Operating Instructions
Spare Parts List

Drive Unit PPH40RR***

Index 000
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0 Introduction

0.1 Congratulations!

You have decided to purchase a tried and tested TYROLIT Hydrostress AG system and have thus acquired a highly sophisticated and reliable state-of-the-art unit.

Thanks to the emphasis 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 can guarantee quality and interchangeability.

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

Any repair work must be carried out by trained personnel only.

If you need more details about how to keep your TYROLIT Hydrostress AG system in perfect condition, please contact our after-sales service for further information.

We hope that working with your TYROLIT Hydrostress AG system will be a problem-free and fault-free experience.

TYROLIT Hydrostress AG
Management

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0.2 Validity of these Operating Instructions

This manual is only valid for the following system:

Drive Unit PPH40RR***

0.3 Standards

These Operating Instructions have been prepared in accordance with the 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 Drive Unit PPH40RR***.
1 Product description

1.1 Application

The Drive Unit PPH40RR*** has been designed as a component for the following concrete processing systems:

• Hydraulic wall saw systems
• Hydraulic diamond wire saw systems
• Hydraulic core drilling systems
• Hydraulic chainsaws

The applicable mandatory limitations on use and other parameters are contained in Chapter 1 "Technical data" 1.7, 1-4

1.2 Safety measures

Any use other than for the intended purpose (see Chapter 1.1, 1-1) constitutes abuse or misuse.

1.3 Operating instructions for connectable equipment

In order to ensure safety in the workplace and in danger areas, as well as the safe operation of connectable equipment, the relevant Operating Instructions must in all cases be followed.

1.4 Name plate
1.5 Information sign

Attached to the plastic hood is an information sign containing the following information:

- Hose connections
  (For a description see "Chapter 5" 5.3.2.1, 5-2)

- Pressure stages
  (For a description see "Chapter 5" 5.4.3, 5-8)

- Risk of frost
  (For a description see "Chapter 6" 6.1.1, 6-2)

- Hydraulic oil
  (For a description see "Chapter 6" 6.1.2.1, 6-2)

Fig. 1-2 Information sign
1.6  **EC Declaration of Conformity**

Description  
Hydraulic drive unit

Type designation  
Drive Unit PPH40RR***

Year of construction  
2007

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

1.6.0.1 Directive applied:

Machinery Directive 2006/42/EC  
EC EMC Directive 89/336/EC  
EC Low Voltage Directive 73/23/EC

1.6.0.2 Standards applied:

EN 12100-1 Safety of machinery – Basic concepts, general design  
EN 12100-2 principles

EN 294  Safety of machinery – Safety distances to prevent upper limbs reaching danger areas

EN 349  Safety of machinery – Safety distances to avoid crushing of body parts

EN 982  Safety of machinery  
Safety requirements of safety systems and their components - Hydraulics

EN 60204-1 Safety of machinery - Electrical equipment of machines
1.7 Technical data

1.7.1 Dimensions

Fig. 1-3  Dimensions

1.7.2 Weight

Operating weight  255 kg

1.7.3 Tyres

Wheel Ø  30 cm
Operating pressure  3 bar
## Hydraulics

### Main circuit

Main circuit 3 pumps

Flow rates can be set to 65 / 75 / 80 / 90 l/min., depending on the cutting tool speed required

### Flow rates and pressures

<table>
<thead>
<tr>
<th>EU</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I</td>
<td>65 l/min</td>
</tr>
<tr>
<td>Stage II</td>
<td>75 l/min</td>
</tr>
<tr>
<td>Stage III</td>
<td>80 l/min</td>
</tr>
<tr>
<td>Stage IV</td>
<td>90 l/min</td>
</tr>
</tbody>
</table>

Same power in all stages

### Feed circuits

Feed circuits: 1 pump

Two hydraulic feed outputs which can be regulated independently of each other, controlled using radio remote control.

### Oil tank

Oil tank volume: 10 litres

Filter quality: 20 µm

### Return oil filter

Type: Tank-mounted filter

### Oil cooling

Oil cooler: Water/oil heat exchanger

### Couplings and hoses

Plug-in couplings Type FD and FF, non-drip

Hoses Length 8m (filled with hydraulic oil)

### Oil quality

TYROLIT Hydrostress AG recommends:

Hydraulic oil: HLP/ISO VG 46
1.9  Electrical equipment

**Information**

Electrical data are only valid for the installed loads
3 P / LNPE 400 VAC / 50 Hz

1.9.1  Different voltages

For countries where different mains networks operate the following types are available:

<table>
<thead>
<tr>
<th>Drive Unit PPH40RR***</th>
<th>Voltage Range</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Unit PPH40RR***</td>
<td>380-420 V</td>
<td>50 Hz</td>
</tr>
<tr>
<td>Drive Unit PPH40RR***</td>
<td>420-480 V</td>
<td>60 Hz</td>
</tr>
<tr>
<td>Drive Unit PPH40RR***</td>
<td>575 V</td>
<td>60 Hz</td>
</tr>
</tbody>
</table>

**Warning**

A danger will arise if the Drive Unit PPH40RR*** is operated with a different mains network voltage.

