GTF Line

Gantry type high speed milling machines

FIDIA

Why FIDIA

Milling Head

FIDIA Delivers

The complete system, designed and made by FIDIA.
Machine, Head, Numerical Control, software and automation from one supplier.

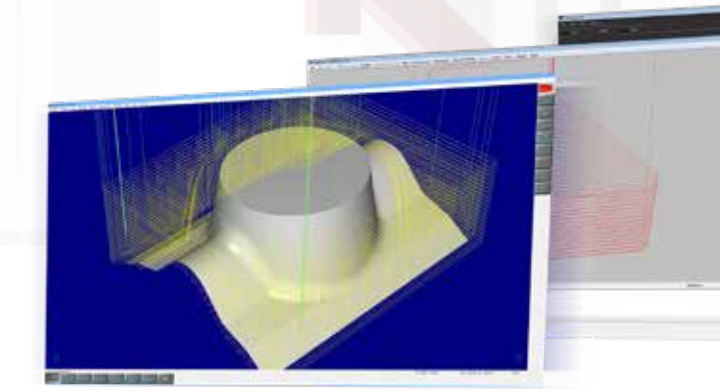
The Customers benefit

- One Partner in Sales and Service
- Flexibility and Fast reaction time
- Modern, Steady and Reliable design
- All components fits together and perfectly optimized
- Unique CNC and Software Solutions
- Wide Customized engineering on demand

HMS - Head Measuring System

Drives

Module Interface IO-Line



HiMonitor - Machine Monitoring System

ViMill® - Anticollision

New User Interface W5

GTF Line

Modularity

The upper Gantry GTF line is characterized by great versatility.
Thanks to its modular structure, and taking advantage of a combination of components conveniently selected according to weight, stiffness and cost requirements, the GTF range becomes an ideal solution to fulfill all Customers' demands.

Performances

The sizing of its structures in accordance with the thermo-symmetry concept, perfectly matches with the extreme dynamic linear axes. Rack & pinions driven by double motors and variable preload grant for total absence of backlash.

Continuous and indexed bi-rotary heads

With any of FIDIA's heads, the A and C axes performs high dynamic continuous interpolation as well as the 3+2 positioning mode.
When using 5 axes machining, the rotative axes (A,C or both) can be stiffly clamped by means of powerful hydraulic brakes, exploiting the maximum torque of the spindle. The axes cinematic chain is provided with lifetime automatic backlash recovery and is able to perform 0.001° resolution positioning.

Applications

General Machining

Thanks to the modular design it is now possible to utilize FIDIA technology to produce large size mechanical components.

A typical example is the wind-turbine power generator, from the blade forming mold to the gear and its casing.
Energy as well as Naval or Rail industries sometimes require very accurate machining cases, which can only be accomplished by specifically designed machines. The M5H head version offers the most advantageous solution in terms of stock removal rate combined with high quality and precision.
The addition of tables and accessories for turning further extends the application field of these machines.

Aerospace

High accuracy and efficiency in 5 axis machining is essential for operating on many types of aeronautical and aerospace structural components.

GTF has specifically designed solutions to afford machining of each material utilized in aerospace: aluminum, titanium, composite materials require chip conveying systems with filtering and protection for both the environment and the machine itself.
In the GTF family there is always the right model to fit in the best price/ performance ratio.

Automotive

Stamping dies

The automotive industry requires powerful and highly accurate machines to mill cast-iron and steel dies from the roughing operation to the final super-finishing. Thanks to GTF's fixed table-upper gantry configuration, manual polishing can be mostly avoided and all operations can be done with a single set up of the workpiece.
The most difficult areas of the component are attained by an appropriate choice of heads and milling accessories.

Plastic injection and die-casting

These type of molds require precision in details and high surface quality.
The unique design of the bi-rotary head of Fidia reduces the tool length, avoiding vibration and thus improving the surface quality. The use of direct encoders and a complete thermal control of structures grant for the highest positioning accuracy during the long milling cycle time required by these complex applications.

Prototyping and styling

The machining of full-scale models for automotive industry, the construction of prototyping molds and quality control gauges match perfectly with the GTF working envelope and technical solutions.
The XYZ axes high dynamic accuracy and the compact size of M5A & M5C heads bring GTF to an upper performance level, defying all competition.
A range of suitable dust suction equipment is available in order to work all type of "light materials" as resin, carbon fiber, clay, etc... This equipment guarantees a high efficiency of suction performance and a total protection of the work environment.

GTF/R

Made of stiff epoxy concrete columns to allow the best vibration dampening effect, these versions of GTF family have the greatest level of modularity, thanks also to the automatic heads changing system. Starting from the smallest 2+2 columns configuration, the same design can be extended to any X axis length just by adding columns.

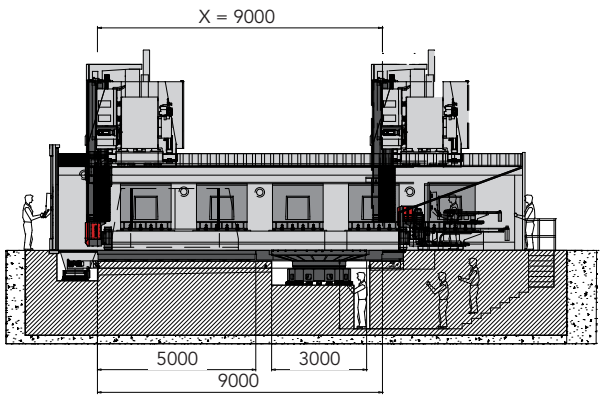
The GTF/R 600 x 600 mm ram allows wide range of heads to choose from:
- M5S, M5S2, M5D, M5E with Z strokes from 1000 up to 2500 mm
- M5H with strokes up to 2000 mm

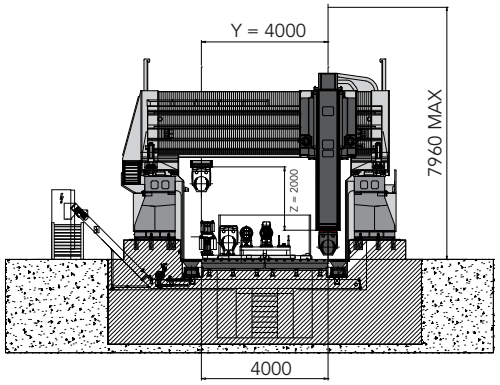
The axes kinematic chains may vary in order to achieve the highest working speed and acceleration. A tandem rack & pinion system drives X and Y axes, while Z axis is driven by rack & pinion, according to the stroke length and application.

