





Service-Information BMW Automobile



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All Service Informations are saved in german language, please find them in the german manual.

Tightening Torques		Nm		mkp	
		from	to	from	to
Engine					
11 11 ... Engine Block					
Main bearing cap bolts (Cleaned and lubricated)		60		6	
Struts/bracing shell	M 10	43		4,3	
	M 8	22		2,2	
Coolant drain plug in crankcase	M 12 x 1,5	30		3	
	M 16 x 1,5	40		4	
Main oil bore plugs		34		3,4	
11 12 ... Cylinder Head and Cover					
Cylinder head bolts (Replaced, washed and oiled)	M10 (Hexagon head bolts)	1st Torque			
		40	45	4	4,5
		15 min. setting time			
		2nd Torque			
		60	65	6	6,5
25 min. warmrunning time					
3rd Torque angle					
25° ± 5°					
Cylinder head bolts (Replaced, washed and oiled)	M12 (Torx head bolts)	1st Torque			
		30		3	0
		2nd Torque			
		90		9	0
3rd Torque					
		90		9	0
No setting time, no warm-running time					
When repairing, only use Torx head bolts					
Cylinder head cover	M 6	10		1	
	M 7	15		1,5	
Timing case to cylinder head	M 7	15		1,5	
	M 8	20		2	

Tightening Torques		Nm		mkp	
		from	to	from	to
Engine					
11 13 ... Oil pan					
Oil drain plug	SW 17 M 12 x 1,5	35		3,5	
	SW 19 M 22 x 1,5	60		6	
11 14 ... Housing covers					
Timing chain cover, upper and lower	M 6	10		1	
	M 8	22		2,2	
	M 10	47		4,7	
Front/ rear end cover to engine block	M 6	10		1	
	M 8	22		2,2	
11 22 ... Flywheel					
Flywheel to crankshaft		105		10,5	
11 23 ... Vibrations Damper					
Vibration damper hub to crankshaft	M 18 x 1,5	410		41	
V-belt pulley and harmonic balancer at hub	M 8 10.9	22		2,2	
11 24 ... Connecting rods and bearings					
Rod bolts (Replaced, cleaned and lubricated)		20	Initial Torque	2	
		70 °	Turn additional		
11 31 ... Camshaft					
Camshaft bearing cap	M 6	10		1	
	M 7	15		1,5	
	M 8	20		2	
Toothed-belt pulley to camshaft	M 10	65		6,5	
Chain sprocket to camshaft flange	M 6	10		1	

Tightening Torques		from Nm to	from mkp to
Engine			
	M 7	15	1,5
Chain tensioner screw plug	M 22 x 1,5	40	4
Cylinder for chain tensor plunger	M 26 x 1,5	50	5

Tightening Torques		Nm		mkp	
		from	to	from	to
Engine					
11 33 ... Rocker arms and bearings					
Lock screw in rocker arm	M 6	10		1	
11 35 ... Layshaft					
Toothed-belt pulley to layshaft	M 10	60		6	
11 41 ... Oilpump with filter screen and dribe					
Screw plug for pressure-relief valve		30		3	
Oil pump to engine block	M 8	22		2,2	
Oil pump cover	M 6	10		1	
Chain sprocket to oil pump	M10x1	25		2,5	
11 42 ... Oil filter and lines					
Disposable filter (cartridge)		hand tight (acc. to manuf. instr.)			
Full-flow filter element (cover)	M 8	22		2,2	
	M 10	33		3,3	
	M 12	33		3,3	
	Cover bolt	25		2,5	
Oil filter housing (line) to block	M20x1,5	40		4	
Oil lubrication line to bearing and camshaft	M 6	10		1	
Oil line to cylinder head for camshaft lubrication	M 8 x 1	10			
	M 5	5		0,5	
Oil radiator oil lines to oil filter housing	M 8	22			
Oil lines to turbocharger	M 8	22			
Oil lines from turbocharger to engine block	Banjo bolt M16x1,5	40		4	
Oil line to turbocharger	Banjo bolt	25		2,5	
	Union nut	30		3	

Tightening Torques		Nm from to	mkp from to
Engine			
11 51 ... Waterpump and drive			
Water pump to engine block	M 8	22	2,2
	M 6	10	1

