

## Safety and operating instructions

### Cut-off saws





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## Introduction

Thank you for choosing a product from Atlas Copco. Since 1873, we have been committed to finding new and better ways of fulfilling our customers' needs. Through the years, we have developed innovative and ergonomic product designs that have helped customers improve and rationalize their daily work.

Atlas Copco has a strong global sales and service network, consisting of customer centers and distributors worldwide. Our experts are highly trained professionals with extensive product knowledge and application experience. In all corners of the world, we can offer product support and expertise to ensure that our customers can work at maximum efficiency at all times.

For more information please visit: [www.atlascopco.com](http://www.atlascopco.com)

Construction Tools EOOD

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## About the Safety and operating instructions

The aim of the instructions is to provide you with knowledge of how to use the cut-off saw in an efficient, safe way. The instructions also give you advice and tell you how to perform regular maintenance on the cut-off saw.

Before using the cut-off saw for the first time you must read these instructions carefully and understand all of them.

## Safety instructions

To reduce the risk of serious injury or death to yourself or others, read and understand the Safety and operating instruction before installing, operating, repairing, maintaining, or changing accessories on the machine.

Post this Safety and operating instruction at work locations, provide copies to employees, and make sure that everyone reads the Safety and operating instruction before operating or servicing the machine. For professional use only.

In addition, the operator or the operator's employer must assess the specific risks that may be present as a result of each use of the machine.

## Safety signal words

The safety signal words Danger, Warning and Caution have the following meanings:

<b>DANGER</b>	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
<b>WARNING</b>	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
<b>CAUTION</b>	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

## Personal precautions and qualifications

Only qualified and trained persons may operate or maintain the machine. They must be physically able to handle the bulk, weight, and power of the tool. Always use your common sense and good judgement.

### Personal protective equipment

Always use approved protective equipment. Operators and all other persons in the working area must wear protective equipment, including at a minimum:

- Protective helmet
- Hearing protection
- Impact resistant eye protection with side protection
- Respiratory protection when appropriate
- Protective gloves
- Proper protective boots
- Appropriate work overall or similar clothing (not loose-fitting) that covers your arms and legs.

### Drugs, alcohol or medication

#### ▲ **WARNING** Drugs, alcohol or medication

Drugs, alcohol or medication may impair your judgment and powers of concentration. Poor reactions and incorrect assessments can lead to severe accidents or death.

- ▶ Never use the machine when you are tired or under the influence of drugs, alcohol or medication.
- ▶ No person who is under the influence of drugs, alcohol or medication may operate the machine.

## Installation, precautions

#### ▲ **WARNING** Whipping hydraulic hose

Hydraulic hoses under pressure can whip uncontrollably if screws loosen or are loosened. A whipping hydraulic hose can cause severe injuries.

- ▶ Depressurise the hydraulic system before loosening the connection of a hydraulic hose.
- ▶ Tighten the nuts on the connections of the hydraulic hoses to the required torque.
- ▶ Check that the hydraulic hose and the connections are not damaged.

#### ▲ **CAUTION** Moving parts

Risk for crushed hands and fingers.

- ▶ Never check bores or passages with hands or fingers.
- ▶ Never clean chips with fingers use brush instead.

#### ▲ **WARNING** Cutting blade hazard

A cutting blade may burst and cause personal injury or death.

- ▶ Check that no persons are within the safety distance, which is 15 m (49 ft). Never start cutting until the working zone is clear.
- ▶ Never use a cutting blade with a lower speed rating than the machine's.
- ▶ Inspect the disc before usage, check that it is not chipped, cracked or show signs of other defects.
- ▶ Check that the cutting blade is fitted correctly and does not show signs of damage.
- ▶ Always ensure that the guard is in place, is in good condition and correctly fitted before starting the machine.
- ▶ Ensure that the disc safety clamps are in place.
- ▶ Never use a cutting blade for any other purpose than it is intended for.

**▲ WARNING Hydraulic oil at high pressure**

Thin jets of hydraulic oil under high pressure can penetrate the skin and cause permanent injury.

- ▶ Immediately consult a doctor if hydraulic oil has penetrated the skin.
- ▶ Never use your fingers to check for hydraulic fluid leaks.
- ▶ Keep your face away from any possible leaks.

**▲ WARNING Hydraulic oil**

Spilled hydraulic oil can cause burns, accidents due to slippery conditions and will also harm the environment.

- ▶ Take care of all spilled oil and handle it according to your safety and environmental regulations.
- ▶ Never dismount the hydraulic machine when the hydraulic oil is hot.
- ▶ Never run any hydraulic lines for attachment of the hydraulic machine through the drivers cab.

**▲ CAUTION Skin eczema**

Hydraulic oil can cause eczema if it comes in contact with the skin.

- ▶ Avoid getting hydraulic oil on your hands.
- ▶ Always use protective gloves when working with hydraulic oil.
- ▶ Wash hands after contact with hydraulic oil.

