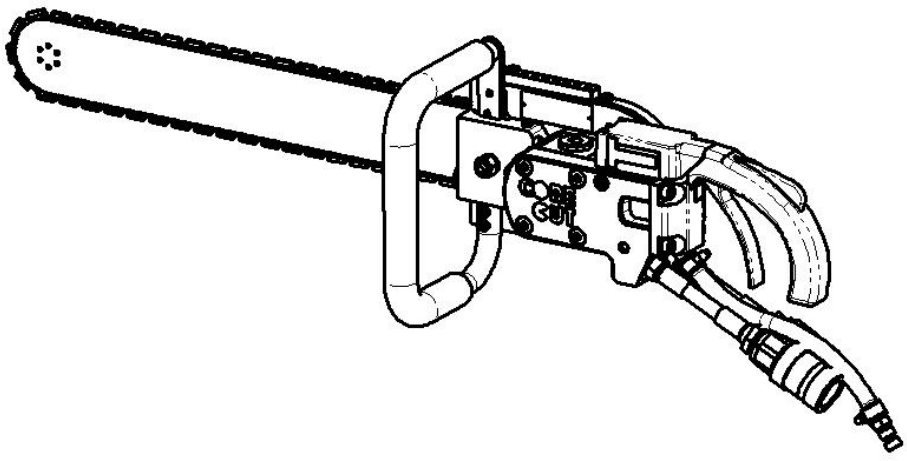
DIAMOND

PRODUCTS

HYDRAULIC CHAIN SAW
MODEL HCH50
OPERATOR MANUAL



September 2009

Part # 1801446

Manufacturer's address:

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TYROLIT Hydrostress AG reserves the right to make technical changes without prior notice.

Overview

0 Introduction

0.1 Congratulations!

You have decided to buy an advanced, tried and tested Hydrostress system and have thus acquired a highly sophisticated and reliable state-of-the-art unit.

Thanks to the stress we place on quality assurance, your Hydrostress system is another top-of-the-range Swiss product:

- High performance
- Reliable operation
- High portability
- Easy handling
- Low maintenance costs

Only original Hydrostress spare parts ensure quality and interchangeability.

In the case of neglected or inappropriate maintenance, we refuse to accept any warranty commitment as specified in our terms of delivery.

Any repair work is to be carried out by trained personnel only.

Should you need more details concerning your Hydrostress system in order to keep it in perfect condition, please contact our after-sales service for further information.

We hope that you will not experience any problems while working with your Hydrostress system.

TYROLIT Hydrostress AG

Management

TYROLIT Hydrostress AG
Witzbergstrasse 18
CH-8330 Pfäffikon
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Telephone +41 (0) 44 / 952 18 18
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0.2 Validity of these operating instructions

These operating instructions are only valid for the following system:

Chain saw HCH5011

0.3 Standards

These operating instructions have been prepared in accordance with

CE Machinery Directive Appendix I and with the relevant standards in force at the time of printing.

0.4 Delimitation of the system

These operating instructions describe the use of the **Chain saw HCH5011**.

1 Product description

1.1 Important information on the Chain saw HCH5011

1.1.1 Main components

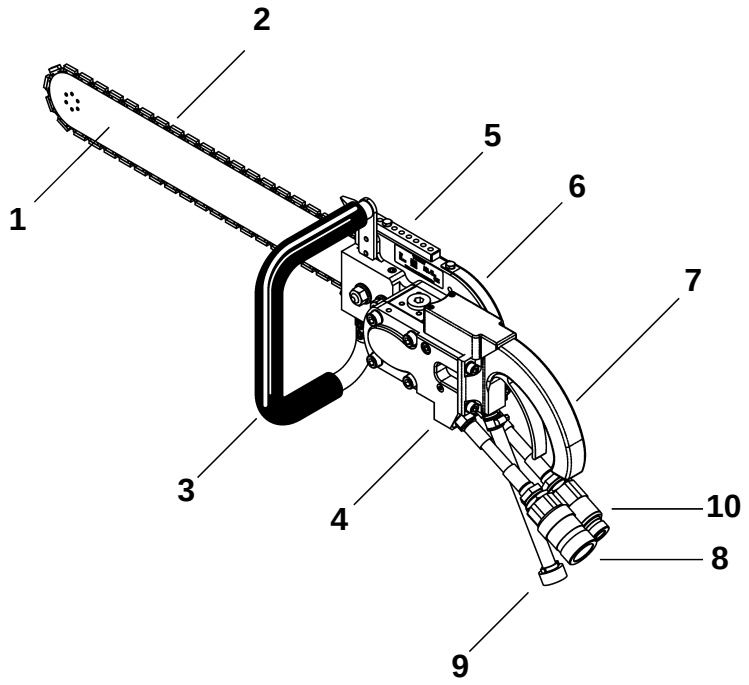

Fig. 1-1 Main components

1 Bar
2 Chain
3 T-handle
4 Valve block
5 Cutting mandrel
6 Chain guard
7 Operating handle with manual starter
8 Coupling FD (flow)
9 Hose stem (water)
10 Nipple FD (return)

1.1.2 Intended purpose

The **Chain saw HCH5011** is designed and built for the following application:

- Cutting of concrete (including reinforced), masonry and natural stone
- Cutting of severance cuts, flush cuts and cross-cuts in ceilings, floors and walls
- Only original **TYROLIT Hydrostress AG** tools (chains) should be used

The information provided in Chapter 1 “Technical Data” 1.2, 🗎 1-4 represents the mandatory usage limits and rated data

1.1.2.1 Safety measures

Any use other than for the intended purpose (see Chapter 1.1.2, 🗎 1-2) constitutes improper use or misuse.

Since improper use or misuse can sometimes results in considerable danger, here details of what we believe constitutes improper use or misuse.

The following applications are prohibited:

- Cutting without the safety devices provided
- Cutting wood, glass and plastics
- Cutting without system and tool cooling
- Cutting in explosion-protected areas
- Cutting loose parts
- Incorrect or absence of waste water disposal (saw sludge)

1.1.3 Workplace and danger areas

Allow enough room for manoeuvre to ensure danger-free working.

Make sure you have sufficient lighting at your workplace.

Clearly cordon off the danger area so that no person can enter the danger area during sawing.

The front, underneath and rear of the sawing area must be protected so that persons or equipment cannot be harmed by falling parts or sawing sludge, or by the protruding cutting tool.
Secure lumps of concrete that have been loosened against falling.

Breathing in the water fog that is created is a health hazard. Ensure adequate ventilation in sealed-off areas.

The sludge resulting from cutting is very greasy. Remove this or ensure that you or other people do not slip on it.

1.1.4 EC statement of conformity

Designation	Hydraulic chain saw
Type designation	**Chain saw HCH5011**
Year of construction	2007

We declare under our own liability that this product complies with the following directives and standards:

1.1.4.1 Directive applied:

European Machine Directives (Machinery Directive) 98/37/EC

1.1.4.2 Standards applied:

EN 292-1	Safety of Machines
EN 292-2	Basic concepts, general design principles
EN 294	Safety of machines Safety distances to prevent upper limbs reaching danger areas
EN 349	Safety of machines Safety distances to avoid crushing of body parts
EN 982	Safety of machines Safety requirements of safety systems and their components Hydraulics

1.1.5 Name plate

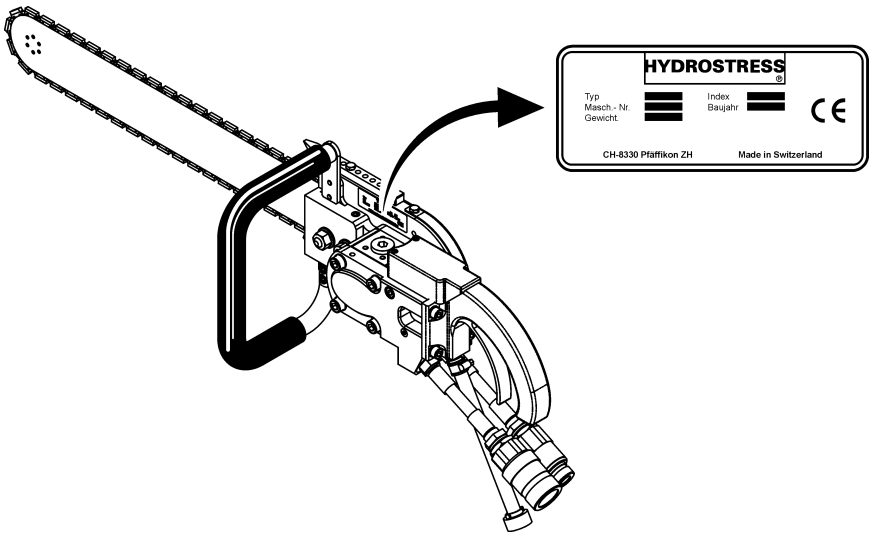

Fig. 1-2 Name plate

1.2 Technical data

1.2.1 Chain saw HCH5011

- Can be used with any hydraulic actuator (use a flow divider with pressure limiter >40 l/min or >140bar)
- Flush cutting possible without removing the protective cover

1.2.1.1 Hydraulic system

Maximum pressure	140 bar
Maximum flow	45 l/min.
Hydraulic hose	Length 2 m

1.2.1.2 Water

Minimum working pressure	2.5 bar
Minimum flow	7.5 l/min.

