

Brushing Machine

Instructions for Use



Preface

The Bungard RBM 300 is a small wet processing brushing machine in professional quality for cleaning and roughening of pcbs. It is suitable for all cleaning steps in the course of pcb production.

Features:

- The RBM 300 has an oscillating brush with quick change holder.
- Brush, dryer, oscillation, and transport can be switched on and off separately.
- In addition the oscillation frequency of the brush and the speed of the conveyor are stepless adjustable.
- The double side parallel adjustment of the brush is of great importance, because in contrast to the widely used single side brush adjustments only the mutual parallel adjustment will enable a long lasting uniform brushing result.
- The machine can be equipped with various brushes so that finishing pcbs before laminating is possible as well as slight deburring after drilling can be fulfilled.

- The usable width is 300 mm.
- In spite of its small size the RBM 300 comes with a complete squeeze off and hot air drying zone behind the wet processing brushzone.
- The integrated frequency converter allows the machine to work worldwide with all power supply systems and enables smooth start and enhanced motor protection.
- Being simply a table size model the RBM 300 lacks only the integrated rinse water treatment of its bigger sister, the RBM 402. A separate rinse water treatment tank is available as an option.

Technical Data

Electrical Connection:	110 - 230 V, 50–60 Hz
Dimensions (L x W x H):	760 x 590 x 415 mm
Working width:	300 mm
Board thickness (rigid boards only):	0,3 - 3 mm
Brushing speed :	1360 RPM
Oscillation stroke :	10 mm
Oscillation frequency:	ca. 10 - 110 H/min
Conveyor speed:	ca. 0,2 - 2 m/min
Rinse water consumption:	6,8 l/min
Weight:	80 kg
Board size (minimum):	80 x 160 mm
Brushing roller stroke:	max. 20 mm

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For security reason, brushing rollers can only be activated if top cover is closed.

Attention: Do not start brush motor when brush is under load.

Do not touch heating elements and tubes. Danger of burn!

Infeed per turn of hand wheel:	ca. 1 mm
Brushing roller length:	310 mm
Brushing roller outside diameter:	89-91 mm
Brushing roller inner diameter:	35 mm
Rinse water inlet:	20 mm
Rinse water outlet:	32 mm
Rinse water pressure:	1.5 bar

Technical details are subject to change without notice.

Safety Regulations

Please apply the general safety rules for working with electrical machines.

Do not run the machine in corroding, humid, dusty, extremely hot or explosive atmosphere. If you do run the machine in an atmosphere as described above be aware that this happens on your own risk and responsibility.

The operator has to provide appropriate safety precautions and equipment. We explicitly exclude any warranty for damages resulting from running the machine in an atmospheres as described above.

When changing the brush you must pay attention to the correct rotating direction of the brush to avoid damage.

Set Up

Check packing and machine for transport damages. If such appear inform your transport agent, your local dealer immediately and us and remark the damage on the transport papers.

Unpack the machine at its final location. The RBM 300 requires a flat, level surfaced table.

To enable easy changing of the brushes later on we recommend to not place the machine directly next to a wall.

For easy transport the hand wheel for adjusting the brush is not yet mounted. Please mount this wheel first and tighten it with the Allen Key screw.



The power connection must be in accordance to the details on the information plate and you local standards.

The RBM 300 is equipped with a frequency converter, which makes the machine suitable for all power systems world wide and enables a smooth start function as well as a motor protection against overload. The machine is delivered with power cord and safety plug.

The water supply for RBM 300 requires a stop valve and a pressure reducer (maximum pressure for rinsing system: 1,5 bar). The discharge must be trapped but has to avoid back draughts. Please consider your local environmental laws. In many countries you may not directly pour the rinse water into the drain but rather preset a filtration.

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As an option we offer a closed cycle rinsing module, which filters the rinsing water and pumps it back into the machine.



(circuit rinsing module)

After machine is installed correctly and according to local regulations, check machine functions. Check that all switches (for brush, dryer, conveyor, oscillation and mains) are off.

Check if brushing roller is fixed correctly. If not, fix it hand-tight with the included socket spanner (wrench / Item no. SW 41). See de-



tails in chapter 6.1 exchange of brushing roller. Now switch on mains. The lamp should be lit.

Distance of brushing roller is preset to maximum. Setting may be modified by means of the handwheel. Feed motion of brushing roller is clockwise. 1 mm infeed increment per 360° turn of handwheel.

For security reason, brushing rollers can only be activated if top cover is closed. Turn on brush. Attention: To avoid damage to the motor and extreme mechanical wear do not start the brush under load.

Switch on oscillation. Check that oscillation speed may be varied with potentiometer.

Switch on conveyor and check if rollers are turning correctly and speed may be varied with the potentiometer.

