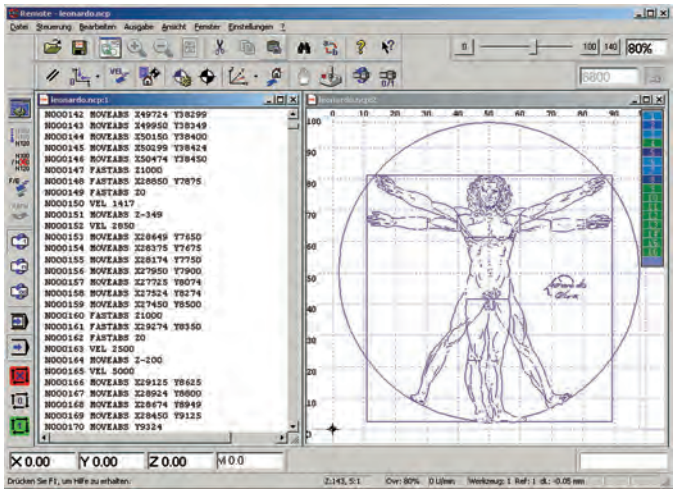
Remote

Control software for Windows



General

Remote is a universal control program for outputting files for machining methods milling, drilling, adhesive bonding, engraving, applying and water jet cutting or laser cutting/welding.

Supported file formats are the isel-specific NCP format (ASCII file with machining data generated by a CAM post-processor, the isel-specific CNC format (ASCII files in an expanded format for universal use in the process automation area, generated by ProNC) and the G-code format to DIN 66025.

Remote is used first and foremost for controlling CNC machines operating different tasks and processes, which is why flexibility is a key feature of the program. A large choice of options allows easy adaptation to current requirements in each case.

Features

- Support for digital joysticks
- "Fast file selection" control panel for serial production
- Milling/multiple output with movements
- Graphic depiction of the processing file with zero point and dimensions

isel-NCP, DIN66025/G-code file formats

- Linear and circular interpolation, helical interpolation, drilling cycles
- Access to digital and analogue inputs and outputs
- When using a CAN controller: "On-the-fly" input/output (without stopping the movement) for metering applications
- Message window, messages in the status line, time delay, input of variable values
- Definition and use of machine positions (tool zero point, park position, home position, etc.)

Additional features for the isel-CNC file format (ProNC output format)

- Repeating loops, counting loops, unconditional and conditional branches
- Arithmetic and trigonometric functions
- Sub-program systems
- Real and symbol chain variables
- Loading and storing process variables
- Access to user-specific expansions, option to call up user software

Ordering information

Part no.: **Z12-334500**
Remote - software for CAN-CNC controllers (Windows)

Features

- runs with Windows operating systems (Windows 2000, XP, Vista)
- compatible with previous software versions
- Processing of DIN66025 (G-code) file formats, NCP or CNC
- immediate processing without conversion, File translation or conversion
- integrated text editor with numerous features for rapid corrections to the present NC program
- Use of up to 6 interpolating axes (Cartesian coordinates system and 3 auxiliary axes)
- Look-ahead track processing with CAN controller
- Managing a milling spindle
- 2 I/O units can be used (max. 64 inputs, 64 outputs)
- Signalling inputs and outputs for process synchronisation
- manual axis movement with joystick, keyboard and mouse
- incremental processing and system monitoring for commissioning
- Configurable interface for user-friendly operation, serial production, handshake with master PLC, etc.
- Control panel for movement control, input/output, spindle and tool change with buttons
- Control panel for max. 6 handling axes independently of the interpolating axes
- available in various languages (German, English, French, Magyar)

software

PAL-PC

Process automation software for Windows

General

PAL-PC enables rapid, easy and low-cost implementation of automation projects such as handling systems, drilling machines, clocking devices, test and measurement systems, machines for individual and serial processing and much more....

PAL-PC is a modern program development environment for CNC step motor controllers and CNC machines

PAL-PC uses memory operation (CNC mode) for the target controller. PAL-PC produces automation solutions in which the controller works in standalone mode, i.e. independent of a control computer.

PAL-PC runs with Windows 2000, XP and Vista operating systems.

Features

- Path commands for relative and absolute positioning
- Carry out movement until event occurs at an input
- Teach-in-programming (linear)
- Linear 2D interpolation, switchable to 3D interpolation
- Circular interpolation
- Input signal analysis for process control
- Loops for repeating of instruction blocks
- Unconditional and conditional branches
- Analysis of the program selection unit
- Output of messages to a display
- Sending and receiving synchronisation marks
- Additional aids for automated processing of typical tasks

Ordering information

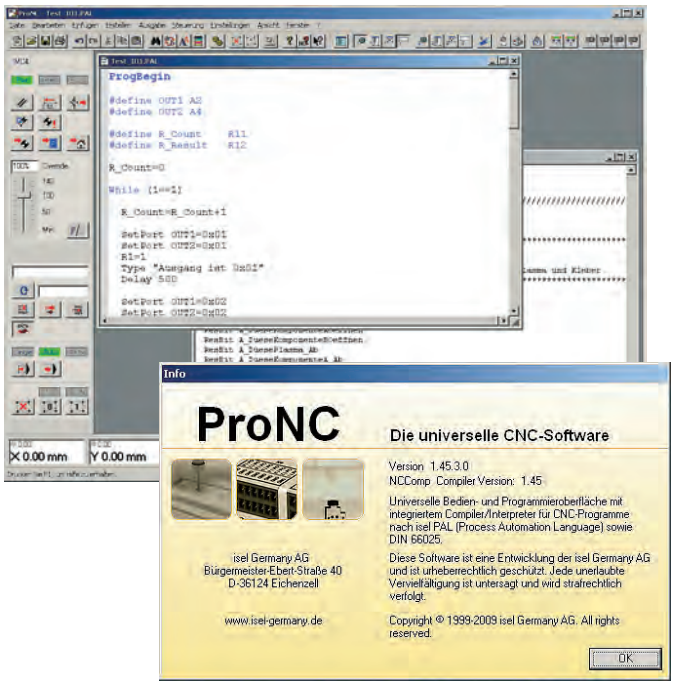
Part no.: **Z11-331810**
PAL-PC - software for CAN-CNC controllers (Windows)

Features

- compatible with previous versions (PAL-PC programs, which were produced with an earlier release of PAL-PC, can be used without adaptation)
- Programming to isel-PAL or DIN66025:
  In addition to the PAL format, users who know programming to DIN66025, can also produce their PAL-PC applications with corresponding G-code commands.
- Integrated editor:
  fast and convenient editing of source texts, editor features such as "Search", "Replace", "Copy" and "Insert " automated code generation, multiple Undo/Redo for efficient programming
- PAL-PC can (depending of the type of controller used) control controllers with up to 4 axes
- Terminal for direct communication with the controller
- Downloading of externally generated CNC programs
- Automatic calculation of type and data transfer rate of the connected controller
- Display of compiler errors and navigating to an error in the source code
- Command rapid overview with optional insertion into the program
- Teach-in-programming with keyboard or mouse
- Acceptance in the editor of target positions as formatted source code
- Live status display at the inputs
- Setting outputs during program generation
- available in German and English

ProNC

Process automation software for Windows



General

The basis of any automation solution is a powerful software that enables implementation of practical solutions for existing tasks quickly and conveniently. In these cases, the operating and programming interface ProNC provides an ideal solution.

ProNC runs with the Windows 2000, XP and Vista operating systems.
ProNC is available for a variety of control systems and controllers from isel
ProNC applications can be produced to isel-PAL or DIN66025

ProNC is outstandingly suited to automation solutions in the milling, drilling, metering, installation, handling, loading and quality control fields, in which application programs are produced mainly in text format, using teach-in-features and the integration of contour data sets (e. g. NCP format).

Features

- Path commands for relative and absolute positioning of the interpolating axes
- Programming of additional axes in handling mode
- Circular interpolation, helical interpolation, drilling cycles
- Repeating loops, counting loops, unconditional and conditional branches
- various mathematical and trigonometric functions
- Sub-program systems, symbolic variables
- Real and symbol chain variables
- Message window, messages in the status line
- Loading and storing process variables
- Access to digital and analogue inputs and outputs
- "On-the-fly" input/output (without stopping the movement) for metering applications
- Access to user-specific extension DLLs
- convenient support for debugging (interruption points, monitoring of status and variable)

Ordering information

Part no.: **Z11-333500**
ProNC - software for CAN-CNC controllers (Windows)

Training courses and application solutions to order.

Features

- Programming to DIN66025 (G-codes) or isel-PAL
- compatible with previous software versions (ProDIN, ProPAL)
- integrated text editor with numerous features for rapid and efficient source code processing
- Import of geometric data (NCP, e.g. from isy-CAD/CAM)
- Use of up to 6 interpolating and up to 6 handling axes (with CAN controller)
- Look-ahead track processing with CAN controller
- up to 4 spindle motors can be used
- up to 4 I/O units can be used (max. 64 inputs, 64 outputs)
- Signalling inputs and outputs for process synchronisation
- Teach-in-with joystick, keyboard and mouse
- Offline programming with simulation modules
- incremental processing, hold points and system monitoring for commissioning
- individually expandable with software libraries
- Control panels for movement control, input/output, spindle and tool change with buttons
- Control panel for max. 6 handling axes independent of the interpolating axes
- available in German and English

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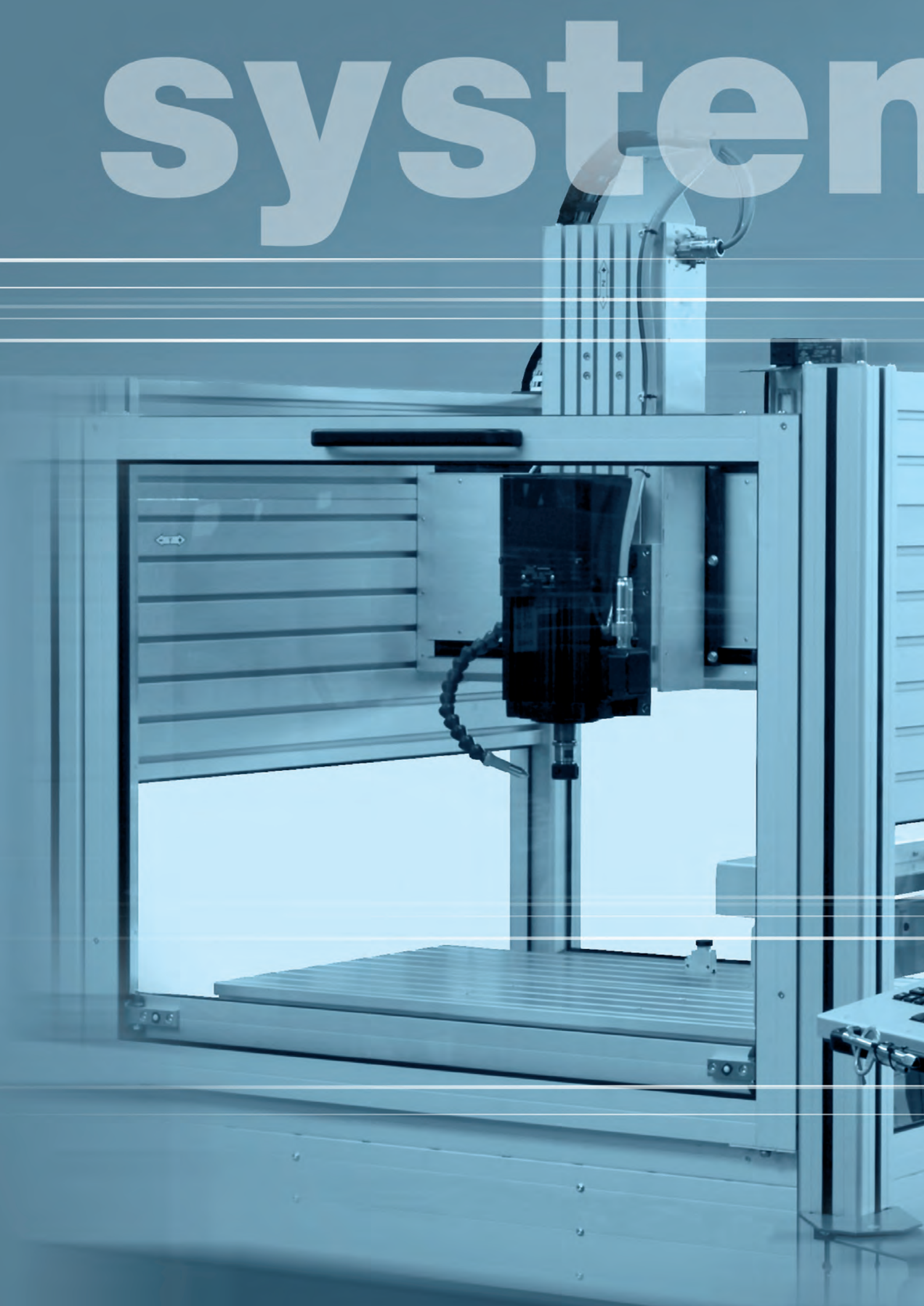

ns

SYSTEMS

CNC machines..... E2
with step motor or servomotor drive

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systems

CNC machines Overview

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CNC machines Overview

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Spindle motors E 19

iSA 500 with manual tool change
iSA 750 with manual tool change
iSA 1500 with manual tool change
iSA 900 with automatic tool change
iSA 2200 with automatic tool change
iSA 3600 with automatic tool change

UFM 500 / UFM 1050

CoolMin tool cooling system E 26

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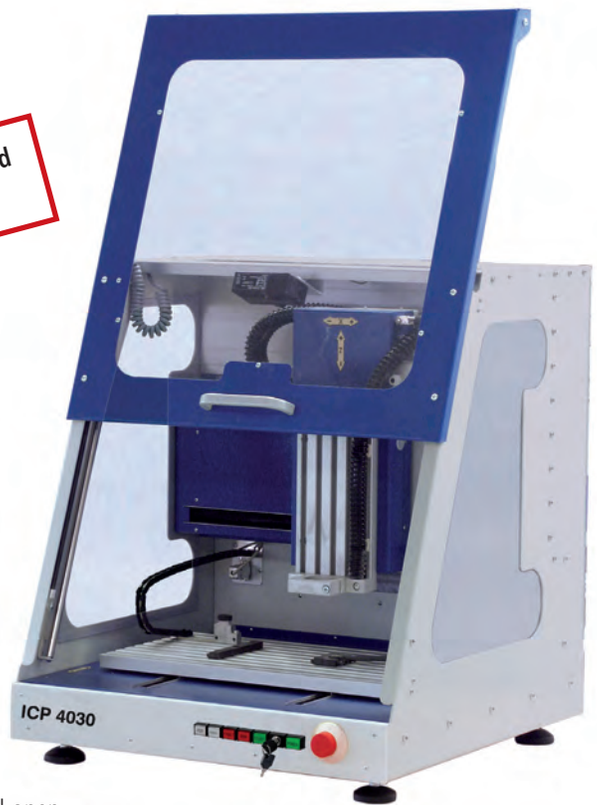
IWH F-2 wafer handling robots
IWH F-3 wafer handling robots
IWH F-5 vacuum robots
Vacuum elevator
Linear track
End effectors
Pre-aligners
Controller and accessories

systems

CNC machine
with step motor drive

ICP

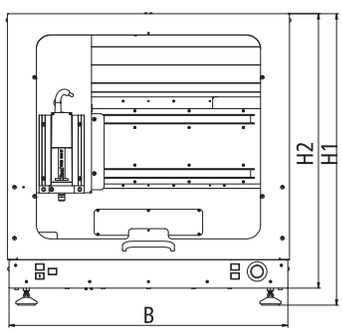
NEW
... with optimised controller.

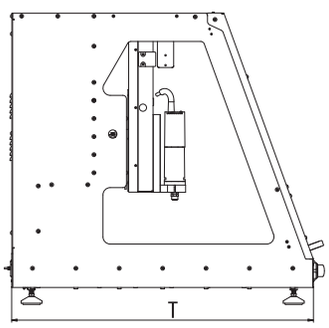


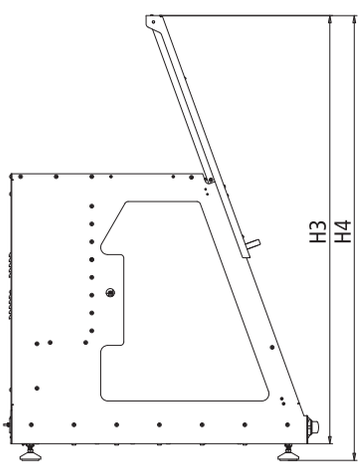
ICP 4030 with hood open

Dimensioned drawings

		ICP 3020	ICP 4030
Width W	[mm]	610	780
Depth D	[mm]	650	850
Height H1	[mm]	715	810
Height H2	[mm]	670	770
Height H3	[mm]	1030	1203
Height H4	[mm]	1080	1250







CNC machine
with step motor drive

ICP

General

CNC machines in the ICP series have been developed from the proven CPM series. By introducing a sliding door, the machines can now be operated in a sitting position which, *inter alia*, leads to shorter cycle times when opening the hood. The chassis is completely bolted instead of being welded like its predecessors. This produces higher precision when building the machine and makes servicing easier. In addition, it was possible to optimise the resonance and vibration behaviour and therefore lower noise build-up has been achieved.

Technical specification

	ICP 3020	ICP 4030
Traverse path X/Y/Z [mm]	300 × 200 × 90	400 x 300 x 140
Clamping table surface W × D [mm]	500 x 250	600 x 375
Throughput [mm]	115	170
Dimensions W × D × H [mm]	610 × 650 × 715	780 × 850 × 810
Guides	Linear units with precision steel shafts and recirculating ball slots, clearance free adjustable	
Process speed X/Y/Z [mm/s]	100	
Repeatability [mm]	± 0.02	
Drive motors	Stepper motors	
Drive elements X/Y/Z	Ball screw drives 16 × 10/16 × 10/16 × 4 mm Clearance free adjustable (optional: 16 × 4 mm in X/Y/Z)	
Controller	iMC-P step controller with 4 final stages 48V/4.2A and 500W power supply unit with processor board	
Operation	Function keys and emergency shutdown	
Software	WinRemote (optional: ProNC, isy 2.5 PLUS)	
Weight [kg]	appr. 102	appr. 120
Part no.:	**280210 7406 ***	**280220 7405 ***

* The deliverables include an accompanying pack with mechanical accessories (*inter alia* Hand lever clamping device, stop rails Triangle wrench, open jaw wrench, hook wrench, Allen key, one 6-socket bench extension, connection lead, power lead)

Accessories

280220 9012	Cooling/spray device for ICP 3020/4030
280120 9010	Length measuring probe for ICP 3020/4030
280120 9004	Workspace lighting for ICP 3020/4030
420003 0500	Milling motor UFM 500, 500 W, 11,000...25,000 r.p.m.
280110 9001	Suction device for UFM 500
Z13-337030	isy-CAM 2.5 PLUS
Z11-333500	ProNC software
310704 1631	iSA 500 spindle motor up to 30,000 rpm, 500 W, with frequency converter, CoolMin tool cooling system, ER 11 clamping ring and motor lead
310707 1631	iSA 750 spindle motor up to 24,000 rpm, 750 W, with frequency converter, CoolMin tool cooling system, ER 16 clamping ring and motor lead (only ICP 4030)
280210 9001	Suction device for iSA 750
280000 0046	Fixing plate for main spindle drive
290055	Vice 1 (W 130 × H 45 × L 152 mm)
290056	Vice 2 (W 180 × H 75 × L 215 mm)

CNC machine
with servomotor drive

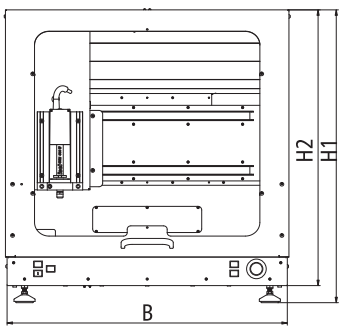
ICV 4030

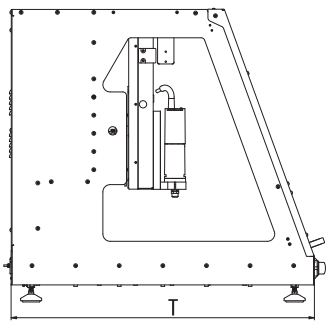
Control unit
... with integrated control computer.

