



MILL Series

Universal precision machining centers for high-performance cutting – from small parts to large workpieces

chiron

www.chiron.de



MILL 1250
Machining center with NC swivel head and CHIRON standard rotary table
for individual set-ups.

Strong, dynamic & precise

As versatile as your manufacturing requirements

The CHIRON MILL series is the optimal solution for highly productive cutting and machining applications. Whether your focus is on flexible single-unit production, or high volume precision manufacturing – its modular design offers numerous configuration possibilities. Every standard MILL series machine can be assembled into the perfect individualized solution:

- Large, flexible work areas
- High milling capacity and powerful drives
- Lower cost per piece
- Highest precision and processing quality
- High stability
- Fast set-up
- Simple operation
- Easy maintenance

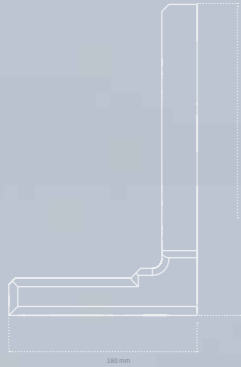
From small parts to large workpieces

Complete precision machining, with the lowest cost per piece

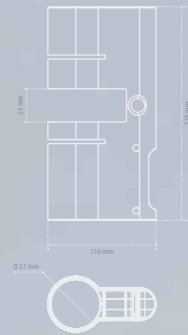
We love perfection ...

That's why we view every detail as an exciting challenge. Whether automotive, aerospace, mechanical engineering, medical or precision technology - the high-quality machining centers of the CHIRON MILL series reduce processing times, while powerfully carrying out their manufacturing tasks in the smallest possible space. Implement your production ideas quickly with micron-level precision.

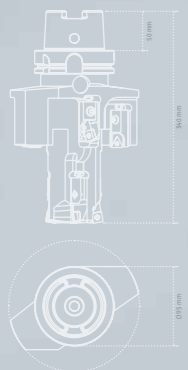
Mechanical Engineering
Machining of long profile components, e. g. take-up angle for textile machines [length: 1,700 mm]



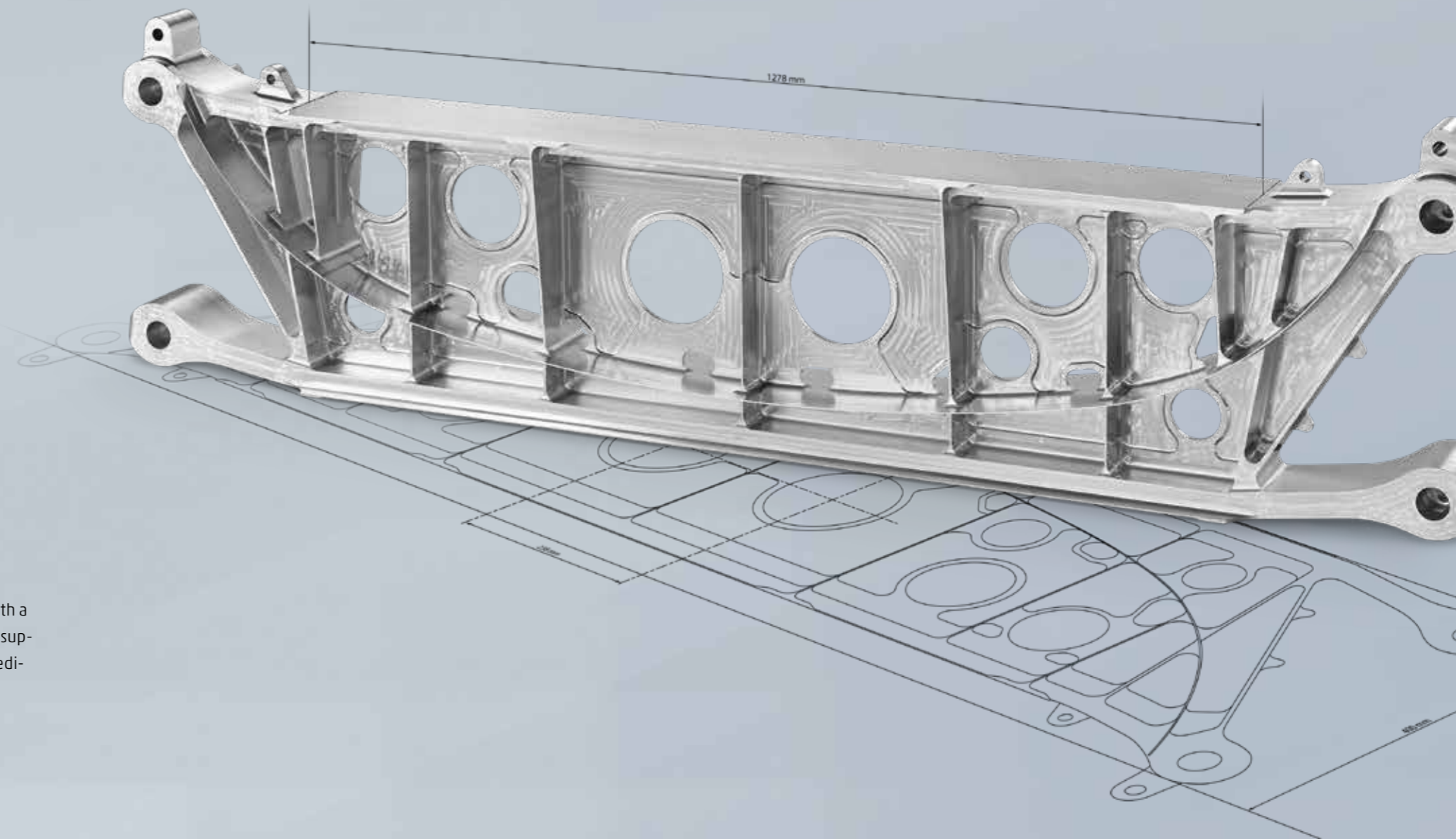
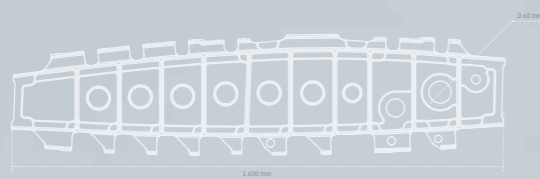
Mechanical Engineering
Complete machining of casings for locking cylinders made of brass

