

STARRAG HECKERT CWK 400 D

4 axes horizontal machining center



Manufacturer	STARRAG HECKERT
Model	CWK 400 D
Year of manufacture	1999
Control	SIEMENS 840 D
Machine number	18280
Travels	X - 650 mm / Y - 650 mm / Z - 650 mm / B - 0,001 degree
Pallet clamping surface	400 x 400 mm
!	<i>New motor spindle</i> <i>changed in 08/2017</i>
!	<i>New B-axis (rotary table)</i> <i>changed in 2016</i>

TECHNICAL DATA

Travels

X-axis	650 mm
Y-axis	650 mm
Z-axis	650 mm
min. distance spindle front edge - workpiece carrier center	50 mm
min. distance spindle center - workpiece carrier top edge	30 mm

Feed axes X / Y / Z

Feed	0 ... 40.000 mm/min
Rapid traverse	40 m/min
Technologically usable feed force 60% / 100% DC	12 / 10 KN
Linear measuring system, optical-incremental, distance-coded	
Accuracy class	$\pm 5 \mu\text{m}$
Division period of the line grating pitch	$20 \mu\text{m}$
Input and display resolution	$1 \mu\text{m}$
Acceleration XYZ at rapid traverse 40 m/min	7 m/s^2

Pallet

Clamping surface	400 x 400 mm
max. loading mass per pallet (in the middle)	400 kg
Permissible torque with eccentric load	200 Nm
Height of the workpiece clamping surface over bed lower edge	1.000 mm
Directional hole diameter / Distance to center of the table	$\varnothing 20^{\text{H6}}$ mm / 150 ± 0.013 mm
Location bore	$\varnothing 50^{\text{H6}}$ mm
Mounting thread	43 x M12
Workpiece passage height	750 mm
max. swing circle	$\varnothing 700$ mm

6-slot pallet station

Number of exchangeable pallets	8
max. pallet changing time	8 s

NC rotary table / B-axis

max. rotational speed	25 min ⁻¹
input and display resolution	0,001 degree
Permissible tangential torque (clamped table)	3.000 Nm
Permissible tangential torque at 100% / 60% DC	530 Nm / 1.000 Nm
max. tilting torque from pallet upper edge	5.000 Nm
Positioning times 45° / 90° / 180°	0,8 s / 1,2 s / 2,0 s

Working spindle / Main motor

Diameter in the front bearing	Ø 70 mm
Tool holder	HSK – A63 DIN 69893
Pull studs	DIN 69872-19
Speed range	50 ... 15.000 rpm
Motor power 40% / 100% DC	31 kW / 19 kW
Torque 40% / 100% DC	200 Nm / 165 Nm

Tool tower magazine

Chip-to-chip time	5 s
Number of tool places	240
max. tool diameter	
- with free adjacent places	Ø 160 mm
- with occupied adjacent places	Ø 80 mm
max. tool projection length	350 mm
max. tool mass	10 kg
max. tilting torque	10 Nm
max. speed Q-axis (Cross/Horizontal movement)	1.000 m/min
max. speed V-axis (Vertical movement)	70 m/min

Dimensions / Space requirement, approx.

Weight, machine	12.800 kg
Dimensions L x W x H	4.600 x 3.920 x 2.442 mm
Installation height, over bed lower edge, approx.	2.842 mm
Height bed lower edge above floor	125 mm



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 and 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 stability

High milling capacity and
powerful drives

Fast set-up

Lower cost per piece

Simple operation

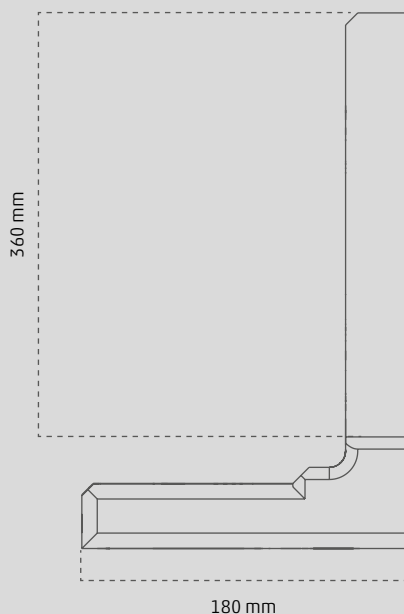
Highest precision and
processing quality

