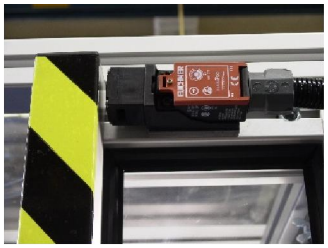
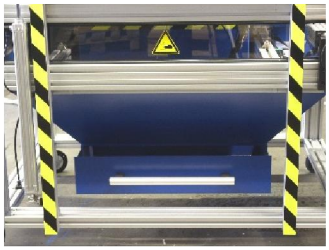
SPONTAN
TRENN- UND ENTGRATTECHNIK

OBM-250-600

Surface brushing machine

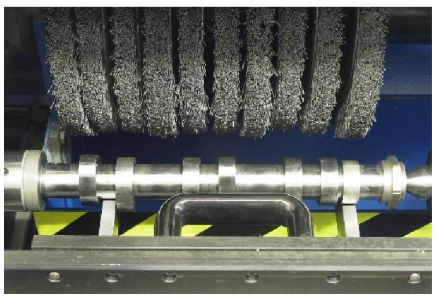


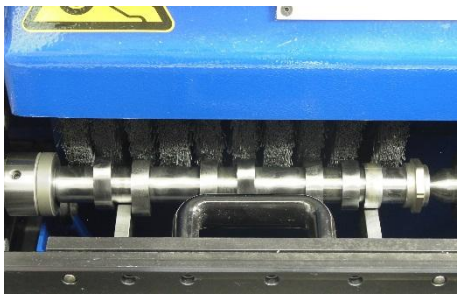


- travelling rack
- quick change brush shaft
- programmable logic control (plc) with control panel
- compensation of brush wear via handwheel with digital position indicator
- aluminum rack with security door for placements and service door for toll changeovers
- dust-trapping funnel with collection tray and connection to external suctions
- customer requested coloring, blue RAL 5010, grey RAL 7035; aluminum profiles

General short description surface brushes

The SPONTAN surface brushing machine is especially designed for the automatically surface brushing of bearings at its defined positions e.g. cam shafts.





The machine can be converted for different sorts and lengths of workpieces.
The material clamping as well as other linear movements will be realized by pneumatical units.
All rotational movements are fitted with electronical drives.

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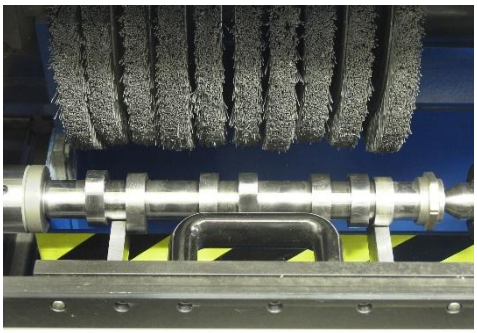
Information about the process sequence

- the material will be inserted manually (component-specifically prism mounting)

- **Automatically start**
  two hand operation
  closing of the security door
  material will be clamped
- feed the brush on contact
- material will be handled (twisted/brushed)
- process time (adjustable)will run out

- **Automatically finish**
  Freeing of the material
  Opening of the security door
  Material will be put out manually



Technical data of the unit and machining parameters

External diameters:	20 – 70mm; or by sample or drawing
Material form:	round profile with or without cams
Cam cutting cycle diameter:	40 to 53 mm
Bearing diameter:	20 to 30 mm
Cam angle:	variable
Output length:	from 300 to 600mm
Workpiece weight:	max. 5,0 kg

Performance data

Process time:	from 0 - 60 sec free adjustable (depending on material)

Tools data

Stainless steel brush:	∅ 200-250 mm (depending on material)
Synthetic brush:	∅ 200-250 mm (depending on material)
With drilling diameter	50,8mm
Brush shaft:	with double grooves and spacers

Brush drive

Drive power:	5,5 kW (Siemens) rated speed 1.500 rpm Speed control via frequency converter (Siemens)

