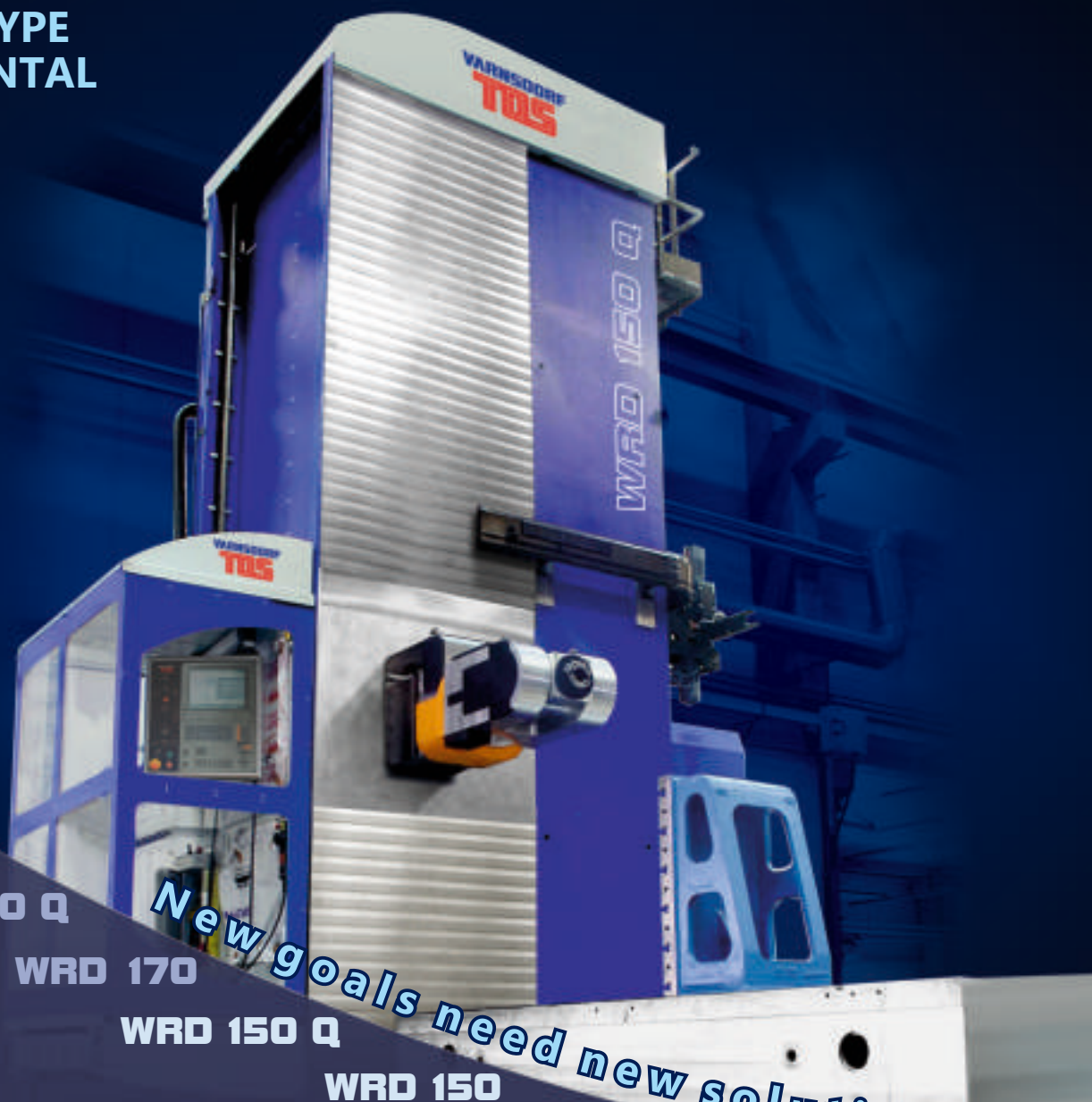


# WRD 130/150 (Q)

**FLOOR TYPE  
HORIZONTAL  
BORING  
MILLS**



**WRD 170 Q**

**WRD 170**

**WRD 150 Q**

**WRD 150**

**WRD 130 Q**

**WRD 130**



10/2011



**TOS VARNSDORF a.s.**



# FLOOR TYPE HORIZONTAL BORING MILLS

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

Floor type horizontal boring machines with a sliding ram and sliding spindle WRD 130 / 150 (Q) represent a twin table type of machines manufactured by TOS VARNSDORF a.s. of the same concept and frame, but different main motor output, spindle headstock and spindle speeds.

The machines are intended for precision and high-efficient coordinate boring, drilling, milling and thread-cutting particularly in the case of large-scale, heavy and structurally difficult work-pieces made of cast iron, cast steel and steel. According to concrete process needs, the machines can be extended with a clamping field consisting of clamping plates or with one of more additional tables.

WRD 130 and 150 horizontal boring machines are typical for their modern, state-of-art design stage and top level of performance parameters. They can be extended with a wide selection of technological accessories that significantly widen the machine technological utility value.

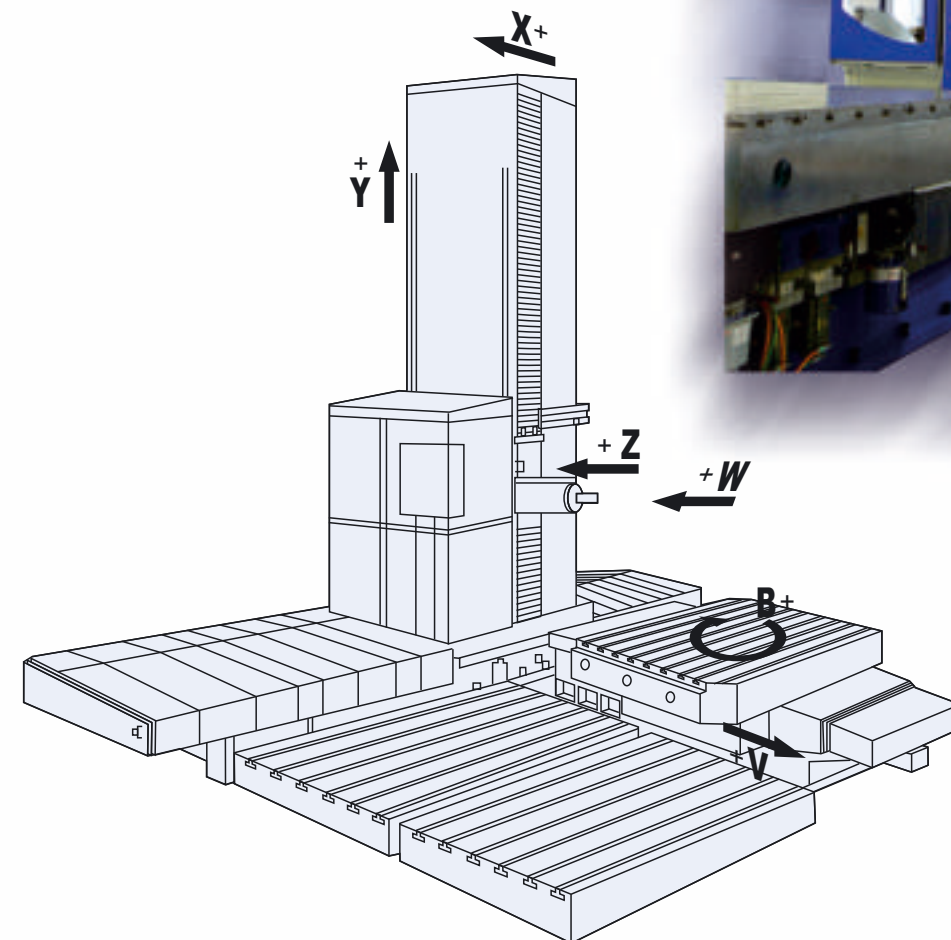
The machines are offered with two different spindle diameters (130 and 150) and other parameters corresponding to such options. Basic design options of these machines are defined by the work cycle automation level:

**WRD 130/150 – basic design**

**WRD 130/150 Q – machine design allowing Automatic Tool Exchange (ATC)**

WRD 130 (Q)		
X	max. 27,000 mm	1,063 inch
Y	max. 4,500 mm	177 inch
Z	1,000 mm	39 inch
W	700 mm	28 inch
WRD 150 (Q)		
X	max. 27,000 mm	1,063 inch
Y	max. 4,500 mm	177 inch
Z	1,000 mm	39 inch
W	800 mm	31.5 inch

**DENOMINATION OF AXES IS ACCORDING TO A MACHINE DESIGN WITH HEIDENHAIN CONTROL SYSTEM.**





# WRD 130/150 (Q) TECHNICAL PARAMETERS

www.tosvarnsdorf.com

## TECHNICAL SPECIFICATIONS OF ADDITIONAL ROTARY TABLES

BASIC SPECIFICATIONS				
		WRD 130		WRD 150
Spindle diameter	mm // inch	130 // 5		150 // 5.9
Spindle taper		ISO 50		
Spindle speed range	RPM	10 - 3,000 (3,500) *		10 - 2,500 (2,800; 3,000) *
Main motor power, rated (continuous load operation S1)	kW // HP	37 // 50		51 // 69
Main motor power max (operation S6 - 60% of the load time)	kW // HP	46 // 62		65 // 88
RAM size	mm // inch	450 x 450 // 17.7 x 17.7		
Column transverse travel X	mm // inch	5,000 - 27,000 // 196.9 - 1,063 **		
Headstock vertical travel Y	mm // inch	2,000 - 4,500 // 78.7 x 177 ***		
RAM travel Z	mm // inch	1,000 // 39.4		
Spindle stroke W	mm // inch	700 // 27.6		800 // 31.5
Feed range - X, Y, Z, W	mm.min <sup>-1</sup>	1 - 8,000		
Rapid feed - X	mm.min <sup>-1</sup>	20,000		
- Y	mm.min <sup>-1</sup>	16,000		
- Z, W	mm.min <sup>-1</sup>	12,000		

\* option  
\*\* modules of 2,000 mm // 78.74 inch  
\*\*\* modules of 500 mm // 19 inch

On the customer's wish the WRD 150 type can be supplied also in design with spindle diameter of 160 mm.

