INVEST GUIDE

Lean Factory | Productivity | Smart Investment

short & sweet

EN | 7.2022

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 the first 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 (direct drive up to 10,000 rpm)
2002 2nd generation assumes management responsibility
2003 Development of the 700 series (direct drive 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
2017 Introduction of the 600 series
2019 Introduction of AM-LOCK and the 900 DD Series up to 5,450 rpm
2021 Introduction of the new MQ series for measurement technology

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

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

Additional pL products

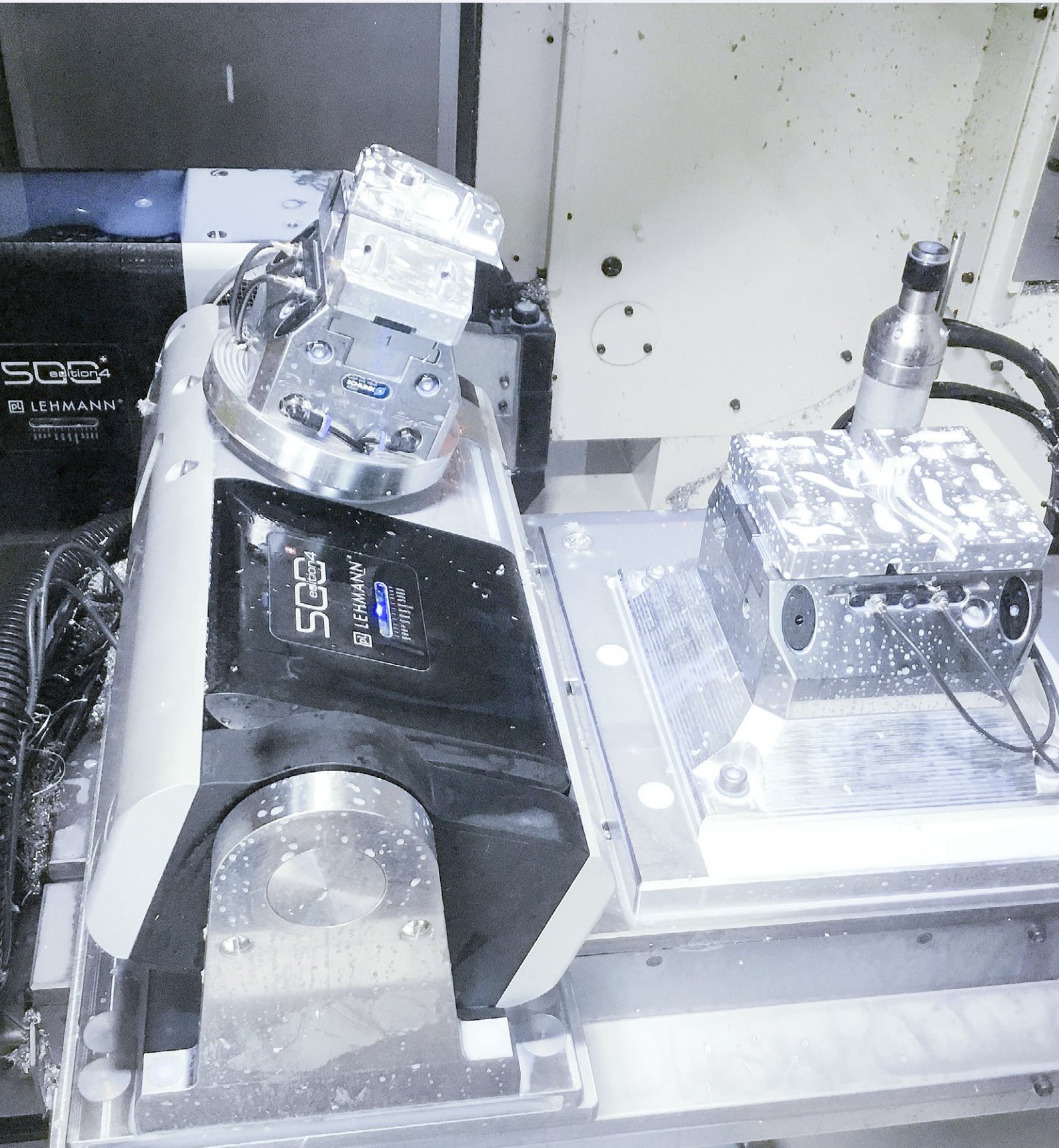
AM-LOCK

MQ Series

Content

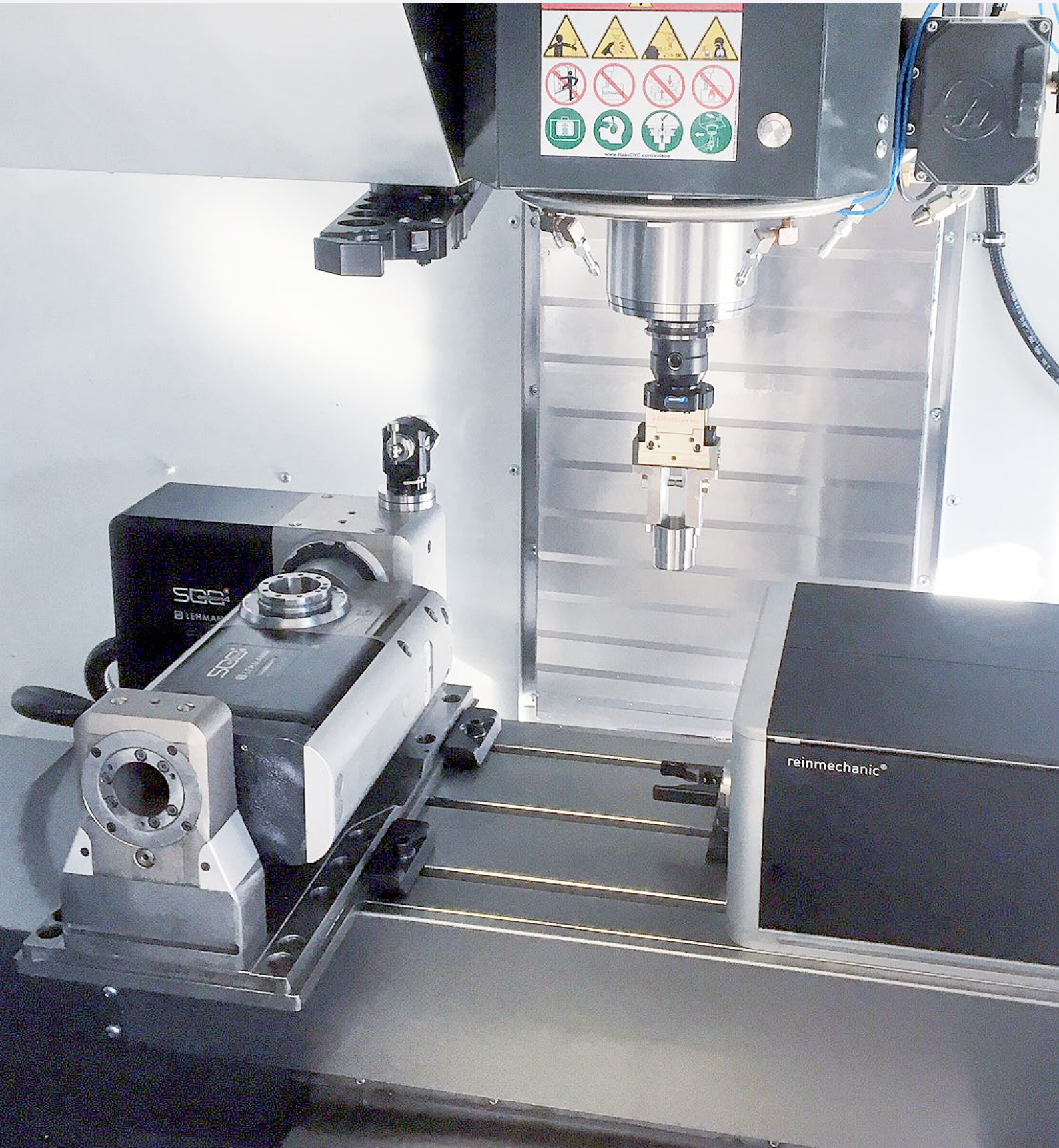
Productivity with a future

6-side machining in a SINGLE cycle



Automated intelligently

Complete machining with indoor automation with unfinished and finished parts storage for small parts



How would you choose?

Your expectation?

- high productivity with moderate investment
- ROI in a short time
- flexible for different processes
- low maintenance

Inexpensive model selection

- Pros and cons of each type
- direct and indirect benchmark

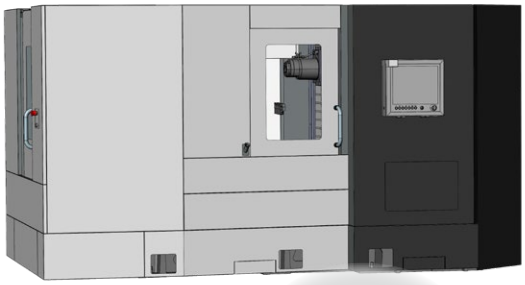
Why are pL LEHMANN products on leading machine tools used?

- short cycle time
- many standardized workpiece clamping systems available
- high precision, high clamping torque, high speed
- minimum space requirement, compact size
- very long service life
- modular design, thus many different variants possible – as standard

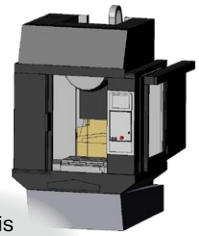
Machine concept

The right machine concept is decisive for the long-term success of the investment.

Purchasing managers do not have it easy.
This Invest Guide is intended to help them keep a cool head when evaluating what is offered on the market ...



Horizontal machining center



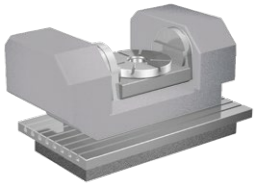
3-axis compact machining center + rotary table

Stable 3-axis machining center + rotary table

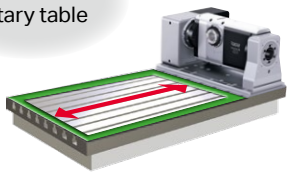
?

5-axis machining center

other rotary table?



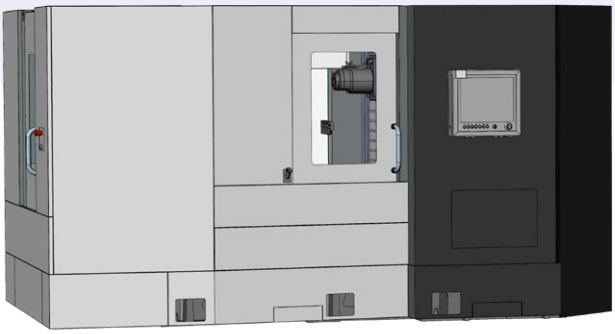
LEHMANN® Rotary table



... and not to invest erroneously in what appears modern and sounds good, but rather to select what provides the best ROI for the company – **invest smartly for lean production.**

Machine footprint & floor load

Horizontal machining centers



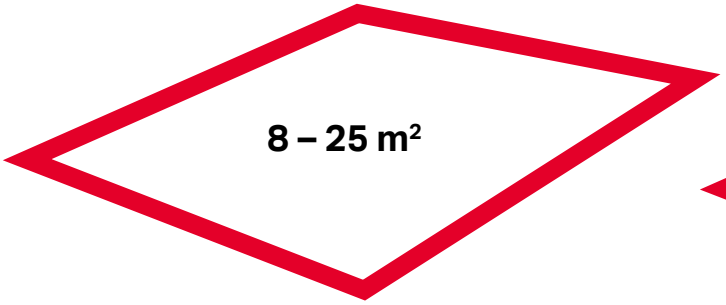
Plus points for horizontal

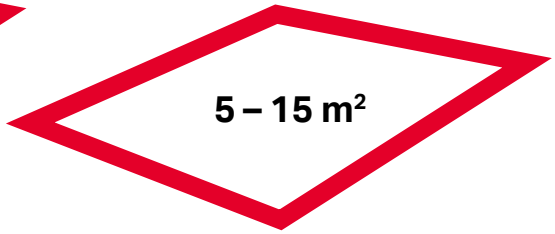
- Capacity very high from the start
- Automation from the factory
- High level of automation

5-axis machining center

Plus points for 5 axes

- Large parts can be machined
- Difficult 5-axis machining possible
- Easier commissioning





+60 ... +200 %
compared to right

There is less and less space and room. As a result, the costs are increasing accordingly. Whoever expands capacity in the existing space wins in two ways. For more, see the right side.

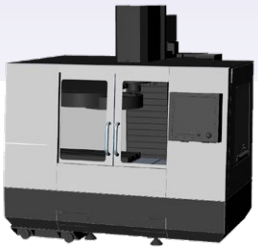
+50 ... +100 %
compared to right

4,500
to
9,000 kg

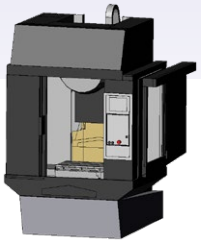
+50 ... +100 %
compared to right

All % figures and color information empirically determined, non-binding approximate values, usually average to average, each compared with similar machining volumes

3-axis VMC + rotary table



3-axis VMC (TC) + rotary table



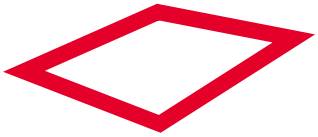
Plus points for 3+ versus horizontal

- Low initial investment
- Expandable & scalable
- Short amortization time

Plus points for 3+ versus 5 axes

- Maximum universality & efficiency
- Shaft machining
- Complete machining, incl. 6th side
- Clamping yoke & tower machining

3x more working spindles per m²



4.5 – 8 m²

–30 %
compared to left

A large medical technology company needed to expand while becoming more cost efficient at the same time. **Requirement:** Double production output from the same production floor space. **Solution:** 5-axis machining centers were replaced with compact vertical machining centers with pL rotary tables. **Result:** With the same investment and on the same production floorspace, output was increased almost 300 %.

3.2 – 5 m²

–50 %
compared to left

For multi-level buildings

3,000
to
6,000 kg

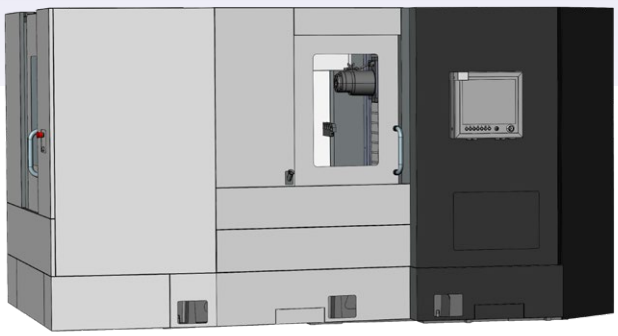
–30 %
compared to left

2,000
to
4,000 kg

–50 %
compared to left

Investment and operating costs

Horizontal machining centers



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5-axis machining center

Plus points for 5 axes

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- Difficult 5-axis machining possible
- Easier commissioning

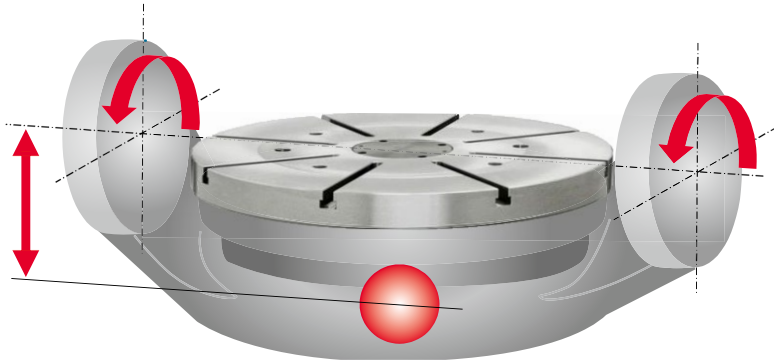
Comfort has a price: Money and space, for both procurement and operation.

