B 300

The precise entry into 3- to 5-axis technology

HERMLE

B 300

The precise entry into 3- to 5-axis technology

Hermle has set the trend with its proven, very compact design principle in modified gantry design as well as the swivelling rotary table located on both of the side walls. The consistent modular structure of the standard machine through to the flexible manufacturing system covers a large area of applications.

The B 300 is based on this concept and is located below the C series. It is the precise entry into 3- to 5-axis technology. With typical Hermle accuracy and quality, no shortcuts were taken. The individual options were adapted to the possible area of application.

The B 300 –
an asset for all sectors

Tool and mould making
Precise 3- to 5-axis technology

Medical engineering
Difficult to machine material

Aerospace
Precision in perfection

Mechanical engineering
High torque for good metal cutting performance

Motor sport
Highest precision at high availability

Subcontract industry
Dynamic, precise and reliable

B 300

The precise entry into 3- to 5-axis technology

3 axes in the tool
component independent dynamics

Central drive
centrally arranged Y axis main drive

Force characteristics
three guideways with one guideshoe for ideal force balance

Linear axes
above the working area

Collision protection
with collision monitor

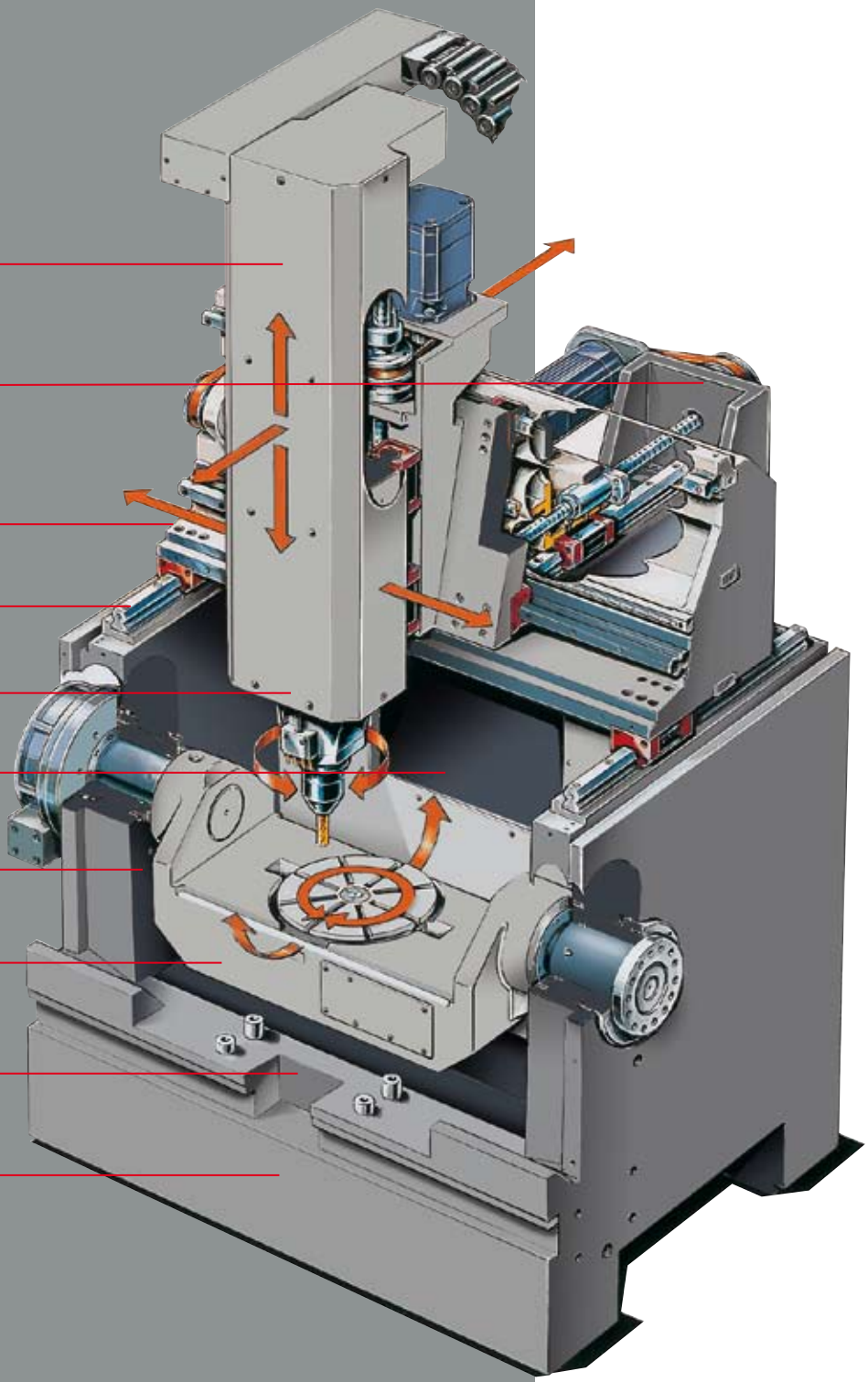
Pick up magazine
integrated in the base, thereby saving space