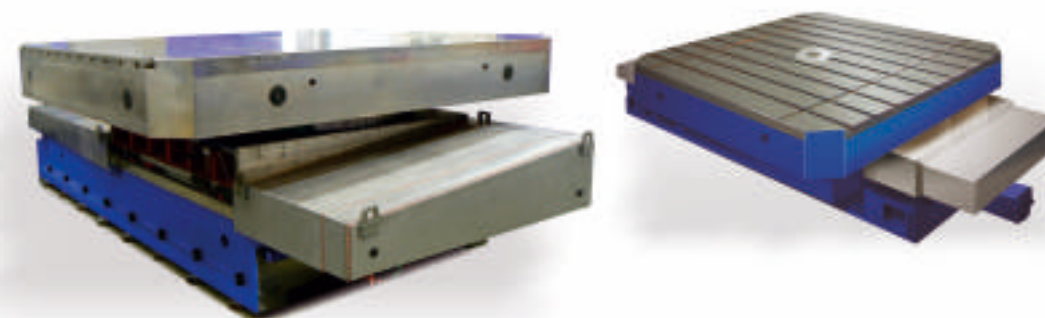
FURTHER SPECIFICATIONS		
Vertical travel of operator platform	mm // inch	Y slimmed by 1,000 // 39.37
Horizontal travel of operator platform		
- to the workpiece	mm // inch	900 // 35.43
Compressed air source output requirements		
- pressure	MPa	0.6
- volume (for a time of 15 sec)	Nl/sec	18
- volume (permanent)	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	86 (WRD 130) / 110 (WRD 150)
Noise level "A" at the operator site max.	dB(A)	80

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 3,000 x 3,000; 3,000 x 3,500	inch	78.7 x 78.7; 78.7 x 98.4; 98.4 x 118.1 118.1 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 - V	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	- V	mm.min <sup>-1</sup>	1 - 8,000	inch.min <sup>-1</sup>	0.04 - 315
	- B	RPM	0.003 - 1.5	RPM	0.003 - 1.5
Rapid feed	- V	mm.min <sup>-1</sup>	16,000	inch.min <sup>-1</sup>	624
	- 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

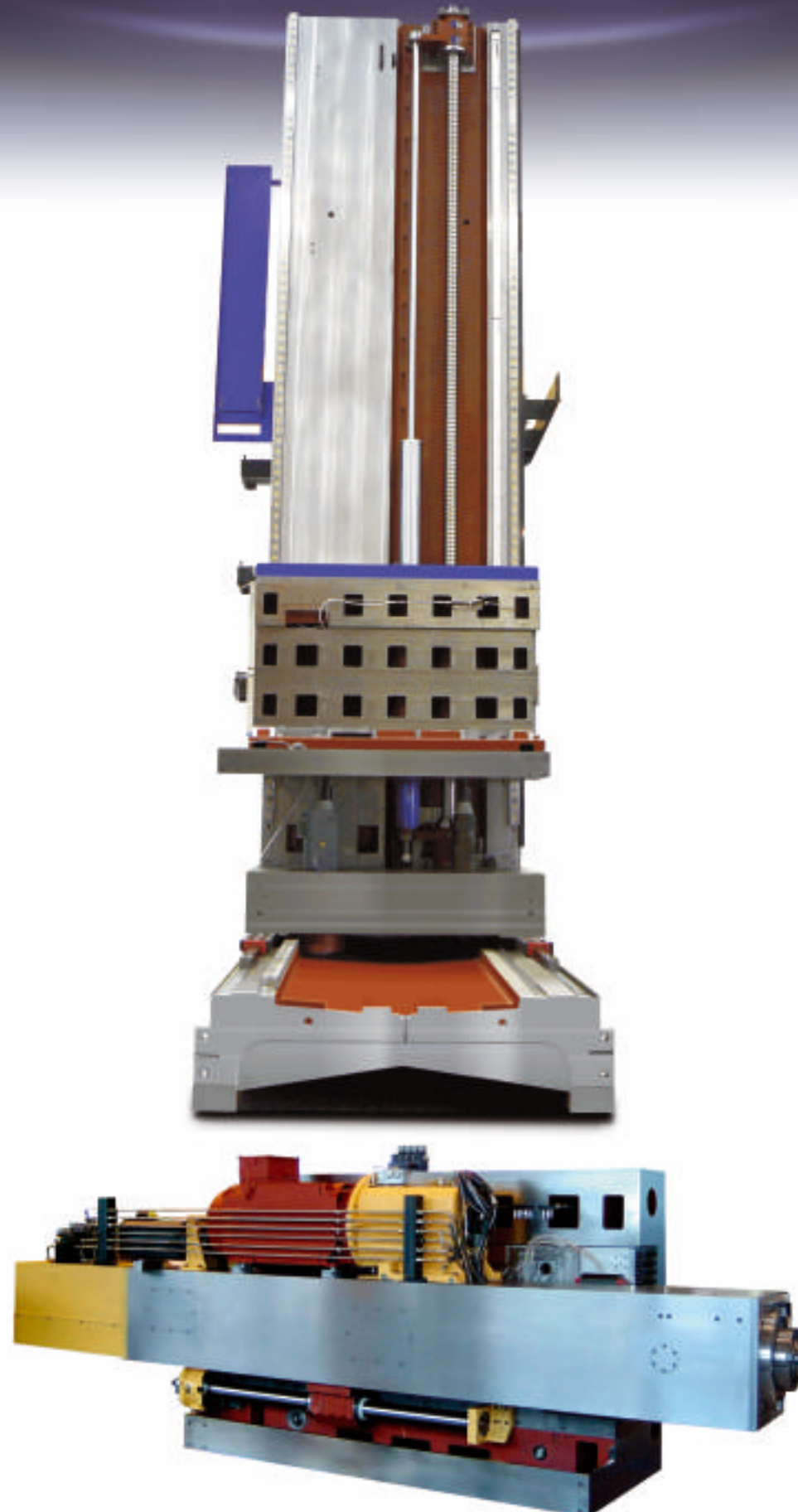
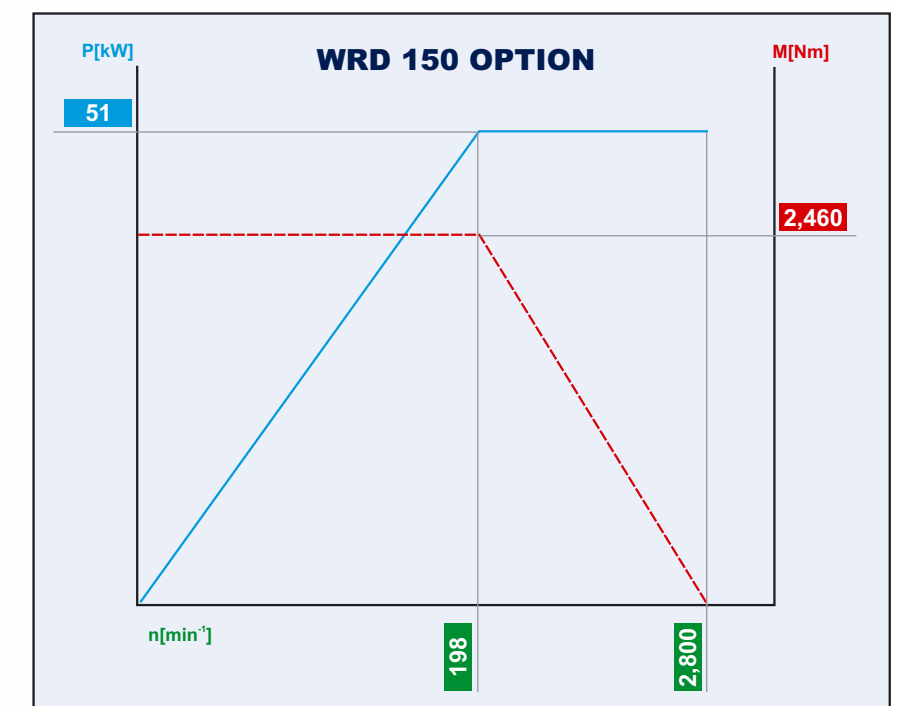
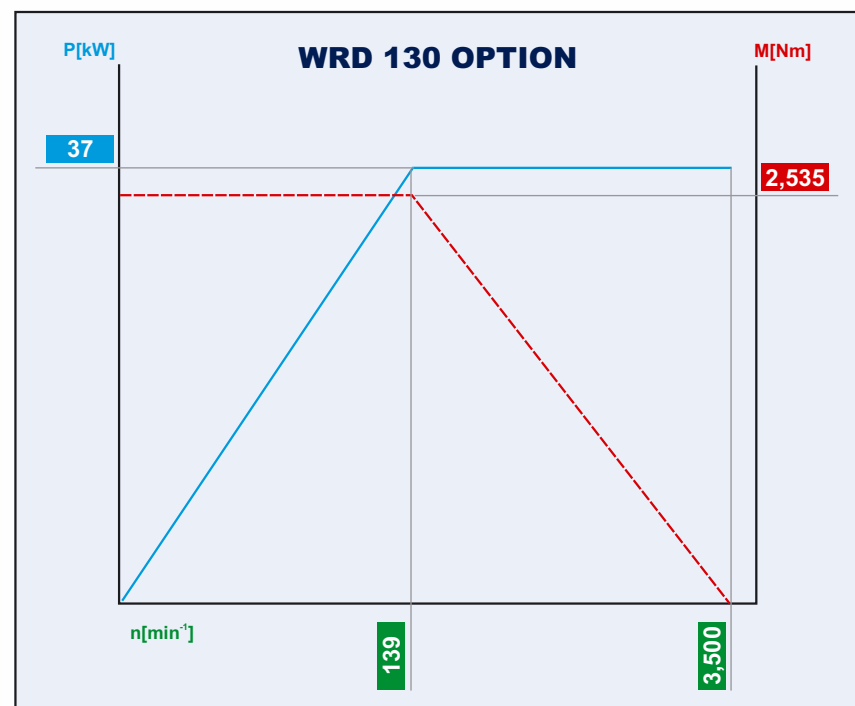
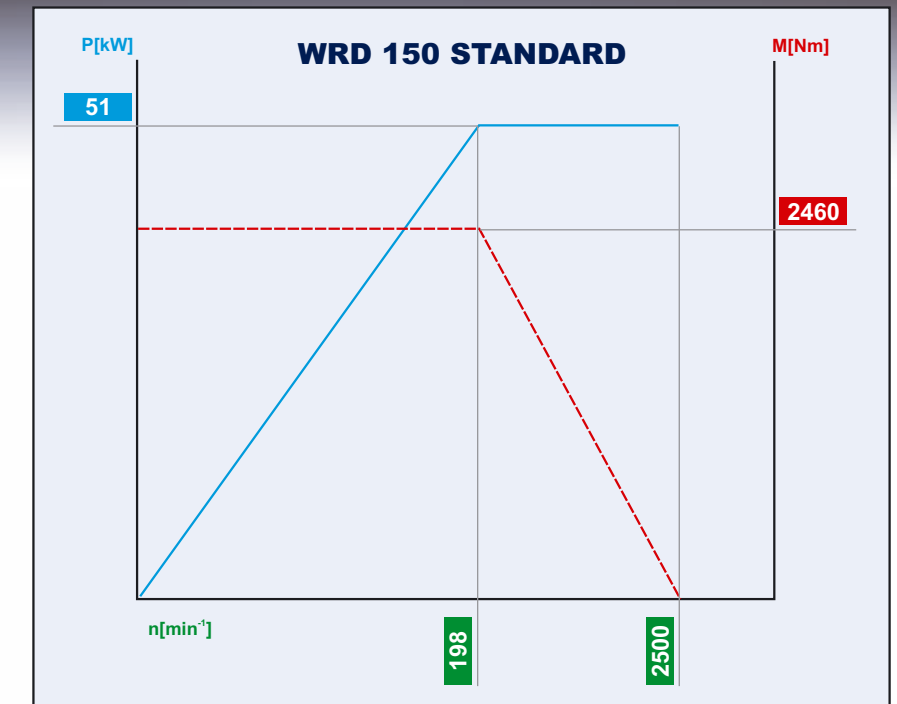
The tables, after prior agreement with the manufacturer, may be supplied with higher load (for example 125 t).



