G996V G996RT

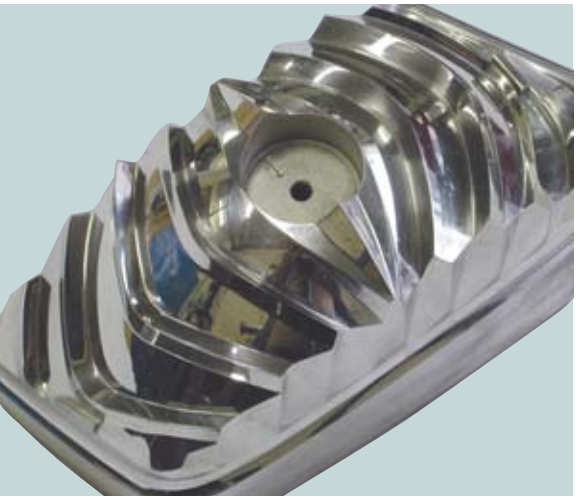
High performance milling systems

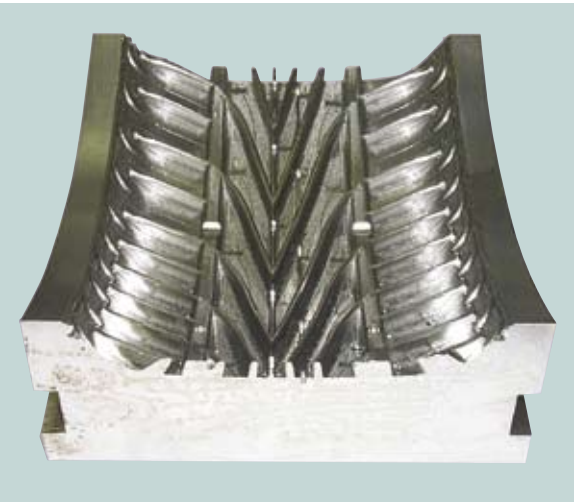
FIDIA

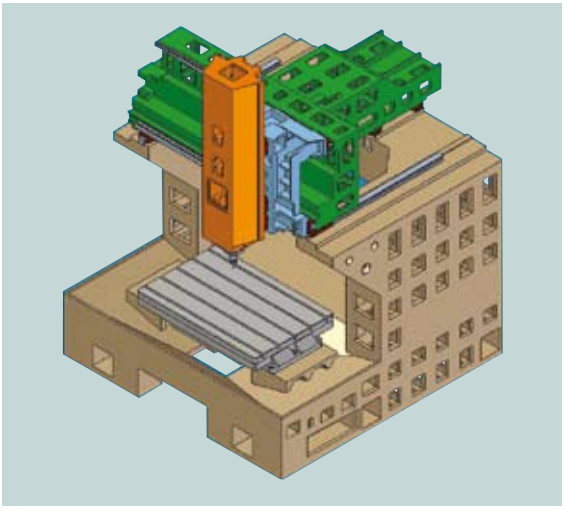
Giving shape to design

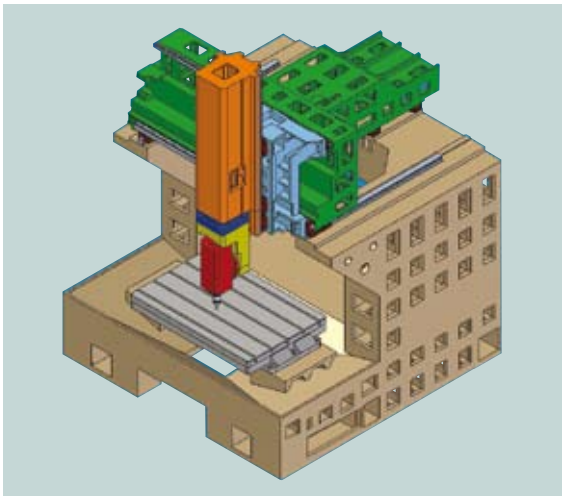
Ongoing technological development

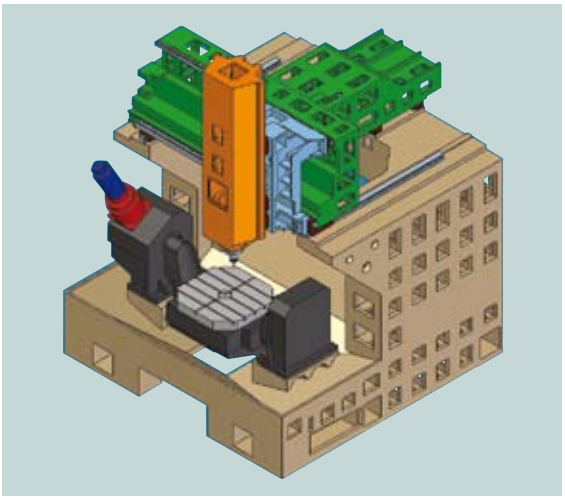
The G996 is the result of Fidia's long experience in the field of high performance milling.
After years of satisfying the need for improvement in the quality and accuracy of complex machining, with the launching onto the market of machine tools designed for finishing, Fidia has responded to a new challenge in which the rationalization of the production cycle has become an absolute priority.
Combining high dynamics with strength, excellent stock removal when roughing out with high precision finishing and modular design with low cost: these are the objectives the G996 product design has set out to achieve.
The result is a system offering various milling equipment and different worktable combinations that is able to satisfy most machining requirements with 3 and 5 continuous or indexed axes.
Sectors in which the G996 can find application include all those where high precision and excellent stock removal are required, from the moulds and dies sector to general machining and the aeronautical industry.