Ideal chip clearance
dry machining

Accessibility
very good ergonomics

Modified gantry design
with ideal main axis support

Mineral casting design
very good vibration dampening properties



Design principle
- Modified gantry design, the disadvantages of the conventional gantry design have been avoided
- Three axes in the tool, thus workpieces independent dynamics, ideal pre-requisite for rapid traverses and feed up to 30 m/min.
- Drives and guideways outside/above the working area
- Z axis with electrical and mechanical quick stop against uncontrolled drop
- Compact design, thus little space required
- Complete transport
- No foundation required (3-point-support)
- Optimised static and dynamic properties
- Maximum utilisation, positioning and long term accuracy
- Short positioning and start times on account of high acceleration of 5 m/s^2

Mineral casting version
- Mineral casting has excellent cushioning properties, very low thermal conductivity and will not absorb moisture
- Extremely high form and countour accuracy on all surfaces
- Optimum surface finish in combination with very tight tolerances
- Ecological manufacturing and disposal of mineral casting

Drives and guideways
- Y slide as a traverse rests on three carriages with three staggered guideways
- Good guideway ratio of the traverse through three-point rest and central drive
- Ball screw and position measuring system are in direct vicinity of the central linear guideway
- Very rigid dynamic cross slide rest
- Roller recirculating guideways in all linear axes, thus constant dynamic conditions
- Digital AC servo motors with pretensioned ball screws
- Permanent position monitoring system
- Low-maintenance automatic central grease lubrication system

Tool change
- Automatic tool change in cycle
- Ring magazine for 30 tools as SK 40 or HSK A 63
- Integrated in the machine base unit
- Protected outside of the working area, thus no contamination of the tools

Electronics
- Digital drives
- Absolute, direct measuring systems
- Proven control technology with the iTNC 530 from Heidenhain
- Frequency-based recovery of the braking energy into the mains
- Switch cabinet with air-conditioning unit
- Entire electronics are integrated into a central switch cabinet

