

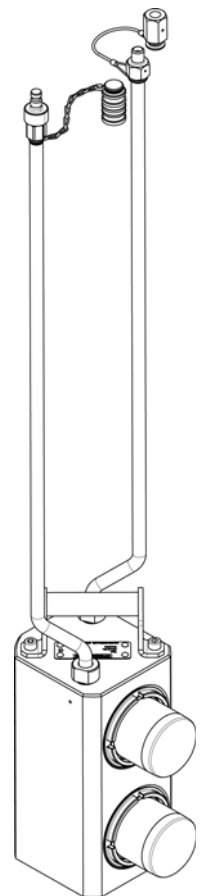
# ***Operating Instructions***

## ***Spare parts list***

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### ***BTH350\*\*\* pressing tool***

*Index001*



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# 0 Introduction

## 0.1 Congratulations!

You have decided to buy an advanced, tried and tested TYROLIT Hydrostress AG 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 TYROLIT Hydrostress AG system is another top-of-the-range Swiss product:

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

Only original TYROLIT Hydrostress AG 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 TYROLIT Hydrostress AG system in order to keep it in perfect condition, please contact our after-sales service for further information.

We trust that working with your Hydrostress system will be trouble-free for you.

TYROLIT Hydrostress AG

Management

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## **0.2 Validity of these Operating Instructions**

This manual is only valid for the following system:

**BTH350\*\*\* pressing tool**

## **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 BTH350\*\*\* pressing tool.

# 1 Product Description

## 1.1 Important information on the product

### 1.1.1 Main components

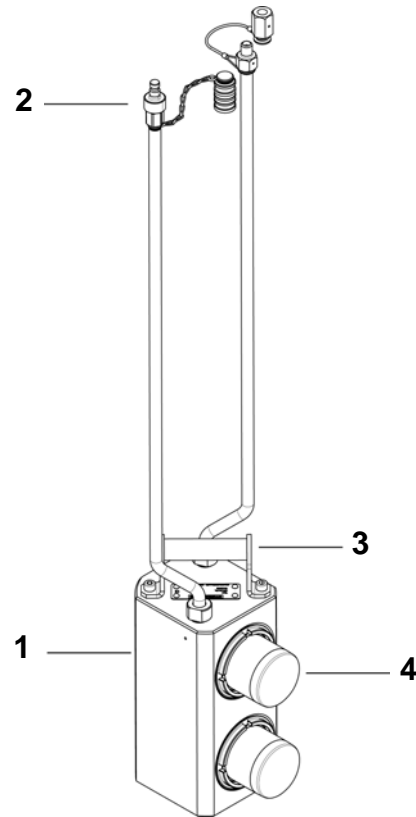


Fig. 1-1 Main components

- |   |                      |   |        |
|---|----------------------|---|--------|
| 1 | Press body           | 3 | Grip   |
| 2 | Hydraulic connectors | 4 | Piston |

## 1.1.2 Application

The BTH350\*\*\* pressing tool is designed and built for the following application:

- Pressing of concrete (including reinforced) and masonry.
- The applicable mandatory limitations on use and parameters are contained in Chapter 1 "Technical data" 1.1.5, 1-4.

### 1.1.2.1 Safety measures

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

### 1.1.2.2 Known inappropriate usage



## Warning

### Pressing of natural stone

**The BTH350\*\*\* pressing tool should not be used for processing natural stone.**

**Failure to observe this regulation may result in damage to property.**

## 1.1.3 Name plate

All product data can be found on the name plate.

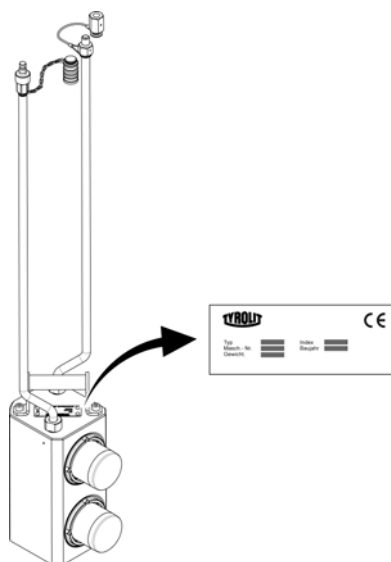


Fig. 1-2 Name plate



### 1.1.4 EC Declaration of Conformity

Description	Pressing tool
Type designation	BTH350***
Year of construction	2008

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 – basic concepts, general design principles
EN 292-2	
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 Technical Data**

**1.1.5.1 Dimensions**

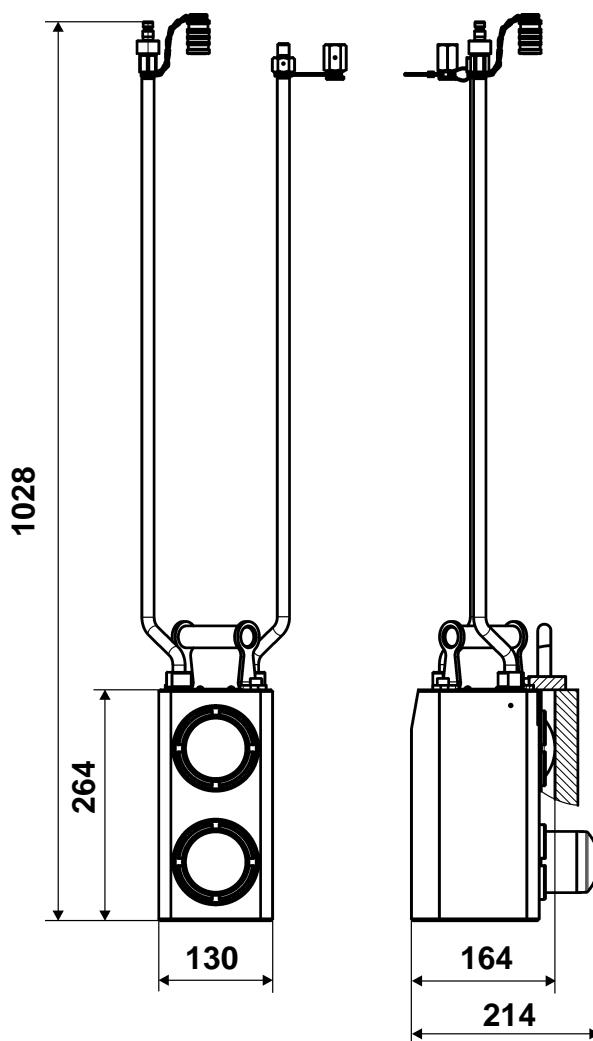


Fig. 1-3 Dimensions in mm

**1.1.5.2 Weights**

BTH350*** pressing tool	36 kg
Pressing plate	6.5 kg

**1.1.5.3 Pressing force**

Maximum pressing force at 2000 bar = 260 t

### 1.1.6 Making the workplace safe

Before starting work enough space should be created to ensure working without danger.

The workplace must be adequately lit.

Danger areas must be visibly cordoned off so that no-one can enter the danger areas when work is being carried out.

The front, underneath and rear of the working area must be protected so that no personal injury or equipment damage can be caused by falling parts. Lumps of concrete that have been pressed out must be secured against falling.

### 1.1.7 Lubricants

#### Specification:

Hydraulic Oil:	HLP / ISO VG 46	
Lubricating grease:	Penetration:	265-295NLGI
	NLGI:	2

### 1.1.8 Noise level

Depending on the working environment, the pressing tool BTH350\*\*\* can cause excessive noise during operation.

The noise can cause permanent harm to 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 BTH350\*\*\* pressing tool hearing protection must be worn.**

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

### 1.1.9 Scope of supply

- BTH350\*\*\* pressing tool
  - incl. 1x pressing plate
  - Operating Instructions
  - Spare parts list



## **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 BTH350\*\*\* pressing tool.

All persons who work on and with the BTH350\*\*\* pressing tool, 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 BTH350\*\*\* pressing tool 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 BTH350\*\*\* pressing tool 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.

## 2.2 Information and symbols

### 2.2.1 Hazard symbols

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

Hazard symbols.

#### 2.2.1.1 Hazard 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 and/or damage to property.

Information symbols.

#### 2.2.1.2 Information symbols in the Operating Instructions



### 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.

## **2.3 Safety principles**

### **2.3.1 Delimitation of the safety concept**

The BTH350\*\*\* pressing tool has no effect on the safety concept of the connected systems, apparatus and installations.

### **2.3.2 Safety elements**

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

### **2.3.3 Safety measures (organisational)**

#### **2.3.3.1 Product monitoring obligation**

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

#### **2.3.3.2 Location of the Operating Instructions**

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

## 2.4 General safety rules

### 2.4.1 Statutory provisions

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

### 2.4.2 Inspection and maintenance obligation

The operator is under an obligation to only use the BTH350\*\*\* pressing tool 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.

