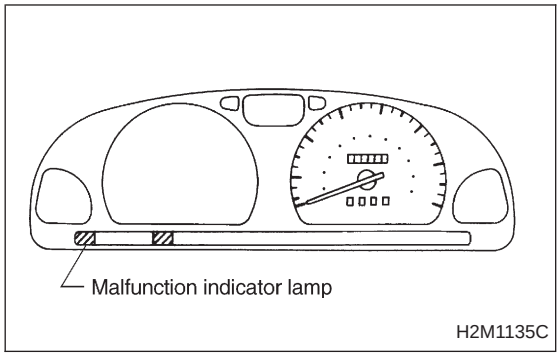
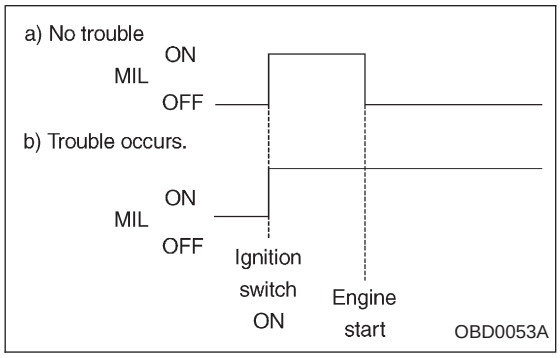


3. Diagnosis System

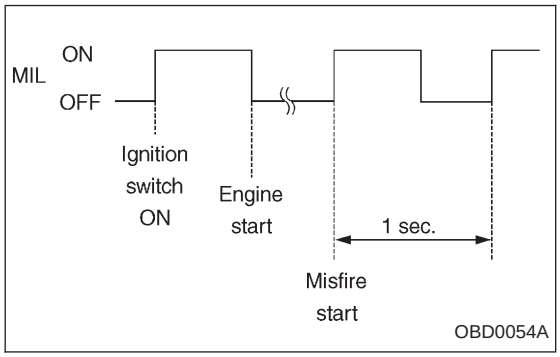
A: MALFUNCTION INDICATOR LAMP (MIL)

1. ACTIVATION OF MALFUNCTION INDICATOR LAMP (MIL)

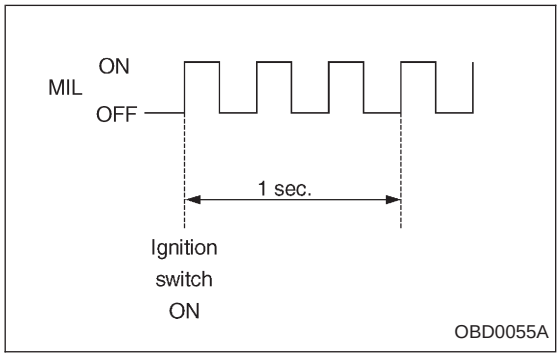
1) When ignition switch is turned to ON (engine off), the CHECK ENGINE malfunction indicator lamp (MIL) in the combination meter illuminates.
NOTE:
If the MIL does not illuminate, perform diagnostics of the CHECK ENGINE light circuit or the combination meter circuit. <Refer to “7. Diagnostics for CHECK ENGINE Malfunction Indicator Lamp (MIL), 2-7b [T700]”.>



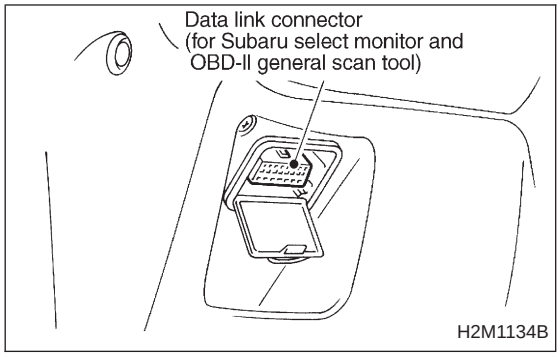
2) After starting the engine, the MIL goes out. If it does not, either the engine or the emission control system is malfunctioning.



3) If the diagnosis system senses a misfire which could damage the catalyzer, the MIL will blink at a cycle of 1 Hz.



4) When ignition switch is turned to ON (engine off) or to “START” with the test mode connector connected, the MIL blinks at a cycle of 3 Hz.



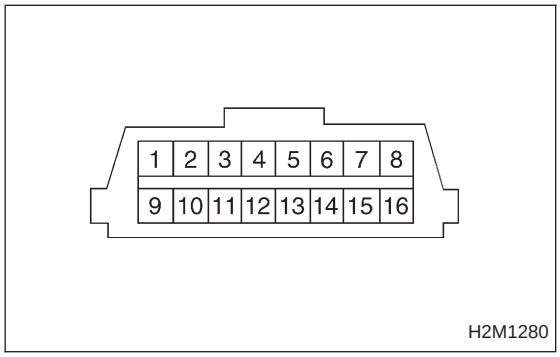
B: OBD-II GENERAL SCAN TOOL

1. HOW TO USE OBD-II GENERAL SCAN TOOL

1) Prepare a general scan tool (OBD-II general scan tool) required by SAE J1978.
2) Open the cover and connect the OBD-II general scan tool to the data link connector located in the lower portion of the instrument panel (on the driver's side), to the lower cover.
3) Using the OBD-II general scan tool, call up diagnostic trouble code(s) and freeze frame data.
OBD-II general scan tool functions consist of:

(1) MODE $01: Current powertrain diagnostic data
(2) MODE $02: Powertrain freeze frame data
(3) MODE $03: Emission-related powertrain diagnostic trouble codes
(4) MODE $04: Clear/Reset emission-related diagnostic information
(5) MODE $05: Oxygen sensor monitoring test results

Read out data according to repair procedures.
(For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.)
NOTE:
For details concerning diagnostic trouble codes, refer to the "DIAGNOSTIC TROUBLE CODE (DTC) LIST", 2-7b [T10A0].



2. DATA LINK CONNECTOR (FOR OBD-II GENERAL SCAN TOOL AND SUBARU SELECT MONITOR)

1) This connector is used both for OBD-II general scan tools and the Subaru Select Monitor.
2) Terminal No. 4 to No. 6 of the data link connector is used for the Subaru Select Monitor signal.

CAUTION:
Do not connect any scan tools other than the OBD-II general scan tools and the Subaru Select Monitor, because the circuit for the Subaru Select Monitor may be damaged.

Terminal No.	Contents	Terminal No.	Contents
1	Power supply	9	Blank
2	Blank	10	K line of ISO 9141 CARB
3	Blank	11	Blank
4	Subaru Select Monitor signal (ECM to Subaru Select Monitor)*	12	Ground
5	Subaru Select Monitor signal (Subaru Select Monitor to ECM)*	13	Ground
6	Subaru Select Monitor clock*	14	Blank
7	Blank	15	Blank
8	Blank	16	Blank

*: Circuit only for Subaru Select Monitor

3. READ DATA LIST

- **MODE $01**

— Current powertrain diagnostic data —
Refers to data denoting the current operating condition of analog input/output, digital input/output and/or the powertrain system.
A list of the support data and PID (Parameter Identification) codes are shown in the following table.

PID	Data	Unit of measure
01	Number of emission-related powertrain trouble codes and MIL status	ON/OFF
03	Fuel system control status	—
04	Calculated engine load value	%
05	Engine coolant temperature	°C
06	Short term fuel trim	%
07	Long term fuel trim	%
0B	Intake manifold absolute pressure	kPa
0C	Engine revolution	rpm
0D	Vehicle speed	km/h
0E	Ignition timing advance	°
10	Air flow rate from mass air flow sensor	g/sec
11	Throttle valve opening angle	%
13	Check whether oxygen sensor is installed.	—
14	Oxygen sensor output voltage and short term fuel trim associated with oxygen sensor—bank 1	V and %
15	Oxygen sensor output voltage and short term fuel trim associated with oxygen sensor—bank 2	V and %
1C	On-board diagnosis system	—

NOTE:
Refer to OBD-II general scan tool manufacturer's instruction manual to access generic OBD-II PIDs (MODE $01).

● **MODE $02**

— Powertrain freeze frame data —

Refers to data denoting the operating condition when trouble is sensed by the on-board diagnosis system.

A list of the support data and PID (Parameter Identification) codes are shown in the following table.

PID	Data	Unit of measure
02	Trouble code that caused CARB required freeze frame data storage	—
03	Fuel system control status	—
04	Calculated engine load value	%
05	Engine coolant temperature	°C
06	Short term fuel trim	%
07	Long term fuel trim	%
0B	Intake manifold absolute pressure	kPa
0C	Engine revolution	rpm
0D	Vehicle speed	km/h

NOTE:

Refer to OBD-II general scan tool manufacturer's instruction manual to access freeze frame data (MODE $02).

● **MODE $03**

— Emission-related powertrain diagnostic trouble codes —

Refers to data denoting emission-related powertrain diagnostic trouble codes.

For details concerning diagnostic trouble codes, refer to the "DIAGNOSTIC TROUBLE CODE (DTC) LIST", 2-7b [T10A0].

NOTE:

Refer to OBD-II general scan tool manufacturer's instruction manual to access emission-related powertrain diagnostic trouble codes (MODE $03).

- **MODE $04**

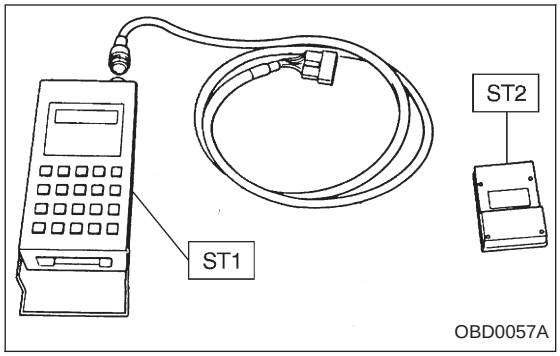
— Clear/Reset emission-related diagnostic information —
Refers to the mode used to clear or reset emission-related diagnostic information (OBD-II trouble diagnostic information).
NOTE:
Refer to OBD-II general scan tool manufacturer's instruction manual to clear or reset emission-related diagnostic information (MODE $04).

- **MODE $05**

— Oxygen sensor monitoring test results —
Refers to the mode using oxygen sensor output data while the on-board diagnosis system is performing diagnosis on the oxygen sensor.
A list of the support oxygen sensor output data and test ID (identification) are shown in the following table.

Test ID	Data	Unit of measure
01	Rich to lean sensor threshold voltage (constant)	V
02	Lean to rich sensor threshold voltage (constant)	V
03	Low sensor voltage for switch time calculation (constant)	V
04	High sensor voltage for switch time calculation (constant)	V
05	Rich to lean sensor switch time (calculated)	sec.
06	Lean to rich sensor switch time (calculated)	sec.
07	Minimum sensor voltage for test cycle (calculated)	V
08	Maximum sensor voltage for test cycle (calculated)	V

NOTE:
Refer to OBD-II general scan tool manufacturer's instruction manual to access oxygen sensor monitoring test results (MODE $05).

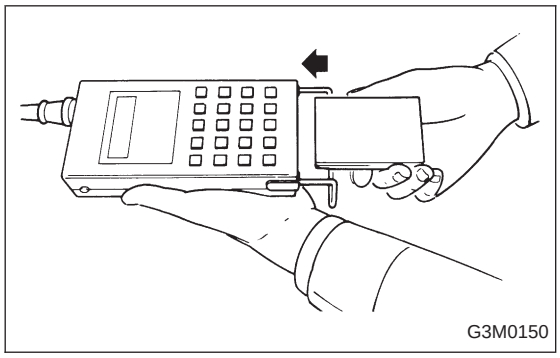


C: SUBARU SELECT MONITOR

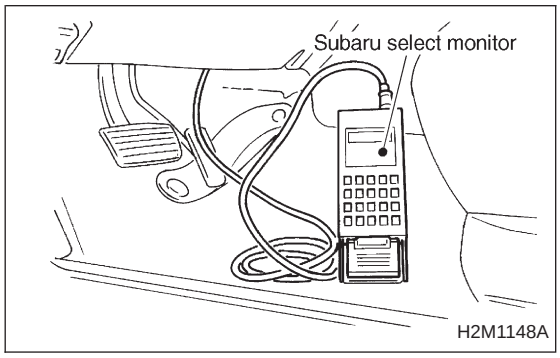
1. HOW TO USE SUBARU SELECT MONITOR

1) Prepare Subaru select monitor and cartridge.

