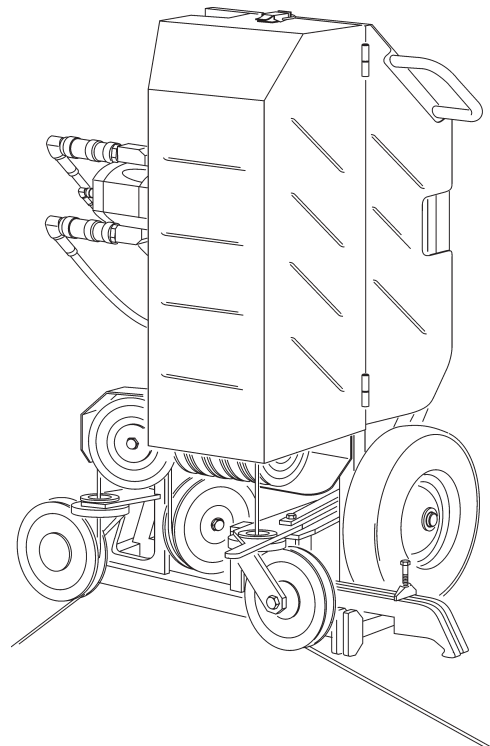


# ***Operating Instructions***

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## ***SB wire saw***

*Index 002*



## **Congratulations!**

With a Hydrostress unit from TYROLIT, you have chosen a tried and tested piece of equipment which has been designed and built to leading technical standards. Only genuine TYROLIT Hydrostress replacement parts can guarantee quality and interchangeability. We are unable to fulfil our warranty obligations if maintenance work is neglected or carried out unprofessionally. Any repair work must be carried out by trained personnel only.

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

We hope that you enjoy untroubled and fault-free working with your TYROLIT unit.

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**

#### **Cuts 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!**

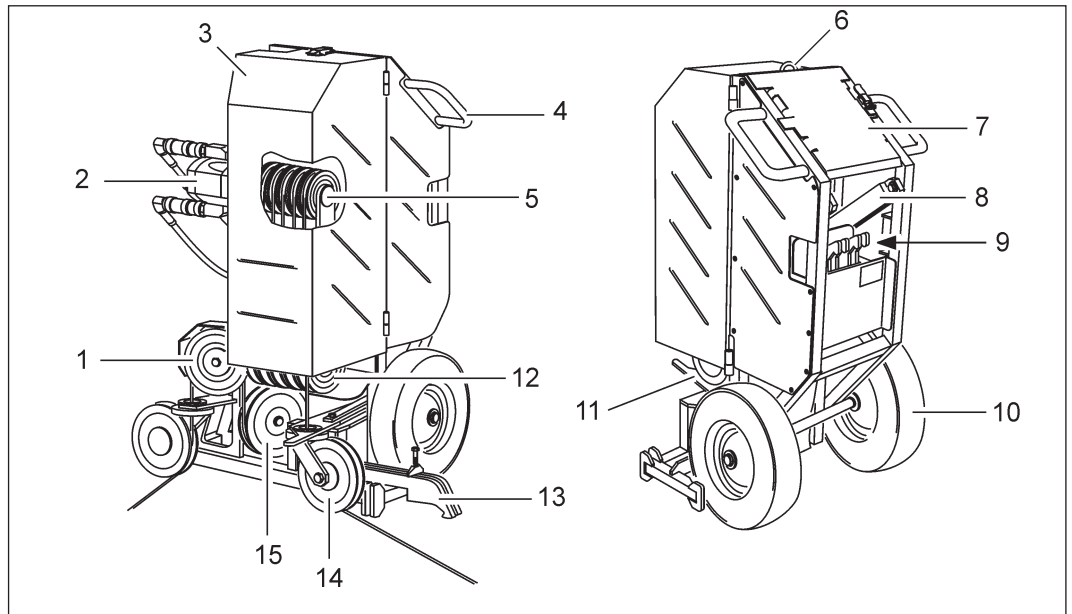
- ▶ Never connect or disconnect hoses while the wire saw is running.

## 2 Description

### 2.1 Wire saw system

The "Safety Manual / System Description for Wire Saws" describes how to work safely with wire sawing systems.

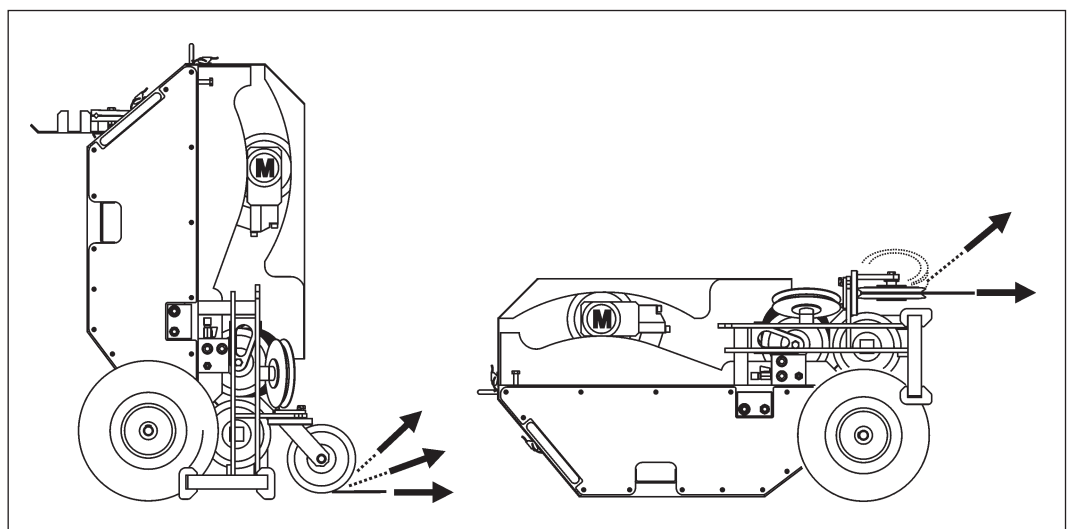
### 2.2 Components



- |                         |                       |
|-------------------------|-----------------------|
| 1 Diverter roll         | 9 Securing clamp      |
| 2 Drive motor           | 10 Wheel              |
| 3 Safety cover          | 11 Swivel roll holder |
| 4 Chassis (handle)      | 12 Diverter rolls     |
| 5 Drive roll unit       | 13 Securing clamp     |
| 6 Crane hook            | 14 Swivel roll        |
| 7 Working table, hinged | 15 Diverter roll      |
| 8 Swivel arm            |                       |