Workpiece drive

otational motor:	0,25 kW rated speed 55 rpm
Feeder:	pneumatically
Strocke:	approx. 100mm

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Measurements and weights

Length:		approx. 1553 mm
Height:		approx. 1548 mm
Width:		approx. 1300 mm
Total weight:		approx. 900 kg
Layout plan:		similar 100.267-300/00

Electronical Control

Mains voltage:		3 x 400 VAC +/-10%
Mains frequency:		50 Hz +/- 2%
Control voltage:		24 VDC +/- 5%
Control cabinets:		Rittal / IP 54
Reserve:		25 %
Control:		safety control Siemens
PLC-control:	**Option**	Siemens S7
Frequency converter:	**Option**	Siemens

The connections to the machine will be arranged by plugs.

The activation of the solenoid valves will follow by contactless outputs.
Inductive proximity switches will be installed as function limit switches.

Connection values

Electric:	approx. 6,5 kW installed power
Pneumatic:	compressed air approx. 300 l/min, 5-10 bar normal dry, filtered

Operating conditions

Temperature:	l5°C. 50°C
Relativ humidity:	max. 90 %

Corrosion protection

The relevant parts of the machine are covered with a high-quality primer coat. Synthetic resin-industrial coat according to specification sheet is provided for finish coat. The aluminum profile rack won't be painted. The warning sights are signal yellow, RAL1003.

Availability

95% (setup times and cleaning work excluded)

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TECHNICAL DESRIPTION

Pos. 01 Machine body

The machine body is a stable frame construction (aluminum) on which the function modules are mounted. The travelling brush head will be moved at linear guidance. The machine body also is a housing for the brush unit and fitted with a big window.
An ergonomically-switched safety-sliding door with a pneumatic drive will lock the working area. The safety door will be closed by two hand operation.

The substructure of the rack includes a chip or rather dust tray.

Leveling feet are provided for the installation of the machine.

Pos. 02 Deburring- or polishing brushes

SPONTAN offers the optimal deburring brush for each material and burring tie.
The service life depends on the burring tie and the diameters of the workpiece.
The immersion depth should not exceed 1-1,2 mm (depending of the workpiece geometry).
An optimal in- and outside deburring will be ensured in one working process.

Pos. 03 Brush unit

The brush drive will come from a three-phase motor by v-belts.

The brush speed will be regulated by a frequency converter and is able to be matched to the handling workpiece.
The belt drives will give the brush the needed elasticity.

The brush roller storages consist of a mounting shaft, belt pulley and a pillow block.

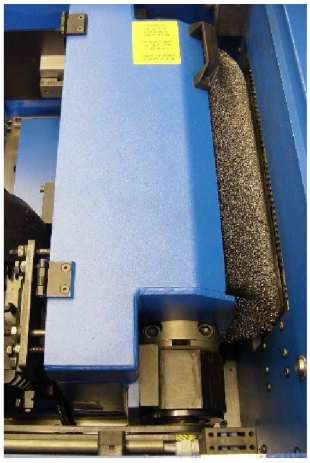
A fine adjustment of the brush ensures, that in case of brush wear, it is possible to simply readjust. Correction of the deburring quality are possible as well. The pre-adjusted positions don’t have to be changed.

The brush units are provided with a newly designed **>quick-change brush shaft<**.
The bearing journal of the brush drive is constructed to be able to clamp the brush shaft via clamp collars.

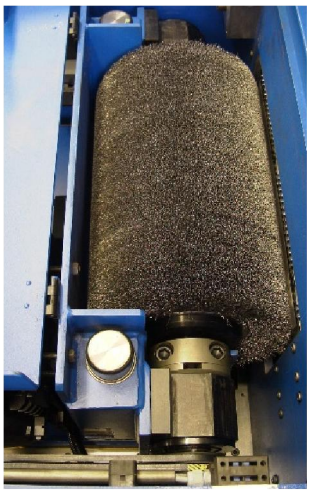
The common disassembly of the whole bearing is not needed anymore.
A user-friendly and quick change of the brush shaft will be ensured by that.

