VOLVO

Construction Equipment

Service Information

Document Title:	Function Group:	Information Type:	Date:
Description	**000**	**Service Information**	**2014/3/13**
Profile: **BHL, BL70B [GB]**			

Description

The **BL70B** machine is a four-wheel drive rigid backhoe loader.

The engine is a low-emission, direct-injection, turbocharged, 4 cylinders, four-stroke, 4.8l displacement, liquid-cooled Volvo diesel engine. The engine is conforming EPA Tier 3 and Stage IIIA regulations.

The machine has a mechanical Powershuttle transmission with four forward and four reverse fully synchronized gears. The transmission has a single stage hydraulic torque converter.
The machine can be equipped with an optional automatic Powershift transmission with four forward and reverse speeds. The Powershift transmission features electro-hydraulic forward/reverse lever on steering column or switch on loader pilot control. Automatic mode is activated when fourth gear is engaged.

The front and rear axles have fully floating drive shafts with planetary type reductions. The rear axle has a dog-clutch type differential lock and integral oil immersed multi-disc brakes.

The service brake is a hydraulically operated, multi-plate, oil-immersed, servo power-assisted brake with self adjusting inboard disc brakes.
The parking brake is mechanically operated.

The steering system is hydrostatic with a load-sensing steering unit and a double acting steering cylinder.

The machine is equipped with a redesigned cab. The new cab has an improved all around visibility and ergonomic layout.
An optional canopy is available.

The electrical system voltage is 12 VDC. Electrical and electro-hydraulic functions are monitored and controlled by a Vehicle Electronic Control Unit (V-ECU).
On the side console several machine functions can be controlled and monitored in a display. For electrical troubleshooting a special service mode can be activated in the display.

The hydraulic system has one working pump with variable displacement. The pump is a closed centre variable piston pump.
For the backhoe functions optional pilot controls are available.

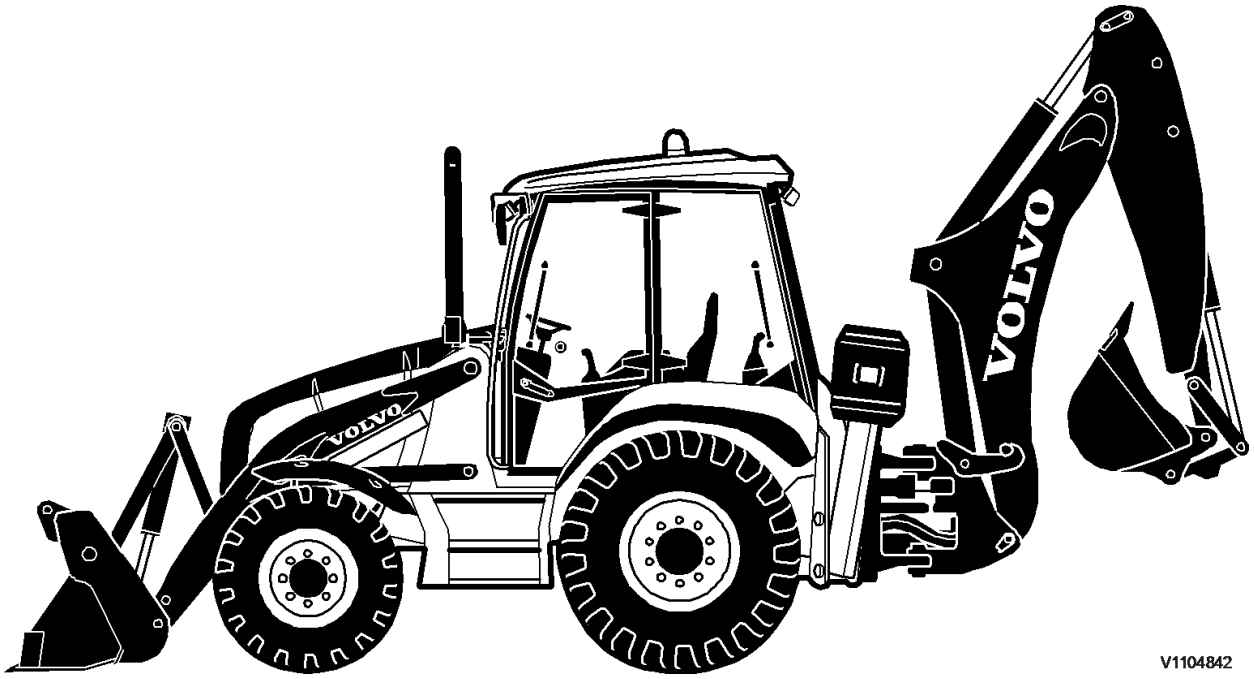

Figure 1
Backhoe loader BL70B

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Document Title:	Function Group:	Information Type:	Date:
E 1708, Checking point	**080**	**Service Information**	**2014/3/13**
Profile: **BHL, BL70B [GB]**			