Machine

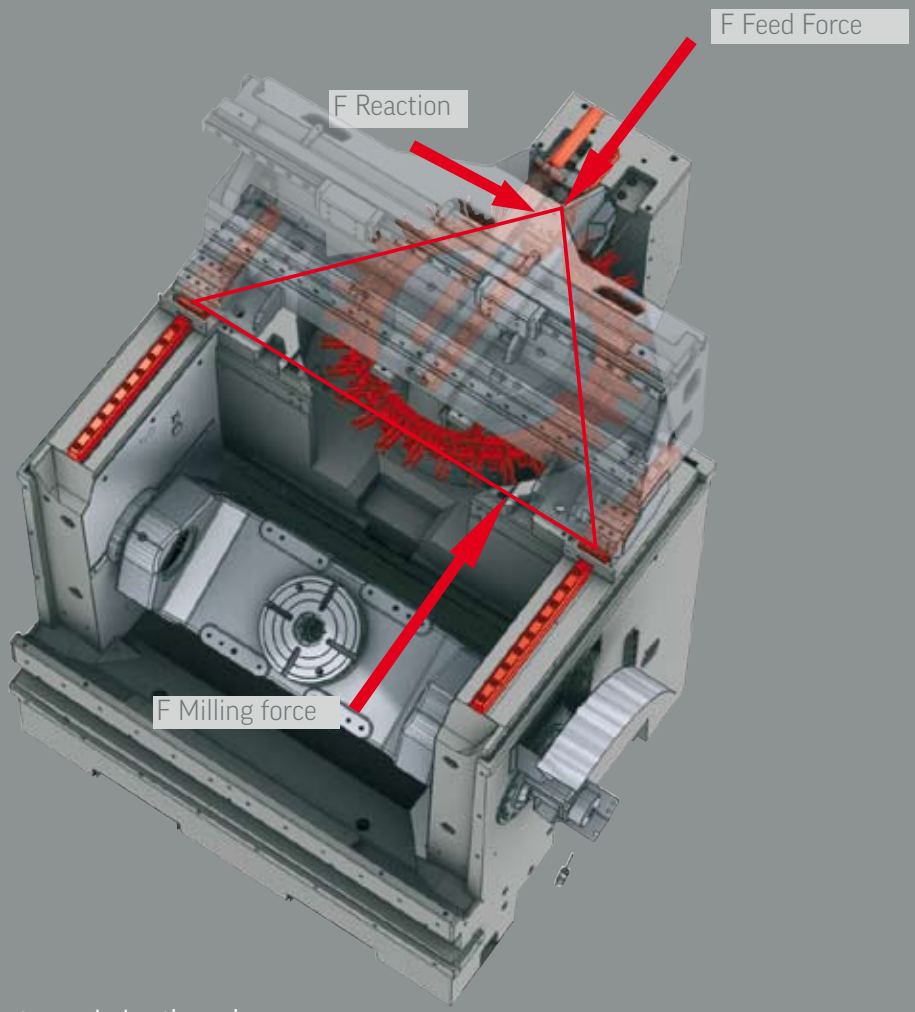
ADVANTAGES OF A UNIQUE MACHINE CONCEPT

LARGEST WORKING AREA RELATIVE TO THE INSTALLATION SURFACE

UNIQUE AXIS CONCEPT

SHORT CHIP-TO-CHIP TIMES ON ACCOUNT OF INTEGRATED TOOL MAGAZINE

SINGLE LIFT TRANSPORT AND BOLT FREE INSTALLATION



Ideal power transmission through
three staggered guideways with central drive

Working area	
Traverse X-Y-Z	800-600-500 mm
Rapid linear traverse X-Y-Z	30 m/min
Linear acceleration	5 m/s²

Main spindle drive	
Speed	15,000 rpm
Torque	up to 165 Nm
Main power	up to 19 kW
Tool interface	SK 40 / HSK A 63

5-axis design	
NC-controlled swivelling rotary table	
Clamping surface	Ø 280 mm
with adjacent clamping plate	800 x 370 mm
Swivelling range	+/- 110°
Table load	250 kg

3-axis design	
Rigid clamping table	
Clamping surface	1000 x 560 mm
Table load	1500 kg

Tool changer (pick up)	
Magazine positions	30
Chip-to-chip time*	approx. 6.0 s

Control	
Heidenhain	iTNC530

*(chip-to-chip times were determined in accordance with VDI 2852, sheet 1 in 3-axis design)

Tables

HIGH DEGREES OF FREEDOM IN THE WORKING AREA

TABLE LOADING WITH 3 AXES (UP TO 1,500 KG AT HIGHEST PRECISION)

NO CHIP COLLECTION ON THE TABLE (TABLE SWIVELLING WITH 5 AXES)

SWIVELLING AXIS A AND ROTARY AXIS C ARE IN THE WORKPIECE

U-SHAPED DESIGN OF THE NC SWIVELLING ROTARY TABLE

WIDE TRUNNION SUPPORT DISPLACEMENT RESULTS
IN A LARGE COLLISION FREE CIRCLE

SWIVELLING AXIS A IN THE COMPONENT
Complicated 5-side machining processes are carried out by comparatively small traverses of the linear axes

