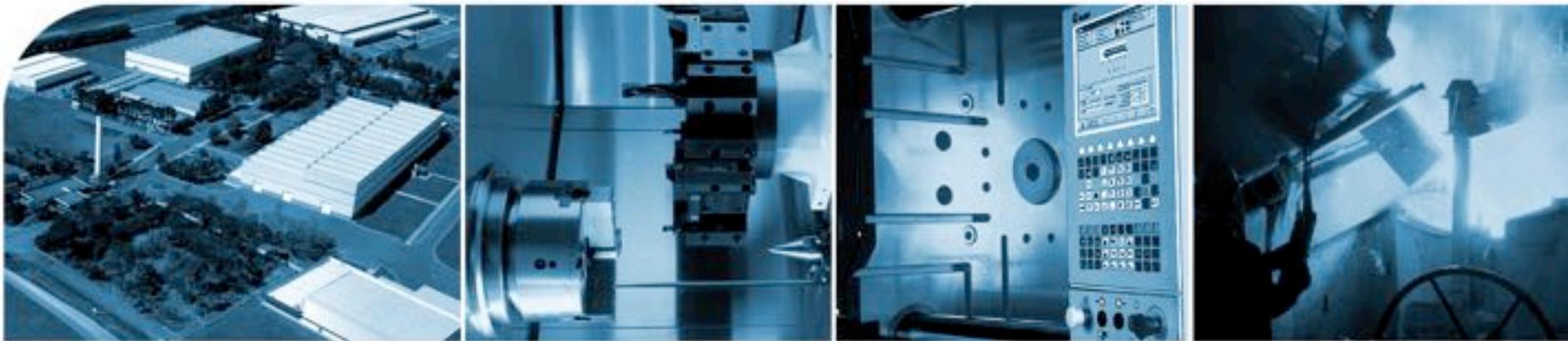




**ROMI**®

A TRADITION OF INNOVATION



# ROMI D Series

Vertical Machining Centers

20/06/2011

## ROMI D 600



- Spindle taper ISO-40
- 20 hp / 15 kW
- Feedrate X / Y / Z = **30 m/min**
- Travel:
  - X = 600 mm
  - Y = 530 mm
  - Z = 580 mm
- Automatic tool changer with 20 tools
- **CNC Fanuc 0i-MD or CNC Siemens 828D**

## ROMI D 800



- Spindle taper ISO-40
- 20 hp / 15 kW
- Feedrate X / Y / Z = **30 m/min**
- Travel:
  - X = 800 mm
  - Y = 530 mm
  - Z = 580 mm
- Automatic tool changer with 30 tools
- **CNC Fanuc 0i-MD or CNC Siemens 828D**

## ROMI D 1000



- Spindle taper ISO-40
- 20 hp / 15 kW
- Feedrate X / Y / Z = **30 m/min**
- Travel:
  - X = 1.020 mm
  - Y = 610 mm
  - Z = 640 mm
- Automatic tool changer with 30 tools
- **CNC Fanuc 0i-MD or CNC Siemens 828D**

## ROMI D 1250



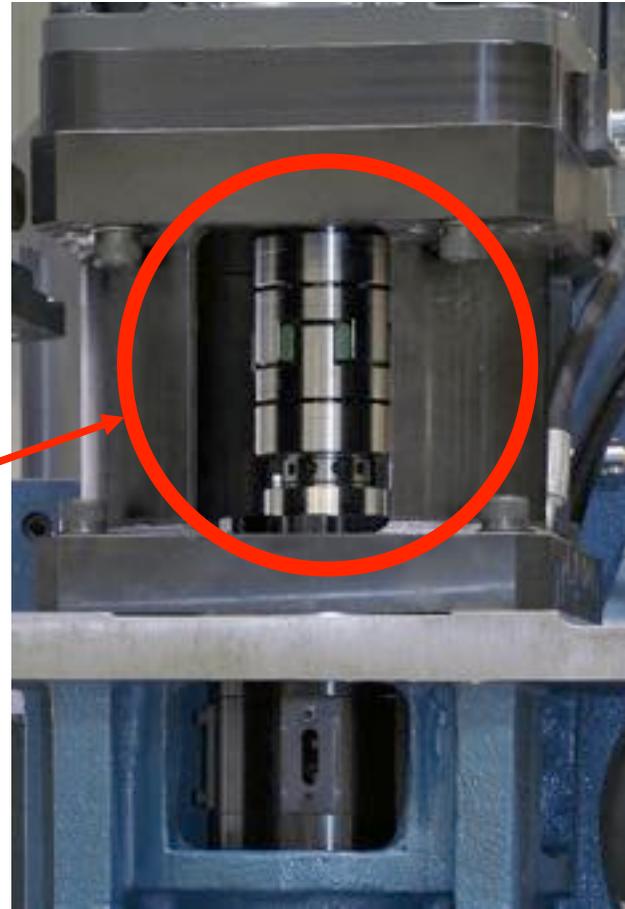
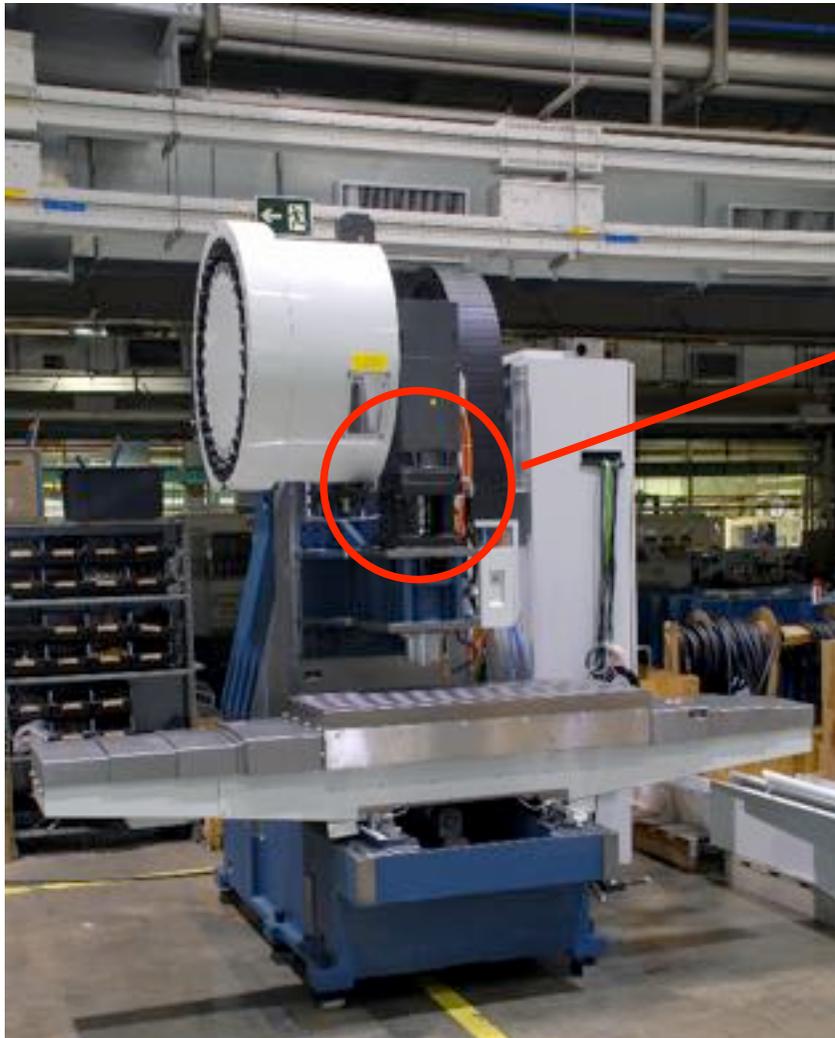
- Spindle taper ISO-40
- 20 hp / 15 kW
- Feedrate X / Y / Z = **30 m/min**
- Travel:
  - X = 1270 mm
  - Y = 610 mm
  - Z = 640 mm
- Automatic tool changer with 30 tools
- **CNC Fanuc 0i-MD or Siemens**

## ROMI D 1000 AP Direct Drive



- Spindle taper ISO-40
- 15.000 rpm
- 25 hp / 18,5 kW
- 15.000 rpm
- Feedrate X / Y / Z = **40 m/min**
- Travel:
  - X = 1.020 mm
  - Y = 610 mm
  - Z = 640 mm
- Automatic tool changer with 30 tools
- **CNC Siemens 828D**

## ROMI D 1000 AP *Direct Drive*



- Headstock Direct Drive 15,000 rpm.
- Main motor directly coupled to the cartridge head, offering great efficiency in transmission of torque and power.
- The cone spindle is prepared tool shank BT / BBT.

- Spindle taper ISO-40 or ISO-50
- 30 hp / 22 kW
- Feedrate X / Y / Z = 30 m/min (ISO-40)
- Feedrate X / Y = 30 m/min (ISO-50)  
Z = 20 m/min (ISO-50)
- Travel:
  - X = 1.530 mm
  - Y = 760 mm
  - Z = 760 mm
- Automatic tool changer with 24 tools (ISO-50)
- Automatic tool changer with 30 tools (ISO-40)
- CNC Siemens 828D

## ROMI D 1500



Illustrative image

## ROMI D 2000

- Spindle taper ISO-40 or ISO-50
- 25 hp / 18,5 kW
- **Feedrate X / Y = 20 m/min (ISO-50)**  
**Z = 150 m/min (ISO-50)**
- Travel:
  - X = 2.000 mm
  - Y = 900 mm
  - Z = 800 mm
- Automatic tool changer with 24 tools (ISO-50)
- Automatic tool changer with 30 tools (ISO-40)
- **CNC Fanuc 0i-MD**



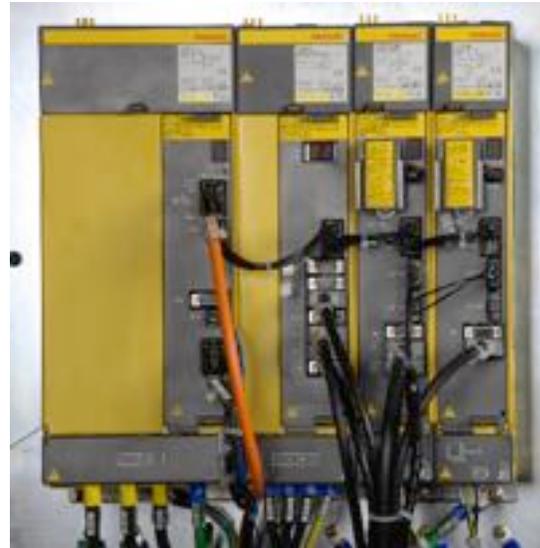
Foto illustrativa

- **CNC**
- **Servomotors**
- **AC Motor**
- **Drives**

• **CNC Fanuc 0i - MD**  
(ROMI D 600 / D 800 / D 1000 / D 1250 / D 2000)

### Benefit:

Homogeneous and compatible electronic, with elements designed to have an optimized interface.



