

Document Title: Description	Function Group: 000	Information Type: Service Information	Date: 4/16/2026
Profile: L50E Volvo			

Description

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

L50E is an articulated four-wheel drive wheel loader.

Loader L50E is equipped with a four-cylinder, four-stroke, low-emission, diesel engine with the type designation D4D. The engine is provided with mechanically controlled fuel injection and is turbocharged. The engine has four separate fuel injection pumps, one for each cylinder.

The machine has hydrostatic drive with a two-stage "Power Shift" gearbox (high/low gear). The type designation is HST75.

The front and rear axles have fully floating drive shafts with planetary gears in the wheel hubs.

The service brakes of the machine are wet type disc brakes built integrally with a planetary gear in each hub. The parking brake, of the drum brake type, is installed on the front axle.

The hydraulic system is load sensing with a pump in common for the brakes, steering and working hydraulics.

For a more detailed description of the various functions and components, refer to the relevant section.



Figure 1
Wheel loader L50E



Document Title: Measurement conversion tables	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Measurement conversion tables

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Length

Unit	cm	m	km	in	ft	yd	mile
cm	1	0.01	0.00001	0.3937	0.03281	0.01094	0.000006
m	100	1	0.001	39.37	3.2808	1.0936	0.00062
km	100000	1000	1	39370.7	3280.8	1093.6	0.62137
in	2.54	0.0254	0.000025	1	0.08333	0.02777	0.000015
ft	30.48	0.3048	0.000304	12	1	0.3333	0.000189
yd	91.44	0.9144	0.000914	36	3	1	0.000568
mile	160930	1609.3	1.6093	63360	5280	1760	1

1 mm = 0.1 cm - 1 mm = 0.001 m

Area

Unit	cm ²	m ²	km ²	a	ft ²	yd ²	in ²
cm ²	1	0.0001	-	0.000001	0.001076	0.000012	0.155000
m ²	10000	1	0.000001	0.01	10.764	1.1958	1550.000
km ²	-	1000000	1	10000	1076400	1195800	-
a	0.01	100	0.0001	1	1076.4	119.58	-
ft ²	-	0.092903	-	0.000929	1	0.1111	144.000
yd ²	-	0.83613	-	0.008361	9	1	1296.00
in ²	6.4516	0.000645	-	-	0.006943	0.000771	1

1 ha = 100 a - 1 mile² = 259 ha = 2.59 km²

Volume

Unit	cm ³ = cc	m ³	l	in ³	ft ³	yd ³
cm ³ = ml	1	0.000001	0.001	0.061024	0.000035	0.000001
m ³	1000000	1	1000	61024	35.315	1.30796
dm ³ (l)	1000	0.001	1	61.024	0.035315	0.001308
in ³	16.387	0.000016	0.01638	1	0.000578	0.000021
ft ³	28316.8	0.028317	28.317	1728	1	0.03704
yd ³	764529.8	0.76453	764.53	46656	27	1

1 gal (US) = 3785.41 cm³ = 231 in³ = 0.83267 gal (UK)

Sample manual. Download All 912 pages at:

<https://www.arespairmanual.com/downloads/l50d-volvo-wheel-loaders-service-manual/>

Weight

Unit	g	kg	t	oz	lb
g	1	0.001	0.000001	0.03527	0.0022
kg	1000	1	0.001	35.273	2.20459
t	1000000	1000	1	35273	2204.59
oz	28.3495	0.02835	0.000028	1	0.0625
lb	453.592	0.45359	0.000454	16	1

1 ton (metric) = 1.1023 ton (US) = 0.9842 ton (UK)

Pressure

Unit	kp/cm ²	bar	Pa=N/m ²	kPa	lbf/in ²	lbf/ft ²
kp/cm ²	1	0.98067	98066.5	98.0665	14.2233	2048.16
bar	1.01972	1	100000	100	14.5037	2088.6
Pa=N/m ²	0.00001	0.001	1	0.001	0.00015	0.02086
kPa	0.01020	0.01	1000	1	0.14504	20.886
lbf/in ²	0.07032	0.0689	6894.76	6.89476	1	144
lbf/ft ²	0.00047	0.00047	47.88028	0.04788	0.00694	1

kg/cm² = 735.56 Dry (mmHg) = 0.96784 atm

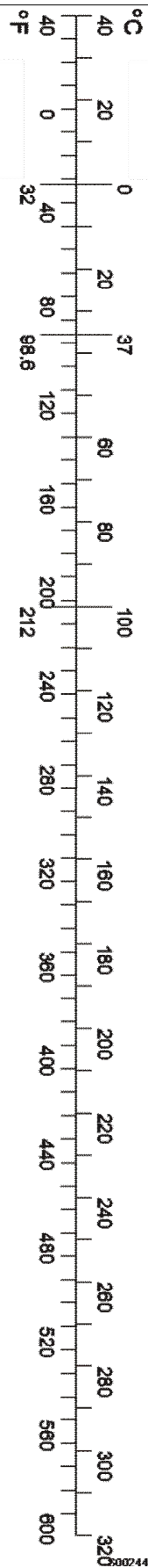
Unit explanations

Unit	abbreviation
Newton meter	Nm
Kilopoundmeter	kpm
Kilopascal	kPa
Megapascal	MPa
Kilowatt	kW
kilojoule	kJ
British thermal unit	Btu
Calorie	ca