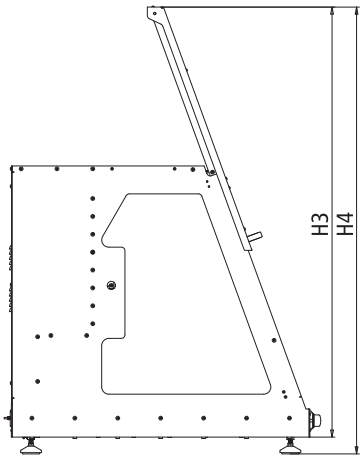
ICV **4030** with hood open

Dimensioned drawings

		ICV 4030
Width W	[mm]	780
Depth D	[mm]	835
Height H1	[mm]	806
Height H2	[mm]	765
Height H3	[mm]	1203
Height H4	[mm]	1250







CNC machine
with servomotor drive

ICV 4030

General note

The ICV 4030 has been developed from the proven, 3D-enabled CNC machine CPV 4030, which is delivered ready for connection to the mains.
The sliding hood, opening upwards, can be operated conveniently from a sitting position. The completely bolted chassis produces higher precision when building the machine and is easier to service. In addition, it was possible to optimise the resonance and vibration behaviour and therefore lower noise build-up has been achieved. Prerequisites for working with the ICV 4030 are simply basic knowledge of CNC systems, general IT literacy and basic knowledge of graphics programs!

Technical specification

	ICV 4030
Traverse path X/Y/Z [mm]	395 x 300 x 100
Clamping table surface W × D [mm]	600 x 375
Throughput [mm]	150
Dimensions W × D × H [mm]	780 x 835 x 806
Guides	Linear units with precision steel shafts and recirculating ball slots, adjustable for no play
Processing speed X/Y/Z [mm/s]	200
Repeatability [mm]	± 0,02
Drive motors	Servomotors
Drive elements X/Y/Z	Recirculating ball transmission 16 × 10/16 × 10/16 × 10 mm clearance free adjustable (optional: 16 × 4 mm in X/Y/Z)
Controller	iMC CAN controller with 3 drive controllers, integrated control computer, I/O module, safety circuit and rest state monitoring Power supply unit 48V/1000 W
Operation	Function keys and emergency shutdown
Software	WinRemote (optional: ProNC, isy 2.5 PLUS)
Weight [kg]	appr. 120
Part no.	**280230 4405 ***

* The deliverables include an accompanying pack with mechanical accessories (*inter alia* Hand lever clamping device, stop rails, triangle wrench, open jaw wrench, hook wrench, Allen key, one 6-socket bench extension, connection lead, power lead)

Accessories

280220 9012	Cooling/spray device for ICV 4030
280120 9010	Length measurement probe for ICV 4030
280120 9004	Workspace lighting for ICV 4030
420003 0500	Milling motor 500 W, 11,000...25,000 r.p.m.
420003 1050	Milling motor 1050 W, 11,000...25,000 r.p.m.
280110 9001	Suction device for UFM 500/1050
280120 9003	Engraving mat, incl. adapter plate
Z13-337030	isy-CAM 2.5 Plus
Z11-333500	ProNC Software
310704 1631	iSA 500 spindle motor up to 30,000 rpm, 500 W, with frequency converter, CoolMin tool cooling system, ER 11 clamping ring and motor lead
310707 1631	iSA 750 spindle motor up to 24,000 rpm, 750 W, with frequency converter, CoolMin tool cooling system, ER 16 clamping ring and motor lead
280210 9001	Suction device for iSA 500/iSA 750
280000 0046	Fixing plate for main spindle drive

Note:
Vacuum clamping plates can be clamped in sizes A5 - A3. (see page E31)

CNC machine
with servomotor drive

EuroMod®

EuroMod MP 30 with closed sliding door

Technical specification

	EuroMod® MP 30	EuroMod® MP 45	EuroMod® MP 65
Traverse path X/Y/Z [mm]	650/300/250	650/450/250	1000/650/250
Clamping table surface W×D [mm]	900x350	900x500	1200x700
Throughput [mm]	350		
Dimensions W × D × H [mm]	1160x800x1700	1160x1110x1700	1480x1510x1700
Processing speed X/Y/Z	appr. 250 mm/s		
Repeatability [mm]	± 0,02		
Drive motors	48V servomotors		
Drive elements X/Y/Z	Recirculating ball drive, clearance free adjustable		
Controller	iMD CAN controller with 3 drive controllers, expandable to 12 axes (max. 6 interpolated & 6 handling axes), PC, I/O module, safety circuit with rest state monitoring, power supply unit 48V/1000 W		
Operation	19" CNC control panel with touch screen, keyboard and mouse		
Weight [kg]	appr. 250	appr. 280	appr. 375
Software	Windows, WinRemote (optional: ProNC, isy 2.5 PLUS)		
Connection values	230V, 16A		
Part no.	**275133 33665**	**275143 33665**	**275153 33665**

* without mounted components on the axes.

CNC machine
with servomotor drive

EuroMod®

systems

General note

The choice of the ideal CNC machine for you should focus both on the clamping area for the workpiece, materials or plates to be machined and on the strategy or difficulties of the machining. In principal, all machines are perfectly suited for machining light metals, non-ferrous metals, plastics and wood . Extensive range of accessories for all our CNC machines to order (see page E18 et seq.).

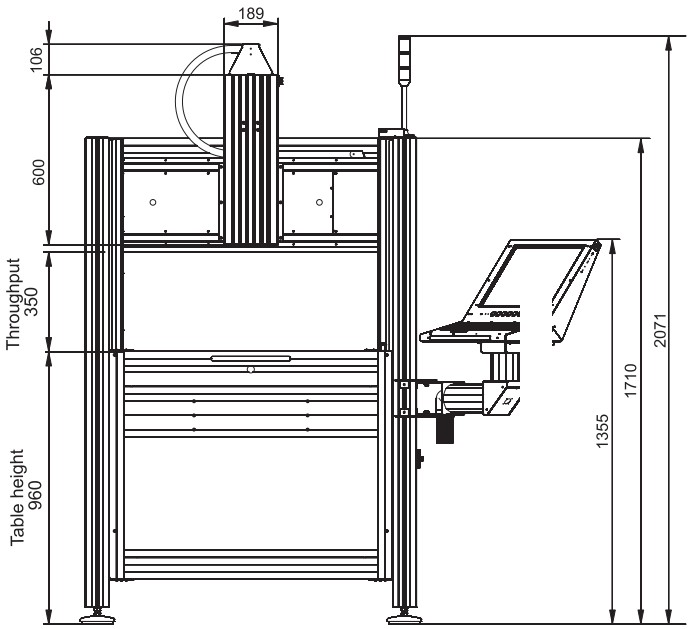
Options

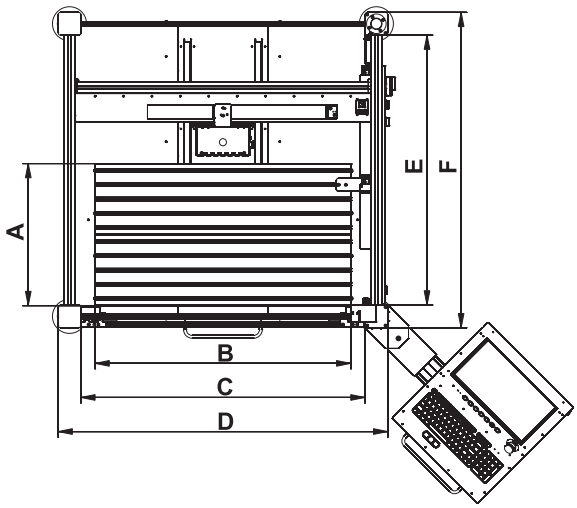
- PC control console with 2 free PCI plug-ins (for use by external PCI hardware)
- Stainless steel keyboard
- Safety light curtain
- Milling and engraving spindles
- SK11/SK20 automatic tool change stations
- Minimum quantity lubrication or CoolMin cooling system
- Vacuum clamping benches
- Suction device
- 4. Axis e. g. RDH series installation
- pneumatic sliding door
- closed hood attachment

Setup

- Portal: fixed, bench: mobile

Dimensioned drawings/dimensions





	A	B	C	D	E	F
EuroMod MP30	350	900	1000	1160	640	800
EuroMod MP45	500	900	1000	1160	950	1110
EuroMod MP65	700	1200	1200	1480	1350	1510

Technical specifications subject to change.

CNC machine
with servomotor drive

FlatCom® M series

FlatCom M 30 without hood

FlatCom M 30 with hood open

Technical specification

	FlatCom® M 20	FlatCom® M30	FlatCom® M40	FlatCom® M50
Traverse path X/Y/Z [mm]	700/600	700/900	1200/900	1200/1400
Z lift [mm]	150 (optional 250, in each case without processing unit)			
Clamping table surface W×D [mm]	750x750	750x1000	1250x1000	1250x1500
Z-Throughput [mm]	200 (optional 300, in each case without processing unit)			
Dimensions W × D × H [mm]	1420x1150x1870	1420x1450x1870	1920x1450x1870	1920x1950x1870
Processing speed X/Y/Z	appr. 250 mm/s			
Repeatable accuracy [mm]	± 0,02			
Drive motors	48V servomotors			
Drive elements X/Y/Z	Recirculating ball drive, clearance free adjustable			
Controller	iMD CAN controller with 3 drive controllers, expandable to 12 axes (max. 6 interpolated & 6 handling axes), PC, I/O module, safety circuit with rest state monitoring, power supply unit 48V/1000 W			
Operation	19" CNC control panel with touch screen, keyboard and mouse			
Weight [kg]	appr. 300	appr. 340	appr. 450	appr. 525
Software	Windows, WinRemote (optional: ProNC, isy 2.5 PLUS)			
Connection values	400V, 16A			
Part no.	275023 32355 **	275033 32355 **	275043 32355 **	275053 32355 **

* without mounted components on the axes.
** with switchgear cabinet and table

CNC machine
with servomotor drive

FLATCOM® M series

General note

The choice of the ideal CNC machine for you should focus both on the clamping area for the workpiece, materials or plates to be machined and on the strategy or difficulties of the machining. In principal, all machines are perfectly suited to machining **light metals, non-ferrous metals, plastics** and **wood** . Extensive range of accessories for all our CNC machines to order (see page E18 *et seq.*).

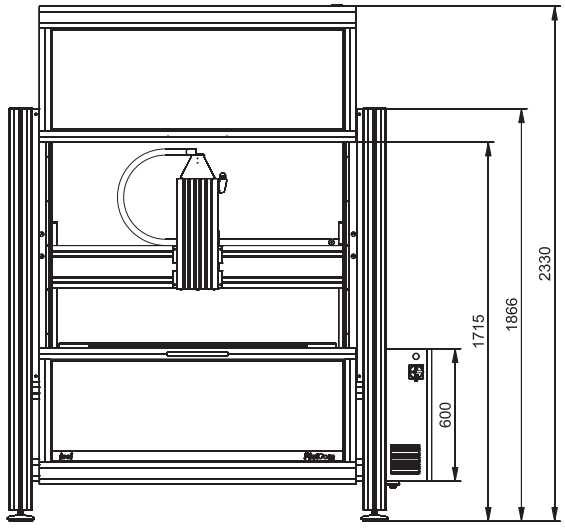
Options

- PC control console with 2 free PCI plug-ins (for use by external PCI hardware)
- Safety light curtain
- toothed belt drive
- Milling and engraving spindles
- SK11/SK20 automatic tool change stations
- Minimum amount lubrication or CoolMin cooling system
- Vacuum clamping benches
- Suction device
- 4. Axis e. g. RDH series installation
- Version without hood
- Maximum 6 interpolated axes + 6 handling axes
- Portal gap 300 mm
- pneumatic sliding door
- closed hood attachment

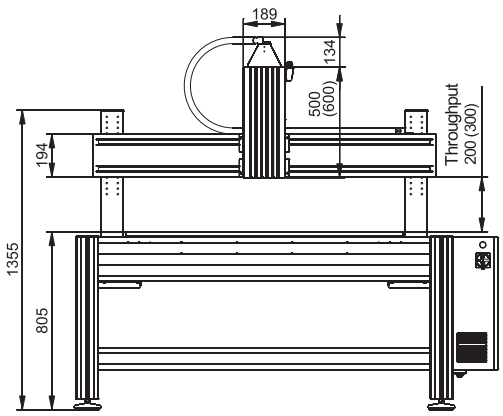
Setup

- Portal: mobile, bench: fixed

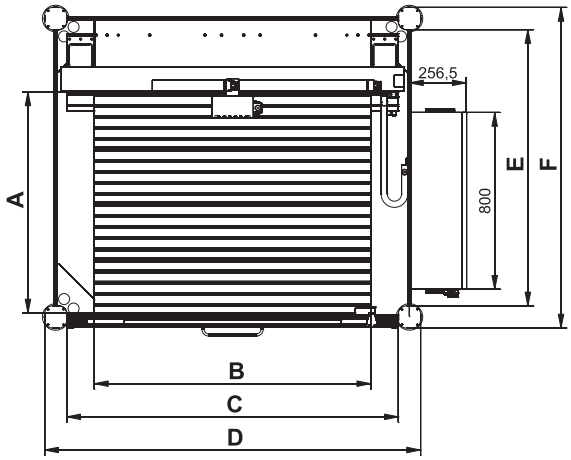
Dimensioned drawings/dimensions



FlatCom with sub-frame and hood



FlatCom with sub-frame, without hood



	A	B	C	D	E	F
FlatCom M20	750	750	1000	1200	950	1150
FlatCom M30	1000	750	1000	1200	1250	1450
FlatCom M40	1000	1250	1500	1700	1250	1450
FlatCom M50	1500	1250	1500	1700	1750	1950

CNC machine
with servomotor drive

FlatCom® L series

FlatCom L without hood

Technical specification

	FlatCom® L150	FlatCom® L250	FlatCom® L300
Processing areas X/Y/Z [mm] *	1500/1700	2500/1700	1700/3000
Z lift [mm]	200 (optional 300, in each case without processing unit)		
Clamping table surface W × D [mm]	1750 × 2250	2750 × 2250	2250 × 3250
Z-Throughput [mm]	250 (optional 500, in each case without processing unit)		
Dimensions W × D × H [mm]	2216 × 2430 × 1600	3216 × 2430 × 1600	2430 × 3716× 1600
Processing speed X/Y/Z	appr. 250 mm/s		
Repeatable accuracy [mm]	± 0,02		
Drive motors	48 V servomotors		
Drive elements X/Y/Z	Recirculating ball drive, clearance free adjustable		
Controller	iMD CAN controller with 3 drive controllers, expandable to 12 axes (max. 6 interpolated & 6 handling axes), PC, I/O module, safety circuit with rest state monitoring, power supply unit 48 V/1000 W		
Operation	19" CNC control panel with touchscreen, keyboard and mouse		
Weight [kg]	appr. 435	appr. 510	appr. 580
Software	Windows, WinRemote (optional: ProNC, isy 2.5 PLUS)		
Connection values	400 V, 16 A		
Part no.	**275062 34565** **	**275072 34565** **	**275082 34565** **

* without mounted components on the axes.
** without protective hood

CNC machine
with servomotor drive

FLATCOM® L series

General note

The choice of the ideal CNC machine for you should focus both on the clamping area for the workpiece, materials or plates to be machined and on the strategy or difficulties of the machining. In principal, all machines are perfectly suited to machining **light metals, non-ferrous metals, plastics** and **wood** . Extensive range of accessories for all our CNC machines to order (see page E18 *et seq.*).

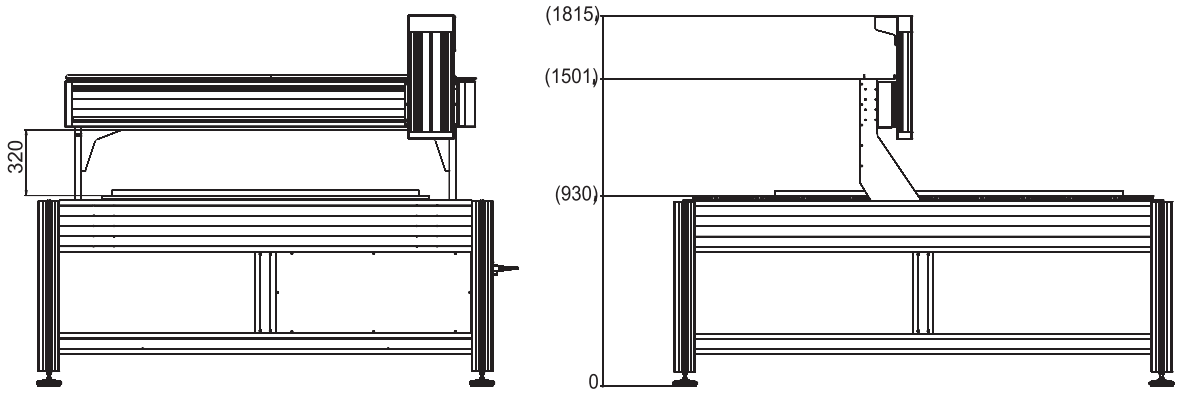
Options

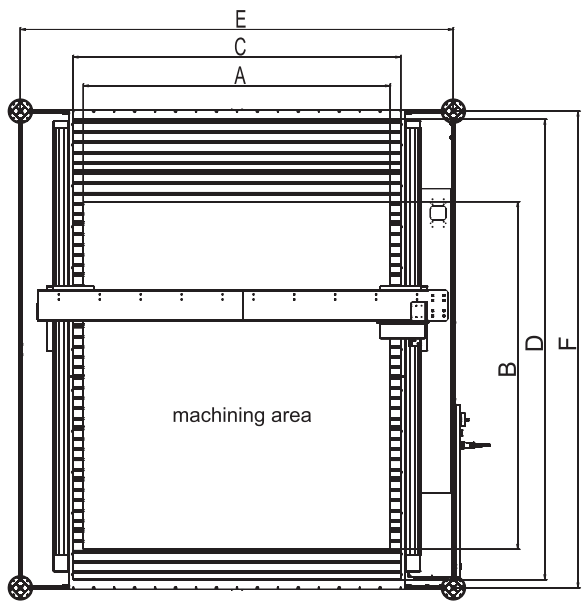
- PC control console with 2 free PCI plug-ins (for use by external PCI hardware)
- Safety light curtain
- toothed belt drive
- Milling and engraving spindles
- SK11/SK20 automatic tool change stations
- Minimum quantity lubrication or CoolMin cooling system
- Vacuum clamping benches
- Suction device
- 4. Axis e. g. RDH series installation
- Version without hood
- Maximum 6 interpolated axes + 6 handling axes
- Portal gap 300 mm
- Protective hood

Setup

- Portal: mobile, bench: fixed

Dimensioned drawings/dimensions





	A	B	C	D	E	F
FlatCom L 150	1500	1700	1750	2000	2116	2330
FlatCom L 250	2000	1700	1750	2000	2616	2330
FlatCom L 300	2000	3000	2050	3250	2616	2616

systems

CNC machine
with servomotor drive

FLATCOM® XL series

FlatCom XL with control panel

Technical specification

	FLATCOM® 102/72	FLATCOM® 102/112	FLATCOM® 142/112	FLATCOM® 142/162	FLATCOM® 142/252
Processing areas X/Y/Z [mm] *	1020/720/220	1020/1120/220	1420/1120/220	1420/1620/220	1420/2520/220
Clamping table surface W×D [mm]	1125 x 1300	1125 x 1700	1500 x 1700	1500 x 2200	1500 x 3050
Z-Throughput [mm]	235 (optional 435, in each case without processing unit)				
Dimensions W × D × H [mm]	2084/1584/1890	2084/1984/1890	2459/1984/1890	2459/2484/1890	2459/3384/1890
Processing speed X/Y/Z	appr. 250				
Repeatable accuracy [mm]	± 0,02				
Drive motors	48V servomotors				
Drive elements X/Y/Z	Recirculating ball drive, clearance free adjustable				
Controller	iMD CAN controller with 3 drive controllers, expandable to 12 axes (max. 6 interpolated & 6 handling axes), PC, I/O module, safety circuit with rest state monitoring, power supply unit 48V/1000 W				
Operation	19" CNC control panel with touchscreen, keyboard and mouse				
Weight [kg]	appr. 550	appr. 600	appr. 700	appr. 800	appr. 1000
Software	Windows, WinRemote (optional: ProNC, isy CAD-CAM)				
Connection values	400 V, 16 A				
Part no.	**274552 0013**	**274553 0013**	**274554 0013**	**274555 0013**	**274556 0013**

* without mounted components on the axes.

