### VERTICAL MACHINING CENTRES

# ROMI D SERIES

**NEW GENERATION** 











In the constant transformation of industrial processes, it is crucial to have differentials that make your products superior to those offered by competitors.

In this context, the insertion of new technologies in its production process, mainly by means of modern, fast and precise machine tools, raises production performance.

You get higher quality, productivity, efficiency and the best: higher profits than already achieved in your business!

With more than 90 years of history and global presence, we have preserved the values that have made our products recognized worldwide. We offer the most cost-effective machine tools on the market. Our commitment to the constant development of new solutions and dedication to innovation, results in robust, high technology and quality machine tools.

We guarantee full support at all stages of purchase through our sales and sales engineering teams, customer training, specialized technical assistance and spare parts. Having a Romi machine tool assures that you have state of the art equipment combined with a reputation of value,

At Romi, you get a complete solution, much more than just equipment: you have the security and tranquility of our full support at all times, always when you need it. Ask us to find a suitable solution that your needs. Our main goal is to make your business even more productive







# ROMI D SERIES NEW GENERATION

High-productivity. Robustness. Precision. Tecnology.





#### **ROMI D Series**

machines are extremely
versatile for several machining
applications. They are designed to
operate in high production sites as well as
in tool rooms. Our D Series machines offers
high rigidity even under severe machining
conditions and present thermal and
geometric stability ensuring great
performance, precision and
productivity.



Headstock	10,000 rpm
Spindle Taper	ISO 40
Main Motor	25 hp / 18.5 kW
Aut. Tool Changer	20 tools
Table - mm	914 x 560 m
CNC	Fanuc Oi-MF Plus

#### **ROMI D 800**

Headstock	10,000 / 15,000 rpm
Spindle Taper	ISO 40
Main Motor	25 hp / 18.5 kW (10,000 rpm) 20 hp / 15 kW (15,000 rpm)
Aut. Tool Changer	30 tools
Table - mm	914 x 560 mm
CNC	Fanuc Oi-MF Plus <i>i</i> -HMI
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#### **ROMI D 1000**

Headstock	10,000 / 15,000 rpm
Spindle Taper	ISO 40
Main Motor	25 hp / 18.5 kW (10,000 rpm) 20 hp / 15 kW (15,000 rpm)
Aut. Tool Changer	30 tools
Table - mm	1,220 x 560 mm
CNC	Fanuc Oi-MF Plus i-HMI

#### **ROMI D 1250**

Headstock	10,000 / 15,000 rpm		
Spindle Taper	ISO 40		
Main Motor	25 hp / 18.5 kW (10,000 rpm)		
IVIAIII IVIUTUI	20 hp / 15 kW (15,000 rpm)		
Aut. Tool Changer	30 tools		
Table - mm	1,320 x 560 mm		
CNC	Fanuc Oi-MF Plus i-HMI		











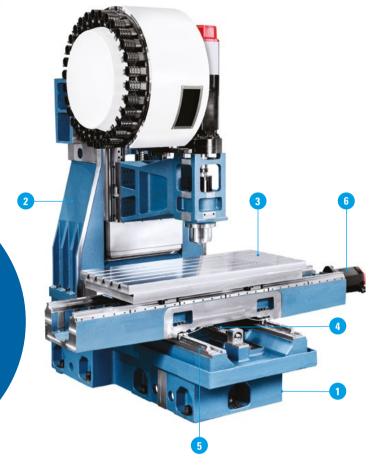


## Linear guide benefits

- Feed rates up to 40 m/min\*
- Fast positioning of axes minimizing idle times and increasing productivity
  - Allow high rates of acceleration
  - Low lubrication oil consumption
    - Easy maintenance
    - High rigidity and long durability

2

3



Monoblock **BASE** made of cast iron, designed to absorb vibrations, provides parts with excellent finishes, longer machine life and longer lasting cutting tools.

**COLUMN:** Dimensioned to support the headstock assembly with excellent geometric stability for the whole assembly.

The **TABLE** is supported on linear guides, with multiple T-slots for mounting and securing devices. Designed to supprt heavy parts with excellent stability.

**BALLSCREWS:** Hardened and ground with pre-loaded nuts provide high rigidity and high accuracy in both positioning and repeatability of axes.



