Babitsch MECHANICS

Production centers

DRILL AND TAMPING MACHINE„TAMPMASTER“ TYPE TM 1 2

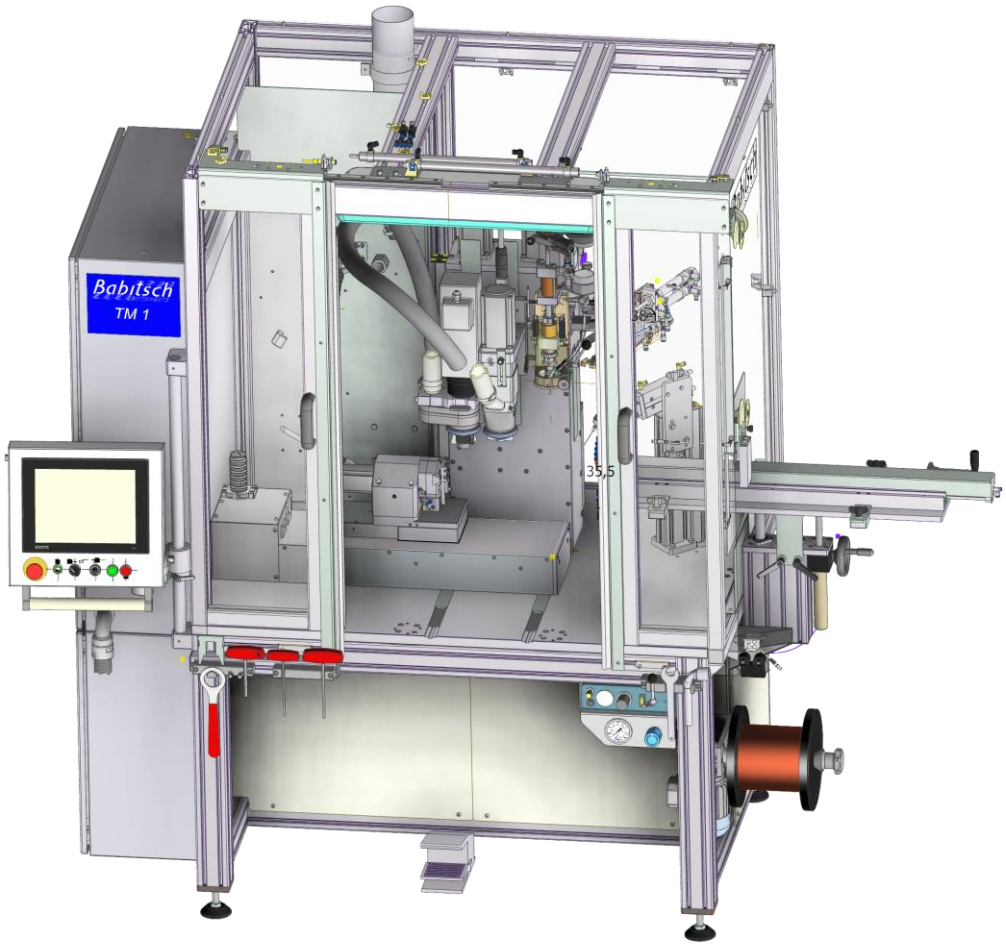
PRODUCTION CENTER TYPE BAZ 200 7

PRODUCTION CENTER TYPE RTPC 10 12

LINE PRODUCTION CENTER TYPE LPC2 15

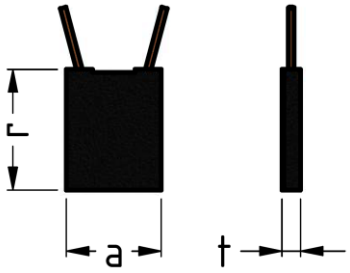
AUTOMATIC STUD GRINDING MACHINE TYPE ZBR600 18

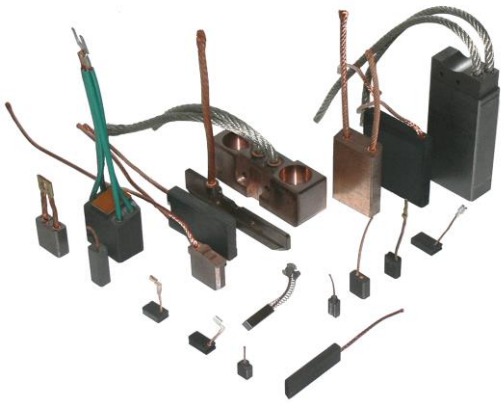
Drill and tamping machine„Tampmaster“ Type TM 1



Application:
Cycle-controlled tamping machine for the production of carbon brushes and grounding contacts especially for small quantities and universal use (several tamping contacts possible)

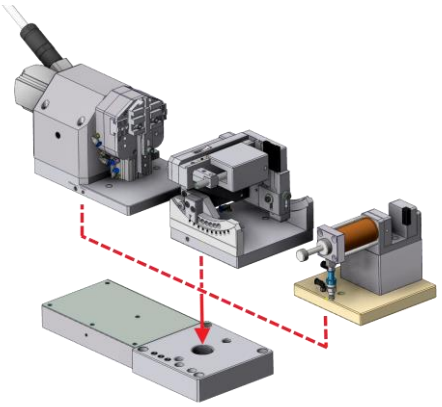
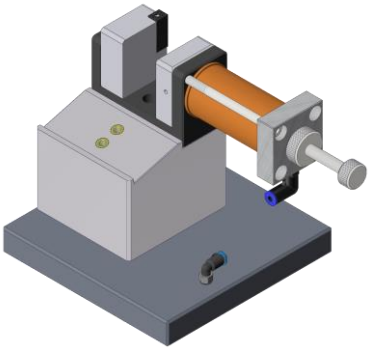
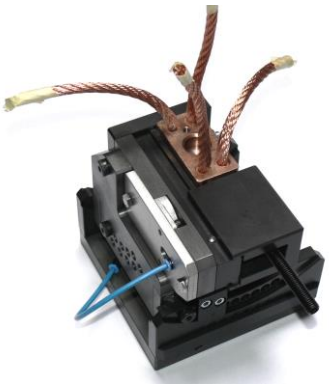
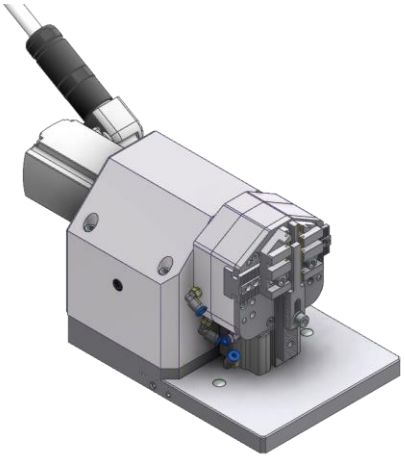
Working range:			Product family:

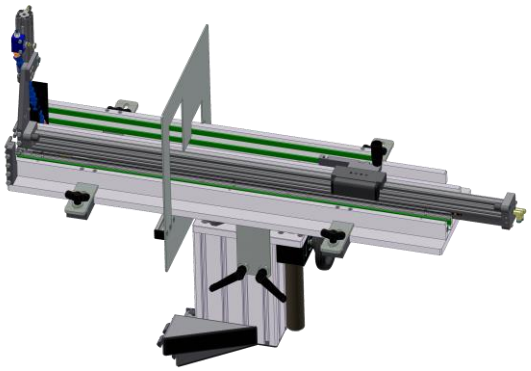
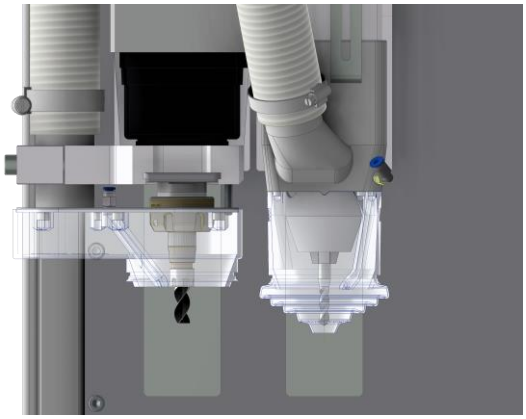
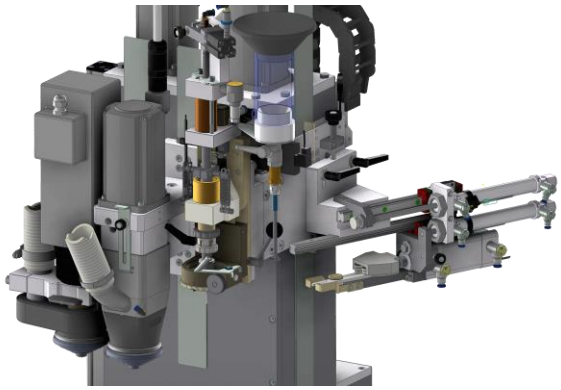
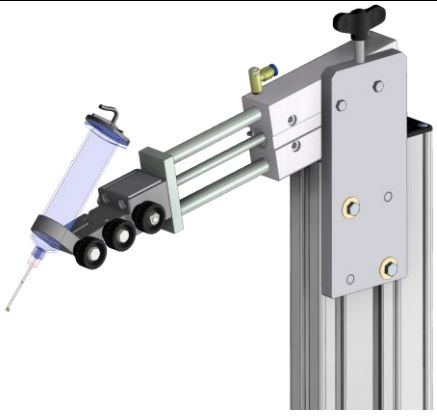


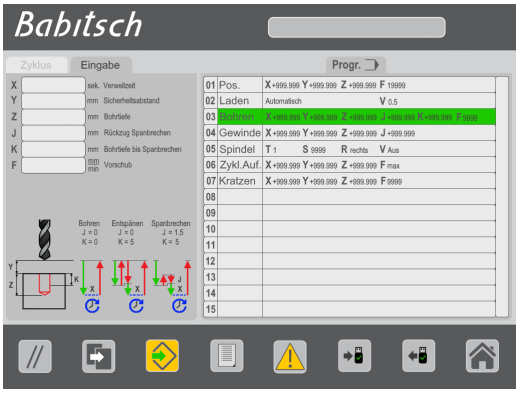


a	= =	8-60mm	/ with special clamping devices adjustable from 3-120
t	= =	5-25mm	/ with special clamping devices adjustable from 3-100
r	= =	25-101mm	/ with special clamping devices adjustable from 3-110
wire Ø	= =	0,8-6,3 mm with Standard tamping head/ 2- 8,4 with heavy tamping head	
wire length	= =	25-220mm	

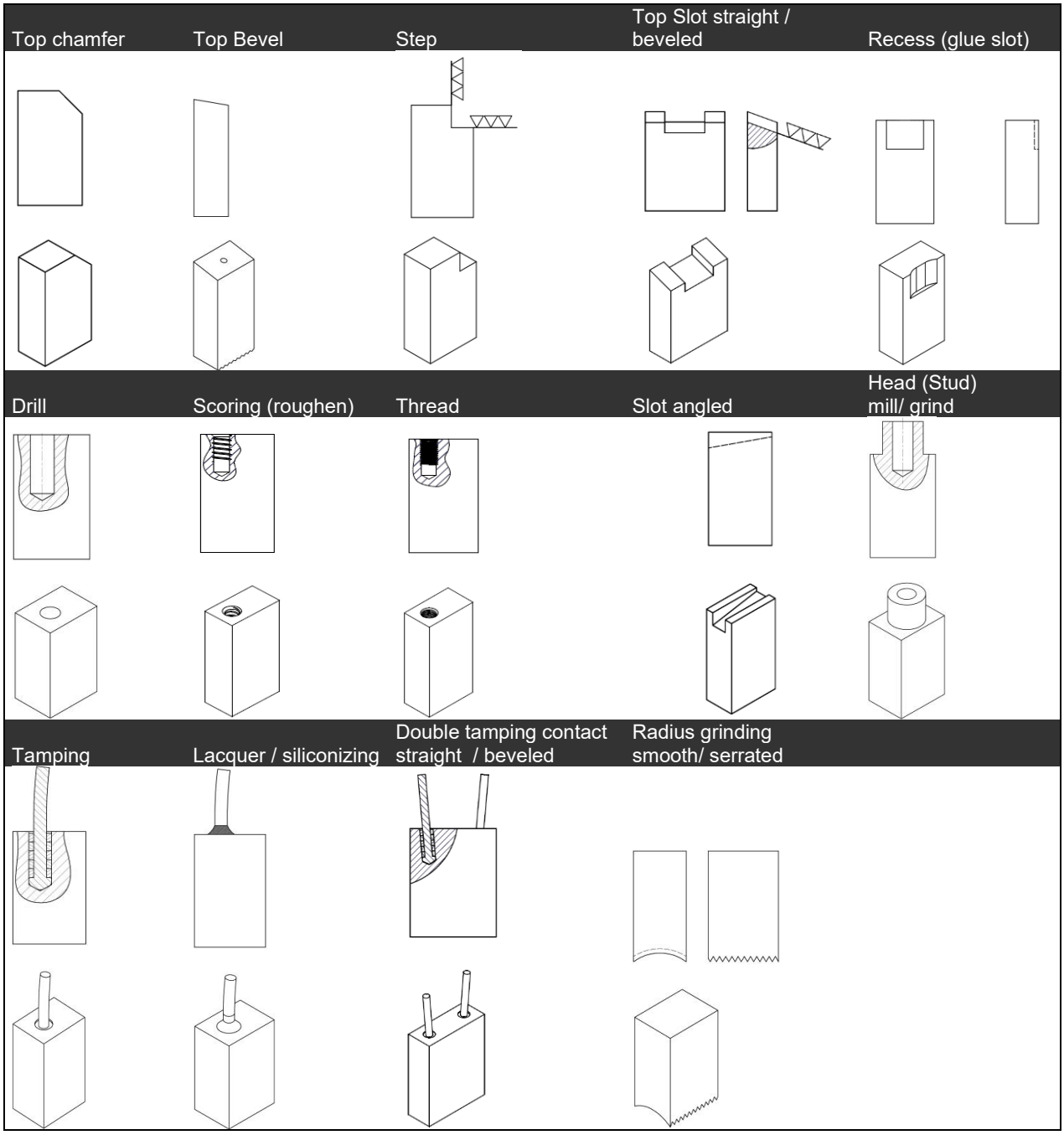
Detail features:

Zero -point clamping system TM1 31001	Various workpiece clamping devices can be set up in seconds by using the zero-point clamping system The cero points are recorded from the controller The maximum working area is 150 x 150 mm	
Pneumatic vice type SPK Option TM1 80300	Pneumatic vice with interchangeable insert gripping jaw size 40x45mm The insert is designed for cut outs tailer made to the product size The vice can be mount in two different angles (e.g. 0°, 15)	
Pneumatic vice slew able Option TM1 80004	The vice can be freely adjusted to two angles between 0 and 45 degrees. Index hole every 5 degrees enables a fast setup. The 3D cero point is calculated by the controller. The product size can be infinitely adjusted using stops . Clamping range: a = 8,0 - 50 mm t = 5,2 - 70 mm r = 3,0 – 101 mm	
Swivel device Option TM1 80203	For faster setup and automatic processing of angular positions. The center clamping system can be adjusted to the product size. The products can be loaded manually or automatically workspace: gripper standard : big : a = 8 - 60mm 8 - 60mm t = 5 - 10mm 10 - 20mm r = 18 -101mm 18 -101mm (further sizes available on demand)	

Loading automatically Option TM1 70001b	A strand with a length of 800 mm can be automatically loaded and unloaded via a feed rail (only in conjunction with the swivel device). The autonomous time results from the workpiece width and cycle time. Alternatively, a robot can be used	
Drilling / milling / grinding	There are 2 spindles available that can perform different tasks: Spindle 1 (left) speed 1000-15000 rpm Clamping diameter up to max. 16mm, for milling / grinding / drilling Spindle 2 (right) speed 100 -5,000 rpm Clamping diameter up to 10mm for scraping / drilling and scraping / thread cutting synchronously (without compensating chuck) Both spindles are vacuumed and can blow out the drill hole	
Tamping	The tamping station uses the proven pneumatic tamping heads. 4 work areas can be selected: .) Super small, wire Ø 0.1 - 2.2mm .) Small, wire Ø 0.3 - 3.4mm .) Standard, wire Ø 0.5 - 6.5mm .) Heavy, wire Ø 2.0 - 8.6mm	
Varnishes Option TM1 63001	Pneumatic varnish station: One or more drops of varnish can be placed immediately after tamping and before cutting. Easiest setting (only in height) because the paint dot is always in the same X and Y position.	

Control	No CNC knowledge is required to create the program. The work steps can be programmed using plain text cycles. Help graphics make entering the drawing dimensions easier. Cycles: .) Loading/unloading .) Milling chamfers / steps / slots .) Drilling .) Scoring (rifling) .) Thread .) Drilling and scoring (rifling) .) Stud milling .) Tamping	
Quick change adapters (extra accessory)	.) ER 11 Adapter for milling spindle 1 - for quick setup time, tool keep clamped - tool memory can store 50 different tools .) ER 16 Adapter for milling spindle 1 - especially for long cantilever length - for machining radii or slots with swiveling device	
Collets (extra accessory)	.) ER 11 high precision collet for clamping drill bit or end mill in ER11 quick change adapter - set = clamping range Ø 1 - Ø 7mm - individual diameter according to order .) ER 16 high precision collet for clamping drill bit or end mill in ER16 quick change adapter - set = clamping range Ø 1 - Ø 13mm - individual diameter according to order	
Dust cover TM1 44416 (extra accessory)	.) Dust cover for milling spindle 1 especially for – grinding radius with swivel device TM1 80203 .) mandrel for grinding wheel - inner Ø 12mm - outer Ø max 40mm	

Possible processes: depending selected options, fixtures and tools:

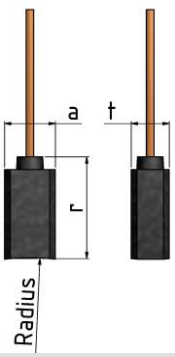
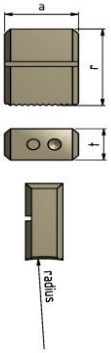
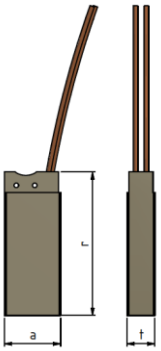


Performance:
Depending on the processing effort, number of strokes and the cable length:

