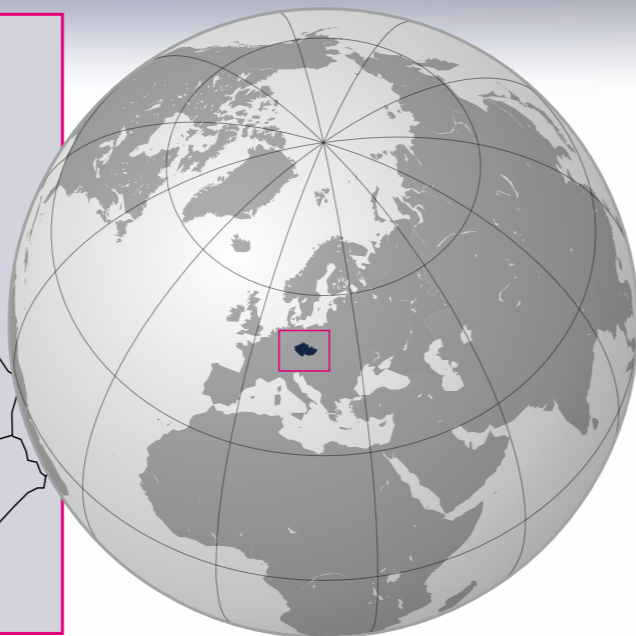


道斯凡斯多夫股份公司
TOS VARNSDORF a.s.

VARNSDORF
TOS



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VARNSDORF
TOS

WRD 170 [Q]型落地卧式镗铣床

来自捷克共和国原装进口机床。
高质量。

落地卧式镗铣床
FLOOR TYPE
HORIZONTAL
BORING MILLS

WRD 170 [Q]

WRD 170

WRD 150 [Q]

WRD 150

WRD 130 [Q]

WRD 130

来自捷克共和国原装进口机床。高质量。



道斯凡斯多夫股份公司
TOS VARNSDORF a.s.



6/2010

技术参数 TECHNICAL PARAMETERS

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带活动滑枕和活动轴的WRD 170 (Q)型落地卧式镗铣床是捷克斯瓦尔多夫股份公司产品系列落地镗铣床中的最新代表者。

WRD 170(Q)型镗铣床可用于高精度坐标钻削、镗削、铣削和螺纹切削等加工。特别适用于对箱体、板体和合金、铸钢、钢铁或其他材料组成的可切削的复杂工件(大型、超大型或重型组件)。根据工艺要求,机床可以装配一个附属工作台或两个旋转工作台外加夹零件。

为了提高该机床的实用工艺价值,可以配备一系列的备件。

工作周期的自动化水平决定了这款机床的基本配备。

WRD 170型 - 标准配置

WRD 170 (Q)型 - 带自动换刀装置(ATC)的配置

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 machine 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)

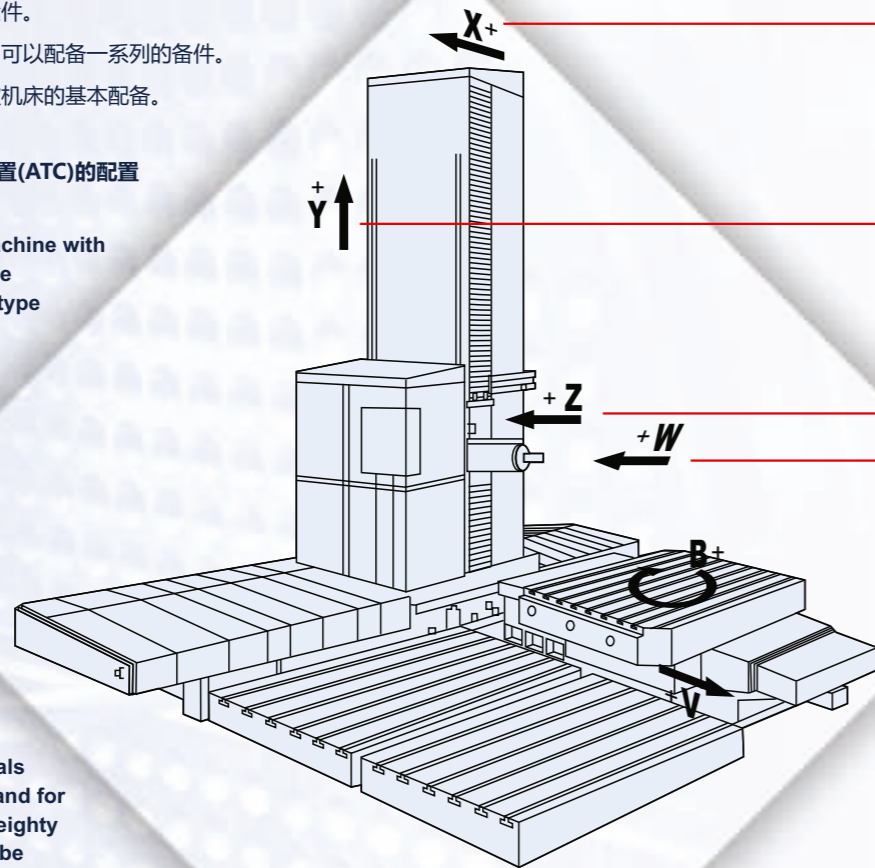
WRD 170 (Q)

X max. 29,000 mm X轴 可达29 000毫米

Y max. 6,000 mm Y轴 可达6 000毫米

Z 1,500 mm Z轴 1 500毫米

W 1,000 mm W轴 1 000毫米



本样册里的数据和设计无任何约束力。制造商有权在未经提前通知的情况下对其进行更改。

Data and features in the present catalogue are not binding.

The producer reserves the right to alter them without advance notice at any time.



基本技术参数 BASIC SPECIFICATIONS

主轴直径 Spindle diameter	mm	170
主轴锥孔规格 Spindle taper		ISO 50
主轴转速范围 Spindle speed range	RPM	10 - 2 200
主电机功率 Main motor power, rated	kW	71
滑枕端面尺寸 RAM size	mm	550 x 550
立柱横向行程(X轴) Column transverse travel X	mm	5 000 - 29 000*
主轴箱垂直行程(Y轴) Headstock vertical travel Y	mm	4 000 - 6 000**
滑枕行程(Z轴) RAM travel Z	mm	1 500
镗轴行程(W轴) Spindle stroke W	mm	1 000
工作行程范围 - X轴, Y轴, Z轴, W轴 Feed range - X, Y, Z, W	mm.min ⁻¹	1 - 8 000
快速进给 Rapid feed - X轴 X	mm.min ⁻¹	16 000
- X轴, Y轴, Z轴, W轴 Y, Z, W	mm.min ⁻¹	12 000

