

Vehicle Technical Specifications



Vehicle: Acura TSX (09 -) Class: GTS

Vehicle Manufacturer: Acura

Year and Model: (2009 -) TSX

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>2705 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>K24A</u>	2.A.3. Number of Cylinders:	<u>4</u>
2.A.2. Maximum Displacement:	<u>2408.5 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>99 mm</u>
2.A.6. Max. Compression Ratio:	<u>12.5:1</u>	2.A.8.a. Percentage Restriction:	<u>25, 30, 35, 40, 45 %</u>
2.A.8. Restrictors:		2.A.8.b. Hole Diameter:	<u>53.7, 51.9, 50.0, 48.0, 46.0 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>11000-RBB-000</u>	2.B.3. Maximum Cylinder Bore:	<u>88.0 mm</u>
2.B.2. Cylinder Block Material:	<u>Aluminum</u>		

2.C. Cylinder Head

2.C.1. Part Number:	<u>10003-RBB-E01</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>38 mm</u>	2.E.1.b. Width:	<u>52.3 mm</u>
2.E.2. Intake Port Work Allowed:	<u>No</u>	2.E.2.a. Depth From Face:	<u>Not Applicable</u>	

2.F. Exhaust Port Dimensions

2.F.1. At Exhaust Manifold Face:	2.F.1.a. Height:	<u>38 mm</u>	2.F.1.b. Width:	<u>43 mm</u>
2.F.2. Exhaust Port Work Allowed:	<u>No</u>	2.F.2.a. Depth From Face:	<u>Not Applicable</u>	

2.G. Piston and Connecting Rod

2.G.1. Connecting Rod Length:	2.G.1.a. Stock:	<u>152 mm</u>	2.G.1.b. Approved:	<u>152 mm</u>
2.G.2. Reciprocating Assembly Mass:	2.G.2.a. Stock:	<u>1069 g</u>	2.G.2.b. Minimum:	<u>890 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>TSX.1A</u>
2.H.3. Rocker Arm Ratio:	<u>1.73:1</u>	2.H.4. Valve Actuation:	<u>Rocker Arm</u>
2.H.5. Type of Cam Follower:	<u>Solid / Roller</u>		

2.I. Crankshaft

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2.I.1. Part Number: 13310-RBB-000
2.I.2. Stock Mass: 17.24 kg 2.I.3. Minimum Mass: 17.24 kg

2.J. Flywheel

2.J.1. Stock Ring Gear Diameter: 308 mm

2.L. Intake Manifold

2.L.1. Part Number: Upper Manifold: 17110-RBB-000 Lower Manifold: 17050-RAA-A00

2.L.2. Stock Port at Cylinder Head Face: 2.L.2.a. Height: 37 mm 2.L.2.b. Width: 48.5 mm

2.L.3.a. Allow Port Match to Head: No 2.L.3.b. Port Matching Depth: Not Applicable

2.L.4.a. Throttle Body Bore Dia.: 62 mm 2.L.4.b. Throttle Body Part Number: 16400-PRB-A11

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: Yes 2.L.9.b. Depth from Face: 25 mm

2.M. Required Engine Seal Locations

2.M.1. Valve Cover Seal #1: Front Passenger Side

2.M.2. Oil Pan Seal #2: Front Passenger Side for wire seal, Front Driver Side for electronic seal.

2.N. Engine Miscellaneous:

Port matching to a depth of 25 mm allowed on intake manifold at throttle body mating surface.
Adaptor plate allowed to mate throttle body to intake (Drawing Number: TSXAIA1)
3 mm of heat resistant material may be used between both intake mating surfaces to prevent heat transfer.

Note: Random OEM machine marks may be present within the intake runners. These marks appear to be from the removal of casting imperfections. No other uniform machine marks permitted beyond the allowed area on the VTS sheet within the intake assembly.

3. Drivetrain

3.A. Transmission

3.A.1. Number of Forward Speeds: 6 3.A.2. Manufacturer: Xtrac (P/N: 416-900-000B)

3.A.3. Gear Ratios Std: 3.A.3.a. 1st: 3.267 3.A.3.b. 2nd: 2.04 3.A.3.c. 3rd: 1.429

3.A.3.d. 4th: 1.073 3.A.3.e. 5th: 0.87 3.A.3.f. 6th: 0.686

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 is allowed.
Alternate diameter clutch disc, 5.25" allowed with Xtrac transmission.
Alternate rear engine mount and transmission mount allowed with Xtrac transmission.
Teams using the OE transmission may use a 30% (51.9mm) restrictor. If a team installs the approved Xtrac

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transmission, they shall not revert to using the OE transmission in the future.

4. Suspension

4.A. Suspension Type: 4.A.1. Front: Double A Arm 4.A.1. Rear: MultiLink

4.B. Suspension Miscellaneous

Conversion to hydraulic power steering is allowed using the following parts:
Hydraulic Power Steering Rack (Acura Part Number 53601-SEP-A53)
Front Sub Frame (Acura Part Number 50200-SEP-A03)
Mounting Brackets and Bushings (RealTime Part Numbers RTR901, RTR929, RTR902)

The following alternate suspension components are allowed:
Rear Camber Link (RealTime Part Number RTR904)
Rear Caster Link (RealTime Part Number RTR905)
Rear Toe Link (RealTime Part Number RTR906)
Rear Upper Control Arm (RealTime Part Number RTR908)
Rear Upper Control Arm Ball Joint Mount (Realtime Part Number RTR907)
Front Lower Control Arm (RealTime Part Number RTR930)
Front Upper Control Arm (RealTime Part Number RTR931)

Front Lower Ball Joint Stud Spacer (RealTime Part Number RTR916) must be used with RTR930 to comply with stock suspension geometry requirements

5. Chassis

5.A. See Technical Department for information

5.B. Chassis Miscellaneous

Rear strut towers may be braced via tubes welded to rear sub frame mounting points.

