

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

13 32 Fuel filter

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Fuel filter to body	B47/ B37	M8		19 Nm

1332 Overview of tightening torques

Fuel filter bracket to console		
Hexagon screw M8x25	Tightening torque	19Nm

13 53 Fuel Injector Nozzles and Lines

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Injector to cylinder head	B37/ B47		Joining Final torque	8 Nm 120° ±15 degrees
2AZ Pressure lines to injector, rail and high pressure pump	B37/ B47	Coupling nut		24 Nm
	B47C20T0			26,5 ±2 Nm
3AZ Fuel pressure sensor to rail	B37/ B47		Grease thread lightly.	70 Nm
4AZ Pressure control valve to rail	B37/ B47		1. Tightening	60 Nm
			2. Opening	90 ° Grad
			3. Final torque	85 Nm
5AZ Mounting, cylinder head cover (support, clamping jaw)	B37/ B47	M6x35		10 Nm
6AZ Rail to cylinder head	B37/ B47	M8x22		19 Nm
7AZ Fuel line to intake plenum	B37/ B47			8 Nm

13 51 High pressure pump

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Metering unit to high-pressure pump	B37/ B47	M5		6,5 Nm
2AZ Bracket to high-pressure pump and crankcase	B37/ B47	M8	Observe tightening specifications.	19 Nm
3AZ Hose clamps	B37/ B47			3,7 Nm
4AZ High pressure pump to timing case cover	B37/ B47	M8		19 Nm
5AZ Screw plug to timing case cover	B37/ B47	M34 x 1.5		20 Nm

13 52 High-pressure pump drive

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Chain tensioner to crankcase	B37/ B47	M6x22		9 Nm
2AZ Sprocket wheel, high-pressure pump	B37/ B47	M12x1		65 Nm
3AZ Bearing journal to crankcase	B37/ B47		Replace bearing journal.	20 Nm
4AZ Oil spray nozzle	B37/ B47	M6x22		9 Nm

13 62 Sensors for control unit

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Camshaft sensor to cylinder head cover	B47/ B37	TS5x20		3,6 Nm
2AZ Coolant temperature sensor at cylinder head	B47/ B37		Check O-rings.	3,5 Nm
3AZ Oxygen sensor / monitoring sensor	B47/ B37			50 Nm
4AZ Exhaust temperature sensor to diesel particulate filter	B47/ B37			30 Nm
5AZ Differential pressure sensor to holder	B47/ B37	TS5x20		4 Nm
6AZ Hot film air-mass meter to intake filter housing	B47/ B37	TS4x16		1,5 Nm
7AZ Temperature sensor on exhaust-gas recirculation cooler	B47/ B37			21,7 Nm
8AZ Pulse sensor for crankshaft	B47/ B37			4,6 Nm
9AZ Exhaust gas pressure sensor to exhaust gas pressure pipe	B47/ B37			13,5 Nm
10AZ Exhaust gas pressure pipe to exhaust turbocharger	B47/ B37	M6x16		8 Nm
11AZ Banjo bolt for exhaust gas pressure sensor	B47/ B37		Renew sealing rings. Use stainless steel sealing rings only	35 Nm
12AZ Charging pressure sensor to charge air pipe	B47T	M6x20		8 Nm

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 cover		
Screw	Tightening torque	1,5Nm
High pressure pump to crankcase		
M8x33	Tightening torque	19Nm
Holder of high pressure pump to crankcase		
M8x33 Observe tightening sequence.	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

13 53 Fuel Injector Nozzles and Lines

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Injector to cylinder head	B37/ B47		Joining Final torque	8 Nm 120° ±15 degrees
2AZ Pressure lines to injector, rail and high pressure pump	B37/ B47	Coupling nut		24 Nm
	B47C20T0			26,5 ±2 Nm
3AZ Fuel pressure sensor to rail	B37/ B47		Grease thread lightly.	70 Nm
4AZ Pressure control valve to rail	B37/ B47		1. Tightening	60 Nm
			2. Opening	90 ° Grad
			3. Final torque	85 Nm
5AZ Mounting, cylinder head cover (support, clamping jaw)	B37/ B47	M6x35		10 Nm
6AZ Rail to cylinder head	B37/ B47	M8x22		19 Nm
7AZ Fuel line to intake plenum	B37/ B47			8 Nm