1.2.1.3 Weight

Chain saw HCH5011 incl. bar and chain 10.5 kg

1.2.1.4 Dimensions Chain saw HCH5011

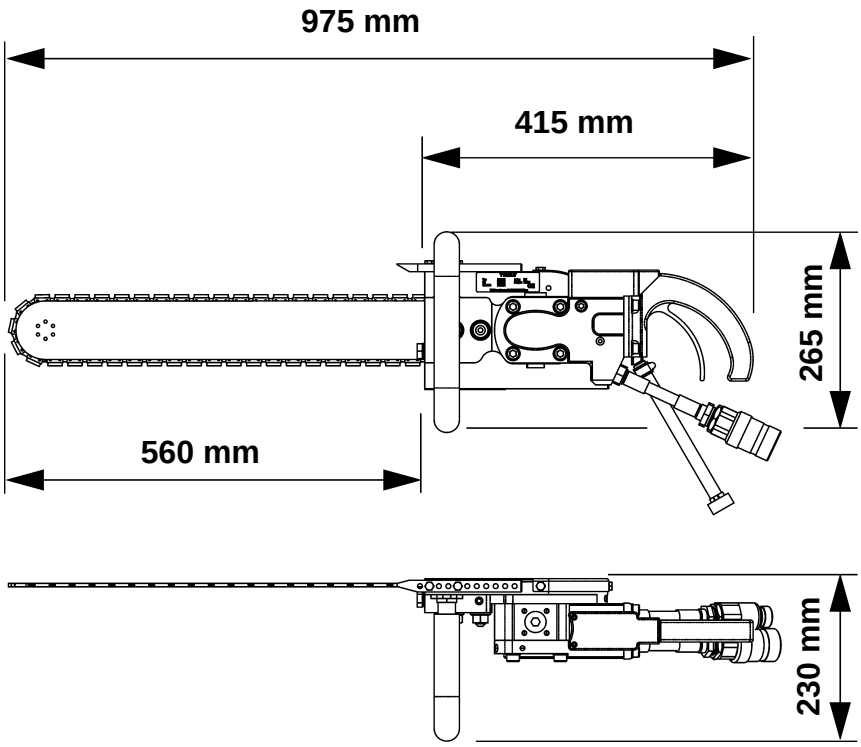

Fig. 1-3 Dimensions **Chain saw HCH5011**

1.2.2 Noise level

Depending on the working environment, the **Chain saw HCH5011** can cause excessive noise during operation.

The noise can permanently harm the hearing of operating personnel and of other people nearby within a short time.

Ear protectors must therefore always be worn while working.

Danger

Noise danger

When using the Chain saw HCH5011 hearing protection must be worn.

If this instruction is not followed irreparable hearing damage may result.

1.2.3 TYROLIT Hydrostress AG- Bar

1.2.3.1 Bar 20“ (Chain saw HCH5011)

Length / Cutting depth	20“ (approx. 50 cm) / 42 cm
Width	85 mm (75 mm without chain)

1.2.3.2 Bar 16“

Length / Cutting depth	16“ (approx. 40 cm) / 32 cm
Width	85 mm (75 mm without chain)

1.2.4 Diamond chains

The **Chain saw HCH5011** is fitted as standard with the **Hydrostress** Universal O-Ring diamond chain 20“ with double pumper.

1.2.4.1 Hydrostress Universal O-Ring diamond chain with double pumper

Application:

- Concrete with a moderate degree of reinforcement (reinforcing irons of up to dia. 12mm)
- Brick and limestone
- Hard and soft natural stone

Hydrostress Universal O-Ring diamond chain 20“ with double pumper	
Part No.	10978001
Type	Diamond chain with double pumper
Number of segments	43
Segment dimensions:	
Height	5.8 mm
Width	5.7 mm
Length	14 mm
Diamond segments	laser-welded
Cutting speed	24 m/s

Hydrostress Universal O-Ring diamond chain 16“ with double pumper	
Part No.	10978132
Type	Diamond chain with double pumper
Number of segments	37
Segment dimensions:	
Height	5.8 mm
Width	5.7 mm
Length	14 mm
Diamond segments	laser-welded
Cutting speed	24 m/s

1.2.4.2 Hydrostress concrete O-Ring diamond chains

The Hydrostress “concrete O-ring diamond chain” is characterised by a long service life and high cutting power in highly reinforced concrete.

Application:

- Concrete with a high degree of reinforcement (reinforcing irons of up to dia. 19mm)
- Brick and limestone
- Hard natural stone

Hydrostress Concrete O-Ring diamond chain 20“	
Part No.	10977642
Number of segments	43
Segment dimensions:	
Height	5.8 mm
Width	5.7 mm
Length	15.2 mm
Diamond segments	laser-welded
Cutting speed	24 m/s

Hydrostress Concrete O-Ring diamond chain 16“	
Part No.	10978131
Number of segments	37
Segment dimensions:	
Height	5.8 mm
Width	5.7 mm
Length	15.2 mm
Diamond segments	laser-welded
Cutting speed	24 m/s

1.3 Accessories

- Flow divider / Pressure limiter 40 l/min, 140 bar
- Pressure control valve 140 bar

1.4 Scope of supply

Complete chain saw system HCH5011:

- **Chain saw HCH5011**
- Carrying case HCH5011
- Tool kit HCH5011
- Operating Instructions / Spare parts list

1.4.1 Tool kit comprises:

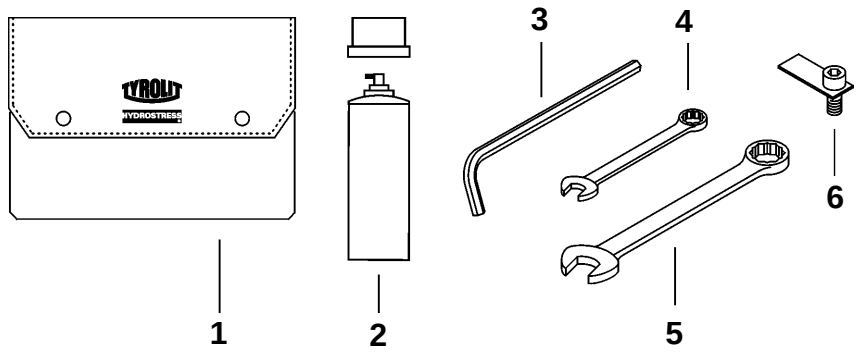

Fig. 1-4 Tool kit

1. Plastic tool bag	Part No. 976497
2. Chain spray	Part No. 975061
3. Allen key SW 5	Part No. 973791
4. Ring/open ended spanner SW 10	Part No. 973781
5. Ring/open ended spanner SW 19	Part No. 973784
6. Drive wheel assembly guide	Part No. 962724

2 Safety instructions

2.1 General

2.1.1 Target audience

This chapter describes the safety instructions that it is essential to follow when using the **Chain saw HCH5011**.

All persons who work on and with the **Chain saw HCH5011**, have a duty to read and understand the chapters of the Operating instructions relevant to their particular activities.

This applies in particular to the “Safety instructions” chapter which is mandatory for all persons and activities.

2.1.2 Observance of the safety instructions

No work must be performed on or with the **Chain saw HCH5011** before the safety instructions contained in the Operating instructions (Chapter 2) have been read and understood. The Operating instructions are mandatory for all work – abridged instructions should only be used in the form of checklists.

The **Chain saw HCH5011** has been inspected before being shipped and is delivered in perfect condition. **TYROLIT Hydrostress AG** does not accept any liability for damage caused by the failure to observe the instructions and information provided in the Operating instructions. This applies in particular to:

- Damage caused by improper use and operator error.
- Damage caused by failure to observe safety-related information in the Operating instructions or shown on the warning signs fitted to the machine.
- Damage caused by defective or absence of maintenance work.

Independently performed conversions and alterations may affect safety and are not permitted.

2.1.3 Use for intended application

The intended application is described in “Chapter 1” under 1.1.2, 🗎 1-2.

2.1.4 Observance of the information on workplace safety and danger area

The workplace and danger area are described in “Chapter 1” under 1.1.3, 🗎 1-2.

2.2 Safety principles

2.2.1 Delimitation of the safety concept

The **Chain saw HCH5011** has no effect on the safety concept of the connected systems, apparatus and installations.

2.2.2 Safety elements

Protection from personal injury is based primarily on a safety concept and design safety.

2.2.2.1 Passive safety elements

Protection from live parts

All functional units that contain parts which carry hazardous voltages, are shock-protected by suitable covers.

2.2.3 Removing protective devices

Protective devices should only be removed when the device is turned off, disconnected from the mains and at a standstill. Safety components in particular should only be removed and refitted by authorised personnel, see “Chapter 2”2.6.1, 🗎 2-7.

Before using the **Chain saw HCH5011** again, the safety elements must be checked for correct operation.

2.2.4 Safety measures (organisational)

2.2.4.1 Product monitoring obligation

Operating personnel must notify changes in the operational behaviour or safety-related components to a responsible person or the manufacturer immediately.

2.2.4.2 Location of Operating instructions

A copy of theOperating instructions must be available at all times to staff at the place of use of the apparatus.

2.3 General safety rules

2.3.1 Statutory provisions

The generally applicable national and local safety and accident prevention provisions and the supplementary operator regulations must be followed and complied with.

2.3.2 Inspection and maintenance obligation

The operator is under an obligation to only use the **Chain saw HCH5011** when it is in a perfect and undamaged condition. The maintenance intervals shown in the Operating instructions must be adhered to without fail. Malfunctions and mechanical damage must be rectified without delay.

2.3.3 Spare parts

Only TYROLIT Hydrostress AG original spare parts should be used. Otherwise damage may be caused to the **Chain saw HCH5011** or to other property and persons.

2.3.4 Power connections

The **Chain saw HCH5011** must be connected and coupled to the drive assembly used in accordance with the Operating instructions.

2.3.5 Modifications

No technical alterations should be made to the apparatus in the form of additions or conversions without the written consent of **TYROLIT Hydrostress AG**.

2.3.6 Safety instructions in the individual chapters

The chapters of these Operating instructions contain additional safety instructions. These make reference to specific potential dangers (residual dangers). The instructions must be followed closely and require that the actions described are taken.

