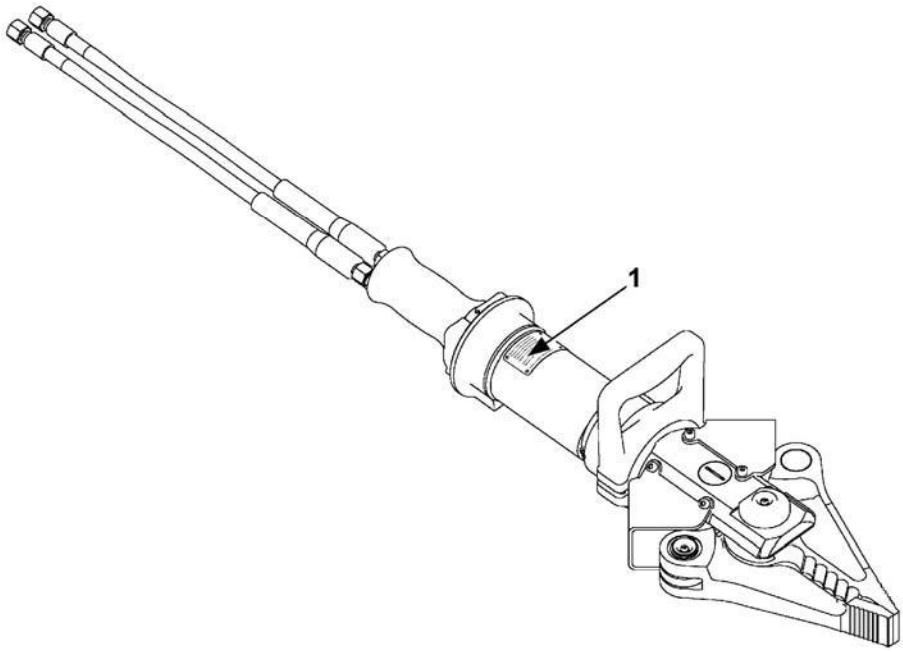
Device Data Sheet

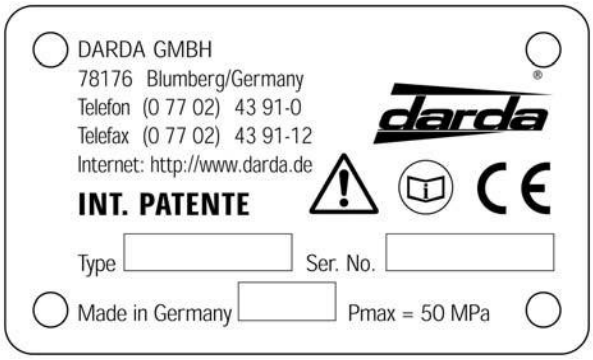
Validity of this Documentation

This Product Manual applies to the device defined in the following:

Combi-Shears HCS 6 by **Darda GmbH**



1 *Position of the rating plate*



Please enter the data from the rating plate on your Combi-Shears into the above illustration, if the manufacturer has not already done this.

When making complaints or queries please cite the data entered in this device data sheet.

Table of Contents

1 Introduction

1.1 Preface

Dear Customer, Dear Operator

You are responsible for

– commissioning,

– maintaining and,

– as necessary, converting

hydraulic **Combi-Shears HCS 6**.

This manual is intended to provide you with the information required to carry out these important tasks.

- Please read this manual carefully
- Act exactly in accordance with the descriptions provided
- Be absolutely certain to heed the safety instructions

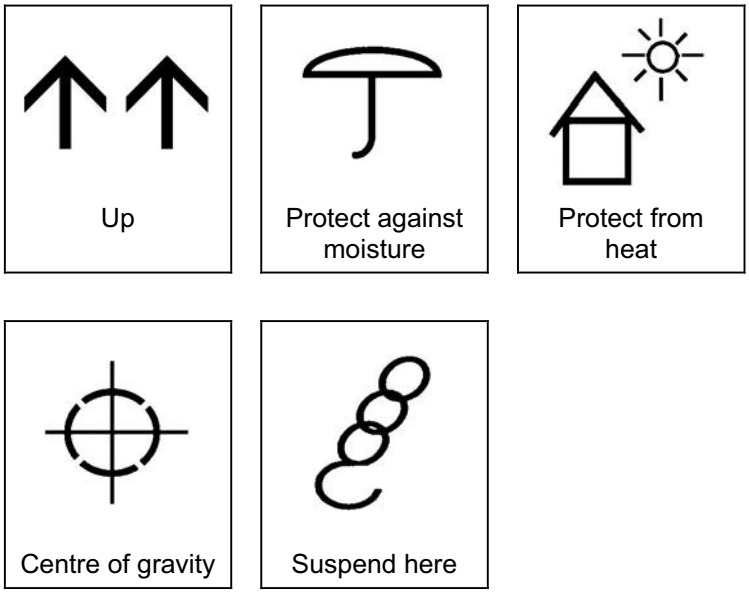
We will be happy to answer any questions you may have. The telephone / fax numbers, as well as the email and Internet addresses can be found on the first page of this manual.

Kind regards,
Darda GmbH

1.2 Transportation / Unloading / Unpacking

The Combi-Shears are prepared and packed by the manufacturer in accordance with the transportation requirements.

- Take note of the weight details and any symbols which are attached to the transportation packaging, such as:



- Use a lifting device with sufficient carrying capacity to unload the Combi-Shears from the transport vehicle.

Danger due to suspended load

Fatal injuries from crushing can result if a suspended load falls.

- ***For this reason never stand under a suspended load.***

- Remove the transportation packaging from the Combi-Shears.

1.3 Receiving Inspection

- Immediately after unpacking inspect
  - the delivery for transport damage and deficiencies.
  - the completeness of the delivery with reference to the delivery note.
  - any accessories included in the delivery.
- Make certain that no parts remain in the packaging and dispose of the packaging in accordance with the national or regional regulations if there is no reason for complaint.

1.4 Complaints

Damage claims arising from transport damage will only be honoured if the delivery company is notified immediately.

- Immediately fill out a damage report for the returned shipment (due to transport damage / repairs) and sent the parts back to the manufacturing plant in their original packaging, if possible.
- Enclose the following details in the returned shipment:
  - Name and address of the sender and recipient
  - Type, Ser. No.
  - Description of the defect
  - In case of transport damage: delivery company name and exact time of delivery, if possible, driver name and registration number of the delivery vehicle

1.5 Guarantee and Liability

In principle, our **General Sales and Delivery Conditions** apply to the use of the Combi-Shears.

Agreements that deviate from these have to be agreed in writing and confirmed by us. Guarantee and liability claims in respect of personal injury or damage to property will not be honoured if they arise from one or more of the following causes:

- use of the Combi-Shears for purposes other than those intended
- incorrect connection, commissioning, operating, repair and maintenance of the Combi-Shears
- use of the Combi-Shears with defective safety equipment or incorrectly installed or non-functioning protective equipment
- non-observance of the advice given in this manual in respect of safety, commissioning, operation, repair and maintenance of the Combi-Shears
- structural modifications to the Combi-Shears, made without authorisation
- use of the splitting cylinder with hydraulic power units which are not released for use by Darda
- overheating of the Combi-Shears or the hydraulic oil caused by unsuitable use of the Combi-Shears
- unauthorised modification of the pressure limiting valve setting on the hydraulic power unit and/or the increasing of the hydraulic pressure
- insufficient monitoring and maintenance of wear-and-tear parts, (e.g. the interchangeable tools).
- Insufficient lubrication of the Combi-Shears or the use of a different lubricating grease than the one specified by Darda.
- Emergencies caused by foreign bodies and acts of God.

Guarantee and liability claims in relation to damage to machine parts (especially interchangeable tools, hydraulic hoses and connections), which cannot be shown to be have been caused by manufacturing defects are excluded. Only original manufacturer's replacement parts may be used during maintenance of the Combi-Shears.

1.6 Product Identification

The descriptions in this manual refer to Type

– HCS 6 C,

– HCS 6 S,

– HCS 6 B and

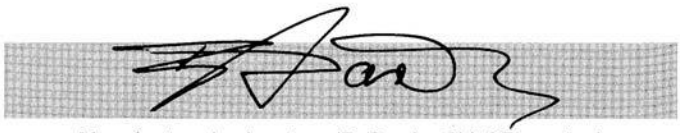
– HCS 6 J

Combi-Shears from **Darda GmbH.**

1.7 Declaration of Conformity

The machine bearing the designation and serial number shown on the title page was designed and manufactured by:
DARDA GmbH
in accordance with the safety requirements generally applicable to machines laid down in EU Directive 89/392/EEC.

The following harmonized standard, applicable to machines, was used accordingly:
EN 292
(Safety of machines, instruments and systems)



Manufacturer's signature (B. Darda, Chief Executive)

Applied EC Directive

– EC "Machinery" Directive 98/37/EEC (revised version of the directive 89/392/EEC including all alterations)

1.8 Areas of Application

The hydraulic Combi-Shears HCS 6 is available in four different versions based on a modular system.

One main body with four interchangeable tools:

- Shear type HCS 6 **C**
- Sickle blade type HCS 6 **S**
- Brick jaw type HCS 6 **B**
- Concrete jaw type HCS 6 **J**

The powerful Combi-Shears work quickly and extremely quietly with the four interchangeable tools. There is no vibration or dust generated through usage. The tools can be exchanged within a few minutes and without needing any special tool.

