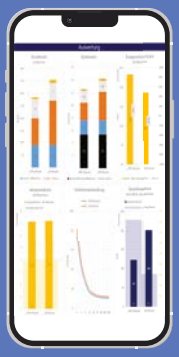
Lean Your Production

Machining, automating, measuring … lean & smart

Save Energy.
More Output.
Less costs.



Overview

01/2024 | EN

Upgrade for your standard machine.
Investment calculation. Highest productivity.
Benchmark. All from a single source.

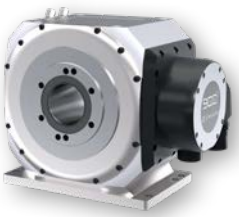
LEHMANN®

Series 500

- Serial production of classical work pieces
  → Positioning, simultaneous machining, multifunctional
- Many workpieces individually clamped and machined on smallest space
- Turns standard VMC's into a highly productive machining cell thanks to ultra-short cycle times

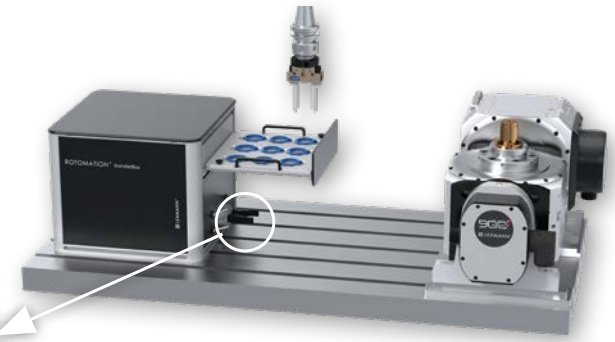
Series 900 DD

- Serial production of demanding workpieces
  → complete machining Mill-Turn, gear skiving, fast & safe
- Wide range of automatic workpiece clamping with integrated safety
- Turns standard VBZ into a unique production system in the smallest of spaces, often at half the price



ROTOMATION

- Programming with machine CNC
- Unnecessary: door automation, automation interface, CE conformity, additional floor space, barrier
- Invest cheaply, produce unmanned, produce bravely



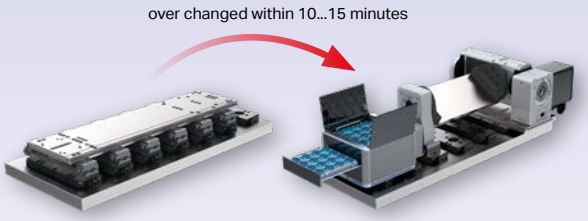
Automatic workpiece turner «partReverser»

MA-Q08 and EA-Q08 with Tablet

- Place & Play solution – simply position precisely
- For CMMs and other process optimization equipment to produce high quality parts
- Measure as produced, same workpiece holder as in the machine tool
- Ready for automation
- CNC software can be used on any standard MS PC without a separate tablet

The correct machine concept
The correct rotary table
The correct automation

But: what is correct for YOU?



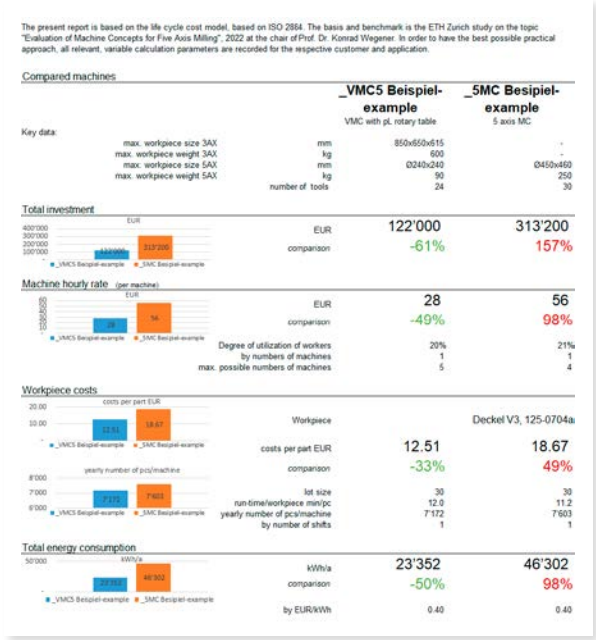
Production by day
e.g. machining of plates

Production by night
e.g. 5 axis machining, fully automated

eVestor MT (Machine Tool)

energy efficient

What is economically correct for my workpiece portfolio? With which concept can I best scale (increase and decrease quantities)? What is my energy and CO2 balance?

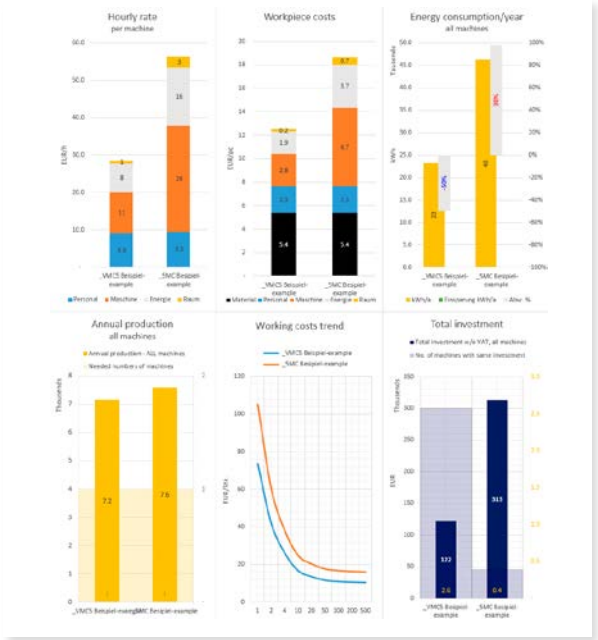


The present report is based on the life cycle cost model, based on ISO 2864. The basis and benchmark is the ETH Zurich study on the topic "Evaluation of Machine Concepts for Five Axis Milling", 2022 at the chair of Prof. Dr. Konrad Wegener. In order to have the best possible practical approach, all relevant, variable calculation parameters are recorded for the respective customer and application.

Compared machines

Key data:		_VMC5 Beispiel-example VMC with pl. rotary table	_5MC Besipiel-example 5 axis MC
max. workpiece size 3AX	mm	850x650x515	-
max. workpiece weight 3AX	kg	600	-
max. workpiece size 5AX	mm	Ø240x240	Ø450x460
max. workpiece weight 5AX	kg	90	250
number of tools		24	30
Total investment	EUR	122'000	313'200
	comparison	-61%	157%
Machine hourly rate (per machine)	EUR	28	56
	comparison	-49%	98%
Degree of utilization of workers	by numbers of machines	20%	21%
max. possible numbers of machines		1	1
		5	4
Workpiece costs	Workpiece		Deckel V3, 125-0704a
	costs per part EUR	12.51	18.67
	comparison	-33%	49%
	lot size	30	30
	run-time/workpiece min/pc	12.0	11.2
yearly number of pcs/machine	by number of shifts	7'172	7'603
		1	1
Total energy consumption	kWh/a	23'352	46'302
	comparison	-50%	98%
	by EUR/kWh	0.40	0.40

A management summary provides important information in a quick overview



Clear graphics provide information on key issues

3 axis VMC with 4th oder 4th/5th axis rotary table, for max. flexibility

?

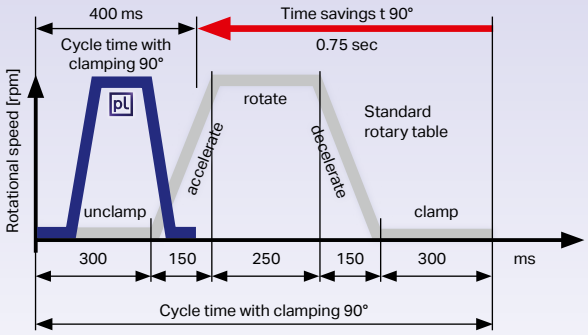
5 axis machining center, fix integrated

A number of different machines are available in a database for mutual comparison. A reliable and professional comparison provides answers to important questions.

