

Vehicle Technical Specifications



Vehicle: Mazda 6 Class: GTS

Vehicle Manufacturer: Mazda

Year and Model: (03-08) 6

This specifications form was developed by SCCA Pro Racing and will be used by the TECHNICAL MANAGER to establish technical compliance for vehicles competing in the SCCA PRO RACING WORLD CHALLENGE series. The TECHNICAL MANAGER can also use, but is not limited to also using the following items to check compliance: Electronic Parts Catalog (EPC), Technical Information System (TIS), and the FIA/ASN Homologation forms (or equivalent documentation).

The specifications within this form include all modifications that have been approved by SCCA Pro Racing specifically for the vehicle model(s) and year(s) listed on this page. The parts, specifications and assemblies used shall be those for the unmodified stock vehicle, those permitted within the Pro Racing Regulations (PRR) and/or within this VTS. If the stock parts, specifications and/or assemblies exceed the performance potential of those approved within this form, then the parts, specifications and/or assemblies used shall meet those listed within this form.

Refer to SCCA PRR and Appendix A. for rules regarding all vehicle specifications not specifically listed within the VTS.

The most current rules can be downloaded from the official website: www.world-challenge.com and look under the "Competitors" section for latest Technical Bulletins, Participant Bulletins, and Appendix A.

This Vehicle Technical Specification sheet is a permissive document. The exact configuration of any modification allowed within this VTS is subject to the approval of the TECHNICAL MANAGER.

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1. General Vehicle Description

1.A. Body Type:	<u>Sedan</u>	1.B. Engine Location:	<u>Front</u>
1.C. Drive Wheels:	<u>Front</u>	1.D. Wheelbase:	<u>2675 mm</u>
1.E. Induction Type:	<u>Naturally Aspirated</u>	1.F. Competition Weight:	<u>See Appendix A</u>
1.G. Weight Distribution:	<u>See Appendix A</u>		

1.H. Vehicle Miscellaneous:

Modifications permitted in Article 2.8 and Article 2.12 of the 2009 PRR are permitted on this vehicle.

2. Engine

2.A.1. OEM Engine Designation:	<u>MZR 2.3</u>	2.A.3. Number of Cylinders:	<u>4</u>
2.A.2. Maximum Displacement:	<u>2319 cc</u>	2.A.5. Rev Limit Method:	<u>ECU</u>
2.A.4. Rev Limit:	<u>See Appendix A</u>	2.A.7. Maximum Piston Stroke:	<u>94.5 mm</u>
2.A.6. Max. Compression Ratio:	<u>12.0:1</u>	2.A.8.a. Percentage Restriction:	<u>30, 35, 40, 45, 50 %</u>
2.A.8. Restrictors:		2.A.8.b. Hole Diameter:	<u>56.9, 54.8, 52.7, 50.4, 48.1 mm</u>
2.A.9. Cylinder Firing Order:	<u>1.3.4.2</u>	2.A.10. Direction of Engine Rotation:	<u>Clockwise</u>

2.B. Cylinder Block

2.B.1. Part Number:	<u>L309-10-300D</u>	2.B.3. Maximum Cylinder Bore:	<u>88.376 mm</u>
2.B.2. Cylinder Block Material:	<u>Aluminum</u>		

2.C. Cylinder Head

2.C.1. Part Number:	<u>L309-10-10XC</u>
2.C.2. Cylinder Head Material:	<u>Aluminum</u>

2.D. Valve System

2.D.1. Number of Valves Per Cylinder:	2.D.1.a. Intake:	<u>2</u>	2.D.1.b. Exhaust:	<u>2</u>
2.D.2. Maximum Valve Head Diameter:	2.D.2.a. Intake:	<u>35 mm</u>	2.D.2.b. Exhaust:	<u>30 mm</u>

2.E. Intake Port Dimensions

2.E.1. At Intake Manifold Face	2.E.1.a. Height:	<u>37 mm</u>	2.E.1.b. Width:	<u>50 mm</u>
2.E.2. Intake Port Work Allowed:	<u>Yes</u>	2.E.2.a. Depth From Face:	<u>25 mm</u>	

