Translation of the original

Operating Manual

diamond wire saw

Type DWS.100
Preface

Honoured Customer,

Thank you for choosing a diamond wire saw from DiamondWireTec GmbH & Co. KG! With this machine, you are receiving a robust and easy-to-use precision diamond wire saw incorporating cutting-edge technology. Please read this operating manual carefully. Should you still have questions, please contact our Customer Service Department.

We will gladly accept your requests, suggestions or improvements. If you are satisfied with your diamond wire saw, we would be grateful for your referral.

Your, DiamondWireTec-Team

Note

This operating manual provides information about the start-up, operation, and maintenance of the machine. Please take adequate time to read this operating manual even if you already have experience with operating this type of machine. In doing so, you will avoid improper handling and potential subsequent damage. Above all, in your own best interest, please follow the safety guidelines specified by the manufacturer.

Furthermore, please note the applicable laws and regulations for accident prevention.

The machine may only be used and maintained by persons, who are respectively qualified. They must have sufficient special expertise and be familiar with the operating manual.

Technical modifications are necessary to further develop our product. Therefore, modifications to the form, technology, and equipment cannot be excluded. Please understand that no claims may be derived from the information or illustrations of this operating manual.
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1 Safety Guidelines

- Please read!
- Note!
- Eye protection
- Hearing protection
- Hair protection
- Disconnect from power supply
- Attention
- Crushing hazard
- Injury hazard
- Rotating machine parts
- Environmentally-friendly disposal
1.1 Declaration of Conformity

EG-Konformitätserklärung - EC Declaration of Conformity

Hiermit erklären wir - We explain

DiamondWireTec GmbH&Co.KG
Südliche Bergstraße 14
D-69469 Weinheim

dass die Bauart der - that the design/ construction of the

Diamantdrahtsäge - diamond wire saw

Modell-Nr. - Stock-no.

DWS100 - No:

den folgenden gültigen Europäischen Richtlinien / Normen entspricht - complies with the following relevant regulations

- EC-Machinery Directive 2006/42/EC
- EMC-Directive 2014/30/EEC

sowie den folgenden Normen entspricht / and complies with the relevant regulations

EN ISO 12100:2010
EN ISO 13849-1:2015
EN ISO 13849-2:2012

Weinheim, 18.01.2017

Karl Preis - Managing Director -

(Town, Date) (Name, Stellung im Unternehmen)
1.2 General Safety Guidelines

For the safe operation of the machine, the accident prevention regulations of your Employers' Liability Insurance Association, the safety regulations of the respective state, and the safety guidelines of the manufacturer must be followed.

The machine may only be operated indoors.

The machine may only be operated, maintained, and repaired by properly trained persons. They must be of the legally required minimum age and adequately trained with respect to
  • Safe operation
  • Proper use
  • Residual risks
They must have read and understood the operating manual.

The use of a machine, which was procured in used conditions or from abroad, shall not release the operator from the duty of ensuring that the original operating manual is provided and applied.

An unobstructed work area around the machine and a non-slip, level floor are of fundamental importance for safe operation.

The work area must be well lit and clear of waste (chips, remnants).

Prior to beginning work, check if the diamond wire is still sufficiently sharp.

Protection and safety devices must be properly attached and fully functionally configured. They may not be disassembled or disabled.

Protect long hair with an appropriate head cover.

Wear safety goggles and, if necessary, hearing protection. Use a respirator in the event of work generating heavy amounts of dust.

Repairs and maintenance may only be conducted if the machine is shut off and disconnected from the electrical supply. Work on an electrical component may only be conducted by authorised technicians.

In the event of malfunctions or arising errors, the machine must be turned off immediately and the incident must be reported to the supervisor.

The machine may only be operated when the switch cabinet door and machine door are closed.
Damaged power and control lines or sensors must be immediately replaced by an electrician.

The wire drum, tension pulley or guide roller must be replaced if it is heavily worn or shrunken.

Use only original replacement and accessory parts, as otherwise your guarantee claim shall lose its validity and the safety of the device is no longer ensured.

The work pieces must be securely applied and fastened during cutting.

