CNC Machining Centers

X.mill 1680 • 1890

with Touch-Screen Technology

- GPlus 450 or Siemens 828 D
  CNC control with touchscreen technology
  and USB port
- Throat up to 1025 mm
- Large X axis travels up to 1800 mm
Rigidity, maximum precision and cost-effective operation make this proven series even more powerful

- Extra wide cast-iron frame with heavy ribbing minimizes vibrations, resonance and torsion to ensure maximum accuracy and optimum surfaces of the part
- Extra-wide rectangular X axis guideways ensure superior rigidity during heavy chip removal operations
- Extraordinary table load capacity up to 3000 kg (X.mill 1890)
- All guideways are ground, hardened and protected by premium stainless steel covers
- Large, preloaded ball screws are driven directly by the servo motors

X.mill 1890 is shown with GPlus Control and optional equipment
• GPlus 450 or Siemens 828D CNC control with touchscreen control, extensive storage space, plus USB port – practice-oriented and easy to operate
• Easy access and reachability of the machine table were the focus during the design of the machine frame and work space in order to reduce down-times to a minimum
• Includes chip conveyor
• The chip tray is easily accessible and includes a powerful chip flushing system
• A blow-out and coolant gun are within reach of the operator for quick and easy cleaning of the workspace and the workpieces
• Automatic central lubrication for low maintenance is standard
• A spindle blow-out system protects the tool mount from chips and coolant
<table>
<thead>
<tr>
<th>Specifications</th>
<th>X.mill 1680</th>
<th>X.mill 1890</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>GPlus 450 or Siemens 828 D control</td>
<td>GPlus 450 or Siemens 828 D control</td>
</tr>
<tr>
<td>Working area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X / Y / Z axis travel</td>
<td>1600 / 820 / 700 mm</td>
<td>1800 / 920 / 700 mm</td>
</tr>
<tr>
<td>Table dimensions</td>
<td>1700 x 820 mm</td>
<td>1900 x 900 mm</td>
</tr>
<tr>
<td>Table load capacity</td>
<td>2200 kg</td>
<td>3000 kg</td>
</tr>
<tr>
<td>T-slots (qty x width x spacing)</td>
<td>7 x 18 x 120 mm</td>
<td>7 x 18 x 120 mm</td>
</tr>
<tr>
<td>Spindle nose-to-table distance</td>
<td>180 + 880 mm</td>
<td>180 + 880 mm</td>
</tr>
<tr>
<td>Throat (spindle center to frame)</td>
<td>900 mm</td>
<td>1025 mm</td>
</tr>
<tr>
<td>Headstock</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spindle speed</td>
<td>6000 rpm</td>
<td>6000 rpm</td>
</tr>
<tr>
<td>Spindle mount</td>
<td>BT50</td>
<td>BT50</td>
</tr>
<tr>
<td>Feed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid feed X / Y / Z axis</td>
<td>15000 mm/min</td>
<td>15000 mm/min</td>
</tr>
<tr>
<td>Work feed X / Y / Z axis</td>
<td>1 - 7000 mm/min</td>
<td>1 - 7000 mm/min</td>
</tr>
<tr>
<td>Tool Carrier</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of tool stations</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Tool size (diameter x length) (max.)</td>
<td>Ø 110 × 300 mm, Ø 180 × 300 mm</td>
<td>Ø 110 × 300 mm, Ø 180 × 300 mm</td>
</tr>
<tr>
<td>Tool weight (max.)</td>
<td>15 kg</td>
<td>15 kg</td>
</tr>
<tr>
<td>Tool changing time, tool/tool</td>
<td>3.8 sec</td>
<td>3.8 sec</td>
</tr>
<tr>
<td>Accuracy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positioning accuracy</td>
<td>± 0.008 mm</td>
<td>± 0.008 mm</td>
</tr>
<tr>
<td>Repeatability</td>
<td>± 0.005 mm</td>
<td>± 0.005 mm</td>
</tr>
<tr>
<td>Drive Capacities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main drive (continuous/30 min)</td>
<td>GPlus 15 / 18.5 kW</td>
<td>GPlus 18.5 / 22 kW</td>
</tr>
<tr>
<td></td>
<td>Siemens 18.5 / 20.5 kW</td>
<td>Siemens 22 / 25.5 kW</td>
</tr>
<tr>
<td>Motor rating for X axis drive</td>
<td>4.4 kW</td>
<td>4.4 kW</td>
</tr>
<tr>
<td>Motor rating Y axis</td>
<td>4.4 kW</td>
<td>4.4 kW</td>
</tr>
<tr>
<td>Motor rating for Z axis drive</td>
<td>5.5 kW</td>
<td>5.5 kW</td>
</tr>
<tr>
<td>Dimensions/Weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (LxWxH)</td>
<td>4300 x 3400 x 3100 mm</td>
<td>4500 x 3400 x 3200 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>14000 kg</td>
<td>16500 kg</td>
</tr>
<tr>
<td>Part No. with GPlus 450</td>
<td>170 085</td>
<td>170 086</td>
</tr>
<tr>
<td>Part No. with Siemens 828 D</td>
<td>170 090</td>
<td>170 091</td>
</tr>
</tbody>
</table>
**X.mill 1680 • 1890**

