GTF

Gantry Type high speed milling machines

FIDIA

Giving shape to design

Modularity

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

Performances

The harmonious sizing of its structures in accordance with the thermo-symmetry concept, perfectly matches with the extremely dynamic linear axes. In this way, speed and power are enhanced to grant the best performance.

Fidia technology inside

The FIDIA integrated technology system, including both drives, and numerical control, offers the most complete and performing equipment, granting the customer with both quality and reliability of one-single-source supplier.

Applications

GTF machines offer a full range of models with modular work envelope.
Thanks to the wide choice of Ram and milling heads solution, GTF find always the best fitting application in various fields:

- Automotive
- Aerospace
- Energy
- Marine

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:
ALUMINIUM, TITANIUM, COMPOSITE MATERIALS require chip conveying systems with filtering and protections 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.

General Machining

Thanks to the modular design it is now possible to utilize FIDIA technology to produce big size mechanical components.
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 industry requires sometimes very accurate machining cases, which can be afforded only by specifically designed machines.
M5H head version offers the most advantageous solution in terms of stock removal rate combined with high quality and precision.

Automotive

Stamping dies

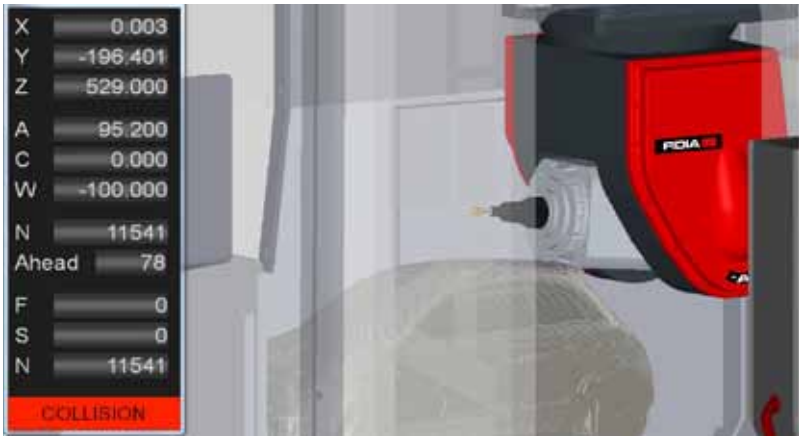
The automotive industry requires highly accurate machines to mill cast-iron and steel dies from the roughing operation to the final super-finishing of surfaces. Manual polishing can be mostly avoided and all operations can be done with a single set up of the work-piece, thanks to the upper gantry configuration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

Plastic injection and die-casting

The precision in details and the surface quality feature this type of moulds.
Bi-rotary heads with high accessibility and a consequent reduction of tool length make these targets possible.
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.

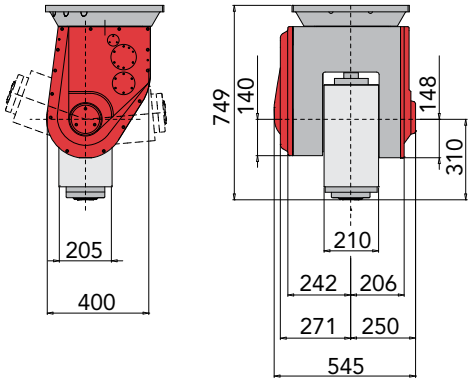
Prototyping and styling

The machining of full-scale models, the construction of prototyping moulds and quality control gauges match perfectly with the GTF working envelope.
The XYZ axes high dynamic accuracy and the compact size of M5A & M5C heads bring GTF to an upper performance level, defying all competition.



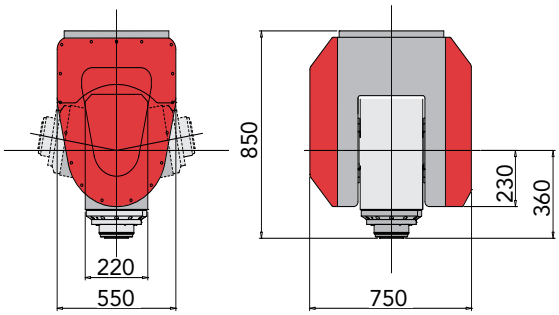
M5A - M5C

HSK63A/100A - HSK63F



M5D

HSK63A



Continuous and indexed

In any FIDIA's head, A and C axes performs high dynamic continuous interpolation as well as the 3+2 positioning mode, at the operator's fingertip.
Indeed, anytime during a full 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 life-time automatic backlash recovery and is able to perform 0.001° resolution positioning.

