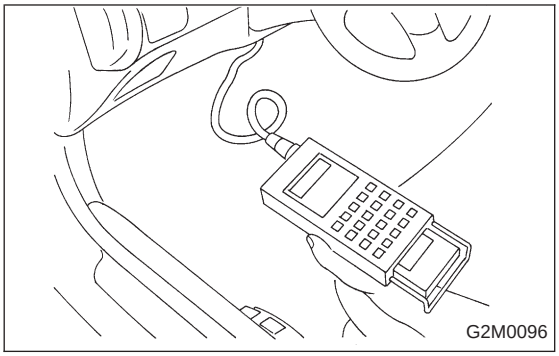
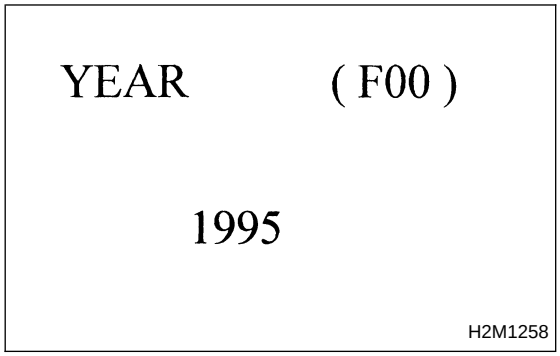


9. Diagnostics Chart with Select Monitor

A: FUNCTION MODE

Applicable cartridge of select monitor: No. 498345500

Function mode	Contents	Abbreviation	Unit of measure	Page
F00	ROM ID number	YEAR	—	81
F01	Battery voltage	VB	V	81
F02	Vehicle speed signal	VSP	MPH	82
F03	Vehicle speed signal	VSP	km/h	82
F04	Engine speed signal	EREV	rpm	83
F05	Engine coolant temperature signal	TW	deg F	84
F06	Engine coolant temperature signal	TW	deg C	84
F07	Ignition signal	ADVS	deg	84
F08	Mass air flow signal	QA	V	85
F09	Load data	LDATA	—	85
F10	Throttle position signal	THV	V	86
F11	Injector pulse width	TIM	mS	87
F12	Idle air control signal	ISC	%	88
F13	Oxygen sensor output signal	O_2	V	88
F14	Oxygen sensor MAX. output signal	O_2 MAX.	V	89
F15	Oxygen sensor MIN. output signal	O_2 MIN.	V	89
F16	A/F correction coefficient	ALPHA	%	90
F17	Fuel temperature signal	TSF	°F	90
F18	Fuel tank pressure signal	VFTP	kpa	90
F19	Purge control signal	CPCD	%	91
F22	Recirculation gas temperature	EGRT	deg C	91
FA0	ON ↔ OFF signal	—	—	92
FA1	ON ↔ OFF signal	—	—	92
FA2	ON ↔ OFF signal	—	—	93



B: MODE F00 — ROM ID NUMBER (YEAR) —

CONDITION:

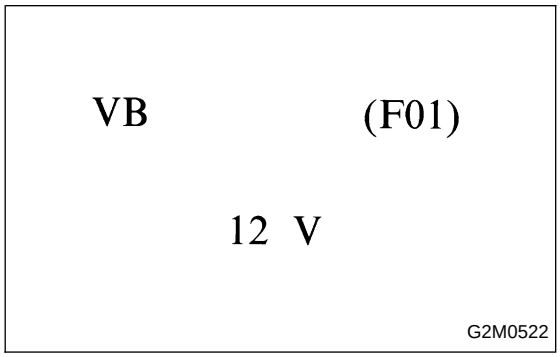
Ignition switch “ON”

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.



C: MODE F01 — BATTERY VOLTAGE (VB) —

CONDITION:

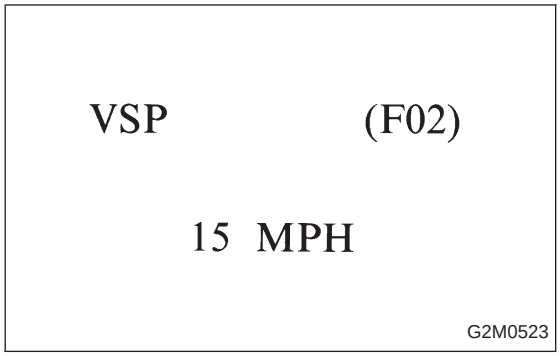
(1) Ignition switch “ON”
(2) Idling after warm-up