Fanuc Drives



CNC Fanuc Panel



Fanuc Servomotors



Fanuc AC Motor

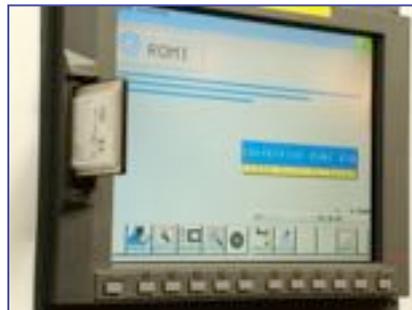
## CNC Fanuc 0i-MD

### Auxiliary Panel for Manual Operation

10,4" LCD monitor

Drive for PCMCIA card

**Benefits:** great flexibility for loading programs and parameters. Machining programs can be executed directly from Compact Flash card or a Pen Drive.



12 softkeys  
(multifunction keys)



RS 232 serial socket for loading programs and parameters.



Electronic handwheel (MPG), with emergency button and JOG for the axis. It is equipped with safety buttons, which do not allow the handwheel to be set off accidentally.

**Benefits:** It gives to the operator more mobility in the work area, facilitating the resetting operations of piece and tool.

• CNC Siemens 828D  
(ROMI D 600 / D 800 / D 1000 / D 1000 AP / D 1250 / D 1500)

- CNC
- Servomotors
- AC Motor
- Drives

**Benefit:**

Homogeneous and compatible  
electrical, with elements designed  
for optimized interfacing.



Siemens Drives



CNC Siemens 828D Panel



Siemens Servomotors



Siemens AC Motor

## CNC Siemens 828D

10,4" LCD color monitor

Drives for:

- Compact Flash Card
- USB
- Ethernet interface for factory network (100 Mbit/ Seg – TCP-IP)



10 softkeys (multifunction keys)

### Auxiliary Panel for Manual Operation



Electronic handwheel (MPG), with emergency button and JOG for the axis. It is equipped with safety buttons, which do not allow the handwheel to be set off accidentally.

**Benefits:** great flexibility for loading programs and parameters. Machining programs can be executed directly from Compact Flash card or a Pen Drive.



**Benefits:** It gives to the operator more mobility in the work area, facilitating the resetting operations of piece and tool.

# ROMI D Series Structure



SEV-MF

Robust structure, made of cast iron, specially designed for CNC machining centers.

ROMI D Series machines was designed through 3D CAD / CAE softwares, aiming to minimize the thermal expansion, damping the chatter and absorb the cutting forces with minimal deformation.

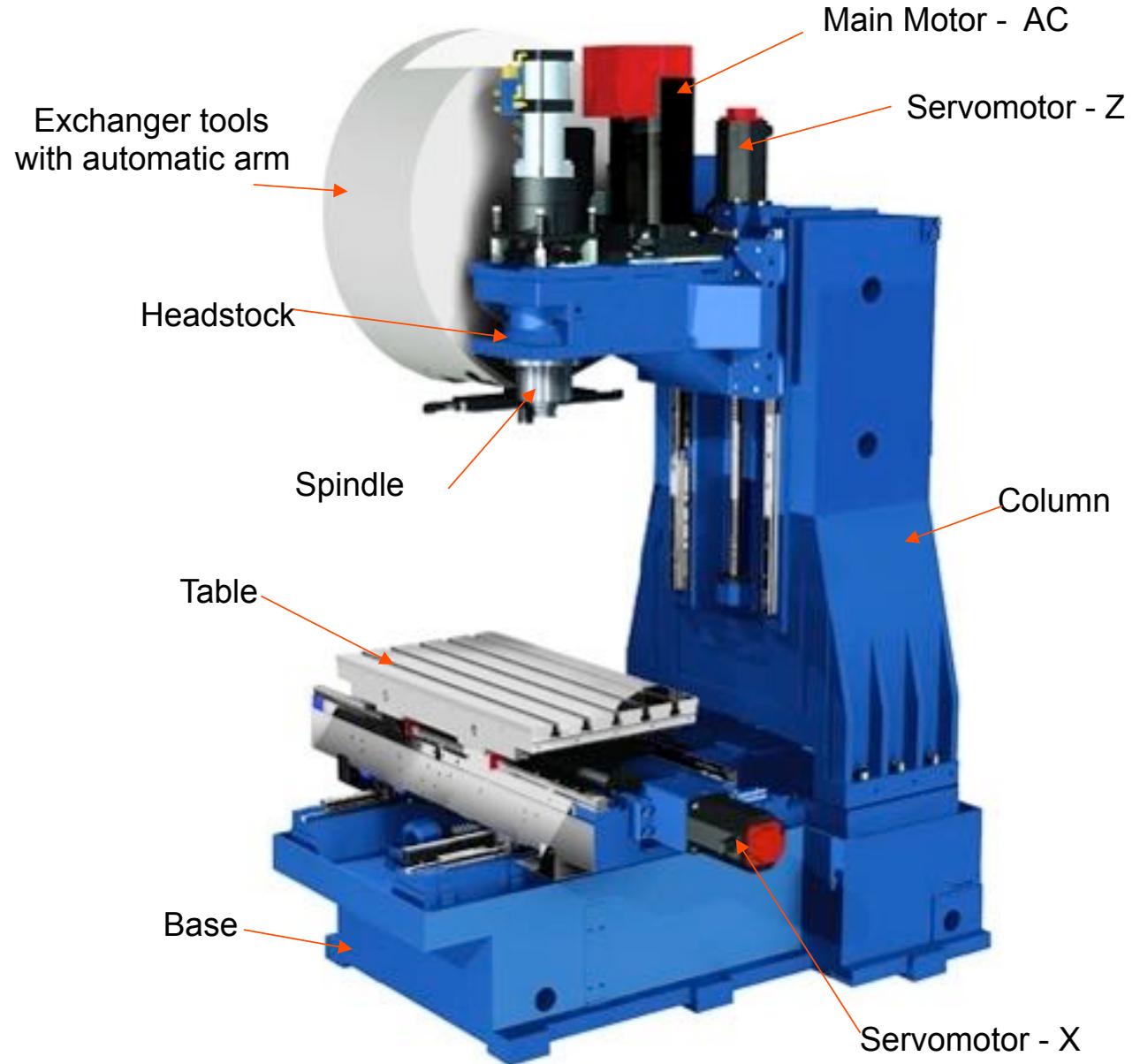
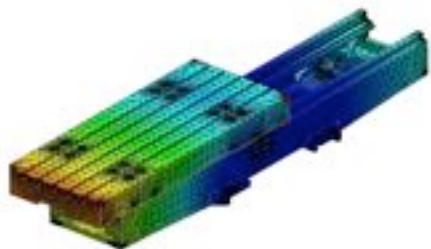
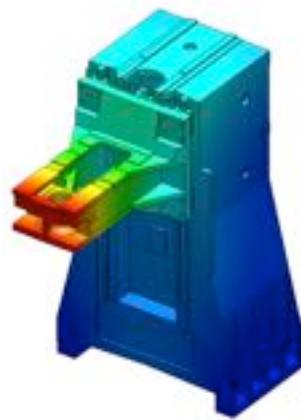
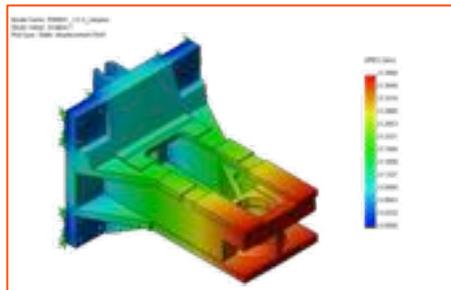
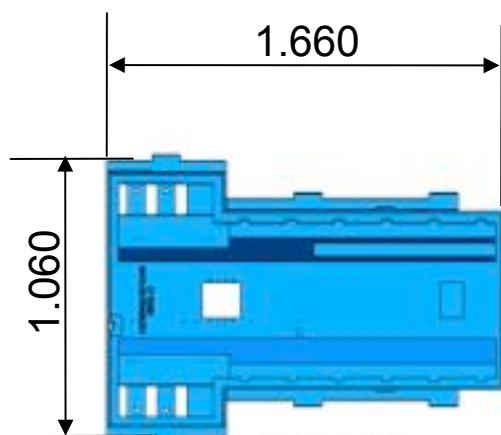
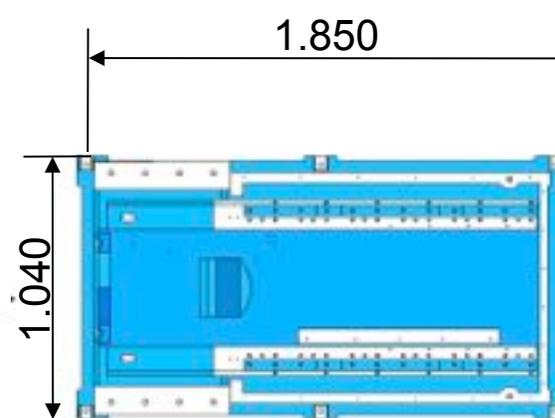


Foto ilustrativa (Estrutura do ROMI D 800)