Federal funding for energy efficiency in business
We also support you in applying for a subsidy (BAFA, Germany). An approved energy consultant uses the results of the eVestor MT to prepare the eligibility check (according to the BAFA funding program «Federal funding for energy efficiency in the economy – subsidy, module 4 – energy-related optimization of systems and processes». By means of an application BAFAG's decision can be shortened to 4–6 weeks for early implementation of measures.

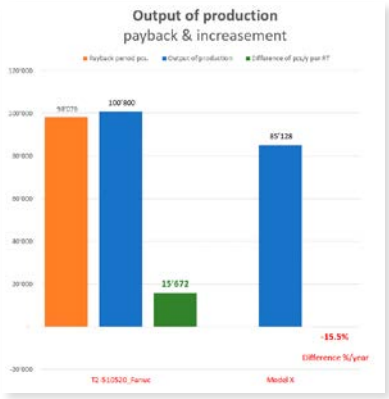
LEHMANN®

pL rotary table rotates and clamps faster

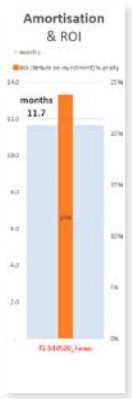


eVestor RT (Rotary Table)

3+ is the perfect machine concept, as found out by eVestor MT. But does the rotary table of pL LEHMANN the right one? How much costs cheap investing? Which additional output can be realized with pL? How easy can I convince my boss?

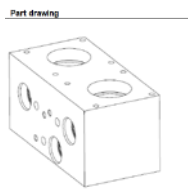


Higher productivity thanks to faster and shorter spindle clamping cycle (graphic for example)



Amortisation and ROI

Select the rotary table pL LEHMANN and its competitors product and find out the economical differences (here a T1-510520 as example)



The workpiece (example)

For special cases: an interesting participation model is avaliable to get the lowest possible price

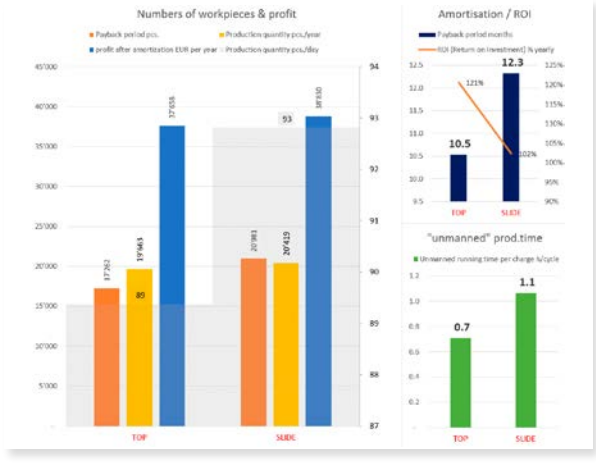
PLUS = participation on leading user system	
earn-out modell "PLUS"	
special offer for RT: -20% of competitor	
24'920	
Partizipation of pL	Duration of years
50%	**4**
of savings = EUR 5525	
	real clamping cycles/y
-20%	**5'241'600**
tolerance	limited at upon value
clamping cycles/y per RT	
6'552'000	
estimation, based on customers data	

An example calculation

eVestor RtB (ROTOMATION transferBox)

Unmanned production without additional space around the machine. No door automation needed, no automation interface, no CE conformity, no additional footprint, no security barrier. 6 sides complete machining. But is it really economical? What variant is the right one for my needs?

Version		TOP	SLIDE
Payback Period	months	11	12
	average production loead c 50% :		
Yearly Profit	EUR	37'658	38'830
Workpiece	name	Stempel D63.5	
Needed		16 M functions	



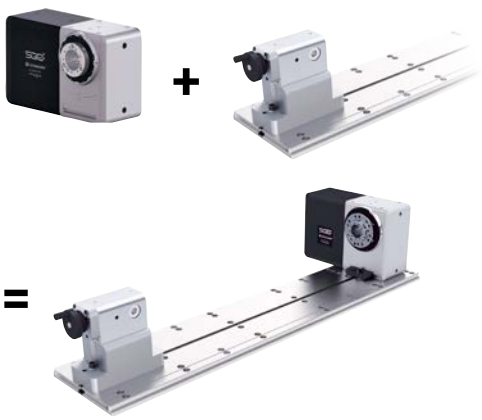
Economically comparison of 2 different executions

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

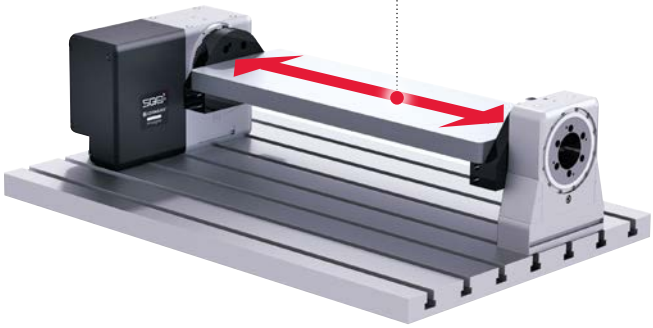
TF TIP ➔ T1 TAP

TF TIP ➔ T1 TOP

T1 TAP ➔ T1 TOP

Very good accessibility,
even with short tools

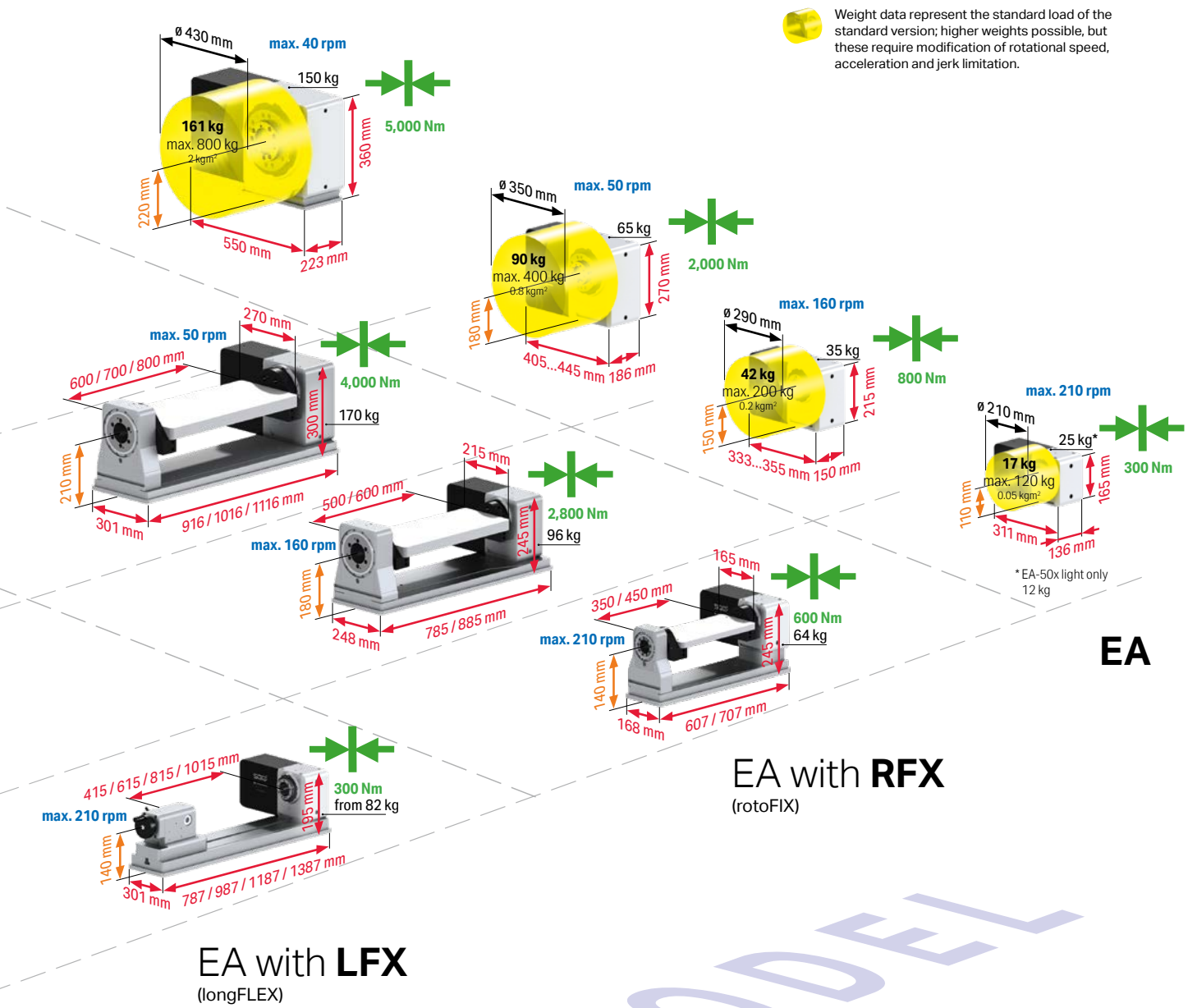
More space for
workpieces and fixtures



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 of the standard version; higher weights possible, but these require modification of rotational speed, acceleration and jerk limitation.