2.3.7 Safety clothing

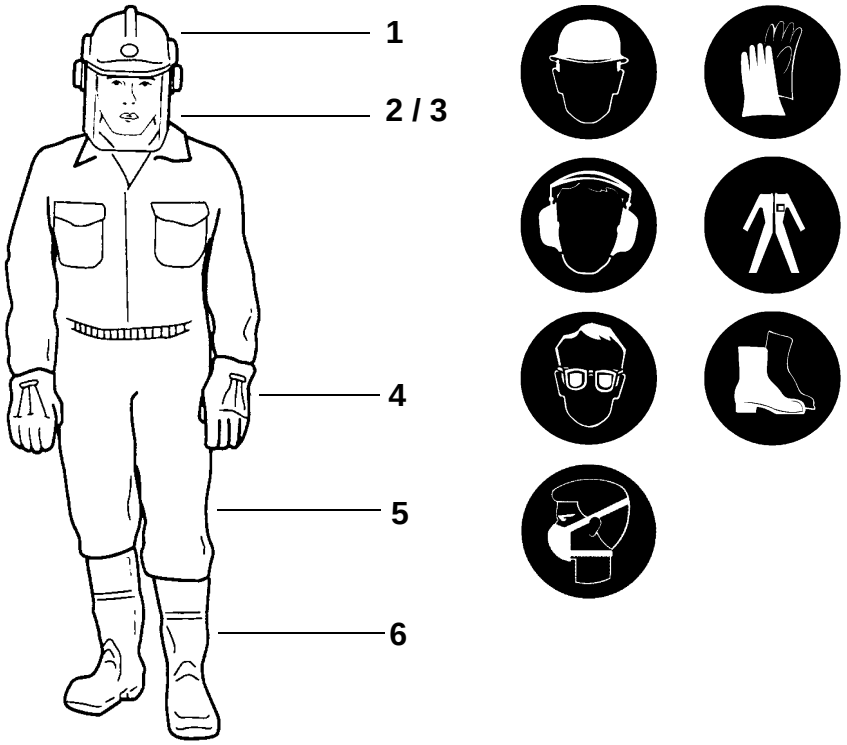

Fig. 2-1 Safety clothing

1. Helmet with ear protectors
2. Visor or goggles
3. Breathing mask
4. Waterproof gloves
5. Waterproof, sturdy, comfortable clothing
6. Work boots with steel toecaps and non-slip soles

Safety clothing must always be worn when drilling, sawing, nibbling or compressing concrete or stone in order to protect against the following dangers:

Sources of danger	**Safety clothing**
Falling parts:	Helmet, steel-capped safety shoes
Moving, sharp-edged parts:	Safety gloves
Flying pieces of concrete and stone, flying sparks:	Goggle or helmet with visor
Slipping:	Anti-slip shoes
Noise	Ear protectors
Contamination of respiratory tracts	Respiratory mask

2.4 Information and symbols

In these Operating instructions information panels are used to draw attention to residual dangers and to point out important technical requirements.

2.4.1 Danger symbols in the Operating instructions

Danger

Warning of danger, where failure to comply could lead to death or serious injury.

Warning

Warning of danger, where failure to comply could lead to injury or damage to property.

Fig. 2-2 Danger and warning notices

2.4.2 Information symbol

Information

Text displayed in this way is practical information and is aimed at achieving optimum use of the installation or apparatus. Failure to take note of this information may mean that the performances shown in the technical data can no longer be guaranteed.

Fig. 2-3 Information notice

2.5 Generally applicable warnings of residual dangers

In the following warnings of residual dangers are shown that are generally applicable to all work (with and on the saw systems and during all phases of the life of the systems).

Danger

Electric shock due to defective electronic equipment.

The electrotechnical equipment must be checked prior to each use and from time to time during prolonged usage. Defective parts such as cables and plugs must be exchanged by electrotechnically trained personnel in the powered down state.

Failure to comply with this regulation may lead to serious physical injury or death. Secondary damage such as fires may also occur.

Warning

Danger from sharp tool edges.

Touching a tool whilst it is still in motion is prohibited.

When touching tools at a standstill it is recommended that protective gloves are worn.

Failure to adhere to this regulation may result in cut wounds to the hands.

Warning

Danger of allergic reactions if skin comes into contact with hydraulic oil.

Persons who have an allergic reaction to hydraulic oil must wear protective gloves and goggles when carrying out work where they come into contact with hydraulic oil. Any areas of the skin affected must be rinsed immediately with copious amounts of water.

Failure to adhere to this regulation may result in allergic reactions or injuries to the eyes.

2.6 Responsibility

2.6.1 Authorised personnel

Work on or with **TYROLIT Hydrostress AG** machines or systems should only be performed by authorised personnel. Personnel are considered by **TYROLIT Hydrostress AG** to be authorised if they meet the necessary training and know-how requirements and they have been assigned a precise functional role.

The personnel qualifications for the corresponding work are contained in the introduction under “General” of the respective chapters.

2.6.2 The manufacturer

TYROLIT Hydrostress AG or a company expressly nominated by **TYROLIT Hydrostress AG** is deemed to be the manufacturer of the products supplied by **TYROLIT Hydrostress AG**. Within the context of an integrated quality and safety control system the manufacturer is entitled to request from the operator information on the products.

2.6.3 Operator

The operator named by **TYROLIT Hydrostress AG** is the primary, legal entity responsible for the correct use of the product and for the training and use of the authorised personnel. The operator sets out the mandatory skills and level of training of the authorised personnel for his company.

2.6.4 Operative (user)

User is the term employed by **TYROLIT Hydrostress AG** to designate a person who independently performs the following work:

- Sets up **TYROLIT Hydrostress AG** machines or systems for tasks according to the intended purpose.
- Performs tasks independently and monitors these.
- Locates malfunctions and initiates or performs troubleshooting.
- Carries out servicing and simple maintenance.
- Observes the correction functioning of the safety devices.

2.6.5 Service engineers

Service engineer is a term used by **TYROLIT Hydrostress AG** to designate a person who independently performs the following work:

- Installs **TYROLIT Hydrostress AG** machines and systems and controls their correct application.
- Makes adjustments to machines and system for which special access rights are required.
- Performs repairs, complex service work and corrective work.

2.6.6 Qualification and training

2.6.6.1 Operator

- A technical trained person in a specialist role.
- Has extensive experience in personnel training and danger assessment.
- Has read and understood the “Safety instructions” chapter.

2.6.6.2 User

- Has completed concrete expert training or has professional experience.
- Has received an introduction (basic training) to operation of the **Chain saw HCH5011** from a service engineer.
- Has read and understood chapter 2 “Safety instructions”.

2.6.6.3 Service engineers

- Specialist professional training (mechanical / electrotechnical).
- Has attended specialist courses at **TYROLIT Hydrostress AG**.
- Has read and understood the “Safety instructions” chapter.

3 Design and function

3.1 Design

The **Chain saw HCH5011** is comprised the following components.

- Chain saw unit
- **TYROLIT Hydrostress AG** bar
- **TYROLIT Hydrostress AG** diamond chain

Safety component:

- Chain guard

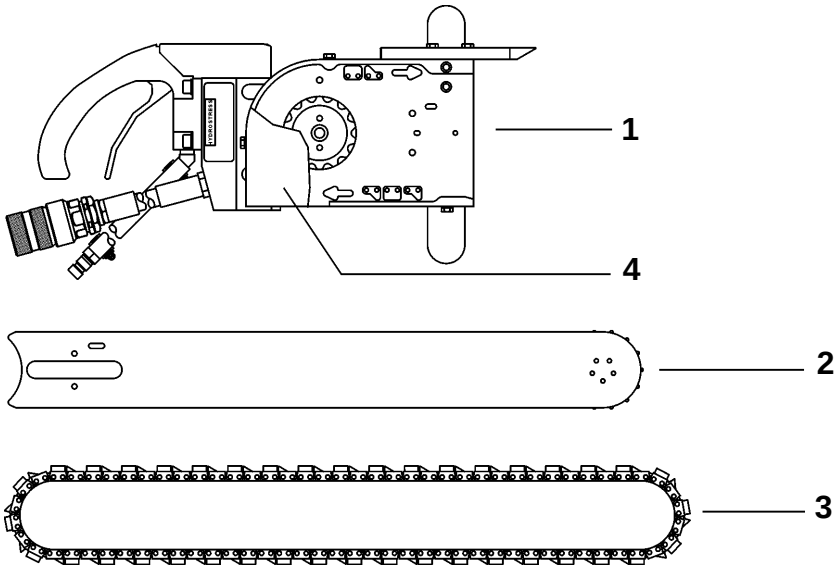

Fig. 3-1 **Chain saw HCH5011** design

1. Chain saw unit
2. Bar
3. Diamond chain
4. Chain guard

3.2 Function

The overall function of the **Chain saw HCH5011** remains exactly the same. The **Chain saw HCH5011** is powered by a hydraulic drive assembly. The chain is driven by the hydraulic motor incorporated into the chain saw unit. The driven chain is inserted into the material to be cut.

