC CONVERTER EFFICIENCY BELOW THRESHOLD

NOTE: This test applies to 2.4L engine with California emissions only.

1) Check exhaust manifold for cracks. If exhaust manifold is okay, go to next step.

2) Using scan tool in MUT II mode, read SERVICE DATA No. 59 (rear heated oxygen sensor). Drive vehicle with transaxle in 2nd gear (M/T) or Low Range (A/T), and with wide open throttle. If voltage is .6-1.0 volt, go to next step. If voltage is not as specified, check rear Heated Oxygen Sensor (HO2S) circuit. See DTC P0136: REAR HEATED OXYGEN SENSOR (HO2S) CIRCUIT MALFUNCTION.

3) Using scan tool in MUT II mode, read SERVICE DATA No. 11 (front heated oxygen sensor). Monitor rear HO2S output voltage while repeatedly racing engine. If voltage is .6-1.0 volt, go to next step. If voltage is not as specified, check front HO2S circuit. See DTC P0130: FRONT HEATED OXYGEN SENSOR (HO2S) CIRCUIT MALFUNCTION.

4) Using scan tool, perform SENSOR READ TEST No. 11 (front heated oxygen sensor volts). Monitor front HO2S output voltage with engine at idle. Scan tool reading should alternate between 0-.4 volt and .6-1.0 volt. If voltage is as specified, go to next step. If voltage is not as specified, replace front HO2S.

5) Replace rear HO2S. Clear DTCs. Road test vehicle to verify

repairs. If DTC 0421 resets, replace catalytic convertor. Clear DTCs. Road test vehicle to verify repairs. If DTC 0421 resets, replace PCM.

DTC P0442: EVAPORATIVE (EVAP) CONTROL SYSTEM LEAK DETECTED

1) Ensure fuel tank cap is tight. Check fuel vent valve. Repair or replace as necessary. If fuel vent valve is okay, go to next step.

2) Using scan tool in MUT-II mode, read SERVICE DATA No. 08 (evaporative emission purge solenoid). Turn ignition on. If solenoid turns on, go to next step. If solenoid does not turn on, check for EVAP control system purge control valve malfunction. See DTC P0443: EVAPORATIVE (EVAP) CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT MALFUNCTION.

3) Using scan tool in MUT-II mode, read SERVICE DATA No. 29 (evaporative ventilation solenoid). Turn ignition on. If solenoid turns on, go to next step. If solenoid does not turn on, check for EVAP control system vent control valve malfunction. See DTC P0446: EVAPORATIVE (EVAP) CONTROL SYSTEM VENT CONTROL MALFUNCTION.

4) On Galant (Federal), go to next step. On all other models, using scan tool in MUT-II mode, read SERVICE DATA No. 73 (fuel tank differential pressure sensor). Remove gas cap. Turn ignition on. If scan tool displays -3.3-3.3 kPa, go to next step. If scan tool does not display -3.3-3.3 kPa, check for EVAP control system pressure sensor malfunction. See DTC P0450: EVAPORATIVE (EVAP) CONTROL SYSTEM PRESSURE SENSOR MALFUNCTION.

5) Using scan tool in MUT-II mode, read SERVICE DATA No. 21 (engine coolant temperature sensor). If temperature displayed on scan tool is equal to actual engine coolant temperature as measured with a thermometer, go to next step. If temperature displayed on scan tool is not equal to actual coolant temperature, check engine coolant temperature circuit. See DTC P0115: ENGINE COOLANT TEMPERATURE (ECT) CIRCUIT MALFUNCTION.

6) Using scan tool in MUT II mode, read SERVICE DATA No. 13 (intake air temperature). If temperature displayed on scan tool is equal to actual air temperature as measured with a thermometer, go to next step. If temperature displayed on scan tool is not equal to actual air temperature, check air temperature circuit. See DTC P0110: INTAKE AIR TEMPERATURE (IAT) CIRCUIT MALFUNCTION.