- The HCS 6 **C** is specially designed to expand and separate material, e.g. radiators, door frames or splitted concrete parts. The tool also has a cutting device for various materials.
- The HCS 6 **S** equipped with sickle shaped blades, is able to cut aluminium and steel pipes, electric cables, reinforcements up to 20 mm diameter, timber frames or wooden panels. The sickle shape avoids that the material can slip out.
- The HCS 6 **B** Brick jaw model can cut through walls up to 32 cm thick. It is used instead of the normal sledgehammer and thanks to its hydraulic operation it is significantly more efficient and very user-friendly.
- Equipped with the Concrete jaw set, the HCS 6 **J** can cut through concrete walls up to 15 cm thick, depending on the compression strength of the concrete. It offers considerable advantages when breaking up thinner partition walls, facing tiles or during renovation of flagstones.

1.9 Symbols

Text that is marked with DANGER provides a warning about exceptionally large, immediate hazards which would, with certainty, result in serious or even fatal injuries if accident prevention measures are not taken.
It is essential that you heed this text.

Text that is marked with WARNING provides a warning about exceptionally large, possible hazards which would, with certainty, result in serious or even fatal injuries if accident prevention measures are not taken.
It is essential that you heed this text.

Text which is marked with CAUTION provides a warning about a potentially dangerous situation which could result in minor injury or damage to property.
It is essential that you heed this text.

Text that is marked with this symbol contains very important information, which may also include information for the prevention of health hazards.
It is essential that you heed this text.

Text that is marked with this symbol contains important information, which may also include information for the prevention of material damage.
It is essential that you heed this text.

This symbol indicates text which contains important information / comments or tips.

● This dot marks the descriptions of activities that you should carry out.

– This dash marks specifications.

➪ This arrow marks a cross-reference.

If a cross-reference to another chapter is necessary in the text, this is shortened for clarity.

Example: **(➪ 2 Safety Instructions)**

This means: see Chapter 2 Safety Instructions.

If the cross-reference refers to a page, figure or position number this information is added to the end of the cross-reference.

(3) Numbers in brackets refer to the positions in figures.

2 Safety Instructions

The type HCS 6 Combi-Shears is a quality product, manufactured using state-of – the-art equipment and from a safety point of view was in a perfect condition when it left the factory.

The Combi-Shears satisfies the currently valid safety norms and conforms to the guidelines laid down by the European Union.

(⇨ 1.7 Declaration of Conformity)

When used properly and in accordance with the description and safety advice contained in this handbook, usage of the Combi-Shears is safe.

Nevertheless, there are dangers associated with the use of the Combi-Shears.

For this reason, we strongly advise the operator that all people who will be operating, setting-up and maintaining the Combi-Shears, should have been advised in advance of possible dangers by reference to this product manual, in particular to the information contained in Chapter 2, Safety Instructions.

2.1 Responsibilities

2.1.1 Responsibility of the Operator

The operator is obliged to ensure that only personnel who satisfy the following conditions are allowed to work with the Combi-Shears:

- **They shall be aware of the basic requirements of safe working practices and shall have been trained by qualified trainers in the use of the Combi-Shears and the hydraulic power unit.**
- **They shall have read and understood the safety and warning advice contained in this manual.**
- **They shall have received sufficient training in the work that is to be carried out.**
- **They shall be protected during their work by suitable personal safety equipment.**

2.1.2 Responsibility of the Personnel

All personnel who are authorised to work to with the Combi-Shears are obliged to:

- **take the basic requirements of safe working practices and accident prevention into account,**
- **read the safety and warning advice contained in this manual and in the case of any uncertainties about what is meant, seek advice from an appropriate source,**
- **wear suitable personal safety equipment while working,**
- **stop work immediately if there are any safety issues and inform the responsible authority without delay.**

2.2 Intended Use

The Darda Combi-Shears of type

- HCS 6 C (equipped with shears) is designed for expansion and separation. Using the Combi-Shears, for example, radiators can be pushed out from the wall, door frames broken out and previous splitted concrete parts can be separated. In addition to this, the HCS 6 C Combi-Shears can be used to cut many different building materials.
- HCS 6 S (equipped with the sickle shaped blade) is designed to pipes, steel rods or bars, **disconnected** high voltage electric cables, timber frames or wooden panels and reinforcements up to 20 mm diameter.
- HCS 6 B (equipped with brick jaws) is designed to cut through walls up to 32 cm thick.
- HCS 6 J (equipped with concrete jaws) is designed to cut through concrete walls up to 15cm thick, (depending on the compression strength of the concrete).

Only Darda hydraulic power units should be used, in order to ensure functional security and to abide by the terms of the guarantee.

Any further usage exceeding the specified ones will be considered as improper. The manufacturer cannot be held liable for any personal or material damage resulting thereby.

2.3 Structural Alterations / Repairs

- **No structural modifications or changes may be made to the component and/or sub-assembly settings of the Combi-Shears.**
- **Repairs should only be carried out to the Combi-Shears either by the manufacturer or by specialists with good knowledge of hydraulics and mechanics.**
- **Only use the original replacement parts from the manufacturer for repairs.**
- **Repairs that have been carried out arbitrarily or without using the original replacement parts from the manufacturer may be detrimental to operational and functional safety.**

2.4 Operator Safety

2.4.1 Safety Instructions for the Respective Tasks

2.4.1.1 Safety instructions for the connection and/or disconnection of the Combi-Shears to and/or from the hydraulic hosts and for retooling

We strongly advise that connection and/or disconnection and retooling of the Combi-Shears should only be carried out by trained personnel who have a good knowledge of mechanics and hydraulics.

- ***Switch the hydraulic power unit off.***
- ***Remove pressure from hydraulic / pneumatic accumulators /hose assemblies / devices etc.***
- ***If required, locate warning signs to ensure that the hydraulic power unit is not accidentally turned back on.***
- ***Carry out the work, taking all relevant safety and accident-avoidance guidelines into account.***
- ***Only use recommended and undamaged material/tools.***
- ***Carry out the work on the Combi-Shears only as laid down in this manual.***
- ***Before releasing the Combi-Shears for operation carry out a function test and check them for perfect and safe operation.***
- ***In particular, you should check the safety devices on the hydraulic power unit, e.g. emergency OFF switch, safety covers, etc), and make sure that the hydraulic hoses and connections do not have any leaks.***
- ***Do not release the Combi-Shears for use if***
  - ***the safety devices are not fully functional or available,***
  - ***malfunctions of any kind occur,***
  - ***any parts of the Combi-Shears or the hydraulic power units are damaged.***

2.4.1.2 Safety Instructions for Commissioning / Shut-down procedure / Operation

We strongly advise that the Combi-Shears may only be commissioned / shut down by trained personnel who due to their occupational training understand the Combi-Shears technology on the one hand and on the other have a good knowledge of the their duties and the material to be processed.

In addition these persons must have read this manual and must have understood these safety instructions in particular.

- ***Make sure there are no potential hazards for persons or the environment when commissioning /shutting down / operating the Combi-Shears.***
- ***Make sure that no persons linger in, step into or are able to step into the danger zone of the Combi-Shears and the hydraulic power units during commissioning / operation.***
- ***If necessary set up danger signs which warn against the commissioning / operation of the Combi-Shears.***
- ***Before any commissioning procedure check***
  - ***the proper function of the Combi-Shears and the hydraulic power units.***
  - ***the safety contrivances / devices for proper function and availability.***
  - ***whether the Combi-Shears and all components are free from damage wear, deformation, damage and corrosion.***
  - ***whether all parts and fixtures fit tightly.***
  - ***the hydraulic hose assemblies and connections.***
  - ***whether the main and the connection pin(s) have been properly lubricated.***
- ***Only commission / shut down the device according to the description in this manual.***
- ***Make sure that, for example, all supply cables or pipes (power, gas, water, hydraulics, air, etc) are fully disconnected and emptied, any steel ropes or reinforcements are not under any tensile loading, walls are not load-bearing, etc.***
- ***Never direct the Combi-Shears against persons if they are fully operational.***
- ***Do not commission any Combi-Shears whose functional / operational safety cannot be guaranteed / achieved.***

2.4.1.3 Safety instructions for Break-up Work

Some serious and unforeseeable risks remain during break-up work, which can only be addressed through systematic planning, danger-aware working practices, experience, etc.

Persons who are in the area where the Combi-Shears is being used are at risk of serious injuries, such as loss of limbs, cuts and bruises or fractures caused by falling masonry.

- ***For this reason, you should plan the work thoroughly before starting and carry it out methodically. If required, you should get specialist information or advice from experts in the field.***
- ***Make sure that, for example, all supply cables or pipes (power, gas, water, hydraulics, air, etc) are fully disconnected and emptied, any steel ropes or reinforcements are not under any tensile loading, walls are not load-bearing, etc.***
- ***Wear personal protective equipment when working with the Combi-Shears, e.g.:***
  - ***hard hat***
  - ***face screen***
  - ***eye shield***
  - ***respiratory equipment***
  - ***protective clothing***
  - ***protective gloves***
  - ***safety boots***

2.4.1.4 Safety Instructions for Maintenance / Cleaning

We strongly advise that cleaning / maintenance of the Combi-Shears should only be carried out by trained personnel who have a good knowledge of mechanics and hydraulics.