### 2.4.3 Spare parts

Only original spare parts should be used. Otherwise damage may be caused to the BTH350\*\*\* pressing tool or to other property and persons.

### 2.4.4 Power connections



#### Warning

**Danger from uncontrolled escaping of oil.**

**Never connect or disconnect hoses when the drive unit is running.**

**Failure to adhere to this regulation may result in physical injury and damage to property.**

### 2.4.5 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.

### 2.4.6 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.



## **2.5 Responsibility**

### **2.5.1 Authorised personnel**

Work on or with the BTH350\*\*\* pressing tool should only be performed by authorised personnel. Personnel are considered 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 defined in the introduction under “General” of the respective chapters.

### **2.5.2 Delimitation of authority**

#### **2.5.2.1 Manufacturer**

TYROLIT Hydrostress AG or a company expressly nominated by TYROLIT Hydrostress AG is deemed to be the manufacturer of the equipment components 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 BTH350\*\*\* pressing tool.

#### **2.5.2.2 Operator**

As the primary legal entity, the latter is responsible for the correct use of the product and for the training and use of the authorised personnel. He sets out the mandatory skills and level of training of the authorised personnel for his company.

### **2.5.3 Operator (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.
- Monitors the correct functioning of the safety devices.

### **2.5.4 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 systems for which special access rights are required.
- Performs repairs, complex service work and maintenance work.

## **2.5.5 Qualification and training**

### **2.5.5.1 Operator**

- Trained building expert in a management position.
- Has extensive experience in personnel training and danger assessment.
- Has read and understood the “Safety instructions” chapter.

### **2.5.5.2 Operator (user)**

- Has trained as a concrete cutting expert or has completed a technical course from the regional professional association and federation or has professional experience.
- Has received an introduction (basic training) to the operation of the BTH350\*\*\* pressing tool from a service engineer.
- Has read and understood chapter 2 “Safety instructions”.

### **2.5.5.3 Service engineer**

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

## **2.6 Analyses performed**

As part of the development process, the known risks were systematically analysed. Hazard symbols on the system and in the Operating Instructions make reference to residual dangers.

## 3 Design and function

### 3.1 General

The BTH350\*\*\* pressing tool is assembled from other components to form a complete pressing system.

#### 3.1.1 System components

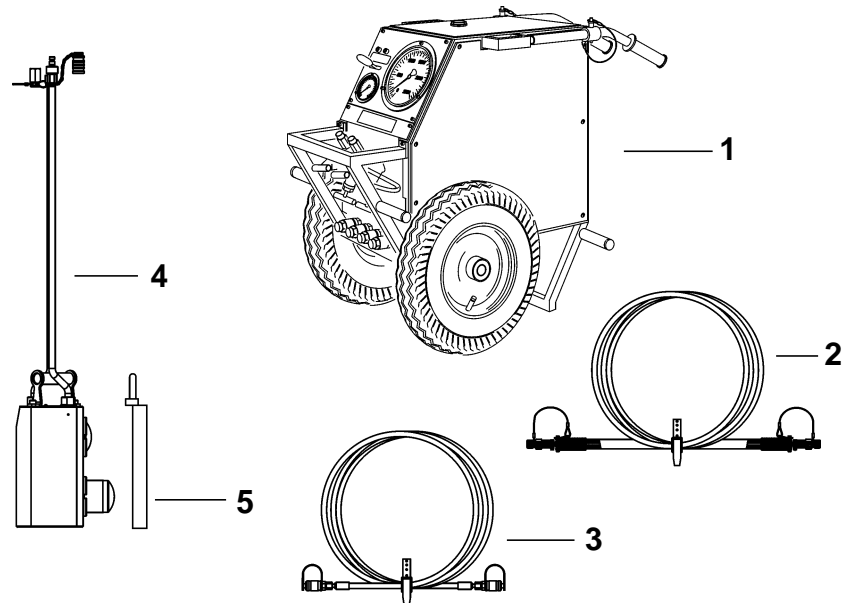


Fig. 3-1 System components

- |                      |                  |
|----------------------|------------------|
| 1 Drive unit         | 4 Pressing tool  |
| 2 High-pressure hose | 5 Pressing plate |
| 3 Low-pressure hose  |                  |

### Warning



**Danger from incorrect system components.**

The BTH350\*\*\* pressing tool should only be operated with original TYROLIT Hydrostress AG- system components.

Failure to adhere to this regulation may result in physical injury and damage to property.

### 3.1.1.1 Drive unit

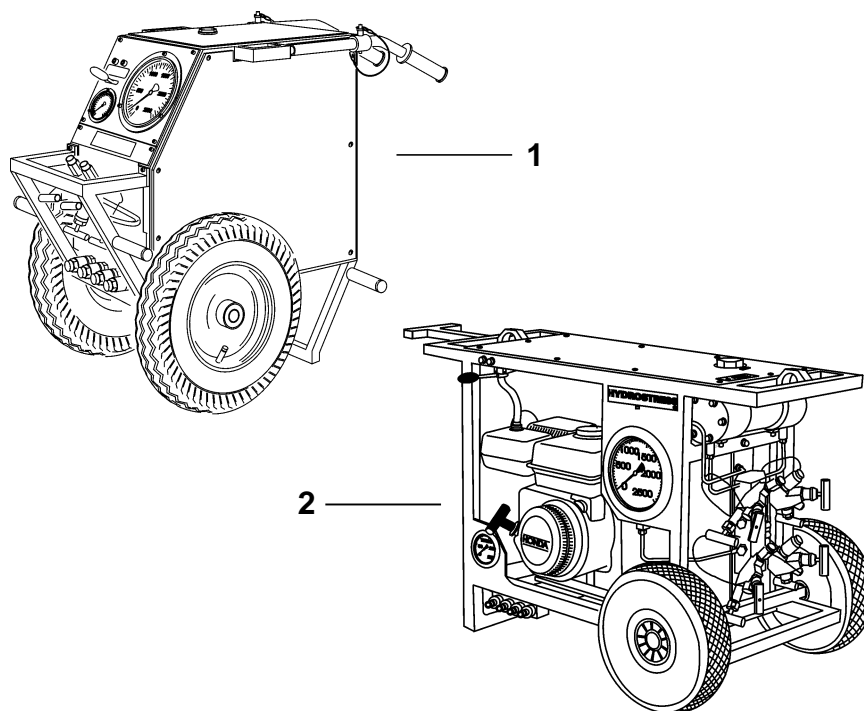


Fig. 3-2 Drive units

- 1 Drive unit with electric motor
- 2 Drive unit with combustion motor

The drive unit provides the power (high pressure oil) for operation and control of pressing tools. The very high oil pressures that are required for pressing work are mostly provided by a pressure booster in the drive unit. A pressure booster increases the working pressure of the primary circuit by a ratio of, for example, 1:25. This means that the pressure of 80 bar in the primary circuit is increased to 2,000 bar.

With drive units for pressing work a distinction is made between drive units with electric motors and those with combustion motors.

### 3.1.1.2 High-pressure hose (HP hose)

For safety reasons the high-pressure hose has a double casing and special reinforcements.

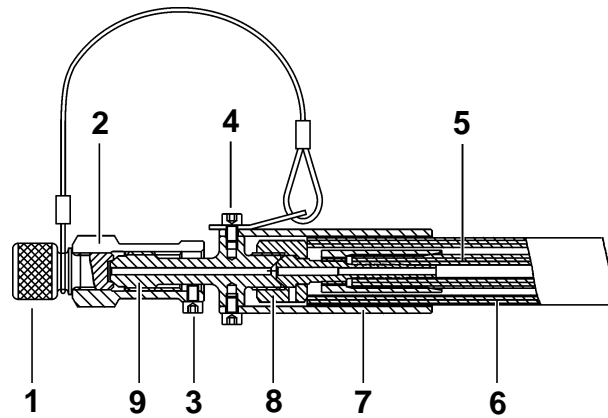


Fig. 3-3 High-pressure hose

- |                     |                          |
|---------------------|--------------------------|
| 1 Protective plug   | 6 Protective hose casing |
| 2 Adjusting nut     | 7 Grip pipe              |
| 3 Stop screw        | 8 Union nut              |
| 4 Allen screw       | 9 Threaded nipple        |
| 5 Inner hose casing |                          |

### 3.1.1.3 Low-pressure hose (LP hose)

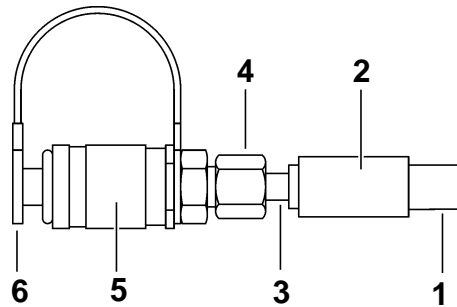


Fig. 3-4 Low-pressure hose

- |   |                    |
|---|--------------------|
| 1 Hydraulic hose with<br>Steel wire braiding insert | 4 Union nut        |
| 2 Pressing sleeve                                   | 5 Plug-in coupling |
| 3 Pressing nipple                                   | 6 Protective plug  |