Easy maintenance

From small parts to large workpieces – Complete precision machining, with the lowest cost per piece

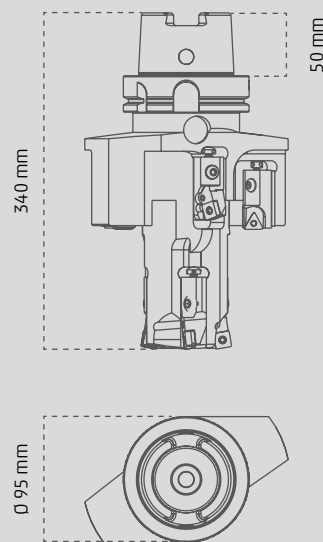
We love perfection

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.



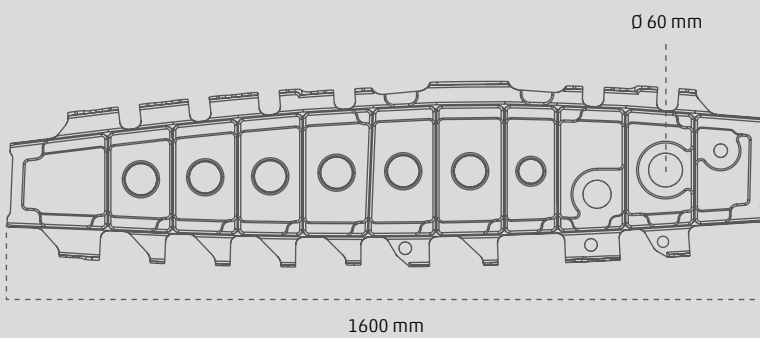
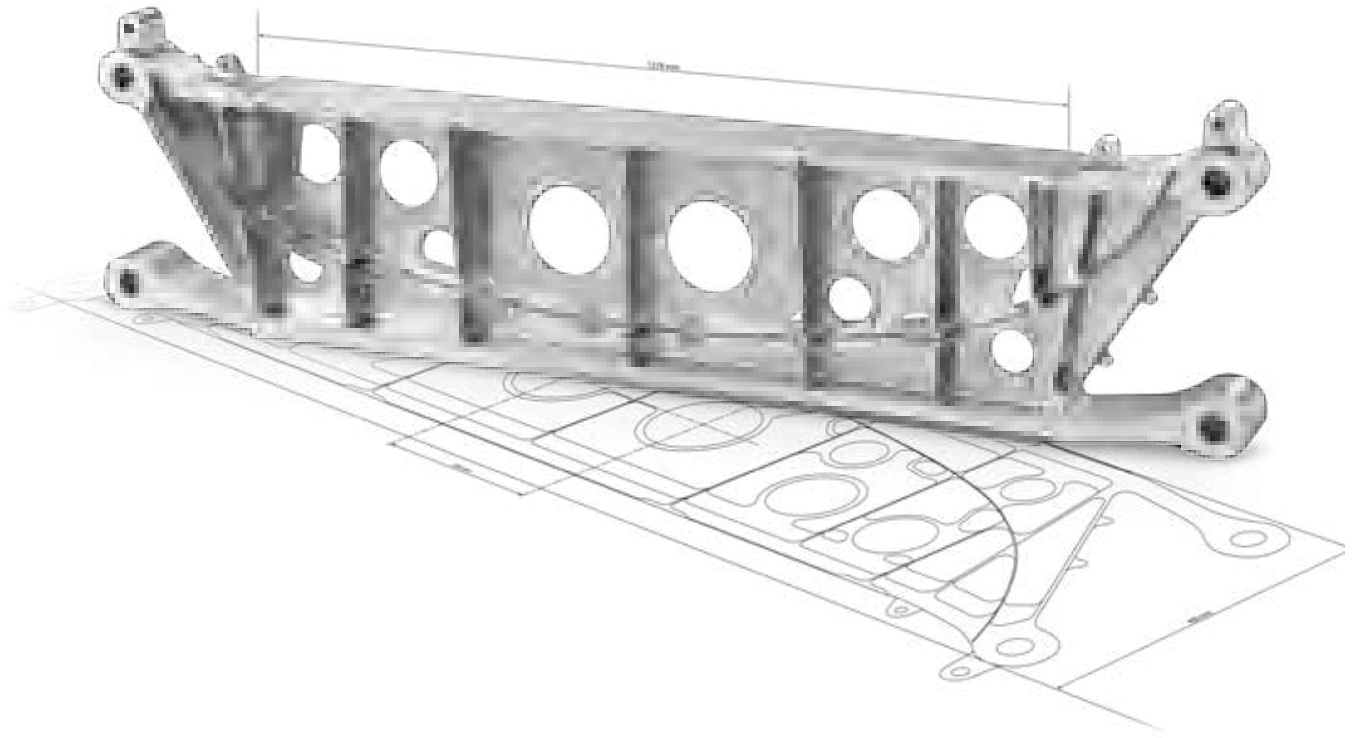
Mechanical Engineering

