

# D218/318/418

High speed machining centres



**FIDIA**   
Giving shape to design





innovative  
technology

The D218, D318 and D418 models enrich range of Fidia 5-axis high-speed milling centres. They employ milling heads that are versatile, compact and highly reliable. The linear axis structure, system layout and body design are the result of a project whose objective is to achieve extremely high-level dynamic performance, optimum swarf management and maximum ease of maintenance. The traditional high-bed construction of Fidia machines, the generous roller guides fitted with numerous roller rail casings, the ample dimensions of the worktable, the protection of the work environment, simplicity of use and ease of maintenance - these are all features of the new Fidia Group products.

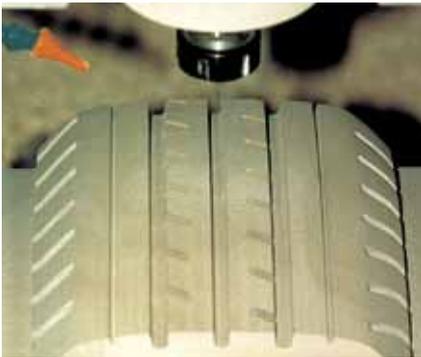




## forward-thinking solutions

Fidia has been a firm believer in high speed milling and has dedicated years of continuous research to the development of machines that have successfully operated worldwide since the early 90s. Continued market growth confirms the validity of the choices made by Fidia.

Above all, high speed means high cutting speeds and fast spindle rotation speeds. The resulting high axis feeds can only be maintained by specially designed machines in order to guarantee precision and surface quality simultaneously. An initial result is a reduction in machining and manual finishing times. But high speed also means being able to machine very hard materials and thus simplify production cycles by enabling parts to be produced with just one positioning operation.



The most widespread applications include the machining of moulds and dies, the making of prototypes and the production of limited series.

Designed for high speed machining, the D218, D318 and D418 find applications for the finishing of the complex dies and moulds used for die-casting and plastics, for the machining of graphite electrodes and resin models, for tyres and for the machining of light alloys.