### 3.1.1.4 Pressing tool

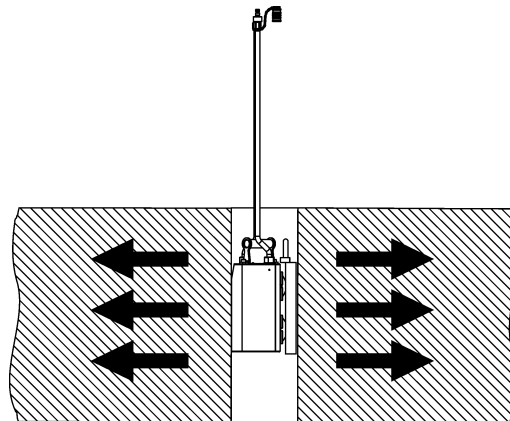


Fig. 3-5 Pressing tool

The pressing tool and pressing plate are introduced into the prepared core bore hole of  $\varnothing 200$  mm to  $\varnothing 220$  mm. The pressing pistons extend at right-angles to the pressing tool under hydraulic high pressure of a maximum of 2,000 bar. The pressing pistons hit the pressing plate with a force of 260 t (130 t per piston) and split the concrete. The reinforcement is ruptured or stretched so that it can be detached with the cutting-off wheel or the flame cutter.

### 3.1.1.5 Pressing plate

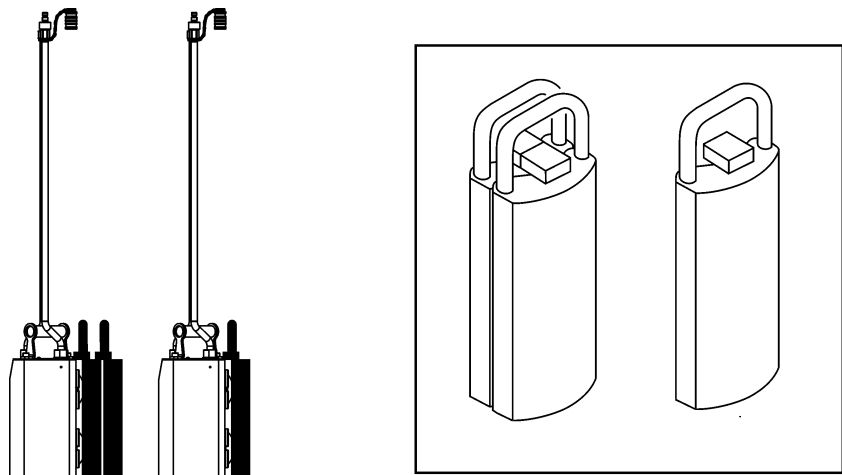


Fig. 3-6 Pressing plate

The pressing plate serves to evenly distribute the force and protects the pressing pistons. The pressing plate is inserted between the pressing tool and the bore hole wall. If the space between the pressing body and the bore hole wall is too great, several pressing plates can be inserted one after another. Pressing plates arranged one after another can also be used to extend the gap.

## 3.2 BTH350\*\*\* pressing tool

### 3.2.1 Design

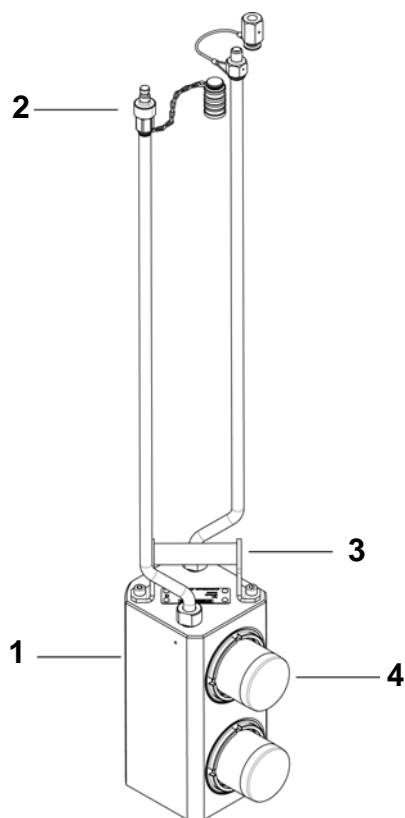


Fig. 3-7 Components

- |                        |          |
|------------------------|----------|
| 1 Press body           | 3 Grip   |
| 2 Hydraulic connectors | 4 Piston |

#### 3.2.1.1 Press body

The press body is the central element of the BTH350\*\*\*. The piston units, hydraulic lines and grip are secured to the press body.

### 3.2.1.2 Hydraulic connections

The high-pressure hose is linked by means of a screw connection.  
The low-pressure hose is connected by means of a plug-in coupling.

#### Screw connection:

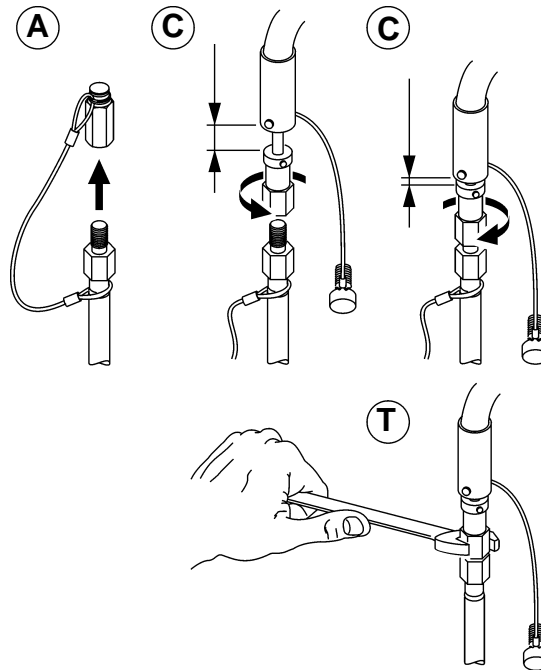


Fig. 3-8 Screw connection

#### In order to connect the high-pressure hose proceed as follows:

- A Remove the protective coupling
- B Rotate the hydraulic hose end piece
- C Screw the hydraulic hose to the BTH350\*\*\* pressing tool
- D Tighten the screwed joint with the fork wrench



## Danger

**Danger from hydraulic oil leaks.**

**Securely tighten the screwed connection of the plug connector with a fork wrench.**

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



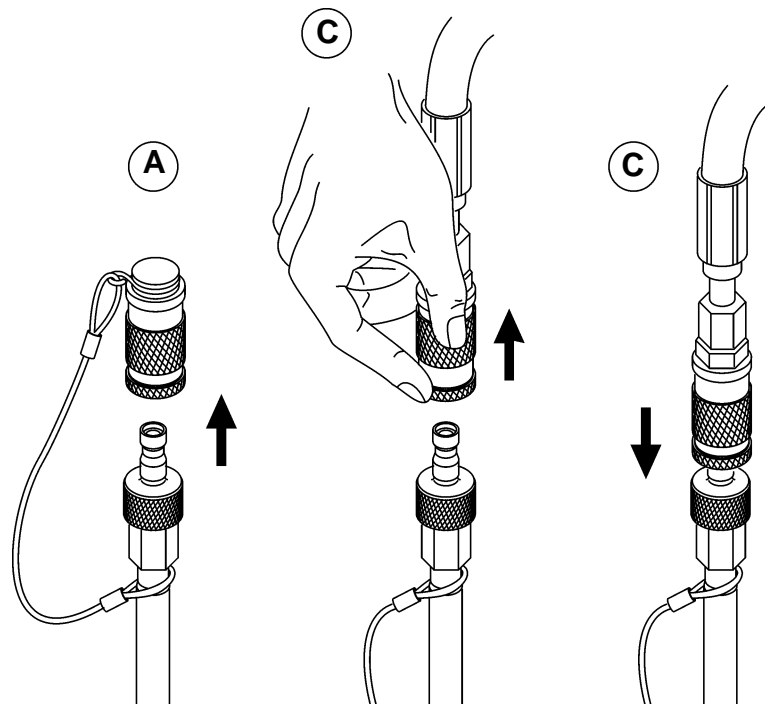
**Plug-in coupling:**

Fig. 3-9 Plug-in coupling

**In order to connect the low-pressure hose proceed as follows:**

- A Remove the protective coupling
- B Pull back the coupling ring
- C Attach coupling piece and slacken coupling ring



## 4 Start-up / Operation

### 4.1 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.

#### 4.1.1 Safety instructions

It is essential to observe the following safety instructions, in particular in relation to the operation and start-up of the BTH350\*\*\* pressing tool.