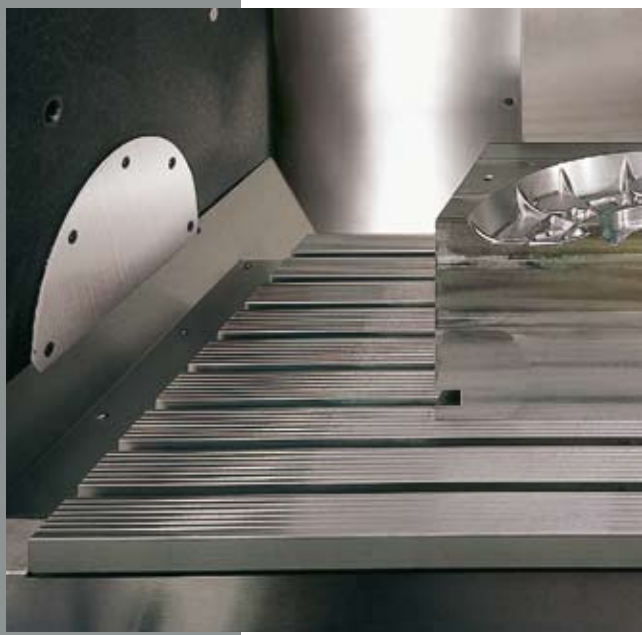
VERY LARGE COLLISION CIRCLE
Optimum utilization of the working area

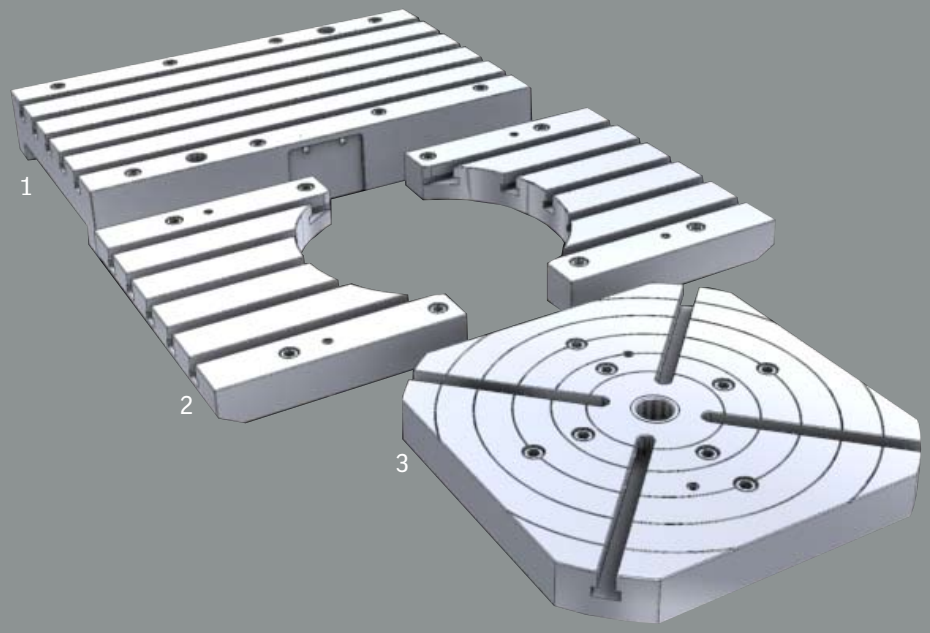
SEPARATION OF THE ROTARY AND SWIVELLING AXES
User and programmer friendly based on easy follow-up of the table movements

TABLE LOAD
Large loads on the NC-controlled rotary table and on the rigid clamping table

ADJACENT CLAMPING PLATES
Highly flexible workpiece arrangement. Multi-sided machining (see below)
left: pre-machining - centre: 5-axis machining - right: 6th side machining

Figure presents only the clamping situation and does not show the original table.





