



# X.mill T 700 • 800 • 1000 X.mill 5X 1000

## VERTICAL CNC MACHINING CENTERS

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Everything for metalworking under one roof

KNUTH Machine Tools is a leading supplier of conventional and CNC machine tools. KNUTH is a global company with a presence in more than 30 countries.

In an area of 172,000 ft<sup>2</sup> at our headquarters in Wasbek, Germany, we keep a complete selection of machines for all areas of machining and metal working ready for demos and quick delivery.



**Open for you 24/7:** Take a virtual tour through our warehouses, spare parts warehouses and workshop with Google Street View.

Quality Assurance for your KNUTH Machine

## Quality by KNUTH

### Certified Quality Assurance

More than 1400 machines are shipped annually from our headquarters in Wasbek, Germany. Every machine has to pass a series of tests in our 5-level quality assurance process that covers everything from incoming quality control to alignment testing, and from functional, technical and geometric accuracy tests to the final acceptance test. These tests are conducted by our master technicians who use a dedicated customized data processing system for this purpose.

An ISO 9001 certified quality management system ensures continuous control and improvement of all quality-relevant activities. Design, development and precision of each individual machine are documented exactly in detailed inspection protocols and acceptance test logs.



## All-Encompassing KNUTH Service

### Worldwide Reliability

Trust our global qualified staff take care of everything from installation and maintenance to repairs and upgrades quickly and professionally.



The Process of Making  
a KNUTH Machine Tool



## KNUTH Machines in Action

Visit our YouTube page to experience machines in action before the real-life test on site

**Subscribe to our YouTube channel - Go to KNUTH Machine Tools!**

## Complete Service by KNUTH

### Reliable service from a single source

We provide highly qualified technicians and engineers all over the world to ensure reliable service from one central source. And our global supplier network ensures prompt availability of replacement parts and consumables at a local level.



#### CONSULTATION

- Sample work pieces
- Machine demos



#### START-UP

- Installation / Commissioning
- On-site Instruction



#### TRAINING

- User Training
- Maintenance Training



#### PREVENTIVE MAINTENANCE

- Inspection
- Maintenance



#### REPAIR

- Machine Repair
- Spare Parts



#### MACHINE WARRANTY

- Protect Insurance

**KNUTH Technical Service Help Desk**

**Tel. +1-847-415-3333**

**service@knuth-usa.com**

**KNUTH Parts Service**

**Tel. +1-847-415-3333**

**service@knuth-usa.com**

**Our Service Help Desk is available 24/7 online at: [knuth-usa.com/servicedesk](https://www.knuth-usa.com/servicedesk)**





Vertical CNC Machining Centers

## X.mill T 700 • 800 • 1000

The compact mid-range solution: Fast, modern, cost-effective



X.mill T 700 with Siemens control is shown

AVAILABLE WITH SIEMENS, FANUC, OR HEIDENHAIN CONTROL

OPTIONALLY WITH 12,000 RPM MAX. SPINDLE SPEED

OPTIONALLY WITH MAX. 30 TOOL STATIONS AND BT40

HIGH RAPID FEED OF 1,417 IN/MIN

TABLE LOAD CAPACITY OF 1,760 LBS (X.MILL T 800 AND T 1000)

### X.mill T Machining Centers Series 700 • 800 • 1000

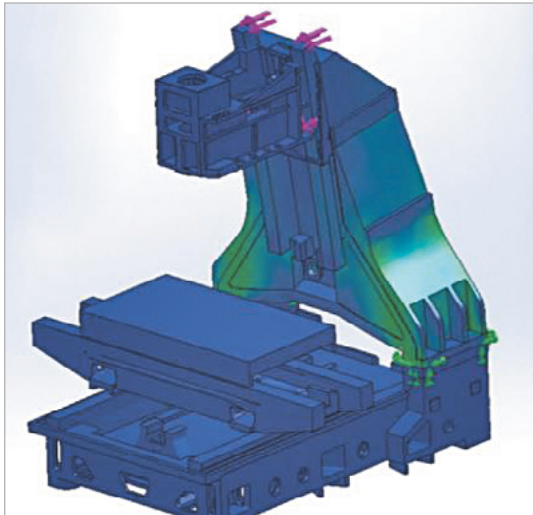
	Si	Fa	Hdh
Part No.	181400	181401	181402
	181406	181407	181408
	181412	181413	181414

- The machining centers of the new X.Mill Series provide a compact midrange solution
- Every machine in this series is available with optional controls by Siemens, Fanuc, or Heidenhain and features a compact machine frame with a wide column base
- The axes move in fully enclosed linear guideways with accuracy class C3 preloaded ball screws (1.26" diameter)
- With various options, every machine can be customized and configured to meet specific customer requirements



## Critical Features

### Machine bed and table

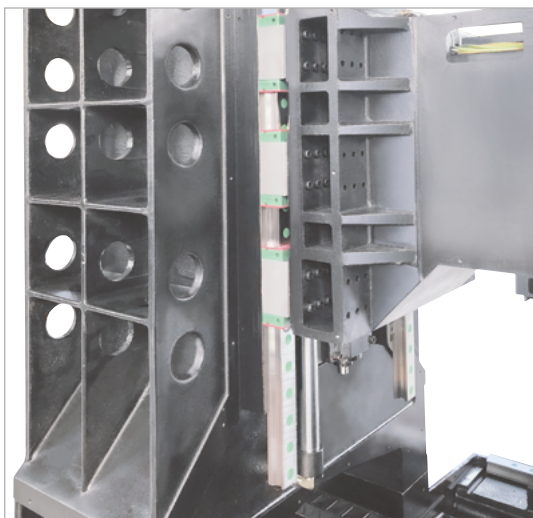


- The X.mill series machine frame was developed using the most advanced FEM analysis software on the market.
- The thorough analysis of the entire machine bed construction and wide column base resulted in a design that is optimized for all load conditions

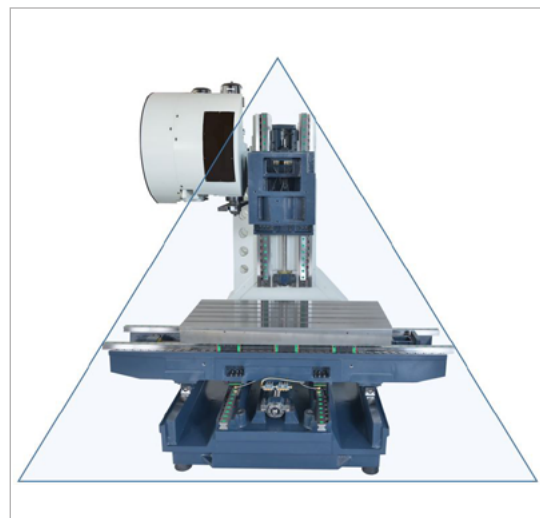


- The massive machine table features 5 slots (0.7" wide), a precision-ground surface, large dimensions and a load capacity of 1760 lbs (models X.mill T 800 and X.mill T 1000)

