

Engine - TDV8 4.4L Diesel -**Lubricants**

Description	Specification
Engine Oil - vehicles with diesel particulate filter (DPF)	SAE 5W-30 oils conforming to WSS-M2C934B (low SAPS) specification
Engine Oil - vehicles without DPF	SAE 5W-30 oils conforming to WSS-M2C913B specification or WSS-M2C913C specification


Sealers

Description	Specification
Camshaft caps	ESK- M2G348-A5
'T' joints - ladder frame to engine block	WSE - M4G323 - A4T
Coolant plug - threaded	LOCTITE 572 SPECIFICATION SJM4G - 9102I

Capacities

Engine Oil Capacity	Specification
Dry fill including filter	11.0 liters (23.24 US pints) (11.62 US quarts)
Oil and filter change	9.5 liters (20.07 US pints) (10.03 US quarts)
Amount of oil required to bring level from 'MIN' to 'MAX' mark on oil level indicator	0.94 liters (2.00 pints) (1.00 US quarts)

General Specifications

Item	Specification
Type	4.4L, 90 degree 'V', common rail direct injection, twin turbocharged and intercooled diesel, twin overhead camshafts, 4 valves per cylinder
Cylinder arrangement	V8, numbers 1 and 5 cylinders at front of engine when engine is viewed from the rear of the cylinder block
Cylinder numbering	 NOTE: Viewed from the rear of the cylinder block <ul style="list-style-type: none"> RH bank: Front cylinder number 1 through to cylinder number 4 LH bank: Front cylinder number 5 through to cylinder number 8
Bore - nominal	84.00 mm (3.307 inches)
Stroke	98.5 mm (3.858 inches)
Capacity	4367 cc (266.49 cu.in)
Firing order	1 - 5 - 4 - 2 - 6 - 3 - 7 - 8
Compression ratio	16.1:1
Direction of rotation	Anti-clockwise viewed from rear of engine
Maximum power	230 kW (312 PS) (308 bhp) @ 4000 rev/min
Maximum torque	700 Nm (516 lb/ft) @ 3000 rev/min
Engine oil pressure (measured at the oil pressure sensor and with oil temperature at 65°C)	<ul style="list-style-type: none"> At idle: 0.8 bar (80 kPa) (11.6 lb/in²) - min 0.5 bar (50 kPa) (7.251 lb/in²) At 3500 rev/min: 2.4 bar (240 kPa) (34.8 lb/ft²) - min 2.0 bar (200 kPa) (29 lb/in²)
Cylinder head maximum permitted warp (flatness specification)	0.2 (mm)

Torque Specifications

Description	Nm	lb-ft
Accessory drive belt idler pulley bolt (65mm)	48	35
Accessory drive belt idler pulley bolt (80mm)	80	59
Accessory drive belt tensioner bolts	25	18
Air conditioning (A/C) compressor bolts	25	17
A/C compressor mounting bracket bolts	25	17
A/C compressor low pressure refrigerant line bolt	18	17
A/C compressor high pressure refrigerant line bolt	18	17
Battery positive cable nut	22	16
Camshaft position sensor bolt	10	7
* Camshaft bearing cap bolts	-	-
Stage 1	1	1
Stage 2	5	4
Stage 3	10	7
* Vacuum pump cap bolts	-	-
Stage 1	13	10
Stage 2	23	17

