

BSE

Bridge type High Speed Milling Machines



FIDIA 
Giving shape to design

BSE 1000



BSE 1000 FIDIA High Speed Bridge Type Vertical Machinig Center

With High Rigidity, High precision and High Speed, the Fidia BSE represents the evolution in Mold&Die machining .



Spindle

BSE 1000 milling centres can be equipped with different spindles designed to satisfy the most advanced market requirements:

The **18.000 Rpm** grease lubricated electrospindle allows high speed finishing and High Speed roughing when the **27 Kw/64.5 Nm** is delivered.

Optionally, **24.000 Rpm** is also available for the high quality finishing milling.

Spindle is water cooled to control thermal effects.



Large Workpiece load & Traverse capacity:

- **1.100 x 600 x 500 mm travels on X/Y/Z**
- **700 mm Distance betwwen Columns**
- **1.220 x 600 mm Table size with 1.500 kg. work piece load.**
- **The wide distance 700mm between twin column, allows the most convenience mounting of medium workpiece, fixture or rotary table etc.**

High quality finishing Electrospindles:

Optionals 24.000 Rpm and 30.000 Rpm 27KW/64.5Nm .



Rigid Bridge Column Type Construction

The characteristic twin bridge&column of BSE has been FEM calculated and it's made of one piece Meehanite, highest quality casting.

This design ensure maximum rigidity and performance in High Speed milling and reduces vibrations during heavy cutting operations.

Thermal influences are minimized, due to the short distance between spindle axis and the portal structure as well as the permanent motor spindle cooling system. The machine bed is a casting athermally symmetrical designed.



User-Friendly & Ergonomic guarding design

The design of the guards allows for optimum viewing of the part being machined as well as ease of loading with a bridge crane.

Totally enclosed guarding includes top side roof to keep all the chips, water and noise inside the machine and to have clean, quite and comfortable enviroment also around the machine.

The machine has been carefully to provide a reduction of overall floor space dimensions.

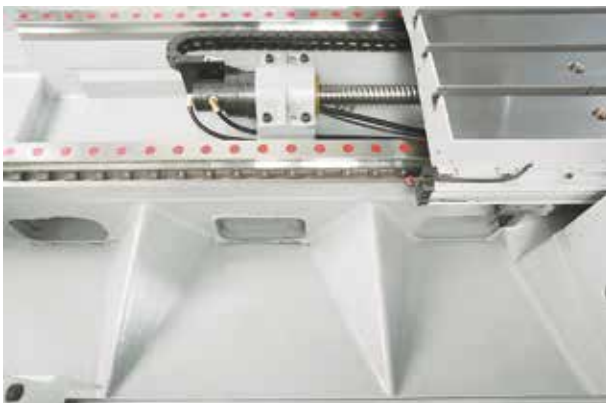


Ball screws

A ball screw central oil cooling system on X & Y axis draws the heat resulted by the very high speed transmission.

Ball screws are cooled on both ends to minimize heat generated by high speed velocity thus maintaining position accuracy on axis.

The mounting brackets on Z axis are integrated on the RAM castings to grant maximum rigidity.



Roller type Guideways

German high rigidity and heavy duty roller type linear motion guideways on 3 axis, provide low starting inertia, low friction and high acceleration rates. Servo motors and drives are optimized to ensure immediate & precise machine response necessary in high speed cutting, positioning and contouring.

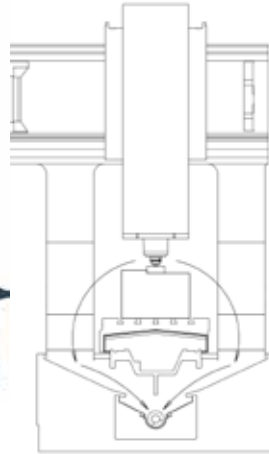
Digital drives & Linear scales

The Fidia digital drives technology and the use of high resolution optical scales allow to optimize the machine tool dynamic behaviour and to achieve the maximum machining resolution and accuracy in high speed.



Fidia Look-Ahead V5

Advanced Path Control, Acceleration feed forward, Jerk control and automatic parametrization for high speed milling are some of the features of the Fidia Look-Ahead V5 installed on the BSE machines.



Guarding and Chip Conveyor

A screw chip auger under machine central bed delivers efficiently chips to the chain type chip conveyor & bucket.

Excellent swarf and coolant disposal with continuous bed cleaning leave the working area always clean.

A viewing window located in the rear side of the machine guarding allows both to examine cutting conditions and easy maintenance.

Automatic Tool Changer

Disk Type 16 station automatic tool changer installed as standard.

Optionally, a 24/32 position tool changer and an automatic laser NC4 preset system can be supplied.