### Machine frame



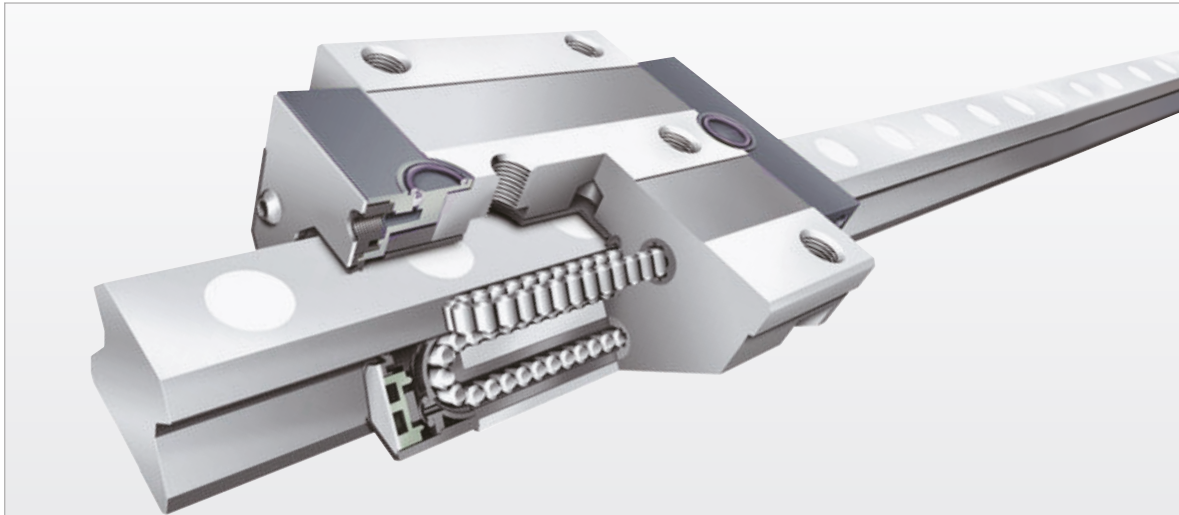
- The cast-iron body, a Y-shaped column design, and wide clamping width ensure maximum rigidity



- $\Delta$  (delta) column design ensures superior cutting stability. Column and headstock maintain their rigidity even during high-speed movements

## Critical Features

### Machine kinematics



Servo-drives with powerful torque drives and preloaded ball screws on all axes.

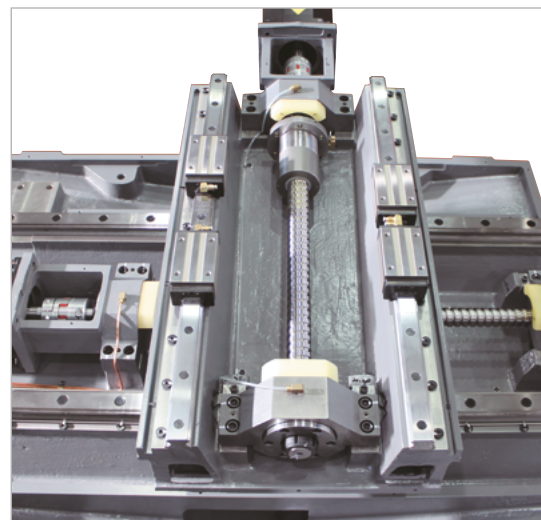
These machines are equipped with HIWIN and PMI brand linear guideways.

- Long life
- High-speed operation
- Low-noise
- Smooth movements
- Maximum load capacity

With roller guides the chain keeps rollers at a constant distance to each other and the typical roll tilting at the idler is eliminated. Low friction rollers ensure low displacement resistance and low-noise performance.

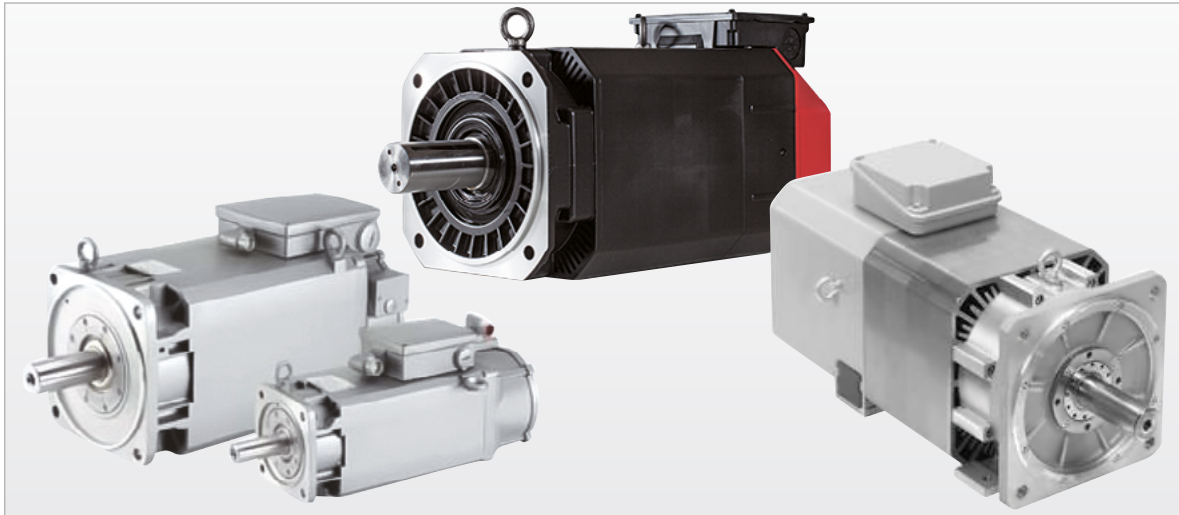


- High-torque servo-drives on all axes (max. 5.23 Hp) with a direct connection to preloaded ball screws (1.26" diameter)



- Assembled linear guides, preloaded ball screw (1.26" diam.) with torsion-proof coupling

## Headstock and main spindle



- Depending on their control, the machines are equipped with main spindle motors by Siemens, Fanuc or Heidenhain
- High-temperature lubricants ensure optimum lubrication at any operating temperature and a long tool life



- The heavily ribbed head features large linear guideways that connect to the machine frame via 6 carriages running smoothly thanks to a very low friction factor

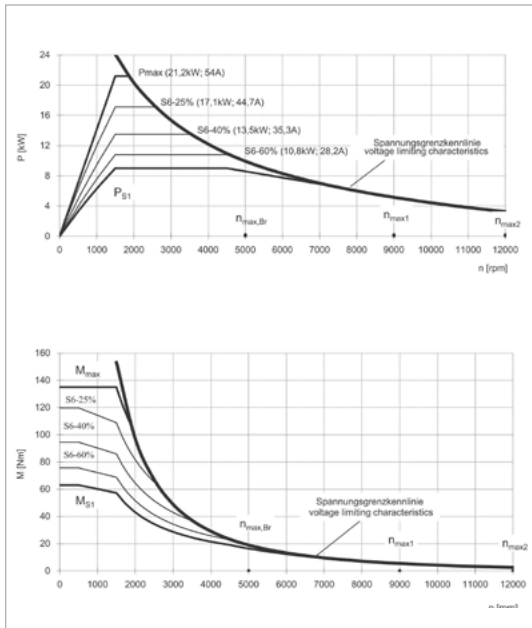


- The standard spindle features a BT40 mount, spindle speeds up to 10,000 rpm, with a timing belt connecting the servo-drive to the spindle
- 4 large main spindle bearings (4.72") by NSK or SKF ensure optimum absorption and distribution of the forces created during machining



