1 M5A: FIDIA CONTINUOUS 5-AXIS MILLING HEADS

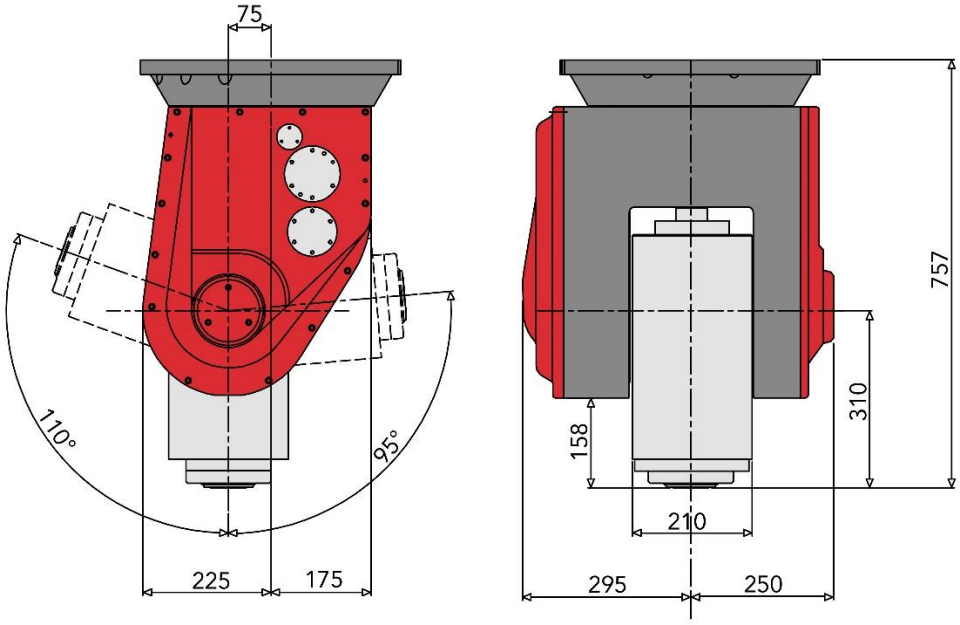
1.1 M5A/55-24: 5-AXIS HEAD - 55 kW (74 hp) - 24000 1/min HSK - A63

1.2 M5A/65-15: 5-AXIS HEAD - 65 kW (88 hp) - 15000 1/min HSK - A100

The high dynamic bi-rotary head is integrated into the lower part of the Z ram and allows for spindle continuous orientation in the space.
The A and C axis position is controlled through high resolution direct encoders. The CNC allows a 5-axis continuous interpolation and compensates the tool centre position according to the spindle inclination (RTCP software).
The A and C axes can be hydraulically clamped into any position within the given strokes range; this 3+2 axes operative mode is commanded by pushbutton and dedicated M functions.
Brushless motors, coupled high reduction gears plus crown & pinion transmission, compose the kinematic chain. No maintenance is required since the device performs a continuous automatic backlash compensation.

The electrospindle utilises synchronous motor technology with consequent increase of torque being equal the external size. Replacement is simplified by the cartridge-type interface.
All channels for cooling are placed inside the head body using suitable rotary distributors to avoid all external pipelines.

The milling head is equipped with a „tri-axial“ accelerometer to measure vibrations. The system detects tool unbalance or breakage, with warning and alarm threshold that can be configured according to each machining mode. The amount of vibration is monitored and displayed on the CNC in real time, with simultaneous recording in a specific logfile.



Technical Data	M5A/**
C axis	
C-axis stroke	± 360°
C-axis max. speed	5.400°/min (15 rpm)
C-axis max. acceleration	1.000°/s²
C-axis driving torque (S1)	1.500 Nm
C-axis off-centering with respect to spindle axis	75 mm (3‘‘)
C-axis positioning (**) VDI/DGQ 3441	P=6, Ps=4 arc-sec
C-axis positioning (**) ASME B5.54	Accuracy=5, Repeatability=3 arc-sec
A axis	
A-axis stroke	+ 95° / - 110°
A-axis max. speed	5.400°/min (15 rpm)
A-axis max. acceleration	1.000°/s²
A-axis driving torque (S1)	1.500 Nm
A-axis positioning (**) VDI/DGQ 3441	P=6, Ps=4 arc-sec
A-axis positioning (**) ASME B5.54	Accuracy=5, Repeatability=3 arc-sec

(*) Environmental conditions in which geometrical accuracy and positioning accuracy of machine axes are guaranteed (in accordance with recommendations of Part 2 of ISO 230:2016):

- Reference Temperature: ……..….20°C (68°F)
- Max. deviation from reference temperature: …..……3°C (5.4°F)
- Max. temperature variation in time: ……...1°C/h (1.8°F)
- Permissible spatial temperature gradient: ……...1°C/m (1.8°F/39‘‘)

Spindle Technical Data	M5A/55-24	M5A/65-15
Max. Power (S6 - 40%)	55 kW (73.7 hp)	65 kW (88.4 hp)
Max. Torque (S6 - 40%)	87.5 Nm	124 Nm
Max. Power/Torque (S1 –100%)	42 kW (56.3 hp) /67 Nm	50 kW (68 hp) / 95.5 Nm
Motor type	Synchronous	
Spindle rotation rating for milling (M03)	240 ÷ 24.000 1/min	150 ÷ 15.000 1/min
Range at constant power	6.000 ÷ 24.000 1/min	5.000 ÷ 15.000 1/min
Position feedback	Encoder	
Bearings lubrication	Minimal air/oil	Minimal air/oil
Tool-holder unclamping	Hydraulic piston	
Pivot length	310 mm (12.2‘‘)	345 mm (13.58‘‘)
Tool-holder (DIN 69 893)	HSK - A63	HSK - A100

1.3 SCC/A-M5A: AIR-BLOW THROUGH SPINDLE CENTRE

This option consists in the integration of a specific distribution circuit to employ air blow through spindle shaft during dry machining. It has to be used with proper tools and tool-holders. The rotary joint is compatible with the use with fluid coolant in case of CRS/02 option. Convenient pushbuttons and dedicated M functions complete the supply.

1.4 SCC/OA-M5A: AIR/OIL MIST BLOW THROUGH SPINDLE CENTRE

The system including a specific high pressure MQL unit, supplies micron-sized oil aerosol particles through the spindle shaft. The spindle is equipped with a specific rotary joint to allow for air/oil mist or fluid through the spindle shaft. The SCC/OA option includes as well circuits to serve air blow through spindle during dry machining. It has to be used with proper tools and tool-holders.
The rotary joint is compatible with the use with fluid coolant in case of CRS/02 option. Convenient pushbuttons and dedicated M functions complete the supply.

1.5 M5A/30L-24: 5-AXIS HEAD– EXT. SPINDLE 30 kW (40 hp) - 24000 1/min HSK - A63

This special spindle is designed to ease the access into complex parts such as large plastic injection moulds.

Spindle technical data	M5A/30L-24
Max. Power (S6 – 40%)	30 Kw (40 hp)
Max. Torque (S6 – 40%)	36 Nm
Max. Power/Torque (S1 –100%)	25 kW (33.52'')/ 30 Nm
Motor type	Synchronous
Spindle rotation rating for milling	240 ÷ 24.000 1/min
Range at constant power	8.000 ÷ 24.000 1/min
Position feedback	Encoder
Bearings lubrication	Minimal air/oil
Tool-holder unclamping	Hydraulic piston
Pivot length	500 mm (19.7'')
Tool-holder (DIN 69 893)	HSK - A63