Description of the brush change

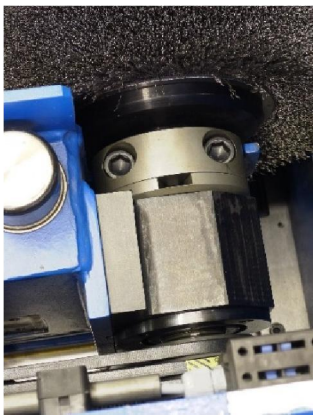
Set brush unit back to service position “350mm”



Open safety cover of the brush unit



Open safety cover of the brush panel



Loose the screws of the bearing positions

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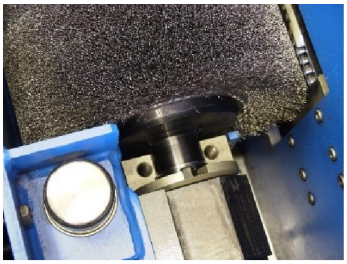
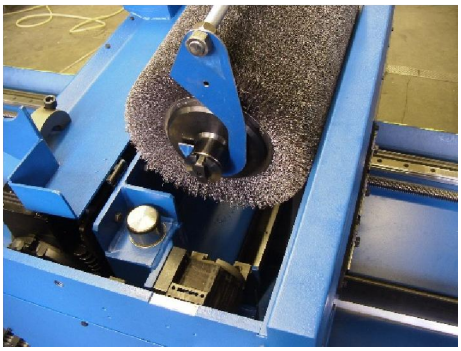


Remove clamp sections

Now it is possible to remove the complete brush shaft.
This preferably happens with suitable lifting tools.
Brush weight inclusive coupling shaft is approx. 50 kg.



The brushes will be put on wooden wedges
to prevent an unwinding.

The installation of the new pre-mounted barrel wire brush
with coupling shaft will follow in reverse order.

While lifting the new brush mind the assembly wedge at the coupling shaft end. Couplings shafts can only be installed in one position.

Mount the clamp sections back to their bearing position
and fix them with their screws.

Close the safety covers of the brush panel and brush unit.
Set the barrel wire brush via handwheel and depending on the brush diameters back to the common position.

Pos. 04 Brush wear adjustment

A handwheel and a mechanically digital position display is also provided for the **compensation of the brush wear** and the settings of the deburring result.
The settings can be made within seconds. To get a similar setting for both brushes, the present brush diameters will be shown at the digital position display.
A readjustment of the deburring result can be taken during the process.

Central lubrication system

All mechanically adjusting movements like e.g. the linear guidance unit of the loose side, brush wear adjustment and height adjustment are connected to a central lubrication system.

Pos. 05 Brush change

Average value: **approx. 25 min**

Because of a complete change of a brush change unit,
the exchange can be rapidly reduced. **approx. 10 min**

Pos. 06 Standard accessories

2 piece Operation Instruction German
1 piece Operation Instruction on media e.g. CD-ROM

General equipment of the surface brushing machine OBM-250

- SPONTAN-surface – deburring machine Type OBM-250-600 Pos.1
- Machine body Pos.1
- Brush unit with quick change system Pos. 03
- Brush wear adjustment Pos. 04
- Standard accessories Pos. 06

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Accessories options

Barrel wire, abrasive grit or stainless-steel brushes for each customer specific use

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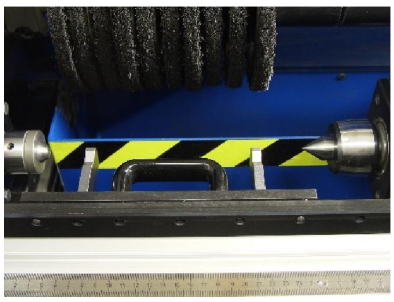
Pos. 07 Component specific prism mounting according to sample parts

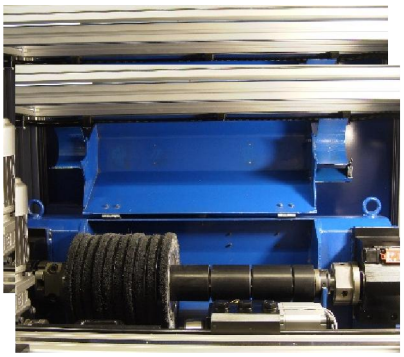


Performance especially for the handling workpiece.