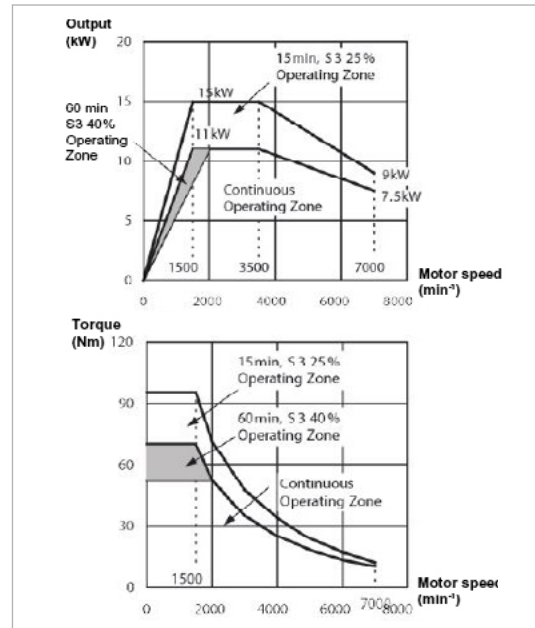
## Critical Features

### Main spindle performance diagram



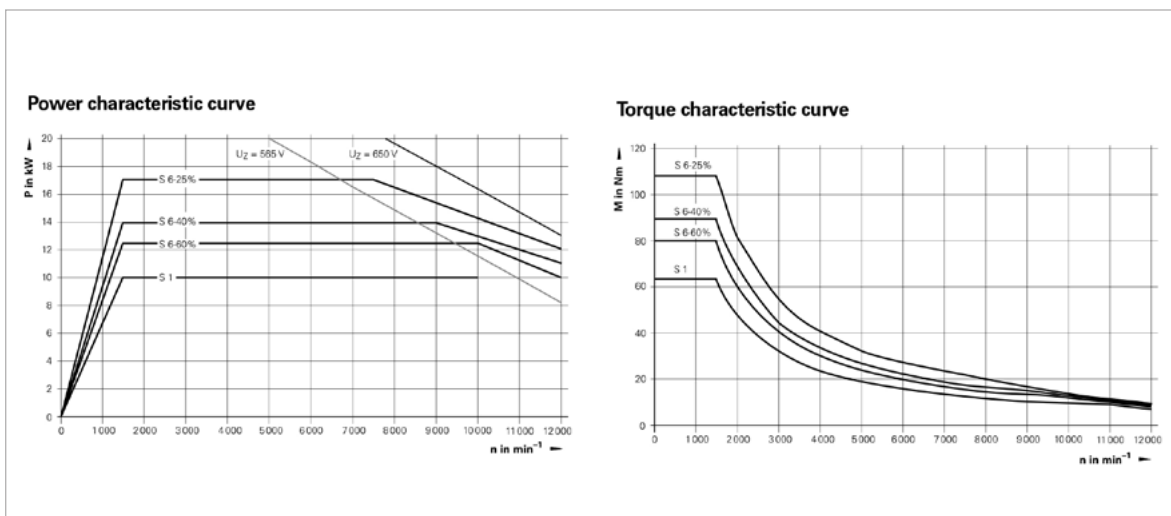
#### Main spindle motor by Siemens, 12.2 Hp

- SIMOTICS M main spindle motors are designed for operation at the inverter; they are more compact, more robust and provide more concentricity than traditional 3-phase induction motors.



#### Main spindle motor by Fanuc, 15 Hp

- Compact high power/high torque motors
- High efficiency and low heat generation



#### Main spindle motor by Heidenhain, 13.6 Hp

- Excellent synchronization
- Very good rated torque/standstill torque ratio

## CNC Control

### Siemens Sinumerik 828 D



- With its powerful CNC functions, the SINUMERIK 828D sets new standards for compact CNC controls
- SINUMERIK Safety Integrated provides protection for operators and machines. Machine setup with open guard doors, offering maximum safety for operator and machine
- USB, CF card, Ethernet at the front panel
- 10.4" color display, and full QWERTY CNC keyboard

### Fanuc Oi-MF



- Series Oi F controls are the successor models of the most popular Series 0 model, which has over 700,000 installations worldwide
- Workshop-specific programming via an optional Manual guide i
- 10.4" LCD panel and integrated 1 MB parts program storage

### Heidenhain TNC 620 control



The compact TNC 620 is very versatile and accommodates up to five controlled axes and a controlled spindle. The user-friendly control concept, high capacity and specifications make it ideal for use on milling machines.

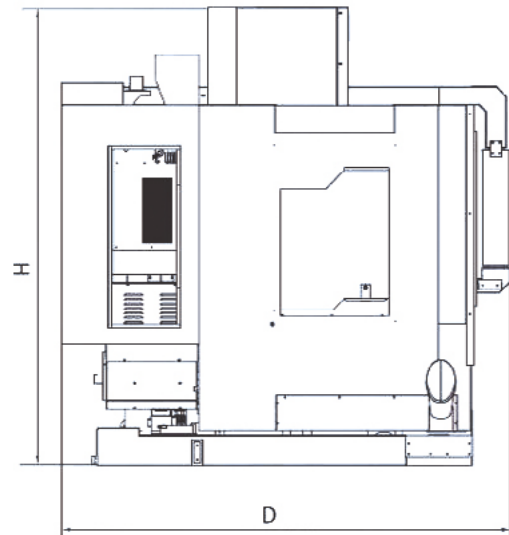
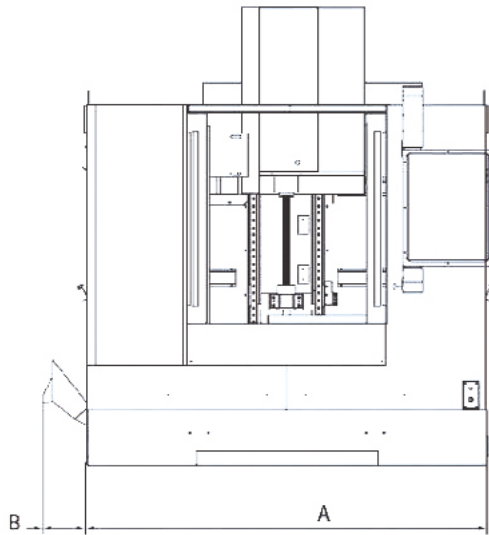
- Workshop-oriented programming
- External program creation
- CAD Viewer included in standard equipment
- Detailed graphics

The large TFT color flat screen monitor provides a clear display of all information that is needed for programming, operation, and controlling the machine: Program blocks, notes, error messages, etc.

Additional information is provided by supporting graphics that are available during program entry, program testing, and machining.

