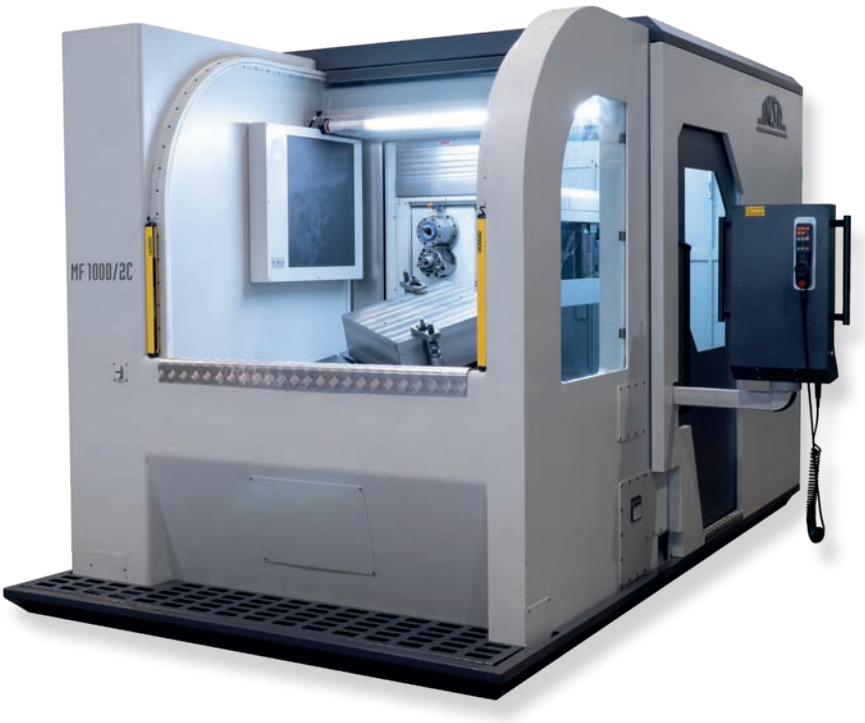
MF 1000/2C

Deep drilling and milling machine for molds and mechanical parts



IMSA®

Specialists in Precision Gundrilling

The Gun Drilling Machine IMSA MF1000/2C is the latest evolution of previous MF1000C machine, now with Dual Spindle configuration, which means, two separate machining units, located on the same headstock: one for tapping and machining operations, and one for deep drilling by gun drill tool.

MF1000/2C is dedicated to molds, mold inserts and blocks up to 2 / 4 tons (depending on the chosen table). MF1000/2C can also be used to drill centerline and off-center deep holes in cylindrical parts.
This machine can execute straight, angled or compound-angled holes, depending on the chosen table: fixed table, rotary table or rotary-tilting table (see page 8).
Rigid structure thanks to Gantry style column. No foundation required.

Deep Drilling: Drilling depth in single operation L=120xD up to 1000 mm. Drilling method: gun drill tool. Optimal drilling diameters: 4 - 25 mm solid, up to 32 mm in counterboring.

ISO40 Auxiliary Milling Head: The milling head is positioned on the headstock, on top of the drilling slide, and is optimized for machining operations that prepare and complete the deep holes (face milling, spot facing, spade drilling, tapping or thread milling). No intervention required for switchover gun drilling/milling and back: fully-automatic commutation by M functions in 8 seconds.

Read a technical introduction to deep drilling:
https://www.imsaitaly.com/en/articles/the-deep-drilling-process

MF1000 /2C on IMSA website
https://www.imsaitaly.com/en/mf1000-2c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Gun drilling capabilities

Drilling depth in single operation: 2 steadyrests support the gun drill tool and enable to drill L120xD up to max. 1000 mm. Drilling method: gun drill tool. Optimal drilling diameters: 4 - 25 mm solid, up to 32 mm in counterboring. 11kW 6000rpm liquid-cooled gun drilling spindle motor.