3.3 Component description

3.3.1 Chain saw unit

3.3.1.1 Design

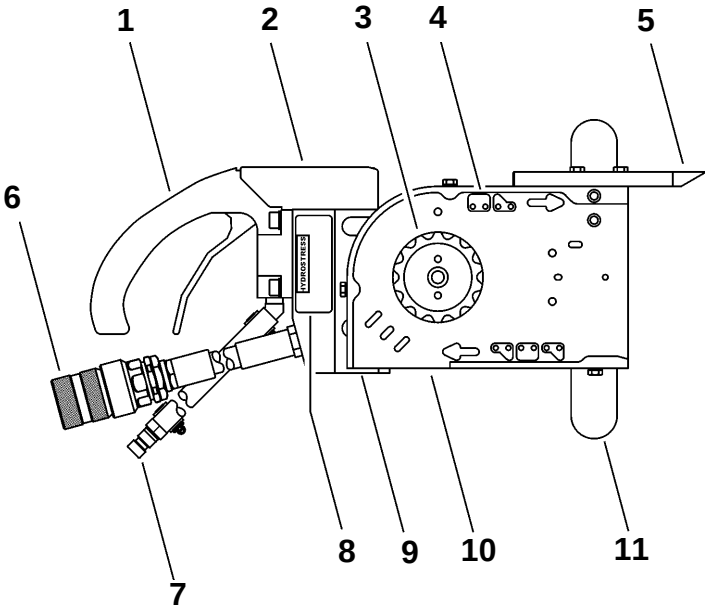

Fig. 3-2 Chain saw unit

1. Operating handle with manual starter
2. Water level housing
3. Drive wheel
4. Fitting aid (chain-engraving)
5. Cutting mandrel
6. Hydraulic connection
7. Water connection
8. Name plate
9. Valve block
10. Chain guard
11. T-handle

3.3.1.2 Function

The chain saw unit is the central component of the **Chain saw HCH5011**. The chain saw unit incorporates the drive motor and the operating handle and T-handle for using the HCH5011. The unit along with its valve block and the hydraulic and water connections also constitutes the interface with the power source (drive assembly).

3.3.2 TYROLIT Hydrostress AG bar

3.3.2.1 Design

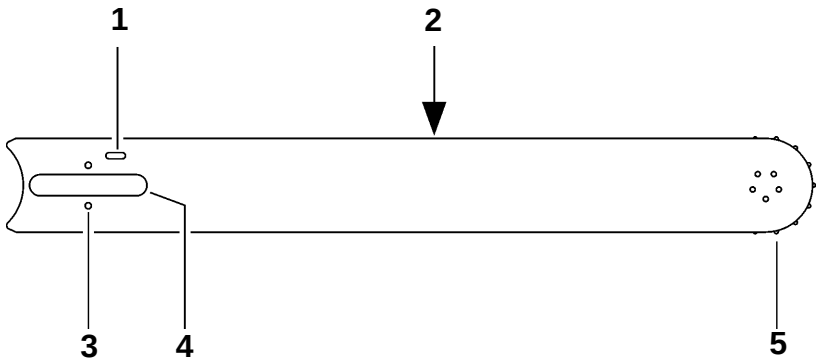

Fig. 3-3 Bar

1. Water inlet
2. Chain guide
3. Assembly bore hole for chain tensioner
4. Assembly opening
5. Reversing wheel

3.3.2.2 Function

The bar is securely fixed to the chain saw unit. The chain runs and is guided on the bar. The bar provides lateral support for the chain. The cutting pressure is absorbed via the bar.

Information

The bar serves solely to guide the diamond chain. Never use the bar as a lifting tool or a crow bar.

3.3.3 Diamond chain

3.3.3.1 Design

The diamond chain has a so-called O-ring design (SEAL-PRO).

For the chain specification see “Chapter 1” 1.2.4, 🗎 1-6

Dimensions of a new chain

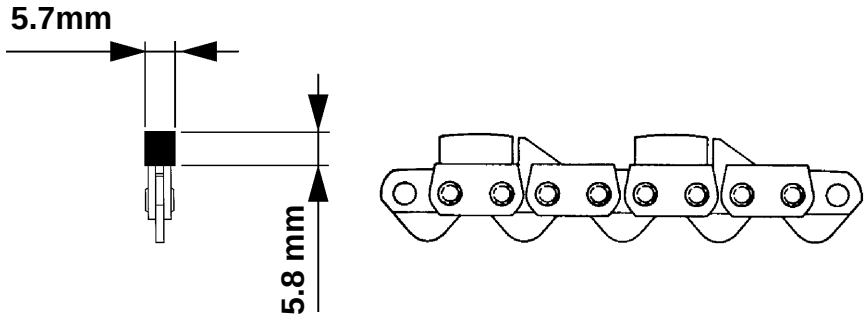

Fig. 3-4 Dimensions of new chain

Dimensions of a worn chain

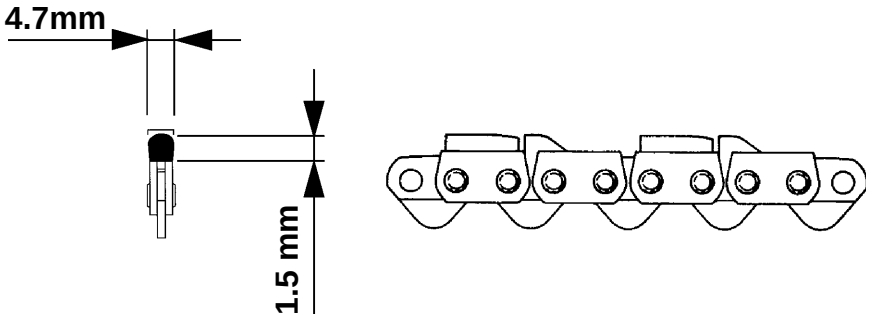

Fig. 3-5 Dimensions of worn chain

Danger

When working with a worn chain there is a danger of the chain breaking.

A worn chain must be replaced by a new chain.
Do not take any notice of the fact that some segments are not completely worn.

Failure to comply with this regulation may lead to serious physical injury or death.

Direction of travel and position of diamond chain

Ensure the correct position and direction of travel when fitting a chain. The engraved mark on the chain saw unit is intended as a fitting aid.

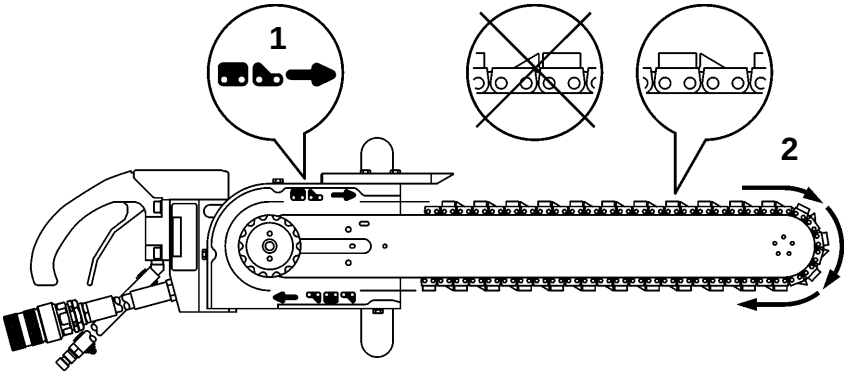

Fig. 3-6 Diamond chain position and direction of travel

1. Fitting aid (engraving)
2. Chain direction of travel

Danger

Working with an incorrectly fitted chain will reduce the lifetime of the chain and there is a danger of the chain breaking.

Insert the chain correctly according to the engraved mark.

Failure to comply with this regulation may lead to serious physical injury or death.

3.3.3.2 Function

The diamond chain constitutes the tool for the **Chain saw HCH5011**. It is with the help of the chain that the cut is performed.

4 Controls and displays

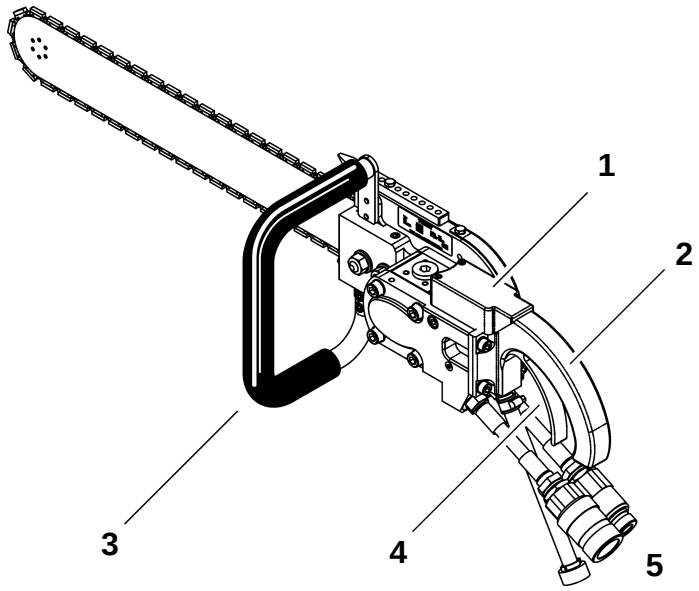

Fig. 4-1 Controls

1. Water level housing
2. Locking cut-out
3. T handle
4. Operating handle with manual starter
5. Couplings

4.1 Controls

Locking cut-out

Pressing the locking cut-out enables the ON/OFF function. This cut-out ensures secure locking of the **Chain saw HCH5011**.

T handle

The T handle is used to hold and carry the **Chain saw HCH5011**.

Operating handle with manual starter

The operating handle with manual starter is secured by the locking cut-out against unintentional activation. This must be operated before the **Chain saw HCH5011** can be switched on.

Couplings

The **Chain saw HCH5011** is connected to the power source (power unit) via the couplings.

4.2 Displays

Water level housing

The water level housing contains three bubble levels for alignment and control of the direction of cut.

5 Putting into operation

The **Chain saw HCH5011** is supplied ready for use. The information provided in “Chapter 6”, Operation, also applies to the putting into operation of your apparatus.

6 Operation

6.1 General

Before proceeding read Chapter 2 «Safety instructions», 🗎 2-1 in these Operating instructions. Be sure also to take note of all the danger information given here and follow the instructions on how to avoid physical injury and damage to property.

6.1.1 Safety instructions

It is essential to observe the following safety instructions, in particular in relation to the operation of the HCH5011.

Danger

Danger of falling heavy parts.

When performing the types of work described in this chapter, it is essential to wear the following individual protective equipment: helmet, goggles, protective gloves and safety shoes. (see “Chapter 2” 2.3.7, 🗎 2-4)

It is essential that the work instructions and procedures described in this safety manual are followed.