**LINEAR ROLLER GUIDES.** Allows faster movements whilst ensuring precision and high accelerations due to low friction coefficient between the rails and blocks.

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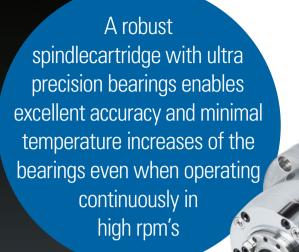
Brushless **AC SERVO MOTORS** are directly coupled to the ballscrews and have integrated absolute encoders, which transmit the movement directly, providing accurate positioning and excellent repeatability of axes.

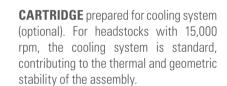
(\*) Except **ROMI D 600** 

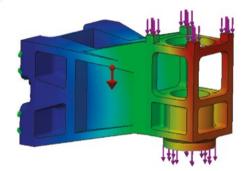
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**HEADSTOCK STRUCTURE** that offers great thermal and geometric stability, rigidity and high capacity to absorb machining efforts without vibrations even the ones generated from heavy machining.

Ultra precision angular contact **BALL BEARINGS** with permanent lubrication.

Bearing sealing by labyrinth.

**PRESSURIZED SYSTEM** - pneumatic seal: to prevent the bearings from contamination by cutting coolant and particles.



#### THERMAL COMPENSATION

Strategically placed on the machine, mathematical algorithms correct the position of the axes in real time. In this way, stable dimensional results are obtained, even for long periods of time.

**PNEUMATIC SYSTEM FOR SPINDLE TAPER CLEANING,** preventing the entry of chips to avoid damage on tool shanks.

**LINEAR ROLLER GUIDES.** Allows faster movements whilst ensuring precision and high accelerations due to low friction coefficient between the rails and blocks



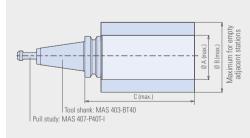


Fast, accurate, and reliable automatic tool changers, helping to increase productivity and machining efficiency. The automatic tool changer has 30 tools capacity (ROMI D 800/ D 1000 / D 1250) or 20 tools capacity (ROMI D 600).





#### Tool dimensions BT / CAT / DIN (\*)



	ROMI D 600	D 1000 / D 1250
	BT-40 / BBT-40	BT-40 / BBT-40
mm	100	75
mm	200	127
mm	254	300
kg	6	7
kg	68	150
	mm mm kg	BT-40 / BBT-40 mm 100 mm 200 mm 254 kg 6

(\*) For machines with thru spindle coolant system, the tool shanks and pull studs must have a hole to pass the coolant thru spindle

For rotations over 10,000 rpm, it is recommended to use BBT mandrels. Regardless of rotation, all tools should be balanced in G2.5

# CNC TECHNOLOGY AND RELIABILITY



**1.** Environment that provides the visualization of various information on a single screen. Ex.: feed axes and main spindle load indicators, current program, modal codes, tool information, icons, alarms, etc.

Vertical Machining Centres from ROMI D Series are equipped with a Fanuc 0i-MF Plus i-HMI CNC, which offers the user great facilities for programming with main screen with different areas for planning, machining, improvements and utilities, allowing access to functions in only two clicks. Ethernet interface, drive for Compact Flash card and USB port is standard.



**2.** Complete and dynamic tool manager, providing quick access to information.



3. Resources for corrective and preventive maintenance (messages, alarms, history, etc). Alert messages are sent before the fault even occurs, for efficient preventive maintenance.



**4.** The machining programs can be easily accessed and viewed in organized folders, with part figure, name and program number, making it easier to identify them.



**5.** Allows viewing of files in several formats, allowing the storage of manuals, diagrams and important information.



**6.** Several interactive machining cycles, such as: cavity cycles, drilling, threading, measurements, etc.



## CHIPS TREATMENT

# FULL REMOVAL OF MACHINING WASTE

The accentuated inclination of telescopic covers and chip trays favor the disposal of the chips, which are driven by the internal auger to the chip conveyor.

