

DB-682010

AUTOMATIC DEBURRING MACHINE

ENGLISH

INSTALLATION & OPERATIONS MANUAL

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GENERAL INFORMATION

Thank you for purchasing this SPV Spintec product. Please read this manual so you know how to operate your model properly. After reading the instructions, put them in a safe place for further use.

If for any reason you would need to contact us, please visit our website at www.spvspintec.se for full contact information.

THE MANUAL REVISION

This manual is the edition: P02 (20130926)

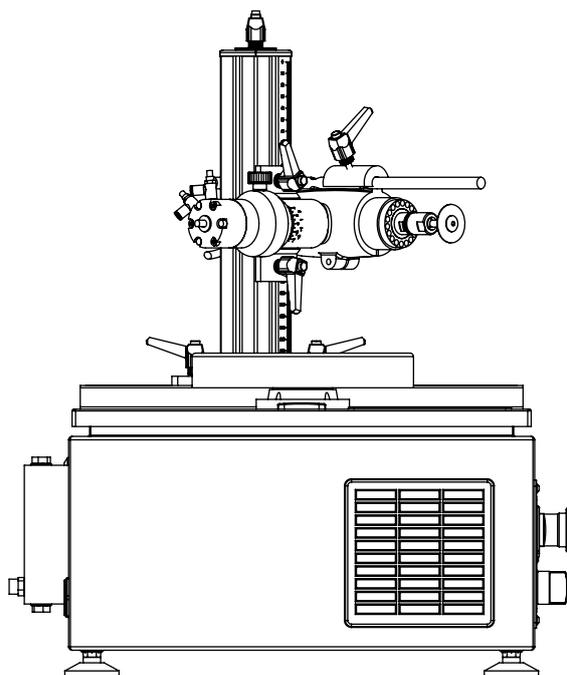
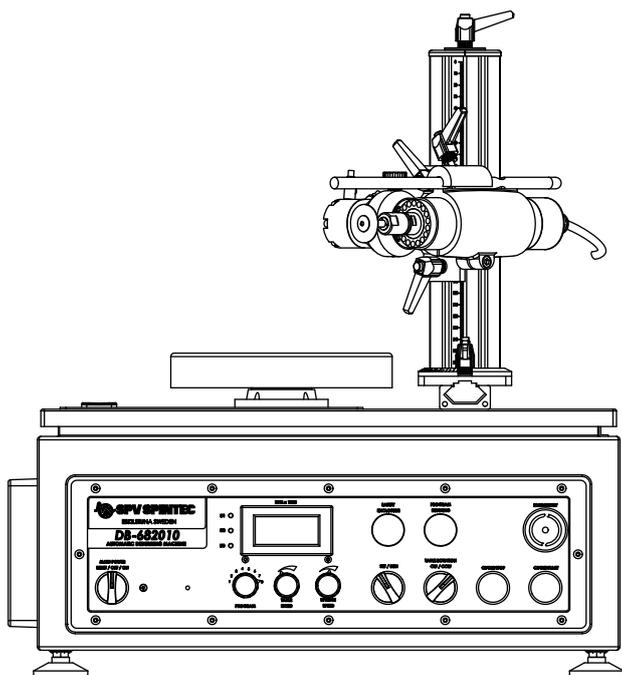
The manual always comes in the latest revision along with the equipment. On our website, you can download the latest version. We reserve the rights to make changes in the construction, both mechanical and electrical.

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CONNECTIONS	
Input voltage	230 V AC
Frequency	50 / 60 Hz
Fuses	10A (Slow)

FREQUENCY CONVERTER CDA	
Recommended effect	0,75 kW
Device power	1,7 kVA
Continuous power output	4,0 A

DEBURRING SPINDLE	
Max output effect	0,4 kW
Max RPM	54.000 RPM
Max tools-shaft diameter	Ø 8,0 mm

PHYSICAL DATA	
Dimensions	
L	530 mm
B	485 mm
H	580 mm
Weight	30 Kg
Enclosure rating	IP20
Temperature range	+5°C to +45°C
Soundlevel during operation	approx: 85 dB

AIR PRESSURE	
AP input	5 - 8 Bar
Consumption, cooling, Max	90 l / min
Hose-diameter input	Ø 6 mm



CAUTION !

This unit must only be connected to a power-grid that provide 220-240V AC 50-60Hz. Any other use may cause damage to both equipment and personnel.

SAFETY INSTRUCTIONS

The following symbols appear in this manual. Make sure that you recognize and understand what they mean.



WARNING!

Improper use may result in damage or malfunction of the equipment.



DANGER due to electrical voltage!

Improper handling can cause severe personal injury.



DANGER due to rotating parts!

Improper operation can cause severe personal injury.

PRECAUTIONS

Always read the installation instructions first and consider the safety notes.

