

# DSW 3018-E

Operating instructions

en



# DSW 3018-E wire saw

It is essential that the operating instructions are read before the machine is operated for the first time.

Always keep these operating instructions together with the machine.

Ensure that the operating instructions are with the machine when it is given to other persons.

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In these operating instructions, the designation “the machine” always refers to the DSW 3018-E wire saw.

### Overview of parts



- ① Drive unit
- ② Control unit
- ③ Air compressor
- ④ Compressed air hoses, 2 × 23 ft, 1 × 3.3 ft
- ⑤ Single pair pulley stands (2)
- ⑥ Long water supply nozzle
- ⑦ Flexible water supply nozzle
- ⑧ Water hoses, 2 × 33 ft
- ⑨ Tool set
- ⑩ Wire guard set
- ⑪ Machine supply socket 63 A, 4P, 480 V, 7h (not illustrated)

## 1 General information

### 1.1 Safety notices and their meaning

#### DANGER

Draws attention to imminent danger that will lead to serious bodily injury or fatality.

#### WARNING

Draws attention to a potentially dangerous situation that could lead to serious personal injury or fatality.

#### CAUTION

Draws attention to a potentially dangerous situation that could lead to slight personal injury or damage to the equipment or other property.

#### NOTE

Draws attention to an instruction or other useful information.

### 1.2 Explanation of the pictograms and other information

#### Warning signs



General warning



Warning: electricity



Warning: avoid hand injuries

#### Obligation signs



Read the operating instructions before use.



Wear protective gloves.



Wear eye protection.



Wear a hard hat.



Wear safety shoes.



Wear breathing protection.



Use the intended lifting points.

#### Symbols



Splash-proof

/min

Revolutions per minute

RPM

Revolutions per minute

V

Volts

A

Amps

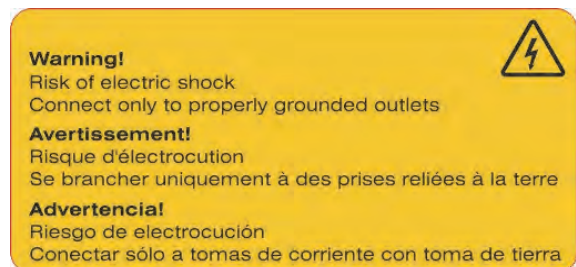
Hz

Hertz

∅

Diameter

#### On the control unit



To be connected only to electric supply sockets with an earth / ground conductor.

#### Location of identification data on the machine

The type designation and serial number can be found on the type identification plate on the machine. Make a note of this data in your operating instructions and always refer

## 1 General information

to it when making an enquiry to your Hilti representative or service department.

Type:

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Generation: 01

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Serial no.:

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## 2 Safety instructions

**WARNING! Read all instructions! Failure to follow all instructions listed below may result in electric shock, fire, severe injury and/or serious damage to property and equipment.**

### 2.1 General safety rules

a) **Warning! Read and understand all instructions.** Failure to follow all instructions listed below may result in electric shock, fire and/or serious personal injury. **SAVE THESE INSTRUCTIONS.**

#### 2.1.1 Work area

- a) **Keep your work area clean and well lit.** Cluttered benches and dark areas invite accidents.
- b) **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust or fumes.
- c) **Keep bystanders, children and visitors away while operating a power tool.** Distractions can cause you to lose control.

#### 2.1.2 Electrical safety

a) **Grounded tools must be plugged into an outlet properly installed and grounded in accordance with all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use any adapter plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded.** If the tools should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.

- b) **Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is grounded.
- c) **Don't expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
- d) **Do not abuse the cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately.** Damaged cords increase the risk of electric shock.
- e) **When operating a power tool outside, use an outdoor extension cord marked "W-A" or "W".** These cords are rated for outdoor use and reduce the risk of electric shock.

#### 2.1.3 Personal safety

- a) **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.
- b) **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing and gloves away from moving parts.** Loose clothes, jewelry or long hair can be caught in moving parts.
- c) **Avoid accidental starting. Be sure switch is off before plugging in.** Carrying tools with your finger on the switch or plugging in tools that have the switch on invites accidents.

## 2 Safety instructions

- d) **Remove adjusting keys or switches before turning the tool on.** A wrench or a key that is left attached to a rotating part of the tool may result in personal injury.
- e) **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enables better control of the tool in unexpected situations.
- f) **Use safety equipment. Always wear eye protection.** Dust mask, non-skid safety shoes, hard hat or hearing protection must be used for appropriate conditions.
- g) **Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the tool's operation. If damaged, have the tool serviced before using.** Many accidents are caused by poorly maintained tools.
- h) **Use only accessories that are recommended by the manufacturer for your model.** Accessories that may be suitable for one tool may become hazardous when used on another tool.

### 2.1.4 Tool use and care

- a) **Use clamps or other practical way to secure and support the workpiece to a stable platform.** Holding the work by hand or against your body is unstable and may lead to loss of control.
- b) **Do not force tool. Use the correct tool for your application.** The correct tool will do the job better and safer at the rate for which it is designed.
- c) **Do not use tool if switch does not turn it on or off.** Any tool that cannot be controlled with the switch is dangerous and must be repaired.
- d) **Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the tool.** Such preventive safety measures reduce the risk of starting the tool accidentally.
- e) **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
- f) **Maintain tools with care. Keep cutting tools sharp and clean.** Properly maintained tools with sharp cutting edges are less likely to bind and are easier to control.

### 2.1.5 Service

- a) **Tool service must be performed only by qualified repair personnel.** Service or maintenance performed by unqualified personnel could result in a risk of injury.
- b) **When servicing a tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual.** Use of unauthorized parts or failure to follow Maintenance Instructions may create a risk of electric shock or injury.

### 2.2 General safety instructions

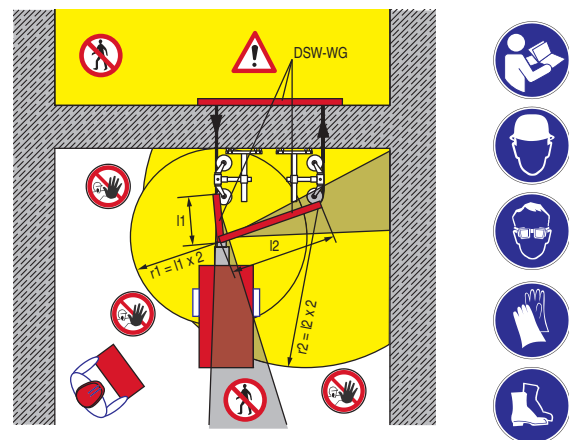


- a) **Before use, check that the wire saw and its components, the wire and its connectors as well as the accessories are in good condition and in perfect working order. Make sure that any damage or malfunctions are rectified in a PROFESSIONAL manner before operation commences.**
- b) **The user and any other persons in the vicinity must wear suitable eye protection, a hard hat, protective gloves and breathing protection while the power tool is in use.**

## 2 Safety instructions

- c) Use only fastening materials of adequate size (anchors, bolts, etc.) to fasten the pulley stands for the wire saw and to secure the object being cut.
- d) Use only the genuine Hilti accessories or ancillary equipment listed in the operating instructions. Use of accessories or ancillary equipment not listed in the operating instructions may present a risk of personal injury.
- e) **Modification of the machine or tampering with its parts is not permissible.**
- f) National regulations and laws, as well as the operating instructions and the safety information applicable to the accessories used (sawing wire, fastening accessories etc.) must be observed.
- g) Use the wire saw only when you have read the operating instructions, when you are familiar with the information the instructions contain, and when you have received training from a specialist on how to use it safely. Observe all warnings and instructions.
- h) Always keep the operating instructions with the equipment and pass them on to any subsequent user who has been trained in its use.
- i) Keep children away. Keep other persons away from the working area. Do not allow anyone to touch the wire saw, the cables or the diamond wire.
- j) The machine is not intended for use by children, by debilitated persons or those who have received no instruction or training.
- k) Careful cleaning and adherence to the specified care and maintenance plan are prerequisites for safe, trouble-free operation of the equipment.
- l) Do not leave tools (e.g. 19 mm open-end wrench) in place on the equipment. Check that all tools have been removed before switching the drive unit on.
- m) Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- n) **Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts.** Loose clothes, jewellery or long hair can be caught in moving parts.

### 2.3 Safety measures at the danger areas



- a) **Persons must NEVER enter the danger area while the wire drive unit is switched on.** The danger area extends to at least twice the radius of the length of wire that would be unleashed in the event of the wire breaking and includes the areas in the extended axes of the directions in which the wire is running. The operator is responsible for cordoning off the area, restricting access and installing guards or covers. The danger area may be entered only when the EMERGENCY STOP button is in the pressed-in position.
- b) **Safety measures must be implemented in the area where sawing is taking place so that operators and other persons cannot be injured or property and equipment damaged**

## 2 Safety instructions

- by debris (wire connectors, wire beads, spacer springs, small stones, sawing slurry, etc.) that may fly off while sawing is in progress. Safety measures must also be implemented in the area to the rear of where the cut is being made.
- c) **Wire whiplash in the event of wire breakage can be avoided by keeping unsupported wire lengths as short as possible (wires at the tension and slack sides should not cross). Also make sure that no objects such as scaffold bars or supports etc. are located close to the wire as the wire could wrap itself around these in the event of wire breakage.** The whiplash effect results in rapid acceleration of the wire, possibly causing parts of the wire to fly off at high speed.
  - d) The length of unsupported wire released in the event of wire breakage must not exceed a maximum of 3.5 meters! **Mount pulley stands at the wire entry and exit points and reduce the length of unsupported wire by mounting additional pulley stands.**
  - e) **Make sure that no one is present in the area immediately beneath the workplace while the saw is being set up and while it is in operation.** Falling objects or tools could cause serious injury.
  - f) **Wire guards must be fitted in situations where it cannot be ensured that persons do not enter the danger area while the equipment is in operation, i.e. the area in which flying fragments etc. present a risk of injury, or in situations where there is a risk of damage to property or other equipment within this area. These guards must be designed to reliably prevent wire whiplash and to stop flying fragments and objects.**
  - g) **Position the control unit as far as possible outside the danger zone and remain in the vicinity of the control unit during cutting operations.**
  - h) **The operator must make sure that no persons enter or loiter in the danger area at any time while the saw is in operation. This also applies to the area not immediately visible to the operator, i.e. the area to the rear of the object in which the cut is being made. If necessary, a large area must be cordoned off or security personnel posted.**
  - i) **When not in use, store the wire saw in a locked, dry place out of reach of children.**

### 2.4 Preparations at the workplace

- a) Slits cut in loadbearing walls of buildings or other structures may influence the statics of the structure, especially when steel reinforcing bars or loadbearing components are cut through. **Consult the structural engineer, architect, or person in charge of the building project before beginning the work.**
- b) **In cooperation with the site engineer or architect, check to ensure that no gas, water, electricity or other supply lines are located in the cutting area. Supply lines located close to the cutting area which, for instance, could be damaged by falling parts, must be specially protected and temporarily taken out of operation and switched off where necessary.**
- c) **Ensure that the cooling water used is drained or extracted in a suitably controlled manner.** Water that is allowed to flow away or spray around in an uncontrolled manner can lead to damage or accidents. The fact that water could drain away into internal, hid-