Tightening Torques		Nm		mkp	
		from	to	from	to
Engine					
11 52 ... Fan					
Fan clutch to water pump (union nut)	left-hand thread	40		4	
11 53 ... Thermostat and connections					
Thermostat housingse	M 6	10		1	
Bleed screw	M 8	8		0,8	
11 61 ... Intake manifold					
Intake manifold to cylinder head	M 8	22		2,2	
	M 7	15		1,5	
	M 6	10		1	
11 62 ... Exhaust manifold					
Exhaust manifold to cylinder head (Apply Molykote HSC paste to exhaust nuts and boltd)	M 6	10		1	
	M 7	15		1,5	
Install upper row of studs locking fluid	M 8	22		2,2	

Tightening Torques		Nm		mkp	
		from	to	from	to
Engine					
11 66 ... Vacuum pump					
Vacuum pump to cylinder head	M 6	10		1	
11 78 Emissio-control, Labda oxygen sensor					
Lambda sensor		55		5,5	
11 81 Engine mounts					
Rubber bushing to front suspension subframe	M 8	22		2,2	
	M 10	42		4,2	
Rubber bushing to engine support bracket	M 8	22		2,2	
	M 10	42		4,2	
Engine support bracket to engine	M 8	22		2,2	
	M 10	42		4,2	

Tightening Torques	Nm		mkp	
	from	to	from	to
Engine Electrical System				
12 11 ... Distributor				
Distributor		22		2,2
Distributor rotor to adapter with DME		2,8		0,28
High tension distributor cap		4		0,4
12 12 ... Spark plugs				
Spark plugs (unlubricated engine M30 M 14 x 1,25)		30		3
12 13 ... Ignition coil				
Primary connections	Kl. 1	3		0,3
	Kl. 15	4,5		0,45
12 14 ... Electronic Switch or Control Units				
TCl control unit		2,5		0,25
Knock sensor		20		2
Speed and reference mark senders (all with DME)		7		0,7
12 31 ... Alternator with drive and mountings				
Wires to alternator	Kl. D+	5		0,5
	Kl. B+	13		1,3
Pulley		45		4,5
Pulley (poly-V-belt)		55		5,5
Rear bracket		3,5		0,35
Cylinder bolt for wiring bracker		3,5		0,35
12 41 ... Starter and Mounting Parts				
Starter		50		5
Support to starter	M5	5		0,5
Support to crankcase		47		4,7
Wires to starter	Terminal 30h (M5)	5		0,5
	Terminal 50 (M6)	6		0,6
	Terminal 30 (M8)	12		1,2

Tightening Torques	Nm		mkp	
	from	to	from	to
Engine Electrical System				
12 61 ... Oil pressure, oil temperature, oil level display				
Oil pressure switch (Lubricate threads)	40		4	
12 62 ... Coolant Temperature				
Coolant temperature sensor	20		2	
Temperature gage sender to cylinder head	19		1,9	
12 72 ... Senders for Control unit				
Lever to pedal value sender	9		0,9	
Pedal value sender to pedal console	5		0,5	

Tightening Torques	Nm		mkp	
	from	to	from	to
Fuel system				
13 11 ... Carburetor				
Carburetor to intake manifold	10		1	
Carburetor to insulationg flange	10		1	
Insulating flange to intake manifold	10		1	
Idling shutout valve max.	5		0,5	
Flow valve max.	28		2,8	
Throttle valve assembly to float housing max.	9		0,9	
Throttle valve neck to intake manifold	10		1	
Warm-up regulator to engine	23		2,3	
13 31 ... Fuel Pump with Drive and Pipes				
Fuel pump to engine	12		1,2	
13 62 ... Senders for Control Unit				
Temperature time switch	25		2,5	
Coolant temperature sensor	13		1,3	
Temperature switch	28		2,8	
Air temperature sensor	13		1,3	
13 64 ... Fuel Injectors				
Fuel injector to intake manifold	10		1	

