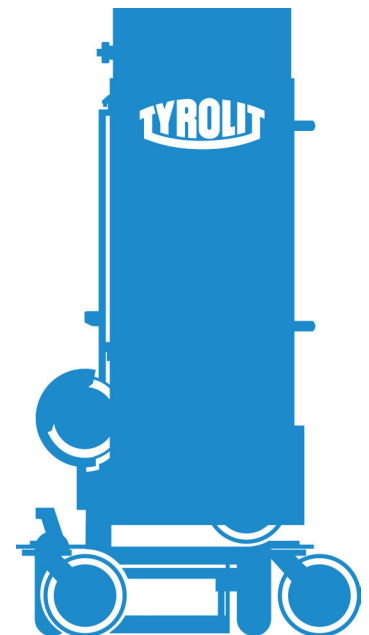




OPERATING INSTRUCTIONS

WCU17

Index 000



Congratulations!

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

1.1 Generally safety instructions



These instructions are just one part of the documentation supplied together with the wire saw. These instructions and the "Safety Manual / System Description for Wire Saws" 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

Risk of cutting from 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.



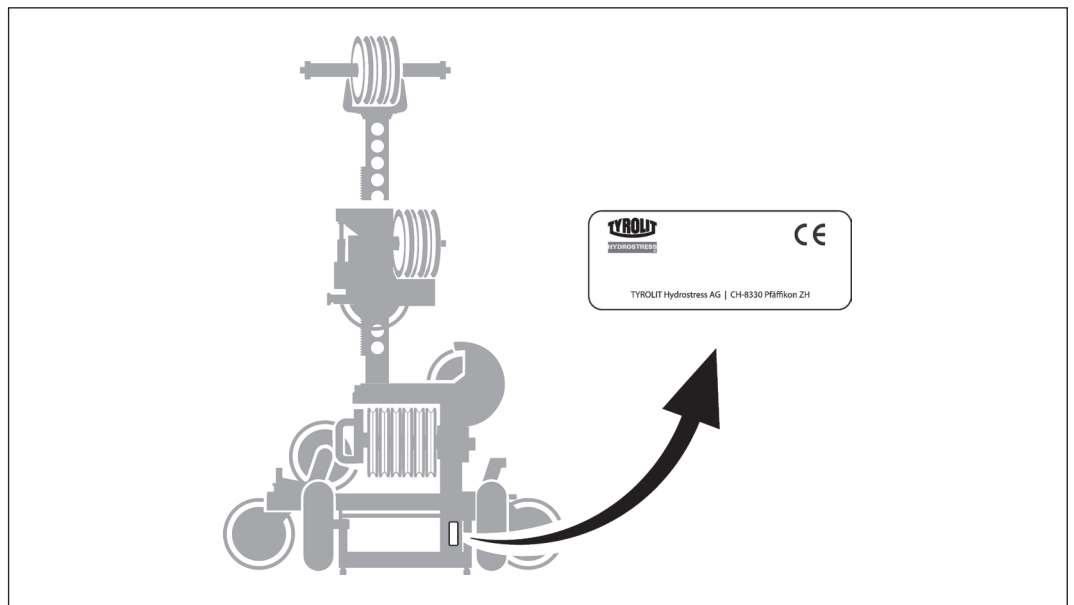
DANGER

Risk of 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.

1.2 Signs on the machine

Name plate



2 Description

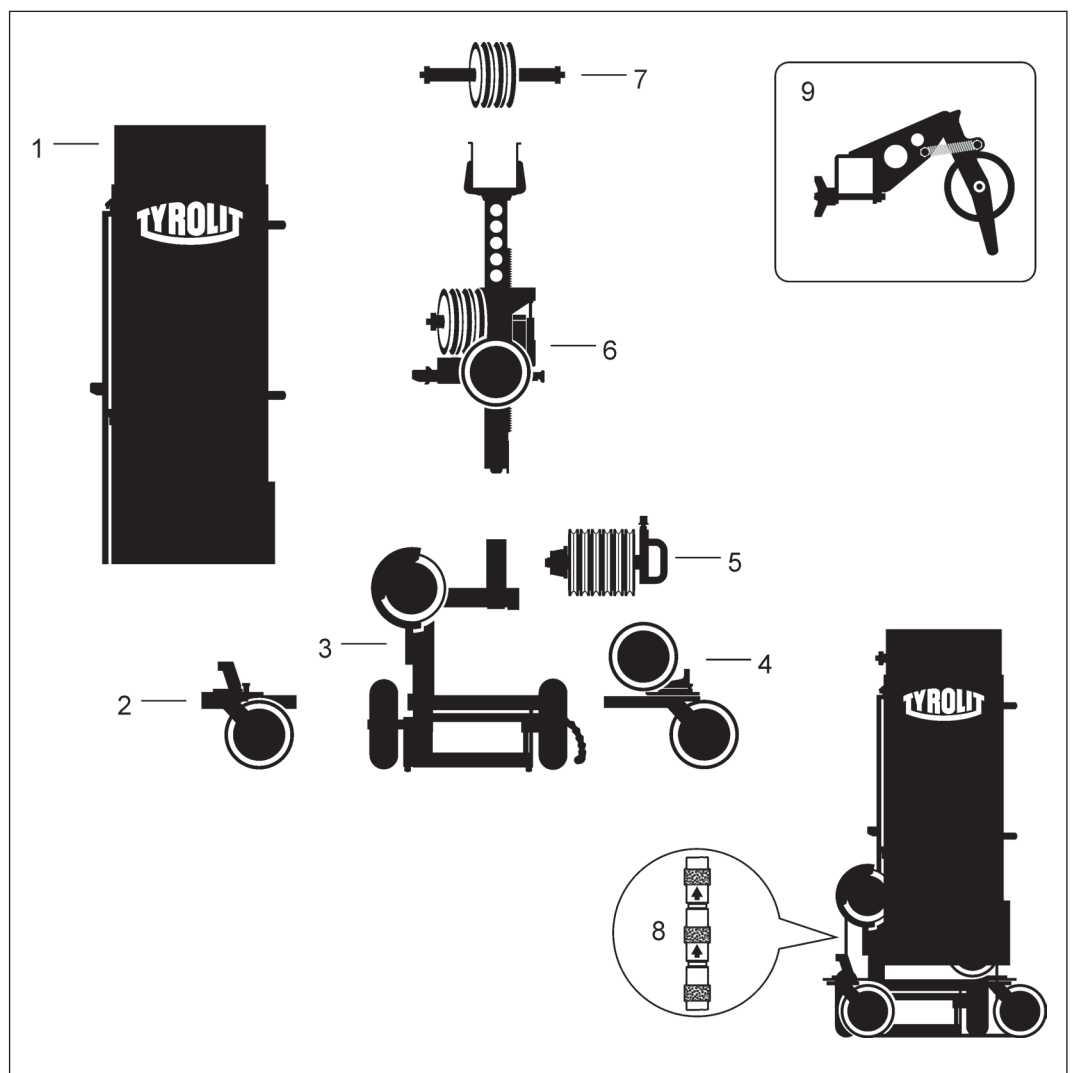
2.1 Wire sawing system

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

2.2 Intended use

Transportable wire saw for use on construction sites, for cutting (reinforced) concrete, stone and masonry. Designed for industrial applications only.
Not suitable for use in potentially explosive atmospheres.

2.3 Wire saw



- | | |
|--------------------------------------|--------------------------------------------------|
| 1 Diamond wire guard | 6 Column with diverter rolls and damping element |
| 2 Swivel roll insert, tensioned side | 7 Diverter rolls |
| 3 Base frame | 8 Diamond wire |
| 4 Swivel roll insert, slack side | 9 Press roll |
| 5 Drive roller unit | |

2.4 Versions



INFORMATION

The WCU17 wire saw can be operated via electrical and hydraulic power supplies. Mounting kits are available for the various drive units.

Mounting kits:

Hydraulic version	
Drive kit TYROLIT No.	MODEL
10997100	WCU17 hydraulic

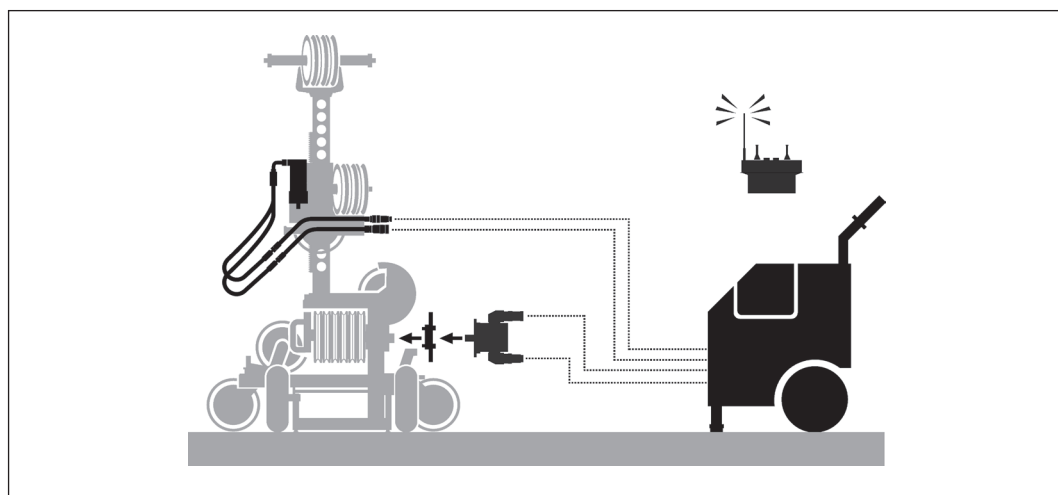
Electric version	
Drive kit TYROLIT No.	MODEL
11000004	WSE1621 with gearbox
10997000	WSE1217
11000005	WSE1217 with gearbox

2.4.1 Hydraulic version



Information regarding correct connection and operation can be found in the operating instructions supplied with the drive kit.

Drive kit TYROLIT No. 10997100

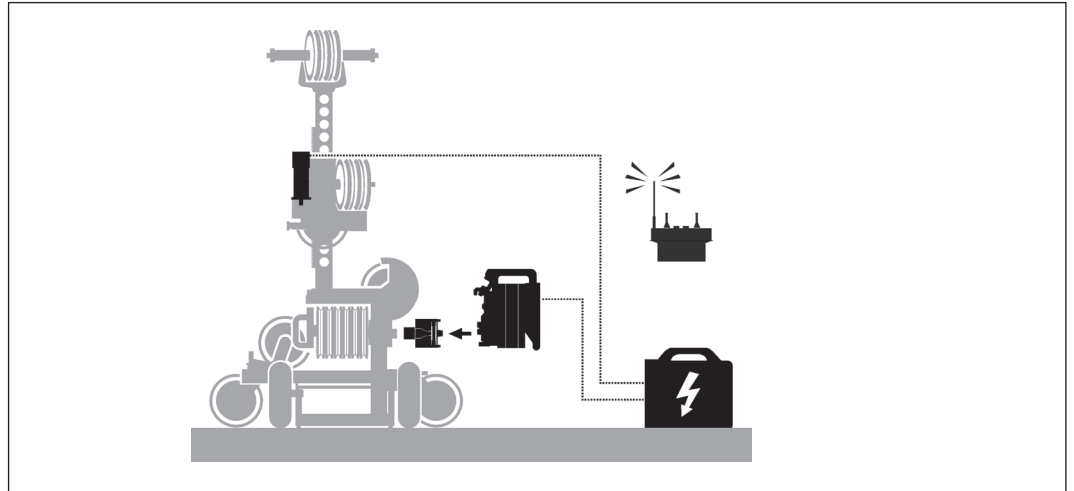


**2.4.2 Electric version
example drive unit WSE1621**



Information regarding correct connection and operation can be found in the operating instructions supplied with the drive kit.

