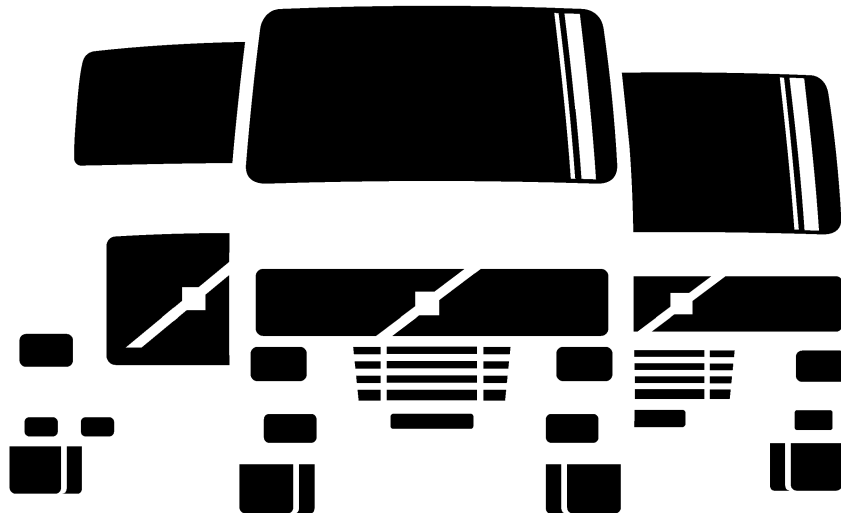


Service Manual Trucks

Group **00**

Release **02**

Dismantling manual for Volvo Trucks



Foreword

The descriptions and service procedures contained in this manual are based on designs and methods studies carried out up to January 2005.

The products are under continuous development. Vehicles and components produced after the above date may therefore have different specifications and repair methods. When this is judged to have a significant bearing on this manual, supplementary service bulletins will be issued to cover the changes.

The new edition of this manual will update the changes.

In service procedures where the title incorporates an operation number, this is a reference to V.S.T. (Volvo Standard Times).

Service procedures which do not include an operation number in the title are for general information and no reference is made to V.S.T.

The following levels of observations, cautions and warnings are used in this Service Documentation:

Note: Indicates a procedure, practice, or condition that must be followed in order to have the vehicle or component function in the manner intended.

Caution: Indicates an unsafe practice where damage to the product could occur.

Warning: Indicates an unsafe practice where personal injury or severe damage to the product could occur.

Danger: Indicates an unsafe practice where serious personal injury or death could occur.

Volvo Truck Corporation
Göteborg, Sweden

Order number: 20 068517

© 2005 Volvo Truck Corporation, Göteborg, Sweden

All rights reserved. No part of this publication may be reproduced, stored in retrieval system, or transmitted in any forms by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of Volvo Truck Corporation.

ENG20676

Disassembly instructions

Contents

“Introduction”	page 2
“Volvo and the environment”	page 3
“The Volvo environmental policy”	page 3
“Legislation, protection and safety regulations”	page 3
“Recycling”	page 4
“Labelling”	page 4
“Hazardous waste”	page 4
“Chemicals and fluids”	page 5
“Plastics”	page 5
“Metals”	page 5
“Handling hazardous waste”	page 5
“Equipment”	page 7
“General recommendations and preparations”	page 7
“Emptying of components”	page 8
“Disassembly instructions”	page 17

Introduction

Volvo's three core values are quality, safety and respect for the environment.

This manual has been prepared as one element of this respect for the environment, to provide general guidelines and information for the dismantling of a Volvo truck.

The aim is to give comprehensive information on how dismantling should take place, whilst leaving a certain amount of flexibility to permit a workshop to devise its own methods and procedures for the work of dismantling, and also to ensure that harmful waste and other material that could cause harm to people or the environment is handled in an environmentally correct manner.

Correct handling also reduces costs and makes best use of the economic value of components and material.

This information is of a general nature because this manual is applicable to different types of truck, which means that certain details may vary between different truck models. However the important information still applies.

For more detailed information and working instructions refer to the other service information in the respective groups from 1 to 9.

Volvo and the environment

Respect for the environment is, along with safety and quality, one of the three Volvo core values.

Taking care of the environment expresses the concern of the Volvo Group to actively improve its environmental work and to reduce the effect on the environment of the products and processes involved in its business operations.

The Volvo environmental policy

The environmental policy of the Volvo Group is built up around the following strategies:

- **Overview**

The company's products are placed in a larger context where efforts are concentrated on reducing the effects on the environment of the products and processes in the business at every stage of the life cycle, from the original ideas to dismantling and waste handling. Customers, society in general, distributors and subcontractors are also included in this chain.

- **Continuous improvement**

Environmental work shall be integrated and followed up in all respects to maintain continual improvement.

This is expressed in the Volvo environmental policy, that shall permeate through, not only vehicle manufacture, but the whole life cycle of each vehicle, including the dismantling process and disposal of the remains.

- **Technical development**

The requirement for care of the environment shall be achieved through active research and development within such areas as transport, legislation and reduction of the effects on the environment of products, also aiming to reduce the use of environmentally harmful material.

- **Efficient use of resources**

The whole life cycle shall be taken into account in respect of products and processes in order to utilise resources as efficiently as possible and to facilitate waste handling.

Legislation, protection and safety regulations

All dismantling operations shall take place in accordance with applicable national legislation and ordinances in the areas of the environment, health and worker protection. This includes all work, handling, sorting, transportation, storage and other treatment of components, chemicals, filters and other material.

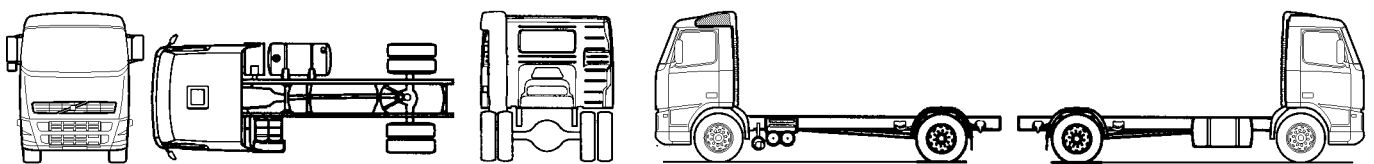
Respect shall be shown for land, surface water and sewage to avoid their pollution. Harmful substances and dangerous waste shall be handled and treated in well ventilated spaces in accordance with legislation and regulations.

Local safety instructions shall be familiar to and respected by the staff.

Environmentally harmful waste shall be transported by a carrier that has been approved by the authorities.

Volvo's own white, gray and black chemical lists shall be followed.

The work of dismantling involves contact with many substances that can pose risks to both the environment and health. It is therefore necessary to have the right knowledge, equipment and preparations in order to minimise these risks and to create the conditions for a safe job.



T1007905

Recycling

Trucks are manufactured on the premise that as much as possible of their material can be recycled, and more than 90% of today's trucks consist of recyclable material.

The easiest material to recycle is metals, but in certain cases the shape and installation of components can hinder the recycling process.

During truck development the LCA method (Life Cycle Analysis) is used to evaluate whether certain proposed materials should be used or avoided. Some types of material are completely forbidden within Volvo, whilst others may be used in only limited quantities.

Material can be recycled in different ways:

- **Component recycling**
Removed components used as second-hand spare parts, such as engines and gearboxes.
- **Material recycling**
Material recycling means that the material is reclaimed and used again, such as glass recycling.
- **Energy recovery**
Energy reclamation means that the stored energy in waste is utilised. Various kinds of energy can be extracted by burning detail parts and components.
- **Disposal by dumping**
If waste cannot be recycled or reclaimed, disposal by dumping may be an alternative, i.e. detail parts that cannot be recycled in any way may be dumped.

Labelling

During the work of dismantling plastics, metal, chemicals, fluids and other material should be sorted and taken care of in a suitable way in accordance with local legislation and regulations. Material that is labelled shall be handled in the prescribed manner. To facilitate the identification and sorting of various materials Volvo has issued a number of standards for labelling of material.

Rubber

Rubber is labelled in accordance with STD 5052,21 "Colour marking of rubber articles". This standard also contains regulations for labelling rubber hoses with text.

Plastics

STD 103-0002 "Material identification and labelling of plastic articles" is an application of European legislation concerning the definition of coding standards for components and material in vehicles in accordance with the European Parliament and Council Directive 2000/53/EC on end-of life vehicles.

Metals

Metals are labelled in accordance with STD 5052,11 "Labelling of metallic objects".

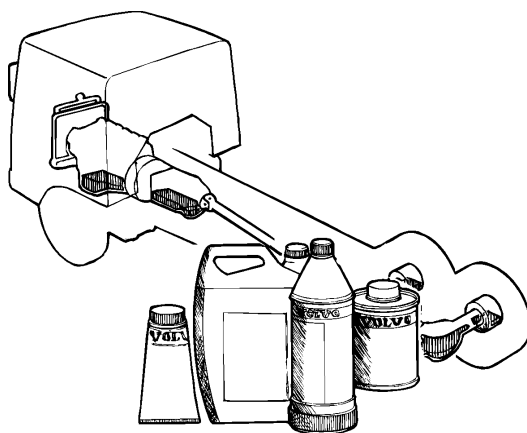
Hazardous waste

A truck contains a number of different materials and chemicals that can have a negative effect on the surrounding environment and on human health, if not handled properly.

