A25E/A30E

Foreword

OPERATOR'S MANUAL

This Operator's Manual is intended as a guide for the correct use and maintenance of the machine. Therefore, study it carefully before starting and operating the machine, or before carrying out any preventive maintenance.

Keep the manual in the cab so that it always is at hand. Replace it immediate if it is lost.

The manual describes the applications for which the machine primarily is intended and is written to apply for all markets. We therefore ask you to disregard the sections which are not applicable to your machine or to the work for which you use your machine.

NOTE! The information in the manual applies to machine models A25E 6x6, A25E 4x4, A25ETR, and A30E, unless otherwise indicated.

Many hours are spent on design and production to make a machine that is as efficient and safe as possible. The accidents which occur in spite of this, are mostly caused by the human factor. A safety conscious person and a well maintained machine make a safe, efficient and profitable combination. **Therefore, read the safety instructions and follow them.**

We continually strive to improve our products and to make them more efficient through changes to their design. We retain the right to do this without committing ourselves to introduce these improvements on products, which have already been delivered. We also retain the right to change data and equipment, as well as instructions for service and other maintenance measures without prior notice.

Safety regulations

It is the operator's obligation to know and follow the applicable national and local safety regulations. The safety instructions in this manual only apply to cases when there are no national or local regulations.

WARNING!

The symbol above appears at various points in the manual together with a warning text. It means: Warning, be alert! Your safety is involved! It is the obligation of the operator to make sure that all warning decals are in place on the machine and that they are readable.Accidents may otherwise occur.

Get to know the capacity and limits of your machine!

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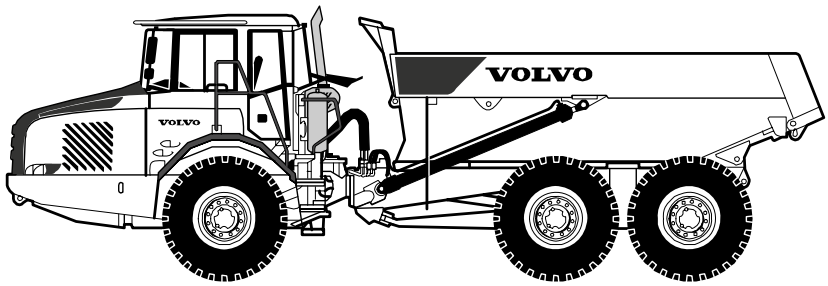
Identification numbers

State the identification number of the machine and the components below. The number should be stated when contacting the manufacturer and when ordering spare parts. Update the list when a component is replaced. The position of the plates is shown on page 11.

Manufacturer	Volvo Construction Equipment AB Hauler & Loader Division Carl Lihnells väg SE-360 42 BRAÅS Sweden
Machine Product Identification Number	
Engine	
Transmission	
Dropbox	
Front axle	
Front bogie axle	
Rear bogie axle	
Cab	

Table of contents



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Presentation

Volvo A25E 6×6 is a 3-axle, sprung hauler with articulated frame steering and a load capacity of 24 tons and a load volume of 15 m^3 (52910 lb / 530 ft^3). The machine has 4-wheel drive, which can be engaged and disengaged.

Volvo A25E 4×4 and Volvo A25ETR (tunnel hauler) are versions of Volvo A25E 6x6. The machines have a load capacity of 24 tons (26.4 sh tons) and a load volume of 13 m^3 (52910 lb / 459 ft^3).

Volvo A30E is a 3-axle, sprung hauler with articulated frame steering and a load capacity of 28 tons and a load volume of 17.5 m^3 (61730 lb / 618 ft^3).
The machine has 4-wheel drive, which can be engaged and disengaged.

Intended use

The machine is intended to be used under normal conditions for the applications described in the Operator's Manual. If it is used for other purposes or in potentially dangerous environments, for example explosive atmosphere, flammable environment or areas with dust containing asbestos, etc., special safety regulations must be followed and the machine be equipped for such use. Contact the manufacturer/dealer for further information.

Environmental requirements

Bear the environment in mind during all operation, and when servicing and maintaining the machine. Always follow local and national environmental legislation that apply to all handling of the machine.

Engine

Volvo D9B is a straight six cylinder, direct-injected diesel engine with 9.4 litre cylinder capacity, turbocharger, intercooler (charge-air cooling) and electronically controlled fuel injection. The engine has an overhead camshaft and unit injectors, one per cylinder. The cylinder head is common for all cylinders and has four valves per cylinder.

Electrical system

The machine has four control units (ECUs). The I-ECU (for the instrumentation) is integrated with the display unit, warning lamps and instruments and provides the operator with information via these. The V-ECU (for the machine) receives signals from sensors on the machine and these are sent to the I-ECU. The T-ECU controls the transmission. The E-ECU controls the engine.

Power transmission

The transmission is fully automatic and of the planetary gear type. It has a torque converter with free-wheeling stator and automatic direct drive clutch (lockup) in all gears. The machine has six forward and two reverse gears. A hydraulic retarder is integrated in the transmission.

The dropbox has a differential, which distributes the torque equally between the front and rear axles, thus reducing tyre and road wear as well as fuel consumption. The longitudinal differential is provided with a locking function.

The drive axles are provided with a differential and hub reduction gears of the planetary gear type. All drive axles have a differential lock.

Brakes

Retarder

The retarder integrated in the transmission is a hydraulic brake that acts on the transmission's turbine shaft. The retarder has a max. braking power of 245 kW (333 hp).

Service brakes

The machine is equipped with compressed air-hydraulically operated disc brakes, two circuits for the front axle, two circuits for the front bogie axle, and one circuit for the rear bogie axle.

Parking brake

The parking brake is of the spring brake type, which acts on the propeller shaft, together with engaged differential lock in the dropbox. The spring brake has a separate compressed-air circuit for releasing the brake.

Steering system

The steering system is Volvo-unique, self-compensating, hydro-mechanical with a secondary steering function. A ground-dependent pump on the dropbox safeguards the steering function even if the engine stops, and the machine is still rolling.

Cab

The cab has a heating and ventilation system with defrosting for the windows. Air conditioning is available as an option. The cab has two emergency exits, the door and the rear right side window, which must be broken with the hammer kept in the cab, if the window has to be used as an exit.

FOPS and ROPS

The cab is approved as a protective cab according to the standards FOPS and ROPS, see page 188. FOPS is an abbreviation of Falling Object Protective Structure (roof protection) and ROPS is an abbreviation of Roll Over Protective Structure (rollover protection).

Never carry out any unauthorised alterations to the cab, e.g. lowering the roof height, drilling, welding on brackets for fire extinguisher, radio aerial or other equipment, without first, via a dealer, having discussed the alteration with personnel at the Volvo Engineering Department. This department will decide whether the alteration may cause the approval to become void.

It is important that all affected persons are aware of these regulations.

Modifications

Modifications to this machine including the use of unauthorised attachments, accessories, units or parts that may affect the machine integrity (condition) and/or the ability of the machine to function in the way for which it is designed. Persons or organisation who carry out unauthorised modifications, assume all responsibility for consequences, which arise because of the modification or can be attributed to the modification, including damaging affect on the machine.

No modifications of any kind may be carried out on this product unless each specific modification having first been approved in writing by Volvo Construction Equipment. Volvo Construction Equipment reserves the right to decline all warranty claims which have arisen because of or can be traced to unauthorised modifications.

Modifications may be considered to be officially approved, if at least one of the following conditions has been met:

1 The attachment, the accessory, the unit or the part has been made or distributed by Volvo Construction Equipment and has been installed according to the factory approved method described in a publication available from Volvo Construction Equipment; or

2 The modification has been approved in writing by the Engineering Department for the respective product line at Volvo Construction Equipment.

Additional structures (retrofits)

All modifications of the basic product may affect its stability. For example this applies when installing body height extension.

If the warranty is to apply, the additional structures must have been approved by Volvo CE

Anti-theft device (optional equipment)

An installed anti-theft device makes it more difficult to steel the machine. Volvo CE can supply an anti-theft device as optional equipment. If your machine is not equipped with such a device, look into the possibility of having one installed by your dealer.

Logged machine data

The machine is equipped with a software system that registers and stores various types of information. The information can be transferred to Volvo CE in order to be used for product development purposes and for troubleshooting. The stored information contains among other items travelling speed, fuel consumption and various temperatures. Volvo CE and its authorised workshops will make use of this information.

CareTrack (optional equipment)

The machine can be equipped with CareTrack, a telematics system developed by Volvo Construction Equipment. The system stores machine data, e.g., the machine's position, operating hours, fuel consumption, fuel level, that is available for wireless transmission to a computer. CareTrack is available in different versions, depending on the required information level.

CareTrack makes it easier to plan for service and reduces costly downtime. Productivity is improved by knowing if machines are being operated correctly and how much fuel is being consumed. CareTrack also allows the customer to restrict the operating area of the machine by using virtual geographic fences. This helps eliminate unauthorised machine usage and theft. For further information, contact a Volvo Construction Equipment dealer.

CareTrack is only available on certain markets. Contact your dealer for more information.

Body height extension for light material (optional equipment)

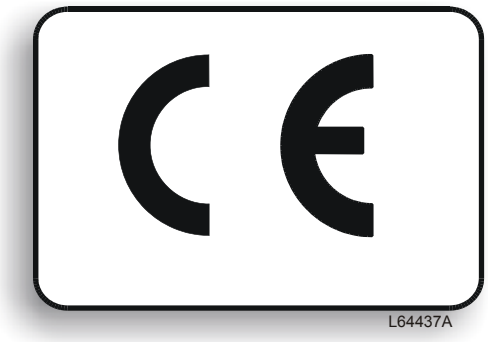
It is possible to equip the machine with body height extension in order to transport light material.

The body height extension is attached directly to the ordinary dump body and while it is mounted, only light material may be transported in the dump body.

Turn-around wheels A25ETR

Equipment to facilitate 180° turns in tight spaces.

CE marking, EMC directive


L64437A

CE marking

(The Declaration of Conformity only applies to machines marketed within the EU/EEA).

This machine is CE marked. This means that when delivered the machine meets the applicable "Essential Health and Safety Requirements", which are given in EU's so-called Machine Safety Directive, 98/37/EC.

Any person carrying out changes that affect the safety of the machine, is also responsible for the same.

As proof that the requirements are met, the machine is supplied with an EU Declaration of Conformity, issued by Volvo CE for each separate machine. This EU declaration also covers attachments manufactured by Volvo CE. The documentation is a valuable document, which should be kept safe and retained for at least ten years. The document should always accompany the machine when it is sold.

If the machine is used for other purposes or with other attachments than described in this manual, safety must at all times and in each separate case be maintained. The person carrying out such action is also responsible for the action which, in some cases, may require a new CE marking and the issue of a new EU Declaration of Conformity.

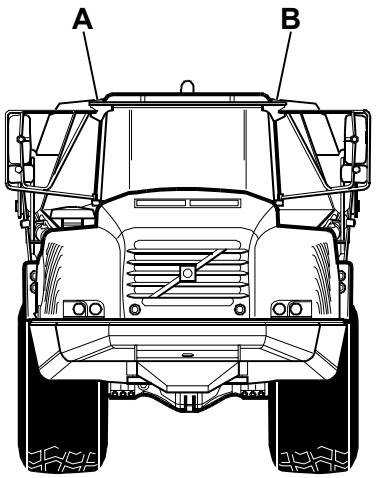
The EU EMC Directive

The electronic equipment of the machine may in some cases cause interference to other electronic equipment, or suffer from external electromagnetic interference, which may constitute safety risks.

The EU EMC directive about "Electromagnetic compatibility", 2004/108/EC, provides a general description of what demands can be made on the machine out of a safety point of view, where permitted limits have been determined and given according to international standards.

A machine or device which meets the requirements should be CE marked. Our machines have been tested particularly for electromagnetic interference. The CE marking of the machine and the declaration of conformity also cover the EMC directive.

If other electronic equipment is fitted to this machine, the equipment must be CE marked and tested on the machine with regard to electromagnetic interference.



A Radio aerial
B Telephone aerial / Two-way radio

Communication equipment, installation

IMPORTANT! All installation of optional communication equipment must be carried out by trained professionals and in accordance with the Volvo CE instructions applicable to the machine.

Protection against electromagnetic interference

This machine has been tested in accordance with EU directive 89/336/EEC governing electromagnetic interference. It is therefore very important that all non-approved electronic accessories, such as communication equipment, should be tested before installation and use, since they can cause interference to the electronic systems of the machine.

Mobile telephones

To obtain the best functionality, mobile telephones should be permanently installed in the electrical system of the machine, with a permanent aerial fixed on the cab and installed as advised by the manufacturer. Note, that if a portable mobile telephone is used, it can constantly transmit information to its base station, even when the telephone is not used.For this reason, it must not be placed close to other electronic equipment in the machine, e.g. directly on a control panel or similar.

Guidelines

The guidelines given below must be followed during installation:

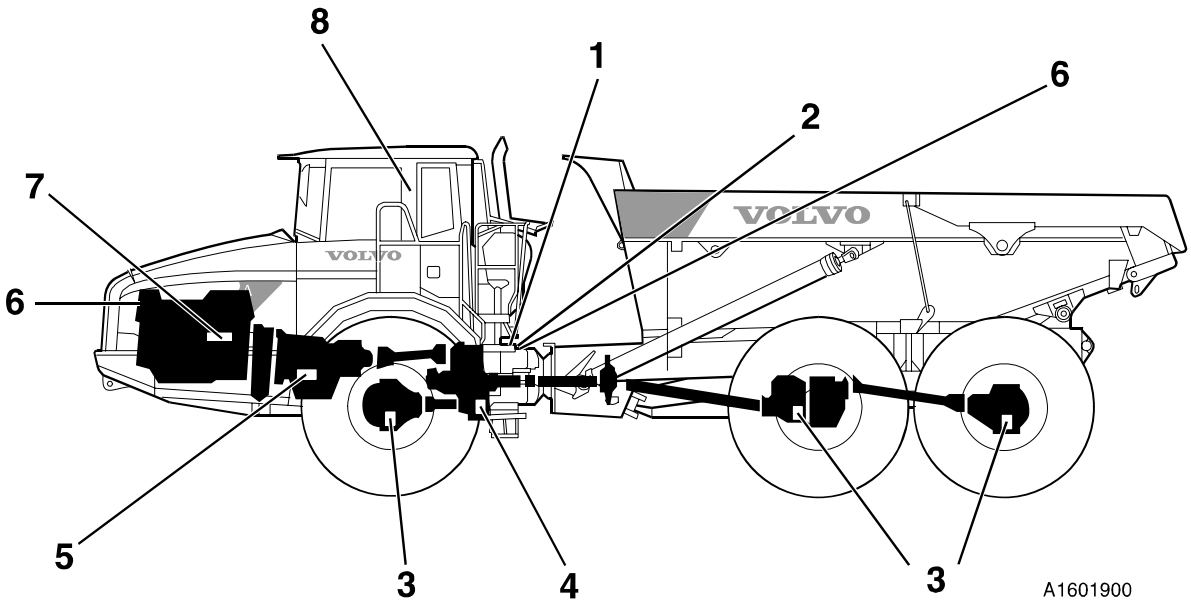
- The position of the aerial must be selected so that it is well adapted to the environment.
- The aerial downlead must be of the coaxial cable type. Make sure that the cable is undamaged, that the screen is not split up at the ends, but thoroughly encased in the connector and has a good galvanic contact with the same.
- The mating surface between the aerial mounting bracket and the bodywork must be clean metal surfaces, with all dirt and oxide removed. Protect the mating surfaces against corrosion after installation, to maintain good galvanic contact.
- Remember to keep interfering cables and those which may suffer from interference apart. Interfering cables are the power supply cables and the aerial cable to the communication equipment. Cables, which may suffer interference, run to and from electronic control units on the machine. Install cable harnesses as close to grounded plate surfaces as possible, as these have a screening effect.

Plates and decals

Product plates

The following shows the product plates that should be found on the machine.

When ordering spare parts and when making enquiries by telephone or correspondence, the model designation and **P**roduct **I**dentification **N**umber **(PIN)**.



1 Product plate with **P**roduct **I**dentification **N**umber, **PIN** for complete machine (includes model number, product number, and serial number). Where applicable, product plate CE with CE-approval, machine weight, engine power, manufacturing year, and serial number. The plate is positioned on the left side of the tractor unit's frame by the steering joint.

2 The serial number of the machine is stamped into the frame on the right side of the tractor unit, by the steering joint.

3 The serial number of the drive axles is positioned on the axle housing.

4 The serial number of the dropbox is positioned at the back of the box to the right.

5 The transmission type designation and serial number are positioned on its left side.

6 The decal ”Important engine information” is located on the engine's valve cover and on the engine-ECU.

7 The engine type designation, part and serial numbers are stamped into both sides of the cylinder block.

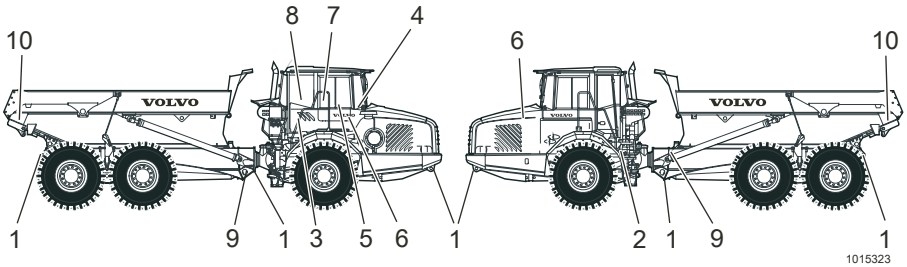
8 Cab type, type approval and serial number are positioned on the left side in the cab.

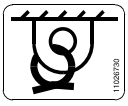
Information and warning plates

The operator shall be aware of and follow the information and warning decals that are found on the machine. All decals are not found on all machines, decals are market and machine-dependent.

Decals shall be kept clean and free from dirt so that they are legible. If they have been lost or no longer are legible, they shall be replaced immediately. Spare part numbers (order number) are found on each decal as well as in the parts catalogue.

NOTE! The text “WARNING” is used on warning decals in North America.




A0000500

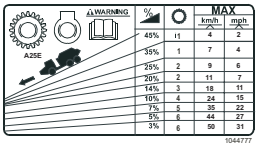
1 Attaching point for lashing


1014833

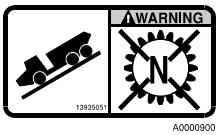
2 Battery disconnect switch


A0000700

3 Avoid directing water jet against air intakes.



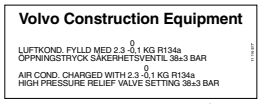
4 Retarder diagram (on page 86 the decal is shown in larger format and for each machine model)



A0000900

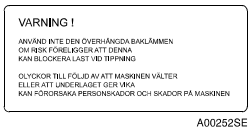
5 WARNING! Do not operate downhill with the gear selector in neutral. Only change gear with the accelerator released.

A0001000



A1601500

6 Air conditioning filled with R134a. Opening pressure, safety valve (optional equipment)



A00252SE

7 WARNING! Do not use the overhung tail gate (optional equipment), if there is a risk that it may block the load when tipping. Accidents caused by the machine overturning or the ground giving way can cause injuries and damage to the machine.

A1601400

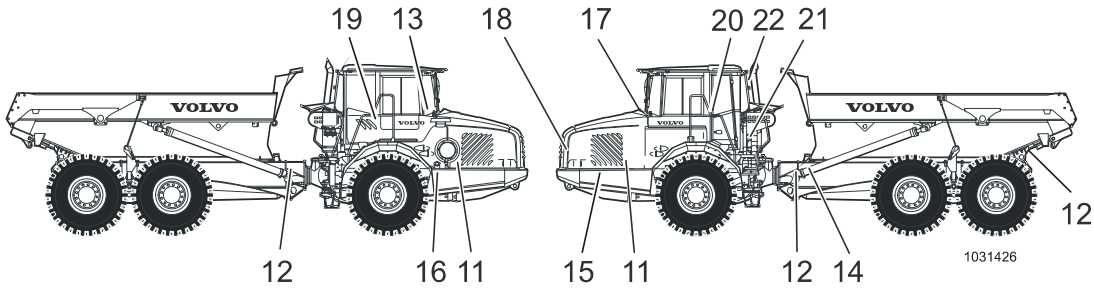
8 Emergency exit

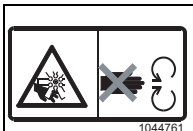

1044759

9 WARNING! Risk of crushing – articulated frame steering.


1044760

10 WARNING! Do not remain within the working area of a reversing machine.




1044761

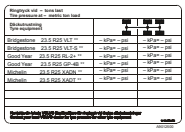
11 WARNING! Rotating fan.


1044762

12 WARNING! Do not lean in under raised dump body, unless it is blocked.


A0197200

13 Brake system under pressure.



14 Tyre pressure


A0001800

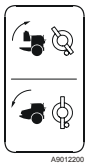
15 Hydraulic oil


A0001900

16 Fuel

1020820

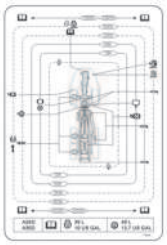
17 WARNING! Only use Volvo coolant VCS – read the Operator's Manual.


A9012200

18 Engine hood

19 Sound pressure level (LpA) at operator's station

20 Sound power level (LwA) around the machine


1014834

21 Service decal

1031103

22 WARNING! The machine must not carry a heavier load than what is stated on the decal (optional equipment on machines with body height extension for light materials).

The USA Federal Clean Air Act

The Federal Clean Air Act Section 203.a (3) prohibits the removal of air pollution control devices or the modification of an EPA-certified non-road engine to a non certified configuration.

The Federal regulations implementing the Clean Air Act for non-road engines, 40 CFR 89.1003(a)(3)(i), reads as follows:

The following acts and the causing thereof are prohibited:

For a person to remove or render inoperative a device or element of design installed on or in a non-road engine vehicle or equipment in compliance with the regulations under this part prior to its sale and delivery to the ultimate purchaser or for a person knowingly to remove or render inoperative such a device or element of design after the sale and delivery to the ultimate purchaser.

The law provides a penalty of up 2,750 USD for each violation.

An example of a prohibited modification is the recalibration of the fuel system so that the engine will exceed the certified horsepower or torque.

You should not make a change to an EPA-certified non-road engine that would result in an engine that does not match the engine configuration certified to meet the Federal Standards.

Customer Assistance

Volvo Construction Equipment wishes to help assure that the Emission Control System Warranty is properly administered. In the event that you do not receive the warranty service to which you believe you are entitled under the Emission Control System Warranty, you should contact the nearest Volvo Construction Equipment Regional office for assistance.

Normal Non-Road Engine Use

The Maintenance Instructions are based on the assumption that this conventional machine will be used as designated in the Operator's Instruction Manual and operated only with the specified fuel and lubrication oils.

Non-Road Engine Maintenance

The non-road engine is of conventional design and any local dealer may perform the necessary non-road engine emission control maintenance defined in this manual.

Volvo recommends that the purchaser use the service program for the non-road engine, known as Preventative Maintenance, including the recommended engine emission control maintenance.

In order to document that the proper regular maintenance has been performed on the non-road engine, Volvo recommends that the owner keep all records and receipts of such maintenance. These records and receipts should be transferred to each subsequent purchaser of the non-road engine.

Service Performed By Your Local Dealer

Your local dealer is best suited to give you good, dependable service since he has trained service technicians and is equipped with genuine original manufacturer's parts and special tools as well as and the latest technical publications. Discuss your servicing and maintenance requirements with your local dealer. He can tailor a maintenance program for your needs.

For regular, scheduled service or maintenance, it is advisable to contact your local dealer in advance to arrange for an appointment to ensure availability of the correct equipment and service technician to work on your machine. In this way you will aid your local dealer in efforts to decrease service time on your machine.

Preventive Maintenance Program

To retain the dependability, noise level and exhaust emission control performance originally built into your conventional non-road engine, it is essential that the non-road engine receives periodic service, inspections, adjustments and maintenance.

Fuel system

Fuel Recommendations:

The fuel used must be clean, completely distilled, stable and non-corrosive. Distillation range, cetane level and sulfur content are most important when selecting fuel for optimum combustion and minimum wear.

Engine working conditions and ambient temperature influence the selection of the fuel with respect to cold handling properties and cetane levels.

If the machine is to operate in cold weather conditions, below 32 ºF (0 ºC), the use of lighter distillate or higher cetane level fuel are recommended. (Final boiling point max. 660 ºF (349 ºC) and cetane min. 45).

To avoid excessive deposit formation and to minimize the emissions of sulfur dioxide into the ambient air, the sulfur content of the fuel should be the lowest available. The diesel fuels recommended for use in Volvo engines should meet ASTM designation: D 975 No. 1D (C-B) or No. 2D (T-T) with a cetane level above 42 and sulfur content not exceeding 0.05 percent by weight.

Check for fuel leaks (while the engine is running at fast idle):

- Visually check unions and hose connections.

Check the condition of fuel hoses for:

- Ageing
- Cracks
- Blisters
- Scuffing

Check the condition of the fuel tank:

- Drain water condensation.
- Check for cracks.
- Check for any leaks.
- Check the mounting.

Check the turbocharger:

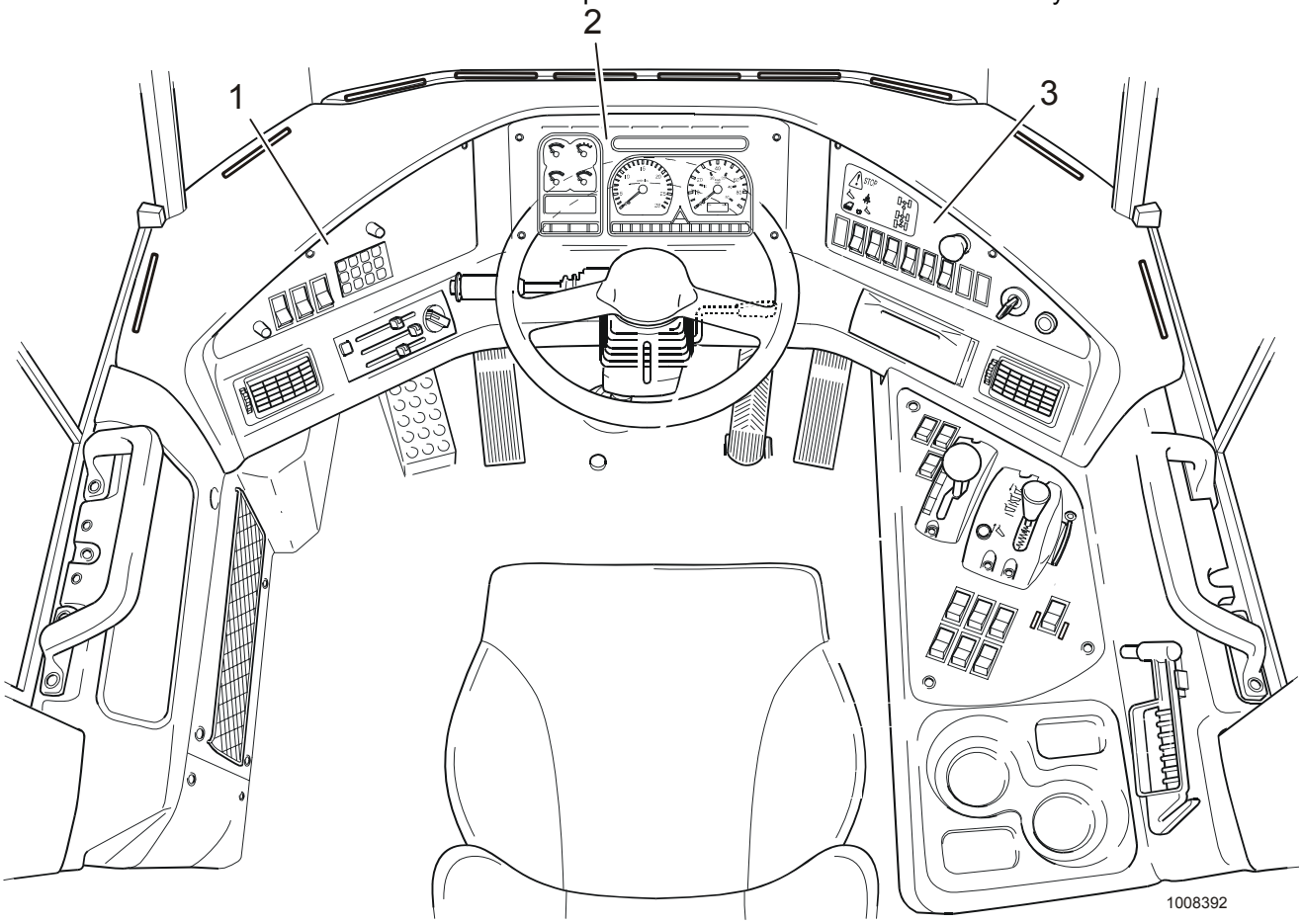
- Visually check for leaks in the intake hoses and exhaust pipe of the turbocharger.

Instrument panels

WARNING!

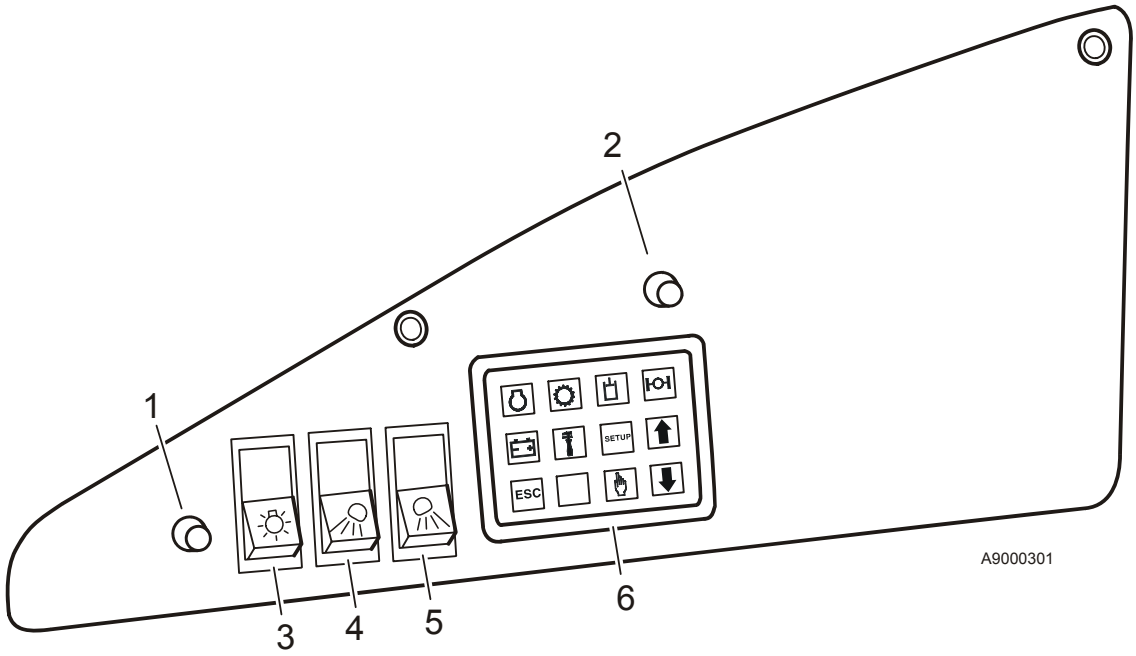
Do not operate the machine until you are thoroughly familiar with the position and function of the various instruments and controls. Read through the Operator's Manual thoroughly – Your safety is involved!

Keep the manual in the cab so that it is always at hand.

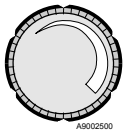


1	Left instrument panel	3	Right instrument panel
2	Centre instrument panel		

Left instrument panel

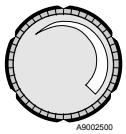


1	Rheostat, lights in switches	4	Front working lights (optional equipment)
2	Rheostat, instrument lighting	5	Rear working lights (optional equipment)
3	Travel lights	6	Keypad for display unit



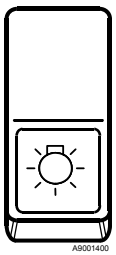
1 Rheostat, switch

Regulates steplessly the light intensity in all switches.



2 Rheostat, instrument lighting

Regulates steplessly the light intensity for the centre instrument panel.

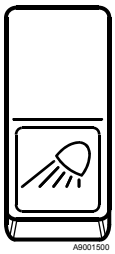


3 Travel lights

Upper end of switch pressed in = lights are off

Switch in centre position = parking and instrument lighting switched on

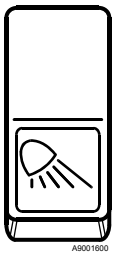
Lower end of switch pressed in = travel and instrument lighting switched on



4 Front working lights (optional equipment)

Upper end of switch pressed in = lights are off

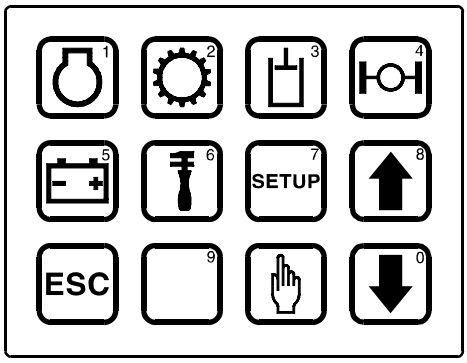
Lower end of switch pressed in = front working lights switched on



5 Rear working lights (optional equipment)

Upper end of switch pressed in = lights are off

Lower end of switch pressed in = rear working lights switched on



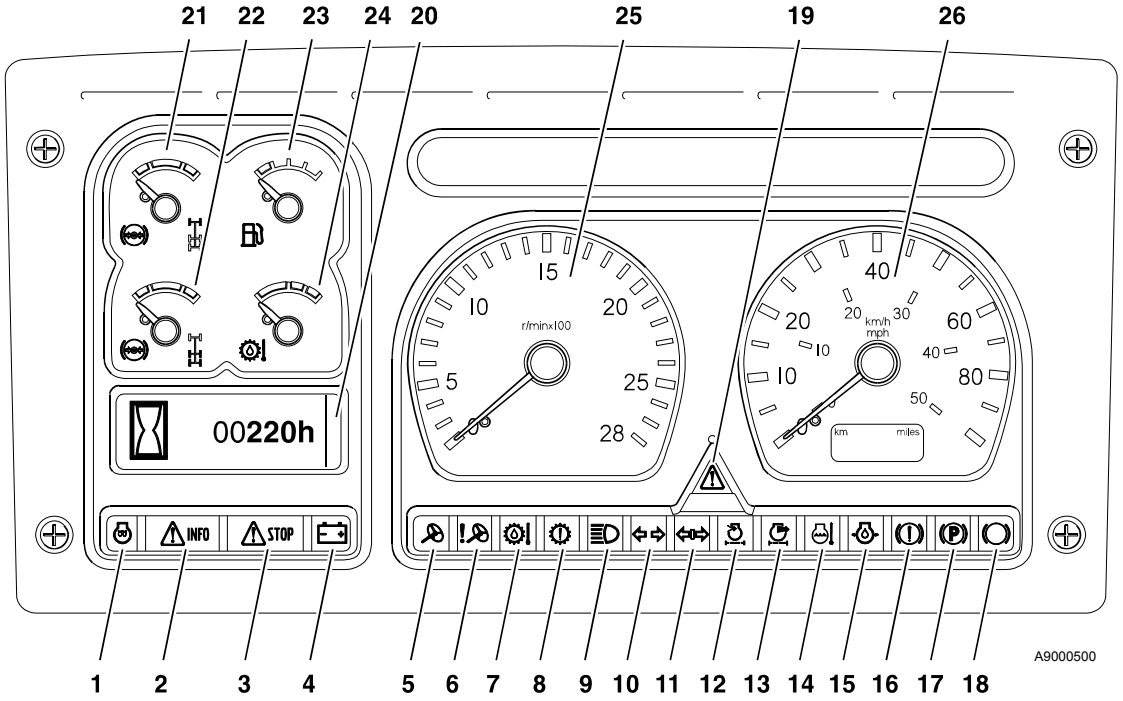
6 Keypad for display unit

With this keypad it is possible to select any menu or function you would like to see on the display unit (located in the main instrument), see page 29.

Centre instrument panel

If, during the start-up sequence, any of these lamps do not light up when the ignition key is turned to running position (1), the lamp is faulty or a fault has occurred in the electrical system. This should be dealt with before start.

All lamps should go out when the engine starts, except for the parking brake light, which does not go out until a pressure of 570 kPa has been reached.



1	Preheating connected	14	Coolant temperature high
2	Central warning, amber	15	Engine oil pressure low
3	Central warning, red	16	Brake system, low oil pressure
4	Charging faulty	17	Parking brake applied
5	Secondary steering system out of order	18	Service brakes applied
6	Primary steering system out of order	19	Central warning, amber
7	Transmission oil temperature high	20	Display unit
8	Transmission sensor malfunctioning or faulty	21	Brake circuit oil pressure in tractor unit
9	High beams on	22	Brake circuit oil pressure in trailer unit
10	Direction indicators, tractor unit	23	Fuel gauge
11	Direction indicators, trailer unit	24	Transmission oil temperature
12	Engine air filter clogged	25	Tachometer
13	Is not used	26	Speedometer/odometer


A1345000

1 Preheating connected

Lights up when the engine preheating coil is connected.

Flashes if the engine coolant temperature is below 0 °C, and the start key is in position 1, preheating is recommended.

A1345200

2 Central warning (INFO), amber

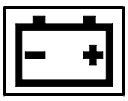
Lights/flashes in case of the existence of abnormal condition. Measures may have to be taken depending on the function concerned – investigate the cause at the next stop. See page 37.

A1345300

3 Central warning (STOP), red

NOTE! If the lamp flashes while operating – stop the machine immediately and investigate the cause.

See also page 37.


A1345400

4 Charging faulty

Lights when the alternator does not supply charging voltage.


A1345500

5 Secondary steering system out of order

Lights if the secondary steering system is out of order.


A1345600

6 Primary steering system out of order

Lights up if the primary steering system is out of order.

NOTE! Stop the machine and investigate the cause.


A1345700

7 Transmission oil temperature high

Lights if the transmission's oil temperature is too high.


A1345800

8 Transmission sensor malfunctioning or faulty

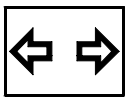
Lights in case of malfunction or faulty sensor in the transmission.

NOTE! Stop the machine, stop the engine and contact workshop authorised by Volvo CE.


A1345900

9 High beams on

Lights when the high beams are on.


A1346000

10 Direction indicators, tractor unit

Flashes when the direction indicators have been activated. Indicates that the tractor unit direction indicators are working.

22 Centre instrument panel


A1363300

11 Direction indicators, trailer unit

Flashes when the direction indicators have been activated. Indicates that the trailer unit direction indicators are working.


A1346100

12 Engine air filter clogged

Lights if the engine air filter is clogged – replace or clean the filter.


A1346200

13 Exhaust emission control

Is not used.


A1346300

14 Coolant temperature high

Lights if the engine's coolant temperature is too high.


A1346400

15 Engine oil pressure low

Lights if the engine's oil pressure is too low.


A1346500

16 Brake system oil pressure low

Lights if the hydraulic oil pressure in the brake system is too low.


A1346600

17 Parking brake applied

Lights when the parking brake is applied.


A1346700

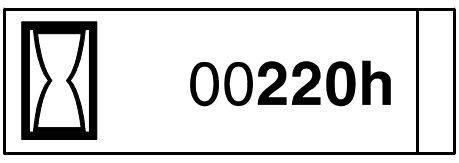
18 Service brakes applied

Lights when the service brakes are applied.


A1345100

19 Central warning, amber

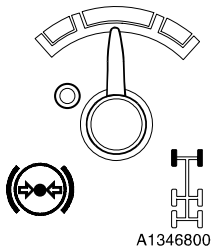
Lights /flashes in case of the existence of abnormal condition. Measures may have to be taken depending on the affected function, investigate the cause at the next stop. See page 37.



A9000600

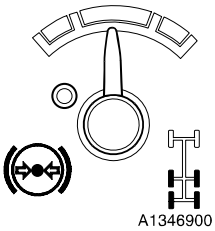
20 Display unit

An LCD-display that shows many different displays (menus) for the machine's condition and state. With the display unit and a keypad on the left instrument panel, you can select the menu you want to see, see page 29.



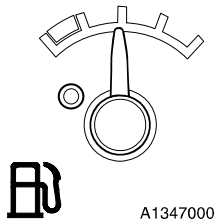
21 Brake circuit oil pressure in tractor unit

Shows the hydraulic oil pressure in the tractor unit brake circuit.



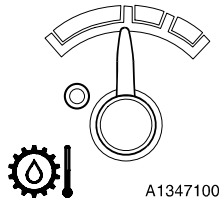
22 Brake circuit oil pressure in trailer unit

Shows the hydraulic oil pressure in the trailer unit brake circuit.



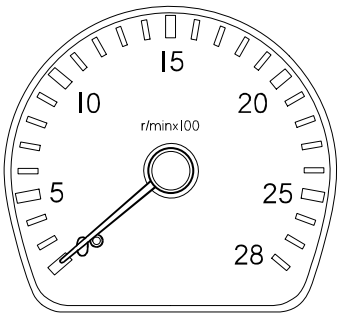
23 Fuel gauge

Shows the level in the fuel tank.



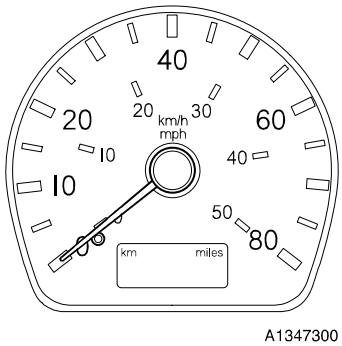
24 Transmission oil temperature

Shows the oil temperature in the transmission.



25 Tachometer

The tachometer is graduated from 0–28/min × 100, which means that, for example, 20 on the scale corresponds to 2000 revolutions per minute.

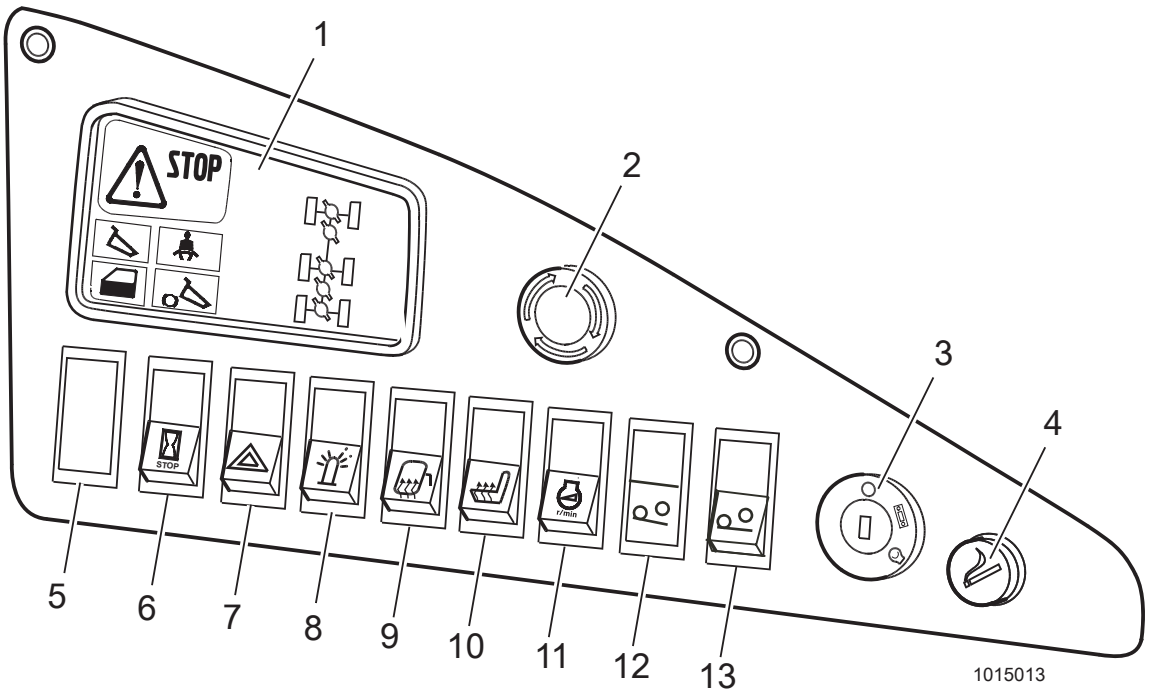


26 Speedometer, odometer

The speedometer shows a speed of 0–80 km/h (0–50 miles/h) and also has a digital odometer, graduated in km (miles).

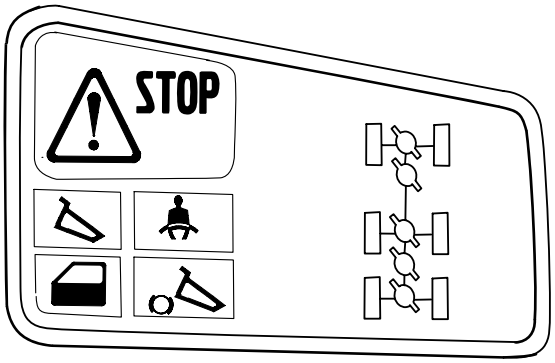
24 Right instrument panel

Right instrument panel



1	Control lamps	8	Rotating warning beacon (optional equipment)
2	Safety stop, engine	9	Electrically heated rear view mirrors (optional equipment)
3	Ignition	10	Electrically heated seat (optional equipment)
4	Cigarette lighter	11	Raised engine speed (optional equipment)
5	Unassigned	12	Control light, turn-around wheels down (applies to A25ETR)
6	Delayed stop (optional equipment)	13	Turn-around wheels (applies to A25ETR)
7	Hazard flashers		

1 Control lamps



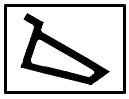
A9000200

A9000100

Red central warning (STOP)

NOTE! If the lamp flashes while operating – stop the machine immediately and investigate the cause.

See also page 37.


A1347900

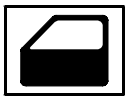
Dump body up, red

Lights when the dump body is raised. Does not light when the dump body is in operating position (i.e., when the dump body is resting against the trailer frame).


A1348000

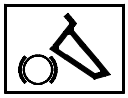
Seat belt reminder, red

Flashes if the operator is sitting in the seat and forgotten to fasten the seat belt with the engine running.


A1347800

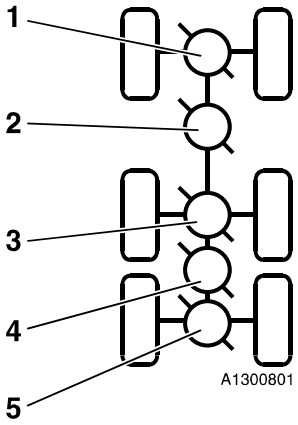
Door open, red

Lights when the door is open. When the door is open, the maximum speed of the machine is limited.


A1348100

Load and dump brake, orange

Lights when the load and dump brake function is engaged. See page 70.



A1300801

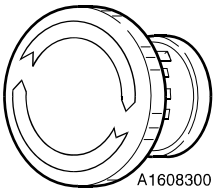
Indicator for differential locks / 6-wheel drive

The lamps in the indicator are on when respective function is activated.

1 Transverse differential lock, front axle
2 Longitudinal differential lock
3 Transverse differential lock, front bogie axle
4 6-wheel drive
5 Transverse differential lock, rear bogie axle

See page 66.

Machines equipped with ATC, see page 49.

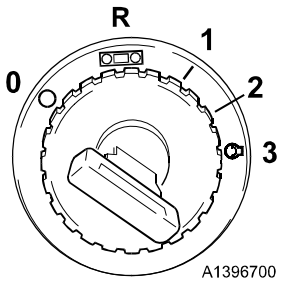

A1608300

2 Safety stop, engine

The safety stop stops the engine under all circumstances.

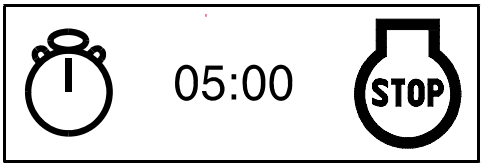
3 Ignition switch

The ignition has five positions as shown in the figure.



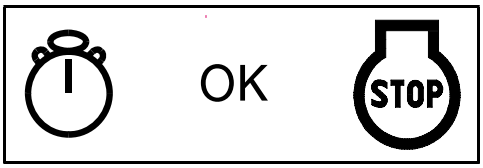
A1396700

OFF position (0)	The engine will stop immediately unless the function "Delayed engine stop" has been activated (optional equipment), see below.
Radio position (R)	Certain electrical equipment will be supplied with electricity. The engine stops if the key is turned from running position (1), unless the function "Delayed engine stop" has been activated (optional equipment), see below.
Running position (1)	The electronics starts up and goes into running mode. The anti-theft device (if installed) will be connected. The safety stop may be connected.
Preheating position (2)	Preheating will be connected.
Starting position (3)	The starter motor will be engaged after a delay of a couple of seconds.



A1364500

Delayed stop (count-down in progress)



A1364600

Delayed stop (count-down completed)

Delayed stop (optional equipment)

When the start key is turned from position 1 to position R or 0 and the switch for "Delayed engine stop" (see point 6 below) is switched on, the engine will run for a further three minutes. This time may be changed with VCADS Pro or Contronic service display unit.

The function will be activated if the following conditions are met:

– gear selector in neutral (N position)
– start key in position 0 (OFF)
– the switch is on.

If the operator changes his or her mind and wants to continue operating, the ignition key should be turned back to position 1 before the electronics has closed down and the engine stopped.

When the function is activated it is not possible to:

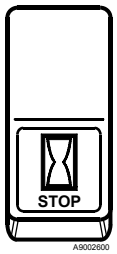
– engage a gear
– change the engine speed (the accelerator pedal is disconnected)
– change the engine speed (the accelerator pedal is disconnected).

4 Cigarette lighter


A1396800

The cigarette lighter socket may also be used as a 24 VDC (15 A) power socket.

5 Unassigned

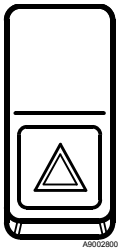


6 Delayed stop of engine (optional equipment)

Upper end of switch pressed in = delayed stop deactivated

Lower end of switch pressed in = delayed stop activated (lamp in switch lights) and the function will be connected if the following conditions are met:

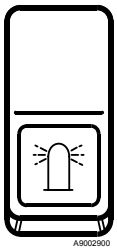
– gear selector in neutral (N position)
– the start key in position 0 (OFF) or position R (radio position)
– the switch is on.



7 Hazard flashers

NOTE! May only be used if you are forced to stop the machine in a way that constitutes a danger to other road users.

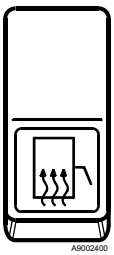
Upper end of switch pressed in = hazard flashers switched off
Lower end of switch pressed in = hazard flashers switched on



8 Rotating warning beacon (optional equipment)

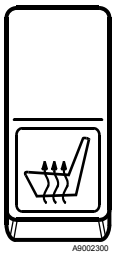
Upper end of switch pressed in = rotating warning beacon switched off

Lower end of switch pressed in = rotating warning beacon switched on



9 Electrically heated rear view mirrors (optional equipment)

Upper end of switch pressed in = heating switched off
Lower end of switch pressed in = heating switched on



10 Electrically heated seat (optional equipment)

Upper end of switch pressed in = heating switched off
Lower end of switch pressed in = heating switched on

11 Raised engine speed (optional equipment)

Upper end of switch pressed in = raised engine speed turned off

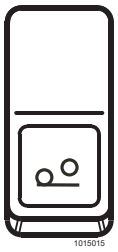
Lower end of switch pressed in = raised engine speed switched on The operating speed control function will be engaged provided that the following conditions are met:

– The function operating speed is activated from the service display unit or VCADS Pro.
– No gear engaged (transmission in neutral).
– Lower end of switch pressed in. Switch is on.

28 Right instrument panel

12 Control light, turn-around wheels down (applies to A25ETR)

Control light is red when the turn-around wheels are down.



13 Turn-around wheels (applies to A25ETR)

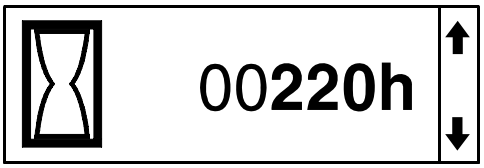
Upper end of switch pressed in = turn-around wheels up

Lower end of switch pressed in = turn-around wheels down

For information on operating with turn-around wheels, see page 91.

Display unit

On the display unit, located on the centre instrument panel, is shown starting sequence, component information, operating information, alarm screens and error codes.



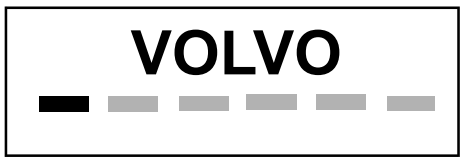
A1363000

Machine hours

When starting electronics, the display shows:

Machine hours

When the battery disconnect switch is switched on and the ignition switch is in position 0, the screen shows accumulated number of machine hours. If the machine is equipped with anti-theft device, see page 42.



A9006400

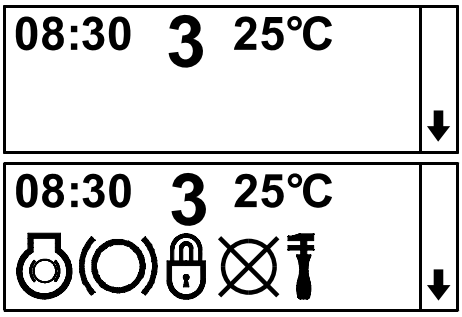
Screen, starting sequence

Initial display

When the ignition switch is turned from position 0 via R to 1, the electronics will start up. Control lamp test is carried out. Initial display is shown on the display unit as an increasing number of rectangles.

The precondition is that the function "Delayed engine stop" (optional equipment) is deactivated, see page 27.

This sequence takes a few seconds. Thereafter the electronics is ready for the engine to be started and the ignition key can be turned to starting position (3).



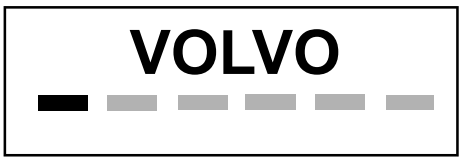
1031106

Operating information

Operating information

When the start-up of the electronics is completed, the Operating Information screen will be shown.

When stopping the electronics, the screen will display:



A9006400

Screen, closing down sequence

When the ignition key is turned from position 1 to R or 0, the electronics of the machine will be closed down in a controlled way. This will be shown on the display unit screen as a reducing number of rectangles, after which the engine stops. This sequence takes a few seconds.

When the ignition switch is turned off, the screen with accumulated number of machine hours will be shown.

If the function "Delayed engine stop" (optional equipment) is activated, see page 27, the engine will not stop until the "delay time" has elapsed. If the ignition key during this time is turned from position 0 to running position 1, the delay is interrupted.

Keypad for display unit

With the aid of the keyboard on the left instrument panel the operator may obtain information about the status of the machine, make settings and enter the code for anti-theft device.

1 ENGINE	2 TRANSMISSION	3 HYDRAULICS	4 AXLES/ BRAKES
5 ELECTRICAL SYSTEM	6 SERVICE	7 SETTINGS	8 ARROW UP
ESC REVERT	9	SELECT/ ACKNOWLEDGE	0 ARROW DOWN

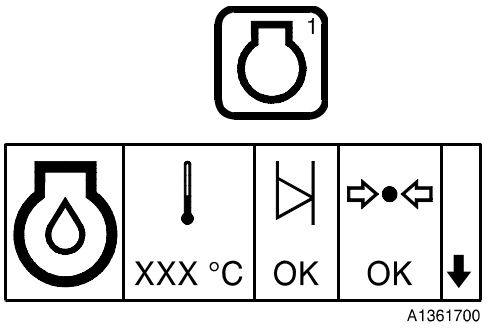
Component information

Information about the machine components is obtained by pressing the respective keys. Use the arrow keys for browsing between the images.

Changing the setting of units, time and date is carried out with the SETUP key, see page 34.

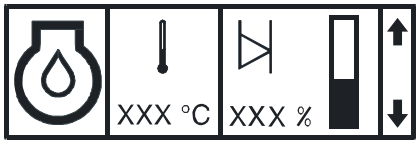
Engine

The screens shown below become available after pressing the engine key. Change screen with the arrow keys.



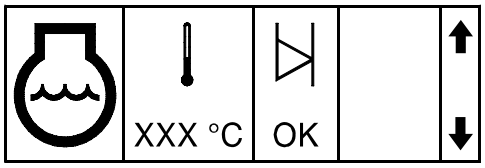
A1361700

Engine oil	
Temperature	°C/°F (in case of minus degrees, the minus sign will be shown at the first position)
Level	OK / V (low) / – – (incorrect value)
Pressure	OK / V (low) / – – (incorrect value)



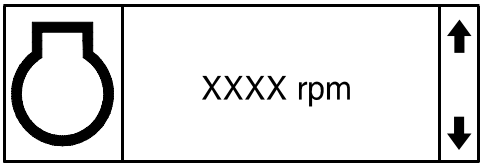
1014647

Engine oil	
Temperature	°C/°F (in case of minus degrees, the minus sign will be shown at the first position)
Level	% within the measuring range



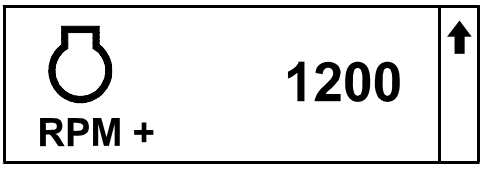
A1361800

Coolant	
Temperature	°C/°F (in case of minus degrees, the minus sign will be shown at the first position)
Level	OK / V (low) / – – (incorrect value)



A1361900

Engine speed	
Engine rpm	rpm

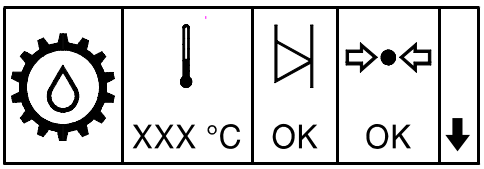


A1617900

Setting operating speed (only shown if the function is available)	
Set operating speed (raised) To change, see page 36	rpm

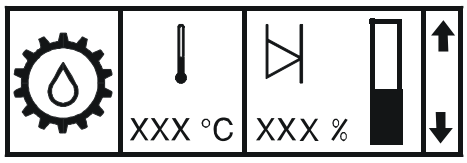
Transmission

The screens shown below become available after pressing the transmission key. Change screen with the arrow keys.



