Flexible Automated Punching Machine

High Productivity –
Compact Punching,
Nibbling and Forming

TRUMATIC 2020 FMC compact

TRUMPF

Compact Flexibility

With a perfect combination of highly productive punching technology and extremely space-saving automation, the TRUMATIC 2020 FMC compact opens up new horizons, especially in the use of Micro-Joints.

The TRUMATIC 2020 FMC compact is a must for any sheetmetal fabricator seeking to improve productivity and quality within an affordable budget. The new punching machine from TRUMPF meets the growing challenges of high workpiece quality and short production times head on.

The TRUMATIC 2020 FMC compact is a "punching professional" which allows you to fabricate single parts just as economically as small and medium-sized production runs. Short floor times are achieved not only by reducing processing times but also through minimized downtimes. Fast setup and easy operation increase your flexibility.

State-of-the-Art Punching Technology from TRUMPF

- Extremely stable C-frame – designed as an FEM-calculated welded construction.
- Hydraulic punching head with a rotary axis which executes 3 rotations per second. All tools can be rotated 360°.
- Linear magazine with 19 tool stations which can accommodate up to 190 tools through the use of Multitools.
- Vacuum-assisted slug removal for greater process safety during punching.

Flexibility through Automation

The integrated automation of the TRUMATIC 2020 FMC compact offers a high degree of flexibility for workpiece handling. Automation units load the material for processing and off-load the finished Micro-Joint sheets. In addition to this, parts measuring up to 200 x 200 mm can be ejected through a chute and sorted into containers. For the operator, effort is reduced to a minimum. This concept guarantees you full flexibility right from the outset.

- Compact size including automation
- High speed
- Accuracy
- Flexibility
- Intelligent, open control technology
- Optimal price-benefit ratio

Punching Head:
Dynamic in all Situations

The speed of a machine is evidenced by its high stroke rates and fast tool change-over times.

The TRUMATIC 2020 FMC compact features stroke rates of up to 900 per minute for punching and 2200 per minute when marking. Thanks to the hydraulic punching head, even forming is possible at almost punching speed.

For processing sensitive materials, the stripper force can be reduced to a pre-set value. Activation is by means of programmed command and individually for each tool.

The machine's ease of operation and good accessibility are invaluable especially during setup.

Tooling System:
Everything under Control

High-speed fabrication requires not only a fast machine but swift production readiness is of equal importance. A sophisticated tooling system, coupled with a linear magazine which is easy to set up, are indispensable for flexible response in manufacturing.

TRUMPF tools are assembled in cartridges. The tool set can be readied off-line while the machine is running a job. Setup itself is accomplished in one quick easy step. The linear arrangement of the tools provides for a good overview. All magazine stations in the linear magazine can hold tools of maximum diameter and of any type.

Since all tools can be rotated, overall tool requirements are greatly reduced. Through the use of TRUMPF Multitools, each station can hold a total of 10 tools. Spray tool lubrication helps to enhance tool longevity.

Punching and Forming:
Quality in a Few Short Steps

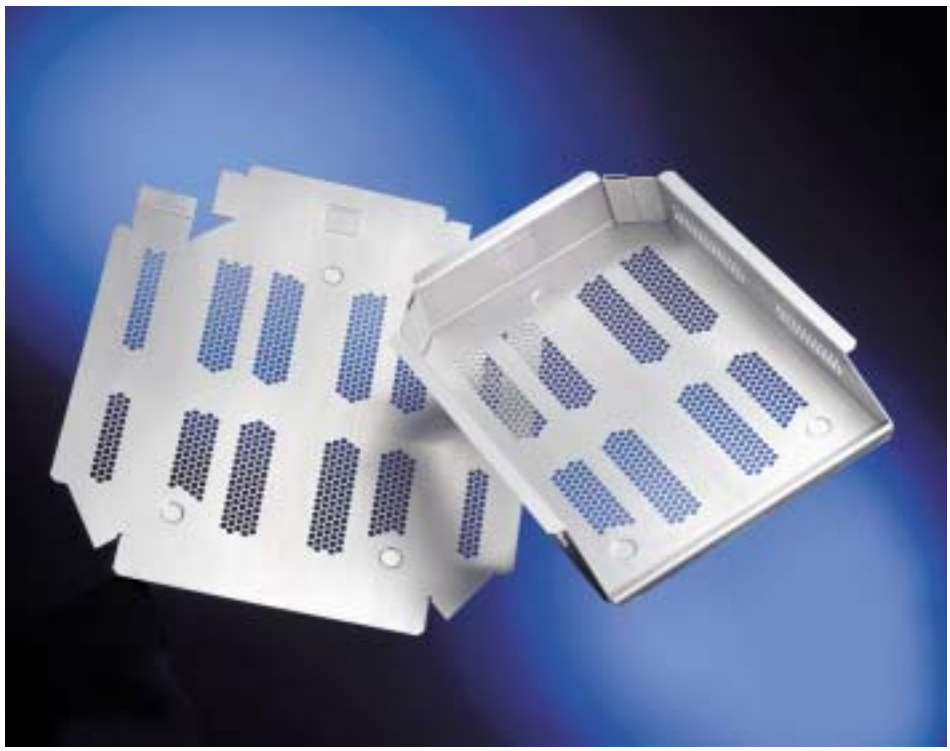
Punching is the technology of choice wherever the task calls for numerous small holes and forms to be processed at high speed. One key goal is to reduce the number of fabrication steps.

