

SDO⁺

CNC Rotary Tables edition 3



Swiss Rotary Table
Technology

pl

Program
& Facts

05/2015

PGD inside **NEW**



pl LEHMANN®

Swiss Rotary Table Technology

pL LEHMANN is a medium-sized business that has specialized in rotary tables for over 40 years – today is present in 25 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

Further catalogs



Overview of branches



Main catalog



Service – Lifecycle

Applications Catalogs

pL LEHMANN provides detailed elaborate application catalogs for various vertical machining centers, e.g. for BROTHER, FANUC Robodrill, DMG MORI, DOOSAN, HAAS, HYUNDAI, YCM, AIMAC and HURCO.

In which you will find details about collision points, collision-free traverse paths and max. possible machining areas for various types of machines with varying pL rotary tables.

For more information see www.lehmann-rotary-tables, or request your desired catalog from the nearest pL representative.

CNC rotary tables for economic manufacturing: Suitable and rational solutions for nearly every industry



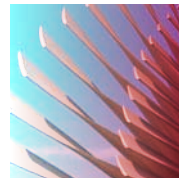
Automotive



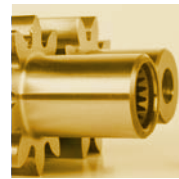
Medical/Dental



Watches/
Micro Technology



Aerospace/Turbines



Mechanics



Please note the following color points starting on **page 10**

pL LEHMANN – your partner.

Benefits for the...

OEM ...OEM's themselves (manufacturer, importer)

USE ...users and OEM application technicians

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

5 ... 5 axis machines

GD ... other gear unit rotary tables up to ø400 mm

DD ... Direct drives up to ø250 mm

... not applicable

Green % values: pL better than benchmark

Red % values: pL not as good as benchmark

* **best of** ... best benchmark values in all sizes with respect to GD, DD or overall

unique ... unique compared to other manufacturers

NEW ... Innovation in this edition

best of *

best of *

best of *

Content

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A wide range of products is available:
More than 240 possible configurations
from only 4 basic models

Some samples from product range

4. Axis



EA-510.L



EA-510.L TM,
manual swiveling
on request



EA-520.L rotoFIX centered



EA-507 INOX,
fully sealed on request



EA-510.OL



EA-520.L rotoFIX bottom

4. + 5. Axis



TF-510520.LL fix



TF-510520.LL fixX



TF-510520.LL vario



T1-510520.LL fix



T1-510520.ORR fix



T1-510520.LL fixX

All standard, all modular - maximum guarantee
for best quality at short delivery times

See **main catalog** for details



EA-510.L longFLEX RST



EA-510.L longFLEX GLA



TF-510520.LL varioX



T1-510520.LL vario



T1-510520.LL varioX



M2-510.L



M3-510.L



M4-510.L
on request



T2-510520.LL fix



T3-510520.LL fix



T4-510520.LL fix
on request

Multi-Spindle Rotary Tables



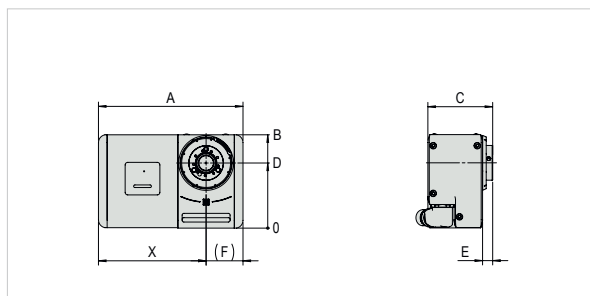
See **main catalog** for details and further models and our conditions

				EA-507	EA-510 (EA-511)	EA-520	EA-530
Dimensions	max. workpiece ø		mm	160	240	350	430
	Center height		mm	110	150	180	220
	Total weight	with motor	kg	30	35	65	150
	Center bore		mm	31	34	46 / (64)	90 / (102)
Bearing / Clamping	Max clamping torque		Nm	300	800 (600)	2'000	4'500
	Max spindle load	with tailstock	kg	240	400	800	1'600
		without tailstock	kg	120	200	400	800
		standard load*	kg	17	42 (21)	90	161
	Max axial force		kN	44	46	100	210
Gear Unit	Max pull-out torque		Nm	1'200	2'000	3'900	10'400
	Max moment of inertia	standard load*	kgm ²	0.05	0.2 (0.07)	0.8	2
		J max	kgm ²	0.5	2 (0.7)	8	20
	Max feed torque		Nm	120	250 (150)	440	650
	Pa **		± arc sec	20/12	17/10	12/8	10/6
Gear Unit	Ps mid		± arc sec	2	2	2	2
	Max speed	with standard load*	min ⁻¹	111	80 (160)	50	42
	Cycle time 90° min	with standard load*	sec	0.26	0.31 (0.23)	0.42	0.5
Precision	Concentricity **	on spindle ø	µm	6 / 3	6 / 3	6 / 3	6 / 3
	Axial concentricity **	at spindle end face	µm	6 / 3	6 / 3	6 / 3	6 / 3
	Parallelism **	Dividing axis to base	µm/100mm	10 / 5	10 / 5	10 / 5	10 / 5

*Mutually dependent

**Standard / increased

Dimensions



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

Options and Accessories

Wide range available, always the same for all rotary table versions. See **main catalog** for more information.

Parameter lists

Specific parameter lists are available for almost all rotary table versions

...for machines from

- + Brother
- + DMG MORI
- + Doosan
- + Fanuc Robodrill
- + Haas
- + Hurco
- + Quaser

- + Tongtai
- + YCM

...for CNC control systems from

- + Fanuc
- + Heidenhain
- + Mitsubishi
- + Siemens



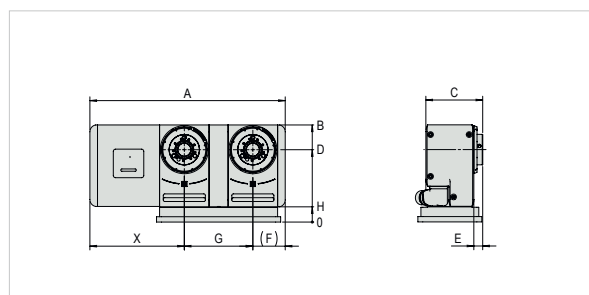
See **main catalog** for details and further models and our conditions