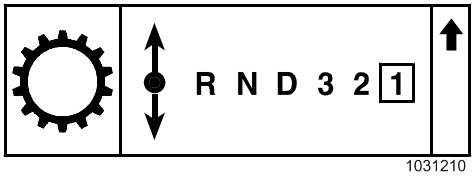
A1362000

Transmission oil	
Temperature	°C/°F (in case of minus degrees, the minus sign will be shown at the first position)
Level	OK / V (low) / ⏜ (high) / – – (incorrect value)
Pressure	OK / V (low) / – – (incorrect value)



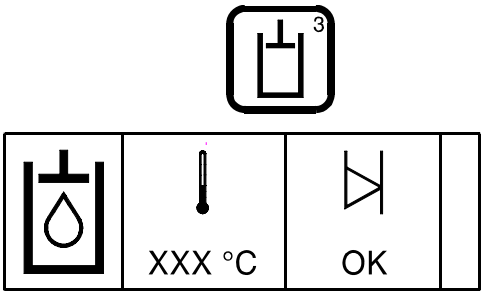
1012033

Transmission oil	
Temperature	°C/°F (in case of minus degrees, the minus sign will be shown at the first position)
Level	% within the measuring range



1031210

Gear	
Position	shows the gear selector control position

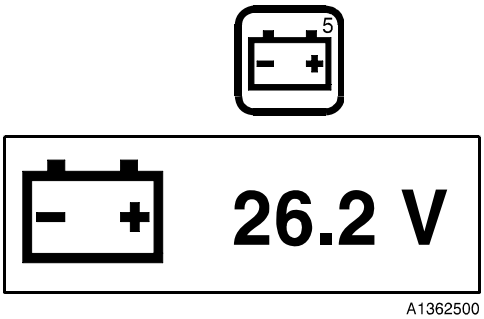


A1362300

Hydraulics

The screen shown below becomes available after pressing the hydraulics key.

Hydraulic oil	
Temperature	°C/°F (in case of minus degrees, the minus sign will be shown at the first position)
Level	OK / V (low) / – – (incorrect value)

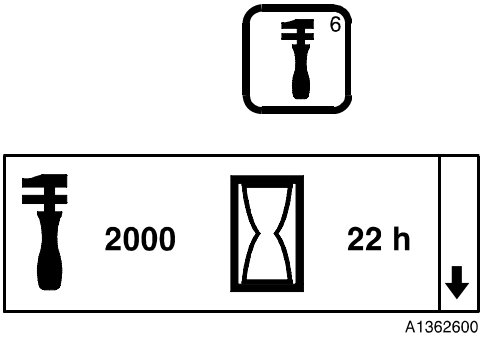


A1362500

Electrical system

The screen shown below becomes available after pressing the electric system key.

Voltage	
Current voltage	V



A1362600

Service

The screen shown below becomes available after pressing the service key.

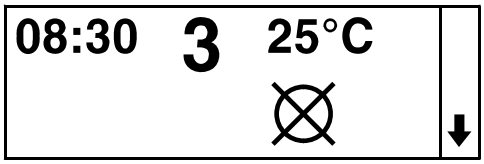
Service	
Next service	250/500/1000/2000
Time left to next service	h

Acknowledgement of service, see page 36.

ESC

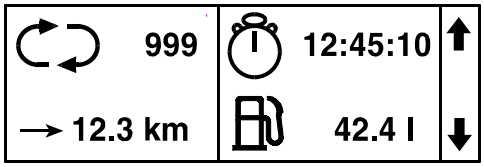
Operating information

The screen below will be shown when the engine has been started.



1031107

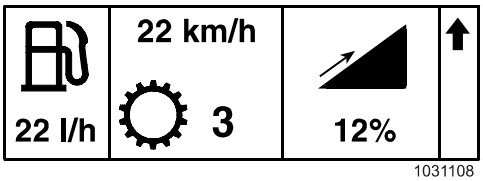
Operating information			
Time	12-display /24-display		Activated exhaust brake
Gear position	N/1/2/3/4/5/6/7/8/9/R1/R2/R3		Activated gear-shift inhibitor
Outside temperature	°C / °F		Error code is active
	Activated engine braking		Next Service



A1361400

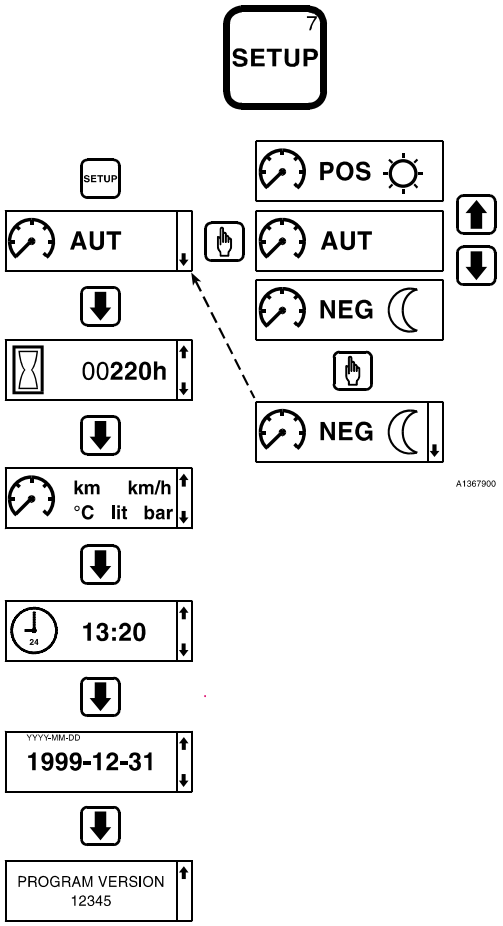
The adjacent screen is shown after pressing the arrow-down key.

Accumulated values after setting to zero			
	Number of operated cycles including tipping after zero setting (To count as one cycle there has to be an interval of three minutes between each tipping).	→	Travelling distance after setting to zero
	Operating time after setting to zero		Fuel consumption after setting to zero



1031108

Current values			
	Fuel consumption (l/h / gal/h)		Gear (N/1/2/3/4/5/6/7/8/9/R1/R2/R3)
Travelling Speed	km/h/mph		Inclination longitudinally (%)

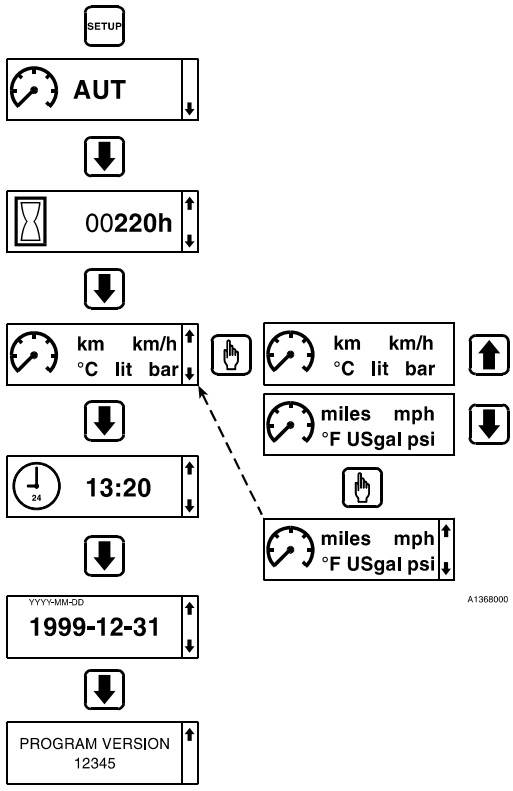


Setting/setting to zero/acknowledgement

The settings below are made with the SETUP key.

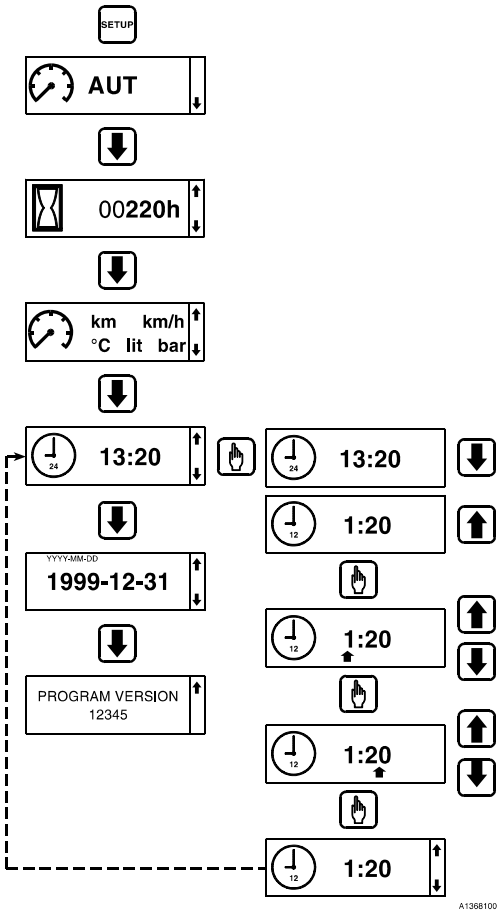
Setting display mode

1 Press the SETUP key.
2 Press the select/acknowledge key.
3 Browse with the arrow keys to the required setting. (The setting procedure may at any time be interrupted with the ESC key.)
POS = positive display screen
AUT = automatic display screen
NEG = negative display screen
4 Acknowledge with the select/acknowledge key.



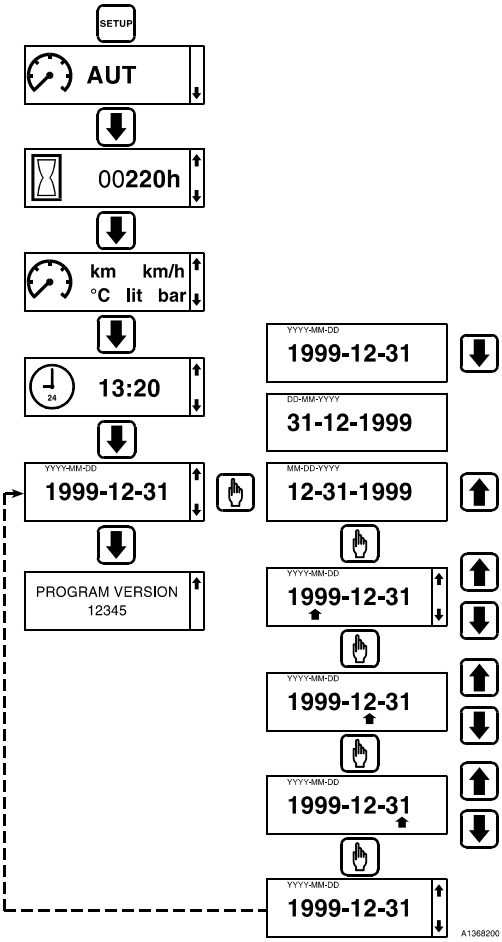
Setting units

1 Press the SETUP key.
2 Press the arrow down key to the unit screen.
3 Press the select/acknowledge key.
4 Browse with the arrow keys to the required setting. (The setting procedure may at any time be interrupted with the ESC key.)
SI/metric = km, km/h, °C, lit, bar
Non-metric = miles, mph, °F, US gal, psi)
5 Acknowledge with the select/acknowledge key.



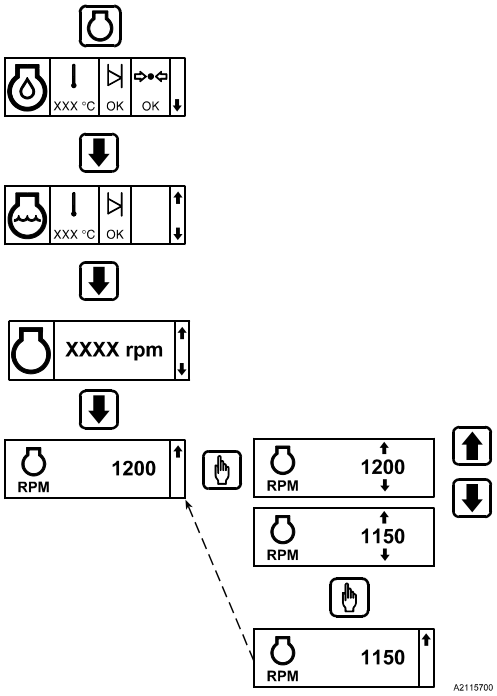
Setting time

1 Press the SETUP key.
2 Press the arrow down key to the time screen.
3 Press the select/acknowledge key.
4 Browse with the arrow keys to the required setting. (The setting procedure may at any time be interrupted with the ESC key.)
   24-hour display (13:20)
   12-hour display (1:20)
5 Acknowledge with the select/acknowledge key.
6 Cursor is placed by hour. Set the hour(s) with the arrow keys.
7 Acknowledge with the select/acknowledge key.
8 Cursor is placed by minute. Set the minute(s) with the arrow keys.
9 Acknowledge with the select/acknowledge key.



Setting date

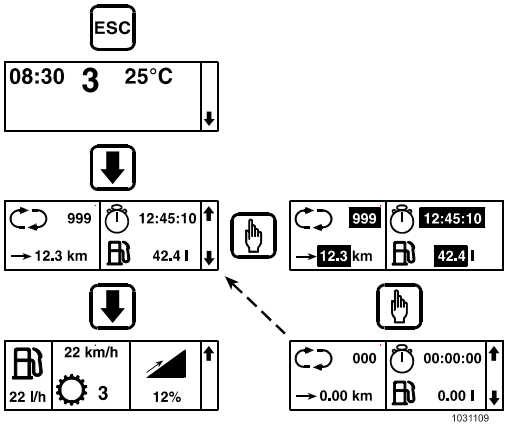
1 Press the SETUP key.
2 Press the arrow down key to the date screen.
3 Press the select/acknowledge key.
4 Browse with the arrow keys to the required setting. (The setting procedure may at any time be interrupted with the ESC key.)
   Year-Month-Day
   Day-Month-Year
   Month-Day-Year
5 Acknowledge with the select/acknowledge key.
6 Cursor is placed by Year. Set the year with the arrow keys.
7 Acknowledge with the select/acknowledge key.
8 Cursor is placed by Month. Set the month with the arrow keys.
9 Acknowledge with the select/acknowledge key.
10 Cursor is placed by Day. Set the day with the arrow keys.
11 Acknowledge with the select/acknowledge key.



Setting operating speed (raised speed) (optional equipment)

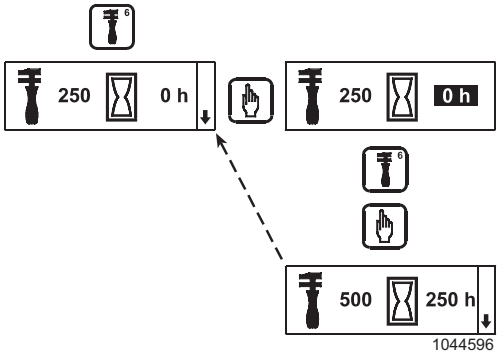
1 Press the engine key.
2 Browse with the arrow down key to the screen for operating speed.
3 Press the select/acknowledge key.
4 Browse with the arrow keys to the required setting. (The setting procedure may at any time be interrupted with the ESC key.)

   The range for the operating speed is 800–1600 rpm. Each step represents 50 rpm. (The range can be altered with VCADS Pro.)
5 Press the select/acknowledge key.



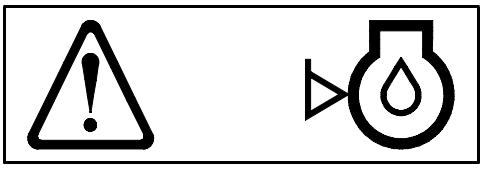
Zero setting cycle counter

1 Press the ESC key.
2 Press the arrow down key to the screen which shows values before the zero setting.
3 Press the select/acknowledge key. The numerals are shown in reverse image. (The zero setting procedure may at any time be interrupted with the ESC key.)
4 Acknowledge with the select/acknowledge key.



Acknowledging service interval

1 Press the service key.
2 Press the select/acknowledge key. The numerals are shown in reverse image. (The acknowledgement may at any time be interrupted with the ESC key.)
3 Acknowledge by first pressing down the service key and then within five seconds pressing down the select/acknowledge key.
4 The next interval (scheduled service) is shown next to the service symbol and the count-down restarts.



A1363800

Example of alarm screen

Showing of the latest error codes and alarms

To be able to access the showing of inactive errors, the engine must be turned off. Inactive warning and errors are shown inverted relative to the display setting. If inverted display already has been selected, the inactive errors will be shown in the standard display mode.

The ten last shown alarms / error codes, which then have become inactive, are to be saved on the list.

It the inactive alarms / error codes are shown in reversed chronological order as they were shown to the operator.

A condition for an alarm / error code to take up a new position in the list is that it has not been stored previously during the same 24 hours.

A1345200

Amber central warning

Alarm screens

The alarm screen will be shown as long as the error remains.

If amber central warning lights up when the alarm display is shown, the cause must be investigated at the next stop. The alarm will be repeated next time the engine is started, if it still is active. Acknowledgement of the alarm is done with the select/ acknowledge key.

A1345300

Red central warning

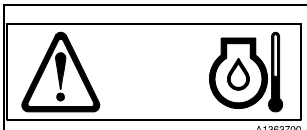
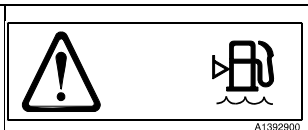
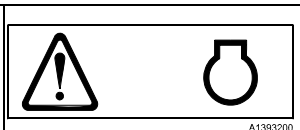
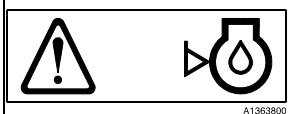
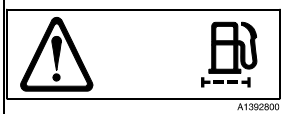
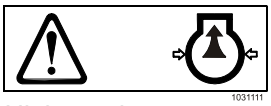
If red central warning flashes when the alarm screen is shown, the machine should be stopped and the cause investigated immediately. Values may be checked by using the respective component keys on the keyboard, but the alarm screen returns ten seconds after the last pressing of a key. When required, contact a workshop authorised by Volvo CE.

In certain cases also the buzzer sounds at the same time as the red central warning flashes.

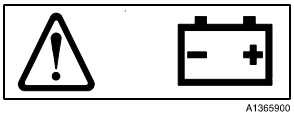
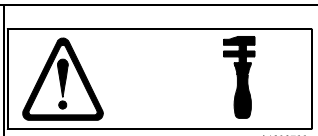
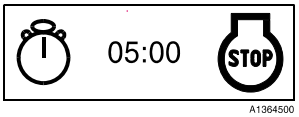
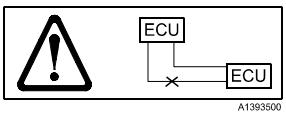
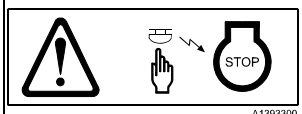
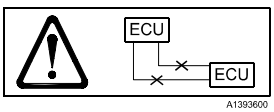
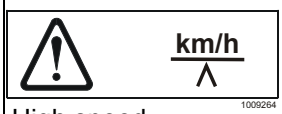
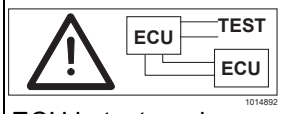
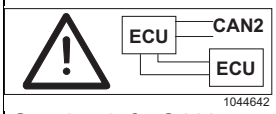
If more than one alarm occurs at the same time, these will be shown one after the other. If any of the alarms causes red central warning to flash and in some cases also the buzzer to sound, only this alarm (these alarms) will be shown.

It is not possible to browse between different levels, e.g. between orange and red. Reds are always predominant.

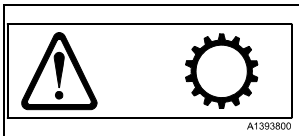
Engine

 A1363700 High engine oil temperature	 A1392900 Water in fuel	 A1393200 Engine, high/low speed
 1012794 Fuel level low	 A1364200 Engine overspeeding	 A1363800 Engine oil level low
 A1393000 Engine air filter clogged	 A1363900 Engine oil pressure low	 A1364000 Coolant temperature high
 A1392800 Fuel filter clogged	 A1364100 Coolant level low	 A1393100 Intercooler clogged
 1027370 Fuel pressure low	 1031111 High crankcase pressure	 1015455 Request working rpm

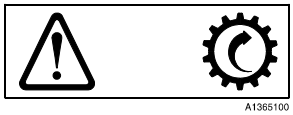
Electrical system

 A1365900 Low/high system voltage Alternator, charging function	 A1364600 Delayed stop (count-down completed)	 A1393700 Time for service has been exceeded
 A1364500 Delayed stop (count-down in progress)	 A1393500 Reduced performance between ECUs, information bus (J1708)	 A2115900 Starting/stopping electronics
 A1393300 Engine safety stop	 A1393600 Reduced performance between ECUs, control bus (J1939)	 1009264 High speed
 1014892 ECU in test mode	 1044642 Service info CAN	

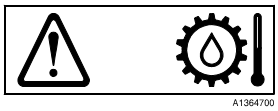
Power transmission



Converter, lockup slippage
Transmission high torque transfer
Transmission clutch slippage
Gear selector control, function

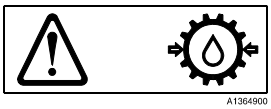


Transmission overspeeding

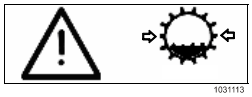


Transmission oil temperature high

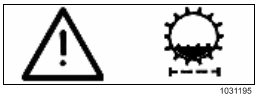
Transmission oil level incorrect (high/low)



Transmission oil pressure low



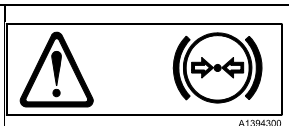
Transmission main oil pressure low



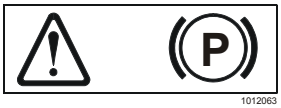
Transmission main filter clogged

Brakes

Disc brake, stroke too long or malfunction



Accumulated brake pressure (servo pressure) low



Parking brake not applied

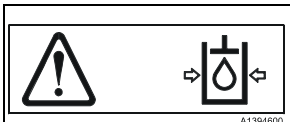
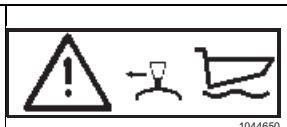
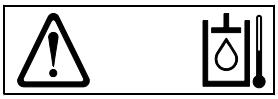
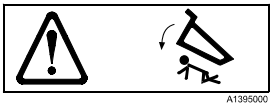
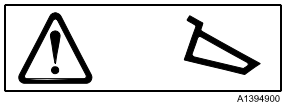
Cab

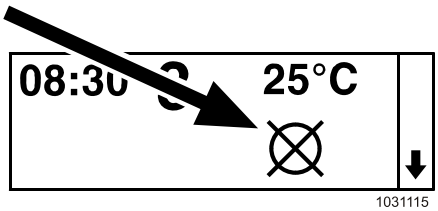
Door is open

Seat belt not fastened

40 Display unit

Hydraulic system

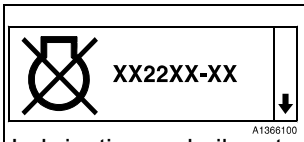
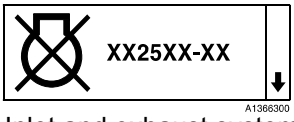
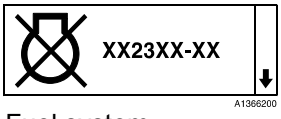
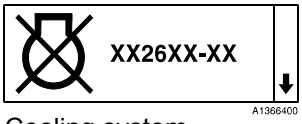
 A1394600 Steering pressure from ground-dependent/engine-dependent pump low/incorrect	 A1365400 Hydraulic oil level low	 1044650 Activate float mode
 A1365300 Hydraulic oil temperature low/high	 A1395000 Tipping control **not** in holding position, risk of crushing during dump body	 A1394900 Dump body is up



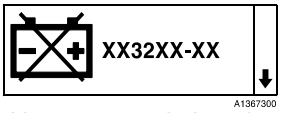
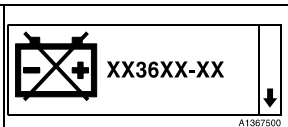
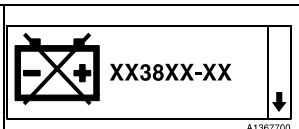
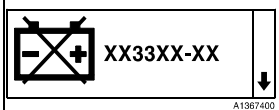
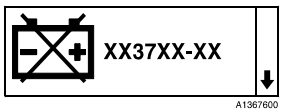
Error code screens

The error code screen indicates that a part of the system is out of order. The cause must be investigated at the next stop. When required, contact a workshop authorised by Volvo CE.

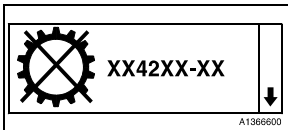
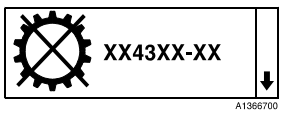
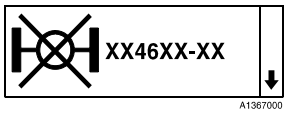
Engine

 Lubrication and oil system	 Inlet and exhaust systems	 Engine controls
 Fuel system	 Cooling system	

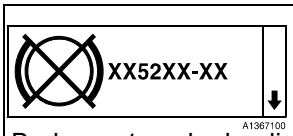
Electrical system

 Alternator and charging regulator	 Other electrical equipment	 Instruments, sensors and warning systems
 Starting system	 Leads and fuses	

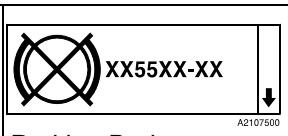
Power transmission

 Transmission, hydraulic	 Transmission, mechanical	 Drive axles

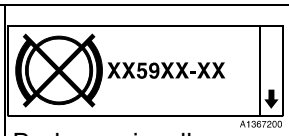
Brakes



Brake system, hydraulics

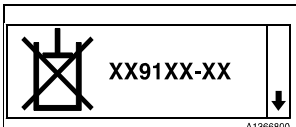


Parking Brake

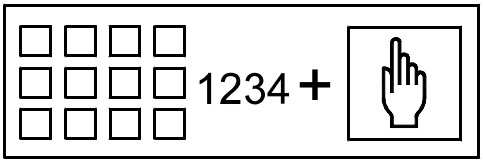


Brakes, miscellaneous

Hydraulics



Working hydraulics and servo system



Entering anti-theft code

Anti-theft device (optional equipment)

NOTE! The anti-theft code can be changed with VCADS Pro.

This equipment protects against unauthorised starting of the engine. When the function is activated, the correct four-digit code must be entered to make it possible to start the engine.

The function is deactivated at factory.

NOTE! The anti-theft device remains until the current is interrupted with the battery disconnect switch.

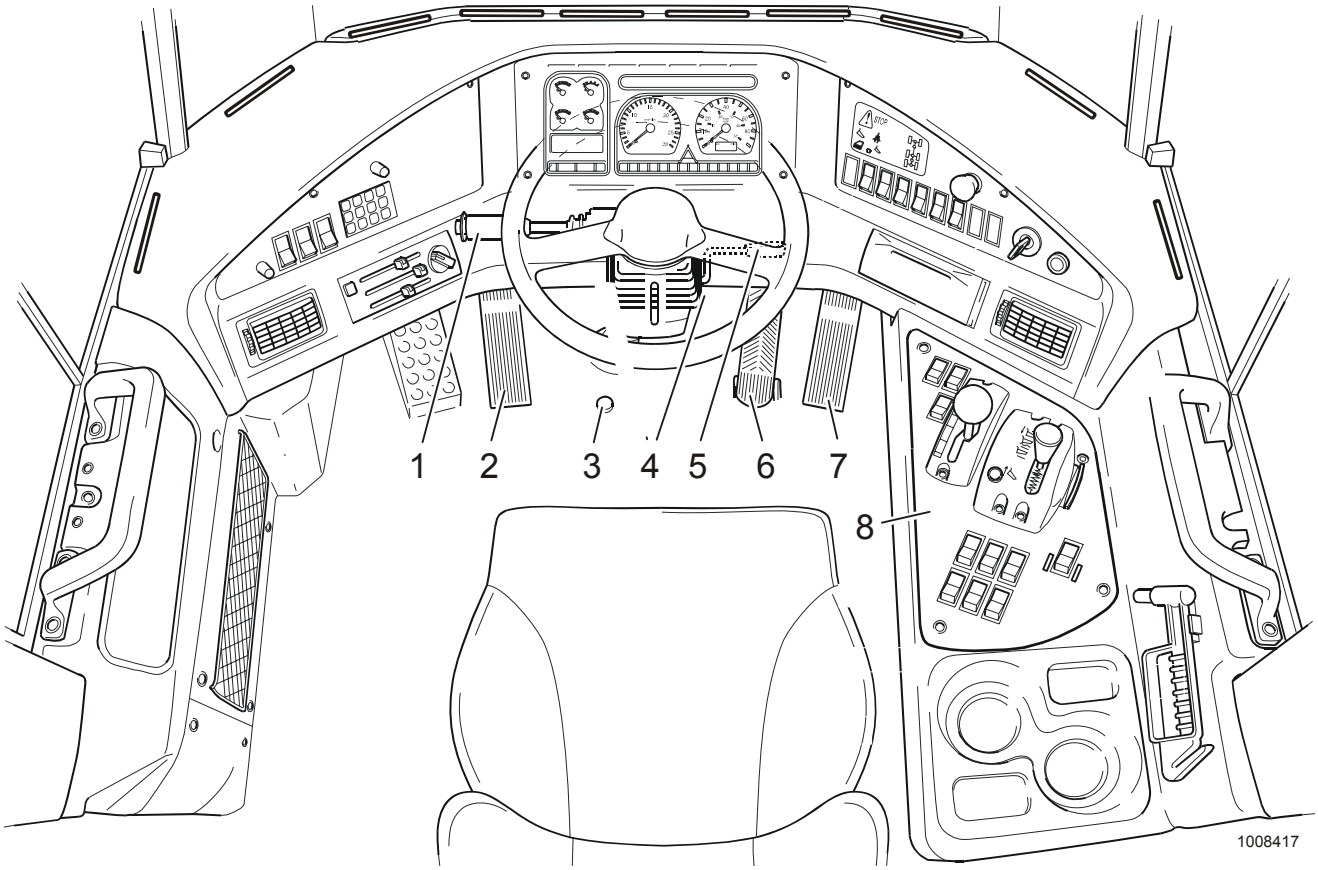
Use the keyboard on the left instrument panel when entering code.

1 Enter the four-digit code and press the select/acknowledge key.
2 When the entering has been completed, the initial display will be shown.

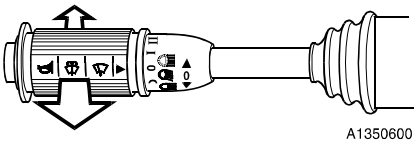
If the wrong entry is made at any position, go back by pressing ESC.

Other controls

Controls



1	Controls, steering column	5	Steering wheel adjustment
2	Retarder / exhaust brake	6	Brake pedal
3	Differential locks and 6-wheel drive	7	Accelerator pedal
4	Service socket	8	Control panel



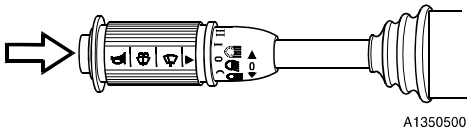
1 Controls, steering column

Headlight dipper, high/low beams

Control upward= Headlight flasher

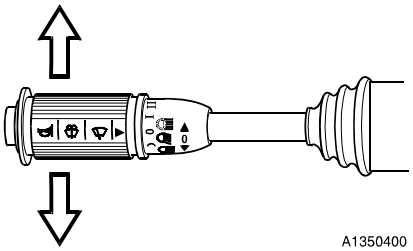
Centre position= Low beams

Control downward= High beams



Horn

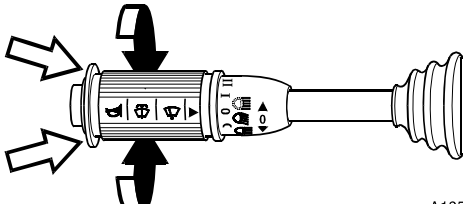
The horn sounds when the button is pressed in.



Control, direction indicators

Control forward= Right direction indicators

Control backward = Left direction indicators



Windscreen wiper

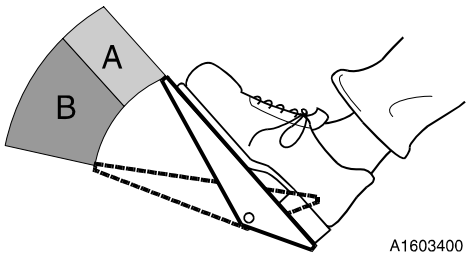
Position J = Intermittent wiper

Position 0 = Neutral position, wiper off

Position I and II = Windscreen wiper (two speeds)

Ring pressed in = Washer with automatic wiping 3–4 strokes

2 Retarder / exhaust brake



WARNING!

The retarder is disengaged automatically if the transmission oil temperature becomes too high. Use the service brake.

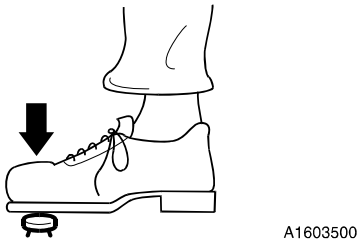
The retarder pedal has two functions, exhaust brake and retarder.

Range A = Only exhaust brake

Range B = Exhaust brake together with infinitely variable control of retarder's braking power.

NOTE! The longitudinal differential lock and 6-wheel drive are engaged automatically if the retarder pedal is pressed down.

For retarder engagement, a number of conditions must be fulfilled, see also on page 69.



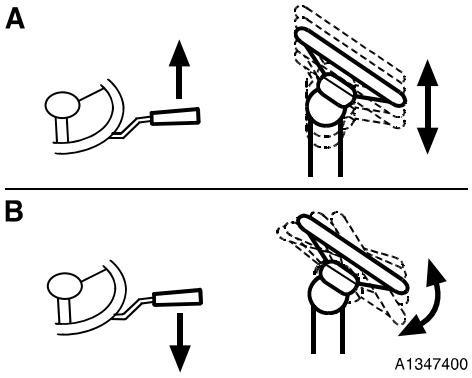
3 Differential locks and 6-wheel drive

All differential locks and 6-wheel drive can be engaged by pressing down the foot control (the lamps in the indicator on the right instrument panel are alight). The differential locks remain engaged for as long as the foot switch is pressed down.

See also page 66.

4 Service socket

Service sockets for MATRIS and VCADS Pro are positioned in the cab, to the right under the steering wheel, to allow readings by service personnel.

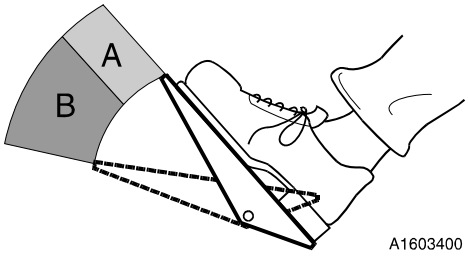


5 Steering wheel adjustment

The steering wheel is adjustable as to its inclination and vertical position.

Control up (A) = Steering wheel may be raised or lowered.

Control down (B) = Steering wheel can be angled to different positions.



6 Brake pedal

The brake pedal has two functions; retarder and service brake. The pedal's retarder function is activated with a switch, see page 47.

The following applies with activated retarder function:

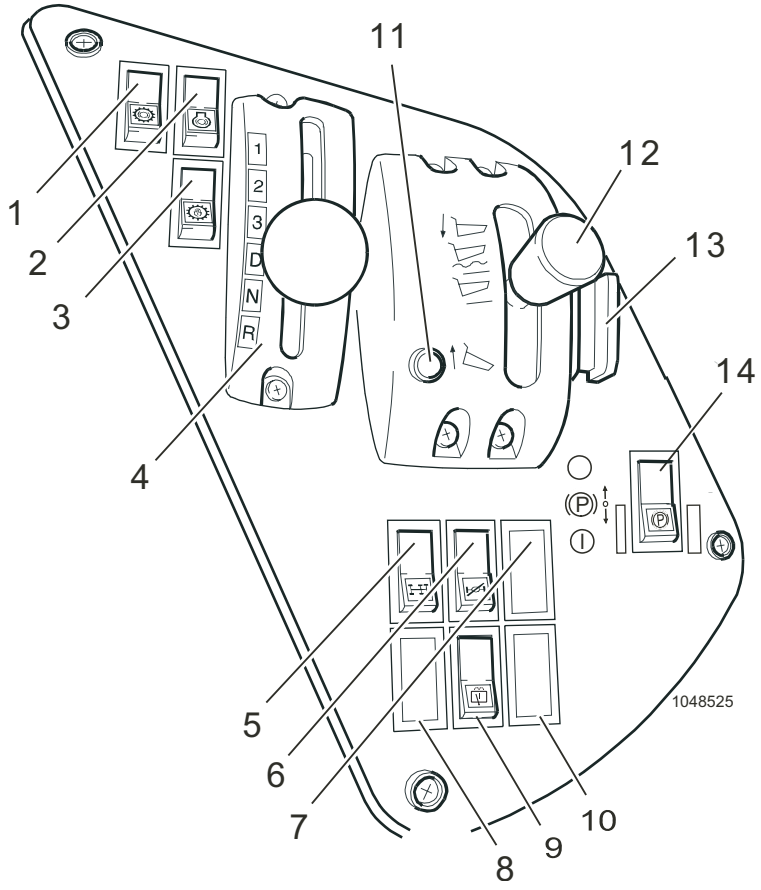
Range A = Only retarder (full braking power in the highest gears)

Range B = Service brake together with retarder

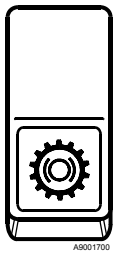
7 Accelerator pedal

The accelerator pedal also provides possibility for exhaust brake when the pedal is fully let up, depending on switch position. See page 47.

8 Control panel



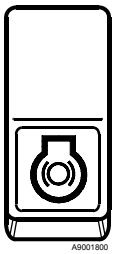
1	Retarder in brake pedal	8	Unassigned
2	Exhaust braking in accelerator pedal	9	Wiper and washer, rear window (optional equipment)
3	Gear-shift inhibitor	10	Unassigned
4	The gear selector	11	Load and dump brake
5	Longitudinal differential lock and 6-wheel drive (if the machine is equipped with ATC, see page 49)	12	Tipping control
6	Transverse differential lock (if the machine is equipped with ATC, see page 49)	13	Lock-out control for tipping control
7	Unassigned	14	Parking brake



1 Retarder in brake pedal

Upper end of switch pressed in = disengaged retarder

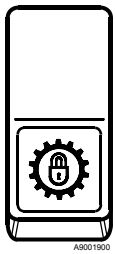
Lower end of switch pressed in = engaged retarder (light in switch is on). See also page 70.



2 Exhaust braking in accelerator pedal

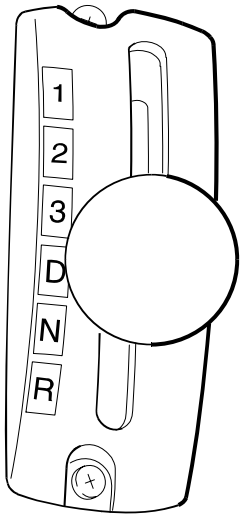
Upper end of switch pressed in = limited engine braking deactivated.

Lower end of switch pressed in = limited engine braking in accelerator pedal activated and the function will be engaged automatically when the accelerator pedal is released.



3 Gear-shift inhibitor

The switch is a rocker-switch. The light in the switch is on when the gear-shift inhibitor is engaged. See also page 63.



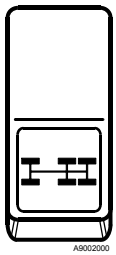
4 Gear selector

NOTE! Never leave the machine with the gear selector in forward or reverse, while the engine is running.

Gear positions

Position 1	1st gear
Position 2	Aut. shifting between 1st and 2nd gear
Position 3	Aut. shifting between 1st, 2nd, and 3rd gear
Position D	Aut. shifting between 1st, 2nd, 3rd, 4th, 5th, and 6th gear
Position N	Neutral
Position R	Aut. shifting between 1st and 2nd reverse gear

See also page 63.

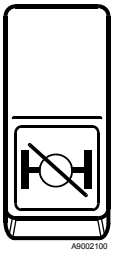


5 Longitudinal differential lock and 6x6 drive

Upper end of switch pressed in = longitudinal differential lock disengaged

Lower end of switch pressed in = longitudinal differential lock engaged

NOTE! Switch missing if machine is equipped with ATC.



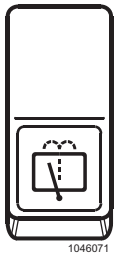
6 Transverse differential lock, front axle

Upper end of switch pressed in = transverse differential lock disengaged

Lower end of switch pressed in = transverse differential lock engaged

NOTE! Switch missing if machine is equipped with ATC.

7-8 Unassigned



9 Wiper and washer, rear window (optional equipment)

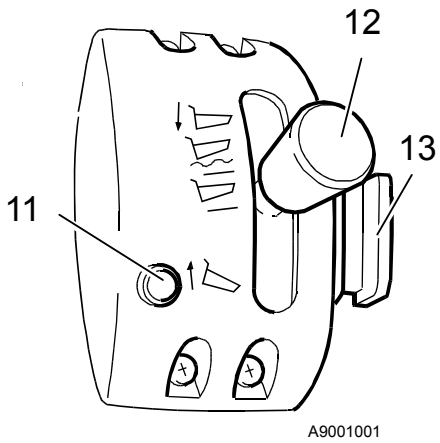
10 Unassigned

11 Load and dump brake

Press the button to apply the wheel brakes when loading and unloading. This is to save having to use the parking brake unnecessarily.

At the application of the load and dump brake, the transmission is automatically shifted to neutral.

For application and release of the load and dump brake to take place, a number of conditions have to be met, see page 70.



12 Tipping control

The tipping control has four positions:

Position 1	Lowering with hydraulic pressure. This position has a spring return action – must be kept in position by hand
Position 2	Floating position, the dump body rests on the trailer unit frame
Position 3	Holding position, the dump body is kept stationary in the current position
Position 4	Tipping position

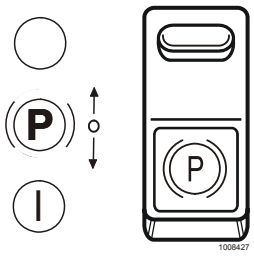
NOTE! During loading and operating, the lever must be in floating position (2).

NOTE! If the operator leaves the operator's seat or the start key is turned to position 0, the tipping control automatically moves to holding position.

See also page 77.

13 Lock-out control, tipping lever

The purpose of lock-out control is to lock the tipping control in holding position.



14 Parking brake

Upper end of switch pressed in = parking brake released

Lower end of switch pressed in = parking brake applied

Application

IMPORTANT! The parking brake should not be applied until the machine is completely stationary.

1 Place the gear selector to neutral.

2 Press in the lower end of the switch.

3 Turn the ignition key to position 0.

If the engine is turned off without the parking brake having first been applied with the switch, the parking brake will be applied automatically.

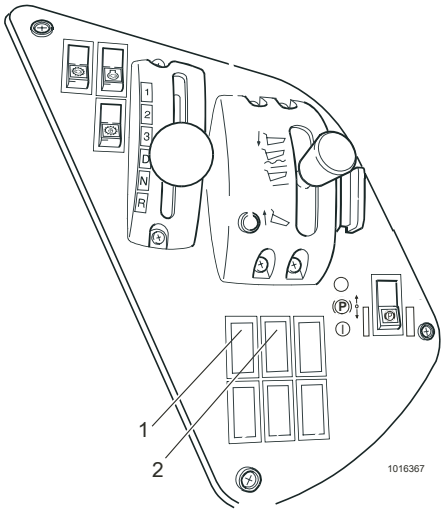
The application of the parking brake causes the longitudinal differential lock to be engaged automatically (lamp on the right instrument panel lights up). In addition, the transmission becomes locked in neutral – no gear can be selected.

Releasing

Slide down the catch on the switch and press in the upper end of the switch.

Releasing (if the parking brake has been applied automatically)

Apply and then release the parking brake with the switch.



Emergency brake

- In an emergency the parking brake serves as an auxiliary brake.
- Should the brake pressure be lost in both service brake circuits at the same time, the parking brake is applied automatically.

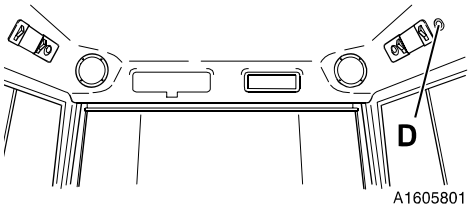
ATC (Automatic Traction Control) (optional equipment)

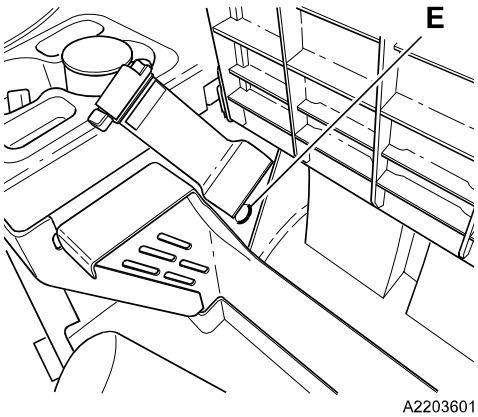
If the machine is equipped with ATC, the following switches are missing:

1 Longitudinal differential lock and 6-wheel drive

2 Transverse differential lock, front axle

For information on ATC, see page 65.



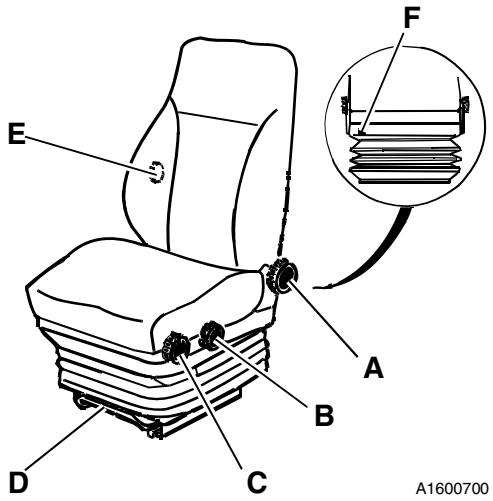


Power socket

Electrical power for optional equipment can be taken from a 12 V socket (D) on the overhead panel and under the instructor seat in the storage space from a 24 V socket (E).
12 V is only available if the machine is provided with a voltage converter.

D Power socket 12 V

E Power socket 24 V



Operator comfort

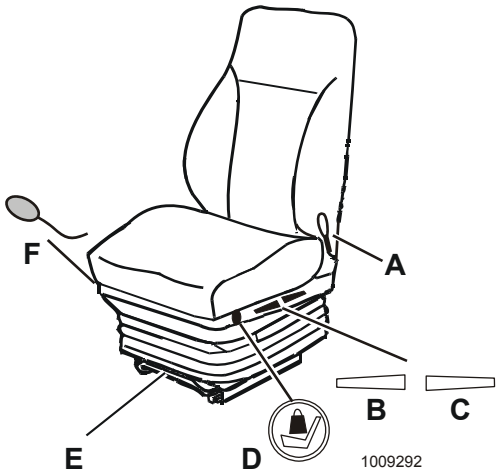
Operator seat

It is important that the operator seat is adjusted in a correct way in order to provide the best possible comfort.

Mechanical operator seat, adjusting

A Backrest inclination
B Seat inclination
C Seat height
D Longitudinal adjustment
E Lumbar support
F Height limitation with locking function
– full height adjustment = control to the right
– limited height adjustment = control at centre
– transporting position (never use when operating (travelling)) = lever to the left

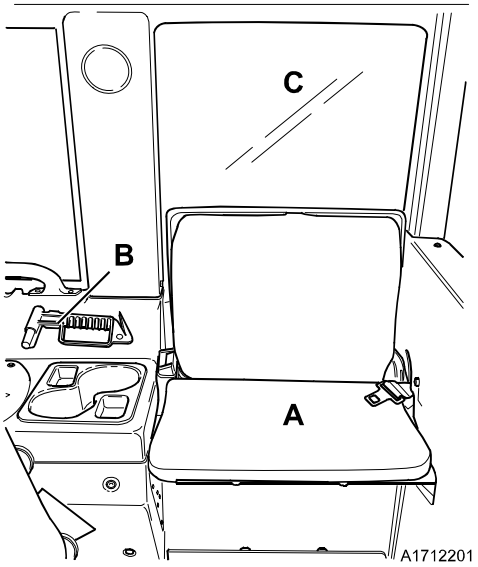
Electrically heated seat (optional equipment)



Seat with air suspension, adjusting

A Backrest inclination
B Seat height at front
C Seat height at rear
D Adjustment according to weight
E Longitudinal adjustment
F Lumbar support

Electrically heated seat (optional equipment)



A Instructor seat
B Emergency hammer
C Emergency exit

Instructor seat

The cab is equipped with a collapsible instructor seat (A). This is intended for an instructor to be able to travel temporarily on the machine in order to instruct or train operators in how to operate and handle the machine in the best possible way.

The instructor must use seat belt.

When an instructor is travelling on the machine, it must be driven with the greatest care (low travelling speed) and on as level ground as possible. The work site should then in advance be levelled and bumps and holes be eliminated so as to avoid unnecessary shaking and sudden movements.

IMPORTANT! The instructor seat is not intended for passengers.

To fold down the backrest:

1 First lift up the seat cushion.
2 Fold down the backrest and then fold down the seat cushion.

IMPORTANT! When the instructor seat is not used, it should be collapsed and folded down.

Seat belt

The seatbelt supplements the safety design of the cab, or the open operator's station, and must be used to prevent the operator from being thrown from the cab if the machine should roll over. Using the seatbelt also helps the operator to maintain control of the machine in case it rocks violently or gets in to other difficulties.

- The seatbelt with associated parts must be inspected at regular intervals. Change the entire seatbelt immediately if it is worn, has loose threads, or if the buckles or roller do not work.
- Change the seatbelt if the machine has been involved in an accident where the seatbelt has been subjected to high strain or loading.
- Change the seatbelt every 3rd year regardless of its appearance or condition.
- Never make any changes to the belt or its mountings.
- The seatbelt is only intended for one adult.
- Keep the seatbelt rolled up (retracted) when it is not used.
- Clean using only warm water, not soap or any other cleaner. Let the belt dry completely pulled out before letting it wind back on the roller. Make sure that the seatbelt is installed correctly.

Storage space

Swing up the seat cushion for the instructor's seat to access the storage space.

Emergency hammer

The emergency hammer (B) should be used in emergency situations for:

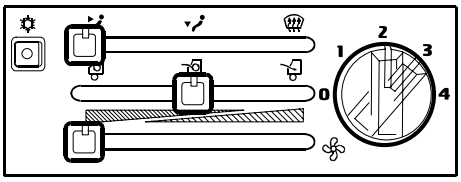
– breaking the emergency exit's window pane.

– cutting the seatbelt with the knife on the back of the hammer.

Emergency exit

The cab has an emergency exit, the rear right side window (C). If the emergency exit is to be used, the backrest on the instructor seat must be folded down before breaking the window.

IMPORTANT! When the instructor seat is not used, it should be collapsed and folded down



A1379800

Ventilation system

Heating and ventilation system

The control panel for heating and ventilation is positioned under the left instrument panel.

The system is of the integrated type, i.e. filtered fresh air, heated air or cooled air come out of the same nozzles.

General about heating and ventilation

- Keep the door closed.
- Direct the airflow away from unprotected skin.
- Adjust the fan speed until the air flow in the cab feels comfortable.

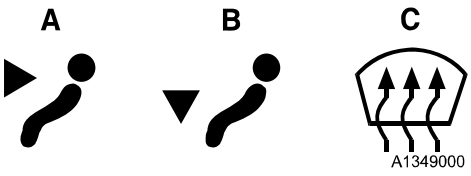
For settings in different weather conditions, see page 53.

Air conditioning (optional equipment)

Air conditioning will be switched on if:

– The switch is pressed in

– The fan control is at least in position 1.



A1349000

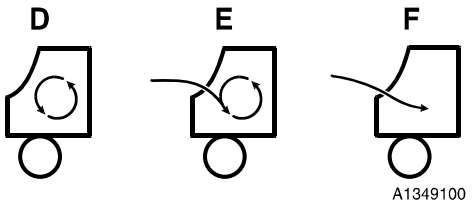
Air distribution control

Stepless regulation of where the air enters the cab.

A All air passes through the instrument panel's ventilation nozzles.

B Most of the air passes through nozzles by the floor.

C Defroster, all air is directed at the windows.



A1349100

Fresh air control

Stepless regulation of the amount of air recirculated within the cab.

D 90% recirculation.

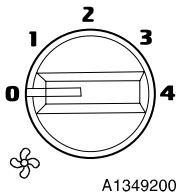
E 50% fresh air and 50% recirculation. Preferably used when the machine is equipped with air conditioning.

F 90% fresh air. Used when you want heating (during the cold season) and during defrosting.

Temperature control

Stepless regulation of temperature in cab.

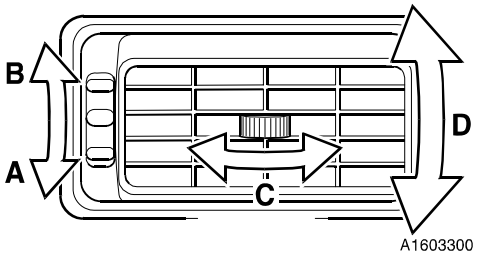
Cold	Furthest to the left (blue)
Warm	Furthest to the right (red)



A1349200

Fan control

Position 0	Fan switched off.
Position 1	¼ of full fan speed – used for heating.
Position 2	Half fan speed – used for heating or air conditioning.
Position 3	¾ of full fan speed – used for air conditioning.
Position 4	Full fan speed – used for defrosting.



A1603300

Ventilation nozzle

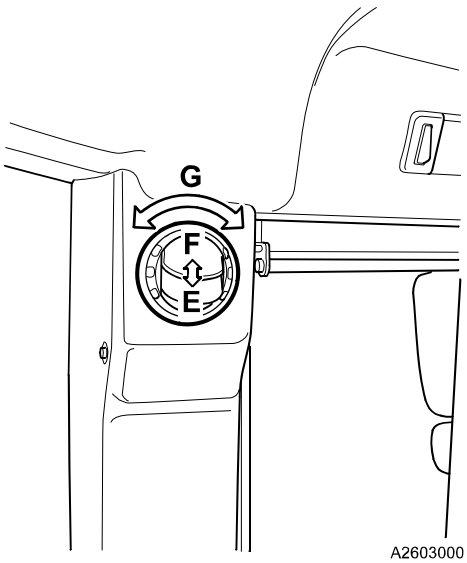
Instrument panel

A closed

B open

C directing flow horizontally

D directing flow vertically



A2603000

B post (cab corner post)

E closed

F open

G direction of flow

Air conditioning (optional equipment)

IMPORTANT! Make sure that the compressor starts up a couple of times during the week so that its seals are lubricated.

For health reasons you should not lower the temperature in the cab more than 11 °F (6 °C) below the outside temperature.

In damp weather

Before switching off the air conditioning, slightly raise the temperature to avoid misting in damp weather.

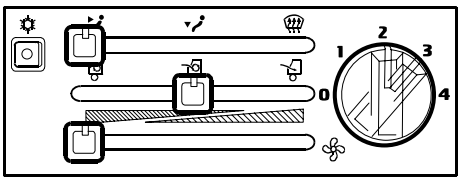
Short rain showers

Do not turn off the air conditioning during short rain showers since the windows may mist up when the air conditioning stops. The air conditioning only works when the engine is running and performs best when the windows are closed.

Ask a workshop authorised by Volvo CE to check the air conditioning once a year.

Climate control system, adjusting

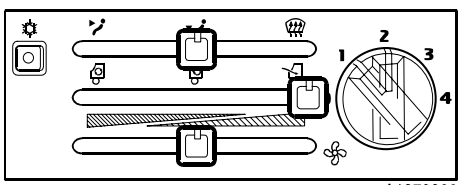
These instructions are basic recommendations. Each operator should experiment to achieve the best possible working environment in the cab, i.e. the right temperature without a draught.



A1379800

Summer

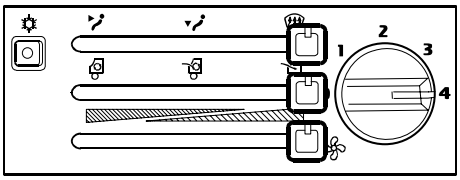
Adjustment for machines with or without air conditioning. On machines with air conditioning the switch should be pressed in.



A1379200

Winter

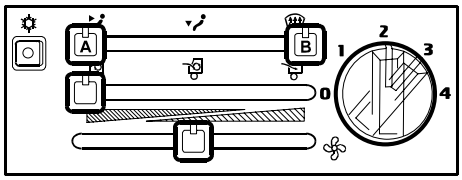
Adjustment for machines with or without air conditioning. On machines with air conditioning the switch should not be pressed in.



A1379100

Defroster

Adjustment for machines with or without air conditioning. On machines with air conditioning the switch should be pressed in.

