

11 12 Cylinder Head with Cover

	Type	Screw	Measure	Unit
7AZ	Cylinder head bolts Fit new cylinder head bolts Do not wash off coating on cylinder head bolt For repair work, only use screws with Torx head	M70 / S70 / M73	M10	
	Jointing torque		30	Nm
	Torque angle		60	°
	Torque angle		60	°
8AZ	Cylinder head bolts Fit new cylinder head bolts Do not wash off coating on cylinder head bolt	M60/1 / M60/2 / M62 / S62	M10	
	Jointing torque		30	Nm
	Torque angle		80	°
	Torque angle		80	°

11 11 Engine block

	Type	Screw	Measure	Unit
3AZ	Taper screw mount on main bearing			
	Screws (replace hex and collar screws) and spacer pin	M60/1 / M60/2 / M62 / M70 / S70 / M73 / S62	M8	
	Jointing torque		20	Nm
	Torque angle		45	°
	Threaded support sleeves	M70 / M60/1 / M60/2 / M62 / S70 / M73 / S62		10
4AZ	Struts/bracing shell	All	M10	43
		All	M8	22
5AZ	Coolant drain plug in engine block	All	M14 x 1.5	25
6AZ	Main oil duct screw plugs	All	M16 x 1.5	34
	Main oil duct screw plugs	All	M18 x 1.5	40
	Main oil gallery, rear (seal plugs with control valve)	M62 / S62	M18x1	10
7AZ	Oil spray nozzle on engine block	All	M6	10
	Oil spray nozzle screwed into bearing seat (coat thread with Loctite 243)	M73	M8x1	5
	Oil spray nozzle to engine block (banjo bolt)	All others	M8x1	12

11 11 Crankcase

		Type	Screw	Measure	Unit
1AZ	Main bearing screws Replace, wash and oil main bearing screws	M10 / M20 / M30	M10	60	Nm
		M21	M10	65	Nm
		S38 / S14 / M40 / M42 / M43 / M43TU / M44 / M50 / M41 / M51 / S50 / S50 US	M10		
	Jointing torque			20	Nm
	Torque angle			50	°
		M47 / M57	M10		
	Jointing torque			20	Nm
	Torque angle			70	°
2AZ	Main bearing screws Replace main bearing screws Do not wash off coating on main bearing screw	M70 / S70 / M73 / M52TU / M52 with aluminum engine block			
	Jointing torque			20	Nm
	Torque angle		M10	70	°
		M60/1 / M60/2 / M62			
	Jointing torque			20	Nm
	Torque angle on engines with M10 main bearing screws		M10	70	°
	Torque angle on engines with M11 main bearing screws		M11	100	°
	Main bearing screws Replace, wash and oil main bearing screws	S52 / M52 with cast iron engine block			
	Jointing torque			20	Nm
	Torque angle		M10	50	°

11 12 Cylinder Head with Cover

	Type	Screw	Measure	Unit	
11AZ	Cylinder head cover	All	M6	10	Nm
		All	M7	15	Nm
		M21	M8	15	Nm
12AZ	Oil trap to cylinder head cover	M21	M8	17	Nm
13AZ	Timing case to cylinder head	All	M7	15	Nm
		All	M8	20	Nm
14AZ	Plug for oil channel (microencapsulated)	M47 / M57	M12x1.5	20	Nm

11 13 Oil Pan

	Type	Screw	Measure	Unit
1AZ Oil drain plug	All	M12 x 1.5	25	Nm
	All	M22 x 1.5	60	Nm
2AZ Oil pan on engine block	All	M6 8.8	10	Nm
Oil sump to engine block (replace microencapsulated screws)	All	M6 10.9	12	Nm

11 14 Case Covers

	Type	Screw	Measure	Unit	
1AZ	Timing case and timing case cover top and bottom	All	M6	10	Nm
		All	M7	15	Nm
		All	M8	22	Nm
		All	M10	47	Nm
2AZ	Front/rear end cover to crankcase	All	M6	10	Nm
		All	M8	22	Nm
3AZ	Bolts on timing case cover	M51 / M41 / M47	M42x1.5	65	Nm
4AZ	Sealing plug or connector on timing case cover	M51 / M41 / M47	M20x1.5	30	Nm
	Plug on timing case cover	M57	M30x1	30	Nm
	Plug on timing case cover	M57	M40x1.5	30	Nm

11 11 Crankcase

		Type	Screw	Measure	Unit
1AZ	Main bearing screws Replace, wash and oil main bearing screws	M10 / M20 / M30	M10	60	Nm
		M21	M10	65	Nm
		S38 / S14 / M40 / M42 / M43 / M43TU / M44 / M50 / M41 / M51 / S50 / S50 US	M10		
	Jointing torque			20	Nm
	Torque angle			50	°
		M47 / M57	M10		
	Jointing torque			20	Nm
	Torque angle			70	°
2AZ	Main bearing screws Replace main bearing screws Do not wash off coating on main bearing screw	M70 / S70 / M73 / M52TU / M52 with aluminum engine block			
	Jointing torque			20	Nm
	Torque angle		M10	70	°
		M60/1 / M60/2 / M62			
	Jointing torque			20	Nm
	Torque angle on engines with M10 main bearing screws		M10	70	°
	Torque angle on engines with M11 main bearing screws		M11	100	°
	Main bearing screws Replace, wash and oil main bearing screws	S52 / M52 with cast iron engine block			
	Jointing torque			20	Nm
	Torque angle		M10	50	°

11 11 Engine block

	Type	Screw	Measure	Unit
3AZ	Taper screw mount on main bearing			
	Screws (replace hex and collar screws) and spacer pin	M60/1 / M60/2 / M62 / M70 / S70 / M73 / S62	M8	
	Jointing torque		20	Nm
	Torque angle		45	°
	Threaded support sleeves	M70 / M60/1 / M60/2 / M62 / S70 / M73 / S62		10
4AZ	Struts/bracing shell	All	M10	43
		All	M8	22
5AZ	Coolant drain plug in engine block	All	M14 x 1.5	25
6AZ	Main oil duct screw plugs	All	M16 x 1.5	34
	Main oil duct screw plugs	All	M18 x 1.5	40
	Main oil gallery, rear (seal plugs with control valve)	M62 / S62	M18x1	10
7AZ	Oil spray nozzle on engine block	All	M6	10
	Oil spray nozzle screwed into bearing seat (coat thread with Loctite 243)	M73	M8x1	5
	Oil spray nozzle to engine block (banjo bolt)	All others	M8x1	12

