FM2 SERIES

4/5-axis twin spindle
high flexibility, fast and compact

FAUSTO MARINELLO

The perfect balance between technology and compactness

FM2 Series: super productive and customizable horizontal machining centers

The new FM 23, 25 and 27 horizontal machining centres are designed to offer maximum **productivity and flexibility for medium and high production volumes**, with **the possibility of customization** that fears no comparisons.

SUPER COMPACT

MAXIMUM ADAPTABILITY

Each machine of the FM2 series is available with **pallet change** (FM232, FM252, FM272) or without pallet change (FM231, FM251, FM271).

MAXIMUM PRECISION

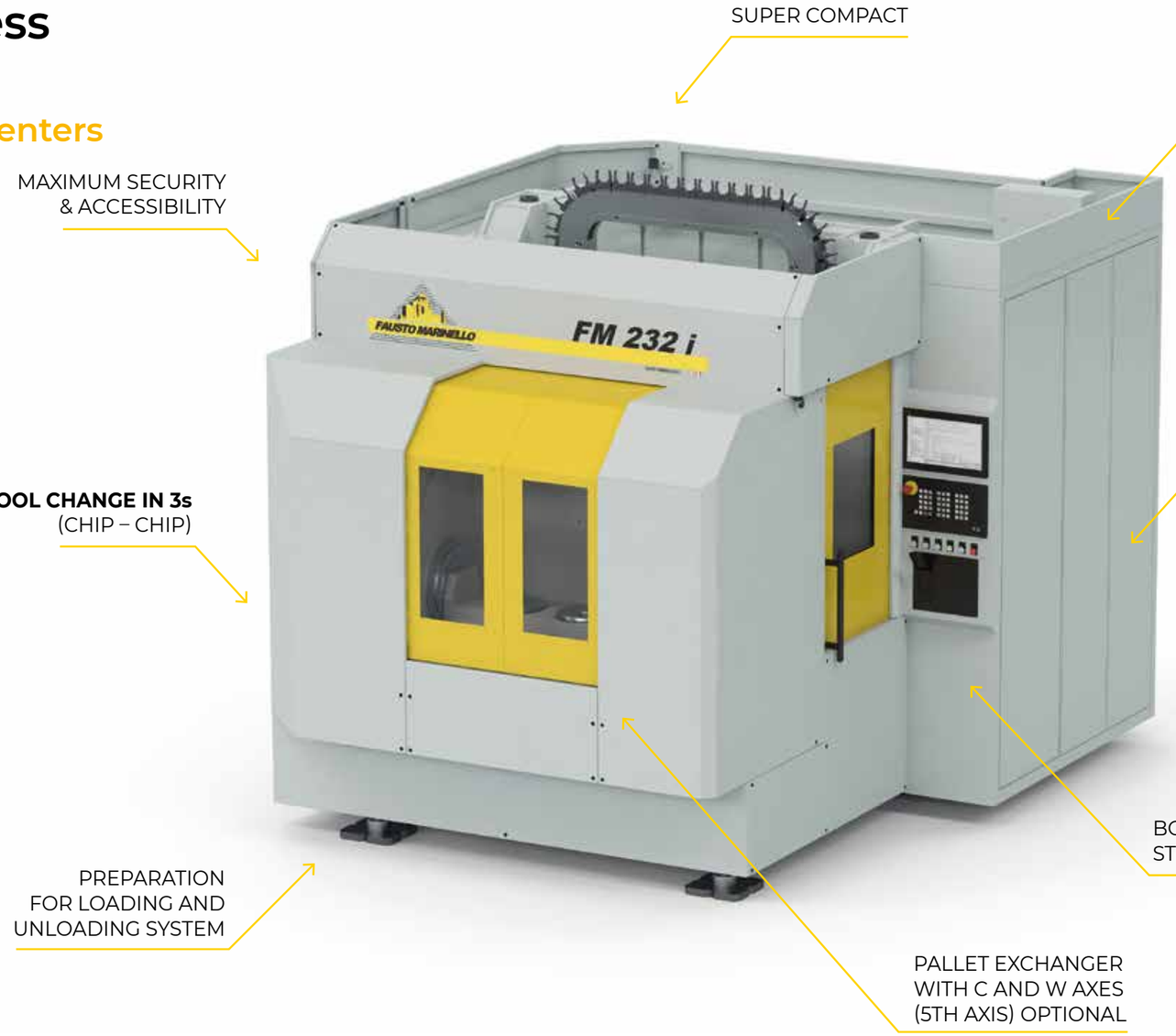
The FM2 series is available with both single Z axis (RAM) and with double Z axis to guarantee its customers maximum reliability and precision.

MAXIMUM ACCESSIBILITY

The FM2 series ensures an **accessibility that has never been reached** in machining centers before for any maintenance operation or calibration, mechanical, electrical or hydraulic.

