

Document Title: <b>Description</b>	Function Group: <b>000</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
Profile:			

## Description

Both L150D and L180D are articulated, four-wheel drive loaders.

The engine in the L150D is a six cylinder, four-stroke, direct-injected and turbocharged diesel engine of the type TD103KCE, and the engine in the L180D is also a six cylinder, four-stroke, direct-injected and turbocharged diesel engine but of the type TD122KHE.

The transmission is hydro-mechanical, with all the gears in constant mesh, with the designation HT210 for the L150D and the designation HT220 for the L180D.

Between the engine and transmission, there is a single-stage hydraulic torque converter.

Front and rear axles have fully floating axle shafts with planetary gears in the hubs. The front axle is equipped with a differential lock.

The parking and service brakes of the machine are wet multi-disc brakes. The parking brake is positioned on the output shaft in the hydraulic transmission and the service brakes are built into each wheel hub.

The steering system is hydrostatic with a variable load-sensing axial piston pump and two hydraulic cylinders (steering cylinders).

Hydraulic system, see Section 9.



**Figure 1**

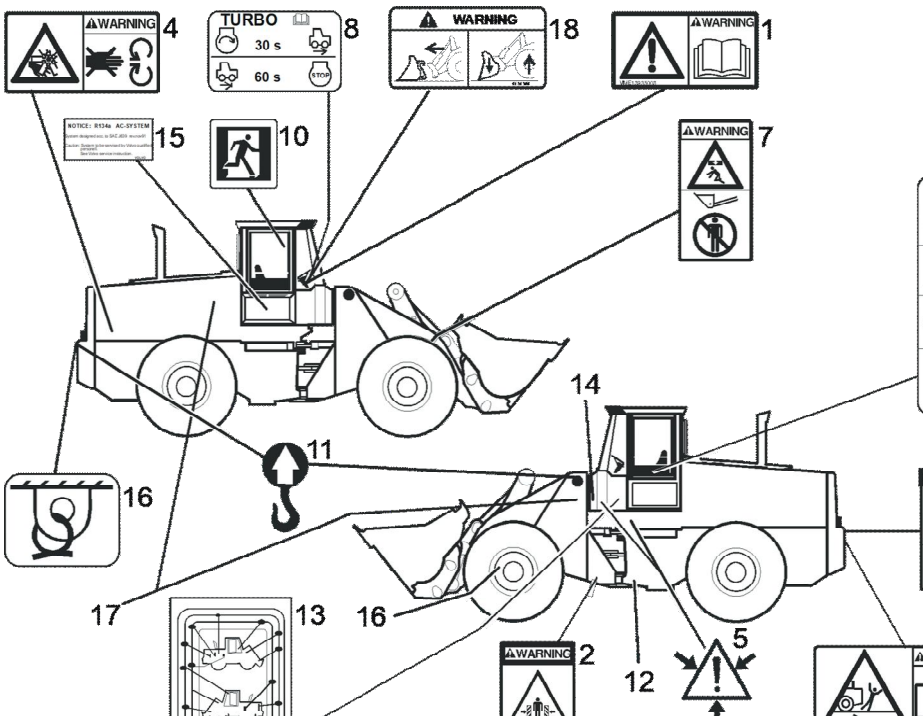
Wheel loader L150D/L180D

Document Title: <b>Information and warning plates</b>	Function Group: <b>000</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
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## Information and warning plates

The illustration and text below indicates which language-free warning plates/decals and information texts are found on the machine. The machine operator should recognise and follow the warnings or information specified on the decals and plates.

Decals/plates that are missing, damaged, painted over or in any other way cannot be read must be replaced immediately. The part number (order number) is indicated on each plate/decals and in the parts catalogue.



**Figure 1**  
Information and warning plates

N	Description	Position
1	Warning! Read the Operator's Manual first.	Cab (windscreen, right-hand side)
2	Warning for crushing risk in frame joint when machine swings	Frame joint (right and left-hand sides)
3	Warning! Reversing machine	Rear (counterweights)
4	Warning! Rotating fan	Rear engine cover (inside)
5	Warning! Pressurised system	Cab (front left-hand side and front left-hand portion of the rear frame)
6	Warning! Read the Operator's Manual before connecting jumper leads.	Battery boxes (inside)
7	Warning! Do not walk under raised attachment	Lifting arms (right and left-hand sides)
8	Let the engine go to idle (turbo)	Cab (windscreen)
9	Warning! When operating on roads, Comfort Drive Control, CDC, must not be active. Use the steering	Cab (CDC armrest)