**▲ WARNING Unexpected movements**

The machine and the cutting blade might kick back towards the operator very suddenly and violently. If the upper quadrant of the blade touches an object, the cutting blade might move and may cause serious injury. To reduce risks:

- ▶ Never use the equipment if you suspect that it is damaged.
- ▶ Never start to cut with the upper quadrant of the cutting blade.
- ▶ Always hold onto the machine with both hands and make sure the cutting blade is away from your body.
- ▶ Keep a good balance and a firm foothold.
- ▶ Always cut with the machine running at maximum speed.
- ▶ Make sure that the work piece is supported during cutting.
- ▶ Be careful when inserting the blade in the machine.
- ▶ Never cut above shoulder height.
- ▶ Never cut in wood.
- ▶ Never place the machine on the ground, before the blade has come to a complete stop.
- ▶ Never strike or abuse the equipment.

## Operation, precautions

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**▲ WARNING Operating pressure**

If the maximum operating pressure for the hydraulic machine is exceeded, it can result in material damage and personal injury.

- ▶ Always run the hydraulic machine with the correct operating pressure. See "Technical data".

**▲ DANGER Explosion hazard**

If an working tool comes into contact with explosives or explosive gases, an explosion could occur. When working on certain materials and when using certain materials in machine parts, sparks and ignition can occur. Explosions will lead to severe injuries or death.

- ▶ Never operate the machine in any explosive environment.
- ▶ Never use the machine near flammable materials, fumes or dust.
- ▶ Make sure that there are no undetected sources of gas or explosives.

**▲ WARNING Dust and fume hazard**

Dusts and/or fumes generated or dispersed when using the machine may cause serious and permanent respiratory disease, illness, or other bodily injury (for example, silicosis or other irreversible lung disease that can be fatal, cancer, birth defects, and/or skin inflammation).

Some dusts and fumes created by drilling, breaking, hammering, sawing, grinding and other construction activities contain substances known to the State of California and other authorities to cause respiratory disease, cancer, birth defects, or other reproductive harm. Some examples of such substances are:

- Crystalline silica, cement, and other masonry products.
- Arsenic and chromium from chemically-treated rubber.
- Lead from lead-based paints.

Dust and fumes in the air can be invisible to the naked eye, so do not rely on eye sight to determine if there is dust or fumes in the air.

To reduce the risk of exposure to dust and fumes, do all of the following:

- ▶ Perform site-specific risk assessment. The risk assessment should include dust and fumes created by the use of the machine and the potential for disturbing existing dust.
- ▶ Use proper engineering controls to minimize the amount of dust and fumes in the air and to minimize build-up on equipment, surfaces, clothing, and body parts. Examples of controls include: exhaust ventilation and dust collection systems, water sprays, and wet drilling. Control dusts and fumes at the source where possible. Make sure that controls are properly installed, maintained and correctly used.
- ▶ Wear, maintain and correctly use respiratory protection as instructed by your employer and as required by occupational health and safety regulations. The respiratory protection must be effective for the type of substance at issue (and if applicable, approved by relevant governmental authority).
- ▶ Work in a well ventilated area.
- ▶ If the machine has an exhaust, direct the exhaust so as to reduce disturbance of dust in a dust filled environment.
- ▶ Operate and maintain the machine as recommended in the operating and safety instructions
- ▶ Select, maintain and replace consumables/ working tools/ other accessories as recommended in the operating and safety instructions. Incorrect selection or lack of maintenance of consumables/ inserted tools/ other accessories may cause an unnecessary increase in dust or fumes.
- ▶ Wear washable or disposable protective clothes at the worksite, and shower and change into clean clothes before leaving the worksite to reduce exposure of dust and fumes to yourself, other persons, cars, homes, and other areas.
- ▶ Avoid eating, drinking, and using tobacco products in areas where there is dust or fumes.
- ▶ Wash your hands and face thoroughly as soon as possible upon leaving the exposure area, and always before eating, drinking, using tobacco products, or making contact with other persons.
- ▶ Comply with all applicable laws and regulations, including occupational health and safety regulations.
- ▶ Participate in air monitoring, medical examination programs, and health and safety training programs provided by your employer or trade organizations and in accordance with occupational health and safety regulations and recommendations. Consult with physicians experienced with relevant occupational medicine.
- ▶ Work with your employer and trade organization to reduce dust and fume exposure at the worksite and to reduce the risks. Effective health and safety programs, policies and procedures for protecting workers and others against harmful exposure to dust and fumes should be established and implemented based on advice from health and safety experts. Consult with experts.
- ▶ Residues of hazardous substances on the machine can be a risk. Before undertaking any maintenance on the machine, clean it thoroughly.