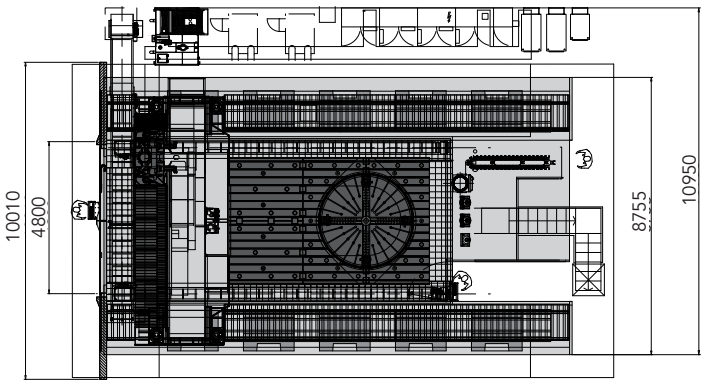
X Strokes	starting from 5200 mm (204") steps of 2400 mm each (7600, 10000, 12400 ...)
Y Strokes	2200 - 3500 - 4000 - 5000 mm (86" - 197")
Z Strokes	Within the range 1000 mm - 2500 mm (39" - 98")
Axis speed	standard 30 m/min (optional X, Y: 50 m/min - Z: 40 m/min)
Load capacity	9000 Kg/m² (1843 lbs/sqft)
Milling heads	M5S, M5S2, M5D, M5E (Z stroke up to 2500 mm) M5H (Z stroke up to 2000 mm)

Chip Conveyor

M5E milling head





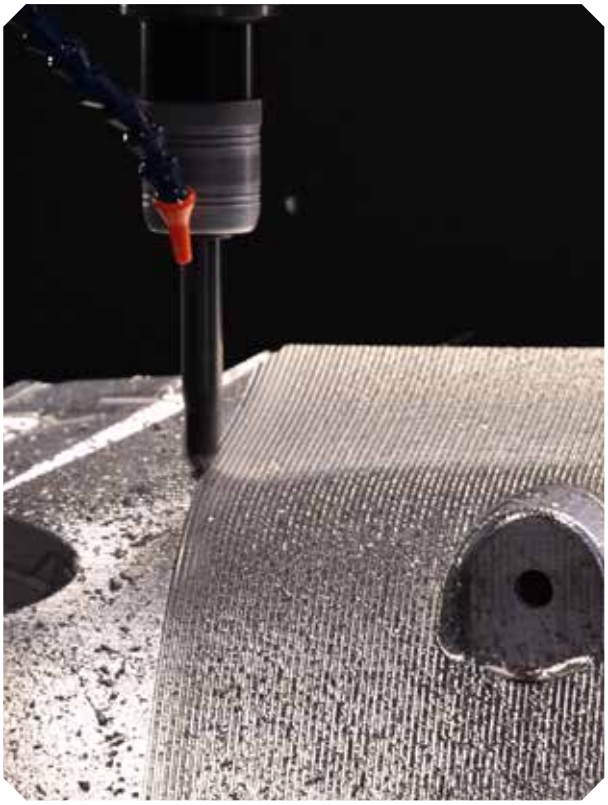


GTF/Q

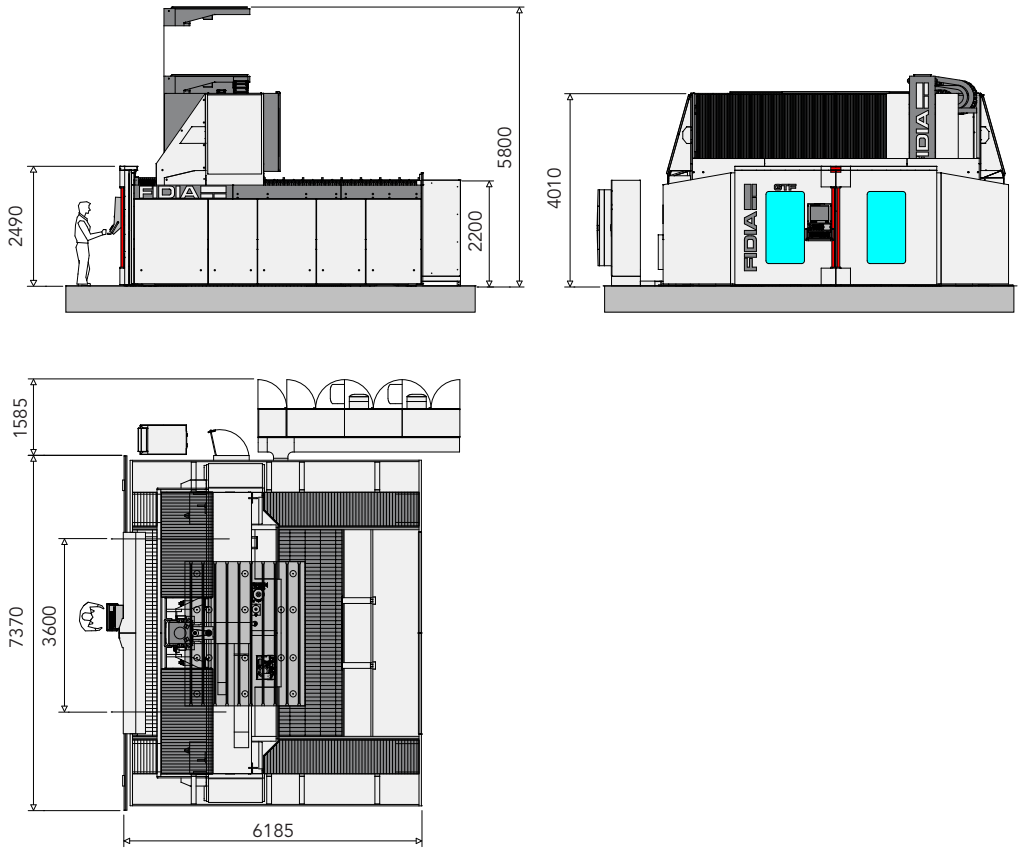
The modular version Q is based upon compact columns and cross beam.
The epoxy concrete structure of columns preserves geometry and accuracy from thermal effects.
The innovative design of cross beam makes it suitable for all versions of M5A, M5S and M5S2.
It's equipped with ram up to 1800 mm stroke.