## 2 Safety instructions

- den cavities, e.g. in brickwork or masonry, must also be taken into account.
- d) **Take the influences of the surrounding area into account. Do not expose the machine to rain or snow and do not use it in damp or wet conditions. Do not use the machine where there is a risk of fire or explosion.** Electric tools and machines generate sparks which may ignite dust or gas.
  - e) **Do not cut materials in which the cutting process may produce toxic or explosive dust or vapors.**
  - f) **Do not cut easily combustible aluminium or magnesium alloys.**

### 2.5 Safety measures at the working area and securing the part to be cut away

- a) **Make sure that adequately-sized supports are correctly installed so that the remaining structure maintains its stability after completion of the cutting work and removal of the part cut away.**
- b) **Take steps to ensure that no persons can be injured or property and equipment damaged by objects that are cut free. In order to avoid injuries and to prevent the diamond wire becoming trapped and stuck, steel wedges and/or supports must be used to prevent uncontrolled movement of objects that are being cut free.**
- c) **Parts that have been cut free, which often have a weight of several tons, may be removed and transported away only by trained specialists using approved lifting equipment.**
- d) **Never loiter in areas where loads are suspended by crane or lifting equipment.**
- e) **The area of the cut or the opening created by the cutting process must be safely and visibly cordoned off in order to avoid the risk of persons falling.**

### 2.6 Safety during operation



- a) **Work with the saw may begin only when the wire saw and the pulley stands have been securely and rigidly fastened to a solid supporting surface. A falling object could result in serious personal injury or damage to property or equipment.**
- b) **Connect the electric power and compressed air supply only once the wire saw has been set up completely.**
- c) **Operate the saw only when the wire store cover is correctly fitted and the wire is guided through the hollow axles of the guide pulleys mounted directly on the structure at the wire entry and exit points.**
- d) **Persons may enter the danger area (e.g. to adjust the pulleys or water nozzles, hammer in wedges, etc.) only after the drive unit has been switched off and the drive wheel has come to a standstill. Press the EMERGENCY STOP button before entering the danger area.**
- e) **Adhere to the permissible drive unit parameters and recommended guide values for wire speed and advance speed while sawing.**
- f) **Stay alert at all times. Monitor the progress of the sawing operation and keep an eye on the cooling water system and the area surrounding the workplace. Do not operate the wire saw if your full concentration is not on the job!**

## 2 Safety instructions

- g) **Dry sawing creates large amounts of dust. In this case, use a dust removal system and wear a dust mask.**
- h) **Do not hold objects against the moving diamond wire by hand, e.g. with a view to using it as an improvised saw.**
- i) **WARNING: Some dust created by grinding, sanding, cutting and drilling contains chemicals known to cause cancer, birth defects, infertility or other reproductive harm; or serious and permanent respiratory or other injury.** Some examples of these chemicals are: lead from lead-based paints, crystalline silica from bricks, concrete and other masonry products and natural stone, arsenic and chromium from chemically-treated lumber. Your risk from these exposures varies, depending on how often you do this type of work. **To reduce exposure to these chemicals, the operator and bystanders should work in a well-ventilated area, work with approved safety equipment, such as respiratory protection appropriate for the type of dust generated, and designed to filter out microscopic particles and direct dust away from the face and body. Avoid prolonged contact with dust. Wear protective clothing and wash exposed areas with soap and water.** Allowing dust to get into your mouth, nose, eyes, or to remain on your skin may promote absorption of harmful chemicals.
- j) **Wear respiratory protection in enclosed or poorly ventilated areas.**
- b) **Use only saw wires that comply with the requirements of EN 13236.**
- c) **The number of wire breakages experienced can be reduced considerably by using high-quality wires, wire connectors and the appropriate crimping tools for fitting connectors.**
- d) **Wear protective gloves, as the wire gets hot through use.**
- e) **When dry sawing use a wire of the greatest possible length.** This allows the wire to cool down before coming into contact with the workpiece again on the next revolution.
- f) **Risk of wire breakage! Use of unsuitable wires, unevenly worn wires or wires consisting of several lengths joined together increases the risk of wire breakage.** Use only high-quality, one-piece wires of the correct length and check to ensure that wear is even. Never make up a wire by joining several lengths of wire together. Never use unevenly worn wires. Never use damaged or kinked wires or wires with beads that are loose or unevenly spaced (i.e. beads have shifted along the wire). Follow the instructions of the wire and connector manufacturer when connecting the ends of the wire.
- g) Use only diamond wire with beads of the specified diameter (bead diameter must be within the 8-12 mm range). Beads of other diameters may cause the wire to jump off the guide pulleys or cause damage to the running surface of the pulleys.

### 2.6.1 Safety instructions applicable to the diamond wire

- a) **Use only sawing wires that are rubber or plastic-coated between the beads and approved for use at a speed of at least 40 m/s (131 ft/s).**

### 2.7 Electrical safety



- a) Sawing inadvertently into a live cable presents a risk of fatal accident if the machine is not earthed/grounded or the insulation on a part of the machine is faulty. Connect the machine and its ancillary equipment only to a power source equipped with an earth/ground conductor and ground fault circuit interrupter (PRCD). Check that these items are in perfect working order before operating the equipment. Install an earth/ground rod if a generator is used or if no earth/ground conductor is present in the on-site electric supply. Operation of the machine without an earth/ground connection is not permissible under any circumstances.
- b) **Check the condition of the machine and its accessories. Do not operate the machine and its accessories if damage is found, if the machine is incomplete or if its controls cannot be operated faultlessly.**
- c) **A ground fault circuit interrupter (RCD) with a tripping current of max. 30 mA must be used.**
- d) **The electric supply voltage must comply with the information given on the type identification plate on the power tool.**
- e) **Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.
- f) **Electric cables and their plug connectors must be kept dry. When not in use, close power outlets with the cover provided.**
- g) **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.
- h) **Check the machine's supply cord at regular intervals and have it replaced by a qualified specialist if found to be damaged. Check extension cords at regular intervals and replace them if found to be damaged.**
- i) **Always disconnect the supply cord from the electric supply when the machine is not in use (e.g. during breaks between working), before making adjustments, before carrying out care and maintenance and before changing core bits.** This safety precaution prevents the machine starting unintentionally.
- j) **Disconnect the electric supply before opening the door on the control unit.**
- k) **Please note that certain components of the current converter (DSW 3018-E electrical unit) retain an extremely dangerous (potentially lethal) high voltage for up to 10 minutes after disconnection from the electric supply.**
- l) Use only extension cables of a type approved for the application and with conductors of adequate gauge. Do not use extension cables that are still rolled up. This can result in a drop in output at the equipment and may cause the cable to overheat.

### 2.8 Safety instructions applicable to transporting the wire saw

- a) **Secure the wire saw and its parts to prevent it sliding about during transportation.**

## 2 Safety instructions

- b) **Always avoid stooping when carrying heavy items, i.e. keep your back straight when lifting and carrying.**
- c) **Bear in mind that the machine, when assembled and standing but not yet fastened, could fall over. Accordingly, stand it only on a solid, level surface.**
- d) **Use the grips provided for transportation. Keep the grips dry, clean and free from oil and grease.**
- e) **The lifting points provided must be used if the drive unit and control unit are to be lifted by crane. Before lifting, check to ensure that all removable parts are securely fastened or removed. Never loiter beneath a load suspended by a crane or lifting equipment.**



### 3 Description

#### 3.1 Area of application

The DSW 3018-E is an electrically-powered wire saw for use with diamond wires. The wire saw is capable of cutting through materials ranging from heavily reinforced concrete to meter-thick masonry. A wet or dry sawing technique may be used.

#### 3.2 Use of the equipment as directed

The wire saw has been developed for the technical demolition of steel, concrete, stone or brickwork structures in construction and civil engineering applications. It can be used for wet or dry sawing (the wet sawing technique is normally used). Use extending beyond this is considered to be not as directed and requires to be clarified in advance with the manufacturer.

The operator in charge must be aware of the possible dangers and of his responsibility for safety, both with regard to himself and to others.

The wire saw may be operated only by specialists trained in concrete cutting techniques, referred to in the following as “operators”. These persons must be familiar with the content of these operating instructions and must have been trained by a specialist on safe application of the instructions.

#### 3.3 Items supplied

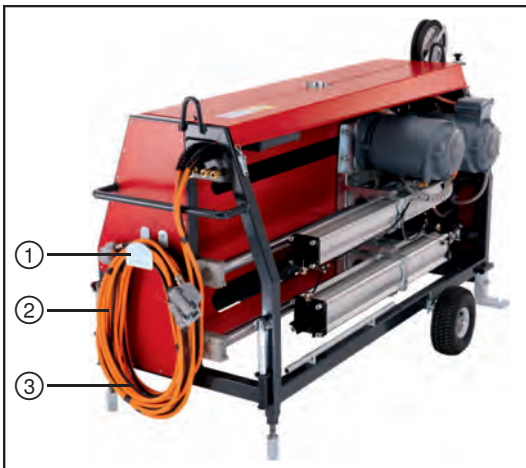
- Drive unit
- Control unit
- Air compressor (with air hoses)
- 2 single-pair pulley stands
- Toolbox with accessories and tools
- 2 water nozzles (with water hoses)
- Wire guard set
- Machine supply socket 63 A, 480 V
- Operating instructions

## 3 Description

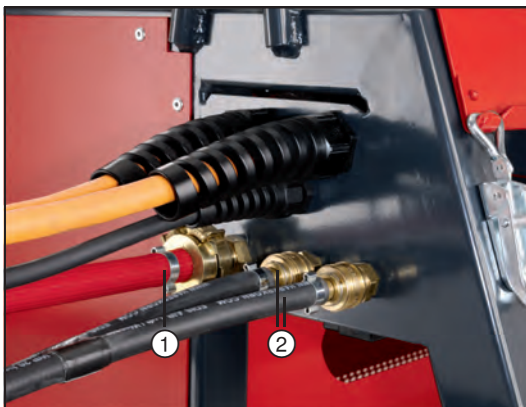
### 3.4 Operating controls on the drive unit



- ① Transport handle
- ② Rings for lifting by crane

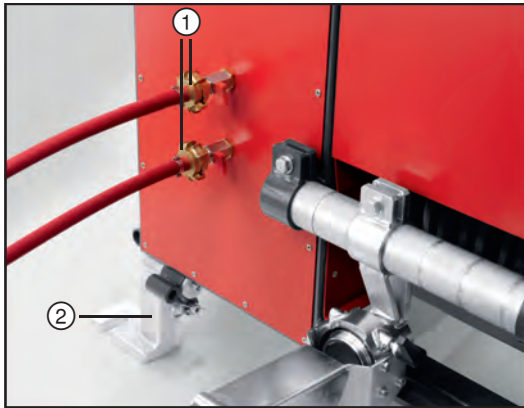


- ① Cable and hose storage point
- ② Supply cable for drive motors (orange)
- ③ Control system cable (black)