Heidenhain CNC with deep drilling cycles developed in team by IMSA/Heidenhain engineers. Specific IMSA functions for deep drilling process control:

- Electronic workpiece approach
- Electronic check against gundrill-breaking, by reading the cutting effort
- Special coordinate transformation function for angled machining.

Accurate oil control

Temperature, pressure and oil cleanliness are fundamental parameters to ensure continuous trouble-free gundrilling operations. For this reason the MF1000/2C is equipped with the best solutions that can automatically manage those three parameters to the most suitable value:

- for oil supply to the gundrill: high-pressure pump managed by cnc and inverter;
- for oil clarification: an automatic filtering system, inside the machine enclosures;
- for oil cooling: a heat exchanger for the deep drilling oil.

The chillers for oil cooling and for spindle cooling operate on parallel circuits, and can be flexibly positioned around the machine. Chip conveyor as standard equipment. Floor pans included in standard machine configuration.

Milling capabilities

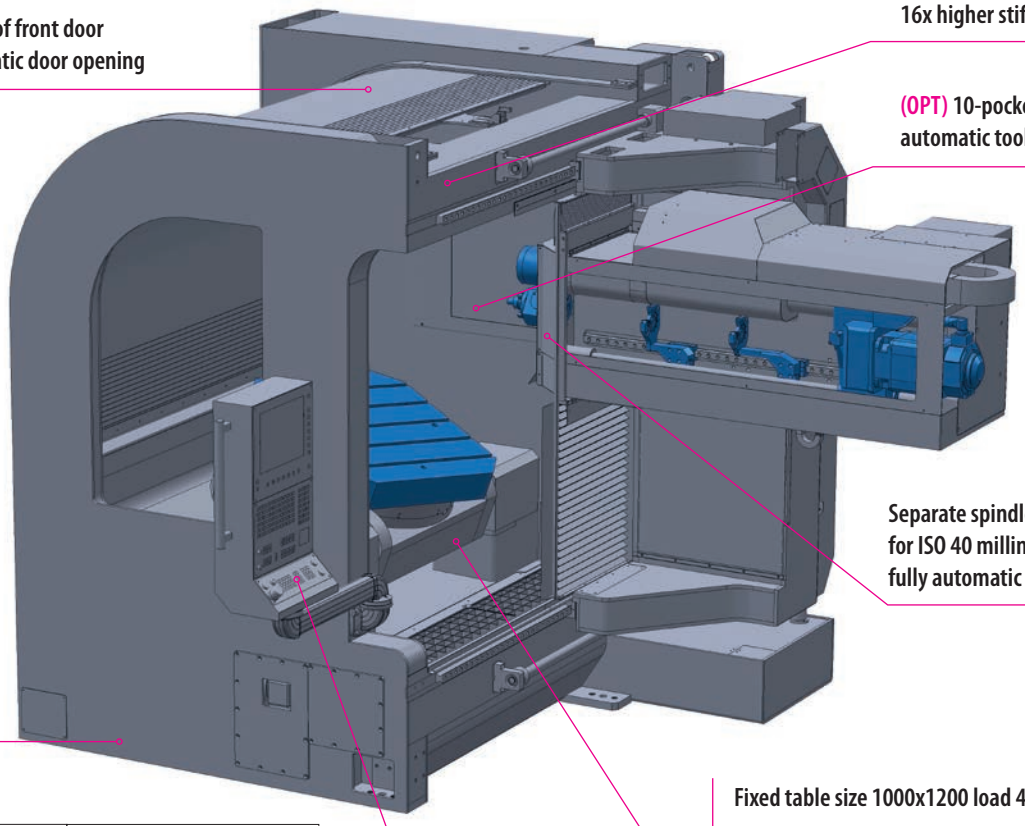
The ISO40 milling head is positioned on the headstock, on top of the drilling slide, and is optimized for machining operations that prepare and complete the deep holes (face milling, spot facing, spade drilling, tapping or thread milling, ...)
Spindle motor 13kW (S1), 6000 rpm, 115 Nm torque, liquid-cooled.
Internal oil passage in tool center 50 bar. Internal air passage as option.
Oil hose for external tool lubrication. Air hose for external tool cooling.
Tool changer with 10 pockets for ISO40 milling tools.

