| Document Title: **Description** | Function Group: **000** | Information Type: **Service Information** | Date: **1/18/2024** |
|---|---|---|---|
| Profile: | | | |

# Description

Volvo A25C is an articulated hauler manufactured by Volvo Articulated Haulers AB.

A25C 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 hitch 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, direct-injected, intercooled and turbocharged diesel engine that is rubber mounted on the frame together with the transmission. The tractor unit drive axle is independently suspended in relation to the frame.

The A25C articulated hauler has constant 4-wheel drive (64) with the possibility of engaging and disengaging 6-wheel drive (66). There is a longitudinal differential lock in the dropbox and there are transverse differential locks on all axles. All differential locks lock to one hundred percent.

The load unit consists of a frame, elevation load body and bogie drive axles.

| Document Title: **Product identification plates** | Function Group: **000** | Information Type: **Service Information** | Date: **1/18/2024** |
|---|---|---|---|
| Profile: | | | |

# Product identification plates

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

The **P**roduct **I**dentification **N**umber **(PIN)** and machine model must always be correctly quoted when ordering spare parts and in any telephone inquiries or correspondence.

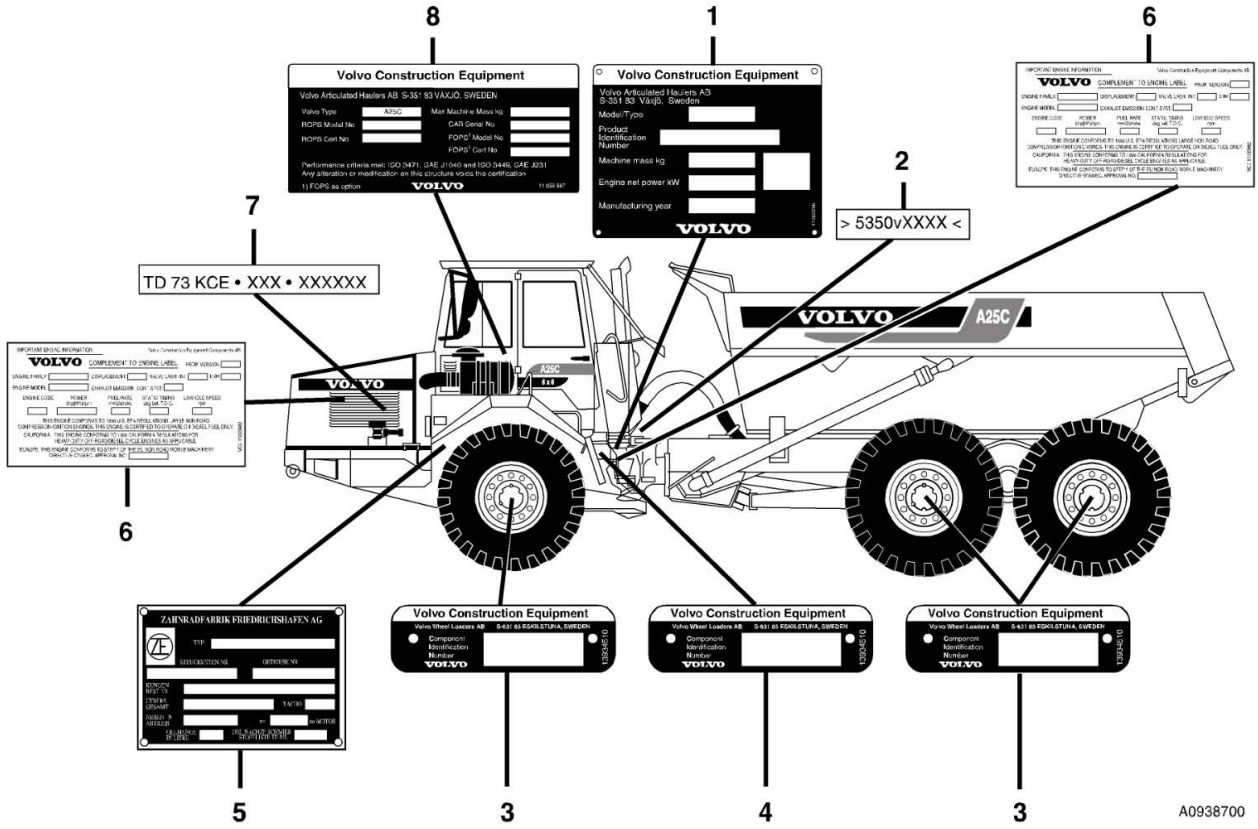


**Figure 1**
Product identification plates on A25C

1. Product plate with **P**roduct **I** dentification **N**umber, **PIN** for complete machine (includes model, product and serial number, machine weight, engine rated output and CE-approval). The plate is located on the left side of the tractor unit frame by the steering joint.
2. The machine serial number is also stamped on the right side of the tractor unit frame by the steering joint.
3. Drive axle serial numbers are located on the axle housing.
4. Dropbox serial number is located on the rear left side of the dropbox.
5. Transmission type designation and serial number is located on the right side of the transmission.
6. The decal "Important engine information" is located on the front of the engineand on the left side of the tractor unit frame by the steering joint.
7. Engine type designation, part and serial number is stamped into the left side of the engine block.
8. Cab type, type approval and serial number is located on the left inside the cab.

| Document Title: **Brakes** | Function Group: **030** | Information Type: **Service Information** | Date: **1/18/2024** |
|---|---|---|---|
| Profile: | | | |

# Brakes

## General

| | |
|---|---|
| Type | Compressed air – hydraulic dual circuit service brake system and parking brake |

## Service brake

| | |
|---|---|
| Type | Dual circuit – compressed air - hydraulic |
| Tractor unit drive axle | Disc brakes, area 1584 $cm^2$ (246 $in^2$) |
| Load unit drive axles (66) | Disc brakes, area 2 792 $cm^2$ (2 123 $in^2$) |
| Load unit drive axle (44) | Disc brakes, area 1584 $cm^2$ (246 $in^2$) |

## Parking brake

| | |
|---|---|
| Type | Disc brake on propeller shaft, spring brake function |
| Propeller shafts | Disc brake, area 282 $cm^2$ (44 $in^2$ ) |

## Compressor

| | |
|---|---|
| Type | Piston compressor |
| Capacity at 700 kPa (7 bar) back-pressure and engine speed 37 r/s (3200 rpm) | 275 $dm^3$/min (litres/min) (73 US gal/ min) |
| Operating speed, max. | 50 r/s |
| Number of cylinders | 1 |
| Cylinder bore | 88 mm (3.5 $in^2$) |
| Displacement | 213 $cm^3$ (13 $in^2$) |

## Air pressure regulator

| | |
|---|---|
| Cut-out (unloading) pressure | 790–830 kPa (7.9–8.3 bar, 115–120 psi) |
| Cut-in (engagement) pressure | 750–790 kPa (7.5–7.9 bar, 109–113 psi) |
| Safety valve opening pressure | 990 kPa (9.9 bar, 144 psi) |

## 4-way protection valve

| | |
|---|---|
| Opening pressure, all circuits | 620–650 kPa (6.2–6.5 bar 90–94 psi) |

## Blocking valve (market adapted equipment)

| | |
|---|---|
| Closes at pressure below | 340–400 kPa (3.4–4.0 bar, 49–58 psi) |

## Valve for parking brake

| | |
|---|---|
| Operation | Automatic return to operating position, block for braking |

| | |
|---|---|
| | position |

### Pressure retaining valve

| | |
|---|---|
| Opening pressure | 550 kPa (5.5 bar, 80 psi) |

### Foot brake valve

| | |
|---|---|
| Type | 2-circuit |
| Maximum allowed pressure difference between circuits | 25 kPa (0.25 bar, 3.6 psi) |

### Compressed air tanks

| | (serial no. –11100, BR –70300<br>US 66 –61400, 44 –70300) | (serial no. 11101–, BR 70301–<br>US 66 61401–, 44 70301–) |
|---|---|---|
| Tractor unit 1 | 30 $dm^3$ (litres) (7.9 US gal) | 45 $dm^3$ (litres) (11.8 US gal) |
| Tractor unit 1 | 6 $dm^3$(litres) (1.6 US gal) | 6 $dm^3$ (litres) (1.6 US gal) |
| Load unit 1 | 30 $dm^3$ (litres) (7.9 US gal) | 45 $dm^3$ (litres) (11.8 US gal) |
| Max. pressure | 1 MPa (10 bar, 145 psi) | 1 MPa (10 bar, 145 psi) |

### Brake cylinder for parking brake

| | |
|---|---|
| Type | Spring brake cylinder |
| Spring force | 1100 kp (2420 lbs) |
| Release pressure | 550 kPa (5.5 bar, 80 psi) |
| Stroke | 57 mm (2.2 in) |

### Brake pads, service brake

| | |
|---|---|
| Thickness | 14 mm (0.55 in) |
| Thickness, min. | 3 mm (0.12 in) |

### Brake disc, service brake

| | |
|---|---|
| Thickness | 16.0 mm (0.63 in) |
| Thickness, min. | 10.0 mm (0.39 in) |
| Maximum allowed wear per side | 3.0 mm (0.12 in) |

### Brake pads, parking brake

| | |
|---|---|
| Thickness | 23 mm (0.9 in) |
| Thickness, min. | 3 mm (0.12 in) |

### Brake disc, parking brake

| | |
|---|---|
| Thickness | 25 mm ( 0.98 in) |
| Thickness, min. | 23.5 mm (0.93 in) |
| Maximum allowed wear per side | 0.75 mm (0.03) |

| Document Title: **Electrical system** | Function Group: **030** | Information Type: **Service Information** | Date: **1/18/2024** |
|---|---|---|---|
| Profile: | | | |

# Electrical system

## Battery

| | |
|---|---|
| System voltage | 24 V |
| Capacity | 145 Ah |
| Ground connection | Negative terminal |
| Quantity | 2 x 12 V |

## Starter motor

| | |
|---|---|
| Output | 5.5 kW (7.4 hp) |

## Alternator with built-in regulator

| | **Earlier version** | **Later version** |
|---|---|---|
| Type | A14N118M | A14N206M |
| Output | 1680 W | 1650 W |
| Voltage, max. | 28 V | 27.5 V |
| Current, max. | 60 A | 60 A |
| Resistance in rotor windings (across slip rings) 10 % | 13.5 W | 13.5 W |
| Resistance in stator windings (between phases) 15 % | 0.12 W | 0.12 W |
| Speed at engine speed 10 r/s (600 rpm) | 25 r/s (1500 rpm) | |