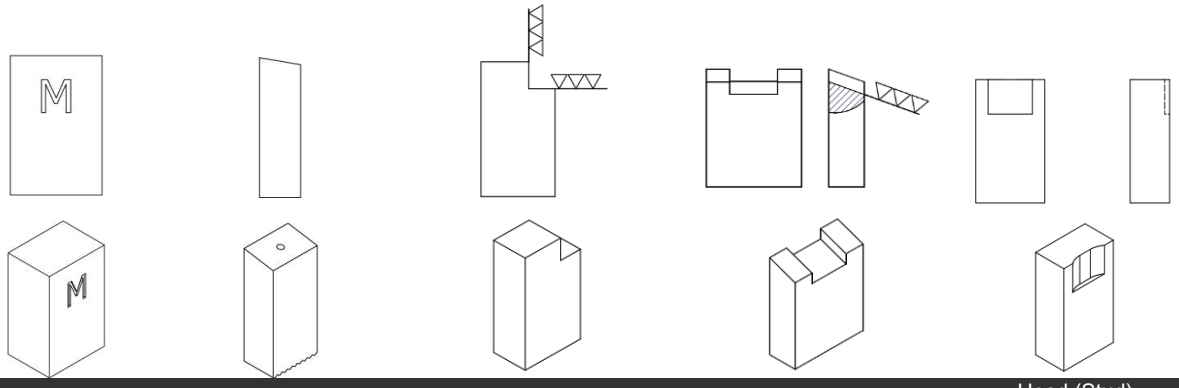
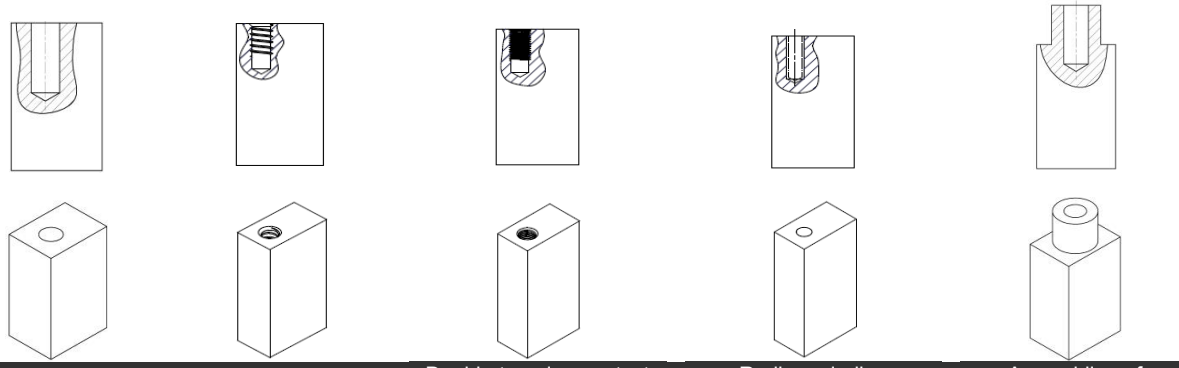
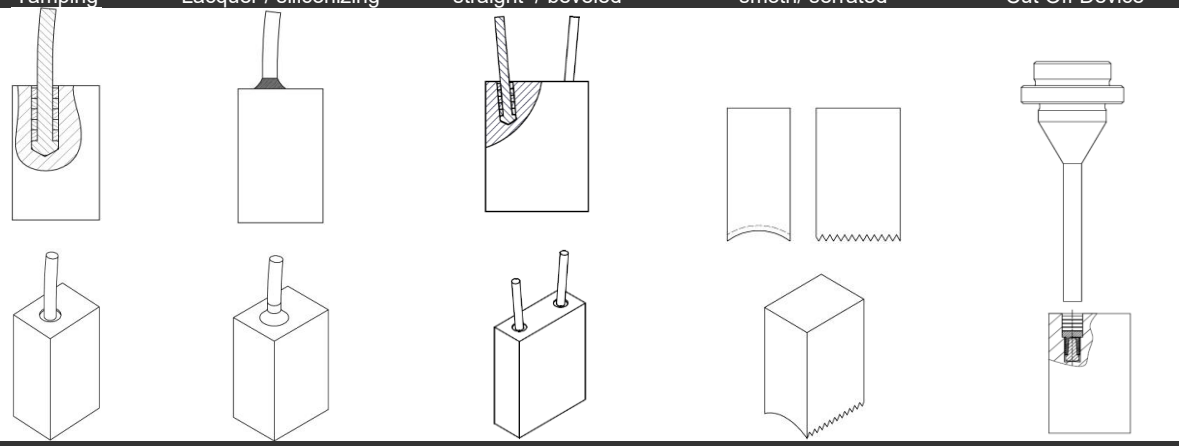
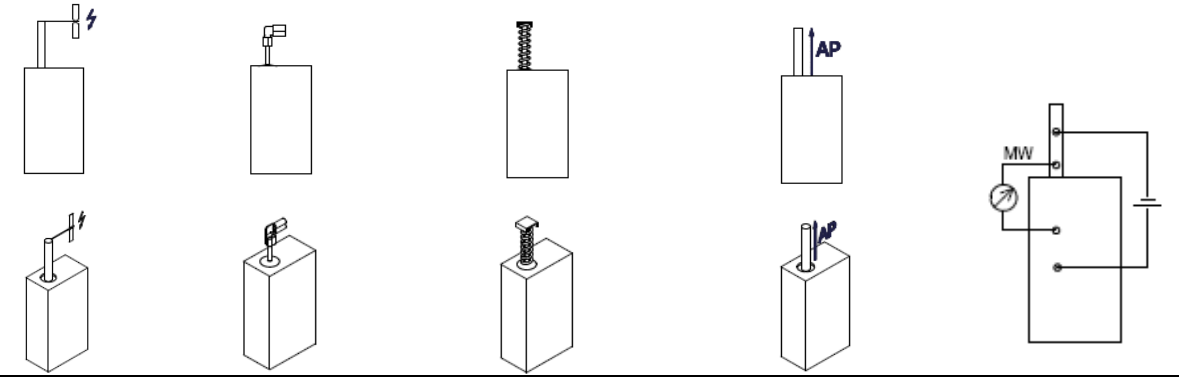
product:	Industrial brush with two wire	Small brush with one wire
	a =50.8 t =5.3 r =54,5mm wire length 100mm 28-32 strokes	a = 22, t=7, r =20mm wire length 50mm 16-20 strokes
Number of pieces per hour	96 pieces	160 pieces
Autonomous running	1 hour 33 minutes	42 minutes

Production Center Type BAZ 200

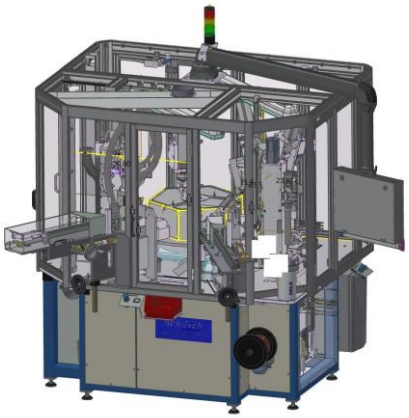
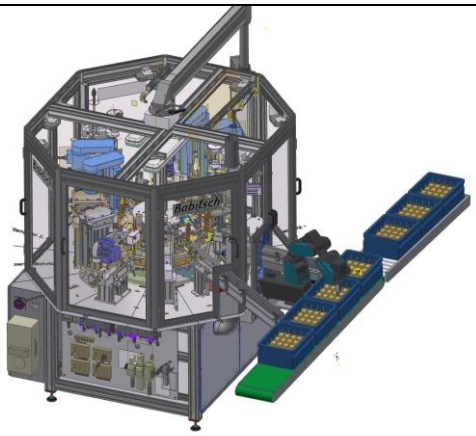
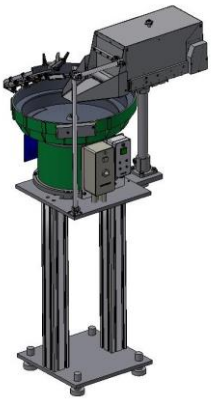
Application:
Round table production center for automatic manufacturing: and assembling of carbon brushes
There are 3 families of parts available.

Working range	Micro	Medium	Industrial
			
a =	2,8-9mm	5-20mm	16 -55mm
t =	2,8-6,9mm	4-15mm	5-25mm
r =	8-25mm	8-42mm	25-101mm
radius R =	10- 25mm - (is determined by grinding wheel)	10- 25mm - ((is determined by grinding wheel)	/
copper cable Ø =	0,3-2,4mm	0,5-3,4mm	1,2-6,3 (8,4)mm
Copper cable length =	8-100mm	15-120mm	15-250mm

The machining center BAZ200 has a modular structure, depending on customer requirements, the number of machining stations is determined. A large number of variants are available.
Typical applications are:

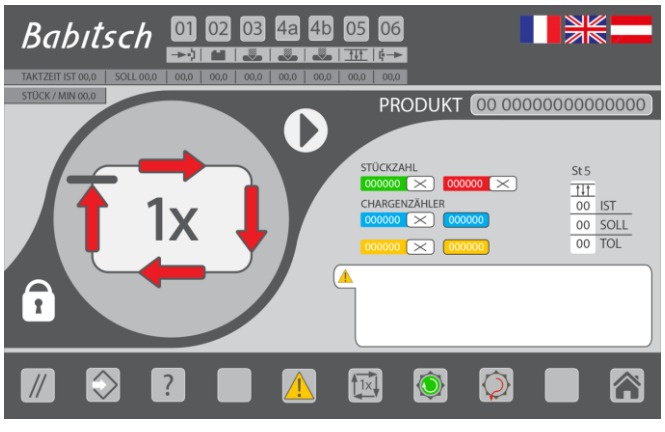
Marking	Top Bevel	Step	Top Slot straight / beveled	Recess
				
Drill	Scoring (roughen)	treat	Silver plate of the drill hole	Head (Stud) turn / grind
				