All dismantled products must be dealt with in accordance with local legislation and regulations.

Particular respect shall be shown in the case of contact with such material, fluids and chemicals.

Refer to the Volvo "Dealer Operating Standard" for more detailed information.



T1006282

Chemicals and fluids

Fluids and other chemicals that can be found in Volvo trucks include engine and transmission oils, brake fluid, lubricating grease, fuel, clutch fluid, coolant, washer fluid, glycol, sulphuric acid, urea solution and refrigerant.

All chemicals and fluids shall be drained or removed from the vehicle that is to be scrapped.

Plastics

Plastics can be divided into two groups: thermosetting plastics and thermoplastic resins.

Thermosetting plastics are in general difficult to recycle and can only be recycled as filling material or as fuel. These plastics have a low energy value.

Metals

The use of certain metals leads to their accumulation in the biosphere, namely many poisonous metals such as lead and mercury that can be present in batteries, lamps and electronic equipment. Most of the weight of a truck, about 90%, consists of the metals iron and steel, but also present are aluminium, brass, copper, nickel, tin, bronze and molybdenum in smaller amounts.

Handling hazardous waste

Chemicals and fluids

- **Oil**

After draining can be cleaned and re-used, or burned for energy reclamation.

Make sure that no oil is poured out into drains! This can cause problems for waste water purifying plants. Contact the local authority for information. Ensure that oil is not polluted by other fluids such as water, coolant or solvents, as polluted oil is much more difficult and expensive to recycle.

- **Solvents**

Solvents can be cleaned and re-used.

Never pour solvents into drains, this is deemed hazardous waste in most countries. Never pour solvents on to the ground as this pollutes the both the land and its ground water.

- **Urea solution**

Urea solution cannot be reused.

Urea solution must not be poured in to drains, it must be collected in a separate container. Do not allow urea solution to come into contact with other chemicals. Spills must be wiped up with absorbing agent.

The fluids from a truck can be reclaimed for either their material or energy content.

For information concerning oil and fluid volumes refer to the service information "Lubrication service and oil changing", Group 175.

Thermoplastic resins can be recycled by melting them down.

Plastics shall only be burned in approved incineration stations!

Metals are the materials that are normally the easiest to recycle. Most metals can be recycled but not have their energy reclaimed.

Iron and steel should be separated from other metals, such as aluminium, copper and brass.

- **Coolant**

Coolant can be recycled.

The fluid is toxic and can contain heavy metals, so it should never be poured on to the ground, into drains or watercourses.

- **Brake fluid**

Brake fluid can be recycled, or burned for energy reclamation.

Never pour brake fluid into drains! Brake fluid should not be polluted if it is to be recycled, this makes the process much more expensive.

- **Refrigerant**

Refrigerant can be recycled, but if this is not possible, it should be taken in hand by a certified refrigerant disposal company.

- **Glycol**

Can be recycled after purification by distillation.

- **Glue**

Cannot be recycled. In addition its presence can reduce the chances of recycling other material.

- **Washer fluid**

Can be filtered and re-used.

- **Sulphuric acid**

Can be purified and re-used.

Other material

- **Batteries**

Truck batteries shall be taken care of by an authorised waste disposal company. Smaller or other types of battery contain valuable metals that can be reclaimed and re-used.

In most countries it is illegal to dump batteries, as this can cause serious harm to humans and animals. Lead is highly toxic and accumulates in the body over time. Sulphuric acid is extremely corrosive.

- **Air bags and belt tensioners**

Air bags and belt tensioners must be dealt with in accordance with local legislation and regulations.



CAUTION

Air bags and belt tensioners contain explosive substances and must always be handled with extreme care. Refer also to Volvo Policy and "Safe Working Practices for SRS-airbag".

- **Oil filters and other filters**

Filters can be efficiently re-used after draining, reclaiming the energy from paper and rubber parts, and recycling clean metal.

Filters contain oil and other harmful substances. Check local legislation and regulations for handling these.

- **Laminated glass**

The glass can be recycled.

- **Electrical and electronic waste**

These components contain valuable and recycleable components, along with a number of chemicals (PCB, heavy metals, etc.) with characteristics that are environmentally harmful. Other parts can be burned to reclaim energy.

Never dump hazardous electrical and electronic waste.

- **Fluorescent lamps and tubes, components containing mercury and switches.**

These components shall be taken care of by an authorised waste disposal company.

Never dump this type of component as rubbish, as they are dangerous to humans and animals. In most countries this is illegal.

- **Gas discharge lamps**

Gas discharge lamps contain mercury and are hazardous waste. They must not be dumped as rubbish. These components shall be taken care of by an authorised waste disposal company.

- **Brake discs and drums**

These parts can be re-used and the metal parts can be recycled.

In earlier truck models these components may contain asbestos. Take precautions to minimise the amount of asbestos dust being spread while working.

- **Rubber**

Can be difficult to reclaim and also may contain chlorine or fluorine. Mainly in truck tyres, that can be ground down and re-used as raw material for new tyres, or burned to reclaim the energy.

Rubber may only be burned in approved incineration plants, as the smoke can cause serious air pollution.

- **Wood products**

Can be recycled, or burned for energy reclamation.

- **Paper**

Paper, cardboard and paperboard should be sorted and recycled, but burning to reclaim energy is also an alternative.

- **Paint**

Waste paint may be hazardous as many paints contain hazardous metals such as lead, cadmium, barium and chrome.

Equipment

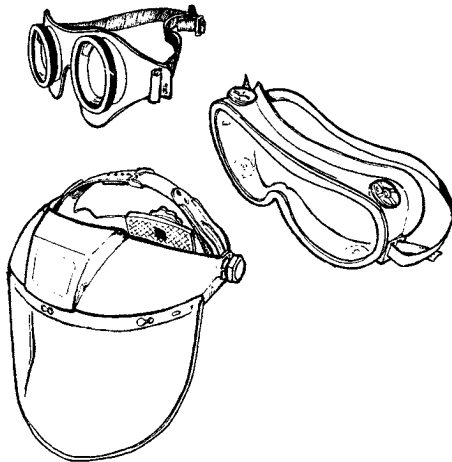
Local

The work of dismantling should be carried out in well ventilated premises that are equipped in accordance with health and safety protection and other legislation and regulations.

Equipment for fire extinguishing, first aid and eye washing should be accessible in the premises!

Protective equipment

At various times during dismantling personal protective equipment is to be used when necessary. This includes protective clothing and footwear, safety goggles, gloves, ear defenders, helmets and face masks.

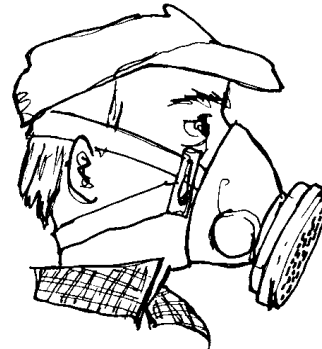


T1006289

Tools

It is important that the work of dismantling is carried out using suitable tools from both the environmental and worker safety aspects. Volvo therefore recommends that dismantling workshops invest in this type of equipment.

Among the tools that could be highly suitable for dismantling are: equipment for draining refrigerant, cutting torches, welding or similar equipment, lifting gear, stands, crowbars, adjustable wrenches, hammers and nut drivers.



T1006290

General recommendations and preparations

It can be good to bear the following recommendations in mind when dismantling:

- Assess first which parts of the truck can be recycled or reclaimed, and use this as a starting point when determining the dismantling procedure.
- Before dismantling begins the pressure in the SCR system must be released and the urea solution emptied out. This process begins automatically when the engine is switched off. Wait 2 minutes after switching off the engine before commencing any work on the vehicle.

Note: If the electrical power is switched off or interrupted in any other way before the emptying procedure is completed, for example with the ADR, main circuit breaker or by removing a battery pole cable, the SCR system will not be emptied and may continue to retain pressure!

- Urea is highly corrosive to metal and can damage electrical connectors. If urea solution comes into contact with disconnected electrical connectors, the urea solution spreads rapidly through the wiring and oxidises the metal.
- Before commencing dismantling, switch off the electric current and disconnect the batteries. Then begin by removing the SRS system.

- Release the pressure in a controlled way! Drive the air suspension as low as possible before commencing dismantling!
- Note that it is very important to separate and sort the various fluids, plastics and metals throughout the entire process.
- If the vehicle is very dirty it should first be washed.
- Lift off any additional superstructure before commencing dismantling of the truck.
- Empty loose parts out of the cab before starting to dismantle.
- Put removed items out of the way while the work is going on, so that they do not get in the way and pose a risk to the work.
As cables and material is released or dismantled, these should be cleared away and sorted.
- When removing pressure hoses, note that there is a risk that they may still be pressurised. Do not release the whole hose at once, first loosen it carefully and let any oil or air it may contain leak out first. Then release the whole hose.