SPECIFIED DATA:

(1) 10 — 12 V
(2) 12 — 14 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 2-7 [T7B1].> ● Check harness connector of ECM power supply line. <Ref. to 2-7 [T7B2], [T7B3].>



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

CONDITION:

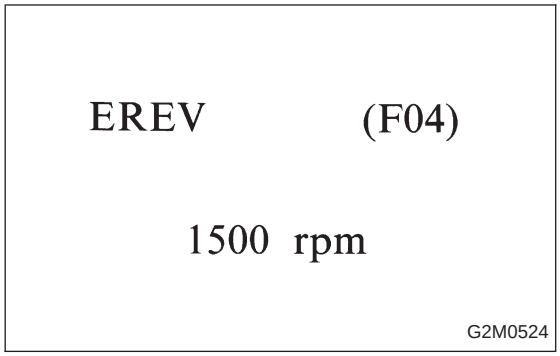
Driving at constant speed.

SPECIFIED DATA:

Compare speedometer with monitor indications.
- F02: Vehicle speed is indicated in mile per hour (MPH).
- F03: Vehicle speed is indicated in kilometer per hour (km/h).

- Probable cause (Item outside “specified data”)

1. Vehicle speed sensor 2	Check vehicle speed sensor line. <Ref. to 2-7 [T8K0].>



E: MODE F04
— ENGINE SPEED SIGNAL (EREV) —

CONDITION:

Operate engine at constant speed.

SPECIFIED DATA:

Compare engine speed indicated at tachometer.

- Probable cause (Item outside “specified data”)

1. Camshaft position sensor	Check camshaft position sensor line. <Ref. to 2-7 [T8D0].>
2. Crankshaft position sensor	Check crankshaft position sensor line. <Ref. to 2-7 [T8B0].>
3. Engine coolant temperature sensor	Check “MODE F05” or “MODE F06”. <Ref. to 2-7 [T9F0].>
4. Power steering pressure switch	Check “MODE FA0”. <Ref. to 2-7 [T9U0].>
5. Throttle position sensor	Check “MODE F10”. <Ref. to 2-7 [T9J0].>
6. Idle air control solenoid valve	Check “MODE F12”. <Ref. to 2-7 [T9L0].>
7. FICD solenoid valve (with A/C model)	Check “MODE FA1”. <Ref. to 2-7 [T9V0].>

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

CONDITION:

Idling after warm-up.

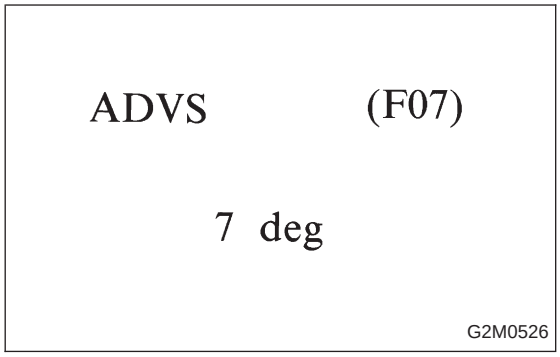
SPECIFIED DATA:

F05: 158 — 194 deg F
F06: 70 — 90 deg C

- F05: Water temperature is indicated in “deg F”.
- F06: Water temperature is indicated in “deg C”.

- Probable cause (Item outside “specified data”)

1. Cooling system	• Check coolant level. <Ref. to 1-5 [05A2].> • Check thermostat. <Ref. to 2-5 [W2B0].> • Check operation of radiator fan.
2. Engine coolant temperature sensor	• Check engine coolant temperature sensor. <Ref. to 2-7 [T8F0].>



G: MODE F07 — IGNITION SIGNAL (ADVS) —

CONDITION:

- Idling after warm-up.
- Shift lever is in Neutral position on MT model.
- Selector lever is in Neutral or Parking position on AT model.