NC-controlled swivelling rotary table	
Clamping surface:	Ø 280 mm
Collision circle of the table jaws:	Ø 900 mm
Swivel range:	+ / - 110°
Speed - swivelling axis A:	10 1/min
Speed - rotary axis C:	15,5 1/min
Type of drive:	worm
Maximum table load:	250 kg
T-grooves:	star 4 / 14 H7
1 Upper clamping plate (option)	800 x 370 mm
2 Adjacent clamping plates (option)	800 x 370 mm
3 Clamping plate (option)	Ø 450, 370 x 370 mm

Rigid clamping table	
Clamping surface:	1000 x 560 mm
Maximum table load:	1,500 kg
T-grooves:	parallel 8 / 14 H7

Spindles

HIGH-TECH SPINDLE FOR DEMANDING MILLING PROCESSES

COLLISION PROTECTION WITH COLLISION MONITORING

SLIM-END SPINDLE FOR MACHINING DEEPER CAVITIES

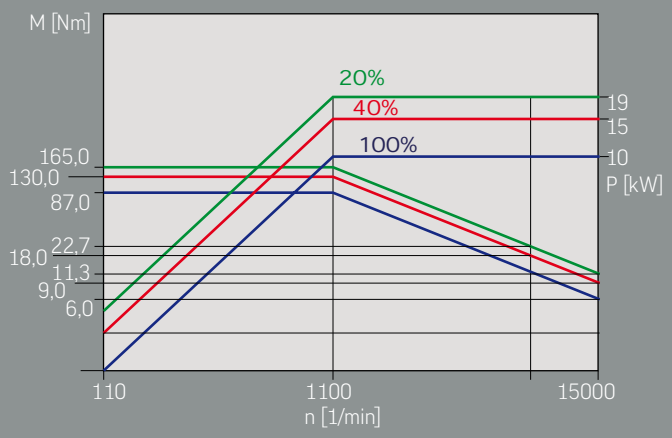
FEW IRREGULAR EDGES (PREVENTION OF COLLISION)

TWO-PART SPINDLE (FASTER REPLACEMENT)

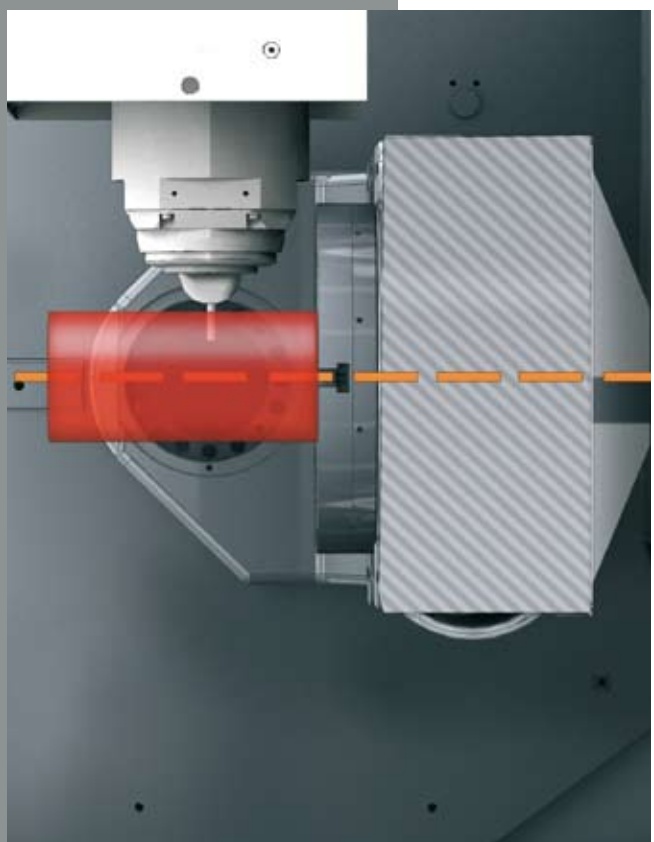
Each spindle has six displacement sleeves to absorb the collision energy.

Prior to a collision

After a collision



Very slender spindle head.



Spindle	
Spindle speed:	15,000 rpm.
Torque:	165 Nm
Main power:	19 kW
Interface:	SK 40 / HSK A 63
Collision protection:	Displacement sleeves

Magazine

PICK UP MAGAZINE

INTEGRATION INTO THE MACHINE BASE

VERY GOOD ACCESSIBILITY

CONTROL PANEL MOVEABLE TO THE LOADING POINT

Tool changer (pick up)	
Magazine positions:	30
Chip-to-chip time*:	approx. 6,0 s
Maximum tool length:	300 mm
Maximum tool diameter:	Ø 80 mm
Maximum tool diameter with corresponding adjacent pocket use:	Ø 125 mm
Maximum magazine load at 30 units:	120 kg