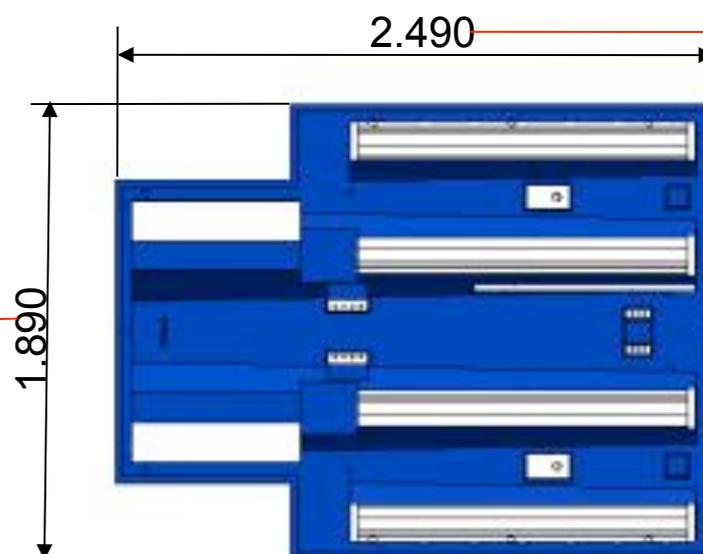
## Comparative - dimensões em mm



**ROMI D 600 / D 800**



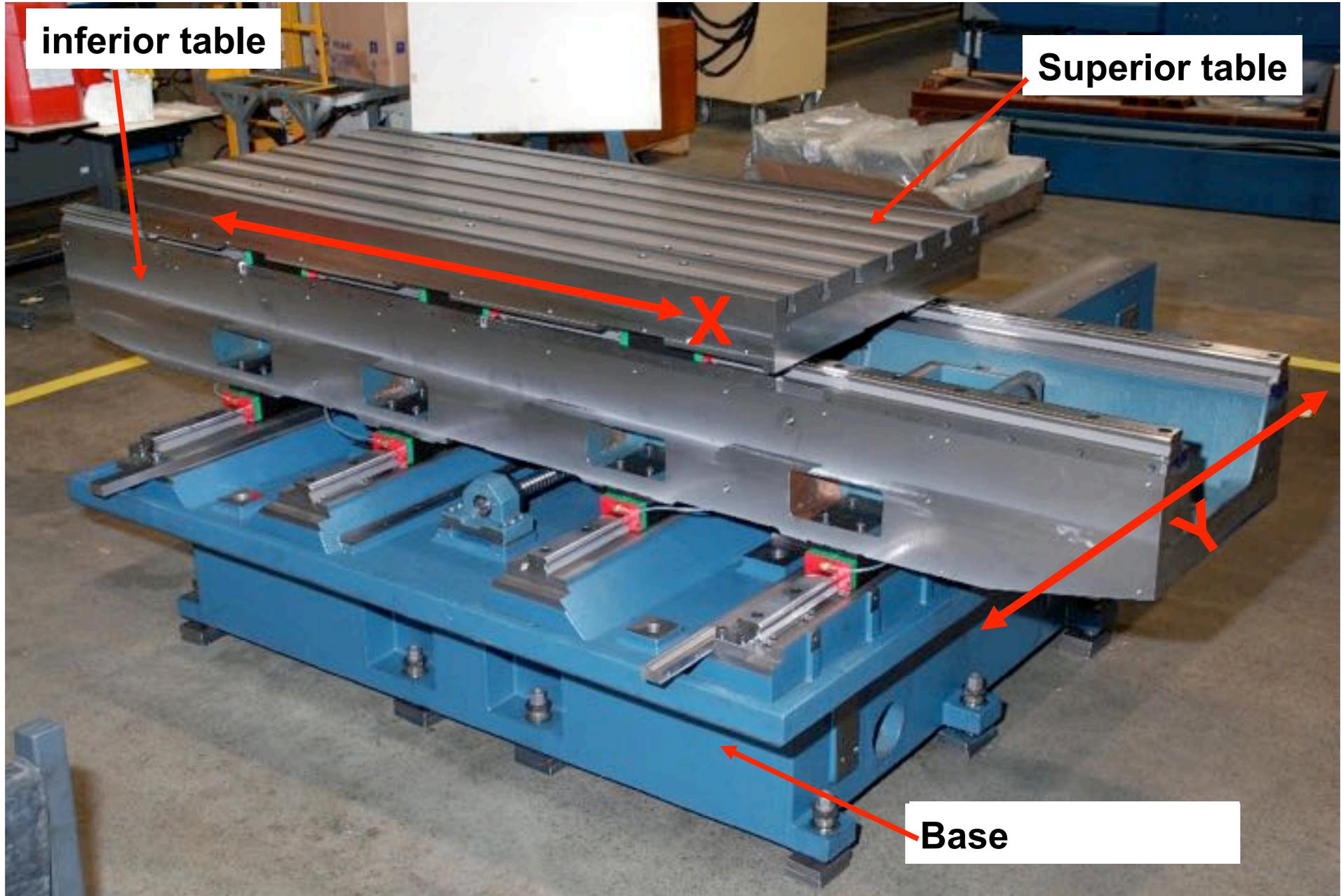
**ROMI D 1000 / D 1250**



**ROMI D 1500**

Increase 82%  
compared to  
D1250.

Increase 35%  
compared to  
D1250.



**inferior table**

**Superior table**

**Base**

- **Sturdy base**  
**Benefit: greater rigidity of the structure**
- **Great distance between guides:**  
**Benefit: increased support and stability of tables**



Monobloc Base - ROMI D 600 / D 800

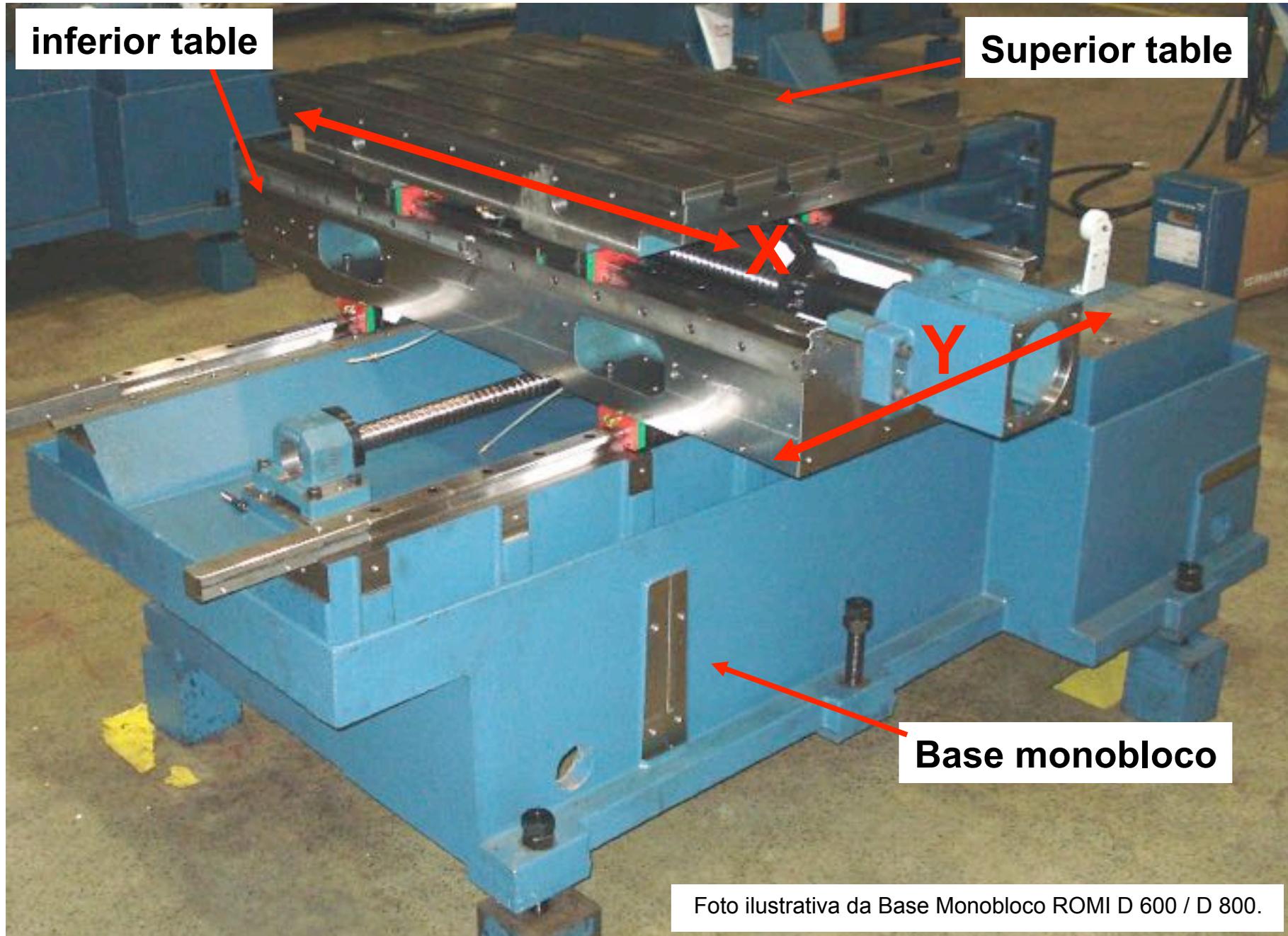


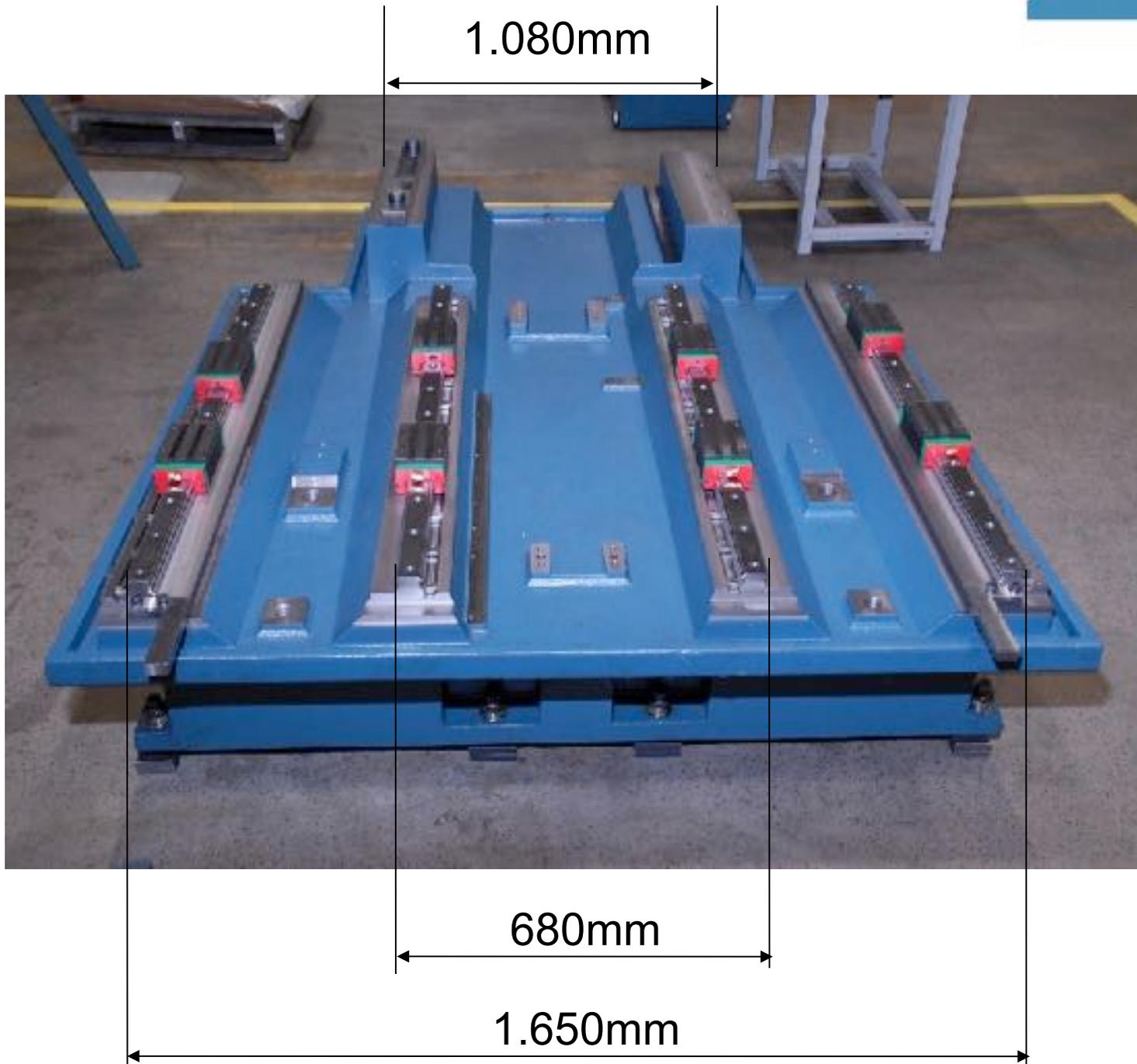
Foto ilustrativa da Base Monobloco ROMI D 600 / D 800.