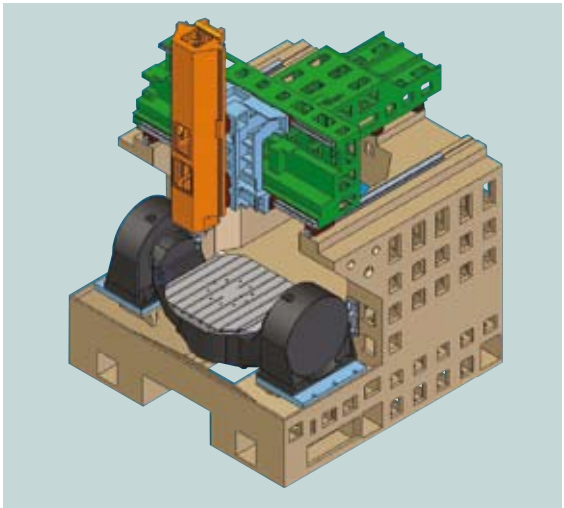










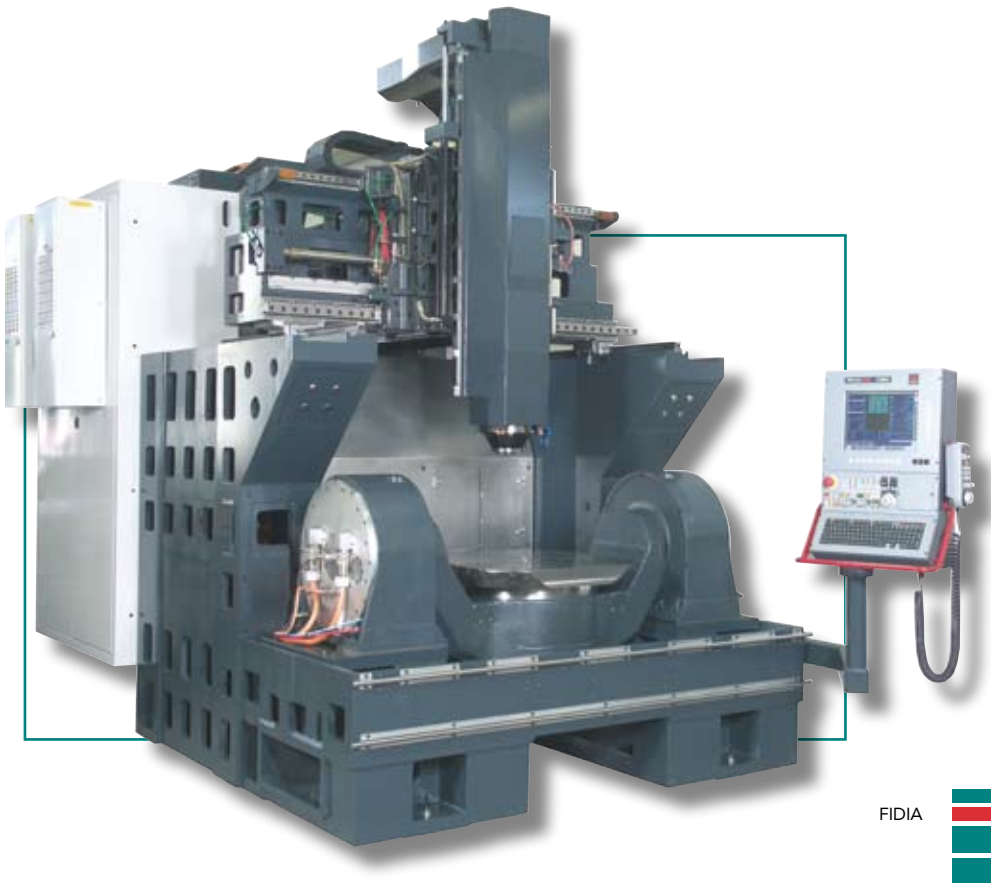


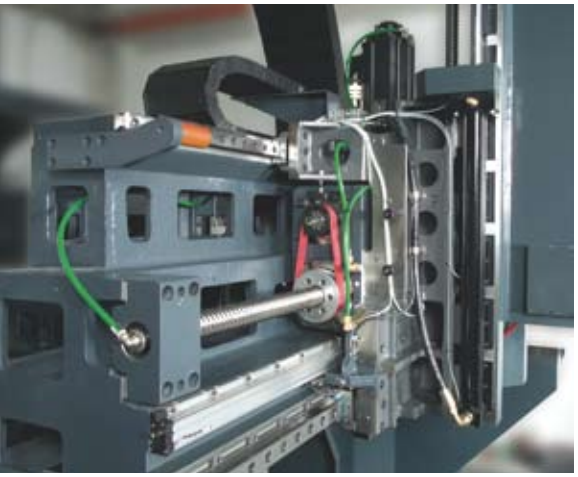
Machine tool structure

The large cast iron bed provides a stable support for the moving parts, while the open front ensures the visibility of the machining.
The moving components, also made of cast iron, have been designed for high acceleration with no dynamic strain. At the same time, they ensure the damping capacity required in order to take full advantage of the high spindle torque.
The use of spheroid graphite cast iron and a system of guides with 6 support points for each axis has made this difficult compromise possible.

No Foundation