ST1 498307500 SELECT MONITOR KIT
ST2 498345500 CARTRIDGE

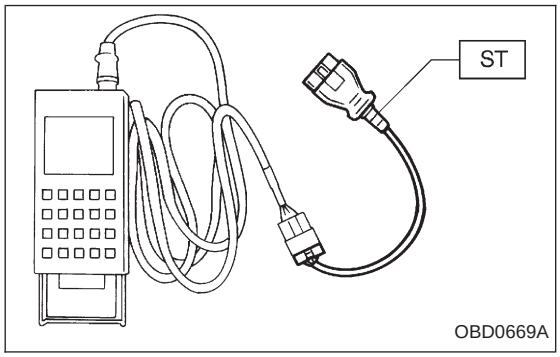


2) Turn ignition switch and Subaru select monitor switch to OFF.
3) Insert cartridge into Subaru select monitor.



4) Connect Subaru select monitor to data link connector.

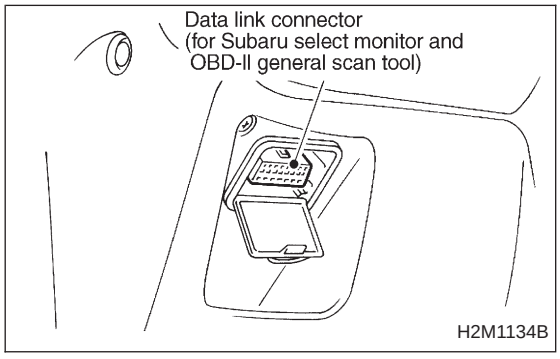
- Using data link connector for Subaru select monitor only, connect Subaru select monitor to its data link connector located in the lower portion of the instrument panel (on the driver's side), to the side of the center console box.



- Using data link connector for Subaru select monitor and OBD-II general scan tool;

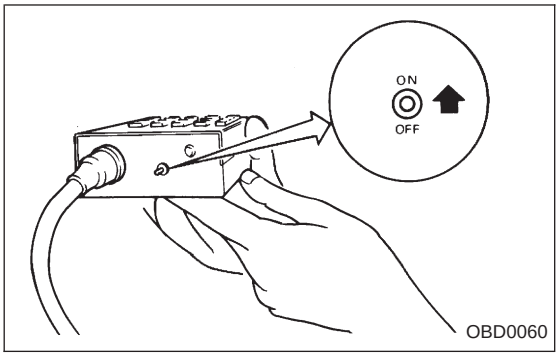
(1) Connect ST to Subaru select monitor cable.

ST 498357200 ADAPTER CABLE



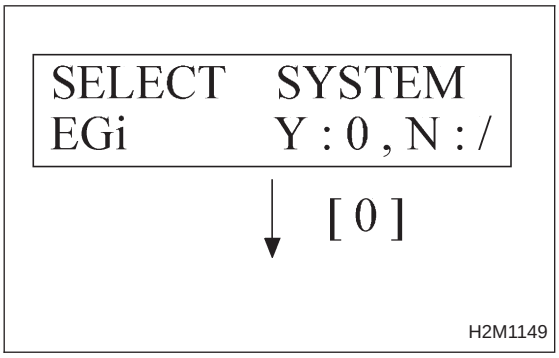
(2) Open the cover and connect Subaru select monitor to data link connector located in the lower portion of the instrument panel (on the driver's side), to the lower cover.

CAUTION:
Do not connect scan tools except for Subaru select monitor and OBD-II general scan tool.



OBD0060

5) Turn ignition switch ON (engine OFF) and Subaru select monitor switch ON.

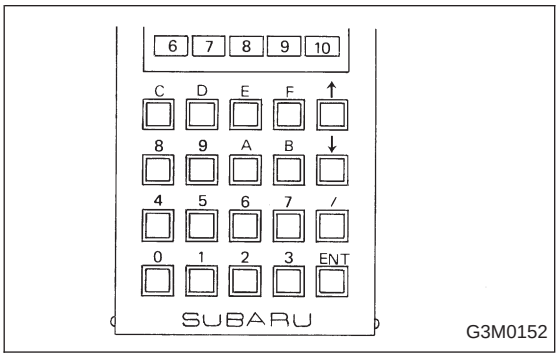


H2M1149

6) Using Subaru select monitor, call up diagnostic trouble code(s) and various data, then record them.

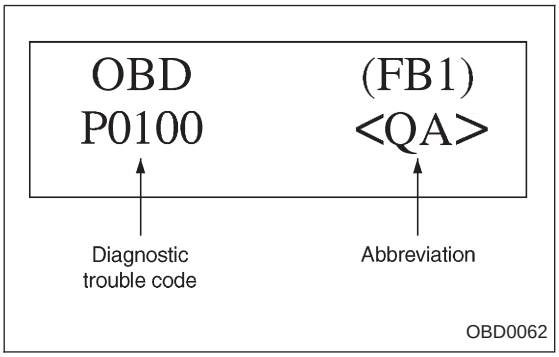
- **READ DIAGNOSTIC TROUBLE CODE (DTC) SHOWN ON DISPLAY. (MODE FB1)**

(1) Press the function key [0].



G3M0152

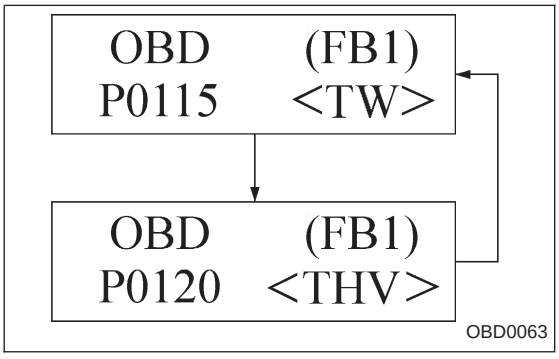
(2) Designate mode using function key.
Press [F] [B] [1] [ENT] in that order.



OBD0062

(3) Ensure diagnostic trouble code(s) is shown.

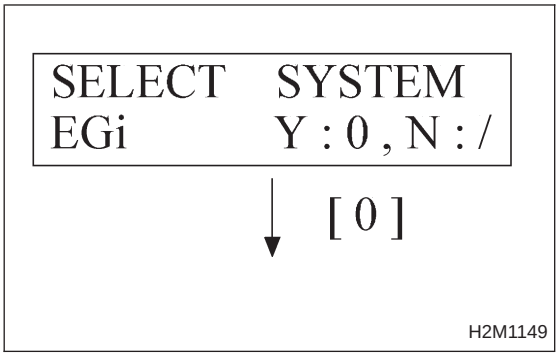
- When there is only one diagnostic trouble code.



OBD0063

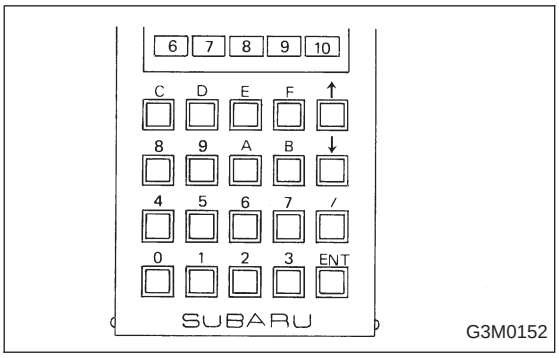
- When there are multiple diagnostic trouble codes.

NOTE:
For details concerning diagnostic trouble codes, refer to the “DIAGNOSTIC TROUBLE CODE (DTC) LIST”, 2-7b [T10A0].

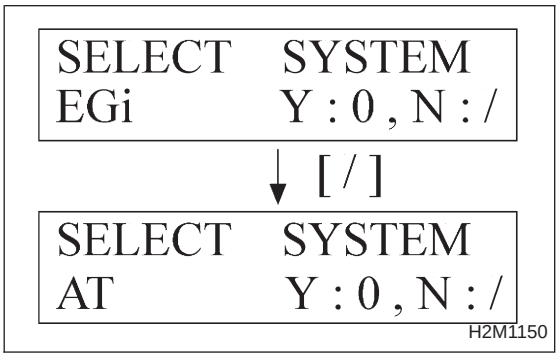


● READ CURRENT DATA AND FREEZE FRAME DATA SHOWN ON DISPLAY FOR ENGINE. (FUNCTION MODE)

(1) Press the function key [0].



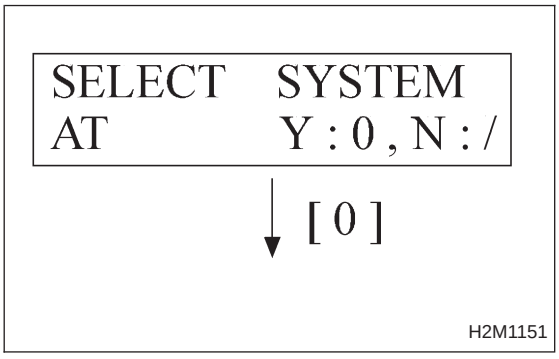
(2) Designate mode using function key.
Refer to “READ DATA FUNCTION KEY LIST FOR ENGINE”, 2-7b [T3C2].
(Example: Press [F] [0] [1] [ENT] in that order.)
(3) Ensure data of input or output signal is shown.

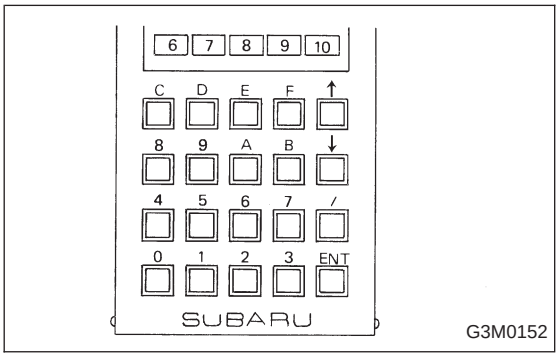


● READ CURRENT DATA SHOWN ON DISPLAY FOR AT. (FUNCTION MODE)

(1) Press the function key [/], and change to AT mode.

(2) Press the function key [0].





(3) Designate mode using function key.
Refer to “READ DATA FUNCTION KEY LIST FOR AT”, 2-7b [T3C6].
(Example: Press [F] [0] [2] [ENT] in that order.)
(4) Ensure data of input or output signal is shown.