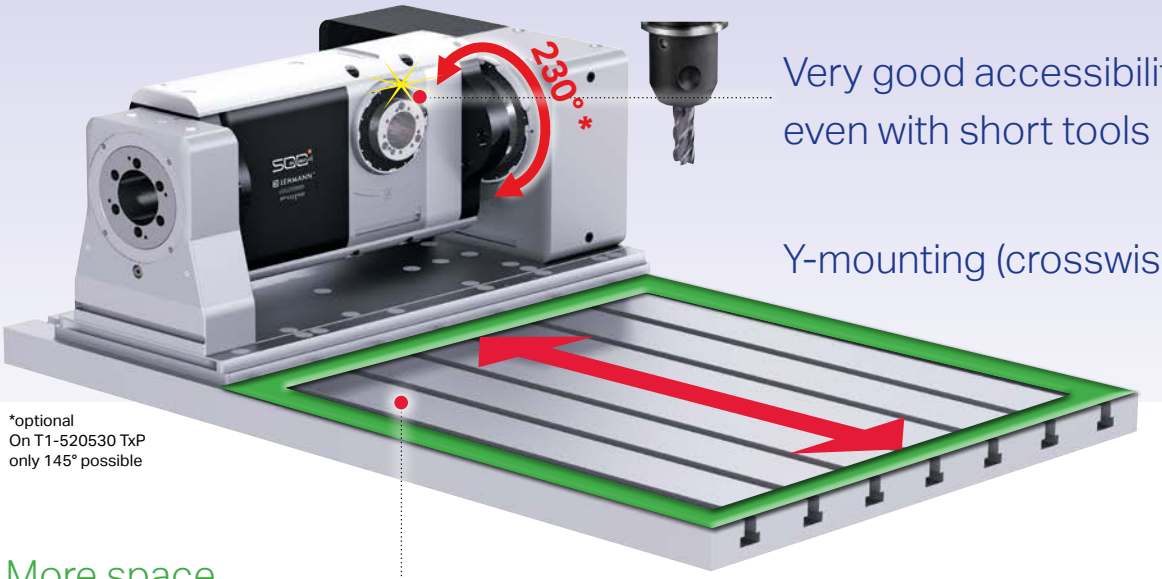


EA

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

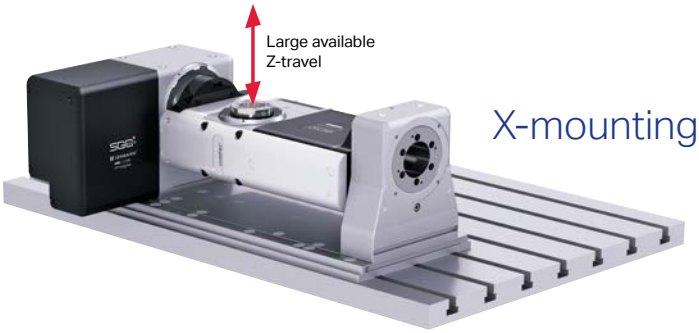


Very good accessibility,
even with short tools

Y-mounting (crosswise)

*optional
On T1-520530 TxP
only 145° possible

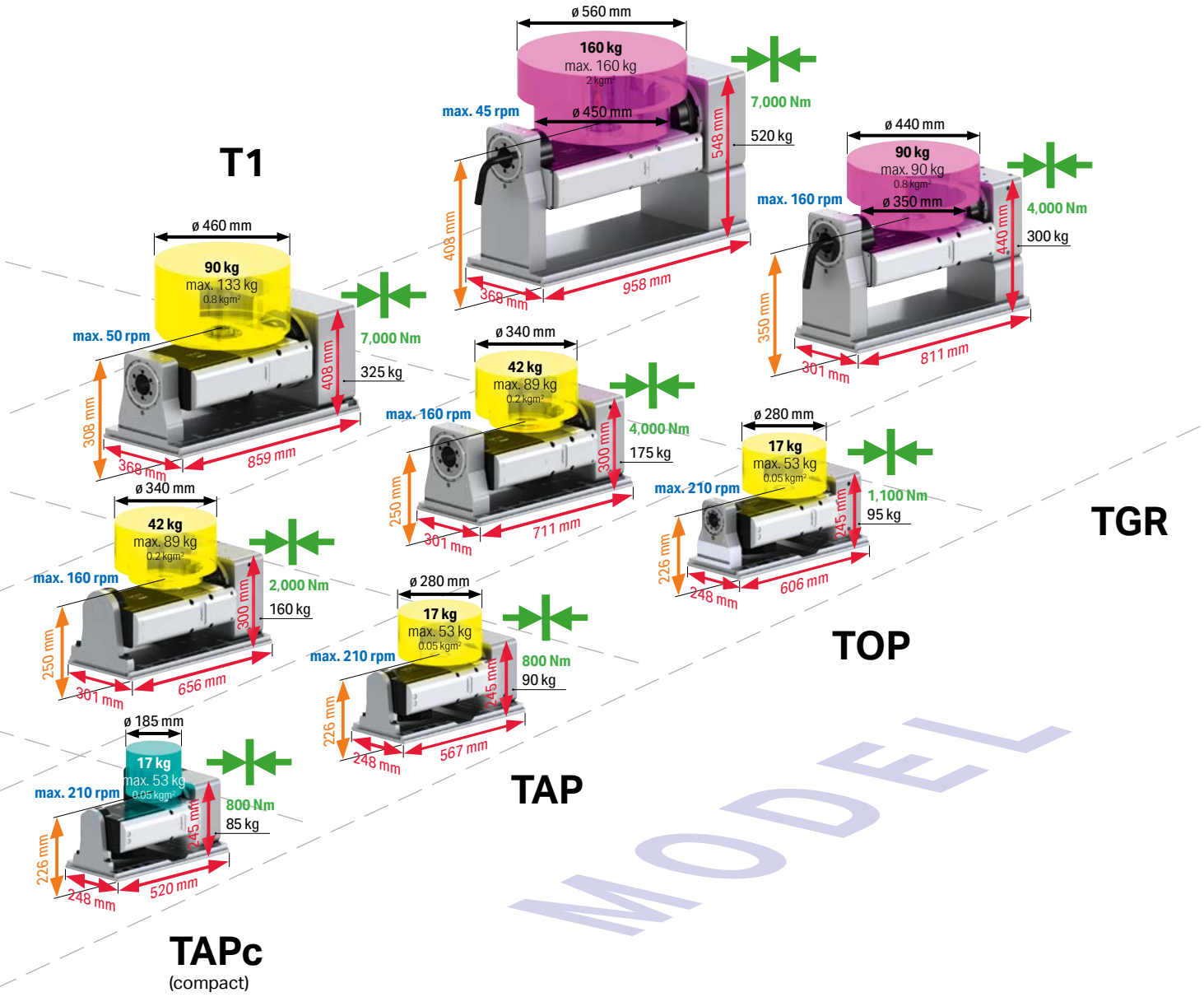
More space
for workpiece and fixtures



X-mounting (lengthwise)