Emptying of components

Components should be emptied as much as possible before dismantling commences.

Some drain locations may become easier to access later during the work.

See below for the components that are involved, although these are not in any particular order.

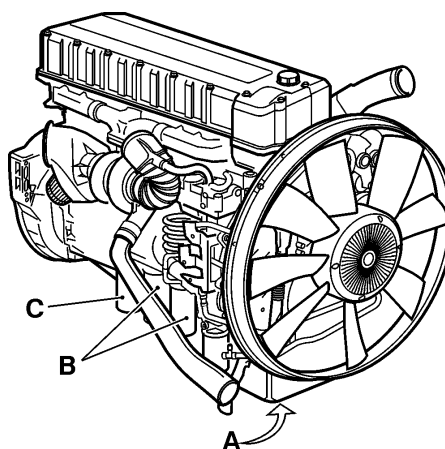
For more detailed information and working instructions refer to the other service information in the respective groups from 1 to 9.

Fluids and chemicals shall be handled, separated and stored in a suitable way and in accordance with local legislation and regulations.

Engine, oil and filters

Drain the engine oil through the drain plug (A).

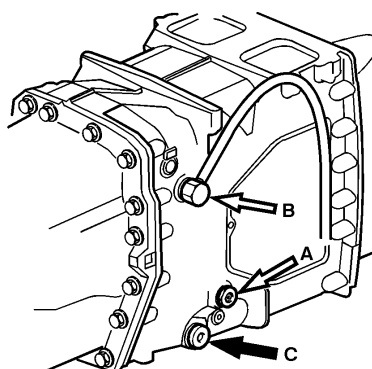
Remove the engine filters; the full flow filter (B) and bypass filter (C).



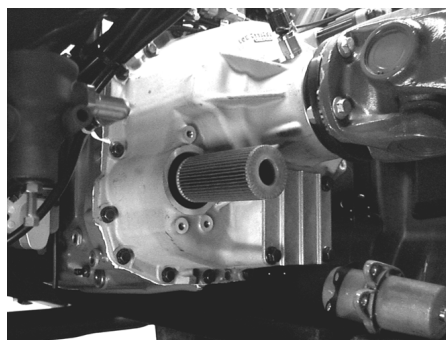
T1007362

Manual gearbox, oil and filter

Drain and empty the gearbox oil through the drain plug (C).



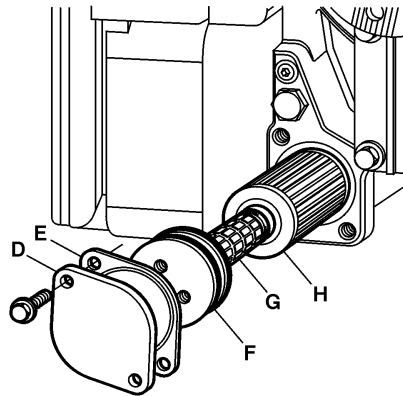
Unscrew the oil filter housing and remove the seal and oil filter.



T1006780

Gearbox with compact retarder, oil filter

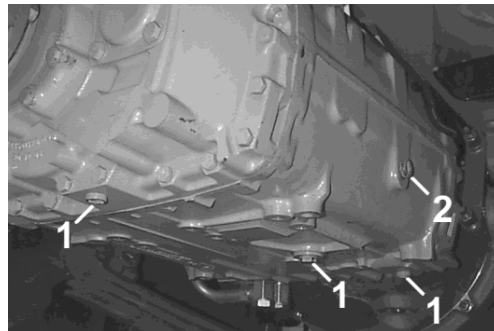
Remove the oil filter (H) from the oil filter housing. Cover (D), gasket (E), adapter (F) and stay tube (G).



T1006939

ZF gearbox, oil

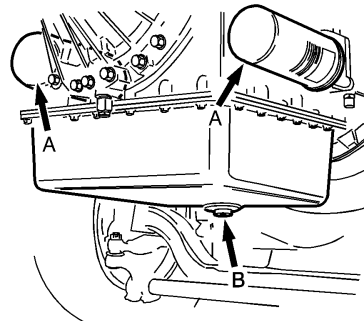
Topping-up and drain plugs (1 and 2).



C1000039

Automatic gearbox, oil and filter

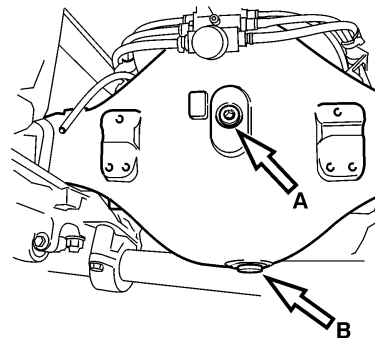
Drain the oil by removing the oil sump drain plug (B), and unscrew the oil filters (A).



T1006796

Final drive, oil

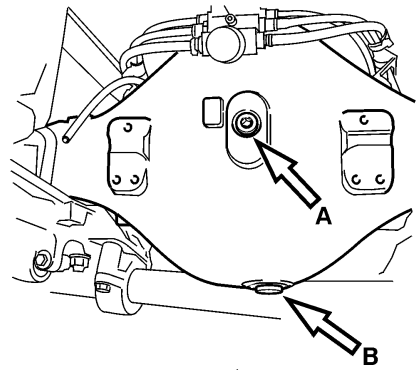
Topping-up and drain plugs (A) and (B).



T1007372

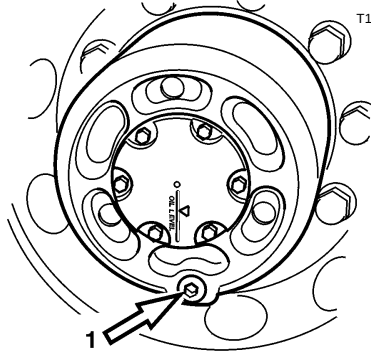
Final drive with hub reduction, oil

Topping-up and drain plugs (A and B).



T1007372

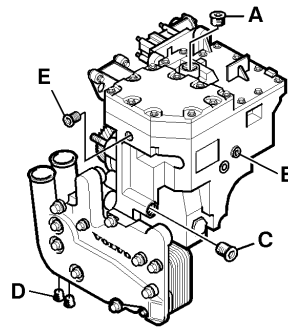
The oil in the hub shall be drained separately.
Drain plug (1).



T1007412

Retarder, oil

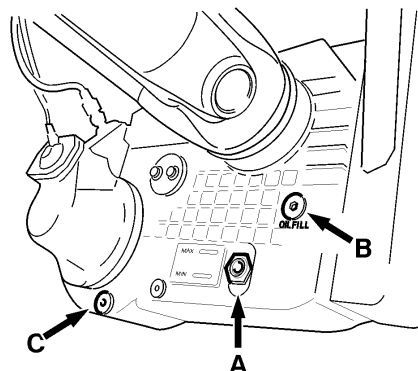
Drain plug (D), topping-up plug (A), vent plug (E).



T0008610

Transfer gearbox, oil

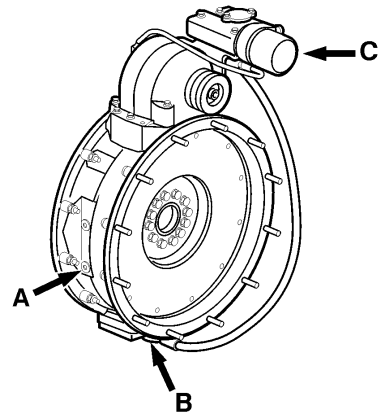
Drain plug (C), topping-up plug (B), level plug (A).



T1007656

Power take-off, oil draining and filter removal

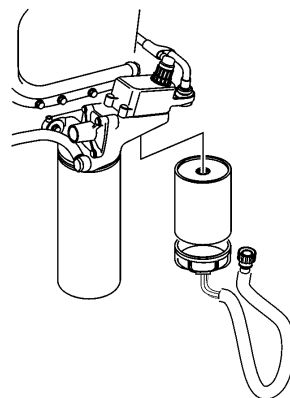
Drain plug (B), level/topping-up plug (A).



T1007654

Water separator, filter

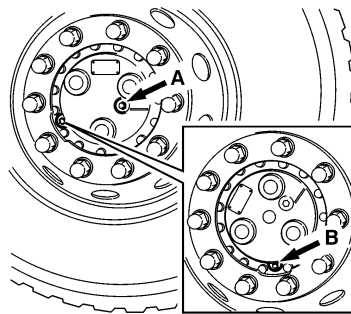
Remove the filter.



T2019100

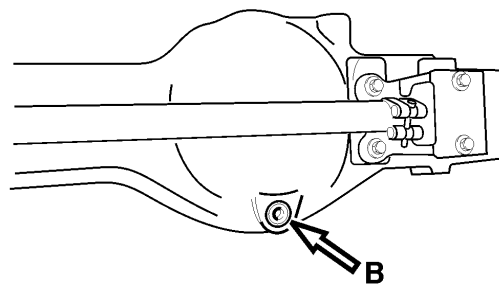
Driven front axle, oil

Front axle wheel gears. Drain plug (A), level/topping-up plug (B).