2.F. Exhaust Port Dimensions

2.F.1. At Exhaust Manifold Face:	2.F.1.a. Height:	<u>37.5 mm</u>	2.F.1.b. Width:	<u>37.5 mm</u>
2.F.2. Exhaust Port Work Allowed:	<u>Yes</u>	2.F.2.a. Depth From Face:	<u>25 mm</u>	

2.G. Piston and Connecting Rod

2.G.1. Connecting Rod Length:	2.G.1.a. Stock:	<u>155 mm</u>	2.G.1.b. Approved:	<u>155 mm</u>
2.G.2. Reciprocating Assembly Mass:	2.G.2.a. Stock:	<u>992 g</u>	2.G.2.b. Minimum:	<u>922.5 g</u>
2.G.3. Aftermarket Rods Allowed:	<u>Yes</u>	2.G.4. Aftermarket Pistons Allowed:	<u>Yes</u>	

2.H. Camshaft

2.H.1. Part Number:	<u></u>	or 2.H.2. SCCA Profile Number:	<u>6.1A</u>
2.H.3. Rocker Arm Ratio:	<u>1:1</u>	2.H.4. Valve Actuation:	<u>Direct Action</u>
2.H.5. Type of Cam Follower:	<u>Solid</u>		

2.I. Crankshaft

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2.1.1. Part Number: Mazdaspeed 0000-01-6407
2.1.2. Stock Mass: 15.0 kg 2.1.3. Minimum Mass: 15.0 kg

2.J. Flywheel

2.J.1. Stock Ring Gear Diameter: 288.93 mm

2.L. Intake Manifold

2.L.1. Part Number: Plenum: 0000-06-6103 Runner: 0000-06-6102
2.L.2. Stock Port at Cylinder Head Face: 2.L.2.a. Height: 36.3 mm 2.L.2.b. Width: 49.8 mm
2.L.3.a. Allow Port Match to Head: See Sample 2.L.3.b. Port Matching Depth: Not Applicable
2.L.4.a. Throttle Body Bore Dia.: 68 mm 2.L.4.b. Throttle Body Part Number: Mazdaspeed 0000-06-6101
2.L.4.c. Alt. Throttle Body Bore Dia.: 62 mm 2.L.4.b. Throttle Body Part Number: Honda/Acura 16400-PRB-A14
2.L.5. Number of Throttle Bodies: 1 2.L.6. Butterflies per Throttle Body: 1
2.L.7. Intake Manifold Material: Aluminum 2.L.8. Manifold Pieces: 2
2.L.9.a. Intermediate Port Matching Allowed: See Sample 2.L.9.b. Depth from Face: Not Applicable

2.M. Required Engine Seal Locations

2.M.1. Valve Cover Seal #1: Front middle two valve cover bolts.
2.M.2. Oil Pan Seal #2: Front passenger side.

2.N. Engine Miscellaneous:

Dry sump system is permitted with 10 lb. penalty. The dry-sump system is limited to three (3) stages consisting of one (1) pressure stage and a maximum of two (2) scavenge stages. If the OE-style pressure pump is used it shall count as the one permitted pressure stage. There may be a maximum of one (1) two-port scavenge stage, or a maximum of two (2) single-port scavenge stages, such that oil is not being scavenged from more than a maximum of two locations.

Vehicles built prior to 1/1/2009 using a dry sump system may use an electric water pump relocated from the stock position.

3. Drivetrain

3.A. Transmission

3.A.1. Number of Forward Speeds: 5 / 6 3.A.2. Manufacturer: Xtrac (P/N: 416-900-000B)
Mazdaspeed (P/N: 0000-02-6601)
3.A.3. Gear Ratios: 3.A.3.a. 1st: 3.17 3.A.3.b. 2nd: 2.071 3.A.3.c. 3rd: 1.555
3.A.3.d. 4th: 1.263 3.A.3.e. 5th: 1.077 3.A.3.f. 6th: N.A.
3.A.3. Gear Ratios: 3.A.3.a. 1st: 3.17 3.A.3.b. 2nd: 2.071 3.A.3.c. 3rd: 1.647
3.A.3.d. 4th: 1.35 3.A.3.e. 5th: 1.143 3.A.3.f. 6th: 1.0
3.A.4. Gear Shift Pattern: Sequential 3.A.5. Gear Engagement: Dog Ring

3.C. Final Drive

3.C.1. Axle Ratio: 3.764

3.D. Drivetrain Miscellaneous

Gear sets must be used complete. No mixing of ratios.
Axle (Part Number: 0000-02-6618) allowed.
Cage and race set (Part Number: 0000-02-6619) allowed.
Alternate diameter, 5.25" clutch allowed with Xtrac.

