Document Title: **Description**	Function Group: **000**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

Description

Hauler A30C consists of two main parts, the tractor unit and the trailer unit.
The two units are joined through the hitch which allows movement around a vertical axis for steering, the steering joint, and around an horizontal axis, the frame joint, for independent movement of the two vehicle parts.

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

The trailer unit consists of frame, tippable dump body and front and rear drive axles, which are connected through a bogie suspension.

The hauler has a permanent 4-wheel drive and 6-wheel drive which can be engaged and disengaged.
It has a longitudinal differential lock in the dropbox and differential locks in the drive axles.

Figure 1

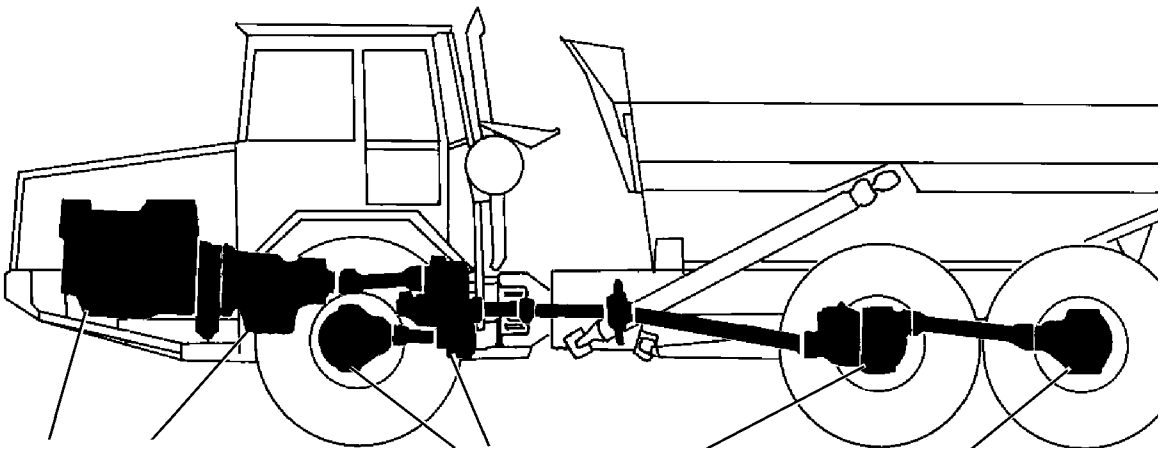

Figure 2
Type and product No., Articulated Hauler A30C

1	TD103KBE – "8188140" (s/n 2903–2958, US –60026)	4	FL 650 E – "22504"
	TD104KAE (s/n 2959–, US 60027–)	5	AH63J – "23728" (s/n –2900)
2	PT1663 – "11037930"		AH63R – "23768" (s/n 2901–, US 60001–)
3	AH63I – "23727" (s/n –2900)	6	AH63K – "23729" (s/n –2900)
	AH63Q – "23767" (s/n 2901–, US 60001–)		AH63S – "23769" (s/n 2901–, US 60001–)

Document Title: **Brake and compressed-air systems**	Function Group: **030**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

Brake and compressed-air systems

Brake system

General	
	Compressed air is used for: brake system (service brakes and parking brake), retarder engagement, differential locks, 6-wheel drive, horn and seat suspension.
Service brakes	
	Dual circuit air-hydraulic disc brakes. One circuit for the tractor unit and one for the trailer unit. Braking force distribution 50 % tractor unit, 50 % trailer unit.
Parking brake	
Type	Air-mechanically controlled disc brake, acting on the trailer unit propeller shaft.
Compressor	
Type	Single-cylinder gear driven piston compressor
Designation	LK3802
Displacement	213 cm^3 (13 in^3)
Flow at 33.3 r/s (2000 rpm) and 700 kPa (7 bar) (102 psi) counter pressure	275 cm^3 (16.8 in^3) per minute
Air-pressure regulator	
Unloading pressure	790–830 kPa (7.9–8.3 bar) (115–120 psi)
Safety valve	
Opening pressure	930 kPa (9.3 bar) (135 psi)
Air-pressure regulator, retarder	
Pressure reduction for	650 kPa (6.5 bar) (94 psi)
4-way protection valve	
Opening pressure, all circuits	620–650 kPa (6.2–6.5 bar) (90–94 psi)
Foot brake valve	
Maximum working pressure	800 kPa (8 bar) (116 psi)
Permissible difference in brake pressure between the circuits	25 kPa (0.25 bar) (3.6 psi)
Valve for parking brake	

Maximum working pressure	800 kPa (8 bar) (116 psi)
Brake cylinder for propeller shaft parking brake	
Type	Spring brake cylinder
Spring force, at stroke of 35 mm (1.38 in)	1100 kgf (247 lbf)
Release pressure	550 kPa (5.5 bar) (80 psi)
Stroke	57.2 mm (2.25 in)
Brake disc, service brakes (tractor and trailer units)	
Thickness, new	16 mm (0.63 in)
Thickness, min.	13 mm (0.51 in)
Diameter	470 mm (18.50 in)
Brake caliper	
Number per wheel	2 on tractor unit, 1 on trailer unit
Brake linings, service brakes (tractor and trailer units)	
Thickness	16 mm (0.63 in)
Thickness, min.	3 mm (0.12 in)
Brake disc, parking brake	
Thickness	25 mm (0.984 in)
Thickness, min.	20 mm (0.79 in)
Brake pad, parking brake	
Thickness, new	22 mm (0.87 in)
Thickness, min.	3 mm (0.118 in)
Air reservoirs	
Wet reservoir	6 litres (0.21 ft3)
Front circuit reservoir	30 litres (1.06 ft3)
Rear circuit reservoir	30 litres (1.06 ft3)
Safety valve, opening pressure	930 kPa (9.3 bar) (135 psi)

VOLVO

Service Information

Document Title: **Capacities**	Function Group: **030**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

Capacities

	when changing	**total**
Engine, incl. filter and oil cooler	25 litres (6.6 US gal)	26 litres (6.7 US gal)
Cooling system	42 litres (11.1 US gal)	70 litres (18.5 US gal)
Hydraulic system		194 litres (51.2 US gal)
Hydraulic oil tank	159 litres (42.0 US gal)	
Transmission incl. filter and cooler	*) approx. 40 litres (10.6 US gal)	53 litres (14.0 US gal)
Dropbox	6 litres (1.6 US gal)	6 litres (1.6 US gal)
Hub	3 litres (0.8 US gal)	
Front axle	**) 29 litres (7.7 US gal)	36 litres (9.5 US gal)
Front bogie axle	**) 30 litres (7.9 US gal)	34 litres (9.0 US gal)
Rear boggiaxel	**) 29 litres (7.7 US gal)	36 litres (9.5 US gal)
Brake system, four at	0.5 litre (31 in3)	
Fuel tank		360 litres (95.0 US gal)

*) Check and adjust the oil level after changing the oil according to the Operator"s Manual.
**) Out of which 3 litres (0.8 US gal) per hub.