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



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)

High-tech modules for any application – Perfectly tuned for flexibility



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.

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 and 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-A63).



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 $\varnothing 500$ 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 five axis and MILL 1250 five axis) or 5-axis-machining with pendulum working (MILL 2000 five axis, MILL 3000 five axis).



Precision machining centre with NC swivel head, integrated NC rotary table with face plate $\varnothing 500$ mm.

The right machine for each component

Variants and extension options



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.



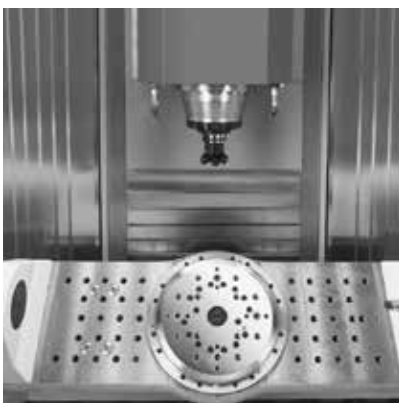
MILL 800 mill turn

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.



Process advantages

– Travel X – Y – Z max.	6,000 – 915 – 715 mm
– Power max.	75 kW
– Spindle speed max.	20,000 min ⁻¹
– Torque max.	280 Nm
– Chip-to-chip time from	2.9 s
– Axis acceleration X – Y – Z max.	11 / 12 / 17 m/s ²
– Rapid feed max.	75 m/min
– Milling capacity in ST 60 max.	900 cm ³ /min
– Number of tools max.	163
– Tool taper	SK-40 oder HSK-A63
– Tool weight max.	8.0 kg
– Tool diameter max.	160 mm
– Tool length max.	370 mm



MILL 2000

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

			Spindles & spindle systems					
			Automatic tool changer					
			Table options					
			MILL 800	MILL 1250	MILL 2000	MILL 3000	MILL 4500	MILL 6000
FZ	CHAIN	L	•	•	•	•	•	•
S-HEAD	CHAIN	L	•	•	•	•	•	•
FZ	CHAIN	FX	•	•	•	•		
S-HEAD	CHAIN	MT	•		•			



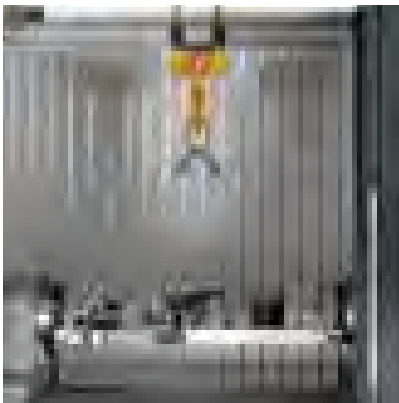
A powerful and flexible large work area for fast, economical production

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

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.



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.



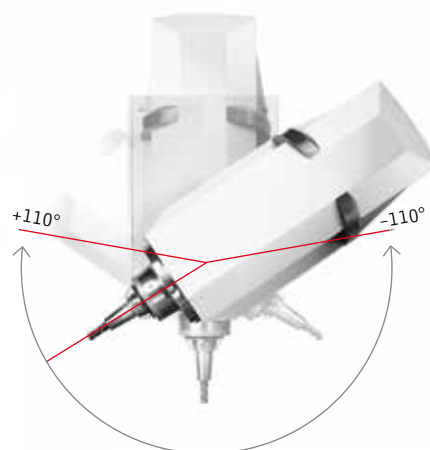
MILL 1250

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.



