

# WRD 170 (Q)

**FLOOR TYPE  
HORIZONTAL  
BORING MILLS**

**WRD 170 Q**

**WRD 170**

**WRD 150 Q**

**WRD 150**

**WRD 130 Q**

**WRD 130**



**TOS VARNSDORF a.s.**

# WRD 170 (Q) TECHNICAL PARAMETERS

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Floor type horizontal boring machine with a sliding ram and sliding spindle WRD 170 (Q) represents a new type of floor type horizontal boring machines manufactured by TOS VARNSDORF a.s.

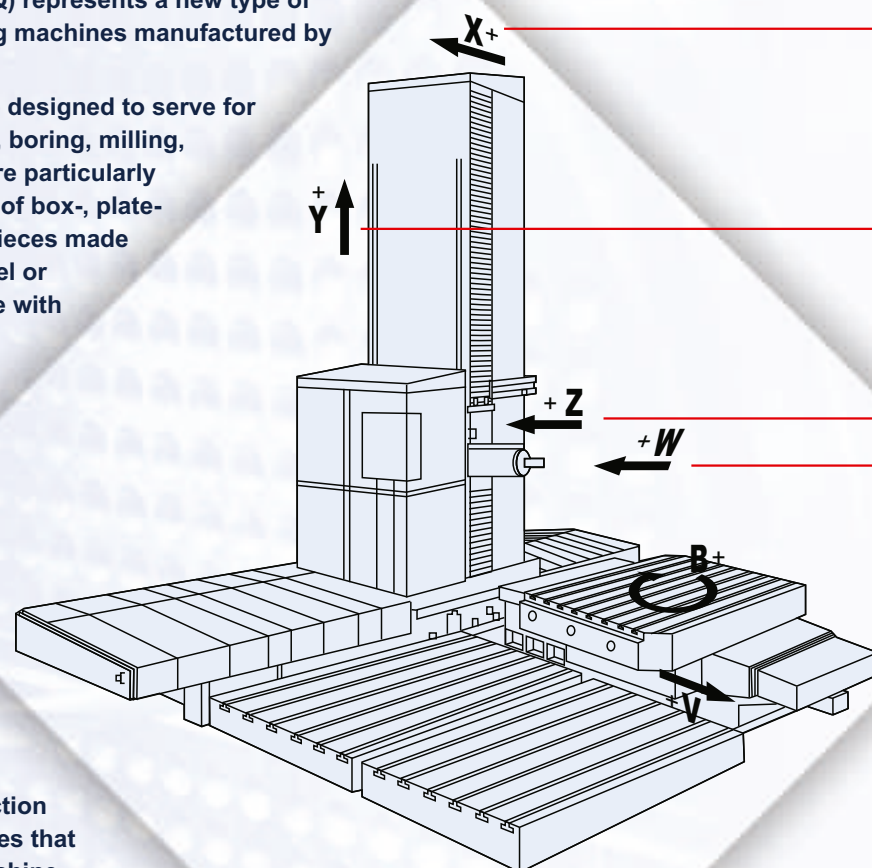
WRD 170 (Q) machines are designed to serve for precise coordinate drilling, boring, milling, and thread cutting. They are particularly suitable for the machining of box-, plate- and complex-shape workpieces made of cast iron, cast steel, steel or other materials machinable with cutting tools, and for large and very large size and weighty components. The machines can be completed with an accessory table, or possibly with two rotary tables and a clamping field composed of clamping plates.

The machines can be extended with a wide selection of technological accessories that significantly widen the machine technological utility value.

Basic design options of these machines are defined by the work cycle automation level:

**WRD 170 – basic design**

**WRD 170 Q – machine design allowing Automatic Tool Exchange (ATC)**



## BASIC SPECIFICATIONS

Spindle diameter	mm // inch	170 // 5.9
Spindle taper		ISO 50
Spindle speed range	RPM	10 - 2,200
Main motor power, rated (continuous load operation S1)	kW // HP	71 // 96.5
Main motor power max (operation S6 - 60 % of the load time)	kW // HP	88 // 119.6
RAM size	mm // inch	550 x 550 // 21.65 x 21.65
Column transverse travel X	mm // inch	5,000 - 29,000 // 196.85 - 1,142*
Headstock vertical travel Y	mm // inch	4,000 - 6,000 // 157.48 - 236.22**
RAM travel Z	mm // inch	1,500 // 59.06
Spindle stroke W	mm // inch	1,000 // 39.37
Feed range - X,Y, Z, W	mm.min <sup>-1</sup> // inch.min <sup>-1</sup>	1 - 8,000 // 0.04 - 315
Rapid feed - X	mm.min <sup>-1</sup> // inch.min <sup>-1</sup>	16,000 // 630
- Y, Z, W	mm.min <sup>-1</sup> // inch.min <sup>-1</sup>	12,000 // 472

\* modules of 2,000 mm // 78.74 inch

\*\* modules of 500 mm // 19. inch

On the customer's wish the machine can be supplied also in design with spindle diameter of 160 mm.

## FURTHER SPECIFICATIONS

Vertical travel of operator platform	mm // inch	Y slimmed by 1,000 // 39.37
Horizontal travel of operator platform		
- to the workpiece	mm // inch	900 // 35.43
Compressed air source output requirements		
- pressure	MPa	0.6
- volume (for a time of 15 sec)	Nl/sec	18
- volume (permanent)	Nl/sec	0.5
Mains voltage / frequency	V/Hz	3 x 400 / 50; 3 x 400 / 60
Control voltage	V=	24
Total power consumption	kVA	155
Noise level "A" at the operator site max.	dB(A)	80

WRD 170 (Q)		
X	max. 29,000 mm	1,142 inches
Y	max. 6,000 mm	236.2 inches
Z	1,500 mm	59 inches
W	1,000 mm	39.4 inches



# TECHNICAL SPECIFICATIONS OF ADDITIONAL ROTARY TABLES

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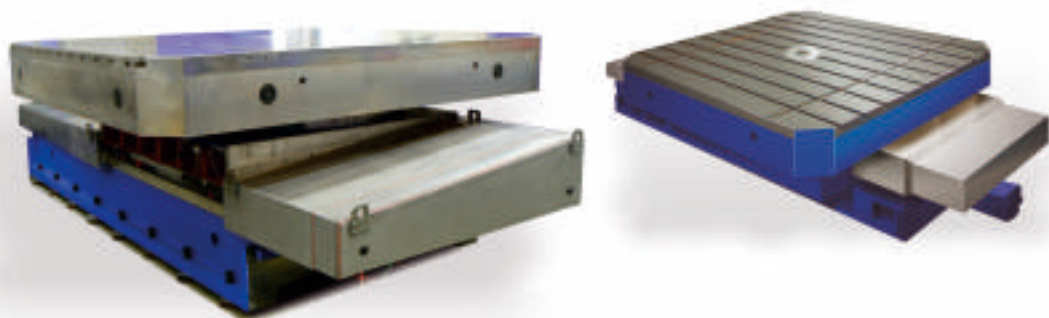
## WRD 170 (Q) PHOTOS