The details on the name plate must correspond to the mains network values (voltage and frequency).

Damage may be caused to the unit if it is connected to a different voltage; there is also a risk of fire and personal injury.

1.9.2  Motor

<table>
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<th>Electric motor</th>
<th>water-cooled</th>
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<td>Power supply</td>
<td>3 P / LNPE 380 - 420 V / 50 Hz</td>
</tr>
<tr>
<td></td>
<td>420 - 480 V / 60 Hz</td>
</tr>
<tr>
<td>Current consumption</td>
<td>380 - 420 V / 50 Hz 63 A</td>
</tr>
<tr>
<td></td>
<td>420 - 480 V / 60 Hz 57 A</td>
</tr>
<tr>
<td></td>
<td>575 V         60 Hz 56 A</td>
</tr>
<tr>
<td>Output</td>
<td>P1 40 kW / P2 34 kW</td>
</tr>
<tr>
<td>Speed</td>
<td>at 50 Hz 2910 rpm</td>
</tr>
<tr>
<td></td>
<td>at 60 Hz 3480 rpm</td>
</tr>
</tbody>
</table>

1.9.2.1  Motor protection

- Thermal protection: Winding thermostat
- Electrical protection: Thermal relay

1.9.2.2  Electric motor cooling

- Water cooling: Cooling channels in the aluminium
- Throughput of cooling water: min. 6 l/min at max. 25° C
- Water connection: min. 2 bar, max. 6 bar
1.9.2.3 Protection class
IP 65

1.9.2.4 Internal control voltage (valve control)
24V / DC

1.9.2.5 Secondary socket
Connections 2 sockets 230V / 10A with fault current tripping at 10 mA

1.10 Water
Pressure min. 2 bar to max. 6 bar
Quantity min. 6 l/min at max 25°C

1.11 Noise exposure (noise level)
Depending on the working environment and the connected device, the Drive Unit PPH40RR*** can produce high noise levels during operation.

### Danger

**Noise danger**

When operating the PPH40RR*** drive unit, the wearing of hearing protection is mandatory at all times.

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

1.11.0.1 Noise level measurement
Noise level measured at the ear of the operator 0.5 m from the Drive Unit PPH40RR***; noise power level according to ISO 3744; drive unit only; highest value taken from all operating states at full load; mean values from three series of measurements.

Noise level 83 dB (A) noise power level 92 dB (A)

1.12 Scope of supply
- Drive Unit PPH40RR***
- Radio remote control
- Water purge pump
- Operating Instructions / Spare parts list
1.13 **Country list for radio transmission frequency**

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<th>Frequency MHz</th>
<th>Country</th>
<th>Frequency MHz</th>
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<td>Mexico</td>
<td>458</td>
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<td>Belgium</td>
<td>434</td>
<td>New Zealand</td>
<td>434</td>
</tr>
<tr>
<td>Bolivia</td>
<td>434</td>
<td>Netherlands</td>
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<td>Brazil</td>
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<td>Norway</td>
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*** On request

Fig. 1-4   Country list for radio transmission frequency
2 Safety instructions

2.1 General

All persons who work on and with the Drive Unit PPH40RR*** have a duty to read and understand the Operating Instructions.

2.1.1 Observance of the safety instructions

The Drive Unit PPH40RR*** has been inspected before being shipped and is delivered in perfect condition. TYROLIT Hydrostress AG does not accept any liability for damage which is caused by 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 attached to the machine.
- Damage caused by defective or neglected maintenance work.

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

2.2 General safety rules

2.2.1 Statutory provisions

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

2.2.2 Inspection and maintenance obligation

The operator is under an obligation to use the Drive Unit PPH40RR*** only 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.

2.2.3 Spare parts

Only TYROLIT Hydrostress AG original spare parts may be used. Otherwise, damage can be caused to the Drive Unit PPH40RR*** or other property and may result in personal injury.

2.2.4 Power connections

The Drive Unit PPH40RR*** must be connected and coupled in accordance with the Operating Instructions.
2.3 Safety principles

2.3.1 Delimitation of the safety concept

The Drive Unit PPH40RR*** does not affect the safety concept of the connected systems, equipment and installations.

2.3.2 Safety elements

Protection from live electrical parts

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

2.3.3 Removal of protective devices

Protective devices may only be removed if the unit has been switched off, disconnected from the mains and is at standstill. Safety components, in particular, may only be removed and refitted by authorised personnel, see "Chapter 2" 2.4.1, 2-3.

Before switching the Drive Unit PPH40RR*** back on again, the safety elements must be checked to ensure correct operation.

2.3.4 Safety measures (organisational)

2.3.4.1 Product monitoring obligation

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

2.3.4.2 Location of the Operating Instructions

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

2.4.1 Authorised personnel

Work on or with the TYROLIT Hydrostress AG machines or systems may 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.

