

# ENGINE TECHNICAL DATA

BHE015001001W01

Item					Engine	
					13B-MSP	13B-MSP
					(Standard power)	(High power)
MECHANICAL						
Drive belt deflection (with pressure of 98 N {10 kgf, 22 lbf})	(N {kgf, lbf})	Generator	New	4.0-4.5 {0.16-0.17}		
			When adjusting	4.5-5.0 {0.18-0.19}		
			Deflection limit	6.0 {0.24} or more		
		A/C	New	3.0-3.8 {0.11-0.14}		
			When adjusting	3.3-4.0 {0.13-0.15}		
			Deflection limit	5.5 {0.21} or more		
Drive belt tension (when using the <b>SST</b> )	(N {kgf, lbf})	Generator	New	620-767 {63.3-78.2, 140-172}		
			When adjusting	519-666 {53.0-67.9, 117-149}		
			Deflection limit	344 {35.1, 77.3} or less		
		A/C	New	559-706 {57.1-71.9, 126-158}		
			When adjusting	519-617 {53.0-62.9, 117-138}		
			Tension limit	265 {27.1, 59.6} or less		
Compression pressure	(kPa {kgf/cm <sup>2</sup> , psi} [rpm])	Standard		830 {8.5, 120} [250 rpm]		
		Minimum		680 {6.9 , 98.6} [250 rpm]		
		Standard difference in chambers		Within 150 {1.5, 21.8}		
		Standard difference in rotors		Within 100 {1.0, 14.5}		
Pushing distance of the rear oil seal				Until it is attached to the seating face of stationary gear		
Idle speed		(rpm)	MT	750-850		
			AT	760-860		
		Electrical loads on <sup>*1</sup>	MT	Neutral	750-850	
			AT	N range	780-880	
				D range	760-860	
		R range		730-830		
		A/C on (standard)	MT	Neutral	760-860	
				N range	780-880	

Idle-up speed* <sup>1</sup>	(rpm)	A/C on (standard)	AT	D range	760-860
				R range	730-830
		A/C on (standard)+electrical loads on * <sup>1</sup>	MT	Neutral	790-890
			AT	N range	780-880
				D range	760-860
				R range	730-830
		A/C on (heavy load)	MT	Neutral	790-890
			AT	N range	800-900
				D range	780-880
R range	780-880				

**LUBRICATION SYSTEM**

Oil pressure (reference value) [oil temperature: 100°C {212°F}]		(kPa {kgf/cm <sup>2</sup> , psi} [rpm])	350 {3.57, 50.8} [3,000]
Oil capacity (approx. quantity)	Oil replacement	(L {US qt, Imp qt})	3.3 {3.5, 2.9}
	Oil and oil filter replacement	(L {US qt, Imp qt})	3.5 {3.7, 3.1}
	Engine overhaul	(L {US qt, Imp qt})	4.7 {5.0, 4.1}
	Total (dry engine)	(L {US qt, Imp qt})	With single oil cooler: 5.8 {6.1, 5.1} With twin oil cooler: 6.7 {7.1, 5.9}

**COOLING SYSTEM**

Coolant capacity		(L {US qt, Imp qt})	9.8 {10.4, 8.6}
Cooling system cap valve opening pressure		(kPa {kgf/cm <sup>2</sup> , psi})	73.3-103.3 {0.748-1.053, 10.63-14.98}
Thermostat	Initial-opening temperature		(°C {°F})
	Full-opening temperature		(°C {°F})
	Full-open amount		(mm {in})
Cooling fan motor current		[12 V] (A)	Cooling fan No.1: 8.9-11.9 Cooling fan No.2: 4.0-7.0

**FUEL SYSTEM**

Fuel line hold pressure			(kPa {kgf/cm <sup>2</sup> , psi})	375-450 {3.83-4.58, 54.4-65.2}	
Fuel injector	Leakage	Position: FP1, RP1	1 drop/110 min. or more		
		Position: FS, RS	1 drop/30 min. or more	1 drop/70 min. or more	
		Position: FP2, RP2	-	1 drop/70 min. or more	
	Resistance [20°C {68°F}]		(ohm)	13.8	

**CHARGING SYSTEM**

Battery	Electrolyte gravity			1.27-1.29 [20°C {68°F}]
	Back-up current* <sup>2</sup>			(mA)
	Test load chart (A)	Battery type (5-hour rate)	50D20L (40)	150
			75D26L (52)	195
	Slow charge (A)	Battery type (5-hour rate)	50D20L (40)	4.0-5.0
			75D26L (52)	5.0-6.0
	Quick charge (A/30 min.)	Battery type (5-hour rate)	50D20L (40)	25
			75D26L (52)	35

Generator	Standard voltage	(V)	Ignition switch ON	Terminal	B	B+
					P	Approx. 1.0 or less
					D	Approx. 0
			Idle [20°C {68°F}]	Terminal	B	13.0-15.0
					P	Approx. 3.0-8.0
					D	*5
	Generated current (Reference)	(A)	Terminal B current [Engine speed 1,000 rpm]		0*3-70	
			Terminal B current [Engine speed 2,000 rpm]		0*3-97	

**IGNITION SYSTEM**

Spark plug	Type	NGK	Australian specs.		Leading side: RE6A-L <sup>*4</sup> , RE7A-L Trailing side: RE9B-T
			European (L.H.D. U.K.) specs		Leading side: RE7A-L <sup>*4</sup> , RE8A-L Trailing side: RE9B-T
	Plug gap	Standard		(mm {in})	1.15-1.25 {0.046-0.049} <sup>*4</sup> 1.05-1.15 {0.041-0.045} <sup>*5</sup>
		Maximum		(mm {in})	Leading side: 1.5 {0.059} Trailing side: 1.4 {0.055}
	Resistance [25°C {77°F}]			(kilohm)	3.0-7.5
	Tightening torque			(N·m {kgf·cm, in·lbf})	12.8-17.7 {131-180, 114-156}
High-tension lead	Resistance [20°C {68°F}]			(kilohm)	1.0-4.0

**STARTING SYSTEM**

Starter	No load test	Voltage	(V)	11
		Current	(A)	MT: 90 or less, AT: 105 or less

**Recommended engine oil**

Item		Market		
		Europe		Except Europe
Engine oil	Grade	API SG, SH, SJ, SL ACEA A1 or A3	API SG, SH, SJ, SL	API SG, SH, SJ, SL ILSAC GF-2, GF-3
	Viscosity (SAE)	5W-30	10W-30	40, 30, 20, 20W-20, 10W-30, 10W-40, 10W-50, 20W-40, 15W-40, 20W-50, 15W-50, 5W-20, 5W-30
	Remarks	<b>Mazda genuine</b> <b>Dexelia oil e.g.</b>	-	-

\*1 : The headlight, rear window defroster, blower fan (2-step or more) are on.

\*2 : Back-up current is the constant flow of current present (for the audio unit, clock, PCM, etc.) when the ignition switch is off and with the ignition key removed.

\*3 : The lower limit must be more than 0 A.

\*4 : Hot type plug: Available only for customers who often drive their car at very low speed which causes the plugs to foul easily.

\*5 : Turn the following electrical loads on and verify that the voltage reading increases.

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- Headlights
- Blower motor
- Rear window defroster