Document Title: **Cooling system**	Function Group: **030**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

Cooling system

General

Cooling fan, 8-blade	Hydrostatically powered, stepless speed control by the coolant temperature and the engine speed.
Make	VOAC
Type	Fixed displacement piston motor
Displacement	19 cm^3 (1.16 in^3) per revolution
Amount of leak-off oil at 20 r/s (1200 rpm)	2 dm^3 litres (0.5 US gal) per minute
Fan speed at a coolant temperature of <70 °C (158 °F) and an engine speed of <24 r/s (1440 rpm)	11.7–15.0/s (700–900 rpm)
Alternative:	
Pressure at a coolant temperature of <70 °C (158 °F) and an engine speed of <24 r/s (1440 rpm)	2.3–3.5 MPa (23–35 bar) (334–508 bar)
Fan speed at a coolant temperature of <70 °C (158 °F) and an engine speed of >24.5–26.2 r/s (1440–1570 rpm)	22.5–24.2 r/s (1350–1450 rpm)
Alternative:	
Pressure at a coolant temperature of <70 °C (158 °F) and an engine speed of >24.5–26.2 r/s (1440–1570 rpm) Oil temperature 20–30 °C (68–86 °F)	6.0–7.5 MPa (60–75 bar) (870–1088 psi)
Fan speed at a coolant temperature of >96 °C (205 °F)	approx. 1900 rpm
Pressure	19.0 MPa (190 bar) (2756 psi)

Thermostat

Thermostat,	Number of	1 pc
	marked	1676306
	Begins to open at	82 °C (180 °F)
	Fully open at	95 °C (203 °F)
Excess pressure valve, opening pressure (cap, expansion tank)		50 kPa (0.50 bar) (7.3 psi)

Hydraulic pump for fan (engine-dependent)

See [Invalid linktarget].

Document Title:	Function Group:	Information Type:	Date:
Dimensional drawing	**030**	**Service Information**	**3/13/2025**
Profile:			

Dimensional drawing

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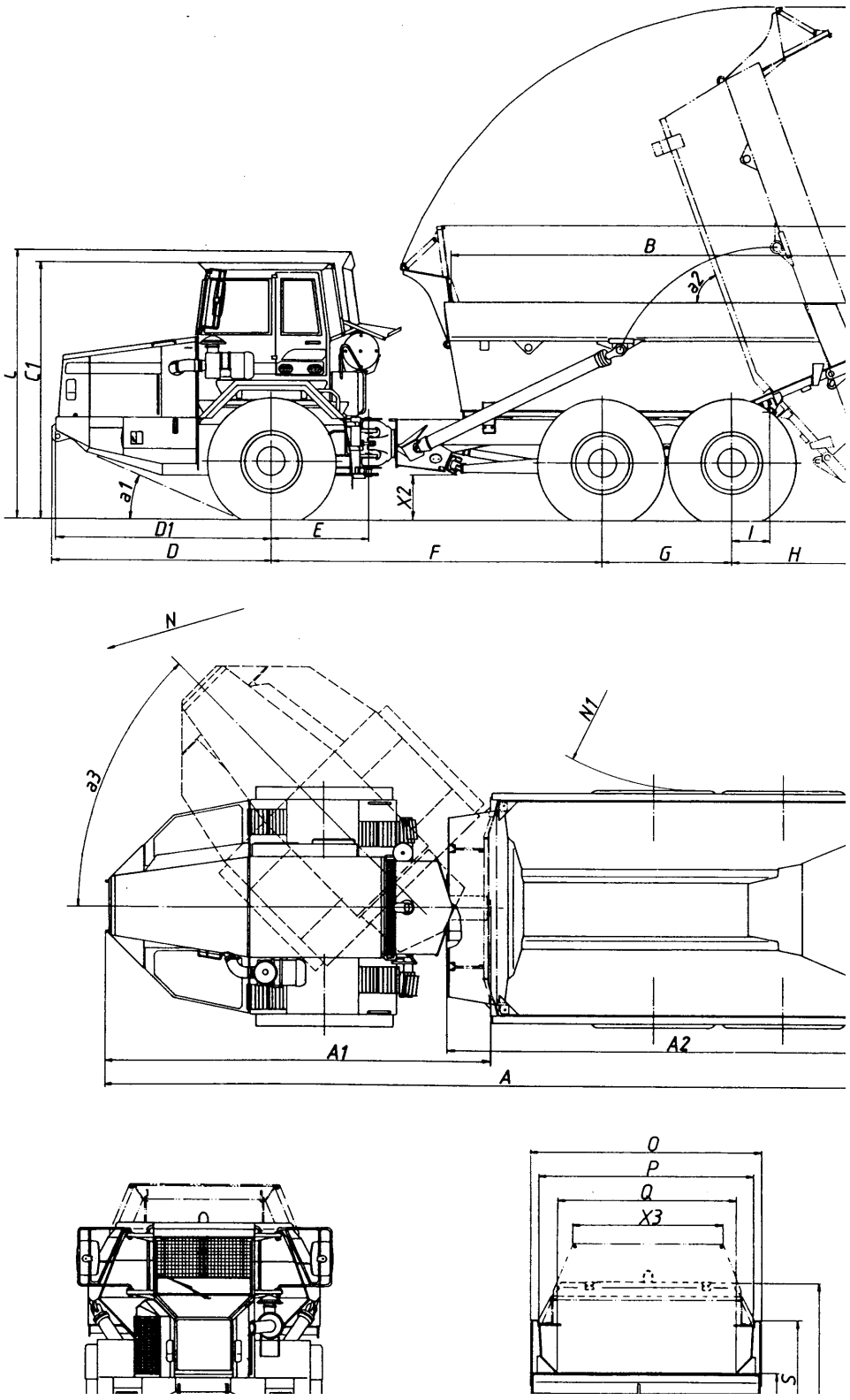

Figure 1

Document Title: **Dimensions with tyres 23.5 R-25**	Function Group: **030**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

Dimensions with tyres 23.5 R-25

	measure	
Overall length	A	10200 mm (33 ft 5.6 in)
Overall length, engine unit	A_1	4862 mm (15 ft 11.4 in)
Overall length, trailer unit	A_2	5856 mm (19 ft 26.0 in)
Dump body length, standard body	B	5167 mm (16 ft 11.4 in)
Overall height across exhaust pipe	C	3410 mm (11 ft 2.3 in)
Height to roof of cab	C_1	3260 mm (10 ft 8.3 in)
Overhang, front	D	2770 mm (9 ft 1.1 in)
Overhang, towing eyes	D_1	2730 mm (8 ft 11.5 in)
Distance, front axle – steering centre	E	1210 mm (3 ft 11.6 in)
Wheel base, drive axles	F	4173 mm (13 ft 8.3 in)
Wheel base, bogie axles	G	1670 mm (5 ft 5.7 in)
Overhang, rear	H	1587 mm (5 ft 2.5 in)
Overhang, frame	I	430 mm (1 ft 4.9 in)
Loading height	J	2834 mm (9 ft 3.6 in)
Height to dump body	K	2180 mm (7 ft 1.8 in)
Free tipping height	L	594 mm (1 ft 11.4 in)
Overall height, tipped dump body	M	6494 mm (21 ft 3.7 in)
Outer turning radius	N	8074 mm (26 ft 5.9 in)
Inner turning radius	N_1	4021 mm (13 ft 2.3 in)
Outside width, dump body	O	2932 mm (9 ft 7.4 in)
Inside width, dump body	P	2720 mm (8 ft 11.1 in)
Width, dump body bottom	Q	2286 mm (7 ft 6.0 in)
Lowest ground clearance, trailer unit	R	530 mm (1 ft 8.9 in)
Dump body bottom – dump body side	S	1464 mm (4 ft 9.6 in)
Dump body bottom – dump body rear edge	T	810 mm (2 ft 7.9 in)
Height to top of head board, dump body	U	3305 mm (10 ft 10.1 in)
Track width, trailer unit	V	2216 mm (7 ft 3.2 in)
Overall width, trailer unit	W	2820 mm (9 ft 3.0 in)
Lowest ground clearance, engine unit	X	485 mm (1 ft 7.0 in)
Lowest ground clearance, steering joint	X_2	670 mm (2 ft 2.4 in)
Height at top of head board on dump body	X_3	3802 mm (12 ft 5.7 in)
Width head board on dump body	X_4	1893 mm (6 ft 2.5 in)
Track width, engine unit	Y	2216 mm (7 ft 3.2 in)
Overall width, tractor unit	Z	2820 mm (9 ft 3.0 in)
Approach angle	a_1	23°
Tipping angle	a_2	70°