Work pieces may only be removed if the cutting process is complete.

Contaminated machine parts may only be cleaned during downtime.

Never reach into the machine when the saw is being operated.

If the latch is not properly engaged when tightening the sample, there is a hazard of crushing your hand.

Please dispose of waste in an environmentally-friendly manner.

1.3 Safety Devices on the Machine

- The main switch of the machines is designed as a simple Emergency OFF switch. After being switched back on, the machine will not restart without an additional start command.
- The drum cover serves as a safeguard against accidental contact with the wire drum. The machine will not restart if this protection device is not properly positioned. This is monitored by means of a sensor.
- The rotating tension pulley is enclosed by two stationary protective covers.
- The drive elements are completely encased.
- The electrical system is housed in a switch cabinet. All electrical components located outside are supplied with low voltage (24V).
- The drive unit brake functions immediately after actuating the STOP button or the main switch.
- The operating and control elements are arranged in an ergonomically favourable and clear manner.
- Operation occurs via simple and comprehensible touch screen instructions.
1.4 Safe Working Method

Follow the safety guidelines in chapter 1.2.

- Switch the machine to the operational mode in an intentional manner.
- The work pieces must be securely applied and fastened according to the expected cutting forces.
- The cutting tool (diamond wire) must be properly wound and have a minimum remaining sharpness for cutting.
- Follow the supporting instructions in the programme.
- Use the machines exclusively for their intended purpose.

1.5 Residual Safety Risk

Despite proper use, the following residual risks may still occur even when complying with all relevant safety regulations:

- Work pieces or parts thereof may come loose and be ejected.
- The diamond wire can break and be discharged from the protective devices in an uncontrolled manner.
- Generation of hazardous dusts when cutting respective materials.
- Injuries when touching the running wire or moving parts.
- Ignoring various instructions in the operating manual.
- Impairment of the health of the eyes or hearing without suitable protective measures, e.g. protective goggles and hearing protection.

2 Installation, Connection, and Guarantee

2.1 Shipment and Delivery Condition

The delivery condition of the diamond wire saw includes the completely pre-assembled machine that is ready for operation. Due to its weight, it can be removed from the packaging and installed by two adult persons.

Caution during shipment, unpacking, and installation. There is an injury hazard if the machine tilts or slips.

Please check the delivery for completeness and damage immediately after receipt. Please send potential complaints immediately to the manufacturer in writing (e-mail – fax).

2.2 Installation at the Job Site

The diamond wire saw may only be installed and operated in dry areas. The site of the machine should be chosen such that the diamond wire saw is accessible from all four sides. It is sensible to position the machine at an ergonomic height on the worktable – in this regard, see the installation recommendation from the manufacturer in the appendix.
2.3 Disposal

If no return or disposal agreement was made, dispose of the diamond wire saw and accessories in consideration for environmental requirements. Local authorities or waste management facilities will gladly provide you with information about this.

2.4 Technical Specifications

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<th>DWS100</th>
</tr>
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<tr>
<td>Machine length</td>
<td>530 mm</td>
</tr>
<tr>
<td>Machine width</td>
<td>350 mm</td>
</tr>
<tr>
<td>Machine height</td>
<td>410 mm</td>
</tr>
<tr>
<td>*Machine weight</td>
<td>35 kg</td>
</tr>
<tr>
<td>Cutting speed</td>
<td>0 - 4 m/s</td>
</tr>
<tr>
<td>Outer diameter of wire</td>
<td>0.1 - 0.35 mm</td>
</tr>
<tr>
<td>*Max. sample width / height</td>
<td>85 x 85 mm</td>
</tr>
<tr>
<td>*Max. sample weight</td>
<td>0.5 kg</td>
</tr>
<tr>
<td>Electrical data</td>
<td>see Electrical Diagram</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>100-240 V / 50-60 Hz</td>
</tr>
<tr>
<td>Motor output</td>
<td>120 Watt</td>
</tr>
</tbody>
</table>

All items marked with (*) may vary due to individual requirements.