Bi-rotary heads M5A & M5C

M5A and M5C enhances the high speed cutting performance and fits over most GTF applications thanks to the compact structure that eases the tool access to the narrowest areas of the part.
M5A milling head is build around a cast iron structure meant to deliver stiffness and thermal stability during demanding operations on Steel.
M5C is a lighter version of M5A, made in aluminum alloy, hosting a grease lubricated spindle. This model does not require hydraulic clamping since it aims to cut light materials as composite, clay and resin.

Bi-rotary head M5D

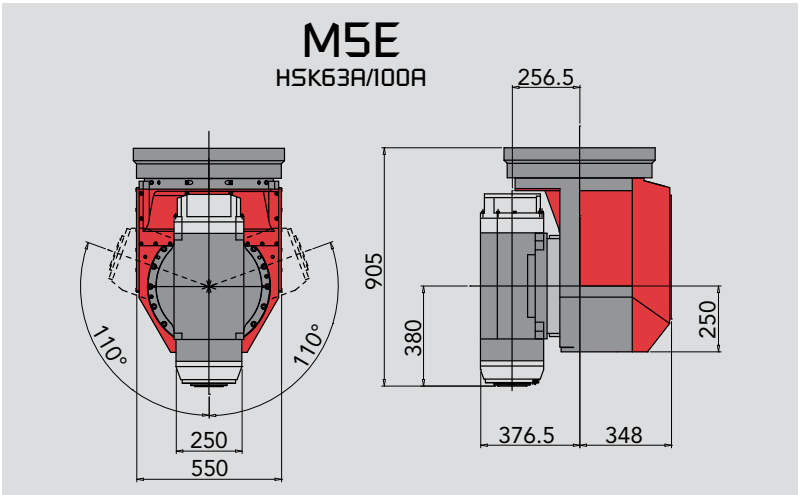
M5D offers an extraordinary volume of chip removal on aluminum, providing an unprecedented efficiency to the manufacturing of large aircraft structural parts.
A dedicated cinematic has been conceived by FIDIA to deliver extreme dynamic on A and C axes.
The spindle matches high power with high speed to highlight the rotative axes performance.

Bi-rotary head M5E & M5H

The new modular system of head and spindle change widely extends GTF applications in the Automotive and Aero complex machining.
M5E head and relevant Ram solution up to 1500 mm Z stroke offers roughing capacity together with high speed on cast iron, steel and other demanding materials.
M5E quick change cartridge system allows for the use of different kinds of electrospindles.
M5H head with mechanical spindle unit develops high torque integrates automatic accessories change to allow for access into narrow spaces.
The dedicated reinforced Ram and multi guide-ways 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 upper level of accuracy.

