



CARTER PROCESS CONTROL

**PRODUCTION MACHINES
AND
TECHNOLOGIES**

INDEX

1.1 CNC-processing machines

1.1.1 CNC-turning lathe TRAUB TNC 65 DGY

for the manufacture of complete precision parts with a max. turning length of 450 mm and a spindle opening of 65 mm (max. turning dia. appr. 250 mm).

This machine is especially designed for complicated turned parts with high milling portion.

Features:

- Traub bar feeding magazine 3 m
- counter spindle
- C-axle with Polyform control
- driven tools
- 2 capstan lathes
- 8 axle-machine

1.1.2 CNC-turning lathe TRAUB TNS 42/60

A CNC-turning lathe with automatic bar feeding magazine for the manufacture of precision-turned parts with a max. turning length of 480 mm and a max. dia of 180 mm is available.

This machine is especially suitable for parts with cross-drilled holes, longitudinal slots, etc., which can be made from the bar (max diameter 42 mm).

As a special advantage we will mention the possibility of backward machining.

Spindle positioning 5 degrees each.

1.1.3 CNC-turning lathe MAZAK QUICKTURN 20 N

1.1.4 CNC-turning lathe MAZAK QUICKTURN 35 N

For lathe chuck work up to a max. turning dia of 400 mm, max. turning length of 1000 mm. Tool magazine contains 24 non-driven tools.

1.1.5 Vertical processing machine MAZAK VQC 20/40

A CNC-processing machine is available especially suitable for the manufacture of complicated high-precision parts up to a weight of 500 kg. It has a magazine containing 30 tools.

Through an accuracy of positioning of $\pm 3 \mu\text{m}$ and a repeat accuracy of $\pm 1,5 \mu\text{m}$ fast production of identical parts is possible.

CNC-Rotary attachment, centrally operated from the main machine, for the use of a 4th axle.

Working range 1000x508x460 mm.

1.1.6 Universal milling and drilling machine MAHO MH 600 C

with automatic swivel milling head, monitored path-control, colour graphic and universal tool change.

Working range:	x-axis	600 mm
	y-axis	450 mm
	z-axis	450 mm

1.1.7 Horizontal machining center OKUMA MC-600 H with 4 axis

with automatic swivel milling head, monitored path control, colour graphic, universal tool change, magazine with 100 tools, multiple pallet changing unit (dimension of pallet 630x630 mm), chip exhaust installation

working range: x-axis 1000 mm
 y-axis 800 mm
 z-axis 750 mm

1.1.8 Universal milling and drilling machine DECKEL FP 5CC

with digital equipment, with automatic sliding head, round and swing table, universal tool change, 5-axle center.

working range: x-axis 800 mm
 y-axis 600 mm
 z-axis 550 mm
 Round table 360 °
 swivel range + 15°/- 30°

Through the digital equipment there is on this machine in connection with above mentioned 5-axle treatment the possibility of making small samples according to samples without drawings.

1.1.9 Universal milling and drilling machine MAHO MH 500 M

with fixed angle table and digital display of axis.

working range: x-axis 500 mm
 y-axis 380 mm
 z-axis 350 mm

1.1.10 Wire eroding machine MITSUBISHI

Especially suitable for complicated forms and parts with undercuts.

Max. thickness of parts: 150 mm
Max. slant: 25 °
Max. deflection angle at max.
thickness 12 °.

1.1.11 Sinkeroing machine MITSUBISHI M 35 K with turrethead for tools

Up to 16 electrodes at once can be used for fully automatic processing at this machine. As a special advantage the possibility of rough-machining and fine-machining in combination is to be mentioned.

1.2. General processing of materials

Machining and reworking of parts by the means of:

- drilling
- milling
- tapping
- slotting
- diamond milling

Special machine for the manufacture of **multi-key profiles and helical gears.**

1.3. Injection moulding

Injection moulded parts of PE, PS, ABS, PP, POM, PU, PA etc. up to a maximum weight of shot of approx. 150 grams (max. mould closing pressure 150 tons) can be manufactured.

For special requirements 3 CNC-controlled injection moulding machines are used.

The following CNC-controlled injection moulding machines are available:

- BATTENFELD (max. weight of shot 16 g)
- ENGEL ES 200/50
- ENGEL ES 300/65

Equipment of regranulating of runners, drying and drycolour pigmenting of granule are available.

Usual tolerances depending on material and size of parts are between $\pm 0,02$ and $\pm 0,25$ mm.

Vacuumformed parts deep drawn out of thermoplastic sheeting up to a size of approx. 250x120 mm can be made on an automatic machine.

1.4 Connecting technology

1.4.1 Metal parts

Spotwelding up to 2 mm thickness of sheet-metal, soft- and silversoldering is possible.

The following further methods can be used:

Pressing, screwing, fine riveting, flanging, gluing, etc.

1.4.2 Thermoplastic parts

The following methods are used:

Snatching, pressing, screwing, riveting, gluing, etc.

1.5 Surface treatment

1.5.1 Metal parts

Facilities for the following methods are available

- Beltgrinding, manual and automatic polishing (burnish)
- Nickelplating, high or dull plated on a framesize up to 800x600x150 mm and in tumblers for mass produced parts.
- Chromeplating, high gloss or dull plated on same frames as nickelplating but not in tumblers.
- High polish zinc plating with passivating in different colours in tumbler with a size of approx. 500 mm dia x 750 mm length.
- Electropolishing of brass on frames of size of 400x300x70 mm
- Tumbling by means of round-vibrators and connected drier
- Goldplating on frames of a size of 400x300x70 mm
- Eloxadizing on frames of a size up to 350x200x100 mm

All electroplating bathes are manual operated. Drying by means of centrifuges or oven is possible.