Tamping	Lacquer / siliconizing	Double tamping contact straight / beveled	Radius grinding smoth/ serrated	Assembling of Cut Off Device
				
Cutting cable by welding scissor	Crimping	Resistant welding Terminal	Measuring the pull out force	Measuring the millivolt drop
				

Depending on the number of pieces and the product, the machine can be loaded manually, semi-automatically or fully automatically:

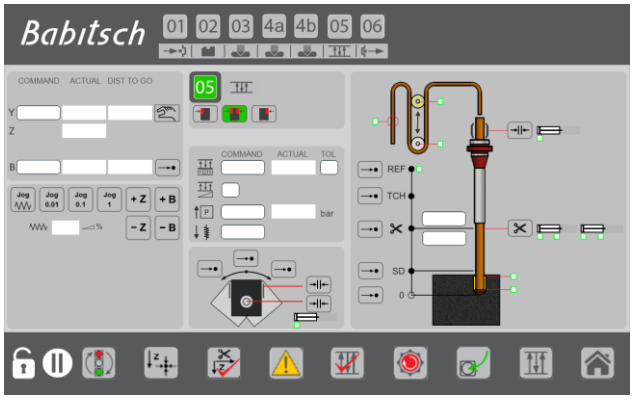
Manual:	
semi-automatically: Storage rail / sorting table	 
full-automatically: Robot / parts conveyor	 

Control / Operation:

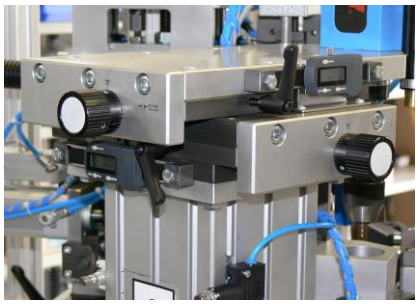
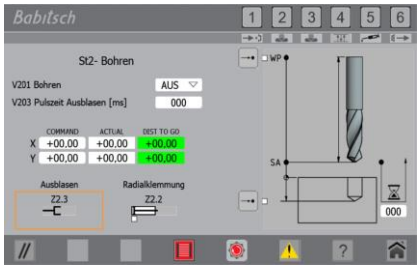
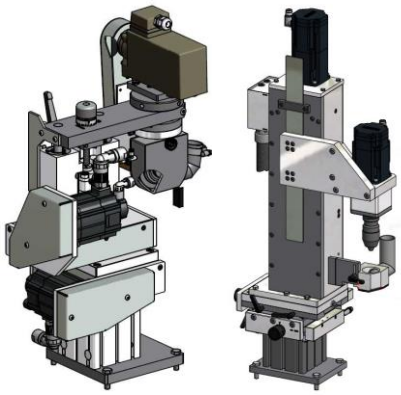
The hole machine is controllable over a graphic Display with touch screen (HMI) Babitsch Mechanics have implement an intuitive operator guidance which enables shortest training period.
Breakdown symbols and error messages in clear text helps also untrained operators to find faults quickly. All cycles could be controlled manually, step by step, and automatically. The intelligent nest Display indicates on every station if the product is raw, good or bad machined. At the Main page, the cycle time of every station and the total output will be displayed, further two independent counters are available. At the station pages all actors and sensor information's get displayed.

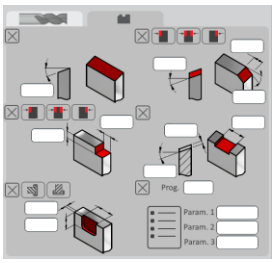
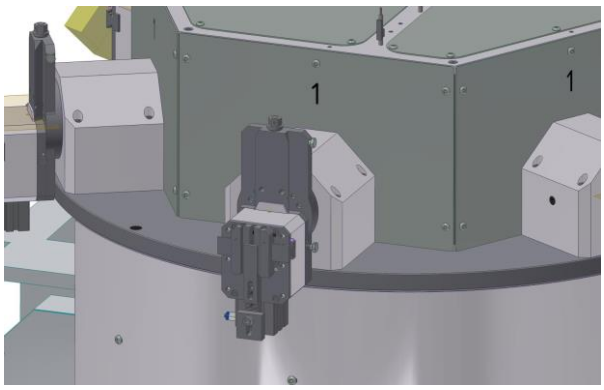
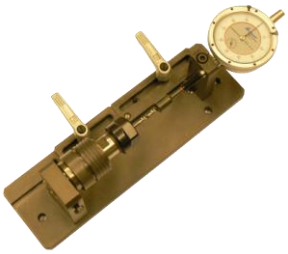


All actuator positions and the associated sensors are displayed in the station images. Digital settings (product parameters) are saved and can be assigned to a product number. This means that a new upgrade can be carried out in just a few minutes. A translation into the national language is optionally possible.



The following options are available for setup time optimization:

Cross slide with digital display	The axis position is read directly on the slide (battery operation)	
Cross slide with absolute measuring system	The axis position is read on the screen. The values are saved. When setting up again, it is only necessarry to positionering to zero.. (drive to zero function), This reduces the setup time extremely.	
Workstations with servo drive	The working positions are digitally programmable and are recorded with the product number. On grinding stations, a large number of grinding wheels can be saved through program sequences	

3,4,or 5 axis operation	Both the clamping device and the processing station can be equipped with servo-controlled swivel devices. As a result, an adjustment to different angular positions can be continuously fully digitally mapped. 	
Set up Device	The workpiece holders and tools can be preset outside of the machine using setting devices.. This significantly reduces downtime during changeover	 

Interchangeable parts:

A set of replacement parts is required for each brush dimension, consisting of:
- Workpiece holders (fixed or adjustable depending on the product family)
- Drilling or scratching tools - Tamping tool (tamping tube, bottom plate, pliers)
- Radius grinding wheel
- with option mark:, marking stamp or with color stamp station, cliché
- with the grinding option: form grinding wheel for head bevels or grooves

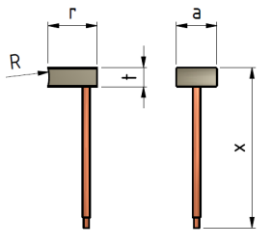
Performance:

depending on brush size, cable length; material quality, drilling depth and required pull-out strength Guide values:

Working range	Micro	Medium	Industrial
	at cable length 20mm 6-8 strokes	at cable length 38mm 10-12 strokes	at cable length 125mm 14-16 strokes
Pieces per minute	20	20	12
Pieces per hour	1200	1200	720

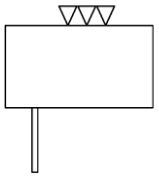
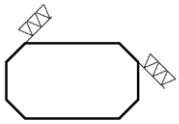
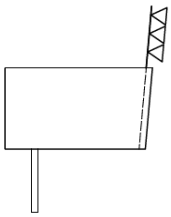
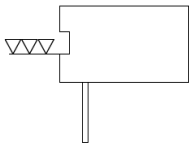
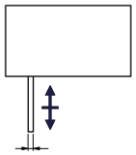
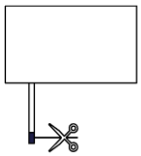
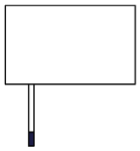
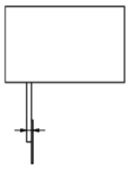
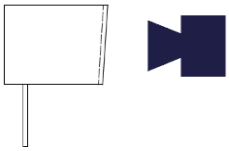
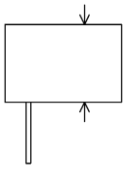
Production Center Type RTPC 10