(ROMI D 800 / ROMI D 1000 / ROMI D 1250)

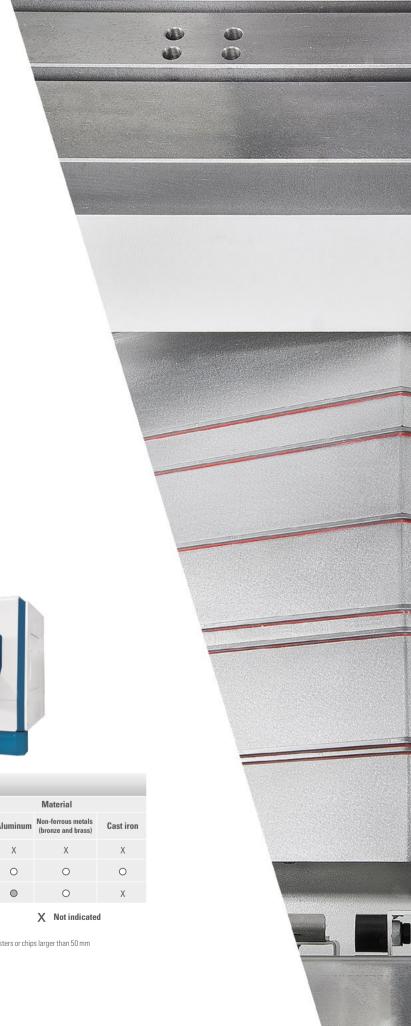


Chip conveyors (optionals)								
Types of chips	(00000)	~/ /!	Material					
Model	Curled or long chips	Short thin chips	Steel	Aluminum	Non-ferrous metals (bronze and brass)	Cast iron		
TCE (Longitudinal Hinged belt chip conveyor)	0	Χ	0	Χ	Х	Х		
TCA (Longitudinal Drag belt chip conveyor)	Х	0	0	0	0	0		
TCL (Longitudinal light chip conveyor - floating chips)	0	0	0	0	0	Х		
Fully in	ndicated	O Partly indic	cated		X Not indicate	d		

TCA: chips smaller than 0.5 mm may contaminate the coolant tank and require frequent cleaning / chip clusters or chips larger than 50 mm may lock the conveyor.

TCE: short chips smaller than 5 mm may contaminate the coolant tank and require frequent cleaning

 $\textbf{TCL:} \ chips smaller \ than \ 0.5 \ mm \ may \ contaminate \ the \ coolant \ tank \ and \ require \ frequent \ cleaning$ 





## **OPTIONALS**

# **VERSATILITY FOR YOUR**

To adapt perfectly your Vertical Machining Centres from **ROMI D Series** to your machining needs, we offer a wide variety of optionals that can equip your machine and

- **PRODUCTION**
- make it even more versatile.





#### 4TH AXIS ROTARY TABLE ROMI MGR AND TAILSTOCK



This optional allows the machining of parts at any angle and with continuous interpolation. It provides excellent positioning and repeatability. Its heavy duty construction and rigidity offers excellent vibration dampening. For machinig of long parts it can be supplied with the optional tailstock.

- 1. Automatic Door and Safety Light Curtain
- 2. Status indicator light
- 3. Mist exhausting system
- 4. Wash Gun
- 5. Chip conveyor
- 6. Headstock cooling system (standard to 15,000 rpm and optional to 10,000 rpm)
- 7. Oil Skimmer





