CNC Rotary Tables - Edition 5

PGD
Series
Preloaded
Gear Drive

2023

Main catalog

1/2023 | EN

Backlash-free, high-speed, with sensors –
ready for real Industry 4.0 thanks to pl-smartBox

LEHMANN®

Swiss Rotary Table Technology

Since 1974

pL LEHMANN s a medium-sized business that has specialized in rotary tables for over 40 years:

1960 Founding – Contract manufacturing
1973 Conversion into a stock corporation
1974 Introduction of numerically controlled rotary tables (HUST)
1980 Construction of new factory building
1986 Development of the 400 series
1988 2nd generation joins management
1997 Construction of new assembly building
2000 Development of the 800 series (DD up to 10,000 rpm)
2002 2nd generation assumes management responsibility
2003 Development of the 700 series (DD up to 800 rpm)
2008 Addition of office building
2010 Development of the 500 series
2011 Start of internationalization / lean production
2013 Development of the high-speed version of the 500 series
2016 Expansion of factory building
2019 Introduction of AM-LOCK and the 900 DD series
2021 New MQ series for measurement technology
2022 New P-Line for simple positioning tasks

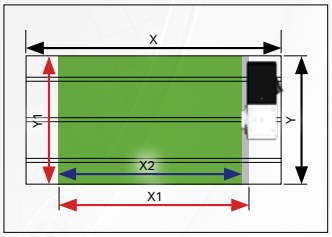
Today, pL LEHMANN is still an owner-managed family-owned company present in over 20 countries (see the back of this catalog).

The company is committed to typical Swiss values
- Product quality
- Superior technology
- Innovation and flexibility
- Long-term, sound business policies

For more, see www.lehmann-rotary-tables.com.

* Sales and service partners trained and equipped by pL (VAR – value added resellers or VAP - value added partners)

Selection Guides
pL LEHMANN offers detailed Selection Guides for over 30 machine brands (see **pp. 6+7**)



Additional pL products

DD Series

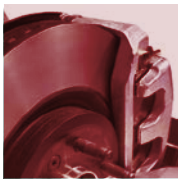
AM-LOCK

ROTOMATION

Measurement technology

Whoever wishes to invest in tomorrow's way of production must consider the needs and opportunities available today

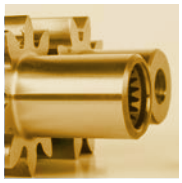
CNC rotary tables for economical manufacturing: pL LEHMANN has suitable and rational solutions for nearly every industry

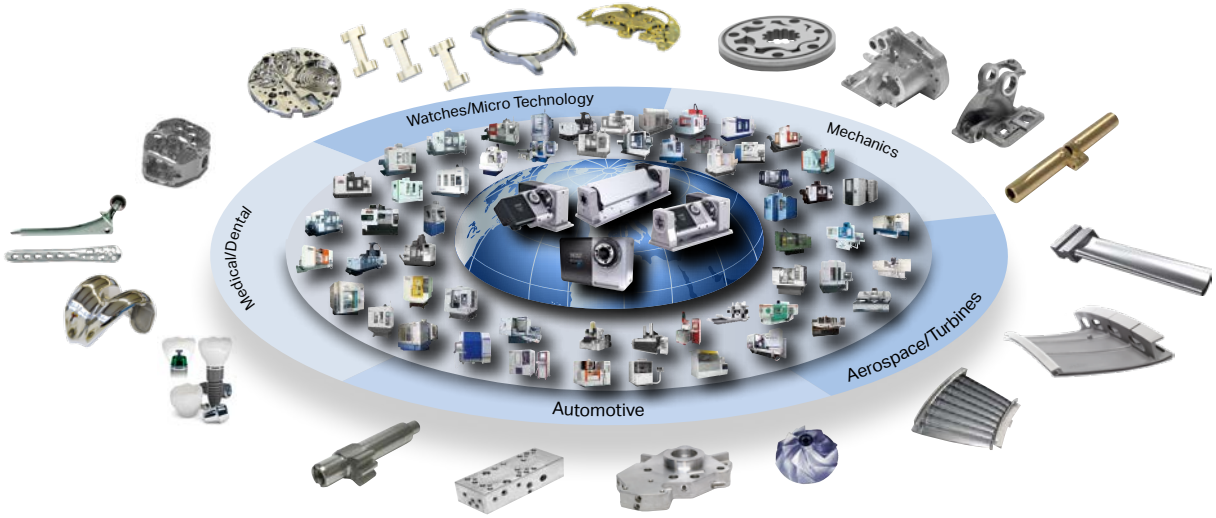

Automotive


Medical/Dental


Watches / Micro Technology


Aerospace/Turbines


Mechanics

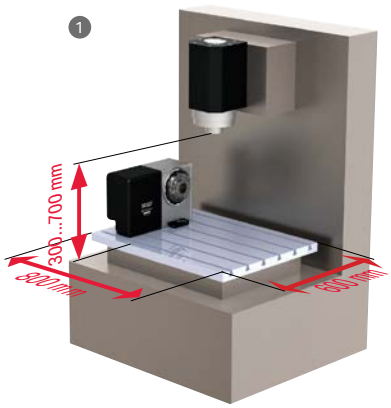


pL rotary tables in use on over **200** different machine brands and over **1,000** different machine models.

pL competence: Integration in **all known** CNC control systems (Fanuc, Siemens, Heidenhain, Haas, Winmax, Mitsubishi, Brother, Mazatrol ...), for new machines as well as for retrofits

Highly productive solutions even on compact machines – for almost every requirement: 4-axis or 5-axis

1



Base machine can be used in 3-axis mode at all times, e.g. for bulky workpieces

2

4th axis with swivel yoke, on base plate

3

4th axis with swivel yoke, directly on machine table

4

4th axis, 3-spindle, X-mounting (lengthwise)

5

4th axis, 3-spindle, Y-mounting (crosswise)

6

4th + 5th axis, 1-spindle, X-mounting (lengthwise)

7

4th + 5th axis, 2-spindle, Y-mounting (crosswise)

8

4th + 5th axis, 2-spindle, X-mounting (lengthwise)

9

4th axis for tilting the grinding spindle. 5th axis (vertical) for workpiece rotation

Up to 210 rpm
up to 0.21 sec / 90°

High-speed GD

Extended travel in
Z- and X-direction

More space

High spindle load,
heavy-duty bearing

Heavy duty

E-Series

energy efficient

EA-50x light only 12 kg

Selection of suitable machines

Vertical machining centers
(Selection Guides available)

- AKRIA
- Almac
- AMS
- AWEA
- BFW
- Brother Speedio
- Chiron
- Cincinnati
- DMG MORI
- DN Solutions
- EMCO
- Fanuc Robodrill
- Fehlmann
- GF Mikron
- Haas CNC
- Hardinge Bridgeport
- Hasegawa
- Hurco
- Hwacheon
- Hyundai/Wia
- Kaast
- Komatech
- Leadwell
- Litz
- Makino
- Map
- MAPLE
- MAS
- Mazak
- MT EVO
- PreMill
- Priminer
- Quaser
- Schaublin
- Takumi
- Tongtai
- Toyoda
- Wele
- YCM

DD Series

Request our special catalog

High-speed DD

up to 5,450 rpm

Adaptability

Multifunctional
spindle HSK

Precision

On the workpiece, as
precise as 2 µm / 100 mm

Pneum. Clamping up to 7,000 Nm

High clamp

Large parts up to ø 500

Big size

PGD backlash-free long-life gear unit

No backlash

Other
- Finepart (waterjet cutting)
- Hexagon (measuring)
- LT Ultra (ultra precision)
- OGP Quality vision (measuring)
- ...

Grinding
- Blohm Jung
- Chevalier
- Elb-Schliff
- Hauser
- Lapmaster Wolters
- Mägerle
- Moore
- ...

Laser
- DMG MORI Sauer
- GF Mikron
- Litz
- Microlution
- ...

T-Series

All base plates made of steel

with integrated hole pattern for slot spacing of 100 and 125 mm, integrated alignment system **lineFIX** for lengthwise or cross-wise clamping.

M-Series

Connectivity

Monitoring for operation & service

No adjust

Load change without parameter adjustment

Less cost

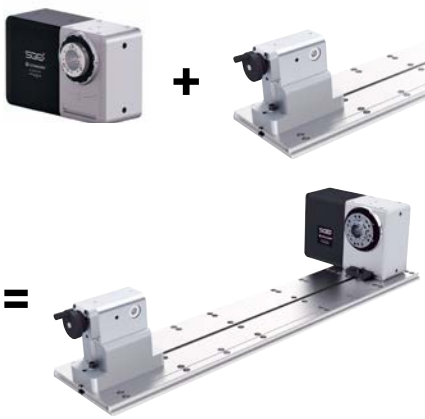
No cooling system, no hydraulics

High value retention: can be modified at any time, only 4 sizes ø100 – 500 mm – over 290 standard configurations

EA ➔ TF TIP

EA ➔ EA with rotoFIX

EA ➔ EA with longFLEX



Diversity of products

unique

- Wide range of applications for each size
- Lower storage costs, also in service (spare parts)
- Increased sales and service productivity

Attention! Due to export control regulations, the conversion will only be carried out at headquarters.

Standard machine in stock, available at short notice, equipped with matching rotary table

Highest level of flexibility

unique

- Rotary table is available quickly and can be converted at any time
- If the needs change, the investment is not lost
- Pay in installments: First, the machine later the rotary table - can be retrofitted at any time

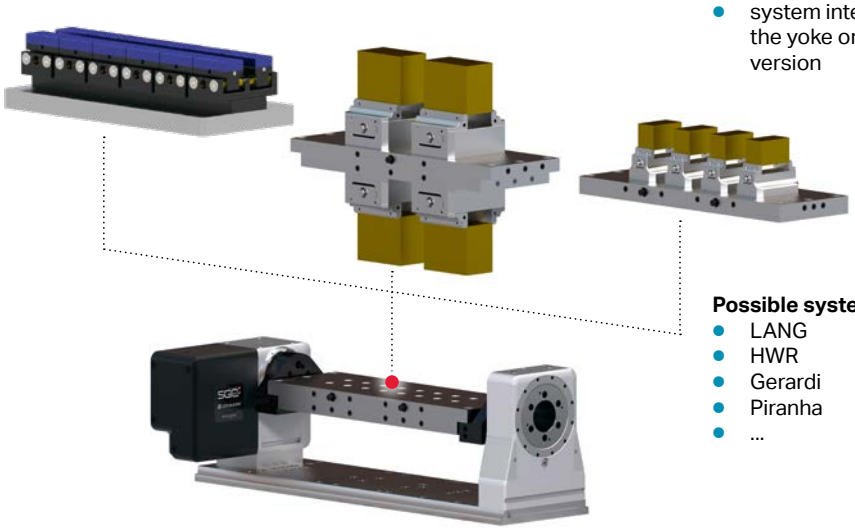
TF TIP ➔ T1 TAP

TF TIP ➔ T1 TOP

T1 TAP ➔ T1 TOP

Potentials of clamping yokes with integrated or built-on zero point clamping system

Yoke with manual zero point clamping system

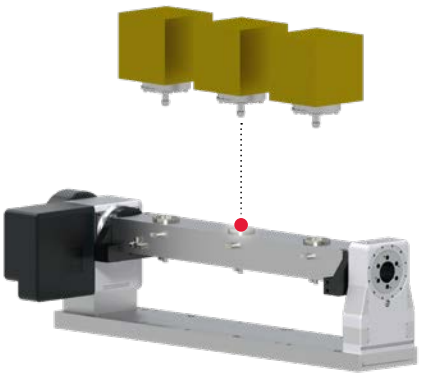


- single or double-sided
- for raster 40, 50, 52, 96
- system integrated into the yoke or as a built-on version

Possible systems
- LANG
- HWR
- Gerardi
- Piranha
- ...

Manual version

Yoke with automatic zero point clamping system



- for automatic loading
- with media channel through clamping yoke

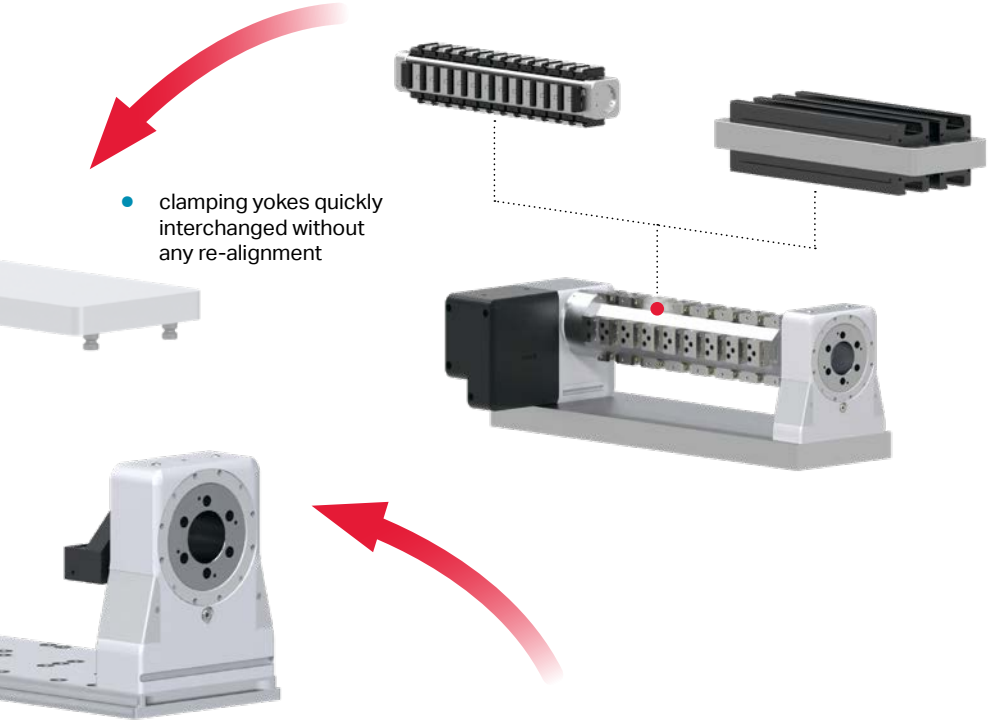
Possible systems
- EROWA
- ROEMHELD
- AMF
- ...

Automatic version

- with quick couplers for transfer of media

Clamping yokes with hole pattern for individual mounting of clamping tools or with a flexibly adjustable rail system

Yoke with rail system

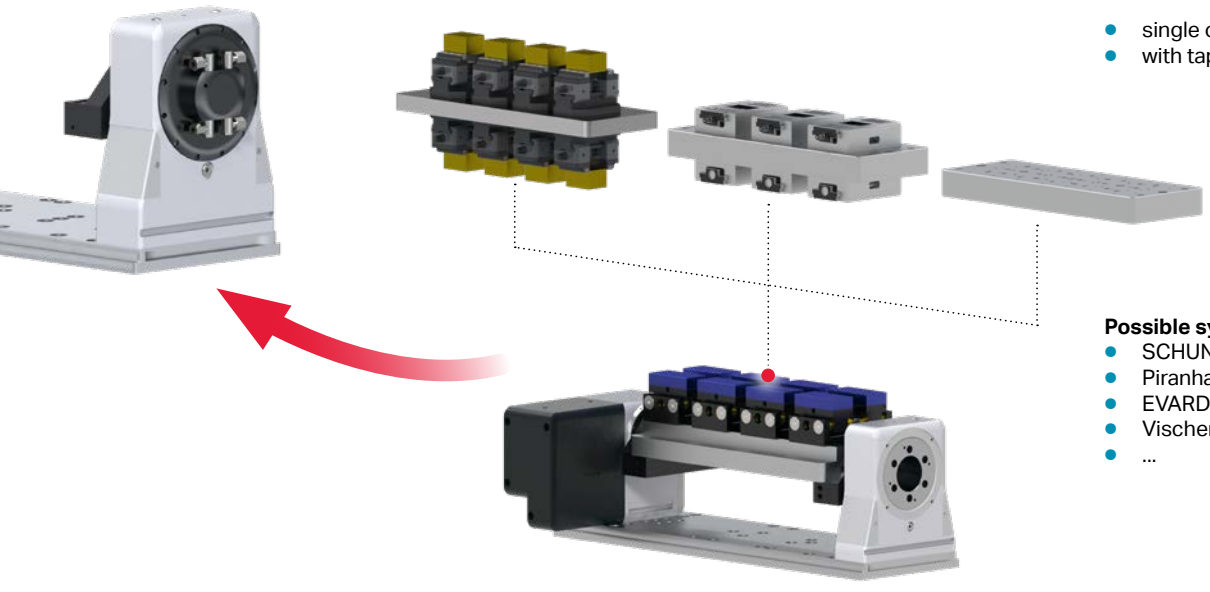


- clamping yokes quickly interchanged without any re-alignment

- vises moved without any re-alignment
- easily adaptable to suit part size

Possible systems
- SCHUNK
- TRIAG
- EVARD
- ...

Yoke with bolted on clamping tools (manual or automatic)

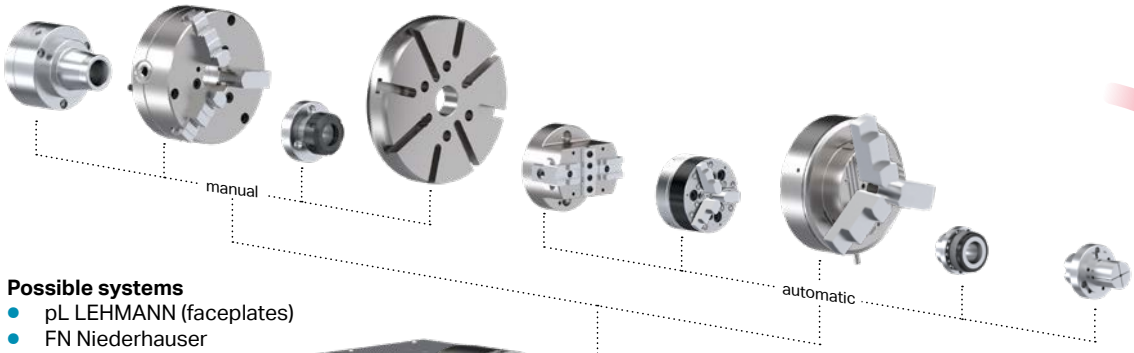


- single or double-sided
- with tapped hole pattern

Possible systems
- SCHUNK
- Piranha
- EVARD
- Vischer & Bolli
- ...

From manual clamping tools for single item production through to fully automated systems

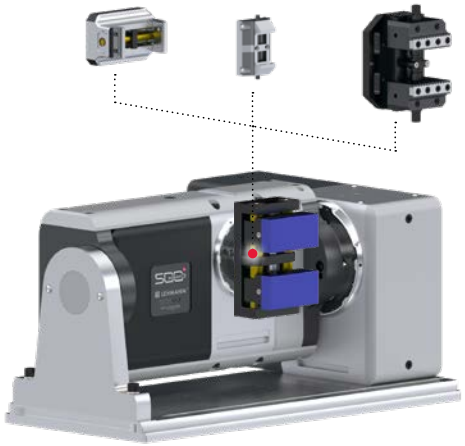
Faceplates, force clamp and jaw chucks, collet chucks



Possible systems
- pL LEHMANN (faceplates)
- FN Niederhauser
- SMW AUTOBLOK
- SwissChuck
- Hainbuch
- Erowa
- TG Colin
- YERLY
- ...

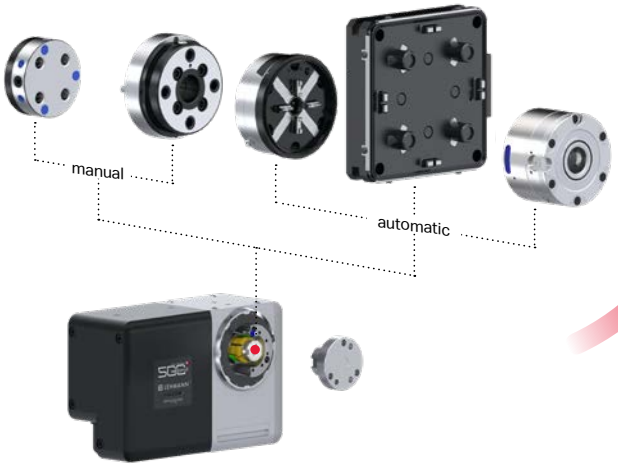
automatable: with rotary feedthroughs and clamping cylinders

Centric clamping unit



Possible systems
- SCHUNK
- LANG
- Vischer & Bolli
- Gressel
- Piranha Clamp
- EVARD
- TRIAG
- ...

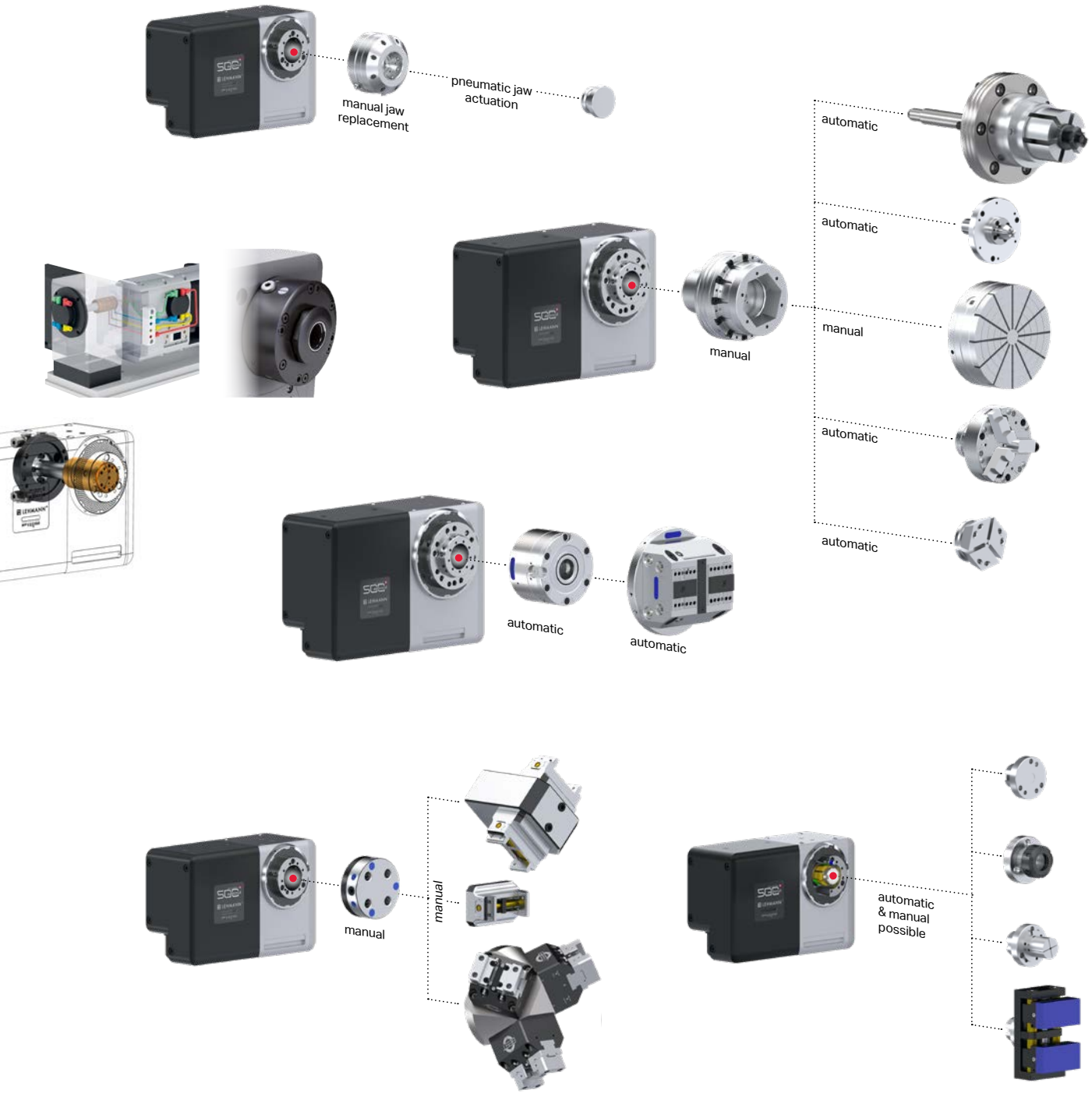
Zero point clamping systems



Possible systems
- pL LEHMANN (ripas & CAPTO)
- Erowa
- System 3R
- FTool
- Parotec
- Roemheld
- AMF
- SCHUNK
- LANG
- GRESSEL
- ...

Centering clamping unit for workpiece handling, built-on zero point clamping system for quick vise interchange

Possible combinations

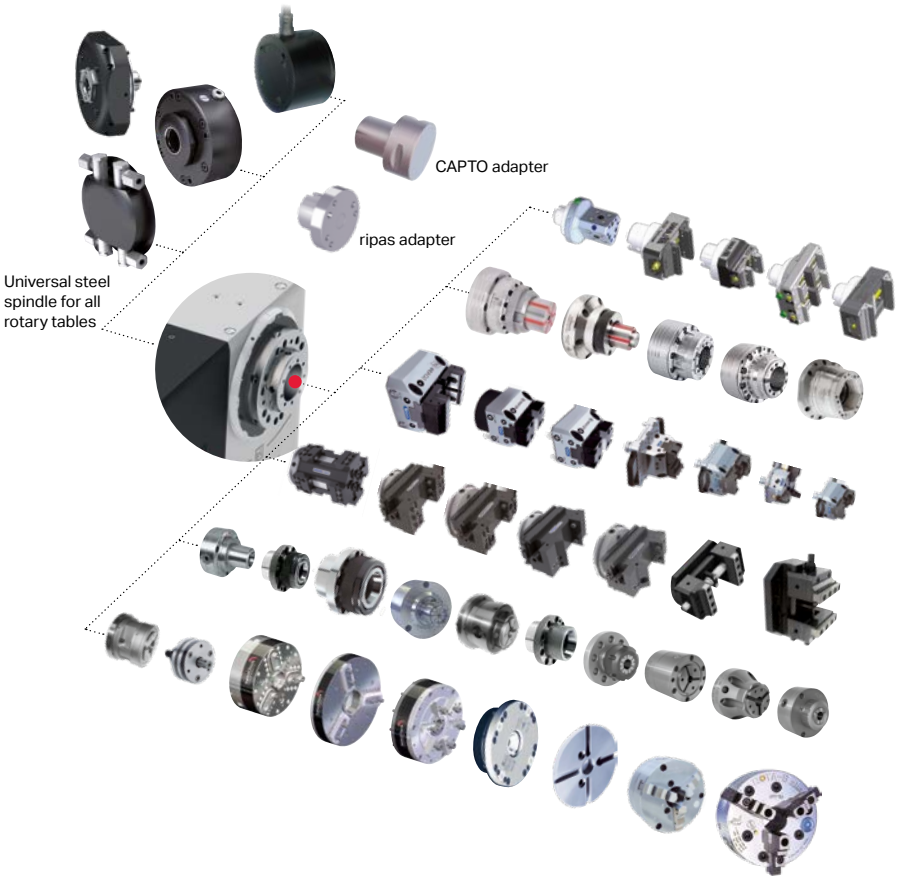


Extremely wide assortment for workpiece clamping. Standardized interface in front and rear: maximum universality

For all variants and possibilities, see **p. 133**

Spindle accessories, rear (see **p. 68**)

- Rotary unions **up to 250 bar**
- Hydraulic clamping cylinder **23 kN at 120 bar**
- Pneumatic clamping cylinder **11 kN at 10 bar**
- Angular position measuring systems **as precise as ± 1 arcsec**



Spindle accessories, front (see **p. 133**)

unique

amf · EROWA · EVARD PRECISION S.A. · ftool by erowa · GRESSEL Spanntechnik · HAINBUCH · LANG TECHNIK einfach. zukunft. greifen. · NIEDERHAUSER SPANNTECHNIK UND SYSTEME · PAROTEC spanntechnik · robotik · engineering · PIRANHA CLAMP · reinmechanic feinmechanische Lösungen · ripas · ROEMHELD HILMA ▪ STARK · ROHM driven by technology · SCHUNK · SwissChuck Precision Workholding · system 3R · TG COLIN · Vischer & Bolli · vb · YERLY

Tailstocks and counter bearings (see **pp. 87–89**)

ripas zero point clamping system (see **pp. 138/139**)

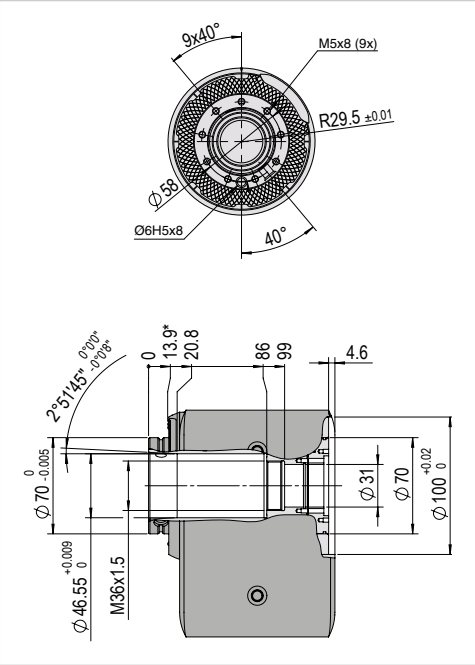
EA-507 with ripas auto and ripas adapter

CAPTO clamping NEW

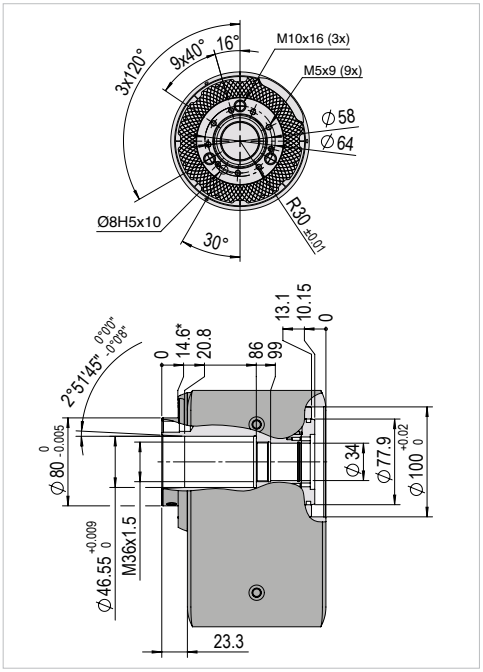
EA-507 with CAPTO retrofit kit (see **p. 139**)

All spindle connection dimensions front and back for building your fixture. Applies to all versions, whether EA-, M- or T-type rotary table

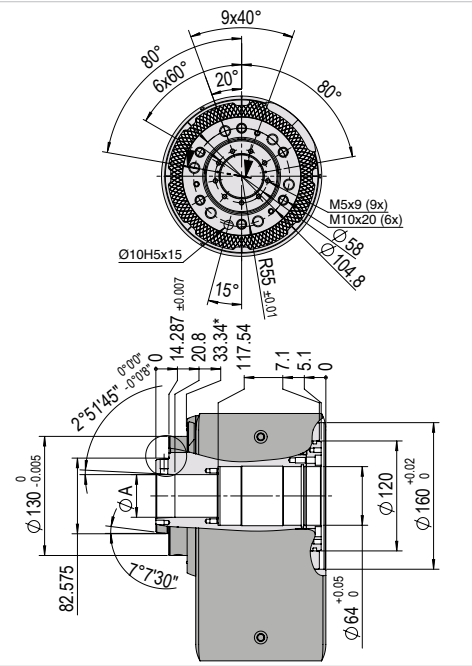
Module size
507 HSK-A63/ø70



Module size
510 HSK-A63/ø80

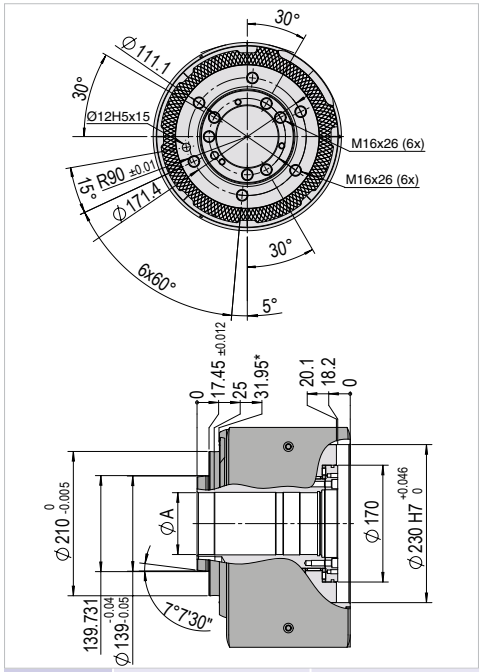


Module size
520 HSK-A63/KK5



Dimension A **Standard:** Ø46.55 +0.009/0 **SPI.520-d64:** Ø64

Module size
530 ø90/KK8



Dimension A **Standard:** Ø90 +0.015/0 **SPI.530-d102:** Ø102

HSK = Hollow shank taper in acc. with DIN 69063-1 (spindle) or DIN 69893 (adapter), KK...= Short taper size ... in acc. with DIN 55026

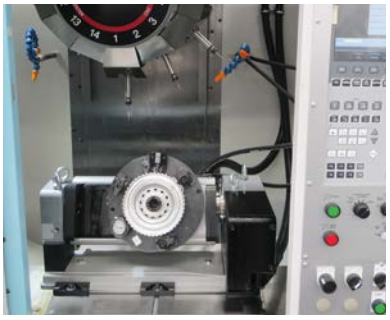
* with SPI.5xx-Lab:
507 = 1.25
510 = 4.95
520 = 20.15
530 = 21.75
(see **S. 30–65**)

Interesting applications for increasing productivity

Provided on GF+ Machining Solutions, Akira Seiki, Almac, Amada Machine, AMS, AWEA, BFW, Blohm Jung, Bridgeport (Hardinge), Brother Milling, Chevalier, Chiron, DMG MORI, DN Solutions, Emco Famup, Fanuc Robodrill, Finepart, Feeler, Haas Automation, Hartford, Hasegawa, Hedelius, Hurco, Huron, Hwacheon, Hyundai WIA, ICON, Kitamura, Kondia, Leadwell, Makino, MAS, Mazak, Microlution, Mikron, Moore Tool, MT EVO, POSmill (Microcut), Quaser, Sauer (DMG MORI), Spinner, Stama, TongTai, Toyoda, Unitech, Willemin-Macodel, XYZ, YCM

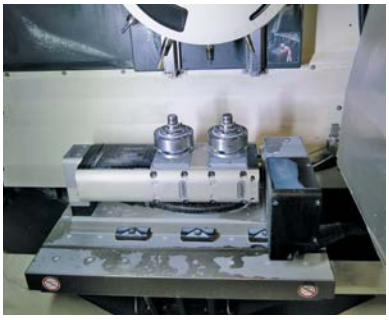
TF-510520 – Milling/boring – Mechanics

T1-520520 – Milling/boring – Mechanics



T1-507510 – Milling/boring – Automotive

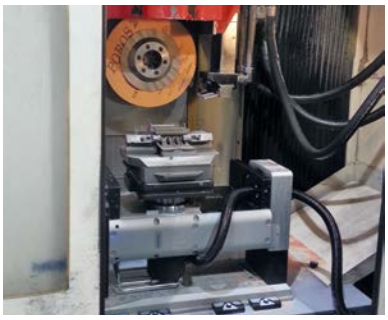
EA-510 rotoFIX – Milling/boring – Automotive



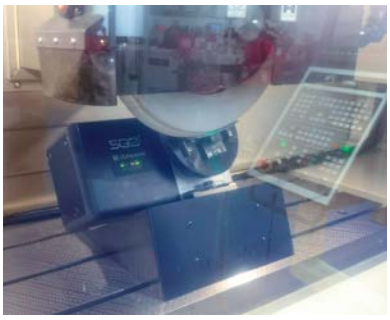
T2-507510 – Milling/boring – Automotive

T1-520520 – Milling/boring – Mechanics

EA-510 – Grinding – built-in – several industries



T1-520520 – Grinding – Aerospace/Turbines



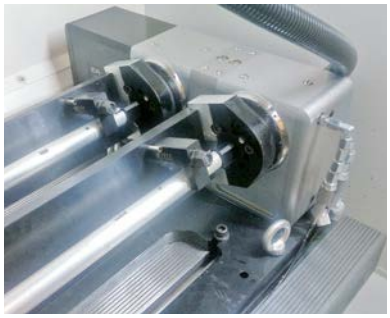
EA-510 – Grinding – Mechanics

TF-507510 – Milling/boring – Medical technology

TF-507510 – Milling/boring – Watches/Micro Technology

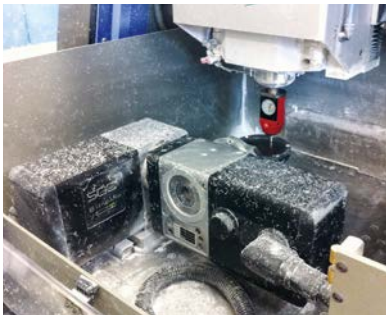
TF-507510 – Milling/boring – Dental Technology

Additional interesting examples of applications can be found on our website www.lehmann-rotary-tables.com in the Download / Applications area

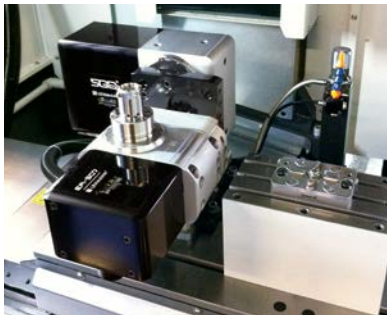


M2-510 – Milling/boring – Automotive

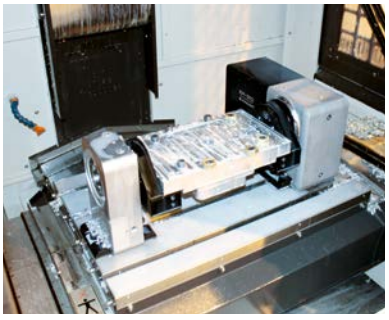
EA-510 – Milling/boring – Automotive



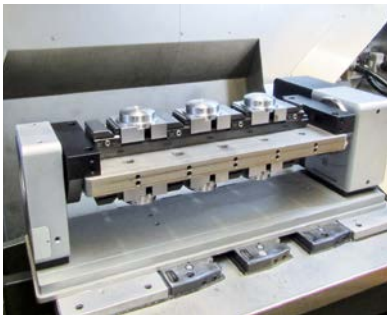
TF-507507 – Milling/boring – Dental Technology



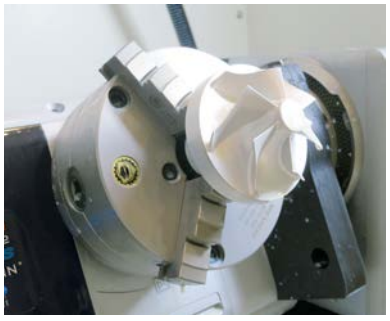
TF-507510 – Milling/boring – Watches/Micro Technology



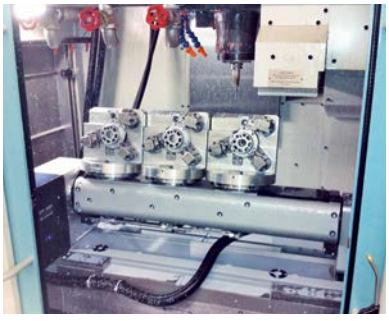
EA-510 rotoFIX – Milling/boring – Mechanics



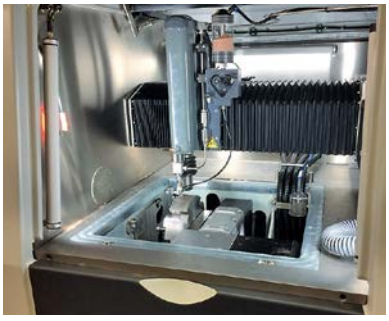
EA-510 rotoFIX – Milling/boring – Mechanics



T1-510520 – Milling/boring – Mechanics



T3-510520 – Milling/boring – Automotive



T1-507510 – Waterjet drilling – Aerospace/Turbines

EA-510 longFLEX – Milling/boring on horizontal center – Mechanics

EA-520 – Milling/boring – Mechanics

T1-510520 – Grinding – Aerospace/Turbines

Benefits for the...

OEM ...OEMs themselves (manufacturer, importer)

USE ...Users and OEM application technicians best of

Benchmark features (average values) in relation to ...

5 ... 5 axis machines

GD ... Other gear-driven rotary tables up to ø400 mm best of

DD ... Direct Drives up to ø250 mm best of

... Not applicable

All % values and color notes are according to pL-Benchmark 2015 with a total of 16 machines

OEM USE | GD DD 5

5 Axis Processing

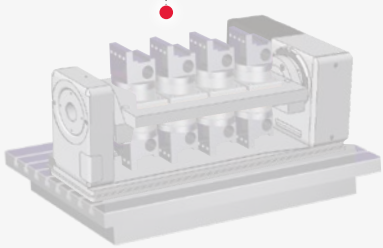
- Simultaneous or positioning mode
- For CNC control systems from Siemens, Fanuc, Heidenhain, Brother, Haas, Mitsubishi, Hurco, Mazak
- Can be used worldwide in pure positioning mode without restrictions due to the export control

OEM USE | GD DD 5

Multi-part machining

not possible

- Highly productive parts manufacturing with clamping yokes and counter bearing
- Manual or automatic workpiece change
- On both 4th axes as well as 4th/5th axes
- Easy to retrofit



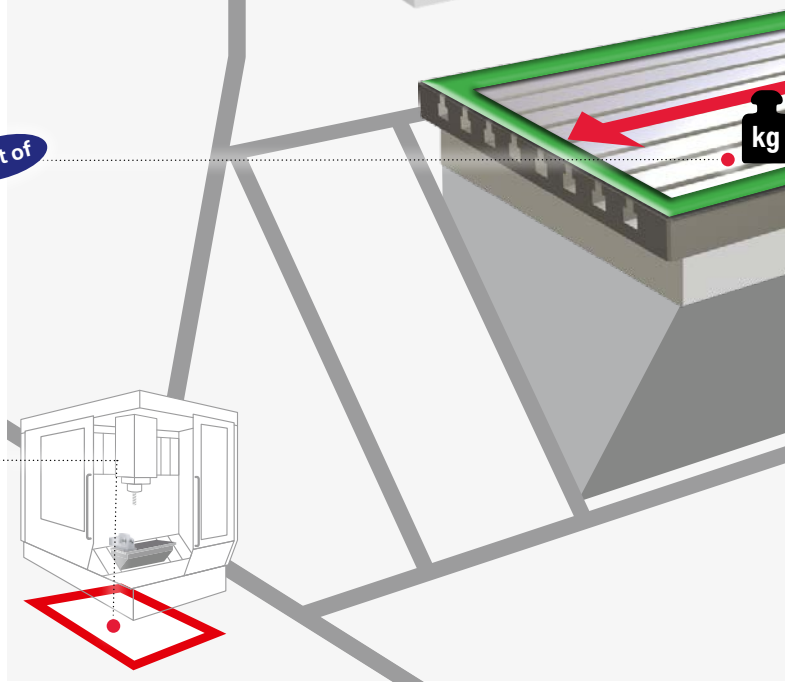
OEM USE | GD DD 5

Table load

+257 %

best of

- More reserves for heavy devices and additional clamping devices, without overloading the machine



OEM USE | GD DD 5

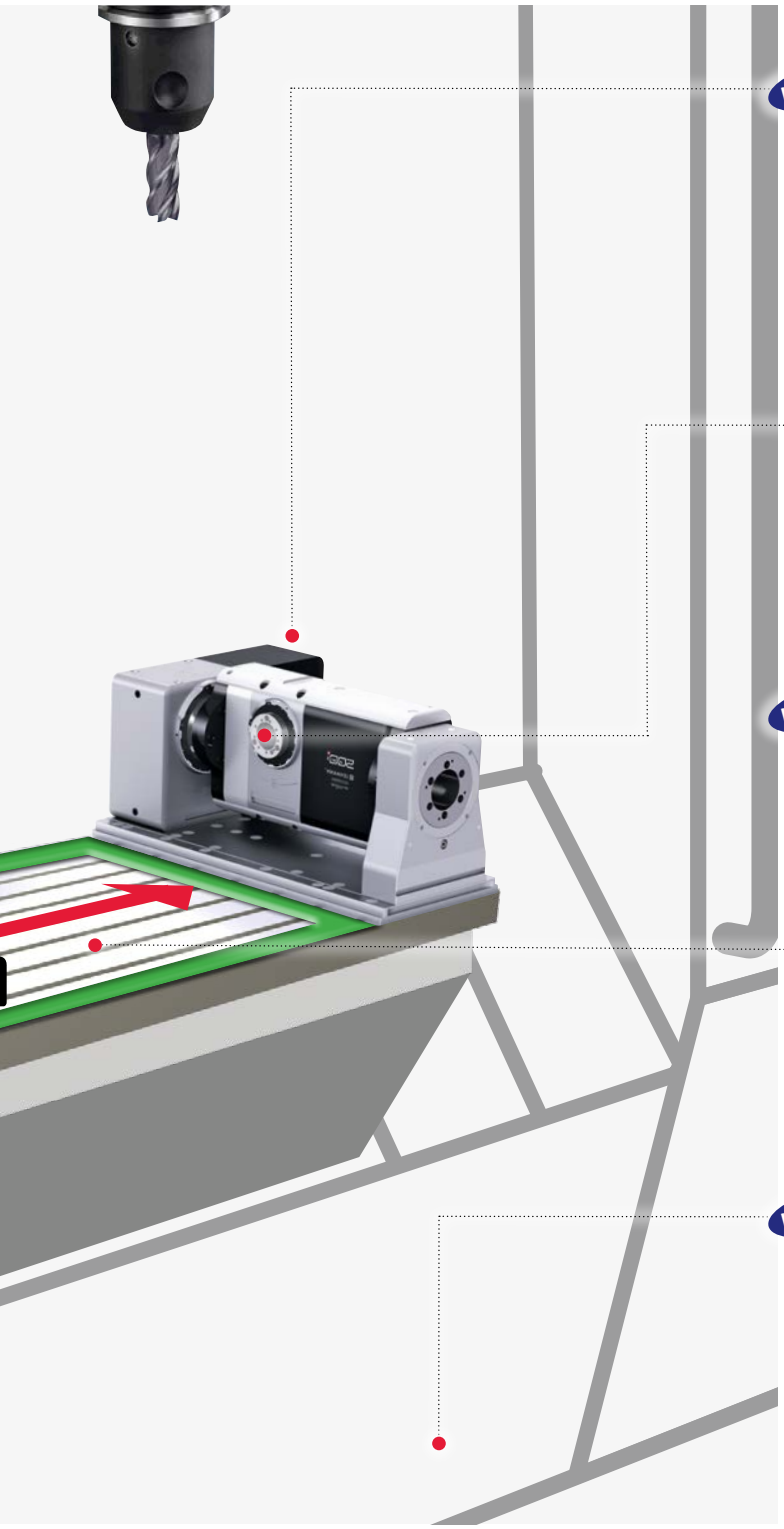
Machine floor space

– 40 %

- 5 machines on a floor space for 3
- 67% higher productivity per m²

Market studies show major productivity gain in various industries with 3 + 2 concepts – at significantly lower costs

Efficient manufacturing of workpieces ... to ø350 mm/150 kg (positioning) or ø150 mm/34 kg (simultaneous) with workpiece accuracies of 0.01...0.002 mm per 100 mm spatial diagonal (For more information and our conditions, see **pp. 126/127**



best of

OEM USE | GD DD 5

Low projecting edge – 52 %

- Good accessibility across the C-axis (from above)
- Cutting tools preloaded very quickly: Maximum service life, best milling performance and surface quality

OEM USE | GD DD 5

C-axis perm. load – 12%

- Suited for medium to small parts – the corresponding 5-axis machine is available for large parts

best of

OEM USE | GD DD 5

Work table surface +94 %

- 2 machines in one: as 3-axis machine for large workpieces, for instance, and parallel to this a genuine 5-axis for the machining of impellers, for example
- Particularly interesting for the flexible contract manufacturer
- Work space for vise or chuck work (pre or post-processing of the 6th side)

best of

OEM USE | GD DD 5

Floor load – 30 %

- Can also be installed in more lightweight production halls without additional foundations
- Lower risk when used in multi-story buildings
- Lower transport costs

Benefits for the...

OEM ...OEMs themselves (manufacturer, importer)

USE ...Users and OEM application technicians best of

Benchmark features (average values) in relation to ...

5 ... 5 axis machines

GD ... Other gear-driven rotary tables up to ø400 mm best of

DD ... Direct Drives up to ø250 mm best of

... ... Not applicable

All % values and color notes are according to pL-Benchmark 2015 with a total of 129 rotary tables from renowned manufacturers.
All criteria is based on the max. achievable limits

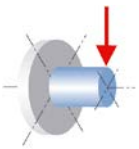
OEM USE | 5 GD DD

Pull-out torque

+ 147 % + 233 %

best of

- Withstands high machining forces (e.g. during drilling)



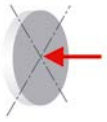
OEM USE | 5 GD DD

Axial force

+ 324 % not available

best of

- Withstands very high compressive and tensile forces

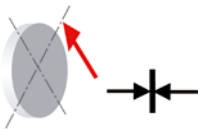


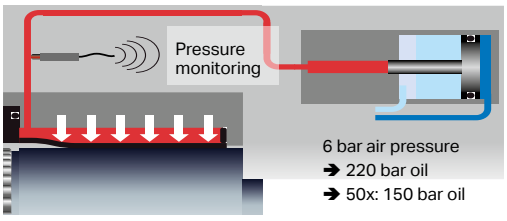
OEM USE | 5 GD DD

Clamping torque

+ 115 % + 236 %

- Ultra-fast, monitored, strong, only 6 bar air pressure



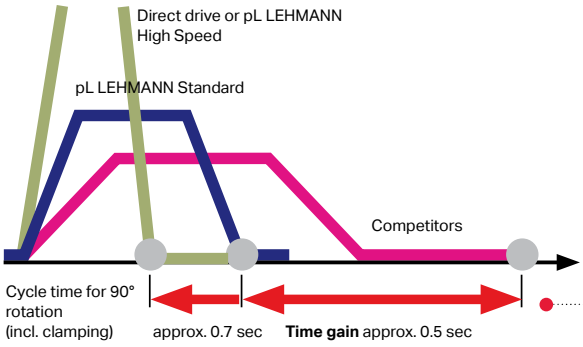


Fully integrated BRAKY pressure intensifier

PGD*-Advantages as Compared to Direct Drives (DD) at a glance

- Only one rotary table for everything: Standard or high speed, for CNCs from Siemens, Heidenhain, Fanuc...
- No cooling unit needed
- No safety brake
- Smaller drive enhancements
- Lower electrical power consumption
- Simpler commissioning and drive tuning

*For more information, please refer to **p. 22**



OEM USE | 5 GD DD

Speed + 78 % – 11 %

best of

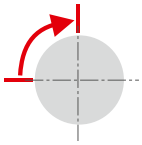
- High speeds

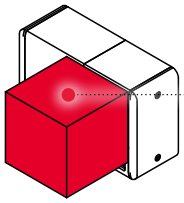
OEM USE | 5 GD DD

Cycle time – 67 % + 4 %

best of

- Short cycle times (with clamping)



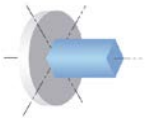


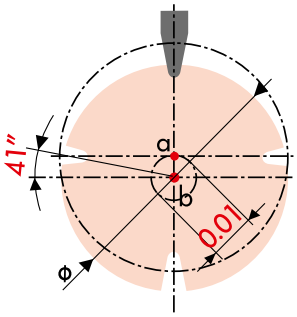
OEM USE | 5 GD DD

Spindle load + 123 % + 427 %

best of

- Large and heavy loads despite its compact external dimensions





OEM USE | 5 GD DD

Radial/axial run-out – 34% – 31 %

best of

- Low radial and axial run-out for optimum workpiece precision

PGD – The preloaded gear unit, permanently backlash-free, wear-resistant: requirements for simultaneous machining and maintenance-free use in production

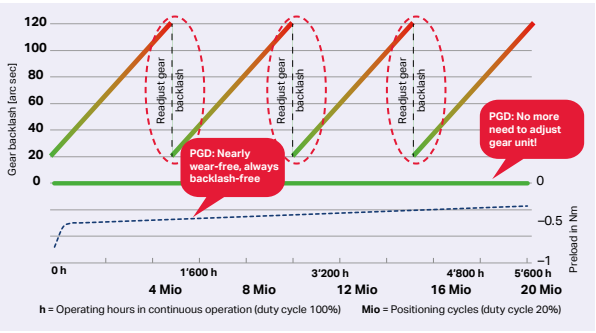
PGD gear unit (Preloaded Gear Drive)

- Strong gear teeth
- Wheel and worm gear made of steel, surface hardened and ground, runs in an oil bath
- Worm gear with 4-way backlash-free mounting
- Permanently backlash-free preloaded
- High long-term precision, virtually wear-free
- High impact resistance
- Up to 20,000 h or 20 million* 90° positionings
- Easy to adjust, if ever necessary
- For smaller machining tasks** no clamping necessary (time savings)
- 5,000 h highly dynamic simultaneous processing*

* Based on long-term tests of more than 20,000 h with over 23 million 90° cycles; valid under appropriate use; the limit reached first is valid

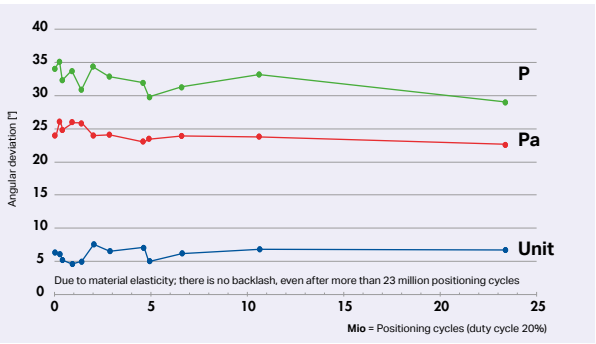
** For possible torque per characteristic curve for 100% duty cycle at 1 rpm; please refer to **pp. 112 – 117**

Maintenance free gear unit – permanently preloaded

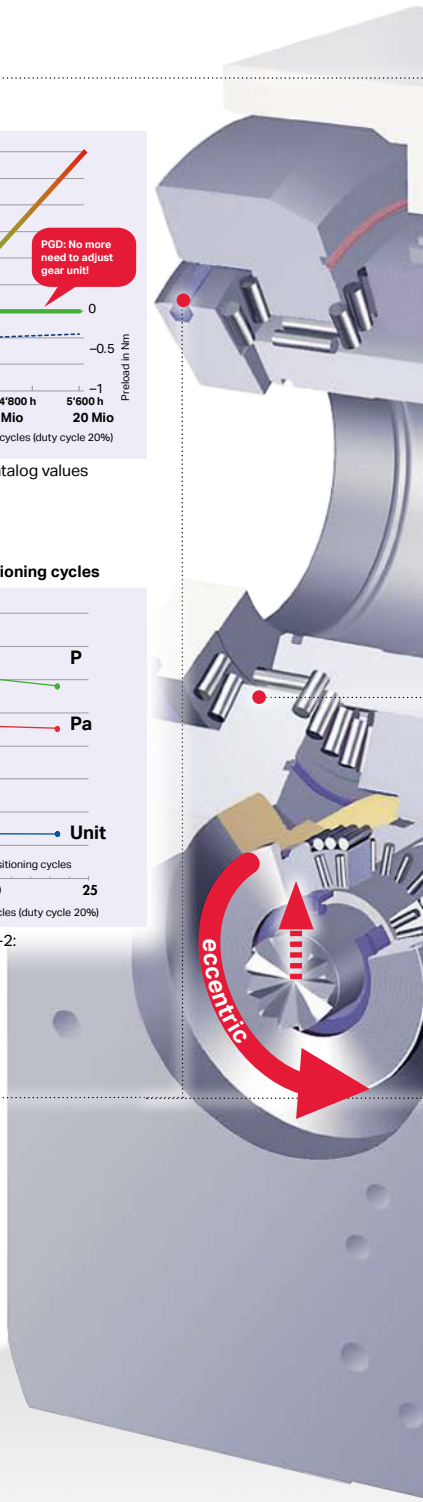


All values based on internal testing using standard load and catalog values (speed, cycle time). Duty cycle as defined on **p. 130**

Consistent accuracy – even after more than 23 million positioning cycles



Real values measured according to VDI/DGQ 3441 or ISO 230-2: Changes in the context of measurement uncertainty.

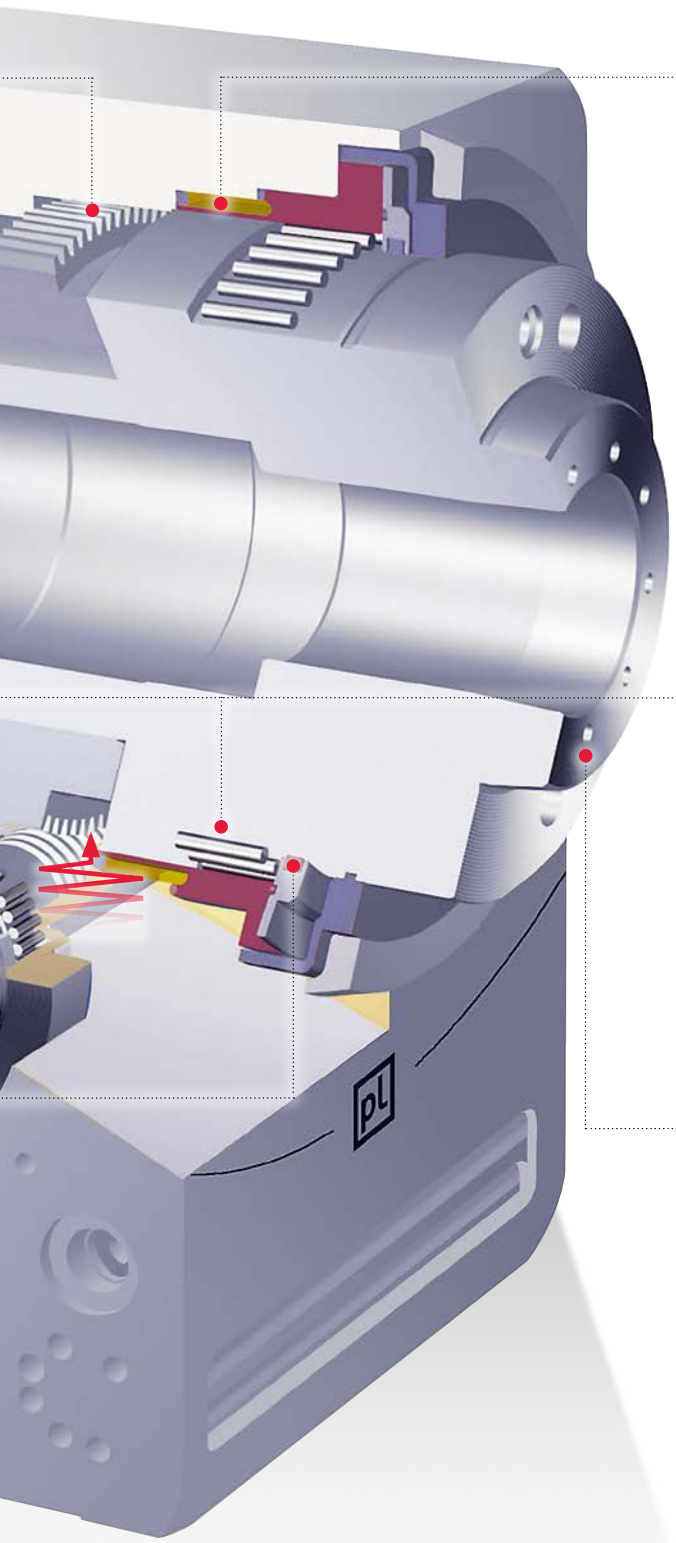


Tightness IP 67 (IP 68)

- All models are fully sealed
- Spindle housing with pressurized oil lubrication system
- Additional spindle labyrinth seal (optional) for use with high-pressure coolant (e.g.. production grinding) and aggressive materials such as glass, graphite, ceramic, etc.

PGD*-Advantages as Compared to Direct Drives (DD) at a glance

- Only one rotary table for everything: Standard or high speed, for CNCs from Siemens, Heidenhain, Fanuc...
- No cooling unit needed
- No safety brake
- Smaller drive enhancements
- Lower electrical power consumption
- Simpler commissioning and drive tuning



Spindle clamping

- Expansion chuck principle
- 6 bar air pressure, integrated pressure intensifier
- Clamping with largest spindle diameter and close to the workpiece
- Very fast acting, 360° simultaneously
- Integrated pressure sensors for optimum monitoring (microprocessor-controlled)
- Long service life
- Consistent clamping force throughout the entire service life

Spindle bearing

- 4x play-free fitted, large precision roller bearings
- Long distance between the radial bearings provides for high spindle rigidity
- All bearing points run in oil baths
- Good gear unit efficiency ratio (up to 60 %)

Spindle

- Steel, hardened and ground
- Radial and axial run-out 6 µm (optional to 2 µm)
- Universal interface with HSK cone and / or short cone KK (both to DIN)
- Accessories for manual or automatic HSK/ISO clamping, various collet systems, faceplates and jaw chucks, palletizing systems, rotary unions and clamping cylinders...

Functional design, good chip and coolant flow, service-friendly

Transport and bleeding holes

- Bolt holes for transport
- Easily accessible bleeding holes for oil bath and spindle clamping system

Drive motor

- Single housing (2 lengths) for all motors: Fanuc, Mavilor (Siemens, Heidenhain), Yaskawa, Sanyo, Meldas/Mitsubishi
- Motors are easy to replace

USB slot

unique

- Fast, simple data output for evaluation on a PC in case of malfunction
- Licensing possibility with registration code via USB stick (OEM feature)
- Fully sealed, placed in well protected location
- PC connection for remote diagnostics

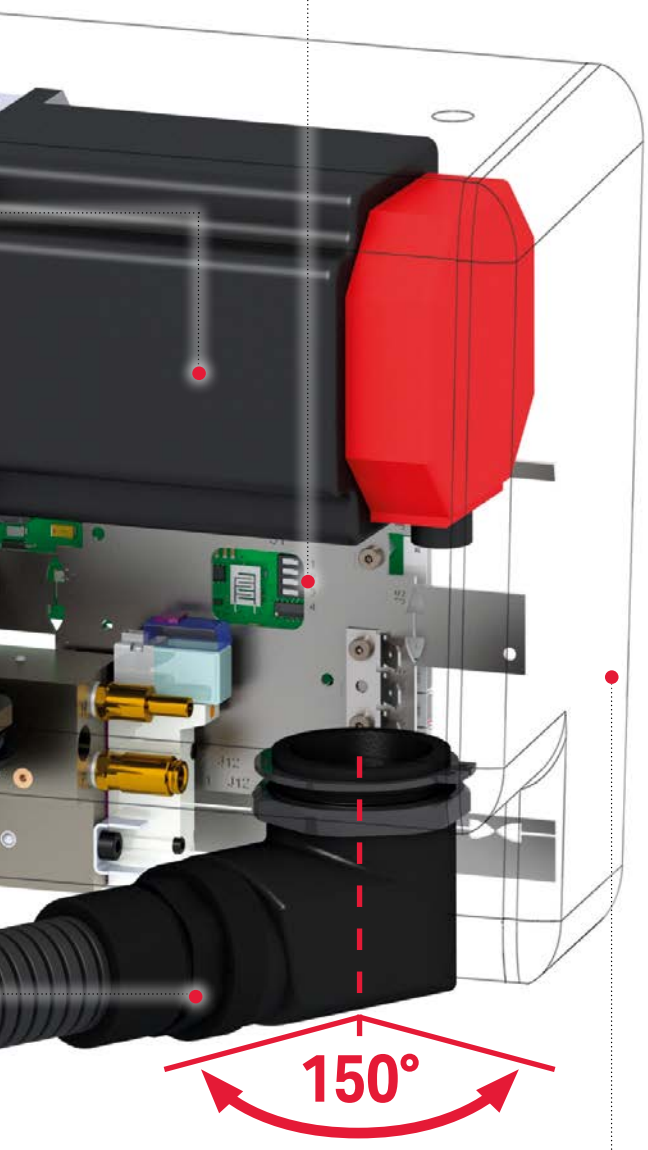
Wire guide

- Wire guide up to 150° (in different directions) swiveling and can be fixed
- Circlip for quick change in the event of a malfunction
- All wires and hoses plugged into the motor housing

Connector interfaces

- Standardized, fully wired, available for many different machines
- Wide range of lengths and connectors

Productivity and availability increase, downtime and maintenance costs decrease



Tightness IP 67 (IP 68)

- Fully sealed motor compartment IP67 (optional IP 68)
- Prevents damage to motor, wiring, connectors, etc.

unique

-smartBox – for real industry 4.0

Helps to increase productivity and availability, lower downtime and maintenance costs and permits quick troubleshooting and preventive maintenance.

Sensors for ...

- Speed
- Internal pressure
- Temperature
- Humidity
- Shock / impact
- Limit value exceeded with real-time stamp

Components

- Microprocessor
- 3D acceleration sensor – shock sensor

Monitoring

- Duty cycle limit – overload protection, prevents motor and gear unit damage

Compatibility

- 100% backwards-compatible with blackBOX (starting at Edition 2)

Prepared for interfaces

- Bluetooth – set parameters and read out data via smartphone and app
- WLAN
- Web server with Ethernet and RJ45 connector – display state/error on CNC
- Input for current sensor

For details, please refer to **pp. 26/27**

Increase availability and decrease maintenance costs!

Every pL rotary table is equipped with a sealed (watertight) USB port. When a common USB flash drive is inserted, the data is automatically read out as a file. This file can be easily sent to pL or to the representative in your country by e-mail for an error analysis.

Technical information for «pL-smartBox» – the rotary table electronics

The electronics unit controls and monitors the system. It is housed in a black box.

Voltage:	24V DC
Current:	0.1A max standard, 0.3A max with servo valve
1 input:	«clamp», optionally +24 V DC approx.5 mA or 110 VAC approx. 25 mA without hardware measures. With AC actuation, the software parameter «Input Clamp» must be set to «AC». Otherwise the pneumatic valve chatters.
8 outputs:	Ready, Error, Unclamped, Clamped, Reference, Limit1, Limit2, Service. Current: Each output individually, max. 50 mA NPN/PNP: can be combined, rewired.
Buffer:	The real-time clock is battery-buffered.
Interface:	USB interface

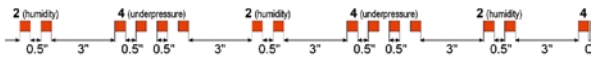
Malfunction display by means of pL-smartBox, flashing LED «ERROR»

Meaning of the red LED, «ERROR»

- In the event of an error, the red LED «ERROR» flashes continuously until the error is rectified.
- When there are several errors, the flashing code for the next error follows after a pause of 3 s, etc.
- The errors do not appear in order of importance, but in ascending order.
- It is possible to continue working with some errors; with others, the «READY» signal goes to 0 V, disabling the rotary table. See the following table.

Measure: Call technician for maintenance.

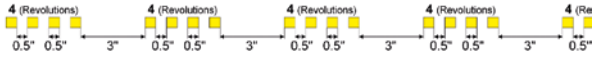
Example of flashing code for «ERROR» LED (red): flashing code for «Rel.humidity» (2) AND «Negative pressure, housing» (4):



Meaning of the yellow LED, «SERVICE»

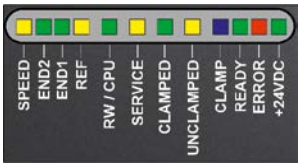
- Meaning of the yellow LED, «SERVICE»
- When «SERVICE» is necessary, the corresponding code flashes continuously.
- For additional instructions, see «Maintenance recommendation» and «Maintenance log», document DOK-0301 included in the packaging. It is also provided on the USB stick for the pL rotary table.
- The continuously updated document must be saved in the course of machine maintenance.

Example of yellow «SERVICE» LED: flashing code for «revolutions of the worm»:

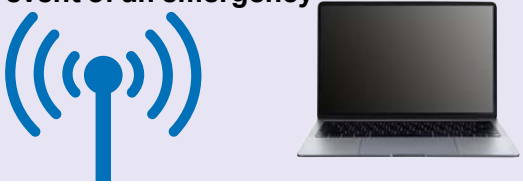


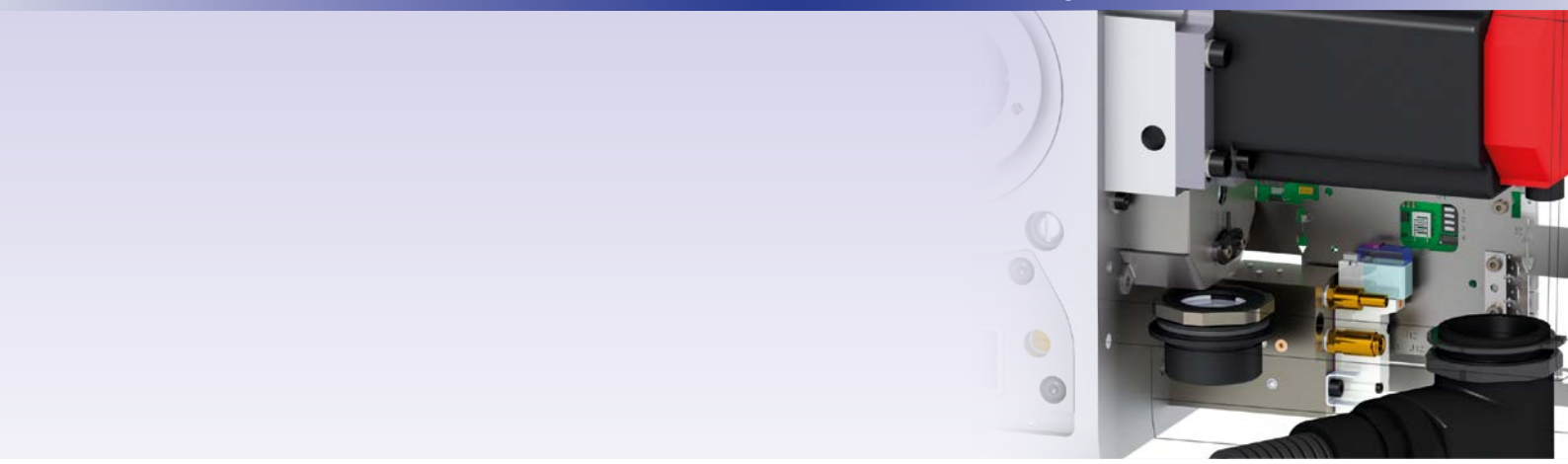
Displays and operating elements

LEDs on the motor cover indicate the operating status.



Remote maintenance – a highlight in the event of an emergency





Meaning of the LEDs

LED	Color	Function	Comment
SPEED	yellow	Worm speed	Flashes 1x per worm revolution
END2	green	Limit switch 2 (-) UZ	Extinguishes when end position «-» is reached. (Only for tilting axes with connected limit switches.)
END1	green	Limit switch 1 (+) GUZ	Extinguishes when end position «+» is reached. (Only for tilting axes with connected limit switches.)
REF	yellow	Spindle reference	Illuminates/extinguishes on the edge of the cam / slot
RW/CPU	green	EPROM / USB stick	– Flashes in idle state at 2-second intervals if OK. – Flickers during read in/out on USB stick or EPROM. – Illuminates permanently/does not illuminate if system is not ready
SERVICE	yellow	Service	Flashing sequence. For code key, see below.
CLAMPED	green	Spindle clamping «clamped»	Illuminates when spindle clamping is clamped
UNCLAMPED	yellow	Spindle clamping «unclamped»	Illuminates when spindle clamp is unclamped
CLAMP	blue	«clamp» spindle clamping	Illuminates when «clamping» signal is present
READY	green	System OK.	Illuminates permanently when system is ready. NOTE: If error messages are displayed and the LED «READY» is nevertheless illuminated, only warnings are involved.
ERROR	red	Error	Flashing sequence. For code key, see below.
+24VDC	green	Power System OK.	Illuminated continuously when the power supply is OK.

Flashing code ERROR ■

No. of flashes	Meaning	Brief explanation	E/B*	Opt.	Actua. thresh. (example)	Signal «READY»**
1	Temperature level	Internal temperature exceeded	E		85 [C°]	0 ⌐└
2	Relative humidity	Relative humidity exceeded	E		50 [%]	0 ⌐└
3	Housing pressure	Housing pressure exceeded	E		1000 [mbar]	0 ⌐└
4	Gauge pressure too low	Below minimum pressure for motor add-on	B		100 [mbar]	0 ⌐└
5	Excess. current, prop. valve	Excessive current at proportional valve	E	x	0.100 [A]	1
10	Max. impact X	Impact / acceleration X exceeded	E		15 [g] 1 [ms]	0 ⌐└
11	Max. impact Y	Impact / acceleration Y exceeded	E		15 [g] 1 [ms]	0 ⌐└
12	«Clamped» time exceeded	«Clamp» time exceeded	E		1 000 [ms]	1
13	«Unclamped» time exceeded	«Unclamp» time exceeded	E		1 000 [ms]	1
17	License expired	License expired				0 ⌐└
18	License key incorrect	License key incorrect				1
19	System time wrong	System time wrong				0 ⌐└
20	Max. rpm exceeded	Max. rpm exceeded	E		(6 000 [rpm])	
21	Interruption request	Acc. sensor defective or not calibrated				
22	Max. duty cycle exceeded	Motor duty cycle exceeded	E		5 [min] / 40 %	0 ⌐└
25	No serial no. parameterized	No serial number parameterized				0 ⌐└
26	Initializ. clamping sensor incompl.	Initializ. of sensor for clamping - calibration not correct				0 ⌐└
27	Initializ. operating pressure sensor incompl.	Initializ. of sensor initialization for operating pressure calibration not correct (e.g. 6 bar)				0 ⌐└
28	Initializ. sealing air sensors not correct	Initializ. of sensor for sealing air calibration not correct				0 ⌐└
29	Initializ. acceleration sensors not correct	Initializ. of sensor for acceleration - calibration not correct				0 ⌐└
30	Max. impact Z	Impact / acceleration Z exceeded	E		15 [g] 1 [ms]	0 ⌐└
31	Internal group error	Various errors – bit breakdown by means of software				0 ⌐└

* Error occurs in the case of: E = exceeding, B = falling below the switching threshold

** «READY» = Signal high = i.O, low = Fehler/Error

Flashing code SERVICE ■ When flashing, see instructions in «Maintenance recommendation» and «Maintenance log»

No. of flashes	Meaning	Brief explanation
1	Clamping cycles	Maximum number of clamping cycles reached. A clamping cycle consists of unclamping, clamping and signal output.
2	Rotary table «ON»	Maximum operating hours reached. The hour counter starts as soon as the blackBOX receives power.
3	Worm rotating	Maximum working hours reached. The hour counter starts running as soon as clamping is released.
4	Rev. worm	Maximum worm gear rotations reached. Sensor on the large toothed belt pulley.
5	Std clamping released	Maximum value for rotary table exceeded during active use. The counter starts running as soon as clamping is released.

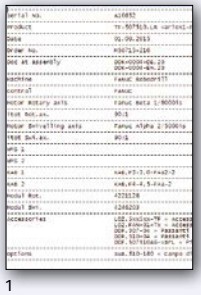
Never search for documents again – everything at hand at all times
No Internet connection necessary!

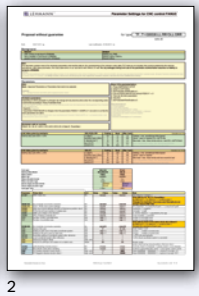
The everyday life of a commissioning technician

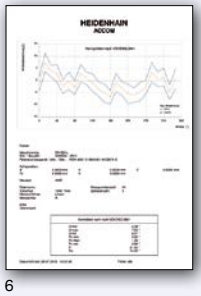
The information needed is missing: electrical schematics, drive data, parameter lists, commissioning instructions ... Commissioning must be interrupted, the search for data begins: paper? Internet? Passwords?. Time is passing. The deadline is approaching. The urgency of the situation means do the best possible with existing knowledge.

Result: It rotates, but functions only halfway, pL specifications cannot be met (rotational speed, cycle time, accuracy...)

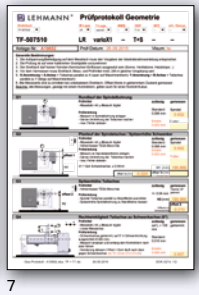
pL finding: Investigations have shown that 70% of optimization cases can be attributed to poor or incorrect commissioning.


1


2



6



7

smart doc on the USB stick

- IA mini USB stick is plugged into a USB slot (in the swiveling/tilting axis on T-type rotary tables)
- The following files have been saved on this USB stick:
  1 ADAT drive setup data for each system
  2 Appropriate parameter list for the provided CNC control system
  3 General operating manual / user's manual in German and English
  4 General commissioning manual in German and English with all diagrams
  5 If necessary, machine-specific commissioning manual in German and English (e.g. for Brother)
  6 Indexing accuracy report(s) to VDI/DGQ 3441
  7 Geometry report
  8 If necessary, special drawings from the customer
- The files are also available online in the pL-ERP (for Helpliner) as well as in the «full documentation»
- All files at the current revision level – version check not needed, risk of errors minimized

Product documentation saved securely: The USB stick remains on the product

Your benefit

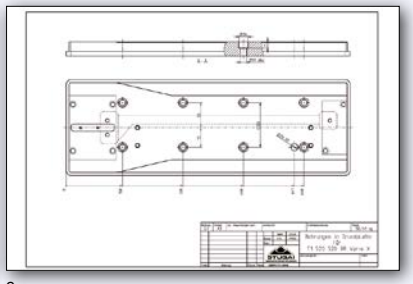
- Download no longer necessary – extra work eliminated
- Password no longer necessary – waiting for registration eliminated
- Internet no longer necessary – problems with poor of no network connection eliminated
- No lost documents, no missing USB stick – stick is always inserted, «loaded» and safely protected under the USB slot cover
- Everything needed is immediately available (appropriate for each rotary table) – tedious searching eliminated
- Emergency solution by technician no longer necessary – existing, often wrong (because out-of-date) data are no longer used

3

4

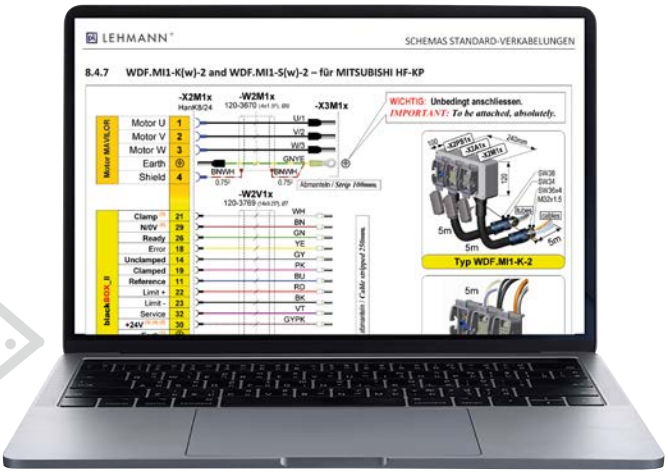
5

8



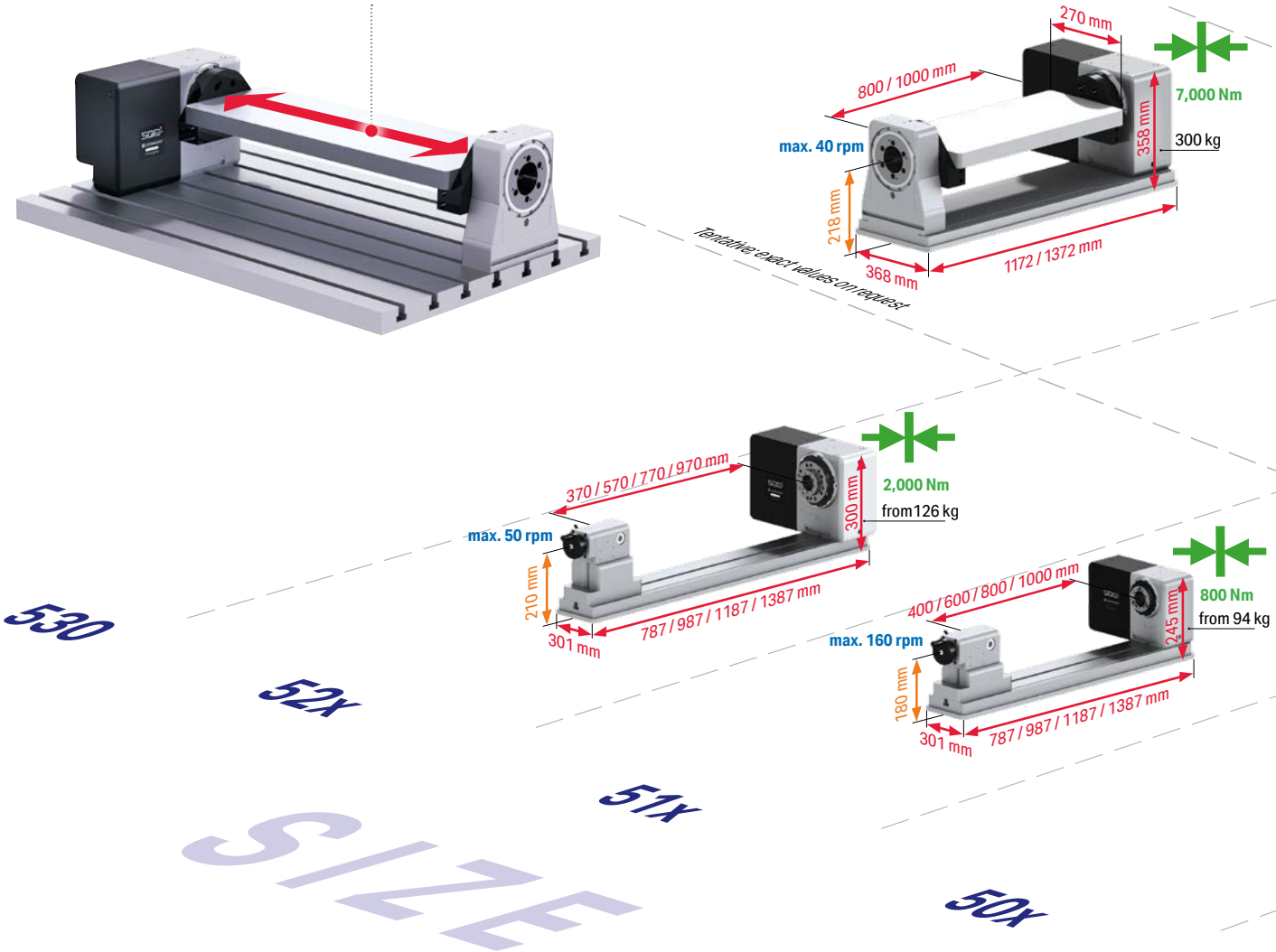
9

If the USB stick is lost, everything is still available on the website.



Very good accessibility,
even with short tools

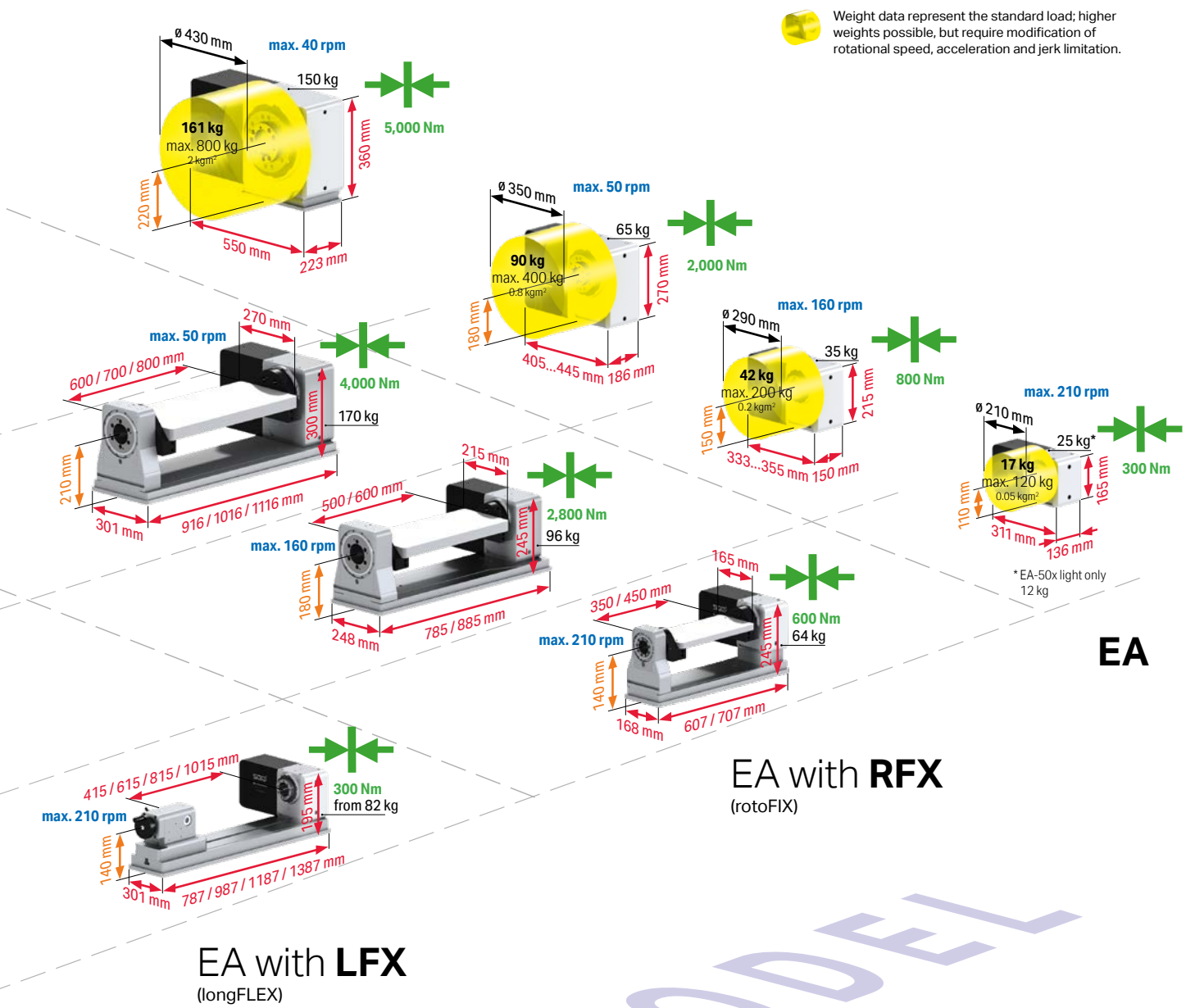
More space for
workpieces and fixtures



Facts

- High speed up to 210 rpm
- Steel base plates with hole pattern (matches a slot spacing of 100 mm and 125 mm)
- Cycle time for 90° as fast as 0.21 sec.

Weight data represent the standard load; higher weights possible, but require modification of rotational speed, acceleration and jerk limitation.



EA

EA with **RFX**
(rotoFIX)

EA with **LFX**
(longFLEX)

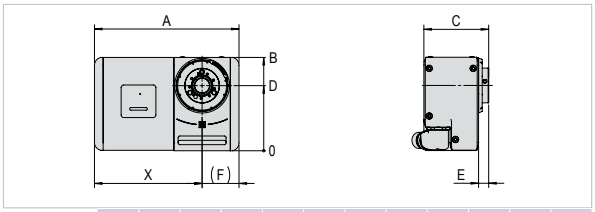
50x	507 (standard) or 508 (high speed)
51x	510 (standard) or 511 (high speed)
52x	520 (standard) or 521 (high speed)
EA	single-axis, single-spindle CNC rotary table
rotoFIX	modular clamping yoke system
longFLEX	modular shaft clamping system

				EA-507	EA-508	EA-510	EA-511	EA-520	EA-521	EA-530
Dimensions	Swivel ø		mm	160		240		350		430
	Center height		mm	110		150		180		220
	Total weight	with motor	kg	25		35		65		150
	Center bore [2]		mm	31		34		46 / 64		90 / 102
Bearing / Clamping	Max. clamping torque		Nm	300	250	800	600	2,000	1,800	5,000
	Max. spindle load	with tailstock	kg	240		400		800		1600
		without tailstock	kg	120		200		400		800
		Standard load [1]	kg	17	12	42	22	90	61	161
	Max. axial force		kN	44		46		100		210
	Max. pull-out torque		Nm	1,200		2,000		3,900		10,400
Gear unit	Max. moment of inertia	Standard load [1]	kgm²	0.05	0.025	0.2	0.07	0.8	0.4	2
		J max	kgm²	0.5	0.25	2	0.7	8	4	20
	Max. feed toque [3]		Nm	120	70	250	150	440	230	650 opt. 850
	Limited torques due to eccentric loads [4]		Nm	25	9 [5]	40	30 [5]	110	45 [5]	280
	Indexing accuracy Pa [2]		± arc sec	20/15		17/10		12/8		10/6
	Repeat accuracy Ps average		± arc sec	2						
	Max speed	with standard load [1]	rpm	111	210	80	160	50	100	40
Precision	Radial run-out [2]	on spindle ø	µm	6 / 3						
	Axial run-out [2]	at spindle end face	µm	6 / 3						
	Parallelism [2]	Dividing axis to base	µm/100 mm	10 / 5						

[1] Mutually dependent; for individual drive motor data, see right side
[2] Standard / increased; for measuring method and validity of the values, please refer to **p. 72**, for optional angular position measuring system please refer to **p. 73**
[3] Limit value for gear unit, at 1 rpm
[4] For torque calculation, see **p. 108**
[5] Limit value for self-locking, gear unit 508/511/521

= High Series (high speed, high resistance)

Dimensions

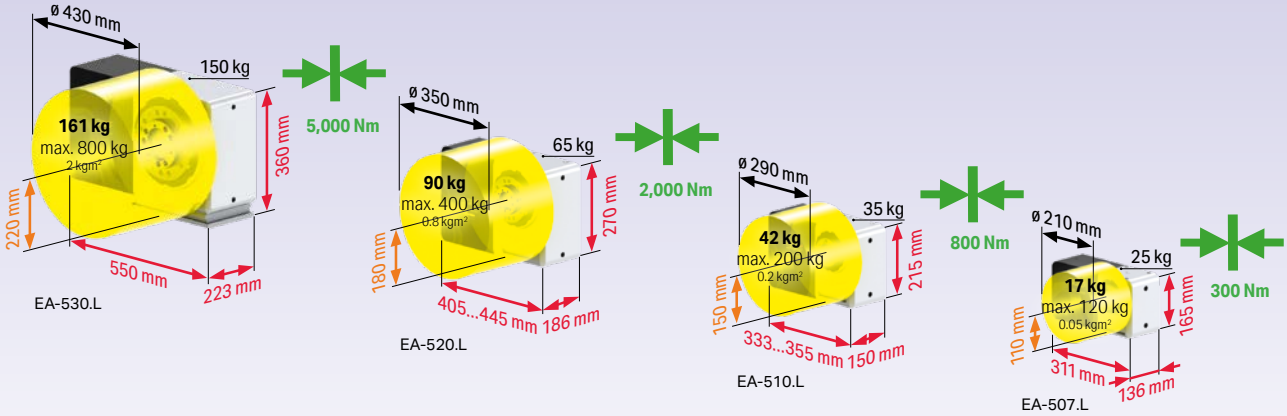


	A	B	C	D	E	F	X
EA-507	311	165	136	110	23	75	236
EA-508	311	165	136	110	23	75	236
EA-510	333	215	150	150	23	85	248
EA-511	333	215	150	150	23	85	248
EA-520	405	270	186	180	44	110	295
EA-521	405	270	186	180	44	110	295
EA-530	550	360	223	220	43	160	390

Item no.