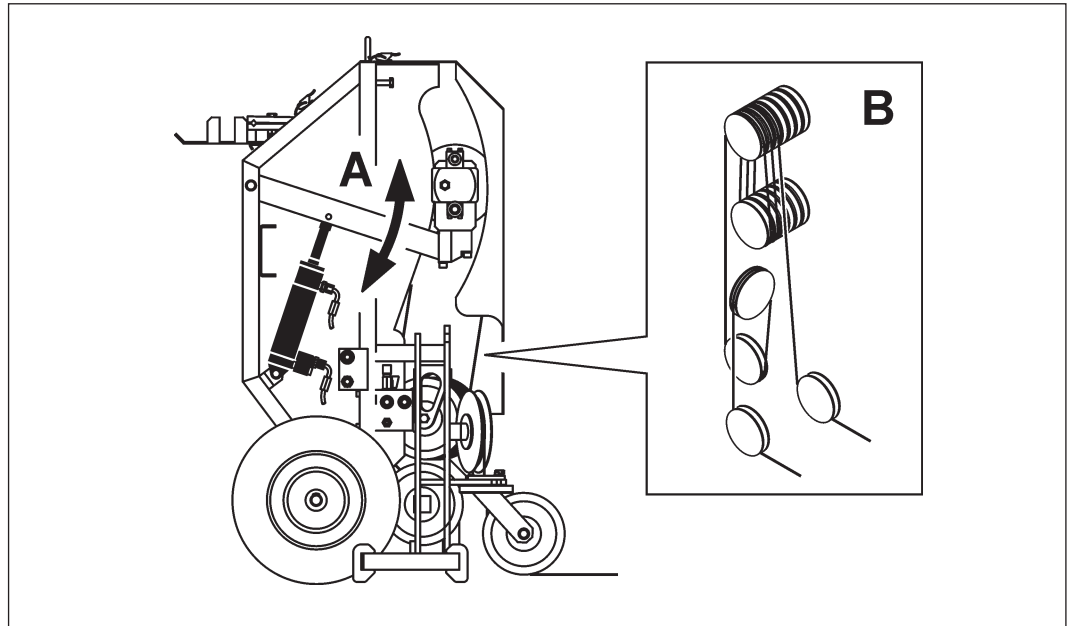
The SB wire saw can be operated vertically or horizontally.



### 3 Design and function

#### 3.1 Method of operation

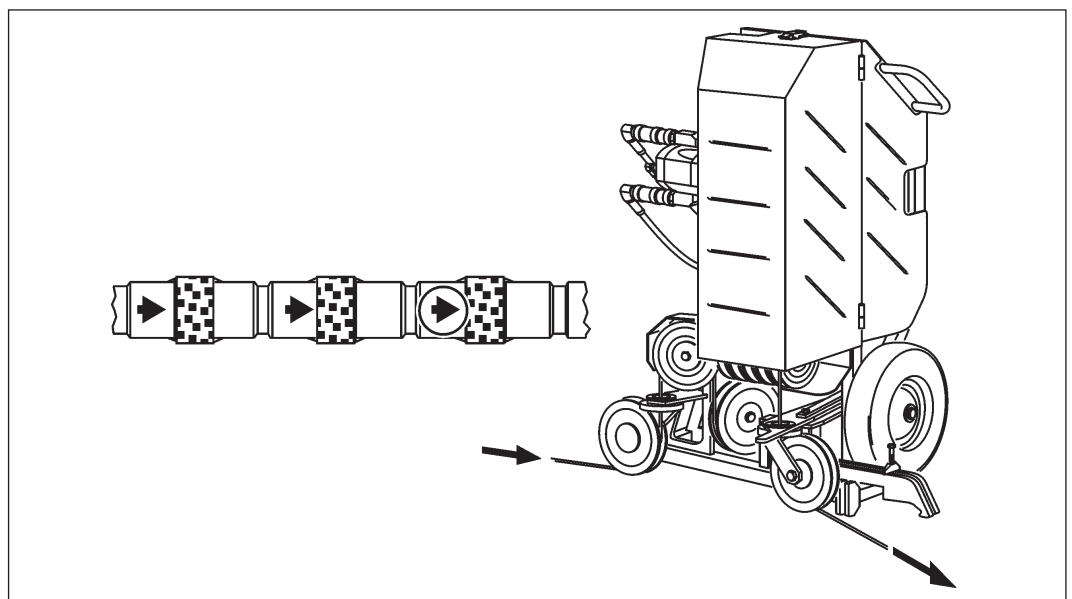
The diamond wire is driven by a motor via the drive roll unit. The diamond wire is pulled into the SB wire saw via the swivel arm (A). The diamond wire can be stored in the SB wire saw on several rolls (B).



- A Drive roll unit  
Swivelling movement via hydraulic cylinder
- B Diamond wire storage

#### 3.2 Diamond wire direction of travel

The direction of travel of the SB wire saw is predetermined by the freewheeling of the drive rollers and cannot be changed.