11 41 Oil Pump with Strainer and Drive

	Type	Screw	Dimension	Unit
1AZ Plug for pressure relief valve	M10 / M30		40	Nm
	M20		30	Nm
2AZ Oil pump to crankcase	All	M8	22	Nm
3AZ Oil pump cover	All	M6	10	Nm
4AZ Sprocket to oil pump	All	M6	10	Nm
	All	M10	47	Nm
	All	M10x1	25	Nm

11 21 Crankshaft and Bearings

	Type	Screw	Measure	Unit
1AZ Increment wheel on crankshaft	All	M5 10.9	13	Nm
Increment wheel to crankshaft (microencapsulated screw)	All	M5 8.8	5.5	Nm

11 22 Flywheel

	Type	Screw	Measure	Unit
1AZ	Flywheel to crankshaft			
	Do not install with screw retaining compound. Bolts are a component part of the flywheel. Screw threads oiled.	S62 / M60/1 / M60/2 / M62 manual transmission	105	Nm
	New micro-encapsulated screws	M40 / M42 / M43 / M43TU / M44 / M70 / S70 / M73	120	Nm
	New micro-encapsulated screws	All 6-cylinder engines with automatic transmission	120	Nm
	New micro-encapsulated screws	All others	105	Nm

11 23 Vibration Damper

	Type	Screw	Measure	Unit
1AZ Vee belt pulley on crankshaft	M10		190	Nm
2AZ Vibration damper hub on crankshaft Replace screws	M20 / M21 / M50 / M52 / M52TU / S50 US / S52	M18 x 1.5	410	Nm
	M30 / S14 / S38 B 35	M24 x 1.5	440	Nm
	M41 / M47 / M51 / M60/1 / M60/2 / M62	M18 x 1.5		
Jointing torque			100	Nm
Torque angle			60	°
Torque angle			60	°
Torque angle			30	°
	M70 / S70 / M73	M18 x 1.5		
Jointing torque			100	Nm
Torque angle			60	°
Torque angle			60	°
	M57	M10		
Jointing torque			40	Nm
Torque angle			60	°
Torque angle			60	°

11 23 Vibration Damper

	Type	Screw	Measure	Unit
3AZ Belt pulley / vibration damper to hub	S38 B36	M8 10.9	34	Nm
	S38 B 38	M8 10.9	34	Nm
	All others	M8	22	Nm
4AZ Belt pulley to vibration damper	S38 B 35	M8 8.8	22	Nm
	S50	M8 8.8	22	Nm
5AZ Sprocket with hub or hub to crankshaft Replace screw	M40	M16 x 1.5	310	Nm
	M42 / M43 / M43TU / M44	M16 x 1.5	330	Nm

11 11 Crankcase

		Type	Screw	Measure	Unit
1AZ	Main bearing screws Replace, wash and oil main bearing screws	M10 / M20 / M30	M10	60	Nm
		M21	M10	65	Nm
		S38 / S14 / M40 / M42 / M43 / M43TU / M44 / M50 / M41 / M51 / S50 / S50 US	M10		
	Jointing torque			20	Nm
	Torque angle			50	°
		M47 / M57	M10		
	Jointing torque			20	Nm
	Torque angle			70	°
2AZ	Main bearing screws Replace main bearing screws Do not wash off coating on main bearing screw	M70 / S70 / M73 / M52TU / M52 with aluminum engine block			
	Jointing torque			20	Nm
	Torque angle		M10	70	°
		M60/1 / M60/2 / M62			
	Jointing torque			20	Nm
	Torque angle on engines with M10 main bearing screws		M10	70	°
	Torque angle on engines with M11 main bearing screws		M11	100	°
	Main bearing screws Replace, wash and oil main bearing screws	S52 / M52 with cast iron engine block			
	Jointing torque			20	Nm
	Torque angle		M10	50	°

11 11 Engine block

	Type	Screw	Measure	Unit
3AZ	Taper screw mount on main bearing			
	Screws (replace hex and collar screws) and spacer pin	M60/1 / M60/2 / M62 / M70 / S70 / M73 / S62	M8	
	Jointing torque		20	Nm
	Torque angle		45	°
	Threaded support sleeves	M70 / M60/1 / M60/2 / M62 / S70 / M73 / S62		10
4AZ	Struts/bracing shell	All	M10	43
		All	M8	22
5AZ	Coolant drain plug in engine block	All	M14 x 1.5	25
6AZ	Main oil duct screw plugs	All	M16 x 1.5	34
	Main oil duct screw plugs	All	M18 x 1.5	40
	Main oil gallery, rear (seal plugs with control valve)	M62 / S62	M18x1	10
7AZ	Oil spray nozzle on engine block	All	M6	10
	Oil spray nozzle screwed into bearing seat (coat thread with Loctite 243)	M73	M8x1	5
	Oil spray nozzle to engine block (banjo bolt)	All others	M8x1	12

11 24 Connecting Rods and Bearings

	Type	Screw	Measure	Unit
1AZ	Connecting rod bolts Replace, wash and oil conrod bolts	M10 / M30		
		M20 / M21 / M40 / M41 / M42 / M43 / M43TU / M44 / M47 / M50 / M51 / M52 / M52TU / M57 / S52 / S50 US / M70 / S70 / M73		
	Application torque		5	Nm
	Jointing torque		20	Nm
	Torque angle		70	°
		M60/1 / M60/2 / M62		
	Application torque		5	Nm
	Jointing torque		20	Nm
	Torque angle		80	°

