00 00 Extract from BMW Group Standard GS 90003-2

Tightening Torques

	Type	Thread	Tightening specifications	Torque
Caution! It is essential to adhere to the prescribed tightening torques in order to carry out a correct and proper repair. This presupposes that the torque wrenches required for this purpose are subject to regular testing. Permitted tolerance of calibrated torque wrenches is ± 4 % from the scale value. Approved torque wrenches and torque testers are featured in the Workshop Equipment Planning Catalogue. Torque wrenches must be tested regularly with the testers mentioned above. In addition, a random examination of screw connections must be carried out by trained employees using suitable test methods.				
If there are no cross-references to tightening torques in the repair instructions, the extracts based on BMW Group Standard GS 90003-2 must be observed.				
A distinction is made between screws / bolts / nuts with surface colour / (surface coating) yellow (ZN) and silver (ZNS) The maximum tightening torques are: Surface colour yellow (ZN): Applicable only to set screws with metric coarse and fine threads to DIN 13-28 and nuts with nut height of 0.8 x d to DIN 934 and exclusively for a total μ = 0.125 (screws/bolts phosphatised, nuts untreated or galvanized. Lubricated condition: both unlubricated and oiled).				

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Surface colour silver (ZNS): Applicable only to set screws with metric coarse and fine threads to DIN 13-28 and nuts with nut height of 0.8 x d to DIN 934 and exclusively for a μ range = 0.09 0.15 (screws/bolts cadmium-plated, nuts untreated or galvanized. Lubricated condition: both unlubricated and oiled). The values specified in the table apply to a screw/screw connection in accordance with the above-mentioned conditions. Not applicable when a different thread surface or lubrication status is used or in the case of deviating nut height.				
Also not applicable to screws/bolts reduced shafts, to self-locking screw/bolt connections and to screwing/bolting parts made of different materials.				

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00 00 M10 and M10 x 1 - maximum tightening torques acc. to BMW GS 90003-2

Tightening Torques

	Type	Thread	Tightening specification	Torque
Scope of applicability of tightening torques, refer to excerpt from company standard BMW GS 90003-2	Surface colour / (surface coating)			
M10 thread	yellow (ZN)	M10 8.8		47 Nm
	silver (ZNS)	M10 8.8		38 Nm
	yellow (ZN)	M10 10.9		66 Nm
	silver (ZNS)	M10 10.9		56 Nm
	yellow (ZN)	M10 12.9		79 Nm
	silver (ZNS)	M10 12.9		62 Nm
M10x1 thread	yellow (ZN)	M10 x 1 8.8		54 Nm
	silver (ZNS)	M10 x 1 8.8		41 Nm
	yellow (ZN)	M10 x 1 10.9		75 Nm
	silver (ZNS)	M10 x 1 10.9		60 Nm
	yellow (ZN)	M10 x 1 12.9		91 Nm
	silver (ZNS)	M10 x 1 12.9		67 Nm

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00 00 M12 and M12x1.5 - maximum tightening torques acc. to BMW GS 90003-2

Tightening Torques

	Type	Thread	Tightening specification	Torque
Scope of applicability of tightening torques, refer to excerpt from company standard BMW GS 90003-2	Surface colour / (surface coating)			
M12 thread	yellow (ZN)	M12 8.8		82 Nm
	silver (ZNS)	M12 8.8		66 Nm
	yellow (ZN)	M12 10.9		115 Nm
	silver (ZNS)	M12 10.9		98 Nm
	yellow (ZN)	M12 12.9		140 Nm
	silver (ZNS)	M12 12.9		108 Nm
M12x1.5 thread	yellow (ZN)	M12 x 1.5 8.8		87 Nm
	silver (ZNS)	M12 x 1.5 8.8		68 Nm
	yellow (ZN)	M12 x 1.5 10.9		123 Nm
	silver (ZNS)	M12 x 1.5 10.9		100 Nm
	yellow (ZN)	M12 x 1.5 12.9		147 Nm
	silver (ZNS)	M12 x 1.5 12.9		110 Nm

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00 00 M14 and M14x1.5 - maximum tightening torques acc. to BMW GS 90003-2

Tightening Torques

	Type	Thread	Tightening specification	Torque
Scope of applicability of tightening torques, refer to excerpt from company standard BMW GS 90003-2	Surface colour / (surface coating)			
M14 thread	yellow (ZN)	M14 8.8		130 Nm
	silver (ZNS)	M14 8.8		104 Nm
	yellow (ZN)	M14 10.9		180 Nm
	silver (ZNS)	M14 10.9		155 Nm
	yellow (ZN)	M14 12.9		220 Nm
	silver (ZNS)	M14 12.9		170 Nm
M14x1.5 thread	yellow (ZN)	M14 x 1.5 8.8		143 Nm
	silver (ZNS)	M14 x 1.5 8.8		110 Nm
	yellow (ZN)	M14 x 1.5 10.9		200 Nm
	silver (ZNS)	M14 x 1.5 10.9		165 Nm
	yellow (ZN)	M14 x 1.5 12.9		240 Nm
	silver (ZNS)	M14 x 1.5 12.9		180 Nm

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00 00 M16 and M16x1.5 - maximum tightening torques acc. to BMW GS 90003-2

Tightening Torques

	Type	Thread	Tightening specification	Torque
Scope of applicability of tightening torques, refer to excerpt from company standard BMW GS 90003-2	Surface colour / (surface coating)			
M16 thread	yellow (ZN)	M16 8.8		200 Nm
	silver (ZNS)	M16 8.8		160 Nm
	yellow (ZN)	M16 10.9		280 Nm
	silver (ZNS)	M16 10.9		235 Nm
	yellow (ZN)	M16 12.9		340 Nm
	silver (ZNS)	M16 12.9		260 Nm
M16x1.5 thread	yellow (ZN)	M16 x 1.5 8.8		216 Nm
	silver (ZNS)	M16 x 1.5 8.8		170 Nm
	yellow (ZN)	M16 x 1.5 10.9		303 Nm
	silver (ZNS)	M16 x 1.5 10.9		250 Nm
	yellow (ZN)	M16 x 1.5 12.9		364 Nm
	silver (ZNS)	M16 x 1.5 12.9		275 Nm

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00 00 M18 and M18x1.5 - maximum tightening torques acc. to BMW GS 90003-2

Tightening Torques

	Type	Thread	Tightening specification	Torque
Scope of applicability of tightening torques, refer to excerpt from company standard BMW GS 90003-2	Surface colour / (surface coating)			
M18 thread	yellow (ZN)	M18 8.8		280 Nm
	silver (ZNS)	M18 8.8		225 Nm
	yellow (ZN)	M18 10.9		390 Nm
	silver (ZNS)	M18 10.9		330 Nm
	yellow (ZN)	M18 12.9		470 Nm
	silver (ZNS)	M18 12.9		365 Nm
M18x1.5 thread	yellow (ZN)	M18 x 1.5 8.8		313 Nm
	silver (ZNS)	M18 x 1.5 8.8		245 Nm
	yellow (ZN)	M18 x 1.5 10.9		440 Nm
	silver (ZNS)	M18 x 1.5 10.9		360 Nm
	yellow (ZN)	M18 x 1.5 12.9		527 Nm
	silver (ZNS)	M18 x 1.5 12.9		400 Nm

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00 00 M4 and M5 - maximum tightening torques acc. to BMW GS 90003-2

Tightening Torques

	Type	Thread	Tightening specification	Torque
Scope of applicability of tightening torques, refer to excerpt from company standard BMW GS 90003-2	Surface colour / (surface coating)			
M4 thread	yellow (ZN)	M4 8.8		3 Nm
	silver (ZNS)	M4 8.8		2 Nm
	yellow (ZN)	M4 10.9		4 Nm
	silver (ZNS)	M4 10.9		3 Nm
	yellow (ZN)	M4 12.9		5 Nm
M5 thread	yellow (ZN)	M5 8.8		6 Nm
	silver (ZNS)	M5 8.8		5 Nm
	yellow (ZN)	M5 10.9		8 Nm
	silver (ZNS)	M5 10.9		7 Nm
	yellow (ZN)	M5 12.9		10 Nm
	silver (ZNS)	M5 12.9		8 Nm

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00 00 M6 and M7 - maximum tightening torques acc. to BMW GS 90003-2

Tightening Torques

	Type	Thread	Tightening specification	Torque
Scope of applicability of tightening torques, refer to excerpt from company standard BMW GS 90003-2	Surface colour / (surface coating)			
M6 thread	yellow (ZN)	M6 8.8		10 Nm
	silver (ZNS)	M6 8.8		8 Nm
	yellow (ZN)	M6 10.9		14 Nm
	silver (ZNS)	M6 10.9		12 Nm
	yellow (ZN)	M6 12.9		17 Nm
	silver (ZNS)	M6 12.9		13 Nm
M7 thread	yellow (ZN)	M7 8.8		15 Nm
	silver (ZNS)	M7 8.8		13 Nm
	yellow (ZN)	M7 10.9		21 Nm
	silver (ZNS)	M7 10.9		19 Nm
	yellow (ZN)	M7 12.9		26 Nm
	silver (ZNS)	M7 12.9		21 Nm

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00 00 M8 and M8 x 1 - maximum tightening torques acc. to BMW GS 90003-2

Tightening Torques

	Type	Thread	Tightening specification	Torque
Scope of applicability of tightening torques, refer to excerpt from company standard BMW GS 90003-2	Surface colour / (surface coating)			
M8 thread	yellow (ZN)	M8 8.8		24 Nm
	silver (ZNS)	M8 8.8		19 Nm
	yellow (ZN)	M8 10.9		34 Nm
	silver (ZNS)	M8 10.9		28 Nm
	yellow (ZN)	M8 12.9		40 Nm
	silver (ZNS)	M8 12.9		32 Nm
M8x1 thread	yellow (ZN)	M8 x 1 8.8		26 Nm
	silver (ZNS)	M8 x 1 8.8		21 Nm
	yellow (ZN)	M8 x 1 10.9		36 Nm
	silver (ZNS)	M8 x 1 10.9		30 Nm
	yellow (ZN)	M8 x 1 12.9		44 Nm
	silver (ZNS)	M8 x 1 12.9		33 Nm

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0 operating fluid overview

Expendable materials

Fitting aid (Circo Light; lubricant)	250 ml, Bottle	83192405829

Expendable materials

Lubricating grease Renolit CX-SP 1	100 g, Tube	83192183737

Expendable materials

Lubricating grease KlÃ¼bersynth LF 44-22	45 g, Tube	83230396713

Expendable materials

Ball bearing grease	100 g, Tube	81229407174

Expendable materials

Lubricating oil 4 UH 1 - 460 N	100 ml, Bottle	83230306232

Expendable materials

Wheel bearing grease UNIREX N3	400 ml, Cartridge	83192160349

Expendable materials

Lubricating grease MI-Setral-43 N	50 g, Tube	83232152082

Expendable materials

Lubricating grease GKY H-15	100 g, Bag	83232179705

Expendable materials

Lubricating grease One Lube Improved	110 g, Bag	83232179708

Expendable materials

Silicone spray	400 ml, Spray can	83192208609

Expendable materials

Universal lubricant spray	250 ml, Spray can	81229407711

Expendable materials

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Adhesive lubricant	250 ml, Spray can	81229407629

Expendable materials

Door brake lubricating grease	400 ml, Spray can	83230301796

Expendable materials

Lubricating material Optimoly Paste TA	400 ml, Spray can	83239407817

Expendable materials

Quietsch-Ex	250 ml, Spray can	83230420633

Expendable materials

Fluropan T20 spray with PTFE	400 ml, Spray can	83230154884

Expendable materials

Lubricating grease Renolit CX-CVM 1	100 g, Bag	83192286016

Expendable materials

Lubricating grease Renolit CX-CVL 1	100 g, Bag	83192286017

Expendable materials

Lubricating grease Renolit CX-TP 1	100 g, Bag	83192286018

Expendable materials

Paste MP 3	100 g, Tube	07559062476

Expendable materials

Active rust film remover	500 ml, Spray can	83192211267

Expendable materials

Contact-protection greaseKF1	50 g, Tube	83192295229

Expendable materials

Special lubricant KRYTOX	30 ml, Bottle	83199408523

Paints and colours

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Paints and colours

BMW sound insulating paint 1	50 g, Spray	83192414997

Paints and colours

Sound insulating paint Berucoat AK 978	100 ml, Spray can	83192358109

Sealing compound

Silicone sealant Drei Bond 1207	310 ml, Cartridge	81229407439

Sealing compound

Surface sealant Loctite 574	50 ml, Bottle	81229407301

Sealing compound

Surface sealant Loctite 5203	50 ml, Cartridge	83190422969

Sealing compound

Surface sealant 2054/2	12 g, Cartridge	83190412375

Sealing compound

Special activator type 5900	10 ml, Bottle	83190412376

Adhesive

Adhesive anaerobic Drei Bond 1385	50 g, Bottle	83190417376

Adhesive

Adhesive Loctite 577	50 ml, Bottle	33112328736

Sealing compound

Surface sealant Loctite 518	50 ml, Cartridge	83190395783

Sealing compound

Loctite 5460 liquid sealing compound	50 ml, Cartridge	83192420102

Adhesive

Screw lock Loctite Stick 268, high strength	19 g, Pin	83190441108

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Adhesive

Screw lock Loctite 270, high strength	10 ml, Bottle	83192210337

Adhesive

Screw lock Loctite 243, medium strength	10 ml, Bottle	83192210339

Adhesive

Screw lock Loctite 277, high strength	250 ml, Bottle	83190142917

Adhesive

Screw lock Loctite 273, high strength	50 ml, Bottle	83190443083

Adhesive

Adhesive Loctite 638	50 ml, Bottle	81229407420

Adhesive

Adhesive Loctite 2701	10 ml, Bottle	33172331095

Adhesive

Adhesive 2K Loctite 3450	25 ml, Bottle	51252313730

Adhesive

BMW Glue Pen	10 g, Pin	81222358167

Adhesive

SuperglueS1	20 g, Bottle	81222351255

Adhesive

SuperglueS2	20 g, Bottle	81222351257

Adhesive

SuperglueS3	3 g, Bottle	81222351258

Expendable materials

Cooling spray	400 ml, Spray can	83199407762

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	Spray can	

Expendable materials

Odour remover	100 ml, Spray can	83192233353

Expendable materials

Rust film remover Professional	5 l, Canister	83192166998
	200 l, Barrel	83120396936
	1000 l, Barrel	83120396937

Expendable materials

Rust film remover Rv26H	500 ml, Spray bottle	83120414441

Expendable materials

Preservative remover	60 l, Canister	83190422208

Expendable materials

Universal cleaner exterior	10 l, Canister	83192153221
	25 l, Canister	83192154648

Expendable materials

Stain remover	1 l, Can	83119407816

Expendable materials

Adhesive remover	1 l, Can	83110009712

Expendable materials

Universal cleaner interior	20 l, Canister	83192154638

Care product

Wheel rim brushes	1x, Set	83192298237

Sealing compound

Loctite 171000 primer	4 ml, Bottle	83197515683

Overview of consumables (Electronic Parts Catalogue)

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Sealing compound

Loctite 193140 liquid sealing compound	6 ml, Cartridge	83190439030

Overview of consumables (Electronic Parts Catalogue)

Sealing compound

Sealant Dow Corning	35 ml, Tube	07580397777

Overview of consumables (Electronic Parts Catalogue)

Adhesive

Adhesive Loctite 648	50 ml, Bottle	07589067732

Overview of consumables (Electronic Parts Catalogue)

Expendable materials

Engine and cold cleaner	1 l, Spray bottle 10 l, Canister	83192360950 83192361705

Overview of consumables (Electronic Parts Catalogue)

Expendable materials

Leak detection spray	400 ml, Spray can	83199407861

Overview of consumables (Electronic Parts Catalogue)

Expendable materials

Contact spray	250 ml, Spray can	83222405599

Overview of consumables (Electronic Parts Catalogue)