4 Axis Milling

When complex milling is required, a Rotary Table $\Phi 100 \sim 400$ mm with tailstock can be supplied as an option.

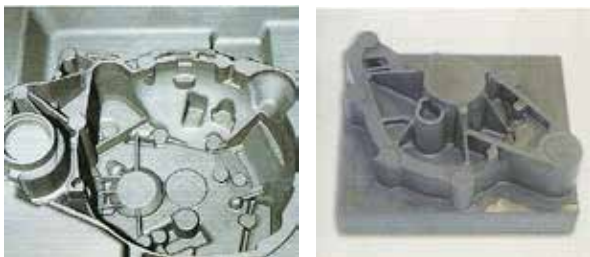
The rotary table can be positioned vertically or horizontally on the machine table.



Grafite and Resin Milling

BSE Machines can be suitable for Grafite and Resin milling with balls screw protections and a powerful suction system:

Optional Spindle up to **30.000 Rpm**.



BSE 1700

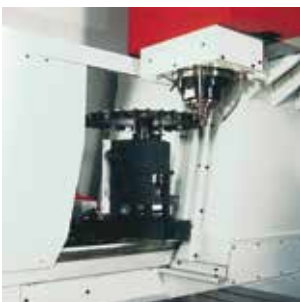


BSE 1700 - Large workpiece load & traverse capacity

**1750 x 1000 x 750mm X/Y/Z travels, with 1750mm twin column distance,
1600 x 1000mm table size with up to 3000 kg work piece load.**

Spindle with full power range:

Powerfull built-in motor spindle 18000 Rpm HSK63 26/32 kW 124/154 Nm .



Automatic Tool Changer and Chip Conveyor

Automatic tool changer 24 positions, disk type, is standard.

Optionally, a 32/40/60 position tool changer and an automatic laser NC4 preset system can be supplied.

Chain type chip conveyor is standard.

BSE 2200

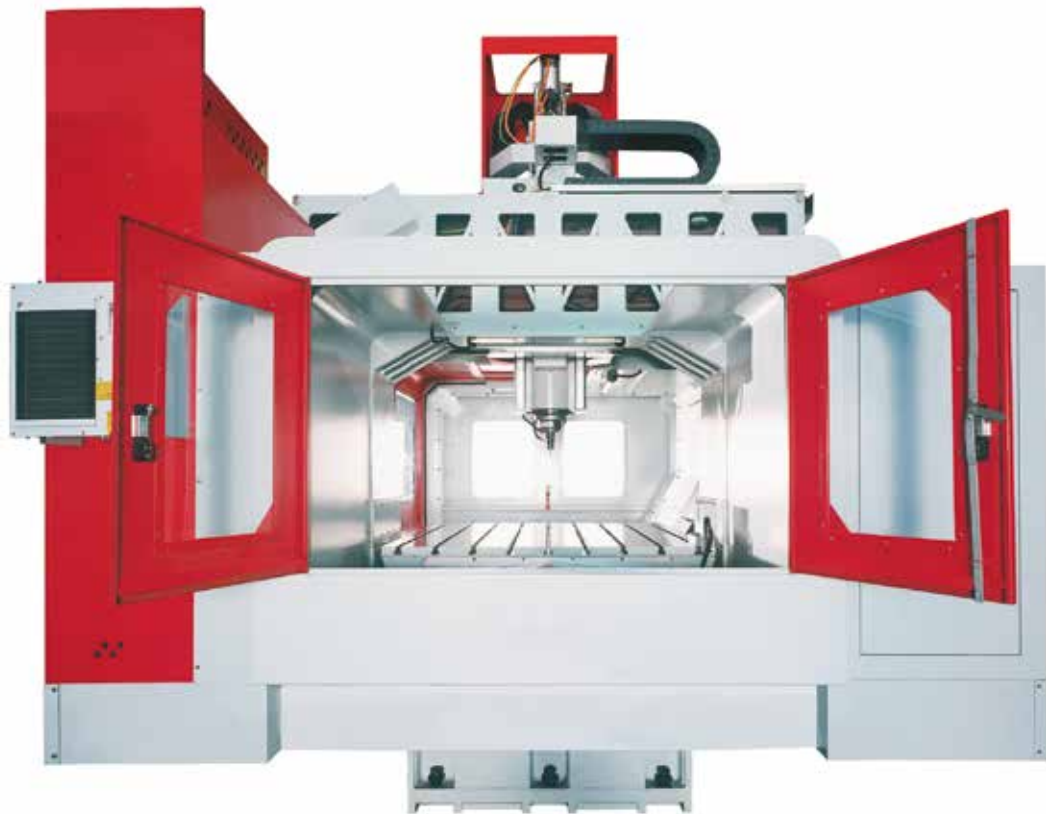


BSE 2200 - Large workpiece load & traverse capacity

**2200 x 1750 x 750mm X/Y/Z travels, with 1750mm twin column distance,
2100 x 1600mm table size with up to 6000 kg work piece load.**

Spindle with full power range:

Powerfull built-in motor spindle 18000 Rpm HSK63 26/32 kW 124/154 Nm .