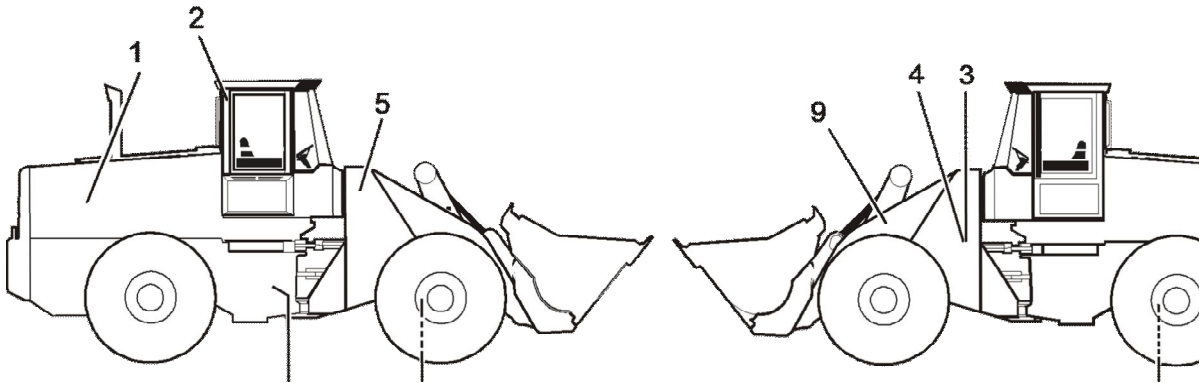
wheel.

- |    |  |   |
|----|--|---|
| 10 | Emergency exit (right-hand side window)  | Cab (front right-hand window pillar)                          |
| 11 | Lifting eyes   | Front frame (upper portion) and at rear counterweight (4 pcs) |
| 12 | Frame joint lock (USA only)  | Frame joint (right and left-hand sides)                       |
| 13 | Lubrication and service charts   | Cab (front left-hand side)                                    |
| 14 | Permissible noise levels (noise pressure level in cab LpA and noise output level around the machine LwA) | Front frame (left-hand side)                                  |
| 15 | Refrigerant (AC)   | Breather filter cover (inside)                                |
| 16 | Tie-down points (for machine transport)  | Front frame and rear frame (4 pcs)                            |

Document Title: <b>Product identification plates</b>	Function Group: <b>000</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
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## Product identification plates

The illustrations below indicate where the different plates are located. The model designation and Product Identification Number, PIN, must always be indicated when ordering spare parts or making telephone or written inquiries.



**Figure 1**  
Machine plates

### 1 Engine

The engine's type designation, part number and serial number are stamped into the cylinder block under the turbocharger (right-hand side of the machine).

### 2 Cab

Serial number, machine type, manufacturer's name and address, ROPS/FOPS number and max. operating weight are located on the right-hand rear roof pillar in the cab.

### 3 Product identification plate

Includes machine type, manufacturer's name and address. The Product Identification Number, PIN, for the complete machine is located on the front left-hand side of the frame (PIN includes model designation, engine code and serial number).

### 4 Additional plate

An additional plate to a product identification plate that shows machine weight, engine output, manufacturing year and a spot for a CE-mark (only EU/EEA countries) is located under the product identification plate.

### 5 Primary marking

PIN, model designation, engine code and serial number are stamped on the front right-hand side of the frame (Shows same PIN as on the product identification plate).

### 6 Rear axle

The rear drive shaft's component plate Component Identification Number, CIN, with product number, serial number and manufacturer is located on the axle casing.

### 7 Transmission

The transmission's product number, serial number and manufacturer are located on the right-hand side of the transmission.

### 8 Front axle

The front drive shaft's component plate, CIN, with product number, serial number and manufacturer is located on the axle casing.

### 8 Differential carrier

The differential carrier's product number, serial number, CIN and manufacturer are located on the differential housing.

### 9 Lifting frame

The lifting frame's product number, serial number and manufacturer are located on its left-hand side.

Document Title: <b>Capacities</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
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### Capacities

Engine, incl. filters, total	29 dm <sup>3</sup> (7.7 US gal)
Engine incl. filters, when changing oil	27 dm <sup>3</sup> (7.1 US gal)
Fuel tank total/actual use	350/318 dm <sup>3</sup> (92/84 US gal)
Cooling system, total	70 dm <sup>3</sup> (18.5 US gal)
Hydraulic transmission, total	45 dm <sup>3</sup> (11.9 US gal)
Hydraulic transmission incl. filter, when changing oil	39 dm <sup>3</sup> (10.3 US gal)
Front axle, total when changing oil	50 dm <sup>3</sup> (13.2 US gal)
Rear axle, total when changing oil	59 dm <sup>3</sup> (15.6 US gal)
Amount of refrigerant R134a	2.2 +0.1 kg (4.85 +0.22 lbs)
Hydraulic system, total	245 dm <sup>3</sup> (64.7 US gal)
Hydraulic system, when changing	165 dm <sup>3</sup> (43.6 US gal)
Hydraulic oil tank	165 dm <sup>3</sup> (43.6 US gal)

Document Title: <b>Capacities</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
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## Capacities

Engine, incl. filters, total	35 dm <sup>3</sup> (9.2 US gal)
Engine incl. filters, when changing oil	34 dm <sup>3</sup> (9.0 US gal)
Fuel tank total/actual use	350/318 dm <sup>3</sup> (92.4/84.0 US gal)
Cooling system, total	81 dm <sup>3</sup> (21.4 US gal)
Hydraulic transmission, total	45 dm <sup>3</sup> (11.9 US gal)
Hydraulic transmission incl. filter, when changing oil	39 dm <sup>3</sup> (10.3 US gal)
Front axle, total when changing oil	50 dm <sup>3</sup> (13.2 US gal)
Rear axle, total when changing oil	59 dm <sup>3</sup> (15.6 US gal)
Amount of refrigerant R134a	2.2 +0.1 kg (4.9 +0.22 lbs)
Hydraulic system, total	260 dm <sup>3</sup> (68.6 US gal)
Hydraulic system, when changing	165 dm <sup>3</sup> (43.6 US gal)
Hydraulic oil tank	165 dm <sup>3</sup> (43.6 US gal)