Always beware of dangers, when working with electrical systems:

- Electric voltage
- Within 10 minutes after disconnecting the device it still can contain electricity. Make sure that the voltage is gone!
- Moving parts
- Hot surfaces

Your knowledge:

- To prevent personal injury and device damages, only people with sufficient knowledge of electrical engineering are allowed to use this device
- The qualified person has to be familiar with the installation instructions

Knowledge about the national rules:

- Consider following, during installation
- Connection conditions and technical data must be followed
- The rules of electrical installation must be followed, for example cable area, protection conductors and ground connection
- Do not touch electric parts or connections. (Electrical discharge can damage components)

PERMITTED USE

IMPORTANT! SAVE THIS MANUAL FOR FUTURE REFERENCE.

1. Keep the work area clean.

Messy areas and benches increases the risk of injury.

2. Consider the work area environment.

Keep the work area well lit. Do not use the device where there is risk to cause fire or explosion, such as in the presence of flammable liquids or gases.

3. Keep unauthorized people away.

Do not let people, especially children, who are not involved in the work, touch the equipment and keep them away from the work area.

4. Use proper tools.

Do not force inadequate tools to perform operations that are suitable for a more durable tool. Do not use tools for purposes other than they were intended too.

5. Maintain tools with care.

Keep the tools sharp and clean, in order to achieve better and safer operation. Always follow the instructions when changing tools. Check the tools regularly.

6. Dress properly.

Do not wear loose clothing or jewelry, since they can get stuck in moving parts. Wear protective hair-net to keep long hair out of your way.

7. Use safety equipment.

Always wear safety glasses. Use a face shield or dust protection if the process produce dust or flying particles. If these particles are very hot, also wear a heat-resistant apron. Always wear ear protection.

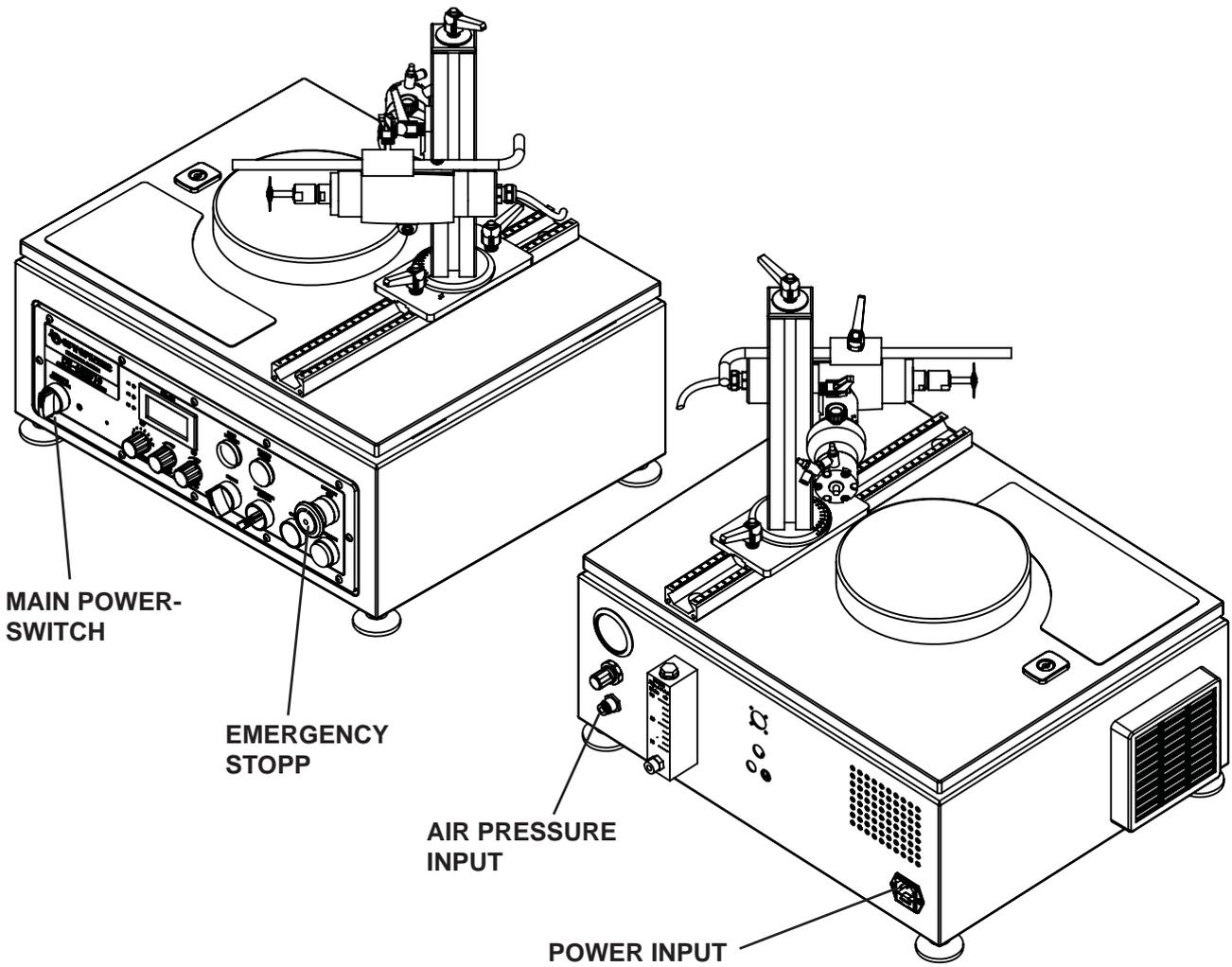
8. Connect dust purging equipment.