**Specifications**

**Standard Equipment**
- GPlus 450 or Siemens 802 D control
- 24-station tool changer with dual-arm gripper
- Spiral chip conveyor
- Electronic hand-wheel
- Servo drives on all axes
- Spindle with stepped gears 6000 rpm / BT 50
- Spindle oil cooler
- Pneumatic tool clamping
- Air-conditioned control cabinet
- Chip flushing system
- Coolant system
- Air and coolant spray wand
- Automatic central lubrication
- Work space lighting
- Signal lamp
- Alignment elements
- Operating tools
- Operating and programming instructions

**Optional Equipment**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>X.mill 1680 Part No.</th>
<th>X.mill 1890 Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chain-type chip conveyor</td>
<td>250 055</td>
<td>250 054</td>
</tr>
<tr>
<td>Tool length measurement</td>
<td>250 046</td>
<td>250 046</td>
</tr>
<tr>
<td>Coolant fed through spindle (70 bar)</td>
<td>250 047</td>
<td>250 047</td>
</tr>
<tr>
<td>4th axis X.div 320</td>
<td>125 788</td>
<td>125 787</td>
</tr>
<tr>
<td>4th axis X.div 400</td>
<td>125 793</td>
<td>125 792</td>
</tr>
<tr>
<td>Hydraulic machine vise, HNCS 100V</td>
<td>104 930</td>
<td>104 930</td>
</tr>
<tr>
<td>Hydraulic machine vise, HNCS 130V</td>
<td>104 932</td>
<td>104 932</td>
</tr>
<tr>
<td>Hydraulic machine vise, HNCS 160V</td>
<td>104 934</td>
<td>104 934</td>
</tr>
<tr>
<td>Hydraulic machine vise, HNCS 200V</td>
<td>104 936</td>
<td>104 936</td>
</tr>
<tr>
<td>Combination shell-end mill arbor MAS-BT50x40</td>
<td>103 954</td>
<td>103 954</td>
</tr>
<tr>
<td>Combination shell-end mill arbor MAS-BT50x50</td>
<td>103 955</td>
<td>103 955</td>
</tr>
<tr>
<td>Clamping tools, assorted De Luxe 18/M16</td>
<td>105 305</td>
<td>105 305</td>
</tr>
</tbody>
</table>

**Training**
- Free 1-day training in Wasbek
- Including accommodations for 1 night in our guest house
CNC Milling with the GPlus 450

Received the TechStar 2008 award for most innovative future-oriented products

**Intuitive programming**
- **True intuitive control** - each input parameter is uniquely displayed with a graphic and plain text
- Simple creation of cycles for circular, rectangular, and arc pockets
- **Drill pattern programming** - hole circle, row of holes grid, parallelogram, and free drill positioning
- Thread cutting cycles for creating female and male threads: Standard threads, linear threads, tapered threads, plane threads, variable pitch threads, multiple threads function: thread repair - re-cutting of worn threads
- **Face milling cycle** - easy and quick to program
- **All cycles run as stand-alone programs** - fast and easy programming of a single program, which is integrated into a main program or available as a series of any number of cycles
- **Quick data transfers** for external programs via USB port, network or optional WLAN-connection

**Compatible and powerful**
- **Easy adaptation** to most CAD/CAM systems
- **Large, internal hard drive** allows quick machining of virtually unlimited complex programs directly at the control

**Rapid processing** of 450 NC blocks per second and 200 Look Ahead sets ensure unprecedented fast and continuous program execution

**Standard networking-capability** - to create, manage and transfer external programs - the GPlus will adapt to your structures