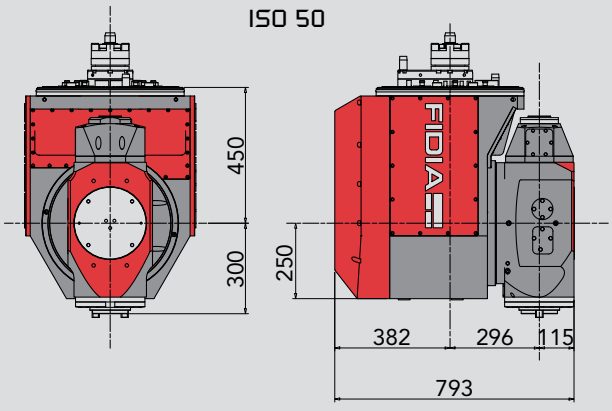
M5E

HSK63A/100A

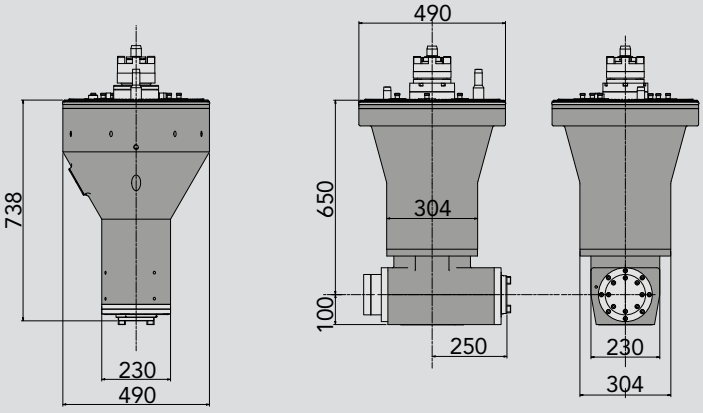


M5H

ISO 50



Mechanical spindle extender



Mechanical right angle head

GTF MODEL					HEAD & SPINDLE		
/L	/Q	/M	/P	/R	M5A	A = +95° -110° 3600 °/min (optional 5000 °/min)	C = +-360° 3600 °/min (optional 5000 °/min)
	S	S	S	O	M5A/55-24(H)	55 kW - 24.000 1/min – 87.5 Nm	HSK63A
	O	O	O	O	M5A/65-15	65 kW - 15.000 1/min – 124 Nm	HSK100A
	O	O	O	O	M5A/46-24G	46 kW - 24.000 1/min - 88 Nm	HSK63A - Grease lubrication
					M5C	A = +95° -110° 7560 °/min	C = +-360° 7560 °/min
S					M5C/23-24	23 kW - 24.000 1/min – 38 Nm	HSK63F
O					M5C/35-24	35 kW - 24.000 1/min – 56 Nm	HSK63A
O					M5C/35-24G	35 kW - 24.000 1/min - 56 Nm	HSK63A - Grease lubrication
					M5D	A = +-110° 10.800 °/min	C = +-360° 10.800 °/min
				O	M5D/80-20	80 kW - 20.000 1/min – 80 Nm	HSK100A
				O	M5D/100-30	100 kW - 30.000 1/min – 56 Nm	HSK63A
					M5E	A = +-110° 3600 °/min	C = +-200° (optional +-360°) 5400 °/min
				O	M5E/62-15	62 kW - 15.000 1/min – 296 Nm	HSK100A
				O	E/35-24	2nd electrospindle 35 kW - 24.000 1/min – 56 Nm	HSK63A
					M5H	A = +-110° 3600 °/min	C = +-200° (optional +-360°) 5400 °/min
				O	M5H/47-03	47 kW - 3.000 1/min – 1100 Nm	ISO50
				O	E/35-24	2nd electrospindle 35 kW - 24.000 1/min – 56 Nm	HSK63A
				O	M3A/50-05	Mechanical Spindle Extender Unit 50kW-5000rpm –1019 Nm	ISO50
				O	MRH/47-03	Mechanical Unit for 3+1 Horizontal 47kw- 3000rpm – 1100 Nm	ISO50

S = Standard
O = Optional
Remark: All electrical data are expressed in “S6” if not otherwise specified

Working volume cover (optional)