11 24 Connecting Rods and Bearings

	Type	Screw	Measure	Unit
1AZ	Connecting rod bolts Replace, wash and oil conrod bolts	M10 / M30		
		M20 / M21 / M40 / M41 / M42 / M43 / M43TU / M44 / M47 / M50 / M51 / M52 / M52TU / M57 / S52 / S50 US / M70 / S70 / M73		
	Application torque		5	Nm
	Jointing torque		20	Nm
	Torque angle		70	°
		M60/1 / M60/2 / M62		
	Application torque		5	Nm
	Jointing torque		20	Nm
	Torque angle		80	°

11 31 Camshaft

	Type	Screw	Measure	Unit	
6AZ	Flange to camshaft	M30		145	Nm
7AZ	Plug for chain tensioner	M50 / S50 US / S62	M22 x 1.5	50	Nm
		All others	M22 x 1.5	40	Nm
8AZ	Cylinder for chain tensioner plunger	M50 / M52 / M52TU / S52 / S50 US	M26 x 1.5	70	Nm
		All others	M26 x 1.5	50	Nm
9AZ	Bearing flange on engine block	M60/1 / M60/2	M6	13	Nm
10AZ	Reversing rail on engine block	M62 / S62	M6 /M7	14	Nm
11AZ	Screw-in pin on camshaft	All	M7	20	Nm
	Nut on screw-in pin	All	M6	10	Nm
12AZ	Bearing pin for sliding and tensioning rails	M41 / M47 / M51 / M57	M16 x 1.5	20	Nm
13AZ	Signal disk to camshaft	S62	M16 x 1.5	50	Nm

11 31 Camshaft

	Type	Screw	Measure	Unit	
1AZ	Camshaft bearing cap	All	M6	10	Nm
		All	M7	14	Nm
		All	M8	20	Nm
2AZ	Sprocket to camshaft	M20 / M21 / M40	M10	65	Nm
3AZ	Sprocket to camshaft flange	M60/1 / M60/2 / M62	M6	15	Nm
		All others	M6	10	Nm
		M50 / M52 / M52TU / S52 / S50 US / M50 VANOS	M7		
	Application torque			5	Nm
	Jointing torque			22	Nm
		All others	M7	15	Nm
4AZ	Sprocket to camshaft	M51 / M41 / M47 / M57	M12 x 1.5		
	Jointing torque			20	Nm
	Torque angle			35	°
5AZ	Splined shaft to intake camshaft	M52 / S52 / S50 US / M50 VANOS	M14 x 1.5		
	Jointing torque			40	Nm
	Torque angle			60	°

11 42 Oil Filter and Pipes

	Type	Screw	Measure	Unit
1AZ Oil filter (one-way cartridge) (Tightening torque by hand in acc. with specification on spin-on oil filter)	All			Nm
2AZ Full flow oil filter (cover)	All	M8	22	Nm
	All	M10	33	Nm
	All	M12	33	Nm
Screwed-on cover	All		25	Nm
3AZ Oil filter housing and lines on crankcase	All	M8	22	Nm
	All	M20 x 1.5	40	Nm

11 42 Oil Filter and Pipes

	Type	Screw	Measure	Unit	
4AZ	Oil filter drain plug				
	Hollow bolt	M21 / S38	20	Nm	
	Full length screw in aluminum	M21	10	Nm	
	Full length screw in threaded insert	M21	23	Nm	
5AZ	Oil drain line on oil filter and upper section of oil pan (banjo bolt)	M60/1 / M60/2 / M62 / M70 / S70 / M73 / S62	30	Nm	
6AZ	Oil line to bearing points and camshaft lubrication	All	M6	10	Nm
7AZ	Oil line for camshaft lubrication on cylinder head				
	Hollow bolt	All	M8x1	10	Nm
		All	M5	5	Nm

11 42 Oil Filter and Pipes

	Type	Screw	Measure	Unit
8AZ Oil cooler oil pipes to oil filter housing	All	M8	22	Nm
9AZ Oil pipes to turbocharger	All	M8	22	Nm
10AZ Oil lines from turbocharger to engine block Hollow bolt	All	M16 x 1.5	40	Nm
11AZ Oil supply pipe to turbocharger				
Hollow bolt	All		25	Nm
Coupling nut	All		30	Nm

11 51 Water Pump and Drive

	Type	Screw	Measure	Unit
1AZ Water pump to crankcase	All	M6	10	Nm
	All	M7	15	Nm
	All	M8	22	Nm

11 52 Fan

	Type	Screw	Measure	Unit
1AZ Fan clutch on water pump Coupling nut (left-hand threads)	All		40	Nm

11 53 Thermostat and Connections

		Screw	Measure	
1AZ	Thermostat housing	M6	10	
2AZ	Bleeder screw	M8	8	

11 61 Intake manifold

	Type	Screw	Measure	Unit
1AZ Intake manifold on cylinder head	All	M8	22	Nm
	All	M7	15	Nm
	All	M6	10	Nm
2AZ Soundproofing hood to holder	M60/1 / M60/2 / M62	M6	8	Nm

11 62 Exhaust manifold

	Type	Screw	Measure	Unit
1AZ Exhaust manifold to cylinder head Screw connections on exhaust with Molykote HSC compound coat	All	M6	10	Nm
	M50 / M52 / M52TU / S52 / S50 US	M7	20	Nm
	All others	M7	15	Nm
Upper row of staybolts installed with bolt cement	All	M8	22	Nm
Retorque after 2000 km Loosen bolt first	M21	M8	12	Nm

11 78 Emissions-control, Lambda oxygen sensor

	Type	Screw	Measure	Unit
1AZ Oxygen sensor and oxygen monitor sensor	All		55	Nm

11 81 Engine Suspension

	Type	Screw	Measure	Unit
1AZ Rubber mount to front axle carrier	All	M8	22	Nm
	All	M10	47	Nm
2AZ Rubber mount to engine console	All	M8	22	Nm
	All	M10	47	Nm
3AZ Engine console to engine	All	M8	22	Nm
	All	M10	47	Nm