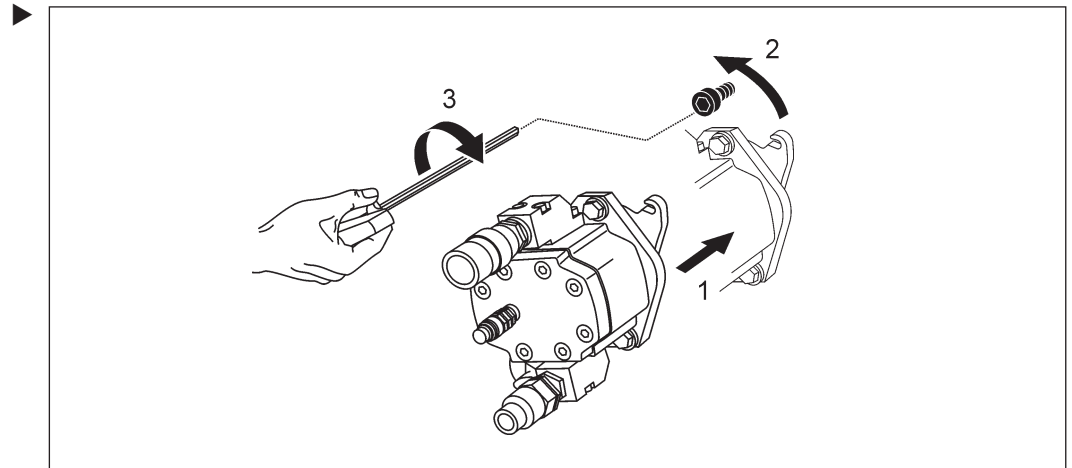


### 3.3 Drive motor



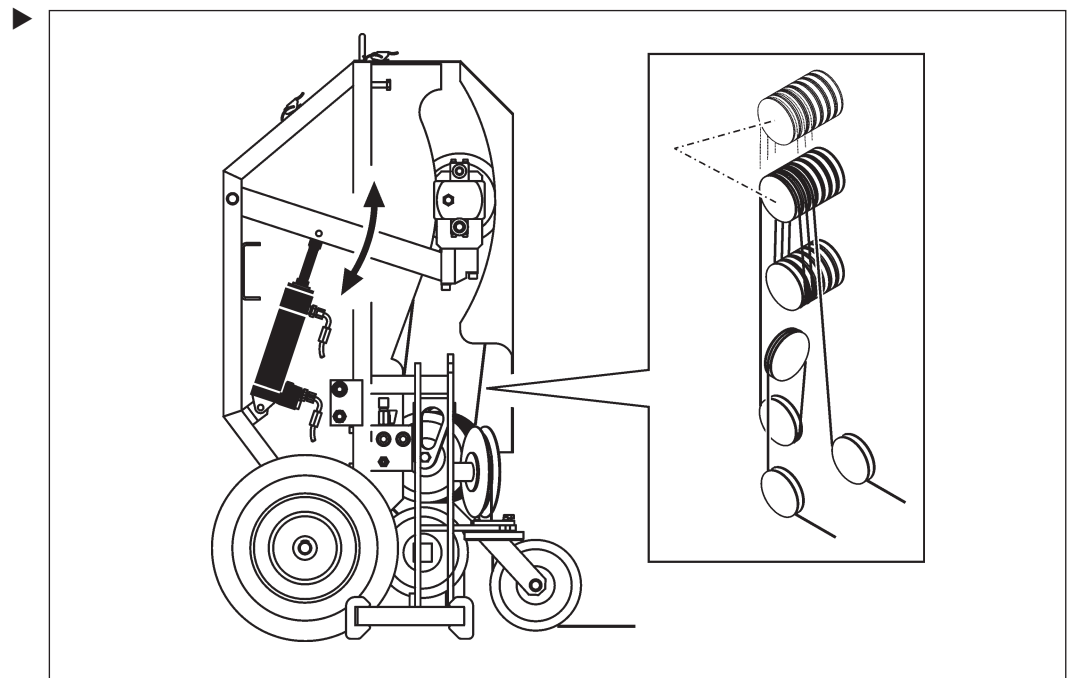
The drive rolls of the SB wire saw are driven by a hydraulic motor. The drive motor must be installed before initial commissioning.

#### Motor attachment



### 3.4 Hydraulic cylinder feed motion

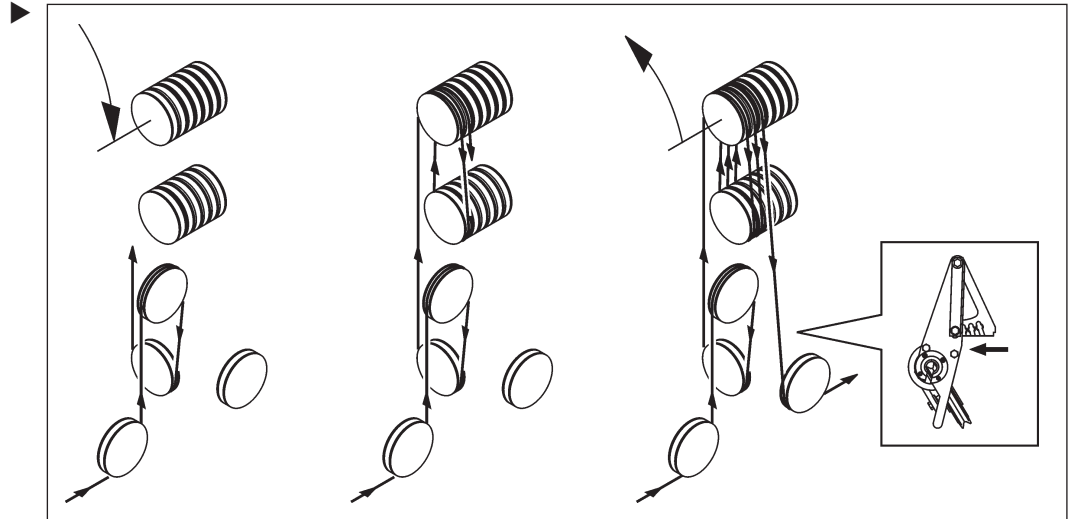
A hydraulic cylinder is used for the feed motion. The feed motion takes place when the diamond wire is pulled into the machine. This is done by swivelling the rocker with the drive rollers upwards.



### 3.5 Inserting the diamond wire



The TYROLIT diamond wire can be inserted into the wire saw open or closed. Attention must be paid to the direction of travel of the diamond wire when the diamond wire is inserted.

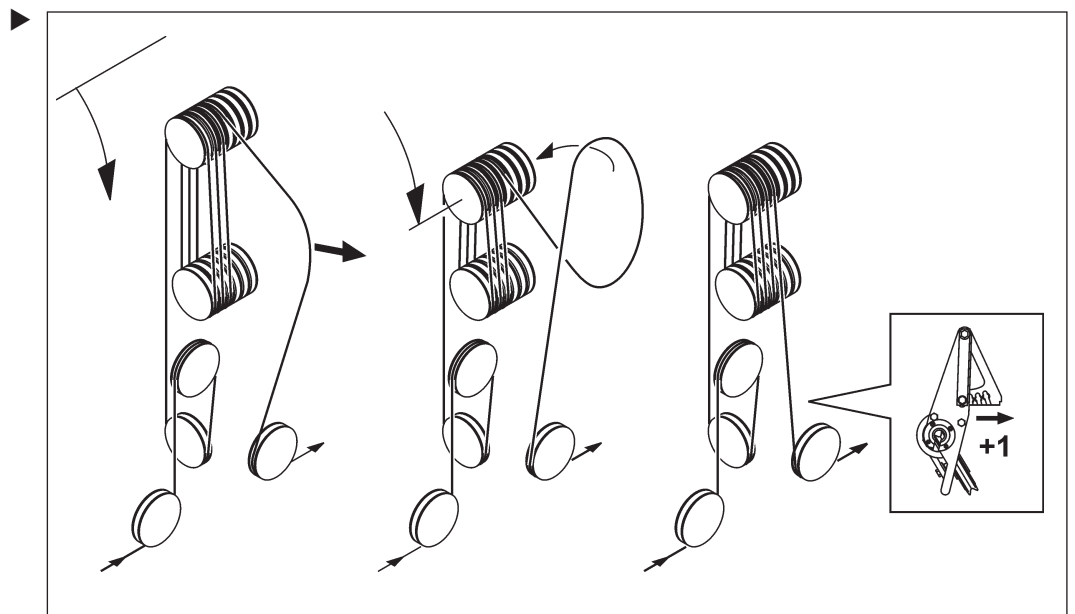


### 3.6 Using the diamond wire storage



The SB wire saw has several storage rolls. In order to expand the storage, the diamond wire must be pulled out of the wire saw and crossed. Storage capacity information can be found in the technical data.

