

# G - TESTS W/CODES

## 1994 Mitsubishi 3000GT

1994 ENGINE PERFORMANCE  
Chrysler Corp./Mitsubishi Self-Diagnostics

Dodge; Stealth  
Mitsubishi; 3000GT

### INTRODUCTION

If no faults were found while performing BASIC DIAGNOSTIC PROCEDURES, proceed with self-diagnostics. If no trouble codes or only pass codes are present after entering self-diagnostics, proceed to H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section for diagnosis by symptom (i.e., ROUGH IDLE, NO START, etc.).

### SELF-DIAGNOSTIC SYSTEM

#### SYSTEM DIAGNOSIS

System diagnosis can be accomplished using an appropriate scan tester, a voltmeter or the Malfunction Indicator Light (MIL). See RETRIEVING CODES. Engine Control Module (ECM) monitors several different engine control system circuits. If an abnormal input signal occurs, a trouble code is stored in ECM memory and assigned a trouble code number. Each circuit has its own trouble code number and message. A specific trouble code indicates a particular system failure, but does not indicate that cause of failure is necessarily within system.

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

##### Hard Failures

Hard failures cause MIL to glow and remain on until malfunction is repaired. If MIL comes on and remains on (MIL may flash) during vehicle operation, cause of malfunction may be determined by using trouble codes. See TROUBLE CODES. If a sensor fails, ECM 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 glow and go out after intermittent trouble code goes away. However, corresponding trouble code will be retained in ECM memory. If related trouble code does not reoccur within a certain time frame, related trouble code will be erased from ECM memory. Intermittent failures may be caused by a sensor, connector or wiring problems. See INTERMITTENTS in H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

### 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 ECM. This will erase any trouble codes stored in ECM.
- \* DO NOT cause short circuits when performing electrical tests. This will set additional trouble codes, 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 ECM may result.
- \* DO NOT prolong testing of fuel injectors. Engine may hydrostatically (liquid) lock.
- \* When a vehicle has multiple trouble codes, always repair lowest number trouble code first.

## RETRIEVING CODES

Manufacturers recommend using a scan tester to retrieve codes. If scan tester is not available, trouble codes may be retrieved using a voltmeter or Malfunction Indicator Light (MIL). See RETRIEVING CODES table for code retrieval method available by model and proceed to appropriate method.

RETRIEVING CODES TABLE

Application	Use Voltmeter	Use MIL
All Models .....	No .....	Yes

### Using Scan Tester

1) Refer to manufacturer's operation manual for instructions in use of scan tester. Before entering on-board diagnostics, see SERVICE PRECAUTIONS. Turn ignition switch to OFF position. Locate Data Link Connector (DLC), at lower right of steering column. Connect power source terminal of scan tester to cigarette lighter socket.

2) Connect scan tester to DLC. Turn ignition switch to ON position. Read and record scan tester self-diagnostic output. Perform necessary repair(s). See TROUBLE CODES.

### Using Voltmeter

1) Before entering on-board diagnostics, see SERVICE PRECAUTIONS. Turn ignition switch to OFF position. Locate Data Link Connector (DLC), next to fuse block. Connect volt-meter positive lead to DLC self-diagnostic test mode terminal and negative lead to either DLC ground terminal. See Fig. 1.

2) Turn ignition switch to ON position. Disclosure of ECM memory will begin. If 2 or more systems are non-functional, they are indicated by order of increasing code number. Indication is made by 12-volt pulses of voltmeter pointer. A constant repetition of short 12-volt pulses indicates system is normal. If system is abnormal, voltmeter will pulse between zero and 12 volts.

3) Signals will appear on voltmeter as long and short 12-volt pulses. Long pulses represent tens; short pulses represent ones. For example, 4 long pulses and 3 short pulses indicate Code 43. After recording trouble code(s), perform necessary repair(s) to indicated circuit(s). See TROUBLE CODES.

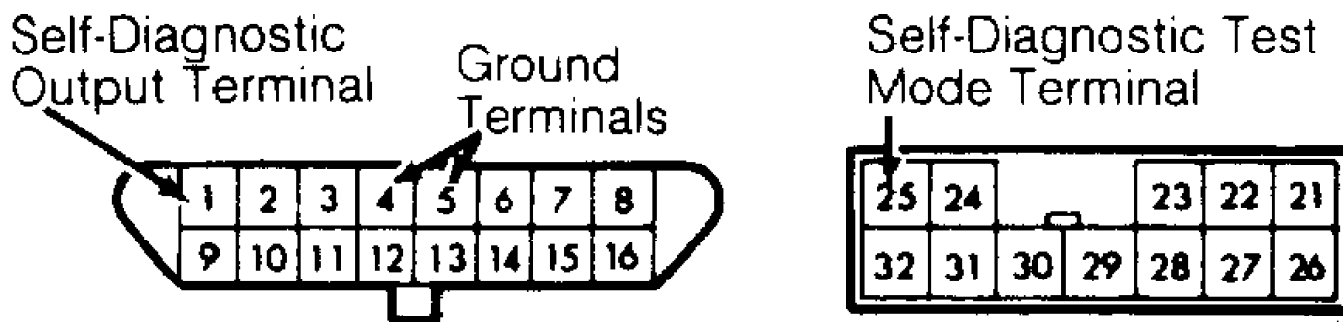
### Using Malfunction Indicator Light (MIL)

1) Before entering on-board diagnostics, see SERVICE PRECAUTIONS. Turn ignition switch to OFF position. Locate Data

Link Connector (DLC), next to fuse block. Connect Diagnostic Harness (MB99159) between DLC self-diagnostic output terminal and chassis ground. See Fig. 1.

2) Turn ignition switch to ON position. Disclosure of ECM memory will begin. If 2 or more systems are non-functional, they are indicated by order of increasing code number. Indication is made by MIL flashes. A constant repetition of short flashes indicates system is normal.

3) If system is abnormal, signals will appear on MIL as long and short flashes. Long flashes represent tens; short flashes represent ones. For example, 4 long flashes and 3 short flashes indicate Code 43. After recording trouble code(s), perform necessary repair(s) to indicated circuit(s). See TROUBLE CODES.



94G44186

Fig. 1: Identifying Data Link Connector (DLC) Terminals  
Courtesy of Mitsubishi Motor Sales of America.

## TROUBLE CODES

NOTE: Codes listed in TROUBLE CODES are not used on all vehicles.

MIL Stays On

ECM trouble code. Possible cause: faulty ECM.

Code 11

Oxygen Sensor (O2S) trouble code. Possible causes: faulty O2S sensor, connector or harness, low or high fuel pressure, defective injector(s), intake air leaks.

Code 12

Airflow sensor trouble code. Possible causes: faulty air-flow sensor, connector or harness.

Code 13

Intake air temperature sensor trouble code. Possible causes: faulty intake air temperature sensor, connector or harness.

Code 14

Throttle Position Sensor (TPS) trouble code. Possible causes: faulty TPS, connector or harness, closed throttle position switch.

Code 15

Idle Speed Control (ISC) motor position sensor trouble code. Possible causes: faulty ISC motor position sensor, faulty throttle position sensor, connector or harness.

Code 21

Engine Coolant Temperature (ECT) sensor trouble code. Possible causes: faulty coolant temperature sensor, connector harness.

Code 22

Crankshaft Position (CKP) sensor trouble code. Possible causes: faulty distributor assembly (if equipped), faulty CKP sensor, connector or harness.

Code 23

Camshaft Position (CMP) sensor trouble code. Possible causes: faulty distributor assembly (if equipped), faulty CMP sensor, connector or harness.

Code 24

Vehicle Speed Sensor (VSS) trouble code. Possible causes: faulty VSS, connector or harness.

Code 25

Barometric (BARO) pressure sensor trouble code. Possible causes: faulty BARO pressure sensor, connector or harness.

Code 31

Knock sensor trouble code. Possible causes: faulty knock sensor, connector or harness.

Code 32

MAP sensor faulty. Possible causes: faulty MAP sensor, connector or harness.

Code 36

Ignition timing adjustment signal trouble code. Possible causes: connector or harness.

Code 39

Oxygen Sensor (O2S) trouble code. Possible causes: faulty O2S sensor, faulty O2S sensor heater, connector or harness, low or high fuel pressure, defective injector(s), intake air leaks.

Code 41

Fuel Injector(s) trouble code. Possible causes: low or high injector coil resistance, connector or harness.

Code 42

Fuel pump trouble code. Possible causes: faulty ECM, faulty MFI relay, connector or harness.

Code 43

EGR trouble code. Possible causes: faulty EGR valve, faulty EGR temperature sensor, faulty EGR solenoid, faulty EGR vacuum control, connector or harness.

Code 44

Ignition coil (cylinders No. 1 and 4) trouble code. Possible causes: faulty ignition coil, faulty ignition power transistor unit, connector or harness.

Code 52

Ignition coil (cylinders No. 2 and 5) trouble code. Possible causes: faulty ignition coil, faulty ignition power transistor unit, connector or harness.

Code 53

Ignition coil (cylinders No. 3 and 6) trouble code. Possible causes: faulty ignition coil, faulty ignition power transistor unit, connector or harness.

#### Code 55

Idle Air Control (IAC) valve position sensor trouble code.

Possible causes: faulty IAC valve position sensor, faulty IAC motor assembly, faulty ECM, connector or harness.

#### Code 59

Rear Oxygen Sensor (O2S), or left rear O2S sensor on vehicles equipped with 4 O2S sensors, trouble code. Possible causes: faulty O2S sensor, faulty O2S sensor heater, faulty ECM, connector or harness.

