

SERVICE PRECAUTIONS

CLEARING DTC

How to clear the DTC with HDS

Connect the HDS to the DLC (page 5-3).

Clear the DTC with the HDS while the engine is stopped.

To clear the DTC without the HDS, refer to the following procedure.

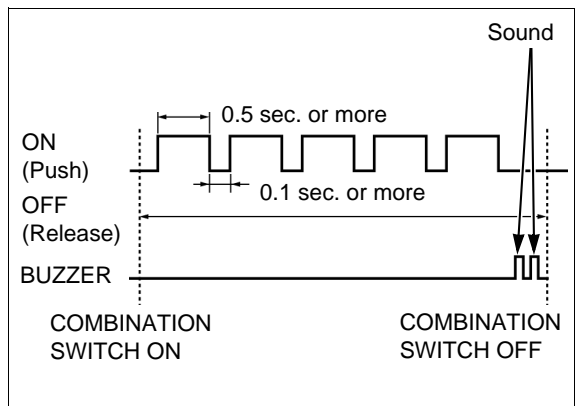
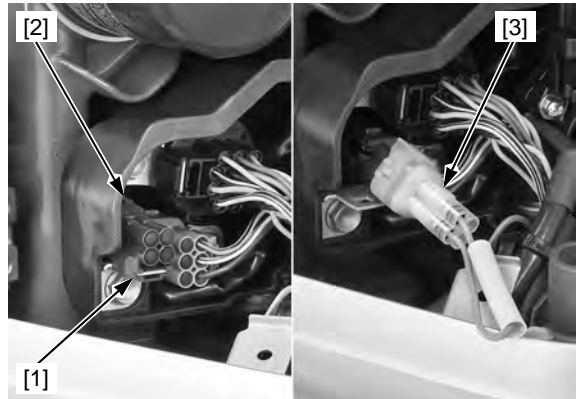
How to clear the DTC with SCS service connector

1. Turn the combination switch to OFF.
2. Remove the dummy connector [1] and short the Brown and Green wire terminals of the DLC [2] using the special tool.

TOOL:

SCS service connector [3] 070PZ-ZY30100

3. Turn the combination switch to ON.
 - Perform steps 4 though 6 within 20 seconds.
4. Turn the emergency stop switch ON (push for 0.5 sec. or more) and OFF (release for 0.1 sec. or more).
Repeat the procedure five times.
5. Check that the buzzer sounds twice.
The MIL should stay ON.
6. Turn the combination switch OFF. (ECM reset procedure completes.)



READING DTC WITH THE HDS

- The HDS can readout the DTC, freeze data, current data, and other ECM condition.

(*) Refer to page of base shop manual (BF175AK1-200AK1-225AK1: 62ZY300).

How to connect the HDS

Turn the combination switch to OFF.

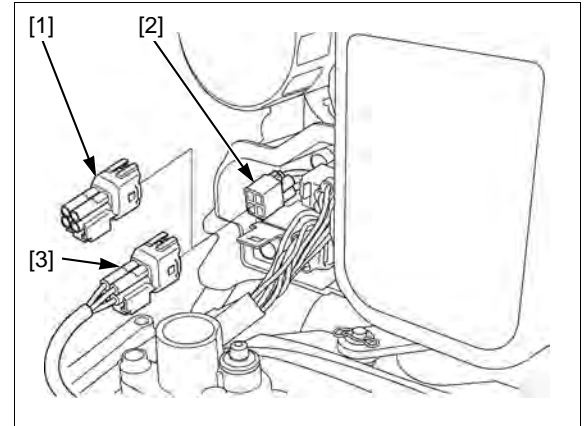
Remove the dummy connector [1] from the DLC [2].
Connect the HDS [3] to the DLC.

Turn the combination switch ON and check the DTC and freeze data.

- Freeze data indicates the engine conditions when the first malfunction was detected.

Read the DTC and freeze data and follow the troubleshooting index (page 5-16*).

After troubleshooting, perform repairs as needed and perform the "FINAL PROCEDURE (AFTER TROUBLESHOOTING)" (page 5-9*).



READING DTC WITH THE MIL

(*) Refer to page of base shop manual (BF175AK1-200AK1-225AK1: 62ZY300).

Turn the combination switch to OFF.

Remove the dummy connector [1] and short DLC terminals using the special tool.

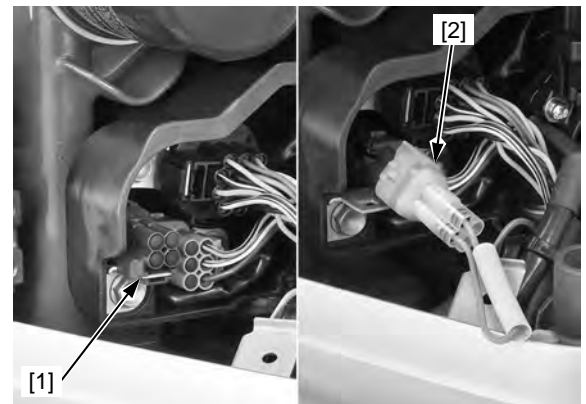
TOOL:

SCS service connector [2] 070PZ-ZY30100

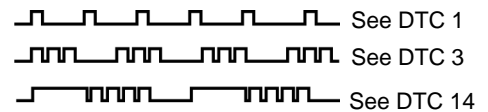
Turn the combination switch ON, read, note the MIL blinks and refer to the troubleshooting index (page 5-31).

- If the ECM has any DTC in its memory, the MIL will start blinking.
- The MIL has two types of blinks, a long blink and short blink. One long blink is the equivalent of 10 short blinks. For example, when 1 long blink is followed by 4 short blinks, the MIL is 14 (1 long blinks = 10 blinks, plus 4 short blinks).
- When multiple problems occur simultaneously, the MIL repeatedly indicates them by blinking separate codes, one after another.

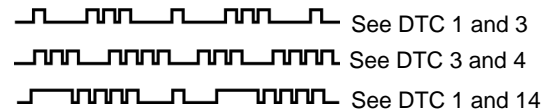
After troubleshooting, perform repairs as needed and perform the "FINAL PROCEDURE (AFTER TROUBLESHOOTING)" (page 5-9*).



Single problem:

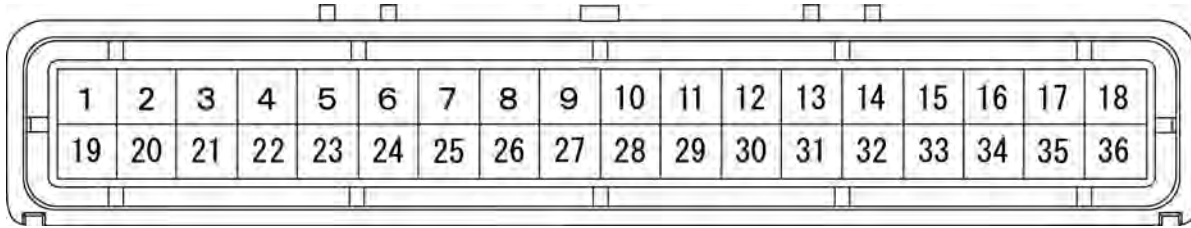


Multiple problems:



ECM TERMINAL ARRANGEMENT

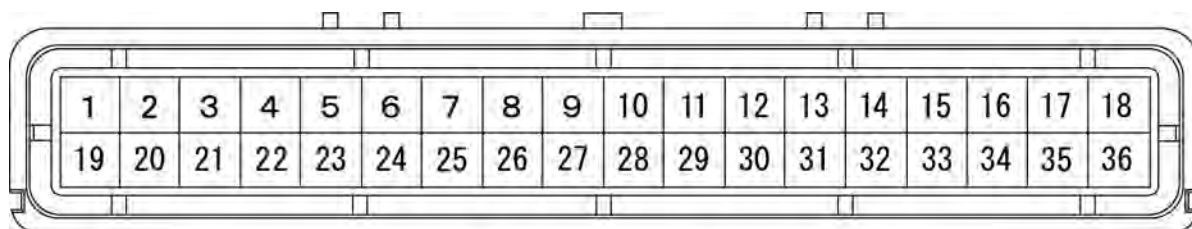
ECM CONNECTOR A (GRAY)



ECM side connector (viewed from the terminal side)

Terminal No.	Terminal mark	Name	Content/Signal
1	-	-	-
2	ACGLP	Alternator indicator lamp	Alternator indicator lamp output
3	WARNL	MIL	MIL output
4	TDC2P	CMP 2 sensor (+)	CMP 2 sensor (+) input
5	TDC2M	CMP 2 sensor (-)	CMP 2 sensor (-) input
6	TE	EBT sensor	EBT sensor input
7	THL	TP sensor	TP sensor input
8	PB	MAP sensor	MAP sensor input
9	-	-	-
10	TACHO	Tachometer	Tachometer pulse output
11	K-LINE	Communication signal	Tester communication signal input/output
12	SVS	IAB control solenoid	IAB control solenoid output
13	FLR1	Fuel pump relay 1	Fuel pump relay 1 output
14	FLR2	Fuel pump relay 2	Fuel pump relay 2 output
15	IGN6	No.6 direct ignition coil	No.6 ignition coil output
16	IGN4	No.4 direct ignition coil	No.4 ignition coil output
17	PG3	Power ground 3	Power ground 3
18 (Except XT, XCT, XXT, XXCT types)	O2HT	O ₂ sensor heater	O ₂ sensor heater output
19	BUZZ	Warning buzzer	Warning buzzer output
20	CRKP	CKP sensor (+)	CKP sensor (+) input
21	CRKM	CKP sensor (-)	CKP sensor (-) input
22	TOH1	EMT sensor 1	EMT sensor 1 input
23	TA	IAT sensor	IAT sensor input
24	TDC1P	CMP 1 sensor (+)	CMP 1 sensor (+) input
25	TDC1M	CMP 1 sensor (-)	CMP 1 sensor (-) input
26	FUP	Fuel consumption meter	Fuel consumption volume output
27 (Except XT, XCT, XXT, XXCT types)	O2	HO2S	HO2S input
28	ACGF	Alternator FR signal	Alternator FR signal input
29	TRMA	Trim angle sensor	Trim angle sensor input
30	TOH2	EMT sensor 2	EMT sensor 2 input
31	OPL	Oil indicator light	Oil indicator light output
32	OHL	Overheat indicator light	Overheat indicator light output
33	IGN5	No.5 direct ignition coil	No.5 ignition coil output
34	IGN3	No.3 direct ignition coil	No.3 ignition coil output
35	IGN2	No.2 direct ignition coil	No.2 ignition coil output
36	IGN1	No.1 direct ignition coil	No.1 ignition coil output

ECM CONNECTOR B (BLACK)















ECM side connector (viewed from the terminal side)













Terminal No.	Terminal mark	Name	Content/Signal
1	CAN1H	NMEA CAN HI	NMEA CAN HI output
2	CAN 12V	NMEA 12 V power source	NMEA 12 V power input
3	CAN GND	NMEA ground	NMEA ground
4	—	—	—
5	LG1	Logic ground 1	Logic ground 1
6	VCC1	Sensor power 1	Sensor power 5 V output 1
7	VCC2	Sensor power 2	Sensor power 5 V output 2
8	IGP1	Power source 1	Power 12 V input 1
9	IGP2	Power source 2	Power 12 V input 2
10 (BF225 only)	VTS	VTEC control solenoid	VTEC control solenoid output
11	INJ 6	No.6 injector	No.6 injector output
12	INJ 5	No.5 injector	No.5 injector output
13	INJ 4	No.4 injector	No.4 injector output
14	INJ 3	No.3 injector	No.3 injector output
15	INJ 2	No.2 injector	No.2 injector output
16	INJ 1	No.1 injector	No.1 injector output
17	PG2	Power ground 2	Power ground 2
18	EACVP	IAC valve (+)	IAC valve (+) output
19	CAN1L	NMEA CAN LO	NMEA CAN LO output
20	SHIELD	NMEA shield	NMEA shield
21	—	—	—
22	VCC3	Sensor power 3	Sensor power 5 V output 3
23	LG2	Logic ground 2	Logic ground 2
24	SG1	Sensor ground 1	Sensor ground 1
25	SG2	Sensor ground 2	Sensor ground 2
26	OPSL	EOP switch (Low pressure side)	EOP switch (Low pressure side) input
27	KS	Knock sensor	Knock sensor input
28	FFD	Water level sensor	Water level sensor input
29	NTSW	Neutral switch	Neutral switch input
30	EMS1	Emergency stop switch 1	Emergency stop switch input 1
31	EMS2	Emergency stop switch 2	Emergency stop switch input 2
32	OPSH	EOP switch (High pressure side)	EOP switch (High pressure side) input
33	SCS	Service check signal	Service check signal input
34	ACGL	Alternator indicator light	Alternator indicator light input
35	PG1	Power ground 1	Power ground 1
36	EACVM	IAC valve (-)	IAC valve (-) output

DTC TROUBLESHOOTING




DTC INDEX

(*) Refer to page of base shop manual (BF175AK1-200AK1-225AK1: 62ZY300).


DTC	MIL	Detected component	Probable cause	Ref. page
0 or does not communicate	MIL does not come ON/blink 	ECM	<ul style="list-style-type: none"> Loose or poor contact of the connector Faulty indicator light Open circuit in MIL wire Open circuit in ECM power/ground cable Faulty ECM 	-
0 or does not communicate	MIL stay ON 	ECM	<ul style="list-style-type: none"> SCS service connector activated Short circuit in DLC wire Short circuit in MIL wire Short circuit in sensor power circuit Faulty ECM 	5-9
0-2	ON 	Internal failure of ECM	<ul style="list-style-type: none"> Faulty ECM 	5-22*
1-4	ON 	HO2S	<ul style="list-style-type: none"> Loose or poor contact of the connector Open or short circuit in HO2S wire Faulty fuel supply system Faulty HO2S 	5-11
3-1	ON 	MAP sensor (voltage too low)	<ul style="list-style-type: none"> Loose or poor contact of the connector Short circuit in MAP sensor wire Faulty MAP sensor 	5-12
3-2	ON 	MAP sensor (voltage too high)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open circuit in MAP sensor wire Faulty MAP sensor 	5-12
4-1	ON 	CKP sensor (no pulse)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open or short circuit in CKP sensor wire Faulty CKP sensor 	5-14
4-2	ON 	CKP sensor (abnormal pulse)	<ul style="list-style-type: none"> Loose or poor contact of the connector Faulty CKP sensor Faulty Guide plate 	5-14
6-1	ON 	ECT sensor 1 (EBT sensor) (voltage too low)	<ul style="list-style-type: none"> Loose or poor contact of the connector Short circuit in EBT sensor wire Faulty EBT sensor 	5-15
6-2	ON 	ECT sensor 1 (EBT sensor) (voltage too high)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open circuit in EBT sensor wire Faulty EBT sensor 	5-16
7-1	ON 	TP sensor (voltage too low)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open and short circuit in TP sensor wire Faulty TP sensor 	5-17
7-2	ON 	TP sensor (voltage too high)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open circuit in TP sensor wire Faulty TP sensor 	5-18