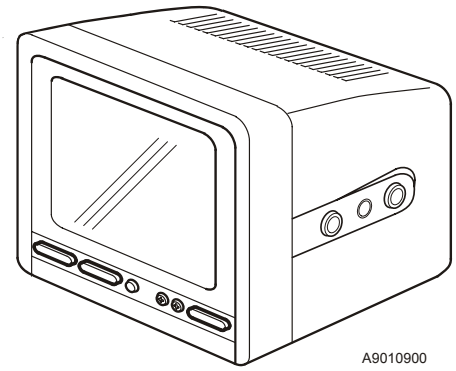


A1379000

Dehumidification

The adjustment applies to machines with air conditioning. The switch for the air conditioning should be pressed in.

The air distribution control should be in position **A** or **B**.


A9010900

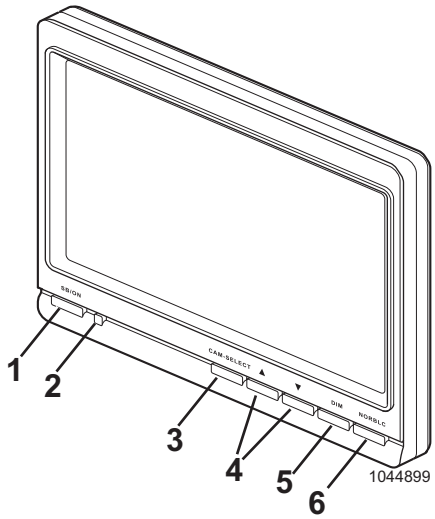
Rear vision camera (optional equipment)

The camera at the rear on the machine, together with the monitor in the cab, gives the operator a better view rearward.

The lens on the camera should be cleaned with a damp rag when needed.

The rear vision camera is connected when the ignition switch is in position 1, running position.

There is a switch on the monitor for selecting viewing only when reversing or all the time when operating both forward and rearward.



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Rear vision system, colour (optional equipment)

The rear vision camera, together with the monitor in the cab, gives the operator a better view to the rear.

The lens on the rear vision camera should be cleaned with a damp rag when needed.

1 **SB/ON.**

ON: The monitor is on all the time when the start key is in operating position.

SB: The monitor is only on when the gear selector is in reverse. The distance indicator is shown. This mode is recommended as normal mode in order to not distract when operating forwards.

2 **LED.** Is alight when the monitor is on. Halved brightness when the monitor is in stand-by position.

3 **CAM-SELECT.** Used to adjust the camera.

The menu with different adjustments is shown if the button is pressed and held in approx. 2 seconds, on the condition that the gear selector is not in reverse.

Press the button again to access the desired adjustment.

Hold in the button for approx. 2 seconds to close the menu. It also closes automatically after 10 seconds.

4 ▼/▲ Used to adjust the volume under "VOICE" in the "INPUT" menu. The buttons are also used to scroll in the menu.

5 **DIM.** Used to adjust light intensity in the monitor.

6 **NOR/BLC.** A sensor senses the light around the camera and automatically adjusts the light intensity on the monitor. Do not cover over the sensor.

Operating instructions

This chapter contains rules which must be followed to make working with the machine safe. However, these rules do not relieve the operator from following laws or other national regulations for traffic safety, industrial safety and labour welfare.

To avoid the risk of accidents, alertness, judgement and respect for applicable safety regulations is a condition.

Running-in instructions

During the first 100 hours, the machine should be operated with a certain amount of care. During the running-in period it is important to check oil and fluid levels often.

Only brake lightly to run in (wear in) the brake pads. Operate in this way during the first day.

After eight hours operation, the wheel nuts should be check-tightened. This applies also after changing a wheel, see page 147.

Warranty inspections

In addition to the scheduled maintenance intervals, service shall be performed at the 100 hour as well as 1000 hour warranty inspection, respectively.

These service actions, such as changing oil and other fluids, must carried out by an authorised workshop, if the warranty is to apply.

See under "Service and maintenance" regarding which oil and fluid changes must be carried out during the running-in period and what else applies according to the Service Programme and the Warranty Inspections.

Speed limiter

Various speed levels can be set for the machine at the customer's request or due to market requirements.

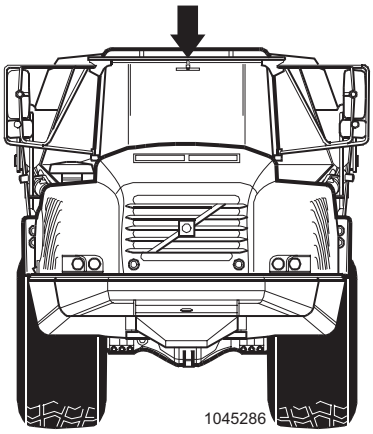
These settings can only be performed by a workshop with the VCADS Pro tool.

Visibility

WARNING!

Some attachments and equipment may affect the operator's visibility. Pay attention to dead angles, where there is no visibility, when operating on work sites and on public roads. When needed, use a signal man.

It may be impossible to obtain visibility all around the machine. Optional equipment can be used in order to achieve acceptable visibility, e.g.,warning systems, mirrors, and surveillance cameras (CCTV).



The machines are equipped with a mirror which, when correctly adjusted, gives improved visibility in front of the machine.

To minimise risks caused by limited visibility, rules and procedures shall be established by the management on the work site. For example:

- Make sure that operators and others working on the site have received adequate safety instructions.
- Control the traffic flow of machines and other vehicles. If possible, avoid reversing.
- Limit the machine's operating area.
- Use a signal man to help the operator.
- Make available equipment for two-way communication as needed.
- Make sure that workers on the site communicate with the operator before approaching the machine.
- Use warning signs.

The standard ISO 5006 "Earthmoving machinery – Operator's field of view" covers the operator's visibility around the machine and is intended to be used when measuring and evaluating visibility and field of view. Conforming to this standard is a requirement in EU-countries, and gives improved visibility around the machine.

The machine is tested according to methods and criteria for this standard. The method used to evaluate visibility cannot cover all aspects of the operator's field of view, but it gives information to determine if optional equipment/extra devices are needed for indirect visibility, such as warning systems.

The test was conducted on machines with standard equipment and standard attachments. If the machine is modified or equipped with other equipment or attachments, resulting in reduced visibility, it shall be tested again according to ISO 5006.

If other equipment or attachments are used and visibility has been reduced, the operator must be informed.

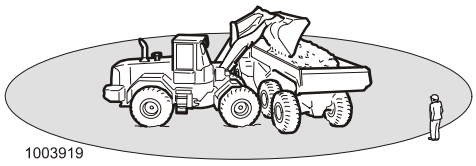
Measures before and during operation

- Walk around the machine and check that there are no obstacles next to the machine.
- Check that mirrors and other visibility-enhancing devices are in good condition, clean, and correctly adjusted.
- Check and make sure that the horn, back-up warning signal, and the rotating beacon (optional equipment) work as intended.
- Check if the management has established rules and procedures for the work site.
- Always pay attention around the machine to identify any obstacles.

Safety rules when operating

Operator duties

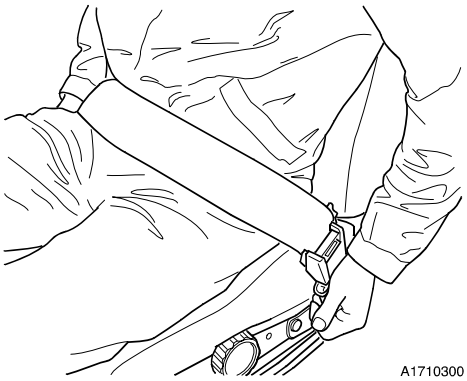
- The machine operator must operate the machine in such a way that the risk of accidents is minimised both for the operator, other road users and persons present at the work site.
- The machine operator must be thoroughly familiar with how to operate and maintain the machine and should preferably undergo required training on the machine.
- The machine operator must follow the rules and recommendations given in the Operator's Manual, but also pay attention to any statutory and national regulations or specific requirements or risks that apply at the work site.
- The machine operator must be thoroughly rested and must never operate the machine under the influence of alcohol, medicine or other drugs.
- The machine operator is responsible for the machine's load when operating on public roads as well as during work.
  - There must be no risk of the load falling off while operating.
  - Refuse any load that is an apparent safety risk.
  - Respect the rated load capacity of the machine. Pay attention to the effects of changes in distance to the centre of gravity as well as those of any optional attachments.
- Avoid operating with the dump body raised on ground where there is a risk of overturning, for example on steep inclines or soft ground.
- The machine operator must be in control of the machine's working area.
  - Prevent persons from entering the risk zone, that is, the area around the machine and at least 7 m beyond the attachment's max. reach. The operator may allow a person to enter the area, but must be careful and operate the machine only when that person can be seen or clearly indicates their whereabouts.
  - Prevent any person from being in the cab of a parked vehicle, if there is a risk that the cab can be struck by attachments or falling objects, e.g., rocks or logs. Does not apply if the cab is of adequate strength or is protected to handle the object's impact.
- The machine operator may only be accompanied by an instructor if there is a specific seat for a passenger.



The danger area around an operating machine forms a circle with a radius of least 7 m.

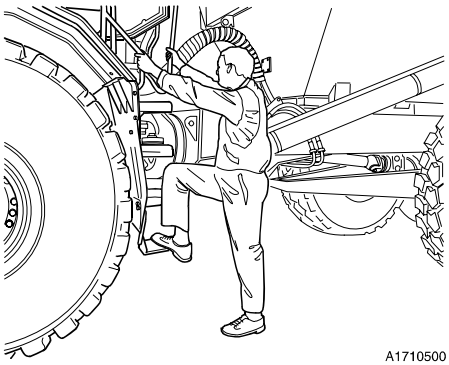
Accidents

- Accidents and also incidents should be reported to the site management immediately.
- If possible leave the machine where it is.
- Only take necessary action so as to reduce the effect of damage, especially personal injuries. Avoid action which may make an investigation more difficult.
- Wait for further instructions from the site management.


A1710300

Machine operator safety

- The machine must be operational, i.e. faults which can cause accidents must be rectified.
- Suitable clothing for safe handling and hard hat should be worn.
- A loose mobile phone should not be used as it may cause interference with important electronics. The mobile phone shall be permanently connected to the machine's electrical system and with a permanent aerial on the outside of the machine, installed according to the manufacturer's instructions.
- Always sit in the operator seat when starting the machine (engine).
- Keep your hands away from areas where there is a risk of crushing, e.g. covers, door, and windows.
- Always use the seat belt.
- Use steps and handholds when entering or leaving the machine. Use the three-point grip, that is, two hands and one foot, or two feet and one hand. Always face the machine – do not jump!
- The door must be closed when the machine is moving.
- Vibration (shaking) which arises when operating may be harmful to the operator. Reduce this by:
  - adjusting the seat.
  - selecting the most even ground.
  - adapting the travelling speed.
- The cab is for the protection of the machine operator and it meets the requirements for Roll Over Protective Structures according to the test standard (ROPS). Therefore, hold firmly onto the steering wheel if the machine should roll over – Do not jump!
- The cab is also designed to meet the requirements for falling objects, with weight fulfilling stated test methods (FOPS).
- The cab has two emergency exits, the door and the right side window.
- Only walk or stand on surfaces, which are provided with antislip pads, see page 96.
- Do not enter or leave the machine during a thunderstorm.
  - If you are outside the machine, keep a good distance away from the machine until the thunderstorm has passed.
  - If you are inside the cab, stay there with the machine stationary until the thunderstorm has passed. Do not touch any controls or anything made of metal.


A1710500

WARNING!

It is forbidden to sit or stand anywhere on the machine which might impede the operator's ability to manoeuvre the machine.

Working within dangerous areas

Working within areas where there are pipes, power lines or cables

- It is the duty of the employer to know of and mark the position of pipes for gas, water, sewage, or power lines and cables on the work site and to inform the operator about these. Failure to do so may have legal consequences. When required, local authorities and/or communication and power companies should be contacted regarding maps, drawings, and advice.
- Cables and power lines must be protected against damage in a suitable way. Electric cables should, if possible, have the power turned off.
- Information about where the gas and water can be turned off should be made available, so that they can be quickly turned off, if they are ruptured.

NOTE! In case of critical closeness to cables, pipes or overhead wires, it may be necessary to take another way.

High voltage overhead power line

Observe great care when working in the proximity of high voltage overhead power lines, as electrical flash-over may damage the machine and injure the operator at fairly great distances from the power line. Bear the following in mind:

The distance sideways between machine and power line must be:

- at least 2 m in case of low voltage.
- 4 m in case of high voltage of max. 40 kV (line normally supported on fixed insulators).
- 6 m in case of high voltage above 40 kV (line normally carried on suspended insulators).

The vertical distance between machine and overhead power line must be:

- at least 2 m in case of low voltage.
- 4 m in case of high voltage.

Operating under ground

- A specific set of regulations may apply to underground operations and may require special equipment. Talk to your dealer.

Working in confined areas

- Check that there is sufficient room for machine and load.
- Move slowly.
- Drive in the middle of a doorway which is too narrow to allow two machines to meet.

Working near danger areas

- Observe great care near marked danger areas.
- Do not operate too close to the edge of a quay, ramp etc.

Travelling and operating (working) on a public road

As machine operator you are considered a road user and therefore required to know and follow local regulations and national traffic regulations.

It is important to bear in mind that the machine, in comparison with the rest of the traffic, is a slow moving wide vehicle, which may cause obstruction. Bear this in mind and pay attention to the traffic behind you. Facilitate overtaking.

Working lights, rotating beacon, or hazard flashers must not be used when operating on public roads, unless local regulations have other provisions.

Road signs, traffic restricting arrangements, and other safety devices that may be required due to traffic speed, intensity, or other local conditions, must be used.

Rotating beacon may be used:

– when the vehicle constitutes a hindrance or danger to other traffic
– when working on or by the side of the roadway.

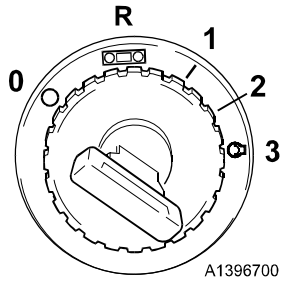
Measures before operating

1 Perform daily service, see page 160. (Make sure that the coolant has sufficient freezing protection in cold conditions and that the lubrication oil is intended for winter use.)
2 Clean/scrape the windows.
3 Check that there are no faulty/loose parts or leaks which can cause damage.
4 Check that the battery disconnect switch is on.
5 Check that the steering joint lock has been disconnected.
6 Check that the wheels are not blocked.
7 Check that engine hood and guard plates are closed.
8 Check that there are no persons close to the machine, see page 57.
9 Adjust the operator seat, see page 50 and the steering wheel, see page 45.
10 Fasten the seat belt.
11 Check that there is sufficient fuel in the tank.

After operating:

- Fill the fuel tank, as this will counteract the formation of condensation water.

Starting the engine



WARNING!

Starting gas (ether, etc.) may not be used together with preheating.

WARNING!

Make sure that no person is close to the steering joint when the engine is running.There is a risk of crushing.

IMPORTANT! Run the engine at low idling speed for at least half a minute after start. This is to ensure the lubrication of the turbocharger.

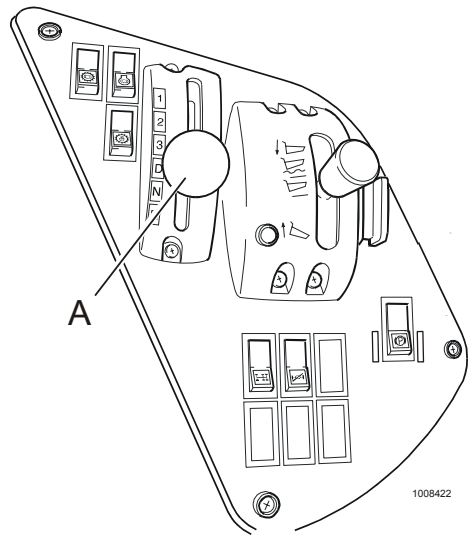
If the machine is equipped with anti-theft device, see page 42.

1 Move the gear selector to neutral.
2 Turn the key in the ignition to running position (1) so that a system test can take place, the duration of which is approx. 4–5 seconds. (Time may have to be increased in order to check the engine's oil level).
3 At the same time check that all lamps light up and that the gauges indicate.
4 Turn the key to start position (3). If the engine does not start, turn the key back to the "0" position, before making a new start attempt.
5 Check that all control and warning lamps are extinguished.
6 Sound the horn.
7 Release the parking brake.
8 Select gear and increase the engine rpm.

At temperatures below 0 °C

IMPORTANT! Run the engine at low idling speed for at least half a minute after start. This is to ensure the lubrication of the turbocharger.

1 Move the gear selector to neutral.
2 Turn the key in the ignition to running position (1) so that a system test can take place, the duration of which is approx. 4–5 seconds. (Time may have to be increased in order to check the engine's oil level).
3 At the same time check that all lamps light up and that the gauges indicate.
4 If the control lamp for preheating flashes, turn the start key to preheating position (2). Keep the start key in this position until the control lamp is extinguished.
5 Turn the key to start position (3). If the engine does not start, turn the key back to the "0" position, before making a new start attempt.
6 Check that all control and warning lamps are extinguished.
7 Sound the horn.
8 Release the parking brake.
9 Select gear and increase the engine rpm.



A Gear selector control

Gear shifting

WARNING!

Never leave the machine with the gear selector in forward or reverse, while the engine is running.

The transmission has six forward gears with automatic direct clutch (lock-up), neutral position, and two reverse gears.

The gearshifting system is fully automatic, but automatic control can be limited by the operator with the gear selector.

The electronics of the transmission registers the travelling speed of the machine, acceleration and the engine loading. Based on these parameters the electronics controls the gear shifting automatically providing the best comfort, fuel consumption and performance.

Gear position D

– Normal gear position for operating forward. See also Overspeed Protection on page 64.

Gear positions 1, 2 and 3

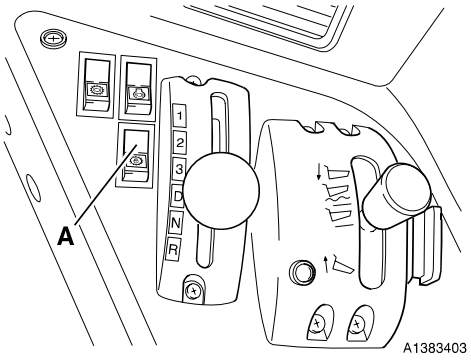
– Limits upshifting from gears 1, 2, and 3. However, upshifting is allowed to prevent overspeeding.

Gear position N

Neutral position.

Gear position R

Reverse gear.



A Gear-shift inhibitor

Gear-shift inhibitor

Is used for preventing gearshift hunting in certain situations, that is to say repeated up- and downshifts at short intervals.

The gear-shift inhibitor is disconnected by again pressing the button or when there is a risk of overspeeding.

Safety functions during gear shifting

The machine features safety functions which protect the engine and transmission via the electronic control unit of the transmission in the event of an operator error.

These functions are:

– The engine can only be started with the gear selector in the neutral position (N position).

– The gear selector may be moved from the N position to different gear positions, but no gear will be engaged if the engine speed exceeds 18.3 r/s (1,100 rpm) (stationary machine). If the engine speed is above 1100 rpm, it will be lowered automatically to 1100 rpm before a gear is engaged.

– When the parking brake is applied, no gear will be engaged.

– When delayed stop has been connected it is not possible to engage a gear (optional equipment).

If the gear selector is moved to the N position while operating:

– If the speed is above 7 km/h, the transmission will not shift from the engaged gear.

– If the speed is below 7 km/h, the transmission shifts to Neutral.

If the gear selector is moved past the N position (change of travelling direction while operating):

– If the speed is above 7 km/h the transmission will not shift from the engaged gear.

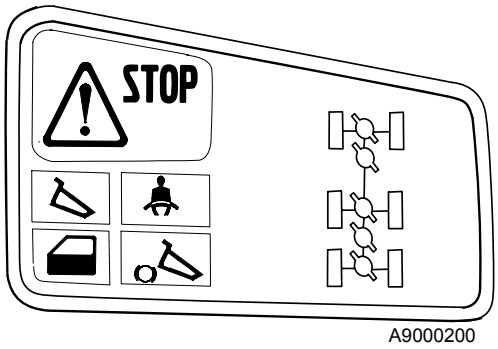
– If the speed is between 2 km/h and 7 km/h the transmission will shift into Neutral.

– If the speed is below 2 km/h and the engine speed is below 1100 rpm (18.3 r/s), a new gear may be selected.

Overspeed protection

■ If there is a risk of the engine overspeeding, an upshift is made to the next higher gear, irrespective of the position of the gear selector and the gear-shift inhibitor.

Operating with differential locks



Right instrument panel

Indicator, differential locks / 6-wheel drive

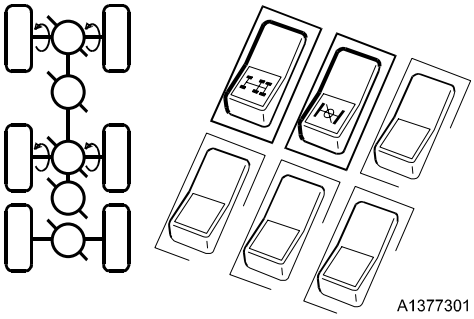
WARNING!

We warn especially against the method of trying to traverse slippery ground by force with chains on one drive side only. This oblique traction power causes extreme wear to the power transmission and you may also lose control of the machine and cause an accident with consequent personal injuries.

NOTE! The differential lock must never be engaged when one of the wheels is spinning.

IMPORTANT! Do not use drive and differential locks on more wheels than what is required by the situation. Incorrect use can cause unnecessary tyre wear, increased fuel consumption and impair the manoeuvrability.

When operating with anti-slip devices (snow chains), the differential locks and the 6-wheel drive should not be engaged.



4-wheel drive without differential locks

Operation (without differential locks)

- During operation four wheels on the machine are driving and there is no drive to the rear bogie axle.
- All differential locks are disengaged.
- No lamps on the instrument panel are alight.

ATC (Automatic Traction Control) (optional equipment)

The longitudinal differential lock and 6-wheel drive on the machine are controlled automatically. The differential lock and 6-wheel drive are controlled independent of each other.

The machine has two possible drive combinations:

- Automatic mode.
- All differential locks and 6-wheel drive are engaged with the foot control.

Automatic mode

Used for all types of operating conditions.

The machine senses wheel speed and steering angle, and the longitudinal differential lock and 6-wheel drive are engaged automatically,independent of each other.

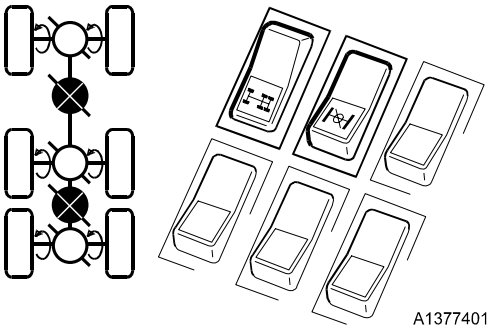
No control lights for differential locks or 6-wheel drive are lit on the instrument panel at engagement or disengagement.

All differential locks and 6-wheel drive

Is used when operating where maximum drive force is required.

Control lights for all differential locks and 6-wheel drive are lit on the instrument panel.

NOTE! The machine's steering ability is reduced.

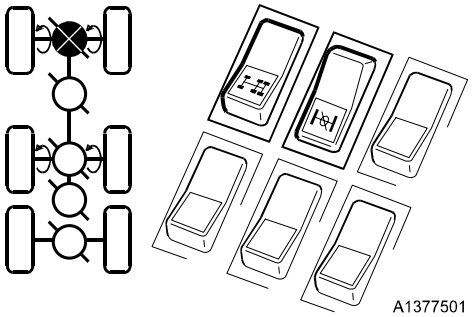


Longitudinal differential lock/6-wheel drive

Longitudinal differential lock / 6-wheel drive

- Engagement of the longitudinal differential lock automatically causes the 6-wheel drive to be engaged as well.
- The longitudinal differential lock and 6-wheel drive (6x6) is used when operating on soft and slippery ground and on steep inclines.
- Engagement and disengagement can be made while operating regardless of travelling speed.
- The control lamp for longitudinal differential lock /6-wheel drive on the instrument panel is on.
- The control lamp in the switch is on.

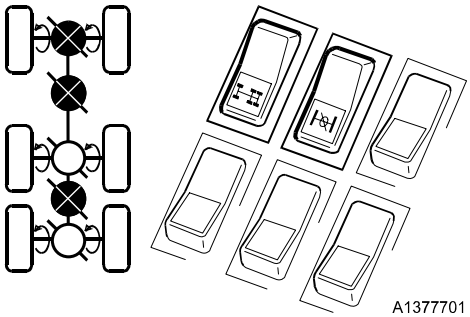
NOTE! The longitudinal differential lock / 6-wheel drive must be disengaged when operating on good ground and at high travelling speed.



Transverse differential lock, front axle

Transverse differential lock, front axle

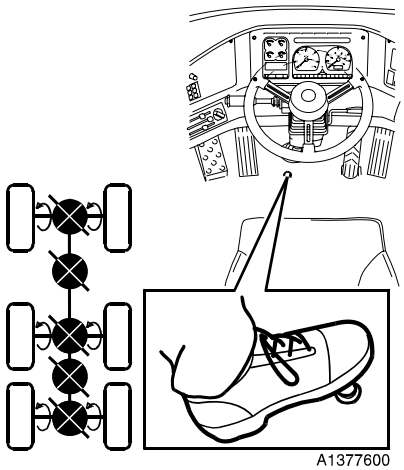
- Only use the transverse differential lock on the front axle separately when the ground is very slippery but firm to maintain the best possible steering ability of the machine.
- Disengage the lock when operating on firm ground.
- The control lamp on the instrument panel for the differential lock on the front axle will be alight.
- The control lamp in the switch will be alight.



Longitudinal differential lock / 6-wheel drive and transverse differential lock, front axle

Longitudinal differential lock / 6-wheel drive + transverse differential lock, front axle

- Provides the best possible traction with maintained steering ability on soft and slippery ground.
- Disengage the lock when operating on firm ground.
- Both the control lamp for the longitudinal differential lock and the control lamp for the differential lock on the front axle, will be alight on the instrument panel.
- The control lamp in the switches will be alight.



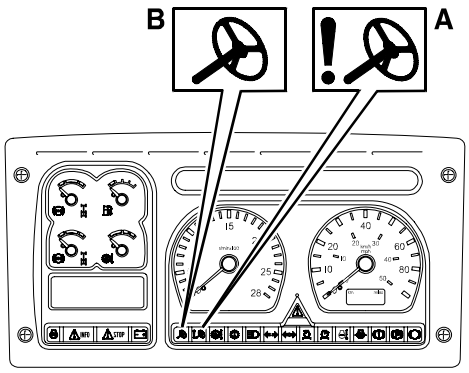
All differential locks / 6-wheel drive

All differential locks / 6-wheel drive

- Is used when operating where traction force is required.
- The following control lamps on the instrument panel will be alight:
  - Longitudinal differential lock/6-wheel drive
  - Differential lock, front axle
  - Differential lock, bogie axle (front)
  - Differential lock, bogie axle (rear)
- The control lamp in the switches for the differential locks will be alight, even if the switches are in position 0.

NOTE! The steering ability of the machine is reduced.

For engagement and disengagement of the differential locks, see page 44.



A Control lamp (red) engine-dependent pump (primary steering system)

B Control lamp (amber) ground-dependent pump (secondary steering system)

Steering

The steering system is a self-compensating, hydro-mechanical system and is provided with a secondary steering function via a ground-dependent pump positioned on the dropbox. This ensures steering down to approx. 3 km/h, even if the engine should stop.

During all forward operation, the control lamp (red) for engine-dependent pumps and the control lamp (amber) for ground-dependent pump (secondary steering) should be extinguished.

If the red lamp (A) for the engine-dependent pumps is on:

The hydraulic pumps have stopped functioning (e.g. the engine has stopped). The steering will work down to approx. 3 km/h. The steering pressure is obtained from the ground-dependent pump when operating forward.

If the amber lamp (B) for the ground-dependent pump is alight:

The hydraulic pump has stopped functioning. The steering functions normally, but if the engine-dependent pumps should now stop functioning, the steering of the machine will be made completely inoperable.

If any of the lamps are alight, stop the machine immediately and contact a workshop authorised by Volvo CE.

Secondary steering

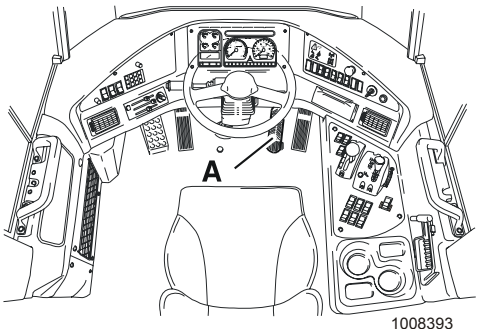
The machine features a secondary steering system which is drive wheel-dependent (ground-dependent pump). This means that the secondary steering works down to approx. 3 km/h when operating forward.

Testing the secondary steering system

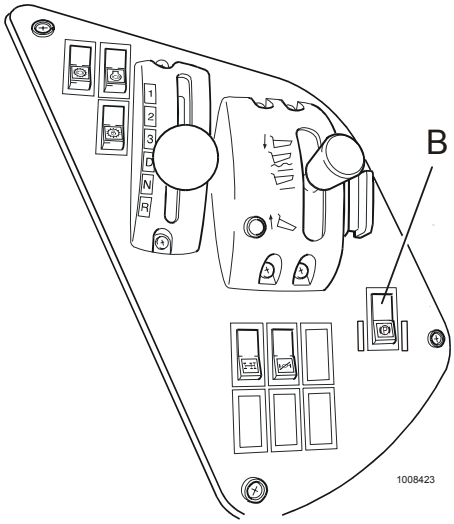
Test the secondary steering system every 2000 hours.

Run the machine on a road where there is no other traffic, stop the engine by pressing in the emergency stop when the machine is moving at approx. 10 km/h. The steering should function down to a speed of approx. 3 km/h.

NOTE! The pressure in the brake system should be at maximum level before testing.



A Service brakes



B Parking brake

Braking

Service brakes

WARNING!

In case of faulty brakes, stop the machine immediately and contact a workshop authorised by Volvo CE for action to be taken.

The service brakes are divided into two separate circuits. If a fault arises in one of the circuits, the machine can still be braked with the intact circuit.

If brake action is lost in both brake circuits, engage the exhaust brake and apply the parking brake and stop the machine.

Parking brake

The parking brake should not be applied until the machine is completely stationary.

Application and release, see page 49.

The parking brake is self-adjusting (no after-adjustment is needed).

NOTE! When the parking brake is applied, it is not possible to engage a gear.

Emergency brake

- In an emergency situation the parking brake may be used as an emergency brake. If the parking brake is used as an emergency brake, the load and dump brake will be engaged automatically if the speed is above 2 km/h.
- The parking brake is applied automatically if the brake pressure is lost in both the front and rear circuits.

Auxiliary brake

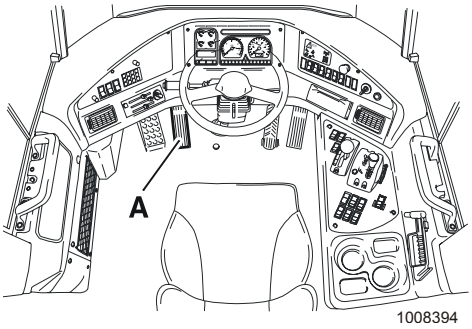
The auxiliary brake is a complement to the machine's ordinary brakes. Exhaust brake and retarder are both auxiliary brakes.

The exhaust brake reinforces the engine's braking power.

The retarder is a hydraulic brake that acts inside the transmission.

The auxiliary brakes give good braking power throughout the entire engine speed range, however, the braking power is slightly higher at high engine speeds.

The auxiliary brakes are used to achieve smooth and comfortable operation that drastically reduces wear of the machine's ordinary brake system.



A Retarder pedal

Retarder

WARNING!

The retarder's braking power is reduced if the oil temperature in the transmission becomes too high. This means that braking performance and deceleration may be insufficient when operating downhill.

The transmission's retarder is a brake, and its retarding action depends on which gear is engaged, that is:

– lower gear – more retarder power (braking action)
– higher gear – less retarder power (braking action)

The retarder is engaged together with the exhaust brake using the retarder pedal (A). The retarder action is infinitely variable, that is, harder pressure on the pedal gives higher retarder action.

The retarder is engaged when the retarder pedal is pressed down and:

– the accelerator pedal is fully released
– the speed exceeds 2 km/h
– the gear selector is in forward or reverse
– the temperature in the transmission oil is not too high

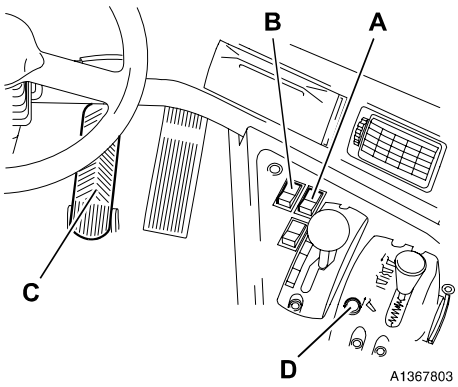
NOTE! The longitudinal differential lock and 6-wheel drive are engaged automatically if the retarder pedal is pressed down.

Braking with retarder

1 Let up the accelerator pedal.
2 Press down the retarder pedal (A) all the way and wait for the braking action. Then adjust the braking action to the operating conditions by letting up on the pedal.
3 Plan the operation by pressing down the retarder pedal a little before braking action is needed for optimal performance.
4 The retarder function disengages when the retarder pedal is let up.

It is advantageous to use the gearshift lock-out at retarder braking to increase the speed range of the engaged gear.

Frequent retarder use means increased oil temperature in the transmission. Keep an eye on the temperature gauge for transmission/retarder. When using the retarder, a reading in the temperature gauge's yellow range is permitted.



A Switch, exhaust brake in accelerator pedal
B Switch, retarder in brake pedal
C Brake pedal
D Switch, load and dump brake

Exhaust brake

Will be connected if:

– the switch (A) is on.
– the accelerator pedal is fully released
– the engine rpm exceeds 1100 rpm (18.3 r/s)
– the engine temperature exceeds 70 °C.

Will be disconnected if:

– the accelerator pedal is pressed down
– the switch is switched off.

Retarder in brake pedal

Will be connected if:

– the switch (B) is on.
– the accelerator pedal is fully released
– the engine rpm exceeds 1100 rpm (18.3 r/s)
– the engine temperature exceeds 70 °C
– the brake pedal (C) is pressed down.

Will be disconnected if:

– the brake pedal is let up
– the switch is turned off.

Load and dump brake

The load and dump brake activates the service brakes and puts the transmission in neutral. This is to facilitate loading and dumping.

This function can only be activated at speeds below 5 km/h.

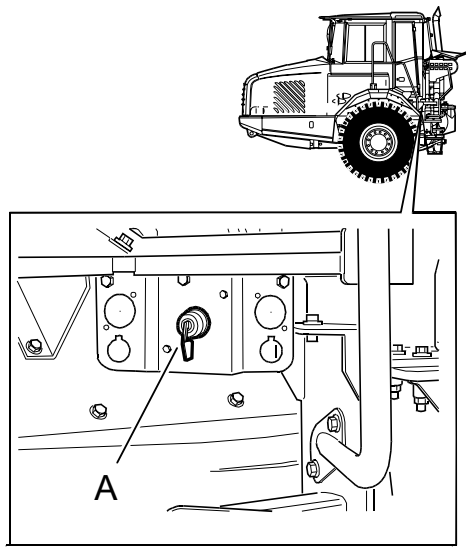
The function is deactivated when the gear selector is moved from neutral position.

Stopping machine

WARNING!

When you are entering and leaving the machine, always face the machine and use the steps or handholds to avoid slipping. Always use the "three-point" grip, i.e. both hands and one foot or both feet and one hand, when entering or leaving. Do not jump!

1 Release the accelerator pedal.
2 Brake and put the gear selector in neutral, when the machine is stationary.
3 Apply the parking brake.
4 Let the engine run at idle speed for at least 1/2 minute before it is stopped to ensure lubrication and cooling of the turbocharger.
5 Turn the start key to position 0 (off).



A Battery disconnect switch

Parking

1 If possible, park the place on level ground. If this is not possible, block the wheels so that the machine cannot start rolling.
2 Make sure that the dump body is lowered or secured. Avoid parking a loaded machine.
3 Check that switches and controls are in the "Off" position or in neutral.
4 Apply the parking brake.
5 Close windows, remove the start key and lock the cab door.
6 **Turn off the battery disconnect switch** (A), which is positioned on the left side of the cab under the entry step.

Long-term parking

1 Carry out the measures as described above. Remember that the ground on which the machine is to stand may shift depending on the weather. Therefore take suitable action.
2 Wash the machine and touch up the paint finish on damaged surfaces to avoid rusting.
3 Rustproof exposed parts, lubricate the machine thoroughly, grease all unpainted surfaces (tipping cylinders, steering cylinders).
4 Check the tyre pressure.
5 Fill the fuel and hydraulic oil tanks to the max. marks.
6 Cover the exhaust pipe (applies when parking out-of-doors).
7 Drain water from the compressed-air reservoirs
8 Remove the fuse for the voltage converter (fuse 41). Otherwise there is a risk that the batteries will be discharged.

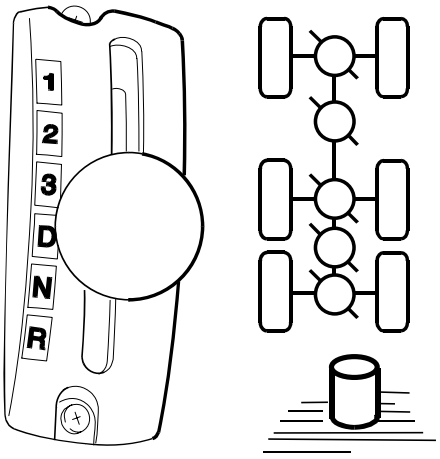
Remember that the risk of theft and break-in can be minimised if one:

– removes the start key when the machine is left unattended
– locks doors and covers after the end of the work shift
– turns off the current with the battery disconnect switch and removes the handle
– avoids parking the machine in places with high risk of theft, break-ins, and malicious damage
– chains the machine to an immobile object.

It is easier to identify stolen machines if the PIN number or registration number is etched onto the windows.

After long-term parking check

– all oil and fluid levels
– all belt tensions
– tyre pressure
– air cleaner.
– battery status.



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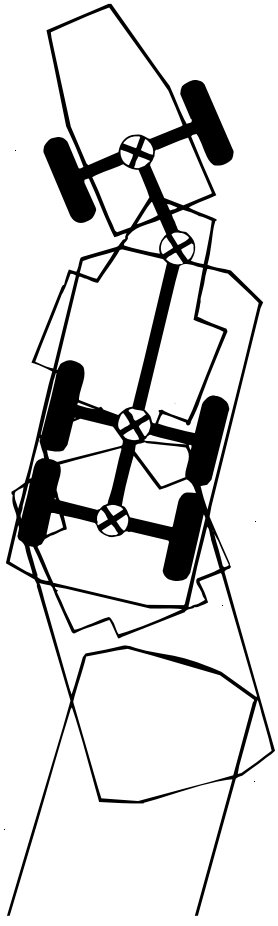
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What to do if the machine gets stuck

Step 1 (by operating in zigzag / ”duck's waddle”)

1 Engage all differential locks with the foot button.
2 Keep an even engine speed and avoid wheel spin.
3 Steer alternately full lock to the right and full lock to the left. When you have reached full lock in one direction, continue operating in that direction until the machine is just about to stop, before turning to full lock in the other direction.

If the machine becomes stationary after 3–4 turns, or if it sinks deeper, stop and proceed to step 2.

Step 2 (by rocking loose)

1 Let up the accelerator to stop the wheels from spinning.
2 Engage the differential locks.
3 Select gear position D and accelerate.
4 Release the accelerator and brake.
5 Select gear position R and accelerate again.
6 Repeat this procedure until the machine has "rocked" loose.

If the machine is still stuck, stop and proceed to step 3.

Step 3

1 Get towing assistance from a crawler tractor, a loader or an excavator.
2 If you have not succeeded in dumping the load due to the risk of overturning, make use of a supporting machine during the dumping operation.
3 Remove the dumped material with the aid of the supporting machine.
4 Lower the dump body.
5 Allow the assisting machine to lift and push at the rear of the dump body at the same time as the hauler is operated according to step 1 until it is free.

Step 4

Getting unstuck with towing assistance

If the hauler has not bogged down but the wheels are simply spinning, it can be towed with the aid of a tow bar, wire rope or chain connected to the towing eyes or pushed by another machine.

See also page 74.

Recovering/towing

WARNING!

- **The greatest care must be taken in connection with towing to avoid serious injury.**
- **Before taking any steps to prepare for recovering or towing, the parking brake must be applied and the wheels blocked to prevent the machine from rolling.**
- **If the engine cannot be started, the brake and steering functions will be limited. In this case, towing should be restricted to emergencies only and over the shortest possible distance by knowledgeable personnel (see under Towing). If possible, transport the machine on a trailer.**

During recovering / towing the engine should be running, if possible, to provide braking and steering.

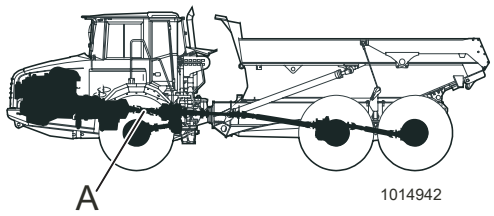
Recovering

- Use a towbar, wire rope or chain connected to the towing eyes at the front or rear on the machine to tow the machine to a suitable location or passable road.

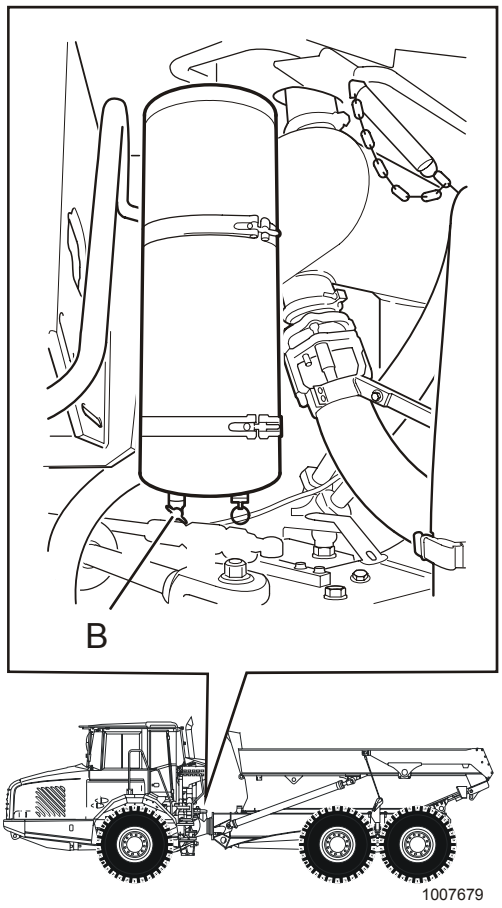
Towing

- If the machine after recovering must be towed to a workshop, use a towbar or wire rope connected to the front towing eyes.
- If there are no brakes on the machine to be towed, a towbar must always be used.
- The vehicle or machine which does the towing, must be at least as heavy as the towed machine, and have sufficient engine and braking capacity to be able to pull and stop both machines on any uphill or downhill slope.
- Towing should always be done over the shortest possible distance.
- Highest travelling speed during all circumstances is 10 km/h.

NOTE! It is not possible to start the engine by towing.



A Propeller shaft



B Filler valve

Case 1 (with engine running)

The gear selector should be in neutral and the parking brake in running position. The machine can be towed 10 km without taking special precautions.

Case 2 (with engine not running)

As the transmission does not receive any lubrication when the engine is not running, the propeller shaft between transmission and dropbox must be removed. In that way lubrication to the dropbox is maintained at the same time as the machine can be steered.

Removing propeller shaft

1 Place the machine in service position, see page 95.
2 Block the wheels so that the machine cannot start rolling and then release all brakes.
3 Release the parking brake.
4 Make sure that the front or rear wheels are slightly above the ground, before removing the bolts from the propeller shaft.

Filling compressed-air system

When required, the compressed-air system can be filled through the filler valve (B), using compressed air from another machine.

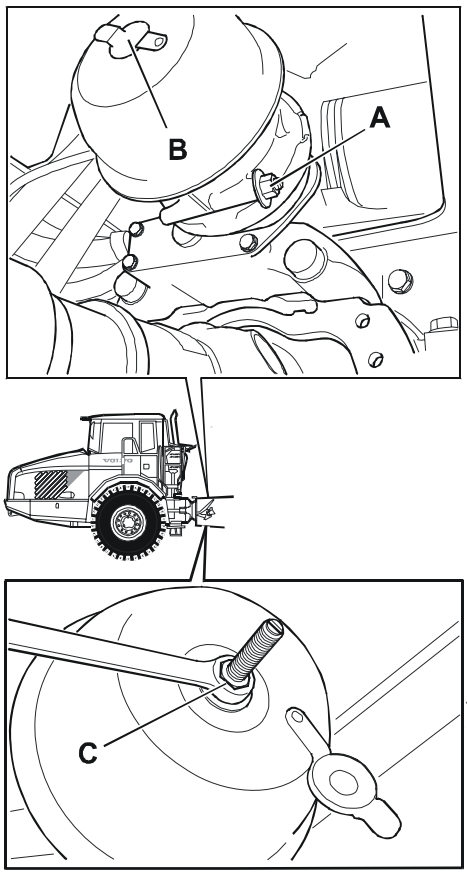
The filler valve is positioned to the left behind the cab.

Depressurising the parking brake

After the compressed-air system has been filled through the filler valve (B), the parking brake can be depressurised with the ordinary control.

The start key shall be in operating position, position 1.

Required min. pressure, approx. 620 kPa (6.2 bar).



A Jacking bolt
B Cover
C Cylinder housing

After recovering / towing

The following safety measures should be taken before the towbar, wire rope or chain is disconnected after recovering / towing:

1 Place the machine on level ground.
2 Apply the parking brake.
3 Block the wheels to prevent the machine from rolling.

Manual release of parking brake

WARNING!

After the parking brake has been released manually it will not work. The machine must only be towed if it is connected to the towing vehicle by a towbar.

If the parking brake cannot be released with the switch because of insufficient compressed air, the brake can be released manually.

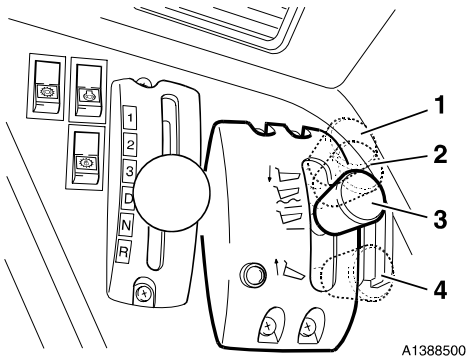
Proceed as follows:

1 Block the wheels or prevent the machine from rolling in another way.
2 Remove the jacking bolt (A).
3 Remove the cover (B) from the cylinder housing.
4 Insert the jacking bolt in the cylinder housing (C) and turn the jacking bolt ¼ turn clockwise to lock it.
5 Release the parking brake by screwing in the jacking bolt clockwise until the brake pads no longer are applied.

NOTE! If the machine is left without restored parking brake, this shall be indicated by attaching a tag to the steering wheel stating that the parking brake is disabled.

Restoring parking brake after manual release

1 Block the wheels or prevent the machine from rolling in another way.
2 Start the engine and let it run until the compressed-air system has reached the correct working pressure, see page 185.
3 Release the parking brake with the switch on the control panel.
4 Screw the jacking bolt counter-clockwise until it is loose.
5 Install the cover on the cylinder housing and reinstall the jacking bolt in its retainer.
6 Then check the function of the parking brake.



Tipping control
1 Lowering with pressure
2 Floating position
3 Holding position
4 Tipping position

Tipping

When tipping, observe the following:

– Steer the machine so that it is straight and with the trailer on level ground.
– Ensure that no persons are near the machine.

If conditions permit, tipping may be carried out while moving.

Tipping control

Dump body lowered by hydraulic pressure = position 1

Used when the dump body is in such a position that it is not lowered by its own weight.

Move the tipping control to position 2 when the dump body begins to lower by its own weight.

Floating position = position 2

NOTE! During loading and transporting this position should be selected.

This position is used for all operation with empty or loaded dump body. Can be used when the dump body is in such a position that it will lower by its own weight.

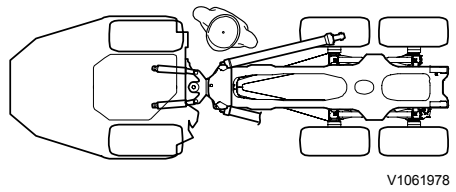
NOTE! If the operator leaves the operator seat, the tipping control automatically moves to holding position.

Holding position = position 3

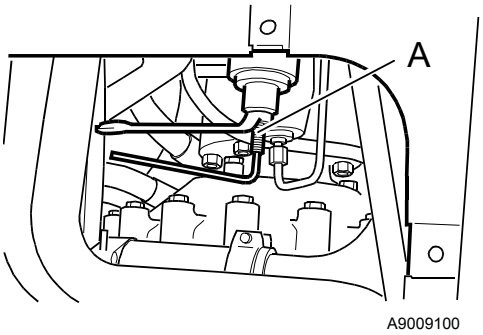
Is used for interrupting the tipping or lowering movements. The dump body stops in the current position.

Tipping position = position 4

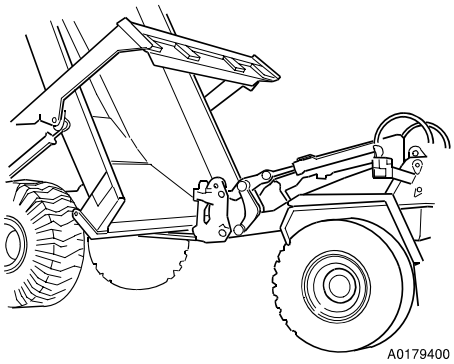
Is used when tipping. Keep the tipping control in this position. Reduce the engine speed before the dump body reaches its top position.



Operator's position during emergency lowering



A Bolt on tipping valve



Dump body, emergency lowering

Operation of the dump body, i.e. tipping and lowering, is controlled with servo pressure.

If the engine should stop with the dump body in the raised position and the starter motor, for some reason, does not work, there will be no servo pressure for operating the tipping valve and the dump body must be lowered manually. The emergency lowering bolt is located on the tipping valve, which can be accessed through a service hatch in the cab floor.

WARNING!

Use the greatest caution when carrying out emergency lowering, as it is not possible to place the machine in service position.

Then the dump body can be lowered in the following way:

1 Open the service hatch under the mat behind the operator's seat.

2 Loosen the lock nut and screw in the bolt on the tipping valve.

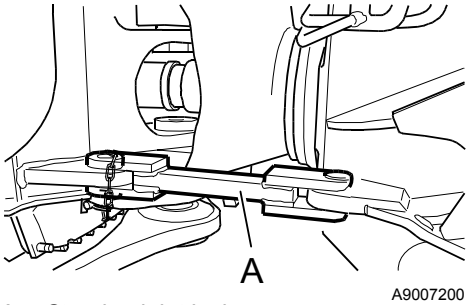
NOTE! The bolt can be turned approx. 8–9 turns before activating the tipping valve spool (count the number of turns). Continue to turn the bolt so that it displaces the valve spool to the lowering/floating position (lowering without pressure).

3 This will cause the dump body to slowly lower unless it is near its top position and the machine is leaning backwards. In this case the dump body needs assistance to lower from an excavator or a loader that lifts at rear edge of the dump body.

4 Restore the bolt to its original position and lock with the nut.

5 Reinstall the service hatch.

Transporting the machine



A9007200

A Steering joint lock

WARNING!

If the machine is driven across from a loading dock onto the platform of a truck or trailer, make sure that this vehicle is securely braked, i.e. the wheels blocked and that there is no risk that the vehicle will tip or tilt in a dangerous way as the machine is driven across.

Steering joint lock

During service work, lifting and transporting the machine on another vehicle, the steering joint should be locked.

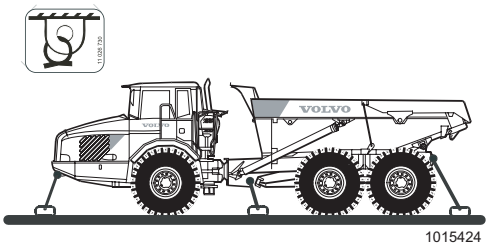
1 Place the machine so that it is straight and turn off the engine.
2 Remove the pin from the transporting position lug and swing the joint lock (A) over to the locked position.
3 Install and secure the pin.

WARNING!

Make sure that no person are close to the steering joint when the engine is running. There is risk of injuries by crushing.

Transporting on another vehicle

- If the machine is driven up onto another vehicle, the steering joint must not be locked. Lock the steering joint when the machine is in position on the transporting vehicle.
- The transporting vehicle must be braked securely and the wheels blocked.
- If the machine is lifted, however, the steering joint shall be locked.



1015424

Lashing the machine for transportation

- Lock the steering joint with the steering joint lock when the machine is in position on the transporting vehicle.
- Apply the parking brake and block the wheels.
- Lash the machine using the towing eyes front and rear and against the platform on the transporting vehicle so that the machine cannot slide, tip or begin to roll.
- In addition to this, follow national regulations.
- Do not forget to unlock the steering joint and secure the steering joint lock in the intended bracket before operating the machine again.

Lifting machine

The lifting tools are optional equipment to be used for lifting the machine. They are intended for a machine weight of:

- **MAX. 24500 kg (54010 lb) for A25E 6x6**
- **MAX. 21900 kg (48280 lb) for A25E 4x4**
- **MAX. 26900 kg (59300 lb) for A30E**

WARNING!

Never remain under the machine when it is suspended in the air.

WARNING!

Do not lift the machine using the eyes on the dump body.

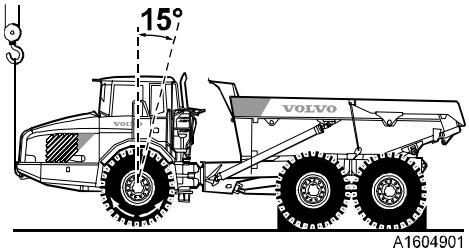
Lifting tool, (optional equipment)

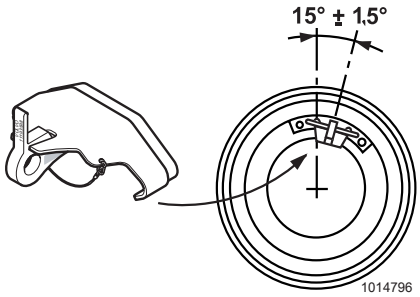
WARNING!

The lifting tool must only be installed together with the special nuts supplied together with the tool, otherwise the tool may loosen causing serious damage.When removing the tool, the ordinary wheel nuts must be reinstalled.

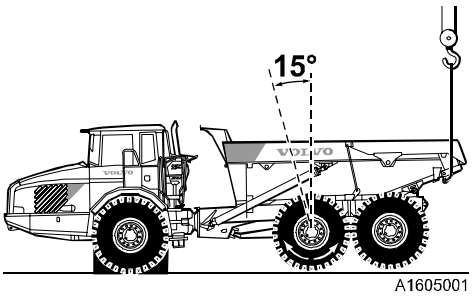
- It is important to use the right lifting tools and nuts, **contact a dealer authorised by Volvo CE for the right tools.** The combination of rims and tyres determines which tools and nuts are to be used.
- It is important that lifting tools are installed correctly, **contact a dealer authorised by Volvo CE for the right method.**
- The lifting tool should only be installed on the machine for lifting and transporting. Remove the tool after use.
- The nuts belonging to the lifting tool should preferably be stored on the tool when they are not used.
- The ordinary wheel nuts should not be stored on the tool when the tool is installed on the machine.
- The lifting tool is marked with two decals that state which tool and nuts should be used in combination with a certain rim and tyre. The part number is also stamped-in on the lifting tool itself.

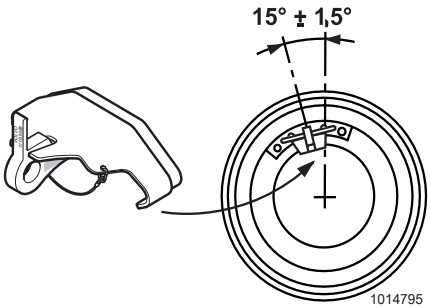
Tightening torque for nuts for lifting tool, 200 Nm.





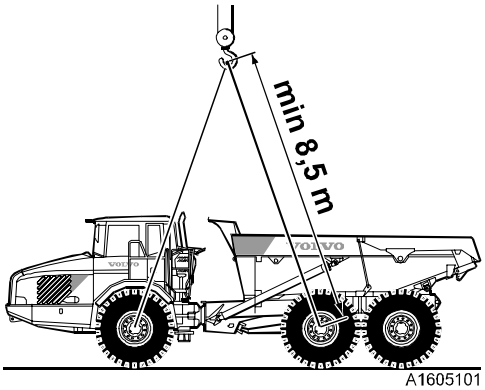
1 Lock the steering joint with the steering joint lock, see page 79.
2 Block the rear wheels.
3 Release the parking brake and disengage differential locks. To be able to do this, the start key has to be in position 1 and there must be enough pressure in the compressed air tanks.
4 Lift the machine in the frame's front lashing eyes.
5 Turn the front wheels so that the wheels' lifting eyes are positioned as shown in the adjacent figure, in line with the lifting sling.



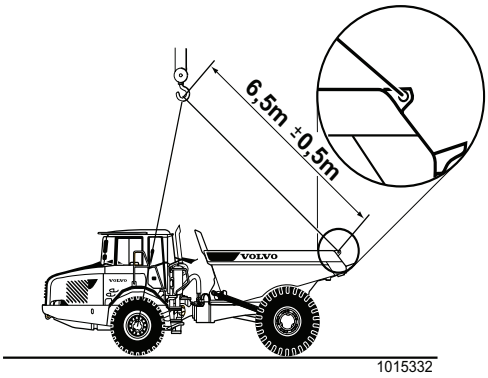


Steps 6–9 do not apply to A25E 4x4.