Application:
Round table production center for automatic manufacturing and assembling of sinter pressed carbon brushs

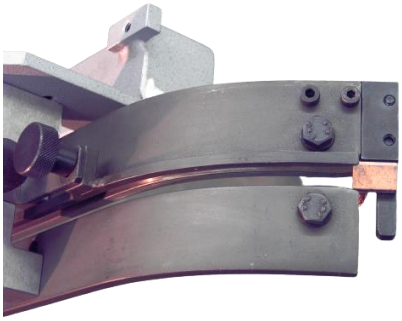
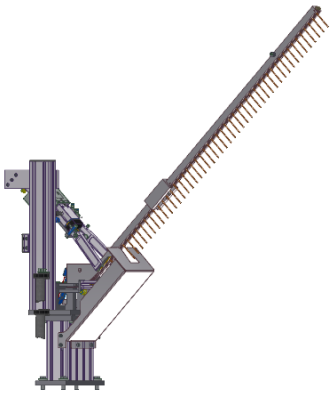
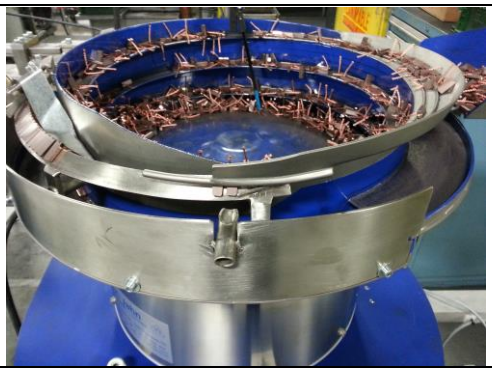
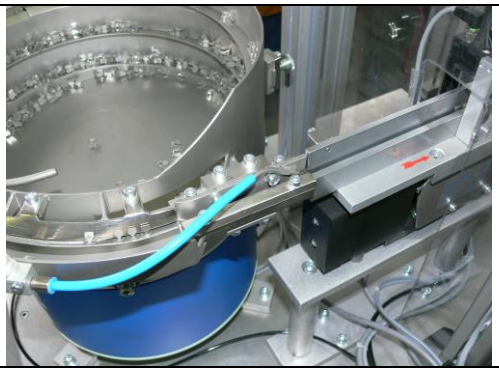
Working range	Product family:
	

a =	4-20mm
t =	4-9mm
r =	7-25mm
radius R =	7- 25mm - (is determined by grinding wheel)
copper cable Ø =	0,8-4,4mm
X= =	max 79mm

The machining center RTPC 10 has a modular structure, depending on customer requirements, the selection of machining stations is determined.
Typical applications are:

Thickness grinding	Chamfering	Radius grinding /angled /smooth or serated	Slot grinding	Cutting the copper flex end
				
cutting the copper flex end	**Compact welding of copper flex end**	**Resistant welding of a terminal**	**Quality inspection by camera**	**Measuring the thickness**
				

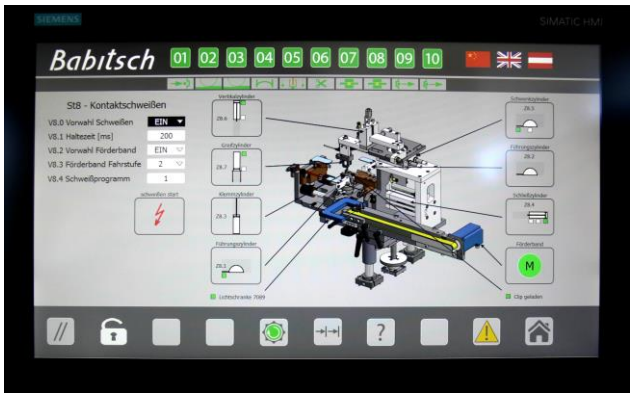
Depending on the number of pieces and the product, the machine can be loaded manually, or fully automatically:

Manual:over infeed chute or magazines	 
Full automattic by feeding unit	 

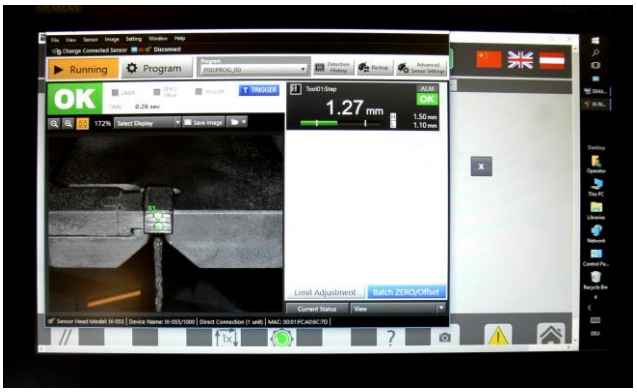
Control / Operation:

The hole machine is controllable over a graphic Display with touch screen (HMI) .
Babitsch Mechanics have implement an intuitive operator guidance which enables shortest training period.
Breakdown symbols and error messages in clear text helps also untrained operators to find faults quickly. All cycles could be controlled manually, step by step, and automatically. The intelligent nest Display indicates on every station if the product is raw, good or bad machined. At the Main page, the cycle time of every station and the total output will be displayed, further two independent counters are available. At the station pages all actors and sensor information's get displayed.

All actuator positions and the associated sensors are displayed in the station images. Digital settings (product parameters) are saved and can be assigned to a product number. This means that a new upgrade can be carried out in just a few minutes. A translation into the national language is optionally possible.



Quality inspection by camera:
Critical parameters can be checked by visual sensors.
Typical inspections are:
.) appearance of features
.) dimension control
.) optical welding result (color)
.) surface check (scratches)

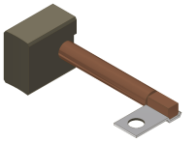
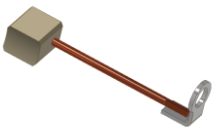
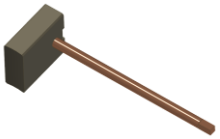


Interchangeable parts:

A set of interchangeable parts is required for each brush dimension, consisting of:
- nest and clamping inserts
- infeed chute for carbon brush and welding parts
- grinding wheel for radius
- grinding wheel for chamfering
- welding electrodes

