

Document Title: Description	Function Group: 000	Information Type: Service Information	Date: 3/23/2025
Profile:			

Description

Articulated hauler A35C consists of two main sections, the tractor unit and the load unit. The two units are joined by the combined frame and steering joint which allows movement about a horizontal bearing. The bearing also allows the tractor unit and load unit to twist and move in relation to each other along the horizontal axis. The steering joint has a vertical bearing arrangement for steering.

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.

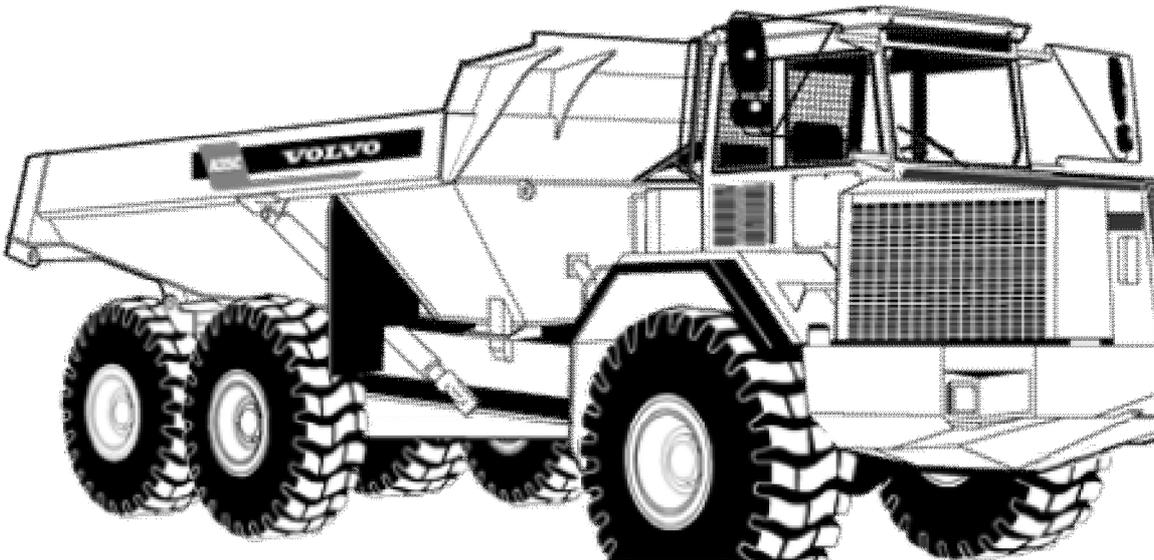


Figure 1

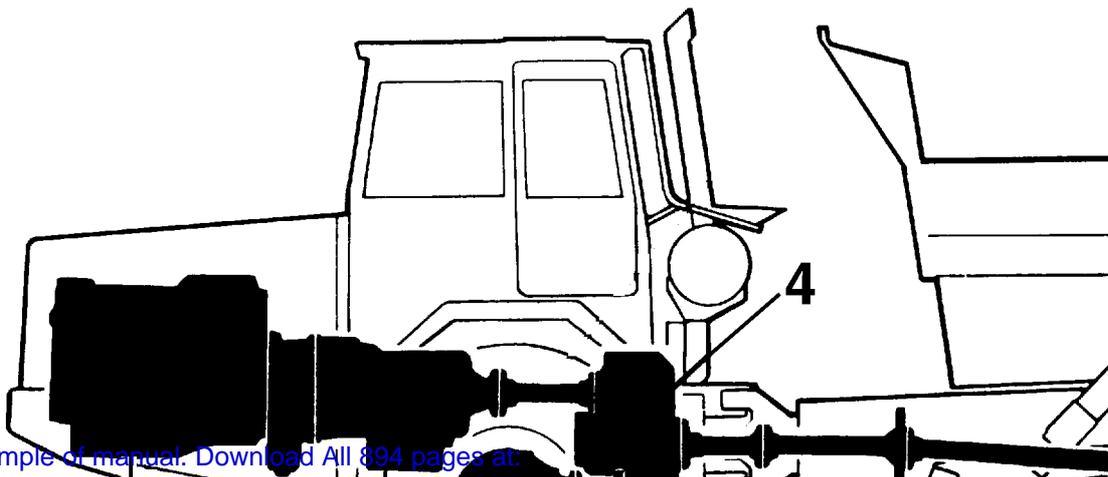


Figure 2

Type and "product no.", articulated hauler A35C

1. TD122 KAE - "499189" (serial no. -5200, US -60300)
TD122 KME - "8188161" (serial no. 5201-, US 60301-)
2. PT1761 - "11037935" (serial no. -5200, US -60300)
PT1761A - "11038035" (serial no. 5201-, US 60301-)
3. AH63 L - "23756"
4. FL762 - "22505"
5. AH63 G - "23580" (serial no. -5200, US -60300)
AH63 Y - "23793" (serial no. 5201-, US 60301-)
6. AH63 H - "23581" (serial no. -5200, US -60300)
AH63 Z - "23794" (serial no. 5201-, US 60301-)

Document Title: Brake and compressed air system	Function Group: 030	Information Type: Service Information	Date: 3/23/2025
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Brake and compressed air system

Brake disc, service brake (tractor unit, load unit)

Thickness	48 mm (1.89 in)
Thickness, min.	43 mm (1.69 in)

Brake pads, service brake

Thickness	22 mm (0.87 in)
Thickness, min.	3 mm (0.19 in)

Unloading (relief) valve

Max. pressure	18.5 +0/-0.5 MPa (185 +0/-5 bar) (2683 +0/-72.5 psi)
Cut-in pressure	15.5 +1/-0 MPa (155 +10/-0 bar) (2248 +145/-0 psi)
Low pressure indication	14.5 MPa (145 bar) (2103 psi)

Relay valve

Type	Pilot-controlled relay valve
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Foot brake valve

Type	Two-circuit slide valve
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Brake oil pump

Type	Axial piston pump
Designation	F 11
Displacement	5 cm ³ /r (0.31 in ³ /r)
Capacity at 16.7–58.3 r/s (1000–3500 rpm)	5–17.5 l/min (1.3 - 4.6 US gal/min)

Accumulator

Type	Diaphragm accumulator
Designation	D 0.75–250
Capacity	0.75 litres / 0.2 US gal (oil capacity 0.4 litres, 0.1 US gal)
Quantity	14
Pre-charge pressure	
new	10 MPa (100 bar) (1450 psi)
min. (discard limit)	8.5 MPa (85 bar) (1233 psi)

parking brake

Type	Compressed air-mechanical disc brake, acting on load unit propeller shaft
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Parking brake lever

Operating pressure, max.	80 kPa (0.8 bar) (11.6 psi)
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Brake disc, parking brake

Thickness	25 mm (0.98 in)
Thickness, min.	20 mm (0.79 in)

Brake pads, parking brake

Thickness	22 mm (0.87 in)
Thickness, min.	3 mm (0.19 in)

Compressed air system

Compressor

Type	1-cylinder gear-driven piston compressor with liquid-cooled cylinder head
Designation	LK3802
Displacement	213 cm ³ (13 in ³)
Capacity at 33.3 r/s (2000 rpm) and 700 kPa (7 bar) (101.5 psi) back-pressure	275 cm ³ /min (16.8 in ³ /min)