6 Block the front wheels.
7 Route a lifting sling or strap around the dump body's chute.
8 Turn the front bogie wheels so that the wheels' lifting eyes are positioned as shown in the adjacent figure, in line with the lifting sling.
9 Lower the machine.
10 Apply the parking brake.



Lifting A25E 6x6



Lifting A25E 4x4

WARNING!

A25E, A30E 6x6
The lifting slings between the lift hook and the wheel's lifting eyes must be at least 8.5 metres long, and all four slings must be of the same length.

A25E 4x4
The lifting slings between the lift hook and the wheels' lifting eyes, as well as between the lift hook and the dump body's eyes, must be 6.5 metres (±0.5 metre), and all four must be of the same length.

11 Lift the A25E/A30E 6x6 by the wheels' lifting eyes.
Lift the A25E 4x4 by the front wheels' lifting eyes and by the lifting eyes on the back of the dump body.

12 Lower the machine.

13 Disconnect the steering joint lock before operating the machine, see page 79.

Operating techniques

The following pages contain advice and instructions on how to operate the machine. It is important to use correct operating techniques in order to obtain safe and efficient use of the machine.

Whole body vibrations

Whole-body vibration emissions on construction machinery are affected by a number of factors, such as the working mode, ground conditions, machine speed, etc.

To a large extent the operator can influence the actual vibration levels, because the operator controls the speed of the machine, its working mode, the travel path, etc.

Therefore, this may result in several different vibration levels for the same type of machine. For cab specifications, see page 188.

Guidelines for reducing vibration levels on earthmoving machines

- Use the right type and size of machine, with optional equipment and attachments suitable for a certain application.
- Make sure that the ground is kept in good condition.
  - Remove larger stones and obstacles.
  - Fill in any ditches and holes.
  - Provide equipment and schedule time for maintaining terrain conditions.
- Adjust machine speed and chose a suitable travel path to minimise the vibration level.
  - Travel around obstacles and uneven ground.
  - Reduce speed if it is necessary to operate over rough terrain.
- Maintain machines according to the manufacturer's recommendations.
  - Tire pressures.
  - Brake and steering systems.
  - Controls, hydraulic system and linkages.
- Make sure that the operator seat is maintained and correctly adjusted.
  - Adjust the seat and its suspension according to the operator weight and height.
  - Inspect and maintain the operator seat suspension and adjustment mechanism.
  - Use the seat belt and adjust it correctly.
- Minimise vibrations during long work cycles or long distance travelling.
  - Transport the machine when there are long distances between work sites.

Back pain associated with whole body vibrations may be caused by other risk factors.

The following guidelines may be effective to minimise risks of back pain:

- Adjust the seat and controls to achieve good posture.
- Adjust the mirrors to minimise twisted posture.
- Provide breaks to reduce long periods of sitting.
- Avoid jumping down from the machine.
- Maintain reasonable weight and physical condition.

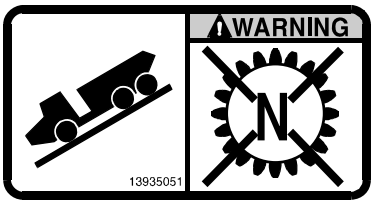
Transport operation


A1602600

WARNING!

As the trailer unit frame is pivoted, relative to the tractor unit frame, around a longitudinal, horizontal axis, you will not feel, if the trailer unit should begin to tip over sideways. Therefore, great care must be exercised when operating the machine. Avoid operating fast round bends, on uneven ground and on downhills.
When operating through a bend at high speed, you must always bear in mind that there is a risk of overturning. The risk of overturning increases when the centre of gravity of the load is high or displaced to one side or if the bends are sharp, cambered the wrong way or the surface is slippery.

- For all operation on roads with moderate inclines select gear position D. The machine will then shift gears automatically depending on the need for traction power.
- Utilise the maximum speed of the machine with sound judgement.
- Always adapt the speed to the road conditions and the traffic situation in order to operate safely and comfortably.
- Pay attention to the trailer unit's movements while operating.
- On no account must there be any risk of part of the load falling off when transporting.
- Do not forget to disengage all differential locks, if you are operating on a good road (firm surface).
- Keep in mind that a loaded machine may have a total weight of up to 45.6 tons for A25E, and 51.1 tons for A30E. This requires longer braking distance, especially if the road is slippery or you are operating at high speed.



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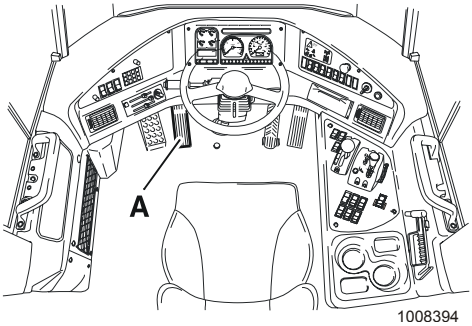
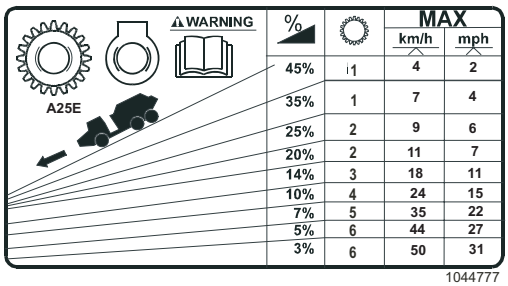
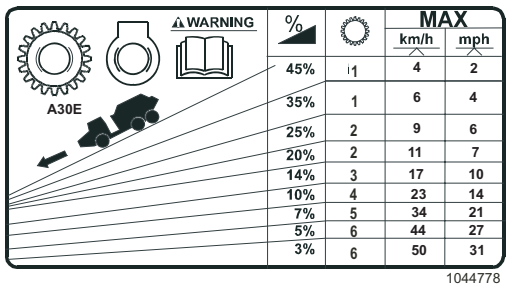


A Retarder pedal



A25E

Max. permitted speed when operating downhill



A30E

Max. permitted speed when operating downhill

Operating on inclines

Uphill operation

The automatic transmission normally makes sure that the correct rimpull is provided on uphill grades.

Under certain conditions, the transmission may start "gear hunting". This means that the transmission changes up and down between two gears at short intervals.

Gear-shift hunting depends on the available power not being sufficient to operate in the higher gear, but is enough for upshifting from the lower gear.

It is possible to prevent gear-shift hunting in two ways:

1 Select the next lower gear.

or

2 Activate the gear-shift inhibitor with the switch on the control panel.

Always engage the longitudinal differential lock / 6-wheel drive when operating in difficult terrain, see page 66.

Downhill operation

WARNING!

- **Do not permit engine speeds above 2300 rpm (38 r/s) when operating downhill.**
- **When operating down a steep incline with a full load, it may happen that the exhaust brake and the engine braking function together do not provide sufficient retardation and this leads to an increasing travelling speed. If this happens, also the service brakes must be used.**
- **The machine must not be allowed to roll with the gear lever in neutral.**

To avoid unnecessary stress to the transmission, the following operating instructions should be followed:

– **Rule:** Select the same gear for operating downhill as you would for operating up the same hill.
If you do not follow this rule, you may loose control of the machine.

– Lower the speed before the downhill.

– Plan downhill operation so that in the first instance the retarder pedal is used, in order not to overuse the service brakes on the machine.

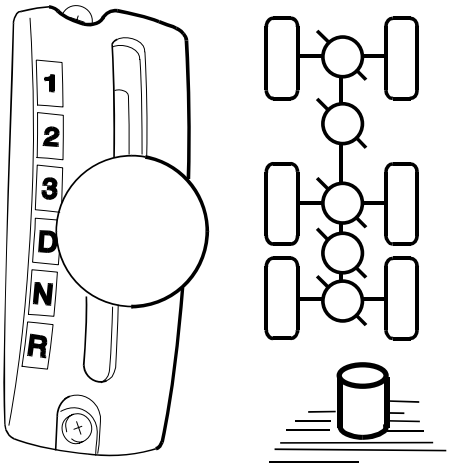
Overspeed protection

WARNING!

When operating down a steep grade with a full load, it may be that the exhaust brake and the engine brake function do not provide sufficient retardation, which leads to increasing machine speed. If this happens, the service brakes MUST ALSO BE USED.

Function description

- If there is a risk of the engine overspeeding, an upshift is made to the next higher gear, regardless of the position of the gear selector and the gearshift inhibitor.
- From 1st to 6th gear, shifting takes place at 2300 rpm (38 r/s).
- When 6th gear forward, or 2nd gear reverse, has been reached and the engine speed exceeds 2300 rpm (38 r/s), lock-up is disengaged and the retarder is activated after two seconds. At 2350 rpm (39 r/s), the retarder is activated immediately.
- In all other gears, lock-up is disengaged and retarder is activated immediately if the engine speed exceeds 2400 rpm (40 r/s).



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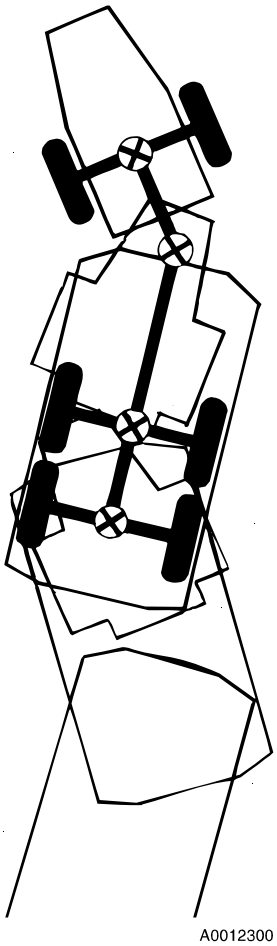

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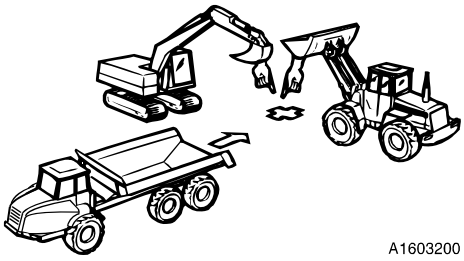
Off-road operation

Different types of terrain require different operating techniques. Check the ground conditions before operating, if you are uncertain and want to avoid getting stuck.

- Always use the longitudinal differential lock/6-wheel drive in off-road operation when there is a risk of slipping.
- If the ground is slippery, use the front axle's transverse differential lock to improve manoeuvrability.
- Always engage the transverse differential locks before any wheel starts to slip.
- In ground conditions where there is a risk of getting stuck, use the steering in combination with transverse differential locks to "renew" traction and grip with the wheels, so-called DUCK WALKING.
- Obtain permission from the management to operate outside the transporting route.
- When operating on soft ground and space permits, choose a new track for each run. In this way you avoid making deep tracks.

NOTE! Avoid operating across steep slopes and over sharp stones and tree stumps.


A1603200

Loading

1 Place the hauler in the indicated place. Make use of the advantages of the articulated steering and place the machine at the best angle for loading. Use the rear view mirrors and keep eye contact with the loader operator while reversing.

2 Apply the load and dump brake, see page 48.

3 Always make sure that the tipping control is in "Floating position" when loading. If this is not the case, the whole load will be resting on the tipping cylinders instead of on the frame.

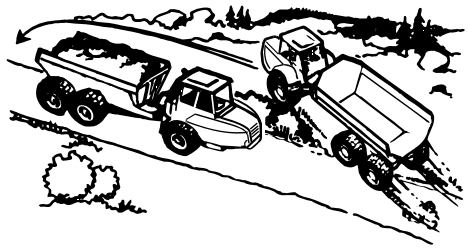
NOTE! Remember that it is you as operator of the hauler, who is responsible for the size and weight of the load, see page 57.

Before moving off, make sure that no part of the load, e.g. stumps or stones, can fall off and cause injury or damage. Protruding objects must be removed.

Body height extension (optional equipment)

Machines equipped with body height extension for light material may only be used for light material. The stability of the machine may be jeopardised if other heavier material is loaded in the dump body. Keep a lower speed when transporting because the centre of gravity lies higher than on machines without body height extensions.

Decal for maximum load is located on a window in the cab.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Transporting with load

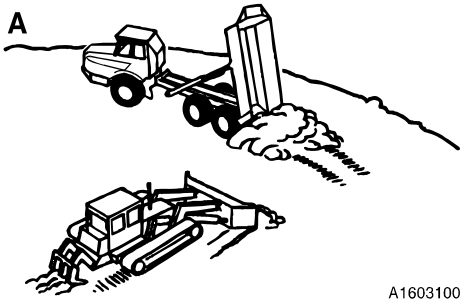
Volvo haulers have very good off-road characteristics, which are often used to shorten transporting distance and time.

You must follow indicated transporting paths. If you consider that it is possible to take cross-country shortcuts, or go off the road to facilitate meeting oncoming traffic, you must always obtain the management's permission to do so.

The condition of the transporting road is of great importance to the capacity of the hauler. If the transporting road is long and poorly maintained, try to influence the management into maintaining the road at a better standard, so that you can keep a higher speed, which means a higher capacity.

Dumping load

A



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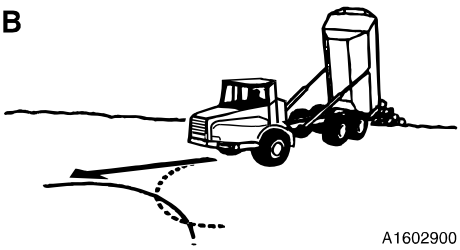


A1602900

C

A1603000

D

A1604000

WARNING!

For all dumping, check out the firmness and inclination of the ground. When dumping over an edge, do not reverse further out than the rear axle is still on firm ground. Check the firmness of the edge.

The way of dumping depends on the condition of the load.

Method A: This is the quickest way to unload where the dump site is large and the load is to be bulldozed over an edge.

Method B: Reverse out as close to the edge as possible so that most of the load falls over the edge. The saving is that one avoids having a dozer on the unloading site.

Always use the rear view mirrors when reversing. Do not stop until the wheels on the rear axle reach the edge. Avoid driving in the same tracks to reduce the risk of getting stuck. Save some of the load and deposit it on the edge.

Method C: When dumping in a heap: reverse up and dump as high up as possible in the heap.

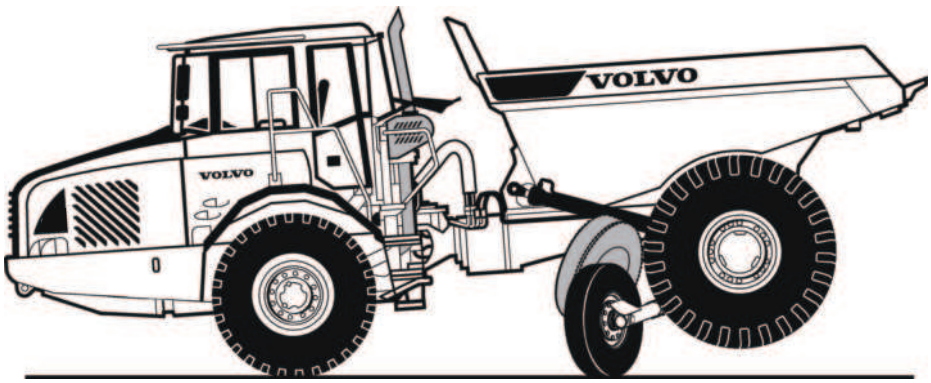
Method D: If a road embankment or a slightly elevated surface is to be built up, make use of the machine's off-road manoeuvrability at the dump site.

The following applies for all dumping

- Before you raise the dump body, make sure that no persons are close to the hauler.
- Do not raise the dump body when reversing if the ground is uneven.
- If the machine is placed across a steep incline, move the machine before dumping the load.
- Place the machine so that it is straight. Engage the load and dump brake, see page 48. Move the tipping control backwards to the tipping position and increase engine rpm.
- Reduce engine speed just before the dump body reaches its top position.
- Move the hauler forward a few metres before you lower the dump body. Move the tipping control to floating position.

Never operate further than necessary with the dump body up. Never make steering movements with the hauler, if the entire load has got stuck and the dump body is raised.

Operating with turn-around wheels (applies to A25ETR)



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Turning in tunnel (dump body must be empty)

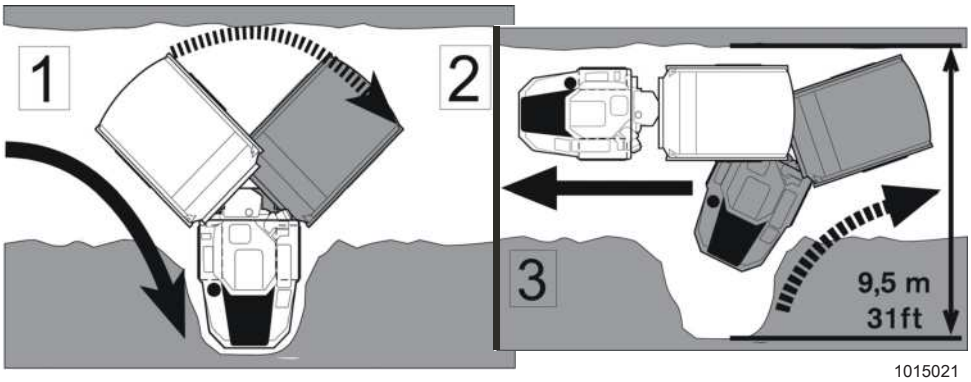
1 Steer to full lock.
2 Brake the machine in place, by applying the service brakes.
3 Lift up the back end.
4 Swing the back end, by using the steering.
5 Lower the back end.
6 Release the brake.

When needed, repeat steps 1-6.

IMPORTANT! When turning the machine with the turn-around wheels, turn smoothly and slowly. Fast and rough turning subjects the turn-around wheels to stresses that shorten the equipment's service life.

WARNING!

When the machine has been turned, check that the indicator light for turn-around wheels is off. Due to the weight of the turn-around wheels they may lower during operation. When the turn-around wheels are too low, the warning light comes on. Lift up the turn-around wheels until the warning light turns off.



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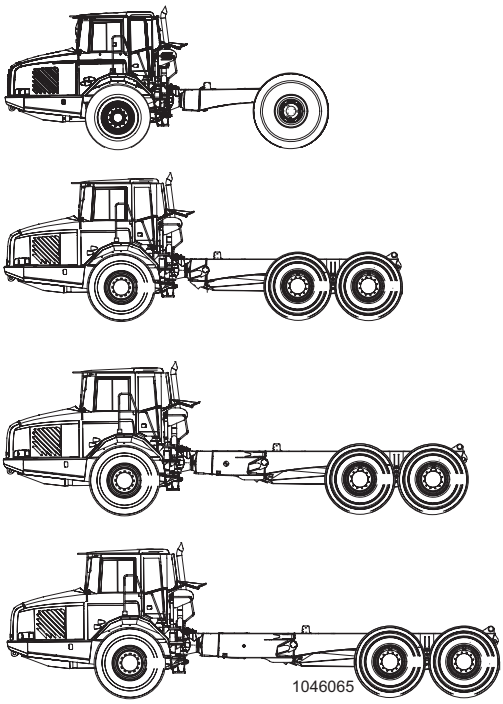


Hauler chassis, versions
A25E 4x4
Standard
Standard with 1200 mm frame extension
Standard with 1700 mm frame extension

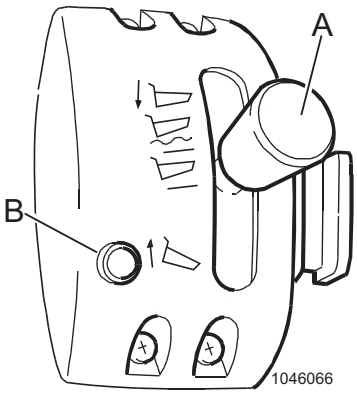
Hauler chassis

In general, all operating instructions in this Operator's Manual are applicable to Hauler chassis. However, instructions related to the dump body may not be applicable, depending on if the hauler version is equipped with a dump body or not. Information about the superstructure is found in the manual provided by the body builder.

Always keep these documents in the cab and replace them if they are lost or become illegible.

Dimensions for the different versions are found on pages 198–205.

The superstructure shall be installed according to Volvo CE's “Body builder instruction”.



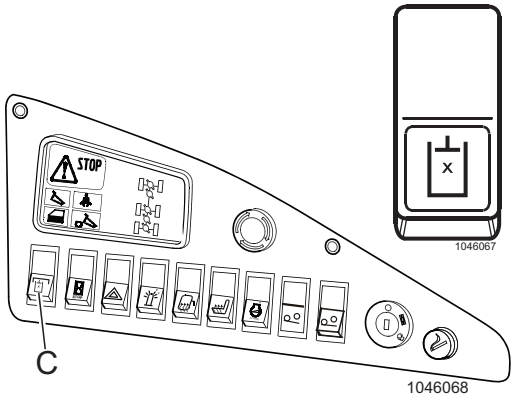
Activate the hydraulics / load and dump brake

Hauler chassis are either equipped with standard hydraulics or optional hydraulics. The hydraulics as well as the load and dump brake are activated in different ways.

Check the function in the manual for the superstructure.

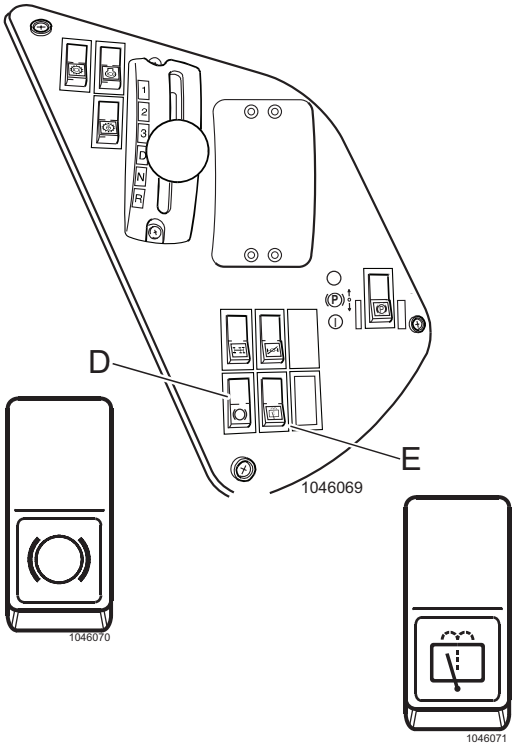
Activating standard hydraulics as well as load and dump brake

Use the tipping control (A) to activate the hydraulics and the button (B) to apply the load and dump brake.



Activating optional hydraulics as well as load and dump brake

Use switch (C) to activate the hydraulics, and switch (D) to apply the load and dump brake.



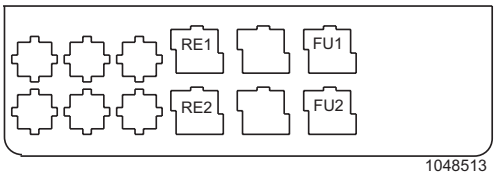
Rear window, wiper and washer (optional equipment)

The rear window's wiper and washer are activated with switch (E).

Bolted joint on rear frame extension, check-tightening

The bolted joint shall be check-tightened by a Volvo CE authorised workshop at the 100 hour warranty inspection, and thereafter every 2000 hours.

Tightening torque: 952 Nm



Fuses (under control panel)

Marking	Rated current	Description
1	5 A	Frame oscillating brake
2	10 A	Wiper and washer, rear window

Relays (under control panel)

Marking	Description
1	Frame oscillating brake
2	Wiper and washer, rear window

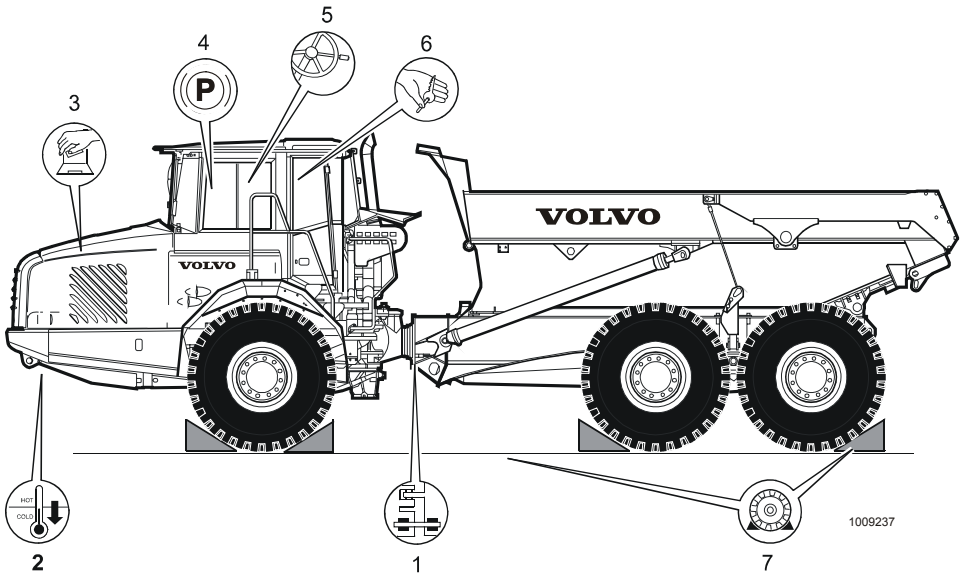
Safety when servicing

Service position

WARNING!

If work has to be carried out on the machine before it has cooled down, care must be observed with regard to hot liquids and hot machine parts – risk of burns.

Before you begin any service work, the machine should be placed on level ground and prepared for service as shown below:



1 Lock the steering joint with the steering joint lock. Lower the dump body on the frame.
If service has to be performed with the dump body up, secure it with the dump body lock or the dump body support, see page 100. Lock the tipping control with the lock-out control, see page 48.

2 Let the machine cool.

3 Carefully release the pressure in pressurised lines and pressure vessels. When working on the brake system, no plugs or pressure lines may be loosened before the pressure in the system has been released.

4 Apply the parking brake.

5 A yellow-black warning label or a red flag should be attached to the steering wheel while service is being done.

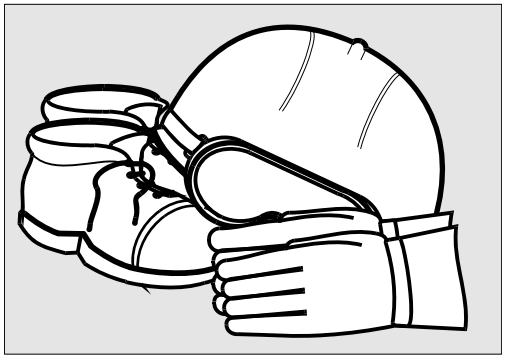
6 Stop the engine and take out the ignition (does not apply when checking the oil in the transmission).

7 Block the wheels in a suitable way (with, for example, wedges).

NOTE! When lifting the machine, the steering joint must be locked and the eyes intended for lifting must be used.

IMPORTANT! If turn-around wheels are installed they must always be lowered during service and repair work, but they may not be used as jacks.

Before service, read



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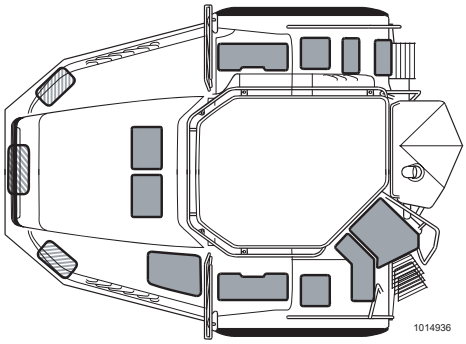
Prevent personal injuries

- Read the Operator's Manual before beginning any service work. It is also important to read and follow the information and instructions given on plates and decals.
- Do not wear loose-fitting clothes or jewellery, which may get caught and lead to injury.
- Always wear a hard hat, safety glasses, gloves, protective shoes and other protective articles when the work so requires.
- Make sure that there is sufficient ventilation when starting the engine indoors.
- Do not stand in front of or behind the machine while the engine is running.
- If service has to be performed with the dump body up, secure it with the dump body lock or the dump body support, see page 100. Lock the tipping control with the lock-out control.

IMPORTANT! Always lean in under the dump body from one side when the dump body lock is to be locked or unlocked.

- Stop the engine before opening engine hood, radiator casings, and similar covers.
- When the engine has been stopped, there is still accumulated pressure in the pressurised systems. If a system is opened without first releasing all pressure, liquid under high pressure will jet out.
- When looking for possible leaks, use a piece of paper or stiff board, not your hand.
- Make sure that stepping surfaces, handholds, and slip protected surfaces are free from oil, diesel fuel, dirt and ice. Never step on surfaces on the machine that are not intended for this.
- It is important that correct tools and equipment are used. Defective tools or defective equipment must be repaired or replaced.



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Slip protection

Prevent machine damage

- When lifting or supporting the machine or parts of the machine, make sure that the equipment you are using has sufficient lifting capacity.
- Lifting devices, tools, working methods, lubricants and spare parts prescribed in the Operator's Manual must be used. Volvo CE will not accept any responsibility if this is not followed.
- Make sure that no tools or other objects, which may cause damage, are left inside or on the machine.
- Release the pressure in the hydraulic system before beginning service work.
- Never adjust a reducing valve to a higher pressure than what is recommended by the manufacturer.
- Machines, which are used within a contaminated or in any other way unhealthy area, must be equipped for such work. Special safety regulations apply when servicing such a machine.
- When installing two-way radio, mobile telephone or similar equipment, the installation must be carried out according to the instructions from the manufacturer in order to eliminate interference with the electronic system and components intended for the function of the machine, see page 10.
- Measures during electric welding, see page 130.
- Make sure that all covers on the machine are in position before starting the engine and putting the machine to work.

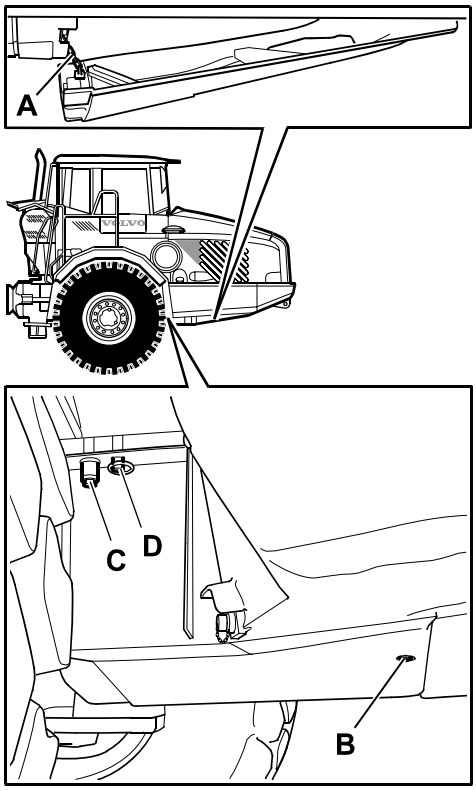
Prevent environmental influence

Be conscious of the environment when carrying out service and maintenance. Oil and other liquids dangerous to the environment and released into the environment will cause damage. Oil breaks down very slowly in water and sediment. One litre of oil can destroy millions of litres of drinking water.

NOTE! In common for all points below is that all waste is to be handed over to a treatment and disposal firm approved by the authorities.

- When draining, oils and liquids must be collected in suitable containers, and steps must be taken to avoid spills.
- Used filters must be drained of all liquid before they are passed on as waste. Used filters from machines which work in environments with asbestos or other dangerous dust must be placed in the bag supplied with the new filter.
- Batteries contain substances dangerous to the environment and health. Used batteries must therefore be handled as waste dangerous to the environment.

Consumables, e.g. used rags, gloves, and bottles may also be contaminated with oils and liquids dangerous to the environment and must in that case be treated as waste dangerous to the environment.



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A Chain
B Lower bolt
C Upper bolt
D Pin

Preparations before service

Guard plates, lowering

For certain service work it is necessary to hinge down or remove the guard plates.

Place the machine in service position, see page 95.

Front guard plate

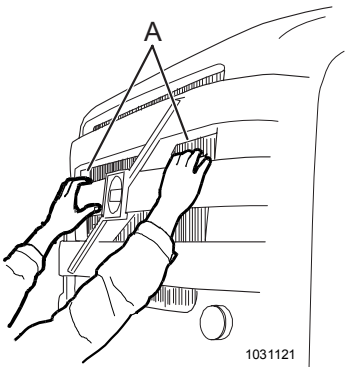
1 Remove the bolts at the rear part of the plate (2 pcs.). The plate is heavy and therefore secured with a chain (A) to prevent it from falling down.
2 Remove the pin for the chain and carefully let down the plate.

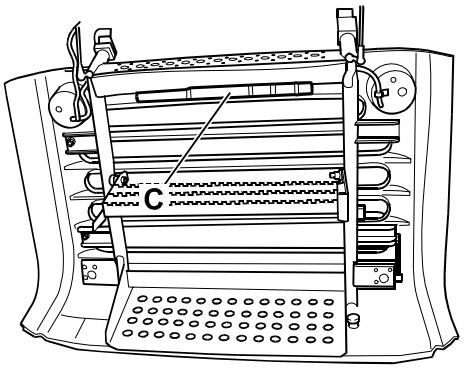
Rear guard plates

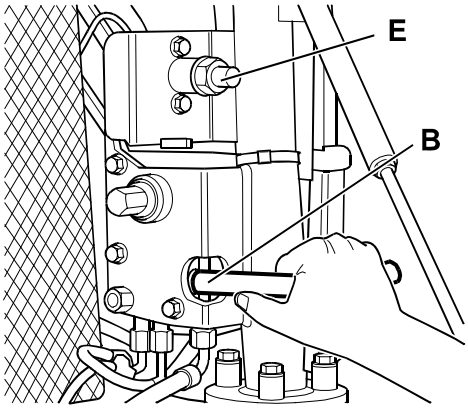
Lower one plate at a time.

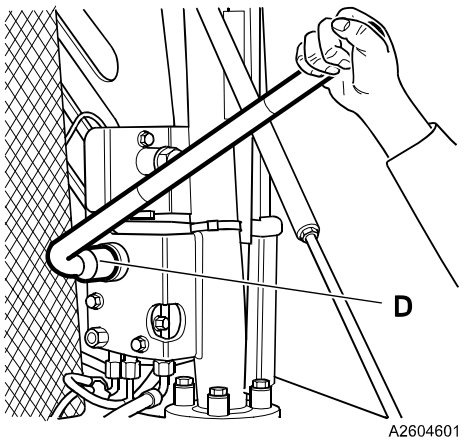
1 First unscrew the lower bolt (B).
2 Hold on to the edge at the same time as the two upper bolts (C) are removed.
3 Remove pin (D) and let down the plate.

Proceed in the same way with the other guard plate.









Hydraulic pump

A Catches, front grill

B Valve

C Socket wrench with extension

D Switch

Engine hood

Opening

1 Press in catches (A).

2 Let down the front grill (a gas spring takes up its weight).

3 Turn the hydraulic pump valve (B) to the downward position with a socket wrench placed by the hydraulic pump. Turn clockwise to end position.

Manual opening

4 Get the extension (C) which is placed in the front grill and join it up with the socket wrench.

5 Engage socket wrench (D) with the pump and start to pump until the engine hood has reached its upper end position.

Electric opening (optional equipment)

6 Place the socket wrench on switch (E) and turn clockwise to end position. The switch has a spring return action.

7 Keep the socket wrench in this position. Release the socket wrench when the engine hood has reached its upper end position.

Lowering

8 Turn the hydraulic pump valve (B) to the upward position with a socket wrench placed by the hydraulic pump. Turn counter-clockwise to end position.

Manual lowering

9 Take out extension (C) which is placed in the front grill and join it up with the socket wrench.

10 Engage socket wrench (D) with the pump and start to pump until the engine hood has reached its lower end position.

Electric lowering (optional equipment)

11 Place the socket wrench on switch (E) and turn clockwise to end position. The switch has a spring return action.

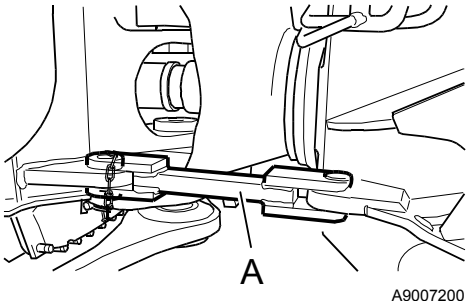
12 Keep the socket wrench in this position. Release the socket wrench when the engine hood has reached its lower end-position.

After lowering

13 Put the socket wrench and extension back in their storage position.

14 Hinge up the front grill.

15 Check that the catches for the front grill engage properly.



A Steering joint lock

Steering joint lock

WARNING!

The steering joint lock must be in the locked position during all work on the steering joint.

1 Remove the pin from the transporting position lug and swing the joint lock (A) over to the locked position.
2 Install and secure the pin.

NOTE! The steering joint must not be locked when operating the machine.

Dump body lock

WARNING!

When working with a raised dump body, the dump body must be secured with the dump body lock or the dump body support.

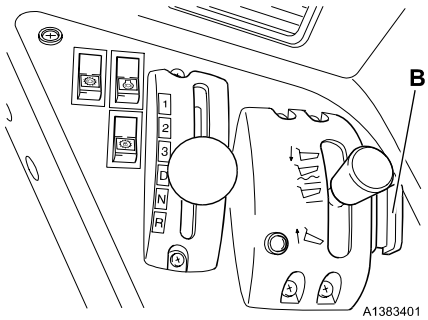
Secure the dump body as follows:

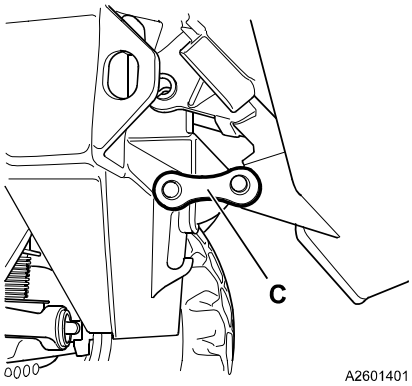
1 Tip up the dump body to max. tipping (dumping) angle.
2 Lock the dump body with the dump body lock (C) or lower the dump body down against a dump body support.
3 Lock the tipping control in "HOLDING POSITION" with the lock-out control (B)

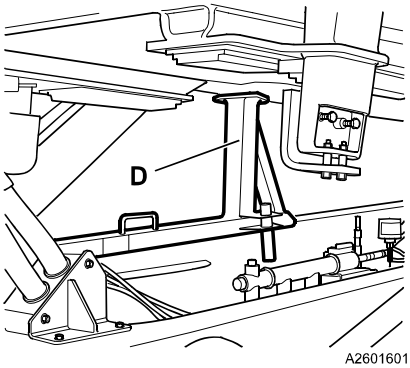
When work has been completed:

4 Disconnect dump body lock (C) or remove the dump body support.
5 Disengage lock-out control (B) from the tipping control.
6 Lower the dump body.

IMPORTANT! Always lean in under the dump body from one side when the dump body lock is to be locked or unlocked.

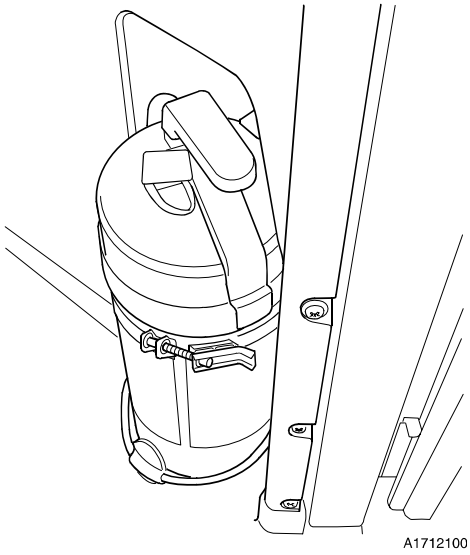






B Lock-out control for tipping control
C Dump body lock
D Dump body support

Fire protection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WARNING!

If a machine is used in an environment, where the risk of fire is particularly high, e.g. in explosive environment, special equipment is required.

There is always a risk of fire. Find out which type of fire extinguisher that is used at your place of work and how it is used.

If the machine is to be provided with a hand-held fire extinguisher, it should be of the type ABE (ABC in North America. The designation ABE means that it is possible to extinguish fires in both solid organic materials and liquid, and that the fire extinguishing compound does not conduct electricity. Efficiency class I means that the time the extinguisher is effective must not be less than 8 seconds, class II at least 11 seconds, and class III at least 15 seconds.

A hand-held fire extinguisher ABE I normally corresponds to an extinguishing powder content of 4 kg (8.8 lb) (EN-class 13A89BC), EN 3-1995 standard, parts 1, 2, 4, and 5.

Preventive fire protection

- Do not smoke and make sure that there is no open flame near the machine when filling with fuel or when the fuel system has been opened and in contact with the surrounding air.
- Diesel fuel is flammable and must not be used for cleaning. Use car care products intended for cleaning or degreasing. Also bear in mind that certain solvents may cause skin rash, damage the paint finish and constitute a fire hazard.
- Keep the place where the service is to be carried out clean. Oil and water may make the floor slippery and are also dangerous in connection with electrical equipment or electric power tools. Oily or greasy clothes are a serious fire hazard.
- Check daily that the machine and the equipment, e.g. underbody plates are free from dust and oil. In addition to reducing the risk of fire, it will also be easier to detect defective or loose components.

NOTE! Observe great care when using high-pressure wash when cleaning. Electrical components and electrical cables may be damaged even at moderately high pressure and temperature. Protect electrical leads in an appropriate way.

- Take extra care when cleaning a machine that is used in a fire-sensitive environment, e.g. sawmills, dumps, and landfill sites. The risk of spontaneous combustion can be further reduced by, e.g. installing insulation around the silencer guard.
- It is important that the fire extinguisher is maintained so that it works when it is required.

- Check that fuel lines, hydraulic and brake hoses and electrical cables have not been damaged by chafing or do not risk being damaged in that way because of incorrect installation or clamping. This applies particularly to unfused cables, these are red and marked R (B+), and are routed:
  - between the batteries
  - between battery and starter motor
  - between alternator and starter motor

  Electrical cables must not lie directly against oil or fuel lines.
- Do not weld or grind on components that are filled with flammable liquids, e.g., tanks and hydraulic pipes. Exercise care with such work in the proximity of such places. A fire extinguisher should be kept near to hand.

Measures in case of fire

If the circumstances permit and your own safety is not endangered, take the following steps at the slightest sign of fire:

1 Stop the machine if it is moving.
2 Turn the ignition to the stop position.
3 Leave the cab.
4 Call the fire department.
5 Turn off the current with the battery disconnect switch, if that does not compromise your safety.
6 If possible, try to extinguish the fire. Otherwise, leave the machine and the danger area.

Measures after fire

When handling a machine damaged by fire or exposed to other intense heat, the following protective measures must be taken:

- Use protective goggles and thick protective gloves made of rubber.
- Never touch burnt components with your bare hands to avoid contact with melted polymers. First wash thoroughly with plenty of lime water (a solution of calcium hydroxide, i.e. slaked lime in water).
- Handling heated fluorocarbon rubber, see page 104.

Handling hazardous substances

Heated paint

WARNING!

All paint decomposes when heated and forms compounds, which may cause irritation and in case of prolonged or repeated exposure be very health-impairing.

When heated, paint gives off poisonous gases. Therefore, the paint must be removed from an area at least 10 cm from the place where welding, grinding, or gas cutting is to be carried out. In addition to the health hazard, the weld will be of inferior quality and strength, which, in the future, may cause the weld to break.

Methods and precautionary measures when removing paint

- Blasting
  - use respirator and protective goggles
- Paint remover or other chemicals
  - use an air extractor, respirator and protective gloves
- Grinding machine
  - use an air extractor, respirator as well as protective gloves and protective goggles

Painted parts that have been discarded must never be burnt. They must be taken care of by an approved waste handling plant.

Rubber and plastics which have been heated

Polymer materials can, when heated, form compounds which are dangerous to health and environment and must therefore never be burned when scrapped.

If gas cutting or welding is to be carried out near such materials, the following safety instructions must be followed:

- Protect the material from heat.
- Use protective gloves, protective goggles, and approved respirator.

Fluorocarbon rubber which has been heated

WARNING!

Certain seals, which are intended to withstand high operating temperatures, e.g. in engines, control valves, hydraulic motors and pumps, may be made from fluorocarbon rubber. When heated to high temperatures, fluorocarbon rubber decomposes to hydrogen fluoride and hydrofluoric acid, which is very corrosive to skin and respiratory tracts.

When handling a machine which has been damaged by fire or been exposed to other intense heat, the following protective steps must under all circumstances be taken:

- Use thick, gloves made of rubber and wear protective goggles.
- Discard gloves, rags, etc. that been in contact with heated fluorocarbon rubber after having first washed them in lime water (a solution of calcium hydroxide, i.e. slaked lime in water)
- The area around a part that has been very hot and that may be made of fluorocarbon rubber must be decontaminated by thorough and ample washing with lime water.
- As a precautionary measure all seals (O-rings and other oil seals) must be handled as if they were made from fluorocarbon rubber.
- The hydrofluoric acid may remain on the machine parts for several years after a fire.
- If swelling, redness or a burning sensation occurs and one suspects that the cause may be contact with heated fluorocarbon rubber contact a medical doctor immediately. Symptoms may not appear until after several hours without any previous warning.
- The acid cannot be rinsed or washed away from the skin. Instead treat with Hydrofluoric Acid Burn Jelly or similar before contacting a doctor.

Refrigerant

NOTE! All types of service of the air conditioning unit must be carried out at accredited workshops by, or under the supervision of, a person in a position of authority with certified competence.

WARNING!

Refrigerant R134a easily causes frostbites, when it comes into contact with bare skin. When heated gases are formed and these may be harmful to lungs and the nervous system.

The air-conditioning unit of the machine is filled with refrigerant R134a at the factory. R134a has no damaging effect on the atmosphere's ozone layer, however, it contributes to the greenhouse effect and must therefore never purposely be released into the open air.

IMPORTANT! R134a must never be mixed with any other kind of refrigerant, e.g. R12, as this will cause the unit to fail.

In case of contact with escaping refrigerant, the following actions must be taken:

- The gases, which are formed when refrigerant is heated may have seriously harmful effects on lungs and the nervous system even at low concentrations and when no smell is detectable. High concentrations have a narcotic effect. An exposed person must be moved out of the danger area and out into the open air. Seek medical advice if there are remaining symptoms.
- In liquid form, the refrigerant may cause frostbite. Carefully heat the injured area with lukewarm water or warm clothes. Seek medical advice, if there are remaining symptoms.
- Seek medical advice, if liquid refrigerant has come into contact with someone's eyes.
- If a leak is suspected, leave the dangerous area and contact an accredited workshop to get information about what action should be taken.

Batteries

WARNING!

Batteries contain sulphuric acid, which is very corrosive to skin.

- Do not smoke near batteries, as these give off explosive gases.
- Make sure that metal objects, e.g., tools, rings, and watch straps do not come into contact with the battery pole studs.
- Make sure that the battery pole stud protections always are in place over the battery terminals.
- Do not tilt a battery in any direction. Battery electrolyte may leak out.
- Do not connect a discharged battery in series with a fully charged battery. Risk of explosion.
- When removing a battery, disconnect the ground cable first and when installing, connect the ground cable last to reduce the risk of sparks.
- Discarded batteries must be taken care of according to governing national regulations.
- Charging batteries, see page 128.
- Starting with booster batteries, see page 130.

Dust of crystalline silicon dioxide (silica dust)

WARNING!

Avoid exposure to dust containing crystalline silicon dioxide, as it may cause serious damage to the lungs (silicosis).

Crystalline silicon dioxide is a basic component part of sand and granite. Many activities on building sites and in mines, such as ditching, sawing, and drilling, generate dust that contains crystalline silicon dioxide. This dust may cause silicosis (miner's consumption).

The employer or the management of the work site should inform the operator about any occurrence of crystalline silicon dioxide on the work site and provide special work instructions, necessary protective equipment and what actions are to be taken.

Also check local/national regulations regarding crystalline silicon dioxide and silicosis.

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Service and maintenance

For the machine to function satisfactorily and at lowest possible cost, a thorough maintenance is required.

Lubrication and service chart

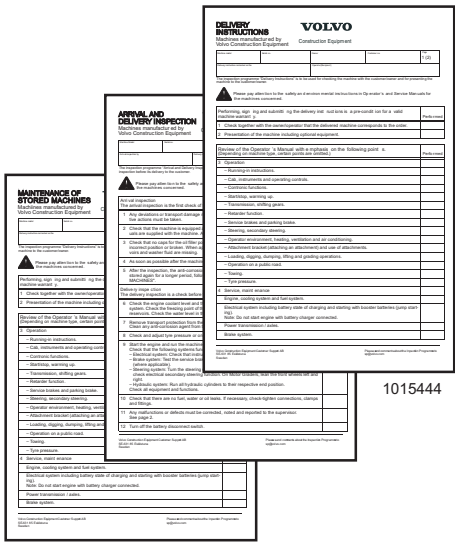
The section “Lubrication and Service Chart” describes the maintenance work, which the operator can carry out. If certain operations require trained workshop personnel and special equipment, this will be indicated. See “Lubrication and service chart” page 160.

Service schedule

After every completed service at an authorised workshop, the service journal shall be filled in, see page 206. The service journal is a valuable document that can be referred to, e.g., when selling the machine.

Arrival and delivery inspection

Before the machine leaves the factory, it is tested and adjusted. The dealer must also, if the warranty is to apply, carry out "Arrival and delivery inspections" according to the applicable form, which must be signed.



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Delivery instructions

When handing the machine over, the dealer must give the buyer "Delivery instructions" according to the applicable form, which must be signed, if the warranty is to apply.

Service programmes

The Service Programme should be used in connection with warranty inspections and during maintenance carried out at an authorised dealer workshop.

The intervals recommended between checks, oil changes, and lubrication apply provided that the machine is used under normal environmental and operating conditions.

Warranty inspection

Two warranty inspections should be done at an authorised dealer workshop. The first within 100 operating hours and the second at the latest at 1000 operating hours.

These warranty inspections must be performed, it is a condition for the warranty to apply.

During these inspections, oil and other liquids have to be changed before the end of the regular intervals.

Maintenance

Intervals for other maintenance, see the Service Programme or the Lubrication and Service chart in this section.

Cleaning the machine

The machine should be cleaned regularly with conventional car care products in order to eliminate the risk of damage to the paint finish and other surfaces on the machine.

IMPORTANT! Avoid using strong cleaning agents or chemicals in order to minimise the risk of damage to the paint finish.

NOTE! Perform daily cleaning of the areas on the machine where dust, chips, and similar may collect in order to minimise the risk of fire.

Recommendations for cleaning the machine

- Park the machine in a place intended for cleaning.
- Follow the instructions supplied with the car care product.
- The water temperature must not exceed 60 °C.
- If a high-pressure wash is used, keep a distance of at least 20–30 cm between the nozzle and machine surface. Too high push and too short distance may cause damage. Protect electrical leads in an appropriate way.
- Use a soft sponge.
- Finish by rinsing the whole machine with only water.
- Always lubricate the machine after washing.
- Touch-up the paint finish when required.

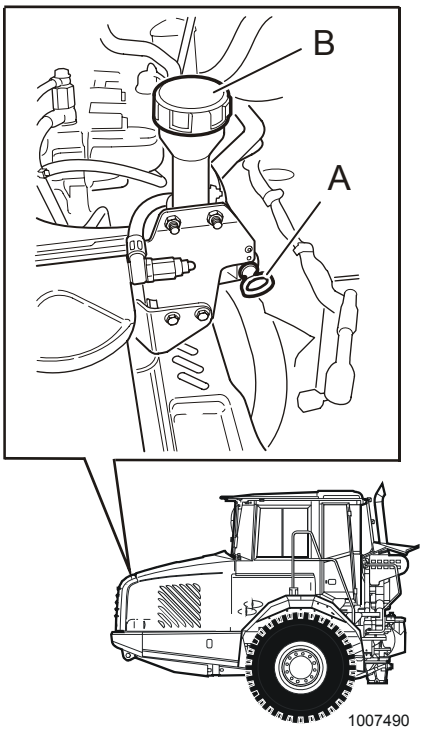
Paint finish maintenance

- Machines which are used in corrosive environment are more prone to rusting than others. As a preventive measure, it is recommended that the paint finish is maintained every sixth months.
- First, clean the machine.
- Apply Dinol 77B (or corresponding transparent waxy anti-rust agent) to a thickness of 70–80 µ.
- A protective layer of underseal Dinitrol 447 (or corresponding) may be applied under the mudguards where mechanical wear is expected.

Touch-up painting

Machines used in corrosive environments are more prone to rusting than others. As a preventive measure, touch up damaged paint finish and perform anti-corrosion treatment every six months.

1. Wash the machine with tepid water. If a high-pressure wash is used, the nozzle must be kept at a certain distance from the machine. The water temperature must not exceed 60 °C.
2. Allow the machine to dry and then lubricate it.
3. Check if any areas of the paint finish are damaged. If this is the case - rectify these.



A Dipstick
B Filler pipe

Engine

Engine oil

Engine oil level can be read off on the information display unit, see page 30. If the engine oil level is low, an alarm display is shown, see page 38.

Engine oil, checking after topping up or changing

- The level should be between the marks on the dipstick. The difference between the MIN. and MAX. marks on the dipstick is approx. 6 litres.
- Try to keep the level at maximum, but do not overfill.

Engine oil, changing

Replace engine oil every 500 hours.

WARNING!

Take care when changing oil. Hot oil can cause burns on unprotected skin.

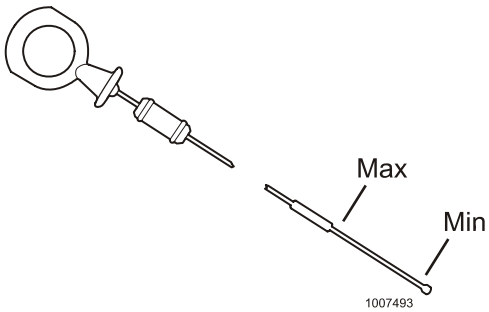
Conditions for intervals of 500 hours to apply are that:

– the oil filters are changed every time the oil is changed
– the oil filters are Volvo original “Long Life” filter and “By-pass” filter
– the oil is of a certain grade, see page 167
– the correct oil viscosity for the ambient air temperature is selected according to diagram, see page 167.

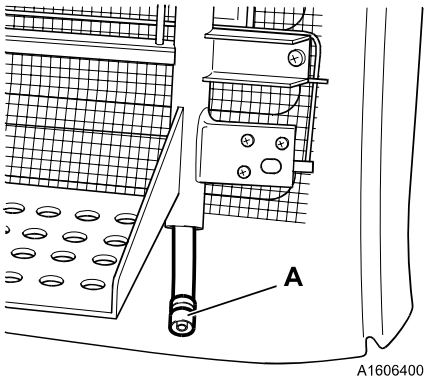
Follow the recommended change intervals in the table on page 171 according to the oil grade that is used and the fuel's sulphur content.

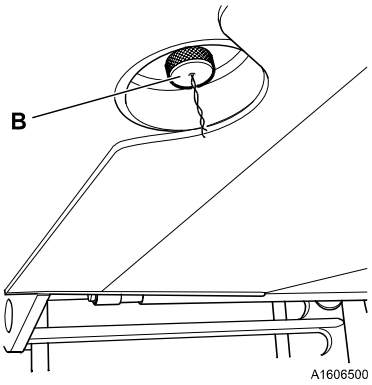
Engine oil of a grade that only meets API CF-4 or an oil grade lower than ACEA-E2 or API-CD must not be used.

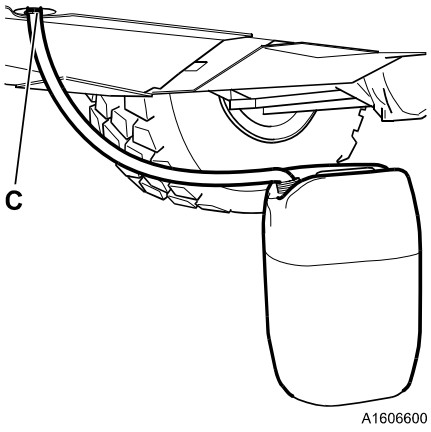
The oil must be changed at least every six months, regardless of the number of operated hours.

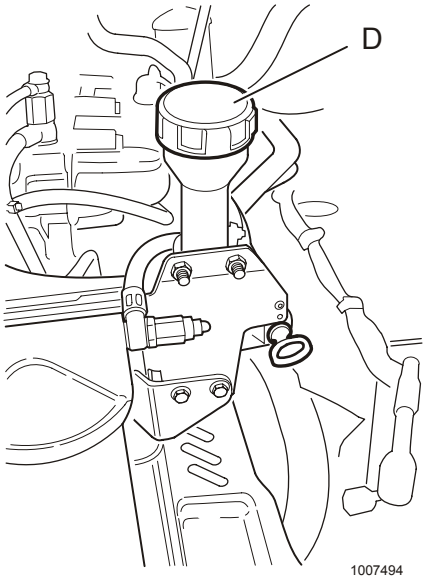


Dipstick









Draining

1 Place the machine in service position, see page 95.
2 Let down the front grille.
3 Detach draining hose (A) from the front grille.
4 Remove the protective cap (B) from over the draining connection (C).
5 Connect the draining hose to the draining connection.
6 Drain the oil.
7 Disconnect the hose from the draining connection.
8 Install the protective cap over the draining connection on the oil sump.
9 Change engine oil filter, see page 111.