## Charging regulator

| | |
|---|---|
| Type | Electronic (integrated in alternator) |

## Fuses

| | **Type** | **Quantity** | **Marking/current rating** |
|---|---|---|---|
| Electrical distribution box | Spool fuse | 2 pcs | 5 Amp |
| Electrical distribution box | Spool fuse | 15 pcs | 8 Amp |
| Electrical distribution box | Spool fuse | 7 pcs | 16 Amp |
| Electrical distribution box | Rail fuse | 2 pcs | 25 Amp |
| Information converter | Glass fuse | 1 pc | 1.6 Amp |
| Main fuse, preheating coil (located in engine compartment) | Rail fuse | 1 pc | 100 Amp |
| Main fuse, tachograph (located in battery compartment) | Blade fuse | 1 pc | 5 Amp |
| Voltage converter | Glass fuse | 1 pc | 10 Amp |

## Bulbs

### Tractor unit

| | Output | **Socket** | |
|---|---|---|---|
| Headlights | 75/70 W | P43t–38 | (right asymmetric lights) |
| | 55/50 W | P45T | (left asymmetric lights) |
| Direction indicators | 21 W | BA 15s | |
| Cab lighting | 10 W | BA 15s | |
| Instrument lights | 2 W | BA 9s | |
| Control lights | 2 W | BA 9s | |
| Central warning light | 3 W | BA 7s | |
| Work lights | 70 W (H 3) | PK 22s | |
| Rotating beacon | 45 W | BA 15s | |
| Parking lights | 5 W | BA 15s | |
| Running (side) lights | 7 W | SV 8.5 | |

## Load unit

| | Output | **Socket** |
|---|---|---|
| Tail lights, 2 pcs | 10 W | BA 15s |
| Direction indicators | 21 W | BA 15s |
| Back-up light | 70 W (H 3) | PK 22s |
| Running lights | 7 W | SV 8.5 |
| Brake lights | 21 W | BA 15s |

### Cold-start device

| | |
|---|---|
| Type | Preheating coil |
| Output | 2400 W |
| Time relay, connection period | approx. 40 seconds |

### Diodes

| | |
|---|---|
| Max. current in conducting direction | 1 A |
| Max. voltage in blocking direction | 1000 V |

### Central warning

| | |
|---|---|
| Connected functions | Oil pressure, engine |
| | Temperature, engine |
| | Overspeeding, engine |
| | Air filter, engine |
| | Brake hydraulics – stroke indicator |
| | Compressed air, service and parking brake |
| | Steering function (engine-driven pump) |
| | Hydraulic oil level |
| | Charging, batteries |
| | Temperature, transmission |

### Indication elevated load body

| | |
|---|---|
| Adjustment, inductive sensor, distance to plate | 1–1.5 mm (0.04–0.06 in) |

| Document Title: **Engine** | Function Group: **030** | Information Type: **Service Information** | Date: **1/18/2024** |
|---|---|---|---|
| Profile: | | | |

# Engine

**General**

| | |
|---|---|
| Designation | TD73KCE |
| Max. output SAE J1349 Gross at 40 r/s (2400 rpm) | 190 kW (255 hp) |
| Flywheel output SAE J1349 Net at 40 r/s (2400 rpm) | 187 kW (251 hp) |
| Torque SAE J1349 Gross at 20 r/s (1200 rpm) | 1090 Nm (804 lbf ft) |
| Torque SAE J1349 Net at 20 r/s (1200 rpm) | 1080 Nm (797 lbf ft) |
| Number of cylinders | 6 |
| Cylinder bore | 104.77 mm (4.125 in) |
| Stroke | 130 mm (5.118 in) |
| Displacement, total | 6.7 litres (1.8 US gal) |
| Compression ratio | 17.7:1 |
| Firing order | 1-5-3-6-2-4 |
| Low idle speed | 11.1–11.9 r/s<br>(665–715 rpm) |
| High idle speed | 44–45 r/s<br>(2600–2720 rpm) |
| Stall speed | 30.8–32.5 r/s<br>(1850–1950 rpm) |

### Valve clearance (cold or warm engine)

| | |
|---|---|
| inlet valve | 0.40 mm (0.0157 in) |
| outlet valve | 0.55 mm (0.0217 in) |

### Turbocharger

| | |
|---|---|
| Lubrication system | Pressure lubrication (force-feed) from engine |

### Lubrication system

| | |
|---|---|
| Oil pressure, operating speed | 350–550 kPa (3.5–5.5 bar) (51–78 psi) |
| Oil pressure, low idle speed, minimum | 150 kPa (1.5 bar) (22 psi) |
| Opening pressure, safety valve in filter head | 100–140 kPa (1.0–1.4 bar, 15–20 psi) |
| Oil pressure, piston cooling at 40 r/s (2400 rpm) | 80–120 kPa (0.8–1.2 bar, 12–17 psi) |

### Air cleaner

| | |
|---|---|
| Type | Dry filter with secondary filter |
| Primary filter | Cyclone cleaner |
| Optional equipment | Oil bath cleaner |

### Fuel system

**Fuel feed pump**

| | |
|---|---|
| Designation | FP/KG 24 P300 |
| Feed pressure | 100–150 kPa (1.0–1.5 bar, 15–22 psi) |

**Fuel injection pump with regulator**

| | |
|---|---|
| Fuel injection pump, designation | PE 6P 110 A 320 RS 8009-1/8036 |
| Regulator, designation | RQV 300 – 1200 PA 1043 |
| Pump timing setting | 8° BTDC |
| Timing adjustment (α -angle) | 6° 1 ° |

**Injectors**

| | |
|---|---|
| Nozzle holders | KBEL 98/P 74 |
| Nozzles | DLLA 145 P 286 |
| Injector opening pressure | 25 MPa (250 bar, 3625 psi) |
| Injectors, setting pressure with new spring | 26.0–26.8 MPa<br>(266–268 bar, 3857–3886 psi) |
| Max. allowed pressure drop when testing with pressure 12.5–10 MPa<br>(125–100 bar, 1813–1450 psi) | 2.5 MPa (25 bar, 362 psi) in 5–25 s |
| Injector nozzle diameter | 0.218 mm (0,0086 in) (6 holes) |
| Marking | 73.6 |

## Cooling system

**General**

| | |
|---|---|
| 8-bladed cooling fan | Ø 680 mm (27 in) |
| Thermostat, number of | 1 pc |
| Thermostat, marked | Red center |
| Thermostat, begins to open at | 82 C (180 F) |
| Thermostat, fully open at | 95 C (203 F) |
| Relief valve, opening pressure | 50 kPa (0.5 bar, 7 psi) |
| Intercooler | Liquid-cooled |

**Hydraulic pump for fan**

| | |
|---|---|
| Type | Variable piston pump |
| Displacement | Variable between<br>0–45 $cm^3$/rev. (0–2.75 in3/rev.) |
| Capacity at 34 r/s (2040 rpm, engine) | 115 $dm^3$/min (litres/min) (30 US gal/min) |
| Rotational direction (RCA) | Clockwise |
| Reduction ratio, engine – pump | 1:1.11 |
| Operating pressure, max. | 17.5–19.5 MPa<br>(175–195 bar, 2538–2828 psi) |
| Max. pressure at 0-flow | 21 MPa (210 bar, 3045 psi) |

**Hydraulic motor for fan**

| | |
|---|---|
| Designation | F11-19-MU-SN-1-101 |
| Type | Fixed piston motor |
| Base speed, engine temperature below 70 C (158 F) | engine speed <24 r/s (1440 rpm), fan speed 11.6–15 r/s |

| | |
|---|---|
| | (700–900 rpm)<br>engine speed 24.5–26 r/s<br>(1470–1570 rpm),<br>fan speed 22.5–24.1 r/s<br>(1350–1450 rpm)<br>Refer also to Section 9, Hydraulic system |
| Displacement | 19 $cm^3$/rev. (1.2 $in^3$/rev.) |
| Leak-oil quantity at 20 r/s (1200 engine rpm) | 2 $dm^3$/min (litres/min) (0.53 $in^3$/rev.) |
| Pressure at base speed, engine temperature below 70 C (158 F) | 2.3–3.5 MPa (23–35 bar, 333–507 psi) |

**Thermostat valve**

| | |
|---|---|
| Type | 553/1/09498/006 |
| Closes at | 96 C (204 F) |
| Fully open at | 70 C (158 F) |
| Operating pressure, max. | 21 MPa (210 bar, 3045 psi) |

**Solenoid valve**

| | |
|---|---|
| Type | on/off with variable by-pass restriction |
| Operating pressure, max. | 21 MPa (210 bar, 3045 psi) |

**Oil filter**

| | |
|---|---|
| Cleaning efficiency | 10 micron nominally |
| Capacity, max. | 90 $dm^3$/min (litres/min) (24 US gal/min) |

| Document Title: **Hydraulic system** | Function Group: **030** | Information Type: **Service Information** | Date: **1/18/2024** |
|---|---|---|---|
| Profile: | | | |

# Hydraulic system

## Hydraulic pumps, engine dependent

| | |
|---|---|
| Type | Variable piston pump |
| Displacement | Variable, 0–45 $cm^3$/rev (0–2.8 $in^3$/rev) |
| Capacity at 40 r/s (2400 rpm, engine) | 110 $dm^3$/min (litres/min) (29 US gal/min) |
| Rotational direction LAW | Counter-clockwise |
| Rotational direction RCQ | Clockwise |
| Reduction ratio, engine – pump | 1:1.11 |
| Leak-oil volume at 20 r/s (1200 engine rpm) | 10 $dm^3$/min (litres/min) (2.6 US gal/min) |
| Thread dimensions for connections: applies to all pumps (4 pumps) | |
| Inlet | 1 5/8" UNF-12 |
| Outlet | 1 5/16" UNF-12 |
| Steering line | 7/16" UNF-20 |
| Leak-oil line | 9/16" UNF-18 |
| Max. pressure at 0-flow | 21 MPa (210 bar) (3045 psi) |

## Hydraulic pump, ground dependent

| | |
|---|---|
| Type | Variable piston pump |
| Displacement | 0–45 $cm^3$/rev (0–2.75 $in^3$/rev) |
| Rotational direction, LAW | Counter-clockwise |
| Reduction ratio, road wheels – pump | 1:14.2 |
| Pump speed at 45 km/h (27.9 mph) | approx. 36.6 r/s (2200 rpm) |
| Max. pressure at flow = 0 | 21 MPa (210 bar) (3045 psi) |

## Hydraulic pump for fan

See heading "Engine, Cooling system".