ADDITIONAL ROTARY TABLE S 16					
Workpiece weight max.	kg	16,000	lbs	35,280	
Table clamping surface dimensions	mm	1,800 x 2,240; 2,000 x 2,500	inch	70.9 x 88.2; 78.7 x 98.4	
T-slots	- dimension	mm	22H8	inch	0.87H8
	- pitch	mm	200	inch	7.8
	- quantity		9		9
Table longitudinal travel - <b>V</b>	mm	0; 1,400; 1,800	inch	0; 55.1; 70.9	
Feed range	- <b>V</b>	mm.min <sup>-1</sup>	1 - 5,000	inch.min <sup>-1</sup>	0.04 - 196.8
	- <b>B</b>	RPM	0.003 - 1	RPM	0.003 - 1
Rapid feed	- <b>V</b>	mm.min <sup>-1</sup>	10,000	inch.min <sup>-1</sup>	394
	- <b>B</b>	RPM	1.75	RPM	1.75

ADDITIONAL ROTARY TABLE S 30					
Workpiece weight max.	kg	30,000	lbs	66,125	
Table clamping surface dimensions	mm	2,000 x 2,000; 2,000 x 2,500; 2,500 x 3,000	inch	78.7 x 78.7; 78.7 x 98.4; 98.4 x 118.1	
		3,000 x 3,000; 3,000 x 3,500		118.1 x 118.1; 118.1 x 137.8	
T-slots	- dimension	mm	22H8	inch	0.87H8
	- pitch	mm	200	inch	7.8
	- quantity		9; 9; 13		9; 9; 13
Table longitudinal travel - <b>V</b>	mm	0; 1,300; 1,800; 2,500; 3,000; 3,500	inch	0; 51.2; 70.9; 98.4; 118.1; 137.8	
Feed range	- <b>V</b>	mm.min <sup>-1</sup>	1 - 8,000	inch.min <sup>-1</sup>	0.04 - 315
	- <b>B</b>	RPM	0.003 - 1.5	RPM	0.003 - 1.5
Rapid feed	- <b>V</b>	mm.min <sup>-1</sup>	16,000	inch.min <sup>-1</sup>	624
	- <b>B</b>	RPM	3	RPM	3

ADDITIONAL ROTARY TABLE S 50					
Workpiece weight max.	kg	50,000	lbs	110,000	
Table clamping surface dimensions	mm	3,000 x 3,000; 3,000 x 3,500	inch	118.1 x 118.1; 118.1 x 136.5	
T-slots	- dimension	mm	28H8	inch	1.1H8
	- pitch	mm	200	inch	7.8
	- quantity		15		15
Table longitudinal travel - <b>V</b>	mm	0; 1,500; 2,000; 2,500; 3,000	inch	0; 59; 78.7; 97.5; 117; 118.1	
Feed range	- <b>V</b>	mm.min <sup>-1</sup>	1 - 8,000	inch.min <sup>-1</sup>	0.04 - 315
	- <b>B</b>	RPM	0.003 - 1.5	RPM	0.003 - 1.5
Rapid feed	- <b>V</b>	mm.min <sup>-1</sup>	15,000	inch.min <sup>-1</sup>	591
	- <b>B</b>	RPM	2.5	RPM	2.5

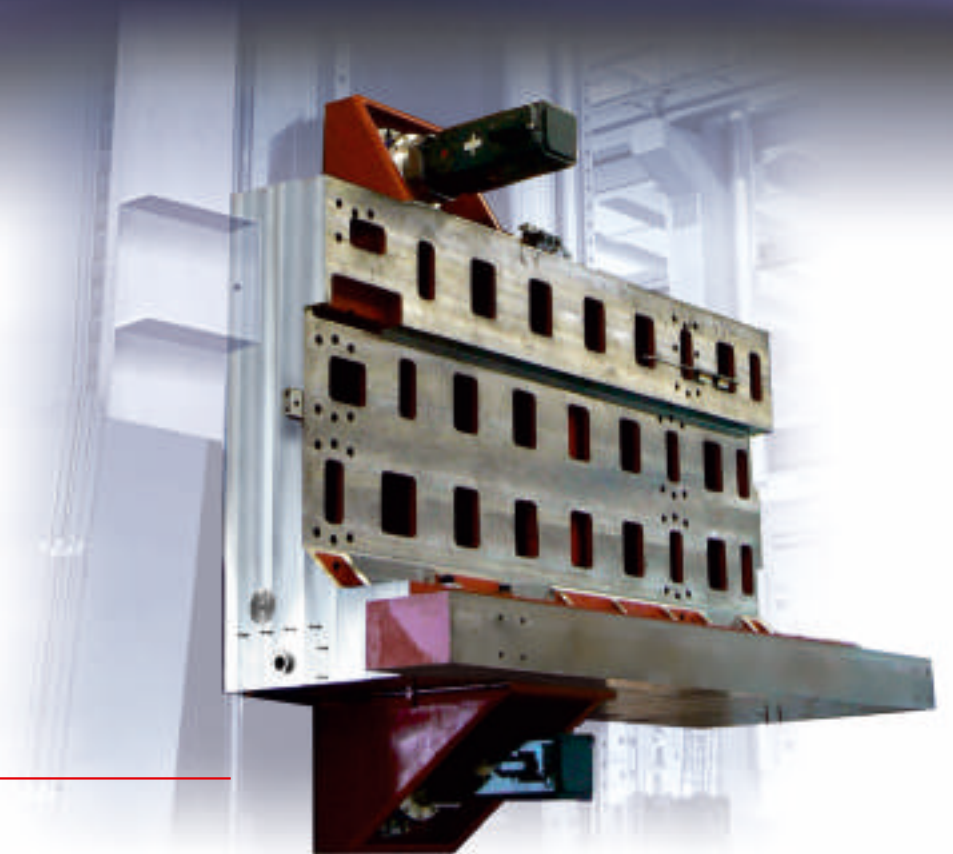
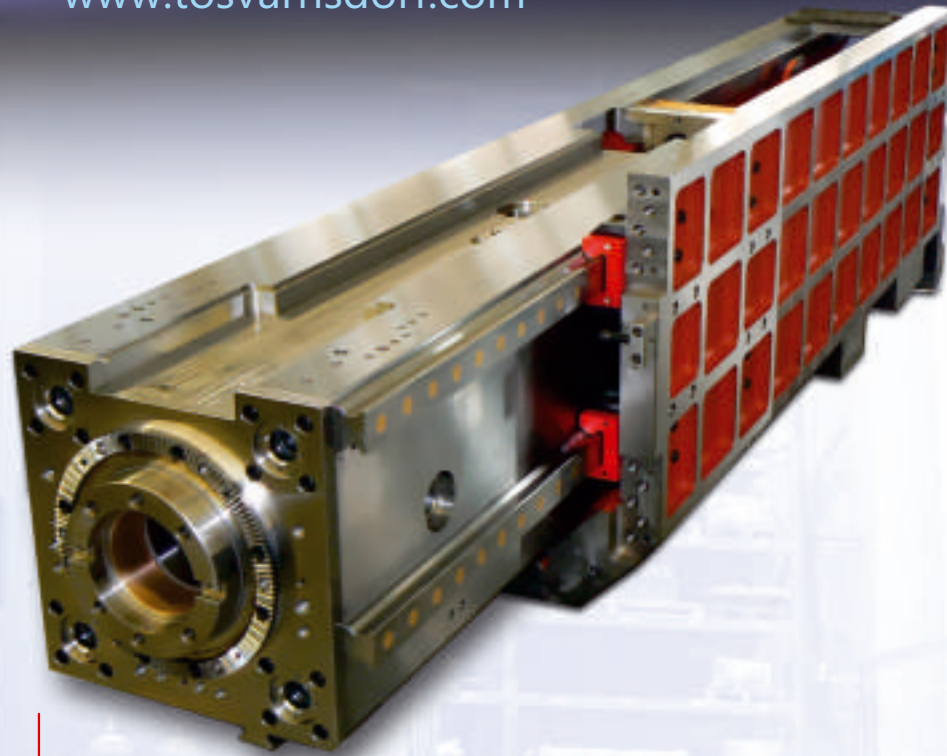
The tables, after prior agreement with the manufacturer, may be supplied with higher load (for example 125 t).