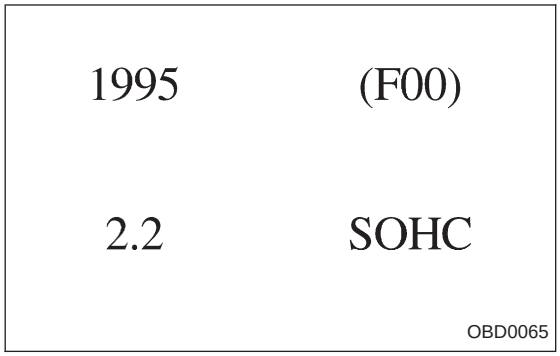
2. READ DATA FUNCTION KEY LIST FOR ENGINE

Function mode	Contents	Abbreviation	Unit of measure
F00	ROM ID number	YEAR	—
F01	Battery voltage	VB	V
F02	Vehicle speed signal	VSP	m/h
F03	Vehicle speed signal	VSP	km/h
F04	Engine speed signal	EREV	rpm
F05	Engine coolant temperature signal	TW	°F
F06	Engine coolant temperature signal	TW	°C
F07	Ignition signal	ADVS	deg
F08	Mass air flow signal	QA	V
F09	Load data	DATA	—
F10	Throttle position signal	THV	V
F11	Injector pulse width	TIM	mS
F12	Idle air control signal	ISC	%
F13	Front oxygen sensor output signal	FO2	V
F14	Front oxygen sensor maximum output signal	FO2max	V
F15	Front oxygen sensor minimum output signal	FO2min	V
F16	Rear oxygen sensor output signal	RO2	V
F17	Rear oxygen sensor maximum output signal	RO2max	V
F18	Rear oxygen sensor minimum output signal	RO2min	V
F19	Short term fuel trim	ALPHA	%
F20	Knock sensor signal	RTRD	deg
F21	A/F correction (short term trim) by rear oxygen sensor	PHOS	%
F23	Atmospheric absolute pressure signal	BARO. P	V
F24	Intake manifold absolute pressure signal	MANI. P	V
F25	Long term fuel trim	KBLRC	%
F28	Long term whole fuel trim	K0	%
F29	Front oxygen sensor heater current	FO2H	A
F30	Rear oxygen sensor heater current	RO2H	A
F38	Minimum EGR system pressure value	EGRmin	mmHg
F45	Load data	LOAD	%
F46	Throttle position signal	THV	%
F47	Mass air flow signal	QA	g/s
F48	Atmospheric absolute pressure signal	BARO. P	kPa
F49	Intake manifold absolute pressure signal	MANI. P	kPa
F50	Load data (Freeze frame data)	LOAD−F	%
F51	Engine coolant temperature signal (Freeze frame data)	TW−F	°C
F52	Throttle position signal (Freeze frame data)	ALPH−F	%
F53	Long term fuel trim (Freeze frame data)	KBLR−F	%
F54	Intake manifold absolute pressure signal (Freeze frame data)	MANI−F	kPa
F55	Engine speed signal (Freeze frame data)	EREV−F	rpm
F56	Vehicle speed signal (Freeze frame data)	VSP−F	km/h

Function mode	Contents	Abbreviation	Unit of measure
FA0	ON ↔ OFF signal	—	—
FA1	ON ↔ OFF signal	—	—
FA2	ON ↔ OFF signal	—	—
FA3	ON ↔ OFF signal	—	—
FA4	ON ↔ OFF signal	—	—
FB0	Diagnostic trouble code (DTC)	INSPECT	—
FB1	Diagnostic trouble code (DTC)	OBD	—
FC0	Clear memory	—	—

NOTE:
1) Subaru select monitor is also available for monitoring information other than that used for check and repair of the vehicle.
2) F38 (Minimum EGR system pressure value) will not read accurately until the EGR flow diagnosis terminates.

EGR flow diagnosis terminates when LED No.5 illuminates at function mode FA4.



● FUNCTION MODE: F00 — ROM ID NUMBER (YEAR) —

CONDITION:

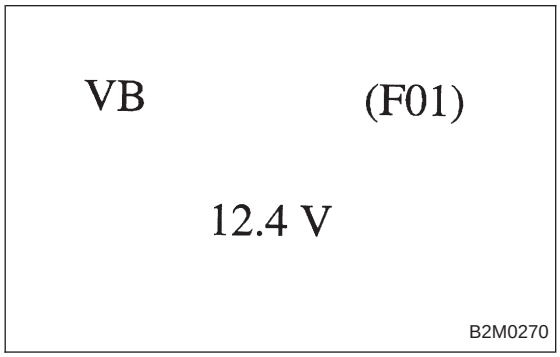
Ignition switch “ON”

SPECIFIED DATA:

Presentation display

● Probable cause (Item outside “specified data”)

1. Error 1	Check for loose or disconnected connector, and discontinued circuit, etc.
2. Error 2	Check for poor contact of cartridge, or different type cartridge.



● FUNCTION MODE: F01 — BATTERY VOLTAGE (VB) —

CONDITION:

(1) Ignition switch “ON”
(2) Idling after warm-up

SPECIFIED DATA:

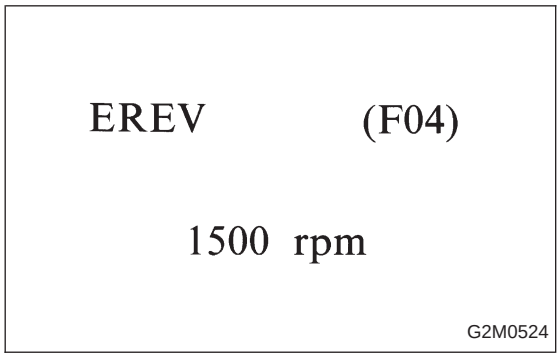
(1) 11±1 V
(2) 13±1 V

● Probable cause (Item outside “specified data”)

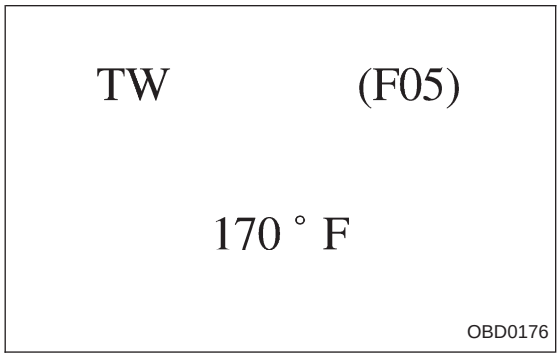
1. Battery	Check battery voltage and electrolyte’s specific gravity.
2. Charging system	● Check regulating voltage. (On no-load) ● Check alternator.
3. Power supply line	● Check main relay. <Ref. to 2-7b [T8C1].> ● Check harness connector of ECM power supply line. <Ref. to 2-7b [T8C2], [T8C3].>

● FUNCTION MODE: F02 AND F03 — VEHICLE SPEED SIGNAL (VSP) —

- F02: Vehicle speed is indicated in mile per hour (m/h).
- F03: Vehicle speed is indicated in kilometer per hour (km/h).

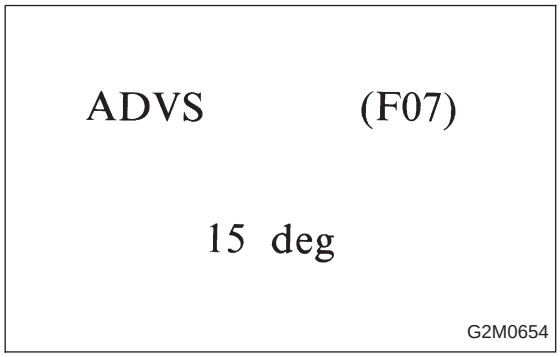


● FUNCTION MODE: F04 — ENGINE SPEED SIGNAL (EREV) —



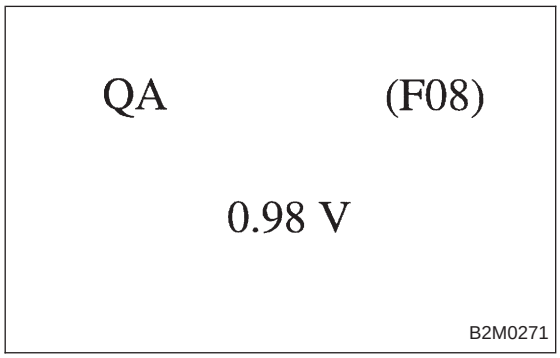
● FUNCTION MODE: F05 AND F06 — ENGINE COOLANT TEMPERATURE SIGNAL (TW) —

- F05: Engine coolant temperature is indicated in "°F".
- F06: Engine coolant temperature is indicated in "°C".

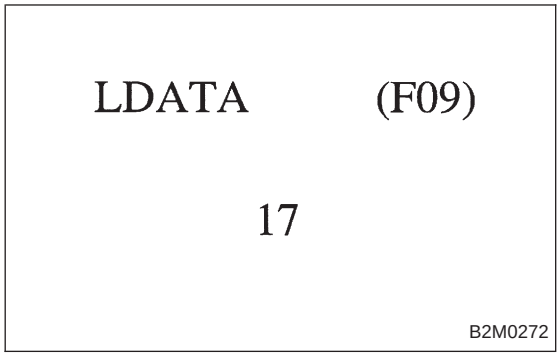


● FUNCTION MODE: F07 — IGNITION SIGNAL (ADVS) —

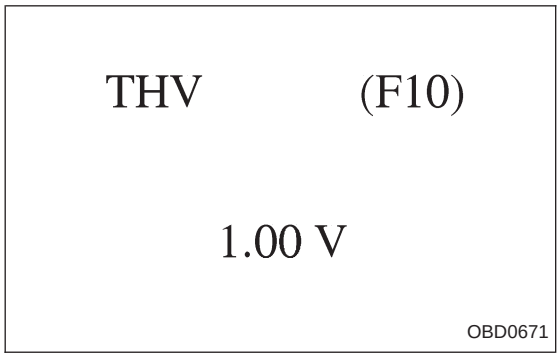
NOTE:
The ignition timing value displayed in mode F07 is a value computed by ECM and will not always correspond with the value measured with a timing light.



● FUNCTION MODE: F08 — MASS AIR FLOW SIGNAL (QA) —

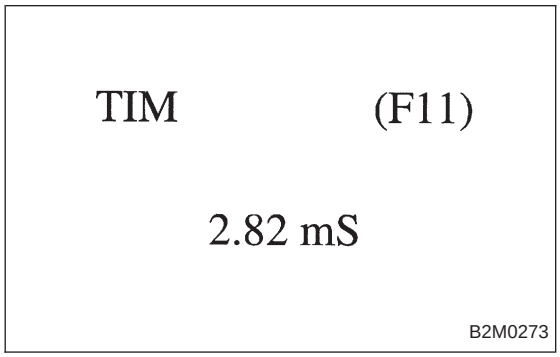


● **FUNCTION MODE: F09**
— LOAD DATA (LDATA) —

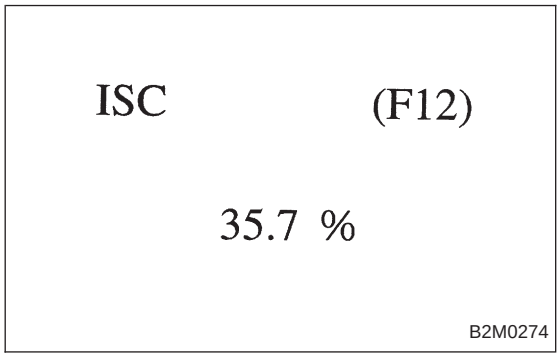


● **FUNCTION MODE: F10**
— THROTTLE POSITION SIGNAL (THV) —

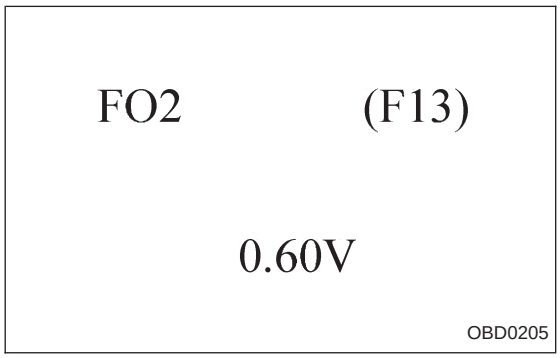
NOTE:
Be sure that the displayed value changes smoothly when changing throttle valve from fully closed to fully opened.