**▲ WARNING Projectiles**

Failure of the work piece, of accessories, or even of the machine itself may generate high velocity projectiles. During operating, splinters or other particles from the working material may become projectiles and cause personal injury by striking the operator or other persons. To reduce these risk:

- ▶ Use approved personal protective equipment and safety helmet, including impact resistant eye protection with side protection.
- ▶ Make sure that no unauthorised persons trespass into the working zone.
- ▶ Keep the workplace free from foreign objects.
- ▶ Ensure that the work piece is securely fixed.



### ▲ **WARNING Slipping, tripping and falling hazards**

There is a risk of slipping or tripping or falling, for example tripping on the hoses or on other objects. Slipping or tripping or falling can cause injury. To reduce this risk:

- ▶ Always make sure that no hose or other object is in your way or in any other person's way.
- ▶ Always make sure you are in a stable position with your feet as far apart as your shoulders width and keeping a balanced body weight.

### ▲ **WARNING Motion hazards**

When using the machine to perform work-related activities, you may experience discomfort in the hands, arms, shoulders, neck, or other parts of the body.

- ▶ Adopt a comfortable posture while maintaining secure footing and avoiding awkward off-balanced postures.
- ▶ Changing posture during extended tasks may help avoid discomfort and fatigue.
- ▶ In case of persistent or recurring symptoms, consult a qualified health professional.

### ▲ **WARNING Material hazard**

During operating, the material that you operate in can become hot and fall down, which can cause a fire or even an explosion. This can lead to personal injury or death.

- ▶ Always consider the direction of the falling object.
- ▶ Wear fire resistant clothing and have a bucket of water nearby.

### ▲ **WARNING Trapping hazard**

There is risk of neck ware, hair, gloves and clothes getting dragged into or caught by a rotating cutting blade or accessories. This may cause choking, scalping, lacerations or death. To reduce the risk:

- ▶ Never grab or touch a rotating blade.
- ▶ Avoid wearing clothing, neck ware or gloves that may get caught.
- ▶ Cover long hair with a hair net.

### ▲ **WARNING Grinding hazard**

Using the side of the cutting blade can cause that the blade jam or break. Pressure from the side can damage the cutting blade. This can result in personal injury. To reduce risk:

- ▶ Never grind by using the side of the cutting blade.
- ▶ Never use the cutting blade if it has been damaged.
- ▶ Never grind over the maximum peripheral speed.

- ▶ Always feed the machine down in line with the cutting blade.
- ▶ Only use the cutting section.
- ▶ Never pull the machine to one side.

### ▲ **WARNING Vibration hazards**

Normal and proper use of the machine exposes the operator to vibration. Regular and frequent exposure to vibration may cause, contribute to, or aggravate injury or disorders to the operator's fingers, hands, wrists, arms, shoulders and/or nerves and blood supply or other body parts, including debilitating and/or permanent injuries or disorders that may develop gradually over periods of weeks, months, or years. Such injuries or disorders may include damage to the blood circulatory system, damage to the nervous system, damage to joints, and possibly damage to other body structures.

If numbness, persistent recurring discomfort, burning sensation, stiffness, throbbing, tingling, pain, clumsiness, weakened grip, whitening of the skin, or other symptoms occur at any time, when operating the machine or when not operating the machine, stop operating the machine, tell your employer and seek medical attention. Continued use of the machine after the occurrence of any such symptom may increase the risk of symptoms becoming more severe and/or permanent.

Operate and maintain the machine as recommended in these instructions, to prevent an unnecessary increase in vibration.

The following may help to reduce exposure to vibration for the operator:

- ▶ Let the tool do the job. Use a minimum hand grip consistent with proper control and safe operation.
- ▶ If the machine has vibration absorbing handles, keep them in a central position, avoid pressing the handles into the end stops.
- ▶ When the percussion mechanism is activated, the only body contact with the machine you should have are your hands on the handle or handles. Avoid any other contact, for example supporting any part of the body against the machine or leaning onto the machine trying to increase the feed force. It is also important not to keep the start and stop device engaged while extracting the tool from the work surface.
- ▶ Make sure that the inserted tool is well-maintained (including sharpness, if a cutting tool), not worn out, and of the proper size. Insertion tools that are not well-maintained, or that are worn out, or that are not of the proper size result in longer time to complete a task (and a longer period of exposure to vibration) and may result in or contribute to higher levels of vibration exposure.

- ▶ Immediately stop working if the machine suddenly starts to vibrate strongly. Before resuming the work, find and remove the cause of the increased vibrations.
- ▶ Never grab, hold or touch the inserted tool when using the machine.
- ▶ Participate in health surveillance or monitoring, medical exams and training programs offered by your employer and when required by law.
- ▶ When working in cold conditions wear warm clothing and keep hands warm and dry.
- ▶ The exhaust air is strongly chilled and shall not make contact with the operator. Always direct the exhaust air away from hands and body.

See the "Noise and vibration declaration statement" for the machine, including the declared vibration values. This information can be found at the end of these Safety and operating instructions.