fixed

bed

structure

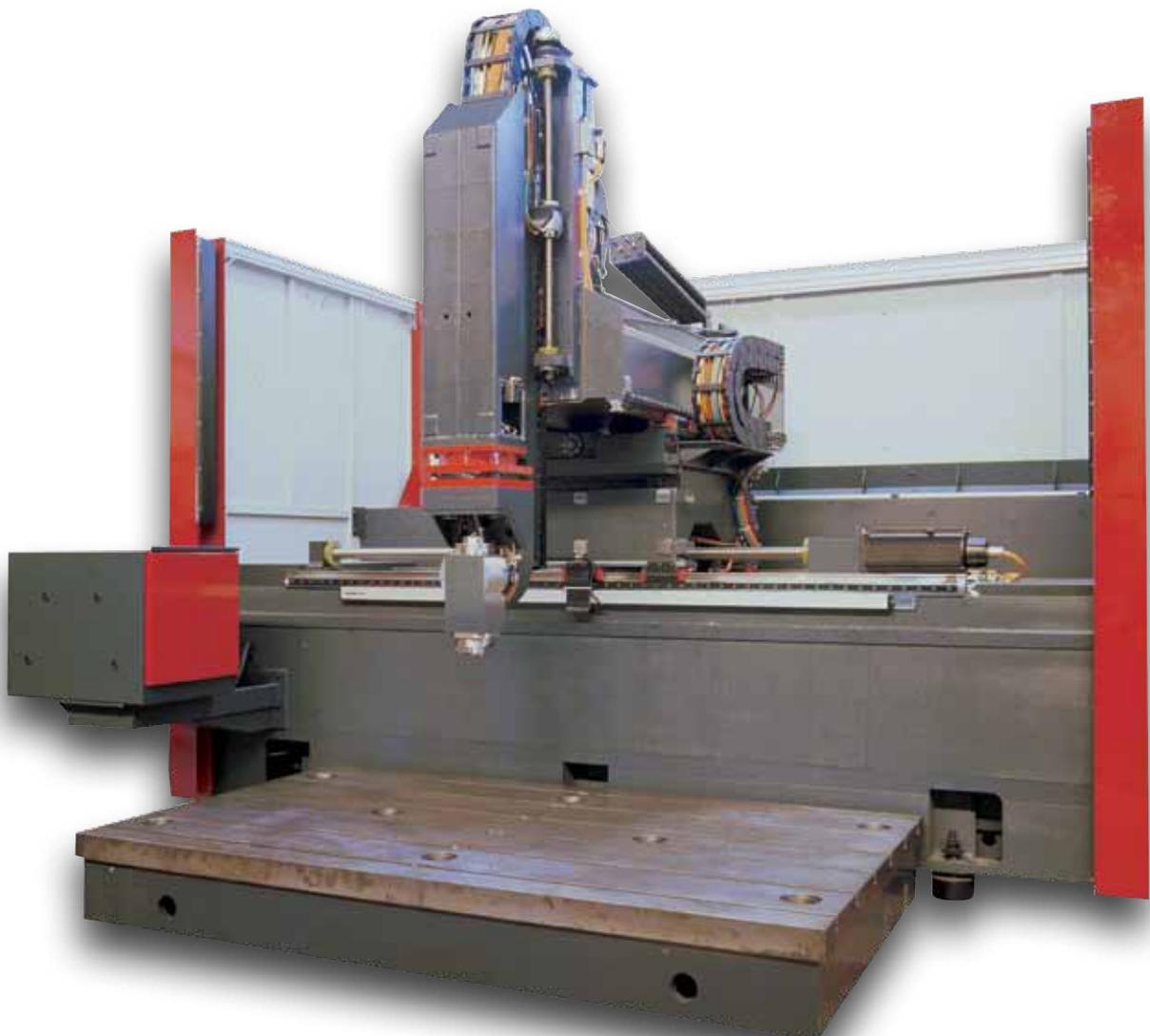
## The technical solutions

The criteria that have determined the choice of a fixed bed structure are:

- constancy of the forces at play, independently of the weight of the work-piece, so that servo unit settings can be optimized
- maximum visibility of the machining work
- ample scope for customization
- containment of overall machine tool dimensions

The “high bed” solution allows for a reduction in moving masses, particularly of the X axis, and results in superior dynamic performance.

The steel structure of the machines is designed on the basis of finished elements analysis and provides a very favourable mass/rigidity ratio.



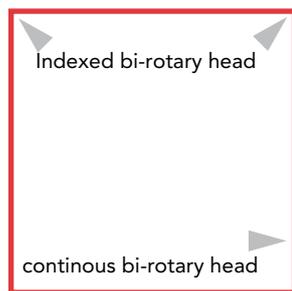


## Milling heads

The most suitable configuration for specific requirements can be selected from the different versions available:

- indexed bi-rotary head with high speed spindle and HSK50E toolholder;
- compact continuous bi-rotary head for high speed spindles and HSK40E toolholders.

Spindles are available with power up to 22 kW and a maximum speed of 32,000 rpm. All spindles have ceramic ball bearings and are cooled by the circulation of coolant at a controlled temperature. Minimum tool lubrication is standard. The lubrication system using emulsion oils and the bed flushing system are optional and are supplied with the chip conveyor equipped with selfcleaning filters.





## Components

The linear axis slides have roller bearings to allow for high feeds and to reduce friction. Friction can cause errors at inversion of movement, as well as over-heating of the machine structures.

The axis drives use digital technology with the following advantages:

- optimization of the dynamic behaviour of the machine tool;
- improvement in resolution and machining accuracy.



The linear axis transducers are the direct type in order to guarantee maximum accuracy and maintain this accuracy over time.

Axis movement is by means of re-circulating ball screws and brushless motors. Technology for the vectorial control used for the spindle drives gives an excellent performance even at low rotations.

## Automatic tool change

Compromises a chain with housing for 20 tools.

The automatic tool changer is incorporated in the machine tool bed and is protected from swarf and coolant. Tools can be loaded in complete safety from the left part of the machine in masked time.



## Tool presetting

Automatic presetting of tool length on the machine simplifies tooling procedures for new machining operations or when replacing worn tools.

Indispensable for unmanned operations, tool presetting is available either in a digital probe version or with a focused laser probe. In addition to verifying tool length, the focused laser system checks tool diameter and shape.