Linear roller guides on the column guides (Z axis)

Upper table (X axis) supported on linear guides with **6 pads**

Lower table (Y axis) supported on **four linear guides** with 8 pads, offering high stability, allowing the set of tables to support pieces until **1.800 kg.**



Dimensioned to support the headstock set.

It has high rigidity and offers excellent geometric stability for the whole set.



**Column Design:** ———→ this opening allows the passage of the Y axis fixed protection.

**Benefits**  
Low maintenance.



Photo illustration (ROMI D 600 Structure)



Photo illustration (ROMI D 600 Structure)

## **Robust Structure:**

**It has excellent results of rigidity and vibration absorption, with thermal and geometric stability.**

## **Machine weight:**

- **ROMI D 600 - weight 5.000 kg**
- **ROMI D 800 - weight 5.500 kg**
- **ROMI D 1000 - weight 5.900 kg**
- **ROMI D 1250 - weight 6.400 kg**
- **ROMI D 1500 - weight 13.000 kg**
- **ROMI D 2000 - weight 21.000 kg**



**Machine weight:**  
**13.000 kg.**  
**50% increase**  
**compared to the ROMI**  
**D 1250 structure**

Directly coupled to the high precision ball screws in the **X, Y and Z** axes.



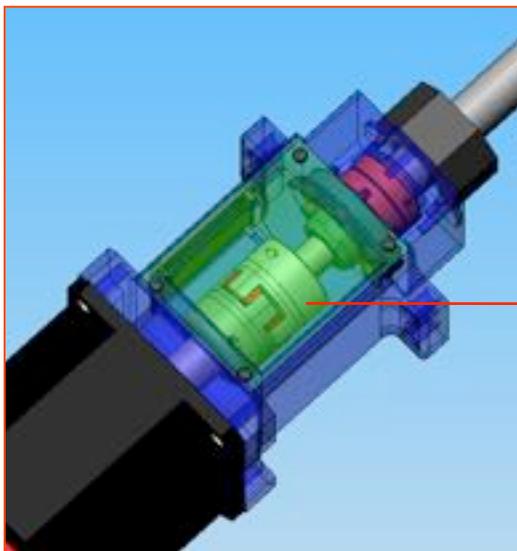
Servomotor - X axis



Servomotor - Y axis

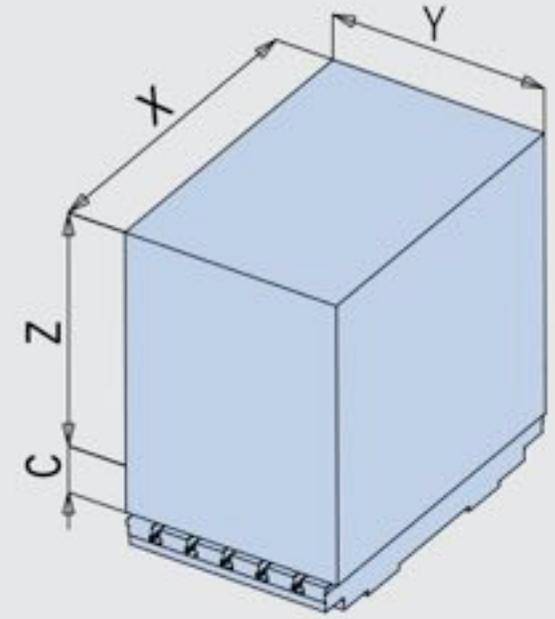
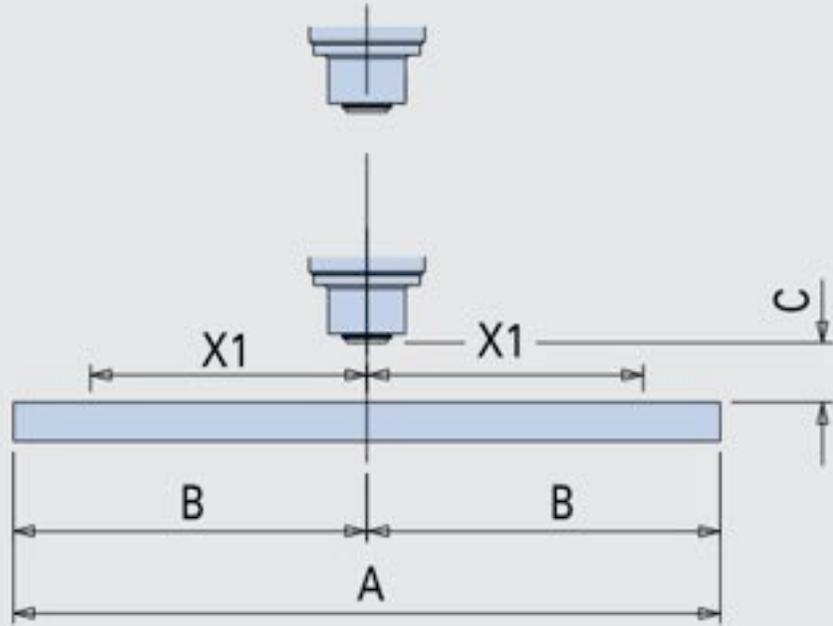


Servomotor - Z axis



## Benefit of direct coupling:

- Contributes for excellent positioning accuracy and repeatability of the axes.
- Lower maintenance - it has no belt



		<b>A</b>	<b>B</b>	<b>C</b>	<b>X</b>	<b>X1</b>	<b>Y</b>	<b>Z</b>
<b>ROMI D 600</b>	mm	840	420	115	600	300	530	580
<b>ROMI D 800</b>	mm	914	457	115	800	400	530	580
<b>ROMI D 1000</b>	mm	1220	610	110	1020	510	610	640
<b>ROMI D 1000AP</b>	mm	1220	610	110	1020	510	610	640
<b>ROMI D 1250</b>	mm	1320	660	110	1270	635	610	640
<b>ROMI D 1500</b>	mm	1.700	850	150	1.530	765	760	760
<b>ROMI D 2000</b>	mm	2.000	1.050	100	2.000	1.000	900	800

**The quality of the manufactory process guarantee reliability and operational effectiveness of the machines**

Every machines are inspected with a laser system to measuring the positioning and repeatability.  
The alignment verification of the axes is accomplished with ball bar system, assuring a perfect interpolation of the X and Y axes.



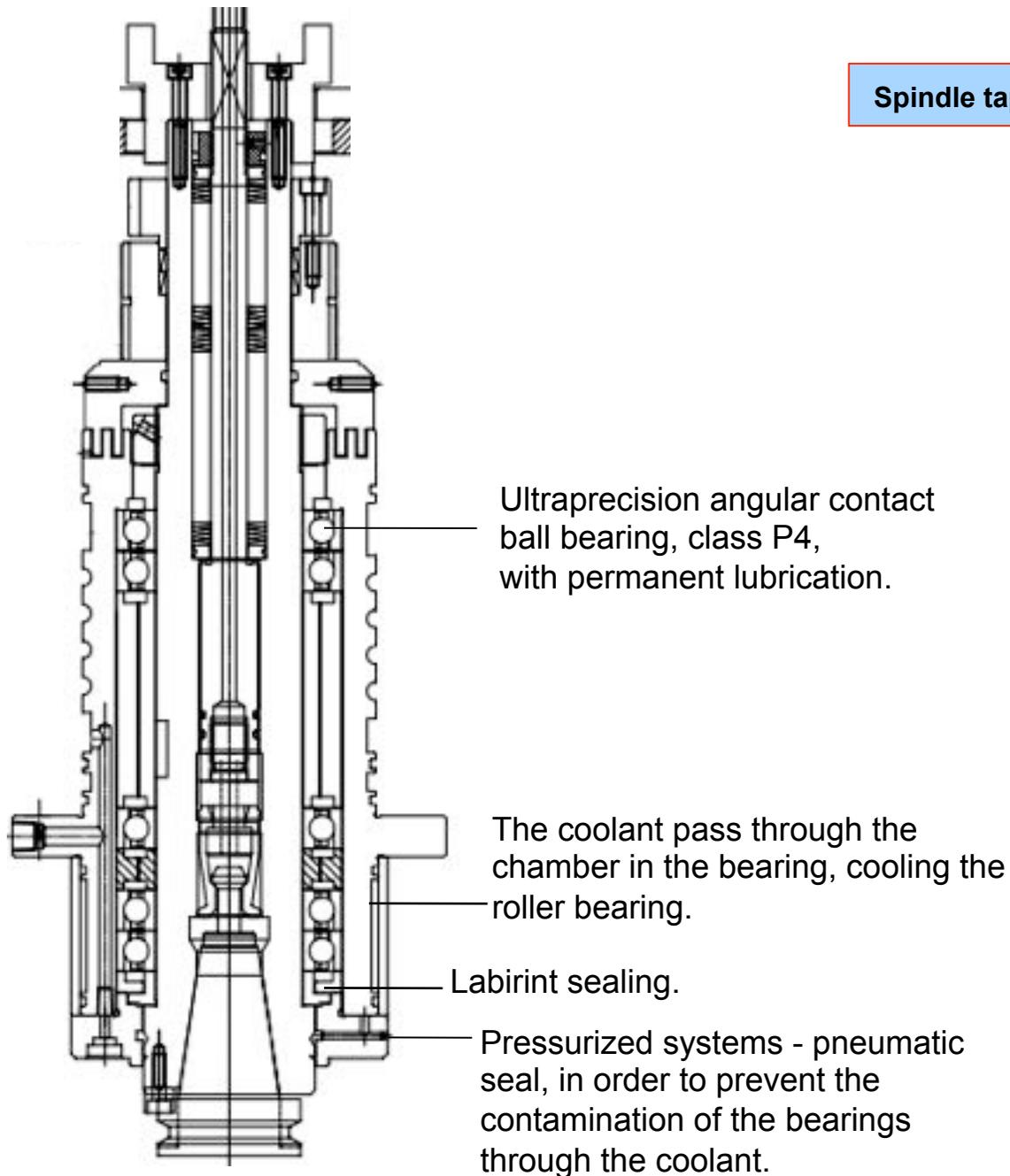
Geometric Inspection with Ball Bar  
(axis alignment verification,  
checking the interpolations)



Laser inspection (positioning and repeatability of the axes)



Geometric Inspection Graphic with Ball Bar



Spindle taper ISO-40 / ISO-50



Coolant flow through the eyes.

