

ENGINE - SPECS**COMMON SPECIFICATIONS & PROCEDURES**

LEGACY & OUTBACK COMMON SPECIFICATIONS & PROCEDURES

System		Specification/Procedure
Air Conditioning		
Service		AIR CONDITIONING SYSTEM
Torque		AIR CONDITIONING UNIT See Torque Specifications in applicable text under.
Axle Shaft Nut (Front)		162 Ft. Lbs. (220 N.m)
Axle Shaft Nut (Rear)		177 Ft. Lbs. (240 N.m)
Battery		
H4SO & H6DO		BATTERY (H4DO) or BATTERY (H6DO)
Brakes		
Bleeding Sequence		RR, LR, RF, LF AIR BLEEDING
Disc Brakes		
Front	FRONT DISC BRAKE ASSEMBLY	
Rear	REAR DISC BRAKE ASSEMBLY	
Torque		COMPONENT See Torque Specifications in text under.
Charging		
Generator		
H4DO & H6DO	GENERATOR (H4DO) or GENERATOR (H6DO)	
Torque		
H4DO & H6DO	See Torque Specifications in text under INSTALLATION (H4DO) or INSTALLATION (H6DO).	
Pulley	80 Ft. Lbs. (108 N.m)	
Drive Belts		
Adjustment		

H4DO	INSPECTION
H6DO	INSPECTION
Belt Routing	
H4DO	V-BELT
H6DO	V-BELT
Engine Cooling	
General Service Specifications	
H4DO	GENERAL DESCRIPTION
H6DO	GENERAL DESCRIPTION
Radiator Cap Pressure	14-18 psi (.95-1.25 kg/cm ²)
Thermostat R & I	
H4DO	THERMOSTAT
H6DO	THERMOSTAT
Water Pump R & I	
H4DO	WATER PUMP
H6DO	WATER PUMP
Engine Mechanical	
Compression	
H4DO	142-171 psi (981-1, 177 kPa (10-12 kg/cm ²)
H6DO	185-213 psi (1, 275-1, 471 kPa (13.0-15.0 kg/cm ²)
Oil Pressure	
At Idle Speed	H4DO 14 psi (1.0 kg/cm ²) H6DO 23 psi (3.0 kg/cm ²)
At 5,000 RPM	H4DO 43 psi (3.0 kg/cm ²) H6DO 85 psi (6.0 kg/cm ²)
Overhaul	
H4DO	PREPARATION FOR OVERHAUL
H6DO	PREPARATION FOR OVERHAUL
Torque	
H4DO	See Torque Specifications in text for

	appropriate items under COMPONENT .
H6DO	See Torque Specifications in text for appropriate items under COMPONENT .
Fluid Specifications	See FLUIDS under MAINTENANCE.
Flywheel/Flex Plate (Drive Plate) Torque	
4 Cylinder	53 Ft. Lbs. (72 N.m)
6 Cylinder	60 Ft. Lbs. (81 N.m)
Fuel System	
Fuel Pressure Test Procedure	
H4DO	GENERAL DESCRIPTION
H6DO	GENERAL DESCRIPTION
Fuel Filter Location	Fuel filter is attached to Fuel Pump Unit located fuel tank.
Ignition	
Firing Order & Cylinder Identification	
H4DO	H4 ENGINES
H6DO	H6 ENGINE
Ignition Wires (Resistance)	
H4DO	Engine is equipped with Coil-On- Plug ignition.
H4SO	Engine is equipped with Coil-On- Plug ignition.
H6DO	Engine is equipped with Coil-On- Plug ignition.
Ignition Wires (Routing)	Engines are equipped with Coil-On- Plug ignition.
Spark Plug	
H4DO	SPARK PLUG SPARK PLUG
H6DO	SPARK PLUG
Starting	
Starter	
H4DO & H6DO	STARTER H4DO STARTER H6DO
Torque	37 Ft. Lbs. (50 N.m)
Wheel Alignment	