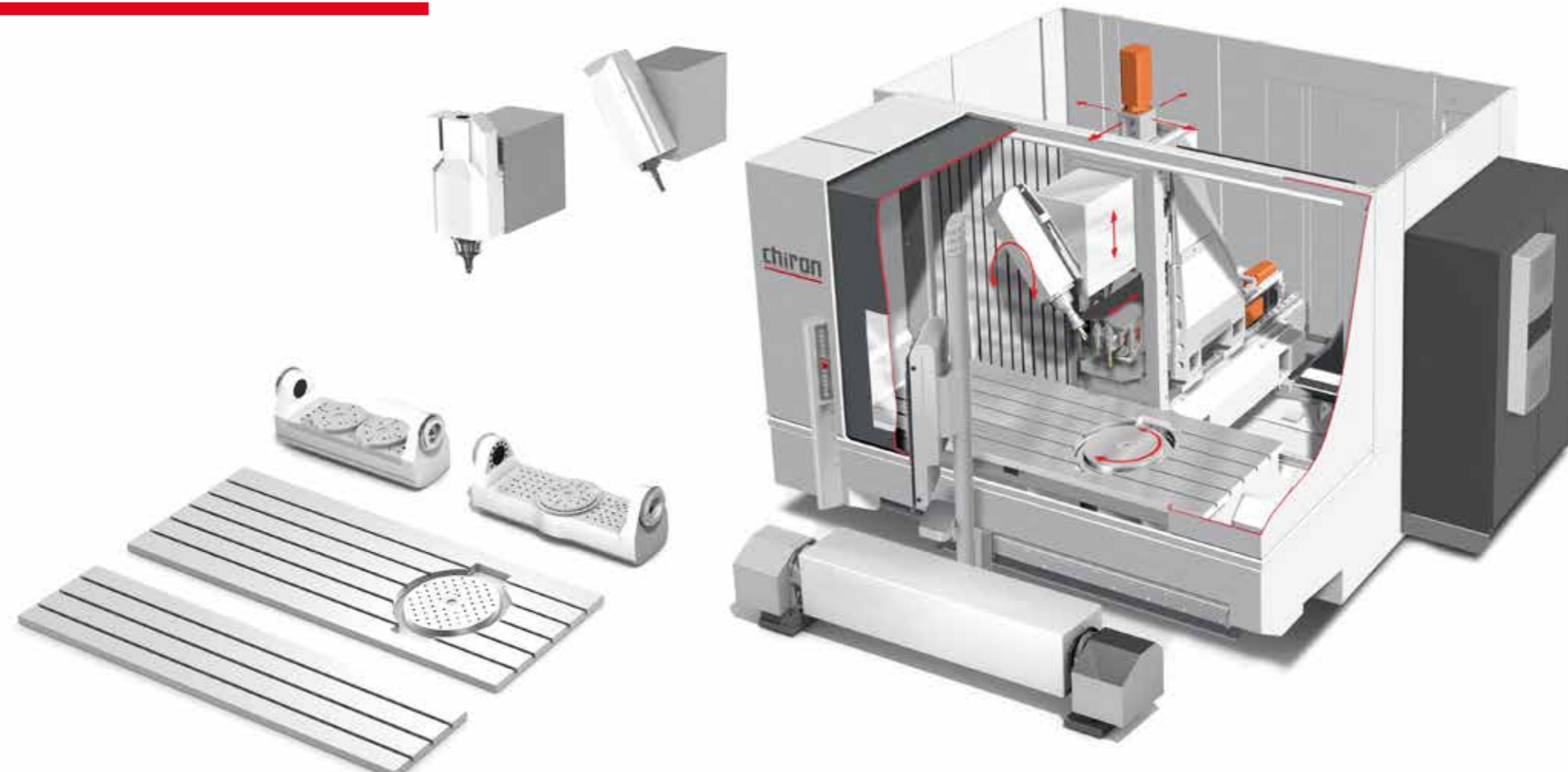


Tool Manufacturing
Milling, drilling, thread cutting and turning in one set-up, e. g. complex multi-step tools made of steel



Aerospace
Wing Rib (large cubic workpiece; Length: 1,600 mm, with a high cutting proportion as a supporting structure part for medium-haul jets)





Precision machining center with NC swivel head, integrated NC rotary table with a face plate of Ø 500 mm.



Highest precision: Glass scales and digital drive technology allow high accelerations with the same contour accuracy. Machines with traverse paths of more than 4,500 mm in X are equipped with linear motors.



The MILL series can be delivered with CNC controls from Siemens, Fanuc or Heidenhain, as needed.



High-tech modules for any application

Perfectly tuned for flexibility

Modular concept:

- Vertical traveling column principle
- Long travel with compact external machine dimensions
- Sturdy machine bed with integrated coolant and chip removal
- High rigidity and thermal stability
- Motor spindles with water cooling
- Precision glass scales on all axes
- Dynamic direct drives and precision guides
- Highest productivity with the High Dynamics package
- Robust CHIRON rotary axes
- Fully enclosed work area, stainless steel covers
- Smooth, steep walls for ideal chip flow
- Ergonomic operating and loading concept
- Service friendly access to all auxiliary units
- Foundation-free set-up
- High durability, low maintenance

Spindles & spindle systems:

-  Proven single-spindle machining centers in the vertical traveling column design.
-  Machining centers with NC swivel head with programmable positioning anywhere within the range of -110° to $+110^{\circ}$.

Tool changing systems:





-  Automatic tool change using the pick-up procedure as fast as 1.5 s (24 / 40 / 60 tool places SK 40 / HSK 63).
-  Background magazine for the provision of 92 to 163 tools during machining.

Table options:

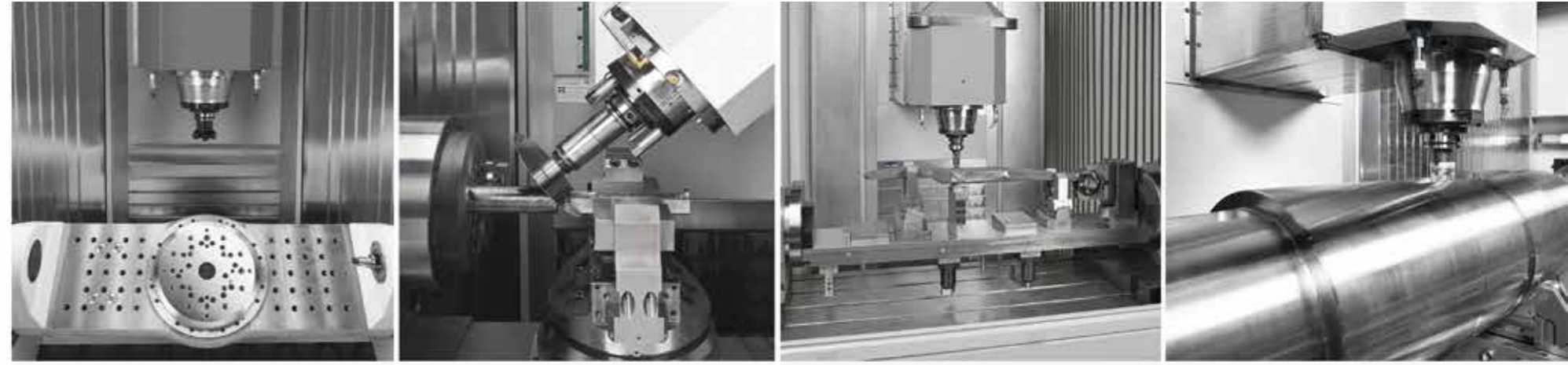
-  Fast, high-performance long-bed production in pendulum mode, or with multiple set-ups for efficient workpiece machining. Plenty of space for devices. E. g. standard rotary table basic device with counterbearing, cheeks with connection coupling for mounting clamping devices or NC rotary tables integrated in the table for multi-side machining with a face plate of Ø 500 mm. The C-axis can be set up as a turning spindle capable of up to 1,000 rpm.
-  2-axis swivel rotary table with AC kinematics with one or two face plates for multi-side machining (MILL 800 FX and MILL 1250 FX) or 5-axis-machining with pendulum working. (MILL FX 2000, MILL FX 3000).

The right machine for each component

Variants and extension options

Process advantages:

- Maximum traverse path [X-Y-Z] 6.000-915-715 mm
- Maximum power 75 kW (40% ED)
- Maximum spindle speed 20.000 rpm
- Maximum torque 280 Nm
- Chip-to-chip time starting from 2,9 s
- Max. axis acceleration X-Y-Z. 11 / 12 / 17 m/s²
- Rapid feed as fast as 75 m/min
- Max. milling capacity in St 60. 900 cm³/min
- Max. number of tools 163
- Tool taper SK 40 / HSK 63
- Maximum tool weight 8,0 kg
- Maximum tool diameter 160 mm
- Maximum tool length 370 mm



MILL 800 five axis: Fast and compact precision machining center with a 2-axis swivel rotary table for 5-axis simultaneous and complete machining. Workpieces can be machined with high surface quality in one set-up.

MILL 800 mill turn: The fastest 6-sided complete machining with swivel head and turning spindle for milling and turning from the bar.

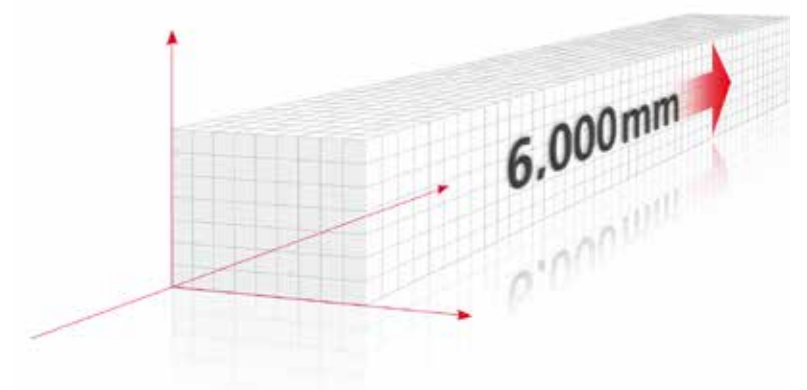
MILL 2000: Powerful long-bed production in pendulum mode with standard rotary table basic device. Work areas of long-bed machining centers larger than X=2,000 mm can be divided into two areas by a central splash guard. NC Control is mobile for ergonomic setting mode.

MILL 2000: Fast, high-precision machining center with NC swivel head and CHIRON standard rotary table basic device for individual set-ups.