EA-510.L-F1

- **Motor** — F1=Fanuc is (200 V), F2=Fanuc HVis (400 V), M1=Movinor/Mavilor ERN, M2=Movinor/Mavilor EQN 1125, M3= Movinor/Mavilor EQN 1135, MI3= Mitsubishi 200V, MI4 Mitsubishi 400V, S3=Sanyo, Y2=Yaskawa SGMJV/ SGMEV, Y4=Yaskawa SGM7J
- **Dividing axis motor position** — L=left, R=right
- **Dividing axis size** — 507, 508, 510, 511, 520, 521, 530
- **Rotary table model**



Drive data

(based on standard load cube shown on **pp. 106/107**)

		Motors	Feed* [Nm]	Speed [rpm]	Cycle time*** 90° [sec]	Cycle time*** 180° [sec]
MAVILOR / MOVINOR **	EA-507	BLS-072	120	111	0.26	0.39
	EA-508	BLS-072	70	210	0.23	0.29
	EA-510	BLS-072	250	80	0.30	0.49
	EA-511	BLS-072	150	160	0.23	0.31
	EA-520	BLS-073	440	50	0.41	0.71
	EA-520	LN-098	440	45	0.43	0.77
	EA-521	LN-098	230	90	0.27	0.43
	EA-530	LN-098	650	40	0.52	0.89
FANUC	EA-507	β1 is	80	66.7	0.30	0.53
	EA-508	β1 is	55	130	0.25	0.36
	EA-510	α2 (HV)is	120	55	0.36	0.63
	EA-511	α2 (HV)is	85	100	0.24	0.39
	EA-520	α2 (HV)is	210	33	0.54	0.99
	EA-520	α4 (HV)is	355	33	0.56	1.01
	EA-521	α4 (HV)is	230	60	0.37	0.62
	EA-530	α4 (HV)is	420	27	0.69	1.25
	EA-530	α8 (HV)is****	650	26.7	0.64	1.20
YASKAWA SGM7J	EA-507	SGM7J 06	120	66	0.30	0.53
	EA-508	SGM7J 06	70	133	0.22	0.33
	EA-510	SGM7J 08	195	66.6	0.32	0.55
	EA-511	SGM7J 08	135	133	0.22	0.33
	EA-520	SGM7J 08	335	40	0.46	0.84
	EA-521	SGM7J 08	230	80	0.28	0.46
	EA-530	on request				
YASKAWA SGMJV	EA-507	SGMJV 04	115	66.7	0.30	0.53
	EA-508	SGMJV 04	70	130	0.22	0.33
	EA-510	SGMJV 08	195	66.7	0.32	0.55
	EA-511	SGMJV 08	140	133	0.21	0.32
	EA-520	SGMJV 08	335	40	0.46	0.84
	EA-521	SGMJV 08	230	80	0.28	0.46
	EA-530	SGMEV 15	650	27	0.65	1.21
MITSUBISHI	EA-507	HG56	120	60	0.32	0.57
	EA-508	HG56	70	110	0.22	0.36
	EA-510	HG-(H)75	185	50	0.37	0.67
	EA-511	HG-(H)75	130	100	0.24	0.39
	EA-520	HG-(H)105	440	32	0.54	1.01
	EA-521	HG-(H)105	230	60	0.34	0.59
	EA-530	HG-(H)104	650	24	0.70	1.32
SANYO	EA-507	R2Ax 06040	120	66.7	0.30	0.52
	EA-508	R2Ax 06040	70	130	0.22	0.33
	EA-510	R2Ax 08075	210	66.7	0.32	0.55
	EA-511	R2Ax 08075	145	130	0.22	0.34
	EA-520	R2Ax 08075	270	45	0.43	0.77
	EA-521	R2Ax 08075	175	95	0.28	0.43
SIEMENS	EA-510	1FK2204	150	65	0.33	0.56
	EA-511	1FK2204	105	130	0.22	0.33
	EA-520	1FK2205	425	33	0.53	0.98
	EA-520	1FK7042	435	50	0.44	0.74
	EA-521	1FK2205	230	65	0.30	0.53
	EA-521	1FK7042	230	90	0.27	0.43
	EA-530	1FK2206	650	35	0.56	0.98
	EA-530	1FK7062	650	40	0.52	0.89

* At 1 rpm; for more, please refer to **p. 112**
** for Siemens / Heidenhain
*** Without clamping; for times, please refer to **p. 126**
**** not with 35iB

For calculation of load, forces and torques, please see **p. 108**

Important information

- The limit values as set out in the corresponding parameter list take precedence over the data and information provided in the main catalog (due to motor, drive enhancement and the respective machine CNC)
- Motor-independent data are optimum values at operating temperature
- Further details are available at www.lehmann-rotary-tables.com, under Download / Commissioning

Labyrinth seal
(cutaway view)

Recommended for:
+ grinding operations
+ high coolant pressures
+ extremely fine abrasive particles

Accessories

Base plates **pp. 34 & 35**, Motor, cable, angular position measuring system and pL-CNC starting at **p. 74**. Accessories starting at **p. 66**

Options

Item no.	Description
GET.5xx-GEN	Increased gear precision [1]
GEO.5xx-GEN	Incr. geometric precision, ½ standard tolerance
SPI.5xx-Lab [2]	Spindle seal with labyrinth, integrated sealing air pressure control

[1] incl. lower radial and axial run-out of 0.003 mm
[2] for 507/510: HSK and ripas clamping not possible manually, GET.5xx-GEN and GEO.5xx-GEN only partly possible (lower radial and axial run-out cannot always be achieved)

Suitable alignment elements

Item no.	Designation	Slot width	Weight [kg]
AUR.St-12	Alignment block, 1 pair	12h6	0.07
AUR.St-14		14h6	0.07
AUR.St-16		16h6	0.07
AUR.St-18		18h6	0.07

The EA clamped in another way ...

Center height increase

	Item no.	Designation	Increase / center height D	Weight [kg]
EA-507 (508)	**GPL.507-150**	Base plate for center height increase	40 mm / 150 mm	
EA-510 (511)	**GPL.510-180**		30 mm / 180 mm	4.67
EA-520 (521)	**GPL.520-220**		40 mm / 220mm	12.15
EA-530	**GPL.530-280**		60 mm / 280 mm	

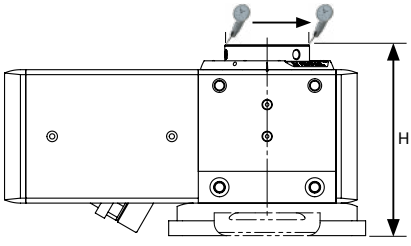
Vertical clamping

	Item no.	DDF	SPZ	WMS 2	WMS 7	WMS C	Height [mm]	Weight [kg]
EA-510 (511)	**GPL.510ver-180**	•				•	180	7.93
EA-510 (511)	**GPL.510ver-240***	•	•	•		•	240	20.37
EA-520 (521)	**GPL.520ver-215**	•				•	215	21.16
EA-520 (521)	**GPL.520ver-275***	•	•	•		•	275	
EA-530	**GPL.530ver-255**	•				•	255	
EA-530	**GPL.530ver-310***	•	•	•	•	•	310	

* only 1 accessory possible (e.g. DDF), cannot be combined (e.g. ~~DDF+SPZ~~)
WMS = for angular position measuring systems (WMS 2 small, WMS 7 large); for more, please refer to **p. 73**
SPZ = for clamping cylinder; for more, please refer to **p. 68/69**
DDF = for rotary union; for more, please refer to **p. 70**

Add-on housing for vertical clamping. Shown with rotary union.

Add-on housing for vertical clamping. Shown with angular position measuring system "compact".

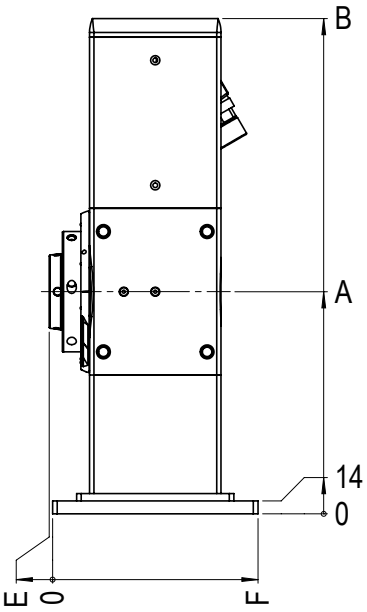


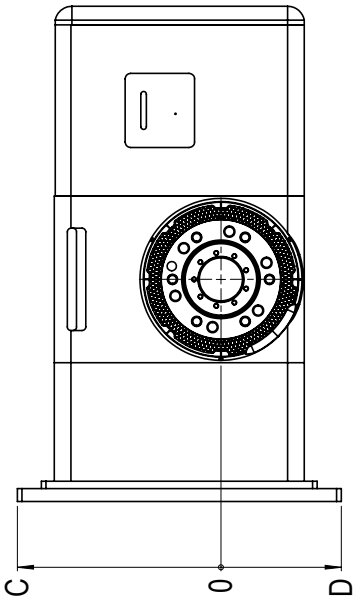
0.01/100 mm (increased: 0.005/100 mm)
H = ±0.1

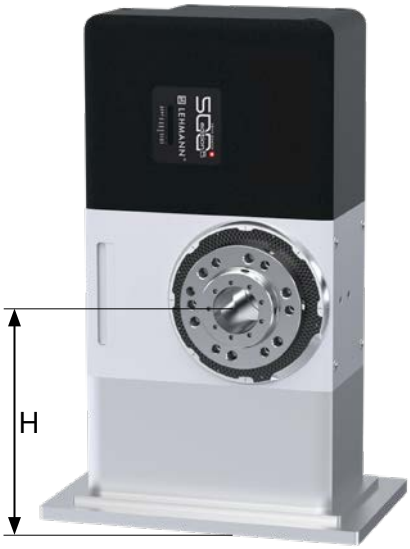
... the solution for horizontal machining centers

Lateral clamping

	Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	H [mm]	Weight [kg]
EA-510 (511)					on request				
EA-520 (521)	GPL.520hor-240	240	575	220	130	4	222	240	
EA-530					on request				

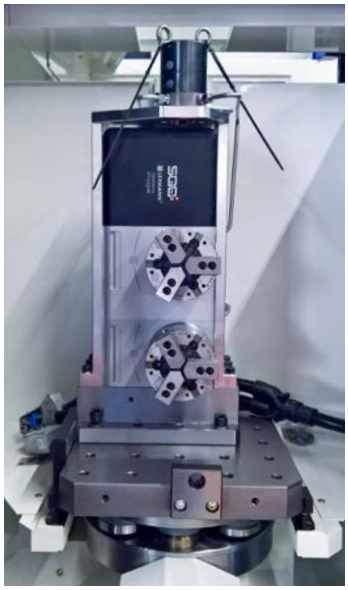






Options

Item no.	Description
GEO.5xx-GEN	Incr. geometric precision, ½ standard tolerance



EA-P07 and EA-P08 rotary table

Simple production solution with ControlTablet and QuickControl software – manual or automatic, with program memory, TEACH-IN ...

Application

For the production of individual parts, small series, rework, where maximum flexibility and ultra-fast changeovers are crucial

ControlTablet with QuickControl PROFI

Ausführung

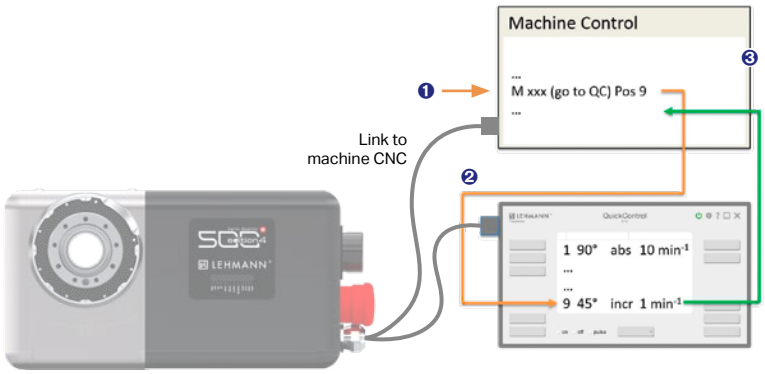
- Rotary table with stepper motor and integrated control (CAN open)
- Interface with USB connector to tablet
- Power supply for 230V with power cable and power cable to rotary table
- Simple commissioning for linking the M-function (approx. 1 day)
- QuickControl software incl. tablet with angle, indexing calculator, endless, absolute or incremental rotation functions; optional (version «PROFI»): TEACH-IN, program memory, M-function; for more, see **p. 39**

For technical data, see **p. 37**

Item no.

EA-P0x.L-NA

	Motor	NANOTEC PD4
	Dividing axis motor pos.	L=left, R=right
	Dividing axis size	507, 508
	Rotary table model	



Operating principle

❶ Higher-level machine control transfers the next step to the ControlTablet with QuickControl and waits for feedback ...

❷ ControlTablet with QuickControl pro executes the programmed steps and reports READY ...

❸ ... and continues with the next block after receiving the READY signal

Technical data

Ingenious: optionally expandable with QuickMover (air cushion) for your measuring station (Item No. MTZ.50x-QM)

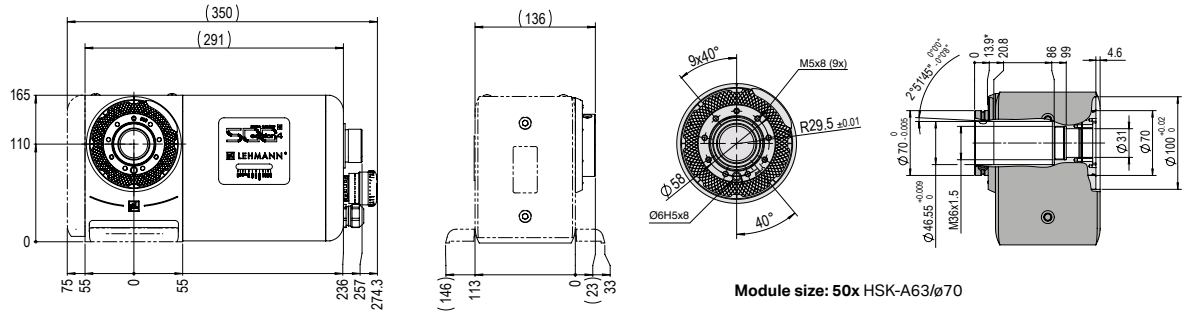
					EA-P07.L/R NA	EA-P08.L/R NA
Dimensions	Swivel ø			mm	160	
	Center height			mm	110	
	Total weight	with motor		kg	25 (light: 12*)	
	Center bore	throughout		mm	31	
Bearing / Clamping	Max. clamping torque	6 bar air pressure		Nm	300	250
	Max. spindle load	with tailstock		kg	40	
		without tailstock		kg	20	
		Standard load[1]		kg	17	12
	Max. axial force			kN	44 (light: 15*)	
	Max. pull-out torque			Nm	1,200 (light: 400*)	
Gear unit	Max. moment of inertia	Standard load [1]		kgm²	0.05	0.025
		J max		kgm²	0.5	0.25
	Max. feed toque [3]			Nm	60	
	Limited torques due to eccentric loads [4]			Nm	25	9[5]
	Positioning accuracy			± arc sec	20 (opt: 15)	
	Repeat accuracy Ps average			± arc sec	4 (opt: 2)	
	Max speed	with standard load [1]		min⁻¹	10	16
Precision	Radial run-out [2]	on spindle ø		µm	6 (opt: 3...2)	
	Axial run-out [2]	at spindle end face		µm	6 (opt: 3...2)	
	Parallelism [2]	Dividing axis to base		µm/100mm	5 (opt: 2)	

[1] Mutually dependent; drive data for stepper motor NANOTEC ST6018L3008-B at 20% duty cycle
[2] For measurement method and validity of values, see main catalog 500
[3] Limit value for gear unit (valid with above motor), at 1 rpm
[4] Torque calculation on request
[5] Limit value for self-locking, gear unit 508

*on request

Version

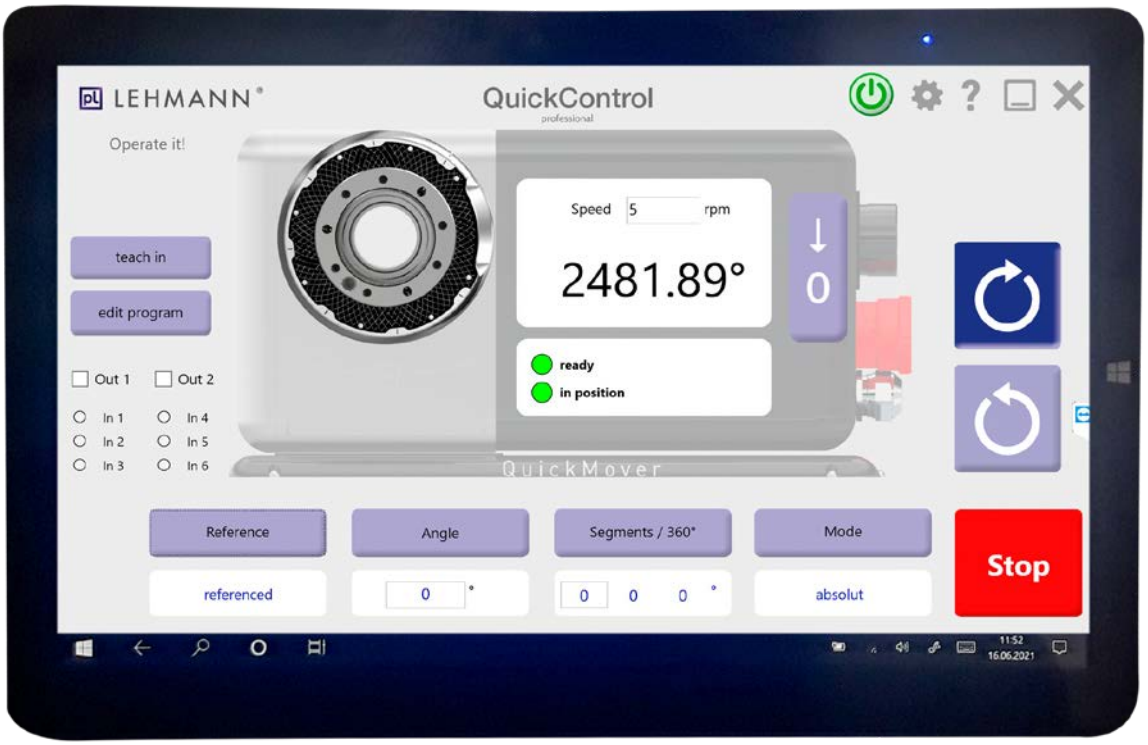
- Housing in Spheroidal graphite cast iron (optional: aluminum)
- With emergency stop on rotary table
- Delivered with power supply and USB cable as well as USB interface software (template), incl. documentation for customer adaptation
- Delivered protected against rust
- Sensors with LEDs, data logger and microprocessor, e.g. for
  – State monitoring and display
  – Service display
  – Data history for cause analysis
  – Remote diagnosis



Module size: 50x HSK-A63/ø70

QuickControl with Microsoft tablet

Easy to operate, stand-alone
or automated with M-function



Manual operation, reference

Manual operation, absolute

Manual operation, continuous


Settings


Programming mode

Automatic operation

Software function and accessories

ControlTablet – can be easily mounted anywhere and brought into operating position

Easy control via CAN interface.
Can be mounted anywhere, thanks to both suction cup and magnet. Easy to operate, lightweight and universal. Particularly handy also in the shopfloor area.

Technical data

- Win10 Pro
- Processor Intel Celeron N4120, 4 MB cache, max. 2.6 GHz
- L 300 x W 200 x D 50 mm
- Display 11.6" / resolu-tio1920 x 1080 pixels

Items included in delivery

- ControlTablet, incl. operating system
- Charger
- USB Bluetooth dongle for pL smartBox
- Anodized tablet holder with magnets and suction cup
- USB cocking station with Ethernet, video, HDMI etc
- QuickControl software, basic or pro
- TeamViewer
- blackBOXcom
- Camera
- Set-up instructions A4

Tablet holder with suction cup

Tablet holder with magnet and detachable keyboard

QuickControl BASIC – for simple manual operation

- Manual operation
- Referencing
- Angle
- Indexing calculator
- Absolute / incremental / endless
- Zeroing at each position

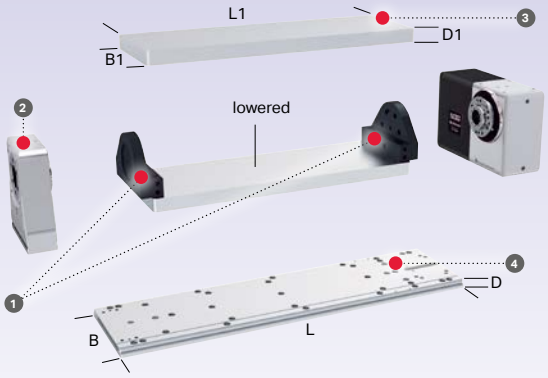
QuickControl PROFI – fully automatable without integration

In addition to basic version:

- Teach-in
- Programming mode
- Program memory
- External control via M-function (fully automatic sequence via machine control)

Item no.

Item no.	Designation
CNC.QCbasic	QuickControl BASIC
CNC.QCpro	QuickControl PROFI
CNC.Tablet	ControlTablet



In order to meet more demanding accuracy requirements, we recommend using a direct angular position measuring system **(pp. 72/73)**

				EA-507 (EA-508)		EA-510 (EA-511)		EA-520 (EA-521)			EA-530	
	Sph		[mm]	140		180		210			218	
1 Bore sets	Aluminum		Item no.	RFX.507-ASa		RFX.510-ASa-TOP		RFX.520-ASa-TOP			RFX.530-ASa-TOP	
	Weight		[kg]	2.86		4.09		6.88				
	Prep. DDF 4-fluted*	DT	Item no.	DDF.507-RFX-04		DDF.510-RFX-04		DDF.520-RFX-04			DDF.530-RFX-04	
	Prep. DDF 6-fluted*	DT	Item no.	–		–		DDF.520-RFX-06			DDF.530-RFX-06	
	Prep. DDF 4-fluted*	GLA	Item no.	DDF.507-RFX-04		DDG.510-RFX-04-TOP		DDG.520-RFX-04-TOP			DDG.520-RFX-04-TOP	
	Prep. DDF 6-fluted*	GLA	Item no.	–		DDG.510-RFX-06-TOP		DDG.520-RFX-06-TOP			DDG.520-RFX-06-TOP	
2 Counter bearing (GLA)	fix		Item no.	GLA.TOP1-110		GLA.TOP2-150		GLA.TOP2-180			GLA.TOP2-180	
3 Clamping yokes	Length L1		[mm]	350	450	500**	600**	600**	700**	800**	800	1000
	Width B1		[mm]	165		215		270			270	
	Thickness D1		[mm]	20		35		40			40	
	Aluminum		Item no.	RFX.507-SB350a	RFX.507-SB450a	RFX.510-SB500a	RFX.510-SB600a	RFX.520-SB600a	RFX.520-SB700a	RFX.520-SB800a	RFX.520-SB800a	RFX.520-SB1000a
	Weight		[kg]	3.11	4.00	10.14	12.17	17.47	20.38	23.30	23.30	29.13
	Steel		Item no.	RFX.507-SB350s	RFX.507-SB450s	RFX.510-SB500s	RFX.510-SB600s	RFX.520-SB600s	RFX.520-SB700s	RFX.520-SB800s	RFX.520-SB800s	RFX.520-SB1000s
	Weight		[kg]	9.04	11.63	29.48	35.38	50.78	59.26	67.74	67.74	84.70
4 Base plates	Length L		[mm]	622	722	785	885	916	1016	1116	1172	1372
	Width B		[mm]	168		248		301			368	
	Thickness D		[mm]	30		30		30			38	
	Steel		Item no.	RFX.507-GP350s-TOP	RFX.507-GP450s-TOP	RFX.510-GP500s-TOP	RFX.510-GP600s-TOP	RFX.520-GP600s-TOP	RFX.520-GP700s-TOP	RFX.520-GP800s-TOP	RFX.530-GP800s-TOP	RFX.530-GP1000s-TOP
	Weight		[kg]	31.01	36.14	46.26	52.10	64.72	71.81	78.90	128.55	150.50
Moments of inertia (without rotary table, without counter bearing)	Mom. inert. (Al)		[kgm²]	0.02	0.02	0.06	0.07	0.16	0.17	0.21	on request	
	Mom. inert. (steel)		[kgm²]	0.04	0.05	0.17	0.21	0.46	0.50	0.60		

fix = Clamping is permanently attached to rotary table; adjustable = Clamping with flexible conduit, assembled by customer
Moments of inertia only for centered placement; eccentric on request
* For suitable rotary union, please refer to **p. 70**
** When the clamping yoke is mounted eccentrically, the zentriX alignment system cannot be used (risk of collision)

Important information

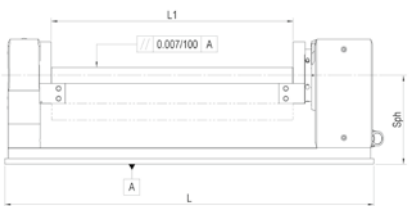
When retrofitting, it may be necessary to reduce the rotational speed, acceleration and gear backlash. The rotary table, rotoFIX and the counter bearing must be installed coaxially to one another <0.05 mm.

Standard load from steel

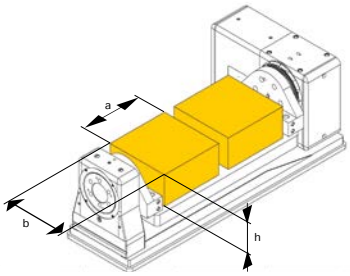
Type	Standard load a × b × h [mm]	Weight [kg]	Moment of inertia J with sls* clamping yoke (Alu) below [kgm²]	Moment of inertia J with sls* clamping yoke (Alu) centric [kgm²]
507	2× 130×130×65	17	0.07	0.08
510	2× 173×173×83	42	0.28	0.35
520	2× 228×228×114	90	0.92	1.26
530	2× 273×273×136	161	on request	

*sls = Standard load, cube **pp. 106/107**

Can be moved with standard drive data for EA-type rotary tables (see **p. 33**); larger loads require a reduction in rotational speed, acceleration and jolt.

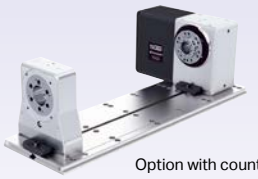


For alignment and clamping, please refer to **p. 86**



Also available adjustable

Support of longer workpieces with adjustable tailstock or counter bearing



Option with counter bearing **(p. 87)**

longFLEX Standard

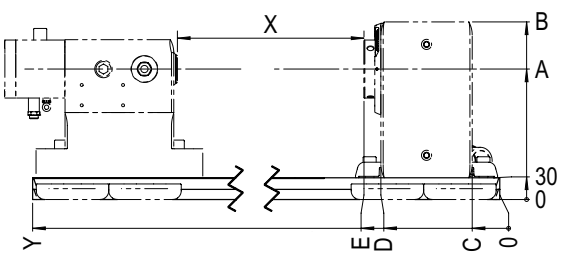
longFLEX base plate kit

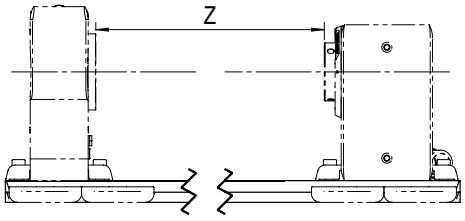
	Item no.	A	B	C	D	E	F	X	Y	Z	Weight*
		[mm]									[kg]
507	**LFX.5xx-400s-2**	140	195	38	151	174	236	415	787	512	82
	LFX.5xx-600s-2							615	987	712	93
	LFX.5xx-800s-2							815	1187	912	102
	LFX.5xx-1000s-2							1015	1387	1112	113
510	**LFX.5xx-400s-2**	180	245	38	164	187	248 (270)	400	787	475	94
	LFX.5xx-600s-2							600	987	675	105
	LFX.5xx-800s-2							800	1187	875	114
	LFX.5xx-1000s-2							1000	1387	1075	125
520	**LFX.5xx-400s-2**	210	300	38	180	209	295 (320)	370	787	452	126
	LFX.5xx-600s-2							570	987	652	137
	LFX.5xx-800s-2							770	1187	852	146
	LFX.5xx-1000s-2							970	1387	1052	157

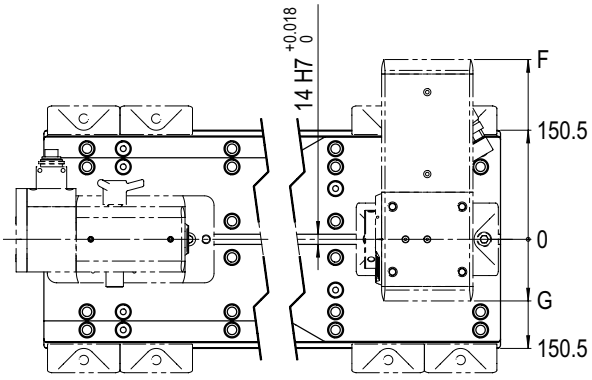
* Complete, including rotary table and tailstock, base plate (steel)

Fastening material

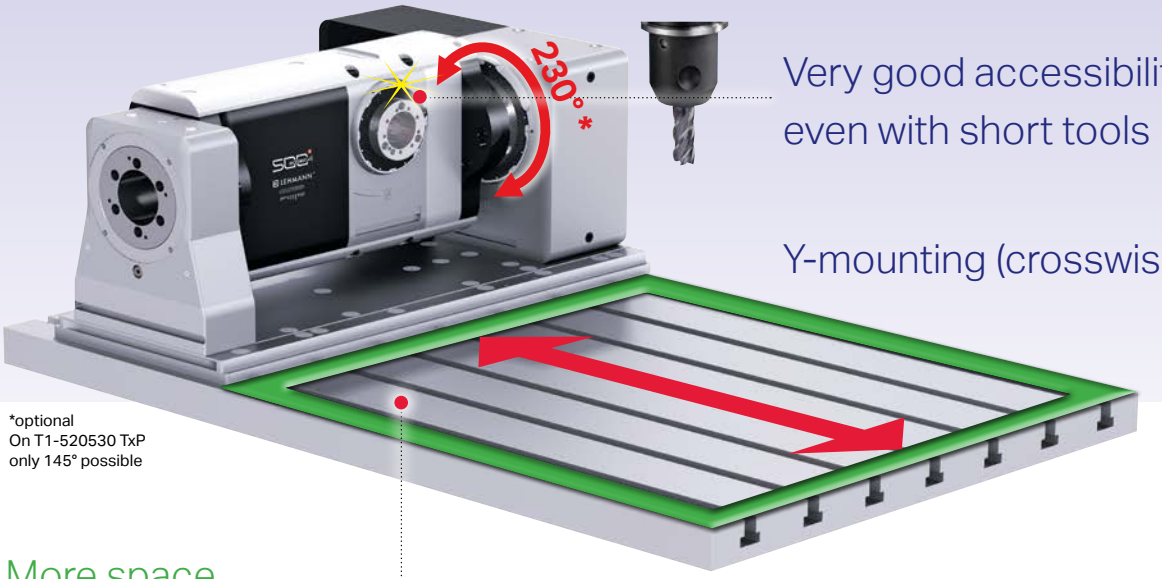
Item no.	Designation
LFX.GLA-Bef	for counter bearing
LFX.RST-Bef	for tailstock







For alignment and clamping, please refer to **p. 86**

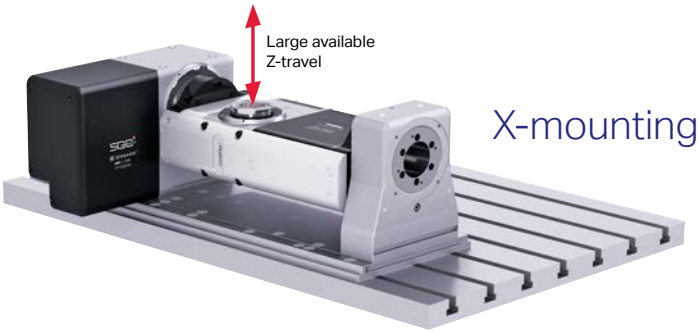


Very good accessibility,
even with short tools

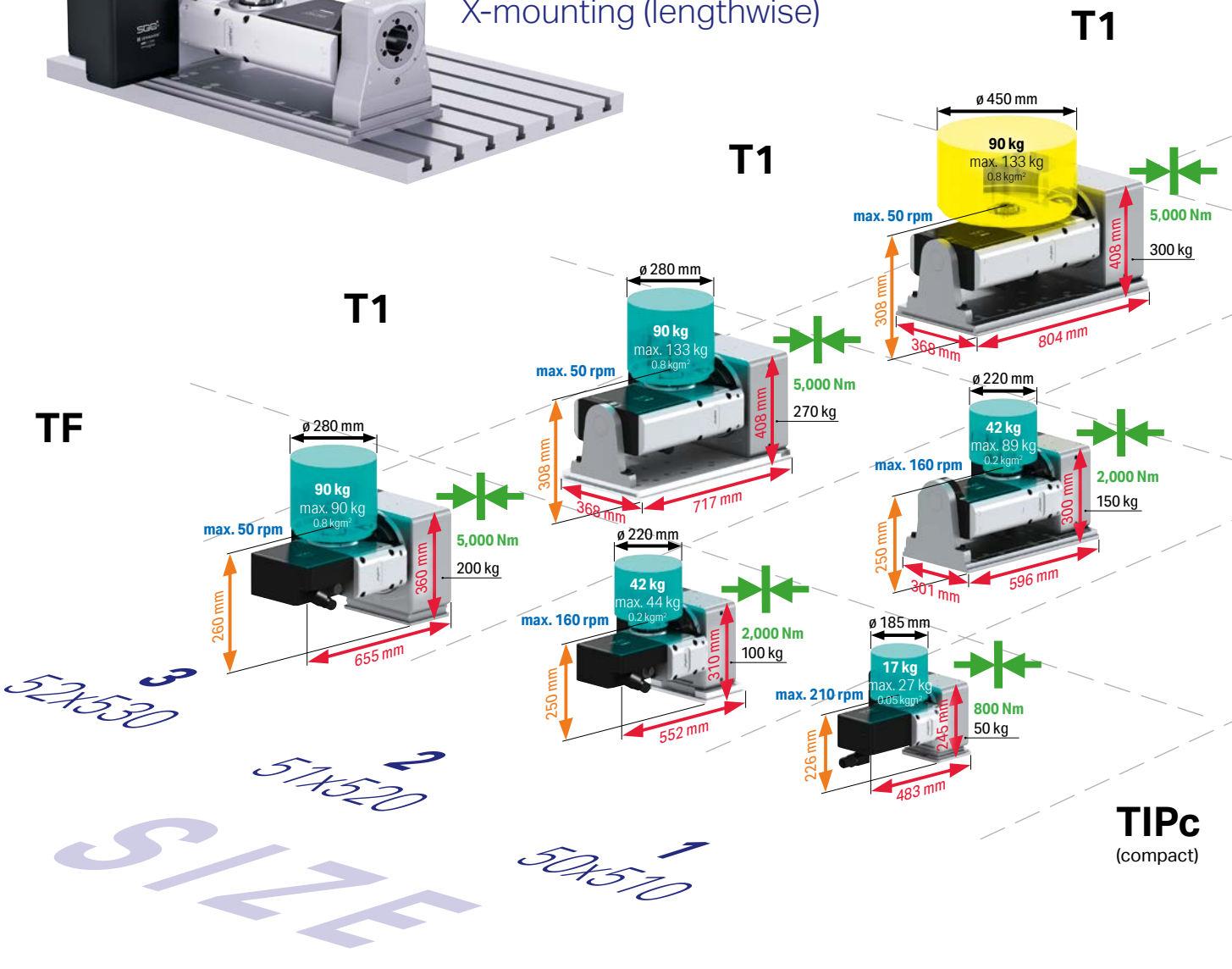
Y-mounting (crosswise)

*optional
On T1-520530 TxP
only 145° possible

More space
for workpiece and fixtures

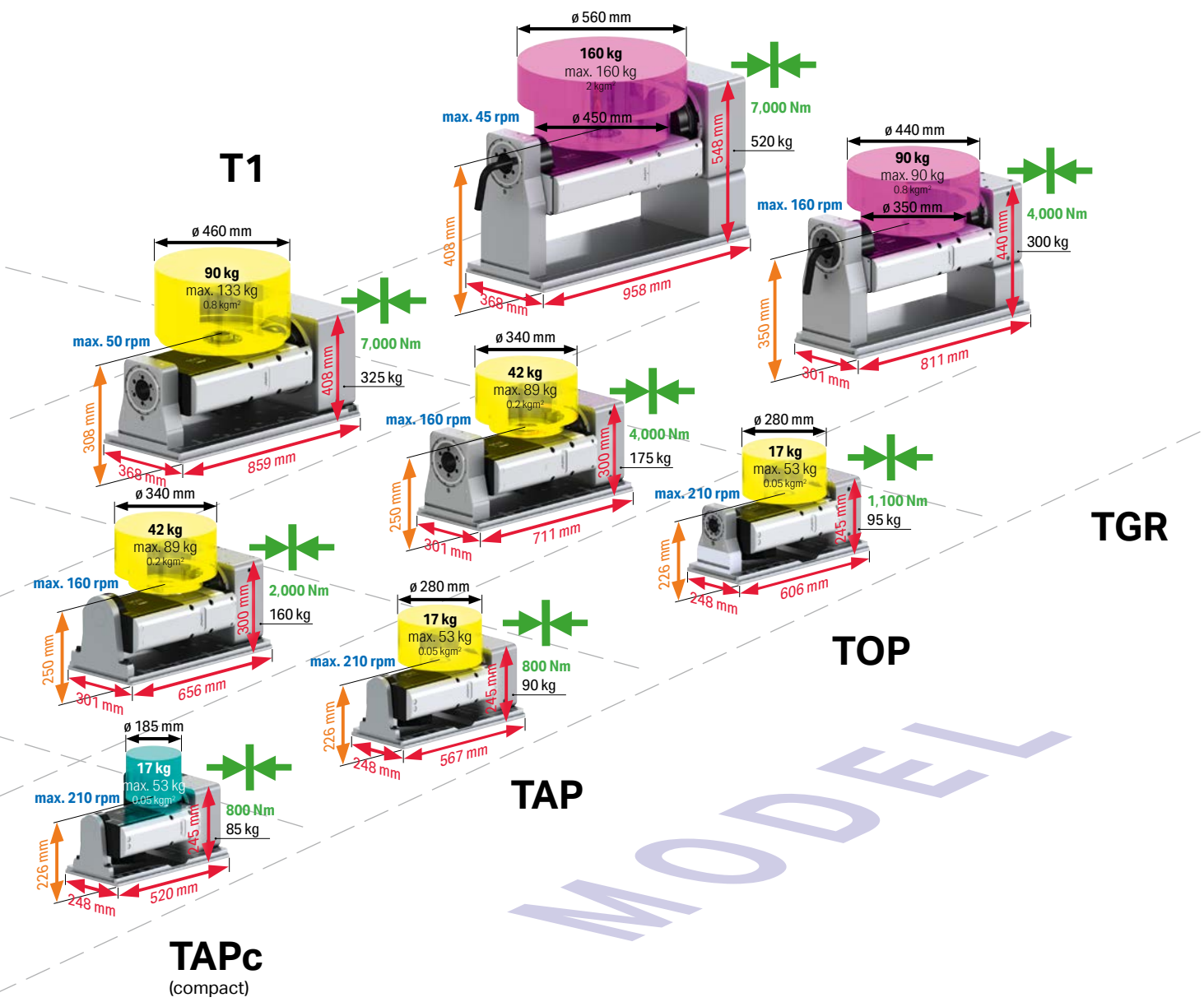


X-mounting (lengthwise)



Facts

- Up to 150 % higher clamping torque in tilting axis
- Fewer variants – more solutions
- Larger workpiece ø possible
- Spatially optimized arrangement of the dividing axis



Weight data represent the standard load; higher weights possible, but require modification of rotational speed, acceleration and jerk limitation.

50x510	508510 (standard) or 508510 (high speed)
51x520	510520 (standard) or 511520 (high speed)
52x530	520530 (standard) or 521530 (high speed)
TIPc	Two-axis rotary table, no counter bearing, compact
TAPc	Two-axis rotary table, with supporting bearing, compact
TAP	Two-axis rotary table, with supporting bearing
TOP	Two-axis rotary table, with clamped counter bearing
TGR	Two-axis rotary table, with clamped counter bearing specifically for grinding applications

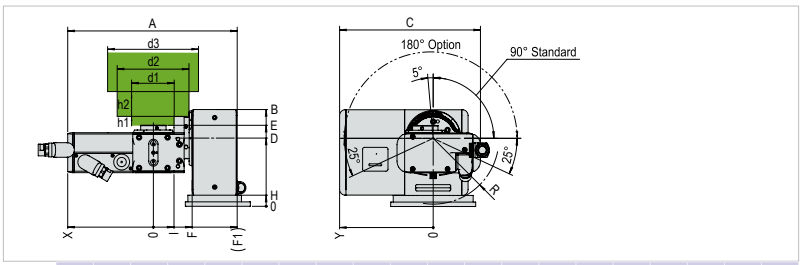
*optional

= Dividing axis for High Series (high speed, high resistance)

					TF-507510 TIP1c	TF-508510 TIP1cs	TF-510520 TIP2c	TF-511520 TIP2cs	TF-520530 TIP3c	TF-521530 TIP3cs
Dimensions	Swivel ø			mm	180		220		195	
	Swiveling range			degrees	90° +5°/-25° (optional 180° ±25°)					
	Center height			mm	180		210		220	
	Total weight	with motor		kg	50		100		200	
	Center bore	Standard / increased		mm	30		34		46 / 64	
Bearing / Clamping	Max. clamping torque	4th axis		Nm	300	250	800	600	2,000	
		5th axis		Nm	800		2,000		5,000	
	Max. spindle load	0°–30°		kg	40		66		135	
		30°–90°		kg	27		44		90	
		Standard load [1]		kg	17	12	42	21	90	61
	Max. axial force	4th axis		kN	6		10		40	
	Max. pull-out torque	4th axis		Nm	1,200		2,000		3,900	
		5th axis		Nm	2,000		3,900		10,400	
Gear unit	Max. moment of inertia	Standard load [1]		kgm²	0.05	0.025	0.2	0.07	0.8	0.4
		J max		kgm²	0.5	0.25	2	0.7	8	4
	Feed torque max [3]	4th axis		Nm	120	70	250	150	440	220
		5th axis		Nm	230		440		650	
	Limited torques due to eccentric loads (acting on the tilting axis) [5]			Nm	40		110		280	
	Gear unit loading 5th axis	without load		Nm	-12		-22		-44	
		with standard load		Nm	15	10	30	5	100	45
		M max		Nm	250		440		650	
	Indexing accuracy Pa	4th axis [2]		± arc sec	20/15		17/10		12/8	
		5th axis (90°) [4]		± arc sec	35/20	35/22	21/22	21/13	11/38	11/20
	Repeat accuracy Ps average	4th axis		± arc sec	2					
		5th axis		± arc sec	2					
	Max speed at standard load	4th axis [1]		min⁻¹	111	210	80	160	50	100
		5th axis [1]		min⁻¹	70		40		25	
Precision	Radial run-out [2]	on spindle ø		µm	6 / 3					
	Axial run-out [2]	at spindle end face		µm	6 / 3					
	Parallelism [2]	Spindle to base		µm/100 mm	10 / 5					

[1] Mutually dependent; for individual drive motor data, see right side
[2] Standard / increased; for measuring method and validity of the values, please refer to **p. 72**, for optional angular position measuring systems, please refer to **p. 73**
[3] Limit value for gear unit, at 1 rpm
[4] Without load / with standard load 0°–90°
[5] For torque calculation, see **p. 108**

Dimensions

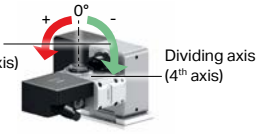


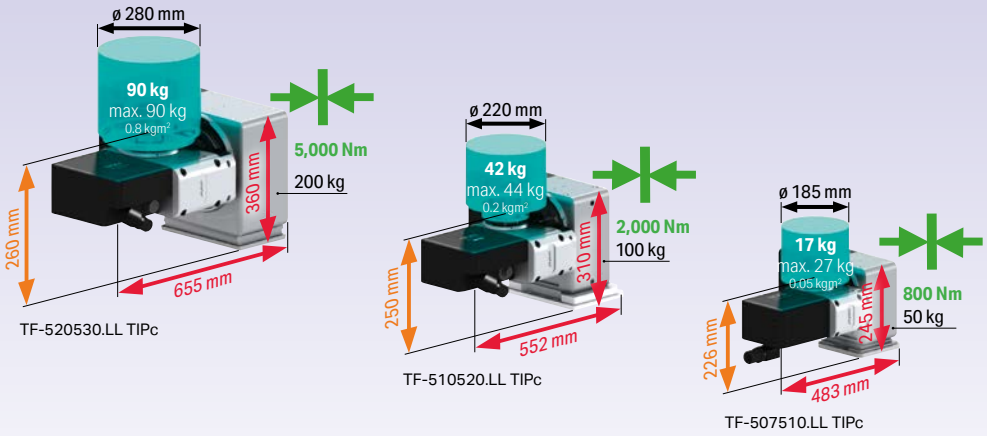
	A	A*	B	C	C*	D	E	F	F1	H	I	R	X	Y	Y*	d1	d2	d3	h1	h2
TIP1c	466		245	382	404	180	226	104	230	30	55	147	236	248	270		186	350		55
TIP2c	512	534	310	444	469	220	260	122	264	40	65	173	248	295	320	128	220	226	30	95
TIP3c	630	655	360	554		220	260	155	335	40	90	195	295	390		178	282	326	66	166

Dimensions with 508, 511 or. 521 identical to 507510, 510520 and 520530.
*With large motor (option)

Important information

Center height increase (option)
Depending on the accessories involved (clamping cylinder, rotary union, angular position measuring system...), a center height increase (dimension D) is required. (See page for respective accessory)





TF-520530.LL TIPc | TF-510520.LL TIPc | TF-507510.LL TIPc

Drive data

(based on standard load cube shown on **pp. 106/107**)

		Motors 4th/5th	Feed* [Nm] 4th	Feed* [Nm] 5th	Speed [rpm] 4th	Speed [rpm] 5th	Cycle time*** [sec] 90° 4th	Cycle time*** [sec] 90° 5th	Cycle time*** [sec] 180° 4th	Cycle time*** [sec] 180° 5th
MAVILOR / MOVINOR**	TF-507510 TIP1c	BLS-072/BLS-072	120	230	111	70	0.26	0.43	0.39	0.64
	TF-508510 TIP1c	BLS-072/BLS-072	70	230	210	70	0.23	0.43	0.29	0.64
	TF-510520 TIP2c	BLS-072/BLS-073	250	425	80	45	0.30	0.50	0.49	0.83
	TF-510520 TIP2c	BLS-072/LN-098	250	440	80	40	0.30	0.50	0.49	0.87
	TF-511520 TIP2c	BLS-072/BLS-073	150	425	160	45	0.23	0.50	0.31	0.83
	TF-511520 TIP2c	BLS-072/LN-098	150	440	160	40	0.23	0.50	0.31	0.87
	TF-520530 TIP3c	BLS-073/LN-098	440	650	50	25	0.41	0.89	0.71	1.49
	TF-521530 TIP3c	LN-098/ LN-098	220	650	90	25	0.27	0.74	0.43	1.34
FANUC	TF-507510 TIP1c	β1 is/α2 (HV)is	80	110	66.7	45	0.30	0.49	0.53	0.83
	TF-508510 TIP1c	β1 is/α2 (HV)is	55	110	130	45	0.25	0.49	0.36	0.83
	TF-510520 TIP2c	α2 (HV)is/α2 (HV)is	120	195	55	29	0.36	0.66	0.63	1.18
	TF-510520 TIP2c	α2 (HV)is/α4 (HV)is	120	335	55	30	0.36	0.64	0.63	1.14
	TF-511520 TIP2c	α2 (HV)is/α2 (HV)is	85	195	100	29	0.24	0.66	0.39	1.18
	TF-511520 TIP2c	α2 (HV)is/α4 (HV)is	85	335	100	30	0.24	0.64	0.39	1.14
	TF-520530 TIP3c	α2 (HV)is/α4 (HV)is	210	395	33	20	0.54	0.94	0.99	1.69
	TF-520530 TIP3c	α4 (HV)is/α8 (HV)is****	355	650	33	25	0.56	0.89	1.01	1.49
	TF-521530 TIP3c	α4 (HV)is/ α4 (HV)is	220	355	60	22	0.37	0.84	0.62	1.52
YASKAWA SGM7J	TF-507510 TIP1c	SGM7J 06/08	120	180	66	60	0.30	0.44	0.53	0.69
	TF-508510 TIP1c	SGM7J 06/08	70	180	133	60	0.22	0.44	0.33	0.69
	TF-510520 TIP2c	SGM7J 08/08	195	315	66.6	38	0.32	0.54	0.55	0.94
	TF-511520 TIP2c	SGM7J 08/08	135	315	133	38	0.22	0.54	0.33	0.94
	TF-520530 TIP3c	on request								
	TF-521530 TIP3c	on request								
YASKAWA SGMJV	TF-507510 TIP1c	SGMJV 04/08	115	180	66.7	60	0.30	0.44	0.53	0.69
	TF-508510 TIP1c	SGMJV 04/08	70	180	130	60	0.22	0.44	0.33	0.69
	TF-510520 TIP2c	SGMJV 08/08	195	315	66.7	38	0.32	0.54	0.55	0.94
	TF-511520 TIP2c	SGMJV 08/08	140	315	133	38	0.21	0.54	0.32	0.94
	TF-520530 TIP3c	SGMJV/EV 08/15	335	650	40	25	0.46	0.89	0.84	1.49
	TF-521530 TIP3c	SGMJV/EV 08/15	220	650	80	25	0.28	0.34	0.46	1.34
MITSUBISHI	TF-507510 TIP1c	HG56/75	120	170	60	45	0.32	0.49	0.57	0.83
	TF-508510 TIP1c	HG56/75	70	170	110	45	0.22	0.49	0.36	0.83
	TF-510520 TIP2c	HG-(H)75/(H)105	185	430	50	30	0.37	0.59	0.67	1.09
	TF-511520 TIP2c	HG-(H)75/(H)105	130	430	100	30	0.24	0.59	0.39	1.09
	TF-520530 TIP3c	HG-(H)105/(H)104	440	650	32	20	0.54	0.94	1.01	1.69
	TF-521530 TIP3c	HG-(H)105/(H)104	220	650	60	22	0.34	0.82	0.59	1.50
SANYO	TF-507510 TIP1c	R2Ax 06040/08075	120	185	66.7	60	0.30	0.44	0.52	0.69
	TF-508510 TIP1c	R2Ax 06040/08075	70	185	130	60	0.22	0.44	0.33	0.69
	TF-510520 TIP2c	R2Ax 08075/08075	210	245	66.7	40	0.32	0.54	0.55	0.92
	TF-511520 TIP2c	R2Ax 08075/08075	145	245	130	40	0.22	0.54	0.34	0.92
SIEMENS	TF-510520 TIP2c	1FK2204/1FK2205	150	425	65	30	0.33	0.59	0.56	1.09
	TF-511520 TIP2c	1FK2204/1FK2205	105	425	130	30	0.22	0.59	0.33	1.09
	TF-520530 TIP3c	1FK2205/1FK2206	425	650	33	25	0.53	0.74	0.98	1.34
	TF-520530 TIP3c	1FK7042/1FK7062	435	650	50	25	0.44	0.89	0.74	1.49
	TF-521530 TIP3c	1FK2205/1FK2206	220	650	65	25	0.30	0.74	0.53	1.34
	TF-521530 TIP3c	1FK7042/1FK7062	220	650	90	25	0.27	0.74	0.43	1.34

* At 1 rpm; for more, please refer to **p. 112**
** for Siemens / Heidenhain
*** Without clamping; for times, please refer to **p. 126**
**** not with 35iB

Item no.

TF–510520.LL TIP–F1

- **Motor** F1=Fanuc is (200 V), F2=Fanuc HVis (400 V), M1=Movinor/Mavilor ERN, M2=Movinor/Mavilor EQN 1125, M3= Movinor/Mavilor EQN 1135, MI3= Mitsubishi 200V, MI4 Mitsubishi 400V, S3=Sanyo, Y2=Yaskawa SGMJV/SGMEV, Y4=Yaskawa SGM7J
- **Divider add-on version**
- **Swiveling axis motor position** L=left, R=right
- **Dividing axis motor position** L=left, R=right
- **Swiveling axis size** 510, 520
- **Dividing axis size** 507, 510, 520
- **Rotary table model**

For calculation of load, forces and torques, please see **p. 108**

Important information

- The limit values as set out in the corresponding parameter list take precedence over the data and information provided in the main catalog (due to motor, drive enhancement and the respective machine CNC)
- Motor-independent data are optimum values at operating temperature
- Further details are available at www.lehmann-rotary-tables.com, under Download / Commissioning

Labyrinth seal (cutaway view)

Recommended for:
- Grinding operations
- High coolant pressures
- Extremely fine abrasive particles

Accessories

Motor, cable, angular position measuring system and pL CNC starting at **p. 74**. Accessories starting at **p. 66**

Options

Item no.	Description
GET.5xx-GEN	Increased gear precision [1]
GEO.5xx-GEN	Incr. geometric precision, ½ standard tolerance
SPI.5xx-Lab [2]	Spindle seal with labyrinth, integrated sealing air pressure control
SWB.510-180	Tilting range increase from 90° to 180° (with overshoot to max. 230°)
SWB.520-180	
SWB.530-180	

[1] incl. lower radial and axial run-out of 0.003 mm
[2] for 507/510: HSK and ripas clamping not possible manually, GET.5xx-GEN and GEO.5xx-GEN only partly possible (lower radial and axial run-out cannot always be achieved)

Suitable alignment elements

Item no.	Designation	Slot width	Weight [kg]
AUR.St-12	Alignment T-slot nuts, 1 pair	12g6	0.07
AUR.St-14		14g6	0.07
AUR.St-16		16g6	0.07
AUR.St-18		18g6	0.07

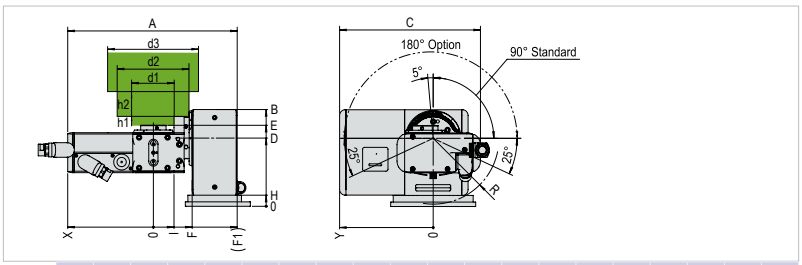
*optional

= High Series
(high speed, high resistance)

				TF-508511 TIP1cs	TF-511521 TIP2cs
Dimensions	Swivel ø		mm	180	220
	Swiveling range		degrees	90° +5°/-25° (optional 180° ±25°)	
	Center height		mm	180	210
	Total weight	with motor	kg	50	100
	Center bore	Standard / increased	mm	30	34
Bearing / Clamping	Max. clamping torque	4th axis	Nm	250	600
		5th axis	Nm	600	1,800
	Max. spindle load	0°–30°	kg	40	66
		30°–90°	kg	27	44
		Standard load [1]	kg	12	21
	Max. axial force	4th axis	kN	6	10
	Max. pull-out torque	4th axis	Nm	1,200	2,000
		5th axis	Nm	2,000	3,900
Gear unit	Max. moment of inertia	Standard load [1]	kgm²	0.025	0.07
		J max	kgm²	0.25	0.7
	Feed torque max [3]	4th axis	Nm	70	150
		5th axis	Nm	130	210
	Limited torques due to eccentric loads (acting on the tilting axis) [5]		Nm	30	45
	Gear unit loading 5th axis	without load	Nm	-12	-22
		with standard load	Nm	10	5
		M max	Nm	150	230
	Indexing accuracy Pa	4th axis [2]	± arc sec	20/15	17/10
		5th axis (90°) [4]	± arc sec	35/22	21/13
	Repeat accuracy Ps average	4th axis	± arc sec	2	
		5th axis	± arc sec	2	
	Max speed at standard load	4th axis [1]	min⁻¹	210	160
		5th axis [1]	min⁻¹	80	50
Precision	Radial run-out [2]	on spindle ø	µm	6 / 3	
	Axial run-out [2]	at spindle end face	µm	6 / 3	
	Parallelism [2]	Spindle to base	µm/100 mm	10 / 5	

[1] Mutually dependent; for individual drive motor data, see right side
[2] Standard / increased; for measuring method and validity of the values, please refer to **p. 72**, for optional angular position measuring systems, please refer to **p. 73**
[3] Limit value for gear unit, at 1 rpm
[4] Without load / with standard load 0°–90°
[5] For torque calculation, see **p. 108**

Dimensions

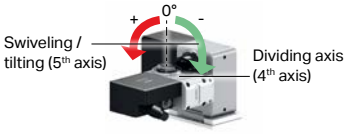


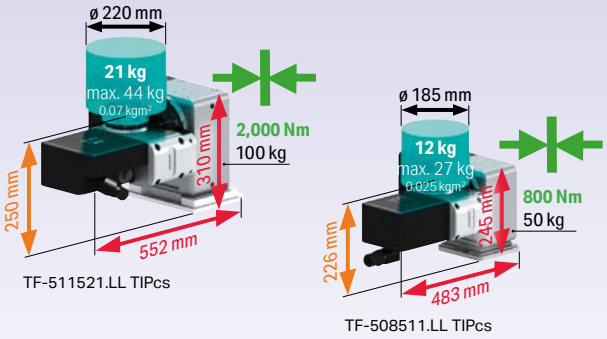
	A	A*	B	C	C*	D	E	F	F1	H	I	R	X	Y	Y*	d1	d2	d3	h1	h2
TIP1c	466		245	382	404	180	226	104	230	30	55	147	236	248	270		186	350		55
TIP2c	512	534	310	444	469	220	260	122	264	40	65	173	248	295	320	128	220	226	30	95

Dimensions with 508, 511 or. 521 identical to 507510, 510520 and 520530.
*With large motor (option)

Important information

Center height increase (option)
Depending on the accessories involved (clamping cylinder, rotary union, angular position measuring system...), a center height increase (dimension D) is required. (See page for respective accessory)





TF-511521.LL TIPcs

TF-508511.LL TIPcs

Drive data

(based on standard load cube shown on **pp. 106/107**)

		Motors 4th/5th	Feed* [Nm] 4th	Feed* [Nm] 5th	Speed [rpm] 4th	Speed [rpm] 5th	Cycle time*** [sec] 90° 4th	Cycle time*** [sec] 90° 5th	Cycle time*** [sec] 180° 4th	Cycle time*** [sec] 180° 5th
MAVILOR / MOVINOR**	**TF-507511 TIP1c**	BLS-072/BLS-072	120	130	111	80	0.26	0.38	0.39	0.37
	TF-508511 TIP1c	BLS-072/BLS-072	70	130	210	80	0.23	0.38	0.29	0.57
	TF-510521 TIP2c	BLS-072/BLS-073	250	210	80	50	0.30	0.44	0.49	0.74
	TF-510521 TIP2c	BLS-072/LN-098	250	210	80	50	0.30	0.44	0.49	0.74
	TF-511521 TIP2c	BLS-072/BLS-073	150	210	160	50	0.23	0.44	0.31	0.74
	TF-511521 TIP2c	BLS-072/LN-098	150	210	160	50	0.23	0.44	0.31	0.74
FANUC	**TF-507511 TIP1c**	β1 is/α2 (HV)is	80	75	66.7	60	0.30	0.49	0.53	0.74
	TF-508511 TIP1c	β1 is/α2 (HV)is	55	75	130	60	0.25	0.49	0.36	0.74
	TF-510521 TIP2c	α2 (HV)is/α2 (HV)is	120	120	55	45	0.36	0.34	0.63	0.87
	TF-510521 TIP2c	α2 (HV)is/α4 (HV)is	120	210	55	50	0.36	0.44	0.63	0.74
	TF-511521 TIP2c	α2 (HV)is/α2 (HV)is	85	120	100	45	0.24	0.54	0.39	0.87
	TF-511521 TIP2c	α2 (HV)is/α4 (HV)is	85	210	100	50	0.24	0.44	0.39	0.74
YASKAWA SGM7J	**TF-507511 TIP1c**	SGM7J 06/08	120	120	66	70	0.30	0.30	0.53	0.61
	TF-508511 TIP1c	SGM7J 06/08	70	120	133	70	0.22	0.30	0.33	0.61
	TF-510521 TIP2c	SGM7J 08/08	195	205	66.6	50	0.32	0.44	0.55	0.74
	TF-511521 TIP2c	SGM7J 08/08	135	205	133	50	0.22	0.44	0.33	0.74
YASKAWA SGMJV	**TF-507511 TIP1c**	SGMJV 04/08	115	120	66.7	70	0.30	0.39	0.53	0.61
	TF-508511 TIP1c	SGMJV 04/08	70	120	130	70	0.22	0.39	0.33	0.61
	TF-510521 TIP2c	SGMJV 08/08	195	205	66.7	50	0.32	0.44	0.55	0.76
	TF-511521 TIP2c	SGMJV 08/08	140	205	133	50	0.21	0.44	0.32	0.76
MITSUB-ISHI	**TF-507511 TIP1c**	HG56/75	120	115	60	60	0.32	0.41	0.57	0.66
	TF-508511 TIP1c	HG56/75	70	115	110	60	0.22	0.41	0.36	0.66
	TF-510521 TIP2c	HG-(H)75/(H)105	185	210	50	50	0.37	0.44	0.67	0.74
	TF-511521 TIP2c	HG-(H)75/(H)105	130	210	100	50	0.24	0.44	0.39	0.74
SANYO	**TF-507511 TIP1c**	R2Ax 06040/08075	120	125	66.7	80	0.30	0.38	0.52	0.57
	TF-508511 TIP1c	R2Ax 06040/08075	70	125	130	80	0.22	0.38	0.33	0.57
	TF-510521 TIP2c	R2Ax 08075/08075	210	155	66.7	50	0.32	0.46	0.55	0.76
	TF-511521 TIP2c	R2Ax 08075/08075	145	155	130	50	0.22	0.46	0.34	0.76
SIE-MENS	**TF-510521 TIP2c**	1FK2204/1FK2205	150	210	65	50	0.33	0.44	0.56	0.76
	TF-511521 TIP2c	1FK2204/1FK2205	105	210	130	50	0.22	0.44	0.33	0.76

* At 1 rpm; for more, please refer to **p. 112**

** for Siemens / Heidenhain

*** Without clamping; for times, please refer to **p. 126**

For calculation of load, forces and torques, please see **p. 108**

Important information

- The limit values as set out in the corresponding parameter list take precedence over the data and information provided in the main catalog (due to motor, drive enhancement and the respective machine CNC)
- Motor-independent data are optimum values at operating temperature
- Further details are available at www.lehmann-rotary-tables.com, under Download / Commissioning

Labyrinth seal (cutaway view)

Recommended for:
- Grinding operations
- High coolant pressures
- Extremely fine abrasive particles

Accessories

Motor, cable, angular position measuring system and pL CNC starting at **p. 74**. Accessories starting at **p. 66**

Options

Item no.	Description
GET.5xx-GEN	Increased gear precision [1]
GEO.5xx-GEN	Incr. geometric precision, ½ standard tolerance
SPI.5xx-Lab [2]	Spindle seal with labyrinth, integrated sealing air pressure control
SWB.510-180	Tilting range increase from 90° to 180° (with overshoot to max. 230°)
SWB.520-180	
SWB.530-180	

[1] incl. lower radial and axial run-out of 0.003 mm

[2] for 507/510: HSK and ripas clamping not possible manually, GET.5xx-GEN and GEO.5xx-GEN only partly possible (lower radial and axial run-out cannot always be achieved)

Item no.

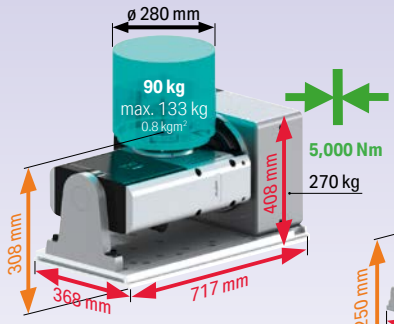
TF–510520.LL TIP–F1

- **Motor** F1=Fanuc is (200 V), F2=Fanuc HVis (400 V), M1=Movinor/Mavilor ERN, M2=Movinor/Mavilor EQN 1125, M3= Movinor/Mavilor EQN 1135, MI3= Mitsubishi 200V, MI4 Mitsubishi 400V, S3=Sanyo, Y2=Yaskawa SGMJV/SGMEV, Y4=Yaskawa SGM7J
- **Divider add-on version**
- **Swiveling axis motor position** L=left, R=right
- **Dividing axis motor position** L=left, R=right
- **Swiveling axis size** 510, 520
- **Dividing axis size** 507, 510, 520
- **Rotary table model**

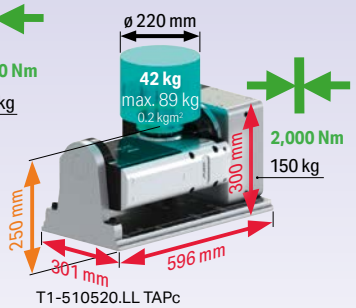
Suitable alignment elements

Item no.	Designation	Slot width	Weight [kg]
AUR.St-12	Alignment T-slot nuts, 1 pair	12g6	0.07
AUR.St-14		14g6	0.07
AUR.St-16		16g6	0.07
AUR.St-18		18g6	0.07

*optional



T1-520530.LL TAPc



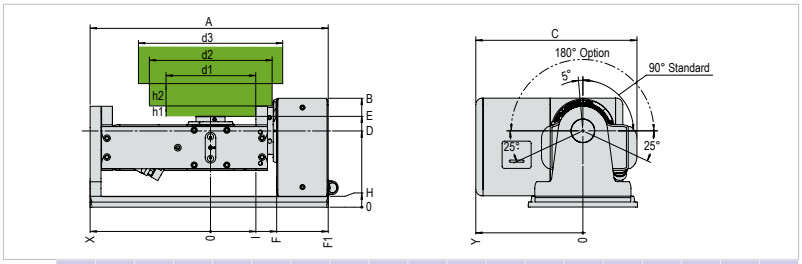
T1-510520.LL TAPc

= Dividing axis for High Series (high speed, high resistance)

					T1-507510 TAP1(c)	T1-508510 TAP1(c)s	T1-510520 TAP2(c)	T1-511520 TAP2(c)s	T1-520530 TAP3(c)	T1-521530 TAP3(c)s
Dimensions	Swivel ø			mm	180		220		195	
	Swiveling range			degrees	90° +5°/-25° (optional 180° ±25°)					
	Center height			mm	180		210 (235[3])		268 / 308	
	Total weight	with motor		kg	90 (85)		160 (150)		300 (270)	
	Center bore	Standard / increased		mm	30		34		46 / 64	
Bearing / Clamping	Max. clamping torque	4th axis		Nm	300	250	800	600	2,000	
		5th axis		Nm	800		2,000		5,000	
	Max. spindle load	0°–30°		kg	79		133		200	
		30°–90°		kg	53		89		133	
		Standard load [1]		kg	17	12	42	21	90	61
	Max. axial force	4th axis		kN	6		10		40	
	Max. pull-out torque	4th axis		Nm	1,200		2,000		3,900	
		5th axis		Nm	2,000		3,900		10,400	
Gear unit	Max. moment of inertia	Standard load [1]		kgm²	0.05	0.025	0.2	0.07	0.8	0.4
		J max		kgm²	0.5	0.25	2	0.7	8	4
	Feed torque max ****	4th axis		Nm	120	70	250	150	440	220
		5th axis		Nm	250		440		650	
	Limited torques due to eccentric loads [6]			Nm	40		110		280	
	Gear unit loading 5th Axis	without load		Nm	-12		-22		-44	
		with standard load		Nm	15	10	30	5	100	45
		M max		Nm	250		440		650	
	Indexing accuracy Pa	4th axis [2]		± arc sec	20/15		17/10		12/8	
		5th axis (90°) [5]		± arc sec	35/20	35/22	21/22	21/13	11/38	11/20
	Repeat accuracy Ps average	4th axis		± arc sec	2					
		5th axis		± arc sec	2					
	Max speed at standard load	4th axis [1]		min⁻¹	111	210	80	160	50	100
		5th axis [1]		min⁻¹	60		40		25	
Precision	Radial run-out [2]	on spindle ø		µm	6 / 3					
	Axial run-out [2]	at spindle end face		µm	6 / 3					
	Parallelism [2]	Spindle to base		µm/100 mm	10 / 5					

[1] Mutually dependent; for individual drive motor data, see right side
[2] Standard / increased; for measuring method and validity of the values, please refer to **p. 72**, for optional angular position measuring systems, please refer to **p. 73**
[3] In relation to dividing axis when in the horizontal position
[4] Limit value for gear unit, at 1 rpm
[5] Without load / with standard load 0°–90°
[6] For torque calculation, see **p. 108**

Dimensions

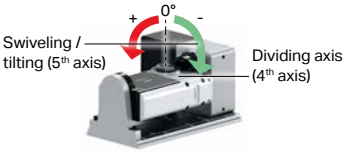


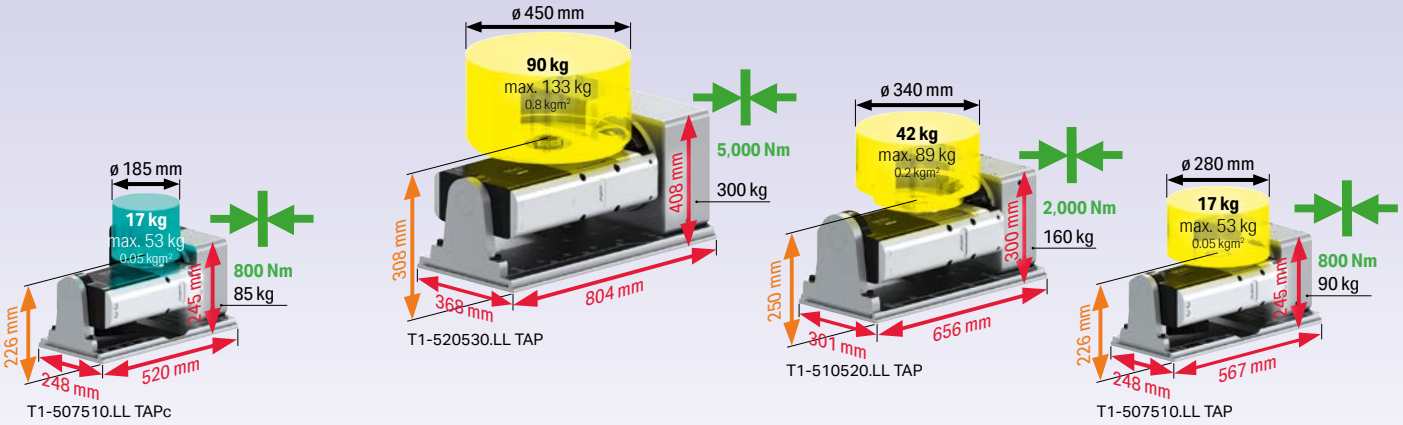
	A	B	C	C*	D	E	F	F1	H	I	R	X	Y	Y*	d1	d2	d3	h1	h2
TAP1	567	245	382	404	180	226	151	277	30	102	149	290	248	270		280	350		55
TAP1c	520	245	382	404	180	226	104	230	30	55	149	290	248	270		186	350		55
TAP2	656	300	444	469	210	250	182	324	30	125	173	332	295	320	248	340	400	30	95
TAP2c	596	300	444	469	210	250	122	264	30	65	173	332	295	320	128	220	400	30	95
TAP3	804	408	554		268	308	242	422	38	177	195	382	390		352	456	500	66	166
TAP3c	717	408	554		268	308	155	335	38	90	195	382	390		178	182	500	66	166

Dimensions with 508, 511 or. 521 identical to 507510, 510520 and 520530.
*With large motor (option)

Important information

Center height increase (option)
Depending on the accessories involved (clamping cylinder, rotary union, angular position measuring system...), a center height increase (dimension D) is required. (See page for respective accessory)





Drive data

(based on standard load cube shown on **pp. 106/107**)

			Feed* [Nm]		Speed [rpm]		Cycle time*** [sec] 90°		180°	
		Motors 4th/5th	4th	5th	4th	5th	4th	5th	4th	5th
MAVILOR / MOVINOR**	T1-507510 TAP1	BLS-072/BLS-072	120	230	111	70	0.26	0.43	0.39	0.64
	T1-508510 TAP1	BLS-072/BLS-072	70	230	210	70	0.23	0.43	0.29	0.64
	T1-510520 TAP2	BLS-072/BLS-073	250	425	80	45	0.30	0.50	0.49	0.83
	T1-510520 TAP2	BLS-072/LN-098	250	440	80	40	0.30	0.50	0.49	0.87
	T1-511520 TAP2	BLS-072/BLS-073	150	425	160	45	0.23	0.50	0.31	0.83
	T1-511520 TAP2	BLS-072/LN-098	150	440	160	40	0.23	0.50	0.31	0.87
	T1-520530 TAP3	BLS-073/LN-098	440	650	50	25	0.41	0.89	0.71	1.49
	T1-521530 TAP3	LN-098/ LN-098	220	650	90	25	0.27	0.74	0.43	1.34
FANUC	T1-507510 TAP1	β1 is/α2 (HV)is	80	110	66.7	45	0.30	0.49	0.53	0.83
	T1-508510 TAP1	β1 is/α2 (HV)is	55	110	130	45	0.25	0.49	0.36	0.83
	T1-510520 TAP2	α2 (HV)is/α2 (HV)is	120	195	55	29	0.36	0.66	0.63	1.18
	T1-510520 TAP2	α2 (HV)is/α4 (HV)is	120	335	55	30	0.36	0.64	0.63	1.14
	T1-511520 TAP2	α2 (HV)is/α2 (HV)is	85	195	100	29	0.24	0.66	0.39	1.18
	T1-511520 TAP2	α2 (HV)is/α4 (HV)is	85	335	100	30	0.24	0.64	0.39	1.14
	T1-520530 TAP3	α2 (HV)is/α4 (HV)is	210	395	33	20	0.54	0.94	0.99	1.69
	T1-520530 TAP3	α4 (HV)is/α8 (HV)is****	355	650	33	25	0.56	0.89	1.01	1.49
	T1-521530 TAP3	α4 (HV)is/ α4 (HV)is	220	355	60	22	0.37	0.84	0.62	1.52
YASKAWA SGM7J	T1-507510 TAP1	SGM7J 06/08	120	180	66	60	0.30	0.44	0.53	0.69
	T1-508510 TAP1	SGM7J 06/08	70	180	133	60	0.22	0.44	0.33	0.69
	T1-510520 TAP2	SGM7J 08/08	195	315	66.6	38	0.32	0.54	0.55	0.94
	T1-511520 TAP2	SGM7J 08/08	135	315	133	38	0.22	0.54	0.33	0.94
	T1-520530 TAP3	on request								
	T1-521530 TAP3	on request								
YASKAWA SGMJV	T1-507510 TAP1	SGMJV 04/08	115	180	66.7	60	0.30	0.44	0.53	0.69
	T1-508510 TAP1	SGMJV 04/08	70	180	130	60	0.22	0.44	0.33	0.69
	T1-510520 TAP2	SGMJV 08/08	195	315	66.7	38	0.32	0.54	0.55	0.94
	T1-511520 TAP2	SGMJV 08/08	140	315	133	38	0.21	0.54	0.32	0.94
	T1-520530 TAP3	SGMJV/EV 08/15	335	650	40	25	0.46	0.89	0.84	1.49
	T1-521530 TAP3	SGMJV/EV 08/15	220	650	80	25	0.28	0.34	0.46	1.34
MITSUBISHI	T1-507510 TAP1	HG56/75	120	170	60	45	0.32	0.49	0.57	0.83
	T1-508510 TAP1	HG56/75	70	170	110	45	0.22	0.49	0.36	0.83
	T1-510520 TAP2	HG-(H)75/(H)105	185	430	50	30	0.37	0.59	0.67	1.09
	T1-511520 TAP2	HG-(H)75/(H)105	130	430	100	30	0.24	0.59	0.39	1.09
	T1-520530 TAP3	HG-(H)105/(H)104	440	650	32	20	0.54	0.94	1.01	1.69
	T1-521530 TAP3	HG-(H)105/(H)104	220	650	60	22	0.34	0.82	0.59	1.50
SANYO	T1-507510 TAP1	R2Ax 06040/08075	120	185	66.7	60	0.30	0.44	0.52	0.69
	T1-508510 TAP1	R2Ax 06040/08075	70	185	130	60	0.22	0.44	0.33	0.69
	T1-510520 TAP2	R2Ax 08075/08075	210	245	66.7	40	0.32	0.54	0.55	0.92
	T1-511520 TAP2	R2Ax 08075/08075	145	245	130	40	0.22	0.54	0.34	0.92
SIEMENS	T1-510520 TAP2	1FK2204/1FK2205	150	425	65	30	0.33	0.59	0.56	1.09
	T1-511520 TAP2	1FK2204/1FK2205	105	425	130	30	0.22	0.59	0.33	1.09
	T1-520530 TAP3	1FK2205/1FK2206	425	650	33	25	0.53	0.74	0.98	1.34
	T1-520530 TAP3	1FK7042/1FK7062	435	650	50	25	0.44	0.89	0.74	1.49
	T1-521530 TAP3	1FK2205/1FK2206	220	650	65	25	0.30	0.74	0.53	1.34
	T1-521530 TAP3	1FK7042/1FK7062	220	650	90	25	0.27	0.74	0.43	1.34

* At 1 rpm; for more, please refer to **p. 112**
** for Siemens / Heidenhain
*** Without clamping; for times, please refer to **p. 126**
**** not with 35iB

For calculation of load, forces and torques, please see **p. 108**

Important information

- The limit values as set out in the corresponding parameter list take precedence over the data and information provided in the main catalog (due to motor, drive enhancement and the respective machine CNC)
- Motor-independent data are optimum values at operating temperature
- Further details are available at www.lehmann-rotary-tables.com, under Download / Commissioning

Labyrinth seal (cutaway view)

Recommended for:
- Grinding operations
- High coolant pressures
- Extremely fine abrasive particles

Accessories

Motor, cable, angular position measuring system and pL CNC starting at **p. 74**. Accessories starting at **p. 66**

Options

Item no.	Description
GET.5xx-GEN	Increased gear precision [1]
GEO.5xx-GEN	Incr. geometric precision, ½ standard tolerance
SPI.5xx-Lab [2]	Spindle seal with labyrinth, integrated sealing air pressure control
SWB.510-180	Tilting range increase from 90° to 180° (with overshoot to max. 230°)
SWB.520-180	
SWB.530-180	

[1] incl. lower radial and axial run-out of 0.003 mm
[2] for 507/510: HSK and ripas clamping not possible manually, GET.5xx-GEN and GEO.5xx-GEN only partly possible (lower radial and axial run-out cannot always be achieved)

Item no.

T1–510520.LL TAP–F1

- **Motor** F1=Fanuc is (200 V), F2=Fanuc HVis (400 V), M1=Movinor/Mavilor ERN, M2=Movinor/Mavilor EQN 1125, M3= Movinor/Mavilor EQN 1135, MI3= Mitsubishi 200V, MI4 Mitsubishi 400V, S3=Sanyo, Y2=Yaskawa SGMJV/SGMEV, Y4=Yaskawa SGM7J
- **Divider add-on version**
- **Swiveling axis motor position** L=left, R=right
- **Dividing axis motor position** L=left, R=right
- **Swiveling axis size** 510, 520
- **Dividing axis size** 507, 510, 520
- **Rotary table model**

Suitable alignment elements

Item no.	Designation	Slot width	Weight [kg]
AUR.iX-12	**lineFIX** alignment pin, 1 pair	12g6	
AUR.iX-14		14g6	0.03
AUR.iX-16		16g6	0.03
AUR.iX-18		18g6	0.03

For **lineFIX**, refer to **p. 86**

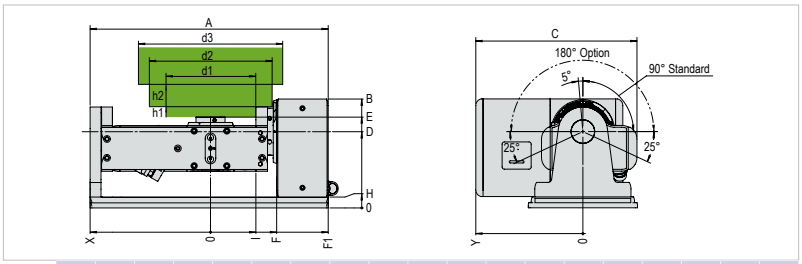
*optional

= High Series
(high speed, high resistance)

					T1-508511 TAP1(c)s	T1-511521 TAP2(c)s
Dimensions	Swivel ø			mm	180	220
	Swiveling range			degrees	90° +5°/-25° (optional 180° ±25°)	
	Center height			mm	180	210
	Total weight	with motor		kg	50	100
	Center bore	Standard / increased		mm	30	34
Bearing / Clamping	Max. clamping torque	4th axis		Nm	250	600
		5th axis		Nm	600	1'800
	Max. spindle load	0°–30°		kg	40	66
		30°–90°		kg	27	44
		Standard load [1]		kg	12	21
	Max. axial force	4th axis		kN	6	10
	Max. pull-out torque	4th axis		Nm	1,200	2,000
		5th axis		Nm	2,000	3,900
Gear unit	Max. moment of inertia	Standard load [1]		kgm²	0.025	0.07
		J max		kgm²	0.25	0.7
	Feed torque max ****	4th axis		Nm	70	150
		5th axis		Nm	130	210
	Limited torques due to eccentric loads [6]			Nm	30	45
	Gear unit loading 5th Axis	without load		Nm	-12	-22
		with standard load		Nm	10	5
		M max		Nm	150	230
	Indexing accuracy Pa	4th axis [2]		± arc sec	20/15	17/10
		5th axis (90°) [5]		± arc sec	35/22	21/13
	Repeat accuracy Ps average	4th axis		± arc sec	2	
		5th axis		± arc sec	2	
	Max speed at standard load	4th axis [1]		min⁻¹	210	160
		5th axis [1]		min⁻¹	80	50
Precision	Radial run-out [2]	on spindle ø		µm	6 / 3	
	Axial run-out [2]	at spindle end face		µm	6 / 3	
	Parallelism [2]	Spindle to base		µm/100 mm	10 / 5	

[1] Mutually dependent; for individual drive motor data, see right side
[2] Standard / increased; for measuring method and validity of the values, please refer to **p. 72**, for optional angular position measuring systems, please refer to **p. 73**
[3] In relation to dividing axis when in the horizontal position
[4] Limit value for gear unit, at 1 rpm
[5] Without load / with standard load 0°–90°
[6] For torque calculation, see **p. 108**

Dimensions

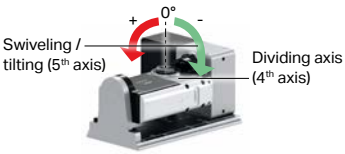


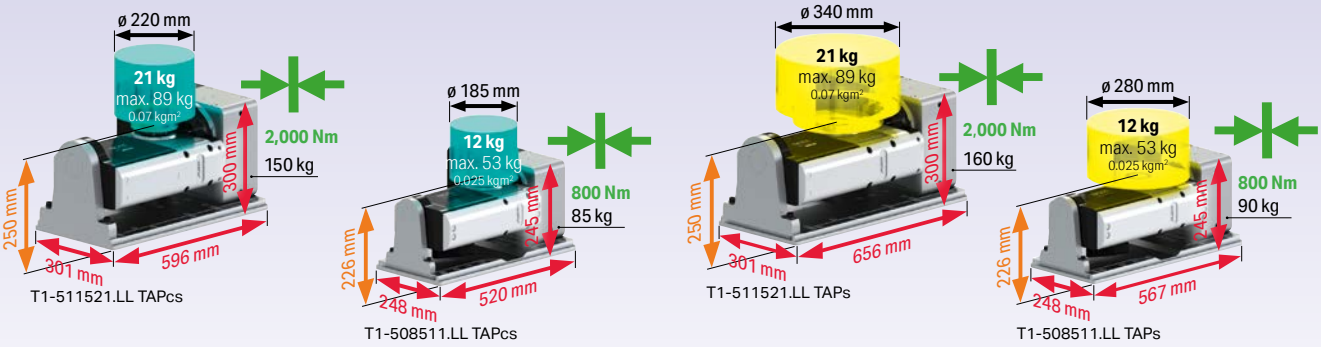
	A	B	C	C*	D	E	F	F1	H	I	R	X	Y	Y*	d1	d2	d3	h1	h2
TAP1	567	245	382	404	180	226	151	277	30	102	149	290	248	270		280	350		55
TAP1c	520	245	382	404	180	226	104	230	30	55	149	290	248	270		186	350		55
TAP2	656	300	444	469	210	250	182	324	30	125	173	332	295	320	248	340	400	30	95
TAP2c	596	300	444	469	210	250	122	264	30	65	173	332	295	320	128	220	400	30	95

Dimensions with 508, 511 or. 521 identical to 507510, 510520 and 520530.
*With large motor (option)

Important information

Center height increase (option)
Depending on the accessories involved (clamping cylinder, rotary union, angular position measuring system...), a center height increase (dimension D) is required. (See page for respective accessory)





Drive data

(based on standard load cube shown on **pp. 106/107**)

		Motors 4th/5th	Feed* [Nm] 4th	Feed* [Nm] 5th	Speed [rpm] 4th	Speed [rpm] 5th	Cycle time*** [sec] 90° 4th	Cycle time*** [sec] 90° 5th	Cycle time*** [sec] 180° 4th	Cycle time*** [sec] 180° 5th
MAVILOR / MOVINOR**	T1-507511 TAP1	BLS-072/BLS-072	120	130	111	80	0.26	0.38	0.39	0.37
	T1-508511 TAP1	BLS-072/BLS-072	70	130	210	80	0.23	0.38	0.29	0.57
	T1-510521 TAP2	BLS-072/BLS-073	250	210	80	50	0.30	0.44	0.49	0.74
	T1-510521 TAP2	BLS-072/LN-098	250	210	80	50	0.30	0.44	0.49	0.74
	T1-511521 TAP2	BLS-072/BLS-073	150	210	160	50	0.23	0.44	0.31	0.74
	T1-511521 TAP2	BLS-072/LN-098	150	210	160	50	0.23	0.44	0.31	0.74
FANUC	T1-507511 TAP1	β1 is/α2 (HV)is	80	75	66.7	60	0.30	0.49	0.53	0.74
	T1-508511 TAP1	β1 is/α2 (HV)is	55	75	130	60	0.25	0.49	0.36	0.74
	T1-510521 TAP2	α2 (HV)is/α2 (HV)is	120	120	55	45	0.36	0.34	0.63	0.87
	T1-510521 TAP2	α2 (HV)is/α4 (HV)is	120	210	55	50	0.36	0.44	0.63	0.74
	T1-511521 TAP2	α2 (HV)is/α2 (HV)is	85	120	100	45	0.24	0.54	0.39	0.87
	T1-511521 TAP2	α2 (HV)is/α4 (HV)is	85	210	100	50	0.24	0.44	0.39	0.74
YASKAWA SGM7J	T1-507511 TAP1	SGM7J 06/08	120	120	66	70	0.30	0.30	0.53	0.61
	T1-508511 TAP1	SGM7J 06/08	70	120	133	70	0.22	0.30	0.33	0.61
	T1-510521 TAP2	SGM7J 08/08	195	205	66.6	50	0.32	0.44	0.55	0.74
	T1-511521 TAP2	SGM7J 08/08	135	205	133	50	0.22	0.44	0.33	0.74
YASKAWA SGMJV	T1-507511 TAP1	SGMJV 04/08	115	120	66.7	70	0.30	0.39	0.53	0.61
	T1-508511 TAP1	SGMJV 04/08	70	120	130	70	0.22	0.39	0.33	0.61
	T1-510521 TAP2	SGMJV 08/08	195	205	66.7	50	0.32	0.44	0.55	0.76
	T1-511521 TAP2	SGMJV 08/08	140	205	133	50	0.21	0.44	0.32	0.76
MITSUBISHI	T1-507511 TAP1	HG56/75	120	115	60	60	0.32	0.41	0.57	0.66
	T1-508511 TAP1	HG56/75	70	115	110	60	0.22	0.41	0.36	0.66
	T1-510521 TAP2	HG-(H)75/(H)105	185	210	50	50	0.37	0.44	0.67	0.74
	T1-511521 TAP2	HG-(H)75/(H)105	130	210	100	50	0.24	0.44	0.39	0.74
SANYO	T1-507511 TAP1	R2Ax 06040/08075	120	125	66.7	80	0.30	0.38	0.52	0.57
	T1-508511 TAP1	R2Ax 06040/08075	70	125	130	80	0.22	0.38	0.33	0.57
	T1-510521 TAP2	R2Ax 08075/08075	210	155	66.7	50	0.32	0.46	0.55	0.76
	T1-511521 TAP2	R2Ax 08075/08075	145	155	130	50	0.22	0.46	0.34	0.76
SIEMENS	T1-510521 TAP2	1FK2204/1FK2205	150	210	65	50	0.33	0.44	0.56	0.76
	T1-511521 TAP2	1FK2204/1FK2205	105	210	130	50	0.22	0.44	0.33	0.76

* At 1 rpm; for more, please refer to **p. 112**
** for Siemens / Heidenhain
*** Without clamping; for times, please refer to **p. 126**

For calculation of load, forces and torques, please see **p. 108**

Important information

- The limit values as set out in the corresponding parameter list take precedence over the data and information provided in the main catalog (due to motor, drive enhancement and the respective machine CNC)
- Motor-independent data are optimum values at operating temperature
- Further details are available at www.lehmann-rotary-tables.com, under Download / Commissioning

Labyrinth seal (cutaway view)

Recommended for:
- Grinding operations
- High coolant pressures
- Extremely fine abrasive particles

Accessories

Motor, cable, angular position measuring system and pL CNC starting at **p. 74**. Accessories starting at **p. 66**

Options

Item no.	Description
GET.5xx-GEN	Increased gear precision [1]
GEO.5xx-GEN	Incr. geometric precision, ½ standard tolerance
SPI.5xx-Lab [2]	Spindle seal with labyrinth, integrated sealing air pressure control
SWB.510-180	Tilting range increase from 90° to 180° (with overshoot to max. 230°)
SWB.520-180	
SWB.530-180	

[1] incl. lower radial and axial run-out of 0.003 mm
[2] for 507/510: HSK and ripas clamping not possible manually, GET.5xx-GEN and GEO.5xx-GEN only partly possible (lower radial and axial run-out cannot always be achieved)

Item no.