T1007659

Front axle differential carrier. Drain plug (B).

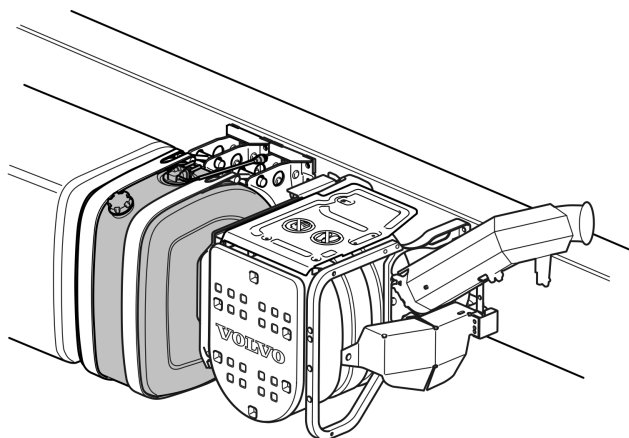


T4017902

Urea tank

Remove the filler cap from the urea tank. Remove the drain plug. Empty the urea tank.

Note: If urea solution comes into contact with disconnected electrical connectors, the urea solution spreads rapidly through the wiring and oxidises the metal, which can damage the connectors and cabling.

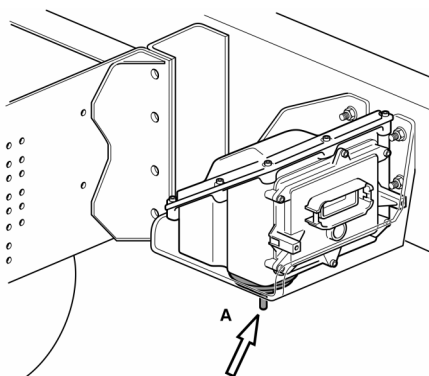


T2023070

Urea filter

Remove the drain plug and drain the filter housing. Remove the urea filter (A) from the pump unit.

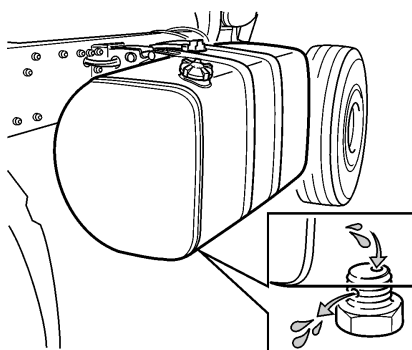
Note: If urea solution comes into contact with disconnected electrical connectors, the urea solution spreads rapidly through the wiring and oxidises the metal, which can damage the connectors and cabling.



T1008641

Fuel tank

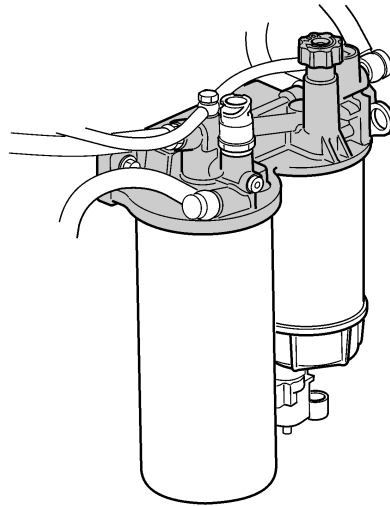
Empty the tank by removing the drain plug.



T2017418

Fuel filter

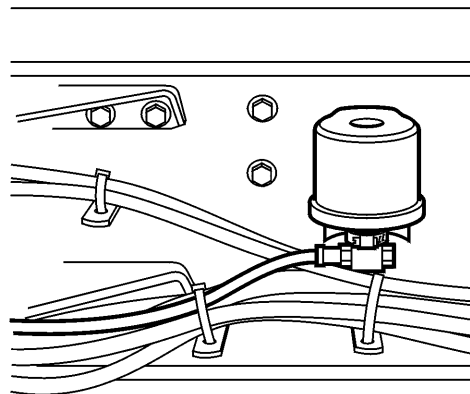
Remove the fuel filter.



T2021550

Fuel tank ventilation filter

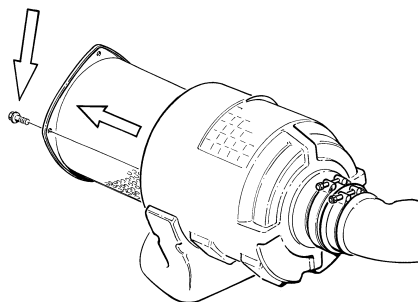
Remove the filter.



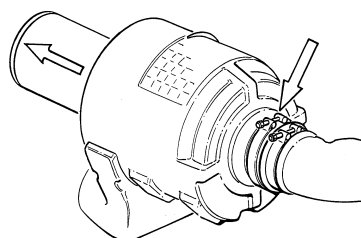
T1006941

Air cleaner filter element

Remove the filter.



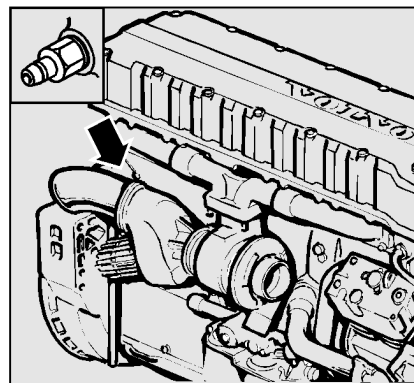
T2006750



T2006751

Coolant

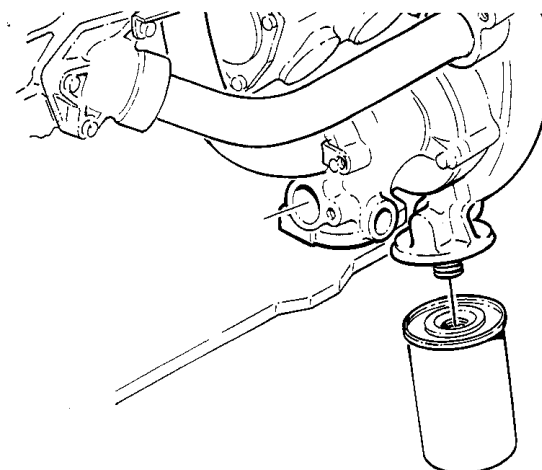
Empty the coolant tank by removing the drain plug.



T0008145

Coolant filter

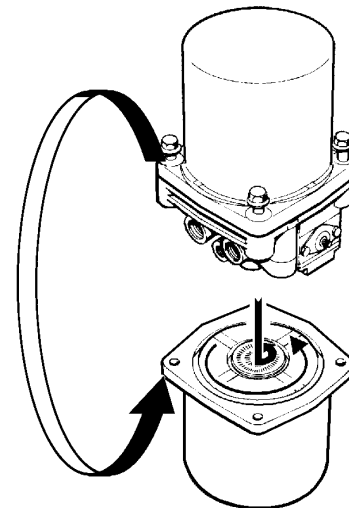
Remove the coolant filter.



T2007230

Air drier, drying compound

Take the drying element out of the air drier.

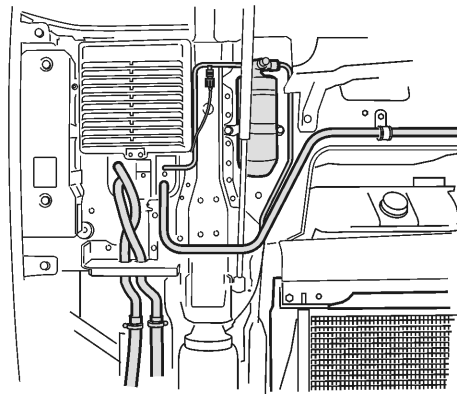


T5008850

Air conditioning unit, filter and emptying refrigerant tank and air conditioning water.

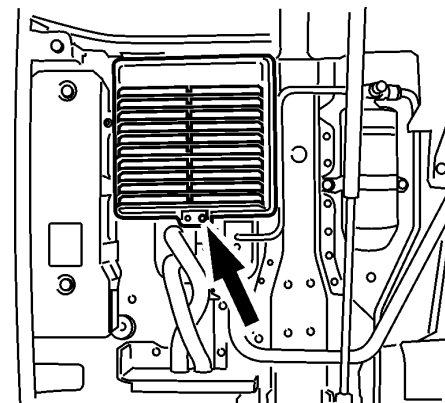
Note: Refrigerant is classified as environmentally hazardous material and shall be dealt with by certified personnel in accordance with local legislation and regulations.

Empty the refrigerant out of the air conditioning system.



T1007376

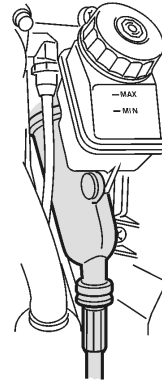
Remove the air conditioner filter.