Cartridge prepared to receive the coolant system.

Pneumatic system for spindle cleaning, to avoid the chips stop.

## **ROMI D 1000 AP / ROMI D 1500**



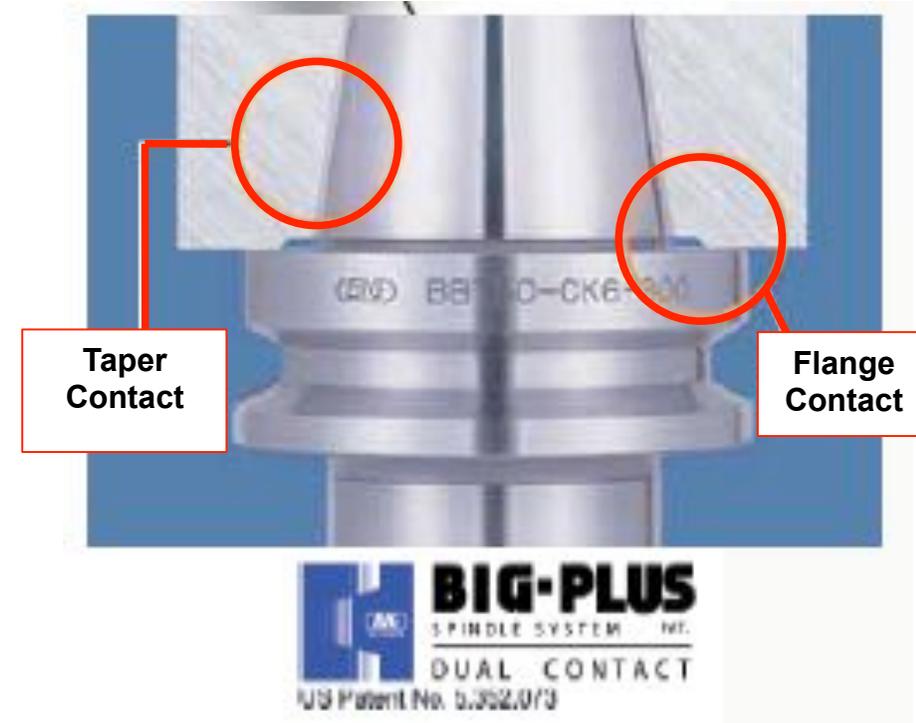
Photo illustration

Spindle taper ISO-40 prepared for **BBT-40** tools:

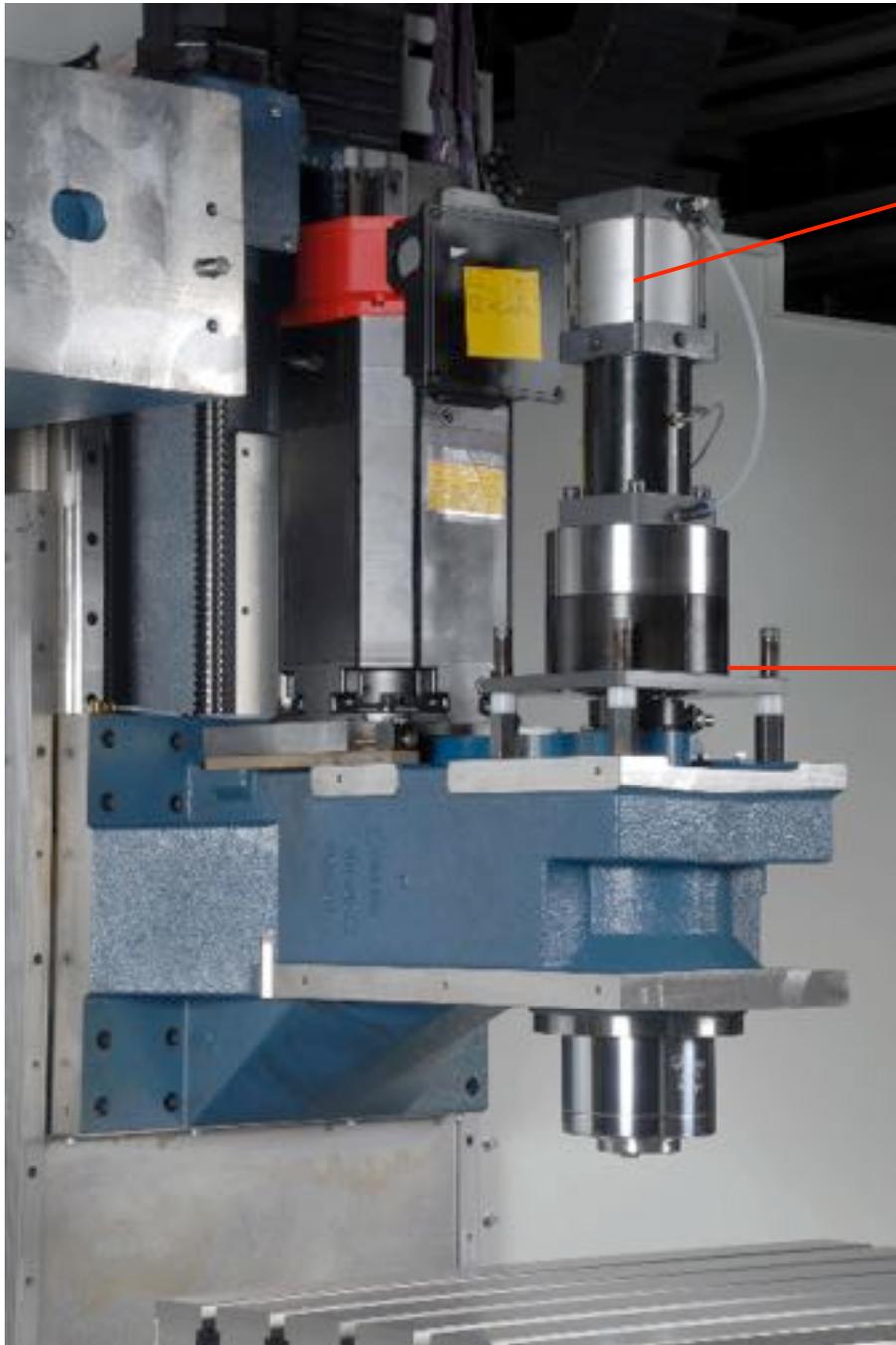
- **8 a 8.000 rpm**
- **10 a 10.000 rpm**

Spindle taper ISO-50 prepared for **BBT-50** tools:

- **6 a 6.000 rpm**



Cartridge supported on ultraprecise roller bearings, designed to support high stresses machining with minimal temperature rise of the set.



**Tool change – liberation through the pneumatic actuator**

Clamping force of the tool-holderl:

- ISO-40 - 750 kgf
- ISO-50 - 1.500 kgf.

**Flotation Mechanical System to drive the draw bar.**

**Benefit:**

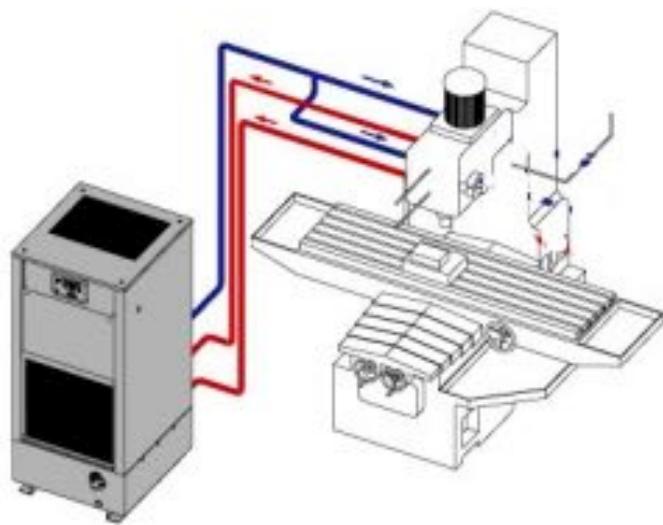
the acting force on the system to release the spring plate is not acting on the bearings - do not force the bearings, helping to increase the life of these components.



Pneumatic panel

# Coolant System for headstock cartridge (optional)

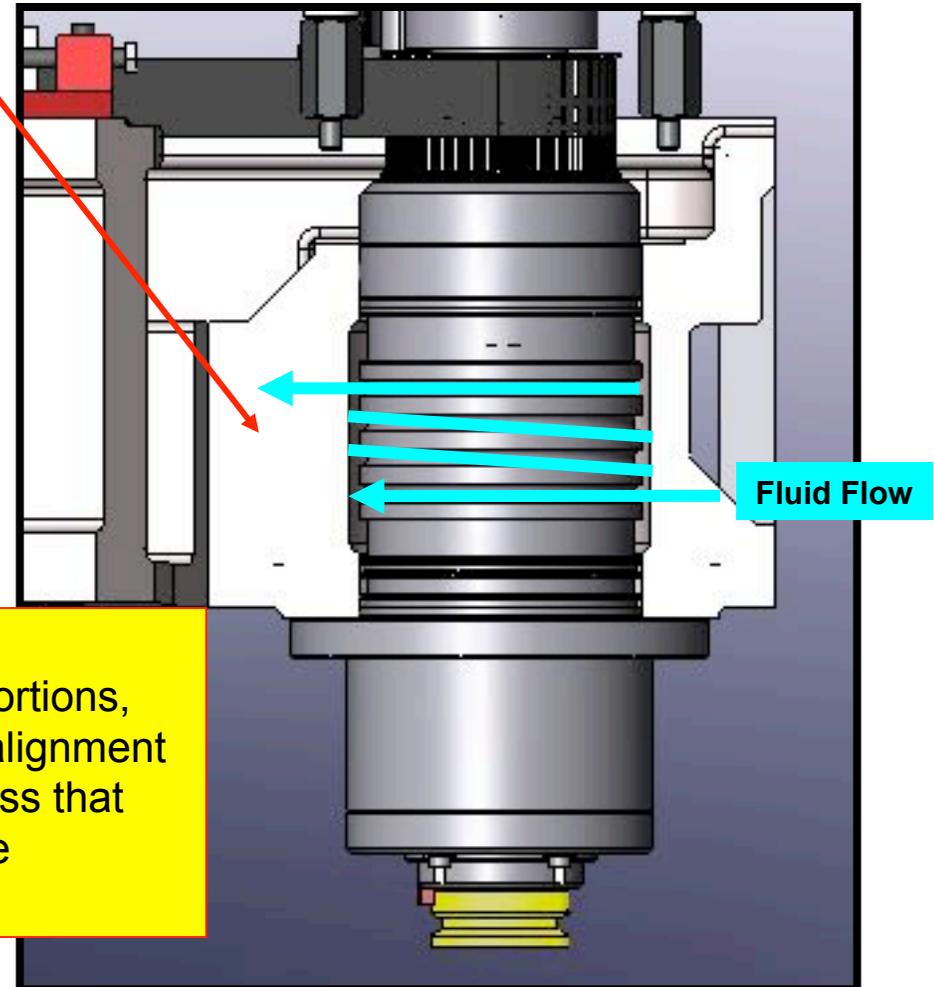
The coolant circulates around the cartridge, to maintain the thermal stability, removing the heat generated through the rolling bearings.



