D321 Line

Compact Gantry

FIDIA

Why FIDIA

Milling Head

FIDIA Delivers:

The complete system, designed and made by FIDIA.
Machine, Head, Controls, 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

Drives

Module Interface IO-Line

HMS
Head Measuring System

D321 Line

The new D321 line is the best solution for mold finishing applications having a compact size with a very large working envelope.
The wide front door is ideal for loading large and heavy workpieces while offering an unsurpassed visibility.
Fast and precise, the new compact Gantry machines take advantage of the FIDIA Bi-Rotary M5A head.

As well as the standard D321 machine, Fidia offers two additional versions, the D321/M and the DL321.

Application areas

Automotive

The automotive sector demands far higher accuracy in mold machining. This is especially true for mold finishing applications.
Thanks to its long experience in the sector, Fidia has recently designed the new D321 line featuring all the options needed to find the perfect solution in high quality machining.

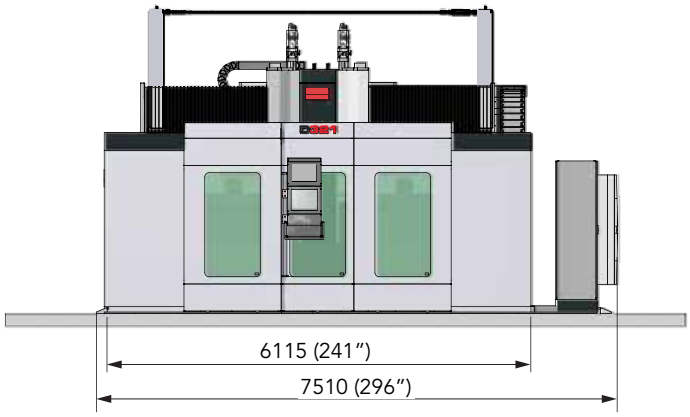
Aeronautical components

High accuracy and efficiency in 5-axis machining are mandatory when it comes to structural parts for the aeronautical sector. This is where the D321 line comes in offering innovative solutions when machining aluminium, titanium and alloy steel.

D321 - D321/M

What makes the D321/M different from the standard version is that it features a cast iron base that integrates the work-piece table, creating a monolithic structure.
This configuration allows for a lighter foundation slab and it is extremely appropriate for roughing machining requiring heavy removal.

	D321	D321/M
X Strokes	3000 mm (118”)	
Y Strokes	2200 mm (87”)	
Z Strokes	1100 mm (43”)	
Axis speed	24 m/min	
Table size	3000 x 2000 (118” x 79”)	
Load capacity	3500 Kg/m² (717 lbs/sqft)	
Milling spindles	M5A/55-24, M5A/55-20G M5A/65-15	M5A/55-24, M5A/55-20G M5A/65-15, M5A/65-12G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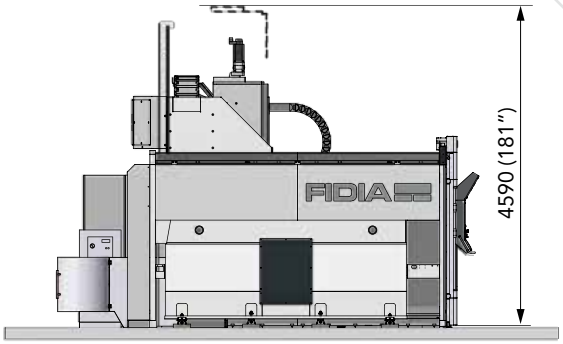
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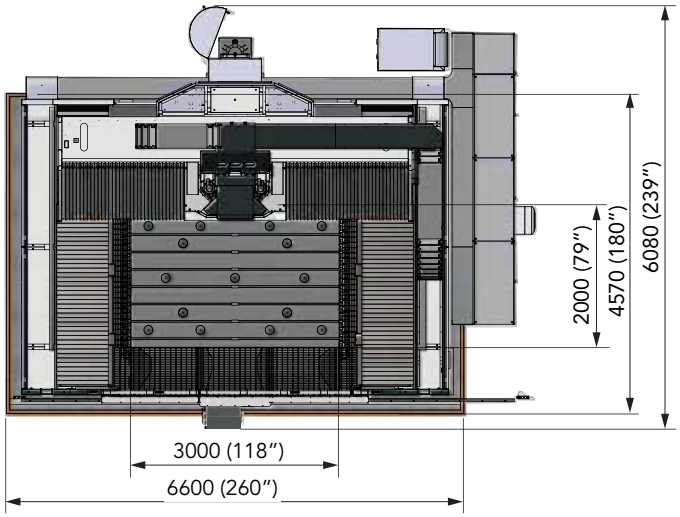
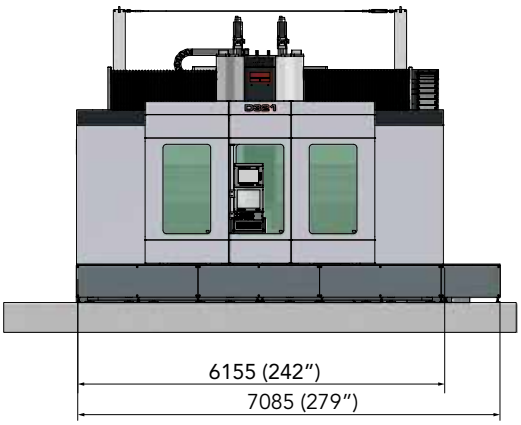