# DESIGN OF MACHINE GROUPS

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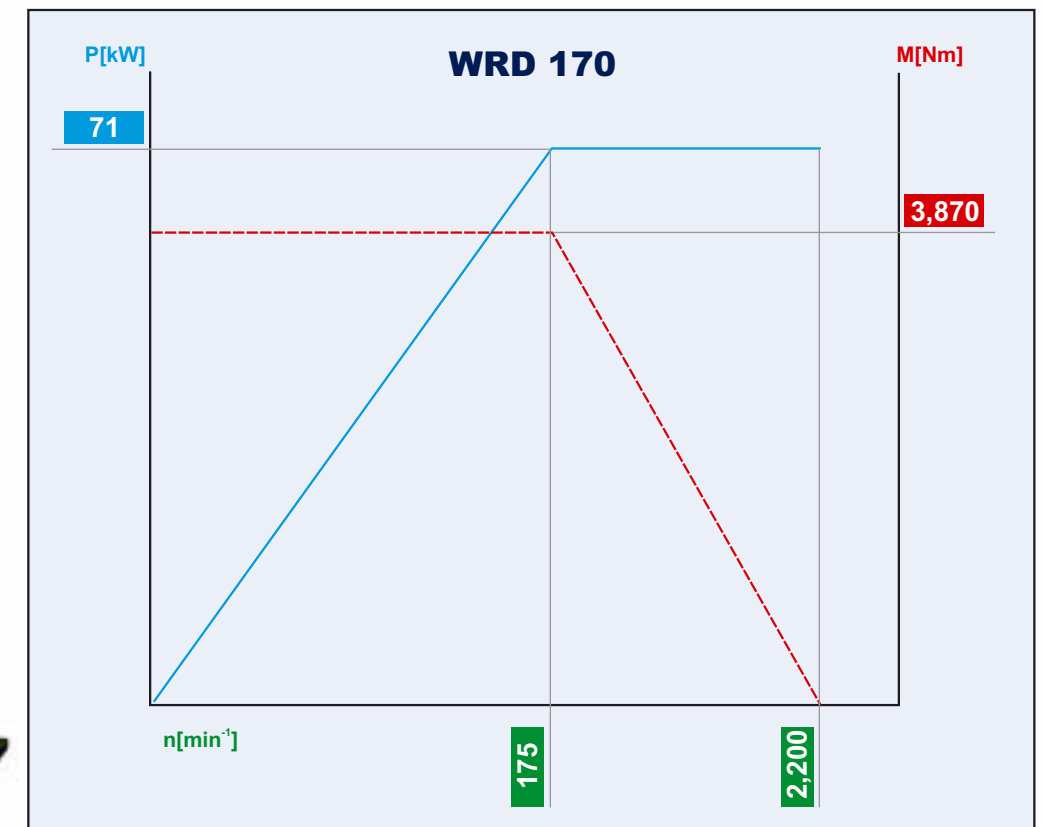
## COLUMN

The column body is a steel weldment. Toothed racks for Y-axis drive, a telescopic hydraulic cylinder for the headstock mass balancing, and two ways for the headstock travel in Y-axis are mounted there. High part of column is prepared for possible inside installation of vibration absorber.

## HEADSTOCK

The headstock has a parted body the inner part of which bears a robust ram fitted with electro-mechanical deformation compensation at the ram extension.

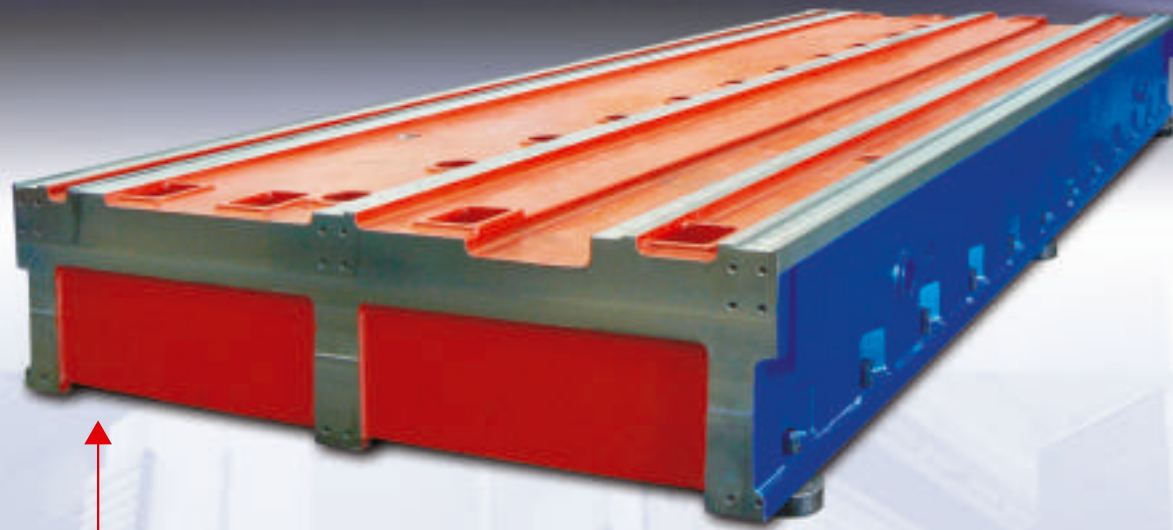
## RAM OF THE WRD 170 (Q) MACHINE





# DESIGN OF MACHINE GROUPS

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## THE BED

is made of grey cast iron. Three linear guideways and a toothed rack for the column slide traversing in X-coordinate are screwed up from the top of the bed.