#### Additional storage



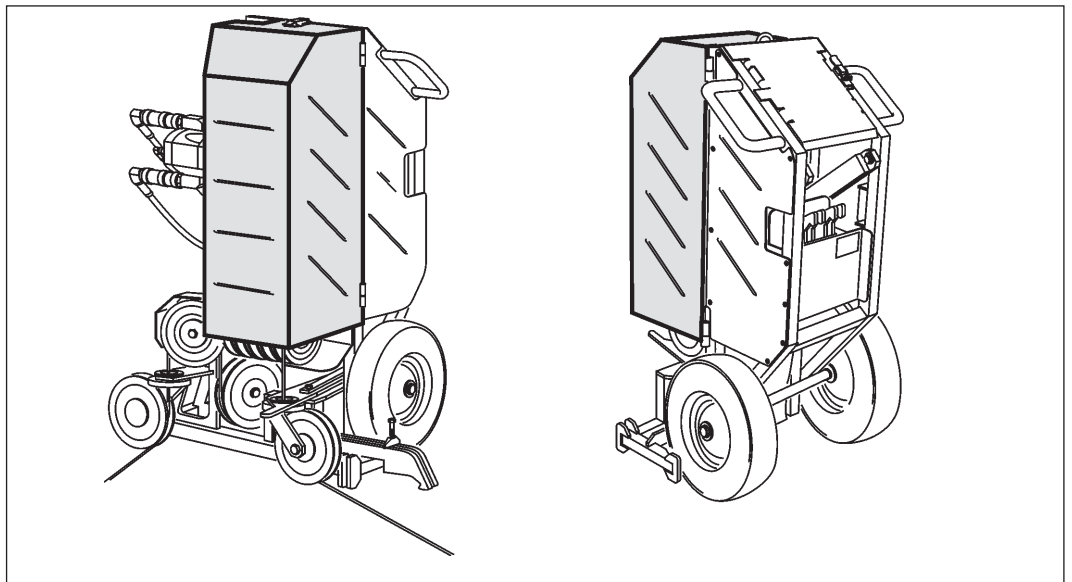
### 3.7 Diamond wire guard



#### DANGER

Death or serious injury as a result of the wire acting like a whip or diamond wire elements flying off.

- ▶ Always work with the diamond wire guard closed.
- ▶ Make sure that you always stick to the defined safety distances and working areas. Avoid free-running lengths of diamond wire.

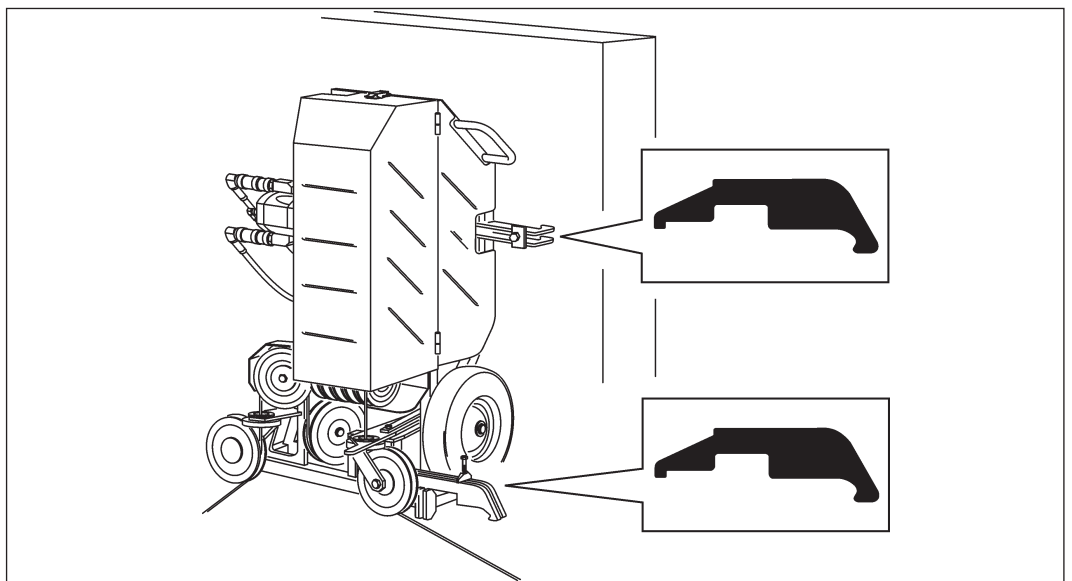


### 3.8 Anchoring the SB wire saw



Before the SB wire saw is started up, the SB wire saw must be firmly anchored to the sub-surface.

The securing clamps included in the scope of delivery must be used to anchor the SB wire saw.







**DANGER**

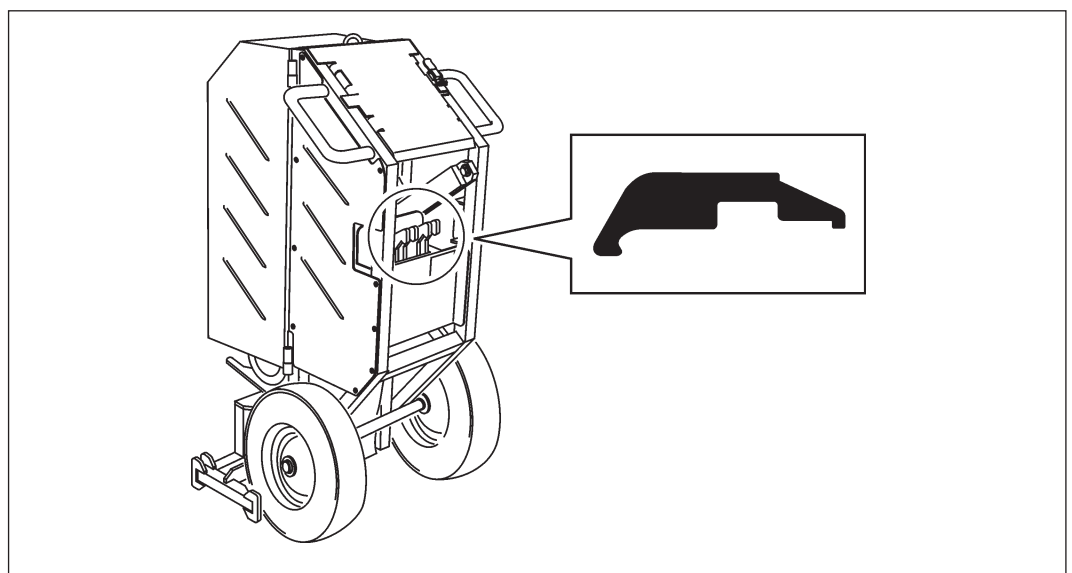
To secure the SB wire saw, anchoring elements appropriate for the sub-surface must be used. When positioning the dowels the installation instructions of the dowel manufacturer must be followed.