CNC machine
with servomotor drive

FlatCom® XL series

General note

The choice of the ideal CNC machine for you should focus both on the clamping area for the workpiece, materials or plates to be machined and on the strategy or difficulties of the machining. In principal, all machines are perfectly suited to machining **light metals, non-ferrous metals, plastics** and **wood** . Extensive range of accessories for all our CNC machines to order. (see page E18 *et seq.*)

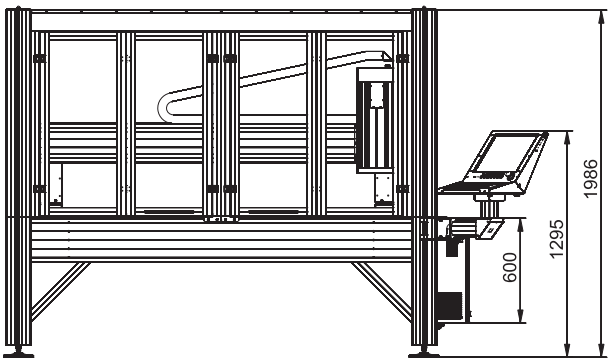
Options

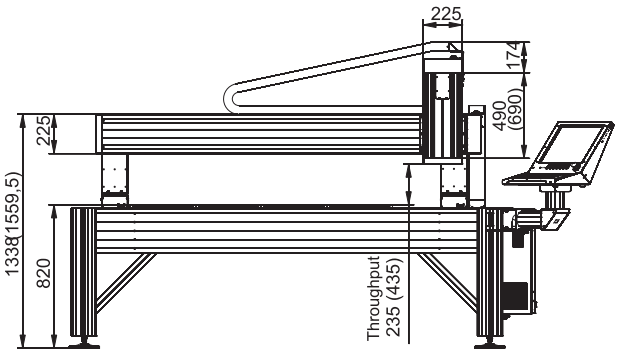
- PC control console with 2 free PCI plug-ins (for use by external PCI hardware)
- Safety light curtain
- toothed belt drive
- Milling and engraving spindles
- SK11/SK20 automatic tool change stations
- Minimum quantity lubrication or CoolMin cooling system
- Vacuum clamping benches
- Suction device
- 4. Axis e. g. RDH series installation
- Version without hood
- Maximum 6 interpolated axes + 6 handling axes
- Portal gap 300 mm
- closed hood attachment

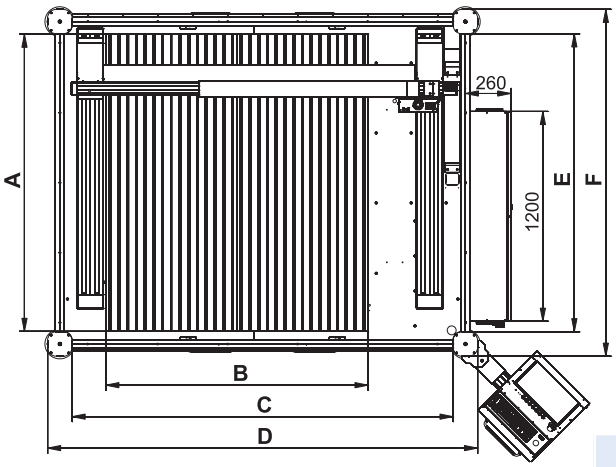
Setup

- Portal: mobile, bench: fixed

Dimensioned drawings/dimensions







	A	B	C	D	E	F
FlatCom XL 102/72	1300	1125	1804	2084	1304	1584
FlatCom XL 102/112	1700	1125	1804	2084	1704	1984
FlatCom XL 142/112	1700	1500	2179	2459	1704	1984
FlatCom XL 142/162	2200	1500	2179	2459	2204	2484
FlatCom XL 142/252	3050	1500	2179	2459	3100	3380

Flatbed and portal units

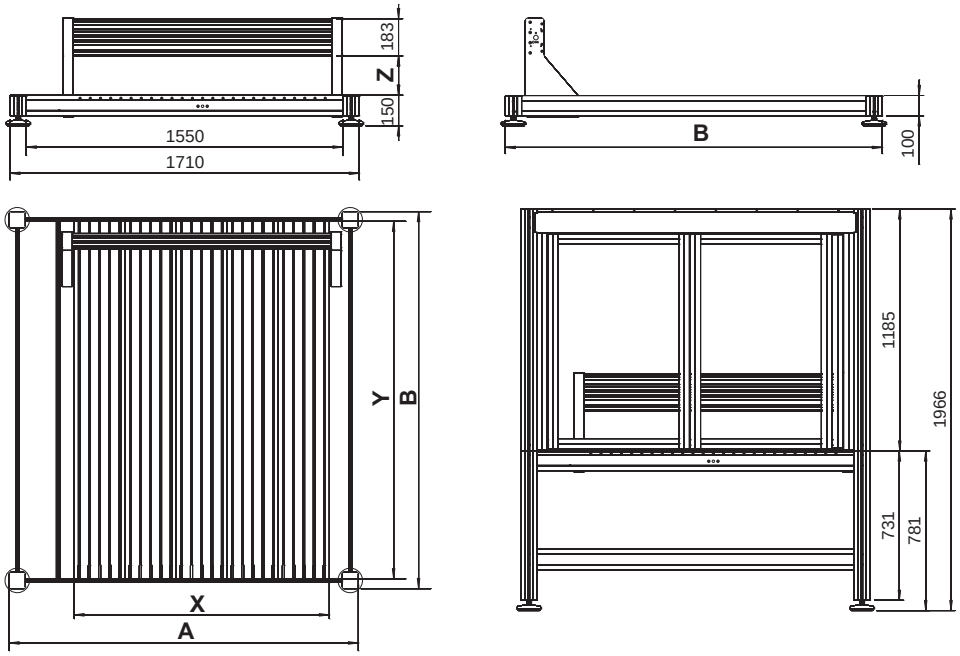
Flat bed unit with Z axis

Portal unit with Z axis

General note

Flatbed units as defined in the machine guideline are incomplete machines according to the modular system with processing paths of 250 to 1250 mm. Step motors (MS200HT), set for no-play, are used as spindle drives
Recirculating ball drives with a repeatability of ± 0.02 mm (positioning reproducibility) are used.
The linear guides used are the isel double track feeds, proven over many years, with no-play
pre-stressed linear ball bearings and recirculating ball spindles with a repeatability of ± 0.02 mm.
All units are equipped with two limit switches per spindle.
The machining and positioning units are available in a number of versions and are characterised by smooth running and high process speeds. The use of high quality aluminium components with
flat-milled surfaces achieves low weight and high accuracy.
isel X/Y/Z units are the ideal basis for setting up machines and systems for fitting and assembling, pressing and engraving, drilling and milling, milling and screwing, shaping and modelling, bonding and casting, soldering and welding, measuring and checking, sawing and cutting, etc..

Dimensioned drawings



Flatbed and portal units

X/Y flatbed units FB2

Part no.	Chassis A × B (mm)	Clamping surface X × Y (mm)	Process path (mm)	Z-Through-put (mm)
246203	1210 x 946	750 x 850	500 x 530	190
246203 2040	1210 x 1196	750 x 1100	750 x 530	
246203 2054	1210 x 1446	750 x 1350	1000 x 530	
246203 2067	1460 x 1446	1000 x 1350	850 x 780	
246203 2130	1710 x 1846	1250 x 1750	1250 x 1030	

All flatbed units are fitted with **16 × 4 mm recirculating ball drives** as standard

Z axes for flatbed units

Part no.	Lift (mm)	
230514	75	with 24V magnetic brake
230514 0400	160	with 24V magnetic brake

Sub-frames

Part no.	suitable for flatbed unit with clamping area:
248500 0027	850 x 750
248500 0040	1100 x 750
248500 0054	1350 x 750
248500 0067	1350 x 1000
248500 0130	1750 x 1250

Portal units PA2

Part no.	Part no. (without motor)	Process path (mm)	Ball screw drive (mm)	Lift (mm)
242 402	**242 409**	280 x 490	16 x 4	75
243 402	**243 409**	280 x 490	16 x 4	without Z axis

Software

Part no.	
Z11 - 333 500 Z13 - 337 030	ProNC software for CAN-CNC controllers isy-CAM 2.5 Plus (only available in combination with a unit)

Options

- matched controller (e.g.: iMC-S8)
- Software modules for operation in CAM, CNC, and PLC applications
- Sub-frame
- Enclosure
- Spindle motors (see E18 *et seq.*)

Enclosures

Part no.	suitable for flatbed unit with clamping area:
248200 0000	850 x 750
248200 2040	1100 x 750
248200 2054	1350 x 750
248200 2067	1350 x 1000
248200 2130	1750 x 1250

Introduction

When developing our spindle motors, our main emphasis was on functionality, quality, and the optimum price structure. Our spindle motors are also particularly easy to maintain. The particularly slim lines and square housing cross-section allow installation in rows with minimum separation.
Our approach to electrical construction is to use an AC short circuit rotor with 2-pole windings in our motors, designed to DIN EN 60034. The insulation of the windings is produced according to heat class F. The motors are dynamically balanced to very fine tolerances, so that good running properties are achieved even at high speeds. In all, they cover a range of speeds from 3,000 to 30,000 rpm. All spindle motors are produced entirely in Germany, meet at least the criteria for IP54 protection class and are therefore approved even for areas where wood dust is present. In our product portfolio, in addition to spindle motors, you'll find all the leads you will need in various lengths and preset, reliable frequency converters for connecting to the controller. By integrating development, production, sales and service under one roof, we have very short procedures and have our own repair service which operates year-round, unlike many of our competitors. An extensive range of accessories, such as vacuum cleaning systems, minimum amount greasing systems, clamping rings, SK housings, tool changers and our unique, patented Coolmin system for optimum and economical tool cooling, without residues, round off our product portfolio.

iSA 500 with manual tool changer E 19

iSA 750 with manual tool changer E 20

iSA 1500 with manual tool changer E 21

iSA 900 with automatic tool changer E 22

iSA 2200 with automatic tool changer E 23

iSA 3600 with automatic tool changer E 24

Universal milling spindles UFM 500 /1050
Engraving spindles E 25

CoolMin tool cooling system E 26

SK 11/20/30 tool change station E 27

Frequency converter, length measuring button, vacuum cleaning, motor leads E 28

Overview of clamping rings and tool housings E 29

Technical specifications subject to change.

Spindle motor
with manual tool changer

iSA 500

iSA 500 with manual tool change

iSA 500 with manual tool change and CoolMin tool cooling system

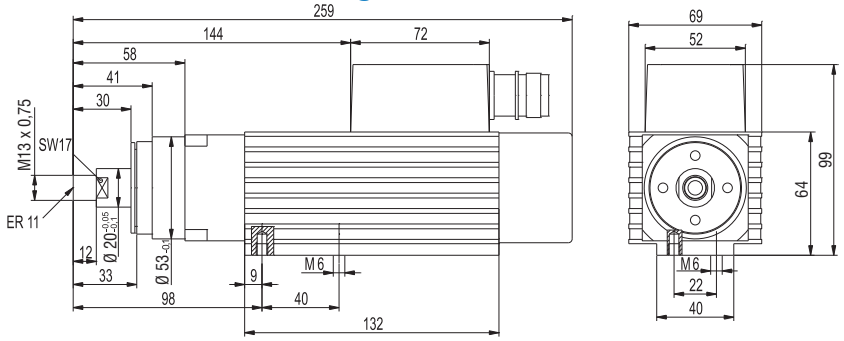
Features

- Robust 2-pole AC motor (asynchronous motor)
- Square shape, Protection class IP54, isolation class F
- Cast sign A side, aluminium cast B side
- Motor shaft to take ER 11 clamping rings
- Rated output 0.5 kW (S6-40% operation)
- Speed range 5,000 rpm. - 30,000 rpm.
- manual tool change
- M23 plug connection
- incl. ER 11 clamping ring, Ø 6 mm
- Clamping range Ø 1 mm – Ø 7 mm
- Intrinsic ventilation B-side
- Governed by frequency converter
- Spindle bearing: 2 bearings A-side
  1 bearing B-side
- optional:
  - CoolMin® (internal and external)
  - Frequency converter
  - various clamping rings, mounting plates, lead lengths
  - Suction device

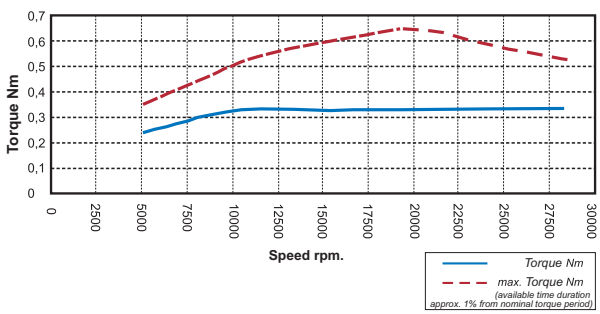
Technical specification

Description		iSA 500
Torque at nominal speed 18.000 rpm.	[Nm]	0.28
Speed	[rpm.]	5,000 to 30,000
Cut-off frequency	[Hz]	300
Number of poles		2
Rated voltage	[V]	230
Rated current	[A	2.6
cos ϕ		0.75
S 6 = 40% rated output	[kW]	0.5
concentricity	[mm]	0.01
Weight	[kg]	2.8

Dimensioned drawings



Torque curves



Ordering information

iSA 500 spindle motor
Part no.: **477004 3130**

iSA 500 spindle motor with converter and lead (8m)
Part no.: **310704 1611**

iSA 500 spindle motor with CoolMin®
Part no.: **477004 5130**

iSA 500 spindle motor with converter, lead (8m) and CoolMin®
Part no.: **310704 1631**

LES 5 mounting plate
Part no.: **277014**

LES 6 mounting plate
Part no.: **277028 0008**

ICP/ICV mounting plate
Part no.: **280000 0046**

EuroMod/FlatCom mounting plate
Part no.: **277028**

- SKC 750 frequency converter see page **E28**
- M23 motor side leads see page **E28**
- Suction device for 38 mm hose see page **E28**
- Clamping ring set, ER11 type see page **E29**

Technical specifications subject to change.

systems

Spindle motor
with manual tool changer

iSA 750

iSA 750 with manual tool change

iSA 750 with manual tool change and CoolMin tool cooling system

Features

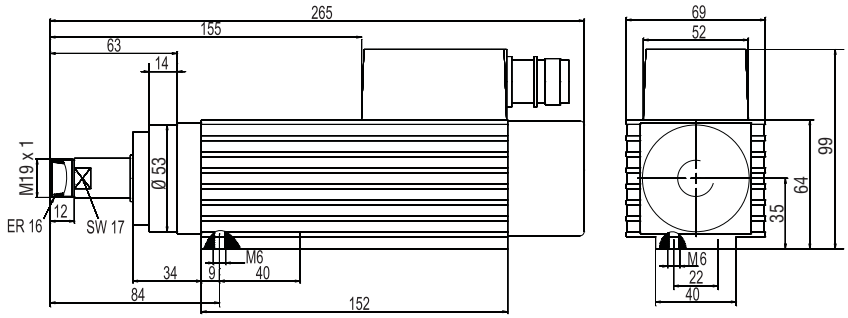
- Robust 2-pole AC motor (asynchronous motor)
- Square shape, Protection class IP54, isolation class F
- Steel sign A-side, Aluminium cast B-side
- Motor shaft to take ER 16 clamping rings
- Rated output 0.75 kW (S6-40% operation)
- Speed range 3,000 rpm. - 24,000 rpm.
- manual tool change
- M23 plug connection
- incl. ER16 clamping ring, Ø 6 mm
- Clamping range Ø 1mm – Ø 10 mm
- Intrinsic ventilation B-side
- Two precision bearings
- Speed control by frequency converter

- optional:
  - CoolMin® (internal and external)
  - Frequency converter
  - various clamping rings, mounting plates, lead lengths
  - Suction device

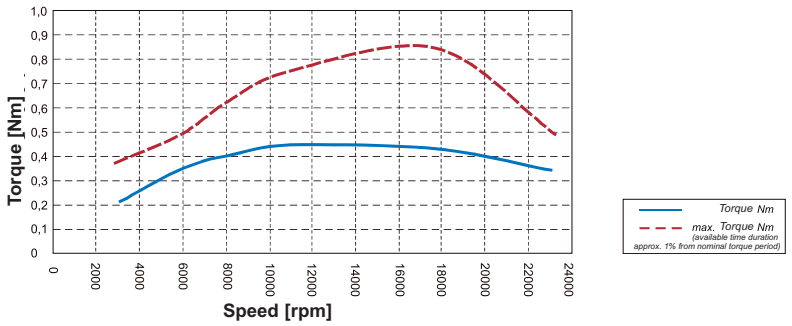
Technical specification

Description		iSA 750
Torque at rated speed 22.000 U/min.	[Nm]	0.34
Speed	[rpm.]	3,000 to 24,000
Cut-off frequency	[Hz]	300
Number of poles		2
Rated voltage	[V]	230
Rated current	[A]	3.4
cos ϕ		0.79
S 6 = 40% rated output	[kW]	0.75
Concentricity	[mm]	0.01
Weight	[kg]	2.6

Dimensioned drawings



Torque curves



Ordering information

iSA 750 spindle motor
Part no.: **477008 3124**

iSA 750 spindle motor with converter and lead (8m)
Part no.: **310708 1611**

iSA 750 spindle motor with CoolMin®
Part no.: **477008 5124**

iSA 750 spindle motor with converter, lead (8m) and CoolMin®
Part no.: **310707 1631**

LES 5 mounting plate
Part no.: **277014**

LES 6 mounting plate
Part no.: **277028 0008**

ICP/ICV mounting plate
Part no.: **280000 0046**

EuroMod/FlatCom mounting plate
Part no.: **277028**

- SKC 750 frequency converter see page **E28**
- M23 motor side leads see page **E28**
- Suction device for 38 mm hose see page **E28**
- Clamping ring set, ER16 type see page **E29**

Technical specifications subject to change.

