

31 21 Wheel Bearings and Steering Knuckle

	Type	Thread	Tightening specification	Measure
1AZ Collar nut (bearing unit)	E24 / from 5.82, E28, E30, E31, E32, E34, E36, E38, E46, E85, E86 E67			290 Nm 420 Nm
2AZ Drive flange to axle shaft	E30 / Four Wheel Drive, E34 / Four Wheel Drive		Replace collar nut	250 Nm
	E46 / Four Wheel Drive, E53, E60 / Four Wheel Drive, E61 / Four Wheel Drive, E67, E83		Replace collar nut	420 Nm
3AZ Castle nut - adjustment specification	E12, E21, E23, E24 / from 5.82		Observe repair instruction.	
4AZ Steering knuckle to spring strut	E36	M12x20	Replace screws	107 Nm
	E36	Fitting screw M12x42		107 Nm
	E39	Screw with flange M12x1.5x95		81 Nm
	E38, E46, E85, E86	M12	Replace screw	81 Nm
5AZ Bearing unit on swivel bearing	E39, E52, E60 / REAR END, E61 / REAR END, E63, E64, E65, E66		Replace screws	110 Nm

	E36		59 Nm
(wrench surface on ball head must be parallel to absorber axle)			
	E30 / Four Wheel Drive		47 Nm
	E52		65 Nm
	E53		100 Nm
8AZ Stabilizer link (with bracket) on stabilizer	E30 / Four Wheel Drive		47 Nm
9AZ Bracket for stabilizer link on control arm	E30, E36		42 Nm
10AZ Bracket for stabilizer link on swivel bearing	E39, E60, E61, E63, E64		59 Nm
11AZ Stabilizer link on stabilizer/bracket	E39, E60, E61, E63, E64	Replace nut	65 Nm
12AZ Stabilizer link to stabilizer	E65, E66, E67	Replace nut	58 Nm
13AZ Stabilizer link to spring strut	E65, E66, E67	Replace nut	
		Jointing torque	20 Nm
		Torque angle	90 °

31 35 Stabilizer Bar

	Type	Thread	Tightening specification	Measure
1AZ Retaining bar for stabilizer to front axle carrier / body	E21			50 Nm
	E12, E24 / until 5.82			45 Nm
	E36, E46, E39, E52, E85, E86	M8	tighten in normal position	21 Nm
	E65, E66, E67		Replace nuts	28 Nm
	E60, E61, E63, E64		Replace nuts	30.5 Nm
	E83	M10 10.9		56 Nm
2AZ Stabilizer to control arm	E21		tighten in normal position	130 Nm
3AZ Stabilizer link to control arm and stabilizer	E23	M8	tighten in normal position	25 Nm
	E23	M10	tighten in normal position	50 Nm
4AZ Stabilizer link to control arm	E34 / Four Wheel Drive			22 Nm
5AZ Stabilizer link to stabilizer	E34 / Four Wheel Drive			78 Nm
	E38, E46, E83			65 Nm
	E85, E86	M10		58 Nm
6AZ Stabilizer link on spring strut shock absorber and stabilizer	E28	(yellow chrome-plated)		30 Nm
	E24 / from 5.82, E28 / from 5.82	(white chrome-plated)		33 Nm
	E24 / from 5.82, E28, E31, E32, E34	(yellow)	(wrench surface on ball head must be parallel to absorber axle)	59 Nm
7AZ Stabilizer link on spring strut shock absorber and stabilizer				

31 31 Spring Struts

	Type	Thread	Tightening specification	Measure
1AZ Spring strut support bearing / adapter for rough road package to wheel arch / adapter for rough road package	E60, E61, E63, E64, E65, E66, E67, E83, E85, E86	Flanged hexagon nut	Replace nuts	34 Nm
	E28, E30, E31, E32, E34, E36 / S50 / S52, E38, E39	Hexagon flange nut dia. 18 mm	Replace nuts	24 Nm
	E36 / S50 / S52	Flanged hexagon nut dia. 21 mm	Replace nuts and secure with Loctite 242	27 Nm
	E32, E34, E36, E46, E53	Flanged hexagon nut dia. 21 mm	Replace nuts	34 Nm
	E52	Hexagon flange nut dia. 18 mm	Replace nuts	28 Nm
2AZ Shock absorber piston rod on thrust bearing	E12, E21, E23, E24 / until 5.82			80 Nm
	E24 / from 5.82, E30, E31, E32, E34	M12 (with external hexagon piston rod)		64 Nm
	E24 / from 5.82, E30, E31, E32, E34	M12 (with internal hexagon piston rod)		44 Nm