Tightening Torques			Nm		mkp	
			from	to	from	to
Fuel Supply System						
16 11 ... Fuel Tank and Mounting Parts						
Fuel tank to body	Bolt	M 8	23		2,3	
	Nut	M 8	25		2,5	
		Retaining strap	8		0,8	
Connecting pipe to fuel tank			25			
Heat shield to fuel tank			8,5			
Drain plug on fuel tank			25		2,5	
16 12 ... Fuel supply						
Pump assembly to metal-bonded mount		with fuel injection	6,5		0,65	
Holder to fuel pump or fuel reservoir		with fuel injection	6,5		0,65	
El. Connections on fuel pump			2		0,2	
		M4 with fuel injection	1,2		0,12	
		M5 with fuel injection	1,6		0,16	
Plastic nut on cover for fuel pipes			2		0,2	
Hose clamps		10-16 mm ø	2		0,2	
16 14 ... Fuel pump						
Fuel level sender to fuel intake (with transfer pump in tank)			4,5		0,45	

Tightening Torques				Nm		mkp	
				from	to	from	to
Cooling System							
17 00 ... Coolant							
Coolant hoses		32 ÷ 48 mm ø		2,5		0,25	
Bleeder screw SW 8 on thermostat housing					8		0,8
Level switch SW 30 to coolant expansion tank					3		0,3
17 11 ... Radiator and Mounting Parts							
Radiator to body	Self-tapping screw	B 6,3		9		0,9	
	Screw	M 6		10		1	
Drain plug on radiator					2,5		0,25
Temperature switch to radiator					15		1,5
Expansion tank to body					9		0,9
17 21 ... Engine Oil Cooler							
Engine oil cooler to body					14		1,4
17 22 ... Oil Cooler Pipes							
Pipes to engine oil cooler					28		2,8
Holder to oil cooler pipes					6		0,6
Coupling nuts on transmission oil cooler (on radiator) and on transmission					20		2
Oil pipes to transmission	Coupling bolt	M 16 x 1,5		37		3,7	
Oil pipes to transmission oil cooler	Coupling bolt	M 14 x 1,5		27		2,7	
Adapters to transmission					37		3,7

Tightening Torques	Nm from to	mkp from to
Exhaust System		
18 00 ... Exhaust system, complete Exhaust pipe to exhaust manifold or turbocharger Spring-loaded version Tighten down nuts evenly until spring is against block then loosen 1,5 turns	10	1
Resonator clamp	15	1,5

Tightening Torques	Nm		mkp	
	from	to	from	to
Clutch				
21 11 ... Bellhousing				
Bellhousing to engine block	M 8	27	2,7	
	M 10	51	5,1	
	M 12	86	8,6	
21 21 ... Clutch and clutch disk				
Clutch to flywheel				
6-point bolt 8.8	M 8	24	2,4	
Cylinder bolt 8.8	M 8	24	2,4	
Cylinder bolt 10.9	M 8	34	3,4	
21 52 ... Clutch release mechanism (hydraulic)				
Union nuts for hydraulic lines		16	1,6	
Master cylinder to mounting brackets		22	2,2	
Master cylinder dowel screw		22	2,2	
Master cylinder to pedal assembly		10	1	
Slave cylinder to bellhousing/ transmission casing		22	2,2	

Tightening Torques		Nm		mkp	
		from	to	from	to
Manual Transmission					
23 00 ... Transmission Assembly					
Transmission to engine			25		2,5
Hexagon head bolts	M 10		49		4,9
	M 12		74		7,4
Torx bolts	M 8		22		2,2
	M 10		43		4,3
	M 12		72		7,2
Transmission to clutch housing		M 12	76		7,6
Reinforcement plate to transmission		M 8	23		2,3
Oil drain plug/ Filler plug			50		5
23 11 ... Case and Covers					
Transmission case rear/ front sections			22		2,2
Cover with guide tube / transmission case	M 8 x 22		18		1,8
	M 8 x 30		25		2,5
	M 6		10		1
Bearing cap/ sealing flange			10,5		1,05
Reverse gear shaft to transfer case			49		4,9
Reverse gear shaft holder to transfer case			25		2,5
Reverse gear shaft to case	M 8		25		2,5
	M 10		45		4,5
Plug on rear case section	M 20		60		6
	M 22		60		6
Sealing caps on rear case section		M 6	10		1

Tightening Torques		Nm		mkp	
		from	to	from	to
Manual Transmission					
23 21 ... Transmission Shafts					
Output flange (Collar nut installed with bolt cement)		1st 170 (17) Initial torque / 2nd loosen 3rd 120 (12) final torque			
23 71 ... Transmission Suspension					
Transmission mounts (rubber) to cross member	M 10	42		4,2	
Transmission cross member to body	M 10	42		4,2	
	M 8	21		2,1	
Mount bracket to transmission	M 8	21		2,1	