Document Title: <b>Conversion tables</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
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## Conversion tables

### 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 <sup>2</sup>	m <sup>2</sup>	km <sup>2</sup>	a	ft <sup>2</sup>	yd <sup>2</sup>	in <sup>2</sup>
cm <sup>2</sup>	1	0.0001	-	0.000001	0.001076	0.000012	0.155000
m <sup>2</sup>	10000	1	0.000001	0.01	10.764	1.1958	1550
km <sup>2</sup>	-	1000000	1	10000	1076400	1195800	-
a	0.01	100	0.0001	1	1076.4	119.58	-
ft <sup>2</sup>	-	0.092903	-	0.000929	1	0.1111	144
yd <sup>2</sup>	-	0.83613	-	0.008361	9	1	1296
in <sup>2</sup>	6.4516	0.000645	-	-	0.006943	0.000771	1

1 ha = 100 a - 1 mile<sup>2</sup> = 259 ha = 2.59 km<sup>2</sup>

### Volume

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

1 gal (US) = 3785.41 cm<sup>3</sup> = 231 in<sup>3</sup> = 0.83267 gal (UK)

### 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 <sup>2</sup>	bar	Pa=N/m <sup>2</sup>	kPa	lbf / in <sup>2</sup>	lbf / ft <sup>2</sup>
kp / cm <sup>2</sup>	1	0.98067	98066.5	98.0665	14.2233	2048.16
bar	1.01972	1	100000	100	14.5037	2088.6
Pa=N / m <sup>2</sup>	0.00001	0.001	1	0.001	0.00015	0.02086
kPa	0.01020	0.01	1000	1	0.14504	20.886
lbf / in <sup>2</sup>	0.07032	0.0689	6894.76	6.89476	1	144
lbf / ft <sup>2</sup>	0.00047	0.00047	47.88028	0.04788	0.00694	1
kg / cm <sup>2</sup> = 735.56 Torr (mmHg) = 0.96784 atm						

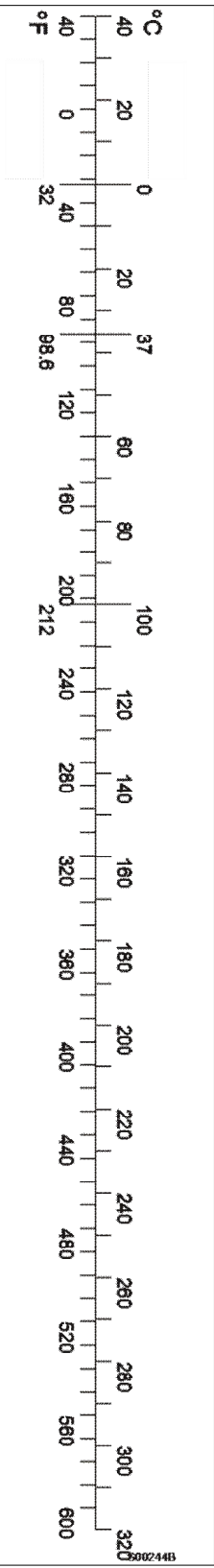
### Unit explanations

Unit	Abbreviation
Newton metre	Nm
Kilopoundmeter	kgf m
Kilopascal	kPa
Mega pascal	MPa
Kilowatt	kW
kilojoule	kJ
British thermal unit	Btu
Calorie	ca

### Approximate conversions

SI unit	Conversion factor	Non-SI	Conversion factor	SI
<b>Torque</b>				
N·m	x 10.2	= kg·cm	x 0.8664	= lb·in
N·m	x 0.74	= lbf·ft	x 1.36	= N·m
N·m	x 0.102	= kg·m	x 7.22	= lb·ft
<b>Pressure (Pa = N / m<sup>2</sup>)</b>				
kPa	x 4.0	= in.H <sub>2</sub> O	x 0.249	= kPa
kPa	x 0.30	= in.Hg	x 3.38	= kPa
kPa	x 0.145	= psi	x 6.89	= kPa
bar	x 14.5	= psi	x 0.069	= bar
kp / cm <sup>2</sup>	x 14.22	= psi	x 0.070	= kp / cm <sup>2</sup>
N / mm <sup>2</sup>	x 145.04	= psi	x 0.069	= bar
MPa	x 145	= psi	x 0.00689	= MPa
<b>Power (W = J / s)</b>				
kW	x 1.36	= hp (cv)	x 0.736	= kW
kW	x 1.34	= bhp	x 0.746	= kW
kW	x 0.948	= Btu / s	x 1.055	= kW
W	x 0.74	= ft·lb / s	x 1.36	= W
<b>Energy (J = Nm)</b>				
kJ	x 0.948	= Btu	x 1.055	= kJ