X Strokes	2700 mm (106″)	4500 mm (177″)	6000 mm (236″)	8000 mm (315″)	step by 2 mt.
Y Strokes	2200 mm (86″)			3500 mm (138″)	
Z Strokes	1000 mm (39″)	1400 mm (55″)	1500 mm (59″)	1800 mm (71″)	
Axis speed	Standard 30 m/min (optional: X,Y 60 m/min - Z: 40 m/min)				
Load capacity	4000 Kg/m² (819 lbs/sqft)				
Milling heads	M5A, M5S, M5S2				

M5S2 milling head



Mold finishing



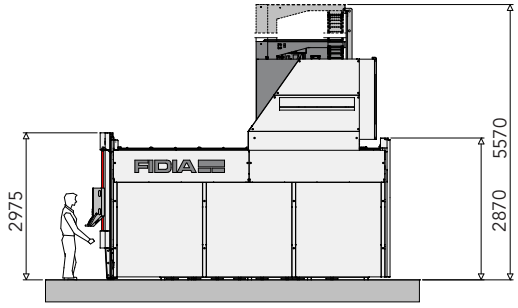
GTF/M

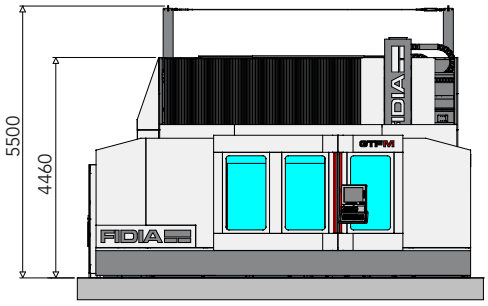
The "monolithic" version M, with its self-supporting cast iron structure, has the right amount of compactness of all small/medium size upper gantry applications.
No specific foundations are required.
It employs the same cross beam design as the Q version, with a significant advantage in the strokes/footprint ratio.
The innovative design of cross beam makes it suitable for all versions of M5A, M5S and M5S2.

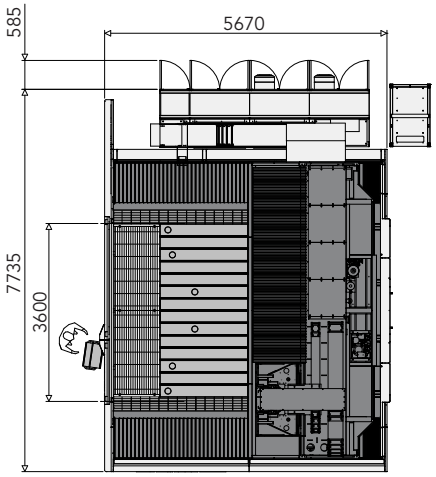
X Strokes	2200 mm (86")	4500 mm (177")	6800 mm (267")
Y Strokes	3500 mm (137")		
Z Strokes	1400 mm (55")		
Axis speed	Standard 30 m/min (optional X, Y: 60 m/min - Z: 40 m/mim)		
Load capacity	4000 Kg/m² (819 lbs/sqft)		
Milling heads	M5A, M5S, M5S2		

M5S2 milling head

Machining of a mold for automotive industry







GTF/L

The lightest version of GTF family is particularily suitable for complex aluminum or composite parts and 1:1 automotive styling models.
Thanks to the specific M5C head, the machine allows for high dynamic 5 axis interpolation and accurate results.
Structures are made of welded steel and concrete walls to match a wide Z clearance requirement.

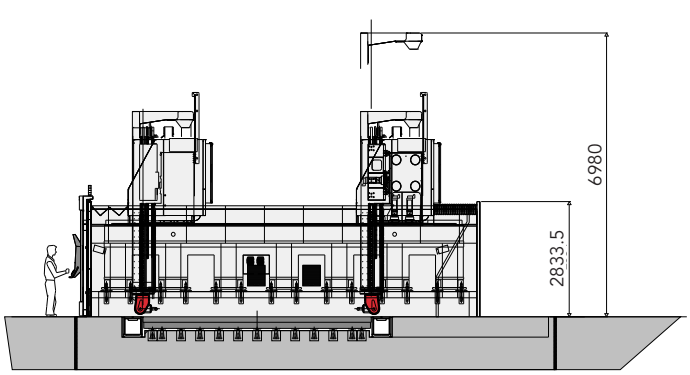
X Strokes	6000 - 7500 - 12000 - 18000 mm (236" - 709")
Y Strokes	3500 - 4000 mm (137" - 157")
Z Strokes	Within the range 1000 to 2500 mm (39" - 98")
Axis speed	X, Y: 60 m/min - Z: 40 m/min
Load capacity	4000 Kg/m² (819 lbs/sqft)
Milling Head	M5C