## Return oil filter, hydraulic tank

| | |
|---|---|
| Capacity | 390 $dm^3$/min (litres/min) (103 US gal/min) |
| Cleaning efficiency | 10 m nominally |
| Overflow pressure | 0.08 MPa (0.8 bar) (11.6 psi) |

### Dumping valve 44 and 66

| | |
|---|---|
| Make | Volvo |

### Hoist cylinder 66

| | |
|---|---|
| Make | Volvo |
| Type | Double-acting, single stage |

| | |
|---|---|
| Dumping time (with load) | Approx. 15 s |
| Lowering time | Approx. 12 s |

**Hoist cylinder 44**

| | |
|---|---|
| Make | Volvo |
| Type | Double-acting, single stage |
| Dumping time (with load) | Approx. 12 s |
| Lowering time | Approx. 10 s |

| Document Title: **Power transmission** | Function Group: **030** | Information Type: **Service Information** | Date: **1/18/2024** |
|---|---|---|---|
| Profile: | | | |

# Power transmission

## Speed ranges (max.)

### 66 Machine (equipped with tyres 20.5-25)

| **Gear** | **Low** **km/h** (mph) | **High** **km/h** (mph) |
|---|---|---|
| 1st | 5.5 (3) | 8 (5) |
| 2nd | 8 (5) | 14 (9) |
| 3rd | 14 (9) | 23 (14) |
| 4th | 20 (12) | 33 (20.5) |
| 5th | 29 (18) | 47 (29) |
| Reverse | 6.5 (4) | 10 (6) |

### 66 Machine (equipped with tyres 23.5-25)

| **Gear** | **Low** **km/h** (mph) | **High** **km/h** (mph) |
|---|---|---|
| 1st | 6 (4) | 9 (6) |
| 2nd | 9 (6) | 15 (9) |
| 3rd | 15 (9) | 25 (15) |
| 4th | 22 (14) | 36 (22) |
| 5th | 31 (19) | 51 (32) |
| Reverse | 7 (4) | 11 (7) |

### 44 Machine (equipped with tyres 23.5-25 and 29.5-25)

| **Gear** | **Low** **km/h (mph)** | **High** **km/h** (mph) |
|---|---|---|
| 1st | 6 (4) | 9 (6) |
| 2nd | 9 (6) | 15 (9) |
| 3rd | 15 (9) | 25 (15.5) |
| 4th | 22 (14) | 36 (22) |
| 5th | 31 (19) | 51 (32) |
| Reverse | 7 (4) | 11 (7) |

## Power take-off, engine

| | |
|---|---|
| Make | Volvo |
| Connections for | 4 hydraulic oil pumps |
| Reduction ratio engine – pump | 1:1.11 |

## Transmission

| | |
|---|---|
| Transmission, type | Automatic planetary transmission |

| | |
|---|---|
| Designation | PT 1051 |
| Number of gears | 5 forward gears<br>1 reverse gear |

## Oil pressure

Warm oil 33.3–41.6 r/s (2000–2500 rpm), in N-position:

| | |
|---|---|
| Main pressure | 1.7–2 MPa (17–20 bar, 246–290 psi) |
| Main pressure, Lock-up engaged | 1.0–1.2 MPa (10–12 bar, 145–174 psi) |
| Torque converter pressure | 0.7–0.8 MPa (7–8 bar, 102–116 psi) |
| Lubrication oil pressure | 0.18–0.25 MPa<br>(1.8–2.5 bar, 26–36 psi) |
| Modulating pressure | 0.60–0.70 MPa (6–7 bar, 87–102 psi) |

## Reduction ratios

| | |
|---|---|
| Torque converter | 2.4:1 |
| 1st gear | 5.6:1 |
| 2nd gear | 3.4:1 |
| 3rd gear | 2.0:1 |
| 4th gear | 1.4:1 |
| 5th gear | 1.0:1 |
| Reverse | 4.8:1 |

## Engine speed dependent functions

| | |
|---|---|
| Exhaust retarder and retarder engaged | 18.8 r/s (1130 rpm) |
| Exhaust retarder and retarder disengaged | 17.5 r/s (1050 rpm) |
| Upshifting at overspeed | 48.3 r/s (2700 rpm) |

## Dropbox, 2 ranges

| | |
|---|---|
| Make | Volvo |
| Designation | FL652C |
| Reduction ratio, high | 0.912 |
| Reduction ratio, low | 1.384 |
| Reduction ratio from output shafts to ground dependent pump | 0.886 |

For further technical specifications, refer to separate Service Manual.

## Drive axles, tractor and load unit

### Drive axles

| (serial no. –11100, BR –70300<br>US 66 –61400, 44 –68200) | | | |
|---|---|---|---|
| **66** | **Tractor unit** | **Front bogie axle** | **Rear bogie axle** |
| Make | Volvo | Volvo | Volvo |
| Designation | AH54E | AH54C | AH54D |
| Product number | 23549 | 23537 | 23538 |

| (serial no. 11101–, BR 70301–<br>US 66 61401–, 44 68201–) |
|---|

| 66 | Tractor unit | Front bogie axle | Rear bogie axle |
|---|---|---|---|
| Make | Volvo | Volvo | Volvo |
| Designation | AH54X | AH56H | AH54Z |
| Product number | 23761 | 23912 | 23763 |

| (serial no. –11100, BR –70300<br>US 66 –61400, 44 –68200) | | | |
|---|---|---|---|
| **44** | **Tractor unit** | **Front bogie axle** | **Rear bogie axle** |
| Make | Volvo | | Volvo |
| Designation | AH54E | | AH71B |
| Product number | 23549 | | 23555 |

| (serial no. 11101–, BR 70301–<br>US 66 61401–, 44 68201–) | | | |
|---|---|---|---|
| **44** | **Tractor unit** | **Front bogie axle** | **Rear bogie axle** |
| Make | Volvo | | Volvo |
| Designation | AH54X | | AH71C |
| Product number | 23761 | | 23782 |

**Final drive**

| 66 | Tractor unit | Front bogie axle | Rear bogie axle |
|---|---|---|---|
| Make | Volvo | Volvo | Volvo |
| Designation | EV80 | EV BM | EV80 |
| Reduction ratio | 3.78:1 | 3.78:1 | 3.78:1 |
| Differential lock | Dog clutch | Dog clutch | Dog clutch |
| 6-wheel drive (66) | | | Drive via dog clutch in front bogie axle |
| **44** | | | |
| Make | Volvo | Volvo | Volvo |
| Designation | EV80 | | EV85 |
| Reduction ratio | 3.78:1 | 3.78:1 | 3.78:1 |

**Hub reduction**

| 66 | Tractor unit | Front bogie axle | Rear bogie axle |
|---|---|---|---|
| Type | Planetary gear | Planetary gear | Planetary gear |
| Reduction ratio | 4.235:1 | 4.235:1 | 4.235:1 |
| **44** | | | |
| Type | Planetary gear | Planetary gear | Planetary gear |
| Reduction ratio | 4.38:1 | | 4.83:1 |

For further technical specifications, refer to separate Service Manual.

## Differential lock

| | |
|---|---|
| Longitudinal | In dropbox |
| Transverse | In drive axles |

| Document Title: **Specifications, capacities** | Function Group: **030** | Information Type: **Service Information** | Date: **1/18/2024** |
|---|---|---|---|
| Profile: | | | |

# Specifications, capacities

| | |
|---|---|
| Engine, including lubrication oil filter, total | 24 litres (6.3 US gal) |
| Engine, including lubrication oil filter, changing | 20 litres (5.3 US gal) |
| Cooling system | 40 litres (10.6 US gal) |
| Fuel tank | 100 + 180 litres (26.4 + 47.5 US gal) |
| Transmission, total | 28 litres (7.4 US gal) |
| Transmission, changing | 16 litres (4.2 US gal) |
| Dropbox | 6 litres (1,6 US gal) |
| Drive axle, tractor unit | 27 litres (7 US gal)[T1] |
| Drive axle, (66), 1st bogie axle | 28 litres(7 US gal)(a) |
| Drive axle, (66), 2nd bogie axle | 27 litres (7 US gal)(a) |
| Drive axle, load unit (44) | 43 litres (11.4 US gal)[1] |
| Hydraulic oil tank | 145 litres (38.3 US gal) |
| Hydraulic system, total | 220 litres (58 US gal) |
| Hydraulic system, at oil change, approx. | 160 litres (42.4 US gal) |
| Compressed air tank, tractor unit | 1 6 + 1 30 litres |
| Compressed air tank, load unit | 1 30 litres |
| Brake fluid reservoir, tractor unit | 2 0.5 litres |
| Hydraulic system, load unit | 2 0.5 litres |
| Anti-freeze reservoir | 1 0.9 litres |

**[T1]**of which approx. 2 litres per hub

## Load capacity

| | **66** | **44** |
|---|---|---|
| Load volume, heaped according to SAE norm | 13.5 $m^3$ | 13.0 $m^3$ |
| Load volume, struck | 10.6 $m^3$ | 10.1 $m^3$ |

**[1]**of which approx. 6 litres per hub

| Document Title: **Specifications, change intervals** | Function Group: **030** | Information Type: **Service Information** | Date: **1/18/2024** |
|---|---|---|---|
| Profile: | | | |

# Specifications, change intervals

## Oil and fluid change

| | Hours |
|---|---|
| Engine | 250 |
| Oil bath cleaner (optional equipment) | 250 |
| Transmission | 500 |
| Coolant | 2000 |
| Dropbox | 2000 |
| Drive axles | 2000 |
| Brake fluid | 2000 |
| Hydraulic system | 2000 |

## Filter change

| | |
|---|---|
| **Engine** | |
| Oil filter | 250 |
| Fuel filter | 1000 |
| Extra fuel filter (optional equipment) | 1000 |
| Air cleaner, primary filter | 1000 |
| Air cleaner, secondary filter | 2000 |
| Clean, oil bath cleaner | 2000 |
| Clean suction strainer, power take-off | 1000 |
| **Transmission** | |
| Suction filter | 500 |
| Breather filter | 1000 |
| **Hydraulic system** | |
| Breather filter | 1000 |
| Return oil filter | 2000 |
| Return oil filter, cooling fan | 2000 |
| **Miscellaneous** | |
| Air filter, compressor | 500 |
| Ventilation filter, cab | 1000 |

| Document Title: **Specifications, tightening torques** | Function Group: **030** | Information Type: **Service Information** | Date: **1/18/2024** |
|---|---|---|---|
| Profile: | | | |

# Specifications, tightening torques

## General

Engine and power take-off, refer also to Service Manual "Engine TD61/63, TD 71/73".