The switchover

No intervention required for switchover gun drilling/milling and back: fully-automatic commutation by M functions in 8 seconds. No need of machinists' presence.

The Structure

Vertical gantry structure, resulting in better rigidity: bending moment 4 times lower than in traditional structure, 16 times higher rigidity. This numerical value is true and analytically obtained from the comparison of the static scheme and the related stress. The gantry column ensures the best performances all along the Y axes travel.
The machine is conceived with a "shell-like" structure. That is, the machine self-supporting structure integrates table and gantry column, and requires no foundations.
A modern coverage encloses the whole machine, so that oil is contained inside the machine and cleanliness of the workshop area is ensured. The frontal aluminum shutter door ensures spacious loading access for work piece loading with hall crane or fork lift.



Oil-proof front door
Automatic door opening

Gantry column structure provides
16x higher stiffness

(OPT) 10-pockets ISO 40
automatic tool changer

Separate spindles on the same headstock,
for ISO 40 milling and gun drilling:
fully automatic switchover

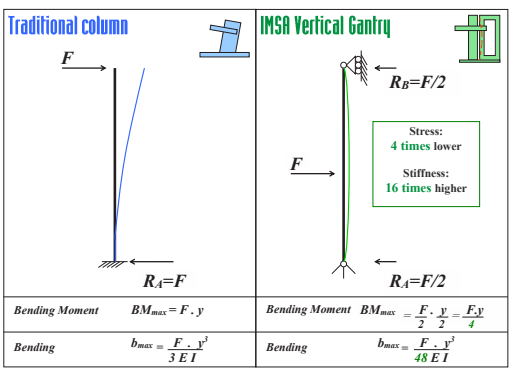
Self-supporting
structure:
no foundation
required. Oil tray
accommodates the
whole machine.

Fixed table size 1000x1200 load 4,0 T

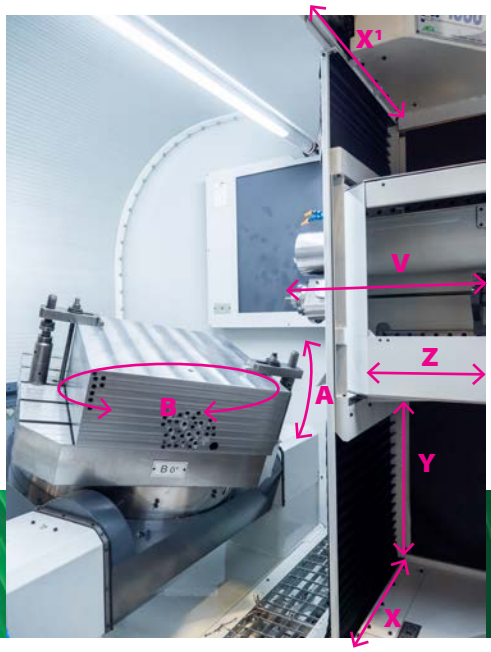
(OPT) Cnc Rotary table
size 800 x 900
load 4,0 T

(OPT) Cnc Rotary/Tilting table
size 800 x 800
load 2,0 T

CNC HEIDENHAIN
TNC 620



MF1000/2C is available in two versions:
for workpieces up to 2 tonnes or for workpieces
up to 4 tonnes. Learn more on page 8.