DTC	MIL	Detected component	Probable cause	Ref. page
8-1	ON 	CMP 1 sensor (no pulse)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open or short circuit in CMP 1 sensor wire Faulty CMP 1 sensor 	5-19
8-2	ON 	CMP 1 sensor (abnormal pulse)	<ul style="list-style-type: none"> Loose or poor contact of the connector Faulty CMP 1 sensor 	5-19
10-1	ON 	IAT sensor (voltage too low)	<ul style="list-style-type: none"> Loose or poor contact of the connector Short circuit in IAT sensor wire Faulty IAT sensor 	5-20
10-2	ON 	IAT sensor (voltage too high)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open circuit in IAT sensor wire Faulty IAT sensor 	5-21
14-1	ON 	IAC valve (abnormal current)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open or short circuit in IAC valve wire Faulty IAC valve 	5-22
21-1	ON 	VTEC spool solenoid valve	<ul style="list-style-type: none"> Loose or poor contact of the connector Open or short circuit in VTEC spool solenoid valve wire Faulty VTEC spool solenoid valve 	5-23
23-1	ON 	Knock sensor	<ul style="list-style-type: none"> Loose or poor contact of the connector Open or short circuit in knock sensor wire Faulty knock sensor 	5-24
41-2	ON 	HO2S heater (abnormal current)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open or short circuit in HO2S heater wire Faulty HO2S 	5-25
58-1	ON 	CMP 2 sensor (no pulse)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open or short circuit in CMP 2 sensor wire Faulty CMP 2 sensor 	5-25
58-2	ON 	CMP 2 sensor (abnormal pulse)	<ul style="list-style-type: none"> Loose or poor contact of the connector Faulty CMP 2 sensor 	5-26
140-1	ON 	ECT sensor 2 (EMT sensor 1) (voltage too low)	<ul style="list-style-type: none"> Loose or poor contact of the connector Short circuit in EMT sensor 1 wire Faulty EMT sensor 1 	5-27
140-2	ON 	ECT sensor 2 (EMT sensor 1) (voltage too high)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open circuit in EMT sensor 1 wire Faulty EMT sensor 1 	5-27

FUEL SYSTEM

DTC	MIL	Detected component	Probable cause	Ref. page
141-1	ON 	ECT sensor 3 (EMT sensor 2) (voltage too low)	<ul style="list-style-type: none"> Loose or poor contact of the connector Short circuit in EMT sensor 2 wire Faulty EMT sensor 2 	5-28
141-2	ON 	ECT sensor 3 (EMT sensor 2) (voltage too high)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open circuit in EMT sensor 2 wire Faulty EMT sensor 2 	5-29
142-1	ON 	EOP switch (high pressure side)	<ul style="list-style-type: none"> Loose or poor contact of the connector Open or short circuit in EOP switch (High pressure side) wire Faulty EOP switch (high pressure side) 	5-30

When multiple DTCs are shown

DTC	MIL	Detected component	Probable cause	Ref. page
1,6,7,10,13,140,141,142	ON 	SG (sensor ground) line	<ul style="list-style-type: none"> Open circuit in SG (sensor ground) line 	-

MIL IS ON BUT DTC IS 0 OR DOES NOT COMMUNICATE

1. DLC power/GND line open circuit inspection

Turn the combination switch OFF and disconnect the HDS.

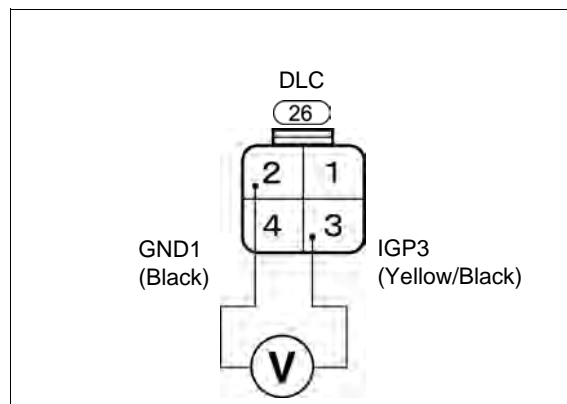
Turn the combination switch ON.

Measure the voltage at the DLC (26) No.3 (Yellow/Black) terminal and No.2 (Black) terminal.

Does battery voltage exit?

YES – GO TO STEP 2.

- NO** –
- Repair open in the Yellow/Black wire between the No.10 fuse and DLC.
 - Repair open in the Black wire between the ground cable (GND1) and DLC.
 - If main wire harness is normal, inspect the No.10 fuse circuit in the fuse/relay junction box (page 10-11).



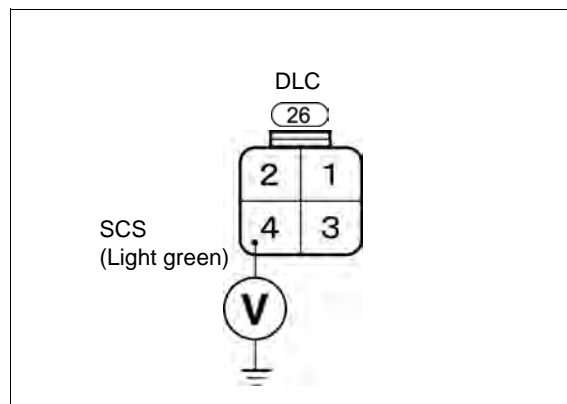
2. DLC signal line short circuit inspection

Measure the voltage between the DLC (26) No.4 (Light green) terminal and engine ground.

Is the measurement within 4.75 – 5.25 V?

YES – GO TO STEP 3.

- NO** – Repair short in the main wire harness between the ECM and the DLC.



3. MIL ON line short circuit inspection

Turn the combination switch OFF.

Disconnect ECM connector A (12).

Turn the combination switch ON and check the MIL.

Does the MIL go OFF?

YES – GO TO STEP 4.

- NO** – Repair short in the main wire harness between the ECM and the MIL.

4. MAP sensor power line short circuit inspection 1

Turn the combination switch OFF.

Connect ECM connector A (12).

Disconnect the MAP sensor 3P connector (22).

Turn the combination switch ON and check the MIL.

Does the MIL go OFF?

YES – Replace the MAP sensor.

NO – GO TO STEP 5.

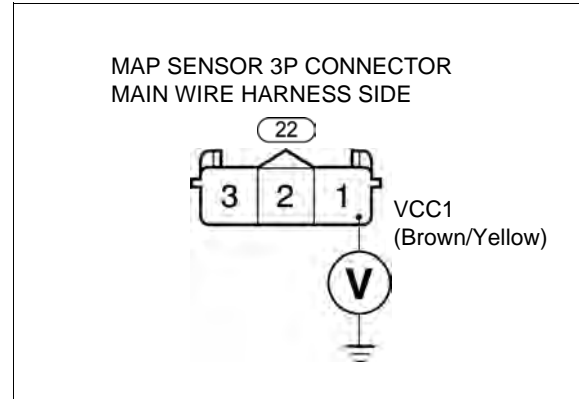
5. MAP sensor power line short circuit inspection 2

Measure the voltage between the MAP sensor 3P connector (22) main wire harness side No.1 (Brown/Yellow) terminal and engine ground.