**Easy tool and workpiece measuring**
- **Easy to understand graphics** and plain text support the intuitive operation
- **Extremely simple collection** and implementation of values for tool length correction and zero offset

**Control for up to 5 axes**
- GPlus 450 allows a **4th and 5th axis** - which easily can be retrofitted
GPlus - our Windows-based CNC control system for Machine Tools

Quick - powerful - user-oriented: key hardware facts

- **Workshop-oriented programming** at the control or external programming (CAD/CAM)
- **450 NC blocks/sec**, 200 sets LookAhead
- The GPlus 450 features a 17" **TFT color monitor** with touch-screen display that shows all data for a user-friendly programming experience and easy operation
- Status messages show the user the current state of the control
- **Graphic simulation** with integrated Zoom function for a detailed display of the actual chip removal
- A standard 10/100 MBit Ethernet interface and **USB port** allow fast data transfers from externally created programs (CAD/CAM) and saving these on the GPlus 450 hard drive
- **Single CPU Concept** (Advantage: ties up only 2% of the system capacity)
- **40 GB storage**, 2.0 GHz Intel Celeron processor, 256 MB RAM
- **Worldwide remote diagnostics**
  - Profibus, CANopen, DeviceNet implementation is possible
- **Easy integration** in factory networks
- **Mobile hand-held device** combines practical and compact controls to simplify machine setup

**Your GPlus Advantage**

- Easy to learn without prior DIN-ISO programming knowledge - from newcomers to professional users
- short learning curve for experienced users - immediate productivity
- quick programming directly at the machine, or easy transfer of programs to minimize down-times
- GPlus Support for any programming questions and quick assistance for problems
CNC Control

Siemens Sinumerik 828D
The top specialist for demanding milling operations

Highlights

- Maximum machining precision
- Intelligent kinematic transformations for machining of cylindrical parts, and for angled workpiece levels
- SINUMERIK MDynamics with the new Advanced Surface feature: For perfect part surfaces and shortest machining times in mold making applications
- ShopMill: Shortest programming time for single parts and small batch productions
- programGUIDE: Fastest machining time and maximum flexibility for high-volume series productions
- Unique spectrum of technology cycles - from milling contours with residual material recognition to process measurements
- Animated Elements: einzigartige Bedien- und Programmierunterstützung mit Bewegtbildsequenzen
- Advanced data transfer options via USB stick, CF card and network (Ethernet)
- Easy Message: Maximum machine availability due to process monitoring per texting (SMS)

A good combination: programGUIDE
Unlimited positioning patterns
Reaming and machining of contours
In a class of its own
Simply compact - simply superior
the new CNC with a small footprint

CNC Hardware
- Control panel-based high-capacity CNC control
- Robust front control panel made of magnesium die-casting
- Integrated full-size QWERTY keyboard
- 10.4" TFT color monitor
- Maintenance-free design (no buffer battery required)

CNC performance data and functions
- SINUMERIK MDynamics package with Advanced Surface for mold making applications
- Tool changing time: ~2 ms (PPU 260/261) / ~1 ms (PPU 280/281)
- Number of Look Ahead sets: 100 (PPU 260/261) / 150 (PPU 280/281)
- Jerk-limited acceleration
- Dynamic feed-forward control
- 4-axis simultaneous interpolation (X, Y, Z and rotary axis)
- Linear, circular and helical interpolation
- Tapping without compensating chuck, plus thread cutting
- Oriented spindle holder
- Inch/metric toggle
- FRAME concept for individual coordinate transformations, rotations, scaling and mirroring
- 100 adjustable zero offsets
- Synchronous actions and quick help function output

CNC Technology Cycles
- Technology cycles for programGUIDE and ShopMill work step programming are available
- Large selection of drilling cycles
- Large selection of milling cycles for standard geometries
- Large selection of position patterns for drilling and milling operations
- Engraving cycle
- High-speed settings for mold making applications
- Geometrical calculator for free contour input
- Machining cycle for contour pockets / contour spigots with isolated contours

Graphic Features
- Animated Elements: Input help for machining parameters with animated sequences
- PC-equivalent graphical online help system
- Graphical CNC simulation with level display

CNC Tool Management
- Display of tool and magazine data on one screen
- Tool management with plain-text tool names
- Loading/unloading feature for easy magazine assignment
- Number of tool edges: 256 (PPU 260/261) / 512 (PPU 280/281)
- Tool management with tool life monitoring