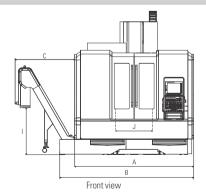


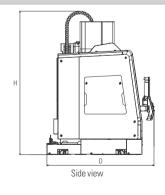
10,400

Technical Specifications		ROMI D 600	ROMI D 800	ROMI D 1000	ROMI D 1250
Vertical headstock					
Spindle taper	ISO	40	40	40	40
Speed range (version 10.000 rpm)	rpm	10 to 10,000	10 to 10,000	10 to 10,000	10 to 10,000
Speed range (version 15.000 rpm)	rpm	-	15 to 15,000	15 to 15,000	15 to 15,000
Feeds					
Rapid traverse (X / Y / Z axes)	m/min	30	40	40	40
Max. programmable cutting feed	m/min	20	20	20	20
Travels					
Superior table travel (X axis)	mm	600	800	1,020	1,270
Inferior table travel (Y axis)	mm	610	610	610	610
Headstock travel (Z axis)	mm	640	640	640	640
Distance from spindle nose to table	mm	110 to 750	110 to 750	110 to 750	110 to 750
Table					
Surface	mm	914 x 560	914 x 560	1,220 x 560	1.320 x 560
T-slot width x distance	mm	18 x 89	18 x 89	18 x 89	18 x 89
Number of T-slots	un	5	5	5	5
Max. Weight on table (uniformly distributed)	kg	900	900	1,100	1,400
Automatic Tool Changer					
Туре		carousel	automatic arm	automatic arm	automatic arm
Tools capacity	un	20	30	30	30
Max. tool diameter	mm	100	75	75	75
Max. tool diameter when adjacent stations are empty	mm	200	127	127	127
Max. tool length	mm	254	300	300	300
Tool holder type	type	BT / CAT / DIN	BT / CAT / DIN	BT / CAT / DIN	BT / CAT / DIN
Max. tool weight	kg	6	7	7	7
Max. tool weight on ATC	kg	68	150	150	150
Tool change time (tool to tool)	s	4.0	3.2	3.2	3.2
CNC					
Model		Fanuc Oi-MF Plus	Fanuc Oi-MF Plus i-HMI	Fanuc Oi-MF Plus i-HMI	Fanuc Oi-MF Plus i-HMI
Installed power (10.000 rpm)					
AC main motor	hp / kW	25 / 18.5	25 / 18.5	25 / 18.5	25 / 18.5
Total installed power	kVA	30	35	35	35
Installed power (15.000 rpm)					
AC main motor	hp / kW	-	20 / 15	20 / 15	20 / 15
Total installed power	kVA	-	40	40	40
Dimension and weight (approx.)					
Height**	mm	3,140	3,140	3,140	3,140
Area (front x side)*	mm	2,495 x 2,425	3,170 x 2,535	3,390 x 2,535	3,700 x 2,535
Machine net weight	kg	6,000	6,600	6,900	7,000
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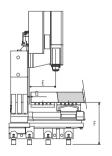
#### Machine dimensions - dimensions in mm

Net weight (machine + optionals + piece)





9,700



9,900

		Δ.	D		C		D E		C C**		H***	Н		
		Α	D	TCA	TCE	TCL	U	-	Г	G	max	min	'	J
ROMI D 600	mm	2,495*	3,080	1,650	1,910	1,890	2,425	617	990	32	3,140	2,810	1,110	790
ROMI D 800	mm	2,820	3,170*	1,410	1,670	1,650	2,535	617	990	32	3,140	2,810	1,110	820
<b>ROMI D 1000</b>	mm	3,040	3,390*	1,410	1,670	1,650	2,535	617	990	32	3,140	2,810	1,110	1,040
ROMI D 1250	mm	3,350	3,700*	1,410	1,670	1,650	2,535	617	990	32	3,140	2,810	1,110	1,340

9,300



#### Standard equipment

- Headstock with BT/ BBT-40 interface (spindle taper ISO-40)
- Rapid traverse 30,000mm/min X, Y and Z axis (ROMI D 600)
- Rapid traverse 40,000mm/min X, Y and Z axis (ROMI D 800 / D 1000 / D 1250)
- CNC Fanuc 0i-MF Plus with 10.4" LCD color screen (ROMI D 600)
- CNC Fanuc 0i-MF Plus with 15" LCD color touchscreen with new HMI (ROMI D 800 / D 1000 / D 1250)
- · Fully enclosed splash guard
- Thermal compensation
- Complete documentation for ROMI product in electronic media
- Speed range from 10 to 10,000 rpm, maximum torque - 118 Nm
- Speed range from 15 to 15,000 rpm, maximum torque - 102 Nm (available ROMI D 800 / D 1000 / D 1250)

- Linear roller guides for X, Y and Z axis
- Electrical installation available for the following voltage/frequencys: 400VCA/50-60Hz
- Ethernet Interface
- Main set of wrenches for machine operation
- Set of levelling screws and nuts
- · Sealed worklight
- 25hp / 18.5kW (regime S3-15%) Fanuc AC main motor for 10 to 10,000rpm
- 20hp / 15kW (S1 continuous regime) for 15 to 15,000rpm - available to ROMI D 800 / D 1000 / D 1250)
- Manual auxiliary panel, with JOG and handwheel functions for the both axis
- Electric panel with centrifugal climatization and positive pressure
- Interlocked sliding safety simple door (ROMI D 600)
- Interlocked sliding safety double door (ROMI D