Compressed air regulator

Cut-out pressure	810 ±20 kPa (8.1 ±0.2 bar) (117.5 ±2.9 psi)
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Compressed air tanks

Capacity	6 litres (1.6 US gal)
Quantity	2
Safety valve, opening pressure	930 kPa (9.3 bar) (134.9 psi)

Pressure retaining valve

Overflow pressure	650 kPa (6.5 bar) (94.3 psi)
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Retarder

Type	Hydraulic, integrated in transmission
Retardation	1200 Nm (885 lbf ft) (33.3 r/s)
Cooling effect	250 kW
Pressure regulator, retarder pressure reduced to	650 kPa (6.5 bar) (94.3 psi)

Compressed air regulator, retarder

Pressure reduction to	650 kPa (6.5 bar) (94.3 psi)
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Document Title: Capacities	Function Group: 030	Information Type: Service Information	Date: 3/23/2025
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Capacities

Engine, including filters and oil cooler	31 litres (8.2 US gal) when changing
Fuel tank	360 litres (95 US gal)
Cooling system	63 litres (16.6 US gal) when changing (90 litres/23.8 US gal, total)
Transmission, including filters and oil cooler	40 litres (10.6 US gal) when changing.[T1] ⓘ
Dropbox	8 litres (2.1 US gal) when changing
Drive axle, tractor unit	39 litres (10.3 US gal) when changing[1]
Front bogie axle	41 litres (10.8 US gal) when changing ^(b)
Rear bogie axle	40 litres (10.6 US gal) when changing ^(b)
Brake hydraulics	31 litres (8.2 US gal) when changing
Anti-freeze fluid	0.9 litres (0.2 US gal)
Hydraulic system, incl. filters	150 litres (39.6 US gal) when changing (260 litres/68.7 US gal, total)
Hydraulic tank	150 litres (39.6 US gal)

[T1] Check and adjust the oil level after the oil change according to the Operator's Manual.

[1] incl. approx. 4 litres (1.1 US gal) per hub.

Document Title: Dimensions	Function Group: 030	Information Type: Service Information	Date: 3/23/2025
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Dimensions

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

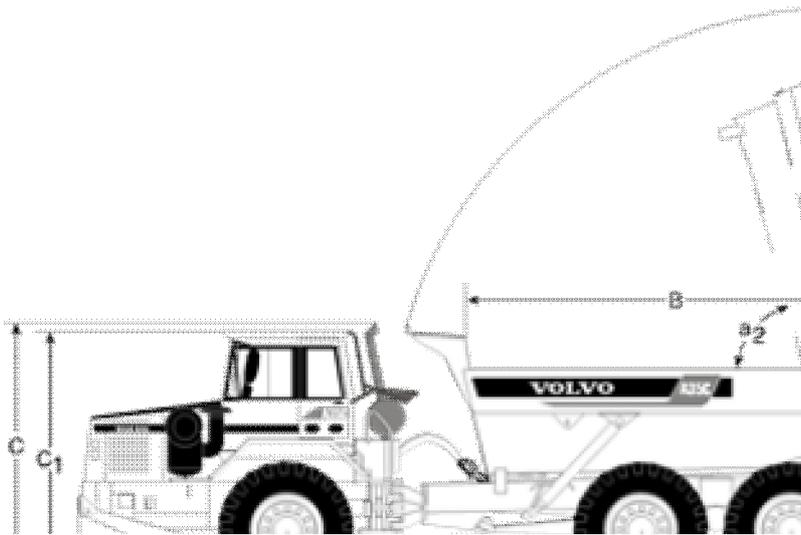


Figure 1

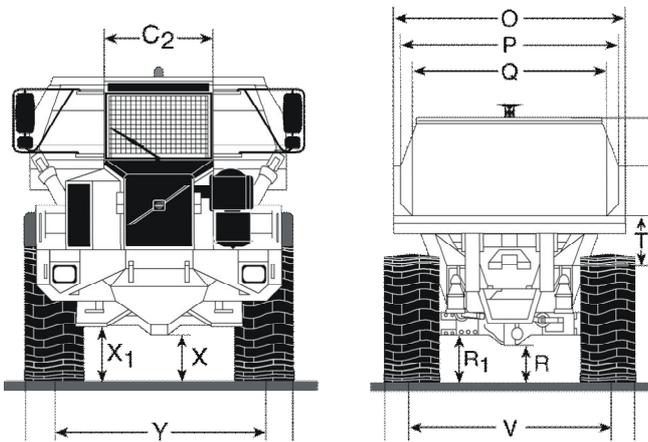


Figure 2

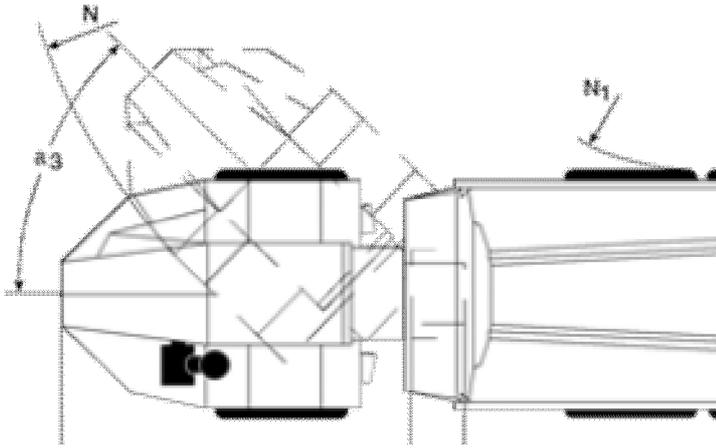


Figure 3

Dimensions

	dimension	mm
Total length	A	10898 (429.1 in)
Total length, tractor unit	A ₁	5232 (205.9 in)
Total length, load unit	A ₂	6348 (249.9 in)
Load body length, standard body	B	5554 (218.7 in)
Total height at exhaust pipe	C	3604 (141.9 in)
Height at cab roof	C ₁	3510 (138.2 in)
Width across cab	C ₂	1330 (52.4 in)
Overhang, towing eyes	D	2959 (116.5 in)
Distance, front axle – center, articulation joint	E	1270 (50 in)
Distance, drive axles	F	4495 (176.9 in)
Distance, bogie axles	G	1820 (71.6 in)
Overhang, rear	H	1624 (63.9 in)
Overhang, frame	H ₁	725 (28.5 in)
Loading height	J	2922 (115.0 in)
Height to load body	K	2231 (87.8 in)
Free dumping height	L	1054 (41.5 in)
Total height, elevated load body	M	7529 (296.4 in)
Outer turn radius	N	8694 (342.3 in)
Inner turning radius	N ₁	4300 (169.3 in)
Outside width, load body	O	3006 (118.3 in)
Inside width, load body	P	2770 (109.1 in)
Width, bottom at load body chute	Q	2510 (98.8 in)
Minimum ground clearance, load unit	R	570 (22.4 in)
	R ₁	670 (26.4 in)
Bottom of load body – side of load body	S	1274 (50.2 in)
Bottom of load body – rear edge of load body	T	595 (23.4 in)
Maximum height, upper body plate	U	3486 (151.4 in)
Track width, load unit	V	2522 (99.3 in)
Total width, load unit	W	3200 (126.0 in)
Minimum ground clearance, tractor unit	X	519 (20.4 in)
	X ₁	559 (22.0 in)