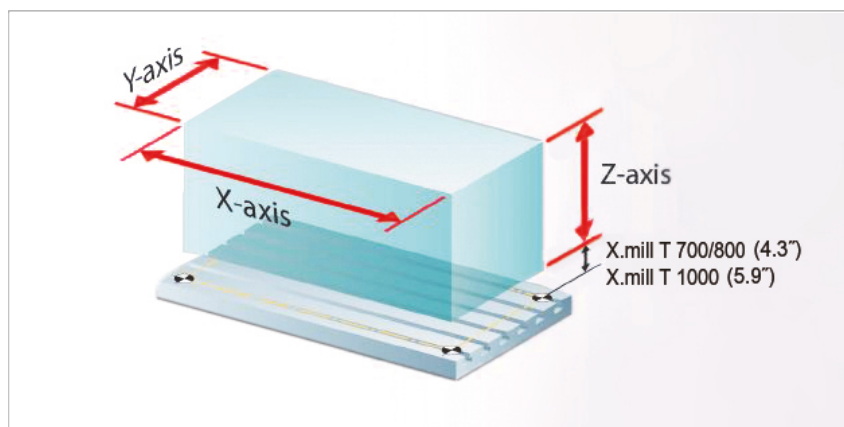
A split-screen mode allows the display of NC blocks on one half of the screen, while graphics or status can be displayed on the other side.

## Dimensions



X.mill T		700	800	1000
D	in	97.3	97.3	97.6
A	in	86.6	86.6	102.4
B	in	9.6	9.6	14.5
Strokes/min	in	89	89	90.2
Strokes max	in	99.2	99.2	107

## Maximum workpiece dimensions



X.mill T		700	800	1000
X axis	in	27.6	31.5	39.4
Y axis	in	17.7	20.5	24.4
Z axis	in	21.7	21.7	21.7





Vertical CNC Machining Centers

## X.mill T 700 • 800 • 1000

The compact mid-range solution: Fast, modern, cost-effective

### Specifications

Specifications X.mill T		700	800	1000
<b>Work Area</b>				
Table dimensions	in	35x18	35x22	43x22
Table load capacity	lbs	1,320	1,760	1,760
Distance from spindle axis to table	in	4.33 - 25.98	4.33 - 25.98	5.91 - 27.56
Spindle center-to-column distance	in	20	20	20
T-slots (width x distance x quantity)	in	0.71x3.15x5	0.71x3.15x5	0.71x3.94x5
<b>Travels</b>				
X axis travel	in	27.6	31.5	39.4
Y axis travel	in	18	20	22
Z axis travel	in		22	
<b>Main spindle</b>				
Spindle speed	rpm		10000	
Spindle mount			BT 40	
Torque, constant (Si / Fa / Hdh)	Nm		45 / 52.5 / 63.7	
<b>Rapid feed</b>				
Rapid feed X / Y / Z axis	in/min		1,417	
<b>Feed</b>				
Work feed X / Y / Z axis	fpm		33x33x33	
<b>Tool carrier</b>				
Number of tool stations	Qty		20	
OD tool size	in		3.94 (5.12)	
Tool weight (max.)	lbs		18	
Tool changing time, tool/tool	sec		8	
<b>Accuracy</b>				
Positioning accuracy	in		0.0002	
Repeatability	in		0.00012	
<b>Drive Capacity</b>				
Main motor rating (Si / Fa / Hdh)	Hp	12.1 / 14.8 / 13.4	12.1 / 14.8 / 13.4	12.1 / 14.8 / 13.4
X axis motor rating (Si / Fa / Hdh)	Hp	3.1 / 2.4 / 3.9	3.1 / 2.4 / 3.9	3.1 / 2.4 / 3.9
Y axis motor rating (Si / Fa / Hdh)	Hp	3.1 / 2.4 / 3.9	3.1 / 2.4 / 3.9	3.1 / 2.4 / 3.9
Z axis motor rating (Si / Fa / Hdh)	Hp	4.43 / 4.02 / 5.23	4.43 / 4.02 / 5.23	4.43 / 4.02 / 5.23
<b>Dimensions/Weight</b>				
Dimensions (length x width x height)	in	98x87x100	98x87x100	104x87x107
Weight	lbs	9,24	9,68	10,12
Part No. with Siemens Control		181400	181401	181402
Part No. with Fanuc Control		181406	181407	181408
Part No. with Heidenhain Control		181412	181413	181414

\* Products and product data are subject to change.



Vertical CNC Machining Centers

## X.mill 5X 1000

5-axis machining of complex shapes in one set-up



X.mill 5X 1000 with Siemens control is shown

AVAILABLE WITH SIEMENS, FANUC, OR HEIDENHAIN CONTROL

ROTARY / SWIVEL TABLE WITH 7.9" TABLE DIAMETER

OPTIONALLY WITH UP TO 30 TOOL STATIONS AND BT40

OPTIONALLY WITH 12,000 RPM MAX. SPINDLE SPEED

EXTENDED Z TRAVEL, 31"

### X.mill 5X Machining Centers Series 1000 Si / Fa / Hdh

	Si	Fa	Hdh
Part No.	181405	181411	181417

- X.mill 5X is based on X.mill T models and pre-configured with a 4th/5th axis, which makes it ideal for cost-effective multi-sided machining
- Every machine in this series is available with optional controls by Siemens, Fanuc, or Heidenhain and features a compact machine frame with a wide column base.
- The axes move in fully enclosed linear guideways with accuracy class C3 preloaded ball screws (1.26" diam.)
- With various options, every machine can be customized and configured to meet specific customer requirements.

### Definition

#### 5-axis Machining

- The term 5-axis defines the number of directions the cutting tool or workpiece can be moved in. On a 5-axis machining center, the cutting tool will move along the linear axes X, Y and Z, but also can be rotated around axis A and axis C. That means, that 5 sides of a workpiece can be machined in only one setup
- During 3+2 machining, the machine will execute a 3-axis milling program, whereby the cutting tool can be moved via both rotary axes to any tilt angle
- 3 axes move simultaneously, 2 axes subsequently

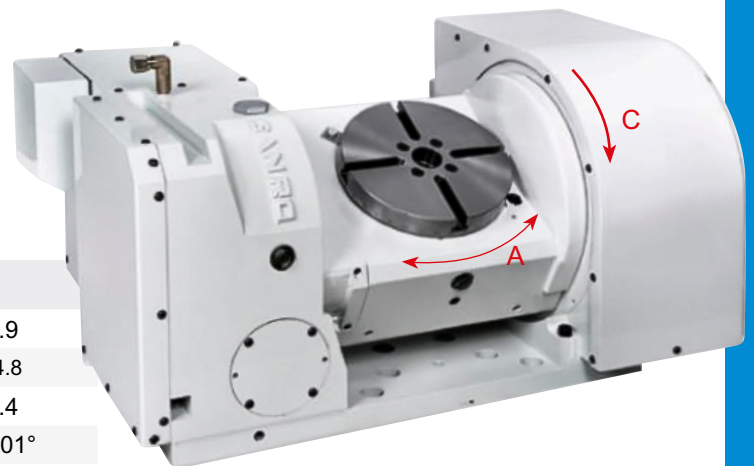
#### Advantages

- Complex shapes can be machined on 5 sides in one single setup, resulting in increased productivity
- Saves money due to shorter tooling times and cycle times
- Increased parts accuracy, since the workpiece is machined within one setup
- Possibility to use shorter cutting tools for higher cutting speeds and less tool vibrations
- superior surface and workpiece quality