Is the measurement within 4.75 – 5.25 V?

YES – GO TO STEP 6.

NO – Repair short in the main wire harness between the ECM and the MAP sensor.



6. TP sensor power line short circuit inspection 1

Turn the combination switch OFF.

Disconnect the TP sensor 3P connector (1).

Turn the combination switch ON and check the MIL.

Does the MIL go OFF?

YES – Replace the TP sensor.

NO – GO TO STEP 7.

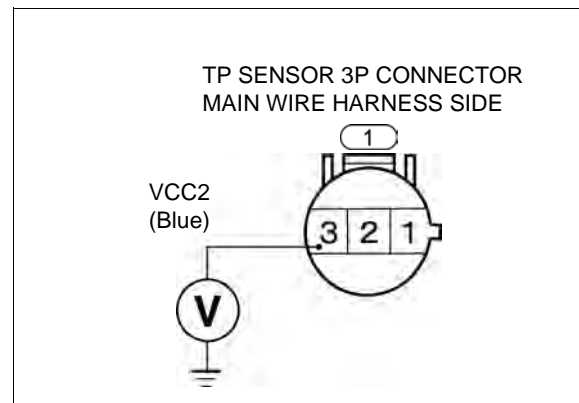
7. TP sensor power line short circuit inspection 2

Measure the voltage between the TP sensor 3P connector (1) main wire harness side No.3 (Blue) terminal and engine ground.

Is the measurement within 4.75 – 5.25 V?

YES – GO TO STEP 8.

NO – Repair short in the main wire harness between the ECM and the TP sensor.



8. Trim angle sensor power line short circuit inspection 1

Turn the combination switch OFF.

Disconnect the trim angle sensor 3P connector (16).

Turn the combination switch ON and check the MIL.

Does the MIL go OFF?

YES – Replace the trim angle sensor.

NO – GO TO STEP 9.

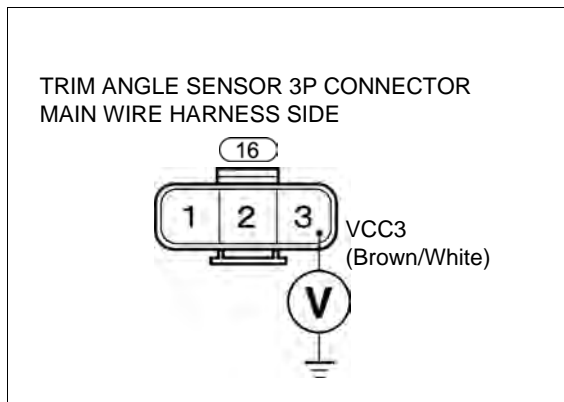
9. Trim angle sensor power line short circuit inspection 2

Measure the voltage between the trim angle sensor 3P connector (16) main wire harness side No.3 (Brown/White) terminal and engine ground.

Is the measurement within 4.75 – 5.25 V?

YES – Replace the ECM with a new one and recheck.

NO – Repair short in the main wire harness between the ECM and the trim angle sensor.



DTC 1-4 (ABNORMAL HO2S) (Except XT, XCT, XXT, XXCT types)

(*) Refer to page of base shop manual (BF175AK1-200AK1-225AK1: 62ZY300).

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the HO2S 4P connector (19), ECM connector A (12), ECM connector B (13), joint connector 1 (11) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Start the engine and let it run at 3,000 min⁻¹ (rpm) for 5 minutes or more under no load.

Let the engine idle for 1 minute or more.

Check the DTC using the HDS.

Does the DTC 1-4 appear?

YES – GO TO STEP 2.

NO – Temporary failure (code does not reappear).

2. HO2S inspection

Turn the combination switch OFF and disconnect the HO2S 4P connector (19).

Inspect the HO2S (page 5-61).

Is the HO2S correct?

YES – GO TO STEP 3.

NO – Replace the HO2S with a new one and recheck.

3. Fuel supply system inspection

Measure the fuel pressure (page 5-114*).

Is the fuel pressure normal?

YES – Repair open or short in the main wire harness between the ECM and HO2S. If the main wire harness is correct, replace the ECM with a new one, and recheck.

NO – Repair fuel supply system and recheck under normal fuel pressure.

DTC 3-1, 3-2 (MAP SENSOR VOLTAGE TOO LOW OR TOO HIGH)

DTC 3-1 (MAP SENSOR VOLTAGE IS TOO LOW)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the MAP sensor 3P connector (1), ECM connector A (12), ECM connector B (13) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.
Measure the MAP sensor voltage using the HDS.

Is the measurement within 0.23 – 4.49 V?

YES – Temporary failure (code does not reappear).

NO – GO TO STEP 2.

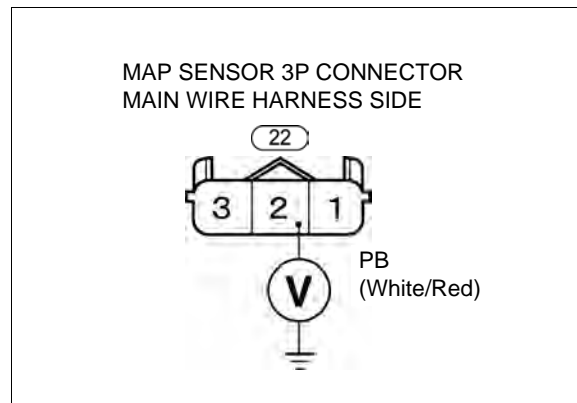
2. MAP sensor signal line short circuit inspection

Turn the combination switch OFF and disconnect the MAP sensor 3P connector (22).
Turn the combination switch ON.
Measure the voltage between the MAP sensor 3P connector (22) main wire harness side No.2 (White/Red) terminal and engine ground.

Is the measurement within 4.75 – 5.25 V?

YES – Replace the MAP sensor with a new one and recheck.

NO – Repair short in the main wire harness between the ECM and MAP sensor. If the main wire harness is correct, replace the ECM with a new one and recheck.



DTC 3-2 (MAP SENSOR VOLTAGE IS TOO HIGH)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the MAP sensor 3P connector (22), ECM connector A (12), ECM connector B (13) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.
Measure the MAP sensor voltage using the HDS.

Is the measurement within 0.23 – 4.49 V?

YES – Temporary failure (code does not reappear).

NO – GO TO STEP 2.

2. MAP sensor power line open circuit inspection

Turn the combination switch OFF and disconnect the MAP sensor 3P connector (22).

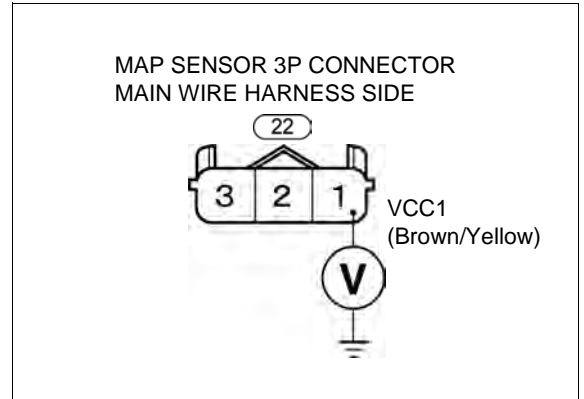
Turn the combination switch ON.

Measure the voltage between the MAP sensor 3P connector (22) main wire harness side No.1 (Brown/Yellow) terminal and engine ground.

Is the measurement within 4.75 – 5.25 V?

YES – GO TO STEP 3.

NO – Repair open in the main wire harness between the ECM and MAP sensor. If the main wire harness is correct, replace the ECM with a new one and recheck.