300,000
to
800,000

+100 ... +400 %
compared to right

190,000
to
500,000

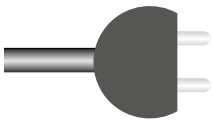
+50 ... +150 %
compared to right



heavy eccentric loads, usually greater moving masses

40
to
70 KVA

+50 ... +150 %
compared to right

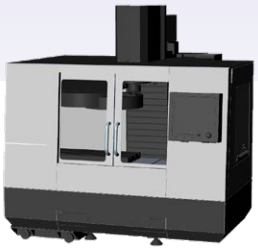


30
to
50 KVA

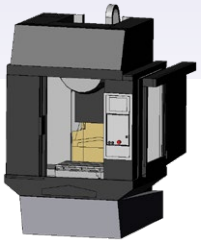
+25 ... +100 %
compared to right

All % figures and color information empirically determined,
non-binding approximate values, usually average to average,
each compared with similar machining volumes

3-axis VMC + rotary table



3-axis VMC (TC) + rotary table



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Plus points for 3+ versus 5 axes

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- Complete machining, incl. 6th side
- Clamping yoke & tower machining

Lower procurement costs

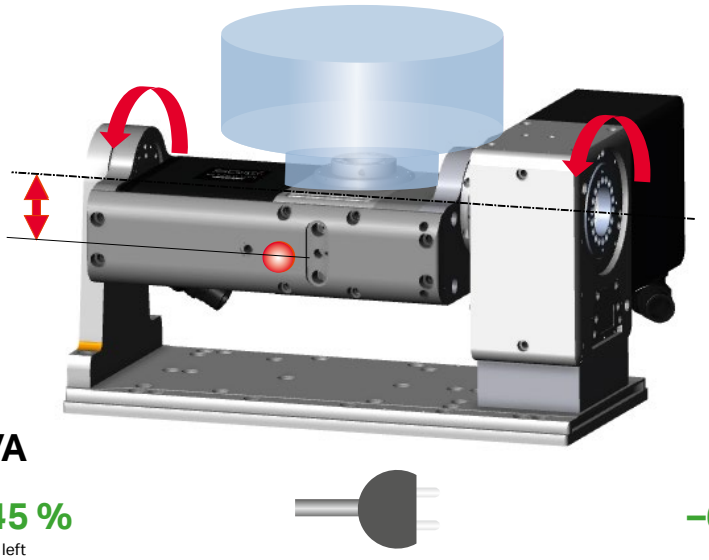
150,000
to
300,000

–10 ... –30 %
compared to left

90,000
to
200,000

–30 ... –60 %
compared to left

More environmentally friendly



20
to
40 KVA

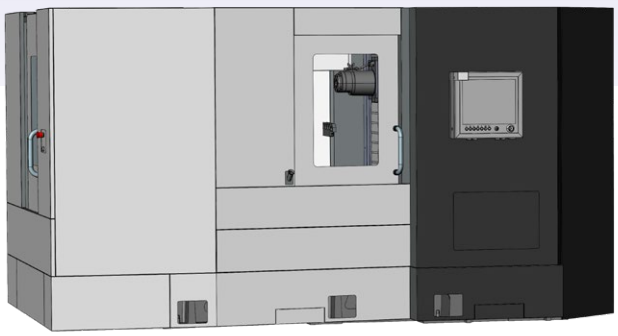
–25 ... –45 %
compared to left

10
to
20 KVA

–60 ... –80 %
compared to left

Accessibility, tool life, surface quality ...

Horizontal machining centers



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5-axis machining center

Plus points for 5 axes

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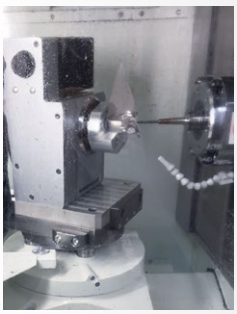
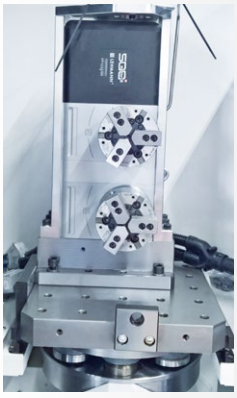
Alternatives

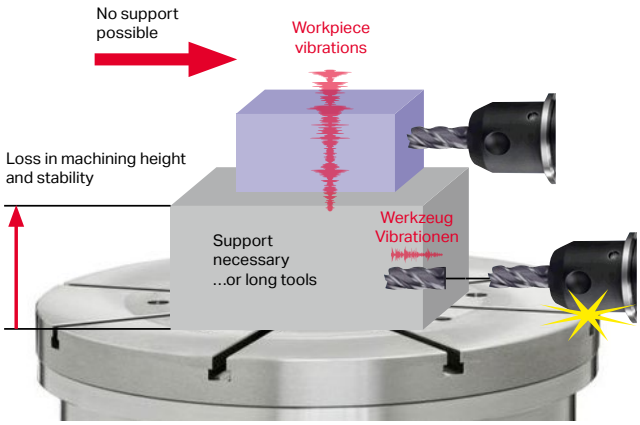
Make a 4 axis horizontal machining center into a 5-axis machining center: increase use and degrees of freedom



5-axis, one spindle, on horizontal machining center



5-axis, two spindles, on horizontal machining center



In the case of small workpieces, the workpiece must be mounted further out or a long tool must be used – both result in vibrations and loss in accuracy and surface area

6th side machining not possible

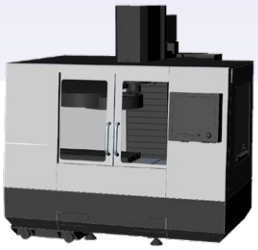
Counter bearing for support not possible

Intelligent automation

LEHMANN®

... Accuracy and flexibility: «on-top» offers a lot

3-axis VMC + rotary table



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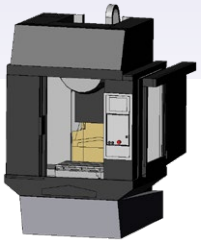

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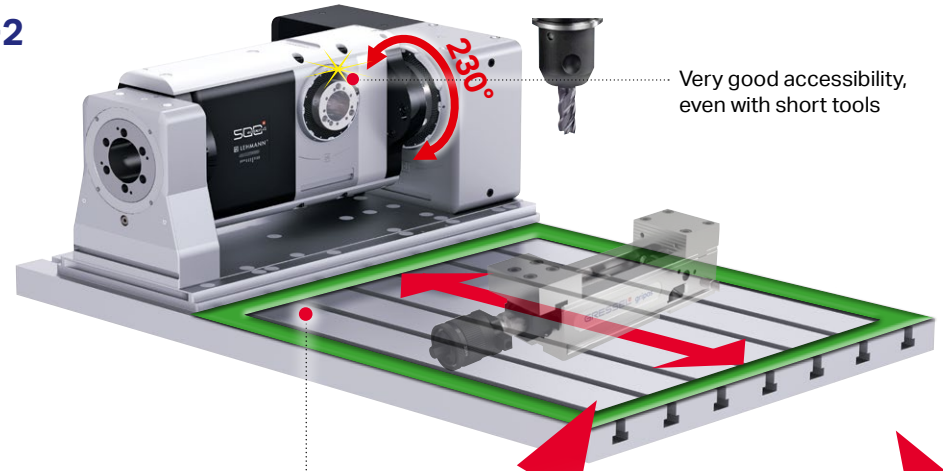
3+2

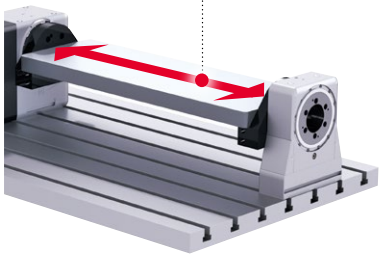


Very good accessibility, even with short tools

More space for workpieces and fixtures

Where necessary, vise, indoor automation, or clamping yoke

3+1



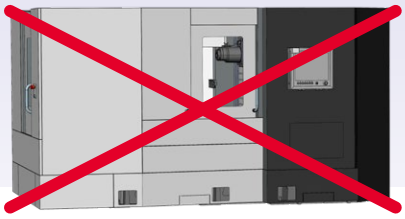
Indoor automation

Intelligent automation

Vises of all kinds

Flexibility: Modular system using standard elements ...

Horizontal machining centers



5-axis machining center

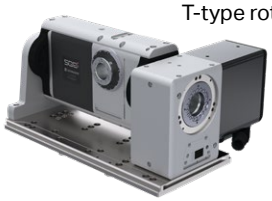
ONE modular system ...

Clamping cube
rotoFIX cube

4th axis
EA-type rotary table

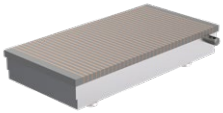
Clamping yoke
rotoFIX yoke

4./5. Axis
T-type rotary table



Tailstock
Counter bearing

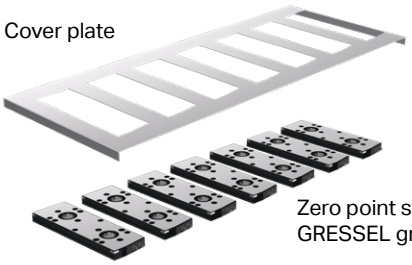
With standard elements ...



Magnetic
clamping plate

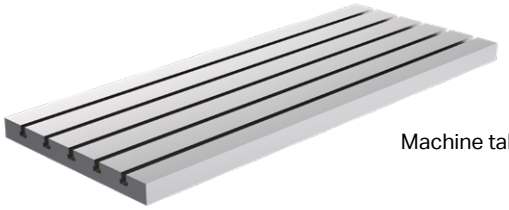
Clamping rail
or vise

Cover plate



Zero point system
SCHUNK Vero-S

Zero point system
GRESSEL gredoc

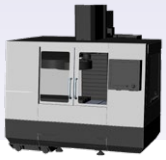


Machine table

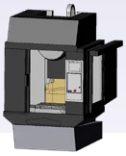
... with almost unlimited possibilities thanks to zero point clamping on all elements

Ideal for vertical machining centers

3-axis vertical machining center



3-axis vertical machining center (TC)



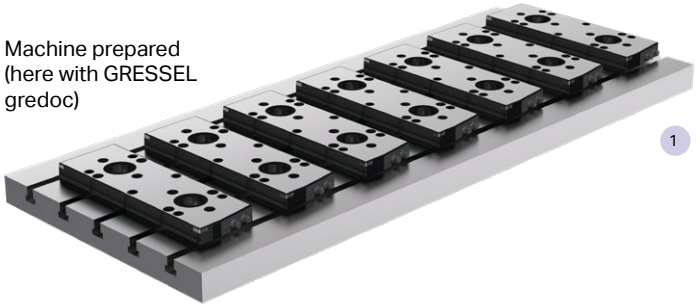
... many solutions

2

with clamping rails from TRIAG (above) for producing large plates (below)

3

Machine prepared (here with GRESSEL gredoc)

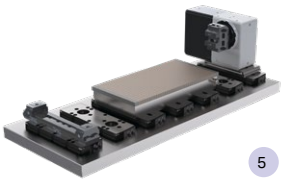


1

4

9

... change-over in 10–15 minutes – to any variant!



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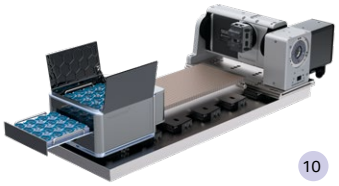

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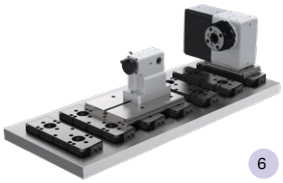

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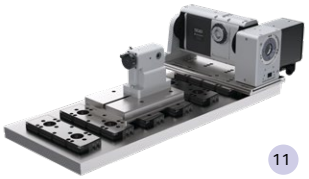
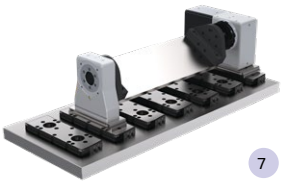


11

14

can be combined with every variant – e.g. for unattended production during the night shift



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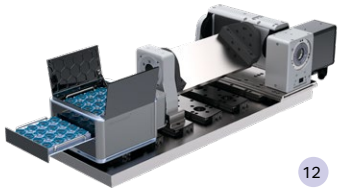

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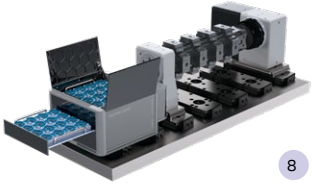

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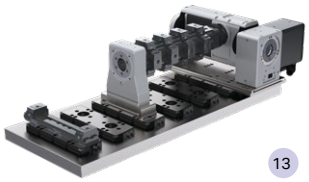
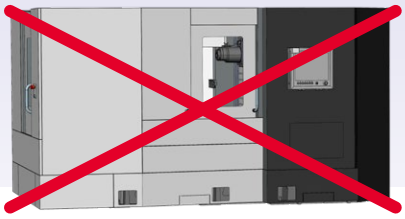


13

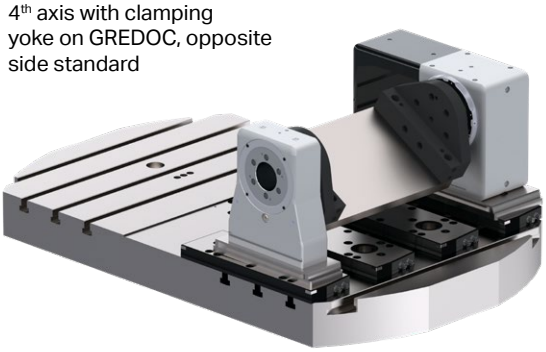
Flexibility: Modular system using standard elements ...

Horizontal machining centers



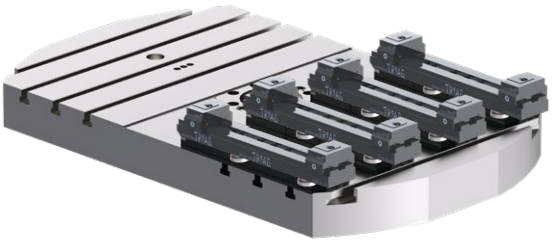
5-axis machining center

4th axis with clamping yoke on GREDOC, opposite side standard

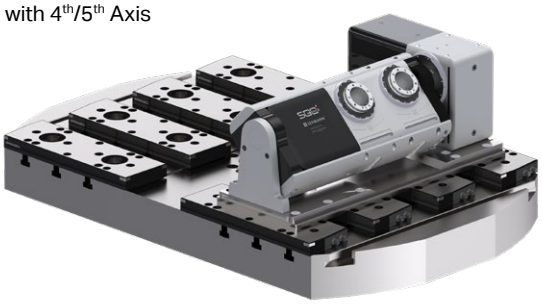


A few examples ...

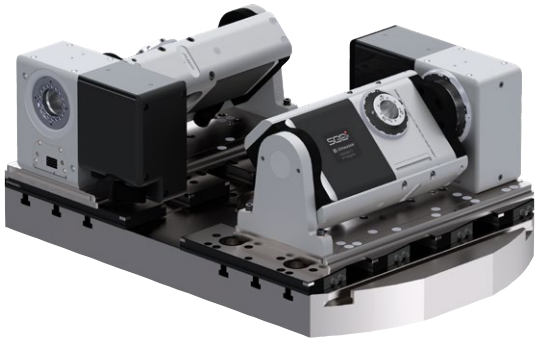
Clamping rails from TRIAG on GREDOC, opposite side standard



Both sides prepared with GREDOC, one side with 4th/5th Axis



Both sides 4th/5th axis on GREDOC, opposite side standard



Both sides prepared with GREDOC, both for any variant

... of additional ideas

... for continuously running machines and heavy-duty machining:
Machines with interchangeable tables for series production

3-axis vertical machining center (APC)

Almost 100 % productive time, even without automation!

Pure productivity

1. Change workpieces while the machine is producing – by hand or using automation, without having to interrupt production
2. On side A, machine the first 3 sides; on side B, the others – more workpieces completed per cycle thanks to combinations a with 4th or 4^{th}/5^{th} axis and/or clamping yokes
3. Non-stop 5-side machining; even simultaneously, depending on CNC system – no 5-axis machine can do this
4. Changeover in 10–15 minutes while the machine is operating (depending on time needed to machine parts)

- **30 % higher investment**
- **50 % greater production**
- **100 % more profit**

... and changed over again in 10–15 minutes

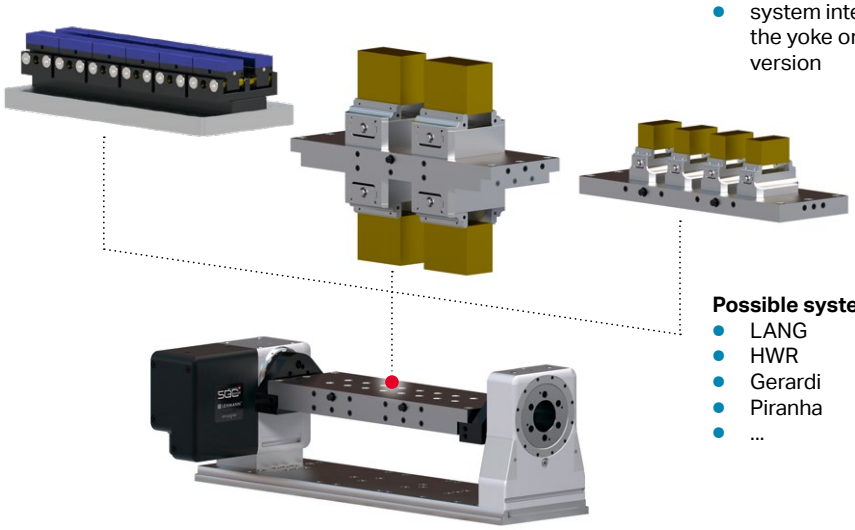
Potentials of clamping yokes with integrated or built-on zero point clamping system

Horizontal machining centers

5-axis machining center

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

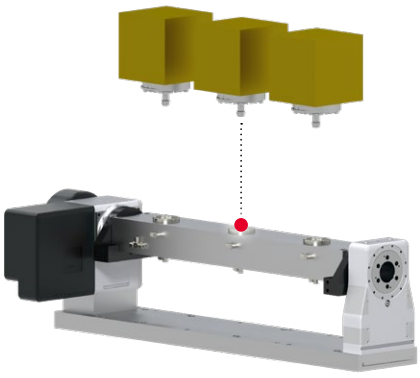


Possible systems
- LANG
- HWR
- Gerardi
- Piranha
- ...

