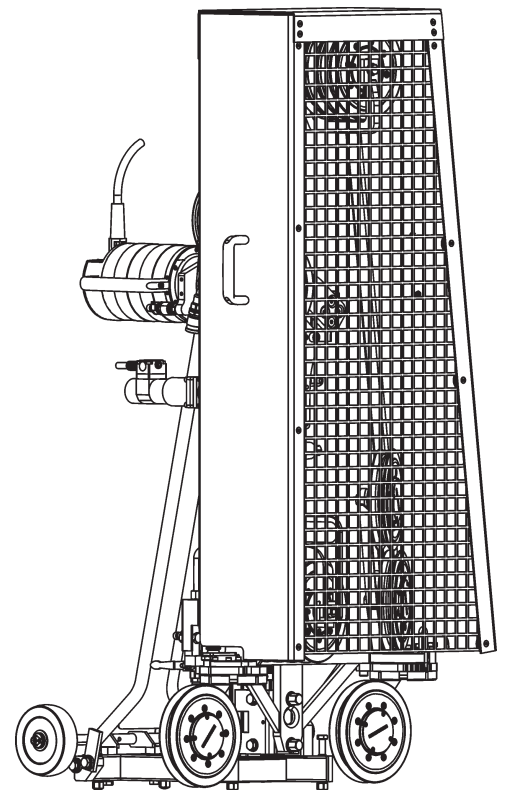


# *Operating Instructions*

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## **Wire saw WCH14★ ★ ★ / WCE14★ ★ ★**

*Index 002*



## **Congratulations!**

With a Hydrostress unit from TYROLIT you have chosen a tried and tested piece of equipment designed and built to the highest technical standards. Only genuine TYROLIT Hydrostress replacement parts can guarantee quality and interchangeability. If maintenance work is neglected or carried out inexpertly we will be unable to honour our warranty obligations. Any repair work must be carried out by trained personnel only.

Our after-sales service is available to help ensure that your TYROLIT Hydrostress units remain in perfect working order.

We hope that working with your TYROLIT unit will be a satisfying and fault-free experience.

TYROLIT Hydrostress

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# 1 Safety



These instructions are just one part of the documentation which is supplied together with the wire saw. These instructions go together with the "Safety Manual / System Description for Wire Saws" to form a complete set of documentation.

**DANGER**

Failure to comply with the safety instructions in the "Safety Manual / System Handbook" may result in serious injury or even death.

- ▶ Please ensure that the "Safety Manual / System Description for Wire Saws" has been read and understood in full.

**DANGER****Cutting injuries from the diamond wire!**

- ▶ Always wear protective gloves when working on the wire saw, particularly when working on the diamond wire.
- ▶ Only operate the wire saw with a guard.

**DANGER****Serious injury or material damage as a result of uncontrolled movements of the wire saw!**

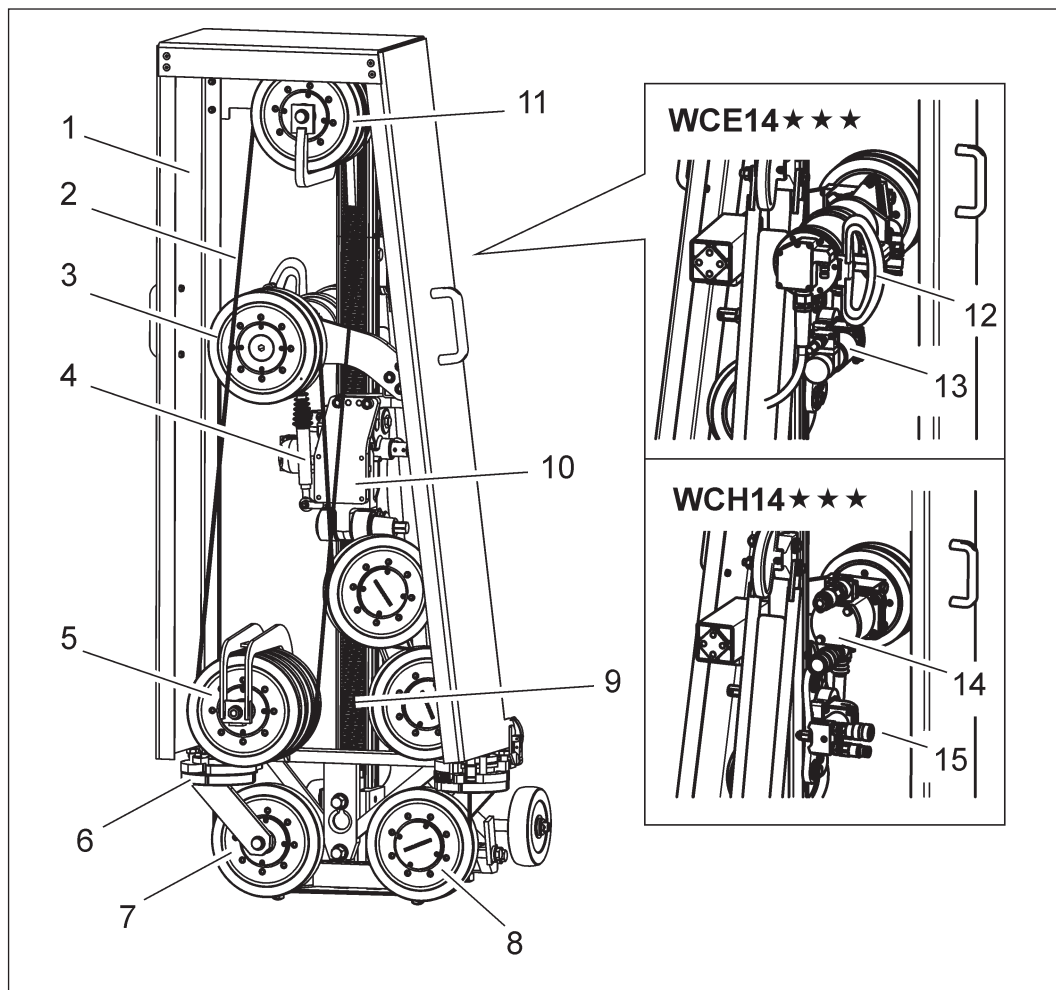
- ▶ Never connect or disconnect hoses or cables while the wire saw is running.

## 2 Description

### 2.1 Wire saw system

The functions of the wire saw systems are described in the "Safety Manual / System Description for Wire Saws".

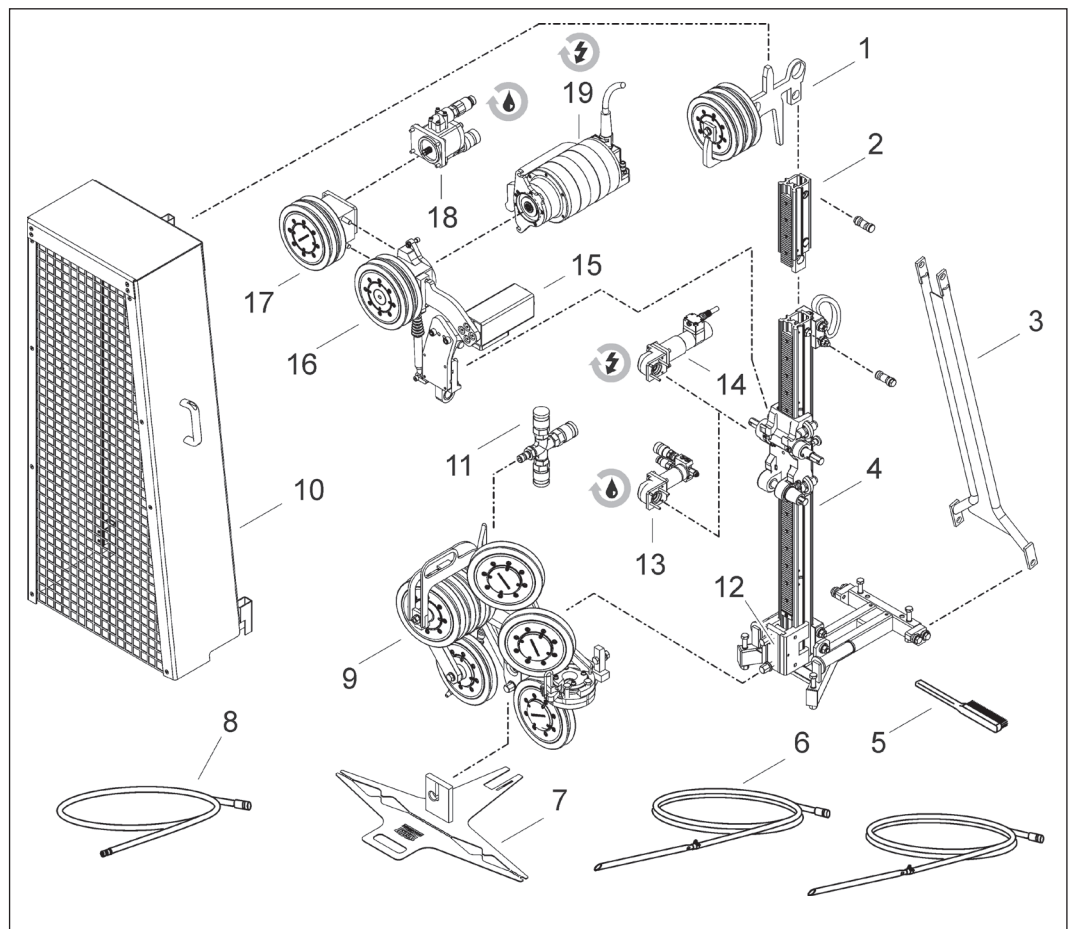
### 2.2 Wire saw



- |                               |                            |
|-------------------------------|----------------------------|
| 1 Diamond wire guard          | 10 Storage roll unit       |
| 2 Diamond wire                | 11 Drive motor ⇒ electric  |
| 3 Drive roller unit           | 12 Electric ⇒ feed motor   |
| 4 Damping element             | 13 Drive motor ⇒ hydraulic |
| 5 Diverter roll unit          | 14 Feed motor ⇒ hydraulic  |
| 6 Swivel roll, slack side     |                            |
| 7 Swivel roll, tensioned side |                            |
| 8 Core drill rig              |                            |
| 9 Support                     |                            |