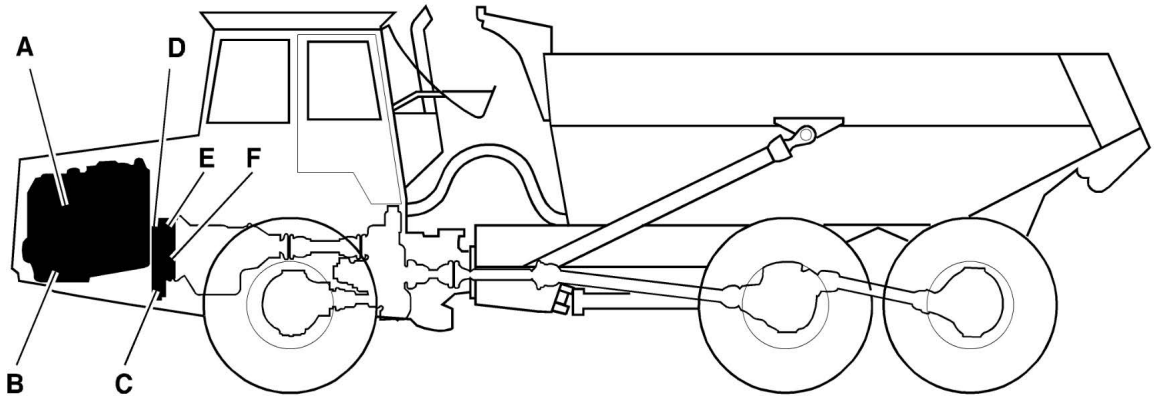


**Figure 1**

| | | Nm (lbf ft) | kpm |
|---|---|---|---|
| A | Air compressor | | |
| | Gear for drive | 225 (166) | 22.5 |
| | Cylinder head | 31 (23) | 3.1 |
| | Cylinder foot | 23 (17) | 2.3 |
| | Compressor, attachment | 54 (40) | 5.4 |
| B | Front engine mount | | |
| | Against engine | 73 (54) | 7.3 |
| | Against frame | 20 (15) | 2.0 |
| | Center bolt | 185 (136) | 18.5 |
| C | Rear engine mount | | |
| | Against flywheel housing | 80 (59) | 8.0 |
| | Against frame | 73 (54) | 7.3 |
| | Power take-off flywheel housing | 38 (28) | 3.8 |
| | Center bolt | 185 (136) | 18.5 |
| D | Engine – flywheel housing | 135 (99) | 13.5 |
| E | Torque converter – drive disc | 80 (59) | 8.0 |
| F | Flywheel | 180 (132) | 18.0 |

## Front engine mount

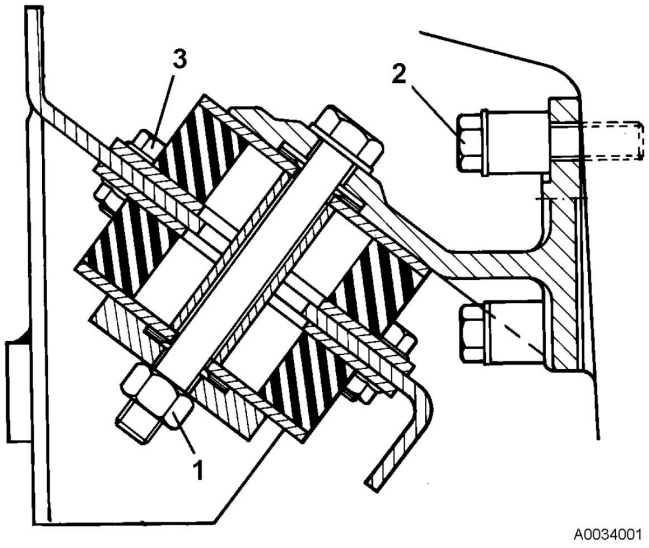


**Figure 2**
Tightening torque, front engine mount

| | **Nm** (lbf ft)) | **kpm** |
|---|---|---|
| 1 | 185 (136) | 18.5 |
| 2 | 73( 54) | 7.3 |
| 3 | 20 (15) | 2.0 |

## Rear engine mount

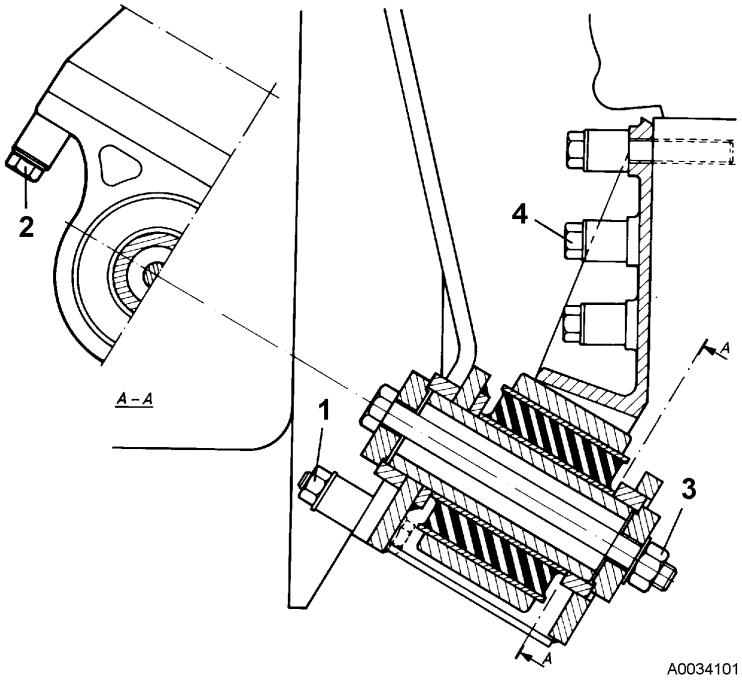


**Figure 3**
Tightening torque, rear engine mount

| | **Nm (lbf ft)** | **kpm** |
|---|---|---|
| 1 | 73 (54) | 7.3 |
| 2 | 73 (54) | 7.3 |
| 3 | 185 (136) | 18.5 |
| 4 | 80 (59) | 8.0 |

## Engine

**Important** Bolts and nuts should be clean and lubricated with oil.

| | |
|---|---|
| Cylinder head | [1] |
| Main bearings | 150 |
| Crankshaft (big-end) bearings | 190 |
| Flywheel (for 6 and 9 bolt types) | 190 |
| Flywheel housing | 140 |
| Cleaning plugs, cylinder head and cylinder block | 70 |
| Vibration damper, attaching bolts | 90 |
| Center bolt, crankshaft | 260 |
| Oil sump | 24 |
| Drain plug for oil sump | 80 |
| Exhaust manifold | 48 |
| **Lubrication oil pump** | |
| bearing sleeve for transfer gear | 33 |
| bracket | 65 |
| **Valves** | |
| bearing cap, rocker arm shaft | 65<br>(50 aluminium) |
| inspection covers, tappets | 24 |
| valve covers | 24 |
| **Transmission** | |
| axial bearing, camshaft | 65 |
| gear wheel, camshaft | 70 |
| gear wheel, pump drive | 33 |
| stub axle for transfer gear | 90 |
| timing gear casing | 33 |
| **Injectors** | |
| nut for injector yoke | 50 |
| pressure pipe nuts | 15–25 |
| **Injection pump** | |
| clamping bolt in pump coupling | 90 |
| pump coupling – flange | 27 |
| flange – pump shaft | 200 |

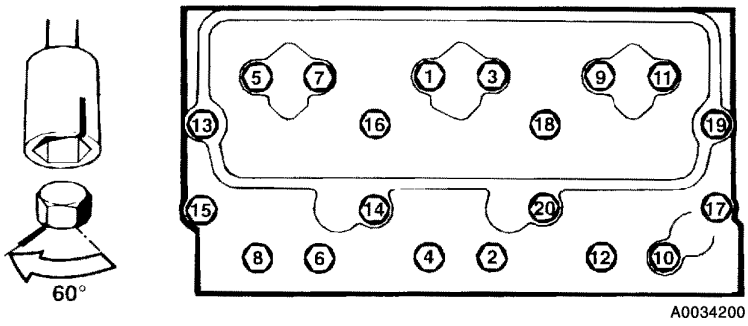


**Figure 4**
Tightening torques

| | |
|---|---|
| 1st torque: | 30 Nm (22 lb ft) |
| 2nd torque: | 90 Nm (66 lbf ft) |
| 3rd torque (check-tightening): | 90 Nm (66 lbf ft) |

| | |
|---|---|
| Final torque: | Torque bolts through 60° angle |

## Transmission

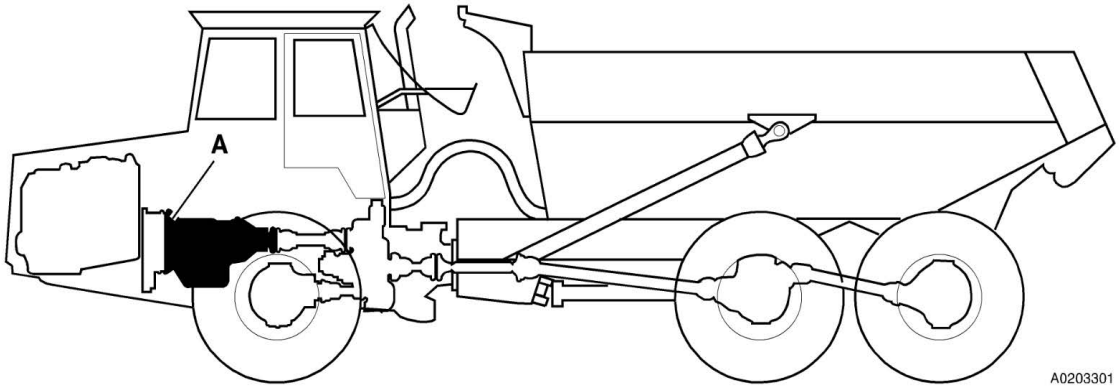


**Figure 5**

| | | Nm (lbf ft) | kpm |
|---|---|---|---|
| A | Flywheel housing – transfer gear | 54 (40) | 5.4 |
| | Transmission | 48 (35) | 4.8 |
| | | | |
| | From and incl. serial no. 8068–: | | |
| A | Flywheel housing – transmission | 48 (35) | 4.8 |