If there are devices for connecting apparatus for cleansing and collecting of pond, ensure that they are connected and used properly.

9. Contact SPV Spintec for service.

This equipment complies with the relevant safety-requirements. Repair and service should be performed only by trained personnel using genuine parts. Otherwise, this may result in danger to the operator. Always contact SPV Spintec at these times.

OVERVIEW



UNPACKING

The equipment is delivered on 1 half euro pallet (deburring-tool such as grinding-discs are not included).

1. Remove all the transport covers.

2. Lift carefully.

Due to the unit's weight, it should not be lifted alone. Enlist the help of another employee to avoid injury. Lift the machine underneath only! (fig 1.)

3. Prepare table space.

Place the equipment in the space corresponding with all safety regulations.

4. Free space.

Make sure you leave at least 10 cm free space on all sides to not restrict ventilation and heat dissipation.

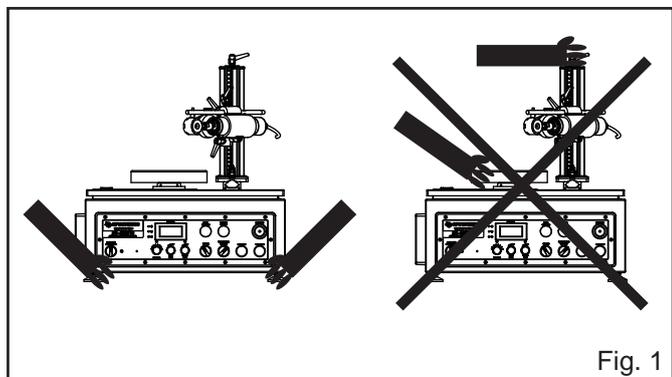


Fig. 1

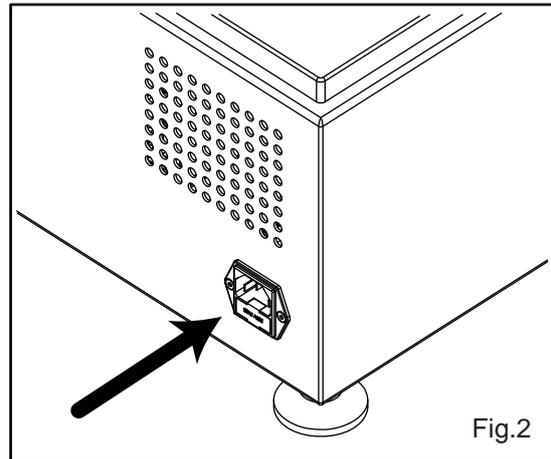
CONNECTING

Check that the serial number is consistent with what is stated on your order documents.

The serial number can be found on a sign on the back, right side of the machine.



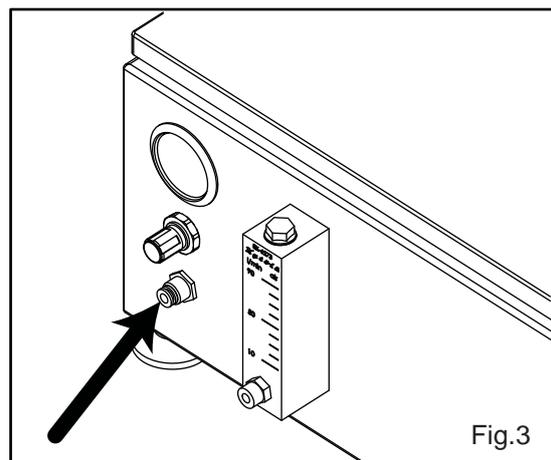
1. If the machine is delivered with the safety-enclosure 68-27000 (option), see separate installation instructions.
2. Connect the main power-cord to the socket on the backside of the machine. (Fig.2)
3. Connect the main power-cord to a wall outlet.