E 1708, Checking point

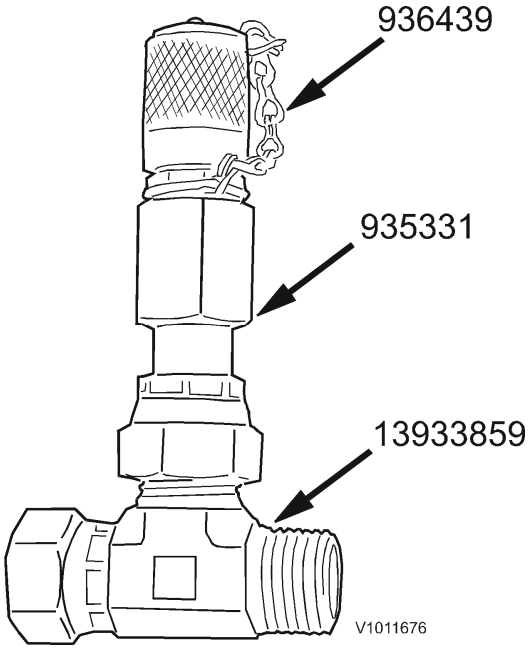

Figure 1

VOLVO
Construction Equipment

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Document Title:	Function Group:	Information Type:	Date:
E1820	**080**	**Service Information**	**2014/3/13**
Profile: **BHL, BL70B [GB]**			

E1820

Bolt, M20×320 mm, part No. 13977717
Nut, M20
Washers, part No. 433065, 2 pcs. To be welded onto both ends of the pipe.

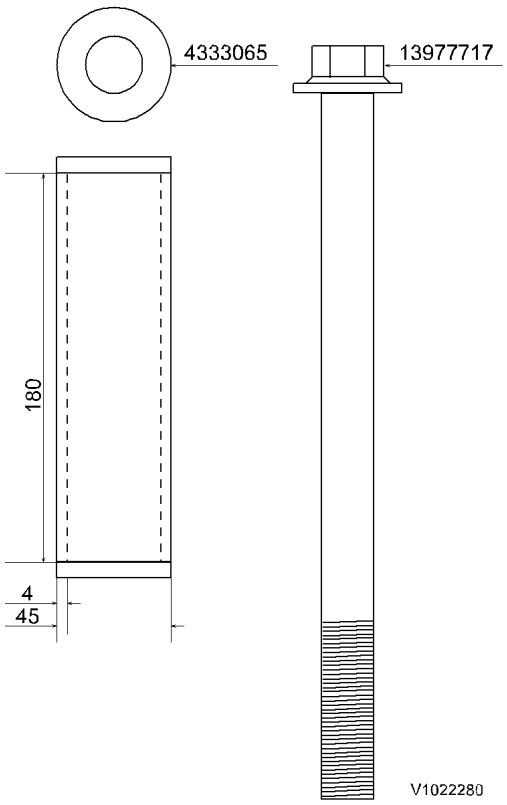

Figure 1
E1820

VOLVO

Construction Equipment

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Document Title:	Function Group:	Information Type:	Date:
Safety concerns everybody!	**191**	**Service Information**	**2014/3/13**
Profile: **BHL, BL70B [GB]**			

Safety concerns everybody!

Always follow the instructions in the machine's operator's manual which supplements this Service Manual.

The Operator's Manual **must always** be kept in the cab for easy reference.

Volvo designs and manufactures machines with a high level of safety as well as effectiveness. All this work may be wasted if anyone who is about to perform service on any of our machines does not read the safety instructions, or does not follow them, e.g., does not replace guards, climbs on slippery machine parts instead of using a ladder, grabs a hold of hoses instead of handles or uses the wrong tools for the job.

In order to maintain safe and efficient function, always use genuine Volvo spare parts intended and adapted for the machine. If other spare parts than genuine Volvo are used then Volvo Construction Equipment cannot be held responsible for machine damage, and warranty claims will be denied.

Machines seldom cause accidents, instead people often do.

A safety-conscious person and a well-maintained machine make for a safe, effective and profitable combination.