Spindle motor
with manual tool changer

iSA 1500

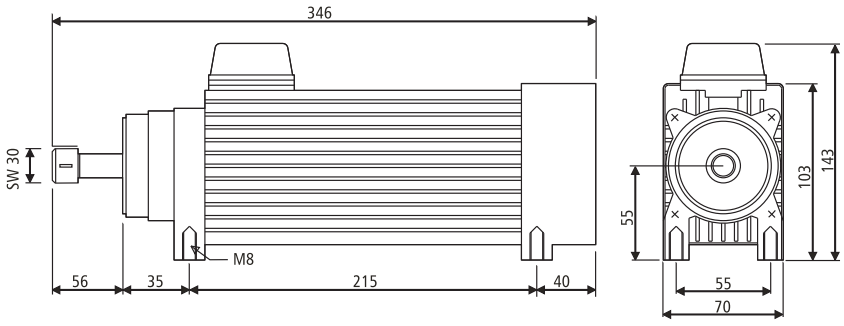
iSA 1500 with manual tool change

iSA 1500 with manual tool change and CoolMin tool cooling system

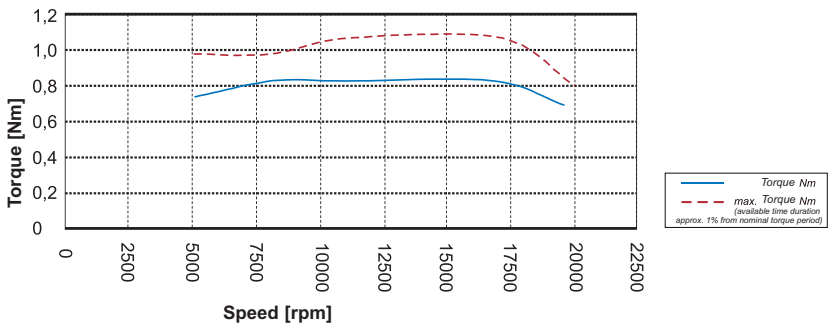
Technical specification

Description		iSA 1500
Torque at rated speed 20.000 U/min.	[Nm]	0.72
Speed	[rpm.]	5,000 to 20,000
Cut-off frequency	[Hz]	300
Number of poles		2
Rated voltage	[V]	230
Rated current	[A]	7.0
cos ϕ		0.85
S 6 = 40% rated output	[kW]	1,5
Concentricity	[mm]	0.01
Weight	[kg]	6.4

Dimensioned drawings



Torque curves



Technical specifications subject to change.

Features

- Robust 2-pole AC motor (asynchronous motor)
- Square shape, Protection class IP54, isolation class F
- Cast sign A and B side
- Motor shaft to take ER 20 clamping rings
- Rated output 1.5 kW (S6-40% operation)
- Speed range 5,000 rpm. - 20,000 rpm.
- manual tool change
- M23 plug connection
- incl. ER20 clamping ring, Ø 6 mm
- Clamping range Ø 2 mm – Ø 13 mm
- Intrinsic ventilation B-side
- Governed by frequency converter
- Spindle bearing: 2 bearings A-side
  1 bearing B-side

optional:
- CoolMin® (internal and external)
- Frequency converter
- various clamping rings,mounting plates, lead lengths
- Suction device
- 4-pole motor version to order

Ordering information

iSA 1500 spindle motor
Part no.: **477510 3120**

iSA 1500 spindle motor with converter
Part no.: **310610 3614**

iSA 1500 spindle motor with CoolMin®
Part no.: **477510 5120**

iSA 1500 spindle motor with converter and CoolMin®
Part no.: **310610 3634**

LES 5 mounting plate
Part no.: **277028 0003**

EuroMod/FlatCom mounting plate
Part no.: **277028 0002**

- CoolMin® external with hose see page **E26**
- SKC 1500 frequency converter see page **E28**
- M23 motor side leads see page **E28**
- Suction device for 80mm hose see page **E28**
- Clamping ring set, ER20 type see page **E29**

systems

Spindle motor
with automatic tool changer

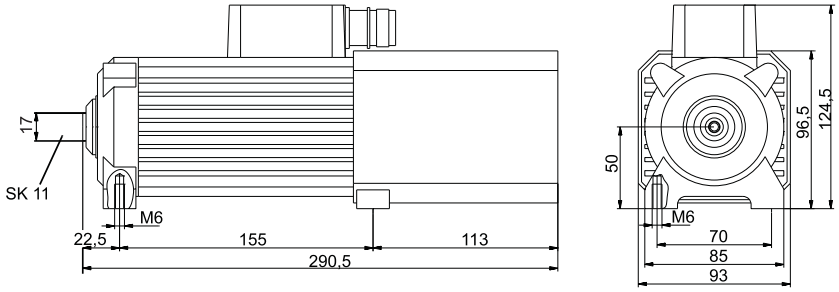
iSA 900

iSA 900 with automatic tool change

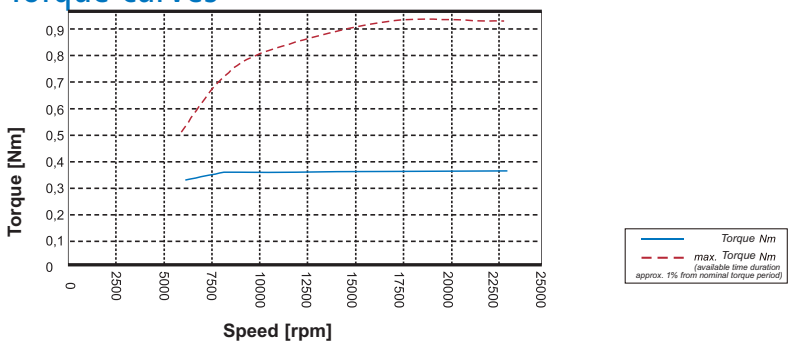
Technical specification

Description		iSA 900
Torque at rated speed 18,000 rpm.	[Nm]	0.37
Speed	[rpm.]	6,000 to 24,000
Cut-off frequency	[Hz]	400
Number of poles		2
Rated voltage	[V]	230
Rated current	[A]	3.25
cos ϕ		0.84
S 6 = 40% rated output	[kW]	0.9
Concentricity	[mm]	0.01
Weight	[kg]	5.8

Dimensioned drawings



Torque curves



Features

- Robust 2-pole AC motor (asynchronous motor)
- Square shape, Protection class IP55, isolation class F
- Cast sign A and B side
- Rated output 0.9 kW (S6-40% operation)
- Speed range 6,000 rpm. - 24,000 rpm.
- Automatic tool change with SK 11 tool housing and ER 11 clamping ring, Ø 6 mm
- M23 plug connection
- Clamping range Ø 1 mm – Ø 7 mm
- separately driven fan B-side
- Governed by frequency converter
- Two precision bearings
- SK 11 tool changer pneumatic (7.5 bars)

- optional:
  - CoolMin® (external)
  - Frequency converter
  - Tool changing station
  - various clamping rings, mounting plates, lead lengths

Ordering information

iSA 900 spindle motor
Part no.: **477009 3324**

iSA 900 spindle motor
with converter and lead (8m)
Part no.: **310709 3612**

LES 5 mounting plate
Part no.: **277028 0003**

- CoolMin® external with hose see page **E26**
- 5× SK 11 tool change stations see page **E27**
- 8× SK 11 tool change stations see page **E27**
- SK 11 tool housing see page **E27**
- SKC 750 frequency converter see page **E28**
- M23 motor side leads see page **E28**
- Clamping ring set, ER11 type see page **E29**

Subject to technical changes.

Spindle motor
with automatic tool changer

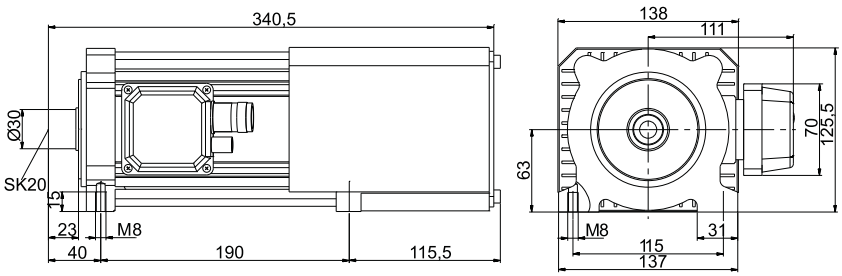
iSA 2200

iSA 2200 with automatic tool change

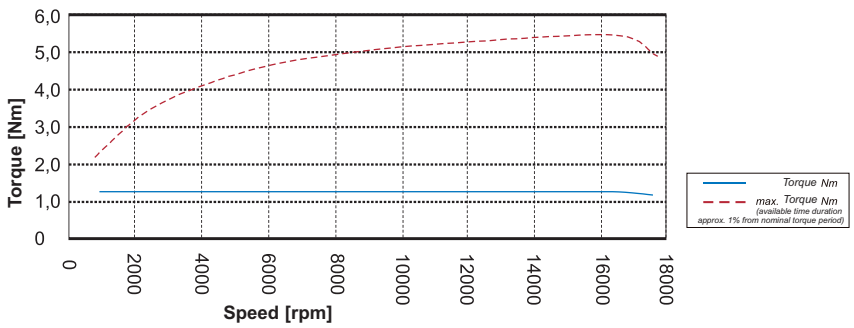
Technical specification

Description		iSA 2200
Torque at rated speed 18,000 rpm.	[Nm]	1.26
Speed	[rpm.]	5,000 to 20,000
Cut-off frequency	[Hz]	280
Number of poles		2
Rated voltage	[V]	230
Rated current	[A]	7.6
cos ϕ		0.84
S 6 = 40% rated output	[kW]	2.2
Concentricity	[mm]	0.01
Weight	[kg]	14.6

Dimensioned drawings



Torque curves



Technical specifications subject to change.

Features

- Robust 2-pole AC motor (asynchronous motor)
- Square shape, Protection class IP54, isolation class F
- Cast sign A and B side
- Motor shaft to take ER 20 clamping rings
- Rated output 2.2 kW (S6-40% operation)
- Speed range 5,000 rpm. - 20,000 rpm.
- Automatic tool change with SK 20 tool housing and ER16 clamping ring, Ø 6 mm
- M23 plug connection
- Clamping range Ø2 mm – Ø 13 mm
- SK 20 tool changer pneumatic (7.5 bars)
- separately driven fan B-side
- Governed by frequency converter
- Two precision bearings
- optional:
  - CoolMin® (external)
  - Frequency converter
  - Tool changing stations
  - various clamping rings
  - Suction device
  - 4-pole motor version to order

Ordering information

iSA 2200 spindle motor
Part no.: **477022 3320**

iSA 2200 spindle motor with converter and lead (8m)
Part no.: **310722 3621**

LES 5 mounting plate
Part no.: **277028 0005**

EuroMod/FlatCom mounting plate
Part no.: **277028 0004**

- CoolMin® external with hose see page **E26**
- 4× SK 20 tool change stations see page **E27**
- 5× SK 20 tool change stations see page **E27**
- SK 20 tool housing see page **E27**
- SKC 4000 frequency converter see page **E28**
- M23 motor side leads see page **E28**
- Clamping ring set, ER20 type see page **E29**

systems

Spindle motor
with automatic tool changer

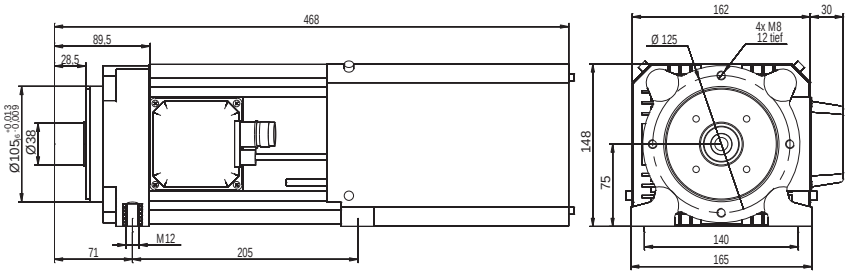
iSA 3600

iSA 3600 with automatic tool change

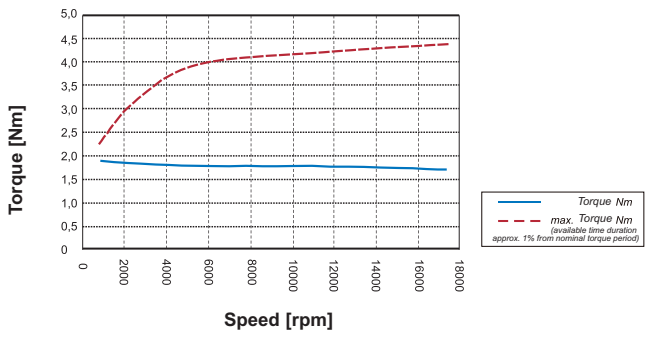
Technical specification

Description		iSA 3600
Torque at rated speed 18,000 rpm.	[Nm]	4.5
Speed	[rpm.]	6,000 to 18,000
Cut-off frequency	[Hz]	300
Number of poles		2
Rated voltage	[V]	3 × 400
Rated current	[A]	5.4
cos ϕ		0.87
S 6 = 40% rated output	[kW]	3.6
Concentricity	[mm]	0.01
Weight	[kg]	23.0

Dimensioned drawings



Torque curves



Features

- Robust 2-pole AC motor (asynchronous motor)
- Square shape. Protection class IP54 Isolation class F
- Steel sign A side, Cast sign B side
- Motor shaft to take ER 32 clamping rings
- Rated output 3.6 kW (S6-40% operation)
- Speed range 6,000 rpm. - 18,000 rpm.
- Automatic tool change with SK 30 tool housing and ER 32 clamping ring, Ø 6 mm
- Clamping range Ø3 mm – Ø 20 mm
- Intrinsic ventilation B-side
- Two precision bearings
- Speed control by frequency converter
- optional:
  - CoolMin® (external)
  - Frequency converter
  - Tool changing station
  - various clamping rings mounting plates and lead lengths

Ordering information

iSA 3600 spindle motor
Part no.: **477822 3600**

iSA 3600 spindle motor with converter and lead (8m)
Part no.: **310736 3615**

LES 5 mounting plates
Part no.: **277028 0009**

- CoolMin® external with hose see page **E26**
- 4× SK 30 tool change stations see page **E27**
- 5× SK 30 tool change stations see page **E27**
- SK 30 tool housing see page **E27**
- SKC 4000 frequency converter see page **E28**
- M23 motor side leads see page **E28**
- Clamping ring set, type ER 32 see page **E29**

Technical specifications subject to change.

Universal milling spindles UFM 500 /1050.

Engraving spindle

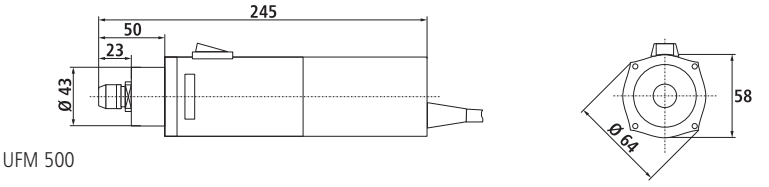
Uni milling motors

UFM 1050 UFM 500

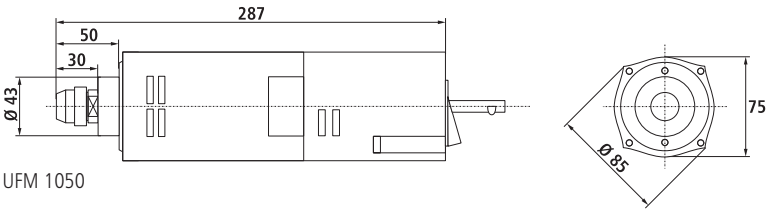
Technical specification

	Part no.	Load speed rpm	Voltage V	Efficiency %	Power consumption W	power output W	Torque Nm
UFM 500	**420003 0500**	22,600	230	68	500	345	0.14
UFM 500-11	**420003 0501**	22.600	115	68	500	345	0.14
UFM 1050	**420003 1050**	21.000	230	71	1050	720	0.32
UFM 1050-11	**420003 1051**	21.000	115	71	1050	720	0.32

Dimensioned drawings



UFM 500



UFM 1050

Engraving spindle with mech. height compensation

Engraving spindle
42V, 150 W, 60,000 rpm.
sealing air cooling
Suction preparation

including holder, corresponding frequency converter, mechanical height compensation and clamping ring Ø 3mm

Part no. **310802 1300**

Features

- Load-independent working speed with Tacho control electronics
- Smooth start for no-backlash acceleration to rated speed
- Blocking protection
- Protective isolation
- PTC thermal monitoring
- Rated output 345 W/720 W
- Speed range 11,000 rpm to 25,000 rpm
- Torque 0.14 Nm (at 22,600/21,000 rpm)
- Rated voltage 230V
- collar
- Clamping range Ø 1 mm – Ø 6.35/8 mm
- Speed control
- Stable double ball bearing
- Weight: 1.9/2.1 kg

UFM 500
- Rated input **500 W**
- Power output **345 W**
- Torque **0,14 Nm**

UFM 1050
- Rated input **1050 W**
- Power output **720 W**
- Torque **0,32 Nm**

Clamping blocks

Clamping blocks Ø 43mm	Part no.
Ra 100 and Ra 150 mm fixings	**290 902**
Ra 100 mm fixing	**290 903**
Ra 125 mm fixing	**290 904**

Clamping rings

Clamping ring sets	Part no.
for UFM 500 (Ø 1.0 - 6.35 mm)	**239110**
for UFM 1050 (Ø 1.0 - 8.0 mm)	**239112 0000**

Clamping nut

clamping nut	Part no.
for UFM 500	**239 111**
for UFM 1050	**239 112**

Carbon brushes

Carbon brushes, VE = 2 units.	Part no.
for UFM 500	**420 003 9000**
for UFM 1050	**420 003 9001**

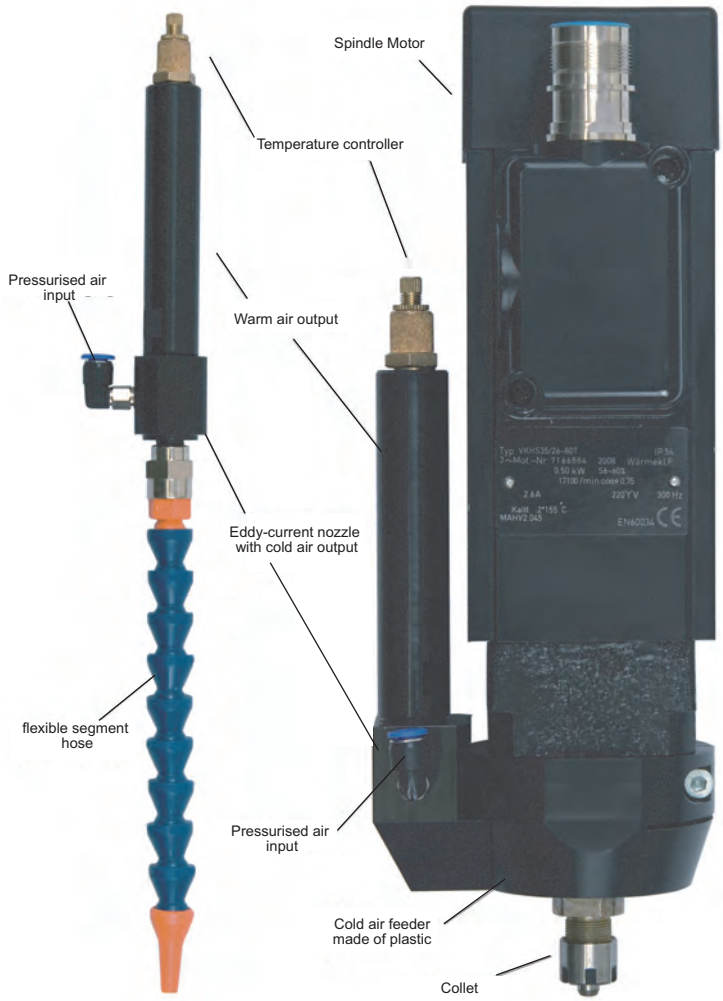
Technical specifications subject to change.

systems

Tool cooling system

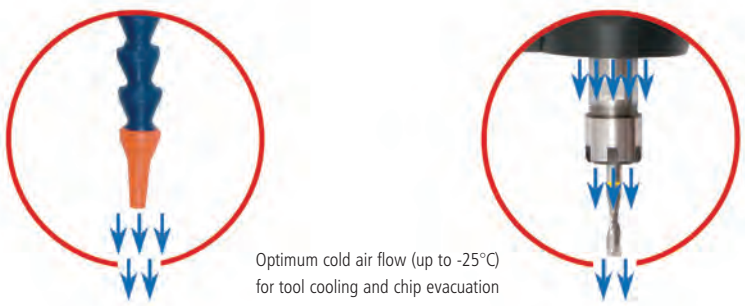
CoolMin

Functional principle



CoolMin external
with hose
Part no.: **239011 0119**

CoolMin internal



Optimum cold air flow (up to -25°C)
for tool cooling and chip evacuation

Tool and material cooling

Dry cutting is today the first choice for many machining tasks.
Hitherto, materials, tool wear and surface finish have often necessitated cooling with appropriate coolants / greases.
This always means moisture. Even spray cooling with minimal amounts leads to unwanted side effects such as dirt building up, sticking of chips to the tool or to the surface and, depending on the material also an attack on its structure.
With the aforementioned patented cooling methods providing very good tool and surface cooling, the side effects are negligible.
The chips are dry and, according to the material, can be vacuumed or blown off easily.
The surface is protected and the direct tool cooling (also suitable for tools with internal cooling) achieves very long working lives for the tools.
The cooling method is based on a jet of cold air, which works on the eddy current principle and divides the flow into warm and cold air.
To operate the system, all that is required is compressed air (6 to 10 bars).