12 11 Distributor

	Type	Screw	Measure	Unit
1AZ Distributor	M20		22	Nm
	M10 / M30		10	Nm
2AZ Distributor rotor to adapter with DME	All		2.8	Nm
3AZ High-tension distributor cap	All		4	Nm

12 12 Spark Plugs

	Type	Screw	Measure	Unit
1AZ Spark plugs (ungreased)	All	M12x1.25	23 ± 3	Nm
	All	M14x1.25	31 ± 2	Nm

12 13 Ignition Coil

	Type	Screw	Measure	Unit	
1AZ	Primary connections				
	Terminal 1	All	3.0	Nm	
	Terminal 15	All	4.5	Nm	
2AZ	Ignition coil on wheel arch / end wall	M42 / M43 / M44	M5	5	Nm
3AZ	Ignition coil on wheel arch	M40	M8	16	Nm

12 14 Electronic Shift Units or Control Units

	Type	Screw	Measure	Unit
1AZ TCI control unit	All		2.5	Nm
2AZ Knock sensor	E23		13	Nm
	All		20	Nm
3AZ Speed and reference-mark senders	All with DME		7	Nm
4AZ Cover on control unit box	E38		4.4	Nm
5AZ Angle impulse sensor on cylinder head	M52		5.0	Nm
6AZ Crankshaft sensor on timing-chain cover Crankshaft sensor on cylinder crankcase	M52		5.0	Nm

12 31 Alternator with Drive and Mounting Parts

	Type	Screw	Measure	Unit
1AZ	Wires to alternator			
	Terminal D+	M10 / M20	5	Nm
		All others	M6	7
	Terminal B+	S38 B 38	8	Nm
		All others	M8	13
2AZ	Pulley	All	45	Nm
3AZ	Pulley (ribbed drive belt)	All	70	Nm
		Alternator with coolant jacket	80	Nm
4AZ	Rear holder	All	3.5	Nm
5AZ	Fillister head screw for wire holder	All	3.5	Nm
6AZ	Alternator on bearing block	M40/M42 / M43 / M44	43	Nm

12 21 Preheating Relay

	Type	Screw	Measure	Unit
1AZ Battery positive lead (terminal 30) to glow plug relay	M41 / M51		4	Nm
2AZ 80 A fuse on glow plug relay	M41 / M51		2	Nm
3AZ Battery positive lead (terminal 30) to glow plug relay	M47/M57		5	Nm

12 23 Glow Plugs

	Type	Screw	Measure	Unit
1AZ Glow plug	M21		25	Nm
2AZ Glow plug 4"	M21 / M41 / M51		20	Nm
	M47 / M57		18	Nm
	M21 / M41 / M51		4	Nm

12 21 Preheating Relay

	Type	Screw	Measure	Unit
1AZ Battery positive lead (terminal 30) to glow plug relay	M41 / M51		4	Nm
2AZ 80 A fuse on glow plug relay	M41 / M51		2	Nm
3AZ Battery positive lead (terminal 30) to glow plug relay	M47/M57		5	Nm

12 32 Governor

	Type	Screw	Value	Unit
1AZ Regulator switch	All	M4	2	Nm
	All	M5	4	Nm

12 41 Starter and Mounting Parts

	Type	Screw	Measure	Unit
1AZ Starter mount	All		47	Nm
2AZ Support to starter	All	M5	5	Nm
3AZ Support to crankcase	All		47	Nm
4AZ Electrical leads to starter				
	All	M5	5	Nm
	All	M6	6	Nm
	All	M8	13	Nm
5AZ Bolt connection, pole tube	All	M6	6	Nm

12 42 Wires to starter

		Type	Screw	Measure	Unit
1AZ	Battery positive connection point in/at distributor	E32 / E34 / E31 / E36	M8	20	Nm
		E39 M57	M8	11	Nm
2AZ	Wiring harness on distributor	E36 M41	M8	10	Nm

12 51 Engine wiring harness

	Type	Screw	Measure	Unit	
1AZ	Wiring harness on electrical cutout device	M51 / M41	M5	2.5	Nm
2AZ	Wiring harness on distributor	E36 M41	M8	10	Nm
3AZ	Battery positive terminal to intake air manifold	M57	M8	7	Nm
4AZ	Battery positive terminal to cylinder head cover	M62 / S62	M8	10	Nm

12 61 Oil pressure, oil temperature, oil level display

	Type	Screw	Measure	Unit
1AZ Oil-pressure switch/oil-temperature switch Note: Oil and screw in	S14 / S50 / S38		20	Nm
	M60 / M62 / M73/S62		27	Nm
	M57		14	Nm
	All others		35	Nm

12 62 Coolant Temperature

		Type	Screw	Measure	Unit
1AZ	Temperature sensor to water flange (glow time/coolant temperature gauge)	M21		18	Nm
		M51		13	Nm
2AZ	Temperature switch (5.5 °C / 17 °C) to fuel filter/cylinder head	M21		18	Nm
3AZ	Coolant temperature sensor (2-pin plug-in connection)	S38 / S50		13	Nm
		All others		20	Nm
4AZ	Remote thermometer sensor (2-pin plug-in connection)	All		20	Nm
	Remote thermometer sensor (4-pin plug-in connection)	M62		16	Nm
		S62	M12 x 1.5	14	Nm
5AZ	Remote thermometer sensor on coolant flange	S50		18	Nm
6AZ	Temperature sensor - air	S38 / S50		13	Nm
7AZ	Temperature sensor - oil	S38 / S50		13	Nm

12 63 Switches and Relays

	Type	Screw	Measure	Unit
1AZ Temperature switch for electronic box	E32 / E34 / E31		15	Nm

12 72 Senders for Control Unit

	Type	Screw	Measure	Unit
1AZ Lever to pedal value sender	E32 / E34 / E31 / E36		9	Nm
2AZ Pedal value sender to pedal console	E32 / E34 / E31		5	Nm

