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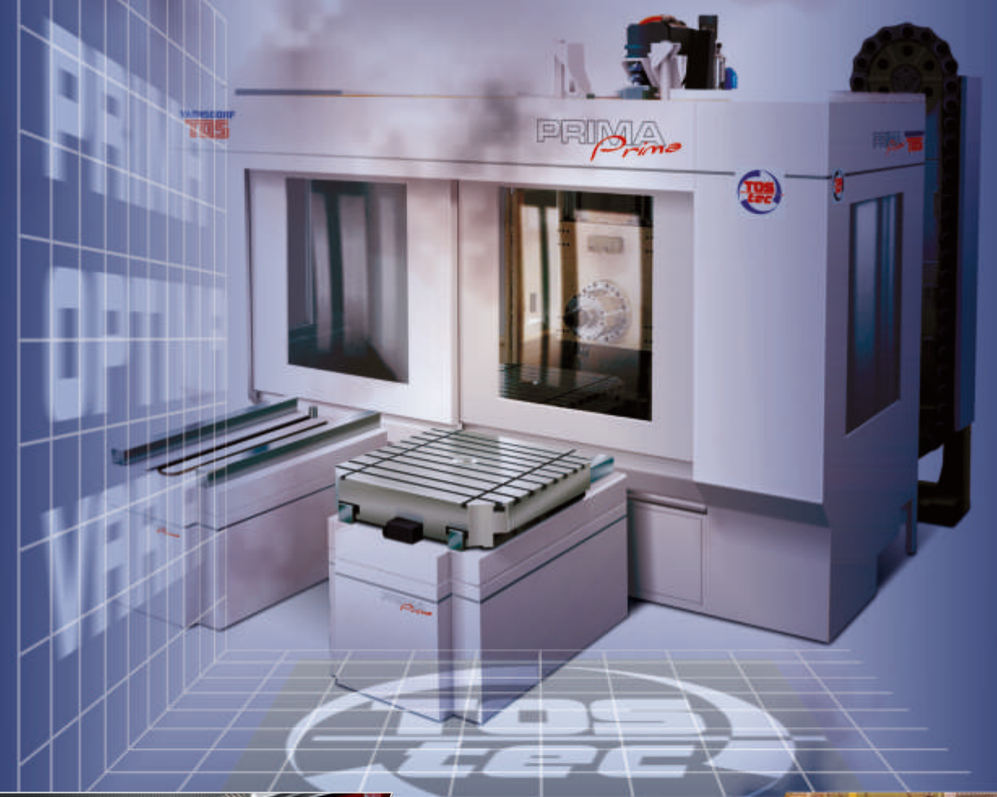
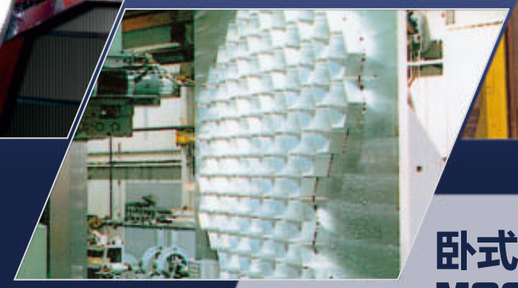
VARNSDORF TOS

PRIMA OPTIMA VARIA

TOS VARNSDORF a.s.





Certifikovaný systém řízení SQS reg. č. 12392-01 TOS VARNSDORF SKQS reg. č. 12392-01 ISO 9001:2008

卧式加工中心
MACHINING CENTRES

来自捷克共和国原装进口机床。
高质量。

VARNSDORF TOS

PRIMA

OPTIMA

VARIA

TOS*tec*系列适用于各种自动化控制加工工艺水平，在先进加工箱体零件、盘件、杂件和大件领域内从最简易至最复杂加工方法。本系列设计为模块化积木式系统，以选择不同模块获得不同坐标轴配置、行程长度、不同工艺目的主轴箱选型、应用自动工艺设备选型配置以及应用其他类型的界面，如自动换刀装置或自动托盘交换装置等的广泛加工中心配置类型。

TOS*tec*系列铣镗加工机床尤其能满足近十年内高要求操作者的需求。因为本系列加工中心具备最大参数和最优技术性能，以便应用最先进的工具。

PRIMA, OPTIMA和VARIA系列是紧凑型全封闭式数控加工中心，适用于通用和特殊要求的切屑加工，包括最先进的五轴加工工艺和HSC高速加工工艺。各组行程调解量以及不同类型主轴箱的选择性十分广泛。PRIMA, OPTIMA, VARIA机型之间的独立装配体混用可能提供任何工艺问题的理想技术解决方案之前提条件。

TOS*tec*系列加工中心的典范特点如下:

- 模块化设计概念保证极大灵活性
  - 直线行程组调节量
  - 主轴箱类型
  - 工作台尺寸和公称载重量
  - 自动换刀装置外围设备
  - 自动托盘交换装置外围设备
- 采用最先进设计解决方案和元件
- 机床切屑与冷却液的标准处理，包括全台封闭式的防护罩–操作方便简易
- 特殊技术设备的广泛选择性
- 对运作和维修要求极小
- 对机床地基预备要求极小

The new line of TOS*tec* machines has been designated for various levels of automatically controlled technologies, from the simplest to the most advanced procedures in the sphere of modern machining of box and board shaped products as well as products of exceptional shapes and dimensions. This line of machines has been designed as module kit from which, by selecting the modules, a large range of machines differentiating by configuration of coordinated axis, their dimensions, equipment of headstocks for various technological purposes, by applying of automatic technological accessories and application of various types of further peripheral devices such as automatic tool or pallet change, can be created.

The new production line of TOS*tec* milling and boring machines is targeted to the most demanding operators of the new decade, that means it features the highest parameters and wide range of technological functions which enable application of the most sophisticated tools.