Drive kit TYROLIT No. 11000004

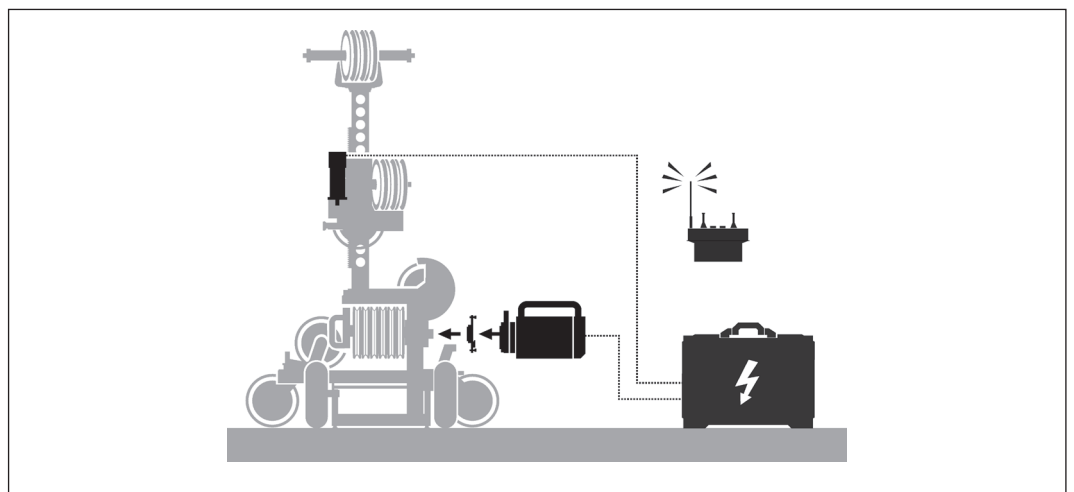


**2.4.3 Electric version
example drive unit WSE1217**



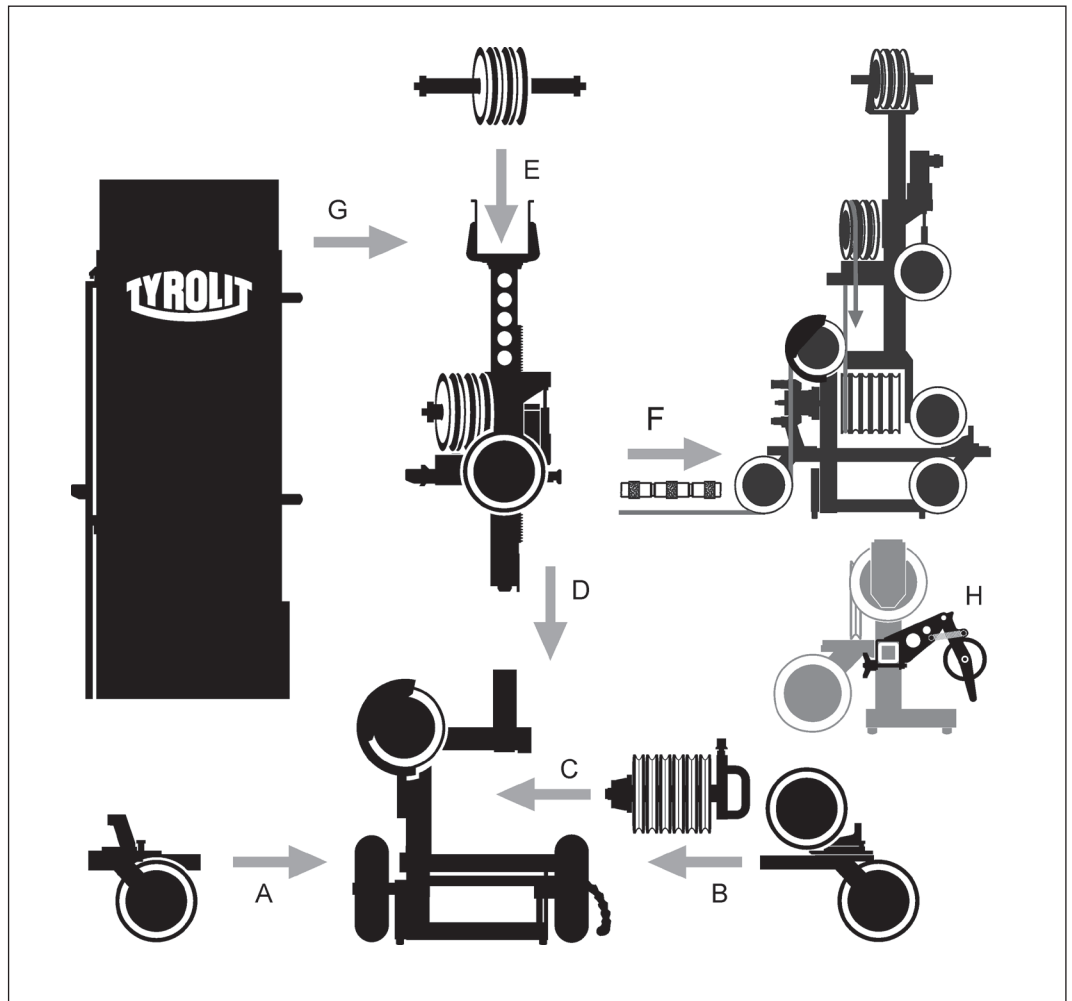
Information regarding correct connection and operation can be found in the operating instructions supplied with the drive kit.

Drive kit TYROLIT No. 10997000



3 Mounting / removal

3.1 Assembly overview



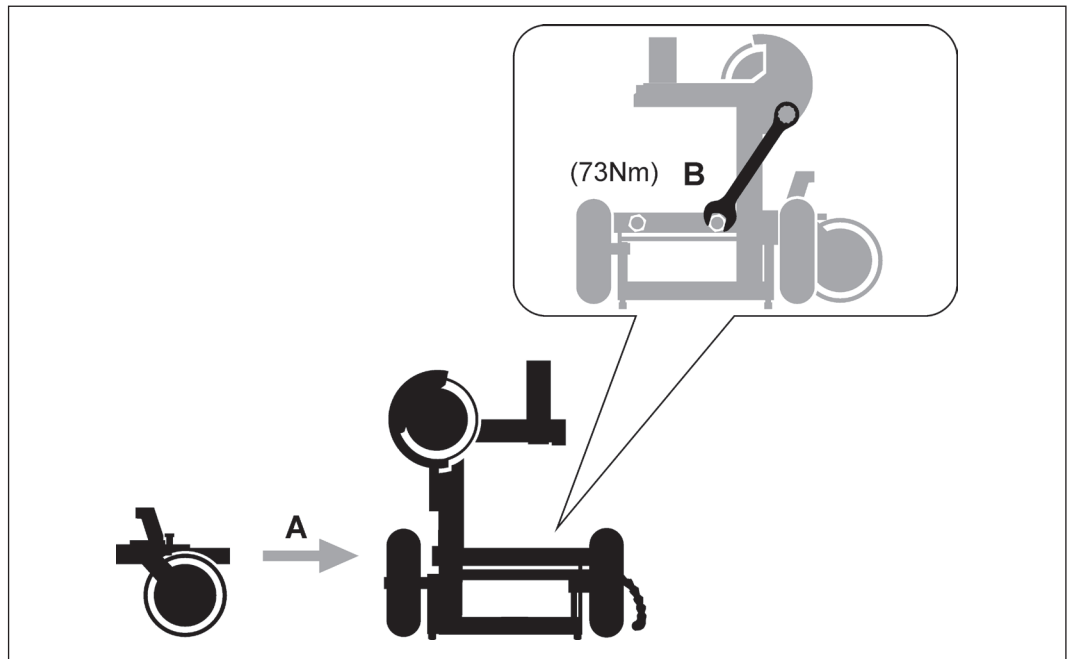
- A Mounting of the swivel roll insert, tensioned side
- B Mounting of the swivel roll insert, slack side
- C Mounting of the drive roll unit
- D Mounting of the column
- E Mounting of the diverter roll unit
- F Mounting of the diamond wire
- G Mounting of the diamond wire guard
- H Mounting of the press roll (only required when encountering startup issues)

3.2 Mounting the swivel roll insert, tensioned side

Fork wrench



Size 19
TYROLIT No. 973784

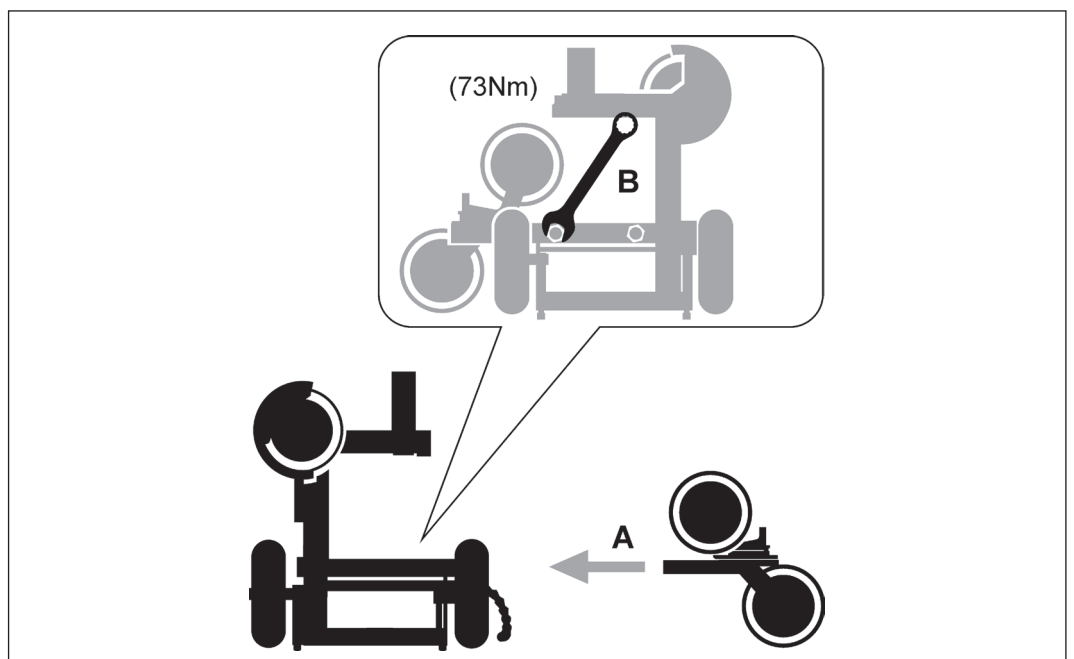


3.3 Mounting the swivel roll insert, slack side




Fork wrench

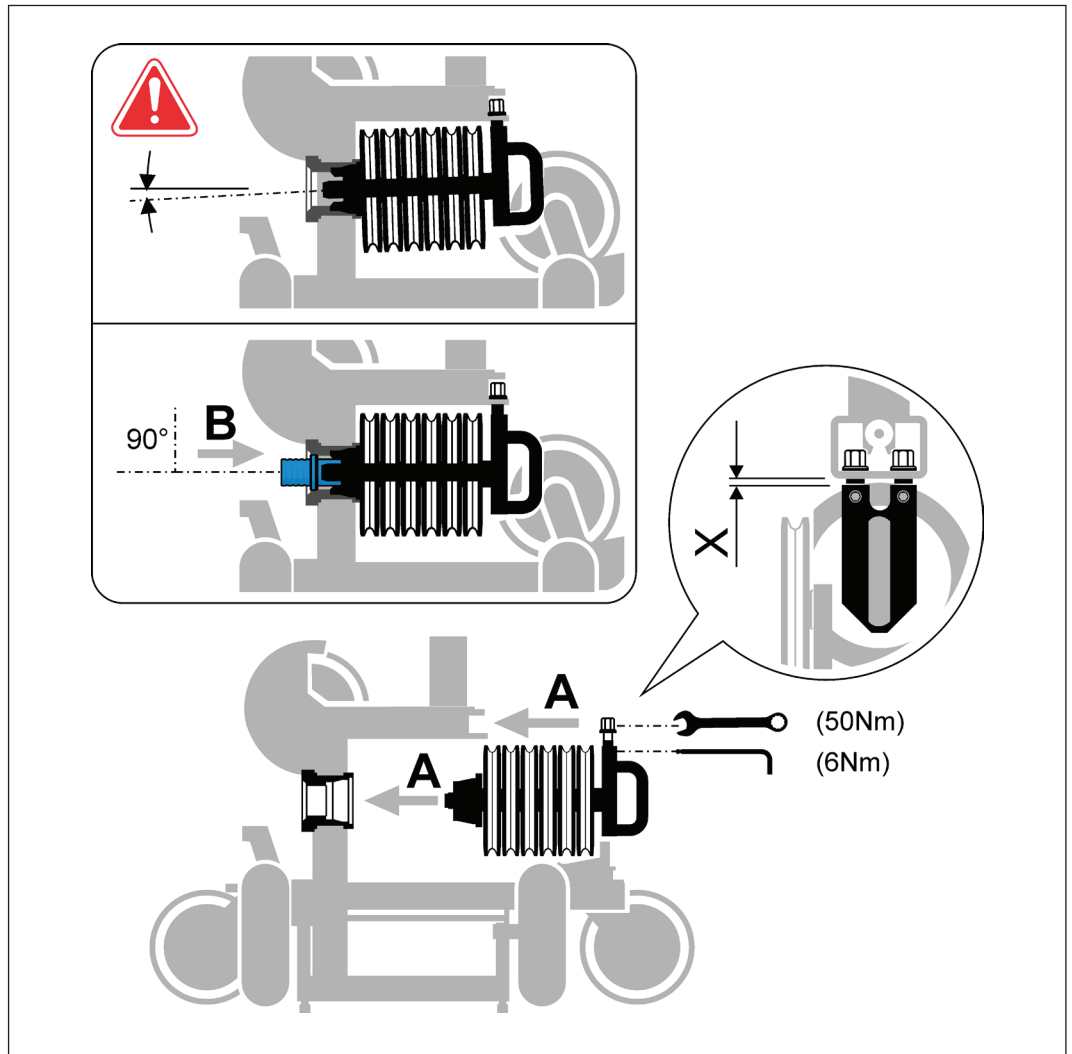


Size 19
TYROLIT No. 973784



3.4 Mounting the drive roll unit

Fork wrench		Size 19 TYROLIT No. 973784
Allen key		Size 3 TYROLIT No. 973789
Centering tool		Accessories TYROLIT No. 10999627



