05F5J−02

DATA LIST/ACTIVE TEST

1. DATA LIST

HINT:

Using the hand−held tester DATA LIST allows switch, sensor, actuator and other item values to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to shorten labor time.

NOTICE:

In the table below, the values listed under ”Normal Condition” are reference values. Do not depend solely on the these reference values when deciding whether a part is faulty or not.

(a) Warm up the engine.
(b) Turn the ignition switch OFF.
(c) Connect the hand−held tester or the OBD II scan tool to the DLC3.
(d) Turn the ignition switch ON.
(e) Turn ON the hand−held tester or the OBD II scan tool.
(f) Enter the following menus: DIAGNOSIS / ENHANCED OBD II / DATA LIST.
(g) According to the display on tester, read the ”DATA LIST”.

Hand−held Tester Display	Measurement Item/Range (Display)	Normal Condition*	Diagnostic Note
INJECTOR	Injection period/ Minimum: 0 ms, Maximum: 32.64 ms	Idling: 1.92 to 3.37 ms	−
IGN ADVANCE	Ignition timing advance/ Minimum: −64 deg., Maximum: 63.5 deg.	Idling: BTDC 5 to 15 deg.	−
CALC LOAD	Calculated load by ECM/ Minimum: 0 %, Maximum: 100 %	• Idling: 3.3 to 26.7 % • Racing without load (2500 rpm): 12.0 to 14.7 %	−
MAF	Air flow rate from MAF meter/ Minimum: 0 gm/s, Maximum: 655 gm/s	• Idling: M/T 0.54 to 4.33 gm/second A/T 0.58 to 4.67 gm/second • Racing without load (2,500 rpm): 3.33 to 9.17 gm/second.	If the value is approximately 0.0 gm/s: • Mass air flow meter power source circuit open • VG circuit open or short If the value is 160.0 gm/s or more: • EVG circuit open
ENGINE SPD	Engine Speed/ Minimum: 0 rpm, Maximum: 16,383 rpm	Idling: M/T 650 to 750 rpm A/T 550 to 750 rpm	−
COOLANT TEMP	Coolant temperature/ Minimum: −40 °C, Maximum: 140 °C	After warming up: 80 to 95°C (176 to 203°F)	• If the value is −40°C (−40°F): sensor circuit is open • If the value is 140°C (284°F) or more: sensor circuit is shorted
INTAKE AIR	Intake air temperature/ Minimum: −40 °C, Maximum: 140 °C	Equivalent to Ambient Temp. (after cold soak)	• If the value is −40°C (−40°F): sensor circuit is open • If the value is 140°C (284°F) or more: sensor circuit is shorted
THROTTLE POS	Absolute throttle position sensor/ Minimum: 0 %, Maximum: 100 %	• Throttle fully closed: 6 to 16 % • Throttle fully open: 64 to 98 %	Read the value with the ignition switch ON (do not start engine)
CTP SW	Closed throttle position switch/ ON or OFF	• Throttle fully closed: ON • Throttle open: OFF	−
VEHICLE SPD	Vehicle speed/ Minimum: 0 km/h, Maximum: 255 km/h	Vehicle stopped: 0 km/h (0 mph)	Speed indicated on speedometer
ACCEL POS #1	Accelerator pedal position sensor No.1 output voltage/ Minimum: 0 V, Maximum: 5 V	• Accelerator released: 0.5 to 1.1 V • Accelerator depressed: 2.6 to 4.5 V	Read the value when ignition switch ON (do not start engine)