#### **▲ DANGER Electrical hazard**

The machine is not electrically insulated. If the machine comes into contact with electricity, serious injuries or death may result.

- ▶ Never operate the machine near any electric wire or other source of electricity.
- ▶ Make sure that there are no concealed wires or other sources of electricity in the working area.

#### **▲ WARNING Concealed object hazard**

During operating, concealed wires and pipes constitute a danger that can result in serious injury.

- ▶ Check the composition of the material before operating.
- ▶ Watch out for concealed cables and pipes for example electricity, telephone, water, gas and sewage lines etc.
- ▶ If the inserted tool seems to have hit a concealed object, switch off the machine immediately.
- ▶ Make sure that there is no danger before continuing.

#### **▲ WARNING Involuntary start**

Involuntary start of the machine may cause injury.

- ▶ Keep your hands away from the start and stop device until you are ready to start the machine.
- ▶ Learn how the machine is switched off in the event of an emergency.
- ▶ Stop the machine immediately in all cases of power supply interruption.

#### **▲ WARNING Noise hazard**

High noise levels can cause permanent and disabling hearing loss and other problems such as tinnitus (ringing, buzzing, whistling, or humming in the ears). To reduce risks and prevent an unnecessary increase in noise levels:

- ▶ Risk assessment of these hazards and implementation of appropriate controls is essential.
- ▶ Operate and maintain the machine as recommended in these instructions.
- ▶ Select, maintain and replace the working tool as recommended in these instructions.
- ▶ If the machine has a silencer, check that it is in place and in good working condition.
- ▶ Always use hearing protection.
- ▶ Use damping material to prevent work pieces from 'ringing'.

## Maintenance, precautions

#### **▲ WARNING Machine modification**

Any machine modification may result in bodily injuries to yourself or others.

- ▶ Never modify the machine. Modified machines are not covered by warranty or product liability.
- ▶ Always use original parts, working tools and accessories.
- ▶ Change damaged parts immediately.
- ▶ Replace worn components in good time.

#### **▲ WARNING Working tool hazards**

Accidental engagement of the start and stop device during maintenance or installation can cause serious injuries, when the power source is connected.

- ▶ Never inspect, clean, install, or remove the working tool while the power source is connected.

#### **▲ CAUTION Hot working tool**

The tip of the working tool can become hot and sharp when used. Touching it can lead to burns and cuts.

- ▶ Never touch a hot or sharp working tool.
- ▶ Wait until the working tool has cooled down before carrying out maintenance work.

## Storage, precautions

- ◆ Keep the machine and tools in a safe place, out of the reach of children and locked up.

## Overview

To reduce the risk of serious injury or death to yourself or others, read the Safety instructions section found on the previous pages of this manual before operating the machine.

## Design and function

The Atlas Copco LS 14 and LS 16 hydraulic cut-off saws are powerful, light and compact machines designed for working together with Atlas Copco hydraulic power packs.

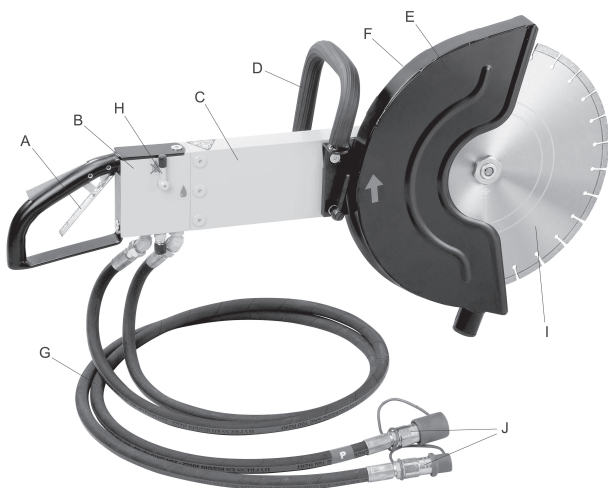
The cut-off saws are designed for cutting through concrete, asphalt and steel with cutting blades for both dry and wet cutting. They can be used with both diamond blades and with abrasive discs. A dust collector can be connected to the blade guard for operation in areas where the use of water is not possible. No other use is permitted.

A separate water kit with pressure tank is available (see the spare parts list).

The simple hydraulic design with direct drive, reduces maintenance and provides consistent speed and torque.

The Atlas Copco LS 14 and LS 16 cut-off saws are delivered with 2 m  $\frac{3}{8}$ " tail-hoses with  $\frac{1}{2}$ " 'Flat-Face' quick-release couplings.

### Main parts



- A. Trigger
- B. Valve block
- C. Frame
- D. Front handle
- E. Guard
- F. Hydraulic motor
- G. Hydraulic hose

- H. Water valve
- I. Cutting blade
- J. Quick release couplings

### Cart for the cut-off saw

The Atlas Copco LSC cart for the cut-off saw is recommended for precise and clean cutting jobs on roads, pavements and floors.

