



VR

VERTICAL
MILLING MACHINES

5-axis
for finishing machining





TRIMILL – your partner for PORTAL MILLING MACHINES

Our main mission is to develop and manufacture portal milling machines with an excellent proportion of QUALITY – OUTPUT – RELIABILITY – PRICE. An important part of our services comprises a well-elaborated system of the warranty and after-warranty service.

A wide selection of the TRIMILL machines contains vertical and horizontal portal milling machines, which are distinguished by high rigidity and accuracy and are intended for machining of pressing tools, moulds and precise workpieces in the single-piece production.

- Machine travels from (X,Y,Z) 1.100/1.000/700 mm to 13.500/4.500/1.800 mm
- Three-, five- and multi-axis design

Partnership with our customers is based on following pillars:

- Proficiency, experience, professionalism
- Customized solutions
- Development of new solutions
- Top service and immediate availability of spare parts

Figures and facts

- 12.900 m² of the production area and more than 130 specialists in development, design, assembly and technology
- Since 2000, when our family company was established, we have been operating in the markets all over the world
- 500 portal machining centres at 200 satisfied customers in 30 countries of the world

Our customers

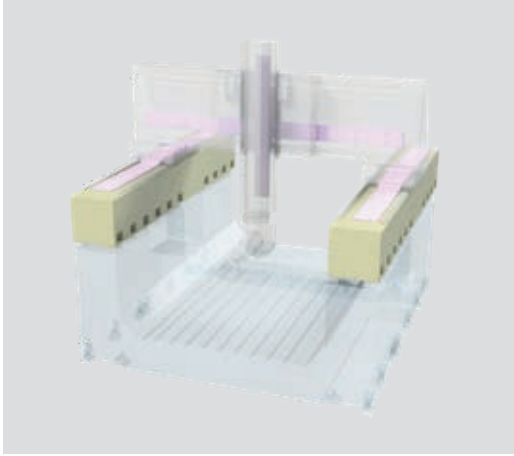
- Tool factories
- Forging shops
- Automotive industry
- Aerospace industry
- Energy industry

The most frequently machined materials on our machines

- Tool steel
- Aluminium alloys
- Cast iron
- Structural materials

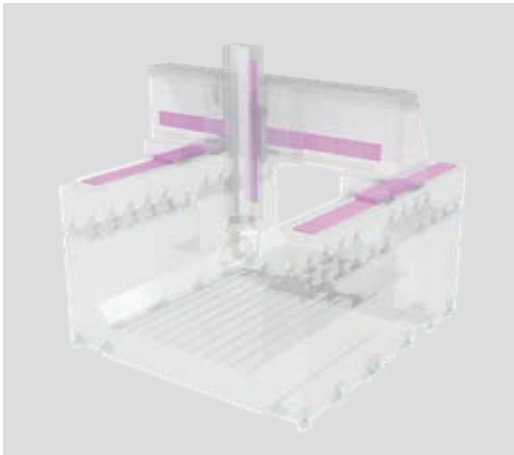
■ UHPC AND LINEAR MOTORS

UHPC is a high-strength concrete with excellent properties for vibration damping and thermal stability of machines.



ADVANTAGES OF USING UHPC:

- UHPC concrete longbeams installed on a U-shaped cast iron base effectively dampen vibrations and contribute to higher quality and precision of the machined surface
- vibration damping has a positive effect on tool life and reduces production costs
- low thermal conductivity and high thermal capacity increase the thermal stability of the machine
- compressive strength $\geq 150 \text{ N / mm}^2 \Rightarrow 6x$ stronger than concrete C20 / 25
- TRIMILL produces all concrete parts in own concrete plant
- UHPC reduces the carbon footprint



LINEAR MOTORS:

- digitally controlled in all axes
- double motorization in the X axis
- liquid cooled