12 90 Control Unit Housing

	Type	Screw	Measure	Unit
1AZ	Assembly of upper and lower sections	E32 / E34 / E36	5	Nm
2AZ	Center section to body	E32 / E34	3	Nm
3AZ	Control unit holder in E box	E36	5	Nm
4AZ	Control unit box cover	E38 / E39	4.4	Nm
		E46	6	Nm

13 11 Carburetor

	Type	Screw	Measure	Unit
1AZ Carburetor to intake manifold	M10 / M20 / M30		10	Nm
2AZ Carburetor to insulating flange	M10 / M20 / M30		10	Nm
3AZ Insulating flange to intake manifold	M10 / M20 / M30		10	Nm
4AZ Idling shut off valve; max.	M10 / M20 / M30		5	Nm
5AZ Flow valve; max.	M10 / M20 / M30		28	Nm
6AZ Throttle valve assembly to float housing; max.	M10 / M20 / M30		9	Nm
7AZ Throttle valve neck to intake manifold	M10 / M20 / M30		10	Nm
	S62	M7	15	Nm
8AZ Throttle valve control to carburetor; max.	2BE		3	Nm
9AZ Warm-up regulator to engine	M10 / M20 / M30		23	Nm

13 31 Fuel Pump with Drive and Pipes

	Type	Screw	Measure	Unit
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

	Type	Screw	Measure	Unit	
1AZ	Fuel line to filter housing and injection pump				
	Coupling nut	M21 / M51 / M41	M14 x 1.5	14	Nm
	Adapter	M21 / M51 / M41	M12 x 1.5	9	Nm
	Hollow bolt	M21 / M51 / M41	M14 x 1.5	14	Nm
2AZ	Fuel filter to holder	M51 / M41	M8	22	Nm
3AZ	Air duct to fuel cooler	M47		5.7	Nm
		M57		2	Nm
4AZ	Fuel filter cover	M47		25	Nm

13 51 Injection Pump, Control Receptacle

	Type	Screw	Measure	Unit
1AZ	Plug for high pressure section of injection pump	M21 / M51 / M41	25	Nm
2AZ	Distributor injection pump to holder	M21 / M51 / M41	25	Nm
3AZ	Electric shutoff to injection pump	M21 / M51 / M41	20 ± 5	Nm
4AZ	Electric cold start valve to injection pump	M21	20	Nm
5AZ	Coupling bolt (OUT) to injection pump (fuel return)	M21 / M51 / M41	25	Nm
6AZ	Pressure valve holder to injection pump	M21 / M51	45	Nm
7AZ	Expansion element housing (temperature dependent idling speed boost) to injection pump	M21	18	Nm
8AZ	Distributor injection pump to flange and console	M21 / M51 / M41	22	Nm
9AZ	Electr. line on fuel cutout device	M51 / M41	2,5	Nm
10AZ	Fuel feed line to injection pump (VP44)	M47	30	Nm
11AZ	Fuel return line to injection pump (VP44)	M47	25	Nm
12AZ	Plug for static basic adjustment (injection pump VP44)	M47	13	Nm
13AZ	Blocking screw for injection pump shaft without spacer plate (injection pump VP44)	M47	31	Nm
14AZ	Blocking screw for injection pump shaft with spacer plate (injection pump VP44)	M47	13	Nm
15AZ	Injection line (union nut) to injection pump (VP44)	M47	30	Nm

13 52 Injection Pump Drive

	Type	Screw	Measure	Unit
1AZ Chain sprocket to injection pump	M21		47	Nm
2AZ Toothed belt pulley to injection pump	M51 / M41		50	Nm
Chain wheel on injection pump (VP44) with blocked injection pump drive shaft Jointing torque	M47		18	Nm
Chain wheel on injection pump (VP44) with unblocked injection pump drive shaft, gripped via crankshaft central bolt Tightening Torque	M47		110	Nm
Sprocket wheel to H.P. pump (Common Rail System)	M57	M14x1.5	65	Nm
3AZ Chain tensioner	M51		15	Nm

13 53 Fuel Injection Nozzles and Pipes

	Type	Screw	Measure	Unit	
1AZ	Injection nozzle combination (assembly)	M21 / M51		80	Nm
2AZ	Injection nozzle combination to cylinder head	M21		40	Nm
		M51 / M41		65	Nm
3AZ	Injection pipe (coupling nut) to injection pump and nozzle combination	M21 / M51 / M41		20	Nm
4AZ	Feed line on injection panel	M43 / M44/M43TU		20	Nm
5AZ	Injection nozzle assembly in cylinder head cover	M47	M6	10	Nm
	Injector in cylinder head cover (Common Rail System)	M57	M6	9	Nm
6AZ	Injection line to injection pump (VP44)	M47		30	Nm
7AZ	Injection line to injector nozzle	M47		30	Nm
8AZ	Pressure lines (Common Rail System)	M57			
	Injector			25	Nm
	Pressure accumulator or H.P. pump			30	Nm
9AZ	Pressure sensor to pressure accumulator (Common Rail System)	M57		38	Nm
10AZ	Pressure regulator to H.P. pump (Common Rail System)	M57		9	Nm

13 62 Senders for Control Unit

		Type	Screw	Measure	Unit
1AZ	Temperature time switch	M21 / M51		18	Nm
2AZ	Coolant temperature sensor	M60/1 / M60/2 / M21 / M51		18	Nm
		All others		13	Nm
3AZ	Temperature switch	All		28	Nm
4AZ	Temperature sensor - air	All		13	Nm
5AZ	Charge-air pressure sensor on holder	M51 / M41		4	Nm
	Charge-air pressure sensor on intake manifold	M47		5	Nm
6AZ	Twin temperature sensor (4-pin plug-in connection)	M41 / M43 / M44 / S50 / S52 / M52 / M62 / M73		13	Nm
7AZ	Air-mass sensor on lower section of air filter housing	M51		3.5	Nm
	Air-mass flow sensor to cylinder head cover	M57		3.5	Nm
	Air-mass flow sensor to cylinder head cover	M47		4.5	Nm
8AZ	Pulse generator, camshaft to cylinder head cover	M57		3.5	Nm
9AZ	Intake neck on air-mass flow sensor	M47		9	Nm