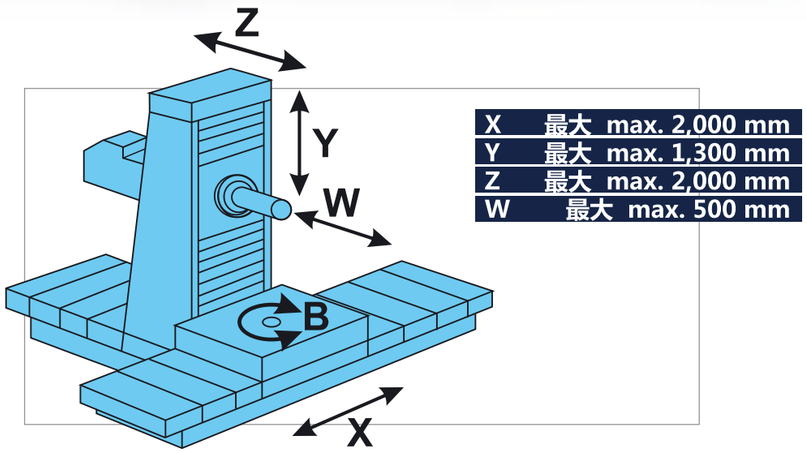
The compact fully-covered machining centres PRIMA, OPTIMA and VARIA are designated for universal and special technologies of cutting operation including the most advanced technologies of five-axes and HSC machining. A large range of travel magnitude of individual groups, various variants of headstocks and the possibility to combine individual elements between the PRIMA, OPTIMA, VARIA machines create the prerequisite for finding the ideal technical solution of whatever technological problem.

The typical features of the new generation of TOS*tec* machine line are:

- modular concept providing the highest variability by means of
  - magnitude of travel of linear adjustable groups
  - types of headstocks
  - dimensions and load of clamping tables
  - periphery of automatic tool change
  - periphery of automatic pallet change
- application of the most advanced design and equipment
- standard concept of chip and water management including the fully covered execution – high comfort of operation
- large selection of special technological accessories
- minimum requirements as to the operation and maintenance
- minimum requirements as to the preparation of the machine base

TOS*tec*

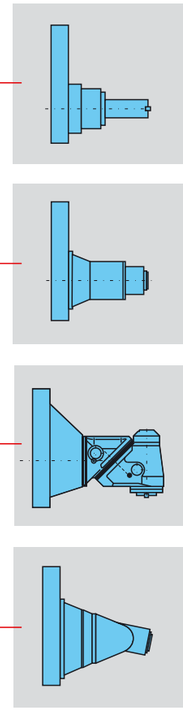
PRIMA



X 最大 max. 2,000 mm
Y 最大 max. 1,300 mm
Z 最大 max. 2,000 mm
W 最大 max. 500 mm

基本技术参数 SPECIFICATIONS

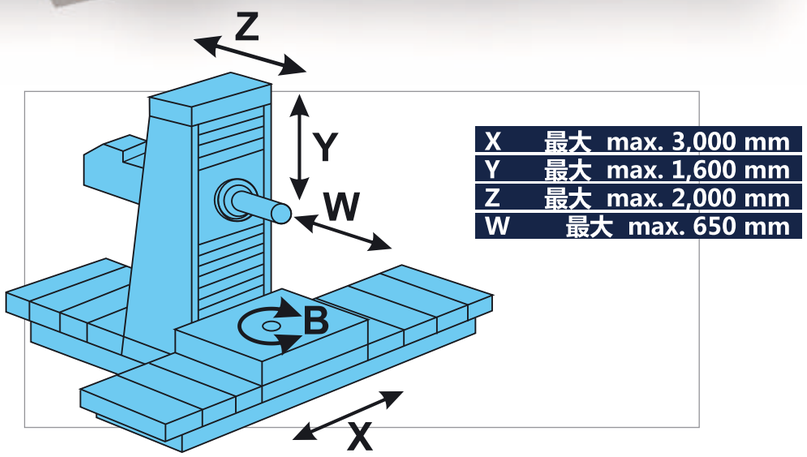
主轴箱选型 HEADSTOCKS	**配有活动轴的主轴箱 THE HEADSTOCK WITH TRAVELLING SPINDLE**		
	配有活动轴的主轴箱 Spindle diameter	mm	100
	主轴锥孔规格 Spindle taper		ISO 50
	主轴转速范围 Range of spindle speeds	RPM	10 - 5,000
	主轴电机功率 Main motor power, rated	kW	22
	主轴行程W坐标 Spindle stroke **W**	mm	500
	配有内装非活动式电主轴的主轴箱 HEADSTOCK WITH THE INTEGRATED NON-EXTENSIBLE ELECTRIC SPINDLE		
	主轴最大转速 Maximal spindle speeds	RPM	24,000*
	装有内装HUI 50铣头的主轴箱 HEADSTOCK WITH THE HUI 50 INTEGRATED MILLING HEAD		
	主轴转速范围 Range of spindle speeds	RPM	10 - 3,000
	最大额定输出功率 Maximal allowable transmitted output	kW	22
	主轴最大扭矩 Max. permissible torque at spindle	Nm	770
	两面定位分辨率(增量) Positioning increment in both dividing planes	Deg	2.5°
	装有一轴或两轴叉形铣头HV2/E-H型电主轴的主轴箱 HEADSTOCK WITH INTEGRATED 2AXIS FORK HEAD WITH ELECTRIC SPINDLE HV2/E-H		
	主轴最大转速 Maximal spindle speeds	RPM	10,000 (20,000)*
立柱 COLUMN	**立柱 COLUMN**		
	主轴箱垂直行程**(Y)** Headstock vertical travel **Y**	mm	1,000, 1,300
	立柱纵向行程**(Z)** Column longitudinal travel **Z**	mm	1,600, 2,000
回转工作台 ROTARY TABLES	**回转工作台 ROTARY TABLES**		
	工作台尺寸 Table clamping surface	mm	1,000 x 1,250
	工件最大重量 Max. table load	kg	5,000
	工作台横向行程**(X)** Table cross travel **X**	mm	1,600, 2,000
	选装OPTIMA机型的工作台 ROTARY TABLE ADOPTED FROM O P T I M A TYPE		
	工作台尺寸 Table clamping surface	mm	1,250 x 1,250, 1,250 x 1,600
	工件最大重量 Max. table load	kg	10,000
	工作台横向行程**(X)** Table cross travel **X**	mm	2,000, 3,000
进给行程 FEEDS	**进给行程 FEEDS**		
	X, Y, Z, W轴快速进给速度 Rapid traverse **X, Y, Z, W**	$m.min^{-1}$	30
	B轴快速进给速度 Rapid traverse **B**	RPM	6.5
	X, Y, Z, W进给速度范围 Working feeds range **X, Y, Z, W**	$m.min^{-1}$	1-20
	B轴进给速度范围 Working feeds range **B**	RPM	0.003 – 1.5



