

Vehicle Technical Specifications



Vehicle: BMW E46 325 Class: GTS

Vehicle Manufacturer: BMW

Year and Model: (99-05) E46 325i and 325Ci

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.

Vehicle Technical Specifications

Vehicle: BMW E46 325 Class: GTS



2.I. Crankshaft

2.I.1. Part Number: 11 21 1 705 848
2.I.2. Stock Mass: 21.32 kg 2.I.3. Minimum Mass: 21.32 kg

2.J. Flywheel

2.J.1. Stock Ring Gear Diameter: 290 mm

2.L. Intake Manifold

2.L.1. Part Number: 11 61 7 502 268
2.L.2. Stock Port at Cylinder Head Face: 2.L.2.a. Height: 23.75 mm 2.L.2.b. Width: 45.40 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.: 64 mm 2.L.4.b. Throttle Body Part Number: 13 54 1 748 105
2.L.5. Number of Throttle Bodies: 1 2.L.6. Butterflies per Throttle Body: 1
2.L.7. Intake Manifold Material: Composite 2.L.8. Manifold Pieces: 1
2.L.9.a. Intermediate Port Matching Allowed: N.A. 2.L.9.b. Depth from Face: Not Applicable

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.

2.N. Engine Miscellaneous:

Adaptor BMWAD1 or BMWAD2 allowed to mate M50 throttle body to M54 intake manifold.

Cars using dry sumps may use electric water pumps relocated from the stock position.

3. Drivetrain

3.A. Transmission

3.A.1. Number of Forward Speeds: 5 3.A.2. Manufacturer: BMW-ZF 23 00 1 434 485
3.A.3. Gear Ratios: 3.A.3.a. 1st: 4.21 3.A.3.b. 2nd: 2.49 3.A.3.c. 3rd: 1.66
3.A.3.d. 4th: 1.24 3.A.3.e. 5th: 1.00 3.A.3.f. 6th:
3.A.4. Gear Shift Pattern: H Pattern 3.A.5. Gear Engagement: Synchromesh

3.C. Final Drive

3.C.1. Axle Ratio: 3.91 or 4.10

3.D. Drivetrain Miscellaneous

Only the Type 188K rear differential may be used.

4. Suspension

4.A. Suspension Type: 4.A.1. Front: MacPherson Strut 4.A.1. Rear: MultiLink

4.B. Suspension Miscellaneous

Rear lower control arms may be constructed to drawing BMWRL1.

Rear upper control arms may be constructed to drawing BMWRL1 to replace BMW Part Number 33 32 1 094 887 & 888

The spindle and/or outer joint on the a-arm and/or strut may be moved in order to correct bump steer caused by changing the vehicle ride height. These components are not limited to the 25mm of movement that applies to the suspension pick-up points located on the chassis.

Vehicle Technical Specifications

Vehicle: BMW E46 325 Class: GTS



Camshaft Profile

SCCA Profile Number: E46325.1A
Vehicle: BMW M54 engine for E46 325i and 325Ci

Intake Lobe	Cam Lift (in)	Duration (°)	Open	Close	Area
	0.010	297.70	50.04 BTDC	67.65 ABDC	37.00
	0.020	281.56	41.46 BTDC	60.10 ABDC	36.88
	0.030	272.24	36.73 BTDC	55.50 ABDC	36.75
	0.040	264.81	32.98 BTDC	51.83 ABDC	36.61
	0.050	258.42	29.76 BTDC	48.66 ABDC	36.46
	0.060	252.58	26.85 BTDC	45.73 ABDC	36.29
	0.070	247.12	24.08 BTDC	43.05 ABDC	36.10
	0.080	241.97	21.51 BTDC	40.46 ABDC	35.90
	0.090	237.02	19.03 BTDC	37.99 ABDC	35.77
	0.100	232.20	16.62 BTDC	35.58 ABDC	35.44
	0.150	209.35	5.19 BTDC	24.17 ABDC	33.97
	0.200	186.83	6.09 ATDC	12.92 ABDC	31.94
	0.250	162.86	18.07 ATDC	0.93 ABDC	29.19
	0.300	135.84	31.65 ATDC	12.52 BBDC	25.42
	0.350	103.06	48.20 ATDC	28.74 BBDC	20.02
	0.400	53.14	73.25 ATDC	53.61 BBDC	10.55

Maximum Lift: **0.41781**

Exhaust Lobe	Cam Lift (in)	Duration (°)	Open	Close	Area
	0.010	294.62	67.28 BBDC	47.33 ATDC	35.82
	0.020	277.54	58.67 BBDC	38.87 ATDC	35.69
	0.030	267.88	53.85 BBDC	34.03 ATDC	35.56
	0.040	260.32	50.07 BBDC	30.25 ATDC	35.42
	0.050	253.83	46.82 BBDC	27.01 ATDC	35.26
	0.060	247.87	43.84 BBDC	24.03 ATDC	35.09
	0.070	242.38	41.11 BBDC	21.27 ATDC	34.90
	0.080	237.16	38.52 BBDC	18.65 ATDC	34.69
	0.090	232.16	36.01 BBDC	16.14 ATDC	34.48
	0.100	227.32	33.59 BBDC	13.73 ATDC	34.23
	0.150	204.32	22.11 BBDC	2.21 ATDC	32.75
	0.200	181.62	10.77 BBDC	9.15 BTDC	30.71
	0.250	157.64	1.21 ABDC	21.15 BTDC	27.96
	0.300	130.59	14.71 ABDC	34.69 BTDC	24.18
	0.350	97.12	31.44 ABDC	51.44 BTDC	18.67
	0.400	43.64	58.16 ABDC	78.20 BTDC	8.51

Maximum Lift: **0.41240**

Permitted Cam Tolerances

Date Issued: 2.24.2009 Version Number: 4 Version Date: 2.09.2010 Page: 5 of 6

Vehicle Technical Specifications

Vehicle: BMW E46 325 Class: GTS



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)