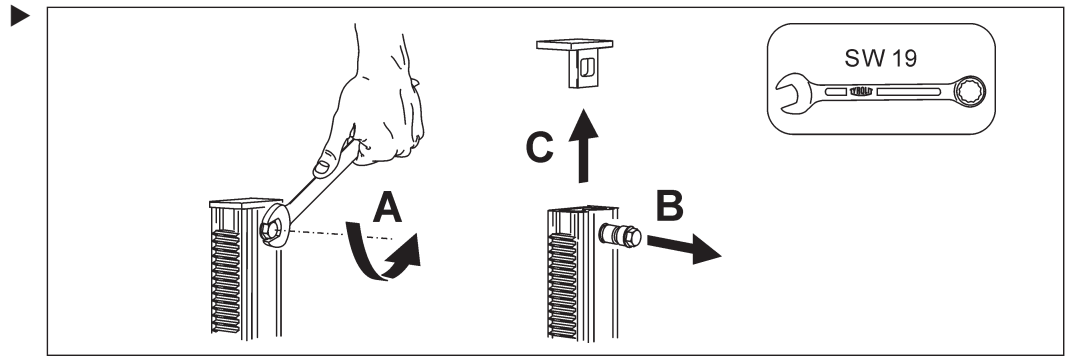
### 3 Assembly / Disassembly

#### 3.1 Assembly overview

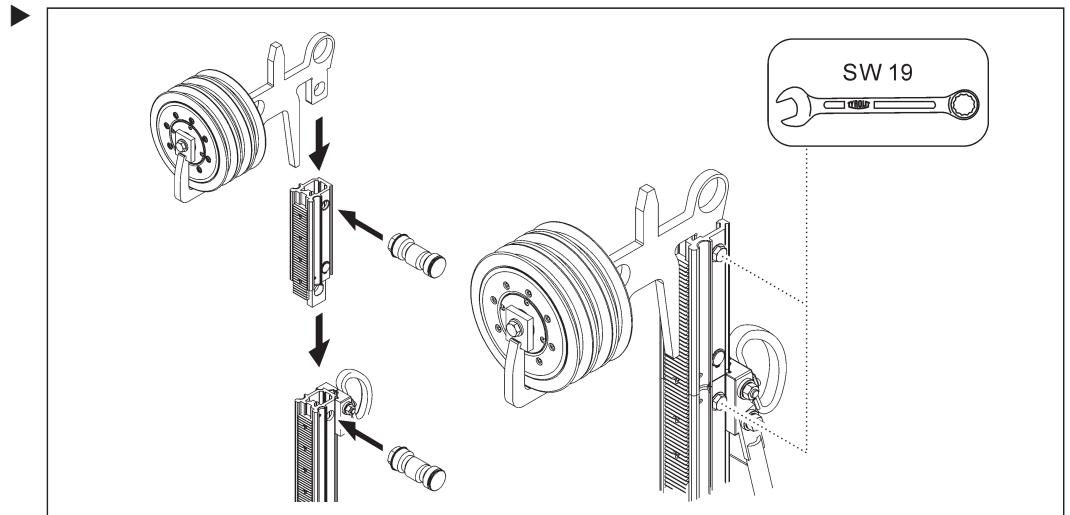


- |                       |                                |
|-----------------------|--------------------------------|
| 1 Storage roll unit   | 11 Water distribution piece    |
| 2 Rail extension      | 12 Attachment bracket          |
| 3 Support rod unit    | 13 Feed motor ⇔ hydraulic      |
| 4 Core drill rig      | 14 Feed motor ⇔ electric       |
| 5 Wire brush          | 15 Drive roll unit holder      |
| 6 Water lance         | 16 Drive roll unit ⇔ electric  |
| 7 Cutting gauge       | 17 Drive roll unit ⇔ hydraulic |
| 8 Water hose          | 18 Drive motor, hydraulic      |
| 9 Diverter roll unit  | 19 Drive motor, electric       |
| 10 Diamond wire guard |                                |

### 3.2 Removing the cover



### 3.3 Fitting the storage roll unit and rail extension



### 3.4 Replacing the support rod

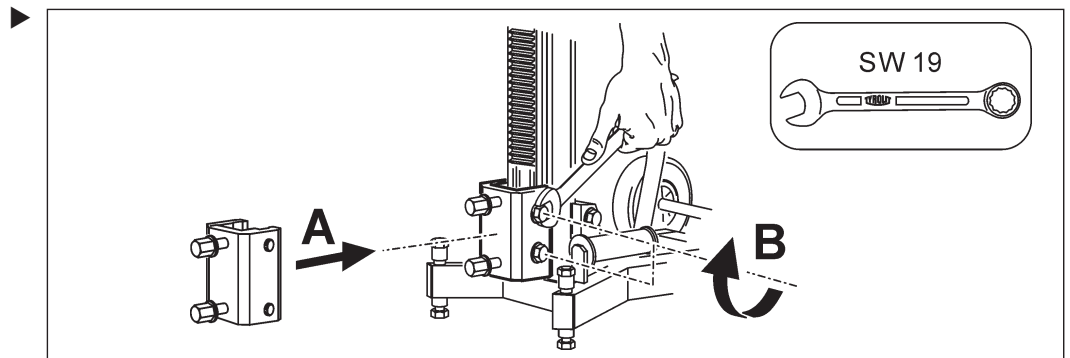


Replace the support rods with the support rod unit (see Assembly Overview 3.1). The support rod unit can also remain mounted on the drill rig for core bore holes.

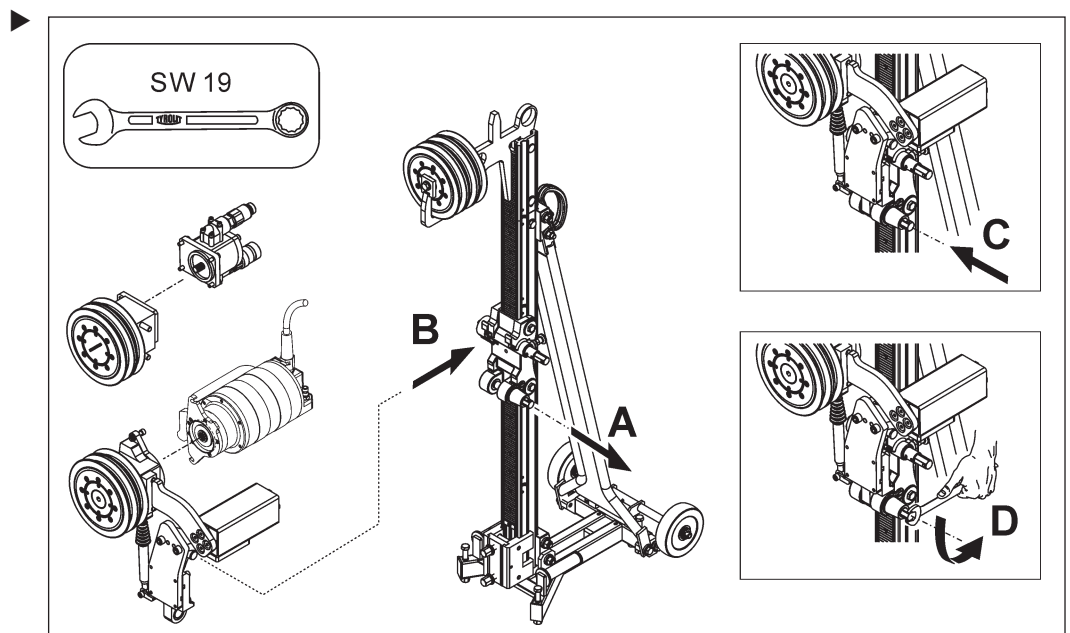
### 3.5 Fitting the attachment bracket



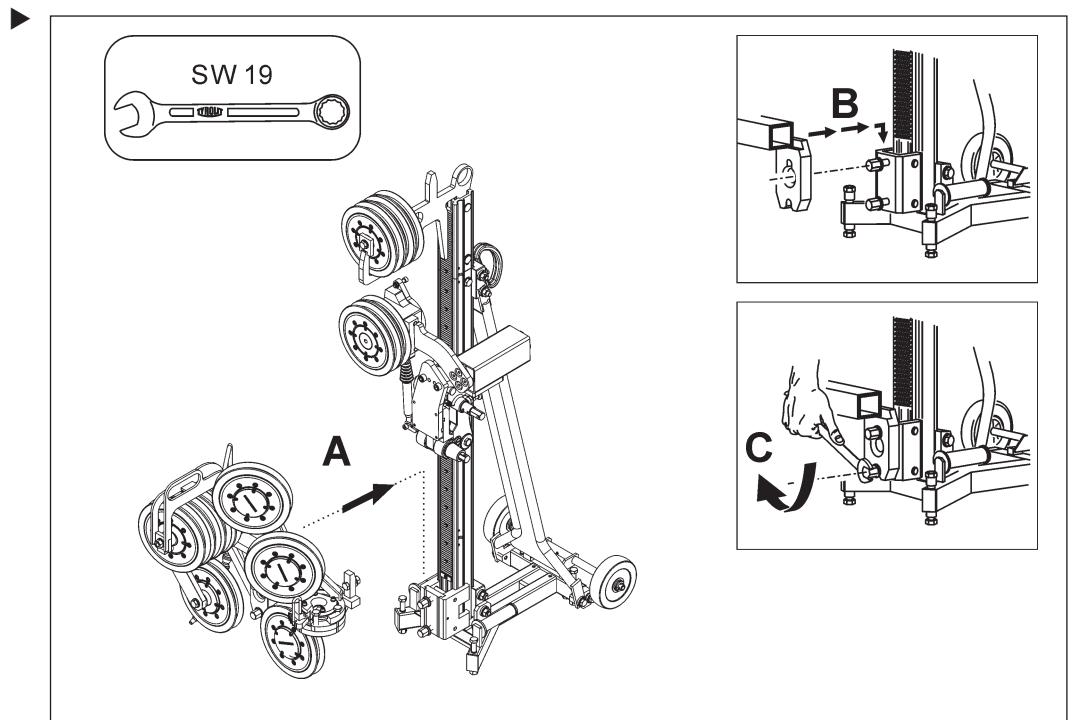
Fit the attachment bracket to the end of the guide rail.