# HEADSTOCK WRD 130 (Q)

www.tosvarnsdorf.com

# HEADSTOCK WRD 150 (Q)



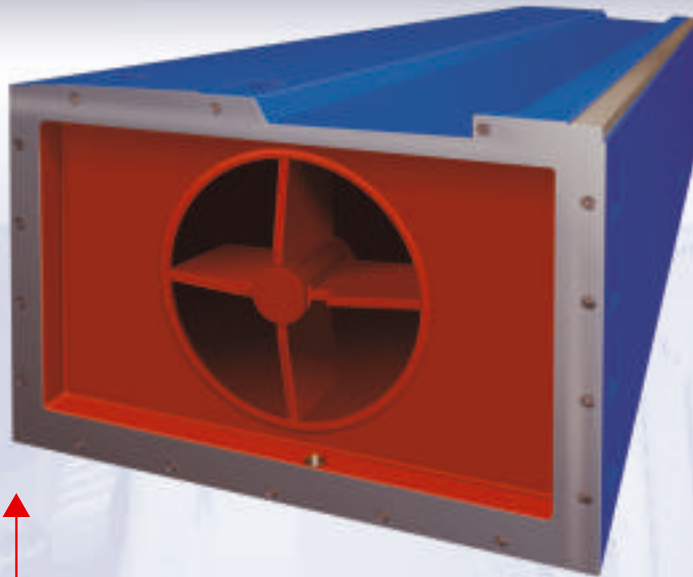
Compensations of the machine frame deformation and of the RAM originating from extending the RAM are carried out electromechanically.

The spindle drive is carried out by geared drives with 2 mechanical steps shifted automatically - by an electrically controlled shifter.



# DESIGN OF MACHINE GROUPS

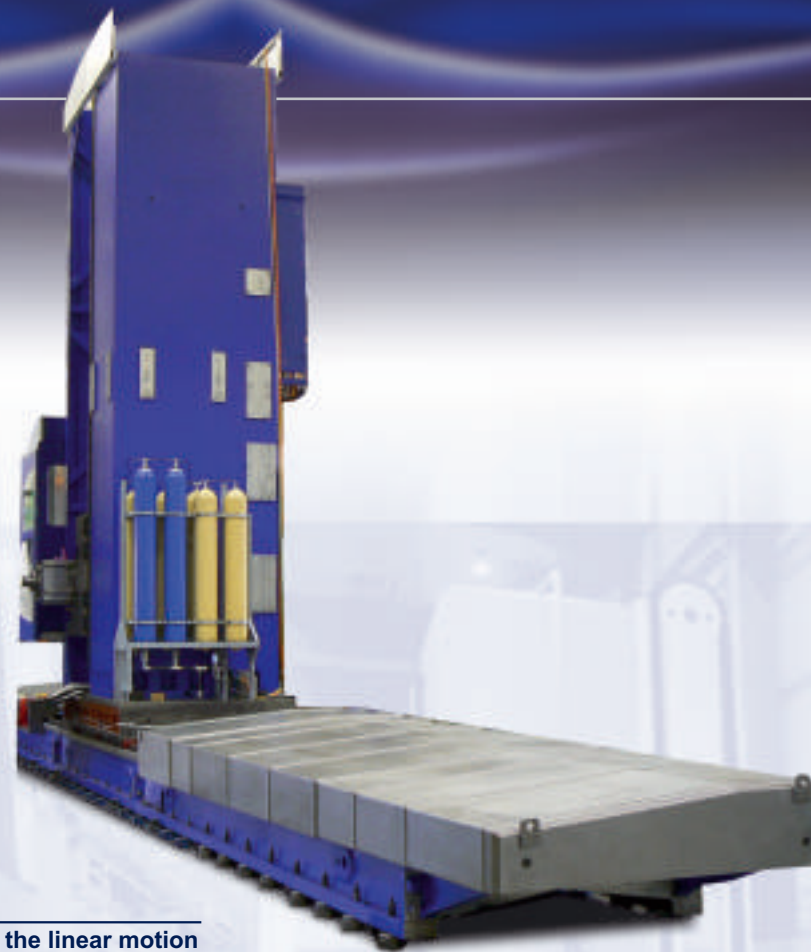
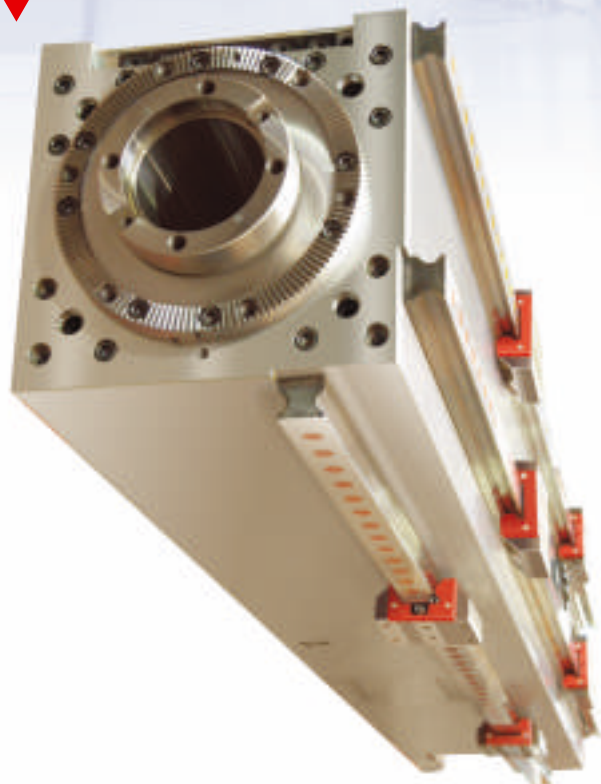
[www.tosvarnsdorf.com](http://www.tosvarnsdorf.com)



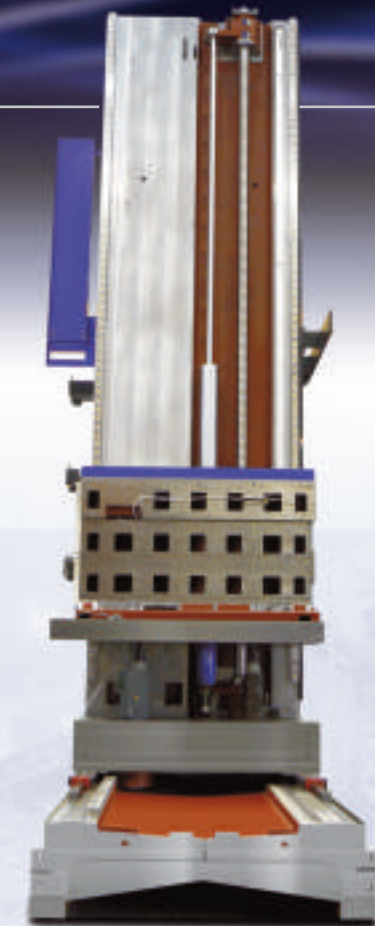
## COLUMN

The column body is a steel weldment. Vertical in the Y coordinate; the headstock travels on it and it bears two tracks of Y linear rolling guides, ball bolt and Y-axis drive and a telescopic hydraulic cylinder for headstock weight balancing is placed on the base.