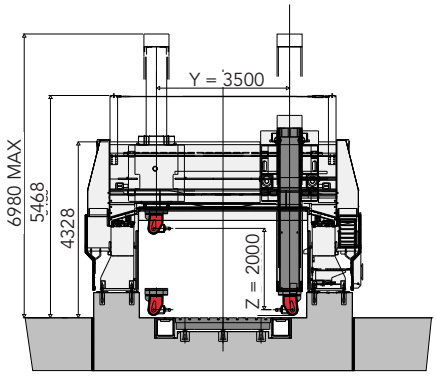
Y2G

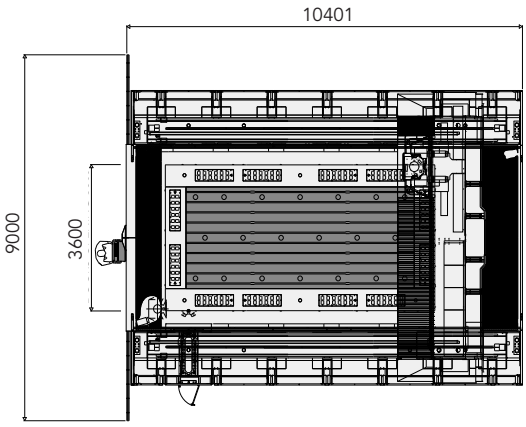
A double cross beam version called Y2G further enhances the modular concept of the GTF machine.
Two independent heads can work either sharing the same piece or two different pieces using the bulkhead.
The X-axis stroke can be adapted to all requirements. Y2G configurations apply to /R, /L and /Q versions.

Milling head M5C

Machining of a resin model





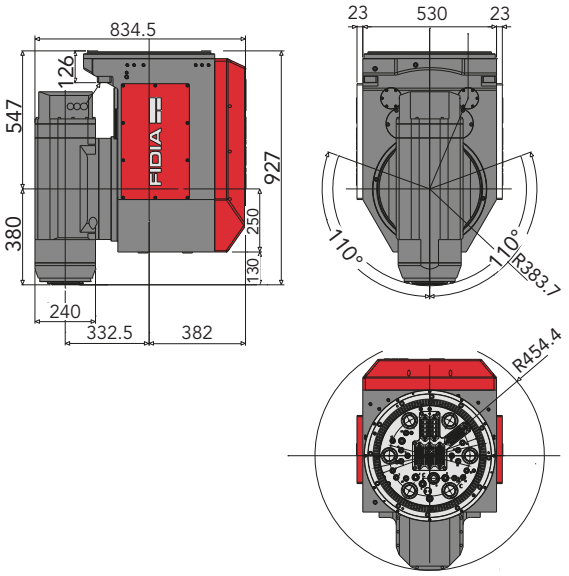


Head M5E

Bi-rotary head M5E

The rapid system change of heads and spindles widely extends GTF effectiveness in the automotive, aerospace and general machining heavy duty applications.
The M5E head and relevant Ram solution up to 2500 mm Z stroke offers roughing capacity together with high speed on cast iron, steel and tough materials. M5E quick change cartridge system allows for the use of different kinds of electrospindles.

M5E - Bi-rotary orthogonal-type		
	M5E/62-15	E/35-24
A axis stroke	±110°	
C axis stroke	±360°	
Max. spindle speed	15000 1/min	24000 1/min
Continuous max. power	62 kW	35 kW
Toolholder	HSK-A100	HSK-A63
Machine models	GTF/R	



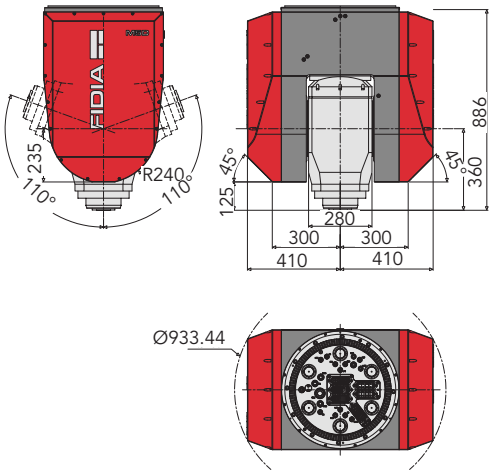
Head magazine and tool changer

Electrospindle magazine

Head M5D

Bi-rotary head M5D

M5D offers an high volume of chip removal on aluminum, providing an efficiency to the manufacturing of large aircraft structural parts.
A dedicated kinematic chain has been designed by FIDIA to perform high acceleration on A and C axes.
The spindle matches high power with high speed to highlight the rotative axes performance.



M5D - Bi-rotary fork type	
	M5D/100-30
A axis stroke	±110°
C axis stroke	±360°
Max. spindle speed	30000 1/min
Continuous max. power	100 kW
Toolholder	HSK-A63
Machine models	GTF/R

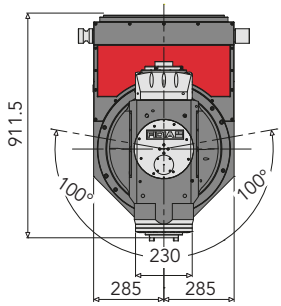
Head M5H

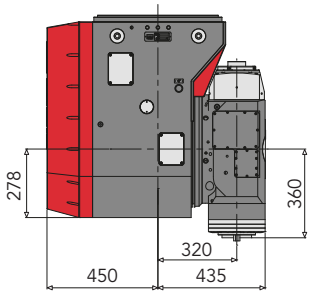
Bi-rotary head M5H

The M5H head with mechanical spindle unit develops high torque and integrates automatic accessories change to allow for access into narrow spaces. The dedicated reinforced Ram and multi guideways system allows for the increased stock removal performance.
A and C axes are suitable for both continuous interpolation and indexed positioning, with strong hydraulic brakes. Direct encoders on both axes grant the highest level of accuracy.