Adjustment Specifications	
Front	FRONT WHEEL ALIGNMENT
Rear	REAR WHEEL ALIGNMENT
Torque	
Front	See Torque Specifications in text in ADJUSTMENT .
Rear	See Torque Specifications in text under WHEEL ALIGNMENT .
Wheel & Tire	
Wheel Lug Nut Torque	88.5 Ft. Lbs. (120 N.m)

SPECIFICATION [Crankshaft]

Refer to "Cylinder Block" for removal and installation procedures of the crankshaft. <Ref. to REMOVAL , Cylinder Block.> <Ref. to INSTALLATION , Cylinder Block.>

SPECIFICATION [Piston]

Refer to "Cylinder Block" for removal and installation procedures of pistons. <Ref. to REMOVAL , Cylinder Block.> <Ref. to INSTALLATION , Cylinder Block.>

SPECIFICATION [Intake And Exhaust Valve]

Refer to "Cylinder Head" for removal and installation procedures of the intake and exhaust valves. <Ref. to REMOVAL , Cylinder Head.> <Ref. to INSTALLATION , Cylinder Head.>

SPECIFICATION [General Description]

Model		3.6 L	
Cylinder arrangement		Horizontally opposed, liquid cooled, 6-cylinder, 4-stroke gasoline engine	
Valve system mechanism		Chain driven, double overhead camshaft, 4-valve/cylinder	
Bore X Stroke	mm (in)	92 X 91 (3.622 X 3.583)	
Displacement	cm ³ (cu in)	3, 630 (221.5)	
Compression ratio		10.5	
Compression (350 r/min and fully open throttle)	kPa (kg/cm ² , psi)	Standard	1, 128 - 1, 471 (11.5 - 15.0, 164 - 213)
Number of piston rings		Pressure ring: 2, Oil ring: 1	
	Open	Max. retard	ATDC 10°
		Min.	BTDC 40°

Engine	Intake valve timing		advance			
			Close	Max. retard	ABDC 74°	
				Min. advance	ABDC 24°	
			Exhaust valve timing		Open	Max. retard
	Min. advance	BBDC 44°				
	Close	Max. retard			ATDC 44°	
		Min. advance			ATDC 4°	
	Valve clearance	mm (in)	Intake		0.20 ^{+0.04} _{-0.06} (0.0079 ^{+0.0016} _{-0.0024})	
			Exhaust		0.35±0.05 (0.0138±0.0020)	
	Idle speed [Select lever is in "P" or "N" range]	r/min	No load	Standard	700±100	
A/C ON			Standard	700 - 910±100		
Ignition order				1 → 6 → 3 → 2 → 5 → 4		
Ignition timing		BTDC/{r/min}	Standard	15°±8°/700		

Camshaft	Bending limit			mm (in)	0.020 (0.00079)	
	Cam lobe height	mm (in)	Intake	Standard	45.90 - 46.00 (1.8071 - 1.8110)	
			Exhaust	Standard	44.65 - 44.75 (1.7579 - 1.7618)	
	Cam base circle diameter	mm (in)	Intake	Standard	36.00 (1.4173)	
			Exhaust	Standard	36.00 (1.4173)	
	Journal O.D.	mm (in)	Front	Standard	37.946 - 37.963 (1.4939 - 1.4946)	
			Except for front	Standard	25.946 - 25.963 (1.0215 - 1.0222)	
	Oil clearance			mm (in)	Standard	0.037 - 0.072 (0.0015 - 0.0028)
	Thrust clearance	mm (in)	Intake	Standard	0.075 - 0.135 (0.0030 - 0.0053)	
			Exhaust	Standard	0.075 - 0.135 (0.0030 - 0.0053)	
Warping limit (Mating surface with cylinder block)				mm (in)	0.020 (0.0008)	

