

# **DAIHATSU**

# **F300**

[HD-ENGINE]

## **ENGINE SPECIFICATIONS**

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WN88E-B001

**B**

# ENGINE SPECIFICATIONS

## ENGINE SPECIFICATIONS

Item		Engine type		HD-C	HD-E	
Engine proper	Type		Petrol, 4-cycle		Petrol, 4-cycle	
	Mounting location		Front		Front	
	Cylinder No. and arrangement		4-cylinder-in-line, mounted longitudinally		4-cylinder-in-line, mounted longitudinally	
	Combustion chamber type		Pent roof type		Pent roof type	
	Valve mechanism		Belt-driven, SOHC		Belt-driven, SOHC	
	Bore × stroke		mm (inch)		76 × 87.6 (2.99 × 3.45)	76 × 87.6 (2.99 × 3.45)
	Compression ratio		9.5		9.5	
	Compression pressure		kg/cm <sup>2</sup> -rpm (psi-rpm)		14 - 300 (199.1 - 300)	14 - 300 (199.1 - 300)
	Maximum output	SAE net	kW/rpm	General specifications	63/6000	—
		EEC	kW/rpm	Australian specifications	—	70/5700
		EEC DIN	kW/rpm	ECE & EEC specifications	63/6000	70/5700
	Maximum torque	SAE net	Nm/rpm	General specifications	126/3500	—
		EEC	Nm/rpm	Australian specifications	—	128/4800
		EEC DIN	Nm/rpm	ECE & EEC specifications	126/3500	128/4800
	Engine dimensions [Length × width × height]		mm (inch)		*693 × 596 × 685 (27.3 × 23.5 × 27.0)	693 × 537 × 673 (27.3 × 21.2 × 26.5)
	Service engine weight		kg (lb)		96 (212)	95 (209)
	Number of piston rings	Compression ring		2		2
		Oil ring		1		1
	Valve timing	Intake	Open	2° BTDC		2° BTDC
			Close	48° ABDC		48° ABDC
Exhaust		Open	43° BBDC		43° BBDC	
		Close	1° ATDC		1° ATDC	
Valve clearance [HOT]	mm (inch)	Intake	0.25 (0.0098)		0.25 (0.0098)	
		Exhaust	0.33 (0.0130)		0.33 (0.0130)	
Idling speed		rpm		850 ± 50	850 ± 50	
Blow-by gas recirculating system		Closed type		Closed type	Closed type	
Lubricating System	Lubricating method		Fully-forced feed method		Fully-forced feed method	
	Oil Pump type		Trochoid type		Trochoid type	
	Oil filter type		Full-flow filter type, filter paper type		Full-flow filter type, filter paper type	
	Lubrication oil capacity	ℓ	Whole	3.8		3.8
			When only oil is changed	3.3		3.3
When oil and oil filter are changed			3.5		3.5	
Oil cooler type		Water-cooled type		Water-cooled type		
Cooling System	Cooling method		V-belt driven type		V-belt driven type	
	Radiator type		Corrugation type forced circulation		Corrugation type forced circulation	
	Coolant capacity (Vehicle with front heater)		liter		5.5 ℓ (excluding 1.0 ℓ in reserve tank)	5.5 ℓ (excluding 1.0 ℓ in reserve tank)
	Water pump type		Centrifugal type, "V" belt-driven tank		Centrifugal type, "V" belt driven type	
	Thermostat type		Wax pellet type		Wax pellet type	
Air cleaner	Type		Filter unwoven fabric type		Filter paper	
	Number		1		1	

\* For GCC specifications: 693 × 602 × 685 (27.3 × 23.7 × 27.0)