Failure to observe this regulation may lead to serious physical injury, and possibly even death, and to property damage.

Danger

Danger from machine suddenly starting up.

Before switching on the Chain saw HCH5011 the operator must ensure that no other person is present in the danger areas.

Failure to adhere to this regulation may result in cut wounds to body parts and damage to property.

Danger

When working with a worn chain there is a danger of the chain breaking.

Worn chains must be replaced with new ones.

Failure to comply with this regulation may lead to serious physical injury or death.

Danger

Working with an incorrectly fitted chain will reduce the lifetime of the chain and there is a danger of the chain breaking.

Use the fitting aid (chain engraving) to correctly insert the chain.

Failure to comply with this regulation may lead to serious physical injury or death.

Danger

Noise danger

When using the Chain saw HCH5011 hearing protection must be worn.

If this instruction is not followed irreparable hearing damage may result.

Danger

Danger from uncontrolled movements

When the Chain saw HCH5011 is switched on, always hold it with both hands using the handles. Thumbs and fingers must be closed around the handles. Otherwise you may loose control of the Chain saw HCH5011. Handles must always be clean and dry.

Failure to observe this regulation may lead to serious physical injury, and possibly even death, and to property damage.

Danger

Danger from working at excessive chain speed or with insufficient water feed.

This can lead to excessive wear of the chain, which in turn can result in loss of stability and the chain breaking.

Operate the Chain saw HCH5011 at the correct speed and with sufficient water feed.
Do not exceed a hydraulic flow of 45 l / min and 140 bar. The working pressure of the water should be a minimum of 2.5 bar and the flow a minimum of 7.5 l / min.

Failure to observe this regulation may lead to serious physical injury, and possibly even death, and to property damage.

Danger

Danger from segments or stone chips flying off from the tool.

The danger area must be property secured.

Failure to observe this regulation may lead to serious injury to body parts, and possibly even death.

Danger

Danger of the Chain saw HCH5011 restarting in the event of an accident

Ensure that you can quickly stop the Chain saw HCH5011 (see Emergency Stop in the Operating instructions of the drive assembly you are using).

Failure to observe this regulation may lead to serious physical injury, and possibly even death, and to property damage.

Warning

Warning of slippery floors

The water feed and abrasion can make standing surfaces smooth and slippery. You should therefore always ensure you have a firm footing.

Failure to adhere to this regulation may result in slight or serious physical injury.

Warning

Warning against working when not in a fit state to do so.

Do not use the Chain saw HCH5011 if you are under the influence of sedatives or alcohol or if you are overtired.

Failure to adhere to this regulation may result in slight or serious physical injury.

6.1.2 Personnel qualifications

The **Chain saw HCH5011** should not be operated by unauthorised personnel. Personnel are only authorised where they meet the following requirements.

- Completion of concrete expert training or having professional experience.
- Receipt of an introduction (basic training) to the operation of the **Chain saw HCH5011** from a service engineer.
- Read and understood chapter 2 “Safety instructions”.

6.2 System requirements

In order to use the **Chain saw HCH5011** a hydraulic drive assembly is needed.

Drive assembly power requirements:

Minimum power:	Minimum flow 35 l/min. Max. pressure 140 bar
Maximum power:	Maximum flow 45 l/min. Max. pressure 140 bar

If the basic power of the drive assembly used is higher, a flow divider / pressure limiter or a pressure relief valve can be used.

Operation of the individual system components is described in the corresponding Operating instructions.

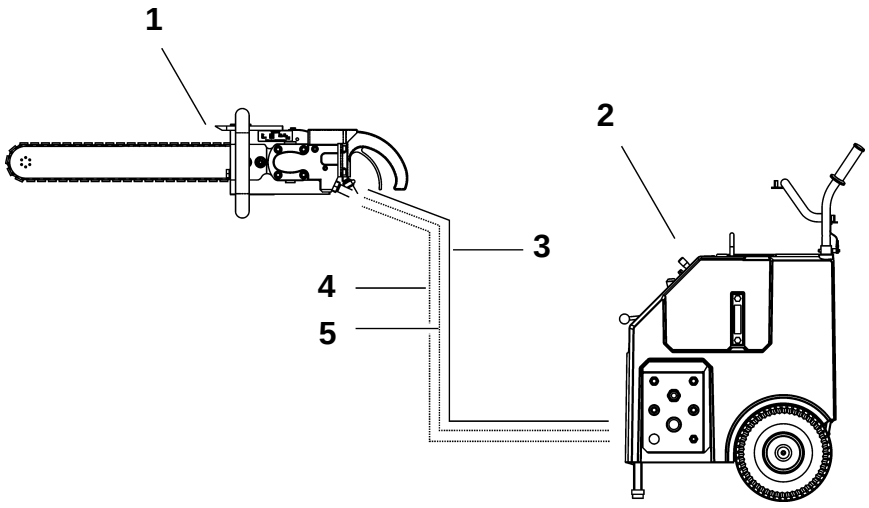

Fig. 6-1 **Chain saw HCH5011** with drive assembly

1. **Chain saw HCH5011**
2. Drive assembly
3. Water feed (cooling water)
4. Main oil circuit (inlet)
5. Main oil circuit (outlet)

6.3 Preparatory operations

Always proceed as follows:

- Sort out fundamental conditions
- Securing the site
- Securing cutouts
- Decide on position and sequence of the cuts
- Perform a visual inspection of the **Chain saw HCH5011**
- Connect the **Chain saw HCH5011** to the drive assembly

6.3.1 Sort out fundamental conditions

- Determine the position of pipes and cables in walls, floors and ceilings.
- Where does the cooling water used for sawing flow to? (Think about water damage to the electrical supply).

6.3.2 Securing the site

- See “Chapter 1” Workplace and danger areas 1.1.3, 🗎 1-2

6.3.3 Securing cutouts

Secure cutouts from walls and especially from ceilings and floors by suitable means, e.g. crane, supports, etc.

Check the weight of concrete. (1m³ = 2400-2700 kg)

6.3.4 Decide on position and sequence of the cuts

6.3.4.1 Position of cuts

Find out about the concrete or masonry to be sawed:

– Where does the reinforcement run?
– Is the concrete heavily or lightly reinforced?

Cut across the reinforcement if possible.

6.3.4.2 Cutting sequence

Decide on the sequence of cuts before starting work. For example, for a window cutout carry out the bottom cut first, then the side cuts, and finally the top cut.

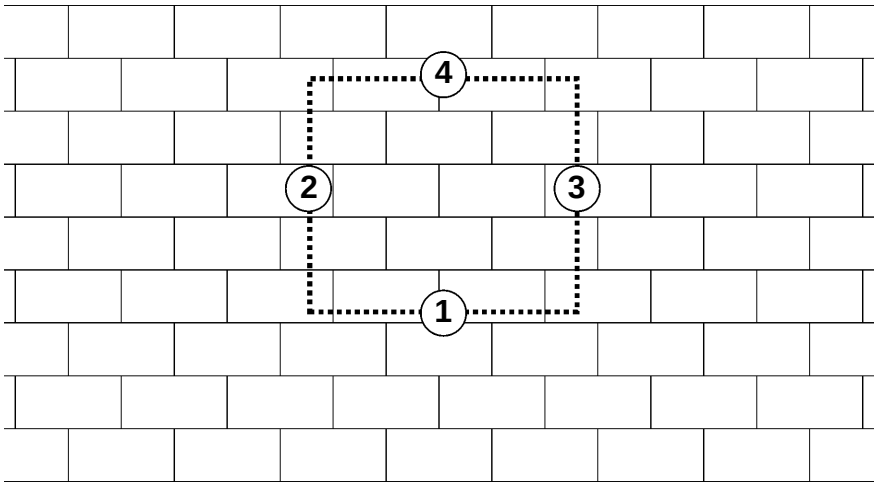

Fig. 6-2 Sequence of cuts for a window cutout

Information

The wrong sequence of cuts can lead to jamming of the bar or damage to the chain.

6.3.5 Perform a visual inspection of the Chain saw HCH5011

6.3.5.1 Check the chain tension

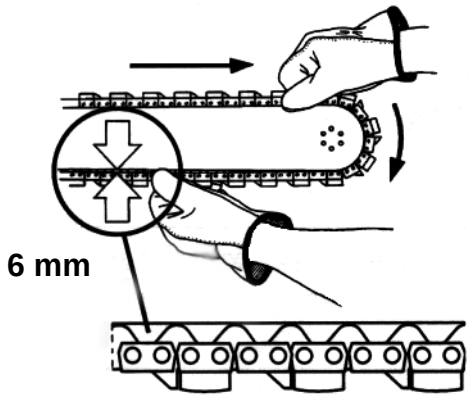

Fig. 6-3 Chain tension

– The chain tension is correctly set if with a moderate pull the chain can be pulled away from the bar by a maximum of 6 mm.
– It must be possible to turn the chain one full rotation with ease by hand.

For chain tensioning see “Chapter 7”

6.3.5.2 Check the diamond chain for wear

If chain is worn see “Chapter 3” 3.3.3, 🗎 3-4

To replace the chain see “Chapter 7”

6.3.5.3 Check the bar for wear

• The bar has been designed so that both sides can be used for working. Rotate the bar if one side is worn.