T1007375

Clutch fluid

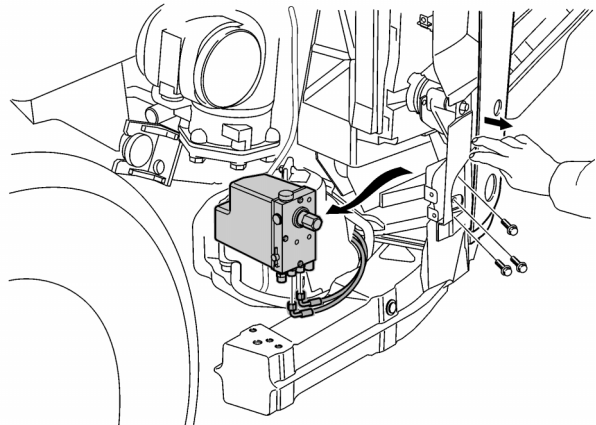
Empty the clutch fluid by removing the drain plug.



T1008225

Cab tilt pump, oil

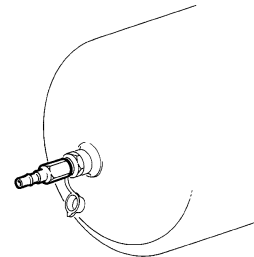
Drain the oil.



T8010177

Pneumatic system, emptying

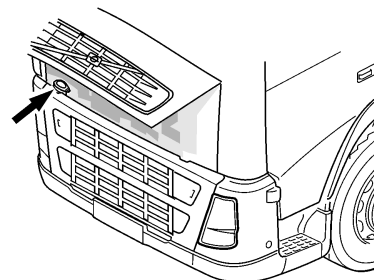
Carefully release the compressed air.



T7006867

Washer fluid

Empty the washer fluid out of the washer tank.



T1007366

Disassembly instructions

The following instructions do not describe dismantling in detail, but outline the procedures, to permit flexibility and self-determined working routines.

The information is general, so that it can be applied to different truck models.

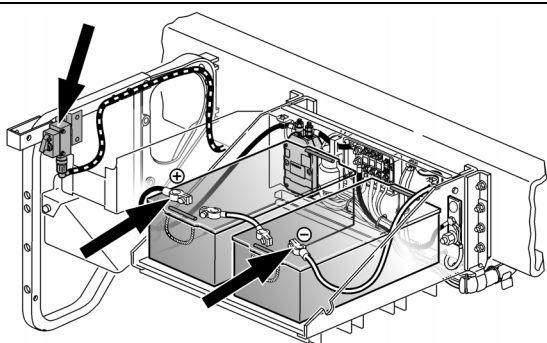
For more detailed information and working instructions refer to the other service information in the respective groups from 1 to 9.

Emptying of components is described above and not repeated here.

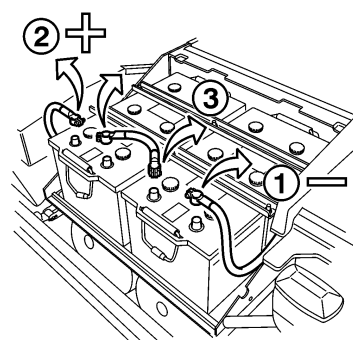
Switch the main power switch off and disconnect the batteries.

Ensure that the ignition has been switched off for at least two minutes before removing the electrical supply, so that the SCR system has time to empty out the urea solution and release its pressure.

Note: Batteries are classified as environmentally hazardous material and require special handling in accordance with applicable legislation and regulations.



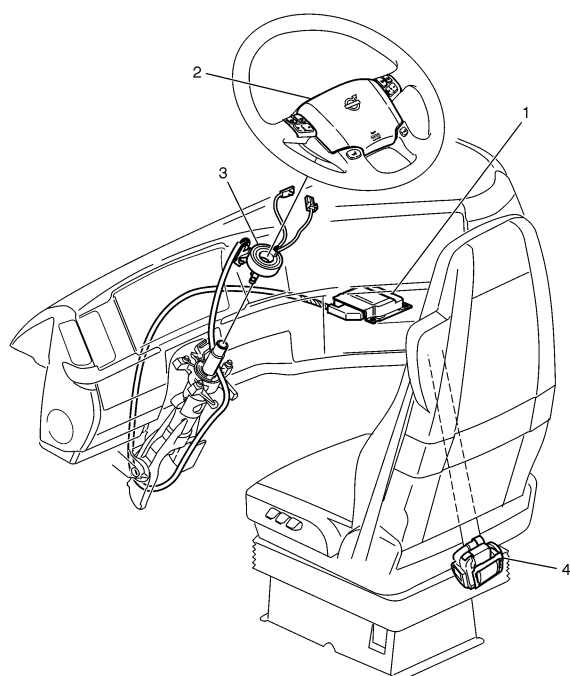
T3017783



T3017758

Dismantling the SRS system.

Carefully follow the dismantling instructions in service information Group 8. Control unit (1), air bag module (2), slip ring (3) and belt tensioner (4).



T8008552



WARNING

Confirm that there is no current in the vehicle before commencing work on the SRS system. SRS components shall be handled and stored in accordance with local legislation and regulations.



DANGER

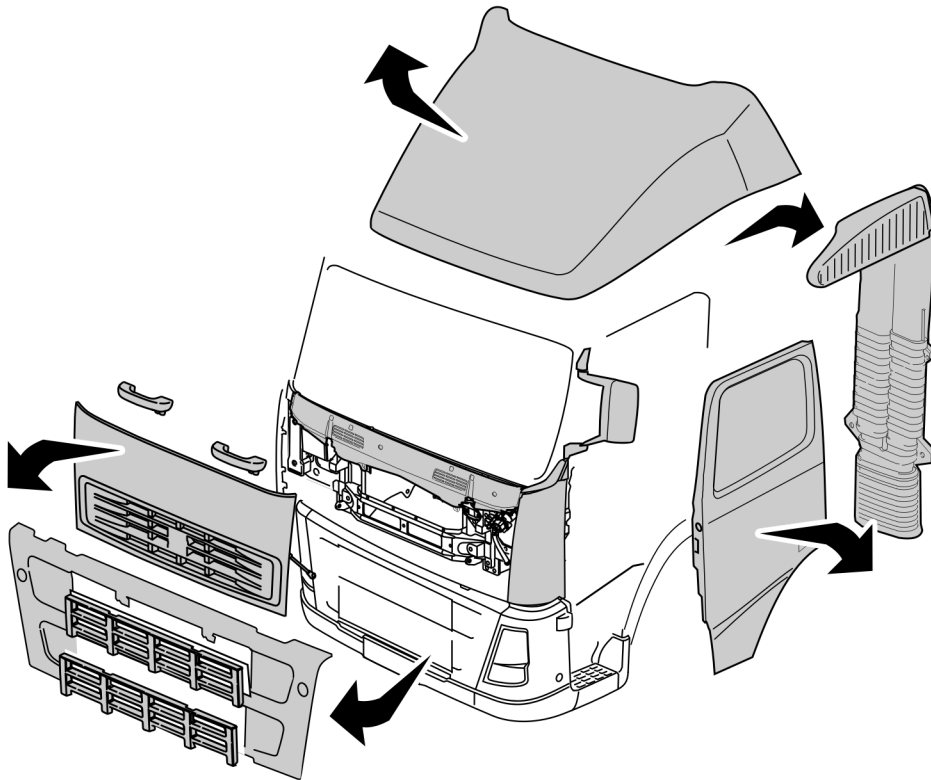
Certain parts of the SRS contain explosives. Explosives can cause personal injury or death if handled incorrectly.



DANGER

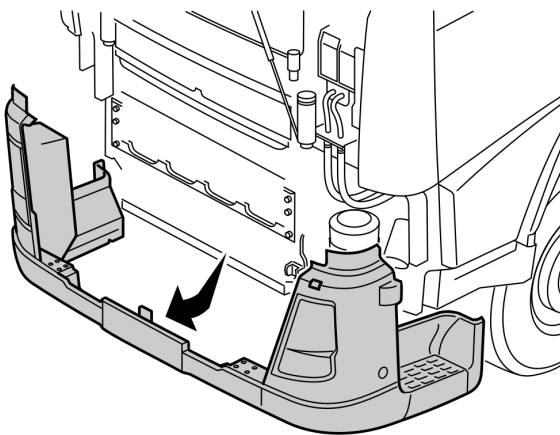
Both heat and electrical current can damage the control unit. Open flames are an accident risk as they can cause air bags or belt tensioners to trigger.

- Clear the exterior of the cab of plastics and sheet metal detail parts.
Remove the front hatches, detach and remove cabling, hoses and other such material.