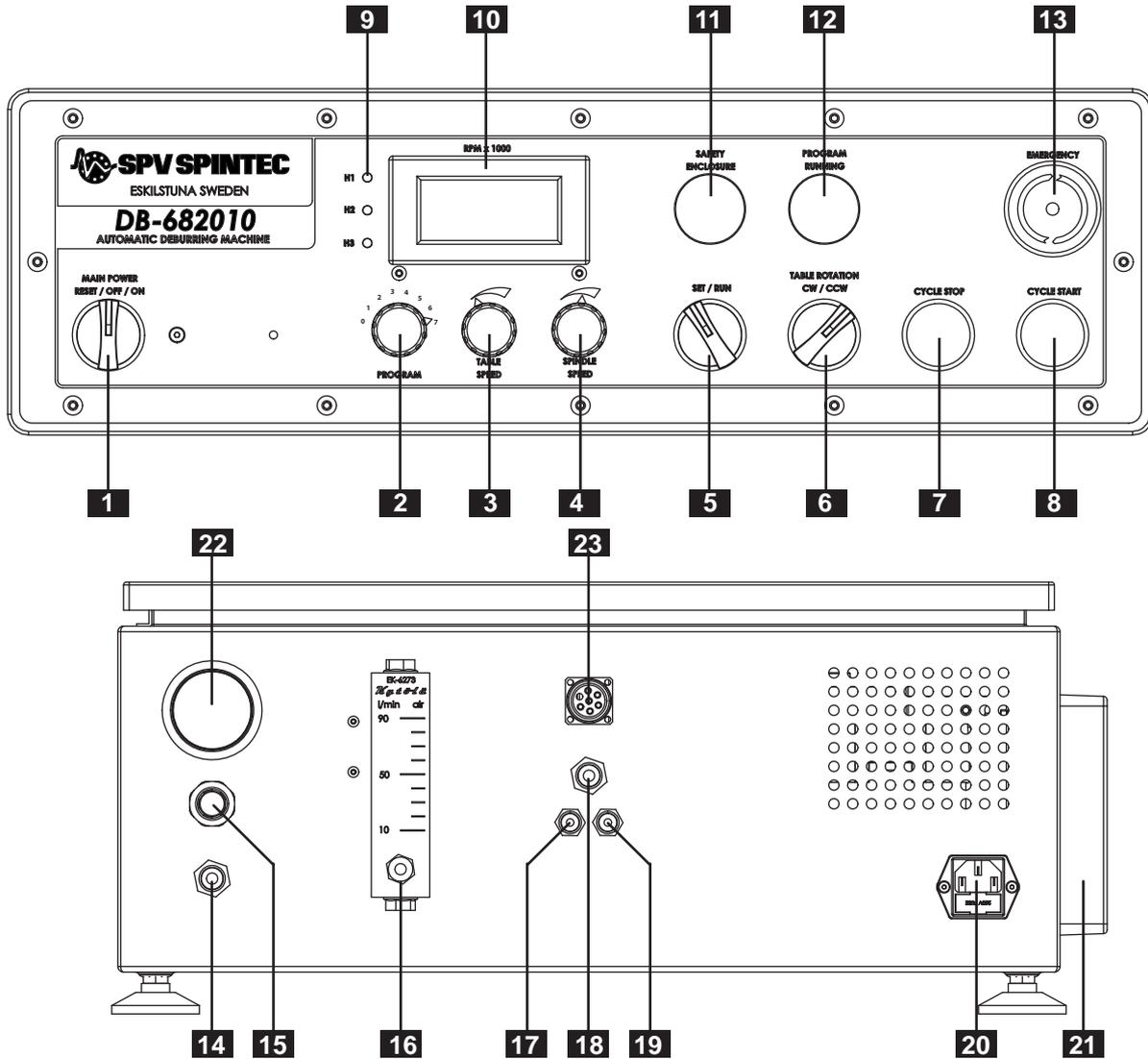


CAUTION !

This unit must only be connected to a power-grid that provide 220-240V AC 50-60Hz. Any other use may cause damage to both equipment and personnel.

4. Connect an air pressure-hose to the inlet on the backside of the machine. (Fig.3)
Hose diameter: Ø 6 mm





1. Main power-switch (RESET/ON/OFF)

Switches the machine ON/OFF and resets the security features.

2. Program choice (0,1,2,3,4,5,6,7)

0: Basic setting, still. 1: 1 rev. 2: 1,5 rev.
3: 2 rev. 4: 2,5 rev. 5: 3 rev. 6: 3,5 rev. 7: 4 rev.

3. Table rotation speed

Infinitely setting of the table rotation speed.

4. Spindle RPM

Infinitely setting of the deburring-spindle speed.
0 - 54.000 RPM

5. Setting/Automatic (SET/RUN)

Select mode. Set = Settings mode, the spindle is lowered.
Run = Automatic mode, the deburring cycle is completed.

6. Table rotation (CW/CCW)

Select table rotation, CW or CCW.

7. Cycle stop

Manual stop of the deburring cycle.

8. Cycle start

Starts the deburring cycle.

9. L.E.D status (H1, H2, H3)

L.E.Ds for control of the frequency converter status. Read more in "Troubleshooting".

10. Display

Displays the set RPM for the deburring spindle.