### Rotary Swivel Table

#### Specifications

Table diameter	in	7.9
Overall height	in	14.8
Bore	in	1.4
Increment min.		0.001°
Swivel range		-15-115°
Workpiece weight -15° to 30°	lbs	220
Workpiece weight -31° to 115°	lbs	110







Vertical CNC Machining Centers

## X.mill 5X 1000

5-axis machining of complex shapes in one set-up

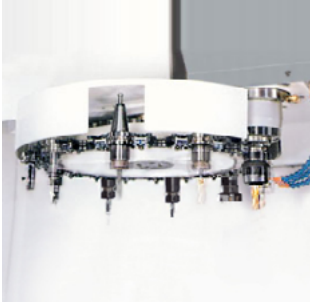
### Specifications

Specifications X.mill 5X		1000
<b>Work Area</b>		
Table dimensions	in	43x22
Table load capacity	lbs	1,760
Distance from spindle axis to table	in	5.91 - 27.56
Distance from spindle axis to table with rotary swivel table	in	1.57 - 25.2
Spindle center-to-column distance	in	20
T-slots (width x distance x quantity)	in	0.71x3.94x5
<b>Travels</b>		
X axis travel / with rotary swivel table	in	39.4 / 8.3
Y axis travel / with rotary swivel table	in	22 / 22
Z axis travel / with rotary swivel table	in	31 / 23.6
<b>Main spindle</b>		
Spindle speed / spindle mount	rpm	10,000 / BT 40
Torque, constant (Si / Fa / Hdh)	ft.lb.	33 / 39 / 47
<b>Rapid feed</b>		
Rapid feed X / Y / Z axis	in/min	1,417
<b>Feed</b>		
Work feed X / Y / Z axis	fpm	33x33x33
<b>Tool carrier</b>		
Number of tool stations	Qty	24
OD tool size	in	3.94 (5.12)
Tool weight (max.)	lbs	18
Tool changing time, tool/tool	sec	1.8
<b>Rotary Swivel Table</b>		
Table diameter	in	8
Overall height	in	14.76
Bore	in	1.38
Increment min.	deg	0.001
Swivel range	deg	-15 - 115
Workpiece weight -15 to 30 degrees	lbs	220
Workpiece weight 31 to 115 degrees	lbs	110
<b>Accuracy</b>		
Positioning accuracy	in	0.0002
Repeatability	in	0.00012
<b>Drive Capacity</b>		
Main motor rating (Si / Fa / Hdh)	Hp	12.1 / 14.8 / 13.4
X / Y / Z axis motor rating (Si / Fa / Hdh)	Hp	3.1 / 2.4 / 5.2
<b>Dimensions/Weight</b>		
Dimensions (length x width x height)	in	104x87x107
Weight	lbs	10,120
Part No. with Siemens Control		181405
Part No. with Fanuc Control		181411
Part No. with Heidenhain Control		181417

\* Products and product data are subject to change.

## Standard Equipment

### Automatic Tool Changer\*



The standard version of these machines comes with an arm-less carousel-type tool changer with 20 tool stations

- Max. tool diameter in adjoining stations: 3.9"
- Max. tool weight 18 lbs

### Tool changer with dual-arm gripper\*\*



- Tool changer with dual-arm gripper and 24 tool stations

### Helical chip conveyor



- Helical chip conveyor, incl. container, for efficient chip removal

### Coolant system



- Coolant system with one pump (1.8 Hp) and a tank capacity of 300 liters

### Heat exchanger



- Heat exchanger for control cabinet ensures constant temperatures even at high outside temperatures

### Electronic hand-wheel



- Portable electronic hand-wheel, including E-stop button

### 2 control panels



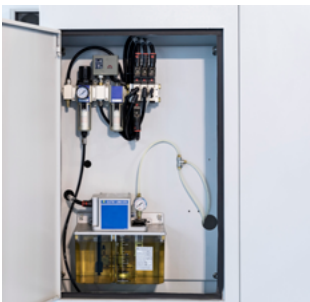
- The X.mill features 2 control cabinets for strict separation of load and control circuits to prevent potential electrical interferences

### Cleaning spray gun



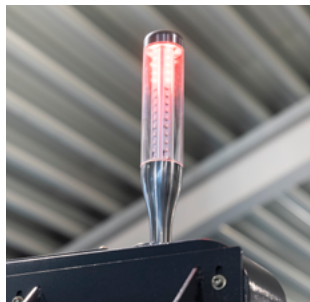
- Cleaning spray gun for easy cleaning of the workspace

### Automatic central lubrication



- Automatic central lubrication system ensures reliable lubrication of all components

### 3-color signal lamp



- 3-color signal lamp reliably shows various operating states

### Toolbox with operating tools



- Toolbox with operating and maintenance tools

### Operator manual



- Installation manual
- Operator manual
- Maintenance schedules
- Wiring diagrams
- Spare parts lists

\* - Standard on X.mill T models

\*\* - Standard on X.mill 5X models

## Optional Equipment

### Tool changer



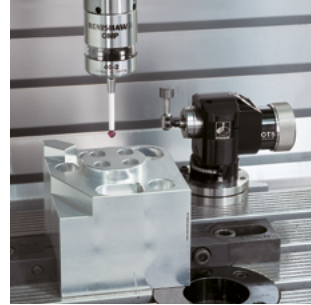
- Tool changer with dual-arm gripper and 24 or 30 tool stations

### Cooling system



- Coolant flow through the spindle (20 or 30 bar), incl. filter system

### Renishaw measurement system



- Renishaw measuring system for tool and workpiece measuring

### Chip flush-out system



- Chip flush-out system for workspace cleanup

### SinuTrain for Sinumerik Operate



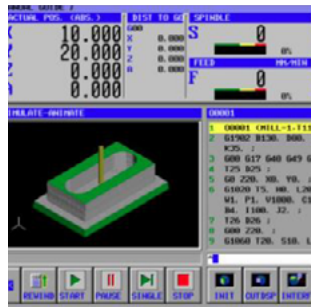
- Control-identical programming station for work preparation, NC program creation and training

### Measuring cycles



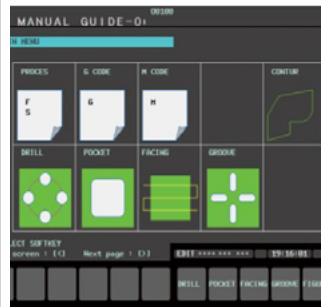
- Reducing tooling time and ensuring quality Available measuring cycles:
- Point/edge measurement
  - Rectangle or corner measurement
  - Pocket/bore measurement
  - Rectangular/circular stud measurement
  - Level/surface alignment
  - Alignment button

### Fanuc Manual guide i



- Fanuc Manual guide i (package 5) is an integrated user interface that simplifies the execution of tasks from programming to machine operation

### Fanuc Manual guide Oi



- Fanuc Manual guide Oi (only in connection with package 1) is an easy to use parts programming function