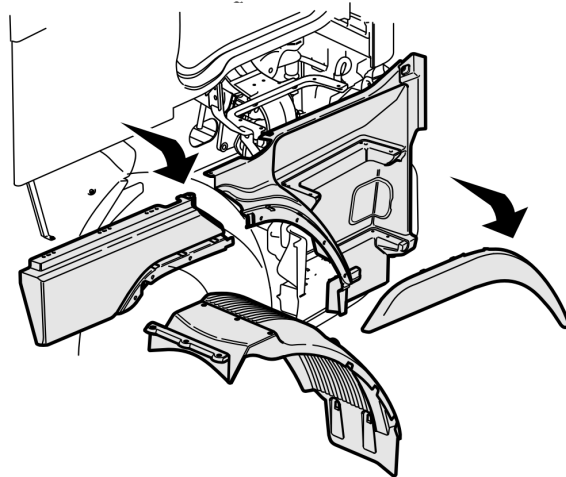


T8010453

- Remove the underbody protection, bumpers and plastic detail parts from the front and side of the cab.

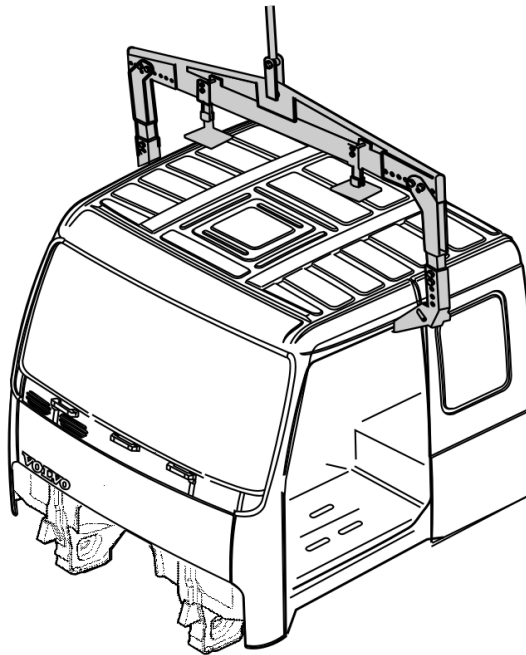


T7009910



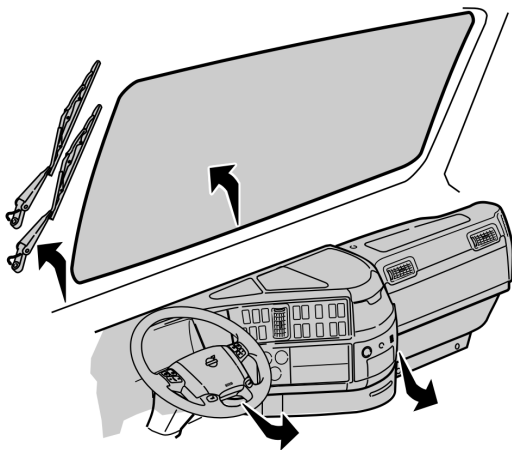
T8010454

- Lift off the cab using lifting equipment.

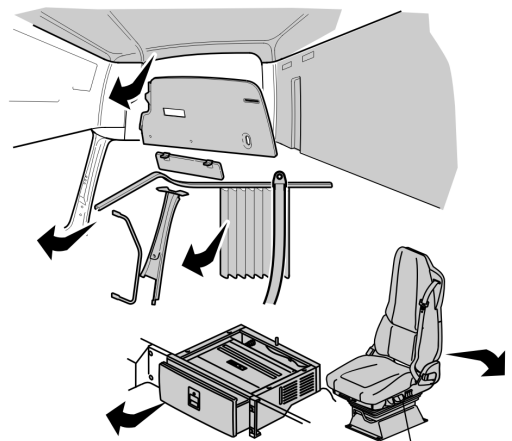


T8010455

- Remove all internal detail parts from the cab.
The windscreen, side glass, instruments, internal fittings and other components such as fans and air conditioning equipment.



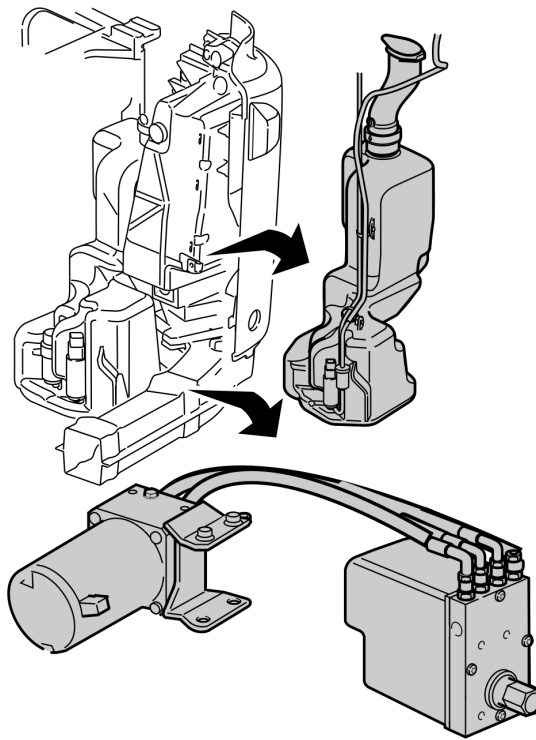
T8010451



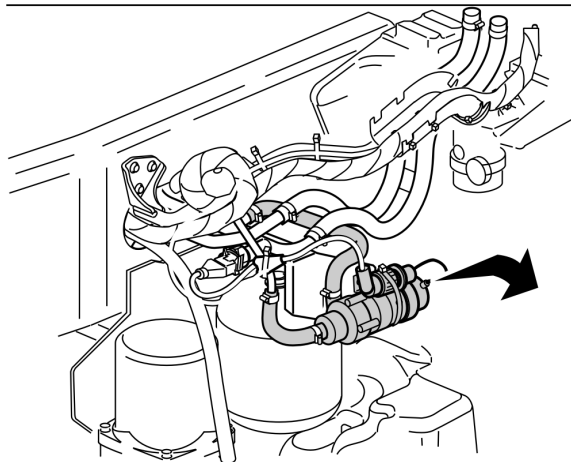
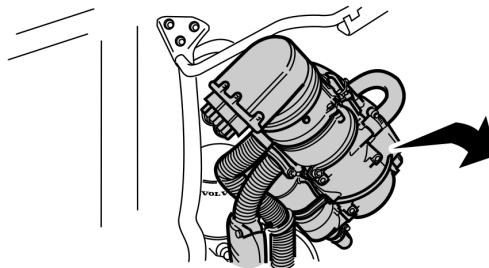
T8010452

Then cut or shear the remaining parts of the cab into smaller pieces for scrapping.

- Remove the washer fluid tank, lighting housings, cab tipping pump and electrical motor, and such nearby components as the parking heater and water pump.

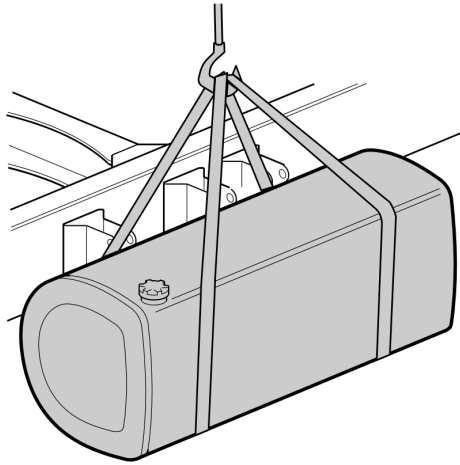


T8010456



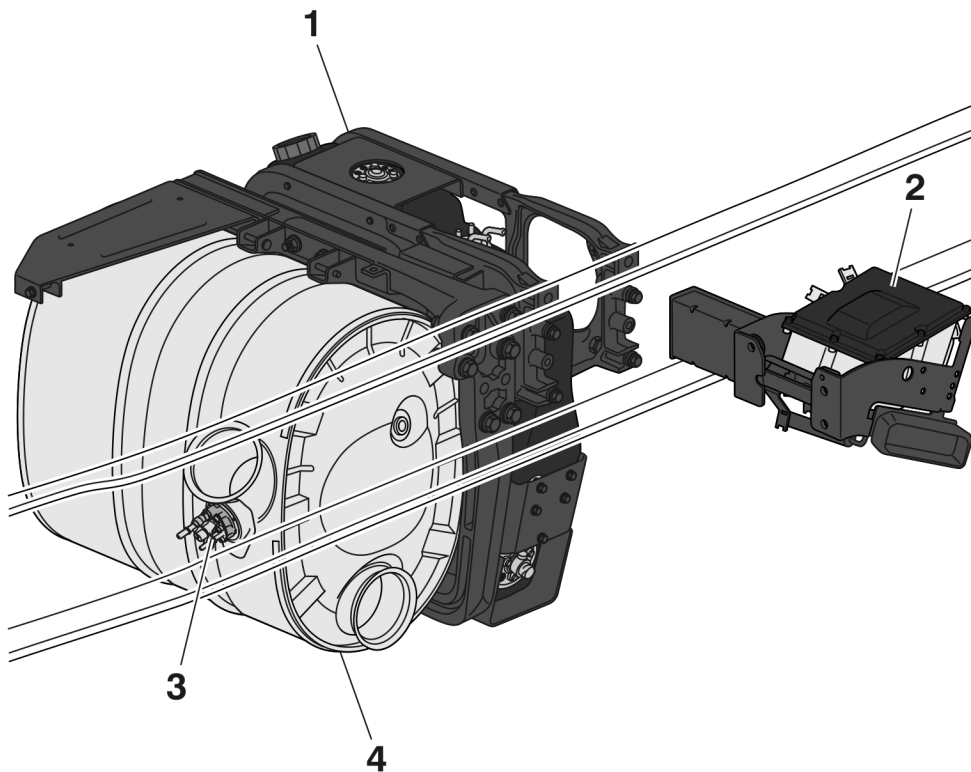
T8010457

- Remove the fuel tank using lifting equipment.
Clean the area.