2.4.2 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 about the products.

2.4.3 Operator (owner)

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 assignment of the authorised personnel. The operator sets out the mandatory skills and level of training of the authorised personnel for his company.

2.4.4 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.

2.4.5 Service engineer

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.
2.4.6 Qualification and training

2.4.6.1 Operator (owner)
- A technically trained person in a management position.
- Has relevant experience in personnel management and danger assessment.
- Has read and understood the "Safety instructions" chapter.

2.4.6.2 Operator (user)
- Has trained as a concrete cutting expert or has professional experience.
- Has received an introduction (basic training) to the operation of the TYROLIT Hydrostress AG machines and systems from a service engineer.
- Has read and understood Chapter 2 "Safety instructions".

2.4.6.3 Service engineer
- Has specialist professional training (mechanical / electrotechnical).
- Has attended specialist courses at TYROLIT Hydrostress AG.
- Has read and understood the "Safety instructions" chapter.
### 2.5 Generally applicable warnings of residual dangers

<table>
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<th>Danger</th>
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<tbody>
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<td>Electric shock due to defective electronic equipment.</td>
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</table>

The electrotechnical equipment must be checked prior to each use and from time to time during prolonged use. Defective parts, such as e.g. cables and plugs, must be replaced immediately in the de-energized state by electrotechnically trained personnel.

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

<table>
<thead>
<tr>
<th>Warning</th>
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<tbody>
<tr>
<td>Danger of allergic reactions if skin comes into contact with hydraulic oil.</td>
</tr>
</tbody>
</table>

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 observe this regulation may result in allergic reactions or injury to the eyes. |
3 Design and function

3.1 Design

Fig. 3-1 Main components

1 Hood 10 Oil tank
2 Wheel 11 Electric motor
3 Electrical box 12 Electrical connection
4 Oil level indicator 13 Pump assembly
5 Transport handle with hose bracket 14 Power supply unit
6 Water valve 15 Hydraulic unit
7 Pressure gauge 16 Oil cooler
8 Suspension shackle 17 Antenna
9 Radio remote control 18 Radio receiver
3.2 Function

3.2.1 Hydraulic circuit diagram

Fig. 3-2 Hydraulic circuit diagram

1  Electric motor  18  Leak-oil nipple
2  Pump assembly  19  Coupling
3  Proportional valve 0-260 bar  20  Nipple
4  Check valve  21  Coupling
5  Pressure relief valve  22  Nipple
6  Pressure gauge 0-400 bar  23  Coupling
7  Oil and water cooler  24  Water valve
8  Aeration filter  25  Pressure valve 20 bar
9  Oil level  26  Proportional valve 5-120 bar
10 Return filter  27  2/2-way seat valve
11  Screw plug  28  Bijour-nozzle
12  2/2-way seat valve  29  Pressure-maintaining valve
13  4/3-way valve  30  Check valve
14  Pressure relief valve 150 bar  31  Water filter
15  Pressure gauge 0-250 bar  32  Water valve
16  Nipple  33  Radial piston pump
17  Coupling
3.2.2  Wiring diagram

Fig. 3-3  Wiring diagram

1  Elec. box  
2  Reversing switch  
3  Auxiliary contact  
4  Contactor  
5  Thermal relay  
6  Interlock  
7  Circuit breaker  
8  Device protective switch  
9  EMERG. STOP  
10  Hour counter  
11  Phase sequence relay  
12  Time relay  
13  Connector CEE 63/5  
14  Safety socket  
15  Relay  
16  Power supply unit
3.3  Radio remote control

3.3.1  Design

Fig. 3-4  Remote controller

1  Controls
2  Plastic housing

3.3.1.1  Accessories

Fig. 3-5  Accessories

1  2x interchangeable battery
2  Battery charger
3  Cable insert
4  Battery insert

**Warning**

The battery charger is exclusively for recharging the interchangeable rechargeable battery. The battery insert and the cable insert must not be inserted.

3.3.2  Function

The radio remote control allows a secure, simple and mobile method of working. The operator can at all times be in a position where he has a full view of the unit during operation.
4 Controls and displays

4.1 Controls

Fig. 4-1 Controls

1 Safety socket
2 Schuko-socket
3 Forward/reverse switch
4 Device protective switch
5 EMERG. STOP
6 Cable connection of remote controller
7 Suspension shackle
8 Water valve
9 Remote controller
10 Water and hydraulic couplings

4.1.1 Radio remote control

Fig. 4-2 Radio remote control

1 Locking switch
2 Pilot lamp (radio & battery)
3 EMERG. STOP
4 Main switch of drive unit
5 Start switch
6 Feed joystick
7 Pressure stage selector switch
8 Water In / Out
9 Main motor potentiometer
10 Main motor On / Off
11 Feed motor potentiometer
4.2 Electric controls

4.2.1 Secondary sockets

The Drive Unit PPH40RR*** is equipped with 2 x 230V / 10 A secondary sockets with fault current tripping at 10 mA.

