

BMW 600 Technical Data

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Technical Data

Engine

Type of engine	BMW flat-twin, 4 cycle unit
Engine cooling system	Air cooling with centrifugal blower
Valve actuation	Tappets, push rods and rockers
Valve arrangement	O. H. V. (overhead in cylinder-heads)
Camshaft drive	Spur gears
Material of cylinder barrels	Perlite casting
Material of cylinder heads	Light metal castings with shrunk-in valve seat inserts
Bore	74 mm (2.913")
Stroke	68 mm (2.677")
Cubic capacity	585 c.c. (35.7 cu. in.)
Compression space	approx. 52 c.c. (3.1 cu. in.) in each cylinder
Compression ratio	6,8:1
Compression pressure	128 to 156 lbs./sq. in. (measured with compression tester, the two spark plugs removed, with fully opened throttle valve and starting speed with fully charged battery, engine at normal operating temperatures).
Max. BHP	19.5 HP (acc. to SAE: 26 HP) at 4500 r. p. m.
Specific power output	33.5 HP/liter
Maximum torque	28.2 foot-pounds at 3000 r. p. m.
Mean piston speed	10.2 m/sec. (33.4 ft./sec.) at 4500 r. p. m.
Valve timing (with a valve clearance of 2 mm/.08") Tolerance $\pm 2.5^\circ$	Old settings: Int. valve opens 4° A. T. C. Int. valve closes 36° A. B. C. Exh. valve opens 36° B. B. C. Exh. valve closes 4° B. T. C. New settings: Int. valve opens 22° A. T. C. Int. valve closes 28° A. B. C. Exh. valve opens 41° B. B. C. Exh. valve closes 9° B. T. C.
Valve lash (cold) (Running clearance)	Intake 0,15 mm (0.006") Exhaust 0,20 mm (0.008")
Engine lubrication	
Lubrication system	Wet sump system pressure feed lubrication
Oil pump	Gear-type oil pump
Oil passages	Drilled holes in engine housing
Oil filter	Full-flow micronic filter with pressure relief valve
Opening pressure of relief valve	35.5 lbs./sq. in.
Lubricant	Branded HD oils for Otto-cycle engines, SAE 10 W 30 in summer and winter
Engine oil capacity	2 liters (.5 U. S. gals./ .44 Imp. gals.)
Oil consumption	2300 miles/U. S. gallon = 2800 miles/Imp. gallon approx.

Fuel system

Feeding system	By gravity
Fuel tank capacity	23 liters (6 U. S. gal. = 5 Imp. gal.) including 3 liters reserve.
Average fuel consumption (acc. to DIN 70030)	43 miles/U. S. gal. = 52 miles/Imp. gal.
Fuel tap	On fuel filter in engine compartment, with remote control from the driver's seat. The fuel tap must be shut as soon as the engine is stopped. The 1959 model features an automatic solenoid-controlled fuel tap.
Fuel filter	Water-trap inspection glass with micronic filter element
Carburetor air filter	Dry-type micronic filter
Carburetor	Zenith 28 KLP cross draft
Aspiration tube	28 mm (1.1") diam.

Carburetor adjustment

Carburetor type	Zenith 28 KL-P1	Zenith 28 KL-P2	Zenith 28 KL-P3
From Chassis Number onwards	supersedes previous types	125959	139690
Venturi	23 mm. diam.	23 mm. diam.	23 mm. diam.
Main jet HD	152.5	140	155
Air correction jet KD	240	240	220
Emulsion tube MR	No. 3, 29.5 mm	No. 3, 29.5 mm	No. 4, 34.5 mm
Emulsion tube outlet	5,2 ϕ H8	5,2 ϕ H8	5,2 ϕ H8
Emulsion tube bores	2 \times 1,5 ϕ and 2 \times 1 ϕ	2 \times 1,5 ϕ and 2 \times 1 ϕ	2 \times 1,5 ϕ and 2 \times 1 ϕ
Pilot jet g	50	50	50
Pilot jet air bleed LLD	150	160	160
Idle mixture adjusting (control) screw	approx. 1 turn opened	approx. 1 turn opened	approx. 1 turn opened
Pump disch. valve PV	short	long (16 mm.)	short
Pump jet GP	50	70	70
Pump discharge nozzle	8 (0,4 ϕ)	7 (0,65 ϕ)	7 (0,65 ϕ)
Pump inlet check valve	50	55	55
Float needle valve SV	22	22	22
Float weight + needle	15 grams	15 grams	15 grams
Fuel level	3 \pm 1 mm.	3 \pm 1 mm.	3 \pm 1 mm.
Orifice in throttle plate	without	1 ϕ (mm.)	1 ϕ
Idle tube	incorporated in emulsion tube	incorporated in emulsion tube	incorporated in emulsion tube
Carburetor body	without overflow groove	with overflow groove	without overflow groove
Carburetor body	bored to 5,7 ϕ for g (pilot jet)		