#### Code 61

Transaxle control module torque reduction signal trouble code. Possible causes: faulty transaxle control module, connector or harness.

#### Code 62

Variable Induction Control (VIC) Valve position sensor trouble code. Possible causes: faulty VIC valve position sensor, connector or harness.

#### Code 69

Right rear Oxygen Sensor (O2S) trouble code. Possible causes: faulty O2S sensor, faulty O2S sensor heater, faulty ECM, connector or harness.

#### Code 71

Traction Control (TC) vacuum valve solenoid trouble code.

Possible causes: faulty TC vacuum valve solenoid, connector or harness.

#### Code 72

Traction Control (TC) vent valve solenoid trouble code.

Possible causes: faulty TC vent valve solenoid, connector or harness.

## CLEARING CODES

**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. See COMPUTER RELEARN PROCEDURES article in the GENERAL INFORMATION Section before disconnecting battery.

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

## ECM LOCATION

### ECM LOCATION TABLE

Application	Location
All Models .....	Behind Radio Console

## TERMINAL IDENTIFICATION

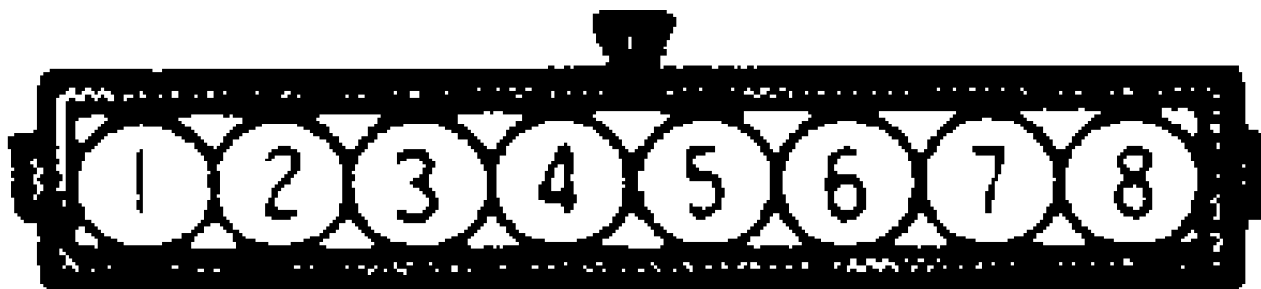
**NOTE:** The following terminals are shown as viewed from component side of connector.

## TERMINAL IDENTIFICATION DIRECTORY

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Connector	See Fig.
Airflow Sensor .....	Fig. 2
CKP/CMP Sensor .....	Fig. 3 & 4
Coolant Temperature Sensor .....	Fig. 5
ECM .....	Fig. 6 & 7
EGR Temperature Sensor .....	Fig. 8
Fuel Injector .....	Fig. 9 & 10
Idle Air Control Valve Position Sensor .....	Fig. 10
Idle Speed Control	
Motor & Position Sensor .....	Fig. 12 & 13
Ignition Coil .....	Fig. 14
Induction Control Valve Position Sensor .....	Fig. 15
Knock Sensor .....	Fig. 16
MAP Sensor .....	Fig. 17
MFI Relay .....	Fig. 18
Oxygen Sensor (O2S) .....	Fig. 19
Throttle Position Sensor .....	Fig. 20
Traction Control Vacuum Solenoid .....	Fig. 21
Traction Control Vent Solenoid .....	Fig. 22
Transaxle Control Module .....	Fig. 23

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50J02536

Fig. 2: Identifying Airflow Sensor Terminals  
Courtesy of Mitsubishi Motor Sales of America.



*94H44187*  
Fig. 3: Identifying CKP/CMP Sensor Terminals (SOHC - Stealth)  
Courtesy of Mitsubishi Motor Sales of America.



*94D44316*  
Fig. 4: Identifying CKP/CMP Sensor Terminals (DOHC - All Others)  
Courtesy of Mitsubishi Motor Sales of America.



94H45218  
Fig. 5: Engine Coolant Temperature (ECT) Sensor Terminal ID  
Courtesy of Mitsubishi Motor Sales of America.

61	72
60	71
59	70
58	69
57	68
56	67
55	66
54	65
53	64
52	63
51	62
108	116
107	115
106	114
105	113
104	112
103	111
102	110
101	109
13	26
12	25
11	24
10	23
9	22
8	21
7	20
6	19
5	18
4	17
3	16
2	15
1	14

ALL OTHER MODELS

93F45109

Fig. 6: ECM Terminal ID (Stealth SOHC, DOHC Non Turbo-Fed., 3000GT Non Turbo-Fed.)  
Courtesy of Mitsubishi Motor Sales of America.

SOHC & DOHC-FED.

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**3000GT – REAR INJECTOR BANK**

**93A45112**

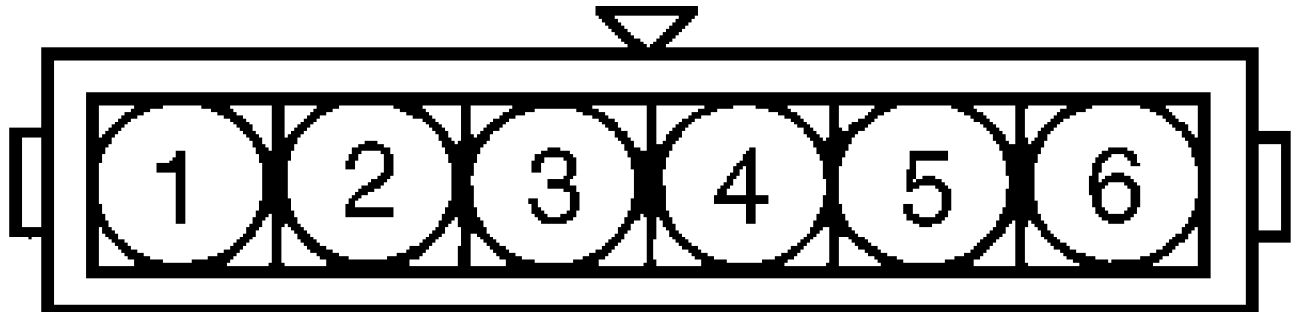
Fig. 9: Fuel Injector Terminal ID (3000GT – Rear Injector Bank)  
Courtesy of Mitsubishi Motor Sales of America.



ALL OTHER MODELS

**93B45113**

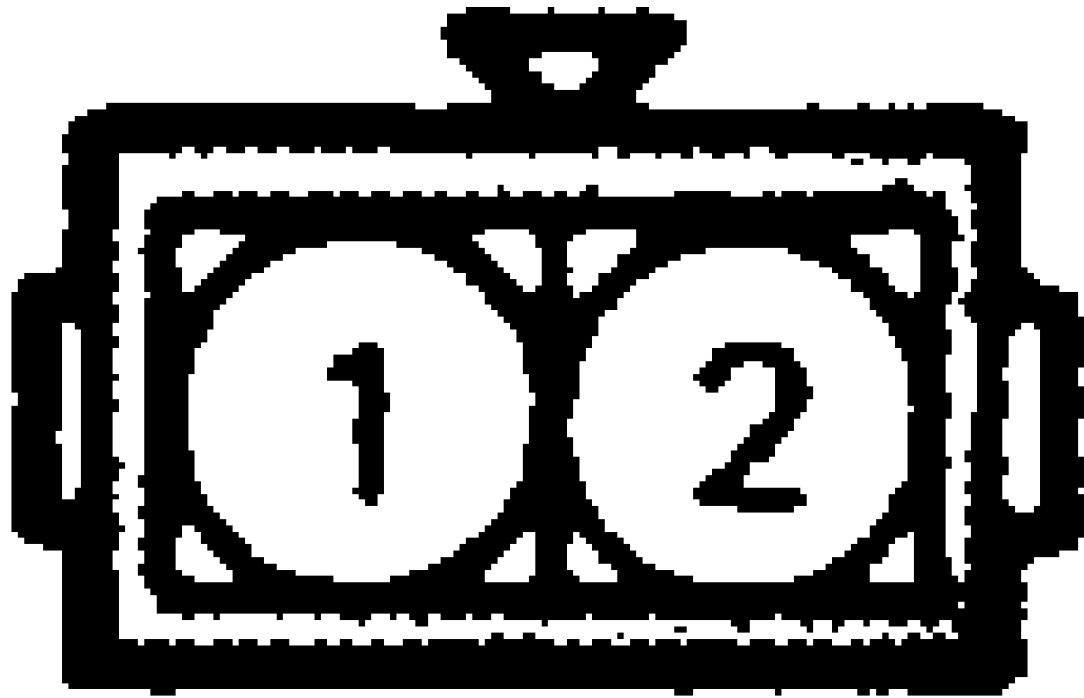
Fig. 10: Fuel Injector Terminal ID (All Others)  
Courtesy of Mitsubishi Motor Sales of America.



**93E80261**

Fig. 11: Idle Air Control Valve Position Sensor Terminal ID  
Courtesy of Mitsubishi Motor Sales of America.