- ① Water connection (water supply from the construction site)
- ② Compressed air connections for advance pressure cylinder

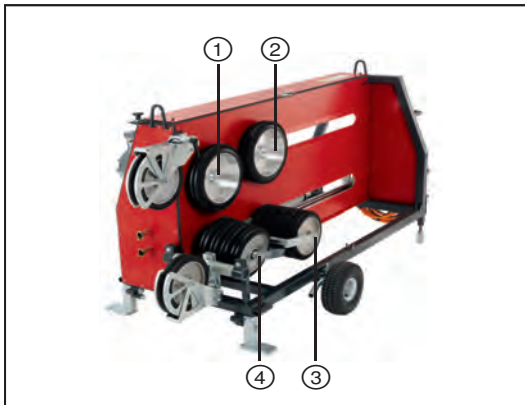
### 3 Description



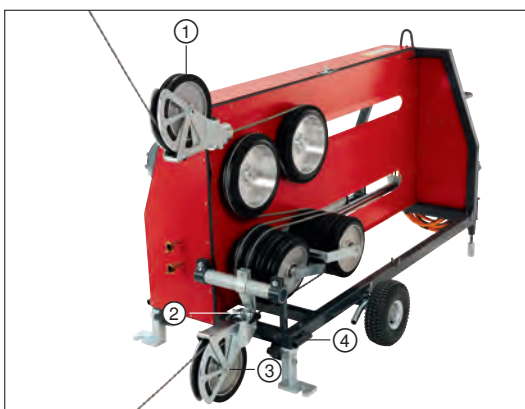
- ① Water connections for cooling water supply to the diamond wire
- ② Plates for securing the drive unit to the floor or ground



- ① Support foot, adjustable in height

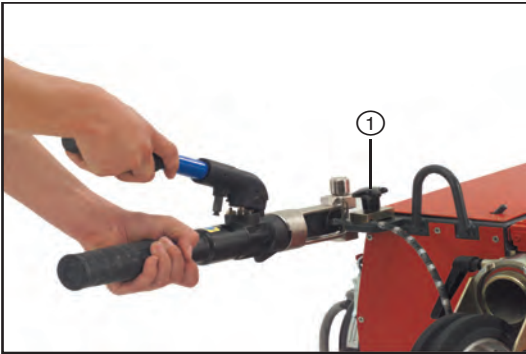


- ① Drive wheel 1  $\varnothing$ 360 mm
- ② Drive wheel 2  $\varnothing$ 360 mm
- ③ Storage pulleys  $\varnothing$ 280 mm
- ④ Storage pulleys  $\varnothing$ 280 mm



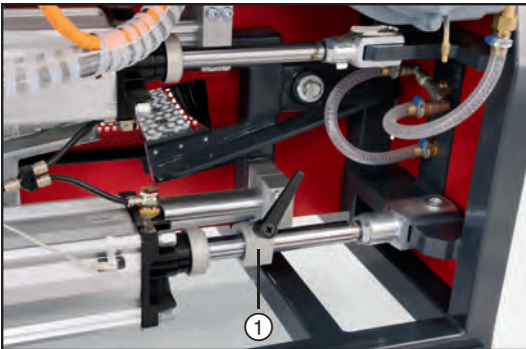
- ① Slack-side guide pulley, adjustable in direction
- ② Clamping lever to fix guide pulley
- ③ Tension-side guide pulley, adjustable in direction and position
- ④ Cylindrical socket for vertical sawing device (accessory)

### 3 Description



① Vice for use when fitting wire connectors

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① Starting lock with clamping lever, compressed air cylinder stop piece

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① Wire storage cover

---



① Wire storage cover securing latch

---

### 3.5 Operating controls on the control unit



- ① Ring for lifting by crane
- ② Compressed air connections, supply to drive unit
- ③ 24 V socket for control circuit
- ④ Supply socket for drive motors
- ⑤ Compressed air supply from the compressor
- ⑥ Folding shelf for the compressor
- ⑦ Transportation handles



- ① Machine supply plug
- ② Machine supply socket

### 3 Description



- ① Control unit cover lock

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- ② Key for control unit cover lock

---

- ③ Main power switch

---

- ④ Display showing wire cutting speed in m/s

---

- ⑤ Green “Ready for operation” indicator lamp

---

- ⑥ Red “Error” indicator lamp

---

- ⑦ Yellow “Wire storage full” indicator lamp

---

- ⑧ White “Water flowing” indicator lamp

---

- ⑨ Gauge showing current input in amps

---

- ⑩ Gauge showing advance pressure in bar

---

- ⑪ Wire speed regulator knob

---

- ⑫ Main drive ON, lights green

---

- ⑬ Main drive OFF, lights red

---

- ⑭ EMERGENCY STOP button

---

- ⑮ Water supply OFF, lights red

---

- ⑯ Water supply ON, lights green

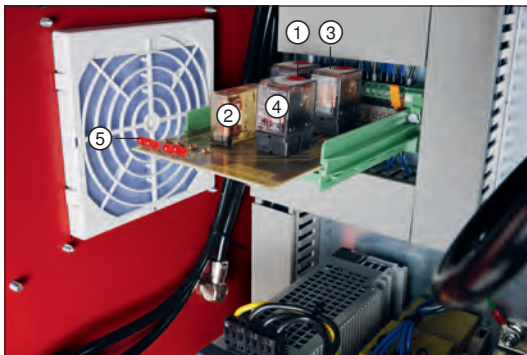
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- ⑰ Advance control ↑ = forward, neutral, ↓ = back

---

- ⑱ Advance pressure regulator knob, pushed in = locked, pulled out = unlocked

#### Overview of relays



- ① Relay no.1, for starting the main motor

---

- ② Relay no. 2, for monitoring the motor cooling system and guards / covers

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- ③ Relay no. 4, for controlling the water valve

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- ④ Relay no. 3, automatic cut-out when wire storage is full

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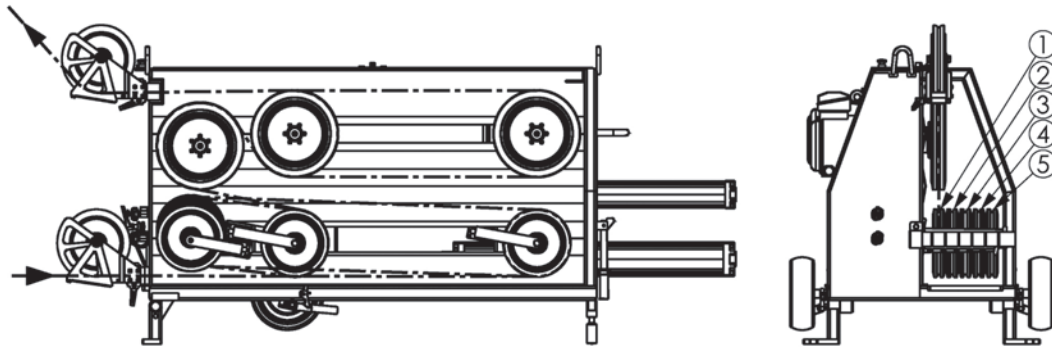
- ⑤ LEDs 1, 2, 3, 4 (from left to right)

## 3 Description

### 3.6 Drive principle

The wire is driven by two electric motors fitted with drive wheels. The wire is fed around the drive wheels in an “S” configuration. The motors’ performance characteristics and control system are designed to achieve high initial torque and working torque. The wire speed can be infinitely adjusted within a range of 2.5–35 m/s.

### 3.7 Saw advance and wire storage



#### Wire configuration in the drive unit

Wire configuration	Min. wire length in drive	Storage capacity per cylinder stroke	Recommended starting pressure depending on wire lead-in
1st storage level	4.1 m (13.45 ft)	4 m (13.12 ft)	1.0 bar (14.5 psi)
2nd storage level	5.7 m (18.7 ft)	6 m (19.69 ft)	1.5 bar (21.76 psi)
3rd storage level	7.3 m (23.95 ft)	8 m (26.25 ft)	2.0 bar (29.01 psi)
4th storage level	8.9 m (29.2 ft)	10 m (32.81 ft)	2.5 bar (36.26 psi)
5th storage level	10.5 m (34.45 ft)	12 m (39.37 ft)	3.0 bar (43.51 psi)

#### Wire configuration and storage capacity

Min. wire configuration in drive unit	4.1 m (13.45 ft)
Max. wire configuration in drive unit	22.5 m (73.82 ft)
Net wire storage capacity	18.4 m (60.37 ft)

The wire advance mechanism works like a block and tackle system, but in reverse. The advance movement, causing the wire to be drawn in, is achieved by pushing two pulley

## 3 Description

stacks apart. The maximum wire storage length is 60 ft. The minimum length of wire necessary in the drive system is 13.5 ft.

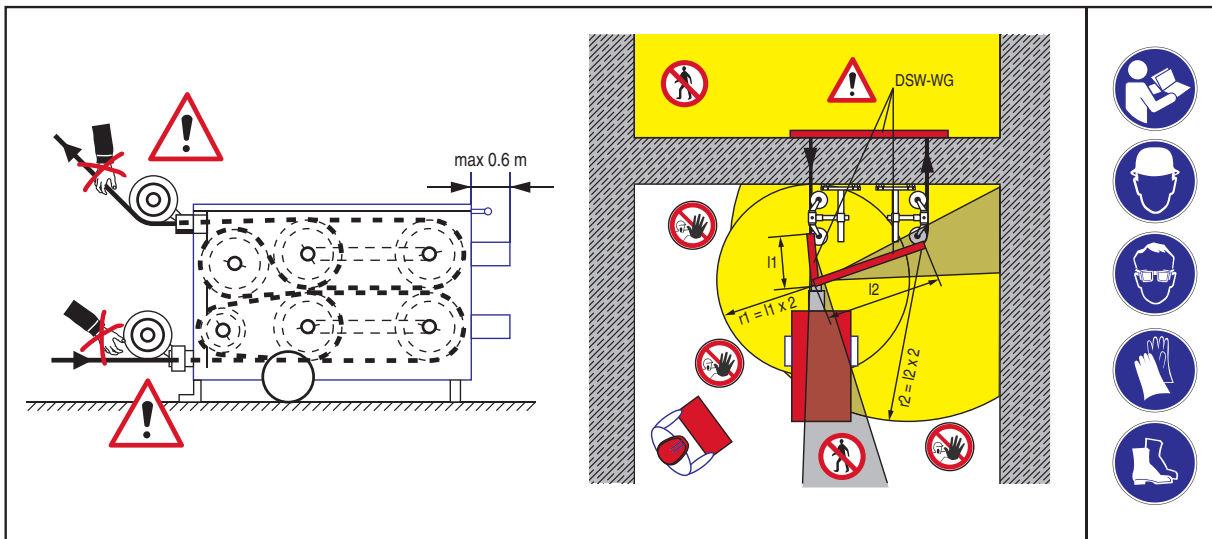
### 3.8 Wire guidance

Guide pulleys are mounted on the wire tension side and on the return side (slack side) of the drive unit. The wire is guided by the lower guide pulley (tension side) to the pulley stand on the object being cut. From this pulley stand the wire is then fed through a hole drilled in the object to be cut, round the back of the object and to the return hole which has also been drilled in the object. The wire is then fed back to the drive unit through the return hole in the object, over a pulley stand mounted on the object and the guide pulley positioned at the slack side of the drive unit.