M5H - Bi-rotary orthogonal-type

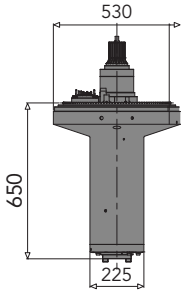
	M5H/75-03	E/35-20G	E/52-12G
A axis stroke		±100°	
C axis stroke		±360°	
Max. spindle speed	3000 1/min	20000 1/min	12000 1/min
Continuous max. power	75 kW	35 kW	52 kW
Toolholder	ISO50	HSK-A63	HSK-A100
Machine models		GTF/R	





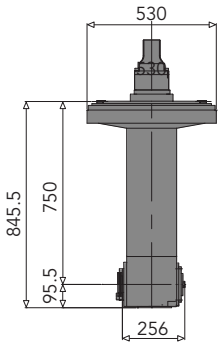
Mechanical spindle extender

M3A/45-04
4000 1/min - 45kW



Mechanical right angle head

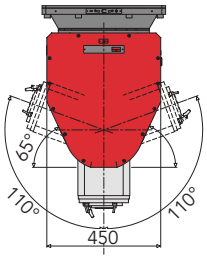
MRH/24-02
2000 1/min - 24kW

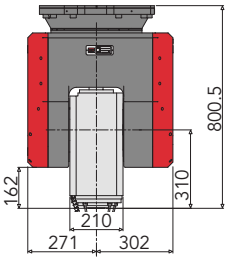


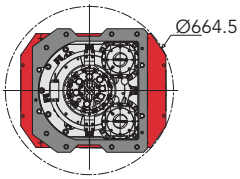
Heads M5S & M5S2

Bi-rotary heads M5S & M5S2

The M5S features a cast iron body and symmetrical fork structure providing optimal thermal stability.
The two tandem motors solution for controlling the A and C axes guarantees an absence of backlash and is maintenance-free.
High torque hydraulic brakes allow the axes to be locked in any position during heavy duty machining.

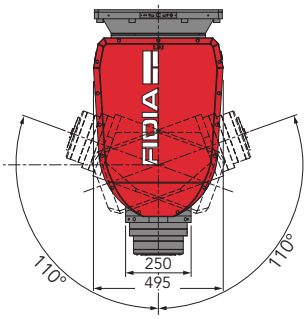


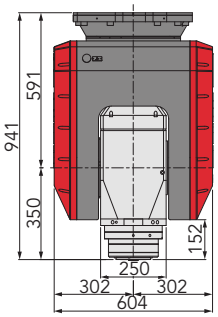


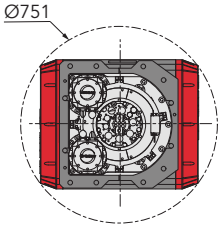


M5S - Bi-rotary fork type

	M5S/55-24	M5S/55-20G	M5S/65-15	M5S/65-12G
A axis stroke	±110° (7.920°/min)			
C axis stroke	±360° (7.920°/min)			
Max. spindle speed	24000 1/min	20000 1/min	15000 1/min	12000 1/min
Continuous max. power	55 kW	55 kW	65 kW	65 kW
Toolholder	HSK-A63	HSK-A63	HSK-A100	HSK-A100
Machine models	GTF/R, GTF/Q, GTF/M			







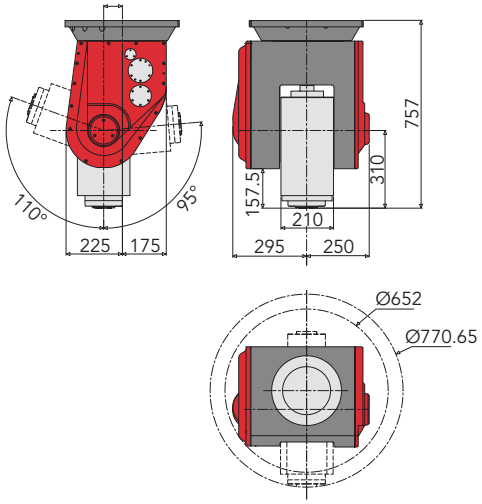
M5S2 - Bi-rotary fork type

	M5S2/87-28	M5S2/62-16
A axis stroke	±110°	
C axis stroke	±360°	
Max. spindle speed	28000 1/min	16000 1/min
Continuous max. power	87 kW	62 kW
Toolholder	HSK-A63	HSK-A100
Machine models	GTF/R, GTF/Q, GTF/M	

Heads M5A & M5C

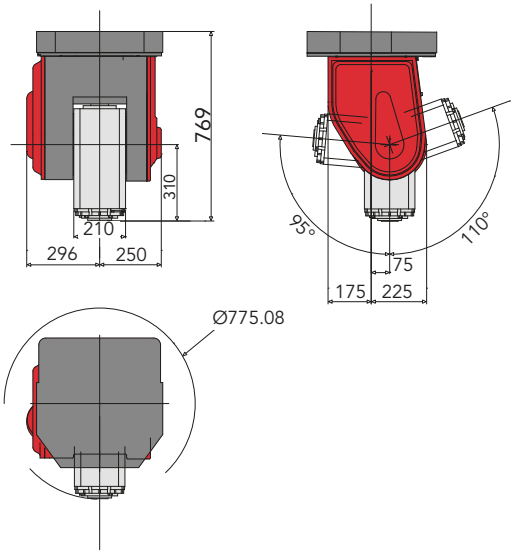
Bi-rotary heads M5A & M5C

M5A and M5C heads enhance the high speed cutting performance and fit over most GTF applications; thanks to their compact structures easy tool access to the narrowest areas of the parts can be reached.
The M5A milling head is built around a cast iron structure meant to deliver stiffness and thermal stability during demanding operations on steel as well as aluminum.
The M5C is a lighter version of M5A, made with aluminum alloy. This model does not require hydraulic clamping since it aims to cut lighter materials such as aluminum, composite, clay and resin.