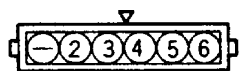




ISC MOTOR

50A02532

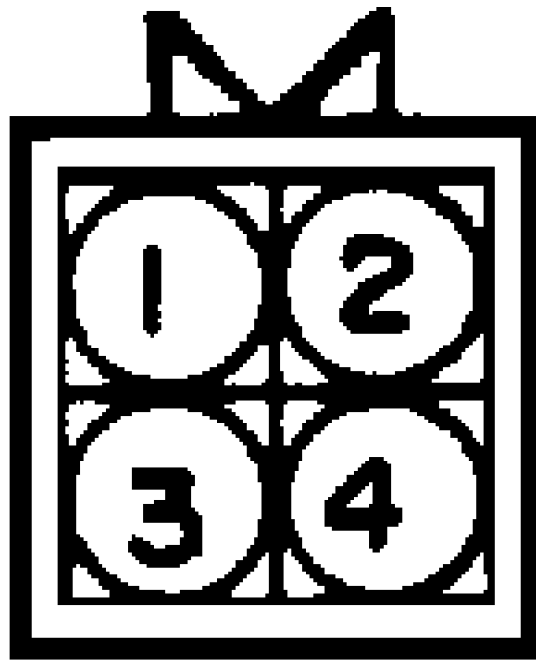
Fig. 12: Idle Speed Control Motor Sensor Terminal ID  
Courtesy of Mitsubishi Motor Sales of America.



ISC POSITION SENSOR

50C02533

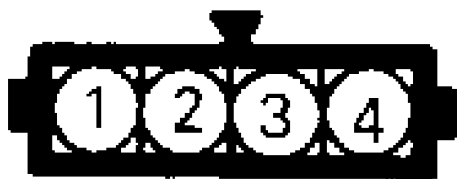
Fig. 13: Idle Speed Control Position Sensor Terminal ID  
Courtesy of Mitsubishi Motor Sales of America.



# ALL OTHER MODELS

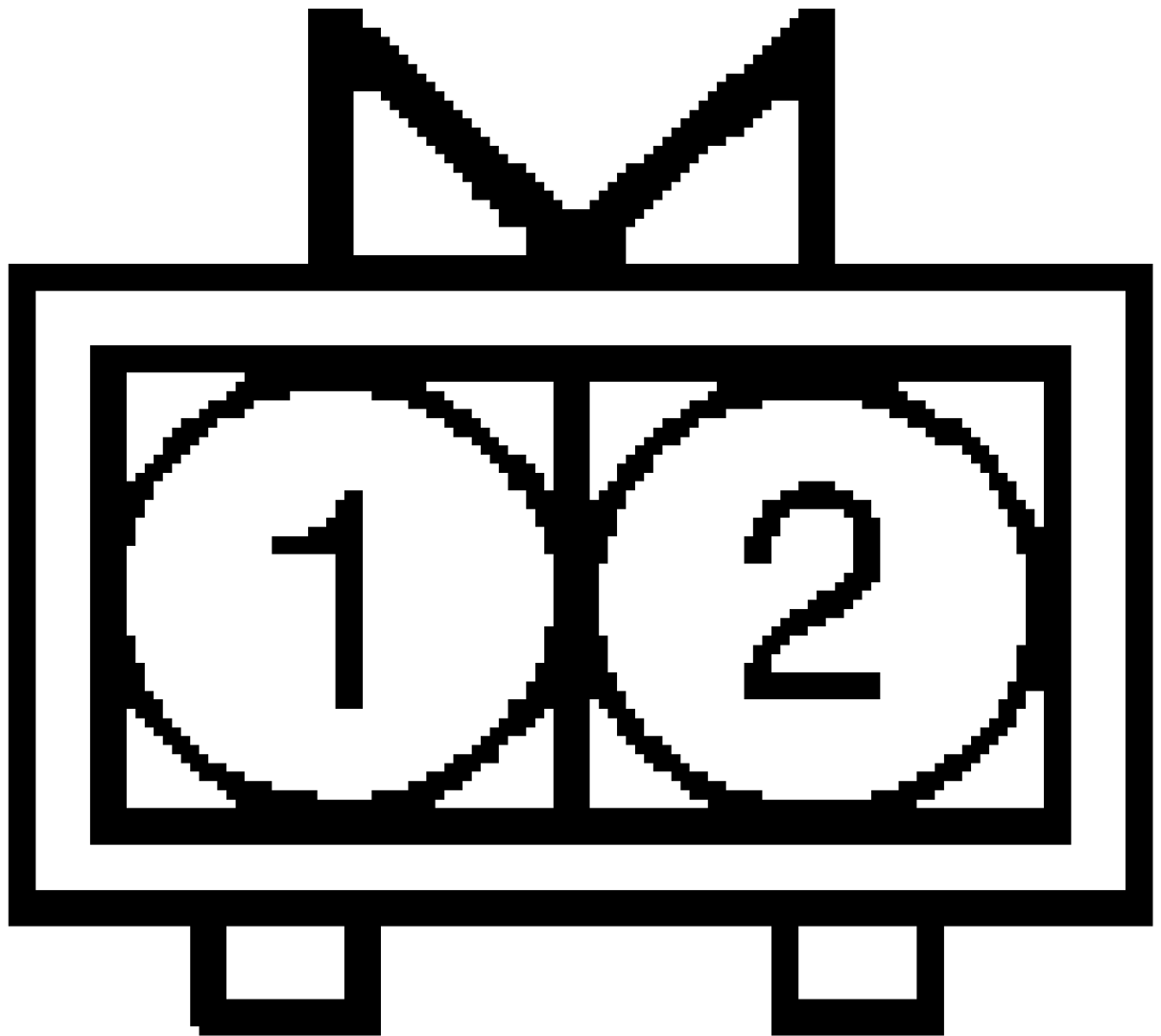
## 50H02540

Fig. 14: Identifying Ignition Coil Terminals  
Courtesy of Mitsubishi Motor Sales of America.



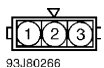
93H80264

Fig. 15: Induction Control Valve Position Sensor Terminal ID  
Courtesy of Mitsubishi Motor Sales of America.



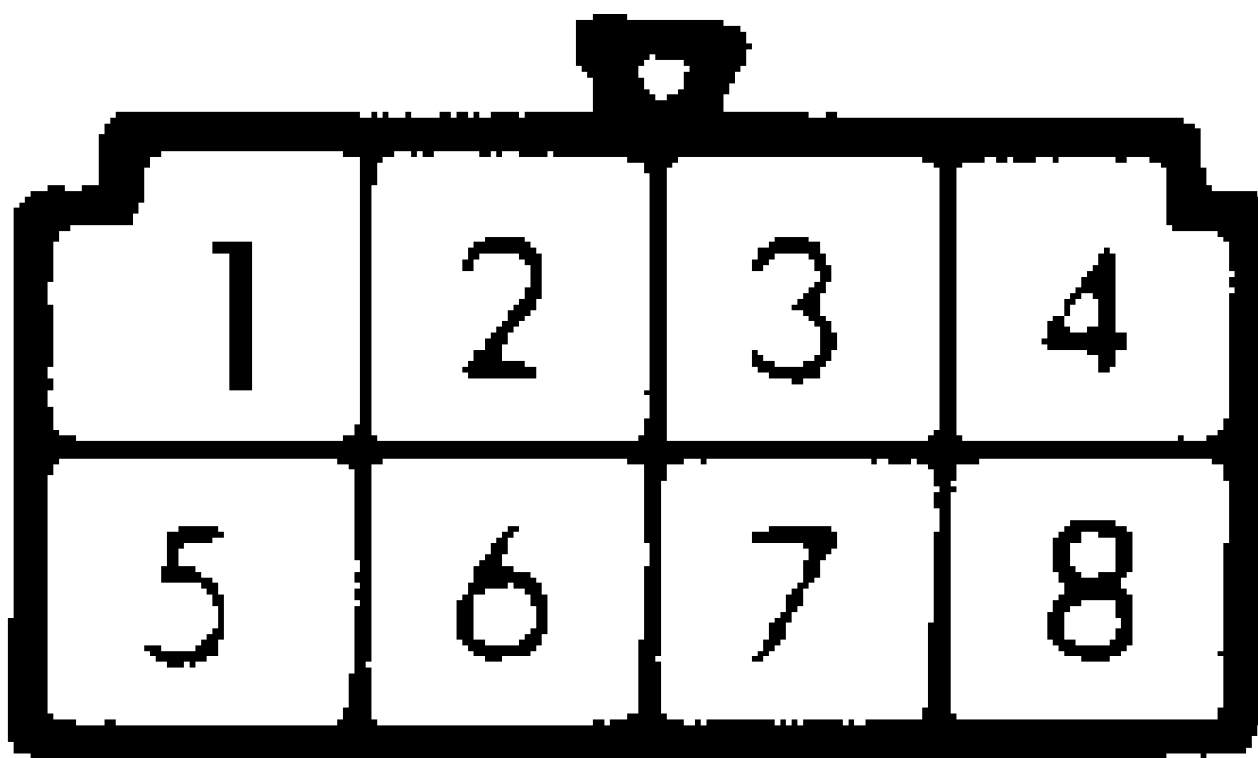
93180265

Fig. 16: Identifying Knock Sensor Terminals  
 Courtesy of Mitsubishi Motor Sales of America.



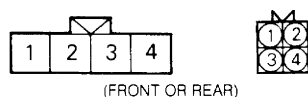
93180266

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



94H44559

Fig. 18: Identifying MFI Relay Terminals  
 Courtesy of Mitsubishi Motor Sales of America.