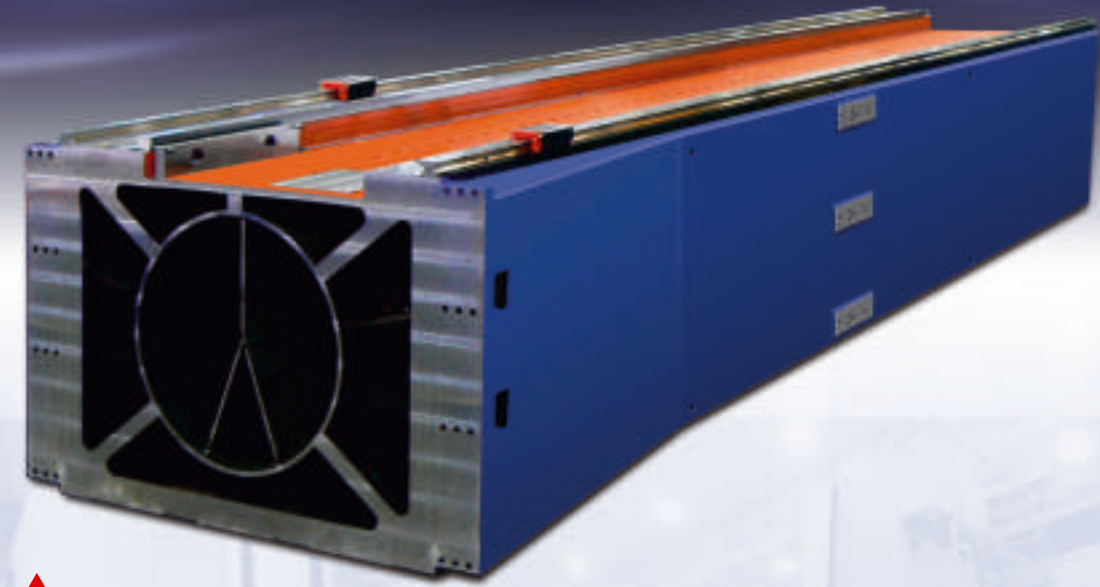
## ELECTRIC OUTFIT

An electric cabinet placed on a shop floor, outside the machine, houses electrical accessories except for actuating and switching elements. It contains a basic control system module, components controlling the servo- and spindle-drives plus other electrical elements supplied by leading specialized companies. Electric box is cooled with unit which is built into the door of this box.



## OPERATOR PLATFORM

As a standard, the machines are equipped with an operator platform moveable vertically and horizontally (in direction of the spindle). Machine control panel is placed on the operator platform.



## COLUMN BODY

## COMPENSATION

Weight of the headstock is compensated by the power of telescopic hydraulic cylinder. Source of pressurized oil comes from a system of pressurized vessels placed on the column saddle.



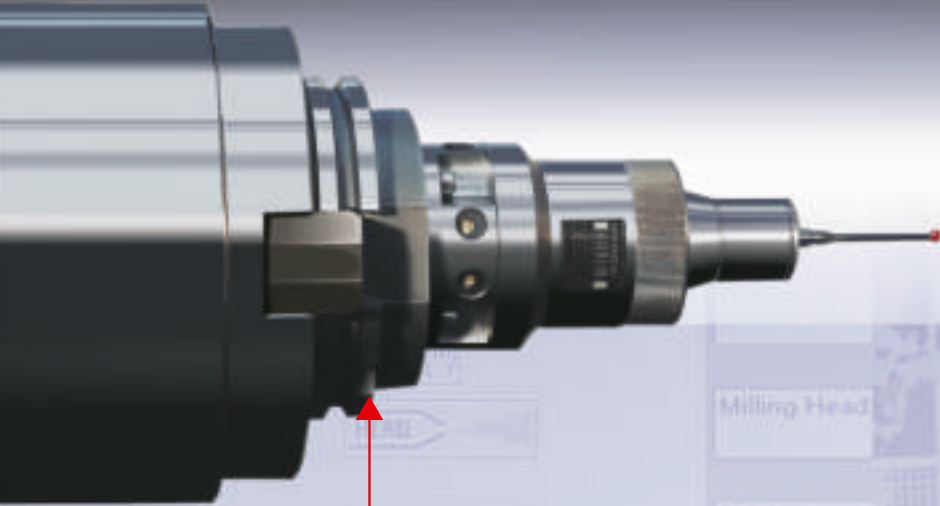
## BED-COLUMN-HEADSTOCK





# CONTROL SYSTEMS - MACHINE CONTROL

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**MEASURING TOUCH PROBE**

## All control systems in standard design include:

- Basic module (control central)
- Collor LCD display unit
- Control panel with keyboard
- Portable control panel with electronic handwheel

## Functions and equipment of the control systems that can be added:

- Measuring touch probe
  - Interface enabling remote diagnostics
- As a standard, the machines are equipped with HEIDENHAIN iTNC 530 machine control system. As an option, the machines can be equipped with

## SINUMERIK 840 D or FANUC 31i machine control systems.

The control system fully continuously controls linear coordinates and eventually positioning of the rotary table (B axis). In case of continuously controlled milling head installation (or other optional equipment requiring continuous control) these axes are also continuously controlled.

## The control system enables simultaneous interpolation:

- linear
- circular
- spiral (helical)



**SYSTEM OF MEASURING**

The linear axes (X, Y, Z) are equipped with direct measuring with the use of sealed HEIDENHAIN electro-optical measuring rules.

**CONTROL PANEL OF SINUMERIK 840 D CONTROL SYSTEM**



**CONTROL PANEL OF HEIDENHAIN iTNC 530 CONTROL SYSTEM**



**CONTROL PANEL FANUC 30/31i CONTROL SYSTEM**



**PORTABLE CONTROL PANEL SINUMERIK**



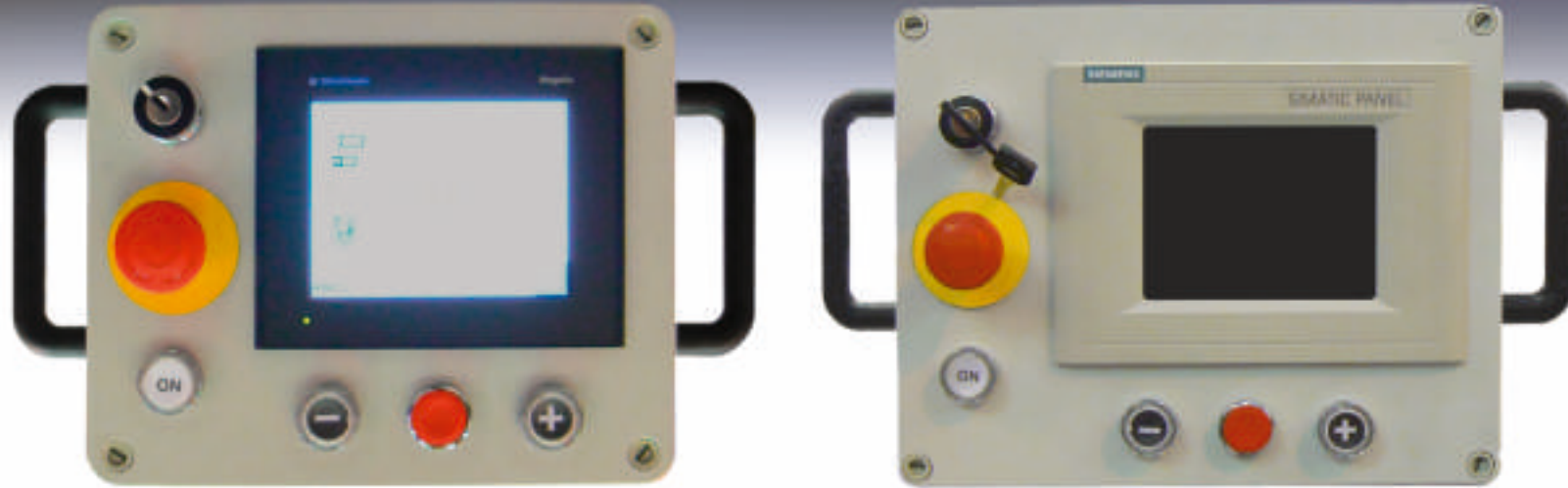
**PORTABLE CONTROL PANEL HEIDENHAIN (OPTION TYPE HR 520)**





