05DVU–04

DATA LIST/ACTIVE TEST

1. DATA LIST

HINT:

Using the hand–held tester is 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 save 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 OFF.
(c) Connect the hand–held tester (with 24 V VIM) to the DLC3.
(d) Turn the ignition switch ON.
(e) Turn the hand–held tester ON.
(f) Enter the following menus: DIAGNOSIS / OBD/MOBD / DATA LIST.
(g) Read the DATA LIST on the tester’s screen.

Hand–held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
INJ VOLUME	Injection volume/ Min.: 0 mm^3, Max.: 1280 mm^3	Idling: 5 to 15 mm^3	—
INJ TIMING	Injection timing/ Min.: – 90°CA , Max.: 90°CA	• Idling: 0°CA • Running without load (3,000 rpm): – 8 to – 6°CA	—
ENGINE SPD	Engine speed/ Min.: 0 rpm, Max.: 16383.75 rpm	Idling: 600 to 700 rpm	—
MAF	Air flow rate from MAF meter status/ Min.: 0 gm/s, Max.: 655.35 gm/s	• Idling: 5 to 20 gm/s • Running without load (3,000 rpm): 50 to 70 gm/s	If value is approximately 0.0 gm/s: • Mass air flow meter power source circuit open • VG circuit open or short If value is 160 gm/s or more: • E2G circuit open
PIM	Absolute pressure inside intake manifold/ Min.: 0 kPa, Max.: 255 kPa	Ignition switch ON: Same as atmospheric pressure	Engine is not running
COOLANT TEMP	Engine coolant temperature/ Min.: – 40°C, Max.: 215°C	After warming up: 80 to 100˚C (176 to 212˚F)	If value is ”– 40°C (– 40°F)” or ”140°C (284°F) or more”, sensor circuit is open or shorted
FUEL TEMP	Fuel temperature status/ Min.: – 40°C, Max.: 215°C	Actual fuel temperature	If value is ”– 40°C (– 40°F)” or ”140°C (284°F) or more”, sensor circuit is open or shorted
ACCEL POSITION	Accel position status/ Min.: 0 %, Max.: 100 %	• Accelerator pedal released: 15 to 17 % • Accelerator pedal depressed: 68 to 74 %	Read 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.: – 20 %, Max.: 120 %	• Idling: 60 to 80 % • Running without load (2,000 rpm): 0 to 5 %	—
PTO SW	Throttle position switch assy/ Min.: 0 V, Max.: 5 V	When operating PTO: 0.6 to 3.7 V	VAP voltage (throttle position switch assy)

Hand–held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
COMN RAIL PRESS	Common rail pressure status/ Min.: 0 MPa, Max.: 255 MPa	• Idling: 25 to 35 MPa (255 kgf/cm^2 (3,625 psi) to 357 kgf/cm^2 (5,076 psi)) • Engine running at 3,000 rpm: 80 to 90 MPa (816 kgf/cm^2 (11,602 psi) to 918 kgf/cm^2 (13,053 psi))	—
COMN RAIL PRESS 2	Common rail pressure status/ Min.: 0 MPa, Max.: 255 MPa	• Idling: 25 to 35 MPa (255 kgf/cm^2 (3,625 psi) to 357 kgf/cm^2 (5,076 psi)) • Engine running at 3,000 rpm: 80 to 90 MPa (816 kgf/cm^2 (11,602 psi) to 918 kgf/cm^2 (13,053 psi))	—
AMBI TEMP SENS	Ambient temperature sensor status/ Min.: –40°C, Max.: 215°C	Actual atmospheric air temperature	If value is "– 40°C (– 40°F)" or "140°C (284°F) or more", sensor circuit is open or shorted
INJ VOL FB #1	Injection volume correction for cylinder 1/ Min.: – 20 mm^3, Max.: 20 mm^3	Idling: – 2.0 to 2.0 mm^3	—
INJ VOL FB #2	Injection volume correction for cylinder 2/ Min.: – 20 mm^3, Max.: 20 mm^3	Idling: – 2.0 to 2.0 mm^3	—
INJ VOL FB #3	Injection volume correction for cylinder 3/ Min.: – 20 mm^3, Max.: 20 mm^3	Idling: – 2.0 to 2.0 mm^3	—
INJ VOL FB #4	Injection volume correction for cylinder 4/ Min.: – 20 mm^3, Max.: 20 mm^3	Idling: – 2.0 to 2.0 mm^3	—
M–INJ/PILOT ON	Main injection time at pilot–injection ON/ Min.: 0 μs Max.: 65,535 μs	Idling: 750 to 850 μs	—
M–INJ/PILOT OFF	Injection time at pilot–injection OFF/ Min.: 0 μs Max.: 65,535 μs	Running without load (3,000 rpm): 650 to 750 μs	—
PILOT–INJ	Sub–Injection time at pilot–injection ON/ Min.: 0 μs, Max.: 65,535 μs	Idling: 500 to 600 μs	—
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	—
A/C SIG	A/C switch/ ON or OFF	A/C switch ON: ON	—
THROTTLE KNOB	Throttle knob voltage/ Min.: 0 V, Max.: 5 V	• Switch angle 20°: 0.5 to 0.9 V • Switch angle 300°: 4.0 to 4.5 V	—
E/G OVER RUN FLAG	Engine overrun history/ ON or OFF	Status: OFF	—
WATER IN FLAG	Water sucked in malfunction history/ ON or OFF	Status: OFF	—

HINT:

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

2. ACTIVE TEST

HINT:

Performing the hand–held tester's ACTIVE TEST allows relay, VSV, actuator and other items to be operated without removing any parts. Performing the ACTIVE TEST early in trouble shooting is one way to save time. The DATA LIST can be displayed during the ACTIVE TEST.

(a) Connect the hand–held tester (with 24 V VIM) to the DLC3.
(b) Turn the ignition switch ON.
(c) Turn the hand–held tester ON.
(d) Enter the following menus: DIAGNOSIS / OBD/MOBD / ACTIVE TEST.
(e) According to the display on the tester, perform the ACTIVE TEST.

Hand–held Tester Display	Test Details	Diagnostic Note
TC/TE1	Same condition as the connection of TC and TE1 ON or OFF	—
INJECTION VOLUME	Injection Volume – 25 to 24.8 %	—
FUEL LEAK TEST	Maintain the engine speed at 2,000 rpm, and pressurize the common rail internal fuel pressure to 175 MPa (1,784.5 kgf/cm^2, 25,380 psi) 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	—