**Example: TYROLIT instruction leaflet for M12x50 dowels**



**Securing clamps**

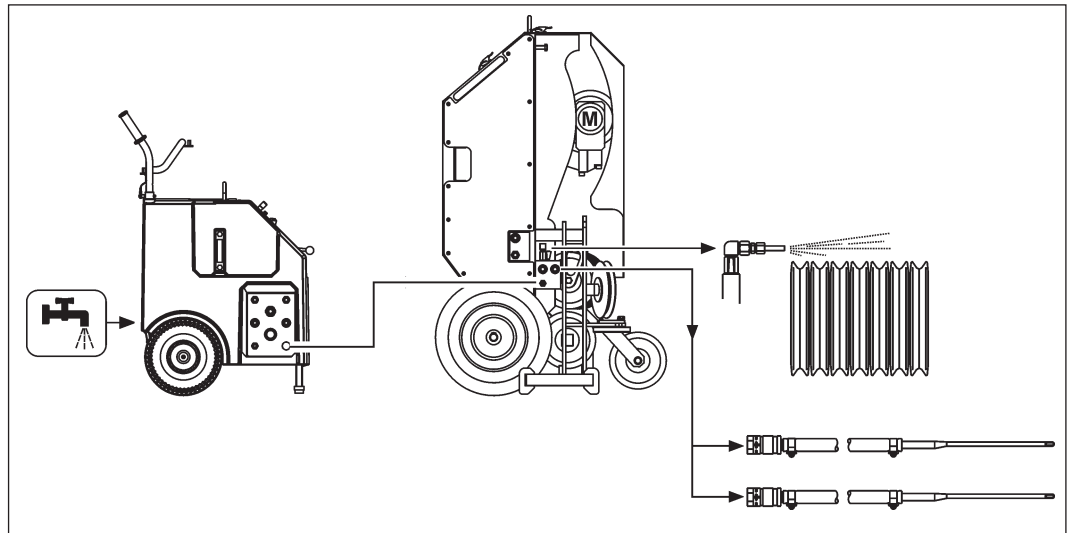
The securing clamps can be stowed away on the back of the SB wire saw for transportation purpose.



### 3.9 Water connection

The cooling water of the saw system flows from the drive unit directly to the water distribution on the SB wire saw. The water is led via the water distribution block to the diverter rolls and the water lances. The quantity of water can be metered at the drive unit and the water valve block.

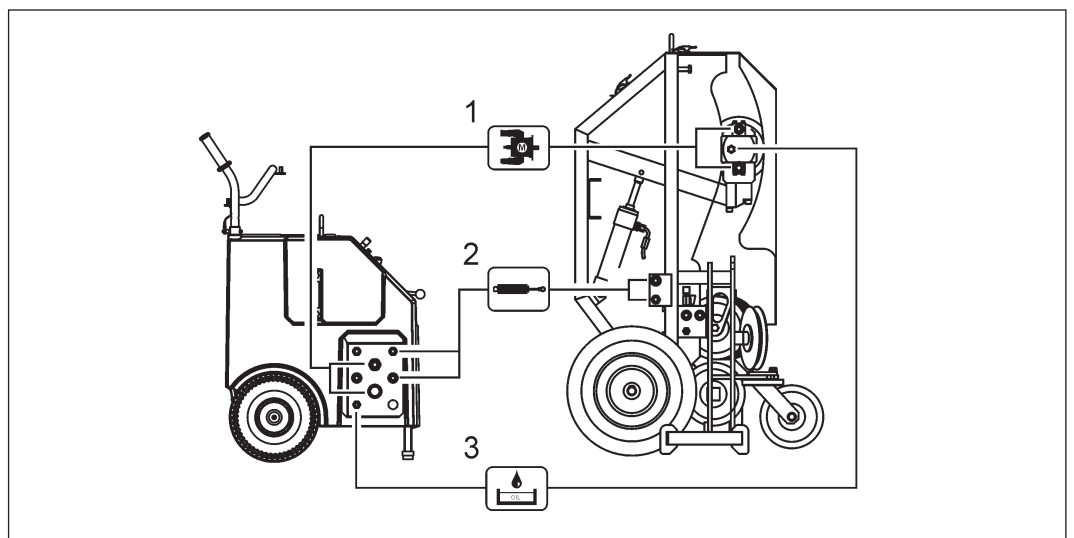
#### Water distribution



### 3.10 Hydraulic connections



The SB wire saw is combined with a TYROLIT drive unit to form the wire sawing system. Information about the correct way to connect and operate these units can be found in the operating instructions for the drive unit.

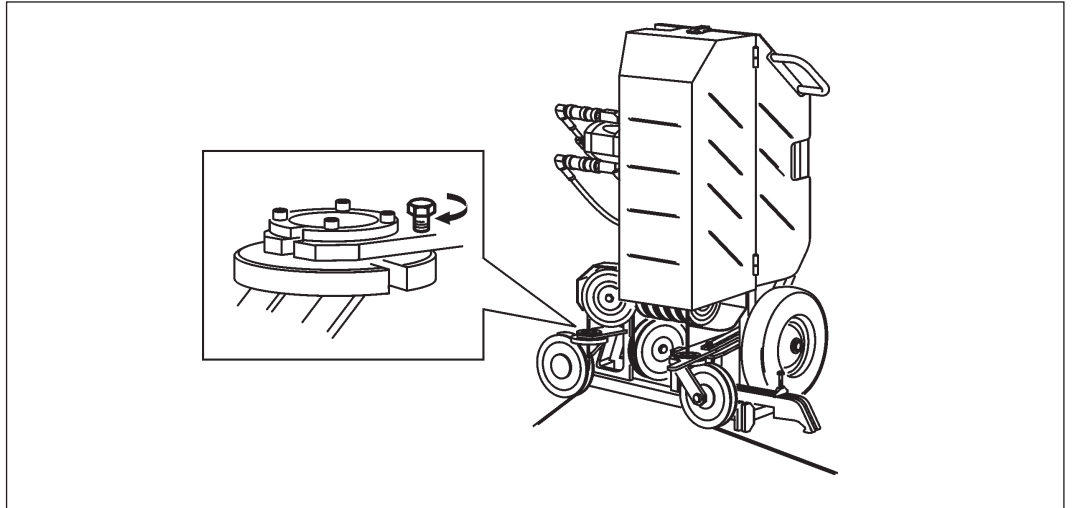


- 1 Diamond wire drive motor
- 2 Hydraulic cylinder feed motion
- 3 Diamond wire drive motor leakage oil connection

### 3.11 Swivel roll



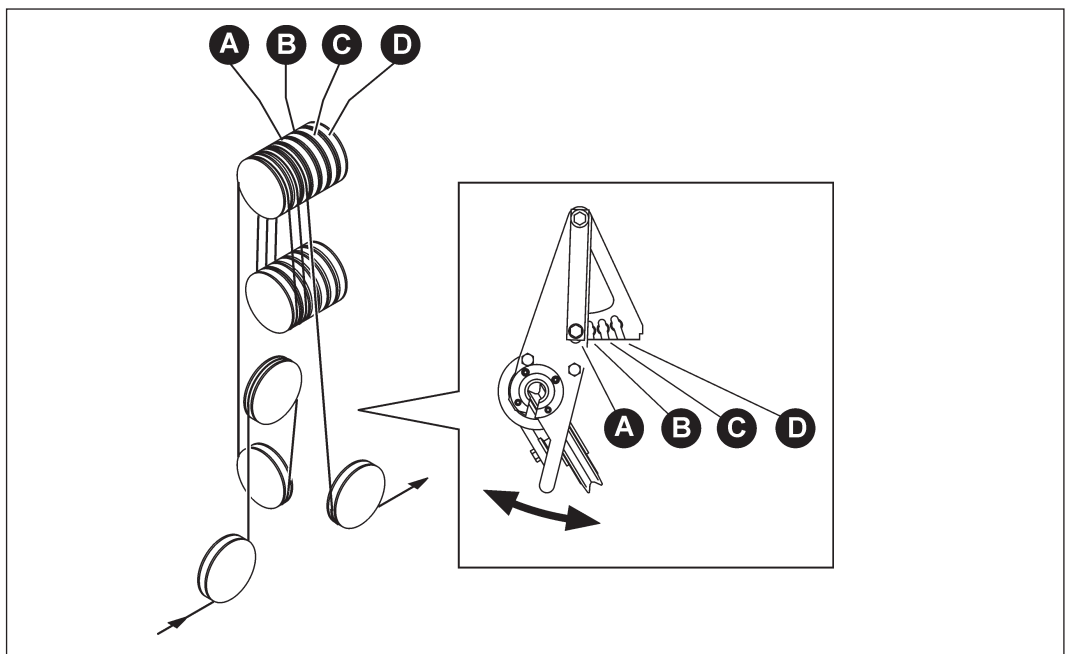
The swivel rolls make it possible to guide the cut of the diamond wire precisely. The swivel roll must be fixed using a clamping screw during the cutting work.



