05DVU–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 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 these reference values when deciding whether a part is faulty or not.

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

Hand–held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
INJ VOLUME	Injection volume/ Min.: 0 mm^3, Max.: 1279.98 mm^3	Idling: 3 to 10 mm^3	—
ENGINE SPD	Engine speed/ Min.: 0 rpm, Max.: 16383.75 rpm	Idling: 750 to 850 rpm	—
MAF	Air flow rate from MAF meter status/ Min.: 0 gm/s, Max.: 655.35 gm/s	• Idling: 3.2 to 4.7 gm/s • Running without load (2,500 rpm): 13.1 to 18.9 gm/s	If the value is approximately 0.0 gm/s: • Mass air flow meter power source circuit open • VG circuit open or short If the valve is 160 gm/s or more: • E2G circuit open
PIM	Absolute pressure inside intake manifold/ Min.: 0 kPa, Max.: 224 kPa	Ignition switch ON: Same as atmospheric pressure	Engine is not running
COOLANT TEMP	Coolant temperature/ Min.: –40°C, Max.: 215°C	After warming up: 75 to 95˚C (167 to 203˚F)	If the value is ”–40°C” or ”140°C or more”, sensor circuit is open or shorted
INTAKE AIR	Intake air temperature/ Min.: –40°C, Max.: 215°C	Equivalent to air temperature at the intake manifold	
FUEL TEMP	Fuel temperature status/ Min.: –40°C, Max.: 215°C	Actual fuel temperature	
ACCEL POSITION	Accel position status/ Min.: 0 %, Max.: 100 %	• Accelerator pedal released: 10 to 22 % • Accelerator pedal depressed: 52 to 90 %	Read the value with ignition switch ON (Do not start engine)
VEHICLE SPD	Vehicle speed/ Min.: 0 km/h, Max.: 255 km/h	Actual vehicle speed	Speed indicated on speedometer
THROTTLE POS	Throttle position sensor status/ Min.: 0 %, Max.: 100 %	• Throttle fully closed: 98 % • Throttle fully open: 0 %	100 % when the engine is at rest
COMN RAIL	Common rail pressure status/ Min.: 0 MPa, Max.: 255 MPa	• Idling: 30 to 40 MPa • Engine running at 3,000 rpm: 50 to 100 MPa	—
AMBI TEMP SENS	Ambient temperature sensor status/ Min.: –40°C, Max.: 215°C	Actual atmospheric air temperature	If the value is ”–40°C” or ”140°C or more”, sensor circuit is open or shorted

Hand–held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
INJ VOL FB #1	Injection volume correction for cylinder 1/ Min.: –10 mm^3, Max.: 10 mm^3	Idling: –3.0 to 3.0 mm^3	—
INJ VOL FB #2	Injection volume correction for cylinder 2/ Min.: –10 mm^3, Max.: 10 mm^3	Idling: –3.0 to 3.0 mm^3	—
INJ VOL FB #3	Injection volume correction for cylinder 3/ Min.: –10 mm^3, Max.: 10 mm^3	Idling: –3.0 to 3.0 mm^3	—
INJ VOL FB #4	Injection volume correction for cylinder 4/ Min.: –10 mm^3, Max.: 10 mm^3	Idling: –3.0 to 3.0 mm^3	—
M–INJ/PILOT ON	Pilot–injection ON timing of main injector/ Min.: 0 μs Max.: 65,535 μs	Idling: 600 to 1,200 μs	—
M–INJ/PILOT OFF	Pilot–injection OFF timing of main injector/ Min.: 0 μs Max.: 65,535 μs	Idling: 600 to 1,200 μs	—
PILOT–INJ	Pilot–injection/ Min.: 0 μs, Max.: 65,535 μs	Idling: 400 to 700 μs	—
INJ FB VALUE	Injection volume feedback learning value/ Min.: –10 mm^3, Max.: 9,092 mm^3	Idling: –4.0 to 4.0 mm^3	—
STOP LIGHT SW	Stop lamp switch/ ON or OFF	• Brake pedal depressed: ON • Brake pedal released: OFF	—
STARTER SIG	Starter signal/ ON or OFF	Cranking: ON	—
CHECK MODE	Check mode/ ON or OFF	Check mode ON: ON	—
EGR VALVE POS	EGR position sensor status/ Min.: 0 V, Max.: 5 V	• Closed: 4.0 V • Open: 2.1 V	—
MIL ON RUN DIST	Travel distance after check engine warning light (CHK ENG) was illuminated/ Min.: 0 km, Max.: 65,535 km	Actual travel distance after check engine warning light was illuminated	—
AFS B1 S1	A/F sensor output voltage for bank 1 sensor 1/ Min.: 0 V, Max.: 7.999 V	Idling 2.8 to 3.8 V	—
DPNR DIFF PRESS	DPNR differential pressure/ Min.: –5 kPa, Max.: 100 kPa	Idling: approximately 0 kPa	—
GENERATOR	Generator (alternator) duty ratio status/ Min.: 0 %, Max.: 100 %	Idling: 10 to 100 %	—
EX TEMP IN	Exhaust gas temperature for IN/ Min.: 0°C, Max.: 1000°C	Actual exhaust gas temperature (on up stream)	—
EX TEMP OUT	Exhaust gas temperature for OUT/ Min.: 0°C, Max.: 1000°C	Actual exhaust gas temperature (on down stream)	—
EX FUEL ADD FB	Exhaust fuel addition correction value/ Min.: 0, Max.: 2	Vicinity of 1.0	—
AF FT B1 S1	Short–term fuel trim associated with the bank 1 sensor 1/ Min.: 0, Max.: 1.999	• Value less than 1 (0.000 to 0.999) = Correction to lean • Stoichiometric Air–fuel ratio=1 • Value greater than 1 (1.001 to 1.999) = Correction to rich	—