- ▶ Take dimension (x) from the existing drive roll unit
- ▶ Mount the drive roll unit (A)
- ▶ Adjust dimension (x) and tighten the Allen screws
- ▶ Tighten the drive roll unit with the fork wrench



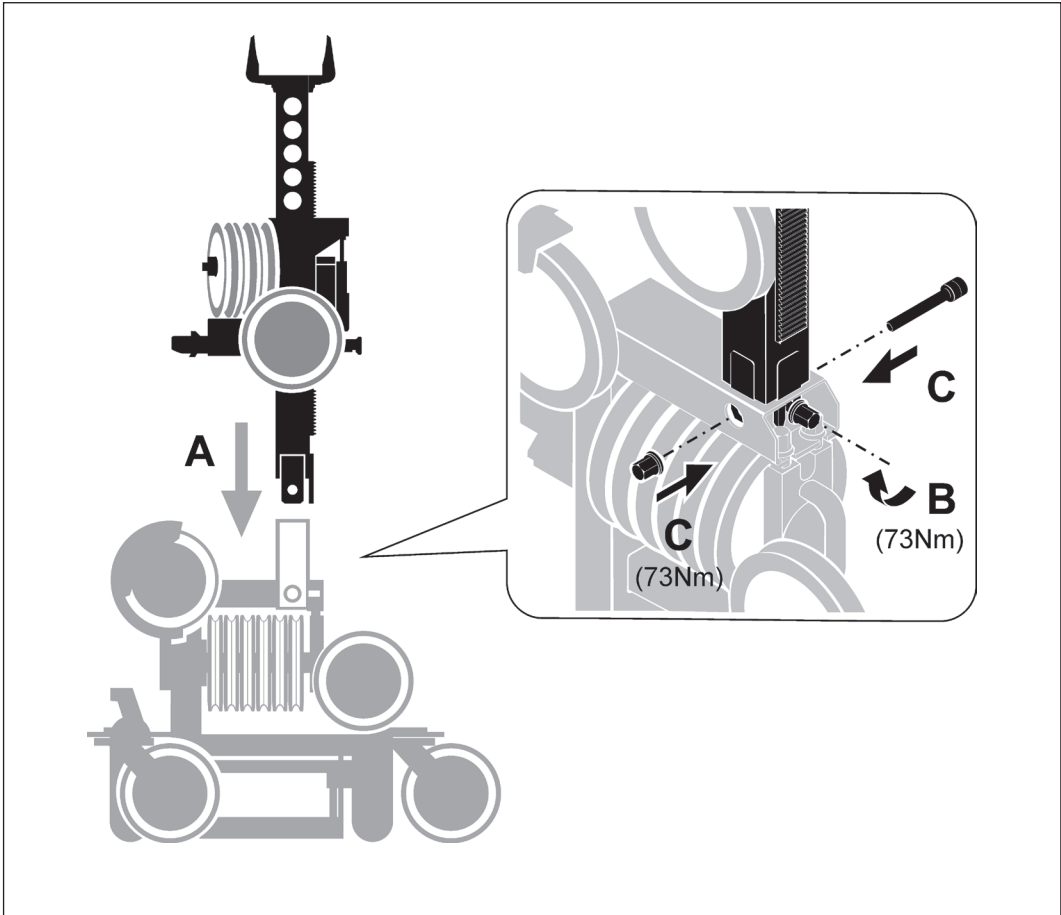
Use the centering tool (B) to check the drive roll unit has been mounted correctly. Accessories; TYROLIT No. 10999627.

3.5 Mounting the column

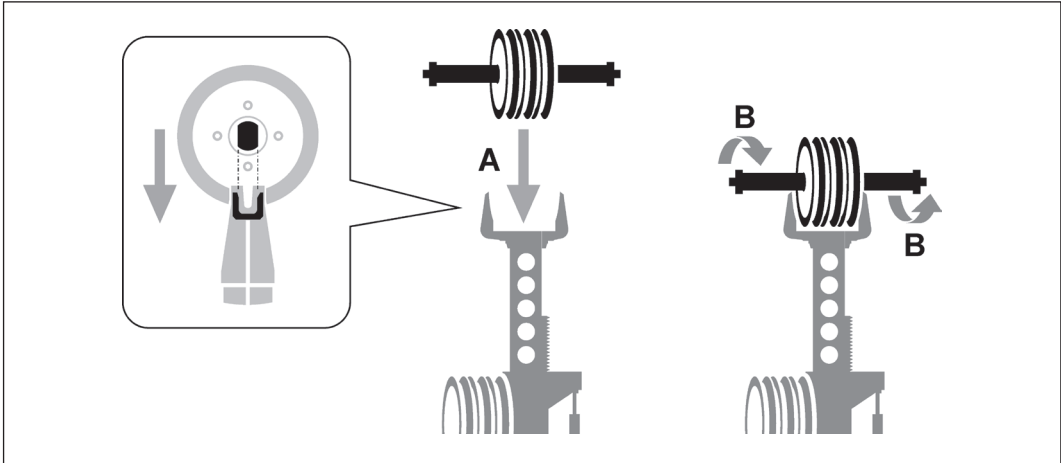
Fork wrench



Size 19
TYROLIT No. 973784



3.6 Mounting the diverter roll package



3.7 Mounting 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.

3.7.1 Diamond wire inserted in a closed state

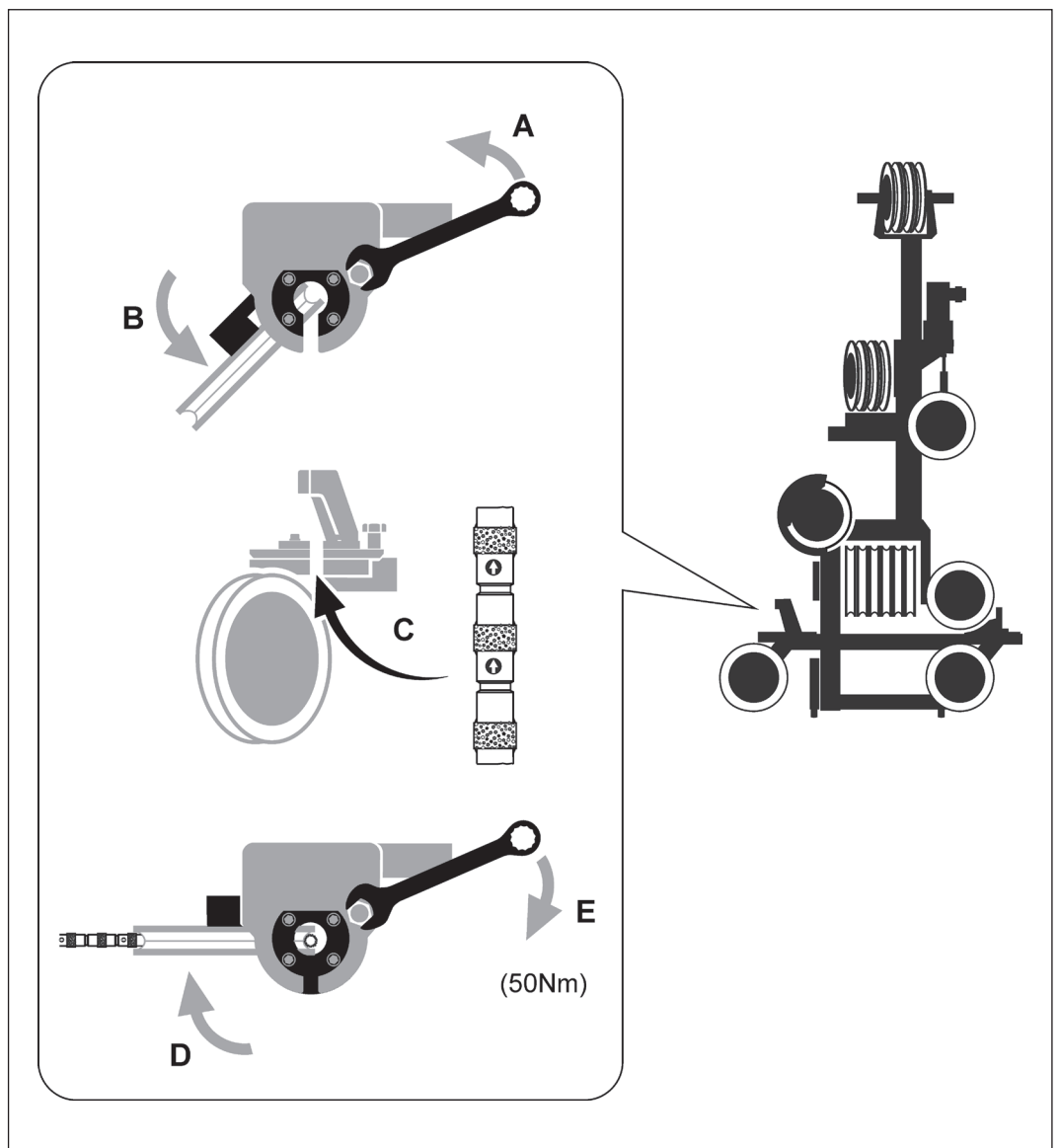


The closed diamond wire can be drawn in over the swivel rolls.