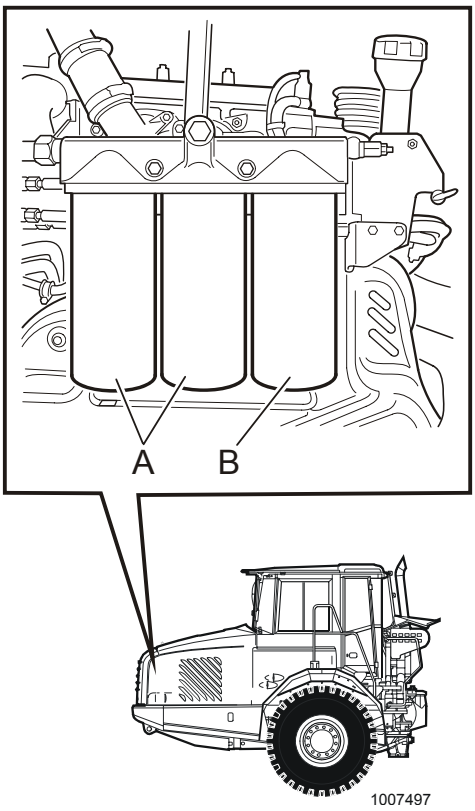
Take care of filters/oils/liquids in an environmentally safe way, see page 97.

Filling

1 Fill with oil through oil filler pipe (D).
2 Put the draining hose back in the front grille.
3 Hinge up the front grill.

Oil capacity when changing: approx. 37 litres including filters

For oil grade, see page 167.



A Full-flow filters
B Part-flow filter

Engine oil filters, replacing

Replace the engine oil filters every time the oil is changed, i.e. every 500 hours.

The filters are of the disposable type, i.e. they cannot be cleaned, but must be replaced as whole units.

Removing

1 Use a suitable tool.

Installing

2 Fill the filter with oil.

IMPORTANT! It is important that the filters are filled with oil before they are installed. This is to ensure lubrication immediately after start.

3 Coat the gasket with oil.

4 Screw on the filter by hand until the gasket just touches the sealing surface.

5 Then tighten the filter a further 1/2 turn.

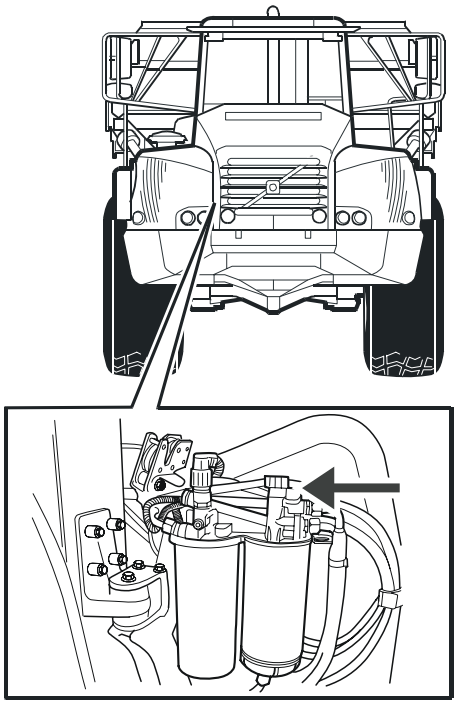
NOTE! Usually it does not help to tighten the filter harder.

After installing

6 Start the engine and check that the gaskets seal. If it does not, remove the filter and check the sealing surface.

IMPORTANT! After replacing oil filters, the engine must run at low idling for at least one minute.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.



1014742

Hand pump

Fuel system

Clean fuel of the correct quality is essential for trouble-free running of the diesel engine.

Fuel system, air bleeding

WARNING!

Make sure that fuel under high pressure cannot come into contact with unprotected parts of your body when working with fuel injection equipment.

If the tank has been run dry or if air has entered the system for other reasons, the system must be bled for air.

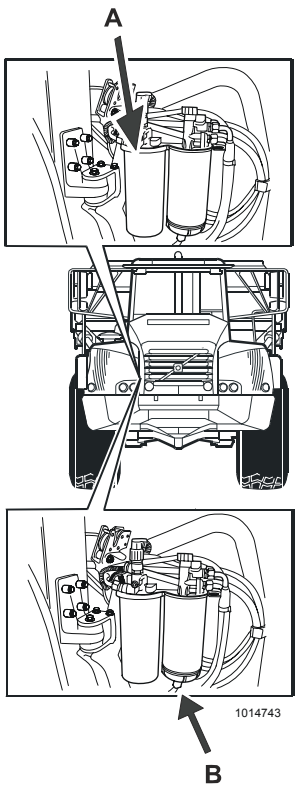
IMPORTANT! Under no circumstances must starting attempts be made before the system has been bled. The fuel feed pump may be seriously damaged.

1 Pump with the hand pump until a resistance can be felt in the pump.

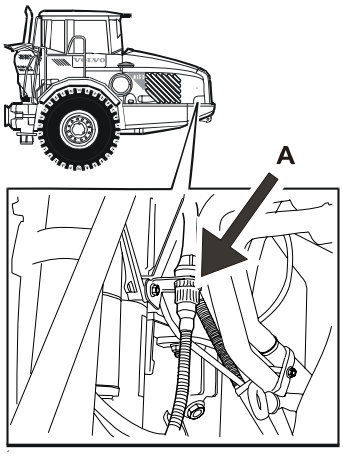
NOTE! No nipple is to be opened.

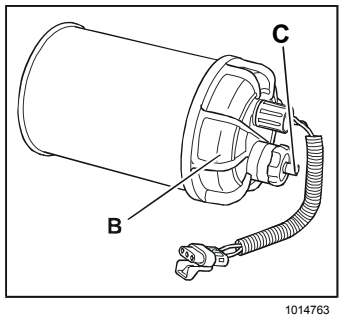
2 Start the engine and leave it running at low idling for approx. five minutes. The engine speed must not be raised, as any air, which is left in the system, may be forced into the cylinder head.

3 Check that there are no error codes shown on the display unit.



A Secondary fuel filter
B Primary fuel filter with water trap





A Connector
B Plastic bowl
C Draining screw

Fuel filters, replacing

Replace the fuel filters every 500 hours or when replacing the engine oil filter.

If the fuel filters become clogged earlier, an alarm display is shown, see page 38, and the filters should be changed.

Removing secondary fuel filter (A)

1 Use a suitable tool to remove the fuel filter.

Installing

2 Coat the gasket with diesel fuel.
3 Screw on the filter by hand until the gasket just touches the sealing surface.
4 Then tighten the filter a further ½ turn.

Removing primary fuel filter (B)

1 Disconnect connector (A) from the cable harness.
2 Unscrew the filter by hand or use a suitable tool.
3 Detach the plastic bowl (B) from the filter.

Installing

4 Install the plastic bowl on the new filter.
5 Coat the gasket with diesel fuel.
6 Screw on the filter by hand until the gasket just touches the sealing surface.
7 Then tighten the filter a further ½ turn.
8 Reinstall the connector to the cable harness.
9 Bleed the system according to instructions on the previous page.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.

Water trap

An alarm display is shown if there is water in the fuel, see page 38. Drain the water trap as follows.

Water trap, draining

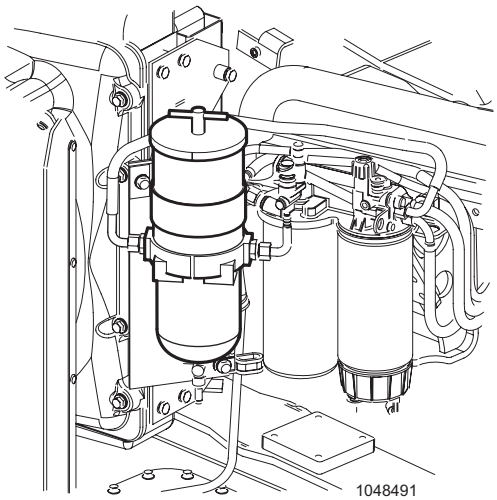
1 Connect a draining hose to draining screw (C) at the bottom of the water trap.
2 Loosen the water draining screw.
3 Tighten the water draining screw, when only clean fuel is running out.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.

Fuel prefilter, changing (optional equipment)

Change the filter insert every 250 hours. More frequent changes may be necessary depending on fuel consumption and fuel grade.

Also change the filter insert in connection with changing the primary and secondary filters after alarm for clogged filter, see page 113.



Fuel prefilter

Draining

Drain the filter daily. Also drain when the water trap is drained after an alarm for water in fuel, see page 113.

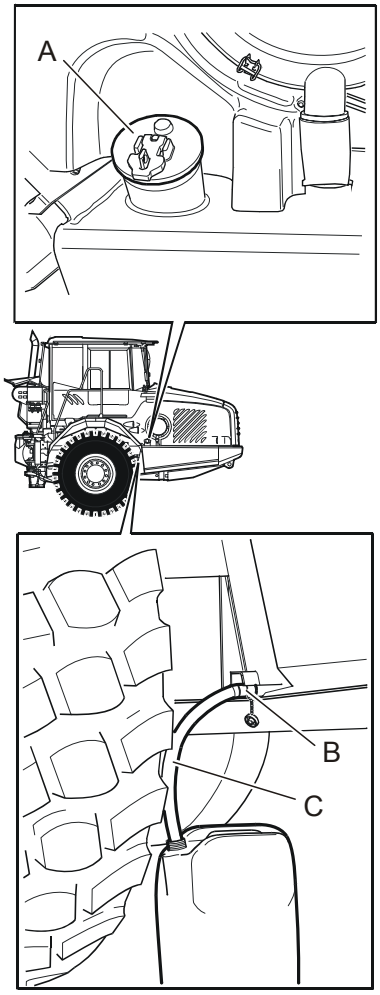
1 Drain the water trap of water and any other impurities by turning the valve at the bottom of the filter.Collect the water in a container.
2 Turn back the valve when only clean fuel runs out.

Removing and cleaning

1 Remove the filter cover by turning the T-handle counter-clockwise.
2 Carefully remove the filter insert with a twisting movement.
3 Clean the water bowl with soapy water on a clean, soft rag or brush. Do not use solvents or abrasive cleaners.
4 Rinse and dry the water bowl thoroughly.

Installing

5 Install the new filter insert and press it all the way down.
6 Fill with clean diesel fuel all the way up.
7 Change the gasket for the cover and the T-handle's O-ring if needed. Brush diesel on the gasket and the O-ring.
8 Install and fasten the filter cover with the T-handle.



A9005501

A Fuel tank cap
B Drain plug, fuel tank
C Draining hose

Fuel, filling

If the fuel level is low, an alarm display is shown, see page 38. Fill with fuel to prevent air from getting in to the system.

NOTE! Carefully clean the fuel tank cap (A) before it is removed

- Avoid spilling when refuelling, – spilled fuel collects dirt.
- During the cold season, keep the fuel tank full to prevent water condensation in the tank.

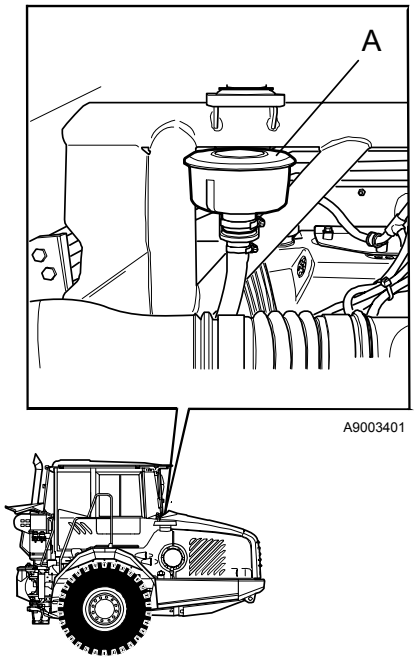
The fuel tank's volume is approx. 400 litres

For fuel quality, see page 170.

Fuel tank, draining sludge

1 Remove the protective cap (B) from the drain connection (located under the underbody skid plate on the right side).
2 Use the same drain hose (C) as is used for engine oil, drain any sludge.
3 Reinstall the protective cap.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.



A Cap, breather filter

Fuel tank, replacing breather filter

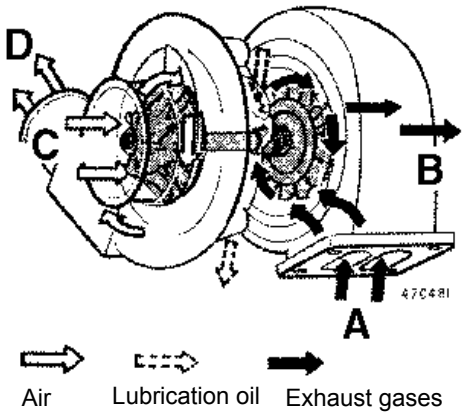
Replace the breather filter every 1000 hours.

The filter is of the disposable type, i.e. it cannot be cleaned but must be replaced.

1 Remove cover (A).
2 Replace the filter insert.
3 Reinstall the cover.

Intercooler

The engine is provided with an air-to-air type intercooler. The intercooler lowers the temperature of the induction air by approximately 100 °C. As a result the induction air will have a higher density,which means that more fuel can be injected and combusted. This results in higher engine power, but the colder air causes less stresses on valves and pistons.



Turbocharger, function

A Exhaust in
B Exhaust out
C Air in
D Air out

Turbocharger

IMPORTANT! Run the engine at low idle for at least half a minute after start and a few minutes before it is stopped. This is to ensure lubrication of the turbocharger.

The turbocharger is lubricated and cooled by the engine's lubrication system. A vital condition for the function of the turbocharger is that engine oil and filter are changed at regular intervals. Maintenance of the air cleaner, tightness (sealing) of the exhaust system and the lubrication oil lines are also important for the function.

If noise or vibrations are confirmed in the turbocharger, change it immediately.

Only a workshop authorised by Volvo CE may do work on the turbocharger.

Air cleaner

The air cleaner prevents dust and other impurities from entering the engine. First the air passes the primary filter and then the secondary filter.

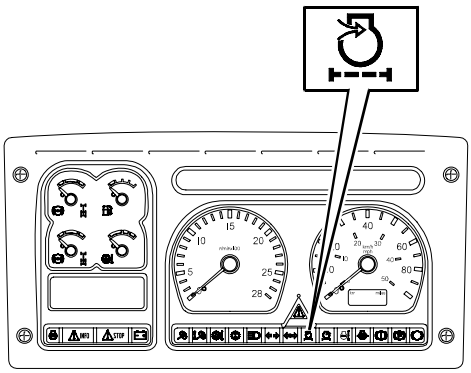
The extent of engine wear depends largely on the cleanliness of the induction air. Therefore, it is very important that the air cleaner is checked regularly and maintained correctly. Maintain greatest cleanliness when working with the air cleaner and filters.

IMPORTANT! Do not, under any circumstances, run the engine without a filter or with a damaged filter.

Check regularly that hose and pipe connections from the air cleaner to the engine's induction manifold do not leak.

Always have a spare air filter available and keep it well protected from dirt.

Primary filter, cleaning/replacing


A1600100

Clean or replace the filter every 1000 hours.If the control lamp turns on earlier and an alarm screen is shown, see page 38, cleaning or replacement must be carried out immediately. The time between cleaning/replacement depends entirely on the machine's work environment.

The filter may be cleaned five times, at the most. Then the filter must be replaced. Also replace the filter if it is damaged.

If the control lamp continues to light after cleaning/replacement, the secondary filter must be replaced, see page 119.

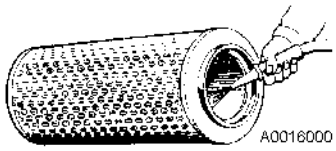
NOTE! At the same time clean the air cleaner cover. However, in dusty and wet conditions the cover should be cleaned more often.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.

Mechanical cleaning

1 Carefully tap the end of the primary filter against a soft and clean surface.

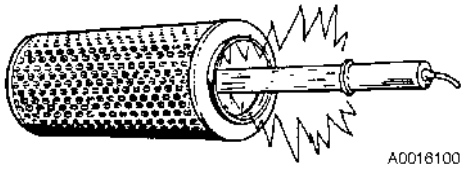
NOTE! Do not tap against a hard object.


A0016000

Cleaning with compressed air

1 Use clean and dry compressed air with a max. pressure of 500 kPa (5 bar). Do not hold the nozzle closer than 3–5 cm.

2 Blow the filter clean from the inside along the folds.

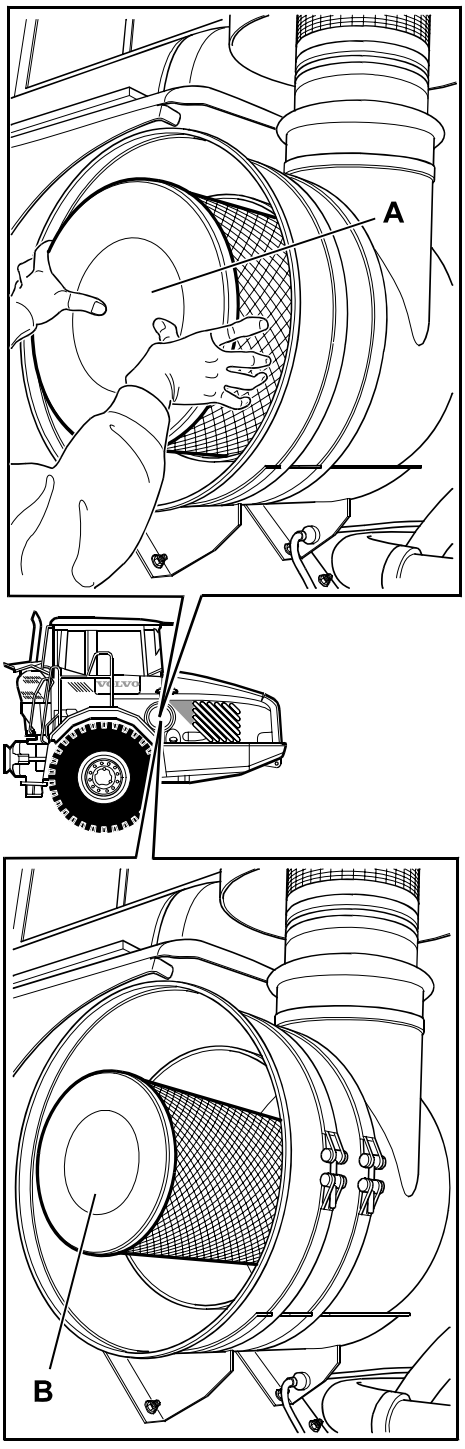

A0016100

Checking filter

1 Check the filter with the aid of a lamp.

2 If there is the smallest hole, scratch, crack or other damage, the filter must be discarded.

NOTE! To discover damage more easily, this check should be made in a darkened room.



A1618000

A Primary filter
B Secondary filter

Replacement

Press with both thumbs on the primary filter (A) at the same time as you pull it out. This is to prevent the secondary filter from coming out together with the primary filter.

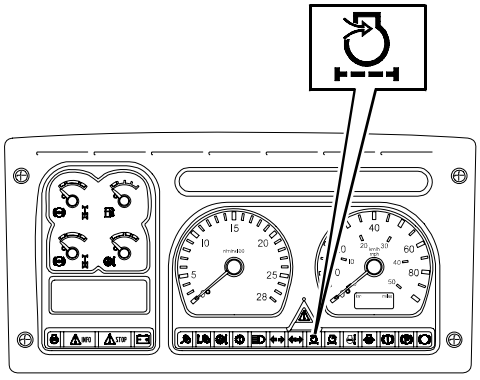
Secondary filter, replacing

Replace the secondary filter every 2000 hours or every third time the primary filter is replaced. Replacement must also be carried out if the control lamp continues to light on after the primary filter has been cleaned or replaced.

- The secondary filter (B) works as a protective filter in case the primary filter is damaged.
- Never remove the secondary filter unless it is to be replaced.
- The secondary filter should be removed carefully and with precision so that no impurities enter the engine. Carefully check that the new secondary filter is correctly installed.

Additional air cleaner

For machines operating in very dusty conditions, the recommendation is to install an optional air cleaner. This will provide extra protection from engine damage.

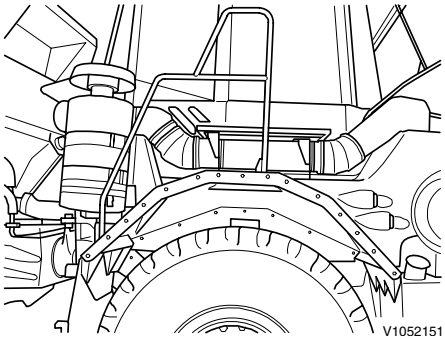

A1600100

EON-filter (optional equipment)

The EON-filter is installed instead of the standard primary filter.

Replace the filter when the control lamp lights.

NOTE! The filter should not be cleaned.


V1052151

Oil bath air cleaner

Oil bath air cleaner (optional equipment)

The oil bath air cleaner is installed in series with the existing standard primary filter.

The particle separating ability of the oil-bath air cleaner is between 90 and 95% which, in practice, means that the primary air cleaner fitted as standard, will act as a backup filter, with a change interval which is at least twice as long.

Oil bath air cleaner, checking

Check the oil in the bowl every 50 hours (more often when required).

If the oil is contaminated by sludge and viscous, or if sludge deposits are found on the underside of the filter insert, the oil must be changed.

If there are areas on the lower filter insert covered in sludge or if there are dry spots, the upper filter insert should also be removed and cleaned.

Oil bath air cleaner, maintenance

Clean the filter inserts every 2000 hours.

Clean housing and the filter inserts with diesel fuel. Avoid using gasoline (petrol) since any remaining gasoline may cause the engine to surge when it is started later on.

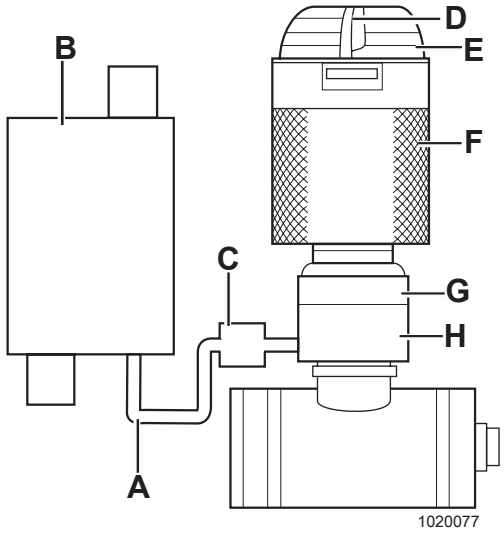
Oil bath air cleaner, changing oil

Change oil every 250 hours.

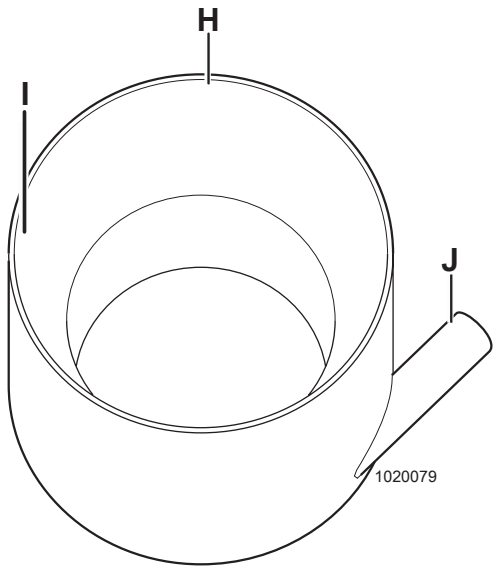
Fill up the bowl with oil of the same viscosity as that in the engine. The oil should reach up to the ”Normalölstand” marking, but not higher.

Capacity when changing: approx. 9.0 litres.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.



A Outlet pipe
B Silencer
C Non-return valve
D Ejector port
E First stage
F Netting
G Tapered adapter
H Second stage



H Second stage
I Bowl for trapping dirt
J Connection for outlet pipe

Engine air precleaner, two-stage

The precleaner is located above the engine hood on the end of the air inlet pipe. The first stage (E) separates dirt (larger impurities) which then are returned immediately to the ambient air. The second stage (H) traps remaining impurities in a bowl (I) which are removed via an outlet pipe(A) through the silencer (B).

Clean the precleaner every 250 hours.If the main filter needs to be cleaned or changed more often than every 1000 hours due to the machine's operating conditions, it is an indication that the precleaner also needs to be cleaned more often.

Cleaning the engine air precleaner

WARNING!

Always use safety glasses and suitable clothing when using compressed air.

1 Disconnect the outlet pipe (A) from the second stage (H).
2 Start the engine and run at high idle.
3 Check if the suction (vacuum) in the outlet pipe is acceptable by placing a piece of paper over the end of the pipe.
– If the paper stays in place, the suction is strong enough.
– If the suction is not strong enough, check that there is nothing blocking the air flow in the pipe. If there is no obstruction in the pipe, disconnect the pipe from the silencer. Check the suction in the pipe's connection on the silencer. If there still is no suction, change the silencer.
4 Turn off the engine.
5 Check that the flap is loose (rattles) in the non-return valve (C) by shaking it.
6 Loosen the clamp and separate the tapered adapter (G) from the second stage (H).
7 Check if there is dirt in the second stage.
8 Clean the bowl (I) and the connection for the outlet pipe (J) with compressed air if there is dirt.
9 Reconnect the outlet pipe to its connection.
10 Turn the precleaner (E, F, G) upside down.
11 Insert your hand and spin the rotor.

WARNING!

Be careful when inserting your hand, the stop plates in the precleaner may be sharp. Do not use compressed air on the rotor, this may cause personal injury.

– If the rotor spins freely, turn over the precleaner and blow with compressed air out through the ejector port (D).
– If the rotor does not spin, contact a workshop authorised by Volvo CE.

12 Blow away any dirt from the netting around the first stage.

13 Assemble the cleaner in reverse order.

14 Start the engine and run at high idle.

15 Check with a piece of paper that there is positive pressure at the ejector port. If the piece of paper blows away from the ejector port on the precleaner's first stage, then the function is satisfactory. If the precleaner does not work to satisfaction, contact a workshop authorised by Volvo CE.

Cooling system

The radiator is a side-mounted, cross-flow radiator with a hydraulically driven cooling fan. A hydraulic pump installed on the engine drives the fan's hydraulic motor.

The fan speed is automatically adapted to the engine's speed and its cooling need.

If the engine temperature becomes too high, even with correct coolant level, the radiator should be cleaned.

If the engine temperature still is too high, contact a workshop authorised by Volvo CE for action to be taken.

Coolant

1020820

The cooling system is filled with Volvo Coolant VCS. To avoid damage to the engine, it is very important to continue using the same coolant when topping up or changing as the system was filled with.

IMPORTANT! To avoid damage to the engine, different kinds of coolant must not be mixed with each other.

Cooling system capacity when changing: approx. 65 litres

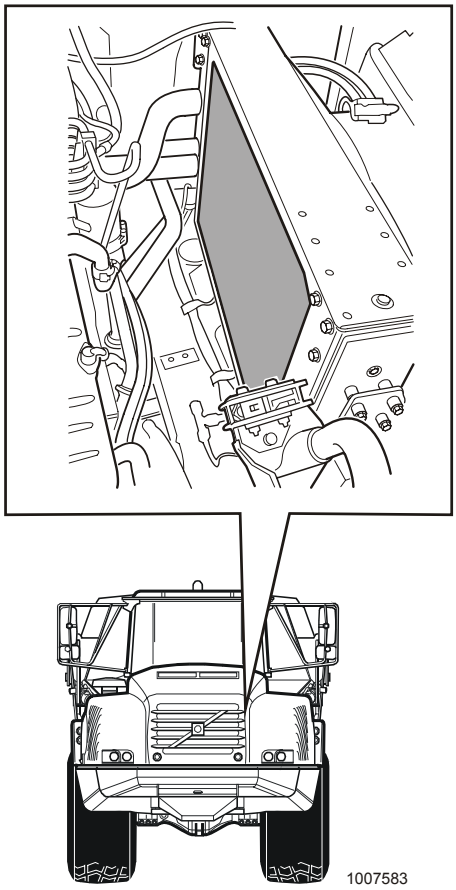
Total capacity: approx. 80 litres

If concentrated coolant and clean water (see page 169) are used, the table below shows the approximate amount of concentrated coolant that is required to achieve freeze protection. The amount of concentrated coolant must never be less than 40 % of the total mixture.

If there is any doubt about the water quality, use ready-mixed coolant.

VIKTIGT! If ready-mixed coolant is used, it is very important to use the correct kind. The engine may be damaged if different coolants are mixed.

Freeze protection down to	Content of concentrated coolant
–25 °C (–13 °F)	40 %
–35 °C (–31 °F)	50 %
–46 °C (–51 °F)	60 %



Radiator, cleaning

WARNING!

Stop the engine before cleaning the radiator.

Clean the radiator every 500 hours.

1 Let down the front grille.
2 Open up the engine hood.
3 Blow the radiator clean with compressed air.
4 Clean the outside of the radiator.

IMPORTANT! Take care so as not to damage the fins on the radiator core.

Coolant, checking

The coolant level can be read off on the information display unit, see page 31. If the coolant level is low, an alarm display is shown, see page 38. If the coolant temperature is too high, the control light is on and an alarm display is shown, see page 38. Take appropriate action.

Check the anti-freeze properties every 500 hours.

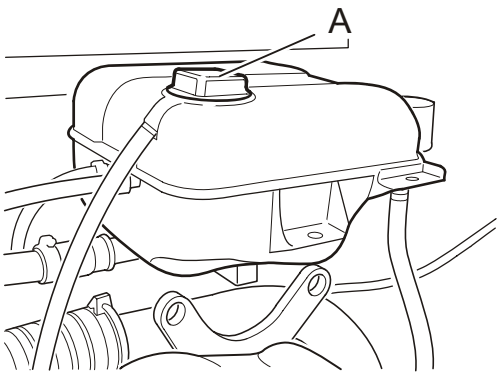
WARNING!

There is a danger of scalding when removing the expansion tank cap (radiator cap), as the cooling system is pressurised when hot.

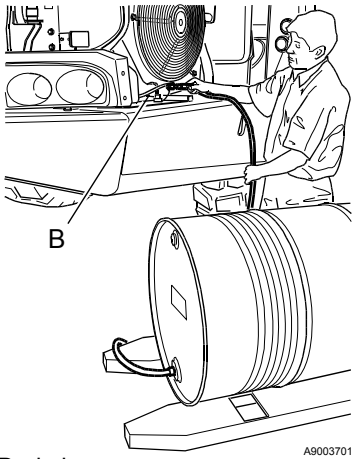
Coolant, checking after topping up or changing

The expansion tank should be filled to 2/3, i.e. up to the max. mark, when the engine is cold.

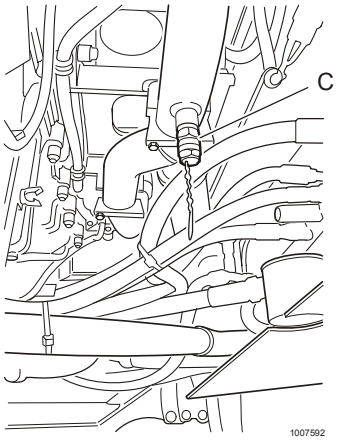
The coolant level must never be below the minimum mark.



A Cap on expansion tank



B Drain hose



C Drain nipple

Coolant, changing

IMPORTANT! To avoid damage to the engine, different kinds of coolant or corrosion protection must not be mixed with each other, see page 169.

Change coolant every 6000 hours or every fourth year.

Draining

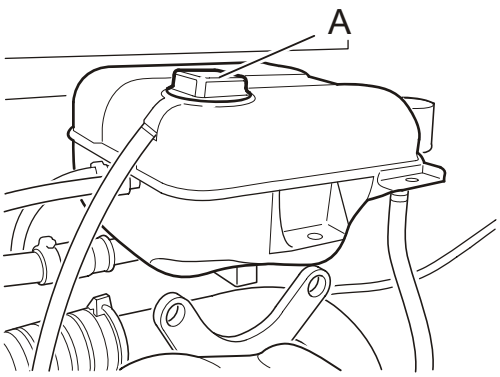
1 Remove the expansion tank cap (A).
2 Bend down hose (B) by the radiator and press in the clamp on the drain nipple so that coolant flows out.
3 Let down the belly plate. Connect the drain hose on the nipple on the engine's lower left side (C).

NOTE! The cooling system is not protected against freezing after draining. Pockets of water may remain in the system.

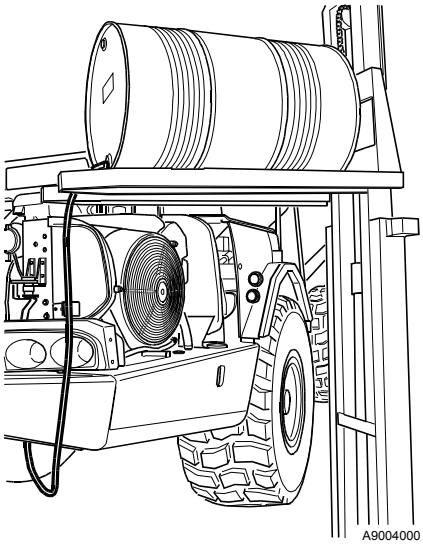
Take care of filters/oils/liquids in an environmentally safe way, see page 97.

Filling

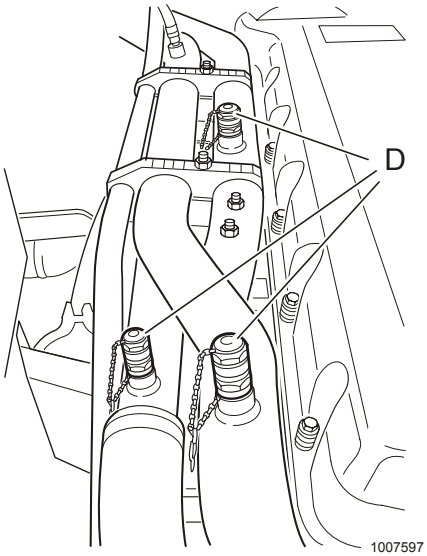
Coolant is filled in the expansion tank.



A Cover



C Drain nipple



D Breather nipples, 3 pcs.

Filling coolant in a system which has been drained

WARNING!

If the engine is started with the radiator in the swung out position, no person may be on or near the right fender.

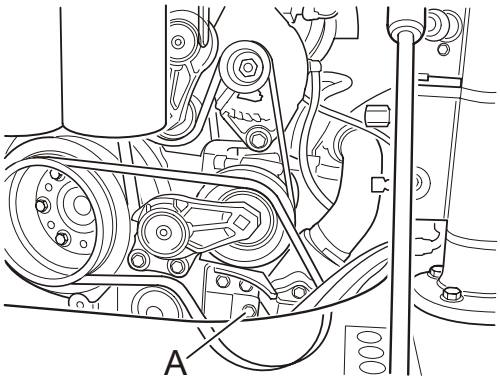
1 The engine should be stationary and the heater control set to warm.
2 Coolant can be filled in the expansion tank (A) or from below through the drain nipple (C).
3 When filling from below through the drain nipple, with a raised container, the expansion tank cap should be removed for bleeding air.
4 Bleed air from the cooling system through the breather nipples (D), 3 pcs.
5 Fill with coolant up to maximum level in the expansion tank.
6 Test-drive the machine to remove all air from the cooling system.
7 Top up until the cooling system is completely full.
8 The level should be checked after the engine has been run warm and then allowed to cool.

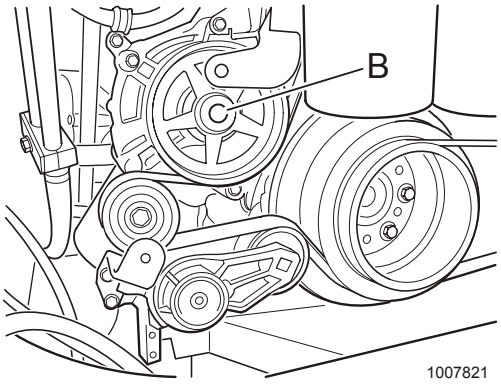
IMPORTANT! Never fill cold coolant in a warm engine. This can cause cracking in the cylinder block and cylinder head.

Failure to change coolant will cause clogging of the cooling system and the risk of the engine seizing.

Cooling system capacity when changing: approx. 65 litres

Total capacity: approx. 80 litres





A Secondary water pump
B Primary water pump

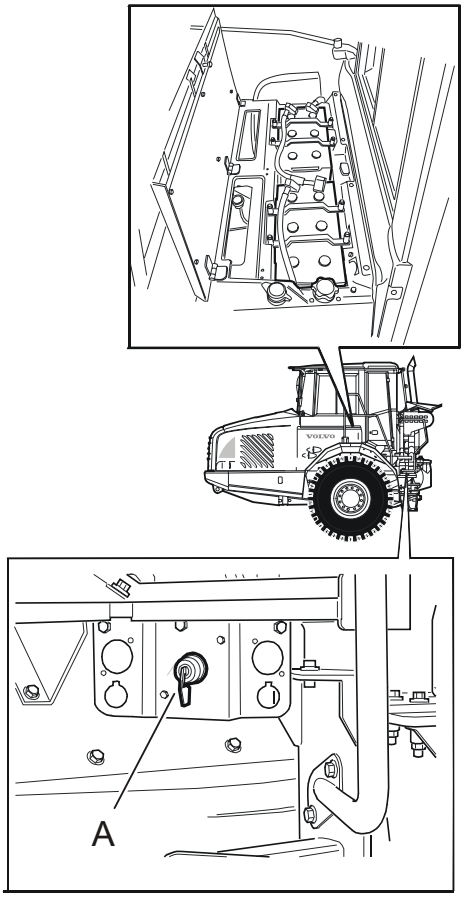
Water pump, checking belt

The engine features two coolant (water) pumps, each with a flat belt of Poly-V type. They have automatic belt tensioning.

NOTE! The belt guard has been removed in the picture.

Check the condition of the belt every 2000 hours.

Change belt if any of the belt's ribs is missing.



A9004201

A Battery disconnect switch

Electrical system

Check lights and control lamps daily.

Battery disconnect switch

IMPORTANT! The battery disconnect switch must not be turned off, when the engine is running.

The battery disconnect switch (A) is located on the cab's left side under the step. After finishing work for the day, the battery disconnect switch should be turned off.

Batteries

The batteries are connected in series and positioned on the left side of the machine.

Batteries, checking electrolyte level

Check the electrolyte level every 500 hours. At temperatures above approx. +20 °C check more often.

The electrolyte level should be approx. 10 mm above the cell plates.

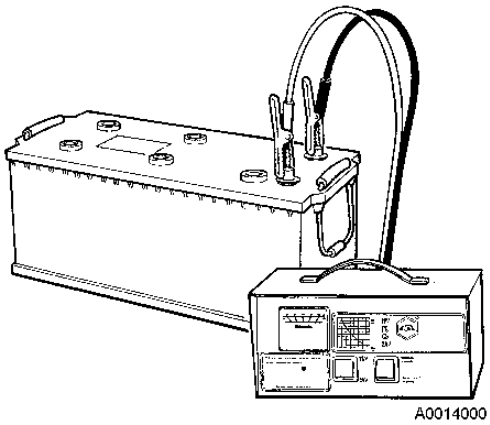
Filling

1 Fill with distilled water.
2 Operate the machine after topping up, so that the water is mixed with the battery electrolyte. This is particularly important in cold weather.
3 Check that the cable terminals and pole studs are clean, well tightened, and coated with petroleum jelly or similar.

Checking state of charging

The state of charge of the batteries is checked with a hydrometer. When there is risk of freezing, it is particularly important that the batteries do not become discharged since the electrolyte in a flat battery may freeze and thus destroy the battery.

Operating with faulty batteries is not allowed.


A0014000

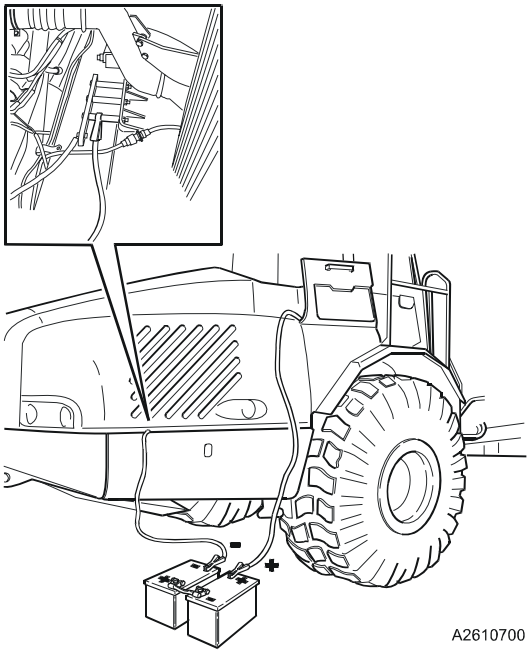
Batteries, charging

WARNING!

During rapid charging of batteries, always remove the cell caps. When a battery is being charged, an explosive mixture of oxygen and hydrogen gas is formed. A short circuit, an open flame, or a spark in the neighbourhood of the battery can cause a powerful explosion.

- **Always switch off the charging current before the charging lead clips are disconnected.**
- **Ventilate well, particularly if the battery is being charged in a confined space.**
- **The battery electrolyte contains corrosive sulphuric acid. Electrolyte spilled on bare skin must be removed immediately. Wash with soap and plenty of water. Should you get splashes of electrolyte in your eyes or on any other sensitive part of your body, rinse immediately in plenty of water and contact a doctor immediately.**

1 Disconnect the cables from the battery pole studs.
2 Remove the cell caps.
3 Top up with distilled water when required.
4 Connect the charging lead clips with plus to the positive pole and minus to the negative pole.
5 Make sure that the battery charger is set to the correct voltage.
6 Turn on the charger.


A2610700

Starting with booster batteries

WARNING!

Because of current surge the batteries may explode if a charged battery is connected to a completely discharged battery and this may cause injuries.

IMPORTANT! The booster batteries or another power source must have the same rated voltage as the batteries on the machine.

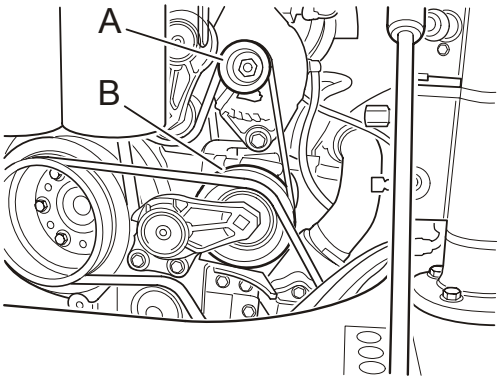
NOTE! Under no circumstances may a switched-on battery charger be connected to the batteries on the machine when an attempt at starting the engine is made, as this may damage the electronic system in the machine.

1 Turn off the battery disconnect switch.
2 Remove the protections from the battery pole studs.
3 Connect two 12 V batteries in series.
4 Connect one of the jump-start cables between the (+) terminal on the machine's battery and the (+) terminal on the booster battery.
5 Connect the other jump-start cable between the (–) terminal on the booster battery and a grounding point on the machine according to the adjacent figure.
6 Connect the machine's batteries by turning on the battery disconnect switch.
7 Wait for a couple of minutes and then start the engine with the start key in the cab.
8 When the engine has started, first disconnect the jump-start cable from the grounding point on the machine, then disconnect the other end of the jump-start cable from the (–) terminal on the booster battery.
9 Then disconnect the jump-start cable between the (+) terminals.
10 Reinstall the insulating caps on the battery terminals.

Welding

NOTE! Before carrying out any electric welding on the machine, all connectors must be disconnected from all ECUs.

- The current must be disconnected with the battery disconnect switch.
- The battery cables must be disconnected from the battery terminals' studs.
- All connectors must be disconnected from all ECUs. When disconnecting and reconnecting the ECUs, the cables must be without current (the battery disconnect switch turned off and the battery cables disconnected).
- Contact a workshop authorised by Volvo CE for more accurate information on how to proceed.



A Alternator
B Compressor

Alternator

Alternator belt

The belt is a flat Poly-V type, with automatic belt tensioning. On machines with air conditioning, the belt is common to the alternator and compressor.

NOTE! The belt guard has been removed in the picture.

Check the belt every 2000 hours.

Change belt if any of the belt's ribs is missing.

The alternator unit is sensitive to incorrect connection, therefore, always follow the instructions below.

Disconnecting

- Battery and alternator cables must not be disconnected when the engine is running. Malfunctions may occur in the alternator and the electronics.
- Disconnect and insulate the battery cables before doing any work on the alternator equipment.

Battery connection

- The battery's connection terminals must absolutely not be confused. Each terminal stud has a stamped (+) or (–) character. If the cables are connected incorrectly, the alternator's rectifier will be destroyed immediately.
- When disconnecting the battery, turn off the current with the battery disconnect switch.

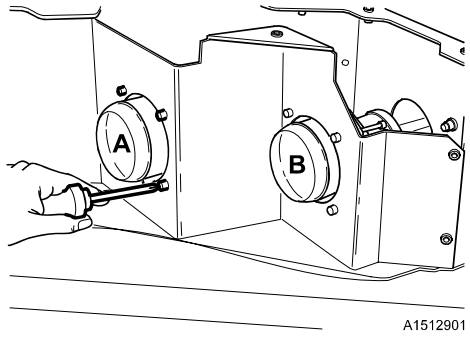
Electrical distribution box

The machine has an electrical distribution box in the cab on the left cab wall. The electrical distribution box contains most of the machine's fuses and relays, see page 177.

If a malfunction should occur in one of the relays, this can be solved temporarily by replacing the defective relay with one that has a less important function. The relays are identical and interchangeable.

WARNING!

- **Never install a fuse with a higher rating than that given on the decal (there is a risk of damage or fire on the circuit board).**
- **If the same fuse is triggered repeatedly, the cause must be investigated.**

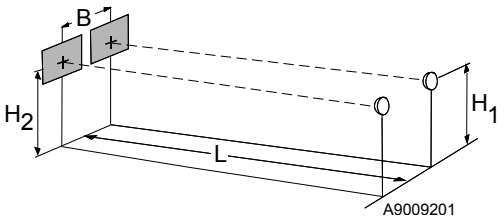


A High beams
B Low beams

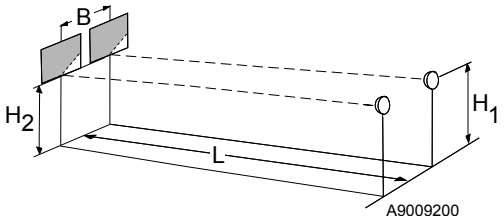
Headlights, adjusting

The setting of the headlights is of great importance, especially when operating on public roads during darkness. The low beams from the headlights are of the asymmetrical type.

1 Place the machine in service position, see page 95. The battery disconnect switch shall be turned on.
2 Measure and mark according to the table below.
3 Open the engine hood.
4 Turn on high beam (A) or low beam (B).
5 Adjust the beam with the three adjusting screws.
6 Turn on the high beams.
7 Adjust the high beam with the three adjusting screws on the front of the headlight.
8 Turn off the high or low beams.
9 Close the engine hood.

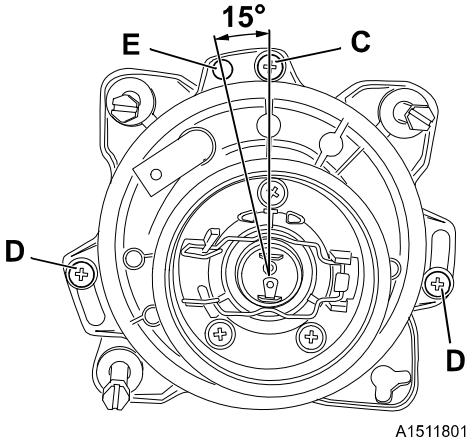


High beams



Low beams

Dimensions	Low beams	High beams
B	1950 mm	1650 mm
H1	1458 mm	1458 mm
H2	1215 mm	1458 mm
L	5000 mm	5000 mm



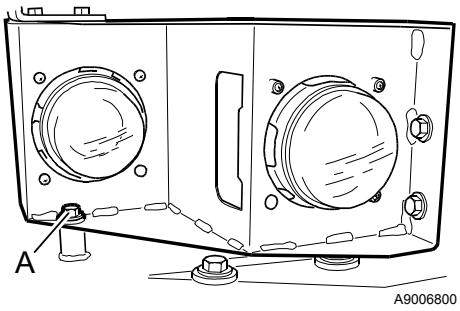
C Screw
D Screws
E Hole

Left/right hand traffic, adjusting

The headlight is supplied adjusted for right-hand traffic.

Adjusting for left-hand traffic

1 Remove screw (C).
2 Loosen screws (D).
3 Turn the back piece so that hole (E) aligns with screw hole (C).
4 Install the screw (C).
5 Tighten screws (D).



A Screw

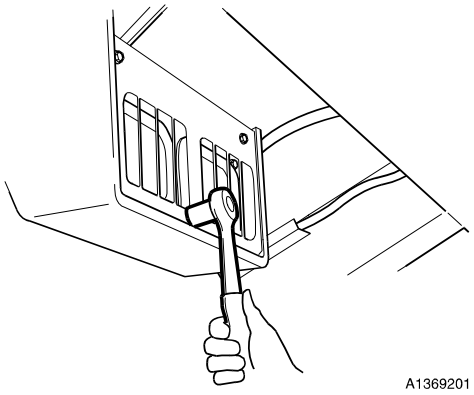
Light bulb, replacing

1 Place the machine in service position, see page 95.
2 Open the engine hood.
3 Remove the screw (A) by the outer edge on the headlight console.
4 Fold out the headlight console.
5 Loosen the rubber cap on the headlight.
6 Disconnect the cable terminal from the light bulb.
7 Open the lock clamp.
8 Change the light bulb.
9 Reinstall the cable terminal and the lock clamp.
10 Reinstall the rubber cap.

NOTE! The rubber cap's drain tube shall point downward.

11 Fold in the headlight console.
12 Reinstall and tighten the screw.
13 Close the engine hood.

NOTE! Do not touch the glass bulb on the new light bulb with your fingers.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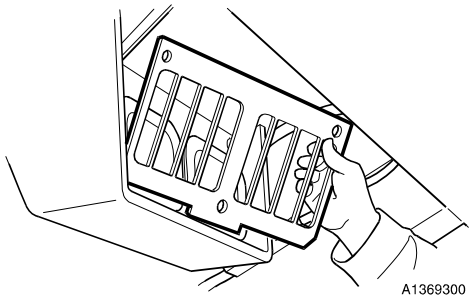
Bulb insert, replacing

1 Remove the protective grill (three bolts).
2 Remove the plate with the bulb inserts (two bolts).
3 Remove the bulb insert from the plate. Push the rubber moulding out through the hole.
4 Unplug the connector for the bulb insert.
5 Remove the rubber moulding from the bulb insert.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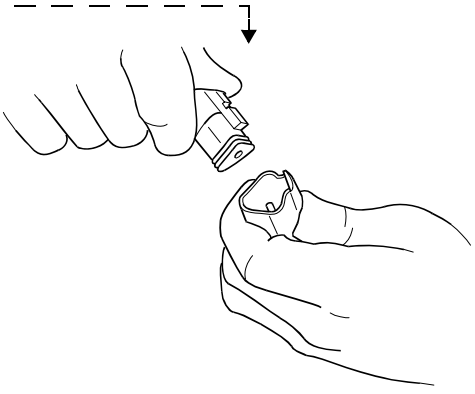
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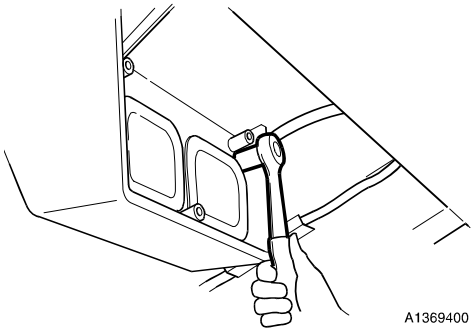
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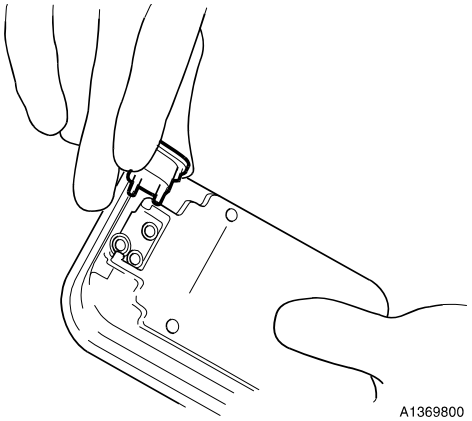
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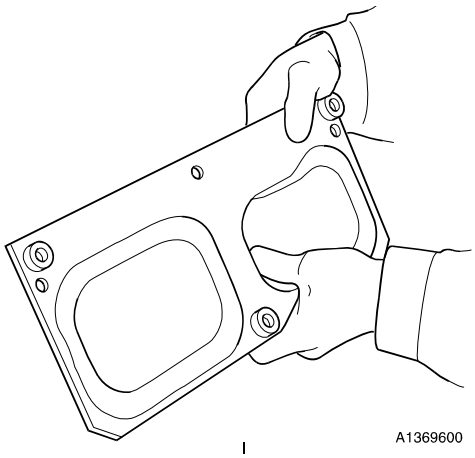
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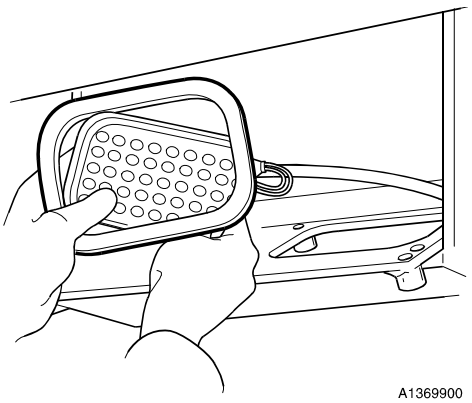
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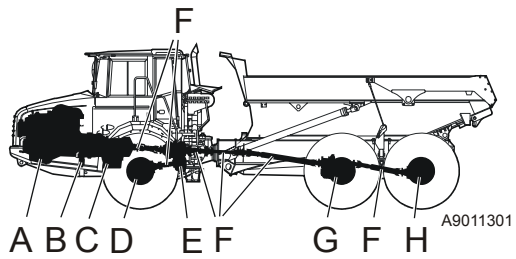


A Engine
B Flywheel housing with power take-off
C Transmission
D Front drive axle
E Dropbox
F Propeller shafts
G Front bogie axle
H Rear bogie axle

Power transmission

Transmission oil

The oil level can be read off on the information display unit, see page 31. If the oil level is incorrect (low/high), an alarm display is shown, see page 39. If the temperature in the transmission is high, the control light is on and an alarm display is shown, see page 39.

Transmission oil, checking level after topping up or changing

IMPORTANT! Always clean around the dipstick before you check the oil level. Dirt in the oil damages the transmission.

Remember:

– The transmission may not drive correctly if there is too little oil, which means that it will be damaged.

– Too much oil makes the oil foam, which causes the transmission to overheat.

Check the oil when its temperature is approx. 60 °C, suitably at the end of the work shift.

1 Place the machine in service position, see page 95.

2 Start the engine and let it idle.

3 Move the gear selector to neutral.

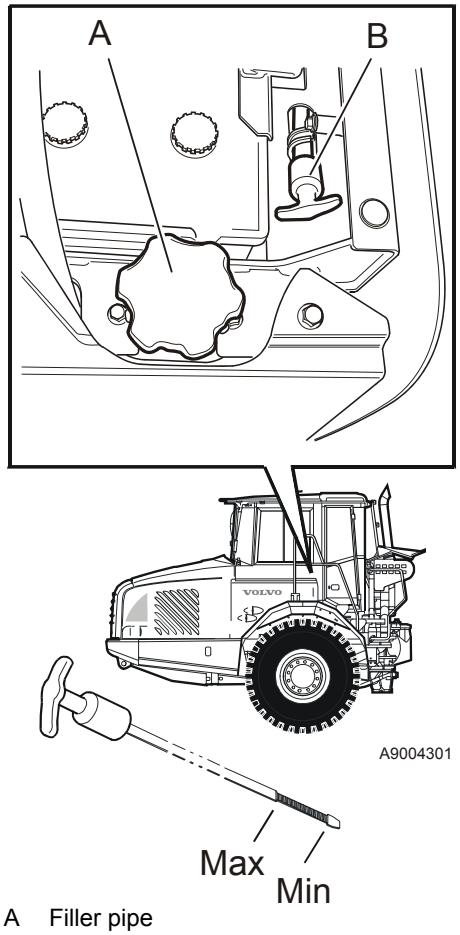
4 Wait for approx. one minute to allow the oil level to stabilise before checking.

NOTE! Use a rag which does not give off fluff, for wiping the dipstick.

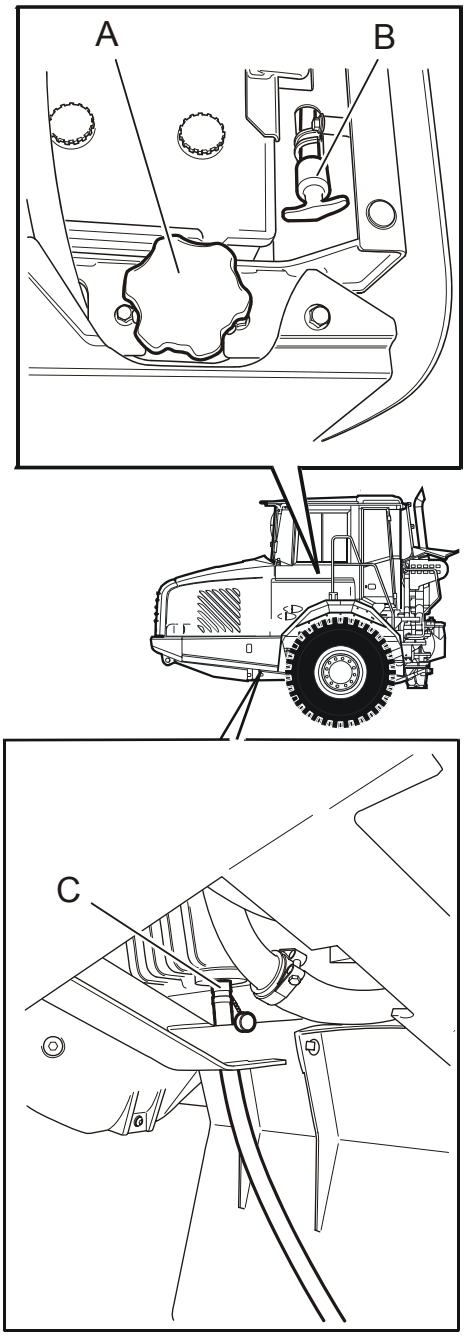
5 The oil level should be 40–70 mm above the min. mark on the dipstick. The corresponding reading on the display unit is 40–70%.