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

Strong performance with large traverse paths in X



MILL 8000

Precision machining centre with open machine bed and clamping cube, NC swivel head and optionally constructed, chip-proof centre partition wall for fast long bed production.

5-axis workpieces up to 8 m in length can be easily clamped and economically produced.



The highest precision



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
- 4th 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 \varnothing 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.

Complete machining with CHIRON five axis

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

	MILL 800 five axis	MILL 1250 five axis
2-axis swivel rotary table		
Swivel range	$\pm 120^\circ$	$\pm 120^\circ$
Face plates	\varnothing 280 mm	\varnothing 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	\varnothing 940 x 430 mm	\varnothing 1,380 x 600 mm
Swing diameter	\varnothing 780 mm	\varnothing 1,010 mm

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

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



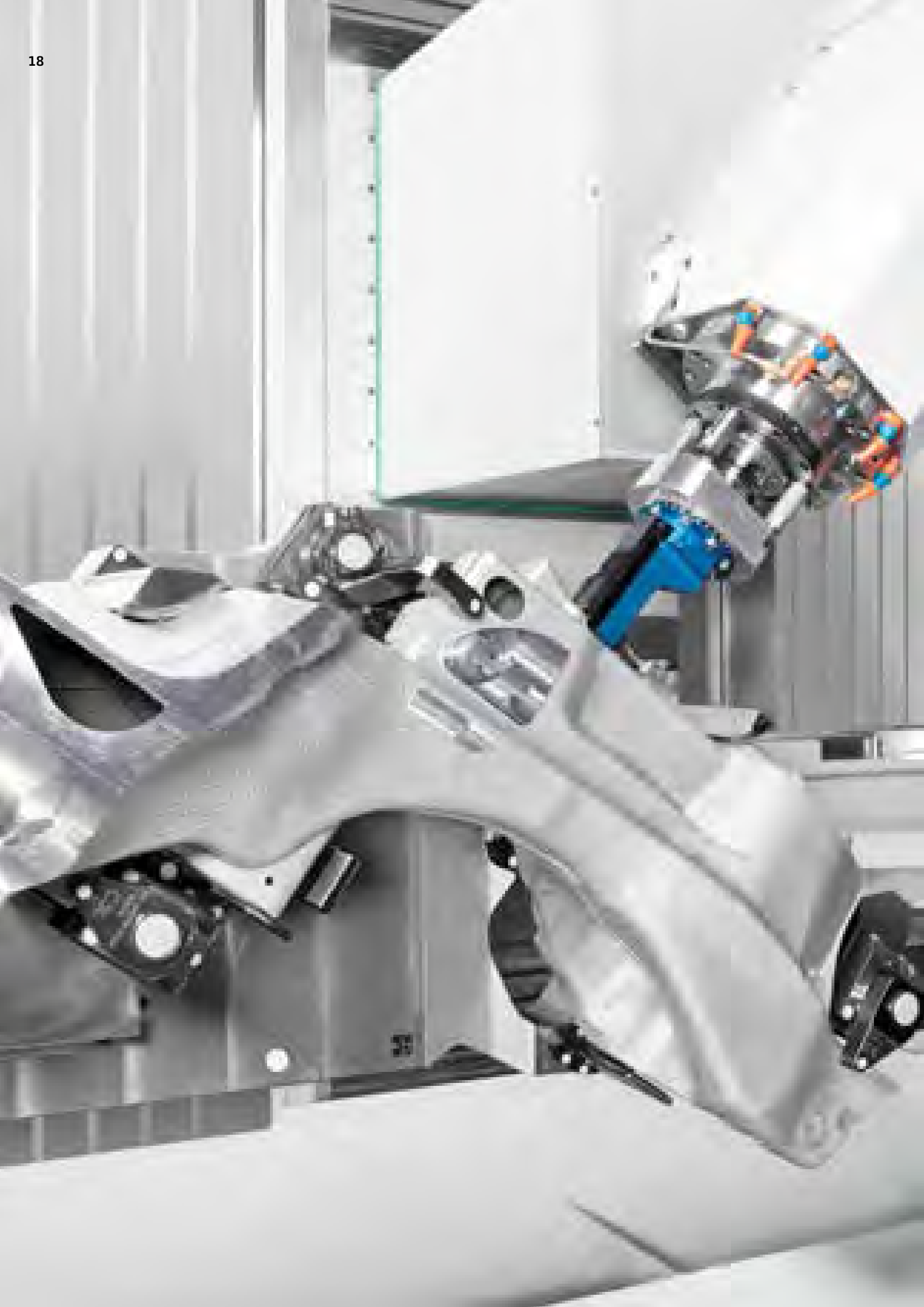
Separation of the workpiece



Drilling and thread cutting



CHIRON Laser Control for tool breakage detection,
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.

MILL Series – 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

Turnkey customization completely from one source

Individual automation and engineered solutions for higher productivity



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



Customized automation solutions

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

CHIRON TURNKEY

Your benefits

- 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



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 proces« 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.

Analyzing

Conceptual
designing

Specifying

Implementing

Profiting

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 software modules