11. Safety enclosure

Indicates the status of the enclosure 68-27000 (option).
Lit = enclosure open, start not possible.
Unlit = enclosure closed, ok to start.
NOTE! The indicator is lit for a few seconds when the machine is starting up.

12. Program running

Indicates that the deburring cycle is running.

13. Emergency stop

Stops the machine and cuts all output power.

14. Air pressure input

Hose diameter \varnothing 6 mm

15. Air pressure adjustment

The knob is pulled outward and then turned clockwise to increase the pressure or counter-clockwise to decrease.

16. Air flow meter

To adjust the air flow of the spindle cooling.

17. Air out, deburring unit

18. Air out, spindle cooling

19. Air in, deburring unit

20. Main power socket, fuse

21. Fan

22. Pressure gauge

For control of input air pressure.

23. Connection deburring spindle

BEFORE STARTING UP

1. Air pressure setting (Fig.4)

When the machine is connected to the compressed air, some settings must be done. Pull the knob (1), then rotate it CCW until the pressure gauge (2) shows 0,6 MPa which is the machine operating pressure. This setting should not be amended retrospectively. Then push the knob to lock the regulator.

Use a flat screwdriver to adjust the airflow to the spindle cooling. Turn the screw (3) CCW until the meter reaches approximately 75 l / min. This value is a benchmark and generally works well in normal use. If experiencing problems with the spindle being too hot, it can be increased by adjusting the screw (3).

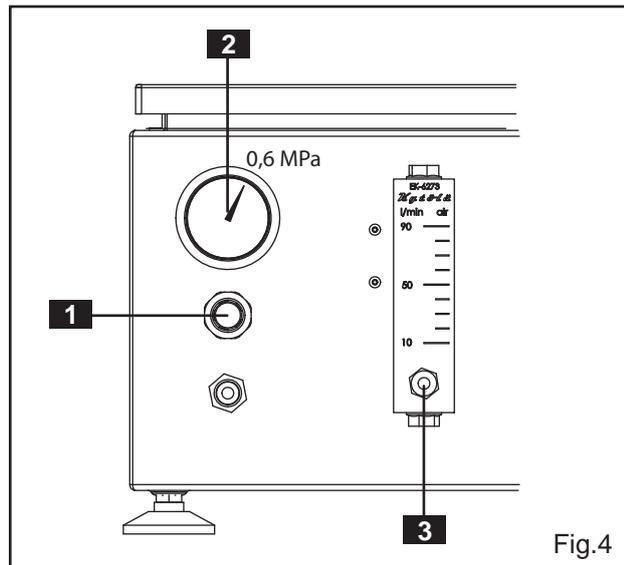


Fig.4

2. Setting up the deburring-unit (Fig.5)

Make sure the machine is started and deburring-tool is mounted in the spindle. Turn the knob (SET/RUN) to position "SET". This lowers the spindle in deburring position.

Now the deburring-unit can be set by releasing the levers (1-3). To adjust the spindle height, release the two levers (1). The deburring-unit angle is adjusted by releasing the lever (2). The entire device length-setting is adjusted by releasing the lever (3). Set the spindle tool as it should be in process. Make sure that all levers are locked before you continue.

Then turn the knob (SET/RUN) to position "RUN".

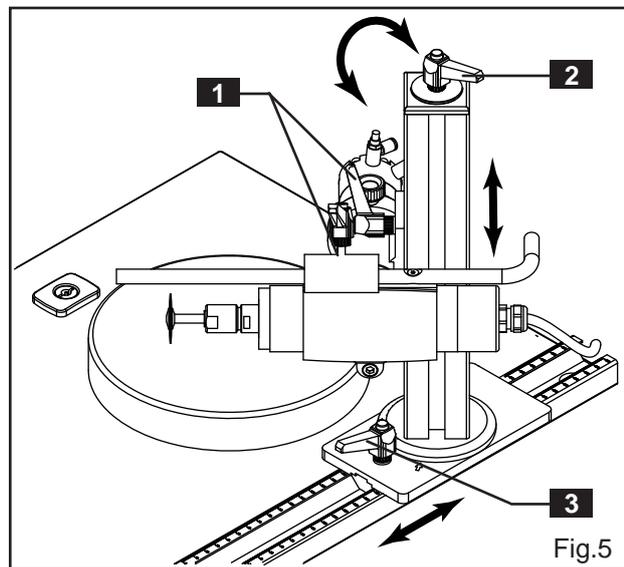


Fig.5

3. Adjust the load pressure (Fig.6)

The load pressure the spindle needs when processing varies greatly and is very part depending on the type of tool used and what kind of material the workpiece is made of. The pressure is adjusted by releasing the lever (1) and then move the weight (2) closer to the tool for increased load pressure or further away from the tool for less load pressure.

The speed when the spindle flips up / down can be adjusted by the throttle valves (3). Use the knob (SET/RUN) and adjust to the desired speed.