In addition these persons must have read this manual and must have understood these safety instructions in particular.

- ***Switch the hydraulic power unit off before starting any cleaning / maintenance work on the Combi-Shears.***
- ***Remove all pressure from hydraulic / pneumatic accumulators / hose assemblies / devices, etc.***
- ***If required, locate warning signs to ensure that the hydraulic power unit is not accidentally turned back on.***
- ***Carry out the cleaning / maintenance in accordance with the descriptions in this manual.***

2.4.1.5 Safety Instructions for the Repair

- ***The Combi-Shears may only be repaired by the manufacturer or trained personnel with a written authorisation to do so.***
- ***Only use the original replacement parts from the manufacturer for repairs.***
- ***Repairs which have been carried out arbitrarily or without using the original replacement parts from the manufacturer may be detrimental to operational and functional safety.***

2.4.2 Safety Instructions for Specific Hazards

2.4.2.1 Hazards Caused by Mechanical Movements

– Persons who are in the area where the Combi-Shears is being used are at risk of serious injuries, such as loss of limbs, cuts and bruises or fractures.

– *When metal is being cut, heavy parts may be thrown at speed through the air.*

- ***For this reason, keep out of the area where the Combi-Shears is being used and/or take appropriate measures to ensure that unauthorised personnel cannot access the area.***
- ***Wear personal protective equipment when working with the Combi-Shears, e.g.:***
  - ***hard hat***
  - ***face screen***
  - ***eye shield***
  - ***respiratory equipment***
  - ***protective clothing***
  - ***protective gloves***
  - ***safety boots***

2.4.2.2 Hazards Caused by Hot Device Parts

Even after a short operation time or after longer idle times the hydraulic hose assemblies or other device parts can become or remain hot.
In case of skin contact serious burns my be incurred.

- ***Note that during normal operation the hydraulic oil may reach a temperature of up to 80 °C.***
- ***Before starting work on hydraulic device parts, check whether you can work safely at the given temperature.***
- ***If necessary let the Combi-Shears or the hydraulic oil cool down before carrying out work on hydraulic parts.***
- ***Never open screw connection parts which are hot (or highly pressurised).***
- ***Wear personal protective equipment when working with the Combi-Shears, e.g.:***
  - ***hard hat***
  - ***face screen***
  - ***eye shield***
  - ***respiratory equipment***
  - ***protective clothing***
  - ***protective gloves***
  - ***safety boots***

2.4.2.3 Hazards Caused by Pressurised Device Parts

Hydraulic oil escaping at high pressure can permeate the skin and may cause poisoning, infections and other serious injuries to the eyes or other organs.

- ***For all work at hydraulic hose assemblies or device wear appropriate personal protective equipment (e.g. eye shield, face screen, protective gloves, protective clothing).***
- ***Check the condition of the hydraulic hose assemblies, the respective connections and all other hydraulic device parts of the Combi-Shears at regular intervals.***

  If they are subject to damage or ageing have these parts immediately replaced by authorised personnel.
- ***Before carrying out work on hydraulic device parts check whether they are pressurised or not.***
- ***Note that even if the hydraulic supply is deactivated, there might be some danger arising from hydraulic oil which is located in the hydraulic hoses and which may be pressurised.***

2.4.2.4 Danger from dust, glass fibres, asbestos

During break-up work, dust particles and very small fibres can be released, which, over time can damage respiratory organs.

- ***For this reason, you should wear a breathing protector while working.***

2.5 Device Protection

Please heed the following information or instructions to prevent the Combi-Shears from being damaged.

- ***Check the Combi-Shears for operational safety before any start-up.***
- ***Only operate the Combi-Shears within the limits defined in the technical data section.***

  Observe in particular the specification for the maximum operating pressure.
- ***Exclusively use hydraulic oils approved by the manufacturer.***
- ***Never mix oils with different viscosities or from different manufacturers. If in doubt, completely change the hydraulic oil.***
- ***Observe the maintenance intervals listed in Chapter 7 Maintenance / Cleaning and complete out all maintenance work on schedule.***
- ***Immediately cut off the hydraulic supply in case of a malfunction of the Combi-Shears, secure them against accidental start-up and inform the superior in charge on the malfunction.***
- ***When changing the tools tighten the fastening nuts at the specified torque.***
- ***Lubricate the points marked in figure 7-1 in accordance with the specified maintenance intervals.***
- ***Only use the grease specified by the manufacturer.***

2.6 Labelling on the Combi-Shears

The following labels are to be found on the Combi-Shears:

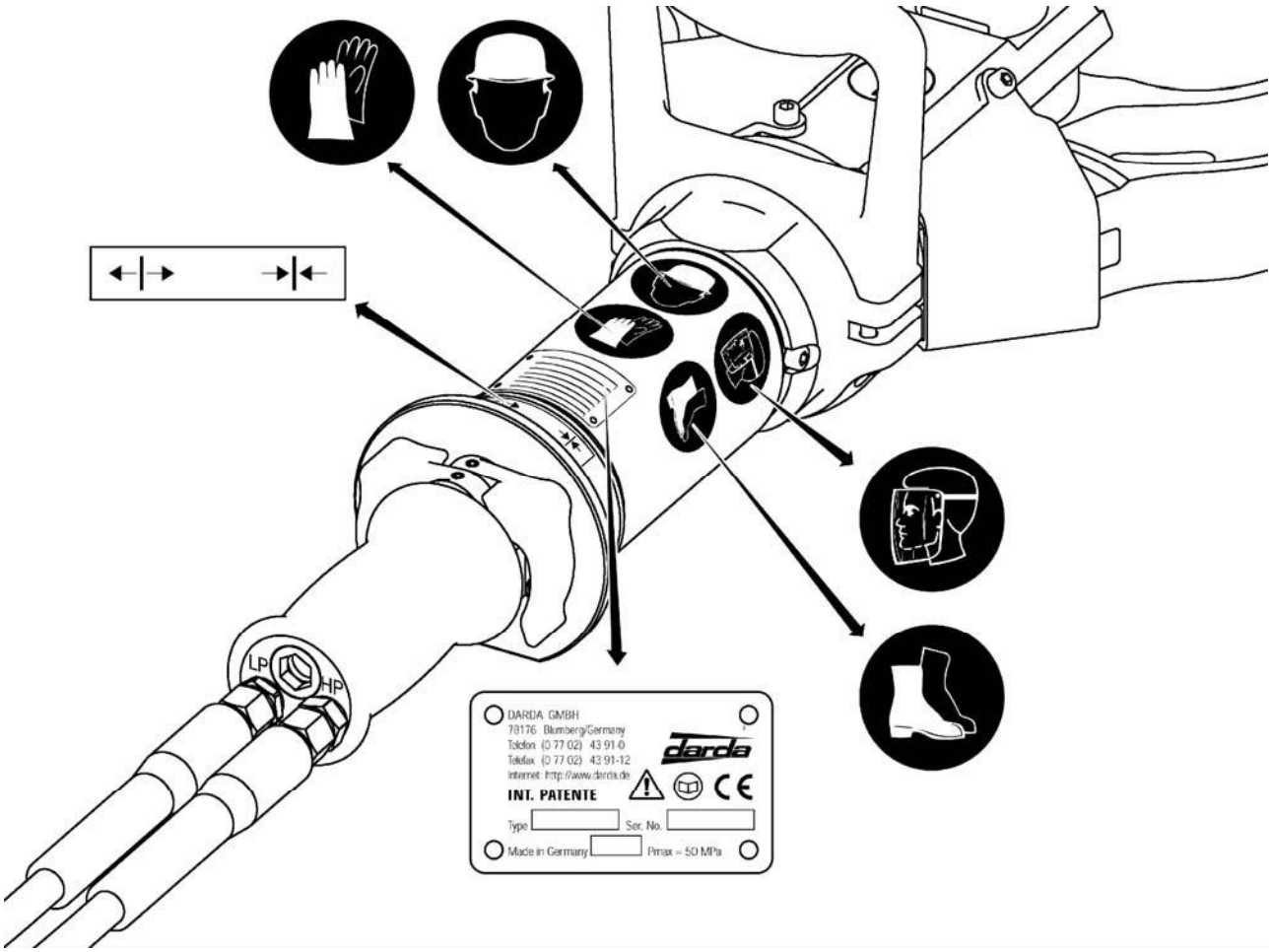


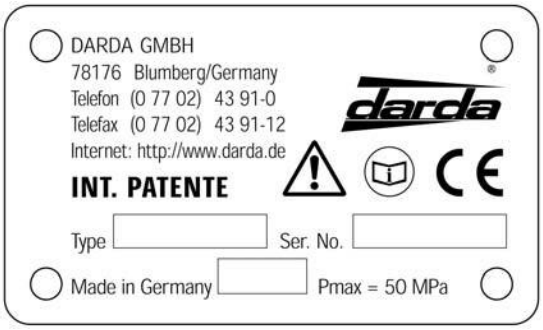
Fig. 2-1 Combi-Shears labelling

Wear a hart had

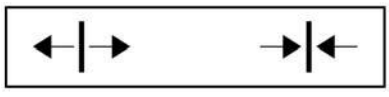
Wear a face shield

Wear protective gloves

Wear safety boots



Rating plate



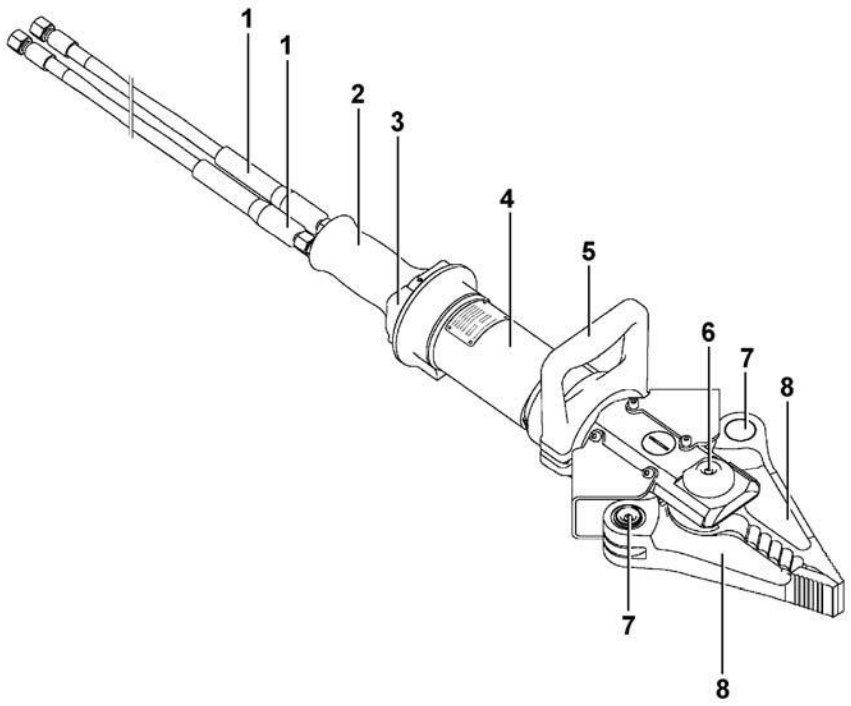
Valve operation

Fig. 2-2 Safety labels, operating instructions and rating plate

- ***Make sure you wear the recommended safety equipment at all times when working with the Combi-Shears.***

3 Device Description

3.1 Description of the Parts



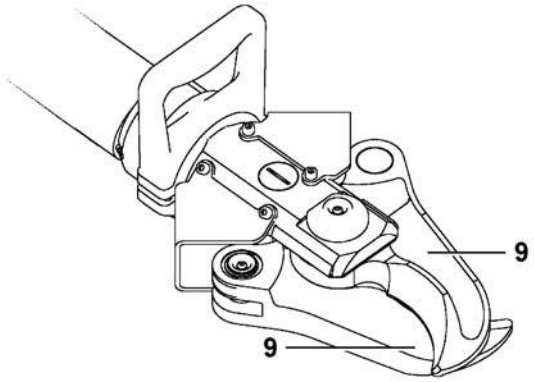
Example unit

1 *Hydraulic hoses*
2 *Cylindrical handle with control valve*
3 *Switch (to open / close the interchangeable tools)*
4 *Cylindrical tube*
5 *Handle*
6 *Main bolts*
7 *Connecting bolts*

Interchangeable tool – Shears

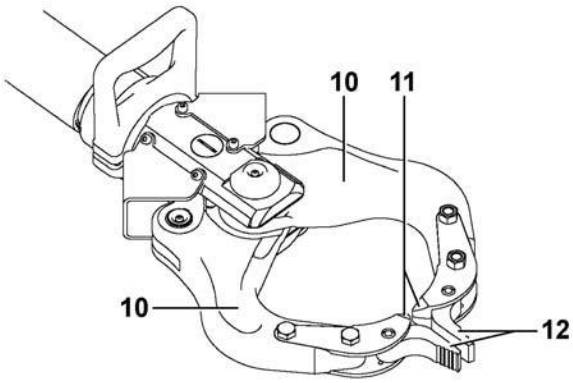
8 *Shear arms*

Fig. 3-1 HCS 6 Example unit (with shears)



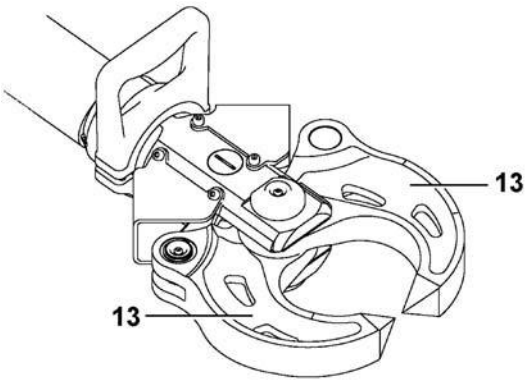
Interchangeable tool – Sickle blade

9 *Sickle blades*



Interchangeable tool – Brick jaws

10 *Brick jaw arms*
11 *Breaking tips*
12 *Separating levers*



Interchangeable tool – Concrete jaws

13 *Concrete jaw arms*

Fig. 3-2 Interchangeable tools

3.2 Functional Description / Operation

3.2.1 General information

The Combi-Shears are connected with the hydraulic power unit through two hydraulic hoses.

When they are supplied with the required hydraulic pressure, the Combi-Shears are ready for operation.

The following movements can be carried out by operating the hydraulic valve located in the cylindrical handle:

– Opening and closing the interchangeable tools

Depending on the pressurised direction, the Combi-Shears will be opened or closed accordingly. The corresponding direction can be determined by testing.

The hydraulic working pressure to open and close the Combi-Shears must not exceed 50 MPa (500 bar).

3.2.2 Operating the Combi-Shears

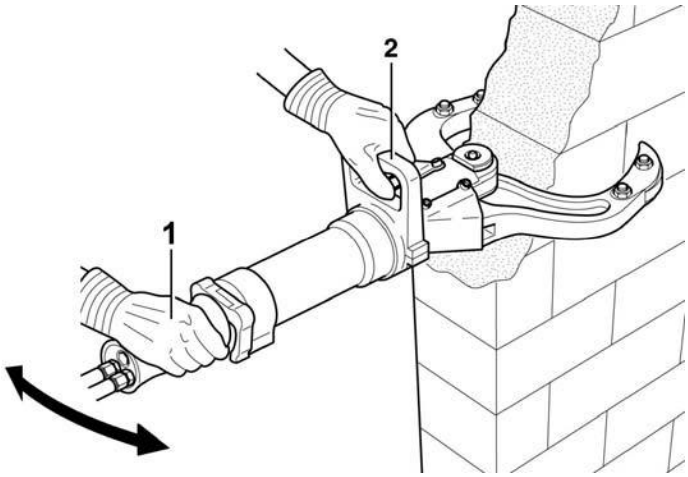


Fig. 3-3 Operating the Combi-Shears

- Pick the Combi-Shears up with one hand on the handle (2).
- Place the other hand around the cylindrical handle (1) and position the Combi-Shears centrally at the wall.

When the jaw arms are closed, the Combi-Shears can suddenly swing left or right.

- ***For this reason, you should maintain a distance of between 20 – 30 cm between you and the Combi-Shears.***

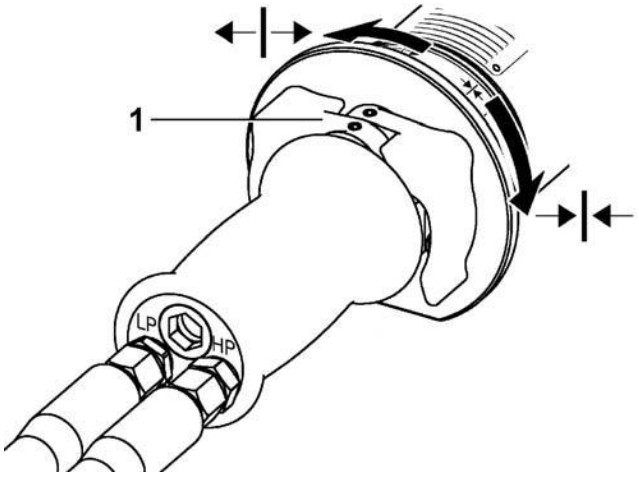


Fig. 3-4 Operating the switch

- To close the tool, →|← turn the switch (1) in a clockwise direction.
- To open the tool, ←|→ turn the switch (1) in a counter-clockwise direction.

In the event of a loss of pressure, the tool remains under load in the current position because of the integrated safety non-return valve.

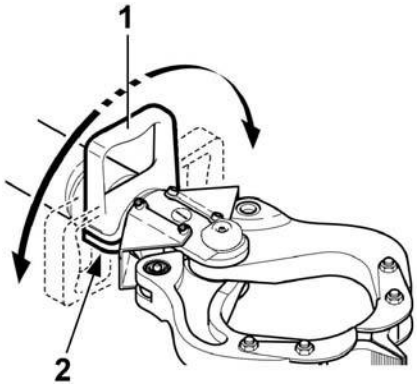


Fig. 3-5 Turning the handle

To make operation of the Combi-Shears easier, the handle can be turned to any position.

DANGER!

In order to avoid injury caused by the accidental opening or closing of the tool while repositioning the handle,

- ***switch the hydraulic power unit off and release the pressure from the hydraulic hoses before turning the handle to another position,***
- ***loosen the Allen screws (2) to reposition the handle,***
- ***turn the handle to the desired position,***
- ***tighten the Allen screws.***

4 Commissioning / Shut-down procedure

We call your attention expressly to the fact that the Combi-Shears may only be commissioned / shut down by trained personnel who due to their training understand the Combi-Shears technology on the one hand and on the other have a good knowledge of the their duties and the material to be processed.