T1–510520.LL TAP–F1

- **Motor** F1=Fanuc is (200 V), F2=Fanuc HVis (400 V), M1=Movinor/Mavilor ERN, M2=Movinor/Mavilor EQN 1125, M3= Movinor/Mavilor EQN 1135, MI3= Mitsubishi 200V, MI4 Mitsubishi 400V, S3=Sanyo, Y2=Yaskawa SGMJV/SGMEV, Y4=Yaskawa SGM7J
- **Divider add-on version**
- **Swiveling axis motor position** L=left, R=right
- **Dividing axis motor position** L=left, R=right
- **Swiveling axis size** 510, 520
- **Dividing axis size** 507, 510, 520
- **Rotary table model**

Suitable alignment elements

Item no.	Designation	Slot width	Weight [kg]
AUR.iX-12	**lineFIX** alignment pin, 1 pair	12g6	
AUR.iX-14		14g6	0.03
AUR.iX-16		16g6	0.03
AUR.iX-18		18g6	0.03

For **lineFIX**, refer to **p. 86**

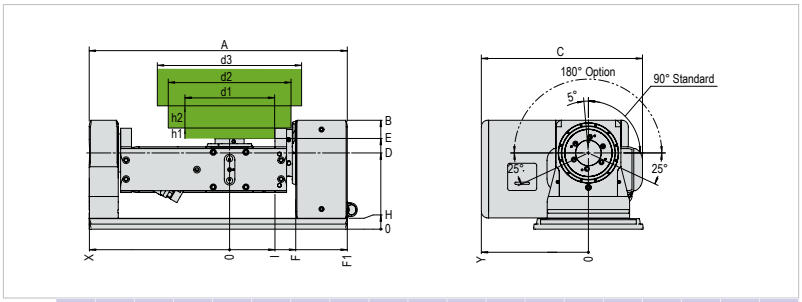
*optional

= Dividing axis for High Series (high speed, high resistance)

					T1-507510 TOP1	T1-508510 TOP1s	T1-510520 TOP2	T1-511520 TOP2s	T1-520530 TOP3	T1-521530 TOP3s
Dimensions	Swivel ø			mm	180		220		195	
	Swiveling range			degrees	90° +5°/-25° (optional 180° ±25°)					
	Center height			mm	180		210 (235[3])		268 / 308	
	Total weight	with motor		kg	95		175		325	
	Center bore	Standard / increased		mm	30		34		46 / 64	
Bearing / Clamping	Max. clamping torque	4th axis		Nm	300	250	800	600	2,000	
		5th axis		Nm	1,100		4,000		7,000	
	Max. spindle load	0°–30°		kg	79		133		200	
		30°–90°		kg	53		89		133	
		Standard load [1]		kg	17	12	42	21	90	61
	Max. axial force	4th axis		kN	6		10		40	
	Max. pull-out torque	4th axis		Nm	1,200		2,000		3,900	
		5th axis		Nm	2,000		3,900		10,400	
Gear unit	Max. moment of inertia	Standard load [1]		kgm²	0.05	0.025	0.2	0.07	0.8	0.4
		J max		kgm²	0.5	0.25	2	0.7	8	4
	Feed torque max [4]	4th axis		Nm	120	70	250	150	440	220
		5th axis		Nm	250		440		650	
	Limited torques due to eccentric loads [6]			Nm	40		110		280	
	Gear unit loading 5th axis	without load		Nm	-12		-22		-44	
		with standard load		Nm	15	10	30	5	100	45
		M max		Nm	250		440		650	
	Indexing accuracy Pa	4th axis [2]		± arc sec	20/15		17/10		12/8	
		5th axis (90°) [5]		± arc sec	35/20	35/22	21/22	21/13	11/38	11/20
	Repeat accuracy Ps average	4th axis		± arc sec	2					
		5th axis		± arc sec	2					
	Max speed at standard load	4th axis [1]		min⁻¹	111	210	80	160	50	100
		5th axis [1]		min⁻¹	60		40		25	
Precision	Radial run-out [2]	on spindle ø		µm	6 / 3					
	Axial run-out [2]	at spindle end face		µm	6 / 3					
	Parallelism [2]	Spindle to base		µm/100 mm	10 / 5					

[1] Mutually dependent; for individual drive motor data, see right side
[2] Standard / increased; for measuring method and validity of the values, please refer to **p. 72**, for optional angular position measuring systems, please refer to **p. 73**
[3] In relation to dividing axis when in the horizontal position
[4] Limit value for gear unit, at 1 rpm
[5] Without load / with standard load 0°–90°
[6] For torque calculation, see **p. 108**

Dimensions

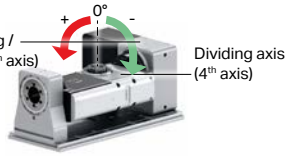


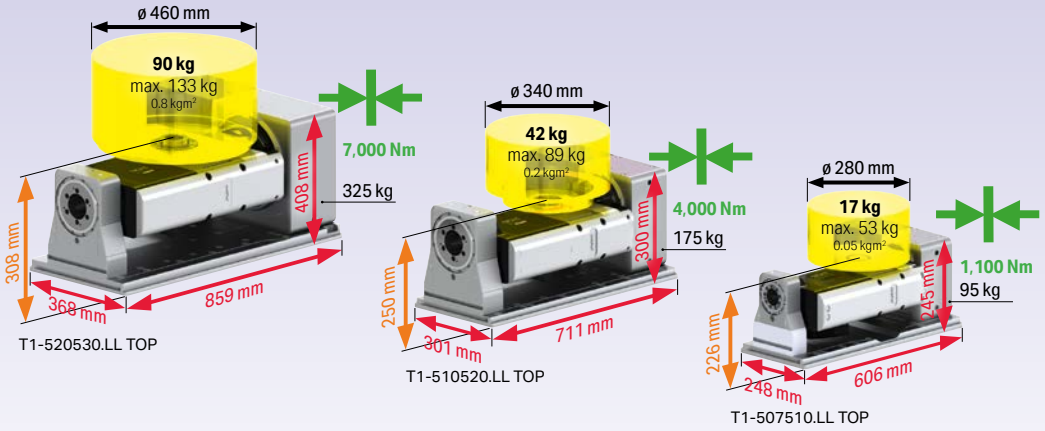
	A	B	C	C*	D	E	F	F1	H	I	R	X	Y	Y*	d1	d2	d3	h1	h2
TOP1	606	245	382	404	180	226	151	277	30	102	149	328	248	270		280	350		55
TOP2	711	300	444	469	210	250	182	324	30	125	173	387	295	320	248	340	400	30	95
TOP3	859	408	554		268	308	242	422	38	177	195	437	390		352	456	500	66	166

Dimensions with 508, 511 or. 521 identical to 507510, 510520 and 520530.
*With large motor (option)

Important information

Center height increase (option)
Depending on the accessories involved (clamping cylinder, rotary union, angular position measuring system...), a center height increase (dimension D) is required. (See page for respective accessory)





Drive data

(based on standard load cube shown on **pp. 106/107**)

		Motors 4th/5th	Feed* [Nm] 4th	Feed* [Nm] 5th	Speed [rpm] 4th	Speed [rpm] 5th	Cycle time*** [sec] 90° 4th	Cycle time*** [sec] 90° 5th	Cycle time*** [sec] 180° 4th	Cycle time*** [sec] 180° 5th
MAVILOR / MOVINOR**	T1-507510 TOP1	BLS-072/BLS-072	120	230	111	70	0.26	0.43	0.39	0.64
	T1-508510 TOP1	BLS-072/BLS-072	70	230	210	70	0.23	0.43	0.29	0.64
	T1-510520 TOP2	BLS-072/BLS-073	250	425	80	45	0.30	0.50	0.49	0.83
	T1-510520 TOP2	BLS-072/LN-098	250	440	80	40	0.30	0.50	0.49	0.87
	T1-511520 TOP2	BLS-072/BLS-073	150	425	160	45	0.23	0.50	0.31	0.83
	T1-511520 TOP2	BLS-072/LN-098	150	440	160	40	0.23	0.50	0.31	0.87
	T1-520530 TOP3	BLS-073/LN-098	440	650	50	25	0.41	0.89	0.71	1.49
	T1-521530 TOP3	LN-098/ LN-098	220	650	90	25	0.27	0.74	0.43	1.34
FANUC	T1-507510 TOP1	β1 is/α2 (HV)is	80	110	66.7	45	0.30	0.49	0.53	0.83
	T1-508510 TOP1	β1 is/α2 (HV)is	55	110	130	45	0.25	0.49	0.36	0.83
	T1-510520 TOP2	α2 (HV)is/α2 (HV)is	120	195	55	29	0.36	0.66	0.63	1.18
	T1-510520 TOP2	α2 (HV)is/α4 (HV)is	120	335	55	30	0.36	0.64	0.63	1.14
	T1-511520 TOP2	α2 (HV)is/α2 (HV)is	85	195	100	29	0.24	0.66	0.39	1.18
	T1-511520 TOP2	α2 (HV)is/α4 (HV)is	85	335	100	30	0.24	0.64	0.39	1.14
	T1-520530 TOP3	α2 (HV)is/α4 (HV)is	210	395	33	20	0.54	0.94	0.99	1.69
	T1-520530 TOP3	α4 (HV)is/α8 (HV)is****	355	650	33	25	0.56	0.89	1.01	1.49
	T1-521530 TOP3	α4 (HV)is/ α4 (HV)is	220	355	60	22	0.37	0.84	0.62	1.52
YASKAWA SGM7J	T1-507510 TOP1	SGM7J 06/08	120	180	66	60	0.30	0.44	0.53	0.69
	T1-508510 TOP1	SGM7J 06/08	70	180	133	60	0.22	0.44	0.33	0.69
	T1-510520 TOP2	SGM7J 08/08	195	315	66.6	38	0.32	0.54	0.55	0.94
	T1-511520 TOP2	SGM7J 08/08	135	315	133	38	0.22	0.54	0.33	0.94
	T1-520530 TOP3	on request								
	T1-521530 TOP3	on request								
YASKAWA SGMJV	T1-507510 TOP1	SGMJV 04/08	115	180	66.7	60	0.30	0.44	0.53	0.69
	T1-508510 TOP1	SGMJV 04/08	70	180	130	60	0.22	0.44	0.33	0.69
	T1-510520 TOP2	SGMJV 08/08	195	315	66.7	38	0.32	0.54	0.55	0.94
	T1-511520 TOP2	SGMJV 08/08	140	315	133	38	0.21	0.54	0.32	0.94
	T1-520530 TOP3	SGMJV/EV 08/15	335	650	40	25	0.46	0.89	0.84	1.49
	T1-521530 TOP3	SGMJV/EV 08/15	220	650	80	25	0.28	0.34	0.46	1.34
MITSUBISHI	T1-507510 TOP1	HG56/75	120	170	60	45	0.32	0.49	0.57	0.83
	T1-508510 TOP1	HG56/75	70	170	110	45	0.22	0.49	0.36	0.83
	T1-510520 TOP2	HG-(H)75/(H)105	185	430	50	30	0.37	0.59	0.67	1.09
	T1-511520 TOP2	HG-(H)75/ (H) 105	130	430	100	30	0.24	0.59	0.39	1.09
	T1-520530 TOP3	HG-(H)105/ (H) 104	440	650	32	20	0.54	0.94	1.01	1.69
	T1-521530 TOP3	HG-(H) 105/ (H) 104	220	650	60	22	0.34	0.82	0.59	1.50
SANYO	T1-507510 TOP1	R2Ax 06040/08075	120	185	66.7	60	0.30	0.44	0.52	0.69
	T1-508510 TOP1	R2Ax 06040/08075	70	185	130	60	0.22	0.44	0.33	0.69
	T1-510520 TOP2	R2Ax 08075/08075	210	245	66.7	40	0.32	0.54	0.55	0.92
	T1-511520 TOP2	R2Ax 08075/08075	145	245	130	40	0.22	0.54	0.34	0.92
SIEMENS	T1-510520 TOP2	1FK2204/1FK2205	150	425	65	30	0.33	0.59	0.56	1.09
	T1-511520 TOP2	1FK2204/1FK2205	105	425	130	30	0.22	0.59	0.33	1.09
	T1-520530 TOP3	1FK2205/1FK2206	425	650	33	25	0.53	0.74	0.98	1.34
	T1-520530 TOP3	1FK7042/1FK7062	435	650	50	25	0.44	0.89	0.74	1.49
	T1-521530 TOP3	1FK2205/1FK2206	220	650	65	25	0.30	0.74	0.53	1.34
	T1-521530 TOP3	1FK7042/1FK7062	220	650	90	25	0.27	0.74	0.43	1.34

* At 1 rpm; for more, please refer to **p. 112**
** for Siemens / Heidenhain
*** Without clamping; for times, please refer to **p. 126**
**** not with 35iB

Item no.

T1–510520.LL TOP–F1

- **Motor** F1=Fanuc is (200 V), F2=Fanuc HVis (400 V), M1=Movinor/Mavilor ERN, M2=Movinor/Mavilor EQN 1125, M3= Movinor/Mavilor EQN 1135, MI3= Mitsubishi 200V, MI4 Mitsubishi 400V, S3=Sanyo, Y2=Yaskawa SGMJV/SGMEV, Y4=Yaskawa SGM7J
- **Divider add-on version**
- **Swiveling axis motor position** L=left, R=right
- **Dividing axis motor position** L=left, R=right
- **Swiveling axis size** 510, 520
- **Dividing axis size** 507, 510, 520
- **Rotary table model**

For calculation of load, forces and torques, please see **p. 108**

Important information

- The limit values as set out in the corresponding parameter list take precedence over the data and information provided in the main catalog (due to motor, drive enhancement and the respective machine CNC)
- Motor-independent data are optimum values at operating temperature
- Further details are available at www.lehmann-rotary-tables.com, under Download / Commissioning

Labyrinth seal (cutaway view)

Recommended for:
- Grinding operations
- High coolant pressures
- Extremely fine abrasive particles

Accessories

Motor, cable, angular position measuring system and pL CNC starting at **p. 74**. Accessories starting at **p. 66**

Options

Item no.	Description
GET.5xx-GEN	Increased gear precision [1]
GEO.5xx-GEN	Incr. geometric precision, ½ standard tolerance
SPI.5xx-Lab [2]	Spindle seal with labyrinth, integrated sealing air pressure control
SWB.510-180	Tilting range increase from 90° to 180° (with overshoot to max. 230°)
SWB.520-180	
SWB.530-180	

[1] incl. lower radial and axial run-out of 0.003 mm
[2] for 507/510: HSK and ripas clamping not possible manually, GET.5xx-GEN and GEO.5xx-GEN only partly possible (lower radial and axial run-out cannot always be achieved)

Suitable alignment elements

Item no.	Designation	Slot width	Weight [kg]
AUR.iX-12	**lineFIX** alignment pin, 1 pair	12g6	
AUR.iX-14		14g6	0.03
AUR.iX-16		16g6	0.03
AUR.iX-18		18g6	0.03

For **lineFIX**, refer to **p. 86**

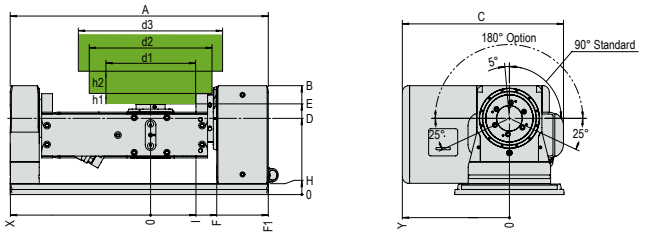
*optional

= High Series
(high speed, high resistance)

					T1-508511 TOP1s	T1-511521 TOP2s
Dimensions	Swivel ø			mm	180	220
	Swiveling range			degrees	90° +5°/-25° (optional 180° ±25°)	
	Center height			mm	180	210
	Total weight	with motor		kg	50	100
	Center bore	Standard / increased		mm	30	34
Bearing / Clamping	Max. clamping torque	4th axis		Nm	250	600
		5th axis		Nm	1,100	3,800
	Max. spindle load	0°–30°		kg	40	66
		30°–90°		kg	27	44
		Standard load [1]		kg	12	21
	Max. axial force	4th axis		kN	6	10
	Max. pull-out torque	4th axis		Nm	1,200	2,000
		5th axis		Nm	2,000	3,900
Gear unit	Max. moment of inertia	Standard load [1]		kgm²	0.025	0.07
		J max		kgm²	0.25	0.7
	Feed torque max [4]	4th axis		Nm	70	150
		5th axis		Nm	130	210
	Limited torques due to eccentric loads [6]			Nm	30	45
	Gear unit loading 5th axis	without load		Nm	-12	-22
		with standard load		Nm	10	5
		M max		Nm	150	230
	Indexing accuracy Pa	4th axis [2]		± arc sec	20/15	17/10
		5th axis (90°) [5]		± arc sec	35/22	21/13
	Repeat accuracy Ps average	4th axis		± arc sec	2	
		5th axis		± arc sec	2	
	Max speed at standard load	4th axis [1]		min⁻¹	210	160
		5th axis [1]		min⁻¹	80	50
Precision	Radial run-out [2]	on spindle ø		µm	6 / 3	
	Axial run-out [2]	at spindle end face		µm	6 / 3	
	Parallelism [2]	Spindle to base		µm/100 mm	10 / 5	

[1] Mutually dependent; for individual drive motor data, see right side
[2] Standard / increased; for measuring method and validity of the values, please refer to **p. 72**, for optional angular position measuring systems, please refer to **p. 73**
[3] In relation to dividing axis when in the horizontal position
[4] Limit value for gear unit, at 1 rpm
[5] Without load / with standard load 0°–90°
[6] For torque calculation, see **p. 108**

Dimensions

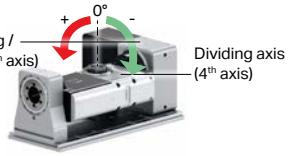


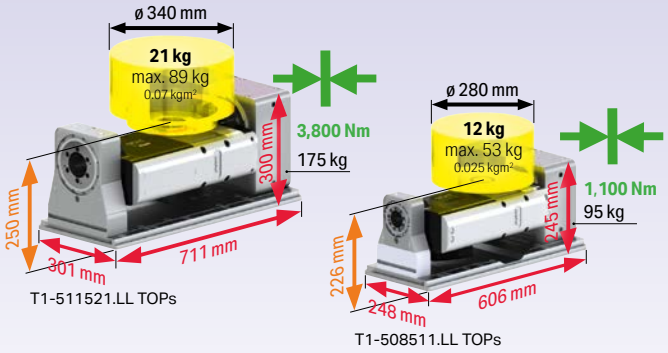
	A	B	C	C*	D	E	F	F1	H	I	R	X	Y	Y*	d1	d2	d3	h1	h2
TOP1	606	245	382	404	180	226	151	277	30	102	149	328	248	270		280	350		55
TOP2	711	300	444	469	210	250	182	324	30	125	173	387	295	320	248	340	400	30	95

Dimensions with 508, 511 or. 521 identical to 507510, 510520 and 520530.
*With large motor (option)

Important information

Center height increase (option)
Depending on the accessories involved (clamping cylinder, rotary union, angular position measuring system...), a center height increase (dimension D) is required. (See page for respective accessory)





Drive data

(based on standard load cube shown on **pp. 106/107**)

		Motors 4th/5th	Feed* [Nm] 4th	Feed* [Nm] 5th	Speed [rpm] 4th	Speed [rpm] 5th	Cycle time*** [sec] 90° 4th	Cycle time*** [sec] 90° 5th	Cycle time*** [sec] 180° 4th	Cycle time*** [sec] 180° 5th
MAVILOR / MOVINOR**	T1-507510 TOP1	BLS-072/BLS-072	120	230	111	70	0.26	0.43	0.39	0.64
	T1-508510 TOP1	BLS-072/BLS-072	70	230	210	70	0.23	0.43	0.29	0.64
	T1-510520 TOP2	BLS-072/BLS-073	250	425	80	45	0.30	0.50	0.49	0.83
	T1-510520 TOP2	BLS-072/LN-098	250	440	80	40	0.30	0.50	0.49	0.87
	T1-511520 TOP2	BLS-072/BLS-073	150	425	160	45	0.23	0.50	0.31	0.83
	T1-511520 TOP2	BLS-072/LN-098	150	440	160	40	0.23	0.50	0.31	0.87
	T1-520530 TOP3	BLS-073/LN-098	440	650	50	25	0.41	0.89	0.71	1.49
	T1-521530 TOP3	LN-098/ LN-098	220	650	90	25	0.27	0.74	0.43	1.34
FANUC	T1-507510 TOP1	β1 is/α2 (HV)is	80	110	66.7	45	0.30	0.49	0.53	0.83
	T1-508510 TOP1	β1 is/α2 (HV)is	55	110	130	45	0.25	0.49	0.36	0.83
	T1-510520 TOP2	α2 (HV)is/α2 (HV)is	120	195	55	29	0.36	0.66	0.63	1.18
	T1-510520 TOP2	α2 (HV)is/α4 (HV)is	120	335	55	30	0.36	0.64	0.63	1.14
	T1-511520 TOP2	α2 (HV)is/α2 (HV)is	85	195	100	29	0.24	0.66	0.39	1.18
	T1-511520 TOP2	α2 (HV)is/α4 (HV)is	85	335	100	30	0.24	0.64	0.39	1.14
	T1-520530 TOP3	α2 (HV)is/α4 (HV)is	210	395	33	20	0.54	0.94	0.99	1.69
	T1-520530 TOP3	α4 (HV)is/α8 (HV)is****	355	650	33	25	0.56	0.89	1.01	1.49
	T1-521530 TOP3	α4 (HV)is/ α4 (HV)is	220	355	60	22	0.37	0.84	0.62	1.52
YASKAWA SGM7J	T1-507510 TOP1	SGM7J 06/08	120	180	66	60	0.30	0.44	0.53	0.69
	T1-508510 TOP1	SGM7J 06/08	70	180	133	60	0.22	0.44	0.33	0.69
	T1-510520 TOP2	SGM7J 08/08	195	315	66.6	38	0.32	0.54	0.55	0.94
	T1-511520 TOP2	SGM7J 08/08	135	315	133	38	0.22	0.54	0.33	0.94
	T1-520530 TOP3	on request								
	T1-521530 TOP3	on request								
YASKAWA SGMJV	T1-507510 TOP1	SGMJV 04/08	115	180	66.7	60	0.30	0.44	0.53	0.69
	T1-508510 TOP1	SGMJV 04/08	70	180	130	60	0.22	0.44	0.33	0.69
	T1-510520 TOP2	SGMJV 08/08	195	315	66.7	38	0.32	0.54	0.55	0.94
	T1-511520 TOP2	SGMJV 08/08	140	315	133	38	0.21	0.54	0.32	0.94
	T1-520530 TOP3	SGMJV/EV 08/15	335	650	40	25	0.46	0.89	0.84	1.49
	T1-521530 TOP3	SGMJV/EV 08/15	220	650	80	25	0.28	0.34	0.46	1.34
MITSUBISHI	T1-507510 TOP1	HG56/75	120	170	60	45	0.32	0.49	0.57	0.83
	T1-508510 TOP1	HG56/75	70	170	110	45	0.22	0.49	0.36	0.83
	T1-510520 TOP2	HG-(H)75/(H)105	185	430	50	30	0.37	0.59	0.67	1.09
	T1-511520 TOP2	HG-(H)75/ (H) 105	130	430	100	30	0.24	0.59	0.39	1.09
	T1-520530 TOP3	HG-(H)105/ (H) 104	440	650	32	20	0.54	0.94	1.01	1.69
	T1-521530 TOP3	HG-(H) 105/ (H) 104	220	650	60	22	0.34	0.82	0.59	1.50
SANYO	T1-507510 TOP1	R2Ax 06040/08075	120	185	66.7	60	0.30	0.44	0.52	0.69
	T1-508510 TOP1	R2Ax 06040/08075	70	185	130	60	0.22	0.44	0.33	0.69
	T1-510520 TOP2	R2Ax 08075/08075	210	245	66.7	40	0.32	0.54	0.55	0.92
	T1-511520 TOP2	R2Ax 08075/08075	145	245	130	40	0.22	0.54	0.34	0.92
SIEMENS	T1-510520 TOP2	1FK2204/1FK2205	150	425	65	30	0.33	0.59	0.56	1.09
	T1-511520 TOP2	1FK2204/1FK2205	105	425	130	30	0.22	0.59	0.33	1.09
	T1-520530 TOP3	1FK2205/1FK2206	425	650	33	25	0.53	0.74	0.98	1.34
	T1-520530 TOP3	1FK7042/1FK7062	435	650	50	25	0.44	0.89	0.74	1.49
	T1-521530 TOP3	1FK2205/1FK2206	220	650	65	25	0.30	0.74	0.53	1.34
	T1-521530 TOP3	1FK7042/1FK7062	220	650	90	25	0.27	0.74	0.43	1.34

* At 1 rpm; for more, please refer to **p. 112**

** for Siemens / Heidenhain

*** Without clamping; for times, please refer to **p. 126**

For calculation of load, forces and torques, please see **p. 108**

Important information

- The limit values as set out in the corresponding parameter list take precedence over the data and information provided in the main catalog (due to motor, drive enhancement and the respective machine CNC)
- Motor-independent data are optimum values at operating temperature
- Further details are available at www.lehmann-rotary-tables.com, under Download / Commissioning

Labyrinth seal (cutaway view)

Recommended for:

- Grinding operations
- High coolant pressures
- Extremely fine abrasive particles

Accessories

Motor, cable, angular position measuring system and pL CNC starting at **p. 74**. Accessories starting at **p. 66**

Options

Item no.	Description
GET.5xx-GEN	Increased gear precision [1]
GEO.5xx-GEN	Incr. geometric precision, ½ standard tolerance
SPI.5xx-Lab [2]	Spindle seal with labyrinth, integrated sealing air pressure control
SWB.510-180	Tilting range increase from 90° to 180° (with overshoot to max. 230°)
SWB.520-180	
SWB.530-180	

[1] incl. lower radial and axial run-out of 0.003 mm

[2] for 507/510: HSK and ripas clamping not possible manually, GET.5xx-GEN and GEO.5xx-GEN only partly possible (lower radial and axial run-out cannot always be achieved)

Item no.

T1–510520.LL TOP–F1

- **Motor** F1=Fanuc is (200 V), F2=Fanuc HVis (400 V), M1=Movinor/Mavilor ERN, M2=Movinor/Mavilor EQN 1125, M3= Movinor/Mavilor EQN 1135, MI3= Mitsubishi 200V, MI4 Mitsubishi 400V, S3=Sanyo, Y2=Yaskawa SGMJV/SGMEV, Y4=Yaskawa SGM7J
- **Divider add-on version**
- **Swiveling axis motor position** L=left, R=right
- **Dividing axis motor position** L=left, R=right
- **Swiveling axis size** 510, 520
- **Dividing axis size** 507, 510, 520
- **Rotary table model**

Suitable alignment elements

Item no.	Designation	Slot width	Weight [kg]
AUR.iX-12	**lineFIX** alignment pin, 1 pair	12g6	
AUR.iX-14		14g6	0.03
AUR.iX-16		16g6	0.03
AUR.iX-18		18g6	0.03

For **lineFIX**, refer to **p. 86**

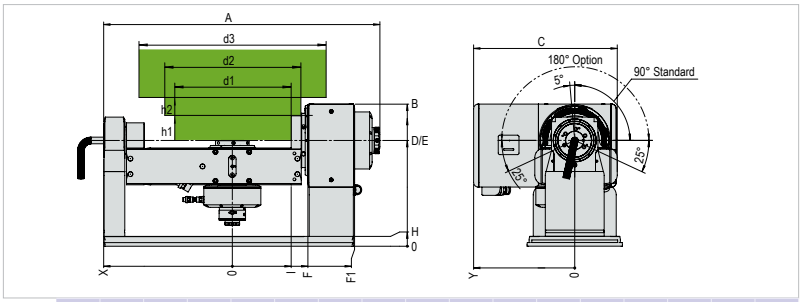
*optional

= Dividing axis for High Series (high speed, high resistance)

					T1-510520 TGR2	T1-511520 TGR2s (on request)	T1-520530 TGR3	T1-521530 TGR3s
Dimensions	Swivel ø			mm	305		335	
	Swiveling range			degrees	90° +5°/-25° (optional 180° ±25°)			
	Center height			mm	348		408	
	Total weight	with motor		kg	300		520	
	Center bore	Standard / increased		mm	34		46 / 64	
Bearing / Clamping	Max. clamping torque	4th axis		Nm	800	600	2,000	
		5th axis		Nm	4,000		7,000	
	Max. spindle load	0°–30°		kg	135		200	
		30°–90°		kg	90		160	
		Standard load [1]		kg	90	22	160	61
	Max. axial force	4th axis		kN	10		40	
	Max. pull-out torque	4th axis		Nm	2,000		3,900	
		5th axis		Nm	3,900		10,400	
Gear unit	Max. moment of inertia	Standard load [1]		kgm²	0.8	0.07	2.0	0.4
		J max		kgm²	2	0.7	8	4
	Feed torque max [3]	4th axis		Nm	250	150	440	220
		5th axis		Nm	440		650	
	Limited torques due to eccentric loads [5]			Nm	110		280	
	Gear unit loading 5th axis	without load		Nm	-105		-160	
		with standard load		Nm	-86	-15	100	-60
		M max		Nm	440		650	
	Indexing accuracy Pa	4th axis [2]		± arc sec	17/10		12/8	
		5th axis (90°) [4]		± arc sec	49/18	49/42	31/25	31/22
	Repeat accuracy Ps average	4th axis		± arc sec	2			
		5th axis		± arc sec	2			
	Max speed at standard load	4th axis [1]		min⁻¹	80	160	50	100
		5th axis [1]		min⁻¹	35		25	
Precision	Radial run-out [2]	on spindle ø		µm	6 / 3			
	Axial run-out [2]	at spindle end face		µm	6 / 3			
	Parallelism [2]	Spindle to base		µm/100 mm	10 / 5			

[1] Mutually dependent; for individual drive motor data, see right side
[2] Standard / increased; for measuring method and validity of the values, please refer to **p. 72**, for optional angular position measuring systems, please refer to **p. 73**
[3] Limit value for gear unit, at 1 rpm
[4] Without load / with standard load 0°–90°
[5] For torque calculation, see **p. 108**

Dimensions

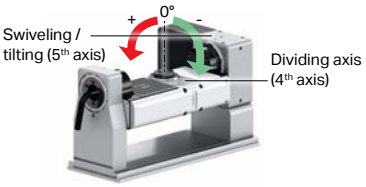


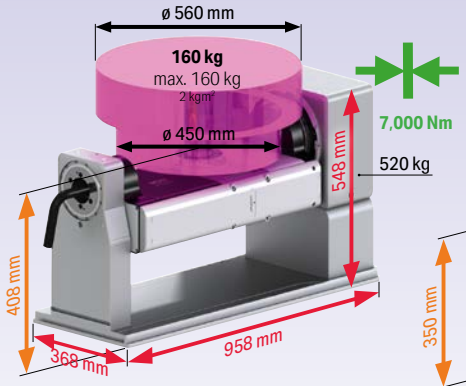
	A	B	C	D	E	F	F1	H	I	R	X	Y	d1	d2	d3	h1	h2
TGR2	928	440	469	350	350	232	374	38	175	196	437	320	352	456	680	56	206
with WMS7:	458																
TGR3	1056	548	554	408	408	292	472	38	227	226	487	390	452	556	800	96	206

Dimensions with 511 or 521 identical to 510520 and 520530.

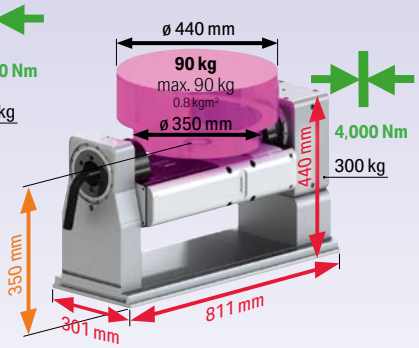
Important information

Center height increase (option)
Depending on the accessories involved (clamping cylinder, rotary union, angular position measuring system...), a center height increase (dimension D) is required. (See page for respective accessory)





T1-520530.LL TGR



T1-510520.LL TGR

Drive data

(based on standard load cube shown on **pp. 106/107**)

		Motors 4th/5th	Feed* [Nm] 4th	Feed* [Nm] 5th	Speed [rpm] 4th	Speed [rpm] 5th	Cycle time*** [sec] 90° 4th	Cycle time*** [sec] 90° 5th	Cycle time*** [sec] 180° 4th	Cycle time*** [sec] 180° 5th
M AVILOR MOVINOR**	T1-510520 TGR2	BLS-072/LN-098	250	440	65	35	0.45	0.71	0.68	1.14
	T1-511520 TGR2	BLS-072/LN-098	150	440	160	35	0.23	0.71	0.31	1.14
	T1-520530 TGR3	BLS-073/LN-098	425	650	45	25	0.50	0.89	0.83	1.49
	T1-520530 TGR3	BLS-098/LN-098	440	650	40	25	0.53	0.89	0.91	1.49
	T1-521530 TGR3	LN-098/ LN-098	220	650	90	25	0.27	0.89	0.43	1.49
FANUC	T1-510520 TGR2	α2 (HV)is/α4 (HV)is	120	335	45	27	0.51	0.86	0.84	1.41
	T1-511520 TGR2	α2 (HV)is/α4 (HV)is	85	335	100	27	0.24	0.86	0.39	1.41
	T1-520530 TGR3	α2 (HV)is/α4 (HV)is	210	395	28	22	0.66	0.97	1.19	1.65
	T1-520530 TGR3	α4 (HV)is/α8 (HV)is****	355	650	30	25	0.64	0.89	1.14	1.49
	T1-521530 TGR3	α4 (HV)is/α4 (HV)is	220	395	60	22	0.37	0.97	0.62	1.65
YASKAWA SGM7J	T1-510520 TGR2	SGM7J 08/08	195	315	60	30	0.46	0.81	0.71	1.31
	T1-511520 TGR2	SGM7J 08/08	135	315	133	30	0.22	0.81	0.33	1.31
	T1-520530 TGR3	on request								
	T1-521530 TGR3									
YASKAWA SGMJV	T1-510520 TGR2	SGMJV 08/08	195	315	60	30	0.46	0.81	0.71	1.31
	T1-511520 TGR2	SGMJV 08/08	140	315	133	30	0.21	0.81	0.32	1.31
	T1-520530 TGR3	SGMJV/EV 08/15	315	650	40	25	0.53	0.89	0.91	1.49
	T1-521530 TGR3	SGMJV/EV 08/15	220	650	80	25	0.28	0.89	0.46	1.49
MITSUBISHI	T1-510520 TGR2	HG-(H)75/(H)105	185	430	50	28	0.48	0.74	0.78	1.28
	T1-511520 TGR2	HG-(H)75/(H)105	130	430	100	28	0.24	0.74	0.39	1.28
	T1-520530 TGR3	HG-(H)105/(H)104	430	650	30	22	0.63	0.94	1.13	1.62
	T1-521530 TGR3	HG-(H)105/(H)104	220	650	60	22	0.43	0.94	0.59	1.62
SA-NYO	T1-510520 TGR2	R2Ax 08075/08075	210	245	60	25	0.46	0.97	0.71	1.57
	T1-511520 TGR2	R2Ax 08075/08075	145	245	130	25	0.22	0.97	0.34	1.57
SIEMENS	T1-510520 TGR2	1FK2204/1FK2205	150	425	60	25	0.46	0.79	0.71	1.39
	T1-511520 TGR2	1FK2204/1FK2205	105	425	90	25	0.44	0.79	0.61	1.39
	T1-520530 TGR3	1FK2205/FK2206	425	650	33	25	0.60	0.88	1.05	1.48
	T1-520530 TGR3	1FK7042/1FK7062	410	650	45	25	0.50	0.89	0.83	1.49
	T1-521530 TGR3	1FK2205/1FK2206	220	650	65	25	0.44	0.88	0.67	1.48
	T1-521530 TGR3	1FK7042/1FK7062	220	650	90	25	0.27	0.89	0.43	1.49

* At 1 rpm; for more, please refer to **p. 112**
** for Siemens / Heidenhain
*** Without clamping; for times, please refer to **p. 126**
**** not with 35iB

For calculation of load, forces and torques, please see **p. 108**

Important information

- The limit values as set out in the corresponding parameter list take precedence over the data and information provided in the main catalog (due to motor, drive enhancement and the respective machine CNC)
- Motor-independent data are optimum values at operating temperature
- Further details are available at www.lehmann-rotary-tables.com, under Download / Commissioning

Labyrinth seal (cutaway view)

Recommended for:
- Grinding operations
- High coolant pressures
- Extremely fine abrasive particles

Accessories

Motor, cable, angular position measuring system and pL CNC starting at **p. 74**. Accessories starting at **p. 66**

Options

Item no.	Description
GET.5xx-GEN	Increased gear precision [1]
GEO.5xx-GEN	Incr. geometric precision, ½ standard tolerance
SPI.5xx-Lab [2]	Spindle seal with labyrinth, integrated sealing air pressure control
SWB.520-180	Tilting range increase from 90° to 180° (with overshoot to max. 230°)
SWB.530-180	

[1] incl. lower radial and axial run-out of 0.003 mm
[2] for 507/510: HSK and ripas clamping not possible manually, GET.5xx-GEN and GEO.5xx-GEN only partly possible (lower radial and axial run-out cannot always be achieved)

Item no.

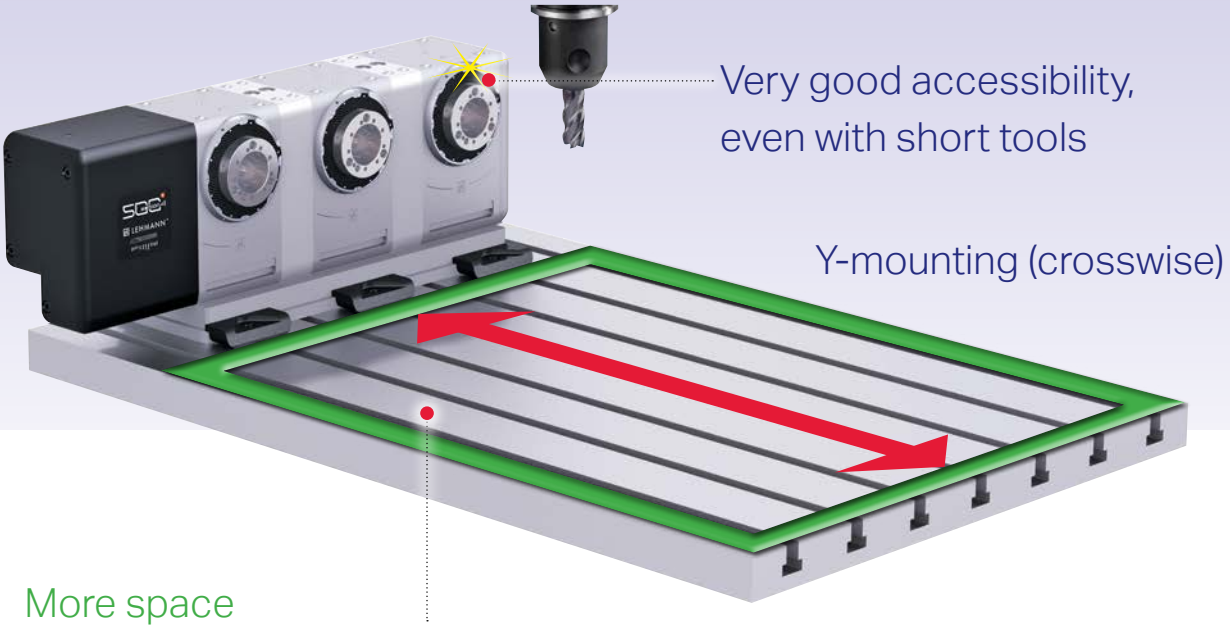
T1–510520.LL TGR–F1

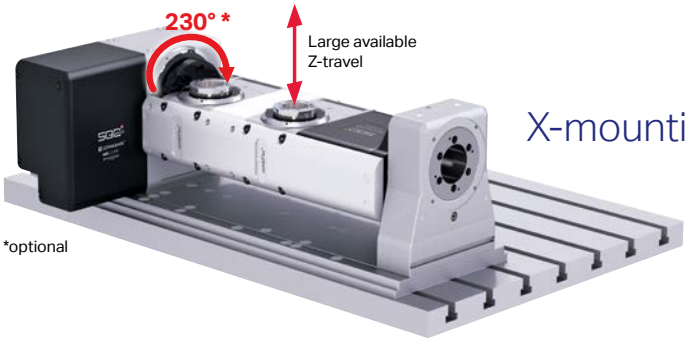
- **Motor** F1=Fanuc is (200 V), F2=Fanuc HVis (400 V), M1=Movinor/Mavilor ERN, M2=Movinor/Mavilor EQN 1125, M3= Movinor/Mavilor EQN 1135, MI3= Mitsubishi 200V, MI4 Mitsubishi 400V, S3=Sanyo, Y2=Yaskawa SGMJV/SGMEV, Y4=Yaskawa SGM7J
- **Divider add-on version**
- **Swiveling axis motor position** L=left, R=right
- **Dividing axis motor position** L=left, R=right
- **Swiveling axis size** 510, 520
- **Dividing axis size** 507, 510, 520
- **Rotary table model**

Suitable alignment elements

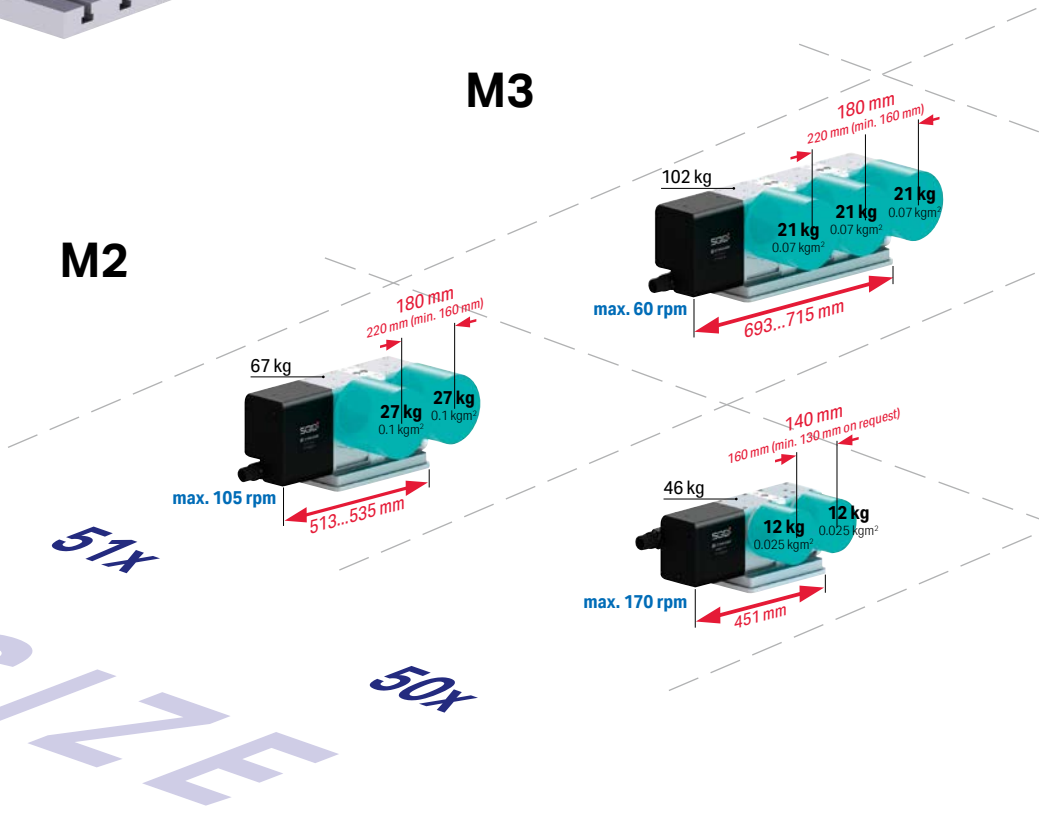
Item no.	Designation	Slot width	Weight [kg]
AUR.iX-12	**lineFIX** alignment pin, 1 pair	12g6	
AUR.iX-14		14g6	0.03
AUR.iX-16		16g6	0.03
AUR.iX-18		18g6	0.03

For **lineFIX**, refer to **p. 86**



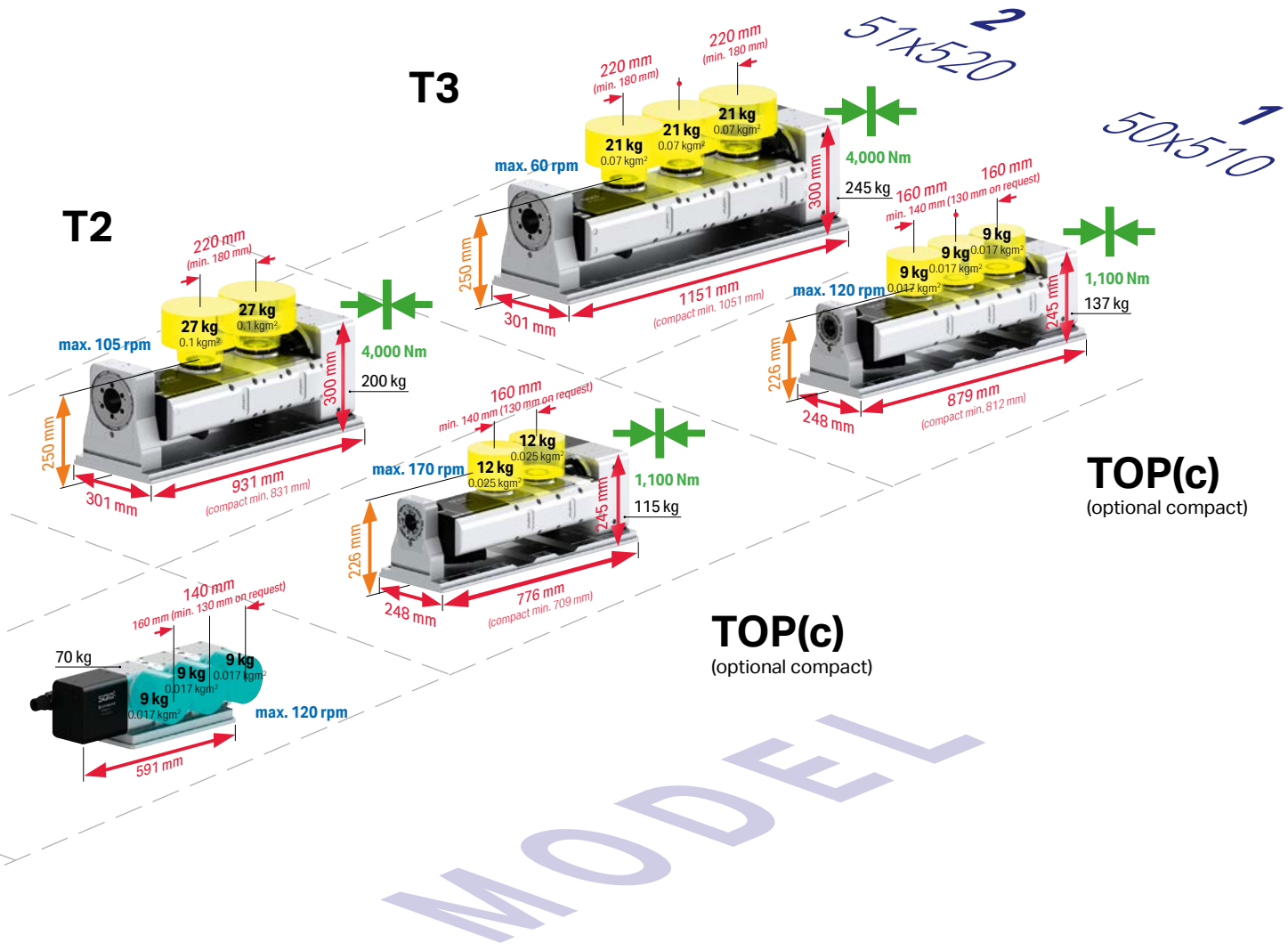


X-mounting (lengthwise)



Facts

- Up to 54 % higher clamping torque in tilting axis
- Fewer variants – more solutions
- Spindle distance min. 130 mm
- Spatially optimized arrangement of the dividing axis



Weight data represent the standard load; higher weights possible, but require modification of rotational speed, acceleration and jerk limitation.

50x	507 (standard) or 508 (high speed)
51x	510 (standard) or 511 (high speed)
M2	Single-axis, multi-spindle rotary table, 2-position
M3	Single-axis, multi-spindle rotary table, 3-position
T2	Two-axis multi-spindle rotary table, 2-position
T3	Two-axis multi-spindle rotary table, 3-position

M2

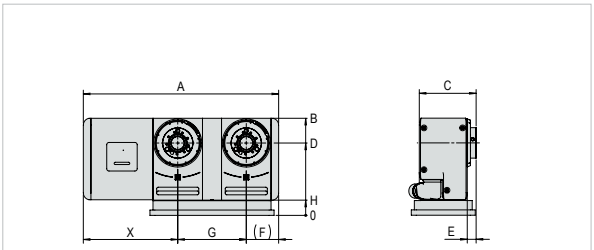
M3

= High Series
(high speed, high resistance)

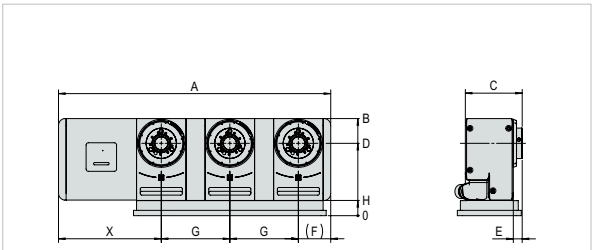
					M2-507	M2-508	M2-510	M2-511	M3-507	M3-508	M3-510	M3-511
Dimensions	Swivel ø			mm	140		180		140		180	
	Spindle distance			mm	140		180		140		180	
	Center height			mm	150		190		150		190	
	Total weight	with motor		kg	46		67		70		102	
	Center bore			mm	31		34		31		34	
Bearing / Clamping	Max. clamping torque			Nm	300		800	600	300		800	600
	Max spindle load per spindle	with tailstock		kg	2x120	2x60	2x200	2x100	3x80	3x40	3x133	3x67
		without tailstock		kg	2x60	2x30	2x100	2x50	3x40	3x20	3x67	3x33
		Standard load*		kg	2x12	2x7.5	2x27	2x14	3x9	3x6	3x21	3x11
	Max. axial force	per spindle		kN	44		46		44		46	
	Max. pull-out torque	per spindle		Nm	1200		2000		1200		2000	
Gear unit	Max. moment of inertia	Standard load*		kgm²	0.05	0.025	0.2	0.07	0.05	0.025	0.21	0.07
		J max		kgm²	0.5	0.25	2	0.7	0.5	0.25	2	0.7
	Max. feed torque			Nm	120	70	190	140	120	70	150	120
	Limited torques due to eccentric loads (per spindle)***			Nm	20	9	25	20	10	9	13	10
	Indexing accuracy Pa **			± arc sec	20		17		20		17	
	Repeat accuracy Ps average			± arc sec	2							
	Max speed	with standard load*		rpm	90	170	70	105	70	120	40	50
Precision	Radial run-out **	on spindle ø, outside & inside		µm	6 / 3							
	Axial run-out **	at spindle end face		µm	6 / 3							
	Parallelism **	Dividing axis to base		µm/100 mm	10 / 5							

* Maximum values possible mechanically, mutually dependent; for individual drive motor data, see right side
** Standard / increased; for measuring method and validity of the values, please refer to **p. 72**, for optional angular position measuring systems, please refer to **p. 73**
*** For torque calculation, please see **p. 108**

Dimensions

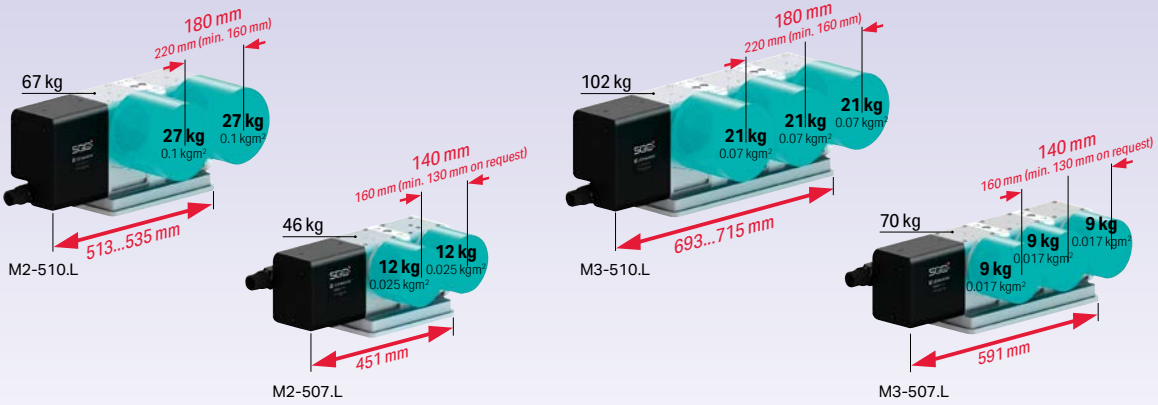


	A	B	C	D	E	F	G	G min.	H	X
M2-207	451	205	136	150	23	75	140	130	40	236
M2-510	513	255	150	190	23	85	180	160	40	248



	A	B	C	D	E	F	G	G min.	H	X
M3-507	591	205	136	150	23	75	140	130	40	236
M3-510	693	255	150	190	23	85	180	160	40	248

Dimensions with 508 or 511 identical to 507 and 510.



Drive data

(based on standard load cube shown on **pp. 106/107**)

		Motors	Feed* [Nm]	Speed [rpm]	Cycle time*** [sec] 90°	Cycle time*** [sec] 180°
MAVILOR / MOVINOR **	M2-507	BLS-072	120	90	0.32	0.48
	M2-508	BLS-072	70	170	0.27	0.35
	M2-510	BLS-072	190	70	0.32	0.54
	M2-511	BLS-072	140	105	0.25	0.40
	M3-507	BLS-072	120	70	0.34	0.55
	M3-508	BLS-072	70	120	0.27	0.39
	M3-510	BLS-072	150	40	0.48	0.85
	M3-511	BLS-072	120	50	0.36	0.66
FANUC	M2-507	β1 is	65	60	0.37	0.62
	M2-508	β1 is	40	90	0.34	0.50
	M2-510	α2 (HV)is	95	45	0.45	0.78
	M2-511	α2 (HV)is	80	70	0.33	0.55
	M3-507	β1 is	30	30	0.57	1.07
	M3-508	β1 is	30	40	0.48	0.86
	M3-510	α2 (HV)is	65	30	0.66	1.16
	M3-511	α2 (HV)is	65	35	0.52	0.95
YASKAWA SGM7J	M2-507	SGM7J 06	120	65	0.35	0.58
	M2-508	SGM7J 06	70	120	0.23	0.36
	M2-510	SGM7J 08	145	50	0.40	0.70
	M2-511	SGM7J 08	110	90	0.28	0.45
	M3-507	SGM7J 06	120	50	0.39	0.69
	M3-508	SGM7J 06	70	95	0.28	0.43
	M3-510	SGM7J 08	105	35	0.54	0.97
	M3-511	SGM7J 08	85	60	0.38	0.63
YASKAWA SGMJV	M2-507	SGMJV 04	85	50	0.41	0.71
	M2-508	SGMJV 04	65	85	0.31	0.49
	M2-510	SGMJV 08	145	50	0.40	0.70
	M2-511	SGMJV 08	110	90	0.28	0.45
	M3-508	SGMJV 04	50	55	0.39	0.66
	M3-510	SGMJV 08	105	35	0.54	0.97
	M3-511	SGMJV 08	85	60	0.38	0.63
MITSUBISHI	M2-507	HG56	100	40	0.43	0.81
	M2-508	HG56	70	80	0.29	0.48
	M2-510	HG-(H)75	135	45	0.40	0.73
	M2-511	HG-(H)75	100	80	0.30	0.49
	M3-507	HG56	75	35	0.48	0.91
	M3-508	HG56	65	65	0.37	0.60
	M3-510	HG-(H)75	95	25	0.64	1.24
	M3-511	HG-(H)75	80	35	0.48	0.91
SANYO	M2-507	R2Ax 06040	95	55	0.37	0.64
	M2-508	R2Ax 06040	70	100	0.30	0.45
	M2-510	R2Ax 08075	145	50	0.39	0.69
	M2-511	R2Ax 08075	135	90	0.28	0.45
	M3-507	R2Ax 06040	70	40	0.48	0.85
	M3-508	R2Ax 06040	60	65	0.35	0.58
	M3-510	R2Ax 08075	110	35	0.54	0.97
	M3-511	R2Ax 08075	120	60	0.35	0.60
SIEMENS	M2-510	1FK2204	110	50	0.42	0.72
	M2-511	1FK2204	85	90	0.28	0.45
	M3-510	1FK2204	70	35	0.57	1.00
	M3-511	1FK2204	65	55	0.41	0.68

* at 1 rpm; for more, please refer to **p. 112** ** for Siemens / Heidenhain
*** without clamping; for times, please refer to **p. 126**

For calculation of load, forces and torques, please see **p. 108**

Important information

- The limit values as set out in the corresponding parameter list take precedence over the data and information provided in the main catalog (due to motor, drive enhancement and the respective machine CNC)
- Motor-independent data are optimum values at operating temperature
- Further details are available at www.lehmann-rotary-tables.com, under Download / Commissioning

Labyrinth seal
(cutaway view)

Recommended for:
- Grinding operations
- High coolant pressures
- Extremely fine abrasive particles

Accessories

Motor, cable, angular position measuring system and pL CNC starting at **p. 74**. Accessories starting at **p. 66**

Options

Item no.	Description
GEO.5xx-GEN	Incr. geometric precision, ½ standard tolerance
SPI.5xx-Lab-x2 [1]	Spindle seal with labyrinth, integrated sealing air pressure control
SPI.5xx-Lab-x3 [1]	Spindle seal with labyrinth, integrated sealing air pressure control

[1] for 507/510: HSK and ripas clamping not possible manually, GET.5xx-GEN and GEO.5xx-GEN only partly possible (lower radial and axial run-out cannot always be achieved)

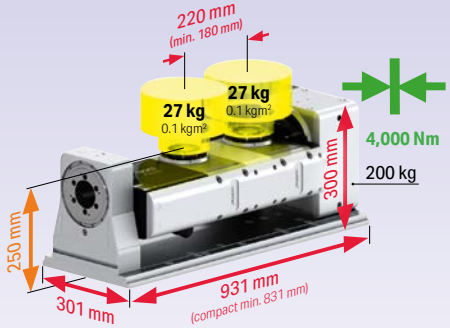
Item no.

M2–510.L–F1

- **Motor** F1=Fanuc is (200 V), F2=Fanuc HVis (400 V), M1=Movinor/Mavilor ERN, M2=Movinor/Mavilor EQN 1125, M3= Movinor/Mavilor EQN 1135, MI3= Mitsubishi 200V, MI4 Mitsubishi 400V, S3=Sanyo, Y2=Yaskawa SGMJV/SGMEV, Y4=Yaskawa SGM7J
- **Dividing axis motor position** L=left, R=right
- **Dividing axis size** 507, 508, 510, 511
- **Rotary table model**

T2

T3

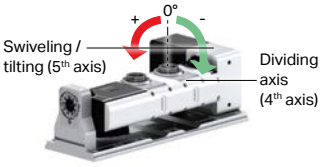


T2-510520.LL TOP(c)

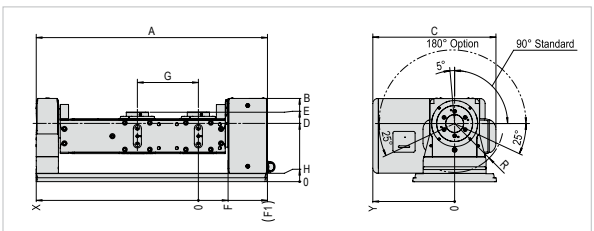
= Dividing axis for High Series (high speed, high resistance)

					T2-507510 (508510) TOP1.2(s)	T2-510520 (511520) TOP2.2(s)	T3-507510 (508510) TOP1.3(s)	T3-510520 (511520) TOP2.3(s)
Dimensions	Swivel ø			mm	160	220	160	220
	Spindle distance			mm	160	220	160	220
	Center height			mm	190	220	190	220
	Total weight	with motor		kg	115	200	137	245
	Center bore			mm	31	34	31	34
Bearing / Clamping	Max. clamping torque	4th axis		Nm	300	800 (600)	300	800 (600)
		5th axis		Nm	1,100	4,000	1,100	4,000
	Max spindle load per spindle	0°–30°		kg	2x40	2x67	3x27	3x44
		30°–90°		kg	2x27	2x45	3x18	3x30
		Standard load [1]		kg	2x12 (2x7.5)	2x27 (2x14)	3x9 (3x6)	3x21 (3x11)
	Max. axial force	4th axis per spindle		kN	12	20	12	20
	Max. pull-out torque	4th axis		Nm	1,200	2,000	1,200	2,000
		5th axis		Nm	2,000	3,900	2,000	3,900
Gear unit	Max. moment of inertia	Standard load [1]		kgm²	0.05 (0.025)	0.2 (0.07)	0.05 (0.025)	0.21 (0.07)
		J max		kgm²	0.5 (0.25)	2 (0.7)	0.5 (0.25)	2 (0.7)
	Feed torque max [3]	4th axis		Nm	120 (70)	190 (140)	120 (70)	150 (120)
		5th axis		Nm	230	440	230	440
	Limited torques due to eccentric loads (acting on the tilting axis) [5]			Nm	40	110	40	110
	Gear unit loading 5th Axis	without load		Nm	-20	-33	-22	-45
		with standard load		Nm	18 (16)	30 (8)	22 (20)	25 (13)
		M max		Nm	250	440	250	440
	Indexing accuracy Pa	4th axis [2]		± arc sec	20	17	20	17
		5th axis (90°) [4]		± arc sec	45/20 (45/29)	26/22 (26/15)	56/28 (56/30)	30/20 (30/18)
	Repeat accuracy Ps average	4th axis		± arc sec	2			
		5th axis		± arc sec	2			
	Max speed at standard load	4th axis [1]		min⁻¹	90 (170)	70 (105)	70 (120)	40 (50)
		5th axis [1]		min⁻¹	60	40	60	40
Precision	Radial run-out [2]	on spindle ø		µm	6 / 3			
	Axial run-out [2]	at spindle end face		µm	6 / 3			
	Parallelism [2]	Spindle to base		µm/100 mm	10 / 5			

[1] Mutually dependent; for individual drive motor data, see right side
[2] Standard / increased; for measuring method and validity of the values, please refer to **p. 72**, for optional angular position measuring systems, please refer to **p. 73**
[3] Limit value for gear unit, at 1 rpm
[4] Without load / with standard load 0°–90°
[5] For torque calculation, see **p. 108**



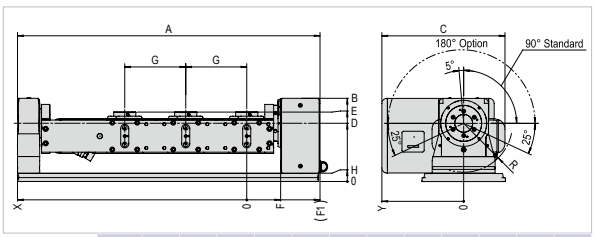
Dimensions



	A	B	C	D	E	F	F1	G	G2*	H	R	X	Y
T2-507510	766	245	382	180	226	151	230	160	130	30	136	489	248
T2-510520	931	300	469	210	250	182	264	220	180	30	177	571	295

Dimensions with 508 or 511 identical to 507510 and 510520.
* Minimum possible spindle distance (option)

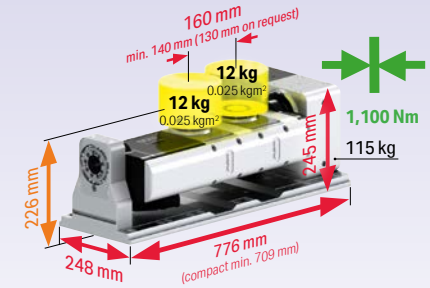
Compact Versions: Dimension A, F and X
507510: 47 mm shorter, 510520: 60 mm shorter



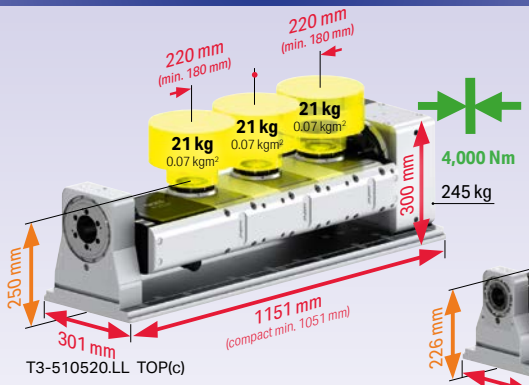
	A	B	C	D	E	F	F1	G	G2*	H	R	X	Y
T3-507510	896	245	382	180	226	151	230	160	130	30	136	658	248
T3-510520	1111	300	469	210	250	182	264	220	180	30	177	791	295

Raised center height (option): Depending on the accessories involved (clamping cylinder, rotary union, angular position measuring system...), a center height increase (dimension D) is required. (See page for respective accessory)

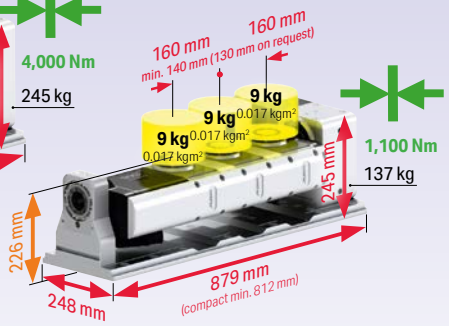
Item no. as on TOP. Instead of «T1», however, «T2» or «T3».



T2-507510.LL TOP(c)



T3-510520.LL TOP(c)



T3-507510.LL TOP(c)

Drive data

(based on standard load cube shown on **pp. 106/107**)

			Feed* [Nm]		Speed [rpm]		Cycle time*** [sec] 90°		180°	
		Motors 4th/5th	4th	5th	4th	5th	4th	5th	4th	5th
MAVILOR / MOVINOR **	T2-507510 TOP1.2	BLS-072/BLS-072	120	230	90	60	0.32	0.44	0.48	0.69
	T2-508510 TOP1.2(s)	BLS-072/BLS-072	70	230	170	60	0.27	0.44	0.35	0.69
	T2-510520 TOP2.2	BLS-072/BLS-073	190	425	80	45	0.32	0.54	0.54	0.87
	T2-510520 TOP2.2	BLS-072/LN-098	190	440	80	40	0.32	0.52	0.54	0.89
	T2-511520 TOP2.2(s)	BLS-072/BLS-073	140	425	105	45	0.25	0.54	0.40	0.87
	T2-511520 TOP2.2(s)	BLS-072/LN-098	140	440	105	40	0.25	0.52	0.40	0.89
	T3-507510 TOP1.3	BLS-072/BLS-072	120	230	70	60	0.34	0.50	0.55	0.75
	T3-508510 TOP1.3(s)	BLS-072/BLS-072	70	230	120	60	0.27	0.50	0.39	0.75
	T3-510520 TOP2.3	BLS-072/BLS-073	150	425	40	40	0.48	0.57	0.85	0.94
	T3-510520 TOP2.3	BLS-072/LN-098	150	440	40	40	0.48	0.54	0.85	0.92
	T3-511520 TOP2.3(s)	BLS-072/BLS-073	120	425	50	40	0.36	0.57	0.66	0.94
	T3-511520 TOP2.3(s)	BLS-072/LN-098	120	440	50	40	0.36	0.54	0.66	0.92
FANUC	T2-507510 TOP1.2	β1 is/α2 (HV)is	65	110	60	40	0.37	0.61	0.62	0.98
	T2-508510 TOP1.2(s)	β1 is/α2 (HV)is	40	110	90	40	0.34	0.61	0.50	0.98
	T2-510520 TOP2.2	α2 (HV)is/α2 (HV)is	95	195	45	28	0.45	0.69	0.78	1.23
	T2-510520 TOP2.2	α2 (HV)is/α4 (HV)is	95	335	45	30	0.45	0.66	0.78	1.16
	T2-511520 TOP2.2(s)	α2 (HV)is/α2 (HV)is	80	195	70	28	0.33	0.69	0.55	1.23
	T2-511520 TOP2.2(s)	α2 (HV)is/α4 (HV)is	80	335	70	30	0.33	0.66	0.55	1.16
	T3-507510 TOP1.3	β1 is/α2 (HV)is	30	110	30	40	0.57	0.69	1.07	1.06
	T3-510520 TOP2.3	α2 (HV)is/α2 (HV)is	65	195	30	27	0.66	0.74	1.16	1.29
	T3-510520 TOP2.3	α2 (HV)is/α4 (HV)is	65	335	30	29	0.66	0.68	1.16	1.19
YASKAWA SGM7J	T2-507510 TOP1.2	SGM7J 06/08	120	180	65	55	0.35	0.48	0.58	0.75
	T2-508510 TOP1.2(s)	SGM7J 06/08	70	180	120	55	0.23	0.48	0.36	0.75
	T2-510520 TOP2.2	SGM7J 08/08	145	315	50	38	0.40	0.56	0.70	0.95
	T2-511520 TOP2.2(s)	SGM7J 08/08	110	315	90	38	0.28	0.56	0.45	0.95
	T3-507510 TOP1.3	SGM7J 06/08	120	180	50	50	0.39	0.52	0.69	0.82
	T3-508510 TOP1.3(s)	SGM7J 06/08	70	180	95	50	0.28	0.52	0.43	0.82
	T3-510520 TOP2.3	SGM7J 08/08	105	315	35	35	0.54	0.61	0.97	1.03
	T3-511520 TOP2.3(s)	SGM7J 08/08	85	315	60	35	0.38	0.61	0.63	1.03
YASKAWA SGMJV	T2-507510 TOP1.2	SGMJV 04/08	85	180	50	55	0.41	0.48	0.71	0.75
	T2-508510 TOP1.2(s)	SGMJV 04/08	65	180	85	55	0.31	0.48	0.49	0.75
	T2-510520 TOP2.2	SGMJV 08/08	145	315	50	38	0.40	0.56	0.70	0.95
	T2-511520 TOP2.2(s)	SGMJV 08/08	110	315	90	38	0.28	0.56	0.45	0.95
	T3-508510 TOP1.3(s)	SGMJV 04/08	50	180	55	50	0.39	0.52	0.66	0.82
	T3-510520 TOP2.3	SGMJV 08/08	105	315	35	35	0.54	0.61	0.97	1.03
	T3-511520 TOP2.3(s)	SGMJV 08/08	85	315	60	35	0.38	0.61	0.63	1.03
MITSUBISHI	T2-507510 TOP1.2	HG56/75	100	170	40	45	0.43	0.51	0.81	0.85
	T2-508510 TOP1.2(s)	HG56/75	70	170	80	45	0.29	0.51	0.48	0.85
	T2-510520 TOP2.2	HG-(H)75/(H)105	135	430	45	30	0.40	0.63	0.73	1.13
	T2-511520 TOP2.2(s)	HG-(H)75/ (H)105	100	430	80	30	0.30	0.63	0.49	1.13
	T3-507510 TOP1.3	HG56/75	75	170	35	40	0.48	0.57	0.91	0.94
	T3-508510 TOP1.3(s)	HG56/75	65	170	65	40	0.37	0.57	0.60	0.94
	T3-510520 TOP2.3	HG-(H)75/(H)105	95	430	25	30	0.64	0.64	1.24	1.14
	T3-511520 TOP2.3(s)	HG-(H)75/(H)105	80	430	35	30	0.48	0.64	0.91	1.14
SANYO	T2-507510 TOP1.2	R2Ax 06040/08075	95	185	55	55	0.37	0.48	0.64	0.75
	T2-508510 TOP1.2(s)	R2Ax 06040/08075	70	185	100	55	0.30	0.48	0.45	0.75
	T2-510520 TOP2.2	R2Ax 08075/08075	145	245	50	40	0.39	0.57	0.69	0.94
	T2-511520 TOP2.2(s)	R2Ax 08075/08075	135	245	90	40	0.28	0.57	0.45	0.94
	T3-507510 TOP1.3	R2Ax 06040/08075	70	185	40	50	0.48	0.52	0.85	0.82
	T3-508510 TOP1.3(s)	R2Ax 06040/08075	60	185	65	50	0.35	0.52	0.58	0.85
	T3-510520 TOP2.3	R2Ax 08075/08075	110	245	35	35	0.54	0.61	0.97	1.03
	T3-511520 TOP2.3(s)	R2Ax 08075/08075	120	245	60	35	0.35	0.61	0.60	1.03
SIEMENS	T2-510520 TOP2.2	1FK2204/1FK2205	110	425	50	30	0.42	0.61	0.72	1.11
	T2-511520 TOP2.2(s)	1FK2204/1FK2205	85	425	90	30	0.28	0.61	0.45	1.11
	T3-510520 TOP2.3	1FK2204/1FK2205	70	425	35	30	0.57	0.64	1.00	1.14
	T3-511520 TOP2.3(s)	1FK2204/1FK2205	65	425	55	30	0.41	0.64	0.68	1.14

* At 1 rpm; for more, please refer to **p. 112**

** for Siemens / Heidenhain

*** Without clamping; for times, please refer to **p. 126**

For calculation of load, forces and torques, please see **p. 108**

Important information

- The limit values as set out in the corresponding parameter list take precedence over the data and information provided in the main catalog (due to motor, drive enhancement and the respective machine CNC)
- Motor-independent data are optimum values at operating temperature
- Further details are available at www.lehmann-rotary-tables.com, under Download / Commissioning

Labyrinth seal (cutaway view)

Recommended for:
- Grinding operations
- High coolant pressures
- Extremely fine abrasive particles

Accessories

Motor, cable, angular position measuring system and pL CNC starting at **p. 74**. Accessories starting at **p. 66**

Options

Item no.	Description
GEO.5xx-GEN	Incr. geometric precision, ½ standard tolerance
SPI.5xx-Lab [1] (for 5th axis)	Spindle seal with labyrinth, integrated sealing air pressure control
SPI.5xx-Lab-x2 [1] (for 4th axis)	Spindle seal with labyrinth, integrated sealing air pressure control, for 2 spindles
SPI.5xx-Lab-x3 [1] (for 4th axis)	Spindle seal with labyrinth, integrated sealing air pressure control, for 3 spindles
SWB.510-180	Tilting range increase from 90° to 180° (with overshoot to max. 230°)
SWB.520-180	

[1] for 507/510: HSK and ripas clamping not possible manually, GET.5xx-GEN and GEO.5xx-GEN only partly possible (increased radial and axial run-out cannot always be achieved)

Suitable alignment elements

Item no.	Designation	Slot width	Weight [kg]
AUR.iX-12	**lineFIX** alignment pin, 1 pair	12g6	
AUR.iX-14		14g6	0.03
AUR.iX-16		16g6	0.03
AUR.iX-18		18g6	0.03

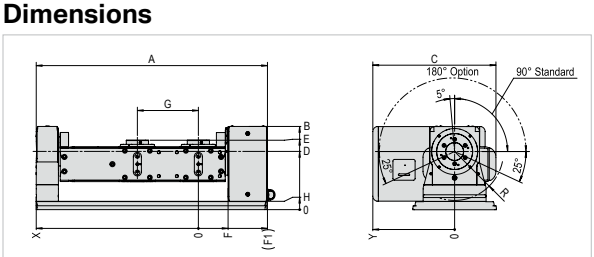
For **lineFIX**, refer to **p. 86**

= High Series
(high speed, high resistance)

					T2-508511 TOP1.2s	T2-511521 TOP2.2s
Dimensions	Swivel ø			mm	160	220
	Spindle distance			mm	160	220
	Center height			mm	190	220
	Total weight	with motor		kg	115	200
	Center bore			mm	31	34
Bearing / Clamping	Max. clamping torque	4th axis		Nm	300	600
		5th axis		Nm	900	3,w800
	Max spindle load per spindle	0°–30°		kg	2x40	2x67
		30°–90°		kg	2x27	2x45
		Standard load [1]		kg	2x7.5	2x14
	Max. axial force	4th axis per spindle		kN	12	20
	Max. pull-out torque	4th axis		Nm	1,200	2,000
		5th axis		Nm	2,000	3,900
Gear unit	Max. moment of inertia	Standard load [1]		kgm²	0.025	0.07
		J max		kgm²	0.25	0.7
	Feed torque max [3]	4th axis		Nm	70	140
		5th axis		Nm	130	210
	Limited torques due to eccentric loads (acting on the tilting axis) [5]			Nm	30	45
	Gear unit loading 5th Axis	without load		Nm	-20	-33
		with standard load		Nm	16	8
		M max		Nm	150	230
	Indexing accuracy Pa	4th axis [2]		± arc sec	20	17
		5th axis (90°) [4]		± arc sec	45/29	26/15
	Repeat accuracy Ps average	4th axis		± arc sec	2	
		5th axis		± arc sec	2	
	Max speed at standard load	4th axis [1]		min⁻¹	170	105
		5th axis [1]		min⁻¹	70	45
Precision	Radial run-out [2]	on spindle ø		µm	6 / 3	
	Axial run-out [2]	at spindle end face		µm	6 / 3	
	Parallelism [2]	Spindle to base		µm/100 mm	10 / 5	

[1] Mutually dependent; for individual drive motor data, see right side
[2] Standard / increased; for measuring method and validity of the values, please refer to **p. 72**, for optional angular position measuring systems, please refer to **p. 73**
[3] Limit value for gear unit, at 1 rpm
[4] Without load / with standard load 0°–90°
[5] For torque calculation, see **p. 108**

Dimensions



	A	B	C	D	E	F	F1	G	G2*	H	R	X	Y
T2-507510	766	245	382	180	226	151	230	160	130	30	136	489	248
T2-510520	931	300	469	210	250	182	264	220	180	30	177	571	295

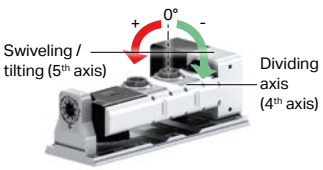
Dimensions with 508 or 511 identical to 507510 and 510520.
* Minimum possible spindle distance (option)

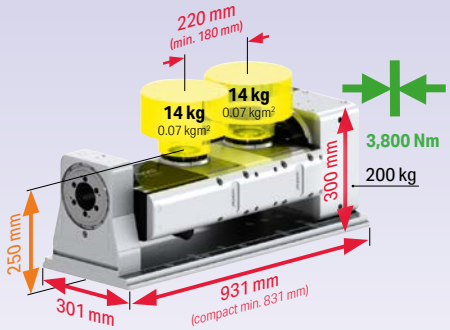
Compact Versions: Dimension A, F and X
507510: 47 mm shorter, 510520: 60 mm shorter

Important information

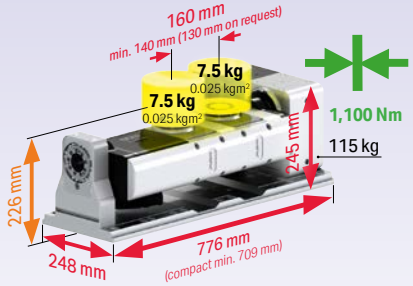
Raised center height (option): Depending on the accessories involved (clamping cylinder, rotary union, angular position measuring system...), a center height increase (dimension D) is required. (See page for respective accessory)

Item no. as on TOP. Instead of «T1», however, «T2».





T2-511520.LL TOP(c)s



T2-508510.LL TOP(c)s

Drive data

(based on standard load cube shown on **pp. 106/107**)

		Motors 4th/5th	Feed* [Nm] 4th	Feed* [Nm] 5th	Speed [rpm] 4th	Speed [rpm] 5th	Cycle time*** [sec] 90° 4th	Cycle time*** [sec] 90° 5th	Cycle time*** [sec] 180° 4th	Cycle time*** [sec] 180° 5th
MAVILOR / MOVINOR**	**T2-508511 TOP1.2(s)**	BLS-072/BLS-072	70	130	170	70	0.27	0.43	0.35	0.65
	T2-511521 TOP2.2(s)	BLS-072/BLS-073	140	210	105	45	0.25	0.50	0.40	0.83
	T2-511521 TOP2.2(s)	BLS-072/LN-098	140	210	105	50	0.25	0.47	0.40	0.77
FANUC	**T2-508511 TOP1.2(s)**	β1 is/α2 (HV)is	40	60	90	45	0.34	0.64	0.50	0.97
	T2-511521 TOP2.2(s)	α2 (HV)is/α2 (HV)is	80	120	70	45	0.33	0.57	0.55	0.77
	T2-511521 TOP2.2(s)	α2 (HV)is/α4 (HV)is	80	210	70	50	0.33	0.47	0.55	0.77
YASKAWA SGM7J	**T2-508511 TOP1.2(s)**	SGM7J 06/08	70	110	120	65	0.23	0.46	0.36	0.69
	T2-511521 TOP2.2(s)	SGM7J 08/08	110	205	90	50	0.28	0.47	0.45	0.77
YASKAWA SGMJV	**T2-508511 TOP1.2(s)**	SGMJV 04/08	65	110	85	65	0.31	0.46	0.49	0.69
	T2-511521 TOP2.2(s)	SGMJV 08/08	110	205	90	50	0.28	0.47	0.45	0.77
MITSU-BISHI	**T2-508511 TOP1.2(s)**	HG56/75	70	100	80	60	0.29	0.48	0.48	0.73
	T2-511521 TOP2.2(s)	HG-(H)75/ (H)105	100	210	80	50	0.30	0.47	0.49	0.77
SANYO	**T2-508511 TOP1.2(s)**	R2Ax 06040/08075	70	110	100	65	0.30	0.46	0.45	0.69
	T2-511521 TOP2.2(s)	R2Ax 08075/08075	135	155	90	50	0.28	0.49	0.45	0.79
SIEMENS	**T2-511521 TOP2.2(s)**	1FK2204/1FK2205	85	210	90	50	0.28	0.47	0.45	0.77

* At 1 rpm; for more, please refer to **p. 112**
** for Siemens / Heidenhain
*** Without clamping; for times, please refer to **p. 126**

For calculation of load, forces and torques, please see **p. 108**

Important information

- The limit values as set out in the corresponding parameter list take precedence over the data and information provided in the main catalog (due to motor, drive enhancement and the respective machine CNC)
- Motor-independent data are optimum values at operating temperature
- Further details are available at www.lehmann-rotary-tables.com, under Download / Commissioning

Labyrinth seal (cutaway view)

Recommended for:
- Grinding operations
- High coolant pressures
- Extremely fine abrasive particles

Accessories

Motor, cable, angular position measuring system and pL CNC starting at **p. 74**. Accessories starting at **p. 66**

Options

Item no.	Description
GEO.5xx-GEN	Incr. geometric precision, ½ standard tolerance
SPI.5xx-Lab [1] (for 5th axis)	Spindle seal with labyrinth, integrated sealing air pressure control
SPI.5xx-Lab-x2 [1] (for 4th axis)	Spindle seal with labyrinth, integrated sealing air pressure control, for 2 spindles
SPI.5xx-Lab-x3 [1] (for 4th axis)	Spindle seal with labyrinth, integrated sealing air pressure control, for 3 spindles
SWB.510-180	Tilting range increase from 90° to 180° (with overshoot to max. 230°)
SWB.520-180	

[1] for 507/510: HSK and ripas clamping not possible manually, GET.5xx-GEN and GEO.5xx-GEN only partly possible (increased radial and axial run-out cannot always be achieved)

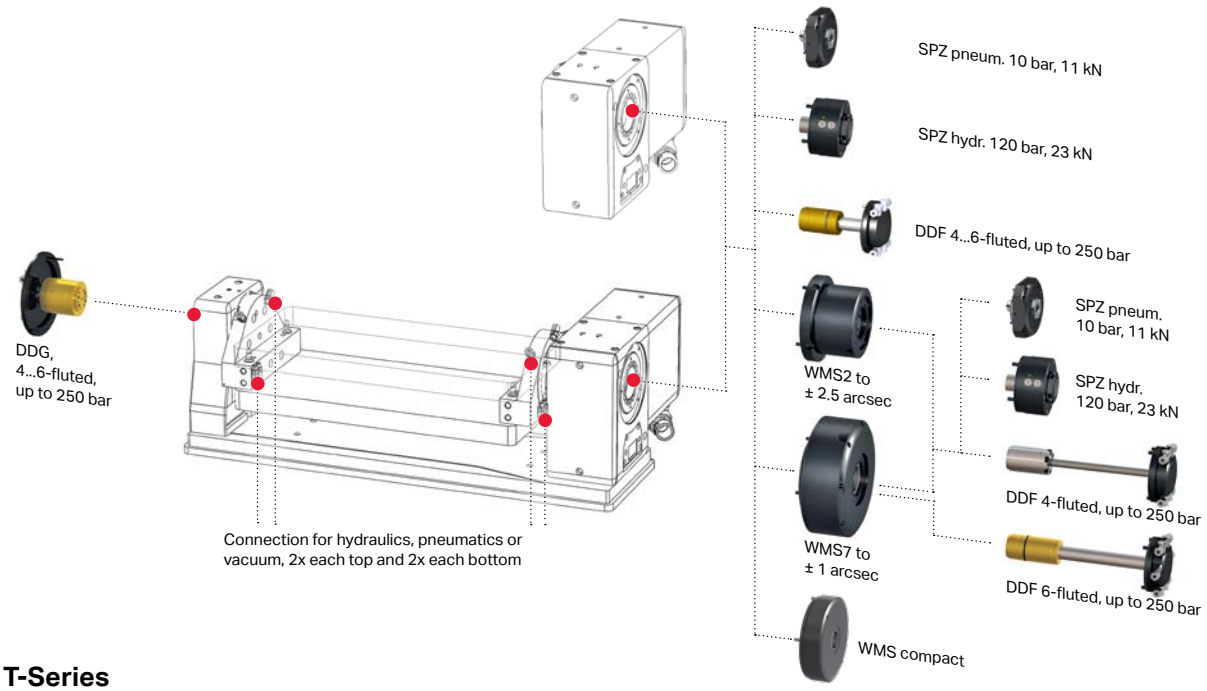
Suitable alignment elements

Item no.	Designation	Slot width	Weight [kg]
AUR.iX-12	**lineFIX** alignment pin, 1 pair	12g6	
AUR.iX-14		14g6	0.03
AUR.iX-16		16g6	0.03
AUR.iX-18		18g6	0.03

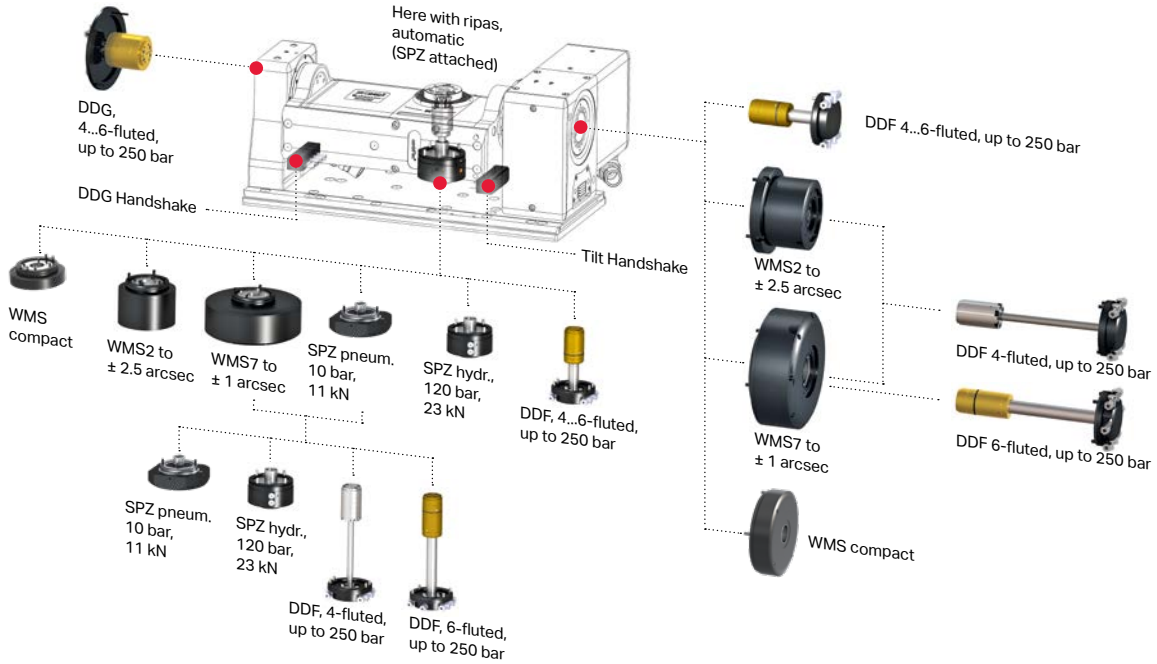
For **lineFIX**, refer to **p. 86**

- Positioning accuracy to ± 1 arcsec
- Up to 12 channels on dividing axis or clamping yoke
- Medium: Oil, air or vacuum, up to 250 bar
- Many standard combinations

E-Series



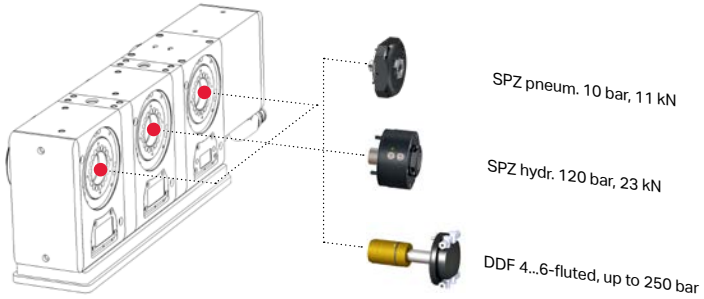
T-Series



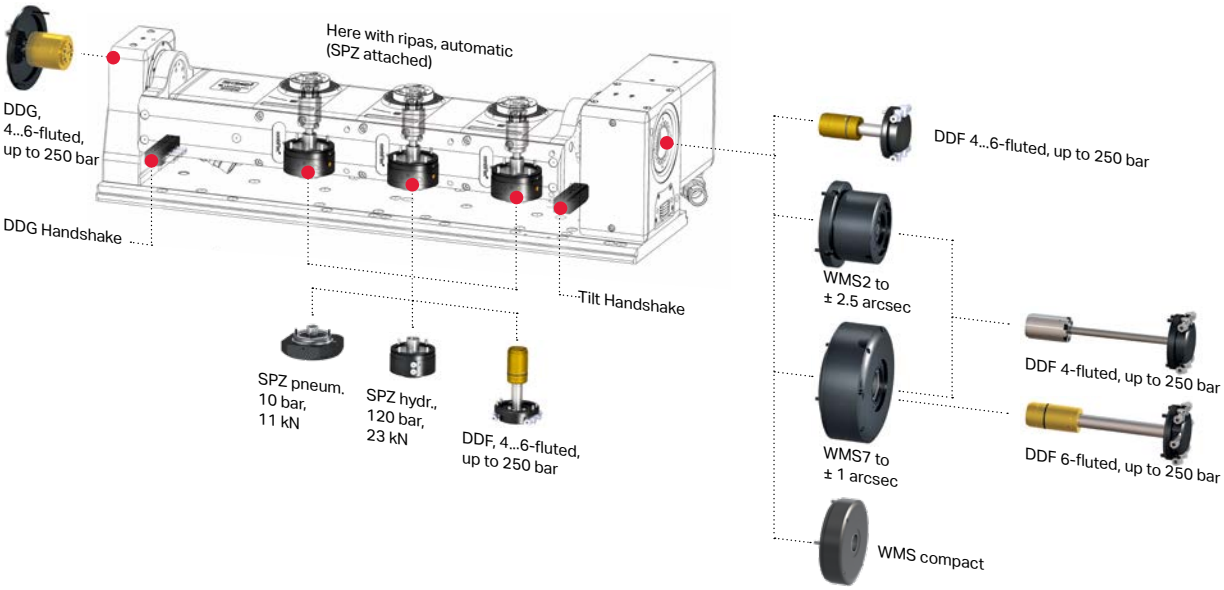
- Rotary union in combination with angular position measuring systems (small and large)
- Easy to retrofit
- Clamping cylinder up to 23 kN

– DDF up to 2x6 channels
– SPZ on WMS2

M-Series



T2...T3-Series



Note

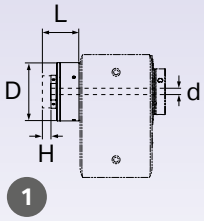
1. DDF 6-fluted not possible on
   - 507 and 508
   - Small counter bearing (TOP1)
   - 510 with rotoFIX
2. WMS7 not possible on 507 and 508
3. SPZ (stroke = 15 mm) not possible in combination with WMS2

WMS Angular position measuring system
2 = Size 2000, Heidenhain, Magnescale
7 = Size 8000, Heidenhain
DDF Rotary union on rotary table

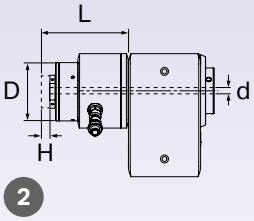
DDG Rotary union for counter bearing
4 = 4 channels
6 = 6 channels
SPZ Clamping cylinders
MTS Modular tooling system

For any center height increases due to the respective spindle accessories, see **S. 69**.