				M2-507	M2-510 (M2-511)	M3-507	M3-510 (M3-511)
Dimensions	max. workpiece 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	30	34	30	34
Bearing / Clamping	Max clamping torque		Nm	300	800 (600)	300	800 (600)
	Max spindle load per spindle	with tailstock	kg	240	400	240	400
		without tailstock	kg	120	200	120	200
		standard load*	kg	12	27 (14)	9	21 (12)
	Max axial force	per spindle	kN	44	46	44	46
Gear Unit	Max pull-out torque	per spindle	Nm	1'200	2'000	1'200	2'000
	Max moment of inertia	standard load*	kgm ²	0.05	0.2 (0.07)	0.05	0.2 (0.07)
		J max	kgm ²	0.5	2 (0.7)	0.5	2 (0.7)
	Max feed torque		Nm	120	240 (150)	75	225 (150)
	Pa **		± arc sec	20/12	17/10	20/12	17/10
Precision	Ps mid		± arc sec	2	2	2	2
	Max speed	with standard load*	min ⁻¹	100	65 (110)	70	50 (65)
	Cycle time 90° min	with standard load*	sec	0.26	0.37 (0.24)	0.32	0.41 (0.31)
Precision	Concentricity **	on spindle ø	µm	6 / 3	6 / 3	6 / 3	6 / 3
	Axial concentricity **	at spindle end face	µm	6 / 3	6 / 3	6 / 3	6 / 3
	Parallelism **	Dividing axis to base	µm/100mm	10 / 5	10 / 5	10 / 5	10 / 5

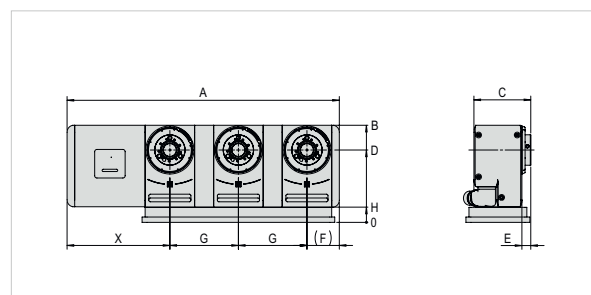
*Mutually dependent

**Standard / increased

Dimensions



	A	B	C	D	E	F	G	H	X
M2-507	451	205	136	150	23	75	140	40	236
M2-510	513	255	150	190	23	85	180	40	248



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

Technical Data on TF- and T1-fix* Rotary Tables



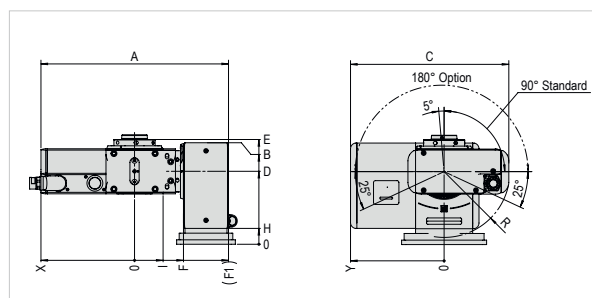
See **main catalog** for details and further models (*fixX, vario, varioX...) and our conditions

				TF-507510	TF-510520 (TF-511520)	T1-507510	T1-510520 (T1-511520)	T1-520520
Dimensions	max. workpiece ø		mm	200	240	200	240	350
	Swiveling range		degrees	90° +5°/-25° (optional 180° ±25°)				
	Center height		mm	150	180	190	220	250
	Total weight	with motor	kg	61	104	96	136	187
	Center bore		mm	30	34	30	34	46 / (64)
Bearing / Clamping	Max clamping torque	4. axis	Nm	300	800 (600)	300	800 (600)	2'000
		5. axis	Nm	800	2'000	1'100	2'600	4'000
	Max spindle load	0°-30°	kg	40	66	80	133	200
		30°-90°	kg	27	44	53	89	133
		standard load*	kg	17	42 (21)	17	42 (21)	67
Gear Unit	Max axial force	4. axis	kN	6	10	12	20	40
	Max pull-out torque	4. axis	Nm	1'200	2'000	1'200	2'000	3'900
		5. axis	Nm	2'000	3'900	2'000	3'900	3'900
	Max moment of inertia	standard load*	kgm²	0.05	0.2 (0.07)	0.05	0.2 (0.07)	0.8
		J max	kgm²	0.5	2 (0.7)	0.5	2 (0.7)	8
Precision	Feed torque max	4. axis	Nm	120	250 (150)	120	250 (150)	440
		5. axis	Nm	250	440	250	440	440
	Pa **	4. axis	± arc sec	20/12	17/10	20/12	17/10	12/8
		5. axis	± arc sec	23/16	28/21	23/16	16/12	20/16
	Ps mid	4. axis	± arc sec	2	2	2	2	2
Max speed		5. axis	± arc sec	2	2	2	2	2
	Max speed at standard load	4. axis	min⁻¹	111	80 (160)	111	80 (160)	50
		5. axis	min⁻¹	60	40	60	40	30
	Cycle time 90° min at standard load	4. axis	sec	0.26	0.31 (0.23)	0.26	0.31 (0.23)	0.41
		5. axis	sec	0.41	0.53	0.41	0.53	0.71
Concentricity	Concentricity **	on spindle ø	µm	6 / 3	6 / 3	6 / 3	6 / 3	6 / 3
	Axial concentricity **	at spindle end face	µm	6 / 3	6 / 3	6 / 3	6 / 3	6 / 3
	Max axial offset	Dividing to swiveling axis	µm	20	20	20	20	20
	Parallelism **	Spindle to base	µm/100mm	10 / 5	10 / 5	10 / 5	10 / 5	10 / 5

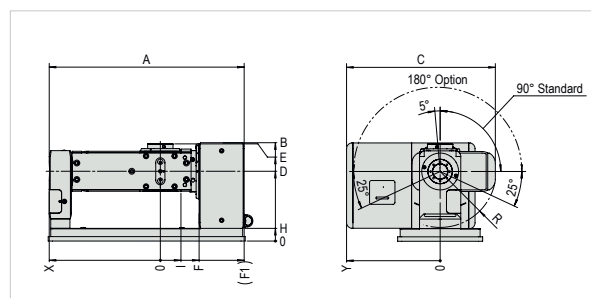
*Mutually dependent (valid for fix models; for further details see **main catalog**)

** Standard / increased

Dimensions



	A	B	C	D	E	F	FI	H	I	R	X	Y
TF-507510	466	245	382	180	260	104	230	30	55	136	236	248
TF-510510	490	265	422	200	287	116	242	50	65	177	248	248
TF-510520	512	310	469	220	307	122	264	40	65	177	248	295
TF-520520	591	320	499	230	330	154	296	50	90	207	295	295



	A	B	C	D	E	F	FI	H	I	R	X	Y
T1-507510	569	255	382	190	269	104	230	40	55	136	339	248
T1-510520	615	310	469	220	307	122	264	40	65	177	351	295
T1-520520	704	340	499	250	350	154	296	40	90	207	408	295