<b>Danger</b>	
	<p><b>Danger of falling heavy parts.</b></p> <p><b>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.</b></p> <p><b>It is essential that the work instructions and procedures described in these Operating Instructions are followed.</b></p> <p><b>Failure to observe this regulation may lead to serious physical injury, possibly even death, and to property damage.</b></p>



<b>Warning</b>	
	<p><b>Danger from uncontrolled movements of the BTH350***.</b></p> <p><b>Never connect or disconnect hoses when the drive unit is running.</b></p> <p><b>Failure to adhere to this regulation may result in physical injury and damage to property.</b></p>



<b>Warning</b>	
	<p><b>Danger from uncontrolled escaping of oil.</b></p> <p><b>Never connect or disconnect hoses when the drive unit is running.</b></p> <p><b>Failure to adhere to this regulation may result in cut wounds or injury to body parts and damage to property.</b></p>

### 4.1.2 Personnel qualifications

The BTH350\*\*\* pressing tool should not be operated by unauthorised personnel. Personnel are only authorised where they meet the following requirements.

- Have trained as a concrete cutting expert or completed a technical course from the regional professional association and federation or have professional experience.
- Have received an introduction (basic training) to the operation of the BTH350\*\*\* pressing tool from a service engineer
- Have read and understood chapter 2 “Safety instructions”.

## 4.2 Putting into operation



Information
The BTH350*** pressing tool is delivered ready for use. The information provided in “Chapter 5” 4.3, 4-2 also applies to the putting into operation of your apparatus.

## 4.3 Operation

### 4.3.1 Connecting the BTH350\*\*\* pressing tool



Information
Information on the correct connection of the BTH350*** pressing tool can be found in Chapter 3 “Design and Function” 3.2.1.2, 3-6.

### 4.3.2 Using the pressing tool

#### 4.3.2.1 Use in pocket bore holes:

The core bore hole must be deep enough for the pressing tool to be inserted completely in the bore hole.

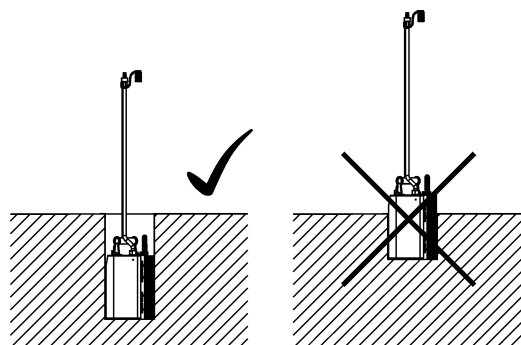


Fig. 4-1 Use in pocket bore holes

### 4.3.2.2 Use in through holes

In order to allow right-angled separation by pressing, the pressing tool must be inserted in the centre of the through hole.

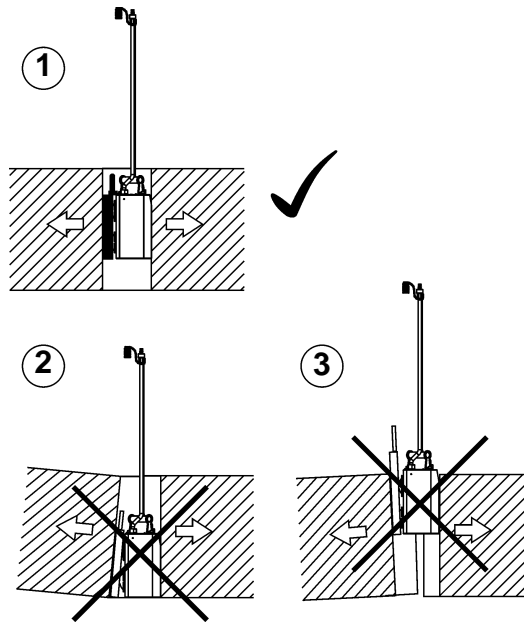


Fig. 4-2 Use in through holes

- 1 BTH350\*\*\* pressing tool correctly inserted
- 2 BTH350\*\*\* pressing tool inserted too deep
- 3 BTH350\*\*\* pressing tool inserted too high

### 4.3.2.3 Use at the correct angle

The pressing tool must be used at right-angles (90°) to the rupture line.

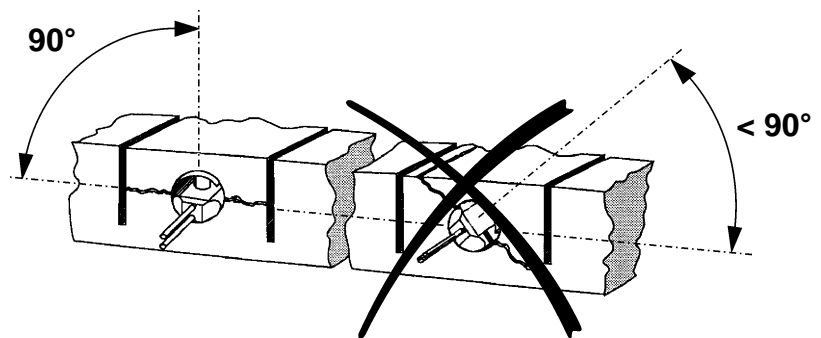


Fig. 4-3 Use at the correct angle

### 4.3.3 Position of the core bore holes with the pressing tool

#### 4.3.3.1 Correct positioning when two pressing tools are used:

The pressing tools must be positioned so that the minimum distances  $L/4$  and  $L/2$  are observed and the rupture line runs perpendicularly to the reinforcement.

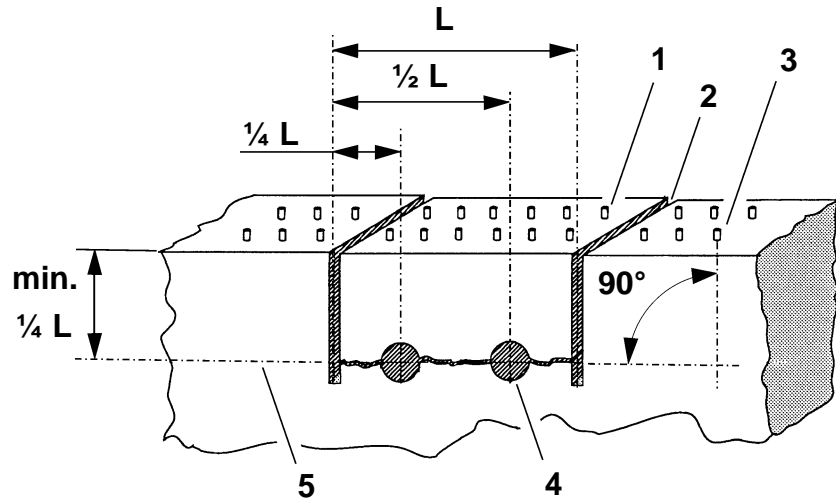


Fig. 4-4 Correct positioning when two pressing tools are used

- |                                 |                                    |
|---------------------------------|------------------------------------|
| 1 Reinforcement                 | 4 Core bore hole for pressing tool |
| 2 Notch                         | 5 Ideal rupture line               |
| 3 Position of the reinforcement |                                    |

#### 4.3.3.2 Correct positioning when three pressing tools are used:

The pressing tools must be positioned so that the minimum distances  $L/6$  and  $L/2$  are observed and the rupture line runs perpendicularly to the reinforcement.

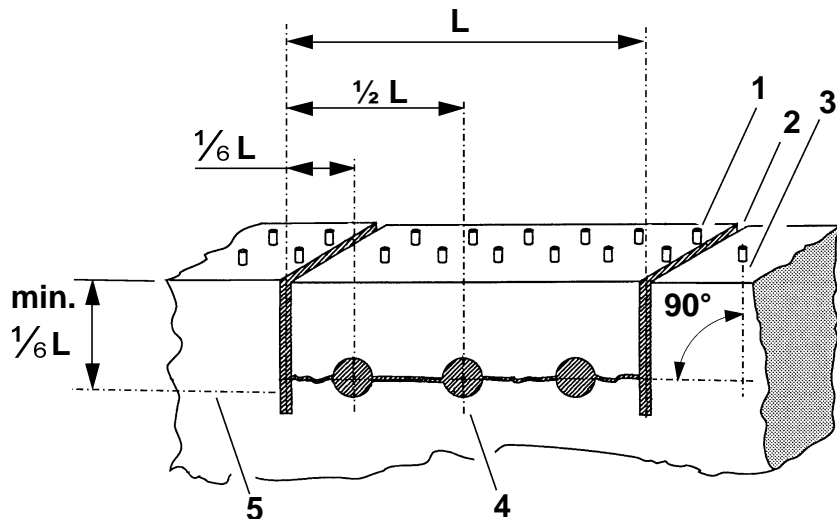


Fig. 4-5 Correct positioning when three pressing tools are used

- |                                 |                                    |
|---------------------------------|------------------------------------|
| 1 Reinforcement                 | 4 Core bore hole for pressing tool |
| 2 Notch                         | 5 Ideal rupture line               |
| 3 Position of the reinforcement |                                    |