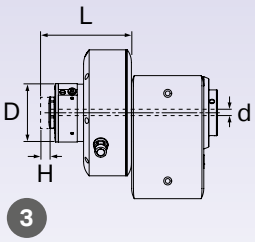
Hydraulic clamping cylinder standard



1 directly on the spindle



2 in combination with WMS RxN-2xxx *



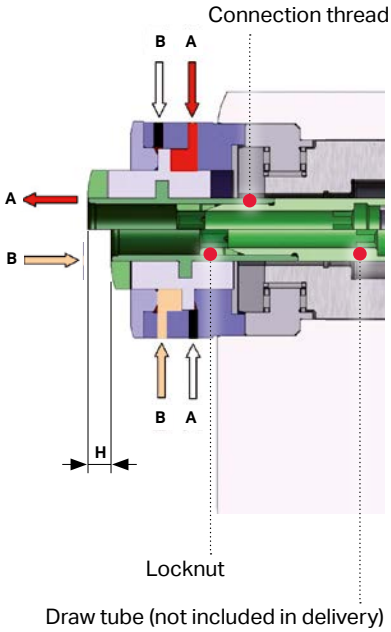
3 in combination with WMS RxN-8xxx

Pulling force max. 23 kN at max. permissible pressure of 120 bar

	Item no.	Effective direction Designation	H [mm]	Oil [cm³]	D [mm]	d [mm]	Connection thread	L [mm] 1	L [mm] 2*	L [mm] 3	Weight [kg]
507	**SPZ.5xx-d2.5**	hydraulic or pneumatic, double	2.5	5.2	102	22	M24x1.5	60	149		2.90
507	**SPZ.5xx-9**	hydraulic or pneumatic, double	9	18.8	102	22	M24x1.5	60	149		2.85
507	**SPZ.5xx-15**	hydraulic or pneumatic, double	15	18.8	102	22	M24x1.5	72	161		3.44
507	**SPZ.507-WMS2**	Draw tube extension, for WMS.510-VOR2							•		
510	**SPZ.5xx-d2.5**	hydraulic or pneumatic, double	2.5	5.2	102	22	M24x1.5	52	141	136	2.90
510	**SPZ.5xx-9**	hydraulic or pneumatic, double	9	18.8	102	22	M24x1.5	52	141	136	2.85
510	**SPZ.5xx-15**	hydraulic or pneumatic, double	15	18.8	102	22	M24x1.5	64	153	148	3.44
510	**SPZ.510-WMS2**	Draw tube extension, for WMS.510-VOR2							•		
510	**SPZ.510-WMS7**	Draw tube extension, for WMS.510-VOR7								•	0.21
520	**SPZ.520-d2.5**	hydraulic or pneumatic, double	2.5	5.2	102	22	M24x1.5	73	165	160	3.60
520	**SPZ.520-9**	hydraulic or pneumatic, double	9	18.8	102	22	M24x1.5	73	165	160	3.55
520	**SPZ.520-15**	hydraulic or pneumatic, double	15	18.8	102	22	M24x1.5	85	177	172	4.14
520	**SPZ.520-WMS2**	Draw tube extension, for WMS.520-VOR2							•		
520	**SPZ.520-WMS7**	Draw tube extension, for WMS.520-VOR7								•	
530	**SPZ.530-d2.5**	hydraulic or pneumatic, double	2.5	5.2	102	22	M24x1.5	65	144	133	5.09
530	**SPZ.530-9**	hydraulic or pneumatic, double	9	18.8	102	22	M24x1.5	65	144	133	5.04
530	**SPZ.530-15**	hydraulic or pneumatic, double	15	18.8	102	22	M24x1.5	77	156	145	5.63
530	**SPZ.530-WMS2**	Draw tube extension, for WMS.530-VOR2							•		
530	**SPZ.530-WMS7**	Draw tube extension, for WMS.530-VOR7								•	
all types	**SPZ.Awk-Vor**	Preparation for presence check (control box optional, SPZ.Awk)									
all types	**SPZ.Awk**	Control box for presence check, incl. 10 m of hose material and wall penetration (in conjunction with SPZ.Awk-Vor)									

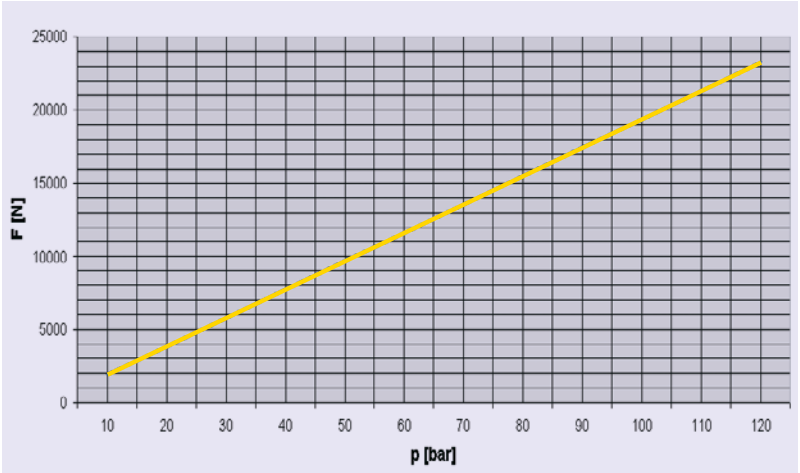
* If in combination with pL accessories, only on request (only possible for stroke of 2.5 mm and 9 mm)

Principle of operation

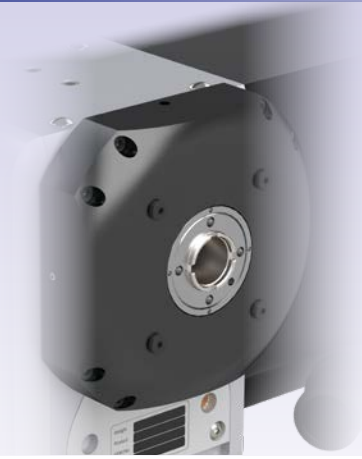


Control box for presence detection (SPZ.Awk)

Hydraulically actuated: Forec diagram 10...120 bar
(compression or tension; for suitable hydraulic unit, please refer to **p. 87**)



Pneumatic clamping cylinder with adjustable stroke



(1)

More information about clamping cylinder **p. 68**, rotary union **p. 70**, angular position measuring system **p. 73**

Pulling force max. 11 kN at max. permissible pressure of 10 bar

	pL LEHMANN Item no.	Designation	H min* [mm]	Air [cm³]	D [mm]	d [mm]	Connection thread	L [mm] (1)	Weight [kg]
507	SPZ.507-p	Pneumatic clamping cylinders	2.5	28	169 / 143x143	22	M24x1.5	57.2	
			9	100				63.7	
			15	167				69.7	
510	SPZ.510-p		2.5	28				48.7	
			9	100				55.2	
			15	167				61.2	
520	SPZ.520-p		2.5	28				69.7	
			9	100				76.2	
			15	167				82.2	
530	SPZ.530-p		2.5	28				61.7	
			9	100				68.2	
			15	167				74.2	

* Stroke of 2.5, 9 and 15 mm can be achieved with the same clamping cylinder

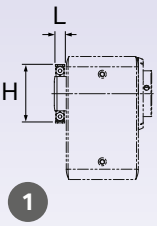
Raised center height on T-type rotary tables

For all combinations of possible spindle accessories.

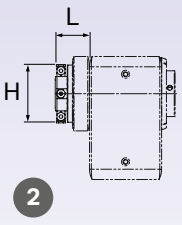
			Hydraulic & pneumatic							Hydraulic								Pneumatic
	Item no.	In-crease	(4)(3)(1) WMS2	(2) WMS7	WMSC	(1) DDF	(2) WMS2 + DDF	(2) WMS7 + DDF	WMSC + DDF	(1) SPZ2.5	(1) SPZ9	(1) SPZ15	(2) WMS2 + SPZ2.5	(3) WMS7 + SPZ2.5	(2) WMS2 + SPZ9	(3) WMS7 + SPZ9	(3) WMS7 + SPZ15	SPZp*
TIP1		without			•	•			•	•	•	•						•
	SPH.TIP1-40	40mm	•		•	•	•		•	•	•	•						•
	SPH.TIP1-80	80mm	•		•	•	•		•	•	•	•	•		•			•
TIP2		without	•		•	•			•	•	•	•						•
	SPH.TIP2-40	40mm	•	•	•	•	•	•	•	•	•	•						•
	SPH.TIP2-80	80mm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
TIP3		without			•	•				•								
	SPH.TIP3-50	50mm	•	•	•	•	•	•	•	•	•	•						•
	SPH.TIP3-100	100mm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
TAP1		without			•	•				•	•							•
	SPH.TAP1-40	40mm	•		•	•			•	•	•	•						•
TAP2		without			•	•				•	•							•
	SPH.TAP2-30	30mm			•	•				•	•	•						•
	SPH.TAP2-60	60mm	•	•	•	•	•	•	•	•	•	•						•
TAP3		without			•	•			•	•	•							•
	SPH.TAP3-50	50mm	•	•	•	•	•	•	•	•	•	•						•
TOP1		without			•	•				•	•							•
	SPH.TOP1-40	40mm	•		•	•			•	•	•	•						•
	SPH.TOP1-70	70mm	•		•	•	•		•	•	•	•						•
	SPH.TOP1-100	100mm	•		•	•	•		•	•	•	•	•		•			•
TOP2		without			•	•				•	•							•
	SPH.TOP2-30	30mm			•	•				•	•	•						•
	SPH.TOP2-60	60mm	•	•	•	•	•	•	•	•	•	•						•
	SPH.TOP2-120	120mm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
TOP3		without			•	•			•	•	•							
	SPH.TOP3-50	50mm	•	•	•	•	•	•	•	•	•	•						
	SPH.TOP3-100	100mm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	

WMS = Angular position measuring system, SPZ = clamping cylinder, DDF = rotary union
* pneumatic clamping cylinder with 2.5, 9 and 15 mm stroke

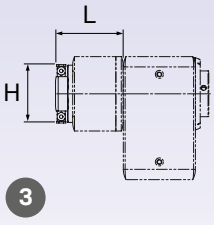
Ultra-compact, for air and oil



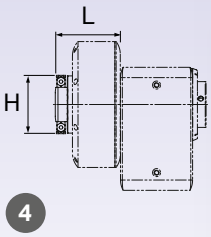
directly on the spindle



in combination with WMS.5xx-VorCx



in combination with WMS.5xx-Vor2

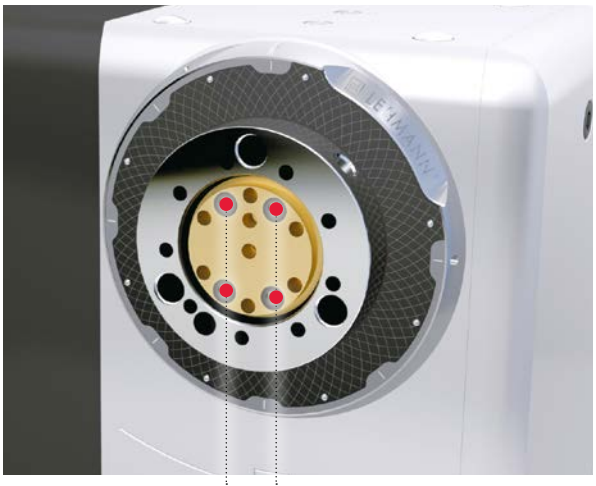


in combination with WMS.5xx-Vor7

Rotary unions for rotary table

	Item no.	Flutes	Oil	Air	H [mm]	L [mm] 1	2	3	4	Weight [kg]
507	**DDF.507-04**	4	●	●		30				2.56
	DDF.507-04-C	4	●	●	102		66			2.69
	DDF.507-04-2	4	●	●				117		2.43
510	**DDF.510-04**	4	●	●	102	21				2.58
	DDF.510-06	6	●	●	122					2.80
	DDF.510-06-C	6	●	●			60			2.93
	DDF.510-04-2	4	●	●	102			119		2.44
	DDF.510-04-7	4	●	●					114	2.89
	DDF.510-06-7	6	●	●	122					3.10
520	**DDF.520-04**	4	●	●	102	42				3.43
	DDF.520-06	6	●	●	122					3.63
	DDF.520-06-C	6	●	●			74			3.05
	DDF.520-04-2	4	●	●	102			121		2.47
	DDF.520-04-7	4	●	●					117	3.03
	DDF.520-06-7	6	●	●	122					3.18
530	**DDF.530-04**	4	●	●	102	34				5.82
	DDF.530-06	6	●	●	122					5.97
	DDF.530-06-C	6	●	●			75			3.87
	DDF.530-04-2	4	●	●	102			109		3.19
	DDF.530-04-7	4	●	●					98	3.79
	DDF.530-06-7	6	●	●	122					3.95

All rotary unions can be used on all T-type rotary tables without increasing the center height so long as no angular position measuring system is used.


Take-off or medium transfer

For raised center height on T-type rotary tables, see p. 69

The center height changes only if the rotary union is used on an angular position measurement system.

Rotary unions (DDF) for counter bearing (GLA)

	Item no.	Flutes	Oil	Air	H [mm]	L [mm]	Weight [kg]
507	**DDG.507-04-TOP**	4	●	●	102	30	2.48
510/520/530	**DDG.520-04-TOP**	4	●	●	102	44	3.66
510/520/530	**DDG.520-06-TOP**	6	●	●	122	44	4.11

DDF on GLA for T-type rotary table

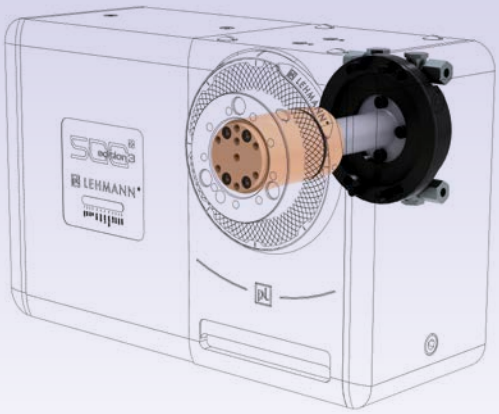

4 connections, at rear

DDF on GLA for rotoFIX


2 connections facing up


2 connections facing down

All rotary unions: Channel size ø3.5 mm, permissible pressure 250 bar



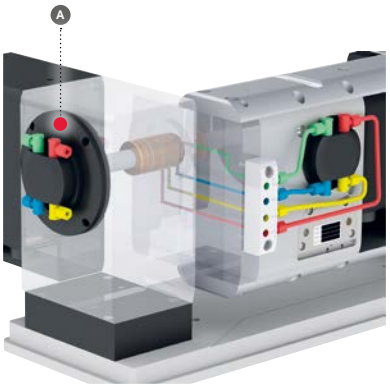
DDF.TxP1.Lx-04(p)

p = pneumatic clamping cylinder
without = DDF and hydraulic clamping cylinder

Handshake for T-type rotary tables

The following options (adapter plate and tubing) are required in order to feed the rotary unions on the dividing axis via the tilting axis:

	Item no.	Left	Right	A	B	Remarks
TxP	**DDF.TxP1.Lx-04(p)**	●		●		not possible for version TxP1c
	DDF.TxP1.Rx-04(p)		●	●		not possible for version TxP1c
	DDF.TxP2.Lx-04-2(p)	●		●		not possible for versions TxP2c and Oxx
	DDF.TxP2.Lx-06-2(p)	●		●		not possible for versions TxP2c and Oxx
	DDF.TxP2.Rx-04-2(p)		●	●		not possible for versions TxP2c and Oxx
	DDF.TxP2.Rx-06-2(p)		●	●		not possible for versions TxP2c and Oxx
	DDF.TxP3.Lx-04-2(p)	●		●		
	DDF.TxP3.Lx-06-2(p)	●		●		
	DDF.TxP3.Rx-04-2(p)		●	●		
	DDF.TxP3.Rx-06-2(p)		●	●		
TOP	**DDG.TOP1-04(p)**	●	●		●	
	DDG.TOP2-04-2(p)	●	●		●	If Oxx in addition, DDF.WMS-7-TxP needed
	DDG.TOP2-06-2(p)	●	●		●	
	DDG.TOP3-04-2(p)	●	●		●	
	DDG.TOP3-06-2(p)	●	●		●	
TGR	**DDF.TGR2.Lx-04(p)**	●		●		
	DDF.TGR2.Lx-06(p)	●		●		
	DDF.TGR2.Rx-04(p)		●	●		
	DDF.TGR2.Rx-06(p)		●	●		
	DDF.TGR3.Lx-04(p)	●		●		
	DDF.TGR3.Lx-06(p)	●		●		
	DDF.TGR3.Rx-04(p)		●	●		
	DDF.TGR3.Rx-06(p)		●	●		

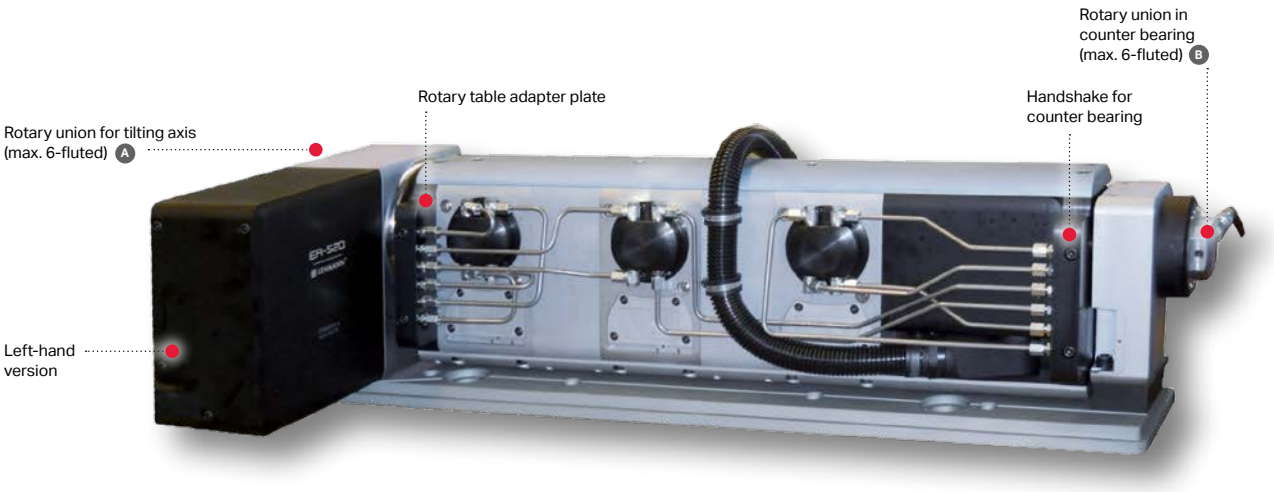


Handshake
Medium transfer from tilting axis to dividing axis (rear)

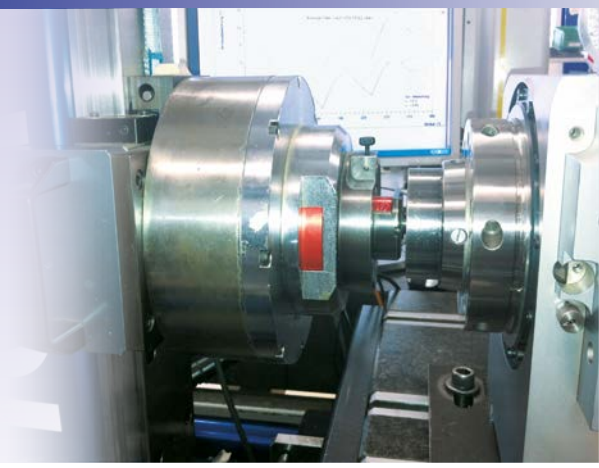
Handshake
Medium transfer from tilting axis to dividing axis (front)

Essential for handshake with WMS.5xx-Vor7

Item no.	Left	Right	Remarks
DDF.WMS-7-TxP	●	●	Adjustment strip, rotary table adapter plate



Measuring and recording the angular accuracy, important application information



Fully automated measuring system for indexing accuracy measurement

Measuring method used to determine the gear unit's accuracy to VDI/DGQ 3441 or ISO 230-2

- Measured at operating temperature of the unit after 5 warm-up cycles
- 5 measuring cycles
- 24 measuring points (15° steps)
- Acceleration 500°/s²
- All measured values apply in the unloaded condition at an ambient temperature of approx. 22°C
- The values WITHOUT load apply

Please note: Due to the influence of environmental factors during the measurement (temperature, vibration...), the recorded measurement error may exceed the catalog limit value by up to 10%.

Elasticity of tilting axes (reference values for pitch error)

	Unloaded		Standard load sls cube *	
0°...90° [arc sec]	TxP	TGR	TxP	TGR
TF...T1-507510 (508510)	-35 (-35)	–	6 (-9)	–
TF...T1-510520 (511510)	-18 (-18)	-73 (on request)	20 (1)	12 (on request)
TF...T1-520530 (521530)	-2	-42	56	29
T2-507510 (508510)	-56 (-56)	–	-5 (-23)	–
T2-510520 (511510)	-28 (-28)	–	20 (-5)	–
T3-507510 (508510)	-78 (-78)	–	-21 (-40)	–
T3-510520 (511510)	-37 (-37)	–	16 (-11)	–

* see **p. 107**

Explanation: The pitch error corrects the positioning error resulting from elasticity and caused by the eccentric load of the dividing/indexing axis on the swiveling/tilting axis.
Recommendation: In order to achieve the best possible accuracies, we always recommend compensating for the gear backlash and the pitch error (5th axis) with the CNC control unit and/or by using a direct angular position measuring system (option, **p. 73**). A tilting range of 180° results in other compensation values; please contact the factory if necessary.

Attainable workpiece accuracies
Reference values for T-rotary tables

In order to achieve the best possible accuracies (volumetric accuracy), a few points must be observed. For more information, please refer to **p. 127**.

	Positioning	Simultaneous
Size	Cube 350 mm	Cube 150 mm
Weight	150 kg	34 kg
Accuracy[1]	± 10 µm / 100 mm	
Accuracy[2]	± 5 µm/100 mm	not possible
Accuracy WMS[1]	± 3 µm / 100 mm	
Accuracy WMS[2]	± 2 µm/100 mm	not possible

WMS: Angular position measuring system ±2.5"
[1] only ONE workpiece zero point [2] multiple workpiece zero points

Accuracy comparison µm/angular seconds

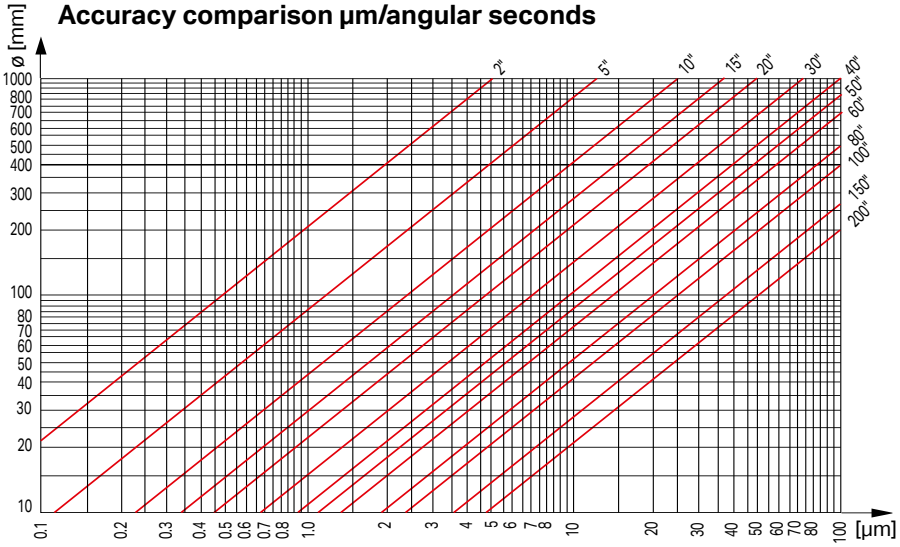
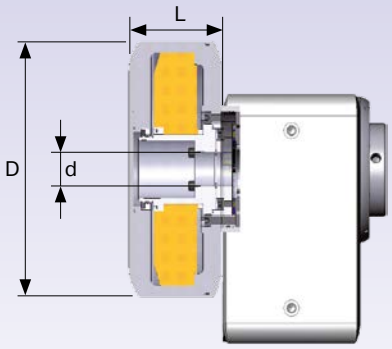


Diagram for determining the relationship between angular seconds and µm on the basis of diameter

For the highest indexing accuracy
Fully encapsulated, leak-proof, protected against impact, adjusted in a highly precise manner



WMS.TXM-75.1T

- T = swiveling / tilting axis, only with incremental measuring system
- without = only 1 measuring head available, .1 = 1 measuring head, .2 = 2 measuring heads
- M = Incremental, A = Absolute
- X = REX
- T = Tonic / 1Vss, V = Vionic / TTL, S = Siemens, F = Fanuc, M = Mitsubishi

Selecting the angular position measuring system

5 in the case of 507/508 with TTL (2 measuring heads) and Siemens only possible without spindle clamping

	Encoder kit Item no.	Preparation Item no.	Incre-mental	Abso-lute	1Vss	TTL	En-Dat02	Siemens driveCliq	Fanuc	Mitsub-ishi	System	Indexing accuracy normal	Indexing accuracy comp.*	Type	Read head	
Rotary table	**WMS.xXM-75**				x						**Renishaw** Line count 11840, or 20 µm pitch	± 10"	± 3"		1	5
	WMS.xXM-75.1	**WMS.5xx-VorCX**	x			x						± 10"	± 3"	REX	1	5
	WMS.xXM-75.2					x						± 2.5"	± 1"		2	5
	WMS.xXA-75								x	x	**Renishaw** Line count 11840, or 20 µm pitch	± 10"	± 3"		1	5
	WMS.xXA-75.1	**WMS.5xx-VorCX**		x				x				± 10"	± 3"	REX	1	5
	WMS.xXA-75.2							x				± 2.5"	± 1"		2	5
	WMS.285	**WMS.5xx-Vor2**		x	x						**Heidenhain**	± 5"		RON 285	built-in	1
	WMS.287				x							± 2.5"		RON 287		1
	WMS.2381	**WMS.5xx-Vor2**		x			x				**Heidenhain**	± 4"		RCN 2381	built-in	1
	WMS.2581	**WMS.5xx-Vor2**		x			x					± 2"		RCN 2581	built-in	1
	WMS.275	**WMS.5xx-Vor2**	x			x						± 5"		RON 275	built-in	1
	WMS.RU97A	**WMS.5xx-Vor2**		x				x			**Magnescale**	± 2.5"		RU97A	built-in	3
	WMS.RU77F	**WMS.5xx-Vor2**		x					x			± 2.5"		RU77	built-in	4
	WMS.RU77M	**WMS.5xx-Vor2**		x						x		± 2.5"		RU77	built-in	4
	WMS.8391F **	**WMS.5xx-Vor7**		x					x		**Heidenhain**	± 2"		RCN 8391F	built-in	2
	WMS.8391M **	**WMS.5xx-Vor7**		x						x		± 2"		RCN 8391M	built-in	2
	WMS.8381 **	**WMS.5xx-Vor7**		x			x					± 2"		RCN 8381	built-in	2
	WMS.8591F **	**WMS.5xx-Vor7**		x					x			± 1"		RCN 8591F	built-in	2
	WMS.8591M **	**WMS.5xx-Vor7**		x						x		± 1"		RCN 8591M	built-in	2
	WMS.8581 **	**WMS.5xx-Vor7**		x			x					± 1"		RCN 8581	built-in	2
Counter bearing	**WMS.2381**	**WMS.TOP2-Vor2**		x							**Heidenhain**	± 4"		RCN 2381	built-in	1
	WMS.2581	**WMS.TOP2-Vor2**		x								± 2"		RCN 2581	built-in	1
	WMS.RU97A	**WMS.TOP2-Vor2**		x							**Magnescale**	± 2.5"		RU97A	built-in	3
	WMS.RU77F	**WMS.TOP2-Vor2**		x								± 2.5"		RU77	built-in	4
	WMS.RU77M	**WMS.TOP2-Vor2**		x								± 2.5"		RU77	built-in	4

* Sine error compensated individually by customer
** not available on 507/508

	L	D	d
	[mm]		
WMS.507-VorCX	35.5	130	34
WMS.510-VorCX	29.9	130	34
WMS.520-VorCX	35.9	165	46
WMS.530-VorCX	38		
WMS.507-Vor2	88.2	130	15
WMS.510-Vor2	88.5		
WMS.520-Vor2	91.6		
WMS.530-Vor2	79		
WMS.510-Vor7	84	220	30
WMS.520-Vor7	87		46
WMS.530-Vor7	68		50
WMS.TOP2-Vor2	102	130	15

1

Heidenhain RxN 2xxx
Passage: ø 20

2

Heidenhain RxN 8xxx
Passage: ø 60

3

Magnescale RU 97

4

Magnescale RU 77

5

Renishaw

Option: Additional cable for retrofitting WMS
KAB.WMS-14.0-o

Cable run in flexible tubing, 14 m long, without connector

Alternative to angular position measuring system

Optional increased mechanical gear accuracy	
GET.5xx-GEN	Only possible on EA-, TF- and T1-type rotary tables (for data, see respective rotary table on **pp. 30–57**)

Important information

On T1-507510 with WMS, the tilting range option for 180° is not possible

For raised center height on T-type rotary tables, see p. 69

The center height of T-type rotary tables is increased in accordance with the angular position measuring system (additional charge)

Suitable motors for drive systems from FANUC, SIEMENS, HEIDENHAIN, YASKAWA, MITSUBISHI, SANYO...

Order items

The correct motor is defined in the order code for the respective rotary table by specifying the motor abbreviation from the applicable order number key.

Item no.	Designation
MOT.dCliq	Siemens sensor module for drive Click for installation in control cabinet

Integration on Siemens Solution Line
pL LEHMANN has developed appropriate solutions together with SIEMENS. Request our special documentation. Our specialists will assist you during commissioning.

Important information

Servo drive design: Rated current at least 75% of motor's peak current! (Otherwise, only reduced drive performance is possible)

Dimension X = Dimension from spindle axis to end of motor housing (see **pp. 30–65**).

Motor flange, max
507 = 70x70 mm, 510 = 80x80 mm
520 = 110x110 mm, 530 = 130x130 mm

Motor table

		pL LEHMANN Item no.	Motor manufacturer Item no.	Voltage [VAC]	s = Standard o = Option				Dimension X Motor pos. L/R				Overall gear ratio i_{tot}						
					507 / 508	510 / 511	520 / 521	530	507 / 508	510 / 511	520 / 521	530	507	508	510	511	520	521	530
MOVINOR / MAVILOR (Siemens, Heidenh.)	BLS 072 ERN 1185	**MOT.MA-072ERN**	BLS 072 ERN 1185	400	s	s			236	248			90:1	45:1	120:1	60:1			
	BLS 072 EQN 1125	**MOT.MA-072EQN25**	BLS 072 EQN 1125	400	o	o			236	248			90:1	45:1	120:1	60:1			
	BLS 072 EQN 1135	**MOT.MA-072EQN35**	BLS 072 EQN 1135	400	o	o			236	248			90:1	45:1	120:1	60:1			
	BLS 073 ERN 1185*	**MOT.MA-073ERN**	BLS 073 ERN 1185	400			s				295						150:1	75:1	
	BLS 073 EQN 1125*	**MOT.MA-073EQN25**	BLS 073 EQN 1125	400			o				295						150:1	75:1	
	BLS 073 EQN 1135*	**MOT.MA-073EQN35**	BLS 073 EQN 1135	400			o				295						150:1	75:1	
	LN098 ERN 1185	**MOT.MO-098ERN**	LN098 ERN 1185	400				s			320	390					150:1	75:1	150:1
	LN098 EQN 1125	**MOT.MO-098EQN25**	LN098 EQN 1125	400				o			320	390					150:1	75:1	150:1
	LN098 EQN 1135	**MOT.MO-098EQN35**	LN098 EQN 1135	400				o			320	390					150:1	75:1	150:1
FANUC	β 1/6000is	**MOT.FA-1/6is**	A06B-0116-B103	200	s	o			236	248			90:1	45:1	90:1	45:1			
	α 2/5000is*	**MOT.FA-2/5is**	A06B-0212-B100	200		s	s			248	295				90:1	45:1	150:1	75:1	
	α 2/5000HVis*	**MOT.FA-2/5HVis**	A06B-0213-B100	400		s	s			248	295				90:1	45:1	150:1	75:1	
	α 4/5000is	**MOT.FA-4/5is**	A06B-0215-B100	200				s			320	390					150:1	75:1	180:1
	α 4/5000HVis	**MOT.FA-4/5HVis**	A06B-0216-B100	400				s			320	390					150:1	75:1	180:1
YASKAWA	SGMJV-04	**MOT.YA-SGMJV04**	SGMJV-04ADA61	200	s	o			236	248			90:1	45:1	120:1	60:1			
	SGMJV-08	**MOT.YA-SGMJV08**	SGMJV-08ADA61	200		s	s			248	295				90:1	45:1	150:1	75:1	
	SGMEV-15	**MOT.YA-SGMEV15**	SGMEV-15ADA61	200				s				390							180:1
	SGM7J-06	**MOT.YA-SGM7J06**	SGM7J-06A7A61	200	s	o			236	248			90:1	45:1	120:1	60:1	150:1	75:1	
	SGM7J-08	**MOT.YA-SGM7J08**	SGM7J-08A7A61	200		s	s			248	295				90:1	45:1			
MITSUBISHI	HG56	**MOT.MI-HG-56S**	HG-56S-D47	200	s	o			236				90:1	45:1					
	HG75	**MOT.MI-HG-75S**	HG-75S-D48	200		s				270					90:1	45:1			
	HG-H75	**MOT.MI-HG-H75S**	HG-H75S-D48	400		s				270					90:1	45:1			
	HG104	**MOT.MI-HG-104S**	HG-104S-D48	200				s				390							150:1
	HG-H104	**MOT.MI-HG-H104S**	HG-H104S-D48	400				s				390							150:1
	HG105	**MOT.MI-HG-105S**	HG-105S-D48	200			s				320						150:1	75:1	
	HG-H105	**MOT.MI-HG-H105S**	HG-H105S-D48	400			s				320						150:1	75:1	
SA-NYO	R2Ax06040	**MOT.SA-R2Ax060-2**	R2AA06040FXR00M	200	s	o			236	248			90:1	45:1	90:1	45:1			
	R2Ax08075	**MOT.SA-R2Ax080-2**	R2AA08075FXR5TM6	200		s	s			248	295				90:1	45:1	120:1	60:1	
SIEMENS	1FK2204	**MOT.SI-1FK2204-5A**	1FK2204-5AF01-0MB0			s				248					90:1	45:1			
	1FK2205	**MOT.SI-1FK2205-2A**	1FK2205-2AF01-0MB0				s				295						150:1	75:1	
	1FK2206	**MOT.SI-1FK2206-4A**	1FK2206-4AF01-0MB0					s				390							150:1
	1FK7042-2AK71	**Drive cliq**	1FK7042-2AK71-1RG0				s				320						150:1	75:1	
	1FK7062-2AH71	**Drive cliq**	1FK7062-2AH71-1RG0					s				390							150:1

* on T1-510520 TGR2, the standard motor used in the tilt axis is Movinor LN-098 or Fanuc alpha 4/5000(HV)is

Suitable servo amplifiers for the respective motor

- incl. required connection material
- Wall penetrations (WDF) **pp. 78/79**, loose accessories (LOZ) **pp. 90–93** and commissioning (INB.1AX-SP or INB.2AX-SP) recommended

Connection material

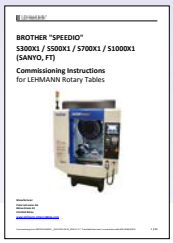
🟢 = Ideal servo 🔴 = Servo at power limit. You may have to reduce the drive data. 🟠 = Servo oversized. Operation guaranteed, however

*** Where item no. missing, on request**

	Item no.*	Servo model	Number of axes	Input [V DC]	Design current [A]	Peak current [A]	Motor								
Brother							R2Ax 06040 FXP00M	R2Ax 08075 FXP00M							
Brother		Sanyo RS2W01A0KL10XXXXC00		300 DC		15	🔴								
Brother		Sanyo RS2W03A0KL10XXXXC00				30	🟢	🟢							
Fanuc 200V							β1/6000is	α2/5000is	α4/5000is						
Fanuc 200V	**SER.F1-aiSV20-B-EA**	SVM1 αiSV 20	1	300 DC	6.5	20	🟢	🟢	🟢						
Fanuc 200V		SVM1 αiSV 80	1		19	80									
Fanuc 200V	**SER.F1-biSV20-B-EA**	SVM1 βiSV 20	1	3x200-240 AC	6.8	20	🟢	🟢	🟢						
Fanuc 200V	**SER.F1-biSV40-B-EA**	SVM1 βiSV 40	1		13	40									
Fanuc 200V		SVM1 βiSV 80	1		18.5	80									
Fanuc 200V		SVM2 αiSV 4/20	1	300 DC	6.5	20	🟢	🟢	🟢						
Fanuc 200V	**SER.F1-aiSV20/20-B-Tx**	SVM2 αiSV 20/20	2	300 DC	6.5	20	🟢	🟢	🟢						
Fanuc 200V		SVM2 αiSV 20/40	2		6.5	20	🟢	🟢	🟢						
Fanuc 200V		SVM2 αiSV 40/80	2		6.5/19	20/80	🟢	🟢	🟢						
Fanuc 200V		SVM2 αiSV 80/80	2		19	80									
Fanuc 200V		SVM2 αiSV 80/160	2		19	80									
Fanuc 200V	**SER.F1-biSV20/20-B-Tx**	SVM2 βiSV 20/20	2	3x200-240 AC	2x6.5	20	🟢	🟢	🟢						
Fanuc 200V		SVM3 αiSV 20/20/20	3	300 DC	3x6.5	20	🟢	🟢	🟢						
Fanuc 200V		SVM3 αiSV 20/20/40	3			20	🟢	🟢	🟢						
Fanuc 400V							α2/5000HVis	α4/5000HVis	α8/4000 HVis						
Fanuc 400V		SVM1 αiSV 10HV	1	600 DC	3.1	10	🟢	🟢							
Fanuc 400V		SVM1 αiSV 40HV	1		9.1	40			🟢						
Fanuc 400V		SVM1 βiSV 10HV	1	3x400-480 AC	3.1	10	🟢	🟢							
Fanuc 400V		SVM1 βiSV 40HV	1		9.2	40			🟢						
Fanuc 400V		SVM2 αiSV 10/10HV	2	600 DC	3.1	10	🟢	🟢							
Fanuc 400V		SVM2 αiSV 20/40HV	2		9.1	40			🟢						
Fanuc 400V		SVM2 αiSV 40/40HV	2		9.1	40			🟢						
Fanuc 400V		SVM2 αiSV 40/80HV	2		9.1	40			🟢						
Heidenhain							BLS072-A-ERN/ EQN	BLS073-A-ERN/ EQN	LN098-2-C-ERN/ EQN						
Heidenhain		UE 212B	5	565	7.5/15	15/30	🟢	🟢	🔴						
Heidenhain		UE 242B	5		1x23	3x15	🟢	🟢	🔴						
Heidenhain	**SER.Mx-UM111D-EA**	UM 111 / UM 111D	1	565/650	1x7.5	1x15	🟢	🟢	🔴						
Heidenhain		UM 111B / UM 111BD	1		1x15	1x30	🟠	🟠	🟢						
Heidenhain	**SER.Mx-UM121D-Tx**	UM 121 / UM 121D	2		2x7.5	2x15	🟢	🟢	🔴						
Heidenhain		UM 121B / UM 121BD	2		2x15	2x30	🟠	🟠	🟢						
Mitsubishi 200V							HG-56	HG-75	HG-105	HG-104					
Mitsubishi 200V	**SER.MI3-E-20A-EA**	MDS-E-V1-20	1	270-324DC	6.4		🟢	🟢	🟢						
Mitsubishi 200V		MDS-E-V1-40	1		10.9					🟢					
Mitsubishi 200V		MDS-E-V2-20	2		6.4		🟢	🟢	🟢						
Mitsubishi 200V		MDS-E-V2-40	2		10.9			🟢	🟢	🟢					
Mitsubishi 200V		MDS-E-V2-80	2		16					🟢					
Mitsubishi 200V		MDS-E-V3-20	3		6.4		🟢	🟢	🟢						
Mitsubishi 200V		MDS-E-V3-40	3		10.9			🟢	🟢	🟢					
Mitsubishi 400V								HG-H75	HG-H105	HG-H104					
Mitsubishi 400V	**SER.MI4-EJH-15A-EA**	MDS-EJH-V1-15	1	513-648	2.8			🟢							
Mitsubishi 400V	**SER.MI4-EJH-20A-EA**	MDS-EJH-V1-20	1		5.4				🟢	🟢					
Mitsubishi 400V	**SER.MI4-EH-10A-EA**	MDS-EH-V1-10	1		2.3			🟢	🟢						
Mitsubishi 400V	**SER.MI4-EH-20A-EA**	MDS-EH-V1-20	1		4.9					🟢					
Mitsubishi 400V	**SER.MI4-EH-10A-Tx**	MDS-EH-V2-10	2		2.3			🟢	🟢						
Mitsubishi 400V	**SER.MI4-EH-20A-Tx**	MDS-EH-V2-20	2		4.9			🟢	🟢	🟢					
Mitsubishi 400V		MDS-EH-V2-40	2		7.7					🟢					
Siemens Sinamics S120 (Solutionline)							BLS072-A-ERN/EQN	BLS073-A-ERN/EQN	LN098-2-C-ERN/EQN	1FK7042-2AK71-1RG0	1FK7062-2AH71-1RG0	1FK2203	1FK2204	1FK2205	1FK2206
Siemens Sinamics S120 (Solutionline)		6SL3120-1TE13-0ADx / 6SL3420-1TE13-0AAx	1	510-720DC	3	9	🔴	🔴		🔴		🟢	🟢	🟢	
Siemens Sinamics S120 (Solutionline)	**SER.Mx-6SL3120-5A-EA**	6SL3120-1TE15-0ADx / 6SL3420-1TE15-0AAx	1		5	15	🟢	🟢		🟢		🔴	🔴	🟠	🔴
Siemens Sinamics S120 (Solutionline)		6SL3120-1TE21-0ADx / 6SL3420-1TE21-0AAx	1		9	27	🟠	🟠	🔴	🟠	🟢				🟢
Siemens Sinamics S120 (Solutionline)	**SER.Mx-6SL3120-18A-EA**	6SL3120-1TE21-8ADx / 6SL3420-1TE21-8AAx	1		18	54	🟠	🟠	🟢	🟠	🟠				🟠
Siemens Sinamics S120 (Solutionline)		6SL3120-1TE23-0AAx	1		30	56									
Siemens Sinamics S120 (Solutionline)		6SL3420-2TE11-0AAx	2		2x1.7	2x5.1	🟠	🟠	🟠	🟠	🟠				
Siemens Sinamics S120 (Solutionline)		6SL3120-2TE13-0ADx / 6SL3420-2TE13-0AAx	2		2x3	2x9	🔴	🔴		🔴		🟢	🟢	🟢	
Siemens Sinamics S120 (Solutionline)	**SER.Mx-6SL3120-5A-Tx**	6SL3120-2TE15-0ADx / 6SL3420-2TE15-0ADx	2		2x5	2x15	🟢	🟢		🟢		🔴	🔴	🟠	🔴
Siemens Sinamics S120 (Solutionline)		6SL3120-2TE21-0ADx	2		2x9	2x27	🟠	🟠	🔴	🟠	🟢				🟢
Siemens Sinamics S120 (Solutionline)		6SL3120-2TE21-8AAx	2		2x18	2x36	🟠	🟠	🟢	🟠	🟠				🟠
Yaskawa Sigma 5							SGMJV-04	SGMJV-08	SGMEV-15						
Yaskawa Sigma 5		Yaskawa SGDV-2R8A01A		3x200-230V AC	2.8	9.3	🟢								
Yaskawa Sigma 5		Yaskawa SGDV-3R8A01A			3.8	11	🟢	🔴							
Yaskawa Sigma 5		Yaskawa SGDV-5R5A01A			5.5	16.9	🟠	🟢							
Yaskawa Sigma 5		Yaskawa SGDV-120A01A			11.6	28	🟠	🟠	🟢						
Yaskawa Sigma 7							SGM7J-06	SGM7J-08	SGM7A-25						
Yaskawa Sigma 7		Yaskawa SGD7S-5R5A00A (±10V)		3x200-230V AC	5.5	16.9	🟢	🟢							
Yaskawa Sigma 7		Yaskawa SGD7S-200A00A (±10V)			19.6	56			🟢						
Yaskawa Sigma 7		Yaskawa SGD7S-5R5AA0A (EtherCAT)			5.5	16.9	🟢	🟢							

Overview, Applications | System & Facts, smartBox | Rotary tables | SPZ, DDF, WMS | MOT, KAB, WDF, CNC | Aligning, GLA, RST, LOZ | Service & Technology | Tooling

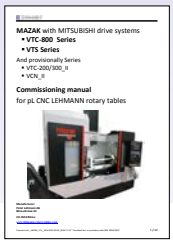
A few implemented and known machine/rotary table combinations (incomplete list)



	Machine Type	CNC System	CNC Type	Input Voltage	EA-507 (508)	EA-510 (511)	EA-520 (521)	EA-530	Mx-507	Mx-510	Tx-50x510	Tx-51x510	Tx-51x520	Tx-520520
Akira Seiki	Vx Series	Mitsubishi	M700	200VAC	●	●	●	●	●	●	●	●	●	●
Alzmetall	BAZ35	Heidenhain	TNC426	400VAC	○	○	○	●	○	○	○	○	○	○
AMS	MVC400	Fanuc	0iMD	200VAC	●	●	●	○	●	●	○	○	○	○
Awea	AF-1000	Fanuc	18iMB	200VAC	●	●	●	●	●	●	●	●	●	●
	AF-1060	Heidenhain	iTNC530	400VAC	●	●	●	○	●	●	●	●	●	●
	AF-1250	Heidenhain	iTNC530	400VAC	●	●	●	○	●	●	●	●	●	●
Axa	DBZ	Heidenhain	iTNC530	400VAC	○	○	○	○	○	○	○	○	○	○
BFW	Dhruva 4070HE	Fanuc	0iMD	200VAC	●	○	●	●	●	○	○	○	○	○
	Dhruva	Siemens	828D	?	○	○	○	○	○	○	○	○	○	○
	Dhruva	Mitsubishi	MV70BV	?	○	○	○	○	○	○	○	○	○	○
Bridgeport	XV2290	Siemens	828D	400VAC	●	●	●	●	●	●	○	○	○	○
Brother	R450X1	Sanyo	C00	200VAC	●	○	●	●	●	○	●	●	●	●
	Sx00X1	Sanyo	C00	200VAC	●	●	●	○	●	●	●	●	●	●
	TC-22Bn	Yaskawa	B00	200VAC	●	○	●	●	●	○	●	●	●	●
	TC-32Bn/FT/QT	Yaskawa	B00	200VAC	●	○	●	●	●	○	●	●	●	●
	TC-R2B	Sanyo	B00	200VAC	●	○	●	●	●	○	●	●	●	●
	TC-S2Dn	Sanyo	B00	200VAC	●	○	●	●	●	○	●	●	●	●
Chevalier	SMART III Series	Syntec	21MA	200VAC	●	●	●	○	●	●	●	●	●	●
	FMG 1632CNC-HD	Siemens	840Dsl	400VAC	●	●	●	○	●	●	●	●	●	●
Chiron	FZ 12W	Fanuc	31iB5	400VAC	●	●	●	●	●	●	○	○	○	○
	Mill2000	Siemens	840Dsl	400VAC	○	●	●	○	○	●	●	●	●	●
DMG MORI	DMU 50, 70, 100			400VAC	○	○	○	○	○	○	○	○	○	○
	Milltap 700	Siemens	840Dsl	400VAC	●	●	●	●	●	●	●	●	●	●
	DMC xx35V			400VAC	○	○	○	○	○	○	○	○	○	○
	DMC xx50V	Siemens	840Dsl	400VAC	○	○	○	○	○	○	○	○	○	○
	DMF			400VAC	○	○	○	○	○	○	○	○	○	○
	CMX xx35V	Siemens	840Dsl	400VAC	●	●	●	○	●	●	●	●	●	●
	CMX xx50V	Siemens	840Dsl	400VAC	●	●	●	○	●	●	●	●	●	●
	CMX xx50V	Fanuc	?	?	○	○	○	○	○	○	○	○	○	○
	NVX5x Series	Mitsubishi	M730BM	200VAC	●	●	●	●	●	●	●	●	●	●
DN Solutions	DNM400–650	Siemens	828Dsl	400VAC	●	●	●	●	●	●	●	●	●	●
	DNM400–650	Fanuc	0iMD	200VAC	●	●	●	●	●	●	○	○	○	○
	DNM500 II, 650 II	Fanuc	0iMD	200VAC	●	●	●	●	●	●	○	○	○	○
	DNM400–650HS	Fanuc	30/31/32i-A	200VAC	○	○	○	○	○	○	○	○	○	○
	DT360D	Fanuc	0iMD	200VAC	○	○	○	○	○	○	○	○	○	○
	DT400	Fanuc	0iMD	200VAC	○	○	○	○	○	○	●	●	●	●
	Mynx7500/50	Fanuc	0iMD	200VAC	●	●	●	●	●	●	○	○	○	●
	VC430 / VC510	Fanuc	0iMD	200VAC	●	●	●	○	●	●	○	○	○	○
	VM5400, 6400	Fanuc	30/31/32i-A	200VAC	○	○	○	○	○	○	○	○	○	○
Fanuc Robodrill	a-T14iFx	Fanuc	31i-A5/B5	200VAC	○	○	○	○	○	○	○	○	○	○
	a-T21iFx	Fanuc	31i-A5/B5	200VAC	○	○	○	○	○	○	●	●	●	●
	a-D14xiA(5)	Fanuc	31i-B5	200VAC	●	●	●	○	●	●	●	●	●	●
	a-D21xiA(5)	Fanuc	31i-B5	200VAC	●	●	●	○	●	●	○	○	○	○
	a-D21xiB(5)	Fanuc	31i-B5	200VAC	○	○	○	○	○	○	●	●	●	●

● All technical information available at pL, partially listed by machine manufacturer
○ Known, completed integrations, technical information only partially available, or to be carried out by machine manufacturer; inquire about feasibility at the factory.

Specific commissioning documentation available for over 40 different machines (incl. parameter lists)



	Machine Type	CNC System	CNC Type	Input Voltage	EA-507 (508)	EA-510 (511)	EA-520 (521)	EA-530	Mx-507	Mx-510	Tx-50x510	Tx-51x510	Tx-51x520	Tx-520520
GF Mikron	MillS400	Heidenhain	iTNC530	400VAC	●	●	●	○	●	●	○	○	○	○
	VCE			400VAC	○	○	○	○	○	○	○	○	○	○
	VCP			400VAC	○	○	○	○	○	○	●	●	●	●
Haas	Minimill, VF-x, DT-1	HAAS	> M18.7	200VAC	●	●	●	○	●	●	●	●	●	●
	OM-2A	HAAS	> M18.7	200VAC	●	●	●	○	●	●	●	●	●	●
	VF-x	HAAS NGC	100.16. 000.1021	200VAC	●	●	●	○	●	●	●	●	●	○
Hasegawa	PM250	Fanuc	31i-B5	200VAC	●	●	●	○	●	●	○	○	○	○
Hermle	C800U	Siemens	840Dpl	400VAC	○	○	●	○	○	○	●	●	●	●
Hurco	VMX10(i)	HURCO	WinMax V9.x	200VAC	●	●	●	●	●	●	●	●	●	●
	VMX24(i), 30(i)	HURCO	WinMax V9.x	200VAC	●	●	●	●	●	●	●	●	●	●
	VMX24, 30	HURCO	WinMax V8.x	200VAC	●	●	●	●	●	●	●	●	●	●
	VMX42	HURCO	WinMax V8.x	200VAC	●	●	●	●	●	●	●	●	●	●
	VMX42(i)	HURCO	WinMax V9.x	200VAC	●	●	●	●	●	●	○	○	○	○
Hyundai WIA	F400	Fanuc	0iMD	200VAC	●	●	●	○	●	●	○	○	○	○
Jyoti	VMC640	Siemens	810D	400VAC	○	○	○	○	○	○	○	●	○	○
KAAST	KAAST	Fanuc			○	○	○	○	○	○	○	○	○	○
Lapmaster	Micron Macro-S/SK	Siemens	840Dpl	400VAC	●	●	○	○	●	●	●	●	●	●
Leadwell	LCV760	Fanuc	0iMF	200VAC	●	●	●	○	●	●	○	○	○	○
Makino	Slim3N	Fanuc	0iMD	400VAC	●	●	●	○	●	●	○	○	○	○
	PS95	Fanuc	?	?	○	○	○	○	○	○	○	○	○	○
Mazak	VCS430	Mazak (Mitsubishi)	SMART or MATRIX NEXUS 2	200VAC	○	●	●	○	○	●	○	○	○	○
	VCS530CSL	Mazak (Mitsubishi)	SMART	200VAC	○	●	●	○	○	●	●	●	●	●
	VTC800	Mazak (Mitsubishi)	Mazatrol	400VAC	○	●	●	●	○	●	●	●	●	●
POSmill	B800	FANUC	0iMD	200VAC	●	●	●	●	●	●	●	●	●	●
	C1050	Heidenhain	iTNC530 HSCI	400VAC	●	●	●	○	●	●	○	○	○	○
	C1050	Heidenhain	TNC620	400VAC	●	●	●	○	●	●	●	●	●	●
	C800	Heidenhain	iTNC530 HSCI	400VAC	●	●	●	○	●	●	●	●	●	●
Quaser	MV154	Fanuc	?	200VAC	○	○	○	○	○	○	○	○	○	○
	MV184	Fanuc	0iMFi	200VAC	●	●	●	●	●	●	○	○	○	○
	MV184	Heidenhain	TNC620	400VAC	●	●	●	○	●	●	○	○	○	○
	MV184	Siemens	828D	400VAC	●	●	●	○	●	●	○	○	○	○
	MV234	Fanuc	31iB	200VAC	●	●	●	●	●	●	○	○	○	○
	MV235	Fanuc	31iB	200VAC	●	●	●	●	●	●	○	○	○	○
Reckermann	Kombi 1300	Heidenhain	TNC320	400VAC	●	●	●	○	●	●	○	○	○	○
Republic Lagun	VGC5028	Fanuc	31i-B5	200VAC	○	○	○	○	○	○	○	○	○	○
Sauer	Lasertech 45	Siemens	840Dsl	400VAC	●	●	●	○	●	●	○	○	○	○
Spinner	MVC610	Siemens	840Dsl	400VAC	●	●	●	●	●	●	●	●	●	●
Tongtai	VU5	Siemens	840dDsl	400VAC	○	○	○	○	○	○	●	●	○	○
Wagner	WMC1100B	Siemens	828D	400VAC	○	○	○	○	○	○	○	○	○	○

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The right connector solution for every need: for the motor, machine and servo

Customer-provided additional cover on cabin wall penetration WDF.xx-K

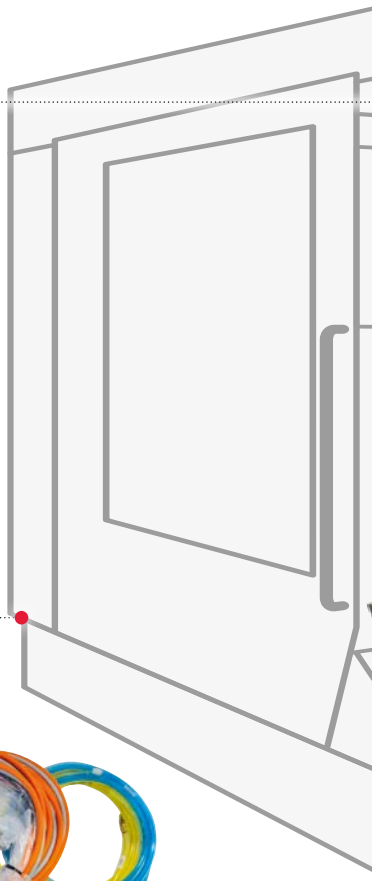
Mazak: Plug-in connection of top of cabin

Connectors suitable for Standard preparation for Kitagawa (Plug and Play): Pull original cable and connectors into top of cabin and connect to pL LEHMANN connectors.

Connectorless installation, performed through hole in cabin

View of outside

View of inside

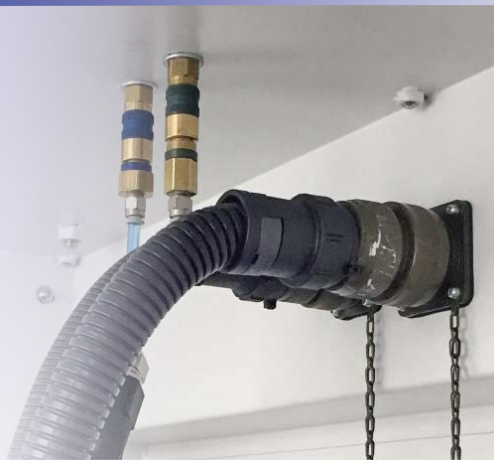


Control cabinet wall penetration, Harting, WDF.xx-S ...

Control cabinet wall penetration, Clipper, WDF.xx-S

WDF.M2-S-2

Depending on the preparation of the machine, loose mating connectors or fully wired wall penetrations for cabin and control cabinet are available

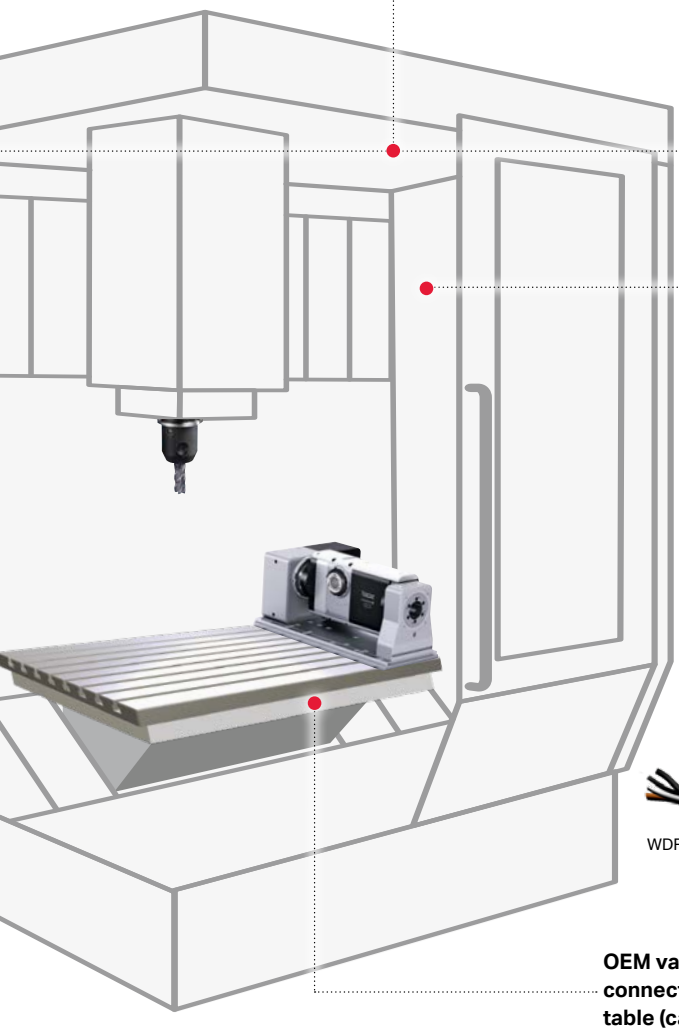


Wall mounting of WDF.xx-MIL

Cabin wall penetration, round connector (MIL), WDF.xx-R1(z)-S…

WDF.Fx-R1

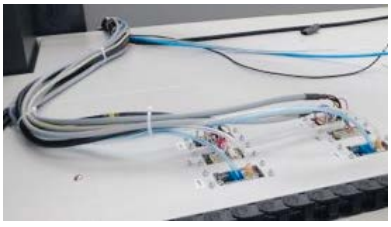
View of outside



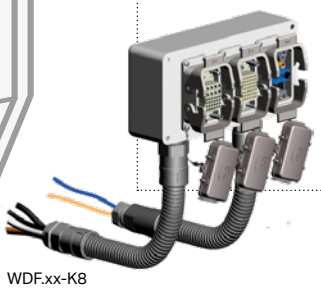
Harting mating connector (without cable)

WDF Harting M4

WDF.K8 inside



WDF.K8 outside

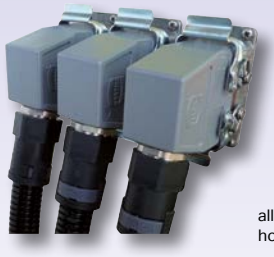


WDF.xx-K8

Cabin wall penetration, WDF.xx-K …

OEM variant: Plug-in connection under machine table (cannot be retrofitted)

HARTING K8



all in tight connector housings

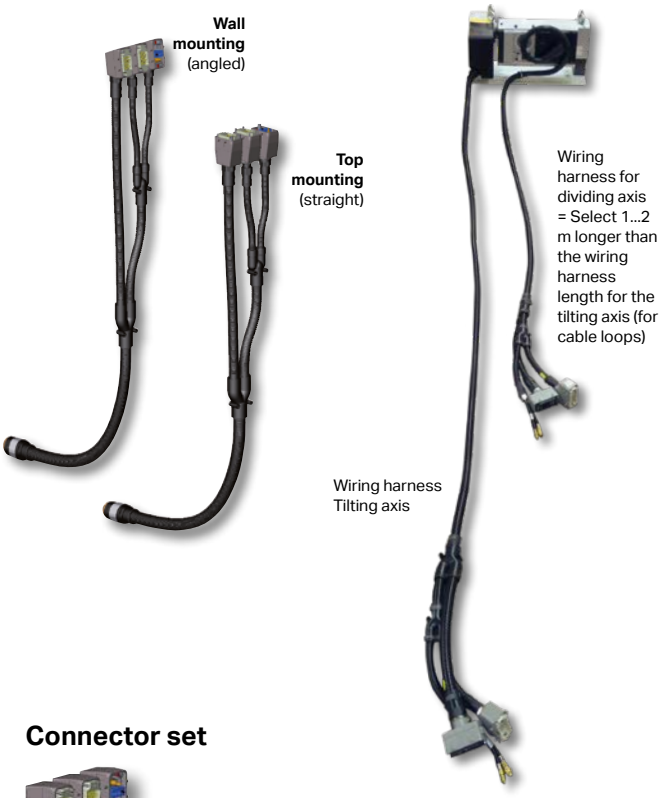
A cable set is an essential accessory to guarantee imperviousness.

HARTING M4

(pL-Standard)

Standard cabling HARTING

- High availability
- Connector is easy to disassemble when servicing is required
- Interface coding makes it impossible to mix up the connectors
- High degree of imperviousness (IP 65)
- Secure connection thanks to crimping
- Cables and hoses are relieved from strain
- Outflow on rotary table in just one flexible tube



Item no.

Please put together order number using the code key below.

KAB.F3-4.0w-K8w

Connector
o = without connector (free cable ends)
K8g = Harting HanK8/24, straight
K8w = Harting HanK8/24, angled
M4g = Harting M4, straight
R1 = MIL round connector 28-11N/20-29W (4th axis)
R1z = MIL round connector 28-11Z/20-29Z (5th axis)
FNC = Fanuc CNC 35iB
needed only if rotary table is equipped with angular position measuring system

Motor
F3 = Fanuc α
F4 = Fanuc β
M1 = Movinor / Mavilor ERN
M2 = Movinor / Mavilor EQN
MI2 = Mitsubishi HF/HG(-H)
SA = Sanyo
Y2 = Yaskawa SGMJV / SGMEV, SGM7J

Cable lengths
Standard = 2 m, 4 m, 6 m
Special = 1 m, 3 m, 5 m (additional charge)

Flexible tubing with splitter

Required when a cable set with free cable ends and connector set STE.xxx is used.

Item no.	Designation
KAB.1H-2	1 Splitter
KAB.1H-M4-2	1 Hose piece with reducer and flexible tubing
KAB.1Hw	1 Splitter with WMS
KAB.2H-2	2 Splitter

Outgoing cable on side

Item no.	Designation
KAB.507.L-Seite	Outgoing cable on side
KAB.507.R-Seite	

Connector set

Item no.	For machine...	Required	Weight [kg]
STE.BRa-2	Brother		0.38
STE.DMa	Deckel DMC xx3V, DMC xx4V, DMC xx35V (eco), DMC xx50V, Milltap 700 (only when 4th axis)	KAB.2H-2, when WMS in add. to STE.DMaw	0.72
STE.DMaw	WMS, Deckel DMC xx3V, DMC xx4V, DMC xx35V (eco), DMC xx50V, Milltap 700 (only when 4th axis)		0.33
STE.DMb-2	Deckel DMU 50/70	When WMS in add. to STE. DMbw	0.76
STE.DMbw-2	WMS, Deckel DMU 50/70		
STE.FAa-2	Fanuc Robodrill (Europe)		0.25
STE.FAb	Fanuc Robodrill (USA); 4th axis	KAB.1H-2	0.27
STE.FAbz	Fanuc Robodrill (USA); 5th axis	KAB.1H-2	0.27
STE.FNC	Fanuc-control system 35iB	KAB.2H-2	0.72
STE.HUb	Hurco VMX	KAB.1H-2	0.48
STE.K8g	Harting K8, straight	KAB.2H-2	1.10
STE.K8w	Harting K8, angled	KAB.2H-2	1.11
STE.M4g	Harting M4, straight	KAB.1H-M4-2	
STE.M4w	Harting M4, angled	KAB.1H-M4-2	
STE.MIb	Mikron VCE	KAB.2H-2	0.98
STE.R1	MIL round connector 28-11N/20-29W	KAB.2H-2, when WMS in add. to KAB1Hw	0.42
STE.R1z	MIL round connector 28-11Z/20-29Z	KAB.2H-2, when WMS in add. to KAB1Hw	0.42

MIL

Electric

Air/oil

Clipper (FANUC Robodrill Europe)

Electric

Air/oil

Machine-specific cabling

Item no.	For machine... (ready to plug in)
KAB.F3-1.0-K8w-2	Kitamura Mycenter 2XiF
KAB.F3-1.6-FAbz-2	Fanuc Robodrill MIL round connector
KAB.F3-4.5-FAa-2	Robodrill Clipper 4th axis, T-type rotary tables
KAB.F3-4.5w-FAa-2	Robodrill Clipper 4th axis, T-type rotary tables
KAB.F3-3.0-FAa-2	Robodrill Clipper, EA-, M-type rotary tables
KAB.F3-3.0-FAa2-2	Robodrill Clipper 5th axis, T-type rotary tables
KAB.F3-1.9-DMa-2	Deckel Maho DMC xx3V, xx4V, xx35V and xx35V eco
KAB.F4-3.0-DOa-2	DN Solutions 4th axis
KAB.F3-3.0-DOa-2	DN Solutions 4th axis
KAB.F3-3.0-DOa2-2	DN Solutions 5th axis
KAB.F3-3.0-HYa-2	Hyundai 4th axis
KAB.F3-2.0-HYaz-2	Hyundai 5th axis
KAB.F3-3.0-MKaT-2	Makino Slim3
KAB.F3-2.0-MKaSE-2	Makino Slim3
KAB.F3-3.0-MKbT-2	Makino PS95/105
KAB.F3-2.0-MKbSE-2	Makino PS95/105
KAB.F3-3.0-MKcT-2	Makino F
KAB.F3-2.0-MKcSE-2	Makino F
KAB.F4-4.5-FAa-2	Robodrill Clipper 4th axis, T-type rotary tables
KAB.F4-3.0-FAa-2	Robodrill Clipper, EA-, M-type rotary tables
KAB.F4-2.5-FAb-2	Fanuc Robodrill MIL round connector
KAB.M1-0.95-DMa-2	Deckel Maho DMC xx50V, 4th axis
KAB.M1-0.95-DMa2-2	Deckel Maho DMC xx50V, 5th axis
KAB.M1-0.95w-DMa-2	Deckel Maho DMC xx50V, 4th axis
KAB.M1-0.95w-DMa2-2	Deckel Maho DMC xx50V, 5th axis
KAB.M1-1.7-DMa-2	DMG Mori CMX xx00V
KAB.M1-1.9-DMa-2	DMC xx35V(eco) and Milltap 700, 4th axis
KAB.M1-1.9-DMa2-2	DMC xx35V(eco), 5th axis
KAB.M1-1.9w-DMa-2	DMC xx35V(eco) and Milltap 700, 4th axis
KAB.M1-1.9w-DMa2-2	DMC xx35V(eco), 5th axis
KAB.M1-1.7-DMb-2	Deckel Maho DMF and DMU, 4th axis
KAB.M1-1.7-DMb2-2	Deckel Maho DMF and DMU, 5th axis
KAB.M1-1.7w-DMb-2	Deckel Maho DMF and DMU, 4th axis
KAB.M1-1.7w-DMb2-2	Deckel Maho DMF and DMU, 5th axis
KAB.M1-3.0-DMc-2	Deckel Maho DMP (only when 4th/5th axis)
KAB.M1-3.0w-DMc-2	Deckel Maho DMP (only when 4th/5th axis)
KAB.M1-3.0-DOa-2	DN Solutions
KAB.M1-2.0-MIa-2	Mikron VCP 600/800 and VCP1000 Duro
KAB.M1-3.0-MIb-2	Mikron VCE 600 Pro - VCE 1400 Pro
KAB.M1-5.0-MIb-2	Mikron VCE 1600
KAB.M1-1.1-MIc-2	Mikron HSM
KAB.M1-1.5-MIc-2	Mikron HPM
KAB.MI1-3.0-MZa-2	Mazak, 4th axis
KAB.MI2-4.0-MZa-2	Mazak, 4th axis
KAB.MI2-3.0-MZaz-2	Mazak, 5th axis
KAB.SA-1.3-BRa-2	Brother Speedio RX1/RX2
KAB.SA-5.0-BRa-2	Brother Speedio SX1/SX2
KAB.SA-6.0-BRa-2	Brother Speedio SX1/SX2
KAB.Y2a-2.5-HUb-2	Hurco 4th axis: Hurco VM1, VM2, VM3, VMX10, VMX24, VMX30, VMX40; 4th/5th axis: VM1, VM2, VM3, VMX10
KAB.Y2-2.5-HUb-2	
KAB.Y2-2.5w-HUb-2	
KAB.Y2-3.5-HUb-2	Hurco 4th axis: Hurco VMX42; 4th/5th axis: VMX24, VMX30, VMX40, VMX42, VMX50, VMX64
KAB.Y2-3.5w-HUb-2	
KAB.Y2-5.0-HUb-2	Hurco 4th axis: Hurco VMX50, VMX60, VMX64, VMX84; 4th/5th axis: VMX60, VMX84
KAB.Y2-5.0w-HUb-2	
KAB.Y2a-5.0-HAa-2	Haas
KAB.Y2-5.0-HAa-2	Haas
KAB.Y2-5.0w-HAa-2	Haas

Mating plugs / wall penetrations

Item no.		Designation	Weight [kg]	
LOZ.Io		Air/oil		
WDF.K8	Mating plug	Harting HanK8/24	1.37	1
WDF.R1	Mating plug	MIL round connector 28-11N/20-29W		1
WDF.R1z	Mating plug	MIL round connector 28-11Z/20-29Z		1
WDF.WMS	Mating plug	M23, 17-pole		
WDF.WMS-Fx-PCR	Mating plug	M23, 17-pole, Fanuc		
WDF.WMS-MIx-10P	Mating plug	M23, 17-pole, Mitsubishi		
WDF.M1-DOa		Encoder plug for DN Solutions	0.46	2
WDF.Fx-S-2		Control cabinet, per axis for Fanuc		2
WDF.Fx-Sw-2		WMS, control cabinet, per axis for Fanuc		2
WDF.Fx-R1(z)-S-2		Control cabinet, per axis for Fanuc		2
WDF.Mx-S-2		Control cabinet, per axis for Mavilor	2.81	2
WDF.Mx-Sw-2		WMS, control cabinet, per axis for Mavilor		2
WDF.M2-R1(z)-S-2		Control cabinet, per axis for Mavilor		2
WDF.MIx-S-2		Control cabinet, per axis for Mitsubishi HF-KP, Hx-(H)		2
WDF.Fx-K-2		Cabinet wall, per axis for Fanuc		3
WDF.Fx-Kw-2		WMS, cabinet wall, per axis for Fanuc		3
WDF.Fx-M4-2		Cabinet wall, per axis for Fanuc		2
WDF.M1-M4-2		Cabinet wall, per axis for Mavilor ERN		2
WDF.M2-M4-2		Cabinet wall, per axis for Mavilor EQN		2
WDF.M2-M4w-2		Cabinet wall, per axis for Mavilor EQN, WMS Endat		2
WDF.Mx-K-2		Cabinet wall, per axis for Mavilor	6.88	3
WDF.Mx-Kw-2		WMS, Cabinet wall, per axis for Mavilor		3
WDF.Mx-M4-2		Cabinet wall, per axis for Mavilor		2
WDF.MIx-K-2		Cabinet wall, per axis for Mitsubishi HF-KP, Hx-(H)		3
WDF.MIx-M4-2		Cabinet wall, per axis for Mitsubishi HF-/HG-(H)		2
WDF.SIx-M4-2		Cabinet wall, per axis for Siemens DriveCliQ BR500		2
WDF.Io		Air/oil	0.09	
WDF.h		Hydraulics (2 fluted)		

WMS = Angular position measuring system

1 Loose mating plugs

– Mating plug, including mounting screws
– Delivered loose
– incl. drilling template for quick installation

2 Control cabinet wall penetration

– Rear side open
– All mating plugs, incl. mounting screws
– Fully wired connections, 5 m of cable and hoses
– At the machine end, with servo mating plug
– incl. drilling template

3 Cabinet wall penetration

– Rear side closed
– Fully wired connections, 10 m of cable and hoses, 5 m of flexible tubing
– At the machine end, with servo mating plug
– incl. drilling template for quick installation

Option: Additional cable for retrofitting WMS
KAB.WMS-14.0-o

Cable run in flexible tubing, 14 m long, without connector

CNC control system FANUC 35iB: Manual control pendant

Multi-functional manual operating device which can be used for both this CNC control system as well as for machines equipped with FANUC CNC.

Please view the appropriate instructions on our website for functions and operation www.lehmann-rotary-tables.com

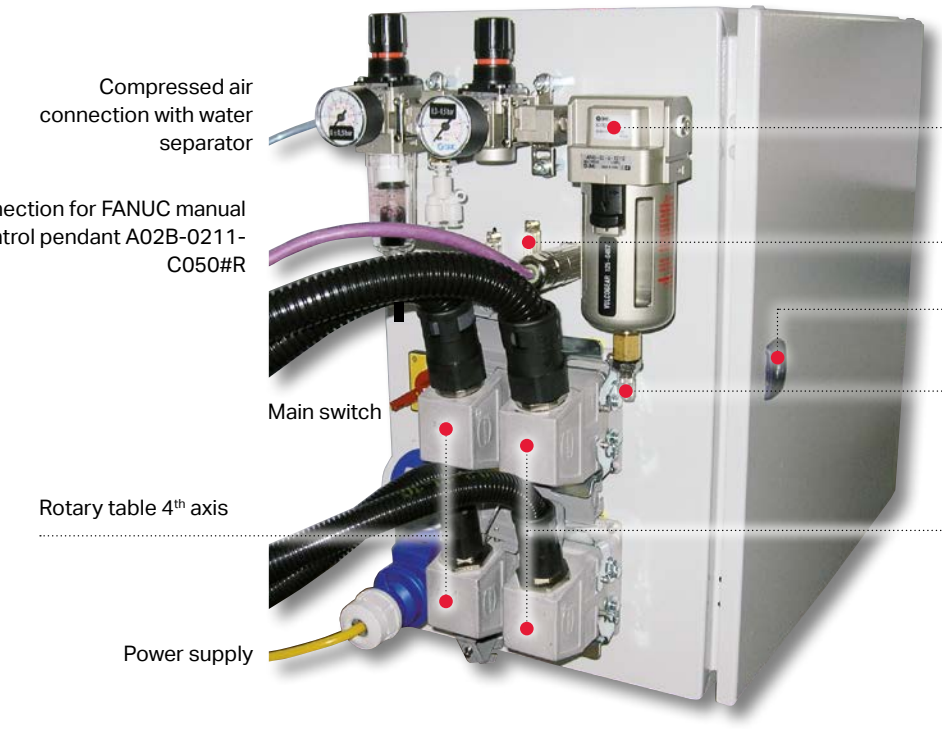
CNC control system for 1 or 2 axes

Original FANUC components – worldwide on-site service guaranteed!

Control cabinet

All connections and operating elements on the side wall on the left. Control cabinet doors for easy access to components. Control cabinet suitable for one- or two-axis models.

Control cabinet dimensions (without connectors):
230 V version: H = 500, B = 500, T = 300 mm

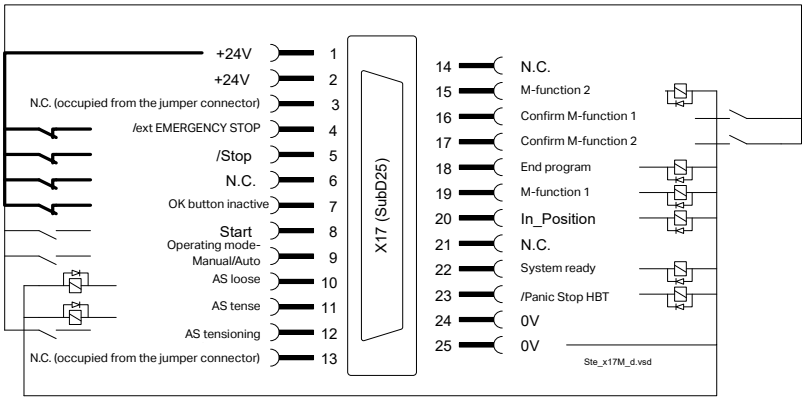


For rotary table cabling, see **p. 80**; if not stated otherwise, all cables are 4 m, cable for manual control pendant is 5 m

Connector X17 for connecting the 4th and 5th axis

The jumper connectors supplied with the product enable the control system to be operated without these axes connected.

Connections necessary for operation are shown in bold.



Wide range of functions

EA-530 with Fanuc 35iB: Drive data reduced by approx. 30%

Order items

Item no.	Designation	Weight [kg]	Dimensions / remarks
CNC.1AX-FA	CNC control system Fanuc 35iB, 1-axis		see **pp. 82/83**
CNC.2AX-FA	CNC control system Fanuc 35iB, 2-axis		see **pp. 82/83**
CNC.MFK	M-function cable	1.05	only in conjunction with CNC.1AX-FA or CNC.2AX-FA
CNC.HaKab-10m	Handycable	1.29	10 m
CNC.WMS-1	Option for angular position measuring system		Only in conjunction with CNC.1AX-FA
CNC.WMS-2	Option for angular position measuring system		Only in conjunction with CNC.2AX-FA
CNC.BAT	Backup battery option	0.05	Only in conjunction with CNC.1AX-FA or CNC.2AX-FA
CNC.Trafo	Transformer	15.11	For Fanuc-CNC (400 V to 200 V)
CNC.TRE	Option: Indexing calculator		

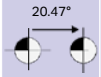
Technical data

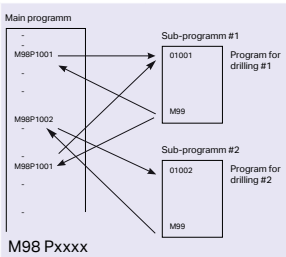
Features	Specifications	Remarks
1. Programmable angle	0.001 ... 9999.999°	freely programmable
2. Sub-programs	Yes	can be nested in 4 ways
3. Total storage capacity	4000 characters (bytes)	Optional 128 kBytes
4. Number of programs, incl. macros	63	Optional 400
5. Program storage buffering	via battery	
6. Programming options	Absolute, incremental	can be combined in any way you wish
7. Reference point approach	Yes, by means of reference cam and measuring system	optional absolute
8. Reference point shift	Yes	via parameters
9. Manual feed	creep, rapid traverse, gradual	
10. Feed programming	Yes	
11. Repeat function	programmable loop	
12. Software range limit switch	Yes	adjustable via parameters
13. Hardware range limit switch	Yes	
14. Spindle clamping	automatic	can be switched on / off
15. Monitoring of spindle clamping	Yes	
16. «Rotary table in position» output	Yes	
17. External «Manual/Automatic» input	Yes	
18. «Ready for operation / fault detection» output	Yes	
19. External «Enable turning» input	Yes	
20. Free M-function outputs	5x	e.g. to activate an automatic tailstock
21. «External cycle start» input	Yes	
22. «External cycle stop» input	Yes	
23. «External EMERGENCY STOP» input	Yes	1-channel
24. OK button	single stage	
25. Fault message system on manual control pendant	Clear text	
26. Motor output	AC servomotor	1 or 2 axes
27. Motor measuring system input	FANUC serial	
28. Position measuring system input	FANUC serial	Optional with SDU box
29. Power supply	200...240 VAC 50/60 Hz	1-phase
30. Interface	USB slot, PC card	Ethernet (option)
31. Minimum required signals from the machine	acknowledgeable M-function EMERGENCY STOP connection	if connection to machine CNC required
32. External single block position specification	via RS232 option	not provided
33. Program skips	by using GoTo command	must be done with block numbers (Nxxxx)
34. Continuous turning	Yes	e.g. for grinding work
35. Sub-programs	Yes	can be nested in 4 ways
36. External «EMERGENCY STOP» output	Yes, from manual operating device	1-channel

Easy to program

Program functions

Angular positioning 	G91 G00 A45	G91 = Incremental G00 = Rapid traverse A45 = 45° with A-axis
Circle milling 	G91 G01 A45 F100	G01 = Feed F = °/min
Unequal divisions 	G91 G00 A45; M00 (cycle stop); A35.12; M00 (cycle stop); A61.876; M00 (cycle stop); A93; M00 (cycle stop); A67.34; M00 (cycle stop); A57.3;	
Auto reference 	G28 A00	Moves to reference position

Incremental / absolute divisions 	G91 G00 A45; M00 (cycle stop); A181.567; M00 (cycle stop); A90.987; M00 (cycle stop); G90 A0;	
Workpiece zero point offset 	G53 = Delete zero point offset G54 = Set zero point offset	
Continuous turning 	M04 S0.5; G04 X30000; M05	30 seconds continuous turning in counterclockwise direction at 0.5 [1/min] (only 4th axis)
M-function	M110 M111 M112 M113 M114	Acknowledgeable M-functions, parameterizable

Subprogram call  M98 Pxxxx		
Delay time 	G04 X1000	Delay time 1 second
Cycle stop	M00	After each motion, an M00 must be programmed so that the program cycle can be stopped.
Program end	M30	M30 = Jump to program start.

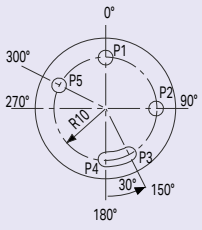
Programming

Programming uses the internationally known ISO code.

Programming example 1 – axis:

%;
O0001(test program 1);

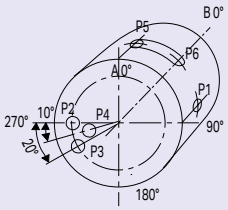
N10 G90 G00 A0 (P1);
N20 M00 (cycle stop);
N30 G90 G00 A90 (P2);
N40 M00 (cycle stop);
N50 G90 G00 A150 (P3);
N60 M00 (cycle stop);
N70 G91 G01 A30 F40 (P4);
N80 M00 (cycle stop);
N90 G90 G00 A300 (P5);
N100 M30 (PG end)



Programming example 2 – axis:

%;
O0001(test program 2);

N10 G90 G00 A90 B0 (P1);
N20 M00 (cycle stop);
N30 G90 G00 A270 B90 (P2);
N40 M00 (cycle stop);
N50 G91 G00 A-20 B0 (P3);
N60 M00 (cycle stop);
N70 G91 G00 A10B0 (P4);
N80 M00 (cycle stop);
N90 G90 G00 A0 B0 (P5);
N100 M00 (cycle stop);
N110 G91 G01 A45 B0 (P5);
N120 M30 (PG end);



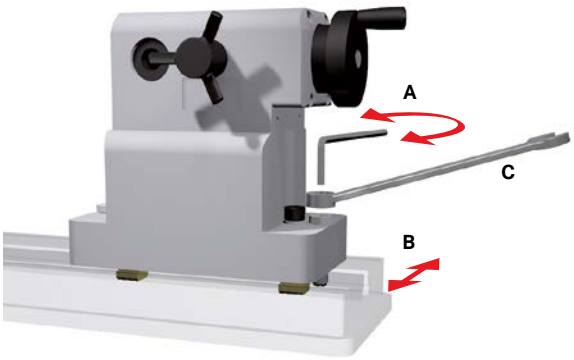
Example of M-functions

CNC machine program	Fanuc CNC 35iB program
N... N1030 G90 G00 X4 Y14 Z40; N1040 M?? →	%; O1001(FanucNC PG); N10 G90 G00 A90; N20 M00 (cycle stop);
N1050 G90 G00 X8 Y4 Z30; N1060 M?? →	N30 G90 G00 A45; N40 M00 (cycle stop);
N1070 G90 G00 X16 Y2 Z33; N1080 M?? →	N50 G90 G00 A00; N60 M30 (PG end)
N1090 G90 G00 X16 Y2 Z33; N1100 M30	

M?? = M-function according to CNC machine

Align and secure correctly on the machine table: **lineFIX** and **zentriX**

zentriX alignment system (example: tailstock on longFLEX)



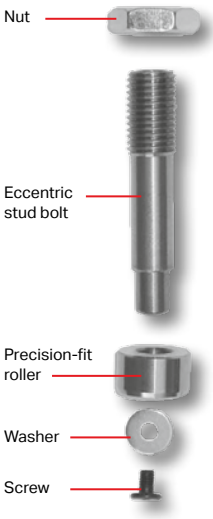
Item no.	Designation	Slot width	Weight [kg]
AUR.zX-12	**zentriX** alignment pin, 1 pair	12g6	0.10
AUR.zX-14		14g6	0.10
AUR.zX-16		16g6	0.11
AUR.zX-18		18g6	0.12

Rotating the Allen wrench **(A)** pushes the tailstock against the base plate **(B)** by means of an eccentric screw. Once the desired position is reached, the eccentric screws is secured with a hexagon nut **(C)**. Finished. For additional information, please refer to the installation and commissioning instructions at: www.lehmann-rotary-tables.com

available for ...

All longFLEX versions

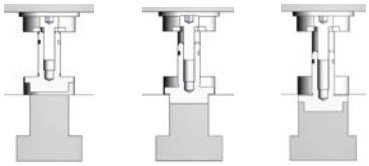
All tailstocks



lineFIX alignment system for T-type rotary tables (not for TIP)

Y-mounting (crosswise)

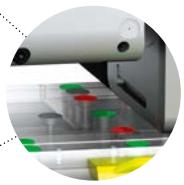
Principle of operation



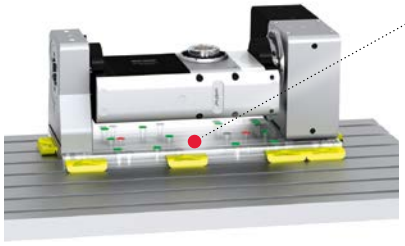
retracted, not used

Alignment element in slot 1 (e.g. 14 mm)

Alignment element in slot 2 (e.g. 18 mm)



- Position of the lineFIX pins.
- Hole pattern for 100 and 125 mm.
- Clamping claws (if necessary)



X-mounting (lengthwise)

As a standard feature, every T-type rotary tables has two **lineFIX** pins (for a slot width of 14 or 18 mm). Depending on the arrangement, four different precision-fit holes are available. Every base plate has a hole pattern that matches a T-slot spacing of 100 mm and 125 mm. After being set up initially with **lineFIX** pins, the rotary table undergoes final adjustment and is then secured in position using these holes.