### 3.6 Fitting the drive roll unit



### 3.7 Fitting the diverter roll unit



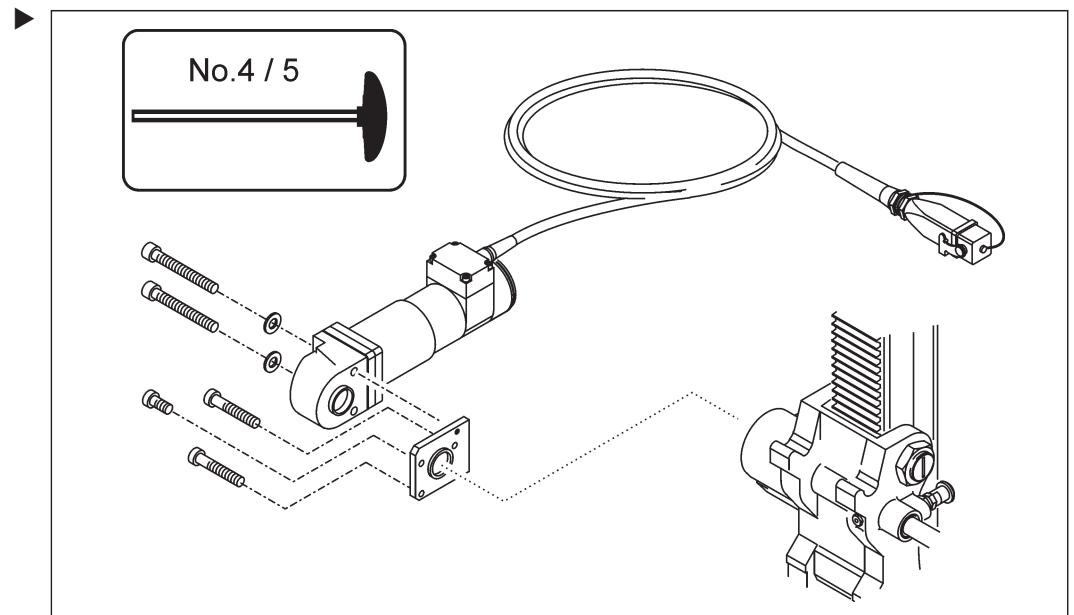
### 3.8 Fitting the drive motor and feed motor



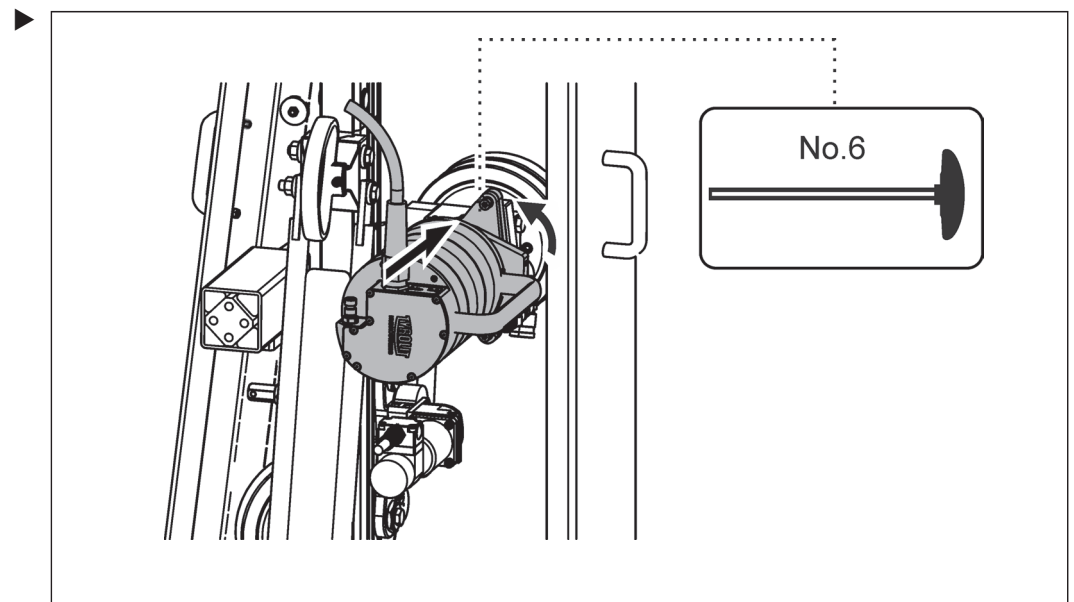
- Wire saw WCE14★★★ ⇨ electric version
- Wire saw WCH14★★★ ⇨ hydraulic version

#### Attaching the motor

##### Electric feed motor



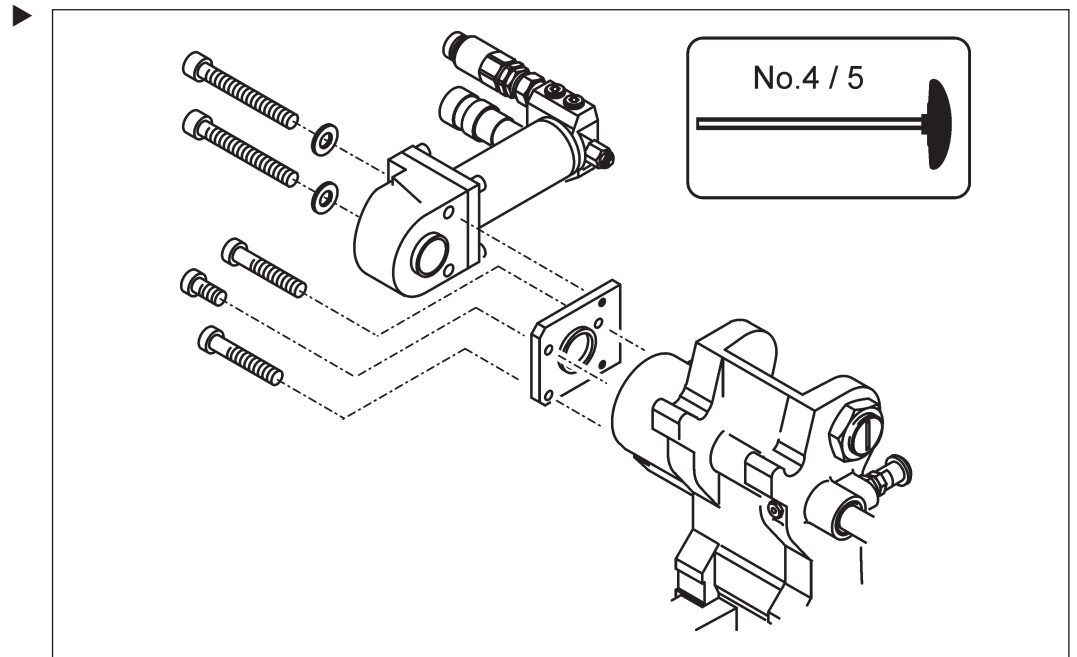
##### Main motor, electric



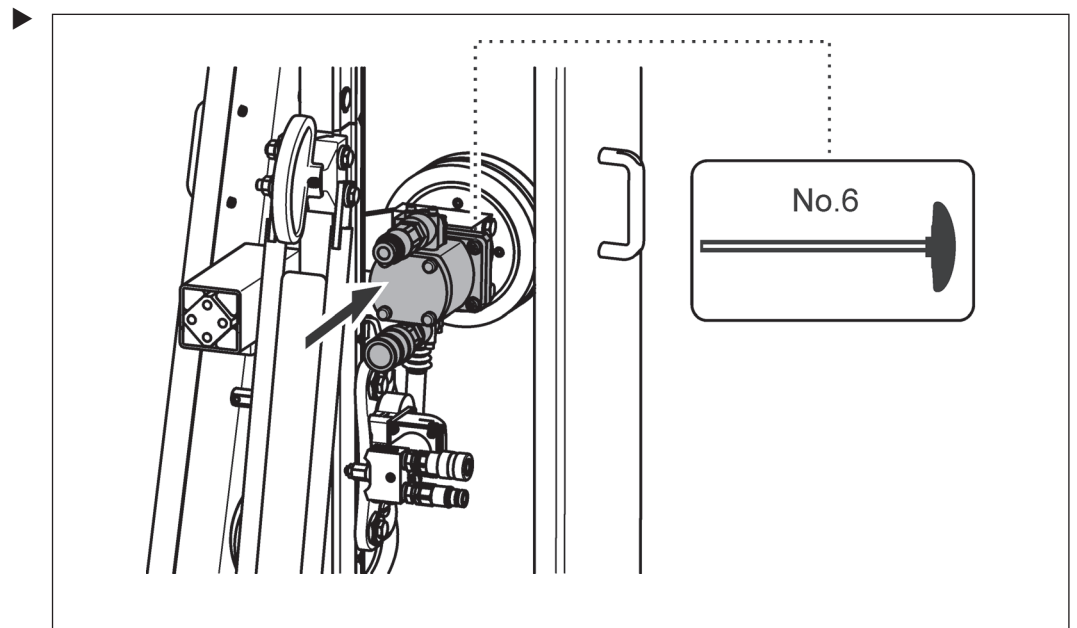


## Attaching the motor

### Hydraulic feed motor



### Main motor, hydraulic



### 3.9 Drawing in the diamond wire

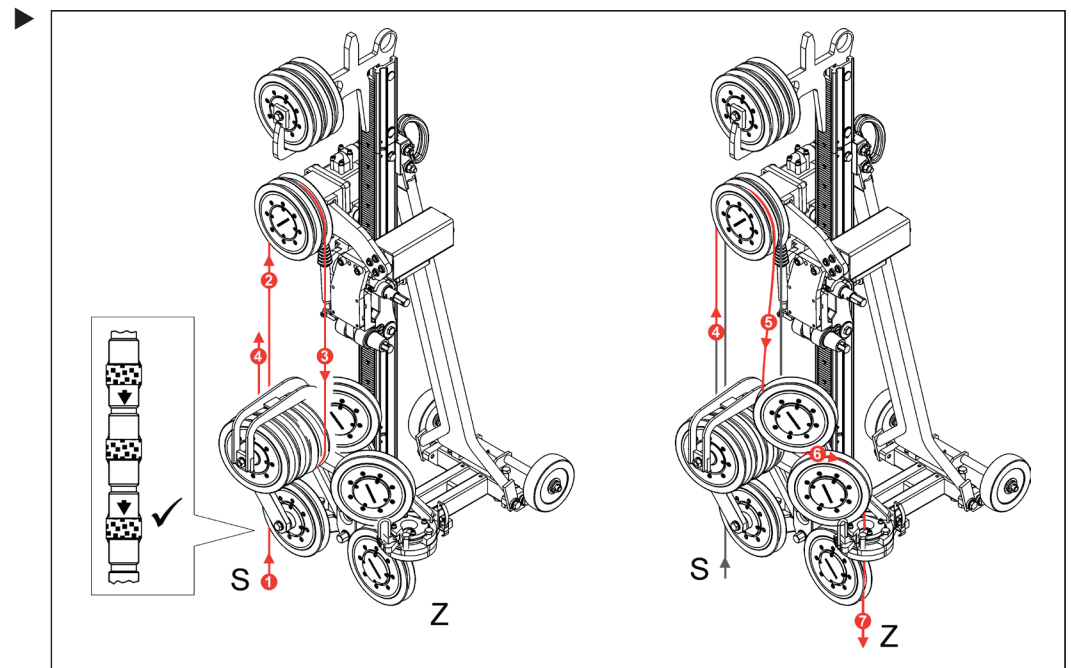
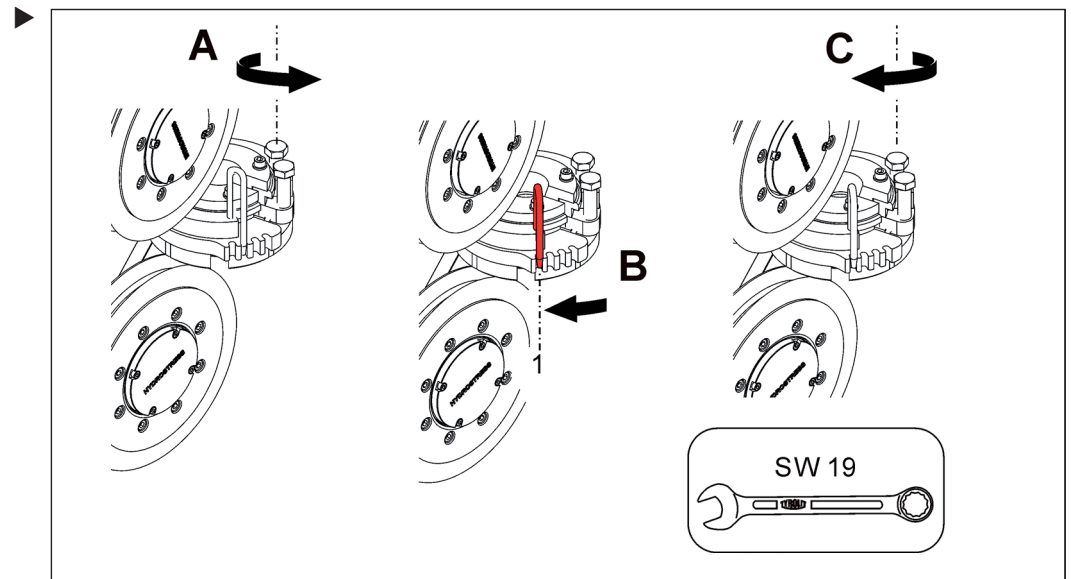