	X_2	696 (27.4 in)
Track width, tractor unit	Y	2522 (99.3 in)
Total width, tractor unit	Z	3200 (126.0 in)
Angle of approach	a_1	25 °
Dump angle	a_2	73 °
Maximum steering angle	a_3	45 °

Document Title: Electrical system	Function Group: 030	Information Type: Service Information	Date: 3/23/2025
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Electrical system

System voltage	24 V
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Batteries

Quantity	Two (2) 12 V batteries connected in series
Battery voltage	12 V
Ground connection	Minus terminal
Battery capacity	170 Ah/battery
Battery disconnect switch connected on (-) side	
Battery electrolyte density	
Fully charged battery	1.275–1.285
Battery should be recharged at	1.250

Alternator

Type	Alternating current
Designation	A 14 N 206M
Effect (rated output)	1650 W (2.28 hp)
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

Starter motor

Designation	KB 24 V 6.5 kW
Effect (output)	6.6 kW (9 hp)

Lighting

Light bulbs – tractor unit	Watt	Base
Headlights	75/50	P43t–38
Parking lights	5	BA 15s
Direction indicators	21	BA 15s
Instrument lighting	2	BA 9s
Switches	1.2	Glass base
Combination instrument, warning lights	1.2	Glass base
Combination instrument, lighting	3	Glass base
Rotating beacon (market adapted equipment)	45	BA 15s

Light bulbs – load unit	Watt	Base
Tail lights	5	BAY 15d

Brake lights	21	BAY 15d
Direction indicators	21	BA 15s
Back-up light	70	PK 22s

Fuses

Fuses	Current rating	Quantity
Electrical distribution box	5 A	15
Electrical distribution box	15 A	9
Main fuse (engine compartment)	25 A	1
Preheating coil	5 A	1
Suspended fuse, tachograph (battery compartment)	5 A	1
Main fuse preheating	100 A	1
Fuse, transformer radio	10 A	1

Document Title: Engine	Function Group: 030	Information Type: Service Information	Date: 3/23/2025
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Engine

Also refer to Service Manual "Engine TD 122"

Serial no. –5200, US –60300

Make	Volvo
Type	Direct injected, low-emission diesel engine with exhaust turbocharger and intercooler
Designation	Volvo TD122 KAE
Product number	499189
Flywheel output at 35 r/s (2100 rpm)	245 kW (333 hp) SAE J 1349 Gross 240 kW (326 hp) DIN 6271, SAE J 1349 Net ISO 9249
Max. torque at 20 r/s (1200 rpm)	1475 Nm (1089 lbf ft) SAE J 1349 Gross 1470 Nm (1085 lbf ft) DIN 6271, SAE J 1349 Net ISO 9249
Number of cylinders	6
Cylinder bore	130.175 mm (5.124 in)
Stroke	150 mm (5.91 in)
Cylinder capacity, total	12 dm ³ (732.3 in ³)
Compression ratio	16.0:1
Compression at 4 r/s (240 rpm)	2.5 MPa (25 bar) (362.5 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	28.5 ±1.3 r/s (1710 ±75 rpm)

Serial no. 5201–, US 60301–

Make	Volvo
Type	Direct injected, low-emission diesel engine with exhaust turbocharger and intercooler
Designation	Volvo TD122 KME
Product number	8188161
Flywheel output at 35 r/s (2100 rpm)	267 kW (363 hp) SAE J 1349 Gross 262 kW (356 hp) DIN 6271, SAE J 1349 Net ISO 9249
Max. torque at 20 r/s (1200 rpm)	1595 Nm (163 kpm) (1176 lbf ft) SAE J 1349 Gross 1585 Nm (162 kpm) (1169 lbf ft) SAE J 1349 Net 1450 Nm (148 kpm) (1069 lbf ft) DIN 70020
Number of cylinders	6
Cylinder bore	130.175 mm (5.124 in)
Stroke	150 mm (5.91 in)
Cylinder capacity, total	12 dm ³ (732.3 in ³)
Compression ratio	16.0:1

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	27.1 ±1.3 r/s (1625 ±75 rpm)

Valve clearance (cold or warm engine)

inlet valve	0.40 mm (0.016 in)
exhaust valve	0.70 mm (0.028 in)

Lubrication system

Oil pressure, minimum at low idle speed (warm engine)	80 kPa (0.8 bar) (11.6 psi)
Oil pressure, operating speed (warm engine)	300–600 kPa (3–6 bar) (43.5 - 87 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 - 20.4 psi) pressure-drop across filters
Safety valve, engine oil cooler, opening pressure	230 kPa (2.3 bar) (33.4 psi) pressure-drop across engine oil cooler

Fuel system

Feed pump

Type	Piston pump
Make	Bosch
Designation	FP/KG 24 P 307
Feed pressure	130–150 kPa (1.3–1.5 bar) (18.9 - 21.8 psi)

Injection pump

Type	In-line pump
Make	Bosch
Designation (serial no. –5200, US –60300)	PE 6P120A320 RS8015
Designation (serial no. 5201–, US 60301–)	PE 6P120A320 RS8051
Pump timing setting (serial no. –5200, US –60300)	10 ° B.T.D.C.
Pump timing setting (serial no. 5201–, US 60301–)	9 ±0,5 ° B.T.D.C.
Regulator (serial no. –5200, US –60300)	RQV 300-1050 PA 657-23
Regulator (serial no. 5201–, US 60301–)	RQV 300-1050 PA 1225
Cold-start device	Manually operated, built into fuel injection pump (pump elements provided with start groove)

Injectors

Type	Multi-hole nozzle
Make	Bosch
Nozzle holder, designation	KBEL117P73
Injector, designation	DLLA152 P339
Opening pressure	25.0 MPa (250 bar) (3625 psi)
Setting pressure with new spring	26.0–26.8 MPa (260–268 bar) (3770 - 3887 psi)
Allowed pressure-drop when testing with pressure 12.5–10.0 MPa (125–100 bar) (1813 - 1450 psi)	2.5 MPa (25 bar) (362.5 psi) in 5–25 sec.