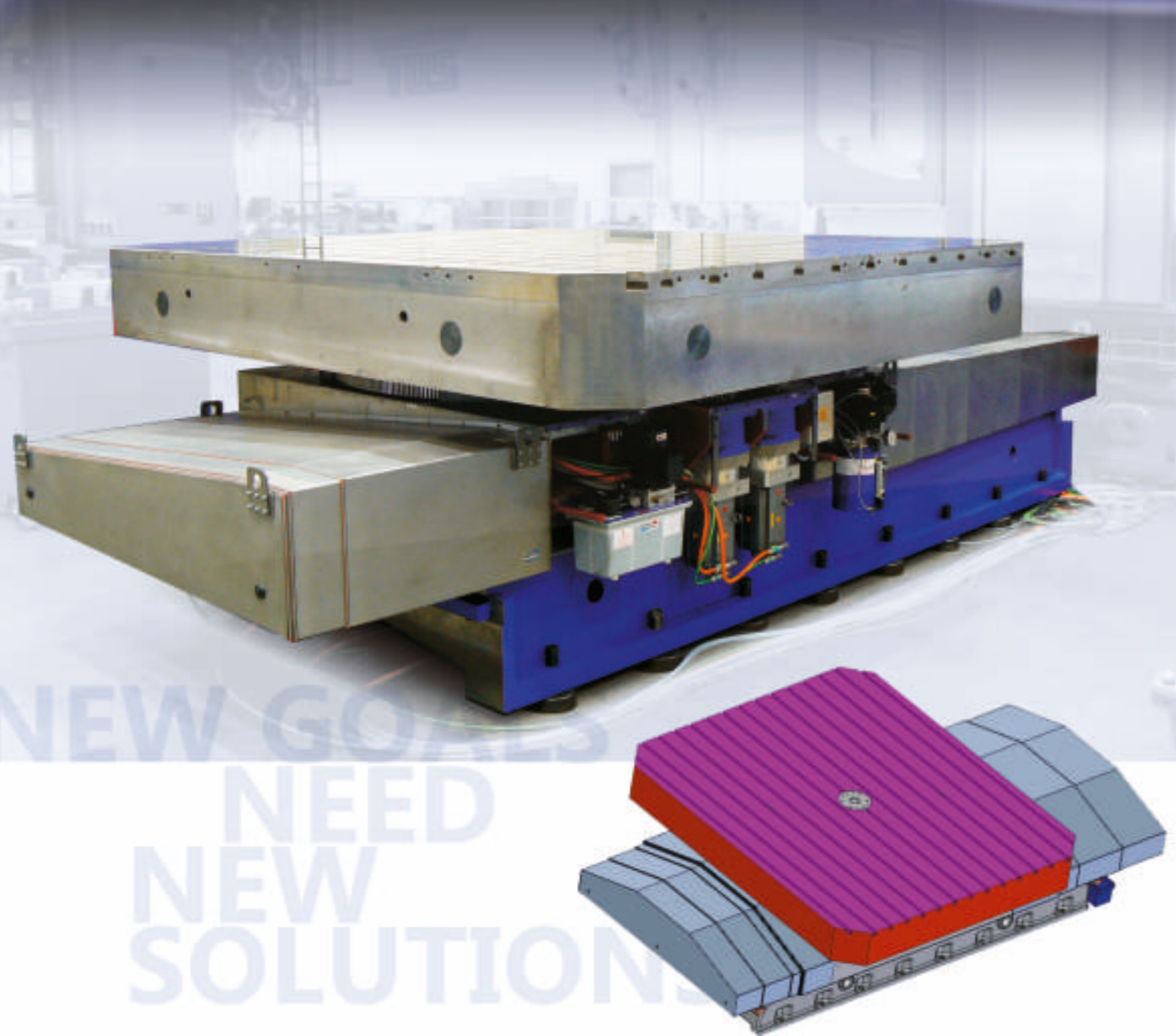
* 每2000毫米 modules of 2 000 mm
** 每500毫米 modules of 500 mm

其他参数 FURTHER SPECIFICATIONS

操作平台垂直行程 Vertical travel of operator platform	mm	Y轴行程1000毫米的长度减少 Y slimmed by 1 000
操作平台水平行程 Horizontal travel of operator platform		
- 往工件的方向 to the workpiece	mm	900
压缩空气至机床输入 Compressed air source output requirements		
- 压力 pressure	MPa	0,6
- 流量 (15秒钟的时段) volume (for a time of 15 sec)	N1/sec	18
- 流量 (永久) volume (permanent)	N1/sec	0,5
电压/电网频率 Mains voltage / frequency	V/Hz	3 x 400 / 50, 3 x 400 / 60
操作和控制电压 Control voltage	V=	24
机床总输入功率 Total power consumption	kVA	155
操作地点最大A音量 Noise level "A" at the operator site max.	dB(A)	80

TECHNICAL SPECIFICATIONS OF ADDITIONAL ROTARY TABLES

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此型号机床工作台旋转组 (B) 到达目标位置时采用自动液压机械夹紧。其工作台纵向行程的位置是由数控工作台自动控制的。

After reaching a final position on all tables, the table rotation group (B) is automatically hydro-mechanically clamped. Position of longitudinal table travel is held in an automatic position bond on the CNC controlled tables.

若客户需要并向制造商提前协商, 则可供应另外载重量更大(比如125吨)的工作台型号。

THE TABLES, AFTER PRIOR AGREEMENT WITH THE MANUFACTURER, MAY BE SUPPLIED WITH HIGHER LOAD (FOR EXAMPLE 125 t).



工作台(分度定位或连续数控)S 16型 ADDITIONAL ROTARY TABLE S 16

工件最大重量 Workpiece weight max.	kg	16 000
回转工作台台面尺寸 Table clamping surface dimensions	mm	1 800 x 2 240, 2 000 x 2 500
工作台T型槽 T-slots	- 尺寸 dimension	mm 28H8
	- 间距 pitch	mm 200
	- 数量 quantity	9
工作台纵向行程 Table longitudinal travel - V轴 V	mm	1 400, 1 800
工作行程范围 Feed range	- V轴 V	mm.min ⁻¹ 1 - 5 000
	- B轴 B	RPM 0,003 - 1
快速进给速度 Rapid feed	- V轴 V	mm.min ⁻¹ 10 000
	- B轴 B	RPM 1,75

工作台(分度定位或连续数控)S 25型 ADDITIONAL ROTARY TABLE S 25

工件最大重量 Workpiece weight max.	kg	25 000
回转工作台台面尺寸 Table clamping surface dimensions	mm	2 000 x 2 000, 2 000 x 2 500, 2 500 x 3 000
工作台T型槽 T-slots	- 尺寸 dimension	mm 28H8
	- 间距 pitch	mm 200
	- 数量 quantity	9, 9, 13
工作台纵向行程 Table longitudinal travel - V轴 V	mm	1 300, 1 800, 2 500, 3 000
工作行程范围 Feed range	- V轴 V	mm.min ⁻¹ 1 - 8 000
	- B轴 B	RPM 0,003 - 1,5
快速进给速度 Rapid feed	- V轴 V	mm.min ⁻¹ 16 000
	- B轴 B	RPM 3