Expendable materials

Powder spray	300 ml, Spray can	83192358648

Expendable materials

Vacuum pump oil	1 l, Bottle	83192232502

Expendable materials

Lubricants PF1	50 g, Pin	83230309627

Expendable materials

Injector lubricating grease	50 g, Can	83230441070

Adhesive

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Screw lock Loctite Stick 248, medium strength	19 g, Pin	83192359746

Expendable materials

Universal cleaner	20 l, Canister	83192360981

Expendable materials

Plastic blind rivet dia. 5.8 mm; clamping area 5.0 - 8.5 mm		51777171004

Expendable materials

Glass activator stick	3,5 ml, Stick	83190444142

Expendable materials

HS-AM multi-base filler VOC	3000 ml, Can (grey colour)	51912244691
	3000 ml, Can (black colour)	51912355280
	3000 ml, Can (white colour)	51912221287

Expendable materials

SPX special cleaner	10 , Canister	83302451562

Expendable materials

Klueberplex REP 41 - 151	90 , Tube	83192460509

Expendable materials

C nozzle		83192155589

Expendable materials

Lubricating grease, Optitemp 2 LN 584 LO	100 g, Bag	83190447919

Adhesive

Profile rubber adhesive	430 g, Tube	83192232322

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1100 Overview of Technical Data

Compression pressure setpoint value	
	min. 16 bar

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Engine oil B47D20U1 / B47D20O1 / B47D20T1	
	Filling capacity, engine oil change with oil filter element
	5,5 l

Oil quantity between the two markings MIN and MAX of the oil dipstick	
	1.0 l

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1100 Overview of tightening torques

Engine fixture to engine fixture		
M10	**Tightening torque**	100Nm
Engine fixture to engine support arm		
Hexagon screws from special tool set	**Tightening torque**	105Nm
Engine support arm on the assembly stand		
M14 x 95	**Tightening torque**	130Nm
Special tool 2 455 010 to crankcase		
M10x30	**Tightening torque**	38Nm
Special tool to cylinder head		
M8	**Tightening torque**	21,5Nm
Special tool to cylinder head		
M8	**Tightening torque**	21,5Nm
Standard screw connection 4 Nm		
Oval-head screw	**Tightening torque**	4Nm
Standard screw connection M10		
M10		38Nm
Standard screw connection M5		
M5		5Nm
Standard screw connection M6		
M6	**Tightening torque**	8Nm
Standard screw connection M7		
M7		13Nm
Standard screw connection M8		
M8	**Tightening torque**	19Nm

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Standard screw connection hose clamp 5

Hose clamp L12 - L15	**Tightening torque**	1,25Nm

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1111 Overview of Technical Data

Cylinder bore

Diameter of cylinder bore	84,00 mm ... 84,018 mm
Permitted irregularity of the cylinder bore	0.01 mm
Permitted conicity of the cylinder bore	0.01 mm

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1111 Overview of tightening torques

Bearing journal of tensioning and guide rail		
M8	Replace bearing journal.	
	Tightening torque	20Nm
Main bearing cap to crankcase		
M10x85 Replace screws.	**1. Tightening torque**	25Nm
	2. Tightening torque	50Nm
	3. Angle of rotation	60°
	4. Angle of rotation	60°
Oil deflector to crankcase		
M8x14	**Tightening torque**	19Nm
Oil deflector to crankshaft bearing cap		
M8x14 Replace screws.	**Tightening torque**	35Nm
	Slacken	180°
	Tightening torque	15Nm
	Angle of rotation	45°
Special tool 11 8 930 to special tool 00 2 300		
M14x35		160Nm
Special tool 11 8 930 to special tool 00 2 320		
M14x35	**Tightening torque**	160Nm
Special tool 2 413 082 to special tool 00 2 320		
M12x65	**Tightening torque**	100Nm
Special tool/holder to crankcase		
M10x35		40Nm

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1112 Overview of Technical Data

Check for cylinder head watertightness

Temperature of the cylinder head	60 °C

Check for cylinder head watertightness

Testing pressure	max. 3,0 bar

Cleaning the intake ports

Blast duration with walnut granules	Approx. 20 s
Blast duration with pure compressed air for the complete blowing out of walnut granules	Approx. 10 s

Cleaning the intake ports

Operating pressure	6 bar ... 8 bar

Cross deviation from flatness

	max. 0,05 mm

Cylinder head flatness

Maximum lengthwise deviation from flatness	0.10 mm
Maximum transverse deviation from flatness	0.05 mm

Longitudinal deviation from flatness

	max. 0,10 mm

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Selecting the cylinder head gasket

A decision is made to determine which cylinder head gasket must be used based on the measuring result of the measurement of the piston protrusion.

Cylinder head gasket with number of holes 1	0 mm ... 0.90 mm
Cylinder head gasket with number of holes 2	0.91 mm ... 1,03 mm
Cylinder head gasket with number of holes 3	1,04 mm ... 1,18 mm

Valve underprotrusion

	0,8 (0.7 - 0,9) mm

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1112 Overview of tightening torques

Bearing journal to cylinder head		
M16x1.5 Replace bearing journal.	**Tightening torque**	20Nm
Cylinder head bolt to timing case cover		
M8x40	**Tightening torque**	19Nm
Cylinder head cover to cylinder head		
M6	**Tightening torque.**	8,5Nm
Cylinder head to crankcase		
M12x1.5 Renew screws.	**1. Tightening torque**	50Nm
	2. Angle of rotation	120°
	3. Angle of rotation	120°
Cylinder head to special tool		
Special tool	**Tightening torque**	25Nm
Flange to assembly stand		
M14X30	**Tightening torque**	135Nm
Flange to assembly stand		
M14X30	**Tightening torque**	135Nm
Ground to cylinder head		
M6	**Tightening torque**	8Nm
Special tool to cylinder head		
Special tool	**Tightening torque**	20Nm
Special tool 00 2 320 to special tool 00 2 300		
M14X95	**Tightening torque**	130Nm

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1113 Overview of Technical Data

Height of the sealing bead	
	2,0 mm ... 2,5 mm

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1113 Overview of tightening torques

Oil drain plug		
M12x16 Replace sealing ring.	**Tightening torque**	25Nm
Oil drain plug		
M12x16 Renew the sealing ring.	**Tightening torque**	25Nm
Oil sump to crankcase		
M8x30	**Tightening torque**	24Nm
M8x110	**Tightening torque**	24Nm

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1114 Overview of Technical Data

Processing time of liquid sealing compound	
	< 12 min

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1114 Overview of tightening torques

Rear timing case cover to crankcase

M6 Renew screws.	**Tightening torque**	8Nm
	Angle of rotation 1	45°
	Angle of rotation 2	45°

Spacer bolt for mounting the acoustic cover

M8x12	**Tightening torque**	12Nm

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1115 Overview of Technical Data

Differential pressure between ambient pressure and engine internal pressure

Nominal value
0 (-15 - +30) mbar

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1116 Overview of tightening torques

Component carrier to crankcase		
M8x35	**Tightening torque**	19Nm
	Angle of rotation	45°

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11 21 Crankshaft and Bearings

Tightening Torques

	Type	Thread	Tightening specification	Torque
1AZ Increment wheel on crankshaft	S54	M5 10.9	Replace screws Jointing torque Torque angle	 5.0 Nm 45 °
Increment wheel on crankshaft		M5 10.9	Replace screws	13 Nm
Increment wheel on crankshaft		M5 8.8	Replace screws	5.5 Nm

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1121 Overview of Technical Data

Axial play of crankshaft	
Equipment installation status	
	0,090 mm ... 0,273 mm
Operating condition	
	0,11 mm ... 0,314 mm

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Maximum permitted torque of the crankshaft	
	max. 2 Nm

1122 Overview of tightening torques

Flywheel to crankshaft

M12x1.5 Renew screws.	**Tightening torque**	45Nm
	Angle of rotation	45°

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1123 Overview of tightening torques

Vibration damper with belt pulley to crankshaft

M10x65 Renew screws.	**Jointing torque**	40Nm
	Angle of rotation	120°

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1124 Overview of tightening torques

Connecting rod bearing cap to connecting rod

M9x47	Renew screws.	
	Tightening torque	20Nm
	1. Angle of rotation	70°
	2. Angle of rotation	70°

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1125 Overview of Technical Data

End clearance of the piston rings

Before measuring the end clearance, make sure the cylinder is within the permissible tolerance.

End clearance of the plain rectangular compression ring	0,13 mm ... 0,17 mm
End clearance of the taper faced piston ring	0,0045 mm ... 0,12 mm
End clearance of the oil scraper ring with spiral expander	cannot be measured

Piston diameter

Measure the piston diameter at distance (A) from the lower end of the piston skirt.

Distance (A) to the lower end of the piston skirt	17 mm
Nominal dimension of piston diameter	83,936 mm ... 83,954 mm

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Side clearance of piston rings

Clean all components before measuring the side clearance.

Side clearance of the plain rectangular compression ring	
	0,17 mm ... 0,27 mm
Side clearance of the taper faced piston ring	
	0.30 mm ... 0.50 mm
Side clearance of the oil scraper ring with spiral expander	
	0.2 mm ... 0.4 mm

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1127 Overview of tightening torques

Gear to counterbalance shaft		
M10 Renew screws.	**1. Jointing torque**	20Nm
	2. Angle of rotation	180°
Idler gear to crankcase		
M12	**Tightening torque**	70Nm
Idler gear to crankcase		
M12x1.5	**Tightening torque**	10Nm
	Angle of rotation	45°
Special tool 2 288 054 to crankshaft		
	Tightening torque	20Nm
Special tool 2 288 054 to crankshaft		
M10	**Tightening torque**	20Nm

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1128 Overview of tightening torques

Belt tensioner for drive belt		
M8x30	**Tightening torque**	28Nm

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1130 Overview of tightening torques

SWZ2249117		
Screw M6	**Tightening torque**	10Nm

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1131 Overview of tightening torques

Camshaft carrier to cylinder head		
M7x35	**Tightening torque**	13Nm
Camshaft sprocket to camshaft		
M7x17.		17Nm
Chain tensioner piston to cylinder head		
22 x 1.5 Replace sealing ring, oil thread.	**Tightening torque**	70Nm
Coolant line to crankcase		
M6X16	**Tightening torque**	8Nm
Holder to crankcase		
M8X16	**Tightening torque**	19Nm
Hydraulic chain tensioner to crankcase		
M6x22	**Tightening torque**	9Nm
Intake and exhaust camshaft in camshaft support		
M6x31	**Tightening torque**	10Nm
Preload timing chain		
	Tightening torque	0,6Nm
Pressing the timing chain with special tool 2 354 962		
Spindle The torque must not be exceeded.		20Nm

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1141 Overview of tightening torques

Camshaft sprocket to oil vacuum pump		
M8x35 Left-hand thread	Renew screws.	
	Jointing torque	5Nm
	Angle of rotation	90°
Hydraulic valve to crankcase		
M6 x 18	**Tightening torque**	8Nm
Intake pipe to oil vacuum pump		
M6x25	**Tightening torque**	8Nm
Oil vacuum pump to crankcaseB47		
M8x35 Renew screw.	**Tightening torque**	15Nm
	Angle of rotation	45°

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1142 Overview of tightening torques

Central piston cooling valve to crankcase		
M6x16	**Tightening torque**	8Nm
Full-flow oil filter to crankcase		
M6 Observe tightening sequence.	**Jointing torque**	4Nm
	Tightening torque	10Nm
Oil feed line for the exhaust turbocharger high-pressure stage		
Hollow bolt	**Jointing torque**	10Nm
	Angle of rotation	70°
Oil feed line on cylinder head		
M6x12	**Tightening torque**	8Nm
Oil feed line on cylinder head		
M6x12	**Tightening torque**	8Nm
Oil feed line to bracket		
Torx screw M6x12	**Tightening torque**	8Nm
Oil feed line to exhaust turbocharger		
Hollow bolt Renew the bolt and sealing rings.	**Jointing torque**	10Nm
	Angle of rotation	70°
Oil feed line to exhaust turbocharger		
Hollow bolt Renew the bolt and sealing rings.	**Jointing torque**	10Nm
	Angle of rotation	70°
Oil feed line to exhaust turbocharger		
Hollow bolt Renew sealing rings.	**Jointing torque**	10Nm
	Angle of rotation	45°

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Oil filter cover to oil filter module

O-ring lightly oiled.	**Initial tightening torque**	25Nm
	Disassembly procedure	180°
	Tightening torque	25Nm

Oil filter cover to oil filter module

O-ring lightly oiled.	**Tightening torque**	25Nm

Oil return line to crankcase

M6x12	**Tightening torque**	8Nm

Oil return line to crankcase

M6x12 Check gasket. Renew the seal or line if necessary.	**Tightening torque**	8Nm

Oil return line to turbocharger

M6x12	**Tightening torque**	8Nm

Oil return line to turbocharger

M6x12	**Tightening torque**	8Nm

Oil return line to turbocharger

M6x12 Renew gasket.	**Tightening torque**	8Nm

Special tool to measure the pressure on the oil filter module

O-ring lightly oiled.	**Tightening torque**	25Nm

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1143 Overview of tightening torques

Guide tube for oil dipstick on engine		
M8x16	**Tightening torque**	19Nm

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1151 Overview of Technical Data

Height of the sealing bead	
	2,0 mm ... 2,5 mm

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1151 Overview of tightening torques

Coolant pump/wiring harness to component carrier		
M6x20	**Tightening torque**	8Nm

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11 52 Fan

Tightening Torques

	Type	Thread	Tightening specification	Torque
1AZ Fan clutch on water pump Coupling nut (left-hand threads)	All			40 Nm
	M54			45 Nm
2AZ Fan to fan clutch	All			10 Nm

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1153 Overview of tightening torques

Connecting branch on crankcase		
M6x25		10Nm
Connecting branch to component carrier		
M6x20	**Tightening torque**	8Nm
Connecting branch to engine block		
M6x25	**Tightening torque**	8Nm
Coolant lines for SCR metering module		
M6X16	**Tightening torque**	8Nm
Coolant thermostat to cylinder head		
M6x30	**Tightening torque**	8Nm
SCR coolant lines to crankcase end cover		
Hexagon screw M6x16	**Tightening torque**	8Nm
Thermostat housing to component carrier		
M6	**Tightening torque**	8Nm

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11 61 Intake manifold

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Intake manifold to cylinder head	All	M8		22 Nm
	All	M7		15 Nm
	All	M6		10 Nm
2AZ Sound absorption cover to holder	M60/1 / M60/2 / M62	M6		8 Nm
3AZ Throttle valve to intake manifold	N73	M6x60/ M6x80		8 Nm

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1161 Overview of Technical Data

Cleaning agent	
Universal cleaner must be diluted with water.	**Washer fluid** 2 parts water, 1 part universal cleaner

Cleaning the intake plenum	
	Soaking time of the cleaning agent 1 h

Walnut granules	
	Quantity for each blasting process 2 l

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1161 Overview of tightening torques

Exhaust-gas recirculation cooler to intake plenum		
	Tightening torque	10Nm
Intake plenum to cylinder head		
M6	**Tightening torque**	11Nm
Swirl-flap controller to intake plenum		
M6 x 16 Tighten the bolts in alternating order until flush.		4Nm
Swirl-flap controller to intake plenum		
6x20 self-tapping	**Tightening torque**	6,5Nm

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1162 Overview of tightening torques

Heat shield of exhaust manifold		
Hexagon screw M8x16	**Tightening torque**	19Nm
Heat shield to exhaust manifold		
M6x12	**Tightening torque**	10Nm

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1165 Overview of tightening torques