# AUTOMATIC TOOL CHANGE

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**ATC AUXILIARY CONTROL  
PANELS FOR HEIDENHAIN  
CONTROL SYSTEM**

**ATC AUXILIARY CONTROL  
PANELS FOR SINUMERIK  
CONTROL SYSTEM**

EQUIPMENT FOR AUTOMATIC TOOL CHANGE				
Number of pockets in magazine		40; 60; 80		40; 60; 80
Pitch of pockets in magazine	mm	130	inch	5.1
Tool dia max.: - full magazine	mm	125 - 150	inch	4.9 - 5.9
- adjacent free pockets	mm	320	inch	12.6
Dia max. of a special flat tool	mm	390 (600)	inch	15.4 (23.6)
Tool length max.	mm	500	inch	19.7
Tool weight max.	kg	35	lbs	77
Tool change time	sec	20	sec	20

## THE AUTOMATIC TOOL CHANGER

is designed with a chain magazine placed on the machine column and with a traveling manipulator with a rotary double gripper. Customer may order a machine modified for tool shanks according to the following standards:

ČSN 22 0432  
ČSN 22 0434  
DIN 69 871/A (without tool cooling kit)  
DIN 69 871/AD (tool cooling kit)  
BT 50 MAS 403-1982  
CAT ANSI/ASME B5.50-1985

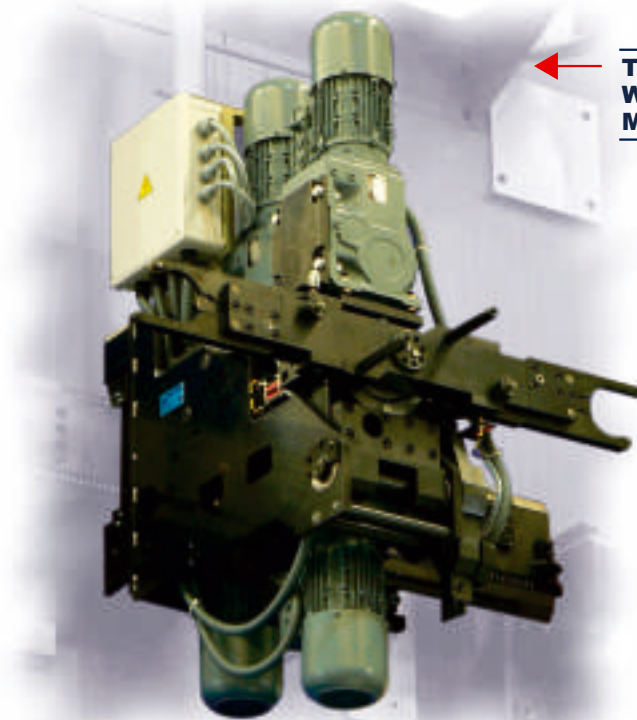
Also, the equipment enables an automatic exchange of tools into the automatic milling heads by the use of a tilting tool handler placing the tool vertically into the head.



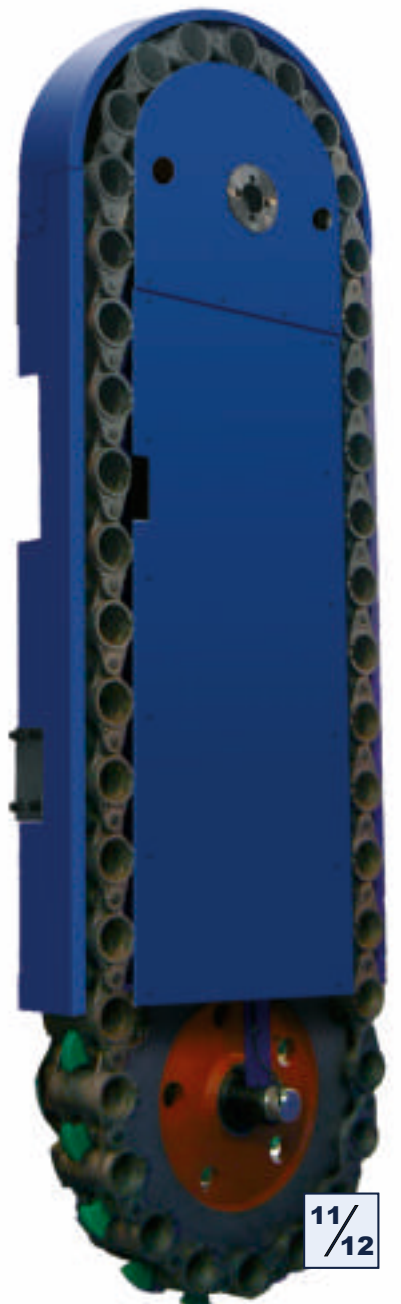
1

2

3



**TOOL MANIPULATOR  
WITH SWIWELING  
MECHANICAL HAND**





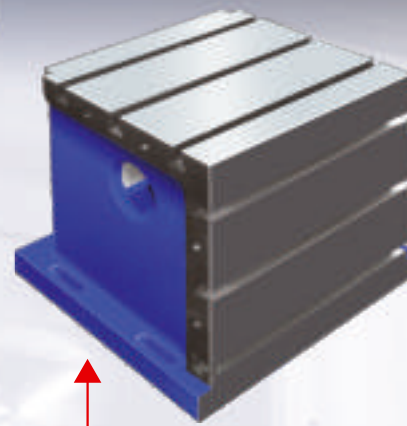
## OPTIONAL ACCESSORIES

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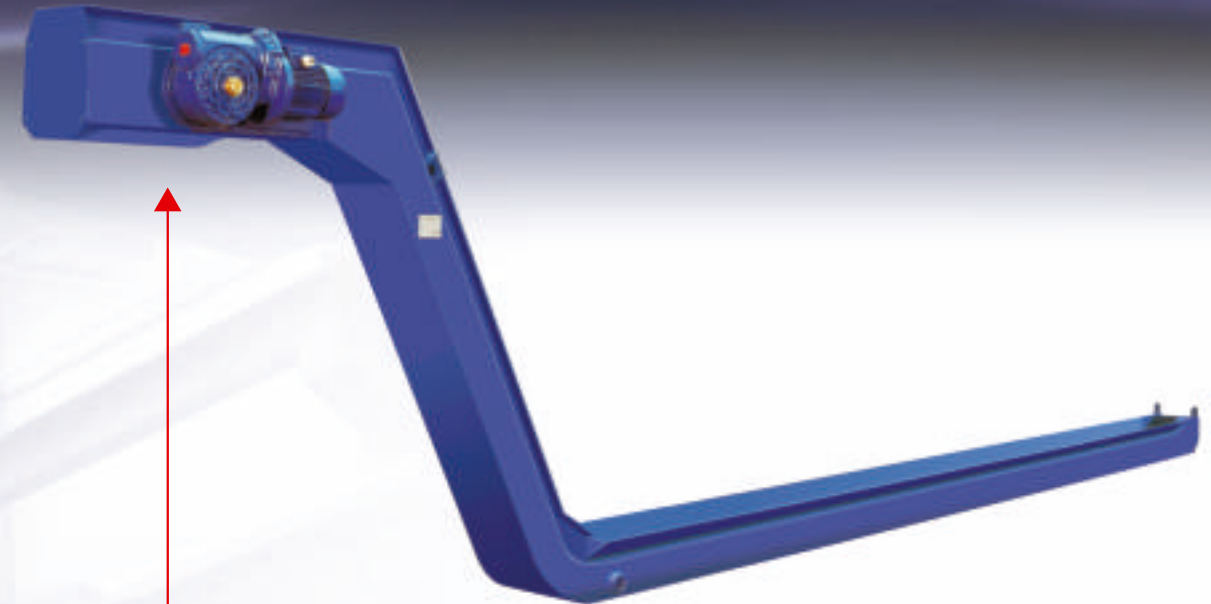
### FLOOR PLATES