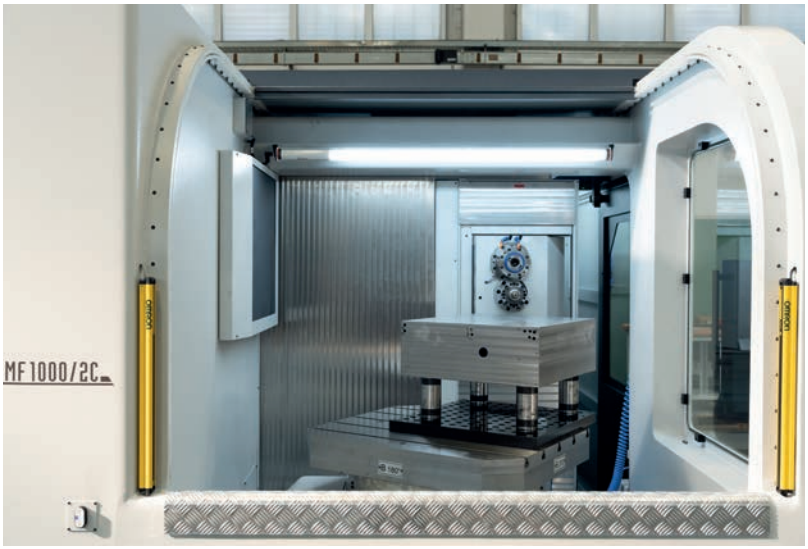
LINEAR MOVEMENTS		
Drilling depth in single operation (max. L 120 x Ø)	V axis	1,000 mm
Column longitudinal travel	X axis	1,000 / 1,100 mm
Headstock vertical movement, net usable travel	Y axis	500 mm
Approach stroke of drill slide and milling travel	Z axis	450 m

TABLE ➡ see next page

GUN DRILL SPINDLE	
Optimal drilling diameter, solid, min-max	4 – 25 mm
Optimal drilling diameter, in counterboring, max.	32 mm
Drilling spindle speed, adjustable	0 – 6,000 rpm