WN88E-B002

# ENGINE SPECIFICATIONS

Item		Engine type		HD-C	HD-E			
Fuel System	Fuel tank	Capacity	liter	60	60			
		Location		Underneath rear seat floor	Underneath rear seat floor			
	Fuel pipe material				Rubber and steel tube	Rubber and steel tube		
	Fuel pump type				Diaphragm type	Electromotor type		
	Fuel filter type				Filter paper type	Filter paper type		
	Carburetor	Manufacturer				Aisan industry	—	
		Type				Down draft, 2-barrel type	—	
		Venturi diameter		mm (inch)			21 (0.83), 28 (1.10)	—
		Choke valve type				Wax type auto choke	—	
	Fuel injection device				—	Electronic type		
	Injection nozzle or injector	Type of nozzle retainer				—	With cushion rubber type	
		Nozzle type				—	Electronic controlled throttle type	
Injection pressure		kg/cm <sup>2</sup> (psi)			—	2.55 (1.84)		
Engine electrical system	Ignition system	Voltage		V			12 [Negative ground]	12 [Negative ground]
		Type				Battery ignition type	Battery ignition type	
		Ignition timing				B.T.D.C. 3° ± 2°/850 ± 50 rpm	B.T.D.C. 3° ± 2°/850 ± 50 rpm	
		Firing order				1-3-4-2	1-3-4-2	
	Distributor	Distributor type				Full-transistorized type	Full-transistorized type	
		Breaker type				—	—	
		Performance of timing advancing mechanism	Centrifugal type				0°/600 rpm, 10°/1,800 rpm	0°/600 rpm, 9.5°/2,077 rpm
	Vacuum type				0°/-100 mmHg, 4.9°/-240 mmHg	0°/-370 mmHg, 3.5°/-440 mmHg		
	Spark plug	Manufacturer				CHAMPION	DENSO	NGK
		Type				RC9YC4	K20PR-U11	BKR6E-11
		Thread				M14 × 1.25	M14 × 1.25	M14 × 1.25
		Spark plug gap		mm (inch)			1.0 - 1.1 (0.039 - 0.043)	1.0 - 1.1 (0.039 - 0.043)
	Battery	Type	General specifications				36B20R (*155B24R)	36B20R (*155B24R)
			ECE & EEC specifications				36B20R (*155B24R)	36B20R (*155B24R)
			Australian specifications				36B20R	36B20R
		Capacity AH (5 Hr)	General specifications				28 (*136)	28 (*136)
			ECE & EEC specifications				28 (*136)	28 (*136)
Australian specifications					28	28		
Alternator	Type				3-Phase alternating current commutating type	3-Phase alternating current commutating type		
	Output		V-A			12-45	12-50	
	Regulator type				Contact-pointless type	Contact-pointless type		
Starter	Type				Magneto engaging type	Magneto engaging type		
	Output		V-KW			12-0.9, *12-1.0	12-0.9, *12-1.0	
Radio noise suppressing device				Resistive cord	Resistive cord			

\*1: Option for cold region specifications

WN88E-B003

# ENGINE SPECIFICATIONS

## SERVICE SPECIFICATIONS

### TUNE-UP

Drive belt deflection with a pressed force of 10 kg (22 lb) Alternator		New belt	5.0 - 7.0 mm (0.20 - 0.28 inch)
		Used belt	6.0 - 8.0 mm (0.24 - 0.31 inch)
Coolant capacity w/heater [Excluding 1.0 liter for reserve tank]			5.5 liters [5.8 liters for tropical specifications]
Engine oil capacity			
Whole amount			3.8 liters (3.52 IMP qt)
When only oil is changed		Full level	3.3 liters (2.9 IMP qt)
		Low level	2.3 liters (2.02 IMP qt)
When oil and filter are changed			3.5 liters (3.08 IMP qt)
			<b>NOTE</b> If oil cooler equipped engine, add 79 cc (4.82 cub inch) for whole amount.
Valve clearances (hot)		Intake	0.25 ± 0.05 mm (0.0098 ± 0.0020 inch)
		Exhaust	0.33 ± 0.05 mm (0.012 ± 0.0020 inch)
[Reference (cold)]		Intake	0.18 mm (0.0071 inch)
		Exhaust	0.25 mm (0.0098 inch)
Spark plugs			
Manufacturer		DENSO	NGK
Type		K20PR-U11	BKR6E-11
Thread		M14 × 1.25	
Spark plug gap		mm (inch)	
		1.0 - 1.1 (0.040 - 0.043)	
Ignition timing		B.T.D.C. 3 ± 2°/1000 rpm or less (However, engine revolution must be stable.)	
Idle speed			
Engine type		HD-C	HD-E
Idle speed		850 ± 50 rpm	850 ± 50 rpm
Fast idle speed adjustment (HD-C)		Full position	1300 - 2000 rpm
Throttle positioner touch revolution (rpm)			
HD-C		HD-E	
1500 ± 50		1800 ± 100	
Throttle positioner operating time		HD-C	0.5 - 5.0 seconds
		HD-E	1.0 - 5.0 seconds
Compression pressure (at 300 rpm)		Standard	14.0 kg/cm <sup>2</sup> (199.1 psi)
		Minimum	10.5 kg/cm <sup>2</sup> (149.3 psi)
		Difference between cylinders	1.5 kg/cm <sup>2</sup> (21.3 psi)