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Power Train and Chassis

Clutch

Make and type F & S (Fichtel & Sachs) K 5, single dry plate

Transmission

Design BMW design, transmission and differential combined in one compact unit. 4 synchronized speeds forward, one reverse.

Gearshift lever Stick-shift

Gear ratios

First	3.54 : 1	Overall ratio	19.4 : 1
Second	1.94 : 1	Overall ratio	10.5 : 1
Third	1.27 : 1	Overall ratio	6.9 : 1
Fourth	0.846 : 1	Overall ratio	4.9 : 1
Reverse	3.45 : 1	Overall ratio	18.7 : 1

Final drive Spiral bevel pinion and ring gear (Palloid)

Ratio 5.43 : 1 (7 and 38 teeth)

Differential 2 planetary differential pinions

Rear axle shafts Double rubber-coupled rear wheel drive shafts

Push feed By trailing arms

Lubricant for transmission Branded Engine Oil SAE 10 W 30, in summer and winter

Capacity 1.25 liters (2.6 U. S. pints/2.2 Imp. pints)

Rear suspension

Design Independent suspension by oscillating trailing arms, connected with rubber units requiring no maintenance

Springs Coil springs with hydraulic, telescopic shock absorbers. Spring travel 150 mm (5.9")

Front suspension

Design Independent suspension by oscillating leading arms in parallelogram arrangement, providing constant toe-in and camber settings.

Springs Coil springs with hydraulic, telescopic shock absorbers. Spring travel 120 mm (4.7")

Front wheel alignment

Toe-in 2-3 mm = approx. 30'

Camber 1°30'

Caster 16°

Max. lock angle
Inside wheel 33° } (track difference angle 13°
Outside wheel 20° } with wheels in full lock position)

Checking steering geometry: With inside wheel turned to 20° away from straight ahead position, outside wheel stands at 16°±1° (track difference angle approx. 4°).

King pin inclination 5°

Wheel turning radius 55 mm (2.16")

Lubricant Engine Oil SAE 10 W 30

Capacity of each front suspension oil reservoir 13 c. c.

Wheels and Tires

Wheels Steel disc with drop center rim 3.5 × 10

Tires (tyres) (five-ply) 5.20-10

Tire pressures: 1-2 occupants Front 1.1 atm (15 lbs./sq. in.)
Rear 1.6 atm (22 lbs./sq. in.)

3-4 occupants Front 1.2 atm (17 lbs./sq. in.)
Rear 1.8 atm (25 lbs./sq. in.)

Steering

Type Spindle type steering

Steering ratio 15.4 : 1

Track rod Single-piece track rod

Smallest turning radius (body contour radius) 8.30 meters (27 ft. approx.)

(chassis track radius) 8 meters (25 ft. approx.)

Brakes

Design ATE-BMW Internal shoe brake with hydraulic operation on all four wheels

Brake drum material Special iron casting

Brake drum diameter 180 (7.09")

Brake lining width 30 mm (1.18")

Brake lining thickness 4 mm (0.16")

Total friction lining area 440 sq. cm. (68.2 sq. in.)

Brake master cylinder Located under floor panel, or frame cross member. Fluid reservoir accessible from the interior of the vehicle.

Hand brake Operates the brakes on the rear wheels, mechanically. Ratchet locking type.

Chassis and Body

Design Sturdy welded tubular chassis frame with rugged cross members and mountings for power plant, pedal assembly, wheel suspensions and body (all-steel body).