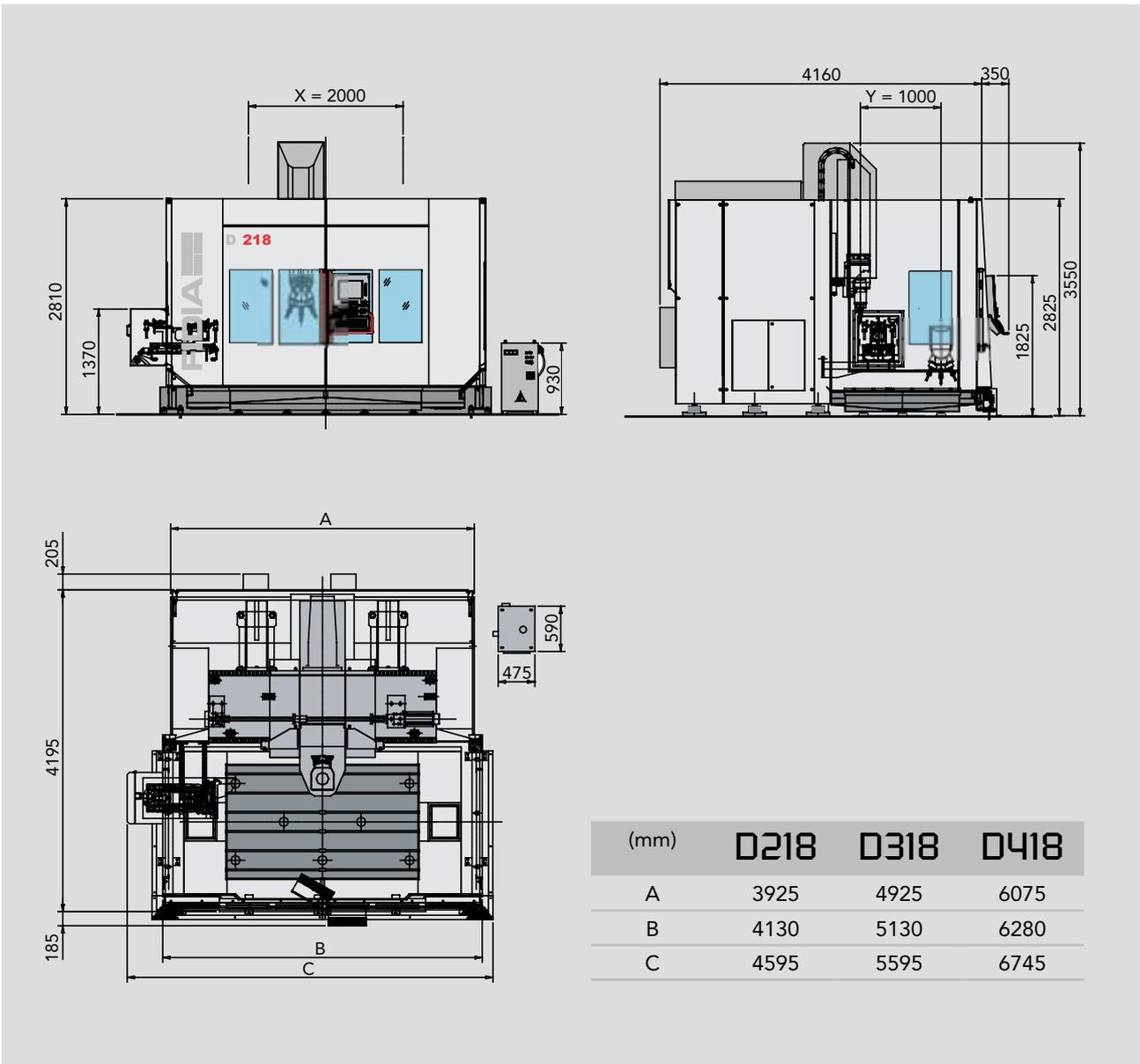
## Dust suction unit

Essential when machining graphite or resins, the dust suction unit consists of a high capacity suction device mounted externally to the machine.

The suction device is equipped with self-cleaning filters, offering a high degree of filtration, that are able to operate in the presence of explosive dust.

The suction device is connected by means of special tubing to the manifold inserted in the basement of the machine.

The machine tool structure, with the slides located far away from the work area and the total absence of moving parts below the work surface, make the D218 and D318 particularly suitable for this application.

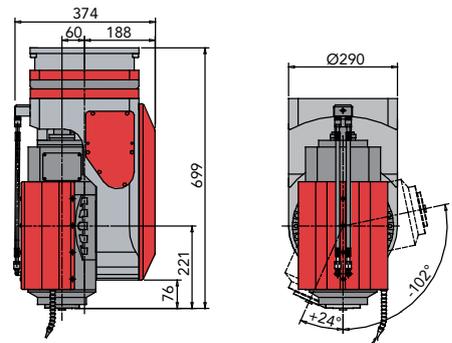




Technical data	D218	D318	D418
<b>LINEAR AXIS TRAVEL</b>			
X	2000 mm (78")	3000 mm (118")	4150 mm (163")
Y		1000 mm (39")	
Z		800 mm (31")	
<b>LINEAR AXIS FEED</b>			
X	20 m/min (787 ipm)	20 m/min (787 ipm)	15 m/min (590 ipm)
X Y		20 m/min (787 ipm)	
<b>TOOL MAGAZINE</b>			
	20 positions		
<b>MAIN OPTIONS</b>			
	swarf conveyor		
	suction system for graphite dust		
	digitizing		
	CAM 3D HI-MILL®		
<b>WORK TABLE</b>			
LENGTH	2500 mm (98")	3500 mm (137")	4500 mm (177")
WIDTH	1500 mm (59")		
T SLOTS	n° 6 pitch 250 mm (9.8")		
MAX. LOAD	10000 kg (22046 lbs)	14000 kg (30864 lbs)	18000 kg (39683 lbs)

