

Document Title: <b>Description</b>	Function Group: <b>000</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

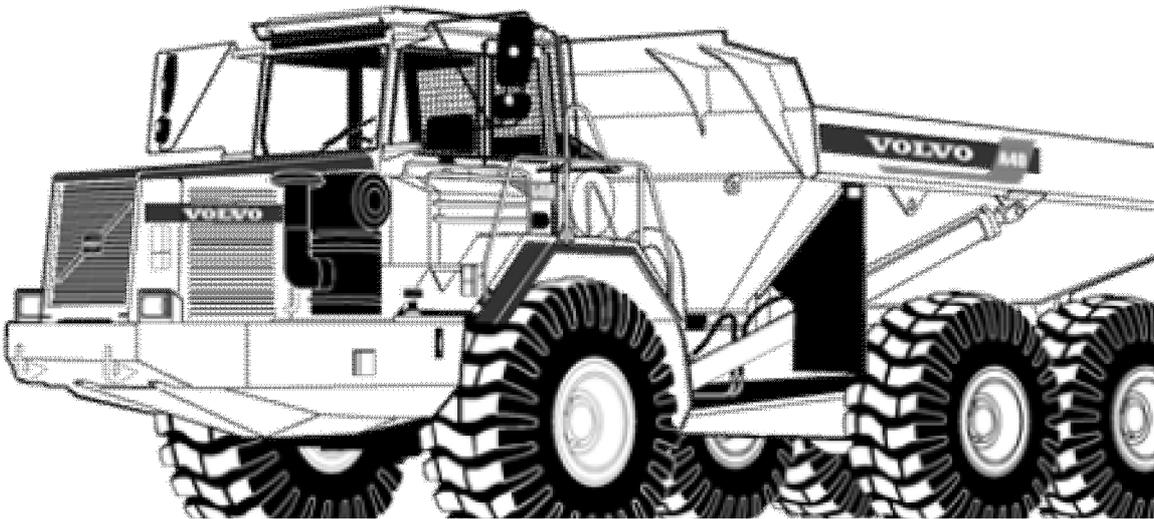
## Description

Articulated hauler A40 consists of two main sections, the tractor unit and the load unit. The two units are joined by the frame joint which allows movement about a vertical axis for steering. The frame joint also allows the two units to twist and move in relation to each other along a horizontal axis.

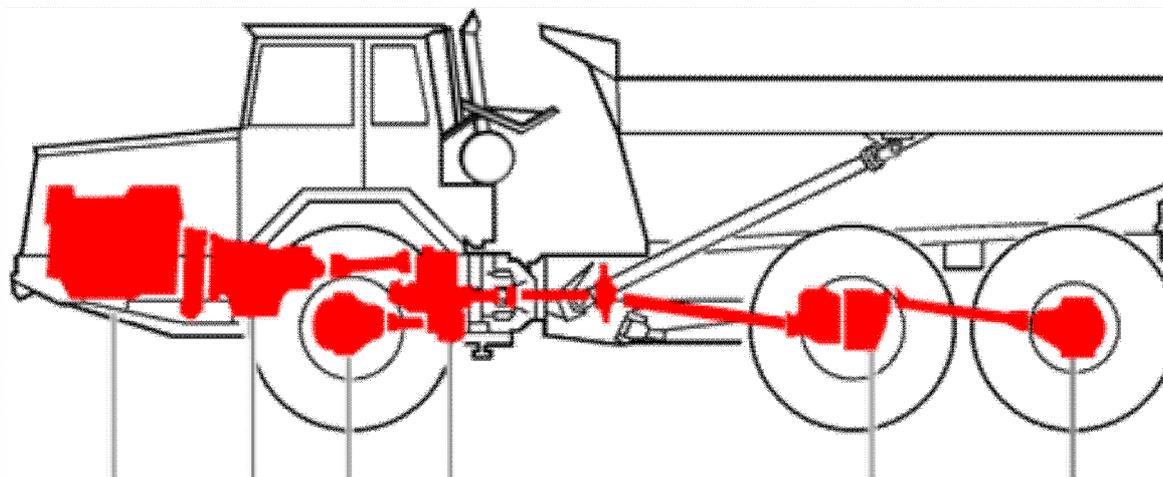
The tractor unit consists of a six-cylinder diesel engine, transmission and dropbox as well as a drive axle. The cab is rubber-mounted to the frame. The frame is independently suspended in relation to the drive axle.

The load unit consists of a frame, elevation load body, as well as a front and rear drive axle, which are linked by the bogie suspension.

The hauler has constant 4-wheel drive with the possibility of engaging and disengaging 6-wheel drive. There is a longitudinal differential lock in the dropbox and there are differential locks on all drive axles.



**Figure 1**



**Figure 2**

Sample of manual. Download All 870 pages at:

Type and product no.: articulated hauler A40

<https://www.aresmanual.com/downloads/volvo-a40-articulated-haulers-service-repair-manual/>

Product: Volvo A40 Articulated Haulers Service Repair Manual

Full Download: <https://www.arepairmanual.com/downloads/volvo-a40-articulated-haulers-service-repair-manual/>

1	TD122 KFE – "499168"	4	FL802 – "22502"
2	PT1760 – "1650001"	5	AHW 71D – "23747"
3	AHW 71C – "23746"	6	AHW 71E – "23748"

Sample of manual. Download All 870 pages at:

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Document Title: <b>Brake and compressed air system</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