Vacuum pump cap bolts	10	77
*+ LH camshaft sprocket and gear bolts	-	-
Stage 1: Tighten the exhaust camshaft gear bolt	80	59
Stage 2: Tighten the exhaust camshaft gear bolt	Further 80°	
Stage 3: Tighten the intake camshaft sprocket and gear bolt	80	59
Stage 4: Tighten the intake camshaft sprocket and gear bolt	Further 80°	
*+ RH camshaft sprocket and gear bolts	-	-
Stage 1: Tighten the exhaust camshaft gear bolt	80	59
Stage 2: Tighten the exhaust camshaft gear bolt	Further 80°	
Stage 3: Tighten the intake camshaft sprocket and gear bolt	80	59
Stage 4: Tighten the intake camshaft sprocket and gear bolt	Further 80°	
Coolant pump bolts	23	17
Coolant pump pulley bolts	23	17
Camshaft phase sensor bolt	10	7
*+2 Crankshaft pulley bolt	-	-
Stage 1	100	74
Stage 2	Further 103°	
Stage 3	Further 35°	
Crankshaft position sensor bolt	5	4
Crankshaft rear seal plate bolts	10	7
Cylinder block coolant elbow bolts	10	7
*+2 Cylinder head bolts	-	-
Stage 1: Tighten the M13 bolts	20	15
Stage 2: Tighten the M13 bolts	40	30
Stage 3: Tighten the M13 bolts	80	59
Stage 4: Tighten the M13 bolts	Further 180°	
Stage 5: Tighten the M8 bolts	20	15
EGR valve inlet tube bolts	10	7
EGR valve and cooler assembly bolts	10	7
Engine breather line bolts	23	17
Engine mount bracket bolts	115	85
Engine mount bolts	100	74
Engine mount nut	100	74
Exhaust manifold heat shield bolts	10	7
* Exhaust manifold nuts	23	17
+ Exhaust manifold studs	13	10
+2 Flexplate bolts	95	70
Front driveshaft joint shield bolts	3	2
Front driveshaft joint shield nut	10	7
Fuel injection pump bolts	23	17
+ Fuel injector bolts	10	7
Fuel rail bolts	23	17
++ Fuel injection high-pressure fuel supply line, fuel rail and injector unions	-	-
Stage 1	Finger tight	Finger tight
Stage 2	10	7
Stage 3	73°	73°
++ Fuel injection high-pressure fuel supply line, fuel pump unions	-	-
Stage 1	Finger tight	Finger tight
Stage 2	10	7
Stage 3	80°	80°
Generator bolts	47	35
Generator battery positive cable nut	15	11
Glow plugs	10	7
Knock sensor bolts	20	15
Oil pan bolts	-	-
M6 bolts	10	7
M8 bolts	23	17
* Oil pump bolts	-	-
Stage 1: Tighten the bolts	4	3
Stage 2: Tighten the bolts	10	7
Oil level indicator tube nut	23	17
Oil pan drain plugs	23	17
Oil baffle plate bolts	23	17
Oil pressure sensor	14	10
Oil filter cover	35	26
Power steering gear bolts	100	74
Power steering pump bolts	23	17

Throttle body bolts	12	
Power steering pump to steering gear pressure line bolt	25	18
Starter motor bolts	45	33
Timing chain tensioner bolts	10	7
Transmission fluid line bracket bolt	6	4
Flexplate bolts	-	-
Stage 1	50	36
Stage 2	Further 15°	
Transmission bolts	45	33
Turbocharger heat shield bolts	10	7
Turbocharger support bracket bolts	24	18
+ Turbocharger to exhaust manifold	-	-
M8 studs	13	10
Nuts	23	17
+ Turbocharger coolant feed pipe	10	7
Secondary turbo down pipe	33	33
Turbo oil drain pipe	10	7
+ Exhaust cross over pipe	-	-
Stud	13	10
Bolts	23	17
Nut	28	20
Exhaust cross over pipe to support bracket	23	17
Exhaust cross over support bracket to EGR	23	17
+ Oil feed to turbo stub pipe	-	-
M8 bolts	8	5
Banjo bolt	23	17
*Valve cover bolts	10	7
Vacuum pump bolts	23	17
Vacuum pump nut	23	17
Vacuum pump stud	10	7

* Bolts must be tightened in sequence

+ New bolts must be installed

++ New pipes must be installed

¹ Lightly oil bolt threads

² Do not apply lubricant to bolt threads