Wheelbase 1700 mm (66.9")

Track (Tread), front 1220 mm (48")

Track (Tread), rear 1160 mm (45.7")

Ground clearance 165 mm (6.5")

Bulge (Bulk) clearance 150 mm (5.9")

Overall length 2900 mm (114.2")

Overall width 1400 mm (55.1")

Overall height 1375 mm (54")

Overhang front 512 mm (20.2")

Overhang rear 686 mm (27")

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Chassis weight	305 kg	(673 lbs.)
Chassis carrying capacity	595 kg	(1310 lbs.)
Lubrication system	Oil reservoir for each front suspension unit, rear suspension trailing arms are rubber-connected and need no maintenance	
Permissible axle load, front	400 kg	(882 lbs.)
Permissible axle load, rear	530 kg	(1170 lbs.)
Max. total weight	900 kg	(1983 lbs.)
Curb weight	565 kg	(1245 lbs.)
Permissible trailer weight, braked	500 kg	(1100 lbs.)
Permissible trailer weight, unbraked	300 kg	(662 lbs.)

Performance Data

Speed Limits

Mileage registered	Permissible speeds (mph) in the individual gears			
	First	Second	Third	Fourth
0-1800 miles (running-in speeds)	12.5	22	31	43
Over 1800 miles	15	28	43.5	62.5

Cruising and maximum speed 100 km/h (62 mph)

Climbing ability

(values obtained with 4 people)

First	over 33%
Second	" 18%
Third	" 9%
Fourth	" 6%

Retardation

(on dry concrete surface)

Braking efficiency 82% (reading taken from Siemens retardation measuring set) = 8.2 m/sec², with approx. 100 pounds pedal pressure, max. vehicle weight (approx. 1983 lbs.) and from approx. 31 mph.

Mean acceleration

Mean time to cover standing 500 m: 31 sec
 Mean time to cover standing 1000 m: 52 sec
 0-30 mph. 8.5 sec.
 0-38 mph. 12.0 sec.
 0-44 mph. 17.5 sec.
 0-50 mph. 24.3 sec.
 0-56 mph. 37.4 sec.

Electrical system

Dynamo starter	Bosch LA-BM 12/130 R (new designation AZ/DJ2 T 130/12/1800 + 0.6 R 3)
Brush tension on commutator	325 - 375 grams (11.5 - 13.2 oz.)
Dynamo rated output	130/190 watts, with voltage regulation

Dynamo (Generator)

Test specifications with cold generator:

Volts	12 V
Current	13-14 Amps
Nominal voltage speed rate	1300-1350 r.p.m.
Speed rate at output test,	cold 1600 r.p.m. warm 1800 r.p.m.

Voltage regulator

	Old type	New type
a) Cutout relay	RS/ZD 60/130/12/4	RS/ZD 60-130/12A4
Closing voltage	12.9-13.7 V	13.0-13.6 V
Cutout current	4-8.0 A	4-9 A

b) Regulator control voltage

Without load	14.4-15.6 V	14.5-15.5 V
With load	13.3-14.6 V	13.7-15.0 V
Adjusting load	130 W	130 W
Load amperage	12.5 Amps	13 Amps

Starter

Test data with cold generator (measured on test bench):

(With 24 Ah-battery)	Voltage V	Current A	Speed rate r.p.m.
Without load	11.8	9-14	830-900
With load	10.3	122-128	240-260
Lock test	8.6	244-254	-

Starter control Ignition-starter switch via relay

Switch relay cranking voltage 3.5-4.5 V

Switch relay cutout voltage 1.5-2.5 V

Battery 12 V/24 Amp/hours

Ignition Battery ignition

Contact breaker gap 0.4 mm (.016")

Contact breaker point tension 600-700 grams (21.2-24.7 oz.)

Dwell angle approx. 205°

Ignition timing Centrifugal advance unit

Initial ignition timing 10° before TDC = approx. 18 mm (.71") on flywheel periphery, with idling speed of 800-900 rpm (governor weights in initial position)

Advance unit starts to function at approx. 850 r.p.m.

Timing range of centrifugal governor approx. 22°

Maximum spark advance approx. 32° before TDC = approx. 58 mm (2.28") on flywheel periphery, at approximately 4500 r.p.m.