Drilling spindle motor power	(S1) 11.0 kW
Motor cooling	liquid
Internal oil passage	120 bar
Oil temperature adjusted to	27 - 32 °C
Filtration degree	max 16 µ

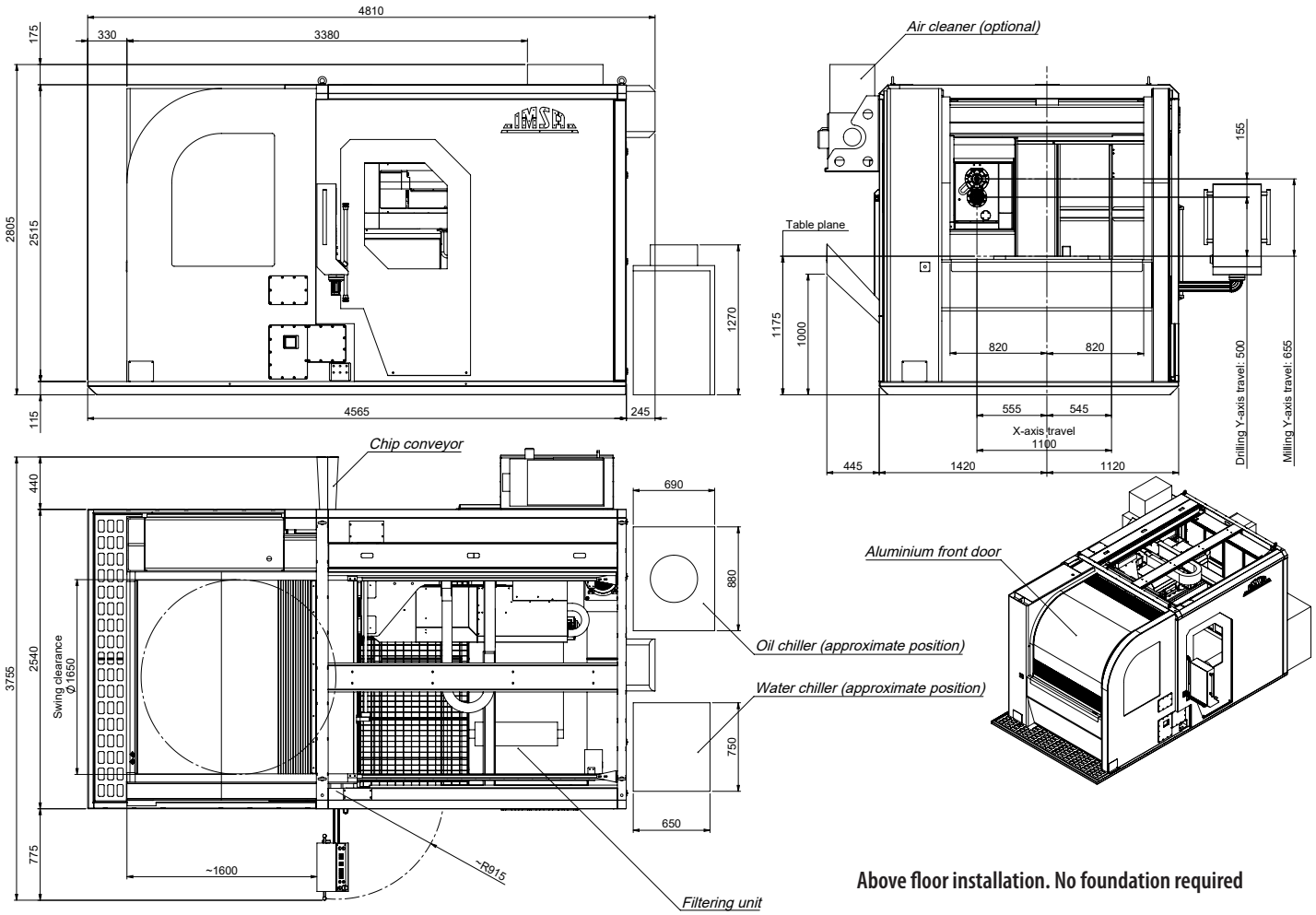
MILLING HEAD ISO 40	
ISO 40 milling spindle speed (adjustable)	6,000 rpm
Milling spindle motor power	(S1) 13.0 kW
Motor cooling	liquid
Maximum torque	115 Nm
Rigid tapping in steel 2311/2312	M24
Internal oil passage	50 bar
External hose oil circuit	6 bar
[Option] internal air passage	6 bar
[Option] ISO 40 tool changer	10 pockets