Those who do not follow the safety instructions and observe the warnings in this manual must make sure that their work method is safe. Otherwise, there is a great risk of accidents, perhaps even accidents that result in fatalities.

WARNING SYMBOL

This symbol is shown at various points throughout the manual. The appearance of it means "Warning, stay alert! Your safety may be involved!"

Get to know the capacity and limits of your machine!

Document Title:	Function Group:	Information Type:	Date:
CE-marking, EMC-directive	**191**	**Service Information**	**2014/3/13**
Profile: **BHL, BL70B [GB]**			

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CE-marking, EMC-directive

CE marking

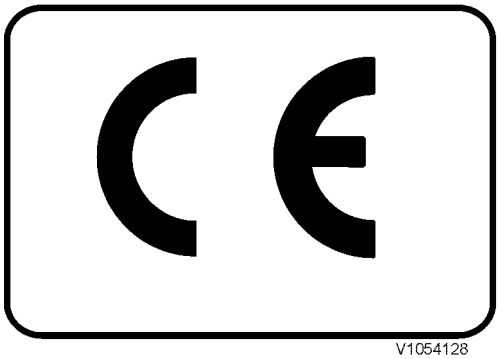

Figure 1

(Declaration of Conformity)

This machine is CE-marked. This means that, when delivered, it meets the applicable "Essential Health and Safety Requirements", stated in EU's so-called Machine Safety Directive, 2006/42/EC.

Any person making changes that affect machine safety is also responsible for the same.

An EU Declaration of Conformity as well as a sound certificate regarding sound power in dB(A) are supplied as proof that the requirements are fulfilled. The sound certificate includes both measured external values and guaranteed sound power level. These declarations are issued by Volvo for every individual machine. This EU-declaration also includes attachments manufactured by Volvo. The documentation is a valuable document and shall be saved in a safe location for at least ten years. The documentation shall always accompany the machine when it is sold.

If the machine is used for other applications or with other attachments than described in this manual, safety must always be ensured in each individual case. A change may in certain cases require a new CE-marking and issuing of a new EU Declaration of Conformity. The person responsible for this is the same person who makes the change.

EU EMC Directive

The machine's electronic equipment may in some cases interfere with other electronic equipment, or be interfered with by external electromagnetic interference, which may result in safety risks.

EU's EMC directive about "Electromagnetic compatibility", 2004/108/EC, provides a general description of what requirements can be made of the machine from a safety perspective, where permitted limit values have been determined and stated in international standards.

A machine or device must meet the requirements to be CE-marked. Our machines have been specially tested for electromagnetic interference. The machine's CE-marking 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.

Document Title: **Declaration of Conformity**	Function Group: **191**	Information Type: **Service Information**	Date: **2014/3/13**
Profile: **BHL, BL70B [GB]**			

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Declaration of Conformity

These pages show a copy of the declaration of conformity for machine and a general copy of the declaration of conformity for attachments in the category "interchangeable equipment" (attachments that can be changed by operator).

The Declaration of Conformity is only applicable in the European Union.

EC DECLARATION OF CONFORMITY FOR MACHINES (IIA)

Volvo Construction Equipment, rue Pierre Pingon, 01300 Belley, France hereby declares that the product:

Make:	Volvo Construction Equipment AB
Type:	Backhoe Loader
Model:	_____
Product identification number (PIN):	VCE _____

to which this declaration relates, is in conformity with the Essential Health and Safety requirements of the:
Council Directive 2006/42/EC relating to Machinery,
Council directive 2004/108/EC on electromagnetic compatibility,
and their Amendments relating to machinery, and other applicable Directives.

Harmonized standards applied:
EN 474-1:2006+A1:2009 Earth Moving machinery – Safety – General requirements.
EN 474-4:2006+A1:2009 Earth Moving machinery – Safety – Requirements for Backhoe Loaders.

This declaration relates exclusively to the machinery in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user.

Signature of the issuer of this declaration:

.....
Signature/Name

.....
Date of issue

Authorized issuer's signature and person authorized to compile the technical file that has been determined in the European Community:

.....
Signature/Name

.....
Address and date of issue

This declaration includes attachments developed designed/approved, marked and marketed by above-mentioned manufacturer.
The owner of the machine must retain this Declaration for at least ten years after delivery.