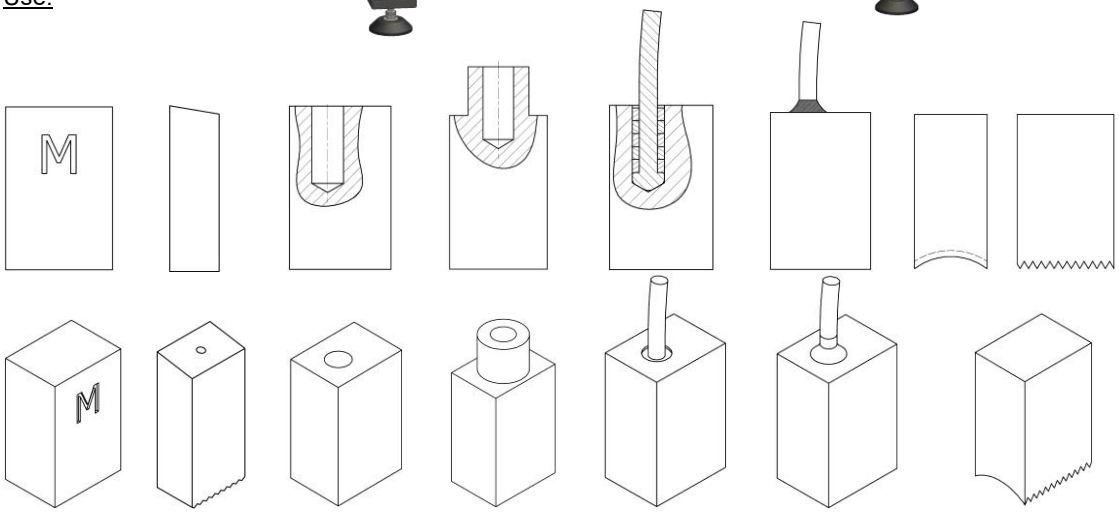
Performance:

depending on brush size, cable length; material quality, and shape of terminal:

sample	a=16; r=17 with terminal	a=6; r = 8 with terminal	a=19; r=22,5 compact welded
			
Pieces per minute	21,33	26	19,6
Pieces per hour	1280	1560	1176

LINE PRODUCTION CENTER TYPE LPC2

Use:



Marking (Option) | Top bevel | Drilling | Head turning (Option) | Tamping | Sealing (lacquering) | Radius grinding smooth or serrated

Design:

Sturdy frame of aluminium profiles
In feed chute adjustable to product size.
Grinding unit driven by spindle motor, (option)
Drilling unit driven by spindle motor, speed and feed variable.
Attached standard pneumatic tamping unit.
Attached lacquering unit (option).
Marking unit for punch marking (option).
Radius grinding unit driven by a spindle motor, speed and feed variable.
All processing units adjustable over cross slides.
Attached electric and pneumatic switch box.
PLC Siemens S7-1200 with graphic display.
Short set up time by using of interchangeable parts for each type of carbon brush.
Union for connecting up to the central dust extraction unit.
CE conform safety cabin with electric guard locking.
Full automation possible by aid of an shaker conveyor (option).

process steps (stations):

1. in feed adjustable
2. mark with stamp (option)
3. head bevel option with form grinding wheel
4. drilling- optional with head turning
5. tamping
6. varnish (option)
7. radius grinding serrated/smooth
8. ejection optional with good/bad sorting

Working area	
a =	5 - 14mm
t =	4,5 - 8mm
r =	12 - 28 (optional -25-40)mm
Radius R =	5 - 25mm - is determined by grinding wheel
Copper cable Ø =	0,3-2,4mm
Copper cable length =	15-100mm
Hole depth =	3-9mm

Exchange parts:

A Set of replacement parts is required for each coal dimension consisting of:
- Tamping tool (tamping tube, bottom plate, collet)
- Radius grinding wheel
- with the marking option: marking guide, making stamp
- with the top bevel option: form grinding wheel

Set up time:

Machine with feed station, drilling, tamping, radius approx., 40 minutes
Marking option about 15 Minuten
Option top bevel about 10 Minuten

Performance:

Depending on brush size, cable length; Carbon material, drilling depth an required pull-out strength between 900 and 1400 pieces/h

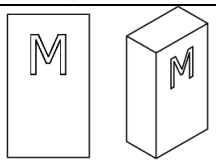
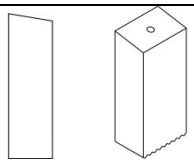
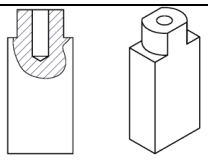
Technical data	
Drill jack Ø =	max 7 mm
Drilling spindle speed =	5000-12000 U/min
Drill motor power =	0,45 kW
Grinding motor power =	0,75 kW
Grinding spindle speed =	5000-15000 U/min
Suction nozzle Ø =	60 mm
Required low pressure of dust extraction =	150 mm water column
Required space =	150 x 80 x 180 cm

Net weight =	ca 470 Kg
Gross weight =	ca 650 Kg
Crate dimension =	110 x 100 x195cm

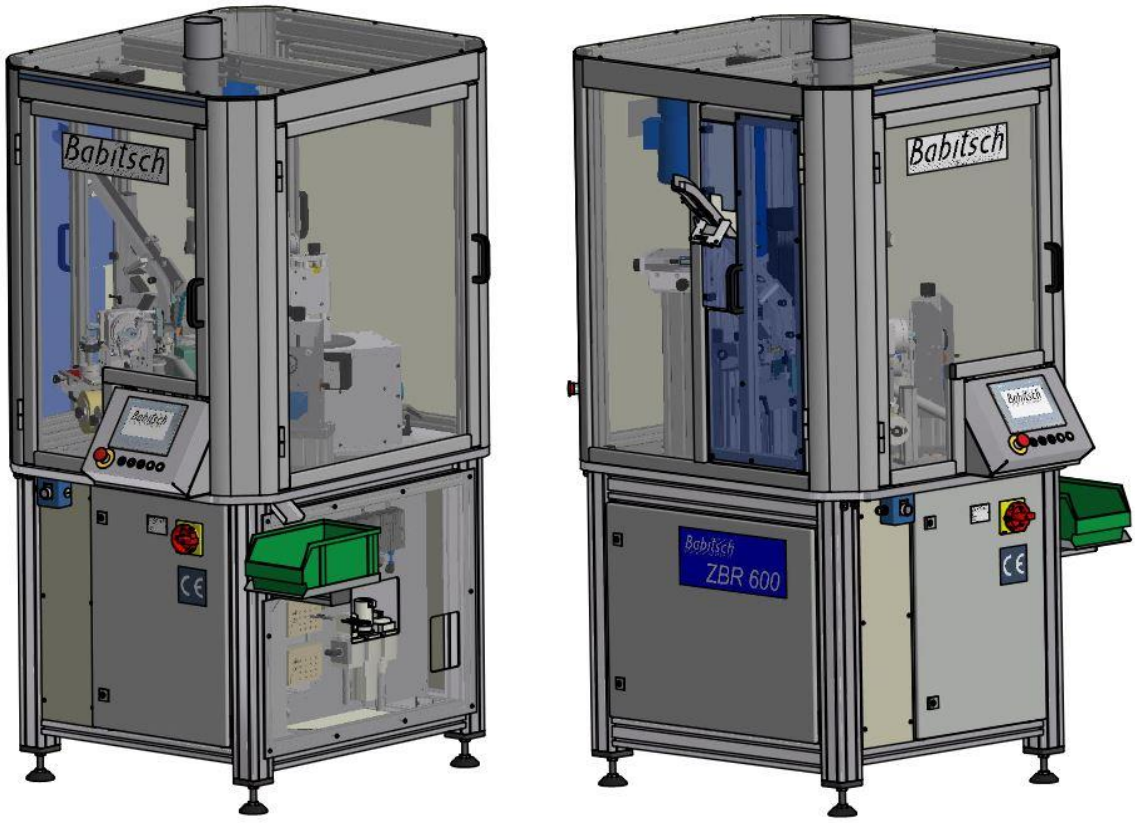
Standard accessories (included):