It addition these persons must have read and must have understood this manual and in particular Chapter 2 Safety Instructions as well as the following commissioning description.

4.1 Connecting the Combi-Shears to the hydraulic power unit

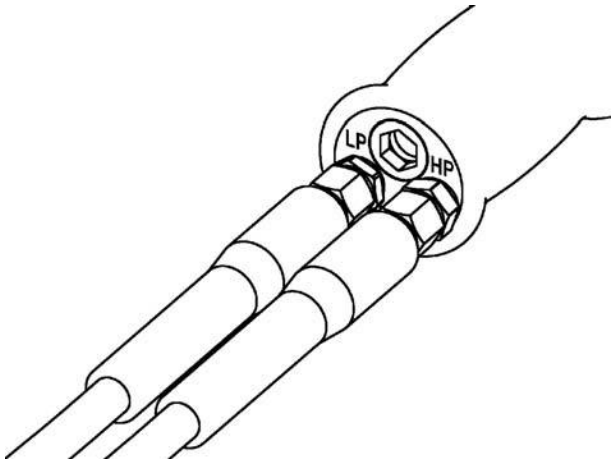


Fig. 4-1 Combi-Shears hydraulic connections

WARNING!

- ***Check to make sure that hydraulic connections are clean. If necessary, clean them thoroughly.***
- ***Switch the hydraulic power unit off and release all pressure before connecting the Combi-Shears.***

- Connect the two hydraulic hoses to the Combi-Shears as shown in the drawing.
  HP ≙ High-pressure connection
  LP ≙ Low-pressure connection

4.2 Commissioning

- ***Make sure that no persons linger in , step into or are able to step into the danger zone of the Combi-Shears and the device hydraulic power units during commissioning / operation.***
- ***If necessary set up danger signs which warn about the commissioning / operation of the Combi-Shears.***
- ***Before any commissioning procedure check***
  - ***the proper function of the Combi-Shears and the hydraulic power units.***
  - ***the safety devices for proper function and availability.***
  - ***whether the Combi-Shears and all components are free from wear, deformation, damage and/or corrosion.***
  - ***whether all parts and fixtures fit tightly.***
  - ***the hydraulic hose assemblies and connections.***
  - ***whether the main and the connection bolt(s) have been properly lubricated.***

Do not commission any Combi-Shears whose functional / operational safety cannot be guaranteed.

- Switch the hydraulic power unit on. Wait a few seconds until the required working pressure has built up.
- Pick the Combi-Shears up and check the open/close functions.

If the movement direction of the Combi-Shears is opposite to the movement direction of the operating handle, this can be corrected by changing the pressurised direction.

Make sure to have the Combi-Shears and its hydraulic hoses depressurised before changing the pressurised direction.

- ***Take care to read the instructions in chapter***

  4.3 Shut-down procedure

  before interchanging the hydraulic hoses.

4.3 Shut-down procedure

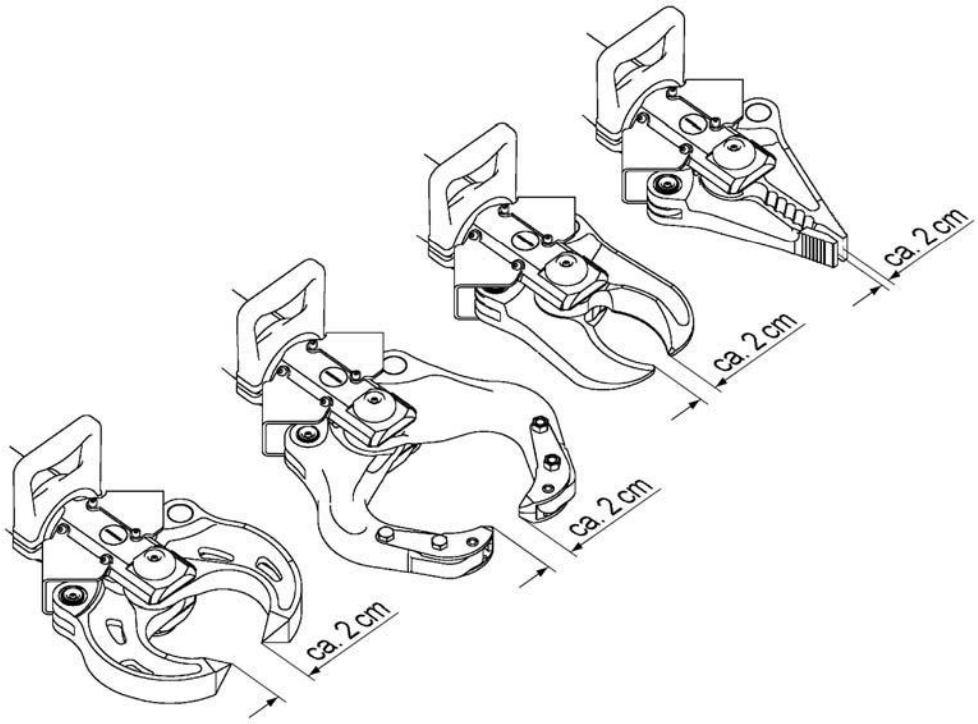


Fig. 4-2 Condition of the Combi-Shears after shut-down

- Close the arms of the Combi-Shears.
- Operate the hydraulic valve in short bursts in different directions until the pressure in the hydraulic circuit has dissipated. The Combi-Shears should be opened about 2 cm when in a non-pressurised condition.
- Secure the Combi-Shears against being wrongly or improperly started-up.

4.4 Separating the Combi-Shears from the hydraulic hoses

- Switch the hydraulic power unit off.
- Release all pressure from the compressed air reservoir, if necessary
- Separate the hydraulic hoses from the Combi-Shears.

5 Converting the Combi-Shears

We call your attention expressly to the fact that conversion work may only be carried out by authorised and trained personnel. This implies they have read and must have understood this manual and in particular Chapter 2 Safety Instructions, and in addition, have completed occupational training which has provided them with the necessary technical background for their work.

WARNING!

- ***The tool on the Combi-Shears should only be changed if they have previously been correctly shut-down and secured against being wrongly or improperly started-up.***
- ***Please note that the connector for the HCS 6 J is longer than that for the C, S and B versions, which are identical in length.***

- Then continue by reading the relevant sub-chapter listed below.

5.1 Changing the Tools

Interchanging between the

- ***shears kit***
- ***sickle blade kit and***
- ***brick jaw kit***

is done in the same way.

It is not necessary to change the connector.

A change from one of the above to the concrete jaw kit or vice-versa is also done in the same way but requires additionally that the two connectors are changed.

5.1.1 Changing tools (without connector change)

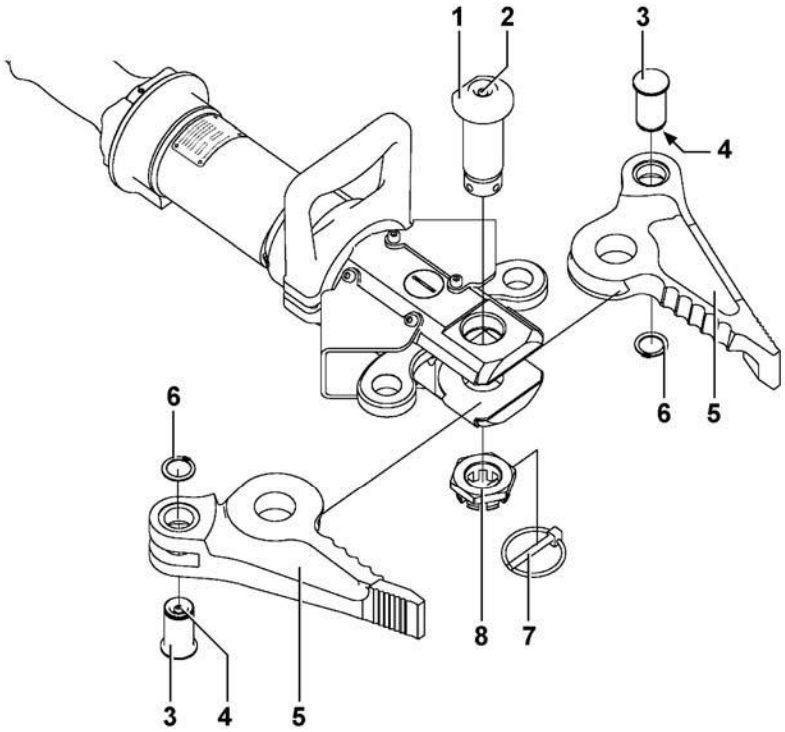


Fig. 5-1 Changing tools, without connector change (using the shear kit as the example)

- ***Only carry out the change if you have read Chapter 5 "Converting the Combi-Shears beforehand".***

- Open the shears arms so that the connecting bolts (3) are still completely visible.

- ***Shut the Combi-Shears down and secure them against* being wrongly or improperly started-up.**

- Remove the folding split-pin (7) at the castel nut (8).
- Loosen the castel nut and remove it.
- Remove the main bolt (1) from the bearing.
- Remove the locking rings (6).
- Press the two connecting bolts (3) out of the holes.
- Remove the disassembled tooling and install the new one in the reverse order into the Combi-Shears.
- Tighten the castel nut to a torque of 80 Nm.
- Always secure the castel nut with a new folding split-pin.
- Position the grease gun at the lubricating nipples (2 / 4) of the main and the connecting bolt(s) and press the grease into the bearings until it starts to leak from in-between the bearings. Only use the special grease specified in the Technical Data section.