Injector opening diameter	6x0.28 mm (6x0.011 in)
Marking	715

Automatic timing adjuster (injection timing device)

Adjustment	begins at 1140 rpm ends at 1620 rpm
Angle adjustment	6°

Inlet and exhaust system

Turbocharger

Designation	Garett T 51/52
Lubrication	Pressure lubrication (force-feed) from engine

Cold-start device

Type	Preheating coil in induction manifold
Effect (output)	3600 W
Time relay, engagement period (automatic engagement below 25 °C, 77 °F)	approx. 50 seconds

Cooling system

8-bladed cooling fan	Hydrostatically driven, rpm controlled by the coolant temperature
Make	VOAC
Type	Fixed piston motor
Displacement	19 cm ³ (1.16 in ³) /rev
Leak-oil volume at 20 r/s (1200 rpm)	2 dm ³ /min (litres/min) (122 in ³ /min)
Fan speed at coolant temp. <70 °C (158 °F) and engine speed <24 r/s (1400 ±50 rpm)	10.0–13.4 r/s (600–800 rpm)
Alternative: Pressure at coolant temp <70 °C (158 °F) and engine speed <24 r/s (1400 ±50 rpm)	2.3–3.5 MPa (23–35 bar) (333.6 - 507.6 psi)
Fan speed at coolant temp. <70 °C (158 °F) and engine speed >24.5–26.2 r/s (1400 ±50 rpm)	22.5–24.2 r/s (1350–1450 rpm)
Alternative: Pressure at coolant temp <70 °C (158 °F) and engine speed >24.5–26.2 r/s (1400 ±50 rpm)	10.5–12.0 MPa (105–120 bar) (1522.5 - 1740.5 psi)
Fan speed at coolant temp >96 °C (205 °F)	
–Fan speed	33.3 r/s (2000 rpm)
–Pressure	21 MPa (210 bar) (3045 psi)
Oil temperature	20–30 °C (68 - 86 °F)

Thermostat	
quantity	2
marked	Red mark in center
begins to open at	82 °C (179 °F)
fully open at	92 °C (197 °F)
Relief valve, opening pressure (cap, expansion tank)	50 kPa (0.5 bar) (7.3 psi)

Hydraulic motor, fan

Type	Fixed piston motor
Designation	F11 - 19 - MU - SN - 1 - 101
Displacement	19 cm ³ /r (1.16 in ³ /r)
Leak-oil volume at 20 r/s (1200 rpm)	2 l/min (0.53 US gal/min)

Document Title: Filter change, intervals	Function Group: 030	Information Type: Service Information	Date: 3/23/2025
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Filter change, intervals

Engine	
Oil filters	250
Fuel filters	1000
Fuel filter, water separator	1000
Air cleaner, main filter (primary)	1000
Air cleaner, inner filter (secondary)	2000
Coolant filter	1000
Clean suction strainer, power take-off	1000
Transmission	
Main oil filter	500
Lube oil filter	500
Breather filter	1000
Brake system	
Pressure oil filter	2000
Breather filter, brake oil tank	1000
Drive axles	
Breather filter	1000
Cab	
Ventilation filter	1000
Recirculation filter	2000
Hydraulic system	
Breather filter hydraulic oil tank	1000
Return oil filters	2000
Return oil filter, cooling fan	2000

Document Title: Hydraulic system	Function Group: 030	Information Type: Service Information	Date: 3/23/2025
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Hydraulic system

Control valve, dumping

Type	Closed center
Designation	HV08

Shock and anti-cavitation valves

Opening pressure, dump	21 MPa (210 bar) (3045 psi)
Opening pressure, lower	5 MPa (50 bar) (725 psi)
Return pressure, valve	1 MPa (10 bar) (145 psi)

Hydraulic pump, engine dependent and ground dependent

Type	Variable piston pump
Designation	PVE21R[1]-2-40-CVPC-12-316 PVE21L[2]-2-40-CVPC-12-317
Displacement	Variable, 0–45 cm ³ /r (0 - 2.75 in ³ /r)
Capacity at 34.2 r/s (2050 rpm)	100 l/min (26.4 US gal/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 ±50.8 psi)
Leak-oil volume at max. pressure	12 l/min (3.17 US gal/min)
Reduction ratio, engine – pump (engine dependent)	1:1.11
Rotational direction	See designation R ^(a) or L ^(b)
Stand-by pressure with disconnected LS	2.4 MPa (24 bar) (348 psi)

Hoist cylinder

Type	3-stage, with double-acting inner stage
Quantity	2

Times for dumping and lowering

Dumping time	15 sec.
Lowering time, total	18 sec.
Lowering time, stage 3 (double-acting)[3]	min. 3 sec.

[1]R = rotational direction CLOCKWISE

[2]L = rotational direction COUNTER-CLOCKWISE

[3]Adjust on the dumping valve

Document Title: Oil and fluid change, intervals	Function Group: 030	Information Type: Service Information	Date: 3/23/2025
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Oil and fluid change, intervals

	Hours
Engine	250
Oil-bath air cleaner	250
Transmission	500
Coolant	2000
Dropbox	2000
Drive axles	2000
Brake oil	2000
Hydraulic system	2000

Document Title: Power transmission	Function Group: 030	Information Type: Service Information	Date: 3/23/2025
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Power transmission

Transmission

Also refer to separate Service Manual for transmission.

Type	Automatic Power Shift planetary type transmission with six (6) forward gears and two (2) reverse gears (in high range) as well as hydraulic retarder
Designation	Volvo PT1761 Volvo PT1761A (serial no. 5201–, US 60301–)
Product number	11037935

Oil pressure, transmission

Oil pressure is checked at 1200 rpm/ oil temperature of 70 °C (158 °F).

Pressure given in MPa and (psi).

Machine stationary

	N		D		R	
	Automatic	Manual	Automatic	Manual	Automatic	Manual
P1	0.56 0.08 (81.2 11.6 psi)	2.0 0.2 (290 29 psi)	1.7 0.17 (246.5 24.6 psi)	2.0 0.2 (290 29 psi)	1.8 0.16 (261 23.2 psi)	2.0 0.2 (290 29 psi)
PC1	0.56 0.08 (81.2 11.6 psi)	0.56 0.08 (81.2 11.6 psi)	0.56 0.08 (81.2 11.6 psi)	0.56 0.08 (81.2 11.6 psi)	0.56 0.08 (81.2 11.6 psi)	0.56 0.08 (81.2 11.6 psi)
PS	0.23 0.07 (33.4 10.2 psi)	0.23 0.07 (33.4 10.2 psi)	0.23 0.07 (33.4 10.2 psi)	0.23 0.07 (33.4 10.2 psi)	0.23 0.07 (33.4 10.2 psi)	0.23 0.07 (33.4 10.2 psi)

Oil pressure table, transmission

Dropbox

Make	Volvo
Designation	FL762
Product number	22505
Reduction ratio, low	1.188:1
Reduction ratio, high	0.733:1
Differential lock	Longitudinal, dog clutch
Lubrication oil pump, type	Rotor pump
Lube oil volume per 50 km (31 miles) travel distance	min 0.5 litres (0.13 US gal)

Bearing clearances

Input shaft (A)	0.10–0.20 mm (0.0039 - 0.0078 in)
Intermediate shaft (B)	0.10–0.20 mm (0.0039 - 0.0078 in)
Differential (C)	0.13–0.23 mm (0.0051 - 0.0090 in)
Rear output shaft (C)	0.10–0.20 mm (0.0039 - 0.0078 in)
Front output shaft (D)	0.10–0.20 mm (0.0039 - 0.0078 in)
Tubular shaft (C)	0.05–0.50 mm (0.0019 - 0.0196 in)

For other technical data, see separate service manual.

Drive axles

Also refer to separate Service Manual for drive axles.

