Scan Tool Data

As the data values given below are standard values estimated on the basis of values obtained from the normally operating vehicles by using a scan tool, use them as reference values. Even when the vehicle is in good condition, there may be cases where the checked value does not fall within each specified data range. Therefore, judgment as abnormal should not be made by checking with these data alone.
Also, conditions in the table below that can be checked by the scan tool are those detected by ECM and output from ECM as commands and there may be cases where the engine or actuator is not operating (in the condition) as indicated by the scan tool. Be sure to use the timing light to check the ignition timing.

NOTE:

- **With the generic scan tool, only star (∗) marked data in the table below can be read.**
- **When checking the data with the engine running at idle or racing, be sure to shift M/T gear to the neutral gear position and A/T gear to the "Park" position and pull the parking brake fully. Also, if nothing or "no load" is indicated, turn OFF A/C, all electric loads, P/S and all the other necessary switches.**

	SCAN TOOL DATA	VEHICLE CONDITION		NORMAL CONDITION/ REFERENCE VALUES
∗	COOLANT TEMP (ENGINE COOLANT TEMP.)	At specified idle speed after warming up		80 – 100°C, 176 – 212°F
∗	INTAKE AIR TEMP	At specified idle speed after warming up		–5°C (23°F) + environmental temp. to 40°C (104°F) + environmental temp.
∗	ENGINE SPEED	At idling with no load after warming up		Desired idle speed ±50 r/min
	INJ PULSE WIDTH (FUEL INJECTION PULSE WIDTH)	At specified idle speed with no load after warming up		2.0 – 4.0 msec.
		At 2500 r/min with no load after warming up		2.0 – 3.6 msec.
	TP SENSOR VOLT (THROTTLE POSITION SENSOR OUTPUT VOLTAGE)	Ignition switch ON/ warmed up engine stopped	Accelerator pedal released	0.5 – 1.0 V
			Accelerator pedal depressed fully	Less than 4.8 V
	DESIRED IDLE (DESIRED IDLE SPEED)	At idling with radiator cooling fan stopped and all electrical parts turned OFF after warming up, M/T at neutral		700 r/min
	IAC FLOW DUTY (IDLE AIR CONTROL FLOW DUTY)	At idling with no load after warming up		5 – 55%
∗	SHORT FT B1 (SHORT TERM FUEL TRIM)	At specified idle speed after warming up		– 20 – +20%
∗	LONG FT B1 (LONG TERM FUEL TRIM)	At specified idle speed after warming up		– 20 – +20%
∗	MAF (MASS AIR FLOW RATE)	At specified idle speed with no load after warming up		1.0 – 4.0 g/s 0.14 – 0.52 lb/min
		At 2500 r/min with no load after warming up		4.0 – 12.0 g/s 0.53 – 1.58 lb/min

	SCAN TOOL DATA	VEHICLE CONDITION		NORMAL CONDITION/ REFERENCE VALUES
✱	CALC LOAD (CALCULATED LOAD VALUE)	At specified idle speed with no load after warming up		10 – 20%
		At 2500 r/min with no load after warming up		10 – 18%
✱	THROTTLE POSITION (ABSOLUTE THROTTLE POSITION)	Ignition switch ON/ warmed up engine stopped	Accelerator pedal released	9 – 19%
			Accelerator pedal depressed fully	70 – 90%
✱	O2S B1 S1 (HEATED OXYGEN SENSOR–1)	At specified idle speed after warming up		0 – 0.95 V
✱	O2S B1 S2 (HEATED OXYGEN SENSOR–2)	When engine is running at 2000 r/min. for 3 min or longer after warming up.		0 – 0.95 V
	FUEL SYSTEM B1 (FUEL SYSTEM STATUS)	At specified idle speed after warming up		CLOSED (closed loop)
	TOTAL FUEL TRIM	At specified idle speed after warming up		– 35 – +35%
✱	MAP (INTAKE MANIFOLD ABSOLUTE PRESSURE)	At specified idle speed with no load after warming up		24 – 38 kPa 180 – 285 mmHg
	BAROMETRIC PRES	–		Display the barometric pressure
	STEP EGR FLOW DUTY	At specified idle speed after warming up		0%
	FUEL CUT	When engine is at fuel cut condition		ON
		Other than fuel cut condition		OFF
	CLOSED THROTTLE POS (CLOSED THROTTLE POSITION)	Throttle valve at idle position		ON
		Throttle valve opens larger than idle position		OFF
	CANIST PRG DUTY (EVAP CANISTER PURGE FLOW DUTY)	At specified idle speed after warming up		0%
✱	IGNITION ADVANCE (IGNITION TIMING ADVANCE FOR NO.1 CYLINDER)	At specified idle speed with no load after warming up		3 – 13° BTDC
	BATTERY VOLTAGE	Ignition switch ON/engine stop		10 – 14 V
	FUEL PUMP	Within 3 seconds after ignition switch ON or engine running		ON
		Engine stop at ignition switch ON		OFF
	ELECTRIC LOAD	Ignition switch ON/Headlight, small light, all turned OFF		OFF
		Ignition switch ON/Headlight, small light, turned ON		ON
	BRAKE SWITCH	Ignition switch ON	Brake pedal is released	OFF
			Brake pedal is depressed	ON
	RADIATOR FAN (RADIATOR FAN CONTROL RELAY)	Ignition switch ON	Engine coolant temp.: Lower than 95°C (203°F)	OFF
			Engine coolant temp.: 97.5°C (208°F) or higher	ON