Fork wrench

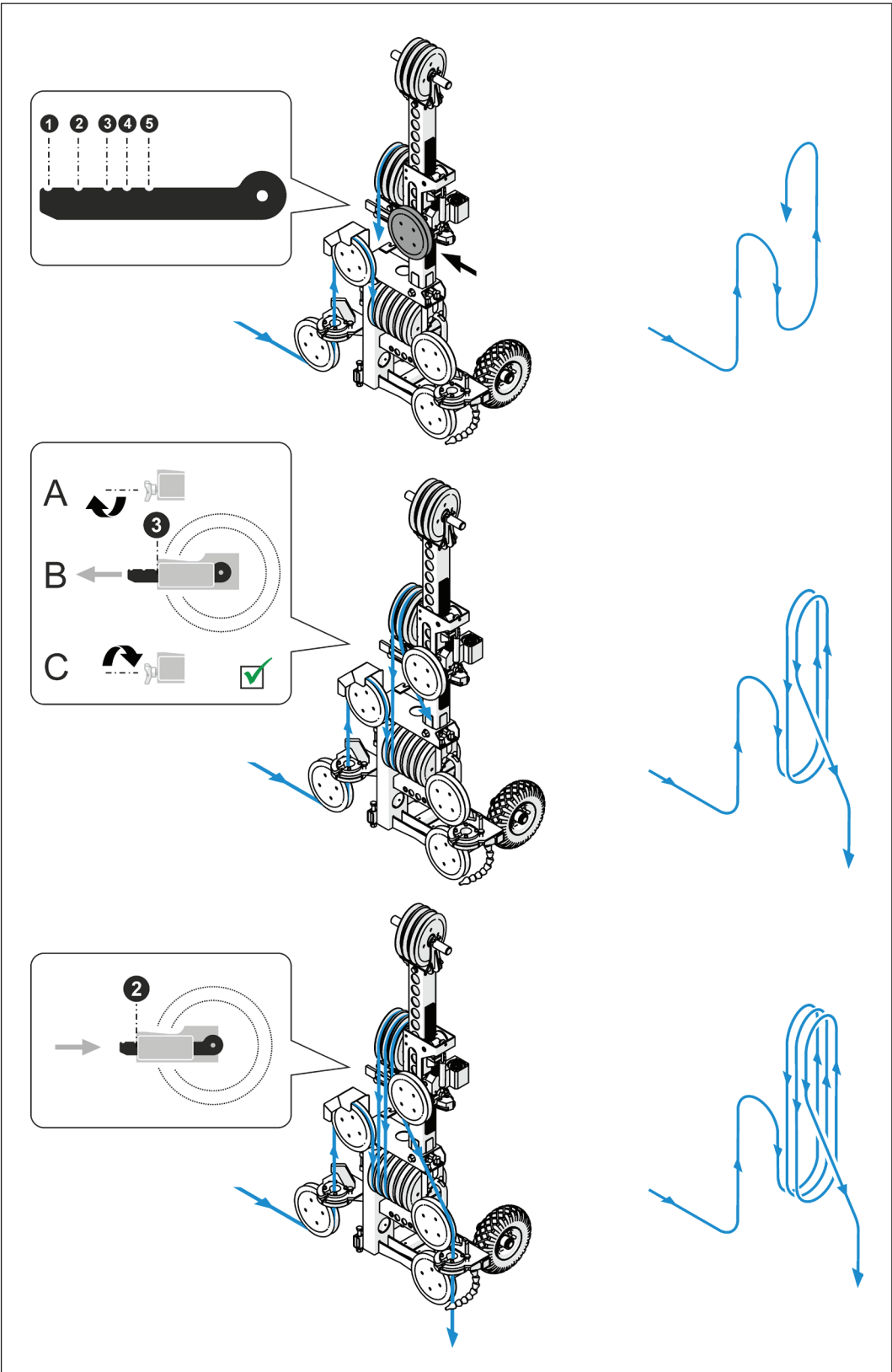


Size 19
TYROLIT No. 973784

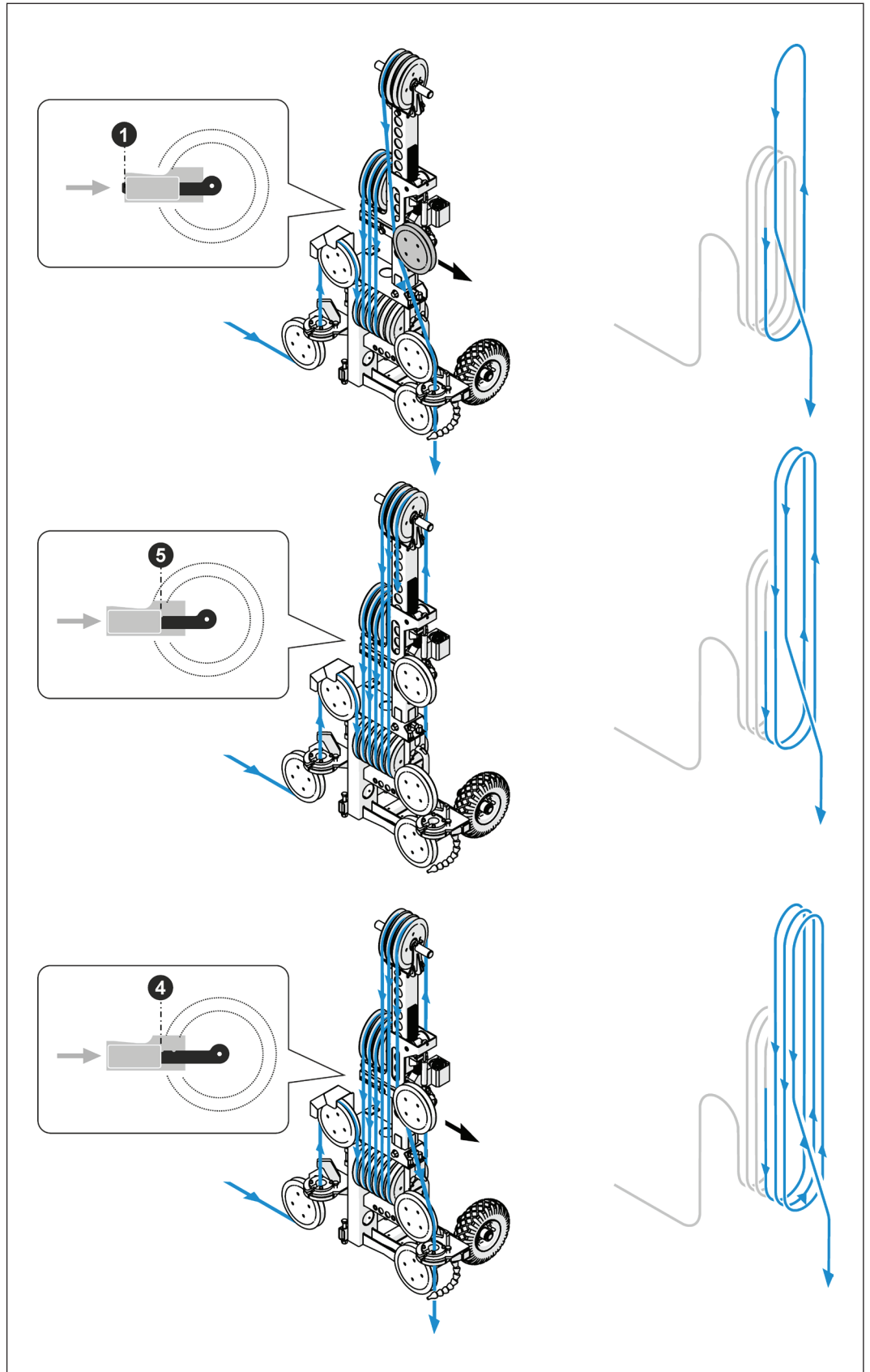


3.8 Diamond wire storage unit

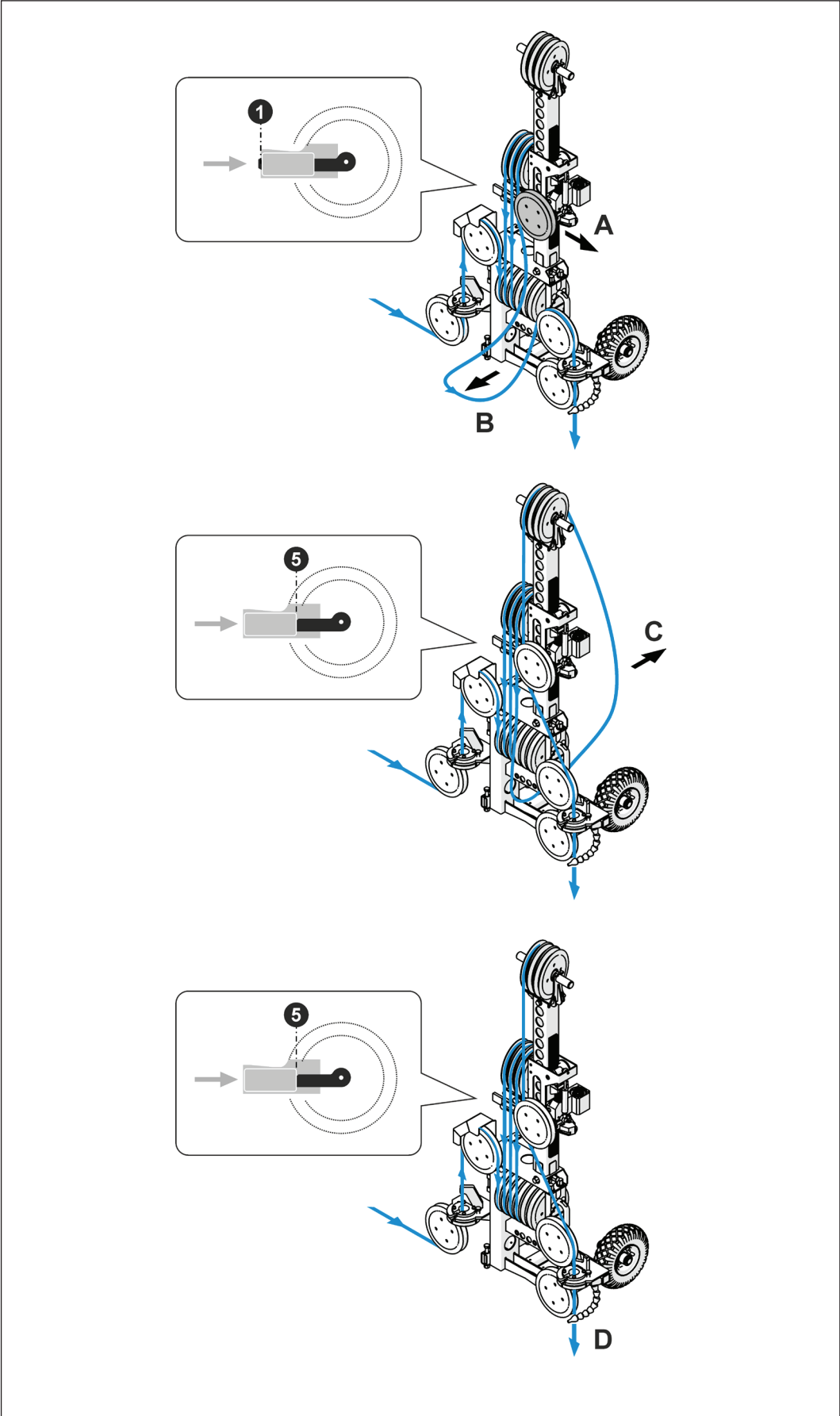
3.8.1 Single diamond wire storage



3.8.2 Extended diamond wire storage



3.8.3 Restoring



3.9 Mounting the diamond wire guard



DANGER

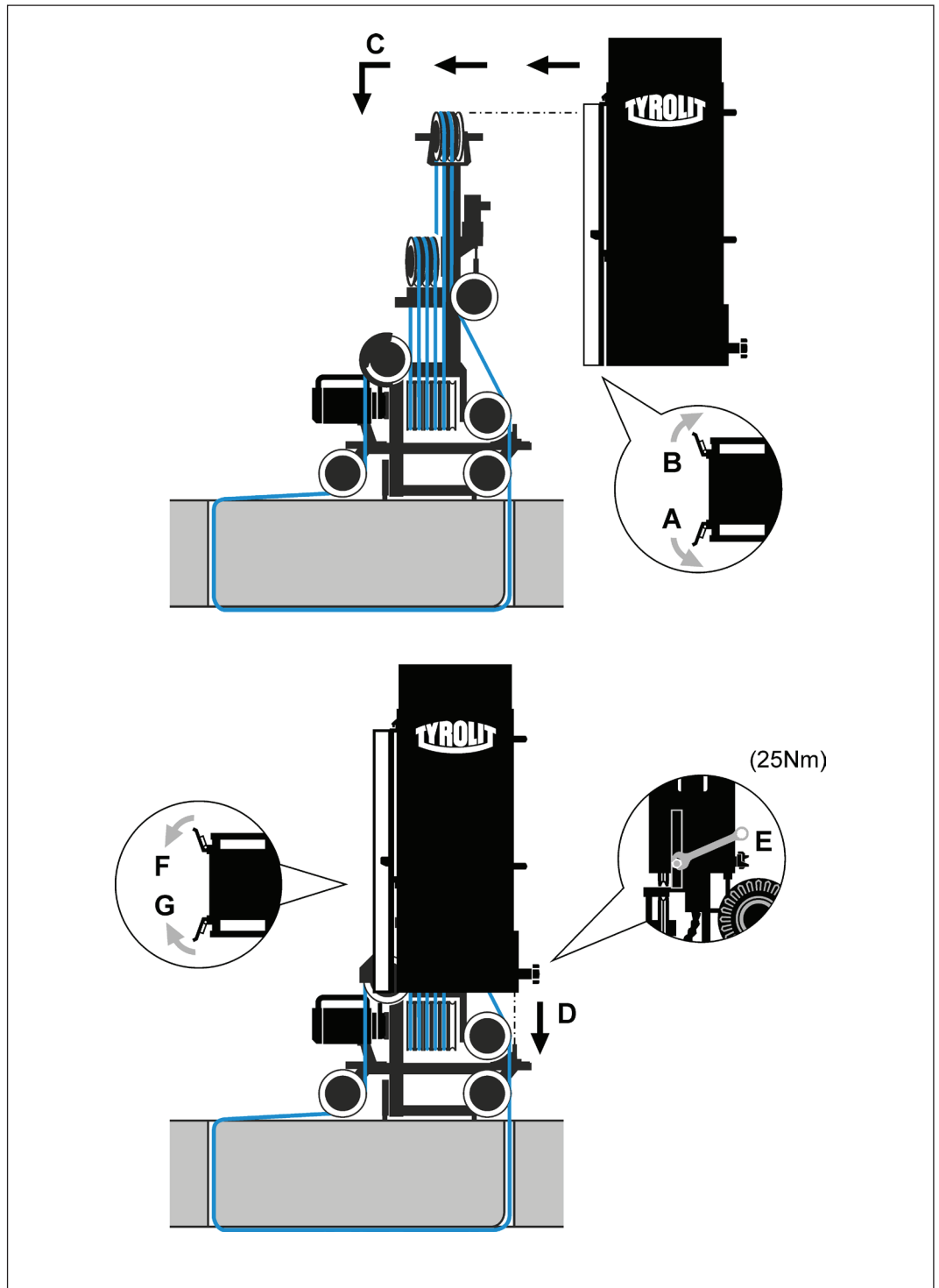
Risk of death or serious injury from the whipping action of the wire or diamond wire elements flying off.