Manual version

Yoke with automatic zero point clamping system

- for automatic loading
- with media channel through clamping yoke



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

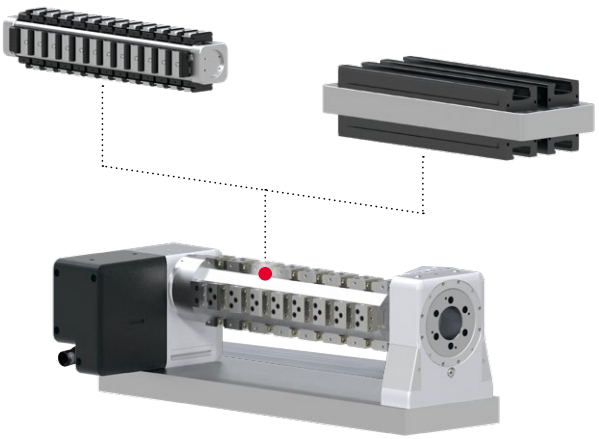
Automatic version

- 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

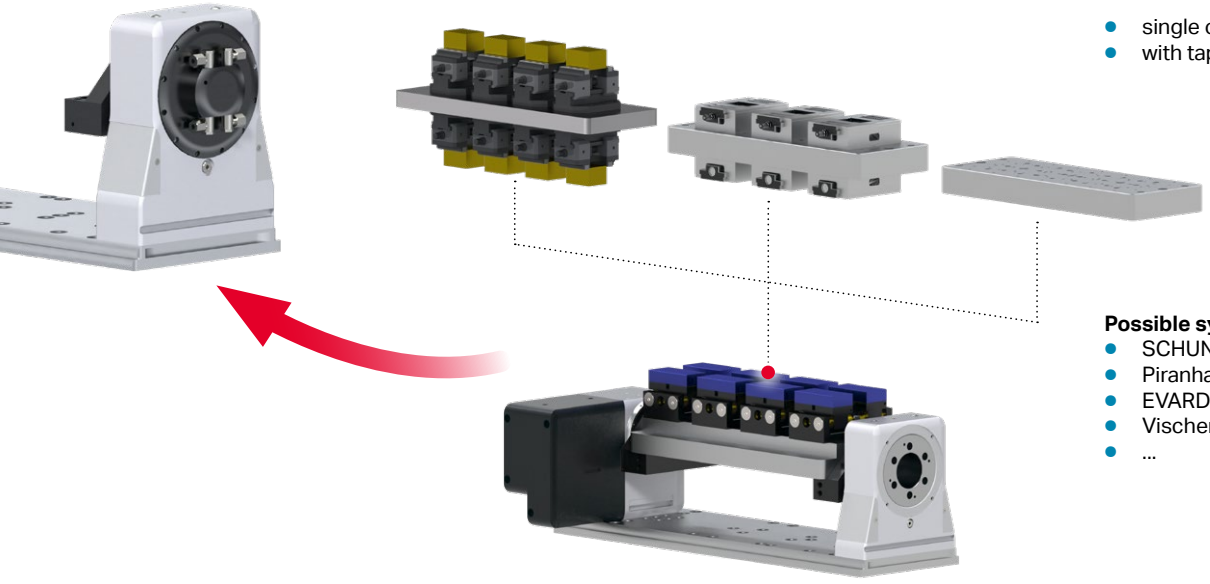
- clamping yokes quickly interchanged without any re-alignment



- 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

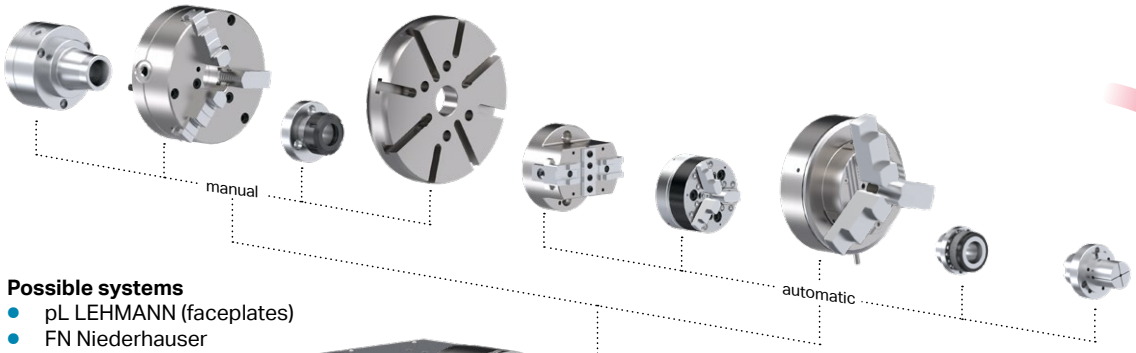
Possible systems
- SCHUNK
- Piranha
- EVARD
- Vischer & Bolli
- ...

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

Horizontal machining centers

5-axis machining center

Faceplates, force clamp and jaw chucks, collet chucks

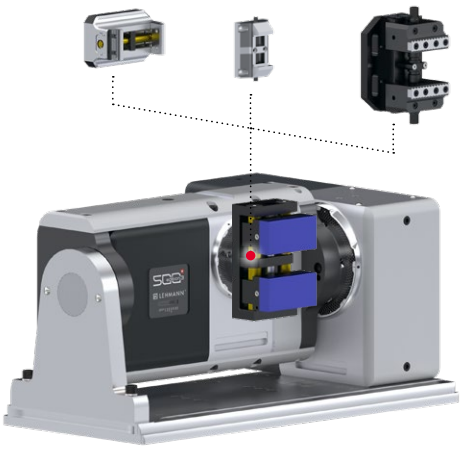


Possible systems

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

automatable: with rotary feedthroughs and clamping cylinders

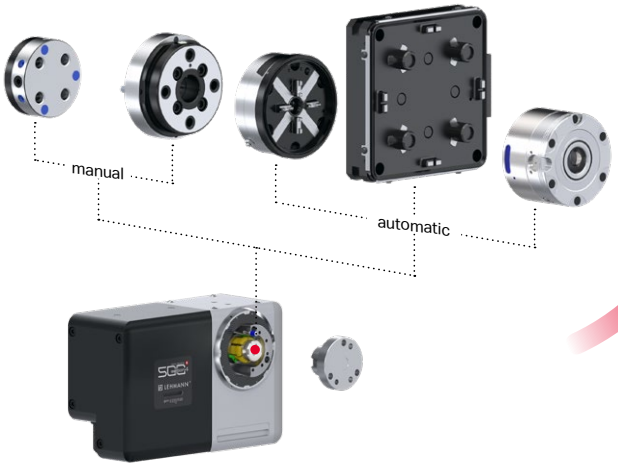
Centric clamping unit



Possible systems

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

Zero point clamping systems



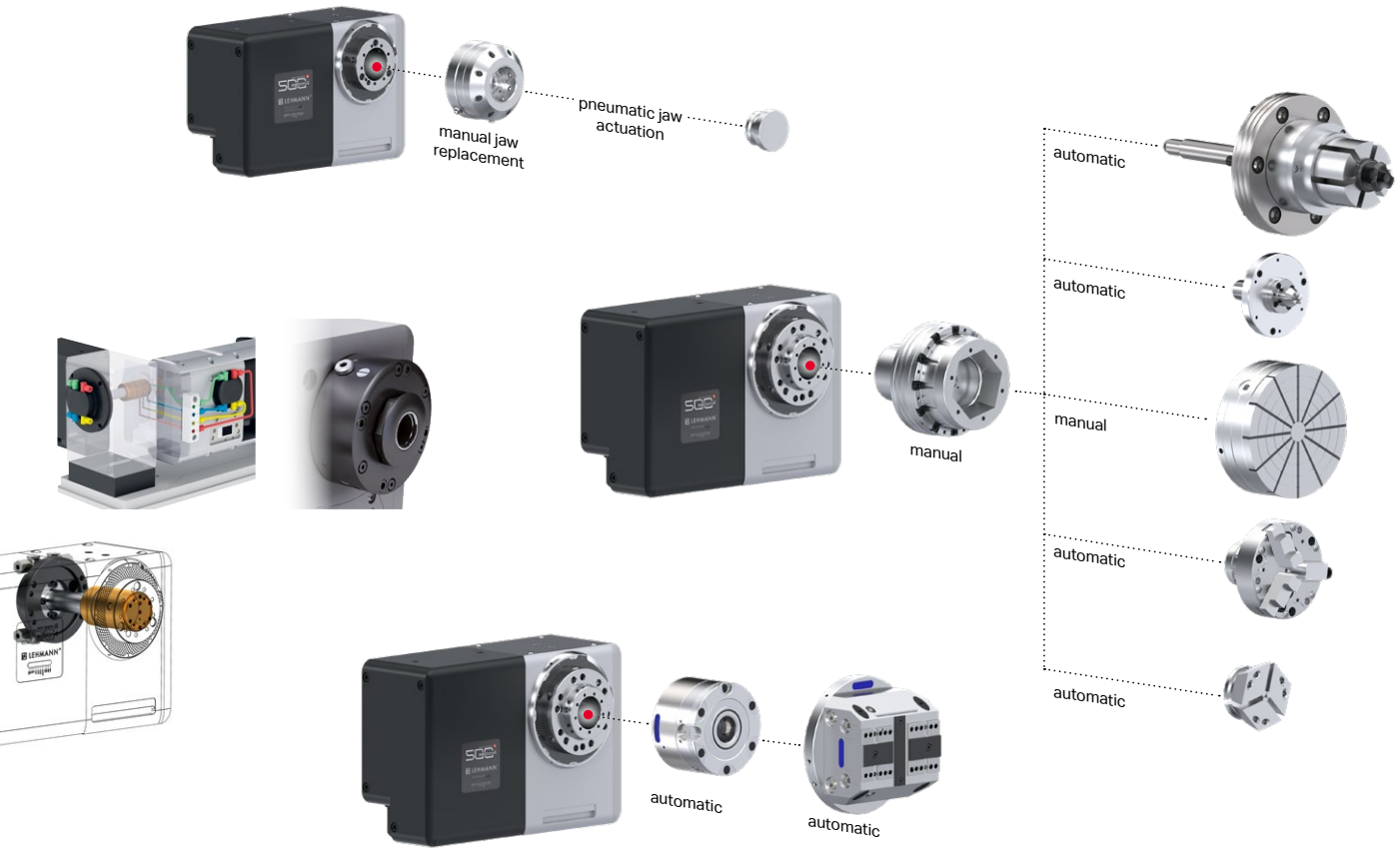
Possible systems

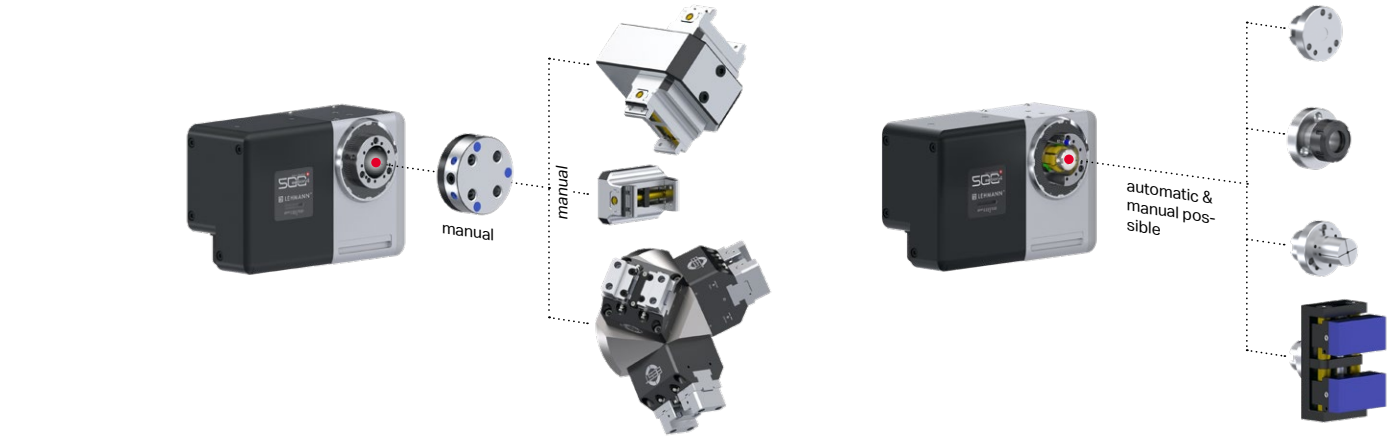
- pL LEHMANN (ripas & CAPTO)
- Erowa
- System 3R
- FTool
- Parotec
- Roemheld
- AMF
- SCHUNK
- LANG
- GRESSEL
- ...

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

Also applies to 900 DD series

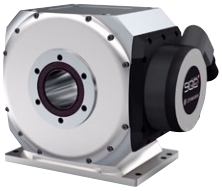
Possible combinations





E-Series

EA-507, EA-510,
EA-520, EA-530,
EA-913, EA-915,
EA-918

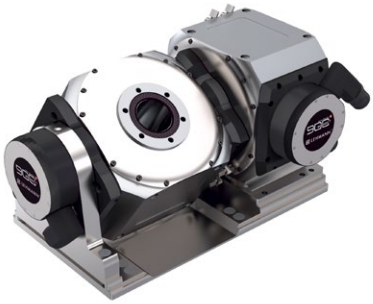


M-Series

M2-507, M2-510,
M3-507, M3-510,
M4-507, M4-510

Tx-Series

T1-507510, T1-510520,
T1-520530, T2-510520,
T1-913915, T1-915915,
T1-915918



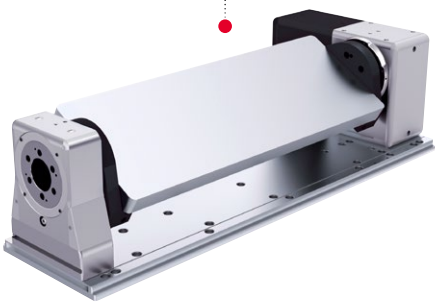
Product portfolio and benchmark

TF-Series

TF-507510, TF-510520, TF-520530

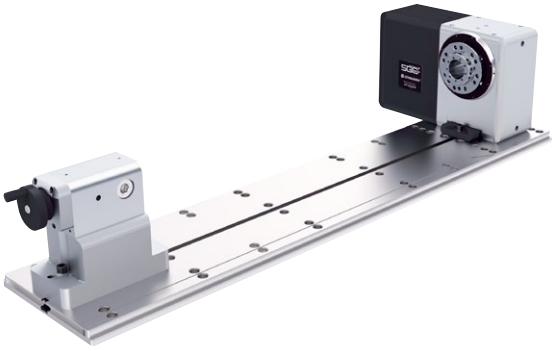
RFX-Series

rotoFix



LFX-Series

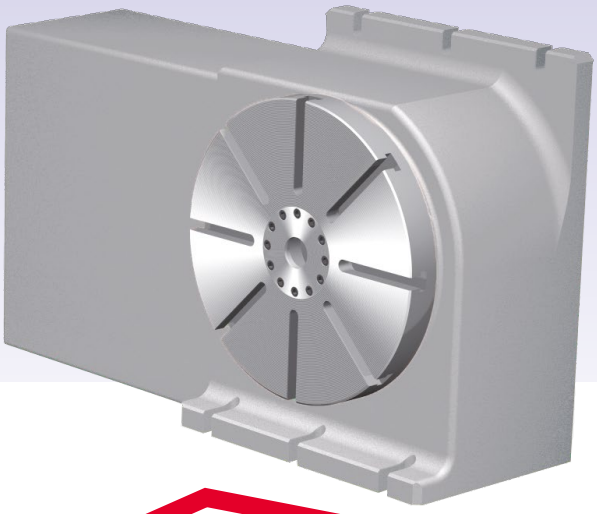
longFlex



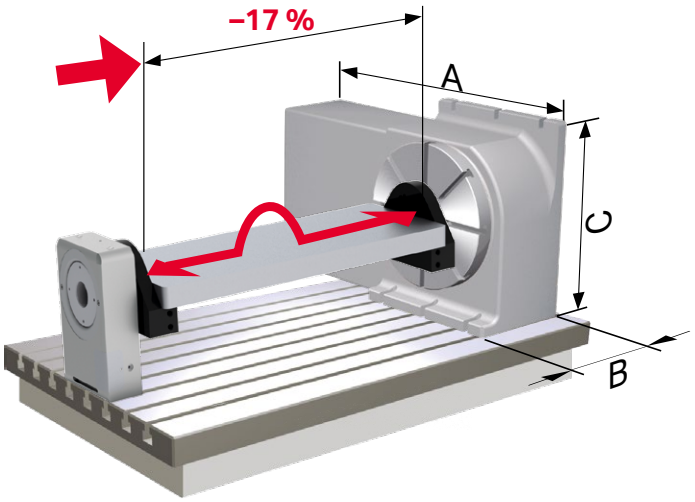
There are many suppliers of rotary tables: OTT, duplex, steel / metal carbide, rollers, balls, direct drive. What are the decisive differences from pL LEHMANN?