Hand–held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
ATM PRESSURE	Atmospheric pressure value/ Min.: 0 kPa, Max.: 150 kPa	Actual atmospheric pressure	—
INJ PRS FB VAL	Injection pressure correction value/ Min.: –500 mm^3/s, Max.: 500 mm^3/s	Idling: –400 to 400 mm^3/s	—
ATM LEARN VAL	Atmospheric pressure learning value/ Min.: 0 V, Max.: 5 V	Ignition switch ON: 1.35 to 2.12 V	—
DIFF SEN FB VAL	Differential pressure correction value/ Min.: –10 kPa, Max.: 10 kPa	Idling: –1.5 to 1.5 kPa	—
EGR LEARN VAL	EGR valve learning value/ Min.: 0 V, Max.: 5 V	Idling: 3.5 to 4.5 V	—
DPNR REJU (PM)	Result of DPNR catalyst regeneration (PM)/ ON or OFF	• DPNR catalyst regeneration (PM) ON: ON • DPNR catalyst regeneration (PM) OFF: OFF	—
DPNR REJU (S)	Result of DPNR catalyst regeneration (S)/ ON or OFF	• DPNR catalyst regeneration (S) ON: ON • DPNR catalyst regeneration (S) OFF: OFF	—

*: If no conditions are specifically stated for "Idling," it means the A/C switch is OFF and all accessory switches are OFF.

2. ACTIVE TEST

HINT:

Performing ACTIVE TEST using the hand–held tester allows the relay, VSV, actuator and so on to operate without parts removal. Performing ACTIVE TEST as a first step of troubleshooting is one of the methods to shorten diagnostic time.

It is possible to display DATA LIST during ACTIVE TEST.

(a) Turn the ignition switch to OFF.
(b) Connect the hand–held tester to the DLC3.
(c) Turn the ignition switch to ON.
(d) Turn the hand–held tester ON.
(e) Enter the following menus: DIAGNOSIS / OBD/MOBD / ACTIVE TEST.
(f) According to the display on the tester, perform ACTIVE TEST.

Hand–held Tester Display	Test Details	Diagnostic Note
TC/TE1	Same condition as the connection of TC and TE1 ON or OFF	—
FUEL LEAK TEST	Maintain the engine speed at 2,000 rpm, and pressurize the common rail internal fuel pressure to 175 MPa ON or OFF	Confirm that there is no leak in the fuel system when the common rail internal fuel pressure is pressurized high
INJECTOR CUT #1	Stop injection of Injector No. 1 ON or OFF	—
INJECTOR CUT #2	Stop injection of Injector No. 2 ON or OFF	—
INJECTOR CUT #3	Stop injection of Injector No. 3 ON or OFF	—
INJECTOR CUT #4	Stop injection of Injector No. 4 ON or OFF	—
DPNR REJU (PM)	DPNR catalyst regeneration (PM) Raise temperature of DPNR to more than 600°C (1,112°F) by adding fuel intermittently using the exhaust fuel addition injector	—
DPNR REJU (S)	DPNR catalyst regeneration (S) Raise temperature of DPNR to more than 600°C (1,112°F) by adding fuel intermittently using the exhaust fuel addition injector	—