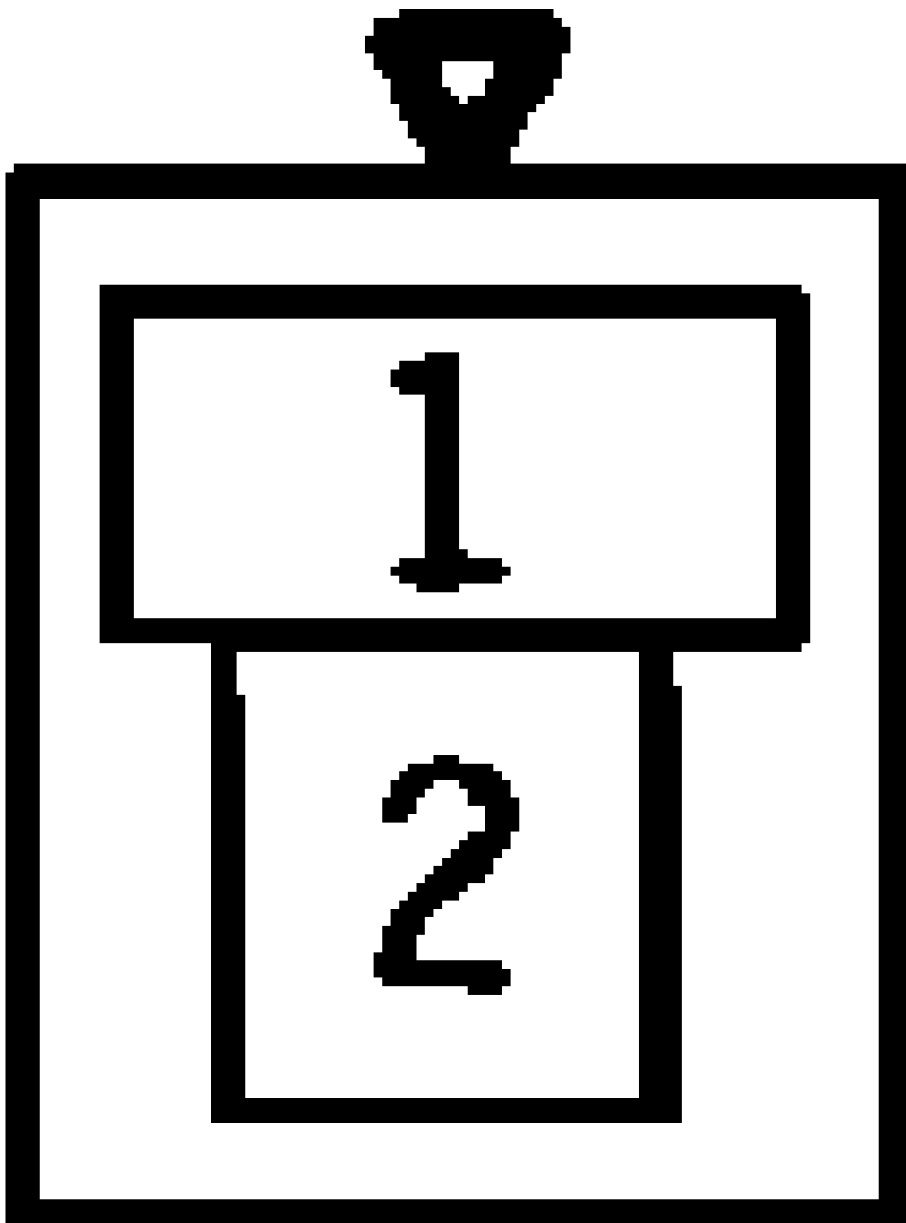
(FRONT OR REAR)

94F44201  
 Fig. 19: Identifying Oxygen Sensor (O2S) Terminals  
 Courtesy of Mitsubishi Motor Sales of America.



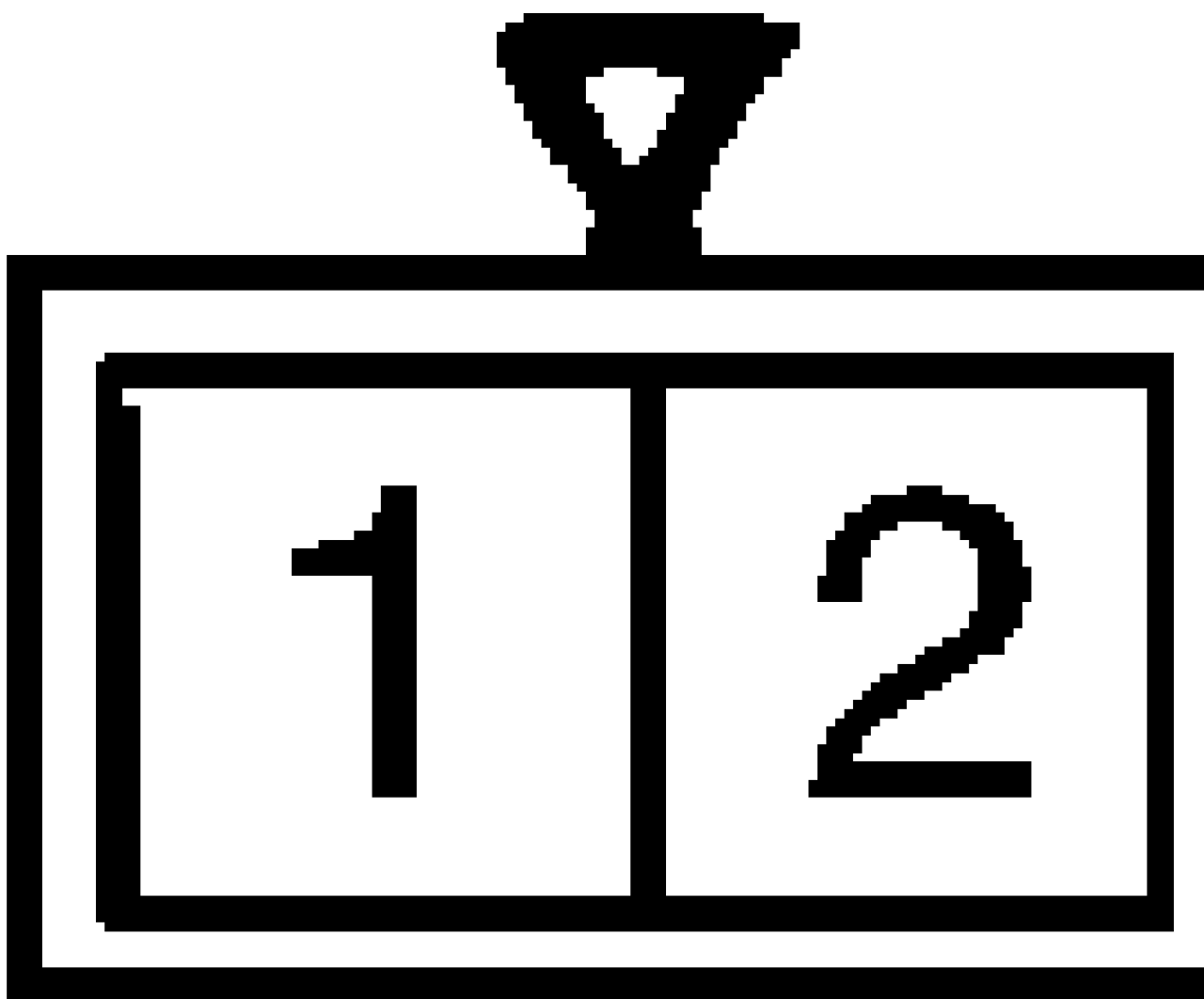
93C80269

Fig. 20: Identifying Throttle Position Sensor Terminals  
 Courtesy of Mitsubishi Motor Sales of America.



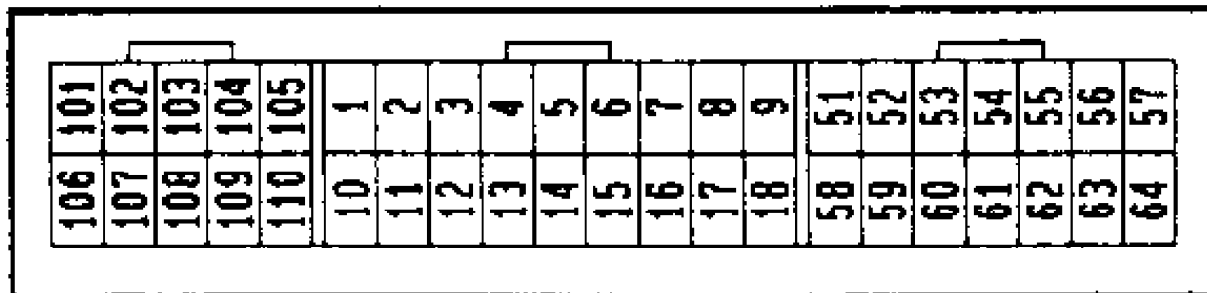
93F80270

Fig. 21: Identifying Traction Control Vacuum Solenoid Terminals  
Courtesy of Mitsubishi Motor Sales of America.



93G80271

Fig. 22: Identifying Traction Control Vent Solenoid Terminals  
Courtesy of Mitsubishi Motor Sales of America.



93H80272

Fig. 23: Identifying Transaxle Control Module Terminals  
Courtesy of Mitsubishi Motor Sales of America.

## DIAGNOSTIC TESTS

**CAUTION:** Ensure ignition switch is in OFF position when performing resistance tests.

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

**NOTE:** For wire color identification at ECM terminals, see appropriate pin voltage chart in J - PIN VOLTAGE CHARTS article in the ENGINE PERFORMANCE Section.

Clear trouble codes after each repair. See CLEARING CODES under SELF-DIAGNOSTIC SYSTEM. Recheck for codes to confirm repair. See RETRIEVING CODES under SELF-DIAGNOSTIC SYSTEM.