### 4.3.4 Example of incorrectly positioned pressing tools

#### 4.3.4.1 Pressing tools too close to the notches

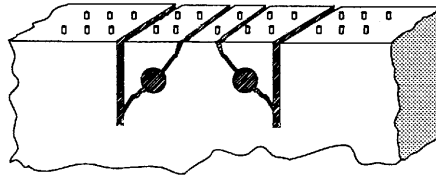


Fig. 4-6 Pressing tools too close to the notches

#### 4.3.4.2 Pressing tools too close to the surface

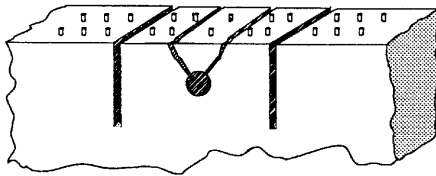


Fig. 4-7 Pressing tools too close to the surface

#### 4.3.4.3 Pressing tools too close together

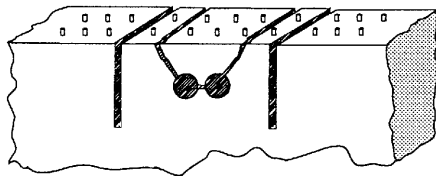


Fig. 4-8 Pressing tools too close together

### 4.3.5 Minimum pressing force

The minimum pressing force must overcome the tensile strength of the reinforcement and of the concrete. The reinforcements inserted in the concrete provide the greatest resistance, since the concrete on account of its lower tensile strength ruptures sooner. When calculating the minimum pressing force the starting point is the overall tensile strength of the reinforcements and the concrete.

Minimum pressing force = tensile strength of iron + tensile strength of concrete

Reinforcement component = tensile strength of iron x area of iron

Concrete component = tensile strength of concrete x area of concrete

Tensile strength of iron = max. 50 kg/mm<sup>2</sup>

Tensile strength of concrete = max. 15 t/mm<sup>2</sup>

#### 4.3.5.1 Calculation example:

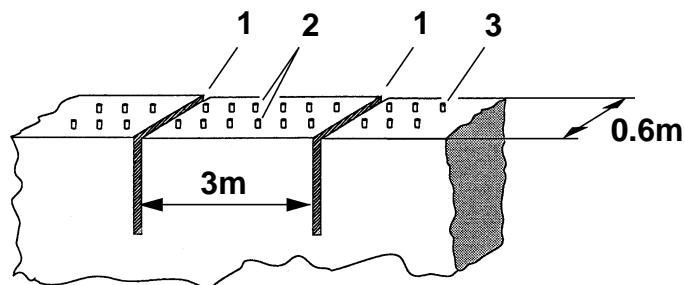


Fig. 4-9 Calculation example

- 1 Notch
- 2 Two rows of 6 reinforcements
- 3 Ø 20mm reinforcement

#### Details of numerical example

Length = 3m

Width = 0.6m

12 reinforcements of Ø 20mm<sup>2</sup>



**Calculation:**

$$\text{Surface area of iron} = 2 \times 6 \times (20^2 \times 3.14) : 4 = 3,768 \text{ mm}^2$$

$$\text{Surface area of concrete} = 3 \text{ m} \times 0.6 \text{ m} = 1.8 \text{ m}^2$$

$$\text{Reinforcement component} = 80 \text{ kg/mm}^2 \times 3,768 \text{ mm}^2 = 301,440 \text{ kg (300 t)}$$

$$\text{Concrete component} = 15 \text{ t/m}^2 \times 1.8 \text{ m}^2 = 27 \text{ t}$$

$$\text{Minimum pressing force} = 300 \text{ t} + 27 \text{ t} = 327 \text{ t}$$

**Result:**

In order to separate by pressing a section of walling of 1.8 m<sup>2</sup> with 12 reinforcements of Ø 20 mm, a pressing force of at least 327 t is required.



## 5 Servicing and Maintenance

### 5.1 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.

#### 5.1.1 Safety instructions

It is essential to observe the following safety instructions, in particular in relation to the servicing and maintenance of the BTH350\*\*\*pressing tool.



### 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.**

**It is essential that the work instructions and procedures described in these Operating Instructions are followed.**

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



### Warning

**Danger from uncontrolled movements and uncontrolled escaping of oil from the BTH350\*\*\*pressing tool.**

**Never connect or disconnect hoses when the drive unit is running.**

**Failure to adhere to this regulation may result in physical injury and damage to property.**

### 5.1.2 Personnel qualifications

The BTH350\*\*\*pressing tool should not be maintained by unauthorised personnel. Personnel are only authorised where they meet the following requirements.

- Have trained as a concrete cutting expert or completed a technical course from the regional professional association and federation or have professional experience.
- Have received an introduction (basic training) to the operation of the pressing tool BTH350\*\*\* by a service engineer.
- Have read and understood chapter 2 “Safety instructions”.

## 5.2 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 user
- Optimum performance
- Optimum reliability at all times

		before each putting into operation	upon completion of work	weekly	annually	in the event of malfunction	in the event of damage
Hydraulic system	Check for cleanliness / tightness	X	X			X	X
Major service	May only be carried out by TYROLIT Hydrostress AG or an authorised representative				X		

## 5.3 Warranty

TYROLIT Hydrostress AG warrants that the system supplied is free from material and manufacturing defects. For the undertaking of warranty services by TYROLIT Hydrostress AG - in international sales under the express exclusion of the warranty regulations of the UN law on sales of 11 April 1980 - the following conditions apply:

1. Any warranty claims must take place within 12 months from hand-over. Any undertaking of warranty service does not extend this time limit.
2. The system and/or any affected part(s) must be sent immediately a defect is discovered to TYROLIT Hydrostress AG or a local authorised TYROLIT Hydrostress AG branch office.
3. This warranty covers the free of charge repair or free of charge replacement of defective parts. No undertaking of warranty over and above this exists.
4. Parts that are normally subject to wear and tear are not covered by this warranty.  
For wear parts regulations see "Chapter 5" 5.4, 5-3.
5. The warranty service is only undertaken provided that the system has been correctly used, handled, serviced and cleaned in accordance with the Operating Instructions and the technical integrity is preserved, i.e. that only original TYROLIT Hydrostress AG consumable material, accessories and spare parts have been used with the system.
6. Further claims are excluded. In particular, TYROLIT Hydrostress AG shall not be liable for direct or indirect damages, losses or costs associated with the use of the system.
7. The warranty expires immediately if the system or only one individual component of it is in any way converted, changed or modified.
8. Provided that a special written contract was concluded for the system, any warranty agreements established therein shall apply. Any verbal or implicit warranty agreements are invalid.

## 5.4 Wear parts

### 5.4.1 Wear parts regulations

Wear parts are parts which are subject to operational wear and tear when the machine is used correctly. A uniform definition of wear is not possible as this will differ according to the intensity of use. Wear parts must be maintained, adjusted and, if necessary replaced differently for each system according to the Operating Instructions of the manufacturer. Operational wear and tear cannot justify a warranty claim.



## 6 Transport

### 6.1 Transport to place of installation

The BTH350\*\*\* pressing tool must be transported in such a way that it is not damaged during transport.

- Do not place any items on the BTH350\*\*\* pressing tool during transport
- Protect the hydraulic components from damage

### 6.2 Carrying the BTH350\*\*\* pressing tool

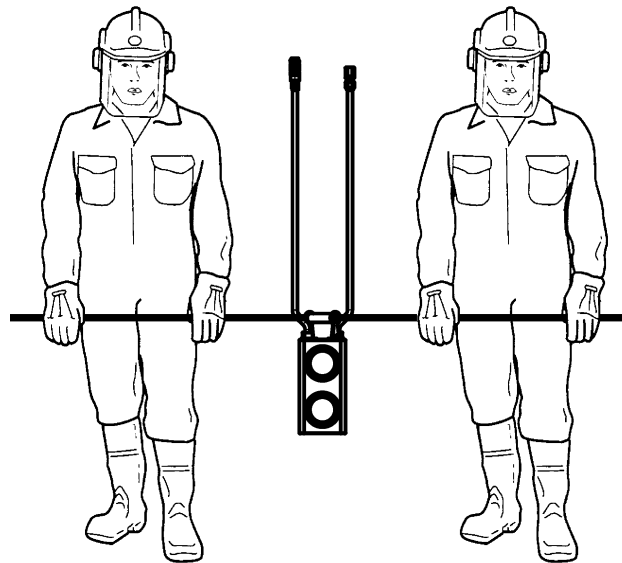


Fig. 6-1 Transport



### Warning

In order to prevent back problems and accidents, always carry the BTH350\*\*\* pressing tool on its own.