	E36, E38, E39, E46, E52, E53, E60, E61, E63, E64, E65, E66, E67, E83, E85, E86	Replace nut	64 Nm
3AZ Spring strut shock absorber to pivot mount	E34 / Four Wheel Drive		80 Nm
	E53	Replace screw & nut	250 Nm
	E52, E60 / except AWD, E61 / except AWD, E63, E64, E65, E66	Replace screw & nut	81 Nm
	E60 / Four Wheel Drive, E61 / Four Wheel Drive, E67, E83	Replace screw & nut	100 Nm

31 12 Control Arms and Struts

	Type	Thread	Tightening specification	Measure
1AZ Tension strut to front axle support	E12, E24 / until 5.82	M12 10.9	tighten in normal position	80 Nm
	E23		tighten in normal position	135 Nm
	E39, E52		tighten in normal position	110 Nm
	E53		Replace screw tighten in normal position	165 Nm
	E60, E61, E63, E64, E65, E66, E67		Replace screw & nut tighten in normal position	
			Jointing torque	100 Nm
			Torque angle	90 °
	E83		Replace screw tighten in normal position	
			Jointing torque	165 Nm
			Torque angle	90 °
2AZ Control arm to front axle support	E24 / from 5.82, E28, E31, E32, E34, E38, E39 / 8 cyl.		tighten in normal position	77,5 Nm
	E39 / 6 cyl., E52		tighten in normal position	110 Nm
	E12, E21, E23, E24 / until 5.82		tighten in normal position	85 Nm
	E53, E60, E61, E63, E64, E65, E66, E67, E83	M12 10.9	Replace screw & nut tighten in normal position	
		Jointing torque	100 Nm	
		Torque angle	90±15 °	

3AZ Control arm (ball joint) on front axle support	E30		Replace nut	85 Nm
	E36, E46		Replace nut	90 Nm
	E30 / Four Wheel Drive		Replace nut	100 Nm
	E85, E86	M14x1.5	Replace nut	80 Nm
4AZ Control arm to spring strut	E21, E30			65 Nm
5AZ Control arm to pivot mount/spring strut	E30 / Four Wheel Drive			85 Nm
	E30 / Four Wheel Drive	Polystop nut		93 Nm
	E34 / Four Wheel Drive			80 Nm
6AZ Control arm on steering knuckle/swivel bearing	E36, E46, E85, E86		Use of impact screwdriver not permitted! Replace nut	65 Nm
	E38		Replace nut	93 Nm
	E39, E53, E52, E83, E60 / Four Wheel Drive, E61 / Four Wheel Drive, E67		Replace nut	80 Nm
	E60 / REAR END, E61 / REAR END, E63, E64, E65, E66		Replace nut	165 Nm
7AZ Bracket for control arm to engine carrier	E30			42 Nm
	E36			47 Nm
	E46		Replace screws	59 Nm
	E85, E86	M10 10.9	Replace screws	56 Nm
8AZ Ball joint for control arm to front axle carrier	E34 / Four Wheel Drive, E46 / Four Wheel Drive			77 Nm

9AZ Control arm to ball joint	E34 / Four Wheel Drive, E46 / Four Wheel Drive		80 Nm
10AZ Control arm holder to front axle support	E34 / Four Wheel Drive		47 Nm
	E46 / Four Wheel Drive	Replace screws	59 Nm
11AZ Pressure strut to body	E24 / from 5.82, E28	tighten in normal position	130 Nm
12AZ Traction strut on tie rod lever/steering knuckle/swivel bearing	E24, E28 / from 5.82, E31, E32, E34, E38		93 Nm
	E39		80 Nm
13AZ Pressure strut to connecting pipe/front axle support	E31, E32, E34, E38, E39	tighten in normal position	127 Nm
14AZ Pressure strut to cruciform reinforcement	E31	tighten in normal position	127 Nm
15AZ Connecting pipe to body	E31, E32, E34		127 Nm
16AZ Connecting pipe support to body	E31, E32, E34		59 Nm
17AZ Connecting pipe to trailing spring mount	E24 / from 5.82, E28		60 Nm
18AZ Leading strut to tie rod arm	E23		85 Nm
19AZ Tension strut on steering knuckle/swivel bearing	E39, E52, E67		80 Nm
	E60 / REAR END, E61 / REAR END, E63, E64, E65, E66		165 Nm
20AZ Tension strut to guide joint	E53, E83	Replace nut	80 Nm
	E60 / Four Wheel Drive, E61 / Four Wheel Drive	Replace nut	165 Nm
21AZ Guide joint to swivel bearing			