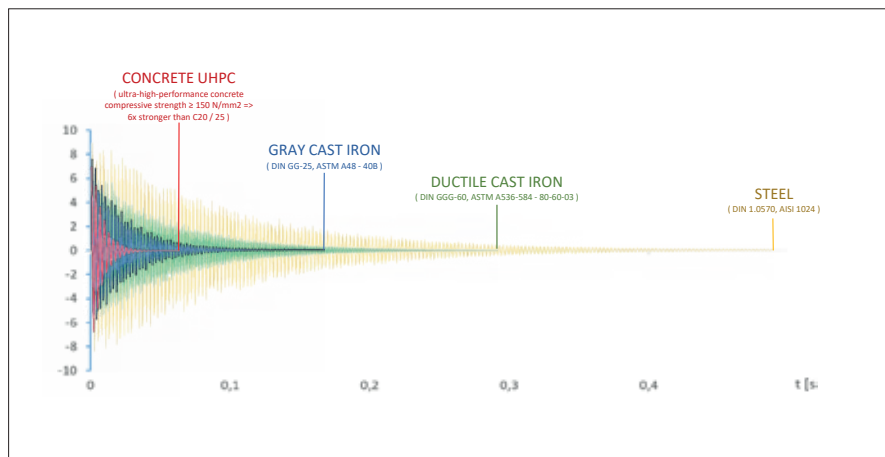


ADVANTAGES OF USING LINEAR MOTORS:

- more dynamic acceleration and deceleration: the machining center achieves high feed rates, shortens cycle times and increases overall productivity
- increased accuracy: extremely high positional accuracy and repeatability leads to higher workpiece accuracy
- increased quality of the machined surface: smoother movement control and better response to rapid changes in cutting forces is reflected in excellent surface quality and reduced vibration
- reduced maintenance: a lower number of wearing parts reduces maintenance requirements, reduces the risk of downtime and increases machine usability
- quieter operation: the use of fewer mechanical components reduces noise and vibration levels

STRUCTURAL DESIGN:

- all precise surfaces are manually scraped
- maximum quality and long-term accuracy
- U-shaped base made of highly ribbed casting
- precision table integrated in the base for clamping workpieces with T-slots in the longitudinal direction



The graphs above show the amplitude of vibration as a function of time for steel, cast iron and UHPC concrete, which are the most commonly used materials for the construction of machine tools.

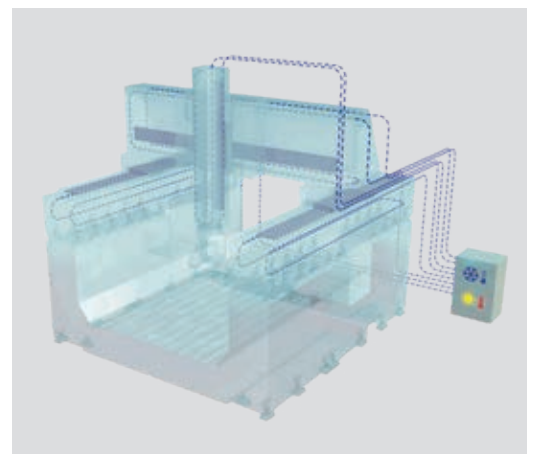
TEMPERATURE STABILIZATION:

Standard configuration includes:

- closed temperature controlled circuits of all main components of the machine
- all main parts - longbeams, crossbeam and ram are liquid chilled
- all primary sections of linear motors and all magnets are temperature stabilized

Optional active temperature stabilization:

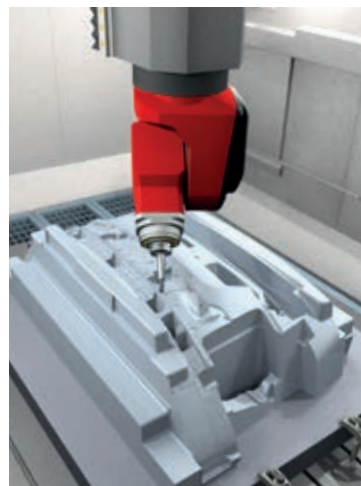
- the cooling circuit of the motors and main components of the machine is supplemented by the function of heating the circulating liquid
- covers of the machine and the crossbeam are supplemented with an insulating layer made of synthetic rubber
- active temperature stabilization is independent and remains in operation even when the machine is switched off



TRIMILL VR 3022



The TRIMILL VR line of 5-axis gantry machines is specially developed for high-speed semi-finishing and finishing milling. The key technical parameters are the high speed of working feeds (60,000 mm/min.) and acceleration (max. 6 m/s²), which are achieved by using linear motors and a weight-optimized crossbeam.