The secondary sockets may only be used with a neutral conductor.

![Secondary sockets diagram]

Fig. 4-3 Secondary sockets

1 On / Off switch
2 Test button
3 Safety socket
4 Schuko socket

4.2.1.1 Safety socket

The safety socket has integral residual current protection and is the active personnel safety device. The operating principle of the safety socket is the same as that of a residual current circuit breaker.

**Information**

Equipment on which the safety socket interrupts the power circuit during operation is defective and must be checked by an electrical engineer and, if necessary, repaired.

**Monitoring**

The safety socket must be checked monthly during operation. The check can be performed with or without the plug inserted, as follows:

- The switch must be in the (I) position
- Press the Test button
  - the switch must switch off (0 position)
- Push the switch back into the (I) position

4.2.1.2 Schuko socket

The Schuko socket is connected and protected via the safety socket.
4.2.2 **Forward/reverse switch**

If the phase position of the power supply to the site is wrong, the phases can be turned.

4.2.3 **Device protective switch**

The device protective switch protects the secondary sockets and thereby protects the devices connected to the sockets.

The device switch interrupts the circuit in the event of a current surge (more than 13A). The circuit is restored by pressing the device switch.

4.2.4 **Cable connection of remote controller**

The radio remote control can be connected to the Drive Unit PPH40RR*** power supply by means of the cable insert.

4.2.5 **EMERGENCY STOP**

Pressing the EMERGENCY STOP button switches the system off and prevents the system being accidentally switched on again.

---

**Fig. 4-4** EMERGENCY STOP

1. EMERG. STOP on the Drive Unit PPH40RR***
2. EMERG. STOP on the radio remote control
4.3 Displays

Fig. 4-5 Displays

1 Hour counter 4 Pressure gauge of main motor
2 Pilot lamp (radio & battery) 5 Oil level indicator
3 Pressure gauge of feed motors

4.3.1 Hour counter

The hour counter allows for precise observance of the service intervals.

Fig. 4-6 Hour counter

4.3.2 Pilot lamp (radio & battery)

Fig. 4-7 LED pilot lamp

The LED pilot lamp on the radio remote control flashes green to indicate operational readiness. When the battery voltage becomes low, the colour changes from green to red.
4.3.3 Pressure gauge

Fig. 4-8 Pressure gauge

1 Pressure gauge of main motor (0 bar to 400 bar)
2 Pressure gauge of feed motors (0 bar to 250 bar)

4.3.4 Oil level indicator

Fig. 4-9 Oil level indicator

<table>
<thead>
<tr>
<th>MAX.</th>
<th></th>
<th>MIN.</th>
</tr>
</thead>
</table>

Information

The quantity of oil between oil MIN and oil MAX is 1.5 litres.

Different types of hydraulic oil should not be mixed together, otherwise the oil will age prematurely.

Recommended hydraulic oil: HLP / ISO VG 46
5 Operation

5.1 Personnel qualifications

The Drive Unit PPH40RR*** must not be operated by unauthorised personnel. Personnel are only authorised if they meet the following requirements.

- Have trained as a concrete cutting expert or have professional experience.
- Have received an introduction (basic training) to the operation of the Drive Unit PPH40RR*** from a service engineer.
- Have read and understood chapter 2 "Safety instructions".

5.2 System requirements

### Warning

A danger will arise if the Drive Unit PPH40RR*** is operated with a different mains network voltage.

The details on the name plate must correspond to the mains network values (voltage and frequency).

The system may be damaged by connecting it to a different voltage. There is also a danger of fire and injury.

5.2.1 Connectable equipment

All hydraulic units that are designed for the pressure and delivery volume of the Drive Unit PPH40RR*** drive unit. (see "Chapter 1" 1.8, § 1-5)

### Information

The Drive Unit PPH40RR*** is one of a series of drive products available from TYROLIT Hydrostress AG.

In order to allow expansion of your Drive Unit PPH40RR*** with suitable devices to create an hydraulic saw or drilling system with optimum performance, please talk to TYROLIT Hydrostress AG.
5.3  Preparatory operations

5.3.1  Visual inspection

Before starting work always complete the following visual inspections:

- Is the power supply earthed, fitted with a neutral conductor and a residual current circuit breaker?
- Does the mains network have fuse protection for a minimum of 63 A?
- Is the cable cross section 5x10mm² (from 25m to 50m / 5x16mm²)?
- Is the water line properly connected to the Drive Unit PPH40RR***?
- Is there sufficient oil in the Drive Unit PPH40RR***?
- Is there any damage to cables or plugs?
- Has the EMERGENCY STOP been reset?

Information

Ensure that the water supply is not interrupted while work is in progress.

Warning

Danger from uncontrolled movements and uncontrolled escape of oil.