Technical Data on T2- and T3 Rotary Tables



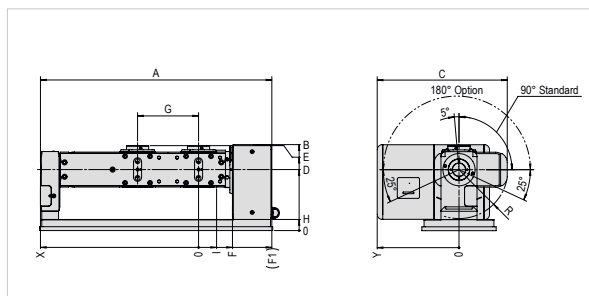
See **main catalog** for details and further models (*fixX, vario, varioX...) and our conditions

				T2-507510	T2-510520 (T2-511520)	T3-507510	T3-510520 (T3-511520)
Dimensions	max. workpiece 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	116	186	151	236
	Center bore		mm	30	34	30	34
Bearing / Clamping	Max clamping torque	4. axis	Nm	300	800 (600)	300	800 (600)
		5. axis	Nm	1'100	2'600	1'100	2'600
	Max spindle load per spindle	0°–30°	kg	40	67	40	67
		30°–90°	kg	27	45	27	45
		standard load*	kg	12	21 (11)	9	14 (7)
	Max axial force	4. axis per spindle	kN	12	20	12	20
	Max pull-out torque	4. axis	Nm	1'200	2'000	1'200	2'000
		5. axis	Nm	2'000	3'900	2'000	3'900
Gear Unit	Max moment of inertia	standard load*	kgm ²	0.05	0.2 (0.07)	0.05	0.2 (0.07)
		J max	kgm ²	0.5	2 (0.7)	0.5	2 (0.7)
	Feed torque max	4. axis	Nm	120	240 (150)	120	225 (150)
		5. axis	Nm	250	440	250	440
	Pa **	4. axis	± arc sec	20/12	17/10	20/12	17/10
		5. axis	± arc sec	30/23	20/16	36/29	24/20
	Ps mid	4. axis	± arc sec	2	2	2	2
		5. axis	± arc sec	2	2	2	2
	Max speed at standard load	4. axis	min ⁻¹	100	65 (110)	70	50 (65)
		5. axis	min ⁻¹	65	40	55	35
Precision	Cycle time 90° min at standard load	4. axis	sec	0.26	0.37 (0.24)	0.32	0.41 (0.31)
		5. axis	sec	0.41	0.53	0.48	0.58
	Concentricity **	on spindle ø	µm	6 / 3	6 / 3	6 / 3	6 / 3
	Axial concentricity **	at spindle end face	µm	6 / 3	6 / 3	6 / 3	6 / 3
	Max axial offset	Dividing to swiveling axis	µm	40	40	40	40
	Parallelism **	Spindle to base	µm/100mm	10 / 5	10 / 5	10 / 5	10 / 5

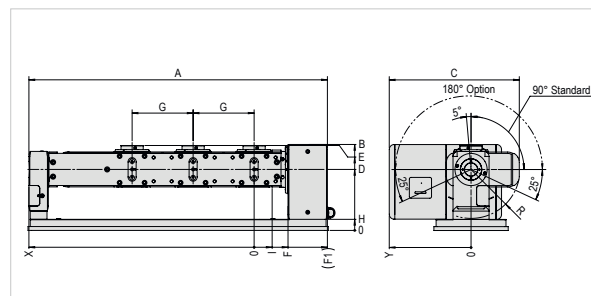
*Mutually dependent (valid for fix models; for further details see **main catalog**)

** Standard / increased

Dimensions



	A	B	C	D	E	F	FI	G	H	R	X	Y
T2-507510	729	255	382	190	269	104	230	160	40	136	499	248
T2-510520	835	310	469	220	307	122	264	220	40	177	571	295



	A	B	C	D	E	F	FI	G	H	R	X	Y
T3-507510	888	255	382	190	269	104	230	160	40	136	658	248
T3-510520	1055	310	469	220	307	122	264	220	40	177	791	295

pL LEHMANN Rotary Tables on Vertical Machining Centers: The Advantages Compared to 5 Axis Machines

Efficient manufacturing of workpieces ... to Ø350 mm / 150 kg (positioning) or ø150mm/34kg (simultaneous) with workpiece precision of 0.01 ... 0.002 mm per 100 mm spatial diagonal.
(For more information and our conditions see the **main catalog, page 81**)

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 processing

not possible

- + Highly productive parts manufacturing with clamping bridge and counter bearing
- + Manual or automatic workpiece change
- + Can be used on 4th axis as well as 4th/5th axes
- + Easy to retrofit

OEM USE | GD DD

5

Table Load

+257%

- + Significantly more reserves for heavy devices and additional clamping devices, without overloading the machine