2.5 Power Connection

⚠️ Prior to initial start-up of the diamond wire saw, please ensure that the voltage corresponds with the operating voltage specified on the rating plate of the machine.

The necessary data as well as the total current can be found on the identification plate or the electrical diagram – see point 9. The supply line must be protected with no more than 16 amps.

⚠️ Electrical diagram – see appendix.

Work on the electrical system may only be conducted by an electrician.

2.6 Generation of Dust

⚠️ In the case of samples to be separated consisting of materials, the dusts of which are to be classified as hazardous to health, we recommend connecting an extraction system. The safety data sheets from the material manufacturer provide important handling information in this regard.
2.7 Noise Emission

In the case of samples to be separated consisting of special materials or in specific shapes, an increased noise level may occur. Then the operating personnel should wear appropriate gear, e.g. hearing protection, or appropriate measures should be taken at the site, e.g. an enclosure.

2.8 Accessories

Manual: 1 x operating manual in hard copy
(including Declaration of Conformity)

Operating tools: 1 x switch cabinet key
1 x set of tools

Standard accessories: 1 x 60 m diamond wire, type K Ø 0.25 mm

1 x coils-receiving-unit
(for winding the diamond wire)

Special accessories: Find on our homepage
www.diamondwiretec.de

2.9 Guarantee and Warranty

The guarantee provisions are described in our General Sales and Delivery Conditions.

Warranty: The manufacturer shall guarantee the functionality of the applied process engineering and the identified performance parameters. The warranty period of one year shall begin with the date of delivery.
3 Technical Description

3.1 Machine Description

During the development of our diamond wire saws, our greatest emphasis was on functionality, easy operation, utmost safety, and a long life – starting with the selection of materials, the use of industrial-strength and standardized components, the menu-guided control, the utilized sensors to the coverings of rotating machine components.

3.2 Features of the Machine (see also Machine Design in the appendix)

On the drive side, this diamond wire saw is equipped with a 24V and 120 V direct current motor with integrated control electronics and a multi-turn absolute encoder. The motor is controlled via a bus interface through touch panel control. The power supply installed in the switch cabinet supplies the controller, the motor, as well as the three sensors with 24V. The main switch of the machine is designed in the form of an Emergency OFF switch. The motor drives the rotation unit via a toothed belt. In turn, it drives the ball screw via a gear drive, which is connected to the drum.

Overall, 3 inductive sensors were built in with the tasks specified below:

* Wire break sensor indicates if the wire is torn and reports wire breakage.
* Cover sensor indicates if the drum cover is not properly closed.
* End-of-cut sensor indicates if the previously set end of the cut has been reached.

The machine has a groove-clamping table for fasten the samples to be separated. Various clamping devices – even adjustment units – can be mounted to it. A removable debris and water container is intended to serve the wear of the saw as a tank for rinsing water.

An enclosed coil-receiving-unit serves the winding of the diamond wire from the coil to the wire drum. This occurs without additional tools directly on the machine.

3.3 Functionality

The saw functions according to the following principle:

The above driven drum has a thread-like groove, in which the wire is wound and the start and end of the wire is fastened. The last wire winding is guided via the tension pulley.

When turned on, the wire drum moves according to the groove pitch alternating to the right and the left, such that the wire achieves a precise, plane-parallel cut in the cutting area. The approx. 19 metres long diamond wire is unwound in the process and simultaneously wound again.

The saw cut running in both directions occurs between the drum and the tension pulley.
3.4 Range of Application of the Machine

With this diamond wire saw, fine precision separation cuts can be produced in materials, such as glass, hard rubber, ceramics, plastics, metals, quartz, just to name a few. The most frequent application, however, is in the separation of work pieces consisting of so-called composite or hybrid materials.

A requirement for a safe cut is the sufficient tightening (clamping) of the sample itself. The maximum cutting surface is at approx. 85 x 85 mm and a sample weight of approx. 0.5 kg.

With a cutting gap of only 0.1 mm to 0.35 mm – depending on the diamond wire thickness – samples can be cut without a notable increase of temperature and partly even without cooling lubricants.

Bevel breaks or smearing is also not expected. Separation cuts with wall thicknesses of less than 1 mm can be conducted.