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Camshaft Profile

SCCA Profile Number: 6.1A
Vehicle: Mazda 6

Intake Lobe	Cam Lift (in)	Duration (°)	Open	Close	Area
	0.010	323.76	61.29 BTDC	82.46 ABDC	47.37
	0.020	303.20	51.54 BTDC	71.65 ABDC	47.22
	0.030	292.86	46.39 BTDC	66.47 ABDC	47.10
	0.040	284.98	42.47 BTDC	62.51 ABDC	46.96
	0.050	278.30	39.15 BTDC	59.15 ABDC	46.81
	0.060	272.34	36.18 BTDC	56.16 ABDC	46.65
	0.070	266.88	33.45 BTDC	53.44 ABDC	46.47
	0.080	261.78	30.90 BTDC	50.88 ABDC	46.28
	0.090	256.93	28.48 BTDC	48.44 ABDC	46.07
	0.100	252.26	26.15 BTDC	46.11 ABDC	45.85
	0.150	230.87	15.49 BTDC	35.38 ABDC	44.52
	0.200	210.86	5.52 BTDC	25.34 ABDC	42.77
	0.250	191.05	4.38 ATDC	15.43 ABDC	40.54
	0.300	170.55	14.64 ATDC	5.19 ABDC	37.72
	0.350	148.45	25.72 ATDC	5.84 BBDC	34.12
	0.400	123.41	38.25 ATDC	18.33 BBDC	29.42
	0.450	92.67	53.65 ATDC	33.68 BBDC	22.87
	0.500	45.09	77.48 ATDC	57.44 BBDC	11.50

Maximum Lift: **0.51492**

Exhaust Lobe	Cam Lift (in)	Duration (°)	Open	Close	Area
	0.010	316.32	76.16 BBDC	60.16 ATDC	41.21
	0.020	288.81	64.05 BBDC	44.75 ATDC	41.02
	0.030	276.70	58.28 BBDC	38.42 ATDC	40.87
	0.040	268.03	53.99 BBDC	34.04 ATDC	40.68
	0.050	260.86	50.44 BBDC	30.42 ATDC	40.56
	0.060	254.51	47.28 BBDC	27.23 ATDC	40.38
	0.070	248.72	44.40 BBDC	24.32 ATDC	40.19
	0.080	243.31	41.72 BBDC	21.60 ATDC	39.99
	0.090	238.22	39.17 BBDC	19.04 ATDC	39.77
	0.100	233.31	36.74 BBDC	16.57 ATDC	39.54
	0.150	210.95	25.63 BBDC	5.32 ATDC	38.15
	0.200	190.04	15.22 BBDC	5.18 BTDC	36.32
	0.250	169.38	4.90 BBDC	15.51 BTDC	34.00
	0.300	147.90	5.85 ABDC	26.26 BTDC	31.04
	0.350	124.49	17.56 ABDC	37.95 BTDC	26.88
	0.400	97.25	31.21 ABDC	51.54 BTDC	22.11
	0.450	60.64	49.55 ABDC	69.81 BTDC	14.30

Maximum Lift: **0.48223**

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Permitted Cam Tolerances

Camshafts used for this car must meet the specifications above within the following tolerances:

Duration at the seat	(From 0.020" lift to 0.030" lift)	+/- 6.5 degrees
Duration on flank	(From 0.100" lift to 0.100" before maximum lift)	+/- 4.0 degrees
Duration over nose	(From 0.100" before maximum lift up to maximum lift)	+/- 6.0 degrees
Maximum Lift	(This tolerance applies to maximum lift only)	+/- 0.005 in (0.127 mm)