The TYROLIT diamond wire can be inserted into the wire saw open or closed. Details of the storage capacity can be found in the technical information.

### 3.10 Single diamond wire storage



Before the diamond wire is drawn in, the exit roll at the tensioned side must be moved to position 1.

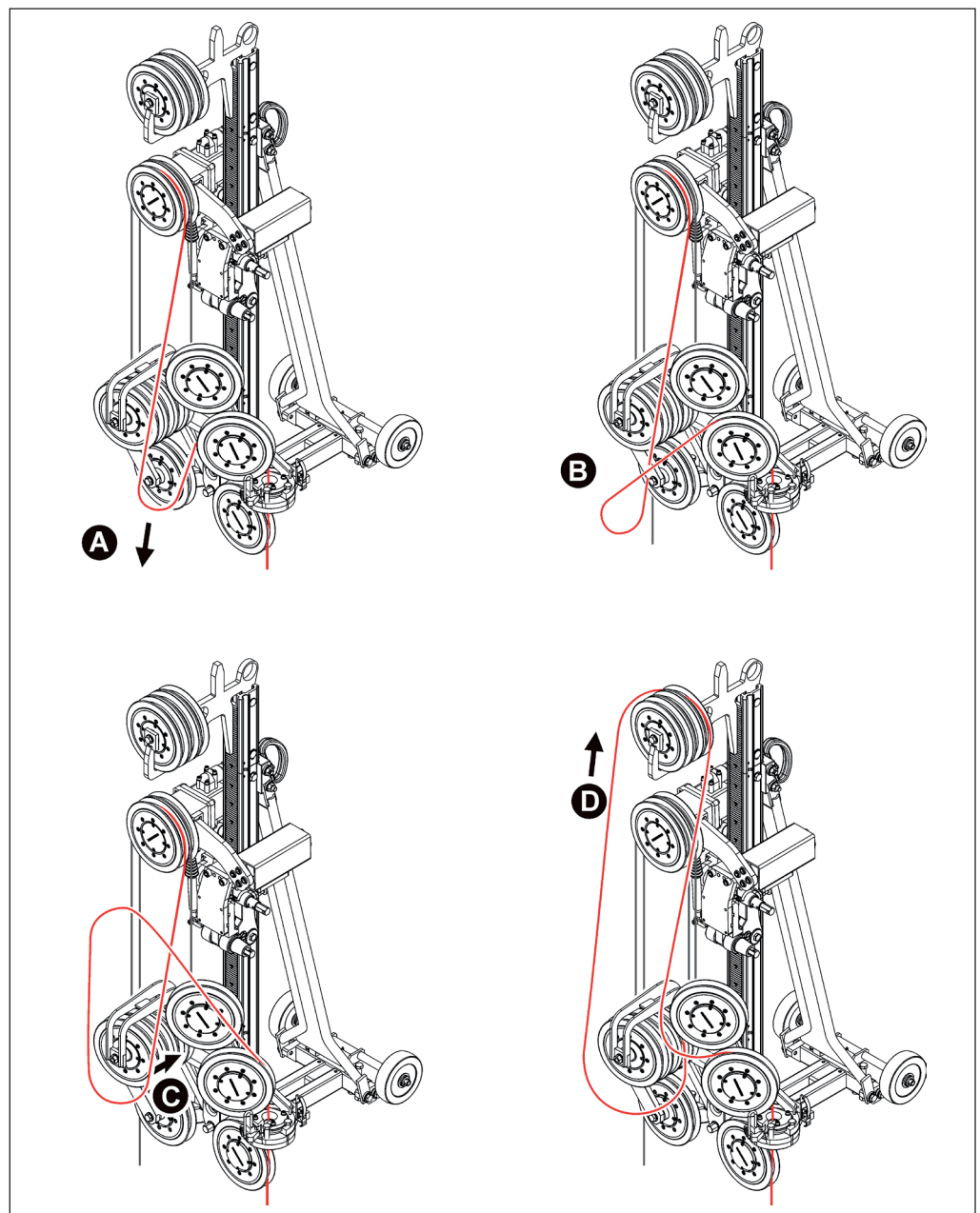
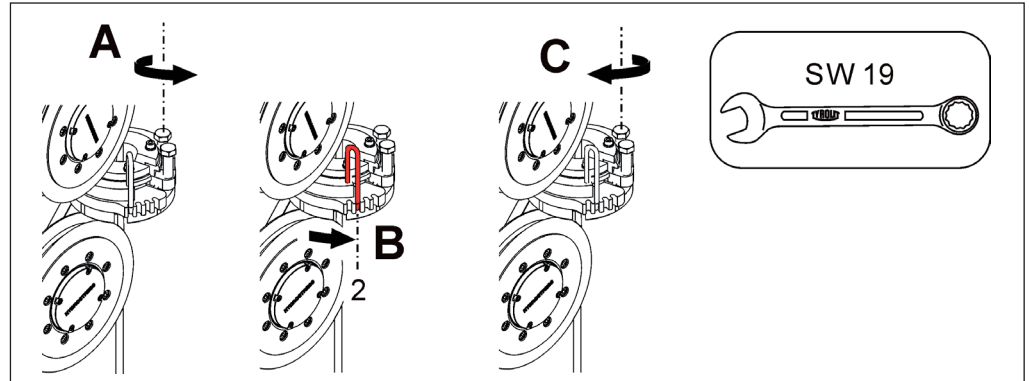


Z Tensioned side  
S Slack side

### 3.11 Extending the diamond wire storage



Before the extended diamond wire storage can be used, the exit roller must be moved to position 2.



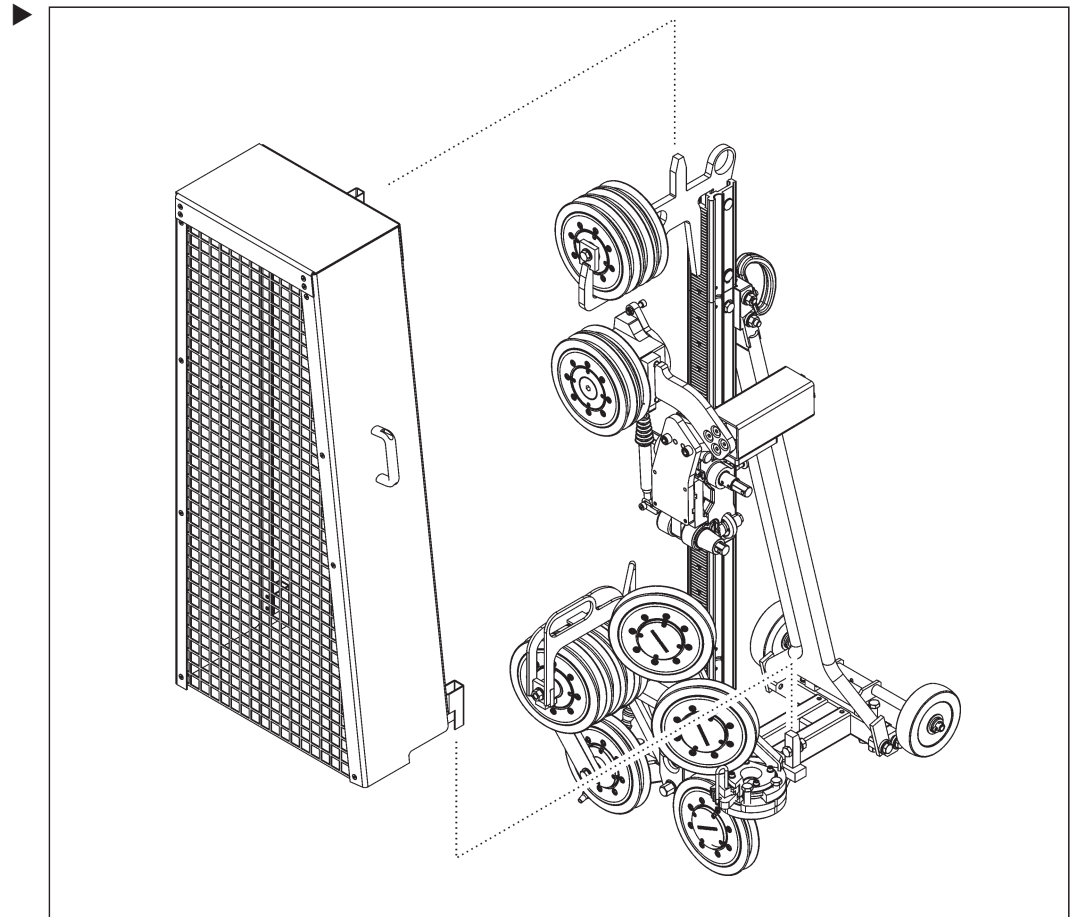
### 3.12 Fitting the diamond wire guard



**DANGER**

**Death or serious injury from the whipping action of the wire or diamond wire elements flying off.**

- ▶ Always work with the diamond wire guard fitted.
- ▶ Make sure that you always maintain the defined safety distances and working areas.