*(chip-to-chip times were determined in accordance with VDI 2852, sheet 1 in a 3-axis design)

Options

OPTIONS FOR

THE INDIVIDUAL APPLICATION POSSIBILITIES

THE PROCESS SAFETY

THE ECONOMIC EFFICIENCY

Options in detail

- Chip conveyor (scraper belt conveyor)
- Chip cart
- Cabin top
- Electrical hand-held control module
- Electrical thermal compensation
- Touch probe
- Air blow internal + external
- Oil mist extractors
- Air purge for glas scales
- Event messenger
- Tool breakage monitoring system
- Tool measurement

Control

HEIDENHAIN iTNC 530

3D SOFTWARE

15“ TFT-TECHNOLOGY

USER-DEFINED SOFTKEYS

smarTNC

CONTROL FOR DEMANDING MILLING PROCESSES

Whether for tool and mould making or in production.

SAFE CONTROL

Control with integrated safety technology keeping with category 3 described in European standard EN 954-1.

E-MESSENGER

Increases the availability of the machines and minimises production failures.

TELESERVICE

Teleservice ensures even faster support in case of programming and operating problems.

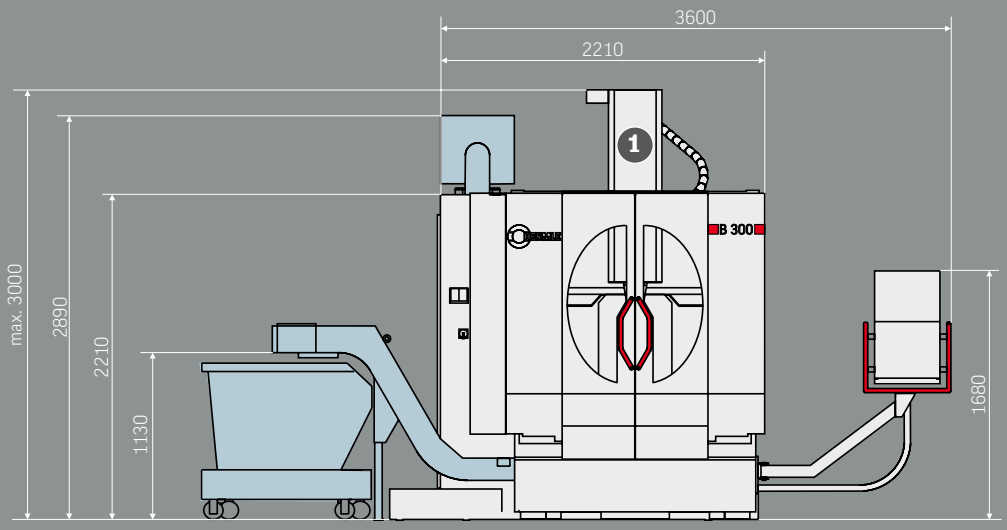
* For detailed information, please refer to the individual leaflets.