UD 4(4,020 x 1,885; 4,020 x 1,260; 2 420 x 1 885 mm /158.3 x 74.2; 158.3 x 49.6; 95.3 x 74.2 inch ) and UDS floor plates are used for clamping large and heavy workpieces.



### CLAMPING CUBE

UK 500, UK 1000  
UK 2000, UK 2500



### CHIP CONVEYOR

The length of a chip conveyor and its discharge height can be accommodated to user's needs.

### ANGLE PLATE

Angle plates can be supplied in sizes 800, 950, 1,120, 1,450; 1,620, 2,000, 2,500, 3,000, 3,500, 4,000, 4,500, 5,000 and 6,000 mm / 31.5, 37.4, 44.1, 57.1, 63.8, 78.7, 98.4, 118.1; 137.8, 157.5, 177.2, 196.9, 236.2 inches.

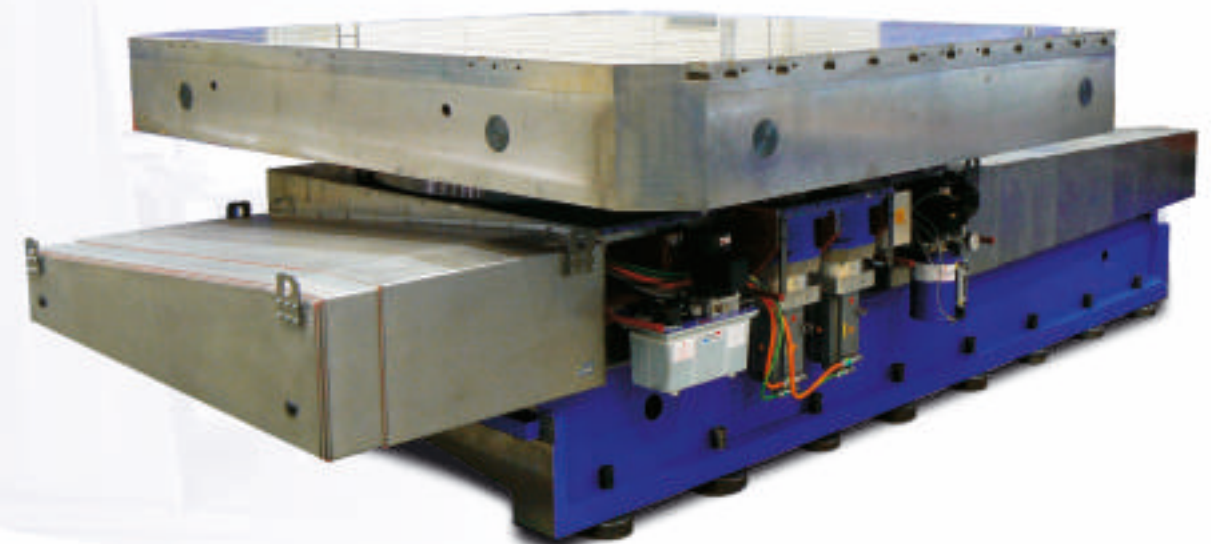
### TOOL COOLING DEVICE

Customer may choose from equipment for tool cooling with outside coolant supply CHZ 170 or equipment enabling coolant supply through the spindle center and outside coolant supply CHOV 170.



### ADDITIONAL ROTARY TABLES

**ANOTHER  
OPTIONAL ACCESSORIES  
YOU CAN FIND ON  
[www.tosvarnsdorf.cz/  
en/products/accessories/](http://www.tosvarnsdorf.cz/en/products/accessories/)**





# OPTIONAL ACCESSORIES

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**HUI 50**



**HUR 50**



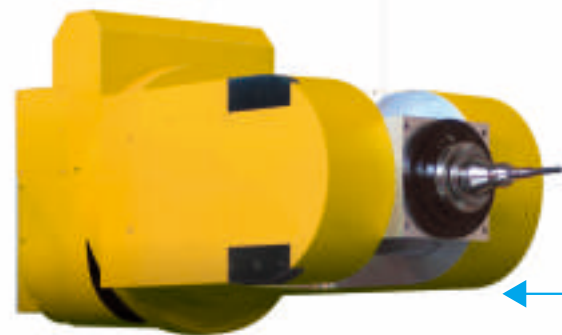
**HOI 50**



**HPR 50**



**HV/V**



- HPR 50** - vertical manual milling head
- HUR 50** - hand universal milling head
- HPI 50** - 1-axes vertical milling head automatically indexed
- HPIT 50** - 1-axes heavy vertical milling head automatically indexed
- HUI 50** - automatically indexed universal milling head
- HOI 50** - 2-axes milling head orthogonal automatically indexed
- HOF 50** - 2-axes milling head orthogonal continuously positioned
- HV/V** - the fork type milling head with 1 or 2 axes driven by the spindle of machine

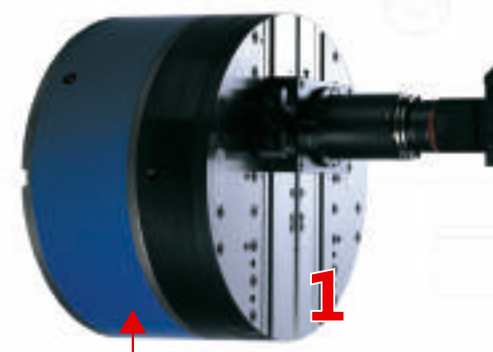
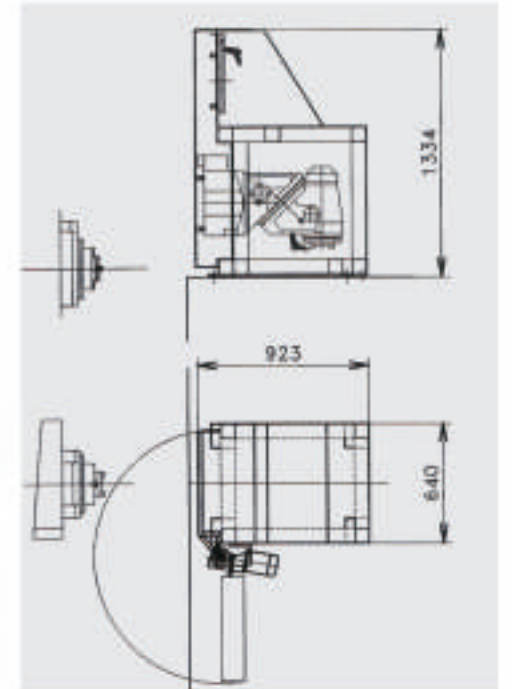


The support fitted with a cover which is opened by roll-up equipment (option).