Chiller: maintain the fluid temperature constant.

**Benefit:**

It minimize the thermal distortions, assuring a perfect spindle alignment during the machining process that require high precision of the positioning of the Z axis.

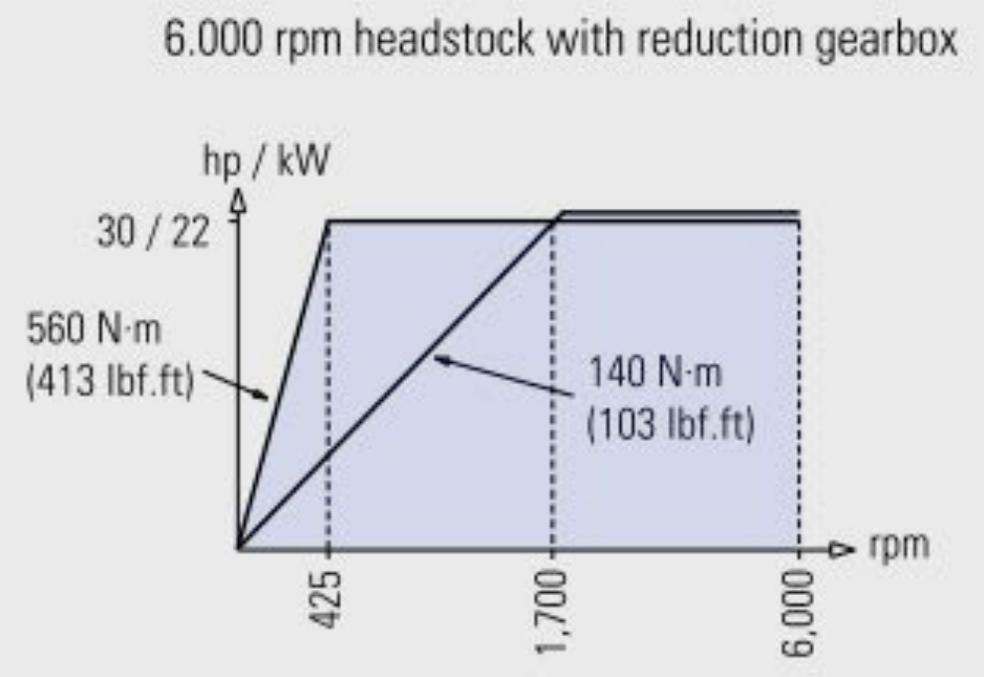
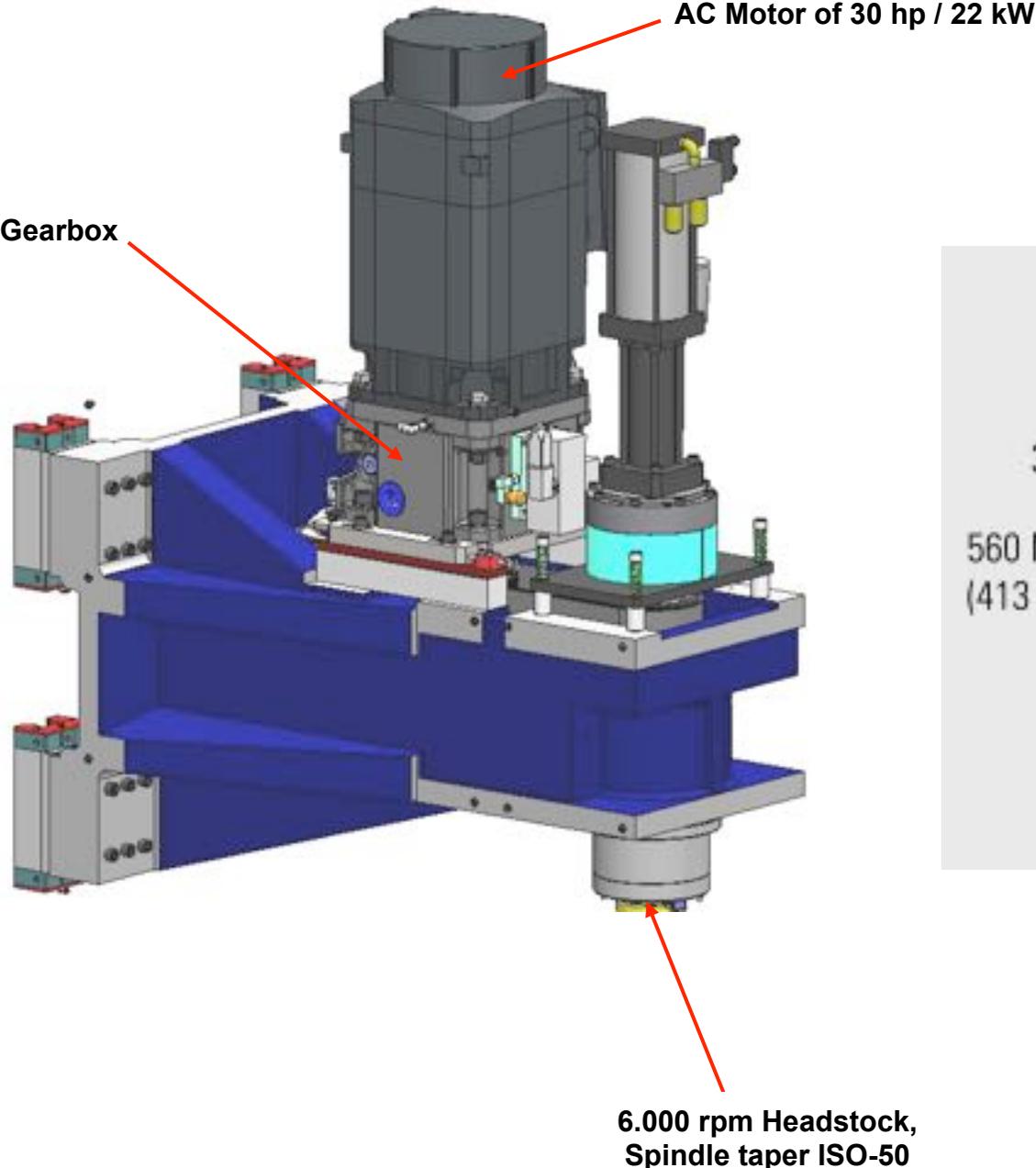


**NOTE: For ROMI D 1000 AP DD - the coolant system is standard.**

# ROMI D 1500 with gearbox



SEV-MF



# Automatic tool changer

Fast, precise and reliable automatic tool changers, helping to increase the machining productivity and efficiency.

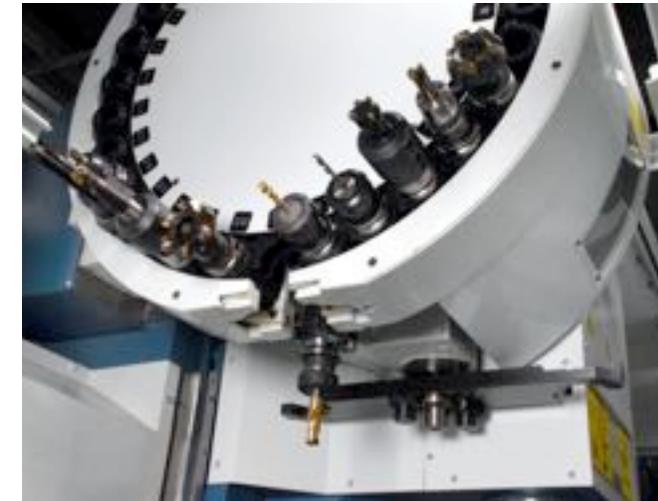


Automatic tool changer (Romi projet), with **20 tools ISO-40** of capacity (ROMI D 600)

Displacement of the magazine set in the linear guides.



Tool changer (umbrella type) Romi Project



Double arm automatic automatic tool changer and **30 tools ISO-40** of capacity (ROMI D 800 / D 1000 // D 1000AP / D 1250 / D 1500)

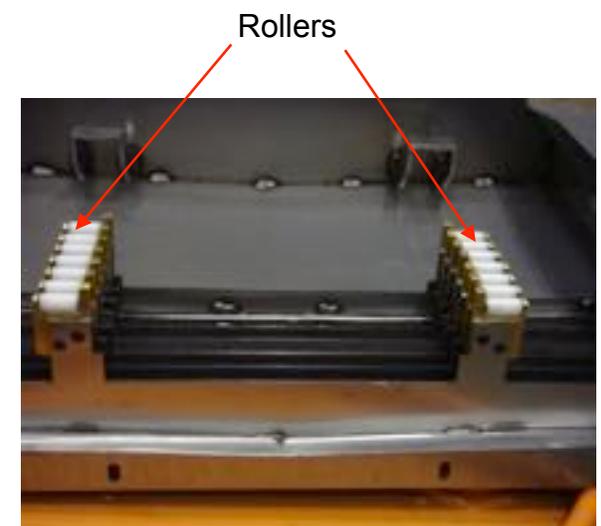


Double arm automatic automatic tool changer and **24 tools ISO-50** of capacity (ROMI D 1500)



Telescopic Protection to protect the linear guides and the ball screws with rollers.

Benefit: more durability and less noise of the displacement set.

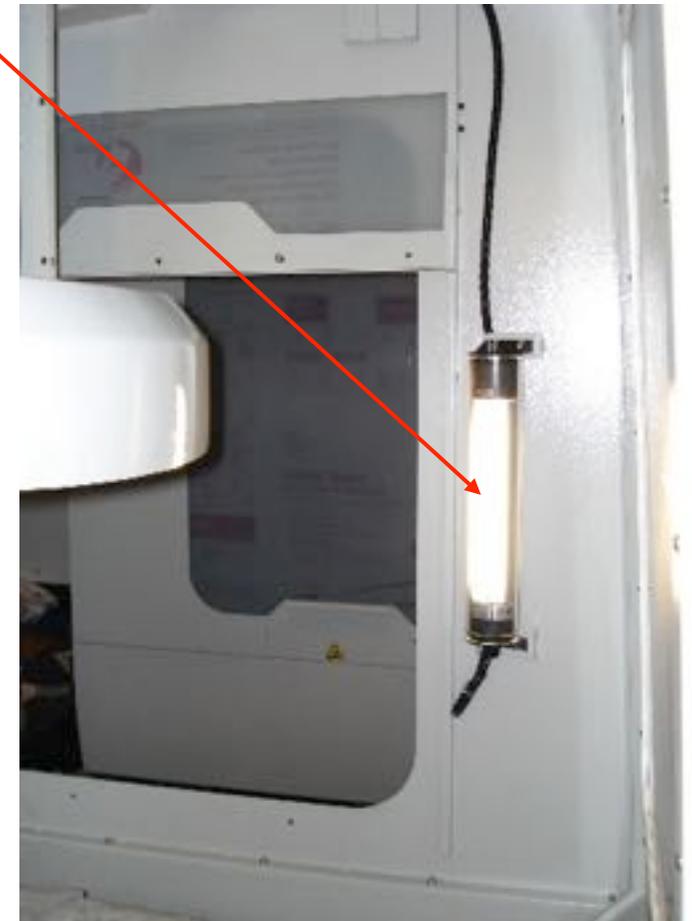


Telescopic protection – back view

## Worklight



Worklight – right side



Worklight – left side



**Operator door electric security lock**  
Doesn't allow to open the door with the machine working.



**Operator's door and side doors made of polycarbonate**  
High impact resistance in case of accident.



**Doors Sensors**  
If the door be opened the machine stops and generate alarms.



**Auxiliary Panel for Manual Operation with safety buttons.**  
It doesn't allow to the handwheel have turned accidentally.