EC DECLARATION OF CONFORMITY WITH DIRECTIVE 2000/14/EC

WE,

Volvo Construction Equipment
rue Pierre Pingon,
01300 Belley, France

DECLARE THAT, UNDER OUR SOLE RESPONSIBILITY FOR MANUFACTURE AND SUPPLY, THE

MODEL	**TYPE**	**PRODUCT IDENTIFICATION NO.**
	BACKHOE LOADER	VCE

TO WHICH THIS DECLARATION RELATES, HAS BEEN MANUFACTURED IN CONFORMITY WITH THE DIRECTIVE AS SHOWN:

Directive & Assessment	Machine Models	Net Installed Power	Mean Measured Values, Lwa	Guaranteed Sound Power Levels, Lwa	Notified Body
2000/14/EC, Annex VI, Part I	XYZ	cc.c kW	bbb dB(A)	aaa dB(A)	AV Technology Hanforth,Cheshire UK, Nr. 1067

The technical documentation is kept by Mr. Todd Gorman, Volvo Construction Equipment SAS

Issued in Shippensburg by:

.....
Signature/Name

.....
Date of issue

VOLVO

Construction Equipment

Service Information

Document Title:	Function Group:	Information Type:	Date:
FOPS and ROPS	**191**	**Service Information**	**2014/3/13**
Profile: **BHL, BL70B [GB]**			

FOPS and ROPS

The cab and canopy are approved as a protective cab according to FOPS and ROPS standards ISO3471 (ROPS) and ISO 3449 (FOPS level 2). FOPS is an abbreviation of Falling Object Protective Structure (roof protection) and ROPS is an abbreviation of Roll Over Protective Structure (roll over protection).

If any part of the cab's protective structure is affected by plastic deformation or cracks, the cab shall be replaced immediately.

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.

Document Title:	Function Group:	Information Type:	Date:
Safety rules when servicing	**191**	**Service Information**	**2014/3/13**
Profile: **BHL, BL70B [GB]**			

Safety rules when servicing

This section covers general safety rules when checking and servicing. Other rules, information and warning texts are given in this manual and also in the Operator's Manual.

CE–marking

This machine is CE marked. This means that when delivered to customer the machine meets the applicable "Essential Health and Safety Requirements", which are given in the EU Machinery Safety Directive. If changes are made that affect the safety of the machine, the person carrying out the changes is responsible for the same.
This, for example, means that:

- When installing a two-way radio, a mobile telephone and similar equipment, the installation should be carried out according to the instructions of the manufacturer in order to eliminate interference to the electronic system and components intended for the function of the machine. For further details see 191 CE-marking and declaration of conformity.
- When retro-fitting equipment in or on the cab; do not drill, weld or cut on or into the cab, as such actions reduce the protection for the operator if the machine should roll over. For further details see 191 CE-marking and declaration of conformity.

Before you begin any service work on the machine:

Service work which is not carried out in the correct way is dangerous.
Make sure you have sufficient knowledge, correct information, tools and equipment to carry out the service in a correct way.
Repair or change broken tools and equipment.

Position the machine on level ground and prepare it for service by placing it in one of the service positions. See:
191 Service position 1
191 Service position 2
191 Service position 3

NOTE!
No work must be carried out on the machine until you have acquired the appropriate knowledge to do so.

General

- A machine which is used within a contaminated area (polluted environment and/or insanitary area) should be equipped in a special way. In addition to this, special local safety regulations apply when servicing such a machine. See also 191 Checklist after a fire or heat exposure.
- If someone is to take over a job you have started, you must make sure that this person is told how much of the job has been carried out and how much remains.

WARNING

Only walk or step on the machine's prepared stepping surfaces, see operator's manual.

- Never wear loose-fitting clothing, e.g. a scarf or jewelry, which can get caught and cause injury, when working on the machine. Long hair should be tied back in a hair net.
- Always wear a hard hat, safety glasses, gloves, protective shoes and other protective articles when required.

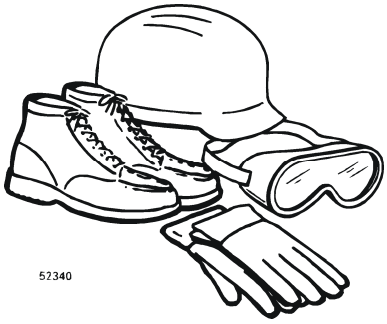

Figure 1
Protective equipment

- Always stop the engine to service the machine, unless otherwise instructed on plates or in this manual.
- Stop the engine before opening engine hood, radiator casings etc. Make sure that no tools or other objects, which can cause damage, are forgotten and left in the machine.

Environment

Our global environment is today exposed to harm because of the increasing industrialisation of the world. Nature, animals and humans all over the world are daily exposed to great risks in connection with various ways of handling chemicals.

