

4 Technical data

4.1 Testing and setting data

ID no.	Name	Information	Series	Value	Unit
General engine data					
P00 01	Length of engine	about all data	TCD 2015	V06 1200	mm
	Length of engine with connection housing		TCD 2015 (Railway)	V06 1107	mm
			TCD 2015 (Railway)	V08 1454	mm
P00 02	Width of engine	about all data	TCD 2015	V06 1200	mm
	Width of engine with connection housing		TCD 2015 (Railway)	V06 1125	mm
			TCD 2015 (Railway)	V08 1120	mm
P00 03	Height of engine	about all data	TCD 2015	V06 1300	mm
	Height of engine with connection housing		TCD 2015 (Railway)	V06 835	mm
			TCD 2015 (Railway)	V08 837	mm
P00 04	Engine weight according to DIN 70020-A	without operating media	TCD 2015	V06 approx. 1020-1200	kg
			TCD 2015	V08 1244	kg
			TCD 2015 (Railway)	V06 920	kg
			TCD 2015 (Railway)	V08 1160	kg
P00 10	Working principle		TCD 2015	4 stroke	-
P00 20	Combustion process		TCD 2015	Direct injection	-
P00 30	Total volume		TCD 2015	V06 11906	cm ³
			TCD 2015	V08 15874	cm ³
P00 31	Bore		TCD 2015	132	mm

ID no.	Name	Information	Series	Value	Unit
P00 32	Stroke		TCD 2015	145	mm
P00 40	Compression ratio		TCD 2015	17.5:1	-
			TCD 2015 (Railway)	16.5:1	-
P00 50	Direction of rotation	looking onto the flywheel	TCD 2015	counter-clockwise	-
P00 51	Compression pressure		TCD 2015	3200-3400 (32-34)	kPa (bar)
P00 70	Spark gap		TCD 2015	V06 120	°
P00 71	Ignition sequence		TCD 2015	V06 A1-B3-A3-B2-A2-B1	-
			TCD 2015	V08 A1-B4-A4-B1-B3-A3-B2-A2	-
P00 81	Cylinder and side view		TCD 2015	T00 81	-
Cylinder head					
P01 01	Valve seat insert, bore (inlet)	Standard fit H6	TCD 2015	47.500 $\overset{+0.0}{\underset{-0.0}{\text{mm}}}$	mm
P01 02	Valve seat insert, bore (outlet)	Standard	TCD 2015	44.500 $\overset{+0.0}{\underset{-0.0}{\text{mm}}}$	mm
P01 03	Valve seat insert, bore (inlet)	1. oversize level	TCD 2015	47.800 $\overset{+0.0}{\underset{-0.0}{\text{mm}}}$	mm
P01 04	Valve seat insert, bore (outlet)	1. oversize level	TCD 2015	44.300 $\overset{+0.0}{\underset{-0.0}{\text{mm}}}$	mm
P01 05	Valve guide, bore in cylinder head	Standard	TCD 2015	15.000 $\overset{+0.0}{\underset{-0.0}{\text{mm}}}$	mm
P01 06	Valve guide, bore in cylinder head	1. oversize level	TCD 2015	15.100 $\overset{+0.0}{\underset{-0.0}{\text{mm}}}$	mm
P01 07	Valve guide, bore in cylinder head	2. oversize level	TCD 2015	15.200 $\overset{+0.0}{\underset{-0.0}{\text{mm}}}$	mm
P01 08	Cylinder head, height	Standard	TCD 2015	120	mm
P01 09	Cylinder head, height	Undersize	TCD 2015	119.70	mm
Valve guide					
P01 11	Valve guide, external diameter	Standard	TCD 2015	15.0	mm

ID no.	Name	Information	Series	Value	Unit
P01 12	Valve guide, external diameter	1. oversize level	TCD 2015	15.1	mm
P01 13	Valve guide, external diameter	2. oversize level	TCD 2015	15.2	mm
P01 14	Valve guide, inside diameter (inlet)	Standard	TCD 2015	8.030 $\pm^{0.0}_{0.0}$	mm
P01 15	Valve guide, inside diameter (outlet)	Standard	TCD 2015	8.030 $\pm^{0.0}_{0.0}$	mm
Valve seat insert					
P01 21	Valve seat insert, outside diameter (inlet)	Standard	TCD 2015	47.5 $\pm^{0.0}_{0.0}$	mm
P01 22	Valve seat insert, outside diameter (outlet)	Standard	TCD 2015	44.0 $\pm^{0.0}_{0.0}$	mm
P01 23	Valve seat insert, outside diameter (inlet)	1. oversize level	TCD 2015	47.800 $\pm^{0.0}_{0.0}$	mm
P01 24	Valve seat insert, outside diameter (outlet)	1. oversize level	TCD 2015	44.300 $\pm^{0.0}_{0.0}$	mm
Valve					
P01 31	Valve shaft diameter (inlet)	Standard	TCD 2015	7.97 $\pm^{0.0}_{0.0}$	mm
P01 32	Valve shaft diameter (outlet)	Standard	TCD 2015	7.96 $\pm^{0.0}_{0.0}$	mm
P01 33	Valve shaft clearance (inlet)	Wear limit	TCD 2015	0.12	mm
P01 34	Valve shaft clearance (outlet)	Wear limit	TCD 2015	0.14	mm
P01 35	Valve edge thickness, valve head (inlet)	Standard	TCD 2015	1.9 $\pm^{0.0}_{0.0}$	mm
P01 36	Valve edge thickness, valve head (outlet)	Standard	TCD 2015	1.5 $\pm^{0.0}_{0.0}$	mm
P01 37	Valve head diameter (inlet)	Standard	TCD 2015	46.0 $\pm^{0.0}_{0.0}$	mm
P01 38	Valve head diameter (outlet)	Standard	TCD 2015	42.0 $\pm^{0.0}_{0.0}$	mm
Valve seat					
P01 45	Valve stand back dimension (inlet)	Standard (from the center of the valve head to the cylinder head sealing surface)	TCD 2015	2.5	mm
		Wear limit (from the center of the valve head to the cylinder head sealing surface)	TCD 2015	1.20 - 1.60	mm