J	x 0.239	= calorie	x 4.19	= J
Speed and acceleration				
m / s <sup>2</sup>	x 3.28	= ft / s <sup>2</sup>	x 0.305	= m / s <sup>2</sup>
m / s	x 3.28	= ft / s	x 0.305	= m / s
km / h	x 0.62	= mph	x 1.61	= km / h
Horsepower/ torque				
Bhp x 5252 r/min= TQ (lb·ft)			TQ x r/min 5252 = bhp	
Temperature				
°C = (°F - 32)/1.8		°F = (°C x 1.8) + 32		
Flow factor				
l / min (dm <sup>3</sup> / min)	x 0.264	= US gal / min x 3.785		= litre/min



Document Title: <b>Measurements</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
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## Measurements

<b>Machine with standard tyres</b> without attachment	
Width	2950 mm (116 in)
Height	3560 mm (140 in)
Length, standard boom	6680 mm (263 in)
Length, long boom	7380 mm (291 in)

Document Title: <b>Measurements</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
Profile:			

## Measurements

<b>Machine with standard tyres without attachment</b>	
Width	2950 mm (116 in)
Height	3560 mm (140 in)
Length, standard boom	7020 mm (276 in)
Length, long boom	7500 mm (295 in)

Document Title: <b>Section 2 Engine</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
Profile:			

## Section 2 Engine

<b>Engine</b>	
Type designation	TD 122 KHE, part no. 8188162
Flywheel output at 35 r/s (2100 rpm)	203 kW SAE J 1349 Net 203 kW DIN 70020
Gross output at 35 r/s (2100 rpm)	209 kW SAE J 1349 Gross
Max. torque at 15 r/s (900 rpm)	1570 Nm SAE J 1349 Net 1580 Nm SAE J1349 Gross 1570 Nm DIN 70020 Net
Number of cylinders	6
Cylinder bore	130.17 mm (5.12 in)
Stroke	150 mm (5.91 in)
Cylinder capacity, total	12 dm <sup>3</sup> (3.2 US gal)
Compression ratio	16:1
Compression at starter motor revolutions	2.6 MPa (377 psi)
Injection sequence	1-5-3-6-2-4
Idle speed, low (frequency, SE 201)	10.8 ±0.5 r/s (650 ±50 rpm) (823 ±63 Hz)
Idle speed, high (frequency, SE 201)	39.2 ±1.2 r/s (2350 ±70 rpm) (2975 ±89 Hz)
Stall speed with torque converter (frequency, SE 201)	34.2 ±1.2 r/s (2050 ±75 rpm) (2595 ±95 Hz)
Stall speed with torque converter + lift against end position (overflow lift) (frequency, SE 201)	25 ±1.7 r/s (1500 ±100 rpm) (1899 ±127 Hz)
Stall speed with torque converter + tilt against end position (overflow tilt) (frequency, SE 201)	27.7 ±1.7 r/s (1660 ±100 rpm) (2101 ±127 Hz)

<b>Valve system</b>	
Valve clearance, cold engine	
inlet valve	0.40 mm (0.02 in)
exhaust valve	0.70 mm (0.03 in)

<b>Lubrication system</b>	
Oil pressure, operating	300 – 600 kPa (44 – 87 psi)
Oil pressure, idle min.	50 kPa (7.25 psi)

<b>Axial clearance</b>	
Pump gear, max	0.15 mm (0.006 in)
Idler gear, max.	0.15 mm (0.006 in)

<b>Oil filter</b>	
Full-flow	2 pcs.
Partial flow	1 pc.
<b>Overflow (relief) valve</b>	
spring, length unloaded	68.8 mm (2.71 in)
loaded with 17 – 19 N	40 mm (1.57 in)
Reduction valve colour marking	Yellow
Piston cooling valve	80 – 140 kPa (12 – 20 psi)

<b>Oil cooler, by-pass valve</b>	
spring, length unloaded	46 mm (1.81 in)
loaded with 53 – 55 N	39 mm (1.54 in)

<b>Fuel feed pump</b>	
Type	Piston pump
Feed pressure	130 – 180 kPa (19 – 26 psi)

<b>Injection pump</b>	
Type	In-line pump
Timing setting	9.5 0.5 degrees BTDC
Pump element lift from basic circle at injection start	3.95 – 4.05 mm (0.156 – 0.159 in)
Injection pump element starting groove	Yes

<b>Injectors</b>	
Type	Multi-hole nozzle (6 holes)
Opening pressure	25.0 MPa (3625 psi)
Setting pressure, for new spring	26.0 – 26.8 MPa (3770 – 3886 psi)

<b>Air cleaner</b>	
Triple-stage air cleaning:	Cyclone cleaner - primary filter - safety filter

<b>Intercooler</b>	
Type	Water/air

<b>Cooling system</b>	
Type	Closed system
Radiator cap valve opens at	50 kPa (7.25 psi)

<b>Thermostat</b>	
Type	Piston thermostat
Number of thermostats	2
Begins to open at	82 °C (180 °F)
Fully open at	92 °C (198 °F)