7) Using scan tool in MUT II mode, read SERVICE DATA No. 27 (power steering pressure switch). Start engine and allow it to idle. If scan tool displays OFF with steering wheel in straight-ahead position and ON with steering wheel turning, go to next step. If scan tool does not display as described, check power steering pressure sensor circuit. see DTC P0551: POWER STEERING PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE.

8) Check for contaminated fuel. Check if any fuel tank, purge line or vapor line seals have failed.

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

1) Turn engine off. Label and disconnect vacuum hose (Brown hose on Eclipse, Black/Red hose on Galant) from purge solenoid. Disconnect electrical connector. Connect hand vacuum pump to solenoid valve nipple where hose was connected. Apply vacuum to solenoid valve. Vacuum should hold.

2) Apply battery voltage across terminals of solenoid. Vacuum should bleed down when voltage is applied to terminals. Using an ohmmeter, check resistance across solenoid terminals. If resistance at 68°F (20°C) is 36 to 44 ohms on Eclipse and Galant (California), or 62-74 ohms on Galant (Federal), go to next step. If solenoid does not test as specified, replace solenoid.

3) Disconnect purge solenoid vacuum hose (Red paint mark on hose on Eclipse 2.4L engine, Red hose on all other models) from throttle body on turbo engine and Galant (Federal), or from intake manifold or plenum on all other engines. Connect hand-held vacuum pump to nipple. Apply 16 in. Hg of vacuum. Start engine and gradually increase RPM. Vacuum reading should remain constant as RPM increases. If vacuum is as specified, go to next step. If no vacuum exists, check throttle body purge port for obstruction.

4) Disconnect purge solenoid electrical connector. Check voltage between ground and purge solenoid connector terminal No. 2. Turn ignition on. If battery voltage exists, go to next step. If battery voltage does not exist, check wiring harness between MFI relay and purge solenoid connector.

5) Turn ignition off. Disconnect PCM connector. Turn ignition on. Check voltage between ground and PCM connector terminal No. 9. If battery voltage exists, check PCM connector. If PCM connector is okay, replace PCM. If battery voltage does not exist, check purge solenoid connector and wiring harness between PCM and purge solenoid connector.

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

1) Label and disconnect both vacuum hoses from EVAP vent solenoid. Disconnect EVAP vent solenoid electrical connector. Connect hand vacuum pump to EVAP vent solenoid valve nipple where Red-striped hose was connected. Apply vacuum to EVAP vent solenoid. Vacuum should hold.

2) Apply battery voltage to EVAP vent solenoid terminals. Vacuum should bleed down when voltage is applied to terminals. Using an ohmmeter, check resistance across EVAP vent solenoid terminals. If resistance is 17-21 ohms at 68°F (20°C), go to next step. If resistance is not as specified, replace EVAP vent solenoid.

3) Turn ignition on. Check voltage between ground and EVAP vent solenoid connector terminal No. 1. If battery voltage exists, go to next step. If battery voltage does not exist, check wiring harness between MFI relay and EVAP vent solenoid connector.

4) Turn ignition off. Disconnect PCM connector. Turn ignition on. Check voltage between ground and PCM connector terminal No. 55 on Eclipse, or No. 85 on Galant. Go to next step.

5) If battery voltage exists, check PCM connector. If PCM connector is okay, replace PCM. If battery voltage exists, clear DTCs. Road test vehicle to verify repairs. If DTC P0446 resets, replace PCM. If battery voltage does not exist, check EVAP vent solenoid connector. If connector is okay, check wiring harness between PCM and EVAP vent solenoid connector.

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

1) Disconnect fuel tank differential pressure sensor connector. Check voltage between ground and sensor connector terminal No. 3. If voltage is 4.8-5.2 volts, go to next step. If voltage is not as specified, check connectors and wiring harness between PCM and fuel tank differential pressure sensor.

2) Check continuity between ground and sensor connector terminal No. 2. If continuity exists, go to next step. If continuity does not exist, check connectors and wiring harness between PCM and fuel tank differential pressure sensor.