3. MAP sensor signal/GND line open circuit inspection

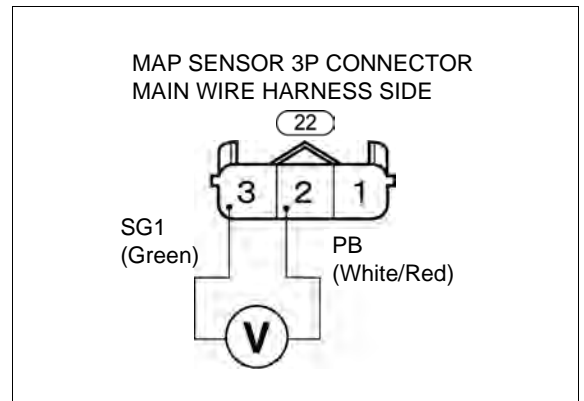
Measure the voltage between the MAP sensor 3P connector (22) main wire harness side No.2 (White/Red) terminal and No.3 (Green) terminal.

Is the measurement within 4.75 – 5.25 V?

YES – Replace the MAP sensor with a new one and recheck.

NO –

- Repair open in the White/Red wire between the ECM and MAP sensor.
- Repair open in the Green wire between the ECM and MAP sensor.
- If the main wire harness is correct, replace the ECM with a new one, and recheck



DTC 4-1, 4-2 (NO CKP SENSOR PULSE OR ABNORMAL CKP SENSOR PULSE)

(*) Refer to page of base shop manual (BF175AK1-200AK1-225AK1: 62ZY300).

DTC 4-1 (NO CKP SENSOR PULSE)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the CKP sensor 2P connector (10), ECM connector A (12) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Start the engine and check the DTC using the HDS.

Does the DTC 4-1 appear?

YES – GO TO STEP 2.

NO – Temporary failure (code does not reappear).

2. CKP sensor inspection

Turn the combination switch OFF.

Inspect the CKP sensor (page 5-131*).

Is the CKP sensor correct?

YES – Repair the open or short circuit in the CKP sensor harness between the CKP sensor and ECM. If the main wire harness is correct, replace the ECM with a new one and recheck.

NO – Replace the CKP sensor with a new one and recheck.

DTC 4-2 (ABNORMAL CKP SENSOR PULSE)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the CKP sensor 2P connector (10), ECM connector A (12) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Start the engine and check the DTC using the HDS.

Does the DTC 4-2 appear?

YES – GO TO STEP 2.

NO – Temporary failure (code does not reappear).

2. CKP sensor installation inspection

Turn the combination switch OFF.

Inspect the CKP sensor installation (page 5-106*).

Is the CKP sensor installed correctly?

YES – GO TO STEP 3.

NO – Install the CKP sensor correctly and recheck.

3. CKP sensor inspection

Replace the CKP sensor and connect the CKP sensor 2P connector (10).

Start the engine and check the DTC using the HDS.

Does the DTC 4-2 appear?

- YES** – Replace the ECM with a new one and recheck.
- NO** – Faulty original CKP sensor.

DTC 6-1, 6-2 (ECT SENSOR 1 (EBT SENSOR) VOLTAGE IS TOO LOW OR TOO HIGH)

DTC 6-1 (ECT SENSOR 1 (EBT SENSOR) VOLTAGE IS TOO LOW)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the EBT sensor 2P connector (40), ECM connector A (12), ECM connector B (13), switch wire 6P connector (4), joint connector 1 (11) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.

Measure the EBT sensor voltage using the HDS.

Is the measurement within 0.08 – 4.92 V?

- YES** – Temporary failure (code does not reappear).
- NO** – GO TO STEP 2.

2. EBT sensor signal line short circuit inspection

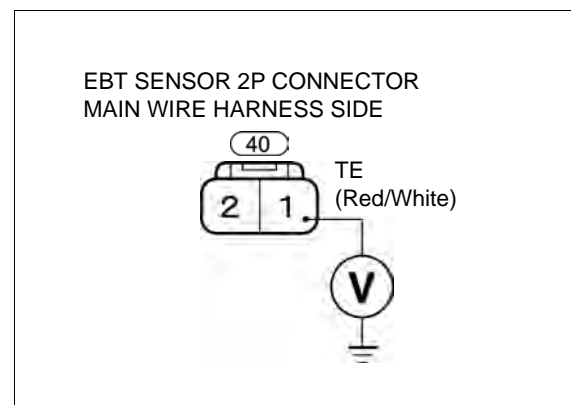
Turn the combination switch OFF and disconnect the EBT sensor 2P connector (40).

Turn the combination switch ON.

Measure the voltage between the EBT sensor 2P connector (40) main wire harness side No.1 (Red/White) terminal and engine ground.

Is the measurement within 4.75 – 5.25 V?

- YES** – Replace the EBT sensor with a new one and recheck.
- NO** – Repair short in the main wire harness between the ECM and EBT sensor. If the main wire is correct, replace the ECM with a new one and recheck.



DTC 6-2 (ECT SENSOR 1 (EBT SENSOR) VOLTAGE IS TOO HIGH)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the EBT sensor 2P connector (40), ECM connector A (12), ECM connector B (13), switch wire 6P connector (4) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.

Measure the EBT sensor voltage using the HDS.

Is the measurement within 0.08 – 4.92 V?

YES – Temporary failure (code does not reappear).

NO – GO TO STEP 2.

2. EBT sensor signal /GND line open circuit inspection

Turn the combination switch OFF and disconnect the EBT sensor 2P connector (40).

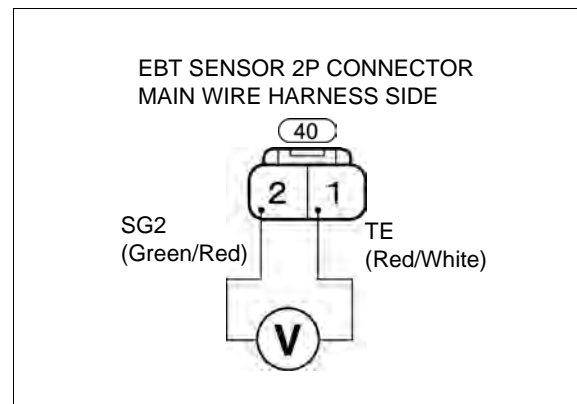
Turn the combination switch ON.

Measure the voltage between the EBT sensor 2P connector (40) main wire harness side No.1 (Red/White) terminal and No.2 (Green/Red) terminal.

Is the measurement within 4.75 – 5.25 V?

YES – Replace the EBT sensor with a new one and recheck.

NO – Repair open in the Red/White or Green/Red wire harness between the ECM and EBT sensor. If the main wire harness is correct, replace the ECM with a new one and recheck.



DTC 7-1, 7-2 (TP SENSOR VOLTAGE IS TOO LOW OR TOO HIGH)

DTC 7-1 (TP SENSOR VOLTAGE IS TOO LOW)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the TP sensor 3P connector (1), ECM connector A (12), ECM connector B (13), joint connector 1 (11) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.

Measure the TP sensor voltage using the HDS.

Is the measurement within 0.23 – 4.89 V?

YES – Temporary failure (code does not reappear).

NO – GO TO STEP 2.

2. TP sensor power/signal line open circuit inspection

Turn the combination switch OFF and disconnect the TP sensor 3P connector (1).

Turn the combination switch ON.

Measure the voltage between the TP sensor 3P connector (1) main wire harness side No.3 (Blue) terminal and No.2 (Red/Black) terminal.