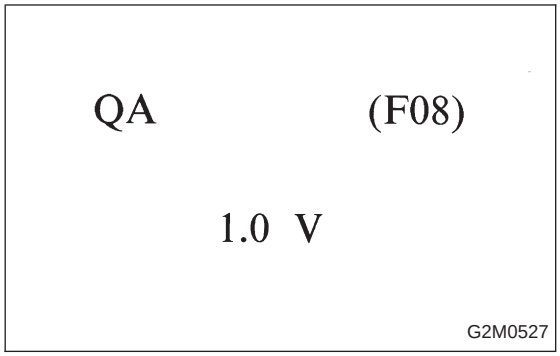
SPECIFIED DATA:

12 — 28 deg

- Probable cause (Item outside “specified data”)

1. Engine under load	Check “MODE F09”. <Ref. to 2-7 [T9I0].>
2. Mass air flow sensor	Check “MODE F08”. <Ref. to 2-7 [T9H0].>
3. Throttle position sensor	Check “MODE F10”. <Ref. to 2-7 [T9J0].>

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.



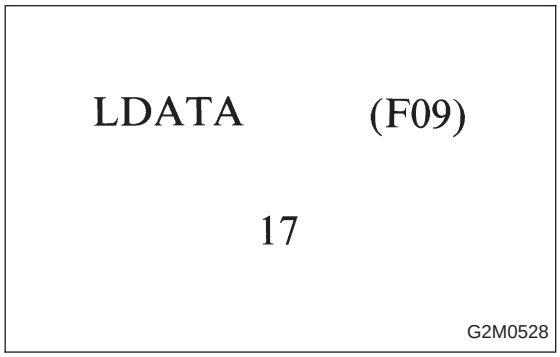
H: MODE F08
— MASS AIR FLOW SIGNAL (QA) —

CONDITION:
Idling after warm-up.

SPECIFIED DATA:
0.8 — 1.2 V

- Probable cause (Item outside “specified data”)

1. Mass air flow sensor	Check mass air flow sensor line. <Ref. to 2-7 [T8G0].>



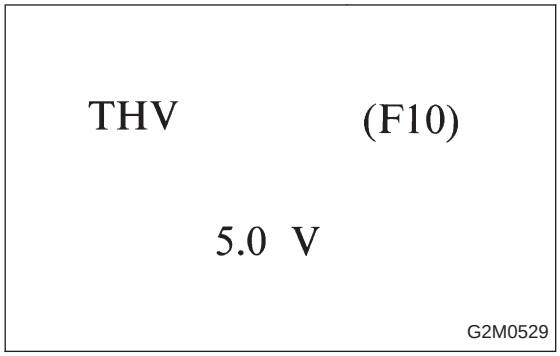
I: MODE F09
— LOAD DATA (LDATA) —

CONDITION:
Idling after warm-up.

SPECIFIED DATA:
15 — 20

- Probable cause (Item outside “specified data”)

1. Mass air flow sensor	Check “MODE F08”. <Ref. to 2-7 [T9H0].>
2. Engine speed	Check “MODE F04”. <Ref. to 2-7 [T9E0].>
3. Camshaft position sensor	Check camshaft position sensor line. <Ref. to 2-7 [T8D0].>
4. Crankshaft position sensor	Check crankshaft position sensor line. <Ref. to 2-7 [T8B0].>



J: MODE F10 — THROTTLE POSITION SIGNAL (THV) —

CONDITION:

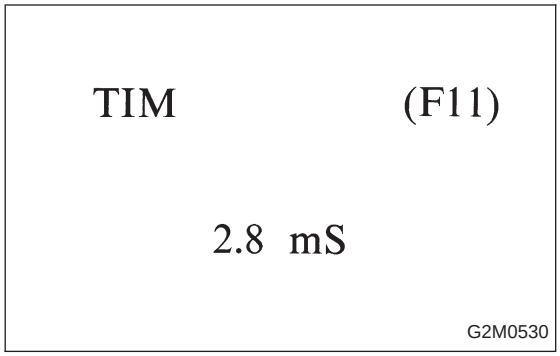
Check voltage while throttle valve is changing from “fully closed” to “fully opened”.