### 3.13 Positioning and securing wire saw

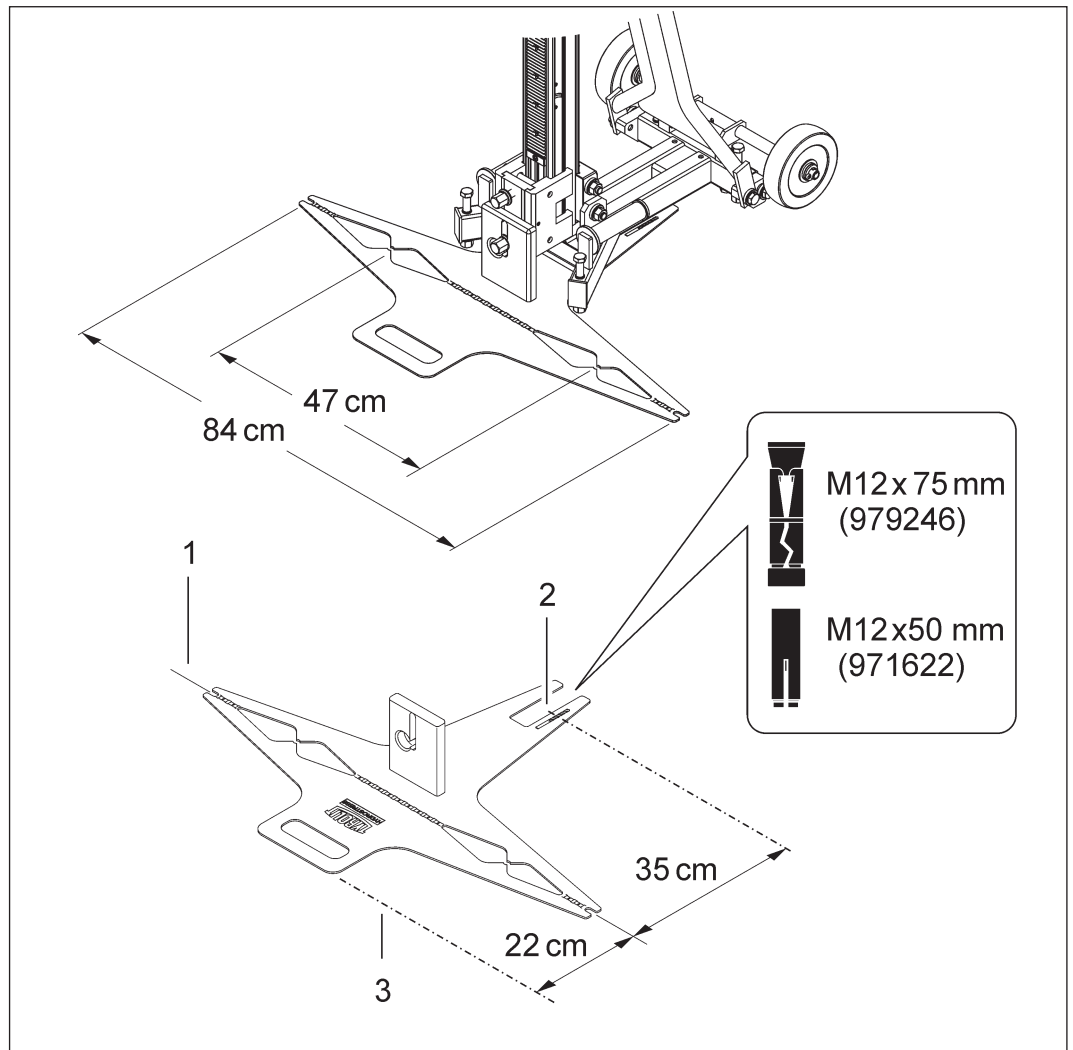


#### Cutting gauge aid

The cutting gauge is a simple aid for aligning and positioning the wire saw.

- ▶ Mount the cutting gauge onto the attachment bracket.
- ▶ Align the wire saw to the cut and mark the dowel space.

The following information can be obtained from the cutting gauge:



- 1 Cutting line
- 2 Dowel space
- 3 Outer edge of the diamond wire guard

### 3.14 Connecting the water supply



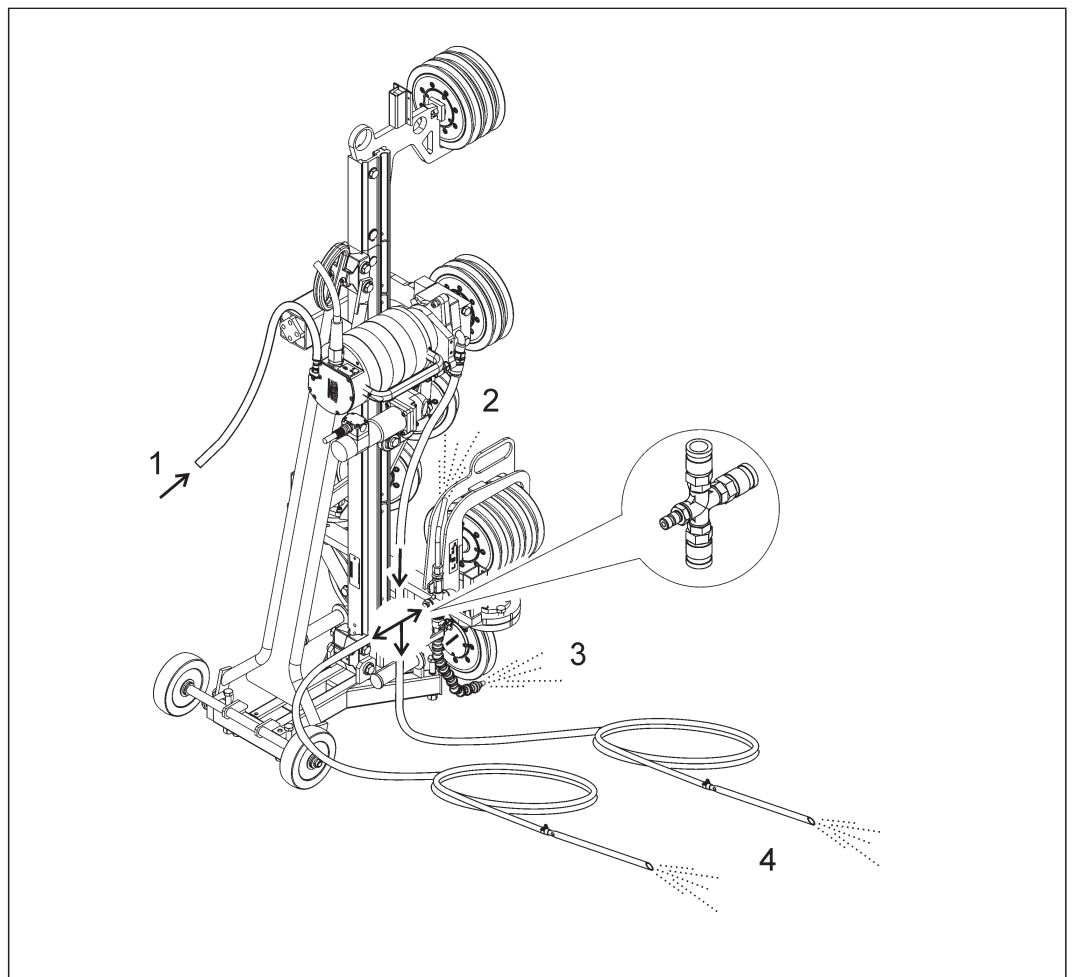
#### WCE14\*\*\* water connection

The cooling water of the saw system flows from the control unit via the drive motor to the water distribution on the diverting roller unit.

#### WCH14\*\*\* water connection

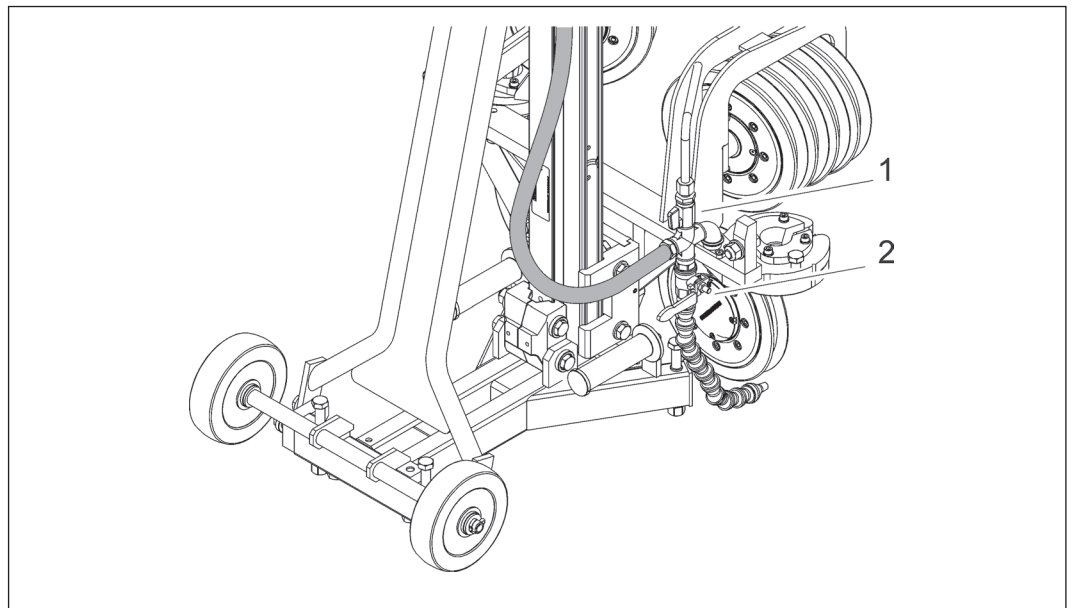
The cooling water of the saw system flows from the drive unit directly to the water distribution at the diverter roll unit.