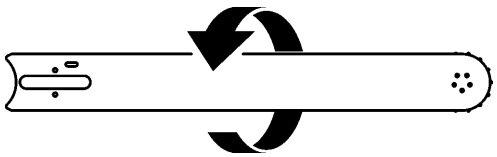

Fig. 6-4 Rotating the bar

6.3.5.4 Check the reversing wheel on the bar for wear

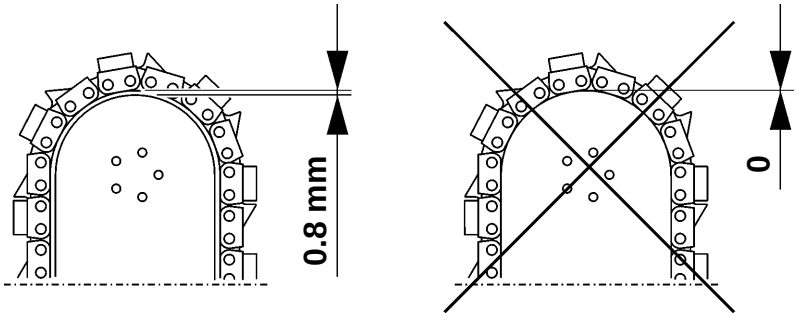

Fig. 6-5 Worn reversing wheel

When the reversing wheel is in the new condition the distance between the chain and bar edge is 0.8 mm. If the chain is running on the bar edge, the reversing wheel must be changed.

Repairs to be performed by an authorised **TYROLIT Hydrostress AG** service centre.

6.3.6 Connecting the Chain saw HCH5011

6.3.6.1 Connecting the hoses

Warning

Danger from uncontrolled movements of the HCH5011!

Never connect or disconnect hoses when the unit is running.

Failure to adhere to this regulation may result in cut wounds or injury to body parts and damage to property.

Warning

Danger from uncontrolled escaping of oil.

Never connect or disconnect hoses when the unit is running.

Failure to adhere to this regulation may result in cut wounds or injury to body parts and damage to property.

6.3.6.2 Hose connections

Before connecting check couplings, **Chain saw HCH5011** and feed lines for cleanliness.

The following hose connections must be established:

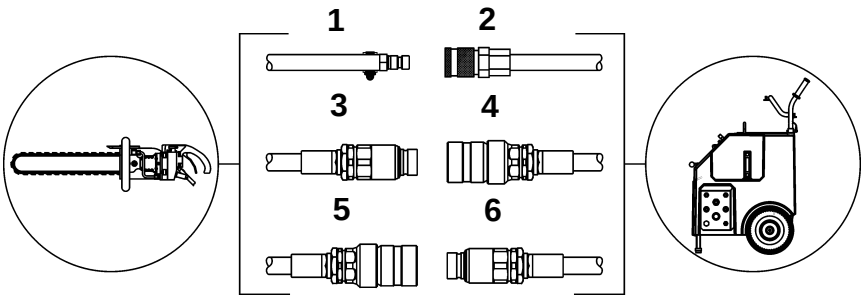

Fig. 6-6 Hose connections

Hoses Chain saw HCH5011	Drive assembly hoses
Water inlet (1) (Coupling – male connector)	Water outlet (2) (Coupling – female connector)
Return (3) (Coupling – male connector)	Main circuit oil return (4) (Coupling – female connector)
Flow (5) (Coupling – female connector)	Main circuit oil flow (6) (Coupling – male connector)

Proceed as follows:

- Visual inspection

  Check:

  – Oil leaks from hoses and couplings
  – Couplings for damage and contamination
  – Hoses for damage

- Push the hose coupling onto its counterpart until you hear it "click"
- Twist the locking ring of the coupling

Information

If the hoses cannot be connected or this cannot be done easily, they are under pressure. Depressurise the hoses by means of the pressure relief.

Never use force couplings to connect.

6.4 Working with the Chain saw HCH5011

Following the preparatory operations, see “Chapter 6” 6.3, 🗎 6-5 the **Chain saw HCH5011** is ready for use.

6.4.1 Areas of use

The **Chain saw HCH5011** is suited to the following cutting work:

- Small cutouts / cutting throughs
- Flush cuttings
- Narrow corner cuts
- Irregular shaped cuts

6.4.2 Starting the Chain saw HCH5011

Always proceed as follows:

- Start the drive assembly (see Operating instructions for the drive you are using).
- Open the water valve on the drive assembly and check the water outlet on the **Chain saw HCH5011**.

Information

The water outlet on the **Chain saw HCH5011** is released by pressing the locking cut-out and the manual starter.

- Set the required operating pressure.
  - Maximum flow 45 l/min.
  - Max. pressure 140 bar
- Hold the **Chain saw HCH5011** securely with both hands
- Press the locking cut-out and operate the manual starter
- Check the direction of travel of the chain (if this direction of travel of the chain is wrong, connect the **Chain saw HCH5011** properly).
- Perform the desired cut

6.4.3 Cutting sequence

Begin the cutting work taking into account the instructions of “Chapter 6”, Position and sequence of cuts 6.3.4, 🗎 6-6.

6.4.4 Working with cutting mandrel

The cutting mandrel (1) has been developed as a mechanical aid that can be used for horizontal and vertical cuts.

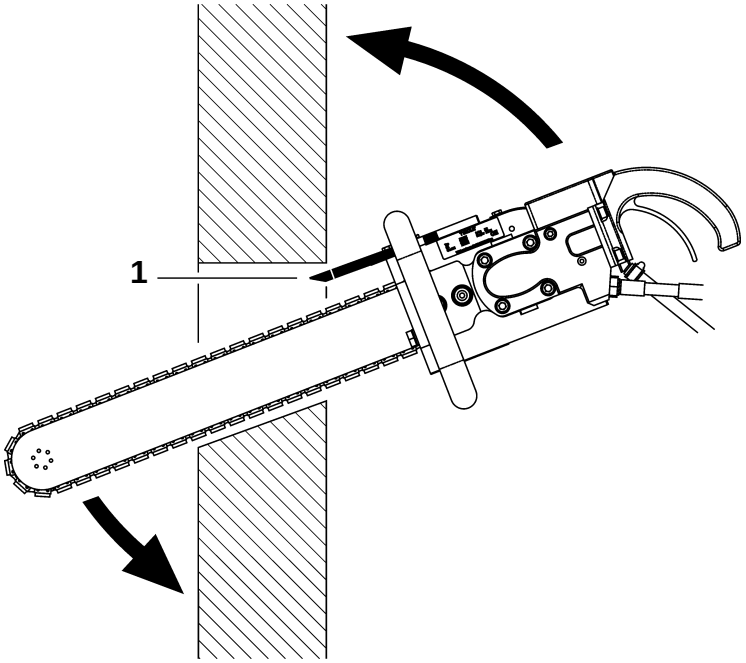

Fig. 6-7 Cutting mandrel

6.5 After the work

Proceed as follows:

- Close off and decouple the water feed
- Blow out water from all lines
- Remove plug from mains (drive assembly)
- Uncouple hydraulic hoses
- Clean the **Chain saw HCH5011** with water
- Lubricate the chain and the bar

6.5.1 Chain and bar lubrication

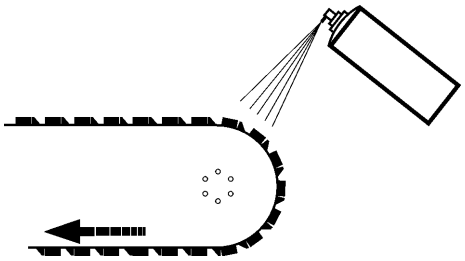

Fig. 6-8 Chain and bar lubrication

Proceed as follows:

- After final use rinse chain and bar with water. Allow chain to run for 5 seconds without water
- Disconnect the **Chain saw HCH5011** from the drive assembly
- Lubricate the chain and bar (chain spray)
- Store the **Chain saw HCH5011** in the dry state

Information

Frequent lubrication will extend the life of the diamond chain and the bar.

Information

In order to avoid frost damage, if there is a danger of frost once work is complete or prior to extended breaks in work the entire water system must be emptied and blown out.

7 Maintenance

7.1 General

Before proceeding read Chapter 2 «Safety instructions», 🗎 2-1 in these Operating instructions. Be sure also to take note of all the danger information given here and follow the instructions on how to avoid physical injury and damage to property.

7.1.1 Safety instructions

It is essential to observe the following safety instructions, in particular in relation to the maintenance of the HCH5011.

Danger

Danger of falling heavy parts.

When performing the types of work described in this chapter, it is essential to wear the following individual protective equipment: helmet, goggles, protective gloves and safety shoes (see “Chapter 2” 2.3.7, 🗎 2-4).

It is essential that the work instructions and procedures described in this safety manual are followed.

Failure to observe this regulation may lead to serious physical injury, and possibly even death, and to property damage.

Danger

Danger from segments flying off from the tool.

In no event should diamond chains have new segments fitted by unauthorised operators.

Failure to observe this regulation may lead to serious physical injury, and possibly even death, and to property damage.

Warning

Danger from uncontrolled movements of the HCH5011!

Never connect or disconnect hoses when the unit is running.

Failure to adhere to this regulation may result in cut wounds or injury to body parts and damage to property.

Warning

Danger from uncontrolled escaping of oil.

Never connect or disconnect hoses when the unit is running.

Failure to adhere to this regulation may result in cut wounds or injury to body parts and damage to property.

7.1.2 Personnel qualifications

The **Chain saw HCH5011** should not be maintained by unauthorised persons. Personnel are only authorised where they meet the following requirements.

- Have completed concrete expert training or professional experience.
- Have received an introduction (basic training) to the operation of the **Chain saw HCH5011** from a service engineer.
- Have read and understood chapter 2 “Safety instructions”.

7.2 Maintenance and servicing table

The following maintenance work must be performed according to the prescribed cycles. Wear parts that are not subject to particular maintenance intervals should also be checked regularly for wear and adjusted or exchanged as necessary.