ID no.	Name	Information	Series	Value	Unit
P01 46	Valve stand back dimension (outlet)	Standard (from the center of the valve head to the cylinder head sealing surface)	TCD 2015	2.4	mm
		Wear limit (from the center of the valve head to the cylinder head sealing surface)	TCD 2015	1.25 - 1.65	mm
Valve spring					
P01 51	Valve spring length	untensioned, normal	TCD 2015	58.7	mm
	Valve spring wire diameter			4.25	
Valve clearance					
P01 61	Valve clearance (inlet)	with rotation angle disc	TCD 2015	90 ⁺¹	°
		with cold engine with feeler gauge		0.25 ^{+0.05}	mm
P01 62	Valve clearance (outlet)	with rotation angle disc	TCD 2015	108 ⁺¹	°
		with cold engine with feeler gauge		0.30 ^{+0.05}	mm
P01 63	Valve clearance setting	Valve overlap according to adjustment schematic	TCD 2015	T01 63	-
Rocker arm/bracket					
P01 72	Rocker arm, bore, diameter (outlet)		TCD 2015	28 ^{+0.05}	mm
P01 73	Rocker arm, bore, diameter (inlet)		TCD 2015	28 ^{+0.05}	mm
P01 74	Rocker arm shaft (diameter)		TCD 2015	28 ^{+0.05}	mm
P01 75	Axial clearance of the toggle levers	Axial bearing clearance with cold engine	TCD 2015	0.2 - 0.4	mm

ID no.	Name	Information	Series	Value	Unit
P01 93	Roughness	Surface for cylinder head gasket	TCD 2015	10	Rz
				20	[Rmax]
		Surface for cylinder head cover	TCD 2015	16	Rz
				20	[Rmax]
Main running gear					
Crankshaft					
Main journal					
P02 03	Main journal, diameter	Standard	TCD 2015	108 ± 0.01	mm
P02 04	Main journal, diameter	Undersize stage 3 stages	TCD 2015	0.25 each	mm
P02 06	Main journal, unroundness	Wear limit	TCD 2015	0.010	mm
P02 07	Main journal, hardness	Standard	TCD 2015	50 ± 0	HRC
Fit journal					
P02 11	Fit bearing, width	Standard	TCD 2015	38 ± 0.01	mm
P02 12	Fit bearing, width	Oversize stage	TCD 2015	38.25 ± 0.01	mm
P02 13	Fit bearing, width	Limit value for oversize stage	TCD 2015	38.50 ± 0.01	mm
Lifting journal					
P02 22	Lifting journal, diameter		TCD 2015	91 ± 0.01	mm
P02 23	Lifting journal, diameter	Undersize stage 3 stages	TCD 2015	0.25 each	mm
P02 25	Lifting journal, unroundness	Wear limit	TCD 2015	0.010	mm
P02 26	Radial run-out, crankshaft	maximum permissible deviation	TCD 2015	0.15	mm
Main bearing					
P02 34	Axial clearance of crankshaft	permissible	TCD 2015	0.205 - 0.392	mm

ID no.	Name	Information	Series	Value	Unit
P02 35	Thrust ring half, thickness	Standard (upper and lower half)	TCD 2015	3.36 ^{+0.0} _{-0.0}	mm
P02 36	Thrust ring half, thickness	1. oversize stage=0.125 mm (upper and lower half)	TCD 2015	3.485 ^{+0.0} _{-0.0}	mm
P02 37	Thrust ring half, thickness	2. oversize stage=0.125 mm (upper and lower half)	TCD 2015	3.610 ^{+0.0} _{-0.0}	mm
Connecting rod					
P02 41	Parallelism of the connecting rod	Permissible deviation (a) at a distance of (x)	TCD 2015	max. 0.06	mm
P02 42	Taper on periphery of the connecting rod	Permissible deviation (A) to (B) at a distance of (x)	TCD 2015	max. 0.10	mm
P02 43	Small end bush, inside diameter	installed, unmachined	TCD 2015	52.040 ^{+0.0} _{-0.0}	mm
P02 45	Small end bush clearance between piston pin and small end bush		TCD 2015	0.04 - 0.063	mm
P02 46	Assembly temperature of the small end bush	cooled in coolant to	TCD 2015	approx. -40	°C
P02 47	Assembly temperature of the connecting rod	heated up in hot-air oven to	TCD 2015	max. 220	°C
Big end bearing					
P02 52	Big end bearing shells, inside diameter	installed identification (n) / top lining spattered	TCD 2015	91.048 ^{+0.0} _{-0.0}	mm
P02 54	Big end bearing	Undersize stage 3 stages	TCD 2015	0.25 each	mm
P02 55	Big end bearing, bore in connecting rod	after separation and re-assembly of rod and cover	TCD 2015	95 ^{+0.0} _{-0.0}	mm
P02 56	Theoretical clearance between the big end bea- ring / lifting journal		TCD 2015	0.060 - 0.136	mm
P02 57	Big end bearing clearance	Wear limit	TCD 2015	0.17	mm