13 51 High pressure pump

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Metering unit to high-pressure pump	B37/ B47	M5		6,5 Nm
2AZ Bracket to high-pressure pump and crankcase	B37/ B47	M8	Observe tightening specifications.	19 Nm
3AZ Hose clamps	B37/ B47			3,7 Nm
4AZ High pressure pump to timing case cover	B37/ B47	M8		19 Nm
5AZ Screw plug to timing case cover	B37/ B47	M34 x 1.5		20 Nm

13 52 High-pressure pump drive

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Chain tensioner to crankcase	B37/ B47	M6x22		9 Nm
2AZ Sprocket wheel, high-pressure pump	B37/ B47	M12x1		65 Nm
3AZ Bearing journal to crankcase	B37/ B47		Replace bearing journal.	20 Nm
4AZ Oil spray nozzle	B37/ B47	M6x22		9 Nm

13 62 Sensors for control unit

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Camshaft sensor to cylinder head cover	B47/ B37	TS5x20		3,6 Nm
2AZ Coolant temperature sensor at cylinder head	B47/ B37		Check O-rings.	3,5 Nm
3AZ Oxygen sensor / monitoring sensor	B47/ B37			50 Nm
4AZ Exhaust temperature sensor to diesel particulate filter	B47/ B37			30 Nm
5AZ Differential pressure sensor to holder	B47/ B37	TS5x20		4 Nm
6AZ Hot film air-mass meter to intake filter housing	B47/ B37	TS4x16		1,5 Nm
7AZ Temperature sensor on exhaust-gas recirculation cooler	B47/ B37			21,7 Nm
8AZ Pulse sensor for crankshaft	B47/ B37			4,6 Nm
9AZ Exhaust gas pressure sensor to exhaust gas pressure pipe	B47/ B37			13,5 Nm
10AZ Exhaust gas pressure pipe to exhaust turbocharger	B47/ B37	M6x16		8 Nm
11AZ Banjo bolt for exhaust gas pressure sensor	B47/ B37		Renew sealing rings. Use stainless steel sealing rings only	35 Nm
12AZ Charging pressure sensor to charge air pipe	B47T	M6x20		8 Nm

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

13 53 Fuel Injector Nozzles and Lines

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Injector to cylinder head	B37/ B47		Joining Final torque	8 Nm 120° ±15 degrees
2AZ Pressure lines to injector, rail and high pressure pump	B37/ B47	Coupling nut		24 Nm
	B47C20T0			26,5 ±2 Nm
3AZ Fuel pressure sensor to rail	B37/ B47		Grease thread lightly.	70 Nm
4AZ Pressure control valve to rail	B37/ B47		1. Tightening	60 Nm
			2. Opening	90 ° Grad
			3. Final torque	85 Nm
5AZ Mounting, cylinder head cover (support, clamping jaw)	B37/ B47	M6x35		10 Nm
6AZ Rail to cylinder head	B37/ B47	M8x22		19 Nm
7AZ Fuel line to intake plenum	B37/ B47			8 Nm

1353 Overview of tightening torques

Clamping claw facing to cylinder head cover		
Screw M6	Tightening torque	8Nm
Fuel line to intake plenum		
TS6x20	Tightening torque	5Nm
High pressure line between high pressure pump and rail		
High-pressure pipe	Tightening torque	28Nm
High pressure lines between injector and rail		
High pressure lines	Tightening torque	28Nm
Injector to cylinder head cover		
Screw	Jointing torque	8Nm
	Angle of rotation	120°
Rail on cylinder head cover		
Torx screw M8x25	Tightening torque	19Nm
Rail pressure regulating valve to rail		
	Initial tightening torque	80Nm
	Release	90°
	Tightening torque	85Nm
Rail pressure sensor to rail		
	Grease thread lightly.	70Nm

13 54 Throttle valve

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Throttle body to intake plenum	B37/ B38/ B46/B47/ B48	6,0x50		7 Nm