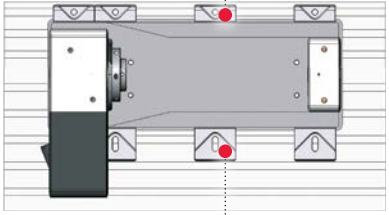
Item no.	Designation	Slot width	Weight [kg]
AUR.iX-12-16	Option (1 pair)	12/16	
AUR.iX-14-18	Standard (1 pair)	14/18	0.03
LOZ.Bride-L	Long clamps, for 63/125 grid pattern*		0.93

* When installed properly as described in the operating manual, the hold-down force per clamping claw (short or long) is 20 kN.

Version with clamping claws

If no hole pattern matches the slots, the rotary table can be secured by means of clamping claws.

Short clamping claws (standard scope of delivery)



Long clamping claws (Item no.: **LOZ.Bride-L**): for use when mounting at intermediate positions.

GLA.520hd


GLA.TOP2 with 2,000 Nm


GLA.TOP1 with 300 Nm

Counter bearing, incl. bearing pin

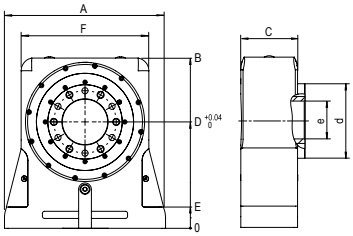
- Compact and stable counter bearing with large roller bearing
- Prepared for automatic clamping, oil connection from below and from side
- Max. allowed hydraulic pressure 220 bar (GLA.TOP2) or max. 150 bar (GLA.TOP1)
- Center height 0 +0.04 mm
- Delivered with bearing pin

	Item no.	Clamping torque* [Nm]	Max. pull-out torque [Nm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	d [mm]	e [mm]	Weight [kg]
507	**GLA.TOP1-110**	300	not available	155	170	55	110	30	110	70	46.55	7
	GLA.TOP1-150	300		155	210	55	150	70	110	70	46.55	9
510, 520, 530	**GLA.TOP2-150-2**	2,000	on request	227	240	80	150	30	179	105	64	21
	GLA.TOP2-180-2	2,000		227	270	80	180	60	179	105	64	24
	GLA.TOP2-220-2	2,000		227	310	80	220	100	179	105	64	29
	GLA.TOP2-280-2	2,000		227	370	80	280	160	179	105	64	36
all sizes	**GLA.HYD-fix**	Hydraulic kit fix										
	GLA.HYD-vario-2	Hydraulic kit vario**										

* at hydraulic pressure = 220 bar or150 bar
** in combination with EA-520 or EA-530 and suitable counter bearing, the pull-out torque is reduced by approx. 30% (applies to rotary table and counter bearing)

Suitable alignment elements

	Item no.	Designation	Slot width	Weight [kg]
GLA.TOP1	**AUR.iX-12-16**	Option (1 pair)	12/16	
	AUR.iX-14-18	Standard (1 pair)	14/18	0.03
GLA.TOP2	**AUR.St-12**	Alignment T-slot nuts, 1 pair	12g6	0.07
	AUR.St-14		14g6	0.07
	AUR.St-16		16g6	0.07
	AUR.St-18		18g6	0.07



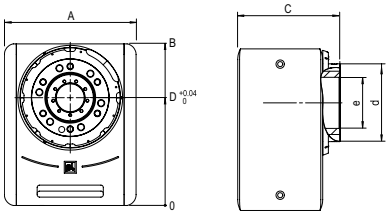
GLA.510hd-150, GLA.520hd-180

NEW

- 2x radial and axial bearings (as on rotary table)
- Prepared for automatic clamping, oil connection from below and from side
- Max. allowed hydraulic pressure 220 bar
- Center height 0 +0.04 mm

Item no.	Clamping torque* [Nm]	Max. pull-out torque [Nm]	A [mm]	B [mm]	C [mm]	D [mm]	d [mm]	e [mm]	Weight [kg]
GLA.510hd	800	2000	170	215	150	150	80	34	
GLA.520hd	2000	3900	220	270	171	180	130	46	

* at hydraulic pressure = 220 bar



CYMAX hydraulic unit

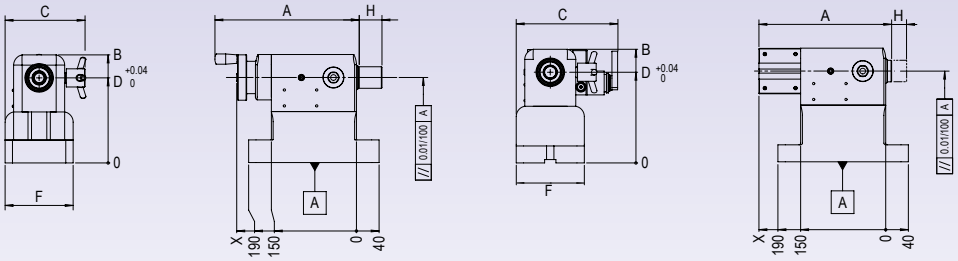
Item no.	Designation	Technical data	Weight [kg]
AGG.CY1-2*	Cymax hydraulic unit	1 clamping circuit, 400 V (can be converted to 200 V)	
AGG.CY2-2*	Cymax hydraulic unit	2 clamping circuits, 400 V (can be converted to 200 V)	
AGG.LEIT-05-2	Hydraulic line with threaded fitting (supplied loose)	1 pair (2 pieces), 5 m	

* Preparing the machine for connection of the unit is the customer's responsibility

- 3x400 VAC (380–480 V, 50–60 Hz) can be converted to 3x200 VAC (200–280 V, 50–60 Hz)
- Control voltage U = 24 V DC
- Main pressure 10–125 bar

gripPACK suitable only for clamping cylinder with 2.5 mm stroke (must be ordered separately)

Item no.	Designation	Technical data	Weight [kg]
AGG.510-ph	Pressure intensifier package, integrated into cover, installed opposite motor (see image)	Clamping / unclamping: Manually via hand switch. No separate compressed air infeed necessary	
AGG.520-ph			



measured without load, quill extended halfway

Standard design for all types = right-handed version (as shown)

Center height D [mm]	Item no.	Designation	A [mm]	B [mm]	C [mm]	F [mm]	H [mm]	manual	pneu-matic [2]	hydraulic [3]	Weight [kg]	✗	✓
110	**RST.COM-110m** [4]	COMPACT tailstock	222	128	130	100	30	•			11		•
	RST.LIG-110m	LIGHT tailstock	255		142		40	•			20		•
	RST.LIG-110p [1]	LIGHT tailstock	225	150	184	120	40		•		20		•
	RST.LIG-110h [1]	LIGHT tailstock	229		168		40			•	24		•
150	**RST.COM-150m** [4]	COMPACT tailstock	222	168	130	100	30	•			16		•
	RST.LIG-150m	LIGHT tailstock	255		142		40	•			25		•
	RST.LIG-150p [1]	LIGHT tailstock	238	190	184	120	40		•		25		•
	RST.LIG-150h [1]	LIGHT tailstock			168		40			•	29		•
180	**RST.LIG-180m**	LIGHT tailstock	255		142		40	•			30		•
	RST.LIG-180p [1]	LIGHT tailstock	238	220	184	120	40		•		30		•
	RST.LIG-180h [1]	LIGHT tailstock			168		40			•	34		•
220	**RST.LIG-220m**	LIGHT tailstock	255		142		40	•			35		•
	RST.LIG-220p [1]	LIGHT tailstock	238	260	184	120	40		•		35		•
	RST.LIG-220h [1]	LIGHT tailstock			168		40			•	40		•
280	**RST.LIG-280m**	LIGHT tailstock	255		142		40	•			42		•
	RST.LIG-280p [1]	LIGHT tailstock	238	310	184	120	40		•		42		•
	RST.LIG-280h [1]	LIGHT tailstock			168		40			•	47		•
Tailstock Option / Accessories	**RST.L-m**	Left-hand version, manual									0.00		•
	RST.L-p	Left-hand version, pneumatic									0.00	•	
	RST.R-pmh	pneumatic, with manual lever valve									0.09	•	
	RST.L-pmh	Left-hand version, pneumatic, with manual lever									0.09	•	
	RST.L-h	Left-hand version, hydraulic										•	
	RST.Hub-p	Stroke monitoring for tailstock (pneumatic), free cable ends 5 m of which 4.5 m in flexible tubing; stroke 5 mm shorter									0.73	•	
	RST.Hub-h	Stroke monitoring for tailstock (hydraulic), free cable ends 5 m of which 4.5 m in flexible tubing; stroke 5 mm shorter									0.82	•	
	RST.SPI-MK2s	Fixed center, hardened steel					MK2						•
	RST.SPI-MK3s	Fixed center, hardened steel					MK3				0.37		•
	RST.SPI-MK2hm	Fixed center, HM use					MK2						•
	RST.SPI-MK3hm	Fixed center, HM use					MK3				0.37		•

All LIGHT tailstocks: Parallelism of quill axis to alignment groove adjustable thanks to **zentriX** system (see operating manual)

[1] Delivered as standard without manual lever valve. Can be ordered as option.
[2] Impact force approx. 660...2,000 N at 2...6 bar air pressure
[3] Impact force approx. 3,800 N at max. 24 bar oil pressure
[4] Delivered with center height +/-0.01 mm

Morse taper size (DIN 228)
– COMPACT = MK 2
– LIGHT = MK 3

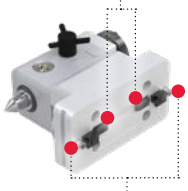
✗ CANNOT be retrofitted
✓ can be retrofitted

Suitable alignment elements

Item no.	Designation	Slot width	Weight [kg]
AUR.zX-12	**zentriX** alignment pin, 1 pair	12g6	0.10
AUR.zX-14		14g6	0.10
AUR.zX-16		16g6	0.11
AUR.zX-18		18g6	0.12
AUR.St-12	Alignment T-slot nuts, 1 pair	12g6	0.07
AUR.St-14		14g6	0.07
AUR.St-16		16g6	0.07
AUR.St-18		18g6	0.07

Possible alignment elements

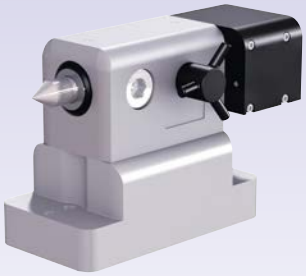
Alignment T-slot nuts



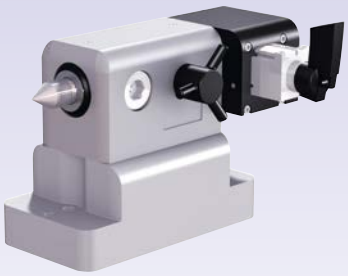
zentriX alignment pins

Revolving centers see **p. 175**

Manual version (right-hand)

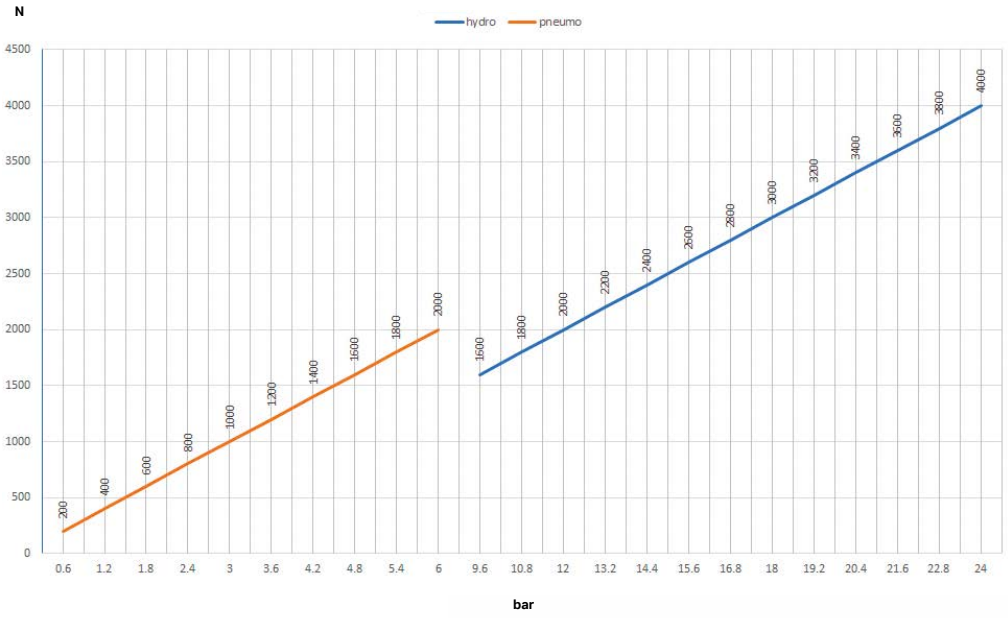


Pneumatic version (right-hand)

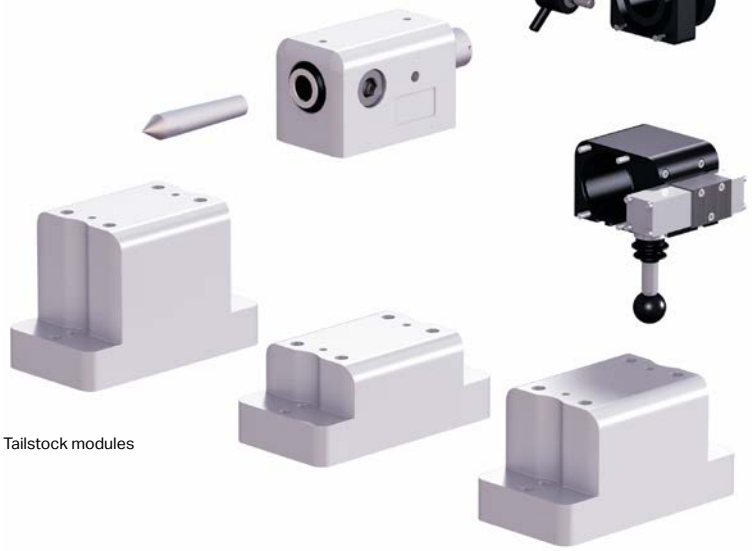


Pneumatic version (right-hand) with manual lever valve (option)

Pressure-force diagram



Left-hand model.

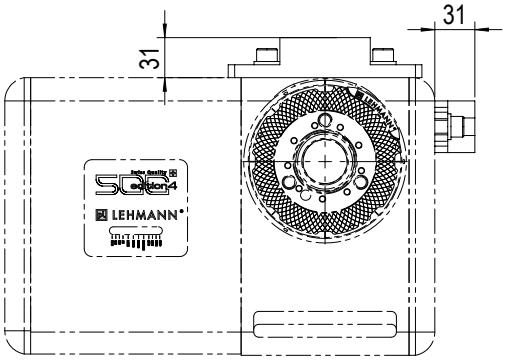


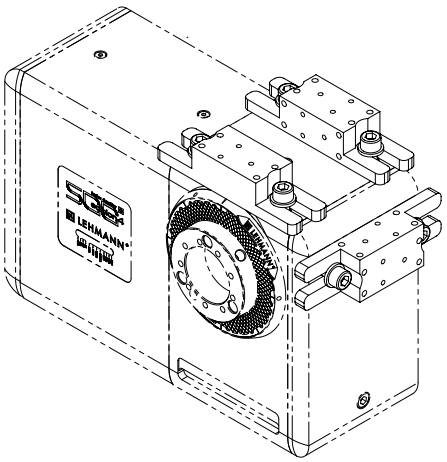
Tailstock modules

Support for mounting various buttons for tool break monitoring

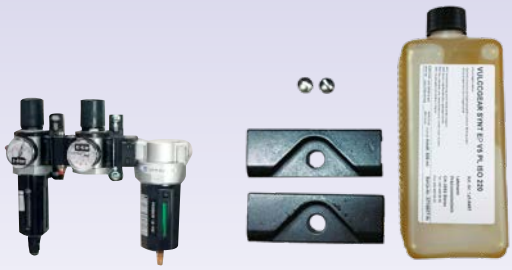
Item no.	Designation	For product	Weight [kg]
LOZ.5xx-WZB	Tool breakage sensor fastening	EA-510, EA-520	

Compatible with
- Marposs (ML75)
- Blum (Micro Compact NT)
- Renishaw (NC4+)





Mounting and accessories packages for standard rotary tables

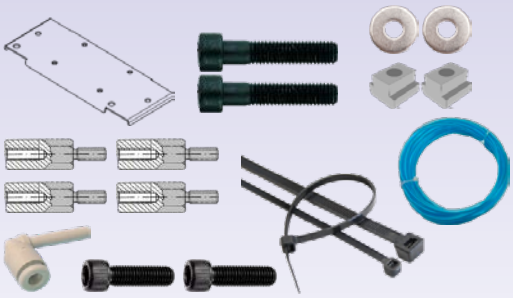


LOZ.5xx-EA

	Item no.	For machine	For product	Weight [kg]	Maintenance unit	Gear oil, clamps, steel plugs	Fastening material on machine table (screws, T-slot nuts)	Alignment slot nut (1 pair)	Mating plug, air / oil
50x	**LOZ.507-EA**		EA-507	2.87	x	x			
	LOZ.507-LFX		longFlex	7.03	x	x			
	LOZ.USB-EA		EA-508 light			x*			
51x	**LOZ.510-EA**		EA-510	3.16	x	x			
	LOZ.510-LFX		longFlex	7.41	x	x			
52x	**LOZ.520-EA**		EA-520	3.16	x	x			
	LOZ.520-LFX		longFlex	7.41	x	x			
530	**LOZ.530-EA**		EA-530	4.01	x	x			
all sizes	**LOZ.5x0-EAo**		EA-510/520.Ox		x	x			
	LOZ.5xx5xx-T1+2		T1/T2-5xx5xx		x	x			
	LOZ.5xx5xx-T3+4		T3/T4-5xx5xx		x	x			
	LOZ.5xx5xx-TF		TF-5xx5xx		x	x			
	LOZ.5xx-GLA		GLA.5xx			x*			
	LOZ.5xx-M2		M2-5xx	4.02	x	x			
	LOZ.5xx-M3+4		M3/M4-5xx	5.74	x	x			
	LOZ.5xx-RFX		rotoFIX	5.73	x	x			
	LOZ.GLA-TOP		Counter bearing	0.87		x*			
	LOZ.Nute12-EA		EA, 12 mm				x		
	LOZ.Nute14-EA		EA, 14mm				x		
	LOZ.Nute14-Tx		Mx-/Tx, 12 mm				x		
	LOZ.Nute16-EA		EA, 16mm				x		
	LOZ.Nute16-Tx		Mx-/Tx, 16mm				x		
	LOZ.Nute18-EA		EA, 18mm				x		
	LOZ.Nute18-Tx		Mx-/Tx, 18mm				x		
	LOZ.RST-14**		LIGHT tailstock, 14 mm				x		
	LOZ.RST-14St***		Reitstock LIGHT, 14mm				x		
	LOZ.RST-18**		LIGHT tailstock, 18mm				x		
	LOZ.RST-18St***		Reitstock LIGHT, 18mm				x		

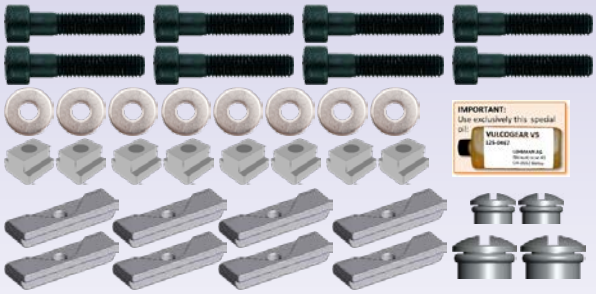
* without gear oil
** with zentriX alignment system (instead of alignment slot nut) and with a fixed center MK3
*** with fixed tip MK3

Mounting and accessories packages for machine-specified rotary tables



LOZ.FAN-EA

	Item no.	For machine	For product	Weight [kg]	Maintenance unit	Gear oil, clamps, steel plugs	Fastening material on machine table (screws, T-slot nuts)	Alignment slot nut (1 pair)	Mating plug, air / oil
Machine-specific installation kits	**LOZ.AKI-Vx-Tx**	Akira Seiki Vx	Tx				x		x
	LOZ.AWE-EA	AWEA AF/BM Series	EA				x	x	x
	LOZ.AWE-Tx	AWEA AF/BM Series	Tx				x		x
	LOZ.BRO-22B-Tx	BROTHER TC-22B	Tx						
	LOZ.BRO-32BQT	BROTHER 32BnQT							
	LOZ.BRO-RX1	BROTHER RX1							
	LOZ.BRO-S2D-EA	BROTHER S2Dx	EA						
	LOZ.BRO-SX1-EA	BROTHER S300X1/S500X1/S700X1	EA				x	x	x
	LOZ.BRO-SX1-Tx	BROTHER S300X1/S500X1/S700X1	Tx				x		x
	LOZ.CHE-EA	Chevalier SMART III	EA	0.56			x	x	x
	LOZ.CHI-xZ-Tx	CHIRON DZ, FZ	Tx						
	LOZ.DMG-xxxV	Deckel DMC xxxV	EA	1.74		x	x	x	
	LOZ.DMG-CMX-EA	DMG CMX xx00V	EA	1.84		x	x	x	
	LOZ.DMG-CMX-Tx	DMG CMX xx00V	Tx	5.48		x	x		
	LOZ.DMG-DMF	Deckel DMF				x	x	x	
	LOZ.DMG-DMF (530)	Deckel DMF	EA	1.96 (3.24)		x	x	x	
	LOZ.DMG-DMU	Deckel DMU	EA	1.84		x	x	x	
	LOZ.DMG-JP-EA	DMG Mori CMX xx00V + NVX (JP made)	EA				x	x	
	LOZ.DMG-JP-Tx	DMG Mori CMX xx00V + NVX (JP made)	EA				x		
	LOZ.DOO-EA	DN Solutions DNM/DVM/VM & Mynx	EA	1.42			x	x	x
	LOZ.DOO-Tx	DN Solutions DNM/DVM/VM & Mynx	Tx				x		x
	LOZ.DOO-VC-EA	DN Solutions VC430/VC510	EA				x		x
	LOZ.FAN-EA	Fanuc Robodrill	EA				x		
	LOZ.FAN-Tx	Fanuc Robodrill	Tx	1.65			x		
	LOZ.HAA-EA	Haas	EA				x		
	LOZ.HAA-Tx	Haas	Tx/Mx				x		
	LOZ.HAR-EA	Hardinge V480/710	EA				x	x	x
	LOZ.HAR-Tx	Hardinge V480/710	Tx				x		x
	LOZ.HAR-GX-EA	GX Series and Hardinge V1000	EA	0.86			x	x	x
	LOZ.HAR-GX-Tx	GX Series and Hardinge V1000	Tx				x		x
	LOZ.HUR-VMX.1a	HURCO VMX24/30							
	LOZ.HUR-VMX.2a	HURCO VMX24/30							
	LOZ.HUR-VMX.2b	HURCO VMX42							
	LOZ.HWA-VESTA-EA	HWACHEON VESTA	EA				x	x	x
	LOZ.HWA-HIT-Tx	HWACHEON HIT400	Tx				x		x



LOZ.DMG-CMX-Tx

LOZ.DOO-EA

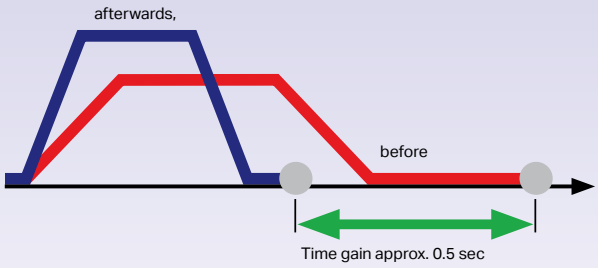
	Item no.	For machine	For product	Weight [kg]	Maintenance unit	Gear oil, clamps, steel plugs	Fastening material on machine table (screws, T-slot nuts)	Alignment slot nut (1 pair)	Mating plug, air / oil
Machine-specific installation kits	**LOZ.HYU-EA**	Hyundai WIA F	EA	0.70			x		x
	LOZ.HYU-Tx	Hyundai WIA F	Tx				x		x
	LOZ.HYU-IC-EA	Hyundai WIA iCUT	EA				x		x
	LOZ.HYU-IC-Tx	Hyundai WIA iCUT	Tx				x		x
	LOZ.HYU-KF-EA	Hyundai WIA KF	EA				x	x	x
	LOZ.HYU-KF-Tx	Hyundai WIA KF	Tx				x		x
	LOZ.LEA-EA	Leadwell V	EA				x		x
	LOZ.LIT-EA	Litz TV	EA				x	x	x
	LOZ.LIT-Tx	Litz TV	Tx				x	x	x
	LOZ.MAK-PS-EA	Makino PS95/105	EA				x	x	x
	LOZ.MAK-SLI-EA	Makino Slim3n	EA				x		
	LOZ.MAK-SLI-Tx	Makino Slim3n	Tx	0.66			x		
	LOZ.MAZ-VCP-EA	Mazak VCP (without APC)	EA				x	x	x
	LOZ.MAZ-VCP-2EA	Mazak VCP (with APC)	2 x EA or 2 x M				x		x
	LOZ.MAZ-VCx-EA	Mazak VCS/VCN	EA				x	x	x
	LOZ.MAZ-VCx-Tx	Mazak VCS/VCN	Tx						
	LOZ.MAZ-VTC-EA	Mazak VTC	EA				x	x	x
	LOZ.MAZ-VTC-Tx	Mazak VTC	Tx				x		x
	LOZ.MIC-Tx	Microlution ML10	Tx						
	LOZ.MIK-HxM	Mikron HSM/HPM	EA	1.74		x	x	x	
	LOZ.MIK-VCE	Mikron VCE			x	x	x	x	
	LOZ.MIK-VCE-530	Mikron VCE			x	x	x	x	
	LOZ.MIK-VCE-Tx	Mikron VCE	Tx		x	x	x		
	LOZ.PRI-EA	Priminer (Kaast) VxL	EA				x	x	x
	LOZ.PRI-Tx	Priminer (Kaast) VxL	Tx	1.94			x		x
	LOZ.PRI-V6-EA	Priminer (Kaast) V6L	EA				x	x	x
	LOZ.QUA-EA	Quaser MV	EA	0.49			x		
	LOZ.QUA-Tx	Quaser MV	Tx	1.70			x		
	LOZ.ROK-EA	RokuRoku CEGA	EA				x	x	x
	LOZ.STA-EA	STAMA MC331	EA		x	x***			
	LOZ.STA-Tx	STAMA MC331	Tx		x	x***			
	LOZ.TON-EA	Tongtai VU-5	EA				x		
	LOZ.TON-Tx	Tongtai VU-5	Tx				x*		
	LOZ.WEL-EA	Wele AQ	EA				x	x	x
	LOZ.WEL-Tx	Wele AQ	Tx				x		x
	LOZ.WER-EA	WERTH Messtechnik (51x-52x)	EA			x**			
	LOZ.WER-T1	WERTH Messtechnik	T1			x**			
	LOZ.WER-TF	WERTH Messtechnik	TF			x**			

* incl. LOZ.Bride-L

** without gear oil

*** without clamps

We support you from A to Z, whether you have problems or when it's a matter of optimization



optimization of the cycle time (CMS **position**)

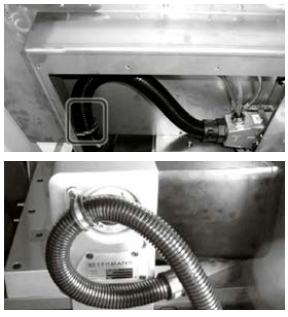
Commissioning Service

Commissioning of new machines with controls from Siemens, Heidenhain, Fanuc, Brother, Hurco, Mitsubishi, Haas, Mazak. In addition to **basic commissioning** (see **p. 97**), we optimize for positioning and simultaneous operation through our application support on request.

Goal
Improved application, optimal adjustment of rotary table and machine, higher productivity

For item no., see **p. 98**

3-D measurement



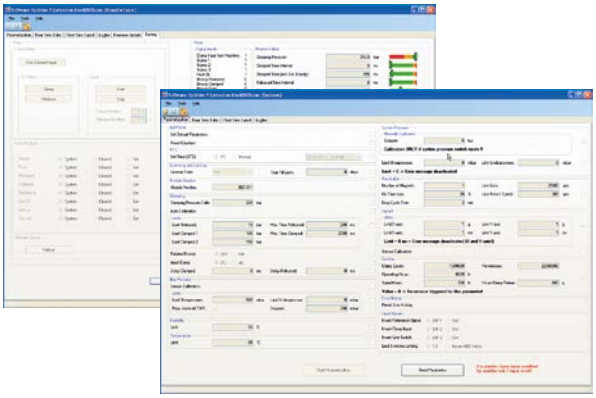
Mech. + electr. installation

Helpline Service

Telephone service from 7:30 a.m. – 12:00 noon and 2:00 p.m. – 5:00 p.m. as well as 24-h/5-day telephone service for all pL service centers

- Technical assistance
- Diagnostic support
- Organizing factory and field service
- Taking spare parts orders

Goal
To help quickly, competently and unbureaucratically



Maximum productivity requires that your application be taken in account – we can help you

Optimally clamped? We can also provide on-site assistance in this regard.

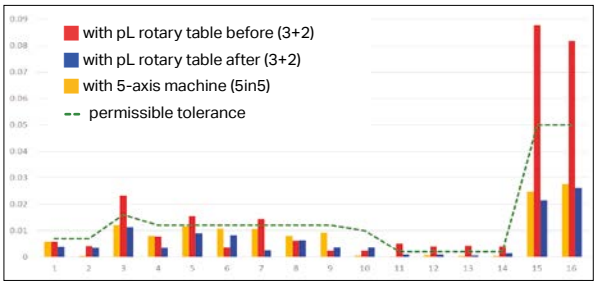
Application Support

Experience has shown: A considerable improvement in time needed per piece and workpiece accuracy are almost always possible.

- Clamping the workpiece correctly, optimizing machining processes
- Improving workpiece accuracy (alignment, 0-point...)
- Fine-tuning of drives and CNC parameterization

Goal
To extract the maximum, improve efficiency, lower workpiece costs, increase workpiece accuracy

For item no., see **p. 98**



Errors at the measuring points before and after APS **precision** for 3-D machining.

Examples from actual practice:

A. Maximization of productivity

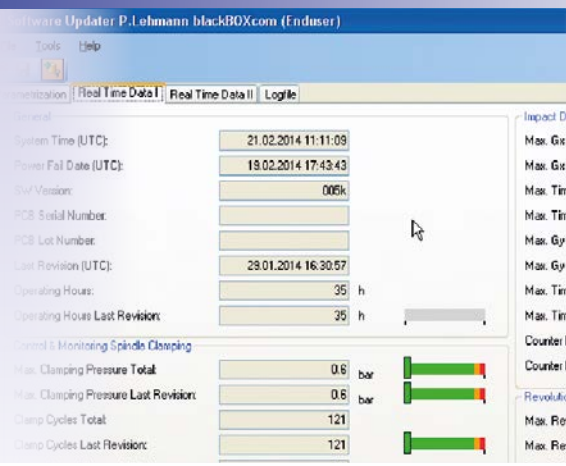
1. Clamping deactivated when necessary
   - Reason: Production of small parts
   - Result: Productivity increased significantly
2. Speed increased from 12 to 58 rpm
   - Reason: Non-optimal commissioning by OEM
   - Result: Cycle time shortened noticeably
3. 'Catalog' values (maximum values) set; at the same time, acceleration reduced by 30% (high moment of inertia)
   - Reason: Non-optimal commissioning by OEM
   - Result: Cycle time shortened noticeably, speed increased
4. Parameters adjusted on the basis of pL calculations, idle times reduced from 100 ms to 10 ms, clamping deactivated sometimes
   - Reason: Maximum possible optimization of time needed per piece
   - Result: Time needed per piece before 60 s, after 40 s; productivity increased 33%
5. Parameters for interpolation optimized, clamping idle times reduced from 500 ms to 10 ms / 1000 ms to 300 ms
   - Reason: Making machining an impeller possible with a 3+2 machine concept
   - Result: Duty cycle 100% and impeller production possible, cycle time shortened noticeably

B. Prevention of future damage/hazards

1. 'Unclamping' reduced from 300 ms to 100 ms
   - Reason: Unnoticed product flaw (pL)
   - Result: Cycle time shortened noticeably
2. Assignment of B/C-axis clamp/unclamp macros corrected
   - Reason: Incorrect commissioning by OEM
   - Result: Future production downtime prevented
3. Control OFF set after spindle 'clamped'
   - Reason: Incorrect commissioning by OEM
   - Result: Future production downtime prevented

C. Optimization of workpiece accuracy

1. Positioning accuracy optimized from 100 to 10 increments
   - Reason: Incorrect commissioning by OEM
   - Result: Noticeably more accurate workpieces
2. Lag after servo OFF eliminated, position drift stopped
   - Reason: Incorrect commissioning by OEM
   - Result: Faulty workpieces during volume production prevented
3. Alignment and 0-point correction of the rotary table
   - Reason: Careless assembly by OEM
   - Result: Volumetric accuracy improved considerably



We also support you after the purchase
to ensure high availability of your equipment

activeService[1)]

[1)] an excerpt from our Active Services; please contact us for additional options

Easy Check

- Visual inspection
- Hose check
- Oil check/maintenance unit
- Bleed if necessary
- Read and evaluate blackBOX data
- Status report with recommendation

Facts

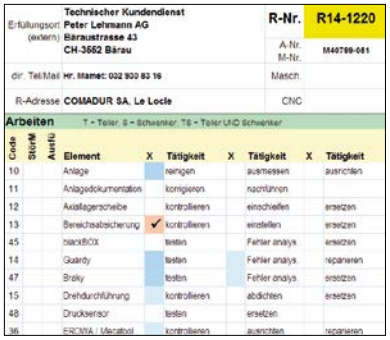
- Without maintenance contract
- We schedule the region on our own
- Then notify the intended customers of the pending visit
- Customers can decide yes or no

Benefits

- Prevention helps to minimize expensive downtime
- Travel costs are prorated
- The customer does not need to think about it
- No contract, you are free to decide annually
- Based on the worldwide practical experience of pL

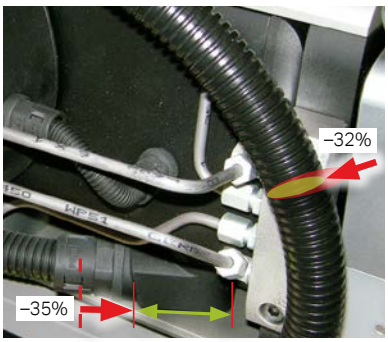
Goal

Prevent downtime, eliminate stress and costs, extend the service life → Prevention instead of reaction


Technischer Kundendienst
Erfüllungsort: Peter Lehmann AG (extern) Bäraustrasse 43 CH-3552 Bärau
R-Nr. R14-1220
A-Nr. M-Nr. M40799-001
dir. Tel/Mail Hr. Mamet 032 930 83 16
Masch.
R-Adresse COMADUR SA, Le Locle
CNC
Arbeiten T = Teiler, S = Schwenker, TS = Teiler UND Schwenker

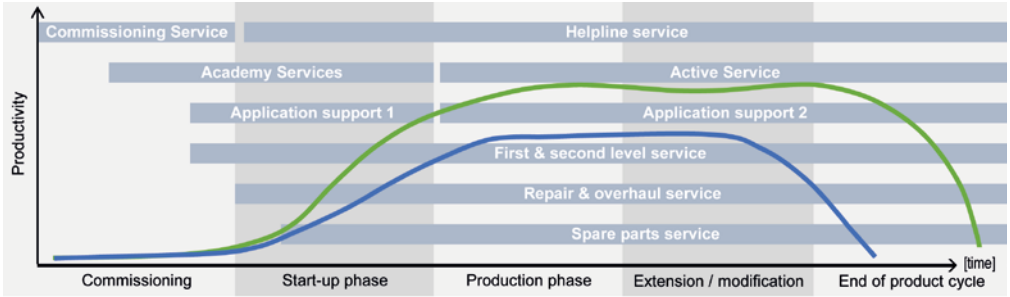
Code	Störm	Ausfü	Element	X	Tätigkeit	X	Tätigkeit	X	Tätigkeit
10			Anlage		reinigen		ausmessen		ausrichten
11			Anlagedokumentation		korrigieren		nachführen		
12			Axiallagerscheibe		kontrollieren		einschleifen		ersetzen
13			Bereichsabsicherung	✓	kontrollieren		einstellen		ersetzen
45			blackBOX		testen		Fehler analys.		ersetzen
14			Guardy		testen		Fehler analys.		reparieren
47			Broky		testen		Fehler analys.		ersetzen
15			Drehdurchführung		kontrollieren		abdichten		ersetzen
48			Drucksensor		testen		ersetzen		
36			EROWA / Mecatool		kontrollieren		ausrichten		reparieren

Status report with recommendation



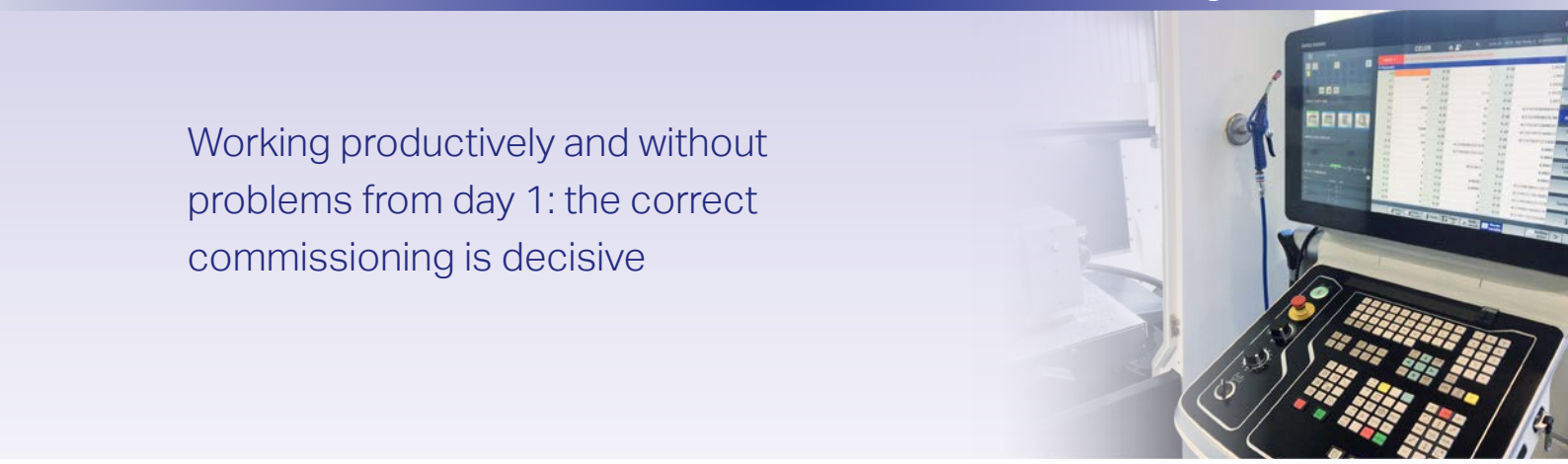
Retrofitting of further developments on request (shorter outgoing cable, smaller diameter).

LifeCycle Services: Increased productivity over the life of your machine ...



Productivity with LifeCycle service products from pL LEHMANN
Productivity without service support

Working productively and without problems from day 1: the correct commissioning is decisive



Investigations have shown that 70% of problem situations during the warranty period can be prevented through careful and professional commissioning. At the same time, it was obvious that productivity could be increased significantly through use of application service. Make use of our services!

Basic commissioning

Goal
Rotary cable connected and parameterized, ready for production

Activities
- Mechanical assembly of the rotary table on the machine table
- Alignment of the rotary axes with respect to the main axes of the machine
- Kinematics setting/check
- Electrical connection of the rotary table on the machine
- Basic parameterization using pL parameter lists, at least with usual values, but possibly to customer requirements
- Brief customer training

Prerequisite
- Machine must be prepared appropriately (servo, control cabinet cabling, connectors, PLC, CNC with readily available 4th and/or 5th axis/axes; or can be ordered from pL LEHMANN (depending on machine; PLC not possible)
- During commissioning, a qualified technician from the machine supplier may need to be present (parameter adjustments, possibly adjustment of the PLC etc.); organized and paid by customer, contact us with the request.

Commissioning of servopack

Goal
Connection of the rotary table and adjustment to customer requirements if possible, incl. integration of the Servopack retrofit kit

Activities
- ServoPack installation with cabling in control cabinet up to enclosure wall
- Mechanical assembly of the rotary table on the machine table
- Alignment of the rotary axes with respect to the main axes of the machine
- Kinematics setting/check
- Electrical connection of the rotary table on the machine
- Basic parameterization using pL parameter lists, at least with usual values, but possibly to customer requirements
- Brief customer training

Prerequisite
- Machine must be prepared appropriately (CNC has readily available 4th and/or 5th axis, PLC is prepared)
- During commissioning, a qualified technician from the machine supplier may need to be present (parameter adjustments, possibly adjustment of the PLC etc.); organized and paid by customer, contact us with the request.

Commissioning of M-function

Goal
FANUC 35i linked to machine's CNC via M-function

Activities
- Cabling from the FANUC 35i to the interface on the machine's CNC
- Function test and brief training of the operator
- Linking of EMERGENCY STOP, if possible

Prerequisite
- Machine and CNC must be prepared appropriately (readily available M-function)

Note
Please note that we offer training for the operation of the Fanuc 35iB controller in our Academy.

Application support

Goal
Rotary table settings optimized for customer application (time optimization and/or accuracy improvement)

Activities
- Calculation based on rotary table and workpiece (what is possible)
- Check of the geometry, and correct as much as possible
- Check whether the clamping control functions correctly and is not active before the intended position is actually reached
- Check of dividing/indexing errors (0-90° relatively simple; possibly with portable measuring instrument)
- Check of clamping/load placement (no overly eccentric loads, improper clamping), and of the machining sequence and the control response (smooth control)
- Adjustment of gear backlash and pitch error
- Optimization for specific workpiece, incl. clamping device and machining strategy (may require considerably more effort for simultaneous machining; invoiced separately)
- Kinematics setting/check
- Expenses such as travel time, travel costs, hotel and meals are calculated on the basis of actual cost

Prerequisite
- Programming system must be prepared appropriately (e.g. for simultaneous operation)

	Item no.	Data	Description
EA-type rotary table	**INB.1AX-APS**	max. 15 h, 1-axis	Application support
	INB.1AX-CMS	basic, max. 10 h, 1-axis	Commissioning of integrated axes
	INB.1AX-SP	max. 15 h, 1 axis	Commissioning of servopack
T-type rotary table	**INB.2AX-APS**	max. 20 h, 2-axes	Application support
	INB.2AX-CMS	basic, max. 15 h, 2-axis	Commissioning of integrated axes
	INB.2AX-SP	max. 20 h, 2 axis	Commissioning of servopack
with pL CNC	**INB.MF**	max. 15 h on-site	Commissioning of M-function

Only well-trained technical personnel can assure optimal performance. This applies to us as well as our customers. Don't hesitate to make use of our service offerings.

Example of a course confirmation

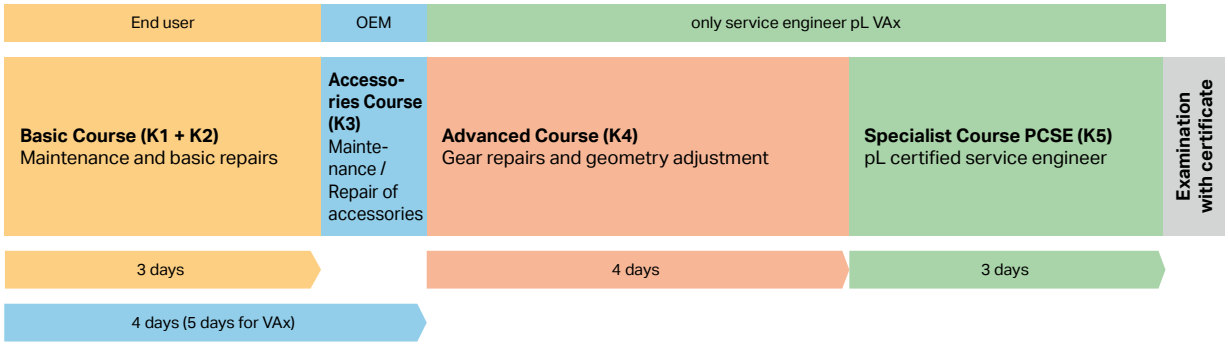
Customer Academy

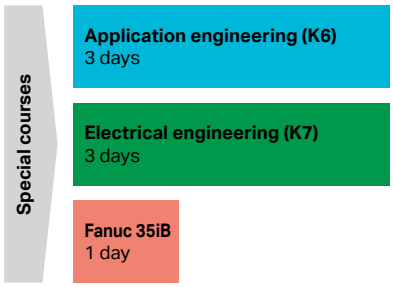
Professional training sessions at the pL factory (at the customer on request) with extensive documentation for reference as well as a corresponding training certificate.

Goal
To make pL service centers and customers more independent, increase the availability of pL products

Your benefit
- Independence from third parties – maximum productivity
- Shortest possible interruptions
- Economical and competent
- Prevention of expensive operator errors
- Prevention of time-consuming fault diagnosis
- Correct spare parts ordering
- 1 year of Helpline service free of charge worldwide

Courses at a glance





Additional information
- Detailed documentation as references
- 1 year of Helpline service free of charge worldwide
- At least 2 participants, max. 4 participants per group
- Course contents matched to the individual when necessary
- Practical exercises, supplemented with theory

Registration prerequisites
- Completion of technical training in mechanics, machining and assembly
- CNC knowledge
- Experience in maintenance or service (preferably with/on machine tools)
- Basic knowledge of electrical engineering, pneumatics and hydraulics

We hold refresher courses to ensure that the knowledge of our technicians is updated continuously. These are also available for you.

Seal change on Braky

The courses in detail (course language in German or English only)

For end customers and machine dealers

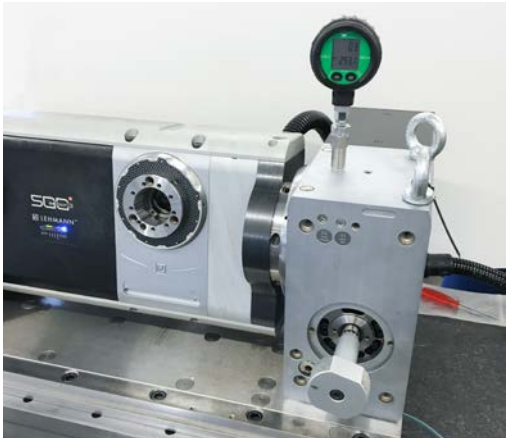
Basic Course – for Helpline and maintenance technicians (K1 + K2)

Prerequisite: Practical experience in maintenance of machine tools

Course goals:

- Basic knowledge of pL LEHMANN rotary tables
- Diagnosing faults (e.g. via blackBOX)
- Knowledge of spare parts packages
- Learning about specific tools
- blackBOX software and analysis
- Small repairs such as Braky replacement, for instance
- Motor and wiring harness replacement on dividing and tilting axis
- Checking and adjusting the gear unit
- Adjusting and cleaning the scale dial

The better your knowledge of pL rotary table, the shorter are your downtimes and the higher is your productivity!



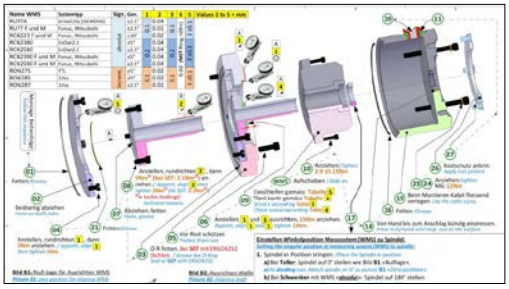
Checking the clamping pressure correctly

Accessories Course – for OEM service / commissioning technicians (K3)

Prerequisite: Basic Level Course

Course goals:

- Correct setting and operation of accessories such as rotary union, clamping cylinder, tailstock, counter bearing...
- Understanding and handling the angular position measuring system
- Handling the ripas system correctly
- Working correctly with CYMAX hydraulic units



Installation instructions for WMS

Courses for our service partners and large and customers who wish to be completely self-sufficient

Advanced Course – for the knowledgeable service technician as a freelancer (K4)

Prerequisite: Accessories Level Course (contractual cooperation with pL service location)

Course goals:

- Repair of gear unit, spindle seals and spindle clamping
- Measuring and adjusting the geometry correctly
- Machine-specific wiring

Remeasuring and aligning

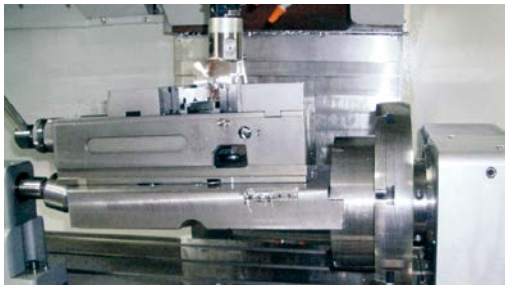
severe oil loss

Specialist Course PCSE – for the knowledgeable pL service technician – for pL service location only (K5)

Prerequisite: Advanced Level Course (contractual cooperation with pL service location)

Course goals:

- In-depth knowledge of current and older products, incl. accessories
- Good knowledge of the service structure and organization of pL
- Performance of damage analyses
- Parameterization of the blackBOX



Massive crash – a case for the pL professional

Special courses

Application engineering – for application technicians and product managers/sellers of pL LEHMANN rotary tables (K6)

Prerequisite: Knowledge of CNC machining and basic knowledge of rotary tables

Course goals:

- Knowledge of the behavior of pL rotary tables in various applications
- Optimization options for applications
- Detailed troubleshooting for demanding customer requirements
- Selection of the correct rotary table based on customer requirements

Measuring correctly

Electrical engineering – for knowledgeable service technicians (K7)

Prerequisite: Practical experience in maintenance of machine tools

Course goals:

- Analytical approach tor electrical problems
- Measurement technology
- Interpretation and understanding of electrical diagrams
- Shutdown measures in case of electrical problems

Application of a 4th axis on a 3-axis machining center

Fanuc 35iB

Prerequisite: Practical experience in operating and programming machine tools

Course goal:

- Operation of our Fanuc 35iB control

Fanuc 35iB manual control pendant

Product line 900

Coming soon after market introduction

Knowledge is a prerequisite.
Professional implementation, however,
requires replacement parts and ...

Gear unit (for trained technicians only)

Seal sets

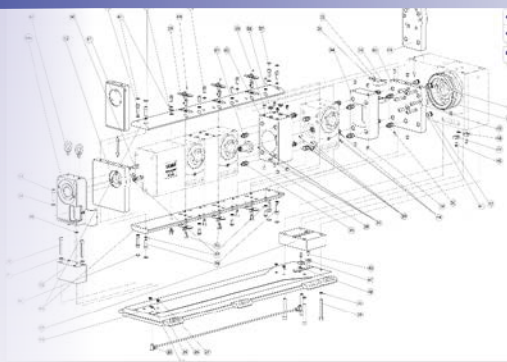
Bearing set

BOOSTY spare parts packages

Cable sets

Spare parts packages in a carrying case

... Tools Our service partners have both. That is why they maintain a web shop with availability data that is updated daily.



Web shop example

WZP.BASIS.BR5xx

WZP.CARD

WZP.HARA.x07

WZP.RIP

WZP.BRAKY.DMO

3x 135-0042b

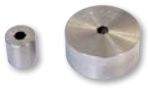
WZP.HARA.xx0

WZP.RIP.SKP

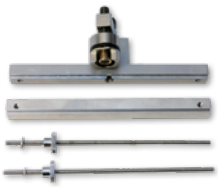
WZP.BRAKY.KTR507
WZP.BRAKY.KTR5x0

WZP.DDF

WZP.MANO.30



WZP.WMS



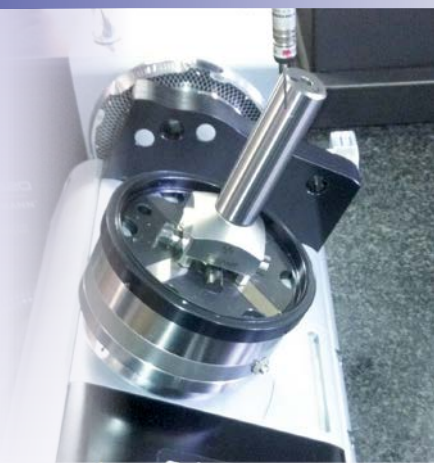
WZP.ZRSP

New Digital Age for Your 3-Axis Machining Center

CNC.Tablet

- Digitally monitored with remote access
- Prevention of downtime through preventive service monitoring
- Useful tool for servicing

High geometric accuracies as standard, combined with a high level of rigidity and stability



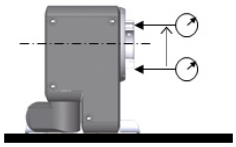
( ) values = increased accuracy. Item no. GEO.5xx-GEN

The tolerances given below apply under the following conditions:

1. The rotary table is mounted as specified in the commissioning instructions
2. The measurement is carried out on a calibrated granite plate (all machine errors are excluded)
3. The rotary table is not subjected to any outside thermal influences (sun, fans, heaters...)
4. Prior to the measurement, the rotary table and the measuring and test equipment have been in the same environment for at least 24 h
5. All measured values are determined for an unloaded rotary table

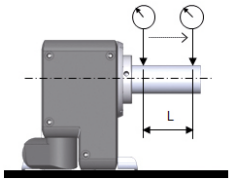
Geometry of EA rotary tables

Perpendicularity
Spindle surface to support surface



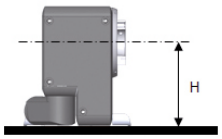
0.01/100 mm (0.005/100 mm)

Parallelism
Spindle axis with support surface



0.01/100 mm (0.005/100 mm)

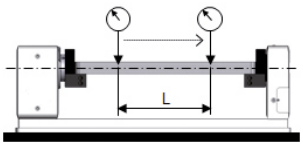
Center height



0...0.04 mm

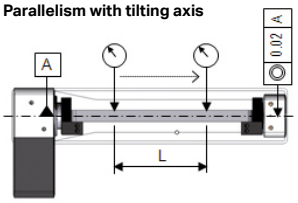
Geometry of EA rotary tables with rotoFIX

Parallelism with support surface



0.007/100 mm (0.0035/100 mm)

Parallelism with tilting axis



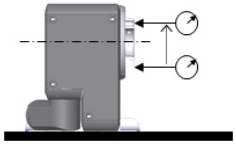
0.007/100 mm (0.0035/100 mm)

For EA vertical see p. 34

Geometry of M-type rotary tables

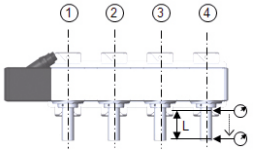
on request

Perpendicularity
Spindle surface to support surface



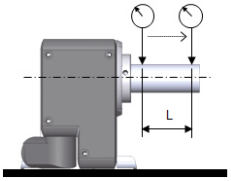
0.01/100 mm (0.005/100 mm)

Axis parallelism
Spindle 2, 3 and 4 to spindle 1



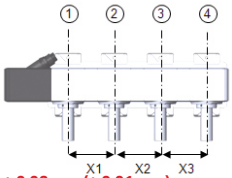
0.01/100 mm (0.005/100 mm)

Parallelism
Spindle axis with support surface



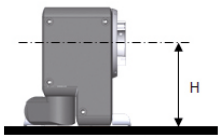
0.01/100 mm (0.005/100 mm)

Axis distance
X1, X2 and X3



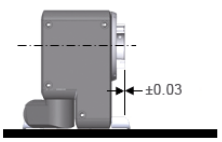
± 0.02 mm (± 0.01 mm)

Center height

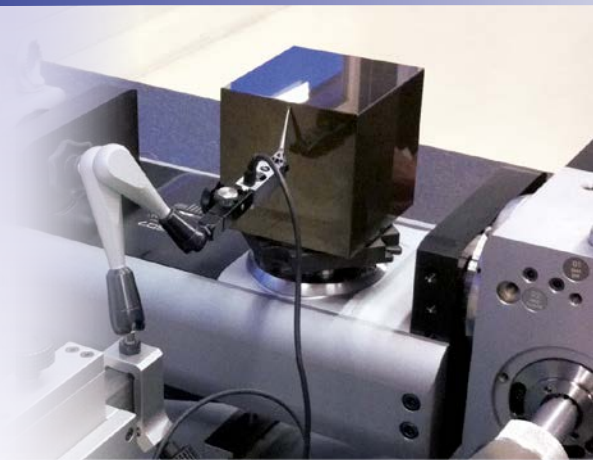


0...0.04 mm

Depth difference of the spindles



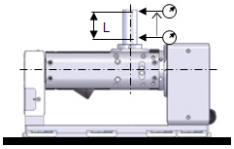
And for the most demanding requirements: 1/2 tolerance as an option



( ) values = increased accuracy. Item no.. GEO.5xx-GEN

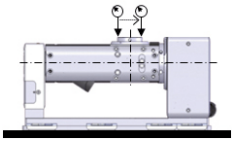
Geometry of TF and T1 rotary tables

Perpendicularity
Dividing/indexing axis to swiveling/tilting axis



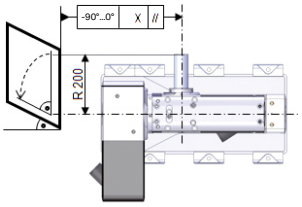
0.01/100 mm (0.005/100 mm)

Parallelism
Spindle surface to support surface



0.01/100 mm (0.005/100 mm)

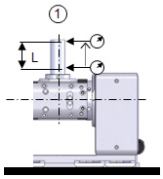
Tilt drift
Change in the angle between the dividing / indexing axis and tilting axis during the tilting movement from -90° to 0°



0.01/R150 mm (0.005/R150 mm; applies only to T1)

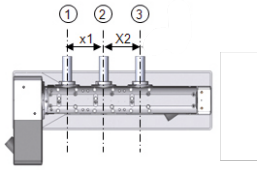
Geometry of T2...3 rotary tables

Perpendicularity
Dividing/indexing axis to tilting axis of spindle 1



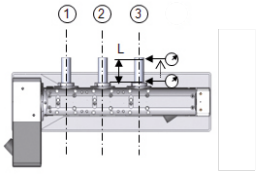
0.01/100 mm (0.005/100 mm)

Axis distance
X1, X2 and X3



± 0.02 mm (± 0.01 mm)

Axis parallelism
Spindle 2 and 3 to spindle 1

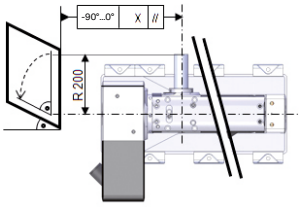


0.01/100 mm (0.005/100 mm)

Parallelism
Spindle surface to support surface

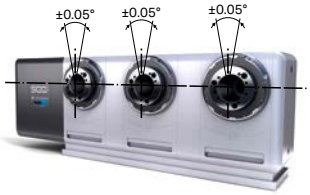
0.01/100 mm (0.005/100 mm)

Tilt drift
Change in the angle between the dividing / indexing axis and tilting axis during the tilting movement from -90° to 0°



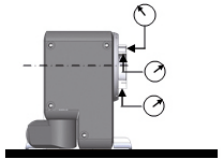
0.01/R150 mm (0.01/R150 mm)

For M- and T-type rotary tables



For all rotary tables

Radial and axial run--out for all rotary table versions
– measured at spindle nose
– Axial run--out on largest diameter
– Radial run-out of the inner bore as well as centering ø



0.006 mm (0.003 mm)

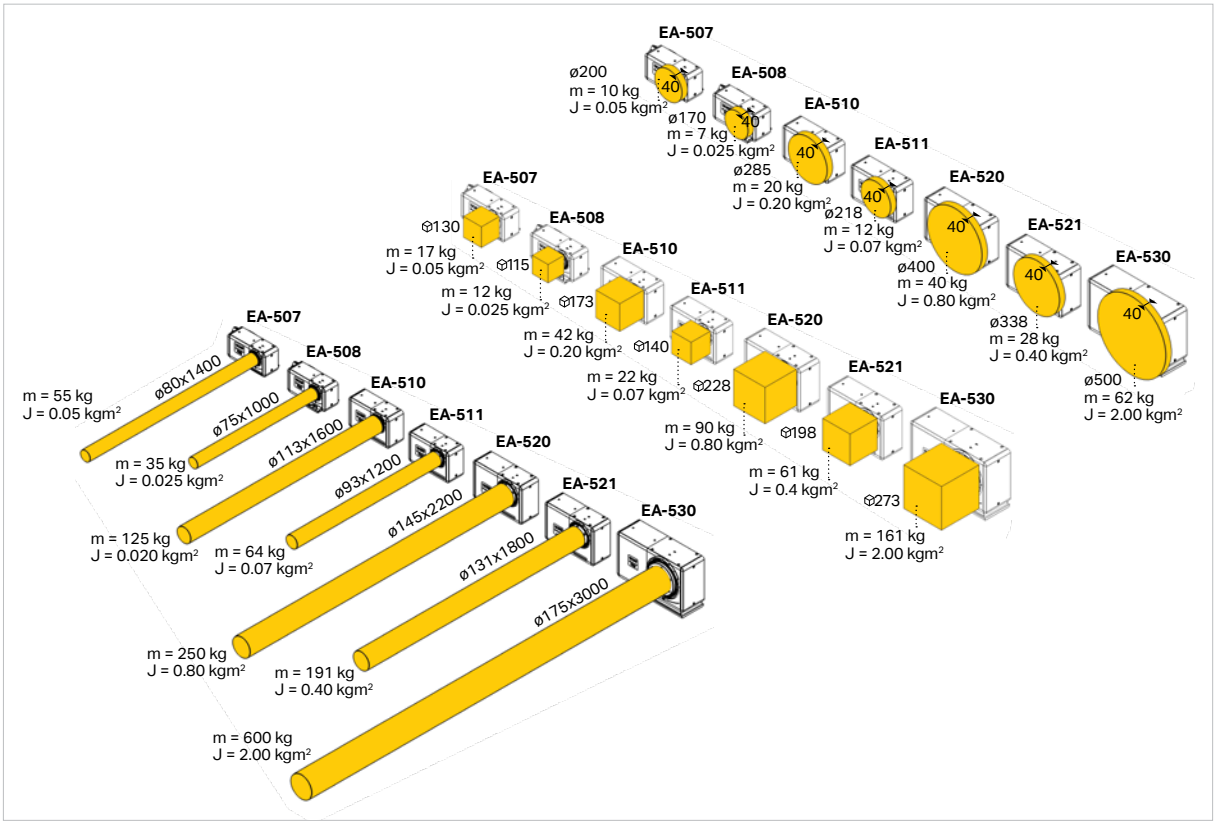
Basics of the drive data

All drive data of pL LEHMANN rotary tables **(pp. 30–65)** have been designed for the following standard spindle loads in accordance with DIN/VDE 0530 as follows:

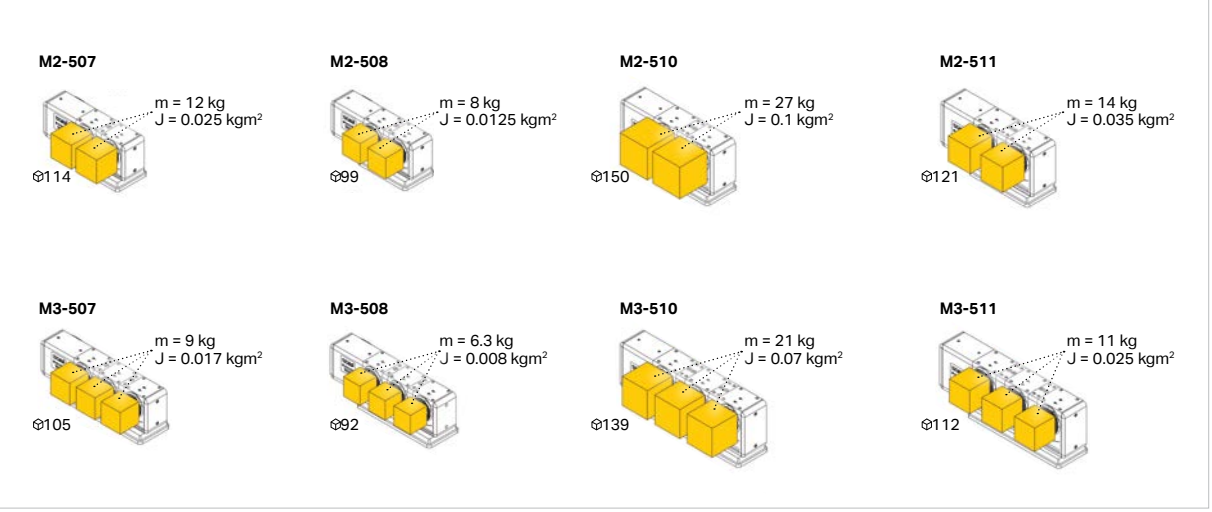
- For intermittent service S3 duty cycle 20%
- Cycle duration 1 minute

Any other conditions require the adjustment of the drive data (acceleration, jerk limitation, rotational speed).

EA-type rotary table



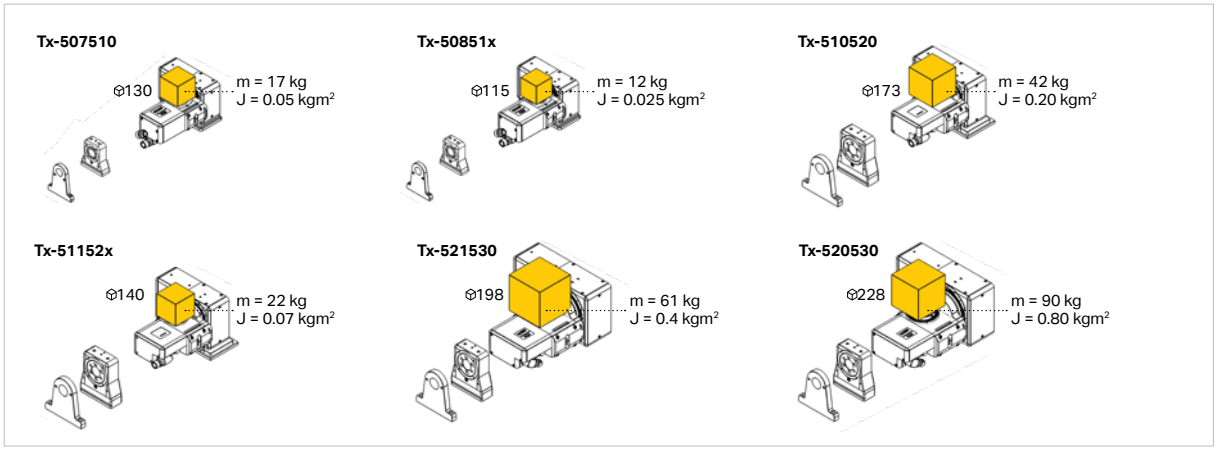
Mx-type rotary tables



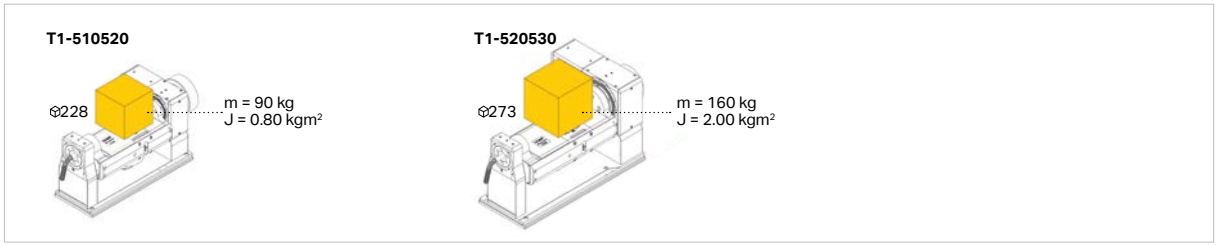
Reference values for duty cycle (ED)

- For normal rotary table work such as milling / boring (mainly positioning) approx. 20 %.
- For milling / boring in intensive mixed operation (positioning / feed machining): approx. duty cycle 40 %
- For profile and depth grinding approx. ED 60% / simultaneous machining, 5-axis
- For engraving: approx. duty cycle 80–100 %.

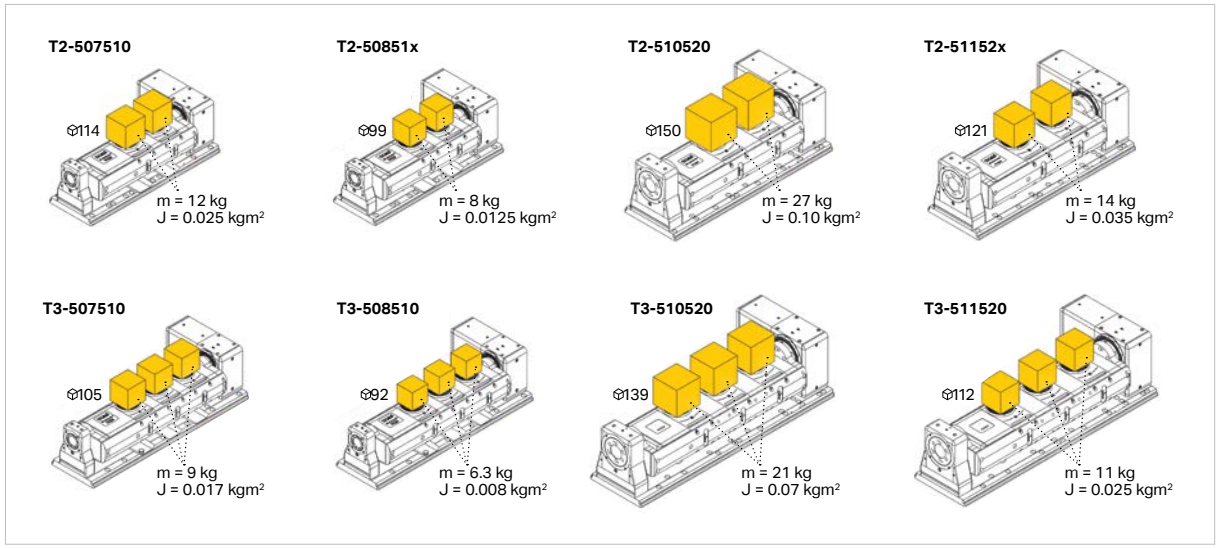
Tx-type rotary tables (TIP, TAP, TOP)



T1-type rotary tables (TGR)



T2...3-type rotary tables (TOP.x)



Calculating loads, forces and moments of inertia, avoiding risks and damage

It is not only the weight which counts; shape and position are also often decisive factors

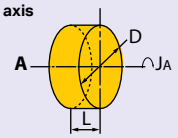
We are here to help

Request a proposal and we will gladly prepare you an offer for your individual calculation up to and with a specific list of parameters. Contact your closest pL LEHMANN representative. We are here to help.

Calculation of the load on the dividing/indexing axis

(using Steiner's theorem)

Center of gravity in rotary axis

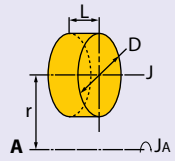


D: Outside diameter of the round bar [m]
L: Length of the round bar [m]
p: Density [kg/m³]
m: Mass of the round bar [kg]
J_A: Moment of inertia [kgm²]

$$m = \frac{D^2 \cdot \pi}{4} \cdot L \cdot p$$

$$J_A = \frac{m \cdot D^2}{8}$$

Center of gravity outside rotary axis



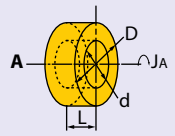
D: Outside diameter of the round bar [m]
L: Length of the round bar [m]
r: Turning radius [m]
p: Density [kg/m³]
m: Mass of the round bar [kg]
J_A: Moment of inertia of the round bar at center A [kgm²]
J: Moment of inertia [kgm²]

$$m = \frac{D^2 \cdot \pi}{4} \cdot L \cdot p$$

$$J = \frac{m \cdot D^2}{8}$$

$$J_A = J + m \cdot r^2$$

Center of gravity in rotary axis

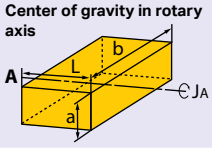


D: Outside diameter of the cylinder [m]
d: Bore diameter of the cylinder [m]
L: Length of the round bar [m]
p: Density [kg/m³]
m: Mass of the cylinder [kg]
J_A: Moment of inertia [kgm²]

$$m = \left(\frac{D^2 \cdot \pi}{4} \cdot L \cdot p\right) - \left(\frac{d^2 \cdot \pi}{4} \cdot L \cdot p\right)$$

$$J_A = \frac{1}{8} m (D^2 + d^2)$$

Center of gravity in rotary axis

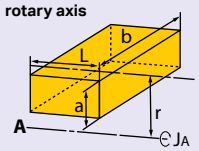


a: Side length [m]
B: Side length [m]
L: Side length [m]
p: Density [kg/m³]
J_A: Moment of inertia [kgm²]

$$m = a \cdot b \cdot L \cdot p$$

$$J_A = \frac{1}{12} m (a^2 + b^2)$$

Center of gravity outside rotary axis



a: Side length [m]
B: Side length [m]
L: Side length [m]
p: Density [kg/m³]
r: Turning radius [m]
J_A: Moment of inertia [kgm²]

$$m = a \cdot b \cdot L \cdot p$$

$$J_A = \frac{1}{12} m (a^2 + b^2 + 12r^2)$$

Key

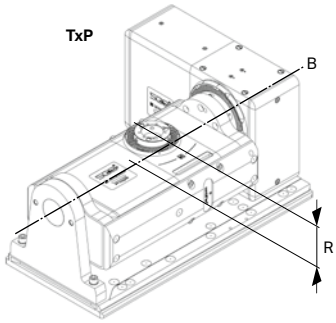
A = Dividing/indexing axis
B = Swiveling/tilting axis
R = Radius between swiveling/tilting axis and spindle nose of dividing/indexing axis [m]
Rs = Center distance [m]
m = Mass [kg]
M = Torque calculated from m x g x Rs [Nm]
Me = Torque acting on the tilting axis caused by the dead weight of the tilting axis [Nm]
g = Acceleration due to gravity 9.81 [m/s²]

Densities of different materials x dynamic speed (p)

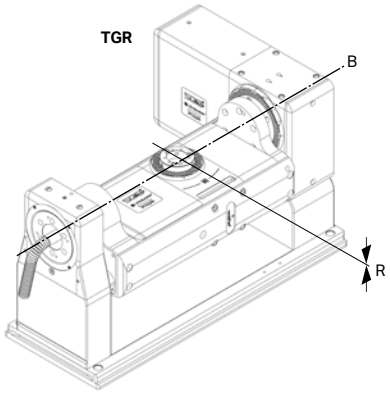
Steel	7.85 x 10^3kg/m³
Cast iron	7.85 x 10^3kg/m³
Aluminum	2.7 x 10^3kg/m³
Copper	8.94 x 10^3kg/m³
Brass	8.5 x 10^3kg/m³

Calculation of the load on the swiveling/tilting axis

TxP



TGR



Distance R

Rotary table	TxP [mm]	TGR [mm]	Limited torques [Nm]*
TF...T1-507510	46	–	40
TF...T1-510520	40	0	110
TF...T1-520530	40	0	280

* Limited torques due to eccentric loads, see **p. 32**

Calculation of the torque in the tilting direction (without intrinsic torque of the dividing axis):

Rs = R + L/2
M = m x Rs x g

Calculation of the total torque in the tilting direction (with intrinsic torque of the dividing/indexing axis):

Me is the gear unit loading without load; see respective T-type rotary table **pp. 42–65**)

Empirical values from intensive machining tests as an aid for proper selection of your T-type rotary table

Starting point

Machine:	DMC 1150V
Spindle power:	14.5 kW
Spindle torque:	110 Nm
Clamping:	8 clamping claws
Workpiece:	C45E, 130x130x130 mm

Test workpiece

Cutting data

No.	Tool	ø mm	vc Cutting speed m/min	n Speed rpm	fz Feed mm/rev	z No of teeth	vf Feed speed mm/min
1	Angular milling cutter	40	260	2069	0.25	5	2578
2	End milling cutter	12	260	6898	0.18	4	4967
3	End milling cutter	12	180	4776	0.09	4	1719
4	Twist drill VHM	17	240	4495	0.35	1	1573

Optimal real-world cutting data or manufacturer's recommendation

General finding

Because of physical laws, the -90° tilt position (dividing axis horizontal) is always more stable than the 0° position (dividing axis vertical). For comparison with near-real-world conditions, only the results for the **0° position** are listed in the following. Despite the absence of clamping in the counter bearing, the TAP-type rotary table achieved amazingly good results.

Comparison in detail

* The trials were conducted with the predecessor version fixX or varioX.

No.	radial depth of cut ap mm				axial depth of cut ae mm				Mat'l. removal rate Q cm³/min			
	T1-507510 TAP1	T1-507510 TOP1	T1-510520 TAP2	T1-510520 TOP2	T1-507510 TAP1	T1-507510 TOP1	T1-510520 TAP2	T1-510520 TOP2	T1-507510 TAP1	T1-507510 TOP1	T1-510520 TAP2	T1-510520 TOP2
1	2	2.5	2.5	3	32	32	32	32	166	207	207	248
2	20	20	20	20	3	3	3	3	298	298	298	298
3	5	5	5	5	10	10	10	10	86	86	86	86
4									357	357	357	357

T1-507510 TAP1

Conclusion

- The limit is reached with tool no. 1, vibrations on the rotary table are quite audible. Reduction of cutting data required for long-term machining
- Tool no. 3 is also at the limit for severe vibrations
- The remaining machining is possible without major problems

T1-507510 TOP1 (fixX*)

Conclusion

- Vibrations with tool no. 1 audible, but still in acceptable range
- Tool no. 3 also generates some, but not critical, vibrations on the rotary table
- Noticeably greater stability than TAP version, thanks to clamping of the counter bearing

T1-510520 TAP2

Conclusion

- Except for minor vibrations with tool no. 1, good machining performance was achieved
- Except for tool no. 1, the machine and tools are the limiting factors. For this reason, the evaluation is identical to that for T1
- Noticeable stability improvement compared to T1-507510 fixX and TAP1

T1-510520 TOP2 (varioX*)

Conclusion

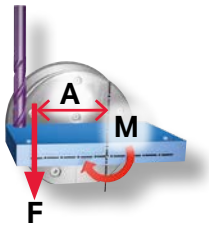
- With the available tools and this machine, the rotary table cannot be pushed to its performance limit. Only tool no. 1 is able to generate minor vibrations
- Compared to TAP2, the stability improvement is not significant, but exists and is noticeable

Reference values for configuring and selecting the correct rotary table

F = Feed force, **A** = Distance [m] from rotary table axis to feed force (F) during machining, **M** = Resulting torque (FxA)
Resulting torque M = F x A → must not exceed the max. clamping torque [Nm] or max. feed torque [Nm] of the rotary table!