OEM USE | GD DD

5

Machine Floor Space

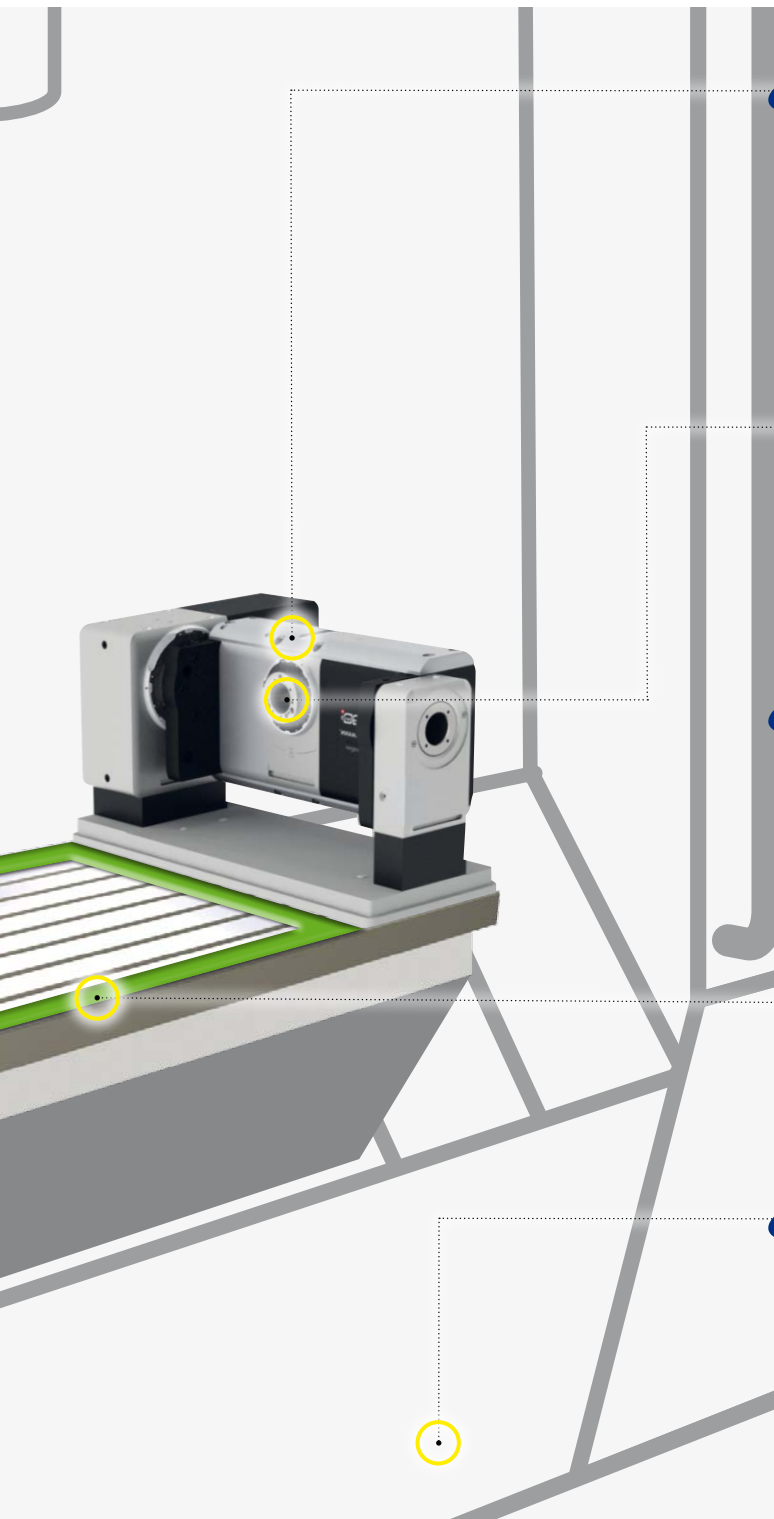
-40%

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

best of

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

All % values and color notes are according to pl-Benchmark 2015 with a total of 16 machines. For explanation see [page 3](#)



best of

OEM USE | GD DD **5**
Low Projecting Edge **-52%**

- + Very good accessibility across the C axis (from the top)
- + Cutting tools very shortly preloaded: Maximum service life, milling performance and surface quality

OEM USE | GD DD **5**
C Axis Perm. Load **-12%**

- + Particularly 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 e.g. large workpieces, and parallel to this a genuine 5-axis for the machining of e.g. impellers
- + 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-level buildings
- + Lower transport costs

A Major Advantage Over Conventional CNC Rotary Tables: Extremely Compact with Comparable or Better Performance

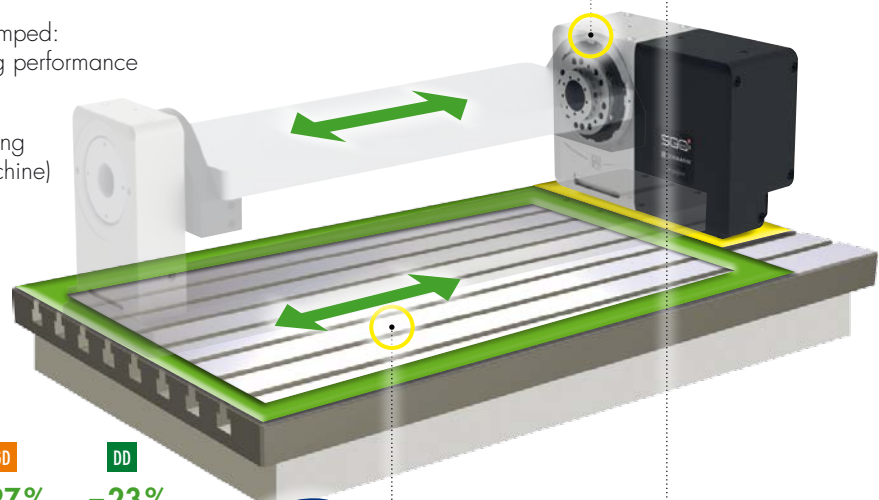
OEM USE | 5

Low projecting edge

GD -40% DD -41%

- + Very good accessibility across the axis (from the top)
- + Cutting tools very shortly clamped: Maximum service life, milling performance and surface quality
- + Good accessibility for grinding wheel (Surface grinding machine)

best of



OEM USE | 5

Space Requirement

GD -27% DD -23%

- + More machine table space available
- + Machining more than one part in one processing cycle extends the unattended machining time
- + Larger or more than one workpiece machined on one machine – lower overall investment on a smaller floor space
- + Entire table surface can be used when rotary table is removed

best of



OEM USE | 5

Weight

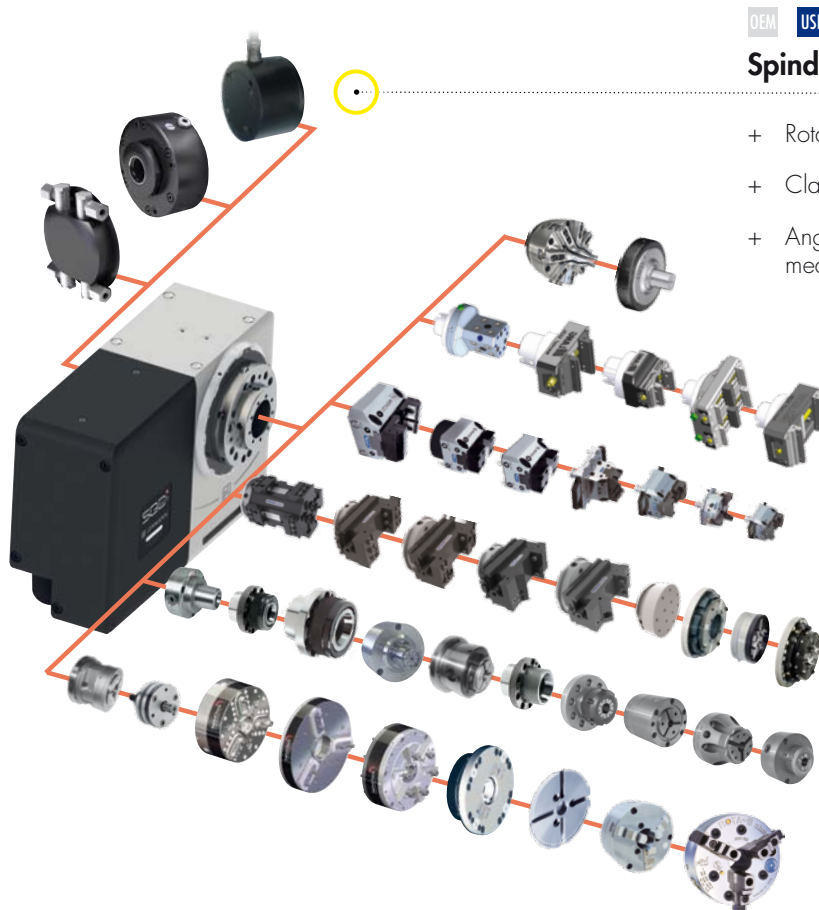
GD -41% DD -50%

- + Significantly more reserves for heavy devices and additional clamping devices, without overloading the machine
- + Or smaller machines for the same processing

kg

Standardized interface in front and rear:
maximum universality, more than 20 different
standard clamping systems available