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Ignition coil test data (Bosch TJ 6/9)

Cranking distance of the spark	5 mm (0.2") (with half rated voltage and 200 sparks per minute)
Operating distance of the spark (ignition coil at normal operating temperatures)	8 mm (0.3") (with rated voltage and 4000 sparks per minute)
Maximum number of sparks	8000 per minute (with 6 mm (.24") spark distance)
Input	9 watts (on one coil)
Spark plugs	Bosch W 240 T 2 (long thread) Beru 240/14/3 u 3
Electrode gap	0,7 mm (.028")

The aforementioned electric test values have been obtained with Bosch test benches and devices.

Lighting system 12 V

Headlight Bilux bulb (asymmetric traffic [low] beam)	2 × 40/45 W	(for BMW 600, US. Model, see corresponding Instruction Manual)
Parking light in headlamp shell	2 × 2 W	
Turn signal & stop/tail light		
Tail light	2 × 5 W	
Turn signal & stop light	2 × 15 W	
Front turn signal light	2 × 15 W	
License plate light	1 × 10 W	
Interior strip bulb	1 × 5 W	
Indicators for high beam, turn signal, generator and two bulbs for speedometer dial illumination	5 × 2 W	

Fuse box (on front door, below the trimming panel for the spare wheel).

Protection of the various circuits by 6 fuses, which are all of a capacity of 8/15 Amps

With the fuses seen from **right to left**,

Fuse 1 protects:	Flasher and high beam of one headlamp.
Fuse 2 protects:	Flasher and high beam of the other headlamp and high beam indicator light.
Fuse 3 protects:	Low beam of both headlamps.
Fuse 4 protects:	Tail light right, rear number plate and speedometer dial lights.
Fuse 5 protects:	Tail light left and parking lights.
Fuse 6 protects:	Turn signal flasher, horn, stop light and windshield wiper.

Fits and Clearances

Engine

Crankshaft

Interference fit of the two main bearing inner races on journals	0,01–0,025 mm (.0004"–.001")
Interference fit of the outer ball bearing (timing gear case side) on journal	0,005–0,025 mm (.0002"–.001")
Tension of oil seal lip on crankshaft journal (52 ϕ)	approx. 2 mm (.08"). This tension may if necessary be reduced to 1,5 mm (0.06") by regrinding the seal ring mating crankshaft surface.
Max. allowable out-of-round on crankshaft journal outer ends, with crankshaft supported on main bearing seats	0,01 mm (.0004")
Max. allowable eccentricity of the two main bearing journals	0,2 mm (.008") (corresponds to approx. $\pm 10^\circ$ offset position of crankwebs on crankpin)
Max. allowable out-of-round with installed dynamo armature, measured on commutator	0,04 mm (.0016")
Flywheel clutch face runout (max.)	0,1 mm (.004")
Tension of oil seal lip on flywheel hub (28 ϕ)	approx. 1 mm (.04"). This tension may if necessary be reduced to 0,8 mm (.32") by regrinding the hub.
Crankpin diameter	36–0,020 mm (1.417"–1.416")

Connecting rod

Fit of connecting rod bearing on crankpin	Without noticeable clearance, but must turn freely.
Diametrical clearance of bearing rollers in roller cage	0,05–0,15 mm (.002"–.006")
End play of rollers in cage	0,10–0,20 mm (.004"–.008")
Side clearance of connecting rod on crankpin	0,07–0,09 mm (.0028"–.0035")
Running clearance between connecting rod bushing and piston pin	0,007–0,020 mm (.00028"–.0008")

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Connecting rod – Twist and Bend total difference (maximum). (Piston pin in small-end bushing and crankpin must be parallel within the specified total difference) 0,1 mm (0.004"), referred to piston pin length

Piston

Fit of pin in piston Slight snug fit (pin can easily be pushed in by hand, at 68° F.)

Piston pin position in piston 1,5 mm (.06") offset (small side is pressure loaded on working stroke)

Piston to bore clearance- Bottom of skirt, new limits (piston diameter and installing direction marked on piston head) 0,06–0,07 mm (.0024"–.0028")

Max. piston to bore clearance, worn limit not over 0,18 mm (.0071")

Piston ovality 0,15 ± 0,015 mm (.0065"–.0053")

Piston ring gaps (and clearances)

Piston ring 1 (hard chromed) 0,30 mm (.012") (chamfered inside edge towards piston head!)