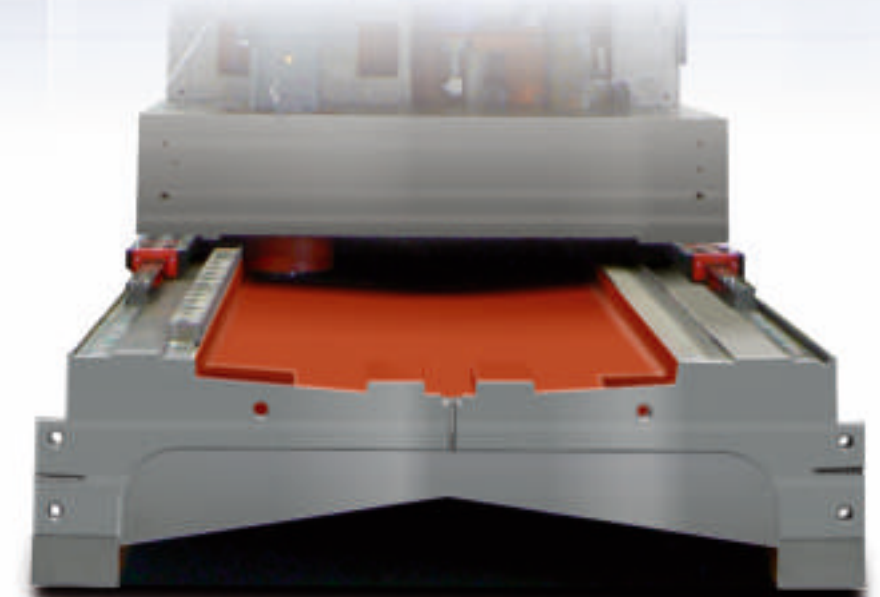
## RAM OF THE WRD 130/150 (Q) MACHINE



The conversion to the linear motion at Y, Z and W axes is designed through ball bolts with pre-stressed nuts; the X-axis movement is carried out by the use of a pair of electric servomotors with reducers. The gear pinion pre-stressing force on the reducing gear outputs against the rack bar is generated by wiring the drives in the "master-slave" function.



Guiding of the CNC controlled traveling axes have been designed as rolling type, preloaded, employing the compact linear roller pads - headstock guiding, ram guiding, column slide ways. The adjustable assemblies in the CNC coordinates are permanently kept in the positional link without any mechanical strengthening. Each of the four axes (X, Y, Z, W) has its independent electric control motor operator available.





# DESIGN OF MACHINE GROUPS

www.tosvarnsdorf.com



## **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.

## **HYDRAULIC AGGREGATE**

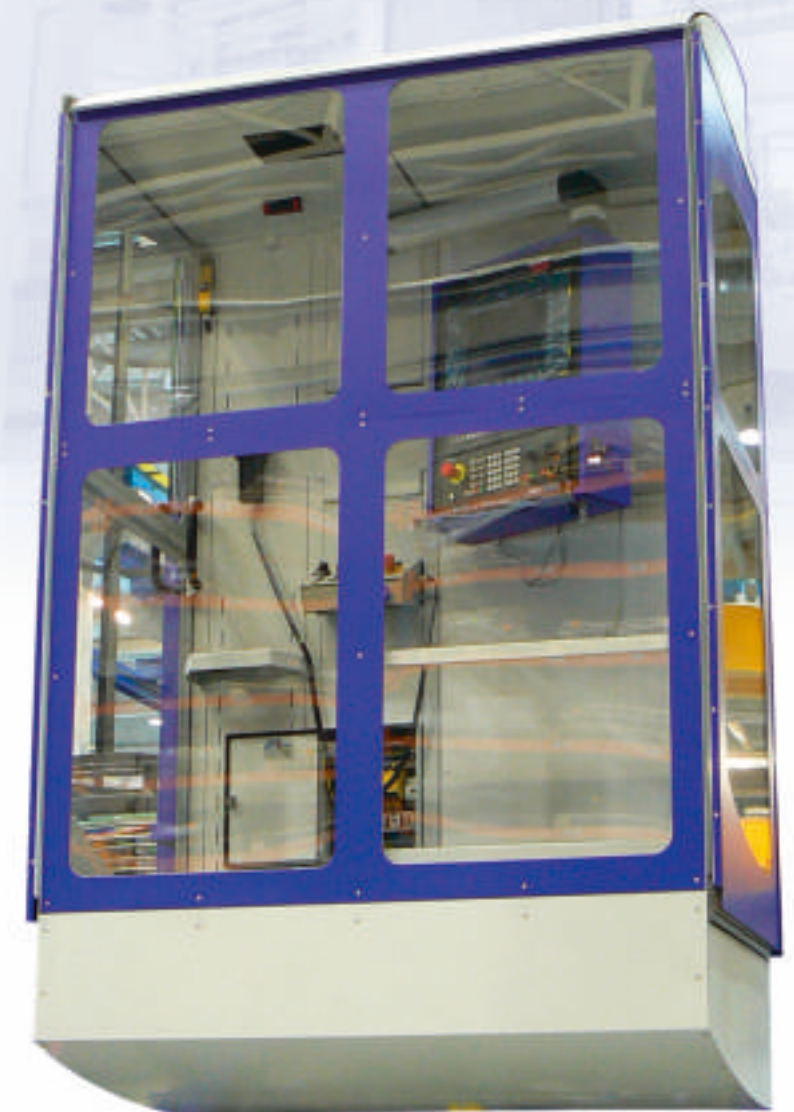
The hydraulic aggregate together with a lubricating aggregate are placed on the column saddle.

## **COMPENSATION**

The headstock weight is balanced by the telescopic hydraulic cylinder. In addition, the balancing equipment contains pressure vessels for hydraulic oil and gas fixed to the base skid.

## **OPERATOR PLATFORM**

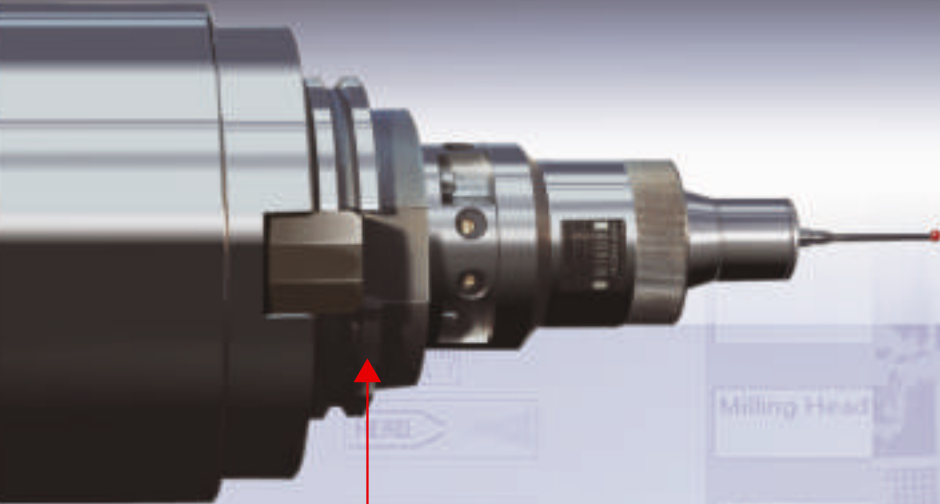
As a standard, the machines are equipped with an operator platform moveable vertically and horizontally (in direction of the spindle) which bears the control system panel.





# CONTROL SYSTEMS - MACHINE CONTROL

www.tosvarnsdorf.com



**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
- Control systems iTNC 530, Simumerik 840D or Fanuc control the machine in four continuously controlled axes (X, Y, Z, and W).