工作台(分度定位或连续数控)S 40型 ADDITIONAL ROTARY TABLE S 40

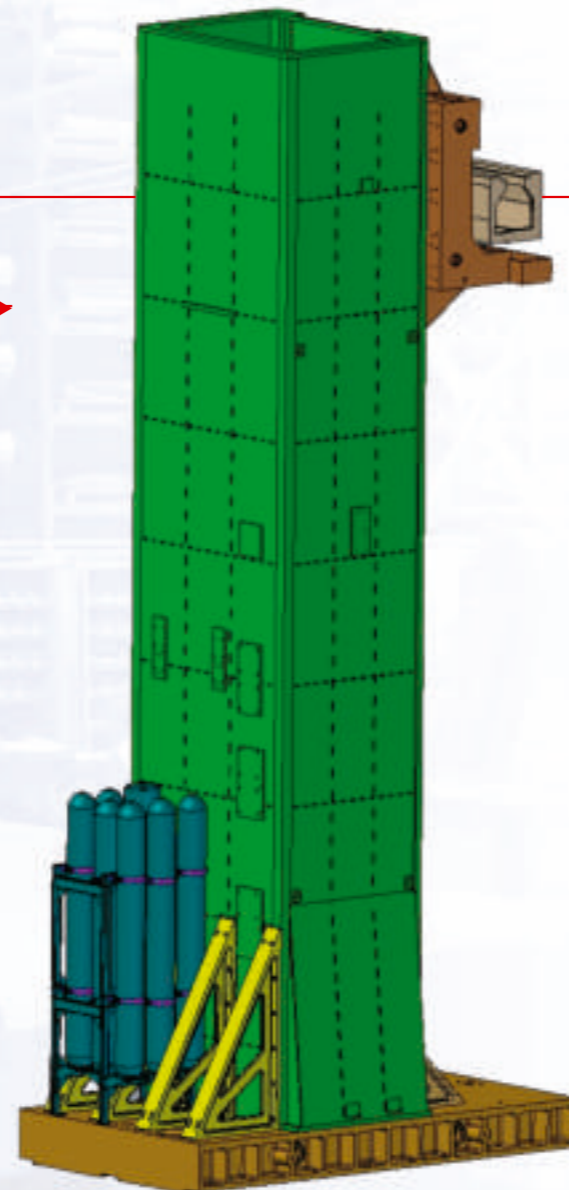
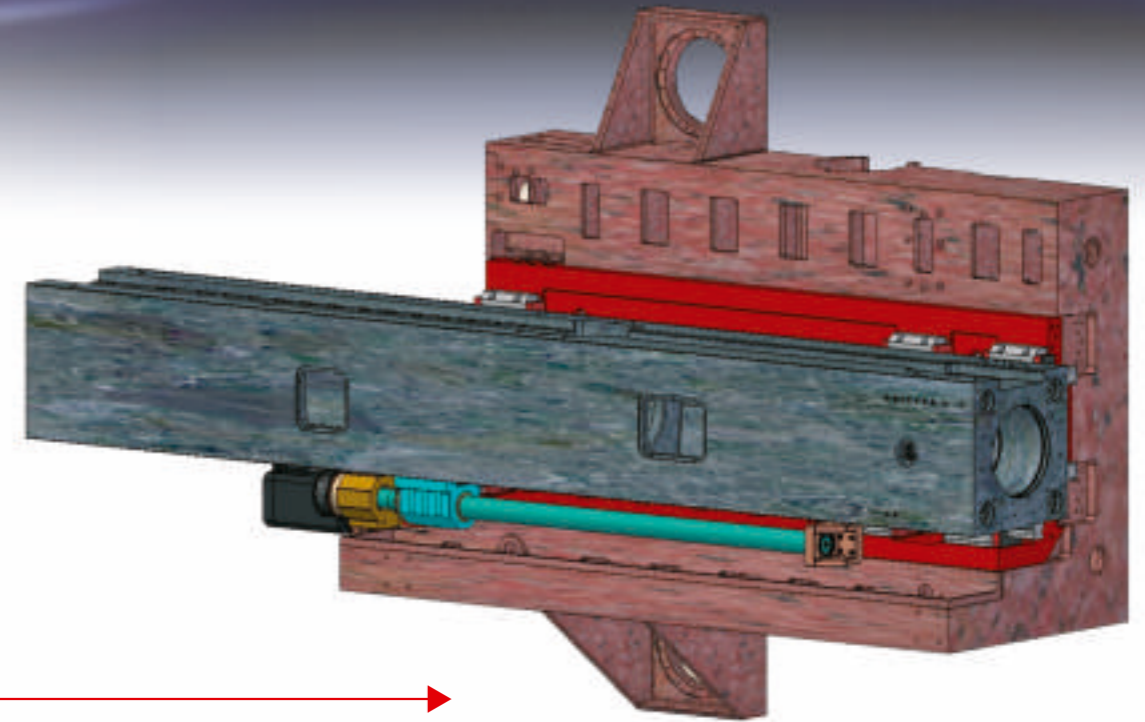
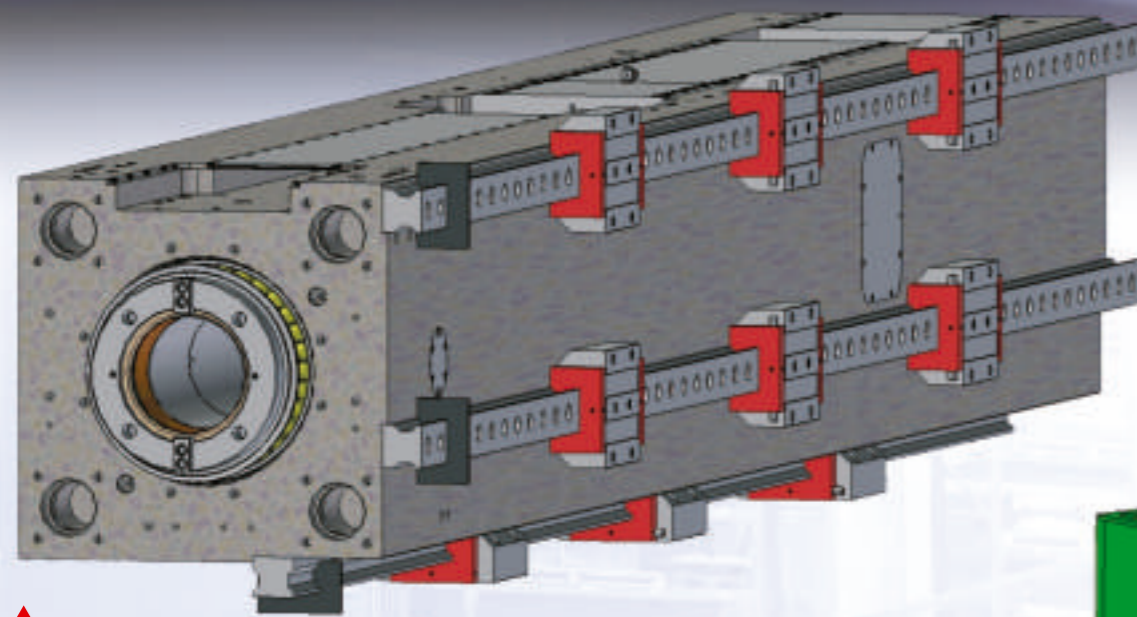
工件最大重量 Workpiece weight max.	kg	40 000
回转工作台台面尺寸 Table clamping surface dimensions	mm	3 000 x 3 000, 3 000 x 3 500
工作台T型槽 T-slots	- 尺寸 dimension	mm 28H8
	- 间距 pitch	mm 200
	- 数量 quantity	15
工作台纵向行程 Table longitudinal travel - V轴 V	mm	1 500, 2 000, 2 500
工作行程范围 Feed range	- V轴 V	mm.min ⁻¹ 1 - 8 000
	- B轴 B	RPM 0,003 - 1,5
快速进给速度 Rapid feed	- V轴 V	mm.min ⁻¹ 15 000
	- B轴 B	RPM 2.5

运动坐标导引系统 GUIDEWAYS

回转工作台(B轴) Table rotation (B)	
S16型 S16	main sliding guideways are cast iron, counterways are coated with low friction plastic 主滑动导轨有嵌入淬火钢, 其配合面则注有低摩擦的塑料层。
S25型 S25	guiding is carried out as rolling with a preloaded roller bearing of a large diameter 采用滚动导引方式, 通过预置的大直径滚轴。
S40型 S40	guiding is carried out as rolling with a preloaded roller bearing of a large diameter 采用滚动导引方式, 通过预置的大直径滚轴。
工作台纵向行程(V轴) Table longitudinal travel (V)	
S16型 S16	guiding is carried out as combined with basic sliding guideways equipped with rolling blocks 采用复合导引方式, 由基础滑动导轨和滚动轴承相结合。
S25型 S25	guiding is carried out as linear compact (four-way roller preloaded blocks) 采用紧凑型直线导引方式 (通过预置的四向滚轴)。
40型 S40	guiding is carried out as linear compact (four-way roller preloaded blocks) 采用紧凑型直线导引方式 (通过预置的四向滚轴)。