Hand−held Tester Display	Measurement Item/Range (Display)	Normal Condition*	Diagnostic Note
ACCEL POS #2	Accelerator pedal position sensor No.2 output voltage/ Minimum: 0 V, Maximum: 5 V	• Accelerator released: 1.2 to 2.0 V • Accelerator depressed: 3.4 to 5.3 V	Read the value when ignition switch ON (do not start engine)
THROTTLE POS #2	Throttle position sensor No.2 output voltage/ Minimum: 0 V, Maximum: 5 V	• Throttle fully closed: 2.1 to 3.1 V • Throttle fully open: 4.5 to 5.5 V	Read the value when ignition switch ON (do not start engine)
THROTTLE TARGT	Target position of throttle valve/ Minimum: 0 V, Maximum: 5 V	Idling: 0.4 to 1.1 V	Read the value when ignition switch ON (do not start engine)
THROTTLE OPN DUTY	Throttle motor opening duty ratio/ Minimum: 0 %, Maximum: 100 %	Throttle fully closed: 0 %	• When accelerator pedal is depressed, duty ratio is increased • Read the value when ignition switch ON (do not start engine)
THROTTLE CLS DUTY	Throttle motor closed duty ratio/ Minimum: 0 %, Maximum: 100 %	Throttle fully open: 0 %	• When accelerator pedal is quick released, duty ratio is increased • Read the value when ignition switch ON (do not start engine)
THROTTLE MOT	Whether or not throttle motor control is permitted/ ON or OFF	Idling: ON	Read the value when ignition switch ON (do not start engine)
+BM	Whether or not electric throttle control system power is input/ ON or OFF	Idling: ON	−
VAPOR PRESS	Vapor Pressure/ Minimum: −4.125 kPa, Maximum: 2.125 kPa	Fuel tank cap removed: 0 kPa	Pressure inside of fuel tank as read by the vapor pressure sensor
O2S B1 S2	Oxygen sensor output voltage of the bank 1 sensor 2/ Minimum: 0 V, Maximum: 1.275 V	Idling: 0.1 to 0.9 V	Performing INJ VOL or A/F CONTROL function of the ACTIVE TEST enables the technician to check voltage output of each sensor
AFS B1 S1	A/F sensor output voltage of the bank 1 sensor 1/ Minimum: 0 V, Maximum: 7.999 V	Idling: 2.8 to 3.8 V	Performing INJ VOL or A/F CONTROL function of the ACTIVE TEST enables the technician to check voltage output of each sensor
ACCEL IDL POS	Whether or not accelerator pedal position sensor is detecting idle/ ON or OFF	Idling: ON	—
THROTTLE IDL POS	Whether or not throttle position sensor is detecting idle/ ON or OFF	Idling: ON	—
FAIL #1	Whether or not fail safe function is executed/ ON or OFF	ETCS has failed: ON	—
FAIL #2	Whether or not fail safe function is executed/ ON or OFF	ETCS has failed: ON	—
THROTTLE INITIAL	Throttle fully closed (learned value) Minimum: 0 V, Maximum: 5 V	0.5 to 0.9 V	—
ACCEL LEARN VAL	Accelerator fully closed (learned value) Minimum: 0 V, Maximum: 5 V	0.4 to 0.8 V	—
THROTTLE MOT	Throttle motor current Minimum: 0 A, Maximum: 20 A	Idling: 0 to 3.0 A	—
SHORT FT #1	Short term fuel trim of bank 1/ Minimum: −100 %, Maximum: 100%	0 ± 20 %	This item is the short−term fuel compensation used to maintain air−fuel ratio at stoichiometric air−fuel ratio

Hand−held Tester Display	Measurement Item/Range (Display)	Normal Condition*	Diagnostic Note
LONG FT #1	Long term fuel trim of bank 1/ Minimum: −100 %, Maximum: 100 %	0 ± 20 %	This item is the overall, long−term fuel compensation that helps to maintain air−fuel ratio at stoichiometric air fuel ratio (steadies long term deviations of short−term fuel trim from the central value).
TOTAL FT #1	Total fuel trim of bank 1/ Minimum: 0.5, Maximum: 1.496	Idling: 0.5 to 1.4	−
AF FT B1 S1	Short term fuel trim associated with the bank 1, sensor 1/ Minimum: 0, Maximum: 1.999	• Value less than 1 (0.000 to 0.999) = LEAN • Stoichiometric Air−Fuel Ratio=1 • Value greater than 1 (1.001 to 1.999) = RICH	−
FUEL SYS #1	Fuel system status (Bank 1) / OL or CL or OLDRIVE or OLFAULT or CLFAULT	Idling after warming up: CL	• OL (Open Loop) : Has not yet satisfied conditions to go closed loop • CL (Closed Loop) : Using heated oxygen sensor(s) as feed back for fuel control • OL DRIVE: Open loop due to driving conditions (fuel enrichment) • OL FAULT: Open loop due to detected system fault • CL FAULT: Closed loop but one of heated oxygen sensors, which is used for fuel control, is malfunctioning
FC IDL	Idle fuel cut/ ON or OFF	Fuel cut operation: ON	FC IDL = ON when throttle valve is fully closed and engine speed is over 1,500 rpm
MIL	MIL status/ ON or OFF	MIL ON: ON	−
STARTER SIG	Starter signal/ ON or OFF	Cranking: ON	−
A/C SIG	A/C signal/ ON or OFF	A/C ON: ON	−
PNP SW [NSW]	PNP switch signal/ ON or OFF	P or N position: ON	−
ELECT LOAD SIG	Electrical load signal/ ON or OFF	Defogger switch ON: ON	−
STOP LIGHT SW	Stop light switch/ ON or OFF	• Brake pedal depressed: ON • Brake pedal released: OFF	−
PS OIL PRESS SW	Power steering signal/ ON or OFF	• While turning the steering wheel: ON • While not turning the steering wheel: OFF	The idle−up control is performed when PS is ON
PS SIGNAL	Power steering signal/ ON or OFF	When the steering wheel is turned	This signal is usually ON until the IG switch is turned OFF
FUEL PUMP / SPD	Fuel pump / speed status / ON/H or OFF/M,L	Idling: ON	−
A/C MAG CLUTCH	A/C magnet clutch status / ON or OFF	A/C magnet clutch ON: ON	−
EVAP VSV	VSV status for EVAP control / ON or OFF	VSV operating: ON	EVAP VSV is controlled by the ECM (ground side duty control)
VVT CTRL B1	VVT control status (Bank 1) / ON or OFF	VVT system operation: ON	−
IGNITION	Ignition counter/ Minimum: 0, Maximum: 400	0 to 400	−
CYL #1, #2, #3, #4	Misfire ratio of the cylinder 1/ Minimum: 0 %, Maximum: 50 %	0 %	This item is displayed in only idling