Approx. conversion

SI unit	Conversion factor	Non SI	Conversion factor	SI
Torque				
Nm	x10.2	=kg/cm	x0.8664	=lb in
Nm	x0.74	=lbf-ft	x1.36	=Nm
Nm	x0.102	=kg/m	x7.22	=lbft
Pressure (Pa = N/m²)				
kPa	x4.0	=in.H ₂ O	x0.249	=kPa
kPa	x0.30	=in.Hg	x3.38	=kPa
kPa	x0.145	=psi	x6.89	=kPa
bar	x14.5	=psi	x0.069	=bar
kp/cm ²	x14.22	=psi	x0.070	=kp/cm ²
N/mm ²	x145.04	=psi	x0.069	=bar
MPa	x145	=psi	x0.00689	=MPa
Power (W = J/s)				

kW	x1.36	= hp(cv)	x0.736	= kW
kW	x1.34	= bhp	x0.746	= kW
kW	x0.948	= Btu/s	x1.055	= kW
W	x0.74	= ft.lb/s	x1.36	= W
Energy (J = Nm)				
kJ	x0.948	= Btu	x1.055	= kJ
J	x0.239	= calorie	x4.19	= J
Speed and acceleration				
m/s ²	x3.28	= ft/s ²	x0.305	= m/s ²
m/s	x3.28	= ft/s	x0.305	= m/s
km/h	x0.62	= mph	x1.61	= km/h
Horsepower/torque				
Bhp x5252 rpm = TQ (lb-ft)			TQ x rpm 5252 = bhp	
Temperature				
°C = (°F - 32) / 1.8			°F = (°C x 1.8) + 32	
Flow factor				
l/min (dm ³ /min)	x0.264	= US gal/min	x3.785	= liter/min



Document Title: Volvo standard tightening torques	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
Profile: L50E Volvo			

Volvo standard tightening torques

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Model	Production site	Serial number start	Serial number stop
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The tightening torques in the following tables apply to bolts and nuts with tensile strength. The tables should be used as a general instruction for tightening bolts and nuts without specified values. The charts contains values for course thread bolts and nuts.

Torque values should be increased with $\approx 10\%$, for flange bolts.

All standard torques for bolts are without surface treatment.

The standard torque for bolts lubricated with oil should be reduced with 20% of the given value.

Standard tightening torque charts

Bolt size Metric Coarse Threads	Tensile strength 8.8		Tensile strength 10.9	
	(Nm)	(lbf ft)	(Nm)	(lbf ft)
M5	6	4	8	6
M6	10	7	14	11
M8	25	18	35	26
M10	50	37	70	52
M12	87	64	122	90
M14	139	103	195	144
M16	213	157	299	220
M18	293	216	413	305
M20	416	307	585	432
M24	719	530	1010	745
M27	1060	782	1490	1100
M30	1140	840	2025	1493
M36	2500	1844	3600	2653

Bolt size Inch SAE Coarse Threads	Tensile strength 5		Tensile strength 8	
	(lbf ft)	(Nm)	(lbf ft)	(Nm)
1/4	10	13,6	14	19
5/16	21	28,5	29	39,3
3/8	37	50,2	52	70
7/16	59	80	84	114
1/2	90	122	128	174
9/16	130	176	184	250
5/8	180	244	254	345

3/4	320	434	451	612
7/8	515	700	728	988
1	775	1052	1091	1480
1 1/8	953	1290	1545	2100
1 1/4	1344	1823	2180	2960
1 3/8	1600	2170	2650	3600
1 1/2	2000	2714	3200	4340

Document Title: Engine, specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
Profile: L50E Volvo			

Engine, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Engine		
Designation	D4D LAE2	Prod. No. 11410478
Flywheel output at 36.7 r/s (2200 rpm)	ISO 9249, SAE J1349, net	73.9 kW (99 hp)
Flywheel output at 36.7 r/s (2200 rpm)	SAE J1995, gross	74.9 kW (100.4 hp)
Max. torque at 25 r/s (1500 rpm)	ISO 9249, SAE J1349, net	384 Nm (283 lbf ft)
Max. torque at 25 r/s (1500 rpm)	SAE J1995, gross	390 Nm (289 lbf ft)
Number of cylinders		4
Cylinder bore		101 mm (3.936 in)
Stroke		126 mm (4.961 in)
Cylinder capacity		4.04 litres (247 in ³)
Compression ratio		19:1
Compression	Starter motor revolutions	3.2–4.1 MPa (464–595 psi)
Injection order		1-3-4-2
Idling speed, low		850 +50 rpm (14.2 ±0.8 r/s)
Idling speed, high		2395 +50 rpm (39.9 ±0.8 r/s)
Stall speed, when tilting forward (lifting arms in top position)		2135 ±50 rpm (35.6 ±0.8 r/s)