Its self-supporting structure allows installing the machine directly on the floor so no specific foundation is required.

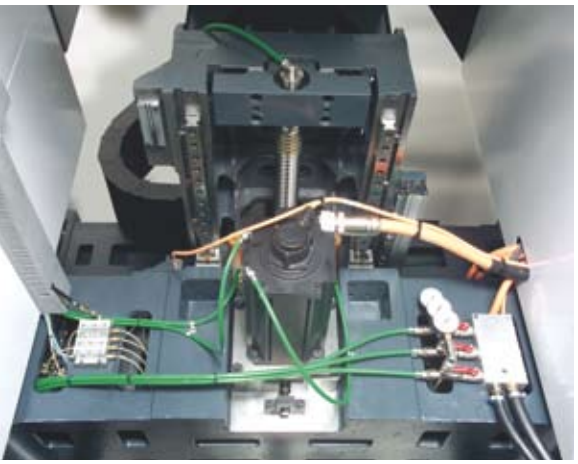




Dynamics and thermal stability control

The kinematics chain employees rotating nut and fixed ball screw technology on all linear axes.
This solution has numerous advantages:

- larger diameter ball screws
- reduction in the moments of inertia owing to the high rotation speed
- extreme rigidity in motion transmission
- heat control with coolant flow through hollow ball screws

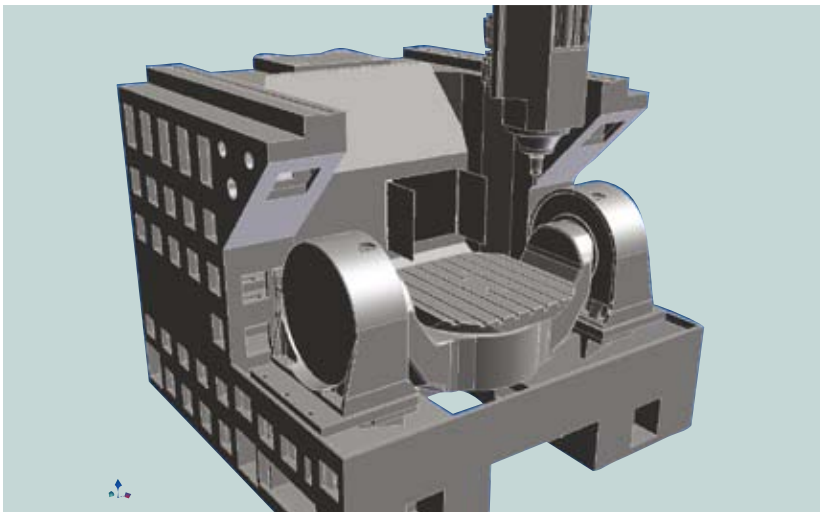


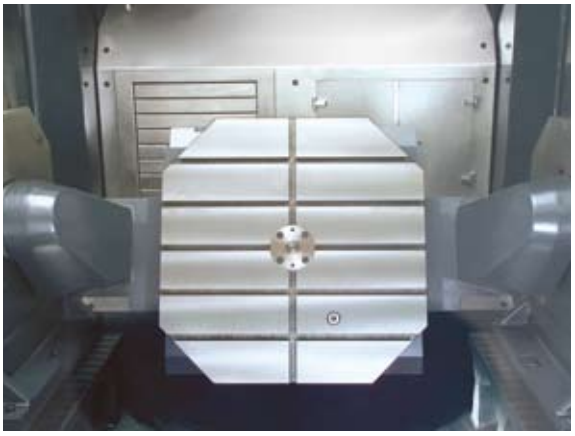
All the parts generating heat, such as axis motors, nut supports, electrospindles are monitored and cooled by means of a central conditioning system.