4th axis on the machine table

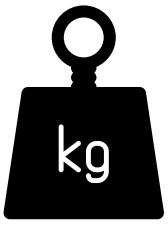
All % figures and color information empirically determined, non-binding approximate values, usually average to average



+20 %
compared to right



+56 %
compared to right



Higher weight reduces the allowed table load of the machine

NO Industry 4.0

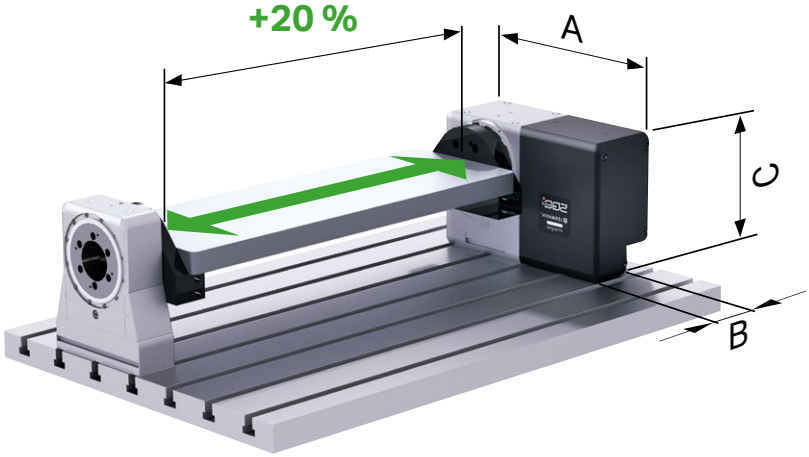
few or no sensors, no or little experience with Industry 4.0

Fewer models, lower weights,
smaller footprint ...
smaller machine suffices!

–17 %
compared to left

Greater use value with less energy

+20 %



–36 %
compared to left

The smaller the rotary table for the particular range of parts, the more energy-efficient

1. smaller moving masses
2. Larger workpieces can be produced on a smaller machine

Ready for industry 4.0

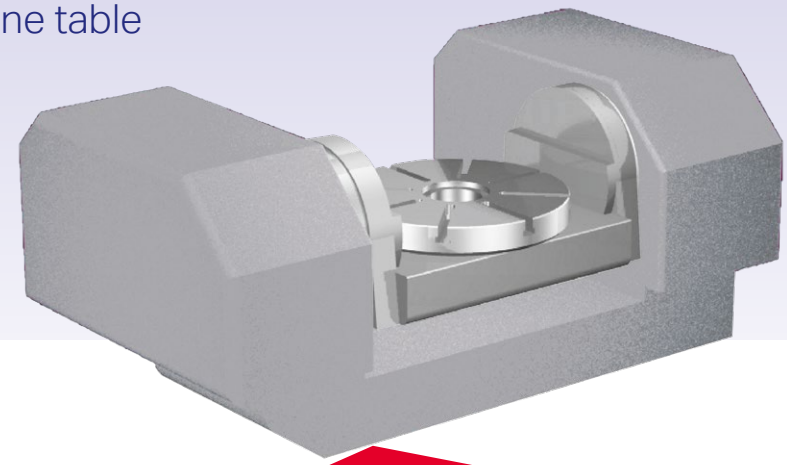
Every pL-LEHMANN rotary table comes standard with a pL iBox

100 %

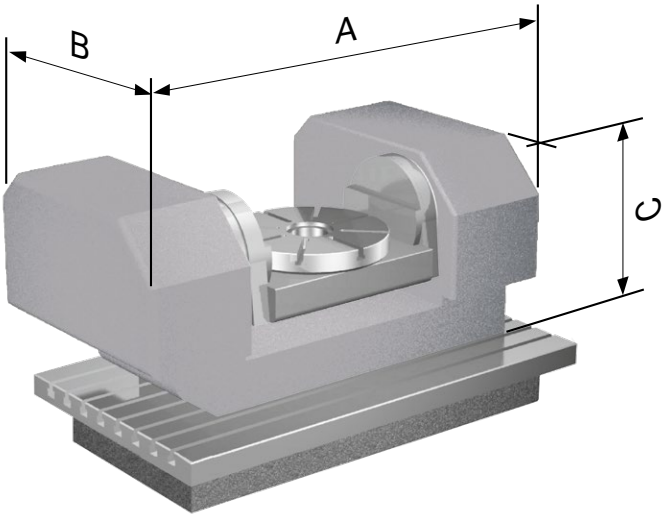
Industry 4.0-compatible
10 years of experience

4th + 5th axis on the machine table

All % figures and color information empirically determined, non-binding approximate values, usually average to average

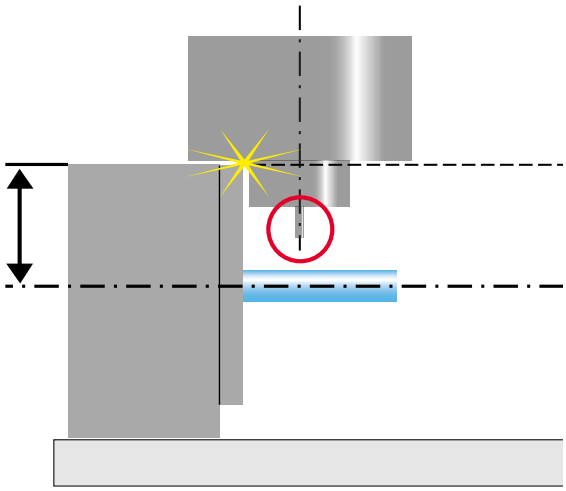


+28 %
compared to right



+50 %
compared to right

Higher weight reduces the allowed table load of the machine



+58 %
gegenüber rechts

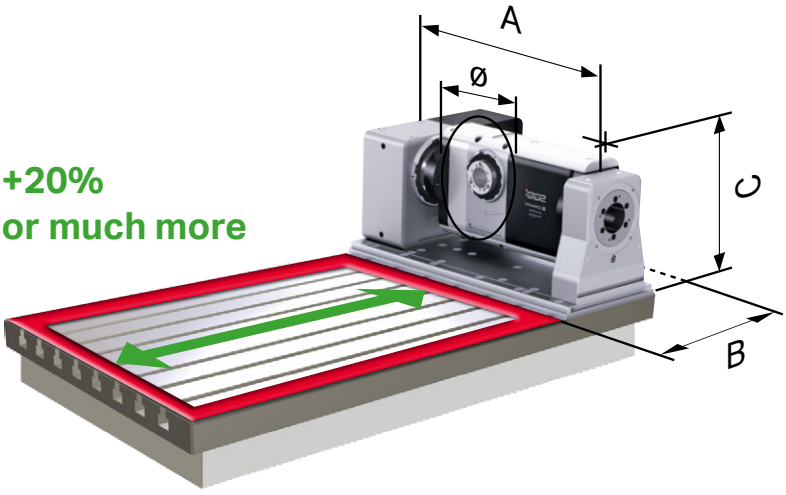
Required:
- long tools
- less cutting data

Result:
- slower – not economical
- worse quality

Compact, powerful, accessible ... greater productivity, higher workpiece accuracy

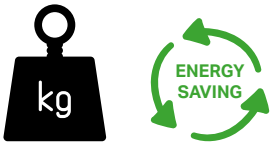
–22 %
compared to left

For contract manufacturers: Maximum universality



+20%
or much more

–30 %
compared to left

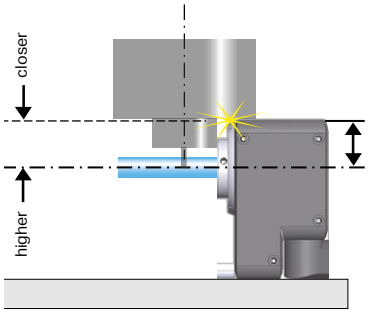


The smaller the rotary table for the particular range of parts, the more energy-efficient

1. smaller moving masses
2. Larger workpieces can be produced on a smaller machine

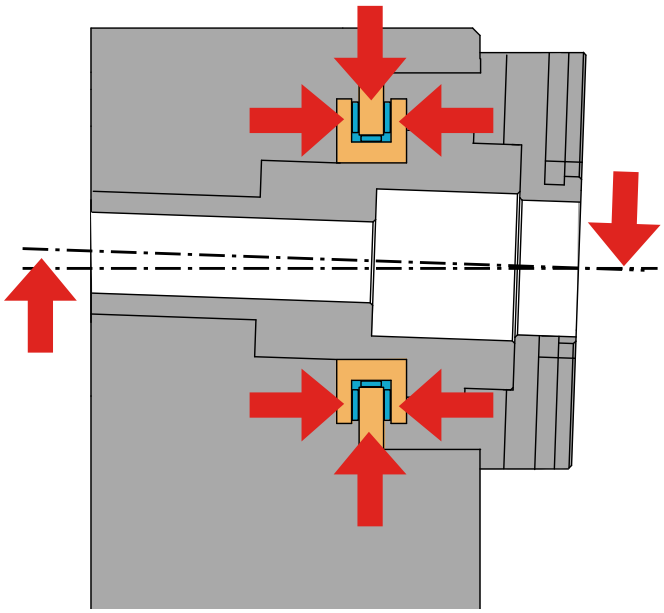
Best accessibility, less loss in Z-direction

–37 %
compared to left

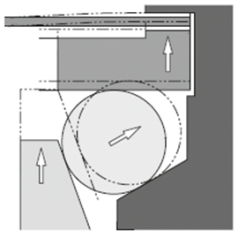


Bearing technology & spindle clamping

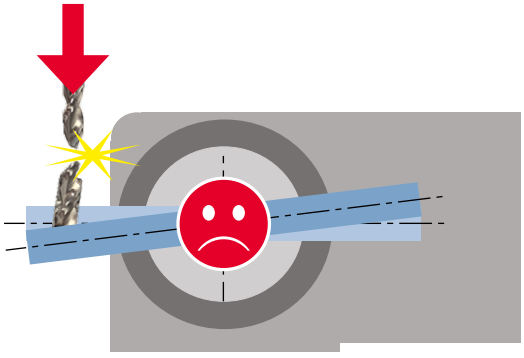
All % figures and color information empirically determined, non-binding approximate values, usually average to average

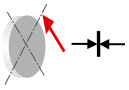


Non-optimal bearings and insufficient spindle clamping reduce the machining capacity, workpiece accuracy and profitability

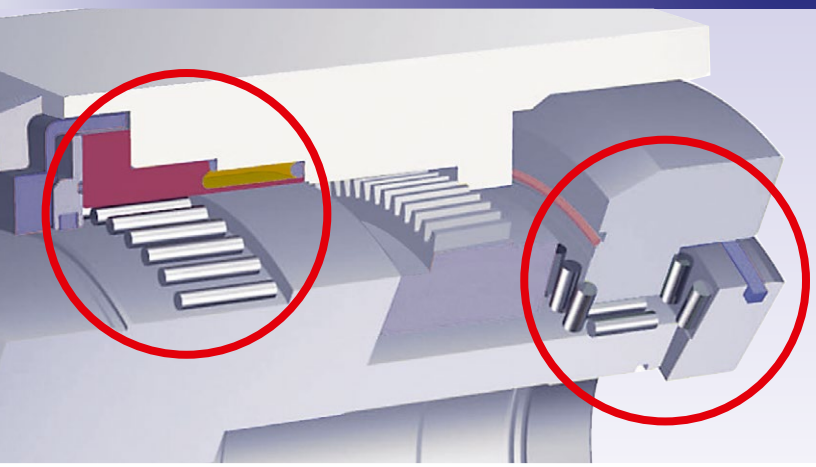


Example of other clamping principles

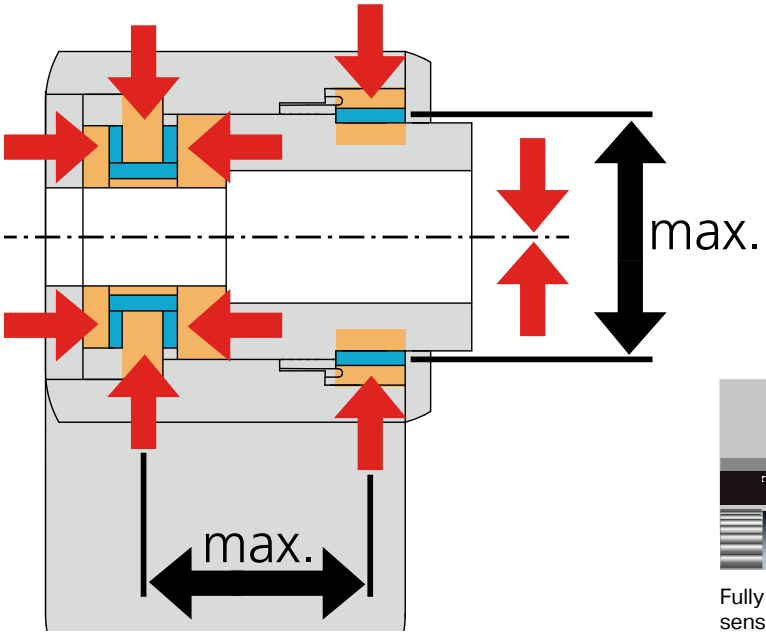


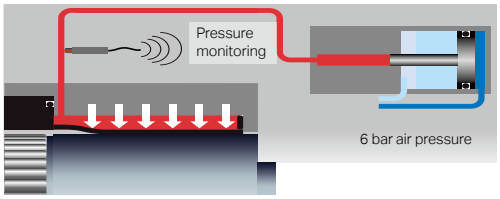


If the brake slips during machining, tool and workpiece may be defective.