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

www.tosvarnsdorf.com



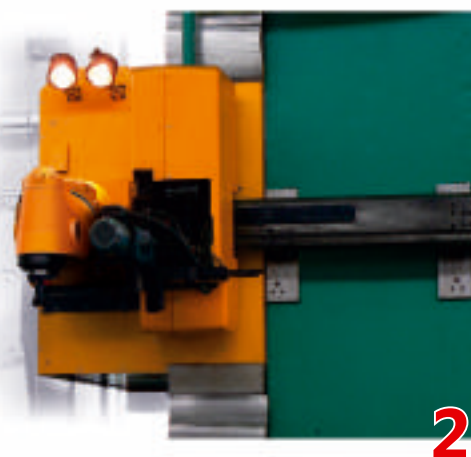
**ATC AUXILIARY  
CONTROL PANELS  
FOR HEIDENHAIN  
CONTROL SYSTEM**

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

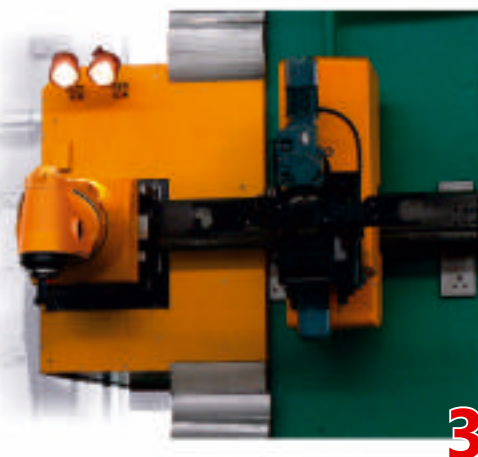
Also, the equipment enables an automatic exchange of tools into the automatic milling heads by the use of a tilting tool handler placing the tool vertically into the head.



**1**



**2**



**3**

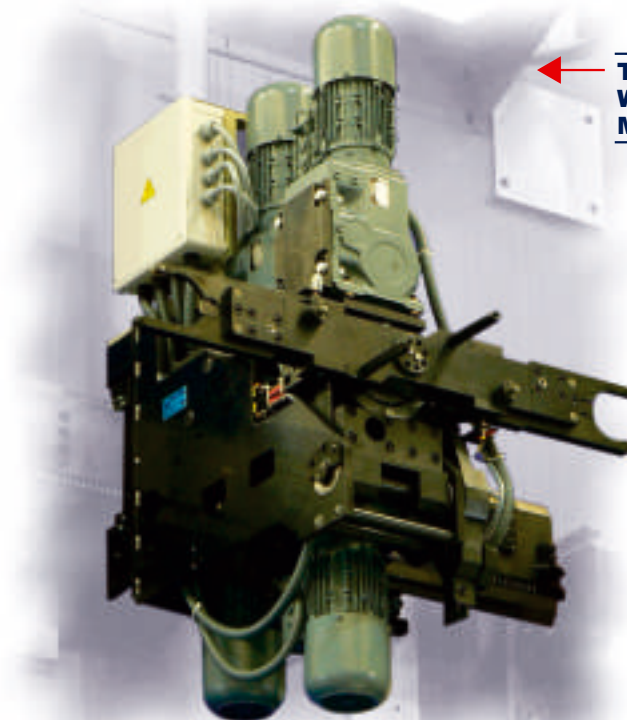
## EQUIPMENT FOR AUTOMATIC TOOL CHANGE

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	inch	4.9
- 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

\* impossible for Y = 2,000 mm // 78.74 inch

## 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



**TOOL MANIPULATOR  
WITH SWIVELING  
MECHANICAL HAND**





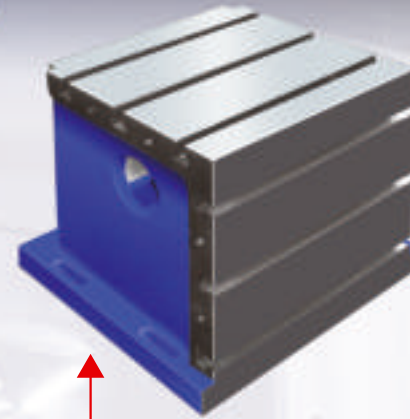
## OPTIONAL ACCESSORIES

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



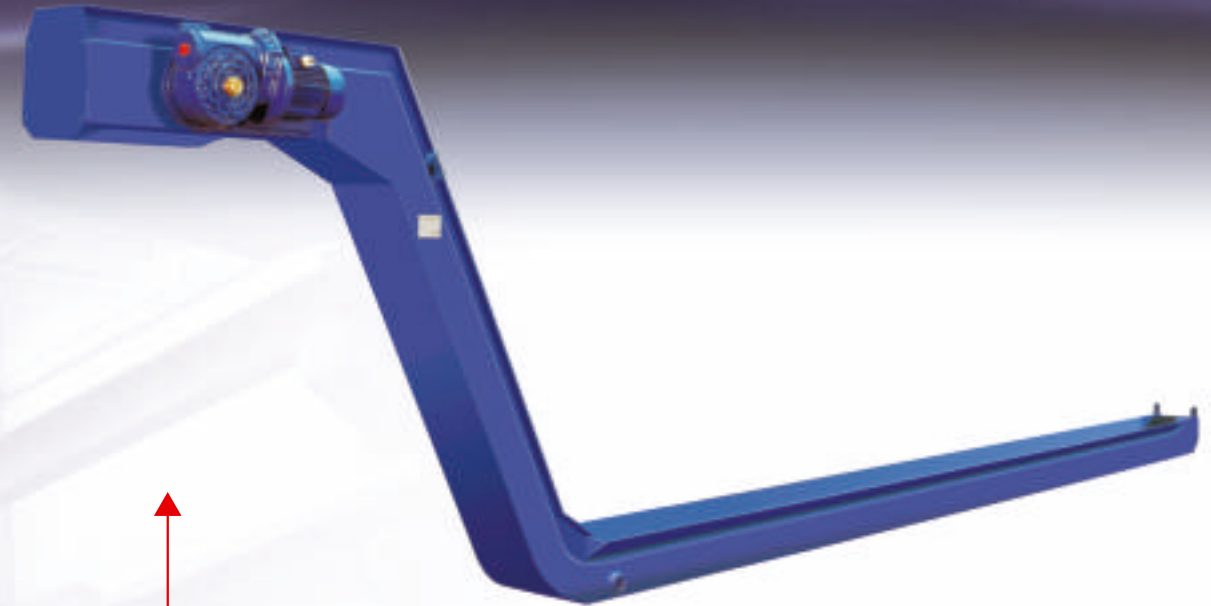
### **FLOOR PLATES**

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

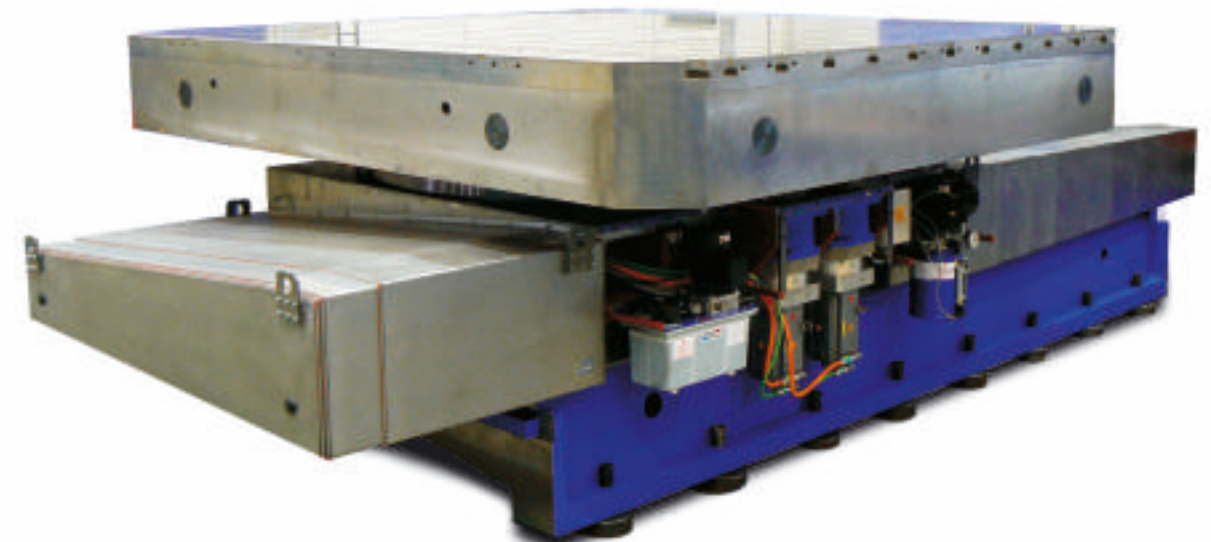
### **TOOL COOLING DEVICE**

Customer may choose from equipment for tool cooling with outside coolant supply CHZ 130/150 or equipment enabling coolant supply through the spindle center and outside coolant supply CHOV 130/150.