IDEAL FOR THE MOST VARIED APPLICATIONS

FM2 is the ideal series of machining centres for many industrial sectors: automotive, machinery construction, precision mechanics, aerospace, hydraulic components, etc., and in all processes where it is essential to obtain high quality results at competitive costs. **FAUSTO MARINELLO is the best technological partner for extremely productive results**.



FAUSTO MARINELLO

FAUSTO MARINELLO, part of the FAMAR group, is constantly looking for technological solutions for its customers' production needs.
*The company designs and develops **innovative solutions for machinery used for milling, in particular it offers horizontal single- or multi-spindle machining centres**. The **machines** manufactured follow the production philosophy of the FAMAR group and are **designed and built with a view to modularity**, with **a technology that can be customised** according to the needs of the production process requested by the customer.*

FM2 SERIES APPLICATIONS

SUSPENSIONS · *MOTOR* · *GEARBOX* · *CHASSIS* · *AEROSPACE* · *FITTINGS*

FM2

Accessible and **tailored** technology

In standard versions, the FM2 series is equipped with a complete 4- or 5-axis module. All machining centres of the FM2 series have a “box in the box” structure that allows maximum rigidity, efficiency, precision and dynamics, allowing optimal chip removal and quality of the finished product.

MAXIMUM TECHNOLOGY

The FM2 series offers an axis travel speed up to 90 m/min* with accelerations up to 15 m/s²*.
The passive times between processes are therefore minimal.

The machining centres of the FM2 series are all equipped with a base with a closed cell structure to ensure maximum rigidity and the maximum possible dynamics to achieve the highest level of performance and quality. This structure also guarantees maximum thermal stability and the ability to absorb the vibrations generated by the processes.

Thanks to their high stability and dynamics, they are ideal for processing both steel and ferrous alloys and aluminium alloys.

Depending on the model and the need for electrospindles, the machines of the FM2 line can be equipped with tool attachment HSK-A63, HSK-A80, HSK-A100.

FM2 machining centres guarantee tool change times of less than 3 seconds, thus reducing the production time.
The electrical opening (optional) of the loading/unloading doors allows for any part loading and unloading system (robotic, portal, etc.) to be used

MAXIMUM ACCESSIBILITY

Thanks to the rational and ergonomic design, the interventions of operators or maintenance technicians in any area of the machine are carried out with the utmost ease and safety.

+ FAUSTO MARINELLO ELECTROSPINDLE

The electrospindles of the FM2 series are designed by FAUSTO MARINELLO.

They are available in versions 10,000 and 17,500 rpm* with spindle attachment HSK-A63, HSK-A80, HSK-A100.

MAXIMUM FLEXIBILITY

The FM2 series can be used for any type of process and is available with double 5th axis tables or special tables.

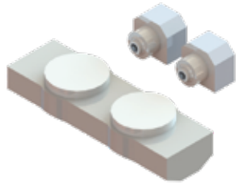
MAXIMUM STABILITY

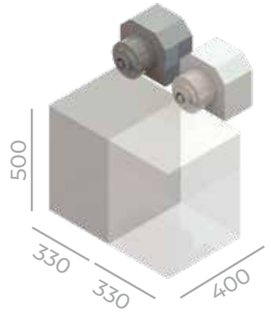
Thanks to the particular structure of the base filled with polymeric cements*, FM2 machines are ideal for extreme precision machining. They offer high rigidity, minimal thermal expansion and maximum vibration absorption.

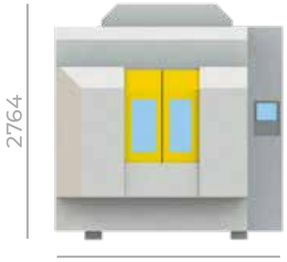
* Data may vary according to the model and configuration.

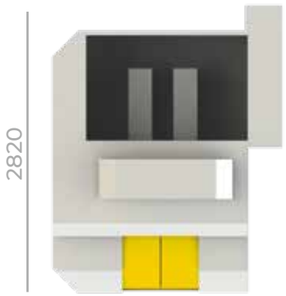
FM231i

WORK AREA	HSK - A63	HSK - A80
X axis stroke [mm]	330	
Y-axis stroke [mm]	500 (+270)	
Z axis stroke [mm]	400	
Spindle spacing [mm]	320	
A AXIS		
Maximum table dimensions [mm]	Ø620x880	
Drive unit	Motor torque	
Maximum weight of equipment and workpiece [kg]	400	
Maximum speed	50	
C/W axis	2 for OPTIONAL AXIS	
ELECTROSPINDLE		
Maximum speed [rpm]	10000	10000
OPTIONAL maximum speed [rpm]	17500	
Rated power [kW]	28	33
Power S6 (40%) [kW]	32	35
Nominal torque [Nm]	63	143
Torque S6 (40%) [Nm]	80	200
Spindle bearing	80	90
PERFORMANCE		
Drive unit	Ball screw	
X axis acceleration [m/s²]	10	
X axis fast speed [m/min]	70	
Maximum X axis thrust [N]	8000	
Y axis acceleration [m/s²]	10	
Y axis fast speed [m/min]	75	
Maximum Y axis thrust [N]	8000	
Z axis acceleration [m/s²]	15	
Z axis fast speed [m/min]	80	
Maximum Z axis thrust [N]	2X5500	
MAGAZINE		
Tool change	Pick-up	
Capacity	2X20	2X21
Optional capacity 1	2X40	2X30
Optional capacity 2	2X60	2X45
Optional capacity 3	2X81	
Maximum tool diameter	Ø75	Ø100
Maximum tool diameter (adjacent free positions [mm])	Ø160	
Maximum tool length [mm]	320	
Maximum tool weight [kg]	8	
Tool change time (chip-to-chip) [s]	≤ 2.5	
GENERAL DATA		
CNC	Siemens	
OPTIONAL CNC	Fanuc	