主部件结构配置 DESIGN OF MACHINE GROUPS

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立柱WRD COLUMN

立柱是钢焊接件。其次内装主轴箱箱体重量平衡所用的伸缩液压缸以及主轴箱在Y轴移动行程直线导引的两个导轨。

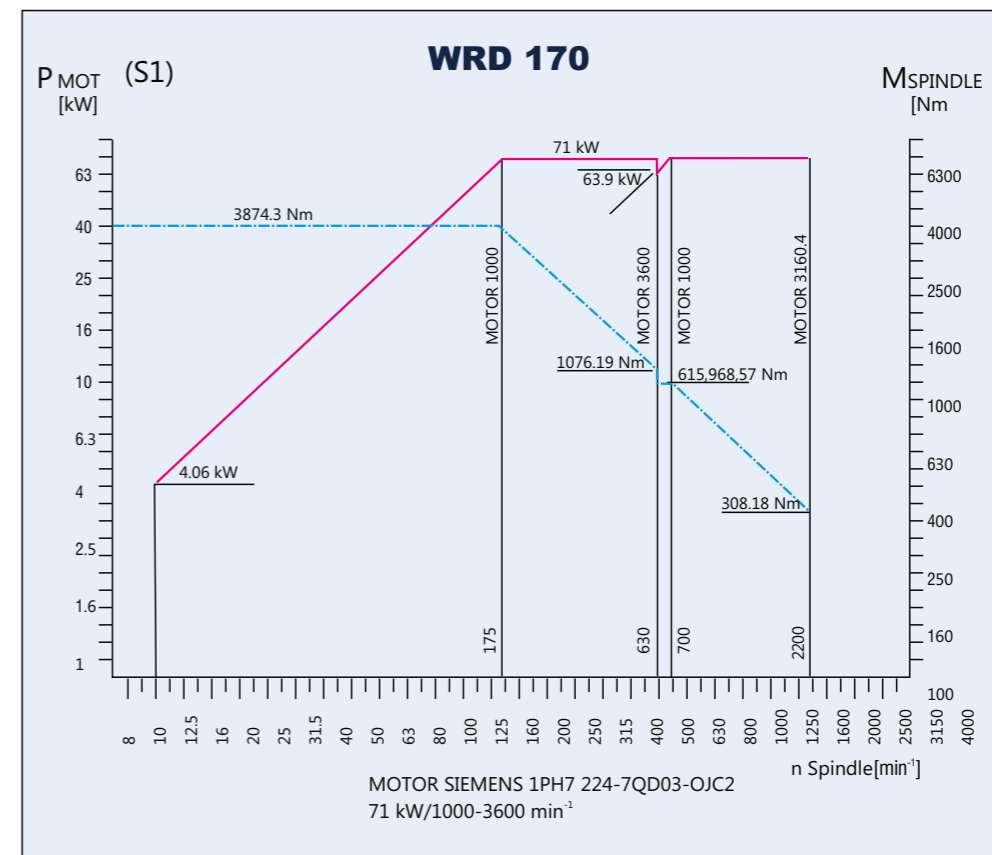
The column body is a steel weldment. Toothed racks for Y-axis drive, a telescopic hydraulic cylinder for the headstock mass balancing, and two ways for the headstock travel in Y-axis are mounted there.

主轴箱箱体 HEADSTOCK

主轴箱箱体是多节的，内部装有坚固的滑枕，滑枕内配以防止机电变形的补偿装置。

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.

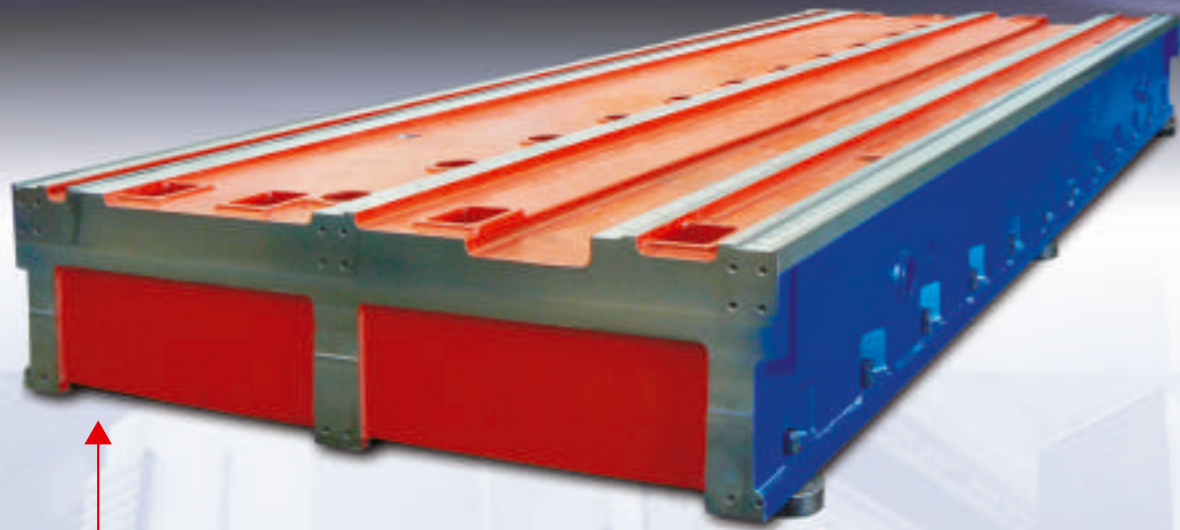
滑枕WRD 107 (Q) RAM OF THE WRD 170 (Q) MACHINE



NEW GOALS
NEED
SOLUTIONS

主部件结构配置 DESIGN OF MACHINE GROUPS

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床身 THE BED

床身是优质灰钢铸件，其上用螺丝固定了三个直线导引系统导轨以及X坐标的立柱滑板行程所用的齿条。

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.

配电柜 ELECTRIC OUTFIT

电柜放置在机床旁边的地板上，电柜内含有除了驱动和开关原件外的所有电器配件。包含有控制系统基础模块、进给驱动和主轴驱动控制装置元件及知名制造商提供的其它电器元件。

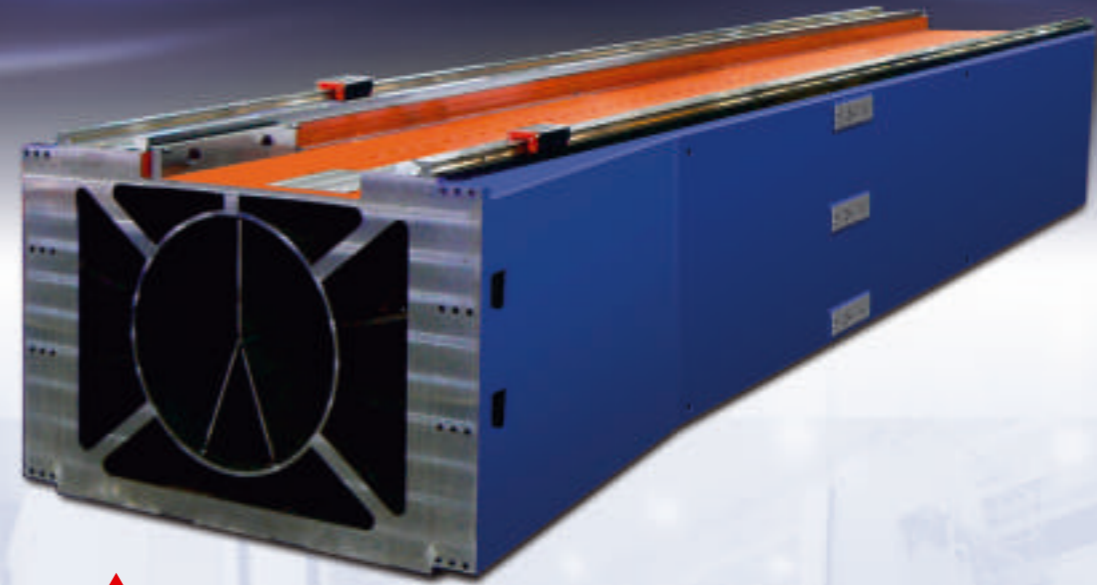
An electric cabinet placed on a shop floor, outside the machine, houses electrical accessories except for actuating and switching elements. It contains a basic control system module, components controlling the servo- and spindle-drives plus other electrical elements supplied by leading specialized companies.