## Brake and compressed air system

### Brake system

<b>Brake oil pump</b>	
Type	Variable piston pump, tandem
Designation	PVB5-RS-21-C-11-S216
Displacement	0–10.6 cm <sup>3</sup> (0–0.65 in <sup>3</sup> )
Pressure, max.	20 ±0.35 MPa (200 ±3.5 bar, 2900±50.75 psi)
<b>Accumulator</b>	
Type	Diaphragm accumulator
Designation	D 0.75 – 250
Capacity	0.75 L (0.2 US gal) (oil capacity 0.4 L, 0.09 US gal)
Number of	14 + 1
Pre-charge pressure, new	10 MPa (100 bar, 1450 psi)
min.	8.5 MPa (85 bar, 1232.5 psi)
System pressure, max.	20 MPa (200 bar, 2900 psi)
<b>Relay valve</b>	
Type	Pilot-controlled relay valve
<b>Parking brake</b>	
Type	Compressed air-mechanical disc brake, acting on load unit propeller shaft
<b>Service brake</b>	
Type	Fully hydraulic, divided into two circuits. One circuit each for the tractor unit and load unit.
<b>Foot brake valve</b>	
Type	Two-circuit slide valve with built-in retarder control
Max. operating pressure	13.8 MPa (138 bar, 2001 psi)
<b>Pressure reducing valve</b>	
Load and dump brake	10.3 ±1 MPa (103 ±10 bar) , 1493.5 ±145 psi)
<b>Brake cylinder for propeller shaft parking brake</b>	
Type	Spring brake cylinder
Spring force, at 35 mm (1.38 in) stroke	6500 N (1462 lbs)
Release pressure	469 KPa (4.7 bar, 68 psi)

Stroke	57.2 mm (2.25 in)
<b>Brake disc</b>	
Thickness	25 mm (0.98 in)
Thickness, min.	20 mm (0,79 in)
<b>Brake pads</b>	
Thickness	22 min.
Thickness, min.	3 min.

## Compressed air system

<b>Compressor</b>	
Type	Single-cylinder gear-driven piston compressor
Designation	LK3802
Displacement	213 cm <sup>3</sup> (13 in <sup>3</sup> )
Capacity at 33.3 r/s (2000 rpm) and 700 kPa (7 bar, 101.5 psi) back-pressure	275 cm <sup>3</sup> /min (16.8 in <sup>3</sup> /min)
<b>Air pressure regulator</b>	
Cut-in (engagement) pressure	690–770 KPa (6.9–7.7 bar, 100–111.6 psi)
Cut-out (unloading) pressure	790–830 KPa (7.9–8.3 bar, 114.5–120.3 psi)
<b>Safety valve</b>	
Opening pressure	930 KPa (9.3 bar, 134.8 psi)
<b>Air pressure regulator, retarder</b>	
Pressure reduction to	650 KPa (6.5 bar, 94.2 psi)
<b>Compressed air tanks</b>	
Wet tank	6 l (1.6 US gal)
Circuit tank	6 l (1.6 US gal)
<b>Pressure retaining valve</b>	
(serial no. 1401–, US 60301–)	
Overflow (relief) pressure	650 KPa (6.5 bar, 94.2 psi)
<b>Pressure regulator, high pressure dropbox</b>	
(serial no. 1401–, US 60301–)	
Pressure reduction to	30 KPa (0.3 bar, 4.3 psi)

Document Title: <b>Capacities</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

### Capacities

	when changing, liters (US gal)	total, liters (US gal)
Engine, including filters and oil cooler	31 (8.2)	42 (11.09)
Cooling system	138 (36.4)	140 (36.9)
Hydraulic system (of which hydraulic tank total volume is 158 liters, 41.7 US gal)	155 (40.9)	272 (71.8)
Hydraulic tank	158 (41.7)	158 (41.7)
Transmission, including filters and oil cooler	40*) (10.6)	45 (11.9)
Dropbox	8 (2.1)	12 (3.2)
Hub reduction	7 (1.8)	7 (1.8)
Front axle, total	46**) (12.1)	47 (12.4)
Front bogie axle	47**) (12.4)	49 (12.9)
Rear bogie axle	46**) (12.1)	47 (12.4)
Brake cooling system, total	100 (26.4)	135 (835.6)
Brake cooling oil tank	100 (26.4)	100 (26.4)
Fuel tank		460 (121.4)

\*) Check and adjust the oil level after the oil change according to the Operator's Manual.

\*\*\*) Incl. approx. 7 liters (1.85 US gal) per hub.

Document Title: <b>Cooling system</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
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## Cooling system