Any other type of usage is considered to be improper. The manufacturer shall not be liable for resulting damage of any kind. Risk shall be assumed solely by the user.

4 Working with the Diamond Wire Saw

Depending on the work piece material to be cut, geometry, and setup situation, the respective parameters for speed, wire tension, and feed force must be set. Even the selection of the diamond wire or the decision for dry or wet cutting ultimately impact the cutting result.

4.1 Wire Speed

The wire speed can be increased up to 4 m/s or decreased to 0 m/s on the touch panel on p. 100 by repeatedly pressing the yellow plus or minus buttons.

The serial set standard speed is 2.0 m/s, however, this can be changed by the manufacturer.

<table>
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<tr>
<th>Work piece property</th>
<th>Wire speed</th>
<th>Wire feed</th>
<th>Grain density</th>
<th>Wet/dry</th>
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</thead>
<tbody>
<tr>
<td>soft e.g. powders</td>
<td>high</td>
<td>low</td>
<td>low</td>
<td>dry</td>
</tr>
<tr>
<td>brittle e.g. ceramics</td>
<td>low</td>
<td>high</td>
<td>high</td>
<td>wet/dry</td>
</tr>
<tr>
<td>tough hard e.g. alloyed steels</td>
<td>low</td>
<td>high</td>
<td>low</td>
<td>wet</td>
</tr>
<tr>
<td>hardened e.g. steel</td>
<td>medium</td>
<td>medium</td>
<td>high</td>
<td>wet</td>
</tr>
<tr>
<td>organic e.g. plastic</td>
<td>high</td>
<td>low</td>
<td>low</td>
<td>dry</td>
</tr>
<tr>
<td>miscellaneous e.g. hybrids</td>
<td>depending on the sample size and material composition</td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

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4.2 **Wire Tension**

Before placing the wire over the tensioning roller 2, it must be tightened with the lever 1 to the right or front. Only after the wire has been applied can the wire tension by changing the weights from position 3 to position 4 be increased or decreased. If the weight is too low, the wire can run, if it is too high, it can tear.

<table>
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<th>Gewichte-Tabelle</th>
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<tr>
<td>Diamantdraht-Zugfestigkeit (N)</td>
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<tr>
<td>150 - 300</td>
</tr>
<tr>
<td>50 - 120</td>
</tr>
<tr>
<td>30 - 80</td>
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<td>15 - 50</td>
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</table>

4.3 **Feed / Cutting Pressure / Wire Tension**

The pressure with which the diamond wire cuts the workpiece is adjusted with the adjustable feed weight 1. The rocker 2 as well as the workpiece carrier 3 are thereby moved upwards through the diamond wire. This arrangement provides a good insight into the separation process. Attention: Too high cutting pressure and too A lot of wire tension can lead to tearing of the diamond wire.

4.4 **Wet or Dry Cutting**

Dry cuts are principally possible. However, a wet separation cut creates a better cutting surface and a longer life of the wire as a result of the cleaning of the wire between the diamonds and the rinsing out of the wear from the cutting gap. If water cannot or may not be used for the cutting process, we recommend removing the resulting material wear through suctioning or blowing out the cutting gap as well as the wire continuously throughout the process.

4.5 **Selection of the Work piece / Sample Clamping**

The workpiece clamping is carried out on the workpiece carrier 1. The ceramic sample carriers can be clamped with D50 mm and D80 mm on which the workpiece to be separated is fixed with special wax, see the middle picture with a HM reversible cutting plate. Alternatively, a resin-cast workpiece, as seen in the right-hand image (spark plug).
can also be tensioned.

In addition, there are further holding devices, e.g. Rotary tables (Fig. 6) into which a workpiece carrier can be clamped.

4.6 Precise Separation Cuts

The DWS100 is equipped as standard via a micrometer feed unit 1, with which the width of the to be separated Workpiece can be precisely adjusted can.

For vertical, but also horizontal right separations can be done with a cut-end stop work. By means of the lateral internal the stop can be used into the desired swing-position, see picture.