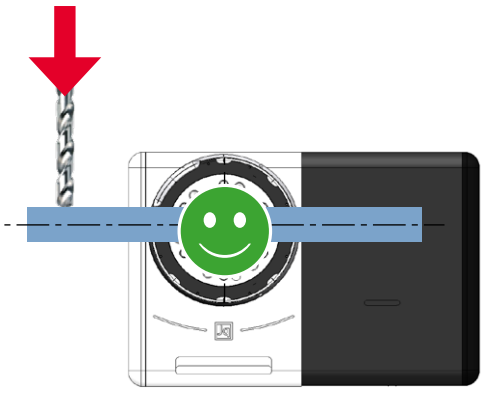
4-way spindle clamping for maximum stiffness



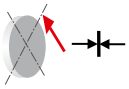


Fully integrated pressure booster with sensor – proven a thousand times

Reliable production, even in cases of difficult machining



+100 %
compared to left

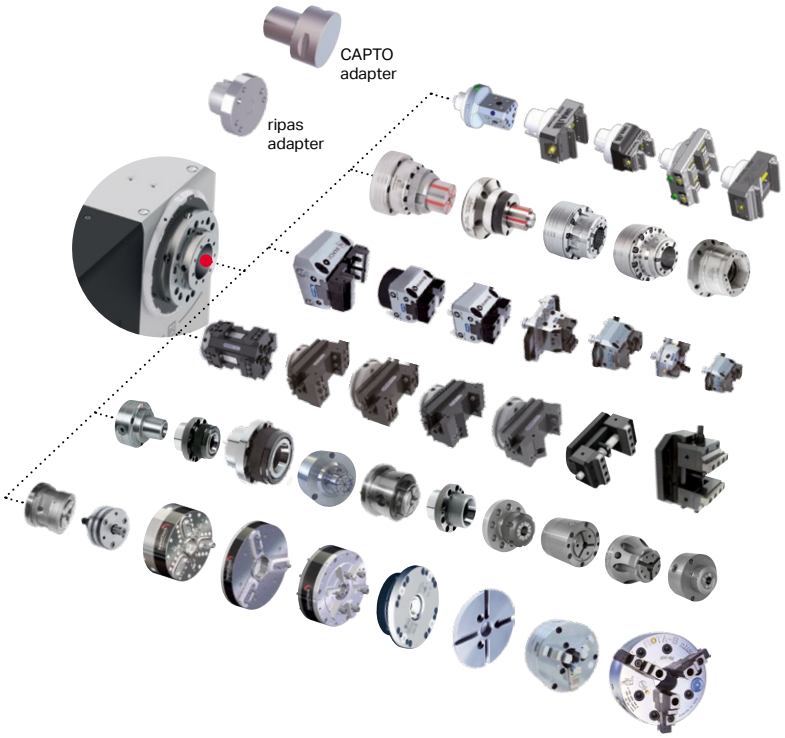


compressed
air only

Once deeply considered – used for ever

- available, sophisticated, standardized
- less fixtures needed
- easy service and documentation

Multi functional workpiece clamping system



Modular system «combiFlex®»

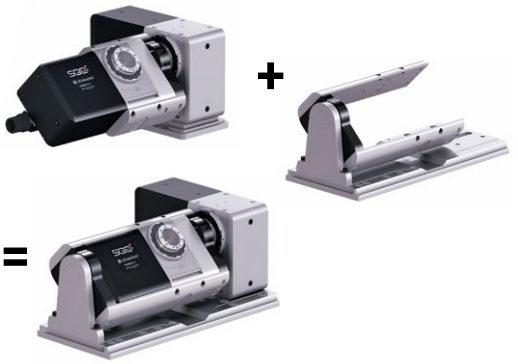
«CombiFlex®» allows a suitable conversion at any time, even after years.

High value retention

- can be modified at any time
- only 4 sizes ø100 – 500 mm
- over 420 standard configurations available

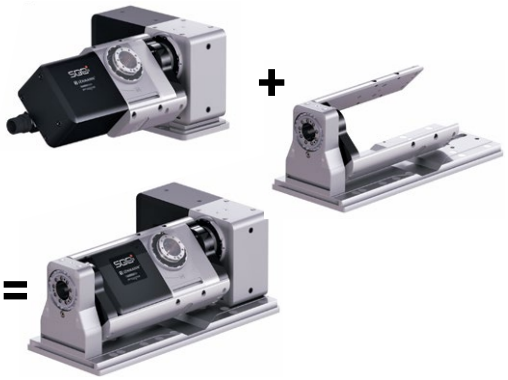
EA ➔ TF TIP

TF TIP ➔ T1 TAP

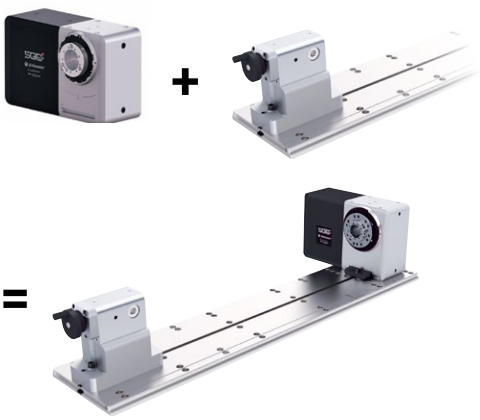


EA ➔ EA with rotoFIX

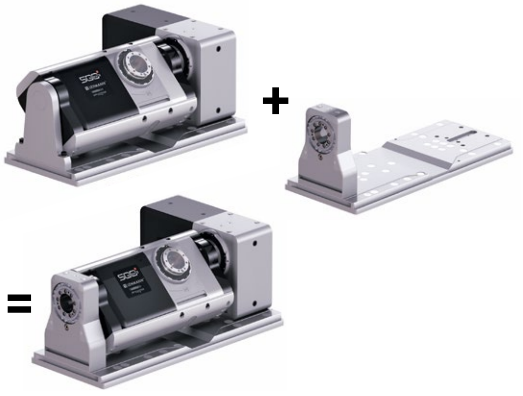
TF TIP ➔ T1 TOP



EA ➔ EA with longFLEX



T1 TAP ➔ T1 TOP

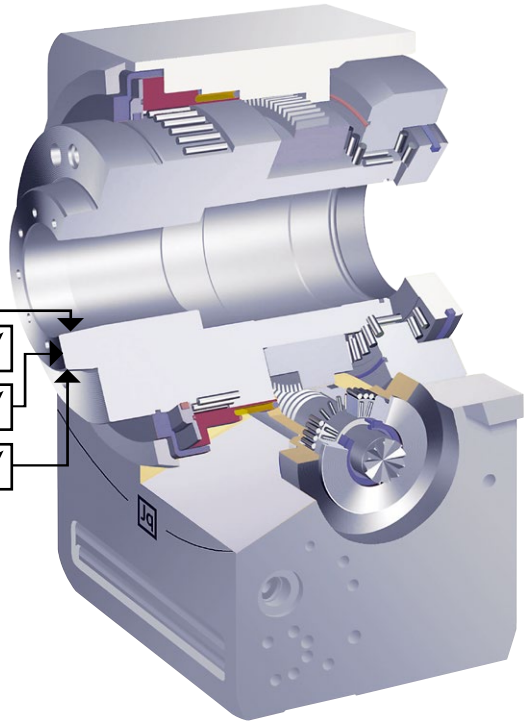


Quality at pL LEHMANN: «The right processes automatically yield the desired results»

Axial and radial run-out determine the overall accuracy

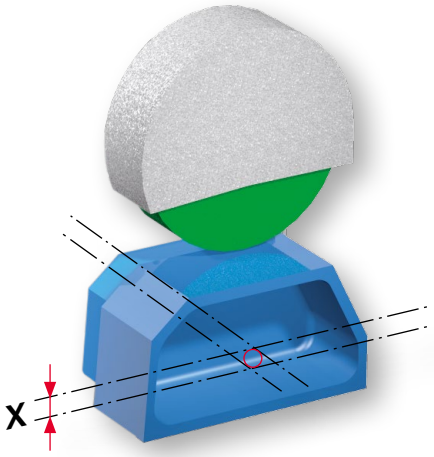
Understanding of quality by pL LEHMANN: «The right processes automatically yield the desired results». For this reason, high standard accuracy and selectable maximum accuracy are a standard feature.

	Standard	Optional
X =	0.006	0.003 (0.002)
	0.006/Ø100	0.003 / Ø100
X =	0.006	0.003 (0.002)

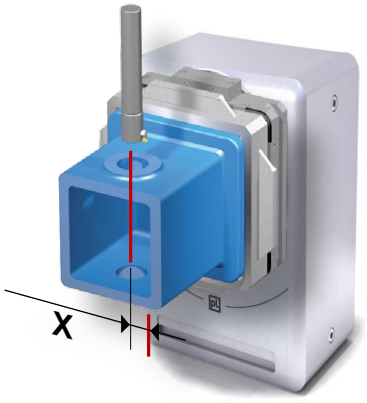


Other rotary tables
Standard: usually 0.01 **+67%** (worse)
Optional: not available

Result on workpiece from radial run-out

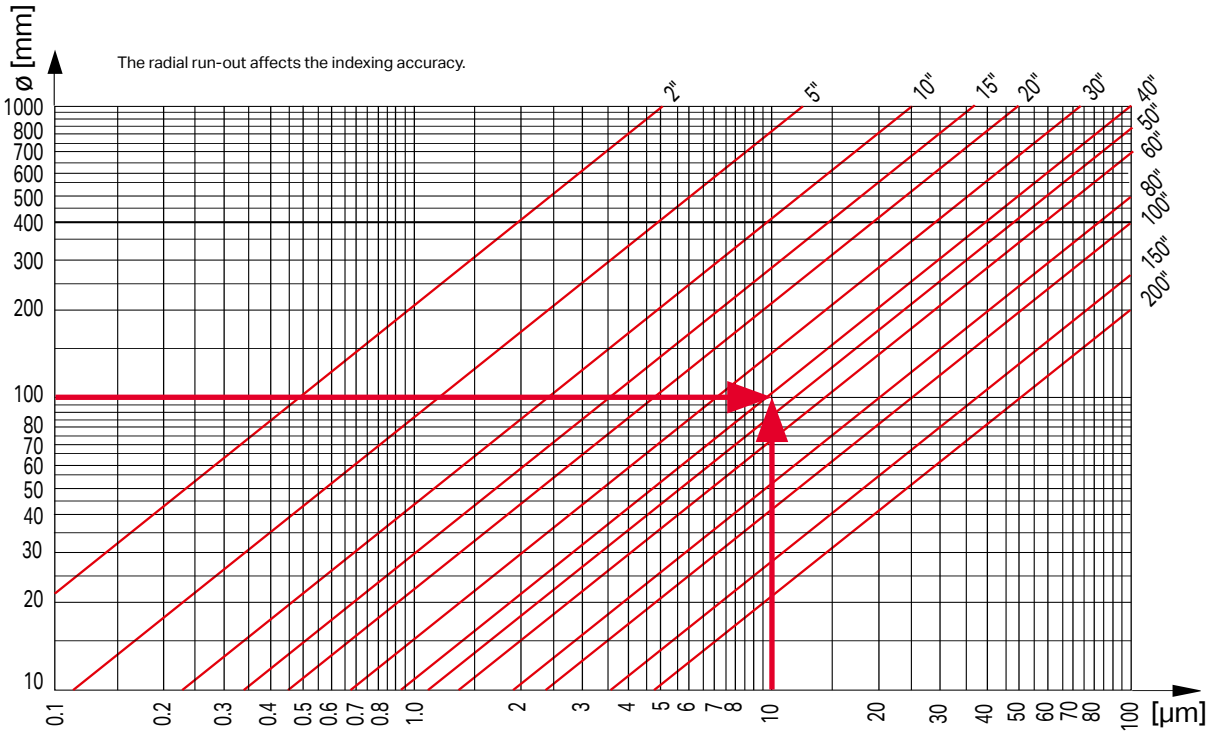


poor coaxiality or symmetry

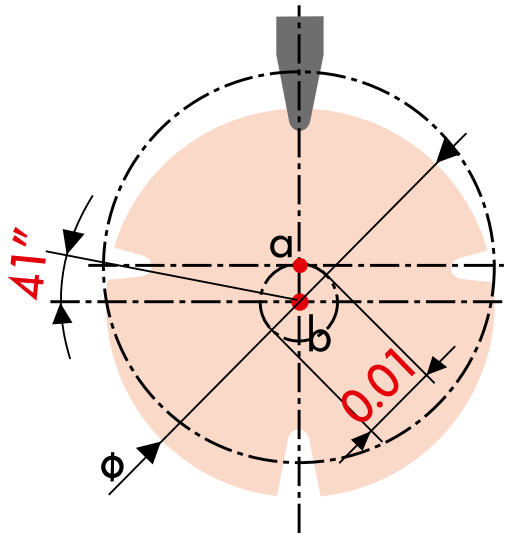


holes offset

Angular seconds and radian measure compared

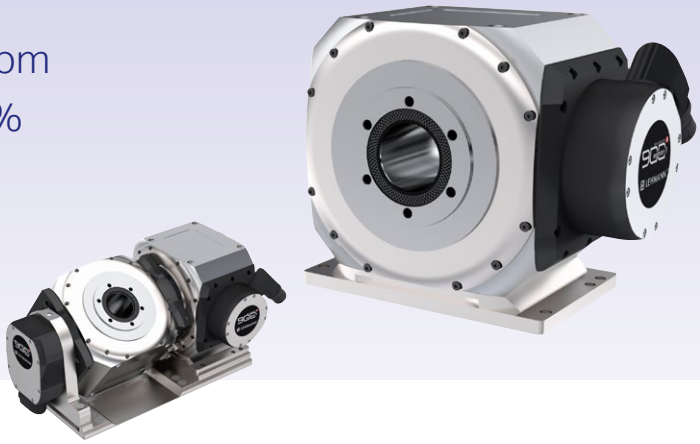


Example: Workpiece-ø 100 mm, radial run-out error 0.01mm = additional error on workpiece up to approx. 41"



a) effective center of rotation
b) Center of spindle / workpiece

- Speed from 200 to 5'000 rpm
- High duty cycle up to 100 %
- Greater crash resistance



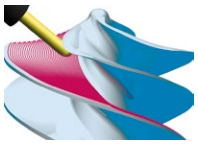
Technology combination

Reduce non-productive time, increase processing time, boost profit: all in a single clamping, on the same machine!

Milling / boring (drilling)

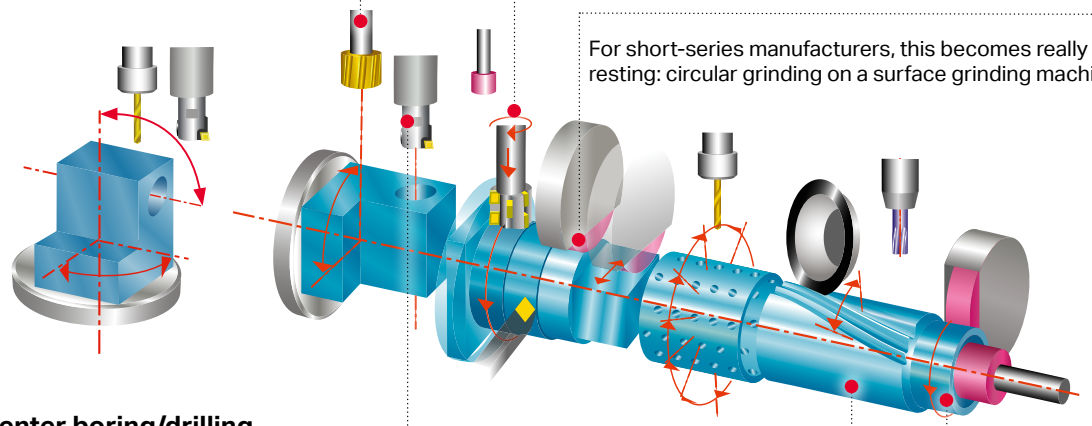
Turning and rotary milling

Impeller machining



Circular grinding on a surface grinding machine

For short-series manufacturers, this becomes really interesting: circular grinding on a surface grinding machine!

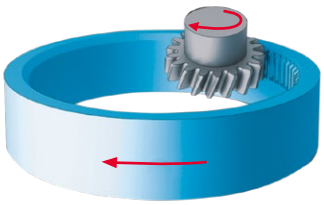


Off-center boring/drilling

...thanks to powerful spindle clamping

Gear skiving

Highly efficient method for manufacturing gears of all kinds



Tool grinding

Problem-free grinding of grooves and chamfers using pendulum method, followed by a circular grinding phase! All in one.