Yet there are for example no oils or coolants on the market which are not harmful to the environment. Therefore, all, who handle, service or repair earth moving machines, must use the aids and methods which are necessary in order to carry out their work in an environmentally correct way.

If you also follow the simple rules listed below, you will contribute to the care of our environment:

Reclamation

- Contribute to a careful utilisation of natural resources by handing in discarded material to companies which specialise in recycling or incineration.

Batteries etc.

- Components such as batteries, plastic objects and others which may constitute an environmental danger, must not be discarded anywhere or anyhow. Such waste must be taken care of in an environmentally correct way.
- Discarded batteries contain substances dangerous to the environment and they should therefore be handled in an environmentally safe way according to national regulations.

Oils/liquids

- Oil released or spilled onto the ground will harm the environment and could also cause a fire. When emptying/ draining oil or fuel, steps should therefore be taken to avoid unnecessary spillage.
- Waste oil and other liquids should always be taken care of by an authorised company.
- Be alert to leakage of oil and other liquids! Rectify the leakage immediately.

Air conditioning

- The refrigerant in the air conditioning for the cab adds to the greenhouse effect and may therefore never intentionally be released into the open air. Special training is required for all service work on the air conditioning. In many countries certification for such work is also required by an authority. For further details see 191 Safety when working with air-conditioning refrigerant.

Working in contaminated environment

- Used cab and engine air filters from machines which operate in environments containing asbestos or other dangerous dust must be placed in the tight-fitting bag which is supplied with the new filter, before they are deposited in a designated place.
- The machine must be equipped for working within contaminated area (polluted environment and/or insanitary area) before any work is carried out. In addition to this, special local regulations apply for such work and when servicing such a machine.

Document Title: **Service position 1**	Function Group: **191**	Information Type: **Service Information**	Date: **2014/3/13**
Profile: **BHL, BL70B [GB]**			

Service position 1

Op nbr 191-021

WARNING

If work must be done on the machine before it has cooled down; beware of hot fluids and hot components that can cause severe burns.

1. Place the machine on firm and level ground. Apply the parking brake.

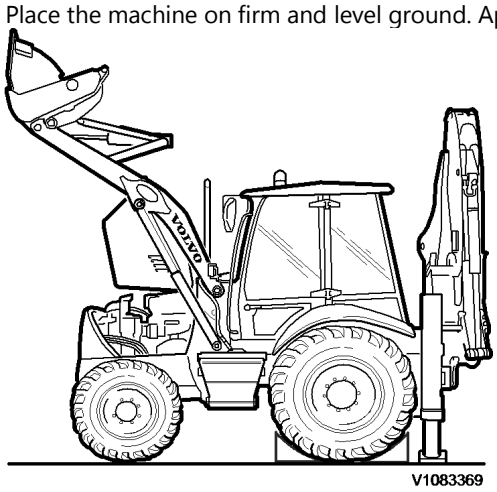

Figure 1
Service position 1

1. backhoe in travelling position, loader boom raised

2. Lower the stabilisers.

3. Retract the backhoe boom fully into travelling position. Engage the backhoe boom lock with the backhoe boom lock switch. On machines equipped with pilot control, the boom lock will be engaged automatically, see 191 Backhoe, boom lock.

   NOTE!

4. **WARNING**

   When servicing the machine with the loader boom raised, the safety strut must always be placed in support position. An unsupported loader boom can drop suddenly and cause serious personal injuries.

   Lift up the loader boom and secure it with the loader safety strut. See 191 Loader boom, safety strut.

5. Stop the engine.

6. Attach a yellow-black warning label or a red flag to the steering wheel while service work is in progress. Add the message "Service work: Forbidden to start the engine".

7. **WARNING**

   If the pressure is not released before opening the system, oil under high pressure will jet out, resulting in serious personal injuries.

   Carefully release the pressure in pressure lines to avoid risks. See 191 Safety for work on hydraulic systems.

8. Remove the ignition key.
9. Turn off the battery disconnect switch.
10. Block the rear wheels in a suitable manner (i.e. with wheel chock).
11. Open the engine hood.

Document Title: **Service position 2**	Function Group: **191**	Information Type: **Service Information**	Date: **2014/3/13**
Profile: **BHL, BL70B [GB]**			

Service position 2

Op nbr 191-022

WARNING

If work must be done on the machine before it has cooled down; beware of hot fluids and hot components that can cause severe burns.