ID no.	Name	Information	Series	Value	Unit
Piston pin					
P02 61	Piston pin, diameter		TCD 2015	51.992 - 52.000	mm
P02 62	Piston pin clearance	Wear limit	TCD 2015	0.09	mm
Piston					
P02 71	Piston, diameter	Measuring point 1 at height 22.5 mm (Identification of the installation position on the piston head)	TCD 2015	132 ± 0.04	mm
P02 72	Piston, diameter	Measuring point 2 at height 87.5 mm (Identification of the installation position on the piston head)	TCD 2015	132 ± 0.04	mm
P02 73	Piston, diameter	Measuring point 3 at height 122.7 mm (Identification of the installation position on the piston head)	TCD 2015	132 ± 0.04	mm
P02 75	Piston projection	1.4 = 1 hole (cylinder head gasket)	TCD 2015	-0.05 to 0.10	mm
P02 76	Piston projection	1.6 = 2 holes (cylinder head gasket)	TCD 2015	0.10 to 0.30	mm
P02 77	Piston projection	1.8 = 3 holes (cylinder head gasket)	TCD 2015	0.30 to 0.51	mm
P02 78	Piston pin, bore		TCD 2015	52 ± 0.04	mm
Piston rings					
P02 84	Closed gap, piston ring 1	Standard	TCD 2015	0.35 - 0.45	mm
		Wear limit (identification TOP in direction of piston head)		0.9	mm
P02 85	Closed gap, piston ring 2	Standard	TCD 2015	1.1 - 1.3	mm
		Wear limit (identification TOP in direction of piston head)		1.4	mm

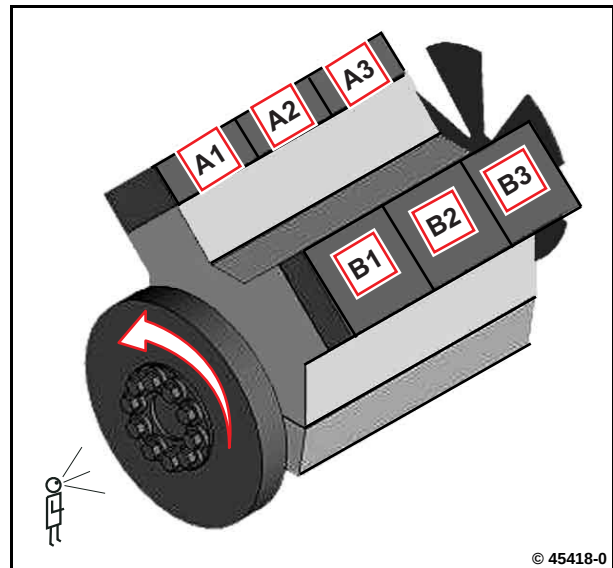
ID no.	Name	Information	Series	Value	Unit
P02 86	Closed gap, piston ring 3	Standard	TCD 2015	0.4 - 0.7	mm
		Wear limit (identification TOP in direction of piston head)		1.2	mm
P02 87	Axial clearance, 1st piston ring	Wear limit	TCD 2015	Measure with trapezoidal groove wear gauge	-
P02 88	Axial clearance, 2nd piston ring	Wear limit	TCD 2015	0.25	mm
P02 89	Axial clearance, 3rd piston ring	Wear limit	TCD 2015	0.15	mm
Crankcase					
Camshaft bearing					
P03 11	Bore diameter for camshaft bearing liner in the crankcase		TCD 2015	75.000 $\overset{+0.0}{\underset{-0.0}{}}$	mm
P03 12	Camshaft bearing liner, outside diameter		TCD 2015	75.090 $\overset{+0.0}{\underset{-0.0}{}}$	mm
P03 13	Camshaft bearing liner, inside diameter		TCD 2015	69.990 $\overset{+0.0}{\underset{-0.0}{}}$	mm
	Camshaft bearing liner, wall thickness			2.0493 $\overset{+0.0}{\underset{-0.0}{}}$	mm
P03 14	Camshaft bearing liner, inside diameter	Wear limit	TCD 2015	70.100	mm
P03 23	Tappet bores, diameter		TCD 2015	25.000 $\overset{+0.0}{\underset{-0.0}{}}$	mm
P03 24	Tappet bores, diameter	Wear limit	TCD 2015	25.050	mm
P03 25	Installation depth of the crankshaft sealing ring (rear cover)	First assembly	TCD 2015	0.5 $\overset{+0.2}{\underset{-0.2}{}}$	mm
		Repairs		3.5 $\overset{+0.2}{\underset{-0.2}{}}$	mm
P03 26	Installation depth of the crankshaft sealing ring (genset support)	First assembly	TCD 2015	3 $\overset{+0.1}{\underset{-0.1}{}}$	mm
		Repairs		7 $\overset{+0.1}{\underset{-0.1}{}}$	mm
Cylinder liners					
P03 31	Cylinder bore	Standard	TCD 2015	132 $\overset{+0.0}{\underset{-0.0}{}}$	mm
P03 35	Fitting depth for cylinder liner		TCD 2015	9.87 $\overset{+0.0}{\underset{-0.0}{}}$	mm