5-AXIS MACHINE FOR FINISHING MACHINING

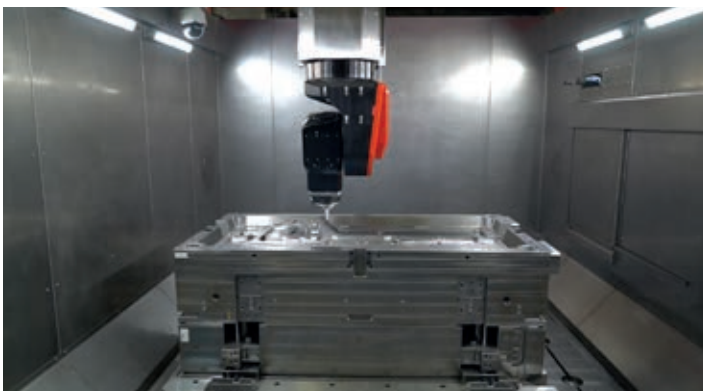


Work area

X-axis	3.000 mm
Y-axis	2.200 mm
Z-axis	1.200 mm
Distance between sidewalls	3.055 mm

Machine table

Clamping plate made of cast iron	
Clamping surface	3.250 x 2.350 mm
Weight of work piece	max. 7.000 kg/m ²
9 T-slots in direction of X-axis	18 mm H12
T-slot distances	250 mm



Feed rate and acceleration

Feed rate X, Y, Z	60.000 mm/min
Acceleration X, Y, Z	max 6 m/s ²

Optional milling heads and spindles (S1/100%)

T15C	HSK-A63, 42 kW, 67 Nm, 24.000 ot/min
T15C	HSK-A100, 50 kW, 95 Nm, 15.000 ot/min
L1	HSK-A63, 42 kW, 67 Nm, 24.000 ot/min

Accuracy of machine according to VDI/DGQ 3441

Positional uncertainty P (X, Y, Z)	max. 0,006 mm
Positional scatter Ps (X, Y, Z)	max. 0,004 mm

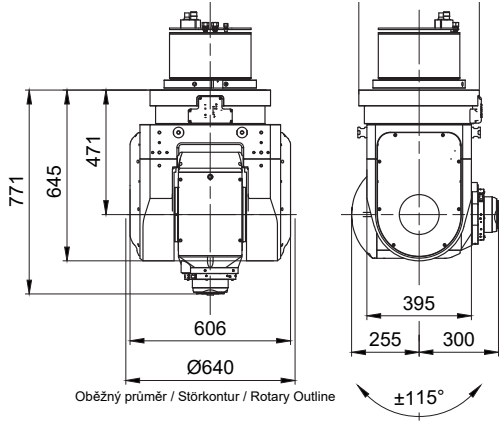
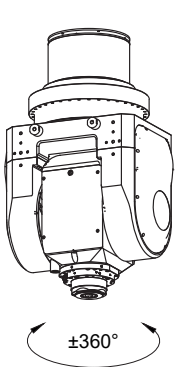
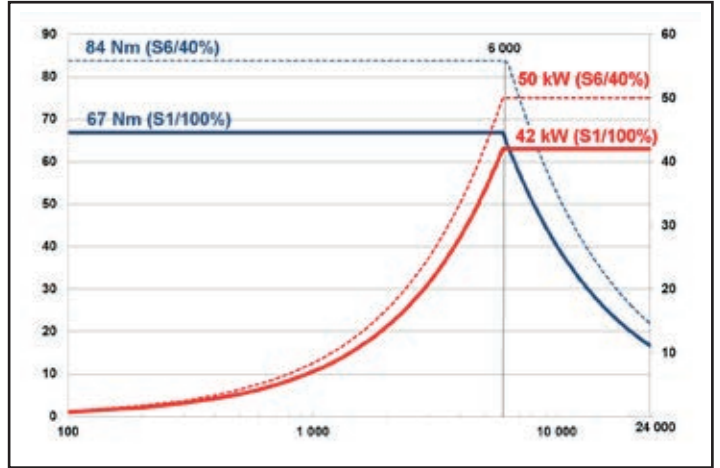
Technical data