The guide pulleys and guide tube mounted on the object prevent the wire jumping off uncontrollably at the end of the cut. These guides reduce the length of wire released in the event of wire breakage.

The length and height of the arc cut by the wire influence the rate of cutting progress as well as the service life of the wire.

### 3.9 Safety concept for the working area





## 4 Technical data

Right of technical changes reserved.

### DSW 3018-E drive unit

Rated voltage	400 V ~
Rated frequency	5...67 Hz
Rated current	60 A
Power rating	30 kW
Cooling water temperature at 5 l/min:	+4...+30°C (+39...+86 °F)
Cooling water pressure	2...6 bar (29.01...87.02 psi)
Drive running speed	140...1,900/min
Wire storage capacity (net)	18.4 m (60.37 ft)
Wire speed	2.5...35 m/sec (8.2...114.83 ft/s)
Wire diameter	8...12 mm (0.31...0.47")
Drive wheel diameter, 2x $\phi$	36 cm (14.17")
Dimensions (L × W × H)	236 cm (92.91") × 109 cm (42.91") × 123 cm (48.43")
Weight	550 kg (1,212.53 lb)
Storage temperature <sup>1</sup>	-15...+50°C (+5...+122 °F)
Ambient temperature range during operation <sup>1</sup>	-15...+45°C (+5...+113 °F)
Cable length (drive unit - control unit)	10 m (32.81 ft)
Protection class	Splash-proof construction (IP 65)

<sup>1</sup> At temperatures below zero allow the unit to warm up slowly before beginning sawing and, after finishing, use the compressor to blow the water out of the cooling circuit.

### Noise values

Typical A-weighted sound power level	103.6 dB (A)
Typical A-weighted sound emission pressure level	86.1 dB (A)
Uncertainty for the given sound level	3 dB (A)

### DSW EB-3018-E control unit

Rated voltage	480 V
Mains frequency	50...60 Hz
Mains connection (phase requirements)	3P+PE
Rated current	60 A
Fuse rating	Max. 60 A
Output voltage	400 V ~
Output frequency	5...67 Hz
Control voltage	24 V =

## 4 Technical data

Protection class	Splash-proof construction (IP 54)
Dimensions (L × W × H)	58.4 cm (22.99") × 76.9 cm (30.28") × 106 cm (41.73")
Weight	95 kg (209.44 lb)
Storage temperature	-15... +50°C (+5... +122 °F)
Ambient temperature range during operation	-15... +45°C (+5... +113 °F)
Leakage current	22 mA

### Air compressor

Compressed air	6...8 bar (87.02... 116.03 psi)
Air volume	Min. 100 l/min (Min. 26.42 gal/min)
Connection	120 V

### DSW-SPP 30 single pair pulley stand

Weight	30 kg (66.14 lb)
Dimensions (L x W x H)	49.5 cm (19.49") x 45 cm (17.72") x 110 cm (43.31")
Minimum anchor diameter (in uncracked concrete)	HDI 5/8"

### 5 Before use

#### 5.1 Planning the cuts to be made

Ask the site engineer or architect for confirmation of the exact position of the cuts to be made and make sure that any pipes, conduits or tensioning cables etc. that are to be cut through do not present any risks or hazards.

Bear in mind that the parts cut away may need to be divided into smaller, more easily manageable sections for removal and transport (i.e. permissible floor loads, loading capacity of lifting equipment, size of door openings, etc. must be taken into account).

#### 5.2 Planning the wire guidance system and cutting configuration



Thorough training and experience are the most important prerequisites for optimum planning of the cutting configuration and wire guidance system.

Do not exceed the system's performance rating when planning the length of the cut. Avoid cutting in a very flat arc (low rate of sawing progress) or situations where the wire follows a very tight radius or pointed arc (possibility of damaging the wire).

Arrange the cutting sequence so that the wire cannot become trapped by parts that are cut away.

1. Plan the sequence of operations before setting up the system.
2. Plan the cooling water supply system and water disposal system.
3. Observe the safety instructions.
4. Define the danger area, cordon it off and take the required safety precautions.
5. Plan how the part to be cut away is to be secured, removed and transported away and make the necessary preparations for these operations.
6. Mark the cutting lines. Where a large section is to be cut away, divide it up and cut it away in smaller parts, where necessary.

#### 5.3 Examples of wire guidance systems

The following examples illustrate the most common applications.

##### **CAUTION**

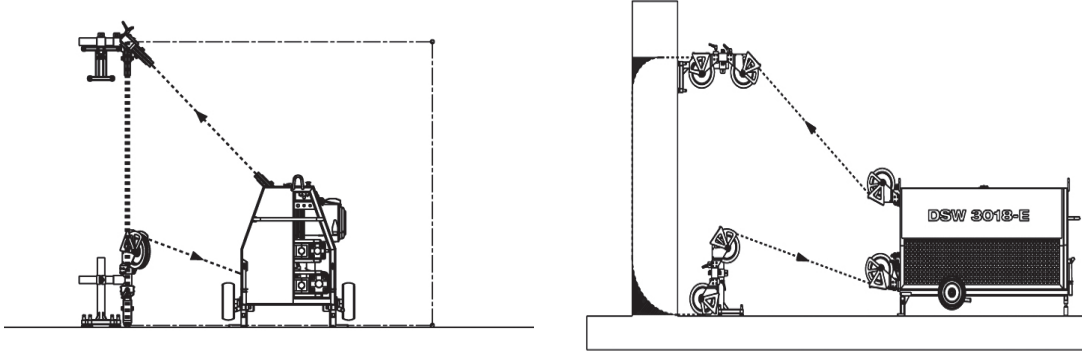
Adhere to the examples shown in these operating instructions when positioning the wire guidance system and the pulley stands. Consult a wire sawing specialist about other methods of wire guidance.

For the sake of clarity, the wire guidance systems in the following examples are shown without guards fitted.

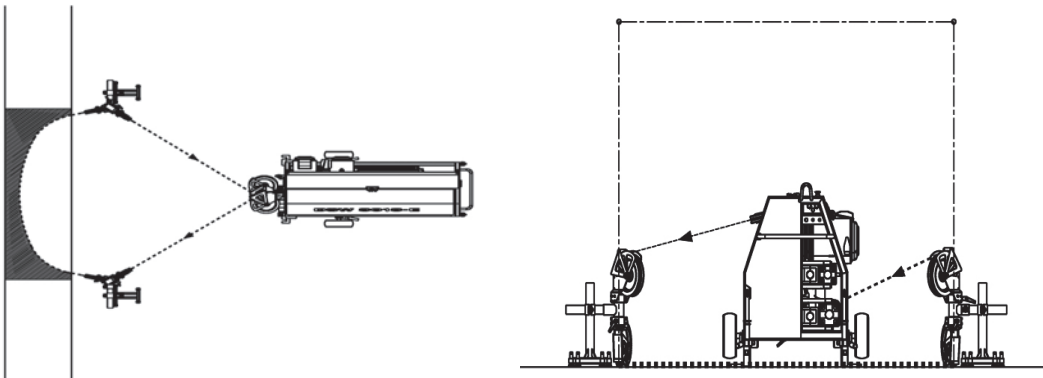
## 5 Before use

### 5.3.1 Cutting out a rectangular opening in a wall

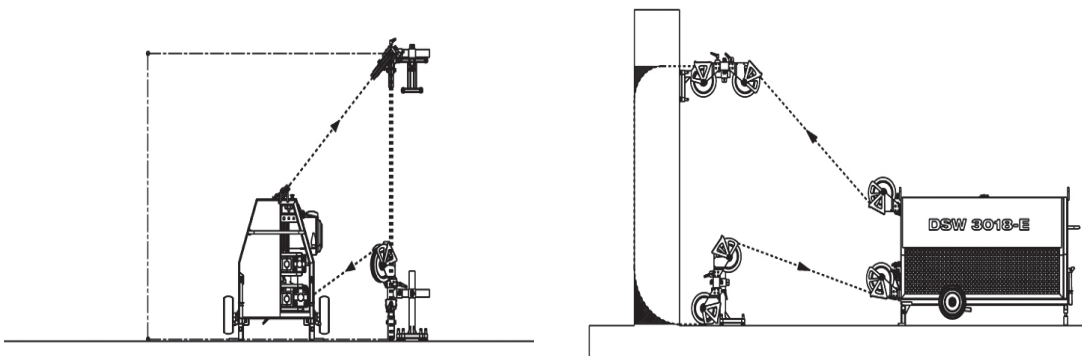
#### Vertical cut (on the left)



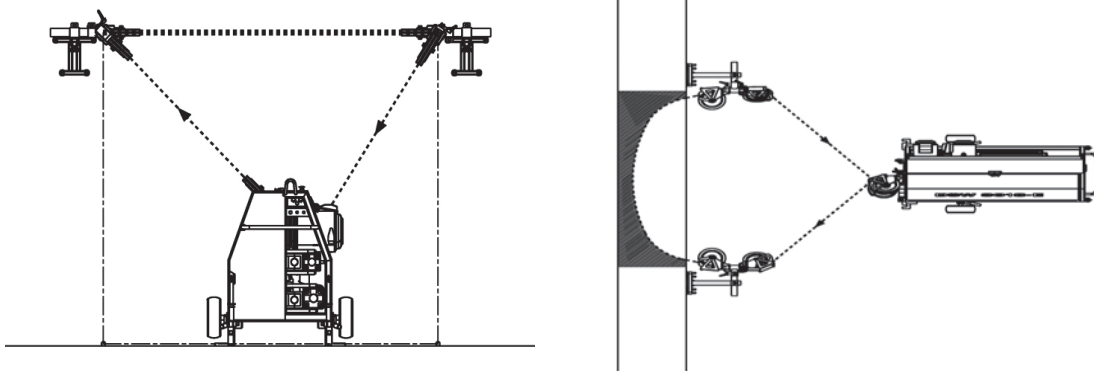
#### Horizontal flush cut (at the bottom)



#### Vertical cut (on the right)

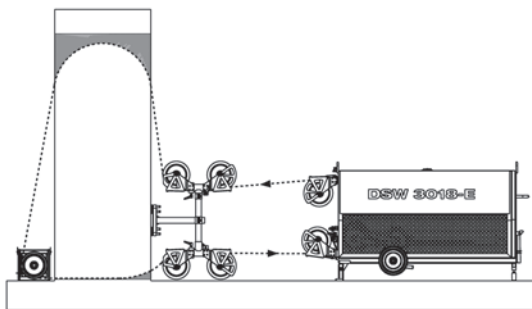


Horizontal cut (at the top)