The use of the cart gives a better working posture, and the cutting depth can be adjusted by means of an arm at the front of the cart. The cart is equipped with a water kit. The cart is not standard equipment.



### Assembling the cut-off saw in to the cart:

- Untighten the screws (1).
- Set the body of the cut-off saw between the brackets (2).
- Tighten the screws (1).
- Set the lever holder (3) over the safety trigger and tighten it.
- Set the cable link over the trigger (4) and tighten it.
- Connect the water hose of the tank to the nipple of the cut of saw and switch ON the water lever of the tank.
- The depth of cutting can be adjusted with the screw (5).

### Disassembling the cut-off saw from the cart:

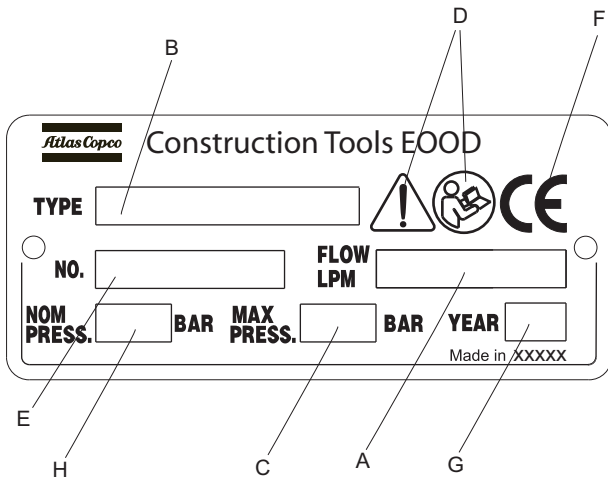
- Switch OFF the water lever of the tank and disconnect the water hose of the tank from the nipple on the cut-off saw.
- Disconnect the cable link from the trigger on the saw.
- Disconnect the lever holder from the safety trigger of the saw.
- Untighten the screws (1).

- Disconnect the body of the cut-off saw from the brackets (2).

## Labels

The machine is fitted with labels containing important information about personal safety and machine maintenance. The labels must be in such condition that they are easy to read. New labels can be ordered from the spare parts list.

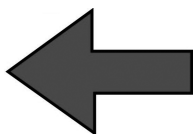
### Data plate



- A. Maximum permitted hydraulic oil flow
- B. Machine type
- C. Maximum relief valve setting
- D. The warning symbol together with the book symbol means that the user must read the safety and operating instructions before the machine is used for the first time.
- E. Serial number (is also stamped in the valve housing).
- F. The CE symbol means that the machine is EC-approved. See the EC declaration which is delivered with the machine for more information.
- G. Year of manufacture.
- H. Maximum nominal operating pressure

### Direction of rotation

The red label on the blade guard shows the direction of rotation.

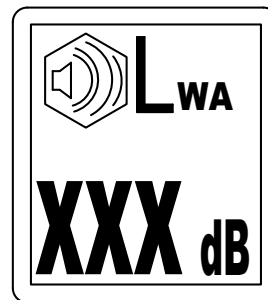


### Cutting blade speed rating

Never use a cutting blade with a lower speed rating than the machine's. A minimum cutting blade speed rating of 4400 r.p.m. is recommended.



### Noise level label



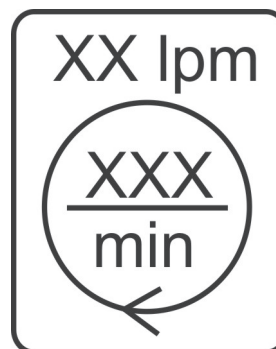
The label indicates the guaranteed noise level corresponding to EC-directive 2000/14/EC. See "Technical data" for accurate noise level.

### EHTMA category

The machine is clearly marked with EHTMA categories. It is important that any power source used is in a compatible category. If any doubt, consult an authorised supervisor.



### RPM label



## Installation

### ▲ **WARNING Whipping hydraulic hose**

Hydraulic hoses under pressure can whip uncontrollably if screws loosen or are loosened. A whipping hydraulic hose can cause severe injuries.

- ▶ Depressurise the hydraulic system before loosening the connection of a hydraulic hose.
- ▶ Tighten the nuts on the connections of the hydraulic hoses to the required torque.
- ▶ Check that the hydraulic hose and the connections are not damaged.

## Hoses

For connection on the machine, the hydraulic hose must be approved for a working pressure of at least 172 bar (2,500 psi) and have a 12.7 mm (½ in.) inner diameter. To resist exterior wear and tear, we recommend using a 2-layer hydraulic hose. The machine connection marked P (pump) is the oil inlet, and the connection marked T (tank) is the oil outlet. Always connect both hoses and make sure that all hose connections are tight. Never carry the machine by the hose.

## Quick-release couplings

The original hydraulic hoses are fitted with Flat-Face quick-release couplings that are strong and easy to clean. The quick-release couplings are fitted so that the male connection supplies oil and the female connection receives oil.