## CODE 11: HEATED OXYGEN SENSOR (HO2S) (4-WIRE OXYGEN SENSOR)

**NOTE:** For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

1) If using scan tester, go to step 3). Disconnect HO2S connector. On all turbo models, install Test Harness (MB998464) between HO2S and HO2S connector. On all models, use DVOM to check resistance between specified HO2S connector heater terminals. See 4-WIRE HO2S CONNECTOR TERMINAL IDENTIFICATION table. HO2S resistance should be 20 ohms at 68°F (20°C). If resistance is not as specified, replace HO2S. If resistance is as specified, go to next step.

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

### HO2S CONNECTOR TERMINAL IDENTIFICATION TABLE

(1) Heater

Output

Application	Terminals No.	Terminals No.
Turbo .....	1 & 3 .....	2 & 4
Non-Turbo .....	3 & 4 .....	1 & 2

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

3) Start and warm engine to operating temperature. Using scan tester, read HO2S voltage. While monitoring scan tester, accelerate to 4000 RPM. Suddenly decelerate. Scan tester should read .3 volt or less. Suddenly accelerate. Scan tester should read .5-1.0 volt. If voltage is not as specified, replace HO2S. If voltage is as specified, go to next step.

4) While monitoring scan tester, accelerate to 2000 RPM and decelerate to 700 RPM (idle). Scan tester should switch between .6-1.0 volt and .4 volt or less. If voltage is not as specified, replace HO2S. If voltage is as specified, go to next step.

5) Disconnect HO2S connector, go to next step.

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

7) Using DVOM, check for continuity between specified HO2S connector terminals and ECM connector terminals. See HO2S-TO-ECM WIRING HARNESS TERMINAL IDENTIFICATION table. If continuity does not exist on either circuit, repair appropriate circuit for open or short to ground as necessary. If continuity exists, go to next step.

#### HO2S-TO-ECM WIRING HARNESS TERMINAL IDENTIFICATION TABLE

Application	HO2S Terminal No.	ECM Terminal No.
Non-Turbo .....	1 .....	56
Turbo .....	4 .....	56

8) Disconnect HO2S connector. Using DVOM, check for continuity between terminal No. 2 and chassis ground. If continuity does not exist, repair wiring harness as necessary. If no system or component malfunctions occur in preceding tests, condition required to set trouble code is not present at this time. Test is complete. Intermittent problem may exist. See H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

9) Disconnect ECM connector. Turn ignition switch to ON position. Using DVOM, check voltage between ECM connector terminal No. 35 and chassis ground. If system voltage does not exist, repair wiring harness as necessary. If system voltage exists and no system or component malfunctions occur in preceding tests, condition required to set trouble code is not present at this time. Test is complete. Intermittent problem may exist. See H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

## CODE 12: AIRFLOW SENSOR

NOTE: For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

NOTE: Procedures are provided by manufacturer for component testing using an engine analyzer with oscilloscope



capability. Refer to manufacturer's operation manual for instructions in use of oscilloscope. If using a scan tester, go to step 3).

1) If using scan tester, go to step 3). Disconnect Airflow Sensor (AFS) connector. Install Test Harness (MB991348) between AFS and AFS connector. Using engine analyzer with oscilloscope capability, connect special patterns probe to AFS connector terminal No. 3.

2) Start engine. Verify that wave form high frequency and low frequency patterns are of approximately the same length (time). See Fig. 24. Verify that wave length decreases and frequency increases as engine RPM increases. If conditions are not as specified, replace AFS. If conditions are as specified, go to step 4).



93180273

Fig. 24: Identifying Known-Good Airflow Sensor Wave Pattern  
Courtesy of Mitsubishi Motor Sales of America

3) Warm vehicle to normal operating temperature. Ensure headlights and accessories are off. Ensure steering wheel is in straight-ahead position. Using scan tester, read Airflow Sensor (AFS) volume (frequency) value. See AIRFLOW SENSOR VALUES table. Frequency should increase when engine is raced. If values are not as specified, replace AFS. If values are as specified, go to next step.

#### AIRFLOW SENSOR VALUES TABLE

Application	Hz @	
	700 RPM	2000 RPM
Stealth SOHC .....	21-47 .....	57-97
Stealth & 3000GT		
DOHC Non-Turbo .....	22-48 .....	50-90
DOHC Turbo .....	22-48 .....	68-108

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

5) With ignition switch in ON position, use DVOM to check voltage between terminal No. 3 and chassis ground. If voltage is not 4.8-5.2 volts, repair wiring harness as necessary. If voltage is as specified, go to next step.

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

7) Disconnect AFS connector and ECM connector. Using DVOM, check for continuity between AFS connector terminal No. 7 and ECM connector terminal No. 57. If continuity does not exist on specified circuit(s), repair appropriate circuit for open or short to ground as necessary. If continuity exists, condition required to set trouble code is not present at this time. Test is complete. Intermittent problem may exist. See H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

### CODE 13: INTAKE AIR TEMPERATURE SENSOR

**NOTE:** Intake air temperature sensor is built into airflow sensor. For CODE 13 test purposes, airflow sensor will be referred to as intake air temperature sensor. For component terminal identification, see AIRFLOW SENSOR under TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

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

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

3) Turn ignition switch to ON or RUN position. Using a thermometer, check engine compartment ambient temperature. Using scan tester, read Intake Air Temperature (IAT) sensor temperature. See IAT SENSOR TEMPERATURE table. If temperatures are not as specified, replace IAT sensor. If temperatures are as specified, go to next step.

IAT SENSOR TEMPERATURE TABLE

Ambient Temperature	Standard Value
-4°F (-20°C) .....	-20 °C
32°F (0°C) .....	0 °C
68°F (20°C) .....	20 °C
104°F (40°C) .....	40 °C
176°F (80°C) .....	80 °C

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

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

### CODE 14: THROTTLE POSITION SENSOR

**NOTE:** For component terminal identification, see TERMINAL

IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

1) If using scan tester, go to step 3). Disconnect Throttle Position Sensor (TPS) connector. Using DVOM, check resistance between TPS terminals No. 1 and No. 4. If resistance is not 3500-6500 ohms, replace TPS. If resistance is as specified, go to next step.

2) Check resistance between TPS terminals No. 2 & 4. While monitoring DVOM, slowly open throttle from idle to fully open position. If resistance does not change smoothly, replace TPS. If resistance changes smoothly, go to step 4).

3) Turn ignition switch to ON position. Using scan tester, read Throttle Position Sensor (TPS) voltage. With throttle at idle, voltage should read .3-1.0 volt. Voltage should increase while slowly opening throttle. At wide open throttle, voltage should read 4.5-5.5 volts. If voltage is not as specified, replace TPS. If voltage is as specified, go to next step.

4) Disconnect TPS connector. Turn ignition switch to ON position. Using DVOM, check voltage between chassis ground and TPS connector terminal No. 4. If voltage is not 4.8-5.2 volts, repair wiring harness as necessary. If voltage is as specified, go to next step.

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

6) With TPS connector and ECM connector disconnected, check for continuity between TPS connector terminal No. 2 and ECM connector terminal No. 84. If continuity does not exist, repair wiring harness as necessary. If continuity exists, condition required to set trouble code is not present at this time. Test is complete. Intermittent problem may exist. See H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

## CODE 21: ENGINE COOLANT TEMPERATURE (ECT) SENSOR

NOTE: For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

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

ECT SENSOR RESISTANCE SPECIFICATIONS TABLE

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

2) Turn ignition switch to ON or RUN position. Using a thermometer, check engine compartment ambient temperature. Using scan tester, read Engine Coolant Temperature (ECT) sensor voltage. See ECT SENSOR VOLTAGE SPECIFICATIONS table. If voltage is not within specifications, replace ACT sensor. If voltage is within specification, go to next step.

## ECT SENSOR VOLTAGE SPECIFICATIONS TABLE

Ambient Temperature	Standard Value °F (°C)
-4°F (-20°C)	-20 °C
32°F (0°C)	0 °C
68°F (20°C)	20 °C
104°F (40°C)	40 °C
176°F (80°C)	80 °C

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

4) Turn ignition switch to ON position. Check voltage between chassis ground and ECT sensor connector terminal No. 2. If voltage is not 4.5-4.9 volts, replace ECM. If voltage is as specified, condition required to set trouble code is not present at this time. Test is complete. Intermittent problem may exist. See H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

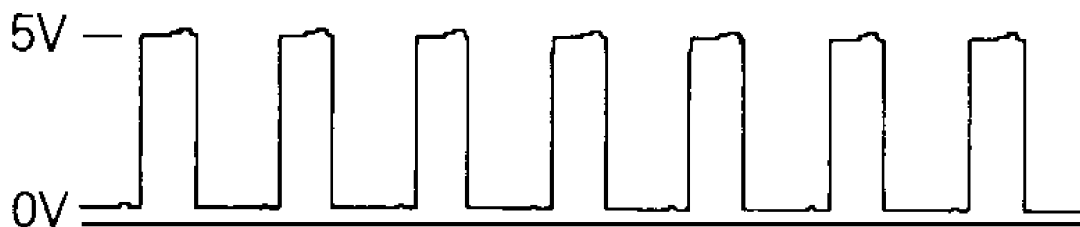
## CODE 22: CRANKSHAFT POSITION (CKP) SENSOR

NOTE: For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

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

1) If using a scan tester, go to step 3). If using engine analyzer with oscilloscope capability, connect special patterns probe to connector terminal No. 2.

2) Start engine. Compare oscilloscope wave pattern with known-good wave pattern. See Fig. 25. Verify that wave length (time) decreases as engine RPM increases. If a wave pattern is output and it fluctuates to left or right, check for loose timing belt or an abnormality in sensor pick-up disc. If a rectangular wave pattern is output even when engine is not started, substitute known-good CKP sensor. Repeat test. If wave pattern is still abnormal, go to step 5).