Max. steering lock	a_3	45°

Document Title: **Electrical system**	Function Group: **030**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

Electrical system

System voltage	24 V
Batteries	
Number of	Two 12 V connected in series = (24 Volt)
Ground connection	Negative pole (–)
Battery capacity	170 Ah per battery
The battery disconnect switch is connect on the (–) side and is positioned on the left side of machine	
Battery electrolyte density	
Fully charged battery	1.275–1.285 kg/dm³
The battery should be recharged at	1.250 kg/dm³
Alternator	
Type	Alternating current
Designation	A 14 N 206M 27.5 V 60 A
Output (rated output)	1650 W
Voltage, max.	27.5 V
Current, max.	60 A
Resistance in rotor windings (across slip rings 10 %)	13.5 Ω
Resistance in stator windings (between phases)	0.12 Ω
Charging regulator	
Type	Electronic
Starter motor	
Designation	KB 24 V 6.5 kW
Output	6.6 kW (9 hp)

Fuses		
	Current rating	**Qty**
Electrical distribution box	5 A	15 pcs
Electrical distribution box	15 A	9 pcs
Main fuse (engine compartment)	25 A	1 pc
Preheating element	5 A	1 pc
Main fuse, preheating element	100 A	1 pc
Light bulbs – tractor unit		
	Watt	**Socket**
Headlights	75/50	P43t–38

Parking lights	5	BA 15s
Direction indicators	21	BA 15s
Instrument lighting	2	BA 9s
Switches	1.2	Glass socket
Instrument cluster, warning lamps	1.2	Glass socket
Instrument cluster, lighting	3.0	Glass socket
Rotating warning beacon (optional)	45	BA 15s
Light bulbs – trailer unit		
Tail lights	10	BA 15s
Stop lights	21	BA 15s
Direction indicators	21	BA 15s
Reversing (back-up) lamp	70	PK 22s
Cold-starting device		
Type	Preheating element in the inlet manifold	
Output	3600 W	
Time relay, remains connected	approx. 50 seconds	

Document Title: **Engine specifications**	Function Group: **030**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

Engine specifications

See also SM "Engine TD103" (Serial Nos 2903–2958, US –60026) and "Engine TD104" (Serial No. 2959–, US 60027–)

General

Make	Volvo
Type	Direct-injection low-emission diesel engine with exhaust turbo and intercooler
Designation	Volvo TD103KBE
Product number	8188140
Flywheel output at 35 r/s (2100 rpm)	216 kW (293 hp) SAE J 1349 Gross 213 kW (285 hp) SAE J 1349 Net ISO 9249:1989 213 kW (285 hp) DIN 6271
Max. torque at 20 r/s (1200 rpm)	1365 N m (1007 lbf ft) SAE J 1349 Gross 1360 N m (1003 lbf ft) SAE J 1349 Net 1360 N m (1003 lbf ft) DIN 70020
Number of cylinders	6
Cylinder bore	120.65 mm (4.750 in)
Stroke	140 mm (5.512 in)
Cylinder capacity, total	9.6 dm^3 (litres) (586 in3)
Compression ratio	18:1
Compression pressure at 4 r/s (240 rpm)	2.6 MPa (26 bar) (377 psi)
Order of injection	1-5-3-6-2-4
Idling speed, low	11.2 0.5 r/s (670 30 rpm)
Idling speed, high	40.0 1.0 r/s (2400 60 rpm)
Stall speed	28.2 +1.3/–1.5 r/s (1690 +80/–90 rpm)
Valve clearance (warm or cold engine):	
inlet valve	0.40 mm (0.016 in)
exhaust valve	0.70 mm (0.028 in)
(Serial No. 2959–, US 60027–)	
Make	Volvo
Type	Direct-injection low-emission diesel engine with exhaust turbo and intercooler
Designation	Volvo TD104KAE
Product number	8188143
Flywheel output at 36.7 r/s (2160 rpm)	235 kW (320 hp) SAE J 1349 Gross 232 kW (316 hp) SAE J 1349 Net, ISO 9249:1989 232 kW (316 hp) DIN 6271
Torque max. at 18.3 r/s (1080 rpm)	1460 N m (1077 lbf ft) SAE J 1349 Gross 1455 N m (1073 lbf ft) SAE J 1349 Net 1360 N m (1003 lbf ft) DIN 6271

Number of cylinders	6
Cylinder bore	120.65 mm (4.750 in)
Stroke	140 mm (5.512 in)
Cylinder capacity, total	9.6 dm^3 (litres) (586 in3)
Compression ratio	18:1
Compression pressure at 4 r/s (240 rpm)	2.6 MPa (26 bar) (377 psi)
Order of injection	1-5-3-6-2-4
Idling speed, low	11.2 0.5 r/s (670 30 rpm)
Idling speed, high	40.0 1.0 r/s (2400 60 rpm)
Stall speed	27.3 1.25 r/s (1640 75 rpm)
Valve clearance, cold engine, inlet valve	0.40 mm (0.016 in)
Valve clearance, cold engine, outlet valve	0.70 mm (0.028 in)

Turbocharger

Designation	Garett GT42
Lubrication	Force-feed lubrication from the engine

Lubrication system

Oil pressure, minimum at low idling speed (warm engine)	80 kPa (0.8 bar) (12 psi)
Oil pressure, operating speed (warm engine)	300–500 kPa (3–5 bar) (44–73 psi)
Safety valve, full-flow filter, opening pressure	100–140 kPa (1–1.4 bar) (15–20 psi) pressure drop across the filters
Safety valve, engine oil cooler, opening pressure	230 kPa (2.3 bar) (33 psi) pressure drop across the engine oil cooler

Air cleaner

Make	Donaldson
Prefilter	Cyclone cleaner

Document Title: **Filter replacement, intervals**	Function Group: **030**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

Filter replacement, intervals

Engine	**Hours**
Oil filters	250
Fuel filters	1000
Fuel filter, water trap	1000
Air cleaner, primary filter	1000
Air cleaner, secondary filter	2000
Coolant filter	1000
Clean, oil bath air cleaner (serial No. 2901–)	2000
Clean, suction strainer, power take-off	1000
Transmission	
Main oil filter	500
Lubricating oil filter	500
Breather filter	1000
Dropbox	
Breather filter (serial No. 2901–)	1000
Drive axles	
Breather filter	1000
Cab	
Fresh-air 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: **Fuel system**	Function Group: **030**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

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) (19–26 psi)

Injection pump

Type	In-line pump
Make	Bosch
Designation	
engine serial No. –303446	PE 6P 120A 320 RS 8052
Timing	9° +1/–0 B.T.D.C.
Governor	RQV 250-1100 PA 589

Injection timing adjuster

Timing adjustment	begins at 1140 rpm ends at 1620 rpm
Angular difference	6°

Injector

Type	Multi-hole nozzle
Make	Bosch
Nozzle holder, designation	KBEL 117
Nozzle, designation	DLLA 152 P571
Opening pressure	25 MPa (250 bar) (3626 psi)
Setting pressure with new spring	26 MPa (260 bar) (3771 psi)
Hole diameter (nozzles)	6 x 0.236 mm (0.009 in)
Marking (nozzles)	571

Document Title:	Function Group:	Information Type:	Date:
Hydraulic system	**030**	**Service Information**	**3/13/2025**
Profile:			

Hydraulic system

General

The hydraulic system includes tipping, steering and fan drive.