All % values and color notes are according to pl-Benchmark 2015 with a total of 129 rotary tables from renowned manufacturers. For explanation see **page 3**



Spindle accessories in rear

- + Rotary union
- + Clamping cylinder
- + Angular position measuring system

ripas

LANG
TECHNIK.de

EROWA

system 3R

SwissChuck
Precision Workholding

ROEMHELD
HILMA • STARK

SCHUNK

GRESSEL
Spanntechnik

PAROTEC
spanntechnik - robotik - engineering

tobler
a member of **MORI SEIKI** group

YERLY

NIEDERHAUSER
SPANNTÉCHNIK UND SYSTEME

AMF

Tailstock and counter bearing

- + manual, pneumatic and hydraulic tailstocks
- + hydraulically clamped counter bearing, very compact (no hydraulic unit required, supplied directly by rotary table)



Medium transfer dividing axis

- + No uncontrolled movement of hydraulic hoses
- + Robust tubing
- + Available for T1...T4 and for rotoFIX



The user is interested in the facts:
How much profit can be made with the technology

All criteria is based on the max. achievable limits

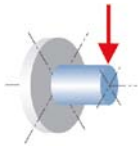
OEM | USE | 5

Pull-out torque

GD DD
+147% +233%

best of

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



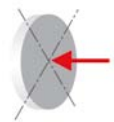
OEM | USE | 5

Axial force

GD DD
+324% not available

best of

- + Withstands very high compressive and tensile forces

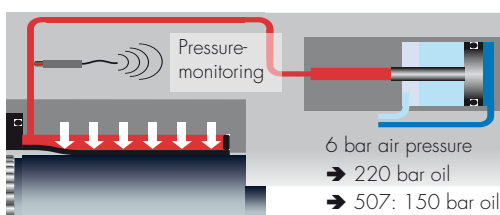
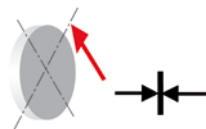


OEM | USE | 5

Clamping torque

GD DD
+115% +236%

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



Fully integrated BRAKY pressure intensifier

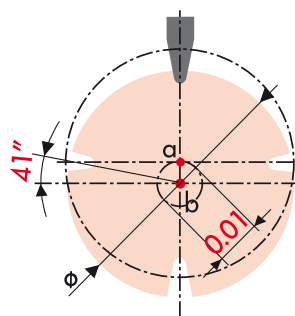
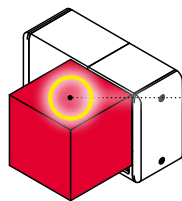
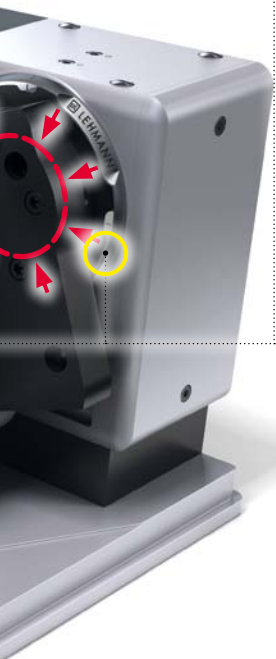


PGD* Advantages as Compared to Direct Drives (DD) at a Glance

- + ONE rotary table for everything: Standard or high speed, for CNC's from Siemens, Heidenhain, Fanuc...
- + NO cooling unit needed
- + NO safety brake
- + Several SMALLER drive enhancers
- + Much LOWER electrical power consumption
- + Significantly EASIER commissioning/tuning

All % values and color notes are according to pl-Benchmark 2015 with a total of 129 rotary tables from renowned manufacturers. For explanation see [page 3](#)

*For more information see [page 18](#)



OEM USE | 5 **GD** **DD**
Rotational speed **+78%** **-11%**

best of

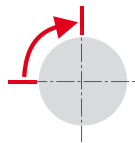
- + High rotational speed



OEM USE | 5 **GD** **DD**
Cycle time **-67%** **+4%**

best of

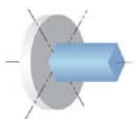
- + Short cycle times (with clamping)



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 concentricity **-34%** **-31%**

best of

- + High concentricity and degree of axial runout for optimum workpiece precision

Functional design – from practical sources for practical applications: Good chip and coolant flow, service-friendly

OEM USE | 5 GD DD

Transport and bleeding holes

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

OEM USE | 5 GD DD

Service access cover

- + combiFlex® interface (remove service cover with only two screws)
- + Service access: Change gear unit preload, bleeding, counter bearing clamping circuit connecting/disconnecting, seal change on worm drive
- + Service access for BRAKY (seal replacement in the integrated pressure intensifier)

OEM USE | 5 GD DD

USB slot

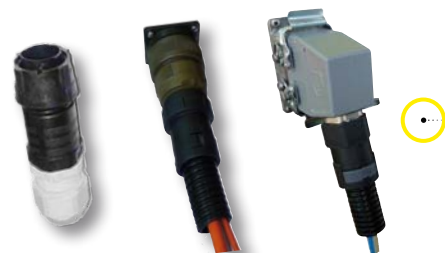
- + Fast, simple data output for evaluation on a PC in case of malfunction
- + Licensing possibility with registration code via USB stick (OEM feature)
- + Fully sealed, placed in well protected location
- + PC connection for remote diagnostics