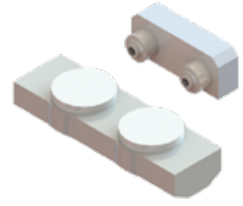


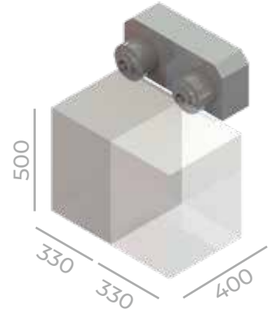


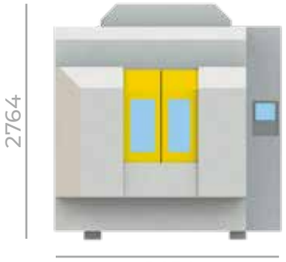


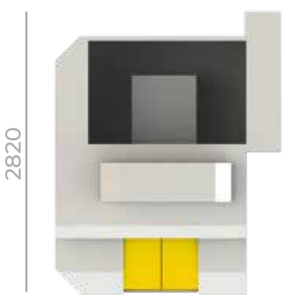
FM231 RAM

WORK AREA	HSK - A63	HSK - A80
X axis stroke [mm]	330	
Y-axis stroke [mm]	500 (+270)	
Z axis stroke [mm]	400	
Spindle spacing [mm]	320	
A AXIS		
Maximum table dimensions [mm]	Ø620x880	
Drive unit	Motor torque	
Maximum weight of equipment and workpiece [kg]	400	
Maximum speed	50	
C/W axis	2 for OPTIONAL AXIS	
ELECTROSPINDLE		
Maximum speed [rpm]	10000	10000
OPTIONAL maximum speed [rpm]	17500	
Rated power [kW]	28	33
Power S6 (40%) [kW]	32	35
Nominal torque [Nm]	63	143
Torque S6 (40%) [Nm]	80	200
Spindle bearing	80	90
PERFORMANCE		
Drive unit	Ball screw	
X axis acceleration [m/s²]	10	
X axis fast speed [m/min]	70	
Maximum X axis thrust [N]	8000	
Y axis acceleration [m/s²]	10	
Y axis fast speed [m/min]	75	
Maximum Y axis thrust [N]	8000	
Z axis acceleration [m/s²]	15	
Z axis fast speed [m/min]	80	
Maximum Z axis thrust [N]	8000	
MAGAZINE		
Tool change	Pick-up	
Capacity	2X20	2X21
Optional capacity 1	2X40	2X30
Optional capacity 2	2X60	2X45
Optional capacity 3	2X81	
Maximum tool diameter	Ø75	Ø100
Maximum tool diameter (adjacent free positions [mm])	Ø160	
Maximum tool length [mm]	320	
Maximum tool weight [kg]	8	
Tool change time (chip-to-chip) [s]	≤ 2.5	
GENERAL DATA		
CNC	Siemens	
OPTIONAL CNC	Fanuc	