3) Check PCM connector. Repair connector as necessary. If PCM connector is okay, check wiring harness between PCM and fuel tank differential pressure sensor. Repair as necessary. If wiring harness is okay, replace sensor. Clear DTCs. Road test vehicle to verify repairs. If DTC P0450 resets, replace PCM.

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

1) Ensure fuel tank cap is tight. Check fuel vent valve. Repair or replace as necessary. If fuel vent valve is okay, go to next step.

2) Using scan tool in MUT-II mode, read SERVICE DATA No. 08 (evaporative emission purge solenoid). Turn ignition on. If solenoid turns on, go to next step. If solenoid does not turn on, check for EVAP control system purge control valve malfunction. See DTC P0443: EVAPORATIVE (EVAP) CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT MALFUNCTION.

3) Using scan tool in MUT-II mode, read SERVICE DATA No. 29 (evaporative ventilation solenoid). Turn ignition on. If solenoid turns on, go to next step. If solenoid does not turn on, check for EVAP control system vent control valve malfunction. See DTC P0446: EVAPORATIVE (EVAP) CONTROL SYSTEM VENT CONTROL MALFUNCTION.

4) On Galant (Federal), go to next step. Using scan tool in MUT-II mode, read SERVICE DATA No. 73 (fuel tank differential pressure sensor). Remove gas cap. Turn ignition on. If scan tool displays -3.3-3.3 kPa, go to next step. If scan tool does not display -3.3-3.3 kPa, check for EVAP control system pressure sensor malfunction. See DTC P0450: EVAPORATIVE (EVAP) CONTROL SYSTEM PRESSURE SENSOR MALFUNCTION.

5) Using scan tool in MUT-II mode, read SERVICE DATA No. 21 (engine coolant temperature sensor). If temperature displayed on scan tool is equal to actual engine coolant temperature as measured using a thermometer, go to next step. If temperature displayed on scan tool is not equal to actual coolant temperature, check engine coolant temperature circuit. See DTC P0115: ENGINE COOLANT TEMPERATURE (ECT) CIRCUIT MALFUNCTION.

6) Using scan tool in MUT II mode, read SERVICE DATA No. 13 (intake air temperature). If temperature displayed on scan tool is equal to actual air temperature as measured using a thermometer, go to next step. If temperature displayed on scan tool is not equal to actual air temperature, check air temperature circuit. See DTC P0110: INTAKE AIR TEMPERATURE (IAT) CIRCUIT MALFUNCTION.

7) Using scan tool in MUT II mode, read SERVICE DATA No. 27 (power steering pressure switch). Turn engine on and allow it to idle. If scan tool displays OFF with steering wheel straight ahead and ON with steering wheel turning, go to next step. If scan tool does not display as described, check power steering pressure sensor circuit. see DTC P0551: POWER STEERING PRESSURE (PSP) SENSOR CIRCUIT RANGE/PERFORMANCE.

8) Check for contaminated fuel. Check if any fuel tank, purge line or vapor line seals have failed.

DTC P0500: VEHICLE SPEED SENSOR (VSS) MALFUNCTION

1) Disconnect Instrument Panel (I/P) connectors. Turn ignition on. While turning drive wheels, check voltage between ground and I/P connector C05 terminal No. 36 on Eclipse, or I/P connector D01 terminal No. 49 on Galant. If voltage is 4.7 volts or more, go to next step. If voltage is not as specified, go to step 3).

2) Check voltage between ground and connector C06 terminal No. 10 on Eclipse, or I/P connector D02 terminal No. 24. If battery voltage exists, replace instrument panel cluster. If battery voltage does not exist, check junction connectors and wiring harness between power supply and instrument panel cluster.