### 3.12 Swivel roll holder



When the amount of storage is expanded, the alignment of the diamond wire between the storage roll and the swivel roll is provided by the adjustable swivel roll holder.



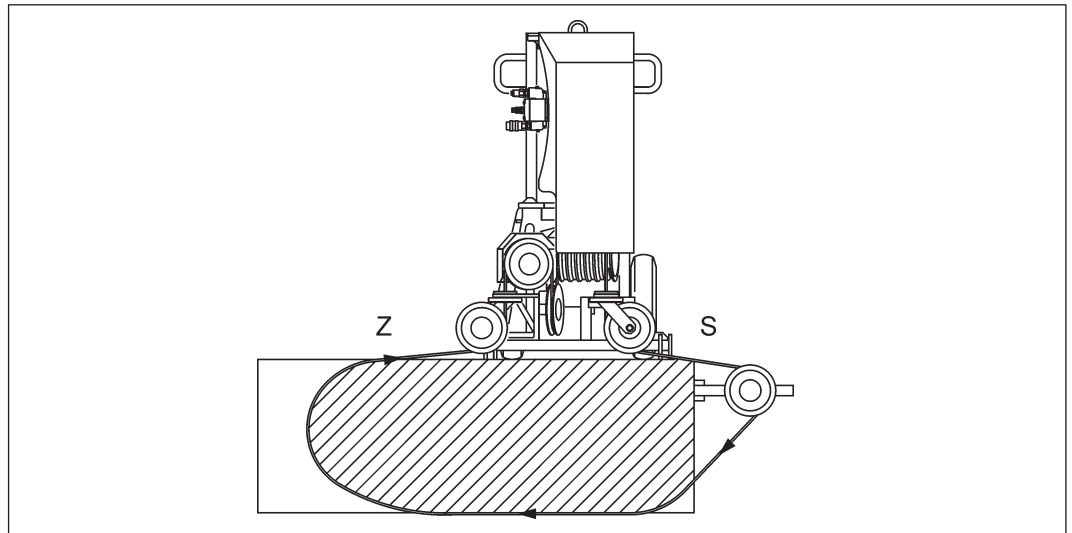
## 4 Application

### 4.1 Correct cutting direction



#### Taut side and slack side

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

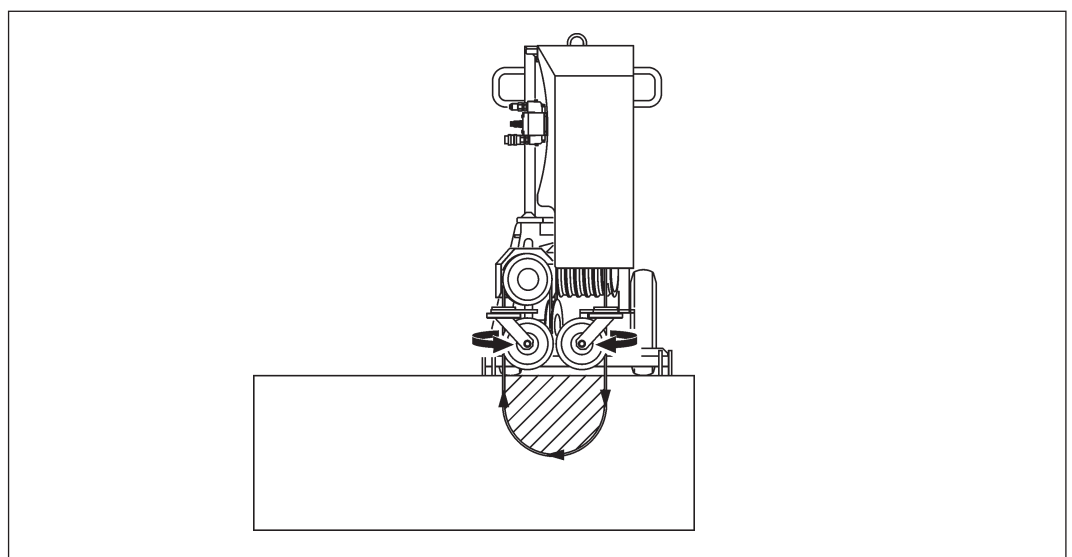


Z Taut side  
S Slack side

### 4.2 Finishing the cut



The swivel rolls must be swivelled inwards when the cut is being finished. Towards the end of a cut, cutting should take place with reduced feed force. This measure makes it possible for the swivel rolls to catch the diamond wire perfectly upon the exit of the diamond wire.

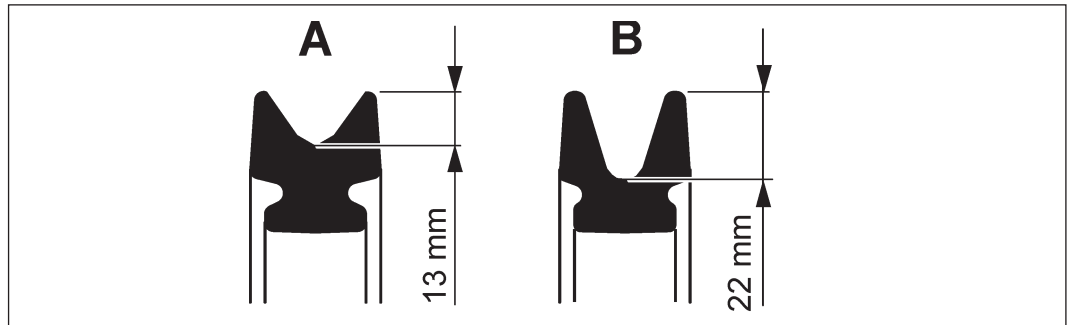


## 5 Servicing and maintenance

### 5.1 Maintenance table

Maintenance and servicing table		Before every commissioning	At end of work	Weekly	Yearly	After faults	After damage
SB wire saw	▶ Retighten loose screws and nuts	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
Hydraulic cylinder	▶ Check for cleanliness / damage	X	X			X	X
	▶ Lubrication			X		X	X
Drive motor	▶ Check for cleanliness / damage	X	X			X	X
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					