Emergency Stop Button

# Optional Equipments

# Chip conveyor (optional)



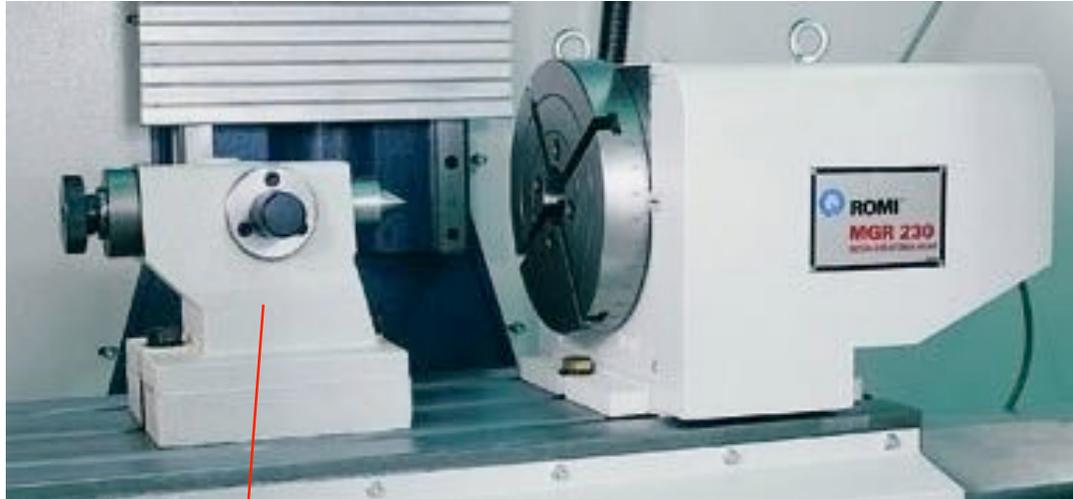
Chip conveyor installed in the frontal chip box.



Hinged belt type chip conveyor (TCE)



Helical type chip conveyor (TCH)

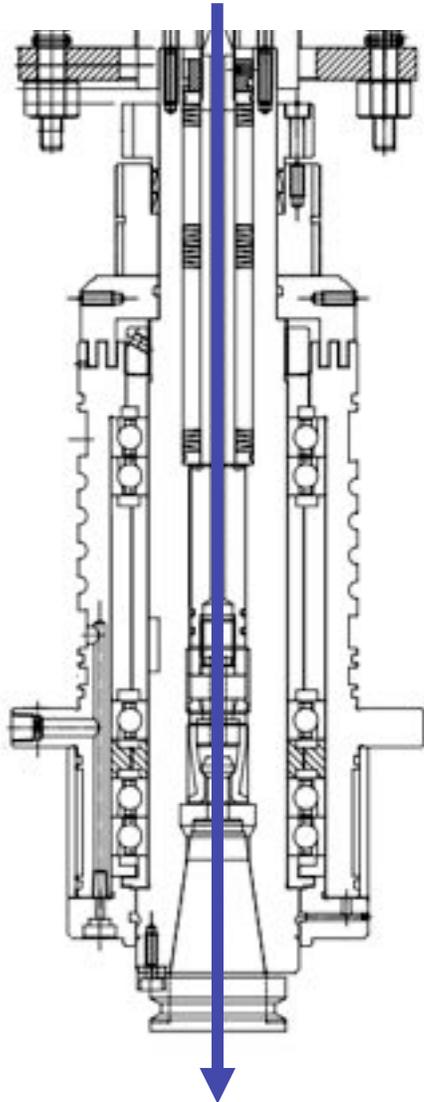
**Tailstock (optional):**

It is used with the rotary table to clamp the workpiece between centers. It has a manual body positioning and a manual or pneumatic driven quill.

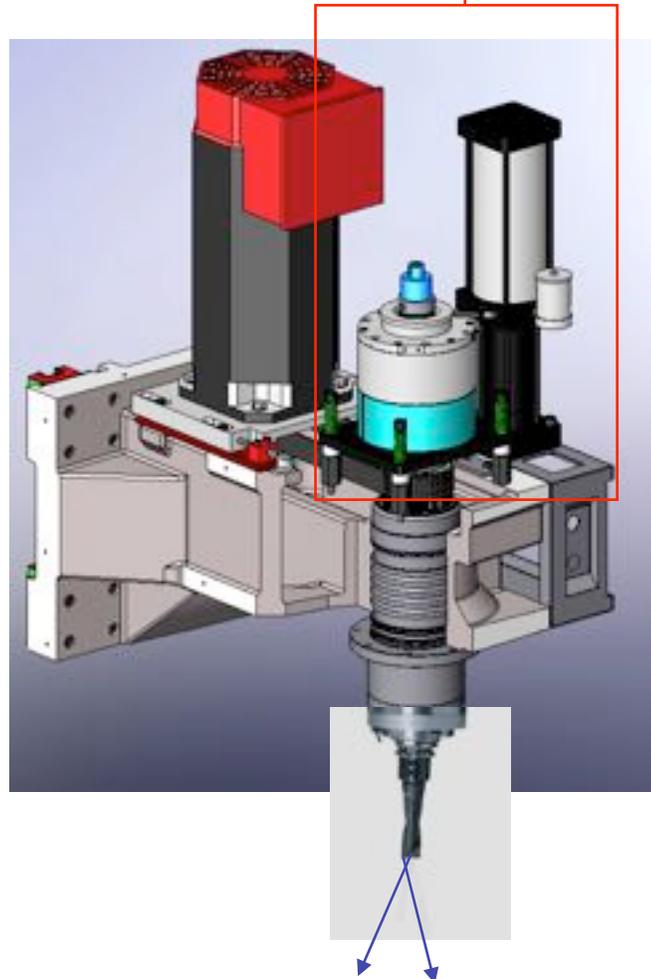
- It allows to machine in any angle and with interpolation;
- Rotary displacement bi-directional;
- Driven Plate by angular bevel gear and worm gear mechanism;
- Pneumatic brake system.

**MGR Rotary Table Interface (optional):**

- Drive to the table servomotor (in the electric panel);
- Electric cables;
- Pneumatic set (for brake system).



**Tool change – liberation through the  
hydro-pneumatic actuator.  
Fixation Force 7 kN.**



## High Pressure Pumps (optional)

- 7 bar
- 15 bar
- 20 bar
- 50 bar



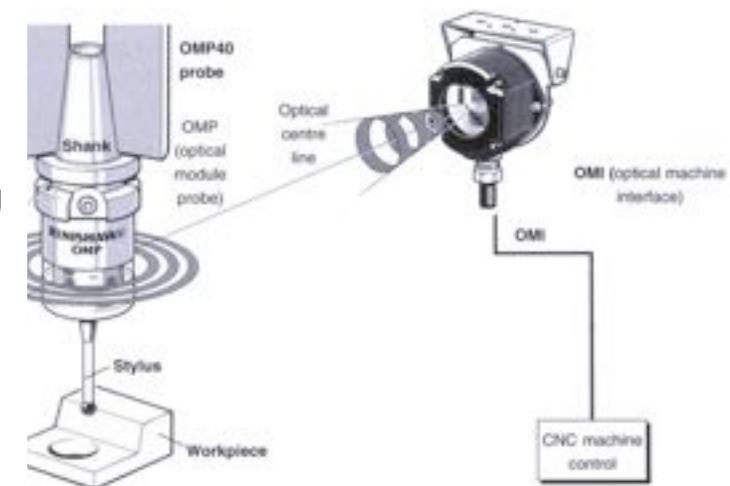
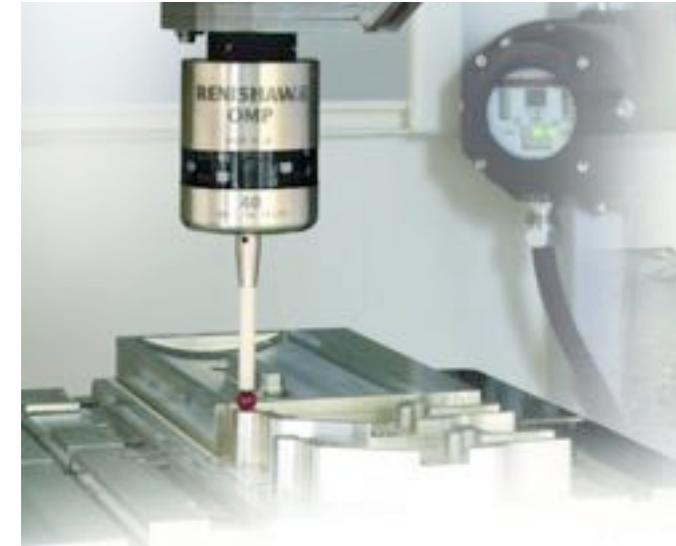
# Measurement and Inspection System of workpieces (optional)

System composed of OMP-40 probe and OMI optical receiver (manufactured by Renishaw).

The probe is fixed in the spindle of the machine as a machining tool, which emits infrared signals to an OMI optical receiver and it sends the data to the CNC machine that performs the adjustments automatically.