Never connect or disconnect hoses while the drive unit is running.

Failure to observe this regulation may result in cut wounds or injury to body parts as well as damage to property.
5.3.2.2 Hose connections

![Diagram of hose connections]

Fig. 5-1 Hose connections

1 Couplings of main motor
2 Water connection
3 Couplings of feed motor 1
4 Couplings of feed motor 2
5 Leak-oil connection (hydraulic motor Gr.3)

Proceed as follows:

• Visual inspection
  Check:
  – Oil leaks from hoses and couplings
  – Couplings for damage and contamination
  – Hoses for damage
  
  • Push the hose coupling on to its counterpart until you hear it "click"
  • Twist the locking ring of the coupling

Information

If hoses cannot be connected or this cannot be done easily, they are under pressure. Release pressure in hoses via the pressure relief device. Release pressure in the Drive Unit PPH40RR***, see "Chapter 5" 5.3.2.3, 5-3.

Never use force to connect couplings!

5.3.2.3 Release pressure in the Drive Unit PPH40RR***

Proceed as follows:

• Turn the forward/reverse switch on the Drive Unit PPH40RR*** to position 1 (2).
  • Switch on the radio remote control by means of the Start switch.
  • Press the main switch once, on the radio remote control.
  • Briefly push the feed joystick in all directions.
5.3.3 Radio remote control provision

<table>
<thead>
<tr>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>The transmitter and receiver are a pair of matched units. They cannot be used with other devices.</td>
</tr>
</tbody>
</table>

5.3.3.1 Power sources

The radio remote control can be operated using a rechargeable battery, disposable battery or via cable.

**Rechargeable battery operation:**

The interchangeable rechargeable battery is inserted at the housing base. The operating period with a fully charged battery is approximately 12 hours. The reception distance is 25 m.

**Cable operation:**

The cable insert included in the scope of supply allows connection of the remote controller to the Drive Unit PPH40RR***. The cable length is 10 m. Cable operation makes it possible to work in areas where radio operation is not allowed (e.g. hospitals).

![Fig. 5-2 Cable operation](image)
5.3.4 **EMERGENCY STOP**

In danger situations the EMERGENCY STOP button must be pressed immediately.

![Fig. 5-3 EMERGENCY STOP](image)

1. EMERG. STOP on the Drive Unit PPH40RR***
2. EMERG. STOP on the radio remote control

### Deactivating EMERGENCY STOP

**Information**

If the EMERG. STOP is activated on the radio remote control, the LED pilot lamp flashes quickly.

![Fig. 5-4 Deactivating EMERGENCY STOP](image)

Proceed as follows:

- The following controls must be moved into the 0 position:
  - Feed joystick (3)
  - Main motor On/Off (5)
- Turn the EMERG. STOP button (1 / 2) clockwise.
- Push the main switch (4) to the ON position.
5.4 Working

5.4.1 Starting the Drive Unit PPH40RR***

Proceed as follows:

- Check that the EMERG. STOP buttons on the radio remote control and on the Drive Unit PPH40RR*** are deactivated.

- Move the controls shown below on the remote controller into the 0 position.

```
Fig. 5-5 0 position
1 Start switch
2 Feed joystick
3 Main motor On/Off
```

- Turn the forward/reverse switch on the Drive Unit PPH40RR*** to position 1.

- Switch on the radio remote control by means of the Start switch.
  - Pilot lamp lights up red, first of all
  - A signal tone sounds simultaneously
  - Pilot lamp lights up green
  - Second signal tone sounds
  - Pilot lamp flashes green

- Push the main switch on the radio remote control twice, into the ON position.
  - the electric motor starts

---

**Information**

The Drive Unit PPH40RR*** should only be switched on in a level and upright position. If the surface has an incline, secure the drive unit to prevent rolling away.

If the electric motor does not start, the forward/reverse switch on the Drive Unit PPH40RR*** must be turned to position 2.
Operating Instructions

5.4.2 Soft start

The Drive Unit PPH40RR*** provides the option of a soft start. The soft start is used mainly for diamond wire sawing.

Proceed as follows

- Start the Drive Unit PPH40RR***, see "Chapter 5", 5.4.1, 5-6
- Turn the main motor potentiometer to the 0 position
- Select the desired pressure stage, see "Chapter 5", 5.4.3, 5-8
- Turn the main motor potentiometer slowly to 100% power

Information

If the Drive Unit PPH40RR*** is switched off after the electric motor has once been started up, in order to start up again it is only necessary to press the main switch on the remote controller just once more.

- Press the Water On/Off button on the remote controller to I
- Open the water valve on the Drive Unit PPH40RR***
  - water emerges from the cutting tool
- The Drive Unit PPH40RR*** is ready for operation
5.4.3 Selecting the pressure stage

Once the Drive Unit PPH40RR*** has been started properly, you can select the pressure stage.

Fig. 5-6 Selecting the pressure stage

Proceed as follows

- Set the pressure stage selector switch to the desired pressure stage and turn the main motor potentiometer from 0 to 100%.