User

ConditionLine	<ul style="list-style-type: none"> – Early detection of unusual operation behavior – Constant monitoring and analysis of the machine condition – Customized degree of networking 	<ul style="list-style-type: none"> – Maintenance engineer – Service
ProtectLine	<ul style="list-style-type: none"> – Collision monitoring in all types of operation – Preventative collision protection – Safety during machining 	<ul style="list-style-type: none"> – Machine operator – Maintenance engineer
TouchLine	<ul style="list-style-type: none"> – Context-sensitive information – Machine-specific support – User-guided operation 	<ul style="list-style-type: none"> – Machine operator – Maintenance engineer – Installer
Remoteline	<ul style="list-style-type: none"> – Machine remote access – Rapid assistance in event of fault – Automatic notifications – Optimum data security 	<ul style="list-style-type: none"> – Maintenance engineer – Service
DataLine	<ul style="list-style-type: none"> – Visualization of machine condition and process progress – Configurable system – Real-time information about all machinery 	<ul style="list-style-type: none"> – Production planner – Head of manufacturing – Controlling
ProcessLine	<ul style="list-style-type: none"> – Digital twin and post-processor – »Digital« process run-in – Collision-tested NC program 	<ul style="list-style-type: none"> – Production planner



Trainings and 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 a 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
- Robots
- Customer-specific



Brands of the CHIRON Group

chiron

STAMA

CMS

FACTORY⁵

■ CHIRON Group R&D, Production, Sales & Service

GERMANY	Tuttlingen, Neuhausen Schlierbach	USA	Charlotte, NC
SWITZERLAND	Iséables, VS	CHINA	Taicang

■ CHIRON Group Sales & Service International

FRANCE	Villeneuve-la-Garenne	USA	Plymouth
ITALY	Rodano Millepini	CHINA	Beijing
TURKEY	Istanbul	INDIA	Bangalore
POLAND	Paniówki	MEXICO	Querétaro
CZECH REPUBLIC	Brno		