The tool interference angle can be adjusted with the knob (4). Loosen the knob and turn the spindle unit to the desired position. Then lock the knob.

When finished, make sure that the slider (SET/RUN) is set to "RUN".

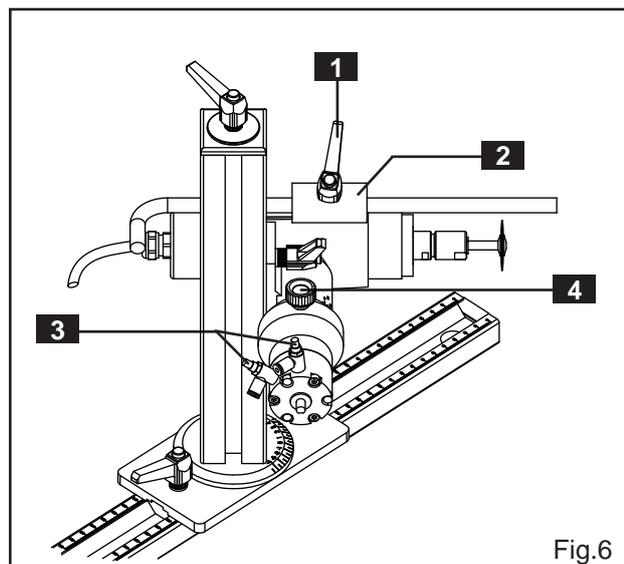


Fig.6

STARTING UP

1. Preparations before starting (Fig.7)

Check that the equipment is properly connected and set. (see p.8).

If the machine is equipped with the safety enclosure 68-27000, close the door and check that the safety enclosure light is lit (1). This signal is required for the machine to start.

Check that the switch (SET/RUN) is set to position "RUN" (2).

Turn the switch (TABLE ROTATION) to the desired position (3).

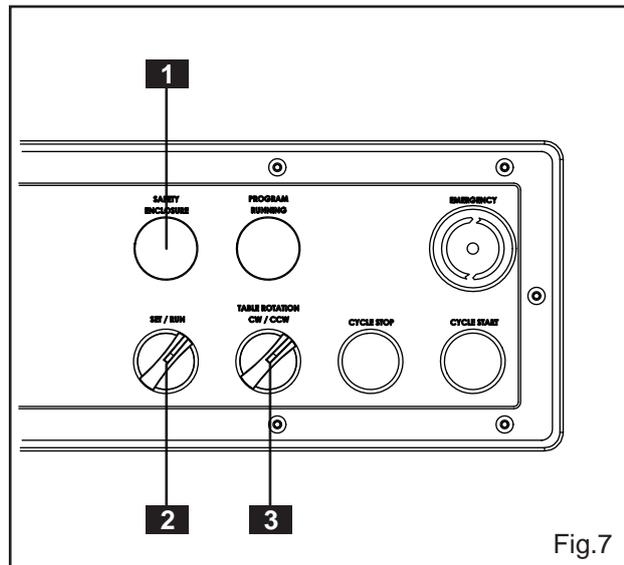


Fig.7

2. Setting RPM, rotation speed. (Fig.8)

Set the program switch (1) to the desired program 0-7 (see p.7 for program descriptions). Make sure that the speed controls for both the spindle and the table (2, 4) is set to zero.

Now press (CYCLE START) to start the deburring cycle. When the lamp (PROGRAM RUNNING) is lit, the cycle is started. However the machine will not start until it gets signal from the knob (4) (TABLE SPEED). Therefore, you can now turn the knob (2) to set the RPM of the deburring spindle. Check the display to verify the rpm.

Now turn the knob (4) and set the desired speed of table rotation. As soon as the table begins to rotate the spindle will flip down and the process is running.

When the cycle is completed the spindle unit will flip up again.

3. Starting the deburring cycle.

When the machine has been tested and the desired speed in both table and the deburring spindle is set, step 2 is not repeated.

When starting the deburring cycle now you only need to press the (CYCLE START) button.

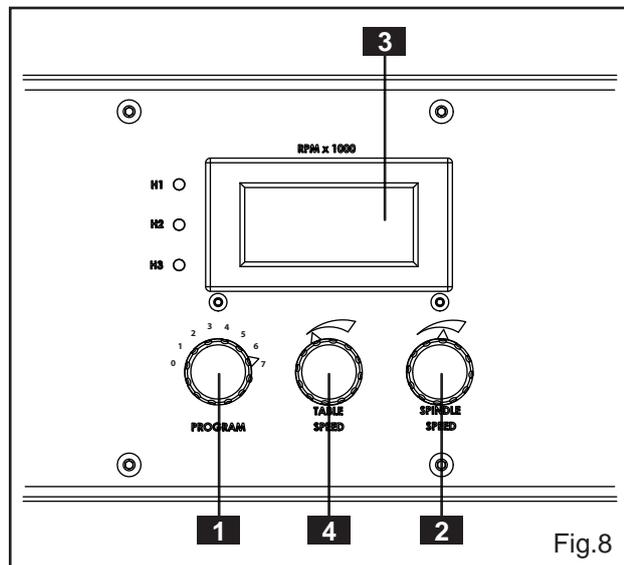


Fig.8

SHUTTING DOWN

1. Manual stop of the deburring cycle (Fig.9)

When the machine completed the deburring cycle according to the settings you have done, it will stop automatically. When the lamp (1) (PROGRAM RUNNING) is off you can open the door to the safety enclosure (option) and change to a new workpiece for deburring.