93A80275

Fig. 25: Identifying Known-Good CKP Sensor Wave Pattern  
Courtesy of Mitsubishi Motor Sales of America

3) Connect an engine tachometer. Crank engine. Ensure ignition coil primary current toggles on and off. Using tachometer and

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

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

IDLE RPM SPECIFICATIONS TABLE

Coolant Temperature	Engine RPM
-4°F (-20°C) .....	1300-1500
32°F (0°C) .....	1250-1450
68°F (20°C)	
Stealth DOHC & 3000GT .....	1100-1300
Stealth SOHC .....	1050-1250
104°F (40°C)	
Stealth DOHC & 3000GT .....	950-1150
Stealth SOHC .....	850-1050
176°F (80°C) .....	600-800

5) Disconnect CKP/CMP sensor connector. Turn IG switch to ON position. Using DVOM, check voltage between chassis ground and CKP/CMP sensor connector terminal No. 3. If battery voltage does not exist, repair ignition circuit between CKP/CMP sensor connector and IG switch. If battery voltage exists, go to next step.

6) With CKP/CMP sensor connector disconnected, check for continuity between chassis ground and CKP/CMP sensor connector terminal No. 1 or terminal No. 4 (Stealth SOHC). If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

7) With ignition switch in ON position, check for voltage between chassis ground and CKP/CMP sensor connector terminal No. 2. If 4.8-5.2 volts do not exist, replace ECM. If voltage is to specification and CKP sensor is suspected, replace CKP sensor.

## CODE 23: CAMSHAFT POSITION SENSOR

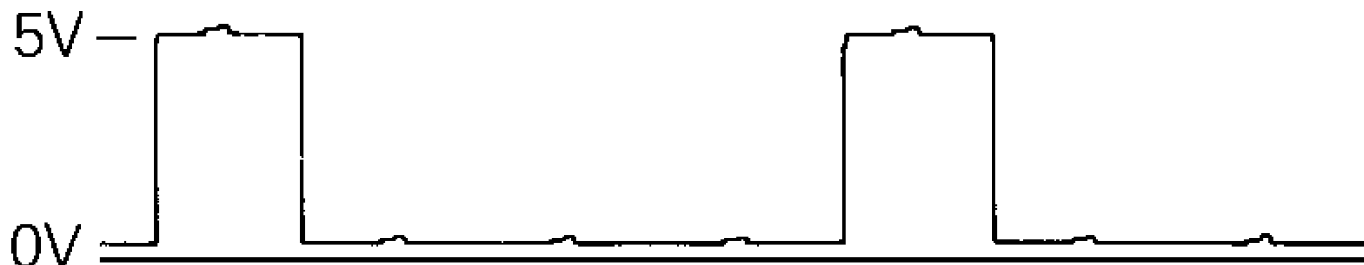
NOTE: For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

NOTE: Procedures are provided by manufacturer for component testing using an engine analyzer with oscilloscope capability. Refer to manufacturer's operation manual for instructions in use of oscilloscope. Manufacturer does not provide procedures for testing component using a scan tester.

1) Using engine analyzer with oscilloscope capability, connect special patterns probe to specified connector terminal No. 1.

2) Start engine. Compare oscilloscope wave pattern with known-good wave pattern. See Fig. 26. Verify that wave length (time) decreases as engine RPM increases. If a wave pattern is output and it fluctuates to left or right, check for loose timing belt or an

abnormality in sensor pick-up disc. If a rectangular wave pattern is output even when engine is not started, substitute known-good CMP sensor. Repeat test. If wave pattern is still abnormal, go to next step.



**93C80277**

Fig. 26: Identifying Known-Good CMP Sensor Wave Pattern  
Courtesy of Mitsubishi Motor Sales of America

3) Disconnect CKP/CMP sensor connector. Turn ignition switch to ON position. Using DVOM, check voltage between chassis ground and CKP/CMP sensor connector terminal No. 3. If battery voltage does not exist, repair ignition circuit between CKP/CMP sensor connector and IG switch. If battery voltage exists, go to next step.

4) With CKP/CMP sensor connector disconnected, check for continuity between chassis ground and CKP/CMP sensor connector terminal No. 1 or terminal No. 4 (Stealth SOHC). If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

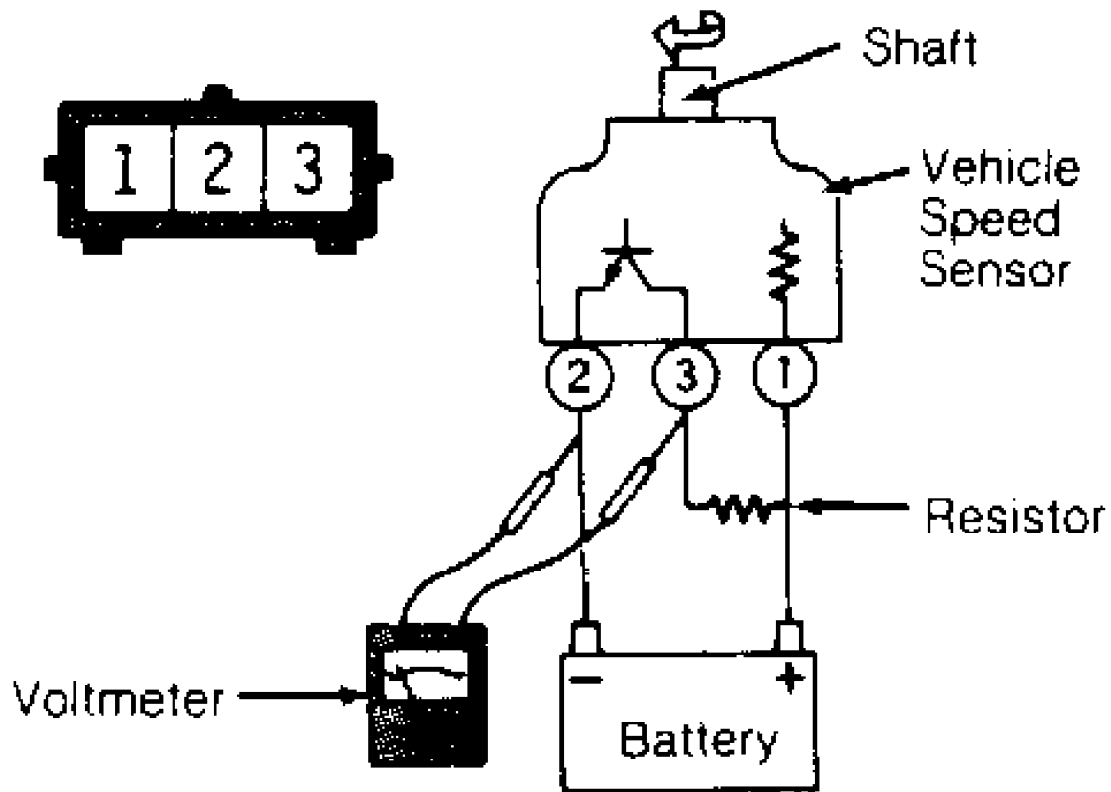
5) With ignition switch in ON position, check for voltage between chassis ground and CKP/CMP sensor connector terminal No. 2 or terminal No. 1 (Stealth SOHC). If 4.8-5.2 volts do not exist, replace ECM. If voltage is as specified, condition required to set trouble code is not present at this time. Test is complete. Intermittent problem may exist. See H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

## CODE 24: VEHICLE SPEED SENSOR

NOTE: For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

1) Manufacturer does not provide Vehicle Speed Sensor (VSS) testing procedures using scan tester. Go to next step

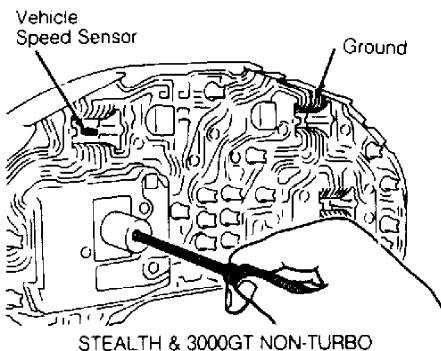
2) VSS is located at end of speedometer cable in transmission. Remove VSS. Connect battery, resistor (3-10 ohms) and voltmeter to indicated terminals. See Fig. 27 or 28. Ensure voltage pulses 4 times per speedometer shaft revolution. If voltage is not as specified, replace VSS. If voltage is as specified, go to next step.



STEALTH & 3000GT TURBO

93E01841

Fig. 27: Identifying VSS Test Terminals (Turbo)  
Courtesy of Mitsubishi Motor Sales of America.



STEALTH & 3000GT NON-TURBO

93C01840

Fig. 28: Identifying VSS Test Terminals (Non-Turbo)  
Courtesy of Mitsubishi Motor Sales of America.

3) Disconnect ECM connector. Using DVOM, check continuity between chassis ground and ECM connector terminal No. 66. Move

vehicle. Ensure continuity pulses on and off 4 times per tire revolution. If continuity is as specified, conditions required to set code are not present at this time, test is complete. If continuity is not as specified, go to step 5).