<b>Hydraulically driven cooling fan</b>	
Max. speed, fan motor	1250 rpm (with fan program A)
	1350 rpm (with fan program B)
	1450 rpm (with fan program C)
Basic engine speed	400 rpm
Max. pressure	23.0 MPa (3335 psi)

(in pressure test with service display panel)

Document Title: <b>Section 2 Engine</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
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## Section 2 Engine

### Specifications, general

<b>Engine</b>	
Type designation	TD 103 KCE, part no. 8188144
Flywheel output at 35 r/s (2100 rpm)	183 kW SAE J 1349 Net 183 kW DIN 70020
Gross output at 35 r/s (2100 rpm)	189 kW SAE J 1349 Gross
Max. torque at 18.3 r/s (1100 rpm)	1390 Nm SAE J 1349 Net 1390 Nm SAE J 1349 Gross 1390 Nm DIN 70020
Number of cylinders	6
Cylinder bore	120.65 mm (4.75 in)
Stroke	140 mm (5.51 in)
Cylinder capacity, total	9.6 dm <sup>3</sup> (2.6 US gal)
Compression ratio	18:1
Compression at starter motor revolutions	2.6 MPa (377 psi)
Injection sequence	1-5-3-6-2-4
Idle speed, low (frequency, SE 201)	10.8 ±0.5 r/s (650 ±50 rpm) (823 ±63 Hz)
Idle speed, high (frequency, SE 201)	39.2 ±1.2 r/s (2350 ±70 rpm) (2975 ±89 Hz)
Stall speed with torque converter (frequency, SE 201)	34.2 ±1.2 r/s (2050 ±75 rpm) (2595 ±95 Hz)
Stall speed with torque converter + working hydraulics (frequency, SE 201)	27.7 ±1.7 r/s (1660 ±100 rpm) (2101 ±127 Hz)

<b>Valve system</b>	
Valve clearance, cold engine	
inlet valve	0.40 mm (0.016 in)
exhaust valve	0.70 mm (0.028 in)

<b>Axial clearance</b>	
Pump gear	0.07 – 0.15 mm (0.003 – 0.006 in)
Idler gear	0.07 – 0.15 mm (0.003 – 0.006 in)

<b>Lubrication system</b>	
Oil pressure, operating	300 – 600 kPa (44 – 87psi)
Oil pressure, idle min.	50 kPa (7.25 psi)

<b>Oil filter</b>	
Full-flow	2 pcs.
Partial flow	1 pc.

<b>Overflow (relief) valve</b>	
spring, length unloaded	68.8 mm (2.71 in)
loaded with 17 - 19 N	32 mm (1.26 in)
Reduction valve colour marking	Yellow

<b>Oil cooler, by-pass valve</b>	
spring, length unloaded	46 mm (1.81 in)
loaded with 53 - 55 N	30 mm (1.18 in)

<b>Fuel feed pump</b>	
Type	Piston pump
Feed pressure	100 – 150 kPa (15 – 22 psi)

<b>Injection pump</b>	
Type	In-line pump
Timing setting	12 0.5 degrees BTDC
Pump element lift from basic circle at injection start	3.0 – 3.1 mm (0.118 – 0.122 in)
Injection pump element starting groove	No

<b>Injectors</b>	
Type	Multi-hole nozzle (6 holes)
Opening pressure	25.5 MPa (3698 psi)
Setting pressure, for new spring	26.0 – 26.8 MPa (3770 – 3886 psi)

<b>Air cleaner</b>	
Triple-stage air cleaning:	Cyclone cleaner - primary filter - safety filter

<b>Intercooler</b>	
Type	Water/air

<b>Cooling system</b>	
Type	Closed system
Radiator cap valve opens at	50 kPa (7.25 psi)

<b>Thermostat</b>	
Type	Piston thermostat
Number of thermostats	1
Begins to open at	82 °C (179.6 °F)
Fully open at	92 °C (197.6 °F)

<b>Hydraulically driven cooling fan</b>	
Max. speed, fan motor	1250 rpm (with fan program A)
	1350 rpm (with fan program B)
	1450 rpm (with fan program C)
Basic engine speed	400 rpm
Max. pressure (in pressure test with service display panel)	23.0 MPa (3335 psi)

Document Title: <b>Section 3 Electrical system</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
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### Section 3 Electrical system

System voltage	24 V
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<b>Battery</b>	
Number of thermostats	2 (connected in series)
Battery disconnect switch (Chassis connection)	Connected to negative terminal
Voltage	12 V
Battery capacity	2 x 140 Ah

<b>Battery electrolyte density</b>	
Fully charged battery	1.275 – 1.285
The battery must be recharged at	1.250

<b>Alternator with regulator</b>	
Type	Alternating current
Output (rated output)	1680 W
Voltage, at + 20 °C	28.5 ±0.15 V
Current, max.	60 A
Resistance across rotor winding	13.5 Ω
Resistance in stator winding	0.12 Ω