SPECIFIED DATA:

5.0 — 1.5 V

- Probable cause (Item outside “specified data”)

1. Throttle position sensor	→ Check throttle position sensor line. <Ref. to 2-7 [T8I0].>



K: MODE F11
— INJECTOR PULSE WIDTH (TIM) —

CONDITION:

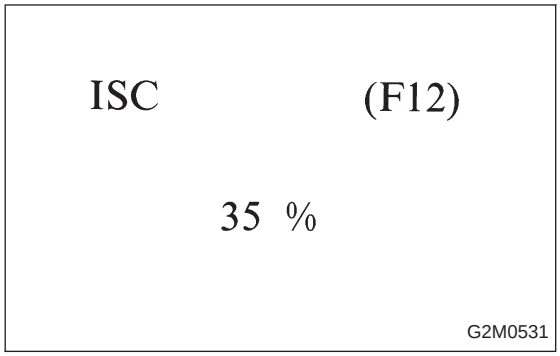
- Idling after warm-up.
- Electric load item and blower fan is turned OFF.
- Radiator fan is not in operation.

SPECIFIED DATA:

2.0 — 3.5 mS

- Probable cause (Item outside “specified data”)

1. Engine under load	Check “MODE F09”. <Ref. to 2-7 [T9I0].>
2. A/F correction coefficient	Check “MODE F16”. <Ref. to 2-7 [T9P0].>
3. Engine coolant temperature sensor	Check “MODE F05” or “MODE F06”. <Ref. to 2-7 [T9F0].>
4. Oxygen sensor	Check “MODE F13”. <Ref. to 2-7 [T9M0].>
5. Vehicle speed sensor 2	Check “MODE F02” or “MODE F03”. <Ref. to 2-7 [T9D0].>
6. Mass air flow sensor	Check “MODE F08”. <Ref. to 2-7 [T9H0].>
7. Idle air control solenoid valve	Check “MODE F12”. <Ref. to 2-7 [T9L0].>
8. Battery voltage	Check “MODE F01”. <Ref. to 2-7 [T9C0].>



L: MODE F12 — IDLE AIR CONTROL SIGNAL (ISC) —

CONDITION:

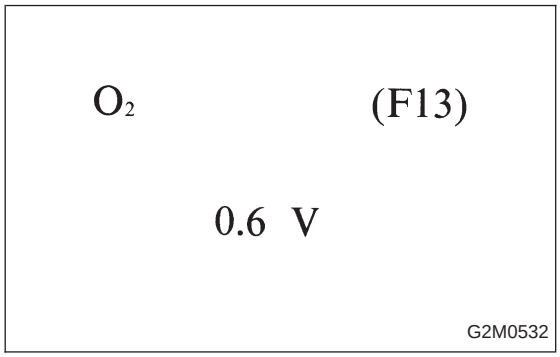
- Idling after warm-up.
- A/C is turned OFF.
- Radiator fan is not in operation.
- Battery voltage is above 13 volts.
- Vehicle is at sea level. (Not high altitudes)

SPECIFIED DATA:

25 — 40 %

- Probable cause (Item outside “specified data”)

1. Engine coolant temperature sensor	Check “MODE F05” or “MODE F06”. <Ref. to 2-7 [T9F0].>
2. Throttle position sensor	Check “MODE F10” <Ref. to 2-7 [T9J0].>
3. Neutral position switch (MT model)	Check neutral position switch line. <Ref. to 2-7 [T8P0].>
4. Park/Neutral position switch (AT model)	Check Park/Neutral position switch line. <Ref. to 2-7 [T8Q0].>



M: MODE F13 — OXYGEN SENSOR OUTPUT SIGNAL (O_2) —

CONDITION:

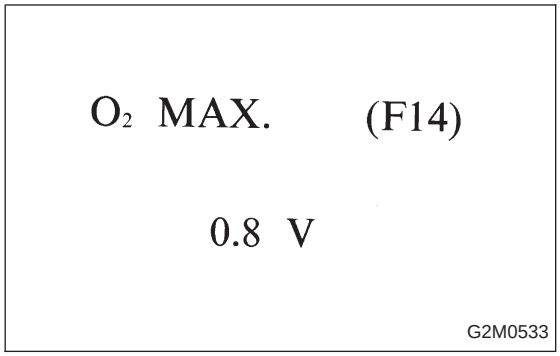
- Idling after warm-up.
- A/C is turned OFF.