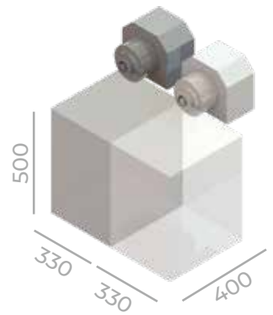


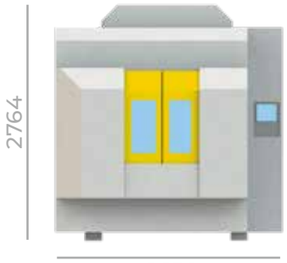


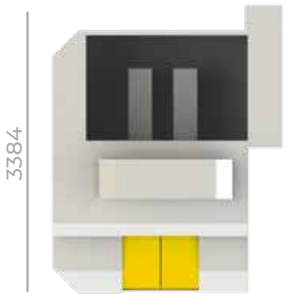


FM232i

WORK AREA	HSK - A63	HSK - A80
X axis stroke [mm]	330	
Y-axis stroke [mm]	500 (+270)	
Z axis stroke [mm]	400	
Spindle spacing [mm]	320	
Q AXIS		
Oscillation time 180° [s]	3	
A/U AXIS		
Maximum table dimensions [mm]	Ø620x880	
Drive unit	Motor torque	
Maximum weight of equipment and workpiece [kg]	400	
Maximum speed	50	
C/W axis	2 for OPTIONAL AXIS	
ELECTROSPINDLE		
Maximum speed [rpm]	10000	10000
OPTIONAL maximum speed [rpm]	17500	
Rated power [kW]	28	33
Power S6 (40%) [kW]	32	35
Nominal torque [Nm]	63	143
Torque S6 (40%) [Nm]	80	200
Spindle bearing	80	90
PERFORMANCE		
Drive unit	Ball screw	
X axis acceleration [m/s²]	10	
X axis fast speed [m/min]	70	
Maximum X axis thrust [N]	8000	
Y axis acceleration [m/s²]	10	
Y axis fast speed [m/min]	75	
Maximum Y axis thrust [N]	8000	
Z axis acceleration [m/s²]	15	
Z axis fast speed [m/min]	80	
Maximum Z axis thrust [N]	2X5500	
MAGAZINE		
Tool change	Pick-up	
Capacity	2X20	2X21
Optional capacity 1	2X40	2X30
Optional capacity 2	2X60	2X45
Optional capacity 3	2X81	
Maximum tool diameter	Ø75	Ø100
Maximum tool diameter (adjacent free positions [mm])	Ø160	
Maximum tool length [mm]	320	
Maximum tool weight [kg]	8	
Tool change time (chip-to-chip) [s]	≤ 2.5	
GENERAL DATA		
CNC	Siemens	
OPTIONAL CNC	Fanuc	

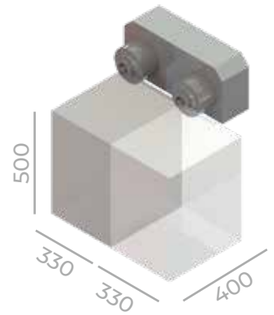


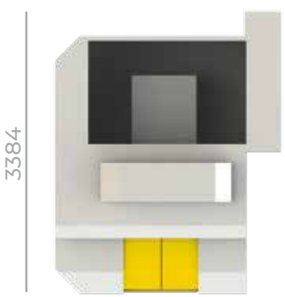




FM232 RAM

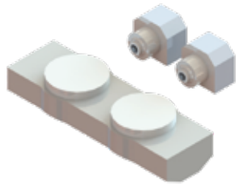
WORK AREA	HSK - A63	HSK - A80
X axis stroke [mm]	330	
Y-axis stroke [mm]	500 (+270)	
Z axis stroke [mm]	400	
Spindle spacing [mm]	320	
Q AXIS		
Oscillation time 180° [s]	3	
A/U AXIS		
Maximum table dimensions [mm]	Ø620x880	
Drive unit	Motor torque	
Maximum weight of equipment and workpiece [kg]	400	
Maximum speed	50	
C/W axis	2 for OPTIONAL AXIS	
ELECTROSPINDLE		
Maximum speed [rpm]	10000	10000
OPTIONAL maximum speed [rpm]	17500	
Rated power [kW]	28	33
Power S6 (40%) [kW]	32	35
Nominal torque [Nm]	63	143
Torque S6 (40%) [Nm]	80	200
Spindle bearing	80	90
PERFORMANCE		
Drive unit	Ball screw	
X axis acceleration [m/s²]	10	
X axis fast speed [m/min]	70	
Maximum X axis thrust [N]	8000	
Y axis acceleration [m/s²]	10	
Y axis fast speed [m/min]	75	
Maximum Y axis thrust [N]	8000	
Z axis acceleration [m/s²]	15	
Z axis fast speed [m/min]	80	
Maximum Z axis thrust [N]	8000	
MAGAZINE		
Tool change	Pick-up	
Capacity	2X20	2X21
Optional capacity 1	2X40	2X30
Optional capacity 2	2X60	2X45
Optional capacity 3	2X81	
Maximum tool diameter	Ø75	Ø100
Maximum tool diameter (adjacent free positions [mm])	Ø160	
Maximum tool length [mm]	320	
Maximum tool weight [kg]	8	
Tool change time (chip-to-chip) [s]	≤ 2.5	
GENERAL DATA		
CNC	Siemens	
OPTIONAL CNC	Fanuc	