## Propeller shafts

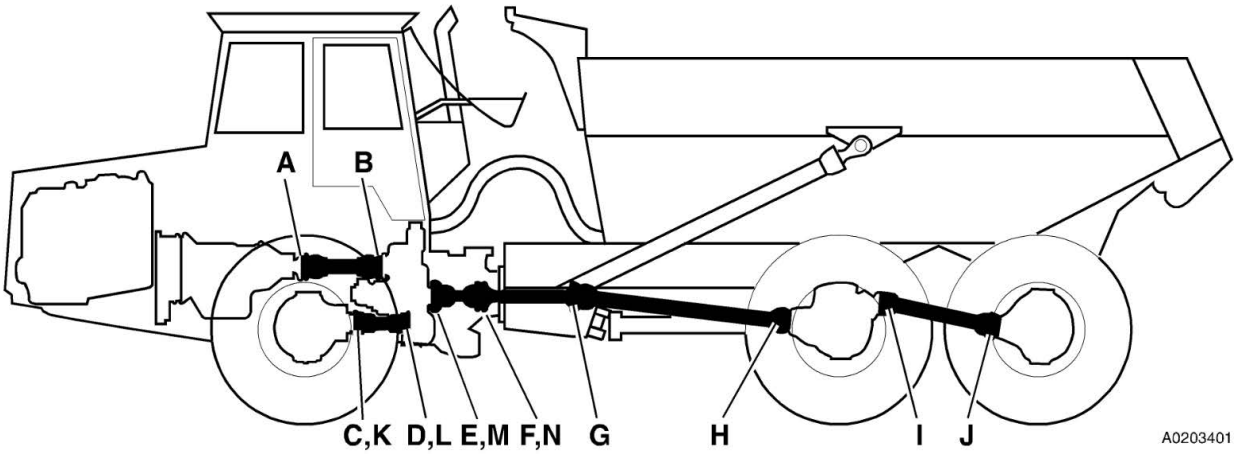


**Figure 6**

| | | **Nm** (lbf ft) | **kpm** |
|---|---|---|---|
| A | Centre bolts, M12, transmission | 60( 44) | 6.0 |
| | Bolted joint 7/16" UNF | 100 (73) | 10.0 |
| B | Centre nut, dropbox | 600 (442) | 60.0 |
| | Bolted joint 7/16" UNF | 100 (73) | 10.0 |
| C | Centre nut, shaft | 1200 (885) | 120.0 |
| | Bolted joint 1/2" UNF | 140 (103) | 14.0 |
| D | Centre nut, dropbox | 600 (442) | 60.0 |
| | Bolted joint 1/2" UNF | 140 (103) | 14.0 |
| E | Centre nut, dropbox | 600 (442) | 60.0 |

| | | | |
|---|---|---|---|
| | Bolted joint 1/2" UNF | 140 (103) | 14.0 |
| F | Centre bolts, M12 hitch | 125 (92) | 12.5 |
| | Bolted joint 1/2" UNF | 140 (103) | 14.0 |
| G | Centre bolts, M12 parking brake | 125 (92) | 12.5 |
| | Bolted joint 3/8" UNF | 66(48) | 6.6 |
| H | Centre nut, shaft | 1200 (885) | 120.0 |
| | Bolted joint M10 | 70 (51) | 7.0 |
| I | Centre nut, output shaft 66 | 600 (442) | 60.0 |
| | Bolted joint 7/16" UNF | 100 (73) | 10.0 |
| J | Centre nut, shaft | 1200 (885) | 120.0 |
| | Bolted joint 7/16" UNF | 100 (73) | 10.0 |

## Front and rear output propeller shaft, dropbox

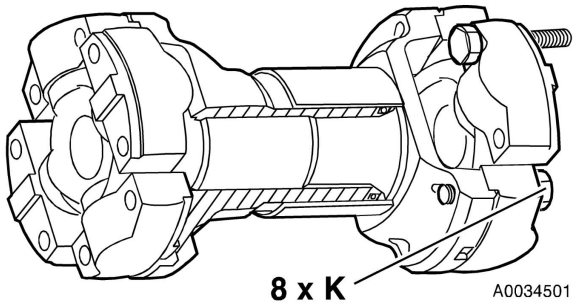


**Figure 7**

| | | Nm (lbf ft) | kpm |
|---|---|---|---|
| K | Bolted joint 1/2" UNF | 140 (103) | 14.0 |

## Dropbox

Refer also to Service Manual "Dropbox FL 650, 650B, 652, 652B".

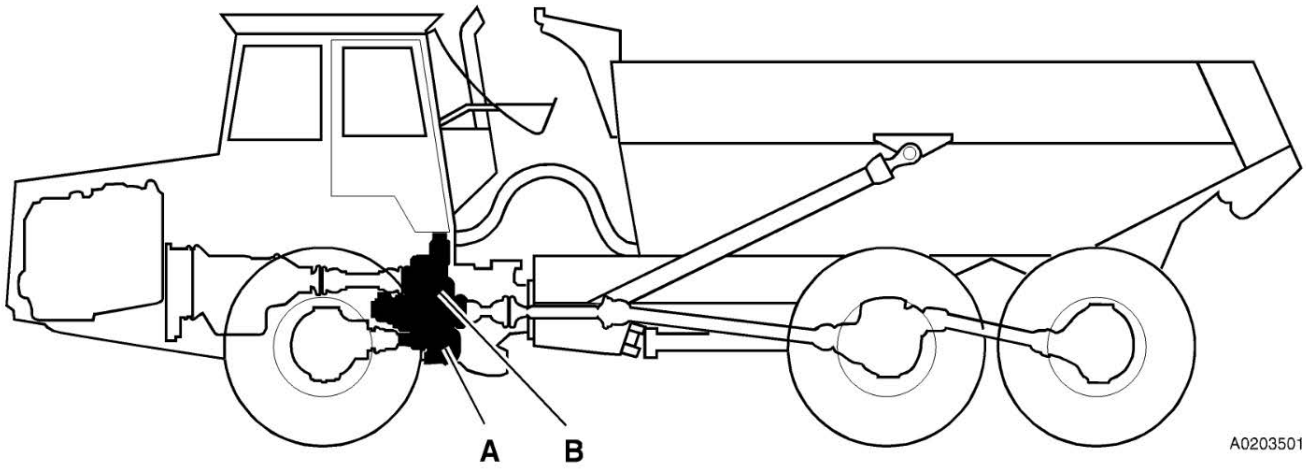


**Figure 8**

| | | | Nm (lbf ft) | kpm |
|---|---|---|---|---|
| A | Attachment against dropbox | (M16) | 185 (136) | 18.5 |
| | Attachment against frame | (M16) | 185 (136) | 18.5 |
| B | Bearing retainer – separator plate in housing | M12) | 80 (59) | 8.0 |
| | Differential housing front – rear | M12) | 80 (59) | 8.0 |

| | | | | |
|---|---|---|---|---|
| | Spacer washer – countershaft, upper shaft | M10) | 46 (34) | 4.6 |
| | Bearing retainer – front cover | M10) | 46 (34) | 4.6 |
| | Bearing retainer, lower shaft – housing | M10) | 46 (34) | 4.6 |
| | Bearing retainer, countershaft – housing | M10) | 46 (34) | 4.6 |
| | Front cover – housing | (M12) | 80 (59) | 8.0 |
| | Lock bolt for diaphragm sleeve, differential lock | M10) | 30 (22) | 3,0 |
| | Plug for dropbox cover | (M18) | 52 (38) | 5.2 |

## Drive axles

Refer also to Service Manual "Drive axles Articulated Haulers".

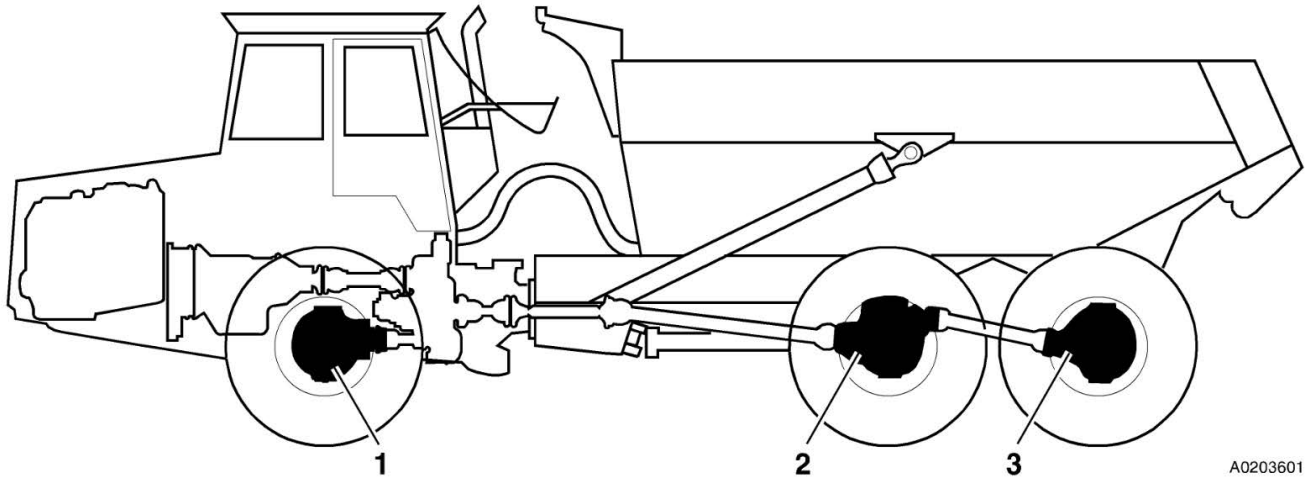


**Figure 9**

| | serial no. –11100, BR –70300<br>US 66 –61400, 44 –68200 | | | serial no. 11101–, BR 70301–<br>US 66 61401–, 44 68201– | | |
|---|---|---|---|---|---|---|
| **66** | **Front axle** | **Front bogie axle** | **Rear bogie axle** | **Front axle** | **Front bogie axle** | **Rear bogie axle** |
| Type | AH54E | AH54C | AH54D | AH54X | AH56H | AH54Z |
| Serial no. | 23549 | 23537 | 23538 | 23761 | 23912 | 23763 |
| Final drive | EV 80 | EV 80 | EV 80 | EV 80 | EV BM | EV 80 |
| **44** | | | | | | |
| Type | AH54E | | AH71B | AH54X | – | AH71C |
| Serial no. | 23549 | | 23555 | 23761 | – | 23782 |
| Final drive | EV 80 | | EV 85 | EV 80 | – | EV 85 |

| | **Nm** (lbf ft) | **kpm** |
|---|---|---|
| Bolts, pinion bearing housing | 140 (103) | 14.0 |
| Bolts, differential bearing caps | 440 (325) | 44.0 |
| Bolts, crown wheel | 150 (111) | 15.0 |
| Bolts, differential housing | 100 (74) | 10.0 |
| Pinion nut, minimum | 1200 (885) | 120.0 |