* 我们推荐跟制造商根据工艺要求详细讨论技术参数。*We recommend to discuss data with respect to machining application with the machine manufacturer.*

TOStec

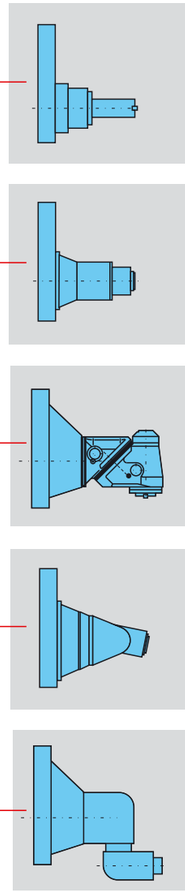
OPTIMA



X 最大 max. 3,000 mm
Y 最大 max. 1,600 mm
Z 最大 max. 2,000 mm
W 最大 max. 650 mm

基本技术参数 SPECIFICATIONS

主轴箱选型 HEADSTOCKS	**配有活动轴的主轴箱 THE HEADSTOCK WITH TRAVELLING SPINDLE**		
	配有活动轴的主轴箱 Spindle diameter	mm	112
	主轴锥孔规格 Spindle taper		ISO 50
	主轴转速范围 Range of spindle speeds	RPM	10 - 4,000
	主轴电机功率 Main motor power, rated	kW	28
	主轴行程**W**坐标 Spindle stroke **W**	mm	650
	配有内装非活动式电主轴的主轴箱 HEADSTOCK WITH THE INTEGRATED NON-EXTENSIBLE ELECTRIC SPINDLE		
	主轴最大转速 Maximal spindle speeds	RPM	10,000 (24,000)*
	装有内装HUI 50铣头的主轴箱 HEADSTOCK WITH THE HUI 50 INTEGRATED MILLING HEAD		
	主轴转速范围 Range of spindle speeds	RPM	10 - 3,000
	最大额定输出功率 Maximal allowable transmitted output	kW	28
	主轴最大扭矩 Max. permissible torque at spindle	Nm	1,000
	两面定位分辨率(增量) Positioning increment in both dividing planes	Deg	2.5°
	装有一轴或两轴叉形铣头HV2/E-H型电主轴的主轴箱 HEADSTOCK WITH INTEGRATED 2AXIS FORK HEAD WITH ELECTRIC SPINDLE HV2/E-H		
	主轴最大转速 Maximal spindle speeds	RPM	10,000 (20,000)*
	装有HOI50直角铣头的主轴箱 HEADSTOCK WITH INTEGRATED ORTHOGONAL MILLING HEAD HOI50		
	主轴最大转速 Spindle speed range	RPM	10 - 4,000
	最大输出功率 Maximal allowable transmitted output	kW	28
	主轴最大扭矩 Maximal permissible torque at spindle	Nm	1,060
	两面定位分辨率(增量) Posit. incr. in both dividing planes	Deg	1°
立柱 COLUMN	**立柱 COLUMN**		
	主轴箱垂直行程**(Y)** Headstock vertical travel **Y**	mm	1,300, 1,600
	立柱纵向行程**(Z)** Column longitudinal travel **Z**	mm	1,600, 2,000
回转工作台 ROTARY TABLES	**回转工作台 ROTARY TABLES**		
	工作台尺寸 Table clamping surface	mm	1,250 x 1,250, 1,250 x 1,600
	工件最大重量 Max. table load	kg	10,000
	工作台横向行程**(X)** Table cross travel **X**	mm	2,000, 3,000
	选装PRIMA机型的工作台 ROTARY TABLE ADOPTED FROM P R I M A TYPE		
	工作台尺寸 Table clamping surface	mm	1,000 x 1,250
	工件最大重量 Max. table load	kg	5,000
	工作台横向行程**(X)** Table cross travel **X**	mm	1,600, 2,000
	选装VARIA机型的工作台 ROTARY TABLE ADOPTED FROM V A R I A TYPE		
	工作台尺寸 Table clamping surface	mm	1,800 x 1,800, 1,800 x 2,200, 1,800 x 2,500
	工件最大重量 Max. table load	kg	20,000
	工作台横向行程**(X)** Table cross travel **X**	mm	2,000**, 3,000, 4,000
进给行程 FEEDS	**进给行程 FEEDS**		
	X, Y, Z, (W)轴快速进给速度 Rapid traverse **X, Y, Z, (W)**	m.min^{-1}	24 (20)
	B轴快速进给速度 Rapid traverse **B**	RPM	6.5
	X, Y, Z, W进给速度范围 Working feeds range **X, Y, Z, W**	m.min^{-1}	1 - 15
	B轴进给速度范围 Working feeds range **B**	RPM	0.003 – 1.5



* 我们推荐跟制造商根据工艺要求详细讨论技术参数。*We recommend to discuss data with respect to machining application with the machine manufacturer.*