- 800 / D 1000 / D 1250)
- Headstock coolant system with temperature control for 15 a 15,000rpm version (available to ROMI D 800 / D 1000 / D 1250)
- Automatic lubrication system with line filter and oil level sensor, for the guides and ball screw
- Cutting cooling system with coolant pump (5bar) (coolant tank not included)
- Pneumatic system for cleaning the spindle taper and tool unlocking
- 20 tools umbrella-type automatic tool changer (ROMI D 600)
- 30 tools automatic tool changer (ROMI D 800 / D 1000 / D 1250)
- Standard colors: Texturized Epoxy Enamel Munsell Blue 10B-3/4 and Texturized Epoxy Gray RAL 7035.

#### **Optional equipment**

- Non-articulated horizontal control panel adaptation (ROMI D 800 / D 1000 / D 1250)
- · Air conditioning for electric cabinet
- Autotransformer 200 to 250VCA or 360 to 480VCA
- Box for chips collecting (coolant tank) 400 liters capacity (A)
- · Auto power off
- Magnetic Filter (G)
- Filter for smoke generated from the heating of the coolant oil during machining process (C)
- 6 M codes for external automation interface - 3 independents outputs: 3 Ms Code Enable and 3 Ms Code Disable
- · Eletrical wiring interface preset of tools and
- · Measure and inspection of parts
- Electronic interface
- Remote diagnostics interface via cable
- Rotary table interface (B)
- Preset of tools and measure and inspection of parts interface (F)
- Status light indicator (3 colors)
- Rotary table MGR 230 or MGR 400 (available to D 1000 and D 1250) (D)

- MT-3 center for rotary table
- Manual or Pneumatic tailstock for rotary
- Universal chuck and adapter plate for MGR
- Wash gun
- Automatic door electronic sensor security system
- Oil skimmer
- · Mist exhausting system
- Pneumatic chip cleaning system during machining process
- Cleaning system the machining area, for machine equipped with chip conveyor (H)
- Preset of tools OTS sensor (E)
- Headstock coolant system with temperature control
- High pressure pump for thru spindle coolant system (7 bar or 15 bar)
- High pressure pump for thru spindle coolant system (20 bar or 70 bar)
- Measure and inspection of parts system with OMP-60 probe, optical sensor, with tip: PS3-1C (E)
- Linear scale for X, Y and Z axis

- Longitudinal Hinged belt chip conveyor (TCE) and coolant tank 600 liters capacity (A)
- Longitudinal light chip conveyor (TCL), coolant tank 600 liters capacity (A)
- CAT 40 or DIN 40 Automatic Tool Changer (in place of standard)
- Longitudinal Drag belt chip conveyor (TCA) and coolant tank 600 liters capacity (A)
- (A) Configurable Optional Equipment Mandatory to select
- **(B)** This interface is applied to the rotary table manufactured according to Romi's specification.
- (C) Mandatory "Mist exhausting system" (optional)
- (D) Mandatory "Rotary table interface" (optional)
- **(E)** Mandatory "Preset of tools and measure and inspection of parts interface" (optional)
- **(F)** Mandatory "Eletrical wiring interface preset of tools and Measure and inspection of parts" (optional)
- (G) Only applied to machine equipped with "chip conveyor"
- **(H)** Recommended the sale for aluminium machining.

#### **Power graphs**

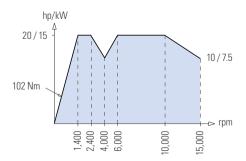
#### 10,000 rpm Headstock

#### hp/kW 25/18.5 15/11 15/11 18 Nm 15/2.5 Nm 6.8 /5 4/3 rpm

Continuous regime S1

Intermittent regime S3 - 15%

#### 15,000 rpm Headstock - Continous rating S1



Drawings are note in scale.

