FLECKENSTEIN
Werkzeugmaschinen GmbH

TECHNICAL DATASHEET
CNC 5-Axes-Machining Center

Manufacturer	**FIDIA**
type	**K 199**
Built	**2007**
Control	**FIDIA C 20**

Typical area of application

- three-dimensional milling on high speed
- scanning of models with storing of tool path
- three-dimensional measuring

Working area

X-axis	1.800	mm
Y-axis	900	mm
Z-axis	850	mm
Table size	2.000 x 1.250	mm
Max. table load	12.000	kg

Travels

X-Axis (longitudinal)	1.650	mm
Y-Axis (lateral)	750	mm
Z-Axis (vertical)	850	mm
A-Axis (milling head pitch)	+95 / -110	°
C-Axis (millinghead roll)	+/- 200	°
Rapid feed	30	m/min
Speeding up max	4	m/sec²

5-axis milling head M5A/55-24 and main spindle

Design of turning- and tilting head allows constant adjustment of working spindle in space.
Rotation of A-axis and C-axis takes place via brushless motors and is transmitted by encoders which are mounted directly on the axis.
The control regulates the alignement of the head by constant interpolation and compensates the position of tool centre according to the spindle inclination.
The two swivelling axis A and C can be locked by hydraulically controlled devices in any position.

Trave C-axis	+/- 200	°
Speed C-axis	2.000	°/min
Offset C-axis to spindle centre	75	mm
Travel A-axis	+95/-110	°
Speed A-axis	2.000	°/min
Spindle		
Max. power (S6-60%)	55	kW
Spindle speed	240-24.000	Min-1
Speed continuous	6.000 – 24.000	Min-1
Torque (S6-60%)	87,5	Nm
Spindle position encoder		Resolver
Spindle lubrication		Minimal air-oil mixture
Unlocking tool taper		Pneumatic piston
Tool taper (DIN 69893)		HSK 63 A
Internal diameter in front bearing	70	mm
External diameter of spindle	210	mm

Tool changing system

No. of places	24	Pc.	
Max. tool diameter	100/75	mm	Neighbourplaces free / engaged
Max. tool length	300	mm	
Max. tool weight	8	kg	Max. chain weight 140 kg

NC-control FIDIA C20

Control with Windows XP, CPU Pentium 4 – at least 2,8 GHz and 512 MB RAM storage, 80 GB hard disc.

Incl. Programming language ISOGRAPH 2D ½ with DWG/DXF – interface

The integrated Software package HIMILL enables the creation of 3D-milling paths with interactive menus. HIMILL works in parallel with all other NC functions and includes:

- Functions for reading defined surfaces, file formats IGES, VDA-FS and STL
- Reading out digital files
- Generation of STL models for reverse engineering
- Independent scale factors on 3 axes
- reversal stamp/matrix
- interactive definition of a large number of milling areas and guided lines on the model
- roughing cycles with toric, flat and spherical cutters
- for high-speed milling, suitalbe roughing and finishing cycles
- „Pencil tracing" with toric, flat and spherical cutters
- Control head 3 + 2 axis
- High-resolution graphical display of models
- Recording of the residual material and guided optimization of the following milling areas
- Storage of parameter sets
- Automatable system for delayed calculations

measurement

L x W x H	ca. 6,0 x 5,0 x 4,2 m
Measurement ground plan	ca. 5,1 x 4,7 m
Machine weight	ca. 15.000 kg

Ausstattung, Zubehör

- Serveral tool tapers HSK 63
- 3D-touch probe manufacturer m&h, type RWP 38.47
- FIDIA HMS/01 HEAD MEASURING SYSTEM
  Measuring system for measurement and calibration of bi-rotary milling heads
- Low pressure-coolant unit with coolant pump and separate tank, capacity 300l
- 3 pc. Chip conveyor, 2 screw conveyor on the side of the table and a scraper conveyor across
- Cooling unit for spindle cooling
- Cooling unit for cooling of axis
- dust exhausting system, manufacturer LOSMA
- Electronical handwheel FIDIA HPX21
- 2-axis milling head M5A/55-24
  - **The following components were renewed in 2019:**
    - Both ball screws incl. bearing of the Z-axis (vertical)
    - Ball screw drive incl. bearing of the X-axis
    - Complete bellows covering of the working area
    Original spare parts from the machine manufacturer were used in each case.