To manually stop the deburring cycle, use the button (2) (CYCLE STOP). The machine will now abort the cycle, the spindle flips up and the program stops and resets. In case of emergency when you would need to stop the machine and break all the output voltage, the button (3) (EMERGENCY STOP) shall be used.

2. Reset from an emergency stop (Fig.9)

If the emergency stop has been used or if the door to the safety enclosure has been opened during processing, the machine must be reset before it is possible to start it again.

First make sure that the safety enclosure is closed. Turn the switch (4) to position "OFF". Then release the button (3) by turning it clockwise. Now turn the switch (4) to position "RESET", hold it for 2 seconds and then release it back "OFF". At last return the switch to position "ON".

Now the reset is done and the machine can be run again.

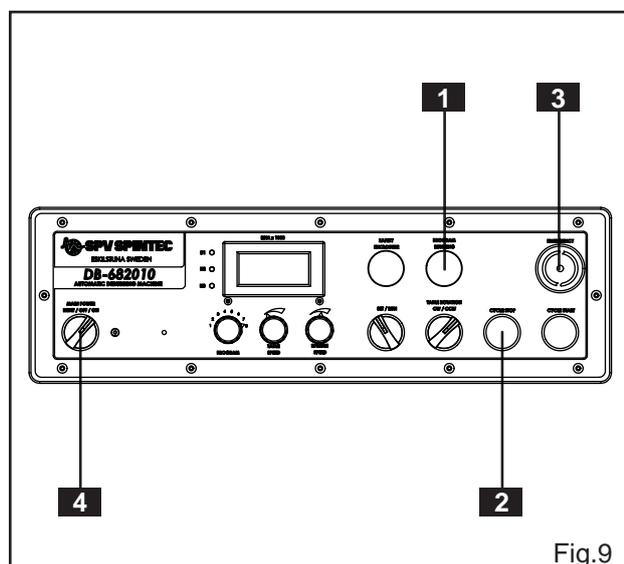
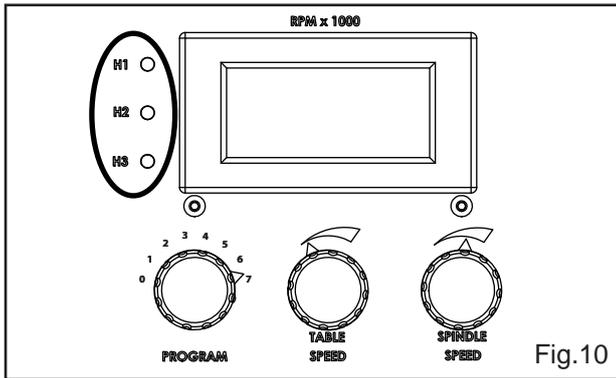


Fig.9

L.E.D's

1. L.E.D's for indication of the frequency converter status.

On the machine control panel there are 3 L.E.D's. These are located directly to the left of the RPM display (Fig.10) and has the following colors. RED (H1), YELLOW (H2) and GREEN (H3) for status indication. The L.E.D's are shown in three different modes, lit, unlit or flashing. See table below.



Device mode	H1 (Red)	H2 (Yellow)	H3 (Green)
Connected	○	○	●
Ready	○	●	●
In process	○	☀	●
Warning	●	● / ☀	●
Error	☀ (code)	○	●

○ = LED unlit ● = LED lit ☀ = LED flashing

ERROR SIGNALS

1. Error signals

If an error occurs during operation, the red LED (H1) flashes. The Flashing code indicates an error message according to the table below.

Flashing code red LED (H1)	Error message	Cause / Action
☀ x 1	Converter CPU error	Shut down the device, disconnect the power-cord. Contact SPV Spintec if the error message recurs.
☀ x 2	Low voltage shutdown	Check the input voltage. This signal occurs shortly when turning of the power normally.
☀ x 3	High power shutdown	Short circuit, ground error. Check the power cables, neutral wire and ground.
☀ x 4	High voltage shutdown	Input voltage overload. Check the input voltage and restart the machine.
☀ x 5	Spindle protection shutdown	Spindle overload. Extend the machine cycle if possible. Make sure that the deburring tool is not over dimensioned.
☀ x 6	Converter protection shutdown	Frequency converter overload. Extend the machine cycle if possible. A more powerful converter might be needed.
☀ x 7	Spindle temperature too high	Spindle overload. Is the PTC correctly connected? Let the spindle cool down. Increase the air flow of the spindle cooling.
☀ x 8	Converter temperature too high	Surrounding temperature is too high: Increase the cooling around the device. Too high load during operation: Check the spindle. In some cases a break-resistor can be connected.