Hydraulic pump

Engine-dependent for fan drive, steering and tipping and ground-dependent for secondary steering system.

Type	Variable piston pump
Designation	PVE21R∗-2-40-CVPC-12-220 PVE21L∗-2-40-CVPC-12-219
Displacement	Variable, 0–45 cm^3 (2.75 in^3) per revolution
Flow at 34.2 r/s (2050 rpm)	100 litres (26.4 US gal) per minute
Working pressure	17.5 MPa (175 bar)
Maximum pressure	19.0 MPa (190 bar) (2756 psi)
Amount of leak-off oil at maximum pressure	12 litres (3.2 US gal) per minute
Gear ratio, engine – pump (engine-dependent)	1:1.11
Direction of rotation	See the designation R∗ or alternatively L∗ or arrow on the pump plate
R∗) = direction of rotation CLOCKWISE L∗) = direction of rotation COUNTER-CLOCKWISE	
Control valve, tipping	
Type	Spool valve
Designation	HV08
Valves in control valve	**Opening pressure**
Shock and anti-cavitation valve, tipping	21 MPa (210 bar) (3046 psi)
Shock and anti-cavitation valve, lowering	5 MPa (50 bar) (725 psi)
Tip-over valve	1 MPa (10 bar) (145 psi)
Non-return valve, raised return pressure	700 kPa (7 bar) (102 psi)
Tipping cylinder	
Type	Single stage double-acting
Number of	Two
Piston nut, width across flats	90 mm (3.54 in)
Times for tipping and lowering	
Tipping time	17 s
Lowering time	13 s

Document Title: **Oil and fluid change, intervals**	Function Group: **030**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

Oil and fluid change, intervals

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

Document Title: **Power transmission**	Function Group: **030**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

Power transmission

Power take-offs

Number of for hydraulic pumps	four (three for steering and tipping hydraulics, one for fan drive)
Bearing clearance:	
upper intermediate gear taper roller bearings	0.05–0.1 mm (0.002–0.004 in)
lower intermediate gear taper roller bearings	0.025 – 0.075 mm (0.001 – 0.003 in)
Tooth backlash:	
at all gear meshes	0.14–0.20 mm (0.006–0.008 in)

Transmission

See also separate Service Manual for transmission

Type	Automatic Power Shift transmission of the planetary type with six forward gears and two reverse gears and hydraulic retarder
Designation	Volvo PT1663
Retarder	
Type	Hydraulic, integrated in transmission

Oil pressure, transmission

Check pressure at 1200 rpm and at oil temp. 70 °C (158 °F).
Pressure stated in MPa. (For psi multiply by 145.038)

	N		D		R	
	Auto	**Manual**	**Auto**	**Manual**	**Auto**	**Manual**
P1	0.56±0.08	2.0±0.2	1.5±0.14	2.0±0.2	1.8±0.18	2.0±0.2
PC1	0.56±0.08	0.56±0.08	0.56±0.08	0.56±0.08	0.56±0.08	0.56±0.08
PS	0.23±0.07	0.23±0.07	0.23±0.07	0.23±0.07	0.23±0.07	0.23±0.07

Table for oil pressures, transmission

Dropbox

See also separate Service Manual for dropbox.

Make	Volvo
Designation	FL650E
Gear ratio	0.900:1
Differential lock	Longitudinal, dog clutch
Lubricating oil pump, type	Rotor pump
Lubricating oil amount per 50 m (164 ft) travelled distance at least	0.5 litre (1 US pint)
Bearing clearance lower shaft	0.10–0.20 mm (0.004–0.008 in)

Bearing clearance all other shafts with taper roller bearings	0.03–0.13 mm (0.001–0.005 in)

Drive axles

See also SM "Drive Axles Articulated Hauler", follow the job descriptions for AH54G, AH54H, AH54I.

	Tractor unit	**Front drive axle, trailer unit**	Rear drive axle, trailer unit
Make	Volvo	Volvo	Volvo
Type	AH63I (s/n –2900,) AH63Q (s/n 2901–)	AH63J (s/n –2900) AH63R (s/n 2901–)	AH63K (s/n –2900) AH63S (s/n 2901–)
Product number	23727	23728	23729
Differential carrier assembly	EV80B (up to incl. drive axle s/n 30929) EV80C(w.e.fr. drive axle s/n 30930)	EVBM	EV80B (up to incl. drive axle s/n 30930) EV80C (w.e.fr. drive axle s/n 30931)
Gear ratio	3.556:1	3.556:1	3.556:1
Hub reduction gear	Planetary gear	Planetary gear	Planetary gear
Gear ratio	4.235:1	4.235:1	4.235:1
Differential lock	Dog clutch	Dog clutch	Dog clutch

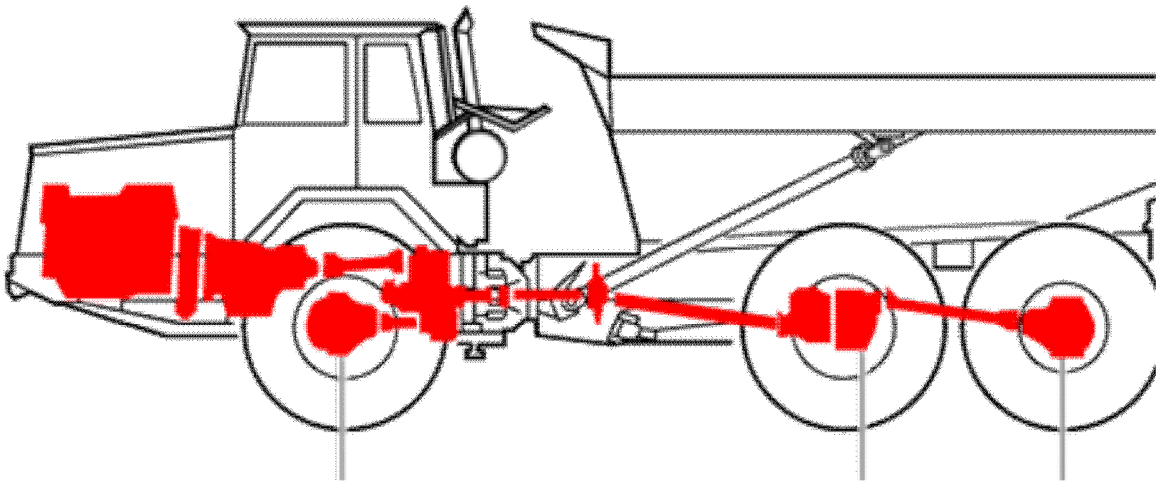

Figure 1
Drive axles

1	AH63I (serial No. –2900)
	AH63Q (serial No. 2901–, US 60001–)
2	AH63J (serial No. –2900)
	AH63R (serial No. 2901–, US 60001–)
3	AH63K (serial No. –2900)
	AH63S (serial No. 2901–, US 60001–)

Document Title: **Product identification plates**	Function Group: **030**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

Product identification plates

The illustration below shows where the different plates are positioned on the machine.
When ordering spare parts and when making enquires by telephone or correspondence regarding service matters, the model designation and **P**roduct **I**dentification **N**umber (PIN) should always be stated.