6 Top up when necessary, but do not overfill.

Oil volume between min. and max. on the dipstick is approx. 7 litres.



A Filler pipe
B Dipstick



A9006600

A Filler pipe
B Dipstick
C Drain point (through a hole in the cross member under the transmission)

Transmission oil, changing

Change oil every 1000 hours. A first change of oil and oil filter should be carried out at the 100 hour warranty inspection.

WARNING!

Take care when changing oil. Hot oil can cause burns on unprotected skin.

Conditions for the 1000 hour interval to apply are that:

– the two oil filters are changed every time that the oil is changed.
– the oil filters meet Volvo CE specifications, which is the case with genuine parts from Volvo CE.
– use oil according to recommendation on page 167.
– the correct oil viscosity for the ambient air temperature is selected according to diagram, see page 167.

Draining

1 Place the machine in service position, see page 95.
2 Lower the guard plates.
3 Remove the protective cap over the draining connection (A) on the oil sump.
4 Connect the draining hose and drain the oil. The draining hose is kept inside the front grill which can be lowered.
5 Remove the draining hose and put it back inside the front grill.
6 Reinstall the protective cap over the draining connection.
7 Change main oil filter and lubrication oil filter, see page 137.

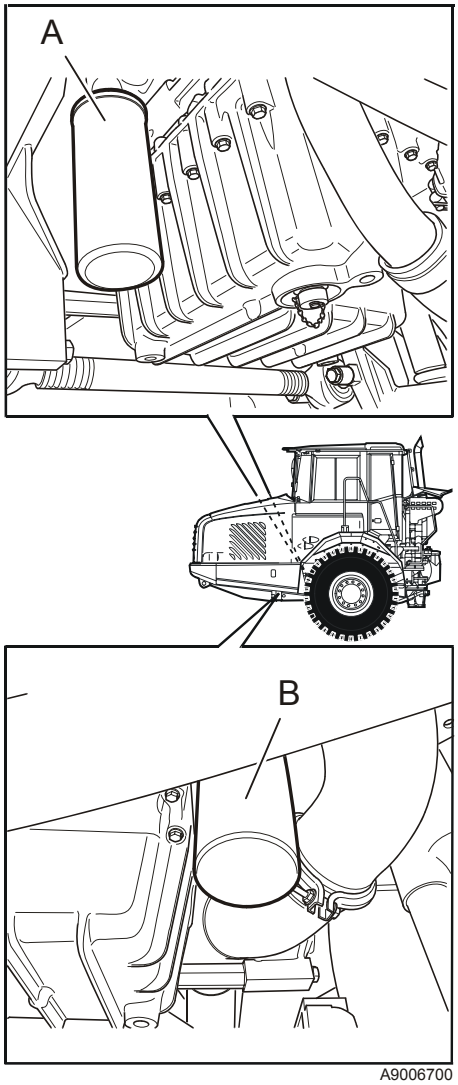
Filling

8 Fill with new oil through the filler pipe (A).
9 Check the level.
10 Raise the guard plates.

Capacity when changing: approx. 41 litres including filters

For oil grade see page 167.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.



A9006700

A Main oil filter
B Lubricating oil filter

Main oil filter and lubricating oil filter, replacing

Replace the filters every 1000 hours in connection with changing oil. The filters are of the disposable type, i.e. they cannot be cleaned but must be replaced.

NOTE! Always replace both filters at the same time.

Removing

Let down the guard plates to access to the filters. The main oil filter is located on the left side and the lubricating oil filter is on the right side of the transmission.

1 Use a suitable tool to remove the filters.

Installing

2 Fill the filters with oil.

3 Coat the gasket with oil.

4 Then screw on the filters until the gasket just touches the sealing surface.

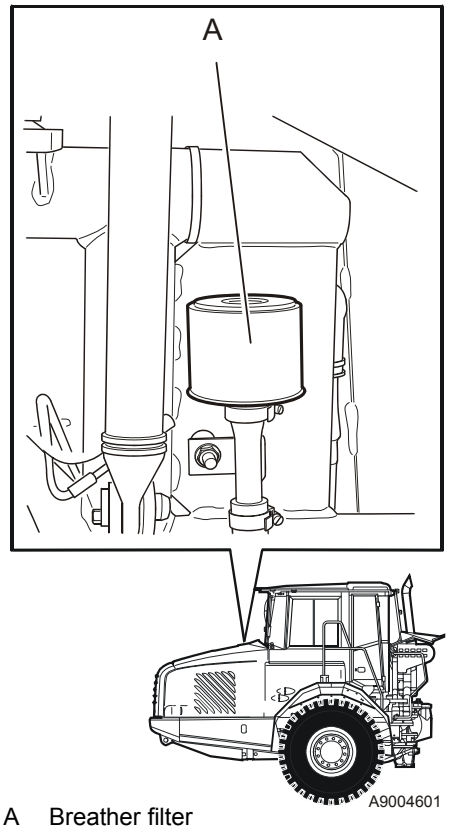
5 Then tighten the filters a further ½ turn.

After installing

6 Start the engine and check that the gasket seals tight. If it does not, remove the filter and check the sealing surface.

NOTE! Usually it does not help to tighten harder.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.



A Breather filter

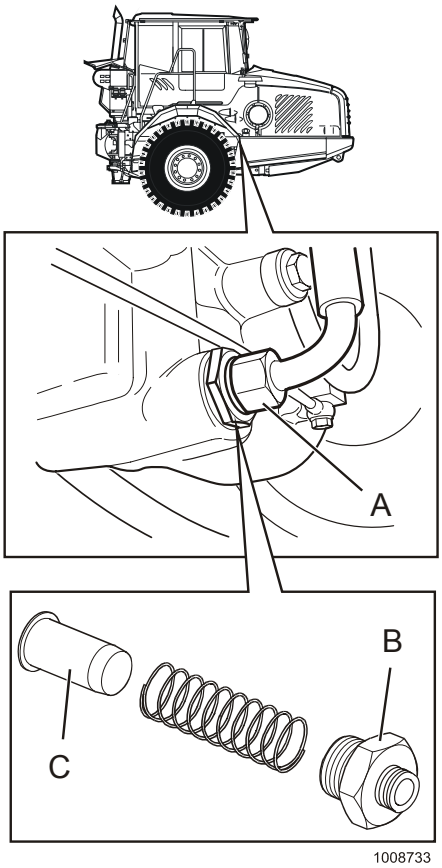
Transmission, replacing breather filter

Replace the breather filter every 2000 hours.

The filter is of the disposable type, i.e. it cannot be cleaned but must be replaced.

1 Loosen the clamp and remove filter (A).

2 Move the clamp over to the new filter and install it.



A Hose
B Connection
C Suction strainer

Suction strainer in power take-off, cleaning

WARNING!

Hot oil can cause severe burns on unprotected skin.

The suction strainer shall be cleaned every 2000 hours.

Suction strainer (C) is located on the front of the power take-off on the flywheel housing.

1 Lower the guard plate and leave it suspended by the chain.

2 Disconnect the hose (A).
NOTE! Approx. 2 dl of oil will run out.

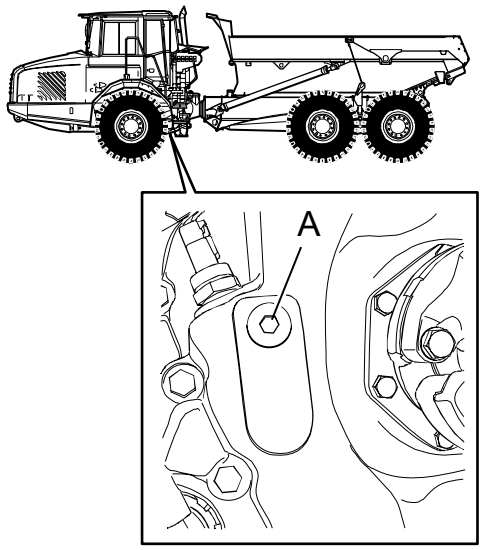
3 Remove the connection (B).

4 Remove and clean the strainer (C).

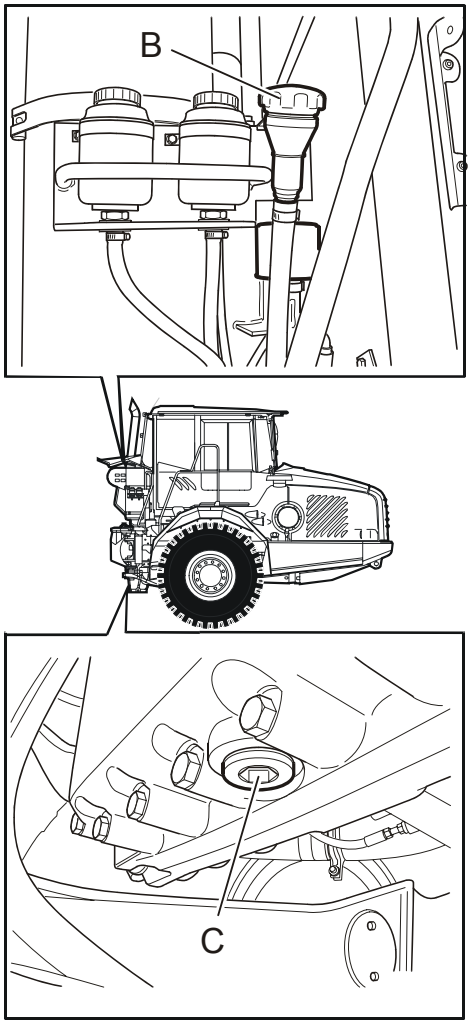
5 Reinstall the strainer and the connection.

6 Reinstall the hose.

7 Raise the guard plate.



A Level plug, 10 mm Allen head



B Filler pipe
C Drain plug, 17 mm Allen head

Dropbox, checking oil level

Check the oil level at regular intervals.

1 Place the machine in service position, see page 95.
2 Unscrew the level plug (A). The oil level should be up to the hole.

Dropbox, checking for leaks

Check that there are no leaks every 250 hours.

1 Place the machine in service position, see page 95.
2 Carry out a visual check for leaks.

Dropbox oil, changing

Change oil every 2000 hours. A first and a second oil change shall take place at the 100 hour and 1000 hour warranty inspections.

WARNING!

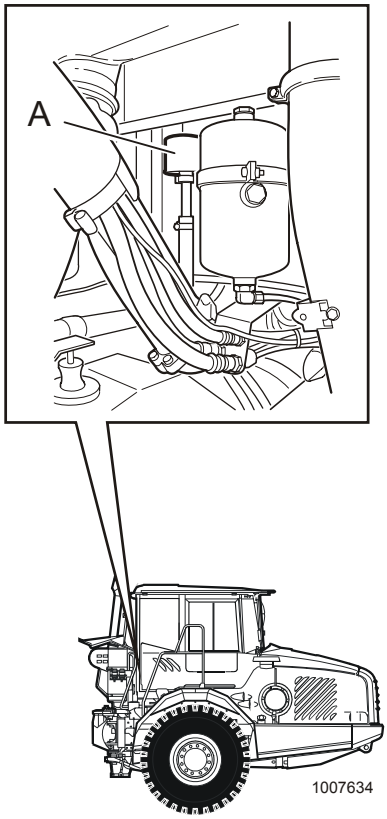
Take care when changing oil. Hot oil can cause burns on unprotected skin.

1 Place the machine in service position, see page 95.
2 Remove the plug (C) and drain the oil.
3 Reinstall the plug after draining.
4 Fill with new oil through filler pipe (B) on the cab's rear right side.
5 After the oil has been changed, check the oil level after a short period of operation.

Capacity when changing: approx. 8.5 litres

Oil grade, see page 167.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.



A Breather filter, dropbox and front axle

Dropbox, replacing breather filter

WARNING!

Hot oil can cause severe burns on unprotected skin.

Replace the breather filter every 2000 hours. The filter is of the disposable type, i.e. it cannot be cleaned, but must be replaced.

1 Undo the clamp and remove filter (A).

2 Move the clamp over to the new filter and install it.

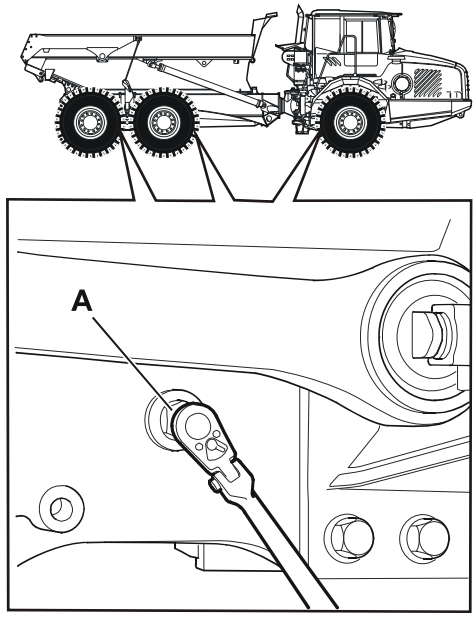
Take care of filters/oils/liquids in an environmentally safe way, see page 97.

Front and rear drive axle

Check that there are no leaks every 250 hours.

1 Place the machine in service position, see page 95.

2 Carry out a visual check for leaks.



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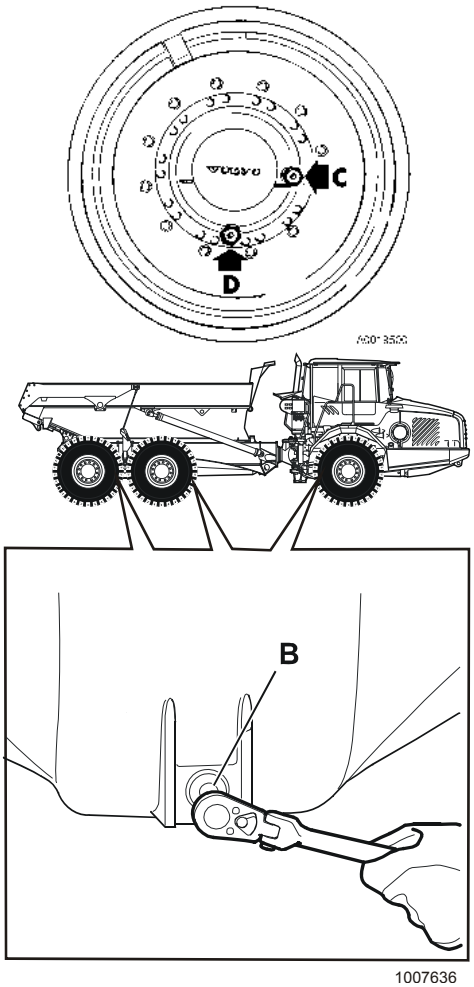
A Level and filler plug



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B Drain plug
C Level and filler plug (same as D)
D Drain plug

Drive axles, checking oil level

1 Park the machine in service position and let it stand for 2 minutes.
2 Remove the combined level and filler plug (A).
The oil level should be up to the hole.

The hub reductions have a common oil space with the final drive (differential carrier assembly), and the oil level shall only be checked by the level and filler plug on the final drive.

Level and filler plug (A)

Drive axle, tractor unit: right side, at the front

Front bogie axle: left side, at the back

Rear bogie axle: right side, at the back

Drive axles, changing oil

Change oil every 2000 hours. The first oil change must be carried out at the 1000 hour warranty inspection.

1 Adjust the wheels so that the drain plug (D) ends up as shown in the figure.
2 Drain the oil by removing the drain plug (B) from the axle housing as well as the plug (D) from the hub reductions.
3 Reinstall plug (B) and (D).
4 Adjust the wheel so that the plug (D) ends up in position (C).
5 Fill new oil in the hub reductions (C) and then in the final drive (differential carrier assembly) (A).

NOTE! Fill the hub reductions first when changing oil.

Oil volumes:

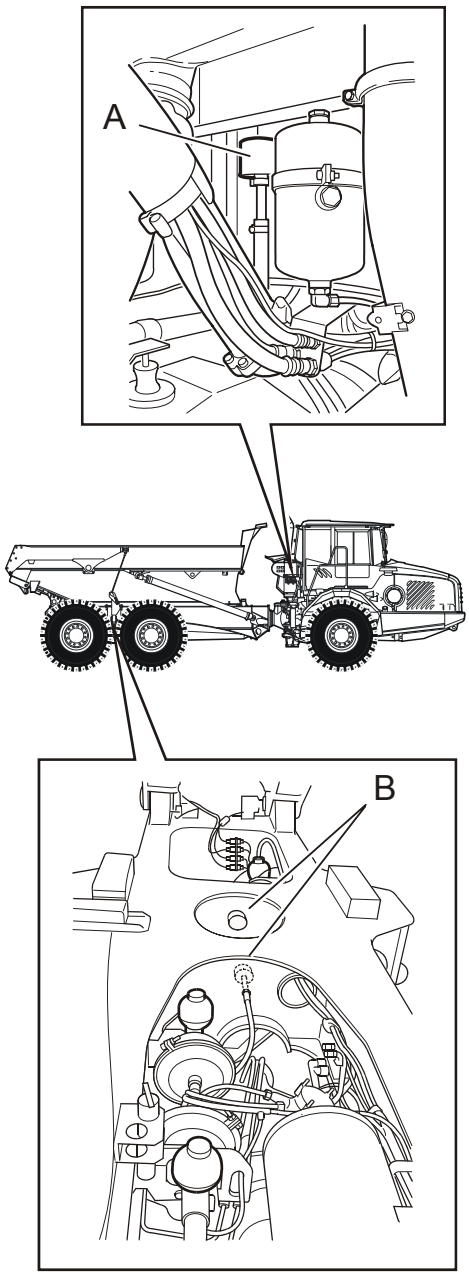
Drive axle, tractor unit: 33 litres (incl. hub reductions).

Front bogie axle: 34 litres (incl. hub reductions).

Rear bogie axle: 33 litres (incl. hub reductions).

Oil grade, see page 167.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.



A Breather filter, front axle
B Breather filter, rear axles

Drive axles, replacing breather filters

Change the breather filter for the front axle (A) every 2000 hours. The filter is common with the dropbox.

1 Undo the clamp and remove the filter.

2 Move the clamp over to the new filter and install it.

The filter is of the disposable type, i.e. it cannot be cleaned, but must be replaced.

NOTE! The breather filter for the rear axles on A25E 6x6 and A30E do not have to be changed.

A25E 4x4 and A25ETR

Change the breather filter for the rear axles (B) every 2000 hours.

The filter is of the disposable type, i.e. it cannot be cleaned but must be replaced.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.

Frame joint bearing, checking and adjusting

Check and adjust the frame joint bearing clearance every 2000 hours.

The work should be carried out by a workshop authorised by Volvo CE.

Brake system

Brake function, checking

Check the brake function every day before starting the engine.

1 Brake out any remaining brake pressure by repeatedly pressing down the brake pedal.
2 Start the engine and let it idle until the pressure has built up.
3 Move off carefully and test-brake, the brakes shall take evenly and without noise.

In case of defective brake function, contact a workshop authorised by Volvo CE.

Brake fluid, checking level

Check the brake fluid level every 50 hours.

When needed, fill brake fluid up to the clamp's level on the tractor unit's reservoir and to the max. marking on the trailer unit's reservoir.

Brake fluid, changing

Change brake fluid every 2000 hours.

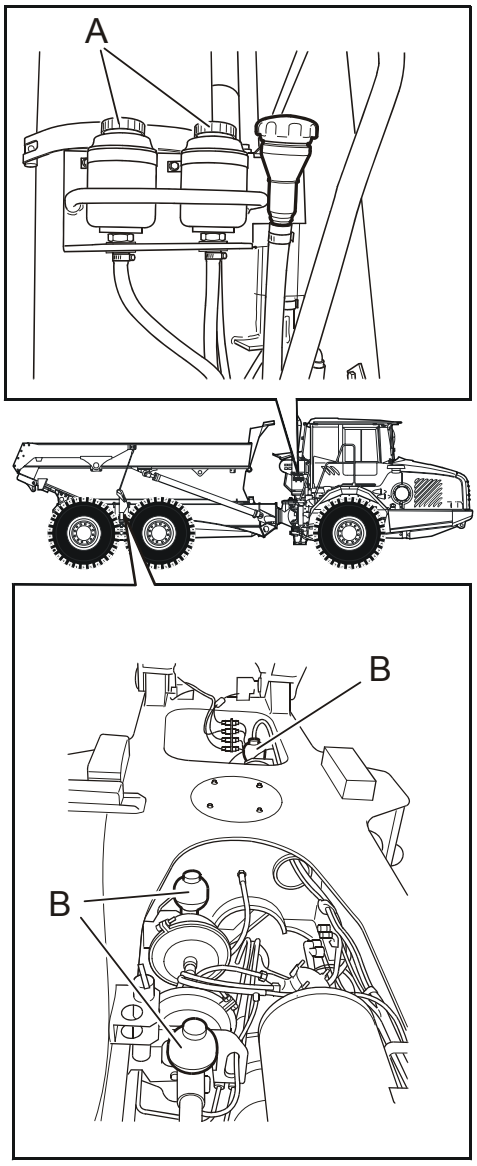
The work should be carried out at a workshop authorised by Volvo CE.

Brake fluid volume: 5 x 0.5 litres.

Brake fluid's grade, see page 167.

Brake system, bleeding air

If the brake fluid has been drained, the brake system must be bled. The work should be carried out at a workshop authorised by Volvo CE.



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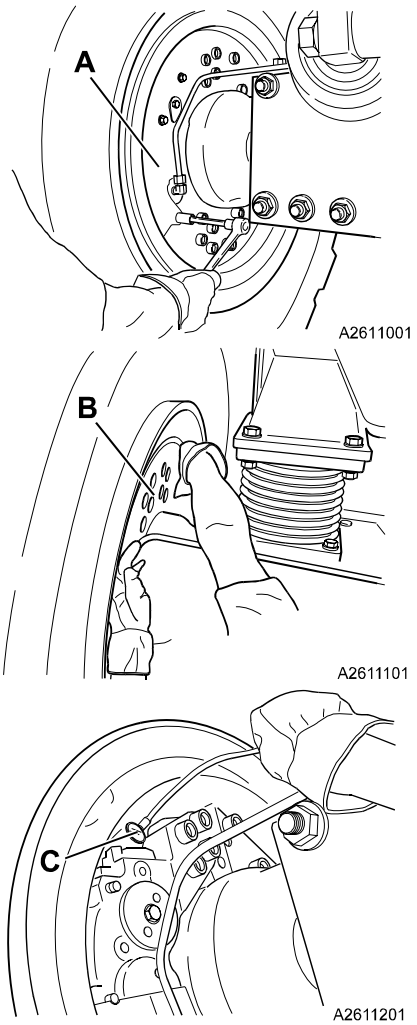
A Brake fluid reservoir, tractor unit
B Brake fluid reservoir, trailer unit



A Protective plate, breather nipple
B Protective plate, brake caliper
C Mirror

Brake pads

New brake pads need to be "worn in". Operate the machine and brake lightly without building up too much heat in the brake pads. Operate in this way during the first day.

Brake adjustment

The service brakes and parking brake are self-adjusting. No after-adjustment is required.

Service brakes, checking brake pads

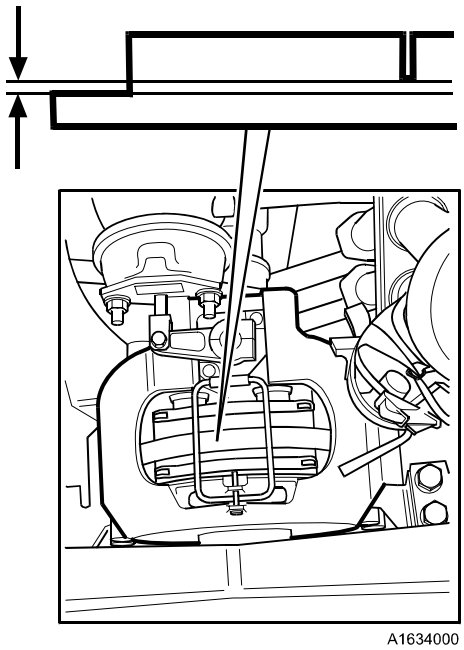
Check wear of the brake pads every 500 hours.

NOTE! This applies for normal operation. For more demanding operations, or when operating in conditions that are tough on the brake pads, check the brake pads more often.

1 Remove the protective plate (A) that covers the breather nipple.
2 Remove the protective plate (B) for the brake caliper.
3 Check that the brake pads are minimum 3 mm. For example, check using a mirror (C).

The brake pads should be changed at the latest when thickness at the most worn point is 3 mm.

NOTE! If the brake pads are worn down to less than 3 mm, the pistons in the brake calipers and the brake discs may be damaged.



Brake pad, min. thickness 5 mm

Parking brake, checking brake pads

Check the brake pad wear every 1000 hours.

The brake pads should be changed at the latest when thickness at the most worn point is 5 mm.

NOTE! If the brake pads are worn down to less than 5 mm, the brake calipers and brake discs may be damaged.

Compressed-air system

Compressed air reservoirs

The machine is equipped with three compressed air reservoirs. Two bigger air reservoirs, one (A) is located to the left behind the cab, the other (D) at the front in the rear frame. A smaller air reservoir (F) is located to the right behind the cab.

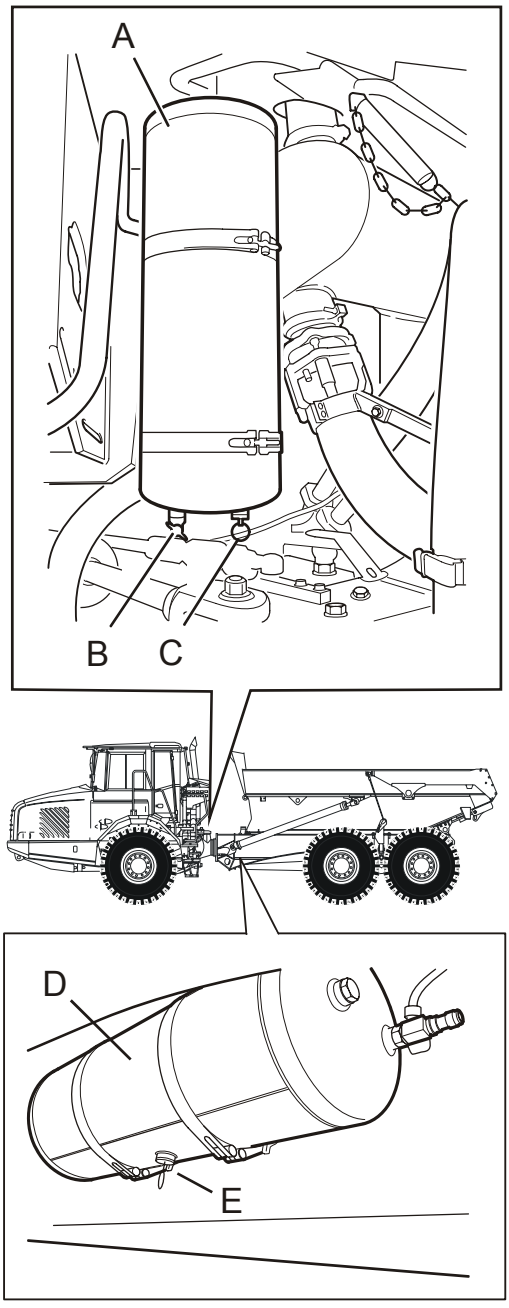
The compressed air reservoirs are kept free from condensation water by an air drier that has a drier cartridge (G), see page 146.

The bigger air reservoirs can be drained manually.

Compressed-air reservoirs, draining

Drain the air reservoirs (A) every 50 hours.

If the air drier function is correct, normally no condensation water should run out when draining.



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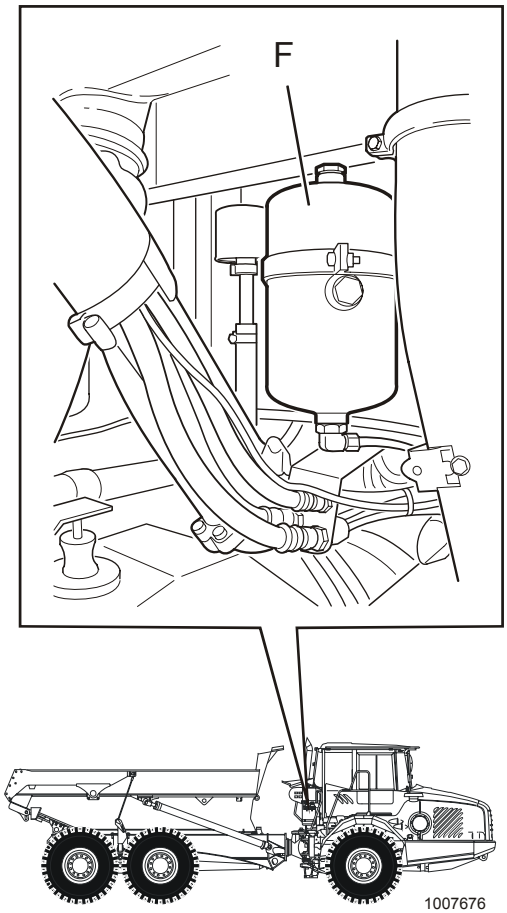

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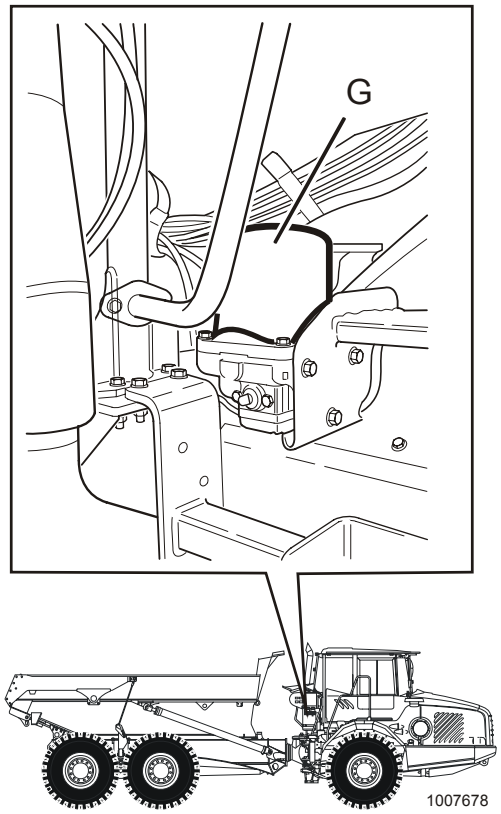
A Air reservoir
B Filler valve
C Draining
D Air reservoir
E Draining
F Air reservoir

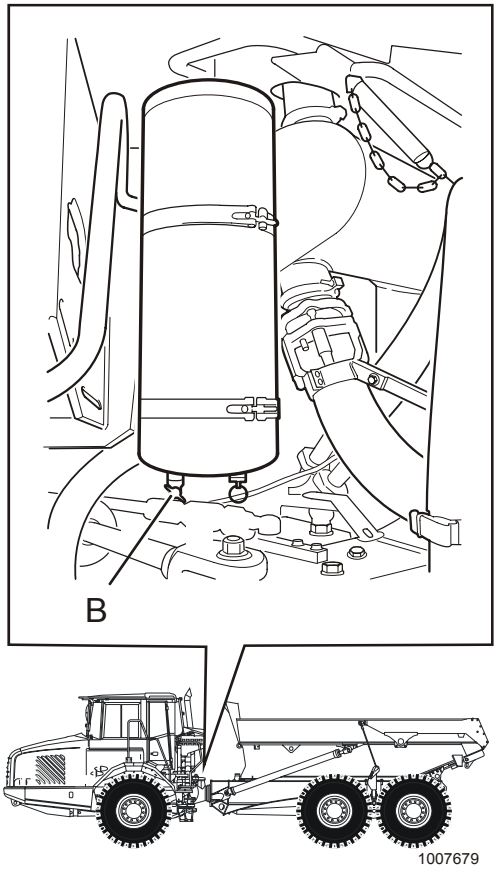


G Drier cartridge

Compressed-air system, replacing drier cartridge

Change the drier cartridge (G) in the air drier every 2000 hours.

The drier filter is located on the right side of the machine, behind the cab.



B Filler valve

Compressed-air system, filling

When required, the compressed-air system can be filled through the filler valve (B) using compressed air from another machine.

The filler valve is positioned to the left behind the cab.

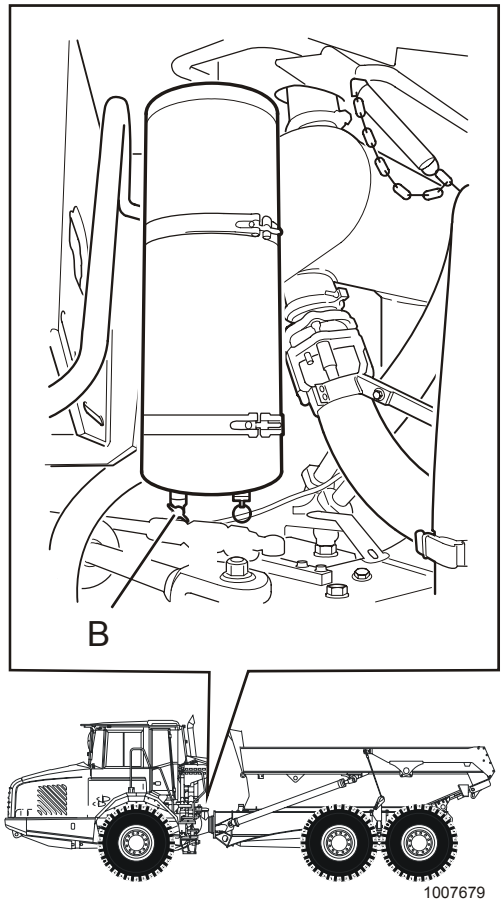
Depressurising the parking brake

After the compressed-air system has been filled through the filler valve (B), the parking brake can be depressurised with the ordinary control.

The start key shall be in operating position, position 1.

Required min. pressure, approx. 620 kPa (6.2 bar).

Tyres



B Filler valve

WARNING!

Make sure that you stand to one side of the tyre when inflating a tyre fitted on a split rim. Wheels of this type may explode, causing injury or death. Use a self-attaching air chuck with a hose long enough to enable you to stand away from the trajectory path when inflating the tire with air.

Tyres, checking air pressure

Check the air pressure every 500 hours.

Regarding recommended air pressure, see page 187.

Tyres, checking wear

Check tyre wear every 500 hours.

Tyres, inflating

Filler valve (A) on the machine may preferably be used for inflating tyres or cleaning in connection with maintenance work.

Connecting hose:

1 Remove the cover.

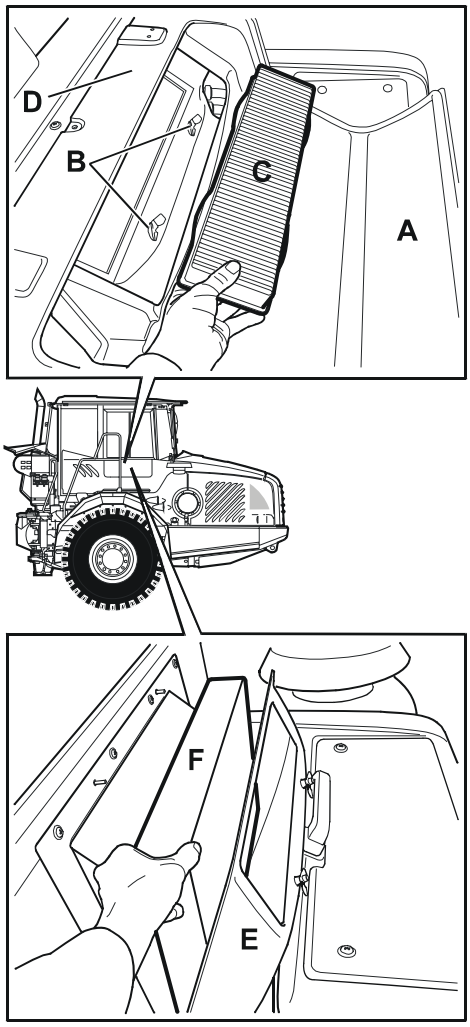
2 Connect the hose.

Wheel nuts, check-tightening

After changing a wheel or if a wheel has been removed for other reasons, the wheel nuts must be check-tightened after 3 hours of operation.

Tightening torque (800 Nm)

NOTE! Try to avoid mixing tyres from different manufacturers or tyres with different type designations on the same axle, since this may lead to unnecessary wear of the drive train and also alter the properties of the machine.



A Cover
B Nuts
C Prefilter
D Side guard
E Casing
F Main filter

Cab

Cab, ventilation filters

The machine is equipped with two ventilation filters in the cab, one prefilter and one main filter. The clogging up of the filters is entirely dependent on the working environment of the machine. Normally the filters should be checked, and cleaned when needed, every 50 hours.

NOTE! The cab filters are only intended to separate particles (dust) from the air. Any dangerous gases are not trapped by the filter.

Cab, replacing prefilter

Replace the filter every 1000 hours.

1 Remove cover (A).
2 Loosen the nuts (B).
3 Remove prefilter (C).

Cab, cleaning prefilter

Shake the filters carefully without damaging them – avoid cleaning with compressed air, vacuum cleaner, or water.

NOTE! Use personal protective equipment (e.g., breathing protection) when cleaning the filters.

Cab, replacing main filter

Replace the filter every 2000 hours.

1 Remove side guard (D).
2 Detach casing (E).
3 Remove main filter (F).

NOTE! The main filter should not be cleaned, it must be replaced.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.

Asbestos filter (optional equipment)

WARNING!

If it is dangerous dust, e.g. toxic or contains asbestos, special measures must be taken to prevent the dust from spreading further.

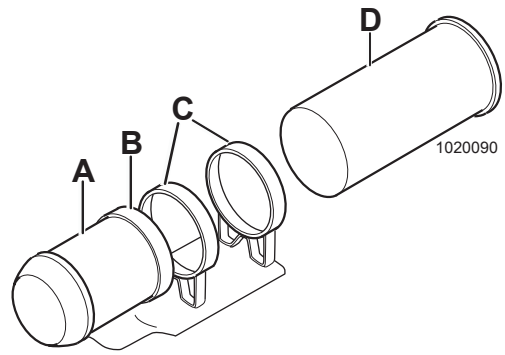
The filter is especially intended for use in environments where there may be asbestos dust, but it is of course effective against all other types of dust when the operator needs highly filtered air in the cab.

The filter is approved according to standard DOP MIL 282, and fulfils the requirements according to the Swedish Work Environment Authority's regulations "Asbestos" AFS 1996:13. It also fulfils the requirements according to EN 1822:1 filter class H13.

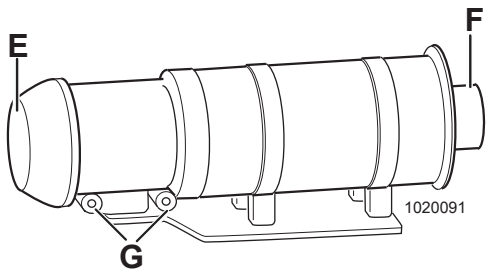
Pay attention to the national regulations regarding work in the environment in question.

Advice for operating in environments where dust / asbestos dust is present

- Enter and leave the machine away from the asbestos-contaminated area to avoid asbestos dust being brought into the cab.
- Keep clothes and shoes clean from dust as far as possible.
- Tidy and vacuum-clean the cab often and use personal protective equipment, for instance respirator (dust mask) intended for asbestos contaminated areas.
- The cab door must be closed. It is particularly important that the tightness (the seals) of the cab is (are) preserved/maintained.
- The cab should be ventilated using its ventilation system, which also provides excess pressure in the cab.
- Replace filters (main filter and prefilter) every 1000 hours or more often when needed. Take care not to damage the new filters. When installing check that the filter edge forms a tight seal.
- Handling of used filters must be done bearing the health hazard and the environment in mind. Before the filters are discarded at the place intended for asbestos waste, the filters must be placed in the tight-sealing plastic bag which is supplied with all new filters.



A Precleaner
B Worm clamp
C Clamps
D Filter casing



E Rain cap on inlet
F Outlet to evaporator housing
G Ejector ports

Cab air precleaner (optional equipment)

Change the system's filter every 1000 hours.

WARNING!

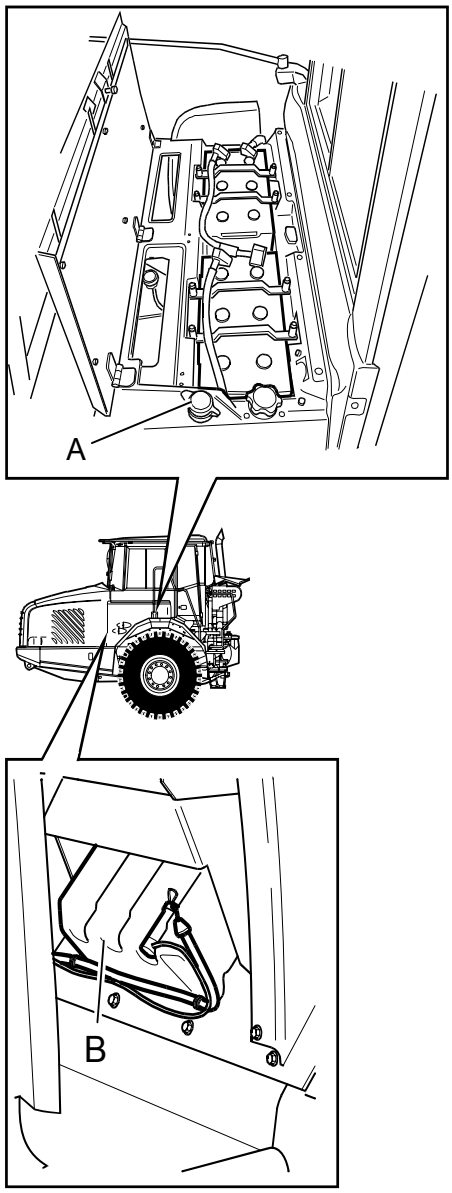
Always use safety glasses and suitable clothing when using compressed air.

Cleaning cab air precleaner

1 Loosen the worm clamp (B) that holds the filter casing (D).
2 Loosen the clamps (C) that hold the filter casing in place and move the filter casing away from the precleaner (A).
3 Remove the filter casing from the air cleaner and leave the pipe for the outlet on the filter casing in place.
4 Remove the rain cap (E) and blow away any dirt with compressed air.
5 Blow out through the two ejector ports (G) and inside the precleaner.Make sure that dirt has not collected in the precleaner.
6 Check that the fan inside the precleaner rotates by looking straight into the inlet when the fan motor is running. The fan blades shall rotate counter-clockwise.
7 Loosen the worm clamp that holds the pipe (F) for the outlet on the filter casing and remove the pipe from the air filter.
8 Install the new pipe in the new filter casing and reinstall the worm clamp.

IMPORTANT! Make sure that no dirt gets in to the pipe. Also make sure that the outside of the pipe, to be inserted in the new air filter, is kept clean.

Reinstall the filter casing in reverse order. If you detect that there is some system malfunction, contact a workshop authorised by Volvo CE.



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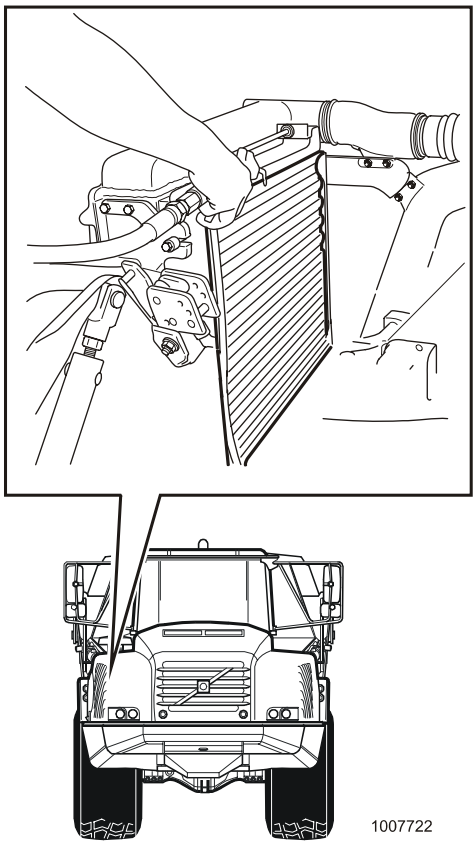
A Filling point
B Reservoir

Windscreen washer reservoir

The windscreen washer reservoir (B) is positioned on the left side of the cab under the battery box.

Top up when needed (C).



Air conditioning (optional equipment)

Condenser, cleaning

Clean the condenser every 500 hours or as needed.

1 Place the machine in service position, see page 95.
2 Let down the front grille.
3 Open up the engine hood.
4 Blow the condenser clean with compressed air.

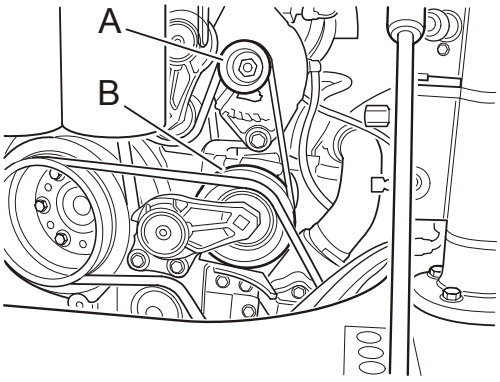
In order to prevent leaks and to safeguard lubrication of the seals in the compressor for the air conditioning, the air conditioning system should be run for approx. five minutes once a month. It is important that the machine operator is made aware of this.

NOTE! At temperatures below freezing, 0 °C, the unit must be run indoors, if possible, as the power supply to the compressor lead is switched off by the thermostat whenever the evaporator temperature is below +1 °C.

Make sure that the exhausts are extracted or ventilated in a suitable way.

Be careful with the hoses between compressor, condenser, and evaporator. There is always high pressure in the system. Therefore, never loosen hoses and never loosen the oil filler plug on the compressor, except during repairs to the system.

Ask a workshop authorised by Volvo CE check the air conditioning system once a year.



A Alternator
B Compressor

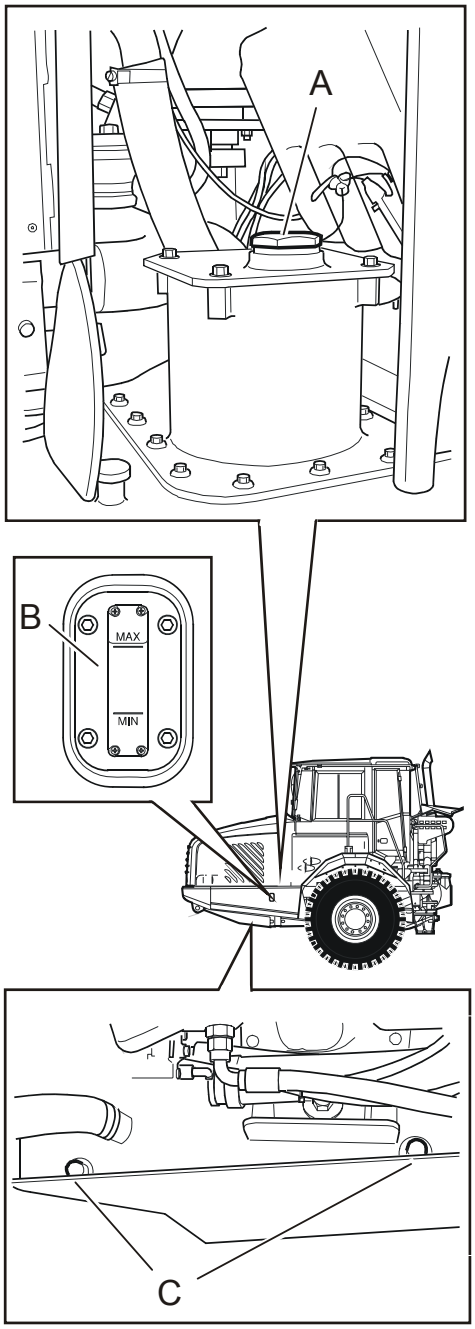
Compressor, checking belt tension

Check the belt every 2000 hours.

The belt is a flat Poly-V type, with automatic belt tensioning. The belt is common for the alternator and compressor.

NOTE! The belt guard has been removed in the picture.

Change the belt if any of the belt's ribs is missing.



A Filler plug
B Level plug
C Drain connection, 2 pcs.

Hydraulic system

IMPORTANT! Exercise cleanliness when filling oil and in all work on the hydraulic system.

Hydraulic oil

The hydraulic oil level is read off on the sight glass located on the left side of the machine.

The oil level can also be read off on the information display unit, see page 30. If the oil level is too low, an alarm display is shown, see page 40. If the temperature in the transmission is too high or low, the control light is on and an alarm display is shown, see page 40.

Hydraulic oil, checking level after topping up or changing

1 Place the machine in service position, see page 95.
2 The oil level should be checked before the engine is started.
3 The oil level should be 3/4 up within the measuring range on the sight glass (A).

NOTE! If the machine is provided with biologically degradable hydraulic oil, the same type of oil must be used when topping up and changing hydraulic oil. Different types of biologically degradable hydraulic oils may not be mixed.

Hydraulic oil, changing

Change oil every 4000 hours if the system is filled with hydraulic oil or Volvo Biodegradable Hydraulic Oil.

Change oil every 2000 hours, if the system is filled with any other biologically degradable hydraulic oil.

WARNING!

Take care when changing oil. Hot oil can cause burns on unprotected skin.

Use the same drain hose as when changing engine oil, located in the front grill.
1 Remove the protective caps over the drain connections.
2 Connect the drain hose to the drain connections (C), on the hydraulic tank's inside. Draining must take place in both drain connections.
3 Drain the oil (drain sludge and condensation through the same connections).
4 Remove the drain hose and install the protective caps on the drain connections.
5 Fill oil through the hydraulic oil filter by the filler plug (A).

Oil capacity when changing: approx. 175 litres

Oil grade, see page 167.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.

Bio oil

When changing from a mineral oil to a bio oil, contact a workshop authorised by Volvo CE.

Hydraulic system, return oil filter and magnetic rods

IMPORTANT! Exercise cleanliness when filling oil and in all work on the hydraulic system.

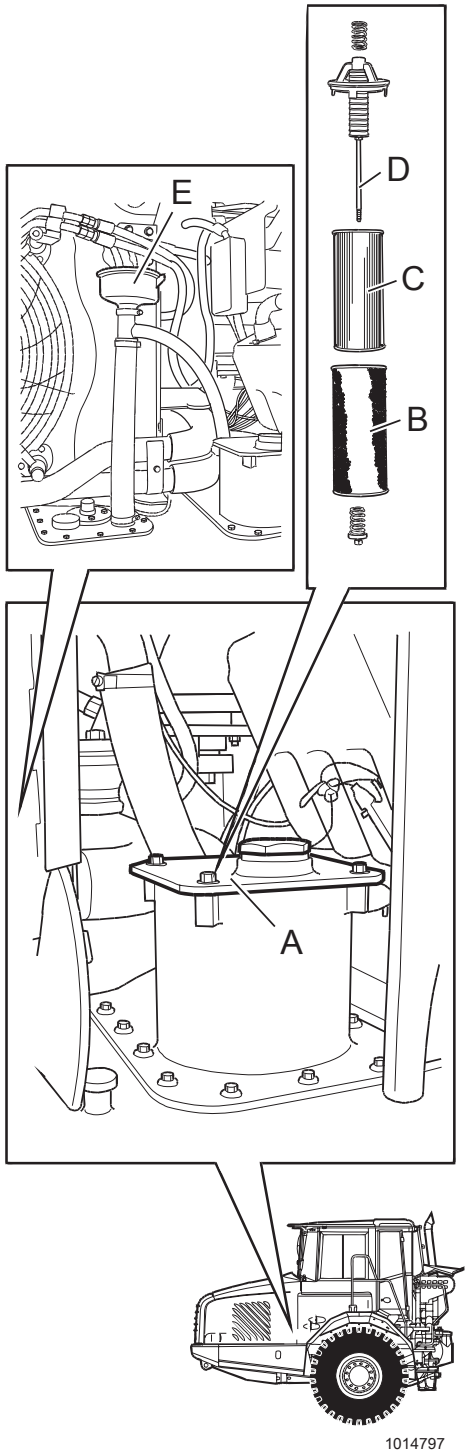
Replace the return oil filter and clean the magnetic rod every 2000 hours. A first change of the return oil filter as well as cleaning of the magnetic rods shall take place at the 1000 hour warranty inspection.

1 Remove cover (A).
2 Remove the filter insert.
3 Clean the magnetic rod (D) and install a new filter (C) in the filter holder (B).
4 Check the O-rings on the magnetic rod and in the cover.
5 Reinstall the filter insert and the cover.

Hydraulic system, breather filter

Replace breather filter (E) every 1000 hours.

1 Remove the cover.
2 Replace the filter insert.
3 Reinstall the cover.



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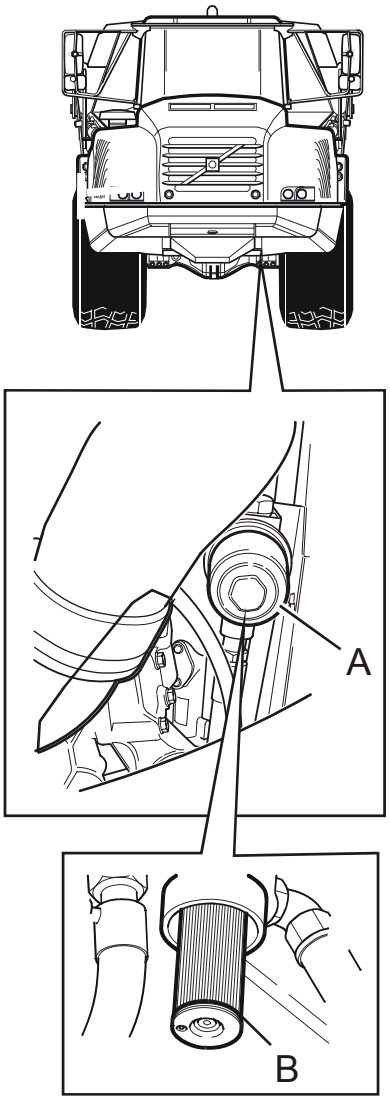
A Cap, return oil filter and magnetic rod
B Filter holder
C Return oil filter
D Magnetic rod
E Breather filter



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A Cover
B Return oil filter

Cooling fan, replacing return oil filter

IMPORTANT! Exercise cleanliness when filling oil and in all work on the hydraulic system.

Replace oil filter every 2000 hours.

Removing

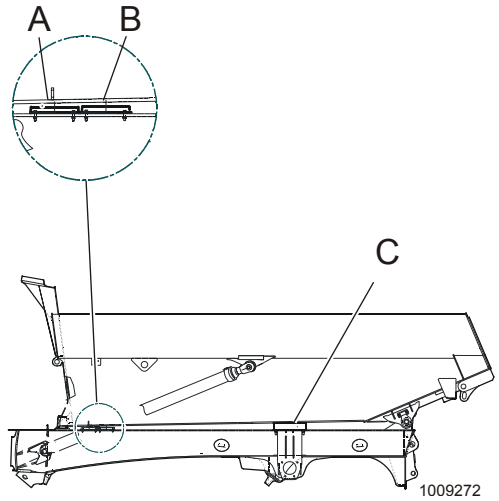
1 Use a socket and ratchet handle or other suitable tool to remove the filter cover.
2 Remove the filter.

Installing

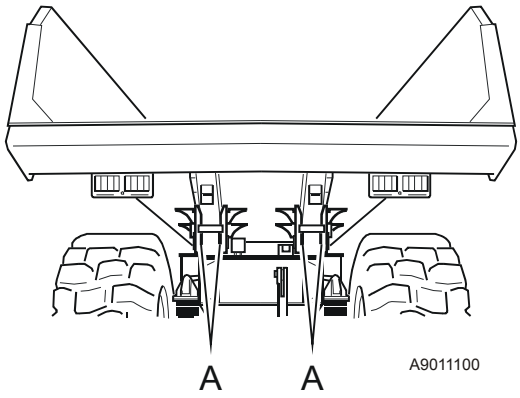
3 Install the new filter.
4 Screw on the cover.

Take care of filters/oils/liquids in an environmentally safe way, see page 97.

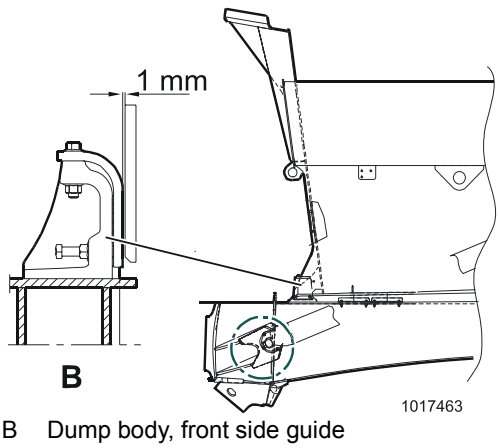
Dump body



A Front rubber cushions
B Front rubber cushions
C Rear rubber cushions



Dump body, rear attachment
A Adjusting washers



B Dump body, front side guide

WARNING!

Keep away from the area under the dump body when it is raised, unless it has been secured with the dump body lock and the tipping control has been locked with the lock-out control, see page 100.

Check the dump body rubber cushions, which fit up against the top of the trailer unit frame, every 1000 hours. A first check should be carried out after 100 hours and also after replacing.

Rubber cushions, checking and adjusting vertically

Before checking, the respective rubber cushions and the top of the frame should be cleaned.

The dump body must be empty and lowered onto the frame and the tipping control in position 2 operating position (lowering/ floating position). When adjusting, it is important that any clearance and compression becomes the same on both sides of the trailer unit frame.