E53, E60 /
Four Wheel
Drive, E61 /
Four Wheel
Drive, E83

Replace screws

60 Nm

31 10 Front Axle Suspension

	Type	Thread	Tightening specification	Measure
1AZ Front axle carrier to engine carrier	E30, E31, E32, E34	M10 8.8	Replace screws (E30 AWD insert with Loctite)	42 Nm
	E30, E31, E32, E34	M10 9.8	Replace screws	47 Nm
	E36	M12 12.9	Replace screws	105 Nm
	E36, E46	M12 10.9	Replace screws	110 Nm
	E38, E39	M12 8.8	Replace screws	77 Nm
	E52	M12 front 10.9 middle 8.8 rear 8.8	Replace screws	75 Nm
	E53, E60 / REAR END, E61 / REAR END, E63, E64, E65, E66, E67, E85, E86	M12 10.9	Observe repair instruction.	100 Nm
	E60 / Four Wheel Drive, E61 / Four Wheel Drive	M12 10.9	Observe repair instruction. Replace screws	
		Jointing torque	100 Nm	
		Torque angle	90 °	
2AZ Front end of front axle carrier to body	E34 / Four Wheel Drive	M10 8.8		47 Nm
	E83	M12 10.9		113 Nm
3AZ Front axle subframe rear / middle to body	E34 / Four Wheel Drive	(collar screw)		59 Nm
	E83	M10 10.9		50 Nm
	E83	M12 10.9		100 Nm

4AZ	Front axle carrier with reinforcement to engine carrier	E31			47 Nm
5AZ	Cruciform reinforcement to door sill	E31			42 Nm
6AZ	Reinforcement to bracket Bracket to body	E31			42 Nm
7AZ	Reinforcement (sleeve) to body	E31			127 Nm
8AZ	Front end reinforcement on front axle carrier/engine carrier	E46		Replace screws; first tighten down rear screws	
				Jointing torque	59 Nm
				Torque angle	90+30 °
9AZ	Reinforcement plate to front axle support/engine carrier	E53		Replace screws & nuts	
				Jointing torque	56 Nm
				Torque angle	90 °
		E60 / REAR END, E61 / REAR END, E63, E64, E65, E66, E67		Replace screws & insertion nuts	56 Nm
				Jointing torque	56 Nm
				Torque angle	90 °
		E60 / Four Wheel Drive, E61 / Four Wheel Drive		Replace screws	
				Jointing torque	56 Nm
				Torque angle	90 °
		E83	M10	Replace screws	74 Nm
10AZ	Adapter to body	E46 / Four Wheel Drive		Replace screws	59 Nm
11AZ	Front axle support to adapter	E46 / Four Wheel Drive		Replace screws	110 Nm
12AZ	Heat shield to front axle carrier	E60, E61, E63, E64, E65, E66, E67			8 Nm

13AZ Mounting bracket to front axle
carrier / engine carrier

E60 / Four
Wheel Drive,
E61 / Four
Wheel Drive

M8 x 26

19 Nm

33 33 Rear Axle Suspension

	Type	Thread	Tightening specification	Measure
1AZ Rubber mount to rear axle carrier	E21, E23			95 Nm
	E21, E24, E28			40 Nm
2AZ Stud to body	E36			120 Nm
	E36 / Z3 / Compact			127 Nm
	E46, E85, E86			90 Nm
3AZ Rear axle carrier with rubber mounts to body	E36, E46, E83, E85, E86	M12 x 1.5		77 Nm
	E36	M14 x 1.5		140 Nm
	E38			127 Nm
	E39, E52, E53			163 Nm
	E60, E61, E63, E64, E65, E66, E67			165 Nm
4AZ Rear rubber mount to body	E32, E34	M10	Thread free from oil and grease Secure with Loctite No. 270	45 Nm
5AZ Rear axle carrier to rear rubber mount	E32, E34	M12		77 Nm
6AZ Fixing, rubber mount/rear axle carrier, front	E67			8 Nm