ID no.	Name	Information	Series	Value	Unit
P03 36	Collar height of cylinder liner		TCD 2015	9.02 $\pm$ 0.0	mm
P03 37	Thickness of shim	Standard	TCD 2015	1.0 $\pm$ 0.05	mm
P03 39	Overhang of cylinder liner		TCD 2015	0.09	mm
Control system					
Camshaft					
P04 31	Camshaft bearing pin diameter	Standard	TCD 2015	70 $\pm$ 0.05	mm
P04 35	Axial clearance of the camshaft		TCD 2015	0.25 - 0.75	mm
P04 37	Thickness of the gasket for axial clearance setting		TCD 2015	0.3	mm
P04 39	Overhang of the parallel pin on the camshaft gear wheel		TCD 2015	5.000	mm
P04 43	Axial clearance of the camshaft for injection pumps		TCD 2015	0.2 - 0.45	mm
P04 44	Tooth edge clearance of the idler gear - idler gear to camshaft gear wheel		TCD 2015	0.04 - 0.3	mm
Speed governing system					
P05 91	Clearance between speed governor (crankshaft) and flywheel		TCD 2015	1.0 $\pm$ u.	mm
P05 92	Clearance between speed governor (camshaft) and camshaft gear wheel		TCD 2015	0.3 - 0.9	mm
Fuel system					
P07 19	Plunger lift of the camshaft for injection pumps	see name plate	TCD 2015	4.00	mm
P07 20	Tooth edge clearance between gear wheel of the camshaft for injection pumps and camshaft gear wheel		TCD 2015	0.04 - 0.3	mm
Injection valve					
P07 52	Nozzle opening pressure of the fuel injector		TCD 2015	280 - 288	bar

ID no.	Name	Information	Series	Value	Unit
P07 91	Installation dimensions of the fuel shut-off valve	dimension X	TCD 2015	approx. 25	mm
P07 92	Installation angle of the fuel pipe	dimension X	TCD 2015	approx. 30	°
Lubricating oil system					
Lube oil pressure					
P08 63	Basic setting of the pressurestat when using new parts	for 3.00 bar	TCD 2015	35	mm
		for 3.50 bar		32	
		for 4.00 bar		29.1	
Cooling system					
P09 11	Thermostat, start opening (A-bank)	Coloured marking black venting notch top	TCD 2015	79	°C
P09 12	Thermostat, start opening (B-bank)	Venting notch top	TCD 2015	87	°C
P09 13	Thermostat, stroke distance		TCD 2015	at least 8	mm
Other components					
P12 11	Tension of the single V-belt (first assembly, generator, 120 Ampere)	with V-belt tension measuring device 8115	TCD 2015	500	N
	Tension of the single V-belt (first assembly, generator, 55 Ampere)	with V-belt tension measuring device 8115		550 ± 5	N
P12 21	Tension of the single V-belt (generator, 120 Ampere)	Check after 15 minutes running under load	TCD 2015	350 ± 5	N
	Tension of the single V-belt (generator, 55 Ampere)	Check after 15 minutes running under load		300 ± 5	N
P13 66	Screw-in height of the flame glow plug in connecting line	dimension X	TCD 2015	60 ± 3	mm

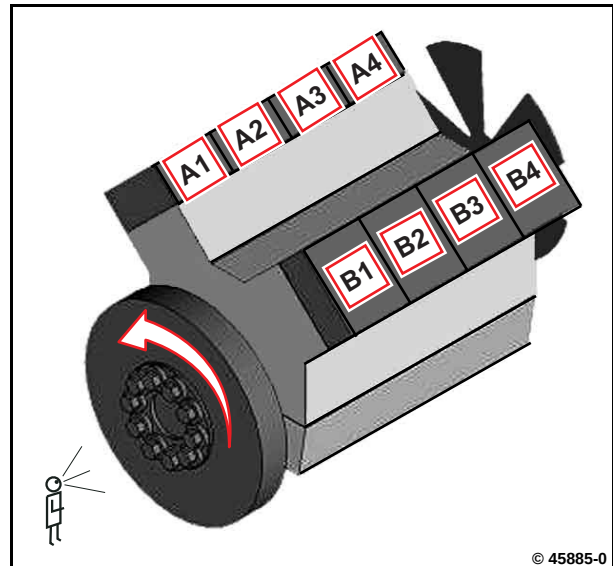
T00 81

Cylinder and side view
engine TCD 2015 V06



T00 81

Cylinder and side view
engine TCD 2015 V08



T01 63

Setting valve clearance
engine TCD 2015 V06
Ignition sequence: A1-B3-A3-B2-A2-B1

Valve overlap on cylinder	Setting on cylinder
A1	B2
B3	A2
A3	B1
B2	A1
A2	B3
B1	A3