The rear rubber cushions (C), located over the bogie, should fit up against the body and be compressed to the same extent on both sides.

At the same time, the front rubber cushions (A) should have a clearance of 18–22 at the leading edge and (B) 15–19 mm at the trailing edge between rubber cushions and trailer frame.

Cushion (B) should be 3 mm higher than cushion (A).

Adjust with shims under the rear rubber cushions.

IMPORTANT! It is important that the area around and under the rubber cushions is kept clean. Dirt, which collects here, considerably increases the risk of damage to the machine, primarily to the frame.

Adjusting washers, checking and adjusting dump body sideways

At the rear attachment of the dump body, the tipping joint, a max. 1 mm (0.04 in) clearance is permitted at each tipping joint bearing. Adjust with adjusting washers (A).

For adjusting the axial clearance of the tipping joint, use adjusting washers.

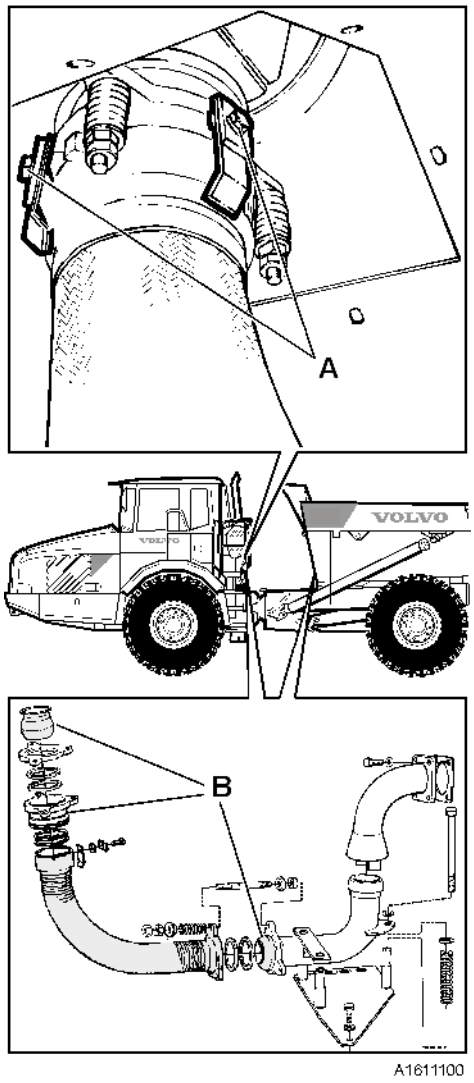
At the front side guide of the dump body, a clearance of max. 1 mm is permitted on each side. Adjust with shims.

Body height extension for light material

If the machine is equipped with a body extension for light, the tailgate's lock mechanism should be adjusted.

Adjustment is done with tensioned chain and loaded dump body.

Check tailgate and lock mechanism daily.



A Bolts for lock plate
B Surfaces to be cleaned and lubricated

Exhaust heated dump body (optional equipment)

In order to prevent excavated material from freezing to the body, the machine can be equipped with a flexible tube between the tractor unit and the dump body, so that exhausts from the engine can be used to warm up the dump body. The flexible tube is provided with an over-load protection (A).

If the tube works loose:

1 Slacken the bolts for locking tabs (A).

2 Reposition the tube.

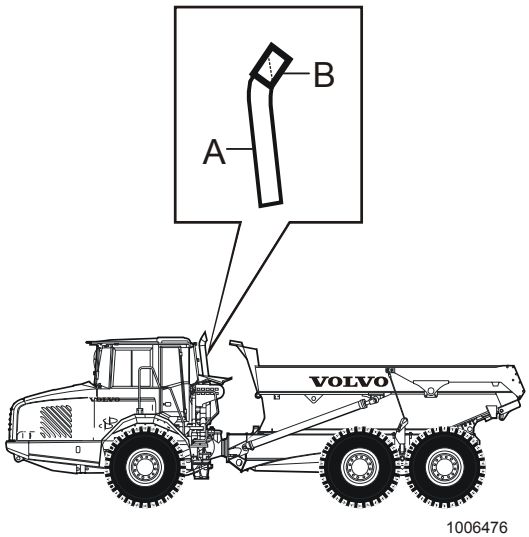
3 Tighten the bolts.

Maintenance of flexible exhaust tube

Clean and lubricate the marked parts (B) every 1000 hours to make sure the function is operational in case the trailer unit might overturn.

Lubricate the surfaces with some lubricant.

NOTE! It is important that the lubricant is allowed to dry properly (for at least 20 minutes) before the exhaust-pipe and the flexible exhaust tube are joined together.



A Exhaust pipe
B Pipe end with restriction

It is important that the engine has the correct back pressure in the exhaust system.

The exhaust pipe (A) must be left in place and provided with a pipe end (B), which is provided with a restriction.

General inspection of machine

All earthmoving machines are to a great extent exposed to strains and wear. Therefore it is essential that they are checked and investigated regularly regarding structural damage and that all systems are functioning correctly.

It is important that regular inspections are carried out to minimise the risk of accidents and break downs. The intervals between these inspections depend on factors such as the age of the machine, type of application, additional structures, loading, the condition of the transporting road and the kind of routine service that has been carried out on the machine. Haulers, which are working under particularly severe operating conditions, require more frequent inspections, but we recommend that these inspections are carried out for the first time at 6000 hours and then every 2000 hours up to and including 12000 hours and thereafter every 1000 hours.

A workshop authorised by Volvo CE should preferably carry out the inspections.

If the machine has been involved in a collision or any kind of accident, is must be taken out of operation immediately and carefully investigated, regardless of when the last inspection was carried out.

In order to be able to carry out a correct inspection, it is important that the hauler is thoroughly cleaned.

Early detection and repair of faults ensure continued function of the machine and improve its availability while at the same time the risk of accidents is reduced. The correct repair of frames and other supporting elements require knowledge of the materials, the design of the frame parts and the manufacturer's recommended repair technique. If the need of repairs arises it is recommended that you contact your Volvo CE distributor, who is qualified to carry out the repairs that may be needed. We do not recommend that repairs are carried out by others than an authorised Volvo CE distributor.

The front and rear frames, the hitch, and the dump body must be carefully inspected regarding crack formations and defects. This applies particularly to the welded construction elements.

The areas, which are dealt with here are particularly important, but this does not mean that other parts may be disregarded. The entire structure must be carefully examined.

Lubrication and service chart

Greasing bearings

Lubrication is an important part of preventive maintenance. The service life of bushings, bearings, and bearing pins can be extended considerably, if the machine is lubricated in a correct way. A lubrication chart makes lubrication work easier and reduces the risk of forgetting greasing points.

Lubrication has two main purposes:

– To supply grease to the bearing to reduce wear between the pin and the bushing.

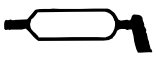
– To replace old, dirty grease. The grease stored inside the outer seal collects dirt and water, and prevents them from penetrating into the bearing.

Therefore grease the vehicle at the recommended intervals. Pump 2–3 strokes or until clean grease comes out and becomes visible by the bearing. Plain bearings should be greased until clean grease is forced out.

Wipe off grease nipples and the grease gun before greasing to avoid introducing sand and dirt particles with the grease.

Symbol key for “Lubrication and service chart”

These standard symbols are used in the Lubrication and service chart, see the adjacent table.


Lubrication point, grease


Pressure


Maintenance/ Engineer


Lubrication point, oil


Transmission


Tyres

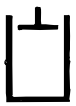

Oil/liquid


Filter

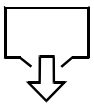

Brake


Water


Control lamp


Hydraulic system

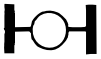

Fuel


Draining

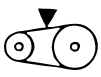

Engine


Anti-freeze


Level check


Differential and hub reduction gear

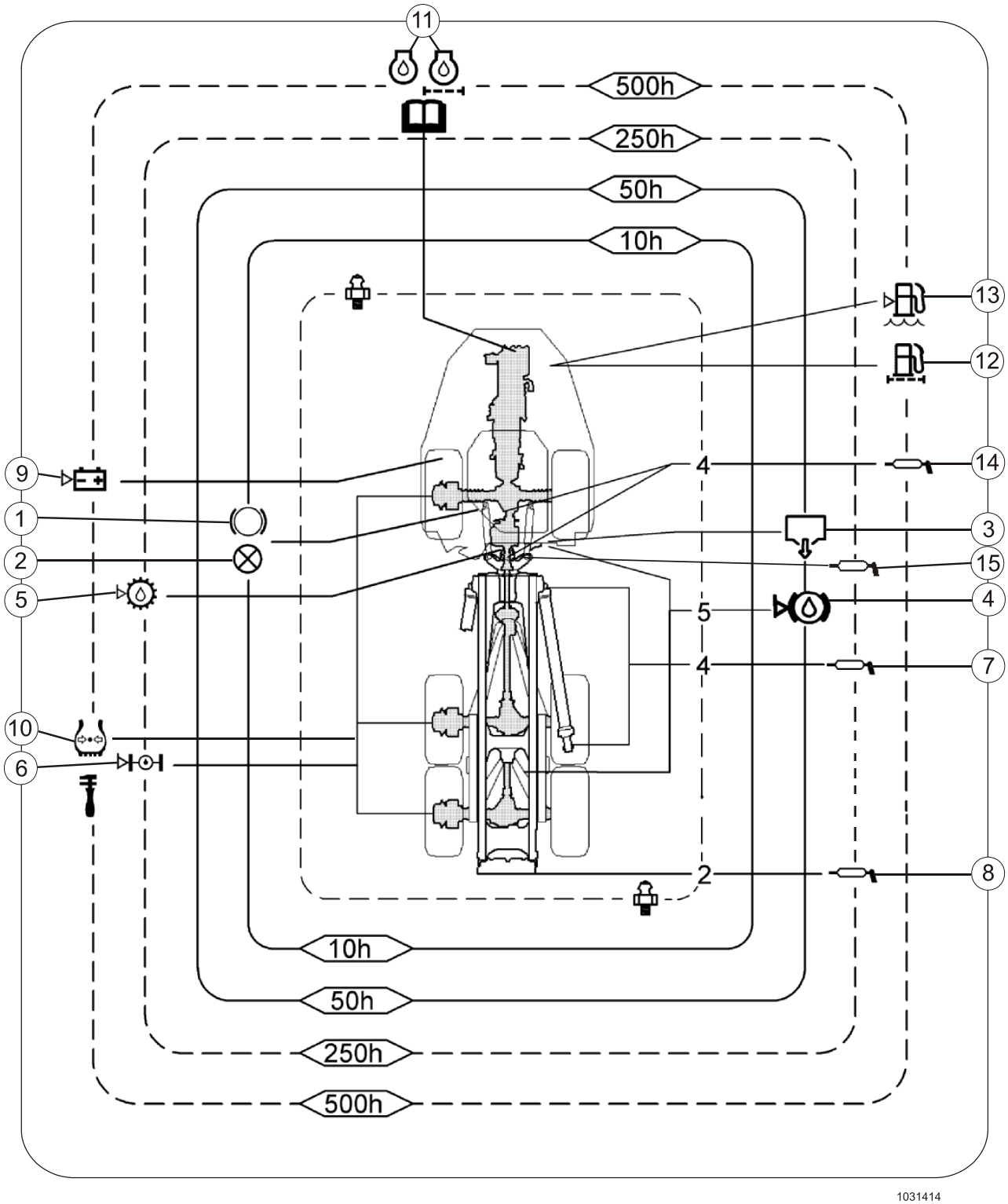

Air


Belt tension

Battery

160 Lubrication and service chart

10 hour, 50 hour, 250 hour, and 500 hour service



Measure	Page	Item
DAILY (every 10 hours)		
Check the brake function	143	1
Check function of control lamps, operating controls, travel and working lights, and that there are no leaks.		2

Measure	Page	Item
EVERY 50 HOURS **After carrying out Daily service**		
Check draining of compressed air tanks	145	3
Check the brake fluid level, 5 reservoirs	143	4

WARRANTY INSPECTION shall be performed at the first 100 hours according to the Service Programme

Measure	Page	Item
EVERY 250 HOURS **After carrying out Daily and 50 hour services**		
Check dropbox	139	5
Check drive axles	141	6
Change oil, oil bath air cleaner (optional equipment)	120	
Grease steering joints and steering cylinders		15
Grease tipping cylinder bearing		7
Grease tipping joint bearings		8
Grease overhung tailgate (optional equipment)		

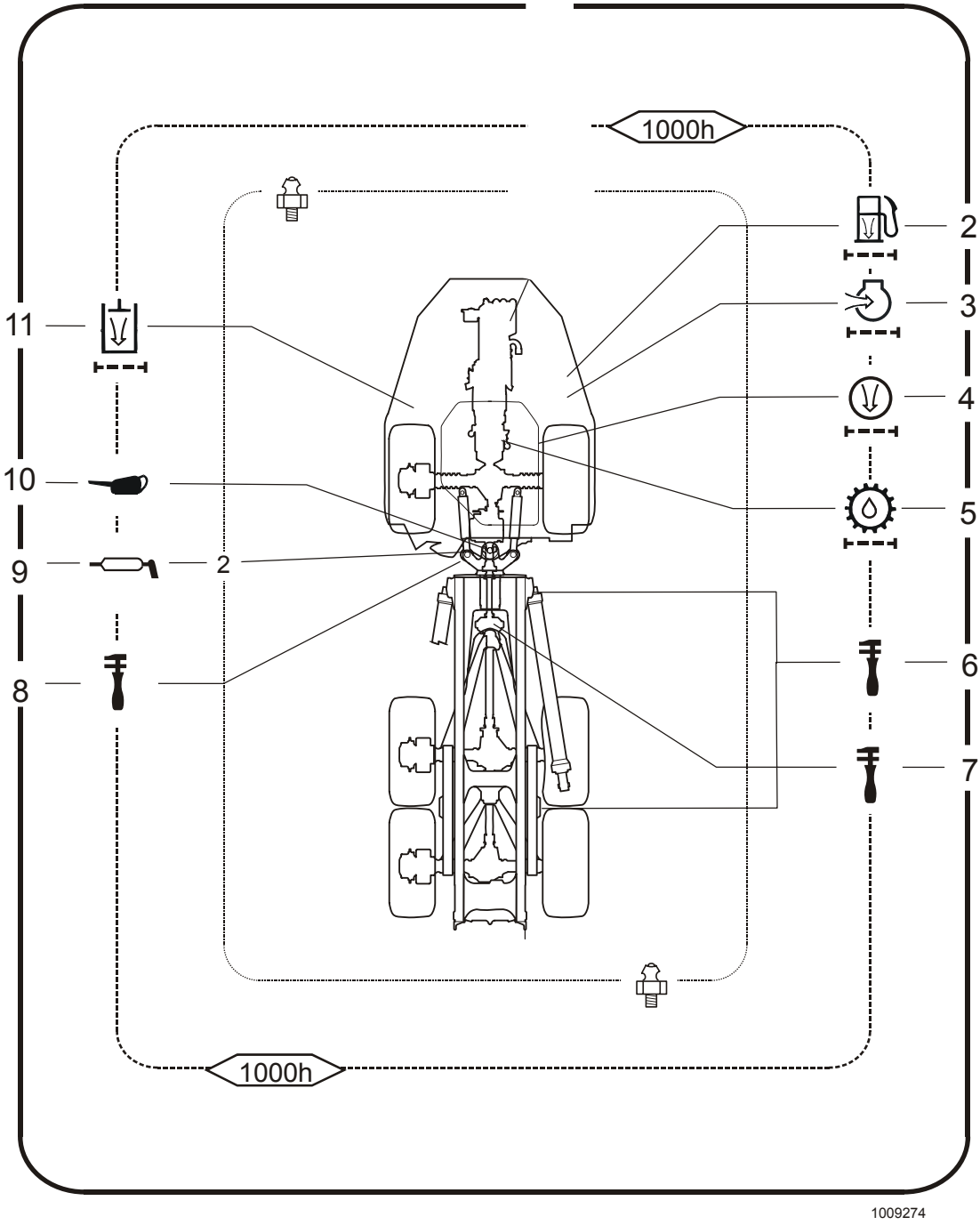
Measure	Page	Item
EVERY 500 HOURS **After carrying out Daily, 50 and 250 hour services**		
Check anti-freeze, coolant	124	
Check electrolyte level, batteries	128	9
Check brake pads, service brake	144	10
Check air pressure and wear, tyres	147	10
Change oil and oil filters, engine*	109	11
Change fuel filter**	113	12
Change filter, water trap**	113	13
Grease propeller shaft, dropbox – front axle		14
Clean radiator	124	
Clean condenser	152	

*) For conditions for the interval of 500 hours to apply, see page 109.

**) Or when changing the engine's oil filter. If the filter becomes clogged earlier, it must be replaced.

162 Lubrication and service chart

1000 hour service

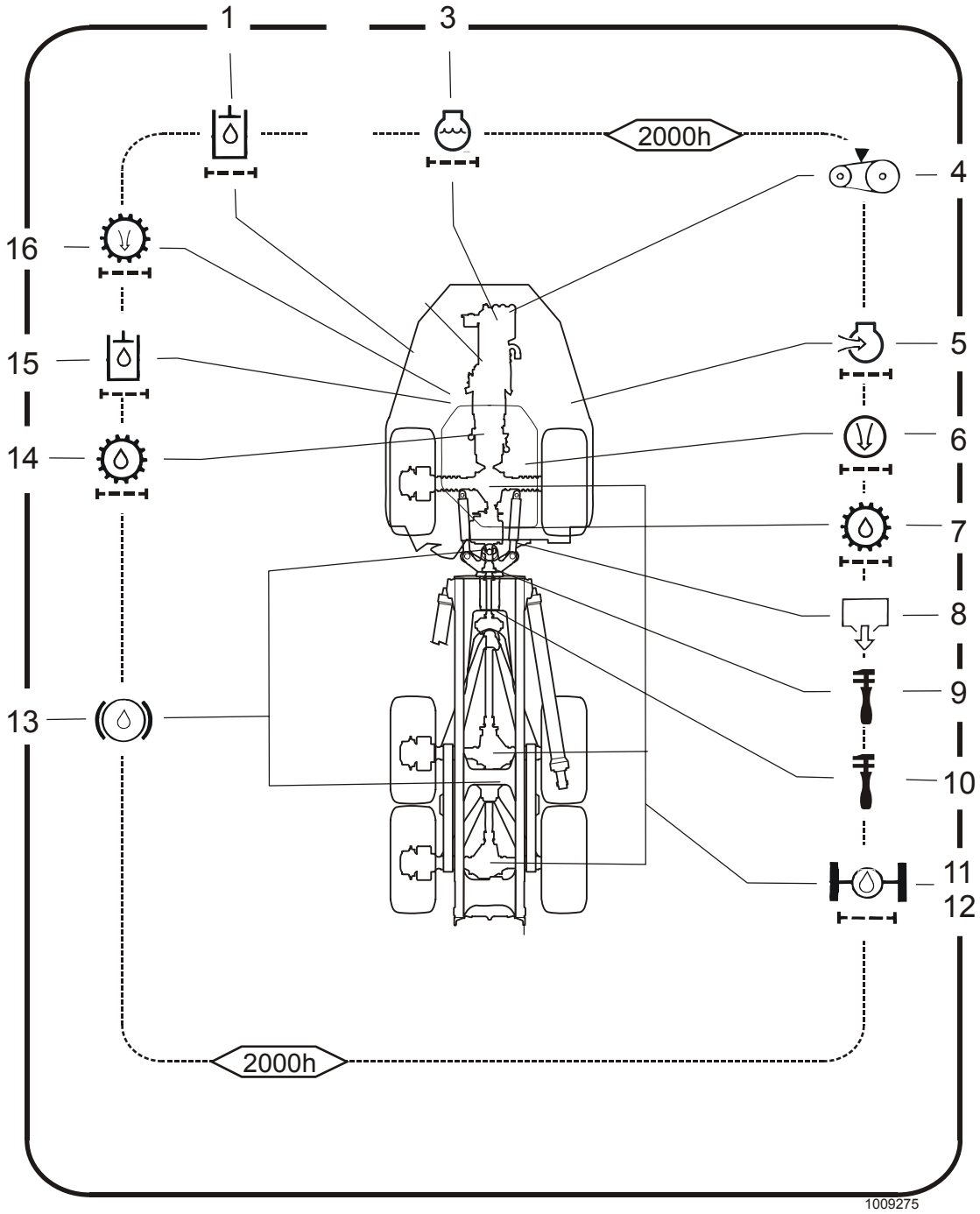


WARRANTY INSPECTION should be performed after the first 1000 hours according to Service Programme

Measure	Page	Item
EVERY 1000 HOURS **After carrying out Daily, 50, 250 and 500 hour services**		
Check rubber cushions, dump body	156	6
Check brake pads, parking brake	144	7
Check steering cylinder bearings		8
Replace breather filter, fuel tank	116	2
Change primary filter, air cleaner, engine	118	3
Replace prefilter, cab	148	4
Change oil, transmission	136	5
Change oil filter, transmission	137	5
Replace breather filter, hydraulic tank	154	11
Grease propeller shaft, dropbox – frame joint		9
Lubricate ball joints, flexible exhaust tube for body heating	157	10
Clean cover, air cleaner	113	3
Clean ball joints, exhaust flexible tube for body heating	157	10

164 Lubrication and service chart

2000 hour service



Measure	Page	Item
EVERY 2000 HOURS **After carrying out Daily, 50, 250, 500 and 1000 hour services**		
Check drive belt, alternator	131	4
Check drive belt, water pumps	127	4
Check drive belt, compressor air conditioning (optional equipment)	152	4
Check steering joint bearings*		9
Check frame joint bearing**		10
Change oil, hydraulic system***	153	1
Replace return oil filter, hydraulic system	154	1
Change coolant****	125	3
Change secondary filter, air cleaner, engine	119	5
Replace main filter, cab	148	6
Replace drier cartridge, compressed air system	146	15
Change oil, drive axles	141	11
Change oil, dropbox	139	7
Replace breather filter, dropbox	140	8
Replace breather filter, drive axles	142	12
Change brake fluid	143	13
Replace return oil filter, cooling fan	155	15
Replace breather filter, transmission	138	16
Grease cab door, hinges		
Lubricate covers, joints and locks		
Clean magnetic rod, hydraulic system	154	1
Clean suction strainer, power take-off	138	14
Adjust frame joint bearings, clearance. Contact authorised workshop.	142	10

*) A first check shall be done at 6000 hours, then check every 2000 hours. Checking should be carried out by workshop authorised by Volvo CE.

**) Checking should be done by workshop authorised by Volvo CE.

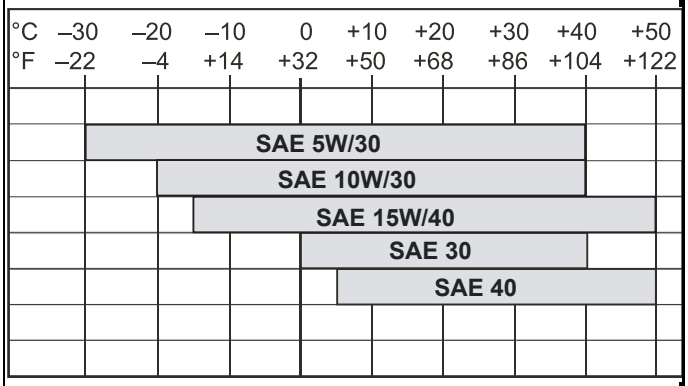
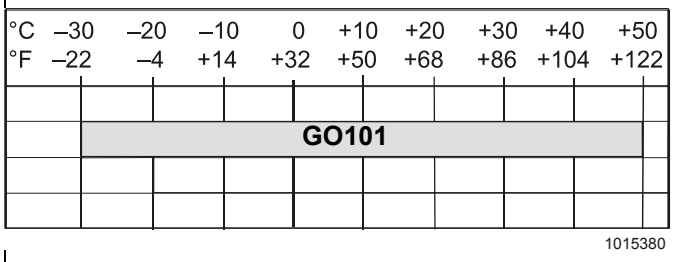
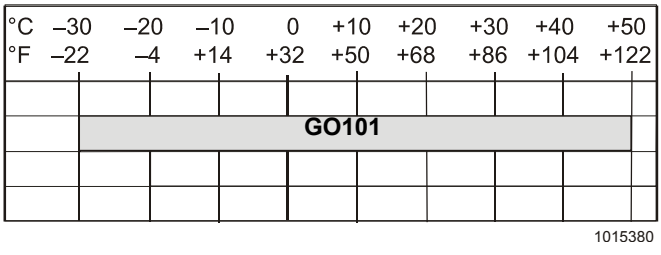
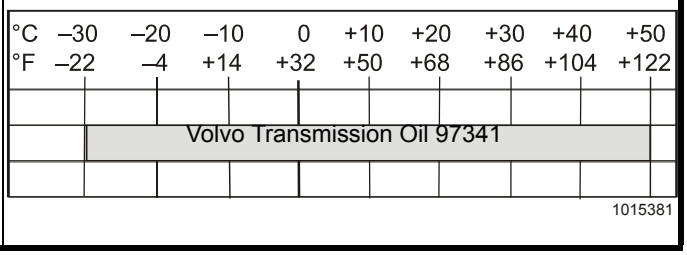
***) Change oil every 4000 hours if the system is filled with hydraulic oil or Volvo Biodegradable Hydraulic Oil. Change oil every 2000 hours, if the system is filled with any other biologically degradable hydraulic oil.

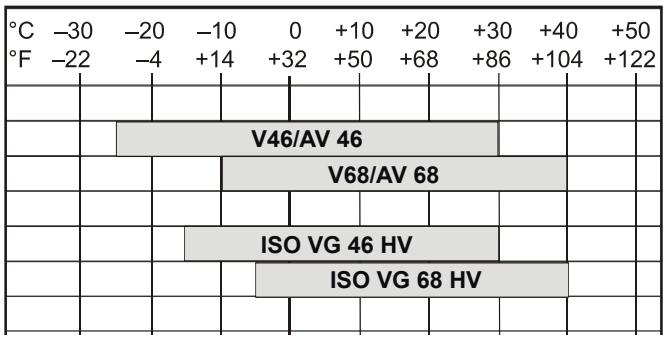
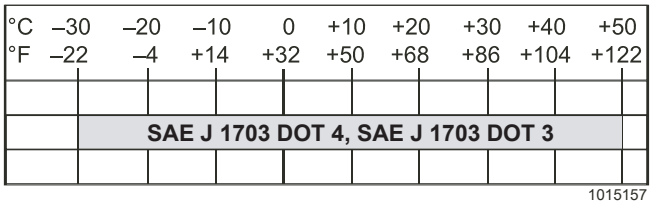
****) Change coolant every 6000 hours.

Specifications

Recommended lubricants

For questions about oils and lubricants, contact a workshop authorised by Volvo CE.
At lower outdoor temperature than in this recommendation, contact your local Volvo service for information.

	Oil grade	Recommended viscosity at varying ambient temperatures
ENGINE	**Volvo Ultra Diesel Engine Oil** or Engine oil VDS-3 or ACEA-E7 + VDS-2 or API CI-4 + VDS-2 or EO-N Premium plus + VDS-2	
AXLES	**Volvo Super Gear oil** Volvo Transmission oil 97316 GO101, 75W-90	
DROPBOX	**Volvo Super Gear oil** Volvo Transmission oil 97316 GO101, 75W-90	
TRANSMISSION	**Volvo Automatic Transmission Fluid** Volvo Transmission Oil 97341	

HYDRAULIC SYSTEM	**Volvo Super Hydraulic Oil** Hydraulic oil Swedish norm SS 15 54 34 alternatively international norm Vickers 35 VQ/25 test viscosity acc. to ISO 3448 grade acc. to ISO 6743-4 **NOTE!** As an alternative, **Volvo biodegradable hydraulic oil** is also available. Contact your local Volvo service workshop for information.	
BRAKE SYSTEM	**Brake fluid** SAE J 1703 DOT 4, DOT 3	
COOLING SYSTEM	**Volvo Coolant VCS**	For further information, see page 123

Engine oil

Oil grade	Sulphur content of the fuel		
	< 0.3 %	**0.3–0.5 %**	**> 0.5 %**
	Oil change interval		
Volvo Ultra Diesel Engine oil	500 hours	250 hours	125 hours
VDS-3			
VDS-2 plus ACEA-E7			
VDS-2 plus API CI-4			
VDS-2 plus EO-N Premium plus			
VDS-2	250 hours	125 hours	75 hours
VDS plus ACEA-E3	125 hours	75 hours	50 hours
ACEA: E7, E5, E4			
API: CI-4, CH-4, CG-4			

Grease

Lithium-based grease with EP-additives and consistency No. NLGI- 2 without molybdenum disulphide additive (MoS_2).
Volvo Super Grease Lithium EP2 / Volvo Ultra Grease Lithium Complex EP2.

Coolant

Use the same coolant as the system was filled with previously. To avoid engine damage, different kinds of coolant may not be mixed with each other.

When using concentrated coolant and clean water, the mixture should contain 40–60 % concentrated coolant and 60–40 % clean water. The amount of concentrated coolant must never be less than 40 % of the total mixture, see table below.

Freeze protection down to	Content of concentrated coolant
–25 °C (–13 °F)	40 %
–35 °C (–31 °F)	50 %
–46 °C (–51 °F)	60 %

The concentrated coolant may not be mixed with water having a high content of lime (hard water), salt, or metals.

The clean water for the cooling system must also meet the following requirements:

Description	Value
Total number of solid particles	< 340 ppm
Total hardness	< 9.5 ° dH
Chloride	< 40 ppm
Sulphate	< 100 ppm
pH value	5.5 – 9
Silica	< 20 mg SiO_2/litre
Iron	< 0.10 mg Fe/litre
Manganese	< 0.05 mg Mn/litre
Electrical conductivity	< 500 µS/cm
Organic content, COD-Mn	< 15 mg/litre

If there is doubt as to the quality of the water, use ready-mixed coolant. To avoid engine damage, different kinds of ready-mixed coolant may not be mixed with each other.

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 governing legal requirements (however, the sulphur content must not exceed 0.3 percent by weight), see page 109.

Bio-diesel fuel

Vegetable oils and/or esters, also called “bio-diesel” (e.g., rape-seed methyl ester RME fuel), are offered on certain markets both as pure products and as mixed in the diesel fuel.

Volvo CE accepts a maximum intermix of 5% bio-diesel fuel in the diesel fuel, ready-mixed from the oil companies.

A higher intermix than 5% of bio-diesel fuel may cause:

– Increased emission by nitrogen oxide, (thereby not meeting legal requirements)
– Shorter service life of engine and injection system
– Increased fuel consumption
– Altered engine output
– Shortening the engine oil change interval to a half
– Shorter service life of rubber materials in the fuel system
– Less good cold handling properties of the fuel
– Limited storage time for the fuel, which may cause clogging up of the fuel system if the machine is laid up for longer periods

Warranty condition

The warranty does not cover damage caused be an intermix of more than 5% of bio-diesel fuel.

Capacities and intervals between changes

	When changing	Total
Engine incl. filters	36 litres (9.5 US gal)	40 litres (10.6 US gal)
Cooling system	71 litres (18.7 US gal)	115 litres (30.4 US gal)
Transmission incl. filter and cooler	41 litres (10.8 US gal)	48 litres (12.7 US gal)
Dropbox incl. filters	8.5 litres (2.2 US gal)	
Front axle (incl. hub reductions)	32 litres (8.4 US gal)	38 litres (10.0 US gal)
Front bogie axle (incl. hub reductions)	36 litres (9.5 US gal)	40 litres (10.6 US gal)
Rear bogie axle (incl. hub reductions)	32 litres (8.4 US gal)	38 litres (10.0 US gal)
Hub reduction gear	3 litres (0.8 US gal)	5 litres (1.3 US gal)
Hydraulic system		260 litres (68.6 US gal)
Hydraulic oil tank	175 litres (46.2 US gal)	180 litres (47.5 US gal)
Fuel tank		400 litres (106 US gal)
Brake fluid	2.5 litres (0.7 US gal)	
Oil bath air cleaner (optional equipment)	9.1 litres (2.4 US gal)	

Oil and fluid changes

	Hours	Page
Engine	500*	109
Coolant	6000**	124
Transmission	500/1000***	136
Dropbox	2000	139
Drive axles	2000	141
Hydraulic oil	4000****	153
Brake fluid	2000	143
Oil bath air cleaner (optional equipment)	250	120

*) For conditions which have to be met if the interval is to apply, see page 109.

**) Change coolant every 6000 hours or every fourth year.

***) For conditions which have to be met, if the interval is to apply, see page 136.

****) For conditions which have to be met, if the interval is to apply, see page 153.

Filter replacements

Engine

	Hours	Page
Oil filters	500	111
Fuel filter	500*	113
Filter in water trap	500*	113
Primary filter, air cleaner	1000	118
Secondary filter, air cleaner	2000	119
Breather filter, fuel tank	1000	116
Clean suction strainer, power take-off	2000	138

* If the filter gets clogged earlier, it must be changed.

Transmission

Main oil filter	500/1000	137
Lubricating oil filter	500/1000	137
Breather filter	2000	138

Dropbox

Breather filter	2000	140

Drive axles

Breather filter, front axle	2000	142

Cab

Pre filter	1000	148
Primary filter	2000	148

Hydraulic system

Breather filter, hydraulic oil tank	1000	154
Return oil filters	2000	154
Return oil filter, cooling fan	2000	155

Engine, specifications

	A25E	A30E
Make	Volvo	
Designation	D9B	D9B
Flywheel output at 35 r/s (2100 rpm)	224 kW SAE J1349 Gross	252 kW SAE J1349 Gross
Torque at 20 r/s (1200 rpm) SAE J1349 Gross SAE J 1349 Net DIN 6271*	 1700 N m (1254 lbf ft) 1689 N m (1246 lbf ft) 1689 N m (1246 lbf ft)	 1700 N m (1254 lbf ft) 1689 N m (1246 lbf ft) 1689 N m (1246 lbf ft)
*) with the cooling fan running at basic speed. With the fan at maximum speed the generated torque is 1589 Nm, which corresponds to DIN 70020.		
Number of cylinders	6	6
Cylinder bore	120 mm (4.724 in)	120 mm (4.724 in)
Stroke	138 mm (5.433 in)	138 mm (5.433 in)
Cylinder capacity, total	9.4 litres (573.6 in^3)	9.4 litres (573.6 in^3)
Compression ratio	19.2:1	19.2:1
Order of injection	1-5-3-6-2-4	1-5-3-6-2-4
Idle speed, low	700 ±10 rpm (11.7 r/s ±0.2)	700 ±10 rpm (11.7 r/s ±0.2)
Idle speed, high	2200 rpm (36.7 r/s)	2200 rpm (36.7 r/s)
Valve clearance, cold engine Inlet Exhaust	 0.20 mm (0.008 in) 0.80 mm (0.031 in)	 0.20 mm (0.008 in) 0.80 mm (0.031 in)
Oil pressure, min. at low idle rpm (warm engine)	270 kPa (2.7 bar) (39 psi)	270 kPa (2.7 bar) (39 psi)
Oil pressure, min. at high idle rpm (warm engine)	300–550 kPa (3.0–5.5 bar) (44–80 psi)	300–550 kPa (3.0–5.5 bar) (44–80 psi)

Air cleaner

Type	Dry filter together with secondary filter
Pre filter	Cyclone cleaner Oil bath air cleaner (market-adapted equipment)

Fuel system

Feed pump

Type	Piston pump
Feed pressure at 600 rpm Feed pressure at 1200 rpm	100 kPa (1.0 bar) (14.5 psi) 300 kPa (3.0 bar) (43.5 psi)

Intercooler

Type	Air/air

Cold-start device

Type	Electrical element
Power, electrical element	2 kW
Time relay (integrated), engagement time	Variable

Unit injectors

Electronically controlled injection amount and injection timing	
Number of	6 pcs

Cooling system, specifications

Cooling fan

Type	Hydraulically driven

Thermostat

Primary system	
Type	Piston-type thermostat
Number of	1
Begins to open at	82 °C (180 °F)
Fully open at	92 °C (198 °F)
Pressure	50 kPa (0.5 bar) (7.3 psi)
Secondary system	
Type	Poppet type thermostat
Number of	1
Begins to open at	55 °C (131 °F)
Fully open at	70 °C (158 °F)
Pressure	50 kPa (0.5 bar) (7.3 psi)

Electrical system, specifications

System voltage	24 V
Batteries	2 pcs.12 V connected in series
Battery voltage	12 V
Battery capacity	170 Ah each
Chassis connection	Negative terminal
Alternator, output	2264 W
Current, max.	80 A
Starter motor, output	9 kW

Battery electrolyte density

Fully charged battery	1.28 kg/dm^3 (80 lb/ft^3)
The battery should be charged at	1.25 kg/dm^3 (78 lb/ft^3)

Bulbs

The light bulbs must be of the highest quality; shake-proof and with long service life.

Tractor unit

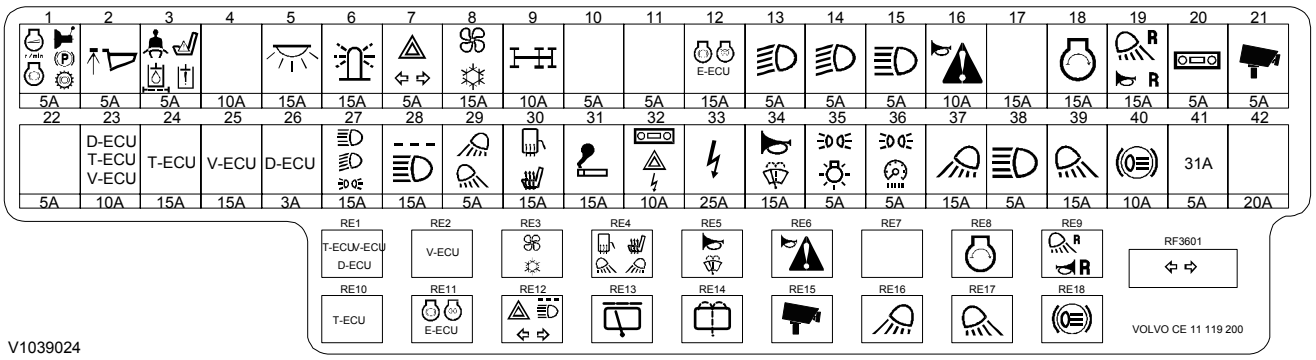
	Watt	**Socket**
Headlights, low beam	70 W	H7
Headlights, high beam	70 W	H7
Parking lights	5 W	Ba 15s
Direction indicators	21 W	E13
Running lights, side	10 W	E13
Working lights (optional equipment)	70 W	H3
Instrument lighting	1.2 W	
Switches	2 W	Ba 9s
Main instrument, control lamps	1.2 W	
Main instrument, lighting	1.2 W	
Rotating beacon (optional equipment)	70 W	H1

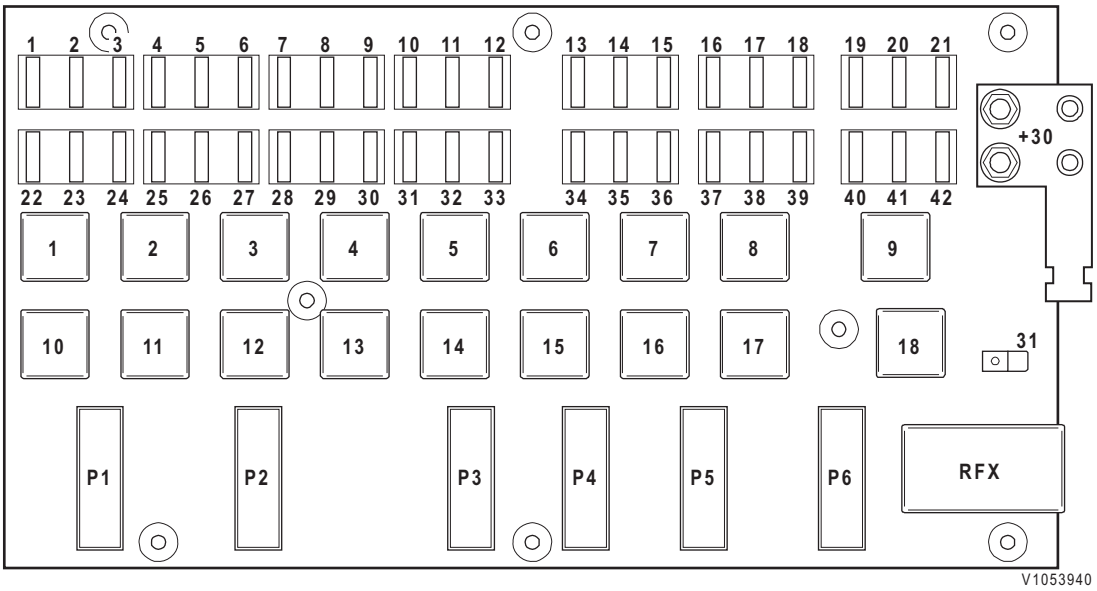
Trailer unit

Tail lights	1 W	LED
Brake lights	7 W	LED
Direction indicators	21 W	Ba 15s
Back-up (reversing) light	70 W	H3

Fuses

Electrical distribution box



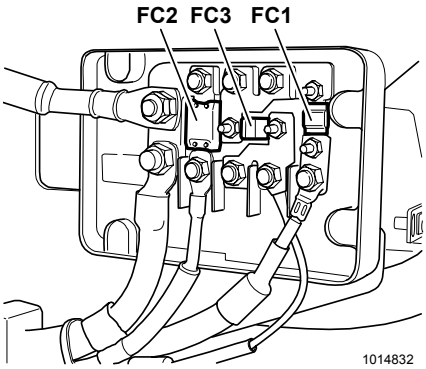


Marking	Rated current	Description (blade fuse)	Marking	Rated current	Description (blade fuse)
1	5 A	Switch exhaust brake, engine brake, switch brake pedal, increased engine rpm, shift lock-out, load and dump brake, tipping control lock-out position Position sensor throttle pedal, position sensor gear selector, position sensor retarder pedal, position monitor low range/high range, position monitor throttle pedal, position monitor retarder pedal, position monitor parking brake	22	5 A	Unassigned
2	5 A	Position monitor dump body	23	10 A	V-, T-, and D-ECU, feed 28 VDC Light load and dump brake Control lights activation red central warning 2, engaged transverse differential lock (front axle), engaged longitudinal differential lock, engaged all differential locks/ 6×6, engaged transverse differential lock (front bogie axle), engaged transverse differential lock (rear bogie axle)

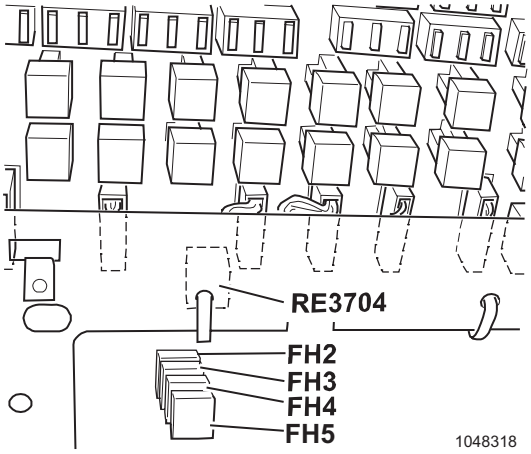
Marking	Rated current	Description (blade fuse)	Marking	Rated current	Description (blade fuse)
3	5 A	Position monitor seatbelt, position monitor seat cushion, position monitor shut-off valve hydraulic oil tank, pressure monitor return oil filter hydraulic oil, pressure monitor return oil filter cooling fan oil, socket service display unit	24	15 A	T-ECU, feed 28 VDC
4	10 A	Switch parking brake	25	15 A	V-ECU, feed 28 VDC
5	15 A	Interior lighting, interior lighting (left/right rear), interior lighting (right front), position monitor door	26	15 A	D-ECU, feed 28 VDC
6	15 A	Rotating beacon	27	15 A	Switch headlights Main fuse for guide lights, running lights, high and low beams for fuses 13–15, 35, 36, and 38
7	5 A	Direction indicators, flashing hazard lights	28	15 A	Headlight flasher
8	15 A	Fan climate control system (AC), relay climate control system (AC), monitor refrigerant pressure, monitor refrigerant temperature Solenoid valve control compressor climate control system (AC)	29	5 A	Switch working lights front/rear, relay working light front/rear, working lights front/rear left/right Unassigned (belongs to relay socket no. 7)
9	10 A	Switch transverse diff. lock (front axle), longitudinal diff. lock/6×6, all diff. locks/6×6 Position monitor longitudinal diff. lock	30	15 A	Switch electrically heated rear-view mirrors Heating coil rear-view mirror left/ right lower/upper Switch seat cushion heater, heating coil seat cushion heat, switch and control light turn-around wheels
10	5 A	Unassigned	31	15 A	Cigarette lighter
11	5 A	Unassigned	32	10 A	Voltage converter, switch flashing hazard lights, flasher relay, tachograph
12	15 A	E-ECU, Feed 28VDC E-ECU (including function engine stop)	33	25 A	Power outlet 28 VDC
13	5 A	Low beam, right	34	15 A	Switch windshield wiper, relay interval wiper, motor windshield wiper, switch windshield washer, relay windshield washer, motor windshield washer, switch horn, horn
14	5 A	Low beam, left	35	5 A	Running lights left/right front, front fender and rear Control guide lights switches Guide light switches
15	5 A	High beam, right	36	5 A	Running lights, instrument lighting
16	10 A	Buzzer, central warning	37	15 A	Working lights front
17	15 A	Unassigned	38	5 A	High beam left, D-ECU signal for activating high beam
18	15 A	Starter motor, control voltage	39	15 A	Working lights rear

Marking	Rated current	Description (blade fuse)	Marking	Rated current	Description (blade fuse)
19	15 A	Back-up (reversing) lights, back-up warning, back-up camera	40	10 A	Brake lights
20	5 A	Voltage converter	41	5 A	Ground tachograph
21	5 A	Back-up (reversing) camera	42	20 A	Unassigned

Other fuses



In fuse box on battery bracket over washer reservoir

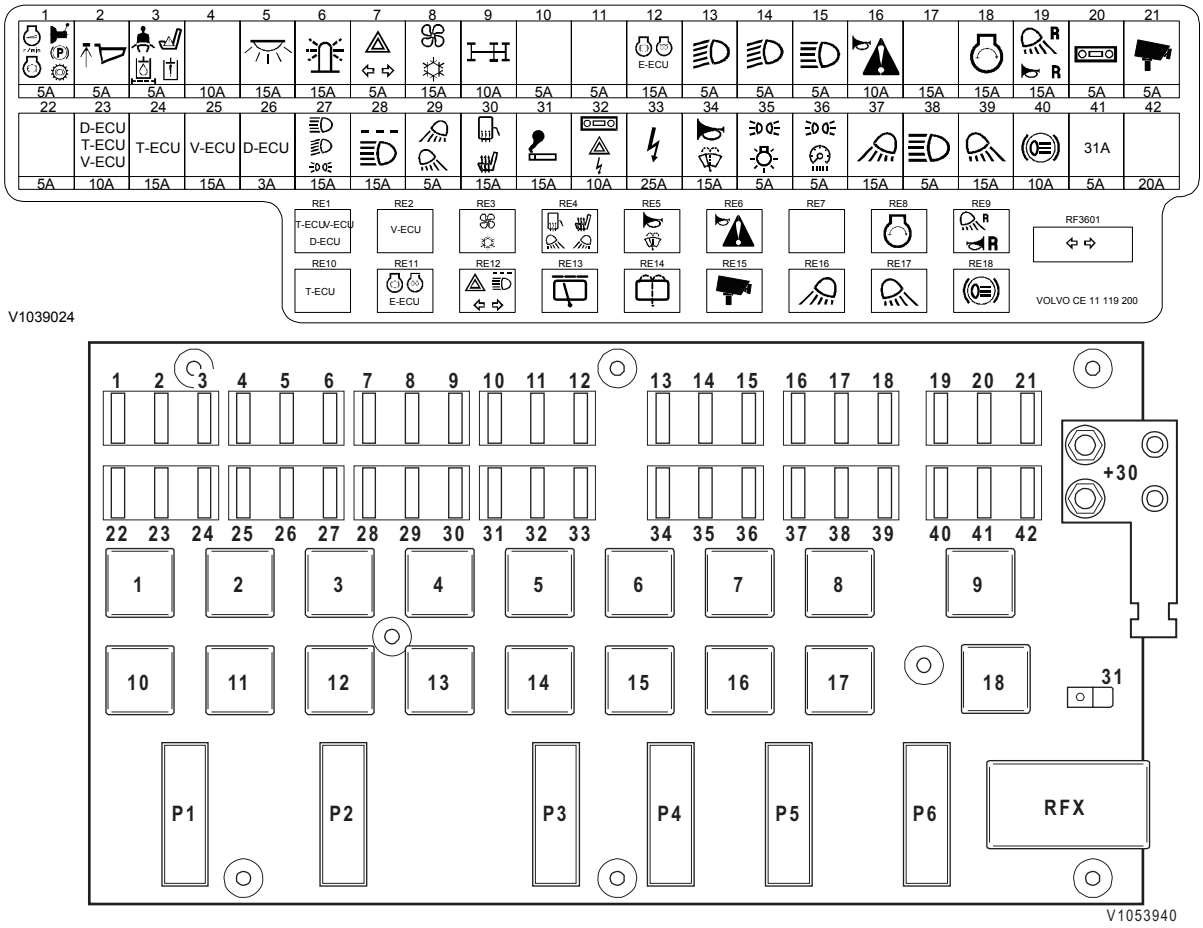


Left side in cab

Marking	Rated current	Description (fuse rail)	Marking	Rated current	Description (blade fuse)
FC1	50 A	Main fuse	FH2	10 A	Delayed stop
FC2	150 A	Heating coil preheating	FH3	5 A	Relay preheating induction air
FC3	40 A	Motor hood pump	FH4	5 A	Exhaust gas recirculation (EGR), exhaust brake (EPG)
Fuse for rear window wiper/washer, see page 94.			FH5	5 A	Load and dump brake

Relays

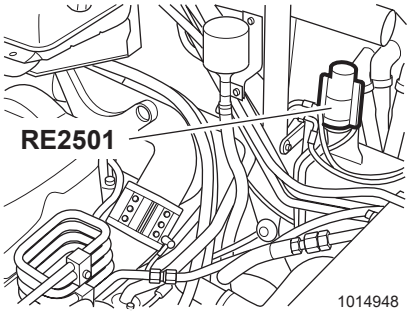
Electrical distribution box



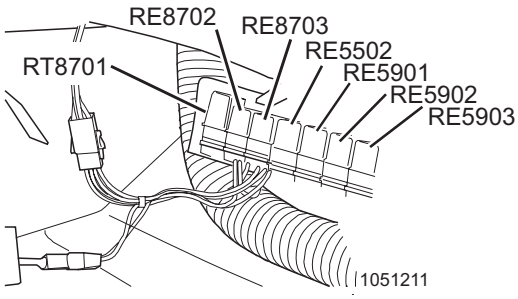
Marking	Designation	Description	Marking	Designation	Description
1	RE3701	Feed 28 VDC I-, T, V-, and V2-ECU, Fuses FU1, FU2, FU3, FU22, FU23	11	RE3705	Feed 28 VDC E-ECU, preheating of induction air, exhaust brake, engine stop
2	RE3702	Feed 28 VDC V-ECU, Steering RE3703, RE3705 Fuses FU4, FU25,	12	RE3604	Direction indicators, hazard flashers and headlight flasher
3	RE8701	Fan and climate control system, Differential locks	13	RE3601	Windscreen wiper
4	RE3503	Electrically heated rear-view mirrors, working lights, seat, fuel warming	14	RE3602	Windscreen washer
5	RE3605	Windscreen wipers, windscreen washer and horn	15	RE3606	Rear vision camera, tachograph
6	RE3603	Buzzer central warning	16	RE3501	Working lights front
7	RE	Unassigned	17	RE3502	Working lights rear
8	RE	Starter motor	18	RE5201	Brake lights

Marking	Designation	Description	Marking	Designation	Description
9	RE4201	Back-up (reversing) light, back-up alarm, and back-up camera	RFX	RF3601	Direction indicators
10	RE3703	Feed 28 VDC T-ECU			

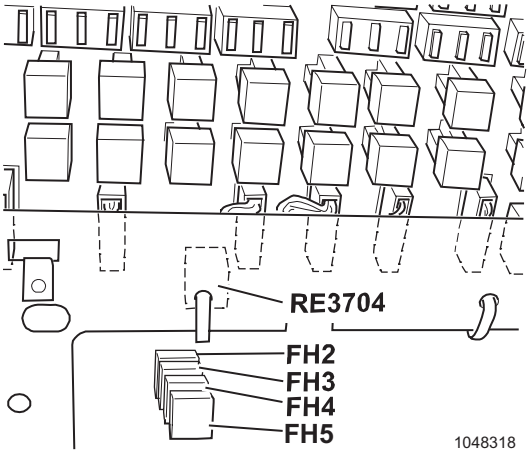
Other relays



Left side of bow



Under right control panel



Down low in electrical distribution box on left side

Marking	Description	Marking	Description
RE2501	Preheating induction air	RE8703	Climate control system (AC)
RE3704	Delayed stop	RE5502	Parking brake
RT8701	Time relay for AC-engagement at start	RE5901	Load and dump brake
RE8702	Climate control system (AC)	RE5902	Load and dump brake
Relay for rear window wiper/washer, see page 94.		RE5903	Load and dump brake

Power transmission

Transmission

Type	Automatic planetary type transmission with six forward gears and two reverse gears
Designation	PT1563
Torque converter, type	Single stage with free-wheeling stator and automatic direct drive clutch (lockup)

Retarder

Type	Hydraulic, variable, integrated in transmission

Dropbox

Designation	IL 1
Power take-off	1 for ground-dependent hydraulic pump
Drive	4-wheel drive in permanent engagement

Differential locks

Longitudinal	Dog clutch	In dropbox
Transverse	Dog clutch	In drive axles

Drive axles

	Tractor unit	Front bogie axle	Rear bogie axle
Make	Volvo	Volvo	Volvo
Designation, A25E	AH56E	AH56F	AH56G
Designation, A30E	AH64D	AH64E	AH64F

Differential carrier assembly

	Tractor unit	Front bogie axle	Rear bogie axle
Make	Volvo	Volvo	Volvo
Gear ratio	2,85	2,85	2,85
Differential lock	Dog clutch	Dog clutch	Dog clutch
6-wheel drive (6×6)			Drive via dog clutch in front bogie axle

Hub reduction gear

	Tractor unit	Front bogie axle	Rear bogie axle
Type	Planetary gear	Planetary gear	Planetary gear
Gear ratio	4,235	4,235	4,235

Wheel nuts

Tightening torque	800 N m (590 lbf ft)

Speed ranges (max.)

Gear	
Forward	
1st gear	8 km/h (5.0 mph)
2nd gear	12 km/h (7.5 mph)
3rd gear	22 km/h (13.7 mph)
4th gear	31 km/h (19.3 mph)
5th gear	40 km/h (24.9 mph)
6th gear	53 km/h (32.9 mph)
Reverse	
1st gear	8 km/h (5.0 mph)
2nd gear	13 km/h (8.1 mph)

Brake system, specifications

Service brakes

Dual circuit, air-hydraulic. Disc brakes on all axles.
One circuit for the tractor unit and one for the trailer unit.

Parking brake

Air-mechanically operated, spring-applied disc brake acting on the trailer unit's propeller shaft.

Retarder

Hydraulic, variable, integrated in transmission.
Total retarder action is obtained with the retarder in transmission together with the exhaust brake.

Compressed-air system, specifications

Air-pressure regulator

Cut-out pressure	830–870 kPa (8.3–8.7 bar) (120–126 psi)
Cut-in pressure	810–730 kPa (8.1–7.3 bar) (117–106 psi)

Compressor

Type	Single cylinder piston compressor

Compressed air reservoirs

	Number of
4 litre regeneration reservoir	1
20 litre circuit reservoir	2

Safety valve

Opening pressure	930 kPa (9.3 bar) (135 psi)

Air drier

	Number of
Drier cartridge	1

Steering/hydraulic system, specifications

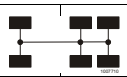
Type of steering	Hydro-mechanical articulated steering
Steering lock	2 × 45°
Number of steering wheel revolutions	3.4 revolutions

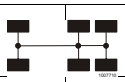
Tipping system

Make	Volvo
Number of	2 pcs.
Type	Double-acting
Tipping time	12.5 seconds
Lowering time	10 seconds

Tyre sizes and recommended air pressure

If other tyres are used than those stated, the tyre manufacturer should be contacted for information about correct tyre pressure.