Piston ring 2 0,20 mm (.008")

Oil ring 0,20 mm (.008")

Piston ring side clearances in piston grooves

Piston ring 1 (hard chromed) 0,04 mm (.0016")

Piston ring 2 0,03 mm (.0012")

Oil ring 0,02 mm (.008")

Cylinder

Cylinder bore diameter standard 74,00 mm (2.9134")
Diameter divergence from specified size marked on side of cylinder flange.

1st oversize 74,50 mm (2.9331")
2nd oversize 75,00 mm (2.9528")

Cylinder head

Intake valve seat insert

material Special grey cast iron

Shrink fit in cylinder head 0,20–0,22 mm (.0079"–.0087")

Exhaust valve seat insert

material Heat-resistant special steel

Shrink fit in cylinder head 0,16–0,18 mm (.0063"–.0071")

Cylinder head temperature for installation of new valve seat inserts 428°–518° F.

Valve seat angle on intake and exhaust valve seat insert 45°+30'

Outer correction angle 15°

Valve seat width, intake approx. 1,6–2,0 mm (.065"–.080")

Valve seat width, exhaust approx. 2,0–2,4 mm (.080"–.095")

Eventual inner correction angle 75°

Valve guides and Valves

Material (valve guide) Bronze

Cylinder head temperature required for pressing in the valve guides 428°–518° F.
(For guide replacement alone, approx. 266° F suffice)

Bore in valve guide, after shrinking-in, recoiling and reaming 7^{+0,005}_{-0,010} mm (.2752"–.2758")

Valve stem diameter 7^{-0,050}_{-0,065} mm (.2736"–.2730")

Valve stem to valve guide clearance (Int. and Exh.) 0,040–0,070 mm (.0016"–.0028")

Wear limit 0,15 mm (.0059")

Valve head diameter:

Intake valve 34 mm (1.339")

Exhaust valve 32 mm (1.260")

Minimum valve head edge thickness when regrinding 0,7 mm (.028")

Maximum valve face runout 0,03 mm (.0012")

Valve springs

inner outer

Wire diameter 2.50 mm (.098") 3.80 mm (.150")

Coil outer diameter 23,50 mm (.925") 33.30 mm (1.311")

Valve spring free length 33.25 mm (1.309") 42,30 mm (1.665")

Valve spring pressure (lbs.) and specified test length (inches) 10.4 lbs./1.142" 40.8 lbs./1.339"
27.6 lbs./ .876" 79.4 lbs./1.035"

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Rocker arms and Tappets

Rocker arm bushing to rocker shaft clearance 0,01–0,045 mm (.0004"–.0018")

Side play of rocker arms 0,01–0,02 mm (.0004"–.0008")

Valve tappet to tappet guide bushing clearance 0,02–0,04 mm (.0008"–.0016")

Camshaft

Interference fit of ball bearing inner race (20 ϕ) on camshaft (flywheel side) 0,005–0,025 mm (.0002"–.0010")

Interference fit of ball bearing inner race (25 ϕ) on camshaft (timing gear side) 0,005–0,02 mm (.0002"–.0008")

Interference fit of timing gear on camshaft 0,05–0,08 mm (.002"–.003")
(To press on the gear, heat same to approx. 176° F.)

Backlash between crankshaft gear and camshaft gear 0,01–0,03 mm (.0004"–.0012")
(replacement only by pairs, see M 7/13.)

Engine housing

Interference fit of bearing bushing (flywheel side) in engine housing 0,020–0,030 mm (0,0008"–0,0012")

Interference fit of main bearings (outer races 80 ϕ and 85 ϕ) in bearing bushing (grey cast iron bush) (light metal bushing) 0,001–0,0012" } Bushing installed in engine housing
0,0016–0,002" }

Interference fit of the outer ball bearing in gearcase cover 0,005–0,035 mm (.0002"–.0014")

Interference fit of camshaft front bearing (flywheel side) in engine housing 0,020–0,030 mm (0,0008"–0,0012")

Interference fit of camshaft rear bearing (timing gear side) in bearing bushing 0,005–0,015 mm (0,0002"–0,0006")