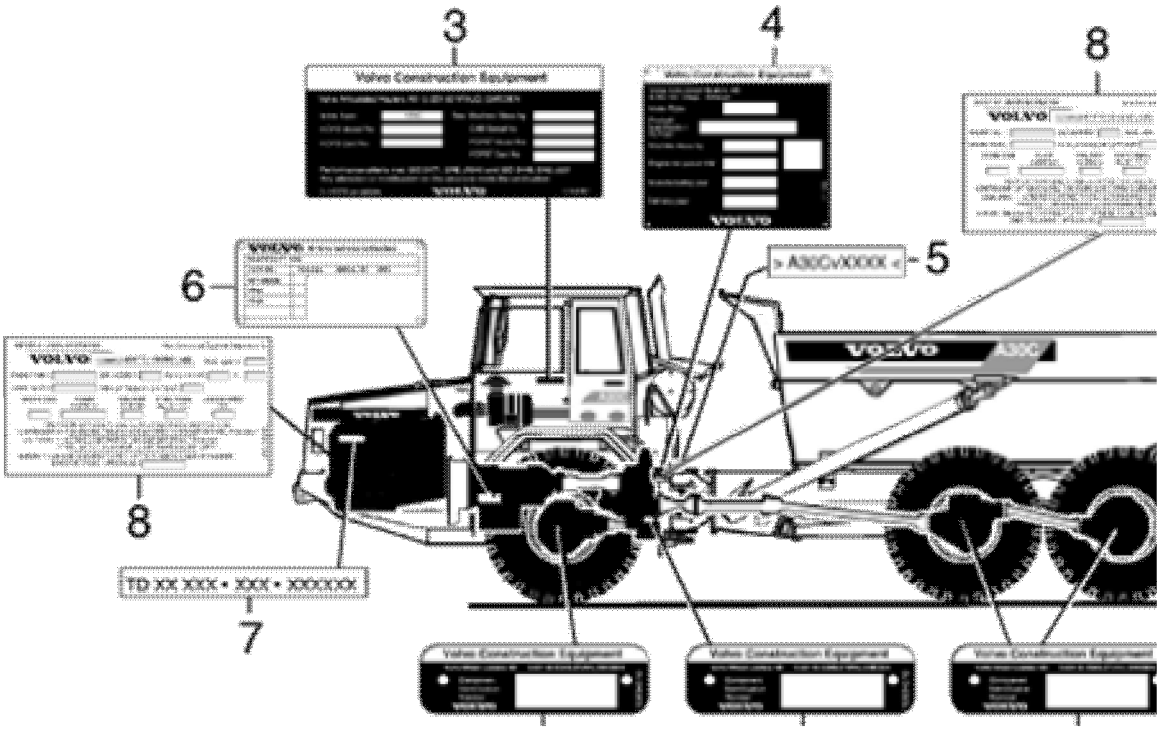

Figure 1

1. The serial number of the drive axles is positioned on the respective axle housings.
2. The serial number of the dropbox is positioned on the right side at the rear of the dropbox.
3. Cab type, type approval and serial number are positioned on the left side in the cab.
4. Product plate with **P**roduct **I**dentification **N** umber, **PIN** for the complete machine (shows the model, product and serial numbers, and the CE-approval). The plate is positioned at the rear on the left side on the tractor unit.
5. The serial number of the machine is stamped-in on the right side on the tractor unit frame.
6. The transmission type designation and serial number are positioned on the left side of the transmission.
7. The engine type designation, part and serial numbers are stamped into the left side of the cylinder block.
8. The plate "Important Engine Information" is positioned at the front of the engine and at the back to the left on the tractor unit.

Document Title:	Function Group:	Information Type:	Date:
Recommended lubricants	**030**	**Service Information**	**3/13/2025**
Profile:			

Recommended lubricants

Viscosity specifications are in accordance with SAE J 300 September -80, applicable as 820301.
Other oils may be used if they fall within our viscosity recommendations and meet our quality requirements. In all systems, mineral oils should be used since synthetic oils can attack and thereby shorten the service life of seals.

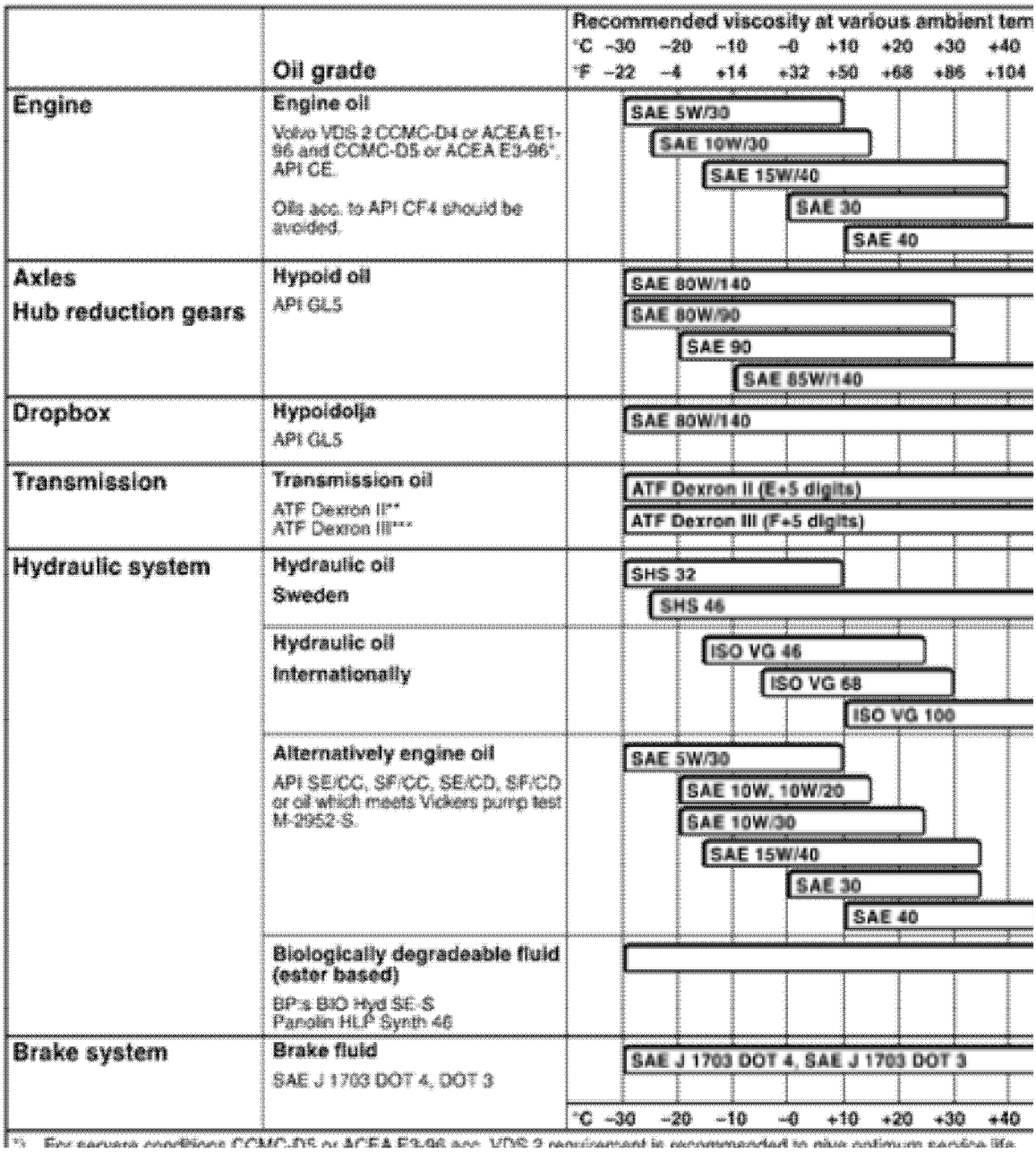

Figure 1

Anti-freeze, compressed-air system

Denatured alcohol, min. 99.5 %.