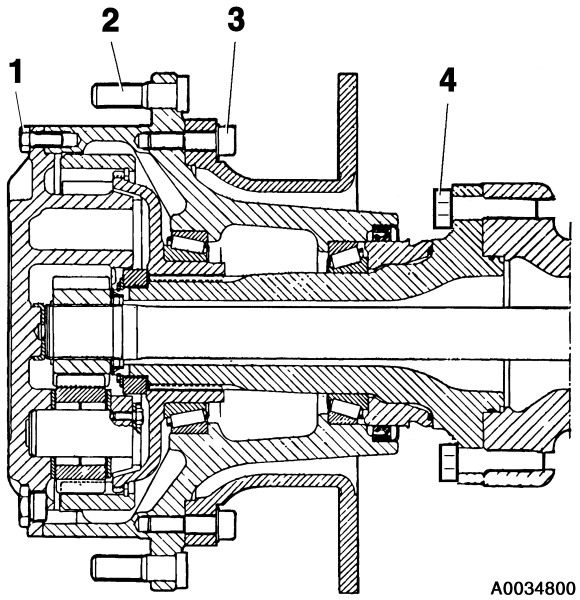


**Figure 10**
Hub

| | serial no. –11100, BR –70300<br>US 66 –61400, 44 –68200 | |
|---|---|---|
| Pos. | **AH54 E, C, D** | **AH71B** |
| 1 | 130 Nm (96 lbf ft) (13.0 kpm) | 180 Nm (133 lbf ft) (18.0 kpm) |
| 2 | 625 Nm (461 lbf ft) (62.5 kpm) | 625 Nm (461 lbf ft) (62.5 kpm) |
| 3 | 310 Nm (229 lbf ft) (31.0 kpm) | 310 Nm (229 lbf ft) (31.0 kpm) |
| 4 | 550 Nm (406 lbf ft) (55.0 kpm) | 550 Nm (406 lbf ft) (55.0 kpm) |
| Brake caliper | 550 Nm (406 lbf ft) (55.0 kpm) | |

| | serial no. 11101–, BR 70301–<br>US 66 61401–, 44 68201– | |
|---|---|---|
| Pos. | **AH54X, AH56H, AH54Z** | **AH71C** |
| 1 | 130 Nm (96 lbf ft) (13.0 kpm) | 180 Nm (133 lbf ft) (18.0 kpm) |
| 2 | 625 Nm (461 lbf ft) (62.5 kpm) | 625 Nm (625 lbf ft) (62.5 kpm) |
| 3 | 310 Nm (229 lbf ft) (31.0 kpm) | 310 Nm (229 lbf ft) (31.0 kpm) |
| 4 | 550 Nm (406 lbf ft) (55.0 kpm) | 550 Nm (406 lbf ft) (55.0 kpm) |
| Brake caliper | 550 Nm (406 lbf ft) (55.0 kpm) | |

## Frame joint

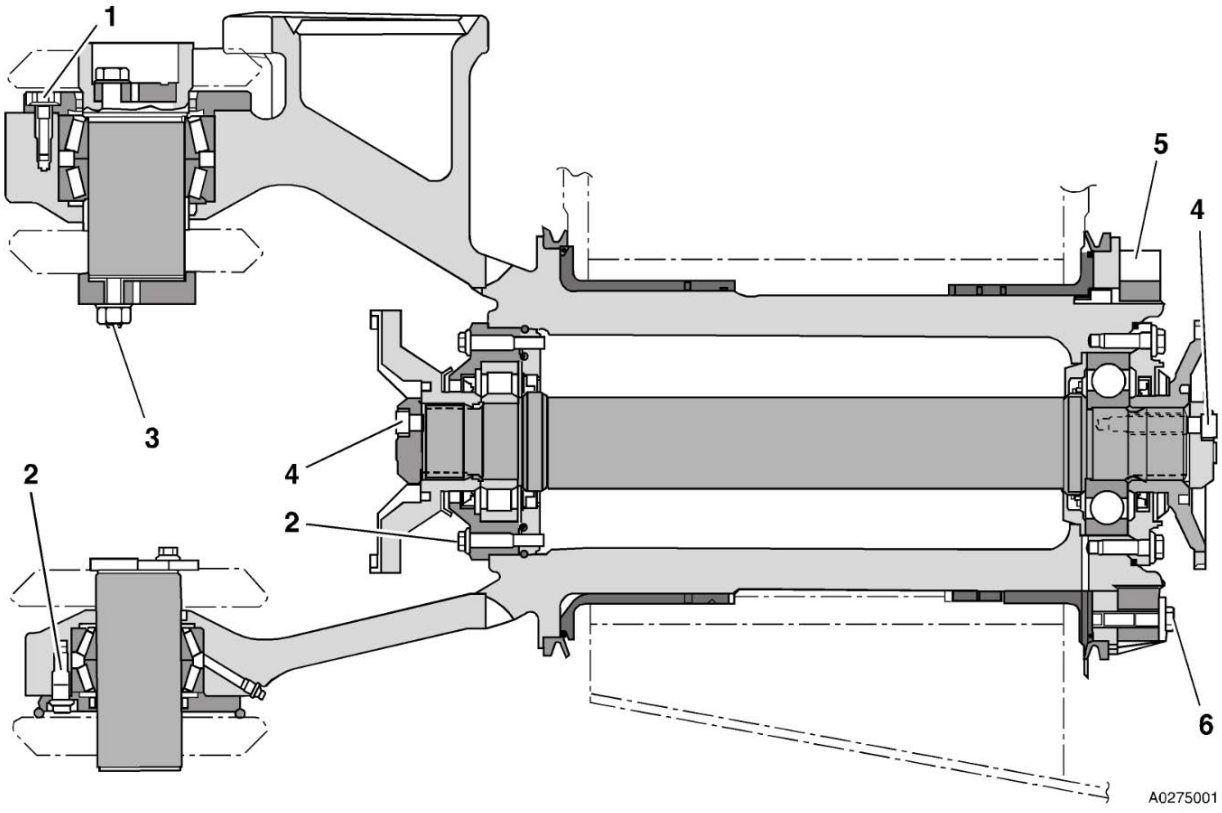


**Figure 11**

| | **Nm** (lbf ft) | **kpm** |
|---|---|---|
| 1 | 85 (63) | 8.5 |
| 2 | 48 (35) | 4.8 |
| 3 | 125 (92) | 12.5 |
| 4 | 125 (92) | 12.5 |
| 5 | 1000 (738) | 100.0 |
| 6 | 85 (63) | 8.5 |