SPECIFIED DATA:

0 — 1.0 V

- Probable cause (Item outside “specified data”)

1. Injection plus width	Check “MODE F11”. <Ref. to 2-7 [T9K0].>
2. Oxygen sensor	Check oxygen sensor line. <Ref. to 2-7 [T8J0].>



N: MODE F14 — OXYGEN SENSOR MAX. OUTPUT SIGNAL (O_2 MAX.) —

CONDITION:

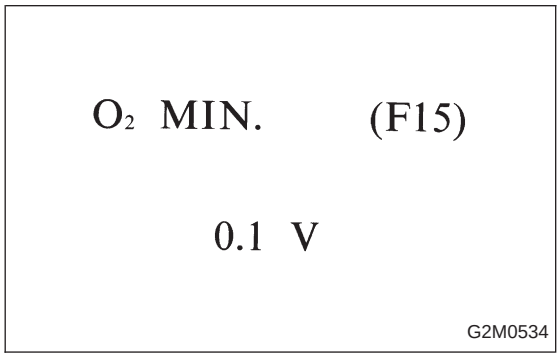
- Idling after warm-up.
- A/C is turned OFF.

SPECIFIED DATA:

0.7 — 1.0 V

- Probable cause (Item outside “specified data”)

1. Injection plus width	Check “MODE F11”. <Ref. to 2-7 [T9K0].>
2. Oxygen sensor	Check oxygen sensor line. <Ref. to 2-7 [T8J0].>



O: MODE F15 — OXYGEN SENSOR MIN. OUTPUT SIGNAL (O_2 MIN.) —

CONDITION:

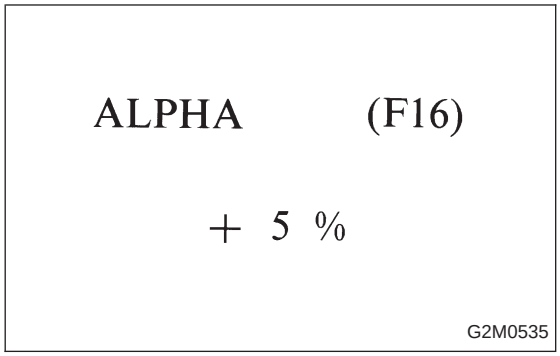
- Idling after warm-up.
- A/C is turned OFF.

SPECIFIED DATA:

0 — 0.2 V

- Probable cause (Item outside “specified data”)

1. Injection plus width	Check “MODE F11”. <Ref. to 2-7 [T9K0].>
2. Oxygen sensor	Check oxygen sensor line. <Ref. to 2-7 [T8J0].>



P: MODE F16 — A/F CORRECTION COEFFICIENT (ALPHA) —

CONDITION:

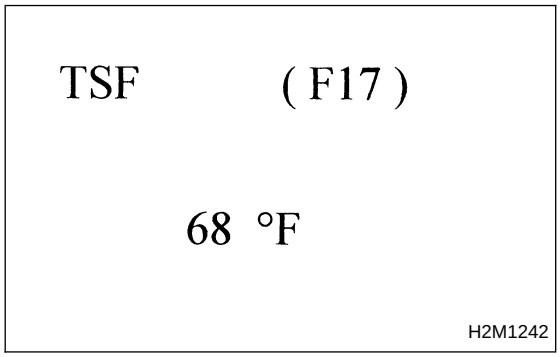
Idling after warm-up.

SPECIFIED DATA:

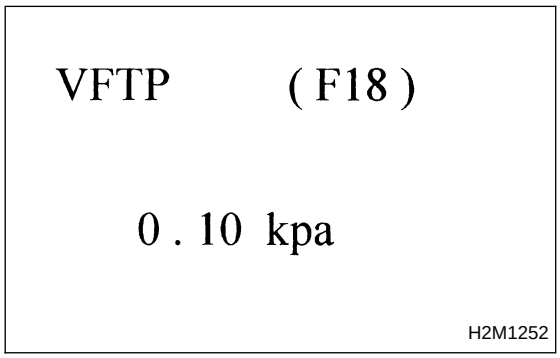
−10 to +10 %

- Probable cause (Item outside “specified data”)

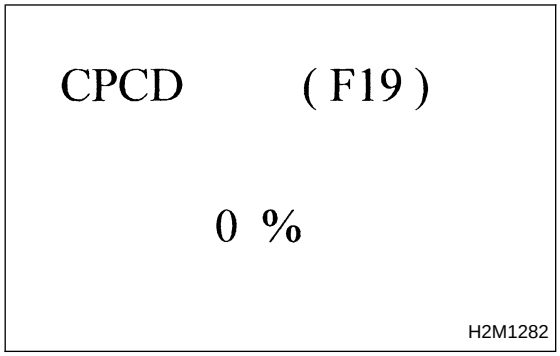
1. Injection plus width	Check “MODE F11”. <Ref. to 2-7 [T9K0].>
2. Oxygen sensor	Check oxygen sensor line. <Ref. to 2-7 [T8J0].>
3. Throttle position sensor	Check throttle position sensor line. <Ref. to 2-7 [T8I0].>