Document Title: Engine, weight	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Engine, weight

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Engine	
Engine	395 kg (871 lb)

Document Title: Fuel system, specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
Profile: L50E Volvo			

Injectors, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Injectors	
Type	Multi-hole nozzle (3 holes)
Opening pressure	22.0 MPa (220 bar) (3191 psi)
Order of injection	1-3-4-2

Document Title: Fuel tank, volume	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
Profile: L50E Volvo			

Fuel tank, capacity

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Capacity	
Fuel tank	150 litres (40 US gal)
Spare fuel after indication	30 litres (8 US gal)

Document Title: Lighting, specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Lighting, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Bulbs	Watt	Socket
Headlights, asymmetric	75/70	P 43t - 38 (H4)
Parking light, front	4	BA 9 s
Parking light, rear	10	BA 15 s
Tail lights	10	BA 15 s
Brake lights	21	BA 15 s
Direction indicators, rear	21	BA 15 s
Direction indicators, side	21	BA 15 s
Side running lights	5	SV 8.5
Cab lighting	10	BA 15 s
Instrument lighting	2	BA 9 s
Control light panel	1.2	W 2x 4.6 d
Switches' guide lights	1.2	W 2x 4.6 d
Work lights, front halogen, cab ^(a)	70	PK 22 s (H3)
Work lights, rear halogen, cab ^(a)	70	PK 22 s (H3)
Work lights, front halogen[T1] ⓘ	70	PK 22 s (H3)
Work lights, rear halogen ^(a)	70	PK 22 s (H3)

[T1]Optional equipment.

Document Title: Engine, volume	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
Profile: L50E Volvo			

Engine, capacity

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

NOTICE

Stated capacity applies when changing, unless otherwise stated.

Engine oil, incl. filter	12 litres (3.2 US gal)
Cooling system	19 litres (5 US gal)
Fuel tank	150 litres (39.6 US gal)
Spare fuel after indication	30 litres (7.9 US gal)

Document Title: Engine, tightening torques	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
Profile: L50E Volvo			

Engine, tightening torques

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

NOTICE

Regarding bolted joints which are not listed here, see "Volvo standard tightening torques"

Engine	
Coolant pump – engine	18 Nm (13 lbf ft)
Valve adjustment, lock nut	20 ±2 Nm (15 ±1.5 lbf ft)
Valve cover	9 Nm (6 lbf ft)
Injection pump – engine	30 Nm (22 lbf ft)
Injector – engine	16 Nm (12 lbf ft)
Delivery pipe	25 Nm (18 lbf ft)
Main bearing caps	
Step 1	50 Nm (36.9 lbf ft)
Step 2: Angular tightening	90°
Step 3: Angular tightening	90°
Big-end bearing cap (connecting rod)	
Step 1	30 Nm (22.1 lbf ft)
Step 2: Angular tightening	60°
Step 3: Angular tightening	60°
Belly plate – frame	60 Nm (44 lbf ft)
Engine mounting	
Engine mounting brackets	78 Nm (58 lbf ft)

Document Title: Valve system specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Valve system specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Valve mechanism	
Valve arrangement	Top valves
Valve clearance, warm/cold engine	
Inlet valves	0.30 mm (0.012 in)
Exhaust valves	0.50 mm (0.020 in)

Document Title: Lubrication specifications	Function Group: system, 030	Information Type: Service Information	Date: 4/16/2026
Profile: L50E Volvo			

Lubrication system, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Oil pressure, warm engine	
Oil pressure, low idling	80 kPa (0.8 bar) (12 psi)
Pressure control valve, opening pressure	400 ±40 kPa (58 ±5.8 psi)
Oil filter, full-flow filter, number of	1

Document Title: Fuel feed pump, specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Fuel feed pump, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Fuel feed pump	
Type	Vane pump
Feed pressure	400–500 kPa (4–5 bar) (58–73 psi)

Document Title: Fuel tank, weight	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Fuel tank, weight

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Weight (approx.)	
Fuel tank	55 kg (121 lb)
Belly plate	45 kg (99 lb)

Document Title: Fuel tank, tightening torques	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Fuel tank, tightening torques

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Tightening torques	
Underbody skid plate – frame	60 Nm (44 lbf ft)