Hand−held Tester Display	Measurement Item/Range (Display)	Normal Condition*	Diagnostic Note
MISFIRE LOAD	Engine load for first misfire range/ Minimum: 0 g/rev, Maximum: 3.98 g/rev.	Misfire 0: 0 g/rev.	—
MISFIRE RPM	Engine RPM for first misfire range/ Minimum: 0 rpm, Maximum: 6,375 rpm	Misfire 0: 0 rpm	—
FC TAU	Fuel Cut TAU: Fuel cut during very light load/ ON or OFF	Fuel cut operating: ON	Fuel cut is being performed under very light load to prevent engine combustion from becoming incomplete
CHECK MODE	Check mode/ ON or OFF	Check mode ON: ON	See page 05−43

*: If no conditions are specifically stated for ”ldling”, the shift lever is in the N or P position, the A/C switch is OFF and all accessory switches are OFF.

2. ACTIVE TEST

HINT:

Performing the hand−held tester ACTIVE LIST allows relay, VSV, actuator and other items to be operated without removing any parts. Performing the ACTIVE LIST early in troubleshooting is one way to shorten labor time. The DATA LIST can be displayed during the ACTIVE TEST.

(a) Warm up the engine.
(b) Turn the ignition switch OFF.
(c) Connect the hand−held tester or the OBD II scan tool to the DLC3.
(d) Turn the ignition switch ON.
(e) Turn ON the hand−held tester or the OBD II scan tool.
(f) Enter the following menus: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST.
(g) According to the display on tester, perform the ”ACTIVE TEST.

Hand−held Tester Display	Test Details	Diagnostic Note
INJ VOL	[Test Details] Control the injection volume Minimum: −12.5 %, Maximum: 25 % [Vehicle Condition] Engine speed: 3000 rpm or less	• All injectors are tested at once • Injection volume is gradually changed between −12.5 and 25 %
A/F CONTROL	[Test Details] Control the injection volume −12.5 or 25 % (change the injection volume −12.5 % or 25 %) [Vehicle Condition] Engine speed: 3000 rpm or less	The following A/F CONTROL procedure enables the technician to check and graph voltage outputs of both the A/F sensor and heated oxygen sensor For displaying the graph, enter ”ACTIVE TEST / A/F CONTROL / USER DATA”, select ”AFS B1S1 and O2S B1S2” by pressing ”YES” and push ”ENTER”, Then press ”F4”.
CAN CTRL VSV	[Test Details] Activate the VSV for canister control ON or OFF	−
EVAP VSV (ALONE)	[Test Details] Activate the EVAP VSV control ON or OFF	−
A/C MAG CLUTCH	[Test Details] Control the A/C magnet clutch ON or OFF	−
FUEL PUMP / SPD	[Test Details] Control the fuel pump ON or OFF	−

Hand−held Tester Display	Test Details	Diagnostic Note
VVT CTRL B1	[Test Details] Activate the VVT system (Bank 1) ON or OFF	• ON: Rough idle or engine stall • OFF: Normal engine speed
TC/TE1	[Test Details] Connect the TC and TE1 ON or OFF	−
FC IDL PROHBT	[Test Details] Control the idle fuel cut prohibit ON or OFF	−