Information

The pressure stages can be freely changed and selected during the work operation. When changing the pressure stage, the cutting tools should not be under load. To ensure the optimal tool speeds, the data for the relevant connected devices must be taken into consideration.

5.4.4 Power control

The power of the main motor and the feed motor is controlled via the potentiometer.

Fig. 5-7 Potentiometers

1 Feed motor potentiometer
2 Main motor potentiometer
5.4.5 Feed movements

The feed motors for the travel motion and the swivelling can only be controlled individually by means of the feed joystick.

Fig. 5-8 Feed

A Travel feed
B Swivel feed

5.4.6 Feed locking

So that the joystick does not have to be held in position during the travel feed motion, the travel feed can be locked.

Proceed as follows

- Push the joystick in the desired travel direction and, at the same time, press the locking switch.
- When the joystick and the locking button are released, the feed is locked.

Information

In order to release the feed lock, move the joystick slightly in any desired direction.
5.4.7 Shutting down the Drive Unit PPH40RR***

Proceed as follows:

- Switch off the electric motor (main switch of radio remote control)
- Shut off the cooling water (Water On/Off button of radio remote control)
- Close the water valve on the Drive Unit PPH40RR***
- Turn the Start switch on the radio remote control into the 0 position
- Turn the forward/reverse switch on the Drive Unit PPH40RR*** to the 0 position

**Information**

Only shut down the Drive Unit PPH40RR*** with the EMERGENCY STOP in a genuine emergency.

5.5 After the work

Proceed as follows:

- Unplug the mains plug (Drive Unit PPH40RR***)
- Uncouple the water supply on the Drive Unit PPH40RR***
- Open the water valve on the Drive Unit PPH40RR***
- Blow out the water from all the lines (purge pump)
- Uncouple the hydraulic hoses
- Clean the Drive Unit PPH40RR*** with water

**Information**

In order to prevent frost damage, if there is a risk of frost the entire water system must be emptied and blown out upon finishing work or prior to extended breaks in the work.
### 6 Servicing

#### 6.1 Servicing and maintenance table

<table>
<thead>
<tr>
<th>Component</th>
<th>Task Description</th>
<th>Before each start-up</th>
<th>Upon completion of work</th>
<th>Weekly</th>
<th>Annually</th>
<th>In the event of malfunction</th>
<th>In the event of damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic system</td>
<td>Hydraulic hose inspection (leakproof condition / cleanliness)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coupling inspection (leakproof condition / cleanliness)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check oil level, see &quot;Chapter 4&quot; 4.3.4, 4-5</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replace hydraulic oil, see &quot;Chapter 6&quot; 6.1.2, 6-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water economy</td>
<td>Water line (leakproof condition / cleanliness)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If there is a risk of frost, blow out the water, see &quot;Chapter 6&quot; 6.1.1, 6-2</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td>Retighten accessible screws and nuts</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Major service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First service after 100 operating hours</td>
<td>May only be carried out by TYROLIT Hydrostress AG or an authorised representative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After every 200 operating hours, thereafter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6.1.1 Blowing out the water

**Information**

In order to prevent damage from frost-cracks, if there is a risk of frost or prior to extended breaks in work the cooling water must be blown out of the system. Use the TYROLIT purge pump No. 10982667.

6.1.2 Oil change

6.1.2.1 Oil quality

TYROLIT Hydrostress AG recommends:

**Hydraulic oil:** HLP / ISO VG 46

Other hydraulic oils can be used if they comply with the following specifications:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pour point</td>
<td>-42° C</td>
</tr>
<tr>
<td>Viscosity index</td>
<td>170</td>
</tr>
<tr>
<td>Viscosity class</td>
<td>HLP VG 46 or ISO 3498 HV 46</td>
</tr>
<tr>
<td>Wear-protection</td>
<td>according to DIN 51524 Part 3 (HV46)</td>
</tr>
</tbody>
</table>

**Information**

Different types of hydraulic oil should not be mixed together, otherwise the oil will age prematurely.
6.1.2.2 Replacing hydraulic oil

In order to replace the hydraulic oil you will need:

- A collecting pan for the used hydraulic oil with a capacity of approx. 15 litres
- Open-ended spanner, size across flats 18 mm for the oil drain plug
- Approx. 10 litres of hydraulic oil

![Replacing hydraulic oil](image)

Proceed as follows:

- Place the collecting pan below the oil drain plug (1)
- Open tank cover
- Remove oil drain plug (1)
- Drain hydraulic oil completely
- Screw in oil drain plug (1)
- Fill tank with new hydraulic oil
- Bleeding the system
- Close the tank cover
- Dispose of waste hydraulic oil in accordance with local regulations
Bleeding the system

Proceed as follows:

- Open tank cover
- Fill oil to maximum mark
- Do not refit the tank cover, yet
- Short-circuit the main circuit with hose
- Start the Drive Unit PPH40RR***, see "Chapter 5" 5.4.1, 5-6
- Select the pressure stage 4, see "Chapter 5" 5.4.3, 5-8
- Allow the Drive Unit PPH40RR*** to run for a maximum of 5 seconds
- Switch off the Drive Unit PPH40RR***, see "Chapter 5" 5.4.7, 5-10
- Wait for 1 minute
- Repeat the start-up and shutdown process three times
- Check the oil level and top up the hydraulic oil as necessary
- Fit tank cover
- The system is now free of air

Information

Air must be bled from the system whenever the tank has been completely emptied and refilled.
## 7 Corrective maintenance

### 7.1 Troubleshooting

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

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Unit PPH40RR*** does not run, although the mains cable is connected</td>
<td>Forward/reverse switch in wrong position</td>
<td>see &quot;Chapter 5&quot; 5.4.1, 5-6</td>
</tr>
<tr>
<td></td>
<td>Emergency stop has been activated</td>
<td>Release emergency Stop, see &quot;Chapter 5&quot; 5.3.4, 5-5</td>
</tr>
<tr>
<td></td>
<td>No voltage at drive unit because:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Automatic circuit breaker in electric controller has tripped</td>
<td>Reset automatic circuit breaker</td>
</tr>
<tr>
<td></td>
<td>Mains cable is defective</td>
<td>Replace the mains cable</td>
</tr>
<tr>
<td></td>
<td>No voltage at the power supply (building site)</td>
<td>Check power supply</td>
</tr>
<tr>
<td></td>
<td>Power supply phases incorrectly connected</td>
<td>Check power supply</td>
</tr>
<tr>
<td></td>
<td>Phase missing</td>
<td>Check power supply</td>
</tr>
<tr>
<td></td>
<td>Remote controller not switched on or controls in wrong position</td>
<td>see &quot;Chapter 5&quot; 5.4.1, 5-6</td>
</tr>
<tr>
<td></td>
<td>No radio connection</td>
<td>Test with cable insert</td>
</tr>
<tr>
<td>Drive unit starts up, but then switches off again</td>
<td>Fuse of building site power supply trips</td>
<td>- Fuse protection too weak</td>
</tr>
<tr>
<td></td>
<td>Incorrect voltage</td>
<td>- Change power supply</td>
</tr>
<tr>
<td></td>
<td>The details on the name plate must correspond to the mains network values (voltage and frequency).</td>
<td></td>
</tr>
<tr>
<td>No power, although electric motor is running and valves are open</td>
<td>Motor runs in wrong direction</td>
<td>Change direction of rotation with forward/reverse switch</td>
</tr>
<tr>
<td></td>
<td>For drive unit with monitoring</td>
<td>Inform TYROLIT Hydrostress AG after-sales service</td>
</tr>
<tr>
<td></td>
<td>Defective pump</td>
<td>Have pump replaced by TYROLIT Hydrostress AG or an authorised representative</td>
</tr>
<tr>
<td></td>
<td>Defective toothed belt</td>
<td>Have toothed belt replaced by TYROLIT Hydrostress AG or an authorised representative</td>
</tr>
</tbody>
</table>
### Corrective Maintenance Operating Instructions

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
</table>
| The hydraulic oil is cloudy, light in colour and the tank overflows | Defective oil cooler | Inform TYROLIT Hydrostress AG after-sales service  
Warning: Do not continue operating the unit, otherwise hydraulic elements could be damaged |
| Coupling leaks | - Defective seal  
- Defective coupling | - Replace seal  
- Replace coupling |
| The drive unit stops suddenly | Power supply interrupted because electric motor or thermal relay has overheated.  
Reasons:  
- Undervoltage at the power supply  
- Overvoltage at the power supply  
- Cross section of power supply cable too small  
- Water supply not correct | Check power supply  
see "Chapter 1" 1.9.1, 1-6  
Check power supply  
see "Chapter 1" 1.9.1, 1-6  
Use mains cable with correct cross section, see "Chapter 5" 5.3.1, 5-2  
Check water circuit  
see "Chapter 1" 1.10, 1-7 |
| Main motor potentiometer does not work | Defective potentiometer | Note:  
see "Chapter 5" 5.4.2, 5-7  
TYROLIT Hydrostress AG  
Inform the after-sales service |
|  | Defective proportional valve | Inform TYROLIT Hydrostress AG after-sales service |
|  | Defective pump | Inform TYROLIT Hydrostress AG after-sales service |
| No pressure build-up in feed circuit | Defective potentiometer | Inform TYROLIT Hydrostress AG after-sales service |
|  | Defective proportional valve | Inform TYROLIT Hydrostress AG after-sales service |
|  | Defective pump | Inform TYROLIT Hydrostress AG after-sales service |
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 designation of your unit (name plate)
• Have the Operating Instructions close to hand