## 5.2 Checking bandages for wear

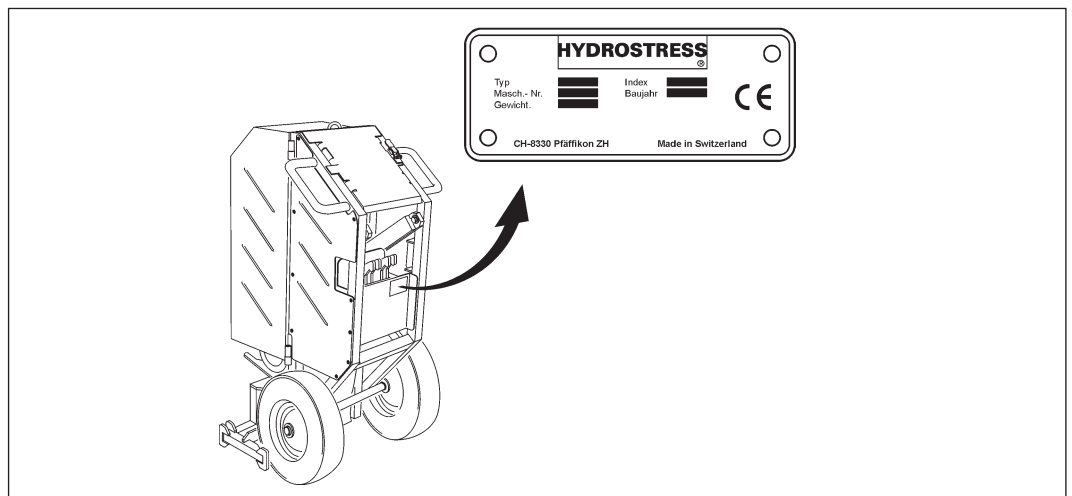


- A New bandage
- B Worn bandage

## 5.3 Troubleshooting

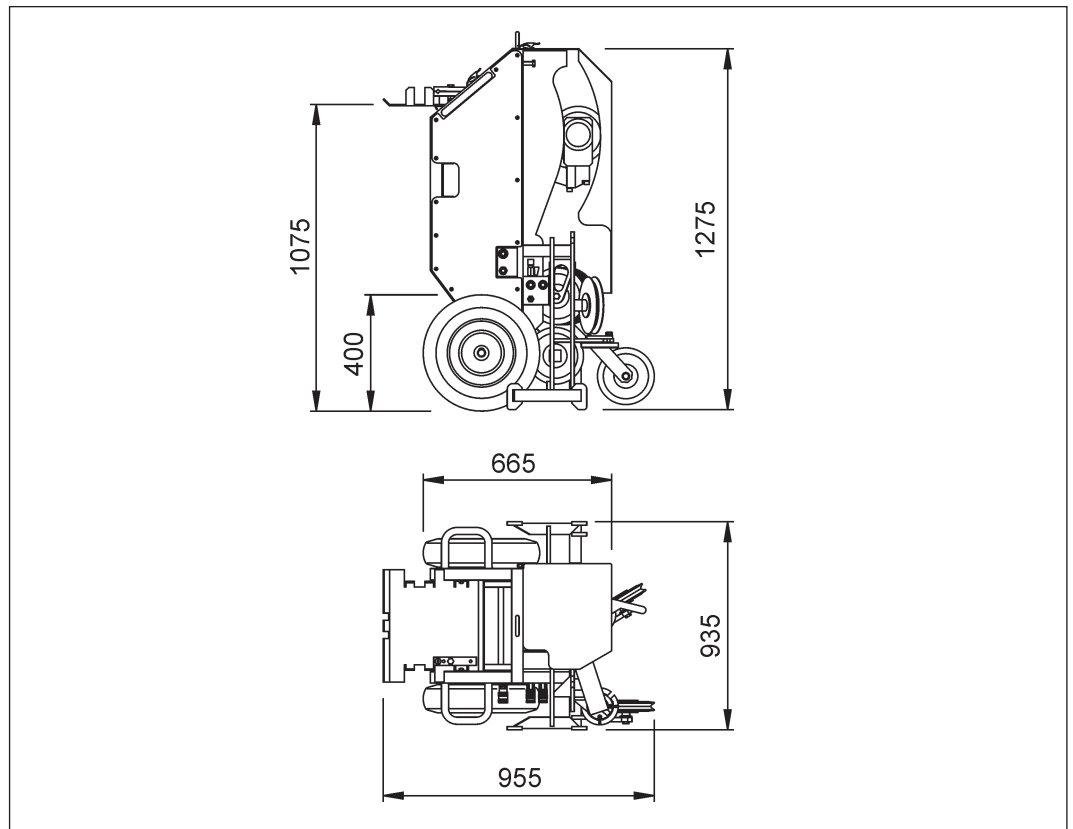
To guarantee a rapid and professional solution to the problem, it is important that you have prepared as follows before calling:

- 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



Dimensions in millimetres

### 6.2 Weight

The total weight of the SB wire saw including main motor is 175 kg

### 6.3 Noise exposure (noise level)

Hearing protection must be worn when working with the SB wire saw.




#### Noise level measurement

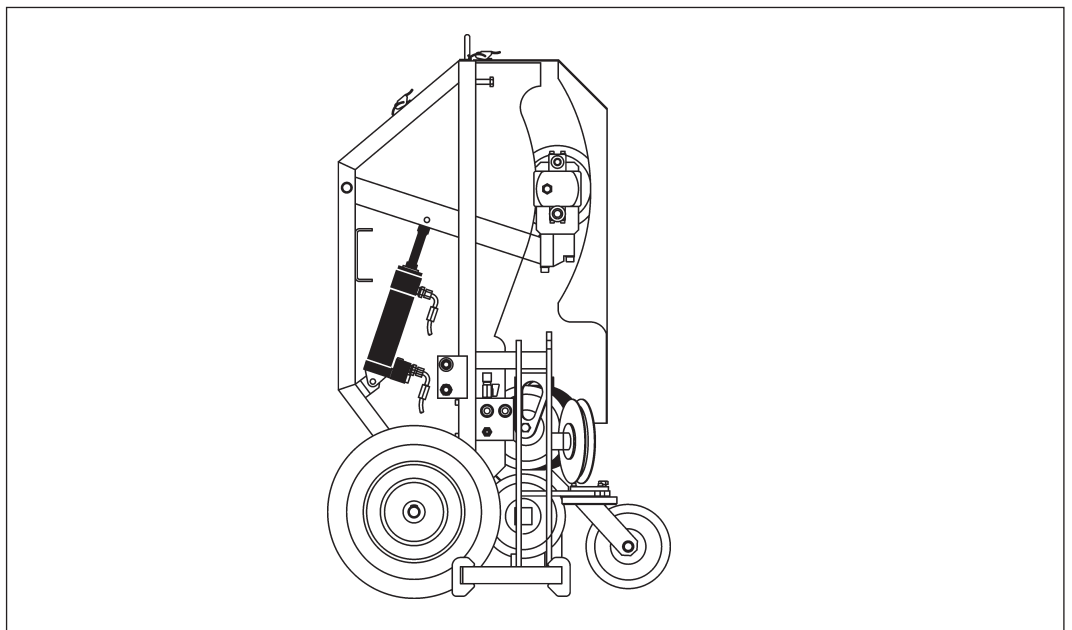



Parameter	Value
Noise level at the ear of the user ( $L_{eq}$ )	dB (A)
Noise level at workplace ( $L_{PA}$ )	85 dB (A)
Sound power according to ISO 5349-2	93 dB (A)

## 6.4 Water connection

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


## 6.5 Hydraulic cylinder



Hydraulic cylinder	
	
Type	Hydraulic cylinder 2T MP1
Article number	10981872
Dimensions	Dm 50 / 25 x 150
Connections	G 3/8 "
Operating pressure	120 bar
Flow rates	10 l/min.