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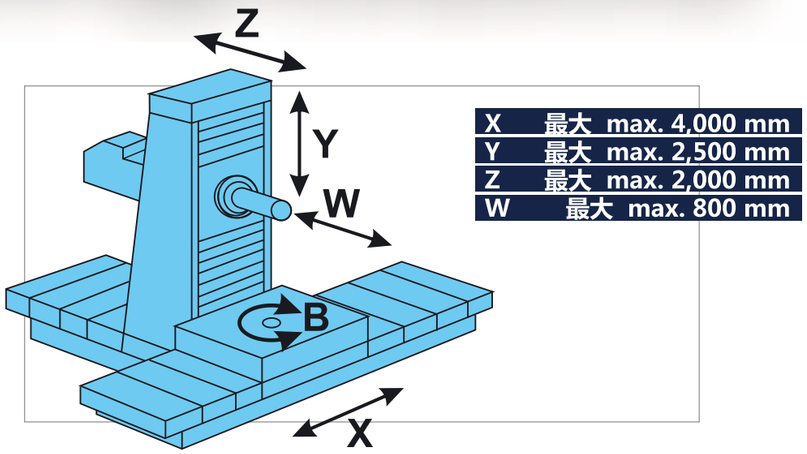
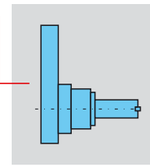
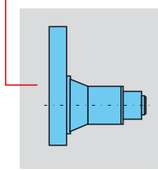
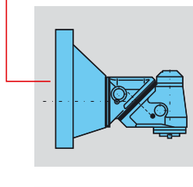
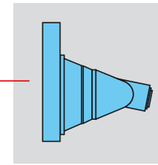
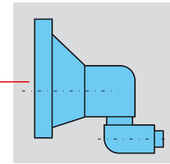
VARIA



X 最大 max. 4,000 mm
Y 最大 max. 2,500 mm
Z 最大 max. 2,000 mm
W 最大 max. 800 mm

基本技术参数 SPECIFICATIONS

主轴箱选型 HEADSTOCKS	**配有活动轴的主轴箱 THE HEADSTOCK WITH TRAVELLING SPINDLE**		
	配有活动轴的主轴箱 Spindle diameter	mm	130
	主轴锥孔规格 Spindle taper		ISO 50
	主轴转速范围 Range of spindle speeds	RPM	5 - 3,500
	主轴电机功率 Main motor power, rated	kW	37
	轴行程W坐标 Spindle stroke **W**	mm	800
	配有内装非活动式电主轴的主轴箱 HEADSTOCK WITH THE INTEGRATED NON-EXTENSIBLE ELECTRIC SPINDLE		
	主轴最大转速 Maximal spindle speeds	RPM	10,000 (24,000)*
	装有内装HUI 50铣头的主轴箱 HEADSTOCK WITH THE HUI 50 INTEGRATED MILLING HEAD		
	主轴转速范围 Range of spindle speeds	RPM	10 - 3,000
	最大额定输出功率 Maximal allowable transmitted output	kW	32
	主轴最大扭矩 Max. permissible torque at spindle	Nm	1,000
	两面定位分辨率(增量) Positioning increment in both dividing planes	Deg	2.5°
	装有一轴或两轴叉形铣头HV2/E-H型电主轴的主轴箱 HEADSTOCK WITH INTEGRATED 2AXIS FORK HEAD WITH ELECTRIC SPINDLE HV2/E-H		
	主轴最大转速 Maximal spindle speeds	RPM	10,000 (20,000)*
	装有HOI50直角铣头的主轴箱 HEADSTOCK WITH INTEGRATED ORTHOGONAL MILLING HEAD HOI50		
	主轴最大转速 Spindle speed range	RPM	10 – 3,500
	最大输出功率 Maximal allowable transmitted output	kW	37
	主轴最大扭矩 Max. permissible torque at spindle	Nm	1,200
	两面定位分辨率(增量) Positioning increment in both dividing planes	Deg	1°
立柱 COLUMN	**立柱 COLUMN**		
	主轴箱垂直行程(Y) Headstock vertical travel **Y**	mm	1,600, 2,000, 2,500
	立柱纵向行程(Z) Column longitudinal travel **Z**	mm	1,600, 2,000
回转工作台 ROTARY TABLES	**回转工作台 ROTARY TABLES**		
	工作台尺寸 Table clamping surface	mm	1,800 x 1,800, 1,800 x 2,200, 1,800 x 2,500
	工件最大重量 Max. table load	kg	20,000
	工作台横向行程(X) Table cross travel **X**	mm	2,000**, 3,000, 4,000
	选装OPTIMA机型的工作台 ROTARY TABLE ADOPTED FROM OPTIMA TYPE		
	工作台尺寸 Table clamping surface	mm	1,250 x 1,250, 1,250 x 1,600
	工件最大重量 Max. table load	kg	10,000
	工作台横向行程(X) Table cross travel **X**	mm	2,000, 3,000
进给行程 FEEDS	**进给行程 FEEDS**		
	X, Y, Z, (W)轴快速进给速度 Rapid traverse **X, Y, Z, (W)**	$m.min^{-1}$	20 (16)
	B轴快速进给速度 Rapid traverse **B**	RPM	3
	X, Y, Z, W进给速度范围 Working feeds range **X, Y, Z, W**	$m.min^{-1}$	1- 15
	B轴进给速度范围 Working feeds range **B**	RPM	0.003 - 1.5