T01 63

Setting valve clearance

engine TCD 2015 V08

Ignition sequence: A1-B4-A4-B1-B3-A3-B2-A2

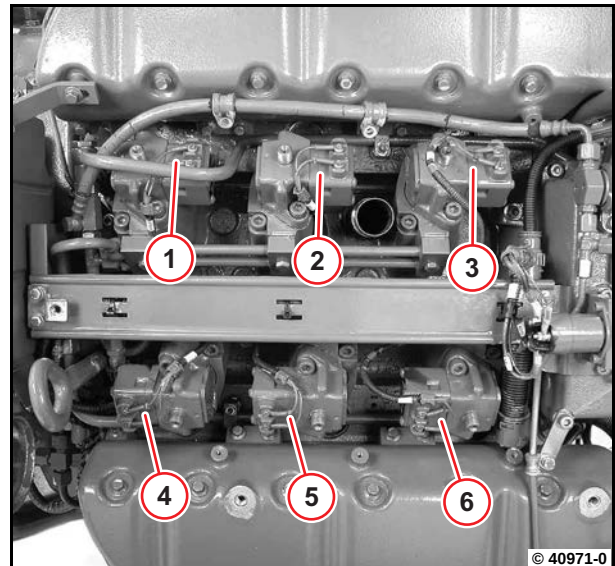
Valve overlap on cylinder	Setting on cylinder
A1	B3
B4	A3
A4	B2
B1	A2
B3	A1
A3	B4
B2	A4
A2	B1

T13 054

Connection plan of the injection pumps

engine TCD 2015 V06

Item	Component	Cylinder assignment
1	Y15.1	A1
2	Y15.5	A2
3	Y15.3	A3
4	Y15.6	B1
5	Y15.4	B2
6	Y15.2	B3



T13 054

Connection plan of the injection pumps

engine TCD 2015 V08

Item	Component	Cylinder assignment
	Y15.1	A1
	Y15.8	A2
	Y15.6	A3
	Y15.3	A4
	Y15.4	B1
	Y15.7	B2
	Y15.5	B3
	Y15.2	B4

4.2 Tightening specifications

ID no.	Name	Screw type	Notes / Remarks	Series	Pre-clamping value	Post-clamping value
A00 001	Clamping bracket on crankcase		Mounting feet/engine mounting on crankcase, elastic	TCD 2015	106 Nm	
A00 002	Clamping bracket on adapter for assembly block		Mounting feet/engine mounting on crankcase, rigid oil lightly	TCD 2015	30 Nm	+45°
A00 003	Mounting feet/engine mounting on crankcase		elastic	TCD 2015	90 Nm	
			rigid oil lightly	TCD 2015	106 Nm	
A01 001	Cylinder head on crankcase		Screw can be used a max. 3 times, otherwise renewed every time they are loosened. Oil lightly	TCD 2015	30 Nm	+45°
A01 002	Rocker arm bracket on cylinder head			TCD 2015	50 Nm	+120° +120° +60°
A01 003	Lock nut valve clearance setting screw			TCD 2015	61 Nm	
A01 004	Cylinder head cover on cylinder head		oil lightly	TCD 2015	20 Nm	
A01 005	Cylinder head cover on cylinder head hood	M8x30	oil lightly hexagonal socket	TCD 2015	22 Nm	
A02 001	Counterweight on crankshaft		oil lightly	TCD 2015	22 Nm	
				TCD 2015	50 Nm	+30° +60° +60°
A02 010	Main bearing cover, vertical screws	Screws with washers	Screws can be used a max. 3 times, otherwise renewed every time they are loosened. Oil lightly	TCD 2015	50 Nm	+60° +60° +120°