WN88E-B004

**ENGINE MECHANICALS**

Timing belt pulley	Wear limit	Camshaft	119.80 mm (4.717 inch)
		Crankshaft	59.37 mm (2.335 inch)
Timing belt tension spring		Free length	46.5 mm (1.83 inch)
		Installation load	3 kg at 50.9 mm (6.6 lb at 2.00 inch)
Camshaft	Oil clearance (cylinder head-to-camshaft)		0.035 - 0.076 mm (0.0014 - 0.0029 inch)
	Maximum limit		0.17 mm (0.0067 inch)
	Thrust clearance		0.1 - 0.25 mm (0.0040 - 0.0098 inch)
	Maximum limit		0.45 mm (0.018 inch)
	Journal diameter		
	Fuel pump cam diameter	Minimum	42.65 mm (1.68 inch)
	Fuel pump cam stroke	Standard	5.0 mm (0.197 inch)
		Minimum	4.8 mm (0.189 inch)
	Valve cam lobe height		
	Intake	Standard	33.08 - 33.28 mm (1.302 - 1.310 inch)
		Minimum	32.9 mm (1.295 inch)
	Exhaust	Standard	33.00 - 33.20 mm (1.299 - 1.307 inch)
	Minimum	32.85 mm (1.293 inch)	
	Maximum circle run out		0.03 mm (0.0012 inch)
Cylinder head	Warpage	Cylinder block side	0.10 mm (0.0039 inch)
		Intake manifold side	0.10 mm (0.0039 inch)
		Exhaust manifold side	0.10 mm (0.0039 inch)
	Valve seat angle	Intake	30° - 45° - 70°
		Exhaust	20° - 45° - 70°
	Valve contacting angle		45°
	Valve seat contacting width	Standard	1.4 mm (0.055 inch)
		Allowance	1.2 - 1.6 mm (0.048 - 0.062 inch)
	Maximum valve seat recession		0.5 mm (0.0197 inch)
Valves	Valve stem diameter	Intake valve	6.560 - 6.580 mm (0.2583 - 0.2590 inch)
		Exhaust valve	6.555 - 6.575 mm (0.2581 - 0.2588 inch)
	Valve length	Intake valve	112.8 mm (4.441 inch)
		Exhaust valve	114.5 mm (4.508 inch)
	Valve face angle		45.5°
	Valve stock thickness (Minimum)		
	Intake		0.8 mm (0.0315 inch)
	Exhaust		1.0 mm (0.0394 inch)
	Valve stem oil clearance		
	Intake	Standard	0.020 - 0.060 mm (0.0008 - 0.0023 inch)
	Maximum	0.080 mm (0.0031 inch)	
Exhaust	Standard	0.025 - 0.065 mm (0.0010 - 0.0025 inch)	
	Maximum	0.090 mm (0.0035 inch)	

