Selection Guide for CNC Rotary Tables ...

Bluetooth®

pl

HAAS

10/2018 | EN

... for CM-, DM-, (S)MINIMILL-, TM-, VF- and VM-series

Applications

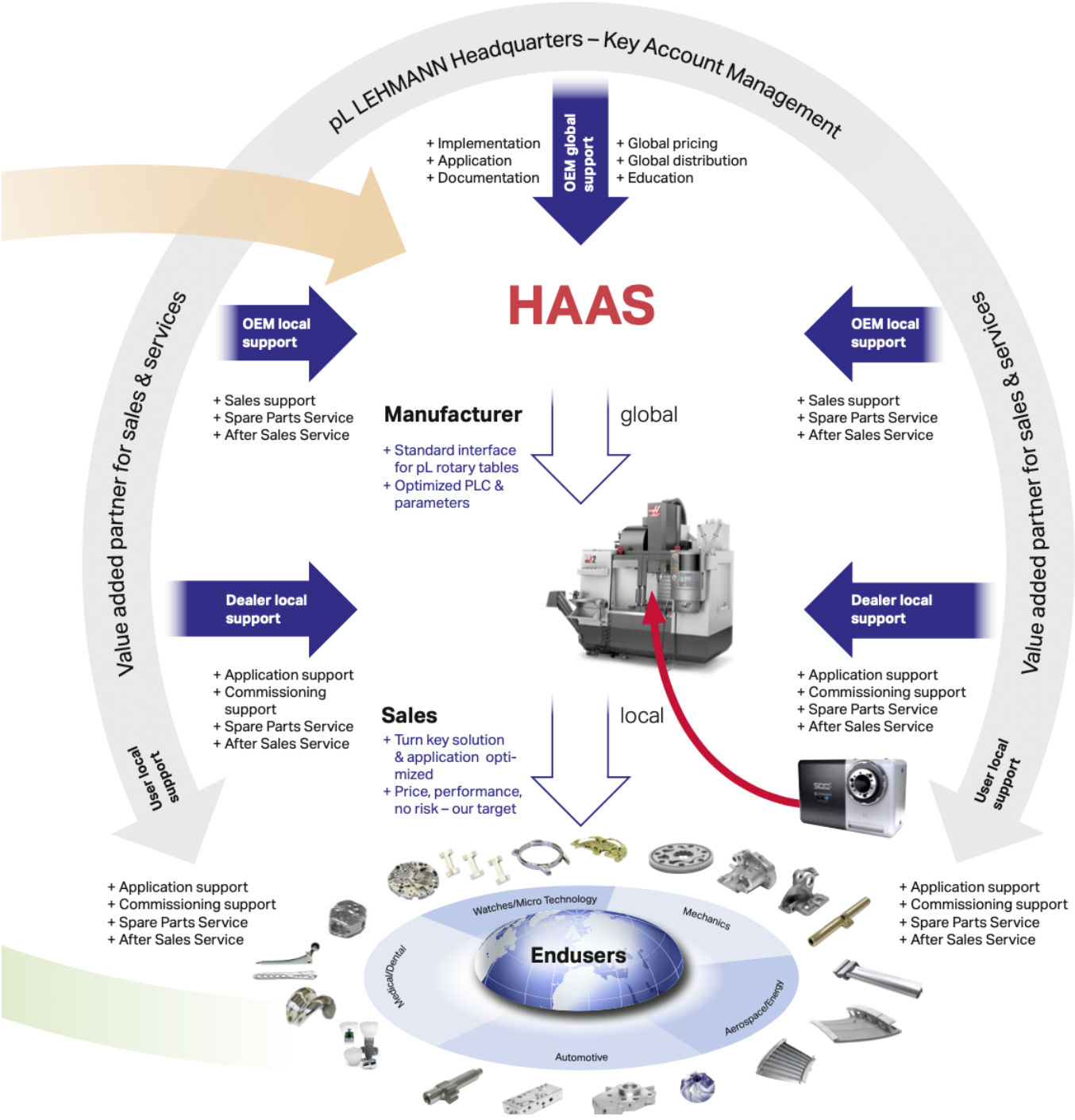
CNC rotary tables for economical manufacturing:
pL LEHMANN has suitable and rational solutions for nearly every industry

pL rotary tables in use: on over **40** different machine brands and over **160** different machine models.