	SCAN TOOL DATA	VEHICLE CONDITION		NORMAL CONDITION/ REFERENCE VALUES
	BLOWER FAN	Ignition switch ON	Blower fan switch: 2nd speed position or more	ON
			Blower fan switch: under 2nd speed position	OFF
	A/C SWITCH (if equipped with A/C)	Engine running after warming up, A/C not operating		OFF
		Engine running after warming up, A/C operating		ON
	A/C MAG CLUTCH (if equipped with A/C)	Engine running	A/C switch and blower motor switch turned ON	ON
			A/C switch and blower motor switch turned OFF	OFF
	A/C COND FAN (if equipped with A/C)	Engine running	Blower motor switch and A/C switch turned ON	ON
			Blower motor switch and/ or A/C switch turned OFF	OFF
	VVT GAP (TARGET-ACTUAL POSITION)	At specified idle speed after warming up		0 – 3°

SCAN TOOL DATA DEFINITIONS

COOLANT TEMP (ENGINE COOLANT TEMPERATURE, °C, °F)

It is detected by engine coolant temp. sensor.

INTAKE AIR TEMP. (°C, °F)

It is detected by intake air temp. sensor.

ENGINE SPEED (rpm)

It is computed by reference pulses from the camshaft position sensor.

INJ PULSE WIDTH (FUEL INJECTION PULSE WIDTH, msec.)

This parameter indicates time of the injector drive (valve opening) pulse which is output from ECM (but injector drive time of NO.1 cylinder for multiport fuel injection).

TP SENSOR VOLT (THROTTLE POSITION SENSOR OUTPUT VOLTAGE, V)

The Throttle Position Sensor reading provides throttle valve opening information in the form of voltage.

DESIRED IDLE (DESIRED IDLE SPEED, rpm)

The Desired Idle Speed is an ECM internal parameter which indicates the ECM requested idle. If the engine is not running, this number is not valid.

IAC FLOW DUTY (IDLE AIR (SPEED) CONTROL DUTY, %)

This parameter indicates current flow time rate within a certain set cycle of IAC valve (valve opening rate) which controls the amount of bypass air (idle speed).

SHORT FT B1 (SHORT TERM FUEL TRIM, %)

Short term fuel trim value represents short term corrections to the air/fuel mixture computation. A value of 0 indicates no correction, a value greater than 0 means an enrichment correction, and a value less than 0 implies an enleanment correction.

LONG FT B1 (LONG TERM FUEL TRIM, %)

Long term fuel trim value represents long term corrections to the air/fuel mixture computation. A value of 0 indicates no correction, a value greater than 0 means an enrichment correction, and a value less than 0 means an enrichment correction, and a value less than 0 implies an enleanment correction.

MAF (MASS AIR FLOW RATE, g/s, lb/min)

It represents total mass of air entering intake manifold which is measured by mass air flow sensor.