Bypass flap to high-pressure stage exhaust turbocharger		
M6	**Tightening torque**	8Nm
Connecting pipe to bypass flap		
M6	**Tightening torque**	8Nm
Connecting pipe with bypass flap to exhaust turbocharger low-pressure stage / high-pressure stage		
M6	**Tightening torque**	8Nm
Electric changeover valve to intake plenum		
TS6x20	**Tightening torque**	5Nm
Exhaust turbocharger low-pressure stage to crankcase		
M8X16	**Tightening torque**	22Nm
Exhaust turbocharger to exhaust manifold		
V-band clamp	**Tightening torque**	19Nm
Exhaust turbocharger to panel holder for support to crankcase		
Hexagon screw M8x16	**Tightening torque**	22Nm
High-pressure stage exhaust turbocharger to exhaust manifold		
M8x20	**Tightening torque**	25Nm
Holder to exhaust turbocharger and crankcase		
M8x16	**Tightening torque**	22Nm
Holder to exhaust turbocharger and crankcase		
M8x16	**Tightening torque**	22Nm
Vacuum reservoir to crankcase		
M6X25	**Tightening torque**	8Nm
Vacuum unit to compressor bypass flap		
Screw	**Tightening torque**	3,8Nm

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1166 Overview of tightening torques

Vacuum line for oil vacuum pump to crankcase		
M6x22	**Tightening torque**	10Nm

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1171 Overview of tightening torques

Exhaust gas recirculation module to exhaust manifold		
M8x28		32Nm
Exhaust-gas recirculation cooler to cylinder head		
M8x20 / M8x28	**Tightening torque**	19Nm
Exhaust-gas recirculation cooler to cylinder head		
M8x20 / M8x28	**Tightening torque**	5Nm
	Release angle	90°
Exhaust-gas recirculation cooler to cylinder head		
M8x28 / M8x20 Renew screws.	**Tightening torque**	19Nm
Exhaust-gas recirculation cooler to exhaust manifold		
M8x28 Replace screws	**Tightening torque**	32Nm
Exhaust-gas recirculation valve to exhaust-gas recirculation cooler		
M6		13Nm

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11 78 Emissions-control, Lambda oxygen sensor

Tightening Torques

	Type	Thread	Tightening specification	Torque
1AZ Oxygen control sensor; oxygen monitor sensor	All	M18 x 1.5		50 Nm

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1179 Overview of tightening torques

Heat shield to cylinder head		
M8X16	**Tightening torque**	10Nm

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11 operating fluid overview

Testing equipment

Connecting hose Ã˜ = 8 x 13 mm, length = 70 mm		

Expendable materials

lubricating grease Longtime PD -1	400 g, Cartridge	83192160340

Overview of consumables (Electronic Parts Catalogue)

Expendable materials

Copper paste	100 g, Tube	81229400794

Overview of consumables (Electronic Parts Catalogue)

Engine oil

Technically suitable engine oils for BMW Group engines		

3.0 Technically appropriate engine oils for BMW Group engines

Engine oil

Technically suitable engine oils for BMW Group engines		

3.0 Specified engine oils for Toyota J29

Sealing compound

Sealant Drei Bond 1209	30 ml, Tube	07 58 9 062 376

Expendable materials

Brake cleaner2.0	500 ml, Spray can 20 , Canister	83192365214 83192365215

Expendable materials

Exhaust turbocharger additive	20 g, Tube	83192362168

Expendable materials

Exhaust turbocharger additive, petrol MSP	17 ml, Tube	83192457276

Expendable materials

High-temperature assembly paste	10 g, Tube	83230309003

Sealing compound

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Loctite No. 270	10 ml, Bottle	83192210337

Overview of consumables (Electronic Parts Catalogue)

Engine oil

Technically suitable engine oils for Toyota engines		

3.0 Technically suitable engine oils for Toyota J29

Sealing compound

Loctite 5970 liquid sealing compound **Processing time <10 minutes at room temperature**	50 ml, Cartridge	83190404517

Overview of consumables (Electronic Parts Catalogue)

Expendable materials

Lubricating grease SYNTHESO GLEP 1	100 g, Tube	83239407778

Overview of consumables (Electronic Parts Catalogue)

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1214 Overview of tightening torques

Holder on end cover and mounting bracket		
M6X16	**Tightening torque**	8Nm

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1223 Overview of tightening torques

Glow elements to cylinder head

Glow element	**Tightening torque**	13Nm

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1231 Overview of tightening torques

Alternator to component carrier		
M10x75	**Tightening torque**	38Nm
M10x125	**Tightening torque**	38Nm
M10x90	**Tightening torque**	38Nm
Battery positive lead on the starter motor generator		
M8	**Tightening torque**	19Nm
Belt tensioner to alternator/starter generator		
M8X30	**Tightening torque**	28Nm
Positive battery cable to the alternator		
M8	**Tightening torque**	19Nm

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1232 Overview of tightening torques

Carbon brushes to alternator		
Screw	**Tightening torque**	1.75Nm
Carbon brushes to alternator		
Screw	**Tightening torque**	1.75Nm
Housing cover to alternator		
Nuts	**Tightening torque**	4.6Nm

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1236 Overview of tightening torques

High-voltage connector to electric drive unit		
M8x46	**Tightening torque**	19Nm

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1241 Overview of tightening torques

Special tool 2 365 488 to engine		
M8x60	**Tightening torque**	19Nm
Starter motor to engine		
M8X60	**Tightening torque**	19Nm
Starter motor to transmission		
M8x60		19Nm

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1242 Overview of tightening torques

Battery positive lead to battery positive terminal		
M8	**Tightening torque**	19Nm
Battery positive lead to starter		
M8	**Tightening torque**	13,5Nm
Ground strap to rear axle differential		
M6x20	**Tightening torque**	8Nm
Positive battery cable to power distribution box		
Flange nutM8	**Tightening torque**	15Nm
Positive battery cable to safety battery terminal		
Flange nutM8	**Tightening torque**	15Nm

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1251 Overview of tightening torques

Wiring harness section on engine		
TS5x20	**Tightening torque**	3,5Nm
Wiring harness section to cylinder head cover		
TS5x20	**Tightening torque**	3,6Nm
Wiring harness section to manifold		
TS5x20	**Tightening torque**	3,6Nm

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1252 Overview of tightening torques

Battery positive lead to starter		
M8		13Nm
Bracket on cylinder head cover		
	Tightening torque	5Nm
Grounding cable/wiring harness section to transmission		
BM6	**Tightening torque**	8Nm

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1261 Overview of tightening torques

Oil level sensor to oil sump		
M6	**Jointing torque**	2Nm
	Tightening torque	8Nm
Oil level sensor to oil sump		
M6 hexagon nut	**Jointing torque**	2Nm
	Tightening torque	8,5Nm
Oil pressure sensor on crankcase		
Sensor	**Tightening torque**	16,5Nm
Oil pressure switch to crankcase		
Sensor Replace oil pressure switch.	**Tightening torque**	22Nm

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1290 Overview of tightening torques

Control unit holder		
M6	**Tightening torque**	8Nm

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12 operating fluid overview

Expendable materials

Cable strap including holder for edges	,	61139200225

Expendable materials

Cable strap including holder for bore holes	,	61136915981

Transmission oil

Technically compatible oils for electric machine transmission		

Main group 12

Expendable materials

Non-woven abrasives 3M-07904		45176141 (BASF)

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13 31 Fuel Pump with Drive and Pipes

Tightening Torques

	Type	thread	tightening specification	Torque
1AZ Fuel pump to engine	All			12 Nm
2AZ Fuel pipe coupling bolt	All / with K-Jetr.	M8		9 Nm
3AZ Fuel pipe coupling bolt	All / with K-Jetr.	M12		20 Nm
4AZ Fuel pipe to pressure regulator	All / with L-Jetr.			30 Nm
5AZ Return pipe connector to pressure regulator	All / with L-Jetr.			27 Nm

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1332 Overview of tightening torques

Fuel filter on vehicle underbody		
M6 Renew nuts.	**Tightening torque**	6Nm

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1351 Overview of tightening torques

Bracket to high-pressure pump and cylinder head		
M8x33	**Observe torque specification**	19Nm
Central bolt of high pressure pump to camshaft sprocket		
M12x1	**Tightening torque**	65Nm
High pressure pump and timing case cover		
M8x33		19Nm
High pressure pump to crankcase		
M8x33	**Tightening torque**	19Nm
Holder of high pressure pump to crankcase		
M8x33	**Tightening torque**	19Nm
Screw plug to end cover		
M34x1.5	**Tightening torque**	20Nm
Screw plug to timing case cover		
M34x1.5 Renew screw plug with O-ring.		20Nm

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1352 Overview of tightening torques

Camshaft sprocket on high pressure pump		
M12	**Tightening torque**	65Nm
Chain tensioner to crankcase		
M6x22	**Tightening torque**	10Nm
High pressure pump on camshaft sprocket		
M12x1		65Nm

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1353 Overview of tightening torques

Clamping claw facing to cylinder head cover		
M6	**Tightening torque**	10Nm
Fuel hose clamp to fuel line		
Clamp 15-19	**Tightening torque**	3,4Nm
Fuel preheating on fuel filter		
	Tightening torque	2Nm
High pressure lines between high pressure pump and rail		
High-pressure pipe	**Tightening torque**	24.5Nm
High pressure lines between injector and rail		
High-pressure pipe	**Tightening torque**	24.5Nm
Holder on intake plenum		
TS6X20	**Tightening torque**	5Nm
Injector to cylinder head cover		
M8	**Tightening torque**	8Nm
	Angle of rotation	120°
Rail pressure regulating valve to rail		
	Initial tightening torque	80Nm
	Release	90°
	Tightening torque	85Nm
Rail pressure sensor to rail		
Grease thread lightly.	**Tightening torque**	70Nm
Rail to cylinder head cover		
M8	**Tightening torque**	19Nm

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1354 Overview of tightening torques

Throttle body to intake plenum		
6x50	**Tightening torque**	7Nm

Throttle body to intake plenum		
6x50	**Tightening torque**	8Nm

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1362 Overview of tightening torques

Banjo bolt for exhaust pressure pipe to exhaust manifold		
Hollow bolt Renew sealing rings.	**Tightening torque**	30Nm
Camshaft sensor to cylinder head cover		
TS5x20	**Tightening torque**	4Nm
Charging pressure sensor to compressor bypass		
Hexagon screw M6x20	**Tightening torque**	8Nm
Charging pressure sensor to intake plenum		
Torx screw 6x20	**Tightening torque**	5Nm
Hexagon bolt 6X20	**Tightening torque**	8Nm
Charging pressure sensor to intake plenum		
TS6X20	**Tightening torque**	5Nm
Clamp for the pressure hose on the differential pressure sensor		
Clamp 1519mm	**Tightening torque**	3Nm
Coolant temperature sensor at cylinder head		
Temperature sensor	**Tightening torque**	3,5Nm
Coolant temperature sensor at cylinder head		
Sensor	**Tightening torque**	3,5Nm
Crankshaft sensor		
		4,6Nm
Crankshaft sensor to timing case cover		
M5	**Tightening torque**	5Nm
Diesel particulate sensor to exhaust system		
Sensor	**Tightening torque**	50Nm

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Differential pressure sensor of diesel particulate filter on cylinder head cover

TS5x20	**Tightening torque**	4Nm

Differential pressure sensor to holder

Screw	**Tightening torque**	4Nm

Engine wiring set to cylinder head cover

		5Nm

Evaluation electronics of diesel particulate sensor to holder

Hexagon nut	**Tightening torque**	8Nm

Exhaust gas pressure pipe to sensor system holder

TS6x20	**Tightening torque**	5,7Nm

Exhaust gas pressure sensor

M14x1.5	**Tightening torque**	13,5Nm

Exhaust temperature sensor for EGR

	Tightening torque	21,7Nm

Exhaust temperature sensor for EGR

Sensor	**Tightening torque**	21,7Nm

Exhaust temperature sensor for the exhaust system after catalytic converter before diesel particulate filter

Sensor	**Tightening torque**	30Nm

Exhaust-gas temperature sensor to diesel particulate filter

Sensor	**Tightening torque**	30Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor	**Tightening torque**	30Nm

Front oxygen sensor to top of diesel particulate filter

Sensor	**Tightening torque**	50Nm

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Hot film air mass meter to intake silencer		
Screw TS 4x16	**Tightening torque**	1,5Nm
Hot film air-mass meter to intake filter housing		
TS4x16		1,5Nm
Monitoring oxygen sensor		
Sensor	**Tightening torque**	50Nm
Nitrogen oxide sensor before SCR catalytic converter		
Sensor	**Tightening torque**	50Nm
Nitrogen oxide sensor downstream of SCR catalytic converter		
Sensor	**Tightening torque**	55Nm
Oxygen sensor		
Oxygen sensor	**Tightening torque**	50Nm

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1364 Overview of Technical Data

Cleaning of injectors with the ultrasonic cleaning unit

Cleaning temperature	60 °C
Cleaning time	30 min
Quantity of SPX special cleaner per cleaning cycle	1000 ml

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1371 Overview of tightening torques

Clean air pipe to exhaust turbocharger		
M6X20	**Tightening torque**	8Nm
Clean air pipe to upper section of intake filter housing		
Clamp	**Tightening torque**	3Nm
Resonator to intake filter housing		
Clamp	**Tightening torque**	3Nm

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1611 Overview of tightening torques

Filling hose on fuel tank		
Hose clamp Replace hose clamp.	**Tightening torque**	4Nm
Fuel filler hose to fuel filler pipe		
Hose clamp	**Tightening torque**	3,5Nm
Fuel tank retaining strap to body		
M8 screw Renew screws.	**Tightening torque**	19Nm
Fuel tank to body		
Nut M8 Renew nut.	**Tightening torque**	19Nm
Plastic nut to fuel filler pipe		
Plastic nut Renew nut.	**Tightening torque**	3,5Nm

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1613 Overview of tightening torques

Carbon canister to body		
Renew screws / nuts.	**Tightening torque**	8Nm
Diagnostic module for tank leaks on body		
Plastic nut	**Tightening torque**	2,6Nm

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1614 Overview of tightening torques

Control unit for electrical fuel pump control on body		
Renew plastic nut.	**Tightening torque**	4Nm

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1619 Overview of tightening torques

Filling hose SCR reservoir		
Hose clamp Replace hose clamp.	**Tightening torque**	3Nm
Fuel filler pipe on upper body		
Nut M6 Renew nut.	**Tightening torque**	8Nm
Hose clamp		
Hose clamp	**Tightening torque**	3.5Nm
Pre-supply pump to pump body		
M4 screw Renew screws.		2Nm
SCR filler pipe to body		
Nut M6	**Tightening torque**	8Nm
SCR reservoir to body		
NutM6 Replace nuts.		8Nm
Service cap on the SCR tank		
M4 screw Renew screws and service cap.	**Tightening torque**	2Nm

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1700 Overview of Technical Data

Capacity of high-temperature coolant circuit G20/G21/G22/G23/G26/G42 mild hybrid technology	
	B57D30T2/O2 / B47B20O1/U1
	7.7 l

Capacity of low-temperature coolant circuit G20/G21/22/23/G26/G42 mild hybrid technology	
	B57D30T2/O2 / B47D20O1/U1
	1.3 l

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Coolant level

Overfill quantity of coolant (above the maximum mark) in the high-temperature expansion tank	+ 200 ml
Overfill quantity of coolant (above the maximum mark) in the low-temperature expansion tank (if installed)	+ 100 ml

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Cooling system capacity G20/G21/G22/G23/G26/G28/G42	
	B47D20O1
	7.0 l

Cooling system test pressure	
	Test pressure for cooling system (gauge pressure)
	1,5 bar

Opening pressure of coolant sealing cover	
	Pressure relief valve opens when the pressure exceeds the ambient pressure.
	min. 1,4 bar
	Electric changeover valve must open at latest when the pressure is lower than the ambient pressure
	max. 0,1 bar

Opening pressure of sealing cap / test pressure of high-temperature coolant circuit cooling system	
	Pressure relief valve opens when the pressure exceeds the ambient pressure.
	min. 1,4 bar
	Electric changeover valve must open at latest when the pressure is lower than the ambient pressure.
	max. 0,1 bar
	Test pressure for cooling system (gauge pressure)
	1,5 bar