M5A - Bi-rotary fork type

	M5A/55-24	M5A/55-20G	M5A/65-15	M5A/65-12G
A axis stroke	+95° / -110°			
C axis stroke	±360°			
Max. spindle speed	24000 1/min	20000 1/min	15000 1/min	12000 1/min
Continuous max. power	55 kW	55 kW	65 kW	65 kW
Toolholder	HSK-A63	HSK-A63	HSK-A100	HSK-A100
Machine models	GTF/Q, GTF/M			



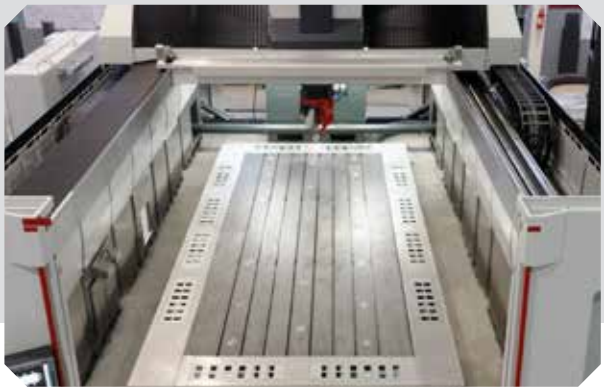
M5C - Bi-rotary fork type

	M5C/35-24	M5C/35-20G	M5C/23-24G
A axis stroke	+95° / -110°		
C axis stroke	±360°		
Continuous max. power	35 kW		23kW
Max. spindle speed	24000 1/min	20000 1/min	24000 1/min
Toolholder	HSK-A63	HSK-A63	HSK-A63
Machine models	GTF/L		