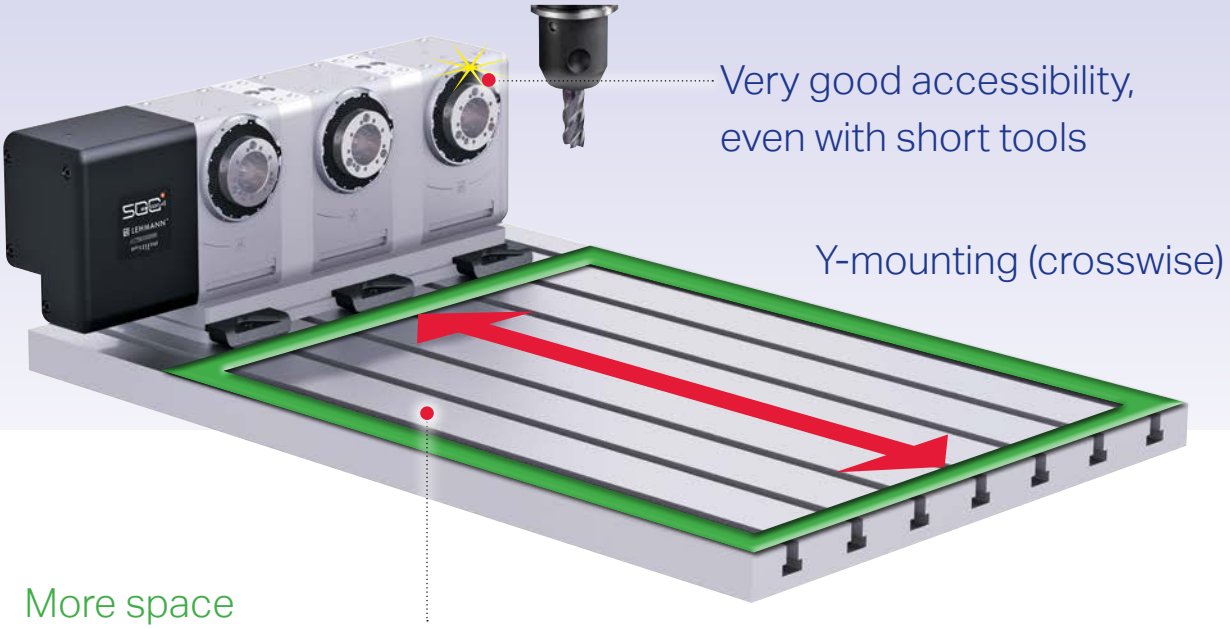
Facts

- 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 of the standard version; higher weights possible, but these require modification of rotational speed, acceleration and jerk limitation.

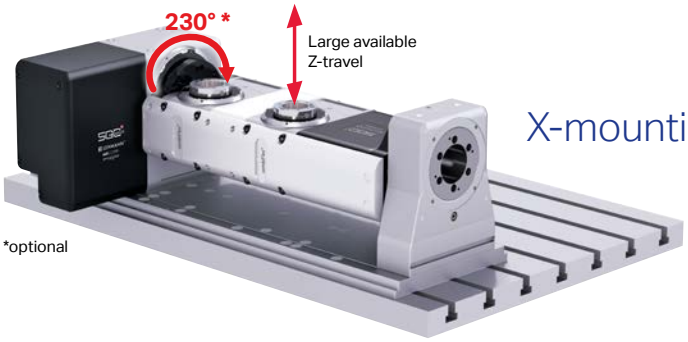
50x510	507510 (standard) or 508510 (high speed)
51x520	510520 (standard) or 511520 (high speed)
52x530	520530 (standard) or 521530 (high speed)
TIPc	Two-axis rotary table, no counter bearing, compact
TAPc	Two-axis rotary table, with supporting bearing, compact
TAP	Two-axis rotary table, with supporting bearing
TOP	Two-axis rotary table, with clamped counter bearing
TGR	Two-axis rotary table, with clamped counter bearing specifically for grinding applications



Very good accessibility,
even with short tools

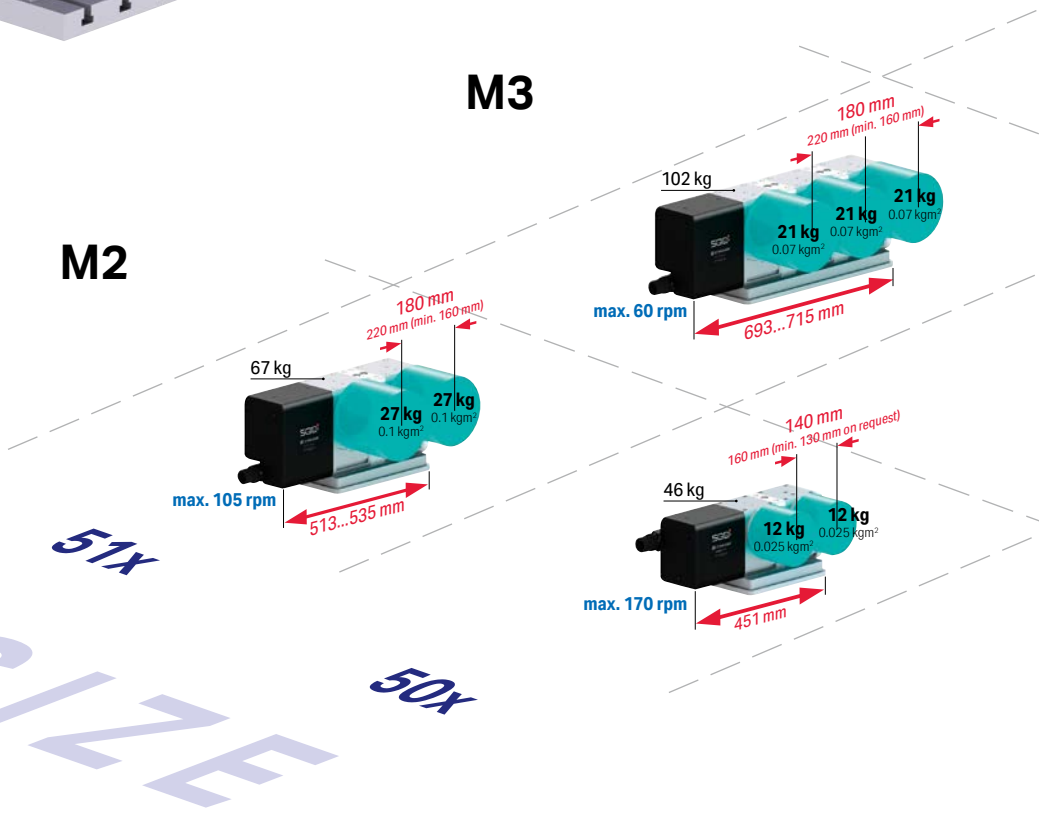
Y-mounting (crosswise)