Tightening Torques	Nm		mkp	
	from	to	from	to
Gear Shift Console				
25 11 ... Shift console - Manual Transmission				
Front console to shift console (with sheet metal console)	25		2,5	
Shift console to transmission (with sheet metal console)	23		2,3	
Rear shift console to body	11		1,1	
Shift arm console to body	21	max.	2,1	
25 16 ... Shift console - Automatic Transmission				
Cable sleeve to holder - shift console and transmission	10		1	
Clamping screw on transmission	11		1,1	
Shift console to tunnel	7		0,7	
Switch to shift console	4,5		0,45	

Tightening Torques		Nm		mkp	
		from	to	from	to
Propeller Shaft					
26 11 ... Driveshaft assembly					
Front coupling to driveshaft and transmission	M 10/ 8,8	48		4,8	
	M 10/ 10,9	64		6,4	
Driveshaft U-joint to transmission	M 10	64		6,4	
Propeller shaft to drive flange (rear axle)					
Universal joint Squeeze nut	M 10	64		6,4	
	M 10	90		9	
Constant velocity joint Squeeze nut	M 8	32		3,2	
	M 8	43		4,3	
	M 10	64		6,4	
(Alter loosening connecting only use ribbed nuts with higher tightening torque					

Tightening Torques	Nm		mkp	
	from	to	from	to
Front Axle				
31 00 ... General Information For screwed connections, which can influence handling, it is also important to have the "car loaded down to normal position" in addition to the tightening torque. Car in normal position: Car with complete equipment for normal operation loaded down with: - 2 x 68 kg on the front seats (seats in center position) - 1 x 14 kg in trunk (middle) and full fuel tank				
31 10 ... Front Axle Suspension				
Front axle carrier to engine carrier	M 10 9.8	47	4,7	
	M 10 8.8	42	4,2	
	M 12	77	7,7	
31 12 ... Control Arms and Struts				
Leading strut to front axle carrier (tightened in normal position)		135	13,5	
Control arm (ball joint) to front axle carrier		85	8,5	
Control arm to spring strut		65	6,5	
Control arm bracket to engine carrier		42	4,2	
31 21 ... Wheel Bearings and Steering Knuckle				
Collar nut (bearing unit)		290	29	

Tightening Torques	Nm		mkp	
	from	to	from	to
Front Axle				
31 31..Spring Struts				
Spring strut mount to wheel house	22		2,2	
Shock absorber piston rod to mount	80		8	
M 14	64		6,4	
M 12	64		6,4	
M 12	44		4,4	
31 32 ... Shock Absorbers				
Screw-on ring for spring strut shock absorber	130		13	
31 35 ... Stabilizer				
Holder to front axle carrier or body	M 8	22	2,2	
Push rod (with pivot) to stabilizer		47	4,7	
Pivot to control arm		42	4,2	
31 50 ... Front Axle Final Drive				
Filler plug		53	5,3	
Drain plug		20	2	
Pinion/ ring gear to front axle final drive		22	2,2	
Bearing cap to front axle final drive		22	2,2	
31 52 ... Ring Gear/ Pinion with Bearings				
Ring gear bolt				1. Torque
(Always replace bolts. Clean tapped bores in ring gear. Use bolt cement. Source of supply: BMW parts)	50	55	5	
				2. Torque angle
				60 - 5°
31 60 ... Output Shaft				
Output shaft console to engine oil pan	22		2,2	

Tightening Torques		Nm		mkp	
		from	to	from	to
Steering and Wheel Alignment					
32 13 ... Power Steering Gear					
Lock nut of adjustment screw		27		2,7	
Oil drain plug		42		4,2	
Ring nut	with 2,5 mm dia.wire)	120		12	
	with 2,5 mm dia.wire)	150		15	
Valve housing to case		18		1,8	
Pressure piece cover		18		1,8	
Pipes (coupling bolts) to steering gear	M 10	10		1	
	M 12	20		2	
Pipe (pipe cringe) to steering gear		20		2	
32 21 ... Steering Arms					
Tie rod to rack		75		7,5	
Tie rod castle nut / self-locking nut		33	40	3,3	4
Important! toe rods with cotter pin holes may not be bolted on with self-locking nuts.					
Tie rod clamping bolt (Tightening in normal position)		24		2,4	
Steering drop arm to steering gear (torque value may be exceeded until position to lockplate is correct)	at least	140		14	
Steering guide arm to front axle carrier	M 10	42		4,2	
	M 12	85		8,5	