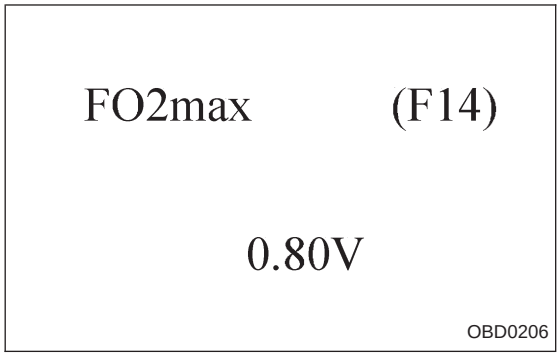
● **FUNCTION MODE: F11**
— INJECTOR PULSE WIDTH (TIM) —



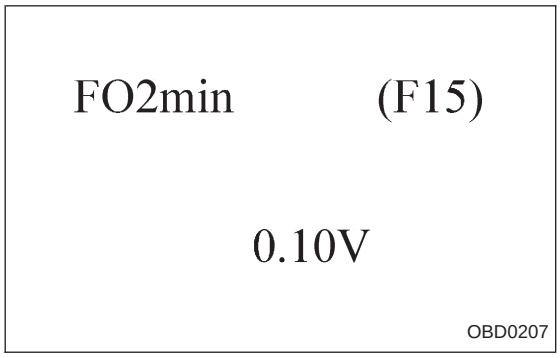
● **FUNCTION MODE: F12**
— IDLE AIR CONTROL SIGNAL (ISC) —



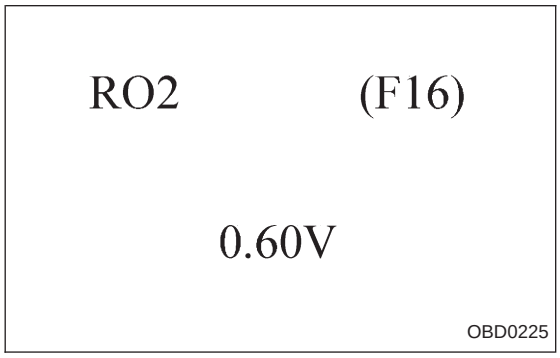
● **FUNCTION MODE: F13**
— FRONT OXYGEN SENSOR OUTPUT SIGNAL (FO2) —



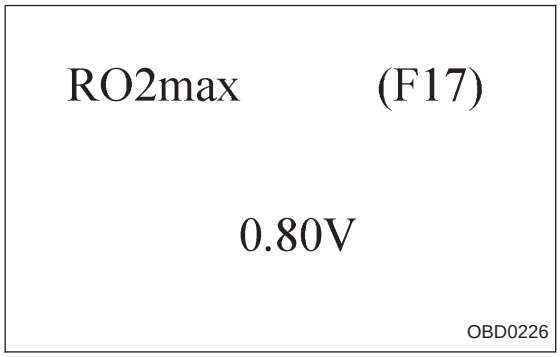
- **FUNCTION MODE: F14**
— FRONT OXYGEN SENSOR MAXIMUM OUTPUT SIGNAL (FO2MAX) —



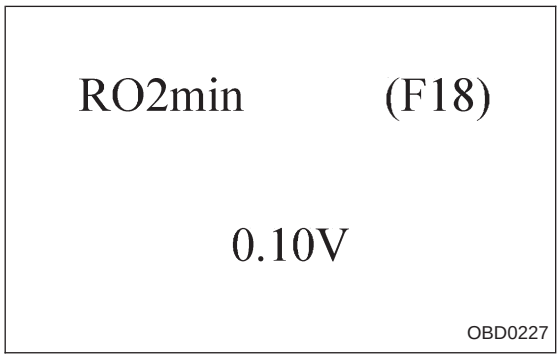
- **FUNCTION MODE: F15**
— FRONT OXYGEN SENSOR MINIMUM OUTPUT SIGNAL (FO2MIN) —



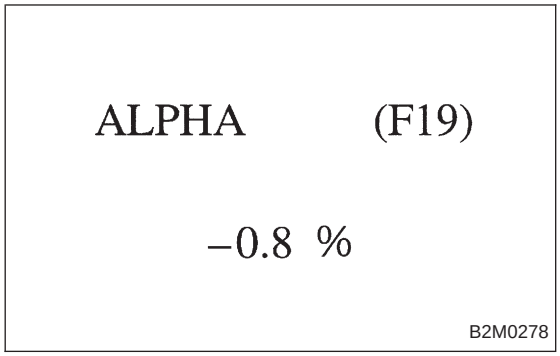
- **FUNCTION MODE: F16**
— REAR OXYGEN SENSOR OUTPUT SIGNAL (RO2) —



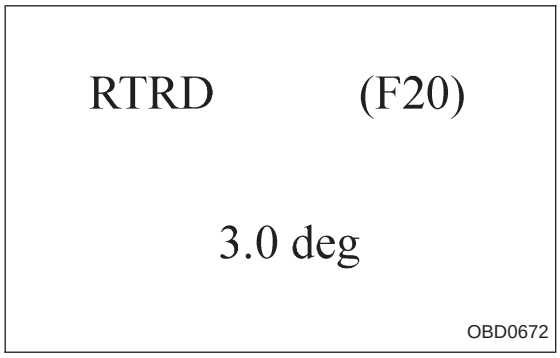
- **FUNCTION MODE: F17**
— REAR OXYGEN SENSOR MAXIMUM OUTPUT SIGNAL (RO2MAX) —



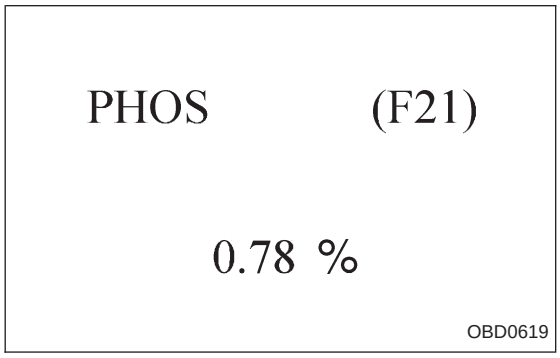
- **FUNCTION MODE: F18**
— REAR OXYGEN SENSOR MINIMUM OUTPUT SIGNAL (RO2MIN) —



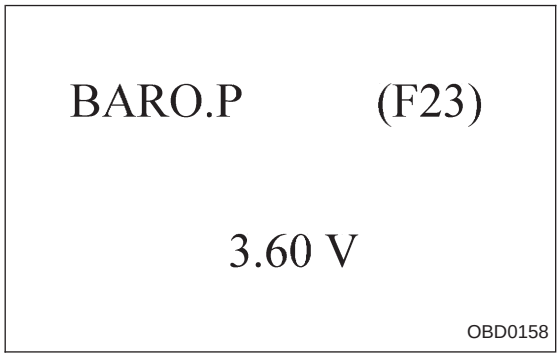
- **FUNCTION MODE: F19**
  — SHORT TERM FUEL TRIM [A/F CORRECTION COEFFICIENT] (ALPHA) —



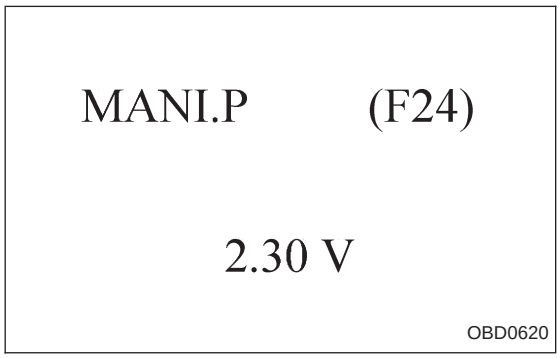
- **FUNCTION MODE: F20**
  — KNOCK SENSOR SIGNAL [IGNITION TIMING CORRECTION COEFFICIENT] (RTRD) —



- **FUNCTION MODE: F21**
  — A/F CORRECTION COEFFICIENT [SHORT TERM TRIM] BY REAR OXYGEN SENSOR (PHOS) —

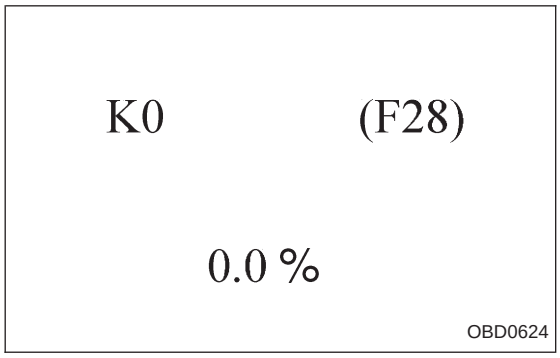


- **FUNCTION MODE: F23**
  — ATMOSPHERIC ABSOLUTE PRESSURE SIGNAL (BARO. P) —

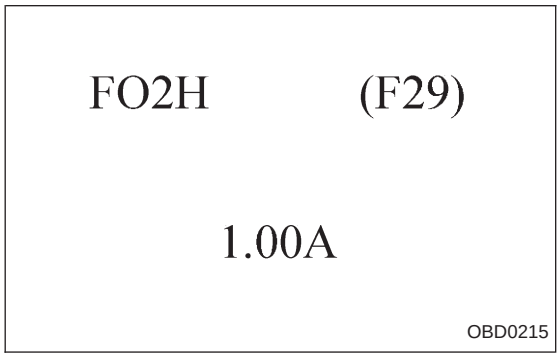


- **FUNCTION MODE: F24**
  — INTAKE MANIFOLD ABSOLUTE PRESSURE SIGNAL (MANI. P) —

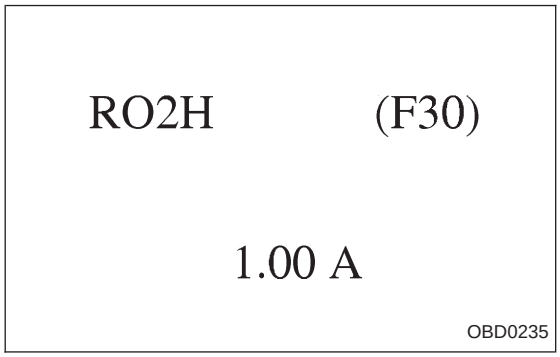
● FUNCTION MODE: F25 — LONG TERM FUEL TRIM [A/F LEARNING CORRECTION COEFFICIENT] (KBLRC) —



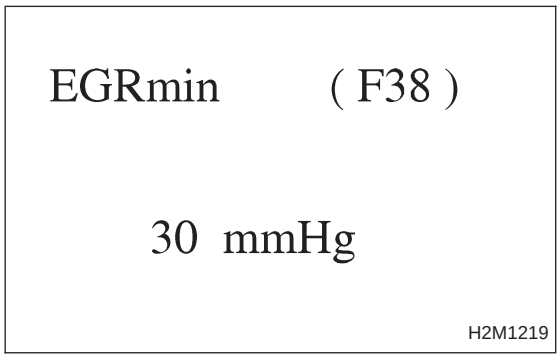
● FUNCTION MODE: F28 — LONG TERM FUEL TRIM WHOLE [A/F LEARNING CONTROL COEFFICIENT] (K0) —



● FUNCTION MODE: F29 — FRONT OXYGEN SENSOR HEATER CURRENT (FO2H) —



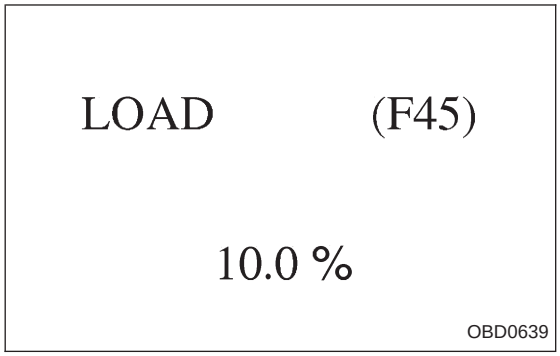
● FUNCTION MODE: F30 — REAR OXYGEN SENSOR HEATER CURRENT (RO2H) —



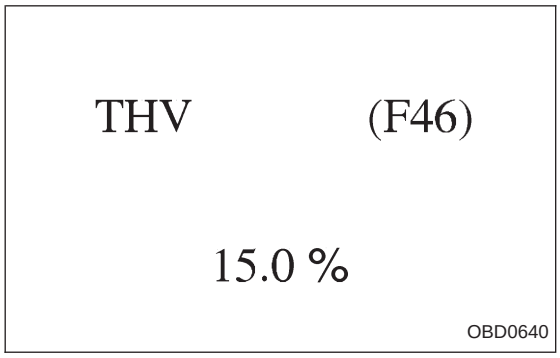
● FUNCTION MODE: F38 — MINIMUM EGR SYSTEM PRESSURE VALUE (EGRMIN) —

NOTE:
Minimum EGR system pressure value will not read accurately until the EGR flow diagnosis terminates.