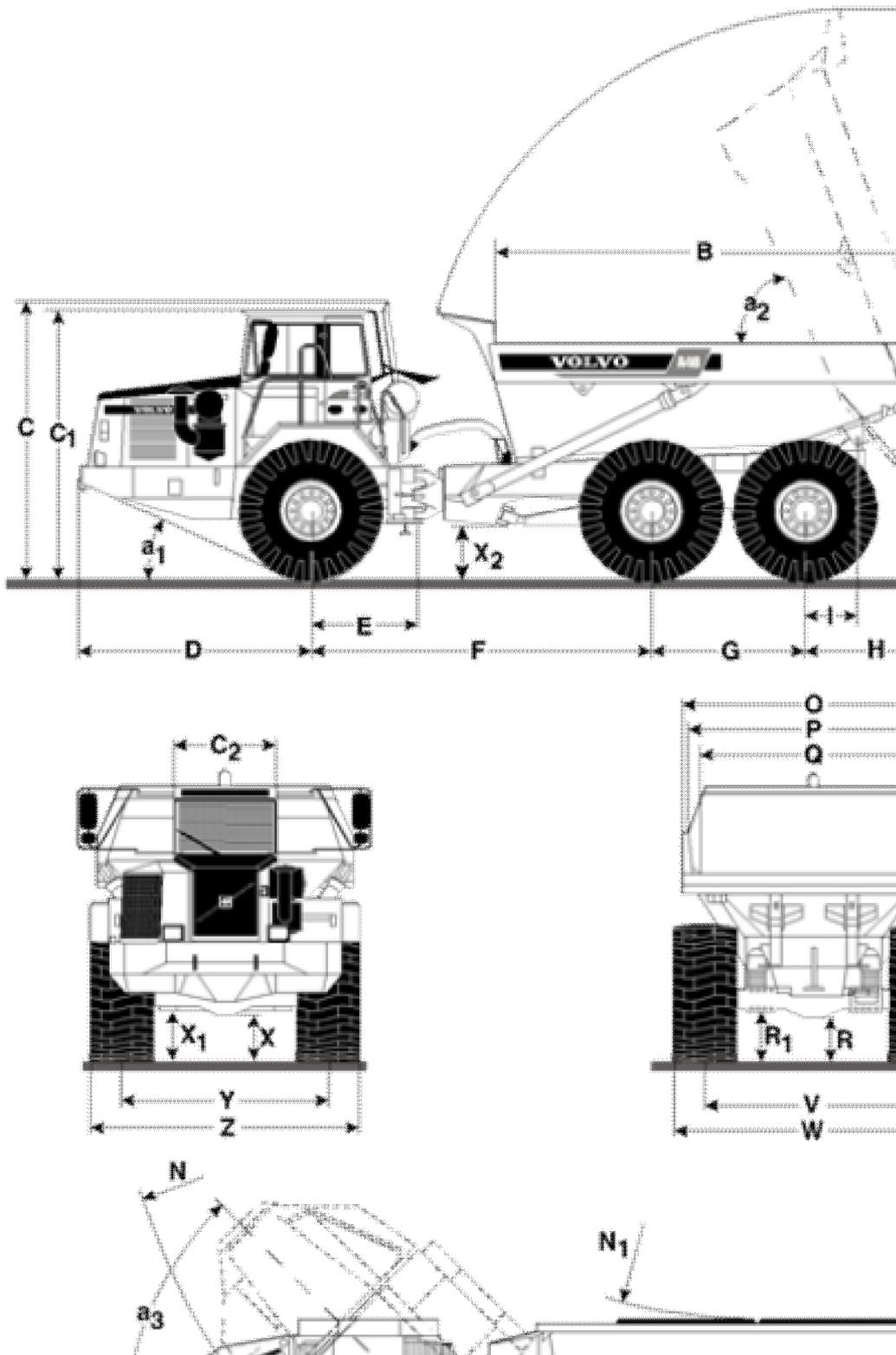
### General

8-bladed radiator fan	Hydrostatically driven, electronic variable speed regulation by way of 4 temperature sensors
Four temperature inputs:	via coolant temperature, see below:
1. Output coolant	60–75 °C (140–167 °F)
2. Transmission, sump	75–85 °C (167–185 °F)
3. Retarder oil	100–120 °C (212–248 °F)
4. Brake cooling oil	95–110 °C (203–230 °F)
Oil temperature > 40 °C (4 °F)	
	Low fan speed (engine speed, idle 675 rpm)
	7–12 r/s (400–700 rpm)
	High fan speed (engine speed, >2000 rpm)
	>27 r/s (> 1650 rpm)
Thermostats, number of	2
	engine thermostat:
	marked:
	Red center
	begins to open at
	82 °C (180 °F)
	fully open at
	92 °C (198 °F)
	secondary thermostat:
	begins to open at
	55 °C (131 °F)
	fully open at
	70 °C (158 °F)
Relief valve, opening pressure (cap, expansion tank)	50 KPa (0.5 bar, 7.25 psi)

Document Title: <b>Dimensions</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

### Dimensions

The letters in the figures refer to the text [Invalid linktarget].



**Figure 1**

Document Title: <b>Dimensions, with tires 29.5 R-25</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

### Dimensions, with tires 29.5 R-25

	dimension	mm	in
Total length	A	11135	438.4
Total length, tractor unit	A <sub>1</sub>	5246	206.5
Total length, load unit	A <sub>2</sub>	6526	257
Load body length, standard body	B	5738	226
Total height at exhaust pipe	C	3701	146
Height at cab roof	C <sub>1</sub>	3618	142.4
Width across cab roof	C <sub>2</sub>	1331	52.4
Overhang, front	D	2960	116.5
Overhang, towing eyes	D <sub>1</sub>	2920	115
Distance, front axle – center, articulation joint	E	1270	50
Distance, drive axles	F	4442	174.8
Distance, bogie axles	G	1940	76.4
Overhang, rear	H	1793	70.6
Overhang, frame	I	643	25.3
Loading height	J	3055	120.3
Height to load body	K	2510	98.8
Free dumping height	L	961	37.8
Total height, elevated load body	M	7491	294.4
Outer turn radius	N	8827	347.5
Inner turning radius	N <sub>1</sub>	4238	166.8
Outside width, load body	O	3290	129.5
Inside width, load body	P	3059	120.4
Width, bottom of load body	Q	2853	112.3
Minimum ground clearance, load unit	R	657	25.8
Minimum ground clearance, load unit	R <sub>1</sub>	754	29.7
Bottom of load body – side of load body	S	1379	54.3
Bottom of load body – rear edge of load body	T	834	32.8
Maximum height, upper body plate	U	3498	137.7
Track width, load unit	V	2636	103.8
Total width, load unit	W	3430	135
Minimum ground clearance, tractor unit	X	618	24.3
Minimum ground clearance, tractor unit	X <sub>1</sub>	645	25.4
Minimum ground clearance, hitch	X <sub>2</sub>	764	30
Track width, tractor unit	Y	2636	103.8
Total width, tractor unit	Z	3430	135
Angle of approach	a <sub>1</sub>	27°	
Dumping angle	a <sub>2</sub>	71°	

