

2005 Mazda MX-5 Miata

2005 ENGINE Technical Data - MX-5 Miata

2005 ENGINE

Technical Data - MX-5 Miata

ENGINE TECHNICAL DATA

Item		Specification		
Engine type		BP	BP WITH TC	
MECHANICAL				
Drive belt deflection (mm {in})/98 N {10 kgf, 22 lbf}	Generator	New	5.5—7.0 {0.22—0.27}	
		Used	6.0—7.5 {0.24—0.29}	
		Limit	8.0 {0.31}	
	P/S, A/C, P/S+A/C	New	7.0—8.0 {0.28—0.31}	
		Used	9.0—10.0 {0.36—0.39}	
		Limit	11.5 {0.45}	
Drive belt tension (N {kgf, lbf})	Generator	New	491—745 {50—76, 111—167}	
		Used	491—706 {50—72, 111—158}	
		Limit	343 {35, 77}	
	P/S, A/C, P/S+A/C	New	588—686 {59—70, 130—154}	
		Used	422—490 {43—50, 95—110}	
		Limit	245 {25, 55}	
Valve clearance [Engine cold] (mm {in})	IN	0.18—0.24 {0.007—0.009} (0.21±0.03 {0.008±0.0012})		
	EX	0.28—0.34 {0.011—0.013} (0.31±0.03 {0.012±0.0012})		
Compression pressure (kPa {kgf/cm ² , psi}) [rpm]	Standard	1,363 {13.9, 198} [300]	1,442 {14.7, 209} [300]	
	Minimum	1,009 {10.29 146} [300]		
	Maximum difference between cylinders	196 {2.0, 28}		
Oil control valve (OCV)	Resistance [20°C {68°F}] (ohms)	6.9—7.9	—	
Tensioner spring free length	(mm {in})	59.2 {2.33}		
Timing belt deflection	(mm {in})/98 N {10 kgf, 22 lbf}	8.5—11.5 {0.34—0.45}		
Pushing distance of the camshaft oil seal	(mm {in})	0—0.4 {0—0.015} (From the edge of the cylinder head)		
Pushing distance of the front oil seal	(mm {in})	0.5—1.0 {0.02—0.03} (From the edge of the oil pump body)		
Pushing distance of the rear oil seal	(mm {in})	0—0.5 {0—0.019} (From the edge of the rear cover)		
Idle speed	(rpm)	750—850 (800±50)		
Ignition timing	(BTDC/rpm)	6—18°/750—850 (6—18°/800±50)		
Idle-up speed* ¹	E/L ON* ²	750—850 (800±50)		
		800—900 {850±50}		
	A/C ON* ³	MT	950—1,050 (1,000±50)	
		AT	750—850 (800±50)	—
P/S ON* ⁴	750—850 (800±50)			
Idle mixture	HC concentration	Within regulation		
	CO concentration	Within regulation		

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Fig. 1: Engine Technical Data Chart (1 Of 3)
 Courtesy of MAZDA MOTORS CORP.

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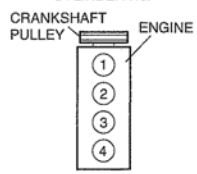
Item		Specification	
		BP	BP WITH TC
LUBRICATION SYSTEM			
Oil pressure (approx. quantity)		(kPa {kgf/cm ² , psi}) [3,000 rpm]	
		295—392 {3.0—4.0, 43—56}	
Oil capacity (approx. quantity)	Total (dry engine)	(L {US qt, Imp qt})	
		4.0 {4.2, 3.5}	
	Oil replacement	(L {US qt, Imp qt})	
		3.6 {3.8, 3.2}	
	Oil and oil filter replacement	(L {US qt, Imp qt})	
		3.8 {4.0, 3.3}	
Oil pump	Tip clearance (mm {in})	Standard	0.02—0.18 {0.0008—0.0070}
		Minimum	0.20 {0.0079}
	Body clearance (mm {in})	Standard	0.09—0.17 {0.0036—0.0066}
		Minimum	0.22 {0.0087}
	Side clearance (mm {in})	Standard	0.03—0.11 {0.0012—0.0043}
		Minimum	0.14 {0.0055}
Pressure spring	Pressing force at pressure spring height (N {kgf, lbf})	H: 35.37 mm {1.393 in}	88.1 {8.98, 19.8}
COOLING SYSTEM			
Coolant capacity (approx. quantity)		(L {US qt, Imp qt})	
		6.0 {6.3, 5.3}	6.2 {6.6, 5.5}
Radiator cap valve opening pressure		(kPa {kgf/cm ² , psi})	
		94—122 {0.95—1.25, 13.5—17.7}	
Thermostat	Initial-opening temperature	(°C {°F})	
		83.5—86.5 {183—187}	
	Full-opening temperature	(°C {°F})	
		100 {212}	
	Full-open lift	(mm {in})	
		8.5 {0.33} min.	
Cooling fan motor current [12 V]		(A)	4.50—6.49
			10
FUEL SYSTEM			
FP hold pressure		(kPa {kgf/cm ² , psi})	
		More than 343 {3.5, 50}	
FP maximum pressure		(kPa {kgf/cm ² , psi})	
		Less than 637 {6.5, 92}	
Fuel injector	Leakage	(drop/2 min)	
		Less than 1	
	Volume	(ml {cc, floz}/15 s)	
		66—82 {66—82, 2.3—2.7}	
	Resistance [20°C {68°F}]	(ohms)	
		12—13	
Pressure regulator	Fuel line pressure	(kPa {kgf/cm ² , psi})	
		370—420 {3.7—4.3, 53—61}	
	Fuel hold pressure	(kPa {kgf/cm ² , psi})	
		More than 250 {2.55, 36.3}	