#### Table dimensions - dimensiones in mm (in)

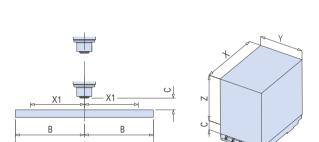


		Α	В	C	D
ROMI D 600 / D 800	mm	914	560	89	102
ROMI D 1000	mm	1,220	560	89	102
ROMI D 1250	mm	1,320	560	89	102

# 18 H8 <sup>+0,027</sup> (Central "T" Slot) 18 <sup>+0,18</sup> (Others "T" Slots) 1.5 x 45° (2x)

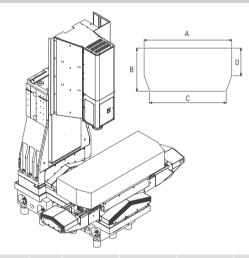
"T" Slot Detail

#### Work area layout - dimensions in mm



		Α	В	C	X	X1	Υ	Z
ROMI D 600	mm	914	457	110	600	300	610	640
ROMI D 800	mm	914	457	110	800	400	610	640
<b>ROMI D 1000</b>	mm	1,220	610	110	1,020	510	610	640
<b>ROMI D 1250</b>	mm	1,320	660	110	1,270	635	610	640

#### **Internal space** - dimensions in mm



30 0+2

		Α	В	C	D
ROMI D 600	mm	1,300	610		-
ROMI D 800	mm	1,630	610	1,470	390
<b>ROMI D 1000</b>	mm	1,750	610	1,590	390
<b>ROMI D 1250</b>	mm	1,935	610	1,775	390

#### 4th Axis Rotary Table - ROMI MGR

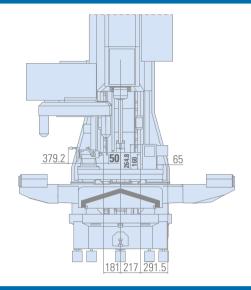


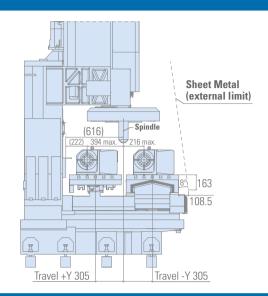
Technical specifications		MGR 210D	MGR 320D
Plate			
Centre height	mm	160	255
Plate diameter	mm	210	320
Centre hole diameter	mm	65	140
Calibrated hole diameter		65H7	180H7
Capacities			
Max. load capacity (on chuck only)	kg	125	200
Maximum speed - Fanuc servo motor	rpm	40	11
Maximum force allowed	N	17,000	28,000
Maximum momentum allowed	N.m	1,265	3,000
Braking system			
Brake locking torque	N.m	400 (pneumatic)	1,600 (hydropneumatic)



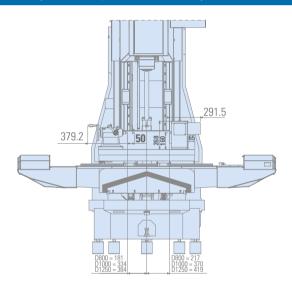
#### Work area layout - MGR - dimensions in mm

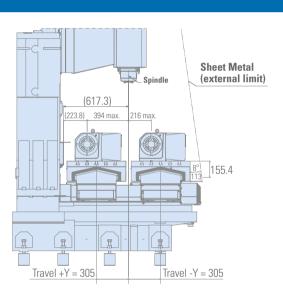
#### MGR 210D (ROMI D 600)



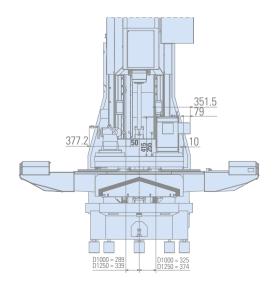


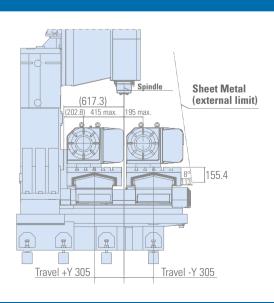
#### MGR 210D (ROMI D 800, D 1000 and D 1250)