Grease

Grease on a lithium base with EP additives and consistency NGLI No. 2 without molybdenum disulphide additive (MoS_2).

Cooling system

Volvo Construction Equipment Group original anti-freeze part No. 11990915-8 = 5 litres (1.3 US gal), part No. 11990967-9 = 20 litres (5.3 US gal). Volvo Construction Equipment Group original corrosion protection, part No. 1129709.

Fuel system

Quality requirements: The fuel should at least meet the current legal requirements, national and international standards for marketed fuels, e.g. EN590 (with nationally adapted temperature requirements), ASTM D 975 No. 1-D and 2-D, JIS KK 2204.
Sulphur content: According to legal requirements (should however not exceed 0.5 percent by weight, see "Engine, intervals between oil changes".

Document Title:	Function Group:	Information Type:	Date:
Steering system	**030**	**Service Information**	**3/13/2025**
Profile:			

Steering system

Type	Hydro-mechanical articulated frame steering with a secondary steering system function
Number of steering wheel revolutions, total	3.4 revolutions
Steering lock	2 x 45°
Time, steering lock	min. 25° s
Steering gear	
Type	Rack and pinion gear
Hydraulic pump, engine-dependent and ground-dependent for secondary steering system. See "Hydraulic system" [Invalid linktarget]	
Control valve, steering	
Type	Spool valve
Steering cylinder	
Number of	Two double-acting
Piston nut, width across flats	72 mm (2.835 in)
Damping cylinder for steering	
Damping spring, preload	2.2–3.8 mm (0.09–0.15 in)

Document Title: **Tightening torques**	Function Group: **030**	Information Type: **Service Information**	Date: **3/13/2025**
Profile:			

Tightening torques

⚠ CAUTION

Regarding nuts and bolts for which no torque has been stated, please see [Invalid linktarget].

Engine

See also separate Service Manual for the engine and [Invalid linktarget] and [Invalid linktarget] (engine mountings).

Engine mountings, see [Invalid linktarget] and [Invalid linktarget]	
Engine – flywheel housing	140 N m (14.0 kgf m) (103 lbf ft)
Crankshaft – crankshaft gear / drive disc	170 N m (17.0 kgf m) (125 lbf ft)

Transmission

See also separate Service Manual for the transmission	
Flywheel housing – transmission	85 N m (8.5 kgf m) (63 lbf ft)
Drive disc – torque converter	55 N m (5.5 kgf m) (41 lbf ft)

Dropbox

See also separate Service Manual for the dropbox	
Dropbox – frame	220 N m (22.0 kgf m) (162 lbf ft)

Drive axles

See also separate Service Manual for drive axles	800 N m (80.0 kgf m) (590 lbf ft)
Differential carrier assembly – axle housing	210 N m (21.0 kgf m) (155 lbf ft)
Differential carrier assembly (6x6) – axle housing:	
Bolts	310 N m (31.0 kgf m) (229 lbf ft)
Nuts	255 N m (25.5 kgf m) (188 lbf ft)
Stub axle – axle	550 N m (55.0 kgf m) (406 lbf ft)
Planet carrier – hub	130 N m (13.0 kgf m) (96 lbf ft)

Brake and compressed-air system

Parking brake caliper plate – frame	220 N m (22.0 kgf m) (162 lbf ft)
Caliper plate, attachment for torsion spring	53 N m (5.3 kgf m) (39 lbf ft)
Brake cylinder, attachment	170 N m (17.0 kgf m) (125 lbf ft)
Adjusting lever bracket	26 N m (2.6 kgf m) (19 lbf ft)
Compressor, attachment	54 N m (5.4 kgf m) (40 lbf ft)
Compressor, cylinder head bolts	31 N m (3.1 kgf m) (23 lbf ft)
Compressor, cylinder foot nuts	23 N m (2.3 kgf m) (17 lbf ft)
Compressor, drive gear	225 N m (22.5 kgf m) (166 lbf ft)
Brake caliper	550 N m (55.0 kgf m) (406 lbf ft)

Brake pad stops	240 N m (24.0 kgf m) (177 lbf ft)
Brake disc	310 N m (31.0 kgf m) (229 lbf ft)

Steering system

Steer. cyl., piston – piston rod	850 N m (85.0 kgf m) (627 lbf ft)
Steer. cyl., piston rod guide	79 N m (7.9 kgf m) (58 lbf ft)
Damp. cyl., attachment	45 N m (4.5 kgf m) (33 lbf ft)
Steer. valve block – valve block	45 N m (4.5 kgf m) (33 lbf ft)

Hydraulic system

Fan hub centre bolt	22 N m (2.2 kgf m) (16 lbf ft)
Tipp. cyl., piston – piston rod	800 N m (80.0 kgf m) (590 lbf ft)
Tipping cyl., piston rod guide	135 N m (13.5 kgf m) (100 lbf ft)
Hydraulic pump, attachment	50 N m (5.0 kgf m) (37 lbf ft)

Front engine mounting

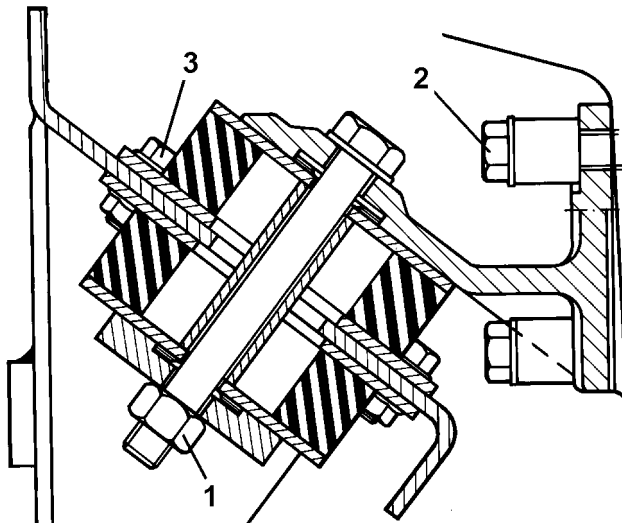

Figure 1
Tightening torque, front engine mounting

1	220 N m (22.0 kgf m) (162 lbf ft)
2	140 N m (14.0 kgf m) (103 lbf ft)
3	50 N m (5.0 kgf m) (37 lbf ft)

Rear engine mounting

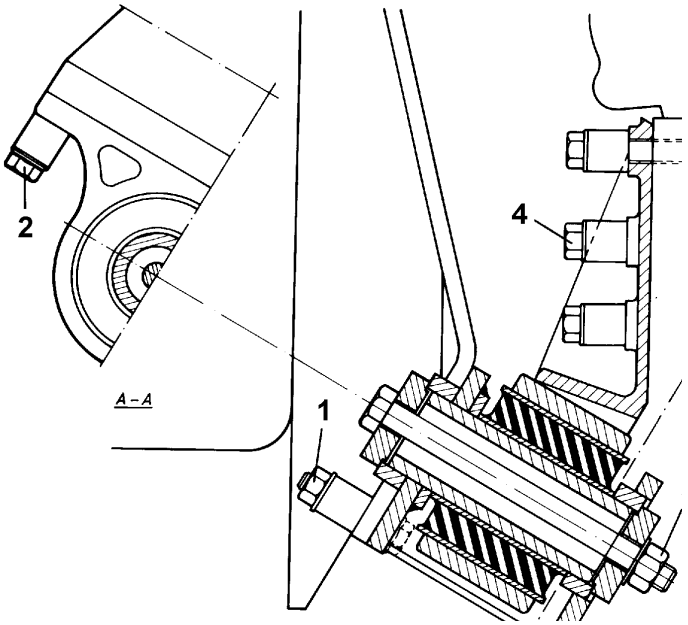

Figure 2
Tightening torque, rear engine mounting

1	85 N m (8.5 kgf m) (63 lbf ft)
2	134 N m (13.4 kgf m) (99 lbf ft)
3	220 N m (22.0 kgf m) (162 lbf ft)
4	220 N m (22.0 kgf m) (162 lbf ft)