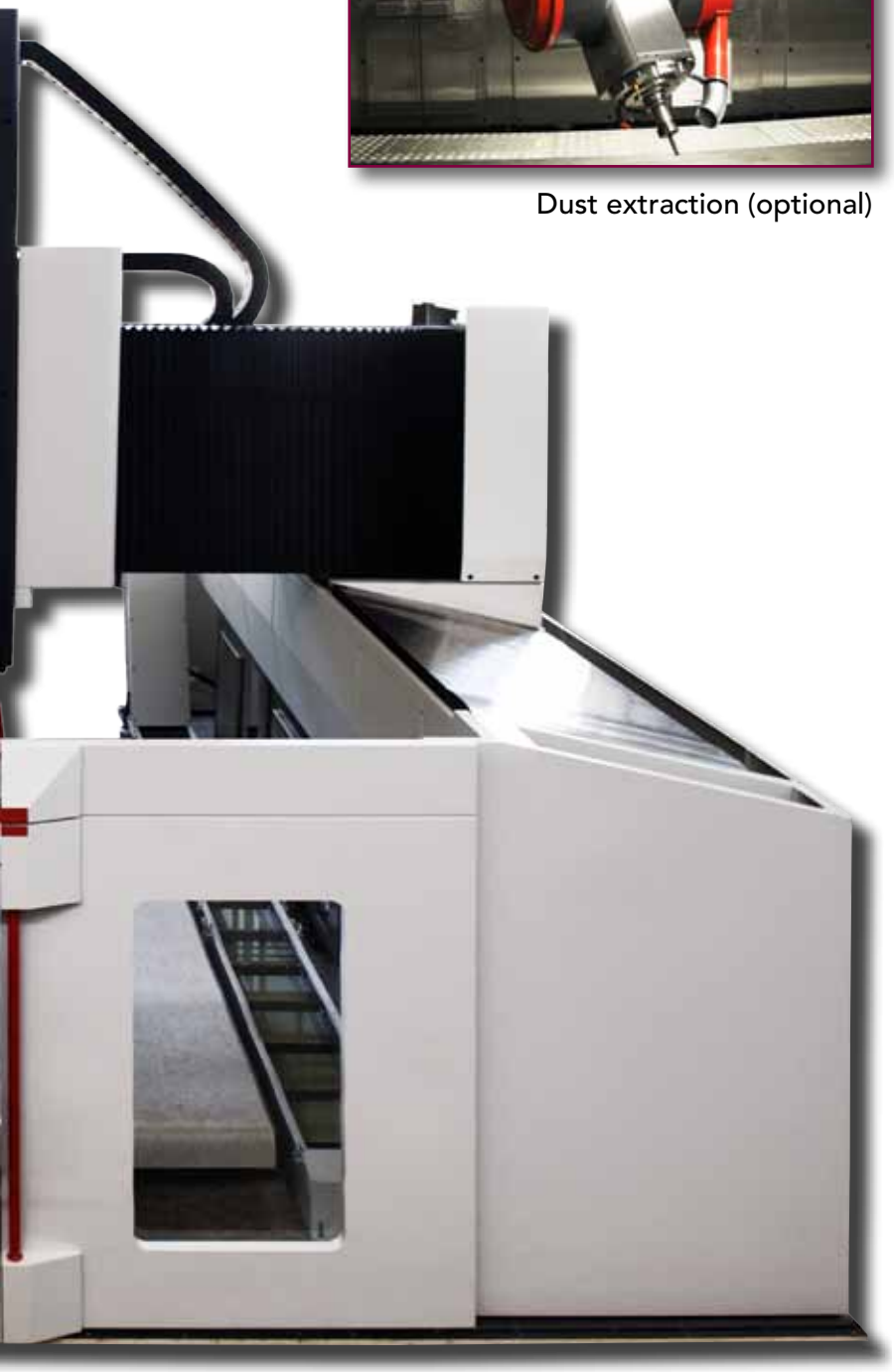
Bench rails

Epoxy concrete columns

C20 Operator console

Dust extraction (optional)