Furthermore, dedicated sensors measure the ambient and structural temperatures providing an overall monitoring picture.
In this way, maximum accuracy is achieved even with lengthy machining cycles requiring numerous re-machining operations and tool changes.

Anti-collision analysis

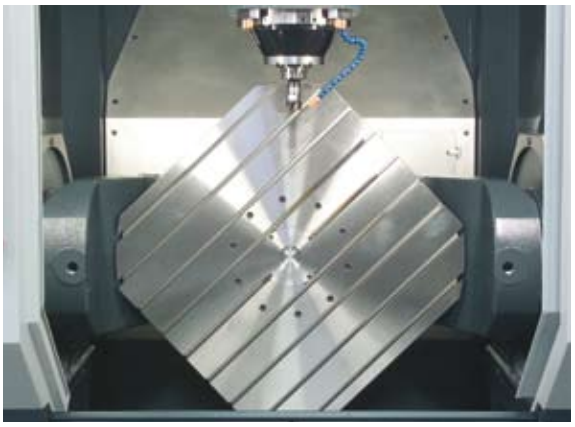
The 3D model of fixed and moving elements within the machining area, allows the modern CAD/CAM system to carry out an efficient anti-crash analysis ensuring a safe and reliable 5-axis tool path simulation.





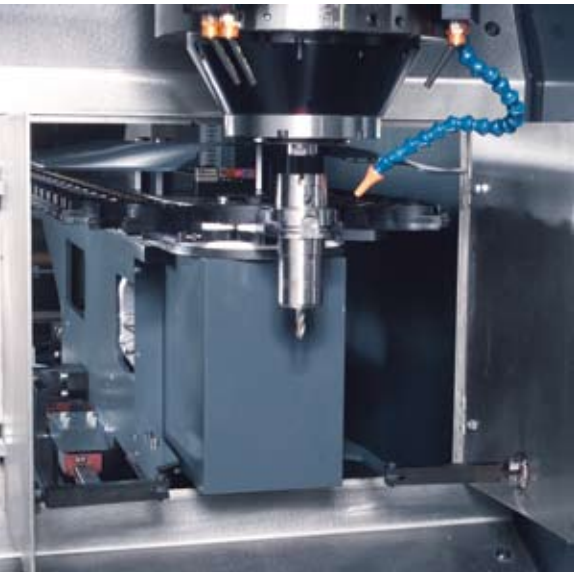
Configurability

The G996 3-axis standard configuration is equipped with a high-speed spindle that is able to deliver High Performance milling, boring, drilling and tapping.
As an option, the vertical axis can be fitted with a robust head with two indexed axes (BSH version) or a continuous head with 5 axes (M5A version).



The fixed worktable can be replaced by two different roto-tilting tables (trunnion type), each being particularly well dimensioned for the machining of complex geometrical forms.
In addition to the traditional robust table design with gears and backlash compensation (TRT/R version), torque motors drive design (TRT/K version) brings the technical characteristics of these solutions to the highest levels of performance. The maximum benefits deriving from the increased capabilities of programming systems on 5 continuous axes are also guaranteed.

All these solutions can easily be combined with automatic pallet changers with the aim of reducing down time and fully automating the production cycle.



Tool Changer and Automatic Presetting

The 24 to 60 position tool magazine (the latter with twin chain) is located in the machine tool structure. The magazine has a large access cover and is suitably protected from dust, fluids and swarf.
The tool measuring probe, which uses a laser beam incorporated in the machine tool bed, checks the length, diameter and shape with the tool rotating in working conditions, keeping any in process errors to a minimum.

Coolant and Chip conveyor Systems

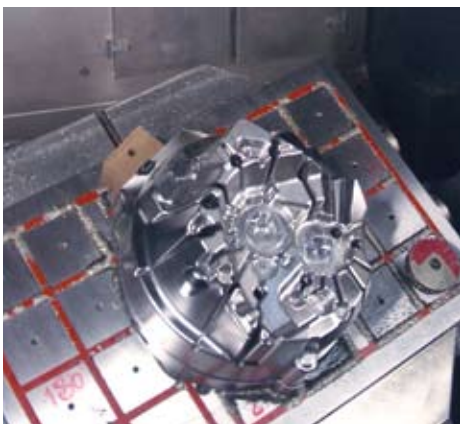
Minimum spray mist lubrication for tools is standard and a swarf collection bin with a large drawer is incorporated in the machine tool bed.
Other systems are available as options:

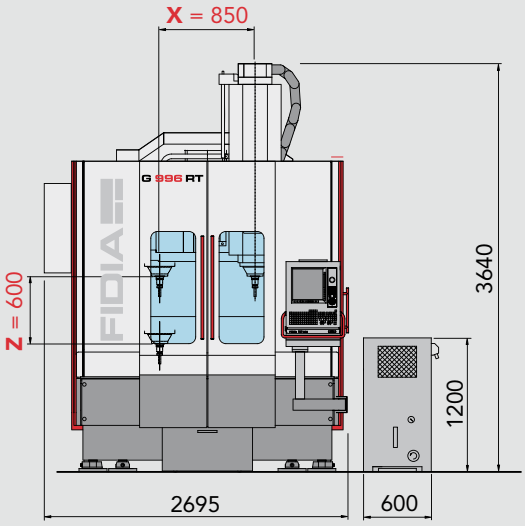
- external low pressure lubrication / cooling
- air mist through the tool centre
- high pressure coolant through the tool centre

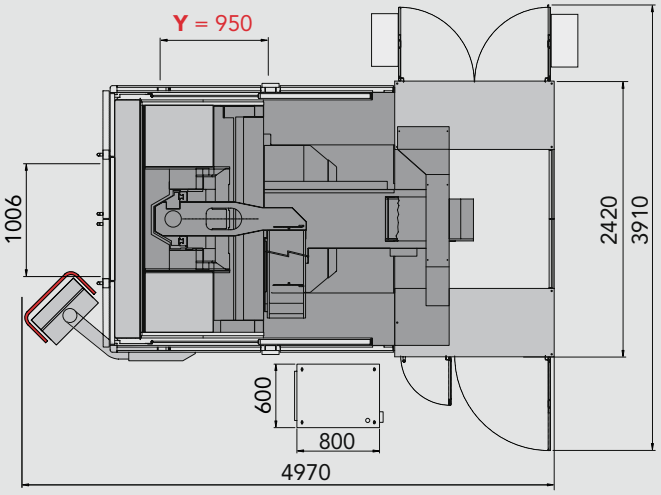
Each of these options requires a suitable swarf conveyor and collection system with tanks and filters of various sizes.

Dust and mist collection units

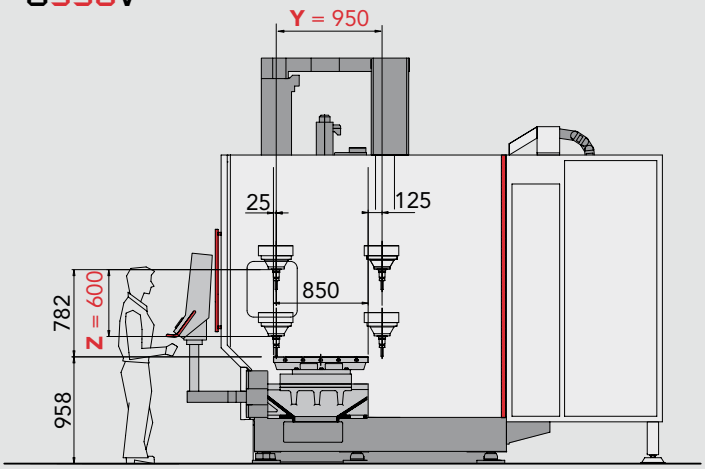
Machine tool components and the work environment can be protected by optional dust and mist collection systems that efficiently recover volatile substances such as graphite or resin dust, and oil mist.
The total enclosure of the work area together with optional protection with pressurised guideways and ballcrews enables to machine highly abrasive materials such as ceramics and carbon fibre.