<b>Starter motor</b>	
Output	5.4 kW

<b>Light bulbs</b>	<b>Watt</b>	<b>Base</b>
Headlights, asymmetrical	75/70	P 43t - 38 (H4)
Parking lights	4	BA 9 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 lights	5	SV 8.5
Cab light	10	BA 15 s
Centre instrument panel (24 pcs.)	1.2	W 2 x 4.6 d
Guide light in switches	1.2	W 2 x 4.6 d
Work lights, front halogen, cab	70	PK 22 s (H3)
Work lights, rear halogen	70	PK 22 s (H3)
Work lights, front halogen (optional)	70	PK 22 s (H3)
Work lights, rear halogen (optional)	70	PK 22 s (H3)

<b>Fuses</b>
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Current rating	5 A	15 pcs, blade fuses
Current rating	10 A	14 pcs, blade fuses
Current rating	15 A	2 pcs, blade fuses
Current rating	20 A	2 pcs, blade fuses
Current rating	55 A	1 pc.

Document Title: <b>Section 3 Electrical system</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
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### Section 3 Electrical system

System voltage	24 V
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<b>Battery</b>	
Number of thermostats	2 (connected in series)
Battery disconnect switch (Chassis connection)	Connected to negative terminal
Voltage	12 V
Battery capacity	2 x 140 Ah

<b>Battery electrolyte density</b>	
Fully charged battery	1.275 - 1.285
The battery must be recharged at	1.250

<b>Alternator with regulator</b>	
Type	Alternating current
Output (rated output)	1680 W
Voltage, at + 20 °C (68 °F)	28.5 ±0.15 V
Current, max.	60 A
Resistance across rotor winding	13.5 Ω
Resistance in stator winding	0.12 Ω

<b>Starter motor</b>	
Output	6.6 kW

<b>Light bulbs</b>	<b>Watt</b>	<b>Base</b>
Headlights, asymmetrical	75/70	P 43t - 38 (H4)
Parking lights	4	BA 9 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 lights	5	SV 8.5
Cab light	10	BA 15 s
Centre instrument panel (24 pcs.)	1.2	W 2 x 4.6 d
Guide light in switches	1.2	W 2 x 4.6 d
Work lights, front halogen, cab	70	PK 22 s (H3)
Work lights, rear halogen	70	PK 22 s (H3)
Work lights, front halogen (optional)	70	PK 22 s (H3)
Work lights, rear halogen (optional)	70	PK 22 s (H3)

<b>Fuses</b>
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Current rating	5 A	15 pcs, blade fuses
Current rating	10 A	14 pcs, blade fuses
Current rating	15 A	2 pcs, blade fuses
Current rating	20 A	2 pcs, blade fuses
Current rating	55 A	1 pc.

Document Title: <b>Section 4 Power transmission</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
Profile:			

## Section 4 Power transmission

<b>Disengagement function</b>	
Pressure sensor (SE 501), closing pressure (located on footbrake valve)	1.8 MPa (261 psi)

<b>Torque converter</b>	
Type	Single-stage
Torque amplification, at stall	2.40:1
Torque converter safety valve	0.84 ±0.18 MPa (122 ±26 psi)

<b>Hydraulic transmission</b>	
Type	Full Power-Shift transmission
Make	Volvo
Designation	HT 210
Product number	30893
Number of gears	4 forward, 4 reverse
Gearshifting system	Electro-hydraulic

Speed range	(tyres 23.5-25)	(tyres 26.5-25)
1st	0 – 6.4 km/h (4.0 mph)	0 – 6.4 km/h (4.0 mph)
2nd	0 – 11.9 km/h (7.4 mph)	0 – 11.8 km/h (7.3 mph)
3rd	0 – 23.5 km/h (14.6 mph)	0 – 23.3 km/h (14.6 mph)
4th	0 – 34.3 km/h (21.3 mph)	0 – 33.9 km/h (21.0 mph)

<b>Oil pressure, at high idle speed and neutral gear</b>	
Main pressure	1.37 – 1.58 MPa (199 – 229 psi)
Clutch pressure, gear 1 – 4, F – R	1.37 – 1.58 MPa (199 – 229 psi)
Torque converter pressure, out	0.20 – 0.50 MPa (29 – 73 psi)
Lubricating oil pressure	0.16 – 0.22 MPa (23 – 32 psi)

<b>Drive shafts</b>	
Type	Fully floating axle shafts with planetary gear hub reductions
Make	Volvo
Designation	
front	AWB 40 (Serial no. 23839, 23840)
rear	AWB 40 (Serial no. 23841)
Gear ratio	
Differential, front	4.25:1
Differential, rear	4.25:1
Total front	22.67:1
rear	22.67:1
Differential lock, front axle	Dog clutch

Operation	hydraulic by servo pressure
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<b>Cooling pump, front and rear axles</b>	
Type	Rotor pump
Operating pressure (full speed)	0.2 – 0.3 MPa (29 – 44 psi)
Flow at 40 r/s (2400 r/min) and 0.25 Mpa (36 psi)	29.0 l/min (7.7 US gal/min)

Document Title: <b>Section 4 Power transmission</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
Profile:			

## Section 4 Power transmission

<b>Disengagement function</b>	
Pressure sensor (SE 501), closing pressure (located on footbrake valve)	1.8 MPa (261 psi)