Torque Limits

Cylinder head bolts 28.9–32.5 foot-pounds

Flywheel retaining bolts 36.2–39.8 foot-pounds

Dynamo armature cone to crankshaft 36.2 foot-pounds

Centrifugal regulator cone to dynamo armature and to crankshaft, respectively 25.3 foot-pounds

Clutch

Clutch disc runout (max.) 0,5 mm (0.02") (supported on splined measuring arbour)

Clutch release bearing runout (max.), clutch fitted to flywheel 0,4 mm (0.015")

Distance between clutch release bearing and bell housing mating surface (measure b), new limits 4,5–5,5 mm (0.18"–0.22")

Transmission

Main drive shaft (Input shaft)

Interference fit of the two ball bearing inner races on main drive shaft 0,005–0,020 mm (.0002"–.0008")

Interference fit of third and fourth speed gear on main drive shaft 0,020–0,070 mm (.0008"–.0028")

Oil seal seat 22 ϕ may if necessary be reground to 21.5 ϕ

Max. allowable out-of-round of main drive shaft bearing seat and on oil seal seat, supported at the two ends (centering bores) 0,04 mm (.0016")

End play of main drive shaft in housing (the outer ball bearing of main drive shaft absorbs the axial thrust) 0,2 mm (.008") (Adjustment of end play see G 2/2.)

Pinion shaft (Output shaft)

Interference fit of ball bearing and double-row taper bearing 0,005–0,020 mm (.0002"–.0008")

Interference fit of the two clutch gears 0,01–0,035 mm (.0004"–.0014")

Fit of needle bearing bushings on pinion shaft (27 ϕ , 27,2 ϕ and 28 ϕ) 0,005 loose – 0,005 tight (.0002"–.0002")

End play of speed gears on pinion shaft

1st speed gear 0,07–0,30 mm (.0028"–.012")

2nd to 3rd speed gear 0,20–0,30 mm (.008"–.012")

4th speed gear 0,15–0,25 mm (.006"–.010")

Radial clearance of speed gears (needle bearings) 0,01–0,03 mm (.0004"–.0012")

Backlash of gear pairs 0,12–0,15 mm (.0048"–.006")

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Speedometer drive pinion

Pinion axle end to housing clearance	
on 10 mm ϕ	0,013–0,050 mm (.00052"–.002")
on 22 mm ϕ	0,020–0,065 mm (.0008"–.0026")

Transmission and Differential housing

Interference fit of ball bearing outer races (two bearings 6205 of main drive shaft, bearings 6305 and 3306 of pinion shaft and two bearings 6208 of differential assembly).

0,001–0,035 mm (.00004"–.0014")

Differential assembly

Fit of ball bearing inner races on hub of differential case and on side gear retainer (differential case cover)	0,005–0,025 mm loose (.0002"–.0010")
Interference fit of differential pinion shaft in differential case	0–0,012 mm tight (0–.00048")
Clearance between differential side gear shafts and differential case and differential cover, respectively	0,020–0,080 mm (.0008"–.0032")
Interference fit of shim (behind differential side gear) in differential case and differential cover	0,003–0,070 mm (.00012"–.0028")

Differential pinion bore to differential pinion shaft clearance

0,010–0,060 mm (.0004"–.0024")

Backlash between differential side gear and differential pinion

Minimum 0,1 mm (0,004")

Backlash between crown gear and pinion

0,10–0,15 mm (.004"–.006"), in accordance with gear tooth contact pattern.

End play of differential side gear with installed three-legged flange

0,1 mm (.004") (with differential side gear thrust against the differential pinion the teeth must mesh without any roughness. The axial thrust is absorbed by the thrust washer behind the three-legged flange).

Seal ring seat (40 ϕ) on three-legged flange (tension of oil seal lip)

The flange hub may, when found with scored surface, be reground to 39,5 mm (1.948") ϕ .

Torque limits for bolts

Castle nut for three-legged flange on differential side gear	87 foot-pounds
Drive gear (crown wheel) mounting bolts	25 foot-pounds

Rear suspension

Fit of ball bearing inner races on rear axle shaft

Inner ball bearing 0.01 to 0.03 mm (0.0004"–0.0012") loose

Outer ball bearing 0.01 to 0.03 mm (0.0004"–0.0012") loose

Fit of ball bearing outer race in trailing arm

Inner ball bearing 0.015 mm loose to 0.015 mm tight (0.0006" to 0.0006")

Outer ball bearing 0.015 mm loose to 0.015 mm tight (0.0006" to 0.0006")

Thicknesses of shims to correct position of wheel bearings

0.18–0.20–0.24 mm (0.0071–0.0079–0.0095")

Tension of sealing ring lip on rear axle shaft (30 mm ϕ)

0.8–1.4 mm (0.032"–0.056"). Can if necessary be reduced to 0.5 mm (0.02") by grinding the mating surface on rear axle shaft.