- ▶ Always work with the diamond wire guard fitted.
- ▶ The defined safety distances and working areas must always be maintained.

Fork wrench



Size 19
TYROLIT No. 973784

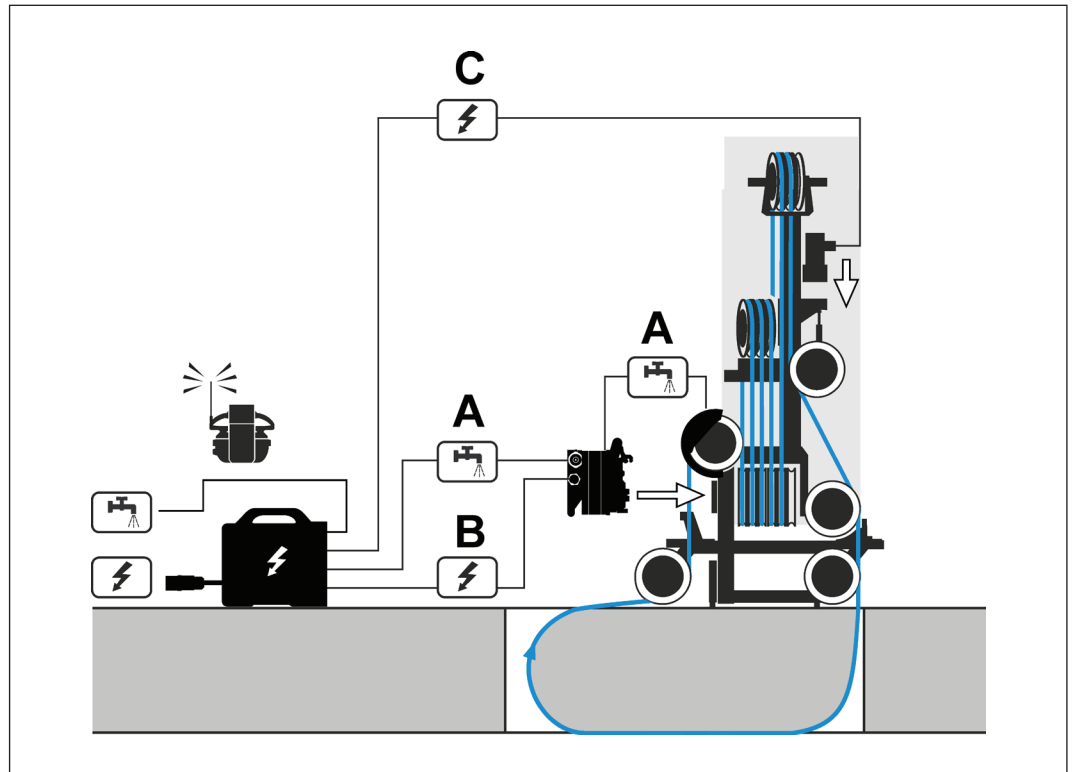


3.10 Connecting the water and power supplies

3.10.1 Electric version

Connecting the power supply

Information regarding correct connection and operation can be found in the operating instructions supplied with the electric mounting kits.

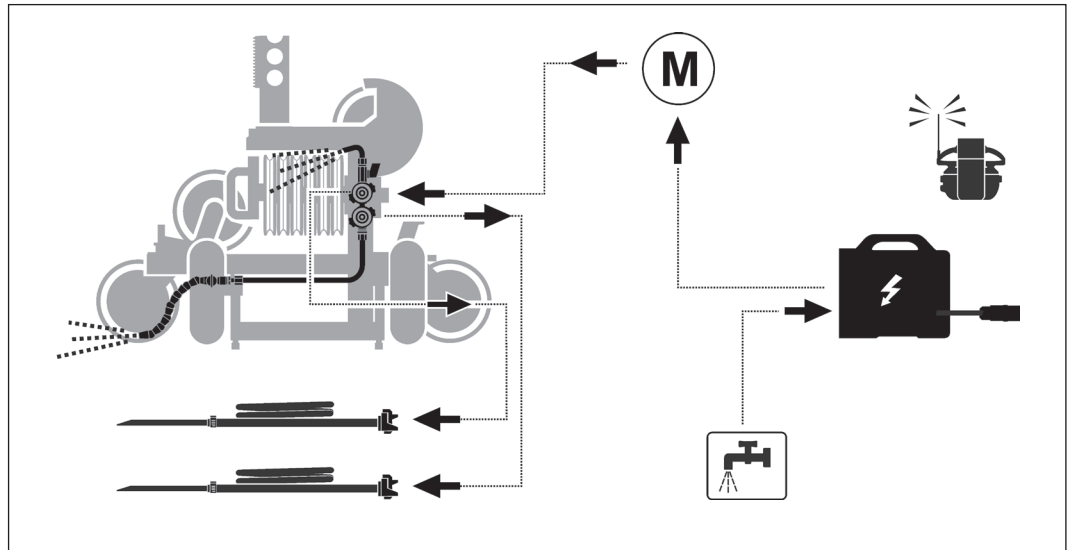


- A Water connection
- B Electrical connection for diamond wire drive motor
- C Electrical connection for feed motor



Water connection

The cooling water of the saw system flows from the control unit via the drive motor to the water distributor on the wire saw.



Water connection

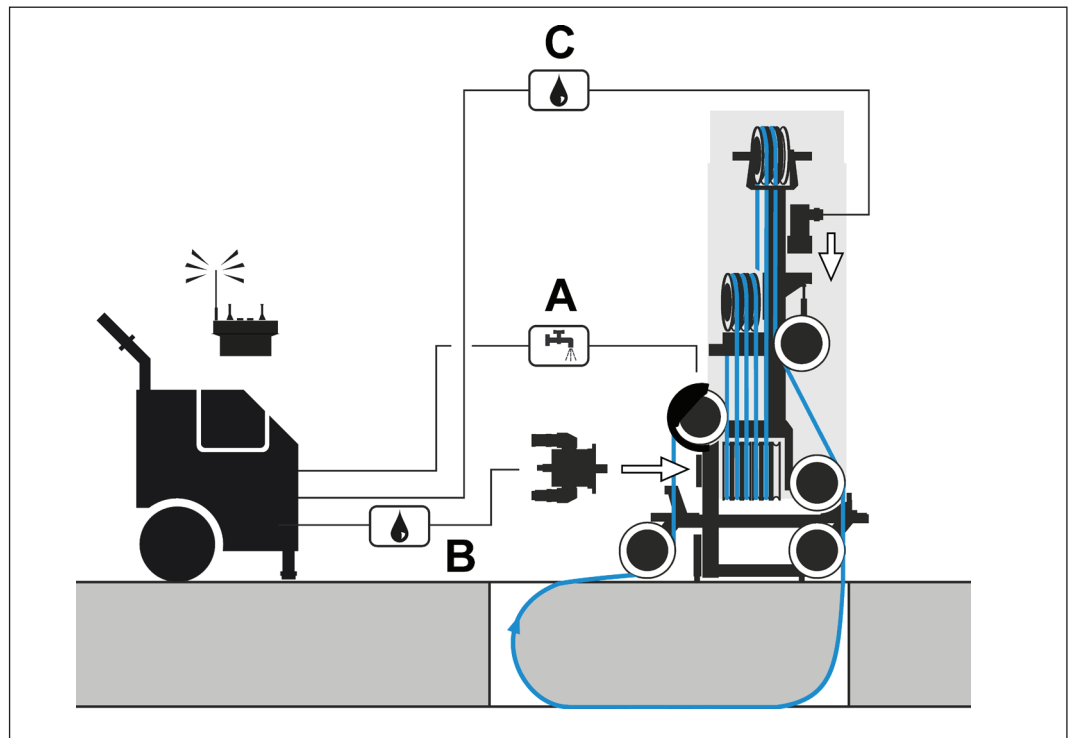
Pressure	1 bar (min.) to 6 bar (max.)
Quantity	min. 4 l/min
Temperature	max. 25 °C

3.10.2 Hydraulic version



Connecting the power supply

Information regarding correct connection and operation can be found in the operating instructions supplied with the hydraulic mounting kit.

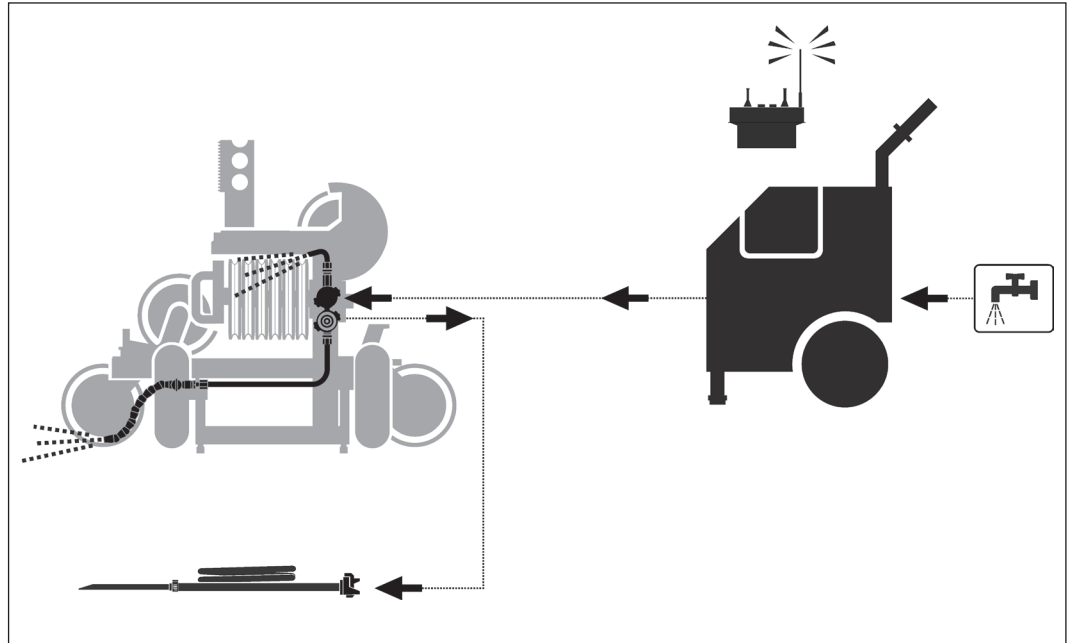


- A Water connection
- B Hydraulic connection for diamond wire drive motor
- C Hydraulic connection for feed motor



Water connection

The cooling water of the saw system flows from the drive unit directly to the water distributor on the wire saw.