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Opening pressure of sealing cap of low-temperature coolant circuit	
	Pressure relief valve opens when the pressure exceeds the ambient pressure.
	min. 1,4 bar
	Electric changeover valve must open at latest when the pressure is lower than the ambient pressure
	max. 0,1 bar
	Test pressure for cooling system (gauge pressure)
	1,5 bar

Test conditions for coolant level	
	Coolant must be cooled down

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1710 Overview of tightening torques

Fan cowl on radiator	
D6x20	6Nm
Intercooler to module carrier	
D6x20	6Nm
Radiator to module carrier	
D6x20	6Nm

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1711 Overview of tightening torques

Cooling module cover on holder		
D6X20	**Tightening torque**	7Nm
Fan cowl with electric fan on radiator		
TS6x20	**Tightening torque**	6,5Nm
Radiator on holder		
D6x20 screw	**Tightening torque**	6Nm

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1722 Overview of tightening torques

Transmission oil cooler line to transmission		
M8		19Nm
Transmission oil cooler to crankcase		
M6	**Tightening torque**	8Nm

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1761 Overview of tightening torques

Electric coolant pump for mild hybrid technology to the body		
Nut M6	**Tightening torque**	8Nm

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17 operating fluid overview

Expendable materials

BMW antifreeze and corrosion inhibitor G30-91 DEU	1500 ml, Can	83192211662
	60 l, Barrel	83192304076

Expendable materials

BMW antifreeze and corrosion inhibitor G30-91 Worldwide (except DEU, JPN, CHN, FIN, NOR, SWE, DNK, FRO, AUS)	1500 ml, Can	83512355294

Expendable materials

BMW antifreeze and corrosion inhibitor G30-91 Worldwide (except DEU)	60 l, Barrel	83512355295

Expendable materials

BMW antifreeze and corrosion inhibitorG48 DEU	1500 ml, Can	83192211191
	60 l, Barrel	83192304068
	205 l, Barrel	83192304069

Expendable materials

BMW antifreeze and corrosion inhibitor (i01) Worldwide	1 l, Can	83512355296

Expendable materials

BMW antifreeze and corrosion inhibitorG48 Worldwide (except DEU, JPN, CHN, FIN, NOR, SWE, DNK, FRO, AUS)	1500 ml, Can	83512355290
	60 l, Barrel	83512355291
	205 l, Barrel	83512355293

Expendable materials

BMW antifreeze and corrosion inhibitorG48 FIN, NOR, SWE, DNK, FRO	1500 ml, Can	83192211914

Expendable materials

BMW antifreeze and corrosion inhibitorG48 JPN	1500 ml, Can	83192211194

Expendable materials

BMW antifreeze and corrosion inhibitorG48 OFF	1500 ml, Can	83192211913

Expendable materials

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Expendable materials

BMW antifreeze and corrosion inhibitorG48 CHN	1500 ml, Can	83192211195

Expendable materials

BMW antifreeze and corrosion inhibitor HT-12 Worldwide	5 , Canister	83192466484

Expendable materials

Technically suitable antifreeze and corrosion inhibitor	

Main group 17

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1800 Overview of tightening torques

Pressure hose to diesel particulate filter	
	3Nm

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1820 Overview of tightening torques

Clamp with partial replacement of exhaust system		
Clamp	**Tightening torque**	45Nm
Exhaust system to diesel particle filter		
M8 If necessary, renew clamp.	**Tightening torque**	26 ±2Nm
Exhaust system to rear axle carrier		
M8 nut	**Tightening torque**	19Nm
Exhaust system to transmission		
M8	**Tightening torque**	19Nm
Front pipe/catalytic converter to rear silencer		
Clamp		45Nm
Rear silencer to body / bumper support		
M8 Replace nuts.	**Tightening torque**	19Nm

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1821 Overview of tightening torques

Diesel particulate filter to holder, bottom	
M8	19Nm

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1831 Overview of tightening torques

Bracket to diesel particulate filter top		
M8	**Tightening torque**	19Nm
Bracket to transmission for diesel particulate filter holder bottom		
M8X20	**Tightening torque**	19Nm
Diesel particulate filter V-clip to exhaust turbocharger		
V-band clamp Renew V-band clamp.	**Tightening torque**	15Nm
Lower holder to diesel particulate filter		
M8	**Tightening torque**	19Nm
SCR metering module V-clip to exhaust system		
V-band clamp Renew V-band clamp.	**Tightening torque**	8Nm

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1832 Overview of tightening torques

Heat shield to body		
Nut	**Tightening torque**	3Nm

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1840 Overview of tightening torques

Banjo bolt for exhaust pressure pipe to exhaust manifold		
Hollow bolt	**Renew sealing rings.**	30Nm
Exhaust gas pressure sensor to holder of sensor system to cylinder head cover		
TS6x20		5Nm
Exhaust manifold to cylinder head		
M7 If necessary, renew loose stud bolts.	**Tightening torque**	11Nm
Replace nuts.	**Tightening torque**	13Nm
Exhaust manifold to cylinder head		
M7 **If necessary, renew loose stud bolts.**	**Tightening torque**	11Nm
Renew nuts.	**Tightening torque**	13Nm
Heat shield to exhaust manifold		
M6x12		10Nm

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18 operating fluid overview

Expendable materials

Diesel particulate filter cleaner	500 ml	83192211602

Expendable materials

Starter kit for diesel particulate filter cleaner	500 ml	83192211603

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2211 Overview of tightening torques

Engine mount to engine mounting bracket		
M12	**Tightening torque**	100Nm
Engine mount to front axle support		
M8	**Tightening torque**	19Nm
Engine mounting bracket on engine		
M10 8.8		38Nm
Engine mounting bracket on engine		
M10	**Tightening torque**	38Nm
Protective cap		
Hexagon screw	**Tightening torque**	3Nm
Right engine mount to side member		
M12	**Tightening torque**	100Nm

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2232 Overview of tightening torques

Transmission cross member to body		
M8	**Tightening torque**	19Nm
Transmission cross member to rubber mounts		
M12	**Tightening torque**	100Nm
Transmission mounting bracket to transmission		
M10	**Tightening torque**	48Nm

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2300 Overview of tightening torques

Holder for underbody panelling		
		3Nm
Transmission to oil sump		
M8	**Tightening torque**	19Nm

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23 operating fluid overview

Brake fluid and hydraulic fluid

Hydraulic fluid CHF 11 S	1 l, Can	83290429576

Transmission oil

Manual gearbox oil MTF LT-5	1 l, Can 20 l, Barrel	83222156969 83222167666

Transmission oil

Manual gearbox oil MTF 3	1 l, Bottle	83222455210

Transmission oil

Manual gearbox oil MTF LT-2 * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	1 l, Can 5 l, Can 1000 ml, TU*	83222339219 83220309031 83220396705

Transmission oil

Manual gearbox oil MTF LT-3 * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	1 l, Can 5 l, Can 1000 ml, TU*	83222339221 83227533818 83220396706

Transmission oil

Manual gearbox oil MTF LT-4 * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	1 l, Can 5 l, Can 1000 ml, TU*	83222339223 83220421925 83220430275

Transmission oil

Manual gearbox oil MTF 2 * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	1 l, Can 20 l, Barrel 1000 ml, TU*	83222344589 83220403247 83220403673

Transmission oil

Manual gearbox oil MTF 1	1 l,	83220396624

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Manual gearbox oil MTF 1 * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	1 l, Can 1000 ml, TU*	81222339384 81229401225

Transmission oil

Technically suitable manual gearbox oil	

Main group 23

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2400 Overview of Technical Data

GA8HP51Z transmission capacity	
	min. 9,28 l

GA8HP76Z transmission capacity	
	min. 9,35 l

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2400 Overview of tightening torques

Transmission to engine		
M8	**Tightening torque**	19Nm
M12	**Tightening torque**	66Nm

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2413 Overview of tightening torques

Double hexagon nut/output flange		
with sealing ring in output flange	**Replace nut**	60Nm

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2430 Overview of tightening torques

Output speed sensor to transmission (position 17)

M6x20 Renew screw.	**Jointing torque**	4Nm
	Angle of rotation	12°

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2440 Overview of tightening torques

Torque converter to flywheel		
M10 Renew screws.	**Tightening torque**	56Nm

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24 operating fluid overview

Transmission oil

Automatic transmission fluid ATF D II	1 l, Can	81229400272
	60 l, Barrel	81229400275

Transmission oil

Automatic transmission fluid ATF D VI	1 l, Can	83222167718
	5 l, Barrel	83222167720

Transmission oil

Automatic transmission fluid ATF 1	1 l, Can	83222305395
	5 l, Can	83222344588

Transmission oil

Automatic transmission fluid ATF 4	1 l, Bottle	83222344206
	20 l, Barrel	83229407807

Transmission oil

Automatic transmission fluid ATF 5	1 l, Bottle	83222344207
	20 l, Barrel	83220442817

Transmission oil

Automatic transmission fluid ATF 6	1 l, Bottle	83222355599
	20 l, Barrel	83222355601

Transmission oil

Automatic transmission fluid JWS 3309	1 l, Bottle	83227542290

Transmission oil

Automatic transmission fluid ATF 3+	1 l, Bottle	83222289720

Transmission oil

Automatic transmission fluid ATF 33 * TU = Trade Unit. TU numbers cannot be ordered!	20 l, Barrel	83220403580

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For invoicing purposes only.	1000 ml, TU*	83220406574

Transmission oil

Automatic transmission fluid ATF D III * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	1 l, Can	83229407858
	1000 ml, TU*	83229407860

Transmission oil

Automatic transmission fluid ATF 2 * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	1 l, Can	83222305396
	20 l, Barrel	83220142516
	1000 ml, TU*	83220144137

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2611 Overview of tightening torques

Centre mount to body		
M8	**Tightening torque**	19Nm
Flexible disc, rear, to propeller shaft		
M12 Renew screws and nuts. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	**Jointing torque** **Angle of rotation**	55Nm 90°
Front flexible disc to propeller shaft		
M12 Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	**Jointing torque** **Angle of rotation**	55Nm 90°
Propeller shaft on the rear axle differential		
Insert nut Replace insert nut.	**Tightening torque**	100Nm
Rear flexible disc to three-hole flange		
M12 Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	**Jointing torque** **Angle of rotation**	55Nm 90°

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26 operating fluid overview

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

Expendable materials

Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919

Expendable materials

High-strength screw lock, Loctite 270	10 ml, Tube	83 19 2 210 337

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2700 Overview of Technical Data

Capacity of transfer box

Transfer-box oil
min. 0.7 l

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2710 Overview of tightening torques

Ground strap to transmission or body		
M8	**Tightening torque**	19Nm
Oil filler plug and oil drain plug		
M22	**Tightening torque**	60Nm
Transfer box control unit on transfer box		
M8	**Tightening torque**	25Nm
Transfer box to automatic transmission		
M10	**Tightening torque**	43Nm

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27 operating fluid overview

Transmission oil

Transfer box oil DTF 1	1 l, Bottle	83222409710

Transmission oil

Hypoid Axle Oil G1	3x 500 ml, Bottle	83222295532

Expendable materials

Mounting grease GE	5 g, Tube	83232357146

Transmission oil

Technically compatible oils for transfer box	

Main group 27

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28 operating fluid overview

Transmission oil

Double-clutch transmission oil DCTF-1+	1 l, Bottle	83222446673

Expendable materials

Twin-clutch gearbox oil BMW DCTF-2	1 l, Bottle	83 22 2 433 157

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3100 Overview of Technical Data

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G22/G23 Rear-wheel drive, standard suspension/sport suspension settings with low-slung

	Dimension A
Measured from centre of wheel hub to lower edge of wheel arch	361 (351 - 371) mm

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Ride height of front axle G08 Standard suspension of rear wheel drive

Ride height (A): Measured from bottom centre of rim flange (1) to lower edge of wheel arch (2).	
18" wheel rim	
	669 mm
19" wheel rim	
	682 mm
20" wheel rim	
	694 mm
21" wheel rim	
	707 mm

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Ride height of front axle G22 sport suspension settings without low-slung (adaptive M suspension, M Sport suspension)

Ride height (A): Measured from bottom centre of rim flange (1) to lower edge of wheel arch (2).	
17" wheel rim	
	595 mm
18" wheel rim	
	607 mm
19" wheel rim	
	620 mm
20" wheel rim	
	632 mm

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Ride height on front axle G22 of standard suspension

Ride height (A): Measured from bottom centre of rim flange (1) to lower edge of wheel arch (2).

17" wheel rim	
	595 mm
18" wheel rim	
	607 mm
19" wheel rim	
	620 mm
20" wheel rim	
	632 mm

Ride height, front axle G08 LCI standard suspension, rear-wheel drive

Ride height (A): Measured from bottom centre of rim flange (1) to lower edge of wheel arch (2).	
	18" wheel rim
	669 mm
	19" wheel rim
	682 mm
	20" wheel rim
	694 mm
	21" wheel rim
	707 mm

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Track width of front axle G22 for rear wheel drive

Rim offset 25
1583 mm
Rim offset 27
1579 mm
Rim offset 30
1573 mm

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Track width on front axle G08 of standard suspension for rear-wheel drive

Rim offset 22	
	1620 mm
Rim offset 27	
	1610 mm
Rim offset 30	
	1604 mm
Rim offset 32	
	1600 mm

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WheelbaseG22

	2851 mm

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3100 Overview of tightening torques

Holder to front axle support		
Oval-head screw TS5 x 16	**Tightening torque**	2,6Nm

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3110 Overview of tightening torques

Front axle carrier to body, rear		
M14 Renew screws.	**Tightening torque**	175Nm
Front axle support to front/centre of body		
M12 Renew screws.	**Tightening torque**	108Nm

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3112 Overview of tightening torques

Crash lever to frame		
M14	**Tightening torque**	100Nm
Crash lever to frame / adapter of front axle support		
M14	**Tightening torque**	100Nm
Tension strut to front axle support		
M12 Renew bolt and cage nut.	**Jointing torque**	100Nm
Tighten screw connection in normal position.	**Angle of rotation**	90°
Tension strut to swivel bearing		
M14 Renew nut.	**Tightening torque**	175Nm
Wishbone to front axle support		
M12 Renew screw and nut.	**Tightening torque**	68Nm
Tighten in normal position! Tightening via screw.	**Angle of rotation**	180°
Wishbone to swivel bearing		
M14 Renew nut.	**Tightening torque**	175Nm

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3121 Overview of tightening torques

Wheel bearing to swivel bearing

M12
Renew spherical collar screws.
Tighten the spherical-collar bolts crosswise.

Tightening sequence must be strictly adhered to and carried out on all spherical-collar bolts at the same time!

Tightening torque	20Nm
Initial torque	140Nm
Unscrew all bolts.	max. 45°
Tightening torque	120Nm
Angle of rotation	90°

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3131 Overview of tightening torques

Absorber weight to spring strut		
M8 Renew screw.	**Tightening torque**	28Nm
	Angle of rotation	90°
Front spring strut support bearing to spring strut		
M12 Renew nut.		71Nm
Nut and locknut/self-locking nut		
M8 Renew screws.	**Tightening torque**	28Nm
	Angle of rotation	90°
Special tool to pressure plate		
	Tightening torque	8Nm
Spring strut shock absorber to swivel bearing		
M10 Renew screw and nut. Tightening via screw.	**Tightening torque**	60Nm
	Angle of rotation	180°

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3135 Overview of tightening torques

Front anti-roll bar link to anti-roll bar/spring strut		
M10 Renew nut.	**Tightening torque**	56Nm
Retaining bracket of anti-roll bar to rear axle support		
M8 Renew screws.	**Tightening torque**	21Nm

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3150 Overview of Technical Data

Front axle transmission oil: Capacity overview (all)

Front axle transmission 168AL
450 ml
Front axle transmission (not 168AL)
600 ml

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3151 Overview of tightening torques

Input flange to front axle transmission		
Replace collar nut.	**Tightening torque**	165Nm

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3160 Overview of Technical Data

Lubricating grease

	Quantity
	90 g

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31 operating fluid overview

Transmission oil

Technically suitable front axle transmission oils	

Main group 31

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3200 Overview of Technical Data

Axle alignment of front axle G08 LCI standard suspension, rear-wheel drive

* To minimise adjustment errors (measuring inaccuracies), use a narrower tolerance for the toe/camber adjustment! Toe difference front axle = criterion for steering wheel inclination

Total toe-in	0° 14' +/- 12'
Total toe-in adjustment*	0° 14' +/-4'
Toe difference on single wheel between left/right	max. 12'
Camber (difference between left/right max. 30')	-0° 23' +/-30'
Camber adjustment*	-0° 23' +/-25'
Toe difference angle (difference between left and right)	max. 20'
Castor angle (difference between left and right)	max. 30'
Front wheel offset	0° +/- 15'
Largest steering angle on inner cornering wheel	Approx. 38° 06'
Largest steering angle on outer cornering wheel	Approx. 32° 09'

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DIN normal position loading

Vehicle has a full tank.
Vehicle is completely assembled.
Per front seat (seat in centre position)
68 kg
On the centre rear seat
68 kg
Centred in the luggage compartment
21 kg

Rear axle wheel alignment G22 sport suspension settings without low-slung (adaptive M suspension, M Sport suspension)

* To minimise adjustment errors (measuring inaccuracies), use a narrower tolerance for the toe/camber adjustment!

