



VERTICAL - MILLING - MACHINE TYPE CNC - NF 1 **(technical information)**

1. Basic design of the Vertical - Milling - Machine type CNC – NF 1

1.1 Machine bed

- of a solid, ribbed weldment with antifriction slideway for the X-axle and with a retaining area for the table board.
- the table plate is made of casting material. It has three chucking- and setting grooves.

1.2 Column saddle

- of solid casting construction.
- the sliding of the X-axes is roller bearing guide and Y- and Z-axes are square guide system with turcite.

1.3 Machine column

- of solid weldment, stiff against torsion and with low-grade vibrating, due to a diagonal ribbing.

1.4 Spindle head

- work spindle with double bearings and very high stiffness.
- tool tightening by SK 40 – interface and system tools, or as option by automatic tightening upon spring power at SK 40.
- main drive with high dynamics by digital servomotor.

1.5 Axle drives

- by digital servomotors, synchronous belt drive and ballscrew spindles.

1.6 Measurement of position

- indirect, by rotating impulse transmitter on the spindle.

1.7 Control cabinet

- screwed-up to a compact unit on the backside of the machine.

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1.8 Coolant arrangement

- for exterior coolant supply at the spindle head.
- integrated coolant tank with volume 150 litres integrated in machine body.

1.9 CNC-movement-control

- Siemens SINUMERIK 840 Dsl
- with integrated adaptive control.
- stored programming, contactless.
- control desk, slewable at the front of the machine in the field of view for the operator.

1.10 Lubrication

- automatical, time-controlled centralized Lubrication equipment.

1.11 Elektrical equipment

- voltage 400 V, 50 Hz
- capacity approx. 12-20 kVA (depends on the size of machine)

1.12 Protection for working area

- the working area is protected on all sides and is to be opened from the front by roller guided sliding doors.

2. Enlargement steps of the Vertical – Milling – Machine type CNC – NF 1

2.1 Tool magazines:

- a) wheel “pickup” magazine for 8 tools, located on right side machine table end
- b) linear “pickup” magazine for 4 tools

2.2 Direct round table.

- with one-hand-fast-acting.

2.3 CNC round table

- as a fourth axes, integrated into the machine control.
- for face and spiral-curves milling works.



2.4 Automatic fastening device

- such as vices and tip clamping devices.
- called in by M-function and the milling program.

2.5 Integration at full-automatical production lines.

- by electric connection and “Profibus” system

2.6 Additional software for special milling programs.

2.7 Enlargement of the travel in the X-axe upto 4.000 mm.

2.8 Oscillating treatment program.

2.9 Enlargement of the length of the table clamping area about 500 mm.

- (at inset of a round table, without loss of travel in the X-axe)



TECHNICAL DATA

Working area

X-axle: column and processing unit		700 mm
	alternative	1300 mm
	alternative	2000 mm
	alternative	2500 mm
	alternative	4000 mm
Y-axis: column with processing unit		150 mm
Z-axle: processing unit		150 mm
Middle of the spindle over table	variable	330 mm
		+/- 75 mm

Work spindle

Diameter at the front bearing		55 mm
Tool holder size concerning DIN 69871		SK 40
Speed range		40 – 6000 rpm
	by option	40 – 8000 rpm
Drive capacity (100% ED)		3,6 kW

Coolant arrangement

Capacity	approximately	150 l
Coolant pump - output		40 l/min

“Pick-up” wheel Tool-Magazines

for 8 tools located at the right end of the table

Stroke measurement

X-, Y-, Z-axis indirect measurement by positioncoder

X-, Y-, Z-axis direct measurement upon request

Slideways

Feedrange of X-, Y-, Z-axis selectable in machine program	1.....10.000 mm/min
Axial force X-, Y-, Z-axis	3500 N



Rapid movement

X-axis speed 30 m/min
Y- and Z-axis speed 20 m/min

Clamping area, table

250 x 900/1500/2100/2700/4300 mm
Number of fixing slots 1 each
Groove width (DIN 650) 18 mm
by option: special machine table

Electrical equipment

Service voltage 400 V 50 Hz
Capacity (depends on the machine equipment) 12 - 20 kVA

Weight

at X = 700 mm including tool magazine approx. 2.500 kg

Dimensions

L x W x H (at X = 700 mm) approx. 2.100 mm x 2.200 mm x 2.400 mm