Make	Volvo	Volvo	Volvo
Type (serial no.-5200, US -60300)	AH63 L	AH 63 G	AH 63 H
Type (serial no. 5201-, US 60301-)	AH63 L	AH 63 Y	AH 63 Z
Product number (serial no. -5200, US -60300)	23756	23580	23581
Product number (serial no. 5201-, US 60301-)	23756	23793	23794
Final drive	EV 80 B	EVBM	EV 85 B
Reduction ratio	4.3:1[1]	4.25:1 ^(a)	4.25:1 ^(a)
Hub reduction	Planetary gear	Planetary gear	Planetary gear
Reduction ratio	4.235:1	4.235:1	4.235:1
Differential lock	Dog clutch	Dog clutch	Dog clutch

[1]The difference in the reduction ratio between the tractor unit and load unit drive axles is evened out with the reduction in the dropbox.

Document Title: Product identification plates	Function Group: 030	Information Type: Service Information	Date: 3/23/2025
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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 enquiries or correspondence regarding service matters.

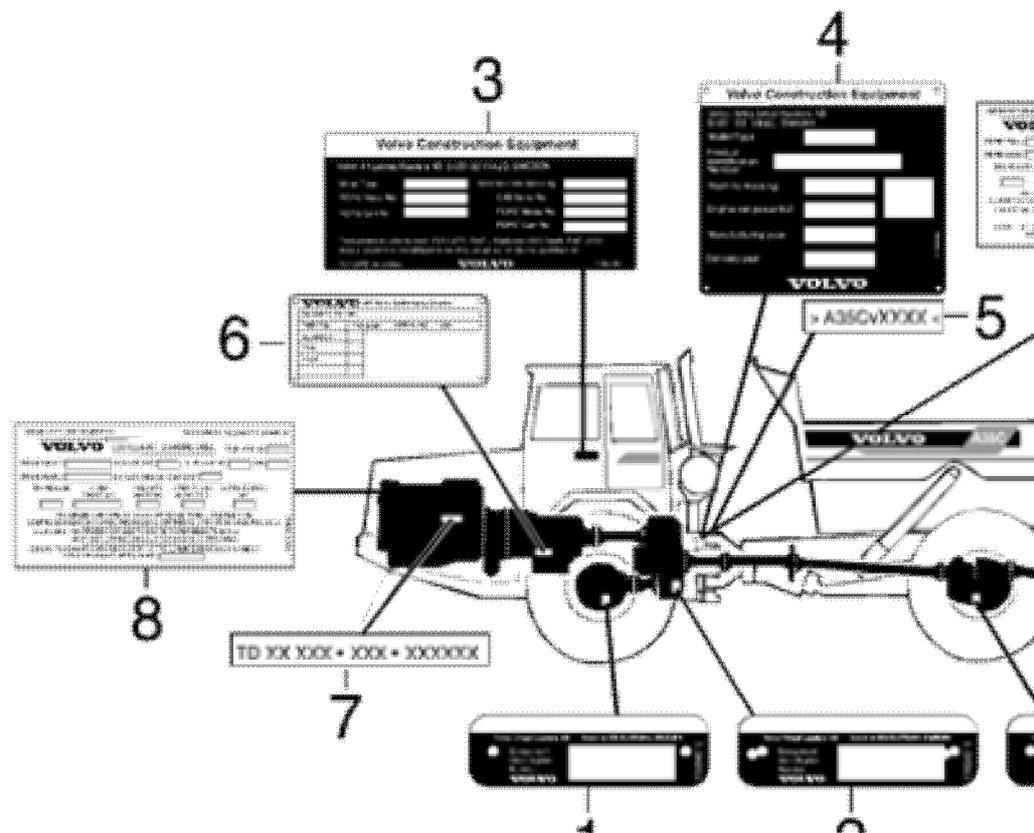


Figure 1

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

Document Title: Steering system	Function Group: 030	Information Type: Service Information	Date: 3/23/2025
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Steering system

Type	Hydro-mechanical articulated steering with function for secondary steering system
Steering wheel turns, total	3.4 turns
Maximum steering angle	2 x 45 °

Steering gear, type	Rack and pinion gear
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Control valve, steering

Type	Slide valve
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Steering cylinder

Quantity	2 double-acting
Piston nut, wrench dimension	72 mm (2.83 in)

Damping cylinder for steering

Damping spring, pre-load	2.2–3.8 mm (0.087 - 0.15 in)
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Document Title: Tightening torques	Function Group: 030	Information Type: Service Information	Date: 3/23/2025
Profile:			

Tightening torques



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

Engine

Also refer to separate Service Manual for engine. Engine mounts, see [Invalid linktarget] and [Invalid linktarget].

	Nm	kpm
Engine – flywheel housing	140 (103.3 lbf ft)	14.0
Crankshaft – crankshaft gear/flex plate	170 (125.4 lbf ft)	17.0
Flywheel housing – transmission	85 (62.7 lbf ft)	8.5
Fan hub, center bolt	100 (73.8 lbf ft)	10

Transmission

Also refer to separate Service Manual for transmission.

Transmission – flywheel housing	85 (62.7 lbf ft)	8.5
Flex plate - torque converter	60 (44.3 lbf ft)	6.0

Dropbox

Also refer to separate Service Manual for dropbox.

Dropbox – frame	185 (136.5 lbf ft)	18.5
Differential housing front/differential housing rear	80 (59.0 lbf ft)	8.0
Inductive sensor	45 (33.2 lbf ft)	4.5
Position sensor, H/L shift longitudinal differential lock	50–75 (36.9 - 55.3 lbf ft)	5.0–7.5
Bolt, input shaft	120 (88.5 lbf ft)	12.0
Bolt, front output shaft	120 (88.5 lbf ft)	12.0
Bolt, rear output shaft	120 (88.5 lbf ft)	12.0
Plug, oil drain	80 (59.0 lbf ft)	8.0
Plug, oil level	80 (59.0 lbf ft)	8.0

Drive axles

Also refer to separate Service Manual for drive axles.

	Nm	kpm
Planetary carrier	200 (148 lbf ft)	20
Lock bolt for striker plate, planetary gear shaft	30 (22.1 lbf ft)	3
Oil plug	135 (99.6 lbf ft)	13.5
Brake disc	310 (228.6 lbf ft)	31
Brake caliper[1]	950 (700.7 lbf ft)	95
Spindle – axle housing	600 (442.5 lbf ft)	60
Final drive housing (AH 63 L and H)	310 (228.6 lbf ft)	31

(serial no. –5200, US –60300)		
Final drive housing (AH 63 L and Z) (serial no. 5201–, US 60301–)	310 (228.6 lbf ft)	31
Final drive housing 6x6 (AH 63 G) (serial no. –5200, US –60300)		
– stud bolt	70 (51.6 lbf ft)	7
– bolt	310 (228.6 lbf ft)	31
– nut	255 (188.1 lbf ft)	25.5
Final drive housing 6x6 (AH 63 Y) (serial no. 5201–, US 60301–)		
– stud bolt	70 (51.6 lbf ft)	7
– bolt	310 (228.6 lbf ft)	31
– nut	255 (188.1 lbf ft)	25.5

Drive axle 6x6

AH63 G (serial no. –5200, US –60300)

AH63 Y (serial no. 5201–, US 60301–)

	Nm	kpm
Nut, crown wheel	210 (155 lbf ft)	21
Bolt, differential housing halves	210 (155 lbf ft)	21
Bolt, bearing caps	435 (321 lbf ft)	43.5
Bolt, adjusting nut	20 (15 lbf ft)	2
Pinion nut	1200 (885 lbf ft)	120
Nut, input shaft	850 (627 lbf ft)	85
Nut, engaging sleeve	30 (22 lbf ft)	3
Bolt, cover	10 (7 lbf ft)	1
Bolt, outer housing and cover	80 (59 lbf ft)	8
Nut, retainer (stop) bolt	100 (74 lbf ft)	10
Nut, output shaft	600 (442 lbf ft)	60

Propeller shafts

Bolted flanges propeller shafts, see [Invalid linktarget] and [Invalid linktarget].