Total toe-in
0° 24' +/- 12'
Total toe-in adjustment*
0° 24' +/-4'
Toe difference on single wheel between left/right
max. 12'
Camber (difference between left/right max. 30')
-1° 45' +/-25'
Camber adjustment*
-1° 45' +/-05'
Geometrical driving axis
0° +/- 12'

Ride height with vehicle load tolerance

Minimum value
min. - 20 mm
Maximum value
max. + 40 mm

Tolerance for ride height at design level

Tolerance for setpoint value
max. 2 mm
Difference between left and right
max. 2 mm

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Tolerance for ride height in normal position

Tolerance for setpoint value
max. 10 mm
Difference between left and right
max. 10 mm

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Wheel alignment of front axle G08 for standard suspension, rear wheel drive

* To minimise adjustment errors (measuring inaccuracies), use a narrower tolerance for the toe/camber adjustment! Toe difference front axle = criterion for steering wheel inclination

Total toe-in	0° 12' +/- 12'
Total toe-in adjustment*	0° 12' +/-4'
Toe difference on single wheel between left/right	max. 12'
Camber (difference between left/right max. 30')	-0° 23' +/-30'
Camber adjustment*	-0° 23' +/-25'
Toe difference angle (difference between left and right)	max. 20'
Castor angle (difference between left and right)	max. 30'
Front wheel offset	0° +/-15'
Largest steering angle on inner cornering wheel	Approx. 38° 06'
Largest steering angle on outer cornering wheel	Approx. 32° 09'

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Wheel alignment of front axle G22 for standard suspension

* To minimise adjustment errors (measuring inaccuracies), use a narrower tolerance for the toe/camber adjustment! Toe difference front axle = criterion for steering wheel inclination

Total toe-in	0° 16' +/- 12'
Total toe-in adjustment*	0° 16' +/-4'
Toe difference on single wheel between left/right	max. 12'
Camber (difference between left/right max. 30')	-1° 02' +/-30'
Camber adjustment*	-1° 02' +/-25'
Toe difference angle (difference between left and right)	max. 20'
Castor angle (difference between left and right)	max. 30'
Front wheel offset	0° +/-15'
Largest steering angle on inner cornering wheel	Approx. 40° 49'
Largest steering angle on outer cornering wheel	approximately 33°20’

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Wheel alignment of front axle G22 sport suspension settings without low-slung (adaptive M suspension, M Sport suspension)

* To minimise adjustment errors (measuring inaccuracies), use a narrower tolerance for the toe/camber adjustment! Toe difference front axle = criterion for steering wheel inclination

Total toe-in	0° 16' +/- 12'
Total toe-in adjustment*	0° 16' +/-4'
Toe difference on single wheel between left/right	max. 12'
Camber (difference between left/right max. 30')	-1° 02' +/-30'
Camber adjustment*	-1° 02' +/-25'
Toe difference angle (difference between left and right)	max. 20'
Castor angle (difference between left and right)	max. 30'
Front wheel offset	0° +/- 15'
Largest steering angle on inner cornering wheel	Approx. 40° 49'
Largest steering angle on outer cornering wheel	approximately 33°20’

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cardiagn.com

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Wheel alignment of rear axle G22 for standard suspension

* To minimise adjustment errors (measuring inaccuracies), use a narrower tolerance for the toe/camber adjustment!

Total toe-in	0° 24' +/- 12'
Total toe-in adjustment*	0° 24' +/-4'
Toe difference on single wheel between left/right	max. 12'
Camber (difference between left/right max. 30')	-1° 45' +/-25'
Camber adjustment*	-1° 45' +/-05'
Geometrical driving axis	0° +/- 12'

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3213 Overview of tightening torques

Electromechanical steering gear to front axle support

M12 Renew screws. Tightening sequence must be strictly adhered to and carried out on all screws at the same time!	1: front left 2: rear right 3: front right 4: rear left
	1. Tightening torque 60Nm
	2. Tightening torque 96Nm
	Angle of rotation 90°

Heat shield to electromechanical steering gear

M6	**Tightening torque** 8Nm

Special tool to rack

	Tightening torque 15Nm

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3221 Overview of Technical Data

Ear hose clamp gap dimension

Dimension [A]
max. 1 mm

Ear hose clamp gap dimension

Dimension [A]
max. 1 mm

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3221 Overview of tightening torques

Track rod end to swivel bearing		
M14 Renew nut.	**Tightening torque**	165Nm
Track rod end to track rod		
M10	**Tightening torque**	32Nm
Track rod to steering box		
	Tightening torque	110Nm
Track rod to steering box		
	Tightening torque	105Nm

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3231 Overview of tightening torques

Bearing plate to bulkhead		
M6	**Tightening torque**	8Nm
Lower steering shaft to steering column		
M8 Recut screw thread. Renew clamping bolt. No retorquing permitted!	**Tightening torque**	28Nm
Steering column to dashboard support		
M8 Observe tightening sequence.	**Tightening torque**	21,4Nm
Universal joint to steering box		
M8 Recut screw thread. Renew clamping bolt. No retorquing permitted!	**Tightening torque**	28Nm
Universal joint to steering box		
M8 Recut screw thread. Renew clamping bolt. No retorquing permitted!	**Tightening torque**	28Nm

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3233 Overview of tightening torques

Balance weight/vibration actuator on steering wheel		
Screw	**Tightening torque**	2,2Nm
Balance weight/vibration actuator on steering wheel		
Screw	**Tightening torque**	2,2Nm
Impact plate on steering wheel		
Screw	**Tightening torque**	6,5Nm
Mounting plate to steering wheel		
M5 Screw	**Tightening torque**	6,5Nm
Steering wheel cover		
Screw TS5x12	**Tightening torque**	2Nm
Steering wheel to steering column		
M14 Only for a micro-encapsulated screw: Renew screw.	**Tightening torque**	62,5Nm

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32 operating fluid overview

Expendable materials

Lubricating grease FB-1	100 g, Tube	83 23 2 208 093

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3300 Overview of Technical Data

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung

	Dimension A
Measured from centre of wheel hub to lower edge of wheel arch	357 (347 - 367) mm

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Rear axle ride height G22 sport suspension settings without low-slung (adaptive M suspension, M Sport suspension)

Measured from bottom centre of rim flange (1) to lower edge of wheel arch (2)	
	17" wheel rim
	590 mm
	18" wheel rim
	602 mm
	19" wheel rim
	615 mm
	20" wheel rim
	628 mm

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Ride height of rear axle G08 for standard suspension, rear wheel drive

Measured from bottom centre of rim flange (1) to lower edge of wheel arch (2)	**18" wheel rim**
	669 mm
	19" wheel rim
	682 mm
	20" wheel rim
	694 mm
	21" wheel rim
	707 mm

Ride height of rear axle G22 for standard suspension, rear wheel drive

Measured from bottom centre of rim flange (1) to lower edge of wheel arch (2)	
	17" wheel rim
	590 mm
	18" wheel rim
	602 mm
	19" wheel rim
	615 mm
	20" wheel rim
	628 mm

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Ride height, rear axle G08 LCI standard suspension, rear-wheel drive

Measured from bottom centre of rim flange (1) to lower edge of wheel arch (2)	
	18" wheel rim
	669 mm
	19" wheel rim
	682 mm
	20" wheel rim
	694 mm
	21" wheel rim
	707 mm

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Track width of rear axle G22, rear-wheel drive

Rim offset 25	
	1622 mm
Rim offset 27	
	1618 mm
Rim offset 30	
	1612 mm
Rim offset 40	
	1592 mm

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3300 Overview of tightening torques

Heat shield to undercarriage		
Screws and nuts	**Tightening torque**	3Nm

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3310 Overview of Technical Data

Initial filling capacity of rear axle differential oil for M-sports differential (rear axle differential with block)

M-sports differential
1.0 l

Installation position

Permissible rotation
-5 ° ... +5 °

Rear axle differential oil: Capacity overview (all)

168LW
0,75 l
190AL
0,8 l
205AL
0,8 l
215LW
0,9 l
215LWS
1.0 l
225AL
0,9 l
225ALS
1.0 l
225M
1.0 l
235LK
1,2 l

Transmission oil

Final drive oil

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3310 Overview of tightening torques

Heat shield to servomotor		
M5x10	**Tightening torque**	5Nm
Servomotor to rear axle final drive		
M6 Renew screws.	**Tightening torque**	9Nm
Temperature sensor to lid of M Sport differential of rear axle transmission		
M12	**Tightening torque**	14Nm
Vibration absorber to rear axle		
M8 Renew screw.	**Tightening torque**	28Nm
Vibration absorber to rear axle support		
M12 Replace screw and clip nut.	**Tightening torque**	28Nm

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3311 Overview of tightening torques

Lid to rear axle differential		
M12		140Nm
M10		90Nm
Oil filler plug on the rear axle differential		
M22 Renew screw plug with O-ring.	**Tightening torque**	60Nm
Rear axle differential oil filler plug		
M22 Renew the oil filler plug.	**Tightening torque**	60Nm

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3317 Overview of Technical Data

Position of the rubber mount in the rear axle support	
If necessary, make a mark on the outer area of the rubber mount to check the installation position.	**Permissible rotation in relation to the vertical** -5 ° ... +5 °

Position of the rubber mount in the rear axle support	
If necessary, make a mark on the outer area of the rubber mount to check the installation position.	**Permissible rotation** -7 ° ... +7 °

Position of the rubber mount or hydraulic bearing for rear axle differential	
	Permissible rotation in relation to the vertical -5 ° ... +5 °

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3317 Overview of tightening torques

Rear differential to rear axle carrier, front		
M12 Renew screw.	**Tightening torque**	100Nm
Rear differential to rear axle carrier, rear		
M14x110 Renew screw and nut.	**Tightening torque.**	175Nm
Rear differential to rear axle carrier, rear		
M14 Renew nut.	**Tightening torque.**	175Nm
Vibration absorber to rear axle		
M10 Renew screw.	**Jointing torque**	56Nm
	Angle of rotation	90°

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3330 Overview of tightening torques

Diffuser, rear		
Screw	**Tightening torque**	3Nm

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3332 Overview of tightening torques

Camber control arm to rear axle support		
M14 Renew eccentric bolt, nut and eccentric washer. Tighten in normal position.	**Tightening torque**	175Nm
Camber control arm to wheel carrier		
M14 Renew screw and nut.	**Jointing torque**	165Nm
	Angle of rotation	90°
Control arm to rear axle support		
M12 Renew screw and nut. Tighten in normal position.	**Tightening torque**	100Nm
	Angle of rotation	90°
Control arm to wheel carrier		
M14 Renew screw. Tighten in normal position.	**Tightening torque**	165Nm
	Angle of rotation	90°
Cover to camber control arm		
M6 Replace nuts.	**Tightening torque**	6Nm
Holder on wheel carrier		
Renew screw.	**Tightening torque**	12Nm
Toe arm to rear axle support		
M12 Replace the eccentric bolt, cam and disc. Tighten in normal position.	**Tightening torque**	108Nm
Toe arm to wheel carrier		
M12 Renew screw. Tighten in normal position.	**Tightening torque**	100Nm
	Angle of rotation	90°
Trailing arm to rear axle support		
M12 Renew screw and nut. Tighten in normal position.	**Tightening torque**	100Nm

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Trailing arm to wheel carrier

M12 Renew screw and nut. Tighten in normal position.	**Tightening torque**	100Nm

Upper wishbone to rear axle carrier

M12 Renew screw and nut. Tighten in normal position.	**Tightening torque**	100Nm
	Angle of rotation	90°

Upper wishbone to wheel carrier

M12 Renew screw and nut. Tighten in normal position.	**Tightening torque**	100Nm
	Angle of rotation	90°

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3333 Overview of tightening torques

Bracing strut on compression strut/body		
M8	**Tightening torque**	28Nm
Compression strut on body		
M10 Renew screws.	**Jointing torque**	47Nm
	Angle of rotation	45°
Rear axle carrier to body		
M12 Renew screws.	**Tightening torque**	108Nm
Special tool on aluminium sleeve		
	Tightening torque	20Nm

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3341 Overview of tightening torques

Output shaft to wheel bearing

M16
Replace the collar bolt.

Jointing torque	210Nm
Angle of rotation	90°

Wheel bearing to wheel carrier

M12
Renew spherical collar screws.
Tighten the spherical-collar bolts crosswise.

Tightening sequence must be strictly adhered to and carried out on all spherical-collar bolts at the same time!

Tightening torque	20Nm
Initial torque	140Nm
Unscrew all bolts.	max. 45°
Tightening torque	120Nm
Angle of rotation	90°

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3352 Overview of tightening torques

Nut and locknut/self-locking nut		
M8x40 Renew screws.	**Tightening torque**	28Nm
Shock absorber to camber arm		
M12 Renew nut and screw. Tighten in normal position.	**Tightening torque**	100Nm
	Angle of rotation	90°
Support bearing on shock absorber		
M10 Renew nut.	**Tightening torque**	41Nm

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3355 Overview of tightening torques

Rear anti-roll bar link to anti-roll bar / wheel carrier		
M10 Renew nut.	**Tightening torque**	56Nm
Rear anti-roll bar retaining bracket on rear axle support		
M8 Renew screws.		28Nm

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3360 Overview of tightening torques

Control unit for the limited slip differential		
Plastic nut with flange	**Tightening torque**	2.6Nm
M6	**Tightening torque**	8Nm
Storage compartment to body		
Plastic nut	**Tightening torque**	2,6Nm

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33 operating fluid overview

Transmission oil

Hypoid Axle Oil G4	500 ml, Bottle	83222447362

Transmission oil

Hypoid Axle Oil G3	500 ml, Bottle	83222413512

Transmission oil

Rear axle differential oil SAF-XJ Booster	3x 1 l, Bottle	83222282583

Transmission oil

Rear axle differential oil SAF Carbon Mod	500 ml, Bottle	83120445832

Transmission oil

Hypoid Axle Oil G2	500 ml, Bottle	83222413511

Transmission oil

Technically suitable rear axle differential oils

Main group 33

Transmission oil

BMW Synthetics OSP	1 l, Bottle 60 l, Barrel	83222365987 83229407768

Transmission oil

Rear axle differential oil MSP/A * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	1 l, Bottle 1000 ml, TU*	83222365988 83229405462

Expendable materials

Repair screws (4x) with washers (4x)	M12x1,5x115 37x2,5	07 14 7 426 660 31 33 6 776 760

Transmission oil

BMW HOK oil	-	83222413513

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3400 Overview of tightening torques

Front ventilation valve Brake calliper manufacturer Brembo		
Vent valve	**Tightening torque**	18Nm
Front ventilation valve fixed brake calliper Brake calliper manufacturer Continental		
Vent valve	**Tightening torque**	15Nm
Rear ventilation valve		
Vent valve	**Tightening torque**	10Nm
Vent valve		
	Tightening torque	10Nm
Vent valve		
	Tightening torque	10Nm
Vent valve of the rear brake caliper, made of aluminium and not painted		
Vent valve	**Tightening torque**	10Nm
Vent valve of the rear brake caliper, made of steel and always painted		
Vent valve	**Tightening torque**	17Nm

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3411 Overview of tightening torques

Brake caliper / caliper carrier at front swivel bearing		
M12 Renew screw.	**Tightening torque**	110Nm
Brake disc to front wheel hub		
M8	**Tightening torque**	16Nm
Brake disc to front wheel hub		
M8 Renew screw.	**Tightening torque**	16Nm
Brake guard plate at front swivel bearing		
M6x12 Renew screw.	**Tightening torque**	8Nm
Guide bolt (brake caliper on caliper carrier)		
M8 Renew screws.		35Nm

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3421 Overview of Technical Data

Minimum brake disc thickness (nominal dimension 330x20)

Minimum brake disc thickness (brake disc 330x20)
18,4 mm

Minimum brake disc thickness (nominal dimension 345x24)

Minimum brake disc thickness (brake disc 345x24)
22,4 mm

Minimum brake disc thickness (nominal dimension 370x24)

Minimum brake disc thickness (brake disc 370x24)
22,4 mm

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3421 Overview of tightening torques

Brake disc to rear wheel hub		
M8	**Tightening torque**	16Nm
Brake disc to rear wheel hub		
M8 Renew screw.	**Tightening torque**	16Nm
Brake protection plate on the rear wheel carrier		
M6x12 Renew screw.	**Tightening torque**	8Nm
Caliper carrier to rear wheel carrier		
M12 Renew screw.	**Tightening torque**	130Nm
Guide bolt (brake caliper on caliper carrier)		
M8		35Nm

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3431 Overview of tightening torques

Retaining screw, expansion tank to tandem brake master cylinder	
Renew screw.	4Nm

Tandem brake master cylinder in the brake booster Replace nuts.	
M8	23Nm

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3432 Overview of tightening torques

Brake hose to brake caliper, front		
	Tightening torque	17Nm
Brake hose to brake caliper, rear		
	Tightening torque	24Nm
Brake pipe screw connection / Union screws		
	Tightening torque	17Nm

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3433 Overview of tightening torques

Brake booster to pedal assembly console

Replace nuts.