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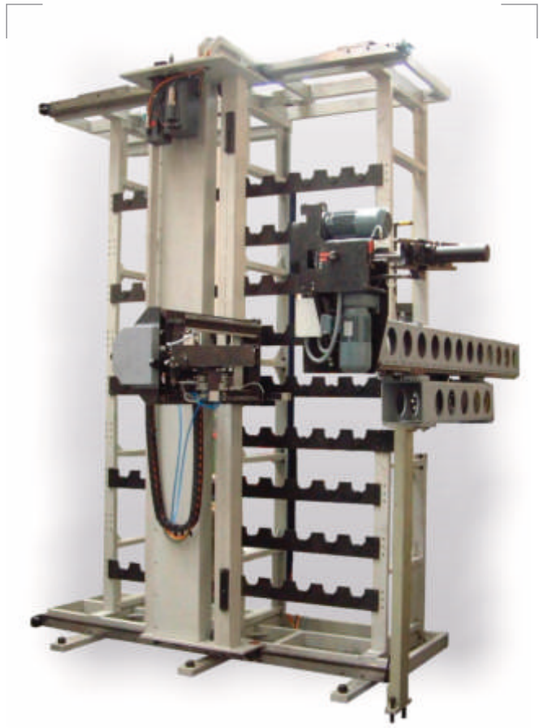
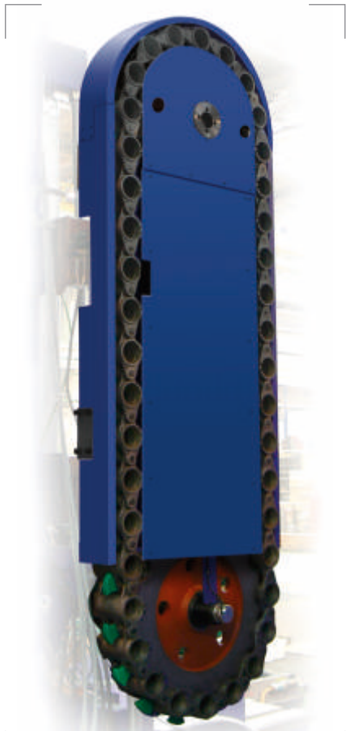
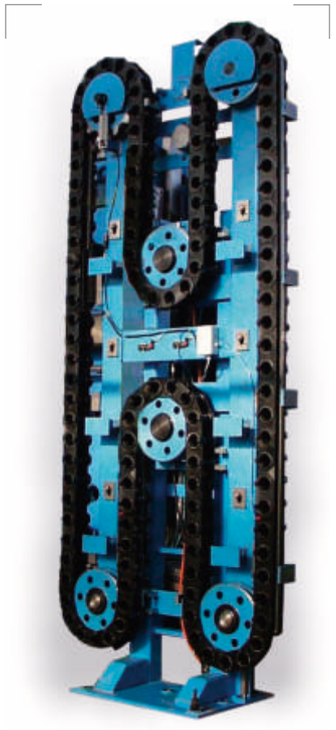
自动换刀装置 EQUIPMENT FOR AUTOMATIC TOOL CHANGE



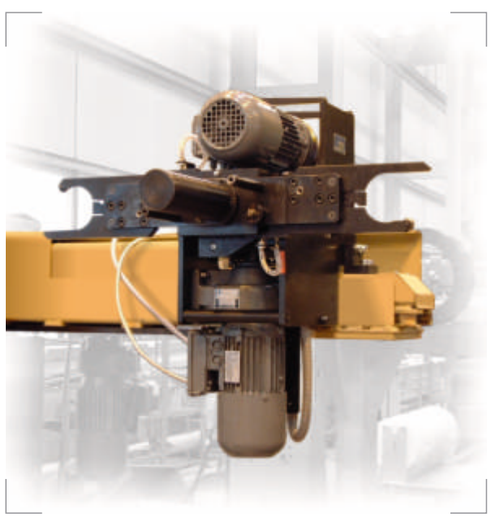
箱式刀库
Rack magazine



链式刀库
Chain magazine



链条式刀库
Loop magazine



刀具装卸装置
Tool manipulator

刀库的操作面板（自动换刀装置）AVN (ATC) control panel

基本技术参数 BASIC TECHNICAL PARAMETERS		PRIMA, OPTIMA, VARIA
刀库容量 Number of storage places in magazine		
- 链式刀库 rack		40, 60
- 链条式刀库 chain		80, 100, 120
- 箱式刀库 loop		150 至 300
链式及链条式刀库的其他技术参数 FURTHER TECHNICAL DATA FOR LOOP AND CHAIN MAGAZINE		
刀位距离 Pitch of storage places	mm	130
刀具最大直径 Max. tool diameter		
- 刀库满刀 with fully loaded magazine	mm	125
- 相邻刀位空缺 with free neighbouring places	mm	320
刀具最大长度 Max. length of tool	mm	500
刀具最大重量 Max. weight of tool	kg	25
配装链式刀库和活动轴自动换刀装置的纯换刀时间 Total time for tool change	sec	20

自动换刀装置构成一个独立功能装配体，装在机床边的独立地基上。

根据客户加工工艺的需求，可选不同刀库容量和结构设计的自动换刀装置选型。按照刀库各刀位的代码进行刀具搜寻刀具交换是其设计概念原理。

链式刀库/加长链条式刀库的自动换刀装置由刀库和移动装有双腕摇臂机械手进行。本装置允许直接到计算机数控控制主轴轴向线位置的主轴箱内装的铣头(HUI50, HOI50) 自动换刀功能。

HV2/E-H叉式铣头装置的自动换刀功能在研发当中，订购时必须向制造商协定。

Automatic tool change is, in its concept, designed as an independent structural element which consists of tool magazine and manipulator with rotating two-arm hand.

In standard execution the machine is produced for tool shanks in accordance with the norm DIN 69871/2. Based on customer's requirement the machine can be produced also for tool shanks in accordance with other norms, e.g. BT 50, CAT, HSK 100 etc.

The equipment also enables the automatic tool change into the milling heads with CNC controlled spindle position (HUI 50, HV - all executions).