Brake system

	Nm	kpm
Parking brake bracket	210 (155 lbf ft)	21
Spring brake cylinder	170 (125 lbf ft)	17
Brake caliper halves [2] (95 Nm (70 lbf ft) + angle torquing 60 °)	500 (369 lbf ft)	50
Brake disc	310 (229 lbf ft)	31
Brake caliper [3] (150 Nm (110.6 lbf ft) + angle torquing 60 °)	950 (700.7 lbf ft)	95

Steering system

Steering cylinder: piston – piston rod	850 (627 lbf ft)	85.0
Steering cylinder: piston rod guide	79 (58 lbf ft)	7.9
Steering valve block – valve block	45 (33 lbf ft)	4.5

Frame

See [Invalid linktarget], [Invalid linktarget], [Invalid linktarget] and [Invalid linktarget].

Hydraulic system

Front engine mount

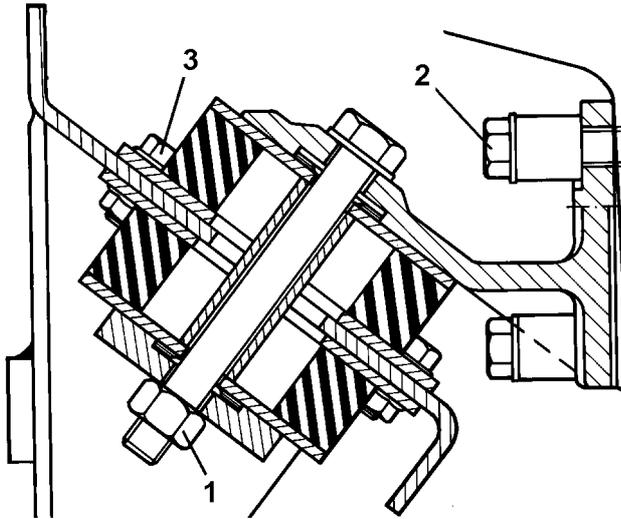


Figure 1
Tightening torque, front engine mount

	Nm	kpm
1	220 (162.3 lbf ft)	22
2	100 (73.8 lbf ft)	10
3	50 (36.9 lbf ft)	5

Rear engine mount

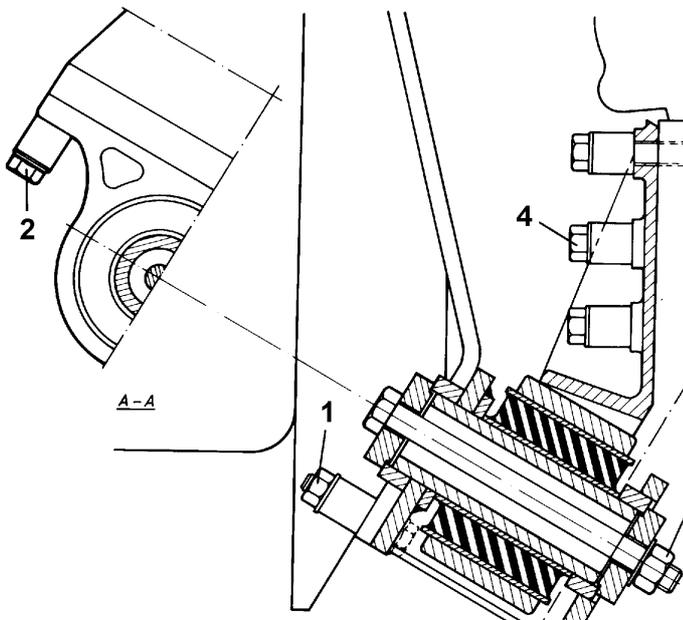


Figure 2
Tightening torque, rear engine mount

	Nm	kpm
1	85 (62.7 lbf ft)	8.5

2	140 (103.3 lbf ft)	14
3	220 (162.3 lbf ft)	22
4	220 (162.3 lbf ft)	22

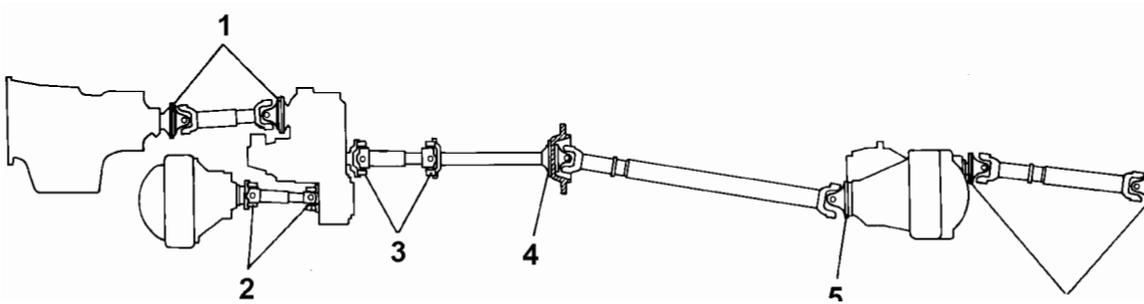


Figure 3
Tightening torques, propeller shafts (serial no. -5200, US -60300)

	Nm	kpm
1	180 (132.8 lbf ft)	18
2	140 (103.3 lbf ft)	14
3	140 (103.3 lbf ft)	14
4	100 (73.8 lbf ft)	10
5	100 (73.8 lbf ft)	10
6	100 (73.8 lbf ft)	10

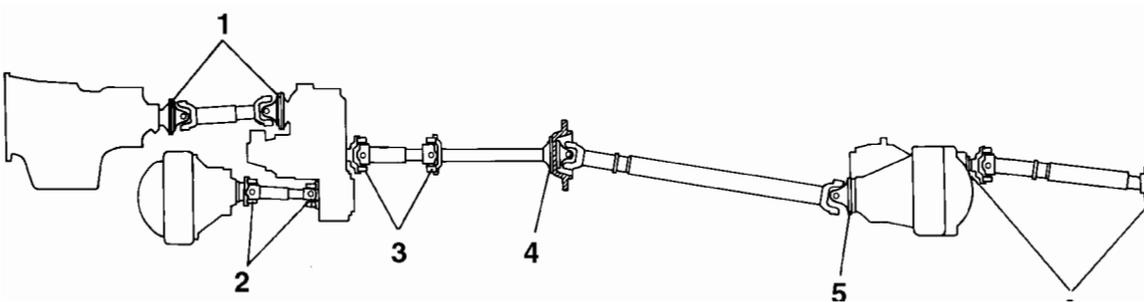


Figure 4
Tightening torques, propeller shafts (serial no. 5201-, US 60301-)