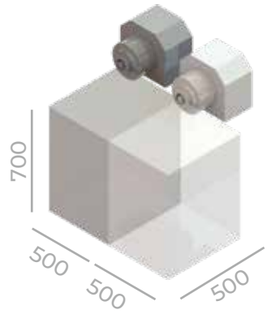


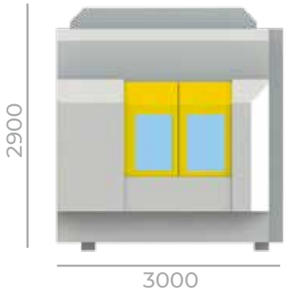


FM251i

WORK AREA	HSK - A63	HSK - A80
X axis stroke [mm]	500	
Y-axis stroke [mm]	700 (+270)	
Z axis stroke [mm]	500	
Spindle spacing [mm]	500	
A AXIS		
Maximum table dimensions [mm]	Ø800x1310	
Drive unit	Motor torque	
Maximum weight of equipment and workpiece [kg]	700	
Maximum speed	50	
C/W axis	2 for OPTIONAL AXIS	
ELECTROSPINDLE		
Maximum speed [rpm]	10000	10000
OPTIONAL maximum speed [rpm]	17500	
Rated power [kW]	28	33
Power S6 (40%) [kW]	32	35
Nominal torque [Nm]	63	143
Torque S6 (40%) [Nm]	80	200
Spindle bearing	80	90
PERFORMANCE		
Drive unit	Ball screw	
X axis acceleration [m/s²]	10	
X axis fast speed [m/min]	60	
Maximum X axis thrust [N]	15000	
Y axis acceleration [m/s²]	10	
Y axis fast speed [m/min]	75	
Maximum Y axis thrust [N]	15000	
Z axis acceleration [m/s²]	15	
Z axis fast speed [m/min]	80	
Maximum Z axis thrust [N]	2X8000	
MAGAZINE		
Tool change	Pick-up	
Capacity	2X40	2X32
Optional capacity 1	2X70	2x56
Optional capacity 2	2X100	2X80
Maximum tool diameter	Ø80	Ø100
Maximum tool diameter (adjacent free positions [mm])	Ø160	
Maximum tool length [mm]	320	
Maximum tool weight [kg]	10	12
Tool change time (chip-to-chip) [s]	≤ 2.75	
GENERAL DATA		
CNC	Siemens	
OPTIONAL CNC	Fanuc	

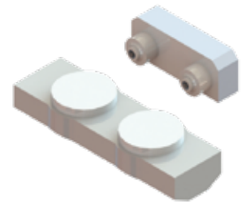


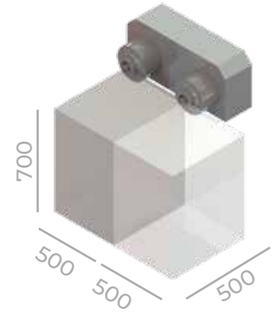


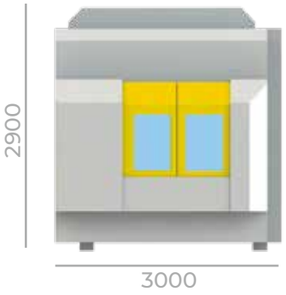


FM251 RAM

WORK AREA	HSK - A63	HSK - A80
X axis stroke [mm]	500	
Y-axis stroke [mm]	700 (+270)	
Z axis stroke [mm]	500	
Spindle spacing [mm]	500	
A AXIS		
Maximum table dimensions [mm]	Ø800x1310	
Drive unit	Motor torque	
Maximum weight of equipment and workpiece [kg]	700	
Maximum speed	50	
C/W axis	2 for OPTIONAL AXIS	
ELECTROSPINDLE		
Maximum speed [rpm]	10000	10000
OPTIONAL maximum speed [rpm]	17500	
Rated power [kW]	28	33
Power S6 (40%) [kW]	32	35
Nominal torque [Nm]	63	143
Torque S6 (40%) [Nm]	80	200
Spindle bearing	80	90
PERFORMANCE		
Drive unit	Ball screw	
X axis acceleration [m/s²]	10	
X axis fast speed [m/min]	60	
Maximum X axis thrust [N]	15000	
Y axis acceleration [m/s²]	10	
Y axis fast speed [m/min]	75	
Maximum Y axis thrust [N]	15000	
Z axis acceleration [m/s²]	15	
Z axis fast speed [m/min]	80	
Maximum Z axis thrust [N]	12000	
MAGAZINE		
Tool change	Pick-up	
Capacity	2X40	2X32
Optional capacity 1	2X70	2x56
Optional capacity 2	2X100	2X80
Maximum tool diameter	Ø80	Ø100
Maximum tool diameter (adjacent free positions [mm])	Ø160	
Maximum tool length [mm]	320	
Maximum tool weight [kg]	10	12
Tool change time (chip-to-chip) [s]	≤ 2.75	≤ 2.75
GENERAL DATA		
CNC	Siemens	
OPTIONAL CNC	Fanuc	