操作台 OPERATOR PLATFORM

机床标准配置配有可纵向或横向（在主轴方向）移动的操作台。机床控制面板放置在操作台上。

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.



立柱柱体 COLUMN BODY

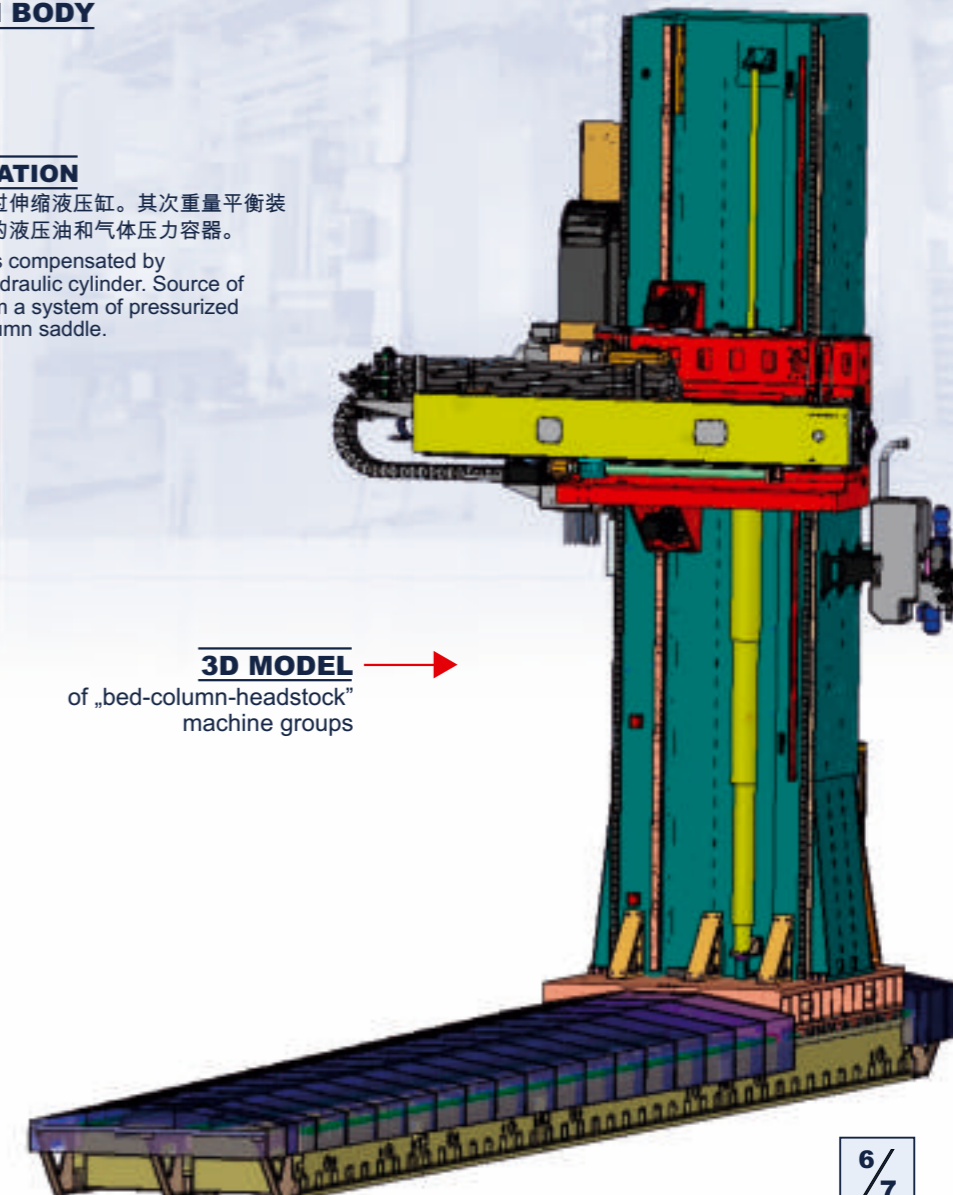
平衡装置 COMPENSATION

主轴箱体重量的平衡通过伸缩液压缸。其次重量平衡装置还包括装在立柱滑板上的液压油和气体压力容器。

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.

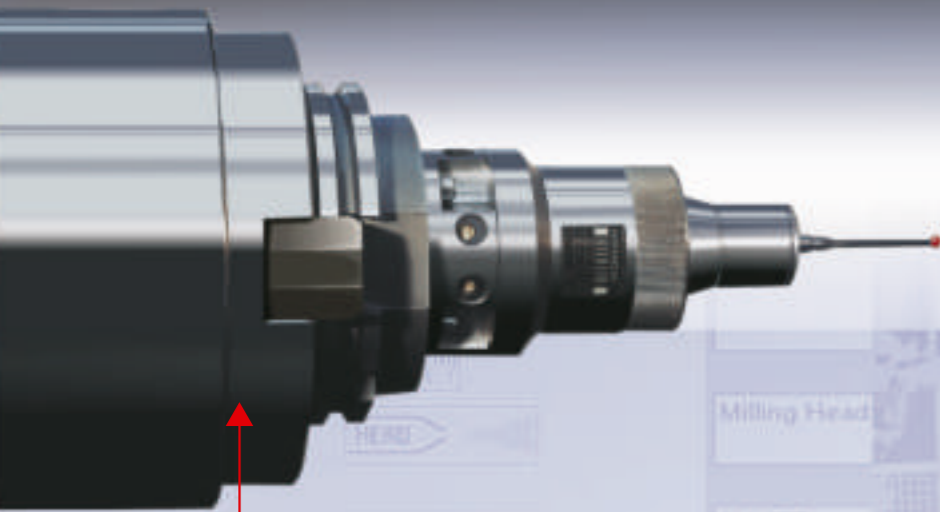


3D MODEL
of „bed-column-headstock”
machine groups



控制系统 – 机床的控制 CONTROL SYSTEMS - MACHINE CONTROL

www.tosvarnsdorf.com



接触式测量测头 MEASURING TOUCH PROBE

所有控制系统的标准配置包括:

- 基本模块(控制主机)
- LCD液晶显示屏的显示模块
- 带键盘的控制面板
- 带电子手轮的便携式控制面板

控制系统功能和配置可增选如:

- 数字化功能 (以测头复制轮廓的自动NC数控程序编写)
- 接触式测量测头
- 允许远程诊断的界面

控制机床可选择海德汉iTNC 530、西门子SINUMERIK 840 D。控制系统完全连续控制所有直线坐标以及工作台的回转运动(B轴)。

若安装比如连续控制的铣头(或要求连续控制的其他附件), 则这些轴同样通过连续控制。

系统允许实现多轴同时插补:

- 直线插补
- 圆弧插补
- 螺旋插补

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:

- Digitalization (automatic NC programming created by copying a shape with a touch probe)
- 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 machine control system.