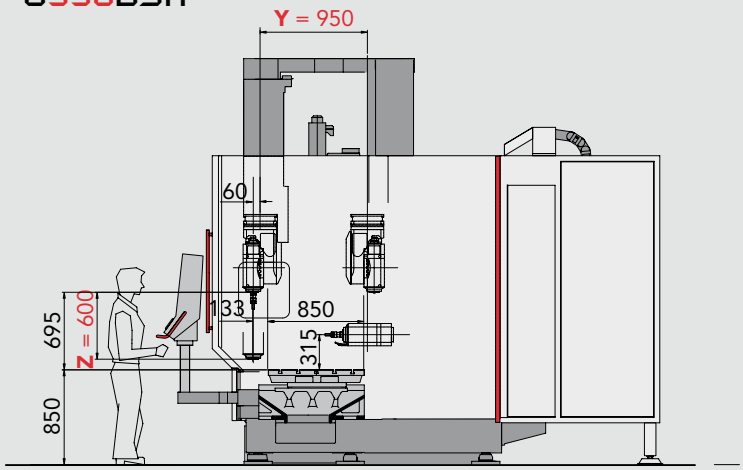




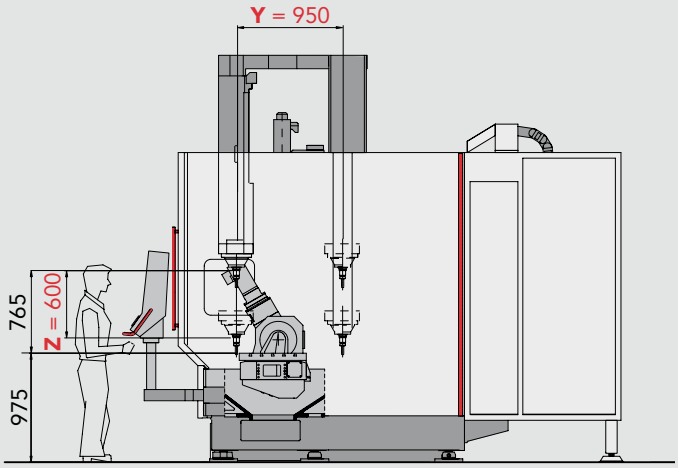
G996V



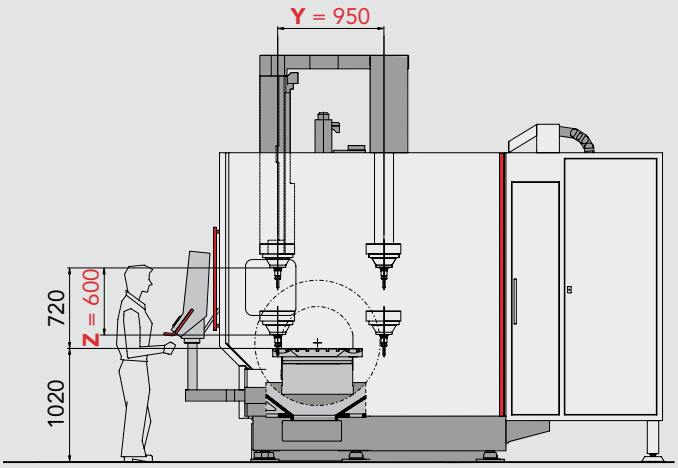
G996BSH

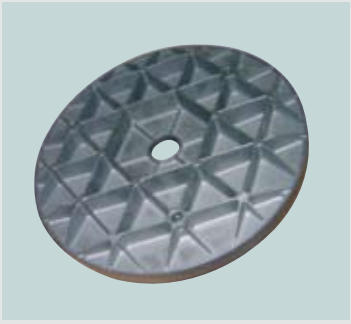


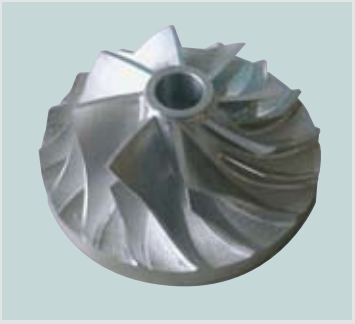
G996RT/R-800

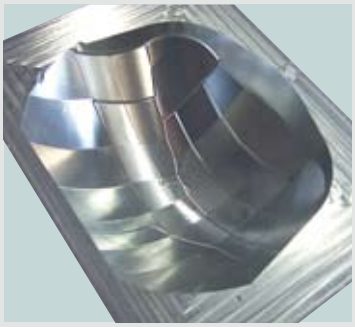


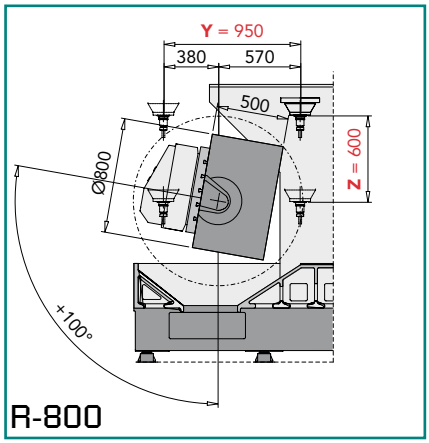
G996RT/K-1000



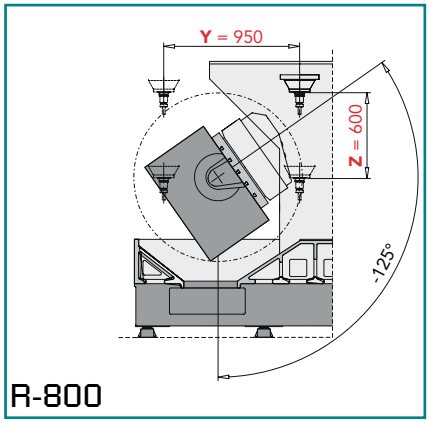




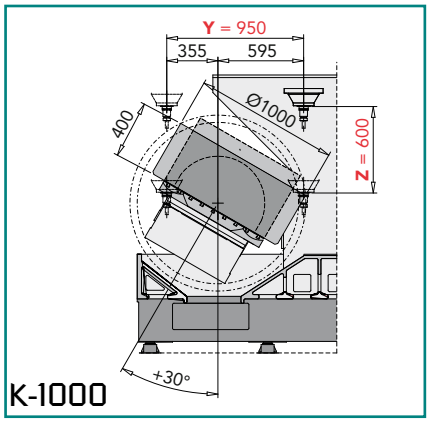




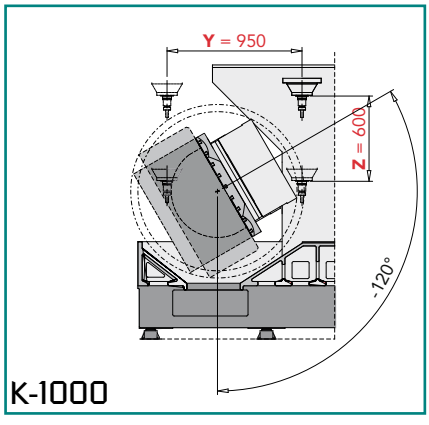
R-800



R-800



K-1000



K-1000

Technical data

Linear axis travel	
X	850 mm (33.46”)
Y	950 mm (37.40”)
Z	600 mm (23.62”)
Linear axis feed	
X Y Z	45 m/min (1771.65 ipm)
Maximum acceleration	
	10 m/s² (393.70 inches/s²)
Standard machine tool weight	
	16000 kg (35273.9 lbs)

Milling heads

Electrospindle 3 axes	**R / RT version**	
Maximum power (S6)	30 kW	
Maximum torque (S6)	105 Nm	
Max. spindle rotation speed	24000 1/min	
Toolholder	HSK63A	
Bi-rotary heads	**indexed BSH**	**continuous M5A**
Work area (X,Y)	970 x 1070 mm (38.19” x 42.13”)	850 x 950 mm (33.46” x 37.40”)
B axis travel	-24°/+102°	±110°
B axis pitch	3°	continuous
C axis travel	-177°/+180°	± 360,1°
C axis pitch	3°	continuous
Max. spindle rotation speed	24000 1/min	32000 1/min
Maximum power (S6)	55 kW	7.5 kW