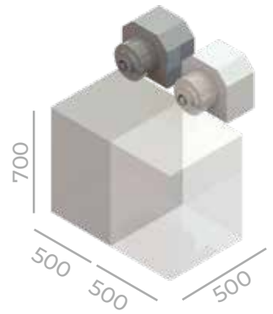


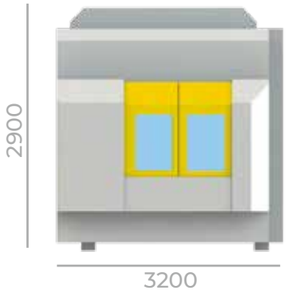


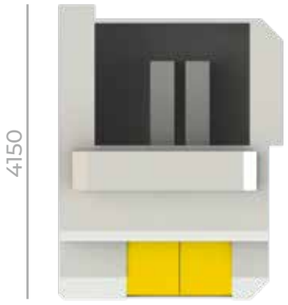


FM252i

WORK AREA	HSK - A63	HSK - A80
X axis stroke [mm]	500	
Y-axis stroke [mm]	700 (+270)	
Z axis stroke [mm]	500	
Spindle spacing [mm]	500	
Q AXIS		
Oscillation time 180° [s]	3	
A/U AXIS		
Maximum table dimensions [mm]	Ø800x1310	
Drive unit	Motor torque	
Maximum weight of equipment and workpiece [kg]	700	
Maximum speed	50	
C/W axis	2 for OPTIONAL AXIS	
ELECTROSPINDLE		
Maximum speed [rpm]	10000	10000
OPTIONAL maximum speed [rpm]	17500	
Rated power [kW]	28	33
Power S6 (40%) [kW]	32	35
Nominal torque [Nm]	63	143
Torque S6 (40%) [Nm]	80	200
Spindle bearing	80	90
PERFORMANCE		
Drive unit	Ball screw	
X axis acceleration [m/s²]	10	
X axis fast speed [m/min]	60	
Maximum X axis thrust [N]	15000	
Y axis acceleration [m/s²]	10	
Y axis fast speed [m/min]	75	
Maximum Y axis thrust [N]	15000	
Z axis acceleration [m/s²]	15	
Z axis fast speed [m/min]	80	
Maximum Z axis thrust [N]	2x8000	
MAGAZINE		
Tool change	Pick-up	
Capacity	2X40	2X32
Optional capacity 1	2X70	2x56
Optional capacity 2	2X100	2X80
Maximum tool diameter	Ø80	Ø100
Maximum tool diameter (adjacent free positions [mm])	Ø160	
Maximum tool length [mm]	320	
Maximum tool weight [kg]	10	12
Tool change time (chip-to-chip) [s]	≤ 2.75	
GENERAL DATA		
CNC	Siemens	
OPTIONAL CNC	Fanuc	

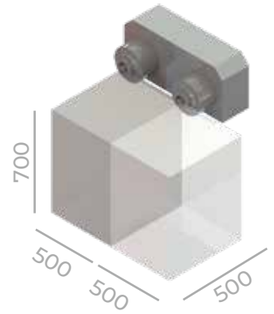


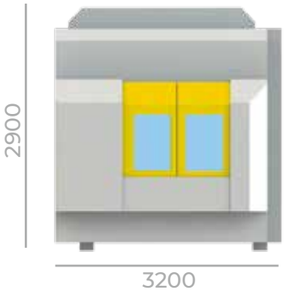




FM252 RAM

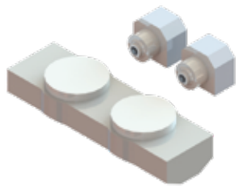
WORK AREA	HSK - A63	HSK - A80
X axis stroke [mm]	500	
Y-axis stroke [mm]	700 (+270)	
Z axis stroke [mm]	500	
Spindle spacing [mm]	500	
Q AXIS		
Oscillation time 180° [s]	3	
A/U AXIS		
Maximum table dimensions [mm]	Ø800x1310	
Drive unit	Motor torque	
Maximum weight of equipment and workpiece [kg]	700	
Maximum speed	50	
C/W axis	2 for OPTIONAL AXIS	
ELECTROSPINDLE		
Maximum speed [rpm]	10000	10000
OPTIONAL maximum speed [rpm]	17500	
Rated power [kW]	28	33
Power S6 (40%) [kW]	32	35
Nominal torque [Nm]	63	143
Torque S6 (40%) [Nm]	80	200
Spindle bearing	80	90
PERFORMANCE		
Drive unit	Ball screw	
X axis acceleration [m/s²]	10	
X axis fast speed [m/min]	60	
Maximum X axis thrust [N]	15000	
Y axis acceleration [m/s²]	10	
Y axis fast speed [m/min]	75	
Maximum Y axis thrust [N]	15000	
Z axis acceleration [m/s²]	15	
Z axis fast speed [m/min]	80	
Maximum Z axis thrust [N]	12000	
MAGAZINE		
Tool change	Pick-up	
Capacity	2X40	2X32
Optional capacity 1	2X70	2x56
Optional capacity 2	2X100	2X80
Maximum tool diameter	Ø80	Ø100
Maximum tool diameter (adjacent free positions [mm])	Ø160	
Maximum tool length [mm]	320	
Maximum tool weight [kg]	10	12
Tool change time (chip-to-chip) [s]	≤ 2.75	
GENERAL DATA		
CNC	Siemens	
OPTIONAL CNC	Fanuc	