The advantages of the TRUMATIC 2020 FMC compact are evidenced by the quality of the sheetmetal parts produced:

- No scratching
- Superior accuracy
- Evenness

Machine technology requirements for attaining high workpiece quality include:

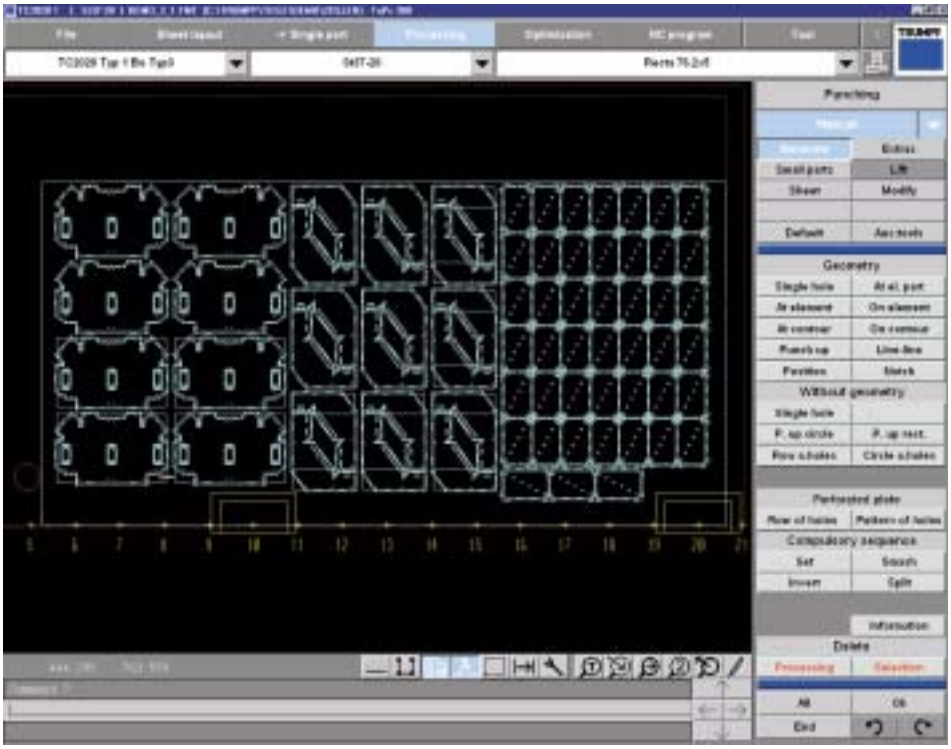
- Extreme rigidity in the machine throat
- High-precision drive system with digital drives
- Punching head with long ram guidance and precision alignment between punch and die
- Variable forming height for shortest possible forming strokes



Operation:
As Easy as it Gets

Thanks to the open architecture controller, operation is quick and easy. The comfortable user interface, a TRUMPF development, focuses on the operator's activities. An integrated online help answers questions as they arise. It goes without saying that a sophisticated diagnostic concept including Teleservice is integrated.

ToPs 2000 is a shopfloor programming system. It is part of the standard machine configuration and ideally complements the ToPs 300 programming system. Easy networking of the systems ensures data consistency for NC programming.



Technical Data

TRUMPF is certified in accordance with DIN EN ISO 9001

TRUMATIC 2020 FMC compact

Working range (X x Y)	
without repositioning	2540 x 1270 mm
Capacities	
Max. sheet thickness	6.4 mm
Max. punching tonnage	180 kN
Max. workpiece weight	150 kg
Max. clearance under stripper	38 mm
Programmable presser foot force	4 – 17 kN
Speeds	
Max. positioning speed	
X axis	90 m/min
Y axis	60 m/min
Simultaneous (X and Y)	108 m/min
C axis	180 rotations/min
Max. stroke rate punching	900 strokes/min
marking	2200 strokes/min
Tools	
Linear magazine	19 tools with 2 clamps
No. if using Multitool (2 clamps)	19 to 190 tools
Rotation of all tools	360°
Tool change time	
Single tool (approx.)	3.5 s
within Multitool (approx.)	0.9 s
Max. punch diameter	
Single stroke	76 mm
Standard Multicut	200 mm
Programmable parts chutes	
Sorted removal of parts to the left and right	200 x 200 mm

Accuracy[1]	
Positioning accuracy	±0.1 mm
Repeatability	±0.03 mm
Drives	
X/Y/C	digital, maintenance-free
Punching head	hydr., closed loop control
Automation unit SheetMaster compact	
Possible sheet formats	2500 x 1250 mm 1250 x 1250 mm 2000 x 1000 mm 1000 x 1000 mm
Sheet thickness range	1 – 6.4 mm
Maximum stack height	130 mm
Maximum unloading capacity	2700 kg
TRUMPF CNC control	Basis Bosch Type 3
Color monitor	10.4"
Hard disc memory	300 MB for NC-programs
Floppy drive	3.5"
Platform	PC Pentium/Windows NT
Shopfloor programming	ToPs 2000
Safety	Light barrier system
Power requirements	
Electrical connection	32 kVA
Pneumatic connection	7 – 14 bar
Max. compressed air consumption	29.5 Nm^3/h
Dimensions and weights	
Space requirements incl. light barriers	6448 x 7440 mm
Height	2600 mm
Weight (approx.)	15000 kg

[1] The achievable accuracy in the workpiece depends – amongst other things – on the type of workpiece, its pre-treatment, sheet size and its position in the work area. According to VDI/DGQ 3441. Measuring length 1 meter.

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