Toolholer	HSK63A	HSK40E

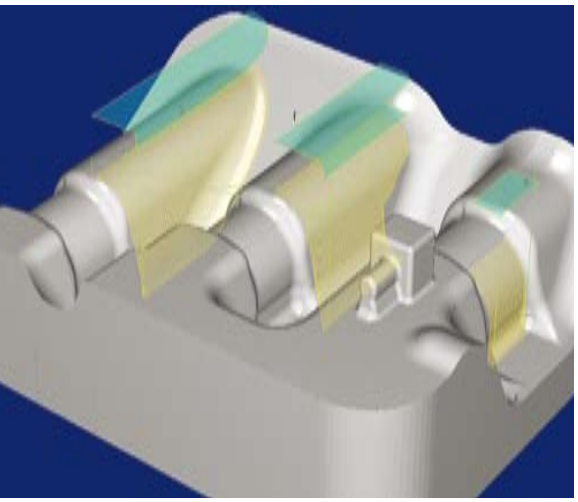
Standard table

Dimensions	1200 x 830 mm (47.24” x 32.68”)
Load capacity	2000 kg (4409.2 lbs)
No. and dimensions of T slots	n° 4+1(H7)x18 mm (0.71”) pitch 160 mm (6.3”)

Table RT	**R-800**	**K-1000**
Dimensions	600 x 600 mm (23.62” x 23.62”)	800 x 800 mm (31.50 x 31.50”)
Maximum rotation diameter	800 mm (31.50”)	1000 mm (39.37”)
A axis travel	-125° / +100°	-120° / +30°
C axis travel	rollover	
Load capacity	600 kg (1322.7 lbs)	1200 kg (2645.5 lbs)

The TRT/R-800 Option allows for the machining on 5 sides of a cylinder with a diameter of 800 mm and height of 500 mm.

The TRT/K-1000 Option allows for the machining on 5 sides of a cylinder with a diameter of 800 mm and height of 500 mm, or diameter of 1000 mm and height of 400 mm.



C20 numerical control

The Fidia C20 numerical control takes full advantage of the potential offered by combining the performance of the Pentium 4 and RISC Power PC processors. The control is designed to manage the most sophisticated high speed 5-axis applications with RTCP. It uses the Windows XP Professional operating system in multitasking mode and is a powerful tool in the cost-effective use of the machine tool.