#### Water connection with distribution piece



- |                                    |                              |
|------------------------------------|------------------------------|
| 1 Water inlet                      | 3 Water outlet, swivel roll  |
| 2 Water outlet, diverter roll unit | 4 Water outlet, water lances |

**Water distribution without distribution piece**



- 1 Water tap, diverter roll unit
- 2 Water tap, swivel roll

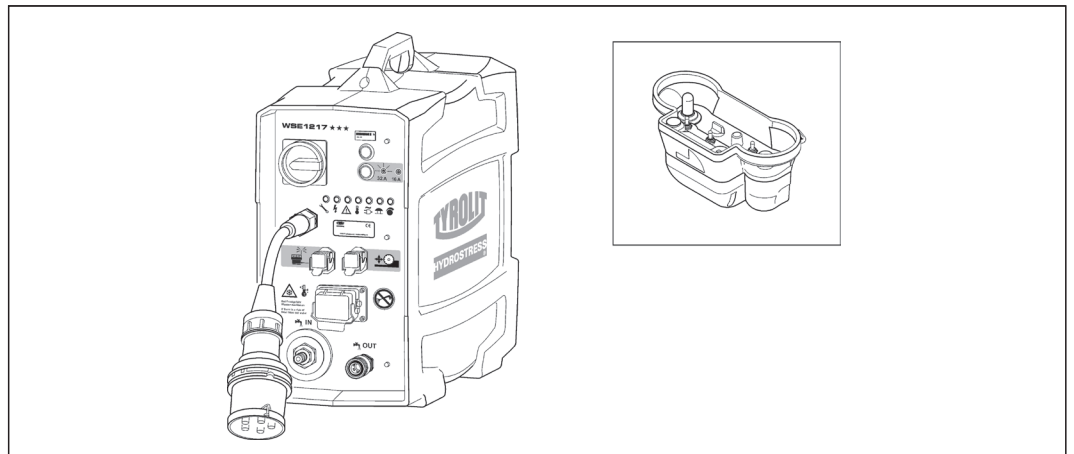
### 3.15 Connecting the wire saw to the power supply



#### WCE14\*\*\* wire saw

The WCE14\*\*\* wire saw is attached to the wire sawing system together with a control unit. Information about the correct way to connect and operate these units can be found in the operating instructions for the control unit.

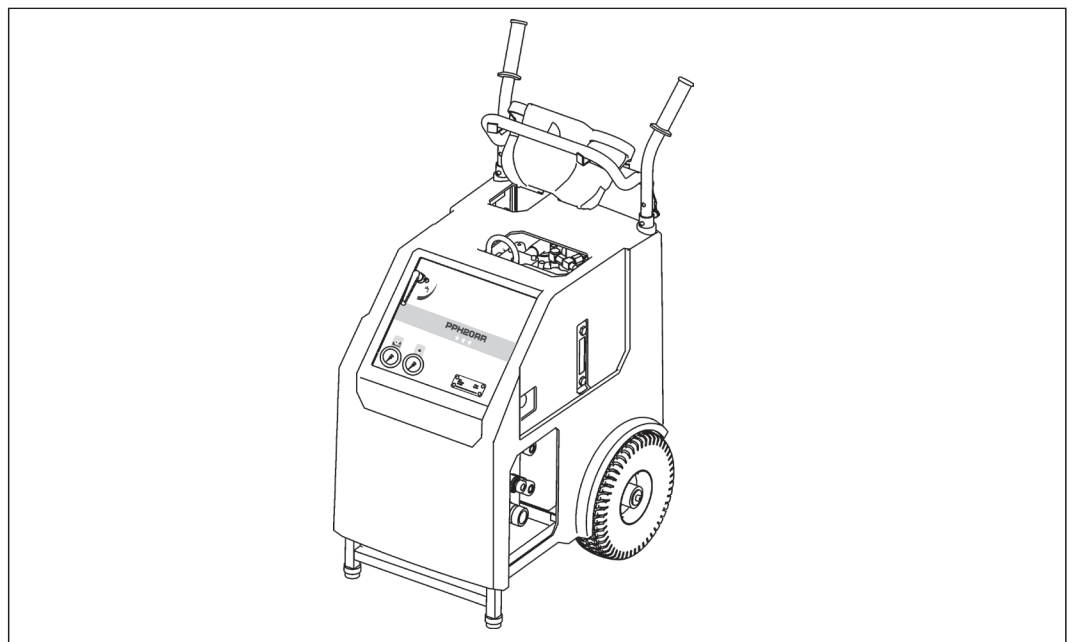
#### Example: Control unit



#### WCH14\*\*\* wire saw

The WCH14\*\*\* wire saw is attached to the wire sawing system together with a TYROLIT drive unit. Information about the correct way to connect and operate these units can be found in the operating instructions for the drive unit.

#### Example: drive unit (20-25 kW)





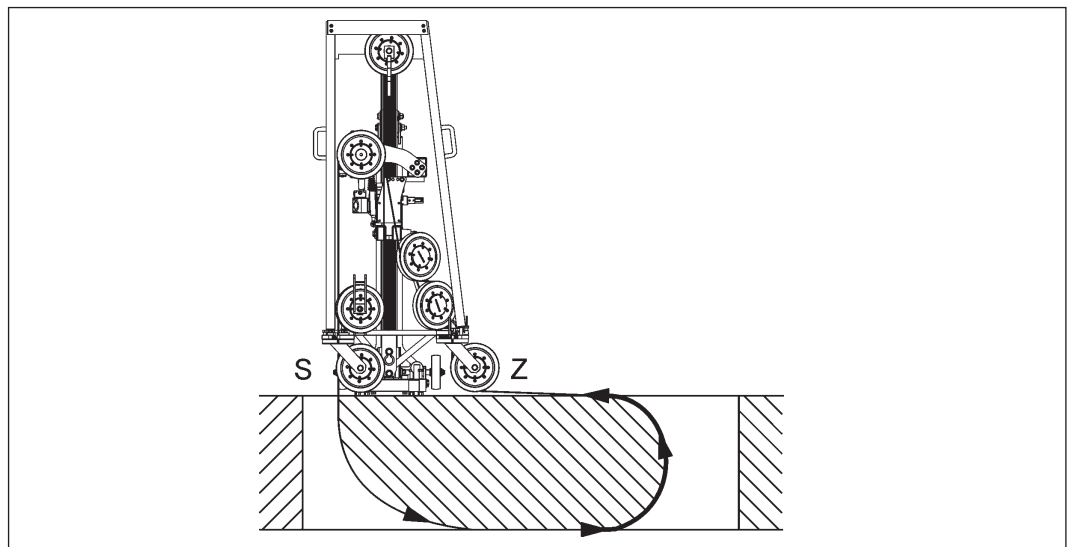
## 4 Application

### 4.1 Correct cutting direction



#### Tensioned side and slack side

The saw cut should be carried out with the tensioned side (Z) of the diamond wire, since this provides the best cutting conditions.

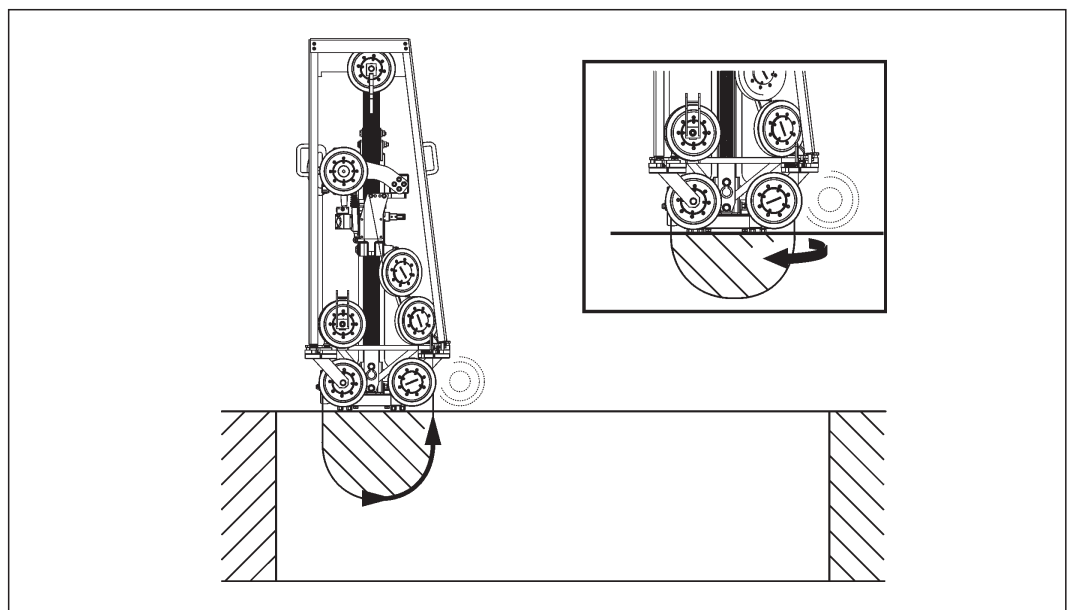


### 4.2 Finishing the cut



During the finishing cut the swivel roll must be swivelled inwards.

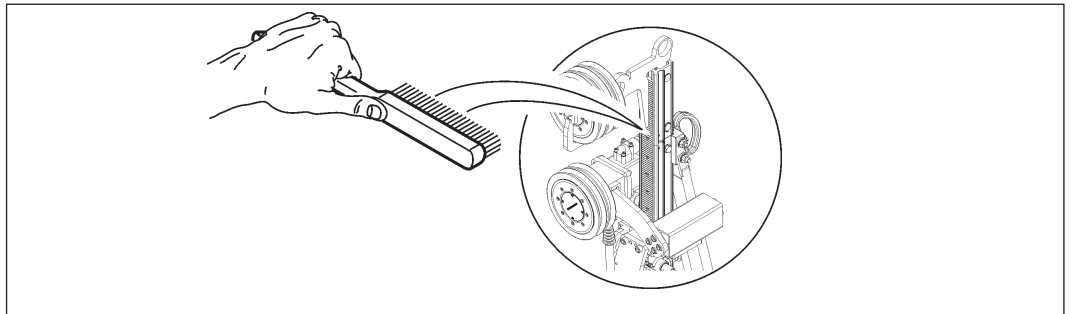
Reduced feed force should be used when approaching the end of a cut. This measure makes it possible for the swivel rolls to catch the diamond wire perfectly upon the exit of the diamond wire.