### Siemens ShopMill



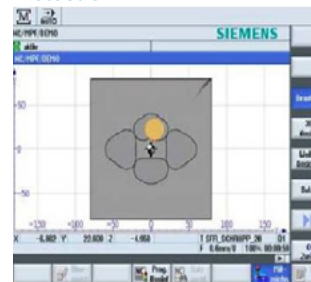
- Siemens Shopmill - Faster from the drawing to the finished part

### Siemens DXF Reader



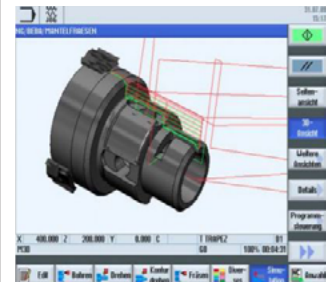
- Siemens DXF Reader for importing DXF files, automatic contour tracking, and workpiece zeroing per contour/drilling point

### Siemens Residual Material Detection



- Shorter machining times due to the use of a large tool for the major part of the machining operation, and use of a smaller tool that targets residual material

### Siemens 3D Simulation



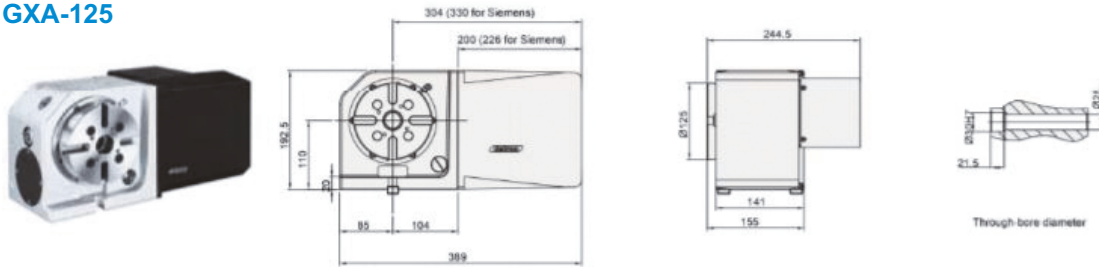
- Real life-like simulation via representation of the workpiece



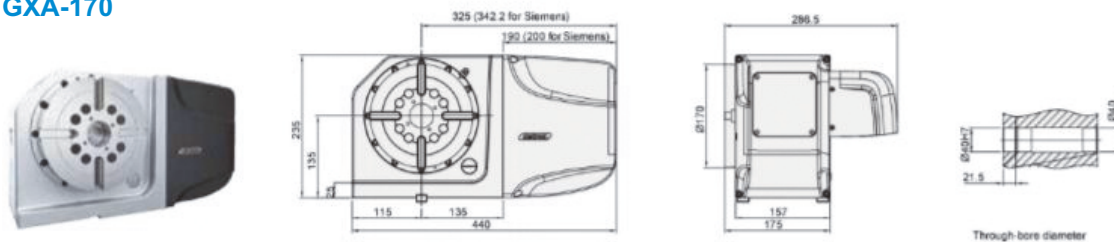
## CNC rotary table, 4.9" – 8.3", with pneumatic clamping

- Worm gears
- Can be used vertically or horizontally
- High rotary speed
- Positioning accuracy 20 - 40 sec, repeatability 6 sec
- Resolution 0.001°

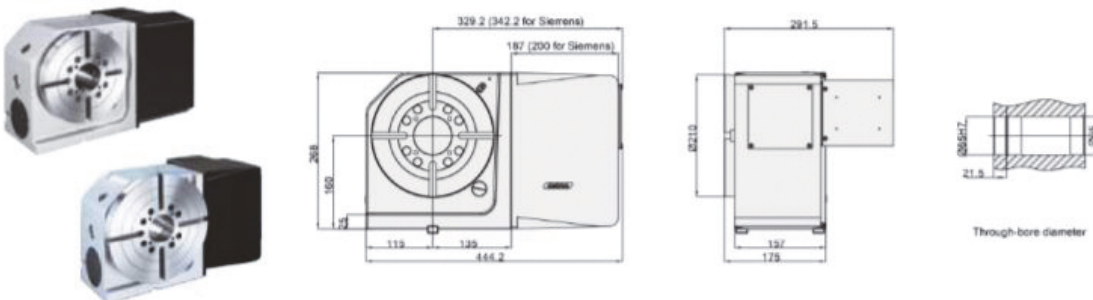
### GXA-125



### GXA-170



### GXA-210



Specifications		GXA-125	GXA-170	GXA-210
Rotary table diam.	in	5	6.7	8.3
Center bore	mm	Diam. 30H7	Diam. 40H7	Diam. 65H7
Through-hole diameter	in	Diam. 1	Diam. 1.6	Diam. 2.6
T-slot width	mm	12H7	12H7	12H7
Clamping force at 7 bar	ft.lb.	103	221	295
Transmission ratio		1/40	1/60	1/72
Max. turning speed	rpm	66.6	53.3	53.3
Resolution		0.001°	0.001°	0.001°
Max. part weight, vertical	lbs	110	220	275.6
Max. part weight, horizontal	lbs	220	440	551
Part No. with Siemens Control		253604	253605	253606
Part No. with Fanuc control		253639	253640	253642
Part No. with Heidenhain control		253643	253644	253646