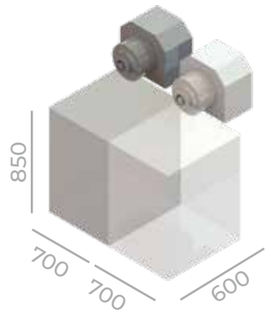




FM271i

WORK AREA	HSK - A63	HSK - A100
X axis stroke [mm]	700	
Y-axis stroke [mm]	850 (+400)	
Z axis stroke [mm]	600	
Spindle spacing [mm]	700	
A AXIS		
Maximum table dimensions [mm]	Ø1000x1760	
Drive unit	Motor torque	
Maximum weight of equipment and workpiece [kg]	1000	
Maximum speed	50	
C/W axis	2 for OPTIONAL AXIS	
ELECTROSPINDLE		
Maximum speed [rpm]	10000	10000
OPTIONAL maximum speed [rpm]	17500	
Rated power [kW]	28	20
Power S6 (40%) [kW]	32	26
Nominal torque [Nm]	63	262
Torque S6 (40%) [Nm]	80	340
Spindle bearing	80	100
PERFORMANCE		
Drive unit	Ball screw	
X axis acceleration [m/s²]	9	
X axis fast speed [m/min]	60	
Maximum X axis thrust [N]	16000	
Y axis acceleration [m/s²]	9	
Y axis fast speed [m/min]	60	
Maximum Y axis thrust [N]	18000	
Z axis acceleration [m/s²]	13	
Z axis fast speed [m/min]	80	
Maximum Z axis thrust [N]	2x10000	
MAGAZINE		
Tool change	Pick-up	
Capacity	2X42	2X30
Optional capacity 1	2x70	2x50
Optional capacity 2	2x105	2x75
Maximum tool diameter	Ø80	Ø110
Maximum tool diameter (adjacent free positions [mm])	Ø250	
Maximum tool length [mm]	450	
Maximum tool weight [kg]	8	20
Tool change time (chip-to-chip) [s]	≤3.5	
GENERAL DATA		
CNC	Siemens	
OPTIONAL CNC	Fanuc	





FM272i

WORK AREA	HSK - A63	HSK - A100
X axis stroke [mm]	700	
Y-axis stroke [mm]	850 (+400)	
Z axis stroke [mm]	600	
Spindle spacing [mm]	700	
Q AXIS		
Oscillation time 180° [s]	3	
A/U AXIS		
Maximum table dimensions [mm]	Ø1000x1760	
Drive unit	Motor torque	
Maximum weight of equipment and workpiece [kg]	1000	
Maximum speed	50	
C/W axis	2 for OPTIONAL AXIS	
ELECTROSPINDLE		
Maximum speed [rpm]	10000	10000
OPTIONAL maximum speed [rpm]	17500	
Rated power [kW]	28	20
Power S6 (40%) [kW]	32	26
Nominal torque [Nm]	63	262
Torque S6 (40%) [Nm]	80	340
Spindle bearing	80	100
PERFORMANCE		
Drive unit	Ball screw	
X axis acceleration [m/s²]	9	
X axis fast speed [m/min]	60	
Maximum X axis thrust [N]	16000	
Y axis acceleration [m/s²]	9	
Y axis fast speed [m/min]	60	
Maximum Y axis thrust [N]	18000	
Z axis acceleration [m/s²]	13	
Z axis fast speed [m/min]	80	
Maximum Z axis thrust [N]	2x10000	
MAGAZINE		
Tool change	Pick-up	
Capacity	2X42	2X30
Optional capacity 1	2x70	2x50
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Maximum tool diameter	Ø80	Ø110
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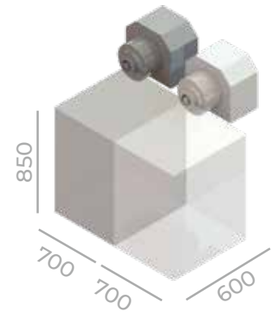
Maximum tool length [mm]	450	
Maximum tool weight [kg]	8	20
Tool change time (chip-to-chip) [s]	≤3.5	
GENERAL DATA		
CNC	Siemens	
OPTIONAL CNC	Fanuc	



— FAUSTO MARINELLO

Overall dimensions

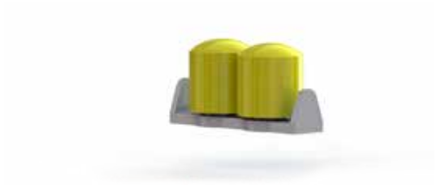
workspace

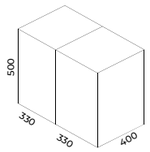
The FM2 series is available with single or double 5th axis table, a dual possibility that makes the FM2 series extremely flexible. In addition to this, thanks to the great experience and professionalism of our design department, it is possible to have special 5th-axis tables, customizable according to the customer's needs.

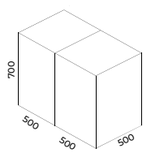
4TH-AXIS TABLE

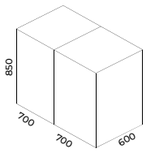
5TH-AXIS TABLE

	FM23X	FM25X	FM27X
C AXIS			
	2x	2x	2x
Maximum table dimensions [mm]	Ø319x360	Ø499x535	Ø699x650
Maximum weight of equipment and workpiece [kg]	100	200	350









ASSISTANCE

In Italian, English, French and German. Fast and reliable delivery of spare parts. Electrospindles always in stock for maximum protection of your investment.