Automatic Tool Changer and Chip Conveyor

Automatic tool changer 24 positions, disk type, is standard.

Optionally, a 32/40/60 position tool changer and an automatic laser NC4 preset system can be supplied.

Chain type chip conveyor is standard.

BSE 1700 2200



BSE 1700/2200 : SAME PROJECT - SAME PERFORMANCES

BSE 1700



Super wide & high rigid one piece casting twin columns

The very wide distance 1750mm between twin column, allow the most convenient mounting of large workpiece, fixture etc. The high column is extremely useful for tall workpiece and those which requires long cutting tools.

Rigid double column bridge type construction

The twin column&bridge has been FEM designed is made of one piece Meehanite highest quality casting following the most advanced high speed machines concepts.

The machine structure ensures rigidity and reduces vibrations coming from the tool during cutting.

High quality forged casting on saddle & ram

High quality special & tough forged casting FCD45 on saddle & ram to get the fastest feed response on Z axis movements.

Roller type Guideways

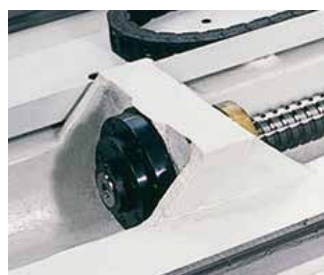
German high rigidity and heavy duty roller type linear motion guideways on 3 axis, provide low starting inertia, low friction and high acceleration rates. Servo motors and drives are optimized to ensure immediate & precise machine response necessary in high speed cutting, positioning and contouring.



BSE 1700 2200



BSE 1700/2200 : SAME PROJECT - SAME PERFORMANCES



Integrated ballscrew mounting brackets

The mounting brackets for 3 axis are integrated on the bridge base and saddle casting for the maximum rigidity.

This solution allow better rigidity and easier maintenance .

Cooling

Screw nuts are air-oil cooled to draw heat coming from high speed movements.

Spindle is water cooled to control thermal effects.





nC19 FIDIA NUMERICAL CONTROL

The **nC19** Numerical Control operator panel is based upon a double CPU PC-based architecture, to grant the best performances in both axis management and on-board programming.

nC19 FIDIA / XPOWER Digital Drives - Industrial based Architecture

- WINDOWS 7 32 Bit Professional
- Intel i3 ,4 Gb RAM, SDD 128 Gb HD
- 19" TFT Touch Screen graphic monitor
- High performance graphic interface, Integrated
- 3 Ethernet Gigabit Lan (RJ45)
- USB 2.0 (+ 3.0 on back panel) and RS-232 Serial Interface
- Power PC 64 Bits floating point axis control CPU

Digital Drives:

- Full digital with 32 bit DSP processing
- 90 Mbit/s FFB proprietary bus
- Sampling 8 kHz for axis, 16 kHz for Spindle

nC19 FIDIA - Standard Software for HIGH SPEED MILLING

- Dynamic LOOK-AHEAD with ACTIVE-TUNING, ACTIVE-DUMPING algorithms and JERK Acceleration variation control for better precision, surface quality and time execution.
- Velocity 5, 3 and 5 axis control advanced feature
- G set of parameters adapted to both roughing, semi-finishing and finishing operations
- VIRTUAL QUILL management for continuous and indexed heads
- On line Help:
- Log File: the log file records all events (messages, commands, etc.) sequentially to facilitate diagnostics, including remote diagnostics via Tele-Service.
- Graphics: simulation of machining programs and graphic display of the tool path are available both before and during machining.



2 2½D ISOGRAPH CAD/CAM software

On-board programming: pocket milling, flattening, profiling, drilling, boring and so on.