### Information

Always hold the grip firmly in the hand when transporting the BTH350\*\*\*. Thumbs and fingers must be closed around the grip. Ensure that the transport grip is always clean and dry.





## 7 Disposal

### 7.1 General

The operator can recycle or dispose of the BTH350\*\*\* pressing tool himself provided he observes the statutory provisions. In order to dismantle the BTH350\*\*\* pressing tool correctly and to properly remove the materials some knowledge in the area of mechanics and knowledge about the differentiation of waste materials is necessary.

If during correct disposal doubts arise that represent a hazard for persons or the environment, the after-sales service of TYROLIT Hydrostress AG will be happy to provide information.

### 7.2 Safety instructions

Before proceeding read Chapter 2 "Safety instructions", 2-1 in these Operating Instructions.

### 7.3 Personnel qualifications

Only personnel with basic technical training and who are in a position to identify the various material groups should be involved in disposal.

### 7.4 Disposal regulations

The normal national and regional rules and guidelines must be observed when disposing of the BTH350\*\*\* pressing tool.

### 7.5 Disposal of product components

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

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

**The BTH350\*\*\* pressing tool consists of the following materials:**

Steel	Rubber
Bronze	Brass



# Ersatzteilliste

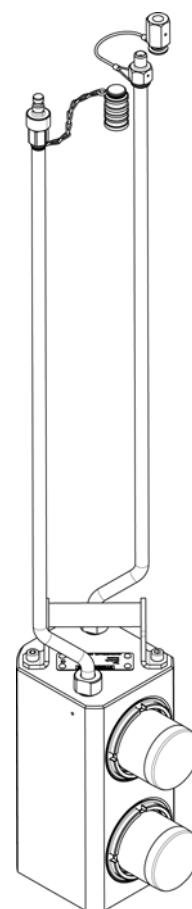
*Spare Parts List / Liste des pièces détachées / Lista di parti di ricambio*

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## **Presswerkzeug BTH350\*\*\***

*Concrete Burster Head BTH350\*\*\* / Élément de poussée BTH350\*\*\* /  
Divaricatore BTH350\*\*\**

*Index / Indice 001*



## Verwendung der Ersatzteilliste

Die Ersatzteilliste ist keine Montage- oder Demontageanleitung. Diese Ersatzteilliste dient ausschliesslich zum einfachen und schnellen Finden von Ersatzteilen, die bei der untenstehenden Adresse bestellt werden können.

### Sicherheitsvorschrift



#### Gefahr

**Montieren oder demontieren von Baugruppen kann Risiken bergen, auf die in dieser Ersatzteilliste nicht hingewiesen wird.**

**Das Verwenden dieser Ersatzteilliste für Montage- oder Demontagezwecke ist strikte verboten. Für Montage- und Demontearbeiten sind ausschliesslich die entsprechenden Beschreibungen in der Betriebsanleitung zu befolgen.**

**Nichtbeachten dieser Vorschrift kann zu Verletzungen führen, die im schlimmsten Fall auch den Tod zur Folge haben könnten.**

### Bestellungen



#### Information

Um Falschlieferungen zu vermeiden sollten vor der Versendung die Angaben in der Bestellung auf Richtigkeit und Vollständigkeit (siehe unter Bestellangaben) überprüft werden.

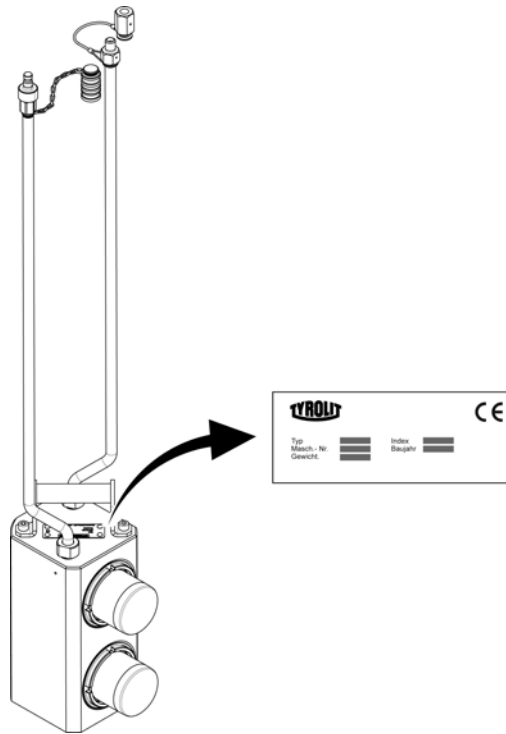
Es ist auch darauf zu achten, dass die Lieferadresse vollständig angegeben ist.

### Bestelladresse:

**TYROLIT Hydrostress AG**  
Witzbergstrasse 18  
CH-8330 Pfäffikon  
Switzerland  
Telefon +41 (0) 44 / 952 18 18  
Telefax +41 (0) 44 / 952 18 00  
e-mail: [info@tyrolit.com](mailto:info@tyrolit.com)  
[www.tyrolit.com](http://www.tyrolit.com)

## 0 Ersatzteilliste

### 0.1 Bestellangaben



Bei Bestellungen von Ersatzteilen benötigen wir folgende Angaben:

- Maschinentyp gemäß Typenschild (z.B. BTH350\*\*\*)
- Maschinennummer gemäß Typenschild (z.B. 10986583)
- Maschinenindex gemäß Typenschild (z.B. 001)
- Ersatzteilnummer gemäß Ersatzteilliste (z.B. 984584)

Für Bestellungen, Fragen und Informationen wenden Sie sich bitte an die zuständige Niederlassung.

## How to use the spare parts list

The spare parts list is not intended as instructions for assembly or dismantling work. It is exclusively intended to help you to quickly and easily find spare parts, which can then be ordered at the address below.

### Safety regulations



#### Danger

**The assembling or dismantling of modules can involve risks which are not identified in this spare parts list.**

**The use of this spare parts list for assembly or dismantling purposes is strictly forbidden. For assembly or dismantling tasks it is essential to only follow the corresponding descriptions in the operating manual.**

**If this regulation is not heeded injuries may be incurred which in the worst case can also be fatal.**

### Ordering



#### Information

To avoid incorrect deliveries you should check the order details for correctness and completeness (see under ordering details) prior shipment.

You should ensure that the delivery address is given in full.

### Order address:

#### **TYROLIT Hydrostress AG**

Witzbergstrasse 18

CH-8330 Pfäffikon

Switzerland

Telefon +41 (0) 44 / 952 18 18

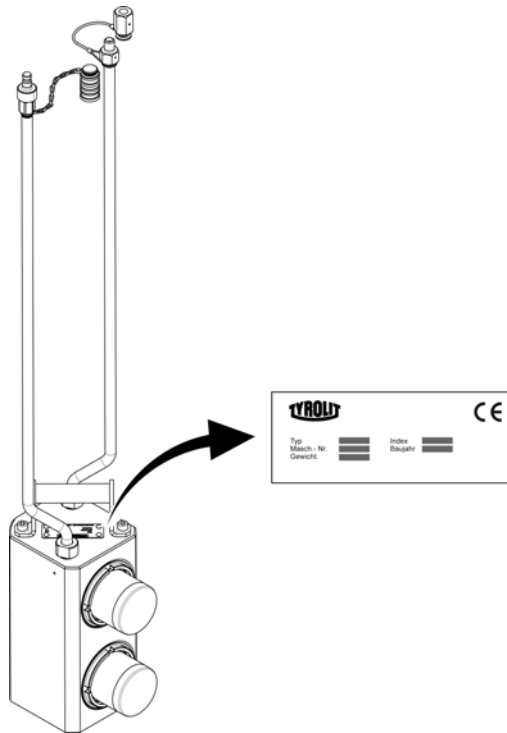
Telefax +41 (0) 44 / 952 18 00

e-mail: [info@tyrolit.com](mailto:info@tyrolit.com)

[www.tyrolit.com](http://www.tyrolit.com)

## 0 Spare Parts List

### 0.1 Ordering details



When spare parts are ordered we need the following details:

- Machine type according to nameplate (e.g. BTH350\*\*\*)
- Machine number according to nameplate (e.g. 10986583)
- Machine index according to nameplate (e.g. 001)
- Spare part number according to the spare parts list (e.g. 984584)

For orders, questions and information please contact your responsible branch office.

## Utilisation de la liste des pièces détachées

La liste des pièces détachées n'est pas une instruction de montage ou de démontage. Cette liste sert exclusivement à trouver simplement et rapidement les pièces détachées, qui peuvent être commandées à l'adresse mentionnée ci-dessous.