13 64 Fuel Injectors

	Type	Screw	Measure	Unit
1AZ Fuel injector to intake manifold	All	M6	10	Nm
2AZ Coupling nut on fuel injector	All with K-Jetr.		25	Nm

13 71 Air intake silencer

	Type	Screw	Measure	Unit
1AZ Air intake silencer on cylinder head cover	M41 / M51	M6	6	Nm

13 81 Air intake valves, low-pressure and vacuum hoses

	Type	Screw	Measure	Unit
1AZ Air intake line on low-pressure unit	316g / 518g		22	Nm

13 80 Gas-powered units

	Type	Screw	Measure	Unit
1AZ Screw plug on low-pressure regulator	316g / 518g		3	Nm

16 11 Fuel Tank and Mounting Parts

	Type	Screw	Measure	Unit
1AZ Fuel tank to body Screw	All	M8	23	Nm
Nut	E30	M8	25	Nm
Nut	E24	M8	45	Nm
Retaining strap			8	Nm
Retaining strap	E39	M8	23	Nm
2AZ Connecting pipe to fuel tank	E30		25	Nm
3AZ Heat shield to fuel tank	E30		8.5	Nm
	E24		1.0	Nm
	E31		3	Nm
4AZ Drain plug on fuel tank	All		25	Nm

13 82 Mixture and metering system, low-pressure reducer

	Type	Screw	Measure	Unit
1AZ MAP sensor on holder	316g / 518g		3.5	Nm

13 83 Gas tank with attachment

	Type	Screw	Measure	Unit	
1AZ	Support frame on body	316g / 518g		45	Nm
2AZ	Gas density sensor on non-return cock of gas tank	316g / 518g		35	Nm
3AZ	Holder of filler connection on body	316g		5	Nm
4AZ	Holder for filler connections on body	518g		3	Nm

13 81 Air intake valves, low-pressure and vacuum hoses

	Type	Screw	Measure	Unit
1AZ Air intake line on low-pressure unit	316g / 518g		22	Nm

16 12 Fuel Supply

		Type	Screw	Measure	Unit
1AZ	Pump assembly to metal-bonded mount	All with fuel injection		6.5	Nm
2AZ	Holder to fuel pump or fuel reservoir	All with fuel injection		6.5	Nm
3AZ	Electric connections on fuel pump	All with fuel injection		2	Nm
4AZ	Electric connections on fuel pump	All with fuel injection	M4	1.2	Nm
5AZ	Electric connections on fuel pump	All with fuel injection	M5	1.6	Nm
6AZ	Plastic nut on cover for fuel pipes	E30		2	Nm
7AZ	Hose clamps 10 - 16 mm dia.	All		2	Nm

16 14 Fuel Pump

	Type	Screw	Measure	Unit
1AZ	Fuel level sender to fuel intake	All with transfer pump in tank	2	Nm
	E32		8	Nm
2AZ	End ring for fuel tank (fuel level sender/pump)			
	Plastic sealing ring, 26.5 mm high	E34 / E31	40	Nm
	Plastic sealing ring, 31.5 mm high (new)	E36 / E34 / E31		
	Torque angle		720	°
	Torque		55	Nm
	Metal sealing ring	E39	35	Nm
3AZ	Intank pump with fill level sensor on tank (tighten nuts crosswise)	E38	M6	6.5

17 00 Coolant

	Type	Screw	Measure	Unit
1AZ	Coolant hoses 32 ... 48 mm dia.	All	2.5	Nm
2AZ	Bleeder screw (8 mm wrench size) on thermostat housing	All, without E46	8	Nm
	Plastic vent screws on coolant lines	E46	2 -0.5/+1	Nm
3AZ	Level switch (30 mm wrench size) to coolant expansion tank	All	3	Nm

17 11 Radiator and Mounting Parts

	Type	Screw	Measure	Unit	
1AZ	Radiator to body				
	Self-tapping screw	All	B6.3	9	Nm
		All	M6	10	Nm
2AZ	Drain plug on radiator	All		2.5	Nm
3AZ	Temperature switch to radiator (91°C / 99°C max.	All		15	Nm
4AZ	Expansion tank to body	All		9	Nm
5AZ	Radiator on module carrier	E46		4+1	Nm
6AZ	Retaining plate, expansion tank on radiator	E46		4+1	Nm
7AZ	Fan cowl on radiator	E46		4+1	Nm

17 21 Engine Oil Cooler

	Type	Screw	Measure	Unit
1AZ Engine oil cooler to body	All		14	Nm
Oil cooler vapor extraction guide to trim panel	E36 M3	B4.8	4	Nm

17 40 Additional Fan (electric)

	Type	Screw	Measure	Unit
1AZ Electric auxiliary fan on fan cowl	E46			Nm
2AZ Electronics for auxiliary fan on fan cowl	E46			Nm

17 22 Oil Cooler Pipes

	Type	Screw	Measure	Unit
1AZ Pipes to engine oil cooler	All		28	Nm
2AZ Pipes to oil filter head	E36 M3		25	Nm
3AZ Holder on oil cooler pipes	All		6	Nm
4AZ Holder for oil cooler pipes to alternator	E36 M3	M6	10	Nm

17 22 Oil Cooler Pipes

	Type	Screw	Measure	Unit	
5AZ	Cap nut on transmission oil cooler (on radiator) and on transmission	All	M18x1.5	20	Nm
		5HP30	M22x1.5	28	Nm
6AZ	Oil lines on transmission				
	Hollow bolt	All	M16 x 1.5	37	Nm
7AZ	Oil lines on transmission oil cooler	A5S 300J		28	Nm
	Hollow bolt	All	M14 x 1.5	27	Nm
8AZ	Screw-in fitting on transmission	All	M14x1.5 und M16x1.5	37	Nm
9AZ	Oil hose on oil pipe	E23		28	Nm
10AZ	Oil pipe bracket on radiator	E23		2	Nm
11AZ	Oil pipe bracket on body	E23		6.5	Nm
12AZ	Oil cooler on transmission	5HP30		10	Nm