ID	Optional Equipment	T 700 Si	T 800 Si	T 1000 Si	T 700 Fa
		181 400	181 401	181 402	181 406
	<b>Siemens Options</b>				
001	Upgrade from 10.4" to 15" Touchscreen, only for PPU260 or higher	•	•	•	■
002	Upgrade Siemens 828D from PPU240 to PPU260	•	•	•	■
003	Siemens Function: P17: Shopmill	•	•	•	■
004	Siemens Function P13: Residual material detection	•	•	•	■
005	Siemens Function: P22: Tracing (real-time simulation)	•	•	•	■
007	Siemens Function: P25: 3D Simulation	•	•	•	■
008	Siemens measuring cycles	•	•	•	■
009	Sinutrain for Sinumerik Operate Version 4.7 Ed.	•	•	•	■
010	DXF Reader Software Sinumerik 828D/840D SL	•	•	•	■
	<b>Fanuc Options</b>				
011	Manual guide i	■	■	■	•
012	Upgrade Fanuc 0i-MF (Package 5) to (Package 1)	■	■	■	•
013	Manual guide 0i (requires Fanuc Package 1)	■	■	■	•
	<b>Spindle Options</b>				
014	Upgrade spindle from BT40 to SK 40 DIN69871	•	•	•	•
016	Upgrade: from BT40 spindle to HST63 spindle	•	•	•	•
017	Spindle speed upgrade from 10,000 to 12,000 rpm (belt type)	•	•	•	•
018	Spindle speed upgrade to 12,000 rpm (direct drive without CTS)	•	•	•	•
019	10,000 rpm, direct drive with CTS	•	•	•	•
	<b>Cooling Options</b>				
020	Spindle oil cooler	•	•	•	•
021	Preparation for CTS	•	•	•	•
022	Coolant flow through spindle, 20 bar, with filter system	•	•	•	•
023	Coolant flow through spindle, 30 bar, with filter system	•	•	•	•
024	Chip flush-out system	•	•	•	•
025	Oil skimmer	•	•	•	•
026	Upgrade from wormgear chip conveyor to chain-drive chip conveyor	•	•	•	•
	<b>Tool Changer Options</b>				
027	Dual-arm gripper with 24 tool stations, BT40	•	•	•	•
028	Upgrade ATC from 24 to 30 tools (BT40)	•	•	•	•
029	Dual-arm gripper with 24 tool stations, ST40 DIN 69871	•	•	•	•
030	Dual-arm gripper with 24 tool stations, HST63	•	•	•	•
031	Top cover	•	•	•	•
	<b>Renishaw Options</b>				
032	Renishaw preparation	•	•	•	•
034	Renishaw OMP 40 workpiece measuring (BT40)	•	•	•	•
035	Renishaw TS27R tool measuring system	•	•	•	•
	<b>4th Axis Options</b>				
036	Connection for 4th axis (wiring only)	•	•	•	•
038	DR-120R (4th axis, servo-motor, driver, pneumatic brakes)	•	•	•	•
039	Manual tailstock ST-125T for rotary table for X.mill	•	•	•	•
040	Manual chuck, 5", for rotary table for X.mill	•	•	•	•
041	DR-170R (4th axis, servo-motor, driver, pneumatic brakes)	•	•	•	•
042	Manual tailstock ST-170T for rotary table for X.mill	•	•	•	•
043	Manual chuck, 6", for rotary table for X.mill	•	•	•	•
044	DR-200R (4th axis, servo-motor, driver, pneumatic brakes)	•	•	•	•
045	Manual tailstock ST-210T for rotary table for X.mill	•	•	•	•
046	Manual chuck, 8", for rotary table for X.mill	•	•	•	•
047	DR-250R (4th axis, servo-motor, driver, pneumatic brakes)	•	•	•	•
048	Manual tailstock ST- 255T for rotary table for X.mill	•	•	•	•
049	Manual chuck, 9", for rotary table for X.mill	•	•	•	•
050	Reinforced machine base with 31" Z axis travel	■	■	•	■

SYMBOLE • Available ■ Not available



Vertical CNC Machining Centers

## X.mill T 700 • 800 • 1000 • 5X 1000

The compact mid-range solution: Fast, modern, cost-effective

ID	T 700 Fa 181 406	T 800 Fa 181 407	T 1000 Fa 181 408	T 700 Hdh 181 412	T 800 Hdh 181 413	T 1000 Hdh 181 414	5X 1000 Si 181 400	5X 1000 Fa 181 406	5X 1000 Hdh 181 412
001	■	■	■	■	■	■	●	■	■
002	■	■	■	■	■	■	■	■	■
003	■	■	■	■	■	■	●	■	■
004	■	■	■	■	■	■	●	■	■
005	■	■	■	■	■	■	●	■	■
007	■	■	■	■	■	■	●	■	■
008	■	■	■	■	■	■	●	■	■
009	■	■	■	■	■	■	●	■	■
010	■	■	■	■	■	■	●	■	■
011	●	●	●	■	■	■	■	●	■
012	●	●	●	■	■	■	■	●	■
013	●	●	●	■	■	■	■	●	■
014	●	●	●	●	●	●	●	●	●
016	●	●	●	●	●	●	●	●	●
017	●	●	●	●	●	●	●	●	●
018	●	●	●	●	●	●	●	●	●
019	●	●	●	●	●	●	●	●	●
020	●	●	●	●	●	●	●	●	●
021	●	●	●	●	●	●	●	●	●
022	●	●	●	●	●	●	●	●	●
023	●	●	●	●	●	●	●	●	●
024	●	●	●	●	●	●	●	●	●
025	●	●	●	●	●	●	●	●	●
026	●	●	●	●	●	●	●	●	●
027	●	●	●	●	●	●	■	■	■
028	●	●	●	●	●	●	●	●	●
029	●	●	●	●	●	●	●	●	●
030	●	●	●	●	●	●	●	●	●
031	●	●	●	●	●	●	●	●	●
032	●	●	●	●	●	●	●	●	●
034	●	●	●	●	●	●	●	●	●
035	●	●	●	●	●	●	●	●	●
036	●	●	●	●	●	●	■	■	■
038	●	●	●	●	●	●	■	■	■
039	●	●	●	●	●	●	■	■	■
040	●	●	●	●	●	●	■	■	■
041	●	●	●	●	●	●	■	■	■
042	●	●	●	●	●	●	■	■	■
043	●	●	●	●	●	●	■	■	■
044	●	●	●	●	●	●	■	■	■
045	●	●	●	●	●	●	■	■	■
046	●	●	●	●	●	●	■	■	■
047	●	●	●	●	●	●	■	■	■
048	●	●	●	●	●	●	■	■	■
049	●	●	●	●	●	●	■	■	■
050	■	■	●	■	■	●	■	■	■

SYMBOLE ● Available ■ Not available

## Optional Equipment

### Tool starter pack BT 40

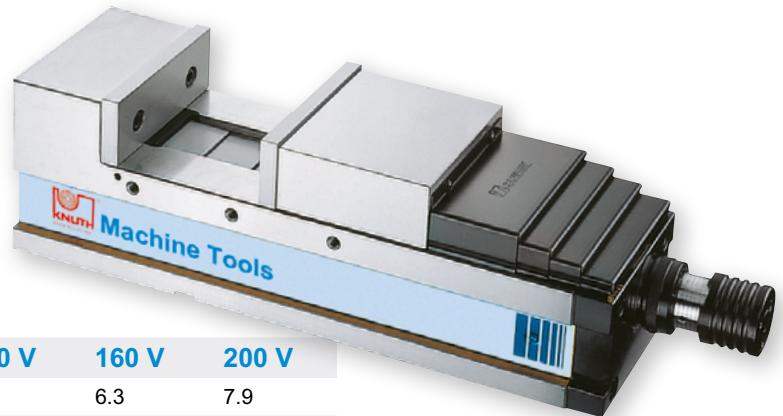
Part No. 450032

- 10 ea Draw bolts MAS BT 40 x 45° with bore
- 1 ea Collet chuck MAS BT40-ER40-80
- 1 ea ER collet set, ER 40, 15-pc
- 2 ea WELDON milling chuck BT 40 / 0.2" dia
- 2 ea WELDON milling chuck, BT 40 / 0.3" dia
- 2 ea WELDON milling chuck, BT 40 / 0.4" dia
- 2 ea WELDON milling chuck, BT 40 / 0.6" dia
- 2 ea WELDON milling chuck, BT 40 / 0.8" dia
- 2 ea WELDON milling chuck, BT 40 / 1" dia
- 1 ea Combo shell-end milling arbor dia. 0.9" BT 40
- 1 ea Combo shell-end milling arbor dia. 1.1" BT 40



### Hydraulic machine vise, HNCS 200V

- High-quality machine vise for hydraulic clamping of parts
- Hardened and ground surfaces ensure high-precision clamping, even when working with in-series connected vises
- 4 work surfaces
- Pull-down system for maximum secure clamping
- Spindle safety guard protects from chips
- face parallelism 0.0008"