33 52 Shock Absorbers

	Type	Thread	Tightening specification	Measure	
1AZ Shock absorber to trailing arm/ wheel carrier/ swinging arm/ support arm/ control arm (tighten in normal position)	E12, E23, E24, E28, E32, E34, E38, E52			127 Nm	
	E21			54 Nm	
	E30, E36/7, E36/5			77 Nm	
	E31			115 Nm	
	E36, E46, E83, E85, E86	M12		100 Nm	
	E39, E53	M14	Replace nut	127 Nm	
	E60, E61, E63, E64, E65, E66	M14	Replace screw	165 Nm	
	E67	M16	Replace screw	250 Nm	
	2AZ Shock absorber piston rod on thrust bearing	E21, E30			15 Nm
		E23, E24, E28, E34			25 Nm
E36, E46, E83		M10	Replace nut	14 Nm	
E38, E39, E52		M10	Replace nut	23 Nm	
E38, E39		M14	Replace nut	27 Nm	
E53, E60, E63, E64, E65, E66, E67		M12	Replace nut	27 Nm	
E61		M12	Replace nut	28 Nm	
E85, E86		M10 x 1	Replace nut	13 Nm	
3AZ Support on body/rear axle carrier	E36, E38	M8	Replace nut	24 Nm	
	E39				

	Nut and bolt yellow chrome- plated	Replace nut	24 Nm
E39	Nut and bolt silver-grey	Replace nut	28 Nm
E46, E52, E60, E63, E64, E65, E66, E67	M8	Replace nuts	28 Nm
E53	M10	Replace nuts	56 Nm
E83, E85 / S54, E86 / S54	M8	Replace nuts	24 Nm
E85 / except S54, E86 / except S54	M8	Replace nuts	27 Nm

33 55 Stabilizer Bar

	Type	Thread	Tightening specification	Measure
1AZ Stabilizer to trailing arm	E30, E31, E36 / Z3 / Compact	M8	tighten in normal position	22 Nm
	E31	M10	tighten in normal position	42 Nm
2AZ Stabilizer link on anti-roll bar/swinging arm	E38			42 Nm
	E39, E52			65 Nm
	E53			100 Nm
	E60, E61, E63, E64	M10		65 Nm
	E65, E66, E67	M10		58 Nm
	E60, E61, E63, E64, E65, E66, E67	M12		100 Nm
3AZ Retaining bracket, stabilizer bar to rear axle support	E46, E52, E85, E86			22 Nm
	E53			19 Nm
	E60, E61, E63, E64	M8		28 Nm
	E65, E66, E67	M10		60 Nm
	E83	M8		21 Nm
4AZ Stabilizer link to bracket	E46, E85, E86	M8	Replace nut	22 Nm
5AZ Bracket stabilizer link to upper control arm	E46, E85, E86	M8	Replace nuts	22 Nm
6AZ Vibration damper to right stabilizer retaining bracket	E61	M12		100 Nm
7AZ Stabilizer link to stabilizer bar / upper control arm	E83	M10	Replace nuts	65 Nm

33 32 Control Arms and Struts

	Type	Thread	Tightening specification	Measure
1AZ Trailing arm to rear axle carrier	E34 (M5)		Replace screw tighten with special tool 33 3 060 and torque wrench Hazet 6291-2CT	55 Nm
	E30, E32, E34, E36		tighten in normal position	67 Nm
	E30, E32, E34, E36	10.9		77 Nm
2AZ Trailing arm to console	E31	M14 x 1.5		127 Nm
3AZ Trailing arm to wheel carrier	E31	M18 x 1.5		278 Nm
4AZ Traction strut to wheel carrier	E31		Tapered spigot and bore must be free of grease	80 Nm
	E38, E52			
	E39		Tapered spigot and bore must be free of grease	55 Nm
	E53			56 Nm
	E60, E61, E63, E64, E65, E66, E67	M10	Replace nut	65 Nm
	E60, E63, E64, E65, E66	M12	Replace nut	108 Nm
5AZ Control arm to rear axle support	E31		tighten in normal position	95 Nm
	E38		tighten in normal position	60 Nm
	E39		tighten in normal position With torque wrench Hazet 6290-CT	60 Nm
	E52		tighten in normal position	60 Nm
	E53		tighten in normal position with special tool 32 3 150 and torque wrench Hazet 6291-ICT	59 Nm