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)



测量 SYSTEM OF MEASURING

X,Y,Z的直线轴运动采用海德汉光电封闭式直线光栅尺。

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

西门子SINUMERIK 840 D 控制系统的控制面板

CONTROL PANEL OF SINUMERIK 840 D CONTROL SYSTEM



海德汉iTNC 530控制系统的控制面板

CONTROL PANEL OF HEIDENHAIN iTNC 530 CONTROL SYSTEM



便携式控制面板 SINUMERIK 840 D

PORTABLE CONTROL PANEL SINUMERIK 840 D



便携式控制面板 iTNC 530

PORTABLE CONTROL PANEL HEIDENHAIN



自动换刀装置 AUTOMATIC TOOL CHANGE

www.tosvarnsdorf.com



HEIDENHAIN海德汉/西门子SINUMERIK
控制系统所用的自动换刀装置的辅助控制面板

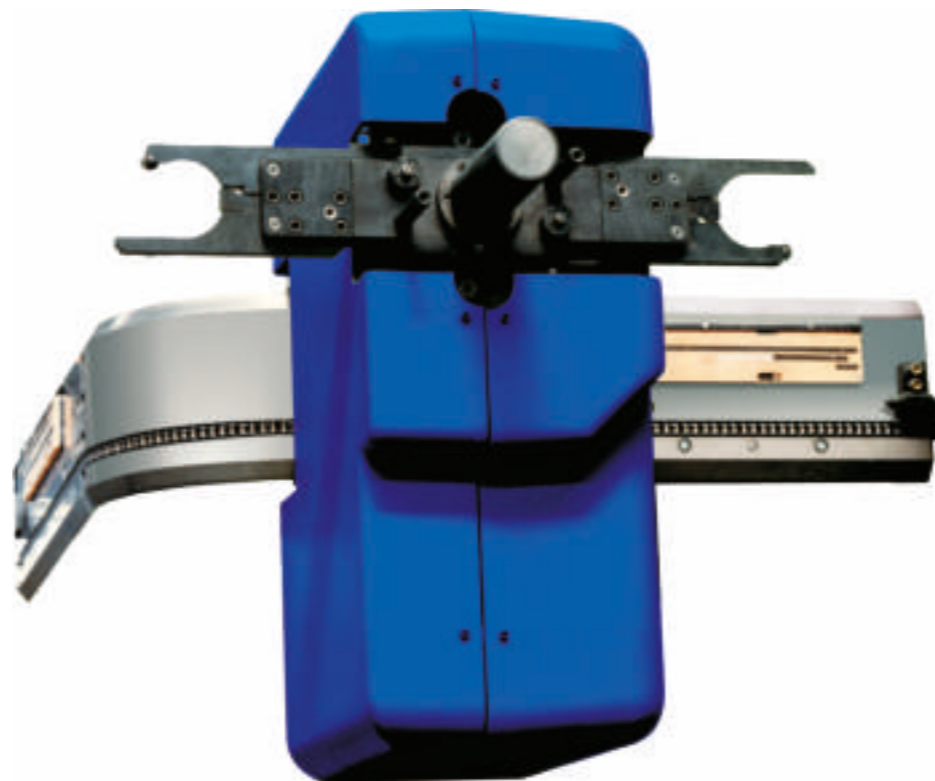
**ATC AUXILIARY CONTROL PANELS FOR
HEIDENHAIN / SINUMERIK CONTROL SYSTEM**

自动换刀装置也允许直接到HUI 50型、HOI 50型、HV2/V型铣头的自动换刀，即是通过换刀摇臂机械手。Also, the equipment enables an automatic exchange of tools into the HUI 50, HOI 50 and HV2/V milling heads by the use of a tilting tool handler placing the tool vertically into the head.



双腕摇臂机械手的刀具装卸装置

**TOOL MANIPULATOR WITH
SWIWELING MECHANICAL HAND**



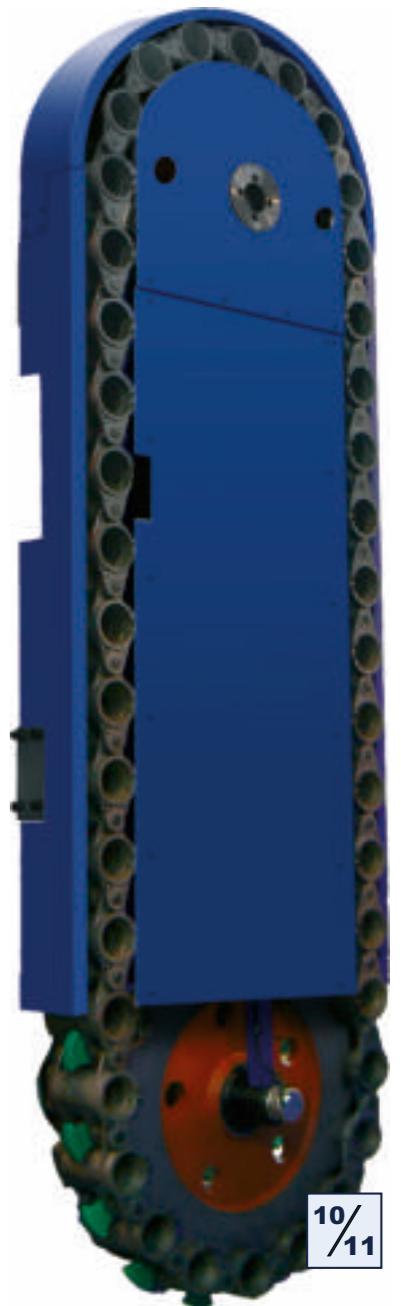
自动换刀装置设计配置由装在机床立柱上的链式刀库和双腕摇臂机械手的移动式刀具装卸装置而构成的。客户可订购按照下列刀具刀柄标准的机床配置：
捷克ČSN 22 0432标准
捷克ČSN 22 0434标准
德国DIN 69871/A标准(不带主轴中心线内刀具冷却)
德国DIN 69871/AD标准(主轴中心线内刀具冷却)
BT 50 MAS 403-1982标准
CAT ANSI/ASME B5.50-1985标准

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

自动换刀装置 EQUIPMENT FOR AUTOMATIC TOOL CHANGE

刀库容量 Number of pockets in magazine	把	40, 60, 80
刀位距离 Pitch of pockets in magazine	mm	130
刀具最大直径 Tool dia max.:	mm	125 - 150
- 刀库满刀 full magazine		
- 相邻刀位空缺 adjacent free pockets	mm	320
最大特殊端面刀具直径 Dia max. of a special flat tool	mm	390 (600)
刀具最大长度 Tool length max.	mm	500
刀具最大重量 Tool weight max.	kg	25
换刀总时间 Tool change time	sec	20



选购件 OPTIONAL ACCESSORIES

www.tosvarnsdorf.com



UD4型夹紧板 UD 4 FLOOR PLATE

夹紧板用于尤其大型和重型工件的夹紧，而构成工件的夹紧区。

4 020 x 1 885, 4 020 x 1 260, 2 420 x 1 885 mm is used for clamping large and heavy workpieces.