More space
for workpiece and fixtures



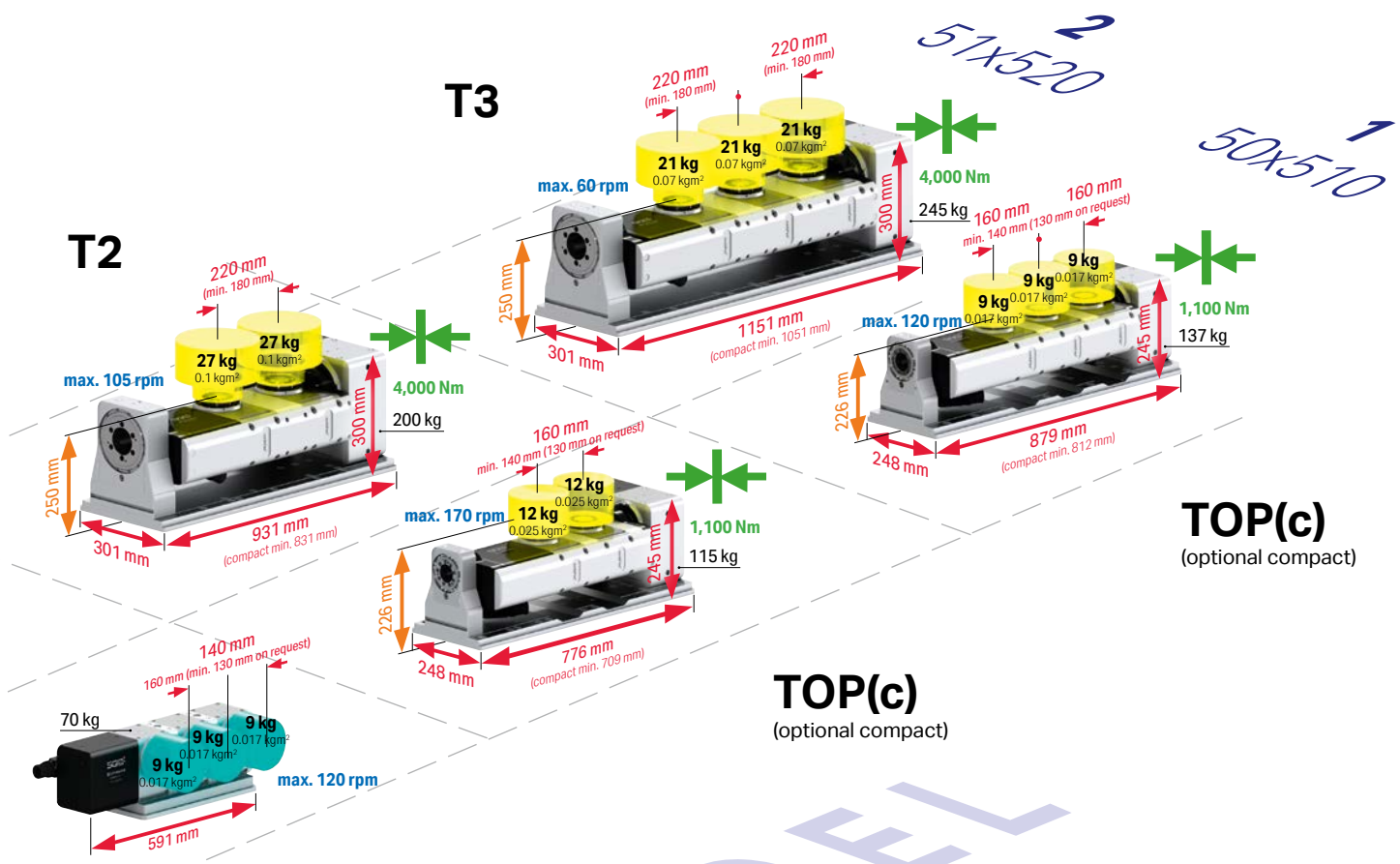
*optional

X-mounting (lengthwise)



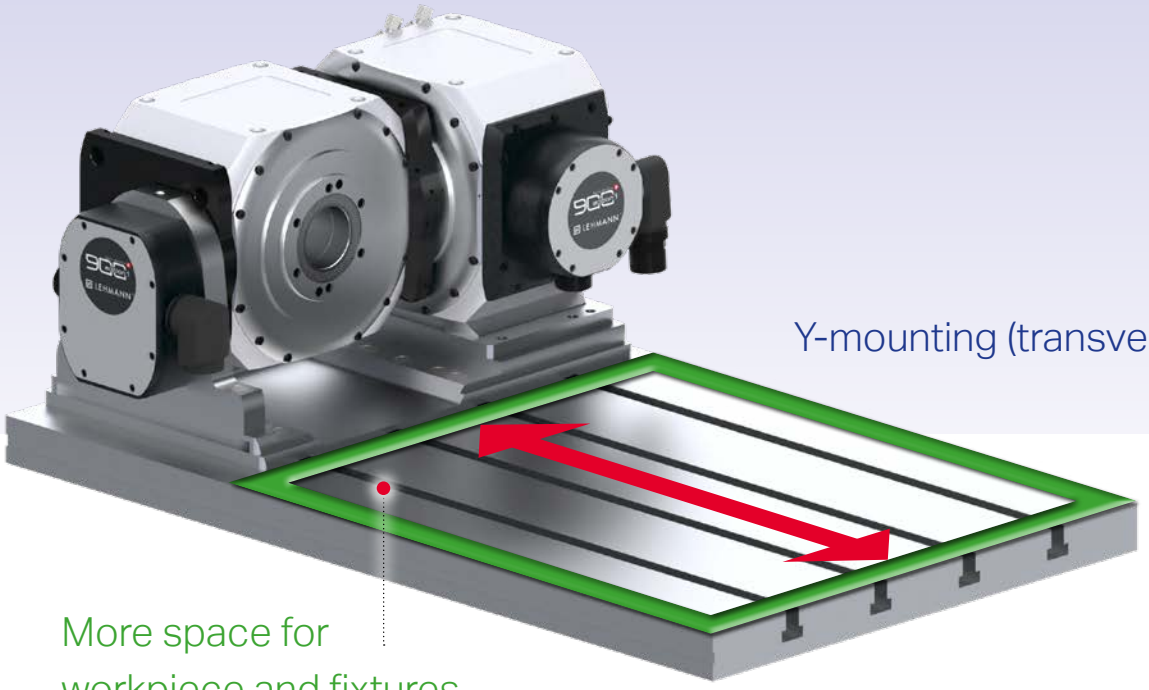
Facts

- 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 of the standard version; higher weights possible, but these 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



Y-mounting (transverse)

More space for
workpiece and fixtures

T1

T1

T1

EA

SIZE

915520

913520

913918

913915

918

915

913

ø 298 mm
31 kg
max. 240 kg
0.5 kgm²
800 Nm
97 kg
max. 1'300 rpm
273 mm
150 mm
330 mm 253 mm

ø 298 mm
20 kg
max. 200 kg
0.2 kgm²
800 Nm
79 kg
max. 2'560 rpm
273 mm
150 mm
330 mm 203 mm

ø 298 mm
12 kg
max. 200 kg
0.07 kgm²
800 Nm
76 kg
max. 3'210 rpm
273 mm
150 mm
330 mm 203 mm