Table options
Automatic tool changer
Spindles & spindle systems

	FZ	CHAIN	L	MILL 800	MILL 1250	MILL 2000	MILL 3000	MILL 4500 MILL 6000
FZ	•	•	•	•	•	•	•	•
S-HEAD	•	•	•	•	•	•	•	•
FZ	•	•	FX	•	•	•	•	-
S-HEAD	•	•	MT	•	-	•	-	-

Flexible work areas and maximum traverse paths:
X=6,000, Y=915, Z=715 mm



A powerful and flexible large work area

for fast, economical production

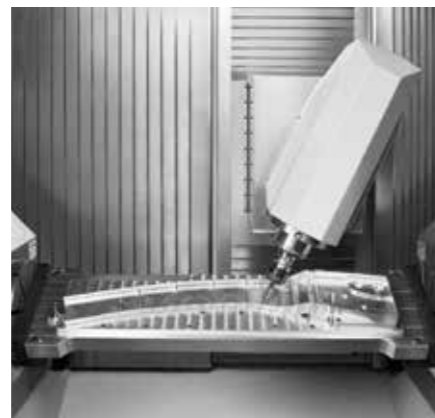
Your advantages with CHIRON fixed table or long-bed machining:

- 3-axis basic machining center based on the vertical traveling column principle
- Long travel with compact external machine dimensions
- Sturdy machine bed
- High rigidity and thermal stability
- Clear, easily accessible work area
- Simple loading with lifting gear (cranes, lift trucks, etc.)
- Work area for larger workpieces or multiple set-ups
- Automatic tool change using the pick-up method
- Chip-to-chip time starting from 2.9 s
- Reduction of down-time due to loading and unloading during machining in pendulum mode or multiple set-ups
- Expandable to 4 axes with the basic device, or to 5-axis machining with the 2-axis tilt rotary table and/or NC swivel head in combination with an integrated NC rotary table

Crane loading: Easy loading of large, heavy devices and workpieces. The front doors are wide opening, allowing great accessibility and easy loading. Automatic door activation can be added as an option.



MILL 1250: High-precision machining center with NC swivel head and CHIRON standard rotary table basic device for individual set-ups.

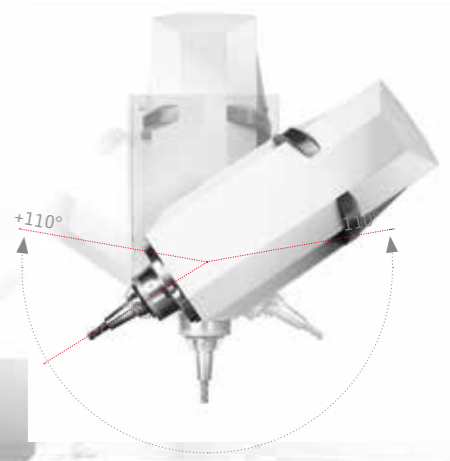


MILL 6000: High-precision machining center for fast long-bed production. Workpieces of up to 6 m in length can be easily clamped and processed economically



MILL 4500: High-precision machining center with fixed table, NC swivel head and mounted chip-proof central splash guard for fast long-bed production in pendulum mode or with multiple set-ups.

NC swivel head with a continuous swivel range of $\pm 110^\circ$. It sets itself apart by its exceptionally high rigidity and speed.



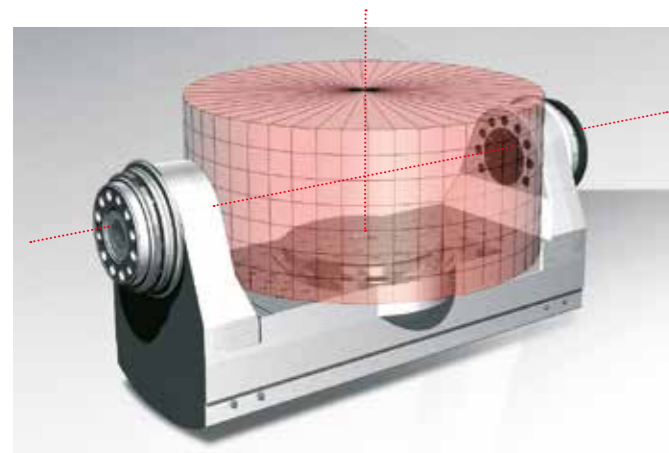


Five-axis machining with the CHIRON rotary table program:

- Rolid and reliable technology – developed and manufactured by CHIRON
- Backlash-free pretensioned precision gear with high overload capacity and large holding torque
- Rotation option due to high-precision torque drives