Is the measurement within 4.75 – 5.25 V?

YES – GO TO STEP 3.

- NO** –
- Repair open in the Blue wire between the ECM and TP sensor
 - Repair open in the Red/Black wire between the ECM and TP sensor
 - If the main wire harness is correct, replace the ECM with a new one, and recheck

3. TP sensor signal line short circuit inspection

Turn the combination switch OFF.

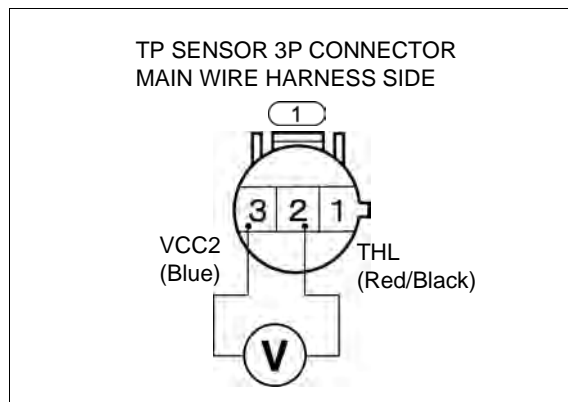
Disconnect ECM connector A (12).

Check for continuity between the TP sensor 3P connector (1) main wire harness side No.2 (Red/Black) terminal and engine ground.

Is there continuity?

YES – Repair short in the main wire harness between the ECM and TP sensor.

NO – Replace the throttle body with a new one and recheck.



DTC 7-2 (TP SENSOR VOLTAGE IS TOO HIGH)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the TP sensor 3P connector (1), ECM connector A (12), ECM connector B (13), joint connector 1 (11) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.

Measure the TP sensor voltage using the HDS.

Is the measurement within 0.23 – 4.89 V?

YES – Temporary failure (code does not reappear).

NO – GO TO STEP 2.

2. TP sensor inspection

Turn the combination switch ON and measure the TP sensor voltage using the HDS.

Is the measurement within 4.49 – 4.85 V when the throttle is fully open and within 0.44 – 0.56 V when the throttle is fully closed?

YES – Replace the ECM with a new one and recheck.

NO – Repair the open circuit in the Green/Red wire between the TP sensor and the ECM. If the main wire harness is correct, replace the throttle body with a new one and recheck.

DTC 8-1, 8-2 (NO CMP 1 SENSOR PULSE OR ABNORMAL SENSOR PULSE)

(*) Refer to page of base shop manual (BF175AK1-200AK1-225AK1: 62ZY300).

DTC 8-1 (NO CMP 1 SENSOR PULSE)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the CMP sensor 4P connector (37), ECM connector A (12) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Start the engine and check the DTC using the HDS.

Does the DTC 8-1 appear?

YES – GO TO STEP 2.

NO – Temporary failure (code does not reappear).

2. CMP sensor inspection

Turn the combination switch OFF.

Inspect the CMP 1 sensor (page 5-131*).

Is the CMP 1 sensor correct?

YES – Repair the open or short circuit in the CMP 1 sensor harness between the CMP 1 sensor and ECM. If the main wire harness is correct, replace the ECM with a new one and recheck.

NO – Replace the CMP 1 sensor with a new one and recheck.

DTC 8-2 (ABNORMAL CMP 1 SENSOR PULSE)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the CMP sensor 4P connector (37), ECM connector A (12) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Start the engine and check the DTC using the HDS.

Does the DTC 8-2 appear?

YES – GO TO STEP 2.

NO – Temporary failure (code does not reappear).

2. CMP 1 sensor installation inspection

Turn the combination switch OFF.

Inspect the CMP 1 sensor installation (page 5-107*).

Is the CMP 1 sensor installed correctly?

YES – GO TO STEP 3.

NO – Install the CMP 1 sensor correctly and recheck.

3. CMP 1 sensor inspection

Replace the CMP sensor and connect the CMP sensor 4P connector (37).

Start the engine and check the DTC using the HDS.

Does the DTC 8-2 appear?

YES – Replace the ECM with a new one and recheck.

NO – Faulty original CMP 1 sensor.

DTC 10-1, 10-2 (IAT SENSOR VOLTAGE IS TOO LOW OR TOO HIGH)

DTC 10-1 (IAT SENSOR VOLTAGE IS TOO LOW)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the IAT sensor 2P connector (21), ECM connector A (12), ECM connector B (13), joint connector 1 (11) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.

Measure the IAT sensor voltage using the HDS.

Is the measurement within 0.08 – 4.92 V?

YES – Temporary failure (code does not reappear).

NO – GO TO STEP 2.

2. IAT sensor signal line short circuit inspection

Turn the combination switch OFF and disconnect the IAT sensor 2P connector (21).

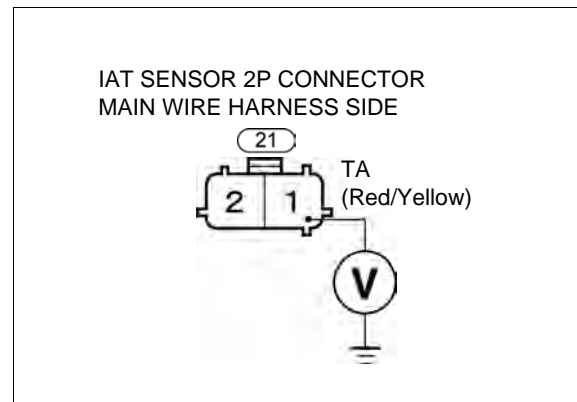
Turn the combination switch ON.

Measure the voltage between the IAT sensor 2P connector (21) main wire harness side No.1 (Red/Yellow) terminal and engine ground.

Is the measurement within 4.75 – 5.25 V?

YES – Replace the IAT sensor with a new one and recheck.

NO – Repair short in the main wire harness between the ECM and IAT sensor. If the main wire is correct, replace the ECM with a new one and recheck.



DTC 10-2 (IAT SENSOR VOLTAGE IS TOO HIGH)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the IAT sensor 2P connector (21), ECM connector A (12), ECM connector B (13), joint connector 1 (11) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.

Measure the IAT sensor voltage using the HDS.

Is the measurement within 0.08 – 4.92 V?

YES – Temporary failure (code does not reappear).

NO – GO TO STEP 2.

2. IAT sensor signal line open circuit inspection

Turn the combination switch OFF and disconnect the IAT 2P connector (21).

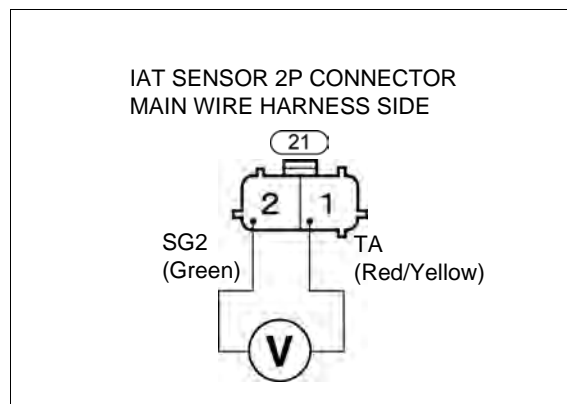
Turn the combination switch ON.

Measure the voltage between the IAT sensor 2P connector (21) main wire harness side No.1 (Red/Yellow) terminal and No.2 (Green) terminal.

Is the measurement within 4.75 – 5.25 V?

YES – Replace the IAT sensor with a new one and recheck.