Propeller shafts

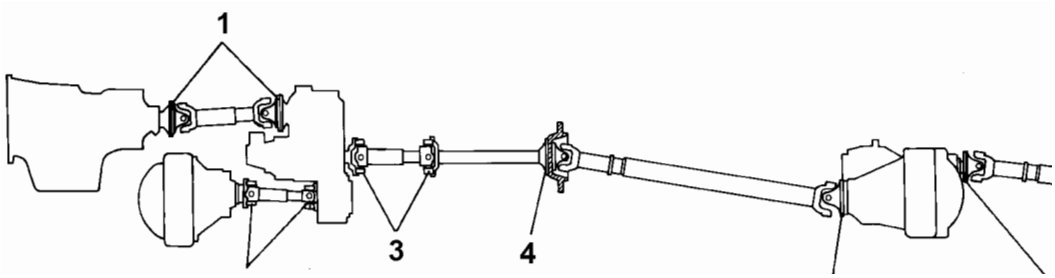

Figure 3
Tightening torques, propeller shafts

1		183 N m (18.3 kgf m) (135 lbf ft)
2	bolts 1/2" UNF	135 N m (13.5 kgf m) (100 lbf ft)
3	bolts 1/2" UNF	135 N m (13.5 kgf m) (100 lbf ft)
4		100 N m (10.0 kgf m) (74 lbf ft)
5		100 N m (10.0 kgf m) (74 lbf ft)
6		100 N m (10.0 kgf m) (74 lbf ft)

Hitch (steering and frame joints)

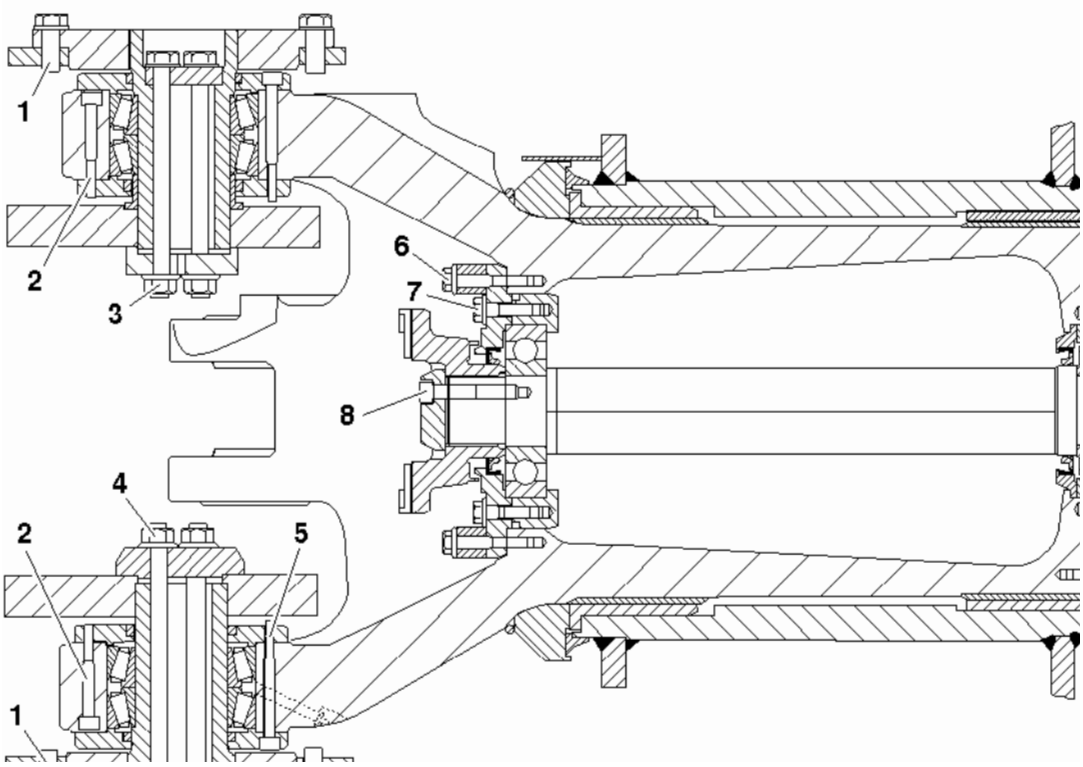

Figure 4
Tightening torques, hitch (steering and frame joints)

1	220 N m (22.0 kgf m) (162 lbf ft)	7	100 N m (10.0 kgf m) (74 lbf ft)
2	50 N m (5.0 kgf m) (37 lbf ft)	8	140 N m (14.0 kgf m) (103 lbf ft)
3	220 N m (22.0 kgf m) (162 lbf ft)	9	90 N m (9.0 kgf m) (66 lbf ft)
4	220 N m (22.0 kgf m) (162 lbf ft)	10	85 N m (8.5 kgf m) (63 lbf ft)
5	50 N m (5.0 kgf m) (37 lbf ft)	11	90 N m (9.0 kgf m) (66 lbf ft)
6	100 N m (10.0 kgf m) (74 lbf ft)	12	1000–1500 N m (100–150.0 kgf m) (738–1106 lbf ft)

Tractor unit

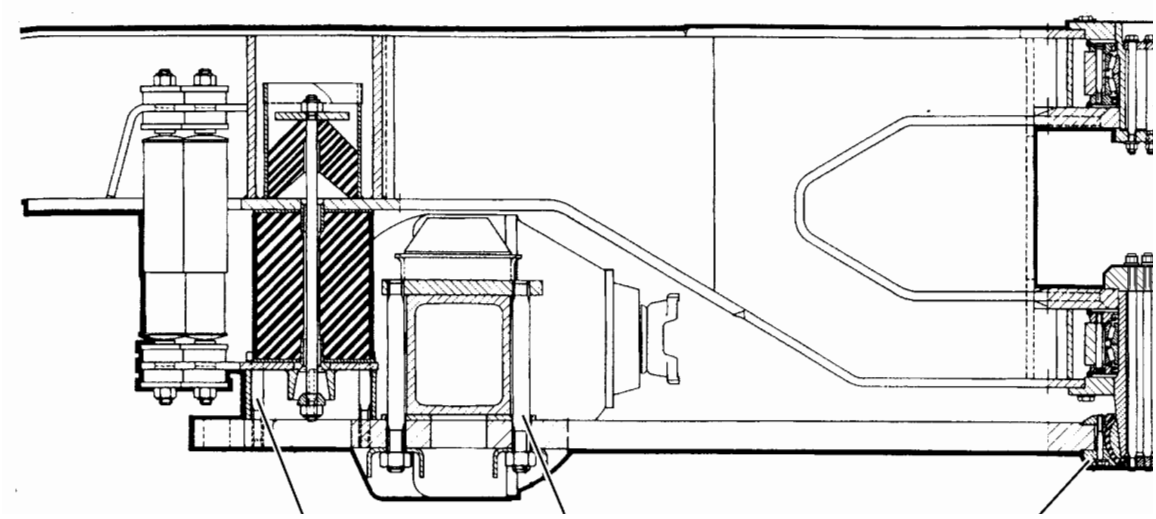

Figure 5
Tightening torques, tractor unit (For torques, see table in the following figure)