From the idea to the full process

A set of skills

Thanks to the cooperation between the companies of the FAMAR group, such as FAUSTO MARINELLO, FAMAR and FAMAR Automations, we are able to develop complete production processes, from the raw piece to the finished and assembled product, combining drilling, milling, turning, grinding, assembly and automation operations.

— CUSTOMIZATION

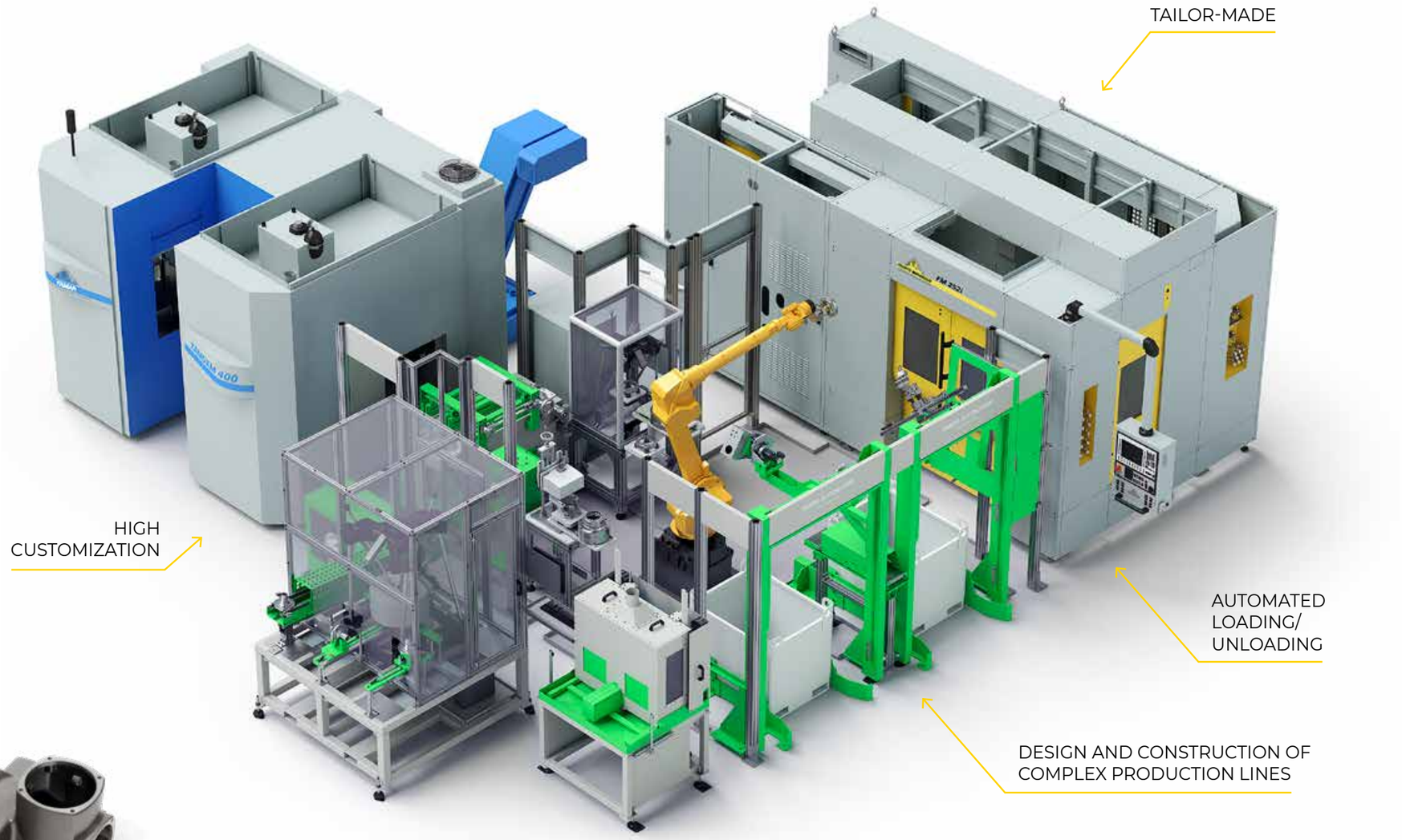
The machines of the FM2 series can be completely customised to meet the customer's needs.
Customization is one of the strengths of the FAMAR group.

— AUTOMATION

Thanks to the experience of our FAMAR Automation department, we are able to develop robotic islands for the automatic loading/unloading of parts, assessing the customer's needs in terms of production and layout.

— DESIGN AND PRODUCTION PROCESSES

The collaboration with FAMAR, a company of the Group that produces vertical pick-up lathes, allows for the design and construction of complex production lines that integrate the skills of the 3 companies, satisfying the customer's needs.



FAUSTO MARINELLO

LIFETIME PRECISION

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