Outside and inside grinding

Additional grinding tasks for truly complete machining

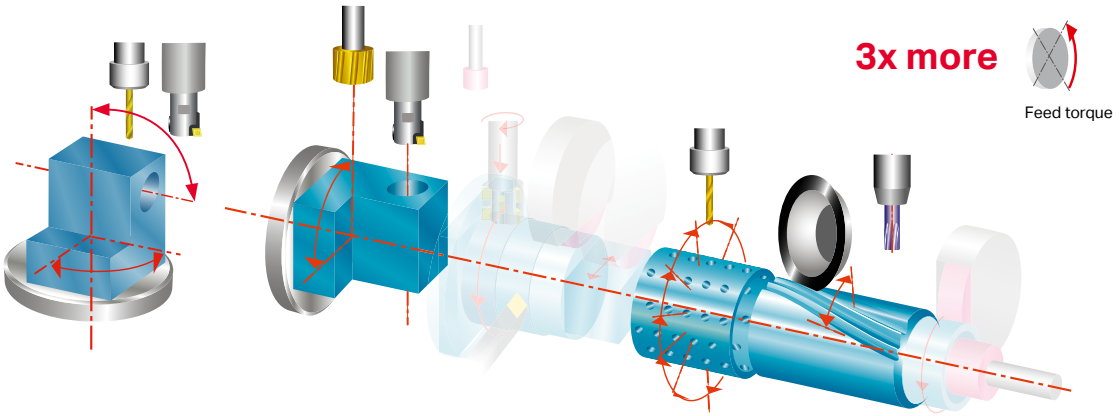
- Do it all with 1 rotary table
- Economical
- Easy commissioning

Versatile and efficient applications

Proven thousands of times over decades, ideal for positioning and brief simultaneous machining. Installed on 1'000 different models of machining centers and over 200 machine brands

All-in-one

- Thanks to high gear ratio of up to 180:1, much higher torques can be transmitted
- This provides much greater range of applications
- Load changes (e.g. different eccentricities) require no re-parameterization



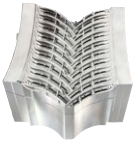
Simpler

- No special precautions needed on machine (e.g. temperature monitoring, back-current...)
- Uncomplicated commissioning and tuning
- Less susceptible to effects of load

More economical

- No cooling unit needed
- Smaller drive enhancements
- Lower safety requirements

Automobiles & vehicles in general



Tire-shaped segment

Hydraulic manifolds

Diesel fuel injection pumps

Crown gears

Medical & dental

Spinal implants

Instruments

Knee joint prosthesis

Hip implants
and plate implants

Micromechanical parts & watches

Wristwatch plates

Micromachined gear

Watch casing

Coffee mill parts

Aircraft & turbines

Impeller

Turbine blade

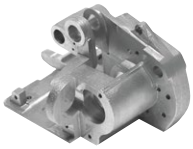
Blade holder segment

Structural component

Application examples of your sectors

Machinery & tools

Milling tools



Housings

Interchangeable inserts
(Photo: Paul Horn)

Bearing housings

Components & systems

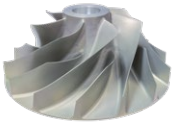
Vacuum pump rotor/stator

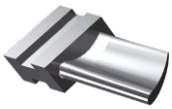
Door and window hardware
(Photo: Blum)

Lock cylinder

Valve block

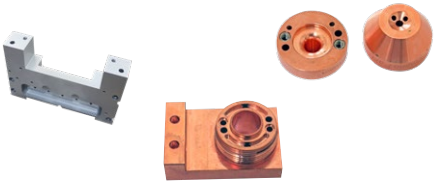
Various



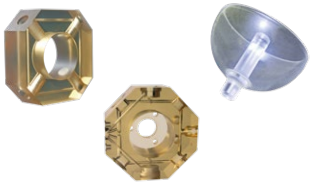


Turbine blade and impeller

Side milling cutter with interchangeable inserts



Nozzles for a plasma torch



Complex glass workpieces

Automobiles & vehicles in general


Automobiles


Trucks


Motorcycles


Bicycles and mopeds

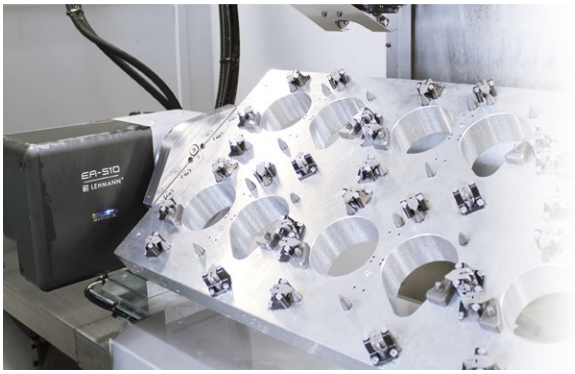

Agricultural machinery

Practical applications

Many interesting user reports are available at www.lehmann-rotary-tables.com under Helpdesk / Downloads / User reports. A few selected examples follow. You can find the entire report on our website by means of the DOK number.

DOK-1003 – EA-510 with automatic workpiece clamping on clamping yoke

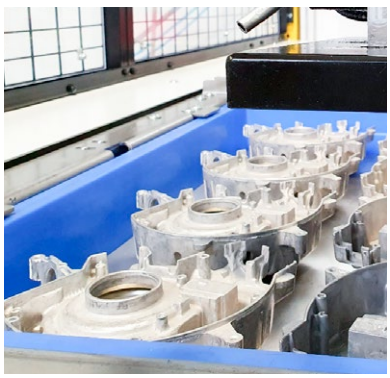

Finished parts in the workpiece magazine.

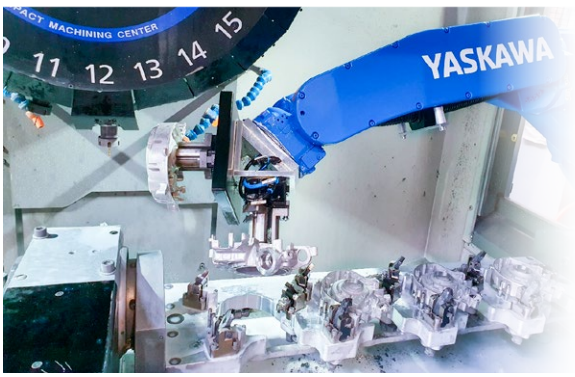


Clamping yoke on EA-510 with integrated, automatically actuated clamping elements

Brother Speedio 700

Fully automated production of steering gear housings on two machines: 4 finished work pieces every 6 minutes


Steering gear housing for motor vehicles



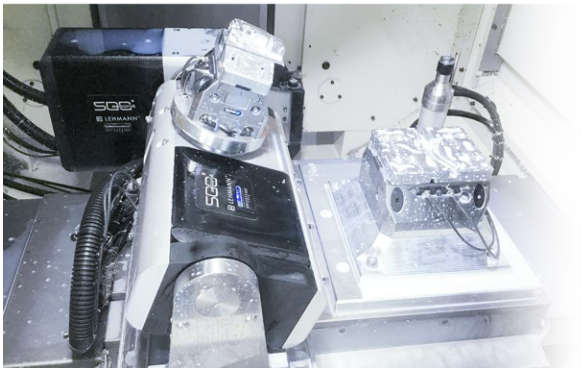
Clamping yoke on 4th axis with integrated, automatically actuated clamping elements

Brother Speedio 1000

- Gear unit
- Steering
- Brake system
- Engine
- Chassis
- Fuel injection system

Fully automatic 6-side complete machining with robotic loading and unloading

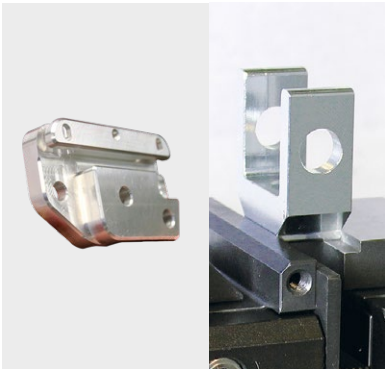
Demanding motorcycle parts



5-side-machining on a T1-507510 TAP1, back in centric clamping unit

Fanuc Robodrill M

DOK-1012 – To remain competitive, the contract manufacturer was looking for a productive solution with short setup times



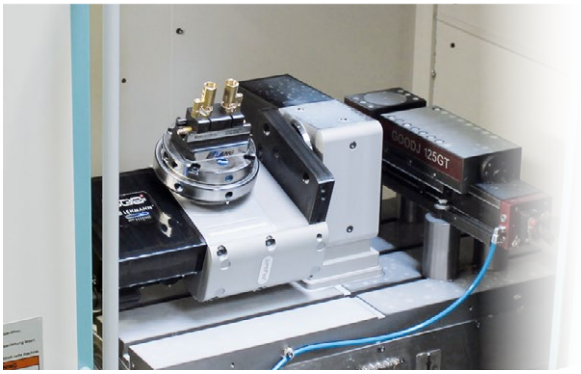
2x 3-side machining = complete machining

EA-510 rotoFIX clamping yoke, equipped with a rail clamping system

DMG Milltap 700

DOK-1021 – Complete machining of 5-axis workpieces with additional clamping location for machining of the back – a satisfied contract manufacture

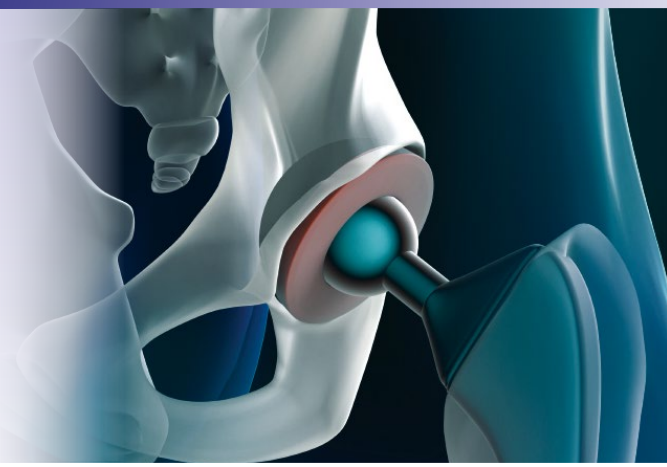
Complex workpieces for different applications



TF-507510 varioX with adjacent vise for 6th side

Brother TC-S2D

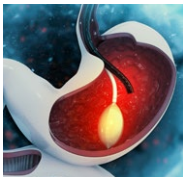
Medical & dental



Bone implants

Dental implants

Instruments



Endoscopy

Practical applications

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DOK-1013 – Producing 5-axis workpieces, incl. 6th side, and simultaneously 3-axis workpieces in the same cycle. A contract manufacturer knows why.

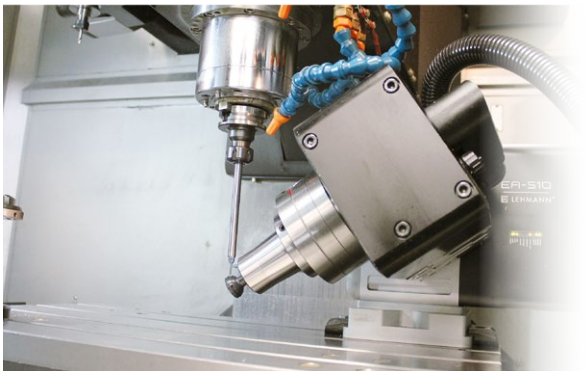
Cross-section from the wide range of parts

T1-520520 mounted crosswise at the right, leaving a lot of space for other machining

AWEA AF-1250

DOK-1014 – Contract manufacturer with small series relies on division of processes: after simple turning operations, workpieces are finished-machined on 5 axes

Turned parts finish-machined economically



Intricate machining on the back possible thanks to the large tilting range of the TF-507510

AWEA AF610

- Nails/screws
- Plates
- Joints (hip, knee)
- Dental implants
- Instrument parts

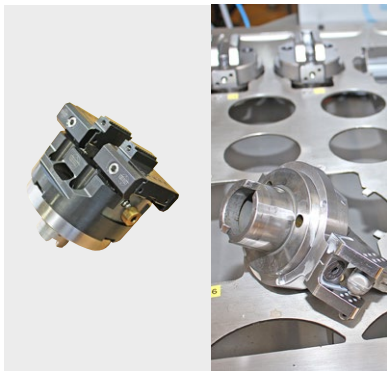
DOK-1015 – Contract manufacturer, a subsidiary of a producer of insulin systems, relies successfully for years on 3+2

Fingertip small parts

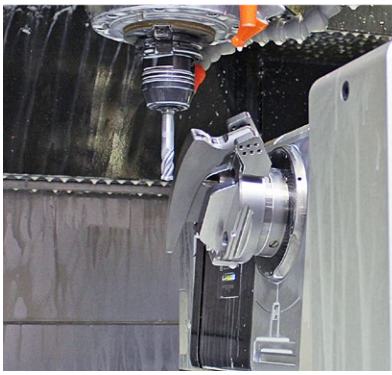
T1-510520 mounted crosswise for maximum flexibility

YCM NSV 156A

DOK-1034 – This manufacturer of hip protheses performs 5 axis machining of high-precision parts fully automatically using a robot



ripas zero point clamping system for max. automation

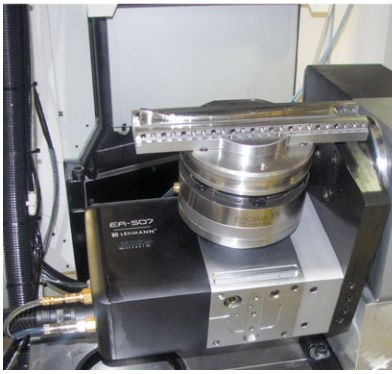


Complex 5-axis machining on a T1-510520, very good accessibility

TOYODA FV1165

An international medical device manufacturer has relied for years on productive solutions from pL LEHMANN: highly productive, simple, easy to use

Bone plates



TF-507510 in a special design, with automatic EROWA palletizing

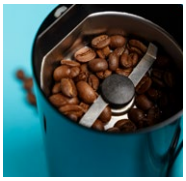
FANUC Robodrill S

Micromechanical parts & watches

Wristwatches

Optics

Laboratories



Household

Practical applications

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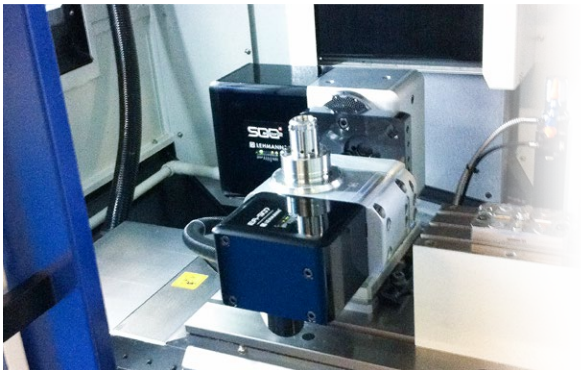
Economical production solution for wristwatch parts. 6-side complete machining in a single work cycle.

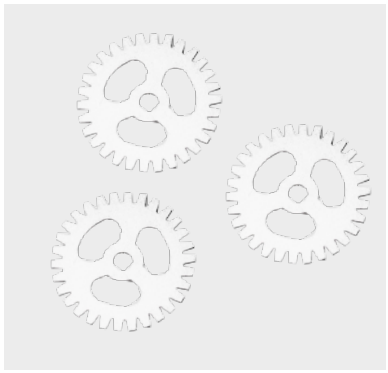
Individual wristwatch parts



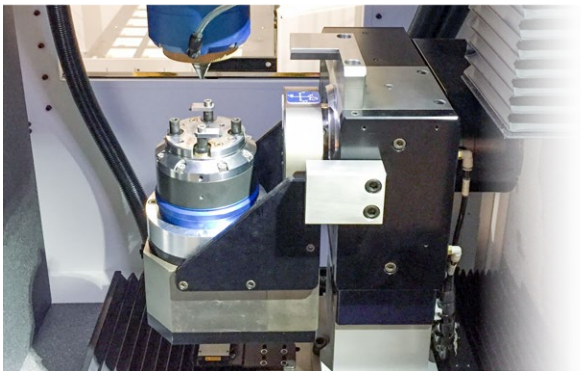
TF-507510 varioX with collet check for machining watch casings

TORNOS C2007

Production of extremely small workpieces for a wide variety of industries by means of laser micromachining



Laser micromachined parts



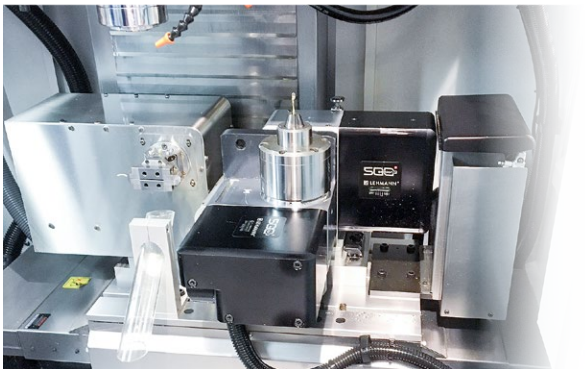
OEM-specific special design of a TF-type rotary table

+GF+ MICROLUTION ML 5

- Watch casings and plates
- Measuring/testing instruments
- Micromech. parts
- Chain links for watches and jewelry

Highly productive 6-axis machining with short rod magazine for unattended production of small parts up to a rod Ø of 30 mm

Various workpieces – ideal from bar stock

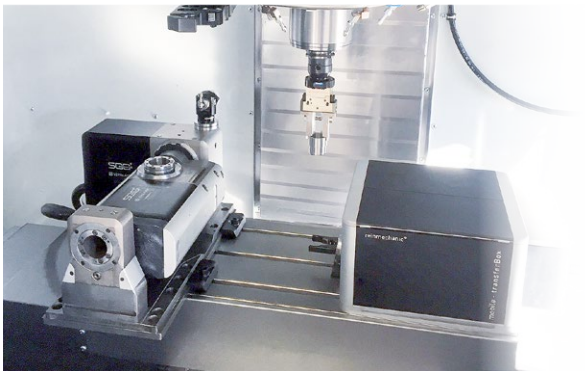


TF-507510 with rod magazine, 6th axis and workpiece discharge

TORNOS C2007

Semi-autonomous complete machining of watch casings thanks to indoor automation with integrated workpiece reversing station

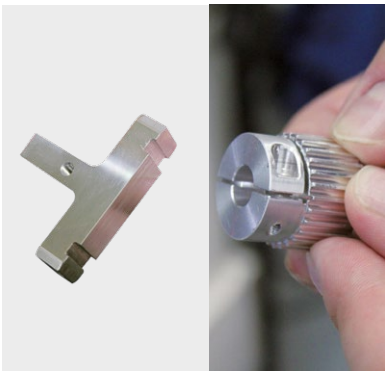
Finished watch casing is deposited



T1-507510 mounted crosswise with «mobile transferBox premium»

HAAS VF-2

DOK-1020 – Contract manufacturer achieves maximum flexibility: Manually loaded short runs or complete machining with robot



Small parts for drives

TF-510510 with automatic workpiece clamping

FANUC Robodrill L

Aircraft & turbines

Aircraft

Turbine

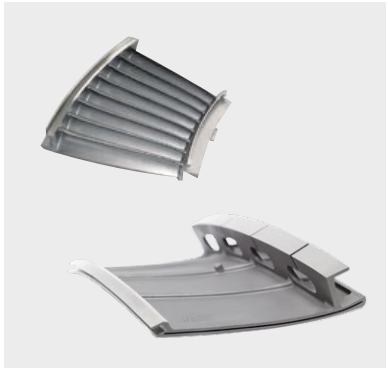
Chassis

Airplane seats

Practical applications

Many interesting user reports are available at www.lehmann-rotary-tables.com under Helpdesk / Downloads / User reports. A few selected examples follow. You can find the entire report on our website by means of the DOK number.