- Define geometric profiles
- Manage ISO files
- Import geometric elements written in DWG/DXF formats
- Import files written in IGES format (optional)
- Employ a powerful programming language
- Generate contouring of both opened and closed profiles
- Generate paths for re-machining of residual material
- Generate fixed drilling, tapping and boring cycles
- Machine pockets with a rectangular, circular or general profile
- Generate smoothing cycles from the dialogue window



GRAPHICAL ENVIRONMENT

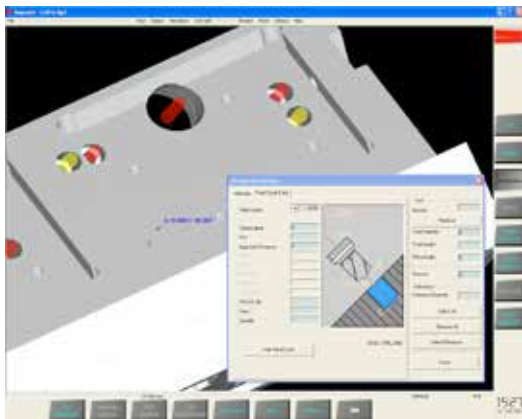


Data entry for milling or drilling programming is done with the aid of graphics and explanatory texts for an easier input of all necessary parameters so as to create the desired machining cycle.

Each program block or work cycle is clearly displayed graphically in 2D or 3D view in order to expedite the operator in achieving the required processing.

Cycles are planned specifically for the rectangular, circular or slot pocket machining for the rectangular or circular flattening, further to the several drilling cycles: for all of them a useful graphic help to programming is provided.

The "help on line" function is also constantly available and this allows for a quick reference of the use and programming manual directly displayed on the NC screen.



ISOGRAPH

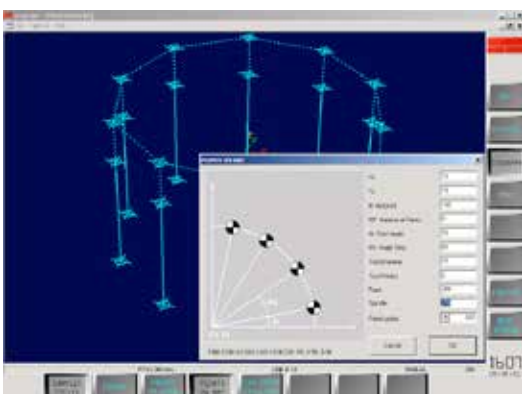
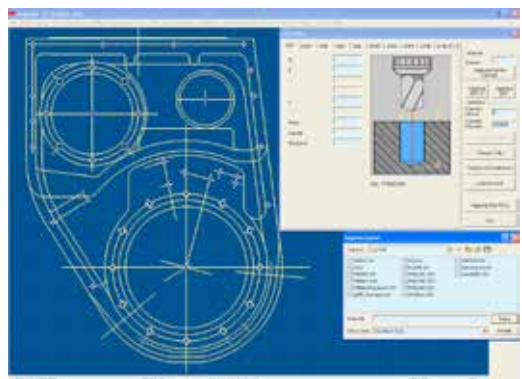
For the machining of more complex components or to simplify the geometric definition of profiles, **ISOGRAPH** offers a wide range of functions and dedicated cycles.

A powerful graphic editor allows to define straight lines, circles and points thus drawing profiles, placing fillets and chamfers, applying tool radius compensation and also inserting approaches. The above operations are performed simply by pressing the function keys and the matched dialog boxes: there is no need to remember any programming function and related syntax.