Maximum steering angle

$a_3$

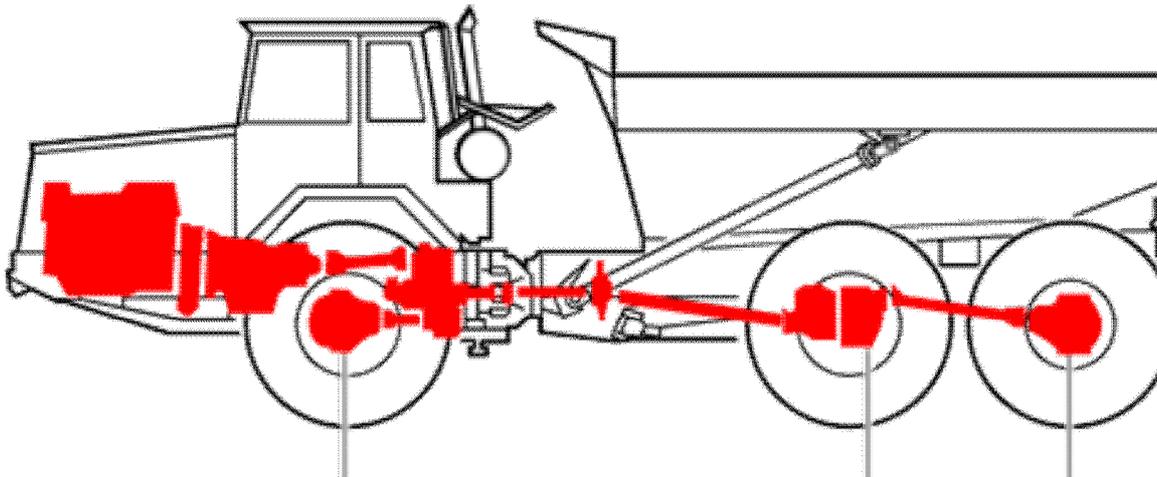
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Document Title: <b>Drive axles</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

## Drive axles

Also refer to Service Manual "Drive axles AHW71".

	Tractor unit	Front drive axle load unit	
Make	Volvo	Volvo	Volvo
Type	AHW 71C	AHW 71D	AHW 71E
Product number	23746	23747	23748
Final drive	EVBM	EVBM	EVBM
Reduction ratio	3.56:1	3.56:1	3.56:1
Hub reduction	Planetary gear	Planetary gear	Planetary gear
Reduction ratio	4.833:1	4.833:1	4.833:1
Differential lock	Dog clutch	Dog clutch	Dog clutch



**Figure 1**

Drive axles

1. AHW 71C
2. AHW 71D
3. AHW 71E

Document Title: <b>Dropbox</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

### Dropbox

Also refer to Service Manual "Dropbox FL762/FL802".

Make	Volvo
Designation	FL802
Type	Mechanical with high/low range
Product number	22502
Power take-off	1 power take-off for ground dependent hydraulic pump
Reduction ratio, low	1.188:1
Reduction ration, high	0.851:1
Differential lock	Longitudinal
Type	Dog clutch, 100 % lock
<b>Bearing clearances</b>	
Positions indicated in brackets ( ) refer to Section 4, Dropbox.	
Input shaft (A)	0.10–0.20 mm (0.004–0.008 in)
Intermediate shaft (B)	0.10–0.20 mm (0.004–0.008 in)
Differential (C)	0.13–0.23 mm (0.005–0.009 in)
Output shaft, rear (C)	0.10–0.20 mm (0.004–0.008 in)
Output shaft, front (D)	0.10–0.20 mm (0.004–0.008 in)
Tubular shaft (C)	0.05–0.50 mm (0.002–0.02 in)

Document Title: <b>Electrical system</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

## Electrical system

System voltage	24 V
<b>Battery</b>	
Number of	Two (2) 12 V batteries connected in series (= 24 Volt)
Ground connection	Negative terminal
Battery capacity	170 Ah/battery
Battery disconnect switch connected on – side	
<b>Battery electrolyte density</b>	
Fully charged battery	1.275–1.285 kg/dm <sup>3</sup> (2.81–2.83 lbs/US gal)
Battery should be recharged at	1.250 kg/dm <sup>3</sup> ( 2.75 lbs/US gal)
<b>Alternator</b>	
Type	Alternating current
Designation	A 14 N 206M
Rating (rated output)	1650 W
Voltage, max.	27.5 ±0.3 V
Current, max.	60 A
Resistance in rotor windings (over slip rings 10 %)	10 Ω
Resistance in stator windings (between phases)	0.14 Ω
<b>Starter motor</b>	
Designation	KB 24 V 6.5 kW
Output	6.6 kW

<b>Fuses</b>	<b>Current rating</b>	<b>Number of</b>
Electrical distribution box	5 A	15
Electrical distribution box	15 A	9
Main fuse (engine compartment)	25 A	1
Slow glass fuse (electronic control unit, ECU)	4 A	1
Preheating coil	5 A	1
Main fuse, tachograph (battery compartment)	5 A	1
<b>Bulbs – tractor unit</b>		
	<b>Watt</b>	<b>Base</b>
Headlights	55/50	P43t–38
Parking lights	5	BA 15s
Direction indicators	21	BA 15s
Instrument lights	2	BA 9s

Switches	1.2	Glass socket
Combination instrument, warning lights	1.2	Glass socket
Combination instrument, illumination	3.0	Glass socket
Rotating beacon (market adapted equipment)	45	BA 15s
<b>Bulbs – load unit</b>		
Tail lights	5	BAY 15d
Brake lights	21	BAY 15d
Direction indicators	21	BA 15s
Back-up light	70	PK 22s
<b>Cold start device</b>		
Type	Preheating coil in induction manifold	
Output	3600 W	
Time relay, engagement period	approx. 50 seconds	

Document Title: <b>Engine specifications</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

## Engine specifications

Also refer to Service Manual "Engine TD 122".