Water connection

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

4 Operation

4.1 Positioning and securing the wire saw

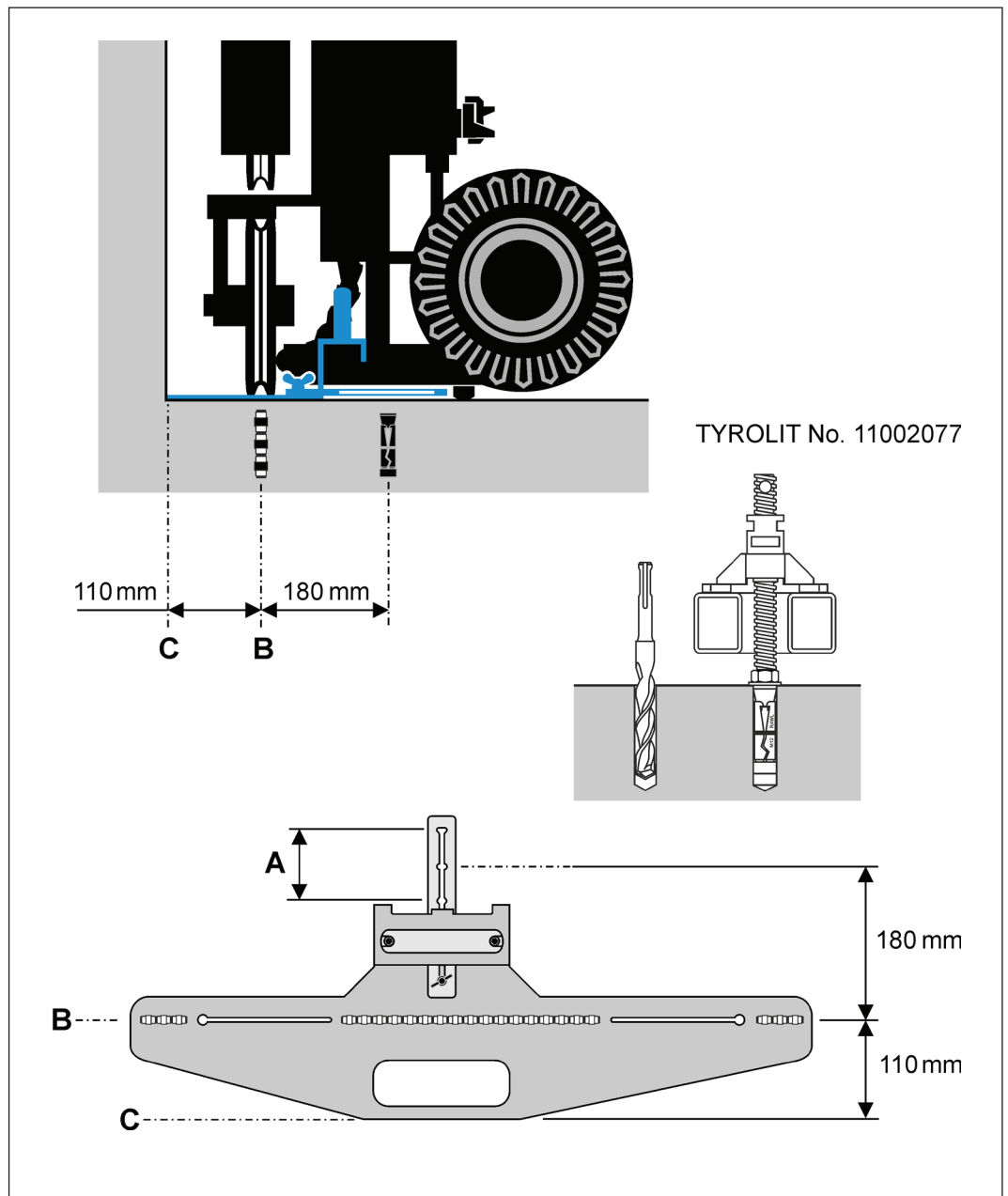


Auxiliary item: Cutting gauge (TYROLIT No. 10999257)

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

- ▶ Mount the cutting gauge on the chassis of the wire saw.
- ▶ Align the wire saw with the cut and mark the dowel space.

The following information can be obtained from the cutting gauge:



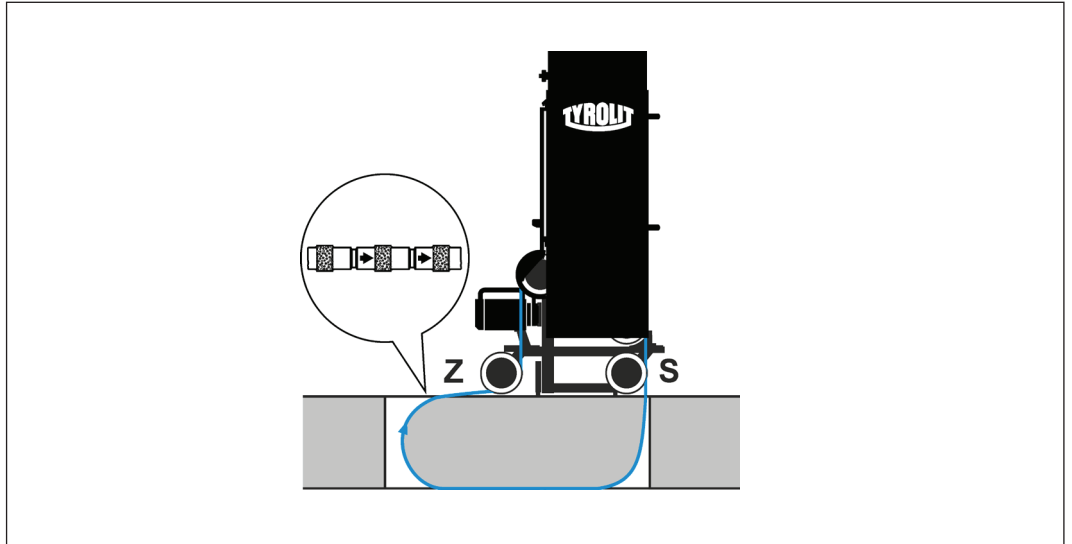
- A Dowel space
- B Cutting line
- C Outer edge of the diamond wire guard

4.2 Correct cutting direction



Tensioned side and slack side

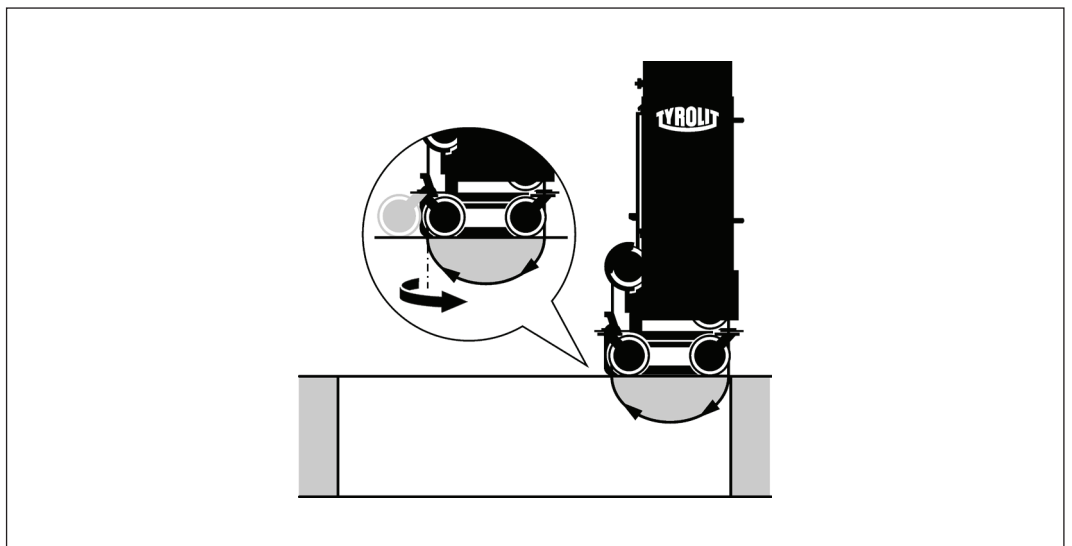
The saw cut should be carried out with the tensioned side (Z) of the diamond wire, as this provides the best cutting conditions.



4.3 Finishing the cut



When finishing the cut, the swivel roll on the tensioned side must be swivelled inwards. Towards the end of a cut, a reduced feed force should be used. This measure makes it possible for the swivel rolls to catch the diamond wire perfectly upon the exit of the diamond wire.



4.4 Damping element



Diverter rolls with damping element

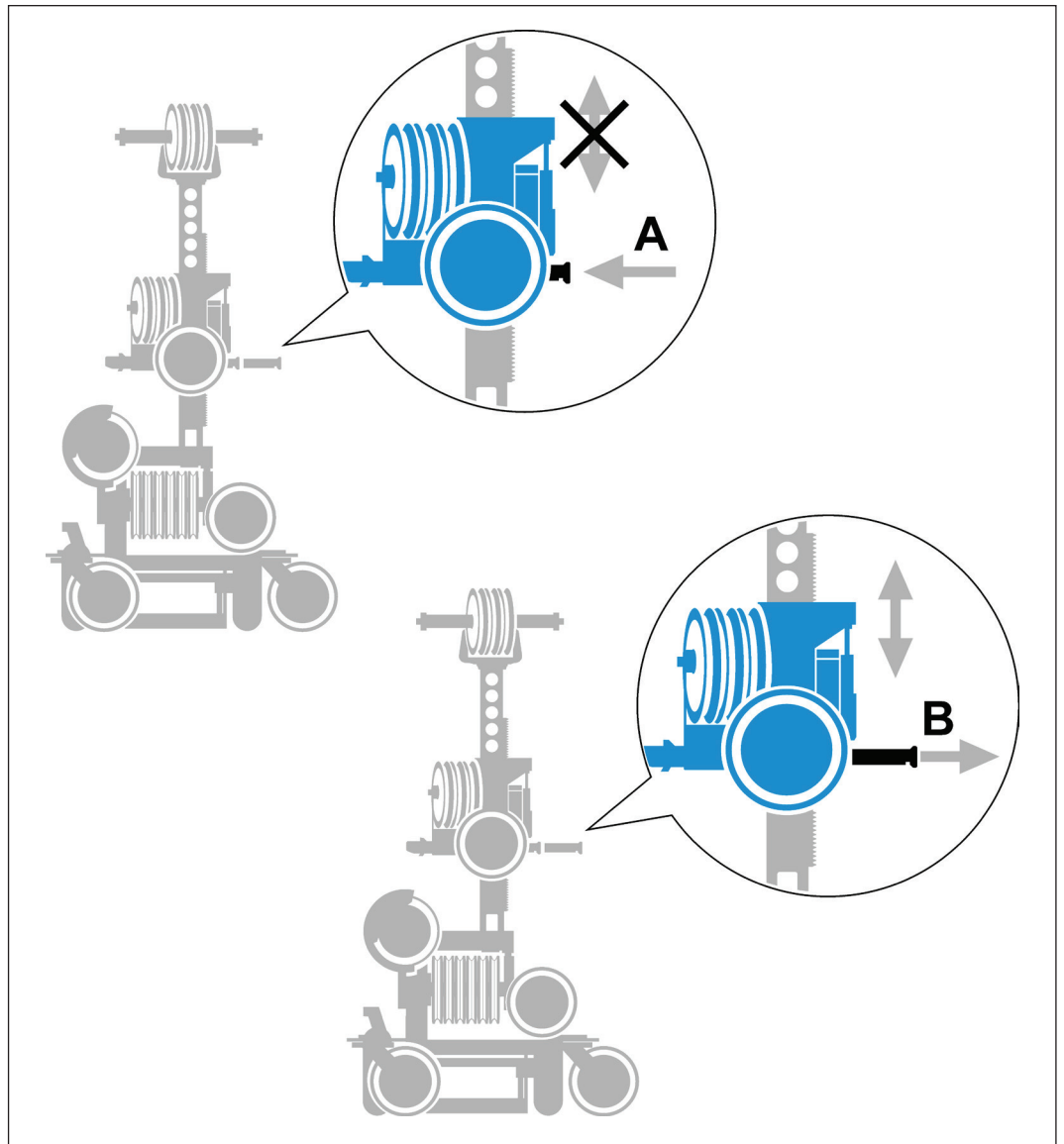
The wire saw can be started without a damping function. The damping element can be deactivated by means of a slider.



DANGER

Risk of serious injury or material damage as a result of uncontrolled movements of the wire saw!

► Do not make any adjustments when the wire saw is operational.



A Damping element passive

B Damping element active

4.5 Startup aid press roll



Press Roll

Startup issues may be addressed applying the press roll. Use the press roll during the startup procedure until the wire has worn in. The press roll can be deactivated by means of a pivot lever.