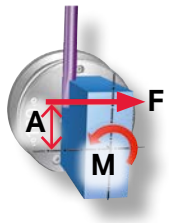
V = Rough machining, WP = indexable inserts, VHM = Solid hard metal

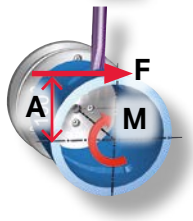
Boring / drilling



Tool type	Wz ø [mm]	Cutting speed [m/min]	Feed F [mm]	Feed force **F** [N] CK45	X5CrNi18-10	AlMg4.5Mn0.7
Twist drill VHM	5	220	0.12	920		
		120	0.10		1120	
		350	0.15			315
Twist drill VHM	10	220	0.27	1,450		
		120	0.18		1,900	
		350	0.2			650
Twist drill VHM	17	220	0.35	2,850		
		120	0.25		3,980	
		350	0.3			1,250
WP drill	38	140	0.09	4,350		
		100	0.08		6,550	
		180	0.16			2,800

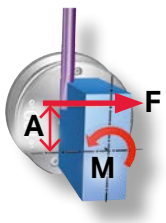
End milling and slot milling





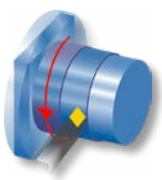
Tool type	Wz ø [mm]	Cutting speed [m/min]	Feed F [mm]	Depth of cut [mm]	Cutting width [mm]	Feed force **F** [N] CK45	X5CrNi18-10	AlMg4.5Mn0.7
End milling cutter V	8	180	0.09 x 4	4	8	840		
		70	0.06 x 4	4	8		410	
		570	0.15 x 4	4	8			360
End milling cutter V	12	180	0.11 x 4	6	12	1,100		
		70	0.07 x 4	6	12		700	
		570	0.17 x 4	6	12			550
End milling cutter V	20	180	0.095 x 4	10	20	1,550		
		70	0.08 x 4	10	20		1,400	
		570	0.17 x 4	10	20			950

Hobbing



Tool type	Wz ø [mm]	Cutting speed [m/min]	Feed F [mm]	Depth of cut [mm]	Cutting width [mm]	Feed force **F** [N] CK45	X5CrNi18-10	AlMg4.5Mn0.7
End milling cutter V	8	200	0.09 x 4	8	4	510		
		77	0.06 x 4	8	4		420	
		627	0.15 x 4	8	4			360
End milling cutter V	12	200	0.11 x 4	12	6	1,050		
		77	0.07 x 4	12	6		700	
		627	0.17 x 4	12	6			550
End milling cutter V	20	200	0.15 x 4	20	10	2,700		
		77	0.08 x 4	20	10		1,350	
		627	0.17 x 4	20	10			950

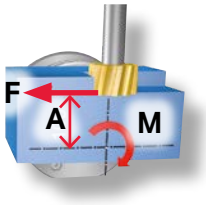
Turning



Tool type	Turning ø [mm]	Cutting speed [m/min]	Feed F [mm]	Depth of cut [mm]	Feed force **F** [N] CK45	X5CrNi18-10	AlMg4.5Mn0.7
Corner lathe tool WP	40	250	0.3	2	541		
		140	0.25	2		286	
		500	0.4	3			65.6

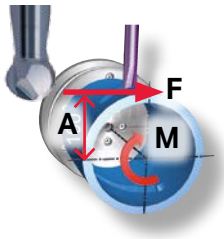
Factory information from well-known tool manufacturers (applies to new tool cutting edges)

Corner milling (slab milling or plane milling)



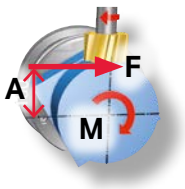
Tool type	Wz ø [mm]	Cutting speed [m/min]	Feed F [mm]	Depth of cut [mm]	Cutting width [mm]	Feed force **F** [N]		
						CK45	X5CrNi18-10	AlMg4.5Mn0.7
Angular milling cutter WP	40	160	0.12 x 6	2	40	1,750		
		160	0.12 x 6	2.5	25	1,250		
		85	0.12 x 6	2	40		1,550	
		85	0.12 x 6	2.5	25		1,150	
		500	0.15 x 6	3	40			1,250
Angular milling cutter WP	80	210	0.15 x 10	3.5	80	4,900		
		240	0.15 x 10	7	40	4,900		
		160	0.08 x 10	3.5	80		3,450	
		176	0.08 x 10	7	40		3,450	
		450	0.2 x 10	3.5	80			3,100
		495	0.2 x 10	7	40			3,100

Ball end milling



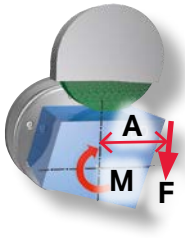
Tool type	Wz ø [mm]	Cutting speed [m/min]	Feed F [mm]	Depth of cut [mm]	Cutting width [mm]	Feed force **F** [N]		
						CK45	X5CrNi18-10	AlMg4.5Mn0.7
Ball end milling cutter	6	220	0.1 x 2	1.0	1.0	60		
		100	0.08 x 2	0.8	0.8		35	
		530	0.15 x 2	2.0	2.0			50
Ball end milling cutter	12	220	0.14 x 2	1.3	1.3	100		
		100	0.11 x 2	1.0	1.0		65	
		530	0.16 x 2	3.0	3.0			85

Mill turning



Tool type	Wz ø [mm]	Cutting speed [m/min]	Feed F [mm]	Depth of cut [mm]	Cutting width [mm]	Feed force **F** [N]		
						CK45	X5CrNi18-10	AlMg4.5Mn0.7
Angular milling cutter	40	130	0.12 x 6	5	1 mm / 360°	435		
		85	0.12 x 6	5	1 mm / 360°		390	
		500	0.12 x 6	5	1 mm / 360°			193

Grinding

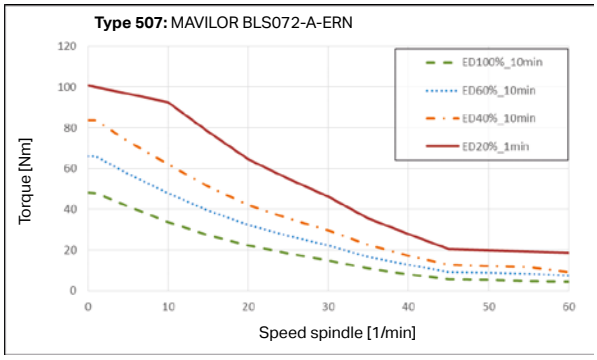


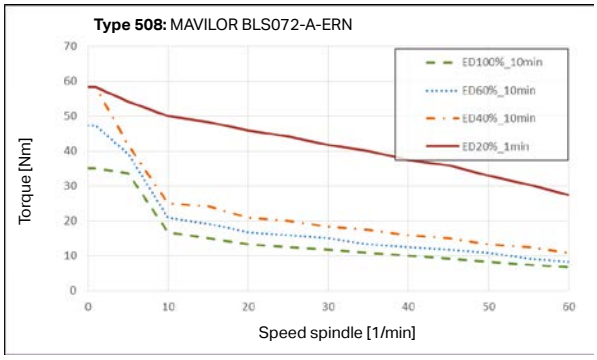
Tool type	Grinding capacity [kW]	Feed force **F** [N]		
		CK45	X5CrNi18-10	AlMg4.5Mn0.7
Ceramic grinding wheel	40	2200		
	75	4130		
CBN grinding wheel				

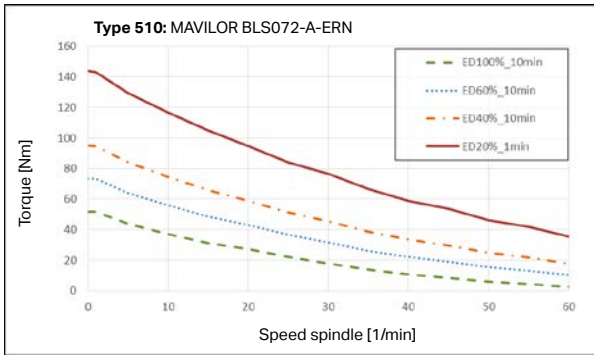
Permissible feed torque during machining under various conditions for **EA**-type rotary tables and dividing axes of **T**-type rotary tables

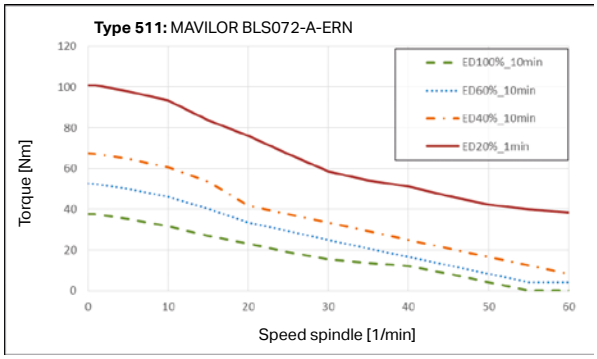
All diagram values with 20 % safety

For Siemens and Heidenhain CNCs









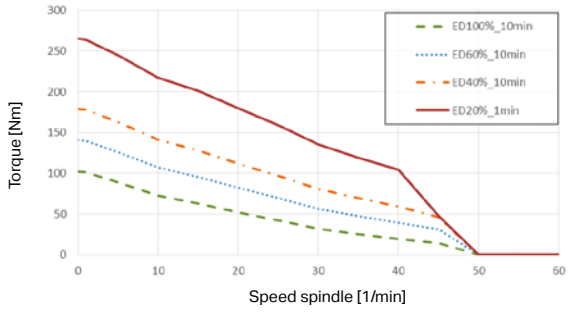
Reference values for duty cycle (ED)

- Duty cycle 20 % → Normal rotary table work of milling / boring for positioning mode
- Duty cycle 40 % → For milling / boring in intensive mixed operation (positioning / feed machining)
- Duty cycle 60 % → Profile and depth grinding, temporary simultaneous machining, 5-axis
- Duty cycle 80–100 % → Engraving, impeller machining, tool and die making

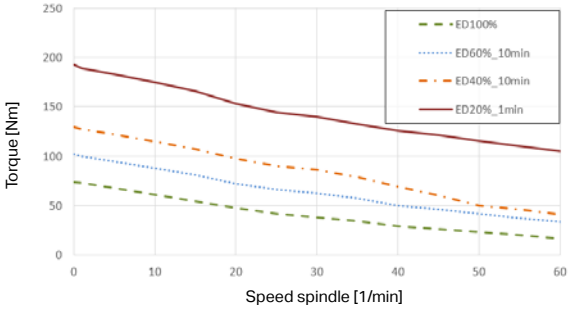
All diagram values with 20 % safety

For Siemens and Heidenhain CNCs

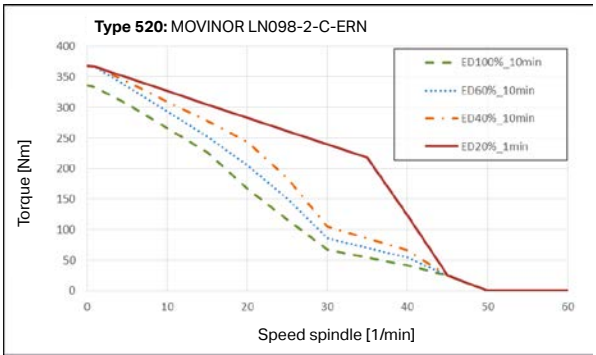
Type 520: MAVILOR BLS073-A-ERN



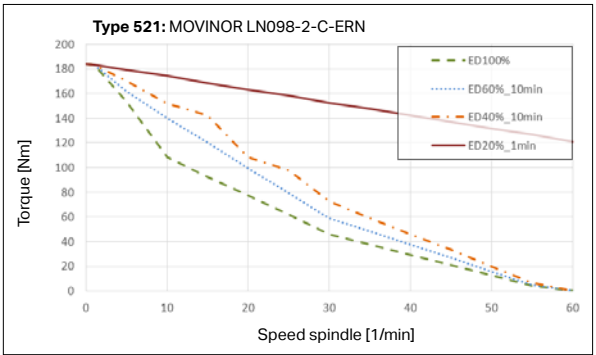
Type 521: MAVILOR BLS073-A-ERN



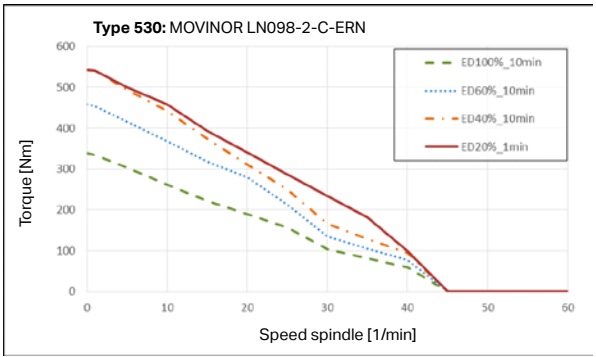
Type 520: MOVINOR LN098-2-C-ERN



Type 521: MOVINOR LN098-2-C-ERN



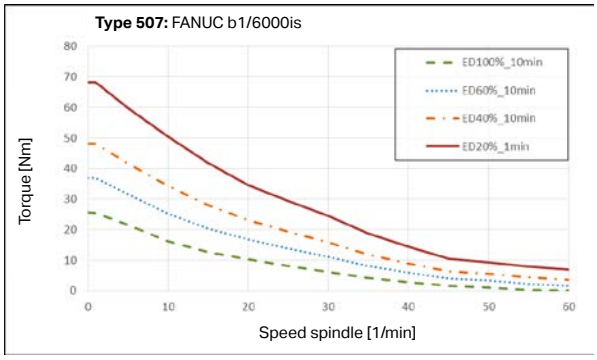
Type 530: MOVINOR LN098-2-C-ERN

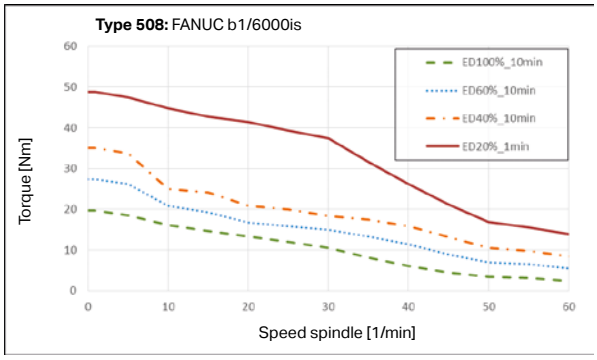


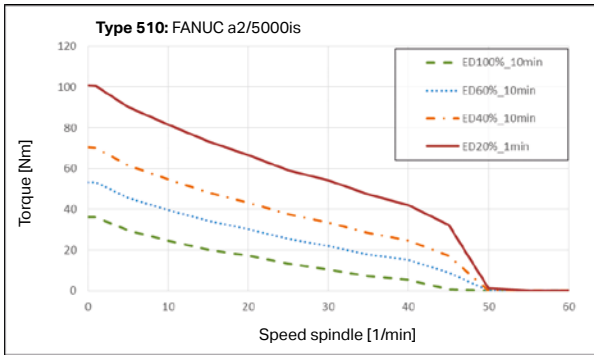
Permissible feed torque during machining under various conditions for **EA**-type rotary tables and dividing axes of **T**-type rotary tables

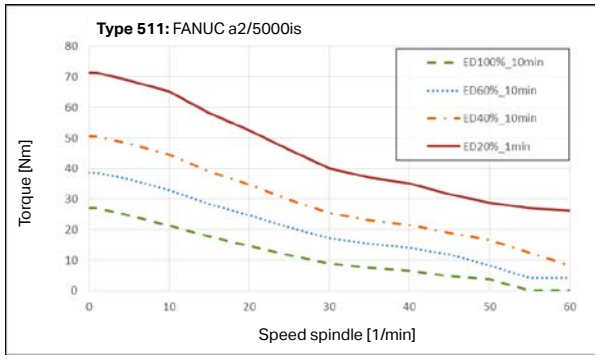
All diagram values with 20 % safety

For Fanuc CNC









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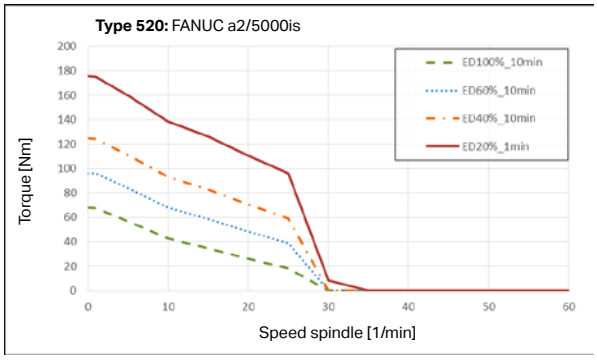
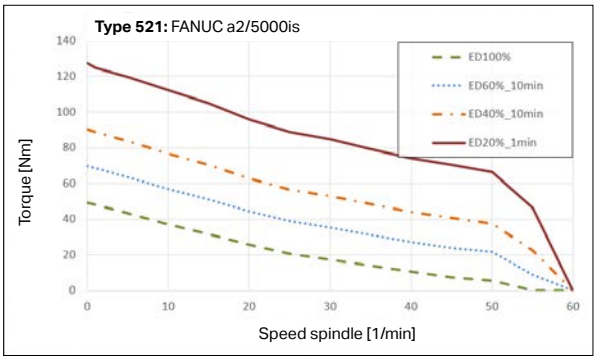
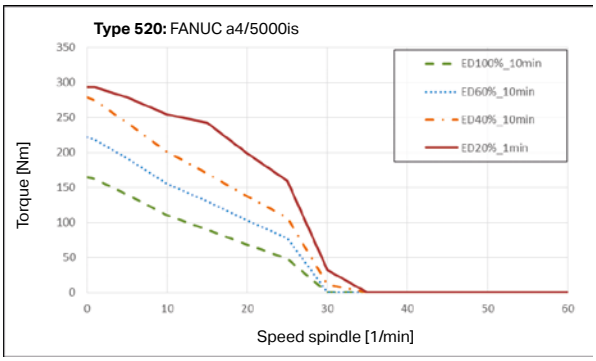
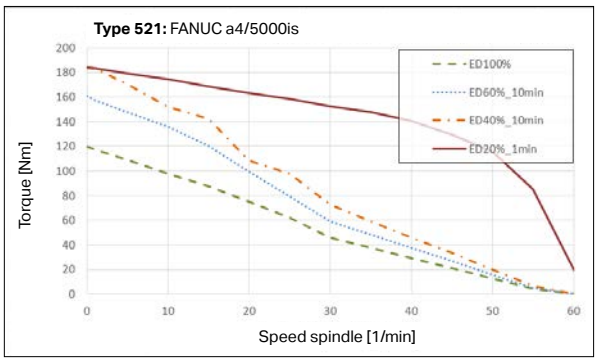
All diagram values with 20 % safety

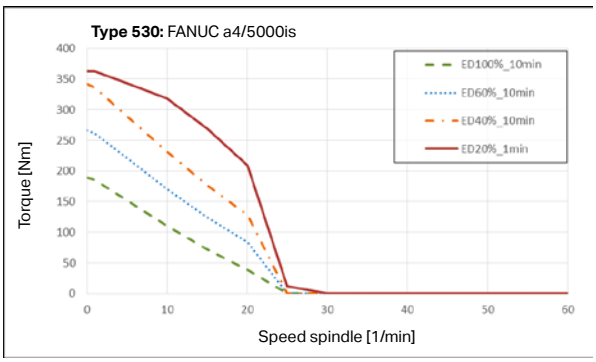
For Fanuc CNC

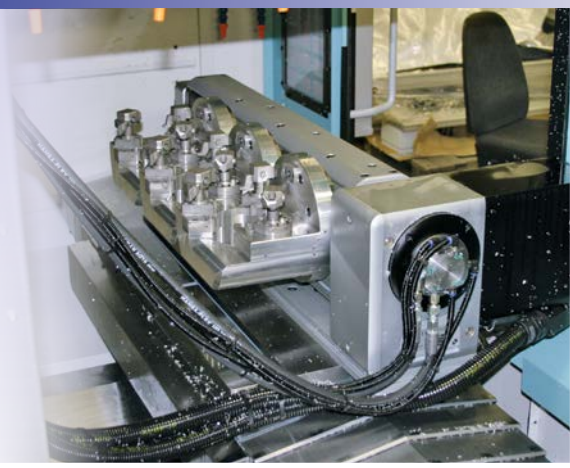








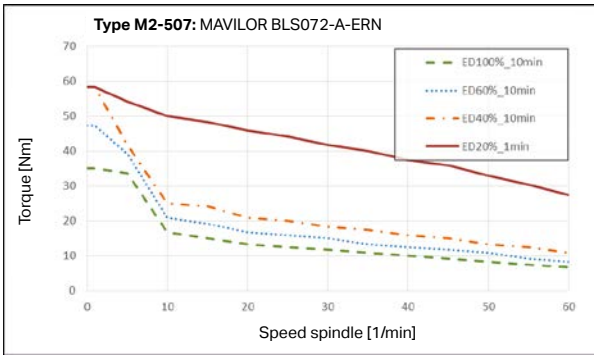


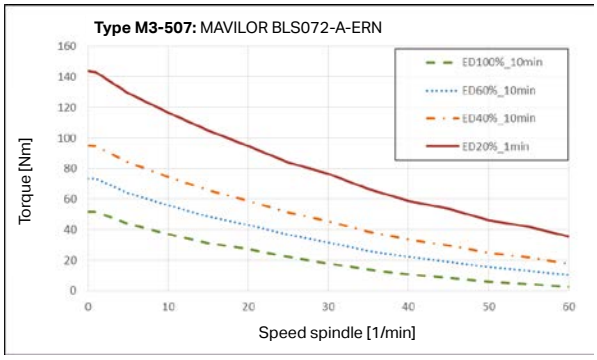


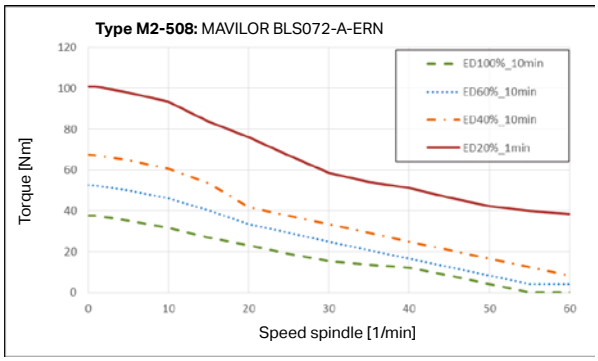
Permissible feed torque during machining under various conditions for **M**-type rotary tables and dividing axes of **T2...3**-type rotary tables

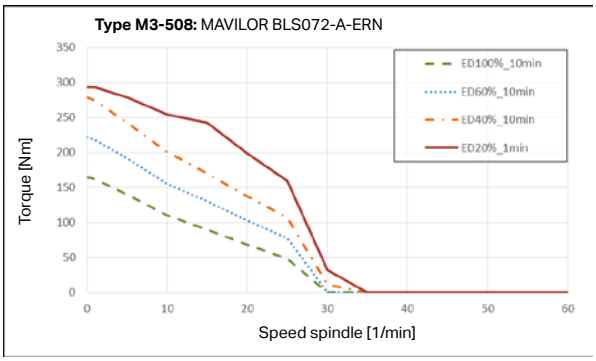
All diagram values with 20 % safety

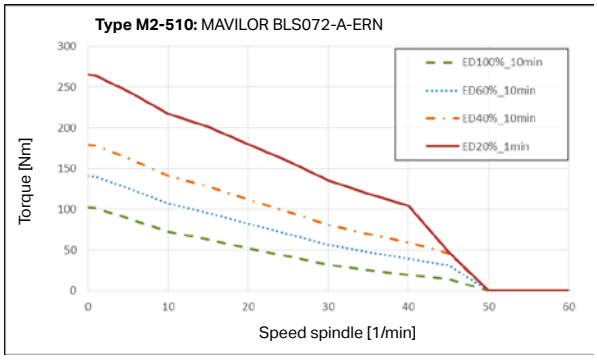
For Siemens and Heidenhain CNCs

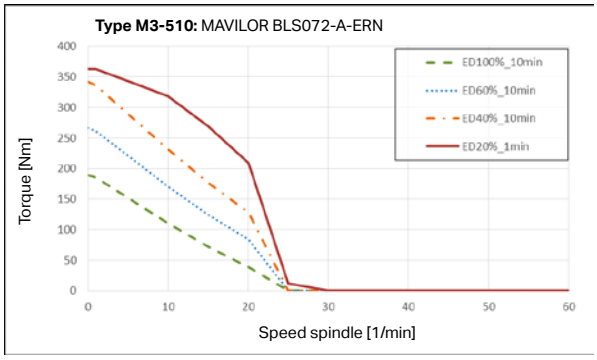


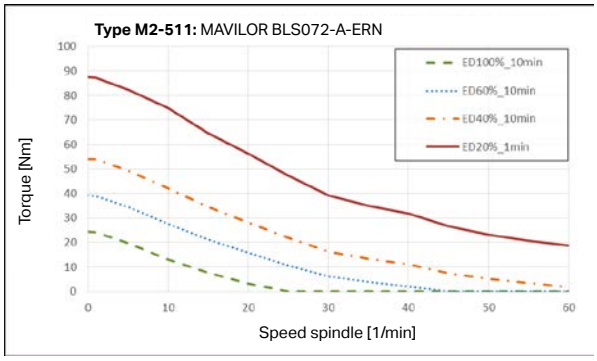


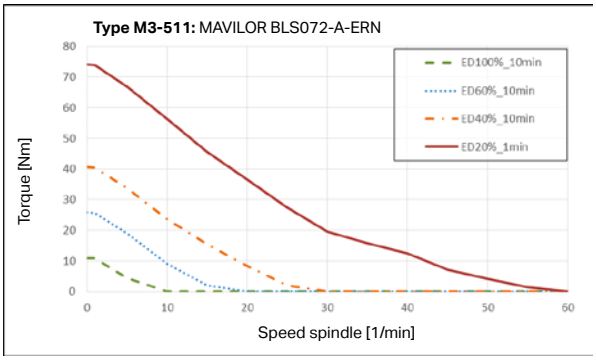












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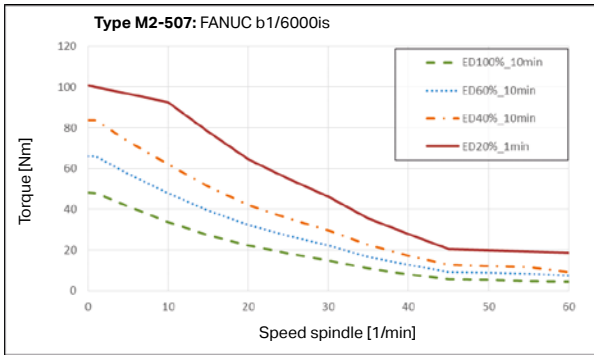
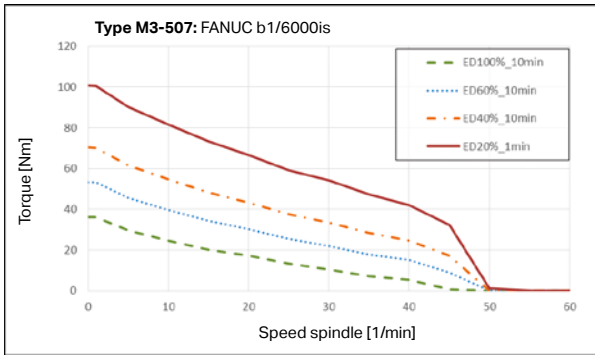
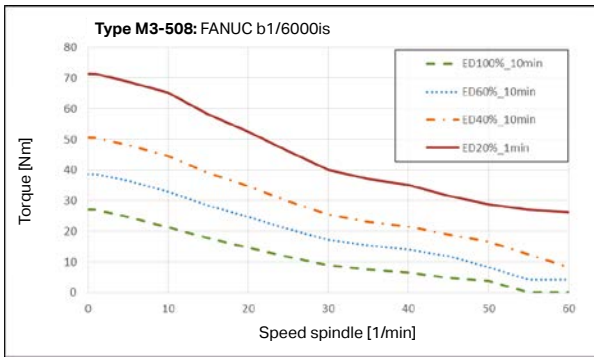
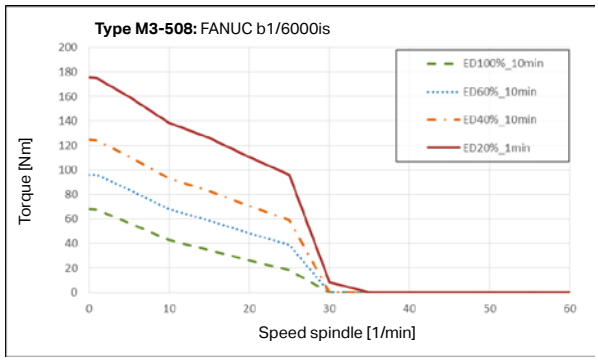
All diagram values with 20 % safety

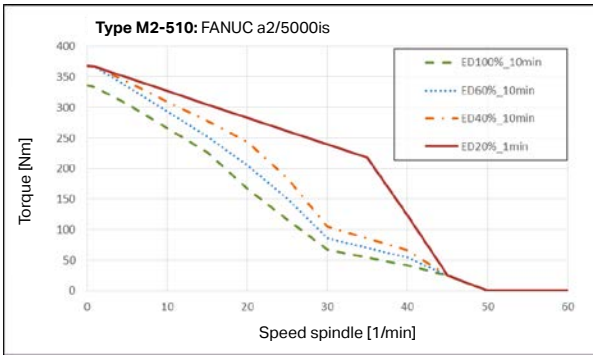
For Fanuc CNC

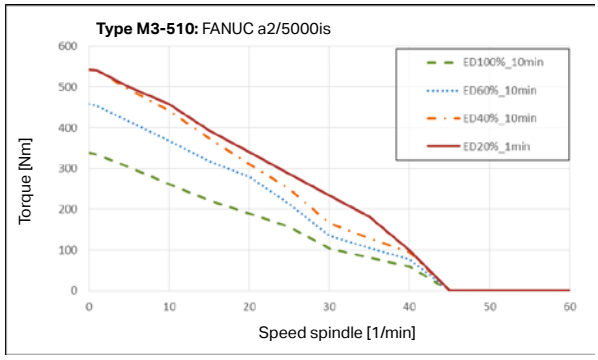


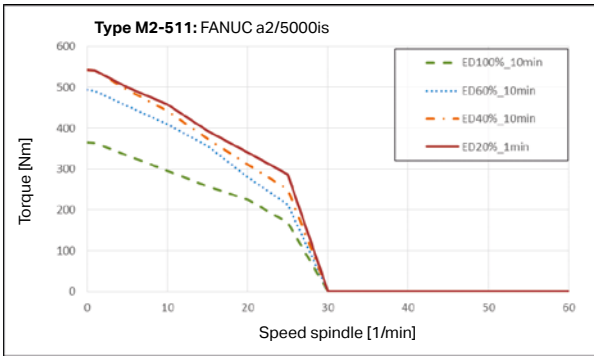


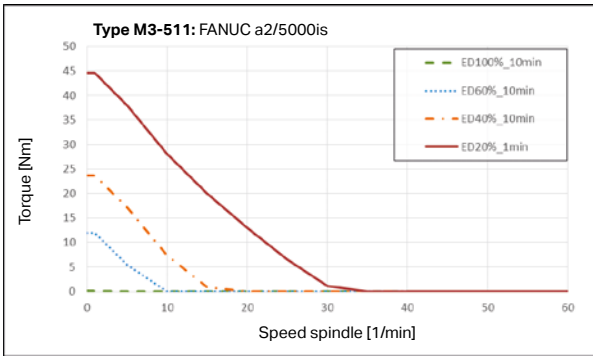












Material elasticities and their effect on workpiece accuracy: Understand them correctly and know how to respond in real-world practice

P8 on EA- and M-type rotary tables

Background

Every material has a certain elasticity. Depending on the orientation and load, these affect the accuracy of machining in different ways. The figures and data shown here provide information on the values to be expected.

Optimization options

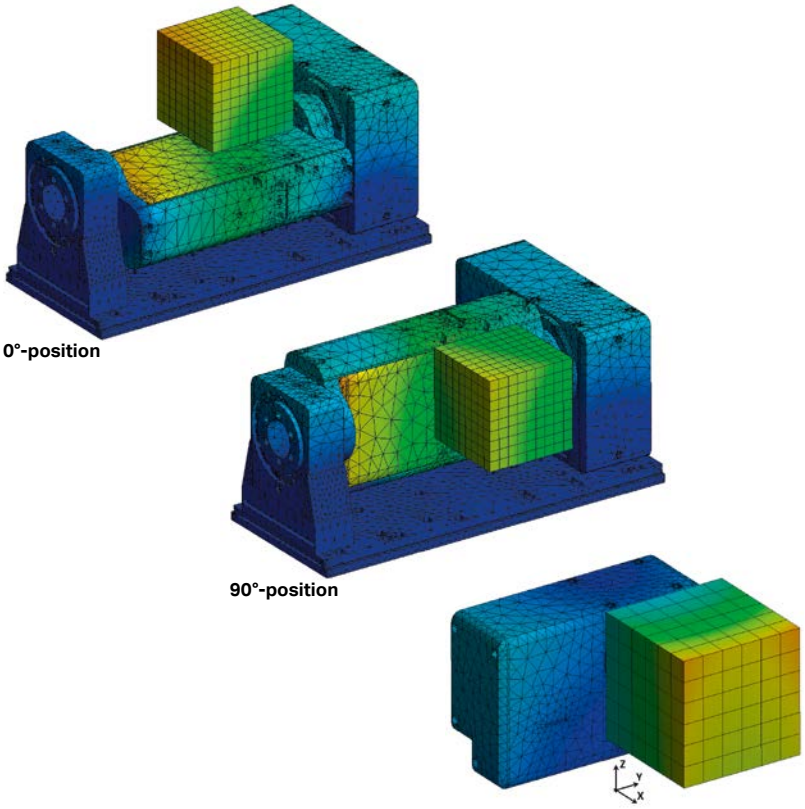
If the static stiffness is insufficient, the following may help:

- Error compensation in the axis direction affected
- Use of lighter clamping means
- On a TF-type rotary table (TIP), retrofitting a counter bearing, if necessary
- Changing the machining strategy

Static mechanical analysis

Using FEM analyses, the compliance in P8 (see figure at right) was calculated in the respective configuration for all T-type rotary tables listed below. The deflections in the X- and Y-directions are usually negligible. The table below shows the deflection in the Z-direction. Depending on the workpiece weight, this information can be used to determine the approximate displacement.

Results of static-mechanical FEM analysis



0°-position

90°-position

Condition: Rotary table is mounted in the specified manner and both axes are clamped with 6 bar compressed air.

Compliance of EA- and M-type rotary tables in P8 in the Z-direction (approximate values)

µm/kg	
EA-50x	-0.020
EA-51x	-0.015
EA-52x	-0.015
EA-530	-0.006

P8 with T-type rotary tables

Compliance of TF-type rotary tables in P8 in the Z-direction (approximate values)

µm/kg	0°	90°
	TIPc	TIPc
TF-50x51x	–0.110	–0.142
TF-51x52x	–0.064	–0.076
TF-52x530	–0.046	–0.056

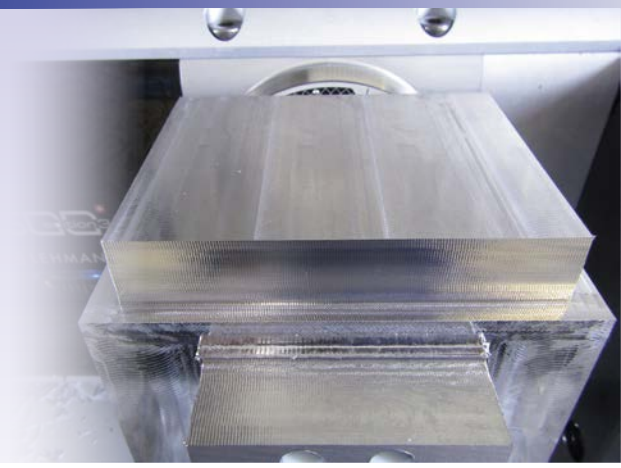
Compliance of T1-type rotary tables in P8 in the Z-direction (approximate values)

µm/kg	0°				90°			
	TAPc	TAP	TOP	TGR	TAPc	TAP	TOP	TGR
T1-50x51x	–0.032	–0.031	–0.039		–0.074	–0.104	–0.132	
T1-51x52x	–0.024	–0.038	–0.041	–0.030	–0.051	–0.082	–0.082	–0.069
T1-52x530	–0.026	–0.046	–0.041	–0.041	–0.055	–0.110	–0.097	–0.101

Compliance of T2-type rotary tables in P8 in the Z-direction (approximate values)

µm/kg	Spindle distance	0°		90°	
		Spindle 1	Spindle 2	Spindle 1	Spindle 2
T2-50x51x TOP1.2	160 mm	-0.042	-0.099	-0.078	-0.219
T2-51x52x TOP2.2	220 mm	-0.038	-0.098	-0.069	-0.234
T2-51x52x TOP2.2	300 mm	-0.038	-0.117	-0.065	-0.292

Optimizing vibration, tool wear, surface quality and machining capacity



Dynamic analysis

The eigenfrequencies were determined using FEM modal analyses. The compliance frequency response curves at the right show the result of the harmonic analysis. The first 9 vibration modes and eigenfrequencies of all rotary tables listed below were determined. Experience has shown the mode 1 and mode 2 are the most important in actual practice. These values can be found in the table below.

Optimization options

If the frequency of the machining process starts to increase, change the following:

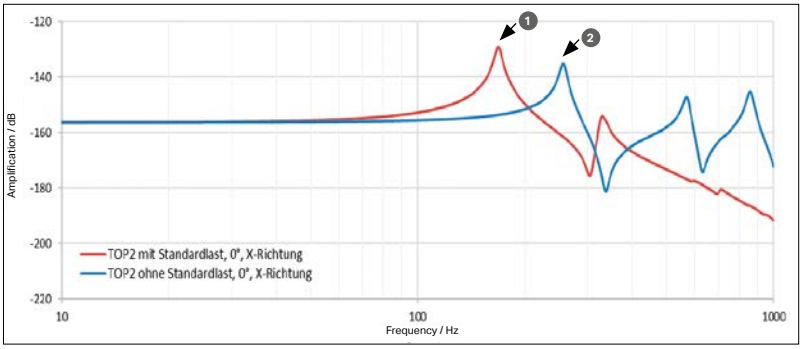
- Tool speed
- Number of teeth on tool
- Machining strategy
- Workpiece orientation

Important notice: : Shape, weight and the way the workpieces are assembled as well as the clamping devices used can significantly affect eigenfrequencies.

Condition: Rotary table is mounted in the specified manner and both axes are clamped with 6 bar compressed air.

With / without standard load

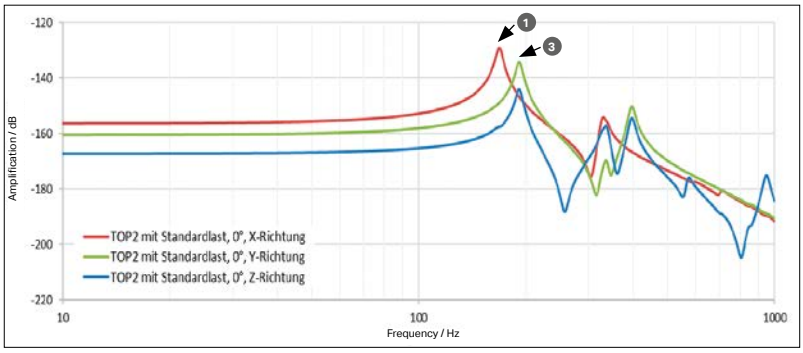
Example: T1-510520 TOP2, excitation in the in X-direction



The above peak values 1-2 can be found in the table below. This example shows clearly how a change in the standard load can shift the eigenfrequencies. This shift also occurs during machining, of course, since the weight of the workpiece is changing.

Operating directions X, Y and Z

Example: T1-510520 TOP2



The lowest eigenfrequency is usually the most critical one. The above illustration shows clearly that this frequency is excited in the X-direction. For this reason, machining that could cause vibration should be performed in the Y- or Z-direction. The first two eigenfrequencies are given in the table below.

Example of machining frequency calculation

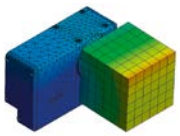
Angular milling cutter ø40 mm, number of teeth 4, speed 1900 rpm = $\frac{4 \times 1900}{60}$ = 127 Hz

Every object has several natural frequencies (so-called eigenfrequencies) that depend on the object's shape, mass and material. If the machining frequency matches an eigenfrequency, e.g. that of a rotary table, the result is chattering or whistling noises. A vertical machining center has the first eigenfrequency in the range of approximately 100 Hz. It is important that the machining frequency does not match the eigenfrequency.

The illustrations below always show mode 1

Eigenfrequency of EA- and M-type rotary table, mode 1 and 2 (approximate values)

Hz	Rotary table fastened by means of bolted connection from below, without consideration of the compliance of the intermediate plate								Rotary table fastened by means of clamping claws							
	without standard load				with standard load				without standard load				with standard load			
	507	510	520	530	507	510	520	530	507	510	520	530	507	510	520	530
Mode 1	859	760	669	602	352	229	160	201	780	716	627	564	339	222	155	194
Mode 2	913	797	681	634	371	249	163	211	857	731	638	596	364	245	160	203

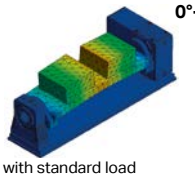


Eigenfrequency of rotoFIX-type rotary tables, mode 1 and 2 (approximate values)

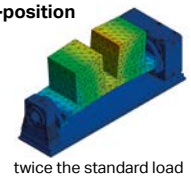
Hz	without standard load				with standard load				with twice the standard load			
	507	510	520	530	507	510	520	530	507	510	520	530
Mode 1	332	254	166	60	224	194	120	46	165	149	90	35
Mode 2	575	364	306	179	325	249	176	108	193	157	104	62

- For the 90° position, a lower first eigenfrequency and a higher second eigenfrequency can be expected (+/- 10-20%).
- With an eccentric clamping yoke assembly, the first eigenfrequency is slightly lower and the second is 20-30% higher.
- The aluminum clamping yoke results in a slightly lower first eigenfrequency for larger loads. For small loads, on the other hand, it is slightly higher.

0°-position



with standard load
listed on **p. 40**

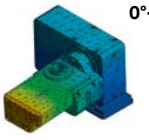


twice the standard load
listed on **p. 40**

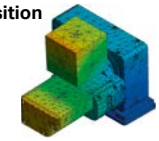
Eigenfrequency of TF-type rotary tables, mode 1 and 2 (approximate values)

Hz		without standard load		with standard load	
		TIPc		TIPc	
		0°	90°	0°	90°
Mode 1	**50x51x**	180	185	129	134
	51x52x	187	194	110	126
	52x530	221	222	107	123
Mode 2	**50x51x**	192	201	141	157
	51x52x	206	215	132	143
	52x530	226	243	133	137

0°-position



without standard load
listed on **p. 44**

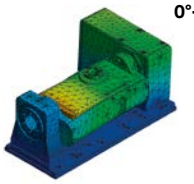


with standard load
listed on **p. 44**

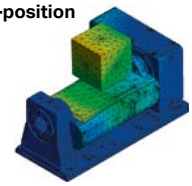
Eigenfrequency of T1-type rotary tables, mode 1 and 2 (approximate values)

Hz		without standard load								with standard load							
		TAPc		TAP		TOP		TGR		TAPc		TAP		TOP		TGR	
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
Mode 1	**50x51x**	270	283	230	231	241	245			187	201	181	190	183	195		
	51x52x	249	233	215	194	(2) 257	214	212	196	152	156	143	142	(1) 169	154	155	154
	52x530	243	211	184	172	195	181	144	122	133	131	107	105	113	112	107	94
Mode 2	**50x51x**	318	315	283	265	312	295			229	238	218	218	244	238		
	51x52x	261	296	233	249	294	321	232	247	162	187	158	175	(3) 192	210	181	196
	52x530	260	314	238	259	259	264	157	196	139	156	134	142	143	145	122	143

0°-position



without standard load
listed on **pp. 48–56**

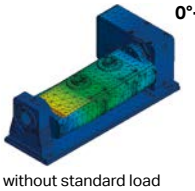


with standard load listed
on **pp. 48–56**

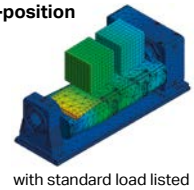
Eigenfrequency of T2-type rotary tables, mode 1 and 2 (approximate values)

Hz		Spindle distance	without standard load		with standard load	
			0°	90°	0°	90°
Mode 1	**T2-50x51x TOP1.2**	160 mm	185	188	150	155
	T2-51x52x TOP2.2	220 mm	154	142	101	96
	T2-51x52x TOP2.2	300 mm	138	129	93	89
Mode 2	**T2-50x51x TOP1.2**	160 mm	272	259	218	211
	T2-51x52x TOP2.2	220 mm	221	220	142	146
	T2-51x52x TOP2.2	300 mm	206	204	137	139

0°-position



without standard load
listed on **p. 62**

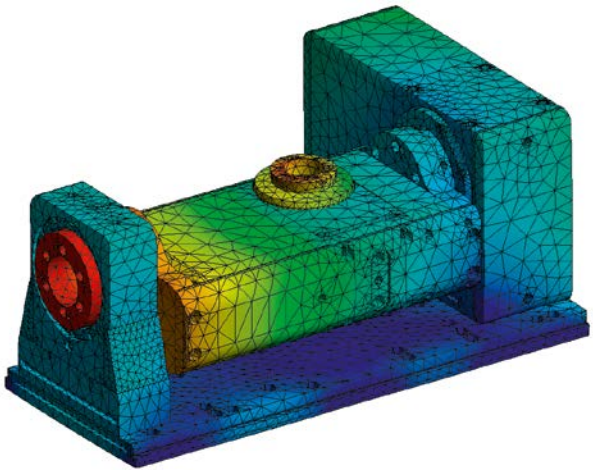


with standard load listed
on **p. 62**

Thermal deformation from the process and operation

Basics

Heat is generated by friction and electrical losses. The more intense and the longer a motion lasts, the more the temperature rises. Depending on the particular heat sources (motor, gear unit, seals, etc.,) the effects on dimensions differ greatly. At point P8 (see figure to the right), the relevant differences for the workpiece have been determined and are presented in the adjacent tables. The determination was made experimentally and with the aid of simulations.



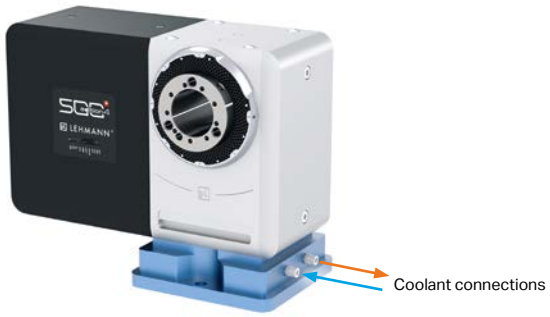
Thermally induced deformations under steady-state conditions from the FEM simulation of the T1-510520 TOP2, duty cycle 20% in acc. with catalog, without coolant, deformation shown magnified 80x.

Approximate values for estimating the deformations

Approximate values for estimating the thermally induced deformations are listed in the tables on the following pages. All values apply to L-versions; on the R-version, it must be kept in mind that the signs for the directions of rotation are reversed.

Cooling plate

The cooling plate is an option for improving heat removal from the gear unit, bearings, etc. in demanding applications, e.g. simultaneous machining over an extended period of time (HSC, grinding, engraving). The values listed in the adjacent tables are based on the use of such cooling plates on EA-type rotary tables or tilting axes on T-type rotary tables.



Influencing factors

The thermally induced deformations occur in response to external (coolant, ambient air, etc.) and internal (gear unit, bearings, motor, etc.) thermal factors. The following factors require particular attention:

- Operating mode of the table (duty cycle, performance, etc.)
- Idle time between the work cycles
- Optional cooling plate (on request) for removing internal heat from the gear unit, bearings, etc.
- Machine table (thickness, size, material) and how the rotary table is mounted on it

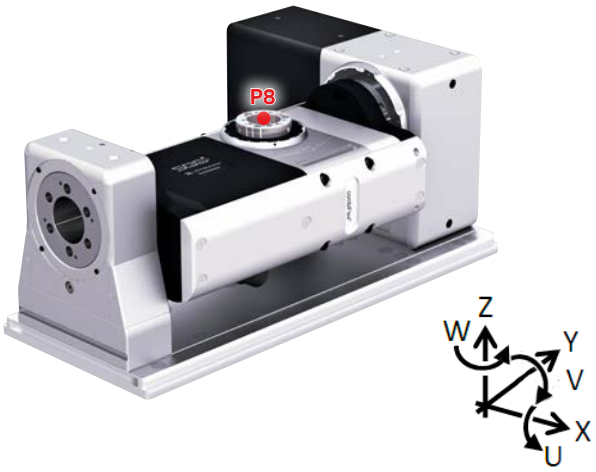
Example of reading the tables

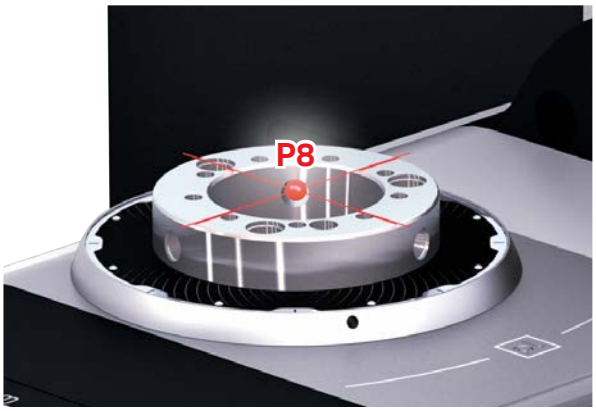
For dry machining with the T1-510520 TOP2, without a cooling plate, the table indicates a displacement at point P8 of 16 µm in the X-direction 60 s after a cold start. This displacement increases in the following minutes and then decreases later. Explanation for this behavior: When starting cold, there are very large temperature differences that cause corresponding displacements. The subsequent equalization of temperatures results in a reduction of the displacements. Tip: The Y-direction does not exhibit this behavior (see Table). It is thus better to perform precision machining shortly after a cold start in the Y-direction than in the X-direction.

The best cooling is not a substitute for the briefest possible workpiece clamping ...

Measuring point P8

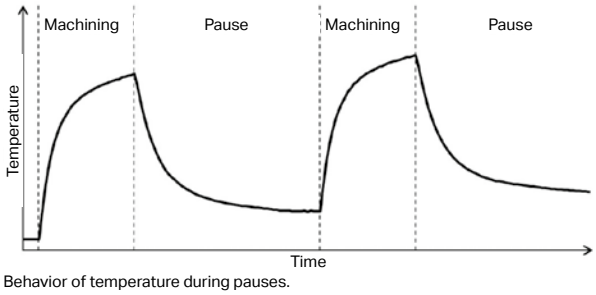
The displacements and rotations are evaluated at point P8, at the center of the spindle surface.



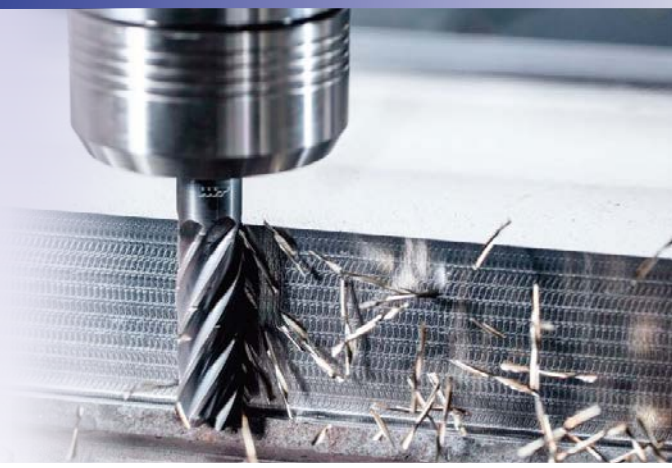


Important for precision machining

Maximum precision is achieved through use of coolant (KSS). Constant and uniform wetting of the rotary table is recommended. Interruptions in the use of coolant can result in accuracy fluctuations. The most effective heat removal is achieved with water-based coolants that are kept at a constant temperature and distributed uniformly. In addition, pauses and interruptions in machining between individual cycles should be avoided. Relevant cooling and thus deformations can occur even from pauses of one minute.



Behavior of temperature during pauses.



The following values in both tables apply with the rotary table mounted and resting over its entire surface on a solid machine table (steel/cast metal).

Dry machining

		µm															arcsec													
		X-displacement					Y-displacement					Z-displacement					U-rotation					V-rotation					W-rotation				
	Time after start, duty cycle 20%	60"	90"	180"	1h	10h	60"	90"	180"	1h	10h	60"	90"	180"	1h	10h	60"	90"	180"	1h	10h	60"	90"	180"	1h	10h	60"	90"	180"	1h	10h
without cooling plate	EA-507	2	2	3	21	35	0	0	0	-2	-4	2	2	4	20	37	-105	-121	-132	-53	-42	-3	-4	-6	-1	2	0	0	0	0	0
	EA-510	2	2	3	23	38	0	0	0	-3	-5	2	3	6	27	50	-105	-121	-132	-53	-42	-4	-5	-8	-1	3	0	0	0	0	0
	EA-520	2	3	5	31	50	0	0	0	-4	-7	3	4	7	32	60	-88	-101	-111	-44	-35	-5	-6	-10	-2	4	0	0	0	0	0
	EA-530	3	4	5	35	57	0	0	0	-6	-10	3	5	8	40	74	-108	-125	-136	-55	-43	-6	-8	-12	-2	5	0	0	0	0	0
	TF-507510 TIP1c	16	19	20	7	5	-1	-1	-3	-45	-70	9	13	20	54	83	-4	-5	-8	0	4	105	120	128	50	40	-135	-147	-141	-54	-47
	TF-510520 TIP2c	16	19	20	7	5	-1	-2	-3	-52	-81	11	15	23	63	97	-5	-7	-11	-1	6	88	100	107	42	34	-135	-147	-141	-54	-47
	TF-520530 TIP3c	57	66	68	26	18	-6	-8	-10	-71	-107	11	19	26	79	120	-6	-9	-13	-1	8	-108	-125	-136	-55	-43	-112	-123	-118	-45	-39
	T1-507510 TAP1c	16	19	20	6	3	-3	-4	-7	-47	-70	8	10	15	47	75	-1	-2	-2	6	10	107	122	130	52	43	-149	-161	-156	-73	-67
	T1-510520 TAP2c	16	19	20	6	3	-3	-5	-9	-54	-81	9	12	18	55	87	-1	-2	-3	8	13	89	102	109	44	36	-149	-161	-156	-73	-67
	T1-520530 TAP3c	57	66	68	21	11	-6	-8	-10	-71	-107	9	15	21	69	107	-1	-3	-4	8	16	-108	-125	-136	-55	-43	-124	-135	-130	-61	-56
	T1-507510 TAP1	16	19	20	6	3	-4	-6	-10	-65	-97	8	10	15	47	75	-1	-2	-2	6	10	107	122	130	52	43	-149	-161	-156	-73	-67
	T1-510520 TAP2	16	19	20	6	3	-4	-7	-13	-77	-116	9	12	18	55	87	-1	-2	-3	8	13	89	102	109	44	36	-149	-161	-156	-73	-67
	T1-520530 TAP3	57	66	68	21	11	-9	-12	-15	-105	-158	9	15	21	69	107	-1	-3	-4	8	16	-108	-125	-136	-55	-43	-124	-135	-130	-61	-56
	T1-507510 TOP1	16	19	20	6	3	-4	-6	-10	-65	-97	8	10	15	47	75	-1	-2	-2	6	10	107	122	130	52	43	-149	-161	-156	-73	-67
	T1-510520 TOP2	16	19	20	6	3	-4	-7	-13	-77	-116	9	12	18	55	87	-1	-2	-3	8	13	89	102	109	44	36	-149	-161	-156	-73	-67
	T1-520530 TOP3	57	66	68	21	11	-9	-12	-15	-105	-158	9	15	21	69	107	-1	-3	-4	8	16	-108	-125	-136	-55	-43	-124	-135	-130	-61	-56
	T1-510520 TGR2	0	0	1	2	4	-4	-7	-13	-76	-114	14	18	27	83	132	-1	-2	-3	8	13	89	102	109	44	36	-149	-161	-156	-73	-67
	T1-520530 TGR3	0	0	1	4	7	-8	-11	-14	-98	-148	14	23	31	104	163	-1	-3	-4	8	16	-108	-125	-136	-55	-43	-124	-135	-130	-61	-56
	T2-507510, 160, 2	16	19	20	6	3	-6	-10	-16	-105	-156	5	7	10	31	50	-1	-2	-2	6	10	107	122	130	52	43	-149	-161	-156	-73	-67
	T2-507510, 160, 1	16	19	20	6	3	-4	-6	-10	-65	-97	8	10	15	47	75	-1	-2	-2	6	10	107	122	130	52	43	-149	-161	-156	-73	-67
	T2-510520, 220, 2	16	19	20	6	3	-7	-12	-23	-135	-204	6	7	11	34	54	-1	-2	-3	8	13	89	102	109	44	36	-149	-161	-156	-73	-67
	T2-510520, 220, 1	16	19	20	6	3	-4	-7	-13	-77	-116	9	12	18	55	87	-1	-2	-3	8	13	89	102	109	44	36	-149	-161	-156	-73	-67
	T2-510520, 300, 2	16	19	20	6	3	-9	-15	-28	-166	-250	5	7	10	30	48	-1	-2	-3	8	13	89	102	109	44	36	-149	-161	-156	-73	-67
	T2-510520, 300, 1	16	19	20	6	3	-4	-7	-13	-77	-116	9	12	18	55	87	-1	-2	-3	8	13	89	102	109	44	36	-149	-161	-156	-73	-67
with cooling plate* (optional)	EA-507	2	2	3	16	20	0	-1	-1	-4	-5	2	2	4	14	17	-105	-122	-135	-64	-60	-3	-4	-6	-4	-4	0	0	-1	-1	-1
	EA-510	2	2	3	17	21	0	-1	-2	-5	-5	2	3	6	19	23	-105	-122	-135	-64	-60	-4	-6	-8	-6	-5	0	-1	-1	-1	-2
	EA-520	2	3	4	23	28	-1	-1	-2	-7	-8	3	4	7	22	27	-88	-102	-112	-54	-50	-5	-7	-10	-7	-6	-1	-1	-1	-2	-2
	EA-530	3	3	5	27	33	-1	-2	-3	-11	-12	4	5	9	27	33	-108	-125	-139	-66	-62	-6	-8	-12	-8	-8	-1	-1	-2	-3	-4
	TF-507510 TIP1c	16	18	19	7	6	-1	-1	-3	-36	-45	9	13	20	47	55	-4	-6	-9	-4	-4	105	120	130	61	57	-136	-148	-143	-57	-50
	TF-510520 TIP2c	16	18	19	7	7	-1	-2	-3	-42	-52	11	15	23	55	64	-5	-8	-12	-6	-5	88	101	108	51	48	-136	-148	-143	-57	-50
	TF-520530 TIP3c	56	64	66	23	23	-6	-6	-13	-61	-72	15	19	30	68	78	-6	-9	-14	-7	-7	-108	-125	-139	-66	-62	-113	-123	-119	-48	-42
	T1-507510 TAP1c	16	18	19	7	6	-3	-4	-7	-38	-45	7	10	15	40	48	-1	-2	-2	2	2	104	119	127	54	50	-137	-149	-144	-61	-55
	T1-510520 TAP2c	16	18	20	7	6	-3	-5	-8	-44	-52	8	11	17	47	55	-2	-2	-3	3	2	87	99	106	45	41	-137	-149	-144	-61	-55
	T1-520530 TAP3c	56	64	68	23	22	-6	-6	-13	-61	-72	11	14	22	58	67	-2	-2	-4	3	3	-108	-125	-139	-66	-62	-114	-124	-120	-51	-46
	T1-507510 TAP1	16	18	19	7	6	-4	-6	-10	-57	-67	7	10	15	40	48	-1	-2	-2	2	2	104	119	127	54	50	-137	-149	-144	-61	-55
	T1-510520 TAP2	16	18	20	7	6	-5	-8	-12	-67	-79	8	11	17	47	55	-2	-2	-3	3	2	87	99	106	45	41	-137	-149	-144	-61	-55
	T1-520530 TAP3	56	64	68	23	22	-9	-9	-19	-94	-111	11	14	22	58	67	-2	-2	-4	3	3	-108	-125	-139	-66	-62	-114	-124	-120	-51	-46
	T1-507510 TOP1	16	18	19	7	6	-4	-6	-10	-57	-67	7	10	15	40	48	-1	-2	-2	2	2	104	119	127	54	50	-137	-149	-144	-61	-55
	T1-510520 TOP2	16	18	20	7	6	-5	-8	-12	-67	-79	8	11	17	47	55	-2	-2	-3	3	2	87	99	106	45	41	-137	-149	-144	-61	-55
	T1-520530 TOP3	56	64	68	23	22	-9	-9	-19	-94	-111	11	14	22	58	67	-2	-2	-4	3	3	-108	-125	-139	-66	-62	-114	-124	-120	-51	-46
	T1-510520 TGR2	0	0	1	2	2	-5	-8	-12	-66	-78	8	11	17	47	55	-2	-2	-3	3	2	87	99	106	45	41	-137	-149	-144	-61	-55
	T1-520530 TGR3	0	0	1	2	3	-9	-9	-18	-89	-105	11	14	22	58	67	-2	-2	-4	3	3	-108	-125	-139	-66	-62	-114	-124	-120	-51	-46
	T2-507510, 160, 2	16	18	19	7	6	-7	-10	-17	-97	-114	5	7	10	26	32	-1	-2	-2	2	2	104	119	127	54	50	-137	-149	-144	-64	-55
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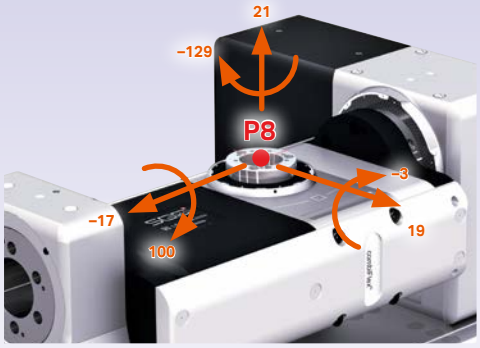
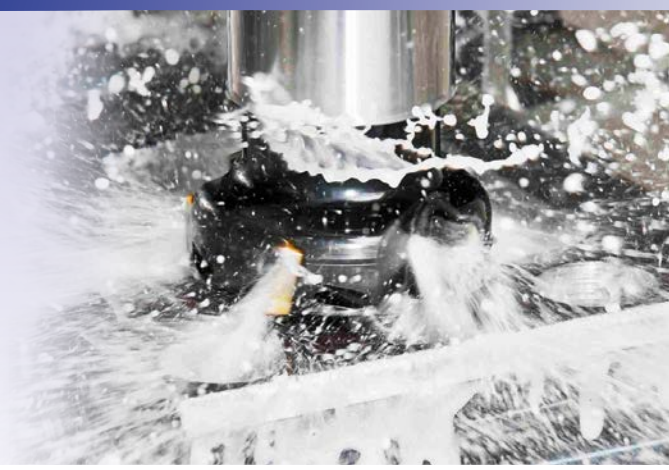
	T2-510520, 220, 2	16	18	20	7	6	-9	-15	-23	-126	-149	5	7	11	29	34	-2	-2	-3	3	2	87	99	106	45	41	-137	-149	-144	-61	-55
	T2-510520, 220, 1	16	18	20	7	6	-5	-8	-12	-67	-79	8	11	17	47	55	-2	-2	-3	3	2	87	99	106	45	41	-137	-149	-144	-61	-55
	T2-510520, 300, 2	16	18	20	7	6	-12	-19	-28	-158	-186	4	6	9	26	30	-2	-2	-3	3	2	87	99	106	45	41	-137	-149	-144	-61	-55
	T2-510520, 300, 1	16	18	20	7	6	-5	-8	-12	-67	-79	8	11	17	47	55	-2	-2	-3	3	2	87	99	106	45	41	-137	-149	-144	-61	-55

* Coolant temperature equal to room temperature. Specific cooling capacity 420 W/K.
High Series tends to generate less heat, therefore values are lower

1 = Spindle 1, 2 = Spindle 2



Example T1-510520 TOP2



Wet machining (water-based coolant)

Values apply for coolant temperature equal to the ambient temperature

		µm															arcsec													
		X-displacement					Y-displacement					Z-displacement					U-rotation					V-rotation					W-rotation				
	Time after start, duty cycle 20%	60"	90"	180"	1h	10h	60"	90"	180"	1h	10h	60"	90"	180"	1h	10h	60"	90"	180"	1h	10h	60"	90"	180"	1h	10h	60"	90"	180"	1h	10h
without cooling plate	EA-507	2	3	4	6	6	0	0	0	1	1	3	4	6	7	7	-125	-138	-126	-115	-111	-4	-6	-7	-7	-7	0	0	0	0	0
	EA-510	2	3	5	6	7	0	0	0	1	1	3	6	8	9	9	-125	-138	-126	-115	-111	-6	-8	-10	-10	-9	0	0	0	0	0
	EA-520	3	5	6	8	9	0	0	1	1	2	4	7	9	11	11	-104	-115	-105	-96	-93	-7	-10	-12	-12	-11	0	0	0	0	1
	EA-530	4	5	7	9	10	0	0	1	2	2	5	8	11	13	14	-129	-142	-130	-119	-115	-8	-12	-14	-14	-14	0	0	0	0	1
	TF-507510 TIP1c	19	21	19	18	17	-2	-3	-5	-7	-8	13	19	24	25	25	-5	-8	-9	-9	-9	124	133	120	110	107	-157	-145	-126	-112	-105
	TF-510520 TIP2c	19	21	19	18	18	-2	-3	-6	-9	-10	15	22	28	29	30	-7	-11	-13	-12	-12	103	111	100	92	89	-157	-145	-126	-112	-105
	TF-520530 TIP3c	67	73	67	63	62	-8	-10	-16	-19	-20	19	25	34	34	38	-8	-13	-15	-14	-15	-129	-142	-130	-119	-115	-131	-121	-105	-93	-88
	T1-507510 TAP1c	19	20	19	17	17	-4	-7	-10	-13	-14	10	15	18	19	19	-2	-2	-2	-2	-2	123	132	120	109	106	-159	-147	-129	-116	-109
	T1-510520 TAP2c	19	21	19	17	17	-5	-8	-12	-15	-16	12	17	21	23	23	-2	-3	-3	-3	-3	102	110	100	91	88	-159	-147	-129	-116	-109
	T1-520530 TAP3c	67	71	66	60	59	-8	-10	-16	-19	-20	15	19	26	27	29	-2	-4	-4	-4	-4	-129	-142	-130	-119	-115	-133	-123	-108	-96	-91
	T1-507510 TAP1	19	20	19	17	17	-5	-10	-14	-18	-19	10	15	18	19	19	-2	-2	-2	-2	-2	123	132	120	109	106	-159	-147	-129	-116	-109
	T1-510520 TAP2	19	21	19	17	17	-7	-12	-17	-22	-23	12	17	21	23	23	-2	-3	-3	-3	-3	102	110	100	91	88	-159	-147	-129	-116	-109
	T1-520530 TAP3	67	71	66	60	59	-12	-15	-25	-29	-30	15	19	26	27	29	-2	-4	-4	-4	-4	-129	-142	-130	-119	-115	-133	-123	-108	-96	-91
	T1-507510 TOP1	19	20	19	17	17	-5	-10	-14	-18	-19	10	15	18	19	19	-2	-2	-2	-2	-2	123	132	120	109	106	-159	-147	-129	-116	-109
	T1-510520 TOP2	19	21	19	17	17	-7	-12	-17	-22	-23	12	17	21	23	23	-2	-3	-3	-3	-3	102	110	100	91	88	-159	-147	-129	-116	-109
	T1-520530 TOP3	67	71	66	60	59	-12	-15	-25	-29	-30	15	19	26	27	29	-2	-4	-4	-4	-4	-129	-142	-130	-119	-115	-133	-123	-108	-96	-91
	T1-510520 TGR2	0	1	1	1	1	-7	-12	-17	-22	-23	20	28	35	38	38	-2	-3	-3	-3	-3	102	110	100	91	88	-159	-147	-129	-116	-109
	T1-520530 TGR3	0	1	1	1	1	-12	-15	-24	-28	-29	25	32	42	45	48	-2	-4	-4	-4	-4	-129	-142	-130	-119	-115	-133	-123	-108	-96	-91
	T2-507510, 160, 2	19	20	19	17	17	-8	-16	-23	-29	-31	7	10	12	13	13	-2	-2	-2	-2	-2	123	132	120	109	106	-159	-147	-129	-116	-109
	T2-507510, 160, 1	19	20	19	17	17	-5	-10	-14	-18	-19	10	15	18	19	19	-2	-2	-2	-2	-2	123	132	120	109	106	-159	-147	-129	-116	-109
	T2-510520, 220, 2	19	21	19	17	17	-12	-21	-30	-39	-41	7	11	13	14	14	-2	-3	-3	-3	-3	102	110	100	91	88	-159	-147	-129	-116	-109
	T2-510520, 220, 1	19	21	19	17	17	-7	-12	-17	-22	-23	12	17	21	23	23	-2	-3	-3	-3	-3	102	110	100	91	88	-159	-147	-129	-116	-109
	T2-510520, 300, 2	19	21	19	17	17	-15	-26	-37	-48	-50	7	9	12	13	13	-2	-3	-3	-3	-3	102	110	100	91	88	-159	-147	-129	-116	-109
	T2-510520, 300, 1	19	21	19	17	17	-7	-12	-17	-22	-23	12	17	21	23	23	-2	-3	-3	-3	-3	102	110	100	91	88	-159	-147	-129	-116	-109
with cooling plate* (optional)	EA-507	2	3	4	5	5	-1	-1	-2	-2	-1	3	4	6	6	7	-126	-139	-129	-119	-114	-4	-6	-8	-8	-8	0	-1	-1	-1	-1
	EA-510	2	3	4	5	6	-1	-1	-2	-2	-2	3	6	8	9	9	-126	-139	-129	-119	-114	-6	-9	-10	-11	-10	-1	-1	-1	-1	-1
	EA-520	3	4	6	7	8	-1	-2	-3	-3	-2	4	7	9	10	11	-105	-116	-108	-99	-96	-7	-10	-12	-13	-12	-1	-1	-2	-2	-2
	EA-530	4	5	7	8	9	-2	-3	-4	-4	-3	5	8	11	13	13	-129	-143	-133	-122	-118	-9	-13	-15	-15	-15	-1	-2	-3	-3	-2
	TF-507510 TIP1c	19	20	18	16	16	-1	-3	-5	-6	-7	13	20	24	25	25	-7	-8	-8	-10	-10	124	134	122	115	110	-159	-147	-129	-114	-108
	TF-510520 TIP2c	19	20	18	17	16	-2	-3	-5	-7	-9	15	23	28	29	29	-9	-11	-11	-14	-13	103	112	102	96	92	-159	-147	-129	-114	-108
	TF-520530 TIP3c	65	69	62	60	56	-8	-13	-16	-18	-19	19	26	34	38	34	-12	-14	-14	-16	-16	-129	-143	-133	-122	-118	-133	-122	-107	-95	-90
	T1-507510 TAP1c	19	20	19	17	16	-4	-7	-10	-12	-13	10	15	18	19	19	-2	-3	-3	-3	-3	122	131	120	108	104	-159	-148	-130	-116	-109
	T1-510520 TAP2c	19	21	19	17	17	-5	-8	-12	-14	-15	12	17	21	22	22	-3	-3	-4	-4	-4	102	110	100	90	87	-159	-148	-130	-116	-109
	T1-520530 TAP3c	66	71	64	60	57	-8	-13	-16	-18	-19	15	19	26	29	26	-4	-4	-5	-5	-5	-129	-143	-133	-122	-118	-133	-123	-108	-97	-91
	T1-507510 TAP1	19	20	19	17	16	-6	-10	-14	-17	-18	10	15	18	19	19	-2	-3	-3	-3	-3	122	131	120	108	104	-159	-148	-130	-116	-109
	T1-510520 TAP2	19	21	19	17	17	-7	-12	-18	-21	-22	12	17	21	22	22	-3	-3	-4	-4	-4	102	110	100	90	87	-159	-148	-130	-116	-109
	T1-520530 TAP3	66	71	64	60	57	-12	-19	-25	-28	-29	15	19	26	29	26	-4	-4	-5	-5	-5	-129	-143	-133	-122	-118	-133	-123	-108	-97	-91
	T1-507510 TOP1	19	20	19	17	16	-6	-10	-14	-17	-18	10	15	18	19	19	-2	-3	-3	-3	-3	122	131	120	108	104	-159	-148	-130	-116	-109
	T1-510520 TOP2	19	21	19	17	17	-7	-12	-18	-21	-22	12	17	21	22	22	-3	-3	-4	-4	-4	102	110	100	90	87	-159	-148	-130	-116	-109
	T1-520530 TOP3	66	71	64	60	57	-12	-19	-25	-28	-29	15	19	26	29	26	-4	-4	-5	-5	-5	-129	-143	-133	-122	-118	-133	-123	-108	-97	-91
	T1-510520 TGR2	0	1	1	1	1	-7	-12	-18	-21	-22	12	17	21	22	22	-3	-3	-4	-4	-4	102	110	100	90	87	-159	-148	-130	-116	-109
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	T2-510520, 220, 2	19	21	19	17	17	-13	-22	-33	-38	-40	7	11	13	14	14	-3	-3	-4	-4	-4	102	110	100	90	87	-159	-148	-130	-116	-109
	T2-510520, 220, 1	19	21	19	17	17	-7	-12	-18	-21	-22	12	17	21	22	22	-3	-3	-4	-4	-4	102	110	100	90	87	-159	-148	-130	-116	-109
	T2-510520, 300, 2	19	21	19	17	17	-16	-27	-40	-47	-49	7	9	12	12	12	-3	-3	-4	-4	-4	102	110	100	90	87	-159	-148	-130	-116	-109
	T2-510520, 300, 1	19	21	19	17	17	-7	-12	-18	-21	-22	12	17	21	22	22	-3	-3	-4	-4	-4	102	110	100	90	87	-159	-148	-130	-116	-109

* Coolant temperature equal to room temperature. Specific cooling capacity 420 W/K.
High Series tends to generate less heat, therefore values are lower

1 = Spindle 1, 2 = Spindle 2

Information regarding questions about cycle time, PLC, commissioning and application (spec. simultaneous operation)

Cycle time calculation

pL has specific calculation tools at its disposal. Where necessary, we can provide assistance when calculating the piece part time. Based on your information, we will prepare a detailed cycle time calculation. See the table to the right for reference values for the clamping cycle.

	unclamp	clamp *
EA-50x	60 ms	90 ms
EA-51x	110 ms	140 ms
EA-52x	120 ms	150 ms
EA-530	160 ms	260 ms

* can be eliminated with PLC optimization

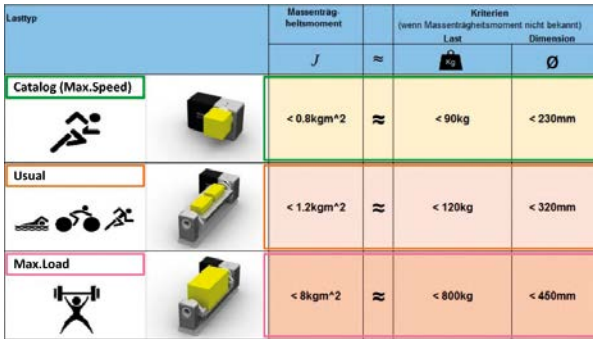
PLC models

Spindle clamping is a pL LEHMANN exclusive and has great potential for savings. At www.lehmann-rotary-tables.com, you can find appropriate PLC templates.

Parameter lists*

A variety of parameter lists for various machines and three typical applications for each are available (Download).

Automatic parameter setting via CNC program. For example, available for FANUC ROBODRILL.



* Tool for determining the permissible limit values for each rotary table; please contact us.

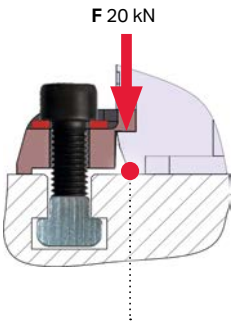
Pull-out torque

Permissible loads as a function of the individual rotary table mounting:

Reference values	Unit	507 / 508	510 / 511	520 / 521	530	Remarks
max. permissible depending on bearing	Nm	1200	2000	3900	10400	Pull-out load, spindle
EA and TF tilter with claw clamps	Nm	700	1000	1000	2000	with max. tensile load on claw clamp, without noteworthy lifting of the housing[1]
EA and TF tilter with base plate*	Nm	1200	2000	3900	10400	Securely bolted from below[2]; base plate is at least twice as wide as housing in the axis direction* and is bolted to machine table in optimal manner
*Base plate width	mm	226	254	284	360	Thickness: min. 40 mm (steel)

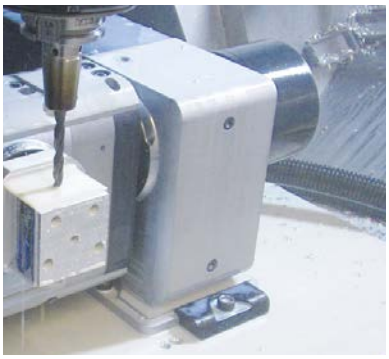
All data measured at face of spindle, across axis of rotation

Bolt torque as specified in operating manual:



[1] Lifting point on housing

[2] Individual base plate securely bolted to housing from below through all 4 holes



Properly tightened is a prerequisite for the best possible utilization of the permissible loading.

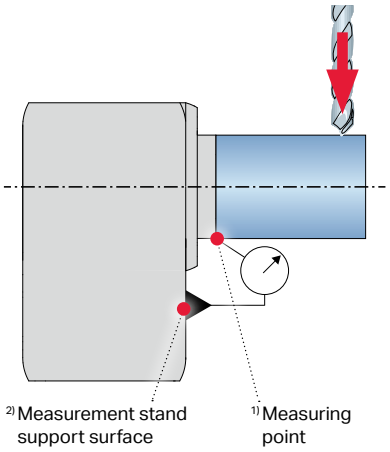
Specific reference values for individual applications and how to use them

Stiffness

Expected response (elasticity) to corresponding load:

Reference values	Unit	507 (508)	510 (511)	520 (521)	530	Remarks
Torsion, gear unit	Nm/°	1440 (1,000)	1800 (1,800)	5400 (5,400)	14000	in conjunction with feed torque
Spindle, axial*	kN/mm	1400	1800	2400	4600	in conjunction with axial force
Spindle, deflection*	kNm/mm	21	26	52	135	in conjunction with pull-out torque

*All data measured at face of spindle[1], relative to rotary table housing[2]; spindle clamping active (inactive approx. –10%)

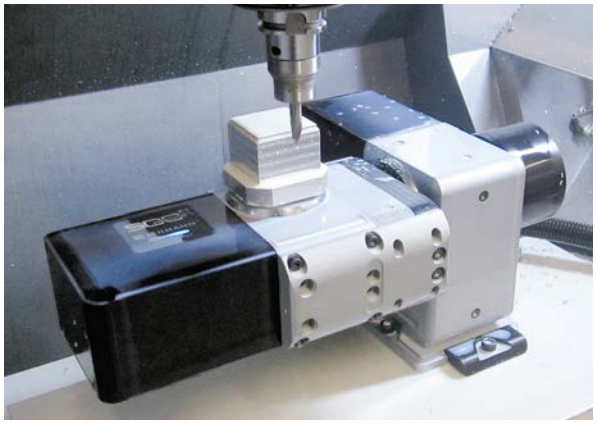


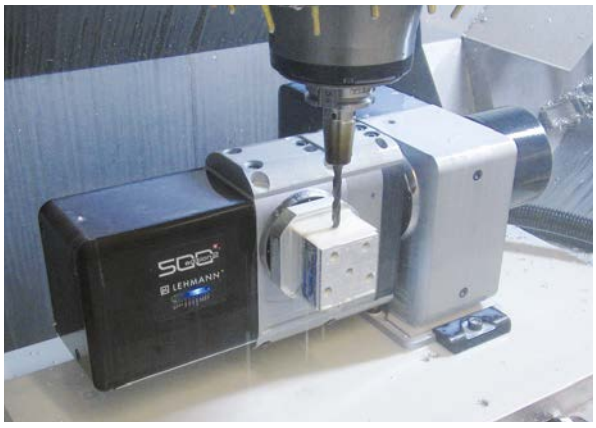
Achievable workpiece accuracies in three dimensions

The reference values are based on detailed experiments where, among other things, such sample parts were produced on a DMU 65: with different T-type rotary tables (TF and T1), with and without WMS, with and without compensation. Depending on the machine's accuracy and the conditions listed below, the following workpiece accuracies are possible:

Reference values	Positioning	Simultaneous
Size	Cube 350mm	Cube 150mm
Weight	150 kg	34 kg
Accuracy [1]	± 10 µm/100 mm	
Accuracy [2]	± 5 µm/100 mm	not possible
Accuracy WMS [1]	± 3 µm/100 mm	
Accuracy WMS [2]	± 2 µm/100 mm	not possible

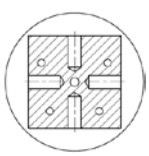
[1] only ONE workpiece zero point [2] multiple workpiece zero points
WMS = Angular position measuring system ± 2.5"; both axes

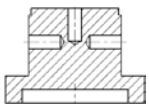




Conditions

1. Perfect alignment to machine axes
2. Highly accurate zero point
3. Best possible error compensation in all axes
4. Increased geometry accuracy of the rotary table (option: GEO.5xx-GEN)





Test workpiece

Definition of the terms used in this catalog

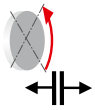
1 Drive data

The term «drive data» always refers to rotational speed, acceleration as well as jerk limitation.

2 Gear unit

Gear unit load ($M_{gear\ max.}$) **[Nm]**
…refers to the maximum permissible mechanical torque at a spindle rotational speed of 1 rpm.

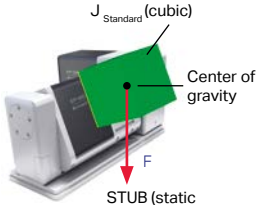
Feed torque (M_{feed}) **[Nm]**
…refers to the available torque at a rotational speed of 1 rpm, corresponding to the maximum permissible gear unit load. Depending on the motor used and/or duty cycle, however, it can be correspondingly lower.

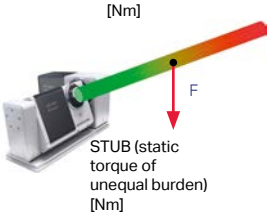


Eccentric spindle load ($sl_{eccentric}$) **[Nm]**
The eccentric load catalog* corresponds to

- 0 Nm (standard load always centric) for EA- and M-type rotary tables as well as dividing/indexing axes of T-type rotary tables
- the maximum torque for T-type rotary tables, which affects the swiveling/tilting axis in the form of the intrinsic load of the dividing/indexing axis as well as that of the cubic standard load. Please refer to the respective parameter list, catalog values.

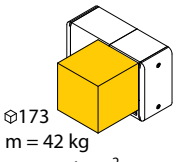
For T-type rotary tables, the eccentric load usual* is identical to the gear load with sls. For an EA rotary table, this torque is equal to the value resulting from the maximum eccentric load when using a rotoFIX Alu with a standard load. Please refer to the respective parameter list for usual values.
The eccentric load max load* corresponds to the maximum mechanical torque which can still be transmitted without any damage using the gear unit at a minimum rotational speed of approx. 10 rpm. Please refer to the respective parameter list, max load values.
* For definitions please refer to «Geometry / Integration» **p. 131**





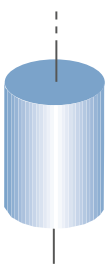
Center of gravity shift without and with load. The greater the red center of gravity, the greater is the gear unit loading in the tilting axis. The blue arrow shows the direction in which the center of gravity moves from «without load» to «with load».

EA-510



pL standard spindle load (sls = $sl_{standard}$) pp. 30–65 and 106/107 **[kg]**
…refers to the pL spindle load defined as standard, derived from practice, covering approximately 90% of all applications. All drive data and parameter lists are designed for the cubic pL standard load. All masses moving within this volume (workpiece including device) and clamped coaxially to the rotary axis can be moved using the standard drive data. Eccentrically arranged standard pL spindle loads may require a reduction of the drive data.

Standard moment of inertia ($J_{standard}$) pp. 30–65 and 106/107 **[kgm2]**
…refers to the resulting moment of inertia due to the defined pL standard load and its shape, if the load is clamped coaxially to the rotary axis. The usual J ratio between load and motor is generally 1:1 or less (e.g. 0.5:1).



Max. perm. moment of inertia (J_{max}) **[kgm2]**
…corresponds to 10x the standard moment of inertia ($J_{standard}$) In most applications, this moment of inertia is not exceeded even with large workpieces. It should also be noted that the J ratio of 10:1 is NOT exceeded with any motorized model. Large J values can be moved, of course, but required appropriate adjustments (on request).

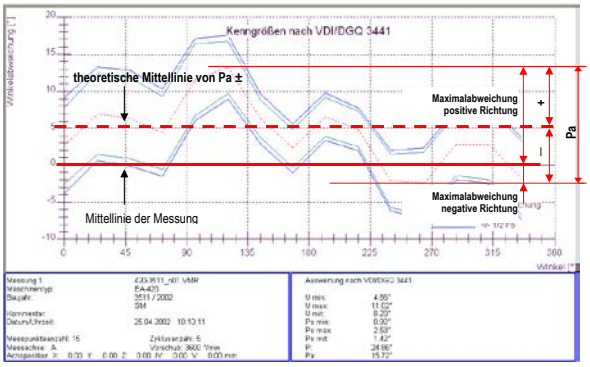
Function explanations, limit values and conditions minimize your risks

3 Gear accuracies

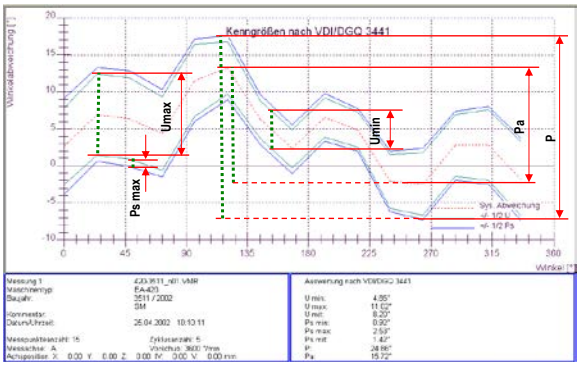
All accuracy data apply to an unloaded rotary table

Measuring process

- 5 warm-up cycles
- 5 measuring cycles
- 24 measuring points (15°)
- Acceleration 500°/s²
- Heidenhain ROD 800 measuring and test equipment with K15 coupling
- Unloaded rotary table as individual module – room temperature approx. 22°C



Explanation of indexing accuracy Pa ±:



Explanation of various parameters according to VDI/DGQ 3441:

Indexing accuracy (Pa ±) [arc sec]

...refers to the sum of maximum positive and negative deviations between the ACTUAL position and the TARGET position of all angular positions over 360° measured in a direction of rotation, stated as ± value. This is equal to the position deviation Pa according to VDI/DGQ 3441, but accumulated (example: TG ± 15" corresponds to Pa 30") and:

- without consideration of the reversal error
- without consideration of the radial and axial run-out error of the spindle

Repeat accuracy (Ps_{with}) [arc sec]

..refers to the maximum deviation within the results of the repeatedly measured angular positions, approached from the same side.
This corresponds to the position variation Ps max according to VDI/DGQ 3441, i.e.:

- without consideration of the reversal error

Positioning accuracy (P) [arc sec]

...refers to the maximum deviation between the TARGET position and the ACTUAL position when the direction of rotation changes.
This corresponds to the positioning uncertainty P according to VDI/DGQ, i.e.:

- without consideration of the radial and axial run-out error of the spindle.

Reversal backlash (U gear) [arc sec]

...refers to the maximum mechanical backlash when the direction of rotation changes within a specific number of repeatedly measured angular positions.

- This does not correspond to a measurement parameter listed in VDI/DGQ 3441
- The elasticity of all parts connected in the drive train is NOT taken into account

Reversal error (U average*) [arc sec]

...refers to the average reversal error, including elasticity, backlash and/or overshoot of all parts connected in the drive train when the direction of rotation changes within a specific number of repeatedly measured angular positions.
This corresponds to the reversal error U average according to VDI/DGQ 3441. The average value is calculated on the basis of all measured values.

* For compensation and definition of backlash, please refer to «Geometry / Integration, 6.4»

Definition of the terms used in this catalog

4 Speed

Duty cycle (ED) **[%]**

...refers to the duration of the movement per unit of time according to the DIN/VDE 0530 Standard. pL rotary tables are designed for intermittent duty (positioning operation) S3 at a duty cycle of 20%, but with a cycle duration of 1 minute. If these conditions are exceeded by the respective application, the drive data must be reduced accordingly.

DIN / VDE 0530 S3, duty cycle 20%

Spindle speed (n_{spi}) **[rpm]**

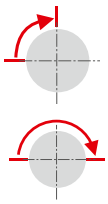
...always refers to the maximum possible rotational speed of the spindle

- while complying with the duty cycle
- with the corresponding motor
- with the pL standard spindle load (cubic)

Cycle time 90° / 180° ($t_{90°}$ / $t_{180°}$) **[sec]**

...refers to the time required for the entire dividing / indexing operation for a 90°/180° movement

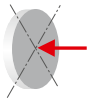
- Dividing/indexing operation STANDARD pL = unclamping and clamping monitored using a pressure sensor. During clamping, the clamped signal is sent as soon as a value of 100 bar has been reached. Thus, the machine can already move before the full clamping pressure is applied. If the full clamping pressure has not been reached after 2 sec, the clamped signal is canceled. Everything is controlled by the pL-smartBox.
- Dividing/indexing operation OPTIMIZED = as standard, but the clamped signal is queried only prior to the feed movement. This operation requires adjustment of the respective machine PLC and is not included in the pL scope of delivery.



5 Spindle bearing

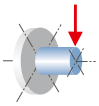
Axial force (F_{axial}) **[N]**

..refers to the maximum permissible axial load on the spindle. It includes the workpiece, devices, machining forces and other forces resulting from the rotational and tilting movement.



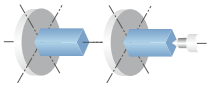
Pull-out torque (M_{tilt}) **[Nm]**

..refers to the maximum permissible tiling load on the spindle, measured from the spindle face. It includes the workpiece, devices, machining forces and torques resulting from the rotational and tilting movement.



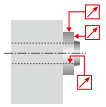
Transport load (sl_{max}) **[kg]**

...refers to the total, maximum permissible load which is installed starting from the spindle nose and performs a rotational movement together with the spindle (device and workpiece). This load does not correspond to the pL standard spindle load.



Radial and axial run-out ($ro_{rad/ax}$) **[mm]**

...refers to the maximum deviation occurring in the axial (axial run--out) or radial (radial run--out) direction when measured over 360°. Measured in each case on the maximum possible diameter of the spindle nose.

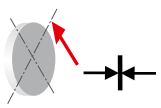


6 Clamping

Clamping torque (M_{clamp}) **[Nm]**

...refers to the maximum permissible torque load on the spindle nose during active clamping (6 bar air pressure). The pL clamping is extremely rigid. Depending on the load, there is also a setting behavior in addition to a usual elasticity. We distinguish between three phases when progressing from zero load to maximum load. The setting behavior results in an irreversible torsion after unloading as follows:

- Phase 1 «normal» (approx. 1/3 to 1/2 of the permissible clamping torque) up to approx. 0.0015 mm*
- Phase 2 «increased» (approx. 2/3 of the permissible clamping torque) up to approx. 0.005 - 0.01mm*
- Phase 3 «maximum» (up to 100% of the permissible clamping torque) up to approx. 0.035 mm*



The clamping torque is so high that the divider package of the 2-axis rotary tables can already exhibit considerable torsional movement before the clamp relaxes. As a result, the maximum clamping torque cannot be used in all cases.

* For unilateral load, in relation to the spindle outside Ø of the respective rotary table. The indexing and repeat accuracy is not impaired by another positioning.

Function explanations, limit values and conditions minimize your risks

7 Leak tightness (acc. to EN 60529)

...refers to the leak tightness in terms of protection against accidental contact, protection against the ingress of foreign matter and protection against the ingress of water:

IP 65: Protection against accidental contact, no ingress of dust, protection against the ingress of water jets
IP 66: Same protection as IP 65, but protection against the ingress of powerful water jets
IP 67 (standard at pL): Same protection as IP 66, but protection against the ingress of water from temporary immersion
IP 68 (optional at pL): Same protection as IP 67, but protection against the ingress of water from permanent immersion

8 Geometry and integration

All accuracy data apply to an unloaded rotary table

Tilting drift (sd $_{200}$)
...refers to the deviation of the perpendicularity between the dividing/indexing axis and the swiveling/tilting axis over a specific tilting range. pL always measures three points: -90° (horizontal), -45° and 0° (vertical), always related to the position of the dividing/indexing axis and on a radius starting from the center of the swiveling/tilting axis of 200 mm.

3D precision

Offset values (offset)
...refer to the deviation from any theoretical NOMINAL values in order to ensure easier alignment of the rotary table on the machine and faster commissioning.

offset 1: [mm]
0.013

Pitch error (pe)
...refers to the effective NOMINAL-ACTUAL deviation over a specific rotation angle ("pitch error") for axis error compensation on the CNC machine. For rotary tables, this occurs typically with the movement of eccentrically arranged loads such as clamping yokes, tilting axes etc.

pitch error: [°]
0.005

Backlash (bl)
...refers to the mechanical and electronic reversal error* (gear unit, angular position measuring system, positioning control...) for the loose backlash compensation on the CNC machine.

* For definition, see «Gear unit» **p. 128**

Parameter lists
To minimize commissioning time and make maximum use of the pL rotary table, you can find parameter lists for various controls at www.lehmann-rotary-tables.com. In the case of load-relevant parameters, we distinguish between...

FANUC
a2/5000is
Fanuc
a1000iA
HEIDENHAIN
RCN x2xF
i 90:1
Value / Value
Catalog: 19800
Usual: 16200
Max. load: 5400

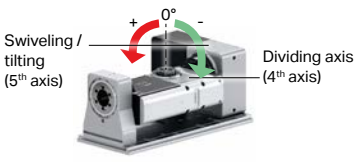
usual
...refers to the practice-oriented drive values for pL standard spindle loads, which should usually be set (pL recommendation) in order to still provide certain reserves to integrate deviations occurring in practice and to allow an easier control comparison. Normally, no warm-up is required here.

catalog
...refers to the maximum achievable catalog drive values for pL standard spindle loads, for which more demanding requirements are imposed both on the commissioning engineer and on the material in order to achieve these values. Depending on the respective application, they must be reduced (empirically). A warm-up cycle for the gear unit is frequently recommended here.

max load
...refers to the maximum achievable drive values for J max. and eccentric loading.

9 Axis definition

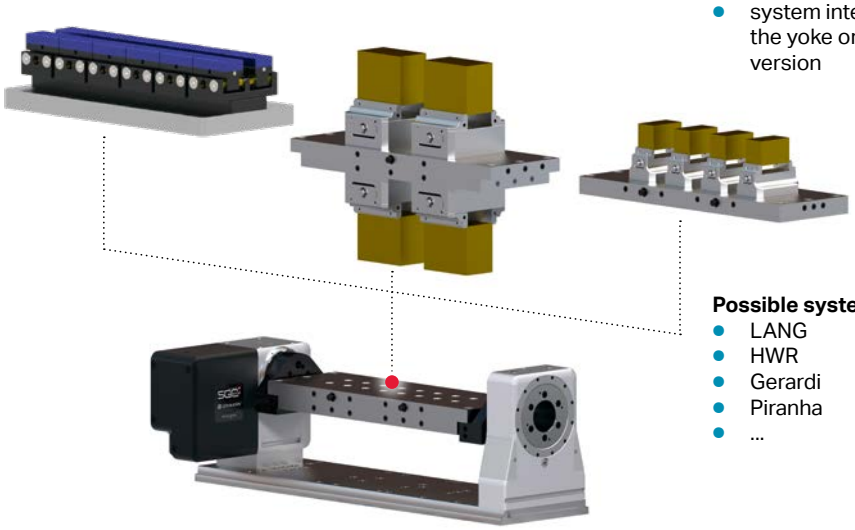
Swiveling axis = tilting axis
Dividing axis = rotary axis



Workpiece clamping systems

Potentials of clamping yokes with integrated or built-on zero point clamping system

Yoke with manual zero point clamping system

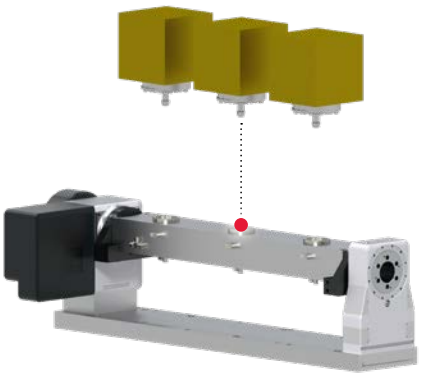


- single or double-sided
- for raster 40, 50, 52, 96
- system integrated into the yoke or as a built-on version

Possible systems
- LANG
- HWR
- Gerardi
- Piranha
- ...

Manual version

Yoke with automatic zero point clamping system



- for automatic loading
- with media channel through clamping yoke

Possible systems
- EROWA
- ROEMHELD
- AMF
- ...

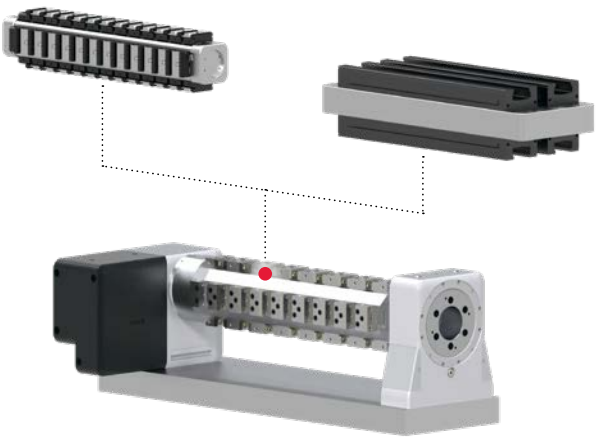
Automatic version

- with quick couplers for transfer of media

Clamping yokes with hole pattern for individual mounting of clamping tools or with a flexibly adjustable rail system

Yoke with rail system

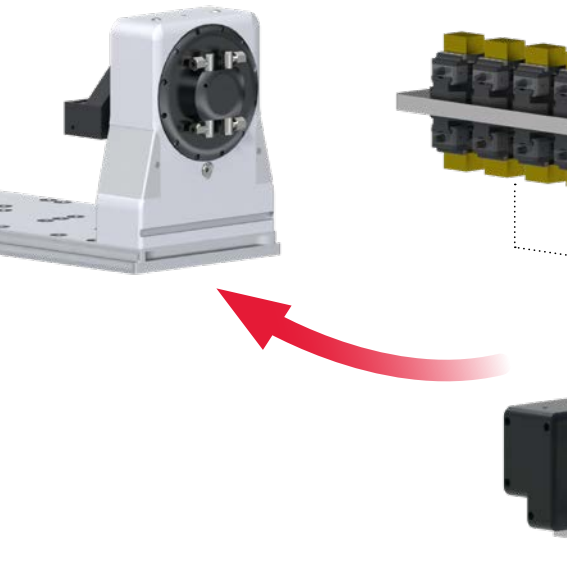
- clamping yokes quickly interchanged without any re-alignment

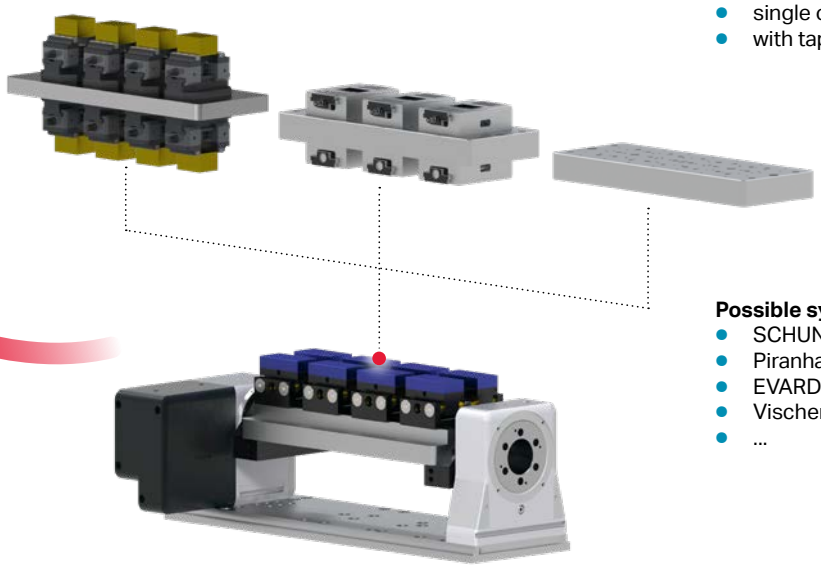


- vises moved without any re-alignment
- easily adaptable to suit part size

Possible systems
- SCHUNK
- TRIAG
- EVARD
- ...

Yoke with bolted on clamping tools (manual or automatic)



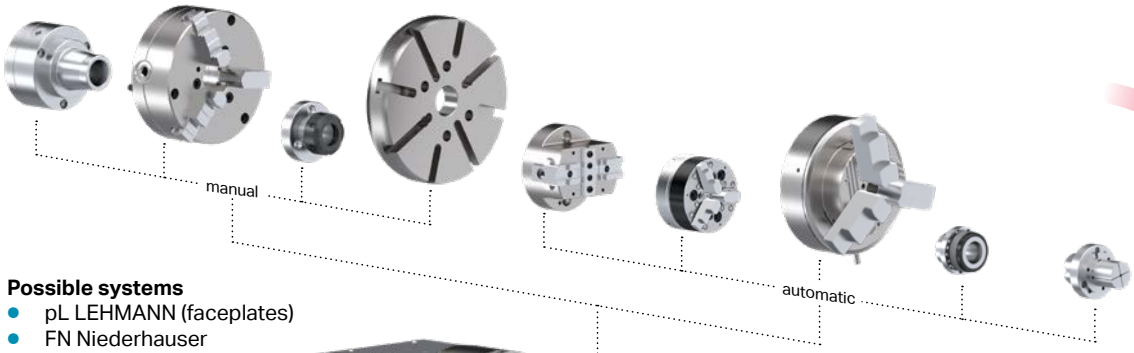


- single or double-sided
- with tapped hole pattern

Possible systems
- SCHUNK
- Piranha
- EVARD
- Vischer & Bolli
- ...

From manual clamping tools for single item production through to fully automated systems

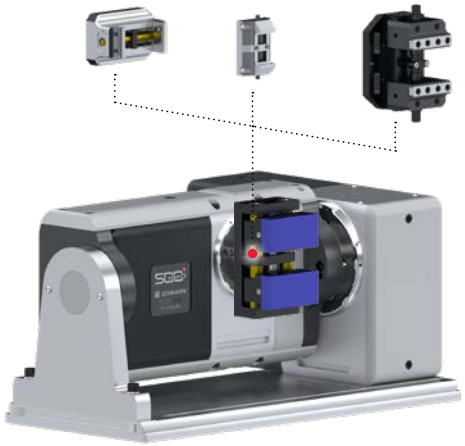
Faceplates, force clamp and jaw chucks, collet chucks



Possible systems
- pL LEHMANN (faceplates)
- FN Niederhauser
- SMW AUTOBLOK
- SwissChuck
- Hainbuch
- Erowa
- TG Colin
- YERLY
- ...