3) Remove VSS. Connect 12-volt power source between VSS terminals No. 1 and 2. Connect negative****positive lead of power source to terminal No. 1. Connect a 3-10 k/ohm resistor between

negative***positive lead of power source and terminal No. 3. Using an analog voltmeter, check voltage between terminals No. 2 and 3 while turning VSS shaft. Meter should pulse 4 times per revolution. If VSS is okay, go to next step on turbo engine or step 7) on 2.4L.

4) Turn ignition on. Check voltage between ground and VSS connector terminal No. 3. If voltage is 4.5 volts or more, go to next step. If voltage is not 4.5 volts or more, check wiring harness between VSS and instrument panel cluster.

5) Check continuity between ground and VSS connector terminal No. 2. If continuity exists, go to next step. If continuity does not exist, check wiring harness between ground and VSS.

6) Check voltage between ground and VSS connector terminal No. 1. If battery voltage does not exist, check junction connector and wiring harness between VSS and power supply.

7) Turn ignition on. Check voltage between ground and VSS connector terminal No. 3. If voltage is 4.5 volts or more, go to next step. If voltage is not 4.5 volts or more, check junction connector and wiring harness between VSS and instrument panel cluster.

8) Check voltage between ground and VSS connector terminal No. 1. If approximately 8 volts exist, go to next step. If voltage is not as specified, check junction connector and wiring harness between VSS and power supply.

9) Disconnect VSS connector. Turn ignition on. Check voltage between ground and VSS connector terminal No. 3. If voltage is 4.8-5.2 volts, go to next step. If voltage is not as specified, check connectors and wiring harness between VSS and PCM. If connectors and wiring harness are okay, replace PCM.

10) Check continuity between ground and VSS connector terminal No. 2. If continuity exists, go to next step. If continuity does not exist, check connectors and wiring harness between PCM and VSS.

11) Check PCM connector. Repair connector as necessary. If PCM connector is okay, check wiring harness between PCM and VSS. Repair as necessary. If wiring harness is okay, replace sensor. Clear DTCs. Road test vehicle to verify repairs. If DTC P0500 resets, replace PCM.

DTC P0505: IDLE CONTROL SYSTEM MALFUNCTION

1) Ensure engine coolant temperature is less than 68°F (20°C). Using a stethoscope, listen for operating sound of Idle Air Control (IAC) motor when ignition switch is placed in ON position. If operating sound can be heard, go to next step. If no operating sound can be heard on 2.4L, go to step 5). On turbo, go to step 4).

2) Disconnect IAC motor connector. Turn ignition on. Check voltage between ground and IAC motor connector terminal No. 2, and between ground and terminal No. 5. If battery voltage exists, go to next step. If battery voltage does not exist, check wiring harness between MFI relay and IAC motor connector.

3) Disconnect PCM connector. Turn ignition on. Check voltage between ground and PCM terminals No. 4, 5, 17 and 18. If battery voltage exists, check PCM connector. If PCM connector is okay, replace PCM. If battery voltage does not exist, go to next step.

4) Check IAC motor connector and wiring harness between PCM and IAC motor connector. If connector and wiring harness are okay, replace IAC motor.

5) Turn ignition off. Connect Test Harness (MB991348) between IAC motor and connector. Check voltage between ground and test harness terminals No. 2 and 4. Voltage should momentarily go from 1.5-4.0 volts to less than one volt or more than 4.5 volts right after ignition switch is turned on. If voltage is as specified on both circuits, replace PCM. If voltage is not as specified, go to next step.

6) Disconnect IAC motor connector. Check voltage between ground and IAC motor connector terminals No. 1, 2 and 4. Voltage should be 4.8-5.2 volts. Check continuity between ground and IAC motor connector terminal No. 3. Go to next step.

7) If voltage is as specified and continuity exists, check IAC motor connector. If IAC motor connector is okay, replace IAC motor on Eclipse or valve position sensor on Galant. If voltage is not as specified or continuity does not exist, check IAC motor connector and wiring harness between PCM and IAC motor connector. If connector and wiring are okay, replace PCM.