WN88E-B005

# ENGINE SPECIFICATIONS

Valve springs	Free length	Standard	45.2 - 46.0 mm (1.78 - 1.81 inch)	
		Minimum	44.3 mm (1.74 inch)	
	Installed tension at 38.0 mm (1.50 inch)		26.4 kg (58.2 lb)	
	Maximum out-of-squareness		1.6 mm (0.063 inch)	
Valve rocker arm and valve rocker shaft	Oil clearance	Standard	0.012 - 0.053 mm (0.0005 - 0.0020 inch)	
		Maximum	0.08 mm (0.0031 inch)	
	Valve rocker arm bore diameter		19.500 - 19.521 (0.7678 - 0.7685 inch)	
	Valve rocker shaft outer diameter		19.468 - 19.488 mm (0.7665 - 0.7672 inch)	
Valve rocker arm spacer	Free width		22.00 mm (0.867 inch)	
Exhaust manifold	Warpage		0.1 mm (0.0039 inch)	
Intake manifold	Warpage	Cylinder head side	0.1 mm (0.0039 inch)	
Cylinder block	Maximum cylinder head surface warpage		0.1 mm (0.0039 inch)	
	Cylinder bore diameter	Standard	76.000 - 76.030 mm (2.9922 - 2.9933 inch)	
		O/S 0.25	76.250 - 76.280 mm (3.0020 - 3.0031 inch)	
		Bore honing angle		35° ± 5°
	Coarse degree		1 - 4 Z	
Piston, piston pin and piston rings	Piston-to-cylinder bore clearance	Standard	0.045 - 0.065 mm (0.0018 - 0.0025 inch)	
		Maximum limit	0.11 mm (0.0043 inch)	
	Piston ring groove-to-piston ring side clearance	Standard.	No. 1	0.03 - 0.07 mm (0.0012 - 0.0027 inch)
			No. 2	0.02 - 0.06 mm (0.00079 - 0.0023 inch)
		Maximum		0.12 mm (0.0047 inch)
	Piston ring thickness	Standard	No. 1	1.17 - 1.19 mm (0.0461 - 0.0468 inch)
			No. 2	1.47 - 1.49 mm (0.0579 - 0.0586 inch)
Piston, piston pin and piston rings	Piston ring end gap	Standard	No. 1	0.27 - 0.42 mm (0.011 - 0.016 inch)
			No. 2	0.35 - 0.50 mm (0.0138 - 0.0196 inch)
			0.1	0.20 - 0.70 mm (0.0079 - 0.027 inch)
	Maximum	No. 1	0.7 mm (0.028 inch)	
		No. 2	0.8 mm (0.031 inch)	
		0.1	1.0 mm (0.039 inch)	
	Piston pin-to-connecting rod interference fit		0.012 - 0.044 mm (0.0005 - 0.0017 inch)	
Piston-to-piston pin clearance		0.005 - 0.011 mm (0.0002 - 0.0004 inch)		
Flywheel	Runout	Maximum	0.1 mm (0.0039 inch)	
Connecting rod	Big end thrust clearance	Standard	0.15 - 0.4 mm (0.006 - 0.015 inch)	
		Maximum	0.45 mm (0.018 inch)	
	Maximum bend		0.05 mm (0.0020 inch)	
	Maximum twist		0.05 mm (0.0020 inch)	

WN88E-B006

## ENGINE SPECIFICATIONS

Crankshaft	Crankpin journal oil clearance	0.020 - 0.044 mm (0.0008 - 0.0017 inch)	
	Main journal oil clearance	0.024 - 0.042 mm (0.0010 - 0.0016 inch)	
	Crankpin journal diameter	44.975 - 45.000 mm (1.7707 - 1.7716 inch)	
	Main journal diameter	49.975 - 50.000 mm (1.9676 - 1.9685 inch)	
	Thrust clearance	Standard Maximum limit	0.02 - 0.22 mm (0.0008 - 0.0086 inch) 0.30 mm (0.012 inch)
	Runout	Maximum	0.06 mm (0.0024 inch)
Thermostat valve (HD-C)	Operating temperature		
		ON OFF	63°C (145.4°F) or more 55°C (131.0°F) or less

WN88E-B007

# ENGINE SPECIFICATIONS

## FUEL SYSTEM SPECIFICATIONS

Carburetor	Float level	Dimension assumed by its own weight	8 mm (0.315 inch)
		Lip dimension	1.6 mm (0.063 inch)
	Throttle valve closed angle	Primary	9°
		Secondary	20°
	Throttle valve fully opened angle	Primary	90°
		Secondary	80°
	Kick-up angle		23°
	Secondary touch angle		50°
	Throttle valve-to-body clearance with throttle valve opened fully		0.3 mm (0.012 inch)
	Throttle valve-to-body clearance during dash-pot operating period		0.45 mm (0.018 inch)
	Number of backing-off of idle mixture adjusting screw		4
Solenoid valve resistance		80 - 100 Ω	
Outer vent resistance		30 - 45 Ω	
Fuel pump (HD-C)	Suction force at 300 rpm		100 mm Hg or more (3.9 inch Hg or more)
	Push rod length	Standard	87.95 - 88.25 mm (3.463 - 3.474 inch)
		Minimum	87.000 mm (3.425 inch)
	Push rod stroke	Standard	5.0 mm (0.197 inch)
Minimum		4.8 mm (0.189 inch)	