## Benefits:

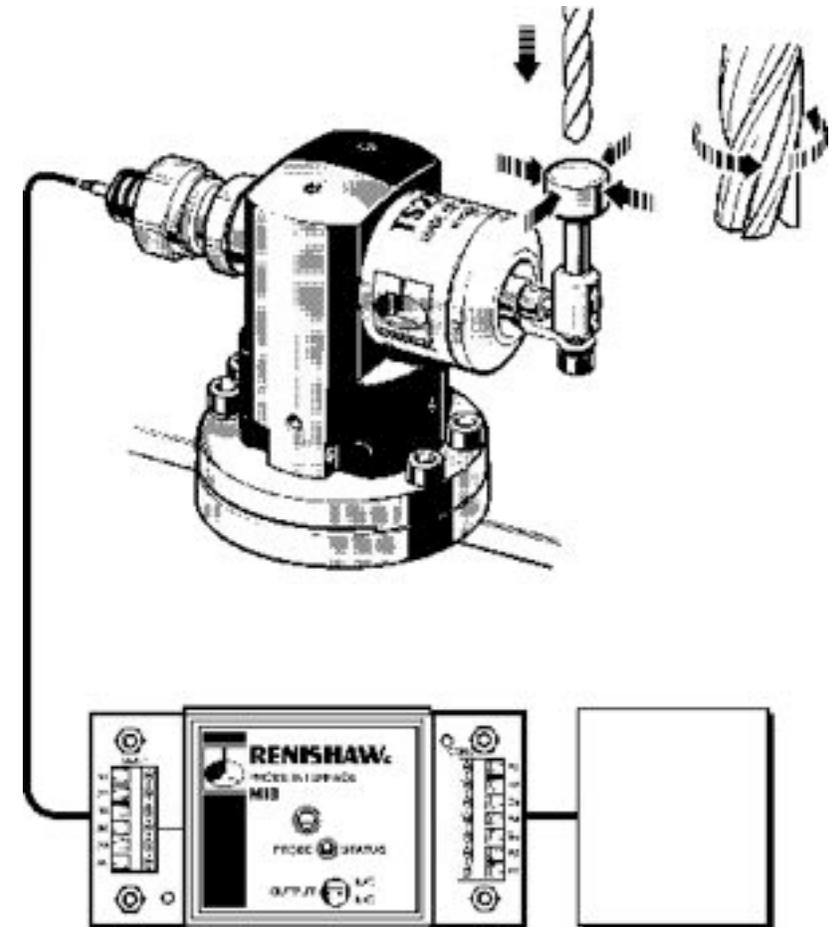
- Using this system allows the user to reduce the setup times of workpieces on the machine, as well as the inspection processes, leaving more time for the machine effectively machine parts.
  - Measurement of machined workpieces, without the need for its removal from the machine;
  - Alignment of workpieces or fixation devices, simplifying and reducing the need for manual setup;
- After the measurement made of a workpiece or fixation device, the machine itself performs a “self alignment”, because the references of the machining program can be “rotated” according to the position information read by the probe and reported to the CNC.
- Inspection of the work process to monitoring the dimensional and the position of the workpiece, making an automatic correction if necessary;
  - Increased of productivity and flexibility of working, by the automatic measurement and by the automated setup.



Consisting of a **TS-27R** probe fixed on the machine table, connected via an interface to the CNC machine.

## Benefits:

- Setup of the machine automatically, via automatic inspection of diameter and length of tool, with automatic compensation measures (offset) on page of offset tools on CNC, reducing significantly the time of preparation machine (reducing downtime).
- Detect the tool breakage during machining processes. It also allows to perform the automatic replacement of a worn tool by another equivalent tool available on the exchanger, thereby avoiding the waste of workpieces, when coupled with the manager's life tools.
- Elimination of errors by manual data entry of tools on CNC offset tools.



## Oil Skimmer (Optional)

It removes the lubricant oil from the coolant, through a belt that circulate immersed at the coolant, driven by electric motor.

Also can be a disk instead of a belt.

The oil picked by the belt is removed through the scrapers and driven to the receptor tank.

### **Benefits:**

- Contributes to increase coolant fluid useful life because it separates the lubricating oil from the coolant fluid and it minimizes alterations of the coolant fluid characteristics;
- It increases the coolant life;
- Reduce the water consumption;
- This is a low cost solution;
- It is in agreement with the environmental standards.





It removes the mist coming from the machining with coolant.

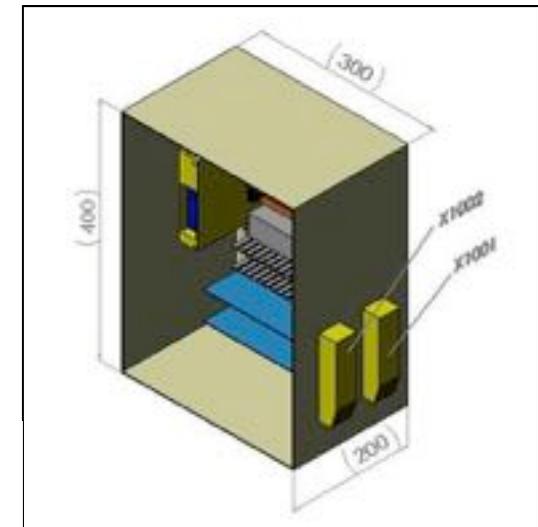
## 6 M codes for external automation interface

With the purpose to facilitate the automated systems application on the machines, Romi developed the optional Automation Interface.

This interface allows the machine to work with external automations developed by the user, in an easy way and with programming flexibility, without logics alterations of machine ladder.

Example of automation systems using the optional **Interface for Automation**:

- Systems for workpieces load and unload (**gantry loader, robots, etc.**);
- Clamping devices;
- Pallets change devices;
- Positioning devices for workpieces turn;
- Special coolant systems.



*The interface components are installed in a panel, with external dimensions of 300 x 200 x 400 mm.*

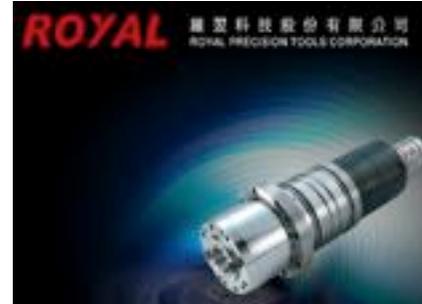
# Examples of major component suppliers



SEV-MF

**FANUC**  
FA BRASIL

**SIEMENS**



**Rexroth**  
Bosch Group

*HIWIN*<sup>®</sup>



**EUCHNER**

**GRUNDFOS**



**KABELSCHLEPP**

**NSK**

**SKF**

**FAG**

 **TEXIUS**

**HEIDENHAIN**



**MURR**  
ELEKTRONIK

**LUBE**  **USA**

**igus**<sup>®</sup>



**ROMI**®

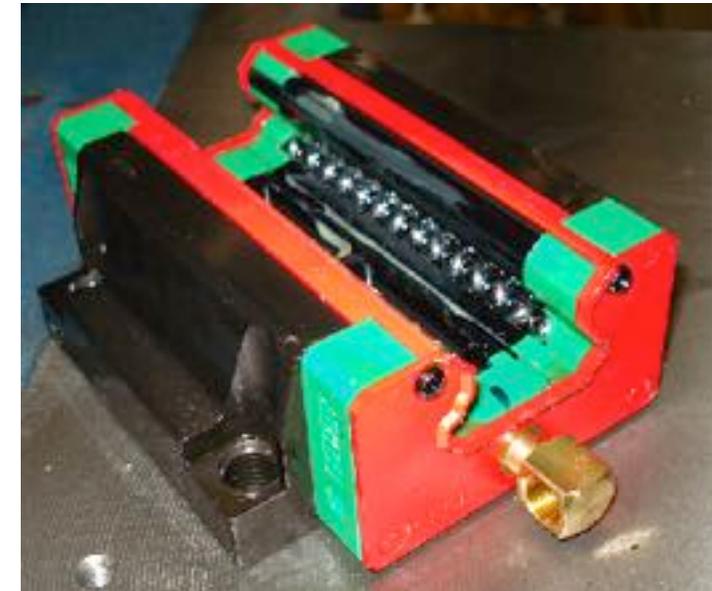
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**Sales Engineering – SEV-MF**

(+5519) 3455-9500

[www.romi.com](http://www.romi.com)

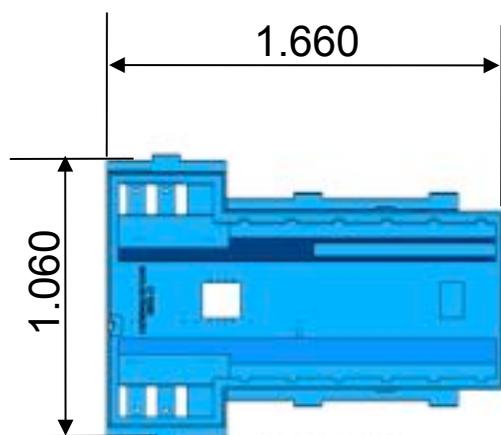
- **Oferecem alta rigidez e alta capacidade de carga**
- **Baixo ruído**
- **Baixo coeficiente de atrito**



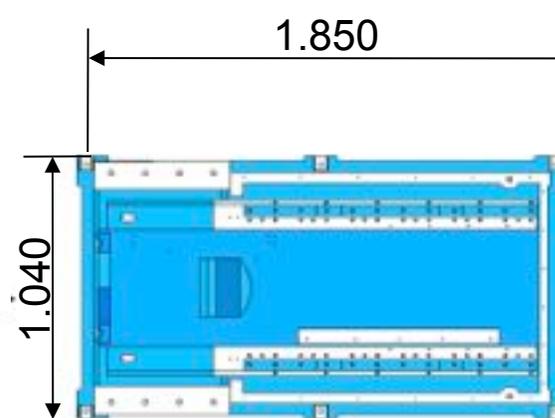
Detalhe da sapata das guias lineares

Fusos de esferas de alta precisão, temperados e retificados, com porcas pré-carregadas, oferece alta rigidez. Em conjunto com os servomotores oferecem deslocamentos rápidos e precisos, altas velocidades e acelerações.

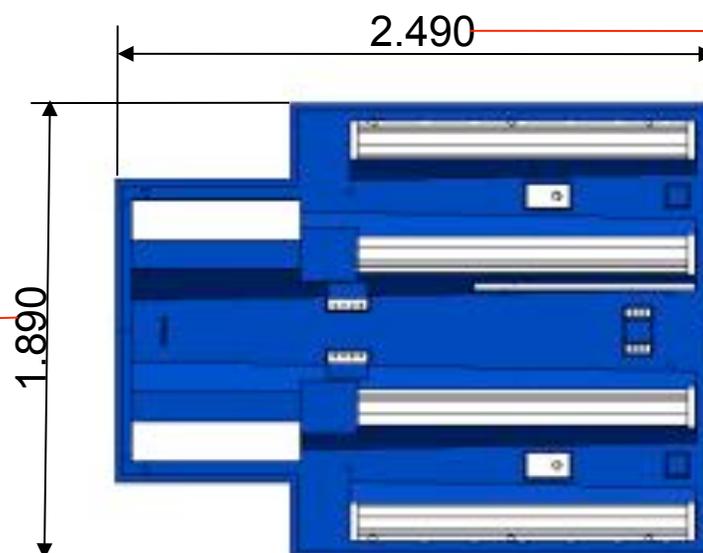
## Comparativo - dimensões em mm



**ROMI D 600 / D 800**



**ROMI D 1000 / D 1250**



**ROMI D 1500**

**Aumento de 82% em  
relação a D1250.**

**Aumento de 35%  
em relação a D1250.**