M8 Re-tighten 1x on brake booster after 10 min .	**Tightening torque**	22Nm

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3441 Overview of tightening torques

EMF actuator to brake caliper		
Renew screws.	**Tightening torque**	12Nm

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3451 Overview of tightening torques

Hydraulic control unit to holder	
M6 Renew screws.	8Nm
Hydraulic unit with holder on body	
Renew screws.	8Nm

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3452 Overview of tightening torques

Control unit for the optional equipment system (SAS) to the holder		
Renew plastic nut.		4Nm
DSC control unit on hydraulic unit		
Screw Renew screws.	Screw in screws and evenly tighten crosswise. **1. Tightening torque** **2. Tightening torque** **3. Tightening torque**	 1,5Nm 2.5Nm 3,5Nm
Rear wheel speed sensor on wheel carrier		
M6 Renew screw.	**Tightening torque**	12Nm
Wheel speed sensor to swivel bearing		
M6 Renew screw.	**Tightening torque**	12Nm

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34 operating fluid overview

Expendable materials

Lubricating grease Staburags NBU 12K	100 g, Tube	83 23 9 407 810

Expendable materials

Safety cleaner 2.0	500 ml, Spray can	83192362037
	20 l, Canister	83192362038
	60 l, Canister	83192362040

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233

Brake fluid and hydraulic fluid

Brake fluid DOT4 front left, low viscosity * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only. EU	250 ml, Can	83132405975
	500 ml, Can	83132405976
	1 l, Can	83132405977
	5 l, Can	83132405978
	30 l, Barrel	83130443028
	60 l, Barrel	83130443029
	1000 ml, TU*	83132184842
	1000 ml, TU*	83132184843
	1000 ml, TU*	83130443030

Brake fluid and hydraulic fluid

Brake fluid DOT4, low viscosity OFF	500 ml, Can	83130042718
	30 , Barrel	83130430440

Brake fluid and hydraulic fluid

Brake fluid DOT4, low viscosity CHN	1 , Can	83132406162

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	1 , Can	83132467487

Brake fluid and hydraulic fluid

Brake fluid DOT4, low viscosity JPN	1 , Can	83132405979
	5 , Canister	83132406163

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3511 Overview of tightening torques

Pedal bracket on body		
M8 Renew screw.	**Tightening torque**	22Nm

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3521 Overview of tightening torques

Brake pedal travel sensor to holder		
M5X10 screw	**Tightening torque**	5Nm
Brake pedal travel sensor with holder to bearing support		
Oval-head screw	**Tightening torque**	3.3Nm

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3540 Overview of tightening torques

Accelerator pedal module to body		
M6 Renew screw.	**Tightening torque**	8Nm
Brake pedal travel sensor to driver pin		
Nut M6	Renew nut. **Tightening torque**	8Nm

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3610 Overview of tightening torques

Wheel bolts

M14 / SW17
Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.

Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.

Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.

Tightening torque	140Nm
Check	140Nm

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3612 Overview of Technical Data

Drive the vehicle	
Speed	
	min. 20 km/h
Travel time	
	max. 10 min

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3620 Overview of tightening torques

Tyre valve to wheel rim

Replace union nut. Tighten screw connection in one go. Do not retighten the screw connection.	**Tightening torque**	8Nm

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36 operating fluid overview

Expendable materials

Tyre-fitting paste	3500 g, Bucket	81220433046

Expendable materials

Lubricating spray	400 ml, Spray can	83192156562

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3714 Overview of tightening torques

Ride height sensor to holder		
M5 Renew screw.	**Tightening torque**	5Nm
VDP control unit to body		
Plastic nut Renew plastic nut.	**Tightening torque**	2,6Nm
Vertical acceleration sensor to spring strut shock absorber		
M6	**Tightening torque**	9Nm

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41 14 Reinforcement plate

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Cap nut to reinforcement plate	All	M5		6 Nm

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4100 Overview of Technical Data

Gap dimension between door window glass and rear side window		
1 front door; 2 side sill trim panel	**a**	
		8.0 (6.7 - 9,3) mm
	b	
		0 (-0,7 - 1,7) mm

Gap dimension bonnet to bumper panel		
1 bonnet; 2 bumper panel	**a**	
		3.5 (2.3 - 4,7) mm
	b	
		1.0 (-0,5 - 2.5) mm

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Gap dimension bonnet to front side panel		
1 bonnet; 2 front side panel	**a**	
		3.3 (2.3 - 4,3) mm
	b	
		0,5 (-1,1 - 2.1) mm

Gap dimension bonnet to headlight

1 bonnet; 2 headlight	**a**
	5,3 (3,5 - 7,1) mm

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Gap dimension from front door to rear side panel

1 Front door; 2 Rear side panel	**a**
	3,8 (2,8 - 4,8) mm
	b
	0 (-0,3 - 1,3) mm

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Gap dimension front door to side sill trim panel

1 front door; 2 side sill trim panel	**a**	3,8 (2,6 - 5.0) mm
	b	1.6 (0,3 - 2,9) mm

Gap dimension front door to side sill trim panel

1 front door; 2 side sill trim panel	**a**	3,8 (2,6 - 5.0) mm
	b	0 (-1.3 - 1.3) mm

Gap dimension front side panel to A-pillar		
1 front side panel; 2 A-pillar	**a**	
		2.8 (1.6 - 4.0) mm
	b	
		0,7 (-0,5 - 1,9) mm

Gap dimension front side panel to front door		
1 Front side panel; 2 front door	**a**	
		3,8 (2.8 - 4,8) mm
		0,5 (-0,3 - 1,3) mm

Gap dimension glass slide/tilt sunroof panel to roof outer skin		
1 glass slide/tilt sunroof panel; 2 roof outer skin	**a**	
		0,7 (-0,05 - 1,45) mm

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Gap dimension rear side panel to tailgate

1 rear side panel; 2 tailgate	**a**	3.5 (2,4 - 4.6) mm
	b	0,3 (-1,1 - 1,7) mm

Gap dimension rear side panel to tailgate	
1 rear side panel; 2 tailgate	**a**
	3.5 (2.3 - 4,7) mm
	b
	-0,6 (-2,0 - 0,8) mm

Gap dimension rear window to roof outer skin	
1 rear window; 2 roof outer skin	**a**
	3,2 (1,9 - 4.5) mm
	b
	1.5 (0.2 - 2.8) mm

Gap dimension roof outer skin to glass slide/tilt sunroof panel	
1 roof outer skin; 2 glass slide/tilt sunroof panel	**a**
	0,7 (-0,05 - 1,45) mm

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Gap dimension tailgate to rear bumper panel		
1 tailgate; 2 rear bumper panel	**a**	
	5,1 (3,6 - 6,6) mm	

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Gap dimension windscreen to roof outer skin		
1 windscreen; 2 roof outer skin	**a**	
	4,3 (3,1 - 5.5) mm	
	b	
	3,6 (2.3 - 4,9) mm	

Putty S1

Processing time 20 °C	90 min
Processing time 30 °C	60 min
Age-hardening duration 60 °C	60 min
Storage	15 °C ... 25 °C
Durability (note the expiration date on the cartridge)	12 Monate

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41 14 Reinforcement plate

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Cap nut to reinforcement plate	All	M5		6 Nm

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4135 Overview of tightening torques

Front side panel holder to body		
M6 screw	**Tightening torque**	8Nm
Front side panel to holder for front side panel		
Screw M6	**Tightening torque**	8Nm
Guide to side panel		
Screw	**Tightening torque**	3,0Nm

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4151 Overview of tightening torques

Door hinge to door		
Countersunk screw with Torx M8	**Tightening torque**	19Nm
Front door to door hinge		
Screw	**Tightening torque**	19Nm
Screw connection, hinge parts		
Screw	**Tightening torque**	27Nm

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4161 Overview of tightening torques

Bonnet to hinge		
Nut M8	**Tightening torque**	19Nm

Engine compartment lid hinge to body		
Screw	**Tightening torque**	28Nm

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4162 Overview of tightening torques

Hinge to hinge support		
Nut	**Tightening torque**	19Nm
Tailgate hinge to body		
Nut M8	**Tightening torque**	19Nm
Tailgate hinge to tailgate		
Hexagon screw M8 x 18	**Tightening torque**	19Nm

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41 operating fluid overview

Adhesive

Body adhesive K1	195 ml	83190413015

Adhesive

Body adhesive K2	2x290 ml	83192355849

Expendable materials

Thin-wall threaded insert M6		41002288195

Expendable materials

Thin-wall threaded insert M8		41002361595

Expendable materials

Helicoil thread insert	M12x30 mm	31 10 6 868 499

Adhesive

Body adhesive K3	2x300 ml	83190417144

Expendable materials

Betawipe 4800	10 ml	83192357707

Expendable materials

Bonding base VP 206	30 ml	83199407777

Expendable materials

Blind rivet N11 for CFRP connections	⌀4,8 mm, Clamping area 2.2-4.7 mm	83197391057

Expendable materials

Blind rivet N12 for CFRP connections	⌀4,8 mm, Clamping area 4.5-7.5 mm	83197391046

Expendable materials

Plastic nut	⌀18 mm	51161943122

Expendable materials

Plastic nut	⌀22 mm	07147169847

Expendable materials

Twist drill, high-strength	⌀6,8 mm, Length: 79 mm	83192359262

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	Length: 79 mm	

Expendable materials

Twist drill, high-strength	⌀4,2 mm, Length: 66 mm	83192359263

Expendable materials

Scotchbrite Multiflex A, very fine (no longer available)	Ersatzweise Schleifpapier Körnung 220 verwenden.	

Expendable materials

Adhesive tape		51717901759

Expendable materials

Reinforcement plate, universal		41217275563

Expendable materials

Sealant D1 (seam sealing)	310 ml	83422409985

Expendable materials

Sealant D2	290 ml	83425A547B9

Expendable materials

Cavity foamHS1	400 ml	83429410694

Expendable materials

Structural foam HS2 (no longer available)	ml	

Expendable materials

Cavity foam HS3 (2K polyurethane foam)	50 ml	83422288930

Expendable materials

Aluminium adhesive tape (adhesive tape)	50 mm	11007769948

Expendable materials

Repair rivet for T-bolt	⌀2,4 mm, Clamping area 0.8-2.5 mm	07148497787

Expendable materials

Repair rivet for T-bolt	⌀2,4 mm, Clamping area 2.5-6.0 mm	07148497788

Expendable materials

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PrimerP2	50 ml, Gas cartridge	83190302555

Expendable materials

PrimerP1	50 ml, Bottle	83190302556

Expendable materials

Cavity sealing wax remover	500 ml, Spray bottle	83120390086

Expendable materials

Screw EMC screw, SF Plus, M5x15		83190301639

Expendable materials

Drill bit	⌀6,8 mm, Length: 150 mm	83192460425

Expendable materials

Drill bit	⌀4,2 mm, Length: 120 mm	83192460424

Expendable materials

Blind rivet N1 Ø 6.5 mm ; clamping area 2.8-4.8 mm		83190301414

Expendable materials

Blind rivet N2 Ø 6.5 mm ; clamping area 4.8-6.8 mm		83190301419

Expendable materials

Punch rivet N5 Ø 5 mm ; 5 mm long		83192158079

Expendable materials

Blind rivet N7 Ø 6.5 mm ; clamping area 1.5 - 3.5 mm		83192240352

Expendable materials

Blind rivet N10 Dia. 6.5 mm; clamping area 10.8-12.8 mm		83199144282

Expendable materials

Blind rivet N9 Dia. 6.5 mm; clamping area 8.8-10.8 mm		83197239634

Adhesive

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Body adhesive K5	50 ml	83192158654

Expendable materials

Blind rivet N3 Dia. 4 mm; clamping area 1-3 mm		83190301421

Expendable materials

Blind rivet N6 Dia. 4 mm; clamping area 3-5 mm		83192158655

Adhesive

Body adhesive K5	195 ml	83195A59935

Adhesive

Body adhesive K4	50 ml, Cartridge	83192456697

Expendable materials

Punch rivet N4 Ø 3 mm ; 4 mm long		83192457307

Expendable materials

Cavity sealant spray	400 ml	83422457337

Expendable materials

Cavity preservation	1000 ml	83422457338

Expendable materials

Helicoil thread insert	M10x25 mm	33 30 6 782 756

Expendable materials

Filler S1	175 ml	83192464575

Expendable materials

Helicoil thread insert	M8x20 mm	31 10 6 868 376

Expendable materials

Blind rivet (steel) Ø 4.8 mm ; Clamping area 2-6 mm ; Head diameter 13 mm		07147230840

Expendable materials

Blind rivet Ø 4.8 mm ; Head Ø 13 mm ; Clamping area 2-6 mm		07147230840

Expendable materials

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Blind rivet nut with flat head	M10	07147199279

Expendable materials

Helicoil thread insert	M10x30 mm	07129909659

Adhesive

Aktivator -205	250 ml, Bottle	83190030155

Expendable materials

Blind rivet Ø 6.0 mm ; Head Ø 15 mm ; Clamping area 2-6 mm		07147265827

Expendable materials

Blind rivet nut for M6 bolt Ø 9.0 mm; clamping area 2.8-4.8 mm		6989330

Expendable materials

Blind rivet N8 Ø 6.5 mm; clamping area 6.8-8.8 mm		83192355998

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5100 Overview of Technical Data

Dimension of adhesive bead

Use standard nozzle C.