unique

OEM USE | 5 GD DD

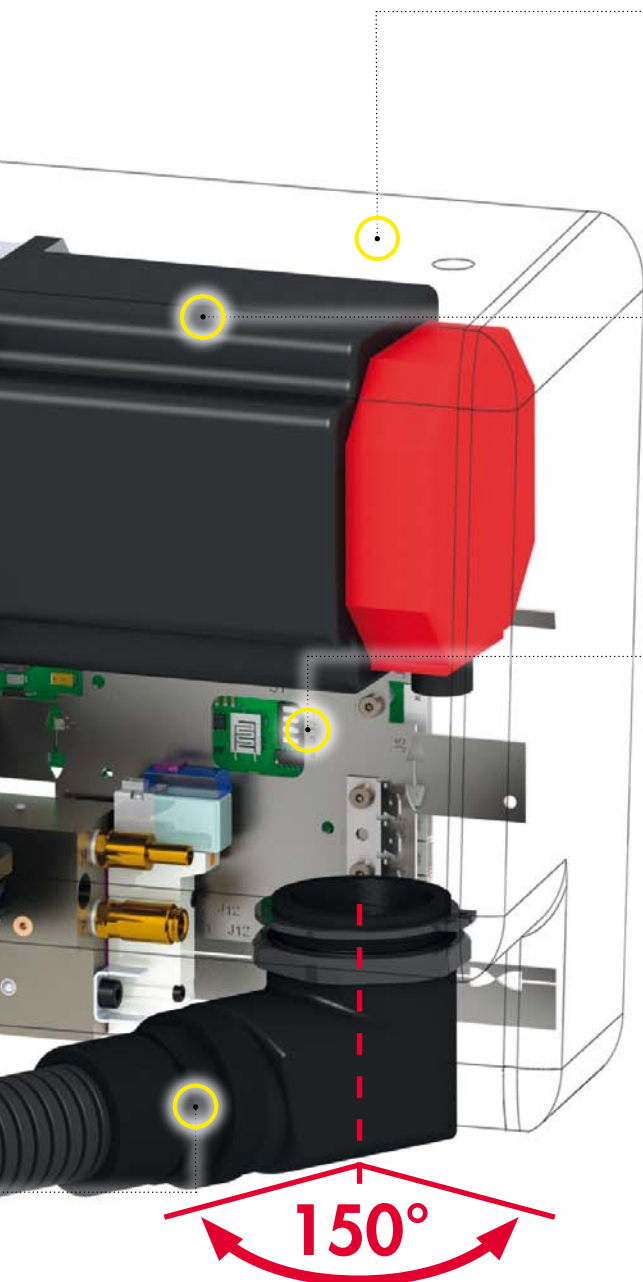
Wire guide

- + 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



Innovative technology in a noble package:
new possibilities and functions,
Industry 4.0 can be implemented

All % values and color notes are according to pl-Benchmark 2015 with a total of 129 rotary tables from renowned manufacturers. For explanation see **page 3**



best of

OEM USE | S GD DD

Fully sealed IP 67 (IP 68)

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

best of

OEM USE | S GD DD

Drive motor

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

unique

OEM USE | S GD DD

blackBOX – for Industry 4.0

- + Measurement of speed, internal pressure in the motor housing, temperature, humidity and shocks
- + Monitoring and control of spindle clamping system
- + History of important data with a real-time clock
- + Quick location of malfunctions and preventative maintenance
- + Increases availability and reduces maintenance costs
- + Connection for remote maintenance

For details see operating manual

OEM USE | S GD DD

Connector interfaces

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

PGD – the Preloaded Gear Unit with Direct Drive Properties: High Speed and High Torque

OEM USE | 5 GD DD

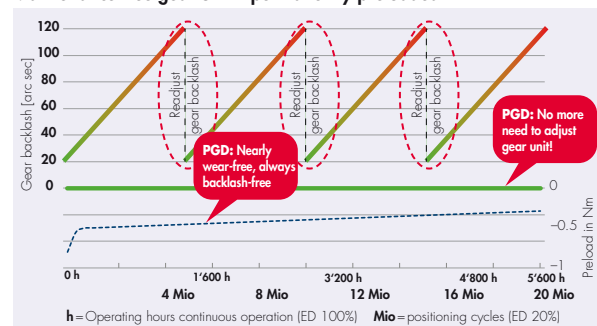
PGD (Preloaded Gear Drive)

- + Strong teeth
- + Wheel and worm made of steel, surface hardened and ground, runs in an oil bath
- + Worm gear with 4-way backlash-free mount
- + Permanently backlash-free preloaded
- + High long-term precision, virtually wear-free
- + High impact resistance
- + 20'000 h or 20 Mio. * 90° positioning
- + Easy to adjust, if ever necessary
- + Up to 30% of perm. feed torque without clamping (time saving)
- + 5'000 h highly dynamic simultaneous processing*

* Extrapolated figures with safety factor of 1.5, based on long-term tests more than 10,500h / 10.6 million 90° cycles; valid under appropriate use; the limit reached first is valid

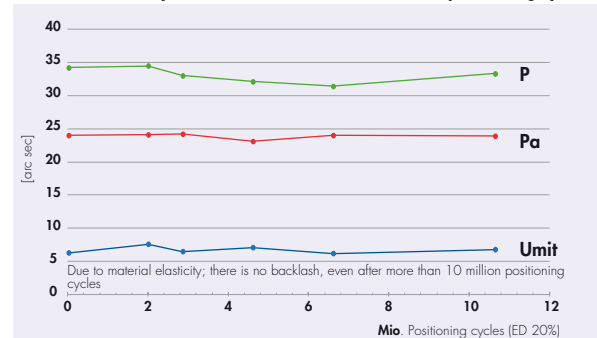
NEW

Maintenance free gear unit – permanently preloaded



All values based on internal testing using standard load and catalog values (speed, cycle time). ED as defined in the **main catalog, page 84**

Consistent accuracy - even after more than 10 million positioning cycles



Realistic measurements according to VDI / DGQ 3441 or ISO 230-2: changes in the scope of the measuring uncertainty.

OEM USE | 5 GD DD

Fully sealed IP 67 (IP 68)