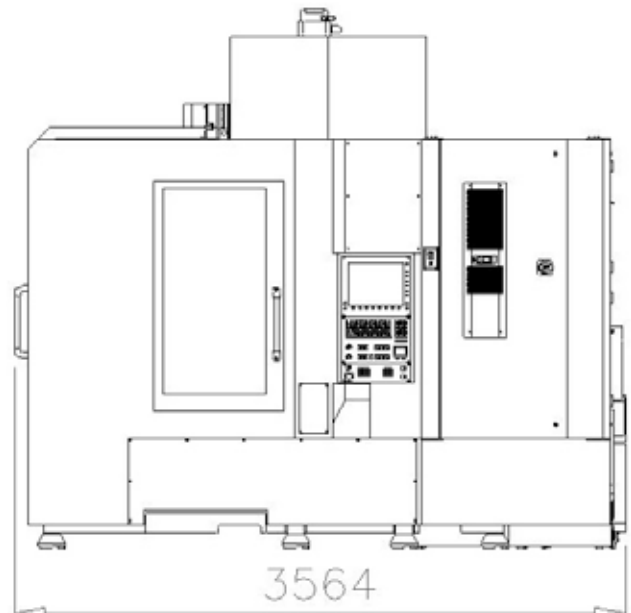
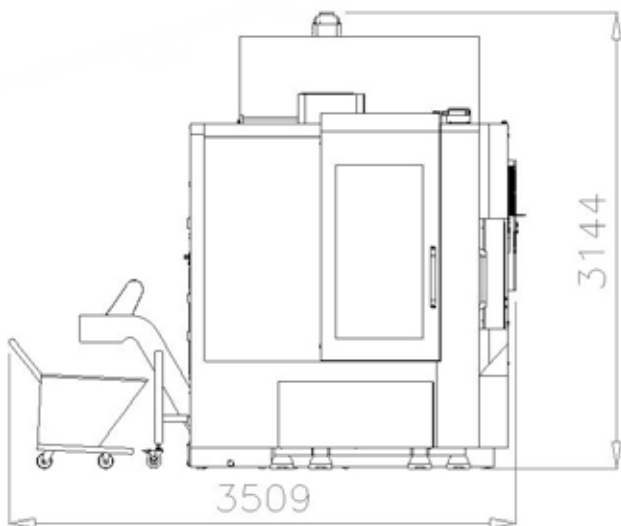
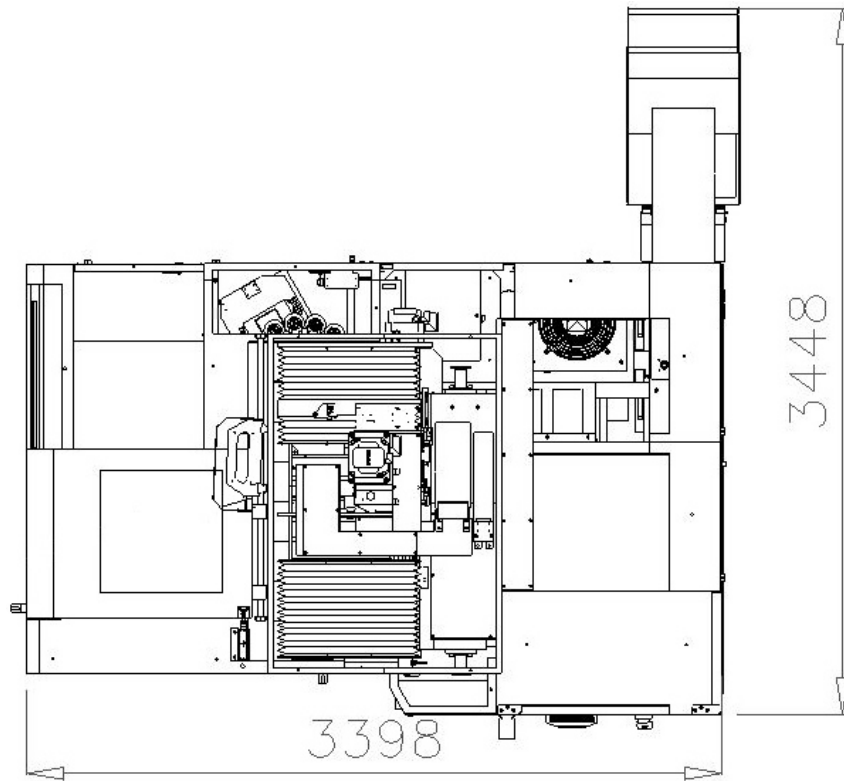
The pocket working cycle allows for the management of complex geometrical profiles; for the rectangular pockets it enables several side wall inclinations and also different radius and fillet of pocket profiles and sections.

The radius compensation through the **ISOGRAPH** dialog box grants an automatic approach and exit to and from the profile. It even enables the machining on open profiles by calculating several tool path levels. Furthermore it performs automatically the removal of any residual material.