### Indexed bi-rotary head

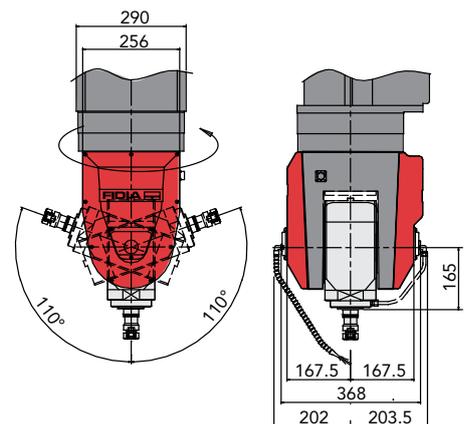
B AXIS TRAVEL	- 102° / +24°
B AXIS PITCH	3°
C AXIS TRAVEL	- 177° / +180°
C AXIS PITCH	3°
MAX. SPINDLE SPEED	30,000 rpm.
CONTINUOUS MAX. POWER (S6)	22 kW
TOOLHOLDER	HSK50E



Indexed bi-rotary head

### Continuous bi-rotary head

B AXIS TRAVEL	± 110°
C AXIS TRAVEL	± 360°
MAX. AXIS FEED	5000°/min
MAX. SPINDLE SPEED	32,000 rpm
CONTINUOUS MAX. POWER (S6)	7,5 kW
TOOLHOLDER	HSK40E



Continuous bi-rotary head



## 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.







**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

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

**FIDIA Sarl**  
47 bis, Avenue de l'Europe  
B.P. 3 - Emerainville  
77313 Marme La Vallée 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**  
24/27, Sadovaya Samotechnaya str.  
127051, Moscow - RUSSIA  
Tel : +7 (495) 792 52 45  
Fax : +7 (495) 792 52 47

**FIDIA Sp. z o.o.**  
ul. Pradzynskiego 12/14  
01-222 Warszawa - POLAND  
tel./fax: +48 22 256 73 74  
mobile: +48 601 486 789  
info@fidia.pl

**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 - 3º andar  
Móoca - SÃO PAULO - Cep 03194-010 - BRAZIL  
Tel. +55 11 29657600  
Fax +55 11 20212718  
info@fidia.com.br

**FIDIA INDIA PRIVATE LTD**  
H Block, Plot No. C-181  
M.I.D.C. Chinchwad,  
PUNE - 411019 - INDIA

**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

## Service centres:

**FIDIA GmbH - SERVICE CZ**  
CZ- 74706 Opava  
Tel/Fax +420 553 654 402  
j.vecerek@fidia.de

**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  
ekosova@3hltm.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

**AXIS SYSTEMS**  
Flat No.9, Building No.13,  
Shraddha Garden, Chinchwad  
Pune 411033 - INDIA  
Cell. +91 9881245460  
Telefax +91 20 27656682  
panks@axis-fidia.in

**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  
thegmann@h-h.com.au

**IE-MAT s.r.l.**  
Bv. De Los Alemanes No. 3387  
5022 Barrio Los Boulevares  
Cordoba - X5022EOF  
ARGENTINA  
Tel. +54 0351 4750483  
Fax +54 0351 4750483  
ie-mat@ie-mat.com.ar

## Manufacturing plants:

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

**FIDIA S.p.A.**  
Via Gorizia, 162  
47100 Forlì  
ITALY  
Tel. +39 0543 770511  
Fax +39 0543 795573  
info@meccanicacortini.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

**SHENYANG FIDIA NC & MACHINE CO., LTD.**  
5th Floor, South Administrative building,  
Tongji University,  
n.4800 Capo An Road. Jiading District,  
201804 Shanghai - CHINA  
Tel. +86 21 69585811  
Fax. +86 21 69585822



**CERTO**  
SAIGLOBAL company  
Sistema Qualità Certificato  
UNI EN ISO 9001 : 2008  
Aut. n. SGG 19C