## Bracket for parking brake caliper

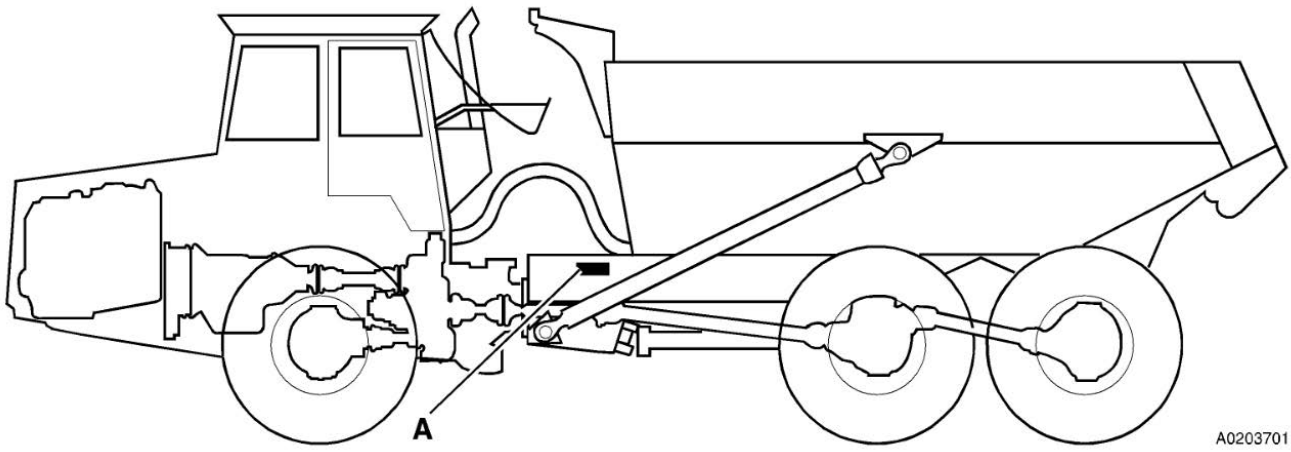


**Figure 12**

| | | |
|---|---|---|
| A | 200 Nm (148 lbf ft) | 20.0 kpm |

## Tractor unit

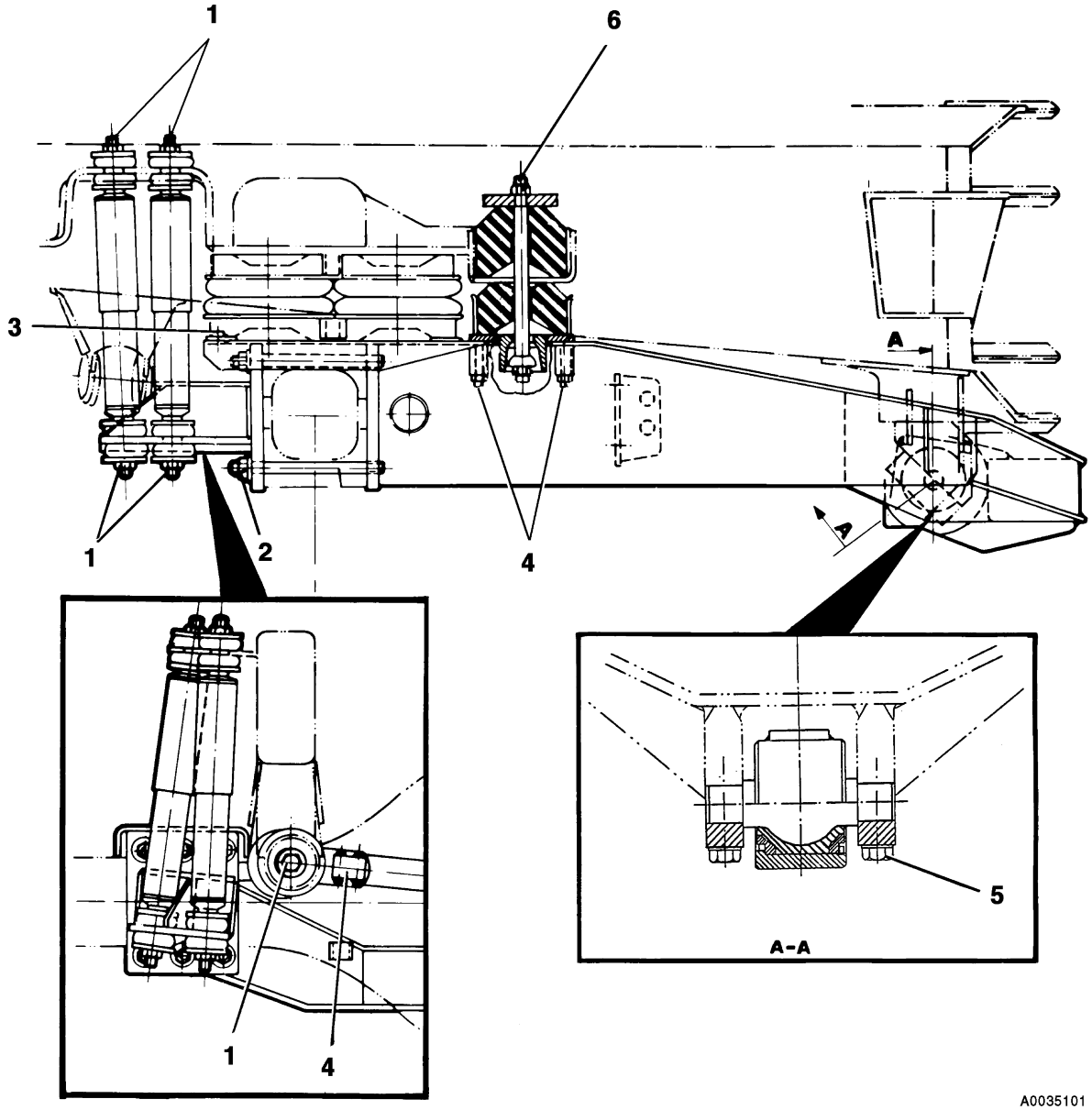


**Figure 13**

| | **Nm** (lbf ft) | **kpm** |
|---|---|---|
| 1 | 100 (74) | 10.0 |
| 2 | 395 (291) | 39.5 |
| 3 | 41 (30) | 4.1 |
| 4 | 73 (54) | 7.3 |
| 5 | 355 (262) | 35.5 |
| 6 | 185 (136) | 18.5 |

## Load unit

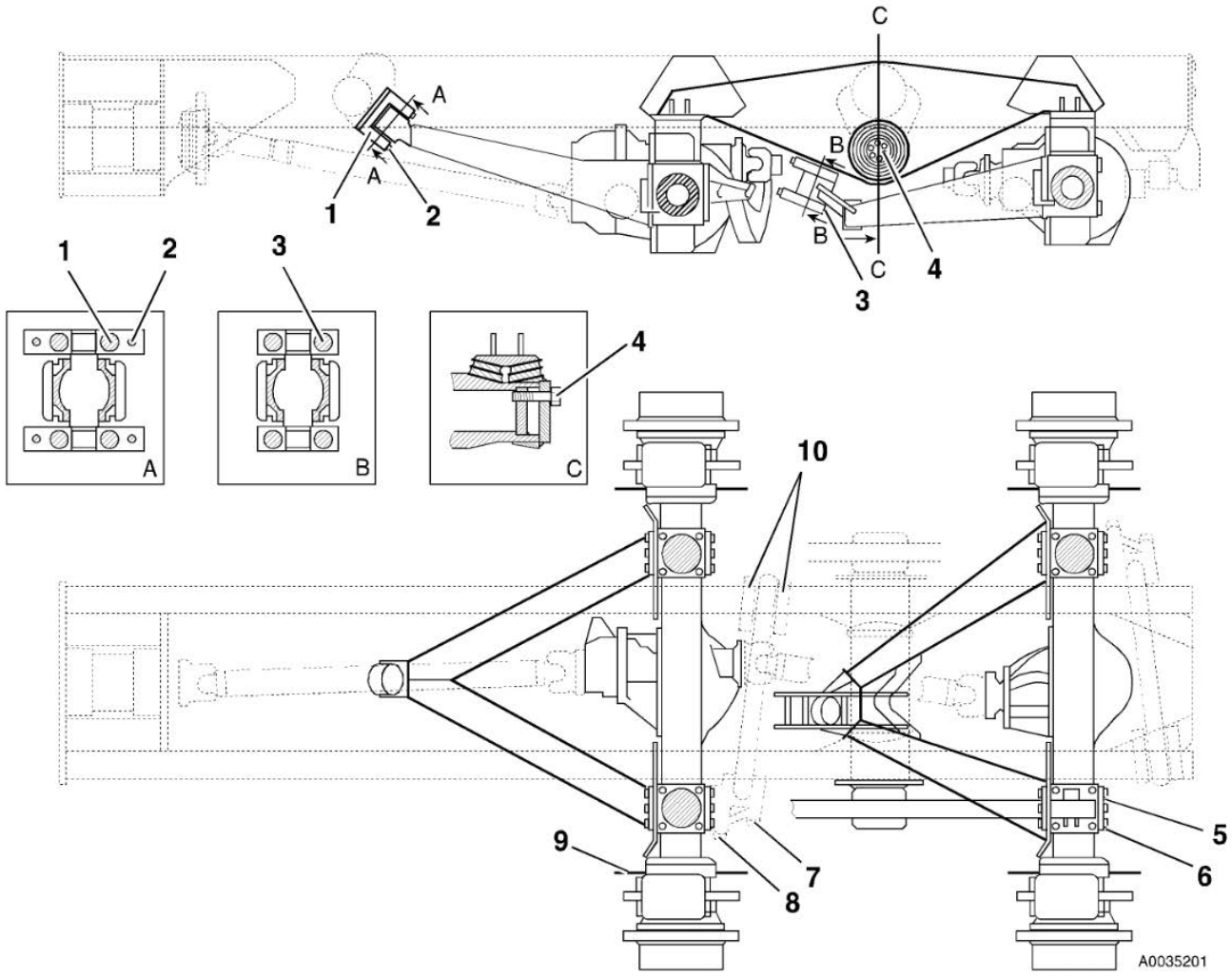


**Figure 14**

| | **Nm** (lbf ft) | **kpm** |
|---|---|---|
| 1 | 360 (266) | 36.0 |
| 2 | 40 (30) | 4.0 |
| 3 | 360 (266) | 36.0 |
| 4 | 185 (137) | 18.5 |
| 5 | 185 (137) | 18.5 |
| 6 | 500 (369) | 50.0 |
| 7 | 500 (369) | 50.0 |
| 8 | 500 (369) | 50.0 |
| 9 | 185 (137) | 18.5 |
| 10 | 500 (369) | 50.0 |

**[1]**A combination of torque tightening (in sequences) and angle torquing applies to cylinder heads, see figure. Dip the cylinder head bolts (also head of bolts) in anti-corrosion fluid max. 24 hours before installing. The bolts must be covered but not dripping wet when installing. (New bolts are pre-treated with anti-corrosion fluid).

| Document Title: **Specifications, weights** | Function Group: **030** | Information Type: **Service Information** | Date: **1/18/2024** |
|---|---|---|---|
| Profile: | | | |

# Specifications, weights

| | **66** | **66** | **44** |
|---|---|---|---|
| Weights for machine with tyres | R20.5-R25 | 23.5-R25 | 23.5-R25<br>R29.5-R25 |
| Operating weight | | | |
| front axle | 8840 kg (19492 lbs) | 9040 kg (19933 lbs) | 9150 kg (20175 lbs) |
| bogie, weight per axle | 8530 kg (18808 lbs) | 8730 kg (19249 lbs) | 6620 kg (14597 lbs) |
| total (incl. operator and full fuel tank, load body with wear plates) | 17170 kg (37859 lbs) | 17770 kg (39182 lbs) | 15770 kg (34772 lbs) |
| Weight distribution with maximum load | | | |
| front axle | 11500 kg (25357 lbs) | 11500 kg (25357 lbs) | 12550 kg (27672 lbs) |
| bogie | 28770 kg (63437 lbs) | 28770 kg (63437 lbs) | 25720 kg (56712 lbs) |
| Load capacity | 22500 kg (49612 lbs) | 22500 kg (49612 lbs) | 22500 kg (49612 lbs) |
| Total weight, maximum | 39670 kg (87472 lbs) | 40270 kg (88795 lbs) | 38270 kg (84385 lbs) |