CAUTION !

Do never on your own try to repair or perform more complicated type of maintenance. Always contact the SPV Spintec service department for assistance.

TROUBLESHOOTING

1. Troubleshooting

The following table can be a tool for easier troubleshooting. Should the problem persist, it is always recommended that you contact SPV Spintec for help and possibly repair.

Problem	Cause / Action
The deburring spindle does not rotate.	<ol style="list-style-type: none"> 1. Is the power on? 2. Is the safety enclosure (option) closed? 3. Is the spindle rpm set (above 2000 rpm)? 4. Is the light "PROGRAM RUNNING" lit? 5. Is the spindle cable connected properly? 6. Turn the machine off and reset by turning the "MAIN POWER" switch to the position "RESET". Start the cycle again. 7. If the problem persists. Contact SPV Spintec.
The table does not rotate.	<ol style="list-style-type: none"> 1. Is the power on? 2. Is the safety enclosure (option) closed? 3. Is the table rotation speed set? 4. Is the light "PROGRAM RUNNING" lit? 5. Turn the machine off and reset by turning the "MAIN POWER" switch to the position "RESET". Start the cycle again. 6. If the problem persists. Contact SPV Spintec.
The deburring spindle does not flip down on cycle start.	<ol style="list-style-type: none"> 1. Is the table rotation speed set? For the spindle to flip down, a start signal from the table rotation is required. 2. Is the air supply connected correctly? (See p 6.) 3. Is the air pressure set to machine working pressure? (See p 8.) 4. Are the throttle valves for the flip function properly adjusted? (See p 8.) 5. If the problem persists. Contact SPV Spintec.
The light "PROGRAM RUNNING" is not lit.	<ol style="list-style-type: none"> 1. Does the table and/or spindle rotate? If it does, the light is broken. 2. Is the table rotating? Check that the knob for spindle RPM is not set to zero. 3. Is the switch "SET/RUN" in position "RUN"? 4. Is the safety enclosure (option) closed? 5. If the problem persists. Contact SPV Spintec.
L.E.D H1 (red) flashes.	<ol style="list-style-type: none"> 1. Count the number of flashes. 2. One flash, turn of the machine and reset by turning the "MAIN POWER" switch to "RESET". Start the machine again. If the problem still persists, contact SPV Spintec. 3. Two or four flashes. Check the main voltage. 4. Three flashes. Short circuit, ground fault. Check the spindle cable. 5. Five to eight flashes. Check the spindle cable. Is the spindle warm? Turn the machine off and reset by turning the "MAIN POWER" switch to position "RESET". Start the machine and start the cycle again. Is the spindle rotating? If not, contact SPV Spintec.
ALARM H1 Deburring spindle temperature too high.	<ol style="list-style-type: none"> 1. Check the air flow for the spindle cooling. Increase if necessary (See p 8.) 2. If the problem persists. Contact SPV Spintec.



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SERVICE AND MAINTENANCE

1. General

The DB-682010 deburring machine requires only minimal maintenance and has been designed to make service and maintenance as easy as possible.



WARNING !

Before performing maintenance, make sure the machine is turned off. Never use compressed air when cleaning, since this may cause failure of the machine.

Period	Action
DAILY.	<ol style="list-style-type: none"> 1. Check that the air cooling is sufficient. 2. Remove chips and dust from the spindle and the table using a brush or cloth. Never use compressed air to clean the spindle as it can cause the bearings to be destroyed. 3. Check that the air supply is sufficient. 4. Make sure the deburring-tool is not damaged or worn. 5. Check the work area so that there are no coolant, oil, grease or other liquids on the floor since this can cause severe personal injury. 6. Check that the machine "EMERGENCY STOP" is working properly (See p 9.) 7. Check that the magnetic switch on the safety enclosure (option) is working properly.
WEEKLY.	<ol style="list-style-type: none"> 1. Clean the table surface from chips and dust using a cloth. 2. Check that no bolts or screws are loose. 3. Make sure the levers for adjusting the deburring unit is working properly. 4. Check all air hoses from damage. 5. Check all cables from possible damage. 6. Clean the safety enclosure (option) in accordance with separate instructions.
MONTHLY.	<ol style="list-style-type: none"> 1. Check that the spindle nose rotates smoothly and without resistance by turning it by hand. 2. Clean the machine thoroughly and lubricate the parts that are adjustable for setting, using silicone spray.
YEARLY.	<ol style="list-style-type: none"> 1. Remove and replace the machine's fan filter. 2. Check the spindle if service is required (recommended normal service interval: 1000 hours). 3. If need of service, contact SPV Spintec.



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