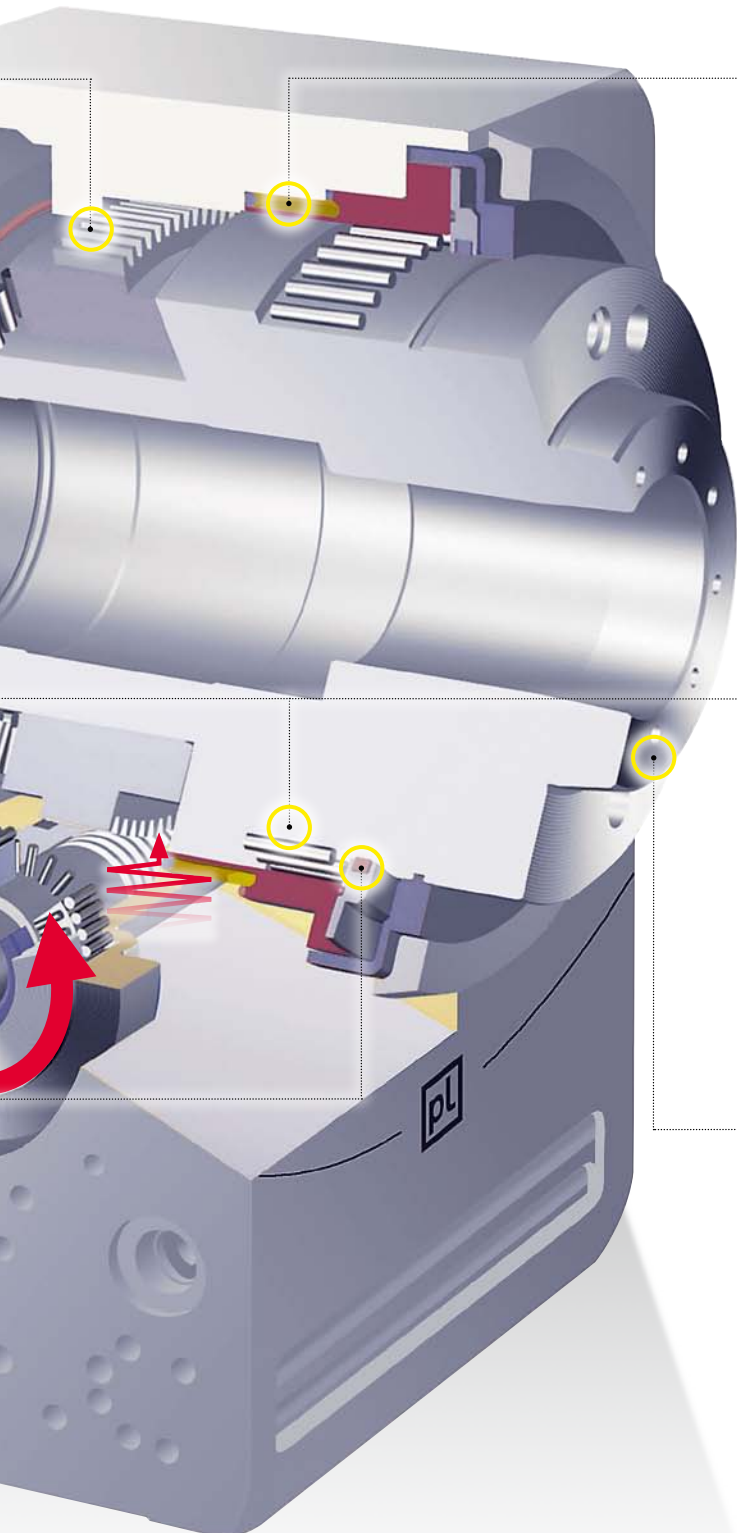
- + All models are fully sealed
- + Spindle housing with pressurized oil lubrication system
- + Additional spindle labyrinth seal (optional) for use with high pressure coolant (e.g. production grinding) and aggressive materials such as glass, graphite, ceramic, etc.

best of



Preloaded with absolutely no backlash (permanently),
wear resistant,: Requirements for simultaneous
processing

All % values and color notes are according to pl-Benchmark 2015 with a total of 129 rotary tables from renowned manufacturers. For explanation see **page 3**



OEM USE | 5 GD DD

best of

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 (micro processor controlled)
- + Long service life
- + Consistent clamping force throughout the entire service life

OEM USE | 5 GD DD

Spindle bearing

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

OEM USE | 5 GD DD

best of

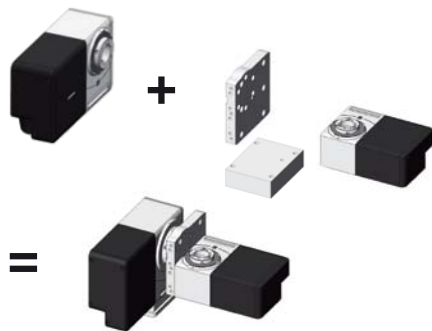
Spindle

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

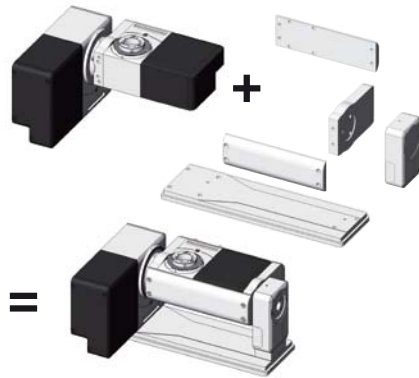
Only 4 sizes $\varnothing 100 - 500$ mm – more than 240 standard configurations