NO – Repair open in the Red/Yellow or Green/Red wire harness between the ECM and IAT sensor. If the main wire harness is correct, replace the ECM with a new one and recheck.



DTC 14-1 (ABNORMAL IAC VALVE)

(*) Refer to page of base shop manual (BF175AK1-200AK1-225AK1: 62ZY300).

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the IAC valve 2P connector (2), ECM connector B (13) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Start the engine and check the DTC using the HDS.

Does the DTC 14-1 appear?

YES – GO TO STEP 2.

NO – Temporary failure (code does not reappear).

2. IAC valve inspection

Turn the combination switch OFF and disconnect the IAC valve 2P connector (2).

Inspect the IAC valve (page 5-133*).

Is the IAC valve correct?

YES – Repair open or short in the main wire harness between the ECM and IAC valve. If main wire harness is correct, replace the ECM with a new one and recheck.

NO – Replace the IAC valve with a new one and recheck.

**DTC 21-1 (ABNORMAL OUTPUT OF
VTEC SPOOL SOLENOID VALVE)
(BF225 only)**

(*) Refer to page of base shop manual (BF175AK1-200AK1-225AK1: 62ZY300).

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the VTEC spool solenoid valve 1P connector (9), ECM connector B (13) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Start the engine and let it run at 3,000 min⁻¹ (rpm) for 5 minutes or more under no load.

Disconnect the neutral switch 2P connector (30).

Raise the engine speed slowly and let it run at 4,500 min⁻¹ (rpm) for a few seconds.

Recheck the DTC with the HDS.

Does the DTC 21-1 appear?

YES – GO TO STEP 2.

NO – Temporary failure (code does not reappear).

2. VTEC spool solenoid valve inspection

Turn the combination switch OFF and disconnect the VTEC spool solenoid valve 1P connector (9).

Inspect the VTEC spool solenoid valve (page 5-133*).

Is the VTEC spool solenoid valve correct?

YES – Repair open in the main wire harness between the ECM and VTEC spool solenoid valve. If main wire harness is correct, replace the ECM with a new one and recheck.

NO – Replace the VTEC spool solenoid valve with a new one and recheck.

DTC 23-1 (ABNORMAL OUTPUT OF KNOCK SENSOR)**1. Symptom reproduction test**

Turn the combination switch OFF.

Disconnect the knock sensor 1P connector (39), ECM connector B (13), switch wire 6P connector (4) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Start the engine and let it run at 3,000 min⁻¹ (rpm) for 5 minutes or more under no load until the engine temperature is over 85 °C (185 °F).

Lower the engine speed gradually and run it at 3,000 – 4,000 min⁻¹ (rpm) for 10 seconds.

Recheck the DTC with the HDS.

Does the DTC 23-1 appear?

YES – GO TO STEP 2.

NO – Temporary failure (code does not reappear).

2. Knock sensor line open or short circuit inspection

Turn the combination switch OFF.

Disconnect the knock sensor 1P connector (39) and ECM connector B (13).

Check the open and short in wire between the Knock sensor and ECM.

Is the knock sensor line correct?

YES – GO TO STEP 3.

NO – Repair open or short in the main wire harness between the ECM and knock sensor.

3. Knock sensor inspection

Replace the knock sensor with a new one and perform the knock sensor symptom reproduction test.

Does the DTC 23-1 appear?

YES – Replace the ECM with a new one and recheck.

NO – Faulty original knock sensor. End of inspection.

DTC 41-2 (ABNORMAL HO2S HEATER) (Except XT, XCT, XXT, XXCT types)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the HO2S 4P connector (19), ECM connector A (12), junction box 23P connector (28) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Start the engine and let it run at 3,000 min⁻¹ (rpm) for 5 minutes or more under no load.

Let the engine idle for a minute or more.

Check the DTC using the HDS.

Does the DTC 41-2 appear?

YES – GO TO STEP 2.

NO – Temporary failure (code does not reappear).

2. HO2S heater inspection

Turn the combination switch OFF.

Inspect the HO2S heater (page 5-61).

Is the HO2S heater correct?

YES – Repair open in the main wire harness between the No.10 fuse and the HO2S or between the HO2S and ECM. If the main wire harness is correct, replace the ECM with a new one and recheck.

NO – Replace the HO2S with a new one and recheck.

DTC 58-1, 58-2 (NO CMP 2 SENSOR PULSE OR ABNORMAL SENSOR PULSE)

(*) Refer to page of base shop manual (BF175AK1-200AK1-225AK1: 62ZY300).

DTC 58-1 (NO CMP SENSOR PULSE)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the CMP sensor 4P connector (37), ECM connector A (12) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Start the engine and check the DTC using the HDS.

Does the DTC 58-1 appear?

YES – GO TO STEP 2.

NO – Temporary failure (code does not reappear).

2. CMP sensor inspection

Turn the combination switch OFF.

Inspect the CMP 2 sensor (page 5-131*).

Is the CMP sensor correct?

- YES** – Repair the open or short circuit in the CMP 2 sensor harness between the CMP 2 sensor and ECM. If the main wire harness is correct, replace the ECM with a new one and recheck.
- NO** – Replace the CMP 2 sensor with a new one and recheck.

DTC 58-2 (ABNORMAL CMP SENSOR PULSE)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the CMP sensor 2P connector (37), ECM connector A (12) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Start the engine and check the DTC using the HDS.

Does the DTC 58-2 appear?

- YES** – GO TO STEP 2.
- NO** – Temporary failure (code does not reappear).

2. CMP sensor installation inspection

Turn the combination switch OFF.

Inspect the CMP 2 sensor installation (page 5-107*).

Is the CKP sensor installed correctly?

- YES** – GO TO STEP 3.
- NO** – Install the CMP 2 sensor correctly and recheck.

3. CMP sensor inspection

Replace the CMP 2 sensor and connect the CMP sensor 4P connector (37).

Start the engine and check the DTC using the HDS.

Does the DTC 58-2 appear?

- YES** – Replace the ECM with a new one and recheck.
- NO** – Faulty original CMP 2 sensor.

DTC 140-1, 140-2 (ECT SENSOR 2 (EMT SENSOR 1) VOLTAGE IS TOO LOW OR TOO HIGH)

DTC 140-1 (ECT SENSOR 2 (EMT SENSOR 1) VOLTAGE IS TOO LOW)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the EMT sensor 1 2P connector (8), ECM connector A (12), ECM connector B (13), joint connector 1 (11) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.

Measure the EMT sensor 1 voltage using the HDS.

Is the measurement within 0.08 – 4.92 V?

YES – Temporary failure (code does not reappear).

NO – GO TO STEP 2.

2. EMT sensor 1 signal line short circuit inspection

Turn the combination switch OFF and disconnect the EMT sensor 1 2P connector (8).

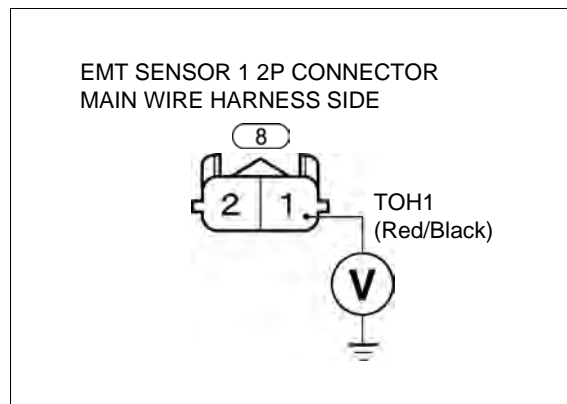
Turn the combination switch ON.