夹紧角铁 ANGLE PLATE

我们提供下列尺寸的夹紧角铁: 800, 950, 1 120, 1 450, 1 620, 2 000, 2 500, 3 000, 3 500, 4 000, 4 500, 5 000 和 6 000 毫米。

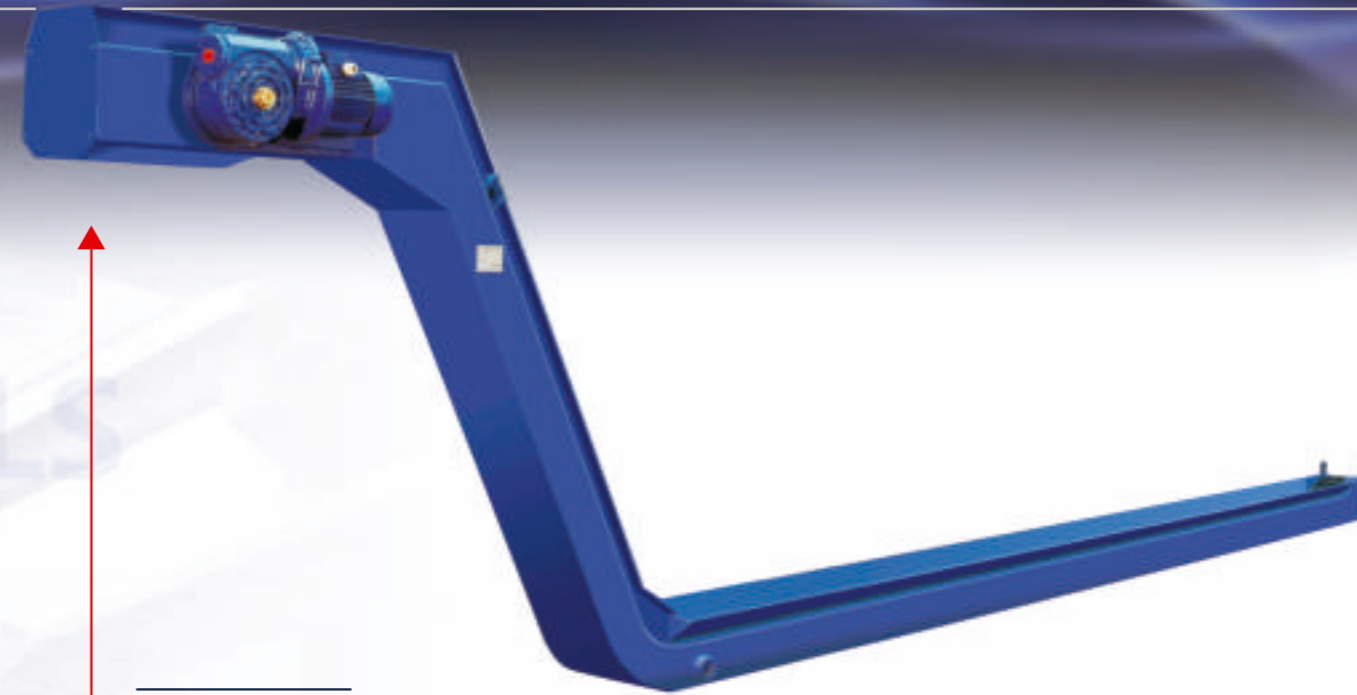
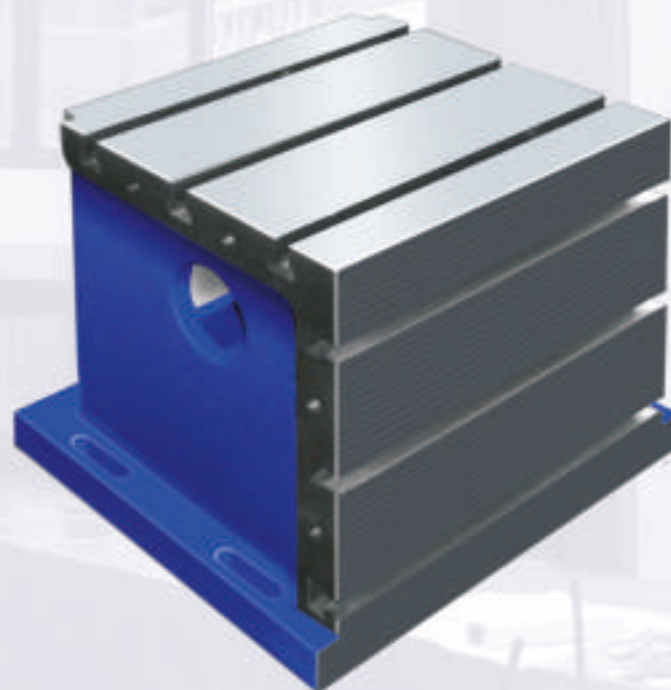
Angle plates can be supplied in sizes 800, 950, 1 120, 1 450, 1 620, 2 000, 2 500, 3 000, 3 500, 4 000, 4 500, 5 000 and 6,000 mm.



夹紧块 CLAMPING CUBE

客户可选下列型号:

UK 500, UK 1000, UK 2000, UK 2500



排屑输送装置 CHIP CONVEYOR

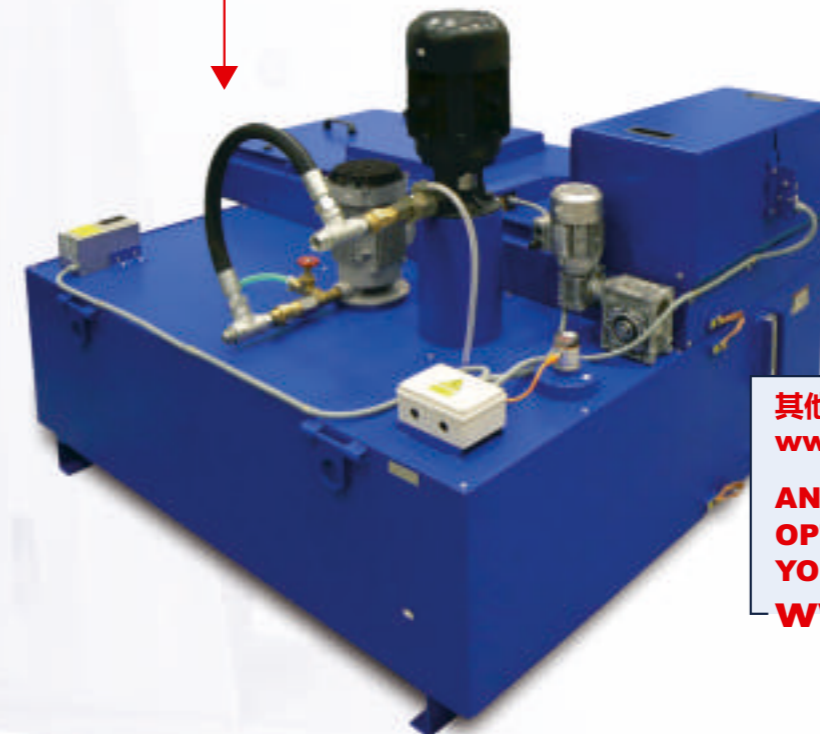
排屑输送装置的长度和提升高度均可客户化。

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

冷却装置 TOOL COOLING DEVICE

客户可以选择CHZ170型外接喷嘴输入切削液的刀具冷却装置或是CHOV170型允许主轴中心内冷却和外接喷嘴输入两种方式的刀具冷却装置。

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.