Maintain the system within the indicated intervals in order to ensure:

- Safety for the operator
- Optimum performance
- Optimum reliability at all times

		before each start-up	upon completion of work	weekly	annually	in the event of malfunction	in the event of damage
Hydraulic system	Hydraulic hose inspection (Tightness / cleanliness)	X	X			X	X
	Coupling inspection (Tightness / cleanliness)	X	X			X	X
Water economy	Water line (Tightness / cleanliness)	X	X			X	X
	Blow out water (frost hazard)		X				
Chain saw unit	Tightness / cleanliness	X	X				
	Retighten accessible screws and nuts			X		X	
Bar	Water cleaning		X				
	Lubrication	X	X				
	Check for wear	X	X			X	X
Diamond chain	Water cleaning		X				
	Lubrication	X	X				
	Chain tension	X					
	Check for wear	X	X			X	X
Major service	May only be carried out by **TYROLIT Hydrostress AG** or an authorized representative				X		

Information

Wear in the drive and reversing wheel / diamond chain and bar is highly dependent upon the thickness, condition and degree of reinforcement of the concrete being worked.

Information

In order to achieve an optimum balance between the diamond chain and the drive wheel, whenever the chain is exchanged due to wear the drive wheel should also be replaced.

Information

In order to achieve an optimum balance between the diamond chain and the bar, every other time the chain is exchanged due to wear the bar should also be replaced.

8 Servicing

8.1 General

Before proceeding read Chapter 2 «Safety instructions», 🗎 2-1 in these Operating instructions. Be sure also to take note of all the danger information given here and follow the instructions on how to avoid physical injury and damage to property.

8.1.1 Safety instructions

It is essential to observe the following safety instructions, in particular in relation to the servicing of the HCH5011.

Danger

Danger of falling heavy parts.

When performing the types of work described in this chapter, it is essential to wear the following individual protective equipment: helmet, goggles, protective gloves and safety shoes (see “Chapter 2” 2.3.7, 🗎 2-4).

It is essential that the work instructions and procedures described in this safety manual are followed.

Failure to observe this regulation may lead to serious physical injury, and possibly even death, and to property damage.

Danger

Danger from segments flying off from the tool.

In no event should diamond chains have new segments fitted by unauthorised operators.

Failure to observe this regulation may lead to serious physical injury, and possibly even death, and to property damage.

Warning

Danger from uncontrolled movements of the HCH5011!

Never connect or disconnect hoses when the unit is running.

Failure to adhere to this regulation may result in cut wounds or injury to body parts and damage to property.

Warning

Danger from uncontrolled escaping of oil.

Never connect or disconnect hoses when the unit is running.

Failure to adhere to this regulation may result in cut wounds or injury to body parts and damage to property.

8.1.2 Personnel qualifications

The **Chain saw HCH5011** should not be serviced by unauthorised persons. Personnel are only authorised where they meet the following requirements.

- Have completed concrete expert training or professional experience.
- Have received an introduction (basic training) to the operation of the **Chain saw HCH5011** from a service engineer.

Have read and understood chapter 2 “Safety instructions”.

8.2 Tensioning the diamond chain

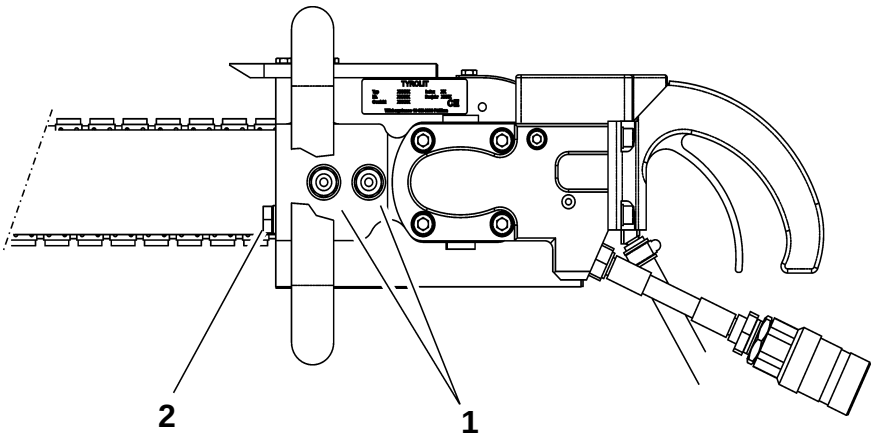

Fig. 8-1 Tensioning the diamond chain

Proceed as follows:

To tension the diamond chain you will need the fork wrench SW 19 supplied with the tool kit.

- Loosen both nuts (1)
- Adjust the adjusting screw (2) for the correct chain tension
- Tighten both nuts (1)

8.2.1 Correct chain tension

- The chain tension is correctly set if, in the middle of the bar, with a moderate pull the chain can be pulled away from the bar by a maximum of 6 mm.
- It must be possible to turn the chain in the uncoupled state one full rotation with ease by hand.

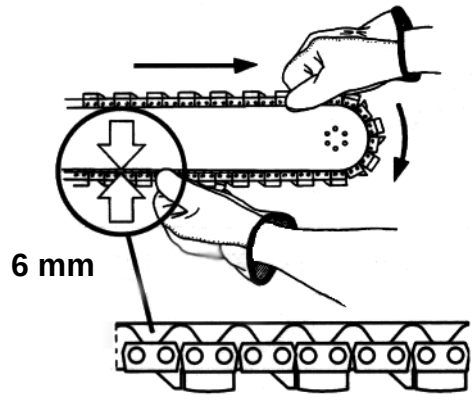

Fig. 8-2 Chain tension

8.3 Changing the diamond chain

To change the diamond chain you will need the fork wrenches SW 19 and SW 10 supplied with the tool kit.

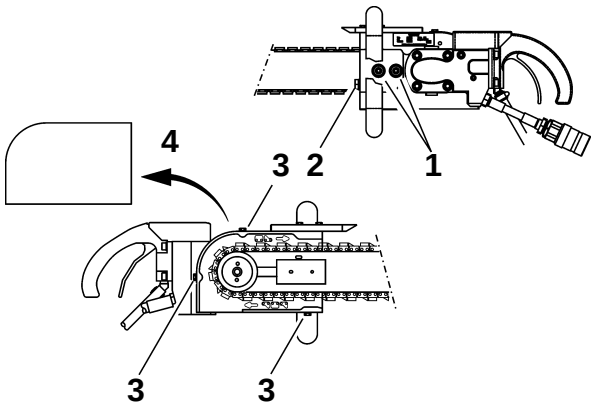

Fig. 8-3 Changing the diamond chain

8.3.1 Removing the diamond chain

Proceed as follows:

- Loosen the three chain guard securing screws (3)
  Fork wrench SW10
- Remove the chain guard (4)
- Loosen both nuts (1)
  Fork wrench SW19
- Release the tension in the diamond chain via the adjusting screw (2)
  Fork wrench SW19
- Remove the diamond chain

8.3.2 Fitting the diamond chain

Proceed as follows:

- Place the diamond chain around the drive and reversing wheel and in the chain guide of the bar. Note the direction of travel and installation position of the diamond chain. See “Chapter 3” 3.3.3, 🗎 3-4
- Tension the diamond chain, see “Chapter 8” 8.2, 🗎 8-3
- Tighten both nuts (1)
  Fork wrench SW1
- Fit the chain guard (4) with the fixing screws (3)
  Fork wrench SW10

8.4 Changing the bar

To change the bar you will need the fork wrenches SW 19 and SW 10 supplied with the tool kit.

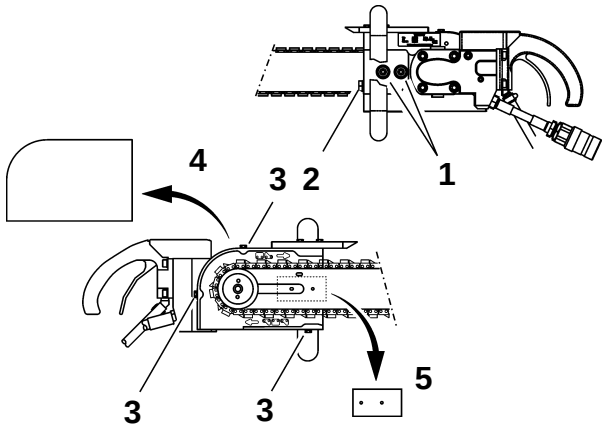

Fig. 8-4 Changing the bar

8.4.1 Dismantling the bar

Proceed as follows:

- Loosen the three chain guard securing screws (3)
  Fork wrench SW10
- Remove the chain guard (4) and the chain tensioning device (5)
- Loosen both nuts (1)
  Fork wrench SW19
- Release the tension in the diamond chain via the adjusting screw (2)
  Fork wrench SW19
- Remove the diamond chain
- Remove the nuts (1) from the chain tensioning device (5)
- Remove the bar

8.4.2 Fitting the bar

Proceed as follows:

- Place the bar in the chain saw unit
- Fit the chain tensioning device (5) and tighten nuts (1) slightly
- Place the diamond chain around the drive and reversing wheel and in the chain guide of the bar. Note the direction of travel and installation position of the diamond chain. See “Chapter 3” 3.3.3, 🗎 3-4
- To tension the diamond chain see 8.2, 🗎 8-3
- Tighten both nuts (1) with fork wrench SW19
- Fit the chain guard (4) with the fixing screws (3)
  Fork wrench SW10

8.5 Changing the drive wheel

In order to be able to change the drive wheel you must first dismantle the bar, see “Chapter 8” 8.4.1, 🗎 8-5

To change the drive wheel you will need the wheel stop and Allen key SW 5 supplied with the tool kit.