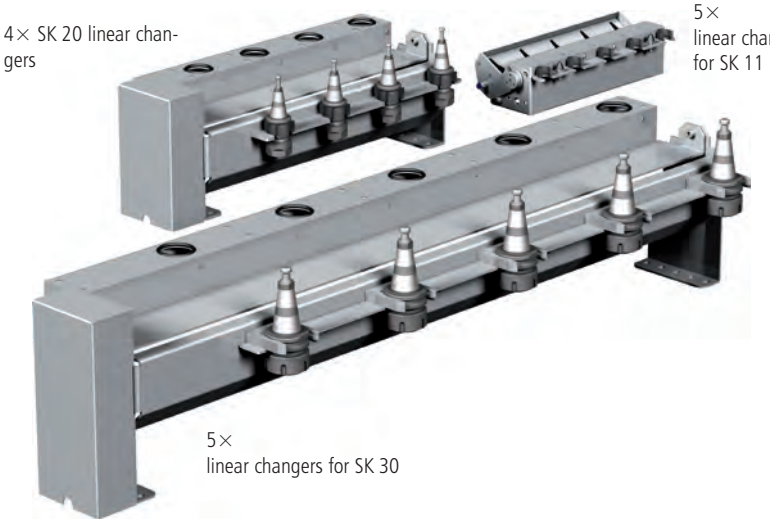
Technical specification:

- Compressed air feed: 6-10 bars
- Cooling air output up to a max. -25°C
- Hot air exhaust: up to a max. 70°C
- Air consumption approx. 150 l/min
- special servicing unit with 1μm filter
- No maintenance cold air jet

Technical specifications subject to change.

Change stations

SK 11/20/30

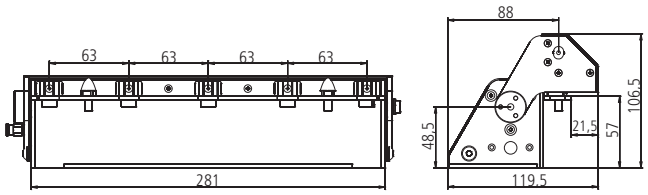


Features

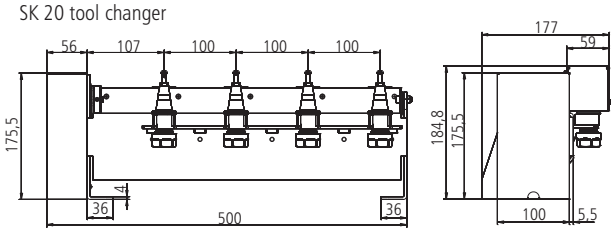
- Simple, functional tool changer for SK11, SK20 and SK30
- Pneumatic rotary cylinder and end position monitoring for safe changing
- Control via 5/2-way valve with integration in the safety circuit
- Low-maintenance stainless steel design (powder-coated aluminium)
- Variable positioning on the machine bench

Dimensioned drawings

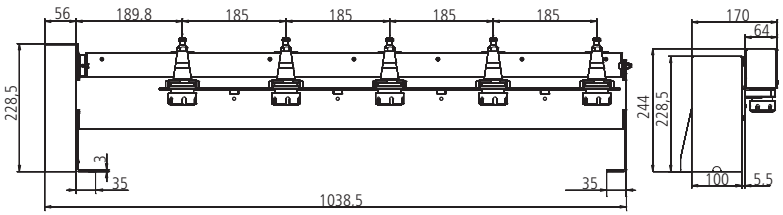
SK 11 tool changer



SK 20 tool changer



SK 30 tool changer



Ordering information

SK 11 tool change station
for iSA 900

5×, without hood
Part no.: **239011 0054**

8×, without hood
Part no.: **239011 0084**

5×, without hood + pneumatics
Part no.: **239011 0053**

8×, with hood + pneumatics
Part no.: **239011 0083**

SK 20 tool change station
for iSA 2200

4×, with hood + pneumatics
Part no.: **239011 0041**

5×, without hood + pneumatics
Part no.: **239011 0050**

10×, with hood + pneumatics
Part no.: **239011 0100** (to order)

SK 30 tool change station
for iSA 3600

4×, with hood + pneumatics
Part no.: **239011 0045**

5×, without hood + pneumatics
Part no.: **239011 0055**

Tool holders

SK 11 for clamping rings, type ER 11
Part no.: **239111 0001**

SK 20 for clamping rings, type ER 20
Part no.: **239172 0020**

SK 30 for clamping rings, type ER 32
Part no.: **239130**

Technical specifications subject to change.

Frequency converter, motor leads and vacuum cleaning system

Frequency converter

SKC 750 frequency converter, suitable for iSA 500, iSA 750 + iSA 900
Part no.: **311707 6000**

SKC 1500 frequency converter, suitable for iSA 1500
Part no.: **311715 6000**

SKC 4000 frequency converter, suitable for iSA 2200 + iSA 3600
Part no.: **311740 6500**

- Compact, pulse width modulated equipment in three output classes
- Input voltage, 230V AC, single phase (SKC 750/1500) or 400V AC, three phase (SKC 4000)
- Three phase, vector controlled control voltage. Frequency.1500 Hz
- Fast spindle braking with highly stressed, integrated brake resistance in the sub-frame
- Turn-off EMC filter
- Programmable inputs and outputs, relay output
- User-friendly control unit for configuring spindles
- 95 operating and display parameters for both simple and demanding applications (e. g. spindle energy sink in no load)
- Protection class: IP 20
- Control types: PLC; 0...10 V; 0...20 mA; with control unit; CAN bus (extra mocule required)
- Approvals: CE; C-Tick; UL

Length measurement button and motor leads

Length measuring button for measuring tool lengths
Part no.: **239099 0001**

- 8-wire
  3 × 0.75 mm² + 1 × PE + 2 × (2 × 0.34 mm²)
- drag chain compatible
- Outer screening and separately screened in pairs
- pre-fabricated

Motor side - M23 plug
Converter side - wire end bushings
Part no.: **392306 0300** (3 m)
Part no.: **392306 0500** (5 m)
Part no.: **392306 0800** (8 m)

Motor side - direct connection
Converter side - wire end bushings
Part no.: **392301 0300** (3 m)
Part no.: **392301 0500** (5 m)
Part no.: **392301 0800** (8 m)

Vacuum cleaning system

... for iSA 500 + iSA 750 spindles
- prepared for hose 38 mm
- manual opening

Part no.: **239012 0000**

... for iSA 1500 spindle
- prepared for hose 80 mm
- manual opening

Part no.: **239012 0001**

... for iSA 2200 spindle
- prepared for hose 80 mm
- Öffnung automatisch

Art.-Nr.: **239012 0002**

Technical specifications subject to change.

Overview of clamping rings and tool housings

Tool housings

SK 11 SK 20 SK 30

SK 11 for clamping rings, type ER 11
Part no.: **239111 0001**

SK 20 for clamping rings, type ER 20
Part no.: **239172 0020**

SK 30 for clamping rings, type ER 32
Part no.: **239130**

The following clamping rings are also able to clamp shafts exactly that are reduced in diameter by 1.0 mm:

Clamping rings type ER 11

for iSA 500 and iSA 900

Ø (mm)	Part no.
1.0	**239170 1000**
1.5	**239170 1500**
2.0	**239170 2000**
2.5	**239170 2500**
3.0	**239170 3000**
3.5	**239170 3500**
4.0	**239170 4000**
4.5	**239170 4500**
5.0	**239170 5000**
5.5	**239170 5500**
6.0	**239170 6000**
6.5	**239170 6500**
7.0	**239170 7000**

Clamping ring set

for spindle motor	Type	Ø (mm)	Part no.
iSA 500 / iSA 900	ER 11	1.0 - 7.0	**239170 0001**

ER 11

ER 16

ER 20

The following clamping rings are also able to clamp shafts exactly that are reduced in diameter by 0.5 mm:

Clamping rings type ER 16

for iSA 750

Ø (mm)	Part no.:
1.0	**239171 1000**
2.0	**239171 2000**
3.0	**239171 3000**
4.0	**239171 4000**
5.0	**239171 5000**
6.0	**239171 6000**
7.0	**239171 7000**
8.0	**239171 8000**
9,0	**239171 9000**
10,0	**239171 0100**

Clamping rings type ER 20

for iSA 1500 and iSA 2200

Ø (mm)	Part no.:
2.0	**239172 2000**
3.0	**239172 3000**
4.0	**239172 4000**
5.0	**239172 5000**
6.0	**239172 6000**
7.0	**239172 7000**
8.0	**239172 8000**
10.0	**239172 0100**
11.0	**239172 0110**
12.0	**239172 0120**
13.0	**239172 0130**

Clamping rings type ER 32

for iSA 3600

Ø (mm)	Part no.:
3.0	**239130 3000**
4.0	**239130 4000**
5.0	**239130 5000**
6.0	**239130 6000**
7.0	**239130 7000**
8.0	**239130 8000**
9.0	**239130 9000**
10.0	**239130 0100**
11.0	**239130 0110**
12.0	**239130 0120**
13.0	**239130 0130**
14.0	**239130 0140**
15.0	**239130 0150**
16.0	**239130 0160**
17.0	**239130 0170**
18.0	**239130 0180**
19.0	**239130 0190**
20.0	**239130 0200**

Clamping collet sets

for spindle motor	Type	Ø (mm)	Part no.
iSA 750	ER 16	1,0 - 10	**239171 0001**
iSA 1500 / iSA 2200	ER 20	2.0 - 13	**239172 0001**
iSA 3600	ER 32	3.0 - 20	**239130 0000**

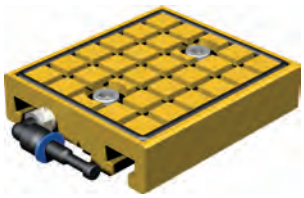
Technical specifications subject to change.

systems

Vacuum clamping plates

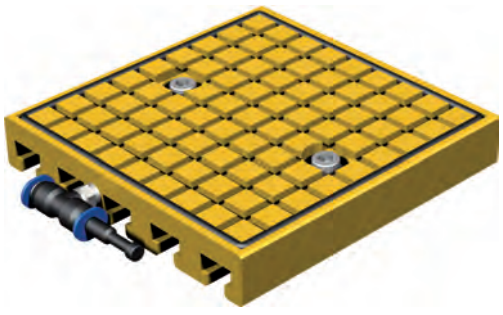
VakuFit®

VakuFit - S
L 75 × W 41.5 × H 20 mm
Part no.: 216601 0015



VakuFit - S
L 75 × W 85 × H 20 mm
Part no.: 216601 0016

VakuFit - S
L 125 × W 75 × H 20 mm
Part no.: 216601 0011



VakuFit - S
L 125 × W 125 × H 20 mm
Part no.: 216601 0012

VakuFit - S

Vacuum clamping plates made from naturally anodised aluminium allow a flexible clamping system on any T-key plate. Sealing is provided by a foamed 4 mm sealing cord, which can be laid freely according to the keyway raster. The hose connections to the suction line are designed for 6 mm hoses.

Depending on the material properties of the workpiece for clamping, up to 6 suction lines (e.g. 125 × 75) are connected to a pneumatic vacuum pump. This achieves up to an 80% vacuum with compressed air at 5.5 bar.
The system is suited for small clamping tasks up to clamping large size plates or components.

Option:
- Clamping plates gold anodised

Pneumatic vacuum pump including vacuum meter.

Pressure reducer, servicing unit with filter, hose, vacuum filter

Part no.: 216600 0009

Pneumatic vacuum pump with energy saving system including vacuum meter.

Pressure reducer, servicing unit with filter, hose, vacuum filter

Part no.: 216600 0008

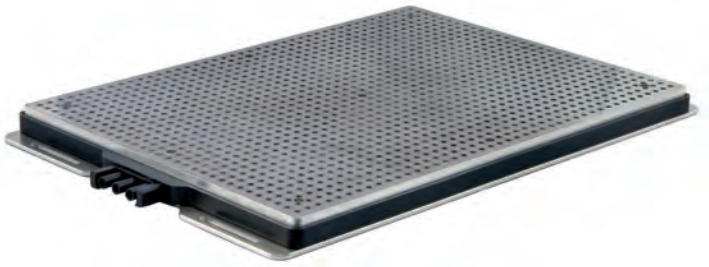
Technical specifications subject to change.

Vacuum clamping plates

VakuFit®

Sample diagram

Multiple connection for high volume flow and optimum vacuum distribution



All vacuum plates can be arranged next to each other over a large area.

Part number	Description	DIN	Clamping surface
216601 0017	VT 2115	A5	210 x 150 mm
216601 0018	VT 3021	A4	300 x 210 mm
216601 0019	VT 4230	A3	420 x 300 mm
216601 0020	VT 6042	A2	600 x 420 mm

216601 0028	Rotary slide valve pump (6.0 m³/h) for DIN A4 and A5
216601 0030	Rotary slide valve pump (10.0 m³/h) for DIN A2 and A3

216600 0027	Servicing kit for rotary slide valve pump 6.0 m³/h
216600 0028	Servicing kit for rotary slide valve pump 10.0 m³/h

VakuFit - L

The hole raster plates for vacuum clamping have little need for a vacuum pump. The plates are almost free from distortion and therefore well suited for engraving work and clamping plate material.

Unlike other vacuum clamping alternatives, materialmilling tasks up to a certain proportion of the total surface area are no problem and components remain securely clamped. Material end stops can be produced simply with 5 mm alignment pins in the hole raster borings. The hole raster rubber mats act as padding and can be used several times.
As well as our standard plates, we also meet individual orders for special tasks, up to complete packages.

Note

The holding force is proportional to the covered area, the coefficient of friction and the pressure difference.
To increase the coefficient of friction, a hole rubber mat is included in the deliverables.

Deliverables

- 1 × connection adapter
- 1 × 68 mm open jaw wrench
- 1 × hole rubber mat
- 1 × rubber mat to cover exposed holes
- 3 × connection hoses
- Operating instructions

Technical specifications subject to change.

Introduction

A division within isel Germany AG, **isel Robotik** presents a cross-section of its product portfolio of automation components from **robots, prealigners, linear units, end effectors** and accessories for the **semi-conductor industry**, made in Germany.

The company's Robotics Division has been operating for more than 8 years in the semiconductor sector. Sales began in 2005 with only a few types of robots and prealigners. Current components for the semiconductor industry cover all OEM customer needs in the semi-conductor sector. Since 2005, **over 500 robot systems have entered field service successfully**. In this connection, our customers mention the **long working life** of individual products as a plus. Our all-in-one designs allow handling of wafers and masks in a class 1 clean room environment.

For these processes, in addition to clean room capability, **high precision** and reliability are paramount. Because these requirements affect the entire production process in the chip industry, stringent specifications also apply for the handling components. The handling components are a shining example of why isel Germany AG has a reputation in the market place: for very high quality, short lead times, best service and a very good price/performance ratio.

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Visit our website at **www.iselrobotik.com**

Overview

Wafer handling robots **IWH F-1**
with 2-link arm — E 34

Wafer handling robots **IWH F-1**
with 2-link arm in heavy duty design — E 35

Wafer handling robots **IWH F-1**
Heavy duty design with 3-link arm — E 36

Wafer handling robots **IWH F-2**
with 2-link arm and heavy duty housing — E 37

Wafer handling robots **IWH F-2**
with 2-link arm and housing in heavy duty design — E 38

Wafer handling robots **IWH F-2**
with 3-link arm and housing in heavy duty design — E 39

Wafer handling robots **IWH F-3**
with dual arm — E 40

Vacuum robots **IWH F-5**
with dual arm — E 41

Vacuum elevator
Linear Track — E 42

End effectors — E 43

Prealigners — E 44

Controller & accessories — E 45

systems

Wafer handling robots
with 2-link arm

IWH F-1

Figure:
IWH TA10S10 F-1

Features

- excellent structural rigidity
- extremely high failure safety and precision
- optionally installed above (TA) or installed below (BA)
- customised adaptations possible
- absolute (digital) or incremental encoder
- simple connection of prealigners, linear track and other peripherals to the robot controller
- optional high end controller for controlling complex systems
- including Robot Control Centre (RCC)
- Class 1 clean room-compatible
- made in Germany

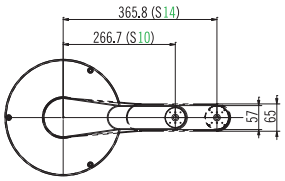
Technical specification

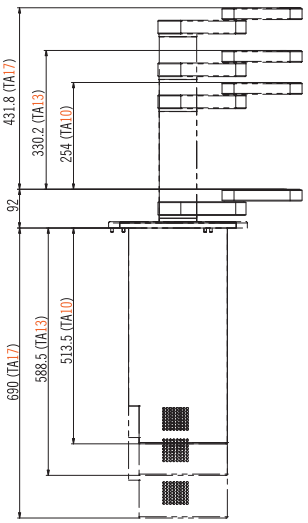
Description		IWH F-1
Repeatability	T	±0.02°
	R	±0.03 mm
	Z	±0.03 mm
Work area	Z	10", 13", 17"
	radial	10", 14"
	theta	450°
Payload on a joint		0.75 kg
Max. speed	T	360°/s
	R	1,000 mm/s
	Z	450 mm/s
Mains voltage		110 / 230 V AC
Control interface		RS-232 [DB9], option: Ethernet [RJ-45]
Interface for peripherals		RS-485 [RJ-45], RJ-11

Dimensioned drawings

IWH TA__S__F-1

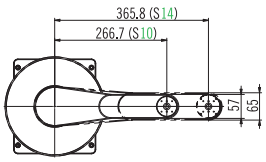
Possible configurations	
IWH TA10S10 F-1	IWH TA10S14 F-1
IWH TA13S10 F-1	IWH TA13S14 F-1
IWH TA17S10 F-1	IWH TA17S14 F-1