### General

#### TD 122 KFE

Make	Volvo
Type	Direct injected, low-emission diesel engine with exhaust turbocharger and intercooler
Designation	Volvo TD122 KFE
Product number	499168-3
Flywheel output at 35 r/s (2100 rpm)	297 kW (398 hp) SAE J1349 Gross 295 kW (395 hp) SAE J1349 Net, ISO 9249:1989 295 kW (395 hp) DIN 6271
Max. torque at 23 r/s (1400 rpm)	1675 Nm (1235 lbf ft) SAE J1349 Gross 1665 Nm (1228 lbf ft) SAE J 1349 Net 1665 Nm (1228 lbf ft) DIN 6271
Number of cylinders	6
Cylinder bore	130.17 mm (5.125 in)
Stroke	150 mm (5.9 in)
Cylinder capacity, total	11.97 dm <sup>3</sup> (3.16 US gal)
Compression ratio	16:1
Compression at 4 r/s (240 rpm)	2.6 MPa (26 bar, 377 psi)
Injection order	1-5-3-6-2-4
Idle speed, low	11.3 ±0.8 r/s (675 ±50 rpm)
Idle speed, high	38.7 ±0.8 r/s (2320 ±50 rpm)
Stall speed	26.1 ±1.2 r/s (1570 ±75 rpm)
Valve clearance (cold engine):	
inlet valve	0.40 mm (0.016 in)
exhaust valve	0.70 mm (0.028 in)
<b>Turbocharger</b>	
Designation	Garret T 51
Lubrication	Pressure lubrication (force-feed) from engine
<b>Lubrication system</b>	
Oil pressure, minimum at low idle speed (warm engine)	50 KPa (0.5 bar, 7.25 psi)
Oil pressure, operating speed (warm engine)	300–500 KPa (3–5.5 bar, 43.5–72.5 psi)
Piston cooling valve, opening pressure	300 KPa (3 bar, 43.5 psi)
Safety valve, full-flow filter, opening pressure	100–140 KPa (1–1.4 bar, 14.5–20.3 psi) pressure-drop across filters
Safety valve, engine oil cooler, opening pressure	230 KPa (2.3 bar, 33.3 psi)

pressure-drop across engine oil cooler

Document Title: <b>Filter change, intervals</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
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### Filter change, intervals

<b>Engine</b>	<b>Hour</b>
Oil filters	250
Fuel filters	1000
Air cleaner, main filter (primary)	1000
Air cleaner, inner filter (secondary)	2000
Coolant filter	1000
Clean suction strainer, power take-off	1000
<b>Transmission</b>	
Main oil filter	500
Lube oil filter	500
Breather filter	1000
<b>Dropbox</b>	
Clean suction strainer	2000
<b>Brake system</b>	
Pressure oil filter	1000
Brake cooling oil system, return oil filter and breather filter	1000
<b>Drive axles</b>	
Breather filter	1000
<b>Cab</b>	
Breather filter	1000
Recirculation filter	2000
<b>Hydraulic system</b>	
Breather filter hydraulic oil tank	1000
Return oil filters	2000
Return oil filter, cooling fan	2000

Document Title: <b>Fuel system</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
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## Fuel system

### Feed pump

Type	Piston pump
Make	Bosch
Designation	FP/KG 24 P 307
Feed pressure	130–180 KPa (1.3–1.8 bar, 18.8–26.1 psi)

### Injection pump

Type	In-line pump
Make	Bosch
Designation	PE 6P120 A320 RS8015 (serial no. –1218, US –60131) PE 6P120A320 RS 8044 (serial no. 1219–, US 60132–. not 1229, 1233, 60142, 60133 – 60135)
Pump timing setting	10.0° +1/–0 B.T.D.C
Regulator (Governor)	RQV 300-1050 PA 1141
Cold start device	Manually operated, built into fuel injection pump

### Injectors

Type	Multi-hole nozzle
Make	Bosch
Nozzle holder, designation	KBEL 117P73
Injector, designation	DLLA152P339
Opening pressure	25 MPa (250 bar, 3625 psi)
Setting pressure with new spring	26.0–26.8 MPa (260–268 bar, 3770–3886 psi)

### Automatic timing adjuster

Adjustment	begins at 1380 rpm ends at 1860 rpm
Checking points:	
1400 rpm on engine	10°±0.5 B.T.D.C
2200 rpm on engine	16°±0.5 B.T.D.C

Document Title: <b>Hydraulic system</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
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## Hydraulic system

### General

**Hydraulic pump, engine dependent for fan drive, steering and dumping, and ground dependent for secondary steering system.**

<b>Hydraulic pump 1–4, engine dependent</b>	
Type	Variable piston pump
Designation	PVE21R*-2-40-CVPC-12-316 (pump 3) PVE21L*-2-40-CVPC-12-317 (pumps 1 and 4) PVE21RTA 9-2-30-CVPC-12-333 (pump 2)
Displacement	Variable, 0–45 cm <sup>3</sup> /r (0–2.75 in <sup>3</sup> /r)
Capacity at 34.2 r/s (2050 rpm)	100 l/min
Operating pressure Q=max.	19 MPa (190 bar, 2755 psi)
Max. pressure Q=0 l/min	21.0 ±0.35 MPa (210 ±3.5 bar, 3045 ±50.7 psi)
Leak-oil volume at max. pressure	12 l/min (3.2 US gal/min)
Reduction ration, engine – pump (engine dependent)	1:1.11
Rotational direction	See designation R* and L* or arrow on pump plate
Stand-by pressure with disconnected LS	2.4 MPa (24 bar, 348 psi)
R*) = rotational direction CLOCKWISE L*) = rotational direction COUNTER-CLOCKWISE	
<b>Hydraulic pump 5, ground dependent</b>	
Type	Variable piston pump
Designation	70523-RB8
Displacement	Variable, 0–69 cm <sup>3</sup> /r (0–4.21in <sup>3</sup> /r)
Operating pressure Q=max.	19 MPa (190 bar, 2755 psi)
Max. pressure Q=0 l/min	21.0 ±0.3 MPa (210 ±3 bar, 3045±43.5 psi)
Rotational direction	Clockwise
Stand-by pressure with disconnected LS	2.4 MPa (24 bar, 348 psi)
<b>Hydraulic motor, fan</b>	
Type	Gear-driven
Designation	2TRO29T4T4B181-210-BP3SM-D3
Displacement	29 cm <sup>3</sup> /r (1.77 in <sup>3</sup> /r)
Max. pressure	21 MPa (210 bar, 3045 psi)
<b>Shut-off block, fan motor</b>	
Pressure monitor, fan	Opens at pressure higher than 2.0 ±0.1 MPa (20 ±1 bar, 2900 ±145 psi)
Solenoid valve	Solenoid valve is activated during dumping (signal from sensor on dumping control)