T2022092

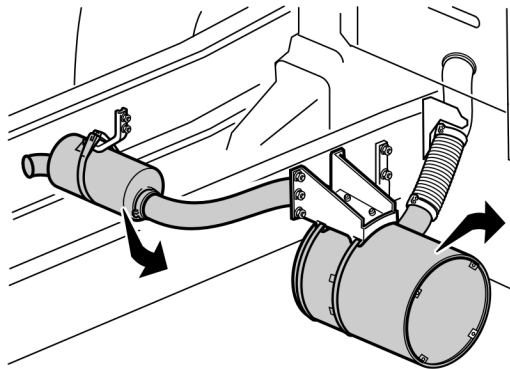
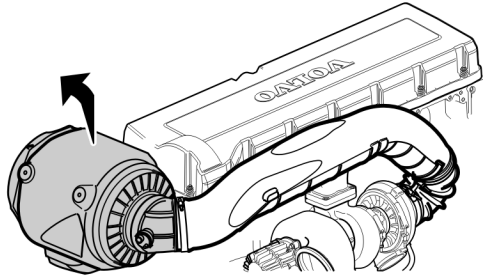
- On vehicles with an SCR system, lift out the urea tank (1) and remove the other SCR system components, namely the pump module (2), dosing unit (3), silencer (4), hoses, lines and pipes.



T2022985

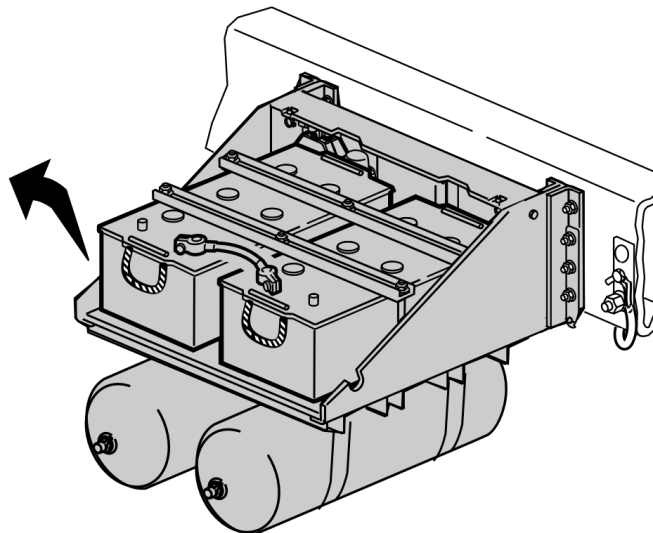
Note: If urea solution comes into contact with disconnected electrical connectors, the urea solution spreads rapidly through the wiring and oxidises the metal, which can damage the connectors and cabling.

- Remove the silencer, lower air intake and air cleaner along with the associated hoses and piping.



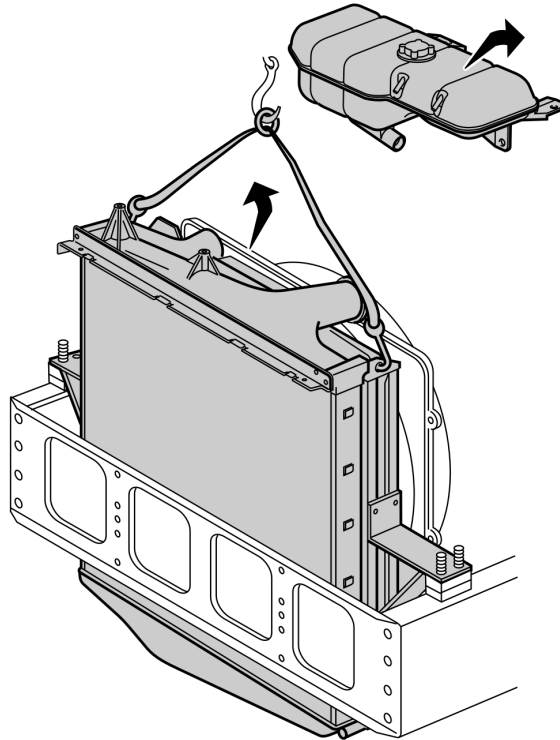
T2022094

Remove the battery box and all air tanks from the chassis, clean all round the chassis.



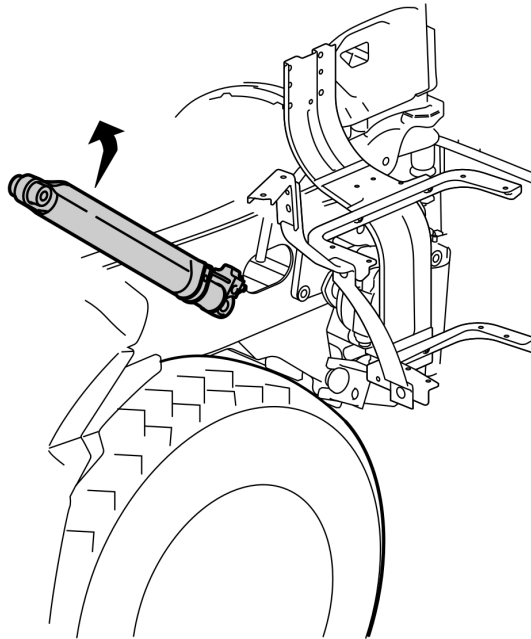
T3018037

- Remove the coolant tank and lift off the complete coolant system with its various components and detail parts with lifting equipment.



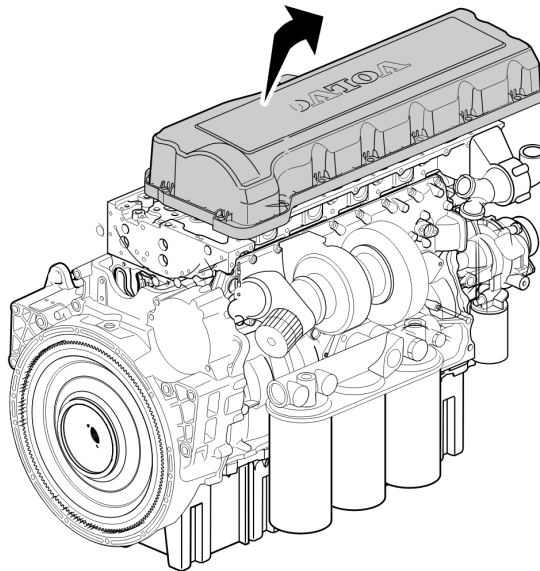
T2022091

- Remove the cab tilt cylinder with its associated detail parts.



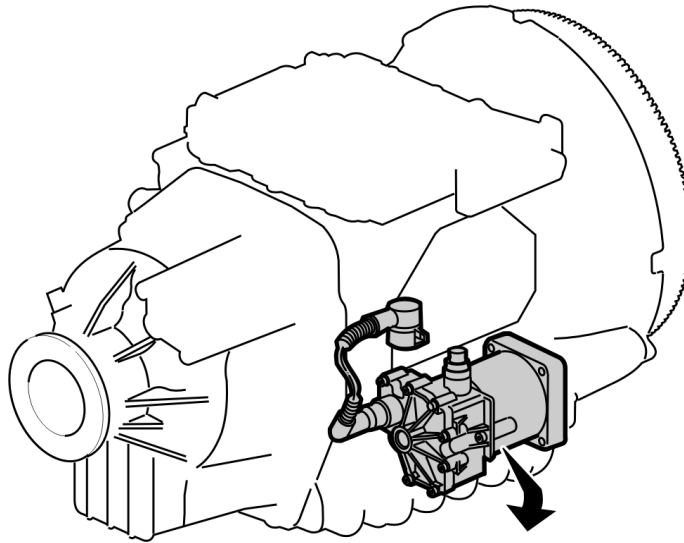
T8010458

- Take off the rocker cover and clean the components and detail parts around the engine.