6. Body

6.A.1. Stock Coefficient of Drag: _____ 6.A.2. Total Frontal Area: _____

6.B. Body Overhang: 2.B.1. Front: _____ 2.B.2. Rear: _____

6.C. Stock Body Materials: Plastic front and rear fascias with steel body.

6.D. Maximum Body Width: 1878 mm

6.F. Body Miscellaneous:

Modified front fascia (RealTime Part Number RTR936) allowed.

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Camshaft Profile

SCCA Profile Number: TSX.1A
Vehicle: Acura TSX and RSX

Intake Lobe	Cam Lift (in)	Duration (°)	Open	Close	Area
High Speed Lobe	0.010	296.00	45.20 BTDC	70.80 ABDC	26.78
0.75 in Ball Follower	0.020	279.40	37.20 BTDC	62.20 ABDC	26.67
	0.030	268.10	31.80 BTDC	56.40 ABDC	26.54
	0.040	259.00	27.40 BTDC	51.60 ABDC	26.39
	0.050	251.00	23.60 BTDC	47.40 ABDC	26.22
	0.060	243.60	20.10 BTDC	43.50 ABDC	26.02
	0.070	236.70	16.90 BTDC	39.90 ABDC	25.80
	0.080	230.10	13.70 BTDC	36.40 ABDC	25.55
	0.090	223.70	10.70 BTDC	33.00 ABDC	25.28
	0.100	217.30	7.60 BTDC	29.60 ABDC	24.97
	0.150	185.00	7.80 ATDC	12.80 ABDC	22.94
	0.200	149.90	25.00 ATDC	5.10 BBDC	19.62
	0.250	107.80	46.00 ATDC	26.3 BBDC	14.93
	0.290	57.11	71.58 ATDC	51.30 BBDC	8.56
Maximum Lift:	0.30517				

Exhaust Lobe	Cam Lift (in)	Duration (°)	Open	Close	Area
High Speed Lobe	0.010	287.54	59.42 BBDC	48.11 ATDC	25.69
0.75 in Ball Follower	0.020	272.78	51.96 BBDC	40.82 ATDC	25.59
	0.030	262.77	46.96 BBDC	35.81 ATDC	25.46
	0.040	254.63	42.96 BBDC	31.67 ATDC	25.32
	0.050	247.38	39.42 BBDC	27.96 ATDC	25.16
	0.060	240.67	36.14 BBDC	24.53 ATDC	24.97
	0.070	234.30	33.05 BBDC	21.25 ATDC	24.77
	0.080	228.02	29.99 BBDC	18.03 ATDC	24.45
	0.090	221.75	26.97 BBDC	14.78 ATDC	24.26
	0.100	215.48	23.97 BBDC	11.51 ATDC	23.97
	0.150	182.68	8.32 BBDC	5.64 BTDC	21.91
	0.200	144.94	9.54 ABDC	25.52 BTDC	18.59
	0.250	93.71	33.91 ABDC	52.37 BTDC	12.78
Maximum Lift:	0.28389				

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Intake Lobe	Cam Lift (in)	Duration (°)	Open	Close	Area
Low Speed Lobe	0.010	260.56	31.35 BTDC	49.21 ABDC	22.24
0.75 in Ball Follower	0.020	246.07	23.75 BTDC	42.32 ABDC	22.12
	0.030	236.09	18.50 BTDC	37.58 ABDC	21.98
	0.040	227.94	14.17 BTDC	33.76 ABDC	21.83
	0.050	220.62	10.30 BTDC	30.32 ABDC	21.66
	0.060	213.96	6.76 BTDC	27.20 ABDC	21.47
	0.070	207.58	3.36 BTDC	24.22 ABDC	21.25
	0.080	201.39	0.07 BTDC	21.32 ABDC	21.01
	0.090	195.30	3.17 ATDC	18.47 ABDC	20.74
	0.100	189.24	6.39 ATDC	15.63 ABDC	20.44
	0.150	158.02	22.67 ATDC	0.69 ABDC	18.44
	0.200	122.54	40.75 ATDC	16.71 BBDC	15.27
	0.250	74.16	65.03 ATDC	40.81 BBDC	9.73

Maximum Lift: **0.27844**

Exhaust Lobe	Cam Lift (in)	Duration (°)	Open	Close	Area
Low Speed Lobe	0.010	254.55	46.84 BBDC	27.70 ATDC	18.64
0.75 in Ball Follower	0.020	237.54	38.49 BBDC	19.05 ATDC	18.51
	0.030	226.52	33.08 BBDC	13.44 ATDC	18.36
	0.040	217.63	28.71 BBDC	8.92 ATDC	18.20
	0.050	209.82	24.91 BBDC	4.91 ATDC	18.01
	0.060	202.56	21.37 BBDC	1.19 ATDC	17.80
	0.070	195.58	17.99 BBDC	2.41 BTDC	17.56
	0.080	188.78	14.71 BBDC	5.92 BTDC	17.30
	0.090	181.95	11.39 BBDC	9.44 BTDC	17.00
	0.100	175.08	8.08 BBDC	13.01 BTDC	16.66
	0.150	138.41	9.49 ABDC	32.10 BTDC	14.31
	0.200	91.39	31.95 ABDC	56.66 BTDC	10.11

Maximum Lift: **0.23805**

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)