4.7 Diamond Wire-Laying

The placement of the diamond wire on the drum is described in section 5.6.1. First take off the tub 1, then the drum cover 2. Then insert part 4 of the reel holder onto the shaft 3, then the reel 5 and then part 6 of the reel Bobbin holder - see small picture. Then twist the knurled screw slightly so that the spool can be turned slightly braked.

How the diamond wire is placed from the spool onto the drum and then over the tensioning roller, please refer to the text and picture instructions on the touchpanel.
Initial Start-Up and Operation

Please always follow our previously described safety guidelines during initial start-up and ongoing operation of the diamond wire saw.

5.1 Starting the Saw

Connect the machine to the power supply. Press the green button on the main switch. The programme will start.

Wait until the first screen page (020) opens.

The menu page 050 can be accessed from any page by pressing the home button (home) or the next or previous page can be accessed by pressing the arrow button.

Confirm that you are aware of the content of this operating manual and acknowledge it.

5.2 Operator Code

Page 030A opens.

Press your finger on the designated spot and page 030B will open.

Enter the four-digit operator code and confirm with ENTER. You can correct your number with CLR (individual numbers) or CANCEL (everything).

If you entered incorrectly, you will receive a short message (p. 040) and will be brought back to page 030 by pressing the OK field.

Your supervisor knows your code.

If the code is entered correctly page 050 will now appear.

ATTENTION: The first two pages 020 and 030 can also be shut off under SETTINGS, such that you will proceed directly to the main menu.
5.3 Main Menu

The main menu, page 050 opens.

Press DIRECT START only if you have conducted all necessary measures for starting the saw and are already familiar with the saw.

In all other cases, we recommend starting the saw with START HELP.

5.4 Direct Start

If you pressed DIRECT START, the page 100 will open.
The wire drum will start or stop by pressing START/STOP. The diamond wire will now first be moved in the direction with the displayed speed and then in the reverse direction. The speed can be increased or reduced by pressing the yellow arrow button.
In the case of a restart, however, the speed will return to the starting speed.

5.5 Start Help

If you pressed START HELP, first page 200 will open.

Follow the instructions on this page.
By pressing the right HELP fields, you will receive supporting images on the display.

Now, press NEXT to get to the next continuing page.

Follow the instructions on page 250

By pressing NEXT you will now get to DIRECT START page 100 – see 5.4
5.6 Wire Change / Re-Tensioning

If you wish to APPLY, REMOVE or RE-TENSION A DIAMOND WIRE, then return to the Main Menu via the Home button and press Wire Change.

Page 300 opens.

Here, as on page 100 as well, the wire life will be displayed. This is automatically reset to 0 when changing the wire.

Depending on the project, press the desired activity.

5.6.1 Apply New Wire

With the option APPLY NEW WIRE you will get to page 320.

Follow the instructions on this page.

By pressing NEXT, you will get to page 1325.

By pressing the START button you will drive the wire drum to the wire change position.

ATTENTION: Wait until the drum stops and has reached the change position.

Only press the STOP button (red) in the event of a malfunction.

After reaching the position, you will get to page 330.
Follow the instructions on this page.

By pressing NEXT, you will get to page 331.

Follow the instructions on this page.

By pressing NEXT, you will get to page 331.

By pressing START, wire winding will begin.

ATTENTION: Wait until the drum stops and the stand-by position has been reached.

Only press the STOP button (red) in the Event of a malfunction.

By pressing the yellow arrow button, you can change the winding speed.

The wire drum will automatically remain stopped if it has reached the end position.

Page 1340 opens.

Follow the instructions on this page.

By pressing NEXT, you will get to page 345.
Follow the instructions on this page.

By pressing **NEXT**, you will get to page 346

Follow the instructions on this page.

By pressing **NEXT**, you will get to page 1347

By pressing **START** you will drive the wire drum to the stand-by position.

**ATTENTION:** Wait until the drum stops and the stand-by position has been reached.

Only press the **STOP button** (red) in the event of a malfunction.

If the position has been reached, menu page 350 will appear.

Follow the instructions on this page.