DTC P0510: CLOSED THROTTLE POSITION (TP) SWITCH MALFUNCTION

1) Disconnect TP sensor connector. Check continuity between TP sensor terminals No. 3 and 4. Continuity should exist with throttle at idle. Continuity should not exist when throttle is opened. If continuity is as specified, go to next step. If continuity is not as specified, replace TP sensor.

2) Turn ignition on. Check voltage between ground and TP sensor connector terminal No. 3. Voltage should be more than 4 volts. Check continuity between ground and TP sensor connector terminal No. 4. If voltage is as specified and continuity exists, check TP sensor connector. If connector is okay, replace PCM. If voltage is not as specified or continuity does not exist, check PCM connector and wiring harness between PCM and TP sensor connector. If connector and wiring are okay, replace PCM.

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

Disconnect PSP switch connector. Turn ignition on. Check voltage between ground and PSP switch connector terminal No. 1. If battery voltage exists, check PSP switch connector. If PSP switch connector is okay, replace PCM. If battery voltage does not exist, check PCM connector, PSP switch connector and wiring harness between PCM and PSP switch. If connectors and wiring are okay, replace PCM.

DTC P0705: TRANSMISSION RANGE SENSOR CIRCUIT MALFUNCTION (A/T)

DTC P0705 is related to Electronic Automatic Transaxle (EATX) diagnostics. For diagnostic procedure, see TRANSMISSION SERVICE & REPAIR article.

DTC P1103: TURBOCHARGER WASTEGATE SOLENOID MALFUNCTION

NOTE: This test applies to Eclipse with 2.0L turbo engine only.

1) Disconnect Black vacuum hose from turbocharger wastegate solenoid. Connect a pressure gauge to disconnected hose. Plug solenoid nipple where Black hose was connected. Go to next step.

2) Drive vehicle at wide open throttle and accelerate to more than 3500 RPM in 2nd. Pressure gauge should stabilize at 6.4-14.7 psi (.4-1.0 kg/cm^2). Go to next step.

3) If pressure is more than specified, check for disconnected or cracked wastegate actuator hose, or malfunctioning wastegate actuator or wastegate valve. If pressure is less than specified, check for malfunctioning wastegate actuator, pressure leaks or faulty turbocharger.

DTC P1104: TURBOCHARGER WASTEGATE SOLENOID MALFUNCTION

NOTE: This test applies to Eclipse with 2.0L turbo engine only.

1) Disconnect White vacuum hose from wastegate solenoid nipple. Disconnect electrical connector. Connect hand vacuum pump to solenoid nipple where White hose was connected. Apply vacuum to solenoid. Vacuum should hold. Go to next step.
2) Disconnect Black vacuum hose from solenoid nipple. Apply battery voltage across terminals of solenoid. Using finger, plug and open solenoid nipple where Black hose was connected. Vacuum should exist with solenoid nipple open and should not exist with nipple plugged. If vacuum is not as specified, replace solenoid. If vacuum is as specified, go to next step.
3) Check voltage between ground and solenoid connector terminal No. 2. If battery voltage exists, go to next step. If battery voltage does not exist, check wiring harness between MFI relay and solenoid.
4) Turn ignition off. Disconnect PCM connector. Turn ignition on. Check voltage between ground and PCM connector terminal No. 11. If battery voltage exists, check PCM connector. If PCM connector is okay, replace PCM. If battery voltage does not exist, check solenoid connector. If connector is okay, check wiring harness between PCM and solenoid.

DTC P1105: FUEL PRESSURE SOLENOID MALFUNCTION

NOTE: This test applies to Eclipse with 2.0L turbo engine only.