Machine weight approx	70.000 kg
Machine dimensions - footprint	39 m ²



MILLING HEADS

T15C



Oběžný průměr / Störkontur / Rotary Outline

T15C

42 kW, 67 Nm, 24.000 ot/min, HSK-A63

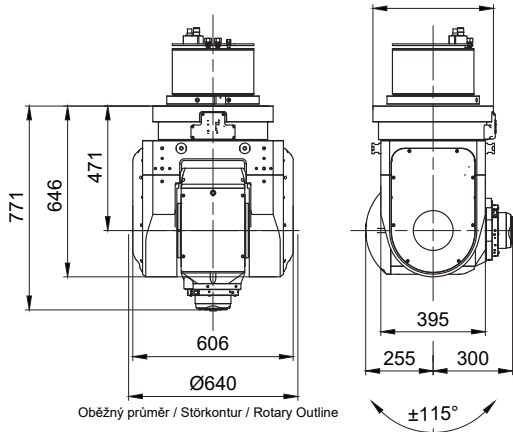
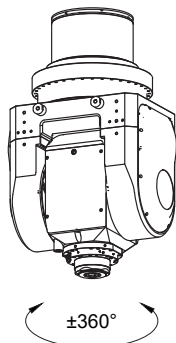
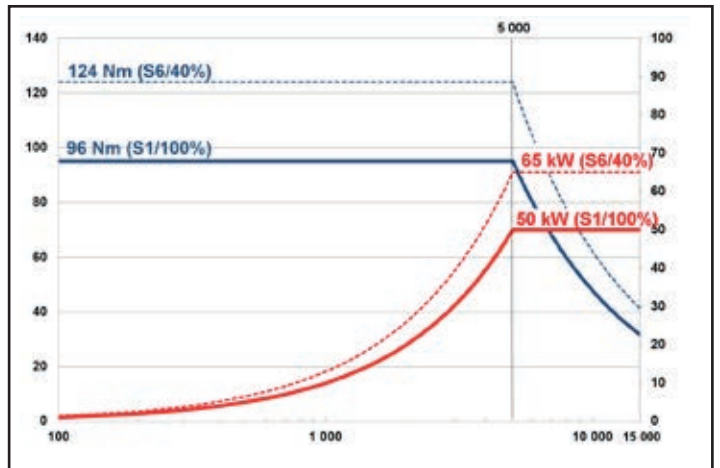
Osa B (frézovací hlava): $\pm 115^\circ$

Osa C (frézovací hlava): $\pm 360^\circ$

Moment zpevnění osy B: 5.400 Nm

Moment zpevnění osy C: 6.120 Nm

T15C



Oběžný průměr / Störkontur / Rotary Outline

T15C

50 kW, 96 Nm, 15.000 ot/min, HSK-A100

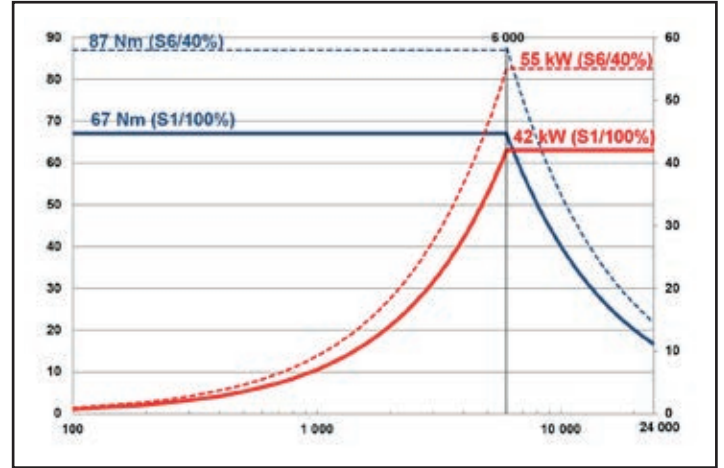
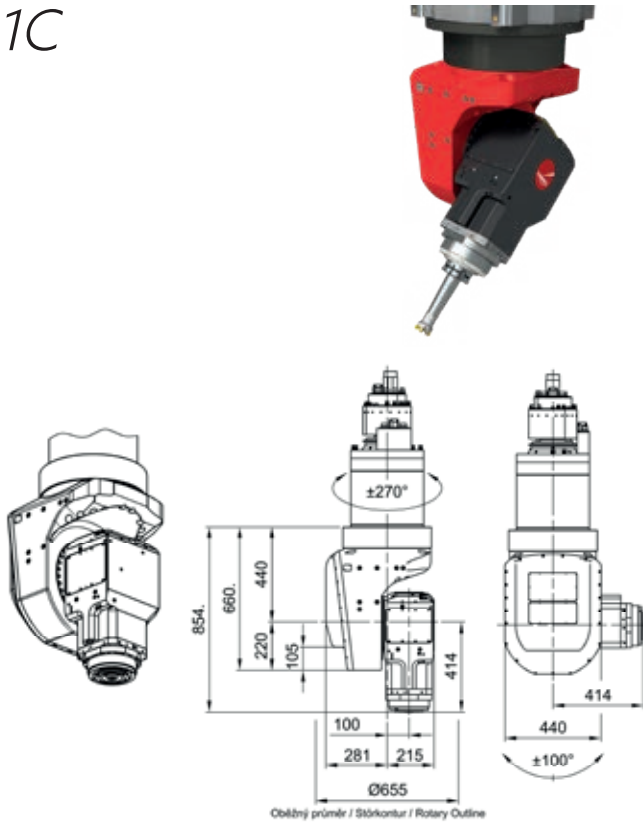
Osa B (frézovací hlava): $\pm 115^\circ$