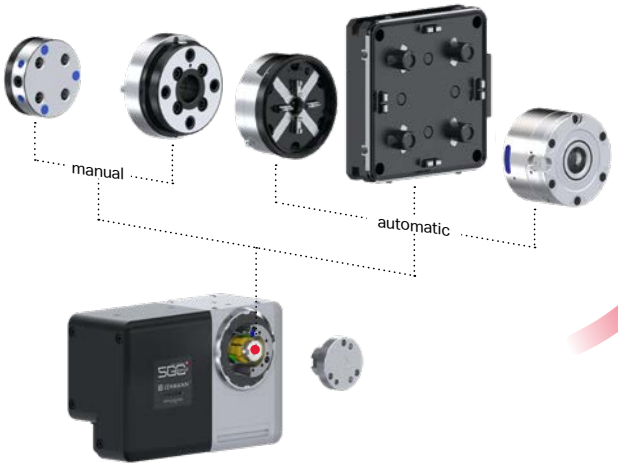
automatable: with rotary feedthroughs and clamping cylinders

Centric clamping unit



Possible systems
- SCHUNK
- LANG
- Vischer & Bolli
- Gressel
- Piranha Clamp
- EVARD
- TRIAG
- ...

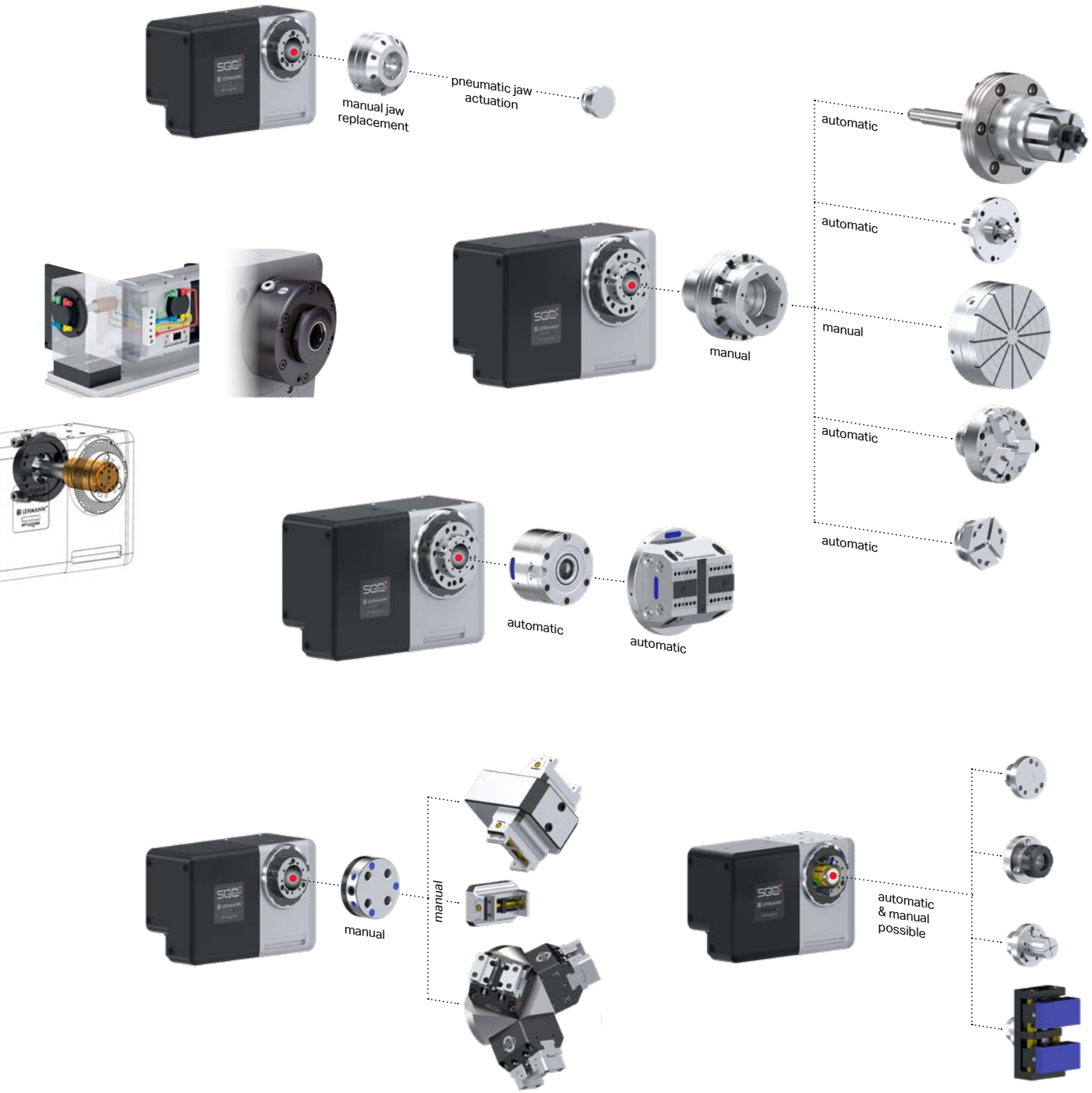
Zero point clamping systems



Possible systems
- pL LEHMANN (ripas & CAPTO)
- Erowa
- System 3R
- FTool
- Parotec
- Roemheld
- AMF
- SCHUNK
- LANG
- GRESSEL
- ...

Centering clamping unit for workpiece handling, built-on zero point clamping system for quick vise interchange

Possible combinations



HSK clamping with precise angular positioning = compact palletizing system manually and automatically

newChuck: ideal table chuck for machining of the 5th or 6th side, for example, with Integrated ripas

All clamping means installed by pL LEHMANN (if ordered together with a rotary table)

The main advantages of ripas

- Very space-saving, as integrated completely in the spindle
- Easy to retrofit
- Very rigid torsionally
- High precision
- Standard interface proven in thousands of applications
- When required, standard adapter can also be used (no rough positioning possible)

The principle

The basis is the standardized HSK clamping with conventional clamping sets. However, the carrier cams are precisely ground and can deflect axially. The counterpart (HSK adapter) has a precise groove as well as a positioning bore for the guide pin.

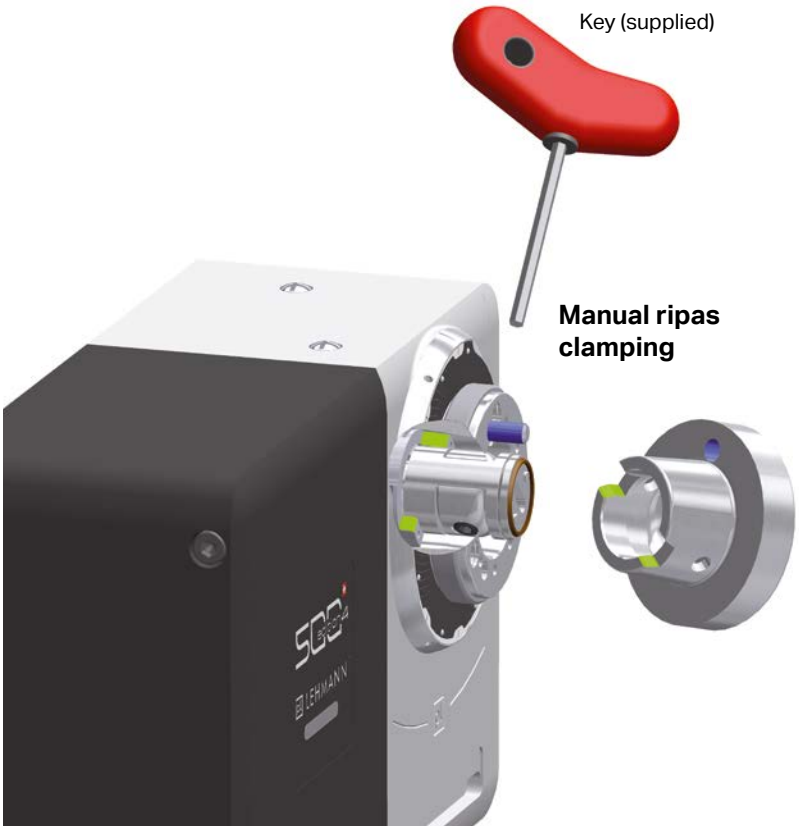
The function

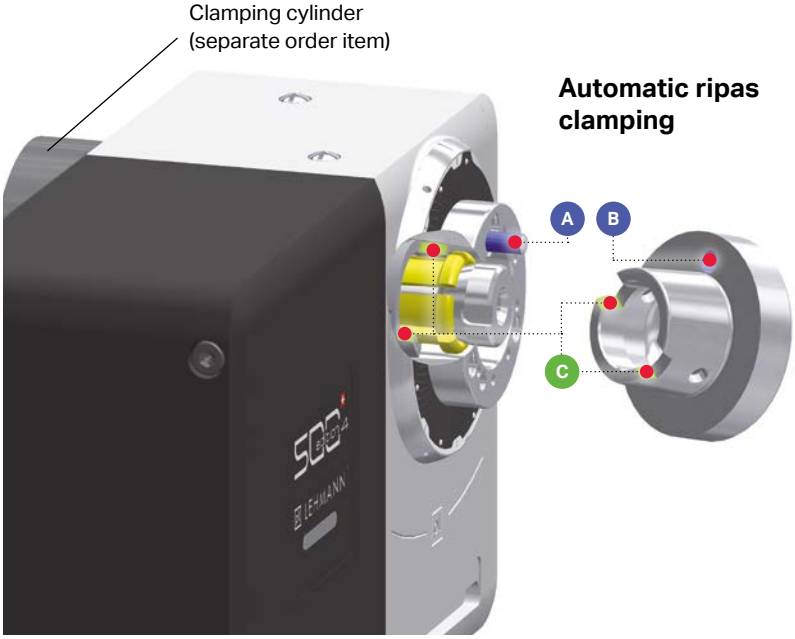
ripas has 3 functions:

A Anti-twist protection
B Rough positioning
C Precision positioning

Process

During changes (manually or automatic), the guide pin A ensures proper orientation while providing rough positioning at the same time B. Shortly before the face is reached, the inner precision cams perform the precision positioning C.

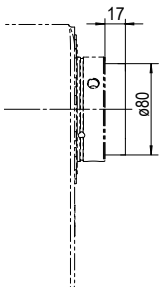




Flexible, precise, compact and can be automated – the ripas / zero point clamping system from pL LEHMANN

SPZ.5xx = Item number for combined clamping cylinder for types 507 and 510

	Item no.	Designation	Weight [kg]	Manual (MAPAL)	automatic (Ortlieb)	Required clamping cylinder *
507	**RIP.507-63m****	ripas clamping, manual, A63	0.97	●		
	RIP.507-63m-OT	ripas clamping, manual, A63, for Ottet system		●		
	RIP.507-63k	ripas clamping, automatic, A63	1.12		●	SPZ.5xx-9 / -p
	RIP.507-63k-OT	ripas clamping, automatic, A63, for Ottet system			●	SPZ.5xx-9 / -p
510	**RIP.510-63m****	ripas clamping, manual, A63	0.97	●		
	RIP.510-63m-OT	ripas clamping, manual, A63, for Ottet system		●		
	RIP.510-63k	ripas clamping, automatic, A63	1.12		●	SPZ.5xx-9 / -p
	RIP.510-63k-OT	ripas clamping, automatic, A63, for Ottet system			●	SPZ.5xx-9 / -p
520	**RIP.520-63m**	ripas clamping, manual, A63	1.45	●		
	RIP.520-63k	ripas clamping, automatic, A63	1.66		●	SPZ.520-9 / -p
all sizes	**MKx.5xx-MK4-1**	Adapter MK4	1.60			
	RIP.63ada	ripas adapter - Standard	0.70			
	RIP.63ada-B	ripas adapter with face coating for major improvement of the slip-free torque transmitted (please refer to technical data)	0.70			
	RIP.63-KD-1	ripas/HSK alignment pin	2.63			
	RIP.FUTm	ripas table chuck	23.10	●		



Above dimensions apply with ripas adapter inserted. Without adapter, the collet chuck projects approx. 10.5 mm.

HSK = Hollow shank taper to DIN 69063-1 (spindle) or DIN 69893 (adapters)
* For T-type rotary tables it may be necessary to increase the center height, see **p. 69**
** Not possible in combination with the «Labyrinth» spindle seal (see **p. 33**)

Technical data for ripas / HSK

	Unit	HSK-A63 manual		HSK-A63 automatic	
		Standard	ripasGrip (option)	Standard	ripasGrip (option)
Perm. tension, max.	kN	–		10 for hydr. 50 / pneum. 9 bar [1]	
Resulting insertion force on adapter, max.	kN	30 at 20 Nm [2]		30	
Perm. pull-out torque (before losing face contact)	kN	approx. 600		approx. 600	
Transport load	kg	approx. 60		approx. 60	
Perm. torque [3] (slip [4] max. ± 0.003°) **A**	Nm	–	approx. +50%	approx. 150	approx. 300
Perm. torque [3] (slip [4] max. ± 0.01°) **B**	Nm	–	approx. +50%	approx. 250	approx. 450
Repeat accuracy, XYZ	mm	< 0.005		< 0.005	
Repeat accuracy, angular	± arc sec	8		4	

[1] With SPZ.5xx-9 / -p
[2] Radial screw
[3] Values apply under static conditions, without any vibrations, with no load, dry, grease-free, clean
[4] Returns to original position after unclamping/clamping

Options for all sizes

SPZ.Awk-Vor	Preparation for presence check only possible for automatic clamping (only with adapter from pL)
SPZ.Awk	Control box for presence check (see **p. 68**)

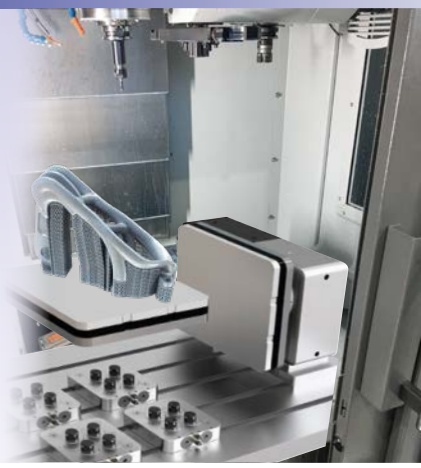
CAPTO clamping

	Item no.	Designation	Weight [kg]	Manual	automatic	Required clamping cylinder *
507	**CAP.507-C4m**	Capto clamping, C4		●		
	CAP.507-C4k	Capto clamping, C4			●	SPZ.5xx-9 / -p
510	**CAP.510-C4m**	Capto clamping, C4		●		
	CAP.510-C4k	Capto clamping, C4			●	SPZ.5xx-9 / -p

Tooling for individual finish machining / finishing

Jumbo pallet (300 x 300 mm) on centric AM-LOCK chuck QUATTRO for light machining

Jumbo pallet (300 x 300 mm) on 4x AMLOCK-QUATTRO chucks for higher machining forces



QUATTRO chuck

Dimensions:
150 x 150 x 35 (53) mm
(L x W x H)

UNO chuck

Dimensions:
100 x 100 mm
35 mm high

6 benefits (applies to QUATTRO and UNO)

- Only 35 mm high
- Manual and pneumatic in one
- Easy to clean
- Pressureless clamping
- Easy mounting
- Minimal maintenance

Technical data

		UNO	QUATTRO
Repeat accuracy X/Y/Z		approx. ± 0.005 mm	
Retention force, clamped	manual	approx. 6 kN	approx. 24 kN
	pneumatic at 6 bar	approx. 10 kN	approx. 40 kN

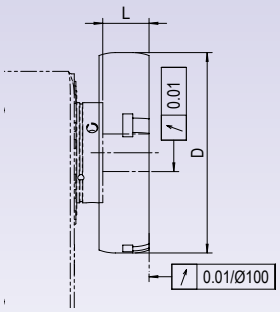
Item no.

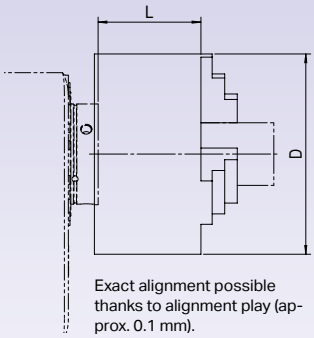
Item no.	Designation	Dimensions	Weight [kg]	max. speed [rpm]
AML.SPF-U	UNO chuck	Ø50x34 mm, 1 pin	1.18	
AML.SPF-Q	QUATTRO chuck	150x150x34 mm, 4 pins	4.70	

for more information, see AM-LOCK brochure

Clamped quickly and easily

Quickly converted for small series and express work





Exact alignment possible thanks to alignment play (approx. 0.1 mm).

All clamping means supplied loose, except TPL.mon or if increased accuracy ordered

Further information about jaw chucks at: www.niederhauser.ch
Request installation and operating instructions directly from manufacturer

Faceplates (axial discs)

	Item no.	Designation	Diameter D [mm]	Thickness [mm]	Passage [mm]	L from spindle [mm]	Weight [kg]	max. speed [rpm]	Moment of inertia J [kgm²]	Niederhauser item no.
507*	**TPL.507-160**	Faceplate, 4 T-slots12 mm	160	30	30	30	6		0.02	
510***	**TPL.510-160**	Faceplate, 4 T-slots12 mm	160	40	30	37	6		0.02	
	TPL.510-200	Faceplate, 4 T-slots12 mm	200	40	30	37	10		0.05	
	TPL.510-240	Faceplate, 4 T-slots12 mm	240	45	30	42	16		0.12	
520***	**TPL.520-250**	Faceplate, 8 T-slots 14 mm	250	45	45	45	17		0.14	
	TPL.520-300	Faceplate, 8 T-slots 14 mm	300	50	45	50	27		0.31	
	TPL.520-350	Faceplate, 8 T-slots 14 mm	350	50	45	50	37		0.58	
530	**TPL.530-300**	Faceplate, 8 T-slots 18mm	300	51	45	51	27		0.31	
	TPL.530-400	Faceplate, 8 T-slots 18mm	400	51	45	51	49		0.99	
	TPL.530-500**	Faceplate, 8 T-slots 18 mm	500	56	45	56	84		2.65	
	TPL.5xx-GEN	Increased accuracy = ½ tolerance values								
	TPL.mon	Faceplate assembled and measured								

* Not possible in combination with spindle seal with labyrinth SPI.507-Lab
** Increased center height required (see **p. 69**)
*** Not possible for TxPc models

Scroll chucks, steel (manual)

incl. matching adapter flange, 1 set each of hard boring and turning jaws as well as clamping wrench and fastening screw

507*	**BFU.507-100ps**	Scroll chuck	100		20	62.5	4	6300	0.005	507-100ps
	BFU.507-125ps**	Scroll chuck	125		35	74	7	5500	0.01	507-125ps
	BFU.507-160ps**	Scroll chuck	160		42	82.5	13	4600	0.04	507-160ps
510	**BFU.510-125ps**	Scroll chuck	125		35	74	7	5500	0.01	510-125ps
	BFU.510-160ps**	Scroll chuck	160		42	82	13	4600	0.04	510-160ps
	BFU.510-200ps**	Scroll chuck	200		44	92	22	4000	0.07	510-200ps
520	**BFU.520-160ps**	Scroll chuck	160		42	85	13	4600	0.04	520-160ps
	BFU.520-200ps**	Scroll chuck	200		55	95	23	4000	0.12	520-200ps
	BFU.520-250ps**	Scroll chuck	250		76	106	39	3500	0.31	520-250ps
530	**BFU.530-250ps**	Scroll chuck	250		76	104	32	3500	0.25	530-250ps
	BFU.530-315ps	Scroll chuck	315		80	116	56	2800	0.69	530-315ps
	BFU.530-400ps	Scroll chuck	400		136	123	97	2000	1.88	530-400ps
	BFU.5xx-GEN	Increased accuracy = ½ tolerance values								

- Limited clamping force
- Cheaper than wedge bar chuck

Wedge bar chuck SMW type HG-F
(manual, modular helical gear jaw system)

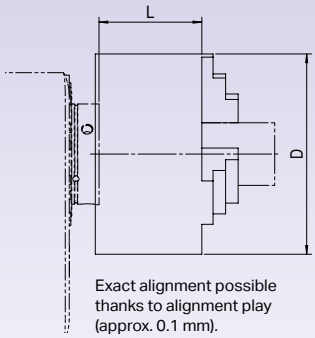
incl. matching adapter flange, 1 set of hard, reversible ground stepped jaws in the chuck as well as clamping wrench and fastening screw

507*	**BFU.507-160ks****	Wedge bar chuck	160		42	81	11	5500	0.04	507-160ks
510	**BFU.510-160ks****	Wedge bar chuck	160		42	81	11	5500	0.04	510-160ks
	BFU.510-200ks**	Wedge bar chuck	200		42	102.5	22	4800	0.11	510-200ks
520	**BFU.520-160ks**	Wedge bar chuck	160		46	70	11	5500	0.04	520-160ks
	BFU.520-200ks**	Wedge bar chuck	210		60	92	22	4800	0.11	520-200ks
	BFU.520-250ks**	Wedge bar chuck	260		81	110	38	4200	0.30	520-250ks
530	**BFU.530-250ks**	Wedge bar chuck	260		81	112	38	4200	0.30	520-250ks
	BFU.530-315ks	Wedge bar chuck	315		102	135	58	3500	0.89	520-315ks
	BFU.530-400ks	Wedge bar chuck	400		128	153	112	2700	2.58	520-400ks
	BFU.5xx-GEN	Increased accuracy = ½ tolerance values								

- Higher clamping force
- Faster conversions (with quick jaw change system)
- More jaw accessories
- More expensive than scroll chuck

* Not possible in combination with spindle seal with labyrinth SPI.507-Lab
** Not possible for TxPc models

NIEDERHAUSER
SPANNTECHNIK UND SYSTEME



Exact alignment possible thanks to alignment play (approx. 0.1 mm).

Clamping means installed and aligned by pL LEHMANN
(if ordered together with a rotary table)

Further information: www.niederhauser.ch
Request installation and operating instructions directly from manufacturer

Precision power chucks, 2- jaw (cylinder-actuated)

	pL LEHMANN Item no.	Designation	D [mm]	Passage [mm]	L from spindle [mm]	Weight [kg]	max. speed [rpm]	Moment of inertia [kgm²]	Required clamping cylinder	Niederhauser item no., incl. adapter flange
507	**BFU.507-100ksa-2**	2-CL-C 100 Z92	100	–	68	5	6000		SPZ.5xx-15 / -p	507-CLC100
	BFU.507-125ksa-2	2-CL-C 125 Z115	125	–	90	8	5000		SPZ.5xx-15 / -p	507-CLC125
	BFU.507-160ksa-2	2-CL-C 160 Z140	160	–	105	14	4100		SPZ.5xx-15 / -p	507-CLC160
510	**BFU.510-125ksa-2**	2-CL-C 125 Z115	125	–	92	8	5000		SPZ.5xx-15 / -p	510-CLC125
	BFU.510-160ksa-2	2-CL-C 160 Z140	160	–	107	14	4100		SPZ.5xx-15 / -p	510-CLC160
	BFU.510-200ksa-2	2-CL-D 200 Z170	200	–	118	20	3300		SPZ.5xx-15 / -p	510-CLD200
520	**BFU.520-160ksa-2**	2-CL-C 160 Z140	160	–	109	15	4100		SPZ.520-15 / -p	520-CLC160
	BFU.520-200ksa-2	2-CL-D 200 Z170	200	–	120	20	3300		SPZ.520-15 / -p	520-CLD200
530	**BFU.530-200ksa-2**	2-CL-D 200 Z170	200	–	123	22	3300		SPZ.530-15 / -p	530-CLD200

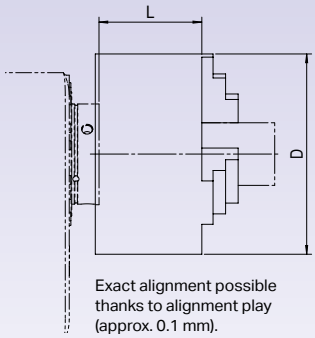
- Can be used as centric clamping unit (if clamping cylinder is present)
- Up to size 160 with tongue and groove base jaws

Precision power chucks, 3- jaw (cylinder-actuated)

	pL LEHMANN Item no.	Designation	D [mm]	Passage [mm]	L from spindle [mm]	Weight [kg]	max. speed [rpm]	Moment of inertia [kgm²]	Required clamping cylinder	Niederhauser item no., incl. adapter flange
507	**BFU.507-130ksa**	BHD-130-32-3-Z	130	32	85	7	7000		SPZ.5xx-15 / -p	507-BHD130
	BFU.507-165ksa	BHD-165-46-3-Z	165	46	95	13	6000		SPZ.5xx-15 / -p	507-BHD165
510	**BFU.510-165ksa**	BHD-165-46-3-Z	165	46	97	13	6000		SPZ.5xx-15 / -p	510-BHD165
	BFU.510-210ksa	BHD-210-52-3-Z	210	52	112	24	5000		SPZ.5xx-15 / -p	510-BHD210
520	**BFU.520-165ksa**	BHD-165-46-3-Z	165	46	87	13	6000		SPZ.520-15 / -p	520-BHD165
	BFU.520-210ksa	BHD-210-52-3-Z	210	52	114	24	5000		SPZ.520-15 / -p	520-BHD210
530	**BFU.530-210ksa**	BHD-210-52-3-Z	210	52	117	27	5000		SPZ.530-15 / -p	530-BHD210

- Radial run-out approx. 0.02 mm
- Fine serration on base jaws
- BHD version is with inch jaws

NIEDERHAUSER
SPANNTECHNIK UND SYSTEME



Exact alignment possible thanks to alignment play (approx. 0.1 mm).

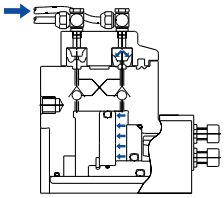
Clamping means installed and aligned by pL LEHMANN (if ordered together with a rotary table)

Further information: www.niederhauser.ch
Request installation and operating instructions directly from manufacturer

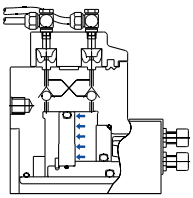
Front-end power chuck, 3-jaw

	pL LEHMANN Item no.	Designation	D [mm]	Passage [mm]	L from spindle [mm]	Weight [kg]	max. speed [rpm]	Moment of inertia [kgm²]	Niederhauser item no., incl. adapter flange
507	**BFU.507-125vsa**	SP 125-26	204	26	135	21	4000		507-SP125
510	**BFU.510-160vsa**	SP 160-38	255	38	163	33	3500		510-SP160
520	**BFU.520-160vsa**	SP 160-38	255	38	163	33	3500		520-SP160

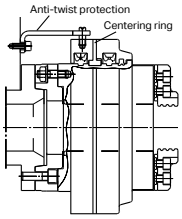
- With finely serrated base jaws



Clamp/open (only possible at standstill). Profile seal is applied to the chuck outer diameter by compressed air and the cylinder chamber is filled. After the clamping pressure has been built up, the compressed air is switched off and the respective cylinder chamber is closed by a pilot-operated check valve in the chuck.



SMW profile seal has lifted off due to inherent elasticity. Clamping pressure is maintained permanently in the cylinder and chuck can rotate.



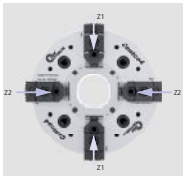
Distributor mounted on chuck outer diameter with centering ring (wear part). An anti-rotation device is required on the machine headstock.

Precision power chucks, 4- jaw (cylinder-actuated)

	pL LEHMANN Item no.	Designation	D [mm]	Passage [mm]	L from spindle [mm]	Weight [kg]	max. speed [rpm]	Moment of inertia [kgm²]	Required clamping cylinder	Niederhauser item no., incl. adapter flange
510	**BFU.510-210ksa-4**	Centco4-210-52	210	52	129	29	5000		SPZ.5xx-15 / -p	510-Centco4
520	**BFU.520-210ksa-4**	Centco4-210-52	210	52	131	30	5000		SPZ.520-15 / -p	520-Centco4
530	**BFU.530-210ksa-4**	Centco4-210-52	210	52	134	32	5000		SPZ.530-15 / -p	530-Centco4

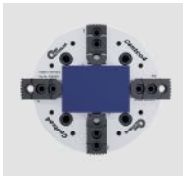
- Good radial and axial concentricity
- Centric clamping of various component shapes

Initially, only the force required for workpiece centering acts on the two pairs of jaws Z1 and Z2. The force required for machining is built up only after both pairs of jaws Z1 and Z2 are in contact with the workpiece.



2+2 centric compensating clamping

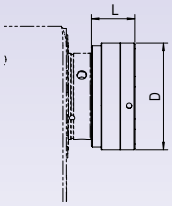
2+2 centric clamping for round or thin-walled workpieces



2+2 centric compensating clamping for rectangular or square workpieces

2+2 centric compensating clamping for workpieces with awkward geometric shape

SwissChuck
Precision Workholding



Clamping device assembled by pL LEHMANN,
final adjustment by customer (if ordered together with a rotary table)

For further information, please visit: www.SwissChuck.com
Request installation and operating instructions directly from manufacturer

Precision power chucks (cylinder-actuated)

	pL LEHMANN Item no.	Designation	D [mm]	Passage [mm]	L from spindle [mm]	Weight [kg]	max. speed [rpm]	Moment of inertia [kgm²]	Required clamping cylinder	SwissChuck item no. and adapter flange
507	**SWI.507-3-110**	3KCHP 110-12	ø110	12	70	3.5		0.003	SPZ.5xx-15 / -p	SZ1020101
	SWI.507-3-160	3KCHP 160-30	ø160	14	85	5		0.015	SPZ.5xx-15 / -p	SZ1020102
510	**SWI.510-3-110**	3KCHP 110-12	ø110	12	70	3.5		0.003	SPZ.5xx-15 / -p	SZ1020103
	SWI.510-3-160	3KCHP 160-30	ø160	14	85	5		0.015	SPZ.5xx-15 / -p	SZ1020104
	SWI.510-3-200	3KCHP 200-40	ø200	14	98	7.8		0.036	SPZ.5xx-15 / -p	SZ1020105
520	**SWI.520-3-160**	3KCHP 160-30	ø160	14	72	5		0.015	SPZ.520-15 / -p	SZ1020106
	SWI.520-3-200	3KCHP 200-40	ø200	14	85	7.8		0.036	SPZ.520-15 / -p	SZ1020107
	SWI.520-3-250	3KCHP 250-52	ø250	14	91	12.8		0.101	SPZ.520-15 / -p	SZ1020108
530	**SWI.530-3-250**	3KCHP 250-52	ø250	14	91	12.8		0.101	SPZ.530-15 / -p	SZ1020109
	SWI.530-3-315	3KFHP 315-48	ø315	0	93	36		0.457	SPZ.530-15 / -p	SZ1020110
	SWI.530-3-400	3KFHP 400-120	ø400	0	100	58		1.236	SPZ.530-15 / -p	SZ1020111

Precision diaphragm chuck (pneumatically actuated)

	pL LEHMANN Item no.	Designation	D [mm]	Passage [mm]	L from spindle [mm]	Weight [kg]	max. speed [rpm]	Moment of inertia [kgm²]	SwissChuck item no. and adapter flange
507	**SWI.507-6-85**	6VMCHP 85 V1	ø85	0	53	1.5		0.001	SZ1020112
	SWI.507-6-128	6VMCHP 128 V1	ø128	0	77	4.6		0.01	SZ1020113
	SWI.507-6-160	6VMCHP 160 V1	ø160	0	92	10		0.032	SZ1020114
510	**SWI.510-6-128**	6VMCHP 128 V1	ø128	0	81	4.6		0.01	SZ1020115
	SWI.510-6-160	6VMCHP 160 V1	ø160	0	96	10		0.032	SZ1020116
	SWI.510-6-200	6VMCHP 200 V1	ø200	0	120	16		0.084	SZ1020117
520	**SWI.520-6-128**	6VMCHP 128 V1	ø128	0	67	4.6		0.01	SZ1020118
	SWI.520-6-160	6VMCHP 160 V1	ø160	0	96	10		0.032	SZ1020119
	SWI.520-6-200	6VMCHP 200 V1	ø200	0	106	16		0.084	SZ1020120
530	**SWI.530-6-128**	6VMCHP 128 V1	ø128	0	71	4.6		0.01	SZ1020121
	SWI.530-6-160	6VMCHP 160 V1	ø160	0	82	10		0.032	SZ1020122
	SWI.530-6-200	6VMCHP 200 V1	ø200	0	102	16		0.084	SZ1020123

Interchangeable jaws and accessories on request

HAINBUCH
SPANNENDE TECHNIK

The clamping device serves as the starting point on the Lehmann CNC rotary table and can be be set up easily for your workpieces through use of a wide variety of clamping elements and adapters. Regardless of whether the clamping requires a round or profiled contour, whether unmachined or finish-machined parts are involved, whether soft or hard machining, or external or internal clamping – the HAINBUCH System offers a multitude of clamping options – without major expense or effort for setup.

Clamping means installed and aligned by pL LEHMANN
(if ordered together with a rotary table)

Further information: www. hainbuch.com
Request installation and operating instructions directly from manufacturer

Advantages of Axzug
- More accurate
- More stable
- Cheaper
- Smaller

Advantages of Axfix
- Fewer clamping marks
- No loss of clamping length
- Defined axial positioning (e.g., for work with counter spindle)
- Hainbuch system not possible

Rotating clamping means

TOPlus Chuck

TOPlus mini Chuck

SPANNTOP Chuck

SPANNTOP mini Chuck

TOROK hand chuck (only Axzug available)

Stationary clamping means

MANOK plus manual vise

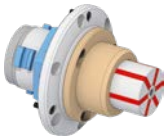
HYDROK hydraulic vise

Clamping element

Clamping head – external clamping

- All-round clamping
- 3 different versions: for tubular material, fine machining or boring out yourself
- Multitude of profile clamping options
- Coolant-resistant rubber-metal connection, keeps swarf out of the clamping means
- Clamping capacity SE ø 3 – 65 mm
  Clamping capacity RD ø 3 – 65 mm

Clamping adapters



MANDO Adapt mandrel – Internal clamping

- Fast conversion from external to internal clamping without alignment thanks to CENTREX interface
- Radial run-out < 0.005 mm between chuck taper and mandrel taper
- Clamping capacity ø 8 – 100 mm

Jaw module size 145 or 215 – jaw clamping (2 jaws also available)

- axfixe 3-jaw clamping
- Can be used in rotating (moving) and stationary applications
- Convert from chuck head to mandrel or jaw clamping in less than 2 minutes
- Jaw stroke with size 65: 2.2 mm

Face driver adaptation

Morse taper adapter

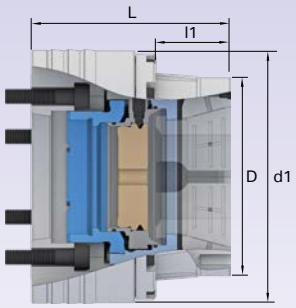
- Enormous flexibility
- Self-centering of adapter in the chuck ≤ 0.003 mm
- Extremely fast conversion without disassembling the chuck [1 min.]

Magnet module

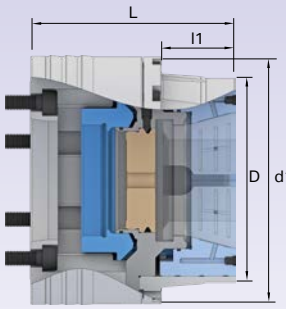
- End face axial clamping via neodymium magnet
- High axial run-out changeover accuracy
- High retention force of 140 N/cm²
- Assembly in 30 sec. without aligning
- Low maintenance, since resistant to contamination
- 1 size Ø200 available

Clamping means installed and aligned by pL LEHMANN
(if ordered together with a rotary table)

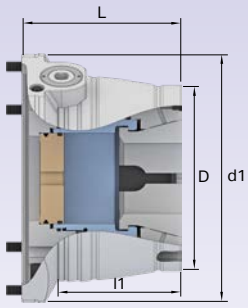
Further information: www. hainbuch.com
Request installation and operating instructions directly from manufacturer



TOPlus mini Axzug
SPANNTOP mini Axzug



TOPlus mini Axfix
SPANNTOP mini Axfix



TOROK SE Axzug
TOROK RD Axzug

HAINBUCH chucks TOPlus mini | TOROK SE

* For T-type rotary tables it may be necessary to increase the center height, see **p. 69**

	pL LEHMANN Item no.	Designation	Manual	Hydraulic	Size	Clamping capacity [mm]	L [mm]	l 1 [mm]	D [mm]	d 1 [mm]	Weight [kg]	Max. speed [rpm]	Required clamping cylinder *	HAINBUCH SYSTEM compatible	HAINBUCH item no., incl. adapter flange
507	**HAI.507-tp-axz**	TOPlus mini Axzug		●	26	3...26	84.5	31	67 f7	129	5.3	500	SPZ.5xx-9 / -p		10001281
	HAI.507-tp-axf	TOPlus mini Axfix		●	26	3...26	86	33	74 f7	129	5.8	500	SPZ.5xx-9 / -p		10001285
510	**HAI.510-tp-axz**	TOPlus mini Axzug		●	52	3...52	103.5	42	119 f7	150	10.9	500	SPZ.5xx-9 / -p	●	10001282
	HAI.510-tp-axf	TOPlus mini Axfix		●	52	3...52	104.5	44	119 f7	150	10.6	500	SPZ.5xx-9 / -p	●	10001286
	HAI.510-tp-to	TOROK SE Axzug	●		52	3...52	137	92	125 f7	174	14.6	7000		●	10001300
520	**HAI.520-tp-axz**	TOPlus mini Axzug		●	52	3...52	107	42	119 f7	150	10.4	500	SPZ.520-9 / -p	●	10001283
	HAI.520-tp-axf	TOPlus mini Axfix		●	52	3...52	109	44	119 f7	150	10.1	7000	SPZ.520-9 / -p	●	10001287
	HAI.520-tp-to	TOROK SE Axzug	●		52	3...52	140	91.5	125 f7	174	14.4	7000		●	10001301
530	**HAI.530-tp-axz**	TOPlus mini Axzug		●	65	3...65	112	49	129 f7	205	14.9	500	SPZ.530-9 / -p	●	10001284
	HAI.530-tp-axf	TOPlus mini Axfix		●	65	3...65	105.5	50	137 f7	203	14.7	500	SPZ.530-9 / -p	●	10001288
	HAI.530-tp-to	TOROK SE Axzug	●		65	3...65	151.5	97	145 f7	210	18.8	500		●	10001302

TOPlus mini

TOPlus mini

- 25 % higher retention force than SPANNTOP
- Outstanding rigidity thanks to large contact surface of the clamping segments
- Insensitive to dirt thanks to clamping head geometry
- Lower centrifugal force losses compared to jaw chucks
- Optimal lubrication thanks to lubrication grooves in the clamping element holder
- Workpiece stabilized through axial pulling against workpiece stop
- Radial run-out < 0.01 mm
- Minimal interference contour and easy changing of the clamping heads

HAINBUCH chucks SPANNTOP mini | TOROK RD

* For T-type rotary tables it may be necessary to increase the center height, see **p. 69**

	pL LEHMANN Item no.	Designation	Manual	Hydraulic	Size	Clamp-ing capacity [mm]	L [mm]	l 1 [mm]	D [mm]	d 1 [mm]	Weight [kg]	max. speed [rpm]	Required clamping cylinder *	HAINBUCH SYSTEM compatible	HAINBUCH item no., incl. adapter flange
507	**HAI.507-st-axz**	SPANNTOP mini Axzug		●	32	3...32	101	43	66 f7	133	6.7	500	SPZ.5xx-9 / -p		10001289
	HAI.507-st-axf	SPANNTOP mini Axfix		●	32	3...32	96	44	74 f7	129	6.2	500	SPZ.5xx-9 / -p		10001293
510	**HAI.510-st-axz**	SPANNTOP mini Axzug		●	52	3...52	103.5	45	90 f7	150	9.0	500	SPZ.5xx-9 / -p	●	10001290
	HAI.510-st-axf	SPANNTOP mini Axfix		●	52	3...52	104.5	44	98 f7	150	9.2	500	SPZ.5xx-9 / -p	●	10001294
	HAI.510-st-to	TOROK RD Axzug	●		52	3...52	137	92	125 f7	174	14.7	7000		●	10001297
520	**HAI.520-st-axz**	SPANNTOP mini Axzug		●	52	3...52	107	45	90 f7	150	9.1	500	SPZ.520-9 / -p	●	10001291
	HAI.520-st-axf	SPANNTOP mini Axfix		●	52	3...52	109	44	98 f7	150	9.4	500	SPZ.520-9 / -p	●	10001295
	HAI.520-st-to	TOROK RD Axzug	●		52	3...52	140	91.5	125 f7	174	14.4	7000		●	10001298
530	**HAI.530-st-axz**	SPANNTOP mini Axzug		●	65	3...65	112	47	111 f7	205	13.9	500	SPZ.530-9 / -p	●	10001292
	HAI.530-st-axf	SPANNTOP mini Axfix		●	65	3...65	105.5	50	119 f7	203	13.3	500	SPZ.530-9 / -p	●	10001296
	HAI.530-st-to	TOROK RD Axzug	●		65	3...65	151.5	97	145 f7	210	18.5	500		●	10001299

SPANNTOP mini

Adapter flange required in order to use Hainbuch system.

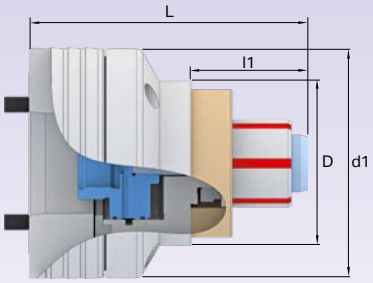
SPANNTOP mini

- Classical benefits of all HAINBUCH power chucks, e.g. high retention force, all-around clamping with high accuracy and exceptional ease of setup
- Lower centrifugal force losses compared to jaw chucks
- Workpiece stabilized through axial pulling against workpiece stop
- Radial run-out < 0.01 mm
- Minimal interference contour and easy changing of the clamping heads

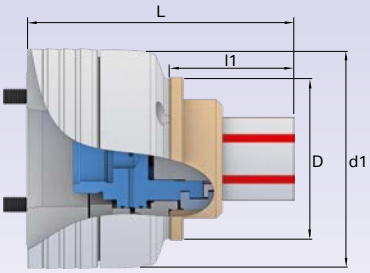
HAINBUCH
SPANNENDE TECHNIK

Clamping means installed and aligned by pL LEHMANN
(if ordered together with a rotary table)

Further information: www. hainbuch.com
Request installation and operating instructions directly from manufacturer



MANDO T211 Axzug



MANDO T212 Axzug
MANDO T812 Axfix

HAINBUCH clamping mandrels MANDO

* For T-type rotary tables it may be necessary to increase the center height, see **p. 69**

	pL LEHMANN Item no.	Designation	Hydraulic	Size	Clamping capacity [mm]	L [mm]	l 1 [mm]	D [mm]	d 1 [mm]	Weight [kg]	max. speed [rpm]	Required clamping cylinder *	HAINBUCH item no., incl. adapter flange
507	**HAI.507-ma-axz1**	MANDO T212 Axzug	●	xxs	8...13	121.5	45.5	65	141	8.30	500	SPZ.5xx-9 / -p	10001308
	HAI.507-ma-axf1	MANDO T812 Axfix	●	xxs	8...13	116.75	44.0	65	141	8.20	500	SPZ.5xx-9 / -p	10001316
	HAI.507-ma-axz2	MANDO T212 Axzug	●	xs	13...19	116	45.5	65	141	8.00	500	SPZ.5xx-9 / -p	10001309
	HAI.507-ma-axf2	MANDO T812 Axfix	●	xs	13...19	120	47.5	65	141	8.20	500	SPZ.5xx-9 / -p	10001317
510	**HAI.510-ma-axz1**	MANDO T212 Axzug	●	s	16...21	112.5	47.5	70	141	7.50	500	SPZ.5xx-9 / -p	10001310
	HAI.510-ma-axf1	MANDO T812 Axfix	●	s	16...21	117.5	49.5	70	141	7.80	500	SPZ.5xx-9 / -p	10001318
	HAI.510-ma-axz2	MANDO T211 Axzug	●	0	20...28	115.5	40.0	75	141	7.20	500	SPZ.5xx-9 / -p	10001303
	HAI.510-ma-axz3	MANDO T212 Axzug	●	0	20...28	123.5	58.5	90	141	8.00	500	SPZ.5xx-9 / -p	10001311
	HAI.510-ma-axf2	MANDO T812 Axfix	●	0	20...28	129.5	60.5	90	141	8.40	500	SPZ.5xx-9 / -p	10001319
520	**HAI.520-ma-axz1**	MANDO T211 Axzug	●	1	26...38	130	51.0	75	141	7.50	500	SPZ.520-9 / -p	10001304
	HAI.520-ma-axz2	MANDO T212 Axzug	●	1	26...38	134	64.5	90	141	8.40	500	SPZ.520-9 / -p	10001312
	HAI.520-ma-axf1	MANDO T812 Axfix	●	1	26...38	137.5	66.5	90	141	8.60	500	SPZ.520-9 / -p	10001320
	HAI.520-ma-axz3	MANDO T211 Axzug	●	2	36...54	150	71.0	100	141	8.10	500	SPZ.520-9 / -p	10001305
	HAI.520-ma-axz4	MANDO T212 Axzug	●	2	36...54	152	80.5	104	141	9.30	500	SPZ.520-9 / -p	10001313
	HAI.520-ma-axf2	MANDO T812 Axfix	●	2	36...54	153.5	82.5	104	141	9.30	500	SPZ.520-9 / -p	10001321
530	**HAI.530-ma-axz1**	MANDO T211 Axzug	●	3	50...80	172	78.0	100	211	14.1	500	SPZ.530-9 / -p	10001306
	HAI.530-ma-axz2	MANDO T212 Axzug	●	3	50...80	172	87.5	120	211	15.5	500	SPZ.530-9 / -p	10001314
	HAI.530-ma-axf1	MANDO T812 Axfix	●	3	50...80	173.5	90.0	120	211	15.8	500	SPZ.530-9 / -p	10001322
	HAI.530-ma-axz3	MANDO T211 Axzug	●	4	69...100	187	95.0	100	211	15.3	500	SPZ.530-9 / -p	10001307
	HAI.530-ma-axz4	MANDO T212 Axzug	●	4	69...100	180.5	97.5	138	211	16.6	500	SPZ.530-9 / -p	10001315
	HAI.530-ma-axf2	MANDO T812 Axfix	●	4	69...100	183.5	100.0	138	211	17.3	500	SPZ.530-9 / -p	10001323


MANDO T211

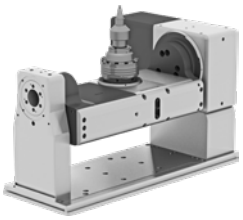
For components with through holes Ø20–200 mm
(due to tension bolts)


MANDO T212
MANDO T812

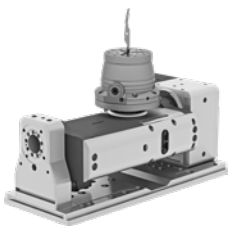
For components with blind holes from Ø8–200 mm

MANDO

- Typical HAINBUCH features such as ease of setup, parallel clamping, optimal force transmission, high rigidity and retention force as well as low wear
- Workpiece stabilized through axial pulling against workpiece stop
- Radial run-out < 0.01 mm, version T812 < 0.025 mm
(with adaptation +0.003 mm)
- Large adaptation range through use of vulcanized clamping elements
- Prepared for air system check at workpiece stop

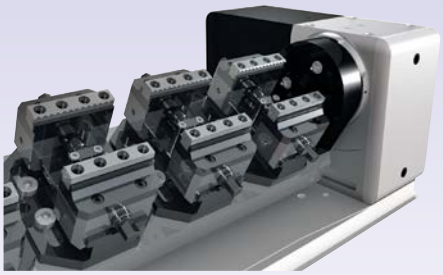

SPANNTOP mini Axzug size 52 on T1-520530 TAP3


MANDO T211 size 0 on T1-510520 TAP2


TOROK SE size 52 on T1-507510 TOP1


TOPlus mini Axfix size 52 on EA-520

Vischer & Bolli
Werkzeug- und Spanntechnik
Machining and workholding



Clamping device assembled by pL LEHMANN, final adjustment by customer
(if ordered together with a rotary table)

Further information: www.vb-tools.com
Request installation and operating instructions directly from manufacturer

SAFE and AirLine zero point clamping systems

	pL LEHMANN Item no.	Designation	Manual	open, pneumatic 6 bar	open, hydraulic 65 bar	D1 [mm]	D2 [mm]	L from spindle [mm]	Weight [kg]	max. speed [rpm]	Draw-in force [kN]	Retention force [kN]	required Rotary union*	vb Item no., incl. adapter flange
507	**VBO.507-al**	AirLine		●		120	130	52			>9	40	DDF.507-04	755 507-04
	VBO.507-SAh	SAFE20			●	120	130	50			>9	40	DDF.507-04	752 507-04
	VBO.507-SAm	SAFE20	●			120	130	50			>9	40		752 507-04-M
510	**VBO.510-al**	AirLine		●		120	130	52			>9	40	DDF.510-04	755 510-04
	VBO.510-SAh	SAFE20			●	120	130	50			>9	40	DDF.510-04	752 510-04
	VBO.510-SAm	SAFE20	●			120	130	50			>9	40		752 510-04-M
520	**VBO.520-al**	AirLine		●		120	140	52			>9	40	DDF.520-04	755 520-04
	VBO.520-SAh	SAFE20			●	120	140	50			>9	40	DDF.520-04	752 520-04
	VBO.520-SAm	SAFE20	●			120	140	50			>9	40		752 520-04-M
530	**VBO.530-al**	AirLine		●		120	220	57			>9	40	DDF.530-04	755 530-04
	VBO.530-SAh	SAFE20			●	120	220	55			>9	40	DDF.530-04	752 530-04
	VBO.530-SAm	SAFE20	●			120	220	55			>9	40		752 530-04-M

* see **pp. 70/71**

Clamping means for SAFE and AirLine zero point clamping systems

	pL LEHMANN Item no.	Designation	Interference circle ø [mm]	L from support [mm]	Clamping capacity [mm]	Dimensions LxWxH [mm]	Weight [kg]	max. speed [rpm]	vb Item no.
Center clamp	**VBO.al-76**	AirLine vb centro76	175	75	5-74/44-120	Ø148x90x75			vb-centro76 AL
	VBO.al-76P	AirLine vb centro76 pendulum	175	75	22-74/62-120	Ø148x90x75			vb-centro76 P AL
	VBO.sa-76	SAFE20 vb centro76	175	75	5-74/44-120	Ø148x90x75			vb-centro76 S
	VBO.sa-76P	SAFE20 vb centro76 pendulum	175	75	22-74/62-120	Ø148x90x75			vb-centro76 P S
Empty pallets	**VBO.al-PalQ**	AirLine Index pallet	206	35		150x150x35			755601 PL
	VBO.al-PalR	AirLine Index pallet. round	160	35		Ø160x35			755602 PL
	VBO.sa-PalQ	SAFE20 Index pallet	206	35		150x150x35			752601 PL
	VBO.sa-PalR	SAFE20 Index pallet, round	160	35		Ø160x35			752602 PL

Center clamp on ripas or directly on spindle

	pL LEHMANN Item no.	Designation	Interference circle ø [mm]	L from support [mm]	Clamping capacity [mm]	Dimensions LxWxH [mm]	Weight [kg]	max. speed [rpm]	vb Item no.
ripas	**VBO.RIP-76**	vb centro76, ripas	175	83	5-74/44-120	Ø148x90x83			vb-centro76 Ri
	VBO.RIP-76P	vb centro76 pendulum, ripas	175	83	22-74/62-120	Ø148x90x83			vb-centro76 P Ri
507	**VBO.507-76**	vb-centro76, direct	175	67	5-74/44-120	Ø148x90x75			vb-centro76 pL 507
	VBO.507-76P	vb-centro76 pendulum, direct	175	67	22-74/62-120	Ø148x90x75			vb-centro76 P pL 507
510	**VBO.510-76**	vb-centro76, direct	175	67	5-74/44-120	Ø148x90x75			vb-centro76 pL 510
	VBO.510-76P	vb-centro76 pendulum, direct	175	67	22-74/62-120	Ø148x90x75			vb-centro76 P pL 510

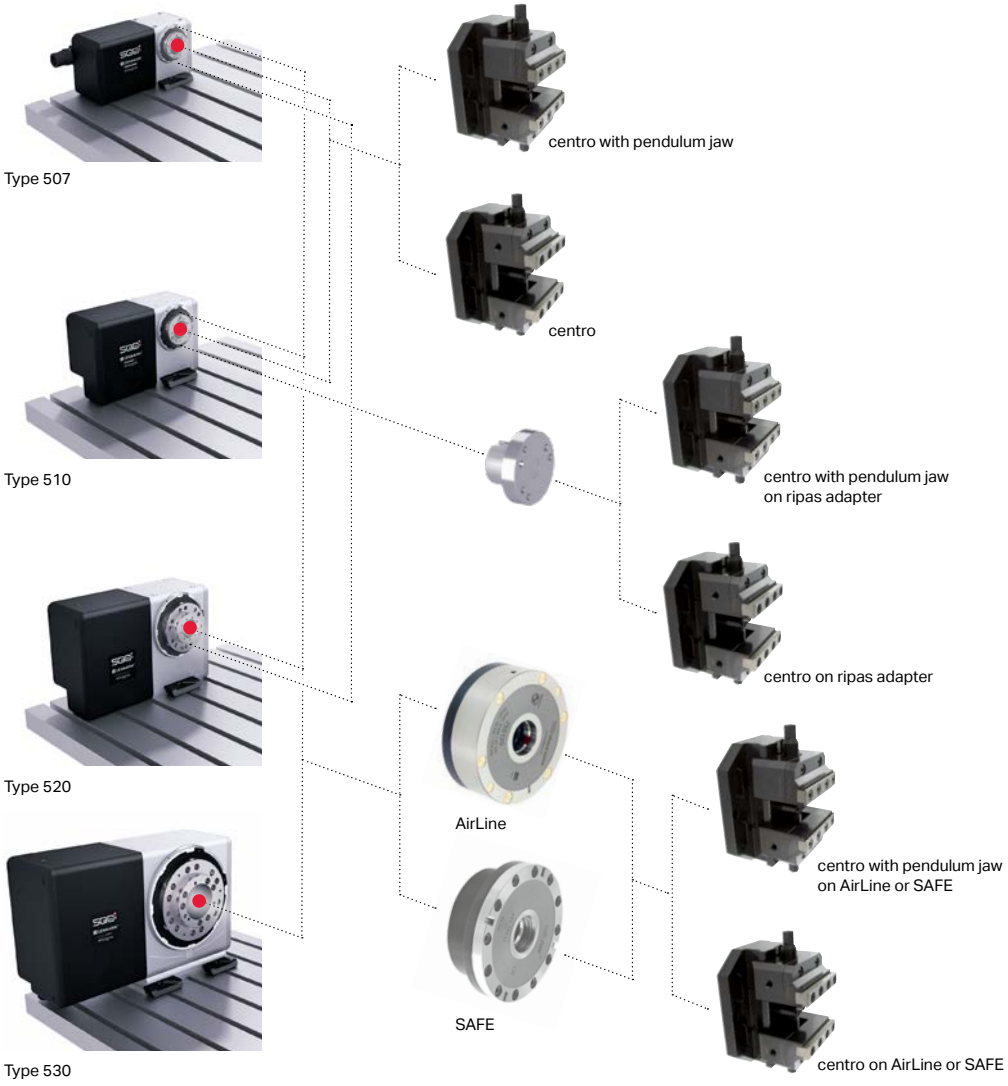
Vischer & Bolli
Werkzeug- und Spanntechnik
Machining and workholding

Clamping device assembled by pL LEHMANN, final adjustment by customer (if ordered together with a rotary table)

Further information: www.vb-tools.com
Request installation and operating instructions directly from manufacturer

vb-centro76 jaw line

	vb item no.	Designation	Dimension (LxWxH)	Weight [kg]	Speed [rpm]
Soft jaws	748-086ST	Soft steel jaws	86x60x40		
	748-086AL	Soft aluminum jaws	86x60x40		
Grip jaws	748-76-04-ST	Grip jaw, standard			
	748-76-04-RG	Grooved / Grip jaw			
	748-76-04-AL	Grip jaw for aluminum			
	748-76-04-L	Positive-fit jaws			
Accessories	748-76-M8	Workpiece stop			
	748-NM	Torque wrench			
	748-SW12	Wrench socket, 12 mm			



Further information: www.schunk.com
Request installation and operating instructions directly from manufacturer

Hole grid plate assembled by pL LEHMANN
(if ordered together with a rotary table)

KSC mini
1 side, 1 row

KSC mini
1 side, 2 rows

KSC mini
2 sides, 1 row

Hole grid plates

	pL LEHMANN Item no.	L [mm]	SCHUNK Item no. Hole grid plate
510	**SCH.510-LRP500**	500	1505511
510	**SCH.510-LRP600**	600	1505512
520	**SCH.520-LRP600**	600	1505513
520	**SCH.520-LRP800**	800	1505514

Clamping elements

pL LEHMANN Item no.	Clamping system	SCHUNK Item no. Clamping elements
SCH.KSCmini	KSC mini	1505515
SCH.KSC80	KSC 80	1505516
SCH.KSC125	KSC 125	1505518
SCH.KSM400	KSM2 400	1505521
SCH.KSM500	KSM2 500	1505522

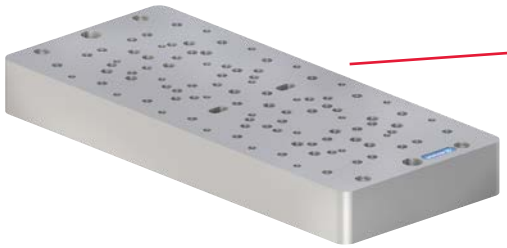
KSC mini

KSM400

Ordering information

Always order together with pL

- Counter bearing GLA.TOP2-xx0 **(p. 40)**
- Mounting kit RFX.5x0-ASa-TOP **(p. 40)**
- Base plate RFX.5x0-GPxxxs-TOP **(p. 40)** or hydraulic kit GLA.HYD-xxx **(p. 87)**



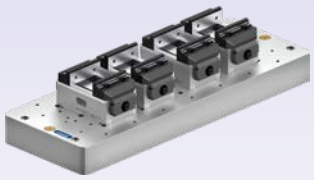
Hole grid plate SCHUNK 40105326, 40105355, 40105356, 40105357

Instead of the standard clamping yoke shown on **p. 40**, the SCHUNK hole grid plate is used here.

Further information: www.schunk.com
Request installation and operating instructions directly from manufacturer

Hole grid plate assembled by pL LEHMANN
(if ordered together with a rotary table)

KSC mini
2 sides, 2 rows

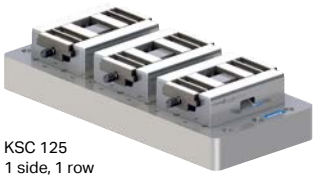


KSC 80
1 side, 1 row

KSC 80
2 sides, 1 row

Combination possibilities

	pL LEHMANN Item no. Hole grid plate	L [mm]	Clamping system	Description	Number of clamping elements
510	SCH.510-LRP500	500	KSC mini	1 side, 1 row	4
		500	KSC mini	1 side, 2 rows	10
		500	KSC mini	2 sides, 1 row	8
		500	KSC mini	2 sides, 2 rows	20
		500	KSC 80	1-sides	4
		500	KSC 80	2-sides	8
		500	KSC 125	1 side, 1 row	3
		500	KSC 125	2-sides 1-row	6
		500	KSM2 400	1 side, 1 row	max. 5
		500	KSM2 400	1 side, 2 rows	max. 10
		500	KSM2 400	2 sides, 1 row	max. 10
		500	KSM2 400	2 sides, 2 rows	max. 20
	SCH.510-LRP600	600	KSC mini	1 side, 1 row	6
		600	KSC mini	1 side, 2 rows	14
		600	KSC mini	2 sides, 1 row	12
		600	KSC mini	2 sides, 2 rows	28
		600	KSC 80	1-sides	4
		600	KSC 80	2-sides	8
		600	KSC 125	1 side, 1 row	3
		600	KSC 125	2-sides 1-row	6
		600	KSM2 500	1 side, 1 row	max. 6
		600	KSM2 500	1 side, 2 rows	max. 12
		600	KSM2 500	2 sides, 1 row	max. 12
		600	KSM2 500	2 sides, 2 rows	max. 24
520	SCH.520-LRP600	600	KSC mini	1 side, 1 row	6
		600	KSC mini	1 side, 2 rows	14
		600	KSC mini	2 sides, 1 row	12
		600	KSC mini	2 sides, 2 rows	28
		600	KSC 80	1-sides	4
		600	KSC 80	2-sides	8
		600	KSC 125	1 side, 1 row	3
		600	KSC 125	2-sides 1-row	6
		600	KSM2 500	1 side, 1 row	max. 6
		600	KSM2 500	1 side, 2 rows	max. 12
		600	KSM2 500	2 sides, 1 row	max. 12
		600	KSM2 500	2 sides, 2 rows	max. 24
	SCH.520-LRP800	800	KSC mini	1 side, 1 row	8
		800	KSC mini	1 side, 2 rows	18
		800	KSC mini	2 sides, 1 row	16
		800	KSC mini	2 sides, 2 rows	36
		800	KSC 80	1-sides	6
		800	KSC 80	2-sides	12
		800	KSC 125	1 side, 1 row	5
		800	KSC 125	2-sides 1-row	10
		800	KSM2 500	1 side, 1 row	max. 6
		800	KSM2 500	1 side, 2 rows	max. 12
		800	KSM2 500	2 sides, 1 row	max. 12
		800	KSM2 500	2 sides, 2 rows	max. 24



KSC 125
1 side, 1 row

KSC 125
2 sides, 1 row

KSCM2 400
1 side, 1 row

KSM2 400
2 sides, 1 row

KSCM2 400
1 side, 2 rows

KSM2 400
2 sides, 2 rows

Clamping devices assembled by pL LEHMANN, final adjustment by customer (if ordered together with a rotary table)

Further information: www.schunk.com
Request installation and operating instructions directly from manufacturer

Adapter flange

	pL LEHMANN Item no.		Fits power clamping blocks	L from spindle [mm]	Weight [kg]	SCHUNK Item no.
507/ 510	**SCH.5xx-Ada64**	1	TANDEM3 64	15	0.7	1504986
	SCH.5xx-Ada100	2	TANDEM3 100	20	2.4	1504987
510	**SCH.510-Ada160**	3	TANDEM3 160	15	4.8	1504112
520	**SCH.520-Ada250**	4	TANDEM3 250	22	18	1504988
530	**SCH.530-Ada250**	5	TANDEM3 250	on request	on request	on request

Power clamping blocks

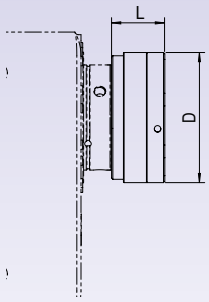
pL LEHMANN Item no.	Designation	Size [mm]	L from spindle (with adapter flange, without jaws) [mm]	Hydraulic	Pneumatic	Centered	Fixed jaw	Jaw stroke [mm]	Clamping force [kN] *	Max. pressure (bar)	Max. range with standard jaws ** [mm]	Weight (with adapter flange) [kg]	Max. speed *** [rpm]	Required adapter flange	Additionally required pL LEHMANN rotary union ***	SCHUNK catalog reference
SCH.KSP64	KSP3 64-Z	64 x 64	65.7		●		●	2	4.5	9	40	1.9	100	1	DDF.5xx-04	1409255
SCH.KSP100	KSP3 100-Z	100 x 100	89.2		●	●		2	18	9	70	6.2	100	2	DDF.5xx-04	1409263
SCH.KSP100LH	KSP3-LH 100-Z	100 x 100	89.2		●		●	6	8	9	70	6.2	100	2	DDF.5xx-04	1409301
SCH.KSP100F	KSP3-F 100-Z	100 x 100	89.2		●		●	4	18	9	70	6.2	100	2	DDF.5xx-04	1409343
SCH.KSP160	KSP3 160-Z	160 x 160	97.2		●	●		3	45	9	120	15.80	100	3	DDF.5xx-04	1409272
SCH.KSP160LH	KSP3-LH 160-Z	160 x 160	97.2		●	●		8	20	9	120	16.00	100	3	DDF.5xx-04	1409312
SCH.KSP160F	KSP3-F 160-Z	160 x 160	97.2		●		●	6	45	9	120	15.80	100	3	DDF.5xx-04	1409351
SCH.KSP250	KSP3 250-Z	250 x 250	128.2		●	●		5	55	6	170	50.00	100	4 / 5	DDF.5xx-04	1409282
SCH.KSP250LH	KSP3-LH 250-Z	250 x 250	128.2		●	●		15	20	6	170	50.00	100	4 / 5	DDF.5xx-04	1409322
SCH.KSP250F	KSP3-F 250-Z	250 x 250	128.2		●		●	10	55	6	170	50.00	100	4 / 5	DDF.5xx-04	1409359
SCH.KSH100	KSH3 100-Z	100 x 100	94.2	●		●		2	18	60	70	7	100	2	DDF.5xx-04	1463173
SCH.KSH100LH	KSH3-LH 100-Z	100 x 100	94.2	●		●		6	16	120	70	7	100	2	DDF.5xx-04	1463180
SCH.KSH100F	KSH3-F 100-Z	100 x 100	94.2	●			●	4	18	60	70	7	100	2	DDF.5xx-04	1463178
SCH.KSH160	KSH3 160-Z	160 x 160	102.2	●		●		3	45	60	120	18.8	100	3	DDF.5xx-04	1463202
SCH.KSH160LH	KSH3-LH 160-Z	160 x 160	102.2	●		●		8	20	120	120	19	100	3	DDF.5xx-04	1463224
SCH.KSH160F	KSH3-F 160-Z	160 x 160	102.2	●			●	6	45	60	120	18.8	100	3	DDF.5xx-04	1463207

* at max. pressure and / or max. torque
** with standard jaws KTR 64 / 100 / 160 / 250 (processing must be carried out by the customer)
*** see **pp. 70/71**
**** only indexing allowed

LH version = long stroke
F version = 1 fixed jaw

KSPZ plus 250 on EA-520

SCHUNK clamping unit on SCHUNK VERO-S **(p. 137)**



NSE3 138-P with two medium interfaces

Clamping devices assembled by pL LEHMANN, final adjustment by customer (if ordered together with a rotary table)

Further information: www.schunk.com
Request installation and operating instructions directly from manufacturer

Adapter flange

	pL LEHMANN Item no.		Compatible with zero-point clamping systems	L from spindle [mm]	Weight [kg]	SCHUNK Item no.
507/510	**SCH.5xx-Ada90**	1	NSE mini 90	15	1	1505504
507/510	**SCH.5xx-Ada138**	2	NSE3 138	35.7	3.7	1505506
507/510	**SCH.5xx-Ada138P**	3	NSE3 138 P	35.7	3.7	1505507
520	**SCH.520-Ada138**	4	NSE3 138	40	2.4	1505508
520	**SCH.520-Ada176**	5	NSE3 176	40	6.6	1505509
530	**SCH.530-Ada176**	6	NSE3 176	50	8.5	1505510

Important technical data

	Unit	NSE3 138	NSE +176
Pneumatic system	[mm]	Yes	Yes
Repeat accuracy	[mm]	< 0.005	< 0.005
Actuating pressure	[bar]	6	6
Draw-in force	[kN]	28	40
Retention force M16	[kN]	75	75

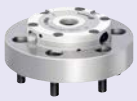
Zero point clamping systems

pL LEHMANN Item no.	Designation non-rusting	Pneumatic 6 bar	Turbo function	non-rusting	D [mm]	L from spindle (with adapter flange) [mm]	Draw-in force [kN]	Increased draw-in force with turbo function [kN]	Max. retention force [kN]	Weight (with adapter flange) [kg]	Max. speed ** [rpm]	Open	Anti-twist protection	Required adapter flange	Required rotary union*	SCHUNK catalog reference
SCH.90ix	VERO-S NSE mini 90-V1	●	●	●	ø90	35	0.5	1.5	25	1.8	100	●	●	1	DDF.5xx-04	0435105
SCH.138ix	VERO-S NSE3 138-V1	●	●	●	ø138	74.7	8	28	75	8.20	100	●	●	2 / 4	DDF.5xx-04	1313723
SCH.138ix-P	VERO-S NSE3 138-V1-P	●	●	●	ø138	74.7	8	28	75	6.7	100	●	●	3	DDF.5xx-04	1359500
SCH.176ix	VERO-S NSE plus 176-V1	●	●	●	ø176	74.7	9	40	75	12.00	100	●	●	5 / 6	DDF.5xx-04	0471096

* see **pp. 70/71**
** only indexing allowed
P = with media passage

Increased accuracy = ½ tolerance values; Item no. NPS.5xx-GEN

NSE plus 90-V1



Empty chuck

Centric clamping unit KSA plus 100

NSE3 138-V1-P

Version -P has 2x media passage

Empty chuck

Diaphragm chuck

Centric clamping unit KSC 125

ROTA-S plus 2.0

NSE plus 176-V1

Empty chuck

GRESSEL Spanntechnik

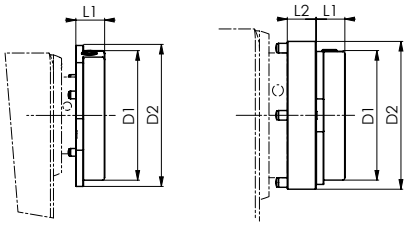
* Clamping devices assembled and aligned by pL LEHMANN
(if ordered together with a rotary table)

Further information: www.gressel.ch
Request installation and operating instructions directly from manufacturer

GRESSEL gredoc pallet system

	pL LEHMANN Item no.	Designation	Manual	D1 [mm]	D2 [mm]	L1 [mm]	L2 [mm]	Weight [kg]	Max. Speed [rpm]	GRESSEL Item no. incl. adapter flange
507	**GRE.507-GRU***	gredoc round	•	ø135	148	30	–	3.0		NGS.010.015.01
510	**GRE.510-GRU***				148		–	3.0		NGS.010.016.01
520	**GRE.520-GRU***				154		30	6.4		NGS.010.007.01

Technical data	Unit	Dimensions
Mechanical system		Yes
Repeat accuracy	(mm)	< 0.01
Draw-in force	(kN)	20
Height tolerance	(mm)	± 0.005



Clamping devices for above GRESSEL gredoc pallet system

pL LEHMANN Item no.	Designation	Manual	D [mm]	L from spindle [mm]	Pallet sizes [mm]	Workpiece weight (perm.) [kg]	Weight [kg]	Max. speed [rpm]	GRESSEL catalog reference	Base body required
GRE.SOL-40	solinos 40-4V-IT	•	148 x 135 x 135	198		8			KLM.040.020.01	GRE.5xx-GRU
GRE.SOL-65	solinos 65-4V-IT	•	193 x 164 x 164	243		18.5			KLM.065.020.01	
GRE.MTZ	4-way tower mini	•	ø158 x 242	242	ø158	12.8			MTZ.000.403.01	
GRE.C280-grip	C2.0 80 L-130 with reversible jaw grip	•	157 x 80 x 78	128		4			CNM.080.001.01	GRE.5xx-GRU
GRE.C2125-grip	C2.0 125 L-160 with reversible jaw grip	•	208 x 125 x 83	133		8.7			CNM.125.001.01	
GRE.SPZ	gredoc collet, cpl.	•	ø148 x 47.5	97.5	ø148	1.5			NGS.010.030.01	
GRE.LP	Empty pallet, steel	•	ø148 x 30	80	ø148	2.0			NGA.000.002.01	
GRE.LRP	Perforated pallet, steel	•	ø148 x 30	80	ø148	2.0			NGA.000.003.01	
GRE.NGZ-p	Pyramid 3-way 30° for C3 L-80	•	ø190 x 54 / 30°		ø190	2.6			NGZ.010.135.11	
GRE.C3	C3 L-80 without system jaws	•	70 x 80 x 42			0.9			CGM.070.002.01	
GRE.SWB-grip	SWB grip 3mm width 45 (1 piece)	•	45 x 22 x 22			0.1			CGA.070.001.01	
GRE.NGZ-w	Bracket cube for C2 80	•	260 x 150 x 220			14.6			NGZ.010.060.11	
GRE.AB	Mounting pin, incl. fastening screw	•	ø40			0.1			NGA.000.001.01	

All items must be ordered separately! (Example of Lehmann EA-507: NGS.010.015.01 + CGM.080.001.01 + NGA.000.001.01)

Possible applications


C2.0 125


SWB grip 3 mm


solinos 4 V


4-way tower mini


Bracket cube with C2.0 80


Empty pallets

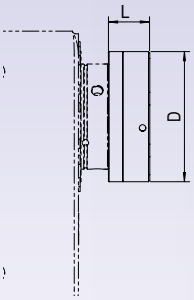

Pallet with hole grid


gredoc collet, cpl.


Pyramid 3-way 30° with C3 L-80 grip


EA application

LANG TECHNIK
einfach. zukunft. greifen.



Clamping device assembled by pL LEHMANN,
final adjustment by customer (if ordered together with a rotary table)

Further information: www.lang-technik.de
Request installation and operating instructions directly from manufacturer

LANG zero point clamping system

pL LEHMANN item no.		LAN.5xx-QP52m	LAN.5xx-QP52k
Designation		Quick·Point® 52, incl. adapter flange	
Actuation		Manual	Power-actuated**
Dimensions	D x L	Ø 116 x 43 mm	
Weight [kg]		3.60	on request
Max. speed [rpm]		400	
suitable for LEHMANN SPI		507 / 510 / 520	
suitable for LANG 5-axis vices*		48085-46 / 48085-77 / 48120-46 / 48120-77 / 48160-77	

pL LEHMANN item no.		LAN.5xx-QP96m	LAN.5xx-QP96k
Designation		Quick·Point® 96, incl. adapter flange	
Actuation		Manual	Power-actuated**
Dimensions	D x L	Ø 196 x 37 mm	
Weight [kg]		7.60	on request
Max. speed [rpm]		400	on request
suitable for LEHMANN SPI		507 / 510	
suitable for LANG 5-axis vices*		48155-77 / 48155-125	

pL LEHMANN item no.		LAN.520-QP96m	LAN.520-QP96k
Designation		Quick·Point® 96, incl. adapter flange	
Actuation		Manual	Power-actuated**
Dimensions	D x L	Ø 196 x 41.5 mm	
Weight [kg]		7.50	on request
max. speed [rpm]		400	on request
suitable for LEHMANN SPI		520	
suitable for LANG 5-axis vices*		48155-77 / 48155-125	

* The maximum length of the vise base body depends on the rotary axis type. Longer vise variants may be possible. Please inquire.
** Required clamping cylinder: SPZ.5xx-9 / -p or SPZ.520-9 / -p

Vices suitable for the LANG zero point clamping system

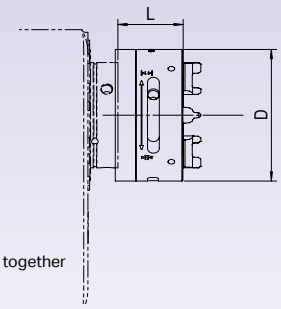
Example of application
Makro·Grip® 125 with Quick·Point® 96, manual on LEHMANN EA-510

Example of application
Makro·Grip® 77 with Quick·Point® 52, power-actuated on LEHMANN EA-510

pL LEHMANN Item no.	Designation	Clamping capacity [mm]	Weight [kg]	Max. speed [rpm]	LANG Item no.	Base body required
LAN.MG46-S85	Makro·Grip® 46, length 102 mm Jaw width 46 mm	0 – 85			48085-46	
LAN.MG46-S120	Makro·Grip® 46, length 130 mm Jaw width 46 mm	0 – 120			48120-46	
LAN.MG77-S85	Makro·Grip® 77, length 102 mm Jaw width 77 mm	0 – 85	2.30	400	48085-77	pL LEHMANN Item no. **LAN.5xx-QP52x**
LAN.MG77-S120	Makro·Grip® 77, length 130 mm Jaw width 77 mm	0 – 120	2.90	400	48120-77	
LAN.MG77-S160	Makro·Grip® 77, length 170 mm Jaw width 77 mm	0 – 160	3.50	400	48160-77	
LAN.MG77-S155	Makro·Grip® 77, length 160 mm Jaw width 77 mm	0 – 155			48155-77	pL LEHMANN Item no. **LAN.5xx-QP96x / LAN.520-QP96x**
LAN.MG125-S155	Makro·Grip® 125, length 160 mm Jaw width 125 mm	0 – 155	8.40	400	48155-125	

All LANG vices can also be attached to other zero point clamping systems (Erowa, Schunk, 3R, etc.) after being adjusted slightly. For further information, please contact your local LANG Technik representative.

EROWA®



ProductionChuck 210 Combi ER-032388

Clamping means installed and aligned by pL LEHMANN (if ordered together with a rotary table)

Further information: www.erowa.com
Request installation and operating instructions directly from manufacturer

ERO.5xx = Item number for combined clamping chuck for types 507 and 510

	pL LEHMANN Item no.	Designation (incl. flange)	Manual	Pneumatic	D [mm]	L from spindle [mm]	Pallet sizes [mm]	Workpiece weight (perm.) [kg]	Max. speed [rpm]	Open	Clean Z-support	Rotary union	Chuck weight, (incl. Adapter flange) [kg]	EROWA catalog reference	EROWA Item no., incl. adapter flange
507	**ERO.507-CTSix**	CTS Chuck Dual Rotation (Inox)		●	ø112	45.3	ø60	4	8000	●	●	1)	4.3	ER-050316	on request
	ERO.5xx-FTSix	FTS Chuck (Inox)		●	ø74	46.5	ø72	4	4000	●	●	1)	1.5	ER-057335	ER-073469
	ERO.5xx-Qcix	QuickChuck 100 P (Inox)	●		ø100	50	□50/ø148	35	3000				2.6	ER-036345	ER-073351
	ERO.5xx-ITS100ix	ITS Chuck 100 P (Inox)		●	ø100	50	□50/ø148	35	5000	●	●	1)	2.5	ER-043123	ER-073433
	ERO.5xx-PC	PowerChuck P		●	ø150	64.5	□50/ø148	50	5000	●	●	1)	7.5	ER-115254	ER-073046
	ERO.5xx-MTS	MTS IntegralChuck S-P/A		●	ø130	62	ø148	50	4500	●	●	1)	4	ER-131210	ER-073457
510	**ERO.510-CTSix**	CTS Chuck Dual Rotation (Inox)		●	ø112	45.3	ø60	4	8000			2)	4.3	ER-050316	on request
	ERO.5xx-FTSix	FTS Chuck (Inox)		●	ø74	46.5	ø72	4	4000	●	●	2)	1.5	ER-057335	ER-073469
	ERO.5xx-QCix	QuickChuck 100 P (Inox)	●		ø100	50	□50/ø148	35	3000				2.6	ER-036345	ER-073351
	ERO.5xx-ITS100ix	ITS Chuck 100 P (Inox)		●	ø100	50	□50/ø148	35	5000	●	●	2)	2.5	ER-043123	ER-073433
	ERO.5xx-PC	PowerChuck P		●	ø150	64.5	□50/ø148	50	5000	●	●	2)	7.5	ER-115254	ER-073046
	ERO.5xx-MTS	MTS IntegralChuck S-P/A		●	ø130	62	ø148	50	4500	●	●	2)	4	ER-131210	ER-073457
520	**ERO.520-PC**	PowerChuck P		●	ø150	75	□50/ø148	50	5000	●	●	3)	8.7	ER-115254	ER-073460
	ERO.520-P210	ProductionChuck 210		●	ø81/ø210	98	ø210	120	4500	●	●	3)	16.6	ER-032964	ER-073461
	ERO.520-P210c	Product.Chuck 210 Combi		●	ø210	98	□50/ø210	120	4500	●	●	3)	18	ER-032388	ER-073462
530	**ERO.530-PC**	PowerChuck P		●	ø150	75	□50/ø148	50	5000	●	●	4)	7.5	ER-115254	on request
	ERO.530-P210	ProductionChuck 210		●	ø81/ø210	98	ø210	120	4500	●	●	4)	16.6	ER-032964	on request
	ERO.530-P210c	Product.Chuck 210 Combi		●	ø210	98	□50/ø210	120	4500	●	●	4)	18	ER-032388	on request
	ERO.530-UPCP	UPC P Chuck		●	320x300	95	□320	250	1000	●	●	4)	51	ER-016841	ER-077382
	ERO.530-UPCC	UPC Chuck Combi		●	280x280	90	□50/□320	200	1000	●	●	4)	48	ER-070649	on request

Increased accuracy = ½ tolerance values; Item no. NPS.5xx-GEN

for all automatic chucks		
ERO.HSV	Manual control valve	supplied loose with all necessary cables and hoses, ready to connect
ERO.ASV-2	Automatic control valve	supplied loose, for installation in the control cabinet, with all necessary cables/hoses

Additionally required rotary union (see **pp. 70/71**):
1) = DDF.507-04, 2) = DDF.510-04, 3) = DDF.520-04, 4) = DDF.530-04

When standard pallets with open holes are used, water, metal chips etc. can get into the pallet chuck, air lines and control valve. To prevent this, seal kits are available from the respective chuck manufacturers.

The speed values are theoretical, application-specific maximum values. The user is responsible for the optimum radial run-out of the pallets (incl. clamping device and workpiece) as well as sufficient workpiece fastening.

FTS Chuck (Inox)
ER-057335

ITS Chuck 100 P (Inox)
ER-043123

CTS Chuck Rotation (Inox)
ER-057324

MTS IntegralChuck S-P/A
ER-131210

PowerChuck P
ER-115254

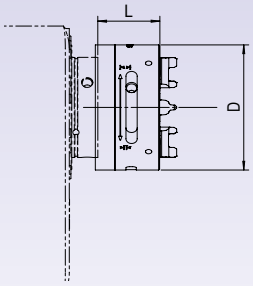
UPC chuck with ITS chuck 100 P
ER-070649

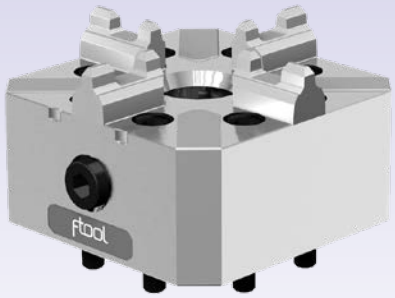
UPC P Chuck
ER-016841

Manual control valve (option)

Automatic control unit with monitoring (option)

ftool by erowa





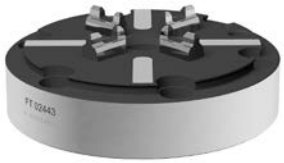
Clamping device assembled by pL LEHMANN,
final adjustment by customer (if ordered together with a rotary table)

Further information: www.f-tool.com
Request installation and operating instructions directly from manufacturer

	pL LEHMANN Item no.	Designation	Manual	D [mm]	L from spindle [mm]	Pallet sizes, max. [mm]	Workpiece weight (perm.) [kg]	Chuck weight (incl. adapter flange) [kg]	Max. speed [rpm]	F-Tool catalog reference	F-Tool item no., incl. adapter flange
507 / 510	**FTO.5xx-80P**	Chuck 80 P	●	□80	51	ø148	35	2.3	200	FT 01043	FT 02404
	FTO.5xx-50	Chuck 50	●	□56	50	ø72	15	1.4	200	FT 02110	FT 02406
	FTO.5xx-MC150P	Manual Chuck 150 P	●	ø150	55	ø148	50	4.3	200	FT 02443	FT 02405
	FTO.5xx-PIN	PIN centering chuck	●	ø80	48	ø100	15	2.1	200	FT 01716	FT 02407

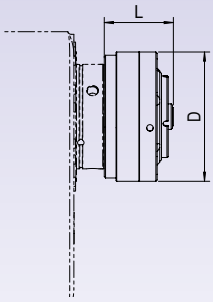

Chuck 80 P
FT 01043


Chuck 50
FT 02110


Manual Chuck 150 P
FT 02443


PIN centering chuck
FT 01716

system 3R



Clamping means installed and aligned by pL LEHMANN
(if ordered together with a rotary table)

Further information: www.system3r.com
Request installation and operating instructions directly from manufacturer

S3R.5xx = Item number for combined chuck for types 507 and 510

	pL LEHMANN Item no.	Designation (incl. flange)	Pneumatic	D [mm]	L from spindle [mm]	Pallet sizes [mm]	Workpiece weight (perm.) [kg]	Weight [kg]	Max. speed [rpm]	Open	Clean Z-support	Clean cams	incr. clamp force/venting	Rotary union	SYSTEM 3R catalog reference	SYSTEM 3R item no. incl. adapter flange
507	**S3R.5xx-G70**	3R GPS 70	●	ø99	56	ø70	10	2.70	5450	●	●			1)	C198700	X663000
510	**S3R.5xx-G70**	3R GPS 70	●	ø99	56	ø70	10	2.70	5450	●	●			2)	C198700	X663000
	S3R.510-G120	3R GPS 120	●	ø118	56	ø120	20	3.60	5450	●	●			2)	C188770	X663010
	S3R.510-MGC*	3R Magnum Chuck	●	ø162	46	ø156, & index pin	100	6.70	5450	●	●		●	2)	3R-SP26712	90940.02
	S3R.510-MCC	3R Macro Chuck	●	ø100	49	54x54, 70x70	10	2.60	5450	●	●		●	2)	3R-600.14-30	90940.01
520	**S3R.520-G120**	3R GPS 120	●	ø118	70	ø120	20	5.00	5450	●	●			3)	C188770	X663020
	S3R.520-G240	3R GPS 240	●	240x240	84	240x240	100	20.70	1500	●	●	●	●	3)	C219200	X663030
	S3R.520-G240ix	3R GPS 240, rust-resistant	●	240x240	84	240x240	100	21.00	1500	●	●	●	●	3)	X607620	X663040
	S3R.520-MGC*	3R Magnum Chuck	●	ø162	60	ø156, & index pin	100	7.70	5450	●	●		●	3)	3R-SP26712	90940.12
	S3R.520-MCC	3R Macro Chuck	●	ø100	63	54x54, 70x70	10	3.50	5450	●	●		●	3)	3R-600.14-30	90940.11
530	**S3R.530-G240**	3R GPS 240	●	240x240	84	240x240	100			●	●	●	●	4)	C219200	a.A.
	S3R.530-G240ix	3R GPS 240, rust-resistant	●	240x240	84	240x240	100			●	●	●	●	4)	X607620	a.A.
Ref. Palette	**S3R.RP-GPS240**	Reference pallet GPS 240													C846600	
	S3R.RP-GPS70120	Reference pallet GPS 70													C846360	
	S3R.RP-Macro	Reference pallet Macro													36-606.1	
	S3R.RP-Magnum	Reference pallet Magnum													3R-686.1-HD	

Additionally required rotary union (see **pp. 70/71**):
1) = DDF.507-04, 2) = DDF.510-04, 3) = DDF.520-04, 4) = DDF.530-04

* For Magnum pallets only.
Macro pallets may not be clamped

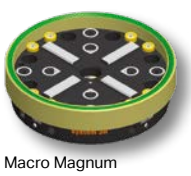
When standard pallets with open holes are used, water, metal chips etc. can get into the pallet chuck, air lines and control valve. To prevent this, seal kits are available from the respective chuck manufacturers.