Cylinder head	Standard height			mm (in)	124±0.05 (4.88±0.0020)
	Seating angle between valve and valve seat				90°
Valve seat	Contacting width between valve and valve seat	mm (in)	Intake	Standard	1.0 (0.039)
			Exhaust	Standard	1.5 (0.059)
Valve guide	Clearance between the valve guide and valve stem	mm (in)	Intake	Standard	0.030 - 0.057 (0.0012 - 0.0022)
			Exhaust	Standard	0.040 - 0.067 (0.0016 - 0.0026)
	Inside diameter			mm (in)	5.500 - 5.512 (0.2165 - 0.2170)
	Valve stem outer diameters	mm (in)	Intake		5.455 - 5.470 (0.2148 - 0.2154)
			Exhaust		5.445 - 5.460 (0.2144 - 0.2150)
	Valve guide protrusion amount	Intake	mm (in)		8.6 - 9.0 (0.3386 - 0.3543)
Exhaust		mm (in)		10.7 - 11.1 (0.4213 - 0.4370)	
Valve	Head edge thickness	mm (in)	Intake	Standard	1.0 (0.039)
			Exhaust	Standard	1.2 (0.047)
	Overall length	mm (in)	Intake		103.5 (4.075)
Exhaust				103.2 (4.063)	
Valve spring	Free length	mm (in)	Intake		49.06 (1.9315)
			Exhaust		49.06 (1.9315)
	Tension/spring height	N (kgf, lb)/mm (in)	Set		182 - 210 (18.6 - 21.4, 40.9 - 47.2)/31.0 (1.220)
			Lift		316 - 350 (32.2 - 35.7, 71.0 - 78.7)/21.0 (0.827)
Squareness				2.5°, 2.1 mm (0.083 in)	
Valve lifter	Outer diameter		mm (in)	Standard	32.959 - 32.975 (1.2976 - 1.2982)
	Valve lifter mating surface inner diameter		mm (in)	Standard	32.994 - 33.016 (1.2990 - 1.2998)
	Valve lifter and valve lifter mating surface clearance		mm (in)	Standard	0.019 - 0.057 (0.0007 - 0.0022)

Cylinder block	Warping limit (Mating surface with cylinder head)		mm (in)	0.020 (0.0008)		
	Standard height		mm (in)	202 (7.95)		
	Cylindricity	mm (in)	Limit	0.030 (0.0012)		
	Out-of-roundness	mm (in)	Limit	0.010 (0.0004)		
	Clearance between cylinder and piston at 20°C (68°F)		mm (in)	Standard	-0.010 - 0.010 (-0.0004 - 0.0004)	
	Cylinder inner diameter boring limit (diameter)		mm (in)		92.515 (3.6717)	
Piston	Piston grade point		mm (in)	37.3 (1.4685)		
	Outer diameter	mm (in)	Standard	A	92.005 - 92.015 (3.6222 - 3.6226)	
				B	91.995 - 92.005 (3.6218 - 3.6222)	
			0.25 (0.0098) OS			92.245 - 92.265 (3.6317 - 3.6325)
			0.50 (0.0197) OS			92.495 - 92.515 (3.6415 - 3.6423)
Inner diameter of piston pin hole		mm (in)	Standard	22.000 - 22.006 (0.8661 - 0.8664)		
Piston pin	Degree of fit			Piston pin must be fitted into position with thumb at 20°C (68°F).		
	Outer diameter		mm (in)	Standard	21.994 - 22.000 (0.8659 - 0.8661)	
	Clearance between piston and piston pin		mm (in)	Standard	0.004 - 0.008 (0.0002 - 0.0003)	
Piston ring	Piston ring gap	mm (in)	Top ring	Standard	0.20 - 0.35 (0.0079 - 0.0138)	
			Second ring	Standard	0.40 - 0.50 (0.0157 - 0.0197)	
			Oil ring	Standard	0.20 - 0.50 (0.0079 - 0.0197)	
	Clearance between piston ring and piston ring groove	mm (in)	Top ring	Standard	0.040 - 0.080 (0.0016 - 0.0031)	
			Second ring	Standard	0.030 - 0.070 (0.0012 - 0.0028)	
			Oil ring	Standard	0.065 - 0.165 (0.0026 - 0.0065)	