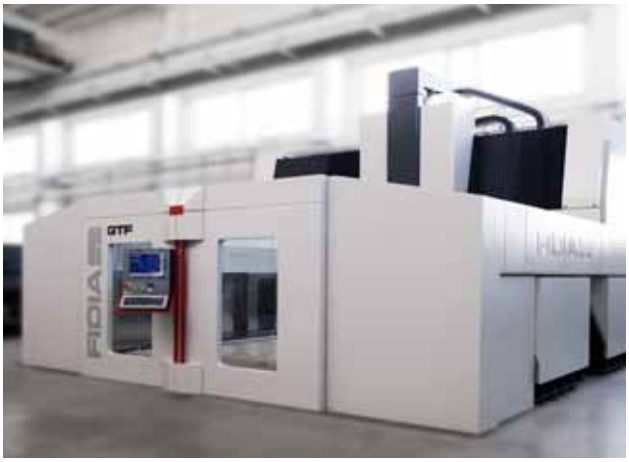
Ram and Y assembly



Tool changer

Laser presetting device

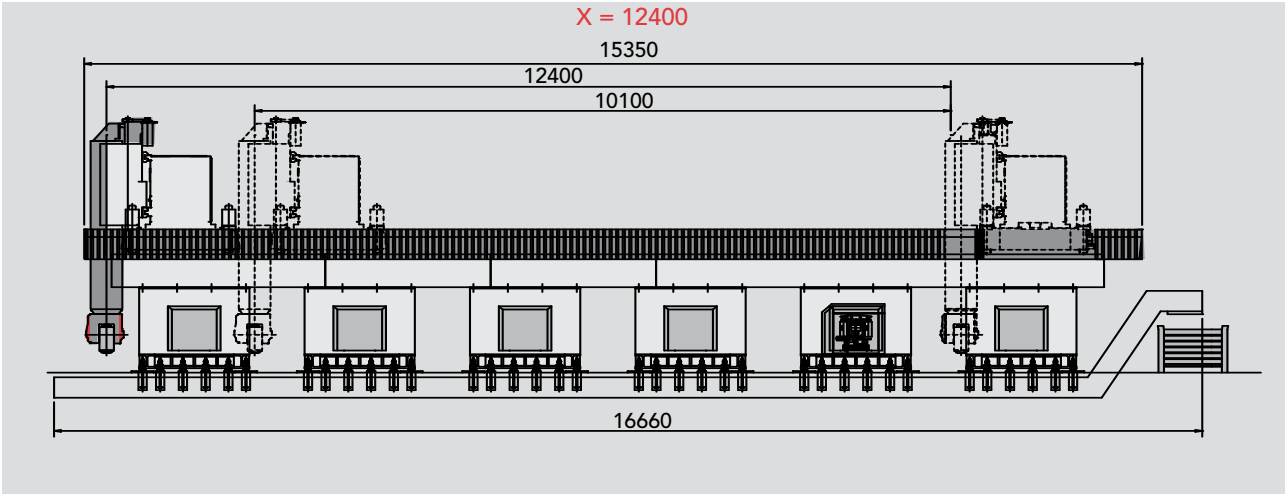
GTF/P - GTF/R



Made of stiff Epoxy Concrete columns, to grant for the best vibration damping effect, these versions of GTF family have the greatest level of modularity. Starting from the smallest 2+2 columns configuration, the same design can be extended to any X axis length just by adding columns.
The main difference between /P and /R is related to the ram cross section: /P integrates a 460 x 460 mm ram while /R holds a 600 x 600. Consequently, heads can be as follows:

- M5A with Z strokes from 1000 up to 1400 mm (GTF/PA)
- M5A with Z strokes from 1400 up to 2500 mm (GTF/RA)
- M5D with stokes up to 1800 mm (GTF/RD)
- M5E with strokes up to 1500 mm (GTF/RE)
- M5H with strokes up to 1000 mm (GTF/RH)

The axes cinematic chains may vary in order to achieve the highest working speed and acceleration.
Rack & pinion tandem system drives X Y axis, while Z can be driven by ball-screw or rack & pinion, according to the stroke.



X Strokes	starting from 2800 mm (110”), steps of 2400 each (5200, 7600, 10000, ...)
Y Strokes	from 2200 - 2800 - 3500 - 4000 mm (86” - 157”)
Z Strokes	Within the range 1000 mm - 2500 mm (39” - 98”)
Axis speed	from 30 to 60 m/min (1181 - 2362 ipm)