<b>Torque converter</b>	
Type	Single-stage
Torque amplification, at stall	2.27:1
Torque converter safety valve	0.84 ±0.18 MPa (121.8 ±26.1 psi)

<b>Hydraulic transmission</b>	
Type	Full Power-Shift transmission
Make	Volvo
Designation	HT 220
Product number	30894
Number of gears	4 forward, 4 reverse
Gearshifting system	Electro-hydraulic

<b>Speed range (tyres 26.5-25)</b>	
1st	0 - 6.5 km/h (0 - 4.0 mph)
2nd	0 - 12.0 km/h (0 - 7.4 mph)
3rd	0 - 23.5 km/h (0 - 14.6 mph)
4th	0 - 34.0 km/h (0 - 21.1 mph)

<b>Oil pressure, at high idle speed and neutral gear</b>	
Main pressure	1.37 – 1.58 MPa (198.7 – 229.1 psi)
Clutch pressure, gear 1 – 4, F – R	1.37 – 1.58 MPa (198.7 – 229.1 psi)
Torque converter pressure, out	0.20 – 0.50 MPa (29.0 – 72.5 psi)
Lubricating oil pressure	0.16 – 0.22 MPa (23.2 – 31.9 psi)

<b>Drive shafts</b>	
Type	Fully floating axle shafts with planetary gear hub reductions
Make	Volvo
Designation	
front	AWB 40 (Serial no. 23852, 23854-55)
rear	AWB 40 (Serial no. 23853, 23856)
Gear ratio	
Differential, front	4.25:1
Differential, rear	4.25:1
Total front	22.67:1

rear	22.67:1
Differential lock, front axle	Dog clutch
Operation	hydraulic by servo pressure

<b>Cooling pump, front and rear axles</b>	
Type	Rotor pump
Operating pressure (full speed)	0.2 – 0.3 MPa (29.0 – 43.5 psi)
Flow at 40 r/s (2400 r/min) and 0.25 Mpa (36.25 psi)	29.0 l/min (7.66 US gal/min)

Document Title: <b>Section 5 Brakes</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
Profile:			

## Section 5 Brakes

<b>Wheel brake</b>	
Type	Dual circuit fully hydraulic wet disc brake
Brake disc, min. thickness	7.2 mm (0.28 in)
Brake discs, thickness, new disc	9.5 mm (0.37 in)
Accumulator capacity	4×0.75 dm <sup>3</sup> (0.2 US gal)
Precharge pressure, new accumulator	5 – 5.3 MPa (725 – 769 psi)
Min. allowed precharge pressure	3.5 MPa (508 psi)
Brake pedal angle (adjustable)	std 50°

<b>Foot brake valve / unloading valve</b>	
System pressure, unloading pressure	15.0 – 15.5 MPa (2175 – 2248psi)
System pressure, cut-in (charge) pressure	12.0 – 13.0 MPa (1740 – 1885 psi)
Max. output pressure	7.4 – 8.6 MPa (1073 – 1247 psi)
Low pressure indication	8.5 – 9.5 MPa (1233 – 1378 psi)

<b>Hydraulic oil pump (incl. in working pump)</b>	
Type	Vane pump
Displacement	15.9 cm <sup>3</sup> (1.0 in <sup>3</sup> )
Flow at 35 r/s (2200 r/min) and pressure 10 MPa (1450 psi)	29.5 l/min (7.8 US gal/min)
Servo pressure (throughout entire engine speed range)	3.0 – 4.5 MPa (435 – 653 psi)
Increased pressure, separate attachment locking (optional equipment)	15.5 – 17 MPa (2248 – 2465 psi)
Accumulator 0.5 l (0.13 US gal) in servo circuit, precharge pressure	1.5 MPa (218 psi)

<b>Parking brake</b>	
Type	Electrically controlled hydraulic disc brake
Min. thickness, brake pads	4.5 mm (0.18 in)
Parking brake, control pressure	12 – 15.5 MPa (0.47 – 0.61 psi)

Document Title: <b>Section 5 Brakes</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
Profile:			

## Section 5 Brakes

<b>Wheel brake</b>	
Type	Dual circuit fully hydraulic wet disc brake
Brake disc, min. thickness	7.2 mm (0.28 in)
Brake discs, thickness, new disc	9.5 mm (0.37 in)
Accumulator capacity	2×1.0 dm <sup>3</sup> , 1×0.5 dm <sup>3</sup>
Precharge pressure, new accumulator	5.0 – 5.3 MPa (725 – 769 psi)
Min. allowed precharge pressure	3.5 MPa (508 psi)
Brake pedal angle (adjustable)	std 50°

<b>Foot brake valve / unloading valve</b>	
System pressure, unloading pressure	15.0 – 15.5 MPa (2175 – 2248 psi)
System pressure, cut-in (charge) pressure	12.0 – 13.0 MPa (1740 – 1885 psi)
Max. output pressure	7.4 – 8.6 MPa (1073 – 1247 psi)
Low pressure indication	8.5 – 9.5 MPa (1233 – 1378 psi)