2000 (79")
4570 (180")
6080 (239")
3000 (118")
6600 (260")

D321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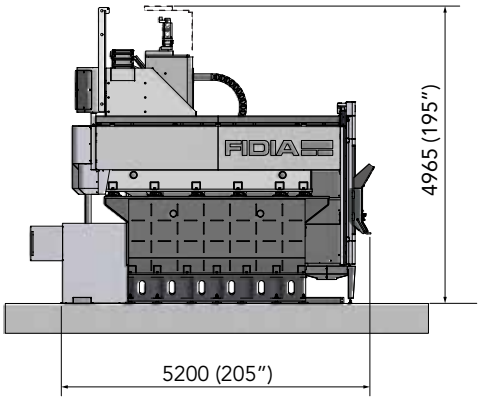
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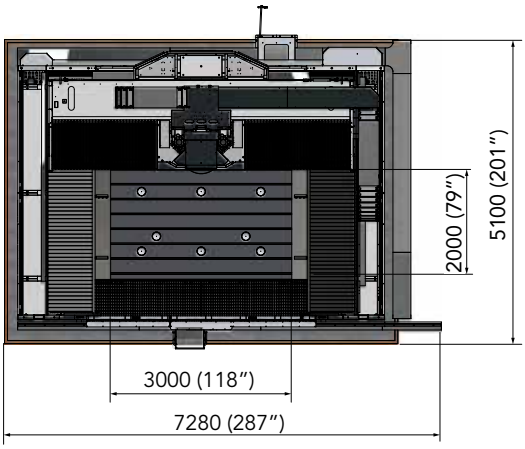
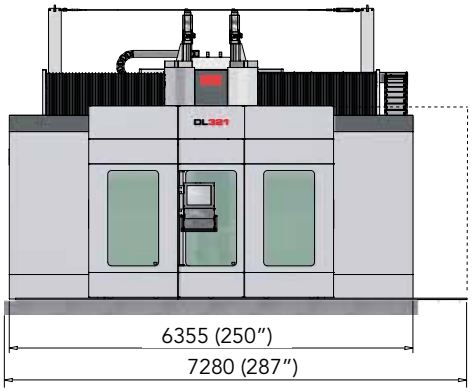

2000 (79")
5100 (201")
3000 (118")
7280 (287")

D321/M

DL321 - DL221

On the DL321 direct linear motors replace the re-circulating ball screws on the X & Y axis, reaching a speed rate up to 60m/min.

	DL321	DL221	DL261
X Strokes	3200 mm (126”)	2500 mm (98”)	2500 mm (98”)
Y Strokes	2200 mm (87”)	2200 mm (87”)	6000 mm (236”)
Z Strokes		1250 mm (49”)	
X Y Axis speed		60 m/min	
Z Axis speed		30 m/min	
Table size	3000 x 2000 mm (118” x 79”)	2500 x 2000 mm (98” x 79”)	2500 x 6000 mm (98” x 236”)
Load capacity		3500 Kg/m² (717 lbs/sqft)	
Milling spindles		M5A/55-24, M5A/55-20G	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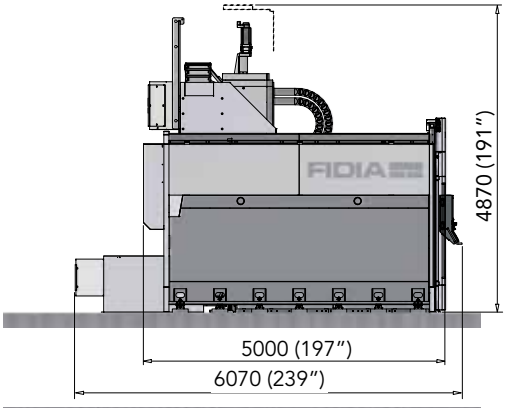
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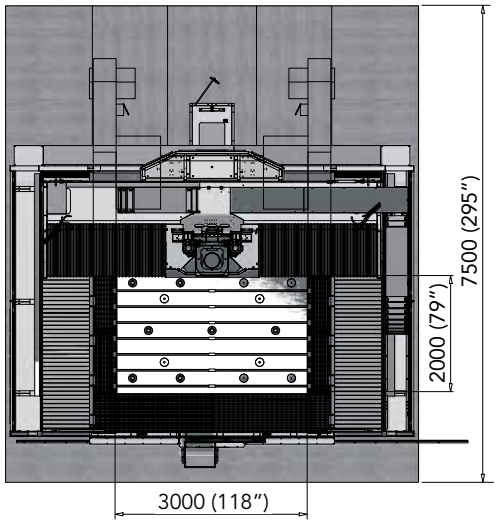
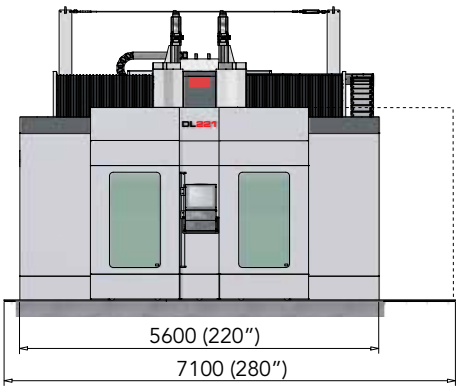
6070 (239")