The Combi-Shears are now ready for operation again.

5.1.2 Changing tools (with connector change)

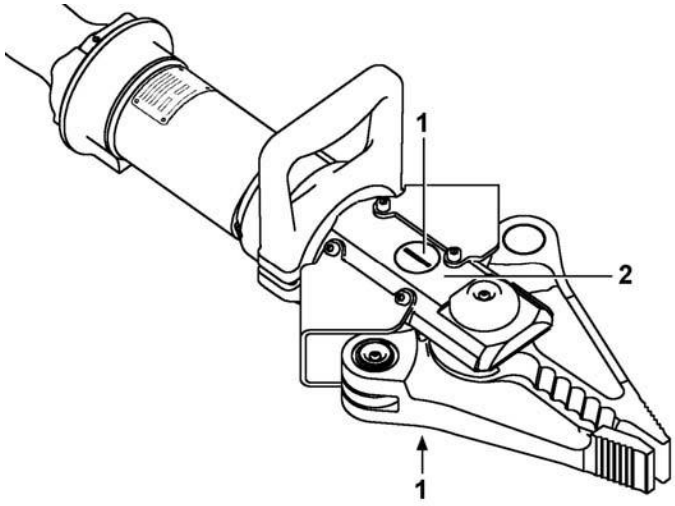


Fig. 5-2 Changing tools, with connector change (e.g. from the shears kit to the concrete jaws kit)

- ***Only carry out the change if you have read Chapter 5 "Converting the Combi-Shears beforehand".***

- Turn both covers (1) and remove them.
- Open the shears arms slowly until the gudgeon pin inside the mounting cup (2) is located exactly under the cover opening.

WARNING!

- ***Shut the Combi-Shears down and secure them against being wrongly or improperly started-up.***

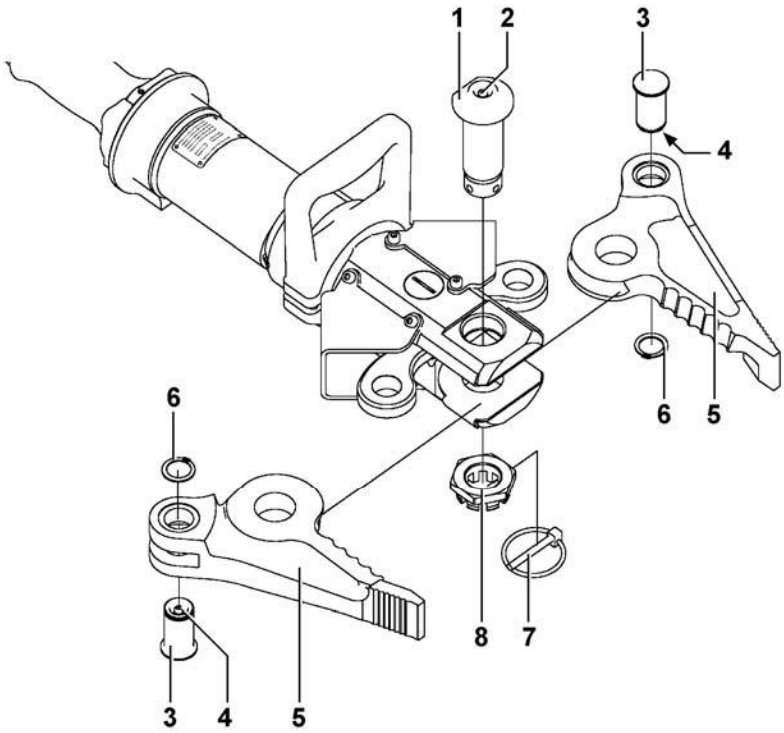


Fig. 5-3 Changing tools

Dismantling the sickle blade or brick jaw kits is the same as dismantling the shears kit.

- Remove the folding split-pin (7) at the castel nut (8).
- Loosen the castel nut and remove it.
- Expel the main bolt (1) from the bearing.
- Remove the locking rings (6).
- Press the two connecting bolts (3) out of the holes.
- Remove the disassembled tooling

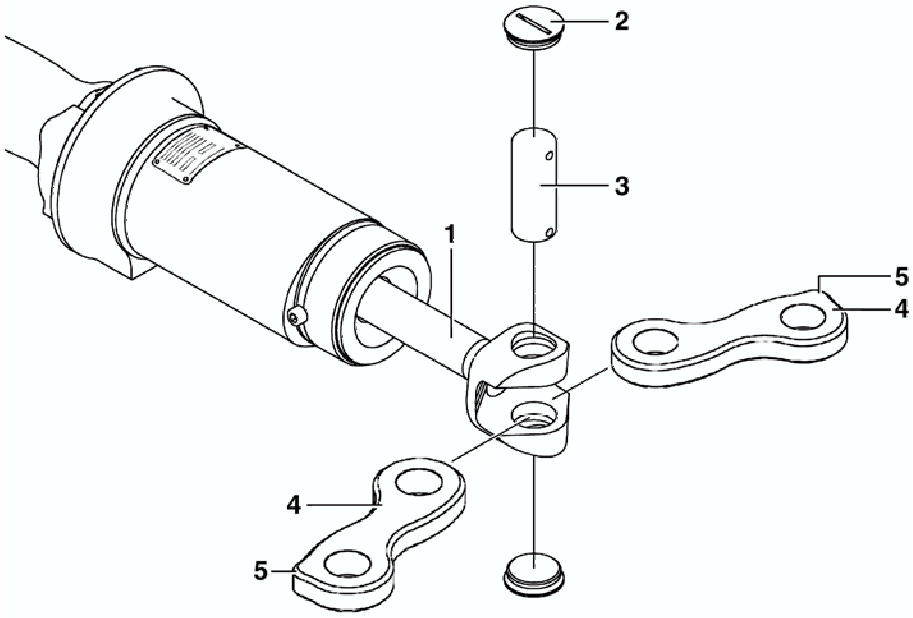


Fig. 5-4 Changing the connector (Mounting cup not shown)

- Push the gudgeon pin (3) out of the fork-shaped end piece of the piston rod (1).
- Remove the two connectors (4) from the shears, sickle blades or brick jaws.
- Insert both the concrete crusher's connecting bars into the piston rod such that the cams (5) on both connecting bars are located in the position shown.

If these connectors are inserted incorrectly, the Combi-Shears will be damaged in operation.

- Lubricate the gudgeon pin with the special grease as specified in the Technical Data and insert it through the connectors and the piston rod.
- Screw the two covers (2) back into position.
- Install the concrete jaw kit in the opposite order to that used to dismantle the shears kit, for example (➪ Fig. 5-3).
- Tighten the castel nut to a torque of 80 Nm.
- Always secure the castel nut with a new folding split-pin.
- Position the grease gun at the lubricating nipples of the main and the connecting bolt(s) and press the grease into the bearings until it starts to leak from in-between the bearings. Only use the special grease specified in the Technical Data section.

The Combi-Shears are now ready for operation again.

5.2 Changing the Breaking tips on the Brick Jaw Kit

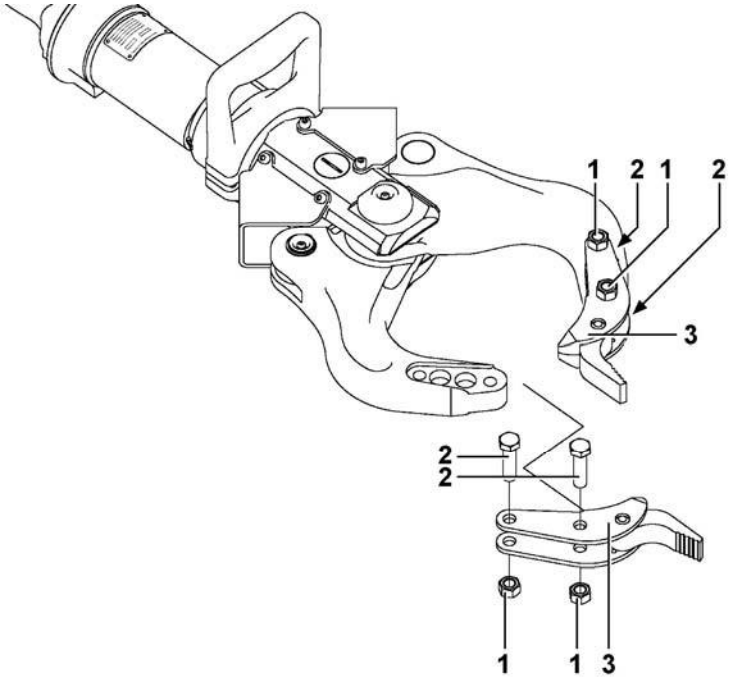


Fig. 5-5 Changing the breaking tips

- ***Only change the*** breaking tips ***if you have read Chapter 5 Converting the Combi-Shears beforehand.***

- Loosen the 4 hexagonal nuts (1) and remove the 4 hexagonal bolts (2).
- Replace both breaking tips (3).
- Insert the bolts and fasten them with the nuts.
- Tighten the nuts to a torque of 80 Nm.