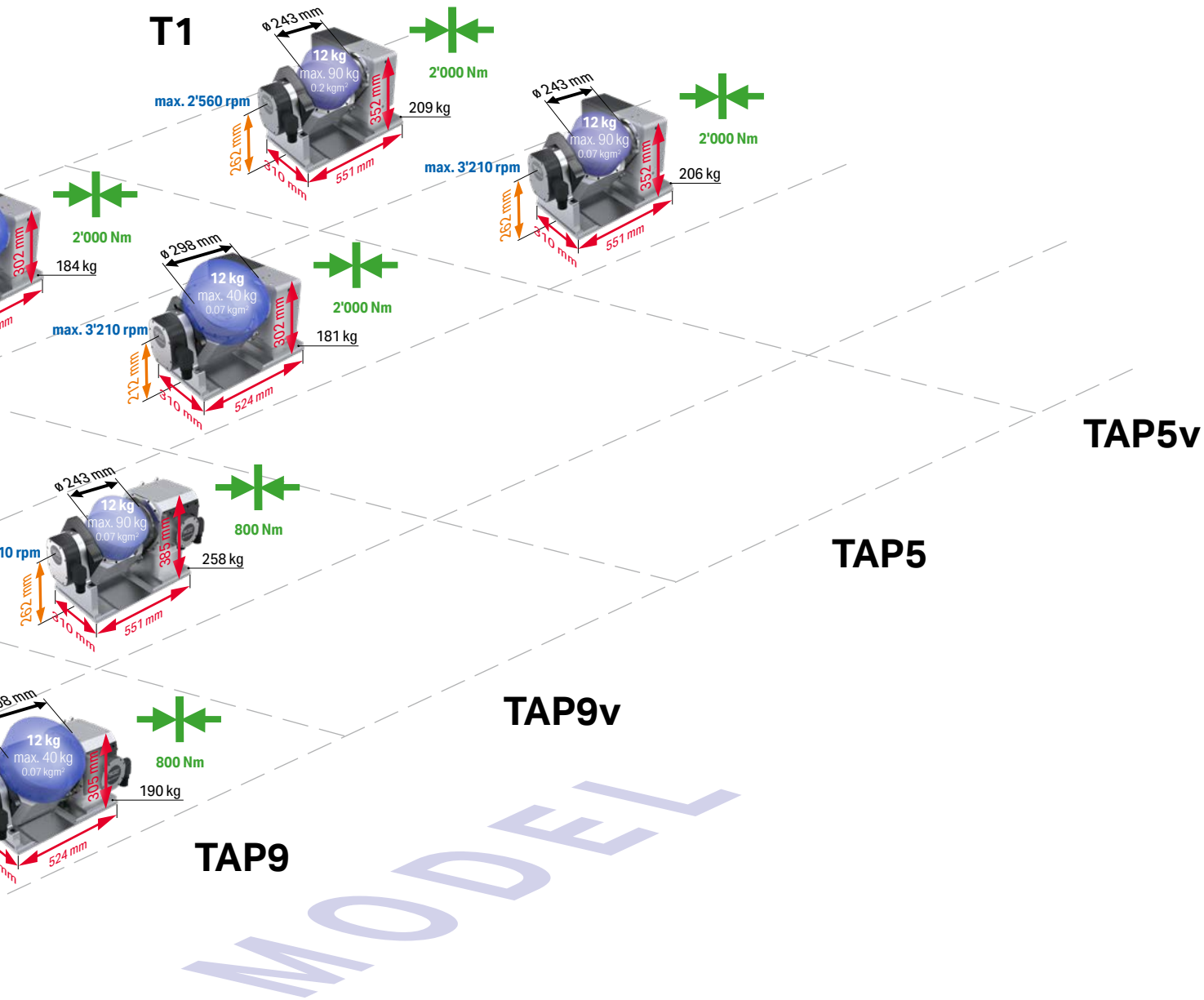
ø 298 mm
12 kg
max. 40 kg
0.2 kgm²
max. 2'560 rpm
212 mm
310 mm
524 m

max. 3'21

ø 29
max. 3'210 rpm
182 mm

Highlights

- For millturn applications (e.g. watch cases from bar stock)
- DD up to 3,000 rpm available (up to 5,450 rpm technically possible)
- Very compact
- For Siemens, Mitsubishi, HEIDENHAIN and Fanuc (if Fanuc measuring system: 100% Fanuc DDT-compatible)



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

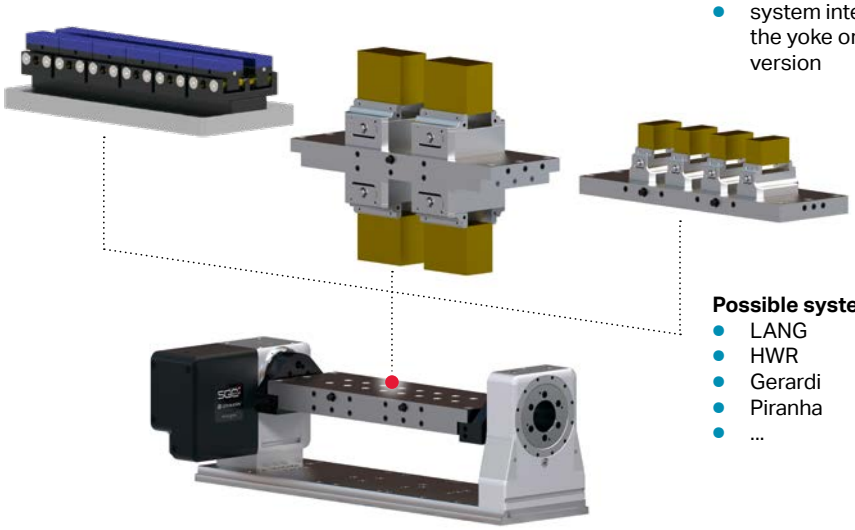
EA	single-axis, single-spindle CNC rotary table
TAP	two-axis rotary table, with supporting bearing
TAPv	Two-axis rotary table, with support bearing, low-profile version (vario)

Feed max.: without flux weakening

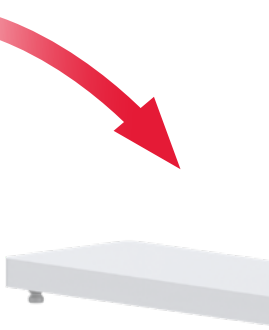
Potentials of clamping yokes with integrated or built-on zero point clamping system

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

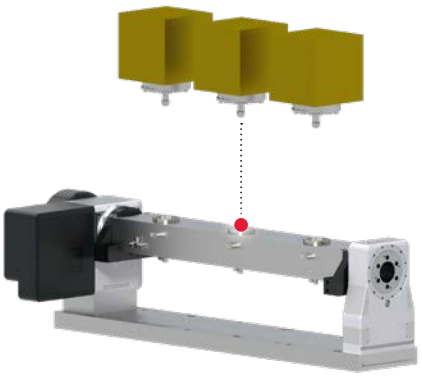


Possible systems
- LANG
- HWR
- Gerardi
- Piranha
- ...



Manual version

Yoke with automatic zero point clamping system



- for automatic loading
- with media channel through clamping yoke

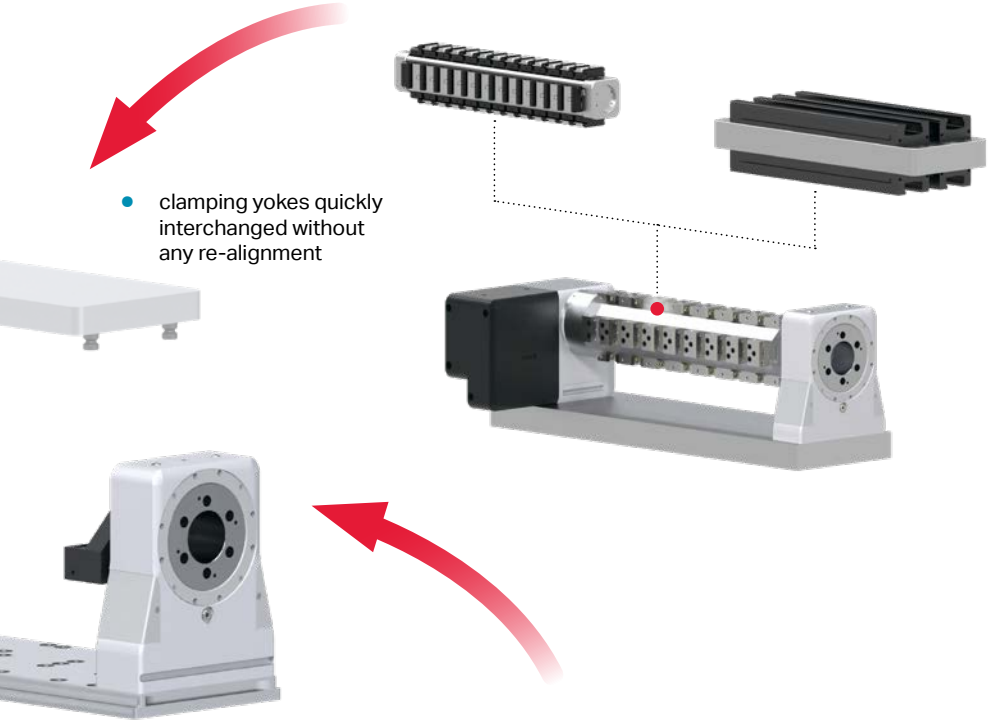
Possible systems
- EROWA
- ROEMHELD
- AMF
- ...