**NOTICE** Wipe all couplings clean before connecting. Ensure that couplings are clean and correctly engaged before operation. Failure to do so may result in damage to the quick couplings and cause overheating and cause foreign matter to enter the hydraulic system.

## Hydraulic oil

In order to protect the environment, use of biologically degradable hydraulic oil is recommended. No other fluids must be used.

- ◆ Viscosity (preferred) 20-40 cSt.
- ◆ Viscosity (permitted) 15-100 cSt.
- ◆ Viscosity index minimum 100.

Standard mineral or synthetic oil can be used. Make sure to only use clean oil and filling equipment.

When the machine is used continuously, the oil temperature will stabilise at a level which is called the working temperature. This will, depending on the type of work and the cooling capacity of the hydraulic system, be between 20-40°C (68-104°F) above the ambient temperature. At working temperature, the oil viscosity must be within the preferred limits. The viscosity index indicates the connection between viscosity and temperature. A high viscosity is therefore preferred, because the oil can then be used within a wider temperature range. The machine must not be used, if oil viscosity fails to remain within the permitted area, or if the working temperature of the oil does not fall between 20°C (68°F) and 70°C (158°F).

## Cutting blades

**NOTICE** High-quality cutting blades are often most economical. Lower quality blades often have inferior cutting capacity and a shorter service life, which results in a higher cost in relation to the quantity of material that is cut. The cutting blades must be approved for free hand cutting machines and rated for minimum 4400 rpm.

### Selecting the right cutting blade

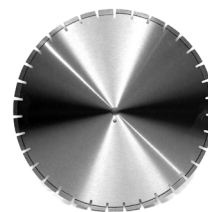
The cut-off saws can be used with both diamond blades and with the more traditional abrasive discs. Store and handle the abrasive product with care in accordance with manufacturer's instructions.

### Abrasive discs

Using abrasive discs, the cut-off saw can be used for cutting steel, concrete, asphalt or other material depending on the blade type.

### Diamond blades

Diamond blades are ideal for masonry, reinforced concrete and other composite materials. They are not, however, recommended for cutting steel.



There is a wide selection of blades with diamond segments for various kinds of material. The local environment (type of stone in the concrete or asphalt) will often determine which type of diamond blade is the ideal and most economic solution. Diamond blades are generally available as dry cutting or wet cutting blades. If dry cutting blades are used, a dust collector can be connected to the blade guard for operation in areas where no water can be accepted.

It is, however, most common to use a wet cutting diamond blade and a small amount of water to remove the dust and cool the diamond segments. With a diamond cutting blade, the cut-off saw can be used underwater without any modification.

### Fitting and removing the cutting blade

1. Untighten and remove the nut.
2. Remove the washer.
3. Remove and change the cutting blade.
4. Attach the new cutting blade. Be aware of the direction of rotation. If there is an arrow on the blade, this must point in the same direction as the red arrow on the blade guard.
5. Attach the washer above the cutting blade and tighten the nut.
6. Make sure that the blades/discs are mounted correctly and tightened before use.
7. Start the machine at low speed for one minute in a safe position and check the direction of rotation of the cutting blade. Stop the machine immediately if it starts to vibrate strongly or if you see other defects.

## Operation

### ▲ **WARNING Involuntary start**

Involuntary start of the machine may cause injury.

- ▶ Keep your hands away from the start and stop device until you are ready to start the machine.
- ▶ Learn how the machine is switched off in the event of an emergency.
- ▶ Stop the machine immediately in all cases of power supply interruption.

**NOTICE** Never exceed the maximum flow stated on the machine, as this might lead to failure of the cutting blade and damage to the machine.

## Preparation before starting

The following checks must be made each time you start to use the cut-off saw. All these checks concern the serviceability of the cut-off saw. Some concern your safety:

- ◆ Clean all safety labels. Replace any that are missing or cannot be read.
- ◆ Inspect the hoses generally for signs of damage.
- ◆ Inspect the blade for wear and damage. Do not use an excessively worn or damaged blade.

- ◆ Connect the machine.
- ◆ Ensure that the hydraulic couplings are clean and fully serviceable.
- ◆ Never invert the cut-off saw without first isolating it from the power source. The blade might be ejected forcefully while connecting it, if the saw is connected to the power source.
- ◆ Ensure that any power source you plan to use is compatible with the cut-off saw that is used, see "Technical data". Use recommended LFD oil flow divider, if the flow from the power source can exceed the maximum allowed oil flow.
- ◆ Never exceed the maximum relief valve setting stated on the machine.
- ◆ Always connect P and T hoses before starting.

## Start and stop

### Starting

1. Connect the hoses and couplings.
2. Mount the cut-off saw in the cart (if a cart is to be used).
3. Start the power source.
4. Activate the water supply or the dust collector, if they are being used.
5. Place the cut-off saw at a right angle to the surface to be cut and activate the trigger.