The Combi-Shears are now ready for operation again.

6 Working with the Combi-Shears

We call your attention expressly to the fact that the Combi-Shears may only be set-up and/or operated by authorised and trained personnel, who, as a result of their training understand on the one side the technology of the Combi-Shears and on the other side, have a good knowledge of the scope of the work and the materials to be handled.

DANGER!

When working with the Combi-Shears serious injuries may be incurred from material falling down or coming off in splinters.

- ***Avoid injuries by staying outside the danger zone and wearing protective clothing / personal protective equipment.***
- ***For this reason, when working with the Combi-Shears do wear***

– a hard hat

– a face screen

– respiratory equipment

– protective clothing

– protective gloves

– safety boots

- ***Draw up a schedule for the procedure and carry out the work accordingly.***
- ***If necessary, consult experts and ask them for information or advice.***
- ***Make sure that, for example, all supply cables or pipes (power, gas, water, hydraulics, air, etc) are fully disconnected and emptied, any steel ropes or reinforcements are not under any tensile loading, walls are not load-bearing, etc.***
- ***Never direct the Combi-Shears against persons if they are fully operational.***
- ***Make sure that no persons linger in, step into or are able to step into the danger zone of the Combi-Shears and the hydraulic power units during commissioning / operation.***
- ***If necessary set up danger signs which warn about the commissioning / operation of the Combi-Shears.***

6.1 Areas of Application when Equipped with the Shear Kit

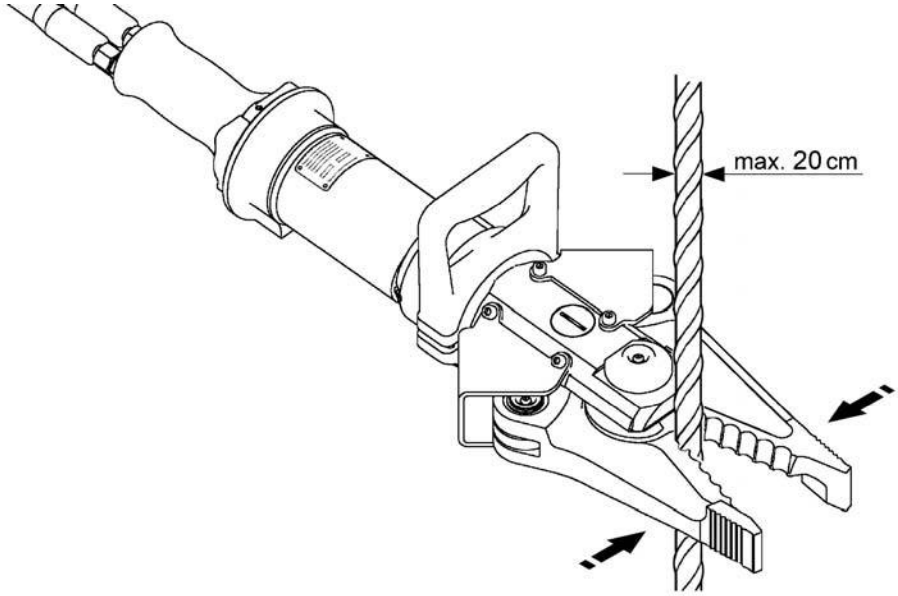


Fig. 6-1

Severing or cutting

Equipped with the shear kit, the Combi-Shears sever, for example, metal pipes, metal frames, (disused) power cables, wooden parts, sheet metal frames, steel structures and bars up to approx. 20 mm thick and with a maximum hardness of 30 HRC (ordinary structural steel).

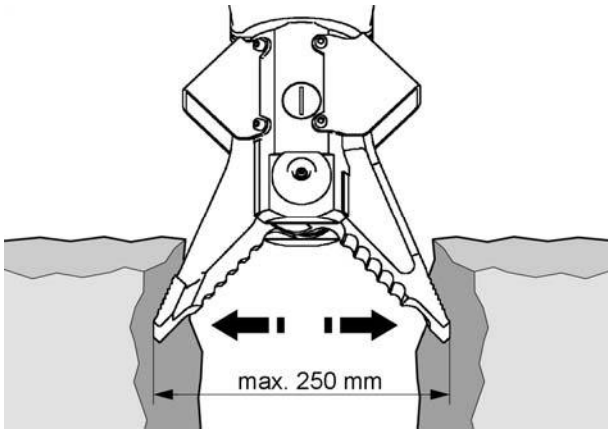


Fig. 6-2

Prying apart or expanding

With the tips of the shears the Combi-Shears can push radiators from the wall, break steel and wooden frames away from the wall, expand or lift previously split cement pieces and separate many other materials. For this purpose the steel tips are placed in the gap between the material parts and the shears then opened. The maximum width of the opening is 250 mm.

6.2 Areas of Application when Equipped with the Sickle Blade Kit

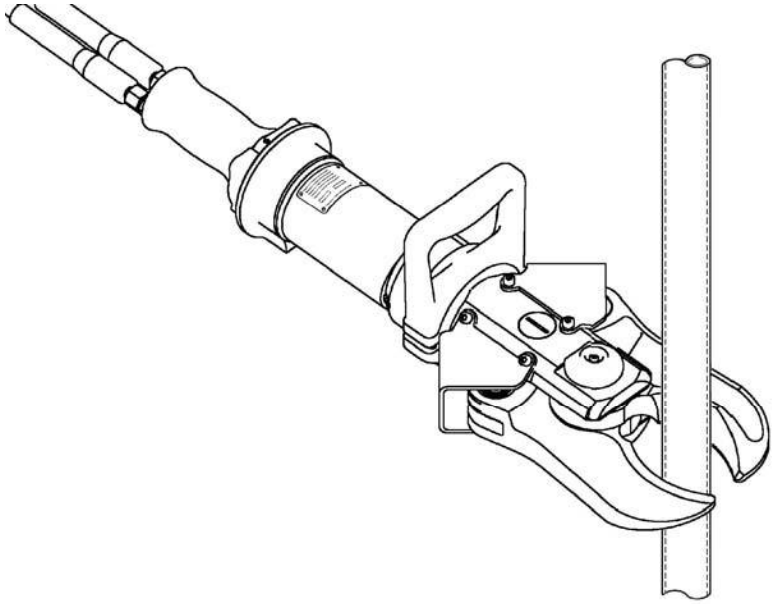


Fig. 6-3

Separating

The HCS 6 **S** equipped with sickle shaped blades, is able to cut aluminium and steel pipes, electric cables, reinforcements up to 20 mm diameter, timber frames or wooden panels. The sickle shape avoids that the material can slip out.

6.3 Areas of Application when Equipped with the Brick Jaw Kit

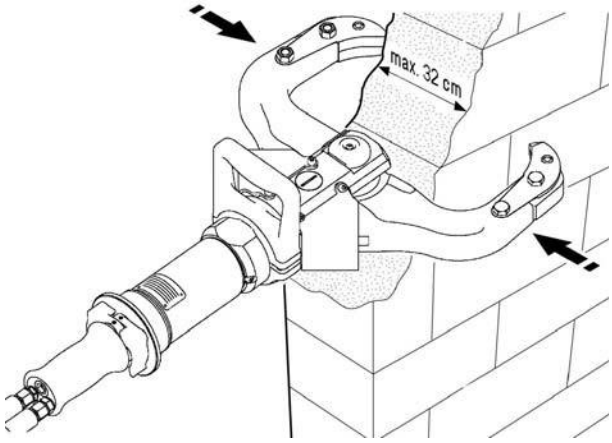


Fig. 6-4

Gripping

When equipped with the brick jaw kit, the Combi-Shears can accurately grip and sever masonry up to 32 cm thick.

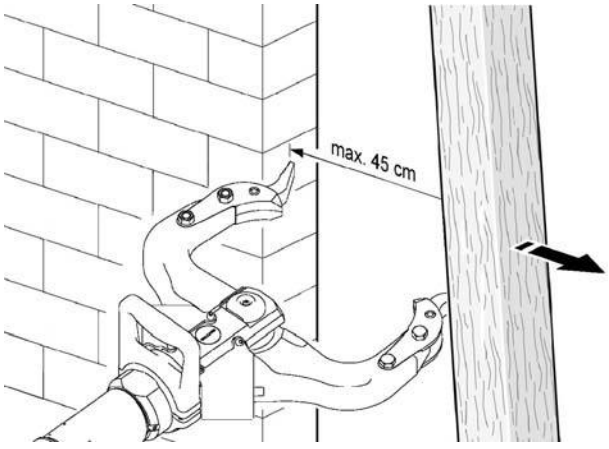


Fig. 6-5

Prying part or expanding

The fold-out expansion levers in the breaking tips of the brick jaw kit. These can be used to pry a wide variety of materials up to 45 cm apart and, e.g. to extract door and window frames from masonry.