### **ADDITIONAL ROTARY TABLES**

**YOU WILL FIND  
MORE SPECIAL  
ACCESSORIES ON  
[www.tosvarnsdorf.cz/  
en/products/accessories/](http://www.tosvarnsdorf.cz/en/products/accessories/)**

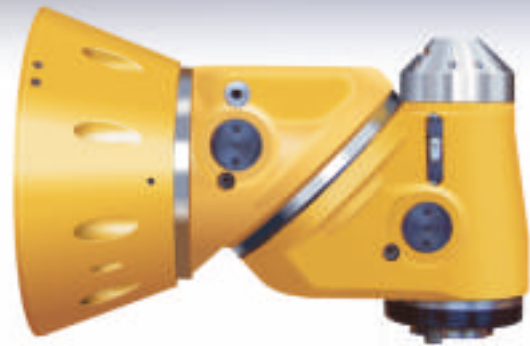




# OPTIONAL ACCESSORIES

www.tosvarnsdorf.com

**HUI 50**



**HUR 50**



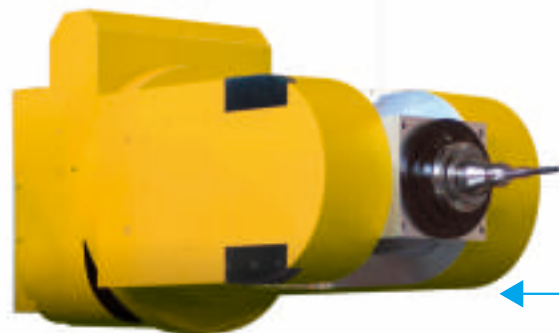
**HOI 50**



**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

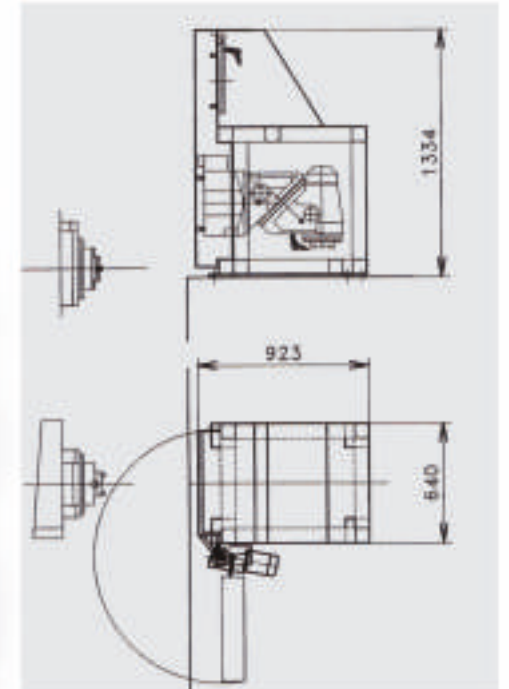


The support fitted with a cover which is opened by roll-up equipment (option).

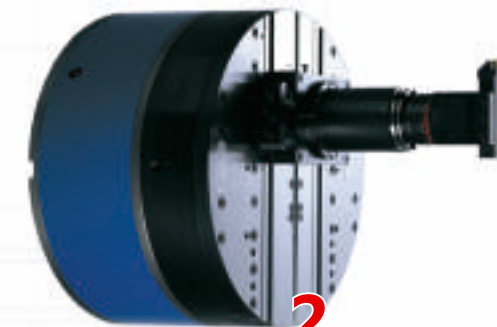


## PICK-UP

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.



**1**



**2**

## FACING HEADS

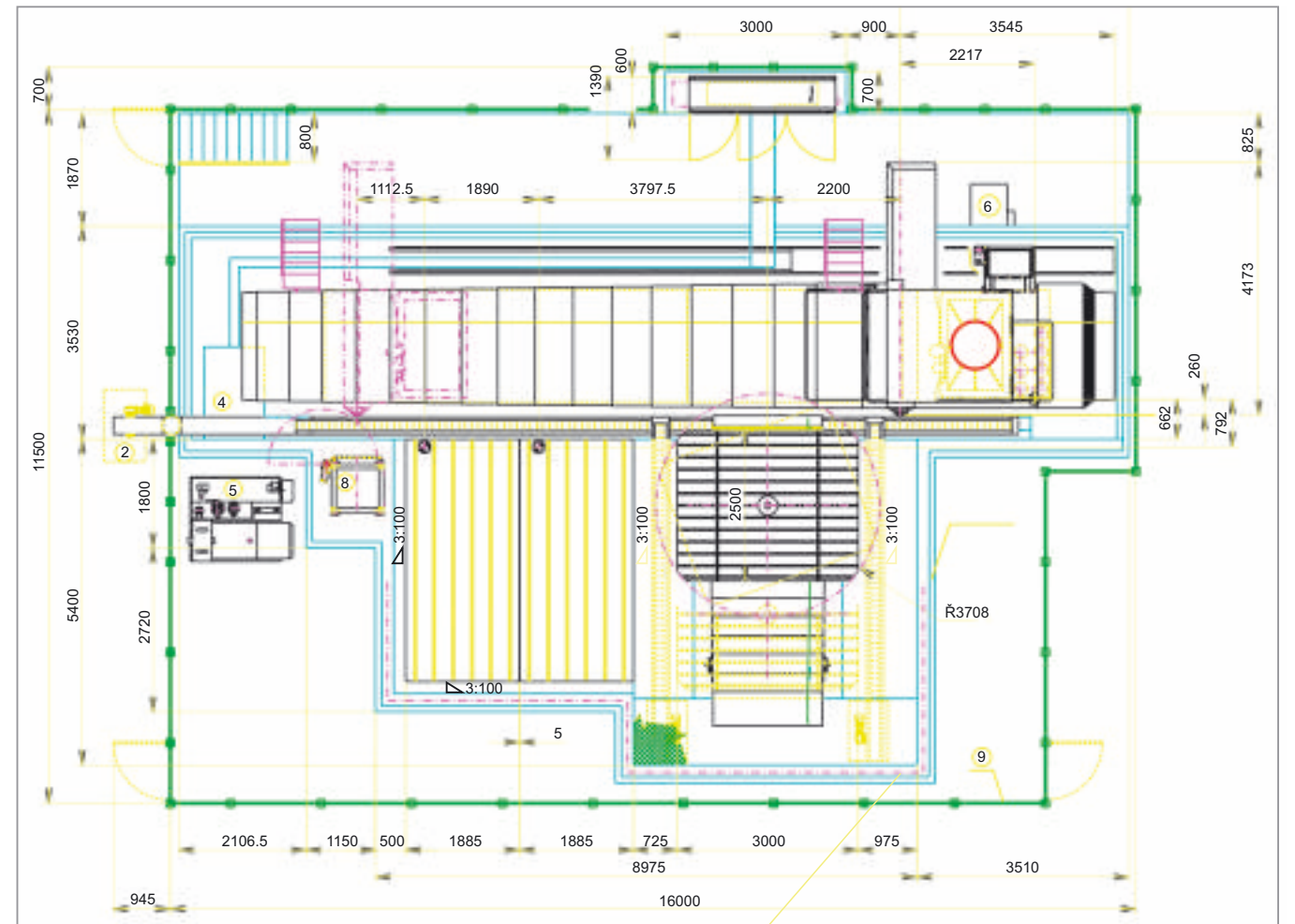
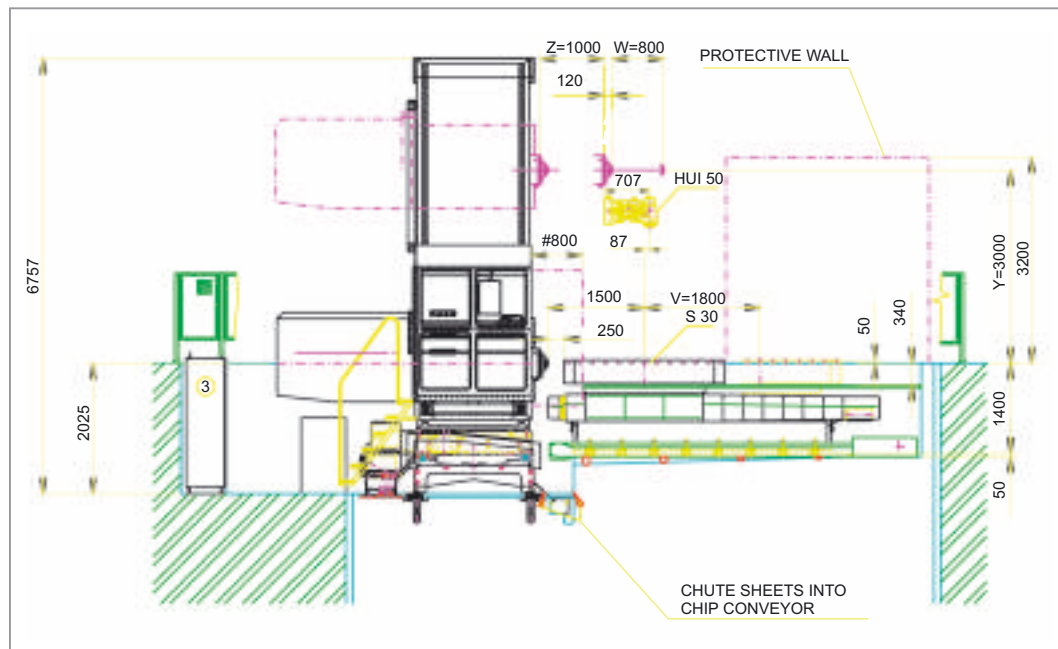
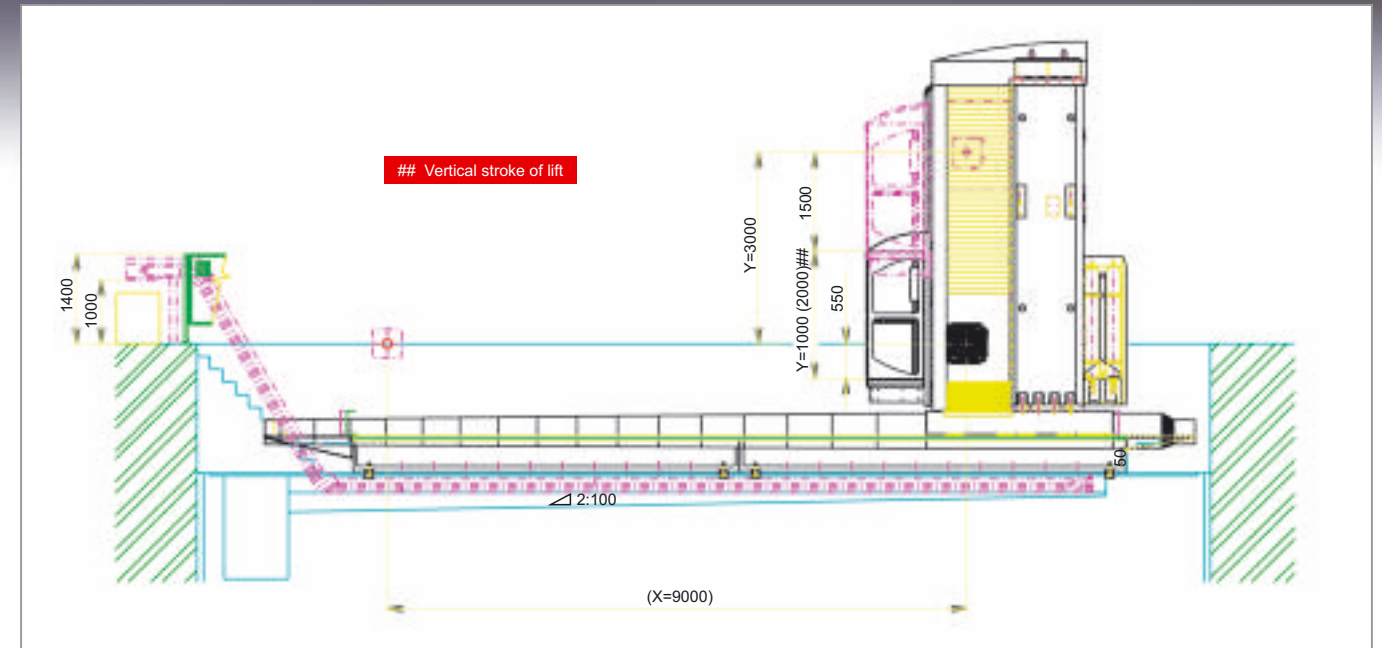
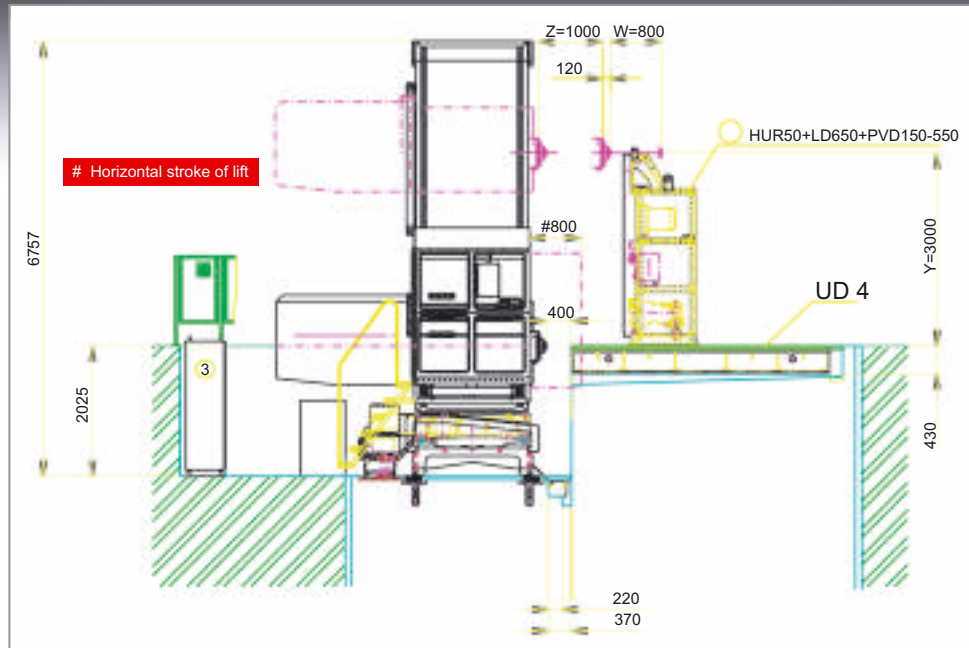
Facing heads LD 650 (1) or D'Andrea (2) are used for demanding technological operations with the possibility of continuous CNC control of the slide position