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

Organization

Professional products from professional partners: HAAS and pL LEHMANN provide first-class service to common customers



Overview and Facts

NEW up to +30 %

Up to 210 rpm
up to 0.21 sec / 90°

High speed

Extended travel in
Z- and X-direction

More space

High spindle load,
heavy-duty bearing

Heavy duty

E-Series

Rotary tables suitable for simultaneous operation!

Save energy

PGD

DD

Benefits of PGD by pL LEHMANN as compared to Direct Drive: small servo, low power draw, no cooling system, and a significantly reduced energy consumption when machining with unclamped rotary table.

Energy label at the left
An intuitive rating as consumption greatly depends on usage, and without any liability assumed, following the directives on energy labelling

See main catalog for more features

NEW up to +30 %

High torque

Feed torque up to
850 Nm (provisional)

Adaptability

Multifunctional
spindle HSK

Precision

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

Overview and Facts

NEW up to +150 %

Pneum. clamping
up to 7,000 Nm

High clamp

Large parts
up to ø 500

Big size

PGD backlash-free
long-life gear unit

No backlash

T-Series

All base plates made of steel NEW

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

M-Series

NEW

Bluetooth

Connectivity

Wireless monitoring,
for operation & service

No adjust

Load change without
parameter adjustment

Less cost

No cooling system,
no hydraulics

Machine Overview

CM-1

DT-2

MINIMILL

A word from HAAS:

«Haas Automation is the largest machine tool builder in the western world

Haas Automation produce top-quality products at affordable prices. By relying on volume sales rather than per-unit profits to build the company, Haas Automation delivers more standard features, high-tech innovations, and rock-solid engineering than perhaps any other CNC manufacturer in the world – and at better prices!»

TM-1

VF-2

VM-2

The right machine/rotary table combination for economical production: this Selection Guide helps you make the right selection

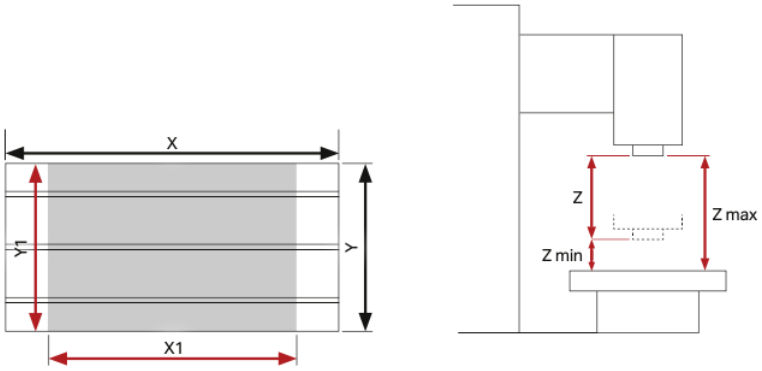


	Table diameter [mm]		Permissible overhang *	Traverse stroke [mm]					Table load **
	X	Y		X1	Y1	Z	Zmin	Zmax	max [kg]
CM-1	508	254	40%	305	254	305	83	388	68
DM(DT)-1	660	380	10%	508	406	394	140	534	113
DM(DT)-2	860	380	10%	711	406	394	140	534	113
(S)MINIMILL (EDU)	910	730	10%	406	305	254	102	356	227
(S)MINIMILL2	1'020	360	10%	508	406	356	102	458	227
TM-1(P)	1'210	270	10%	762	305	406	102	508	454
TM-2(P)	1'470	270	10%	1'016	406	406	102	508	454
TM-3(P)	1'470	370	10%	1'016	508	406	102	508	454
VF-1	660	360	10%	508	406	508	102	610	1'361
VF-1YT	660	460	10%	508	508	508	102	610	1'361
VF-2(SS)	910	360	10%	762	406	508	102	610	1'361
VF-2(SS)YT	910	460	10%	762	508	508	102	610	1'361
VF-3(SS)	1'220	460	10%	1'016	508	635	102	737	1'588
VF-3(SS)YT	1'370	640	10%	1'016	660	635	114	749	1'588
VF-4(SS)	1'320	460	10%	1'270	508	635	102	737	1'588
VF-5/(SS)(40)(50)	1'320	580	10%	1'270	660	635	178	813	1'814
VF-5/40(50)XT	1'570	580	10%	1'524	660	635	201	836	1'814
VF-6/(SS)(40)(50)	1'630	710	10%	1'626	813	762	102	864	1'814
VM-2	910	460	10%	762	508	508	102	610	1'361
VM-3	1'370	640	10%	1'016	660	635	102	737	1'814
VM-6	1'630	710	10%	1'626	813	762	102	864	1'814