CALC LOAD (CALCULATED LOAD VALUE, %)

Engine load displayed as a percentage of maximum possible load. Value is calculated mathematically using the formula: actual (current) intake air volume maximum possible intake air volume x 100%

THROTTLE POS (ABSOLUTE THROTTLE POSITION, %)

When throttle position sensor is fully closed position, throttle opening is indicated as 0% and 90 – 100% full open position.

O2S SENSOR B1 S1 (HEATED OXYGEN SENSOR–1, V)

It indicates output voltage of HO2S–1 installed on exhaust manifold (pre-catalyst).

O2S SENSOR B1 S2 (HEATED OXYGEN SENSOR–2, V)

It indicates output voltage of HO2S–2 installed on exhaust pipe (post-catalyst). It is used to detect catalyst deterioration.

FUEL SYSTEM (FUEL SYSTEM STATUS)

Air/fuel ratio feedback loop status displayed as one of the followings.
OPEN: Open loop-has not yet satisfied conditions to go closed loop.
CLOSED: Closed loop-using oxygen sensor(s) as feedback for fuel control.
OPEN-DRIVE COND: Open loop due to driving conditions (Power enrichment, etc.).
OPEN SYS FAULT: Open loop due to detected system fault.
CLOSED-ONE O2S: Closed loop, but fault with at least one oxygen sensor-may be using single oxygen sensor for fuel control.

TOTAL FUEL TRIM B1 (%)

The value of Total Fuel Trim is obtained by calculating based on values of short Term Fuel Trim and Long Term Fuel Trim. This value indicates how much correction is necessary to keep the air/fuel mixture stoichiometrical.

MAP (MANIFOLD ABSOLUTE PRESSURE, mmHg, kPa)

This value indicates how much correction is necessary to keep the air/fuel mixture stoichiometrical.
It is detected by manifold absolute pressure sensor.

BAROMETRIC PRESS (kPa, inHg)

This parameter represents a measurement of barometric air pressure and is used for altitude correction of the fuel injection quantity and IAC valve control.

STEP EGR FLOW DUTY (%)

This parameter indicates opening rate of EGR valve which controls the amount of EGR flow.

FUEL CUT (ON/OFF)

ON: Fuel being cut (output signal to injector is stopped)
OFF: Fuel not being cut

CLOSED THROTTLE POSITION (ON/OFF)

This parameter will read ON when throttle valve is fully closed, or OFF when the throttle is not fully closed.

CANIST PURGE DUTY (EVAP CANISTER PURGE FLOW DUTY, %)

This parameter indicates valve ON (valve open) time rate within a certain set cycle of EVAP canister purge valve which controls the amount of EVAP purge.

IGNITION ADVANCE (IGNITION TIMING ADVANCE FOR NO.1 CYLINDER, °)

Ignition timing of NO.1 cylinder is commanded by ECM. The actual ignition timing should be checked by using the timing light.

BATTERY VOLTAGE (V)

This parameter indicates battery positive voltage inputted from main relay to ECM.

FUEL PUMP (ON/OFF)

ON is displayed when the ECM activates the fuel pump via the fuel pump relay switch.

ELECTRIC LOAD (ON/OFF)

ON: Headlight or small light ON signal inputted.
OFF: Above electric loads all turned OFF.

BRAKE SW (ON/OFF)

This parameter indicates the state of the brake switch.

RADIATOR FAN (RADIATOR FAN CONTROL RELAY, ON/OFF)

ON: Command for radiator fan control relay operation being output.
OFF: Command for relay operation not being output.

BLOWER FAN (ON/OFF)

This parameter indicates the state of the blower fan motor switch.

A/C SWITCH (ON/OFF)

ON: Command for A/C operation being output from ECM to A/C amplifier.
OFF: Command for A/C operation not being output.

A/C MAG SWITCH (A/C COMPRESSOR RELAY, ON/OFF)

This parameter indicates the state of the A/C switch.

A/C COND FAN (ON/OFF)

This parameter indicates the state of the A/C Condenser Fan control signal.

VVT GAP [TARGET-ACTUAL POSITION] (°)

It is calculated using the formula: target valve timing advance – actual valve timing advance.