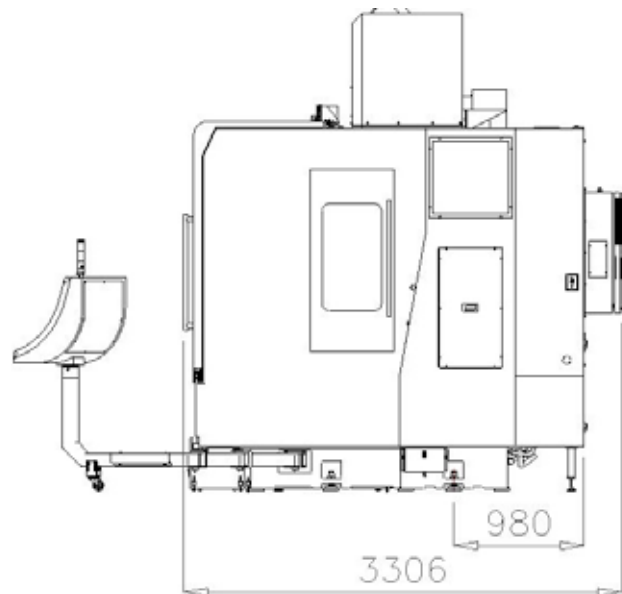
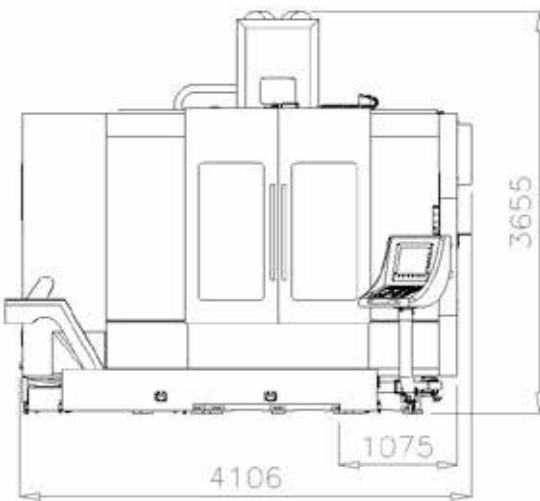
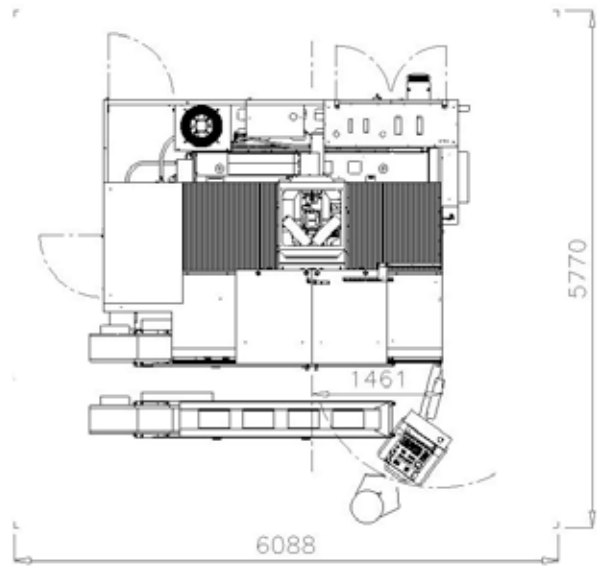
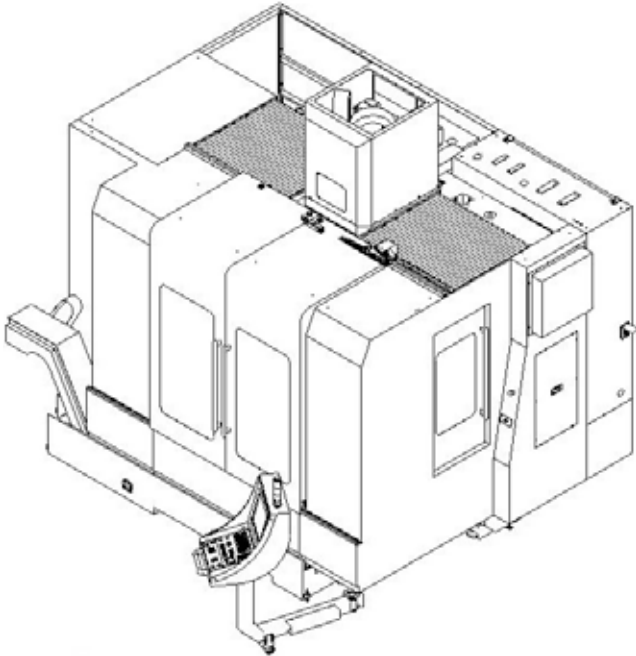
For drilling cycles, in addition to the definition of the points on grid and circumference, the definition of the points on a generic profile is provided.