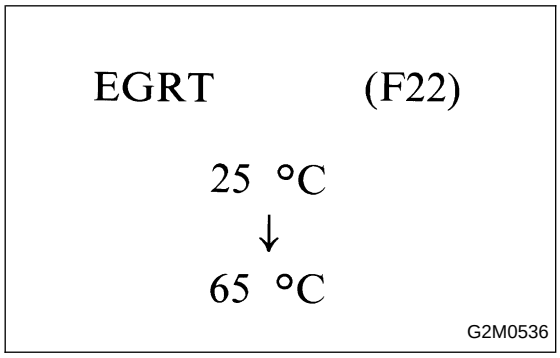
Q: MODE F17 — FUEL TEMPERATURE SIGNAL (TSF) —



R: MODE F18 — FUEL TANK PRESSURE SIGNAL (VFTP) —



S: MODE F19
— PURGE CONTROL SIGNAL (CPCD) —



T: MODE F22
— RECIRCULATION GAS TEMPERATURE (EGRT) —

CONDITION:

Idling after warm-up.

SPECIFIED DATA:

(1) Make sure to recirculate gas temperature when engine is idling.
(2) Open EGR valve by force.
(3) Make sure that indicated temperature rises.

- Probable cause (Item outside “specified data”)

1. Recirculation gas temperature sensor	→ Check recirculation gas temperature sensor line. <Ref. to 2-7 [T8R0].>

LED No.	Signal name	Display
1	Ignition switch	IG
2	Identification of AT model	AT
3	Test mode connector	UD
4	Read memory connector	RM
5	Fuel tank pressure control solenoid valve	PC
6	—	—
7	Park/Neutral position switch	NT
8	Power steering pressure	SS
9	—	—
10	Oxygen sensor signal	O2

IG	AT	UD	RM	PC
——	NT	SS	——	O2

1	2	3	4	5
6	7	8	9	10

U: 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. 4 Read memory connector is connected.
LED No. 5 Fuel tank pressure control solenoid valve is in function.
LED No. 7 ● On MT model, gear position is in neutral.
● On AT model, shift position is in “P” or “N”.
LED No. 8 Steering is turned.
LED No. 10 Mixture ratio is rich.

NOTE:
● When LED Nos. 3 and 4 blink with the test mode connector connected and the ignition switch turned to ON, the corresponding parts are functioning properly.

LED No.	Signal name	Display
1	FICD solenoid valve	AF
2	A/C switch	AC
3	A/C relay	AR
4	Radiator fan relay 1	R1
5	Radiator fan relay 2	R2
6	—	—
7	—	—
8	—	—
9	—	—
10	Oxygen sensor signal	O2

AF	AC	AR	R1	R2
——	——	——	——	O2

1	2	3	4	5
6	7	8	9	10

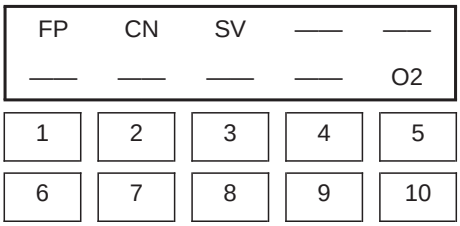
V: MODE FA1

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.
LED No. 1 FICD solenoid valve is in function.
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. 10 Mixture ratio is rich.

NOTE:
When LED No. 1 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	Fuel pump relay	FP
2	Purge control solenoid valve	CN
3	Air suction solenoid valve	SV
4	—	—
5	—	—
6	—	—
7	—	—
8	—	—
9	—	—
10	Oxygen sensor signal	O2



W: MODE FA2

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.
LED No. 1 Fuel pump relay is turned ON.
LED No. 2 Purge control solenoid valve is in function.
LED No. 3 Air suction solenoid valve is in function.
LED No. 10 Mixture ratio is rich.

NOTE:
● When LED Nos. 2 and 3 blink with the test mode connector connected and the ignition switch turned to ON, the corresponding parts are functioning properly.