1. Place the machine on firm and level ground. Apply the parking brake.

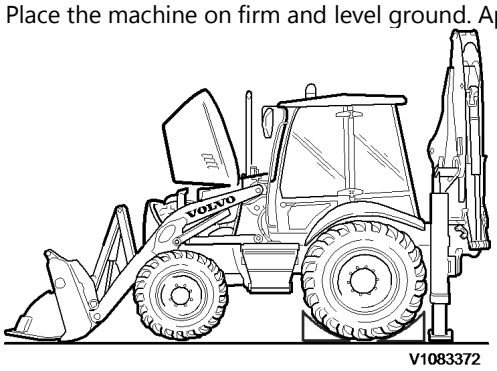

Figure 1
Service position 2

1. backhoe in travelling position, loader boom lowered to the ground

2. Lower the stabilisers.

3. Retract the backhoe boom fully into travelling position. Engage the backhoe boom lock with the backhoe boom lock switch. On machines equipped with pilot control, the boom lock will be engaged automatically, see 191 Backhoe, boom lock.

4. Lower the loader boom fully down to the ground.

5. Stop the engine.

6. Attach a yellow-black warning label or a red flag to the steering wheel while service work is in progress. Add the message "Service work: Forbidden to start the engine".

7. **WARNING**

   If the pressure is not released before opening the system, oil under high pressure will jet out, resulting in serious personal injuries.

   Carefully release the pressure in pressure lines to avoid risks. See 191 Safety for work on hydraulic systems.

8. Remove the ignition key.

9. Turn off the battery disconnect switch.

10. Block the rear wheels in a suitable manner (i.e. with wheel chock).

11. Open the engine hood.

Document Title: **Service position 3**	Function Group: **191**	Information Type: **Service Information**	Date: **2014/3/13**
Profile: **BHL, BL70B [GB]**			

Service position 3

Op nbr 191-025

WARNING

If work must be done on the machine before it has cooled down; beware of hot fluids and hot components that can cause severe burns.

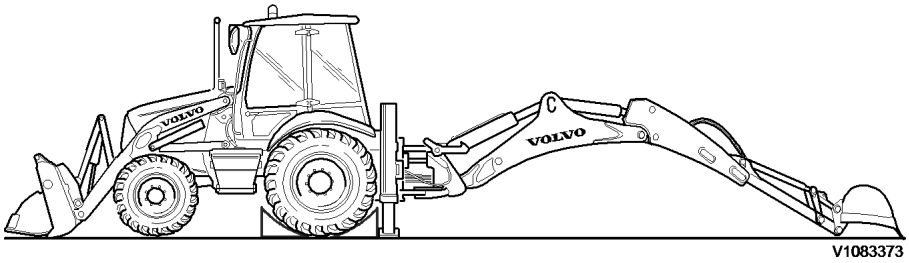

Figure 1
Service position 3

1. backhoe fully extended, loader boom lowered to the ground
    1. Place the machine on firm and level ground. Apply the parking brake.
    2. Lower the stabilisers.
    3. Extend the backhoe arm fully, so that it is lowered to the ground.
    4. Lower the loader boom fully down to the ground.
    5. Stop the engine.
    6. Attach a yellow-black warning label or a red flag to the steering wheel while service work is in progress. Add the message "Service work: Forbidden to start the engine".
    7. **WARNING**

       If the pressure is not released before opening the system, oil under high pressure will jet out, resulting in serious personal injuries.

       Carefully release the pressure in pressure lines to avoid risks. See 191 Safety for work on hydraulic systems
    8. Remove the ignition key.
    9. Turn off the battery disconnect switch.
    10. Block the rear wheels in a suitable manner (i.e. with wheel chock).
    11. Open the engine hood.

VOLVO

Construction Equipment

Service Information

Document Title:	Function Group:	Information Type:	Date:
Safety when lifting and supporting the machine	**191**	**Service Information**	**2014/3/13**
Profile: **BHL, BL70B [GB]**			

Safety when lifting and supporting the machine

- When lifting or supporting machine parts, use equipment with a lifting capacity that equals at least the weight of the part in question.
- All lifting devices, such as straps, slings, ratchet blocks, must comply with governing national regulations for lifting devices. We will not accept any responsibility if any lifting devices, tools or work methods are used other than those described in this publication.
- Use the lifting eyes or lifting points that are located on certain machine components.
- If a jack is to be used, make sure that the ground or floor is even and is sufficiently firm or strong to support the expected load.
- Prevent the machine from rolling by applying the parking brake and placing suitable wedges on both sides of the wheels which are not to be raised off the ground.
- Always use a jack with sufficient lifting capacity and position the jack according to instructions for the work that is to be done.
  Make sure that the jack is correctly positioned and is at the correct angle to the lifting point on the machine.
- Take care to position supports under the machine in a safe way.