ID no.	Name	Screw type	Notes / Remarks	Series	Pre-clamping value	Post-clamping value
A02 011	Main bearing cover, horizontal screws		Screws can be used a max. 3 times, otherwise renew every time they are loosened.	TCD 2015	80 Nm	+30° +30°
A02 020	Big end bearing cover on connecting rod		Renew screws every time they are loosened.	TCD 2015	50 - 60 Nm	+60° +60°
A03 010	Rear cover on crankcase		Insert with locking agent DEUTZ DW 59	TCD 2015	21 Nm	
A03 020	Genset support on crankcase	M10		TCD 2015	55 Nm	
A03 030	Lubricating oil pan on crankcase		Gasket steel beading Observe tightening order	TCD 2015	28 Nm	
				TCD 2015 (Railway)	24 Nm	
A03 031	Oil drain plug on lubricating oil pan		oil lightly	TCD 2015	120 Nm	
				TCD 2015 (Railway)	120 Nm	
A03 034	Half-flange on connecting flange	M8x30-10.9		TCD 2015 (Railway)	30 Nm	
A03 035	Connecting flange on lubricating oil pan	M10x20-10.9		TCD 2015 (Railway)	30 Nm	
A03 051	Valve housing (pressurestat) on crankcase		oil lightly	TCD 2015	50 Nm	210 Nm
A03 060	Crankcase breather		Pipe clamp	TCD 2015	8 Nm	
A03 064	Breather pipe on intake elbow/oil separator		Hose clip	TCD 2015	6.5 Nm	
	Breather pipe (holder) on cable harness rail			TCD 2015	20 Nm	
A03 069	Pipe (crankcase breather) on cable harness rail			TCD 2015 (Railway)	20 Nm	

ID no.	Name	Screw type	Notes / Remarks	Series	Pre-clamping value	Post-clamping value
A03 070	Pipe (crankcase breather)		Hose clip	TCD 2015 (Railway)	6.5 Nm	
A03 080	Connection housing on lubricating oil pan			TCD 2015	70 Nm	
A03 081	Connection housing to crankcase	M12x1.5x35	Insert with locking agent DEUTZ DW 59	TCD 2015	30 Nm	+30° +30°
A03 082	Connection housing to crankcase	M12x1.5x90	Insert with locking agent DEUTZ DW 59	TCD 2015	30 Nm	+60° +60°
A03 085	Cover on connection housing	M8x16	Insert with locking agent DEUTZ DW 59	TCD 2015	21 Nm	
A03 088	Connection housing to crankcase	M12x190	Insert with locking agent DEUTZ DW 59	TCD 2015	30 Nm	+60° +60° +60°
A03 089	Connection housing to crankcase	M12x175	Insert with locking agent DEUTZ DW 59	TCD 2015	30 Nm	+60° +90°
A04 001	Central screw for camshaft gear wheel on camshaft		oil lightly	TCD 2015	50 Nm	+150°
A04 002	Stop cover (camshaft) on crankcase		Insert with locking agent DEUTZ DW 72	TCD 2015	22 Nm	
A04 003	Camshaft gear wheel on idler gear		oil lightly	TCD 2015	30 Nm	
A04 004	Gear wheel on camshaft for injection pumps			TCD 2015	30 Nm	+30°
A04 005	Plug of injection pump camshaft on crankcase		Fastening screw for diverter stopper	TCD 2015	8.5 Nm	
A04 011	Fastening screw for idler gear on genset support			TCD 2015	80 Nm	
A04 012	Screw plug for bolt idler gear		oil lightly	TCD 2015	79 Nm	
A04 013	Screw for bolt idler gear	M12x100	oil lightly	TCD 2015	70 Nm	
A04 015	Pad thrust bearing on crankcase		oil lightly	TCD 2015	30 Nm	

ID no.	Name	Screw type	Notes / Remarks	Series	Pre-clamping value	Post-clamping value
A04 020	Gear case cover on crankcase	M8x35 M8x45		TCD 2015	21 Nm	
A04 022	Cover (stop cover) on crankcase		Insert with locking agent DEUTZ DW 72	TCD 2015	20 Nm	
A05 011	Speed governor on connection housing (crankshaft)			TCD 2015	8 Nm	
A05 012	Speed governor on cover (camshaft)			TCD 2015	8 Nm	
A06 001	Exhaust pipe at cylinder head		Insert with fitting compound DEUTZ S1	TCD 2015	60 Nm	
A06 002	Exhaust pipe on exhaust manifold		Insert with fitting compound DEUTZ S1	TCD 2015	22 Nm	
A06 003	Exhaust pipe on exhaust line	Nut	Insert with fitting compound DEUTZ S1	TCD 2015	18 Nm	
A06 010	Exhaust manifold to connection housing			TCD 2015	28 Nm	
	Exhaust manifold to exhaust line		Insert with fitting compound DEUTZ S1	TCD 2015 (Railway)	35 Nm	
A06 020	Exhaust turbocharger to exhaust manifold	Nut	Insert with fitting compound DEUTZ S1	TCD 2015	35 Nm	
				TCD 2015 (Railway)	10 Nm	35 Nm
A06 021	Intake elbow to exhaust turbocharger		Hose clip housing position of the hose clip top screw head rear	TCD 2015	5 Nm	
A06 024	Tubing connection to turbocharger		Hose clip	TCD 2015 (Railway)	5 Nm	

