



P03.20-2173-09

- 1 Crankshaft
- 2 Crankshaft bearing shell with oil bore and oil groove
- 3 Crankshaft bearing shell
- 4 Crankshaft bearing cap
- 5 Fitted bearing
- 6 Thrust plate
- 8 Crankshaft bearing bolts (M11)
- 9 Lateral crankshaft bearing bolts (M10)
- 10 Crankshaft bearing cap
- 11 Connecting rod
- 12 Connecting rod bolts
- 13 Connecting rod bearing shell
- 14 Anti-twist lock
- 15 Groove
- 16 Connecting rod bearing cap

	Remove/install		
	Risk of injury caused by fingers being pinched or crushed when removing, installing or aligning hoods, doors, trunk lids, liftgates or sliding roof	Keep body parts and limbs well clear of moving parts.	AS00.00-Z-0011-01A
	Risk of death caused by vehicle slipping or toppling off of the lifting platform.	Align vehicle between columns of vehicle lift and position four support plates at vehicle lift support points specified by vehicle manufacturer.	AS00.00-Z-0010-01A
	Notes on self-locking nuts and bolts	All models	AH00.00-N-0001-01A
1.1	Remove engine with front axle carrier	Model 164 Model 251	AR01.10-P-2500GZB AR01.10-P-2500RTB
1.2	Remove engine	Model 164 If no major assembly platform lift is available, it may be more difficult to remove the engine on model 164 toward the top, for information see: ↓ Service information	AR01.10-P-2400GZB SI58.40-P-0016A
	Remove transmission with torque converter	Model 164 Model 251	AR27.10-P-0500GZ AR27.10-P-0500RTA
3	Remove cylinder head		AR01.30-P-5800GZC
4	Remove oil pan bottom section		AR01.45-P-7555GZB
5	Remove oil pan	Model 164 Model 251 with 4MATIC Model 251 without 4MATIC	AR01.45-P-7500GZB AR01.45-P-7500RTB AR01.45-P-7500RTC
6	Remove oil pump		AR18.10-P-6020GZB
7	Remove chain tensioner		AR05.10-P-7800GZB
8	Remove camshaft sprocket		AR05.20-P-6040OM
9	Take off timing case cover		AR01.40-P-8000GZB
10	Remove connecting rod bolts (12)		*BA03.10-P-1001-01L

11	Remove connecting rod	<p>! Installation: The connecting rods (11) are cracked (broken) (magnified section). Dimensional accuracy of connecting rods (11) can no longer be guaranteed after opening, therefore new connecting rods must be fitted. The connecting rods (11) are delivered with assembly bolts, which are to be replaced by connecting rod bolts (12) with assembly locking element.</p> <p>i Installation: The anti-twist lock (14) for connecting rod bearing shell (13) must fit into groove (15) for connecting rod (11) and for connecting rod bearing cap (16): ↓</p> <p>Install and measure connecting rod bearings</p>	<p>AR03.10-P-6111-06PI</p> <p>*BE03.10-P-1001-01G</p> <p>*BE03.10-P-1002-01G</p> <p>*BE03.10-P-1003-01G</p> <p>*BE03.10-P-1004-01G</p> <p>*BE03.10-P-1005-01G</p> <p>*BE03.10-P-1006-01G</p> <p>*BE03.10-P-1007-01G</p> <p>*BE03.10-P-1008-01G</p> <p>*BE03.10-P-1009-01G</p> <p>*BE03.10-P-1010-01G</p> <p>*BE03.10-P-1011-01G</p> <p>*BA03.10-P-1001-01L</p>
12	Remove pistons		AR03.10-P-7021GZB
13	Unscrew crankshaft bearing caps (4, 10) and fitted bearing (5)	<p>! Installation: The crankshaft bearing bolts (M11) (8) and crankshaft bearing bolts on the side (M10) (9) must be replaced otherwise there is a risk of cracks and fracture.</p> <p>i Loosen crankshaft bearing bolts (M11) (8) and lateral crankshaft bearing bolts (M10) (9) in the opposite direction to the tightening procedure.</p> <p>i Installation: Tighten the crankshaft bearing bolts (M11) (8) and the lateral crankshaft bearing bolts (M10) (9) synchronously and in accordance with the tightening procedure. ↓</p> <p>Tightening procedure for crankshaft bearing caps</p>	<p>AR03.20-P-4351-02TI</p> <p>*BA03.20-P-1001-01E</p> <p>*BA03.20-P-1002-01E</p>
14	Remove crankshaft bearing caps (4, 10) and fitted bearing (5)	<p>i Carefully lever out crankshaft bearing caps (10) and (5).</p> <p>i Before removing, mark crankshaft bearing caps (4, 10) and fitted bearing (5).</p>	
15	Take crankshaft (1) out of cylinder crankcase		
16	Take crankshaft bearing shells with oil hole and oil groove (2) out of crankcase	i Installation: Lubricate crankshaft journal and crankshaft bearing shell with oil hole and oil groove (2)!	
17	Remove thrust plates (6) from crankcase	i Pay attention to installation position.	
18	Install in the reverse order		
19	<p>Risk of accident caused by vehicle starting off by itself when engine is running. Risk of injury caused by contusions and burns during starting procedure or when working near the engine as it is running</p> <p>Check for leaks with engine running</p>	<p>Secure vehicle to prevent it from moving by itself.</p> <p>Wear closed and snug-fitting work clothes.</p> <p>Do not touch hot or rotating parts.</p>	AS00.00-Z-0005-01A