7500 (295")
2000 (79")
3000 (118")

DL321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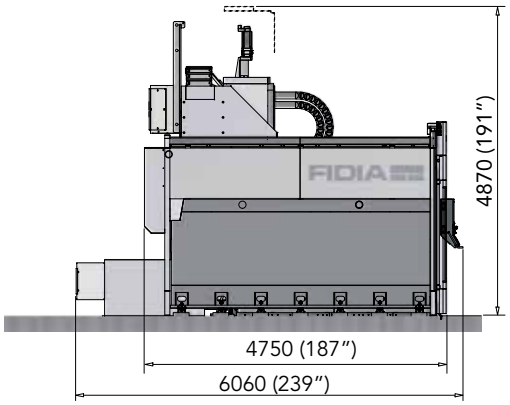
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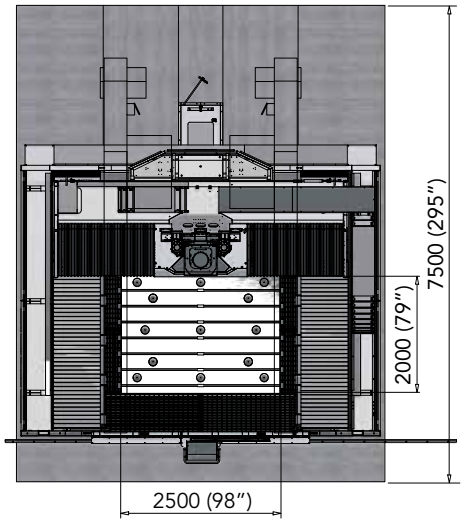
6060 (239")


7500 (295")
2000 (79")
2500 (98")

DL221

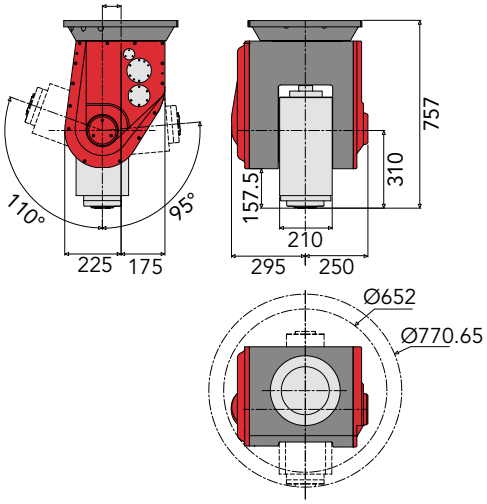
M5A head

Bi-Rotary M5A head

M5A head enhances the high-speed cutting performances of the D321 line and fits over a wide range of applications. It is built around a cast iron structure meant to deliver stiffness and thermal stability during demanding machining on steel, cast iron and aluminum.
The compactness and the geometric structure of the head enables it to reach the most difficult areas and gives the ability to use shorter tools.

The axes cinematic chain is provided with life-time automatic backlash recovery system and it is able to perform 0.001° resolution.

The high dynamic of the axis of M5A head allows the application of the D321 line in 5 axis high speed machining. The same head can be used in 3+2 axes positioning mode, stiffly clamping the rotary axis by means of powerful hydraulic breaks, exploiting the maximum torque and power of the spindle.



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	55kW	65 kW	65 kW
Toolholder	HSK-A63	HSK-A63	HSK-A100	HSK-A100

Tool magazine

The machine is equipped with an automatic tool changer with 24 or 42 positions, an automatic opening safety door and an external opening for the loading and unloading of tools.
A laser measuring tool system is also positioned inside the tool magazine.

Working area

On the D321 and DL321 the working table is made of cast iron as an independent part fastened to the floor, while on D321/M the table is integrated into the monolithic structure of the machine.
The surface of the workpiece table has T slots to clamp the parts. The new line D321 combines a compact footprint with a remarkable working volume.

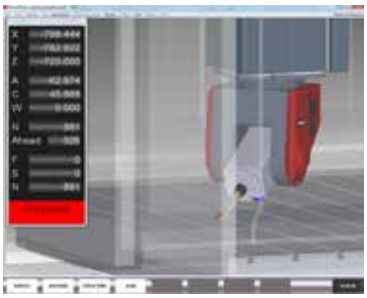
C20 & C40 Numerical Controls

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.

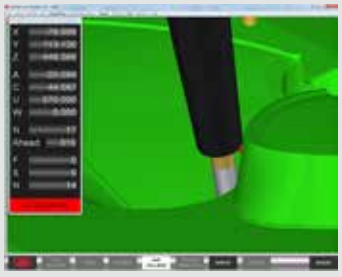
ViMill®

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.



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