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Fig. 2: Engine Technical Data Chart (2 Of 3)
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Item				Specification			
Engine type				BP	BP WITH TC		
CHARGING SYSTEM							
Battery	Electrolyte gravity [20 °C {68 °F}]			1.22—1.29			
	Back-up current*5 (mA)			Max. 20			
	Test load chart (A)	Battery type (5-h rate)	S46A24L (S) (32)	105			
	Slow charge (A)	Battery type (5-h rate)	S46A24L (S) (32)	3.0—4.0			
	Quick charge (A/30 min.)	Battery type (5-h rate)	S46A24L (S) (32)	20			
Generator	Rotor resistance (Between slip rings) (ohms) [20 °C {68 °F}]			2.67			
	Brush length		Standard (mm {in})	22 {0.87}			
			Minimum (mm {in})	6 {0.24}			
	Brush spring force		Standard (N {kgf, lbf})	3.43 {0.35, 0.77}			
			Minimum (N {kgf, lbf})	1.03 {0.105, 0.231}			
	Standard voltage (V)		Ignition switch ON	Terminal B	B+		
				Terminal P	Below 1		
			Idle [20 °C {68 °F}]	Terminal	Terminal D	Approx. 0	
					Terminal B	13—15	
	Generated current (Reference) (A)		Engine speed (rpm)	Terminal P	Approx. 3—8		
Terminal D				*			
Generated current (Reference) (A)		Engine speed (rpm)	Terminal B current	0*6—65			
			Terminal B current	0*6—77			
IGNITION SYSTEM							
Ignition coil	Resistance [20 °C {68 °F}]	Secondary coil (kilohms)		7—11			
Firing order			1—3—4—2 (Ignition occurs simultaneously in paired cylinders 1—4, 2—3)				
CYLINDER No.							
High-tension lead	Resistance (kilohms)		No.1 lead	5—13			
			No.2 lead	—			
			No.3 lead	1.5—4.0			
			No.4 lead	—			
Spark plug	Type		BKR5E-11*7, BKR6E-11*8 (NGK) K16PR-U11*7, K20PR-U11*8 (DENSO)	SK16PR-F8 (DENSO)*7 SK20PR-F8 (DENSO)*8			
	Plug gap (mm {in})		1.0—1.1 {0.040—0.043}	0.7—0.8 {0.028—0.031}			
	Resistance [20 °C {68 °F}] (kilohms)		3.0—7.5		3.0—7.5		
	Tightening torque (N·m {kgf·m, ft·lbf})		15—22 {1.5—2.3, 11—16}				
STARTING SYSTEM							
Starter	Commutator diameter		Standard (mm {in})	29.4 {1.16}			
			Minimum (mm {in})	28.8 {1.13}			
	Brush length		Standard (mm {in})	12.3 {0.48}			
			Minimum (mm {in})	7.0 {0.28}			
	Brush spring force		Standard (N {kgf, lbf})	15.05—20.35 {1.534—2.076, 3.375—4.567}			
			Minimum (N {kgf, lbf})	5.9 {0.6, 1.3}			
Pinion gap (mm {in})		0.5—2.0 {0.020—0.078}					




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Fig. 3: Engine Technical Data Chart (3 Of 3)
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ENGINE OIL SPECIFICATION

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Item	U.S.A. and CANADA	Except U.S.A. and CANADA
Engine oil grade	 (ILSAC)	  (ILSAC) API SL or ILSAC
Engine oil viscosity	5W-20	

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

- Headlights
- Blower motor
- Rear window defroster

+1 : Excludes temporary idle speed drop just after the loads (E/L, A/C, P/S) are turned on.

+2 : Head light, fan switch (above 1st) and cooling fan are turned on.

+3 : A/C switch and fan switch are turned on.

+4 : Steering wheel is fully turned.

+5 : Back-up current is the constant flow of current present (for such as audio unit, clock, PCM.) when the ignition switch is off and with the key removed.

+6 : Lower limit of current must be more than 0A.

+7 : Standard plug

+8 : Cold type plug

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Fig. 4: Engine Oil Specification
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