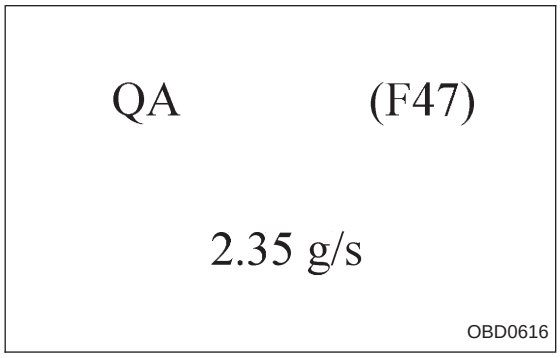
EGR flow diagnosis terminates when LED No.5 illuminates at function mode FA4.



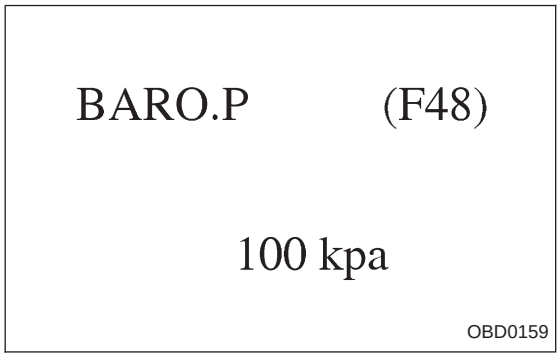
- **FUNCTION MODE: F45**
— LOAD DATA (LOAD) —



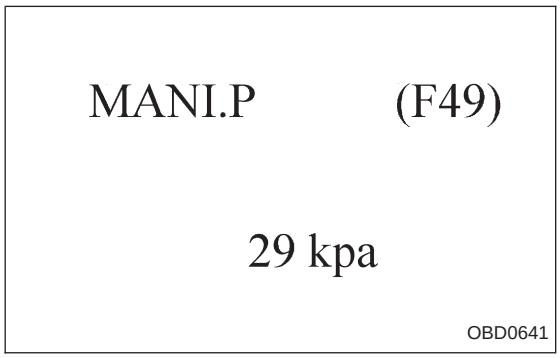
- **FUNCTION MODE: F46**
— THROTTLE POSITION SIGNAL (THV) —



- **FUNCTION MODE: F47**
— MASS AIR FLOW SIGNAL (QA) —

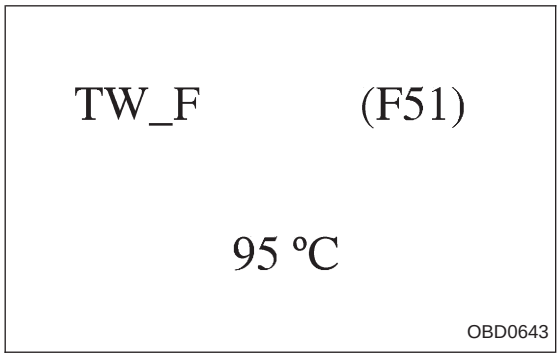


- **FUNCTION MODE: F48**
— ATMOSPHERIC ABSOLUTE PRESSURE SIGNAL (BARO. P) —

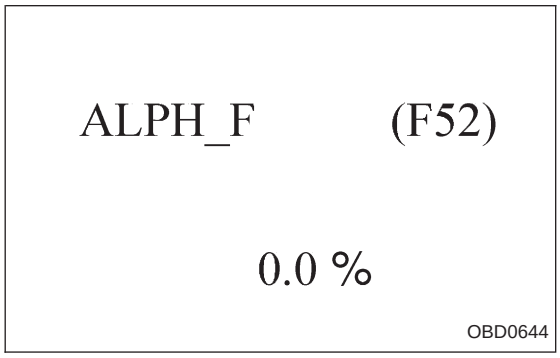


- **FUNCTION MODE: F49**
— INTAKE MANIFOLD ABSOLUTE PRESSURE SIGNAL (MANI. P) —

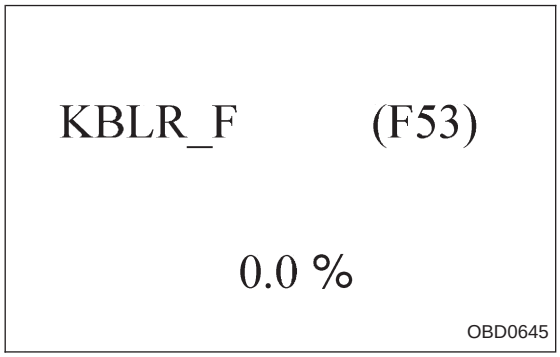
● **FUNCTION MODE: F50**
— LOAD DATA [FREEZE FRAME DATA) (LOAD – F) —



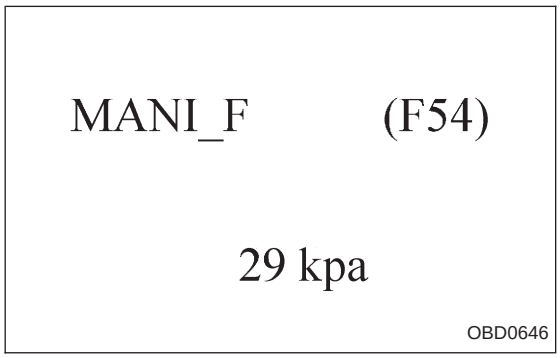
● **FUNCTION MODE: F51**
— ENGINE COOLANT TEMPERATURE SIGNAL [FREEZE FRAME DATA] (TW – F) —



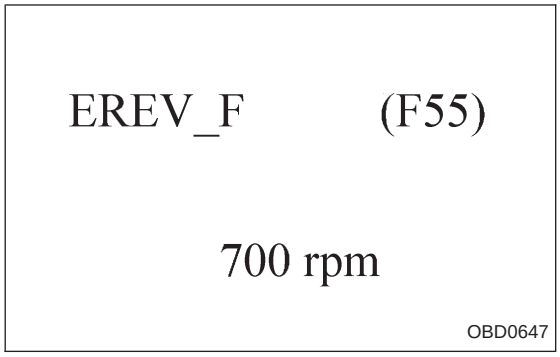
● **FUNCTION MODE: F52**
— THROTTLE POSITION SIGNAL [FREEZE FRAME DATA] (ALPH – F) —



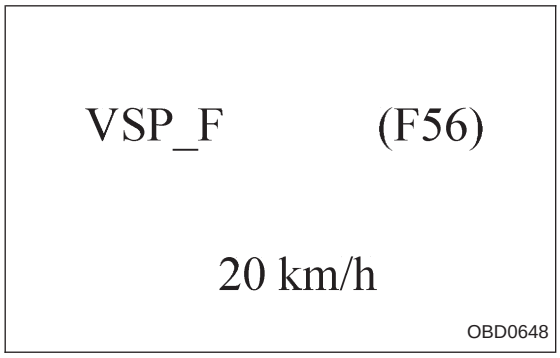
● **FUNCTION MODE: F53**
— LONG TERM FUEL TRIM <A/F LEARNING CONTROL COEFFICIENT> [FREEZE FRAME DATA] (KBLR – F) —



● **FUNCTION MODE: F54**
— INTAKE MANIFOLD ABSOLUTE PRESSURE SIGNAL [FREEZE FRAME DATA] (MANI – F) —



● **FUNCTION MODE: F55**
— ENGINE SPEED SIGNAL [FREEZE FRAME DATA] (EREV – F) —



● **FUNCTION MODE: F56**
— VEHICLE SPEED SIGNAL [FREEZE FRAME DATA] (VSP – F) —

3. FA MODE FOR ENGINE

Function mode	LED No.	Contents	Display	LED “ON” requirements
FA0	1	Ignition switch	IG	When ignition switch is turned ON.
	2	AT/MT identification signal	AT	When AT identification signal is entered.
	3	Test mode connector	UD	When test mode connector is connected.
	5	Idle speed control identification signal	IC	When engine rpm is less than the established value.
	7	Neutral switch	NT	When neutral position signal is entered.
FA1	2	Air conditioner switch	AC	When air conditioner switch is turned ON.
	3	Air conditioner relay	AR	When air conditioner relay is in function.
	4	Radiator fan relay 1	R1	When radiator fan relay 1 is in function.
	5	Radiator fan relay 2	R2	When radiator fan relay 2 is in function.
	6	Fuel pump relay	FP	When fuel pump relay is in function.
	7	Purge control solenoid valve	CP	When purge control solenoid valve is in function.
	8	Pressure sources switching solenoid valve	BR	When pressure sources switching solenoid valve is in function.
FA2	3	EGR solenoid valve	EG	When EGR solenoid valve is in function.
	4	Engine torque control signal	TR	When engine torque control signal is entered.
	5	Engine torque control cut signal	TC	When engine torque control cut signal is got out.
	9	Front oxygen sensor signal	FO	When front oxygen sensor mixture ratio is rich.
	10	Rear oxygen sensor signal	RO	When rear oxygen sensor mixture ratio is rich.

LED No.	Signal name	Display
1	Ignition switch	IG
2	Identification of AT model	AT
3	Test mode connector	UD
4	—	—
5	—	—
6	—	—
7	Park/Neutral position switch	NT
8	—	—
9	—	—
10	—	—

IG	AT	UD	ID	IC
—	NT	—	—	—

1	2	3	4	5
6	7	8	9	10

● FUNCTION MODE: FA0

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.
LED No. 1 Ignition switch is turned ON.
LED No. 2 Vehicle is AT model.
LED No. 3 Test mode connector is connected.
LED No. 7 Shift position is in “P” or “N”.

LED No.	Signal name	Display
1	—	—
2	A/C switch	AC
3	A/C relay	AR
4	Radiator fan relay 1	R1
5	Radiator fan relay 2	R2
6	Fuel pump relay	FP
7	Purge control solenoid valve	CP
8	—	—
9	Pressure sources switching solenoid valve	BR
10	—	—

—	AC	AR	R1	R2
FP	CP	—	BR	—

1	2	3	4	5
6	7	8	9	10

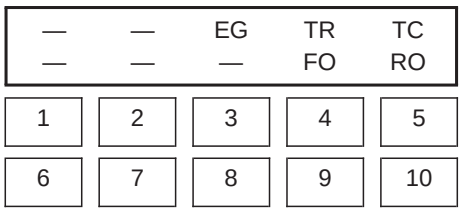
● FUNCTION MODE: FA1

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.
LED No. 2 A/C switch is turned ON.
LED No. 3 A/C relay is turned ON.
LED No. 4 Radiator fan relay 1 is turned ON.
LED No. 5 Radiator fan relay 2 is turned ON.
LED No. 6 Fuel pump relay is turned ON.
LED No. 7 Purge control solenoid valve is in function.
LED No. 9 Pressure sources switching solenoid valve is in function.

NOTE:
When LED No. 3, 4, 5, 6, 7 and 9 blinks with the test mode connector connected and the ignition switch turned to ON, the corresponding part is functioning properly.

LED No.	Signal name	Display
1	—	—
2	—	—
3	EGR solenoid valve	EG
4	Torque control signal	TR
5	Torque control cut signal	TC
6	—	—
7	—	—
8	—	—
9	Front oxygen sensor signal	FO
10	Rear oxygen sensor signal	RO



● FUNCTION MODE: FA2

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.
LED No. 3 EGR solenoid valve is in function.
LED No. 4 ECM entered the torque control signal emitted from TCM.
LED No. 5 Engine torque control cut signal goes out.
LED No. 9 Front oxygen sensor mixture ratio is rich.
LED No. 10 Rear oxygen sensor mixture ratio is rich.