A
8 (7 - 9) mm
B
12 (11 - 13) mm

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5111 Overview of tightening torques

Adapter, front axle support to front axle support		
M8x70	**Tightening torque**	19Nm
Bumper mounting, side front		
Screw	**Tightening torque**	3Nm
Bumper panel, front top		
Oval-head screwM6	**Tightening torque**	4,6Nm
Front bumper panel to front side panel		
Torx screw 5x35	**Tightening torque**	3Nm
Front bumper panel to underbody protection		
Hexagon screw for thermoplastic	**Tightening torque**	2,6Nm
Front bumper support to engine support		
Hexagon screw with flange Renew screw	**Tightening torque**	100Nm
	Angle of rotation	180°
License plate baseplate		
Oval-head screw	**Tightening torque**	2,5Nm
Support for bumper panel, bottom front on deformation element		
Combination oval-head machine screw	**Tightening torque**	10Nm
Vertical connection to deformation element		
Flat-head screw M6x20	**Tightening torque**	11,8Nm
Vertical connection to deformation element		
Hexagon screw	**Setpoint torque**	21Nm
Vertical connection to deformation element		
Hexagon screw	**Tightening torque**	21Nm

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5112 Overview of tightening torques

Guide, side, to body		
Combination hexagon nut	**Tightening torque**	4,6Nm
Lower bumper panel to body		
Oval-head screw	**Tightening torque**	2.5Nm
Mounting for rear bumper panel on support for rear bumper panel		
Hexagon screw for thermoplastic	**Tightening torque**	2,6Nm
Rear bumper panel guide on body at the side		
Multi-purpose nut with paint scrape groove	**Tightening torque**	5Nm
Rear bumper trim panel to guide		
Hexagon screw	**Tightening torque**	2.5Nm
Rear centre guide to body		
Nut		4,6Nm
Rear silencer to support		
M8 hexagon nut	**Tightening torque**	19Nm
Support to impact plate		
M12 hexagon nut	**Tightening torque**	108Nm

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5114 Overview of Technical Data

Heating using hot air blower	
	Surface temperature
	40 °C ... 50 °C

Model inscription on the left side of the tailgate	
	Dimension B from horizontal lower edge of tailgate
	47 mm

Model inscription on the left side of the tailgate	
	Dimension A from corner of tailgate
	69 mm

Model inscription on the right side of the tailgate	
	Dimension B from horizontal lower edge of tailgate
	45 mm

Model inscription on the right side of the tailgate	
	Dimension A from corner of tailgate
	75 mm

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5116 Overview of tightening torques

Centre console on tunnel		
M6x18 Hexagon screw	**Tightening torque**	4,6Nm
Centre console to instrument panel		
Oval-head screw	**Tightening torque**	1,8Nm
Cup holder to centre console		
Oval-head screw	**Tightening torque**	1,8Nm
Exterior mirror to door		
Screw	**Tightening torque**	8Nm
Fold-down compartment to instrument panel		
Oval-head screw	**Tightening torque**	1,8Nm
Housing to exterior mirror		
	Tightening torque	0,85Nm
Retaining ring to exterior mirror		
Screw	**Tightening torque**	0,85Nm
Storage compartment in centre console		
Oval-head screw	**Tightening torque**	1,8Nm
Sun visor to body		
Screw	**Tightening torque**	3.3Nm

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5121 Overview of tightening torques

Attachment bell to outside door handle support		
Screw	**Tightening torque**	3Nm
Clamping bolt for door handle		
Screw	**Tightening torque**	2Nm
Door lock to door		
Screw	**Tightening torque**	8,8Nm
Door retainer to door		
Hexagon nut	**Tightening torque**	8Nm
Door stop to pillar		
Screw	**Tightening torque**	28Nm
Outer door handle to door		
Clamping bolt	**Tightening torque**	3Nm
Outside door handle support to door		
Screw	**Tightening torque**	2,6Nm

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5122 Overview of tightening torques

Lock striker		
Screw	**Tightening torque**	21Nm

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5123 Overview of tightening torques

Actuator to engine compartment lid hinge		
M6x12 Renew screw.		8Nm
Engine compartment lid catch		
Screw Replace screws	**Tightening torque**	8Nm
Striker to bonnet		
Screw	**Tightening torque**	8Nm

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5124 Overview of tightening torques

Striker to rear lid		
Hexagon screw M8x20	**Tightening torque**	19Nm
Tailgate lock to body		
Hexagon screw M8x20	**Tightening torque**	19Nm

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5131 Overview of Technical Data

Air drying time after cleaning	
	Cleaning agent R1
	1 min

Air drying time after cleaning	
	Window glass or painted panel without residual adhesive bead
	5 min
	Body with residual adhesive bead
	15 min

Air drying time after cleaning	
	Cleaning agent R2
	2 min

Air drying time after cleaning	
	Cleaning agent R2
	5 min

Air drying time after cleaning	
	Window glass or painted panel without residual adhesive bead
	5 min
	Body with adhesive bead
	15 min

Air drying time after the order	
	Glass activator
	10 min

Air drying time after the order	
	Glass activator
	2 min

Air drying time after the order	
	Loctite SF 770
	30 s

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Air drying time after the order

	Aktivator -205
	2 min

C nozzle

	Diameter A	Height B
For windscreens, rear windows, and body-specific fixed side window glass.	7.5 (6,5 - 8,5) min	13 (12 - 14) mm

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5132 Overview of tightening torques

Door window glass to power window regulator		
Screw	**Tightening torque**	0.25Nm

Toothed nut of side window		
Toothed nut	**Tightening torque**	11Nm

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5133 Overview of tightening torques

Module carrier to the front door		
Oval-head screwM6	**Tightening torque**	9Nm

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5135 Overview of tightening torques

Power window regulator to inner door panel	
M6	9,5Nm

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5141 Overview of tightening torques

Door trim panel		
Oval-head screw	**Tightening torque**	3Nm
Handle on door trim panel		
Oval-head screw	**Tightening torque**	2.0Nm
Inner door opener on door trim panel		
Oval-head screw	**Tightening torque**	2.0Nm
Repair screw to door trim panel		
Oval-head screw M4x10	**Tightening torque**	2,0Nm

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5143 Overview of tightening torques

A-pillar footwell side trim panel		
Screw	**Tightening torque**	2,5Nm
A-pillar trim panel to body		
Sheet metal screw 4,8x38	**Tightening torque**	2,6Nm
Armrest to side trim panel		
Screw	**Tightening torque**	1,8Nm
C-pillar trim panel to body		
Screw	**Tightening torque**	2,6Nm

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5144 Overview of tightening torques

Headlining to frame		
Oval-head screw	**Tightening torque**	1,5Nm

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5145 Overview of tightening torques

Dashboard to support		
Screw	**Tightening torque**	2,4Nm
Support for instrument panel		
M8 hexagon nut	**Tightening torque**	21Nm
Hexagon screw	**Tightening torque**	21Nm

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5146 Overview of tightening torques

Mounting dome for parcel shelf		
Mounting dome	**Tightening torque**	3,6Nm
Screen trim mounting		
Sheet metal screw 4.8 x 16	**Tightening torque**	2Nm

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5147 Overview of tightening torques

Oddments tray on body		
Plastic nut		3Nm
Storage compartment/fixture on body		
Nut	**Tightening torque**	2.5Nm
Underbody protection front		
Hexagon screw for thermoplastic	**Tightening torque**	2,6Nm
Hexagon screw M6x20	**Tightening torque**	8Nm

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5161 Overview of tightening torques

Cross-brace to bulkhead		
Hexagon screw M10x25 Renew screws.	**Tightening torque**	56Nm
	Angle of rotation	90°

Cross-brace to spring strut dome		
Hexagon screw M10x55 Renew screws.	**Tightening torque**	56Nm
	Angle of rotation	90°

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5164 Overview of tightening torques

Adapter to the front panel		
Oval-head screw with spring washer	**Tightening torque**	4Nm
Air flap control to front end		
Oval-head screw with spring washer	**Tightening torque**	4Nm
Bottom air flap control on top bumper panel support		
Oval-head screw	**Tightening torque**	4,6Nm
Bracing strut on cross connection and bumper support		
Hexagon screw M8	**Tightening torque**	28Nm
Cross connection, top		
M8x20	**Tightening torque**	28Nm
Cross connection, top		
M6x20	**Tightening torque**	11,8Nm
Front cross connection on the tailgate lock support		
Combination oval-head machine screw	**Tightening torque**	28Nm
Front end strut		
Screw	**Tightening torque**	56Nm
Holder to support		
M6x20	**Tightening torque**	8Nm
Rear top cross connection to wheel arch carrier support		
M10x20 screw Renew screw.	**Jointing torque**	56Nm
	Angle of rotation	90°
Strut on front end		
Hexagon screw	**Tightening torque**	28Nm

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Top rear cross connection to bonnet catch support

Flat-head screw M6x20	**Tightening torque**	11,8Nm

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5171 Overview of tightening torques

Bulkhead lower part to body		
Screw	**Tightening torque**	2,6Nm
Plastic nut	**Tightening torque**	2,6Nm
Bulkhead upper part to bottom bulkhead		
	Tightening torque	3Nm
Connecting support to tunnel		
M8x25 screw	**Tightening torque**	20Nm
Screw	**Tightening torque**	3Nm
Cover, front bottom on side		
Hexagon screw for thermoplastic	**Tightening torque**	3Nm
Cover, steering unit		
Screw	**Tightening torque**	3Nm
Rear wheel arch cover to bumper trim panel		
Hexagon screw	**Tightening torque**	2,6Nm
Tension strut on bulkhead		
M10x25 screw	**Tightening torque**	56Nm
Tension strut to spring strut dome		
Screw Renew screws.	**Jointing torque**	56Nm
	Angle of rotation	90°
Wheel arch cover		
Screw		3Nm
Plastic nut		2,6Nm
Wheel arch cover (screws)		
Thermoplastic hexagon screw	**Tightening torque**	3Nm

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Wheel arch trim panel, front

Thermoplastic hexagon screw	**Tightening torque**	2,6Nm

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5174 Overview of tightening torques

Brake air duct to front wheel arch cover of front section		
Hexagon screw for thermoplastic	**Tightening torque**	2,6Nm

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5175 Overview of tightening torques

Diffuser / underbody panelling		
Nuts and screws	**Tightening torque**	3Nm
Retaining plates for vehicle underbody cover		
Sheet metal nut/plastic nut Renew nuts.	**Tightening torque**	3Nm
Underbody panelling		
Screw	**Tightening torque**	2,6Nm
Plastic nut	**Tightening torque**	2,6Nm
Underbody panelling on body		
Plastic nut	**Tightening torque**	2,6Nm
Underbody panelling on body		
Hexagon screw	**Tightening torque**	2,6Nm
Underbody panelling, side		
Hexagon screw	**Tightening torque**	2.6Nm
Plastic nut	**Tightening torque**	2.6Nm
Underbody protection		
Hexagon screw	**Tightening torque**	3Nm
Underbody protection of the steering gear		
Hexagon screw for thermoplastic	**Tightening torque**	2.6Nm
Hexagon bolt M6x20	**Tightening torque**	8Nm

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51 operating fluid overview

Expendable materials

Yellow plastic adhesive tape		83199410979

Expendable materials

Adhesive tape, double-sided		54112290978

Expendable materials

Cutting cord		81432344272

Expendable materials

Cleaning agent R1	100 ml, Bottle	83192211217

Expendable materials

Cleaning agent R2	500 ml	83190417324

Adhesive

Window glass adhesive Rest of World	300 ml, Cartridge	83192289286

Adhesive

Window glass adhesive USA	300 ml, Cartridge	83192289181

Adhesive

Window glass adhesive CHN	300 ml, Cartridge	83192180002

Expendable materials

Cutting wire for glass repair		83192150267

Expendable materials

Self-adhesive felt strip set		52202697913

Adhesive

Window glass adhesive (security vehicle) SIKA Flex 265	300 ml, Cartridge	

Expendable materials

Isopropanol 70820 cleaning agent		

Expendable materials

SIKA Primer 206 G+P		

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Expendable materials

SIKA Aktivator 100		

Adhesive

Sika Flex 265 adhesive SIKA Flex 265	300 ml, Cartridge	

Expendable materials

Washer Ø 6.4 x Ø 25 x 1.5		07146977329

Expendable materials

Repair screw Delta PT4	⌀4 mm, l = 12 mm,	07149200941

Expendable materials

Repair screw Delta PT4	⌀4 mm, l = 20 mm,	07149185673

Expendable materials

Repair screw TS5	⌀5 mm, l = 16 mm,	51417067920

Expendable materials

Repair screw TS6	⌀6 mm, l = 10 mm,	07147118369

Expendable materials

Repair screw Torx	⌀3,3 mm, l = 5 mm,	07147305240

Expendable materials

Repair screw PT5	⌀5 mm, l = 15,5 mm,	07147220383

Expendable materials

Lock washer	Außendurchmesser: 11,5 mm, Wellendurchmesser: 4 mm,	64118247773

Expendable materials

Lock washer	Außendurchmesser: 16 mm, Wellendurchmesser: 6 mm,	52207115704

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Expendable materials

Lock washer	Außendurchmesser: 20,5 mm, Wellendurchmesser: 6 mm,	07147295776

Expendable materials

Lock washer	Außendurchmesser: 12,6 mm, Wellendurchmesser: 8 mm,	07149459832

Expendable materials

Lock washer	Außendurchmesser: 25,3 mm, Wellendurchmesser: 10 mm,	07149889983

Expendable materials

Clip	Schlitz 5,5 x 1,5 mm,	07147243883

Expendable materials

Clip	Schlitz 7,8 x 0,6 mm,	51417464302

Expendable materials

Clip	Schlitz 14 x 1,2 mm,	07149241763

Expendable materials

Clip	Schlitz 13,5 x 0,7 mm,	07147464307

Adhesive

Plastic repair adhesive SF	50 ml	51910446011

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5210 Overview of tightening torques

Seat to body		
Cheese head screw with collar Renew screw.	**Tightening torque**	42Nm
Thigh support to front seat		
Screw	**Tightening torque**	2Nm

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5213 Overview of tightening torques

Seat frame on backrest frame		
Screw Renew screw.	**Tightening torque**	44Nm
Seat frame on backrest frame		
Screw Renew screw.	**Tightening torque**	44Nm

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5214 Overview of tightening torques

Inner seat trim to seat frame		
Oval-head screw Renew screw.	**Tightening torque**	3.3Nm
Outer seat trim to seat frame		
Screw	**Tightening torque**	3.5 Nm
Seat trim to seat frame		
Sheet metal screw	**Tightening torque**	2.5Nm

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5216 Overview of tightening torques

Backrest frame to seat frame		
M10 screw Renew screw.	**Tightening torque**	42Nm
Backrest width adjustment on backrest frame		
Oval-head screw with collar	**Tightening torque**	2.5Nm

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5217 Overview of tightening torques

Inner cover on seat frame		
Screw	**Tightening torque**	2.5Nm
Release handle to backrest frame		
Screw	**Tightening torque**	2,7Nm

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5219 Overview of tightening torques

Rear panel on rear seat backrest		
Screw	**Tightening torque**	3Nm

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5224 Overview of tightening torques

Rear centre armrest to backrest frame		
Screw	**Tightening torque**	8Nm
Rear seat backrest on body		
Screw Renew screw.	**Tightening torque**	42Nm

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5226 Overview of tightening torques

Backrest lock to body		
M8		19Nm
Backrest side section with side airbag		
M6x20 Renew screw.	**Tightening torque**	8Nm
Rear seat backrest on body		
Screw Renew screw.	**Tightening torque**	42Nm

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5230 Overview of tightening torques

Angle bracket to cross member	
Fillister head bolt	25Nm
Carriage to cross member	
Fillister head bolt	25Nm
Cross member to assembly stand	
Screw	135Nm
Support arm to cross member	
Fillister head bolt	25Nm
Third-row seating to special tool	
Fillister head bolt	35Nm

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52 operating fluid overview

Assembly aids

Adapter with code 32		36136765545

Expendable materials

Adhesive tape, double-sided	19 mm	83190445309

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5410 Overview of tightening torques

Cross member to glass slide/tilt sunroof frame	
Nut	5,5Nm
Panorama glass roof lid to mechanics	
M5 Replace screws.	4,5Nm
Slide/tilt sunroof frame to body	
M6	5,4Nm

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5413 Overview of Technical Data

Adhesive bead of side window

Width a	8 (7 - 11) mm
Height b	12 (10 - 13) mm
Application time	max. 7 min

C nozzle

For windscreens, rear windows, and body-specific fixed side window glass.