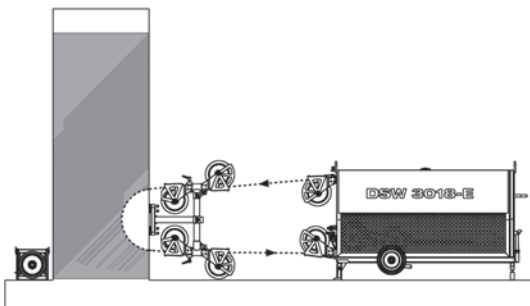


5.3.2 Vertical cut using the twin-pair pulley stand and release pulley

Starting the cut

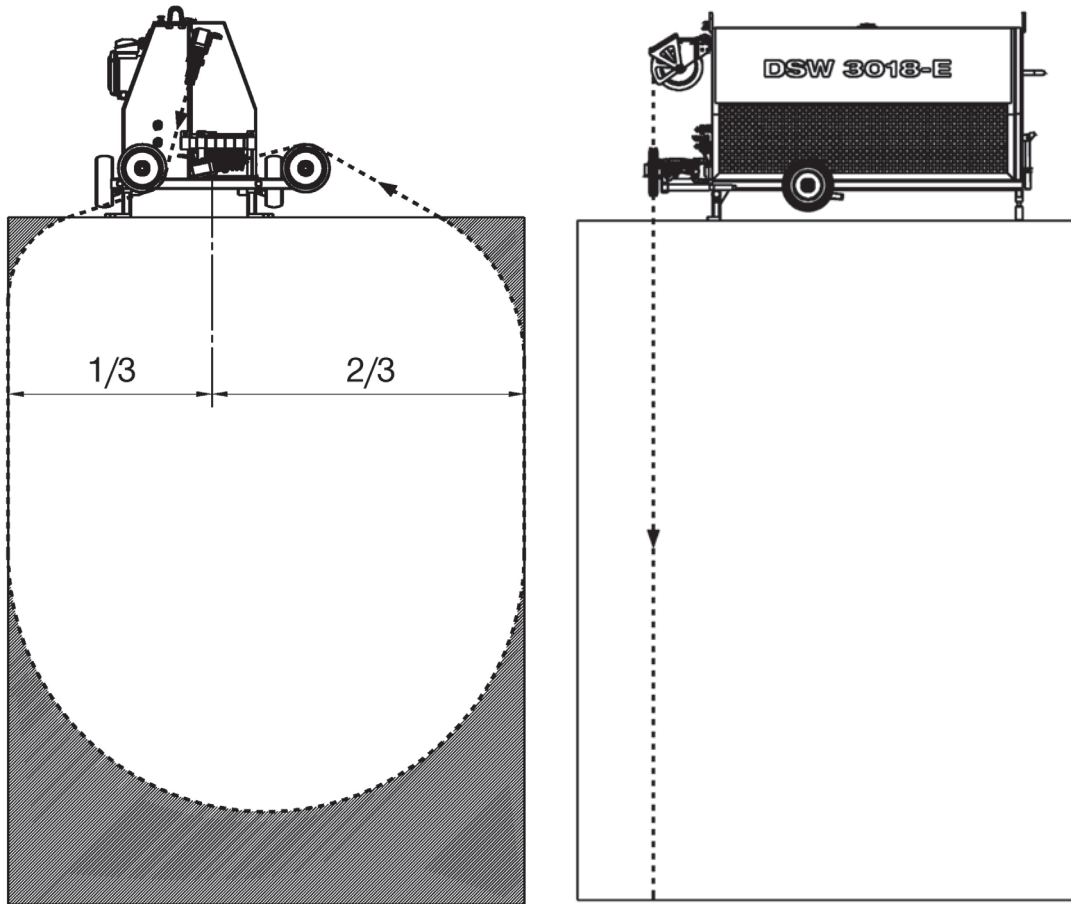


Finishing the cut



## 5 Before use

### 5.3.3 Cutting using the vertical sawing device



Cutting using the vertical sawing device

## 5.4 Calculating the wire storage and wire length required

### Calculating the required storage and wire length

Calculation of storage length required (approximation):	Thickness of object in cutting direction x 2
Calculation of wire length required (approximation):	Wire length required (for minimum configuration) <sup>1</sup> + length of tension side + thickness of object cut x 2 + length of cut + length of slack side

<sup>1</sup> The lengths required for the minimum configuration can be found in the "Technical data" section.

### 5.5 Safety aspects to be clarified when setting up the wire saw

1. Is the cutting area free from hazardous pipes or cables (gas, water, electricity, etc.)?
2. Have the effects of the cutting work on the stability of the structure been clarified and are all supports capable of taking up the resulting loads?
3. Can the possibility of hazards or damage as a result of the cooling water used be ruled out?
4. Can safety measures be implemented in order to ensure that no persons can be injured or property and equipment damaged by falling objects or debris that may fly off?
5. Can the parts of the structure cut away be removed safely in a controlled operation and disposed of?
6. Does the electric supply and water supply available for use meet the specified requirements?
7. Is the required equipment in the correct specification available for use?
8. Has the work to be carried out been approved in full by the site engineer or architect?

### 5.6 Electric power supply / fuse rating



#### CAUTION

Irrespective of whether using mains power or generator power, always check that an earth/ground conductor and ground fault circuit interrupter are present in the power supply and that these are connected.

Check that the fuse rating of the electric power supply at the construction site is as follows:

#### 3x480 V voltage

Fuse rating	60 A
Ground fault circuit interrupter (FI)	Type A 30 mA

### 5.7 Electric supply / plug connector on the appliance

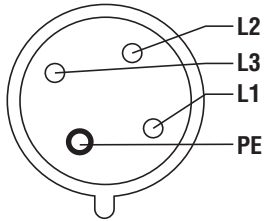
#### NOTE

Modification or replacement of the electric supply plug connector on the control unit is not permissible. If necessary, fit the electric socket supplied to the electric extension cable you are using.

## 5 Before use

### Connection scheme for the machine supply socket (3x480 V, 60 A) on the control unit

#### Connection scheme 3P + PE



L1	Phase 1
L2	Phase 2
L3	Phase 3
PE	Earth / ground conductor

### 5.8 Extension cables / conductor cross section

Make sure that only extension cables approved for the intended field of use and with conductors of adequate cross section are used. The cable may otherwise overheat.

In accordance with EN 61029-1 the conductor cross section must be at least 10 mm<sup>2</sup> (AWG 9) for 63 A (conductor cross section = cross sectional area of each conductor).

Inadequate conductor cross sections and long cables lead to a drop in voltage and, accordingly, to a loss of performance.

Check to ensure that cables are fully unrolled before the wire saw is put into operation.

Current 60 A	Minimum cable cross section AWG 9	Minimum cable cross section AWG 7	Minimum cable cross section AWG 5
Maximum cable length	100 m (328.08 ft)	150 m (492.13 ft)	200 m (656.17 ft)

### 5.9 Cooling water supply

When the cooling water has a temperature of 63°F, a flow rate of approx. 5 l/min (1.3 gal/min) is required to cool the drive unit.

The machine's automatic cut-out will be activated in the event of inadequate cooling.

Use only clean water. Do not use salty water or sea water.

If the pressure in the site water supply system is low, use a non-return valve to prevent contamination of the water supply.

### 5.10 Through-holes for the wire

#### NOTE

When sawing through very thick objects, cut the part to be removed at slight angle to form a taper. The part cut out can then be removed more easily.

The position in which the through-holes are drilled has a direct influence on the accuracy of the cut. On very thick walls or where the permissible tolerances are low we recommend that a diamond core drilling rig is used to drill the through-holes.

A rotary hammer can be used to drill the through holes on thinner walls or where the permissible tolerances are high.



The diameter of the through-holes drilled should be at least one and a half times the diameter of the sawing wire.

After drilling, use a suitable tool to round off the sharp edge of the hole.

### 5.11 Transporting the system

#### WARNING

The wheels on the drive unit must be in the raised position before transportation in your vehicle or on a trailer. The drive unit, control unit and other components must be secured with ratchet straps to prevent movement or falling over.

#### NOTE

Use suitable lifting equipment when loading / unloading the vehicle or trailer (e.g. fork lift or crane).

#### NOTE

The drive unit can be moved more easily when the carriage of the wire storage system is in the rearmost position.

The control unit can be moved using the two handles.

Rings are provided for lifting by crane.

Remove the compressor from the fold-out shelf on the control unit before transporting the equipment.

Bring the wheels into the transport position and raise the supporting feet before moving the drive unit.

#### Bring the wheels into the transport position (left and right)



1. Insert the bar in the pivot mechanism and (the bar is located on the frame at the cylinder side).
2. Release the catch and use the bar to pivot the wheel down into position.
3. Allow the catch to re-engage.

## 5 Before use

### Lift the supporting feet (left and right)



- Remove the retaining pin and pull the bolt out.
- Lift the supporting foot, push the bolt in and then reinsert the retaining pin.

### 5.12 Fastening the wire saw

#### **CAUTION**

A basic prerequisite for safe and efficient use of the saw system is that it must be secured using a means of fastening suitable for the applicable material and of adequate dimensions.

#### **WARNING**

**Use an anchor suitable for the material on which you are working and observe the anchor manufacturer's instructions.**

#### **NOTE**

HDI 5/8" metal expansion anchors are usually suitable for making fastenings in uncracked concrete. Under certain conditions it may be necessary to use an alternative fastening method. Consult a specialist if you have questions about secure fastening.

#### **WARNING**

The HDI 5/8" anchor is unsuitable for use on cracked concrete, masonry and synthetic or natural stone or similar materials.

#### **CAUTION**

Set up the drive unit and control unit only on a flat and solid surface.

#### **NOTE**

Consult a specialist if you have questions about secure fastening.

The drive unit may shift in the direction of the tension on the wire if the wire gets stuck while sawing is in progress.

Use anchors at the supporting feet or a ratchet strap to prevent inadvertent movement of the drive unit.

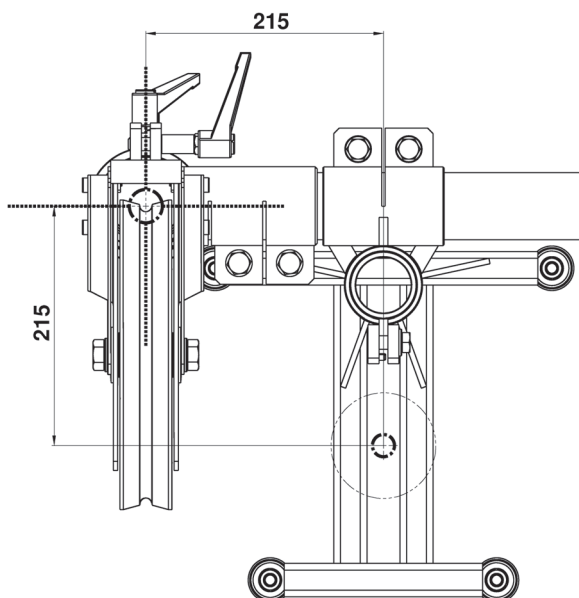
Set up the drive unit in such a way that the lengths of wire unleashed in the event of wire breakage are as short as possible.