Many custom solutions for the turbine and aircraft industries: High-precision production solutions for grinding operations



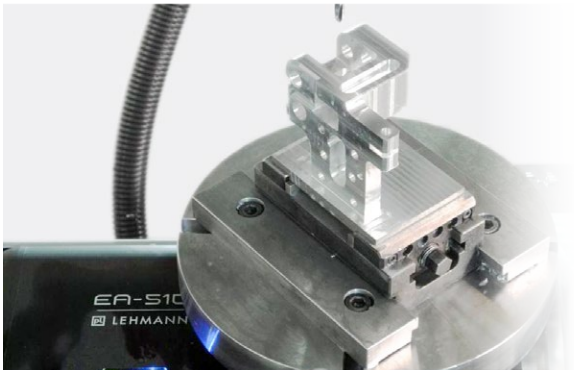
Turbine blade segment

T1-520530 with zero point clamping at 4 locations

BLOHM Profimat MT 608

Contract manufacturer for prototypes and short runs where flexibility has very high priority: Machined aluminum as well and as high-strength steel

Structural component for airplane seat

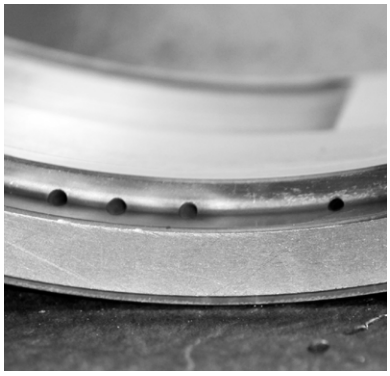


T1-510520 with faceplate and centric clamping unit

HURCO VMX 24

- Structural and joint components (e.g. seats)
- Blades
- Impellers
- Blisk
- Chassis

Waterjet drilling of engine components at up to 3'400 bar: Extremely demanding requirement for leak tightness and functionality



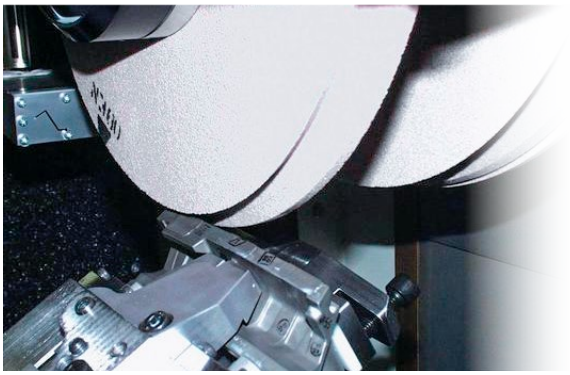
Turbine component with micro-drilled holes

T1-510520 IP68, completely immersed in water bath

FINEPART Finecut VMC 500 II

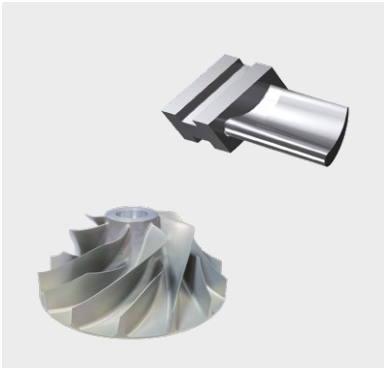
Deep grinding of slots in turbine segments places high demands regarding leak tightness, accuracy and service life

Turbine blades

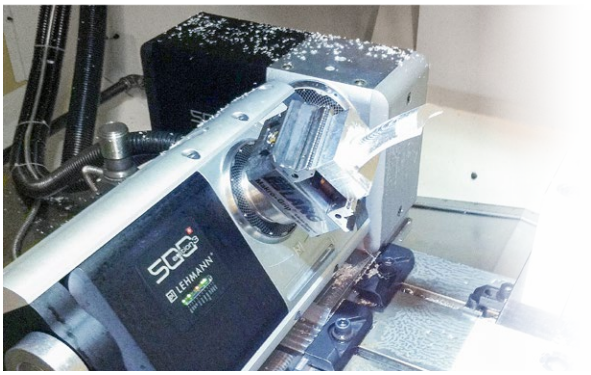


T1-520520 with special device for autom. clamping of workpieces

Simultaneous machining of turbine blades – an attractive alternative



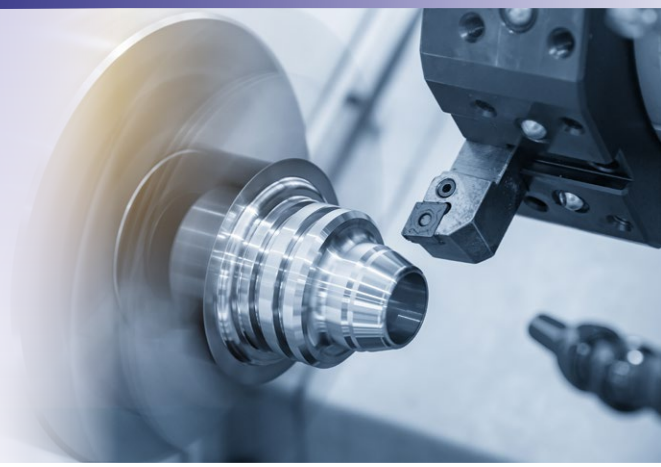
Turbine blade and impeller



T1-507510 TAP1, crosswise: A lot of space on the machine table for much more

FANUC Robodrill M

Machinery & tools



Machinery

Metal-cutting tools

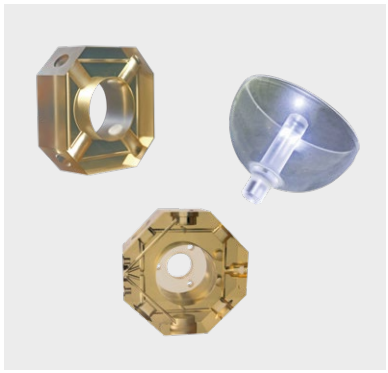
Conveying systems

Equipment construction

Practical applications

Many interesting user reports are available at www.lehmann-rotary-tables.com under Helpdesk / Downloads / User reports. A few selected examples follow. You can find the entire report on our website by means of the DOK number.

DOK-1024 – A machine manufacturer relies on ultrasonically assisted grinding technology for machining of glass, ceramics and other brittle yet hard materials



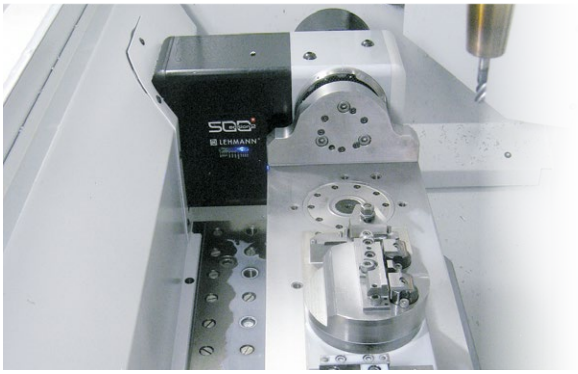
Complex glass workpieces

EA-520 as tilting axis; Dividing axis built in-house

DAMA USG 500

DOK-1026 – A machine manufacturer for strip and narrow fabrics relies on a clamping yoke solution with 4th axis

Complex and time-consuming parts



EA-510 with clamping yoke and integrated zero point clamping system

CHIRON FZ 12

- Machine elements
- Cutting tools
- Precision molds
- Embossing rollers
- Hydraulic/pneumatic components
- Contract manufacturing of all kinds

DOK-1016 – Manufacturer of metal carbide parts performs 5-axis machining under extreme conditions: Successful for years.

Metal carbide parts from blank to finished part

T1-507510 with additional labyrinth seal

TONGTAI TMV 720

DOK-1037 – A convinced tool manufacture has relied on a 3 axis machining center with additional two-axis rotary table for years: His success is proof.

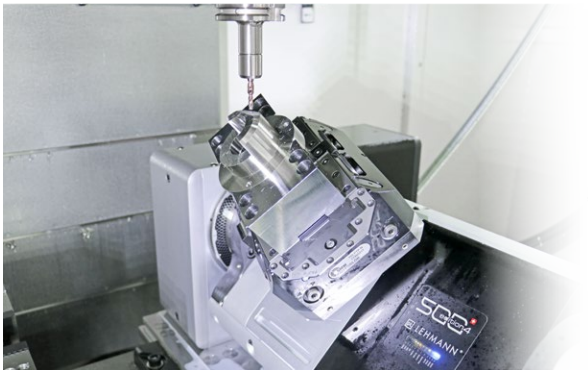
Side milling cutter with interchangeable inserts

T1-520520 varioX with attachment for holding tools

DMG MORI DMC 1150V

DOK-1043 – A contract manufacturer has ideas not only in his head, but also on the machine.

Nozzles for a plasma torch



T1-510520 with SCHUNK centric clamping device and a lot of space for much more

MAZAK VCN 530C

Components & systems

Pump manufacturing

Valve technology

Installations

Hardware

Practical applications

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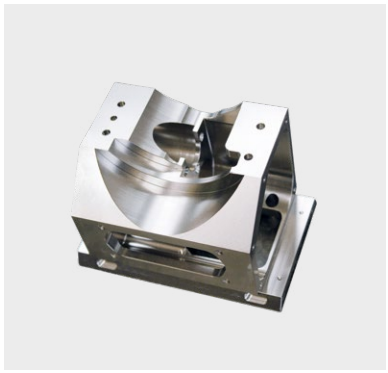
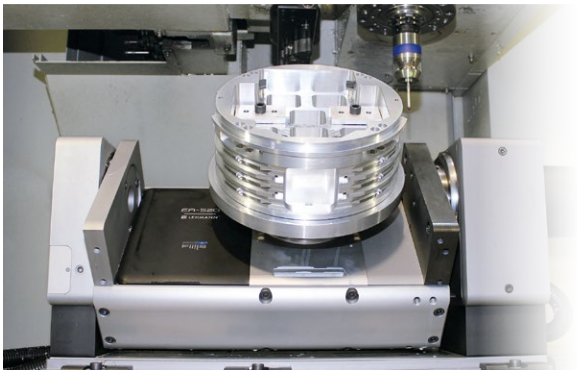
DOK-1004 – A contract manufacturer of complex workpieces for measuring, testing and automation equipment clearly prefers the 3+2 of a 5-axis machine.



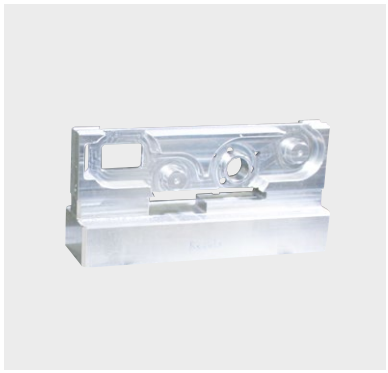
Complex workpieces



T1-520520 varioX mounted lengthwise, adjacent vise for 6th side

QUASER MV-204 CPL

DOK-1041 – A manufacturer of automation components increases productivity considerably with flexible workpiece clamping in combination with a 4th axis: 3+1 is the solution.



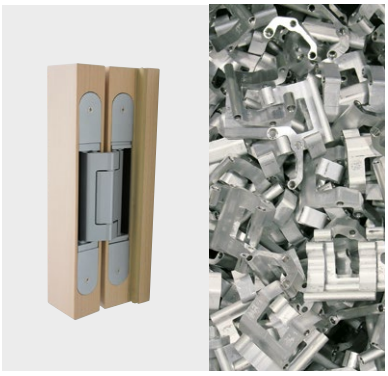
Demanding automation component

EA-530 with clamping yoke and integrated gredoc zero point clamping system

POSmill CE 1000

- Water pumps
- Lock cylinder
- Door and window hardware
- Fittings
- Clamping systems
- Automation

DOK-1029 – One of the best-known hinge manufacturers produces aluminum and zinc die castings in record time – fully automatically



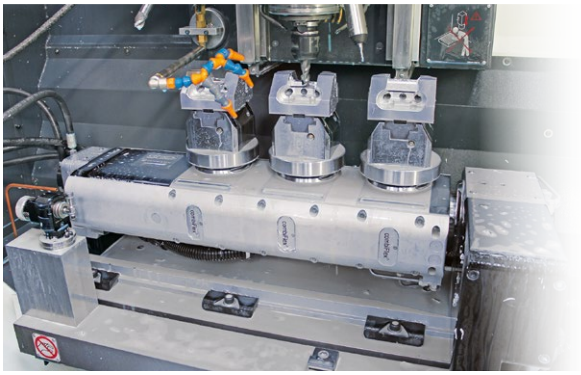
Door and window hardware

EA-511 with clamping yoke, 6 centric clamping devices and clamped counter bearing

BROTHER Speedio S700

DOK-1032 – Complete machining in minimal space with high productivity was the goal of a well-known manufacturer of door hardware

High-quality door hardware

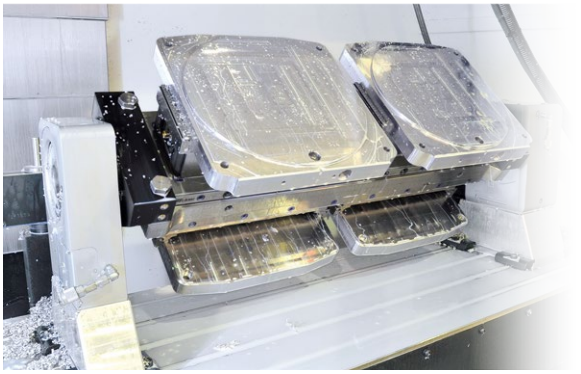


T3-507510 with automatic workpiece clamping

DMG Milltap 700

DOK-1030 – A manufacturer of pneumatic components has reduced processing time by over 30% while maintaining high precision – expectations exceeded