By pressing **NEXT**, you will get to page 050.
5.6.2 Removing Wire

With the option REMOVING WIRE (p. 300) you will get to page 310.

Now follow the instructions on this page if a wire was already inserted.

By pressing NEXT, you will get to Page 1315.

If the wire got entangled, remove the middle screw of the drum and pull it up towards the front.
ATTENTION: The key may fall out.
By pressing the COAST button, the motor brake will be released and the drum can turn.
After removing the wire, proceed in the reversed order.
In the process, ensure the proper seating of the rubber collar.

5.6.3 Re-Tensioning the Wire

With the option RE-TENSIONING THE WIRE (p. 300) you will get to page 1360.

Press START and wait until the wire drum automatically remains stopped on the wire re-tensioning position.
Page 370 opens.

Follow the instructions on this page.
By pressing NEXT, you will get to page 348
Follow the instructions on this page.

By pressing NEXT, you will get to page 1347

By pressing START, you will drive the wire drum to the standby position.

ATTENTION: Wait until the drum stops and has reached the position.

Only press the STOP button (red) in the event of a malfunction.

If the position has been reached, menu page 350 will appear.

Follow the instructions on this page.

By pressing NEXT, you will get to page 050

5.7 Settings

Press SETTINGS to get to the submenu on page 400.
Various setting options will be offered in this menu.

Depending on the project, press the desired activity, as described in the following.

5.7.1 Screen Display

On this page, you can TURN the screen displays of the following pages OFF (red) or ON (green)
- 020 (greeting page)
- 030 (operator code)

5.7.2 Speed Settings

With speed settings, the standard speeds for the given actions can be changed.

However, the setting range is limited by the manufacturer.

If the desired speed is not accepted, it is Beyond this range.

5.7.3 Position Settings

This submenu is exclusively for use by a trained service technician.

Motor positions and motor data can be Changed or adapted here.

However, the respective access data is Required for this.
5.7.4 Time and Date

The date and time can be set or potentially corrected on this page by pressing the GREEN ARROW BUTTONS.

5.7.5 Language Selection

By touching the respective COUNTRY FLAG, you can select the desired language.

5.8 Service

In this submenu, the various information can be called up as explained below.

5.8.1 Device Designation

Here, you will receive various information regarding your device.

The depicted data is only an example.
5.8.2 Hours of Operation

Under HOURS OF OPERATION, the hours are shown, during which the motor has actually turned.

By pressing SERVICE HOURS you will get to the following page 525.

Here, you will receive information regarding when and which service actions must be conducted.

As soon as 0 hours are reached (counts backwards), the programme will automatically prompt service action.

You can find more information regarding service action itself under Maintenance, point 6.

5.8.3 Care and Maintenance

Under PFLEGE & MAINTENANCE, we likewise refer to the actions mentioned in chapter Maintenance, under point 5.

(Good care and maintenance of a machine maintains its life and precision)

5.8.4 Customer Hotline

Under CUSTOMER HOTLINE, you will receive our contact information.
Please understand that this data is included in the delivery of the device.
In the event of potential changes, we will naturally inform you.
5.9  
**Error Messages**

5.9.1  
**Wire Break**

This page appears if the tension roller swing arm nears the wire break sensor.

If there is no error message (defective sensor, contamination, etc.), the wire is torn.

5.9.2  
**End of the Cut**

This page appears if the work piece carrier swing arm nears the end-of-the-cut sensor.

If there is no error message (defective sensor, contamination, etc.), the sample is fully cut.

5.9.3  
**Drum Cover is Open**

This page appears if the drum cover does not touch the sensor.

If there is no error message (defective sensor, contamination, etc.), the drum cover must not be applied at all or incorrectly applied.

Please apply the cover correctly!

5.9.4  
**Motor Error Messages**

This error message is displayed if there is a technical malfunction with the motor.

E.g. **ERROR CODE 4000** means that the motor was briefly overloaded.

**RESET** the error message and continue working. If the error occurs again, please call our technical department.
6 Maintenance

6.1 Cleaning, Inspecting, and Lubricating

The machine is largely maintenance-free. However, it is important to regularly clean the machine of dust, debris, and work piece remnants.