VOLVO

Construction Equipment

Service Information

Document Title:	Function Group:	Information Type:	Date:
Safety when handling oils and fuel	**191**	**Service Information**	**2014/3/13**
Profile: **BHL, BL70B [GB]**			

Safety when handling oils and fuel

- When changing oil in engine, hydraulic system or transmission: Keep in mind that the oil may be hot and can cause scalding or burn injuries.
- Engine, hydraulic and transmission oils as well as diesel fuel have a corrosive effect on mucous membranes, for example, in eyes and throat and on skin. Therefore, take special care to keep such oils away from these sensitive body parts.
- When emptying/draining oils or fuel, steps must be taken to avoid unnecessary spills. In places where a container for collecting the liquid cannot be used, use a pump or connect a hose to ensure safe handling. Oil released or spilled on the ground will harm the environment and could also cause a fire.
  Waste oils/fluids shall always be taken care of by a company authorized for this work. See 191 Environmentally safe handling
- Remember the fire hazard!

Document Title: **Safety when working with air conditioning refrigerant**	Function Group: **191**	Information Type: **Service Information**	Date: **2014/3/13**
Profile: **BHL, BL70B [GB]**			

Safety when working with air conditioning refrigerant

WARNING

There are a number of safety aspects that should be kept in mind when working with repairs and maintenance of the air conditioning. Therefore, read and consider the safety section in the Service Manual Air Conditioning R134a before starting any work.

General

For repairs of the air conditioning, refer to the **Service Manual Air Conditioning R134a**.

Special competence is required for service work and more involved work which requires opening of the air conditioning system.
Many countries also require special training and official authority approval. Find out about governing regulations for your country and follow them!

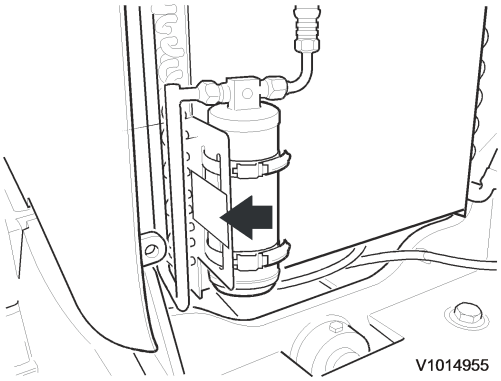

Figure 1
Type plate for refrigerant, position

Refrigerant R134a is used in the air conditioning unit, see also Section 8.
The type of refrigerant and the amount to be filled are shown on the type plate.

NOTE!
R134a adds to the greenhouse effect and should never be intentionally released into the open air.

Personal protective equipment

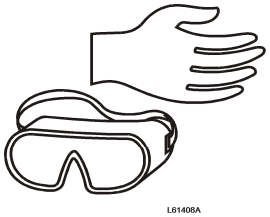

Figure 2

Protective goggles and gloves should be worn when there is a risk of contact with refrigerant.

When there is a risk of skin contact with refrigerant, use:
Tight-fitting protective goggles and protective gloves, and protect other bare skin (risk of frostbite).

Risks

WARNING

The gases have no smell and may cause serious damage to the lungs already at low concentrations.

Refrigerant R134a may, if incorrectly handled, cause serious personal injuries as well as damage to the environment. Therefore, great care must be taken in all work with air conditioning units! The rules given below may be a great help to avoid injuries to all who come into contact with refrigerants.

- In liquid form the refrigerant may cause:
  Frostbite.
- When in the form of a gas and at low concentration, the gas may:
  Have some effect, especially on the nervous system.
- When in the form of a gas and at high concentration it may:
  Have an anaesthetic effect.
- The air conditioning unit is pressurized and the refrigerant can unintentionally leak out. **Never disconnect hoses or remove the filler plug on the compressor.**
  If you suspect a leak, certified and trained personnel at a licensed workshop should be contacted for troubleshooting and repair.
- The refrigerant gas is heavier than air and will sink to the floor. Therefore, make sure that any escaped gas is ventilated before work is started in any low-lying areas.

Smoking, welding or other open flames are not allowed in a workplace where work with refrigerant is in progress. The refrigerant gas will then burn and form a toxic gas which is very dangerous to inhale. The gases formed when heating the refrigerant have a pungent smell at high concentrations.
The symptoms may appear several hours (perhaps up to 24 hours) after exposure to the gases.