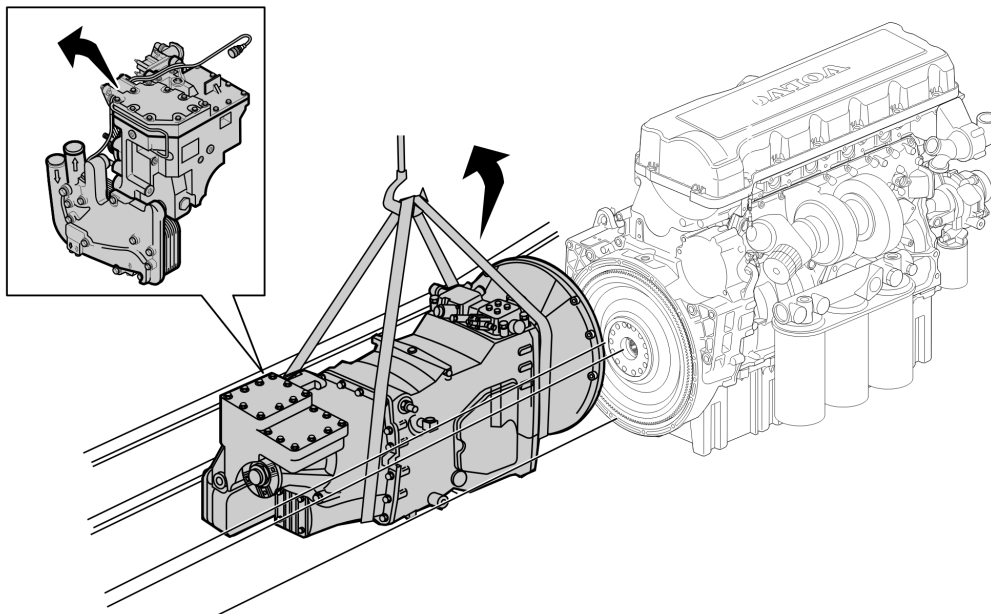
T2022093

- Remove the clutch cylinder and other components and detail parts around the gearbox.



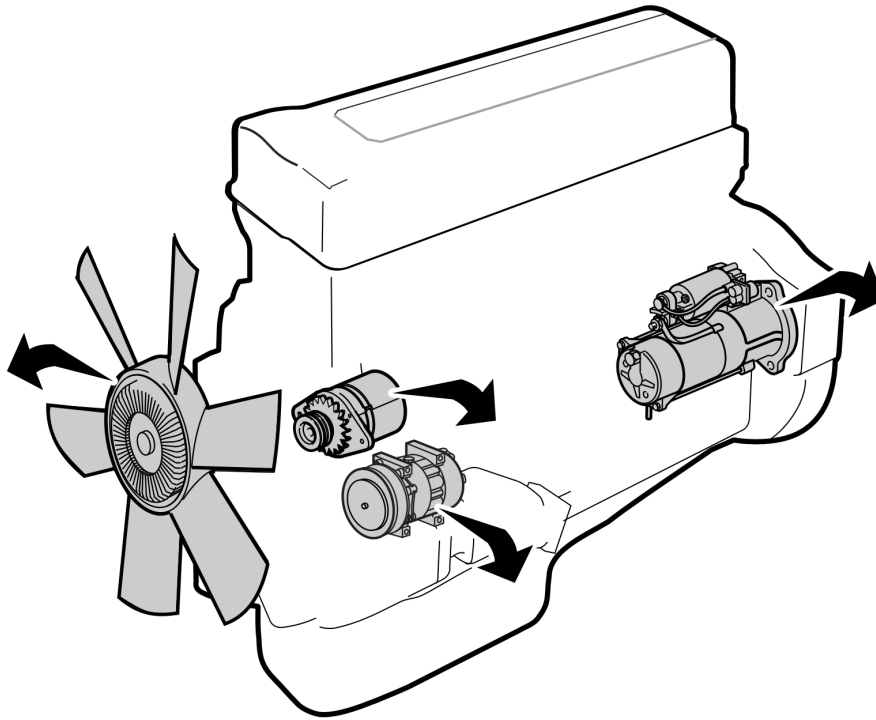
T4020999

- Lift out the gearbox and where applicable the retarder, using lifting equipment. Then detach the retarder from the gearbox. Remove the servo pump.



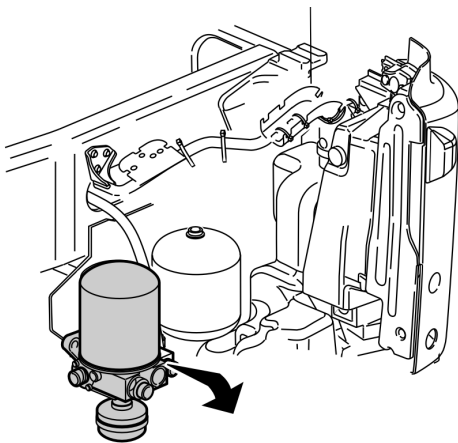
T4021000

- Lift out the engine using lifting equipment. Then remove the mounted components such as the alternator, air conditioning pump, fan and starter motor.

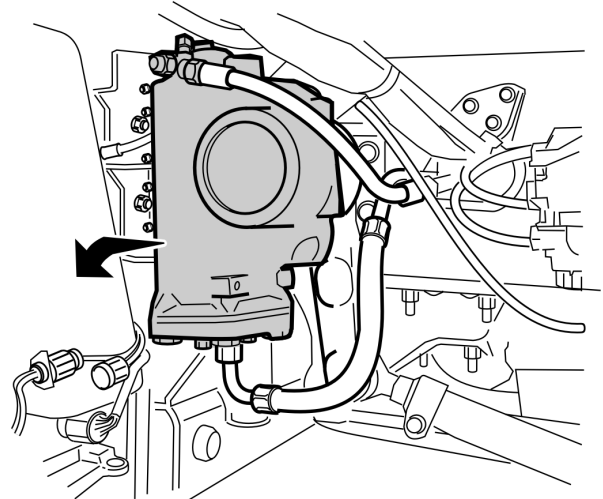


T2022097

- Remove the air drier, steering gear and surrounding pipes, hoses and components.



T5014148



T6009539

Remove all detail parts from the chassis frame.

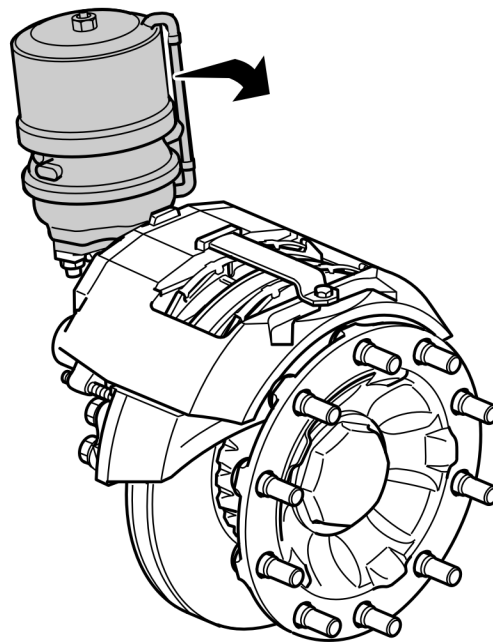
After this the chassis frame should be clean and ready to be cut into pieces.
Put the chassis on stands and cut it into suitable size pieces for disposal.



WARNING

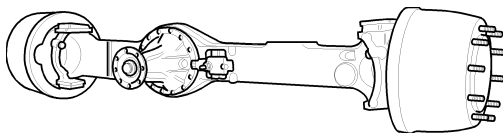
Support the chassis by sections! Otherwise there is a risk of serious personal injury!

- Remove the brake actuators or cylinders and other detail parts around the tyres. Be careful!

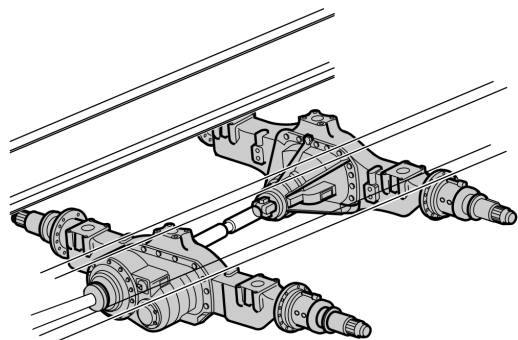


T5014149

- Separate the wheels from the axles and the tyres from their rims.
Remove the tyres, drive axles, differential lock, gears, shafts and crown wheel.



T4011554



T4021001

If necessary, cut up or divide the remaining parts of the chassis frame and dismantled parts into smaller pieces for scrapping.
Sort out the tyres, wires, metal and plastic detail parts.

Feedback

One of our objectives is that workshop personnel should have access to correct and appropriate service manuals where it concerns fault tracing, repairs and maintenance of Volvo vehicles.

In order to maintain the high standards of our literature, your opinions and experience when using this manual would be greatly appreciated.

If you have any comments or suggestions, make a copy of this page, write down your comments and send them to us, either via telefax or mailing directly to the address listed below.

To

From

To

Volvo Parts Corporation

Dept. Technical Support Service 31820

S-405 08 GÖTEBORG

Fax: +46 31 661060

.....

.....

.....

.....

.....

.....

.....

Comments/proposals

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Concerns Service Manual:

VOLVO

Volvo Truck Corporation

Göteborg, Sweden