<b>Cooling oil pump, axles</b>	
Type	Gear pump
<b>Oil flow distributor, brake cooling oil axles and oil pump dropbox</b>	
Type	Rotating flow distributor of gear type resp. gear pump
<b>Proportional valve</b>	
Loss of electric power results in max. pressure, no oil flow through valve.	

<b>Dumping control</b>	
Type	Pilot valve, 4 positions
Designation	1-27H6X06-10/1-HS157
Sensor, dumping	Closes at 1.2 ±0.3 MPa (12 ±3 bar, 1740 ±43.5 psi)
Feed pressure	3.0–4.0 MPa (30–40 bar, 435–580 psi)
<b>Control valve, dumping</b>	
Type	Closed center, 4 positions
Designation	MO1921-03/1 MO-32PH
Relief valve	1.0 MPa (10 bar, 145 psi)
Pressure reducing valve, dumping control lever	3.0 MPa (30 bar, 435 psi)
Pressure limiting valve, dumping control lever	4.5 MPa (45 bar, 652.5 psi)
Pressure limiting valve for B-port	6.5 MPa (65 bar, 942.5 psi)
Non-return valve with back-pressure function	0.5 MPa (5 bar, 72.5 psi)
<b>Hoist cylinder</b>	
Type	Single-stage, double-acting
Number of	2

<b>Times for dumping and lowering</b>	
Dumping time	15 seconds
Lowering time	12 seconds
<b>Dumping angle</b>	
Dumping angle load body	71°

Document Title: <b>Oil and fluid change, intervals</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
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## **Oil and fluid change, intervals**

	<b>Hour</b>
Engine	250
Oil bath air cleaner	250
Transmission	500
Brake cooling oil	1000
Coolant	2000
Dropbox	2000
Drive axles	2000
Brake oil/Hydraulic oil	2000

Document Title: <b>Oil pressure, transmission</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

### Oil pressure, transmission

Oil pressure is checked at an oil temperature of 70 °C (158 °F).

PRESSURE CHECKS		Manual	Automatic	Manual/Automatic	
Normal operating temperature		P1	P1	PC1	PS
Gearshift selector	Engine speed	Main pressure	Main pressure	Converter pressure	Lubrication oil pressure
N	20.0 r/s (1200 rpm)	2.0 ±0.2 MPa (20 ±2 bar) (290 ±29 psi)	0.56 ±0.06 MPa (5.6 ±0.6 bar) (81.2 ±8.7 psi)	0.56 ±0.06 MPa (5.6 ±0.6 bar) (81.2 ±8.7 psi)	0.23 ±0.07 MPa (2.3 ±0.7 bar) (33.35 ±10.15 psi)
D	20.0 r/s (1200 rpm)	2.0 ±0.2 MPa (20 ±2 bar) (290 ±29 psi)	2.0 ±0.2 MPa (20 ±2 bar) (290 ±29 psi)	–	–
R	20.0 r/s (1200 rpm)	2.0 ±0.1 MPa (20 ±1 bar) (290 ±14.5 psi)	2.0 ±0.2 MPa (20 ±2 bar) (290 ±29 psi)	–	–

Document Title: <b>Power transmission</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

## Power transmission

Speed ranges (max.)

Machine equipped with tires 29.5 R-25

Gear	Total reduction ration	Max. speeds	
		km/h	mph
Reverse:			
2L	83:1	9.5	5.9
1H	88:1	7.7	4.8
2H	51:1	13.3	8.3
Neutral N			
Forward:			
1L	122:1	5.9	3.7
2L	86:1	8.6	5.3
3L	49:1	15.4	9.6
4L	35:1	22.4	13.9
5L	27:1	28.4	17.6
6L	21:1	37.7	23.4
1H	75:1	8.3	5.2
2H	53:1	12.0	7.4
3H	30:1	21.6	13.4
4H	21:1	31.2	19.4
5H	17:1	39.7	24.7
6H	13:1	52.6	32.7

## Flywheel housing and power take-off

<b>Power take-off</b>	
Number of hydraulic pumps	4
<b>Transmission</b>	
Also refer to Service Manual "Transmission PT1760/PT1761/PT1663".	
Designation	PT1760
Type	Automatic Power Shift planetary type transmission with six forward gears and two reverse gears in high range, as well as hydraulic retarder
Product number	1650001
<b>Retarder</b>	
Type	Hydraulic, adjustable, integrated in transmission