#### MGR 320D (ROMI D 1000 and D 1250)





#### CNC FANUC Oi-MF Plus i-HMI **ROMI D 800 / D 1000 / 1250**





#### 1 - Resources and CNC Performance:

- Display touchscreen LCD 15"
- Qwerty keyboard
- · Operation Panel
- Look Ahead = 200
- · Minimum Increment Positioning 0.001 mm or 0.0001 inches
- · Simultaneous control of up to 4 axes
- · Stroke Limit Check Before Move
- Linear Interpolation
- · Circular Interpolation
- Helical Interpolation
- Protection Key
- · PCMCIA Interface 16 GB Limit
- Ethernet Interface
- USB Interface
- Data automatic backup
- Auxiliary functions (T, S, M, F)
- · Parts counter
- Clock
- Calculator
- Machining Cycle Time
- · Pitch Error Compensation
- Bell-Shaped Accel./Decc. in Rapid Feed
- · Linear acceleration/deceleration after interpolation for rapid traverse
- Rapid Traverse Block Overlap
- · Power Mate Manager
- Machine Lock
- Software limit
- Interlocking
- Backlash Compensation
- Torque Limit Skip
- · Languages: Portuguese, English, German, French, Italian, Spanish
- Energy Saving Level Selecting Function
- · Stylus Plastic Pen

#### 2 - Programming Resources:

- Floating Tapping
- · Programmable Return to Reference Position of machine (G28, G30 e G53)
- · High Speed and high quality Machining Package
- Programming Error Prevention

#### 3 - Feedrate Functions:

- Feed per Minute
- Feed per Rotation
- Dwell (G04)

#### 4 - Graphic Functions:

- Graphic Display
- Graphic Simulation 2D
- · Graphic Simulation 3D
- Residual Material Removal

#### 5 - Coordinate Systems:

- · Local Coordinate System Setting
- · Machine Coordinate System Selection (G53)
- Workpiece Coordinate System
- · Workpiece Coordinate Preset (G92, G92.1)
- Tool Geometry and Wear Compensation = 100

#### 6 - Coordinate Values and Dimensions:

- · Absolute (G90) or Incremental (G91) Programming Mode
- Inch/Metric Conversion (G20, G21)
- · Coordinate System Rotation
- · Transfer Zero Point
- · Programmable Mirror Image
- Programmable Data Input

#### 7 - Spindle Functions:

- Spindle Speed Function
- Spindle Orientation (M19)
- · Monitoring of current Spindle Speed

#### 8 - Applied Tool Function:

- Tool Radius Compensation
- · Input Relative Corrector Tool
- Tool Life Management
- · Tool lenght measuring Screen Manual Mode i-HMI

#### 9 – Macro:

- Macro B
- Addition of Custom Macro Commom Variable
- Macro Executor
- · Mbytes of memory for application in "Macro Executor" and "Fanuc Picture" = 6MB
- Ladder programming

#### 10 - Simplification Program Functions:

- · End Face Peck Drilling Cycle
- · Direct Drawing Dimension
- · Drilling / Boring
- Rigid Tapping
- · Retraction for Rigid Tapping
- Cylindrical Interpolation

- · Polar Coordinate Command
- Engraving cycle

#### 11 – Programming Format:

- Programming Format Command ISO Fanuc-10/11
- · i-HMI CNC-Programming

#### 12 - Execution Operations:

- Number / program search
- Comments
- · Sub-program Call
- MDI Operation
- Cycle Start
- Single Block
- Stop Program Execution
- Optional Stop
- Block Delete ("/")
- Program Restart
- DNC Function
- Program Test Function
- · Dry Run Function
- Machine Home
- · High Speed Skip
- Spindle Override Switch
- Tool retract and recover
- G-Codes System A/B/C
- Sequence Number Search
- Extended Part Program Editing
- Background Editing
- Registerable Part Programs = 1000
- Part Program Storage Size = 2 Mbytes (5120m)
- Manual handle Feed
- JOG Feed
- · Feed Override Switch

#### 13 - Maintenance Functions:

- · Course Limits
- Emergency Stop
- External Message Ladder
- · Alarm History
- Operating History
- Maintenance
- Analysis of the servo system
- Help Function
- · Diagnosis Screen
- · Maintenance Screen
- · Power consumption monitoring

#### **OPTIONALS**

- 4Gb/16 Gb PCMCIA card
- RS-232 Serial Interface (2 channels)
- · Anti-Reflective Protection Membrane
- Linear Scale X/Z/Y axes
- Ethernet Data Server Interface
- · Energy consumption monitoring