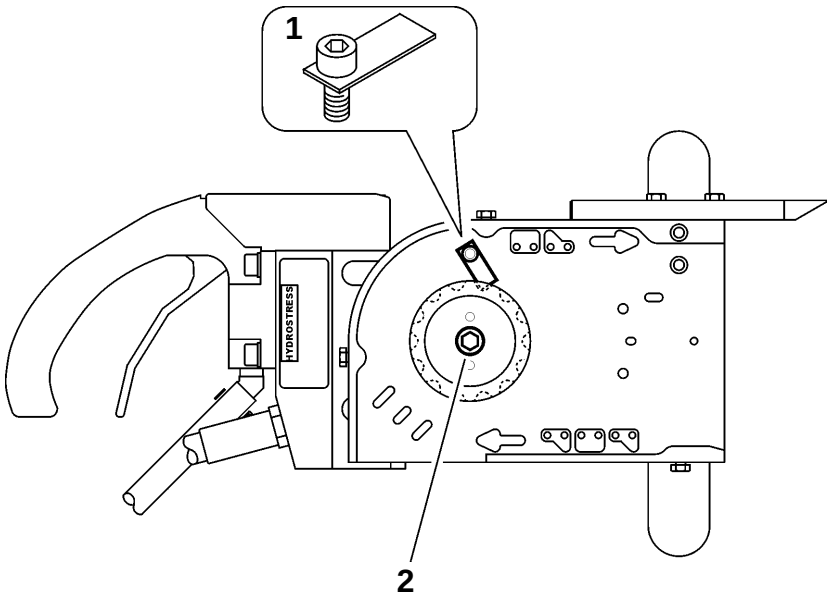

Fig. 8-5 Changing the drive wheel

8.5.1 Dismantling the drive wheel

Proceed as follows:

- Fit the drive wheel stop (1)
- Loosen the left-hand thread Allen screw (2)
  Allen key SW 5
- Remove the drive wheel and the V-seal

8.5.2 Fitting the drive wheel

- Fit the V-seal (grease the seal)
- Push drive wheel onto drive shaft
- Fit the drive wheel stop (1) and nuts (1)
- Secure the drive wheel with the Allen screw (2)
  and Loctite 243
- Remove the drive wheel stop

8.6 Troubleshooting

Proceed systematically when looking for the causes of a fault. Refer to the operating instructions of the drive assembly you are using when doing this.

The following table will help you to narrow down and rectify the source of the fault.

Fault	Possible cause	Solution
Chain saw HCH5011 cannot be started	Drive assembly is switched off	Switch on drive assembly
	Emergency stop on drive assembly has been activated	Release emergency stop on the drive assembly
	Chain tension too high	Tension diamond chain correctly see “Chapter 8” 8.2, 🗎 8-3
	Reversing wheel bearing rusted or reversing wheel worn	Free-up bearing with chain spray or replace reversing wheel
	Diamond chain has excessive contact with building structure	Withdraw from cut and insert into building structure with chain running
	Drive wheel incorrectly mounted	Check drive wheel
Diamond chain broken	Loose metal or stone in building structure	Remove metal or stones or position cut at another point
	Diamond chain incorrectly assembled	Assemble diamond chain correctly see “Chapter 3” 3.3.3, 🗎 3-4
	Diamond chain worn	Replace diamond chain see “Chapter 3” 3.3.3, 🗎 3-4
	Chain speed is too high	Drive assembly power is too high. Use a pressure relief valve (140 bar) or a flow divider (pressure limiter 40 l/min at 140 bar).
Diamond chain seriously worn on cutting segment	Highly reinforced building structure	Cannot be removed
	Chain speed too low	Use hydraulic unit at min. 35 l/min
	Insufficient water	Min. pressure 2bar
Diamond chain vibrates heavily	Diamond chain inadequately tensioned	Tension diamond chain correctly see “Chapter 8” 8.2, 🗎 8-3
Diamond chain sticks in cut	Block being cut out moves	Insert stable wood or steel shims in the cut so that the block no longer moves
	Incorrect cutting sequence	Observe cutting sequence see “Chapter 6” 6.3.4, 🗎 6-6
Diamond chain can no longer be tensioned, since the chain tensioner is at its limit	Diamond chain has stretched through normal wear	Lift bar from tensioning cam A and tension using tensioning cam B see “Chapter 8” 8.2, 🗎 8-3

Fault	Possible cause	Solution
No water coming from the bar and diamond chain	Water line is blocked	Clean water line
	Water valve on feed line is closed	Open water valve.
	Insufficient water pressure	Ensure a minimum water pressure of 7.5 l/min
Diamond chain jumps from bar	Chain tension too low	Tension diamond chain correctly see “Chapter 8” 8.2, 🗎 8-3
	Worn chain guide on bar	Replace bar
	Worn chain wheels	Replace chain wheels

If you are unable to remedy a fault, please call our service centre (see manufacturer’s address on the reverse of the title page).

To guarantee a rapid and professional solution to the problem, it is important that you have prepared as follows before calling:

- Try to describe the fault as accurately as possible
- Note the type and index of your unit (name plate)

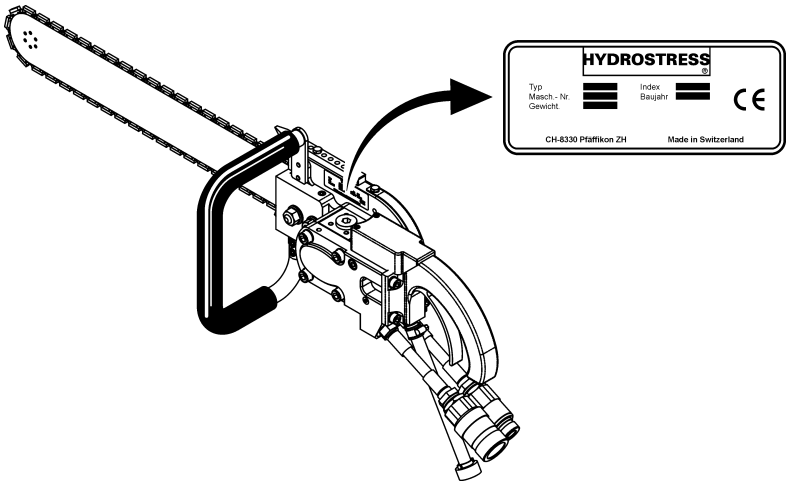

Fig. 8-6 Name plate

- Have the operating instructions close to hand

9 Taking out of service and storage

9.1 Taking out of service

9.2 General

Before proceeding read Chapter 2 «Safety instructions», 🗎 2-1 in these Operating instructions. Be sure also to take note of all the danger information given here and follow the instructions on how to avoid physical injury and damage to property.

9.2.1 Safety instructions

It is essential to observe the following safety instructions, in particular in relation to the taking out of service of the HCH5011.

Danger

Danger of falling heavy parts.

When performing the types of work described in this chapter, it is essential to wear the following individual protective equipment: helmet, goggles, protective gloves and safety shoes (see “Chapter 2” 2.3.7, 🗎 2-4).

It is essential that the work instructions and procedures described in this safety manual are followed.

Failure to observe this regulation may lead to serious physical injury, and possibly even death, and to property damage.

Warning

Danger from uncontrolled movements of the HCH5011!

Never connect or disconnect hoses when the unit is running.

Failure to adhere to this regulation may result in cut wounds or injury to body parts and damage to property.

Warning

Danger from uncontrolled escaping of oil.

Never connect or disconnect hoses when the unit is running.

Failure to adhere to this regulation may result in cut wounds or injury to body parts and damage to property.

9.2.2 Personnel qualifications

The **Chain saw HCH5011** should not be taken out of service by unauthorised persons. Personnel are only authorised where they meet the following requirements.

- Have completed concrete expert training or professional experience.
- Have received an introduction (basic training) to the operation of the **Chain saw HCH5011** from a service engineer.

Have read and understood chapter 2 “Safety instructions”.

9.3 Storage

Some components of the **Chain saw HCH5011** consist of materials which may corrode. If unused for lengthy periods, take the following action:

- Blow the water out of the water lines
- Lightly oil the apparatus
- Store in a dry location

10 Transport, Packing

10.1 Transport

The **Chain saw HCH5011** is a high-tech apparatus. Protect it against transport damage:

- Do not place anything on or against the **Chain saw HCH5011**
- Protect the **Chain saw HCH5011** from impacts
- Transport the **Chain saw HCH5011** in the carrying case provided for this purpose

10.2 Packing

The **Chain saw HCH5011** is packed in the carrying case included in the scope of supply.

11 Disposal

11.1 General

The operator can recycle or dispose of the **Chain saw HCH5011** himself provided he observes the statutory provisions. In order to dismantle the apparatus correctly and to properly remove the materials some knowledge in the area of mechanics and knowledge about differentiation of waste materials is necessary.

Before proceeding read Chapter 2 «Safety instructions», 🗎 2-1 in these operating instructions. Be sure also to take note of all the danger information given here and follow the instructions on how to avoid physical injury and damage to property.

11.1.1 Safety instructions

It is essential to observe the following safety instructions, in particular in relation to the disposal of the HCH5011.

Danger

Danger of falling heavy parts.

When performing the types of work described in this chapter, it is essential to wear the following individual protective equipment: helmet, goggles, protective gloves and safety shoes (see “Chapter 2” 2.3.7, 🗎 2-4).

It is essential that the work instructions and procedures described in this safety manual are followed.

Failure to observe this regulation may lead to serious physical injury, and possibly even death, and to property damage.

11.1.2 Personnel qualifications

Personnel performing the work described in this chapter must meet the following conditions:

- Have and understood the safety instructions in “Chapter 2”.
- Completed their technical training (mechanical/electrotechnical) and be in a position to identify the various material groups.

11.2 Disposal regulations

The normal local and regional rules and guidelines must be observed when disposing of the **Chain saw HCH5011**.

11.3 Disposal of the Chain saw HCH5011

To allow proper disposal the components of the HCH5011 must be dismantled. This is performed by the client's personnel.

The dismantled parts of the apparatus are sorted by material and sent separately to the appropriate collection points. Ensure that the following parts in particular are properly disposed of.

The Chain saw HCH5011 consists of the following materials:

Cast aluminium	Rolled aluminium products
Bronze	Steel
Rubber	Rubber / nylon fabric
Synthetic grease	