Simple and reliable to use

The C20 has a 17" TFT video and imports CAD mathematics directly in the IGES, DXF and DWG formats thanks to the HI-MILL® 3D CAM and ISOGRAPH 2½D CAD/CAM. This improves and, at the same time, simplifies tool path management. The machining of hollow components, threads and inserts is programmed directly on the machine using the interactive graphics in complete safety owing to the use of softkeys and the ability to simulate all machining in real time.
All the functions available on the numerical control, whether standard or optional, can be rapidly consulted by means of the on line Help.
With the Teleservice Option, remote management of the NC is possible by telephone, ISDN line or similar for diagnostics, data exchange and maintenance.

High speed machining

The parameters, adapted to the specific dynamic characteristics of the machine, are optimized by the following tool path control functions:

- new look-ahead with advanced feed control for curvatures
- control of acceleration variations
- Active Tuning for optimizing performance in terms of accuracy/ speed
- parameter set that can be recalled by G functions for managing various machining conditions (roughing out, semi-finishing and finishing)

ENG-08/05

FIDIA

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

SINCERT
CERTO
UNI EN ISO 9001 : 2000
CERTIFICATO N° 019/A

FIDIA S.p.A.
Via San Crispino 94
35129 Padova - ITALY
TEL. +39-049-8071320
FAX. +39-049-8071320
info-pd@fidia.it

FIDIA GmbH
Voltastraße 8
63303 Dreieich-Sprendlingen
GERMANY
TEL. +49-6103-4858700
FAX +49-6103-4858777
info@fidia.de

FIDIA S.a.r.l.
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 de Zamudio
Edificio 208 - 48170 Zamudio
Bilbao - SPAIN
TEL. +34-94-4209820
FAX +34-94-4209825
info@fidia.es

OOO FIDIA
28, Volnaya str.
105187, Moscow,
RUSSIA
TEL. +7-095-7867724
FAX +7-095-7867725
info@fidia.ru

FIDIA Co.
1397 Piedmont , Suite 800
Troy - Michigan 48083
USA
TEL. +1-248-6800700
FAX +1-248-6800135
info@fidia.com

FIDIA DO BRASIL LTDA
Av. Salim Farah Maluf, 4.236 - 3° andar
Móoca - SÃO PAULO - Cep 03194-010 - BRAZIL
TEL. +55-11-69657600
FAX +55-11-61212718
info@fidia.com.br

FIDIA JVE
Beijing Fidia Machinery & Electronics Co., Ltd
N.8 East Dongfang Rd.
Chao-yang District
100027 Beijing - CHINA
TEL. +86-10-64605813 - 14 - 15
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

Service centres:

FIDIA SPA - SERVICE UK
2 Nene Crescent
Corby Northants
NN 172 JQ - UNITED KINGDOM
TEL/FAX +44-(0)1536504018
ian.houston3@ntlworld.com

SEMACO Tools & Software, s.r.o.
B. Němcové 787
CZ-790 01 Jeseník
CZECH REPUBLIC
Tel.: 00420-584-4585-20
Fax: 00420-584-4585-32
e-mail: info@semaco.cz

MUSTEK Takim Tezgahlari San.Tic.Ltd.Sti.
IMES Sanayi Sitesi C. Block 305 Sk. No.7
Dudullu 34776
Istanbul, TURKEY
TEL. +90-216-5401919
FAX +90-216-5404887
mustek@mustekt.com

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
pvanek@sancelink.co.za

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

H&H Machine Tools Australia Pty. Ltd.
45 Fordson Road
Campbellfield (Melbourne), VIC 3061
AUSTRALIA
tel: +61 3 9357 2368
fax: +61 3 9359 3887
mailto: thegmann@h-h.com.au

IE-MAT s.r.l.
Bv. De Los Alemanes No. 3387
5022 Barrio Los Boulevares
CORDOBA ,
C.P. X5022E OF ARGENTINA
TEL. +54-0351-4750483
FAX +54-0351-4750483
e-mail: ie-mat@ie-mat.com.ar

Manufacturing plants:

MECCANICA CORTINI S.p.A
Via Gorizia, 162
47100 Forlì
ITALY
TEL. +39-0543-770511
FAX +39-0543-795573
info@meccanicacortini.it

SIMAV S.p.A.
Via Valpellice, 67/A
10060 San Secondo di Pinerolo
TO - ITALY
TEL. +39-0121-500676
FAX +39-0121-501273
simavspa@fidia.it

SITRA AUTOMAZIONE s.r.l.
Via De Pretis, 1/E
15100 Alessandria
ITALY
TEL. +39-0131-248090
FAX +39-0131-248070
sitrasrl@fidia.it

SHENYANG FIDIA NC & Machine Co. Ltd
No. 25 Zhulin Road Dadong District
Shenyang - Liaoning Province - PRC
TEL. +86-24-88735601
+86-24-88235602
FAX +86-24-88721015
info@fidia.com.cn