Tractor unit

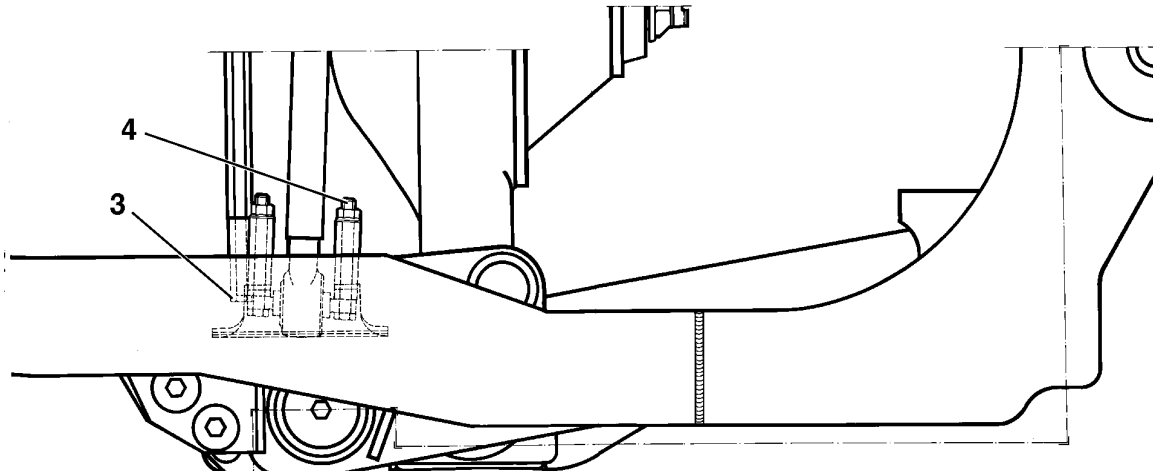

Figure 6
Tightening torques, tractor unit

See [Invalid linktarget] and [Invalid linktarget]	
1	400 N m (40.0 kgf m) (295 lbf ft)
2	1900 N m (190.0 kgf m) (1400 lbf ft)
3	550 N m (55.0 kgf m) (406 lbf ft)
4	550 N m (55.0 kgf m) (406 lbf ft)
5	120 N m (12.0 kgf m) (89 lbf ft)

Trailer unit

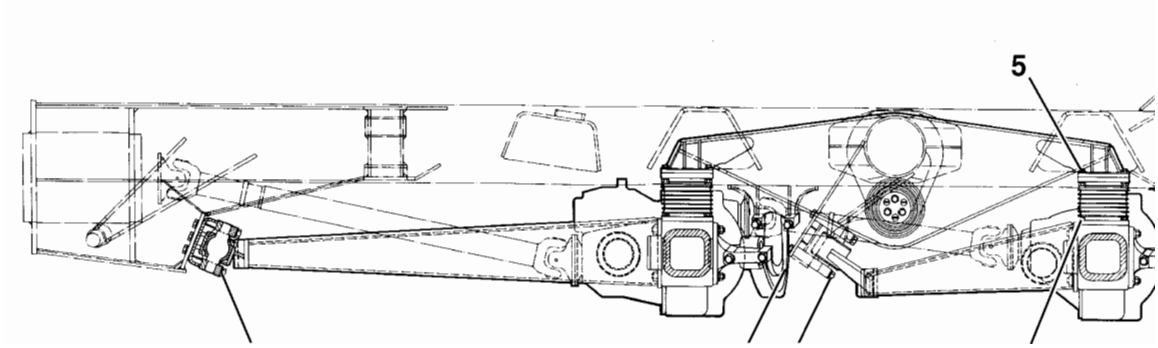

Figure 7
Tightening torque, trailer unit (For the torques, see table in figure 14)

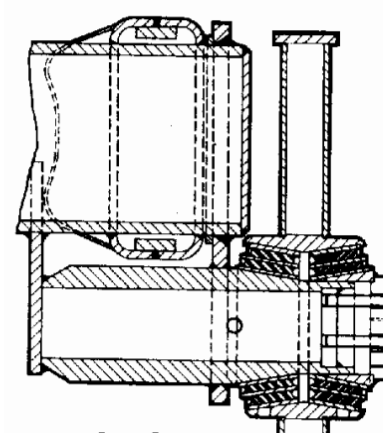

Figure 8
Tightening torque, trailer unit (For the torques, see table in figure 14)

Trailer unit

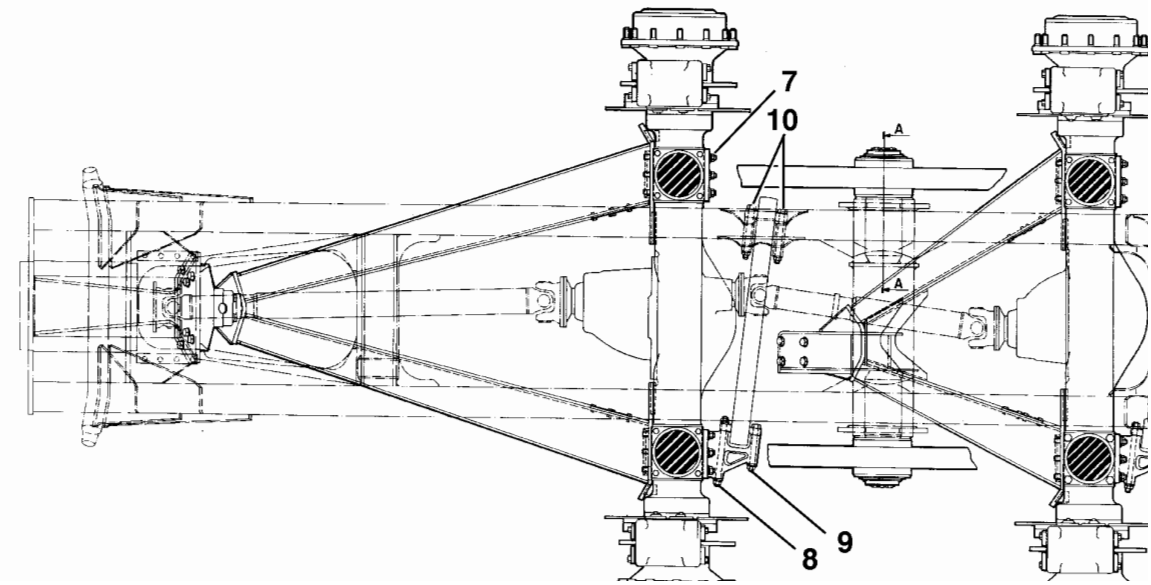

Figure 9
Tightening torques, trailer unit

See [Invalid linktarget] and [Invalid linktarget]		See [Invalid linktarget]	
1	400 N m (40.0 kgf m) (295 lbf ft)	7	450 N m (45.0 kgf m) (332 lbf ft)
2	400 N m (40.0 kgf m) (295 lbf ft)	8	550 N m (55.0 kgf m) (406 lbf ft)
3	400 N m (40.0 kgf m) (295 lbf ft)	9	550 N m (55.0 kgf m) (406 lbf ft)
4	220 N m (22.0 kgf m) (162 lbf ft)	10	550 N m (55.0 kgf m) (406 lbf ft)
5	220 N m (22.0 kgf m) (162 lbf ft)	11	90 N m (9.0 kgf m) (66 lbf ft)
6	220 N m (22.0 kgf m) (162 lbf ft)		