4. FB MODE FOR ENGINE

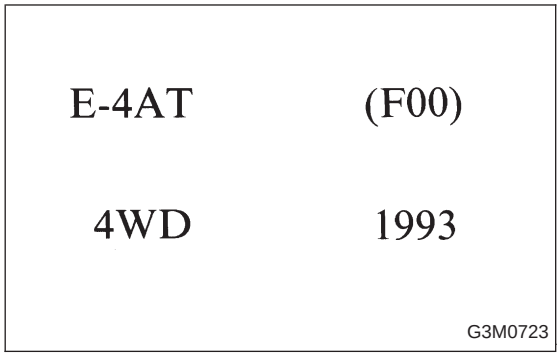
Function mode	Abbreviation	Contents	Contents of display	Page
FB0	INSPECT	On-board diagnostics (Inspection)	Current trouble code indicated by on-board diagnostics after clear memory.	49
FB1	OBD	On-board diagnostics (Read data)	Current trouble code indicated by on-board diagnostics.	24

5. FC MODE FOR ENGINE

Function mode	Abbreviation	Contents	Contents of display	Page
FC0	MEMORY CLR	Back-up memory clear	Function of clearing trouble code stored in memory.	48

6. READ DATA FUNCTION KEY LIST FOR AT

Function mode	Contents	Abbr.	Unit
F00	Mode display	—	—
F01	Battery voltage	VB	V
F02	Vehicle speed sensor 1	VSP1	m/h
F03	Vehicle speed sensor 1	VSP1	km/h
F04	Vehicle speed sensor 2	VSP2	m/h
F05	Vehicle speed sensor 2	VSP2	km/h
F06	Engine speed	EREV	rpm
F07	ATF temperature sensor	ATFT	deg F
F08	ATF temperature sensor	ATFT	deg C
F09	Throttle position sensor	THV	V
F10	Gear position	GEAR	—
F11	Line pressure duty	PLDTY	%
F12	Lock-up duty	LUDTY	%
F13	AWD duty	4WDTY	%
F14	Throttle position sensor power supply	THVCC	V
F15	Mass air flow sensor	AFM	V



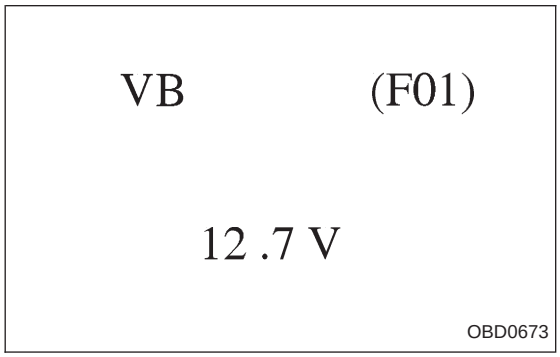
● FUNCTION MODE: F00 — MODE DISPLAY —

SPECIFIED DATA:

Data at the left should be indicated.

Probable cause (if outside “specified data”)

1. Communication failure (No communication method can be confirmed with power ON.)	(1) Check loose or poor connectors, or shortcircuit. (2) Check type of cartridge.
2. Vehicle types cannot be identified (due to communication failure).	Check improper cartridge. Replace with proper one.



● FUNCTION MODE: F01 — BATTERY VOLTAGE (VB) —

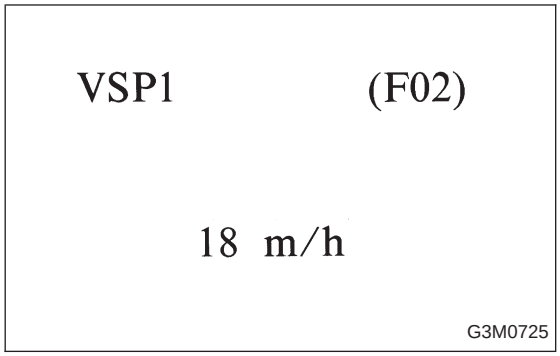
CONDITION:

(1) Ignition switch ON
(2) Engine idling after warm-up

SPECIFIED DATA:

(1) 12±1 V
(2) 13±1 V

1. Battery	Check battery voltage and specific gravity of electrolyte.
2. Charging system	(1) Measure regulating voltage under no loads. (2) Check generator (as a single unit).

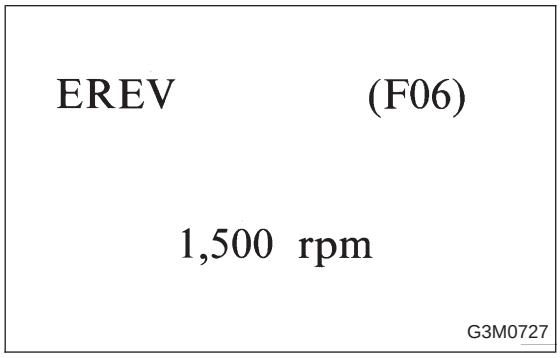


● FUNCTION MODE: F02 — VEHICLE SPEED SENSOR 1 (VSP1) —

● F02: Vehicle speed is indicated in mile per hour (m/h).
● F03: Vehicle speed is indicated in kilometer per hour (km/h).

● FUNCTION MODE: F04 — VEHICLE SPEED SENSOR 2 (VSP2) —

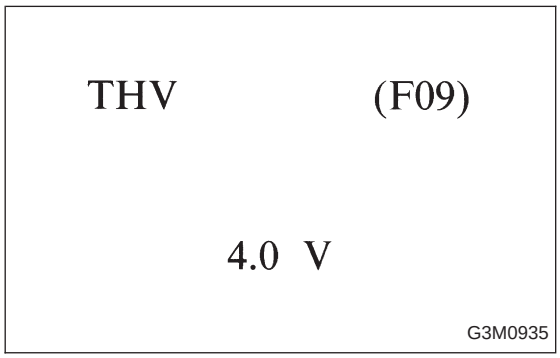
● F04: Vehicle speed is indicated in mile per hour (m/h).
● F05: Vehicle speed is indicated in kilometer per hour (km/h).



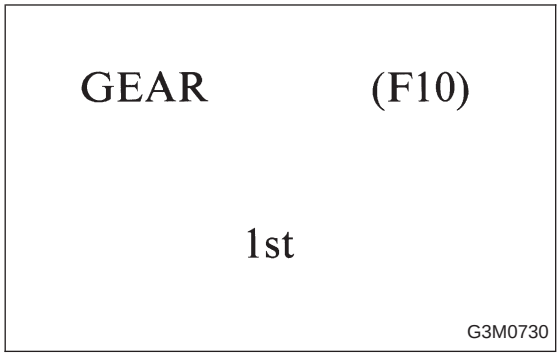
● FUNCTION MODE: F06 — ENGINE SPEED (EREV) —

● FUNCTION MODE: F07 — ATF TEMPERATURE SENSOR (ATFT) —

● F07: ATF temperature is indicated in “deg F”.
● F08: ATF temperature is indicated in “deg C”.

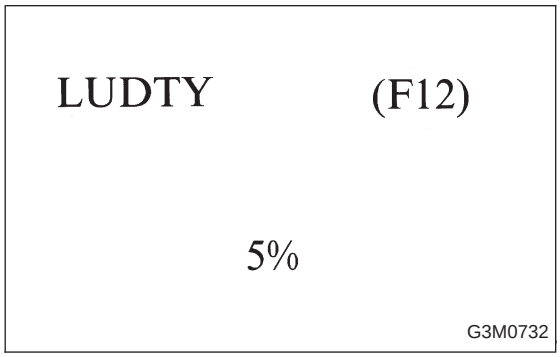


● FUNCTION MODE: F09 — THROTTLE POSITION SENSOR (THV) —

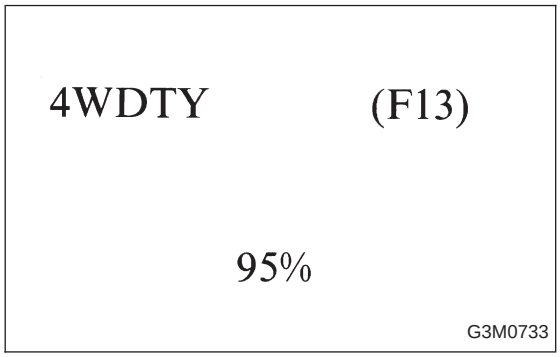


● **FUNCTION MODE: F10**
— GEAR POSITION (GEAR) —

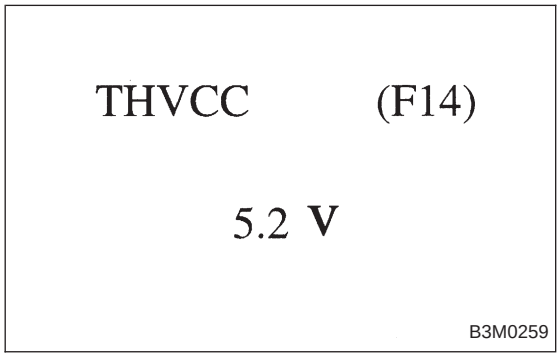
● **FUNCTION MODE: F11**
— LINE PRESSURE DUTY (PLDTY) —



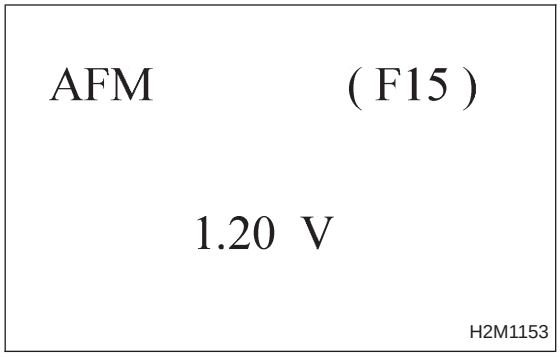
● **FUNCTION MODE: F12**
— LOCK-UP DUTY (LUDTY) —



● **FUNCTION MODE: F13**
— AWD DUTY (4WDTY) —



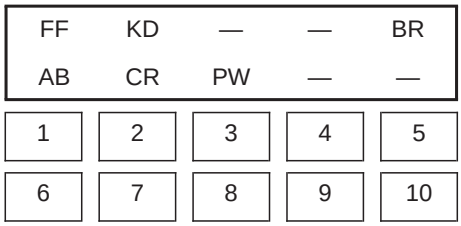
● **FUNCTION MODE: F14**
— THROTTLE POSITION SENSOR POWER SUPPLY (THVCC) —



- **FUNCTION MODE: F15**

— MASS AIR FLOW SENSOR (AFM) —

LED No.	Signal name	Display
1	FWD switch	FF
2	Kick-down switch	KD
3	—	—
4	—	—
5	Brake switch	BR
6	ABS switch	AB
7	Cruise control set	CR
8	Power switch	PW
9	—	—
10	—	—

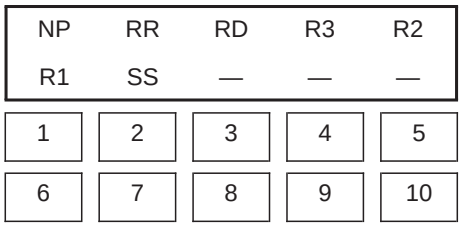


● FUNCTION MODE: FA0

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.
LED No. 1 Fuse is installed in FWD switch.
LED No. 2 Kick-down switch is turned ON. (Europe and General models only)
LED No. 5 Brake pedal is depressed.
LED No. 6 ABS signal is entered.
LED No. 7 Cruise control is set.
LED No. 8 Power switch is turned ON. (Europe and General models only)

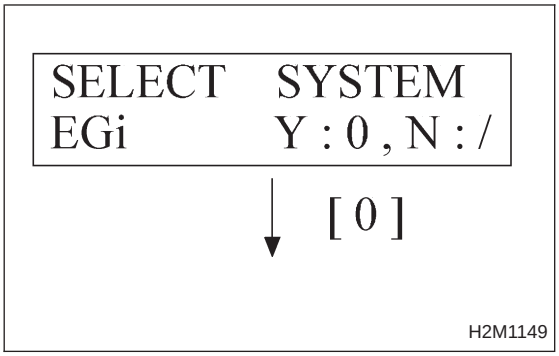
LED No.	Signal name	Display
1	N/P range switch	NP
2	R range switch	RR
3	D range switch	RD
4	3 range switch	R3
5	2 range switch	R2
6	1 range switch	R1
7	Diagnosis switch	SS
8	—	—
9	—	—
10	—	—



● FUNCTION MODE: FA1

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.
LED No. 1 “N” or “P” range is selected.
LED No. 2 “R” range is selected.
LED No. 3 “D” range is selected.
LED No. 4 “3” range is selected.
LED No. 5 “2” range is selected.
LED No. 6 “1” range is selected.
LED No. 7 Diagnosis connector is connected.