### Prescription de sécurité



#### Danger

**Le montage ou le démontage des modules peut présenter des risques dont il n'est pas fait mention dans cette liste des pièces détachées.**

**Il est strictement interdit d'employer cette liste des pièces détachées à des fins de montage ou de démontage. Pour les opérations de montage et de démontage, il faut exclusivement suivre les descriptions correspondantes dans le mode d'emploi.**

**Le non-respect de la présente prescription peut conduire à des blessures, pouvant même entraîner la mort.**

### Commandes



#### Information

Pour éviter des livraisons inappropriées, il est conseillé de vérifier avant l'expédition l'exactitude et l'exhaustivité des indications fournies dans la commande (voir Données de commande).

Il faut aussi veiller à bien indiquer l'adresse de livraison en entier.

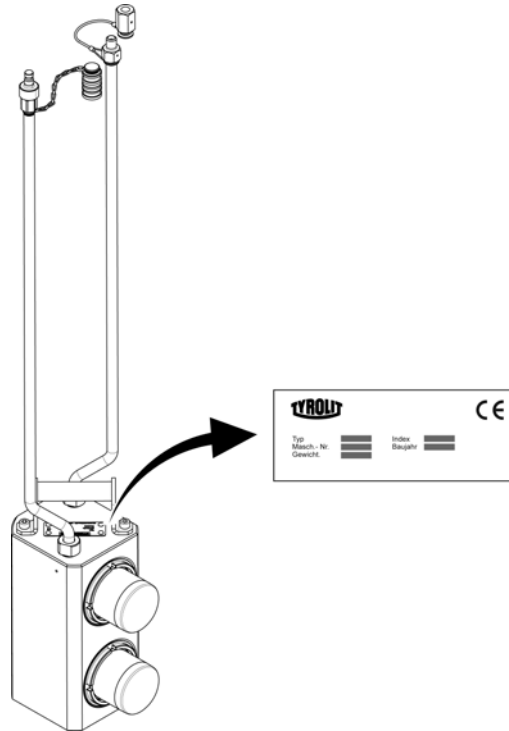
### Adresse de commande :

**TYROLIT Hydrostress AG**  
Witzbergstrasse 18  
CH-8330 Pfäffikon  
Suisse  
Telefon +41 (0) 44 / 952 18 18  
Telefax +41 (0) 44 / 952 18 00  
e-mail: [info@tyrolit.com](mailto:info@tyrolit.com)  
[www.tyrolit.com](http://www.tyrolit.com)



## 0 Liste des pièces détachées

### 0.1 Données de commande



Lors de la commande de pièces détachées, nous avons besoin des données suivantes :

- Type de machine selon la plaque signalétique (p.ex. BTH350\*\*\*)
- Numéro de machine selon la plaque signalétique (p.ex. 10986583)
- Indice de machine selon la plaque signalétique (p.ex. 001)
- Numéro de pièce détachée selon la liste des pièces détachées (p.ex. 984584)

Pour les commandes, questions et informations, vous êtes prié de vous adresser à la filiale compétente.

## Uso della lista di parti di ricambio

La lista di parti di ricambio non è un manuale d'istruzioni per montaggio o smontaggio. Questa lista di parti di ricambio serve esclusivamente per trovare in modo semplice e rapido parti di ricambio che possono essere ordinate all'indirizzo riportato qui sotto.

### Norme di sicurezza



#### Pericolo

**Il montaggio o lo smontaggio di componenti della macchina può comportare pericoli che non sono indicati in questa lista di parti di ricambio.**

**E' assolutamente vietato servirsi di questa lista di parti di ricambio per scopo di montaggio o di smontaggio. Per operazioni di montaggio o smontaggio occorre seguire esclusivamente le relative istruzioni nel manuale per l'uso della macchina.**

**La mancata osservanza di queste norme può comportare lesioni, e nel caso peggiore anche la morte.**

### Ordinazioni



#### Informazione

Per evitare forniture incorrette, occorre verificare prima dell'invio dell'ordinazione se i dati indicati in essa sono corretti e completi (vedere la lista dei dati per l'ordinazione).

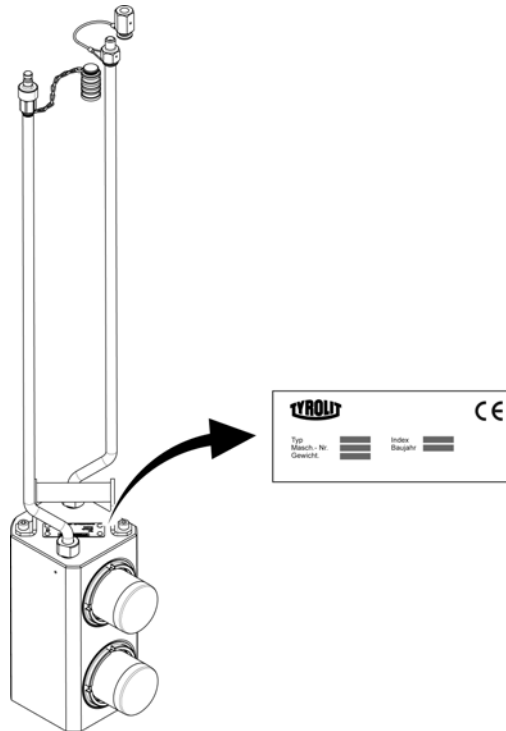
Occorre verificare anche se l'indirizzo per la consegna è esatto e completo.

### Indirizzo per ordinazioni:

**TYROLIT Hydrostress AG**  
Witzbergstrasse 18  
CH-8330 Pfäffikon  
Svizzera  
Telefon +41 (0) 44 / 952 18 18  
Telefax +41 (0) 44 / 952 18 00  
e-mail: [info@tyrolit.com](mailto:info@tyrolit.com)  
[www.tyrolit.com](http://www.tyrolit.com)