	Nm	kpm
1	180 (132.8 lbf ft)	18
2	140 (103.3 lbf ft)	14
3	140 (103.3 lbf ft)	14
4	180 (132.8 lbf ft)	18
5	180 (132.8 lbf ft)	18
6	140 (103.3 lbf ft)	14

Hitch (steering and frame joint)

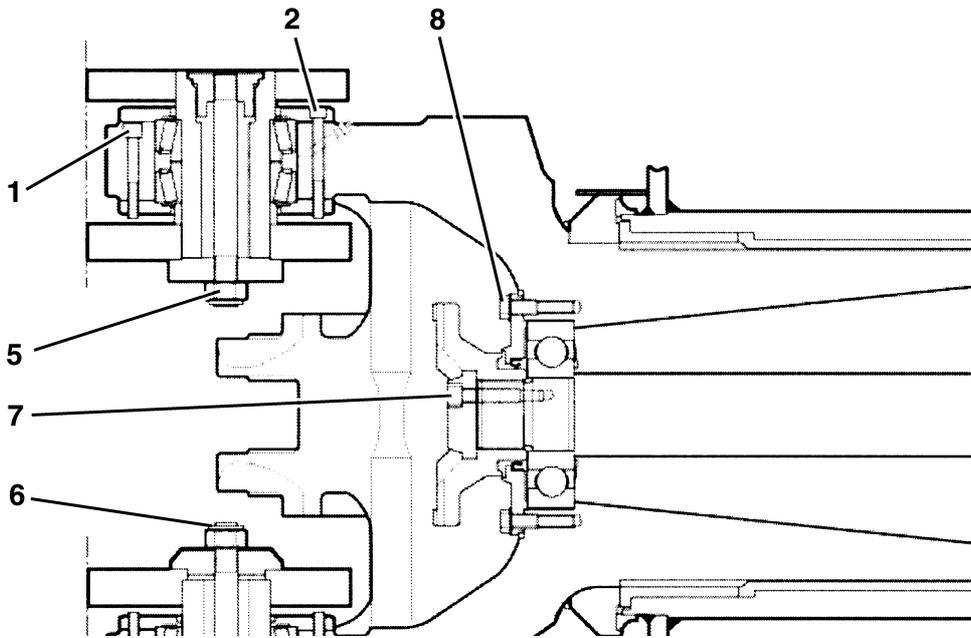


Figure 5
Tightening torques, hitch (steering and frame joint)

	Nm	kpm
1	53 (39.1 lbf ft)	5.3
2	53 (39.1 lbf ft)	5.3
3	53 (39.1 lbf ft)	5.3
4	53 (39.1 lbf ft)	5.3
5	750 (553.2 lbf ft)	75
6	750 (553.2 lbf ft)	75
7	135 (99.6 lbf ft)	13.5
8	110 (81.1 lbf ft)	11
9	110 (81.1 lbf ft)	11
10	135 (99.6 lbf ft)	13.5
11	110 (81.1 lbf ft)	11
12	85 (62.7 lbf ft)	8.5
13	1000–1500 (737 - 1106 lbf ft)	100–150 (74 - 110 lbf ft)

Tractor unit

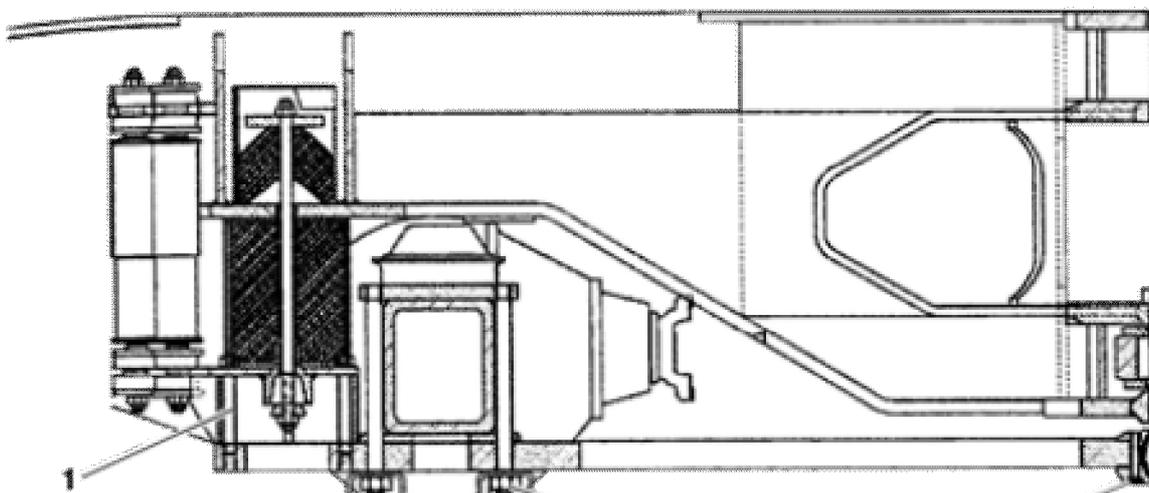


Figure 6

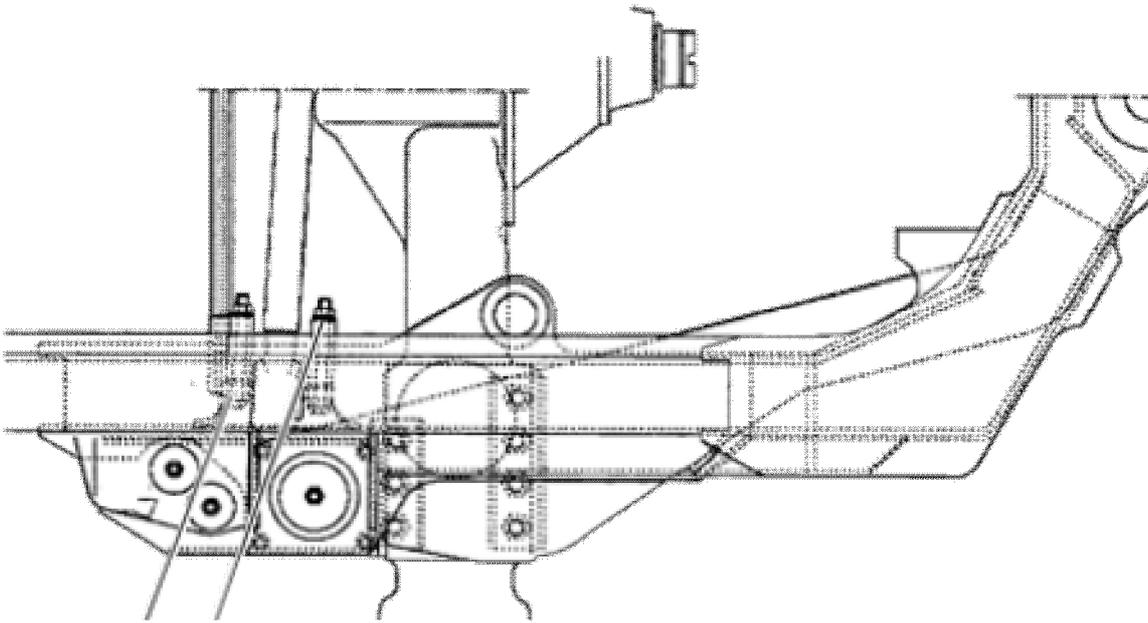


Figure 7

Tightening torques, tractor unit

	Nm	kpm
1	400 (295 lbf ft)	40
2	1900 (1401 lbf ft)	190
3	520 (383 lbf ft)	52
4	520 (383 lbf ft)	52
5	120 (88.5 lbf ft)	12