# MACHINE LAYOUT

www.tosvarnsdorf.com

PROTECTION WALL



WHEN USING CHOV WRD150  
COOLANT THROUGH SPINDLE  
IS NECESSARY TO INSTALL  
PROTECTION WALL

**mm // inch**  
X = 9,000 // 354.3  
Y = 3,000 // 118.1  
Z = 1,000 // 39.4  
W = 800 // 31.5  
Additional rotary table S 30 (2,500 x 3,000 // 98.4 x 118.1)  
V = 1,800 // 70.9

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



# WRD 150 DUO – SPECIAL TECHNOLOGICAL WORKPLACE

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

The Workplace is made by two independent WRD150Q machines, which have common workspace created by the table S 30 (2500x3000mm) and by floor plate 2200x7500 mm. The main advantage of this machines configuration is the possibility of permanent machining of workpiece with help of two independent spindles (tools) from both sides, or simultaneously machining of two identical or different workpieces.



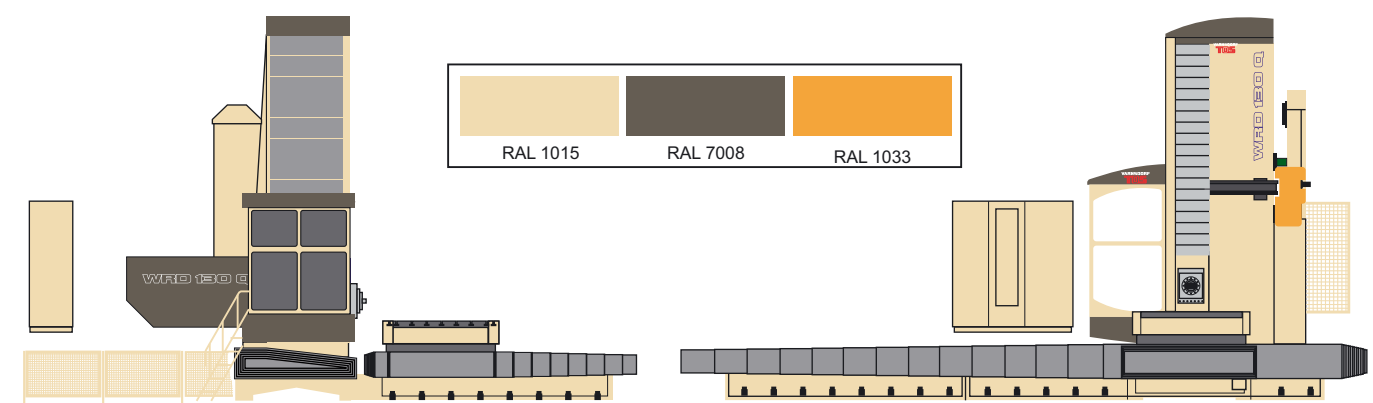
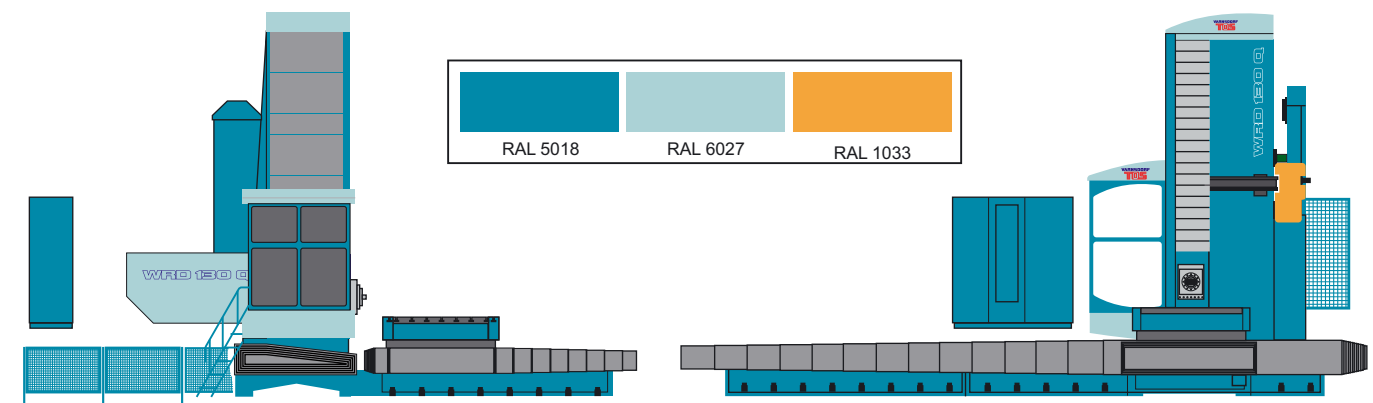
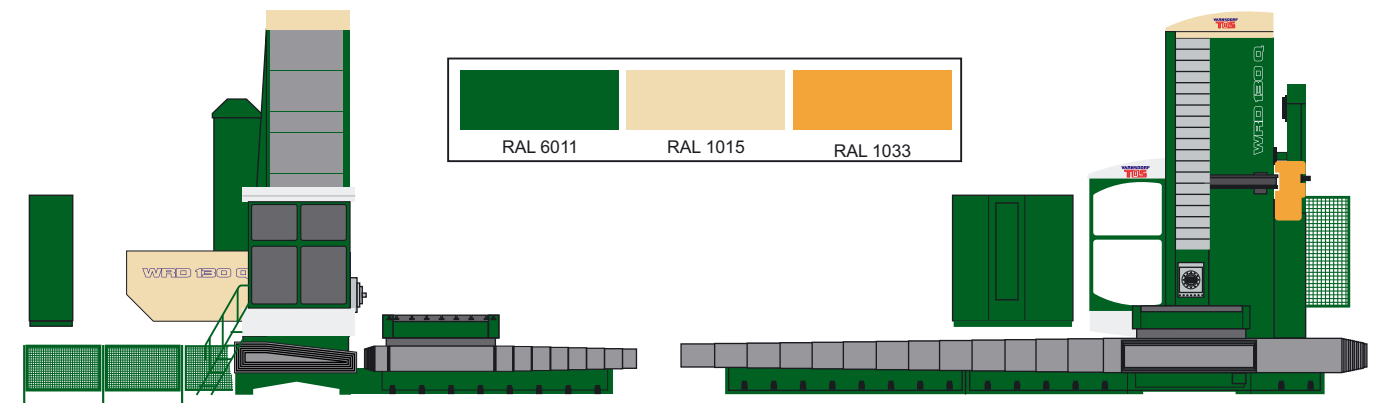
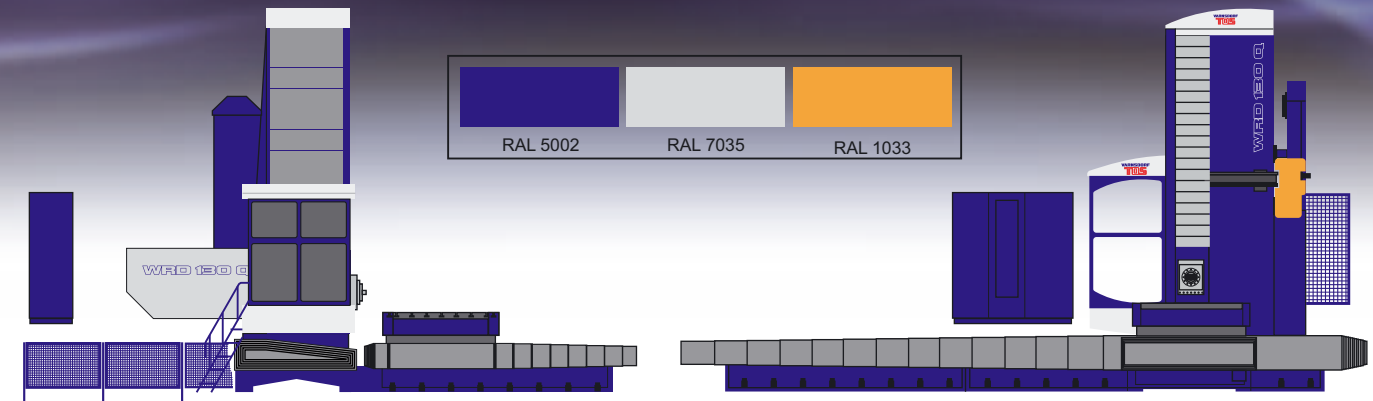
## WRD 150 DUO