Switch on dryer. Attention, do not touch heating elements and tubes. Heating-up time has to be approx. 3 min.

Operating

Surface quality

The RBM is equipped with medium fine brushing rollers for deoxidisation and soft burring. The surface quality is a function of different parameters such as pressure, oscillation, conveyor speed, material quality and requirement of the job (deoxidisation, polishing, burring). Optimised presetting has to be found by individual tests.

Presetting of RBM

Turn on the main switch. Adjust distance of brushing roller to maximum possible values. Turn on brushing rollers and oscillation. Adjust pressure according to board thickness. For pressure adjustment we recommend a PCB of 200 mm and minimal length of 250 mm. Enter board and modify the distance of brushing roller so that pressure is sufficient to clean the surface softly. You can hear the motor load increasing as soon as the brush touches the board.

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Normally it is sufficient for PCB processing to work with low pressure to remove oxides and to have a good base for PTH or photo laminating. Only deep scratches in the PCB surface require higher pressure and if necessary more than one processing.

Drying

The dryer consists of a mechanical and a hot-air drying compartment. Drying efficiency is best at low conveyor speed. Important for good results is that the drying clothes are in a good condition. They have to be exchanged from time to time. Moist clothes work better than totally dry ones. If the pcb shall leave the machine completely dry you have to reduce the speed to minimum. You can post dry the board by putting it on the heat grid sheet.

Maintenance

6.1. Exchange of brushing roller

Lift brushing roller by turning the handwheel **counterclockwise**. Dismount the grey cap on the machine's side (1). Notice the exact position of all parts you disassemble. This will simplify the reassembly to a great extent. Open top cover of the machine.



(1)

This will simplify the reassembly to a great extent. Open top cover of the machine.

Block the brushing roller manually and loosen full floating axle **clockwise** (left-handed thread !) until you can pull it off (2 and 3).



(2)

Take out brushing roller and dismount the shaft nut with special 41 mm wrench (4). Insert shaft into new brushing roller and fix it. Attention: take care of the sense of rotation, marked on the brush.



(3)



(4)

Insert complete unit into the machine. Insert full floating axle, fix it hand-tight by turning **counterclockwise**. Close top cover. Grind brushing roller if necessary.

6.2 Exchange of drying clothes

Clothes are changed upon need.

Switch off dryer and let it cool down. Demount the heat grid sheet by loosening the 4 Allen key screws.



Dismount upper dryer cover and squeeze roller. Remove old drying clothes and clean rollers. Fix new double sided scotch tape on the lower roller. Put tissue on adhesive tape, use the conveyor system to roll it up.



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Apply double side adhesive tape to upper roller. Cover upper roller with cloth. Roll up cloth and insert upper squeeze roller into machine.

6.3. Bearings

All friction bearings have to be oiled. Worm gear pair of brushing roller lifts have to be greased. Attention: full floating axle of oscillation system is fitted with silicon based sliding bearings that should not be greased nor oiled.

6.4. Grinding in of brushing rollers

New and / or worn out brushing rollers have to be ground by use of the included rubbing plate.

Insert rubbing plate (rough side top) so that plate is fixed by one pair of press rollers each left and right to the brush. Stop conveyor. Activate rinsing. Switch on brush rotation and oscillation. Feed brushing rollers by turning hand wheel clockwise until you hear the motor load increasing. Repeat until the brush surface is levelled over the entire working width. Turn on conveyor and drive out rubbing plate. Your brushing machine is ready for use now.

Guarantee

All machines are submitted before distribution to examination on function and continuous operation firmness. On the machine we grant a work warranty of 12 months to our customers starting from purchase date on accuracy in material and processing. We warrant at our choice by exchange of incorrect parts or by repair of the machine in our house. Old parts change into our possession.

Disclaimer of Warranty

All parts subjected to wear are excluded from this warranty. Non-observance of this manual shall void all warranty claims.

We cannot accept subsequent claims from damage or destruction of workpieces worked on in the machine, because we have no knowledge or control over the operating conditions at your site. This is valid in a general manner also for requirements from damage to articles, buildings and persons as well as the environment.

We do not warrant that the function of the machine will meet the customer's requirements or that the operation of the machine will to this regard be error free.

In no event will we be liable to the customer for any incidental, consequential, or indirect damages of any kind, including loss of profit and prosecution for environmental pollution, even if we could have been aware of the possibility of such damages.

All information was arranged with great care. We reserve ourselves however mistake and technical changes without previous announcement.

Running the machine in corroding, humid, dusty, extremely hot or explosive atmosphere happens at the operator's own risk and responsibility.

We explicitly exclude any warranty for damages resulting from running the machine in in corroding, humid, dusty, extremely hot or explosive atmosphere.

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