WN88E-B008

## LUBRICATION SYSTEM

Oil pump	Compression spring free length		57 mm (2.24 inch)
	Body clearance		0.20 - 0.28 mm (0.0079 - 0.011 inch)
	Tip clearance		0.16 - 0.24 mm (0.0063 - 0.0094 inch)
	Side clearance		0.035 - 0.085 mm (0.0014 - 0.0033 inch)
	Oil pressure	idling	
at 3000 rpm			0.25 - 5.0 kg/cm <sup>2</sup> (3.56 - 71.1 psi)

WN88E-B009

**COOLING SYSTEM**

Radiator cap	Relief valve opening pressure	
	Standard	0.75 - 1.05 kg/cm <sup>2</sup> (10.7 - 14.9 psi)
	Minimum	0.6 kg/cm <sup>2</sup> (8.5 psi)
Thermostat	Valve opening temperature	
	General specifications	82 - 86°C (179.6 - 186.8°F)
	ECE & EEC specifications	76 - 80°C (168.8 - 176.0°F)
	Valve lift	
	General specifications	8.5 mm or more at 98°C (0.34 inch or more at 208.4°F)
	ECE & EEC specifications	8.5 mm or more at 91°C (0.34 inch or more at 195.8°F)

WN88E-B010

**IGNITION SYSTEM**

Ignition timing	No sub vacuum timing advance takes place. (Engine revolution must be stable at 1000 rpm or less.)	BTDC 3 ± 2°
High-tension cord	Resistance Maximum	15 kΩ per cord
Distributor	Air gap between signal rotor and signal generator	0.2 - 0.4 mm (0.0079 - 0.015 inch)
Ignition coil	Primary coil	1.35 - 1.65 Ω at 20°C (68°F)
	Secondary coil	22 - 30 k Ω at 20° (68°F)

WN88E-B011

# ENGINE SPECIFICATIONS

## STARTING SYSTEM

Conventional type starter motor	Rating voltage and output power	12 V 0.9 kW
	No-load characteristic at 11.0 V	
	Amperage	Less than 50 A
	rpm	More than 5,000 rpm
	Brush length	
	Standard	16.0 mm (0.63 inch)
	Minimum	10.5 mm (0.41 inch)
	Commutator	
	Outer diameter	
	Standard	28 mm (1.102 inch)
Minimum	27 mm (1.063 inch)	
Undercut depth		
Standard	0.5 - 0.8 mm (0.0197 - 0.0314 inch)	
Minimum	0.2 mm (0.0079 inch)	
Maximum circle runout	0.4 mm (0.016 inch)	
Reduction type starter motor	Rating voltage and output power	12 V 1.0 kW
	No-load characteristic at 11.5 V	
	Amperage	Less than 90 A
	rpm	More than 3,000
	Brush length	
	Standard	13.0 mm (0.51 inch)
	Minimum	8.5 mm (0.33 inch)
	Commutator	
	Outer diameter	
	Standard	30 mm (1.18 inch)
Minimum	29 mm (1.14 inch)	
Undercut depth		
Standard	0.6 mm (0.024 inch)	
Minimum	0.2 mm (0.0079 inch)	
Maximum circle runout	0.05 mm (0.0020 inch)	
Spring installed load	1.785 - 2.415 kg (3.94 - 5.32 lb)	

WN88E-B012

## CHARGING SYSTEM

Battery specific gravity		1.25 - 1.27	
Alternator	Rated output	Amperage	45 A/50 A
	Rotor coil resistance		$2.9 \pm 0.2 \Omega$ at 20°C (68°F)
	Slip ring diameter	Standard	14.4 mm (0.57 inch)
		Minimum	14.0 mm (0.55 inch)
	Brush exploded length	Standard	10.5 mm (0.41 inch)
			1.5 mm (0.06 inch)
IC regulating voltage		14.2 - 14.8 V	