18 00 Exhaust Assembly

		Type	Screw	Measure	Unit
1AZ	Primary catalytic converter to exhaust turbocharger	M57	M10	42	Nm
	Version with compression spring: Evenly tighten the compression springs with nuts on the block, then loosen by 1.5 revolutions	M30 / M70		10	Nm
	Preload compression springs with nuts to 27 ± 1 mm	M51			
	Version without compression springs	S50	M10	30	Nm
2AZ	Exhaust pipe to flow section	E23		25	Nm
3AZ	Clamp for final muffler	All	M8	15	Nm
4AZ	Catalytic converter on silencer				
	Version with compression spring: Evenly preload compression springs with nuts to 30 mm	E36 M42			
5AZ	Connection of positive and ground leads to E catalytic converter	M73		5	Nm

17 40 Additional Fan (electric)

	Type	Screw	Measure	Unit
1AZ Electric auxiliary fan on fan cowl	E46			Nm
2AZ Electronics for auxiliary fan on fan cowl	E46			Nm

21 11 Bell housing

	Type	Screw	Measure	Unit
1AZ Clutch housing to crankcase	All	M8	27	Nm
	All	M10	51	Nm
	All	M12	86	Nm

21 21 Clutch disc and drive plate

	Type	Screw	Measure	Unit
1AZ Clutch to flywheel				
	All	M8 8.8	24	Nm
	All	M8 10.9	34	Nm
Replace bolt and taper sleeve.	S14 / S38 B36	M8 10.9	34	Nm

21 52 Clutch operation (hydraulic)

	Type	Screw	Measure	Unit
1AZ Coupling bolts for hydraulic pipes	All		17	Nm
	E46		20 + 5	Nm
2AZ Master cylinder to console	All		22	Nm
3AZ Master cylinder setscrew	All		22	Nm
4AZ Master cylinder to pedal assembly	All		10	Nm
5AZ Slave cylinder to clutch housing or transmission case	All		22	Nm

24 00 Transmission in general

	Type	Screw	Measure	Unit	
1AZ	Transmission to engine				
	Hex screws	All	M8	24	Nm
	Hex screws	All	M10	45	Nm
	Hex screws	All	M12	82	Nm
	Torx bolts	All	M8	21	Nm
	Torx bolts	All	M10	42	Nm
	Torx bolts	All	M12	72	Nm
2AZ	Reinforcement plate to transmission	All	M8	23	Nm

24 11 Transmission Case, Oil Sump

	Type	Screw	Measure	Unit
1AZ Transmission extension	All	M8	25	Nm
	A4S 270R / A4S 310R	5/16"	32	Nm
	A5S 360R	M8	22	Nm
2AZ Guard	All	M6	9	Nm
3AZ Converter bell housing	All	M8	25	Nm
	4HP-22 / 4HP-24	M10	46	Nm
	A4S 270R / A4S 310R	1/2"	42	Nm
4AZ Plug on transfer plate	All	M10	16	Nm
	4HP-22 / 4HP-24	M14	40	Nm
	4HP-22 / 4HP-24	M20	50	Nm

24 11 Transmission Case, Oil Sump

	Type	Screw	Measure	Unit
5AZ Oil Pan	4HP-22 / 4HP-24 A5S 310Z/A5S 325Z	M6	6	Nm
	A5S 560Z / A5S 440Z	M6	10	Nm
	A4S 270R / A4S 310R	M6	12	Nm
	A5S 360R	M6	10	Nm
	A5S 300J		9	Nm
6AZ Oil drain plug	All	M10	16	Nm
	A5S 325Z		35	Nm
	A5S 440Z	M16x1.5	30	Nm
	A5S 560Z		50	Nm
	A5S 360R	M14	18	Nm
	A4S 270R / A4S 310R		25	Nm
	A5S 300J		35	Nm
	A5S 325Z		30	Nm
	A5S 310Z / A5S 560Z		100	Nm
	A5S 440Z	M18x1.5	35	Nm
	A4S 270R / A4S 310R		33	Nm
	A5S 360R	M14	18	Nm
	A5S 300J		40	Nm

24 11 Transmission Case, Oil Sump

	Type	Screw	Measure	Unit
8AZ Oil filler pipe	3HP-22		105	Nm
	4HP-22 / 4HP-24 / A5S 310Z		98	Nm
9AZ Plug	All	M18	43	Nm
10AZ Oil bore plugs	A5S 300J		8	Nm
	A5S 310Z / A5S 560Z		15	Nm
11AZ Damper cover on transmission case	A5S 300J	M6	10	Nm
12AZ Radial shaft seal on converter bell housing	A4S 270R / A4S 310R A5S 360R	M4	3	Nm
13AZ Intermediate plate on intermediate housing	A4S 270R / A4S 310R	5/16"	25	Nm

24 13 Transmission Extension, Bearings, Seals

	Type	Screw	Measure	Unit
1AZ Slotted nut/output flange	A5S 310Z / A 5 S 440 Z / A5S 560Z A5S 325Z		120	Nm

24 15 Electrical fittings

	Type	Screw	Measure	Unit
1AZ Position switch on transmission	All	M6	10	Nm

24 21 Input, Intermediate and Output Shafts

	Type	Screw	Measure	Unit
1AZ	Flange nut, output flange	A5S 300J	225	Nm
	Flange nut, output flange without spring washer	A5S 360R	30	Nm
	Flange nut, output flange with spring washer	A5S 360R	60	Nm
	All others		100	Nm

24 22 Planetary gear drive

	Type	Screw	Measure	Unit
1AZ Brake coupling D/G on gear box housing	A5S 310Z / A5S 560Z	M10		
Insert all screws until contact is made with screw head in each case				
center bolt			30	Nm
both outer screws			15	Nm
center bolt			63	Nm
both outer screws			30	Nm
both outer screws			63	Nm