Because of the use of this exchangeable mountings it is ensured, that only one sort of workpiece will fit.

Pos. 08 Change brush shaft

Consisting of a whole brush shaft with clamping flange to reduce the setup time.



Pos. 08a Complete brush shaft toolkit as sample part

Consisting of whole brush shaft with clamping nut, with needed disc brushes and distance parts

Pos. 08b brush traverse for brush change

It is easy and safe to change the deburring brush with this lifting tool.
We urgently suggest the purchase of this tool.

Pos. 09 Machine lamp (Option)

Optional, it is possible to add a machine lamp to the safety protection cover.
This lamp will light up the working area of the brush module and is helpful for the setting of the machine.

Pos. 10 Machine wheels (Option)

It is possible to match the machine with fixed and swivel castors to move the machine without any pallet or forklift truck. The wheels have a locking device.

Pos. 11 Programmable logic control)PLC) with operating panel

As an option the machine can be equipped with a SPS-control(Siemens). Via the central operating panel, it is possible to set the tube dimensions and machine parameters.

All functions can be chosen via manual and automatic handling.
A menu-driven machine operation simplifies the handling.

Warning and fault messages will be shown directly as plain text at the panel.

Oder and operation parameters will be filled in by the Control panel:

- Brush speed/ peripheral speed entry
- Operation time entry
- process time entry
- operation status display
- quantity display
- fault message display

Pos. 11a Data transfer to a customer interface (Option)

There are two possibilities available for preparation of the data transfer to the customer. Hereby it is possible to transfer operating data, fault messages or order data.

- Provision of data via Ethernet interface (Profinet)
- Provision of data via Profibus interface (Profibus)

Its needed software extension can only be performed after the completion of the necessary protocols according to the determination and will be calculated by effort.
These data will be supplied via data block by customer collection.

Pos. 11b Remote maintenance (Option)

A remote access can be provided for error diagnoses and Software-Updates.

Pos. 12 Temperature monitoring of storage units (option)

At the electronical temperature monitoring in the area of -20 - +180°C, the four storage points of the brush shaft inclusion (speed range 1500 – 2200 rpm) will be controlled as a preventing maintenance.
The temperature sensors are connected to the related electronically external value-units (with digital display) and installed to the brush units. The present operating temperatures of the storage points will be displayed on the panel.
In case of exceedance of a defined limit temperature, an operation/ warning message will be issued.

Pos. 25 Extraction unit / wet suction Type HNA – size 3

The extraction unit consists of a sheet steel housing with revision cover, water tank, integrated fan, engine, droplet separator, intake manifold with funnel out of polypropylene (PP), movable mud bucket, fresh water supply, cleaning hose, management for water level regulation with related piping.

Pipe connection	from brush to extraction
Installation of piping	inside the brush unit
Suction rail inside the brush unit	Type Norfil NW 125
Suction vehicles	for travelling brush unit
Electrical control	integrated in control cabinet
Air performance	1.800 Bm³ / h
Drive power Motor	3,0 kW
Total pressure	2.100 Pa
Mud bucket	120 Liter
Intake manifold	187 mm
Filling level regulation	autom. via float switch
Gemittelter Schalldruckpegel	82 dB
Dimension width x height x depth	**835x1825x760 mm**
weight	250 kg

Pos. 25a After filter/depth loading filter with differential pressure monitoring:

The filtering of the extraction unit's exhaust air with a differential pressure monitoring, electrical response at dense depth loading filter via digital DPQ3 – pressure gauge,
Qualified filter materials are used.

It is not allowed to aspirate mixed-dust (Steel and Aluminum)
Please observe the aluminum dust rules
Danger of Explosion!

Pos. 25b Equipment for aluminum - extraction (Option)

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