4) With ECM connector disconnected, disconnect VSS connector. Ground ECM connector VSS output terminal No. 66. Using DVOM, check for continuity between chassis ground and VSS connector terminal No. 9. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

5) With VSS connector disconnected, check for continuity between chassis ground and VSS connector terminal No. 102. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

6) With VSS connector and ECM connector disconnected, turn ignition switch to ON position. Using DVOM, check for voltage between chassis ground and VSS connector terminal No. 109. If voltage is not 4.5-4.9 volts, replace ECM. If voltage is as specified, condition required to set trouble code is not present at this time. Test is complete. Intermittent problem may exist. See H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

## CODE 25: BAROMETRIC PRESSURE SENSOR

**NOTE:** Barometric (BARO) pressure sensor is built into airflow sensor. For code 25 test purposes, the airflow sensor will be referred to as the BARO pressure sensor. For component terminal identification, see AIRFLOW SENSOR under TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

1) Manufacturer does not provide component testing procedure without scan tester. Turn ignition switch to ON position. Using scan tester, read sensor pressure. See BARO PRESSURE SENSOR SPECIFICATIONS table. If pressure is not as specified, replace BARO pressure sensor. If pressure is as specified, go to next step.

BARO PRESSURE SENSOR SPECIFICATIONS TABLE

Altitude Ft. (M)	Pressure In. Hg
0 (0)	29.92
1969 (600)	27.95
3937 (1200)	25.98
5906 (1800)	24.02

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

3) With BARO pressure sensor connector disconnected, turn ignition switch to ON position. Check for voltage between chassis ground and BARO pressure sensor connector terminal No. 1. If voltage is not 4.8-5.2 volts, repair wiring harness as necessary. If voltage is as specified, go to next step.

4) With BARO pressure sensor connector and ECM connector disconnected, ground ECM connector terminal No. 65. Using DVOM, check for continuity between chassis ground and BARO pressure sensor connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, condition required to set code is not present at this time. Test is complete. Intermittent problem may exist. See H - TESTS W/O CODES article in the ENGINE



PERFORMANCE Section.

### CODE 31: KNOCK SENSOR

NOTE: For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

1) Manufacturer does not provide component testing procedure using scan tester. Go to next step.

2) Disconnect knock sensor connector and ECM connector. Ground ECM connector terminal No. 58. Using DVOM, check continuity between chassis ground and knock sensor connector terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

3) With knock sensor connector disconnected, check for continuity between chassis ground and knock sensor connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, condition required to set code is not present at this time. Test is complete.

### CODE 36: IGNITION TIMING ADJUSTMENT SIGNAL

NOTE: For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

Turn ignition switch to ON position. Using DVOM, check voltage at ignition timing adjustment terminal (located at firewall) with terminal grounded and ungrounded. With terminal grounded, voltage should be 0-1.0 volt. With terminal ungrounded, voltage should be 4.0-5.5 volts. If voltage is not as specified, repair ignition timing adjustment terminal wiring harness or connector as necessary. If voltage is as specified, replace ECM.

### CODE 39: OXYGEN SENSOR (O2S)

NOTE: For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

1) If using scan tester, go to step 3). Disconnect O2S connector. Install Test Harness (MB998464) between O2S and O2S connector. Using DVOM, check resistance between O2S connector terminals No. 1 and No. 3. O2S resistance should be 20 ohms at 68°F (20°C). If resistance is not as specified, replace O2S. If resistance is as specified, go to next step.

2) Start and warm engine to operating temperature. Using jumper wires, ground O2S connector terminal No. 3 and apply 12 volts to O2S connector terminal No. 1. Using DVOM, check voltage between O2S connector terminals No. 2 and No. 4 while repeatedly racing engine. If voltage is not .6-1.0 volt, replace O2S. If voltage is as specified, go to step 5).

3) Start and warm engine to operating temperature. Using scan tester, read O2S voltage. While monitoring scan tester, accelerate engine to 4000 RPM. Suddenly decelerate engine. Scan tester should read .2 volt or less. Suddenly accelerate engine. Scan tester should read .6-1.0 volt. If voltage is not as specified, replace O2S. If voltage is as specified, go to next step.

4) While monitoring scan tester, accelerate to 2000 RPM and decelerate to 700 RPM (idle). Scan tester should switch between .6-1.0 volt and .4 volt or less. If voltage is not as specified, replace O2S. If voltage is as specified, go to next step.

5) With O2S connector disconnected, turn ignition switch to ON position. Using DVOM, check voltage between chassis ground and O2S connector terminal No. 1. If system voltage does not exist, repair wiring harness as necessary. If system voltage exists, go to next step.

6) Using DVOM, check for continuity between O2S connector terminal No. 4 and ECM connector terminal No. 56. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

7) With O2S connector disconnected, check for continuity between chassis ground O2S connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, condition required to set fault is not present at this time. Test is complete. Intermittent problem may exist. See H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

## CODE 41: FUEL INJECTOR

NOTE: For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

1) Using a stethoscope or long-bladed screwdriver, listen for clicking sound from each injector while engine is running or being cranked. If no sound is heard from injector(s), check injector connections. If connections are not okay, repair connections as necessary. If connections are okay, go to next step.

2) Disconnect injector connector. Using DVOM, check resistance across injector terminals. If resistance is not 13-16 ohms, replace injector. If resistance is as specified, go to next step.

3) Using scan tester, read injector drive time while cranking engine. See INJECTOR CRANKING DRIVE TIME SPECIFICATIONS table. Go to next step.

INJECTOR CRANKING DRIVE TIME SPECIFICATIONS TABLE

Coolant Temperature	Drive Time
32°F (0°C)	
Stealth Turbo .....	8.8-10.8 ms
3000GT Turbo .....	8.1-9.9 ms
Stealth & 3000GT Non-Turbo .....	13.8-16.8 ms
68°F (20°C)	
Stealth Turbo .....	25.6-31.2 ms
3000GT Turbo .....	26.1-31.9 ms
Stealth & 3000GT Non-Turbo .....	40.0-48.8 ms
176°F (80°C)	
Stealth Turbo .....	5.5-6.7 ms
3000GT Turbo .....	6.3-7.7 ms
Stealth & 3000GT Non-Turbo .....	8.6-10.6 ms

4) Ensure coolant temperature is at 176-205°F (80-95°C), all accessories are off and transaxle is in Neutral position. Using scan tester, read injector drive time under specified engine conditions. See INJECTOR OPERATING DRIVE TIME SPECIFICATIONS table. Go to next step.

INJECTOR OPERATING DRIVE TIME SPECIFICATIONS TABLE

Engine State	Drive Time
750 RPM	

Non-Turbo .....	2.3-3.5 ms
Turbo .....	1.6-3.8 ms
2000 RPM	
Non-Turbo .....	2.0-3.3 ms
Turbo .....	1.4-2.6 ms
Suddenly Accelerated	
All Models .....	(1)

(1) - Drive time should increase.

5) Allow engine to idle after warm up. Using scan tester, shut off injectors in sequence. Idle should change when good injectors are shut off. If idle state does not change, check injector connection, spark plug and cable, and cylinder compression. If conditions are not as specified in preceding steps, go to next step.

6) Disconnect MFI relay resistor connector. Turn ignition switch to ON position. Using DVOM, check for voltage between chassis ground and resistor connector terminal No. 2. See Fig. 29. If battery voltage does not exist, repair wiring harness as necessary between MFI relay resistor connector and MFI relay. If battery voltage exists, reconnect MFI relay resistor connector. Go to next step.



## VIEWED FROM HARNESS SIDE

### 93H80280

Fig. 29: Identifying MFI Relay Resistor Terminals  
Courtesy of Mitsubishi Motor Sales of America

7) If faulty injector is on rear injector bank, go to next step. Disconnect injector connector at faulty front injector. Turn ignition switch to ON position. Using DVOM, check voltage between chassis ground and injector connector terminal No. 1. If battery voltage does not exist, repair wiring harness as necessary between injector connector and MFI relay. If voltage exists, go to step 18).

8) Disconnect rear bank injector connector. Using DVOM, check voltage between chassis ground and injector connector terminal No. 1. If battery voltage does not exist, repair wiring harness as necessary between injector connector and MFI relay. If voltage exists, go to step 10).

9) With injector connector disconnected, disconnect ECM connector. Ground ECM connector terminal No. 1 for injector No. 1, No. 2 for injector No. 3, or No. 3 for injector No. 3. Using DVOM, check for continuity between chassis ground and injector connector terminal No. 2. If continuity does not exist, repair wiring harness as necessary between appropriate injector connector and ECM connector terminal. If continuity exists, condition required to set code is not present at this time. Test is complete. Intermittent problem may

exist. See H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

10) With rear bank injector connector disconnected, disconnect ECM connector. Ground ECM connector terminal No. 14 for injector No. 2, No. 15 for injector No. 4, or No. 16 for injector No. 6. Using DVOM, check for continuity between chassis ground and rear bank injector connector terminal No. 2 for injector No. 2, No. 3 for injector No. 4, or No. 4 for injector No. 6. If continuity does not exist, repair wiring harness between rear bank injector connector and ECM connector. If continuity exists, condition required to set code is not present at this time. Test is complete. Intermittent problem may exist. See H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

### CODE 43: EGR TEMPERATURE SENSOR

NOTE: For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

1) If using scan tester, go to step 2). Remove EGR temperature sensor from intake manifold. Submerge temperature sensing portion of EGR temperature sensor in hot water. Using DVOM, check resistance across sensor terminals. Resistance should be 60,000-83,000 ohms at 122°F (50°C), 11,000-14,000 at 212°F (100°C). If resistance is not as specified, replace EGR temperature sensor. If resistance is as specified, go to step 3).

2) Warm engine to operating temperature. Allow engine to idle for 2 minutes. Squeeze green-striped hose between EGR valve and EGR solenoid. Using scan tester, read EGR temperature sensor temperature. At 700-750 RPM, scan tester should read 212°F (100°C) or less. At 3500-4000 RPM, scan tester should read 248°F (120°C) or more. If reading is not as specified, replace EGR temperature sensor. If reading is as specified, go to next step.