Tyre air pressure with a load of 24 tonnes		**A25E 6X6**	
Tyres			
Bridgestone 23.5 R25 VLT **	kPa Psi	375 54.5	400 58.0
Bridgestone 23.5 R25 VLT-S **	kPa Psi	375 54.5	400 58.0
Continental 23.5 R25 STL2+**	kPa Psi	375 54.5	430 62.5
Continental 23.5 R25 STL3**	kPa Psi	375 54.5	430 62.5
Good Year 23.5 R25 RL-2+ **	kPa Psi	375 54.5	400 58.0
Good Year 23.5 R25 TL-3A+**	kPa Psi	375 54.5	400 58.0
Good Year 23.5 R25 GP-4B **	kPa Psi	375 54.5	400 58.0
Michelin 23.5 R25 XADN **	kPa Psi	340 49.0	375 54.5
Michelin 23.5 R25 XADT **	kPa Psi	340 49.0	375 54.5
Michelin 23.5 R25 SUPERTERRAIN	kPa Psi	340 49.0	375 54.5

Tyre air pressure with a load of 28 tonnes		**A30E 6X6**	
Tyres			
Bridgestone 23.5 R25 VLT **	kPa Psi	400 58.0	450 65.0
Bridgestone 23.5 R25 VLT-S **	kPa Psi	400 58.0	450 65.0
Bridgestone 750/65 R25 VLT **	kPa Psi	375 54.5	400 58.0
Continental 23.5 R25 STL2+**	kPa Psi	400 58.0	500 72.5
Continental 23.5 R25 STL3**	kPa Psi	400 58.0	500 72.5
Good Year 23.5 R25 RL-2+ **	kPa Psi	400 58.0	450 65.0
Good Year 23.5 R25 TL-3A+**	kPa Psi	375 54.5	450 65.0
Good Year 23.5 R25 GP-4B **	kPa Psi	400 58.0	450 65.0
Good Year 750/65 R25 RL-2+ **	kPa Psi	350 51.0	400 58.0
Michelin 23.5 R25 XADN **	kPa Psi	350 51.0	400 58.0
Michelin 23.5 R25 XADT **	kPa Psi	350 51.0	400 58.0
Michelin 750/65 R25 XAD65-1 **	kPa Psi	325 47.0	375 54.5
Michelin 23.5 R25 SUPERTERRAIN	kPa Psi	350 51.0	400 58.0

Cab, specifications

General	
The cab is fitted on rubber elements, is insulated, and has a flat floor with a rubber mat.	
Tested and approved as a protective cab according to ISO 3471-1994 ROPS and SAE J1040 - MAY94 (ROPS). FOPS tested according to ISO 3449-1992.	
Cab interior fittings and upholstery	Fire retardant (fire resistant) measured according to ISO 3795-1989
Number of emergency exits	1 (right side window)

Heating and ventilation
The basic version of the machine is provided with a heating and ventilation system with defrosting for all windows and the best possible air distribution. The cab fan is a double radial fan with four speeds. Air conditioning is available as optional extra.

Operator seat	This machine is equipped with an operator seat, which meets the criteria of EN ISO 7096.
Height adjustment (rapid adjustment)	100 mm (4 in)
Longitudinal adjustment	160 mm (6.3 in)
Adjustment for driver weight	40–130 kg (88–287 lb)
Adjustment of backrest, (adjustable backrest inclination)	12°
Upholstery	Fire resistant
Lap type seat belt with reel	Yes

Vibration and sound information

Hand-arm vibrations

Emission of hand-arm vibration during real operating conditions at its intended use is less than 2.5 m/s^2 RMS (root mean square) acceleration according to ISO 8041.

Whole body vibrations

Emission of Whole-Body Vibration during real operating conditions at its intended use is according to the table below.

Typical operating conditions	Vibration emission value $a_{w,eqx}$ (m/s^2 RMS)	Vibration emission value $a_{w,eqy}$ (m/s^2 RMS)	Vibration emission value $a_{w,eqz}$ (m/s^2 RMS)
Loading	0.29	0.41	0.24
Transporting with load	0.64	0.89	0.67
Dumping	0.49	0.42	0.30
Transporting without load	0.82	1.02	0.81

The following vibration directions are defined:

x = longitudinally

y = lateral

z = vertical

The values for whole body vibrations stated above have been taken from ISO/CEN Technical Report.

NOTE! These hole-body vibration emission values were determined at particular operating and terrain conditions and is therefore not representative for all the various conditions in accordance with the intended use of the machine and should not alone be used to determine the whole-body vibration exposure to the operator using the machine. For this purpose the information in ISO/CEN Technical Report is recommended.

To ensure that the generated whole-body vibrations during machine use is kept to a minimum, see page 84.

Sound information

	A25E	**A30E**
Sound pressure level (LpA) at operator station (Measurement according to ISO 6396)	74 LpA dB(A)	74 LpA dB(A)
Sound power level (LwA) around the machine (Measurement according to 2000/14/EC with applicable appendices and measuring method according to ISO 6395)	111 LwA dB(A)	111 LwA dB(A)
Sound power level (LwA) around the machine (Measurement according to 2000/14/EC with applicable appendices and measuring method according to ISO 6395) **With sound absorbing optional equipment**	108 LwA dB(A)	108 LwA dB(A)

Weights

A25E

Tyres	23.5 R25
Weights are given incl. operator and all fluids	
Service weight:	
Front axle	12180 kg (26852 lb)
Bogie	9400 kg (20723 lb)
Total service weight*	21560 kg (47532 lb)
Total weight	
Maximum permitted load on front axle	14140 kg (31173 lb)
Maximum permitted load on bogie	31420 kg (69269 lb)
Load capacity (payload)	24000 kg (52911 lb)
Total weight, max.	45560 kg (100442 lb)

*) If the machine is equipped with body height extension for light material, the service weight will be 1908 kg (4206 lb) more.

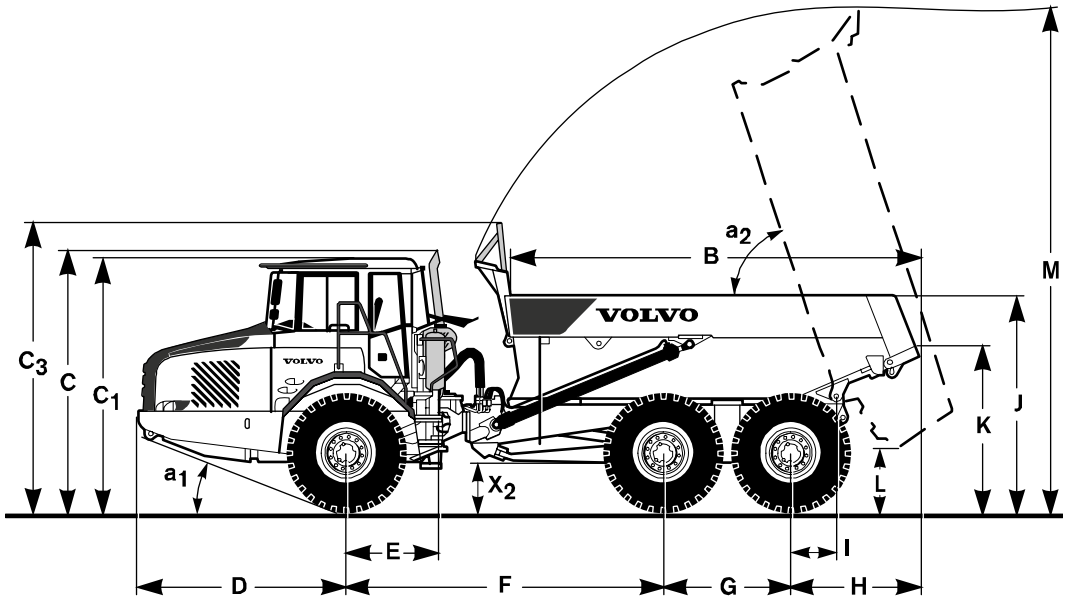
A30E

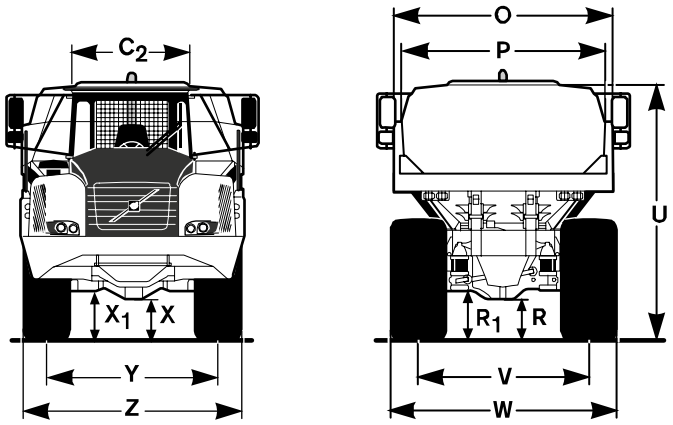
Tyres	750/60 R25
Weights are given incl. operator and all fluids	
Service weight:	
Front axle	12500 kg (27560 lb)
Bogie	10560 kg (23280 lb)
Total service weight*	23060 kg (50840 lb)
Total weight	
Maximum permitted load on front axle	14990 kg (33050 lb)
Maximum permitted load on bogie	36070 kg (79520 lb)
Load capacity (payload)	28000 kg (61730 lb)
Total weight, max.	51060 kg (112600 lb)

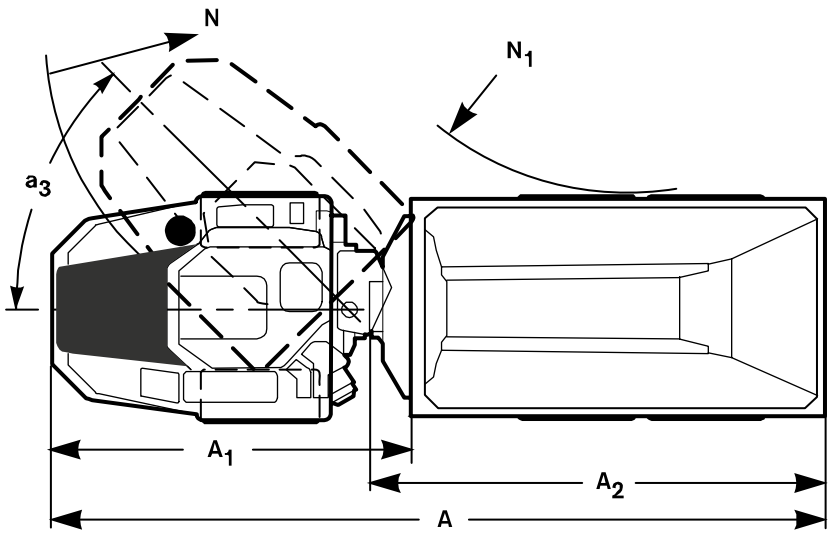
*) If the machine is equipped with body height extension for light material, the service weight will be 2057 kg (4535 lb) more.

Dimensional drawing, A25E

The letters in the illustrations refer to the text on the next page.







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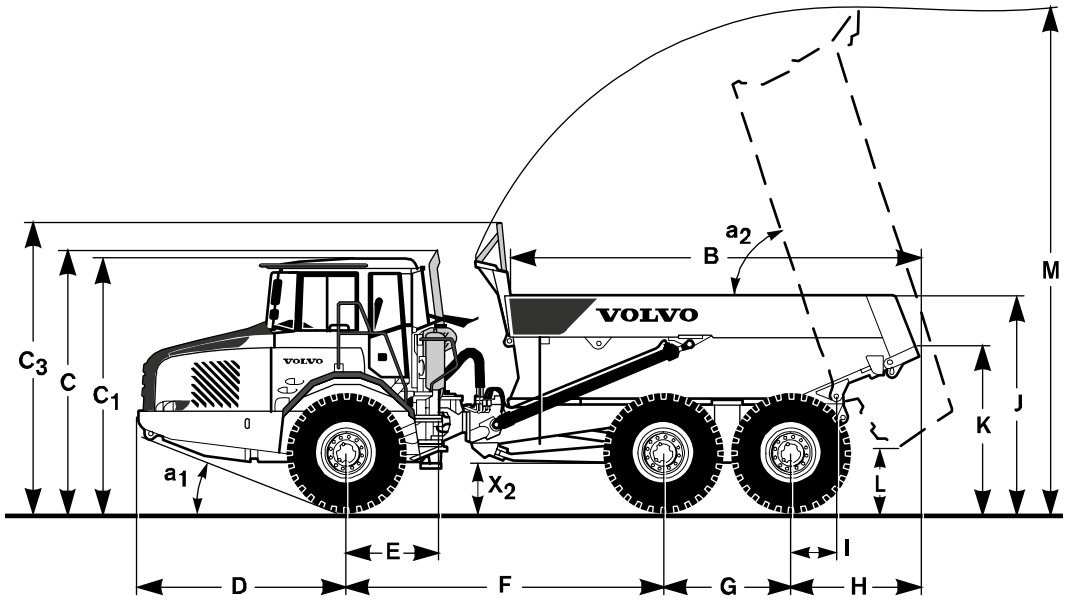
192 Dimensional drawing, A25E

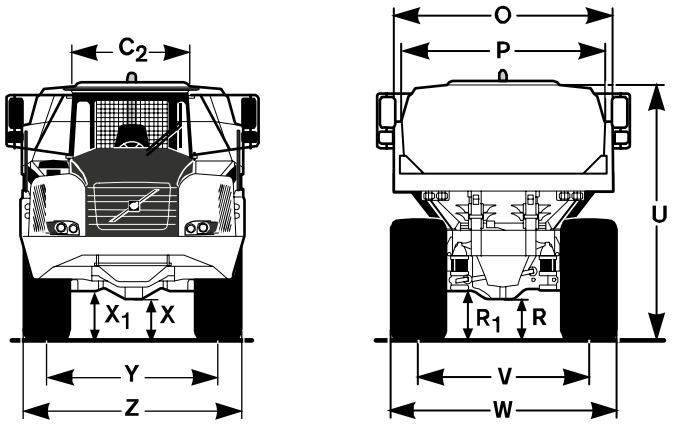
Dimensions apply to unloaded machine with tyres 23.5 R25		
Dimension		
Overall length	A	10220 mm (33 ft 6.4 in)
Overall length*	A*	10828 mm (35 ft 6.3 in)
Overall length, tractor unit	A_1	4954 mm (16 ft 3.0 in)
Overall length, trailer unit	A_2	5764 mm (18 ft 10.9 in)
Dump body length, standard body	B	5152 mm (16 ft 10.8 in)
Overall height across exhaust pipe	C	3453 mm (11 ft 3.9 in)
Height to roof of cab	C_1	3318 mm (10 ft 10.6 in)
Width across cab	C_2	1768 mm (5 ft 4.3 in)
Overall height over spill guard, lowered dump body	C_3	3760 mm (12 ft 4.0 in)
Overall height over spill guard, lowered dump body*	C_3	3590 mm (11 ft 9.3 in)
Overhang, towing eyes	D	2604 mm (8 ft 6.5 in)
Distance, front axle – steering centre	E	1210 mm (3 ft 11.6 in)
Wheel base, drive axles	F	4175 mm (13 ft 4.4 in)
Wheel base, bogie axles	G	1670 mm (5 ft 5.7 in)
Overhang, rear	H	1610 mm (5 ft 3.4 in)
Overhang, frame	I	608 mm (1 ft 11.9 in)
Loading height	J	2778 mm (9 ft 1.4 in)
Loading height*	J*	3484 mm (11 ft 5.2 in)
Height to dump body	K	2102 mm (6 ft 10.8 in)
Free tipping height	L	677 mm (2 ft 2.7 in)
Overall height, tipped dump body	M	6559 mm (21 ft 6.2 in)
Overall height, tipped dump body*	M*	6587 mm (21 ft 7.3 in)
Outer turning radius	N	8105 mm (26 ft 7.1 in)
Inner turning radius	N_1	4079 mm (13 ft 4.6 in)
Outside width, dump body	O	2700 mm (8 ft 10.3 in)
Outside width, dump body*	O*	2874 mm (9 ft 5.1 in)
Inside width, dump body	P	2490 mm (8 ft 2.0 in)
Lowest ground clearance, trailer unit	R	512 mm (1 ft 8.2 in)
Ground clearance axle, trailer unit	R_1	634 mm (2 ft 1.0 in)
Max. height, upper body plate dump body	U	3257 mm (10 ft 8.2 in)
Track width, trailer unit	V	2258 mm (7 ft 4.9 in)
Overall width, trailer unit	W	2859 mm (9 ft 4.6 in)
Lowest ground clearance, tractor unit	X	456 mm (1 ft 6.0 in)
Ground clearance axle, tractor unit	X_1	581 mm (1 ft 10.9 in)
Ground clearance, hitch	X_2	659 mm (2 ft 1.9 in)
Track width, tractor unit	Y	2258 mm (7 ft 4.9 in)
Overall width, tractor unit	Z	2859 mm (9 ft 4.6 in)
Approach angle	a_1	23.5°
Tipping angle	a_2	74°
Max. steering lock	a_3	45°

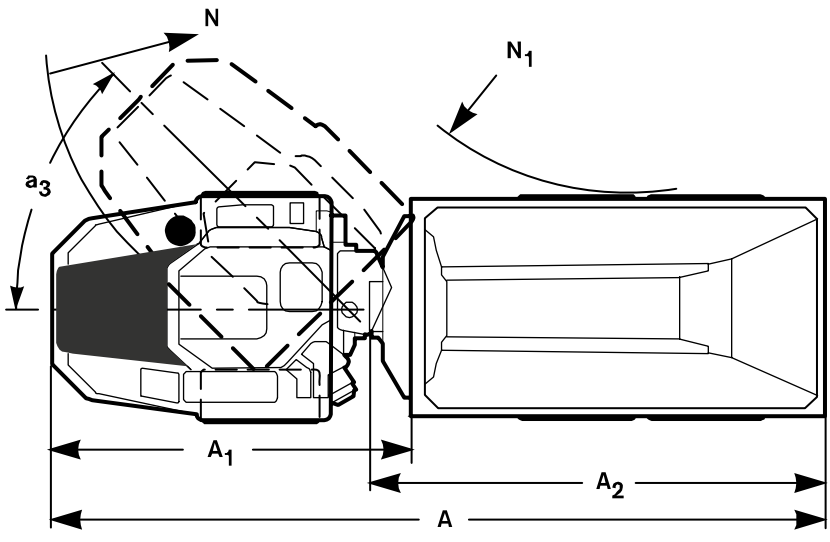
*) Applies to machines with body height extension for light material

Dimensional drawing, A30E

The letters in the illustrations refer to the text on the next page.







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Dimensional drawing, A30E

Dimensions apply to unloaded machine with tyres 750/65 R25		
Dimension		
Overall length	A	10297 mm (33 ft 9.4 in)
Overall length*	A*	10909 mm (35 ft 9.5 in)
Overall length, tractor unit	A_1	4954 mm (16 ft 3.0 in)
Overall length, trailer unit	A_2	6002 mm (19 ft 8.3 in)
Dump body length, standard body	B	5339 mm (17 ft 6.2 in)
Overall height across exhaust pipe	C	3453 mm (11 ft 3.9 in)
Height to roof of cab	C_1	3318 mm (10 ft 10.6 in)
Width across cab	C_2	1768 mm (5 ft 4.3 in)
Overall height over spill guard, lowered dump body	C_3	3834 mm (12 ft 6.9 in)
Overall height over spill guard, lowered dump body*	C_3	3718 mm (12 ft 2.4 in)
Overhang, towing eyes	D	2604 mm (8 ft 6.5 in)
Distance, front axle – steering centre	E	1210 mm (3 ft 11.6 in)
Wheel base, drive axles	F	4175 mm (13 ft 4.4 in)
Wheel base, bogie axles	G	1670 mm (5 ft 5.7 in)
Overhang, rear	H	1688 mm (5 ft 6.5 in)
Overhang, frame	I	608 mm (1 ft 11.9 in)
Loading height	J	2856 mm (9 ft 4.4 in)
Loading height*	J*	3610 mm (11 ft 10.1 in)
Height to dump body	K	2181 mm (7 ft 1.9 in)
Free tipping height	L	686 mm (2 ft 3.0 in)
Overall height, tipped dump body	M	6592 mm (21 ft 7.5 in)
Overall height, tipped dump body*	M*	6748 mm (22 ft 1.7 in)
Outer turning radius	N	8105 mm (26 ft 7.1 in)
Inner turning radius	N_1	4037 mm (13 ft 2.9 in)
Outside width, dump body	O	2900 mm (9 ft 6.2 in)
Outside width, dump body*	O*	3074 mm (10 ft 1.0 in)
Inside width, dump body	P	2706 mm (8 ft 10.5 in)
Lowest ground clearance, trailer unit	R	513 mm (1 ft 8.2 in)
Ground clearance axle, trailer unit	R_1	635 mm (2 ft 1.0 in)
Max. height, upper body plate dump body	U	3310 mm (10 ft 10.3 in)
Track width, trailer unit	V	2216 mm (7 ft 3.2 in)
Overall width, trailer unit	W	2941 mm (9 ft 7.8 in)
Lowest ground clearance, tractor unit	X	456 mm (1 ft 6.0 in)
Ground clearance axle, tractor unit	X_1	582 mm (1 ft 10.9 in)
Ground clearance, hitch	X_2	659 mm (2 ft 1.9 in)
Track width, tractor unit	Y	2216 mm (7 ft 3.2 in)
Overall width, tractor unit	Z	2941 mm (9 ft 7.8 in)
Approach angle	a_1	23.5°
Tipping angle	a_2	70°
Max. steering lock	a_3	45°

*) Applies to machines with body height extension for light material

Specifications, A25E 4x4 and A25ETR

The same specifications apply for A25E 4x4 and A25ETR as for A25E 6x6, but with the following supplements.

Axles

Front axle AH 64	Change volume 38 litres
Rear axle AH 71E	Change volume 52 litres

Tyres

Make	Size	Pressure
Good Year RL-2+	front 23,5 R25	375 kPa (54 psi)
Good Year RL-2+	rear 29,5 R25	525 kPa (76 psi)
Good Year LT-3A+	front 23,5 R25	375 kPa (54 psi)
Good Year LT-3A+	rear 29,5 R25	525 kPa (76 psi)
Good Year GP4B	front 23,5 R25	375 kPa (54 psi)
Good Year GP4B	rear 29,5 R25	525 kPa (76 psi)
Michelin XADN	front 23,5 R25	350 kPa (51 psi)
Michelin XADN	rear 29,5 R25	450 kPa (65 psi)
Michelin XADT	front 23,5 R25	350 kPa (51 psi)
Michelin XADT	rear 29,5 R25	450 kPa (65 psi)
Bridgestone VLT	front 23,5 R25	375 kPa (54 psi)
Bridgestone VLT	rear 29,5 R25	525 kPa (76 psi)
Bridgestone VLT-S	front 23,5 R25	375 kPa (54 psi)
Bridgestone VLT-S	rear 29,5 R25	525 kPa (76 psi)
Nokia Armor-Gard	turn-around wheels 11,00-20 16	900 kPa (131 psi)

Turn-around wheels A25ETR

Rim	8,00-20
Hoist cylinders	2 pcs. single stage, double-acting

Weight

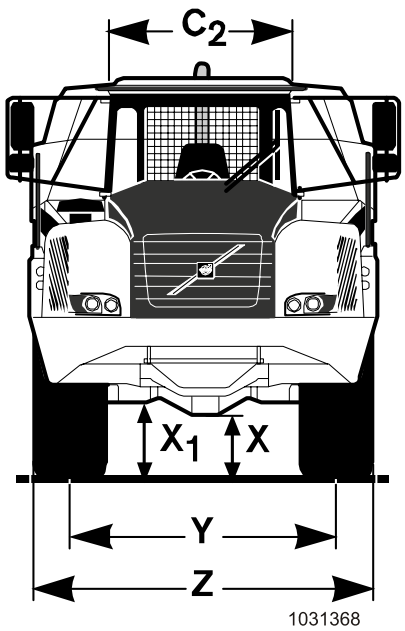
Unloaded machine	
Front axle	12400 kg (27337 lb)
Rear axle	7070 kg (15587 lb)
Total	19470 kg (42924 lb)
Machine with max. load	
Front axle	15450 kg (34061 lb)
Rear axle	26520 kg (58467 lb)
Total	41970 kg (92528 lb)
Turn-around wheel equipment A25ETR	850 kg (1874 lb)
Wear plate equipment	1200 kg (2646 lb)

Frame

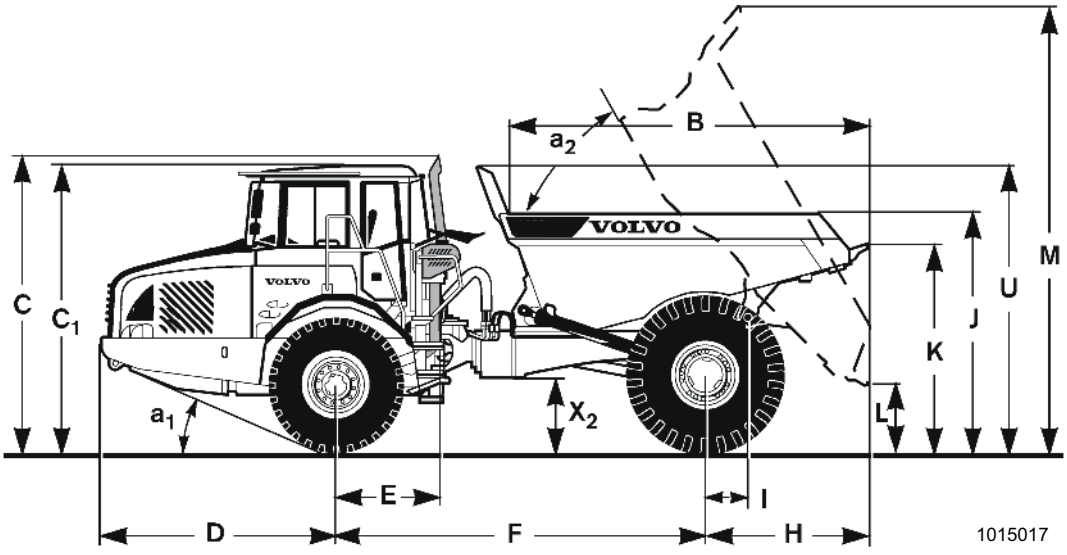
Tipping angle	59°

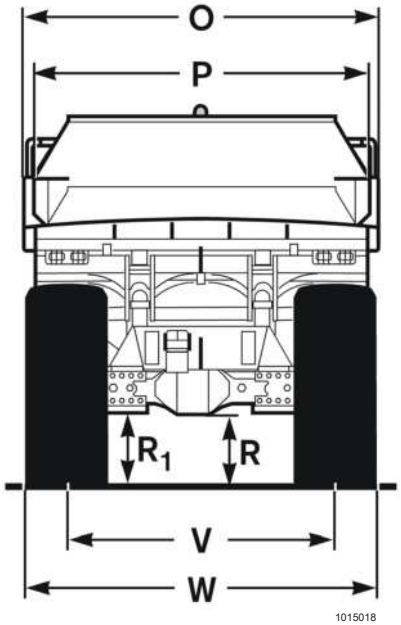
Dimensional drawing, A25E 4x4 and A25ETR

The dimensions apply to unloaded machine with wheel equipment front 23,5 R25*, rear 29,5 R 25 *
* (without turn-around wheels, A25ETR).

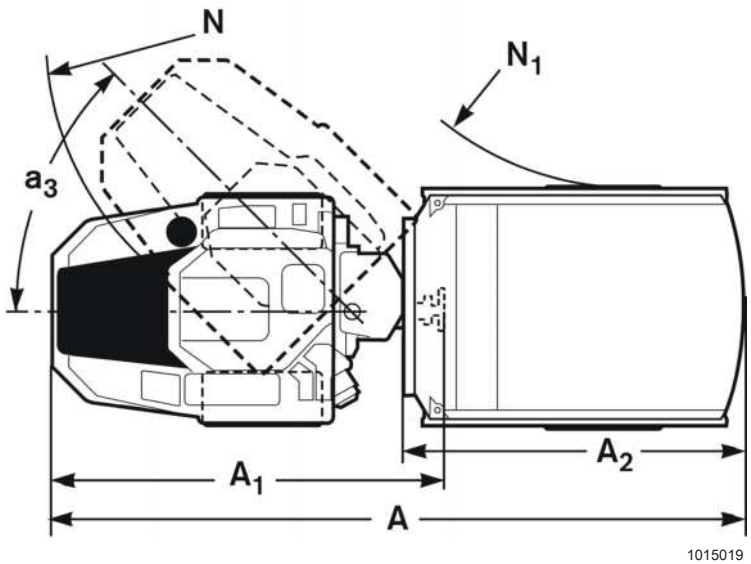


Dimensions		
Overall length	A	8939 mm (29 ft 3.9 in)
Overall length, tractor unit	A_1	4954 mm (16 ft 3.0 in)
Overall length, trailer unit	A_2	4558 mm (14 ft 11.4 in)
Overall length without rear tailgate	A_3	8736 mm (28 ft 7.9 in)
Dump body length, standard body	B	4219 mm (13 ft 10.1 in)
Overall height across exhaust pipe	C	3470 mm (11 ft 4.6 in)
Height to roof of cab	C_1*	3332 mm (10 ft 11.2 in)
Width across cab roof	C_2	1768 mm (5 ft 4.3 in)
Overhang, front	D	2766 mm (9 ft 0.9 in)
Overhang, front, to lashing eye	D_1	2605 mm (8 ft 6.6 in)
Distance, front axle – steering centre	E	1210 mm (3 ft 11.6 in)
Wheel base, drive axles	F	4254 mm (13 ft 11.5 in)
Overhang, rear	H	1919 mm (6 ft 3.6 in)
Overhang, bottom of dump body	I	495 mm (1 ft 7.5 in)
Loading height	J	2794 mm (9 ft 2.0 in)
Height to dump body	K	2416 mm (7 ft 11.1 in)
Free tipping height	L	773 mm (2 ft 6.4 in)





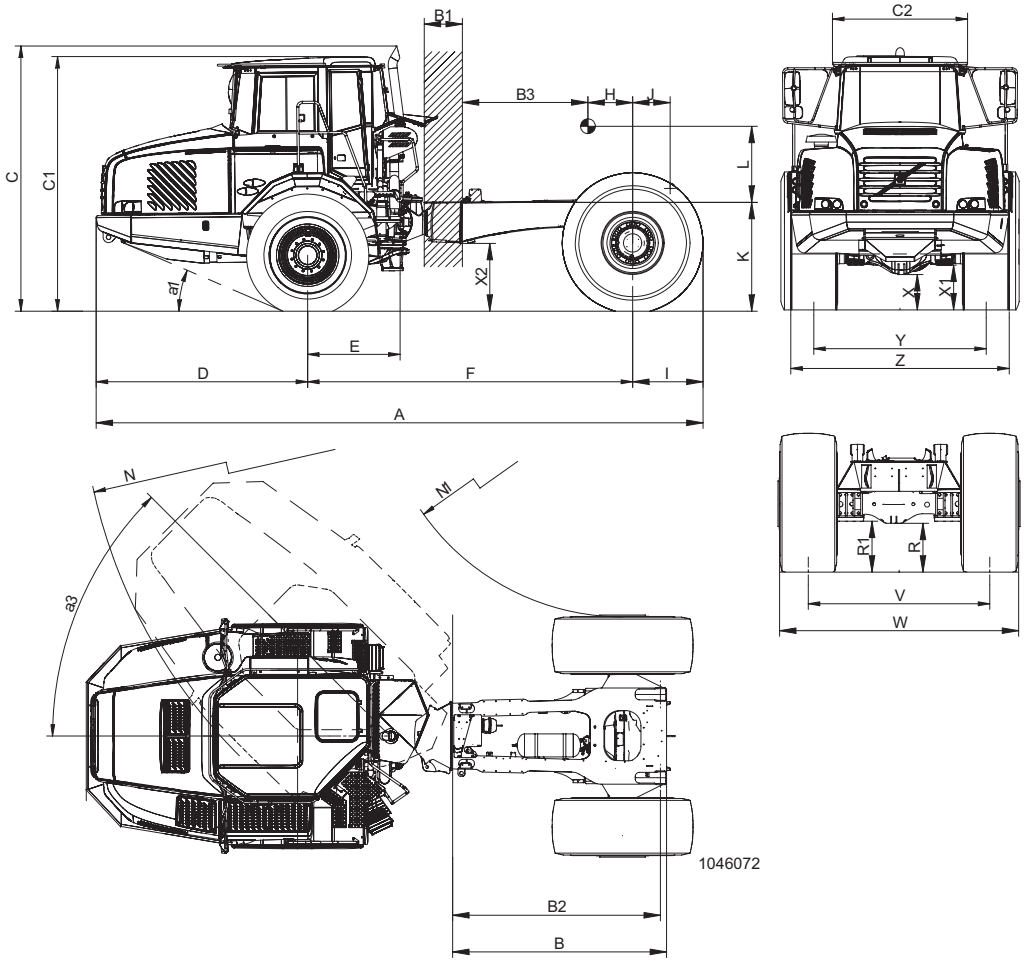
Dimensions		
Overall height, tipped dump body	M	5176 mm (16 ft 11.8 in)
Outer turning radius	N	7092 mm (23 ft 3.2 in)
Inner turning radius	N_1	3197 mm (10 ft 5.9 in)
Outside width, dump body	O	3130 mm (10 ft 3.2 in)
Inside width, dump body	P	2930 mm (9 ft 7.4 in)
Lowest ground clearance, trailer unit	R	637 mm (2 ft 1.1 in)
Ground clearance axle, trailer unit	R_1	664 mm (2 ft 2.1 in)
Max. height, upper body plate dump body	U	3317 mm (10 ft 10.6 in)
Track width, trailer unit	V	2374 mm (7 ft 9.5 in)
Overall width, trailer unit	W	3117 mm (10 ft 2.7 in)
Lowest ground clearance, tractor unit	X	461 mm (1 ft 6.1 in)
Ground clearance axle, tractor unit	X_1	585 mm (1 ft 11.0 in)
Ground clearance, hitch	X_2	886 mm (2 ft 10.9 in)
Track width, tractor unit	Y	2258 mm (7 ft 4.9 in)
Overall width, tractor unit	Z	2859 mm (9 ft 4.6 in)
Approach angle	a_1	23.1°
Tipping angle	a_2	59°
Max. steering lock	a_3	45°



Dimensional drawing, Hauler chassis

Hauler chassis A25E 4x4

The letters in the illustrations refer to the text on the next page.



Hauler chassis A25E 4x4

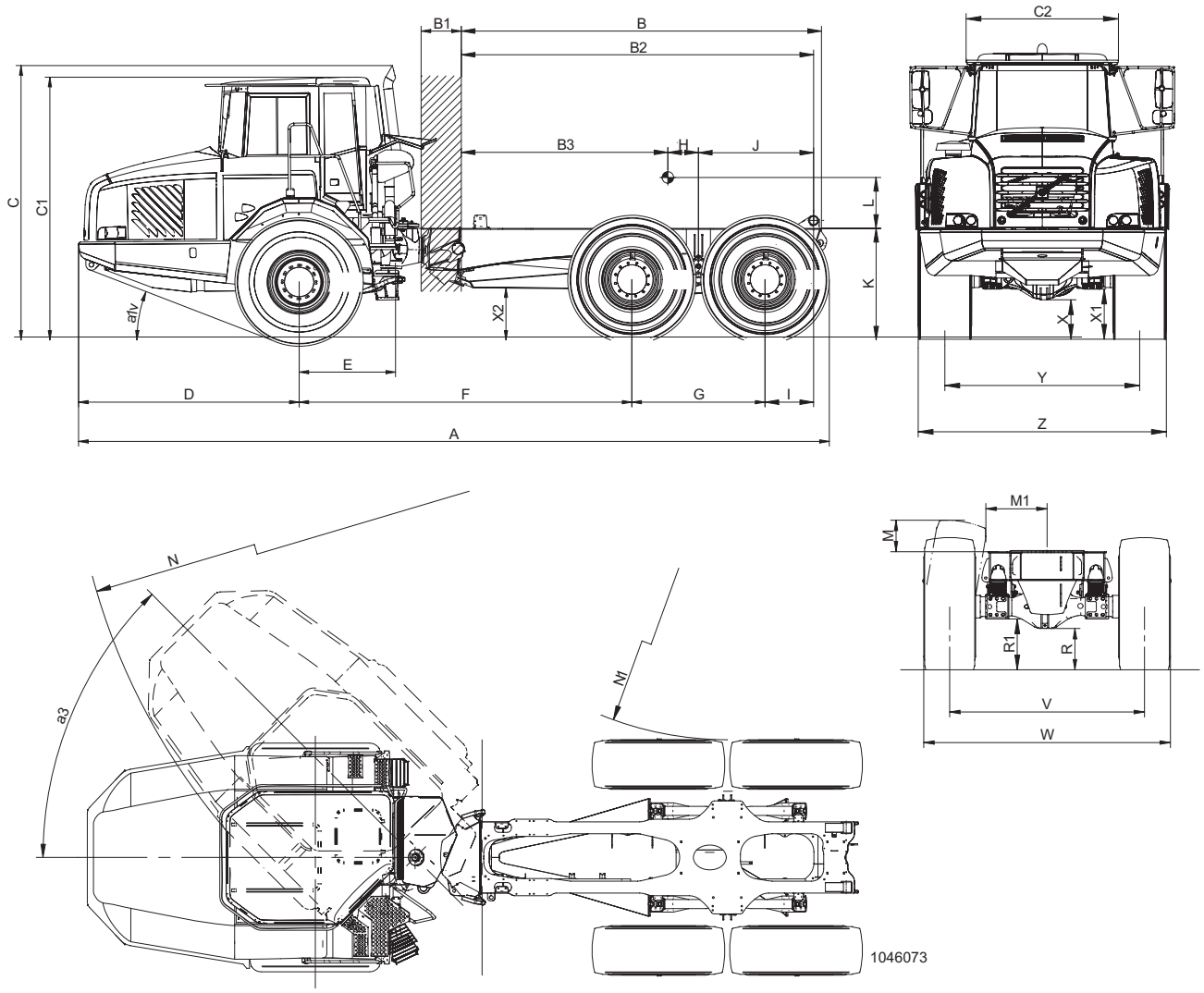
	Dimensions apply with tyres 23.5 R25
A	7941 mm (26 ft 0.6 in)
B	2800 mm (9 ft 2.2 in)
B1	500 mm (1 ft 7.7 in)
B2	2720 mm (8 ft 11.1 in)
B3	1639 mm (5 ft 4.5 in)
C	3470 mm (11 ft 4.6 in)
C1	3332 mm (10 ft 11.2 in)
C2	1768 mm (5 ft 9.6 in)
D	2766 mm (9 ft 0.9 in)
E	1210 mm (3 ft 11.6 in)
F	4254 mm (13 ft 11.5 in)
H	585 mm (1 ft 11 in)
I	921 mm (3 ft 0.3 in)
J	496 mm (1 ft 7.5 in)
K	1425 mm (4 ft 8.1 in)
L	995 mm (3 ft 3.2 in)
N	7092 mm (23 ft 3.2 in)
N1	3197 mm (10 ft 5.9 in)
R	637 mm (2 ft 1.1 in)
R1	664 mm (2 ft 2.1 in)
V	2374 mm (7 ft 9.5 in)
W	3117 mm (10 ft 2.8 in)
X	461 mm (1 ft 6.1 in)
X1	585 mm (1 ft 11 in)
X2	585 mm (1 ft 0.6 in)
Y	2258 mm (26 ft 0.6 in)
Z	2859 mm (26 ft 0.6 in)
a1	23.5°
a3	45°

	Service weight	Total weight
Front axle	11800 kg (26010 lb)	15650 kg (34500 lb)
Rear axle	3705 kg (8168 lb)	27820 kg (61330 lb)
Total	15505 kg (34180 lb)	43470 kg (95830 lb)
Load capacity incl. superstructure	27965 kg (61650 lb)	–

200 Dimensional drawing, Hauler chassis

Standard Hauler chassis

The letters in the illustrations refer to the text on the next page.



Standard Hauler chassis

	A25E Dimensions apply with tyres 23.5 R25	A30E Dimensions apply with tyres 750/65 R25
A	9410 mm (30 ft 10.4 in)	9410 mm (30 ft 10.4 in)
B	4520 mm (14 ft 10 in)	4520 mm (14 ft 10 in)
B1*	500 mm (1 ft 7.7 in)	500 mm (1 ft 7.7 in)
B2	4420 mm (14 ft 6 in)	4420 mm (14 ft 6 in)
B3	2554 mm (8 ft 4.55 in)	2517 mm (8 ft 3.1 in)
C	3428 mm (11 ft 3in)	3428 mm (11 ft 3in)
C1	3318 mm (10 ft 10.6 in)	3318 mm (10 ft 10.6 in)
C2	1768 mm (5 ft 4.3 in)	1768 mm (5 ft 4.3 in)
D	2764 mm (9 ft 0.82 in)	2764 mm (9 ft 0.82 in)
E	1210 mm (3 ft 11.6 in)	1210 mm (3 ft 11.6 in)
F	4175 mm (13 ft 4.4 in)	4175 mm (13 ft 4.4 in)
G	1670 mm (5 ft 5.7 in)	1670 mm (5 ft 5.7 in)
H	422 mm (1 ft 4.62 in)	459 mm (1 ft 6.1 in)
I	608 mm (1 ft 11.9 in)	608 mm (1 ft 11.9 in)
J	1444 mm (4 ft 8.86 in)	1444 mm (4 ft 8.86 in)
K	1400 mm (4 ft 7.12 in)	1400 mm (4 ft 7.12 in)
L	940 mm (3 ft 1.01 in)	1005 mm (3 ft 3.56 in)
M	365 mm (1 ft 2.38 in)	380 mm (1 ft 2.96 in)
M1	720 mm (2 ft 4.34 in)	615 mm (2 ft 0.22 in)
N	8105 mm (26 ft 7.1 in)	8105 mm (26 ft 7.1 in)
N1	4079 mm (13 ft 4.56 in)	4037 mm (13 ft 2.88 in)
R	512 mm (1 ft 8.16 in)	513 mm (1 ft 8.2 in)
R1	634 mm (2 ft 0.96 in)	635 mm (2 ft 1.0 in)
V	2258 mm (7 ft 4.87 in)	2216 mm (7 ft 3.24 in)
W	2859 mm (9 ft 4.56 in)	2941 mm (9 ft 7.8 in)
X	456 mm (1 ft 6.0 in)	456 mm (1 ft 6.0 in)
X1	581 mm (1 ft 10.87 in)	582 mm (1 ft 10.9 in)
X2	659 mm (2 ft 1.9 in)	659 mm (2 ft 1.9 in)
Y	2258 mm (7 ft 4.87 in)	2216 mm (7 ft 3.2 in)
Z	2859 mm (9 ft 4.56 in)	2941 mm (9 ft 7.8 in)
a1	23.5°	23.5°
a3	45°	45°

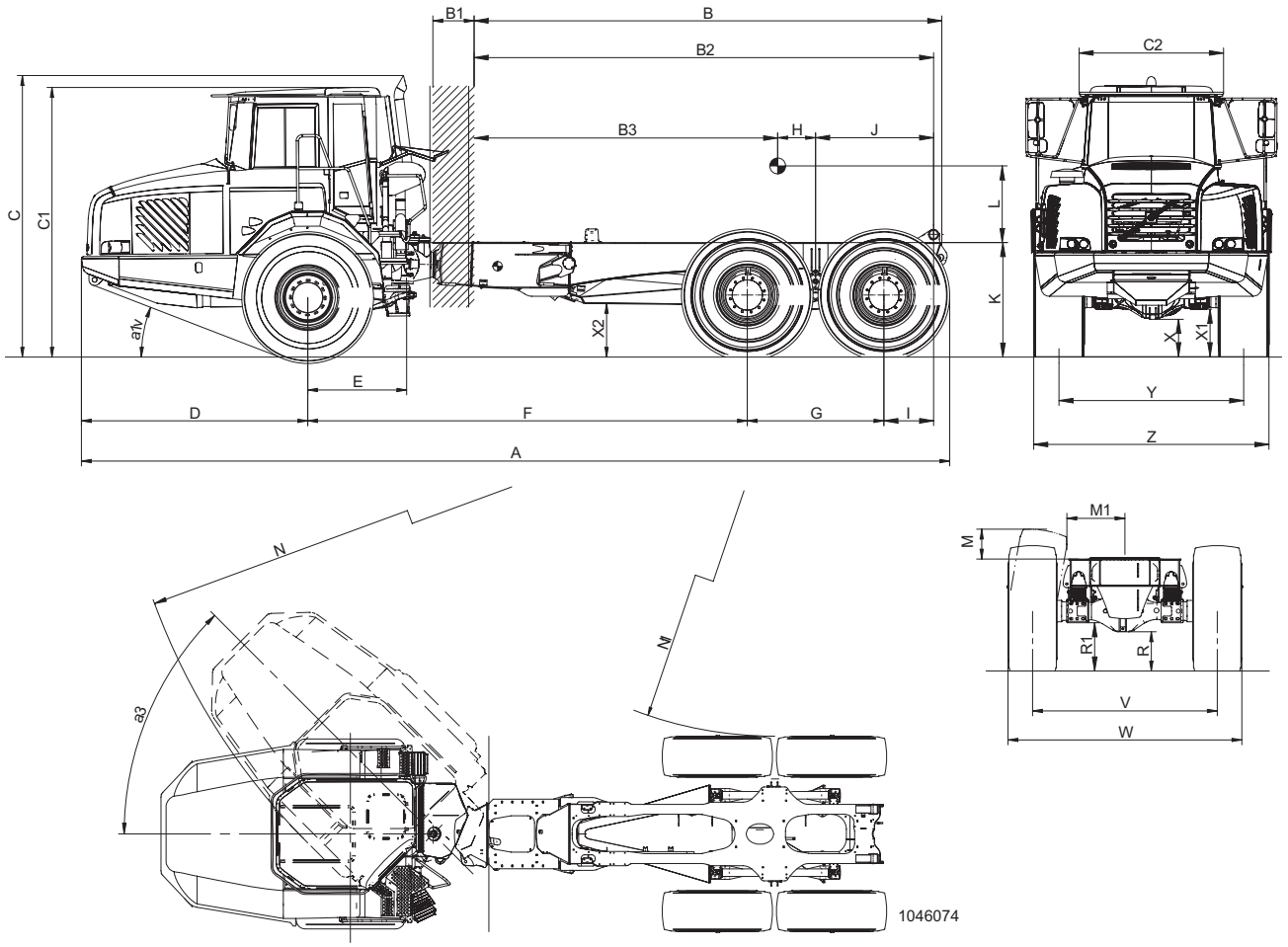
* free zone, superstructure not permitted within the area, applies to max. width.

	A25E		A30E	
	Service weight	**Total weight**	**Service weight**	**Total weight**
Front axle	11798 kg (26010 lb)	14140 kg (31170 lb)	12028 kg (26520 lb)	14990 kg (33050 lb)
Combined rear axles	5985 kg (13190 lb)	31420 kg (69270 lb)	6683 kg (14730 lb)	36070 kg (79520 lb)
Total	17783 kg (39200 lb)	45560 kg (100400 lb)	18711 kg (41250 lb)	51060 kg (112600 lb)
Load capacity incl. superstructure	27777 kg (61240 lb)	–	32349 kg (71320 lb)	–

202 Dimensional drawing, Hauler chassis

Standard Hauler chassis with 1200 mm frame extension

The letters in the illustrations refer to the text on the next page.



Standard Hauler chassis with 1200 mm frame extension

	A25E **Dimensions apply with tyres 23.5 R25**	**A30E** **Dimensions apply with tyres 750/65 R25**
A	10620 mm (34 ft 10.1 in)	10620 mm (34 ft 10.1 in)
B	5720 mm (17 ft 3.5 in)	5720 mm (17 ft 3.5 in)
B1*	500 mm (1 ft 7.7 in)	500 mm (1 ft 7.7 in)
B2	5620 mm (18 ft 5.3 in)	5620 mm (18 ft 5.3 in)
B3	3692 mm (12 ft 1.32 in)	3713 mm (12 ft 2.2 in)
C	3428 mm (11 ft 3 in)	3428 mm (11 ft 3 in)
C1	3318 mm (10 ft 10.7 in)	3318 mm (10 ft 10.7 in)
C2	1768 mm (5 ft 9.61 in)	1768 mm (5 ft 9.61 in)
D	2764 mm (9 ft 0.82 in)	2764 mm (9 ft 0.82 in)
E	1210 mm (3 ft 11.64 in)	1210 mm (3 ft 11.64 in)
F	5375 mm (17 ft 7.6 in)	5375 mm (17 ft 7.6 in)
G	1670 mm (5 ft 5.75 in)	1670 mm (5 ft 5.75 in)
H	484 mm (1 ft 7.1 in)	539 mm (1 ft 9.22 in)
I	608 mm (1 ft 11.94 in)	608 mm (1 ft 11.94 in)
J	1444 mm (4 ft 8.86 in)	1444 mm (4 ft 8.86 in)
K	1400 mm (4 ft 7.12 in)	1400 mm (4 ft 7.12 in)
L	940 mm (3 ft 1.01 in)	1005 mm (3 ft 3.56 in)
M	365 mm (1 ft 2.38 in)	380 mm (1 ft 2.96 in)
M1	720 mm (2 ft 4.34 in)	615 mm (2 ft 0.22 in)
N	9670 mm (31 ft 8.76 in)	9711 mm (31 ft 10.32 in)
N1	5270 mm (17 ft 3.48 in)	5229 mm (17 ft 1.92 in)
R	512 mm (1 ft 8.16 in)	513 mm (1 ft 8.2 in)
R1	634 mm (2 ft 0.96 in)	635 mm (2 ft 1.0 in)
V	2258 mm (7 ft 4.87 in)	2216 mm (7 ft 3.24 in)
W	2859 mm (9 ft 4.56 in)	2941 mm (9 ft 7.8 in)
X	456 mm (1 ft 6.0 in)	456 mm (1 ft 6.0 in)
X1	581 mm (1 ft 10.87 in)	582 mm (1 ft 10.9 in)
X2	659 mm (2 ft 1.9 in)	659 mm (2 ft 1.9 in)
Y	2258 mm (7 ft 4.87 in)	2216 mm (7 ft 3.2 in)
Z	2859 mm (9 ft 4.56 in)	2941 mm (9 ft 7.8 in)
a1	23.5°	23.5°
a3	45°	45°

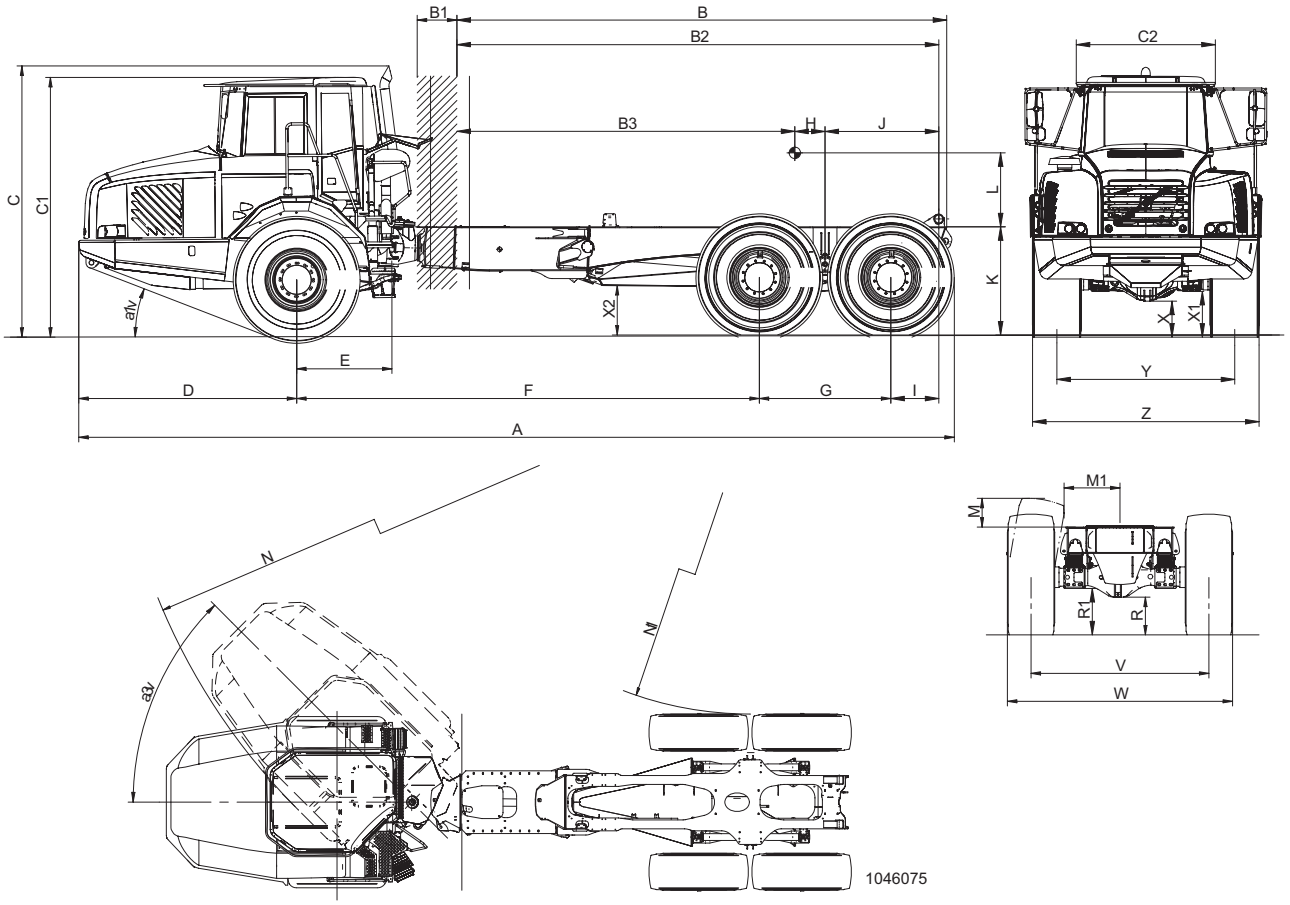
* free zone, superstructure not permitted within the area, applies to max. width.

	A25E		**A30E**	
	Service weight	**Total weight**	**Service weight**	**Total weight**
Front axle	12020 kg (26500 lb)	14140 kg (31170 lb)	12689 kg (27970 lb)	14990 kg (33050 lb)
Combined rear axles	6319 kg (13930 lb)	31420 kg (69270 lb)	6569 kg (14480 lb)	36070 kg (79520 lb)
Total	18339 kg (40430 lb)	45560 kg (100200 lb)	19267 kg (42480 lb)	51060 kg (112600 lb)
Load capacity incl. superstructure	27221 kg (60010 lb)	–	31793 kg (70090 lb)	–

204 Dimensional drawing, Hauler chassis

Standard Hauler chassis with 1700 mm frame extension

The letters in the illustrations refer to the text on the next page.



Standard Hauler chassis with 1700 mm frame extension

	A25E Dimensions apply with tyres 23.5 R25	A30E Dimensions apply with tyres 750/65 R25
A	11120 mm (36 ft 5.76 in)	11120 mm (36 ft 5.76 in)
B	6220 mm (20 ft 4.92 in)	6220 mm (20 ft 4.92 in)
B1*	500 mm (1 ft 7.7 in)	500 mm (1 ft 7.7 in)
B2	6120 mm (20 ft 0.96 in)	6120 mm (20 ft 0.96 in)
B3	4169 mm (13 ft 8.16 in)	4105 mm (13 ft 5.64 in)
C	3428 mm (11 ft 3 in)	3428 mm (11 ft 3 in)
C1	3318 mm (10 ft 10.68 in)	3318 mm (10 ft 10.68 in)
C2	1768 mm (5 ft 9.61 in)	1768 mm (5 ft 9.61 in)
D	2764 mm (9 ft 0.82 in)	2764 mm (9 ft 0.82 in)
E	1210 mm (3 ft 11.6 in)	1210 mm (3 ft 11.6 in)
F	5875 mm (19 ft 3.24 in)	5875 mm (19 ft 3.24 in)
G	1670 mm (5 ft 5.75 in)	1670 mm (5 ft 5.75 in)
H	507 mm (1 ft 7.96 in)	571 mm (1 ft 10.48 in)
I	608 mm (1 ft 11.94 in)	608 mm (1 ft 11.94 in)
J	1444 mm (4 ft 8.86 in)	1444 mm (4 ft 8.86 in)
K	1400 mm (4 ft 7.12 in)	1400 mm (4 ft 7.12 in)
L	940 mm (3 ft 1.01 in)	1005 mm (3 ft 3.56 in)
M	365 mm (1 ft 2.38 in)	380 mm (1 ft 2.96 in)
M1	720 mm (2 ft 4.34 in)	615 mm (2 ft 0.22 in)
N	10360 mm (33 ft 11.9 in)	10401 mm (34 ft 1.44 in)
N1	5770 mm (18 ft 11.16 in)	5729 mm (18 ft 9.6 in)
R	512 mm (1 ft 8.16 in)	513 mm (1 ft 8.2 in)
R1	634 mm (2 ft 0.96 in)	635 mm (2 ft 1.0 in)
V	2258 mm (7 ft 4.87 in)	2216 mm (7 ft 3.24 in)
W	2859 mm (9 ft 4.56 in)	2941 mm (9 ft 7.8 in)
X	456 mm (1 ft 6.0 in)	456 mm (1 ft 6.0 in)
X1	581 mm (1 ft 10.87 in)	582 mm (1 ft 10.9 in)
X2	659 mm (2 ft 1.9 in)	659 mm (2 ft 1.9 in)
Y	2258 mm (7 ft 4.87 in)	2216 mm (7 ft 3.2 in)
Z	2859 mm (9 ft 4.56 in)	2941 mm (9 ft 7.8 in)
a1	23.5°	23.5°
a3	45°	45°

* free zone, superstructure not permitted within the area, applies to max. width.

	A25E		A30E	
	Service weight	**Total weight**	**Service weight**	**Total weight**
Front axle	12096 kg (26670 lb)	14140 kg (31170 lb)	12914 kg (28470 lb)	14990 kg (33050 lb)
Combined rear axles	6412 kg (14140 lb)	31420 kg (69270 lb)	6522 kg (14380 lb)	36070 kg (79520 lb)
Total	18508 kg (40800 lb)	45560 kg (100400 lb)	19436 kg (42850 lb)	51060 kg (112600 lb)
Load capacity incl. superstructure	27052 kg (59640 lb)	–	31624 kg (69720 lb)	–

Service history

Service 100 hours		Type of service	Signature and stamp
Date	Hours	☐ Warranty Inspection	

Service 500 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 1000 hours		Type of service	Signature and stamp
Date	Hours	☐ Warranty Inspection ☐ Service and maintenance	

Service 1500 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 2000 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 2500 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 3000 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 3500 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 4000 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 4500 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 5000 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 5500 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 6000 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 6500 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 7000 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 7500 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 8000 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 8500 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 9000 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 9500 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Service 10000 hours		Type of service	Signature and stamp
Date	Hours	☐ Service and maintenance	

Alphabetical index

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