Toothed belts, toothed belt discs, and gears must be inspected for signs of wear and potentially replaced.

Moving components, such as shafts and guides must be greased in intervals.

The intervals are displayed in from a programme-technical perspective after reaching a specific number of hours of operation.

After pressing the LATER button (if you are, e.g. in a cutting process), the indicator will be re-displayed in 5 Hours of Operation until you have conducted the maintenance and then pressed the RESET button.

In the process, please do not forget to turn the machine off prior to maintenance work and to completely disconnect it from the power supply.

6.2 Cleaning the Machine

Open the drum cover and brush the drum grooves clean of potential debris. Clean the machine housing as well as the debris pan of deposits.

Clean the machines first in a dry manner and then in a moist manner with machine cleaner. If the contamination is severe, you can also use our heavy-duty cleaner – see Accessories.

6.3 Inspecting the Drive Elements

Check the mechanical drive unit consisting of a toothed belt and a small toothed belt pulley, as requested by the program. This can be done by a company-trained, trained specialist or by the service of the manufacturer.

The test can only be carried out in the wireless state.

First take the machine from power supply. Remove the tub, the drum cover and then the drum itself, by loosening the central screw. Look for the key between the drum and the shaft, as well as the patented cuff at the end of the drum.

To get to the mechanical drive unit, loosen the two screws of the housing door as well as the four screws of the side plate. Remove the retaining ring (4 screws). Then you will see the mechanical drive unit. Determine visually whether the belt wheels and the toothed belt are still positive and not worn. Worn parts must be replaced immediately.

After checking or replacing, reinstall the machine parts in the reverse order.
6.4 **Lubricating the guide shafts**

Open the two screws of the machine housing door and swing them to the right. Then you see the gear unit. Remove the cover plate (2 screws), to get to the parts to be maintained. Give now something of the special fat Microlube GL261 from Klüber or a similar fat with the same consistency on the dynamic thread spindle, and the two guide shafts.

Then lubricate the bearing of the dyn. rotation spindle over the grease nipple.

Replace the cover and close the case door. Now reset the service message by RESET.

NOTE: Special grease and grease can be found on our homepage accessory page.
## 7 Malfunctions

### 7.1 Eliminating Malfunctions

<table>
<thead>
<tr>
<th>Description of the error</th>
<th>Possible causes</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine will not start</td>
<td>• No voltage</td>
<td>• Check power supply</td>
</tr>
<tr>
<td></td>
<td>• Main switch defective</td>
<td>• Replace main switch</td>
</tr>
<tr>
<td></td>
<td>• Toothed belt torn</td>
<td>• Replace toothed belt</td>
</tr>
<tr>
<td>No display</td>
<td>• Power supply interrupted</td>
<td>• Check and correct</td>
</tr>
<tr>
<td></td>
<td>• Plug connection is loose</td>
<td>• Check and correct</td>
</tr>
<tr>
<td>Diamond wire broke</td>
<td>• Excessive weight on tension roller</td>
<td>• Reduce weight</td>
</tr>
<tr>
<td></td>
<td>• Incorrect diamond wire</td>
<td>• Select suitable wire</td>
</tr>
<tr>
<td></td>
<td>• Diamond wire worn</td>
<td>• Apply new wire</td>
</tr>
<tr>
<td></td>
<td>• Wire feed too high</td>
<td>• Reduce feed weight</td>
</tr>
<tr>
<td></td>
<td>• Wire incorrect on drum</td>
<td>• Place correctly on drum</td>
</tr>
<tr>
<td>Poor cutting quality</td>
<td>• Incorrect diamond wire</td>
<td>• Wire with high grain density</td>
</tr>
<tr>
<td></td>
<td>• Cutting speed too low</td>
<td>• Select higher speed</td>
</tr>
<tr>
<td></td>
<td>• Diamond wire is dirty</td>
<td>• Potentially cut with water</td>
</tr>
<tr>
<td></td>
<td>• Diamond wire tension too low</td>
<td>• Increase wire tension cut</td>
</tr>
<tr>
<td></td>
<td>• Diamond wire applied incorrectly</td>
<td>• Apply correctly</td>
</tr>
</tbody>
</table>
8 Replacement Parts