3) Disconnect EGR temperature sensor connector. Using DVOM, check continuity between chassis ground and EGR temperature sensor terminal No. 1. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

4) With EGR temperature sensor connector and ECM connector disconnected, turn ignition switch to ON position. Check voltage between chassis ground and EGR connector terminal No. 1. Voltage should be 3.3-4.7 volts. If voltage is not as specified, repair wiring harness as necessary. If voltage is as specified, condition required to set code is not present at this time. Test is complete. Intermittent problem may exist. See H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

### CODES 44, 52 & 53: IGNITION COILS

NOTE: For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

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

1) If using a scan tester, go to step 3). Start engine and let idle. Idle speed is 700 RPM. Using engine analyzer with oscilloscope capability, connect special pattern probe at ignition power transistor terminal No. 13. Observe oscilloscope wave pattern. See Fig. 30. Connect special pattern probe at ignition power

transistor terminal No. 3.

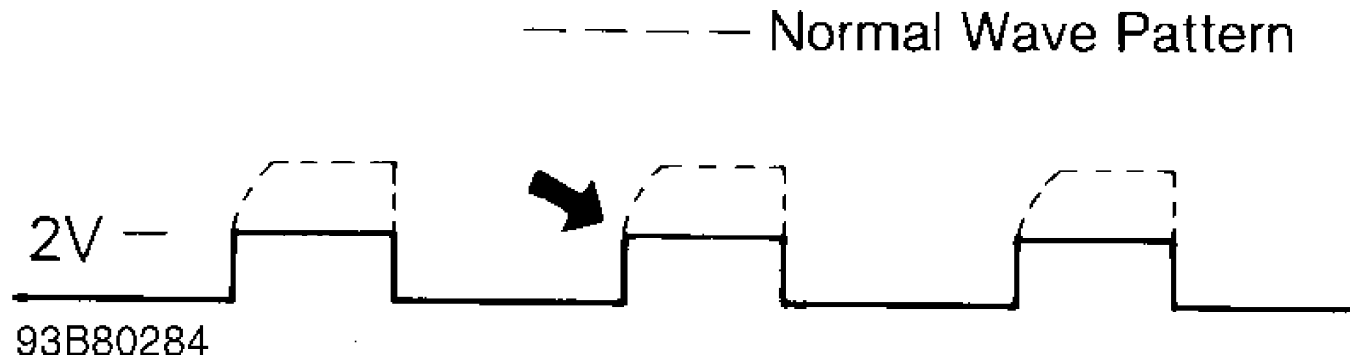


Fig. 30: Identifying Known-Good Ignition Coil Wave Pattern  
Courtesy of Mitsubishi Motor Sales of America

2) If oscilloscope wave pattern rise fluctuates to right and is between 2-4.5 volts for each transistor terminal, system is okay. If wave pattern is rectangular and is 2 volts or less, check for broken wire in primary ignition circuit. If wave pattern is rectangular and is 12 volts or more, replace defective ignition power transistor.

3) Using scan tester, check for continuity between chassis ground and ignition timing adjustment terminal. With engine at idle, ground ignition timing adjustment terminal (located at firewall). Scan tester should display ON. With ignition timing adjustment terminal not grounded, scan tester should display OFF. If conditions are not as specified, repair circuit between ignition timing adjustment connector and ECM terminal No. 104. If conditions are as specified, go to next step.

4) Connect timing light and tachometer. Ensure engine is at normal operating temperature. With engine at idle (700 RPM), check ignition timing. Timing should be 7-23 degrees BTDC.

5) With engine at 2000 RPM, timing should be 30-50 degrees BTDC on non-turbo models, or 23-43 degrees BTDC on turbo models. Ground ignition timing adjustment terminal. On all models, with engine idling, ignition timing should be 3-7 degrees BTDC.

6) Disconnect ignition coil connector. Turn ignition switch to ON position. Using a DVOM, check voltage at ignition coil connector terminal No. 3. If battery voltage is not present, repair wiring between ignition coil and ignition switch. If battery voltage is present, go to next step.

7) Disconnect ignition power resistor connector. Check voltage at ignition power resistor connector terminal No. 6. If battery voltage is not present, repair wiring between ignition power resistor connector and ignition switch. If battery voltage is present, go to next step.

8) Disconnect ECM connector. Ground ECM connector terminal No. 101. Check for continuity between chassis ground and ignition power transistor connector terminal No. 5. If continuity does not exist, check appropriate circuit for open or short to ground between ignition power transistor and ECM. If continuity exists, go to next step.

9) Check for continuity between ignition power transistor connector terminal No. 11 and ignition coil connector terminal No. 4. Check for continuity between ignition power resistor connector terminal No. 12 and ignition coil terminal No. 1.

10) Check for continuity between ignition power transistor connector terminal No. 13 and ignition coil connector terminal No. 2. If continuity does not exist, repair appropriate between ignition power transistor and ignition coil. If continuity exists, go to next

step.

11) Check for continuity between chassis ground and ignition power transistor connector terminal No. 4. If continuity does not exist, repair wiring between ignition power transistor connector and ground. If continuity exists, go to next step.

12) With ignition switch in START position, check voltage at ignition power transistor connector terminals No. 1, 2 and 3. Voltage should be 0.5-4.0 volts. If voltage is not as specified, repair appropriate circuit between ignition power transistor connector and ECM connector. If voltage is as specified, go to next step.

13) With ignition switch in ON position, check voltage at ignition timing adjustment connector. On all models, voltage should be 4.0-5.2 volts. If voltage is as specified, circuit is okay. If voltage is not as specified, repair wiring between ignition timing adjustment connector and ECM connector.

## **CODES 59 & 69: REAR OXYGEN SENSOR (O2S)**

**NOTE:** For component terminal identification, see **TERMINAL IDENTIFICATION**. For wiring diagrams, see **L - WIRING DIAGRAMS** article in the **ENGINE PERFORMANCE** Section.

1) If using scan tester, go to next step. Disconnect O2S connector. Using DVOM, check continuity between O2S terminals No. 3 and No. 4. If continuity does not exist, replace O2S. If continuity exists, go to step 3).

2) With an assistant, road test vehicle. Drive vehicle with wide open throttle in 2nd gear (M/T) or "L" position (A/T). Using scan tester, read O2S voltage. If O2S voltage is not .6-1.0 volt at 3500 RPM, replace O2S. If voltage is as specified, go to next step.

3) Disconnect O2S connector and MFI relay connector. Using DVOM, check for continuity between O2S connector terminal No. 3 and MFI relay connector No. 2. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

4) With O2S connector disconnected, disconnect ECM connector. Check for continuity between O2S connector terminal No. 1 and ECM connector terminal No. 55. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

5) With O2S connector disconnected, check for continuity between chassis ground and O2S connector terminals No. 2 and No. 4. If continuity does not exist on either circuit, repair wiring harness as necessary. If continuity exists and preceding test procedure did not discover any trouble codes, replace O2S.

## **CODE 61: TRANSAXLE CONTROL MODULE SIGNAL**

**NOTE:** For component terminal identification, see **TERMINAL IDENTIFICATION**. For wiring diagrams, see **L - WIRING DIAGRAMS** article in the **ENGINE PERFORMANCE** Section.

1) Disconnect Transaxle Control Module (TCM) and ECM connectors. Ground TCM connector terminal No. 7. Using DVOM, check continuity between chassis ground and ECM connector terminal No. 116. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

2) Ground TCM connector terminal No. 9. Check continuity between chassis ground and ECM connector terminal No. 59. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

3) Ground TCM connector terminal No. 108. Check continuity between chassis ground and ECM connector terminal No. 7. If continuity does not exist, repair wiring harness as necessary. If continuity exists, test is complete. Intermittent problem may exist. See

H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section.

## CODE 62: INDUCTION CONTROL VALVE POSITION SENSOR

NOTE: For component terminal identification, see TERMINAL IDENTIFICATION. For wiring diagrams, see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section. Induction control valve position sensor is built into induction control motor.

1) Disconnect induction control motor connector and ECM connector. Ground ECM connector terminal No. 61. Using DVOM, check continuity between chassis ground and induction control motor connector terminal No. 1.

2) Ground ECM connector terminal No. 111. Check continuity between chassis ground and induction control motor connector terminal No. 2.

3) Ground ECM connector terminal No. 103. Check continuity between chassis ground and induction control motor connector terminal No. 4.

4) If continuity exists in previous steps, go to next step. If continuity does not exist in previous steps, check for open or short to ground in appropriate circuit between ECM connector and induction control motor.

5) With induction control motor connector disconnected, check continuity between chassis ground and induction control motor connector terminal No. 3. If continuity does not exist, repair wiring harness as necessary. If continuity exists, go to next step.

6) Turn ignition switch to ON position. Ensure control motor connector is disconnected and ECM connector is connected. Using DVOM, check voltage at induction control motor connector terminals No. 2 and No. 4. If voltage is not 4.8-5.2 volts, repair wiring harness as necessary. If wiring harness is okay, replace ECM. If voltage is as specified, go to next step.

7) Ensure ignition switch is in ON position. Ensure control motor connector is disconnected and ECM connector is connected. Using DVOM, check voltage at induction control motor connector terminal No. 1. If voltage is not 4.8-5.2 volts, repair wiring harness as necessary. If wiring harness is okay, replace ECM. If voltage is as specified, test is complete. Intermittent problem may exist. See appropriate H - TESTS W/O CODES article in the ENGINE PERFORMANCE Section. If wiring harness, connectors and induction control motor are okay, replace air intake plenum assembly. See appropriate ENGINES article in the ENGINES Section.

## SUMMARY

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