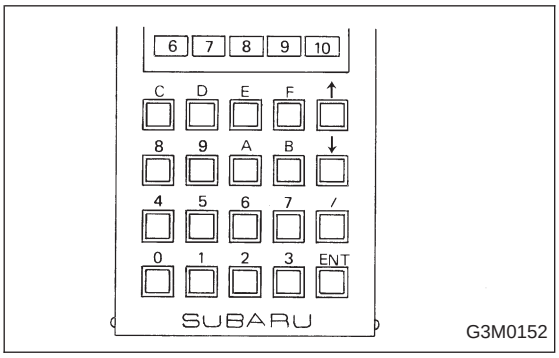
D: CLEAR MEMORY MODE

1. SUBARU SELECT MONTOR

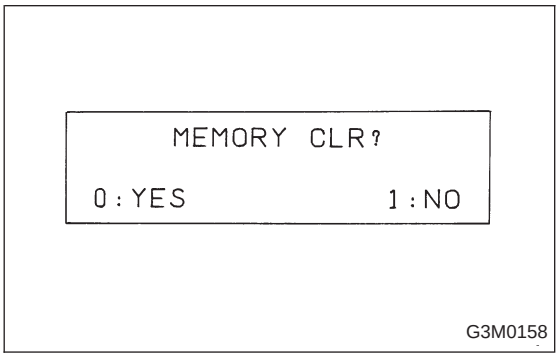
1) Select engine mode or AT mode using function key.
- Engine mode:

Press the function key [0].
- AT mode:

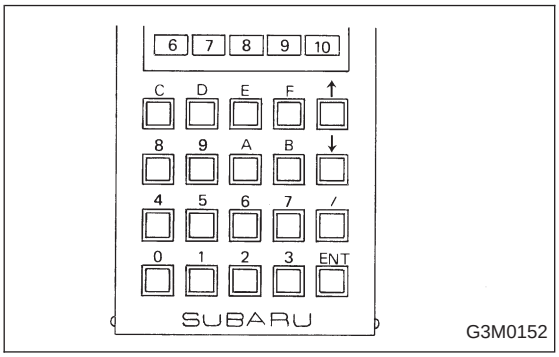
Press the function key [/] [0] in that order.



2) Designate mode using function key.
Press [F] [C] [0] [ENT] in that order.



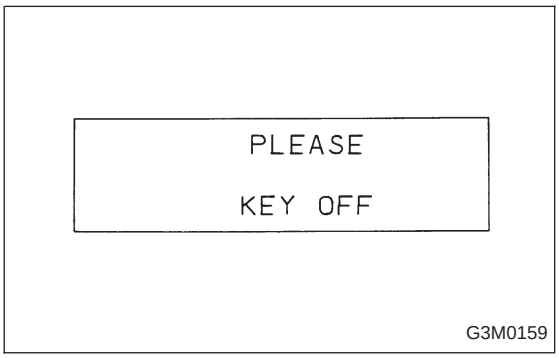
3) Ensure displayed message.



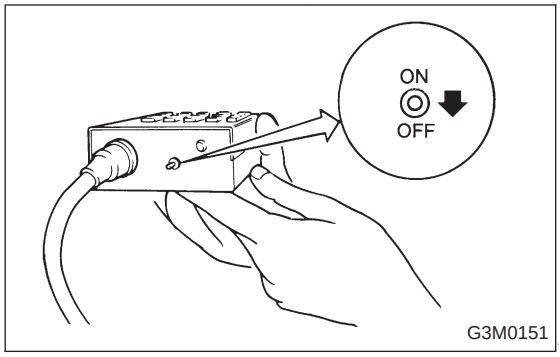
4) Press function key.
- When executing, (YES)

Press [0] [ENT] in that order.
- When not executing, (NO)

Press [1] [ENT] in that order.



5) When executed, the indication as shown here appears for approximately four seconds, and the past trouble history is deleted.

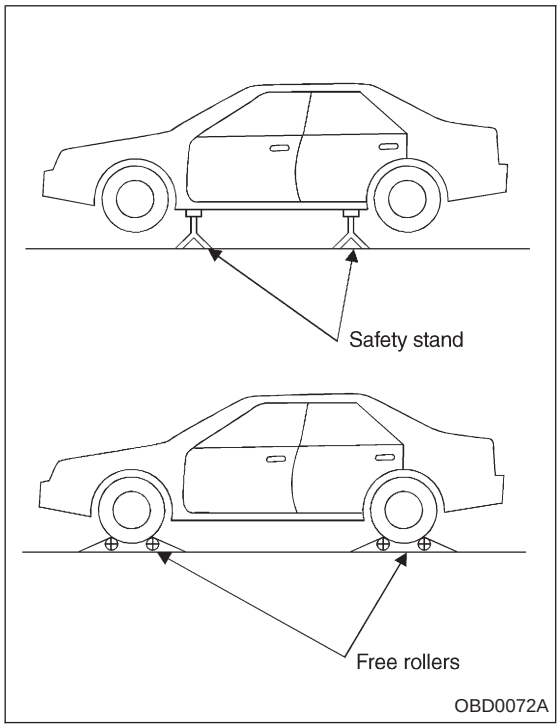


6) After the display is gone, turn Subaru select monitor switch and ignition switch to OFF.

NOTE:
When the ECM, battery terminals, etc. are disconnected after memory is cleared, idling speed may increase. This is not considered a problem because the ISC valve duty controlled learning value has been cleared. To return the engine to idling speed, idle for approximately 2 minutes with air conditioner off.

2. OBD-II GENERAL SCAN TOOL

For clear memory procedures using the OBD-II general scan tool, refer to the OBD-II General Scan Tool Instruction Manual.



E: INSPECTION MODE

1. PREPARATIONS FOR THE INSPECTION MODE

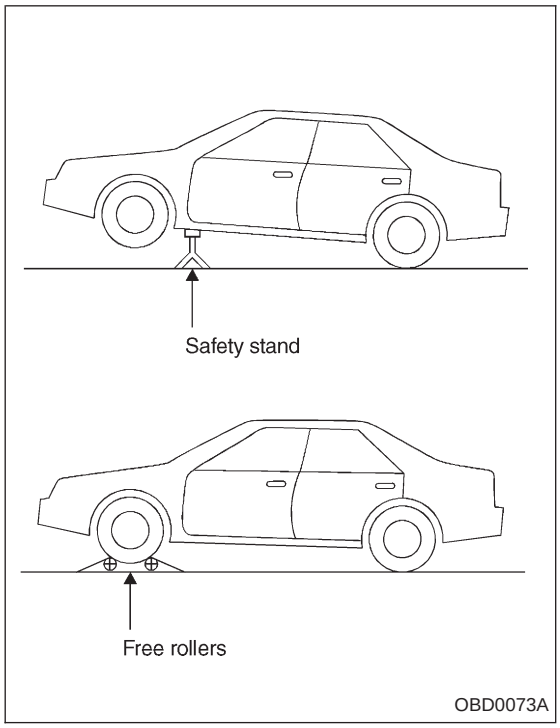
Raise the vehicle using a garage jack and place on safety stands or drive the vehicle onto free rollers.

- **FULL-TIME AWD MODELS**

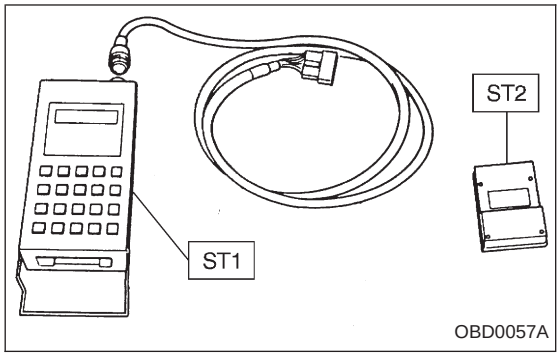
WARNING:

- **Before raising the vehicle, ensure parking brakes are applied.**
- **Do not use a pantograph jack in place of a safety stand.**
- **Secure a rope or wire to the front and rear towing or tie-down hooks to prevent the lateral runout of front wheels.**
- **Do not abruptly depress/release clutch pedal or accelerator pedal during works even when engine is operating at low speeds since this may cause vehicle to jump off free rollers.**
- **In order to prevent the vehicle from slipping due to vibration, do not place any wooden blocks or similar items between the safety stands and the vehicle.**

● Since the rear wheels will also roting, do not place anything near them. Also, make sure that nobody goes in front of the vehicle.



● FWD MODELS
WARNING:
● Before raising the vehicle, ensure parking brakes are applied.
● Do not use a pantograph jack in place of a safety stand.
● If only the front wheels are raised or placed on a free roller, apply parking brakes and lock the rear wheels.
● Secure a rope or wire to the front and rear towing or tie-down hooks to prevent the lateral runout of front wheels.
● Do not abruptly depress/release clutch pedal or accelerator pedal during works even when engine is operating at low speeds since this may cause vehicle to jump off free rollers.
● In order to prevent the vehicle from slipping due to vibration, do not place any wooden blocks or similar items between the safety stands and the vehicle.
● Since the rear wheels will also roting, do not place anything near them. Also, make sure that nobody goes in front of the vehicle.

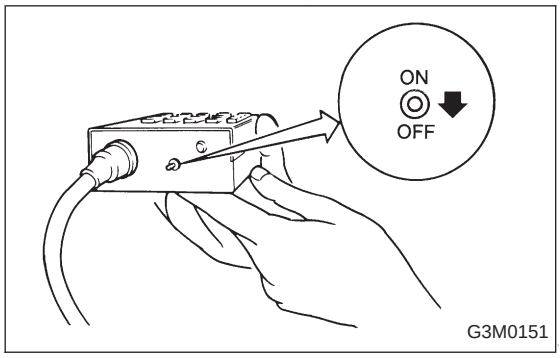


2. SUBARU SELECT MONITOR

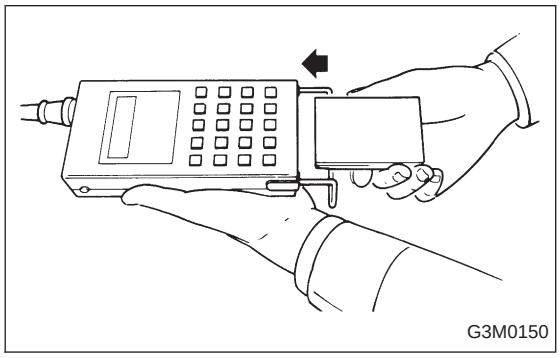
After performing diagnostics and clearing the memory, check for any remaining unresolved trouble data.

1) Prepare Subaru select monitor and cartridge.