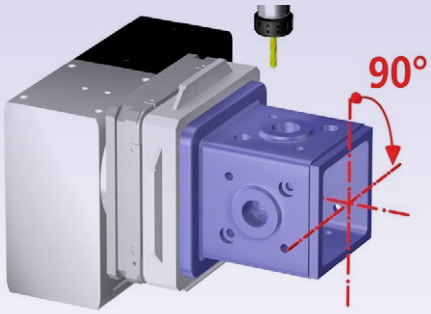
Pneumatic cylinders



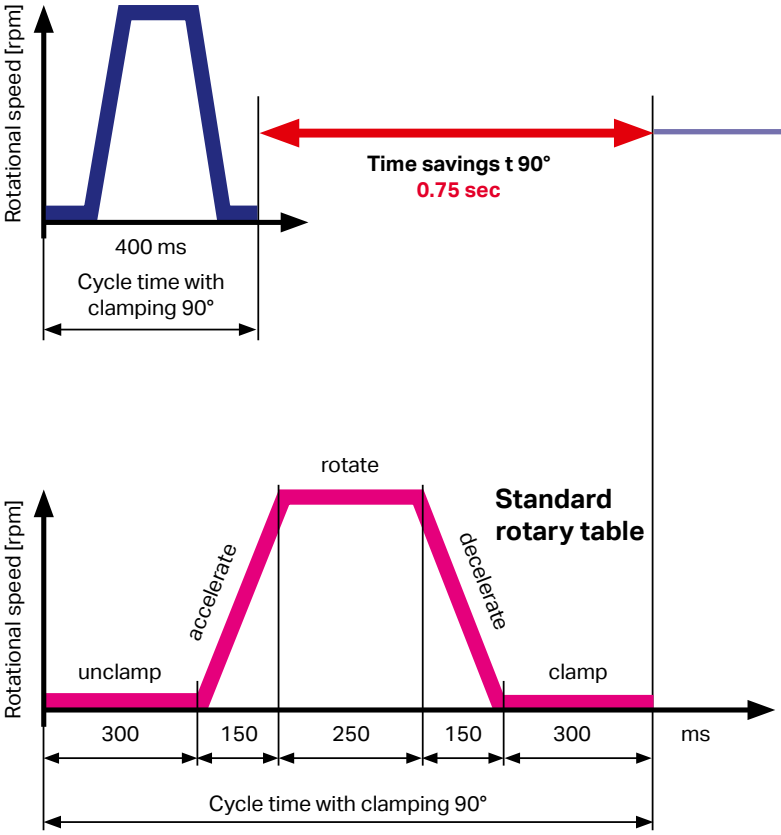
EA-520 with removable clamping yoke and clamped counter bearing

MAZAK VC 530C

Growth productivity: shorter cycle time thanks to faster rotating and quicker spindle clamping



pL LEHMANN rotary table



Time gain when machining housing:
- 11 tools, **44** × 90°-positionings
- Savings per 90° rotation = **0.75 s**

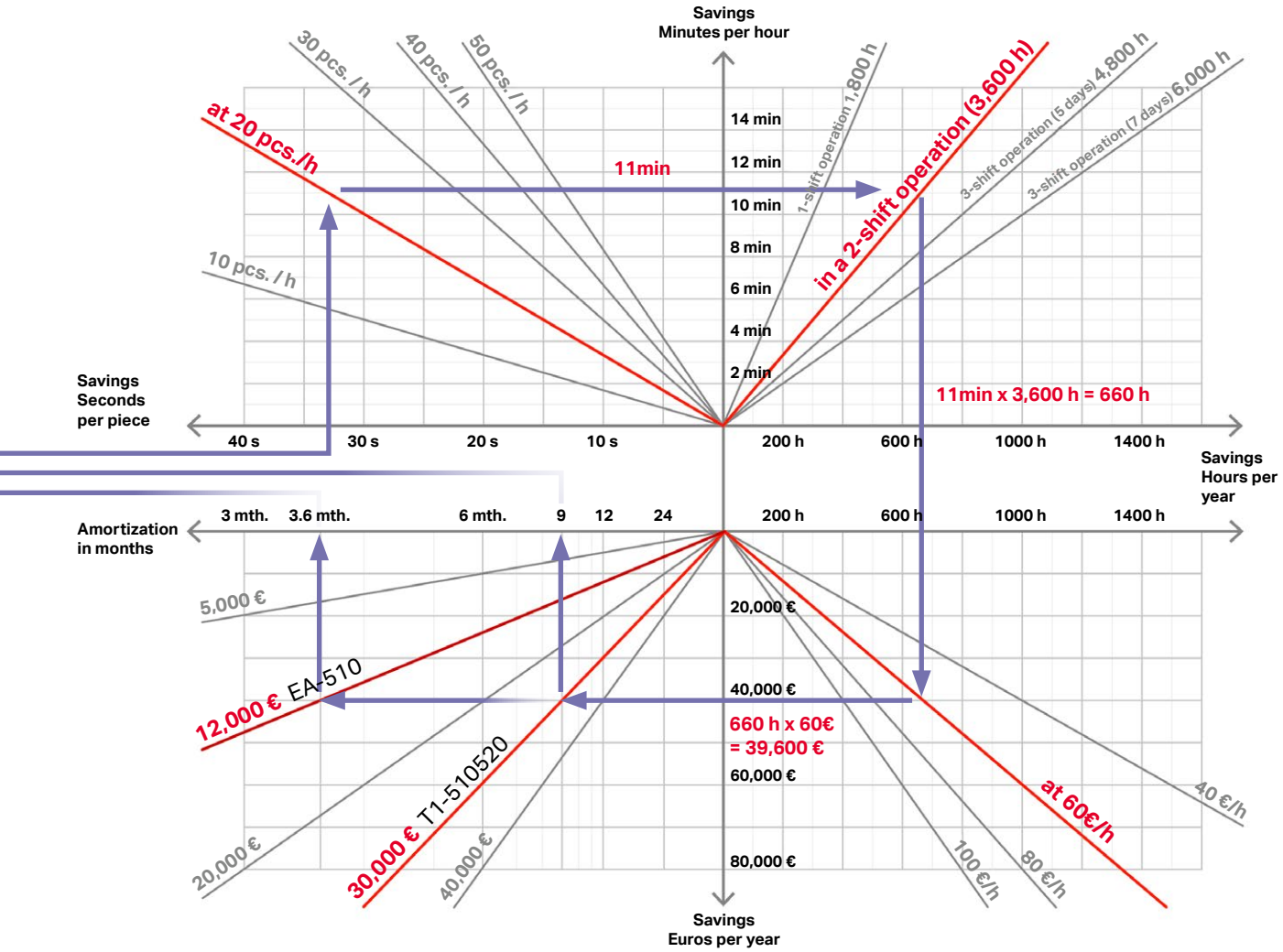
= Total time gain for one workpiece:
44 × 0.75 s =
33 s time gain per housing

Purchase price **30,000 €** for a T1-510520 = in **9 months** amortized

Purchase price **12,000 €** for a EA-510 = in **3.6 months**. amortized

Economics & service

Rotary table amortized in 3.6 or 9 months



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

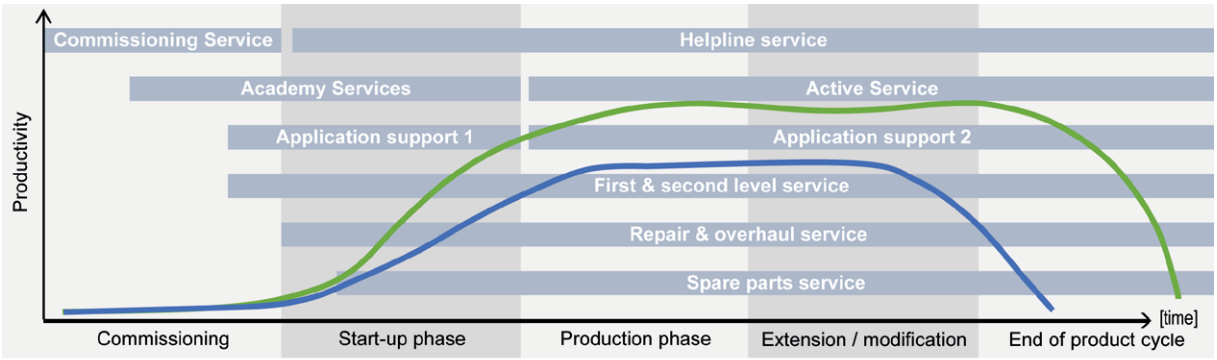
Sales & Post Sales
- Specified offers for each machine
- Wide range of work piece clamping systems
- Standardized interfaces

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 lifecycle

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

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A look in our production: High manufacturing depth provides for flexibility and quality

Production

Pallet pool for unmanned production

High precision circular and flat grinding

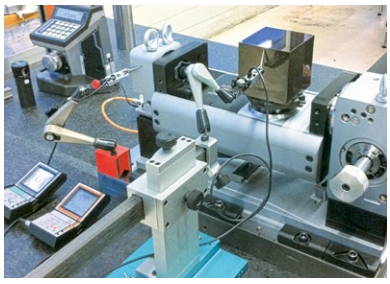
Material flow

Assembly area with Kanban System

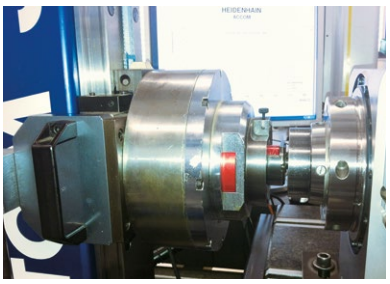
Rational equipping of spare parts packages

Quality control

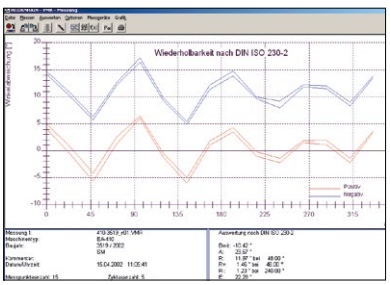
Measuring a housing on a 3D measuring unit



Measuring a T-type rotary table with a cube

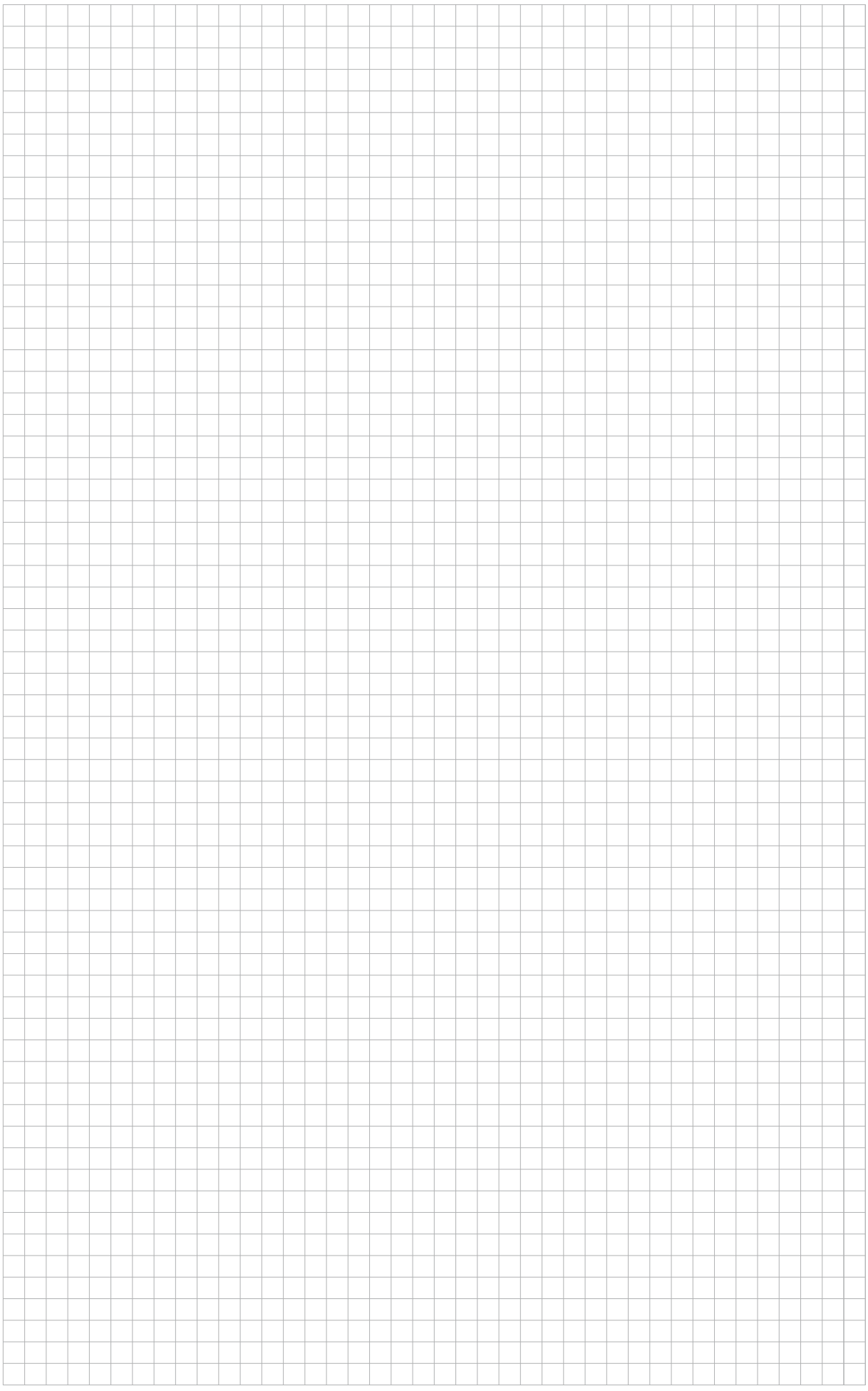


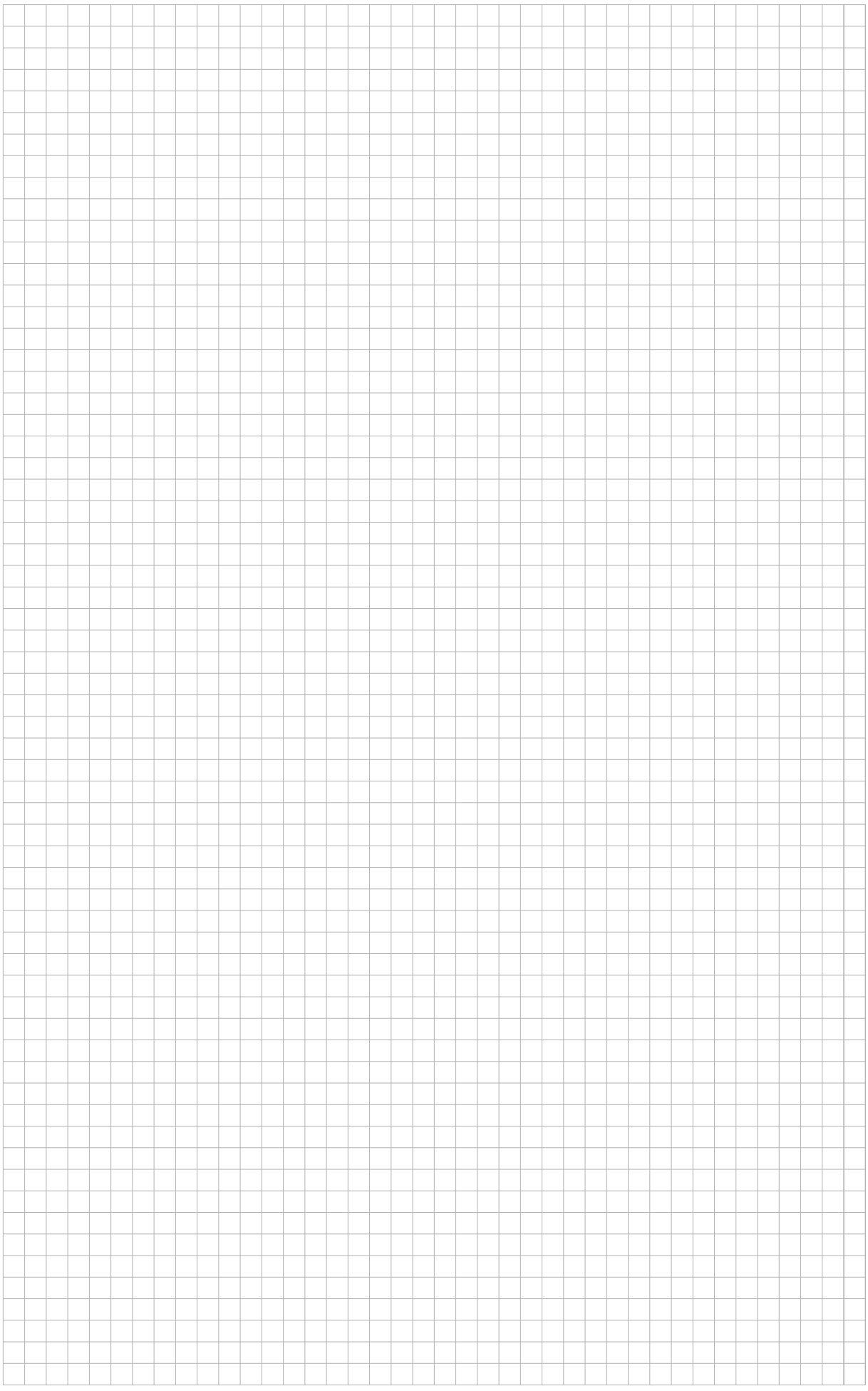
Measuring the indexing accuracy – fully automatically



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





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