1 electronic/pneumatic control box with programmable control
1 error display in clear text (language selectable)
1 piece counter resettable
1 pneumatic maintenance unit
1 machine frame made of aluminum profile
1 CE-complaint complete enclosure, Working doors with electric guard locking
1 feed slide
1 drilling unit
1 tamping unit with tamping head in small design
1 set of tamping tools consisting of; 1 clamp, 1 tubular ram, 1 bottom plate
1 cable run off frame
1 scissor unit
1 set of hardened steel scissors blades
1 set of tension springs for tamping
1 radius grinding unit
1 unload chute
1 powder container
1 two hands safety switch
1 set of tools for setup
1 operating instruction (English)

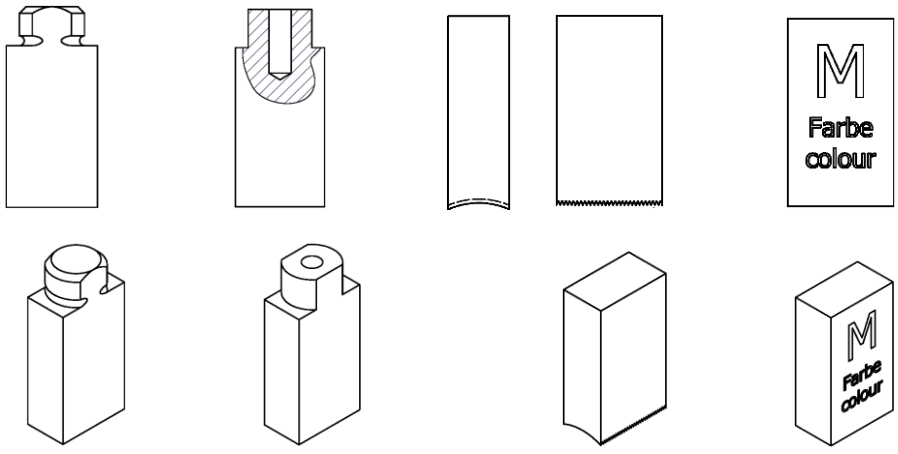
Special accessories (at extra cost)

10	**Tamping tool;** 1 set consisting of: 1 tubular ram, 1 clamp, 1 bottom plate	
20	**Option marking unit:** 1 marking cylinder, 1guide for one carbon dimension, 1marking stamp, (letters or logo)	
30	**Option top beveling unit / slot grinding** Grinding station for head bevel or slot	
40	**Head turning option (stud)** Turning head adjustable turning Ø 4-9, max. drilling Ø3,18	
50	**Parts conveyor TF 400** Adjustable to product size Sorted lengthwise without identifying features Including stand and electrical connection	

Automatic Stud Grinding Machine Type ZBR600



application:



Stud grinding | Drilling | Radius grinding | ink marking (option)

1) For grinding the head symmetrically or offset to the main axis. Undercuts and chamfers can be realized with a profile grinding wheel.

2) For simultaneous drilling oft he carbon brush symmetrically or offset tot he main axis (option)

Alternatively, this station can prepare the head (using a drill head)

3) For simultaneous radius grinding in the plunge process opposite the head. The radius can be smooth or serrated (option)

4) For marking the carbon brush using a punch or pad printing process (option)

Design:

Stable stand in aluminum profiles construction
The grinding wheel moves in a circular path around the stationary carbon brush
Spindle motor frequency controlled
Grinding wheel mount with internal collets
Connection piece for central dust extraction
Working speed oft he stations infinitely adjustable
Rotary indexing table, Type Weiss TC 150
Integrated electrical and pneumatic control box
Freely programmable PLC control from Siemens (S7-1200)
Pneumatics from Festo
Error Text display in clear text
Short set-up time thanks to quick change parts
CE-compliant complete housing; Working doors with electric guard locking
Fully automatic operation with parts conveyor possible (option)

Process steps (Station):

1. In feed(adjustable)
2. Drilling option
3. stud grinding
4. Radius grinding option serrated/smooth
5. Eject with marking option

Work area	
a =	4 - 16mm
t =	4 - 10mm
r =	8 - 40mm
Radius R =	8 - 25mm - is determined by grinding wheel

Exchange parts:

The clamping device is adjustable in the a dimension , with the workpiece thickness (t dimension) – 2mm can be bridged with a clambing jaw (4-6mm, 6-8, 8-10mm), the parts are quickly interchangeable
Radius and stud grinding wheels

Set-up time:

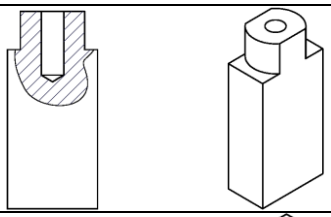
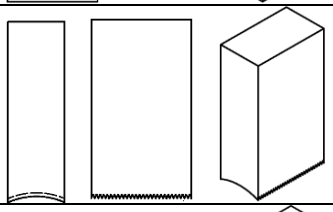
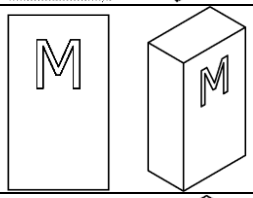
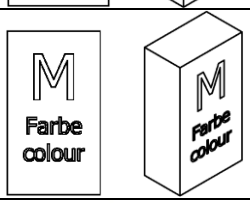
Machine with station in feed, stud, radius, eject, approx. 30 minutes
Drilling option approx about 10 minutes
Stamping option approx about 10 minutes

Performance:

Adjustable between 900 and 1600 pieces/h depending on the material and surface

Technical data	
Grinding wheel Ø =	40 mm
Grinding wheel bore Ø =	12 mm
Grinding wheel speed =	12.000 -18.000 min -1
Grinding motor power =	0,75 kW
Drill motor power =	0,55 kW
Suction socket =	80 mm
Required low pressure of dust extraction =	150 mm water column
Required space =	150 x 80 x 180 cm
Net weight =	ca 470 Kg
Gross weight =	ca 650 Kg
Crate dimension =	110 x 100 x195cm

Special accessories (at extra costs):

10	**interchangeable part** 1 set (=6 pieces) fixed jaw for length range/ r- dimension 16-40 / ZBR600 90010_ xx	
20	**interchangeable part** 1 set (= 6 pieces) fixed jaw for lenght range / dimension 8-16 / ZBR600 90010_xx	
30	**Drill option** Pneumatic drilling unit with adjustable feed via oil brake	
40	**Option radius** Pneumatic radius grinding unit with adjustable feed via oil brake, for smooth or rerrated radius grinding discs	
50	**Marking with stamp option** Pneumatic marking station with stamp A stamp is required for each product variant	
60	**Mark with ink color stamp option** Pneumatic ink stamp machine (single color) a engraved cliché is required for each product variant	
70	**Parts conveyor TF 400** Adjustable to product size Sorted lengthwise without identifying features Including stand and electrical connecting	
80	**Parts conveyor TF 550** Adjustable to product size Sorted lengthwise without identifying features Including stand and electrical connection Optionally with buffer stock for longer autonomous run