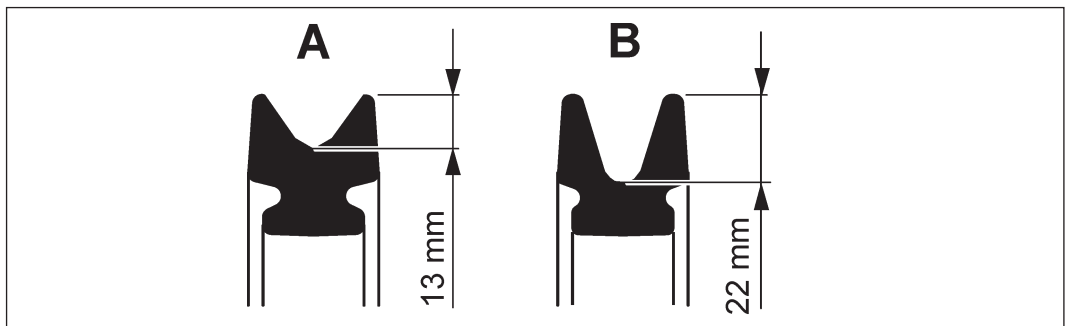
## 5 Servicing and maintenance

Maintenance and servicing table		Before each use	At end of work	Weekly	Yearly	After faults	After damage
Wire saw	▶ Re-tighten loose screws and nuts			X		X	X
Guide support	▶ Check wear and setting of the guide elements	X	X			X	X
	▶ Lubrication			X		X	X
Guide rail	▶ Clean the toothed rack and guide grooves, see 5.1		X			X	X
Drive rolls and guide rolls	▶ Check the bandages for wear, see 5.2	X	X			X	X
	▶ Check bearings			X		X	X
	▶ Clean	X	X				X
Feed motor	▶ Check for cleanliness / damage	X	X			X	X
Drive motor	▶ Check for cleanliness / damage	X	X			X	X
Connectors, cables, couplings	▶ Check for cleanliness / damage	X	X			X	X
Water economy	▶ Check the water line for cleanliness and leak-tightness	X				X	X
	▶ Blow out water		X				
Diamond wire	▶ Clean with water		X				
	▶ Check for wear	X	X			X	X
Service	▶ To be performed by TYROLIT Hydrostress AG or an authorised workshop	After 100 / 300 / 500 / 700 hours					

## 5.1 Clean the toothed rack



## 5.2 Check bandages for wear

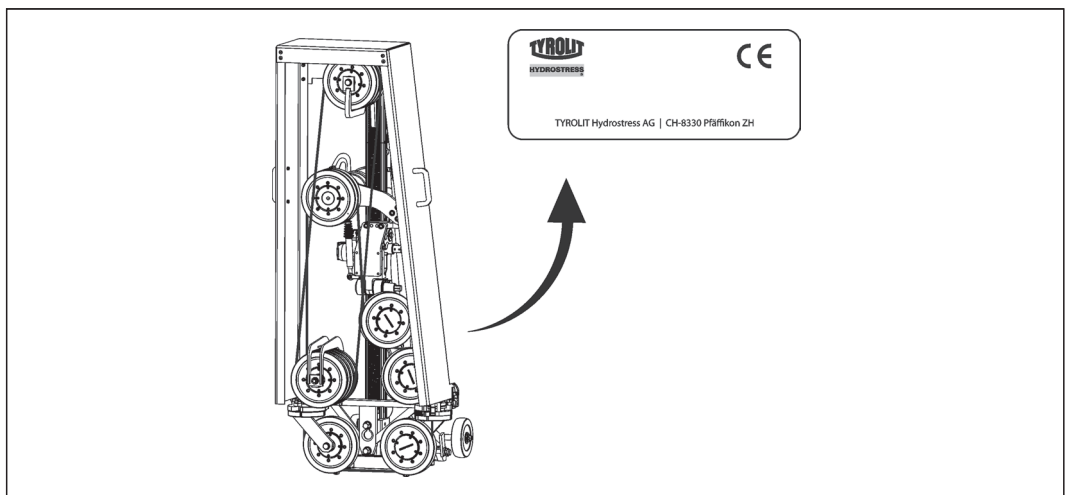


- A New bandage
- B Worn bandage

## 5.3 Troubleshooting

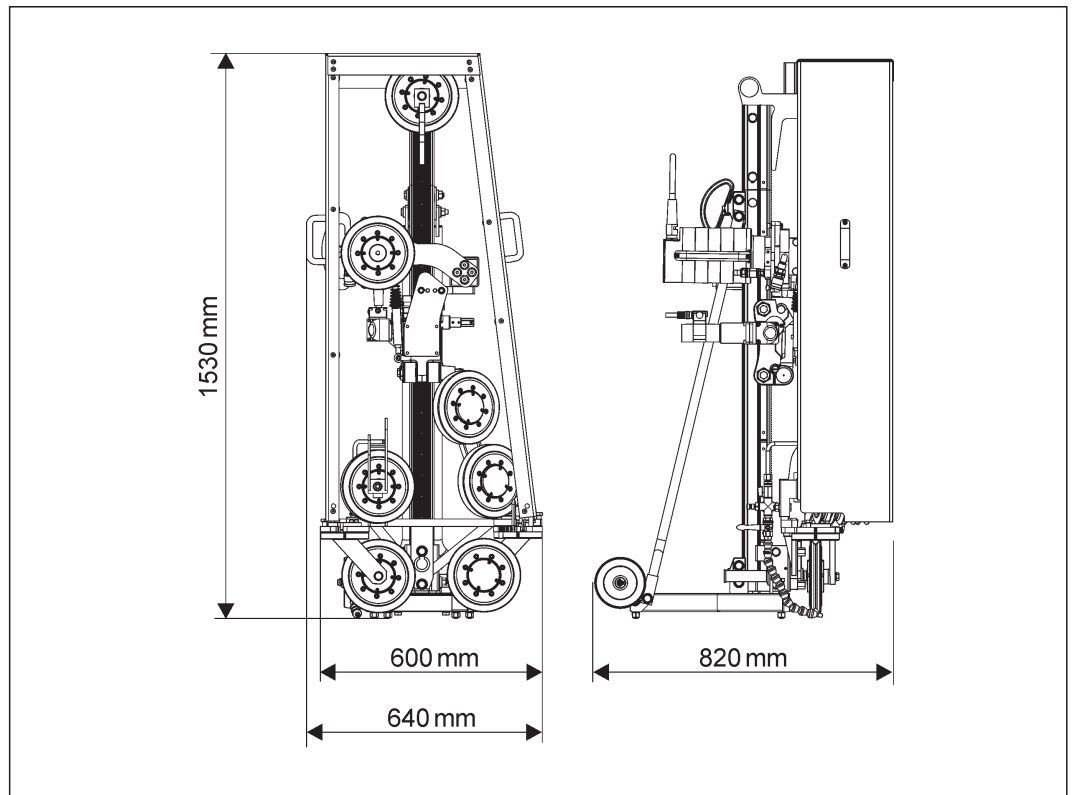
To guarantee a rapid and professional solution to the problem, it is important that you have prepared as follows before calling:

- Try to describe the fault as precisely as possible
- Make a note of the type and index description (refer to the name plate)
- Have the Operating Instructions close to hand

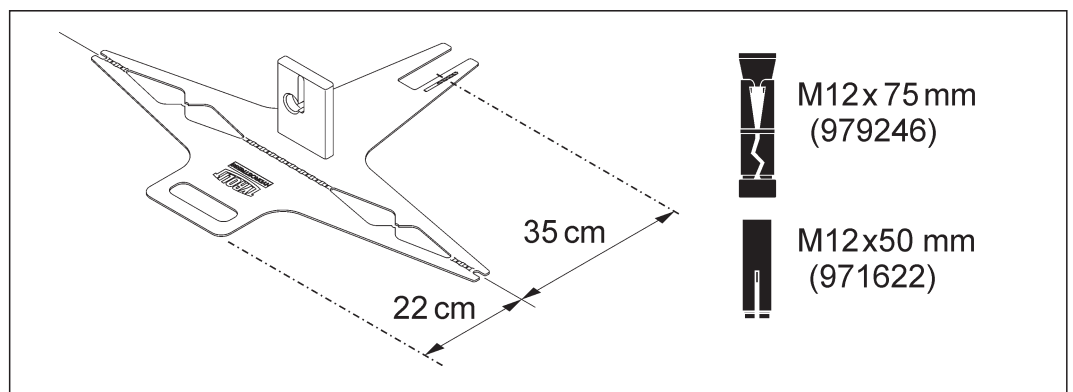


## 6 Technical data

### 6.1 Dimensions



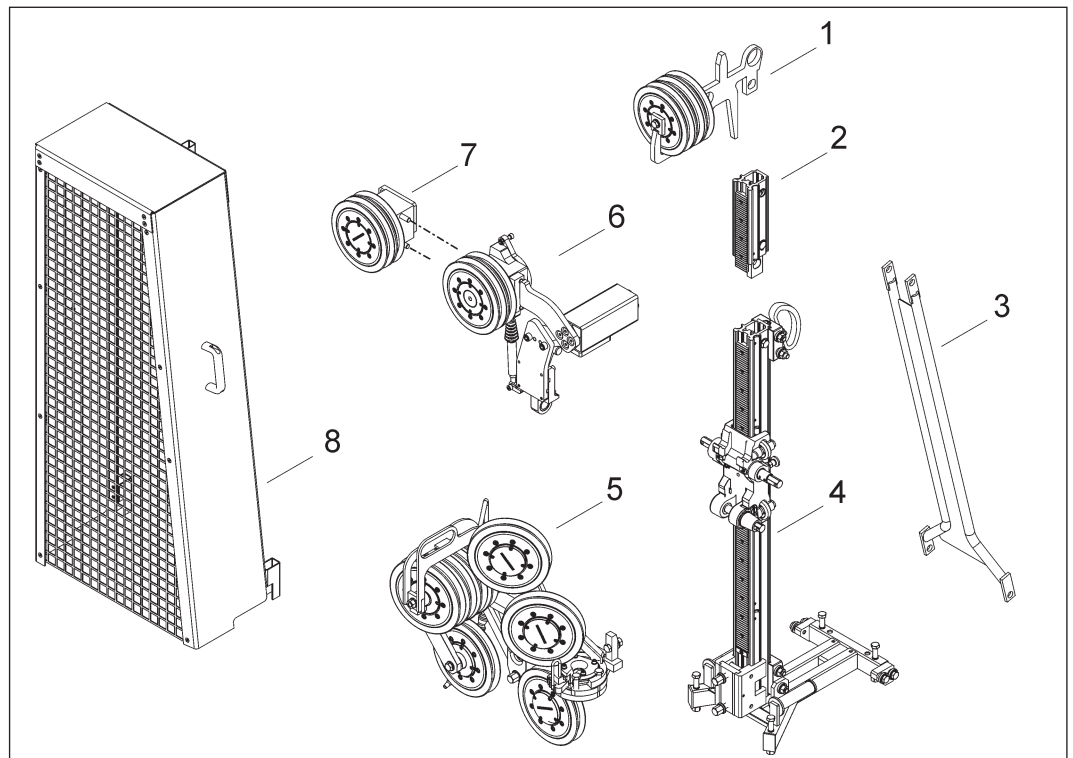
### 6.2 Dowel dimension



### 6.3 Water connection

Pressure	1 bar (min.) to 6 bar (max.)
Quantity	At least 4 l/min
Temperature	max. 25 °C

## 6.4 Weights



1 Diverter roll unit	10 kg
2 Rail extension	3.1 kg
3 Support rod unit	6.6 kg
4 Core drill rig	26 kg
5 Diverter roll unit	39 kg
6 Hydraulic drive unit	18 kg
7 Electric drive unit	19 kg
8 Diamond wire guard	12 kg

## 6.5 Noise data according to ISO 3744



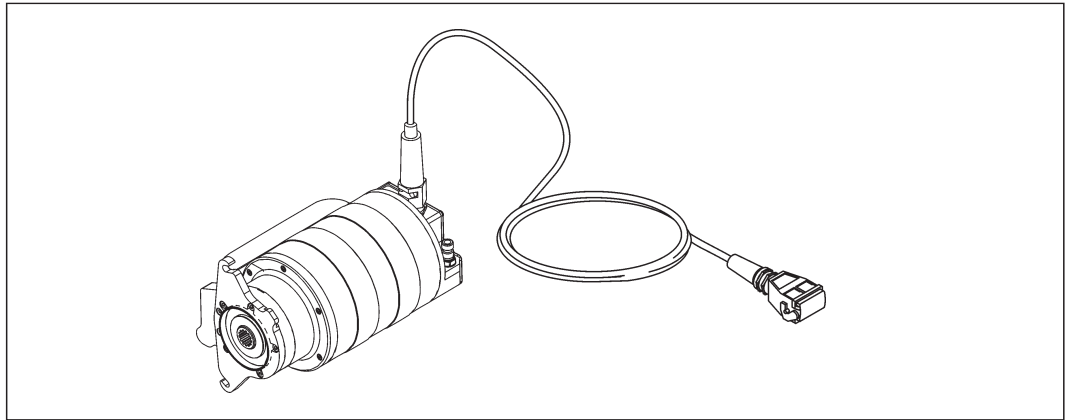
Hearing protection must be worn at all times when working with the WCE14★★★ and WCH14★★★ wire saws.