The highest precision

Complete machining with CHIRON five axis

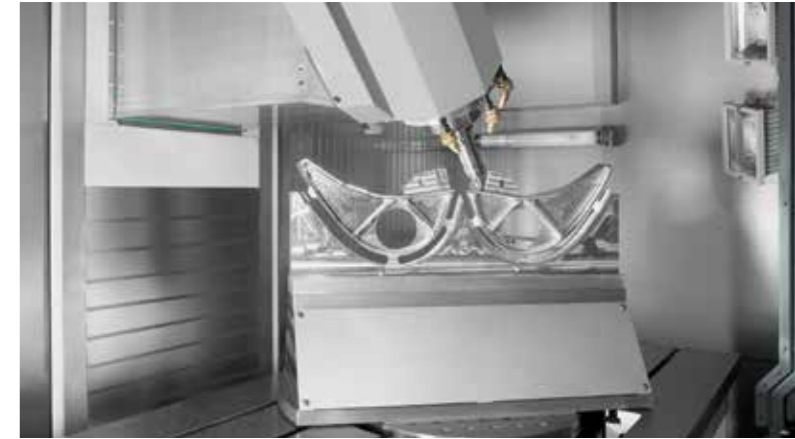


	MILL 800 five axis	MILL 1250 five axis
2-axis swivel rotary table		
- Swivel range	± 120°	± 120°
- Face plates	Ø 280 mm	Ø 630 mm
- Table load capacity	320 kg	1.000 kg
Chain magazine / tool places	24 / 40 / 60 / 92 / 163	24 / 40 / 60 / 92 / 163
Tool changing time	1,5 s	1,5 s
Maximum workpiece dimensions	Ø 940 x 430 mm	Ø 1.380 x 600 mm
Swing diameter	Ø 780 mm	Ø 1.010 mm

5-axis machining in pendulum mode (MILL 2000 five axis und Mill 3000 five axis) possible.

Your advantages with CHIRON five axis

- Long travel with compact external machine dimensions
- Sturdy machine bed
- High rigidity and thermal stability
- Highest precision in positioning and simultaneous operation
- Clear, easily accessible work area
- Simple loading with lifting gear (cranes, lift trucks, etc.)
- Spindle speeds of up to 20,000 rpm
- Excellent surface quality
- Integrated CHIRON 2-axis swivel rotary table with direct measuring systems
- Integrated 6-way energy supply for clamping device on the face plate
- Zero-point clamping systems can be integrated
- Fourth axis with a pivoting range of up to +/- 120°
- 5th axis with torque drive up to 1,000 rpm for turning work
- Automatic machine compensation due to the 3D touch probe TS27



MILL 1250: Combination of a NC swivel head and NC rotary table integrated in the fixed table with a face plate of Ø 500 mm. The C axis can be designed as a NC rotary table or as a turning spindle with a speed of up to 1,000 rpm.



MILL 2000: Combination of a NC swivel head and a standard rotary table basic device. The swivel plate can be customized according to our customers' requirements; for instance 4-sided due to a clamping cube.



MILL 3000: Combination of a NC swivel head and the basic device. Achieve maximum productivity using the High Dynamics package.

Stationary 3D probing system for tool length measurement, tool breakage checks, as well as machine compensation.



Precision by the meter

6-side complete machining with CHIRON mill turn

Your advantages with CHIRON mill turn

- Multi-functional machining, incl. back side of workpiece
- Milling, turning, drilling, thread cutting and measuring – all carried out on one machine
- Reduction of the throughput time due to 6-sided complete machining from the bar (Passage up to 100 mm)
- Customized material feeding solutions (bar loader / bar loading magazine)
- Job processing and machining times as well as in-plant logistics processes are reduced considerably
- The machining quality is greatly enhanced thanks to the reduced number of reclamping operations.
- Direct path measurement system in all axes
- High running autonomy
- Sturdy machine bed, high cutting capacity and precision

MILL 800 mill turn

Multi-functional machining center for drilling, milling and turning. The combination of swivel head and turning spindle allows the automatic machining of complex parts with high precision.

Turning up to 4,500 rpm



Separation of the workpiece



Drilling and thread cutting



CHIRON laser control for tool breakage checks, tool measurement and machine compensation.

Faster and more productive

Options create greater efficiency

Using the High Dynamics package, achieve faster and more productive manufacturing of body and lightweight structural parts.

Interpolation and positioning with short chip-to-chip times are key features of the High Dynamics package for the MILL series. A weight optimised machine structure with generously sized drives and axes offer outstanding performance in acceleration and rapid feed rates. Ideal for machining lightweight automotive body components or aerospace structural components.