1. Transport the drive unit to the desired position.
2. Remove the retaining pin and pull the bolt out at the supporting feet.
3. Lower the feet.
4. Lock the feet in position with the bolt and then reinsert the retaining pin.
5. Use the bar to lift the wheels at both sides.



6. Adjust the leveling feet so that the drive unit stands steadily ①.

### 5.13 Fastening a pulley stand



1. Mark the position of the anchor hole to be drilled for the pulley stand.
2. Drill the anchor hole and clean it out.
3. Insert the anchor (HDI 5/8") and use the setting tool to expand it.
4. Screw the clamping spindle in by hand as far as it will go.
5. Fit the pulley stand, bring it into alignment and tighten the clamping nut lightly.

## 5 Before use

6. Tighten the leveling screws in a diagonal sequence until the pulley stand is securely seated on the surface.
7. Fit the wire guidance unit by sliding the clamping ring onto the stand, bring the unit into alignment and then tighten the clamping screw on the pulley stand.

### 5.14 Setting up the control unit

#### CAUTION

Set up the control unit only on a flat and solid surface.

Set up the control unit outside the danger area where the operator cannot be struck by the end of the wire unleashed in the event of wire breakage or by objects that may fly off.

### 5.15 Connecting the electric power, water and compressed air

#### NOTE

Set all switches on the control unit to OFF or NEUTRAL and press the EMERGENCY STOP button.

#### NOTE

The drive motors must be cooled with water even when using the dry cutting technique.

#### NOTE

The overheating prevention sensor will be activated, causing the motors to be switched off automatically, if the cooling water flow rate is inadequate or if the water used is too warm. The "Error" warning lamp on the control unit will light (please also refer to the "Troubleshooting" section).

Situation: The drive unit has been set up and the pulley stands with the guide pulleys have been installed.

1. **DANGER** Always set up the control unit outside the wire sawing danger area.  
Connect the system's power cable and the 24 V control cable between the drive unit and the control unit.
2. Connect the external power supply cable to the socket on the control unit.
3. Connect the long compressed air hoses (supplied) between the drive unit and the control unit.
4. Connect the two cooling water hoses at the front of the drive unit (beside the guide pulleys).
5. Lead the cooling water hoses to where the cut is being made and connect them to the flexible water nozzle and to the long water nozzle.
6. Turn the main switch on the control unit to ON.  
The indicator lamp lights green. The water valve closes.  
The red warning lamp on the control unit lights until the correct voltage status has been reached. When the correct voltage status has been reached, the red lamp goes out automatically.

7. Connect the compressor to the electric supply and switch it on.  
The compressor builds up pressure and switches off automatically when the required pressure is reached.
8. Once pressure has built up, connect the compressor to the control unit with the short air hose.  
**NOTE** If the compressed air hose is connected before pressure has built up, the compressor will be unable to build up pressure (see sticker on the compressor).
9. Use the short compressed air hose to connect the compressor to the control unit.  
When pressure drops, the compressor switches on automatically and builds up pressure again.
10. Connect the water supply to the rear of the drive unit.
11. Turn on the construction site water supply tap.  
The water begins to flow only when the cooling water supply is switched on at the control unit.
12. Turn the main switch on the control unit to OFF.

### 5.16 Rigging and tensioning the wire



Situation: The length of the wire and the optimum position of the drive unit has been determined and the drive unit has been set up at the correct distance from the structure. The wire has been fitted with wire connectors.

#### **WARNING**

Press the EMERGENCY STOP button and turn the main switch on the control unit to OFF before you begin rigging the wire.

#### **WARNING**

When feeding the wire through, check that the direction of travel indicator on the wire corresponds to the direction of rotation of the drive wheel. The wire is pulled into the machine through the hollow axle of the lower guide pulley. Fitting the wire the other way round (opposite direction of travel) will cause the wire to jam in the kerf.

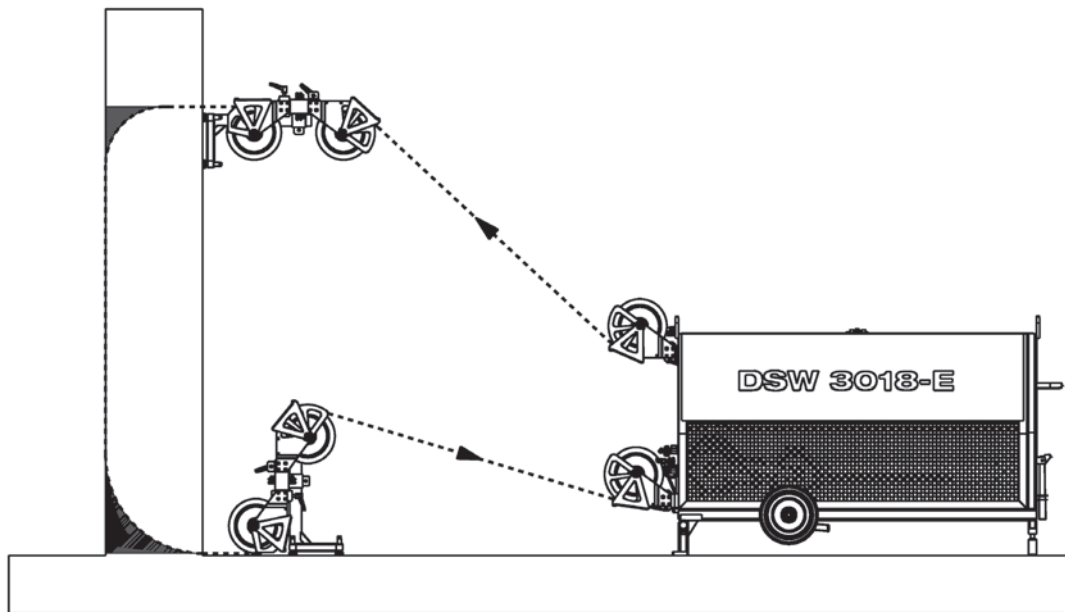
#### **NOTE**

If the indicator arrow on the wire is no longer visible, the direction of travel can be determined from the conical shape of the beads (the narrow end points in the direction of travel).

#### **NOTE**

Well-rounded corners and edges make it easier to start the wire.

## 5 Before use



1. Feed the wire in the correct direction of travel through the hollow axle of the pulley stand furthest away from the drive unit and through the hole drilled in the structure.
2. Pull the wire through by hand, pulling it over the corner where the cut is to be started (one person at the front of the object, one at the rear). Repeat this procedure until the wire can be moved freely by hand.  
**NOTE** If the corners where the cut is to be started are not sufficiently rounded, the high power of the motors may result in the piston rods being pushed back into the cylinders slightly, causing the wire on the storage pulleys to become slack.
3. Feed the wire from the rear of the object through the second through-hole, through the hollow-axle of the second pulley stand and then round off the corner where the cut is to be made.
4. Check that the wire can be pulled by hand through the object to be cut, pulling the wire in a to-and-fro motion. If the wire cannot be moved by hand, or only with great difficulty, round off the corners more thoroughly or eliminate the cause of the wire sticking.
5. Feed the wire from the pulley stand closest to the drive unit through the hollow axle of the lower guide pulley on the drive unit (the arrow on the wire indicating direction of travel should point to the drive unit) and from there feed it back through the hollow axle of the upper guide pulley on the drive unit.



6. Before connecting the ends of the wire, twist the wire in a counterclockwise direction, applying between one half turn and one whole turn per meter length of wire. This ensures that the beads wear evenly and remain round.



7. Connect the ends of the wire by fitting the pin.  
**NOTE** Observe the manufacturer's instructions.
8. Release the starting lock at the compressed air cylinder by releasing the clamping lever.
9. Turn the main switch on the control unit to the ON position and release the EMERGENCY STOP button.
10. Set the advance pressure on the control unit to approx. 1 bar and operate the advance lever so that the pulley stacks on the drive unit move towards each other (until the drive wheels are as close together as possible).



11. Starting from the upper guide pulley, pass the wire around the drive wheels (refer to the sticker on the drive unit) and then pass the wire around the storage pulleys, taking between one and five turns depending on the length of wire to be taken up.  
**NOTE** If the length of wire available is insufficient to rig the saw in the minimum configuration, move the drive unit closer to the structure or use a longer wire.  
**NOTE** If too much wire is left over, move the drive unit further away from the structure or use a shorter wire.

## 5 Before use

**NOTE** To allow full use of the wire storage capacity, set up the drive unit so that only the first storage level is occupied by the wire before the first cut is made.



12. Slide the guide pulley to the corresponding storage level and secure it with the screw provided (marking grooves serve as an accurate positioning aid).



13. **WARNING** Risk of finger injury! Watch where you put your fingers and hands. Don't grip the wire too close to the pulleys.  
Lift the wire with two fingers.  
**NOTE** Check that the wire lies in the groove in the pulleys.
14. Set the advance pressure on the control unit to approx. 1 bar and operate the advance lever.  
Tension is applied to the wire.
15. Adjust the guide pulleys on the drive unit and the pulley stands so that the wire lies exactly in the middle of the guide groove in the pulleys.
16. Check the complete wire guidance system to ensure that the wire is correctly positioned on all pulleys. Bring the wire into alignment by adjusting the position of the guide pulleys. After making adjustments, check that the screws at all guide pulleys have been retightened.



17. Slide the starting lock all the way towards the compressed air cylinder and clamp it securely.  
**NOTE** Engaging the starting lock prevents the wire becoming slack and possibly coming off the pulleys when starting.



18. Release the starting lock when you begin the actual cutting operation.



19. Fit and secure the wire store cover on the drive unit.  
**NOTE** The drive unit can be started only when the wire store cover is locked in position.
20. Where necessary, fit the wire guards and tubular guards over the exposed lengths of wire.

### 5.17 Setting up the wire cooling system

#### **NOTE**

The motors must be cooled even when using the dry cutting technique. A closed-circuit water supply system can be used for this purpose. Direct the waste water into a drain or suitable reservoir.

Position the flexible water supply nozzle at the wire entry point on the object to be cut and secure it in position with a wedge.

Position the long water supply nozzle at the rear of the object to be cut.

Adjust the nozzles so that the water is drawn into the kerf by the wire.

As sawing progresses it may be necessary to reposition the nozzles in order to avoid creating dust and causing the wire to overheat.

Press the EMERGENCY STOP button and turn the main switch on the control unit to OFF before making any adjustments to the system.

Readjust the water supply nozzles and then restart the sawing operation.

## 6 Operating the saw

### 6 Operating the saw

#### 6.1 Checks before beginning sawing

1. Have the safety measures been correctly implemented at the danger zones?
2. Have the guards been fitted correctly?
3. Have the necessary supports and covers been positioned correctly?
4. Can the cooling water be drained away under control?
5. Have the individual pieces of equipment been installed with adequate security?
6. Has the wire been fitted in the correct direction of travel and can it be pulled through the kerf easily by hand?
7. Have the guide pulleys been set up exactly in alignment with the wire?
8. Does the advance cylinder have adequate stroke available?
9. Have the electric cables, water and compressed air hoses been connected correctly, engaged securely and positioned safely?
10. Have the water nozzles been positioned correctly (the water should be pulled into the kerf by the wire)?
11. Do the electric power and water connections meet the necessary requirements?