Parameter	Value WCE14P	Value WCH14P
Noise level at the ear of the user (Leq)	89 dB	86 dB
Noise level at workplace (LPA)	77.5 dB	76.4 dB
Sound power level in accordance with ISO 3744 (LwA)	97.5 dB	96.5 dB

## 6.6 Motors

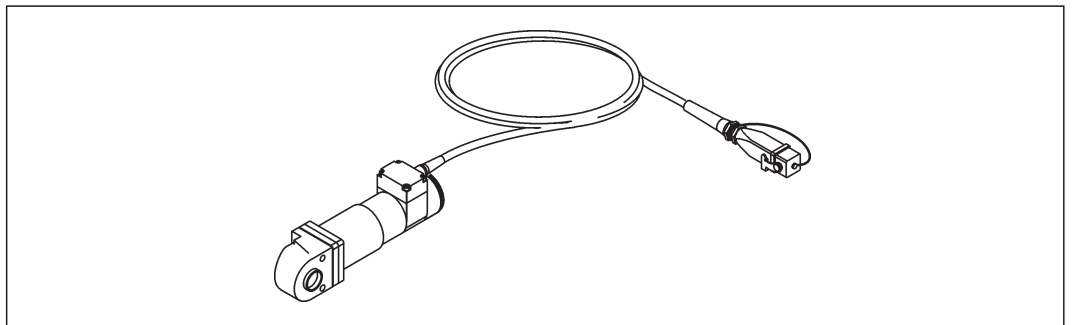
### Drive motor, electric



**Example:**

<b>Electric motor (high frequency, water-cooled)</b>	
Output at 16 A	8 kW
Output at 32 A	17 kW
Weight	22 kg

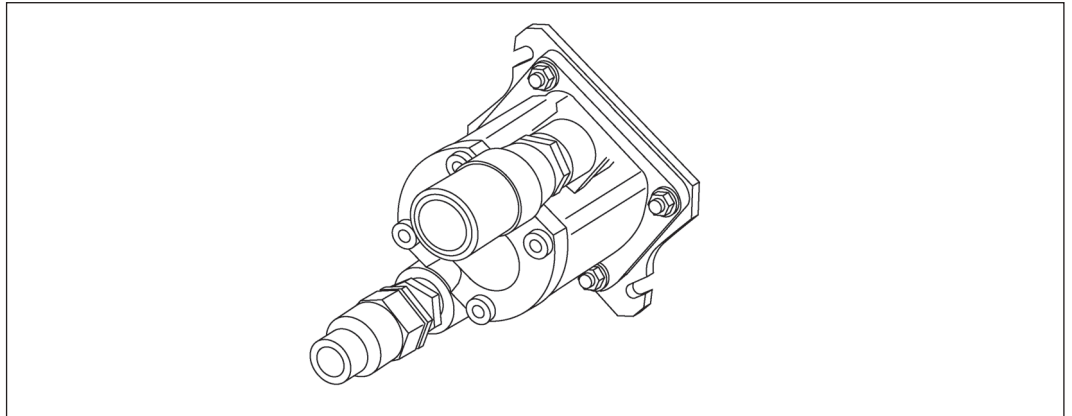
### Electric feed motor



**Example:**

<b>Electric feed motor with gears and brake</b>	
Gear reduction	1:100
Voltage	48 V
Feed	Toothed wheel on rail
Weight	4.1 kg

## Drive motor, hydraulic

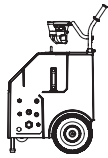
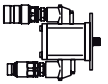


### Example:

Hydraulic motor	
Speed	1100 to 3333 rpm.
Size	2
Absorption volume	12 cm <sup>3</sup> to 30 cm <sup>3</sup>
Transmission ratio	1:1
Operating pressure	max. 260 bar
Type	External geared motor

## Rotational speeds

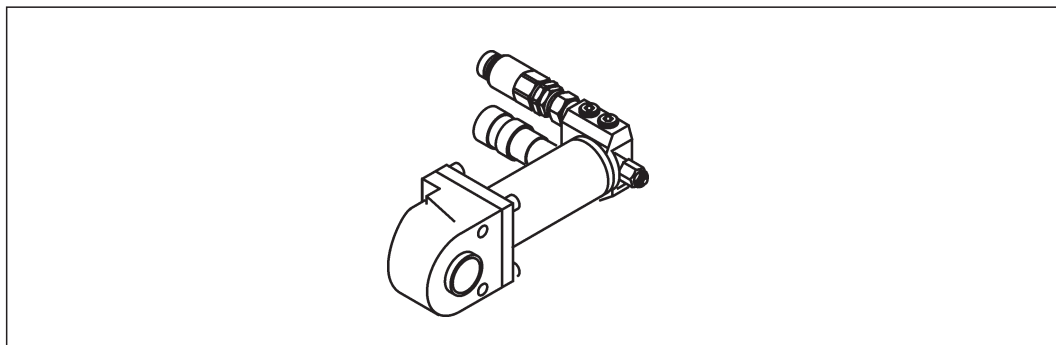
### Hydraulic motors

Rotational speeds, hydraulic motors for wall saws							
							
		cm <sup>3</sup> 12	cm <sup>3</sup> 16	cm <sup>3</sup> 18	cm <sup>3</sup> 22	cm <sup>3</sup> 26	cm <sup>3</sup> 30
l/min	33	2750	2063	1833	1500	1269	1100
l/min	40	3333	2500	2222	1818	1538	1333
l/min	45	3750	2813	2500	2045	1731	1500
l/min	50	4167	3125	2778	2273	1923	1667
l/min	60	5000	3750	3333	2727	2308	2000
l/min	70	5833	4375	3889	3182	2692	2333

 Operation possible

 Operation not possible

## Hydraulic feed motor



### Example:

Hydraulic motor	
Speed	187 rpm
Type	Gerotor
Operating pressure	max. 120 bar
Rated torque	50 Nm
Feed force	6,000 N
Feed	Toothed wheel on rail



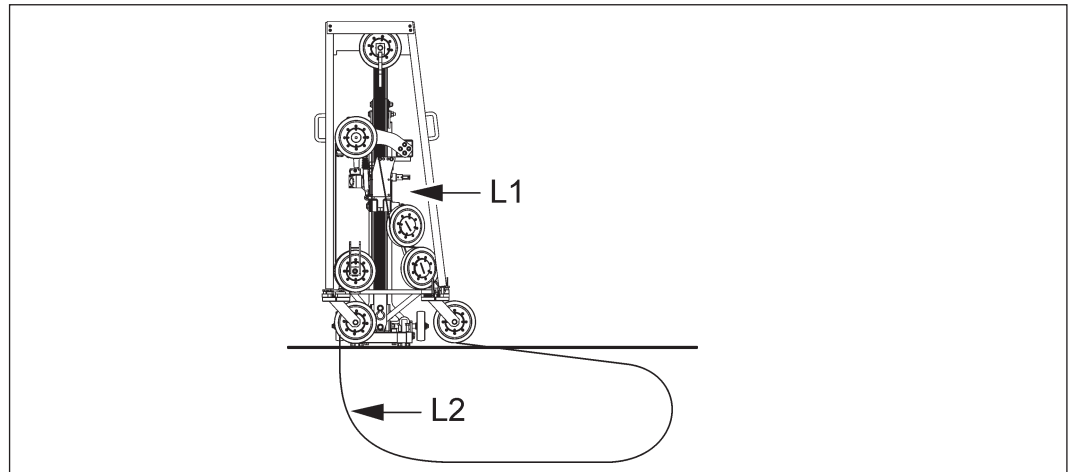
## 6.7 Diamond wire lengths



The total diamond wire storage volume of the WCE14★★★ and WCH14★★★ wire saw is 14.2 m.

Wire storage can be expanded by integrating the storage roll unit.

### Diamond wire basic storage



L1 Diamond wire basic storage in the machine	3.2 m
L2 Diamond wire length outside the machine	11 m
Total storage length	14.2 m

## EC declaration of conformity

Description	Wire saw
Type designation	WCE14★★★
Year of construction	2011

We declare under our sole responsibility that this product complies with the following directives and standards:

### Applied directives

2006/42/EG	17.05.2006
2004/108/EG	15.12.2004
2002/96/EG	27.01.2003
1999/5/EG	09.03.1999

### Applied standards

EN 15027/A1:2009  
EN ISO 12100:2010  
EN 60204-1/A1:2009  
EN 61000-3-11:2000  
EN 61000-3-12:2005

### TYROLIT Hydrostress AG

Witzbergstrasse 18  
CH-8330 Pfäffikon  
Switzerland

Pfäffikon, 01.09.2011



Pascal Schmid  
Leiter Entwicklung



## EC declaration of conformity

Description	Wire saw
Type designation	WCH14★★★
Year of construction	2011

We declare under our sole responsibility that this product complies with the following directives and standards:

### Applied directives

2006/42/EG	17.05.2006
------------	------------

### Applied standards

EN 15027/A1:2009  
EN ISO 12100:2010

**TYROLIT Hydrostress AG**  
Witzbergstrasse 18  
CH-8330 Pfäffikon  
Switzerland

Pfäffikon, 01.09.2011



Pascal Schmid  
Leiter Entwicklung