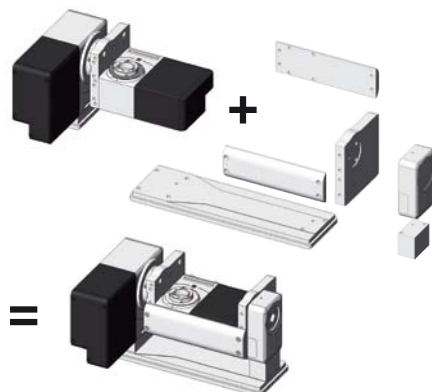
EA → TF vario



TF fix → T1 fix



TF vario → T1 vario



Diversity of products OEM USE | 5 GD DD approx. **-50%** approx. **-50%** unique

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

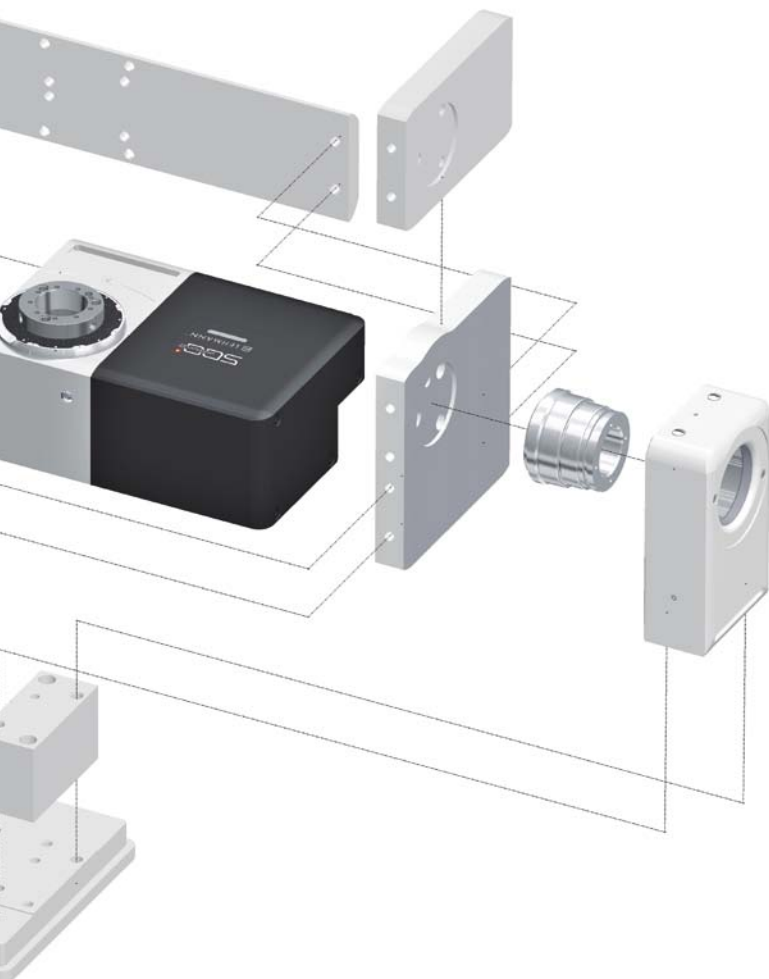


High value retention: Always adaptable to new requirements

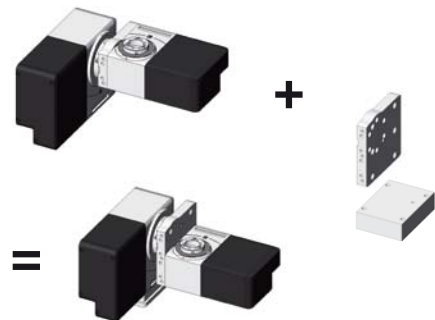
All % values and color notes are according to pl-Benchmark 2015 with a total of 129 rotary tables from renowned manufacturers. For explanation see **page 3**

OEM USE | 5 GD DD **Highest level of flexibility** *unique*

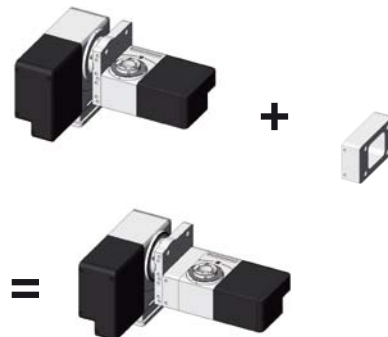
- + Standard machine in stock, available at short notice, equipped with matching rotary table
- + Rotary table is readily available and can be converted by the OEM
- + If the needs change, the investment is not lost
- + Pay in installments: First, the machine later the rotary table - can be retrofitted at any time



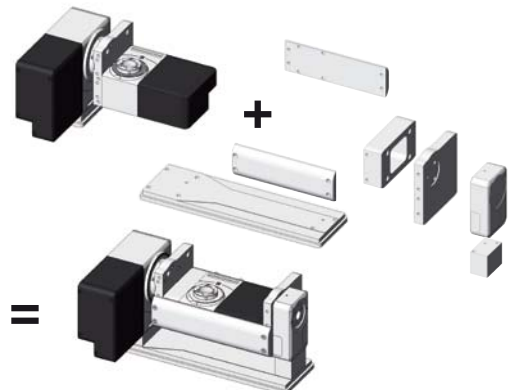
TF fix → TF vario



TF vario → TF varioX



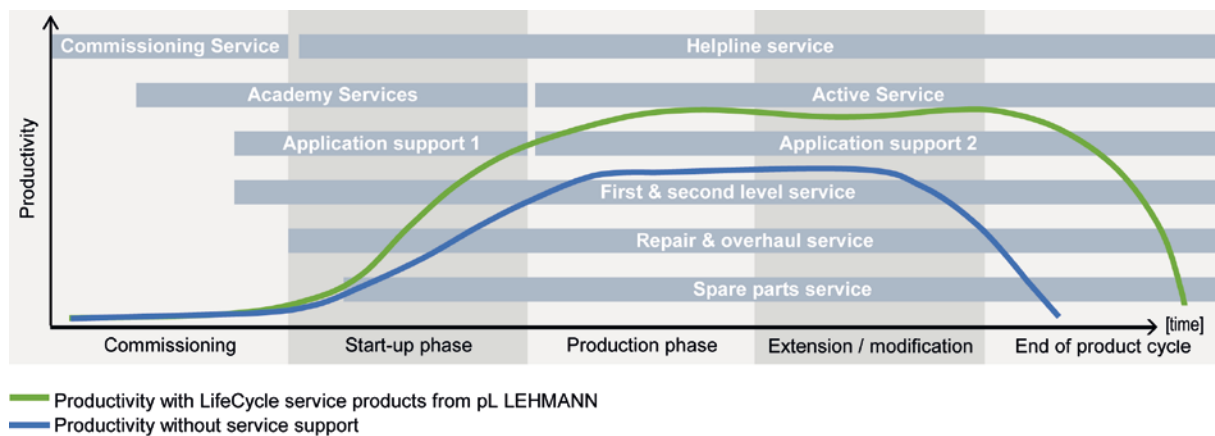
TF vario → T1 varioX



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DELFIN COMPON.



UK –
AVON



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AXTO



Scandinavia –
CNC-TEKNO AB



America

Brazil –
SISFIX



USA –
ROTEC



Asia

China –
SHANGHAI RUIMAN



India –
STITCH



Taiwan –
GTW



Japan –
FUKUDA



South Korea –
HIOIL



Singapore –
VAKANT



Africa / Oceania

South Africa –
ROTHCO



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

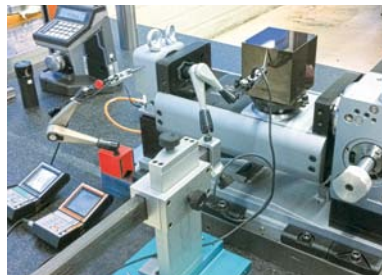


Rational equipping of spare parts packages

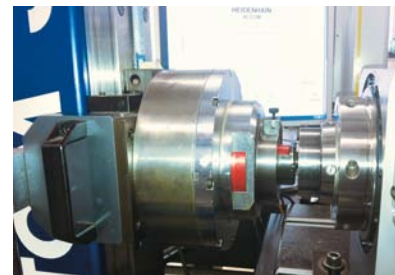
Quality control



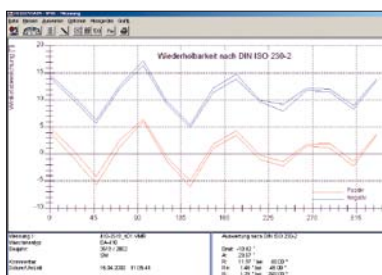
Measuring a housing on a 3D measuring unit



Measuring a Trotary table with Kubus



Measuring the accuracy of parts - fully automatically



Recording the accuracy of parts according to ISO 230-2 and VDI/DGQ 3441

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ROTARY TABLES • PRECISION TECHNOLOGY • SOFTWARE

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