其他选购件的提供请查看
www.tosvarnsdorf.com

**ANOTHER
OPTIONAL ACCESSORIES
YOU CAN FIND ON
www.tosvarnsdorf.com**

选购件 OPTIONAL ACCESSORIES

www.tosvarnsdorf.com

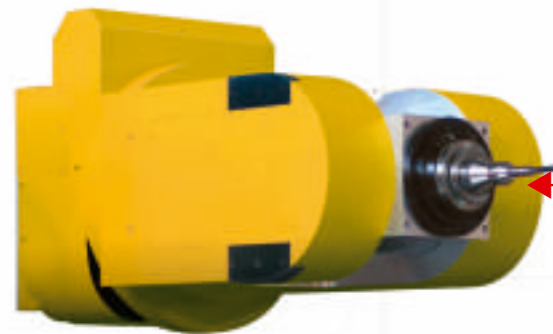
HUI 50



HUR 50



HV2/V



HF 50



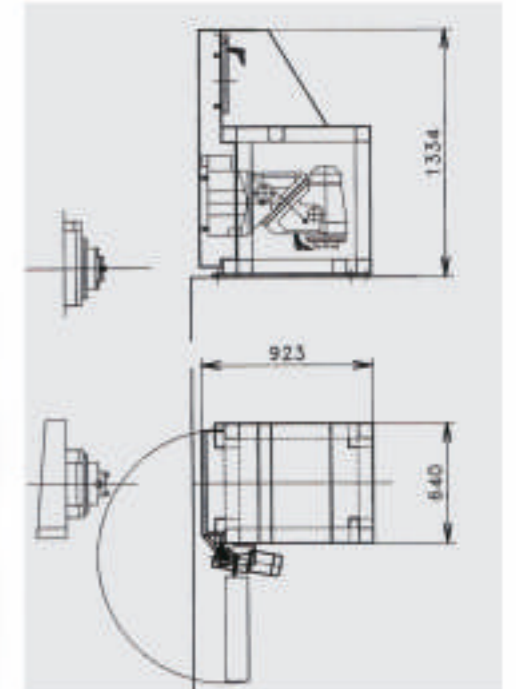
HOI 50



- HF50型垂直铣头, 手动可调**
HF 50 - vertical milling head, manually adjustable
- HUR50型万能铣头, 手动可调**
HUR 50 - universal milling head, manually adjustable
- HUI50 两轴自动定位铣头**
HUI 50 - two-axes automatically positioned milling head
- HV2/V型叉形铣头**
HV2/V - fork type milling head with 1 or 2 axes driven by the spindle of the machine
- HOI 50型正交铣头**
HOI 50 - two-axes orthogonal automatically positioned milling head



专用配件的窗帘式支架(选购件)
The support fitted with a cover which is opened by roll-up equipment (option).



PICK UP

HUI50型, HOI50型, HV2/V型铣头在机床上仅自动夹紧, 通过专用配件的支架。其具体配置(刀位数、防护罩等等)必须提前与制造商协商。

HUI50, HOI50 and HV2/V 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.

型平旋盘 FACING HEAD UT 5 - 630 S / UT 8 - 800 S

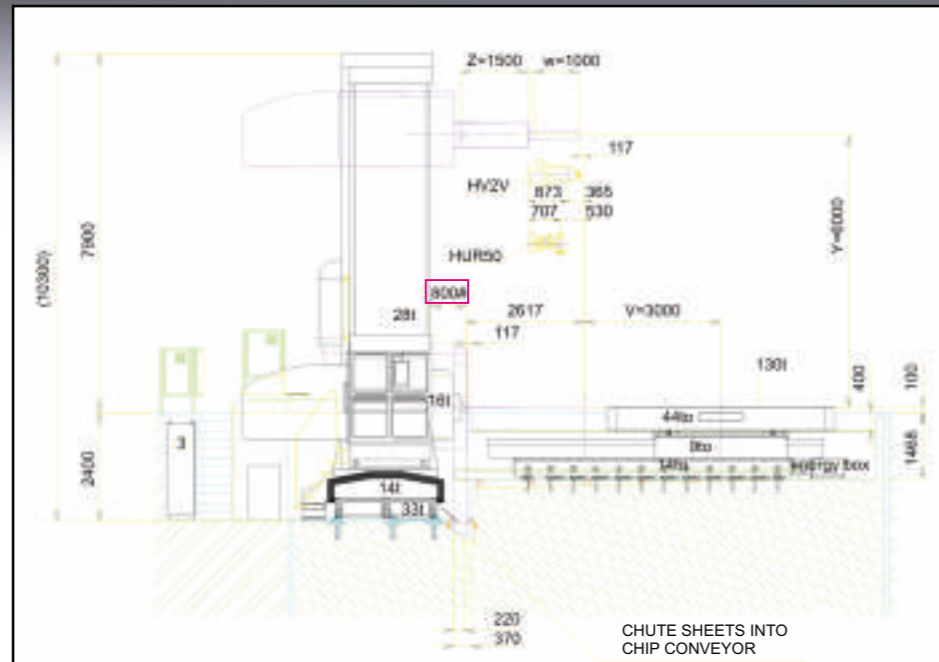
特别适用于利用CNC计算机连续控制刀滑板位置的复杂加工工艺的方案。

Facing head is used for demanding technological operations with the possibility of continuous CNC control of the slide position.

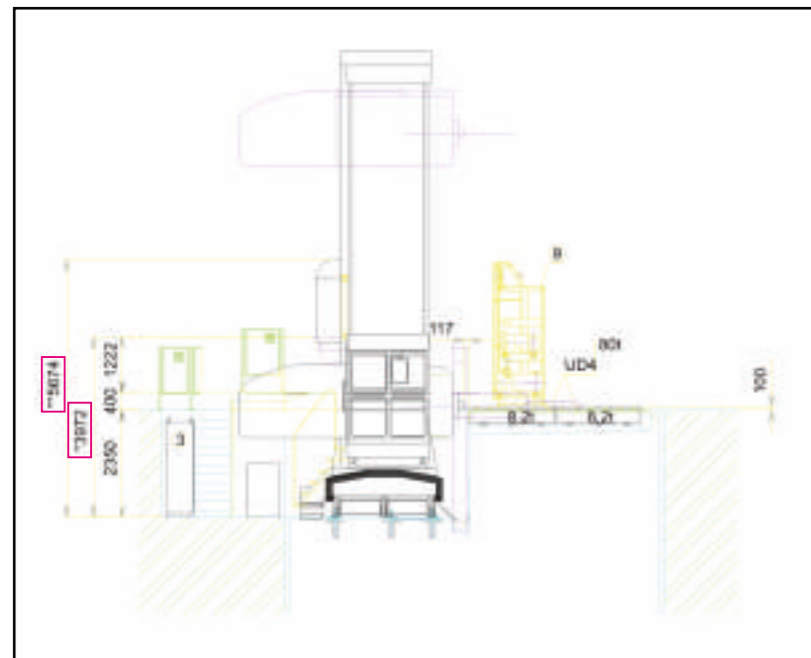


WRD 170 (Q)型机床布局的尺寸草图 WRD 170 (Q) MACHINE LAYOUT

www.tosvarnsdorf.com



X = 15 000 mm
Y = 6 000 mm
Z = 1 500 mm
W = 1 000 mm
回转工作台 (5 000 x 4 400 mm)
4 x UD4型夹紧板
Rotary table (5,000 x 4,400) v = 1,800
Clamping plate 4 x UD4



- # 操作台卧式调节
- # 操作台立式调节
- * 可以配装刀库的高度
- ** 40把刀容量的刀库

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

- 1 排屑输送装置 Swarf conveyor
- 2 切屑容器 Swarf container
- 3 配电柜 Switch cabinet
- 4 冷却箱 Coolant tank
- 5 防护栏 Protective fencing
- 6 油液冷却器 Oil refrigerator
- 7 过滤装置 Filtration unit
- 8 栅地板 Slotted floor
- 9 专用配件支架 Pickup station
- ⚡ 连接电源 Connecting place to power supply

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

若与制造商提前协商，机床可配装其它装置和工艺附件。

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