## 0 Lista di parti di ricambio

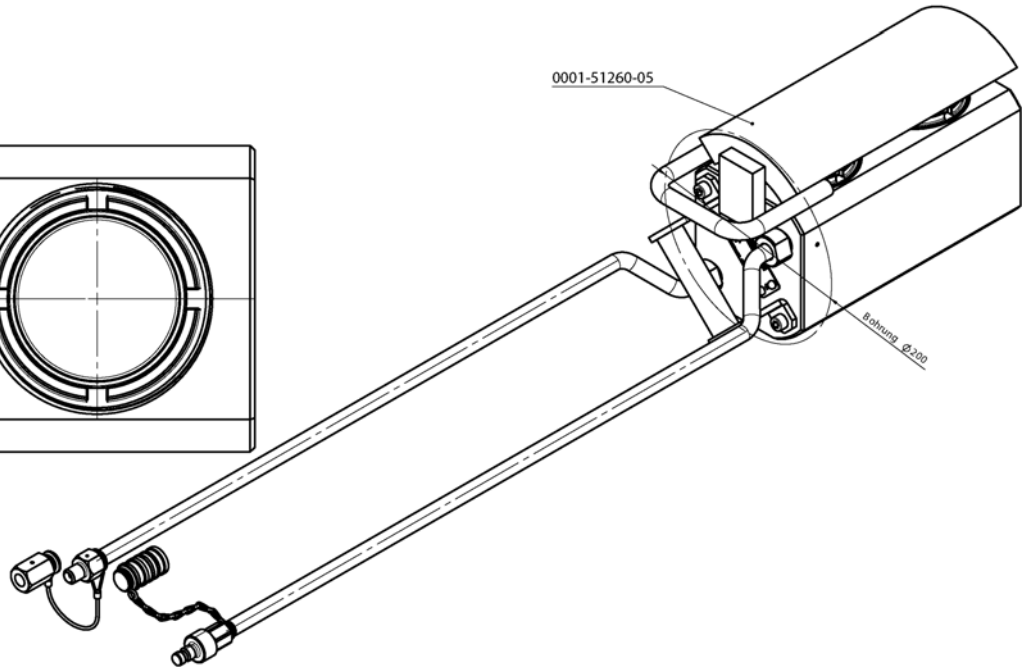
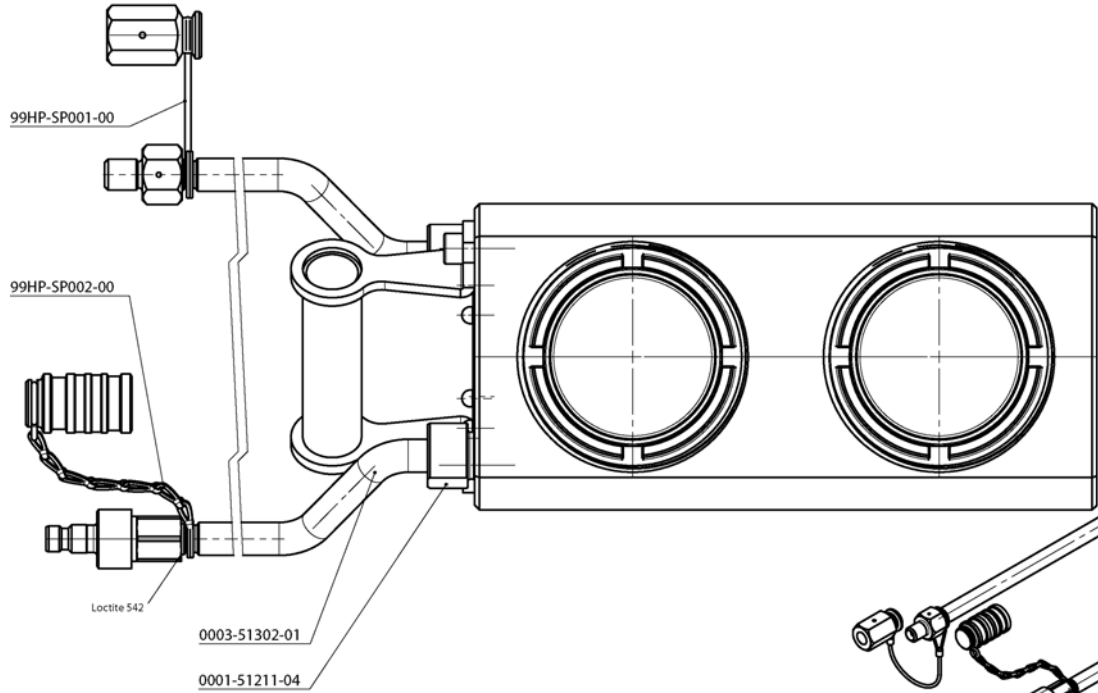
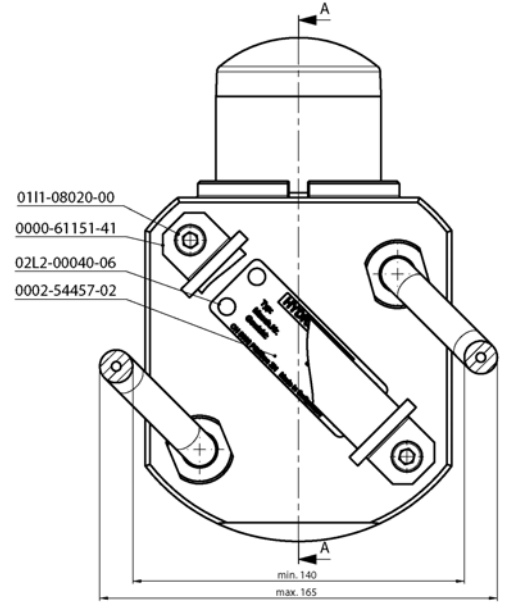
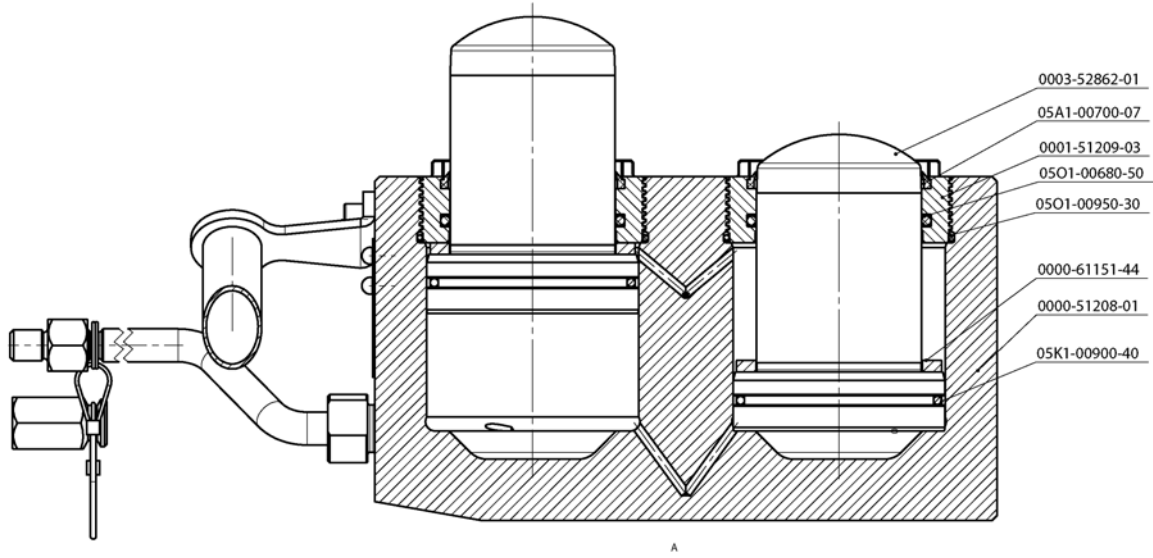
### 0.1 Dati per l'ordinazione



Per ordinazioni di parti di ricambio ci occorrono i dati seguenti:

- Tipo di macchina indicato sulla targhetta della macchina (per es. BTH350\*\*\*)
- Numero della macchina indicato sulla targhetta della macchina (per es. 10986583)
- Indice della macchina indicato sulla targhetta della macchina (per es. 001)
- Numero della parte di ricambio secondo la lista di parti di ricambio (per es. 984584)

Per ordinazioni, domande o richieste d'informazioni Vi preghiamo di rivolgerVi all'agenzia competente.



**Presswerkzeug BTH350\*\*\***

Zeichn. Nr.	Mat. Nr.	Deutsch	English	Français	Italiano	Stk.
<b>99HP-SP001-00</b>	<b>974053</b>	<b>Rücklaufnippel komp.CP/SP</b>	<b>Return nipple comp.CP/SP</b>	<b>Coupleur complet BP CP/SP</b>	<b>Racc.+Tappo bassa press.</b>	1
07S3-06000-19	972796	Staubkappe zu Nippel ND	Dust cap	Protecteur de raccord 5-1	Tappo racc cont martinett	1
07S3-06513-14	972799	Stecknippel Va I 2-WR513	Nipple with male end	Rac. male VA I2-WR513 CON	Raccordo di contatto SP 2-WR513	1
<b>99HP-SP002-00</b>	<b>974054</b>	<b>Schraubnippel kompl.CP/SP</b>	<b>Screw nipple cpl.CP/SP</b>	<b>Raccord hp enligne CP/SP</b>	<b>Schraubnippel kompl.CP/SP</b>	1
0001-50771-06	970287	Verschlusskappe AU/AR/2A	Sealing cap	Bouchon AU/AR/2A	Verschlusskappe AU/AR/2A	1
0004-52578-01	971583	Schraubnippel 1/4 zu SP	Schraubnippel 1/4 zu SP	Raccord à visser 1/4" SP	Schraubnippel 1/4 zu SP	1
02Q1-00200-00	971988	Schlüsselring Dm 20	Keyring dia. 20	Schlüsselring Dm 20	Schlüsselring Dm 20	1
06A1-00285-00	972353	Befest.Kabel zu Ball-Lok	Fixing lever	Cable fixa./goupille poig	Cavo di fissaggio BR	1
0000-51208-01	970001	Presskörper	Presskörper	Presskörper	Presskörper	1
0000-61151-41	10986982	Griff	Griff	Griff	Griff	1
0001-51260-05	970271	Druckplatte	Pressure plate	Cale de reparti.	Druckplatte	1
0000-61151-44	10986984	Distanzring	Distanzring	Distanzring	Distanzring	3
0001-51209-03	970299	Rückhaltemutter	Rückhaltemutter	Rückhaltemutter	Rückhaltemutter	2
0003-52862-01	974817	Kolben	Kolben	Kolben	Kolben	2
0001-51211-04	970300	Differenznippel M24-G1/4	Differential fitting	Raccord diff. M24-G1/4 P.	Raccordo per tubo rigido	2
0002-54457-02	975924	HS-Typenschild klein	HS name plate small	HS-Petite plaque	HS-Typenschild klein	1
0003-51302-01	971383	HD-Leitung lang gebog. SP	HP pipe bent SP	Conduite hp coudee SP	Tubo rigido divaric. SP	2
0111-08020-00	979283	Inbus-Schraube M 8x 20	Socket screw M 8x 20	VIS CHC M 8X20	Vitebrugola M8X20	2
02L2-00040-06	979374	Kerbnagel 4x8	Wedge nail 4x8	Rivet 4x8	Vite M4x8 X livella	4
05A1-00700-07	972182	Abstreifring 70 x 78 x 7	Abstreifring 70 x 78 x 7	Bague gratte-huile 70 x 78 x 7	Abstreifring 70 x 78 x 7	3
05K1-00900-40	972198	Dichtung KDS 90	Seal KDS 90	Joint KDS 90	Dichtung KDS 90	3
05O1-00950-30	972290	O-Ring 95x3 NBR 70	O-Ring 95x3 NBR 70	O-Ring 95x3 NBR 70	O-Ring 95x3 NBR 70	3
05O1-00680-50	972278	O-Ring 68x5	O-Ring 68x5	O-Ring 68x5	O-RING 68x5	6