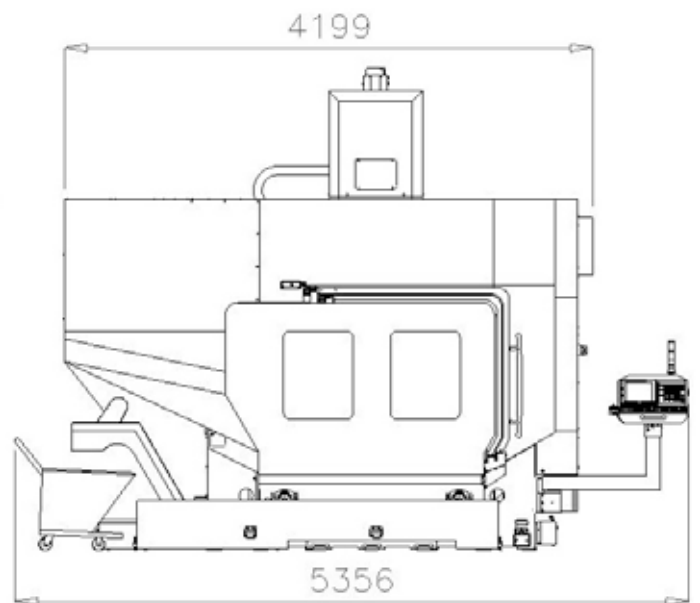
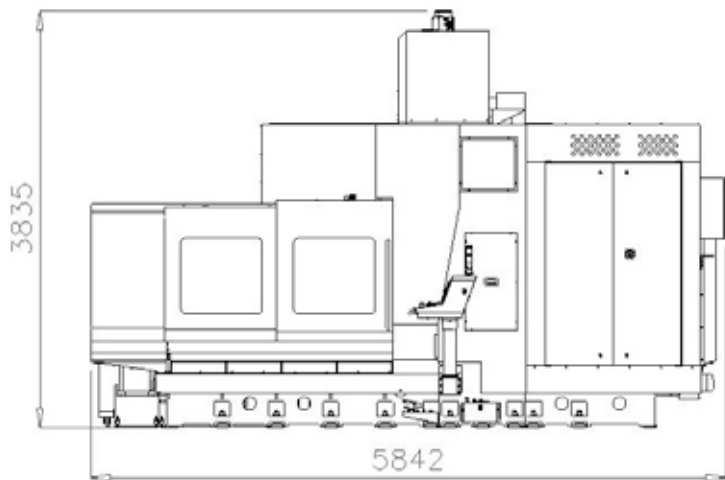
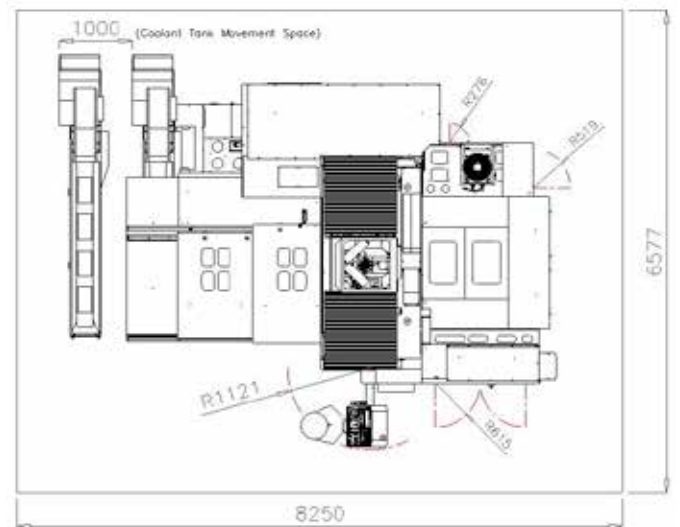
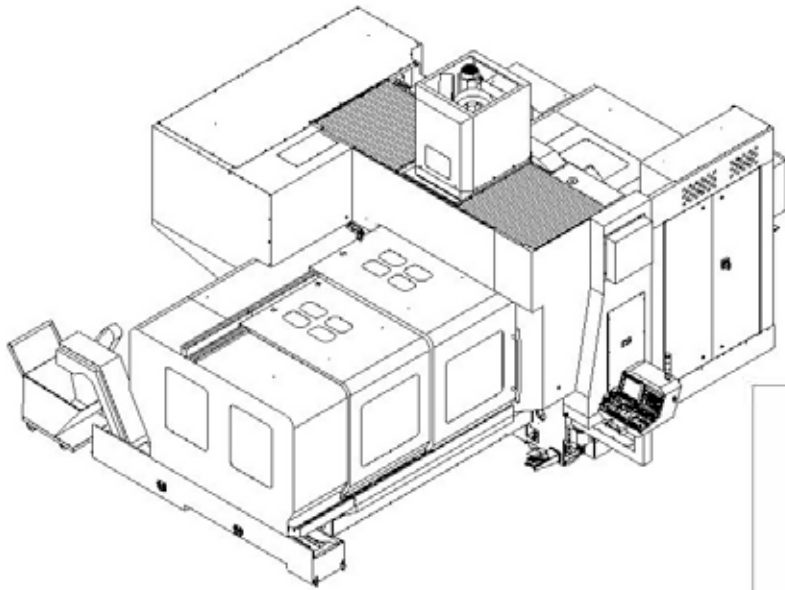
BSE 1000