Increased accuracy = ½ tolerance values; Item no. NPS.5xx-GEN


GPS 70

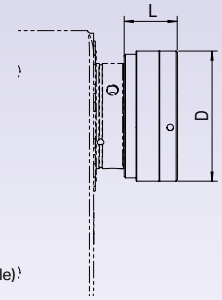

GPS 120

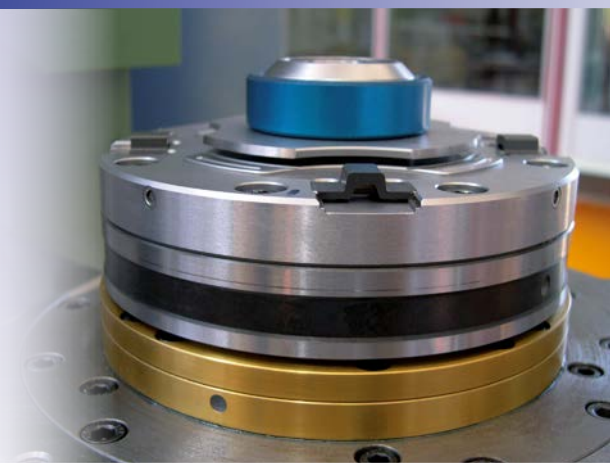

Macro


Macro Magnum


GPS 240

PAROTEC
spanntechnik · robotik · engineering





Clamping device assembled by pL LEHMANN,
final adjustment by customer (if ordered together with a rotary table)[1]

Further information: www.parotec.ch
Request installation and operating instructions directly from manufacturer

	pL LEHMANN Item no.	Designation	Manual	Pneumatic	Hydraulic	D [mm]	L from spindle [mm] (up to Z-support)	Pallet sizes [mm]	Number of media interfaces	Max. workpiece weight [kg]	Weight [kg]	Max. speed [rpm]	Open system [bar]	Clean Z-support	With re-tightening	Required rotary union**	PAROTEC Item no. incl. adapter flange
507	**PAR.507-PG162p**	POWER GRIP 160, 1er		●		Ø162	69	□158/ Ø148	0	250	9.6	6,000	6	●	●	DDF.507-04	XT2160142007
	PAR.507-PG162mp	POWER GRIP 160, 1er (LPA)	●			Ø162	69	□158/ Ø148	0	250	9.9	6,000	6		●	DDF.507-04	XT2160142008
	PAR.507-PG162h	POWER GRIP 160, 1er			●	Ø162	69	□158/ Ø148	0	750	9.9	6,000	30	●	●	DDF.507-04	XT2160142707
	PAR.507-PY162p	POLY GRIP, 1er		●		Ø162	69/76.5	Ø70-Ø148	0	50			6	●	●	DDF.507-04	XT9911420707
	PAR.507-PY162mp	POLY GRIP, 1er (LPA)	●			Ø162	69/76.5	Ø70-Ø148	0	50			6		●	DDF.507-04	XT9911420708
510	**PAR.510-PG162p**	POWER GRIP 160, 1er		●		Ø162	69	□158/ Ø148	0	250	9.5	6,000	6	●	●	DDF.510-04	XT2160162010
	PAR.510-PG162mp	POWER GRIP 160, 1er (LPA)	●			Ø162	69	□158/ Ø148	0	250	9.5	6,000	6		●	DDF.510-04	XT2160162011
	PAR.510-PG162p-P	POWER GRIP 160, 1er		●		Ø162	69	□158/ Ø148	3	250	9.6	6,000	6	●	●	DDF.510-06	XT2160162013
	PAR.510-PG162h	POWER GRIP 160, 1er			●	Ø162	69	□158/ Ø148	0	750	9.5	6,000	30	●	●	DDF.510-04	XT2160162710
	PAR.510-PG162h-P	POWER GRIP 160, 1er			●	Ø162	69	□158/ Ø148	3	750	9.6	6,000	30	●	●	DDF.510-06	XT2160162713
	PAR.510-PY162p	POLY GRIP, 1er		●		Ø162	69/76.5	Ø70-Ø148	0	50			6	●	●	DDF.510-04	XT9911420710
	PAR.510-PY162mp	POLY GRIP, 1er (LPA)	●			Ø162	69/76.5	Ø70-Ø148	0	50			6		●	DDF.510-04	XT9911420711
520	**PAR.520-PG162p**	POWER GRIP 160, 1er		●		Ø162	69	□158/ Ø148	0	250	10.4	6,000	6	●	●	DDF.520-04	XT2160162020
	PAR.520-PG162mp	POWER GRIP 160, 1er (LPA)	●			Ø162	69	□158/ Ø148	0	250	10.4	6,000	6		●	DDF.520-04	XT2160162021
	PAR.520-PG162p-P	POWER GRIP 160, 1er		●		Ø162	69	□158/ Ø148	3	250	10.4	6,000	6	●	●	DDF.520-06	XT2160162023
	PAR.520-PG162h	POWER GRIP 160, 1er			●	Ø162	69	□158/ Ø148	0	750	10.4	6,000	30	●	●	DDF.520-04	XT2160162720
	PAR.520-PG162h-P	POWER GRIP 160, 1er			●	Ø162	69	□158/ Ø148	3	750	10.4	6,000	30	●	●	DDF.520-06	XT2160162723
	PAR.520-PY162p	POLY GRIP, 1er		●		Ø162	69/76.5	Ø70-Ø148	0	50			6	●	●	DDF.520-04	XT9911420720
	PAR.520-PY162mp	POLY GRIP, 1er (LPA)	●			Ø162	69/76.5	Ø70-Ø148	0	50			6		●	DDF.520-04	XT9911420721
530	**PAR.530-PG350p**	POWER GRIP 160, 1er		●		Ø350	89	□158/ Ø148	0	250	9.9	6,000	6	●	●	DDF.530-04	XT2160162030
	PAR.530-PG350mp	POWER GRIP 160, 1er (LPA)	●			Ø350	89	□158/ Ø148	0	250	9.9	6,000	6		●	DDF.530-04	XT2160162031
	PAR.530-PG350p-P	POWER GRIP 160, 1er		●		Ø350	89	□158/ Ø148	3	250	9.9	6,000	6	●	●	DDF.530-06	XT2160162033
	PAR.530-PG350h	POWER GRIP 160, 1er			●	Ø350	89	□158/ Ø148	0	750	9.9	6,000	30	●	●	DDF.530-04	XT2160162730
	PAR.530-PG350h-P	POWER GRIP 160, 1er			●	Ø350	89	□158/ Ø148	3	750	9.9	6,000	30	●	●	DDF.530-06	XT2160162733
	PAR.530-PG376p-P	POWER GRIP 160, 4er		●		Ø376	85	□398/ Ø400	4	1000	57	6,000	6	●	●	DDF.530-06	XT2160462034
	PAR.530-PG376h-P	POWER GRIP 160, 4er			●	Ø376	85	□398/ Ø400	4	3000	57	6,000	30	●	●	DDF.530-06	XT2160462734
	PAR.530-GG376h-P	GENIUS GRIP 160, 4er			●	Ø376	85	□398/ Ø400	4	3000			30	●	●	DDF.530-06	GX2160462734
	PAR.530-PY350p	POLY GRIP, 1er		●		Ø350	69/76.5	Ø70-Ø148	0	50			6	●	●	DDF.530-04	XT9911420730
	PAR.530-PY350mp	POLY GRIP, 1er (LPA)	●			Ø350	69/76.5	Ø70-Ø148	0	50			6		●	DDF.530-04	XT9911420731

* height of Z-supports varies depending on clamping depth of workpiece
** see **p. 70/71**

LPA = air gun connection

Technical data	Unit	POWER GRIP	GENIUS GRIP	POLY GRIP	DEFO GRIP
Repeat accuracy	mm	±0.002	±0.002	±0.002	±0.005
Retention force without re-tightening PNEU	kN	17		7	0.75
Retention force with re-tightening PNEU	kN	28		12	1.2
Retention force without re-tightening HYDR	kN	35	50		
Retention force with re-tightening HYDR	kN	45	90		

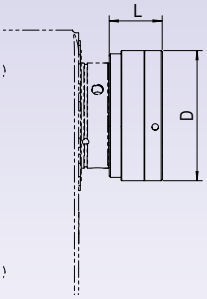

POWER GRIP 160, 1er on EA-507

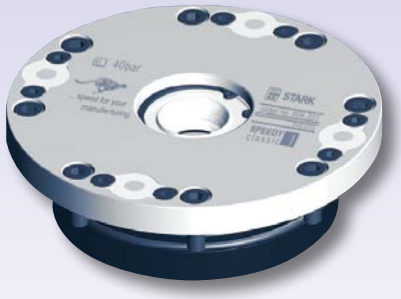

POWER GRIP 160, 1er on EA-510


POWER GRIP 160, 1er on EA-520


POWER GRIP 160, 4er on EA-530

ROEMHELD
HILMA ▪ STARK



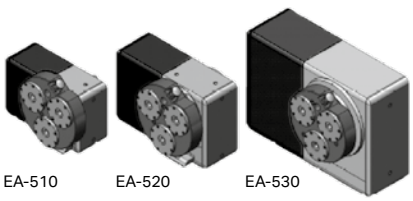


Clamping device assembled by pL LEHMANN, final adjustment by customer (if ordered together with a rotary table)

Further information: www.stark-inc.com
Request installation and operating instructions directly from manufacturer

	pL LEHMANN Item no.	Designation	Hydraulic	D [mm]	L from spindle [mm]	Max. pull-out torque (Nm)	Open [bar]	Weight [kg]	Max. speed [rpm]	Suspension mechanism	Manual loading	Can be automated	X-Y-Z positioning/clean support	Z-contact check	Clamping check	Integrated media passage	Increased clamping force	Required rotary union*	STARK catalog reference	STARK Item no., incl. adapter flange
507	**on request**																			
510	**STA.510-01**	SVP 510 SPEEDY classic 1	●	ø250	60	1740	40			●	●							-	804 331	SL1-63-0-0-2-01
	STA.510-02		●	ø250	60	2620	80			●	●						●	-	804 348	SL1-63-0-0-3-01
	STA.510-03		●	ø250	60	1740	40			●	●					●		DDF.510-04	804 331	SL1-63-0-1-2-01
	STA.510-04		●	ø250	60	2620	80			●	●					●	●	DDF.510-04	804 348	SL1-63-0-1-3-01
	STA.510-05		●	ø250	60	1740	40			●	●				●			DDF.510-04	804 331	SL1-63-1-1-2-01
	STA.510-06		●	ø250	60	2620	80			●	●				●		●	DDF.510-04	804 348	SL1-63-1-1-3-01
	STA.510-21	SVP 510 SPEEDY classic 1 Twister	●	ø250	63	1740	40			●	●	●	●	●				DDF.510-04	804 500	SL1-63-0-1-2-11
	STA.510-22		●	ø250	63	2620	80			●	●	●	●	●			●	DDF.510-04	804 501	SL1-63-0-1-3-11
	STA.510-23		●	ø250	63	1740	40			●	●	●	●	●	●			DDF.510-04	804 500	SL1-63-1-1-2-11
	STA.510-24		●	ø250	63	2620	80			●	●	●	●	●	●		●	DDF.510-04	804 501	SL1-63-1-1-3-11
520	**STA.520-01**	SVP 520 SPEEDY classic 1	●	ø250	60	1740	40			●	●							-	804 331	SL2-63-0-0-2-01
	STA.520-02		●	ø250	60	2620	80			●	●						●	-	804 348	SL2-63-0-0-3-01
	STA.520-03		●	ø250	60	1740	40			●	●					●		DDF.520-04	804 331	SL2-63-0-1-2-01
	STA.520-04		●	ø250	60	2620	80			●	●					●	●	DDF.520-04	804 348	SL2-63-0-1-3-01
	STA.520-05		●	ø250	60	1740	40			●	●				●			DDF.520-04	804 331	SL2-63-1-1-2-01
	STA.520-06		●	ø250	60	2620	80			●	●				●		●	DDF.520-04	804 348	SL2-63-1-1-3-01
	STA.520-21	SVP 512 SPEEDY classic 1 Twister	●	ø250	63	1740	40			●	●	●	●	●				DDF.520-04	804 500	SL2-63-0-1-2-11
	STA.520-22		●	ø250	63	2620	80			●	●	●	●	●			●	DDF.520-04	804 501	SL2-63-0-1-3-11
	STA.520-23		●	ø250	63	1740	40			●	●	●	●	●	●			DDF.520-04	804 500	SL2-63-1-1-2-11
	STA.520-24		●	ø250	63	2620	80			●	●	●	●	●	●		●	DDF.520-04	804 501	SL2-63-1-1-3-11
530	**STA.530-01**	SVP 530 SPEEDY classic 1	●	ø250	60	1740	40			●	●							-	804 331	SL3-63-0-0-2-01
	STA.530-02		●	ø250	60	2620	80			●	●						●	-	804 348	SL3-63-0-0-3-01
	STA.530-03		●	ø250	60	1740	40			●	●					●		DDF.530-04	804 331	SL3-63-0-1-2-01
	STA.530-04		●	ø250	60	2620	80			●	●					●	●	DDF.530-04	804 348	SL3-63-0-1-3-01
	STA.530-05		●	ø250	60	1740	40			●	●				●			DDF.530-04	804 331	SL3-63-1-1-2-01
	STA.530-06		●	ø250	60	2620	80			●	●				●		●	DDF.530-04	804 348	SL3-63-1-1-3-01
	STA.530-21	SVP 513 SPEEDY classic 1 Twister	●	ø250	63	1740	40			●	●	●	●	●				DDF.530-04	804 500	SL3-63-0-1-2-11
	STA.530-22		●	ø250	63	2620	80			●	●	●	●	●			●	DDF.530-04	804 501	SL3-63-0-1-3-11
	STA.530-23		●	ø250	63	1740	40			●	●	●	●	●	●			DDF.530-04	804 500	SL3-63-1-1-2-11
	STA.530-24		●	ø250	63	2620	80			●	●	●	●	●	●		●	DDF.530-04	804 501	SL3-63-1-1-3-11

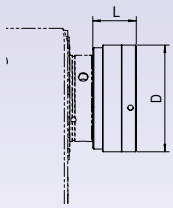
* see **pp. 70/71**



EA-510 EA-520 EA-530

Note permissible pull-out torque (use counter bearing if necessary)

Version 20 kN			Version 30kN		
Distance [mm]	Force [kN]	Weight [kg]	Distance [mm]	Force [kN]	Weight [kg]
200	8.8	897	200	13.1	1335
300	5.9	601	300	8.8	897
400	4.4	449	400	6.6	673
500	3.5	357	500	5.3	540
600	2.9	296	600	4.4	449

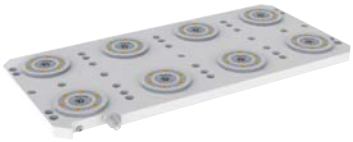


Clamping device assembled by pL LEHMANN,
final adjustment by customer (if ordered together with a rotary table)

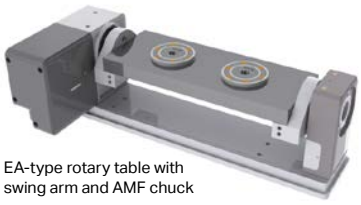
Further information: www.amf.de
Request installation and operating instructions directly from manufacturer

	pL LEHMANN Item no. incl. adapter flange	Designation	Pneumatic, 5 bar	Hydraulic, 50 bar	D [mm]	L from spindle [mm]	Weight [kg]	Max. speed [rpm]	Draw-in and closing force up to	Retention force	Indexing	Contact check	Required rotary union*	AMF catalog reference
507	**AMF.507-6206-S1**	6206ILA-10	●		ø112	47			10 kN	25 kN	●	●	DDF.507-04	428771
510	**AMF.510-6206-S1**	6206ILA-10	●		ø112	47			10 kN	25 kN	●	●	DDF.510-04	428771
520	**AMF.520-6206-S1**	6206ILA-20	●		ø138	90			17 kN	55 kN	●	●	DDF.520-04	428797
530	**AMF.530-6370-S1**	6370EAIHA40		●	ø148	98			40 kN	105 kN		●	DDF.530-04	429845

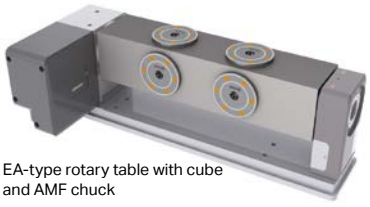
* see **pp. 70/71**



AMF zero point clamping system



EA-type rotary table with swing arm and AMF chuck



EA-type rotary table with cube and AMF chuck

YERLY

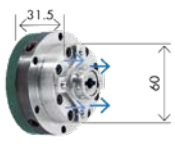
Clamping device assembled by pL LEHMANN, final adjustment by customer
(if ordered together with a rotary table)

Further information at: http://fr.yerlymecanique.ch/
Request installation and operating instructions directly from manufacturer

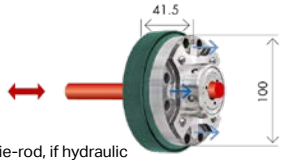
	pL LEHMANN Item no.	Designation	Hydraulic	Pneumatic	D [mm]	L from spindle [mm]	Workpiece size, approx. [mm]	Weight [kg]	Max. speed [rpm]	Required clamping cylinder	Required rotary union**	YERLY catalog reference	YERLY Item no., incl. adapter flange
507	**YER.507-060P-***	YERLY* NPS 60		●	60	85	0.1...60				DDF.507-04	MD-60-*	YER.507-60P-*-JT
	YER.507-100P-*	YERLY* NPS 100	●		100	108	0.1...100			SPZ.5xx-9 / -p		MD-100-*	YER.507-100P-*-TI
	YER.507-100M-*	YERLY* NPS 100	●		100	85	0.1...100			SPZ.5xx-9 / -p		MD-100-*	YER.507-100M-*-TI
510	**YER.510-060P-***	YERLY* NPS 60		●	60	85	0.1...60				DDF.510-04	MD-60-*	YER.510-60P-*-JT
	YER.510-100P-*	YERLY* NPS 100	●		100	108	0.1...100			SPZ.5xx-9 / -p		MD-100-*	YER.510-100P-*-TI
	YER.510-100M-*	YERLY* NPS 100	●		100	85	0.1...100			SPZ.5xx-9 / -p		MD-100-*	YER.510-100M-*-TI

* 2 = 2-jaw chuck, 3 = 3-jaw chuck, 4 = 4-jaw chuck
** see **pp. 70/71**

Yerly Basis 60P

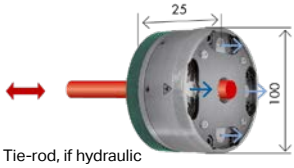


Yerly Basis 100P

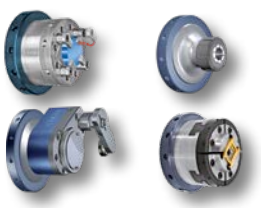


Tie-rod, if hydraulic

Yerly Basis 100M



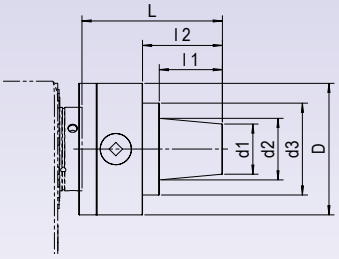
Tie-rod, if hydraulic



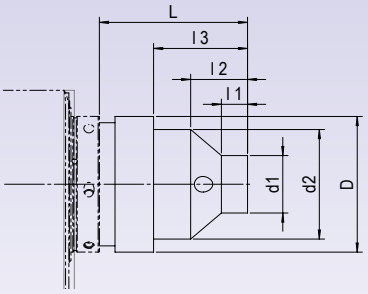
Examples of YERLY chuck attachments. Can be adapted to any chuck type

NIEDERHAUSER
SPANNTECHNIK UND SYSTEME

Manual flange-mounted chuck supplied loose, power-operated, set up and aligned by pL LEHMANN (if ordered together with a rotary table)



Mounting chuck, manual
Radial run-out with collet approx. 15µ (Schaublin)



Mounting chuck, automatic Type B axfix

Further information at: www.niederhauser.ch
Request installation and operating instructions directly from manufacturer

SPZ.5xx = Item number for combined clamping cylinder for types 507 and 510 (see **p. 68**)

	pL LEHMANN Item no.	Designation	System	axfix	Manual	Power-actuated	L [mm]	l 1 [mm]	l 2 [mm]	l 3 [mm]	D [mm]	d1 [mm]	d2 [mm]	d3 [mm]	Weight [kg]	Max. speed [rpm]	Required clamping cylinder ** (Option)	Niederhauser item no., incl. adapter flange
507	**ZSP.507-B32Am**	Mounting chuck	B32		●		133	59	75	–	126	53	62	88	8.5	6000		507-B32
	ZSP.507-B32Aka	Mounting chuck	B32	●		●					130				7.2	8000	SPZ.5xx-d2.5d25	507-B32KA
510	**ZSP.510-B32Am**	Mounting chuck	B32		●		133	59	75	–	126	53	62	88	8.7	6000		510-B32
	ZSP.510-B32Aka	Mounting chuck	B32	●		●					130				7.2	8000	SPZ.5xx-d2.5d25	510-B32KA
520	**ZSP.520-B32Am**	Mounting chuck	B32		●		149	59	75	–	130	53	62	88	9.7	6000		520-B32
	ZSP.520-B32Aka	Mounting chuck	B32	●		●	135	25	54.5	90	130	55	105		8.4	8000	SPZ.5xx-d2.5d25	520-B32KA
	ZSP.520-B45Am	Mounting chuck	B45		●		180	76	–	–	160	65	96	–				520-B45
	ZSP.520-B45Aka	Mounting chuck	B45	●		●	142	25	55.5		130	68	105				SPZ.520-d2.5 / -p	520-B45KA

** For T-type rotary tables it may be necessary to increase the center height, see **p. 69**

Clamping capacity and passage

System	Clamping capacity [mm]	Collet passage [mm]
B32	0.3...32	28
B45	1...45	36

Mounting chuck


B32, manual


B32, automatic


B45, manual

Collet holder B32

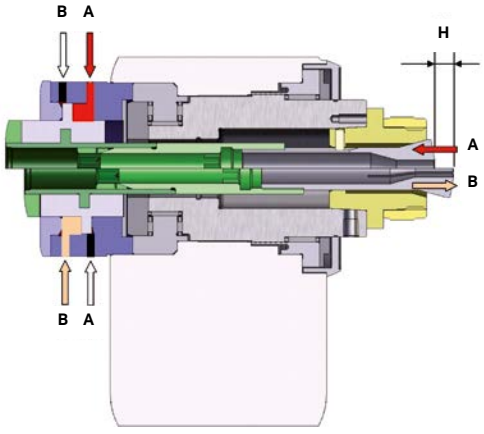
ki-mech gmbh


with pointed B32 collet

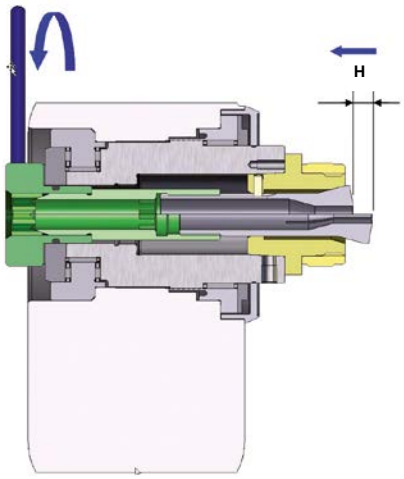

with standard B32 collet

For more, please see **p. 163**

Principle of collet clamping with HSK application



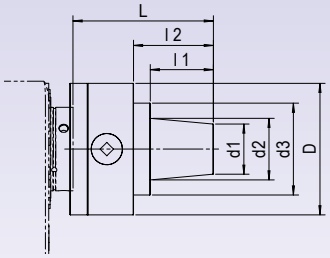
Automatic collet clamping



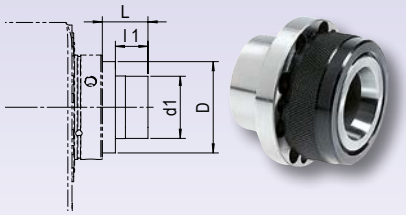
Manual collet clamping

NIEDERHAUSER
SPANNTECHNIK UND SYSTEME

Manual flange-mounted chuck supplied loose, power-operated, set up and aligned by pL LEHMANN (if ordered together with a rotary table)



Mounting chuck, manual



Collet adapter, installed by pL LEHMANN (if ordered together with a rotary table)

Further information at: www.niederhauser.ch
Request installation and operating instructions directly from manufacturer

SPZ.5xx = Item number for combined clamping cylinder for types 507 and 510 (see **p. 68**)

	pL LEHMANN Item no.	Designation	System	Manual	Power-actuated	L [mm]	L1 [mm]	L2 [mm]	D [mm]	d1 [mm] * without/ with threaded protective ring	d2 [mm]	d3 [mm]	Weight [kg]	Max. speed [rpm]	Required clamping cylinder ** (Option)	Niederhauser item no., incl. adapter flange
507	**ZSP.507-W20m**	with HSK adapter	W20	●		50	35	–	70	38/54*	–	–				
	ZSP.507-W20Am	Mounting chuck	W20	●		111	36	53	126	40	54	88	7.5	6000		507-W20
	ZSP.507-W20k	with HSK adapter	W20		●	50	35	–	70	38/54*	–	–			SPZ.5xx-d2.5 / -p	
	ZSP.507-W25m	with HSK adapter	W25	●		50	35	–	70	48/60 *	–	–				
	ZSP.507-W25Am	Mounting chuck	W25	●		135	60	76	126	48	59	88	8.5	6000		507-W25
	ZSP.507-W25k	with HSK adapter	W25		●	50	35	–	70	48/60 *	–	–			SPZ.5xx-d2.5 / -p	
	ZSP.507-W31m	with HSK adapter	W31.75	●		50	35	–	70	46	–	–				
	ZSP.507-W31Am	Mounting chuck	W31.75	●		122	48	64	126	53	62	88	7.5	6000		507-W31.75
	ZSP.507-W31k	with HSK adapter	W31.75		●	50	35	–	70	46	–	–			SPZ.5xx-d2.5 / -p	
	ZSP.507-W31kND	with HSK adapter, effective passage increased ø25 mm	W31.75		●	50	35	–	70	46	–	–			SPZ.5xx-d2.5d25	
510	**ZSP.510-W20m**	with HSK adapter	W20	●		50	35	–	70	38/54 *	–	–				
	ZSP.510-W20Am	Mounting chuck	W20	●		111	36	53	126	40	54	88	7.5	6000		510-W20
	ZSP.510-W20k	with HSK adapter	W20		●	50	35	–	70	38/54 *	–	–			SPZ.5xx-d2.5 / -p	
	ZSP.510-W25m	with HSK adapter	W25	●		50	35	–	70	48/60 *	–	–				
	ZSP.510-W25Am	Mounting chuck	W25	●		135	60	76	126	48	59	88	8.5	6000		510-W25
	ZSP.510-W25k	with HSK adapter	W25		●	50	35	–	70	48/60 *	–	–			SPZ.5xx-d2.5 / -p	
	ZSP.510-W31m	with HSK adapter	W31.75	●		50	35	–	70	46	–	–				
	ZSP.510-W31Am	Mounting chuck	W31.75	●		122	48	64	126	53	62	88	7.5	6000		510-W31.75
	ZSP.510-W31k	with HSK adapter	W31.75		●	50	35	–	70	46	–	–			SPZ.5xx-d2.5 / -p	
	ZSP.510-W31kND	with HSK adapter, effective passage increased ø25 mm	W31.75		●	50	35	–	70	46	–	–			SPZ.5xx-d2.5d25	
520	**ZSP.520-W20Am**	Mounting chuck	W20	●		127	36	53	130	40	54	88	8.7	6000		520-W20
	ZSP.520-W25Am	Mounting chuck	W25	●		151	60	76	130	48	59	88	9.7	6000		520-W25
	ZSP.520-W31Am	Mounting chuck	W31.75	●		138	48	64	130	53	62	88	8.7	6000		520-W31.75

** For T-type rotary tables it may be necessary to increase the center height, see **p. 69**

Collet adapters (Type W) pL LEHMANN®


W20


W25


W31.75 (5C)

Collet holder W25



with standard W25 collet

- Rugged and slim design for better accessibility
- Radial run-out < 0.005mm

ki-mech gmbh

Further information at: www.ki-mech.ch
Request installation and operating instructions directly from manufacturer

Clamping capacity and (effective) passage

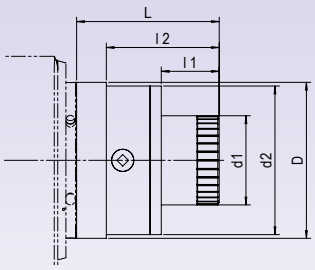
System	Clamping capacity [mm]	Collet passage [mm]	Standard effective passage [mm]
W20	0.3...23	14.5	14
W25	0.3...29	21	17
W31.75 (5C)	0.5...31	27	17
W31.75 (5C), increased passage*	0.5...31	27	25

* applies to kND versions in table above

NIEDERHAUSER
SPANNTECHNIK UND SYSTEME

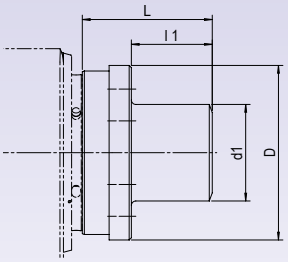
Manual flange-mounted chuck supplied loose, power-operated, set up and aligned by pL LEHMANN (if ordered together with a rotary table)

for sizes 507 to 530



Mounting chuck, manual Type F

for sizes 507 to 530



Mounting chuck, hydraulic Type F

Further information at: www.niederhauser.ch
Request installation and operating instructions directly from manufacturer

Collet clamping Type F

Achievable accuracy with collet 30–40µ

	pL LEHMANN Item no.	Designation	Manual	Pneumatic	Hydraulic	System	Clamping capacity [mm]	L [mm]	l 1 [mm]	D [mm]	d 1 [mm]	Weight [kg]	Max. speed [rpm]	Required clamping cylinder *	Niederhauser item no., incl. adapter flange
507	**ZSP.507-F35Am**	Mounting chuck	●			F35	1...30	129	40	160	90	12.7	4500		507-F35
	ZSP.507-F35Ak	Mount. chuck, power-actuated			●	F35	1...30	117.4	73.4	112	85	8.8	6000	SPZ.5xx-9 / -p	507-F35K
510	**ZSP.510-F35Am**	Mounting chuck	●			F35	1...30	129	40	160	90	12.7	4500		510-F35
	ZSP.510-F35Ak	Mount. chuck, power-actuated			●	F35	1...30	114.4	73.4	112	85	8.8	6000	SPZ.5xx-9 / -p	510-F35K
520	**ZSP.520-F48Am**	Mounting chuck	●			F48	1...42	145	40	160	90	12.7	4500		520-F48
	ZSP.520-F48Ak	Mount. chuck, power-actuated			●	F48	1...42	137.9	90.9	155	102	8.8	6000	SPZ.520-9 / -p	520-F48K
530	**ZSP.530-F66Am**	Mounting chuck	●			F66	4...60	192	78	210	120	24	4000		530-F66
	ZSP.530-F66Ak	Mount. chuck, power-actuated			●	F66	4...60	174.9	108.9	235	130	18.7	5000	SPZ.530-9 / -p	530-F66K

Manual

Automatic

SPZ.5xx = Item number for combined clamping cylinder for types 507 and 510 (see **p. 68**)

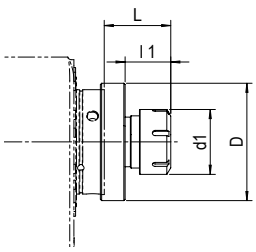
* For T-type rotary tables it may be necessary to increase the center height, see **p. 69**

Collect clamping Type ER

	pL LEHMANN Item no.	Designation	Manual	System	Clamping capacity [mm]	L [mm]	l 1 [mm]	l 2 [mm]	D [mm]	d1 [mm]	d2 [mm]	Weight [kg]	Max. speed [rpm]	Niederhauser item no., incl. adapter flange
507	**ZSP.507-E25Am**	Mounting chuck	●	ER-25	0.5...17	62	30	–	90	42	–	2.7	6000	507-ER25
	ZSP.507-E32Am	Mounting chuck	●	ER-32	1...22	70	38	–	90	50	–	3.0	6000	507-ER32
	ZSP.507-E40Am	Mounting chuck	●	ER-40	2...30	72	40	–	90	63	–	3.7	6000	507-ER40
510	**ZSP.510-E25Am**	Mounting chuck	●	ER-25	0.5...17	46	30	–	90	42	–	1.5	6000	510-ER25
	ZSP.510-E32Am	Mounting chuck	●	ER-32	1...22	54	38	–	90	50	–	1.8	6000	510-ER32
	ZSP.510-E40Am	Mounting chuck	●	ER-40	2...30	56	40	–	90	63	–	2.5	6000	510-ER40
520	**ZSP.520-E25Am**	Mounting chuck	●	ER-25	0.5...17	80	30	50	130	42	90	4.2	6000	520-ER25
	ZSP.520-E32Am	Mounting chuck	●	ER-32	1...22	88	38	50	130	50	90	4.5	6000	520-ER32
	ZSP.520-E40Am	Mounting chuck	●	ER-40	2...30	90	40	50	130	63	90	5.2	6000	520-ER40

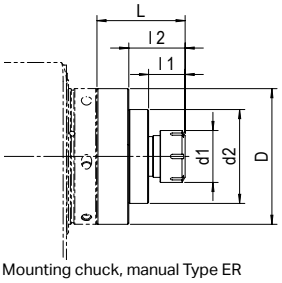
Manual

for sizes 507 and 510



Mounting chuck, manual Type ER

for size 520



Mounting chuck, manual Type ER

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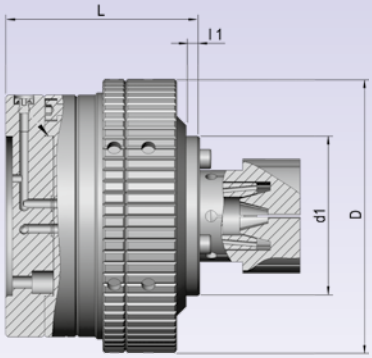


Clamping devices assembled and aligned by pL LEHMANN
(if ordered together with a rotary table)

Further information at: www.niederhauser.ch
Request installation and operating instructions directly from manufacturer

OTTET collet chuck

	pL LEHMANN Item no.	Designation	D [mm]	d 1 [mm]	L [mm]	l 1 [mm]	Weight [kg]	Max. speed [rpm]	Power-actuated	Required rotary union or clamping cylinder*	Niederhauser item no. incl. adapter flange
507	**ZSP.507-OTp**	OTTET collet chuck	130	–	85	–	12.7	7,000	●	DDF.507-04	507-FNO-1
	ZSP.507-OTph**		120	70	82	–	9.2	7,000	●	DDF.507-04	507-FNO-PH
	ZSP.507-OTkh**		120	70	96	20	9.2	7,000	●	SPZ.5xx-9 / -p	507-FNO-K
510	**ZSP.510-OTp**	OTTET collet chuck	130	–	85	–	12.7	7,000	●	DDF.510-04	510-FNO-1
	ZSP.510-OTph**		120	70	85	–	9.2	7,000	●	DDF.510-04	510-FNO-PH
	ZSP.510-OTkh**		120	70	99	20	9.2	7,000	●	SPZ.5xx-9 / -p	510-FNO-K
520	**ZSP.520-OTp**	OTTET collet chuck	130	–	101	–	12.7	7,000	●	DDF.520-04	520-FNO-1
	ZSP.520-OTph**		130	70	98	–	9.2	7,000	●	DDF.520-04	520-FNO-PH
	ZSP.520-OTkh**		130	70	102	20	9.2	7,000	●	SPZ.520-9 / -p	520-FNO-K


External clamping


Internal clamping

* see **pp. 68–71**
** h = with stroke limitation

The collet chuck with clamping piston inside is suitable for internal and external clamping, pneumatically actuated.

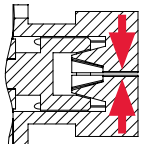
OTTET collet clamping with ripas

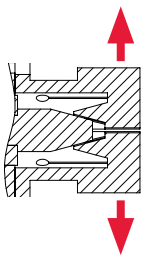
pL LEHMANN ®

	pL LEHMANN Item no.	Designation	Max. speed [rpm]	Required ripas palletizing system and clamping cylinder*
507	**ZSP.507-OTk**	With HSK adapter, power-actuated		RIP.507-63m-OT and SPZ.5xx-2.5 / -p required
	ZSP.507-OTm	With HSK adapter, manual		RIP.507-63k-OT and SPZ.5xx-2.5 / -p required
510	**ZSP.510-OTk**	With HSK adapter, power-actuated		RIP.510-63m-OT and SPZ.5xx-2.5 / -p required
	ZSP.510-OTm	With HSK adapter, manual		RIP.510-63k-OT and SPZ.5xx-2.5 / -p required

* see **p. 68/69/139**

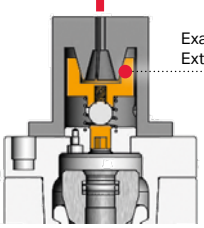
The collet chuck with clamping piston inside is suitable for internal and external clamping, pneumatically actuated.


External clamping


Internal clamping

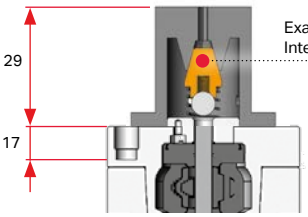

ripas pallet with OTTET collet

Max. clamping stroke 2 mm
manual, pushing
Example External clamping



ripas automatic (or manual), OTTET manual

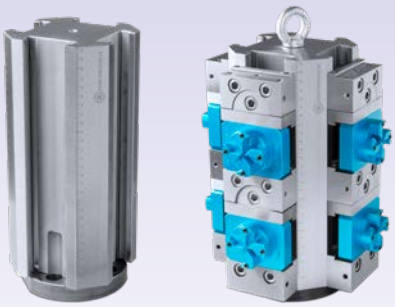
Max. clamping stroke 2 mm
2 kN pushing
Example Internal clamping



- Machining depth 8–13 mm
- Collet min. Ø30 (only internal clamping possible)
- Collet max. Ø80mm

ripas manual (automatic not possible), OTTET automatic

EVARD PRECISION S.A.

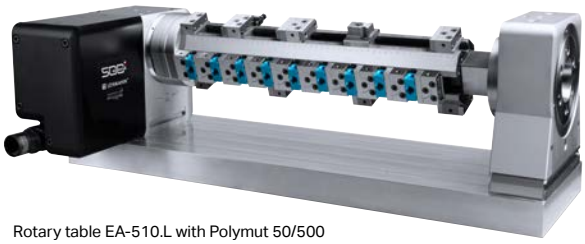


Clamping device assembled by pL LEHMANN,
final adjustment by customer (if ordered together with a rotary table)

Further information at: www.evard-precision.ch
Request installation and operating instructions directly from manufacturer

Polymut Monoblock towers

	pL LEHMANN Item no.	Designation	Size [mm]	Total length [mm]	Length Toothing [mm]	Weight [kg]	Evard item no. incl. adapter flange
507	**EVA.507-350-T50**	Polymut monoblock tower incl. flange set	50	368	318	16	T50350507
507	**EVA.507-450-T50**	Polymut monoblock tower incl. flange set	50	468	418	19	T50450507
510	**EVA.510-500-T50**	Polymut monoblock tower incl. flange set	50	503	453	24	T50500510
510	**EVA.510-600-T50**	Polymut monoblock tower incl. flange set	50	603	553	28	T50600510
510	**EVA.510-500-T80**	Polymut monoblock tower incl. flange set	80	503	423	45	T80500510
510	**EVA.510-600-T80**	Polymut monoblock tower incl. flange set	80	603	523	53	T80600510



Rotary table EA-510.L with Polymut 50/500

Compatible with pL LEHMANN rotoFIX base plate.

Simultaneously produce up to 32 workpieces 25 mm wide with a precision and repeat accuracy of +/- 0.01 mm. The modular Polymut system will meet all of your requirements regarding workpiece clamping.

Fixed and clamping jaws

	pL LEHMANN Item no.	Designation	Size [mm]	Width [mm]	Weight [kg]	Required accessories	Evard Item no.
Polymut 50	**EVA.50160**	Basic jaw, narrow	50	20	0.310	–	50160
Polymut 50	**EVA.50161**	Clamping jaw, narrow	50	20	0.360	–	50161
Polymut 50	**EVA.4101**	Base jaw, stepped, Type A	50	49	0.226	–	4101
Polymut 50	**EVA.4121**	Base jaw, deep stepped, Type B	50	49	0.230	–	4121
Polymut 50	**EVA.50105**	Base jaw, no step, Type C	50	49	0.340	–	50105
Polymut 50	**EVA.4102**	Clamping jaw, stepped, Type A	50	49	0.373	–	4102
Polymut 50	**EVA.4109**	Clamping jaw, deep stepped, Type B	50	49	0.373	–	4109
Polymut 50	**EVA.50101**	Clamping jaw, no step, Type C	50	49	0.373	–	50101
Polymut 80	**EVA.4111**	Base jaw, stepped, Type A	80	78	0.880	–	4111
Polymut 80	**EVA.4120**	Base jaw, deep stepped, Type B	80	78	0.900	–	4120
Polymut 80	**EVA.80107**	Base jaw, no step, Type C	80	78	1.330	–	80107
Polymut 80	**EVA.4110**	Clamping jaw, stepped, Type A	80	78	1.446	–	4110
Polymut 80	**EVA.4119**	Clamping jaw, deep stepped, Type B	80	78	1.430	–	4119
Polymut 80	**EVA.80101**	Clamping jaw, no step, Type C	80	78	1.475	–	80101
Polymut 80	**EVA.105001**	Base jaw, stepped, Type A	80	105	2.050	–	105001
Polymut 80	**EVA.105005**	Base jaw, deep stepped, Type B	80	105	2.070	–	105005
Polymut 80	**EVA.105007**	Base jaw, no step, Type C	80	105	2.100	–	105007
Polymut 80	**EVA.105002**	Clamping jaw, stepped, Type A	80	105	2.650	–	105002
Polymut 80	**EVA.105006**	Clamping jaw, deep stepped, Type B	80	105	2.575	–	105006
Polymut 80	**EVA.105008**	Clamping jaw, no step, Type C	80	105	2.540	–	105008
Polymut 80	**EVA.120001**	Base jaw, stepped, Type A	80	120	2.300	–	120001
Polymut 80	**EVA.120005**	Base jaw, deep stepped, Type B	80	120	2.200	–	120005
Polymut 80	**EVA.120007**	Base jaw, no step, Type C	80	120	2.400	–	120007
Polymut 80	**EVA.120002**	Clamping jaw, stepped, Type A	80	120	2.980	–	120002
Polymut 80	**EVA.120006**	Clamping jaw, deep stepped, Type B	80	120	2.890	–	120006
Polymut 80	**EVA.120008**	Clamping jaw, no step, Type C	80	120	2.830	–	120008

EVARD PRECISION S.A.

Clamping device assembled by pL LEHMANN,
final adjustment by customer (if ordered together with a rotary table)

Further information at: www.evard-precision.ch
Request installation and operating instructions directly from manufacturer

Centering vise – Type CM

	pL LEHMANN Item no.	Designation	Size [mm]	Clamping capacity [mm]	Weight [kg]	Evard Catalog Reference	Evard Item no. incl. adapter flange
507/510	**EVA.5xx-2020**	CM centering vise	20	25	0.22	2020	2020507
	EVA.5xx-2021	CM stainless steel centering vise	20	25	0.22	2021	2021507
	EVA.5xx-3000	CM centering vise	30	56	0.66	3000	3000507
	EVA.5xx-3001	CM stainless steel centering vise	30	56	0.66	3001	3001507
	EVA.5xx-5000	CM centering vise	50	89	2.30	5000	5000510
	EVA.5xx-8000	CM centering vise	80	137	6.45	8000	8000510

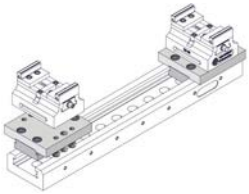
Combine the EA-507 rotary table with the CM 20 centering vise and split the µ's.

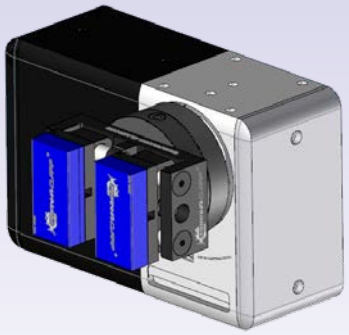
Jaws

	pL LEHMANN Item no.	Designation	Size [mm]	Weight [kg]	Required accessories	Evard Item no.
CM 50	**EVA.500053**	Standard jaw	50	Included in the weight of the vise	–	500053
	EVA.500051	Stepped jaw	50	Included in the weight of the vise	–	500051
	EVA.500052	Claw jaw	50	Included in the weight of the vise	–	500052
	EVA.500055	Special claw jaw	50	Included in the weight of the vise	–	500055
CM 80	**EVA.800053**	Standard jaw	80	Included in the weight of the vise	–	800053
	EVA.800051	Stepped jaw	80	Included in the weight of the vise	–	800051
	EVA.800052	Claw jaw	80	Included in the weight of the vise	–	800052
	EVA.800055	Special claw jaw	80	Included in the weight of the vise	–	800055
CM 105	**EVA.105053**	Standard jaw	105	Included in the weight of the vise	–	105053
	EVA.105051	Stepped jaw	105	Included in the weight of the vise	–	105051
	EVA.105052	Claw jaw	105	Included in the weight of the vise	–	105052
	EVA.105055	Special claw jaw	105	Included in the weight of the vise	–	105055

Adapter plate for CM 50 on Polymut

pL LEHMANN Item no.	Designation	Size of the CM [mm]	Size of the Polymut [mm]	Required accessories	Evard Item no.
EVA.500054	Adapter plate for CM 50 on Polymut 80	50	80	See Monoblock tower	500054
EVA.500057	Adapter plate for CM 50 on Polymut 50	50	50	See Monoblock tower	500057





Clamping device assembled by pL LEHMANN,
final adjustment by customer (if ordered together with a rotary table)

Further information at: www.piranha-clamp.ch
Request installation and operating instructions directly from manufacturer

Zero-point clamping plates on rotary table

	pL LEHMANN Item no.	Designation	Dimensions [mm]	Weight [kg]	Max. speed [rpm]	PiranhaClamp catalog reference	PiranhaClamp item no., incl. HSK adapter
507		Flange 507	Ø 130 x 25			551158	551158
		Zero point clamping plate Ø 130 mm	Ø 130 x 26			551161	551161
510		Flange 510	Ø 130 x 25			551159	551159
		Zero point clamping plate Ø 130 mm	Ø 130 x 26			551161	551161
520		Flange 520	Ø 130 x 25			551160	551160
		Zero point clamping plate Ø 130 mm	Ø 130 x 26			551161	551161

507 with NSP

Zero point clamping plate for faceplates (axial discs) from page 139

	pL LEHMANN Item no.	Designation	Dimensions [mm]	Weight [kg]	Max. speed [rpm]	PiranhaClamp catalog reference	PiranhaClamp item no.
507		Zero-point clamping plate Butterfly for faceplate (axial disc)	170 x 170 x 26 Positioning pin Ø 30			540283	540283-507
510			170 x 170 x 26 Positioning pin Ø 40			540283	540283-510

510 with NSP

Compatible centering vices

Article no.	Designation	Dimensions [mm]	Clamping capacity [mm]	Weight [kg]	Speed [rpm]
551112	PV75 clamping vise	75 x 56 x 55	19 – 49 / 25 – 55, 0 – 31 / 5 – 35		
540362	Snapper 170 clamping vice	170 x 90 x 55	5 – 75 / 53 – 118		
540446	Snapper 170 clamping vise with higher jaws	170 x 90 x 65	5 – 75 / 53 – 118		
551076	Snapper 170 double station	170 x 90 x 55	2x 6 – 30 / 2x 26 – 52		
551075	Snapper 170 double station with higher jaws	170 x 90 x 65	2x 6 – 30 / 2x 26 – 52		
540444	Gepard 170 clamping vise, incl. aluminum jaws XS	170 x 90 x 85	0 – 155, varies with jaw type		
551079	Gepard 170 double station, incl. aluminum jaws XS	170 x 90 x 85	2 x 0 – 75		

520 with NSP

Ripas

	pL LEHMANN Item no.	Designation	Manual	Clamping capacity [mm]	Centering vise length [mm]	Centering vise dimensions [mm]	Weight [kg]	Max. speed [rpm]	PiranhaClamp catalog Reference	PiranhaClamp item no., incl. HSK adapter
507		PV75, incl. flange	1)	19 – 49 / 25 – 55 0 – 31 / 5 – 35	75	75 x 56 x 55			551112	551112-63
		Snapper 170, incl. flange	1)	5 – 75 / 53 – 18	170	170 x 90 x 55			540362	540362-63
		Gepard 170 with aluminum jaws XS, incl. flange	1)	0 – 155 varies with jaw type	170	170 x 90 x 84			540444	540444-63
510		PV75, incl. flange	2)	19 – 49 / 25 – 55 0 – 31 / 5 – 35	75	75 x 56 x 55			551112	551112-63
		Snapper 170, incl. flange	2)	5 – 75 / 53 – 18	170	170 x 90 x 55			540362	540362-63
		Gepard 170 with aluminum jaws XS, incl. flange	2)	0 – 155 varies with jaw type	170	170 x 90 x 84			540444	540444-63
520		PV75, incl. flange	3)	19 – 49 / 25 – 55 0 – 31 / 5 – 35	75	75 x 56 x 55			551112	551112-63
		Snapper 170, incl. flange	3)	5 – 75 / 53 – 18	170	170 x 90 x 55			540362	540362-63
		Gepard 170 with aluminum jaws XS, incl. flange	3)	0 – 155 varies with jaw type	170	170 x 90 x 84			540444	540444-63
		Snapper 300, incl. flange	3)	5 – 191 / 53 – 238	300	300 x 120 x 66			540401	540401-63
		Gepard 300 with aluminum jaws XS, incl. flange	3)	0 – 268 varies with jaw type	300	300 x 120 x 105			540400	540400-63

Additionally required clamping system (see **p. 139**)
1) = RIP.507-63m,
2) = RIP.510-63m,
3) = RIP.520-63m

With some minor adjustment, all PiranhaClamp clamping devices can also be assembled to other zero-point clamping systems (Lang, Erowa, Schunk, AMF…).

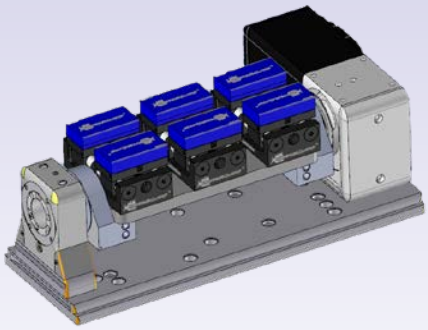
PV 75 Ripas

Snapper 170 Ripas

Snapper 300 Ripas

Gepard 170 Ripas

Gepard 300 Ripas



Hole grid plate installed by pL LEHMANN
(if ordered together with a rotary table)

Further information at: www.piranha-clamp.ch
Request installation and operating instructions directly from manufacturer

Clamping yoke

	pL LEHMANN Item no.	L [mm]	Weight [kg]	Type of clamping	Clamping system	Number of clamping elements	PiranhaClamp item no. Hole grid plate	PiranhaClamp item no. Zero point clamping plate	PiranhaClamp item no. Clamping system
507*		350		directly mounted	Snapper 170	3	Always needed 551167-1		540362
		350			Gepard 170	3			540444
		350		with zero point clamping plate	PV75	3	Always needed 551167-2	Additionally needed 551162	551112
		350			Snapper 170	3			540362
		350			Gepard 170	3			540444
510**		500		directly mounted	Snapper 170	4	Always needed 551168-1		540362
		500			Gepard 170	4			540444
		500		with zero point clamping plate	PV75	4	Always needed 551168-2	Additionally needed 551163	551112
		500			Snapper 170	4			540362
		500			Gepard 170	4			540444
		600		directly mounted	Snapper 170	5	Always needed 551169-1		540362
		600			Gepard 170	5			540444
		600		with zero point clamping plate	PV75	6	Always needed 551169-2	Additionally needed 551164	551112
		600			Snapper 170	6			540362
		600			Gepard 170	6			540444
520***		600		directly mounted	Snapper 170	5	Always needed 551170-1		540362
		600			Gepard 170	5			540444
		600		with zero point clamping plate	PV75	6	Always needed 551170-2	Additionally needed 551164	551112
		600			Snapper 170	6			540362
		600			Gepard 170	6			540444
		800		directly mounted	Snapper 170	6	Always needed 551171-1		540362
		800			Gepard 170	6			540444
		800		with zero point clamping plate	PV75	8	Always needed 551171-2	Additionally needed 551165	551112
		800			Snapper 170	8			540362
		800			Gepard 170	8			540444

Ordering information
Always order together with pL
* Counter bearing GLA.TOP1-110 **(p. 40)**, mounting kit RFX.507-ASa-TOP **(p. 40)**, base plate RFX.507-GP350s-TOP **(p. 40)** or hydraulic kit GLA.HYD-xxx **(p. 87)**
** Counter bearing GLA.TOP2-150 **(p. 40)**, mounting kit RFX.510-ASa-TOP **(p. 40)**, base plate RFX.510-GPxxxs-TOP **(p. 40)** or hydraulic kit GLA.HYD-xxx **(p. 87)**
*** Counter bearing GLA.TOP2-180 **(p. 40)**, mounting kit RFX.520-ASa-TOP **(p. 40)**, base plate RFX.520-GPxxxs-TOP **(p. 40)** or hydraulic kit GLA.HYD-xxx **(p. 87)**

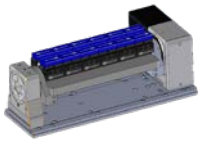
507–350 mm x165 mm 3 Gepard direct

507–350 mm x 165 mm NSP 3 PV75

510–500 mm x 215 mm 4 Gepard direct

510–500 mm x 215 mm NSP 4 Gepard

520–600 mm x 270 mm 5 Gepard direct



520–600 mm x 270 mm NSP 6 Gepard

520–800 mm x 270 mm 6 Gepard direct

520 –800 mm NSP 8x PV75

TRIAG
INTERNATIONAL

Clamping means installed and aligned by pL LEHMANN
(if ordered together with a rotary table)

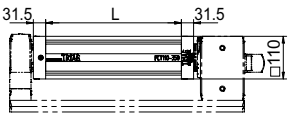
Further information at: www.triag-int.ch
Request installation and operating instructions directly from manufacturer

Clamping bars

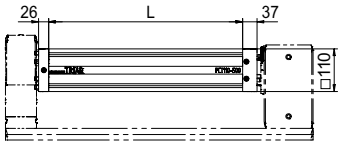
	pL LEHMANN Item no.	Usable length L L [mm]	Cube [mm]	Interference circle* Ø [mm]	Weight [kg]	Max. speed [rpm]	Counter bearing **	Base plate	IVO Item no.
507	**TRI.507-350**	350	110x110	156	34		GLA.TOP1-110	RFX.507-GP350s-TOP	IVO-TRI.507-350
	TRI.507-400	400	110x110	156	39		GLA.TOP1-110	RFX.507-GP450s-TOP	IVO-TRI.507-400
510	**TRI.510-500**	500	110x110	156	46		GLA.TOP2-150	RFX.510-GP500s-TOP	IVO-TRI.510-500
	TRI.510-600	600	110x110	156	54		GLA.TOP2-150	RFX.510-GP600s-TOP	IVO-TRI.510-600
520	**TRI.520-600**	600	110x110	198	55		GLA.TOP2-180	RFX.520-GP600s-TOP	IVO-TRI.520-600
	TRI.520-650	650	110x110	198	63		GLA.TOP2-180	RFX.520-GP700s-TOP	IVO-TRI.520-650

* without jaws
** must always be ordered from pL

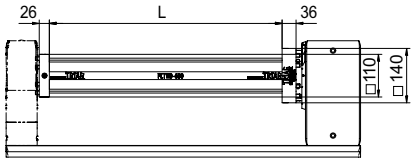
- Weight for clamping bar and adapter flanges only (without rotary table, counter bearing and common base plate).
- For more information about base plates, see **p. 41** and for counter bearings, see **p. 87**



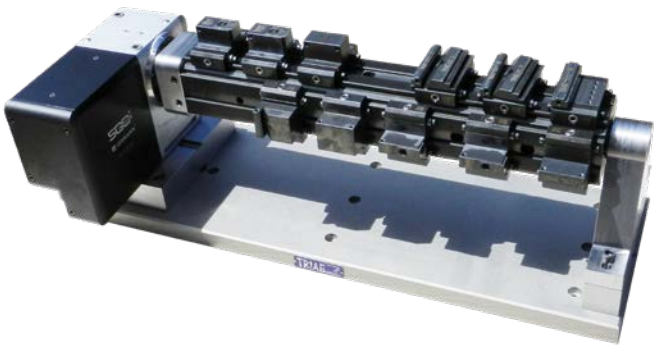
EA-507 for GLA.TOP1-110 and
RFX.507-GPxxxs-TOP



EA-510 for GLA.TOP2-150 and
RFX.510-GPxxxs-TOP



EA-520 for GLA.TOP2-180 and
RFX.520-GPxxxs-TOP



pl LEHMANN®

TRIAG INTERNATIONAL

Ultra-compact self-centering vice – only 50 mm above spindle

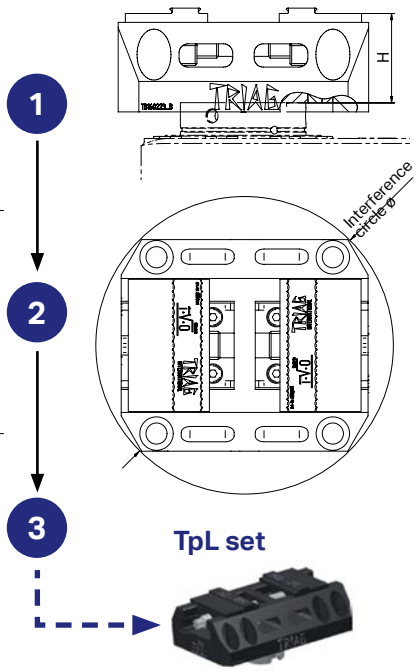
Clamping device assembled by pL LEHMANN,
final adjustment by customer (if ordered together with a rotary table)

Manufacturer for adaptation to pL rotary table: www.ivo-oesterle.de
Manufacturer for all other add-on elements: www.triag-int.ch

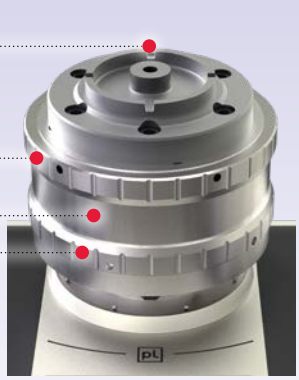
Slide set 1
Stamping jaws (3mm), width 75 mm

Slide set 2
Stamping jaws (3mm), width 76 mm

Slide set 3
powerCLAMP, interface

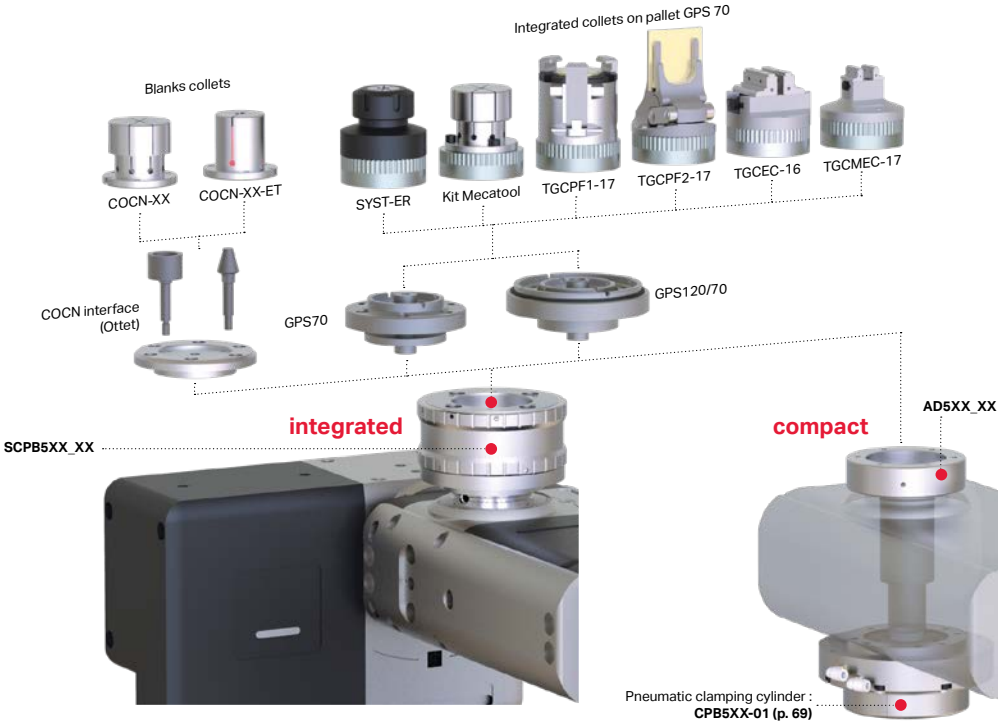


	pL LEHMANN Item no.	1 Centric clamping unit	2 Adapter	3 Stamping jaws	H [mm]	Interference circle ø [mm]	Weight, approx. [kg]	Max. speed [rpm]	Required	IVO item no.
HSK	IVO.5xx-140ada	ZSP 140 140 x 120 x 50	HSK adapter	A	50	184	4.8		RIP.5xx-63x	26299-1-1-1
				B			5.8		RIP.5xx-63x	26299-1-1-2
				C			5.6		RIP.5xx-63x	26299-1-1-3
	IVO.5xx-180ada	ZSP 180 180 x 120 x 50		A		216	6		RIP.5xx-63x	26299-2-1-1
				B			7		RIP.5xx-63x	26299-2-1-2
				C			6.8		RIP.5xx-63x	26299-2-1-3
507	IVO.507-140fla	ZSP 140 140 x 120 x 50	Flange	A	52.5	184	5.2			26299-1-2-1
				B			6.2			26299-1-2-2
				C			6			26299-1-2-3
	IVO.507-180fla	ZSP 180 180 x 120 x 50		A		216	6.4			26299-2-2-1
				B			7.4			26299-2-2-2
				C			7.2			26299-2-2-3
510	IVO.510-140fla	ZSP 140 140 x 120 x 50		A	52.5	184	5.1			26299-1-3-1
				B			6.1			26299-1-3-2
				C			5.9			26299-1-3-3
	IVO.510-180fla	ZSP 180 180 x 120 x 50		A		216	6.3			26299-2-3-1
				B			7.3			26299-2-3-2
				C			7.1			26299-2-3-3
520	IVO.520-140fla	ZSP 140 140 x 120 x 50		A	52.5	184	6.2			26299-1-4-1
				B			7.2			26299-1-4-2
				C			7			26299-1-4-3
	IVO.520-180fla	ZSP 180 180 x 120 x 50		A		216	7.4			26299-2-4-1
				B			8.4			26299-2-4-2
				C			8.2			26299-2-4-3



Clamping device assembled by pL LEHMANN,
final adjustment by customer (if ordered together with a rotary table)

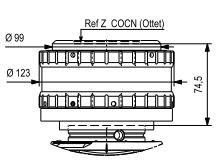
Further information: www.tgcolin.ch
Request installation and operating instructions directly from manufacturer



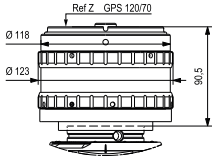
	pL LEHMANN Item no.	Designation	Functions	Weight [kg]	Max. speed [rpm]	integrated	compact	Required rotary union or clamping cylinder*	TG Colin Item no.
507	**TGC.507-COCN**	Clamping device COCN	clamping/unclamping			●		DDF.507-04	SCPB507-01_COCN
	TGC.507-G70	Clamping device GPS70	Pallet enable / clamping/unclamping			●		DDF.507-04	SCPB507-01_GPS70
	TGC.507-G12070	Clamping device GPS120/70	Pallet enable / clamping/unclamping			●		DDF.507-04	SCPB507-01_GPS120/70
	TGC.507-AdaCOCN	Adapter COCN	clamping / unclamping				●	TGC.507-SPZ-6.5A	AD507-01_COCN
	TGC.507-AdaGPS70	Adapter GPS70	clamping / unclamping				●	TGC.507-SPZ-6.5A	AD507-01_GPS70
	TGC.507-AdaGPS12070	Adapter GPS120/70	clamping / unclamping				●	TGC.507-SPZ-6.5A	AD507-01_GPS120/70
510	**TGC.510-COCN**	Clamping device COCN	clamping / unclamping			●		DDF.510-04	SCPB510-01_COCN
	TGC.510-G70	Clamping device GPS70	Pallet enable / clamping/unclamping			●		DDF.510-04	SCPB510-01_GPS70
	TGC.510-G12070	Clamping device GPS120/70	Pallet enable / clamping/unclamping			●		DDF.510-04	SCPB510-01_GPS120/70
	TGC.510-AdaCOCN	Adapter COCN	clamping / unclamping				●	TGC.510-SPZ-6.5A	AD510-01_COCN
	TGC.510-AdaGPS70	Adapter GPS70	clamping / unclamping				●	TGC.510-SPZ-6.5A	AD510-01_GPS70
	TGC.510-AdaGPS12070	Adapter GPS120/70	clamping / unclamping				●	TGC.510-SPZ-6.5A	AD510-01_GPS120/70

* see **pp. 69–71**

integrated versions



SCPB5XX-01_COCN



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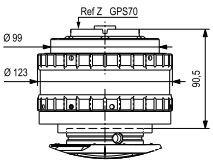
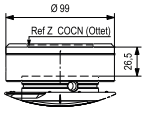
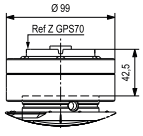


SCPB5XX-01_GPS70

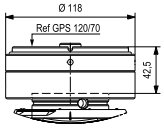
compact versions



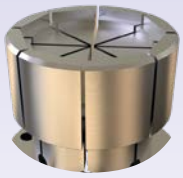
AD5XX-01_COCN

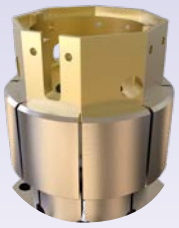


AD507-01_GPS70



AD507-01_GPS120/70





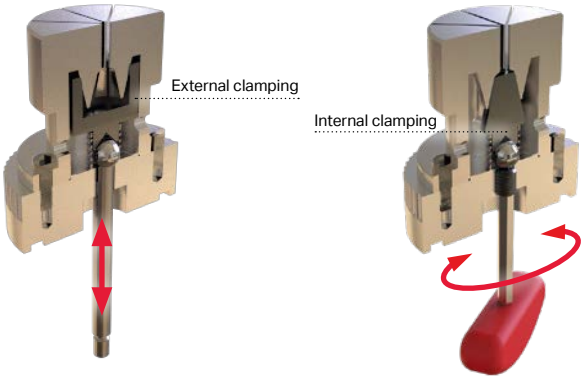
Clamping device assembled by pL LEHMANN,
final adjustment by customer (if ordered together with a rotary table)

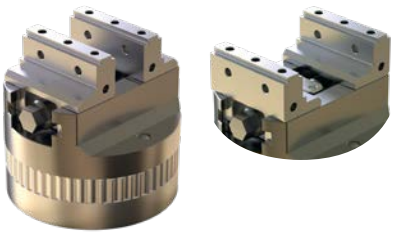
Further information at: www.tgcolin.ch
Request installation and operating instructions directly from manufacturer

TGCPF1-17
System for precise positioning and axial retention of watch plate

TGCPF2-17
System for clamping plate blanks in order to machine them from above and below

KIT MECATOOL
Collet blank, opening or closing; can be adapted to the workpiece shape





TGCEC-16
Clamping capacity 0–48 mm. Width 40 mm. Total height from pallet surface 45 mm.

TGCMEC-17
Clamping capacity 0–22 mm. Width 20 mm. Total height from pallet surface 43 mm.

driven by technology

Installed by pL LEHMANN
(if ordered together with a rotary table)

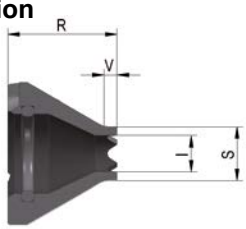
Further information at: www.roehm.biz
Request installation and operating instructions directly from manufacturer

Face driver, play-free version with hydraulic compensation for clockwise and counterclockwise rotation

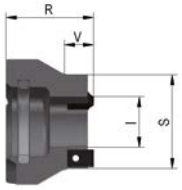
	pL LEHMANN Item no.	Designation	Overhang [mm]	Max. workpiece weight [kg]	Max. axial load [kN]	Weight [kg]	Max. speed [rpm]	RÖHM Item no., incl. adapter flange
507	**RÖH.507-SM**	Face driver	65	100	20			1340449
510	**RÖH.510-SM**	Face driver	65	100	20			1340450
520	**RÖH.520-SM**	Face driver	65	100	20			1340451
530	**RÖH.530-SM**	Face driver	65	100	20			1340452

Accessories: Driver plates / play-free / clockwise and counterclockwise rotation

	pL LEHMANN Item no.	Designation	S Clamping circle Ø	Associated center Ø	R Overhang [mm]	I [mm]	V [mm]	Weight [kg]	RÖHM item no.
directly geared	**RÖH.MS-DV08**	Driver plate	8	4	38	4.5	4		1209000
	RÖH.MS-DV10	Driver plate	10	4	38	4.5	4		1209001
	RÖH.MS-DV12	Driver plate	12	6	36	7	4		1209002
	RÖH.MS-DV16	Driver plate	16	10	33	11	4		1209003
	RÖH.MS-DV20	Driver plate	20	12	30	13	4		1209004
	RÖH.MS-DV25	Driver plate	25	16	30	17	8		1209005
	RÖH.MS-DV32	Driver plate	32	16	30	22	10		1209006
3x select. HM plates 6 x 3.2	**RÖH.MS-HM20**	Driver plate	20	6	30	7	8		1209007
	RÖH.MS-HM25	Driver plate	25	10	30	11	8		1209008
	RÖH.MS-HM32	Driver plate	32	16	30	17.5	10		1209009
	RÖH.MS-HM40	Driver plate	40	16	30	27	16		1209010
	RÖH.MS-HM50	Driver plate	50	16	30	36			1209011
	RÖH.MS-HM63	Driver plate	63	16	30	49			1209012
	RÖH.MS-HM80	Driver plate	80	16	30	66			1209013



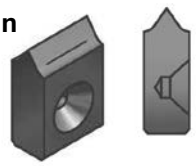
Driver plate directly geared
1209000



Driver plate
3x select. HM plates 6 x 3.2
1209007

Accessories: Metal carbide driver plates, clockwise and counterclockwise rotation

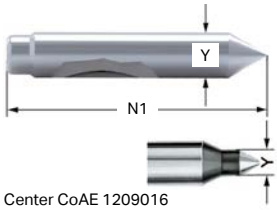
pL LEHMANN Item no.	Designation	Clamping circle Ø	Size	Weight [kg]	RÖHM Item no.
RÖH.HMP-20	Metal carbide plate	20-32	6 x 3,2		88970
RÖH.HMP-40	Metal carbide plate	40-80	9.5 x 3.2		87931



Metal carbide driver plates 088970

Accessories: Center

pL LEHMANN Item no.	Designation	Clamping circle Ø	Y Center Ø	N1 [mm]	Weight [kg]	RÖHM Item no.
RÖH.ZS-08	Center	8-10	4	90		1209016
RÖH.ZS-12	Center	12	6	90		1209017
RÖH.ZS-16	Center	16	10	90		1209018
RÖH.ZS-20	Center	20	12	90		1209019
RÖH.ZS-25	Center	25-80	16	90		1209020



Center CoAE 1209016

driven by technology

Supplied loose by pL LEHMANN

Further information at: www.roehm.biz
Request installation and operating instructions directly from manufacturer

Revolving centers

	pL LEHMANN Item no.	Designation	Mount MK	Max. run-out deviation [mm]	Max. workpiece weight [kg]	Max. radial load [daN]	Max. speed [rpm]	D Moving-tip Ø [mm]	B Housing Ø [mm]	A [mm]	G [mm]	K [mm]	Weight [kg]	RÖHM item no.
Tailstock options / accessories	**RÖH.ZS-DAMK3**	with pressure display and length compensation; spring-loaded tip - spring travel max. 1.6 mm at axial clamping force of 550 daN; body hardened and ground – tip angle 60°	3	0.01	400	200	4000	25	64	105	23.8	31		60798
	RÖH.ZS-SAMK2	Standard version; body hardened and ground; tip angle 60°	2	0.005	200	100	7000	20	43	65	17.8	24		43115
	RÖH.ZS-SAMK3		3	0.005	400	200	6300	22	48.5	70.5	23.8	27		42315
	RÖH.ZS-GDMK2	with small housing diameter, body hardened and ground; tip angle 60°	2	0.005	200	100	7000	15	32	62	17.8	19.5		5336
	RÖH.ZS-GDMK3		3	0.005	400	200	7000	15	34	62	23.8	19.5		5429

Mikö 60798

Mikö 43115 / 42315

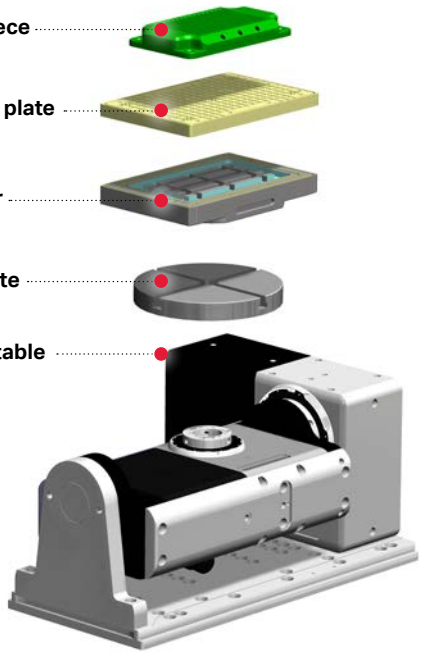
Mikö 5336 / 5429

reinmechanic®
feinmechanische Lösungen

Vacuum clamping technology for mounting thin-walled workpieces, housings, plates ...

Further information at: www.reinmechanic.de
Request installation and operating instructions directly from manufacturer

vacuum - mobile Workpiece mount for rotary tables



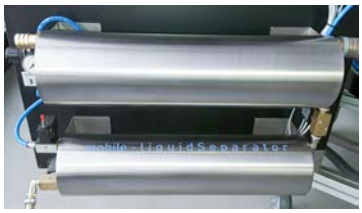
pL rotary table T1-510520 with reinmechanic vacuum adapter and reinmechanic universal suction plate

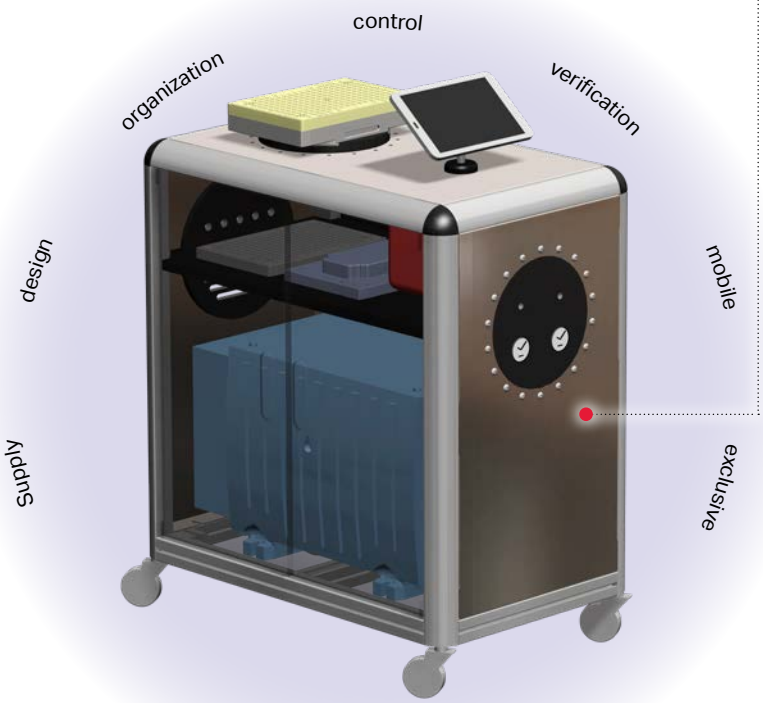
Features of the reinmechanic-vacuum system:

- pl-compatible (ready to use)
- Production-oriented solution (manufacturing solutions)
- Individual sizing (lean production)
- reinmechanic adapter service (individual adapter service)
- Manufacturer-independent (all-round use)
- Industry 4.0-compatible
- Touchscreen control (easy-handling)
- Self-monitoring overall system (self-monitoring)
- Command transfer to machine control (i/O handshake)

mobile-liquidSeparator

- Optional liquid separator
- Process-monitored
- Automatic feedback





reinmechanic-vacuum-mobile «premium» with mechanical-vacuum adapter and mechanical-universal suction plate

mobile-systems available in three versions

«standard»
- Complete design
- Required functions
- Economical

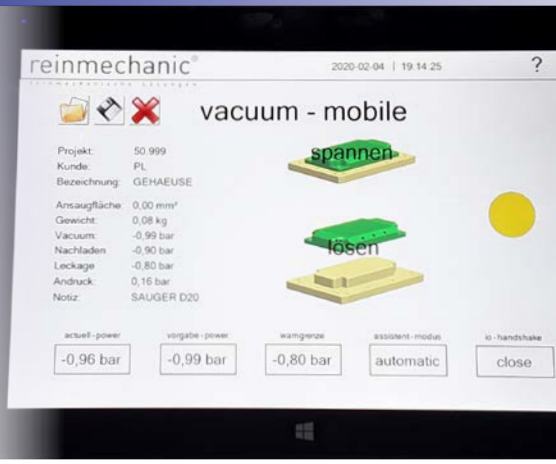
«professional»
- Complete design
- Advanced functions
- Semi-automated

«premium»
- Complete design
- Industry 4.0-capable
- Touchscreen control

reinmechanic®
feinmechanische Lösungen

Readily accessible machining surfaces as ideal prerequisite for measurement tasks, precision machining ...

Further information at: www.reinmechanic.de
Request installation and operating instructions directly from manufacturer

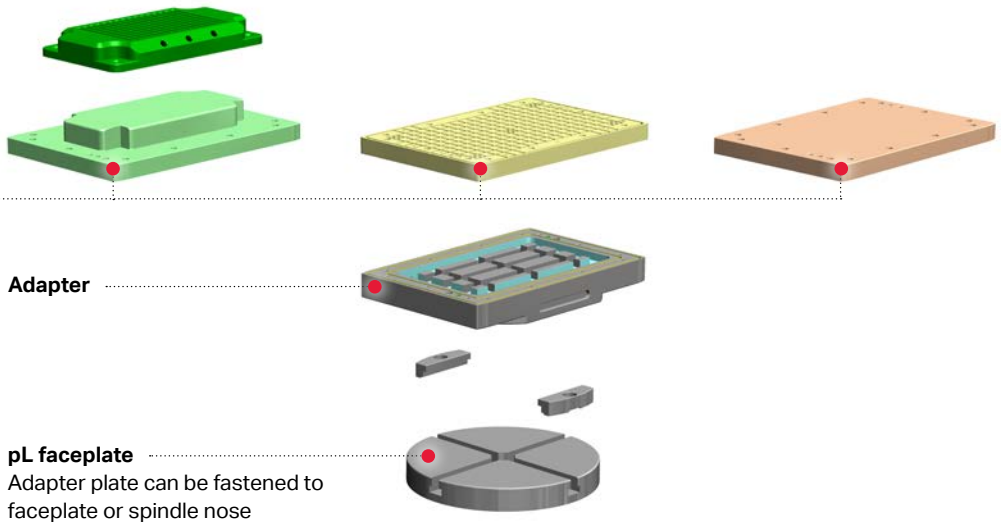


vacuum - mobile modular system

specific
designed by reinmechanic as finished solution

universal
Matrix plate freely adjustable

individual
can be modified by user



	pL LEHMANN Item no.	Designation	Weight [kg]	reinmechanic Item no.
Basic equipment	**RMV.BAS**	vacuum-mobile systems «basic»		Vpl-20-001-XX
	RMV.PRO	Vacuum-mobile systems «professional»		Vpl-20-002-XX
	RMV.PRE	Vacuum-mobile systems «premium»		Vpl-20-003-XX
	RMV.LIS	mobile-liquidSeparator		Vpl-21-001-XX
507	**RMV.507-SPE**	vacuum-mobile suction plate «specific»		Vpl-15-001-XX
	RMV.507-UNI	vacuum-mobile suction plate «universal»		Vpl-15-002-XX
	RMV.507-IND	vacuum-mobile suction plate «individual»		Vpl-15-003-XX
	RMV.507-ada	vacuum-mobile adapter plate 507		Vpl-15-004-XX
510	**RMV.510-SPE**	vacuum-mobile suction plate «specific»		Vpl-15-005-XX
	RMV.510-UNI	vacuum-mobile suction plate «universal»		Vpl-15-006-XX
	RMV.510-IND	vacuum-mobile suction plate «individual»		Vpl-15-007-XX
	RMV.510-ada	vacuum-mobile adapter plate 510		Vpl-15-008-XX
520	**RMV.520-SPE**	vacuum-mobile suction plate «specific»		Vpl-15-009-XX
	RMV.520-UNI	vacuum-mobile suction plate «universal»		Vpl-15-010-XX
	RMV.520-IND	vacuum-mobile suction plate «individual»		Vpl-15-011-XX
	RMV.520-ada	vacuum-mobile adapter plate 520		Vpl-15-012-XX
530	**RMV.530-SPE**	vacuum-mobile suction plate «specific»		Vpl-15-013-XX
	RMV.530-UNI	vacuum-mobile suction plate «universal»		Vpl-15-014-XX
	RMV.530-IND	vacuum-mobile suction plate «individual»		Vpl-15-015-XX
	RMV.530-ada	vacuum-mobile adapter plate 530		Vpl-15-016-XX

Spare parts and additional accessories available on request

reinmechanic®
feinmechanische Lösungen

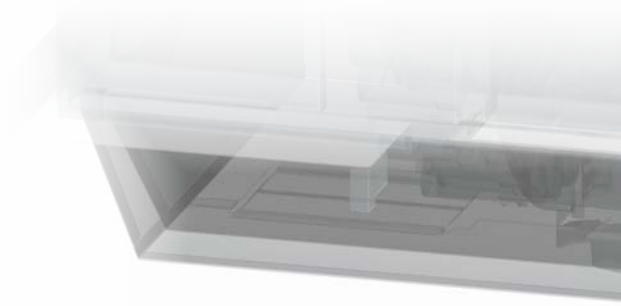
Automation 4.0 - fully integrated

Further information at: www.reinmechanic.de
Request installation and operating instructions directly from manufacturer

ROTOMATION - transferBox

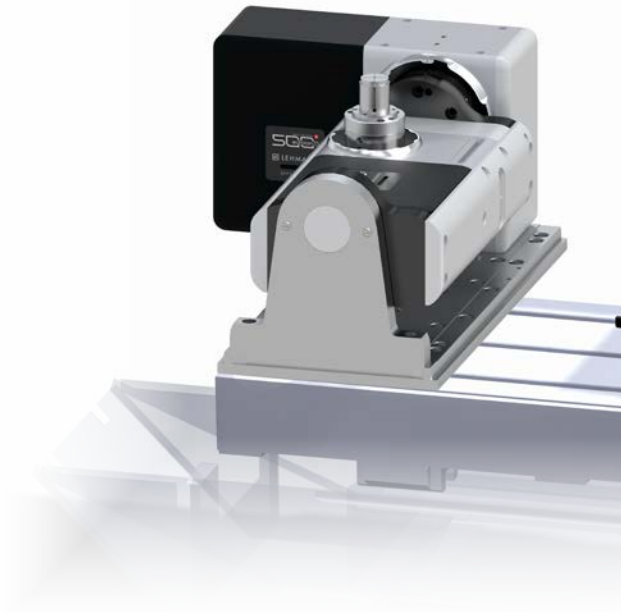
Workpiece magazine directly where needed

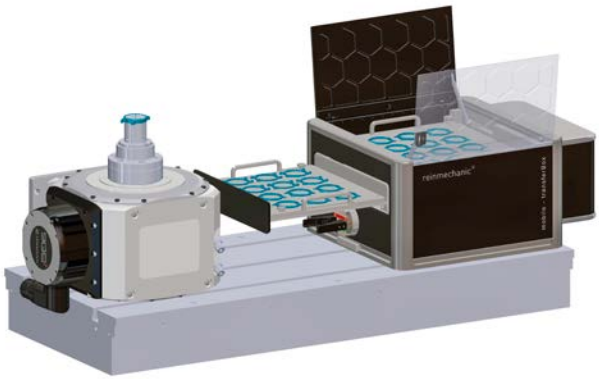
- Storage area protected from chips
- Time-optimized provision
- Short transfer paths
- Specific placement displays
- High reference accuracy
- With barrier air on request
- In various sizes (S, M, L...)
- Special sizes on request (XS, XL, XXL)



Highlights

- No additional handling device necessary
- Installation area for robot cell eliminated
- Only standard CNC program knowledge needed





ROTOMATION solution with
- Rotary table EA-915 DD
- ROTOMATION - transferBox (mtB)
- ROTOMATION - partTablet (mpT)

reinmechanic®
feinmechanische Lösungen

Automate standard machines efficiently

Further information at: www.reinmechanic.de
Request installation and operating instructions directly from manufacturer

ROTOMATION - transferTool

handling «easy - in»

- Integrated suction gripper system
- Process-monitored
- Tightly holding vacuum via suction turbine
- Automatic suction/pressure changeover
- With cleaning function on request

Ideal for miniature parts with dimensions of a few millimeters up to medium-sized workpieces with outside dimensions up to 300...400 mm (depending on the interference contour of the plates, housing, rods)

pL LEHMANN Item no.	Designation	Weight [kg]
REM.RtB/c-p-xs	transferBox, xs, 350x350 mm	
REM.RpTxs50	partTablet, xs, 220x235 mm	
REM.RpP	partPalette, xs, 260x245 mm	
REM.RtT	transferTool	
CNC.Tablet	controlTablet	
REM.RcB*	controlBox	
REM.RpB-c	processBox	
REM.RaB-c	airBox	
REM.RcJ-c	cleanJet	
REM.RpR	partReverser	

*Mandatory with transferBox
Spare parts and additional accessories available on request

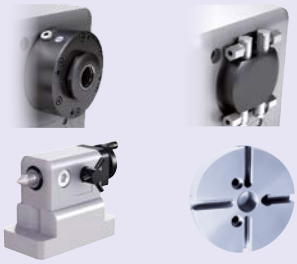
ROTOLUTION – customer-specific turn-key solutions «ontop», largely with proven standard elements, from CAD to commissioning.

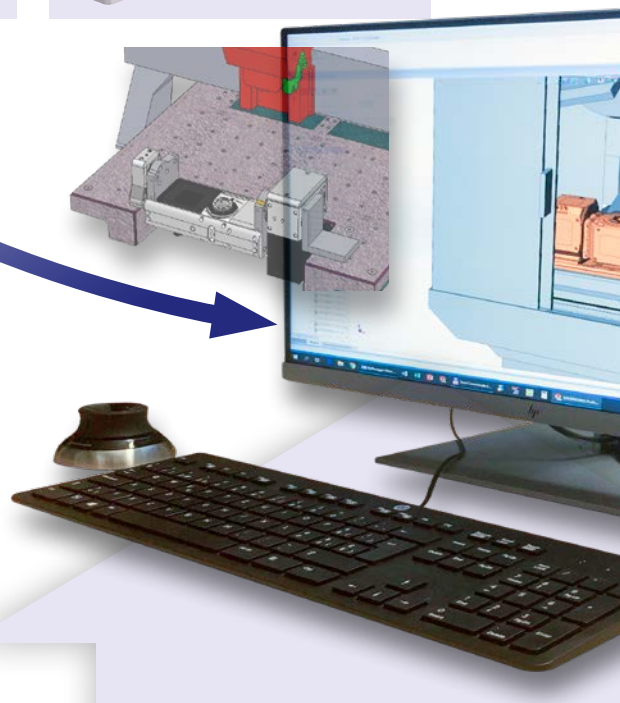
ROTOMATION – The ideal expansion with standardized automation. Economical. Professional. Simple.

Standard

Rotary tables see **pp. 30–65**

Accessories
see **pp. 68–71, 87–89, 138–141**





Customer

Problem situation
«help me» –
don't know,
have no time,
no experience!

Vertical machining centers and grinding machines (a Selection Guide is available for all of these machines at our website)

*Examples

amf · HAINBUCH · PANHACLAMP · ROHM driven by technology · ITG COLIN · EROWA · LANG TECHNIK einfach. zukunft. greifen. · ripas · SCHUNK · TRIAG INTERNATIONAL · EVARD PRECISION S.A. · NIEDERHAUSER SPANNTECHNIK UND SYSTEME · reinmechanic feinmechanische Lösungen · SwissChuck Precision Workholding · Vischer & Bolli vb · GRESSEL Spanntechnik · PAROTEC spanntechnik · robotik · engineering · ROEMHELD HILMA ■ STARK · system 3R · YERLY

ROTOLUTION

CAD & adaptation
- Installation check
- Adjustment to standard parts
- Special parts

CAD & clamping means
- Workpiece clamping
- Standard/special

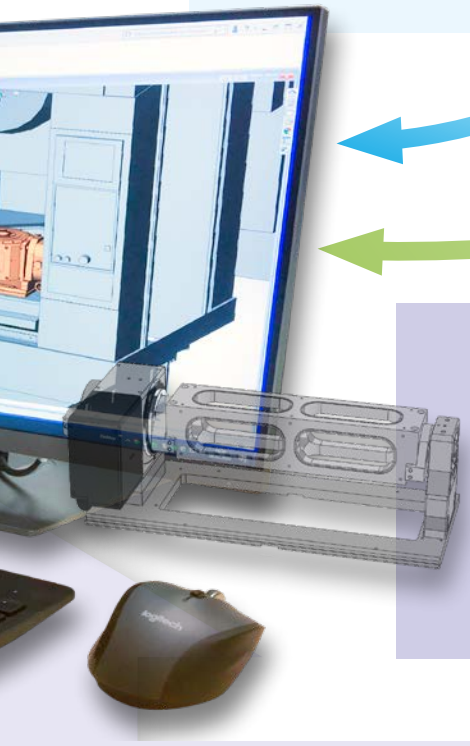
see **pp. 142–175**

*Examples

ROTOMATION

CAD & automation
- Workpiece handling
- Partnerships (GU with partners) e.g. reinmechanic – mobile - concept

see **pp. 176–179**



Project management and execution, direct if needed

Plug-&-work package

Problem solution «on top» –
Standard and ROTOLUTION from a single source, ROTOMATION and machine in partnership

Customer

Present in over 20 countries: from sales consultation to the final service

Services from A to Z

Pre Sales
- First class literature
- Application drawings 2D
- 3D models
- Example of applications

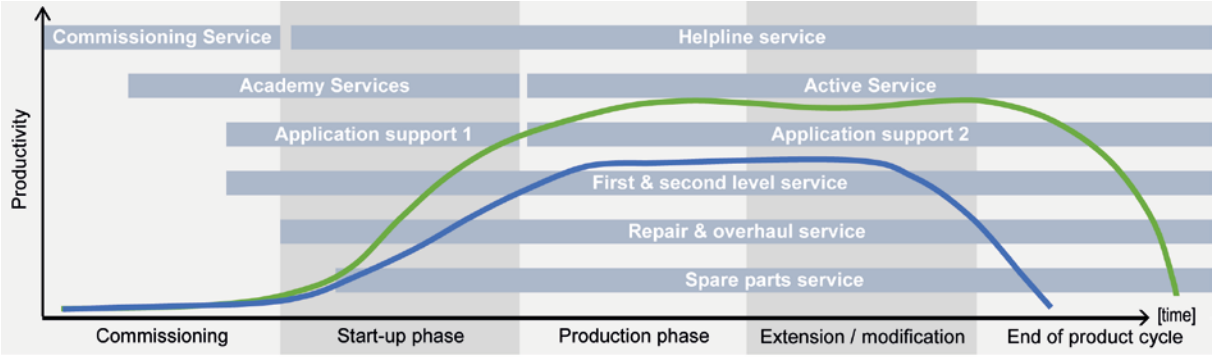
Sales & Post Sales
- Specified offers for each machine
- Wide range of work piece clamping systems
- Standardized interfaces

Commissioning
- Parameter lists
- Machine specified commissioning instructions
- User manual
- Partner Kit
- On-site support

After Sales
- Service points in 25 countries PTSE
- Spare parts worldwide by eShop
- In-field support by flying doctors

Increase productivity – Extend life cycle

Comprehensive and professional services throughout the product life cycle – maximum availability with consistent quality and high productivity.



Productivity with LifeCycle service products from pL LEHMANN
Productivity without service support

A look in our production: High manufacturing depth provides for flexibility and quality

Production


With workpiece pool for unmanned production


High precision circular and flat grinding

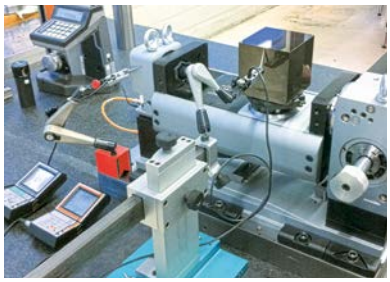

Material flow


Assembly area with Kanban System

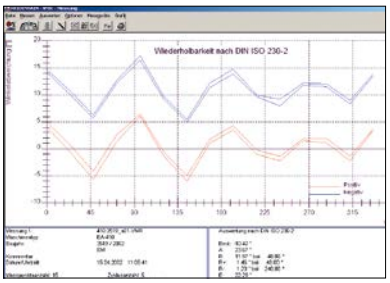

Rational equipping of spare parts packages

Quality control


Measuring a housing on a 3D measuring unit


Measuring a T-type rotary table with a cube


Measuring the indexing accuracy – fully automatically



Recording the indexing accuracy according to ISO 230-2 and VDI/DGQ 3441

Interested? Contact us or visit our website at www.lehmann-rotary-tables.com

LEHMANN®

ROTARY TABLES · PRECISION TECHNOLOGY · SOFTWARE

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More information (address, telephone number...) at www.lehmann-rotary-tables.com

Subject to change / Edition: 1/2023