<b>Hydraulic oil pump (common with servo system)</b>	
Type	Vane pump
Displacement	16.4 cm <sup>3</sup> (1 in <sup>3</sup> )
Flow at 36.7 r/s (2200 r/min) and pressure 10 MPa	31.0 l/min (8.2 US gal/min)
Servo pressure (throughout entire engine speed range)	3.0 – 4.5 MPa (435 – 653 psi)
Increased pressure, separate attachment locking (optional equipment)	15.5 – 17 MPa (2248 – 2465 psi)
Accumulator 0.5 l (0.13 US gal) in servo circuit, precharge pressure	1.5 MPa (218 psi)

<b>Parking brake</b>	
Type	Electrically controlled hydraulic disc brake
Min. thickness, brake pads	4.5 mm (1.18 in)
Parking brake, control pressure	12 – 15.5 MPa (1740 – 2248 psi)

Document Title: <b>Section 6 Steering system</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
Profile:			

## Section 6 Steering system

<b>Steering</b>	
Type	Load-sensing hydrostatic
Steering angle	±37°
Number of steering wheel turns, total	4.1 revolutions
Steering time, lock – lock, low idle speed	approx. 5.0 sec
Steering time, lock – lock, high idle speed	approx. 3.5 sec

<b>Oil pump</b>	
Type	Axial piston pump, variable displacement
Displacement	60 cm <sup>3</sup> (3.7 in <sup>3</sup> )
Max. operating pressure, high idle speed	21 ±0.35 MPa (3045 ±51 psi)
Flow at 35.0 r/s (2100 rpm) and 10 MPa pressure	122 l/min (32.2 US gal/min)
Hold (stand-by) pressure (across entire engine speed range)	3.0 ±0.3MPa (435 ±43.5 psi)

<b>Steering valve</b>	
Type	"Closed centre"

<b>Shock valves</b>	
Number of valves	2 pcs.
Opening pressure	27 – 29 MPa (3915 – 4205 psi)

<b>Shift valve</b>	
Activation (cut-in) pressure, P-pressure	17.5 MPa (2538 psi)
Activation (cut-in) pressure, LS-pressure	16.0 MPa (2320 psi)

<b>Steering cylinder</b>	
Type	Double-acting
Piston rod diameter	50 mm (2 in)
Inside diameter / stroke	90 / 418 mm (3.54 / 16.46 in)

Document Title: <b>Section 6 Steering system</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
Profile:			

## Section 6 Steering system

<b>Steering</b>	
Type	Load-sensing hydrostatic
Steering angle	± 37°
Number of steering wheel turns, total	4.2 revolutions
Steering time, lock – lock, low idle speed	approx. 5.5 sec
Steering time, lock – lock, high idle speed	approx. 3.5 sec

<b>Oil pump</b>	
Type	Axial piston pump, variable displacement
Displacement	60 cm <sup>3</sup> (3.7 in <sup>3</sup> )
Max. operating pressure, high idle speed	21 ±0.35 MPa (3045 ±51 psi)
Flow at 35.0 r/s (2100 rpm) and 10 MPa (1450 psi) pressure	122 l/min (32.2 US gal/min)
Hold (stand-by) pressure (across entire engine speed range)	3.0 ±0.3MPa (435 ±43.5 psi)

<b>Steering valve</b>	
Type	"Closed centre"

<b>Shock valves</b>	
Number of valves	2 pcs.
Opening pressure	27 – 29 MPa (3915 – 4205 psi)

<b>Shift valve</b>	
Activation (cut-in) pressure, P – pressure	17.5 MPa (2538 psi)
Activation (cut-in) pressure, LS – -pressure	16.0 MPa (2320 psi)

<b>Steering cylinder</b>	
Type	Double-acting
Piston rod diameter	50 mm (2 in)
Inside diameter / stroke	100 / 418 mm (4 / 16.5 in)

Document Title: <b>Section 8 Cab</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
Profile:			

## Section 8 Cab

Air conditioning temperature values during performance test (°C)				
	Ambient temperature			
	Air conditioning temperature values			
Relative humidity of the air	<b>25°</b>	<b>30°</b>	<b>35°</b>	<b>40°</b>
10%	7°	7°	7°	7°
20%	7°	7°	7°	7°
30%	7°	7°	7°	7°
40%	7°	7°	7°	8°
50%	7°	7°	8°	11°
60%	7°	8°	10°	14°
70%	7°	10°	13°	17°
80%	7°	11°	15°	20°
90%	7°	12°	18°	23°



Document Title: <b>Section 8 Cab</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/10/2026</b>
Profile:			

## Section 8 Cab

Air conditioning temperature values during performance test (°C)				
	Ambient temperature			
	Air conditioning temperature values			
Relative humidity of the air	<b>25°</b>	<b>30°</b>	<b>35°</b>	<b>40°</b>
10%	7°	7°	7°	7°
20%	7°	7°	7°	7°
30%	7°	7°	7°	7°
40%	7°	7°	7°	8°
50%	7°	7°	8°	11°
60%	7°	8°	10°	14°
70%	7°	10°	13°	17°
80%	7°	11°	15°	20°
90%	7°	12°	18°	23°