DANGER

Danger from sharp edges during diamond wire sawing

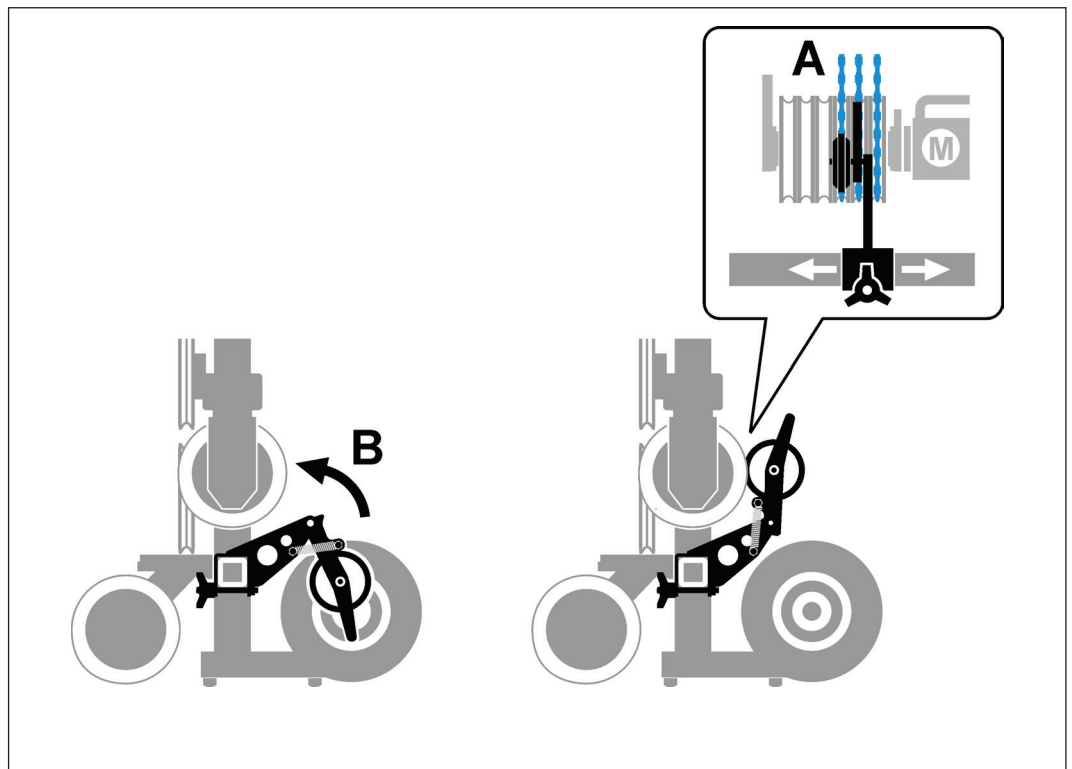
- ▶ Sharp edges can lead to breaks when working with diamond wire saws and therefore all edges must be rounded-off to a minimum radius of $R=10\text{ cm}$ before the cutting procedure



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

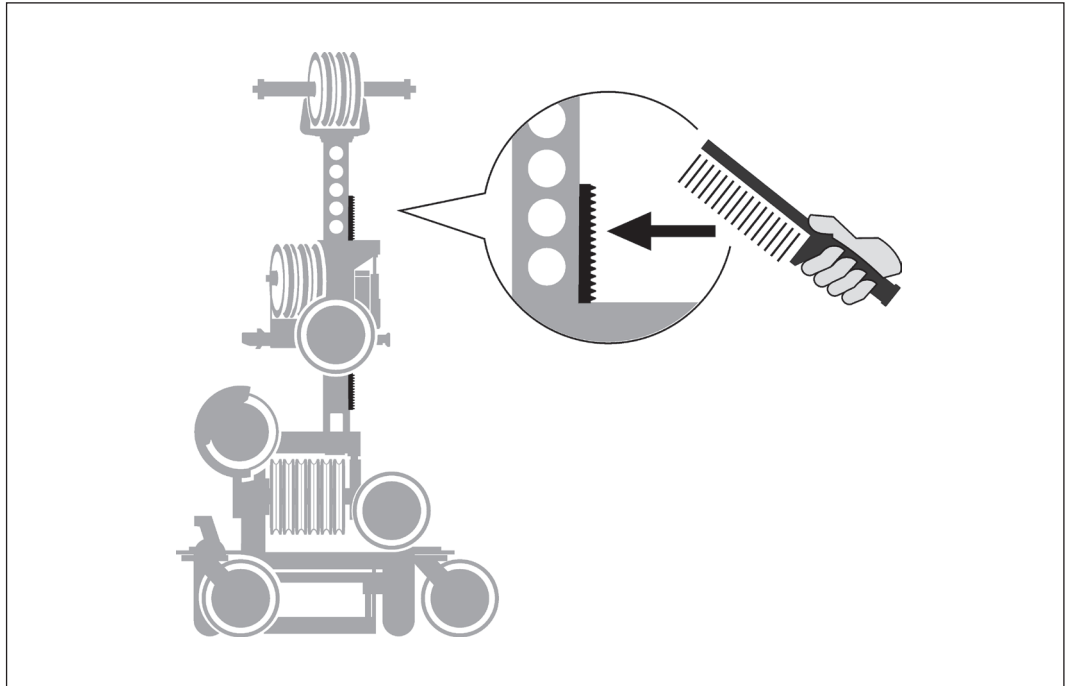


- ▶ Mount the press roll to the cross bar of the base chassis
- ▶ Position the press roll on the most inward occupied pulley (A).
- ▶ Pivot the press roll onto the drive pulley unit.
- ▶ Pivot the press roll back into the initial position after the wire has worn in.

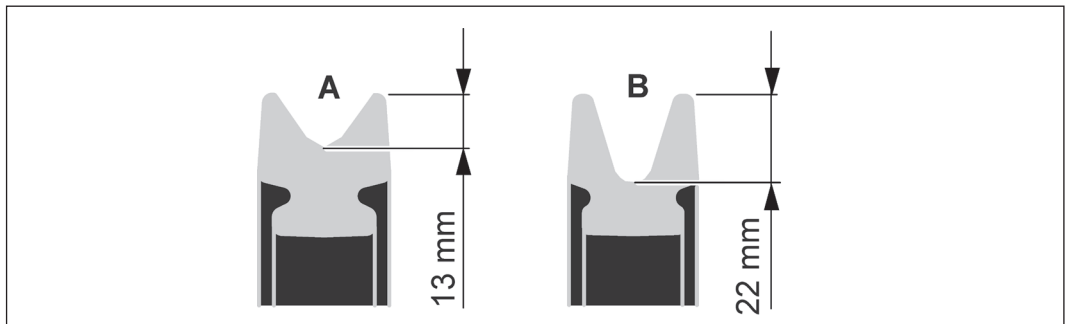
5 Servicing and maintenance

Maintenance and servicing table							
		Before starting up	After finishing work	Weekly	Annually	After faults	After damage
Wire saw	▶ Tighten loose screws and nuts			X		X	X
Guide support	▶ Check wear and adjustment of the guide elements	X	X			X	X
	▶ Lubrication			X		X	X
Guide rail	▶ Clean the toothed rack and guide grooves		X			X	X
Drive and guide rollers	▶ Check bandages for wear	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
	▶ Blowing 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 Checking bandages for wear

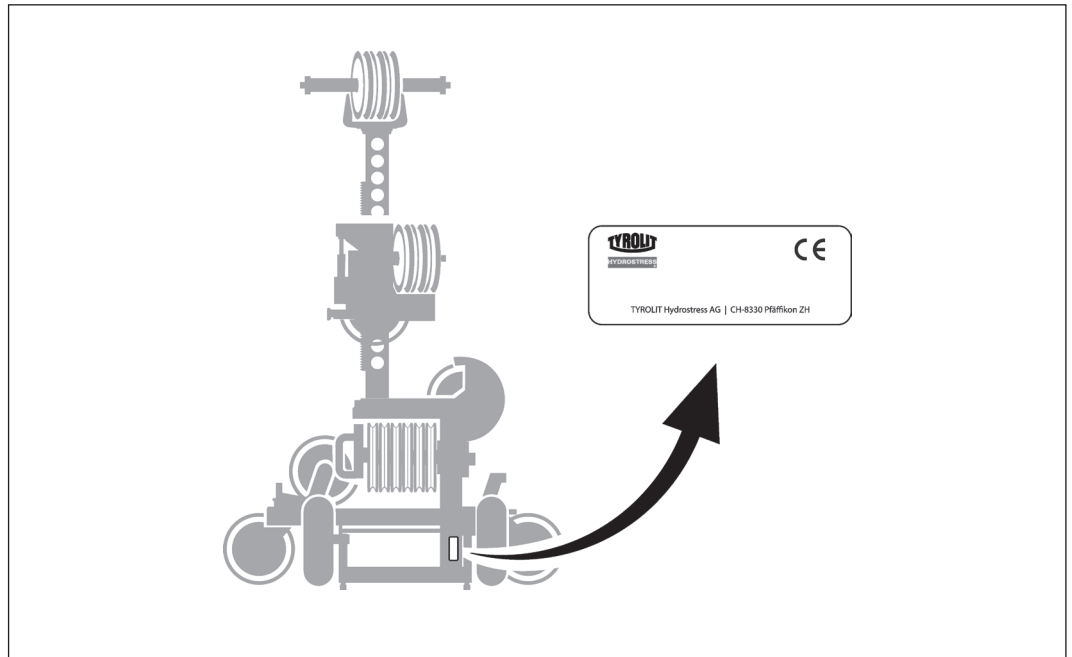


- A New bandage
- B Worn bandage

5.3 Troubleshooting

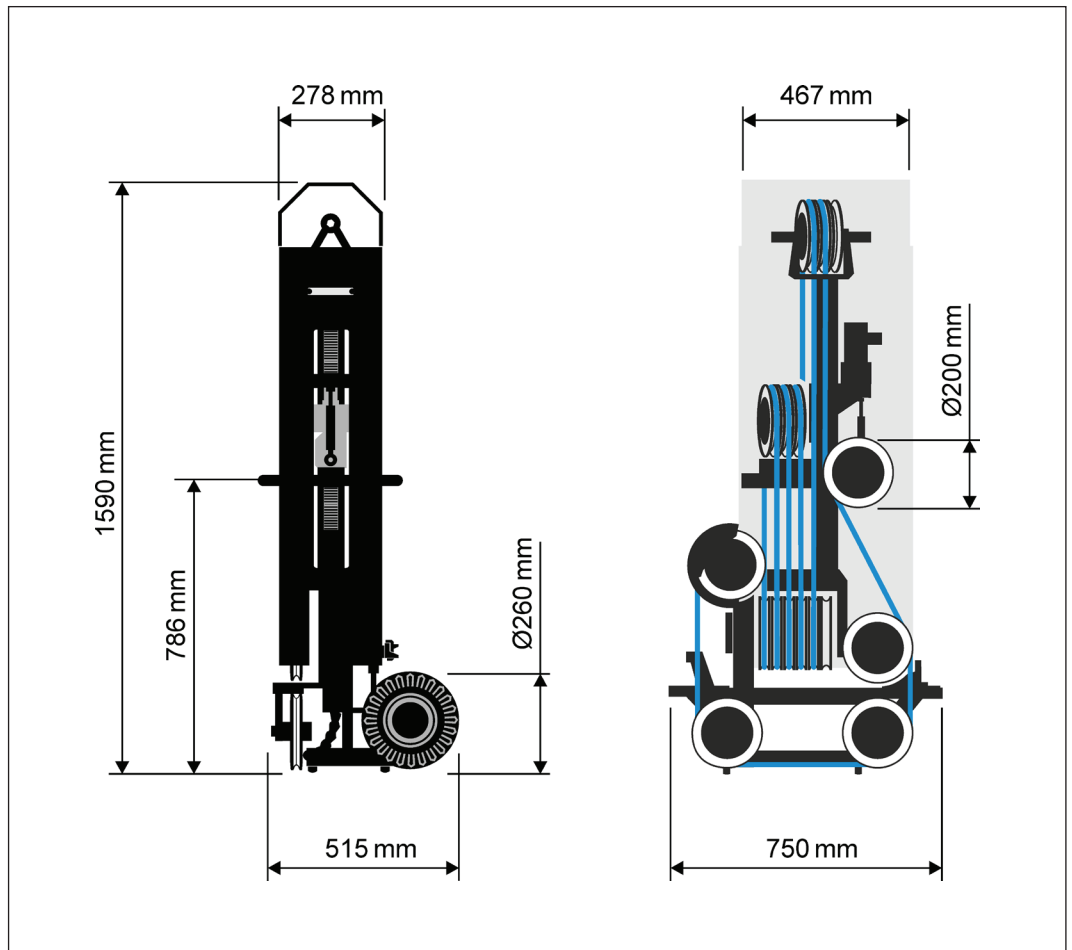
To guarantee a rapid and professional solution to the problem, it is important that you have prepared as follows before calling:

- 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

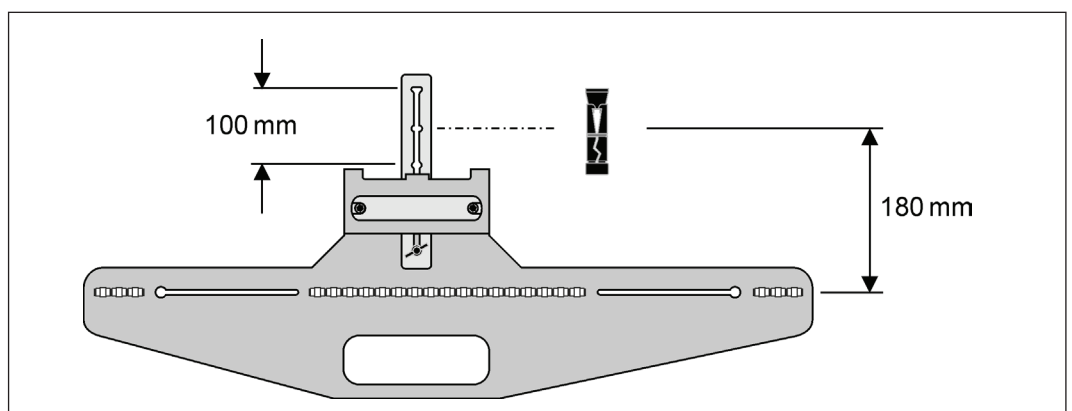


6 Technical data

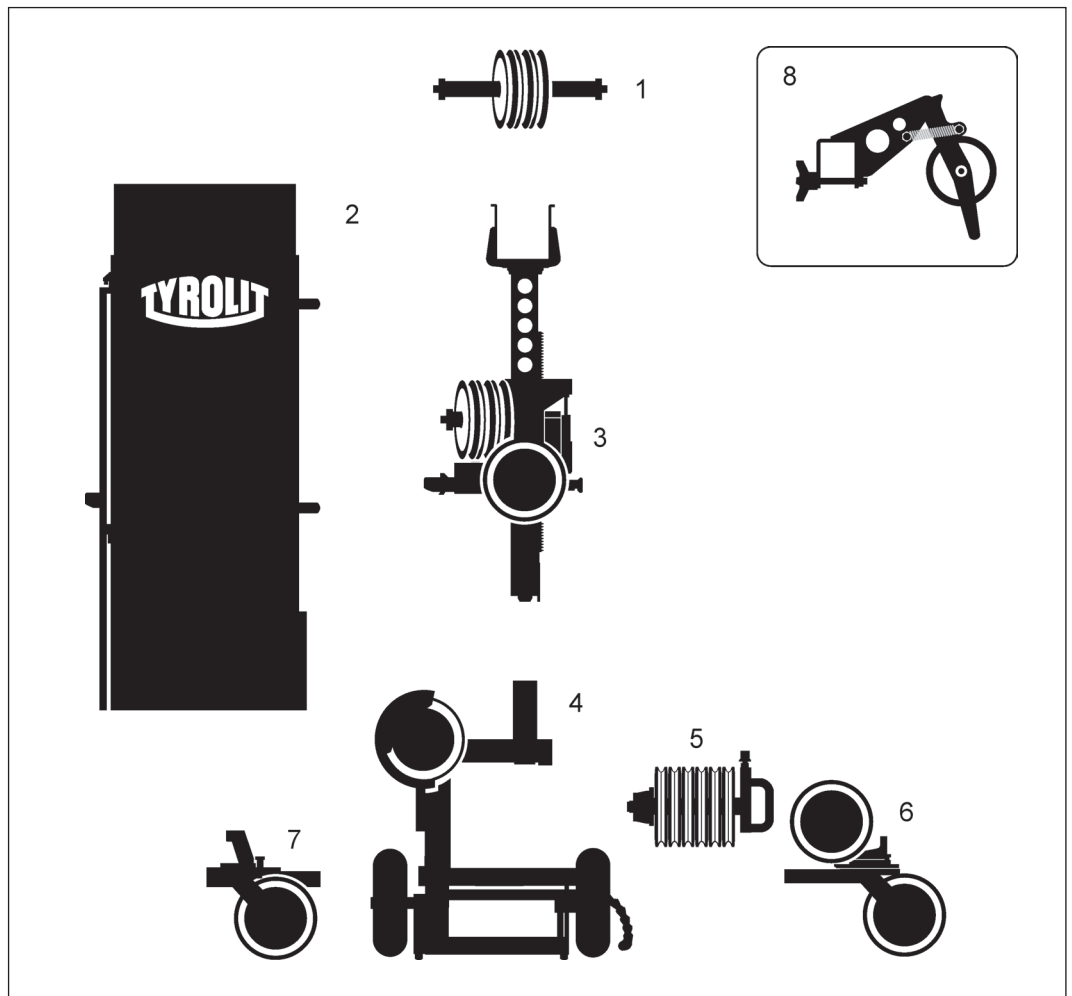
6.1 Dimensions



6.2 Dowel dimension



6.3 Weights



1	Diverter roll unit	6.0 kg
2	Diamond wire guard	10.0 kg
3	Column for the electric version	23.9 kg
	Column for the hydraulic version	25.0 kg
4	Base frame	22.0 kg
5	Drive roller unit	13.9 kg
6	Swivel roll unit, slack side	10.6 kg
7	Swivel roll unit, tensioned side	7.8 kg
8	Press roll	1.4 kg

6.4 Water connection

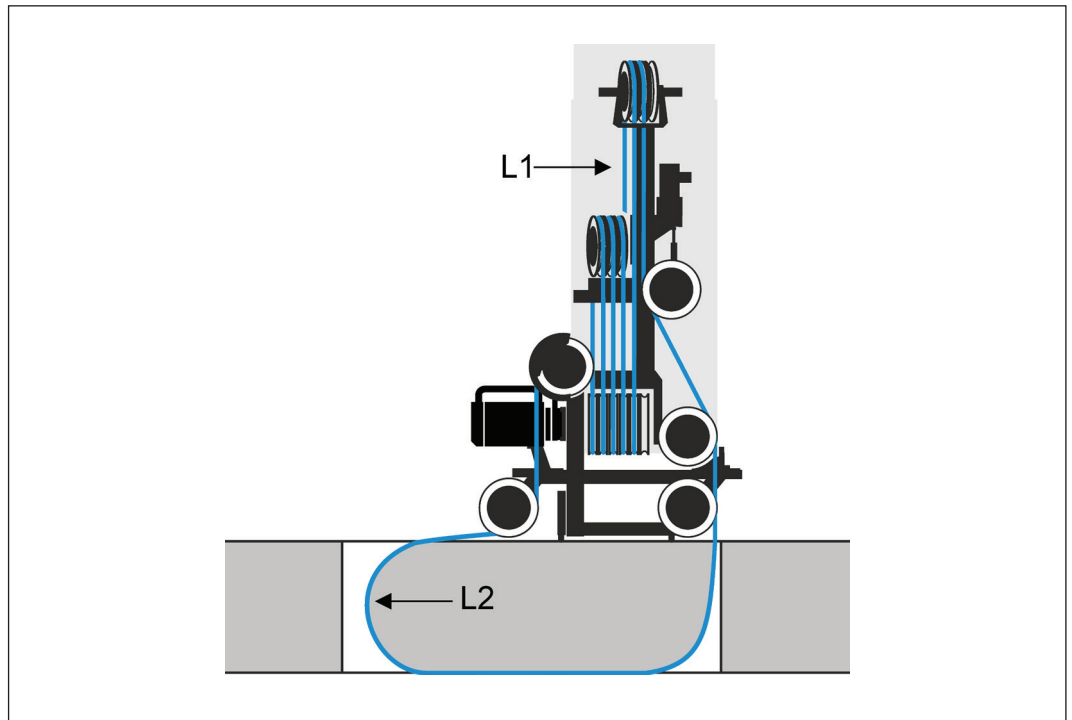
Pressure	1 bar (min.) to 6 bar (max.)
Quantity	min. 4 l/min
Temperature	max. 25 °C

6.5 Diamond wire lengths



The total diamond wire storage capacity of the WCU wire saw is 17 m.

Diamond wire basic storage



Two-roll configuration

L1 Diamond wire basic storage in the machine	4.5 m
L2 Diamond wire length outside the machine	12.5 m

Three-roll configuration

L1 Diamond wire basic storage in the machine	6 m
L2 Diamond wire length outside the machine	11 m

Total storage length L1 + L2	17 m
-------------------------------------	-------------

6.6 Noise data according to ISO 3744

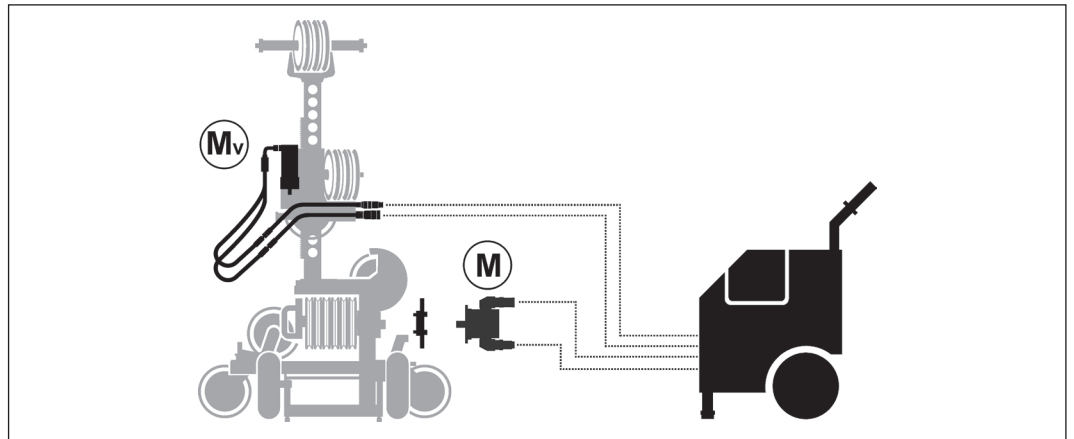


Hearing protection must be worn at all times when working with the WCU17 wire saw.



Parameter	Value WCU17
Noise level at the ear of the user (Leq)	90 dB
Workplace sound pressure level (LPA)	84.1 dB
Sound power level in accordance with ISO 3744 (LwA)	104.1 dB



6.7 Hydraulic drive motor and feed motor



Drive motor M

Example:

Hydraulic motor	
Speed	1100 to 2813 rpm.
Size	2
Absorption volume	12 cm ³ to 30 cm ³
Transmission ratio	1:1
Operating pressure	max. 260 bar
Type	External geared motor

Rotational speeds, hydraulic motors for wall saws						
						
	16 cm ³	18 cm ³	22 cm ³	26 cm ³	30 cm ³	
l/min 33	2063	1833	1500	1269	1100	rpm
	20	16	14	11	10	m/s
l/min 40	2500	2222	1818	1538	1333	rpm
	24	20	16	14	12	m/s
l/min 45	2813	2500	2045	1731	1500	rpm
	27	22	19	15	14	m/s
l/min 50		2778	2273	1923	1667	rpm
		25	21	17	15	m/s
l/min 60			2727	2308	2000	rpm
			25	20	18	m/s
l/min 70				2692	2333	rpm
				24	21	m/s

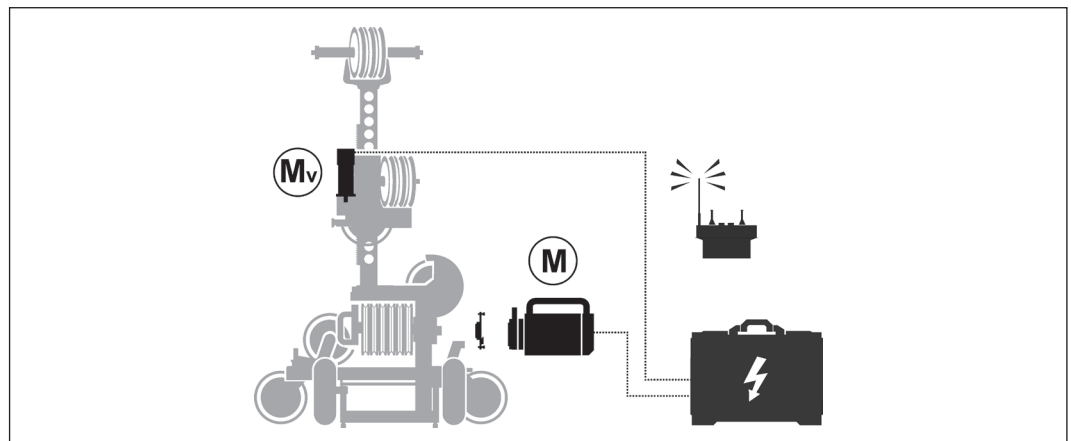
Operation possible
 Operation not possible

Feed motor Mv

Example:

Hydraulic motor Mv	
Speed	187 rpm
Type	Gerotor
Operating pressure	max. 120 bar
Rated torque	50 Nm
Feed force	6000 N
Feed	Toothed wheel on rail

6.8 Electric drive motor and feed motor



Drive motor M

Example:

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

Feed motor Mv

Example:

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

7 EC Declaration of Conformity

Description Wire saw
Type designation WCU17

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

Directive applied

2006/42/EG	17.05.2006
2012/19/EU	04.07.2012

Applied standards

EN ISO 12100:2010
EN 15027:2007+A1:2009

TYROLIT Hydrostress AG
Witzbergstrasse 18
CH-8330 Pfäffikon
Switzerland

Pfäffikon, 06.10.2020



Roland Kägi
Operations + R&D Machines