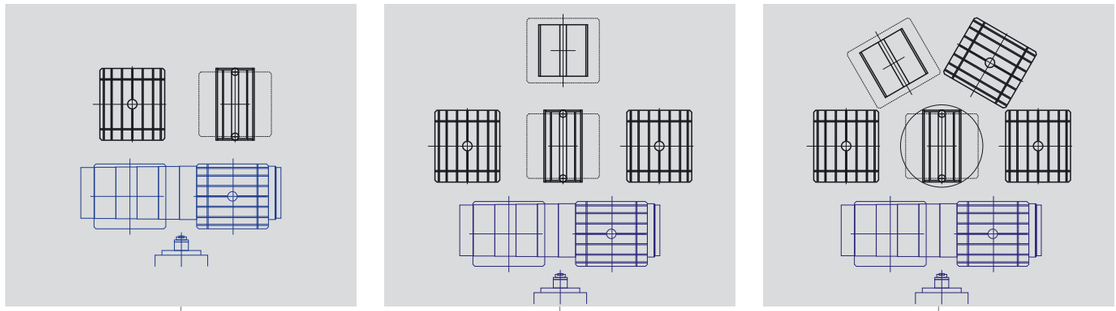
HIGH dynamics

优质技术的加工 machining for the top quality technologies

TOStec

自动托盘交换装置 EQUIPMENT FOR AUTOMATIC PALLET CHANGE

		PRIMA	OPTIMA	VARIA
托盘数 Number of pallet in system		2 - 4	2 - 4	2
工件最大重量 Maximum workpiece weight	kg	4,000	6,000	20,000
托盘台面尺寸 Pallet clamping area	mm	1,000 x 1,000 1,000 x 1,250	1,250 x 1,250 1,250 x 1,600	1,600 x 1,600 1,600 x 2,000
T型槽尺寸 Size of T-slots	mm	22H8	22H8	22H8
自动托盘交换时间 Time of pallet change	sec	80	90	90



自动换工件装置操作站的布置实例
An example of workplace arrangements for automatic workpiece change

自动托盘交换装置设计概念基础于配装机械手的固定装卸站与机床上托盘的夹紧底座之间的自动工艺托盘交换的原理。两个定位销在机床的托盘夹紧底座上进行托盘的位置调节，而蝶形弹簧进行托盘机械夹紧，托盘松开则采用液压方式。

托盘尺寸和T型槽尺寸根据ISO标准。

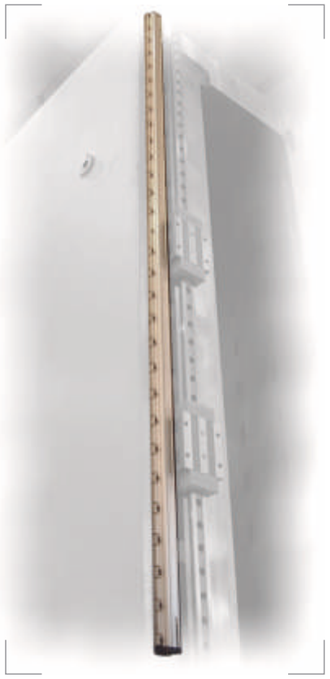
若配装两只托盘，则其交换直接进行在装卸站和机床之间，若应用3只或4只托盘模式，在机床和装卸站间所装置的摇臂机械手进行托盘交换。

Concept of the pallet change system is based on automatic change of production pallets between pallet stations, which are equipped with pallet changing mechanism, and a pallet clamping base on the machine saddle. Pallet is arrested on the clamping base by means of two centering pins and locked by hydraulic mechanism.

Dimensions of pallet and T-slots are based on ISO standard.

When two pallet system is used, pallets are changed directly between stations and the pallet base. In case 3 or 4 pallet system is used, pallets are changed by the help of rotary manipulator placed between stations and the pallet base.

主部件结构配置 DESIGN OF MACHINE GROUPS



测量光栅尺 ENCODERS

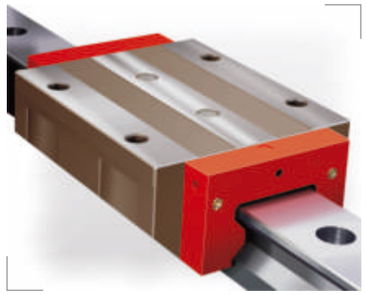
X, Y, Z的直线轴运动采用海德汉光电封闭式直线光栅尺。

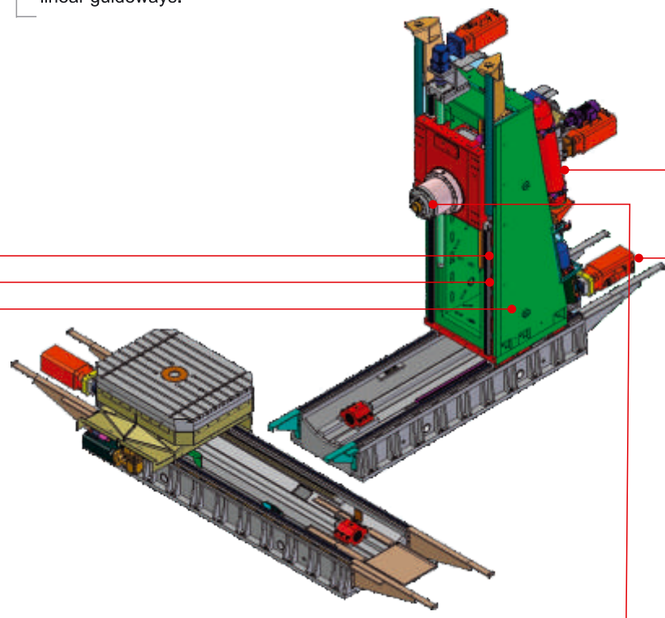
Linear axes X, Y, Z are fitted with sealed direct electro-optical linear scales HEIDENHAIN.