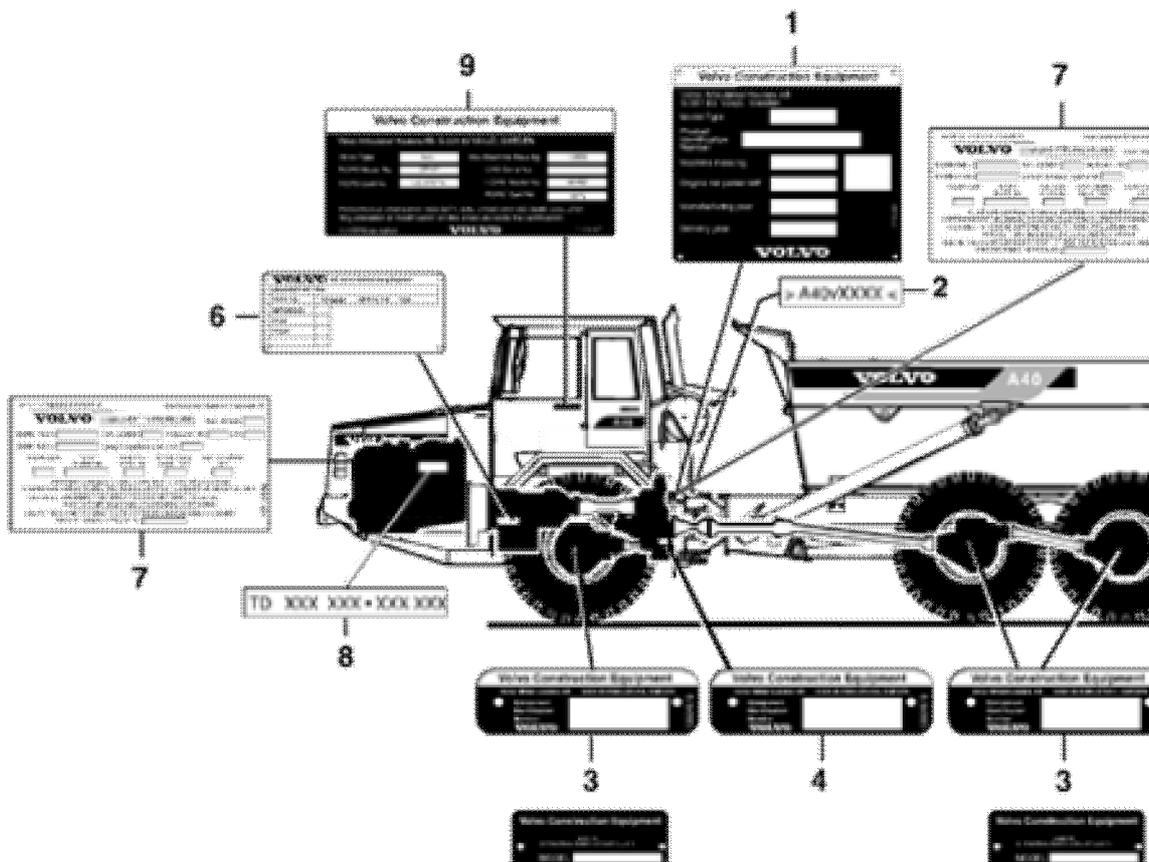
Pressure regulator, retarder	
pressure reduction to	650 KPa (6.5 bar, 94.25 psi)

Document Title: <b>Product identification plates</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

### Product identification plates

The following text with numbers refers to the illustration, and shows which product identification plates should be on the machine.

The **Product Identification Number (PIN)** and machine model must always be correctly quoted when ordering spare parts and in any telephone inquiries or correspondence regarding service matters.



**Figure 1**

1. Product plate with **Product Identification Number, PIN** for complete machine (includes model designation, engine manufacturer). The plate also contains information regarding machine weight, engine rated output (net) and production year. There is a space for CE-approval on the plate. The plate is located on the left rear part of the frame member on the machine.
2. The machine serial number is also stamped on the right side of the tractor unit frame.
3. Drive axle serial numbers are located on the axle housing.
4. Dropbox serial number is located on the rear right side of the dropbox.
5. Brake type designation and serial number is located on the brake housing end.
6. Transmission type designation and serial number is located on the left side of the transmission.
7. The decal "Important engine information" is located on the front of the engine and on the rear left part frame member on the machine.
8. Engine type designation, part and serial number are stamped into the left side of the engine block.
9. Cab type, type approval and serial number is located on the left inside the cab.

Document Title: <b>Recommended lubricants</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

## Recommended lubricants

The viscosity specification is according to SAE J 300 September -80, in effect from 820301.

Other oils may be used if these are within our viscosity recommendations and meet all our quality requirements. Mineral oils should be used in all systems since synthetic oils may degrade seals and thus shorten their operating life.

	Oil grade	Recommended viscosity at various ambient tem							
		°C -30	-20	-10	-0	+10	+20	+30	+40
		°F -22	-4	+14	+32	+50	+68	+86	+104
<b>Engine</b>	<b>Engine oil</b> Volvo VDS 2 CCMC-D4 alt ACEA E1-96 och CCMC-D5 alt ACEA E3-96*, API CE.  Oils acc. to API CF4 should be avoided.								
<b>Axles</b> <b>Hub reduction gears</b>	<b>Hypoid oil</b> API GL5								
<b>Dropbox</b> <b>Brake Cooling</b>	<b>WB 101</b>  As an alternative, an oil meeting the requirements according to Ford-E5N-M2-C134-D and JOHN DEEREJQ95 may be used.								
<b>Transmission</b>	<b>Transmission oil</b> ATF Dexron II** ATF Dexron III***								
<b>Hydraulic system</b> <b>Brake system</b>	<b>Hydraulic oil</b> <b>Sweden</b>								
	<b>Hydraulic oil</b> <b>Internationally</b>								
	<b>Alternatively engine oil</b> API SE/CC, SF/CC, SE/CD, SF/CD or oil which meets Vickers pump test M-2952-S.								
	<b>Biologically degradable fluid (ester based)</b> BP's BIO Hyd SE-S Panolin HLP Synth 46								
		°C -30	-20	-10	-0	+10	+20	+30	+40

**Figure 1**

### Anti-freeze, compressed air system

Denatured alcohol, min. 99.5%

### Lubricating grease

Lithium-based grease with EP-additives and additives to maintain consistency NGLI no. 2 without molybdenum disulfide additive (MoS<sub>2</sub>).

### **Cooling system**

Volvo Construction Equipment Group original coolant part no. 11990915-8 = 5 liters (1.3 US gal), part no. 11990967-9 = 20 liters (5.3 US gal). Volvo original anti-corrosion, part no. 1129709.