#### 6.2 Starting the saw and beginning sawing

##### Situation

- The main switch is in the ON position
- The green “Ready for operation” lamp is lit
- The compressor, i.e. the system, is at working pressure
- The advance lever is in the tilted position and the saw wire is tensioned
- The water supply is connected
- The motor is OFF
- The advance lock on the cylinder is locked

##### Beginning sawing

Open the water valves on the drive unit.

Pull up the advance pressure control knob and turn it to set a starting pressure of about 1 bar.

Switch the water supply to ON. The white indicator lamp should light.

Press the green “Main drive ON” button.

Use the speed regulator knob to increase wire speed gradually. Once the wire is running at a low speed (approximately 3–10 m/s cutting speed), allow it to cut into the object at this speed for a few seconds. Check that the wire is running correctly on all guide pulleys.

Increase the advance pressure and the wire speed. As you do so, take care to adhere to the recommended values.

##### Cutting speed guide values

Sawing technique	Recommended cutting speed
Wet cutting	25 ... 35 m/sec (82.02 ... 114.83 ft/s)
Dry cutting	10 ... 20 m/sec (32.81 ... 65.62 ft/s)

### NOTE

Set the advance pressure so that current input is 40-50 A.

After sawing for a short time, press the OFF button to stop the saw. Press the EMERGENCY STOP button.

Check that the wire is being correctly guided and adjust the water supply nozzles if necessary.

Release the locking ring on the compressed air cylinder.

### 6.3 Sawing

#### DANGER

Press the EMERGENCY STOP button and switch off the drive unit before entering the danger area.

#### DANGER

Press the EMERGENCY STOP button immediately in the event of a critical or dangerous, unforeseen situation occurring, e.g. the wire jumps off a guide pulley or a person enters the danger area.

#### DANGER

Always remain at the control unit while sawing is in progress, monitor the operation and keep an eye on the danger area.

#### Beginning sawing

Release the EMERGENCY STOP button.

Start the drive unit.

The wire speed and advance pressure settings previously made remain unchanged and do not require to be readjusted.

The wire saw then cuts automatically.

Monitor the following:

- The danger zone
- Wire guidance
- The cutting parameters (current input, advance pressure and wire speed) on the control unit
- The cooling water supply at the wire  
Readjust the water nozzles as soon as dust is created (if using the wet cutting technique).

#### Wire cooling instructions

Sawing technique	Cooling	Comment
Wet cutting	Approx. 5 liters (1.3 gal) of water per min.	Readjust the water nozzles if dust is produced
Dry cutting	“Air cooling”, long wire	Use vacuum dust removal if necessary

## 6 Operating the saw

### Wire storage system is full

The yellow warning lamp lights when the advance mechanism has reached the rear end of its travel. The drive unit switches off automatically.

Press the EMERGENCY STOP button.

Press the red “Water supply OFF” button.

Set the advance pressure to 1 bar.

Push the advance lever in the opposite direction. The pulley stacks move toward each other.

Open the catch and remove the wire store cover.

Lay the length of wire that has become slack over the storage pulleys not already in use.

Position the hollow axle of the guide pulley at the tension side to bring it into alignment with the wire entering the wire store. Secure the hollow axle with the screw.

Retension the wire, see 5.16

Make sure that the wire lies correctly in the groove in the wire storage pulleys.

Fit the wire store cover and close the catch.

### NOTE

If wire storage capacity is inadequate, move the drive unit further away from the object being cut and refasten it in this position or, alternatively, shorten the wire.

### Restarting the sawing operation

Check the alignment of the guide pulleys. Readjust them if necessary.

Set the advance pressure to the value last used.

Switch the cooling water supply back on.

Release the EMERGENCY STOP button.

Switch the drive unit on.

Use the speed control knob to set the desired cutting speed (wire speed).

The wire saw then cuts automatically.

Monitor the sawing operation.

### NOTE

If the saw wire vibrates excessively, check the alignment of the guide pulleys. If necessary, adjust the wire speed and advance pressure slightly.

### NOTE

Towards the end of the cut the arc followed by the wire becomes flatter, thereby reducing the wire's contact pressure and cutting performance. Where possible, compensate this by increasing the advance pressure or by adjusting the wire guidance system so that the wire cuts in a tighter arc.

### 6.4 Ending the sawing operation

#### **DANGER**

The object that has been cut free may move in an uncontrolled way. Before cutting the object, check to ensure that the cut will not affect structural integrity. Use supports and/or steel wedges to secure the object to be cut.

1. Stop sawing.
2. Adjust the guide pulleys on the pulley stands so that the wire, when it is released after cutting through the object, will subsequently lie in the guide groove in the pulleys.
3. Reduce cutting speed and advance pressure and then cut through the last few centimeters of the object.
4. Switch off the drive unit when the object has been cut through and then press the EMERGENCY STOP button.

**NOTE** Clean the pulley stands and the drive unit, especially the guide pulleys and the drive wheels, immediately after finishing each cut.

## 7 Care and maintenance

### 7 Care and maintenance

#### 7.1 Cleaning the wire saw

##### CAUTION

Disconnect the control unit and compressor from the electric supply, turn the main switch on the control unit to OFF and press the EMERGENCY STOP button before beginning cleaning.

##### CAUTION

Do not use running water to clean the control unit, air compressor and plug connections.

##### NOTE

To avoid damage when cleaning with a high-pressure water-jet cleaning system, keep the jet at least 1 ft away from the parts. Do not direct the jet at bearings, seals or electrical components.

##### NOTE

We recommend that the wire saw and the pulley stands are cleaned quickly between each cut in order to remove any slurry that may be adhering to parts. Don't wait too long before cleaning as the slurry adhering to parts dries very quickly.

Turn the main switch on the control unit to the OFF position and press the EMERGENCY STOP button.

Set all controls to the OFF or neutral position.

Disconnect the supply cord plug from the main electric supply.

Remove the wire store cover from the drive unit and then use a brush and water to remove any concrete slurry adhering to the casing, pulleys and guides.

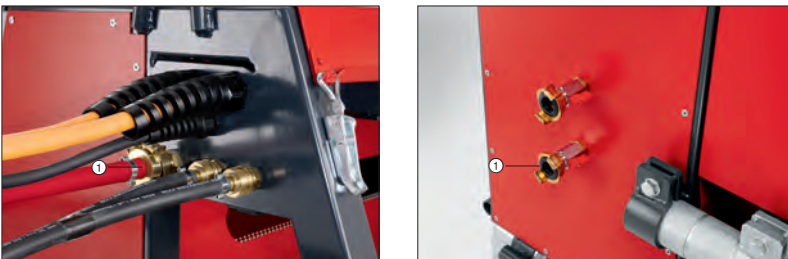
Clean the pulley stands and other wire guides with water and a brush.

After cleaning, check all parts visually for faults and to ensure easy movement. Replace damaged or faulty parts immediately in order to avoid accidents or consequential damage.

#### 7.1.1 Blowing water out of the motors

##### CAUTION

When there is a risk of frost (< 39°F), blow the water out of the motors before work breaks, after finishing work or after cleaning.



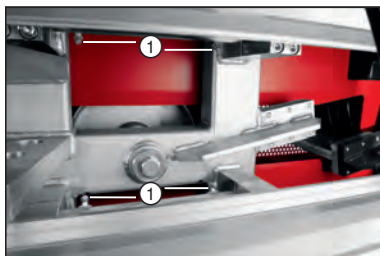
Disconnect the water supply and drainage hoses from the drive unit.

Open the water valve at the water exit.

Blow through with compressed air at the water supply connection on the drive unit.

Continue blowing through the drive unit until no further water escapes at the water valve.

### 7.2 Care and maintenance



Clean and oil all moving parts after use. This will help to prevent water and dirt entering the bearings and causing unnecessary wear.

Use a grease gun at the four grease nipples ① to grease the bearings at the guide bars from time to time.



Check the condition of the air filter occasionally (at the top and bottom of the control unit ②). Clean or replace it as necessary.

## 8 Troubleshooting

### 8 Troubleshooting

#### DANGER

Persons may enter the danger area only after the drive unit has been switched off and the drive wheel has come to a standstill. Press the EMERGENCY STOP button before entering the danger area. Disconnect the electric supply before opening the control unit. Disconnect the supply cord plug from the power outlet.

Fault	Possible cause	Remedy
The wire saw doesn't start.	Corners on the object to be cut are too sharp.	Use a suitable tool to round off the corners and pull the diamond wire through first by hand.
	A new diamond wire gets stuck in a kerf cut by a worn wire.	End the cut with the worn wire or use another thinner wire. Drill an additional hole through which the new wire can be pulled.
	Excessively long length of contact between the diamond wire and the concrete.	Install more guide pulleys or release pulleys.
	Tension on the wire is too high.	Reduce tension on the wire by adjusting the air pressure regulation valve.
	The wire is fitted the wrong way round (direction of travel).	Check the wire's direction of travel.
	The wire is defective.	Replace the wire.
The drive wheel slips / the wire is not driven.	Tension on the wire is too low.	Increase tension on the wire by adjusting the air pressure regulation valve.
	The drive wheel is too badly worn.	Replace the drive wheel.
The wire jumps off the drive wheel or guide pulley when starting the saw.	The starting lock was not used.	Use the starting lock (position and lock the clamping piece against the air cylinder).
	The wire is fitted the wrong way round (direction of travel).	Check the wire's direction of travel.
The wire wears unevenly, wears on one side.	The diamond wire was not twisted before connecting the ends together.	Twist the diamond wire approx. 0.5-1 turn to the left per meter length (looking at the cut face of the wire). The wire must be re-twisted after each large cut, applying a different number of turns for each cut.



## 8 Troubleshooting

Fault	Possible cause	Remedy
Wire breakage right beside the connector.	The wire passes round a sharply angled corner on the object being cut.	Reduce the angle of deflection by installing additional guide pulleys.
	Wire fatigue due to long period of use and aging.	Use a new wire.
	Wire fatigue due to excessive bending of the wire at the connector.	Reduce bending of the wire through use of flexible connectors. Use larger-diameter guide pulleys.
The diamond wire is pulled out of the crimped connector.	Insufficient pressure applied to the crimping pliers.	Minimum press capacity 7 t (7.7 short tons).
	Incorrect or worn crimping jaws.	Check the crimping jaws and replace if necessary.
	The wire was not pushed far enough into the connector.	Push the wire into the connector up to the first stop. The end of the wire must be cut cleanly, in accordance with instructions.
The diamond wire jumps about and vibrates very strongly.	Tension on the wire is too low.	Increase tension on the wire by adjusting the air pressure regulation valve.
	The guide pulleys are too far apart (length of unsupported wire is too long).	Reduce the length of unsupported wire by fitting additional pulley stands or by moving the wire saw closer to the object to be cut. Fit a shorter diamond wire.
	The grooves in the wire guides and pivoting pulleys are not in alignment with each other.	Adjust the pivoting pulleys to bring them into alignment with the guide pulleys.
The diamond wire vibrates very strongly at a high frequency.	The wire tension is too high for the length of the cut.	Increase the length of the cut and/or reduce the wire tension.
	Wrong speed.	Set the correct speed.
The diamond wire wears too quickly.	Cutting speed, i.e. wire drive speed, is too low.	Increase the cutting speed, i.e. wire drive speed.
	Inadequate cooling of the diamond wire.	Make sure that sufficient water reaches the points where the wire is cutting. Mount more water nozzles at the points where the wire is cutting.