ID no.	Name	Screw type	Notes / Remarks	Series	Pre-clamping value	Post-clamping value
A06 030	Charge air pipe to cylinder head			TCD 2015	20 Nm	
	Charge air pipe to air intake pipe	M10 x 85 M10 x 65		TCD 2015	60 Nm	
A06 033	Connection pipe to air intake pipe			TCD 2015	20 Nm	
		Nut		TCD 2015 (Railway)	20 Nm	
A06 034	Joint plate on connecting pipe			TCD 2015	57 Nm	
	Holder on exhaust manifold			TCD 2015 (Railway)	20 Nm	
A06 038	Screw plug on charge air pipe			TCD 2015	34 Nm	
A06 046	Connecting elbow to charge air pipe	Nut		TCD 2015	20 Nm	
		Stud		TCD 2015	4.5 Nm	
A06 056	Connecting pipe to holder			TCD 2015	20 Nm	
				TCD 2015 (Railway)	20 Nm	
A06 058	Retaining plate on genset support			TCD 2015	20 Nm	
A07 001	Fuel injector on cylinder head	Union screw	without leak oil Insert with fitting compound DEUTZ S1	TCD 2015	70 Nm	
A07 002	Injection nozzle on fuel injector	Nozzle cap nut		TCD 2015	40 - 50 Nm	
A07 003	Injection line on fuel injector/injection pump	Union nut		TCD 2015	25 Nm	
A07 006	Pipe clamp for injection pipe	M6x12		TCD 2015	10 Nm	
A07 009	Injection pump housing on crankcase		oil lightly	TCD 2015	60 Nm	
A07 012	Injection pump on injection pump housing		oil lightly	TCD 2015	60 Nm	

ID no.	Name	Screw type	Notes / Remarks	Series	Pre-clamping value	Post-clamping value
A07 015	Fuel pipe to injection pump housing			TCD 2015	25 Nm	
A07 018	Fuel pipe to fuel shut-off valve (flame flow plugs)	Union nut		TCD 2015	20 Nm	
A07 023	Temperature transmitter on connector			TCD 2015	22 Nm	
A07 024	Bearing housing (fuel supply pump) to genset support			TCD 2015	42 Nm	
A07 034	Fuel line on fuel supply pump	Hollow screw		TCD 2015	max.35 Nm	
A07 044	Fuel pipe fastening		Pipe clamp/holder oil thread and head contact surface.	TCD 2015	8.5 Nm	
	Fuel pipe fastening		Pipe clamp	TCD 2015 (Railway)	8.5 Nm	
A07 057	Adapter (flame glow plug) on charge air pipe	M45x1.5	SW50	TCD 2015 (Railway)	50 Nm	
A07 058	Ground cable on lock nut (flame glow plug)			TCD 2015 (Railway)	7.5 Nm	
A07 059	Flame glow plug to connecting pipe	Lock nut		TCD 2015	25 Nm	
A07 066	Connector (fuel pressure holding valve) to fuel pipe	Union nut		TCD 2015	42 Nm	
				TCD 2015 (Railway)	42 Nm	
A07 067	Overflow valve on connector			TCD 2015	39 Nm	
A07 068	Screw-in nipple on fuel shut-off valve			TCD 2015 (Railway)	39 Nm	
				TCD 2015	18 Nm	

ID no.	Name	Screw type	Notes / Remarks	Series	Pre-clamping value	Post-clamping value
A07 069	Screw-in nipple on overflow valve	M16x1.5		TCD 2015 (Railway)	42 Nm	
A07 093	Fuel shut-off valve (flame glow plug) on crankcase (thermostat housing)		Pipe clamp	TCD 2015	20 Nm	
A08 002	Adapter on oil filter nozzle (genset support)			TCD 2015	50 Nm	
A08 010	Oil pressure pump on genset support		Oil thread and head contact surface.	TCD 2015	40.5 Nm	
A08 011	Plug on oil pump		Oil thread and head contact surface.	TCD 2015	21 Nm	
A08 013	Lubricating oil pipe to genset support	Hollow screw		TCD 2015	18 Nm	
A08 014	Lubricating oil pipe to fuel supply pump	Union nut		TCD 2015	20 Nm	
A08 015	Oil suction intake pipe on oil pump	M8x16		TCD 2015	22 Nm	
		M8x20		TCD 2015 (Railway)	22 Nm	
A08 016	Holder oil suction pipe on retaining plate (main bearing cover)	M8x25		TCD 2015	22 Nm	
				TCD 2015 (Railway)	22 Nm	
	Holder on oil suction pipe	M8x16		TCD 2015	22 Nm	
A08 035	Guide tube on screw-in nipple (lubricating oil pan)	Union nut		TCD 2015 (Railway)	22 Nm	
A08 038	Screw-in nipple (guide tube) on lubricating oil pan			TCD 2015	30 Nm	
A08 040	Lubricating oil pipe on exhaust turbocharger	Union nut M14 x 1.5		TCD 2015	45 Nm	
				TCD 2015	39 Nm	