### **Fuel system**

**Quality requirement:** The fuel must at least meet existing legal requirements, national and international standards for market fuels, i.e.: EN590 (with nationally adapted cold requirements), ASTM D 975 No. 1-D and 2-D, JIS KK 2204.

**Sulphur content:** According to existing legal requirements (should not exceed 0.5 percent by weight, see "Engine, oil change intervals").

Document Title: <b>Steering system</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

## Steering system

Type	Hydro-mechanical articulated steering
Steering wheel turns, lock-to-lock	3.4 turns
Steering angle	2 x 45°
Time, steering angle	min. 25°/s
<b>Steering gear</b>	
Type	Rack and pinion gear

Hydraulic pump, engine dependent and ground dependent for secondary steering. See heading "Hydraulic system" on [Invalid linktarget].

<b>Control valve, steering</b>	
Type	Slide (spool) valve
<b>Steering cylinder</b>	
Number of	2 double-acting
<b>Damping cylinder for steering</b>	
Damping spring, pre-load	2.2–3.8 mm (0.087–0.15 in)

Document Title: <b>Tightening torques</b>	Function Group: <b>030</b>	Information Type: <b>Service Information</b>	Date: <b>4/3/2025</b>
Profile:			

## Tightening torques



For bolts and nuts without specified values, see [Invalid linktarget] .

### Engine

Also refer to Service Manual "Engine TD122" as well as, see and (engine mounts) see [Invalid linktarget] and [Invalid linktarget] .

	<b>Nm</b>	<b>kpm</b>	<b>lbf ft</b>
Engine – flywheel housing (18 bolts)	140	14.0	103.3
Crankshaft – flex plate (14 bolts)	170	17.0	125.4
Flywheel housing – transmission	85	8.5	62.7
Flex plate – torque converter	60	6.0	44.3
Timing adjustment gear	33	3.3	24.3

### Transmission

Also refer to Service Manual "Transmission PT1760/PT1761/PT1663"

### Dropbox

Also refer to Service Manual "Dropbox FL762/FL802"

### Drive axles

Also refer to Service Manual "AHW 71"

	<b>Nm</b>	<b>kpm</b>	<b>lbf ft</b>
Planetary carrier	220	20.0	162.3
Oil plug	135	13.5	99.6
Spindle – axle	1060	106.0	781.9

### Propeller shafts

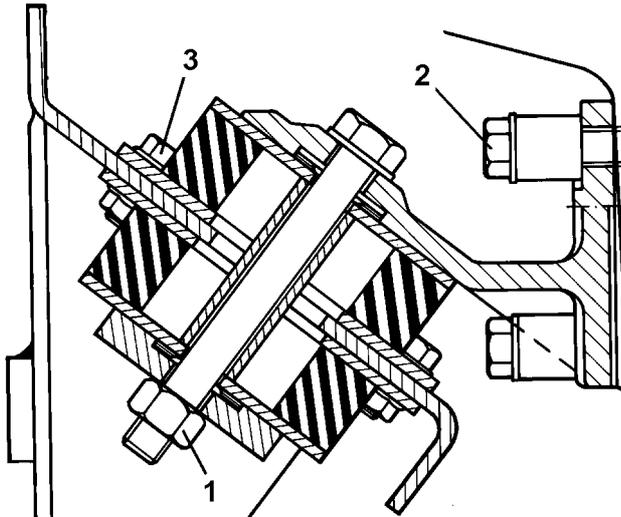
	<b>Nm</b>	<b>kpm</b>	<b>lbf ft</b>
Flange bolts, propeller shafts, engine – dropbox	180	18.0	132.8
Hitch – 1st bogie axle	180	18.0	132.8
Others	140	14.0	103.3

### Wheels

	<b>Nm</b>	<b>kpm</b>	<b>lbf ft</b>
Wheel nuts	820	82.0	604.8

### Brake and compressed air system

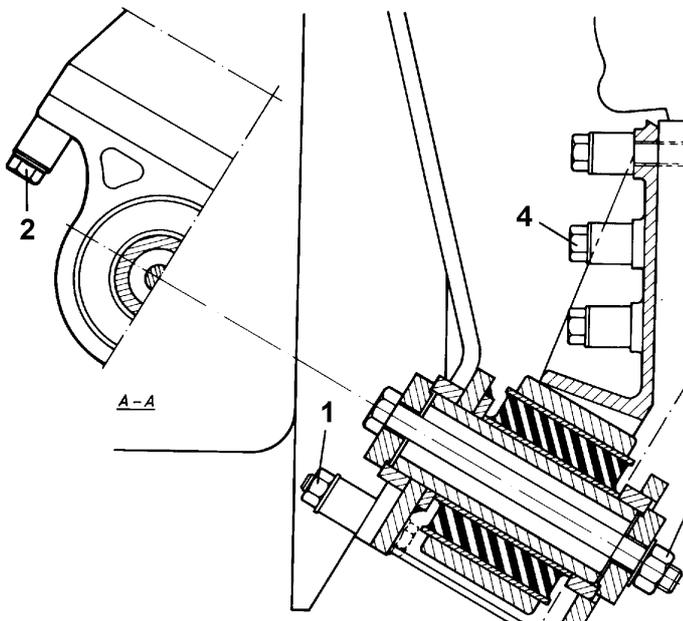
	<b>Nm</b>	<b>kpm</b>	<b>lbf ft</b>
Parking brake caliper plate – frame	220	22.0	162.3



**Figure 1**  
 Tightening torques, front engine mount

	Nm	kpm	lbf ft
1	220	22	162.3
2	120	12	88.6
3	50	5	36.9

**Rear engine mount**



**Figure 2**  
 Tightening torques, rear engine mount

	Nm	kpm	lbf ft
1	85	8.5	62.7
2	140	14	103.3
	220	22	162.3