Diameter A	7.5 (6,5 - 8,5) min
Height B	13 (12 - 14) mm

HS-AM multi-base filler, VOC

Layer thickness	30 µm ... 40 µm
Hardening time with infrared	10 min
Hardening time without infrared 60°C	30 min
Hardening time without infrared 20°C	1 Tag

Residual height of the adhesive bead

Residual height of the adhesive bead	max. 1 mm

Sika-Primer 206

Protrusion of the glass activator against the compressed adhesive bead	1 mm ... 2 mm
Air drying time at over 15°C	10 min
Air drying time at lower than 15°C	30 min

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54 operating fluid overview

Brake fluid and hydraulic fluid

Hydraulic fluid for convertible top / lids	250 ml, Bottle	54340394395

Expendable materials

Lubricating grease Renolit RHF 1	20 g, Bag	83192157321

Expendable materials

Sika-Primer 206	30 ml, Can	83199407777

Expendable materials

Butyl rope	4 mm, 10 m roller	81220442636

Expendable materials

Lubricant M	30 ml	83 19 2458653

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6114 Overview of tightening torques

Control unit holder		
Plastic nut with flange		2,6Nm
Front power distribution box sealing frame		
Bolt RF5x25	**Tightening torque**	2.5Nm
Ground cable to body		
Flange nutM8	**Tightening torque**	19Nm
Positive battery cable		
M8x16 screw	**Tightening torque**	15Nm
Positive battery cable		
Flange nutM8	**Tightening torque**	15Nm
Positive battery cable		
Flange nutM8	**Tightening torque**	15Nm
Positive battery cable		
Positive pole screw	**Tightening torque**	15Nm
Positive battery connection point		
Flange nutM8		19Nm
Positive battery connection point		
Positive pole screw	**Tightening torque**	15Nm
Power distribution box		
Plastic nut with flange	**Tightening torque**	2,6Nm
Power distribution box, front		
M8x35 screw	**Tightening torque**	13Nm
Power distribution box, front		
Screw TS5x16		2.5Nm

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Wire on PCU48

Nut M8	**Tightening torque**	15Nm

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6120 Overview of tightening torques

Battery carrier to body		
M8 screw	**Tightening torque**	19Nm
Battery carrier to body		
M6 screw	**Tightening torque**	8Nm
Battery earth lead to body		
Flange nutM8	**Tightening torque**	15Nm
Battery rollover protection bracket to luggage compartment floor		
Screw	**Tightening torque**	8Nm
Battery tray to 48 V battery		
M6 screw	**Tightening torque**	8Nm
Negative battery cable to 48-V battery		
Nut M8	**Tightening torque**	19Nm
Negative battery terminal		
Nut	**Tightening torque**	5Nm
Negative battery terminal 12V dual storage system		
Nut	**Tightening torque**	19Nm
Positive battery cable to 48-V battery		
Nut M8	**Tightening torque**	19Nm
Positive battery terminal (dual storage battery)		
Flange nutM8	**Tightening torque**	19Nm
Positive battery terminal to battery		
Nut	**Tightening torque**	5Nm

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6121 Overview of tightening torques

Battery holder to body		
M8 screw	**Tightening torque**	15Nm
Coolant flange screw		
M6x20 screw	**Tightening torque**	8Nm
PCU48 screw		
M6 screw	**Tightening torque**	8Nm
Rollover protection bar auxiliary battery on holder		
Nut M8	**Tightening torque**	15Nm
Screw for coolant line		
M6 screw	**Tightening torque**	8Nm

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6131 Overview of tightening torques

Controller to gear selector switch		
Screw	**Tightening torque**	1,8Nm
Decorative trim to steering wheel		
Screw TS5x12	**Tightening torque**	1,5Nm
Gear selector switch to centre console trim		
Screw	**Tightening torque**	1,8Nm
MFL switch		
Screw TS5x12	**Tightening torque**	1,5Nm
Roof function centre (FZD)		
	Tightening torque	1.2Nm
Selector lever on gear selector switch		
Screw Renew screw.	**Tightening torque**	0,8Nm
Shift paddle to steering wheel		
Screw TS5x12	**Tightening torque**	2Nm
Steering column switch cluster (SZL) on the steering column		
Screw TS5x20	**Tightening torque**	3Nm
Steering wheel heating button to decorative trim/cover		
	Tightening torque	2Nm
Steering wheel heating button to decorative trim/cover		
	Tightening torque	2Nm
Switch for convertible top operation at the gear selector switch GWS		
Screw	**Tightening torque**	1,8Nm

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6133 Overview of tightening torques

Fanfare to support for bumper panel		
M6x20 screw	**Tightening torque**	8,8Nm

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6135 Overview of tightening torques

Interior aerial		
Screw	**Tightening torque**	2.3Nm

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6142 Overview of tightening torques

Heat shield to side member		
Screw	**Tightening torque**	2.6Nm
Metal nut	**Tightening torque**	2.6Nm

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6161 Overview of Technical Data

Distance from window pane edge to wiper blade	
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

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6161 Overview of tightening torques

Windscreen wiper arm		
Combination hexagon nut	**Tightening torque**	35Nm
Wiper console to body		
Nut M8 Renew nut.	**Tightening torque**	11,8Nm

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6171 Overview of Technical Data

Washer fluid antifreeze

Minimum temperature
-18 °C

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6171 Overview of tightening torques

Washer fluid reservoir

Tightening torque	8Nm

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61 operating fluid overview

Expendable materials

Protective cover "Vehicle protection" picture panel		8319 2 350 087

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6211 Overview of tightening torques

Instrument cluster (KOMBI) to support		
Screw	**Tightening torque**	1,8Nm

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6230 Overview of tightening torques

Head-Up Display to support		
M6x25 screw	**Tightening torque**	13Nm

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6311 Overview of tightening torques

Front lighting electronics control unit to headlight		
Screw	**Tightening torque**	1,5Nm
Frontal light electronics (FLE)		
PT-SCREW 40x12	**Tightening torque**	1,5Nm
LED module of daytime driving lights to headlight		
Screw	**Tightening torque**	1,5Nm
LED turn indicator to headlight		
Screw	**Tightening torque**	1,5Nm

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6312 Overview of tightening torques

Front light combination, bottom		
Oval-head screw	**Tightening torque**	5Nm
Front light combination, top		
Oval-head screw	**Tightening torque**	8Nm

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6314 Overview of Technical Data

Light carpet length

	Length (a)
	130 cm

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6317 Overview of tightening torques

Fog light on bumper panel		
Screw	**Tightening torque**	3,5Nm

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6321 Overview of tightening torques

Rear light at tailgate		
Clamping claw	**Tightening torque**	2,6Nm
Rear light to side panel to body		
Combination hexagon nut	**Tightening torque**	4Nm

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6400 Overview of tightening torques

Heater/air conditioner

Screw	**Tightening torque**	1,2Nm

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6411 Overview of tightening torques

Heating and air-conditioning unit on support		
Nut M6	**Tightening torque**	4Nm

Heating and air-conditioning unit on the bulkhead		
Oval-head screw	**Tightening torque**	2,8Nm

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6412 Overview of tightening torques

Changeover valve to holder		
Screw	**Tightening torque**	1,8Nm
Electric fuel pump to body		
Screw	**Tightening torque**	6Nm
Ground cable to body		
Hexagon nut	**Tightening torque**	8,0Nm
Heater/air conditioner		
Screw	**Tightening torque**	1,2Nm
Silencer to holder / holder to body		
Screw	**Tightening torque**	8Nm
Nut	**Tightening torque**	8Nm
Silencer to stationary heating		
Nut	**Tightening torque**	6Nm
Stationary heating to holder/body		
Nut	**Tightening torque**	19Nm
Screw	**Tightening torque**	19Nm

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6422 Overview of tightening torques

Ventilation grille to decorative strip/instrument panel		
Screw	**Tightening torque**	1.8Nm

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6431 Overview of tightening torques

Microfilter lid on heating and air-conditioning unit		
Screw	**Tightening torque**	2.8Nm

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6451 Overview of tightening torques

Expansion valve to heater - A/C		
M5	**Tightening torque**	5.5 Nm
Refrigerant line to expansion valve / connecting piece		
M6	**Tightening torque**	13Nm

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6452 Overview of tightening torques

Air conditioning compressor in component carrier		
M10	**Tightening torque**	38Nm
Refrigerant line on air conditioning compressor		
M8	**Tightening torque**	19Nm
Refrigerant line to connecting piece		
M8	**Tightening torque**	19Nm

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6453 Overview of tightening torques

Air conditioning condenser bracket on body		
Nut M6	**Tightening torque**	8Nm
M6 screw	**Tightening torque**	8Nm
Refrigerant lines to air conditioning condenser/connecting piece		
M6	**Tightening torque**	13Nm
Safety pressure switch		
	Tightening torque	10Nm

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64 operating fluid overview

Expendable materials

Heating and air conditioning system cleaning agent	1000 ml, Bottle	83192180507
	5000 ml, Bottle	83192219932

Expendable materials

Heating and air conditioning system cleaning agent	100 ml, Can	83192409611

Expendable materials

Ozonizer	100 ml, Can	83192318666

Expendable materials

Refrigerant oil PAG-Ã–L Denso ND8	500 ml, Can	81342147762

Expendable materials

UV additive Waeco	500 ml, Can	83192232504

Expendable materials

Cartridge set for leak detector case	3x , Cartridge	83192232569

Expendable materials

Cleaning agent UV filter	237 ml, Spray bottle	83192243942

Expendable materials

Refrigerant R1234yf	5 kg, Bottle	83192354790

Expendable materials

UV additive	472,5 ml, Can	83192243934

Expendable materials

Refrigerant oil * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	250 ml, Can	81229407724
	10 ml, TU*	83190143174

Expendable materials

Refrigerant	12 kg	83190408286

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Refrigerant R134a	12 kg, Bottle	83199408386

Expendable materials

Refrigerant oil Sanden SP-A2 ** TU = Trade Unit. TU numbers cannot be ordered!* *For invoicing purposes only. EU*	250 ml, Can 10 ml, TU*	83222339920 83192287382

Expendable materials

Water	5	

Expendable materials

Coarse-grained salt	5 kg	

Expendable materials

Ice cube or dry ice	10 kg	

Expendable materials

Dry ice	10 kg	

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6512 Overview of tightening torques

Amplifier / RAM on holder		
M5 screw	**Tightening torque**	3Nm
Nut	**Tightening torque**	3Nm
Bracket to body		
Nut	**Tightening torque**	6Nm
Screw	**Tightening torque**	6Nm
Central bass speaker to floor assembly		
Nut	**Tightening torque**	5Nm
Central bass speaker trim		
Screw	**Tightening torque**	2Nm
Head unit to holder / holder to support		
Screw	**Tightening torque**	1,8Nm
Post-amplifier to holder		
Screw	**Tightening torque**	3,3Nm

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6513 Overview of tightening torques

Door speaker on door module carrier		
Oval-head screw for thermoplastic	**Tightening torque**	2Nm
Loudspeakers on the door / trim panel		
Screw	**Tightening torque**	2Nm
Speaker on instrument panel / speaker on door		
Screw	**Tightening torque**	1,8Nm
Speaker to door		
Screw	**Tightening torque**	2Nm
Speaker to storage shelf/support		
Screw	**Tightening torque**	1,8Nm
Speaker to support / support to instrument panel / support to body		
Screw	**Tightening torque**	1,8Nm

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6520 Overview of tightening torques

Aerial amplifier to body		
Screw	**Tightening torque**	3Nm
Interference suppression filter to body		
Screw	**Tightening torque**	3Nm
Roof-mounted aerial on the roof outer skin		
Screw	**Tightening torque**	4Nm
Wave trap to Câ€ pillar		
	Tightening torque	4,6Nm

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6550 Overview of tightening torques

Central information display to instrument panel		
Screw	**Tightening torque**	2,4Nm

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6571 Overview of tightening torques

Emergency power siren with tilt sensor		
Hexagon nut M6x8 Renew nut.	**Tightening torque**	6Nm

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6577 Overview of tightening torques

Airbag control unit to body		
Screw	**Tightening torque**	8Nm
Airbag sensor, B-pillar		
M6 screw	**Tightening torque**	8Nm

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6631 Overview of tightening torques

Front radar sensor (FRS) / (FRSF) holder to support		
Combination oval-head machine screw	**Tightening torque**	8Nm

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6652 Overview of tightening torques

Driver Camera System (DCS) to instrument cluster		
Screw	**Tightening torque**	1.05Nm

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6653 Overview of tightening torques

TRSVC control unit on bracket		
Nut	**Tightening torque**	3,3Nm
Top view camera to exterior mirror		
Screw	**Tightening torque**	0,85Nm

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6713 Overview of tightening torques

Drive for exterior mirror adjustment		
Screw	**Tightening torque**	1.2Nm

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6761 Overview of tightening torques

Drive for panorama sunroof to body		
Screw	**Tightening torque**	5,5Nm

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6762 Overview of tightening torques

Flat motor on door module carrier		
Oval-head screw for thermoplastic	**Tightening torque**	3,5Nm
Flat motor to power window regulator		
Oval-head screw	**Tightening torque**	5Nm

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7160 Overview of tightening torques

Trailer tow hitch on body

Nut M12x1 Replace nuts	**Tightening torque**	108Nm

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7211 Overview of tightening torques

Additional connection of rear inertia reel to body		
Hexagon bolt M6	**Tightening torque**	4.5Nm
Additional screw connection of REMA to body		
M8 Renew screw.	**Tightening torque**	19Nm
End fitting to body		
M10 Renew screw.	**Tightening torque**	42Nm
End fitting to body		
M10	**Tightening torque**	42Nm
Front inertia reel to body		
Screw Renew screw.	**Tightening torque**	42Nm
Lower strap to body		
M12 screw	**Tightening torque**	42Nm
Lower strap to seat mechanism		
M10 screw Renew screw.	**Tightening torque**	38Nm
Rear inertia reel to body		
M10 Renew screw.	**Tightening torque**	42Nm
Seat belt guide loop on body		
Screw	**Tightening torque**	42Nm
Slide bar to body (B-pillar)		
Screw	**Tightening torque**	5Nm

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7212 Overview of tightening torques

Airbag on backrest frame		
Nut Renew nut.	**Tightening torque**	6,5Nm
Front passenger airbag on instrument panel trim		
Oval-head screw	**Tightening torque**	2Nm
Head airbag on bodyshell		
Screw	**Tightening torque**	8Nm
Knee airbag on support structure		
Nut	**Tlghtening torque**	8Nm
Knee airbag on the instrument panel		
Hexagon nut	**Tightening torque**	8Nm

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83 operating fluid overview

Assembly aids

Lubricants G14	900 ml, Can	83232360412

Expendable materials

Multifunction spray Brunox	400 ml, Spray can	83230418567

Adhesive

Adhesive set K6	11 g, Loctite No. 3090 10 g, Loctite SF 770 2 , Mixing tube	83192317925

Assembly aids

Lubricant for rubber mount (Circo Light)	250 ml	83192405829

Expendable materials

Sealant D2	300 ml	83 42 5A547B9

Assembly aids

Lubricating grease NBU 12K	100 g, Tube	83239407810

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8410 Overview of tightening torques

Nut to LTE compensator	
Plastic nut	3Nm

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99 operating fluid overview

Paints and colours

Emergency program base filler 2K spray	200 ml, Application time 8 h	51910432615

Paints and colours

INOX spray welding primer	500 ml	83400409992

Paints and colours

Spray paint, black matt	400 ml	51911900346

Paints and colours

Paint spray aerosol, inside filler of spare wheel well	400 ml	51910411026

Care product

Blue microfibre cloth	5	83 12 2 185 839

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