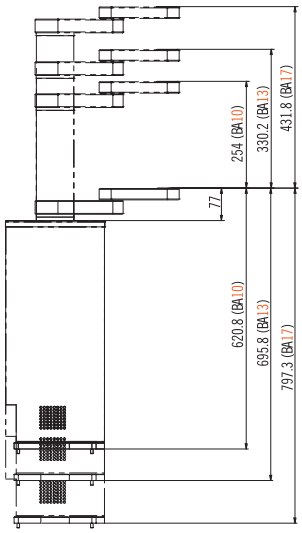




IWH BA__S__F-1

Possible configurations	
IWH BA10S10 F-1	IWH BA10S14 F-1
IWH BA13S10 F-1	IWH BA13S14 F-1
IWH BA17S10 F-1	IWH BA17S14 F-1





Wafer handling robots
with 2-link arm in heavy duty design

IWH F-1

Figure:
IWH TA10S10HD F-1

Features

- excellent structural rigidity
- extremely high failure safety and precision
- optionally installed above (TA) or installed below (BA)
- customised adaptations possible
- absolute (digital) or incremental encoder
- simple connection of prealigners, linear track and other peripherals to the robot controller
- optional high end controller for controlling complex systems
- including Robot Control Centre (RCC)
- Class 1 clean room-compatible
- made in Germany

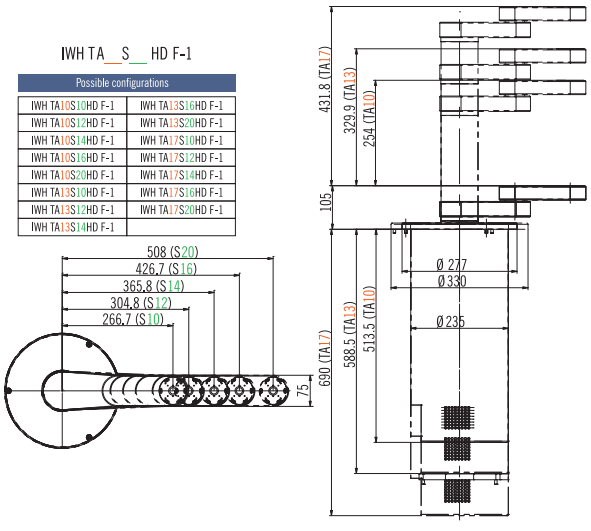
Technical specification

Description		IWH F-1
Repeatability	T	±0.02°
	R	±0.03 mm
	Z	±0.03 mm
Work area	Z	10", 13", 17"
	radial	10", 12", 14", 16", 20"
	theta	450°
Payload on a joint		2.75 kg
Max. speed	T	360°/s
	R	1,000 mm/s
	Z	450 mm/s
Mains voltage		110/230 V AC
Control interface		RS-232 [DB9], option: Ethernet [RJ-45]
Interface for peripherals		RS-485 [RJ-45], RJ-11

Dimensioned drawings

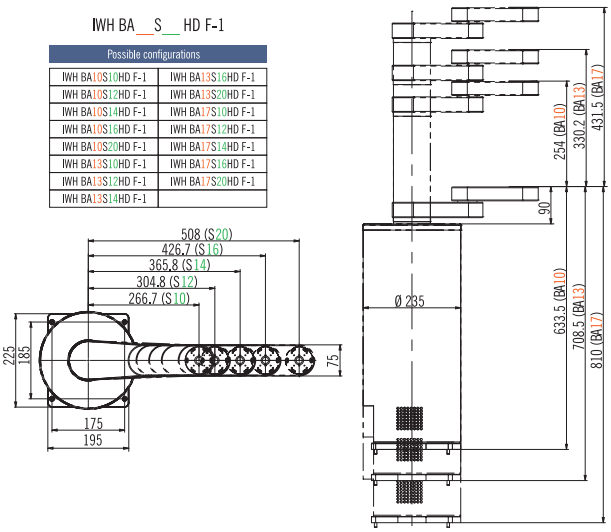
IWH TA__S__ HD F-1

Possible configurations	
IWH TA10S10HD F-1	IWH TA13S16HD F-1
IWH TA10S12HD F-1	IWH TA13S20HD F-1
IWH TA10S14HD F-1	IWH TA17S10HD F-1
IWH TA10S16HD F-1	IWH TA17S12HD F-1
IWH TA10S20HD F-1	IWH TA17S14HD F-1
IWH TA13S10HD F-1	IWH TA17S16HD F-1
IWH TA13S12HD F-1	IWH TA17S20HD F-1
IWH TA13S14HD F-1	



IWH BA__S__ HD F-1

Possible configurations	
IWH BA10S10HD F-1	IWH BA13S16HD F-1
IWH BA10S12HD F-1	IWH BA13S20HD F-1
IWH BA10S14HD F-1	IWH BA17S10HD F-1
IWH BA10S16HD F-1	IWH BA17S12HD F-1
IWH BA10S20HD F-1	IWH BA17S14HD F-1
IWH BA13S10HD F-1	IWH BA17S16HD F-1
IWH BA13S12HD F-1	IWH BA17S20HD F-1
IWH BA13S14HD F-1	



Wafer handling robots
Heavy duty design with 3-link arm

IWH F-1

Figure:
IWH TA10S16 F-1

Features

- excellent structural rigidity
- extremely high failure safety and precision
- optionally installed above (TA) or installed below (BA)
- customised adaptations possible
- absolute (digital) or incremental encoder
- simple connection of prealigners, linear track and other peripherals to the robot controller
- optional high end controller for controlling complex systems
- including Robot Control Centre (RCC)
- Class 1 clean room-compatible
- made in Germany

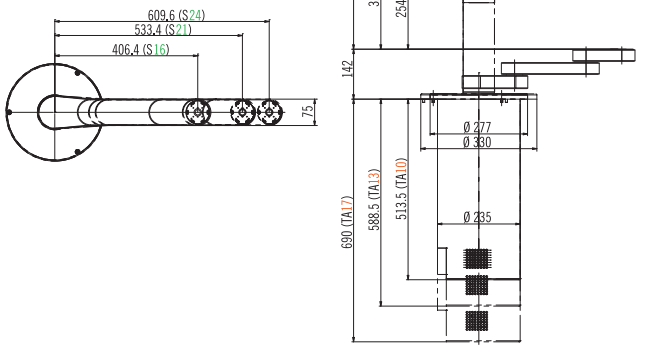
Technical specification

Description		IWH F-1
Repeatability	T	±0.02°
	R	±0.03 mm
	Z	±0.03 mm
Work area	Z	10", 13", 17"
	radial	16", 21", 24"
	theta	450°
Payload on a joint		2.75 kg
Max. speed	T	360°/s
	R	1,000 mm/s
	Z	450 mm/s
Mains voltage		110/230 V AC
Control interface		RS-232 [DB9], option: Ethernet [RJ-45]
Interface for peripherals		RS-485 [RJ-45], RJ-11

Dimensioned drawings

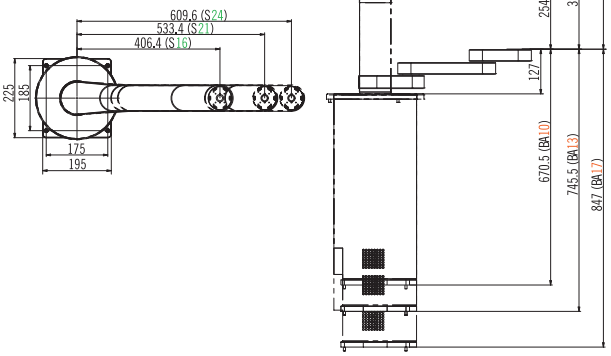
IWH TA__S__F-1

Possible configurations	
IWH TA10S16 F-1	IWH TA13S24 F-1
IWH TA10S21 F-1	IWH TA17S16 F-1
IWH TA10S24 F-1	IWH TA17S21 F-1
IWH TA13S16 F-1	IWH TA17S24 F-1
IWH TA13S21 F-1	



IWH BA__S__F-2

Possible configurations	
IWH BA10S16 F-1	IWH BA13S24 F-1
IWH BA10S21 F-1	IWH BA17S16 F-1
IWH BA10S24 F-1	IWH BA17S21 F-1
IWH BA13S16 F-1	IWH BA17S24 F-1
IWH BA13S21 F-1	



Wafer handling robots
with 2-link arm and heavy duty housing

IWH F-2

Figure:
IWH TA13S10 F-2

Features

- excellent structural rigidity
- extremely high failure safety and precision
- optionally installed above (TA) or installed below (BA)
- customised adaptations possible
- absolute (digital) or incremental encoder
- simple connection of prealigners, linear track and other peripherals to the robot controller
- optional high end controller for controlling complex systems
- including Robot Control Centre (RCC)
- Class 1 clean room-compatible
- made in Germany

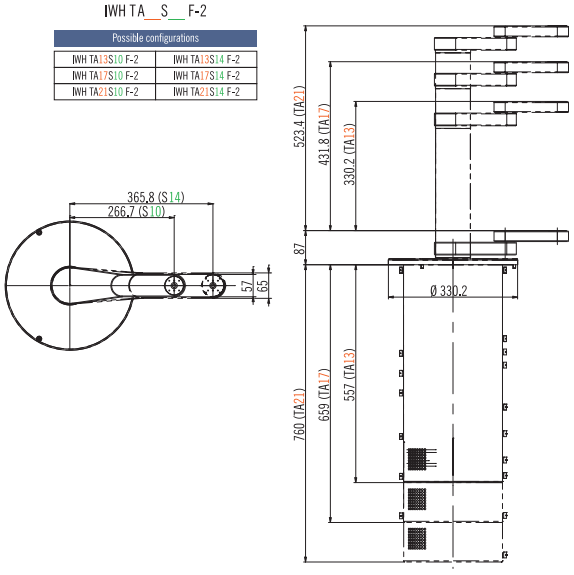
Technical specification

Description		IWH F-2
Repeatability	T	±0.02°
	R	±0.03 mm
	Z	±0.03 mm
Work area	Z	13", 17", 21"
	radial	10", 14"
	theta	450°
Payload on a joint		0.75 kg
Max. speed	T	360°/s
	R	1,000 mm/s
	Z	450 mm/s
Mains voltage		110/230 V AC
Control interface		RS-232 [DB9], option: Ethernet [RJ-45]
Interface for peripherals		RS-485 [RJ-45], RJ-11

Dimensioned drawings

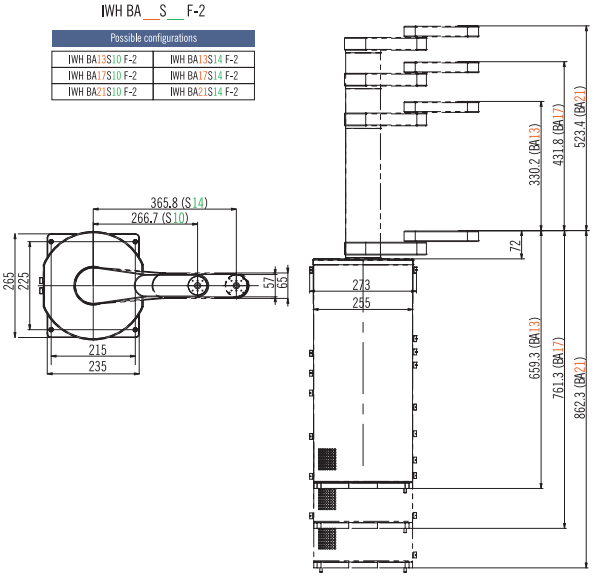
IWH TA__S__F-2

Possible configurations	
IWH TA13S10 F-2	IWH TA13S14 F-2
IWH TA17S10 F-2	IWH TA17S14 F-2
IWH TA21S10 F-2	IWH TA21S14 F-2



IWH BA__S__F-2

Possible configurations	
IWH BA13S10 F-2	IWH BA13S14 F-2
IWH BA17S10 F-2	IWH BA17S14 F-2
IWH BA21S10 F-2	IWH BA21S14 F-2



Wafer handling robots
with 2-link arm and housing in heavy duty design

IWH F-2

Figure:
IWH TA13S10HD F-2

Features

- excellent structural rigidity
- extremely high failure safety and precision
- optionally installed above (TA) or installed below (BA)
- customised adaptations possible
- absolute (digital) or incremental encoder
- simple connection of prealigners, linear track and other peripherals to the robot controller
- optional high end controller for controlling complex systems
- including Robot Control Center (RCC)
- Class 1 clean room-compatible
- made in Germany

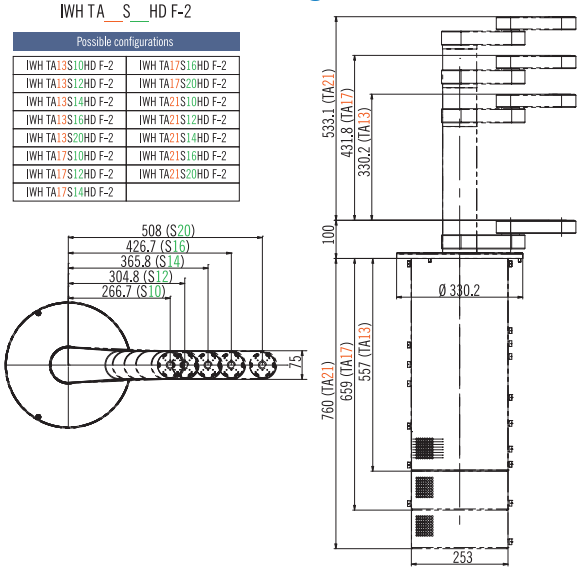
Technical specification

Description		IWH F-2
Repeatability	T	±0.02°
	R	±0.03 mm
	Z	±0.03 mm
Work area	Z	13", 17", 21"
	radial	10", 12", 14", 16", 20"
	theta	450°
Payload on a joint		2.75 kg
Max. speed	T	360°/s
	R	1,000 mm/s
	Z	450 mm/s
Mains voltage		110/230 V AC
Control interface		RS-232 [DB9], option: Ethernet [RJ-45]
Interface for peripherals		RS-485 [RJ-45], RJ-11

Dimensioned drawings

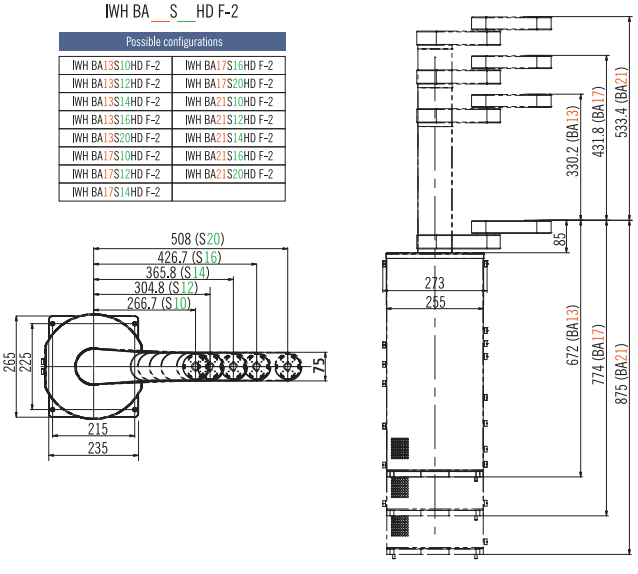
IWH TA__S__HD F-2

Possible configurations	
IWH TA13S10HD F-2	IWH TA17S16HD F-2
IWH TA13S12HD F-2	IWH TA17S20HD F-2
IWH TA13S14HD F-2	IWH TA21S10HD F-2
IWH TA13S16HD F-2	IWH TA21S12HD F-2
IWH TA13S20HD F-2	IWH TA21S14HD F-2
IWH TA17S10HD F-2	IWH TA21S16HD F-2
IWH TA17S12HD F-2	IWH TA21S20HD F-2
IWH TA17S14HD F-2	



IWH BA__S__HD F-2

Possible configurations	
IWH BA13S10HD F-2	IWH BA17S16HD F-2
IWH BA13S12HD F-2	IWH BA17S20HD F-2
IWH BA13S14HD F-2	IWH BA21S10HD F-2
IWH BA13S16HD F-2	IWH BA21S12HD F-2
IWH BA13S20HD F-2	IWH BA21S14HD F-2
IWH BA17S10HD F-2	IWH BA21S16HD F-2
IWH BA17S12HD F-2	IWH BA21S20HD F-2
IWH BA17S14HD F-2	



Wafer handling robots
with 3-link arm and housing in heavy duty design

IWH F-2

Figure:
IWH TA13S16 F-2

Features

- excellent structural rigidity
- extremely high failure safety and precision
- optionally installed above (TA) or installed below (BA)
- customised adaptations possible
- absolute (digital) or incremental encoder
- simple connection of prealigners, linear track and other peripherals to the robot controller
- optional high end controller for controlling complex systems
- including Robot Control Center (RCC)
- Class 1 clean room-compatible
- made in Germany

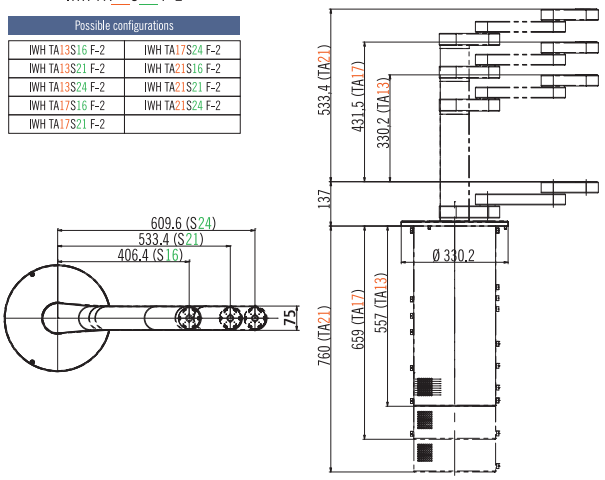
Technical specification

Description		IWH F-2
Repeatability	T	±0.02°
	R	±0.03 mm
	Z	±0.03 mm
Work area	Z	13", 17", 21"
	radial	16", 21", 24"
	theta	450°
Payload on a joint		2.75 kg
Max. speed	T	360°/s
	R	1,000 mm/s
	Z	450 mm/s
Mains voltage		110 / 230 V AC
Control interface		RS-232 [DB9], Option: Ethernet [RJ-45]
Interface for peripherals		RS-485 [RJ-45], RJ-11

Dimensioned drawings

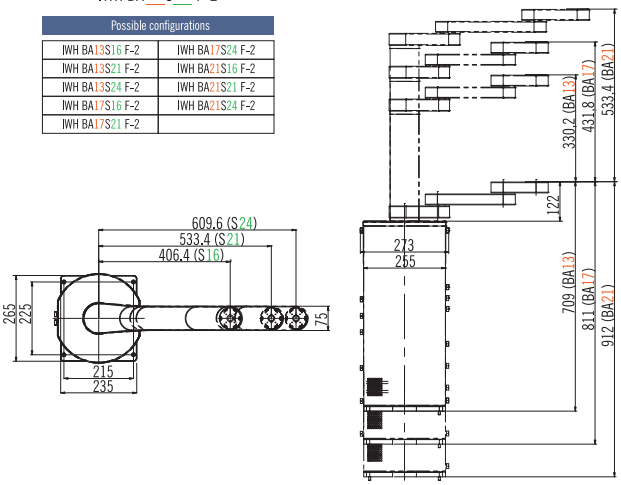
IWH TA__S__F-2

Possible configurations	
IWH TA13S16 F-2	IWH TA17S24 F-2
IWH TA13S21 F-2	IWH TA21S16 F-2
IWH TA13S24 F-2	IWH TA21S21 F-2
IWH TA17S16 F-2	IWH TA21S24 F-2
IWH TA17S21 F-2	