## 8 Troubleshooting

<b>Fault</b>	<b>Possible cause</b>	<b>Remedy</b>
The diamond wire wears too quickly.	Excessively short length of contact between the diamond wire and the concrete.	Increase the length of the cut (increase area of contact).
	The wire tension is too high for the length of the cut.	Increase the length of the cut and/or reduce the wire tension.
	Very abrasive material.	Use a different wire specification.
The diamond wire collapses / the beads are pushed together on the wire.	The wire was not cooled or cooling was inadequate.	Make sure that sufficient water reaches the points where the wire is cutting.
	The wire jammed suddenly while sawing.	Individual concrete sections must be secured with steel wedges to prevent movement. Remove loose material from the saw kerf.
	The wire was fitted the wrong way round (opposite to specified direction of travel).	Check that the wire is always used in the same direction of travel.
	The wire passes round a sharply angled corner on the object being cut.	Reduce the angle of deflection by installing additional guide pulleys.

### Faults in the electrical system

<b>Message displayed</b>	<b>Fault</b>	<b>Possible cause</b>	<b>Remedy</b>
The green "ready for operation" lamp on the control unit doesn't light.	The drive unit cannot be switched on.	The main switch on the control unit is set to OFF.	Turn the main switch to ON.
		No electric power or faulty electric supply.	Check the voltage of all three phases of the electric supply. Check the plug connectors. Check the fuses in the site power distribution box or on the generator.
		The automatic safety cut-out in the control unit has been activated.	Reset the automatic safety cut-out in the control unit.

## 8 Troubleshooting

Message displayed	Fault	Possible cause	Remedy
The green “ready for operation” lamp on the control unit doesn’t light.	The drive unit cannot be switched on.	The transformer fuse in the control unit has blown.	Replace the transformer fuse.
The green “ready for operation” lamp and red fault indicator lamp on the control unit light.	The drive unit cannot be switched on.	The electric cable or control cable from the drive unit is not plugged in to the control unit.	Plug the cable in and lock it.
		The cover is not fitted or not closed properly.	Fit the cover and lock it closed properly.
		The safety cut-out has been activated due to overloading of the motors.	Allow the motors to cool down and increase the water flow / use cooler water.
		The safety cut-out has been activated due to overloading of the converter.	Reduce the load on the saw. Current input during operation should not exceed 60 amps. Replace the air intake filter on the control unit to improve cooling. Do not set up the control unit in direct sunshine.
		Relay number 2 is defective.	If LED 2 doesn’t light, replace the control circuit board.
		Fault in the converter.	Resetting the converter: Switch off at the main switch and wait approx. 1 min. before switching back on again.
The green “ready for operation” lamp on the control unit lights.	The drive unit cannot be switched on.	The EMERGENCY STOP button is pressed in.	Release the EMERGENCY STOP button.
		The relay is defective.	If LED no.1 on the control circuit board lights, replace relay no. 1.

## 8 Troubleshooting

<b>Message displayed</b>	<b>Fault</b>	<b>Possible cause</b>	<b>Remedy</b>
The green and yellow indicator lamps on the control unit light.	The drive unit cuts out while running and cannot be switched on again.	The wire storage carriage has reached the end position.	Move the carriage forward and put the slack wire onto the storage pulleys.
The display remains blank	The current drawn when starting is over 60 amps.	The resistance presented by the wire is too high.	Reduce the advance pressure. Round off the corners better where the cut is being made.
		Voltage of one phase is too low or missing completely.	Check the electric supply and remedy any faults.

### 9 Tools and accessories

#### 9.1 Sawing wires



In order to saw safely, reliably and cost-efficiently, use of high-grade sawing wires that are matched to the saw system and to the application (i.e. the material to be cut) is essential. Sawing wires of various types and specifications are available .

#### NOTE

Use only wire connectors and accessories specially matched to the applicable type of sawing wire. Follow the manufacturer's instructions when fitting and using these items.

#### NOTE

The wire saw is designed for use with sawing wires in the 8 to 12 mm diameter range. At special request the saw can be equipped by the manufacturer for use with thicker sawing wires.

#### Diamond wires - recommendations for use




Specification	Applications and characteristics	Color code	Bead $\varnothing$ in mm	No. of beads per meter
DS-W 10.5 CM+	Universal, fast cutting	Green	10.5	40
DS-W 10.5 CH	For hard concrete, long life	Gray	10.5	40
DS-W 10.2 20% steel CH	For cutting heavily reinforced concrete	Black	10.2	40
DS-W 10.8 100% steel CH	For cutting steel	Black	10.8	48
DS-W 10.2 dry	For dry cutting	Black	10.2	40

#### 9.2 Accessories for connecting wires

The durability of the wire connection and its efficiency when sawing depends to a great extent on use of the optimum wire connectors and ensuring that they are fitted correctly. Correct connection of the wire is an important factor with respect to SAFETY when wire sawing. We recommend the accessories listed below for connecting wires. The assembly instructions for the wire connectors are enclosed with the connectors, in the package.


## 9 Tools and accessories

### Accessories for connecting wires





Designation	Use / comment	Number	Ordering designation	Item number
Crimping pliers 	Crimping wire connectors, crimping force 8 t	1	DA-WSTHY	235845
Flexible connector	Flexible quick-release wire connector	1	DA-WCMV	340427
Connector set	Quick-release type with pins and O-rings	5	DSWC set	371383
Pin	Replacement pin for flexible connectors	10	DA-WP	235842
Sleeve	Rigid, non-reusable wire connector	5	DA-WS	235841
O-ring	Replacement O-ring for wire connectors	10	O-ring 10/4, 7x2.5	235844
Crimping jaw 	Replacement jaws for crimping pliers	2	DA-WJ	340426
Angle grinder	Cutting diamond wire when fitting connectors	1		
Cutting disc	Cutting diamond wire when fitting connectors	1	AC-D 125, 1 mm	361887
Pin ejector 	Opening flexible connectors	1	DS-WMT	295161

### 9.3 Accessories for securing and operating the drive unit and wire guides





#### Tool set (item no. 2048471)

Contents of the tool set	Qty.	Use	Item number
Open-end / ring wrench 19 mm (0.75")	1	Installing pulley stand	221189
Hammer 1.5 kg (3.31 lb)	1	Setting anchors	339303
Screwdriver 6 mm (0.24")	1	Fitting the clamping spindle	339304
BB blow-out pump 	1	Setting anchors	59725

## 9 Tools and accessories

Contents of the tool set	Qty.	Use	Item number
Spirit level	1	Marking the cutting line and fastening positions	276945
Wooden pencil	2	Marking cutting and fastening positions	335500
Cleaning cloth	1	Cleaning and maintenance	9354
Lubricant spray	1	Cleaning and maintenance	308976
Grease dispenser	1	Cleaning and maintenance	203086
Flat brush	1	Cleaning and maintenance	3206
Clamping spindle 5/8" 	3	Installing pulley stands and drive unit	282991
DD-CN-SML clamping nut 	3	Installing pulley stands and drive unit	251834
Water connection nipple 	1	Water supply	356700
GK seal	5	Replacement seal for water supply	356701
Steel wedge 	6	Securing concrete blocks	41910

### Accessories and replacement wearing parts for the wire saw system

Designation	Quantity	Use	Item number
Clamping spindle 5/8" 	1	Installing pulley stands and drive unit	282991
HDI 5/8" drop-in anchor 	25	Installing pulley stands and drive unit	336428
Long water supply nozzle 	1	Water supply to the wire	339307
Flexible water supply nozzle 	1	Water supply to the wire	339379
Drive wheel 360 mm	1	DSW 3018-E drive unit	435850
Storage pulley 280 mm	1	DSW 3018-E drive unit	339316

## 9 Tools and accessories

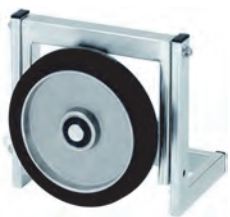
Designation	Quantity	Use	Item number
Guide pulley 280 mm	1	DSW-SPP 30 single pair pulley stand	2012743
Connector CEE 63 A, 480 V, 3P + PE	1	For the extension cable	2021769
Fuse 1A, slow-acting, 5x20	10	DSW 3018-E control unit	2058473

### 9.4 DSW-SPP 30 single pair pulley stand



Pulley stands are used to guide the wire to and on the object being cut.

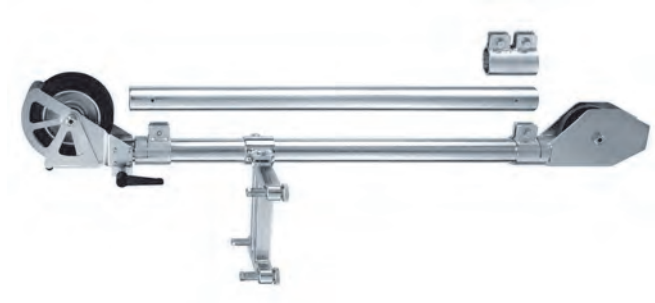
### 9.5 DSW-RW 30 release pulley



The release pulley is used to reduce the length of wire in contact with the object being cut or to avoid a tight radius in the wire at the rear of the object.



### 9.6 DS-WSPW plunge pulley



For use in situations where there is no access to the rear (or reverse side) of the object to be cut.

### 9.7 DSW-VSD 30 vertical sawing device



For making cuts where the drive unit is positioned directly above the cutting face. No additional pulley stands are then required.

### 9.8 DSW-DH dust hood



For use with the dry cutting technique.

## 9 Tools and accessories

### 9.9 DSW-WG 30 wire guard set



The tubular guards prevent the wire lashing out dangerously over a wide area in the event of wire breakage. When protective devices are used, check to ensure that they are fitted correctly.

**10 Disposal****10.1 Recommended pretreatment for disposal of drilling and sawing slurry****NOTE**

Disposing of sawing slurry directly into rivers, lakes or the sewerage system without suitable pretreatment is problematic from an environmental point of view. Ask the local public authorities for information about current regulations. We recommend the following pretreatment:

1. Collect the sawing slurry (e.g. using an industrial vacuum cleaner).
2. Allow the slurry to settle and dispose of the solid material at a construction waste disposal site (the addition of a flocculent may accelerate the separation process).
3. The remaining water should be neutralized by adding an acidic neutralization agent or diluted by adding a large quantity of water before it is allowed to flow into the sewerage system.

## **11 Manufacturer's warranty**

### **11 Manufacturer's warranty**

Please contact your local Hilti representative if you have questions about the warranty conditions.



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