Measure the voltage between the EMT sensor 1 2P connector (8) main wire harness side No.1 (Red/Black) terminal and engine ground.

Is the measurement within 4.75 – 5.25 V?

YES – Replace the EMT sensor 1 with a new one and recheck.

NO – Repair short in the main wire harness between the ECM and EMT sensor 1. If the main wire is correct, replace the ECM with a new one and recheck.



DTC 140-2 (ECT SENSOR 2 (EMT SENSOR 1) VOLTAGE IS TOO HIGH)

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the EMT sensor 1 2P connector (8), ECM connector A (12), ECM connector B (13), joint connector 1 (11) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.

Measure the EMT sensor 1 voltage using the HDS.

Is the measurement within 0.08 – 4.92 V?

YES – Temporary failure (code does not reappear).

NO – GO TO STEP 2.

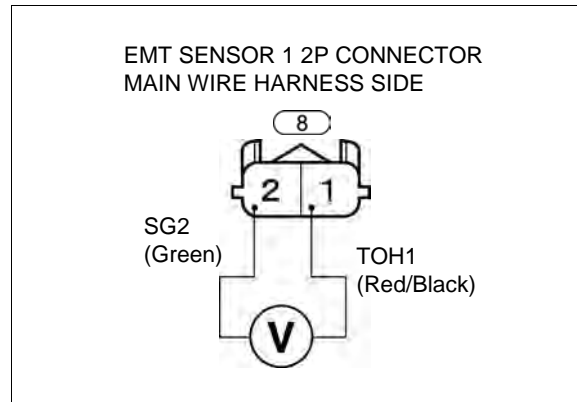
2. EMT sensor 1 signal /GND line open circuit inspection

Turn the combination switch OFF and disconnect the EMT sensor 1 2P connector (8).

Turn the combination switch ON.
Measure the voltage between the EMT sensor 1 2P connector (8) main wire harness side No.1 (Red/Black) terminal and No.2 (Green) terminal.

Is the measurement within 4.75 – 5.25 V?

- YES** – Replace the EMT sensor 1 with a new one and recheck.
- NO** – Repair open in the Red/Black or Green wire harness between the ECM and EMT sensor 1. If the main wire harness is correct, replace the ECM with a new one and recheck.



DTC 141-1, 141-2 (ECT SENSOR 3 (EMT SENSOR 2) VOLTAGE IS TOO LOW OR TOO HIGH)

DTC 141-1 (ECT SENSOR 3 (EMT SENSOR 2) VOLTAGE IS TOO LOW)

1. Symptom reproduction test

Turn the combination switch OFF.
Disconnect the EMT sensor 2 2P connector (14), ECM connector A (12), ECM connector B (13), joint connector 1 (11) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.
Measure the EMT sensor 2 voltage using the HDS.

Is the measurement within 0.08 – 4.92 V?

- YES** – Temporary failure (code does not reappear).
- NO** – GO TO STEP 2.

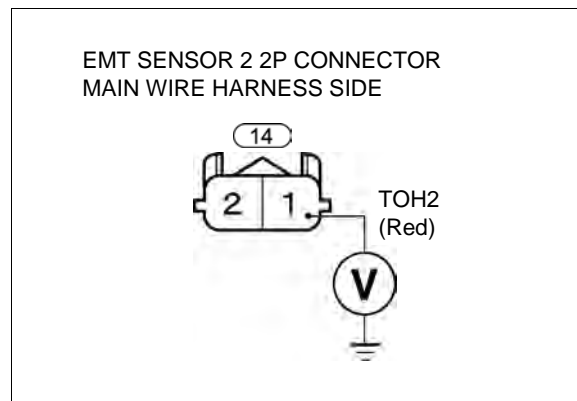
2. EMT sensor 2 signal line short circuit inspection

Turn the combination switch OFF and disconnect the EMT sensor 2 2P connector (14).

Turn the combination switch ON.
Measure the voltage between the EMT sensor 2 2P connector (14) main wire harness side No.1 (Red) terminal and engine ground.

Is the measurement within 4.75 – 5.25 V?

- YES** – Replace EMT sensor 2 with a new one and recheck.
- NO** – Repair short in the main wire harness between the ECM and EMT sensor 2. If the main wire is correct, replace the ECM with a new one and recheck.



**DTC 141-2 (ECT SENSOR 3 (EMT SENSOR 2)
VOLTAGE IS TOO HIGH)**

1. Symptom reproduction test

Turn the combination switch OFF.

Disconnect the EMT sensor 2 2P connector (14), ECM connector A (12), ECM connector B (13), joint connector 1 (11) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.

Measure the EMT sensor 2 voltage using the HDS.

Is the measurement within 0.08 – 4.92 V?

YES – Temporary failure (code does not reappear).

NO – GO TO STEP 2.

2. EMT sensor 2 signal/GND line open circuit inspection

Turn the combination switch OFF and disconnect the EMT sensor 2 2P connector (14).

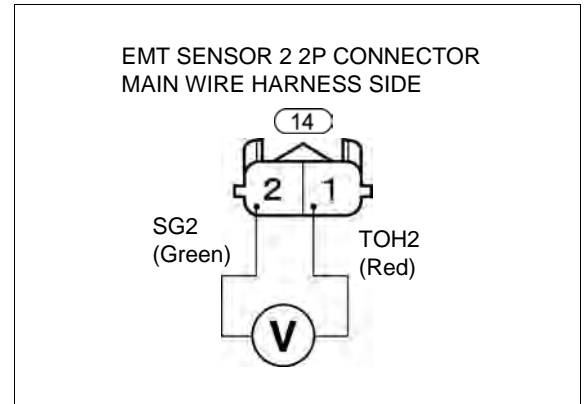
Turn the combination switch ON.

Measure the voltage between the EMT sensor 2 2P connector (14) main wire harness side No.1 (Red) terminal and No.2 (Green) terminal.

Is the measurement within 4.75 – 5.25 V?

YES – Replace EMT sensor 2 with a new one and recheck.

NO – Repair open in the Red or Green wire harness between the ECM and EMT sensor 2. If the main wire harness is correct, replace the ECM with a new one and recheck.



DTC 142-1 (ABNORMAL EOP SWITCH (HIGH PRESSURE SIDE))

1. Symptom reproduction test

Turn the combination switch OFF.
 Disconnect the EOP switch (High pressure side) 2P connector (38), ECM connector B (13), switch wire 6P connector (4), joint connector 1 (11) and then reconnect them.

Clear the DTC (page 5-2).

- Continue the procedure if the DTC does not clear.

Turn the combination switch ON.
 Check the EOP switch (high pressure side) signal with the HDS.

Is there the OFF signal?

YES – Temporary failure (code does not reappear).

NO – GO TO STEP 2.

2. EOP switch (high pressure side) line open circuit inspection

Turn the combination switch OFF and disconnect the EOP switch (high pressure side) 2P connector (38).

Turn the combination switch ON.
 Measure the voltage between the EOP switch (high pressure side) 2P connector (38) main wire harness side No.1 (Yellow/Red) terminal and No.2 (Green) terminal.

Does battery voltage exit?

YES – Replace the EOP switch (high pressure side) with a new one and recheck.

NO – Repair open in the main wire harness between the ECM and EOP switch (high pressure side). If main wire harness is correct, replace the ECM with a new one and recheck.

EOP SWITCH (HIGH PRESSURE SIDE)
 2P CONNECTOR MAIN WIRE HARNESS SIDE