24 23 Shift Clutches

	Type	Screw	Measure	Unit	
1AZ	Torx screws for F clutch on transmission case	4HP-22 / 4HP-24	M6	10	Nm
		A5S 560Z	M8	23	Nm
2AZ	Brake band adjusting screw	A 4 S 270 R / A 4 S 310 R	5/16"	5	Nm
3AZ	Lock nut of brake band adjusting screw	A 4 S 270 R / A 4 S 310 R	5/16"	21	Nm

24 30 Hydr./Elec. Control Elements

	Type	Screw	Measure	Unit
1AZ Valve body to transmission	3HP-22	M6	11	Nm
	4HP-22 / 4HP-24 / A5S 310Z / A5S 440Z / A5S 300J	M6	8	Nm
	A4S 270R / A4S 310R	5/16"	20	Nm
	A5S 360R	M6	11	Nm
	A5S 325Z	M6	8	Nm
	A5S 560Z	M6 x 12	6	Nm
	A5S 560Z	M6x55	8	Nm
2AZ Valve housing to valve body	All	M6	5	Nm
3AZ Adapter plate on shift unit	A4S 270R / A4S 310R		13	Nm

24 31 Primary Pump

	Type	Screw	Measure	Unit
1AZ Oil pump to case				
	A4S 270R / A4S 310R	5/16"		
1st pass			10	Nm
2nd pass			20	Nm
	A5S 560Z	M6	10	Nm
	A5S 560Z	M5	5	Nm
	All others	M6	11	Nm
2AZ Oil strainer	A5S 440Z / A5S 560Z		5	Nm
	A5S 310Z		6	Nm
	A5S 325Z	M6	6	Nm
	A4S 270R / A4S 310R	5/16"	20	Nm
	All others		8	Nm
3AZ Oil pump body	A4S 270R / A4S 310R	5/16"	20	Nm
	A5S 310Z / A5S 560Z	M6	10	Nm
4AZ Oil cooler pipe adapter to transmission	A5S 300J / A4S 270R / A 4 S 310 R		28	Nm
Hollow bolt	A5S 440Z	M18 x 1.5	25	Nm
Cap screw	A5S 440Z	M18 x 1.5	20	Nm

24 32 Governor

	Type	Screw	Measure	Unit
1AZ Governor flange to transmission	All	M8	16	Nm
2AZ Stud in centrifugal governor	All	M6	3	Nm
3AZ Hexagon nut on stud	All		10	Nm
4AZ Hexagon head screw on centrifugal governor	All	M6	11	Nm
5AZ Governor housing to hub	4 HP-22 H	M6	11	Nm

24 35 Wire Harness, Shift Elements and Sensor

	Type	Screw	Measure	Unit
1AZ Transmission socket to case	4HP-22 EH / 4 HP-24EH / A5S 310Z	M26	12	Nm
	A4S 270R / A4S 310R	M26	14	Nm

24 34 Shift Valves, Parking Lock

	Type	Screw	Measure	Unit
7AZ Pulse generator, output speed	A5S 325Z		6	Nm
8AZ Pulse generator, turbine speed	A5S 325Z		8	Nm
9AZ Plug	A5S 325Z		20	Nm

24 34 Shift Valves, Parking Lock

		Type	Screw	Measure	Unit
1AZ	Pressure regulator to valve housing	4HP-22 EH / 4 HP-24EH / A5S 310Z	M6	5	Nm
		A4S 270R / A4S 310R		10	Nm
2AZ	Solenoid valve to valve housing	4HP-22 EH / 4 HP-24EH / A5S 310Z	M6	5	Nm
		A4S 270R / A4S 310R		10	Nm
		A5S 560Z		6	Nm
		A5S 300J	M5	3	Nm
		A5S 300J	M6	8	Nm
3AZ	Guide plate/parking lock mechanism	A5S 310Z		10	Nm
		A5S 325Z		10	Nm
		A5S 560Z		23	Nm
		A5S 360R	M6	21	Nm
4AZ	Pulse sender	A5S 310Z / A5S 440Z	M5	5	Nm
		A5S 560Z	M5	6	Nm
			M8	23	Nm
		A5S 360R	M6	11	Nm
		A5S 300J	M5	6	Nm
5AZ	Cover for servo piston on shift unit	A4S 270R / A4S 310R	5/16"	25	Nm
6AZ	Retaining plate for solenoid valves and pressure regulator on shift unit	A5S 440Z	M5	5	Nm
		A5S 325Z		6	Nm

24 40 Torque converter

	Type	Screw	Measure	Unit
1AZ Torque converter to flywheel		M8	26	Nm
	A4S 270R / A4S 310R / A5S 310Z / A5S 300J / A5S 440Z / A5S 560Z / A5S 325Z	M10	45	Nm
	All others	M10	49	Nm

24 51 External shift linkage

	Type	Screw	Measure	Unit
1AZ Selector lever on transmission	All	M8x1	10	Nm
	A5S 300J	M8	15	Nm

24 52 Interior Shift Elements

	Type	Screw	Measure	Unit
1AZ Shift segment to shaft	A4S 310R / A4S 310R		22	Nm
	A5S 300J	M14x1.5	35	Nm
2AZ Detent spring on shift unit	A4S 270R / A4S 310R	5/16"	25	Nm

24 71 Transmission mounts

	Type	Screw	Measure	Unit
1AZ	Cross member to body	All	21	Nm
2AZ	Rubber mounts to cross member or transmission	All	21	Nm
3AZ	Support tube to engine subframe	E36	42	Nm
4AZ	Rubber mounts to carrier pipe	E36	21	Nm
5AZ	Carrier plate	E36	21	Nm

25 16 Shift Console - Automatic Transmission

	Type	Screw	Measure	Unit
1AZ	Bowden cable on shift tower/transmission	All	15	Nm
2AZ	Clamping screw on shift lever	All	10	Nm
3AZ	Shift console to tunnel	All	7	Nm
4AZ	Switch to shift console	All	4.5	Nm
5AZ	Interlock cable on shift tower	All	7	Nm

62 16 Car Electrical System Senders

	Type	Screw	Measure	Unit
1AZ Screws for speedometer sender	All		6,6 ... 8,4	Nm