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

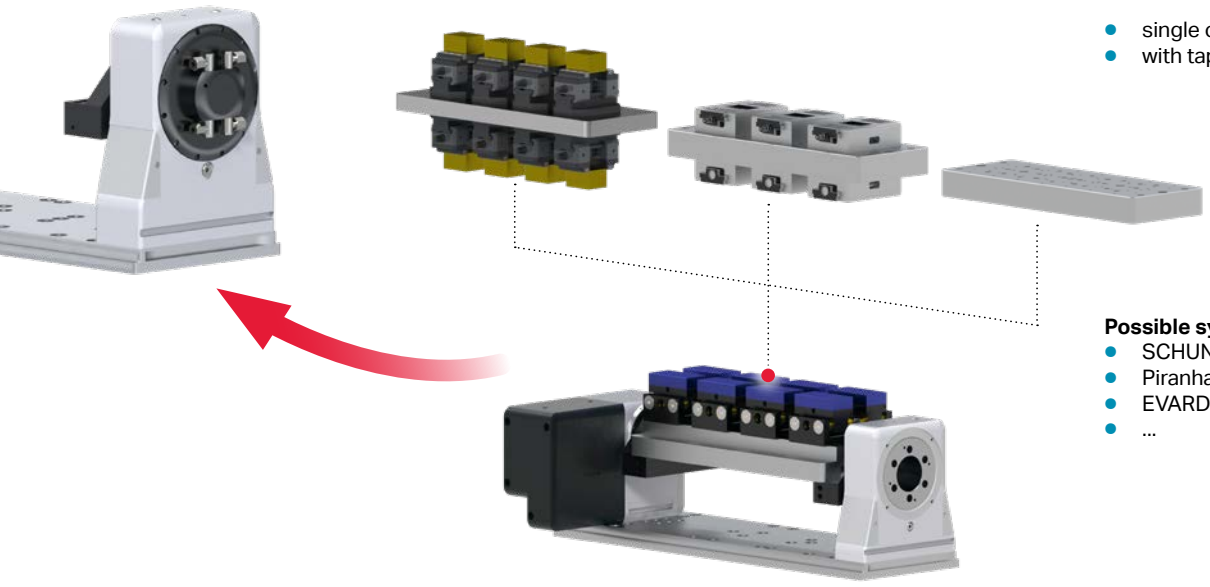


- clamping yokes quickly interchanged without any re-alignment

- 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)

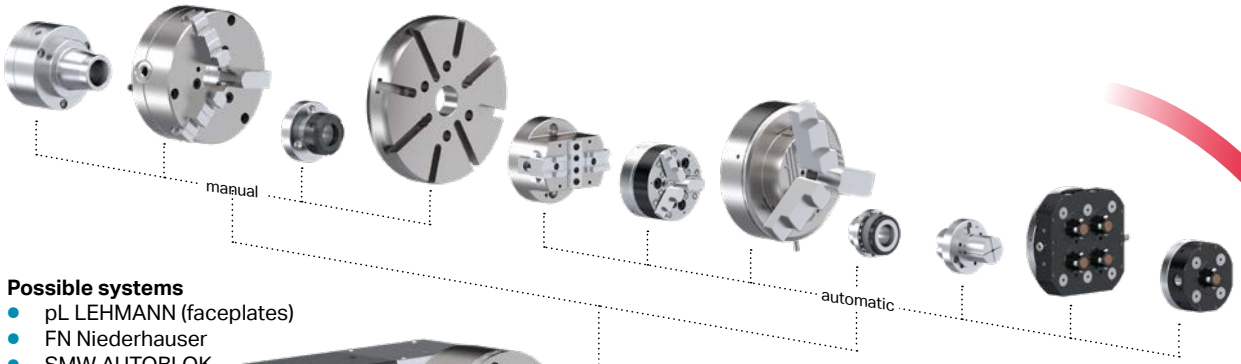


- single or double-sided
- with tapped hole pattern

Possible systems
- SCHUNK
- Piranha
- EVARD
- ...

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

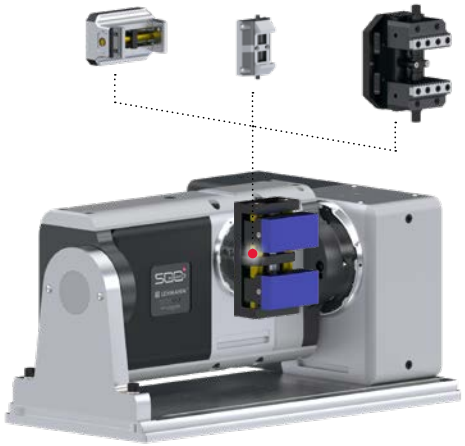
Faceplates, force clamp and jaw chucks, collet chucks



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

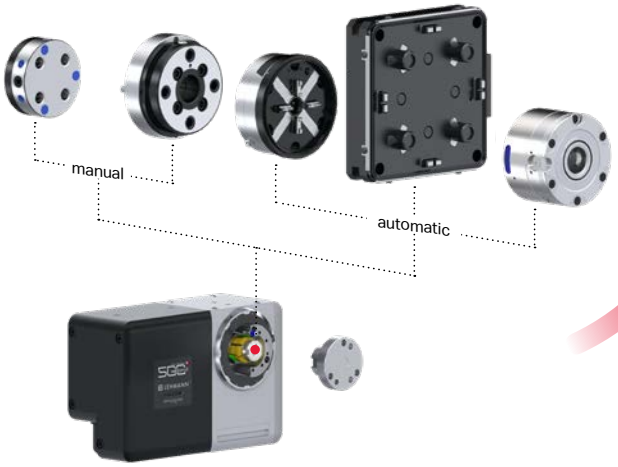
automatable: with rotary feedthroughs and clamping cylinders

Centric clamping unit



Possible systems
- SCHUNK
- LANG
- Gressel
- Piranha Clamp
- EVARD
- TRIAG
- ...

Zero point clamping systems



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

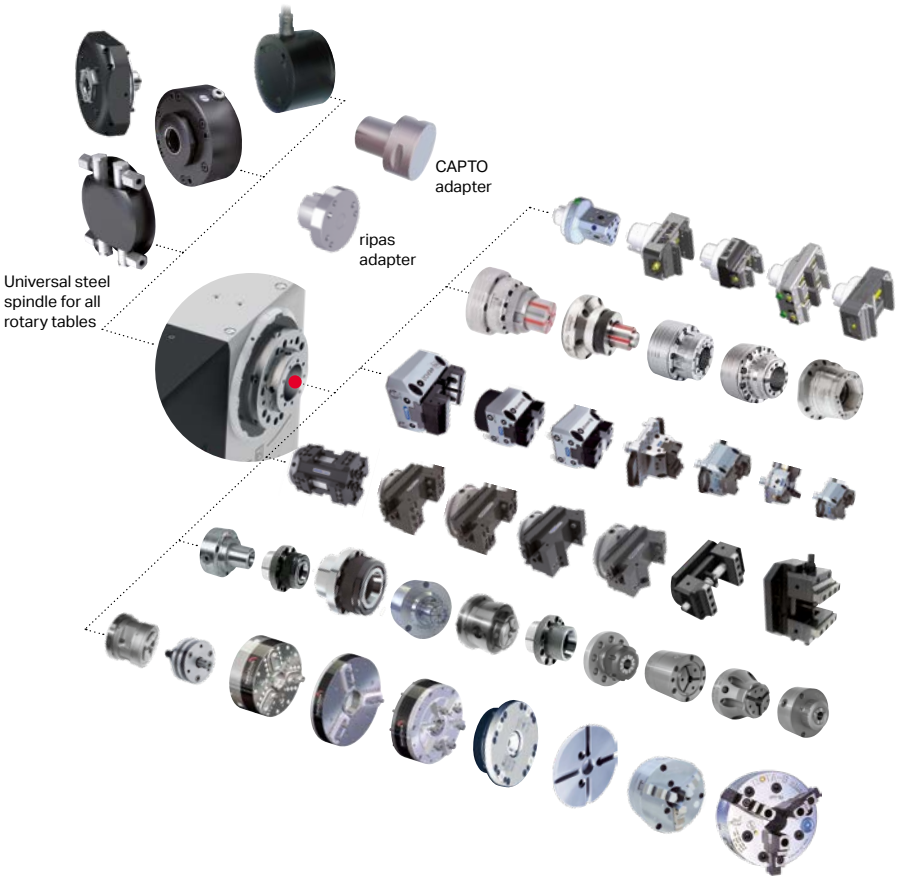
Centering clamping unit for workpiece handling, built-on zero point clamping system for quick vise interchange