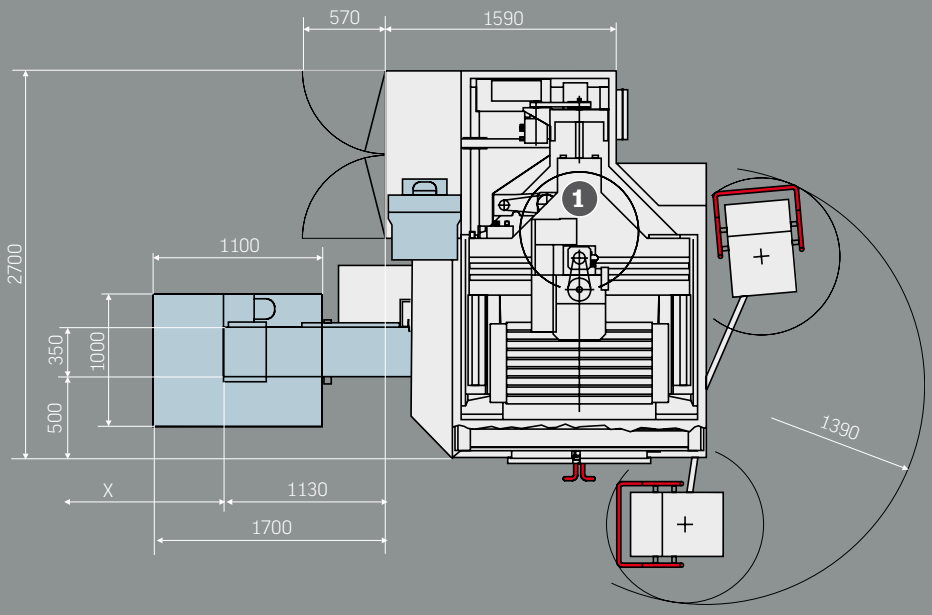
Technical data

Working area	Traverse	X axis	800 mm	
	Traverse	Y axis	600 mm	
	Traverse	Z axis	500 mm	
	Linear rapid traverse	X-Y-Z	30 m/min	
	Linear acceleration	X-Y-Z	5 m/s²	
	Linear feed force	X-Y-Z	8000 N	
Main spindle drive	Speed	15,000 rpm.	SK 40 / HSK A 63	
	Main power / torque	20% c.d.f.	19 kW / 165 Nm	
Control unit	Heidenhain		iTNC 530	
Tool changer (pick up)	Magazine pockets		30	
	Chip-to-chip time*		approx. 6.0 s	
	*(Chip-to-chip times were determined in accordance with VDI 2852, sheet 1 in a 3-axis design)			
	Maximum tool length		300 mm	
	Maximum tool diameter		Ø 80 mm	
	Maximum tool diameter with corresponding adjacent pocket allocation		Ø 125 mm	
	Maximum magazine load at 30 units		120 kg	
Table variants		NC-controlled swivelling rotary table Ø 280 ●	Rigid clamping table ●	
	Clamping surface	Ø 280 mm	1000 x 560 mm	
	Swivel range	+ / - 110°	-	
	Speed - swivelling axis A	10 rpm.	-	
	Speed - rotary axis C	15,5 rpm.	-	
	Maximum table load	250 kg	1500 kg	
	T-grooves radially arranged	4 / 14 H7	-	
	T-grooves parallel	-	8 / 14 H7	
	Adjacent clamping plates	800 x 370 mm ●	-	
	T-grooves parallel	5 Stück / 14 H7	-	
	Upper clamping plate	800 x 370 mm ●	-	
	T-grooves parallel	5 Stück / 14 H7	-	
	Clamping plate	Ø 450, 370 x 370 mm ●	-	
	T-grooves radially arranged	4 Stück / 14 H7	-	
Position measuring system direct	Resolution		0,0001 mm	■
Position tolerance	Tp in X-Y-Z axis keeping with German standard VDI/DGQ 3441 (determined at 20° Celsius +/-1° Celsius constant ambient temperature. Our products are subject to German export laws and exports have to be approved as the achievable accuracy may be smaller / equal than 6 µm.)		0,008 mm	■
Volume of coolant	Amount of coolant		300 l	■
Swarf	Removable swarf			■
Chip conveyor	Scraper belt conveyor			●
	Ejection height of swarf conveyor		1100 mm	
	Chip cart		450 l	●

Hermle AG reserves the right to carry out modifications without prior notification, which may lead to deviating technical data.

Dimensions





Options

Electrical heat compensation	●
Electrical hand-held control module	●
Touch probe including preparation	●
Preparation for touch probe	●
Tool breaking monitoring	●
Tool measuring system	●
Coolant nozzle	●
Blowing attachment internal + external	●
BDE signal	●
Event messenger	●
Cabin top	●
Oil mist extractor	●
Air purge for glas scales	●
Swarf	●
Chip conveyor (Scraper belt)	●

Transport dimensions	B 300
Width	2425 mm
Depth	3800 mm
Height	2850 mm
Pull-out dimension	Chip conveyor
X	min. 1760 mm

■ standard equipment
● to order

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The information in this leaflet only contains general descriptions or performance characteristics which in a real application do not always meet the description or which may change by further development of the products.
The requested performance parameters shall be binding only, if they are explicitly agreed within the sales contract.

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