Document Title: Thermostat, specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
Profile: L50E Volvo			

Thermostat, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Thermostat	
Type	Piston thermostat
Quantity	1
Begins to open at	83 °C (181 °F)
Fully open at	95 °C (203 °F)

Document Title: Weight of cooling system	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Weight of cooling system

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Weight	
Radiator	50 kg (110 lb)

Document Title: Cooling system, capacity	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
Profile: L50E Volvo			

Cooling system, capacity

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Capacity	
Coolant	19 litres (5 US gal)

Document Title: Cooling fan, specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Cooling fan, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Temperature limits for cooling fan speed		
Fan speed at high idling of diesel engine.	<400 rpm	Max. 1000 rpm
Coolant temperature outlet radiator SE210*	60 °C (140 °F)	80 °C (176 °F)
Coolant temperature diesel engine, SE205*	85 °C (185 °F)	95 °C (203 °F)
Transmission oil temperature, SE406	70 °C (158 °F)	85 °C (185 °F)
Hydraulic oil temperature, SE906	70 °C (158 °F)	85 °C (185 °F)

NOTE!

Between the temperature limits the relation between temperature and fan speed is linear.

*= See description of function.

Max. cooling fan speed		
The following maximum speeds can be selected from the service display unit:		
On service display	Meaning	Equivalent to max. speed
A	Noise reduction kit	1000 rpm
B	EU execution	1000 rpm
C	High cooling performance	1000 rpm

Document Title: Fuel tank, specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Fuel tank, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
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Fuel tank	
Type	Plastic

Document Title: Fuel tank, volume	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
Profile: L50E Volvo			

Fuel tank, capacity

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Capacity	
Fuel tank	150 litres (40 US gal)
Spare fuel after indication	30 litres (8 US gal)

Document Title: Injection pumps, specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Injection pumps, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
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Injection pumps	
Type	Single piston pump
Setting	Mechanically controlled

Document Title: Injectors, specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Injectors, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L50E Volvo			

Injectors	
Type	Multi-hole nozzle (3 holes)
Opening pressure	22.0 MPa (220 bar) (3191 psi)
Order of injection	1-3-4-2

Document Title: Electrical specifications	Function Group: system, 030	Information Type: Service Information	Date: 4/16/2026
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Electrical system, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
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Electrical system	
System voltage	24 V

Document Title: Preheating, specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Preheating, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
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Preheating coil	
Output	4 kW

Document Title: Air cleaner, specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Air cleaner, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
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Air cleaner	
Type	Cyclone cleaner – Primary filter – Secondary filter
Preheating element	In induction manifold

Document Title: Power transmission, specifications	Function Group: 030	Information Type: Service Information	Date: 4/16/2026
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Power transmission, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
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Pump	
Type	Nine-cylinder axial piston pump, variable displacement
Feed pressure	2.6 ±0.2 MPa at 2200 ±100 rpm (4622 ±210 Hz)
Pressure cut-off	42.6 ±1.0 MPa at 2200 ±100 rpm (4622 ±210 Hz)
Stall curve, start at	10 MPa at 900 ±50 rpm (1891 ±105 Hz)
Stall curve	40 MPa at 1800 ±100 rpm (3782 ±210 Hz)
Hydrostatic motor	
Type	Bent axis motor, variable displacement
Change-over pressure, dynamic	26.5 MPa (265 bar) (3844 psi)
Change-over pressure, static (basic setting)	26.5 MPa (265 bar) (3844 psi)
Gearbox	
Type	Power Shift
Designation	HST75
Number of gears, forward/reverse	2/2 (high/low)
Gear-shifting system	Electrical
Clutch pressure, low gear at low idle	2.1 ±0.2 MPa (21 ±2 bar) (305 ±29 psi)
Clutch pressure, low gear at high idle	2.2 ±0.2 MPa (22 ±2 bar) (319 ±29 psi)
Clutch pressure, high gear at low idle	2.1 ±0.2 MPa (21 ±2 bar) (305 ±29 psi)
Clutch pressure, high gear at high idle	2.2 ±0.2 MPa (22 ±2 bar) (319 ±29 psi)
Steering pressure, at low idle	2.1 ±1.0 MPa (21 ±10 bar) (305 ±145 psi)
Lubricating oil pressure	0.03–0.05 MPa (0.3–0.5 bar) (4.4–7.3 psi)

Speed range	
Low gear	0–16 km/h (0–10 mph)
High gear	0–37 km/h (0–23 mph)
With hydrostatic motor locked at max. displacement:	
Low gear	0–5 km/h (0–3 mph)
High gear	0–11 km/h (0–7 mph)
Drive axles	
Type	Fully floating drive shafts with hub reduction gears of planetary type
Designation, front	AWB10 (Product No. 23819)
Designation, front (with differential lock)	AWB10 (Product No. 23836)