运动轴导引系统 GUIDEWAYS OF MOVABLE GROUPS

直线运动轴导引系统在机床X,Y,Z及W轴均采用通过预紧的紧凑式滚动直线导轨。

Guiding of all linear movable machine groups in axes X, Y, Z, W comprises of preloaded compact roller-bearing linear guideways.





平衡装置 COMPENSATION

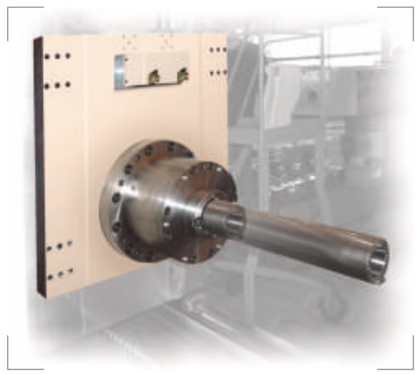
主轴箱重量的平衡采用液压机械方法，采用独立液压站。主轴箱平衡以立柱侧面装有的两个油缸处理，以平型传动带通过滑轮与主轴箱连接。

Weight of the headstock is balanced hydro-mechanically by means of standalone hydraulic unit. Headstock stabilization is realized with help of 2 pistons located on the column side connected with headstock with help of pulley of belt.

机身 SKELETON OF THE MACHINE

机床机身的重型结构基础部件(立柱、纵床身和横床身、工作台滑板)是经有限元分析内部加强肋板密度很高的钢铸件。立柱则为双层箱式结构，其中内部空间填充具有高密度专用填料和永久过压与立柱外壳相连接。其次填料增加静电和动力稳定性，并保证立柱的形状稳定性。

Fundamental parts of the skeleton (column, longitudinal and cross bed, saddle of the table) are fabricated as a close ribbed welded steel structure. The machine column is designed as box-type double-case whose internal compartments are charged by high density permanently pressurized foam which is stuck to internal surfaces of the column shell. The filling compound increases dynamical stability and shape durability of the column.



主轴箱 HEADSTOCK

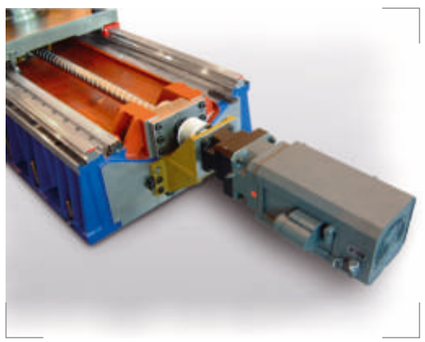
TOS*tec*加工中心装配“箱中箱”主轴箱。此设计理念从机身热应力和电力负荷的平衡角度提供优化。主轴箱的基础组件是所带镗杆支架的厚钢板、主电机和其他根据主轴箱的选型不同主轴固定和机械传动机构和轴套等。

TOS*tec* machine are equipped with centrally guided headstock. This is the best solution from view of balanced stress of the machine skeleton by forces and thermal load. An elementary part of the headstock is a massive plate which carries headstock-tai with other essential units, spindle housing and spindle drive mechanisms according to a design of headstock.

进给驱动装置和夹紧 FEED DRIVES AND CLAMPING

B轴(工作台的旋转)是自动液压夹紧。直线轴进给传动的伺服驱动器是西门子数字交流伺服驱动电机(X轴、Y轴、Z轴: 50 Nm / 3000 rpm, W轴: 38 Nm / 2000 rpm, B轴单变速齿轮传动: 18,5 Nm / 3000 rpm、B轴双齿轮轴传动: 2x 14,7 Nm / 3000 rpm)。主轴传动采用西门子数字交流伺服驱动电机。

All linear axes are controlled in permanent close loop. B axis (rotary table) is clamped automatically by hydraulic pressure. Servodrives are AC digital made by Siemens (X, Y, Z axes 50 Nm / 3000 RPM and for W 38 Nm / 2000 RPM and, B axes 18,5 Nm / 3000 RPM for 1 pinion drive of B axes and 2x 14,7 Nm / 3000 RPM for double pinion drive of B axes). Spindle is driven by Siemens AC digital drive.

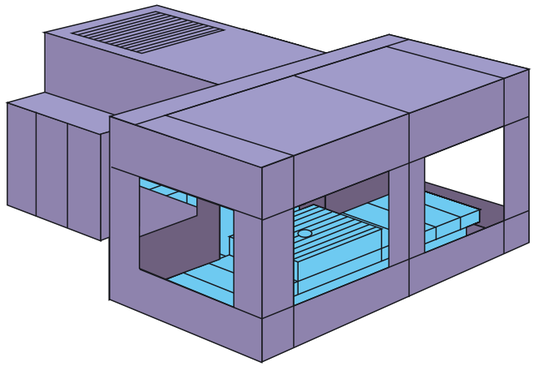


H I G H ACCURACY o f p o s i t i o n i n g

优 质 技 术 的 加 工 m a c h i n i n g f o r t h e t o p q u a l i t y t e c h n o l o g i e s

TOStec

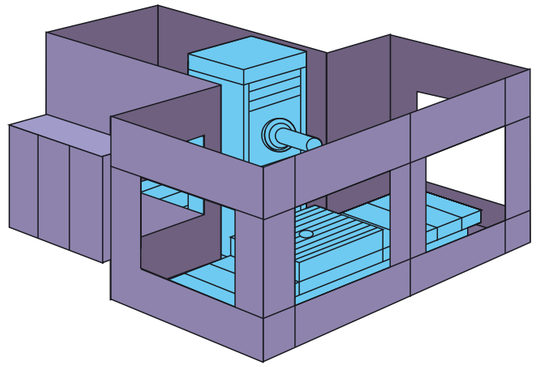
机床防护罩 THE MACHINE COVERS



全台封闭式的防护罩 COMPLETE COVERING

为防护最优质技术选择，是我公司加工中心的标准配置。由金属板组成防护罩，在加工空间的领域其中一些金属板带有透明材料的窗孔。面向车间的机床防护罩的部分装配宽度高的滑动门；因其结构达到机顶，所以允许采用起重机方便轻易地进行工件的装载(手动打开，配有托盘的机型则自动)。配装两个托盘的机型门是伸缩式，配装工作台是两边往外开。
加工中心采用工作地点周围的防护罩，进入工作区装有允许进入加工空间的滑动门。