Tension of sealing ring lip on rear wheel drive flange (58 mm ϕ)

1.0–1.6 mm (0.04"–0.064"). Can if necessary be reduced to 0.7 mm (0.028") by grinding the mating surface on drive flange.

Torque limit for nuts of three-legged flange to rubber joint coupling bolts

32.5 foot-pounds

Torque limit for nuts SW 19 of trailing arm silent-bloc mounting bolts

47 foot-pounds

Torque limit for the mounting bolts SW 14 of brake support plate

21.7 foot-pounds

Rear coil spring

Wire diameter	11 mm (0.44")
Coil outer diameter	96 mm (3.78")
Coil spring free length	320 mm (12.6")
Coil spring pressure with a test length of 210 mm (8.2")	551 pounds

Rear shock absorber

Test stroke of test machine	25 mm (0.9843")	75 mm (2.9528")
R.P.M. number	100	100
Tensile force	121 pounds	275 pounds
Pressure force	22 pounds	44 pounds
Installing length from center of silent-bloc eye to dust shield top edge	287.5 mm (11.3")	

Max. length, extended	334 mm (12.7")
Min. length, compressed	225 mm (8.85")

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Torque limit for lower mounting nut SW 17 of rear shock absorber 25.3 foot-pounds

Rear wheel alignment

Camber 0°
Toe-in on each roadwheel 15' ± 15' = approx. 2.5 mm (0.1")

Front suspension

Fit of ball bearing inner races on oscillating arm
Inner ball bearing 0.015 mm loose to 0.010 mm tight (0.0006" to 0.0004")

Outer ball bearing 0.010 mm loose to 0.010 mm tight (0.0004" to 0.0004")

Fit of ball bearing outer races in wheel hub

Inner ball bearing 0.015 mm loose to 0.015 mm tight (0.0006" to 0.0006")

Outer ball bearing 0.015 mm loose to 0.015 mm tight (0.0006" to 0.0006")

Thicknesses of shims to correct position of wheel bearings 0.18–0.20–0.24 mm (0.0071–0.0079–0.0095")

Front coil spring

Wire diameter 8.5 mm (0.33")

Coil outer diameter 62.5 mm (2.46")

Coil spring free length 280 mm (11")

Coil spring pressure with a test length of 202 mm (7.95") 440 pounds

Front shock absorber

Test stroke of test machine 25 mm (0.9843") 75 mm (2.9528")

R.P.M. number 100 100

Tensile force 55 pounds 286 pounds

Pressure force 11 pounds 22 pounds

Installing length from center of silent-bloc to piston rod end 310 mm (12.2")

Max. length, extended 343 mm (13.5")

Min. length, compressed 260 mm (10.2")

Torque limit for hex. nut SW 24 of shock absorber mounting bolt 101 foot-pounds

Steering knuckle king pin

Interference fit of king pin bushings in front axle carrier 0.015 to 0.055 (0.0006" to 0.0022")

Bore of pressed-in bushings, co-axially reamed to measure (20 Ø F7) 20 +0.040 +0.020 mm (0.7882" to 0.7890")

Clearance of king pin to bushings 0.02 to 0.05 mm (0.0008" to 0.0020")

Axial clearance of front axle carrier to frame stub 0 to 0.05 mm (0 to 0.002")

Swing arm bearing

Bore for needle bearing bushings in front axle carrier 32 -0.025 -0.050 mm (1.2594"–1.2603")
New needle bearing bushings have an accurately machined outer diameter, so when pressing-in the bushings the prescribed interference fit is automatically obtained.