We can assist you in determining the most appropriate solution for your drilling needs.
Technical data can be modified for improvements without notice.



Version "4 tonnes" with rotary table

8 MF 1000/2C

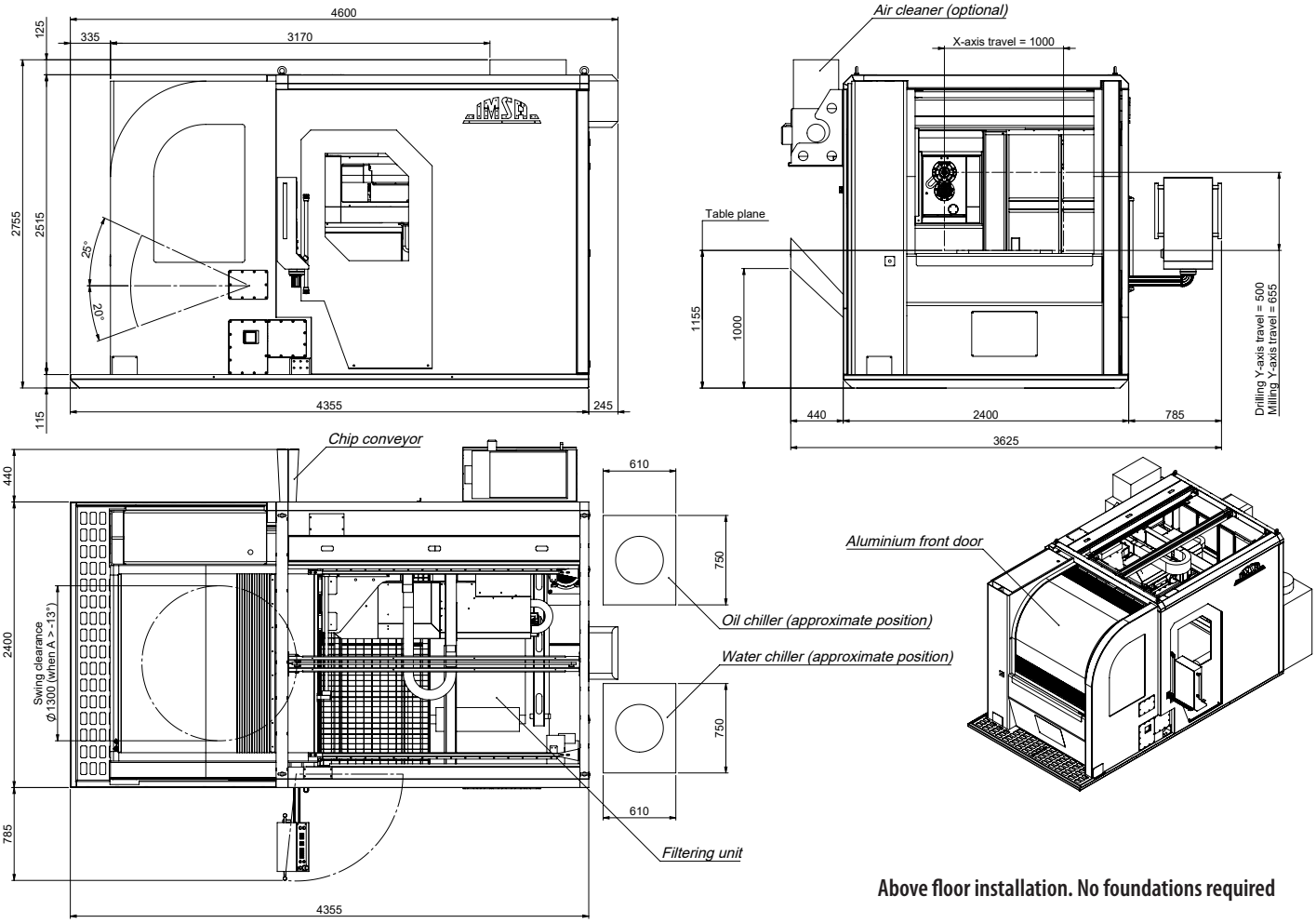


Above floor installation. No foundation required

Horizontal movement (gantry column)	X	1.100 mm
Useable vertical travel	Y	500 mm
Headstock travel	Z	450 mm
Gundrilling depth max.	V	1.000 mm

Rotary table		
Table size		800 x 900 mm
Table load		4.000 kg
Indexing resolution	B	0,001°
Standard T-slots		18 mm
Measuring system:		inductive perimetral ring scale

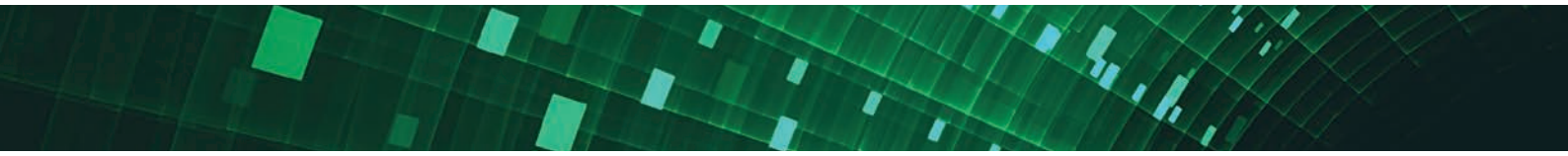
**Version "2 tonnes"
with rotary/tilting table**



Above floor installation. No foundations required

Horizontal movement (gantry column)	X	1.000 mm
Useable vertical travel	Y	500 mm
Headstock travel	Z	450 mm
Gundrilling depth max.	V	1.000 mm

Rotary/tilting table		
Table size		800 x 800 mm
Table load		2.000 kg
Indexing resolution (rotation and inclination)	B and A	0,001°
Tilting angle	A	+25°... -20°
Standard T-slots		18 mm
Measuring system:		inductive perimetral ring scale



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