IWH BA__S__F-2

Possible configurations	
IWH BA13S16 F-2	IWH BA17S24 F-2
IWH BA13S21 F-2	IWH BA21S16 F-2
IWH BA13S24 F-2	IWH BA21S21 F-2
IWH BA17S16 F-2	IWH BA21S24 F-2
IWH BA17S21 F-2	



systems

Wafer handling robots
with dual arm

IWH F-3

Figure:
IWH F-3

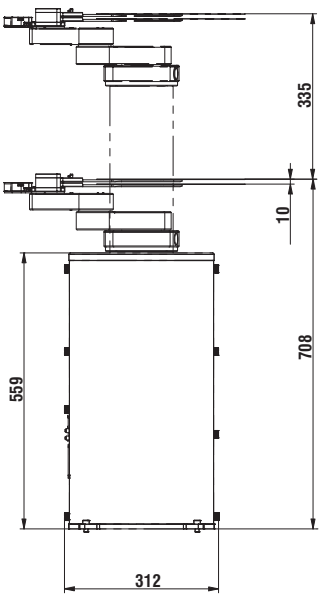
Features

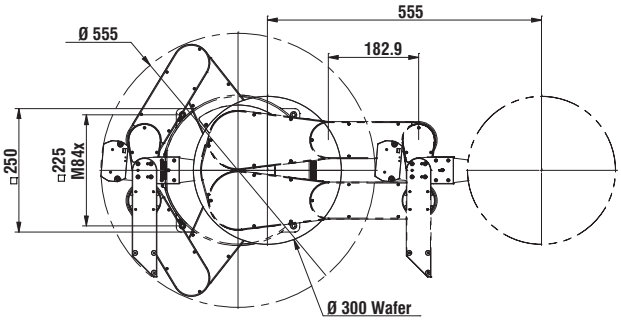
- excellent structural rigidity
- Handling wafers up to 300 mm
- extremely high reliability and accuracy
- simple connection of a linear track to the robot controller
- Real time motion control
- very quiet in operation
- brushless, no maintenance servo motors with low moment of inertia
- no-play harmonic drive® transmission
- Absolute encoder
- Versatile communication interfaces
- Class 1 clean room-compatible
- MTBF: > 50,000 operating hours
- including Robot Control Centre (RCC)

Technical specification

Description		IWH F-3
Repeatability	T	±0.02°
	R	±0.03 mm
	Z	±0.03 mm
Work area	Z	13" (330.2 mm)
	radial	14.4" (365.8 mm)
	theta	450°
Payload on a joint		max. 1.25 kg/arm
Max. speed	T	360°/s
	R	1,100 mm/s
	Z	425 mm/s
Mains voltage		110/230 V AC
Control interface		RS-232 [DB9], Option: Ethernet [RJ-45]
Interface for peripherals		RS-485 [RJ-45], RJ-11

Dimensioned drawings





Wafer handling vacuum robots IWH F-5

with dual arm

Diagram:
IWH F-5

Features

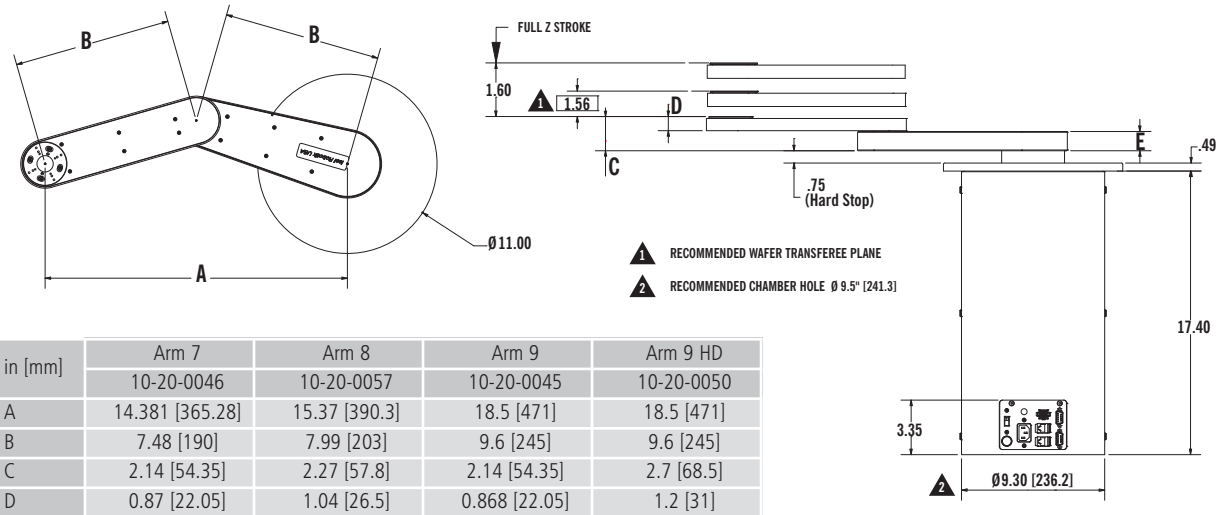
- Control area & installation configuration to industry standard
- Handling wafers up to 300 mm
- high precision, user-configurable 14", 16" and 18" arms
- extremely high reliability and precision
- Ferrofluid vacuum seal
- Vacuum < 5×10 Torr
- Real time motion control
- very quiet in operation
- brushless, no maintenance servo motors with low moment of inertia
- Absolute encoder
- Wide range of communication interfaces
- Class 1 clean room-compatible
- MTBF: > 50,000 operating hours

Technical specification

Description		IWH F-5
Repeatability	T	±0.02°
	R	±0.05 mm
	Z	±0.05 mm
Work area	Z	1.5" (38.4 mm)
	radial	14" (355.6 mm)
	theta	380°
Payload on a joint		1.0 to 2.2 kg
Leakage		<5E-9 Torr
Weight		21.8 kg

Description		IWH F-5
Max. speed	T	360°/s
	R	500 mm/s
	Z	100 mm/s
Mains voltage		110 VAC
Control interface		RS-232 [DB9], Option: Ethernet [RJ-45]
Max. temperature		150° C (302° F)
Max. operating temperature		80° C (176° F)
Visible materials		Al 6061, stainless steel, Ferrofluid, Viton
Type of installation		above/below the vacuum chamber
Configuration		Modular, exchangeable arms

Dimensioned drawings



in [mm]	Arm 7	Arm 8	Arm 9	Arm 9 HD
	10-20-0046	10-20-0057	10-20-0045	10-20-0050
A	14.381 [365.28]	15.37 [390.3]	18.5 [471]	18.5 [471]
B	7.48 [190]	7.99 [203]	9.6 [245]	9.6 [245]
C	2.14 [54.35]	2.27 [57.8]	2.14 [54.35]	2.7 [68.5]
D	0.87 [22.05]	1.04 [26.5]	0.868 [22.05]	1.2 [31]
E	1.181 [30]	1.14 [29]	1.18 [30]	1.3 [32.5]

Vacuum elevator / Linear track

Vacuum elevator

Diagram:
Vacuum elevator

Features

- Class 1 cleanroom compatible
- Absolute encoder
- Repeatability: 0.001"
- Maximum vertical lift: 406 mm (16")
- Maximum vacuum: 1.0×10 Torr
- AC servo motors
- Weight: 18.2 kg
- Payload: 5.5 kg
- Surface: Aluminium, stainless steel
- Cassette detection sensor
- Z-lift: 304.8 mm (12")

Linear Track

Diagram:
Linear track with
isel IWH-BA series wafer handling robot installed above

Technical specification

Description		
Repeatability	K	±0.02 mm
Standard spindles work area	K	21", 42", 62"
Payload		for all isel robots
Max. speed	K	1.200 mm/s
Max. acceleration	K	1.500 mm/s²
Power supply		110 / 230 V AC
Control interface		RS-232 [DB9], Option: Ethernet [RJ-45]

General

The ILT linear track series can be integrated seamlessly into your system's handling area owing to its flexibility. Tracks are controlled in conjunction with our IWH series robots. This combination of linear tracks with isel robots makes for a very effective system and thus provides high throughputs.

Depending on the application, installation can be below or to the side of the robot. The use of brushless servo motors makes linear tracks very responsive dynamically, low maintenance and quiet in operation.

Features

- High speed and dynamic response
- Lengths freely definable according to use
- Installation at the side or from below
- Very good structural rigidity
- Extremely high reliability and precision
- Simple connection to the robot controller
- Drive by linear or spindle motor
- Made in Germany

End effectors

Paddle EE
with scanner

Horseshoe EE
without scanner

Dual EE with
thru beam scanner

Exclusion zone vacuum
with scanner

Edge grip
with scanner

Vacuum analyser unit

Features

- for wafer sizes up to 12" (300 mm)
- modular design
- low intrinsic weight
- high rigidity
- favourable price/performance ratio
- PTFE-coated

Options

- various wafer mapping sensors
- various surface finishes
- Special designs
  - Pocket EE
  - Friction wafer
  - Edge grip EE
  - Exclusion zone grip EE
  - Exclusion zone vacuum EE
  - Multiple EE

Accessories

Vacuum analyser unit

- high response pattern
- freely programmable
- Resolution 0.001 bar
- Integrated end effectors
- two-colour display
- can be used with all
  vacuum end effectors

Ordering key

2	5	0	0	4	x	x	x	x	x	x	x	x

Automation components for the Semiconductor Industry, product group endeffectors IEE series 1

Wafer size

5= 2 - 5"
6= 6 - 8"
7= 4 - 8"
8= 12"
9= 8 - 12"

Endeffector type

01= Paddle
02= Horse shoe
03= Edge Grip
04= 2x paddle
05= Paddle/horse shoe
07= 2x horse shoe
08= Pocket end effector
09= Exclusion zone grip

Wafer Mapping

0 = No wafer mapping sensor
4 = Thru beam sensor horseshoe
7 = Holder for wafer mapping sensor
10 = Exclusion zone vacuum

Option

0000 = Standard
0002 = Flip module
0003 = Vakuum-Auswertereinheit
9xxx = kundenspezifisch

Prealigners

LPA series

isel triple axis prealigner
IPA series with
side connection field
and PEEK pin/chuck

isel single axis prealigner
IPA series with
back connection field

General

The LPA series of prealigners are an innovative, highly precise, Class 1 clean-room compatible prealigner solution with integrated scanning electronics.
The prealigners are developed and produced by Logosol Inc. USA and isel Germany AG is the exclusively authorised distributor for Europe.

Features

Three-axis prealigner

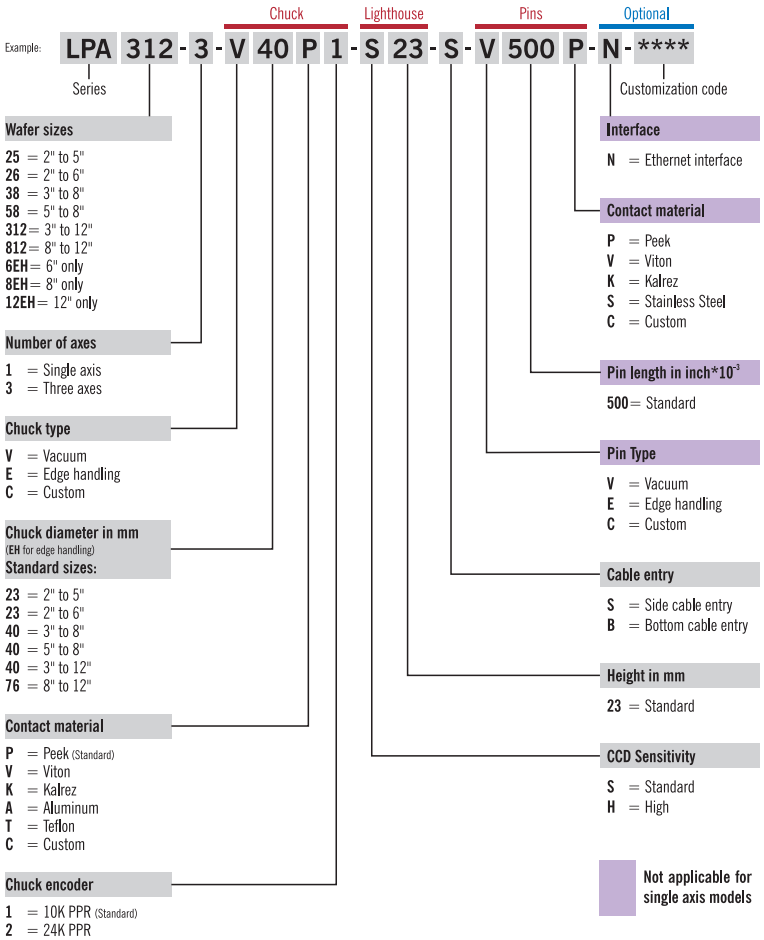
- innovative all-in-one design
- Alignment times < 3.5 seconds
- repeatability:
  linear ± 0.025 mm,
  circular ± 0.05°
- contactless measurement using LED and CCD sensor
- integrated scanning electronics
- standalone capability
- Chuck or pin load and change to another wafer size without rebuild
- transparent, semi-transparent, holed and opaque wafers can be aligned
- SEMI, flat and notch wafer specifications
- For wafer sizes from 2" to 12"
- Connection fields available from the side and from below

Features

Single axis prealigner

- Alignment times < 2.5 seconds
- contactless measurement using LED and CCD sensor
- integrated scanning electronics
- Chuck load
- Change to another wafer size without rebuild
- transparent, semi-transparent, holed and opaque wafers can be aligned
- SEMI, flat and notch wafer specifications
- For wafer sizes from 3" to 12"
- Connection fields available at the side and from below

Configuration options



Controller and accessories

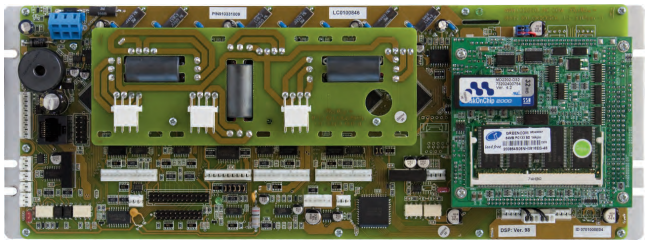


Figure: internal controller

Features
IRC 331 internal controller

- IWH series 1, IWH-HD series 2, IVR series, prealigners
- Incremental sensor control
- 3+1 axes, can be retrofitted
- 4 inputs, 3 outputs
- RS232 and Ethernet data transfer
- RCC software
- optional:
  - I/O expansion
  - Hand terminal

Figure:
external controller

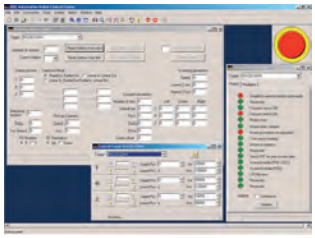


Figure: RCC software

Features
IRC 331 external controller ex

- IWH series 1, IWH-HD series 2, IVR series, prealigners
- Incremental sensor control
- 3+1 axes, can be retrofitted
- 4 inputs, 3 outputs
- RS232 and Ethernet data transfer
- RCC software
- optional:
  - I/O expansion
  - Hand terminal

Diagram: Flip module

Diagram: IHT hand terminal

Diagram: IMS-EX43(73)QS

Diagram: IMS-MDW1

Accessories

IFM-300-3 flip module

- precise turning of wafers with highly accurate positioning through mechanical endstops
- universal end effector adapter
- Mapping sensor
- DC motor with transmission unit
- electrical damping at the end of rotary path
- continuously variable speeds

Hand terminal

- optimum support for teaching an isel wafer handler
- isel wafer handler-optimised keyboard layout
- Terminal function
- Teach function
- Diagnostic function
- RS-485

IMS wafer mapping sensors

- Light source laser or LED
- Measurement distance 38/56 mm (1,5"/2,2")
- Sensor flexibly configurable

Space for your notes

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General Terms and conditions of Payment and Delivery and Software Terms of Use

Date: November 1st 2010

I. Scope of applicability

1. The following terms and conditions of sale are applicable to all contracts for the delivery of goods concluded between the customer and us. By placing an order and receiving the goods supplied by us, the customer confirms his acceptance of our terms and conditions. These terms and conditions shall also be applicable to all future business transactions, even if they are not expressly agreed again. Deviating terms and conditions of the customer are not binding for us unless expressly recognised, even if we have not expressly rejected such terms and conditions. The deviating terms and conditions are already herewith expressly rejected. The following terms and conditions of sale shall also be applicable where we unconditionally perform an order from the customer despite our knowledge of opposing or deviating terms and conditions of the customer.
2. Other agreements, amendments and understandings require written confirmation.
3. All agreements reached between the customer and us with regard to performance of the purchase contracts are drawn up in writing in those contracts.

II. Offers and conclusion of contracts

1. An order from the customer is deemed an offer to conclude a purchase contract. We may accept this offer by communicating a confirmation of offer within a period of two weeks or else by delivering the ordered goods within the same period.
2. Our offers are non-binding and subject to change, except where they are expressly described as binding. The scope of our obligation to perform is determined solely by our written confirmation of order.
3. The documents forming the basis for an offer or confirmation of order on our part, such as illustrations, drawings and specifications of dimensions and weights, are to be understood as approximate values only, insofar as they have not been described expressly as binding.
4. We reserve all property rights, copyrights and other protected privileges in respect of all illustrations, calculations, drawings and other documents, materials, models, specimens and specifications. The customer may only pass these on to third parties with our written consent, irrespective of whether they are marked as being confidential.
5. Evident errors or printing, arithmetic, spelling or calculation mistakes are not binding for us and do not found an entitlement for the customer to claim damages.
6. We reserve the right to implement design changes or other modifications to technical data and performance parameters where this is deemed to serve technical progress.

III. Pricing and terms of payment

1. Our prices are applicable ex works excluding packaging, unless specified otherwise in the confirmation of order. Our prices do not include value-added tax. Where applicable, this will be specified separately on the invoice at the statutory rate applicable on the date of invoicing. The costs for packaging will be charged at our discretion.
2. Deliveries are performed exclusively on the basis of cash on delivery or advance payment in the currency "EURO".
3. All orders are performed on the basis of the prices and discount rates applicable at the time of delivery. A discount for cash payment may only be deducted in case of a specific written agreement between us and the customer. This written agreement may also be deemed concluded, for example, by way of our confirmation of order.
4. Deliveries on account must be expressly agreed. The purchase price is then due for payment net (without deductions) immediately upon receipt of the invoice by the customer, insofar as no other period for payment is stipulated in the confirmation of order. A payment is only deemed effected once we are able to dispose of the amount. In case of payments by cheque, the payment is only deemed effected after the cheque has been submitted and credited to our account. We are not obliged to accept bills or drafts.
5. If the customer falls into arrears with payment, then the statutory rules shall apply.
6. All claims against the customer on our part become due for payment immediately, if a deadline for payment is not observed or the customer violates other contractual agreements or we gain knowledge of circumstances which may be expected to reduce the creditworthiness of the customer. In such a case, we are furthermore entitled to perform any outstanding deliveries only against advance payment or the furnishing of security, even if other agreements were reached previously. Following expiry of a reasonable period of grace, we are in this case also entitled to withdraw from the contract or to demand compensation for non-performance. We may furthermore prohibit the resale of goods supplied subject to a reservation of ownership, demand their return or transfer of immediate possession at the expense of the customer, and cancel an authorisation to collect.
7. The customer is only entitled to offset payments if the counterclaims are non-appealable, recognised by us or undisputed, even if notifications of defects or counterclaims are pending. The customer is only entitled to exercise a right of retention if his counterclaim is based on the same contractual relationship.