Tightening Torques	Nm		mkp	
	from	to	from	to
Steering and Wheel Alignment				
32 31 ... Steering Column				
Universal joint/ coupling to steering gear/ steering spindle	22		2,2	
Steering wheel control console to dashboard carrier and pedal assembly console	22	M 8	2,2	
Clamp/ shackle for outer steering tube	10		1	
Steering column to dashboard	22		2,2	
Steering column to arm	14		1,4	
32 33 ... Steering Whell				
Steering wheel to steering spindle	80	nut	8	
	63	bolt	6,3	
32 41..Pump and Oil supply				
Power steering pump console to crankcase (use spacers)	22		2,2	
Hose connections on power steering pump and steering gear	35	M 14	3,5	
	40	M 16	4	
Hose connections on power flow regulator	40		4	

Tightening Torques		Nm		mkp	
		from	to	from	to
Final Drive and Rear Suspension					
33 11 ... Differential housing with cover					
Housing cover	M 10/ 8.8	45		4,5	
Side covers (in continuous sockets, coat bolts with Loctite 270)	M 8	22		2,2	
Filler and drain plugs		70		7	
33 12 ... Ring and pinion assembly with bearings					
Ring gear to differential housing	M 10	1. Initial torque 50 + 5 / 2. Turn additional 60°-5°			
(Always use new bolts for assembly. Bolts clean with no oil or grease, secure with Loctite 270)	M 12 x 1,5	1. Initial torque 100 + 10/ 2. Turn additional 50°+5°			
	M 14 x 1,5	1. Initial torque 100 + 10/ 2. Turn additional 30°+4°			
Drive flange to crown wheel					
- Side cover with 4 bolts, min.	M 20	175		17,5	
- Side cover with 6 bolts, min.	M 20	185		18,5	
- Side cover with 8 bolts, min..	M22	210		21	
33 14 ... Limited-slip differential with bearings					
Cover to differential housing	M 8	33		3,3	
(Secure bolts with Loctite 270)	M 10	47		4,7	
33 17 ... Differential mountings					
Differential to subframe		123		12,3	
Differential to swing mounting, swing mounting to floorpan		90		9	
Differential cover rubber bushing to floorpan		87		8,7	

Tightening Torques	Nm		mkp	
	from	to	from	to
Final Drive and Rear Suspension				
33 21 ... Axle Shafts				
Axle shaft to differential and drive flange Cylinder bolt	M 10	83	8,3	
	M 10 with locking teeth	96	9,6	
	M 10	83	8,3	
	Torx - bolt M 8 with ripped teeth	64		
	Torx - bolt M 10 with ripped teeth	96	9,6	
Drive flange to axle shaft (collar nut lightly lubricated)		200	20	
33 32 ... Rear Suspension				
Trailing arm to rear subframe		67	6,7	
(Tighten in normal position)	10.9	77	7,7	
Angle brace to body		28	2,8	
Radius rod to floorpan	M 8/ 8.8	30	3	
Secondary control arm to trailing arm and rear subframe (Tighten in normal position)		127	12,7	
33 33..Rear subframe				
Rubber bushings to rear subframe		95	9,5	
Rear subframe with rubber bushing to floorpan	M 14 x 1,5	140	14	
33 52 ... Shock absorbers				
Shock absorber to trailing arm, support arm/ control arm (Tighten in normal position)		87	8,7	
	10,9 bolt	130	13	
Shock absorber to rubber bushing		15	1,5	
Shock absorber with rubber bushing to body	M 8	22	2,2	
33 55 ... Anti-roll bar				
Anti-roll bar to trailing arm		22	2,2	