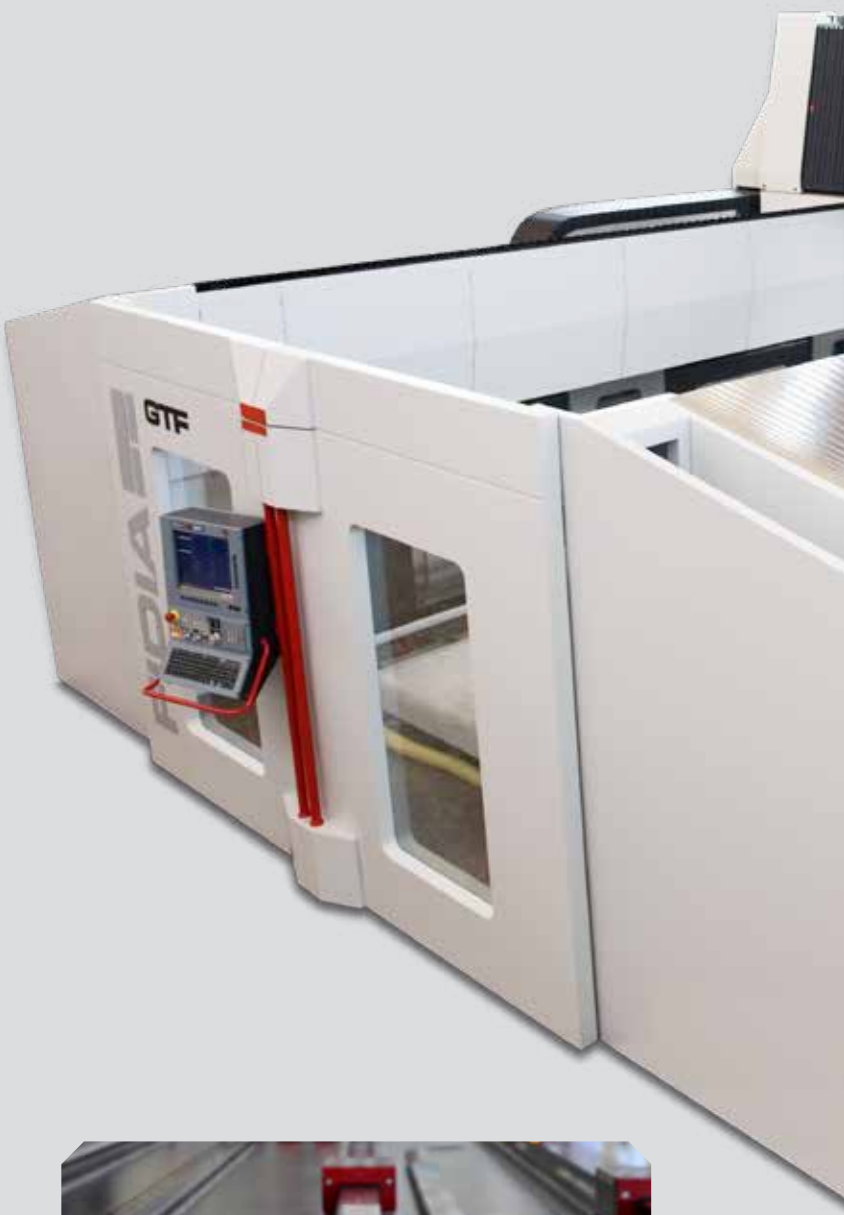
Details

Rotary Table for milling and turning applications

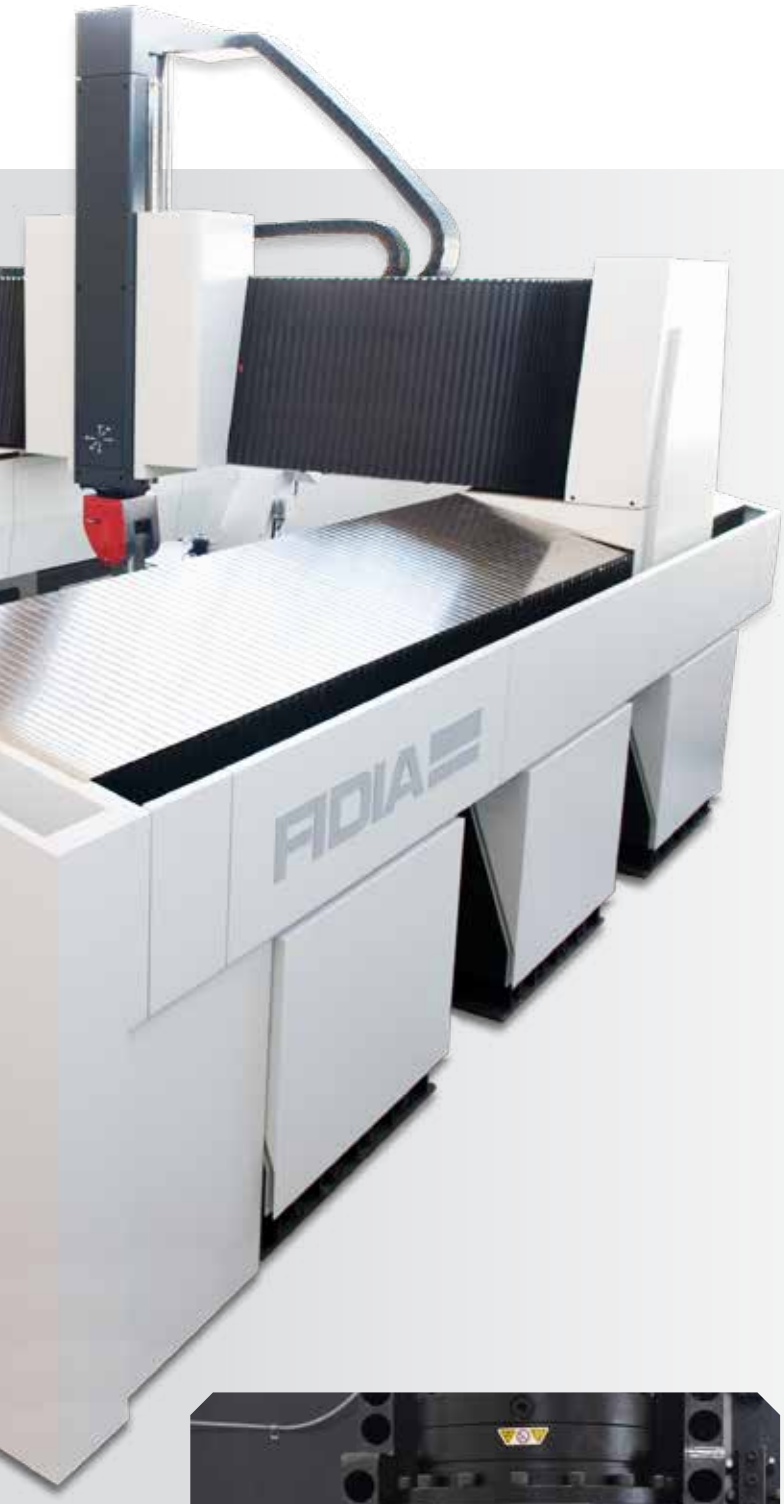
Dust Suction System on M5C milling head



Dust Suction Frame around the work table



Double Carriage



Automatic Working Volume Cover

Double Tool Change

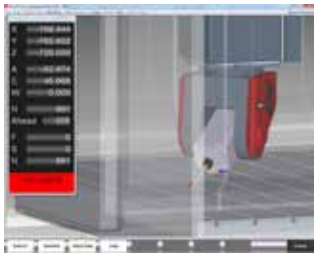
Epoxy Concrete Columns

Rack & Pinion

C20 & C40 Numerical Controls

C20

The C20 fulfills the highest demands for complex applications where a 5-axis HSC machining with RTCP and a large number of drives (gantry, tandem, multiple axes) must be managed simultaneously. The C20 controls are always equipped with high-level hardware to continually increase performance. The current version includes multi core processors and Windows® 10 operating system.
The user interface allows the operator to work with the maximum flexibility in any machining condition: programs coming from CAM systems, 5 axes machining with RTCP function, mechanical machining such as slots, threads and pullers programmed directly on board of the machine by using ISOGRAPH. Velocity Five™ look ahead algorithms and the combination with the Xpower™ drives technology allow the best speed and quality of machining bringing them even closer to excellence.



C40

C40 control, available as an option, is the high-end CNC for 5 axis and HSC machining.
High processing speed allows C40 control to run the standard ViMill® machine protection suite, preventing possible collisions between machine tool components, through a dynamic collision check.
The ViMill® full version with total collision check, including the milling part, is available as an upgrade option to the standard protection.

HPX21 – Portable pushbutton panel

The HPX21 portable pushbutton is the comfortable solution to manually move the machine. One electronic handwheel, 16 pushbuttons and 2 overrides for feed rate and spindle speed are used to operate close to the working area.

HMS™ – Head measuring system

The HMS™ system is a device designed to measure and compensate error on continuous and indexed bi-rotary heads, and on roto-tilting tables. The HMS™ is a device designed for measuring and checking continuous, indexed bi-rotary heads and roto-tilting tables.
HMS™ is a high-precision instrument and provides an alternative to the traditional checking method using dial gauges.
It has many advantages:

- a drastic reduction in checking time;
- measurement of all head and/or table positions;
- measurement of RTCP parameters;
- automatic insertion of correction values in the CNC;
- a full report of the measurements taken and the corrections made.

HiMonitor – Machine Monitoring System

To make the most efficient use of the machine tools in the workshop and to improve the production process, FIDIA has developed two advanced software modules:

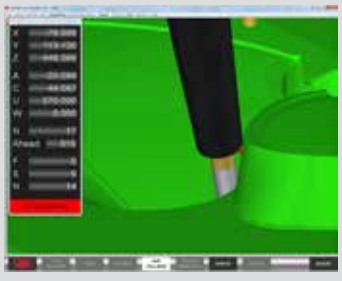
- machine Monitoring System, that detects the different machine tool and CNC activities, records them and generates on screen or printed reports;
- monitoring System on WEB, that allows the machine tool status to be checked from a remote device, such as a phone, tablet or PC.