Thicknesses of shims to adjust axial clearance of swing arm 1.5–1.55–1.60–1.65–1.70 mm (0.0591–0.0611–0.0630–0.0650–0.0669")

Axial clearance of swing (oscillating) arm in front axle carrier 0.03 to 0.13 mm (0.0012" to 0.0052")

Brake plate stay

Interference fit of bearing bush in front axle carrier 0.015 to 0.055 mm (0.0006" to 0.0022")

Bore of pressed-in bushing, reamed to measure (22 Ø H7) 22 +0.020 mm (0.8661 to 0.8669)

Diameter of brake plate stay shaft 22 -0.020 -0.040 mm (0.8646" to 0.8654")

Clearance of brake plate stay shaft to the bushings 0.020 to 0.060 mm (0.0004" to 0.0024")

Control measure for depth of silent-bloc pressed in the eye of brake plate stay 64.5 ±0.2 mm (2.54" ±0.008")

Torque limit for brake plate to stay mounting nut SW 19 57.9 foot-pounds

BMW 600 Technical Data

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Roadwheels

Allowable unbalance of front wheel with tire fitted (red spot of tire to valve!) 10 grams measured on rim edge

Sizes of available balancing weights 20; 30; 40; 50 and 60 grams

Steering

Radial distance of directional flasher turn-off cam to switch finger of flasher Approx. 0.5 mm (0.02")

Fit of outer race of angular contact ball bearing in steering gearbox cover 0.02 mm loose to 0.02 mm tight (0.0008" to 0.0008")

Interference fit of inner race of angular contact ball bearing on steering worm 0 to 0.02 mm tight (zero to 0.0008")

Fit of outer race of angular contact ball bearing in eye of steering gear arm 0.015 mm loose to 0.005 mm tight (0.0006" to 0.0002")

Fit of inner race of angular contact ball bearing on bolt in steering gear arm eye 0 to 0.02 mm tight (zero to 0.0008")

Lateral fit of steering gear arm eye in yoke of steering worm sliding nut Without noticeable side clearance. If necessary, rectify front face of yoke bolt bushing slightly and tighten bolt nut securely

Interference fit of steering shaft bearing bushes in frame tube 0.015 to 0.08 mm (0.0006" to 0.0032")

Bore of pressed-in steering shaft bushings, co-axially reamed to measure (25 ϕ H7) 25 +0.020 mm (0.9843" to 0.9851")

Diameter of steering arm shaft 25 $\begin{matrix} -0.020 \\ -0.035 \end{matrix}$ mm (0.9835" to 0.9829")

Diametral clearance of steering arm shaft to bushings 0.02 to 0.055 mm (0.0008" to 0.0022")

Axial (side) clearance of steering arm shaft (arms fitted) in its bearings Without noticeable side play

Torque limit for steering wheel fastening nut 30 foot-pounds

Brakes

Interference fit of bearing bush in brake support plate 0.05 to 0.165 mm (0.002" to 0.0065")

Bore of pressed-in bearing bush, reamed to measure (30 ϕ H7) 30 +0.020 mm (1.1810" to 1.1818")

Clearance of bearing bush on swing arm 0.01 to 0.045 mm (0.0004" to 0.0018")

Brake drum diameter 180 mm (7.09")

Drum maximum boring limit 181 mm (7.125")
If necessary refinish to 2 repair diameters:
1st repair diameter 180.5 mm (7.1062")
2nd repair diameter 181.0 mm (7.125")

Allowable brake drum ovality Max. 0.10 mm (0.004")

Allowable brake drum taper Max. 0.08 mm (0.0032")

Master cylinder

Nominal diameter $3/8$ " 15.87 mm

Maximum allowable cylinder bore diameter 15.97 mm (0.628")

Minimum allowable piston diameter 15.74 mm (0.619")

Piston to cylinder clearance (maximum) 0.23 mm (0.0092")

Wheel cylinders, front

Nominal diameter $11/16$ " 17.46 mm

Maximum allowable cylinder bore diameter 17.56 mm (0.691")

Minimum allowable piston diameter 17.33 mm (0.682")

Piston to cylinder clearance (maximum) 0.23 mm (0.0092")

Wheel cylinders, rear

Nominal diameter $1/2$ " 12.70 mm

Maximum allowable cylinder bore diameter 12.80 mm (0.50")

Minimum allowable piston diameter 12.57 mm (0.493")

Piston to cylinder clearance (maximum) 0.23 mm (0.0092")