	E60, E61, E63, E64, E65, E66, E67		Replace nut tighten in normal position	65 Nm
6AZ Support arm to rear axle support	E31	M14 x 1.5		127 Nm
7AZ Support arm to wheel carrier	E31			150 Nm
8AZ Upper control arm to wheel carrier	E31	M14 x 1.5		127 Nm
	E38, E52			160 Nm
	E39			142 Nm
	E53		Replace nut	165 Nm
	E60, E61, E63, E64, E65, E66		Replace nut	175 Nm
	E67		Replace nut	110 Nm
9AZ Interconnecting link to trailing arm	E31	M16 x 1.5	Tapered spigot and bore both free of grease	120 Nm
10AZ Integral arm to upper control arm	E31	M14 x 1.5		127 Nm
11AZ Upper/lower control arms to trailing arm	E36, E46	M12 x 1.5	Replace nut tighten in normal position	110 Nm
12AZ Trailing arm to console	E36, E46			110 Nm
	E83, E85, E86	M12 x 1.5 10.9		100 Nm
13AZ Trailing arm console to body	E36, E46, E83, E85, E86			77 Nm
14AZ Upper control arm to rear axle carrier	E31	M12 x 1.5	tighten in normal position	77 Nm
	E36	M12 10.9	tighten in normal position Always replace antifatigue bolts with combination bolts and washers, see BMW Parts Service	77 Nm
	E38, E39, E52		tighten in normal position	110 Nm
	E52		tighten in normal position	110 Nm
	E46, E83, E85, E86		tighten in normal position	77 Nm
	E53, E60, E61, E63, E64		Replace nut	

				100 Nm
			tighten in normal position	
	E65, E66, E67		Replace nut	
			tighten in normal position	
			Jointing torque	100 Nm
			Torque angle	90 °
15AZ Lower control arm to rear axle carrier	E36	M12 10.9	tighten in normal position	77 Nm
			Always replace antifatigue bolts with combination bolts and washers, see BMW Parts Service	
	E46, E83, E85, E86		tighten in normal position	77 Nm
16AZ Support bracket on body	E21 / E30			28 Nm
17AZ Compression strut on body	E46, E83, E85, E86	M8 8.8		21 Nm
	E30, E32, E34, E36, E85, E86	M8 10.9		30 Nm
	E60, E61, E63, E64	M10 10.9		48 Nm
	E65, E66, E67	M10 10.9		38 Nm
18AZ Auxiliary control arm to trailing arm and rear axle carrier	E32, E34	M14 x 1.5	tighten in normal position	127 Nm
19AZ Additional strut on rear axle carrier	E32, E34	M12 x 1.5		110 Nm
20AZ Swinging arm to rear axle support	E38	Front	tighten in normal position	60 Nm
	E39	Front	tighten in normal position	58 Nm
	E52	Front	tighten in normal position	105 Nm
	E53, E60, E61, E63, E64, E65, E66, E67	Front	Replace nut tighten in normal position	100 Nm
	E38	Rear	tighten in normal position	130 Nm
	E39	Rear M12	tighten in normal position	115 Nm
	E39 / Touring,	Rear M14	tighten in normal position	174 Nm

	E52	Rear M14	tighten in normal position	160 Nm
	E53, E60, E61, E63, E64, E65, E66, E67	Rear M14	Replace nut tighten in normal position	165 Nm
21AZ Integral link on front wheel carrier	E38, E39, E52, E53		tighten in normal position	105 Nm
	E60, E61, E63, E64, E65, E66, E67		tighten in normal position	100 Nm
22AZ Screw connection, swinging arm, integral link, wheel carrier	E38		tighten in normal position	236 Nm
	E39, E52		Replace nut tighten in normal position	256 Nm
	E53		Replace nut tighten in normal position	250 Nm
	E60, E61, E63, E64, E65, E66, E67		Replace nut tighten in normal position	240 Nm
23AZ V-strut to tension strut / body	E46 / M3 / M3 CSL		Replace screws	
			Jointing torque	59 Nm
			Torque angle	90 °
24AZ Upper control arm to trailing arm	E85, E86	M12 x 1.5 8.8	Replace nut	100 Nm
	E83	M12x1.5	Replace nut	106 Nm
25AZ Lower control arm to trailing arm	E85, E86	M12 x 1.5 10.9	Replace nut tighten in normal position	77 Nm
	E83	M12 x 1.5 10.9	Replace nut tighten in normal position	100 Nm
26AZ Tension strut to compression strut / body	E83	M10		60 Nm
27AZ Heat shield to compression strut	E83, E85, E86	M6		5 Nm
28AZ Heat shield to compression strut	E65, E66, E67	M8		19 Nm