Working jointly, the modules allow for close workshop monitoring, accurate cost calculations, smooth manufacturing and extremely efficient interventions.

ViMill®

ViMill® is an anti-collision system incorporated in the C40 control that prevents collision between the machine tool components and the part being machined, and consists of two modules.
The standard Machine Protection module prevents any possible collision between machine tool structures, such as the head, tool and table both during automatic machining and manual movements.
The complete ViMill module includes the following features:

- total anti-collision with reference to machine tool components, the part being machined and clamping equipment;
- anti-collision during manual movement by the operator;
- off-line simulation of a part-program checking for any possible collisions;
- automatic management of Numerical Control tool data;
- graphic display of movements in 3D and in real time.



FIDIA S.p.A.
Corso Lombardia, 11
10099 San Mauro Torinese - TO - ITALY
Tel. +39 011 2227111
Fax +39 011 2238202
info@fidia.it
www.fidia.com

EN - 19/08

FIDIA GmbH
Robert-Bosch-Strasse 18
63303 Dreieich-Sprendlingen - GERMANY
Tel. +49 6103 4858700
Fax +49 6103 4858777
info@fidia.de

FIDIA Co.
3098 Research Drive
Rochester Hills MI 48309 - USA
Tel. +1 248 6800700
Fax +1 248 6800135
info@fidia.com

FIDIA Sarl
47 bis, Avenue de l'Europe
B.P. 3 - Emerainville
77313 Marne La Vallee Cedex 2 - FRANCE
Tel. +33 1 64616824
Fax +33 1 64616794
info@fidia.fr

FIDIA Iberica S.A.
Parque Tecnológico
Laida Bidea, Edificio 208
48170 Zamudio - Bizkaia - SPAIN
Tel. +34 94 4209820
Fax +34 94 4209825
info@fidia.es

FIDIA DO BRASIL LTDA
Av. Padre Anchieta, 161 - Jordanopolis
São Bernardo do Campo
09891-420 - SP - BRASIL
Tel. +55 11 3996-2925
info@fidia.com.br

FIDIA JVE
Beijing Fidia Machinery & Electronics Co., Ltd
Room 1509, 15/F Tower A. TYG Center Mansion
C2 North Road East Third Ring Road,
Chaoyang District
100027 BEIJING - P.R. CHINA
Tel. +86 10 64605813/4/5
Fax +86 10 64605812
info@fidia.com.cn

FIDIA JVE
Shanghai Office
28/D, No.1076, Jiangning Road
Putuo District
Shanghai 200060 - CHINA
Tel. +86 21 52521635
Fax +86 21 62760873
shanghai@fidia.com.cn

OOO FIDIA
c/o Promvost
Sushovskiy Val, Dom 5, Str. 2, Office 411
127018 Moscow - RUSSIA
Tel.: +7 499 9730461
Mobile: +7 9035242669
sales.ru@fidia.it
service.ru@fidia.it

Service centres:

FIDIA GmbH - SERVICE CZ
CZ- 74706 Opava
Tel/Fax +420 553 654 402
sales.cz@fidia.it

FIDIA S.p.A. - SALES & SERVICE UK
32 Riverside, Riverside Place
Cambridge - Cambridgeshire
CB5 8JF - United Kingdom
Mobile: +44 - (0)7425 838162
sales.uk@fidia.it

3H MAKINA
Atasehir Bulvari, Ata 2/3
Plaza, Kat: 9 No: 80
Atasehir - Istanbul - TURKEY
Tel.: +90 216 456 10 43
Fax: +90 216 456 75 23
sales.tr@fidia.it
service.tr@fidia.it

AXIS SYSTEMS
T8 ~ T9 ~ T20, "INSPIRIA"
Old Mumbai - Pune Highway,
Pune – 411044, India
Cell : +91 9881245460
service.in@fidia.it

P.V. ELECTRONIC SERVICES C.C.
P.O. Box 96
Hunters Retreat 6017
Port Elisabeth SOUTH AFRICA
Tel. +27 41 3715143
Fax +27 41 3715143
sales.za@fidia.it

SHIYAN FIDIA SERVICE CENTRE
N.84 Dong Yue Road,
Shiyan, Hubei - CHINA
Tel. +86 719 8225781
Fax +86 719 8228241

CHENGDU FIDIA SERVICE CENTRE
Huang Tian Ba
Chengdu, Sichuan - CHINA
Tel. +86 28 87406091
Fax +86 28 87406091

IE-MAT s.r.l.
Bv. De Los Calabreses 3706
Barrio: Boulevares.
Córdoba - ARGENTINA
CP: X5022EWW
Tel. +54 351 5891717
sales.ar@fidia.it

Manufacturing plants:

FIDIA S.p.A.
Via Valpellice, 67/A
10060 San Secondo di Pinerolo
TO - ITALY
Tel. +39 0121 500676
Fax +39 0121 501273

FIDIA S.p.A.
Via Balzella, 76
47100 Forlì
ITALY
Tel. +39 0543 770511
Fax +39 0543 795573
info@fidia.it

SHENYANG FIDIA NC & MACHINE CO., LTD.
No. 1 17 Jia Kaifa Rd.
Shenyang Economic & Technological Development Zone
110141 Shenyang - P.R. CHINA
Tel. +86 24 25191218/9
Fax +86 24 25191217
info@fidia.com.cn

Research centres:

FIDIA S.p.A.
c/o Tecnopolis
Str. Provinciale per Casamassima Km 3,
70010 Valenzano
Bari - ITALY
Tel. +39 080 4673862