6.4 Areas of Application when Equipped with the Concrete Jaws Kit

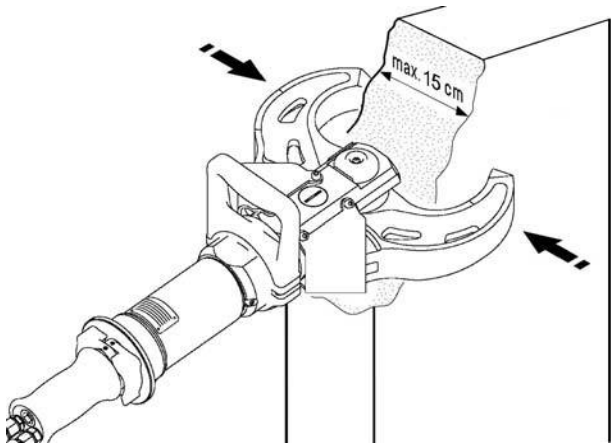


Fig. 6-6

Breaking up

The HCS 6 **J** is able to crush up to 15 cm thick concrete walls (depends on compression strength of concrete). A big advantage for breaking, dividing or separating walls, facade panels or re-developing concrete buildings.

7 Maintenance / Cleaning

We call your attention expressly to the fact that maintenance and cleaning work may only be carried out by authorised and trained personnel. This implies that they have read and must have understood this manual and in particular Chapter 2 Safety Instructions, and have completed occupational training which has provided them with the necessary and technical background for their work.

7.1 Maintenance

- ***Only perform maintenance work on the Combi-Shears after shutting them down beforehand. Before starting the maintenance work read Chapter***

  4.3 Shut-down procedure

  and observe the notes for the user.

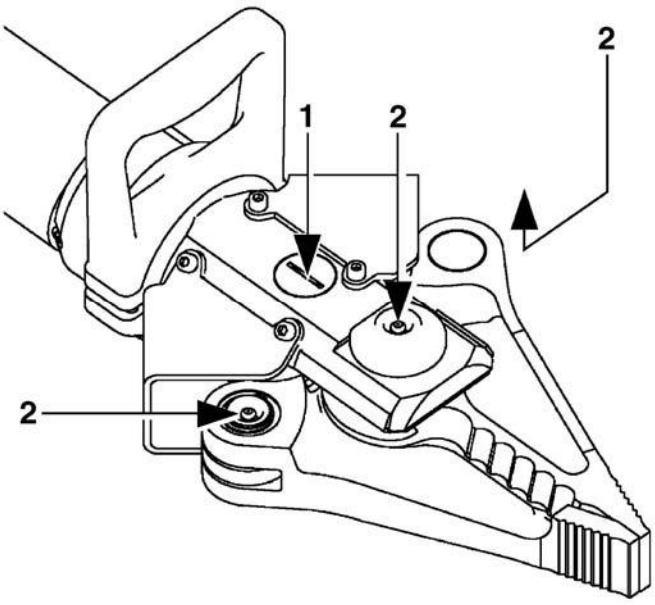


Fig. 7-1 Lubricating nipples at the Combi-Shears

Maintenance intervals for the Combi-Shears

Every 4 operating hours or after half a day

- Using a greasing gun, apply the grease specified in the Technical Data to the greasing nipple (2 ⟶) until grease flows out between the bearings.

Every 8 operating hours or daily

- Check all components for wear, deformations, breaks or crack and check whether all fixtures fit tightly.

- ***Do not start up the Combi-Shears if you have detected any damage.***
- ***Have the damaged parts repaired by the manufacturer or a person authorised by the manufacturer.***

Every 40 operating hours or once a week

- Lubricate the gudgeon pin Chapter 7-1 (Pos. 1⟶) with the grease specified in the Technical data. Take note of the instructions in **Chapter 5.1.2 Changing tools (with connector change)** without however, changing the tool or the connector
- Check all hydraulic connections, lines, hose assemblies for leaks and other damage which can be detected by visual inspection.

- ***Do not start up the Combi-Shears if you have detected any damage.***
- ***Have the damaged parts repaired by the manufacturer or a person authorised by the manufacturer.***

Every 6 years

- Regardless of the number of operating hours, have the hydraulic connections, lines, hose assemblies replaced by the manufacturer or a person authorised by the manufacturer every 6 years.

- ***Before having replaced the hydraulic components listed above read Chapter***

2 Safety Instructions
and
4.3 Shut-down procedure.

7.2 Cleaning

- ***Only clean the Combi-Shears after shutting them down beforehand.***
- ***Before starting to clean read Chapter***

4.3 Shut-down procedure.

- Remove
  - coarse demolition material which has settled on the Combi-Shears during work manually at regular intervals.
  - small parts and dust using compressed air if appropriate.
- To clean the Combi-Shears do not use
  - high pressure or steam jet cleaning devices.
  - coarse tools (e.g. handspikes etc.).
  - aggressive cleaning agents.
- Avoid any damage to the Combi-Shears during cleaning.

8 Repair

We call your attention expressly to the fact that, for reasons of safety repair work at the Combi-Shears, which is not described in this product manual is principally not allowed.

In case any damage occurs please contact the manufacturer. For the telephone / fax-number please refer to the first page of this manual.

Renewing wear surfaces

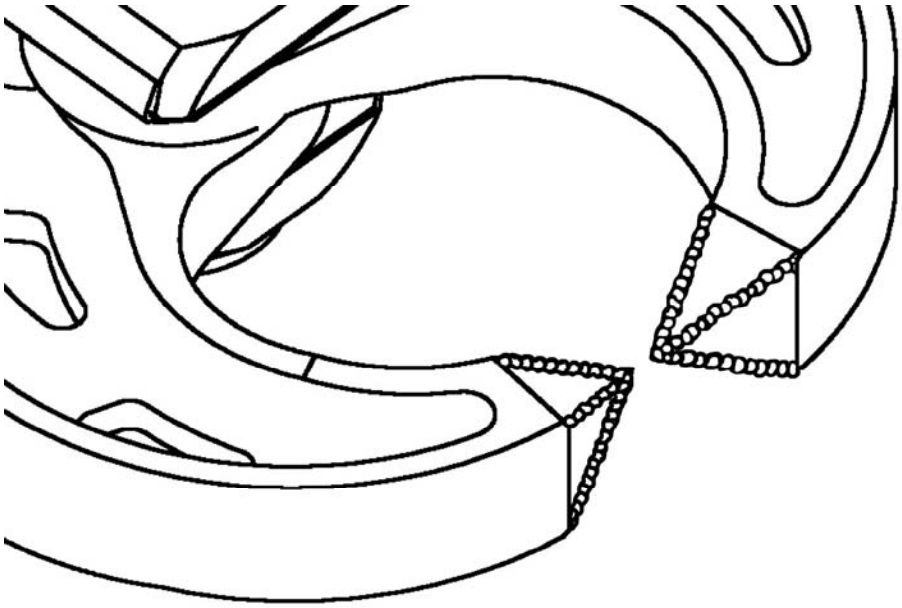


Fig. 8-1 Crushing tip with wear surfaces

In order to increase the service life of the crushing tips, the wear surfaces should be renewed regularly. Only use welding electrodes explicitly permitted by the manufacturer for this activity. Proceed as follows when renewing the wear surfaces:

- **Shut-down the Concrete Crusher.**
  ⇨ 4.3 Shut-down Procedure
- Grind the rests of the old wear surfaces (**wear safety glasses.**)
- Apply new wear surfaces according to figure using an electric welding machine.

WARNING!

Always wear personal safety equipment during this activity.

9 Disposal

After shutting down the Combi-Shears correctly **(⇨ 4.3 Shut-down procedure)**, removing the hydraulic oil and removing possible lubricating grease residues, the shears can be disassembled and recycled according to materials.

If contaminated with radioactive, poisonous or other substances hazardous to persons or the environment, the Combi-Shears must be disposed of in accordance with the regulations applicable.

10 Technical Data

	HCS 6 C Shear	HCS 6 S Sickle blade	HCS 6 B Brick jaw	HCS 6 J Concrete jaw
Dimensions				
Total length:	720 mm	690 mm	795 mm	715 mm
Weight				
Total weight, approx.:	14 kg	14 kg	14 kg	14 kg
Hydraulic connection				
Connection pressure, max.: or pressure of the device carrier	50 MPa (500 bar)	50 MPa (500 bar)	50 MPa (500 bar)	50 MPa (500 bar)
Performance (for connection pressure max. 50 MPa (500 bar))				
Cutting force max.:	214 kN	214 kN	–	–
Gripping force max.:	–	–	34 kN	73 kN
Expansion force max.:	57 kN	–	22 kN	–
Opening width:	250 mm [1)]	145 mm	320 mm	170 mm
Depth of break:	–	–	105 mm	100 mm
Specification of the hydraulic oil to be used:	ISO VG 22-VG 46	ISO VG 22-VG 46	ISO VG 22-VG 46	ISO VG 22-VG 46
Specification of the lubricating grease to be used:	MoS_2-Grease	MoS_2-Grease	MoS_2-Grease	MoS_2-Grease

[1)] Maximum expanding width

Appendix A

List of Signatures

Procedure/How to fill in the list of signatures

- Copy the list of signatures below.
- Enter the address of your company/authority and confirm using the company stamp.
- Make any member of the staff enter their name and signature (who have been instructed on the Combi-Shears either on your own or the manufacturer's premises).
- File this list with the other documents.

List of Signatures

of the following company/authority/operator:

Address/stamp

The persons listed below confirm by their signature that they have been instructed, by means of

- ❒ this documentation
- ❒ special training/ instructions given by the manufacturer, on
  - ❒ the functions,
  - ❒ the operation,
  - ❒ the conversion

of the **Combi-Shears HCS 6** and that they have read and understood Chapter **2 Safety Instructions**.

Participant Name	**Date, Signature**	**Instructor (Date, Signature)**

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