Inspection data of connecting rod

Number	Designation	Engine 642
BE03.10-P-1001-01G	Dimension	
	Distance from center of connecting rod bearing bore to connecting rod bush bore (L)	mm 167.97 to 168.03
	Width of connecting rod	Connecting rod bearing bore (B) mm 18.1 to 18.6

		Connecting rod bush bore (b)	mm	21.94 to 22.0
		See picture		-
BE03.10-P-1002-01G	Dimension	Connecting rod bearing shell basic bore (D1) ∅	mm	67.600 to 67.614
		Permissible out-of-roundness and conicity of basic bore	mm	0.007
		See picture		-
BE03.10-P-1003-01G	Dimension	Permissible twist of connecting rod bearing bore to connecting rod bush bore over a length of 100 mm	mm	0,100
BE03.10-P-1004-01G	Dimension	Permissible variation of axial parallelism of connecting rod bearing bore to connecting rod bush bore over a length of 100 mm	mm	0,045
BE03.10-P-1005-01G	Dimension	Permissible weight difference between complete connecting rods in the same engine	g	2
BE03.10-P-1006-01G	Dimension	Connecting rod bush inside ∅(d)	mm	30.038 to 30.044
		See picture		-
BE03.10-P-1007-01G	Dimension	Connecting rod bush outside dia.	mm	-
BE03.10-P-1008-01G	Dimension	Connecting rod bush basic bore ∅(d1)	mm	32.500 to 32.525
		See picture		-
BE03.10-P-1009-01G	Dimension	Piston pin play in connecting rod bushing	mm	0.028 to 0.039
BE03.10-P-1010-01G	Dimension	Peak-to-valley height (R _z) inside connecting rod bush	µm	5
BE03.10-P-1011-01G	Connecting rod bolt	Thread dia.	M	8.5×1
		Shank length when new	mm	47 (±0.3)

Nm Crankshaft bearing cap

Number	Designation	Engine 642
BA03.20-P-1001-01E	Bolt, crankshaft bearing cap bolt to crankshaft bearing body	M10 Stage 1 Nm 5
		Stage 2 Nm 35
		Stage 3 4° 95
		Stage 4 4° 95
BA03.20-P-1002-01E	Lateral bolt connecting crankcase to crankcase bearing cap	M10 Stage 1 Nm 53
		Stage 2 4° 95

Nm Connecting rod

Number	Designation	Engine 642
BA03.10-P-1001-01L	Bolt, connecting rod bearing cap to connecting rod	1. Short arm stage Nm 15
		2. Long arm stage Nm 20
		Stage 3 short arm Nm 30
		Stage 4 long arm Nm 40
		Stage 5 short arm Nm 40
		└° 90
		Stage 6 long arm └° 90
		7th stage short arm └° 90
		8th stage long arm └° 90
		See picture AR03.10-P-6111-06TI