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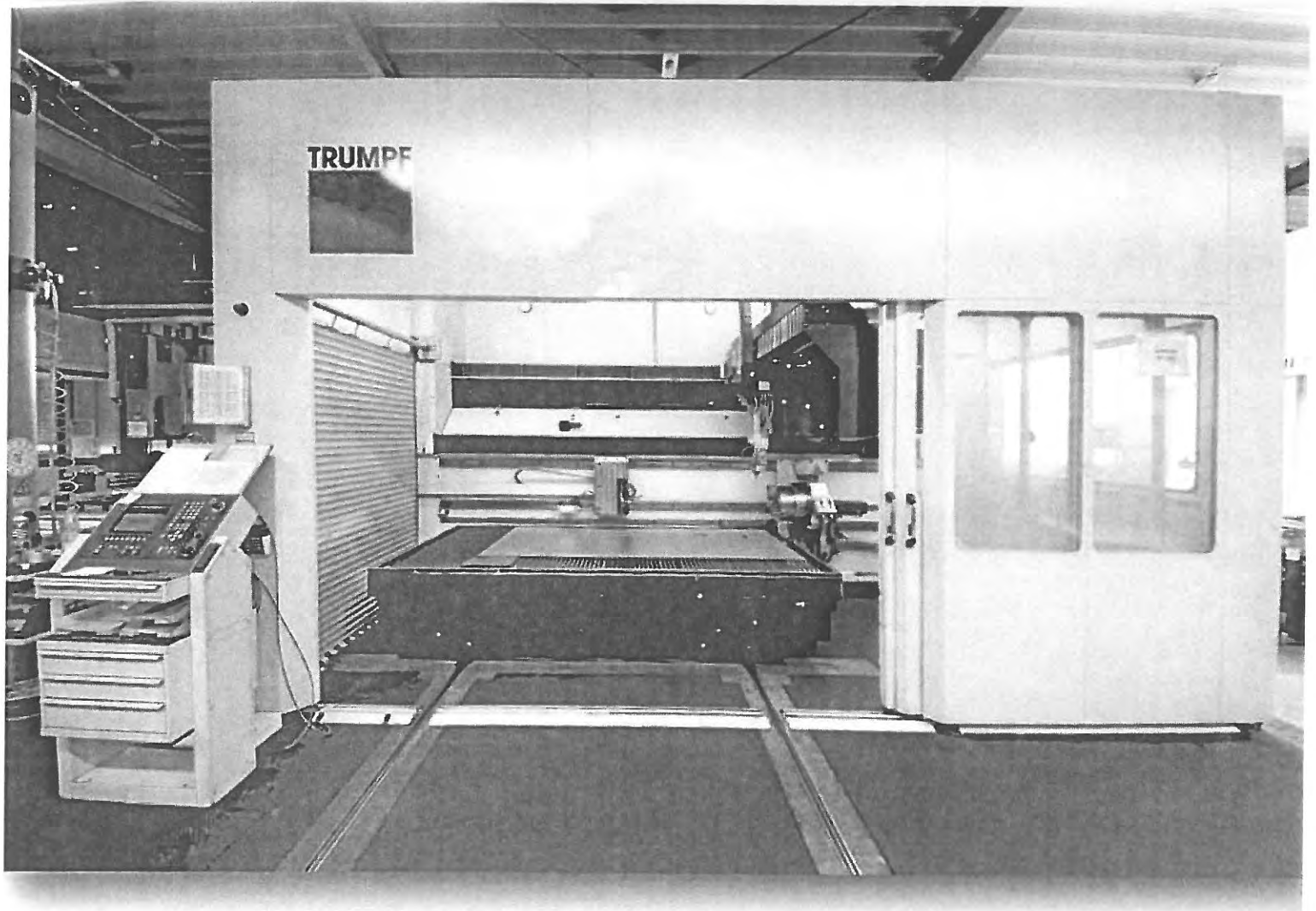
The CHIRON Group is a global company specializing in CNC vertical milling and mill-turn machining centers, as well as turnkey manufacturing solutions. The Group has a global presence, with production and development sites, sales and service subsidiaries, and sales agencies worldwide.

www.chiron-group.com



TRUMPF | TLC 1005

6 axes universal machining center



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MACHINE INFO

6 axes universal machining center

Manufacturer	TRUMPF
Year of manufacture	2001
Control	SIEMENS SINUMERIK 840 D
Machine number	24 04 09
with CNC rotary axis/rotary table for tube machining	Ø 400 mm
Working area	X axis – 3.000 mm Y axis – 1.500 mm Z axis – 500 mm C axis – n x 360° B axis - +- 120° A axis (rotary table) – n x 360°



EQUIPMENT

C axis (Rotational movement at Z)
Rotary range n x 360°

B axis (swivel movement at Y)
Swivel range +/- 120°

Machine basic body

-welded one-piece frame, performed as a welded construction

„Flying optics“ with 3 CNC controlled linear axes X, Y, Z and digital AC drives

Travel range:

X axis: 3.000 mm

Y axis: 1.500 mm

Z axis: 500 mm

Control panel

CNC control SIEMENS SINUMERIK 840 D designed for 6 axes.
Communication interface integrated in the control cabinet.
Pedestal with side table shelf, drawers and keyboard.

Floppy drive 3 ½“ integrated in the control panel

5-axis transformation

Teach-Panel

Thank you very much for your interest



We do not guarantee the accuracy and completeness of these documents. We further do not assure any characteristics and qualities. The named machine, which is up for sale, is used.