Acceleration X / Y / Z: 11 / 12 / 17 m/s²

Rapid feed rate: 75 m/min

Background magazine for the provision of up to 163 tools.



Stationary 3D probing system TS 27 for tool length measurement, tool breakage checks as well as machine compensation.



CHIRON laser control for tool breakage checks, for tool measurement and for machine compensation.



Baureihe MILL - further options

- Speed⁺ - package
- Reinforced spindle drive
- Work area suctioning unit
- Connection for central suctioning unit
- Energy-efficiency package with an intelligent energy-saving control
- Automatic doors
- Zero point clamping systems
- Oil package with fire-extinguishing system CHIRON
- Robot interface, and much more.

Customized automation solutions including: Autonomous production due to the use of a pallet changer/storage with loading and unloading portal robot.



Turnkey customization completely from one source

Individual automation and engineered solutions for greater productivity

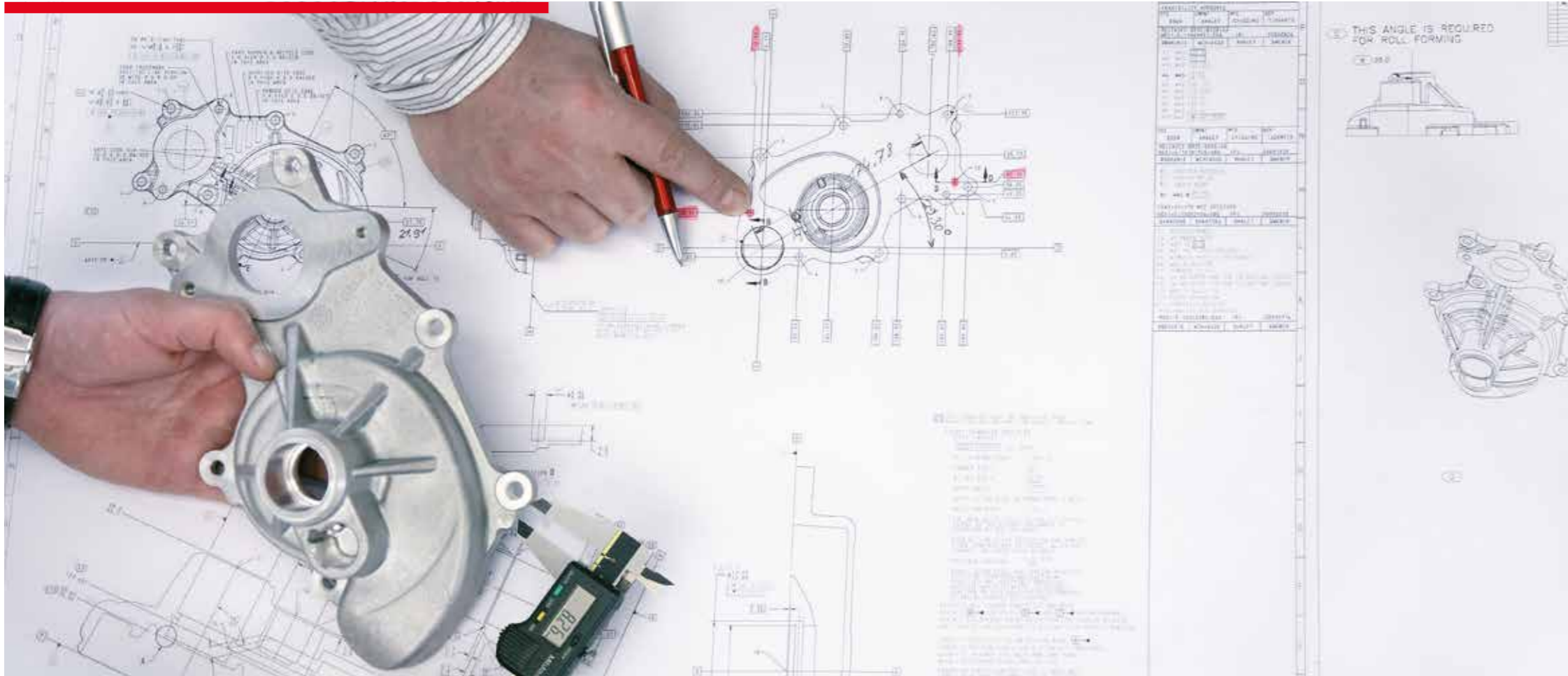
Customized automation solutions:

- Machine-integrated spindle grippers
- Portal and articulated-arm solutions
- Load and unload devices
- Pallet changing systems
- Pallet storage for raw and finished parts
- Interlinked systems and much more



Space-saving integration of an articulated arm robot for removing finished parts.