Tightening Torques		Nm		mkp	
		from	to	from	to
Brakes					
34 00 ... Testing and Bleeding Brakes					
Bleeder valve	wrench size 7	5		0,5	
	wrench size 9	6		0,6	
34 11 ... Front Wheel brakes					
Brake disc to wheel hub		16		1,6	
Brake caliper to steering knuckle (bolts oiled lightly)		123		12,3	
Guide bolt	wrench size 7 mm	25	30	2,5	3
Bolts to guidepin (always replace)		35		3,5	
34 21 ... Rear Wheel brakes					
Brake drum/ disc to wheel hub		16		1,6	
Wheel cylinder to brake backplate		10			
Brake backplate to trailing arm		65		1	
Brake caliper to trailing arm/ brake backplate		67		6,7	
Guide bolt	wrench size 7	25	30	2,5	3
34 31 ... Master Cylinder					
Master cylinder to vacuum booster		24		2,4	
34 32 ... Brake Lines					
Brake hose couplings	M 10 x 1	19		1,9	
	M 12 x 1	17		1,7	
34 33 ... Brake Booster					
Brake booster to pedal assembly console		22		2,2	

Tightening Torques	Nm		mkp	
	from	to	from	to
Pedals				
35 11 ... Pedal Assembly Console				
Cosole to body	22		2,2	
Nut on shaft	27		2,7	
35 21 ... Brake Pedal and Linkage				
Piston rod lock nut	27		2,7	
Nut on shaft	27		2,7	
Pull rod Nut for pivot	27		2,7	
Left and right reversing lever Nut on shaft bolt	27		2,7	
Support to console Brake booster	22		2,2	
Support to console Reversing lever	27		2,7	
35 31 ... Clutch Pedal and Linkage				
Spring lock nut	6		0,6	
Piston rod shaft bolt	22		2,2	
Master cylinder to pedal assembly console	9		0,9	
Spring-pedal shaft bolt	22		2,2	
Clutch pedal Nut on eccentric bolt	22		2,2	
35 41 ... Accelerator Pedal and Linkage				
Full throttle stop	10		1	

Tightening Torques	Nm	mkp
	from to	from to
Wheel rims and Tires		
36 10 ... Wheels Wheel bolts	90 110	9 11
36 11 ... Wheel Rims Blade rim to base rim (bolts coated with blue Loctite 243)	9	0,9

Tightening Torques	Nm	mkp
	from to	from to
Integrated Suspension Systems		
37 12 ... Ride Level Control System		
Pressure pipe connections (electrical system)	14	1,4
Regulating arm to stabilizer	9	0,9
37 21 ... Pressure Reservoir		
Pressure reservoir to body	9	0,9

Tightening Torques		Nm		mkp	
		from	to	from	to
General Electrical System					
61 13 ... Plug Connections					
Door plug connection to body		5		0,5	
Fuse box Screws for safty fuse	M 6	5		0,5	
Ground or positive connection points		5		0,5	
61 31 ... Switches					
Temperature switch	91°C	14		1,4	
Oil pressure switch		40		4	
Reversing lamp switch		20		2	
Transmission switch on instrument panel		4,5		0,45	
61 61 ... Windshield Wipers					
Motor crank to wiper motor	M 8	27		2,7	

Tightening Torques	Nm from to	mkp from to
Instruments		
62 16 ... Screws for speedometer sender Srews for speedometer sender	6,6 8,4	0,66 0,84

Tightening Torques		Nm		mkp	
		from	to	from	to
Heater and Air Conditioner					
64 12 ... Additional Heater with Controls					
Additional heater to body floor		4,5		0,45	
Oil control plug and oil filler plug		16		1,6	
Mounting screws		M 5	6	0,6	
		M 6	10	1	
		M 8	24	2,4	
		M 10	48	4,8	
Screw for filter cover		0,9		0,09	
64 51 ... Air conditioner (Evaporator), Control Units					
High /medium pressure pressostat		25		2,5	
Low pressure pressostat		19		1,9	
Three-way safety switch		25		2,5	
64 52 ... Compressor					
Compressor to engine		22		2,2	
Solenoid clutch spring plate		20		2	
64 53 ... Condensor and Drier with Pipes					
Pipe connections		5/8"	20	2	
		3/4"	39	3,9	
		7/8"	42	4,2	
		11/16"	48	4,8	

Tightening Torques	Nm from to	mkp from to
Equipment and Accessories for Body		
72 11 ... Seat Belts		
Seat belt to body or seat	48	4,8
Belt height control bolts	24	2,4