8.1 Replacement Parts List DWS100

When ordering replacement parts, the following data must be kept ready:
- Machine number - item designation - quantity of required unit

Here is an excerpt of the most important replacement parts:

<table>
<thead>
<tr>
<th>Bezeichnung</th>
<th>Artikelnummer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wire Drum</td>
<td>100-004</td>
</tr>
<tr>
<td>Gearwheel, small</td>
<td>100-006</td>
</tr>
<tr>
<td>Gearwheel, large</td>
<td>100-007</td>
</tr>
<tr>
<td>Belt pulley, small</td>
<td>100-008</td>
</tr>
<tr>
<td>Belt pulley, large</td>
<td>100-009</td>
</tr>
<tr>
<td>Ball Screw</td>
<td>100-010</td>
</tr>
<tr>
<td>Spline shaft unit</td>
<td>100-015</td>
</tr>
<tr>
<td>Tension pulley</td>
<td>100-027</td>
</tr>
<tr>
<td>drive motor</td>
<td>100-061</td>
</tr>
<tr>
<td>Ball bearing tensioning roller (2x)</td>
<td>100-064</td>
</tr>
<tr>
<td>toothed belt</td>
<td>100-067</td>
</tr>
<tr>
<td>bellow</td>
<td>100-068</td>
</tr>
<tr>
<td>Sensor cut end</td>
<td>100-072</td>
</tr>
<tr>
<td>Sensor wire</td>
<td>100-073</td>
</tr>
<tr>
<td>Sensor cover</td>
<td>100-074</td>
</tr>
<tr>
<td>Control module</td>
<td>100-075</td>
</tr>
<tr>
<td>Control Display</td>
<td>100-075</td>
</tr>
<tr>
<td>main switch</td>
<td>100-076</td>
</tr>
<tr>
<td>guide bearing</td>
<td>100-085</td>
</tr>
<tr>
<td>brake body</td>
<td>SB41-1</td>
</tr>
<tr>
<td>Item</td>
<td>Code</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
</tr>
<tr>
<td>power adapter</td>
<td>100-093</td>
</tr>
<tr>
<td>Built-in Caliper</td>
<td>100-095</td>
</tr>
<tr>
<td>Sample carrier D50</td>
<td>100-117</td>
</tr>
<tr>
<td>Sample carrier D80</td>
<td>100-118</td>
</tr>
</tbody>
</table>

9.0 NOTES
Test Protocol

Machine

Diamond Wire Saw DWS  Machine-No.:  Construction Year

Komponenten

Drive Motor No.:  SPS-No.:  P-No.:  

Function Test

Program Function  Electro Function  Table Bearing
Sensor – cut end  Sensor – cover  Sensor – wire break

Settings

Null Position  W.Ch-End  
Ch.L.  Ch.R.  W.Ch-Start  
Acceleration  Deceleration  Rotary Switch

Lubrication

Threaded spindle  Grooved Shaft  Labrication nipples

Comment


Inspector:  Inspection date:

Diamond WireTec GmbH & Co.KG - Südliche Bergstraße 14 - 69469 Weinheim - www.diamondwiretec.de
Dear customer,

Thank you for choosing one Diamond WireTec diamond wire saw have decided.

With this dimension sheet we want Give them a recommendation for the Set up your machine.

The external dimensions of the DWS.100: H410 x L530 x W350 mm, weight: 35 kg

Recommendation:
1. Set the machine exclusively in dry rooms.
2. Leave enough space around the machine around.
3. It is important that the machine is absolute stands horizontally.
4. Take care of 2 to 3 sockets 100-120 V and 50-60 Hz and 16A, for the machine and possibly for an auxiliary lighting or microscope
5. An air or water connection are not necessary.
6. We are happy to offer you for your machine a base cabinet - see above - on.
Diamond WireTec GmbH & Co.KG
Südliche Bergstraße 14
D-69469 Weinheim
Germany
www.diamondwiretec.de