The machines could be directly controlled from operator platform situated separately on every machine, or from control station common for both machines.

## STANDARD COLOUR SCHEME

**VARNSDORF**  
**TOS**







**PRODUCTION OF A BUILDING MACHINE PART**



**ROUGH MACHINING OF A HOLE**

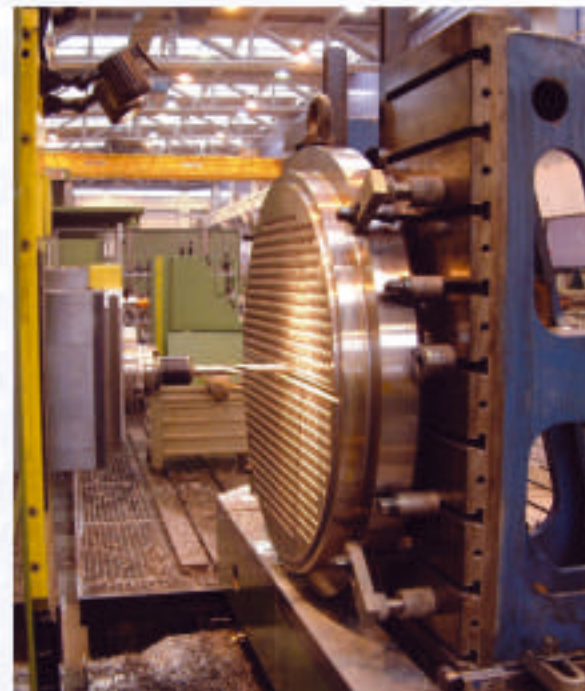


**DRILLING OF A BODY**

**MILLING, BORING, ROUGH MACHINING  
AND THREAD CUTTING OF A BUILDING  
MACHINE FRAME**



**DRILLING OF A TUBE PLATE**



**MILLING OF A BEDS**



**ANOTHER  
TECHNOLOGIES  
YOU CAN FIND ON  
[www.tosvarnsdorf.cz/  
en/technologies/](http://www.tosvarnsdorf.cz/en/technologies/)**

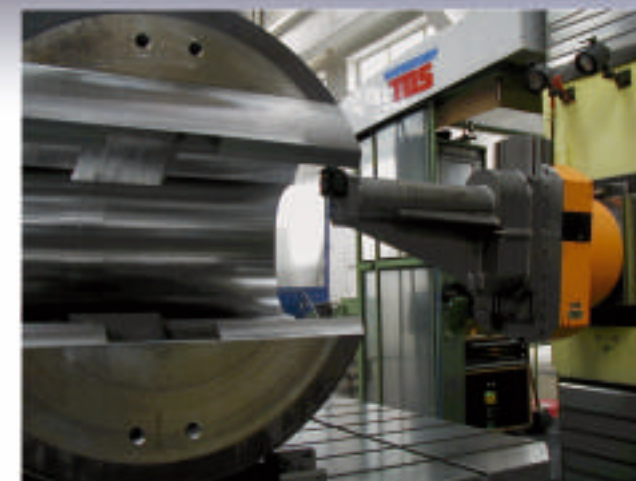




**MILLING OF HOLE BY THE HUI50  
MILLING HEAD**



**ROUGH MACHINING OF AN ELECTRIC  
MOTOR BODY**



**DRILLING OF A BODY**



**PRODUCTION OF A WIND-POWER STATIONS**



**MACHINING OF A GLASS-MACHINE FRAME**



**MILLING OF A MOULD PART**

**THE MACHINE, AFTER PRIOR AGREEMENT WITH THE MANUFACTURER, MAY BE  
EQUIPPED WITH ADDITIONAL DEVICE AND/OR PROCESS ACCESSORIES.**



Data and features in the present catalogue are not binding. The producer reserves the right to alter them without advance notice at any time.

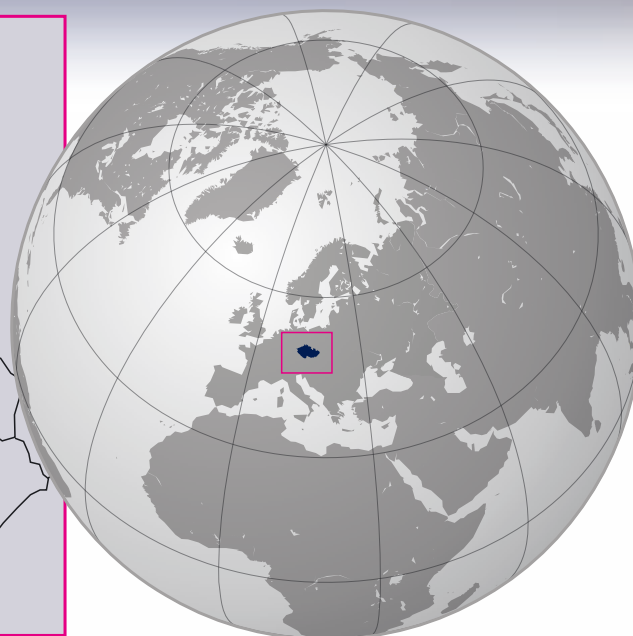
**102**

**STATISTICS OF SOLD  
WRD 130/150 (Q)  
OF ALL TYPES:  
2000 – SEPTEMBER 2011**

	Czech Republic	16
	Germany	13
	Spain	9
	Finland	7
	Slovenia	7
	Poland	6
	France	5
	Italy	5
	China	4
	Estonia	4
	India	4
	Russia	4
	Norway	3
	Ukraine	3
	Canada	2
	Slovakia	2
	Austria	1
	Belarus	1
	Belgium	1
	Brazil	1
	Hungary	1
	Indonesia	1
	Iran	1
	South Africa	1
<b>Total</b>		<b>102</b>



**TOS VARNSDORF a.s.**



**TOS VARNSDORF a.s.**  
**Říční 1774, 407 47 Varnsdorf**  
**Czech Republic**

**Tel: +420 412 351 203**  
**Fax: +420 412 351 269**  
**E-mail: [info@tosvarnsdorf.com](mailto:info@tosvarnsdorf.com)**  
**[www.tosvarnsdorf.com](http://www.tosvarnsdorf.com)**  
**[www.tosvarnsdorf.eu](http://www.tosvarnsdorf.eu)**



**[www.tosvarnsdorf.com](http://www.tosvarnsdorf.com)**