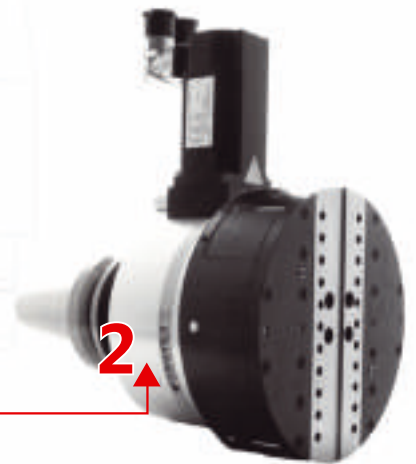
## PICK UP

Milling heads are clamped automatically only, making use of an accessory magazine. Its execution (number of storage places, covers, etc.) is subject to prior consultation with the manufacturer.



## FACING HEADS

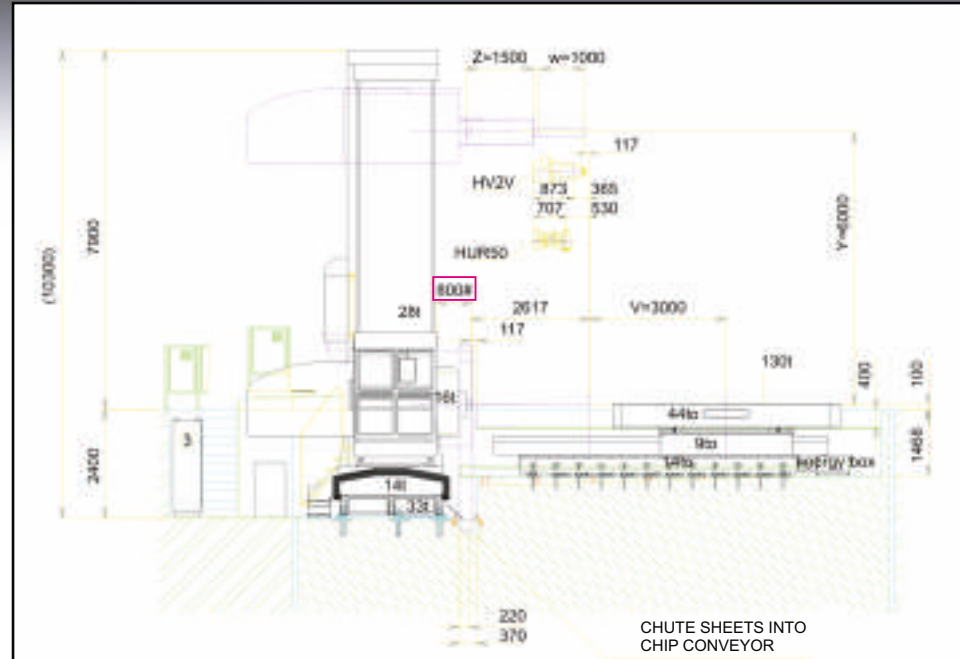
Facing heads UT 5 - 630 (800) S (1) or TA - T 200 (2) are used for demanding technological operations with the possibility of continuous CNC control of the slide position.





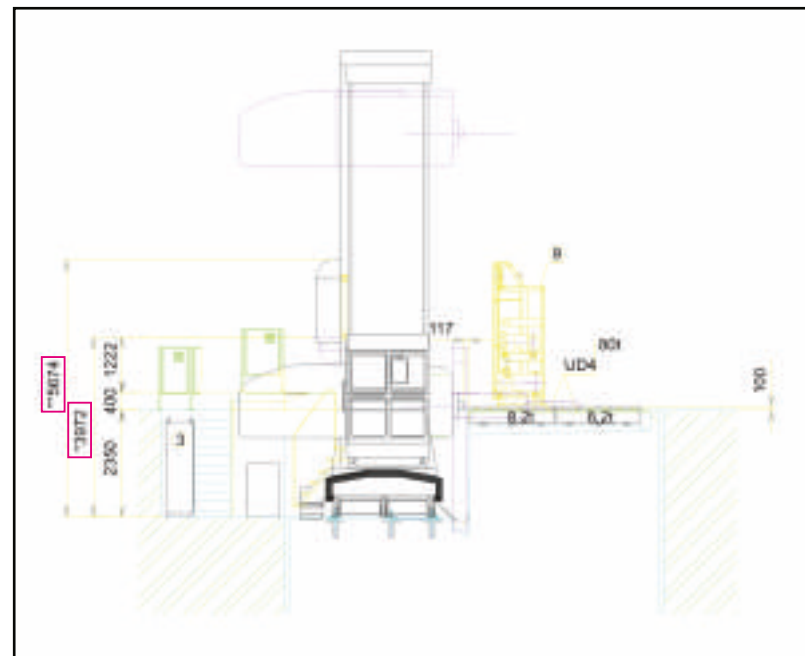
# MACHINE LAYOUT

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- # Horizontal stroke of lift
- ## Vertical stroke of lift
- \* Height of the place for manual tool magazine insertion
- \*\* 40 pockets in tool magazin

**X = 15,000**  
**Y = 6,000**  
**Z = 1,500**  
**W = 1,000**  
**Rotary table (5,000 x 4,400) v = 1,800**  
**Clamping plate 4 x UD4**