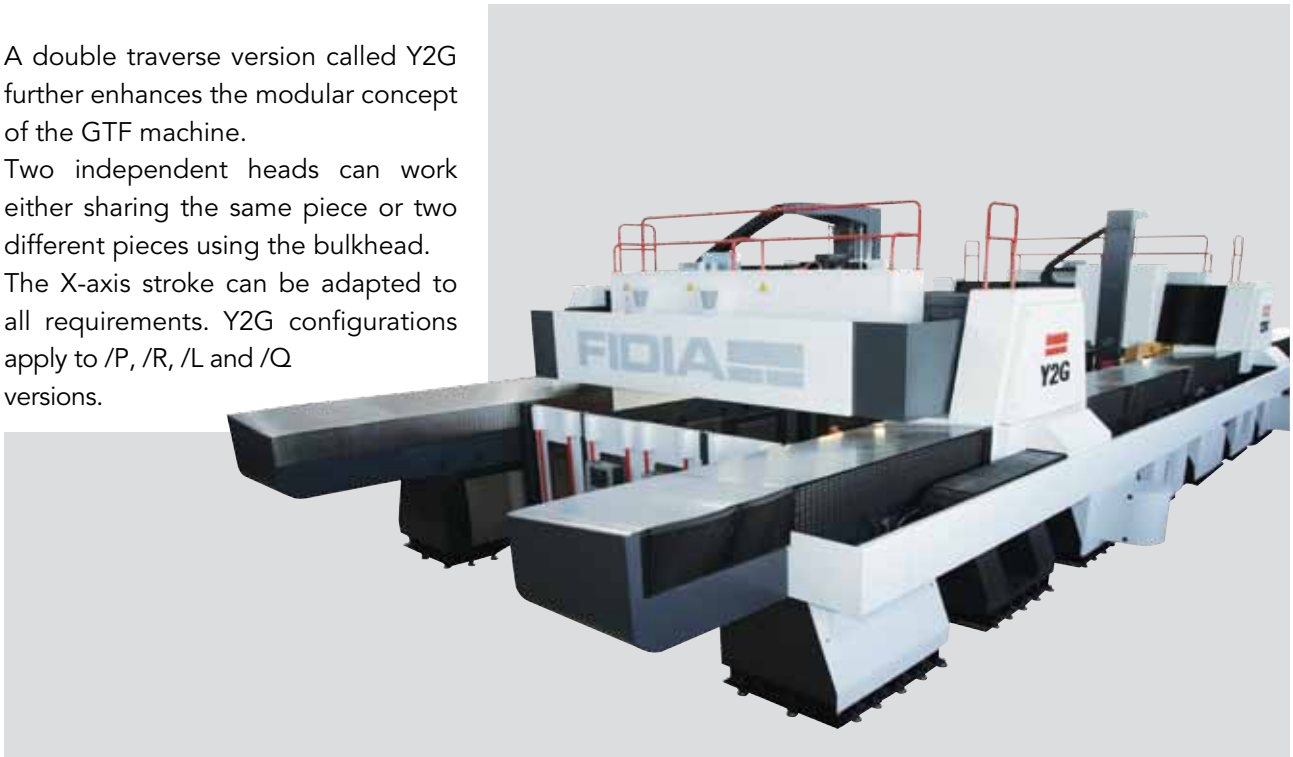
GTF/L

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

X Strokes	starting from 4000 mm (157”)
Y Strokes	from 2200 - 2700 - 3200 - 3500 - 4000 mm (86” - 157”)
Z Strokes	Within the range 1000 to 2500 mm (39” - 98”)
Axis speed	60 m/min (2362 ipm)

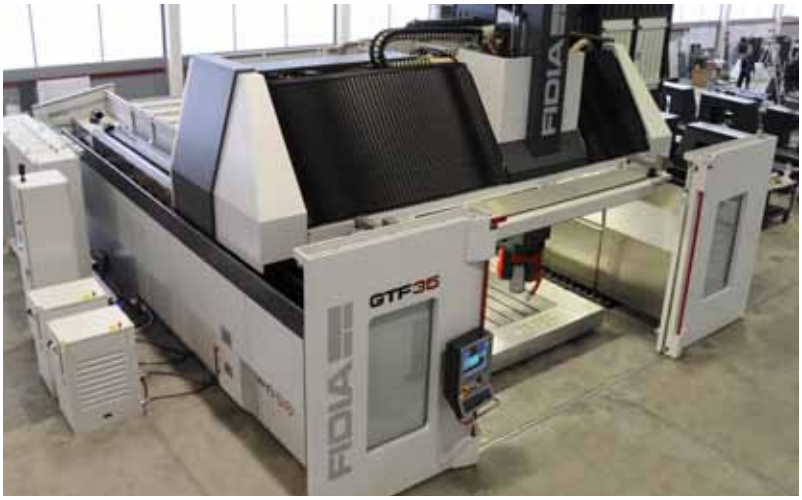
Y2G

A double traverse 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 /P, /R, /L and /Q versions.