WN88E-B013

**EFI SYSTEM**

Fuel pressure regulator	Fuel pressure at No. vacuum	2.3 - 2.8 kg/cm <sup>2</sup> (32.8 - 39.8 psi)															
Injector	Resistance at 20°C (68°F) (approx.)	11.0 - 15.0 Ω															
	Injection amount (approx.)	152 - 168 cc/60 seconds at 20°C (68°F) (9.28 - 10.2 cub inch)															
	Difference between each injector	5 cc or less (0.31 cub inch or less)															
	Fuel leakage	Less than one drop of fuel per minute															
EFI main relay Injector relay	Between terminals ① - ② ③ - ④	60 - 85 Ω Infinity															
Fuel pump relay	Between terminals ① - ② ③ - ④	70 - 90 Ω Infinity															
Idle-up VSV	Resistance	30 - 50 Ω at 20°C (68°F)															
Throttle position sensor	Resistance																
	Between terminals ⑩ - ⑪ Throttle valve closed fully	0.2 Ω or less at 20°C (68°F)															
	Throttle valve opened fully	10 kΩ or more at 20°C (68°F)															
	Between terminals ⑫ - ⑬ Throttle valve closed fully	10 kΩ or more at 20°C (68°F)															
Throttle valve opened fully	5 Ω or less at 20° (68°F)																
Fuel pump	Fuel flow amount	235 cc or more/15 seconds (14.34 cub inch or more)															
Water temperature sensor Intake air temperature sensor	Cooling water temperature	Resistance															
	80°C (176°F)	0.322 ± 0.1 kΩ															
	60°C (140°F)	0.584 ± 0.2 kΩ															
	40°C (104°F)	1.14 ± 0.3 kΩ															
	20°C (68°F)	2.45 ± 0.5 kΩ															
	0°C (32°F)	5.88 ± 1.5 kΩ															
-20°C (-4°F)	16.2 ± 3.2 kΩ																
Pressure sensor Output between SST terminals ⑬ - ⑭ (ground) (When engine is stopped.)																	
<table border="1"> <thead> <tr> <th>Measuring point</th> <th>Atmospheric pressure mm Hg (inch Hg)</th> <th>Voltage V</th> </tr> </thead> <tbody> <tr> <td>Altitude (height above sea level) m (ft)</td> <td></td> <td></td> </tr> <tr> <td>0 (0)</td> <td>760 (29.92)</td> <td>3.3 - 3.9</td> </tr> <tr> <td>500 (1640)</td> <td>716 (28.19)</td> <td>3.2 - 3.8</td> </tr> <tr> <td>1000 (3280)</td> <td>674 (26.54)</td> <td>3.0 - 3.6</td> </tr> </tbody> </table>			Measuring point	Atmospheric pressure mm Hg (inch Hg)	Voltage V	Altitude (height above sea level) m (ft)			0 (0)	760 (29.92)	3.3 - 3.9	500 (1640)	716 (28.19)	3.2 - 3.8	1000 (3280)	674 (26.54)	3.0 - 3.6
Measuring point	Atmospheric pressure mm Hg (inch Hg)	Voltage V															
Altitude (height above sea level) m (ft)																	
0 (0)	760 (29.92)	3.3 - 3.9															
500 (1640)	716 (28.19)	3.2 - 3.8															
1000 (3280)	674 (26.54)	3.0 - 3.6															