BSE 1700



BSE 2200





BSE TECHNICAL CHARACTERISTICS

MODEL	BSE 1000	BSE 1700	BSE 2200
TABLE:			
OVERALL SIZE	1.220 × 600 mm	1.600 × 1.000 mm	2.100 × 1.600 mm
T-SLOT (SIZE x No. x PITCH)	18 mm × 5 × 100 mm	18 mm × 7 × 125mm	18 mm × 9 × 180mm
MAXIMUM LOADING	1.500 kg	3.000 kg	6.000 kg
TRAVEL AND FEEDRATES:			
X	1.100 mm	1.750 mm	2.200 mm
Y	600 mm	1.000 mm	1.750 mm
Z	500 mm	750 mm	
AXIS FEED RATE X / Y / Z	36 / 36 / 36 m/min	30 / 30 / 30 m/min	24 / 30 / 30 m/min
DISTANCES:			
DISTANCE BETWEEN COLUMNS	700 mm	1.750 mm	
SPINDLE TO TABLE TOP (Note 1)	35 mm ~ 535 mm	107 ~ 857mm	152 ~ 902mm
FLOOR TO TABLE TOP (Note 1)	650 mm	880 mm	895mm
SPINDLE:			
MOTOR	27kW - 64.5 Nm (S1)	26/32 Kw 124/154 Nm	
CONE	HSK 63A		
SPEED	18.000 Rpm Grease (Optional 24.000 / 30.000)		
SWING ARM AUTOMATIC TOOL CHANGER			
NO. OF POSITIONS	16 (24/32 Option)	24 (32 / 40 /60 Option)	
TOOL TO TOOL	6 / 12 Sec	3 / 10 Sec	
MAX TOOL DIAM./LENGTH (Note 1)	75 mm / 250 mm	80 mm / 250 mm	
MAX TOOL WEIGHT (Note 1)	7 kg		
BALLSCREWS			
DIAM. X / Y / Z	45 / 45 / 45 mm	55 / 50 / 50 mm	63 / 55 / 50 mm
PITCH X / Y / Z	12/ 12 / 12 mm	16 / 16 / 12 mm	
PRECISION CLASS	C3 - mm/ 300 mm : 0.008		
LINEAR ROLLER GUIDES			
WIDHT X / Y / Z	45 / 45 / 55 mm	55 / 55 / 55 mm	
ACCURACY			
POSITIONING (Note 2)	VDI 3441 P = 0.012 mm		
REPEATABILITY (Note 2)	VDI 3441 PS = 0.008 mm		
MISCELLANEOUS			
COOLANT TANK CAPACITY	200 liters	425 liters	
POWER REQUIRED	20 KVA		
PNEUMATIC REQUIRED	7 kgf / cm3		
MACHINE NET WEIGHT	11.000 kg	14.000 kg	20.000 kg
Note 1: May change according to the spindle type			
Note 2: Values measured in air conditioned room			

INCLUDED IN BASIC MACHINE	BSE 1000	BSE 1700	BSE 2200
Linear Scales	✓	✓	✓
Tool Changer	✓	✓	✓
Full splash guard	✓	✓	✓
Chain type chip conveyor & bucket	✓	✓	✓
Coolant system	✓	✓	✓
Spindle air blast system	✓	✓	✓
Working lamp	✓	✓	✓
Indication lamp for alarm/dwell & end of job	✓	✓	✓
Levelling bolt&pad	✓	✓	✓

MAIN OPTIONS	BSE 1000	BSE 1700	BSE 2200
SPINDLE OPTIONS			
24000 Rpm HSK 63A Air Oi Built in 27 kW / 64.5 Nm-S1	✓		
30000 Rpm HSK 50A Air Oi Built in 27 kW / 64.5 Nm-S1	✓		
24000 Rpm HSK 63A Air Oi Built in 21/27 kW 85/116 Nm		✓	✓
OTHERS			
Coolant through spindle 20 Bars	✓	✓	✓
RMP600 Workpiece probe & Fidia MQR10 measuring cycles	✓	✓	✓
NC4 Tool length&radius measurement	✓	✓	✓
Resin milling internal Kit	✓	✓	✓
Grafite (dry/wet) milling internal Kit	✓	✓	
Suction Unit 5000 m3/h 5,5 kW / Water Curtain ext. system	✓	✓	✓
Working area mist collector 900m3/h 1.5 Kw	✓	✓	
Oil Skimmer	✓	✓	✓
ATC			
Arm type 24 positions ATC	✓		
Arm type 32 positions ATC	✓	✓	✓
Arm type 40 positions ATC		✓	✓
Arm type 60 positions ATC		✓	✓
4TH AXIS			
4th Axis rotary table with tailstock Φ 100 mm	✓	✓	✓
4th Axis rotary table with tailstock Φ 150 mm	✓	✓	✓
4th Axis rotary table with tailstock Φ 200 mm	✓	✓	✓
4th Axis rotary table with tailstock Φ 250 mm	✓	✓	✓
4th Axis rotary table with tailstock Φ 320 mm	✓	✓	✓
4th Axis rotary table with tailstock Φ 400 mm	✓	✓	✓

EMC / CE / ISO CERTIFIED

**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 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 Vallée 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. 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 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 Valpellece, 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