Osa C (frézovací hlava): $\pm 360^\circ$

Moment zpevnění osy B: 5.400 Nm

Moment zpevnění osy C: 6.120 Nm

L1C



L1C

42k W, 67 Nm, 24.000 ot/min, HSK-A63

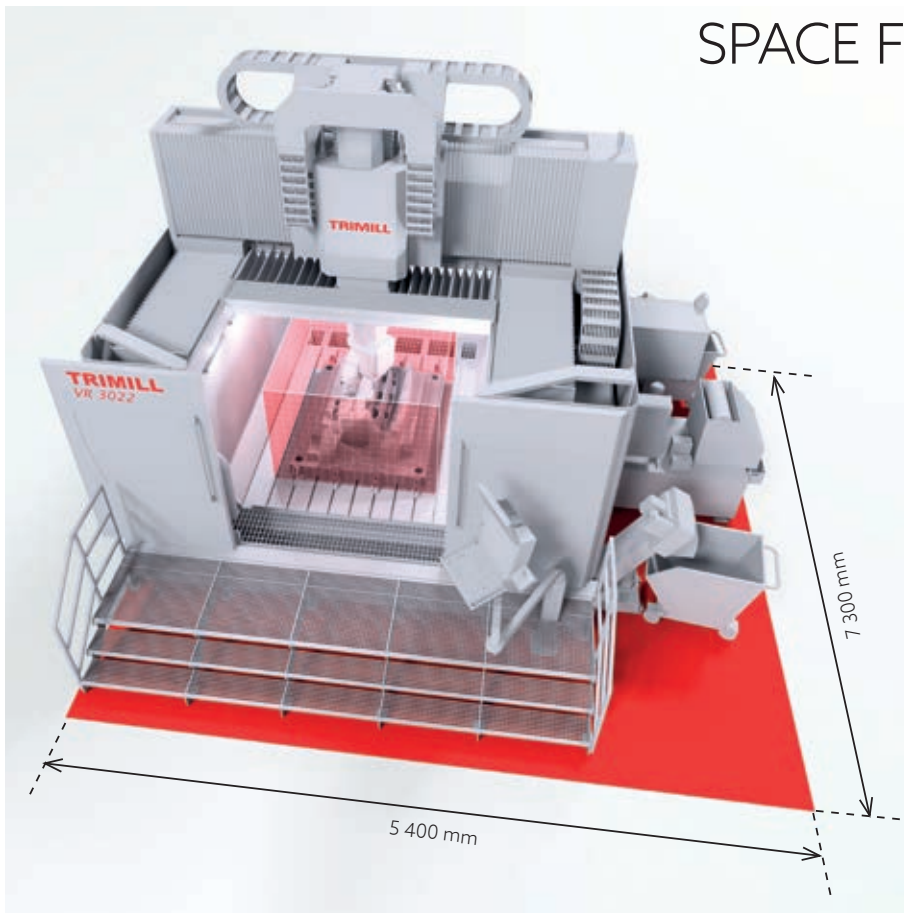
Osa B (frézovací hlava): +/-100°

Osa C (frézovací hlava): +/-270°

Moment zpevnění osy B: 2.000 Nm

Moment zpevnění osy C: 4.000 Nm

SPACE FOR THE MACHINE ■



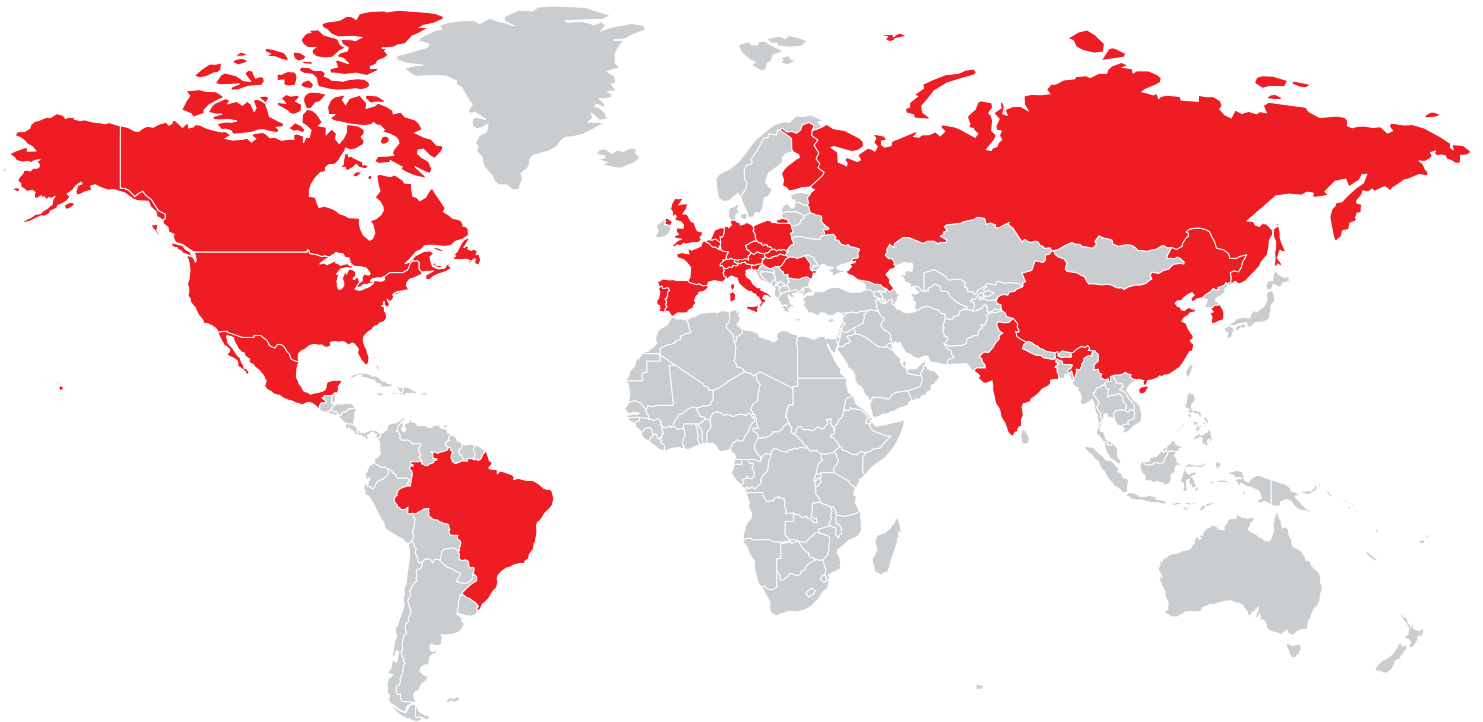
A significant competitive advantage is the minimum installation area of the machine (only 39 m²) compared to the maximum machineable part size (up to 7.6 m²).

The machine does not require the construction of a special foundation for its installation, but it can be placed on the flat floor of the production hall. The floor must have sufficient thickness and adequate reinforcement.

500 portal milling machines

with 200 satisfied customers

in 30 countries around the world.



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