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No water emerging</td>
<td>Water line is blocked</td>
<td>Clean the water line</td>
</tr>
<tr>
<td></td>
<td>Water valve on feed line</td>
<td>Open water valve</td>
</tr>
<tr>
<td></td>
<td>is closed</td>
<td></td>
</tr>
<tr>
<td>Insufficient water</td>
<td></td>
<td>Check water circuit</td>
</tr>
<tr>
<td>pressure</td>
<td></td>
<td>see &quot;Chapter 1&quot; 1.10, 1-7</td>
</tr>
<tr>
<td>Defective water valve</td>
<td></td>
<td>Inform TYROLIT Hydrostress AG after-sales service</td>
</tr>
<tr>
<td>Water filter is</td>
<td></td>
<td>Clean the filter or inform</td>
</tr>
<tr>
<td>blocked</td>
<td></td>
<td>TYROLIT Hydrostress AG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>after sales service</td>
</tr>
</tbody>
</table>

Fig. 7-1  Name plate
7.2 Storage

The Drive Unit PPH40RR*** consists partially of material which can corrode. If you take the unit out of service for an extended period, proceed as follows:

- Blow out the water from the water lines
- Lightly oil the unit
- Store in a dry location
8 Transport

8.1 Transport

The Drive Unit PPH40RR*** is a high-quality, technical device. Protect it against transport damage:

- Do not place any parts on or against the Drive Unit PPH40RR***
- Protect the Drive Unit PPH40RR*** from impacts
- The Drive Unit PPH40RR*** must be secured against rolling away during transport

8.2 Safety instructions

It is essential to observe the following safety instructions, especially in relation to taking the Drive Unit PPH40RR*** out of service.

<table>
<thead>
<tr>
<th>Danger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger from incorrect crane transport</td>
</tr>
<tr>
<td>Crane transport should only be carried out using the crane shackles provided.</td>
</tr>
<tr>
<td>Only undertake crane transport with serviceable building and mobile cranes.</td>
</tr>
<tr>
<td>Failure to observe this regulation may lead to serious physical injury, possibly even death, and to property damage.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger from the lifting of heavy loads.</td>
</tr>
<tr>
<td>Units which weight more than 30 kg must not be lifted without suitable equipment.</td>
</tr>
<tr>
<td>For transport, use the handles provided. Always keep handles clean and free of grease.</td>
</tr>
<tr>
<td>Failure to adhere to this regulation may result in physical injury and damage to property.</td>
</tr>
</tbody>
</table>
8.3 Crane shackles and transport handles

![Diagram of crane shackles and transport handles]

1. Crane shackles
2. Transport handles with hose bracket

**Danger**

Danger of falling parts.

When crane transport is used, the Drive Unit PPH40RR*** must be transported alone, without the radio remote control and hoses.

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

9.1 General

The operator can recycle or dispose of the Drive Unit PPH40RR*** himself provided that he observes the statutory provisions. In order to dismantle the unit correctly and to properly separate the materials, some knowledge of mechanical procedures and knowledge about the differentiation of waste materials is necessary.

Before proceeding, first of all read Chapter 2 "Safety instructions", 2-1 in these Operating Instructions. Be sure also to observe all the danger information given here and follow the instructions on how to prevent personal injury and damage to property.

9.1.1 Safety instructions

It is essential to observe the following safety instructions, especially in relation to disposal of the Drive Unit PPH40RR***.

<table>
<thead>
<tr>
<th>Danger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger of falling heavy parts.</td>
</tr>
</tbody>
</table>

When performing the types of work described in this chapter, it is absolutely essential to wear the following personal protective equipment: goggles, protective gloves and safety shoes.

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

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

9.1.2 Personnel qualifications

Personnel who carry out the work described in this chapter must meet the following conditions:

- Have read and understood the safety instructions in "Chapter 2".
- Have completed their technical training (mechanical/electrotechnical) and are in a position to differentiate the various material groups.
9.2 Disposal regulations

The usual national and regional regulations and directives must be observed when disposing of the Drive Unit PPH40RR***.

9.3 Disposal of the Drive Unit PPH40RR***

To allow proper disposal, the components of the Drive Unit PPH40RR*** must be dismantled. This is performed by the client's personnel.

The dismantled parts of the device are sorted by material type and sent separately to the appropriate collection points. Ensure, above all, that the following parts are correctly disposed of.

The Drive Unit PPH40RR*** consists of the following materials:

<table>
<thead>
<tr>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast aluminium</td>
</tr>
<tr>
<td>Rolled aluminium products</td>
</tr>
<tr>
<td>Copper</td>
</tr>
<tr>
<td>Steel</td>
</tr>
<tr>
<td>Rubber</td>
</tr>
<tr>
<td>Rubber / nylon fabric</td>
</tr>
<tr>
<td>Synthetic grease</td>
</tr>
<tr>
<td>Hydraulic oil</td>
</tr>
<tr>
<td>Plastic</td>
</tr>
</tbody>
</table>