### Stopping

1. Release the trigger. Keep a firm grip on the cut-off saw, until the cutting blade has come to a complete stop.
2. It can take up to ten seconds for the cutting blade to stop completely.
3. Stop the power source.
4. Disconnect the hoses and fit the protective caps to the quick-release couplings.

### ▲ **WARNING Longer stopping time**

Stopping time can be up to 10 seconds.

- ▶ Always put the cut-off saw in a stable position.
- ▶ Be careful not to hurt yourself or anybody else when the blade is still running.

## Operating

**NOTICE** Diamond blades can become dull when the wrong feeding pressure is used or when cutting in certain materials, such as heavily reinforced concrete. Working with a blunt diamond blade causes overheating, which can result in diamond segments coming loose. Sharpen the blade by cutting in a soft material such as sandstone or brick.

**NOTICE** The blade can become out-of-round and vibrate if an excessive feeding pressure is used. A lower feeding pressure can stop the vibration. Otherwise replace the blade. The blade must be of the recommended type for the material to be cut.

### Cutting

The technique described below is of a general character. Check information for each cutting blade regarding individual cutting characteristics (for example, diamond blades require less feeding pressure than abrasive discs).

- ◆ During operation the working zone must be cleared.
- ◆ Always hold the machine in a firm grip with both hands. Hold it so that the thumbs and fingers grip round the handles.
- ◆ Stand in a stable position with your feet well away from the cutting blade.
- ◆ Check that the cutting blade is not in contact with anything when the machine is started.
- ◆ Always cut at maximum speed. Check regularly that the speed of the cutting blade is not higher than what is marked on it.
- ◆ Support the workpiece in such a way, that the cut slot would open up during the cutting process.
- ◆ Never grind with a cutting disc.
- ◆ Start cutting smoothly, allowing the machine to work without forcing or pressing in the blade.
- ◆ Move the blade slowly forwards and backwards to achieve a small contact area between the blade and the material to be cut. This reduces the temperature of the blade and ensures effective cutting.
- ◆ Feed the machine down in line with the blade.
- ◆ The cutting blade guard must be adjusted so that the rear section is in line with the work piece. Splinters and sparks from the material being cut are then collected by the guard and led away from the operator. Make sure that sparks do not land on clothing.

- ◆ If the cutting blade gets jammed in a cut, shut off the grinder and ease the wheel free. Before continue make sure it is not damaged.

## When taking a break

- ◆ During all breaks you must place the machine in such a way that there is no risk for it to be unintentionally started. Make sure to place the machine on the ground, so that it can not fall.
- ◆ In the event of a longer break or when leaving the workplace: Switch off the power supply and then bleed the machine by activating the start and stop device.

## Maintenance

Regular maintenance is a basic requirement for the continued safe and efficient use of the machine.

Follow the maintenance instructions carefully.

- ◆ Before starting maintenance on the machine, clean it in order to avoid exposure to hazardous substances. See "Dust and fume hazard".
- ◆ Use only authorised parts. Any damage or malfunction caused by the use of unauthorised parts is not covered by warranty or product liability.
- ◆ When cleaning mechanical parts with solvent, comply with appropriate health and safety regulations and ensure there is satisfactory ventilation.
- ◆ For major service of the machine, contact the nearest authorised workshop.
- ◆ After each service, check that the machine's vibration level is normal. If not, contact the nearest authorised workshop.

## Every day

Before undertaking any maintenance on hydraulic machines, always switch off the oil supply and bleed the machine by depressing the start and stop device. Then disconnect the hydraulic hose from the machine.

- ◆ Clean and inspect the machine and its functions each day before the work commences.
- ◆ Check if the spindle thread, the guard (the disc may not touch the guard) and the flange are in good condition.
- ◆ Conduct a general inspection for leaks, damage, and wear.

- ◆ Change damaged parts immediately.
- ◆ Replace worn components in good time.
- ◆ Make sure that all the attached and related equipment, such as hoses and flow dividers are properly maintained.
- ◆ If the machine has been dropped, carefully examine the disc.
- ◆ Ensure that the disc dimensions are compatible and that it fits the spindle.
- ◆ Always plug hoses and nipples with clean and tight plugs when dismantling.
- ◆ Check tightness of nuts, bolts, screws and hose fittings after the first days of operation and thereafter in accordance with the maintenance schedule.

## Every three month

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- ◆ Check tightness of nuts, bolts, screws and hose fittings.

## Every 300 hours of operation or every year

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- ◆ Check moving parts, seals and bolts for wear and cracks. Replace if necessary.
- ◆ Check the function of the machine.

## Storage

- ◆ Check that the machine is properly cleaned before storage.
- ◆ Store the machine in a dry place.
- ◆ Keep the machine and tools in a safe place, out of the reach of children and locked up.

## Disposal

A used machine must be treated and scrapped in such a way that the greatest possible portion of the material can be recycled and any negative influence on the environment is kept as low as possible.