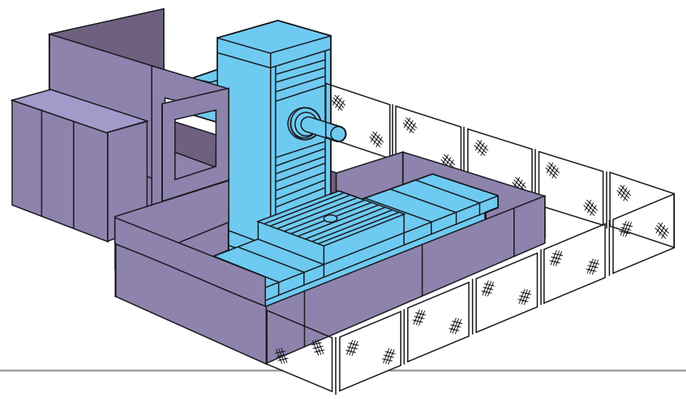
This top quality solution of workplace protection is offered as prefer design of machining center. Covers are assembled from steel panels. Some panels at working space are fitted with plexi-glass. Covers from the side of machine shop are fitted with large a sliding door which extends into the roof of the covers. It permits a trouble-free loading of workpieces by means of a crane. (hand opening, automatic by the machines with pallets). By machines with two pallets, door is opened telescopic crisscross, by more pallets or by table it is opened to both sides.
Access into the machine working space (e.g. due to a workpiece clamping or a tool setup atc.) is provided from the operator`s place, where covering is fitted with sliding door.



低型防护罩 REDUCED COVERING

(也可称为„2/3封闭式防护罩“)是非标防护罩选型，客户在面对空间干涉时(比如工件高度或车间设备布局等)才选择本型防护罩。与上文所述的全封闭式防护罩设计相似，仅顶部未装防护罩。但此敞开型防护罩的最高部分仍高于Y轴的主轴最上部位置。防护罩配置必须根据草图与制造商提前讨论，制造商对防护罩配置草图提供方案。

(So called 2/3 covers) is not standard and a customer selects this model in case when there are space obstructions (due to e.g. workpiece height or configuration of equipment) in machine shop. These covers are designed the same way as here above described complete covering type, but without roofing section. They are cut down so as they exceed Y axis above the upper position of the spindle centerline limit. This model of covers needs to be discussed with the machine tool manufacturer in accordance with a sketch supplied together with the machine offer.



客户化防护罩 INDIVIDUAL COVERING

若用户有特殊要求，就可以与制造商商谈后应用特殊防护罩系统，比如在有大型工件回转时。

In case of special customer need and after discussion with the machine producer it is possible to realize a special cover, for example by customer request for rotation of bulky workpieces.

控制系统 CONTROL SYSTEMS

HEIDENHAIN iTNC 530

SINUMERIK 840 D

数控系统控制W轴和回转工作台的数控机床5轴联动的控制和主轴角度定位。在各轴定位位置精度可编程0,001mm分辨率或0,001°度在B坐标的分辨率。
数控系统选择为海德汉**iTNC 530**或西门子**Sinumerik 840 D**。

It controls the machine with extendible spindle and rotary table in 5 fully controlled axes (X, Y, Z, W, B) and the spindle with possibility of angle positioning (B-axis has 2 options!). The position in coordinates is programmed with increment of 0,001mm or of 0,001° in the B coordinate.
TOStec machining centre is offered with the control system Heidenhain iTNC 530 or Sinumerik 840 D.

能源箱 ELECTRO-BOX

电气设备大多数装配电柜中。
包括数控系统控制模块、进给驱动和主轴驱动控制装置以及所有供电、开关和断路元件。电气设备配装知名制造商(施耐德Telemècanique、梅兰日兰Merlin Gerin、西门子 Siemens)的电气元件。元件被装置在配电柜门上，并与电箱相连。

Electric outfit is mainly installed in electric 3 compartment cabinet. It includes the control central unit, feed and spindle drives, all electric power supply units, relays and circuit breakers. Electric outfit is assembled from units produced by renowned companies (e.g. Telemècanique, Merlin-Gerin, Siemens). Electric box is cooled with unit which is builted into the door of this box.

TOStec

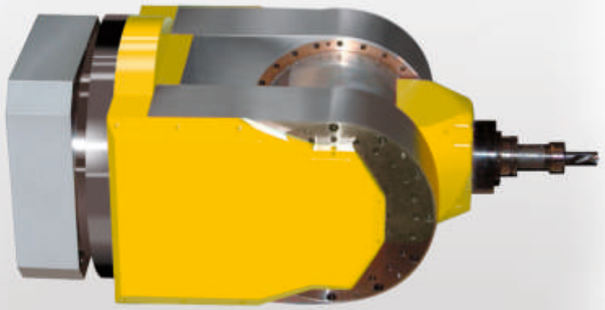
铣头 MILLING HEADS

HF 50

HUR 50

HUI 50

HOI 50



HV2/E-H

HF 50 A型垂直铣头
HF 50 A - vertical milling head

HUR 50型万能铣头
HUR 50 - hand universal milling head

HUI50型自动分度万能铣头
HUI 50 - automatic universal milling head

HOI50型正交铣头
HOI 50 - automatic orthogonal milling head

HV2/E-H - 装有一轴或两轴叉形铣头**HV2/E-H**型电主轴
HV2/E-H - 2axis fork type continuous milling head

t h e m i n i m u m
REQUIREMENTS
FOR OPERATION AND MAINTENANCE