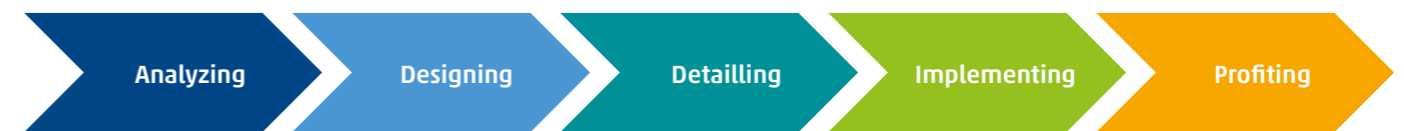
CHIRON TURNKEY



From the planning stage to serial production

Today, manufacturing excellent machining centers is not enough. Users expect a solution, which is as individual as it is intelligent. From one specific machining task, a „Turnkey process“ is to be developed around the workpiece based on the specifications and constraints. The CHIRON TURNKEY makes it possible to optimally solve complex tasks.

Together with perfectly adapted technology modules, CHIRON engineers create the most economical solution from one source to meet the customer's special needs. This ensures decisive competitive advantages for CHIRON customers. CHIRON not only offers the machining solution itself, but also the support to keep manufacturing running at an optimal level.



- Comprehensive process design
- Expert engineering
- Experienced project management
- Validation of statistical process capability

- Ensuring targeted productivity
- Production assistance during the initial phase
- Training in operation and programming
- CHIRON Service available around the world

SmartLine

The path to „Digitally enhanced machining“ is prepared

Intelligent machine control, digital networking, mutual machine communication, if „Digitally enhanced machining“ is mentioned, CHIRON may already has something to say. With the SmartLine program, the CHIRON Group provides a modular software system that enables customers to unlock the full potential of the digital manufacturing process.



Machine
TouchLine, ProtectLine,
ConditionLine



Factory
DataLine, ProcessLine,
ConditionLine



Cloud
Remoteline,
ConditionLine

An overview of all modules

ConditionLine

- Constant monitoring and analysis of the machine condition
- Early detection of unusual operation behavior
- Customized degree of networking

ProtectLine

- Collision monitoring in all types of operation
- Preventative collision protection
- Safety during machining

TouchLine

- Context-sensitive information
- Machine-specific support
- User-guided operation

Remoteline

- Machine remote access
- Rapid assistance in event of fault
- Automatic notifications
- Optimum data security

DataLine

- Visualization of machine condition and process progress
- Configurable system
- Real-time information about all machinery

ProcessLine

- Digital twin and post-processor
- „Digital“ process run-in
- Collision-tested NC program

User

Maintenance engineer
Service

Machine operator
Maintenance engineer

Machine operator
Installer
Maintenance engineer

Customer maintenance
engineer
Service

Production planner
Head of manufacturing
Controlling

Production planner



Trainings & workshops

Ahead through qualification, because knowledge leads to success.

To enable you to use your CHIRON CNC machining center optimally, we offer a comprehensive range of qualification measures, training courses and training for operators, setup personnel and service technicians.

The training programme is characterised above all by flexibility in implementation. In addition to the courses in our CHIRON training centre, these can also take place at your location. Our trainers are able to offer courses in German and English. Optionally we offer further languages with the help of an translator.

In the CHIRON Training Center, we get interested persons, both beginners and pros, up-to-date with the latest technology, step by step. With a number of individually combinable machine courses and programming courses. In this way we qualify your employees while increasing the productivity of your CHIRON CNC machining center. This leads to more success for your company, since qualified and motivated employees are an important success factor.

Our training courses are designed didactically according to the latest teaching methods. By doing practical work in small groups, we take into account the field of interest and the level of knowledge of the participants. Our philosophy is to strongly qualify the participants through their own work on our training objects. Subsequently, what has been learned can be directly put into practice in routine work.

CHIRON training courses and training are available for the following topics

- Service and maintenance
- Operation
- Programming
- Components
- Robot
- Customer-specific



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