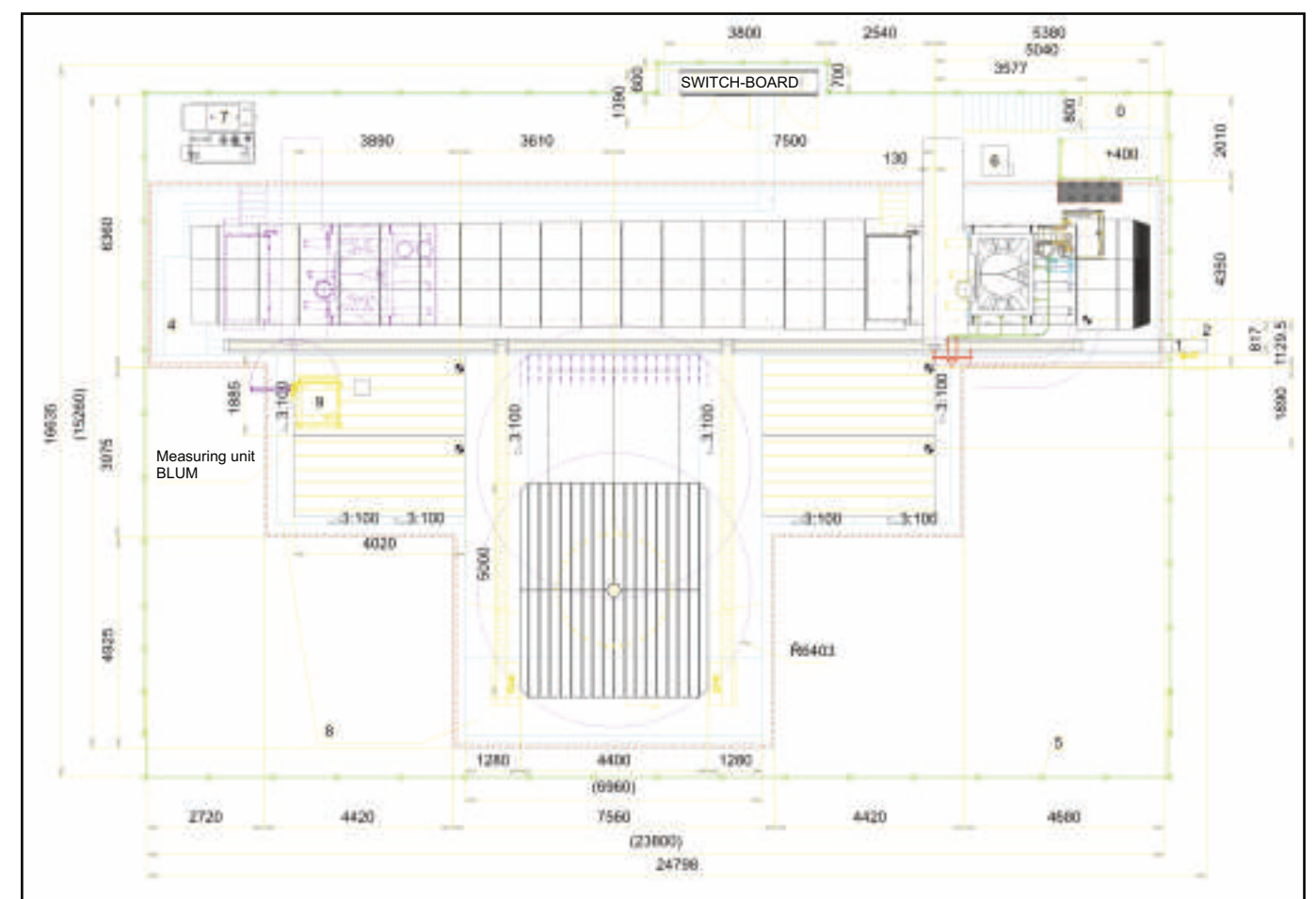
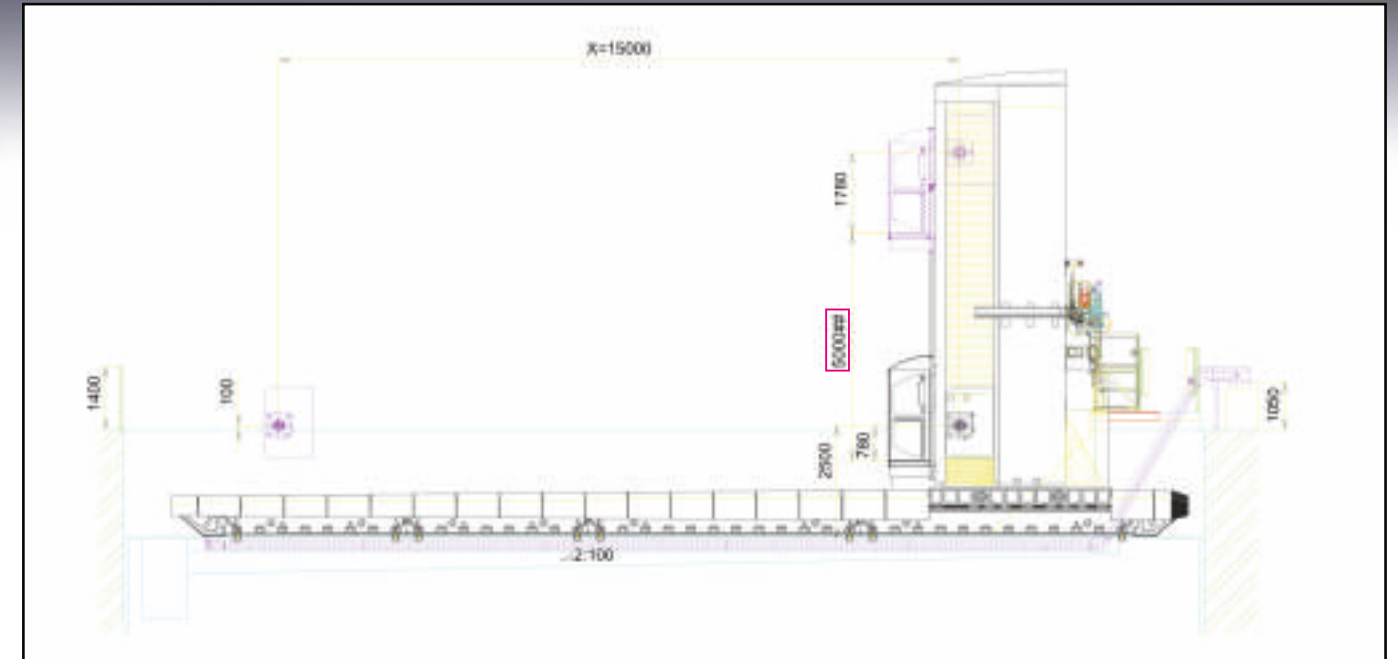


- 1 Swarf conveyor
- 2 Swarf container
- 3 Switch cabinet
- 4 Coolant tank
- 5 Protective fencing
- 6 Oil refrigerator
- 7 Filtration unit
- 8 Slotted floor
- 9 Pickup station
- ⚡ Connecting place to power supply

**The machine, after prior agreement with the manufacturer, may be equipped with additional device and/or process accessories.**



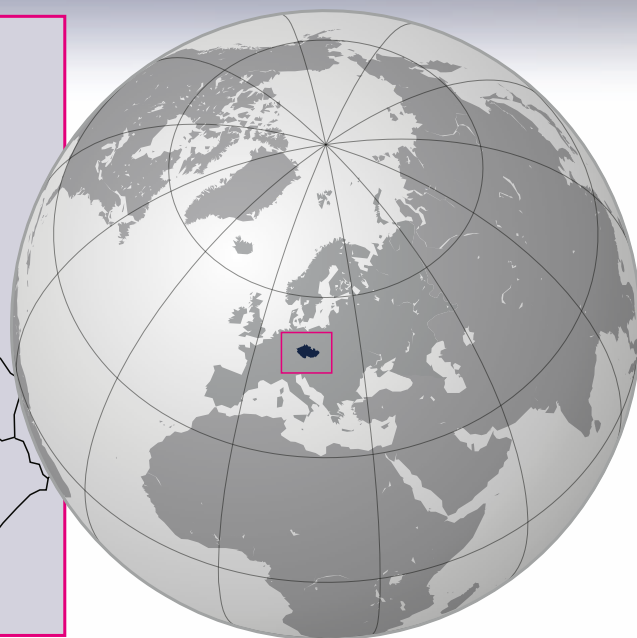
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