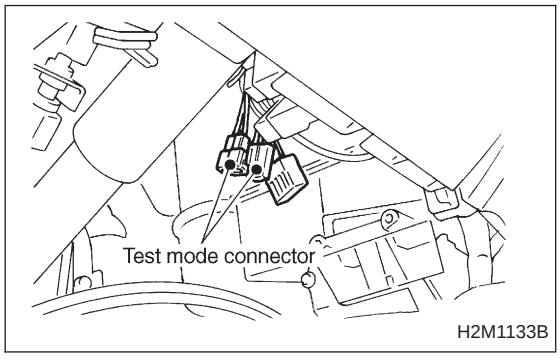
ST1 498307500 SELECT MONITOR KIT
ST2 498345500 CARTRIDGE



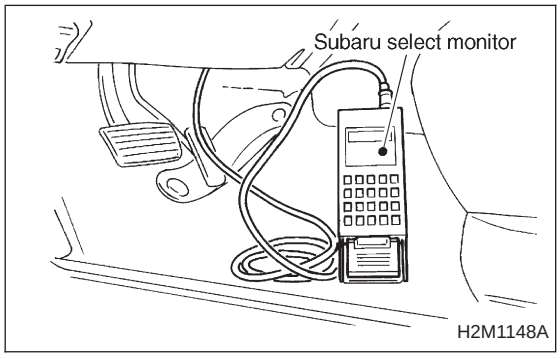
2) Turn ignition switch and monitor switch to OFF.



3) Insert cartridge into Subaru select monitor.

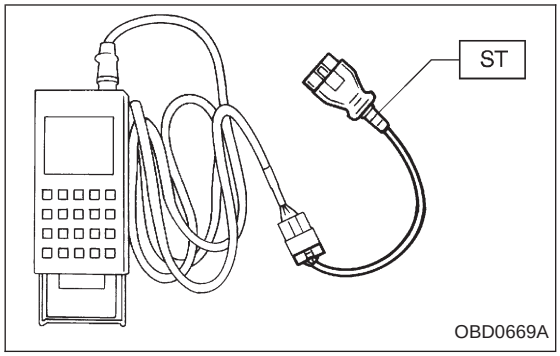


4) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



5) Connect Subaru select monitor to data link connector.

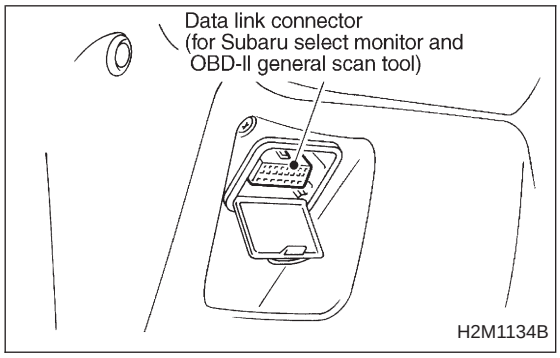
● Using data link connector for Subaru select monitor only:
Connect Subaru select monitor to its data link connector located in the lower portion of the instrument panel (on the driver's side), to the side of the center console box.



● Using data link connector for Subaru select monitor and OBD-II general scan tool:

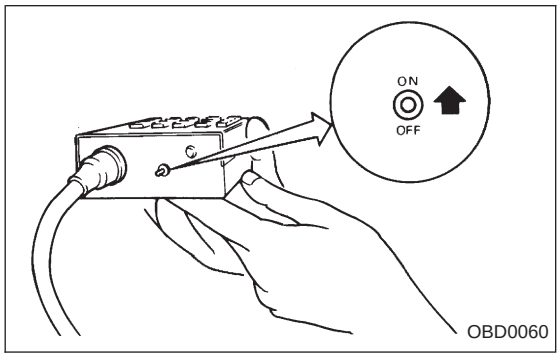
(1) Connect ST to Subaru select monitor cable.

ST 498357200 ADAPTER CABLE



(2) Open the cover and connect Subaru select monitor to data link connector located in the lower portion of the instrument panel (on the driver's side), to the lower cover.

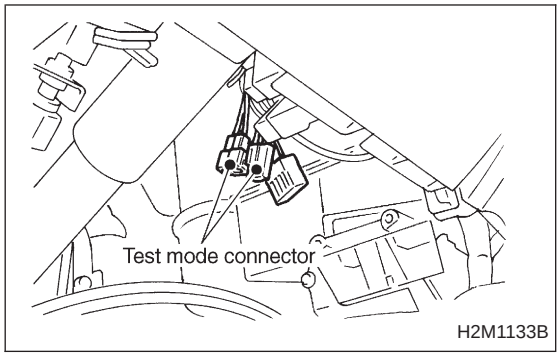
CAUTION:
Do not connect scan tools except for Subaru select monitor and OBD-II general scan tool.



6) Turn ignition switch ON (engine OFF) and Subaru select monitor switch ON.
7) Start the engine.
NOTE:
Ensure the selector lever is placed in the "P" position before starting.
8) Using the selector lever or shift lever, turn the "P" position switch and the "N" position switch to ON.
9) Depress the brake pedal to turn the brake switch ON.
10) Keep engine speed in the 2,500 — 3,000 rpm range for 40 seconds.

NOTE:
On models without tachometer, use the Subaru select monitor or tachometer (Secondary pickup type).

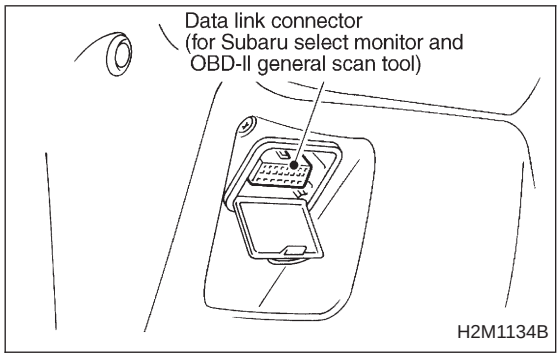
11) Place the selector lever or shift lever in the "D" position and drive the vehicle at 5 to 10 km/h (3 to 6 MPH).
NOTE:
● On AWD vehicles, release the parking brake.
● The speed difference between front and rear wheels may light either the ABS warning light, but this indicates no malfunctions. When engine control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system. <Ref. to 4-4 [T1C2].>



3. OBD-II GENERAL SCAN TOOL

After performing diagnostics and clearing the memory, check for any remaining unresolved trouble data:

1) Connect test mode connector at the lower side of the instrument panel (on the driver's side), to the side of the center console box.



2) Open the cover and connect the OBD-II general scan tool to its data link connector in the lower portion of the instrument panel (on the driver's side), to the lower cover.

CAUTION:
Do not connect the scan tools except for Subaru select monitor and OBD-II general scan tool.

3) Start the engine.

NOTE:
Ensure the selector lever is placed in the "P" position before starting.

4) Using the selector lever or shift lever, turn the "P" position switch and the "N" position switch to ON.

5) Depress the brake pedal to turn the brake switch ON.

6) Keep engine speed in the 2,500 — 3,000 rpm range for 40 seconds.

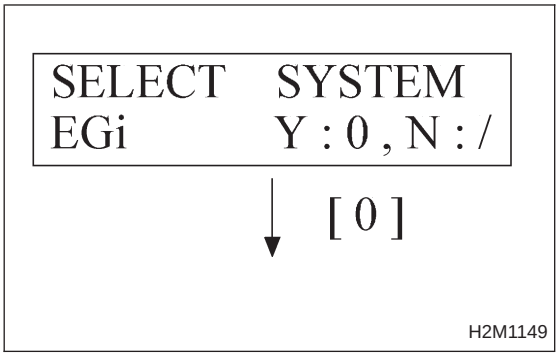
NOTE:
On models without tachometer, use the Subaru select monitor or tachometer (Secondary pickup type).

7) Place the selector lever or shift lever in the "D" position and drive the vehicle at 5 to 10 km/h (3 to 6 MPH).

NOTE:
- On AWD vehicles, release the parking brake.
- The speed difference between front and rear wheels may light either the ABS warning light, but this indicates no malfunctions. When engine control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system. <Ref. to 4-4 [T1C2].>

8) Using the OBD-II general scan tool, check for diagnostic trouble code(s) and record the result(s).

NOTE:
- For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.
- For details concerning diagnostic trouble codes, refer to the "DIAGNOSTIC TROUBLE CODE (DTC) LIST", 2-7b [T10A0].

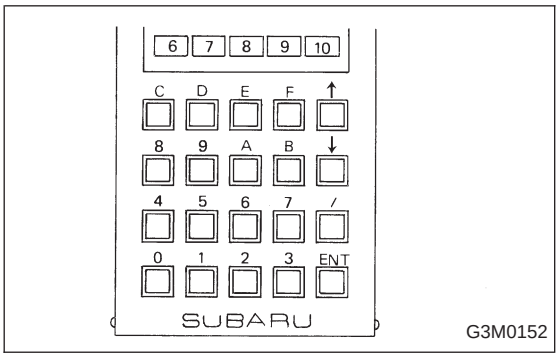


4. CHECK FOR DIAGNOSTICS TROUBLE CODE

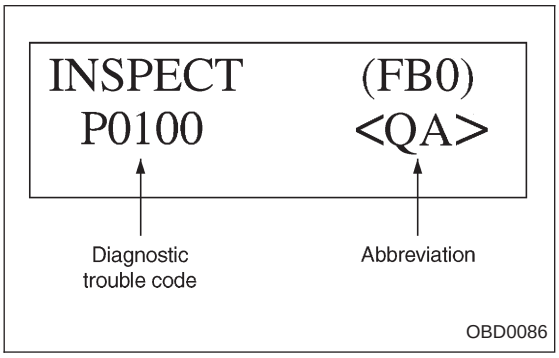
Using Subaru select monitor, check for diagnostic trouble code(s) and record the result(s).

● READ DIAGNOSTIC TROUBLE CODE (DTC) SHOWN ON DISPLAY. (MODE FB0 <INSPECTION MODE>)

(1) Press the function key [0].

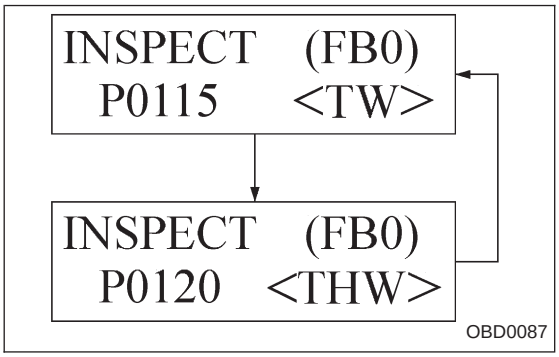


(2) Designate mode using function key.
Press [F] [B] [0] [ENT] in that order.



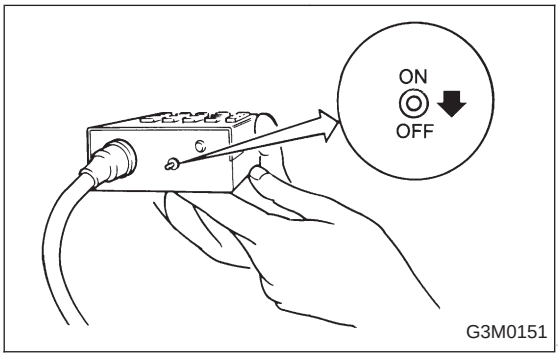
(3) Ensure diagnostic trouble code(s) is shown.

- When there is only one diagnostic trouble code.



- When there are multiple diagnostic trouble codes.

NOTE:
For details concerning diagnostic trouble code(s), refer to the “DIAGNOSTIC TROUBLE CODE (DTC) LIST”, 2-7b [T10A0].



5. FINISHING DIAGNOSIS OPERATION

1) Disconnect test mode connector at the lower portion of instrument panel (on the driver’s side), to the side of the center console box.
2) Turn Subaru select monitor switch and ignition switch to OFF.
3) Disconnect Subaru select monitor from its data link connector.