1354 Overview of tightening torques

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

13 62 Sensors for control unit

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Camshaft sensor to cylinder head cover	B47/ B37	TS5x20		3,6 Nm
2AZ Coolant temperature sensor at cylinder head	B47/ B37		Check O-rings.	3,5 Nm
3AZ Oxygen sensor / monitoring sensor	B47/ B37			50 Nm
4AZ Exhaust temperature sensor to diesel particulate filter	B47/ B37			30 Nm
5AZ Differential pressure sensor to holder	B47/ B37	TS5x20		4 Nm
6AZ Hot film air-mass meter to intake filter housing	B47/ B37	TS4x16		1,5 Nm
7AZ Temperature sensor on exhaust-gas recirculation cooler	B47/ B37			21,7 Nm
8AZ Pulse sensor for crankshaft	B47/ B37			4,6 Nm
9AZ Exhaust gas pressure sensor to exhaust gas pressure pipe	B47/ B37			13,5 Nm
10AZ Exhaust gas pressure pipe to exhaust turbocharger	B47/ B37	M6x16		8 Nm
11AZ Banjo bolt for exhaust gas pressure sensor	B47/ B37		Renew sealing rings. Use stainless steel sealing rings only	35 Nm
12AZ Charging pressure sensor to charge air pipe	B47T	M6x20		8 Nm

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		3,6Nm
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		
6x20	Tightening torque	5Nm
Charging pressure sensor to intake plenum		
TS6X20	Tightening torque	4Nm
Clamp for the pressure hose on the differential pressure sensor		
Clamp 15â€“19mm	Tightening torque	3Nm
Control sensor		
Control sensor	Tightening torque	50Nm
Coolant temperature sensor at cylinder head		
Temperature sensor	Tightening torque	3,5Nm
Crankshaft sensor		
		4,6Nm
Crankshaft sensor to housing cover		
Crankshaft sensor	Tightening torque	4,6Nm
Diesel particulate sensor to exhaust system		
Sensor	Tightening torque	50Nm

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 sensor		
Exhaust gas pressure sensor	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 to diesel particulate filter		
Exhaust-gas temperature sensor	Tightening torque	28Nm
Exhaust-gas temperature sensor to exhaust system		
Exhaust-gas temperature sensor	Tightening torque	28Nm
Hot film air-mass meter to intake filter housing		
TS4x16		1,5Nm
Hot film air-mass meter to intake filter housing		
Screw TS4x16	Tightening torque	1,4Nm
Monitoring 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	50Nm

Oxygen sensor

Oxygen sensor

Tightening torque

50Nm

Oxygen sensor holder to intermediate shaft

Hexagon screw M6x16

Tightening torque

8Nm

1371 Overview of tightening torques

Clean air pipe to cylinder head cover		
Oval-head screw Renew screw.	Tightening torque	8Nm
Clean air pipe to intake silencer housing		
Clamp	Tightening torque	3Nm
Intake filter housing upper section to intake filter housing lower section		
	Tightening torque	2,2Nm
Intake neck to cross connection		
M6	Tightening torque	8Nm
Intake silencer housing to lock bridge		
M6X30	Tightening torque	8Nm
Resonator to manifold and clean air pipe		
Screw TS6 Renew screw.	Tightening torque	5Nm

13 71 Intake filter housing

Tightening Torques

	Type	Thread	Tightening specifications	Torque
1AZ Intake neck to cross connection	B37/ B38/ B47/ B48	M6		8 Nm
2AZ Intake silencer housing to lock bridge	B37/ B38/ B47/ B48	M6x30		8 Nm
3AZ Clean air pipe to intake silencer housing	B37/ B38/ B47/ B48	Clamp		3 Nm
4AZ Intake filter housing upper section to intake filter housing lower section	B37/ B38/ B47/ B48			1,6 Nm
5AZ Resonator to intake plenum / clean air pipe	B37/ B47	TS6x20		5 Nm
6AZ Clean air pipe to cylinder head cover	B37/ B38/ B47/ B48	TS6x20		5 Nm