ID no.	Name	Screw type	Notes / Remarks	Series	Pre-clamping value	Post-clamping value
A08 044	Oil return pipe to turbocharger/crankcase			TCD 2015	20 Nm	
				TCD 2015 (Railway)	20 Nm	
A08 045	Oil pressure pipe on gear case cover		Pipe clamps	TCD 2015	8.5 Nm	
	Oil pressure pipe on genset support		Pipe clamp	TCD 2015 (Railway)	20 Nm	
A08 050	Oil cooler housing cover on genset support			TCD 2015	20 Nm	
A08 051	Oil cooler on genset support			TCD 2015	20 Nm	
A08 071	Screw plug on valve housing (pressurestat)		Hexagon socket head	TCD 2015	180 Nm	
A08 079	Holder (lubricating oil pipe) on genset support/gear case cover			TCD 2015	20 Nm	
A08 081	Relief valve of piston cooling nozzle on crankcase			TCD 2015	28 Nm	
A08 091	Oil pressure pick-up on oil cooler housing	M14 x 1.5		TCD 2015	20 Nm	
	Thermostat housing on crankcase				20 Nm	
A09 001	Holder on thermostat housing		Holder of pipe clamp (fuel pipe)	TCD 2015	20 Nm	
A09 002	Outlet branch on thermostat housing			TCD 2015	20 Nm	
A09 010	Coolant pump on genset support		oil lightly	TCD 2015	21 Nm	
A09 011	Inlet adapter on coolant pump		oil lightly	TCD 2015	20 Nm	
A09 031	Temperature transmitter on thermostat housing			TCD 2015	22 nm	
A12 001	Flywheel on crankshaft	M16x70	Renew screws after every loosening. Oil lightly	TCD 2015	50 Nm	+30° +60° +60°
A12 030	Flanged hub (torsional vibration damper) on crankshaft		oil lightly	TCD 2015	30 Nm	+120°

ID no.	Name	Screw type	Notes / Remarks	Series	Pre-clamping value	Post-clamping value
A12 031	V-belt pulley/torsional vibration damper on flanged hub		oil lightly	TCD 2015	30 Nm	
A12 057	Bearing housing (hydraulic pump drive) on crankcase	M10x55	oil lightly	TCD 2015	30 Nm	+60°
A12 058	Flange housing on bearing housing (hydraulic pump drive)	M10x110	oil lightly	TCD 2015	30 Nm	+120°
A12 059	Flange housing on bearing housing (hydraulic pump drive)	M10x210	oil lightly	TCD 2015	30 Nm	+180°
A12 071	Holder on gear case cover	M8x16-8.8		TCD 2015	18 Nm	
	Heat shield on holder (gear case cover)			TCD 2015 (Railway)	20 Nm	
A12 080	Fuel pipe on flame glow plug	M8x16-10.9		TCD 2015	20 Nm	
	Union nut	Union nut		TCD 2015	20 Nm	
A12 082	Oil pressure pipe	Union nut		TCD 2015	39 Nm	
A12 090	Fuel hose to connector (overflow valve/fuel shut-off valve)	Hollow screw M10x1		TCD 2015 (Railway)	45 Nm	
			Pipe union with ring piece, pipe 6 mm	TCD 2015	13 Nm	
A12 092	Hollow screw pipe union with ring piece	Hollow screw M14x1.5	Breather pipe on oil cooler cover	TCD 2015	18 Nm	
A12 093	Hollow screw pipe union	M16x1.5	Fule pipe on fuel pressure holding valve	TCD 2015	39 Nm	
A12 095	Pipe clamps, fuel pipe to connecting pipe	M6			40 Nm	
	Fuel hose to air intake pipe		Pipe clamp	TCD 2015	8.5 Nm	
	Clip (cable) on holder (central plug)	M8			8.5 Nm	
					18 Nm	

ID no.	Name	Screw type	Notes / Remarks	Series	Pre-clamping value	Post-clamping value
A12 096	Breather pipe on holder		Pipe clamp	TCD 2015 (Railway)	30 Nm	
A12 098	Screw-in nipple (lubricating oil pipe) on exhaust turbocharger			TCD 2015 (Railway)	45 Nm	
A13 001	Starter on crankcase	Nut		TCD 2015	30 Nm	+60° +60°
A13 006	Heat shield (starter) on crankcase	M12x22 M12x28		TCD 2015	70 Nm	
A13 012	Generator on plate (console)			TCD 2015	hand tight	20 Nm
A13 015	Generator on console			TCD 2015	hand tight	20 Nm
A13 017	Lock nut (V-belt) on generator holder	Screw lock nut		TCD 2015	hand tight	42 Nm
A13 018	Generator holder on genset support			TCD 2015	42 Nm	
A13 035	Cable to flame glow plug	Nut M5		TCD 2015	max. 5 Nm	
A13 037	Cable to pre-heating relay	Nut M4		TCD 2015 (Railway)	5 Nm	
A13 038	Cable to pre-heating relay	Nut M6		TCD 2015	2 Nm	
A13 046	Pressure sensor/temperature transmitter on connecting pipe			TCD 2015	7.5 Nm	
A13 054	Cable to injection pump			TCD 2015	9 Nm	
				TCD 2015	1.0 Nm	
				TCD 2015 (Railway)	5 Nm	

ID no.	Name	Screw type	Notes / Remarks	Series	Pre-clamping value	Post-clamping value
A13 090	Cable harness holder to connecting pipe	M8 x 20 M8 x 16 M8		TCD 2015	18 Nm	
A13 094	Cable harness rail on holder	M6 M6x12 M6x16		TCD 2015 (Railway)	20 Nm	
A13 098	Holder (cable harness) on connection housing			TCD 2015 (Railway)	7.5 Nm 8 Nm 70 Nm	