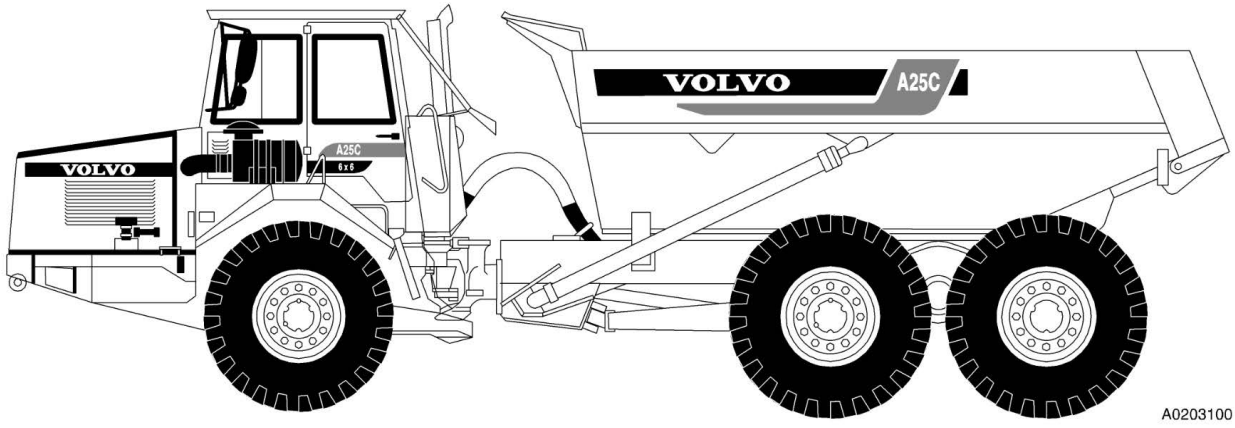


**Figure 1**

## Components

| **Component** | **kg (lbs)** |
|---|---|
| Engine | 725 (1598) |
| Transmission | 340 (749) |
| Dropbox | 350 (771) |
| Wheel: 20.5 -R25 | |
| Tyre Bridgestone | 200 (441) |
| Tyre Michelin | 220 (485) |
| Tyre Good Year | 230 (507) |
| Rim | 190 (419) |
| Wheel: 23.5 -R25 | |
| Tyre Bridgestone | 290 (639) |

| | |
|---|---|
| Tyre Michelin | 320 (705) |
| Tyre Good Year | 360 (793) |
| Rim | 215 (474) |
| Load body, std. | 3332 (7347) |
| Underhung tailgate with mechanism | 225 (496) |
| Hitch, complete | 300 (661) |
| Frame, tractor unit | 800 (1764) |
| Frame, load unit | 1600 (3528) |
| A-frame, tractor unit | 150 (330) |
| A-frame, front drive axle load unit | 170 (375) |
| A-frame, rear drive axle load unit | 120 (264) |
| Bogie member | 110 (242) |
| Fender, left | 120 (264) |
| Fender, right | 100 (220) |
| Final drive | 155 (341) |
| Brake caliper, service brake | 40 (88) |
| Brake caliper, parking brake | 50 (110) |
| Cab | 920 (2028) |
| Hoist cylinder | 170 (375) |
| Steering cylinder | 50 (110) |
| Drive axle, tractor unit complete | 940 (2072) |
| Drive axle, load unit, front complete | 940 (2072) |
| Drive axle, load unit, rear complete | 940 (2072) |
| 44 | |
| Frame, load unit | 985 (2172) |
| Drive axle, load unit | 1390 (3065) |
| Load body, std. | 4500 (9922) |
| Hoist cylinder | 235 (518) |

## Propeller shafts

| | |
|---|---|
| Transmission – dropbox | 48 |
| Dropbox – front axle | 26 |
| Dropbox – hitch | 36 |
| Hitch – front bogie axle | 62 |
| Front bogie axle – rear bogie axle | 48 |

| Document Title: **Specifications, dimensions** | Function Group: **030** | Information Type: **Service Information** | Date: **1/18/2024** |
|---|---|---|---|
| Profile: | | | |

# Specifications, dimensions

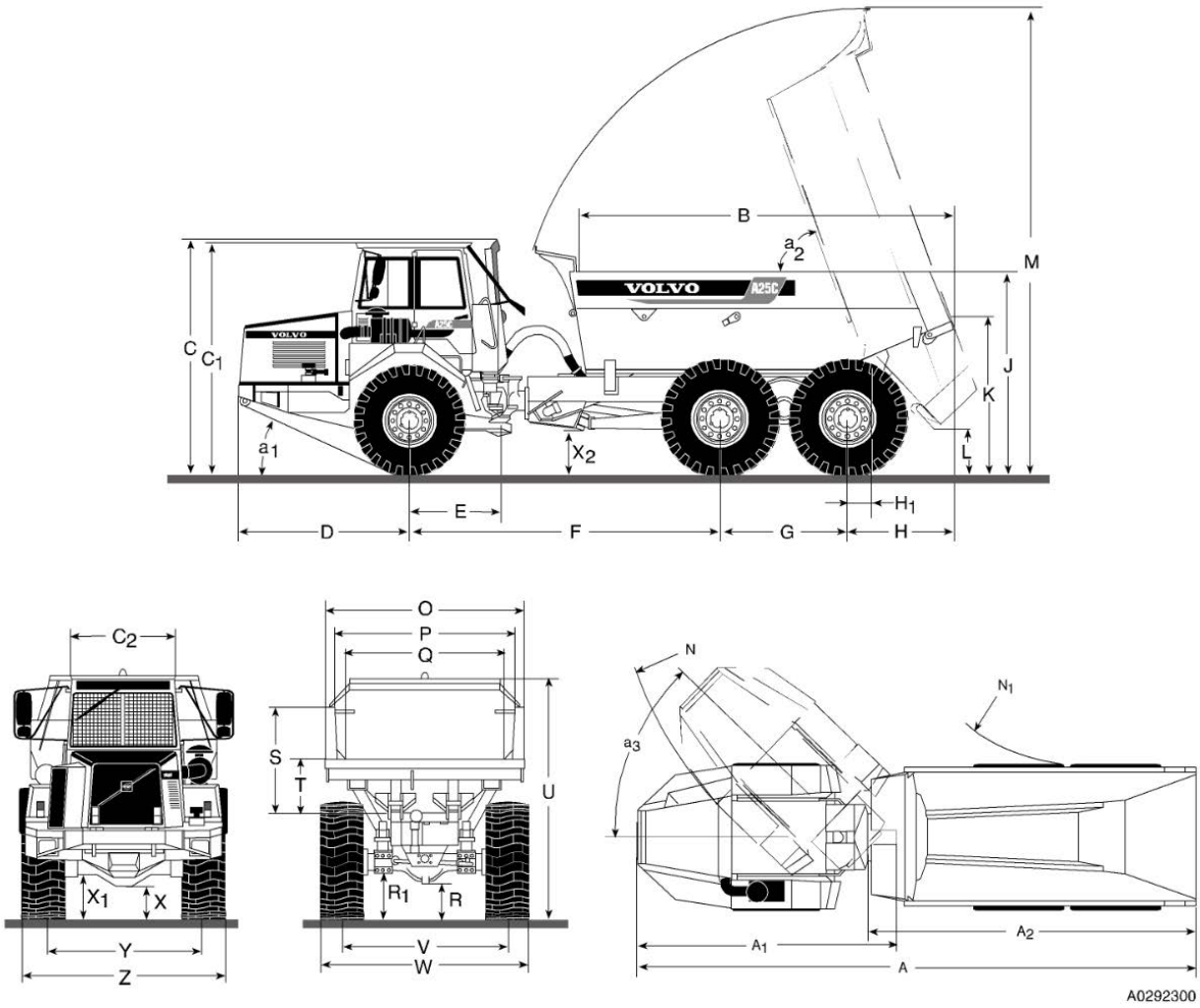


**Figure 1**
Dimensions

| Measurements in mm (in) for unloaded machine with tyres: | | | |
|---|---|---|---|
| | 20.5-25 | 23.5-25 | 23.5-25<br>29.5-25 |
| | **6x6** | **6x6** | **4x4** |
| A | 9675 (380.9) | 9675 (380.9) | 8955 (352.5) |
| $A_1$ | 4495 (176.9) | 4495 (176.9) | 4495 (176.9) |
| $A_2$ | 5710 (224.8) | 5710 (224.8) | 5710 (224.8) |
| B | 5000 (196.8) | 5000 (196.8) | 4500 (177.2) |
| C | 3225 (127) | 3285 (129.3) | 3285 (129.3) |
| $C_1$ | | 3210 (126.4) | 3210 (126.4) |
| C2 | 1320 (52) | 1320 (52) | 1320 (52) |

| | | | |
|---|---|---|---|
| D | 2415 (95) | 2415 (95) | 2415 (95) |
| E | 1200 (47.2) | 1200 (47.2) | 1200 (47.2) |
| F | 4165 (164) | 4165 (164) | 4650 (183.1) |
| G | 1670 (65.8) | 1670 (65.8) | – |
| H | 1425 (56.1) | 1425 (56.1) | 1890 (74.4) |
| $H_1$ | 385 (151.2) | 385 (151.2) | 590 (23.2) |
| J | 2720 (107.1) | 2780 (109.4) | 2730 (107.5) |
| K | 2090 (82.3) | 2150 (84.7) | 2335 (91.9) |
| L | 580 (22.8) | 640 (25.2) | 650 (25.6) |
| M | 6350 (250) | 6400 (252) | 5700 (224.4) |
| N | 7850 (309) | 7850 (309) | 7500 (295.2) |
| $N_1$ | 4250 (167.3) | 4250 (167.3) | 3550 (139.8) |
| O | 2500 (98.4) | 2500 (98.4) | 2980 (117.3) |
| P | 2300 (90.5) | 2300 (90.5) | 2800 (110.2) |
| Q | 2100 (82.7) | 2100 (82.7) | 2680 (105.5) |
| R | 460 (18.1) | 520 (20.5) | 555 (21.7) |
| $R_1$ | 560 (22) | 620 (24.4) | 695 (27.3) |
| S | 1340 (52.7) | 1340 (52.7) | 1405 (55.3) |
| T | 710 (27.9) | 710 (27.9) | 1030 (40.5) |
| U | 2945 (116) | 2995 (117.9) | 3165 (124.6) |
| V | 1930 (75.9) | 2150 (84.7) | 2370 (93.3) |
| W | 2490 (98) | 2795 (110) | 3180 (125.1) |
| X | 420 (16.5) | 480 (18.8) | 480 (18.8) |
| $X_1$ | 550 (21.6) | 610 (24) | 610 (24) |
| $X_2$ | 600 (23.6) | 660 (26) | 770 (30.3) |
| Y | 1930 (75.9) | 2150 (84.7) | 2150 (84.7) |
| Z | 2490 (98) | 2795 (110) | 2795 (110) |
| $a_1$ | 24.5 | 26 | 26 |
| $a_2$ | 70 | 70 | 70 |
| $a_3$ | 45 | 45 | 45 |