Connecting rod and connecting rod bearing	Bend or twist per 100 mm (3.94 in) in length		mm (in)	Limit	0.10 (0.0039 in)	
	Thrust clearance		mm (in)	Standard	0.070 - 0.330 (0.0028 - 0.0130)	
	Oil clearance		mm (in)	Standard	0.016 - 0.043 (0.0006 - 0.0017)	
	Bearing size (thickness at center)	mm (in)	Standard	1.495 - 1.511 (0.0589 - 0.0595)		
			0.03 (0.0012) US	1.515 - 1.519 (0.0596 - 0.0598)		
0.05 (0.0020) US			1.525 - 1.529 (0.0600 - 0.0602)			
0.25 (0.0098) US			1.625 - 1.629 (0.0640 - 0.0641)			
Bushing of small end	Clearance between piston pin and bushing		mm (in)	Standard	0 - 0.022 (0 - 0.0009)	
	Bending limit			mm (in)	0.035 (0.0014)	
	Crank pin	Out-of-roundness	mm (in)	Limit	0.005 (0.0002)	
		Cylindricality	mm (in)	Limit	0.006 (0.0002)	
		Grinding limit	mm (in)		51.734 (2.0368)	
	Crank journal	Out-of-roundness	mm (in)	Limit	0.005 (0.0002)	
		Cylindricality	mm (in)	Limit	0.006 (0.0002)	
		Grinding limit	mm (in)		63.742 (2.5095)	
	Crank pin outer diameter	mm (in)	Standard	51.976 - 52.000 (2.0463 - 2.0472)		
			0.03 (0.0012) US	51.954 - 51.970 (2.0454 - 2.0461)		
			0.05 (0.0020) US	51.934 - 51.950 (2.0446 - 2.0453)		
			0.25 (0.0098) US	51.734 - 51.750 (2.0368 - 2.0374)		
				Standard	63.992 - 64.016 (2.5194 - 2.5203)	
0.03 (0.0012)				63.962 - 63.978 (2.5182)		

Crankshaft and crankshaft bearing	Crank journal outer diameter	mm (in)	#1, #3, #5, #7	US	- 2.5188)
				0.05 (0.0020) US	63.942 - 63.958 (2.5174 - 2.5180)
			0.25 (0.0098) US	63.742 - 63.758 (2.5095 - 2.5102)	
			Standard	63.992 - 64.016 (2.5194 - 2.5203)	
		#2, #4, #6	0.03 (0.0012) US	63.962 - 63.978 (2.5182 - 2.5188)	
			0.05 (0.0020) US	63.942 - 63.958 (2.5174 - 2.5180)	
			0.25 (0.0098) US	63.742 - 63.758 (2.5095 - 2.5102)	
			Standard	1.996 - 2.013 (0.0786 - 0.0793)	
	Bearing size (thickness at center)	#1, #3, #5	mm (in)	0.03 (0.0012) US	2.011 - 2.014 (0.0792 - 0.0793)
				0.05 (0.0020) US	2.021 - 2.024 (0.0796 - 0.0797)
				0.25 (0.0098) US	2.121 - 2.124 (0.0835 - 0.0836)
				Standard	1.996 - 2.013 (0.0786 - 0.0793)
		#2, #4, #6	mm (in)	0.03 (0.0012) US	2.015 - 2.018 (0.0793 - 0.0794)
				0.05 (0.0020) US	2.025 - 2.028 (0.0797 - 0.0798)
				0.25 (0.0098) US	2.125 - 2.128 (0.0837 - 0.0838)
				Standard	1.992 - 2.009 (0.0784 - 0.0791)
		#7	mm (in)	0.03 (0.0012) US	2.011 - 2.014 (0.0792 - 0.0793)
				0.05 (0.0020) US	2.021 - 2.024 (0.0796 - 0.0797)
				0.25 (0.0098) US	2.121 - 2.124 (0.0835 - 0.0836)
				Standard	0.030 - 0.115 (0.0012 - 0.0045)
Thrust clearance	mm (in)	Standard	0.030 - 0.115 (0.0012 - 0.0045)		
Oil clearance	mm (in)	Standard	0.010 - 0.030 (0.0004 - 0.0012)		



NOTE: OS: Oversize

US: Undersize

SPECIFICATION [Connecting Rod]

Refer to "Cylinder Block" for removal and installation procedures of connecting rod. <Ref. to REMOVAL , Cylinder Block.> <Ref. to INSTALLATION , Cylinder Block.>