1) Disconnect Black vacuum hose from fuel pressure solenoid nipple. Disconnect electrical connector. Connect hand vacuum pump to solenoid nipple where Black hose was connected. Apply vacuum to solenoid. Vacuum should hold. Go to next step.
2) Disconnect White vacuum hose from solenoid nipple. Apply battery voltage across solenoid terminals. Using finger, plug and open solenoid nipple where White hose was connected. Vacuum should exist with solenoid nipple open and should not exist with nipple plugged. If vacuum is not as specified, replace solenoid. If vacuum is as specified, go to next step.
3) Turn ignition off. Check resistance between solenoid terminals. If resistance is 36-44 k/ohms at 68°F (20°C), go to next step. If resistance is not as specified, replace solenoid.
4) Turn ignition on. Check voltage between ground and solenoid connector terminal No. 1. If battery voltage exists, go to next step. If battery voltage does not exist, check wiring harness between MFI relay and solenoid.
5) Turn ignition off. Disconnect PCM connector. Turn ignition on. Check voltage between ground and PCM connector terminal No. 3. If battery voltage exists, check PCM connector. If PCM connector is okay, replace PCM. If battery voltage does not exist, check solenoid connector. If connector is okay, check wiring harness between PCM and solenoid.

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

1) Disconnect MDP sensor connector. Install Test Harness (MD991348) between MDP sensor and harness connector. With engine at idle, check voltage between ground and test harness terminal No. 1. Reading should be 0.8-2.4 volts. When throttle is opened suddenly, voltage should momentarily rise to more than 0.8-2.4 volts. If voltage is as specified, go to next step. If voltage is not as specified, go to step 3).
2) With PCM connector connected, check voltage between ground and PCM connector terminal No. 73 on Eclipse, or No. 53 on Galant.

Start engine and allow it idle. If voltage is 0.8-2.4 volts, check PCM connector. If PCM connector is okay, replace PCM. If voltage is not as specified, check wiring harness between PCM and MDP sensor connector.

3) Disconnect MDP sensor connector. Turn ignition on. Check voltage between ground and MDP sensor connector terminal No. 3. Voltage should be 4.8-5.2 volts. Check continuity between ground and MDP sensor connector terminal No. 2.

4) If voltage is not as specified or continuity does not exist, check PCM connector and wiring harness between MDP sensor connector and PCM. If connector and wiring are okay, replace PCM. If voltage is as specified and continuity exists, check MDP sensor connector and wiring harness between PCM and MDP sensor connector. If connector and wiring are okay, replace MDP sensor.

DTC P1500: GENERATOR FR TERMINAL CIRCUIT MALFUNCTION

1) With generator field connector connected. Check voltage between ground and field connector terminal No. 4. Ensure radiator fan is off. In sequence, turn headlights, stoplights and rear defogger switch on and then off. Voltage should drop .2-3.5 volts with accessories on. If voltage is not as specified, go to next step. If voltage is as specified, replace PCM.

2) Disconnect generator field connector. Turn ignition on. Check voltage between ground and field connector terminal No. 4. If voltage is 4.8-5.2 volts, check field connector, and wiring harness between PCM and field connector. If connector and wiring are okay, replace generator. If voltage is not as specified, check PCM connector, junction connector and wiring harness between PCM and field connector. If wiring and connectors are okay, replace PCM.

DTC P1600: SERIAL COMMUNICATION LINK MALFUNCTION

DTC P1600 is related to Electronic Automatic Transaxle (EATX) diagnostics. For diagnostic procedure, see TRANSMISSION SERVICE & REPAIR article.

DTC P1715: PG ASSEMBLY MALFUNCTION

DTC P1715 is related to Electronic Automatic Transaxle (EATX) diagnostics. For diagnostic procedure, see TRANSMISSION SERVICE & REPAIR article.

DTC P1750: SOLENOID ASSEMBLY MALFUNCTION

DTC P1750 is related to Electronic Automatic Transaxle (EATX) diagnostics. For diagnostic procedure, see TRANSMISSION SERVICE & REPAIR article.

DTC P1791: ENGINE COOLANT TEMPERATURE LEVEL INPUT CIRCUIT TO TCM MALFUNCTION

DTC P1791 is related to Electronic Automatic Transaxle (EATX) 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.