Action in case of accidents

Inhalation
If escape of gas is suspected, leave the area, try to find fresh air and move affected persons out of the danger area. Small amounts of vapour from refrigerant R134a may have some effect especially on the nervous system. In large amounts, the gas may have an anaesthetic effect. In serious cases, seek immediate medical attention.

Skin contact
In case of frostbite, flush with lukewarm water for a long time. If a large amount of liquid refrigerant comes into contact with unprotected skin, the injured area should be carefully warmed with lukewarm water or warm clothes. Seek medical attention immediately if symptoms persist.

Splash in eyes
Flush with warm water until the irritation ceases. Seek immediate medical attention.

VOLVO
Construction Equipment

Service Information

Document Title: **Safety when working with batteries**	Function Group: **191**	Information Type: **Service Information**	Date: **2014/3/13**
Profile: **BHL, BL70B [GB]**			

Safety when working with batteries

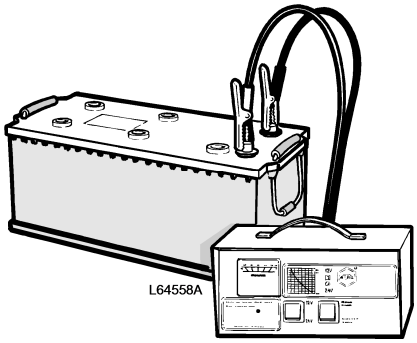

Figure 1
Battery charging

WARNING

Risk of serious corrosive injuries!

Batteries contain sulphuric acid which is very corrosive to the human body and parts of the machine. In addition, batteries give off hydrogen gas when they are loaded (supplying electricity) or being charged.
Together with the oxygen in the air, hydrogen gas forms a very explosive mixture.

This combination, **corrosive acid and explosive gas**, means a high risk of accidents during all work with batteries used in vehicles.
Therefore, it is very important that you take great care and follow the rules below when you are working with batteries.

Follow these instructions when charging batteries:

- Batteries give off explosive gases. Never smoke near batteries.

Figure 2
Do not smoke near batteries!

- Begin by disconnecting the ground lead when removing a battery. In order to reduce the risk of sparks that can cause fire, always connect the ground lead last when fitting a battery.
- Never tilt a battery to any great extent in any direction. Battery electrolyte may leak out.
- Do not connect a discharged battery in series with a fully charged battery. The current surge can cause the batteries to explode.
- Do not allow metal objects (such as tools, rings, wristwatches) to come in contact with battery terminals. Risk of fire and personal injury.

- Always cover the top of the battery with a rag or other non-conducting material when you work close to the batteries.
- Always refit the terminal caps on the batteries.
- Batteries contain substances hazardous to health and the environment. Therefore, discarded batteries be handled according to governing local/national regulations. See 191 Environmentally safe handling

Charging batteries

Explosion hazard

When a battery is being charged, an explosive mixture of oxygen and hydrogen is formed. A short circuit, open flame or spark near the battery can cause a powerful explosion. Always turn off the charging current before disconnecting the charging clamps. Ventilate well, especially if the battery is charged in a confined space.

WARNING

Risk of serious corrosive injuries!

Figure 3
Corrosive acid

Corrosive sulphuric acid

The battery electrolyte contains corrosive sulphuric acid. Electrolyte spilled on bare skin must be removed immediately. Wash with soap and plenty of water. If electrolyte gets into your eyes or any other sensitive body part, rinse immediately with plenty of water and seek immediate medical attention.

Document Title: **Starting with booster batteries**	Function Group: **191**	Information Type: **Service Information**	Date: **2014/3/13**
Profile: **BHL, BL70B [GB]**			

Starting with booster batteries

When starting with booster batteries, the following must be observed:

Check that the booster batteries or other power source have **the same voltage**as the standard batteries.

WARNING

The batteries could explode due to the current surge if a fully charged battery is connected to a completely discharged battery. Since the batteries contain sulphuric acid, this could result in personal injuries.

Follow these steps:

1. Move the gear selector to neutral.
2. Apply the parking brake.
3. Check that the booster batteries or other power source have the same voltage as the standard batteries.
4. Do not disconnect the cables to the standard batteries!
5. Connect (+) on the booster battery to (+) on the battery nearest the starter motor.
6. Connect the other start cable from (-) on the booster battery to the machine chassis, such as on the frame member close to the starter motor.
7. Start the engine with the ignition key in the cab.
8. Once the engine has started, remove the start cable between the chassis and the booster battery negative terminal (-). Then remove the start cable between the positive terminals (+).
9. Refit the terminal caps on the battery terminals.