#### **CNC FANUC 0i-MF Plus - ROMI D 600**



#### 1 - Resources and CNC Performance:

- Display LCD 10.4"
- Owerty keyboard
- Operation Panel
- · Look Ahead = 200
- Minimum Increment Positioning 0.001mm or 0.0001 inches
- · Simultaneous control of up to 4 axes
- · Stroke Limit Check Before Move
- Linear Interpolation
- · Circular Interpolation
- Helical Interpolation
- Protection Key
- PCMCIA Interface 16 GB Limit
- Et hernet Interface
- USB Interface
- Data automatic backup
- Auxiliary functions (T, S, M, F)
- · Parts counter
- Clock
- Calculator
- · Machining Cycle Time
- Pitch Error Compensation
- Bell-Shaped Accel./Decc. in Rapid Feed
- · Linear acceleration/deceleration after interpolation for rapid traverse
- Rapid Traverse Block Overlap
- · Power Mate Manager
- Machine Lock
- Software limit
- Interlocking
- Backlash Compensation
- Torque Limit Skip
- · Languages: Portuguese, English, German, French, Italian, Spanish
- · Energy Saving Level Selecting Function

#### 2 - Programming Resources:

- Floating Tapping
- Programmable Return to Reference Position of machine (G28, G30 e G53)
- · High Speed and High Quality Machining Package
- Programming Error Prevention

#### 3 - Feedrate Functions:

- Feed per Minute
- Feed per Rotation
- Dwell (G04)

#### 4 - Graphic Functions:

- Graphic Display ISO/2D/3D

#### 5 - Coordinate Systems:

- · Local Coordinate System Setting
- · Machine Coordinate System Selection (G53)
- · Workpiece Coordinate System
- · Workpiece Coordinate Preset (G92, G92.1)
- Tool Geometry and Wear Compensation = 100
- Absolute (G90) or Incremental (G91) Programming Mode
- · Inch/Metric Conversion (G20, G21)

#### 6 - Coordinate Values and Dimensions:

- Coordinate System Rotation
- · Transfer Zero Point
- Programmable Mirror Image
- · Programmable Data Input

#### 7 - Spindle Functions:

- Spindle Speed Function
- Spindle Orientation (M19)
- · Monitoring of current Spindle Speed

#### 8 - Applied Tool Function:

- Tool Radius Compensation
- Input Relative Corrector Tool
- Tool Life Management
- · Tool lenght measuring Screen Manual Modea

#### 9 - Macro:

- Macro B
- Addition of Custom Macro Commom Variable
- · Macro Executor
- Mbytes of memory for application in "Macro Executor" and "Fanuc Picture" = 6MB
- Ladder programming

#### ${\bf 10-Simplification\ Program\ Functions:}$

- End Face Peck Drilling Cycle
- Direct Drawing Dimension
- Drilling / Boring
- Rigid Tapping
- · Retraction for Rigid Tapping
- Cylindrical Interpolation
- · Polar Coordinate Command

#### 11 - Programming Format:

Programming Format Command ISO Fanuc-10/11

#### 12 - Execution Operations:

- Number / program search
- Comments
- Sub-program Call
- MDI Operation
- Cycle Start
- Single Block
- Stop Program Execution
- Optional Stop
- · Block Delete ("/")
- Program Restart
- DNC Function
- Program Test Function
- Drv Run Function
- Machine Home
- High Speed Skip
- · Spindle Override Switch
- Tool retract and recover
- G-Codes System A/B/C
- Sequence Number Search
- · Extended Part Program Editing
- Background Editing
- Registerable Part Programs = 400
- Part Program Storage Size = 2 Mbytes (5120m)
- · Manual handle Feed
- JOG Feed
- · Feed Override Switch

#### 13 - Maintenance Functions:

- Course Limits
- Emergency Stop
- · External Message Ladder
- Alarm History
- Operating History
- Maintenance
- Analysis of the servo system
- Help Function
- Diagnosis Screen
- · Maintenance Screen
- Power consumption monitoring

#### OPTIONALS

- Manual Guide i
- Number of Registered programs, expansion (1000)
- Ethernet Data Server Interface
- 4Gb/16 Gb PCMCIA card
- RS-232 Serial Interface (2 channels)
- Linear Scale X/Z/Y axes
- · Energy consumption monitoring























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