Possible combinations

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

Spindle accessories, rear

- 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

unique

AMF
EROWA
EVARD PRECISION S.A.
GRESSEL
HAINBUCH
hemo
HOFER technics
HWR
LANG TECHNIK
MicroLoc
NIEDERHAUSER
PAROTEC
PIRANHA CLAMP
ripas
ROEMHELD HILMA ▪ STARK
RÖHM driven by technology
SCHUNK
SwissChuck Precision Workholding
system 3R
TG COLIN
TRIAG INTERNATIONAL
YERLY

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

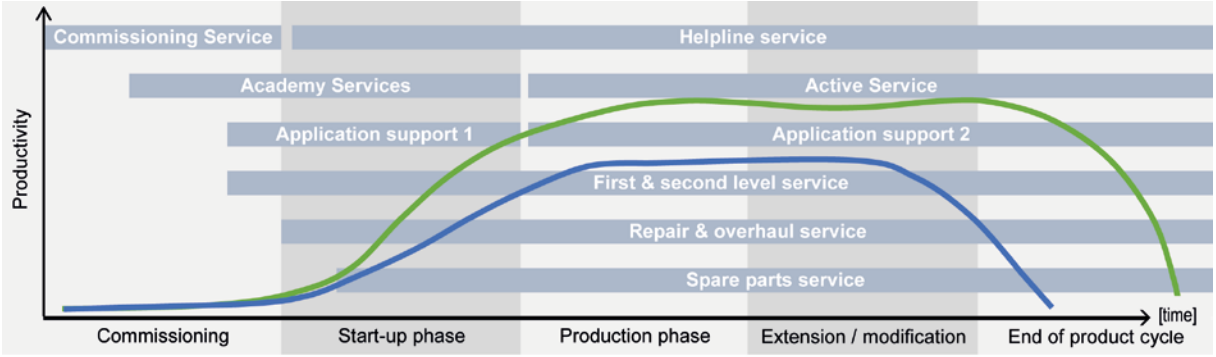
Sales & Post Sales
- Specified offers for each machine
- Wide range of work piece clamping systems
- Standardized interfaces

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

Interesting applications for increasing productivity

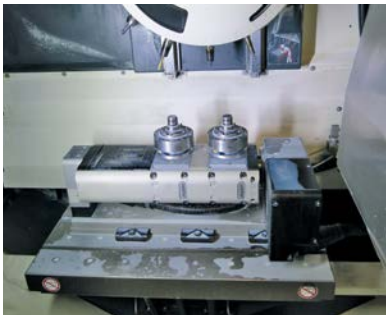
Provided on GF+ Machining Solutions, Akira Seiki, Almac, Amada Machine, AMS, AWEA, BFW, Blohm Jung, Bridgeport (Hardinge), Brother Milling, Chevalier, Chiron, DMG MORI, DN Solutions, Emco Famup, Fanuc Robodrill, Finepart, Feeler, Haas Automation, Hartford, Hasegawa, Hedelius, Hurco, Huron, Hwacheon, 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

T1-913915 – power skiving – Mechanics

T1-520520 – Milling/boring – Mechanics

TF-507510 – Milling/boring – Dental Technology

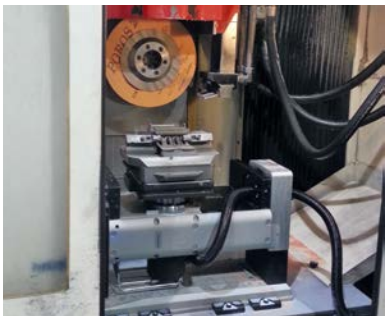
EA-510 rotoFIX – Milling/boring – Automotive



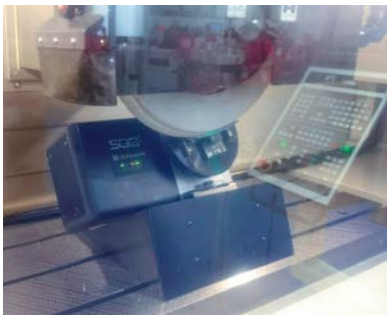
T2-507510 – Milling/boring – Automotive

T1-520520 – Milling/boring – Mechanics

EA-915



T1-520520 – Grinding – Aerospace/Turbines



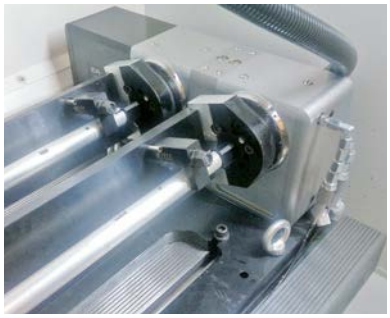
EA-510 – Grinding – Mechanics

TF-507510 – Milling/boring – Medical technology

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

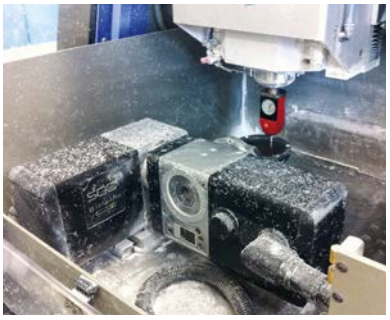
T1-913915 TAP9 – Turning/Milling/boring

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

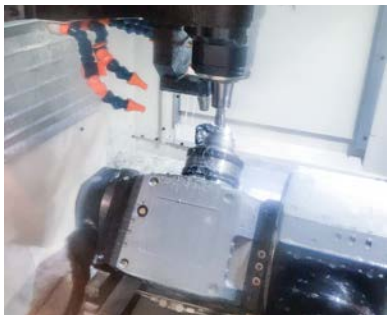


M2-510 – Milling/boring – Automotive

EA-510 – Milling/boring – Automotive



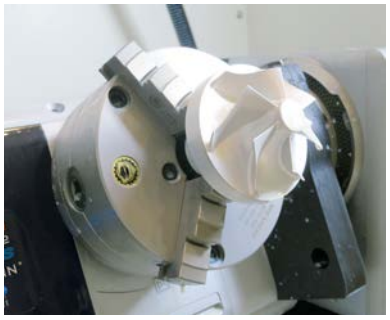
TF-507507 – Milling/boring – Dental Technology



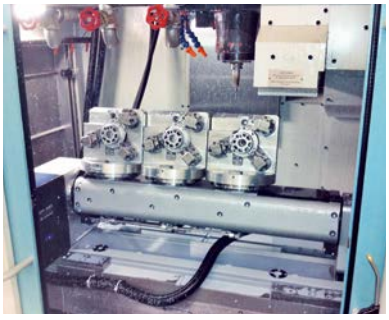
T1-913915 TAP9 – Turning/Milling/boring – Mechanics

T1-510520 – Grinding – Aerospace/Turbines

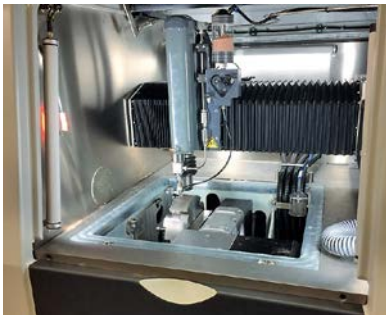
EA-510 rotoFIX – Milling/boring – Mechanics



T1-510520 – Milling/boring – Mechanics



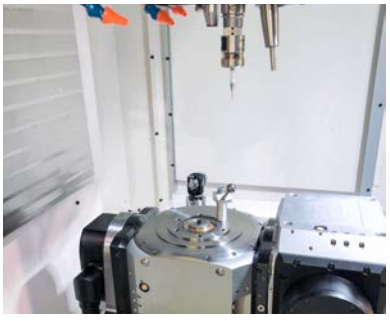
T3-510520 – Milling/boring – Automotive



T1-507510 – Waterjet drilling – Aerospace/Turbines

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

EA-520 – Milling/boring – Mechanics



T1-913915 TAP9 – Turning/Milling/boring

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Subject to change / Edition: 01/2024