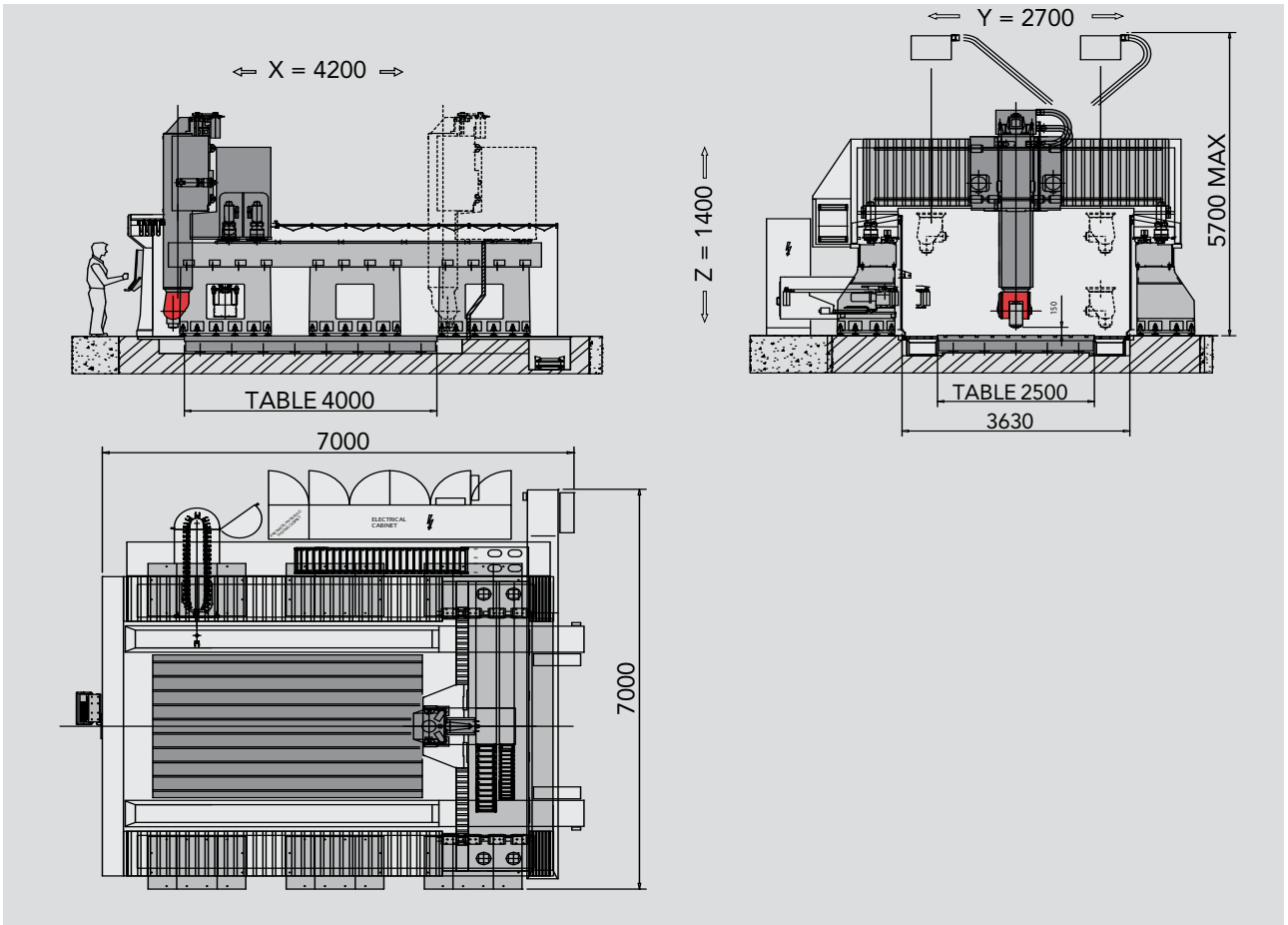


GTF/Q

The modular version /Q is based upon compact columns and traverse optimizing floor space in the workshop. The Epoxy concrete structure of columns preserves geometry and accuracy from thermal effects.
The innovative design of traverse makes it suitable for all versions of M5A and bi-swivelling heads.
It's equipped with ram up to 1400 mm stroke.



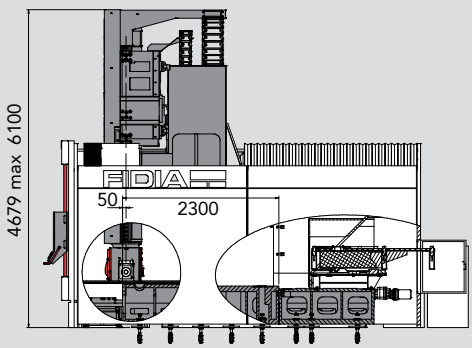
X Strokes	2700 mm (106″)	4200 mm (165″)	6000 mm (236″)	8000 mm (315″)	...over
Y Strokes	2200 mm (86″)	2700 mm (106″)	3200 mm (126″)	3500 mm (138″)	
Z Strokes	1000 mm (39″)	1250 mm (49″)	1400 mm (55″)		
Working feedrate	From 30 to 60 m/min (1181 - 2362 ipm)				