HNCS		100 V	130 V	160 V	200 V
Jaw width	in	3.9	5.1	6.3	7.9
Clear opening	in	0-4.9	0-7.1	0-9.4	0-11
Jaw height	in	1.9	2.2	2.3	2.5
Overall height	in	5.2	5.9	6.4	6.8
holding force	lbf	36	46	56	71
Weight	lbs	55	84	126	172
Part No.		104930	104932	104934	104936

### Option for HNCS

#### Dial

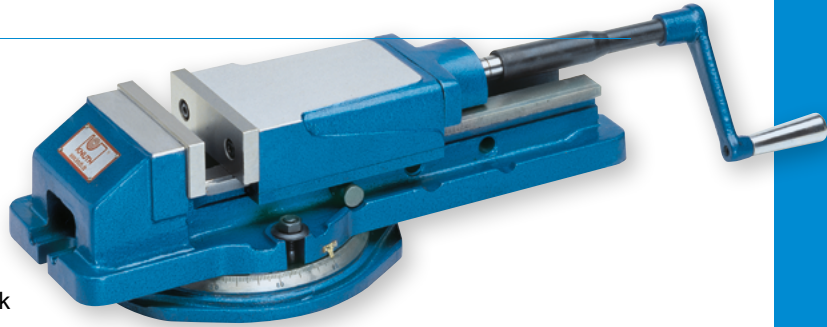
Dial diam.	in	9.8	11.7	12.3	15
dial height	in	1.1	1.2	1.3	1.7
Part No.		104931	104933	104935	104937





### Hydraulic machine vise HS

- Possible clamping force is up to 10 times higher than on conventional machine vises
- Jaws and guideways are hardened and precision-ground
- The vise body is mounted on a dial that rotates 360°
- Constant clamping force without vibration or shock interference
- Hydraulic force amplification



HS		100	125	150	200
Jaw width	in	4.3	5.3	5.9	8.3
Jaw height	in	1.4	1.9	2	2.6
Clamping width	in	7	8.7	11.5	11.8
Weight	lbs	57	93.7	165.3	275.6
Part No.		105096	125024	125028	125029

### 6X Zero point clamping system with grid plate

Part No. 253789

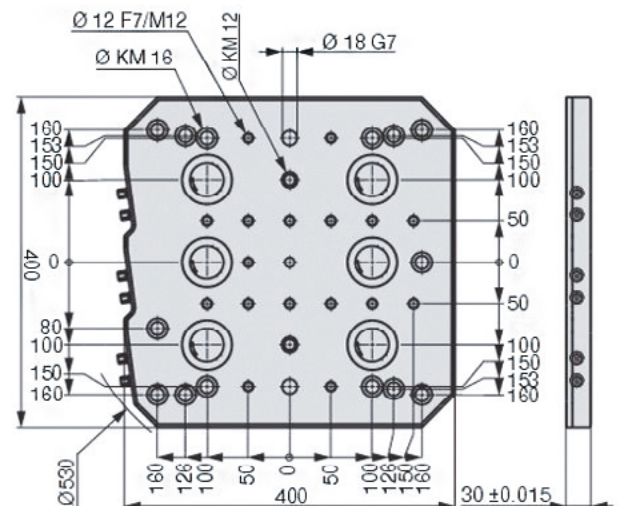
Zero point clamping systems are the best solution for optimizing machine capacities and reducing tooling times to a minimum. This clamping solution have proven to speed up production processes while providing maximum precision and process safety.

The clamping system grid plate is designed for stationary mounting to the machine table of machining centers. The following components can be clamped on a zero point clamping system: Clamping tools, like machine vises, single or multiple pallets and blanks.

- Non-corrosive and vacuum-hardened
- 20 kN feed-in force at the clamping pin
- 12x fastening bores M16, for T-slot distances of 2.5"; 3"; 3.9"; 4.9"
- 2x fastening bores M12
- 17x dowel holes 12 H7 dia/M12
- 2x dowel holes 18 G7 dia for positioning
- 2x dowel holes 12 F7 dia for positioning

#### Consisting of:

- 1 ea base plate, 6x, 15.7 x 15.7 in
- 4 ea mounting bolts
- 1 ea operating set (torque wrench incl. nut and screw driver SW 10)



## Automation for intelligent manufacturing

Individually customized automation allows large and small operations to optimize their machines for current and future needs. The investment in smart technology will pay for itself from day 1, because resources will be used most efficiently already in the very first work step, and the system easily can be expanded with a wide spectrum of automated Just adding a clamping system that easily can be installed on a machining center will allow maximum optimization without sacrificing flexibility. Integration of this simple solution can reduce tooling times and double spindle run times. Machine hour cost could be reduced significantly.

### AMF Clamping Technology

Cost-effective alternative to robots

The gripper is mounted directly from the machine's tool magazine into the spindle, where it allows workpiece handling between parts storage and clamping device.

- This allows an easy implementation of unmanned shifts resulting in higher machine utilization and increased flexibility
- Drastic reduction of tooling times in small to medium batch productions



### AMF Clamping System KV-FR-PN-006

Part No. 252867

#### Design

- Clamping via pneumatic vise with jaws pads made of 16MnCr5
- Nitrated and ground

### Specifications

#### Dimensions

Base plate	in	14 x 30 x 1.2
Mounting template for 12 workpieces	in	14 x 16 x 0.2

#### Vise

Jaw width	in	2.6
Bed height L	in	2.6

## Automation for intelligent manufacturing



### Lorescheit Automation Technology

Automation | Custom Machine Construction | Robotics

Lorescheit Automatisierungs-Technik GmbH was founded in 2010. Lorescheit supplies components and complete solutions for automation technology. Lorescheit offers a complete component building set for lightweight robot applications that allow customers to solve their automation tasks on their own. In addition, Lorescheit provides turn-key solutions

for customer-specific tasks in the areas of workpiece handling, measuring/testing, cleaning, notching, deburring, machining and sorting.

Lorescheit is at your side - from the idea to the complete implementation.

Check out the capabilities and get to the next level of productivity for your production with the FlexLoad System.

The FlexLoad System by Lorescheit Automatisierungs-Technik, you won't ask anymore "Shall I automate my machines?". Instead you will ask "Which machines should I automate?".

The idea behind it: Many producers of small and medium batch sizes still will have to load their machines by hand. This is what keeps many of them from changing to automation or robotics. Because, if the machine has to be loaded manually, automation is not productive? With the FlexLoad System, this is a different story. This system can be used at any other machine after completion of a job on one machine. The system is very flexible and can be adapted easily to any special needs.

The standard version of the FlexLoad System includes a PLC, which serves as interface to the machining tool. It provides a touch panel



for easy and comfortable use of the HMI. This operating concept ensures that the FlexLoad System can be used intuitively and without special programming language knowledge.



**KNUTH Machine Tools USA, Inc.**

590 Bond St.

IL 60069 Lincolnshire / Chicago

Tel. +1-847-415-3333

Fax +1-847-415-2402

E-Mail [info@knuth-usa.com](mailto:info@knuth-usa.com)

**[www.knuth-usa.com](http://www.knuth-usa.com)**

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