IV. Period for delivery or performance

1. Delivery dates and deadlines are exclusively non-binding indications, unless expressly agreed as binding. The delivery period specified by us begins only after clarification of all technical questions and details of performance.
2. The customer must fulfil the obligations resting upon him properly and in good time. The agreed delivery deadline is extended – notwithstanding our rights arising from the customer's default – by the period by which the customer is in default with his obligations from the present or any other contract. This applies also where a fixed delivery date was agreed.
3. If the underlying transaction of the purchase contract is a fixed-date transaction in the sense of § 286 para. 2 no. 4 BGB (German Civil Code) or § 376 HGB (German Commercial Code), then we are liable in accordance with the statutory regulations. The same applies also where the customer is entitled to assert the frustration of his interest in further performance of the contract due to a delay in delivery attributable to us. In this case, our liability is limited to the amount of the foreseeable, typically arising damage. The limitation of liability is not applicable where the delay in delivery is due to a deliberate violation of the contract attributable to us, for which purposes such fault on the part of our representatives or agents is deemed attributable to us.
We are similarly liable towards the customer in accordance with the statutory regulations in case of a delay in delivery arising from a deliberate or grossly negligent violation of the contract attributable to us, for which purposes such fault on the part of our representatives or agents is deemed attributable to us. Our liability is limited to the amount of the foreseeable, typically arising damage if the delay in delivery is not due to deliberate violation of the contract attributable to us.
4. In a case in which a delay in delivery attributable to us arises from culpable violation of an essential contractual duty, for which purposes such fault on the part of our representatives or agents is deemed attributable to us, we are liable in accordance with the statutory regulations with the proviso that the liability for compensatory damages is in this case limited to the amount of the foreseeable, typically arising damage.
5. The customer is in case of a delay in delivery attributable to us otherwise entitled to demand flat-rate compensation amounting to 0.5% of the delivery value for each full week of the delay, but in total no more than 5% of the delivery value.
6. All further liability for a delay in delivery attributable to us is excluded. Further statutory claims and rights on the part of the customer which may be available to him alongside the claim for compensatory damages due to a delay in delivery attributable to us remain unaffected.
7. We are entitled to effect partial delivery or partial performance at any time, insofar as this is reasonable for the customer.
8. Delivery deadlines are deemed to have been observed if the goods leave our premises in good time.
9. Cases of force majeure entitle us to delay the delivery for the period of the hindrance and a reasonable response time or else to withdraw from the portion of the contract which has not yet been performed. Strikes, lock-outs and other circumstances which significantly impair or otherwise render our delivery impossible are deemed equivalent to force majeure, irrespective of whether they affect us directly or a supplier. The customer is entitled to demand a statement from us as to whether we intend to withdraw or deliver within a reasonable period. If we make no such statement, then the customer is entitled to withdraw.
10. If the customer falls into default with his acceptance of our delivery, then we are entitled to demand reimbursement of the damage incurred and any additional expense. The same applies also where the customer culpably violates duties to cooperate. The risks of deterioration and accidental loss pass to the customer with his default in accepting or debtor's delay.

V. Transfer of risk – Dispatch and packaging – Delivery

1. Goods are dispatched and delivered insured at the customer's risk and expense, unless we have been prohibited accordingly by the customer. We will make every effort to take into account the wishes and interests of the customer when choosing the form of dispatch and forwarding route; any ensuing additional costs are to be paid by the customer, even if carriage-paid delivery was otherwise agreed. All liability is excluded in respect of the choice of transport means and forwarding route.
2. All risk passes to the customer upon handing-over to the forwarder, carrier or the customer himself as collector, but at the latest upon the goods leaving the works or warehouse.
3. In case of deliveries with erection or assembly at the customer's site, risk passes upon taking-over for own operations or, if agreed, after successful test operation. If the dispatch, delivery, start or performance of erection or assembly, taking-over for own operations or test operation is delayed for reasons attributable to the customer, or of the customer falls into default of acceptance for any other reasons, then risk already passes to the customer with the corresponding readiness.
4. We do not take back transport packaging or any other packaging in accordance with the directive on packaging, with the exception of pallets. The customer must provide for disposal of the packaging at his own expense.
5. If dispatch is delayed at the wishes or through the fault of the customer, then we take the goods into storage at the customer's risk and expense. In this case, the notification of readiness for dispatch is deemed equivalent to actual dispatch.
6. The minimum order amount for deliveries to be dispatched is 100 EURO (excluding VAT) for inland sales or 250 EURO for foreign sales. Inland orders below the minimum order value will be delivered subject to invoicing of an extra handling charge of 50 EURO (excluding VAT), in addition to the usual costs for packaging and dispatch. Foreign orders below the minimum order value will not be accepted for delivery.
7. Orders for custom products or for quantities and dimensions which are not specified in our catalogue must be submitted in written form by the customer. Where appropriate, an agreed advance payment must be made. If we accept orders for custom products in large quantities, then our delivery may exceed or fall short of the specified quantity by a reasonable amount (generally ±10%). Dispatch packaging is always charged at cost price.

VI. Warranty/liability

1. In contractual relations with registered traders and between companies we give a warranty of freedom from defects for our products for a period of one year.
2. For milling spindles and other wearing parts we give a warranty of freedom from defects for a period of 6 months. This warranty period of 6 months applies also to milling spindles which are integrated into a machine system.
3. Advice on applications is provided according to the best of our knowledge. All specifications and information with regard to the suitability and applicability of our goods, however, remain non-binding and do not release the customer from the requirement to perform his own calculations, tests and trials. The customer is himself responsible for compliance with statutory and authority regulations concerning use of the goods. We are liable for the suitability of the goods for a particular purpose only if this suitability has been expressly warranted in writing.
4. We provide a warranty for material defects as follows, to the exclusion of all further claims and subject to the following stipulations and the stipulations of Sections VIII and IX:
5. If the customer is a registered trader, he can assert claims for defects only if he has complied properly with his duties of inspection and notification of complaint in accordance with § 377 HGB. Other customers must submit their notice of complaint to us in writing within 10 days after receiving the goods. In the case of transactions with non-traders this applies only insofar as the defect is an evident defect. Notices of complaint can only be considered if the goods are still in the state in which they were delivered.
6. In case of justified notifications of defect we are entitled, to the exclusion of rights on the part of the customer, to withdraw from the contract or to reduce the purchase price or else obliged to rectify our performance, unless we are entitled to refuse rectifying performance on the basis of statutory regulations. The customer must grant us a reasonable period for rectifying performance. The rectifying performance may be effected by way of remedying of the defect (reworking) or replacement delivery at our own discretion. We bear the necessary expenses in case of remedying of the defect, insofar as the expenses are not increased due to the goods concerned being at a place other than the place of performance. If the rectifying performance is not successful, the customer may at his own discretion demand a reduction of the purchase price or declare his withdrawal from the contract. Remedying is deemed unsuccessful after the second unsuccessful attempt, insofar as further attempts at remedy are not justifiable and reasonable for the customer on account of the nature of the goods. The customer may only assert claims for damages due to defect under the following terms after an unsuccessful attempt at rectifying performance. The customer's rights to claim further damages under the following terms remain unaffected.
7. Returns of goods subject of a complaint are permissible only with our consent. Goods must be returned in the original or an equivalent packaging. Carriage costs are to be paid by the customer. Costs will be reimbursed only in case of a justified notification of defect. If the customer demands an inspection of the delivered goods and specifies a defect for which we would be liable, then we charge a handling fee for each inspected item which is shown not to be defective.
8. Warranty claims on the part of the customer expire one year after delivery to the customer, unless we have fraudulently concealed the defect; in this case the statutory regulations shall apply. Our duties arising from Section VI no. 9 and Section VI no. 10 remain unaffected.
9. We are obliged in accordance with the statutory regulations to take back the new goods or else to reduce the purchase price also without the otherwise necessary specification of a deadline if the customer's customer as end user of the new movable sold (consumer goods sales) is able to demand return of the goods or reduction of the purchase price from the customer due to the defect in the goods or if such a resulting claim under a right of recourse has been expressed against the customer. We are in this case furthermore obliged to reimburse the expenses, in particular transport, travel, labour and material costs, incurred by the customer in conjunction with his rectifying performance for the end user due to a defect in the goods present at the passing of risk from us to the customer. This claim is excluded if the customer failed to comply properly with his duties of inspection and notification of complaint in accordance with § 377 HGB.
10. The obligation under Section VI no. 9 is excluded insofar as the notice of defect is based on marketing statements or other contractual agreements which did not originate from us, or if the customer has given special guarantees to the end user. The obligation is similarly excluded if the customer himself was not obliged to perform the warranty duties towards the end user under statutory regulations or failed to assert such opposition to the claim made against him. This applies also where the customer has performed warranty duties towards the end user which go beyond the statutory scope.
11. We are liable according to the statutory regulations and irrespective of the following limitations of liability for injury to life, body or health which is attributable to a negligent or deliberate violation of duties by us, our legal representatives or our agents, as well as for damage which is covered by a liability under the Product Liability Act (Produkthaftungsgesetz). In case of damage which is not covered by sentence 1 above and which is attributable to deliberate or grossly negligent violations of contract or fraudulent actions by us, our legal representatives or our agents, we are liable in accordance with the statutory regulations. In this case, however, the liability for damages is limited to the amount of the foreseeable and typically arising damage, insofar as we, our legal representatives or our agents have not acted deliberately. To the extent to which we have given a warranty of quality or durability in respect of the goods or parts thereof, we are liable also within the framework of this warranty. In case of damage arising from the absence of the warranted quality or durability but not directly in the goods themselves, however, we are liable only where the risk of such damage is evidently covered by the warranty of quality and durability.
12. All further liability is excluded, irrespective of the legal nature of the asserted claim. This applies in particular also to tortious claims or claims for the reimbursement of futile expenses in lieu of performance; our liability in accordance with Section IV no. 6 to Section IV no. 10 of these terms and conditions remains unaffected. Where our liability is excluded or limited, this applies also to the personal liability of our staff, employees, representatives and agents.
13. Claims on the part of the customer for compensatory damages due to a defect expire one year after delivery of the goods. This does not apply in cases of injury to life, body or health for which we, our legal representatives or our agents are to blame, or where we or our legal representatives have acted deliberately or with gross negligence, or where our simple agents have acted with gross negligence.
14. We furthermore accept no liability for damage arising from the following circumstances: Unsuitable or improper use or storage, incorrect assembly by the customer or any third party, own modifications and attempts at repair, natural wear, incorrect or negligent handling, chemical influences, electrical influences, etc. over which we have no control, as well as in case of use for purposes other than those intended or failure to observe our operating instructions and catalogue specifications. Our warranty is also waived if the customer or any third party performs modifications without our prior written authorisation and without any other justification (delayed rectification of a fault on our part), in particular modifications to controllers/software, even if the fault occurs in a part which was not modified.
15. In case of legal defects, where use of the delivered goods violates industrial property rights or copyright in Germany, we will at our expense obtain a principle right for the customer or else modify the delivered goods in a manner reasonable for the customer and such that the rights are no longer violated. If this is not possible at economically reasonable expense or within a reasonable period, then the customer is entitled to withdraw from the contract. We will furthermore indemnify the customer against any undisputed or non-appealable claims.
16. Our above obligation is attendant subject to the above liability stipulations for cases of violation of property rights and copyright. The obligation under clause 15 is thus only effective if the customer informs us without delay of any claims of violation of property rights and copyright, the customer supports us to a reasonable extent in contesting the asserted claims and/or permits us to make corresponding modifications, we retain the right to take all defensive measures, including out-of-court settlements, the violation is not attributable to an instruction of the customer, and the violation is not due to the customer himself modifying the delivered goods or using the goods in a manner not compliant with the contract.

VII. Repairs and returns

1. If the customer wishes a cost estimate to be provided before performance of repairs, then this must be expressly specified. The costs of carriage and packaging are to be paid by the customer. The invoice amount for repairs is payable immediately without deductions of any kind. All repairs, including those performed as warranty repairs, are performed at our works, insofar as no other written agreement exists.
2. Returns of delivered goods are possible only after prior consultation and agreement, and are subject to appropriate mark-downs. All returns of custom products and software are excluded! All shipments and returns are to enclose a copy of the delivery note or invoice. The costs of the return shipment are to be paid by the customer. Returns must be delivered free of charge to our address.

VIII. Assembly

1. Assembly work is to be paid for separately, unless agreed otherwise in writing. The costs of assembly comprise in particular travel costs, daily allowances, the usual daily rates for working time and supplements for overtime, for work at nights or on Sundays and public holidays, for work under aggravated circumstances and for planning and supervision.
2. The costs for preparation, travelling, waiting and site-to-quarters times will be invoiced separately. If the assembly or commissioning is delayed for reasons not attributable to us, then the customer is to bear all costs for the waiting time and for any further travel which becomes necessary.
3. The customer is at his own expense to provide the necessary helpers in appropriate numbers with their required tools. The customer is furthermore to provide sufficiently large, suitable, dry and lockable rooms for the keeping of machine parts, equipment, materials, tools, etc. He is to take the same measures to protect our property and the assembly personnel as he would take to protect his own property. If the nature of the customer's operations requires special protective clothing or protective equipment for the assembly personnel, then he is also to provide this clothing and equipment.
4. Our assembly personnel and their subcontractors are not authorised to perform work which is not performed to fulfil our obligation to deliver and erect or assemble the goods nor to have such work performed by the customer or a third party without prior consultation with us. We are not liable for such work which is not attributable to our sphere of responsibility. If the assembly is performed by the customer or a third party commissioned to do so by him, then our correspondingly valid operating and assembly instructions are to be observed.

IX. Software, use of software and supplementary warranty and defect claims

1. For all software of whatever kind from us, including the corresponding documentation, the customer is in exchange for payment granted a non-exclusive, non-transferable and in terms of time unlimited right of use on a particular or individually specified hardware product. We remain the holders of the copyright and all other industrial property rights. The right of duplication is granted only for the purpose of data backups. Copyright notices must not be removed.
2. We supply installation and start-up instructions with appropriate safety notes for the software in printed form. All other documentation is provided only in the form of software data. When a new software release is sent to the customer, the correspondingly necessary software data will also be sent. We are also entitled to supply the documentation by way of an online help function or online documentation.
3. All communication to third parties requires our prior written consent. Where software is supplied for the purpose of resale, acceptance of this condition by the third party must be ensured. Modifications are not permitted.
4. In case of a violation of these stipulations, the customer is to pay a contractual penalty amounting to 10 times the order value for each violation. Further claims for compensatory damages remain unaffected. The contractual penalty is to be offset from any claims for compensatory damages. The customer is entitled to furnish proof that less or no damage has been incurred. The software and the corresponding documentation are in this case to be returned without delay.
5. The above stipulations are not applicable to exclusively customer-specific software developed on the basis of specifications provided by the customer. Such software developed within the framework of a contractually agreed complete control solution is composed specifically for the customer through the combination of modular software components created for a diversity of application cases (standard software modules) and is matched to the contractual performance specifications (customer-specific application software).
6. Upon full payment of the purchase price for the customer-specific application software, we grant the customer an exclusive and in terms of territory and time unlimited right of use, but without the customer acquiring any rights of any kind in respect of the individual standard software modules on which the customer-specific adaptation is based.
7. Irrespective of these stipulations, we remain entitled to create and offer further customer-specific software solutions on the basis of this development to accommodate the task specifications of other customers. We in any case retain a simple right of use in respect of the customer-specific solutions for our own internal purposes.
8. Subject to the stipulations of Section VI, we provide a warranty for the proper duplication of our software. Software from us will run on hardware products specified by us. Warranty duties are fulfilled by way of replacement delivery. Beyond this, we give no warranty regarding the flawless quality of the software and its data structure, unless agreed otherwise in writing. In the case of customer-specific software, we give a warranty in respect of the function and performance properties defined in the specifications, the confirmation of order, the documentation or the jointly determined work/process descriptions. We give no warranty regarding the flawless quality of the programs as used in all applications intended by the customer, in particular not in those applications which were not known to us or tested at the time of creation/acceptance.

X. Reservation of ownership

1. The supplied goods remain our property until all claims have been settled, including all open account balance claims which we hold now or in the future against the customer (reserved goods). In case of behaviour contrary to the contract on the part of the customer, e.g. payment arrears, we are entitled to take back the reserved goods after having previously specified a reasonable period of grace. If we take the reserved goods back, then this is deemed to represent withdrawal from the contract. If we seize the reserved goods, then this is deemed to represent withdrawal from the contract. We are entitled to dispose of reserved goods which are taken back. After deduction of a reasonable amount to cover the costs of disposal, the proceeds of disposal are to be offset against the amounts owed to us by the customer.
2. The customer is to handle the reserved goods with due care and is at his own expense to insure them adequately for their original value against fire, water damage and theft. Maintenance and inspection work which becomes necessary is to be performed by the customer in good time and at his own expense.
3. The customer is entitled to resell and/or make use of the reserved goods in the course of proper business, provided he is not in arrears with payments. He is not permitted to pledge the reserved goods nor to assign them as security. Claims arising from reselling or on any other legal basis (insurance, unlawful action) in respect of the reserved goods (including all open account balance claims) are already herewith assigned to us in full by the customer as security; we herewith accept this assignment. We authorise the customer revocably to collect the claims assigned to us in his own name for his account. The authorisation to collect can be revoked at any time, should the customer fail to properly fulfil his payment obligations. The customer is also not authorised to assign claims for the purpose of collection by way of factoring, unless an obligation is founded at the same time whereby the factor is to effect considerations up to the amount of the claims directly to us as long as we still hold claims against the customer.
4. Any processing or refashioning of the reserved goods by the customer is in all cases deemed to be performed on our behalf. Insofar as the reserved goods are processed with other items not belonging to us, we acquire co-ownership of the new goods according to the ratio between the value of the reserved goods (final invoice amount including VAT) and that of the other processed items at the time of processing. The same stipulations apply to the new goods arising through such processing as to the reserved goods. Where the reserved goods are combined inseparably with other items not belonging to us, we acquire co-ownership of the new goods according to the ratio between the value of the reserved goods (final invoice amount including VAT) and that of the other combined items at the time of combining. If the customer's product is to be considered the principal good as a result of the combining, then we and the customer are agreed that the customer is to assign proportional co-ownership of this good to us; we herewith accept this assignment. Our resulting sole or co-ownership of a good is to be kept for us by the customer.
5. In case of access to the reserved goods by a third party, in particular in case of seizure, the customer is to draw attention to our ownership and is to inform us without delay so that we are able to assert our ownership rights. If the third party is not in a position to reimburse the judicial and extrajudicial costs incurred by us in this connection, then the customer is to be liable accordingly.
6. We are obliged to release securities assigned to us insofar as the realisable value of our securities exceeds the secured claims by more than 10%; the decision as to which securities are to be released is left to our discretion.

XI. Place of performance, place of jurisdiction and applicable law

1. The place of performance and jurisdiction in respect of deliveries and payments (including actions pertaining to cheques and bills) as well as for all disputes arising between us and the customer from purchase contracts concluded between us and the customer, if the customer is a registered trader, a legal person under public law or a special trust under public law, or if he has his residence or business offices outside the Federal Republic of Germany, is the court at the place of our business offices in 36124 Eichenzell, Germany. We are entitled, however, to file action against the customer at the place of his residence or business offices.
2. The relationships between the contract parties are governed solely by the law applicable in the Federal Republic of Germany to the exclusion of all bilateral and multilateral treaties relevant to the transaction; the applicability of UN Law on International Sales, in particular, is excluded.

XII. Miscellaneous

1. If the customer exports our goods to territories outside the Federal Republic of Germany, then we accept no liability for an ensuing violation of property rights held by third parties. The customer is obliged to provide compensation for all damage arising from the exporting of goods which we did not supply expressly for export.
2. If any of the stipulations of these general terms and conditions of business are shown to be invalid, then this shall not affect the validity of the remaining stipulations. We and the customer are to replace the invalid stipulations with new stipulations which are legally permissible and correspond as closely as possible to the original legal and economic intention and purpose.
3. All changes and amendments to these general terms and conditions of business become effective only if executed in writing. This applies also to an agreement to waive this requirement of the written form.

ClimatePartner°
CO_2 emissions of this product have been compensated with emission reduction certifcates.
Certifcate Number: 971-53323-1010-1285
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