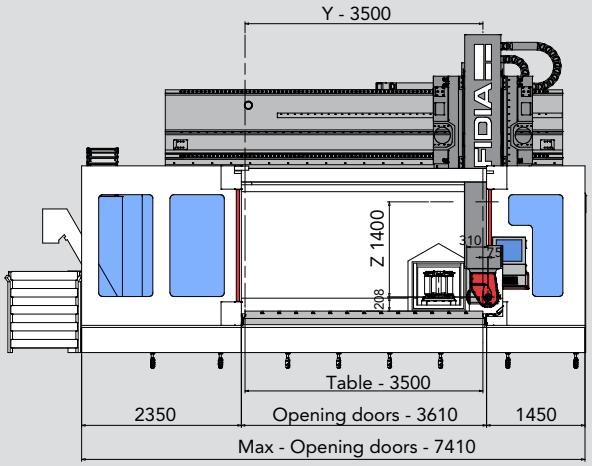


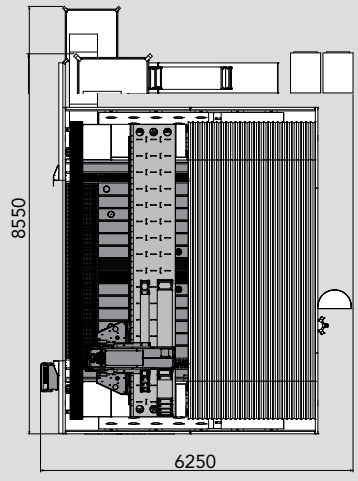
GTF/M

The "monolithic" version /M, with its self-supporting cast iron structure, is the right answer of compactness in all small/medium size upper gantry applications. No foundation is required.
It employs the same traverse design as the /Q version, with significant advantage in strokes/footprint ratio.
It suits the same versions of M5A and ram as /Q.

X Strokes	2200 mm (86")	3500 mm (138")	
Y Strokes	3500 mm (86")		
Z Strokes	1000 mm (39")	1250 mm (49")	1400 mm (55")
Working feedrate	From 30 to 60 m/min (1181 - 2362 ipm)		







The C20 numerical control

The Fidia C20 numerical control takes full advantage of the potential offered by combining the performance of the Dual Core and the RISC Power PC processors. It is conceived to manage the most sophisticated high-speed applications running at 5 axes with RTCP. It is equipped with Windows XP Professional operating system in multitasking mode.

Simple and reliable machining

Fidia controls have always been appreciated for their high level performance and for the comprehensive range of features supplied. The user interface environment allows to operate with the maximum flexibility in any machining condition: program 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.

High speed milling

Speed and quality of machining of sculptured surfaces are the most well known and appreciated features of Fidia controls.
The combination of Fidia controls with the Xpower technology drives increases more than ever milling performances bringing them towards even closer to excellence.
The direct access to all the drive's parameters enables to control the motors and, therefore, the axes, in the best possible way even in the most critical condition of use.

HMS – Head measuring system

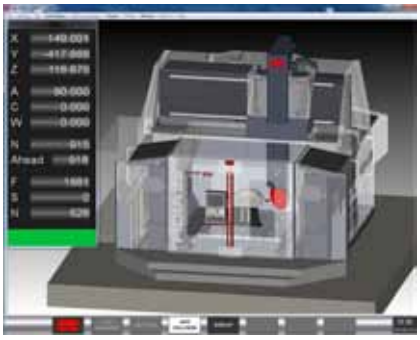
The HMS is a device designed for measuring and checking continuous, indexed bi-rotary heads and roto-tilting tables.
HMS is a high-precision instrument and provides an alternative to the traditional checking method using dial gauges. It has many advantages:

- 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.

Easy to install and use, HMS can also be used by operators with no particular expertise.
A full report is available at the end of the calibration cycle detailing the measurements made and the compensation values inserted.

C40 VISION numerical control

C40 is the most power numerical control on the market for hi-end application, 5 axes and HSC machining.
C40 is equipped with multi core processor, powerfull graphic board and 64 bit operating system for perfect computation and virtual machining of the tool path using ViMill.
On-board operativity is enhanced by the large 19" Touch screen.



ViMill

The integration of ViMill on FIDIA Controls, allows the machine operator to visually check any possible collision or unexpected movements between tool, head and machine with the actual workpiece just before pressing the start push button or during the real milling process.
The ViMill function proves to be also very useful during machine operation and in case of program stop and re-start. In fact, even if the part program has been duly verified with off-line simulation solutions, many CNC parameter settings can produce machine movements that are not possible to check using conventional off-line methods.
Using ViMill function, the operator can visually check all axes and movements at the most critical time, just before pressing start.
It's very easy to verify the milling, to avoid rough mistakes and even check small undesired movements by using ViMill zooms and graphic functions.

HPW – wireless terminal

HPW is the ultra-compact solution for machine control without cables. His innovative and ergonomic design with 5" colours display and touch interface allows a wide range of functionality.
The compact size and lightness will ensure comfortable operating conditions in a safe way

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