- Spraypainting and annealing of parts with a max. size of 500x350x30 mm
- Tampoprint in one or up to four colours on a max. printing size of 50 mm dia.
- Shot peening up to a max. size of approx. 70x50x50 mm.
Small mass produced parts can be tumbled as well as sandblasted ceramics blasted and steel-shot blasted.

1.5.2 Thermoplastic parts

Tampoprint at a max. size of approx. 50 mm dia in one or up to four colours including heat treatment (thermo-diffusion).

1.6 Various treatments

Ultrasonic cleaning of small parts in screen tumblers and on screens.

Degreasing of metal- and thermoplastic parts.

Penetration hardening, case hardening and tempering of small bulk pieces, biggest size 25 mm.

Cauterising, brushing, varnish polishing, anti-corrosive protection and effect lacquering (e.g. shrivelling lacquering).

1.7 Assemblies

From manual assembly of small parts in small quantities to fully automated assembly of mass manufactured products.

1.8 Packing

Manual:

Folding boxes or plastic bag packing and so on.

Semiautomatic:

Skinpacking max. size 500x300 mm

Blisterpacking (cap size max. 250 x 100 mm)

(Cardboard size max. 350x250 mm)

Shrinkpacking

Packing for transportation in corrugated board, steel belt surrounded respectively in wooden cases or on pallets or with shrink hoods etc. is possible (Despatch in containers as well).

2. Toolroom

Experience and references for design and manufacturing of the following working facilities are available.

Injection moulding tools, vacuum shallow drawing tools, work locating fixtures, processing devices, checking and measuring devices, gauges, assembly jigs, special machines, making of prototypes.

Turning

Max. diameter 450 mm, max. length 1500 mm. Tolerances depending on size and application $\pm 0,01$ to $\pm 0,1$ mm.

Round grinding

Grinding of outer diameters max. 160 mm and max. length 1000 mm.

Grinding of inner diameters from 1 mm to 60mm dia and on larger diameters up to a depth of 80 mm maximum.

Tolerances depending on size and application $\pm 0,005$ to $\pm 0,02$ mm.

Milling

Maximum working range 1000x480x400 mm.

Tolerances depending on size and application from $\pm 0,01$ to $\pm 0,1$ mm.

Roundtable and dividing heads are available.

Surface grinding

Maximum working range 1000x400x450 mm.

Tolerances depending on size and application from $\pm 0,002$ to $\pm 0,02$ mm.

Form grinding

Maximum grinding length approx. 180 mm.

Largest disc width 25 mm

Diaform 10:1

Tolerances approx. $\pm 0,001$ mm.

Spark eroding

– Sink eroding

Mounting table size 400x250 mm

path of work 200x160 mm

Tolerances depending on size and surface roughness from $\pm 0,01$ to $\pm 0,1$ mm.

Fine-eroding and planetary working is possible.

– Wire eroding

path of work 300x250 mm

Maximum height of working piece 150 mm

Max. deflection angle 12 degrees at max. part height.

Jig drilling

Maximum range 400x250x250 mm

Tolerances from $\pm 0,002$ to $\pm 0,01$ mm

Co-ordinate table grinding

Maximum range 400x250x250 mm

Tolerances $\pm 0,002$ to $\pm 0,01$ mm.

Grinding of diameters and partial radii

Additional equipment

Cold saw, belt saw, column type drilling machine, bench drilling machines, hydraulic assay press, heat-treatment equipment, keyway cutting, electric- and autogenous welding equipment, soldering, WIG-,MIG/MAG-welding equipment

3. Sheet-metal-working-plant

Production of complete sheet-metal-constructions and special designed machines made out of welded structures and sheet metals.

Production of container made of stainless steel sheet using grinding machines.

3.1 Sheet metal processing machine (nibbling machine)

Type TRUMPF Trumatic TC-202 W
working range 1300x2080 mm, CNC-controlled, automatically tool-change with 20 tool binders.
Machining of structural steel-sheet metal up to 10 mm, stainless steel-sheet metal up to 5 mm.

3.2 Thick metal plate shears

Working range 3 m
Processing of structural steel sheet metal up to 6 mm.

3.3 Thin gauge plate shears

Working range 2,5 m
Processing of structural steel sheet metal up to 3 mm
Processing of aluminium sheet up to 6 mm.

3.4 Trimming press

Type VOEST-ALPINE
Pressing effect max. 125 mp, working width up to 3 m
stroke 200 mm
Processing of structural steel up to 8 mm thickness.

3.5 Sheet metal roll up machine

Working width 1 m, smallest diameter 120 mm
processing of sheet metal up to 3 mm.

3.6 Straightening press 60 to

Maximum band width 1000 mm

3.7 Various welding equipment

2 examples: MIG/MAG-welding equipment
WIG-welding equipment

for welding of various materials like
steel, stainless steel, aluminium, heat-resistant, etc.

Certified welding operator according ÖNORM EN 287-1 ST37
2 - 20 mm

Certified welding operator for tubes according ÖNORM M 7807
(European Welding Specialist).

3.8 Plasma-cutting

Manual:
STAINLESS STEEL up to 5 mm, STEEL up to 8 mm