## 6.6 SB hydraulic drive motor

Hydraulic motor	
	
Speed	900 to 3500 rpm.
Size	3
Absorption volume	20 ccm <sup>3</sup> to 50 ccm <sup>3</sup>
Operating pressure	max. 260 bar
Type	External geared motor

## 6.7 Diamond wire speeds

The optimum wire cutting speed for standard applications is 20-25m/s.

Diamond wire speeds										
	20 cm <sup>3</sup>		25 cm <sup>3</sup>		31 cm <sup>3</sup>		40 cm <sup>3</sup>		50 cm <sup>3</sup>	
	33 l/min	1650 rpm	<b>16 m/s</b>	1320 rpm	<b>12 m/s</b>	1065 rpm	<b>10 m/s</b>	775 rpm	<b>7 m/s</b>	660 rpm
45 l/min	2250 rpm	<b>21 m/s</b>	1800 rpm	<b>17 m/s</b>	1452 rpm	<b>14 m/s</b>	1125 rpm	<b>11 m/s</b>	900 rpm	<b>8 m/s</b>
50 l/min	2500 rpm	<b>24 m/s</b>	2000 rpm	<b>19 m/s</b>	1613 rpm	<b>15 m/s</b>	1250 rpm	<b>12 m/s</b>	1000 rpm	<b>9 m/s</b>
60 l/min	3000 rpm	<b>28 m/s</b>	2400 rpm	<b>23 m/s</b>	1935 rpm	<b>18 m/s</b>	1500 rpm	<b>14 m/s</b>	1200 rpm	<b>11 m/s</b>
65 l/min	3250 rpm	<b>31 m/s</b>	2600 rpm	<b>24 m/s</b>	2097 rpm	<b>20 m/s</b>	1625 rpm	<b>15 m/s</b>	1300 rpm	<b>12 m/s</b>
70 l/min	3500 rpm	<b>33 m/s</b>	2800 rpm	<b>26 m/s</b>	2258 rpm	<b>21 m/s</b>	1750 rpm	<b>16 m/s</b>	1400 rpm	<b>13 m/s</b>
75 l/min	3750 rpm		3000 rpm	<b>28 m/s</b>	2419 rpm	<b>23 m/s</b>	1875 rpm	<b>18 m/s</b>	1500 rpm	<b>14 m/s</b>
80 l/min	4000 rpm		3200 rpm	<b>30 m/s</b>	2581 rpm	<b>24 m/s</b>	2000 rpm	<b>19 m/s</b>	1600 rpm	<b>15 m/s</b>
90 l/min	4500 rpm		3600 rpm		2903 rpm	<b>27 m/s</b>	2250 rpm	<b>21 m/s</b>	1800 rpm	<b>17 m/s</b>

Operation possible

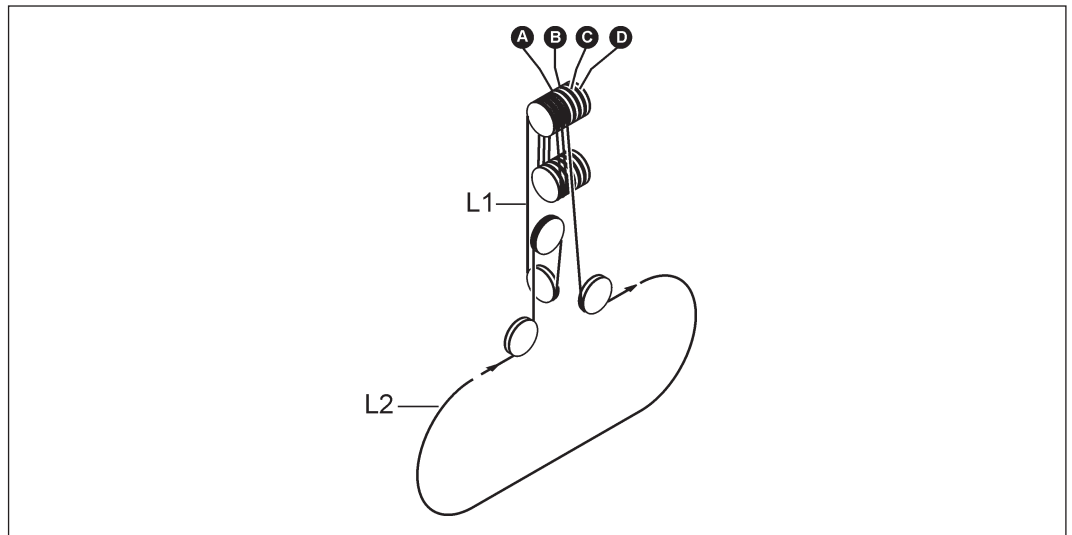
Operation not possible

## 6.8 Diamond wire lengths



The total diamond wire storage capacity of the SB wire saw is 10 m.

The feed motion takes place when the wire is pulled into the machine. This is done by swivelling the rocker with the drive rollers upwards. The wire lengths that are pulled into the machine are shown in the "Diamond wire lengths" table.



Diamond wire length				
	Storage	Rocker down	+ L2 (rocker up)	= Total length
L1	without storage	5,50 m	2,00 m	(L1+L2) = 7,50 m
L1	+ storage A	7,50 m	+2,00 m = 4,00 m	(L1+L2) = 9,50 m
L1	+ storage B	9,50 m	+2,00 m = 6,00 m	(L1+L2) = 11,50 m
L1	+ storage C	11,50 m	+2,00 m = 8,00 m	(L1+L2) = 13,50 m
L1	+ storage D	13,50 m	+2,00 m = 10,00 m	(L1+L2) = 15,50 m

## EC declaration of conformity

Description	Wire saw
Type designation	SB
Year of construction	2004

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

### Directive applied

Machinery Directives 2006 / 42 / EC

### Standards applied

EN 12100-1	Safety of machines – basic concepts, general design principles
EN 12100-2	
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 for safety systems and their components - hydraulics

### TYROLIT Hydrostress AG

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Pfäffikon, 18.08.2015



Pascal Schmid