WN88E-B014

# ENGINE SPECIFICATIONS

## VOLTAGES AT ECU WIRING CONNECTORS

Terminals	STD voltage or resistance	Conditions	Remedies
(1) - (21)	1 $\Omega$ or less	Ignition switch OFF.	Proceed to flow chart (2).
(2) - (21)	1V or less	Ignition switch OFF (after more than one minute).	Check power supply.
	10 - 15V	Ignition switch ON.	
(3) - (21)	0.1V or less	Ignition switch OFF (after more than ten seconds).	Check power supply.
	10 - 15V	Ignition switch ON.	
(4) - (21)	10 - 15V	At all times. (Measured voltage is lower than specified voltage only at during starting period.)	Check power supply.
(5) - (21)	10 - 15V	Engine fully warmed up. All accessory switches turned OFF.	Check power supply.
	3.0V or less	Idle-up VSV ON.	Check idle-up VSV control.
(6) - (21)	4.5 - 5.5V	Ignition switch ON. T-terminal shorted with ground terminal. Throttle valve fully closed.	Proceed to flow chart (2).
	1V or less		Check diagnosis code.
	0 - 4.5 to 5.5V (Measured voltage varies)	Ignition switch ON. T-terminal shorted with ground terminal. Engine revolution speed build at 300 rpm after it has fully warmed up.	Oxygen sensor system.
(7) - (21)	0.1V or less	Ignition switch OFF.	Check power supply.
	10 - 15V	Ignition switch ON.	
(8) - (21)	0.1V or less	Ignition switch OFF.	Check power supply.
	6 - 15V	When ignition switch is set to ST position.	
(9) - (21)	0.1V or less	Ignition switch OFF.	Check T-terminal wiring.
	10 - 15V	Ignition switch ON.	
(10) - (21)	0.5V or less	Ignition switch ON. Throttle valve fully closed.	Throttle position sensor system.
	10 - 15V	Ignition switch ON. Throttle valve fully opened.	
(11) - (21)	0.1V or less	Ignition switch ON. Headlamp switch and/or defogger switch OFF.	Check idle-up VSV control.
	9 - 15V	Ignition switch ON. Headlamp switch and/or defogger switch ON.	
(12) - (22)	0.1V or less	Ignition switch OFF.	Check VCC wiring.
	4.5 - 5.5V	Ignition switch ON.	
(13) - (22)	3.2 - 3.8V	Ignition switch ON. Atmospheric pressure is 760 mmHg (29.9 inchHg).	Check pressure sensor.
(14) - (30)	0.9 - 3.0V	Ignition switch ON. Air temperature inside surge tank: 20°C (68°F).	Check intake air temperature sensor.
(15) - (30)	0.4 - 0.5V	Ignition switch ON. After engine has been warmed up fully. (Cooling water temperature: 80 - 90°C (176 - 194°F).	Check cooling water temperature sensor.
(16) - (1)	1 $\Omega$ or less	Ignition switch OFF.	Proceed to flow chart (2).
(17) - (21)	1V or less	Ignition switch OFF (after more than one minute).	Check/repair injector power supply.
	10 - 15V	Ignition switch ON.	

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# ENGINE SPECIFICATIONS

Terminals	STD voltage or resistance	Conditions	Remedies
(18) - (21)	0.1V or less	Ignition switch OFF.	Check/repair ECU power supply.
	10 - 15V	Ignition switch ON.	
(19) - (21)	3V or less	Ignition switch ON. (Check engine lamp illuminated.)	Check power supply for check engine lamp.
	10 - 15V	Engine is rotating. (Check engine lamp not illuminated).	
(20) - (21)	1V or less	Ignition switch ON. Fuel pump is operating.	Check/repair fuel pump power supply.
	10 - 15V	Ignition switch ON. Fuel pump is stopped.	
(21) - Engine ground	0.2Ω or less.	Ignition switch OFF.	Check ground wiring.
(22) - (21)	0.5Ω or less.	Ignition switch OFF.	Replace ECU.
(23) - (21)	10 - 15V	Engine is rotating. Air conditioner compressor is rotating. (Genuine air conditioner-equipped vehicle.)	Check air conditioner wiring.
(26) - (21)	0 - 10 to 15V	Ignition switch ON. When vehicle is moved. (Measured voltage changes 4 times for movement of 1.5 m.)	Check speed sensor
(28) - (21)	4.5 - 5.5V	Ignition switch ON. Throttle valve fully closed.	Check throttle position sensor.
	0.5V or less	Ignition switch ON. Throttle valve fully opened.	
(29) - (21)	0.1V or less	Ignition switch ON (after more than 60 seconds).	Check oxygen sensor.
	Voltage varies within 0 - 1.0V	After engine has warmed up fully. When engine revolution is held as 3000 rpm for more than 2 minutes:	Check fuel system.
(30) - (21)	1Ω or less	Ignition switch ON.	Proceed to flow chart (2).

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