Load unit

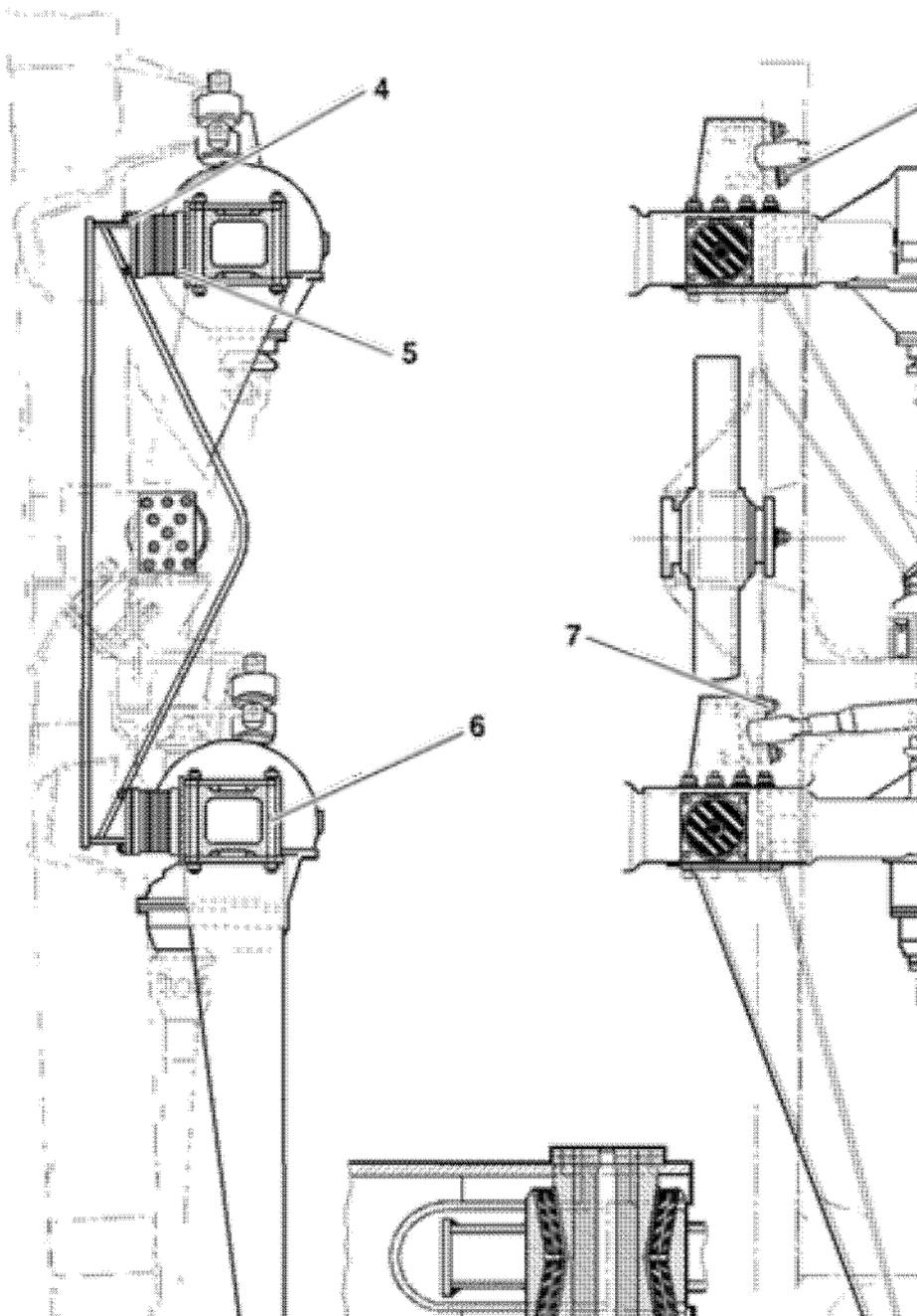


Figure 8
Tightening torques, load unit

	Nm	kpm
1	930 (686 lbf ft)	93
2	75 (55.3 lbf ft)	7.5
3	1480 (1091 lbf ft)	148
4	220 (162.3 lbf ft)	22
5	220 (162.3 lbf ft)	22
6	930 (686 lbf ft)	93
7	750 (553.2 lbf ft)	75
8	750 (553.2 lbf ft)	75
9	750 (553.2 lbf ft)	75

Volvo Standard tightening torques

The tightening torques in the following tables apply to bolts and nuts with tensile strength according to the information noted below

The tables should be considered as a general guideline for tightening bolts and nuts which have no specified torque values



The torque values should be increased by 10 % for flanged bolts of type U6FS. Bolts and nuts must be clean and lubricated with oil.

Tensile strength 8.8 Metric coarse and fine threads

Thread	Nm	kpm	lbf ft
M6	10	1.0	7.4
M8	24	2.4	18
M10	48	4.8	35
M12	85	8.5	63
M14	140	14.0	103
M16	220	22.0	160
M20	430	43.0	320
M24	740	74.0	550

Tensile strength 10.9 Metric coarse and fine threads

Thread	Nm	kpm	lbf ft
M6	12	1.2	9
M8	30	3.0	22
M10	60	6.0	44
M12	105	10.5	78
M14	175	17.5	130
M16	275	27.5	204
M20	540	54.0	400
M24	805	80.5	594

Tensile strength 8.8 UNC-threads, coarse pitch

Thread	Nm	kpm	lbf ft
1/4"	9	0.9	6.6
5/16"	18	1.8	13
3/8"	33	3.3	24
7/16"	54	5.4	40
1/2"	80	8.0	59
9/16"	120	12.0	89
5/8"	170	17.0	130
3/4"	300	30.0	220
7/8"	485	48.5	360
1"	725	72.5	530

[1]In order to obtain the correct tightening torque, tighten the bolt to approx. 150 Nm (15 kpm) (110 lbf ft). Then tighten through a 60 ° angle with an impact wrench.

[2]In order to obtain the correct tightening torque, tighten the bolt to approx. **95 Nm** (9.5 kpm) (70 lbf ft). Then tighten through a 60 ° angle with an impact wrench.

[3]In order to obtain the correct tightening torque, tighten the bolt to approx. **150 Nm** (15 kpm) (110 lbf ft). Then tighten

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through a 60° angle with an impact wrench.

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