Before a used machine is scrapped it must be emptied and cleaned from all hydraulic oil. The remaining hydraulic oil must be deposited and any negative influence on the environment is to be kept as low as possible.



## Technical data

## Troubleshooting

Problem	Cause	Solution
Saw turns too fast or develops too much torque	Connected to improper power source	Use proper power source
	Power source not adjusted correctly	Adjust power source flow and pressure settings as per the manufacturer's instructions
Saw will not turn at all or turns too slowly	Power supply defect	Disconnect saw and check power supply
	Valve block defect	Repair or replace
	Motor defect	Disconnect power source and try to turn the motor shaft by hand. Repair or replace
Saw does not develop enough torque (insufficient power to cut material)	Power supply defect	Repair or replace
	Motor defect	Repair or replace

## Machine data

Type	LS 14	LS 16
Weight without hoses and blade	9.8 kg (21.6 lb)	10.6 kg (23.4 lb)
Oil flow range	20-30 lpm (5-8 US gal/min)	20-40 lpm (5-10 US gal/min)
Max pressure relief valve setting on power source	170 bar (2500 psi)	170 bar (2500 psi)
EHTMA category	C and D	C, D and E
Max back pressure in return line (measured at saw)	30 bar (450 psi)	30 bar (450 psi)
Oil working temperature	30-70°C (86-158°F)	30-70°C (86-158°F)
Motor performance (max)	6.7 kW (9.0 HP)	8.8 kW (12.0 HP)
Motor torque (max)	16 Nm (11.8 ft-lbs)	21 Nm (15.5 ft-lbs)
Circumferential speed	46-75 m/s (151-246 ft/s)	42-85 m/s (138-279 ft/s)
Number of revolutions	2500-4000 rpm	2000-4000 rpm
Blade size	355 mm (14 in)	405 mm (16 in)
Arbor hole diameter	25.4 mm (1 in)	25.4 mm (1 in)
Cutting depth when used handheld	133 mm (5.2 in)	160 mm (6.3 in)
Cutting depth when mounted in cart	100 mm (3.9 in)	125 mm (4.9 in)
Required cooling capacity	Approx. 1.5 kW	Approx. 2 kW

## Noise and vibration data

	Noise		Vibration	
	Sound pressure	Sound power	Three axes values	
	Declared values		Declared values	
	EN ISO 11203	2000/14/EC	EN ISO 28927-8	
Type	Lp r=1m dB(A) rel 20µPa	Lw guaranteed dB(A) rel 1pW	A m/s <sup>2</sup> value	B m/s <sup>2</sup> spreads
LS 14 (Ø405 mm, 20 lpm)	94	108	4.90	1.00
LS 14 (Ø405 mm, 30 lpm)	94	108	5.00	1.10
LS 16 (Ø405 mm, 20 lpm)	102	116	4.90	1.00
LS 16 (Ø405 mm, 30 lpm)	102	116	5.00	1.10
LS 16 (Ø405 mm, 40 lpm)	102	116	8.30	2.00

## Noise and vibration declaration statement

Guaranteed sound power level **Lw** according to EN ISO 3744 in accordance with directive 2000/14/EC.

Sound pressure level **Lp** according to EN ISO 11201, EN 500-4:2011.

Vibration value determined according to EN 500-4:2011. See table "Noise and vibration data" for the values etc.

These declared values were obtained by laboratory type testing in accordance with the stated directive or standards and are suitable for comparison with the declared values of other machines tested in accordance with the same directive or standards. These declared values are not suitable for use in risk assessments and values measured in individual work places may be higher. The actual exposure values and risk of harm experienced by an individual user are unique and depend upon the way the user works, in what material the machine is used, as well as upon the exposure time and the physical condition of the user, and the condition of the machine.

We, Construction Tools EOOD, cannot be held liable for the consequences of using the declared values, instead of values reflecting the actual exposure, in an individual risk assessment in a work place situation over which we have no control.

This machine may cause hand-arm vibration syndrome if its use is not adequately managed. An EU guide to managing hand-arm vibration can be found at <http://www.humanvibration.com/humanvibration/EU/VIBGUIDE.html>

We recommend a programme of health surveillance to detect early symptoms which may relate to vibration exposure, so that management procedures can be modified to help prevent future impairment.

# EC Declaration of Conformity

## EC Declaration of Conformity (EC Directive 2006/42/EC)

We, Construction Tools EOOD, hereby declare that the machines listed below conform to the provisions of EC Directive 2006/42/EC (Machinery Directive) and 2000/14/EC (Noise Directive), and the harmonised standards mentioned below.

Cut-off saws	Guaranteed sound power level [dB(A)]	Measured sound power level [dB(A)]	Pmax (bar)
LS 14	108	105	170
LS 16	116	113	170

### Following harmonised standards were applied:

- ◆ EN ISO 11148-7

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Rousse, 2012-05-31









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