* The recommended rotary tables can overhang the machine table by so many % (e.g. 10 % means: the rotary table length can be greater than dimension Y or X by max. 10 % of the machine width Y with Y-clamping or 10 % of the table length X with X-clamping.)
** The recommended rotary tables do not exceed 50 % of the allowed table load.

Table explanation for pp. 8–11

	EA-507 X2	EA-510 X2	EA-520 X2	EA-530 X2
CM-1	240			

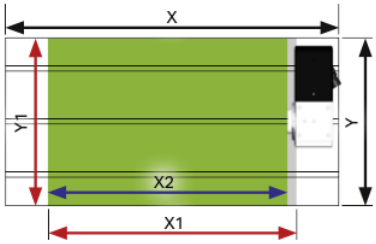
Wherever values are listed, the combination is recommended. Empty cells mean that a combination is not possible, because the rotary table is too large, or is not recommended, because the rotary table is disproportionately small or heavier than 50% of the table load.

Machine combinations with EA-type rotary tables

For further details about the rotary tables, see p. 12 and higher or refer to the main catalog

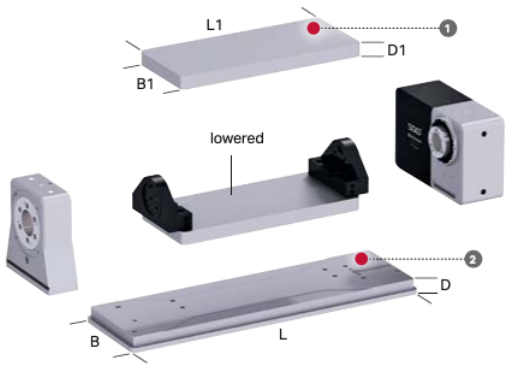
EA-510 EA-520 EA-530

	EA-507 X2	EA-510 X2	EA-520 X2	EA-530 X2
CM-1	240			
DM(DT)-1	417	401		
DM(DT)-2	619	603		
(S)MINIMILL (EDU)			449	
(S)MINIMILL2	597	581		
TM-1(P)				
TM-2(P)				
TM-3(P)	1'076	1'060	1'034	
VF-1	417	401		
VF-1YT	417	401	375	
VF-2(SS)	669	653		
VF-2(SS)YT	669	653	627	
VF-3(SS)	951	935	909	
VF-3(SS)YT		1'010	984	955
VF-4(SS)	1'128	1'112	1'086	
VF-5/(SS)(40)(50)	1'128	1'112	1'086	1'057
VF-5/40(50)XT	1'380	1'364	1'338	1'309
VF-6/(SS)(40)(50)			1'419	1'390
VM-2	669	653	627	
VM-3		1'010	984	955
VM-6			1'419	1'390



Rotary table installation with pL clamping claws in accordance with the operating manual

Clamping yokes for EA-type rotary tables



			EA-507		EA-510		EA-520			EA-530	
	Sph	[mm]	190		180		210			218	
1 Clamping yokes	Length L1	[mm]	350	450	500	600	600	700	800	800	1000
	Width B1	[mm]	165		215		270			270	
	Thickness D1	[mm]	20		35		40			40	
2 Base plates	Length L	[mm]	622	722	785	885	916	1016	1116	1172	1372
	Width B	[mm]	168		248		301			368	
	Thickness D	[mm]	30		30		30			38	
Weights / moments of inertia (without rotary table, without counter bearing)	Weight (Al)	[kg]	10	12	23	28	40	45	52	on request	
	Weight (steel)	[kg]	29	34	66	80	117	130	152		
	Mom. inert. (Al)	[kgm²]	0.02	0.02	0.06	0.07	0.16	0.17	0.21		
	Mom. inert. (steel)	[kgm²]	0.04	0.05	0.17	0.21	0.46	0.50	0.60		

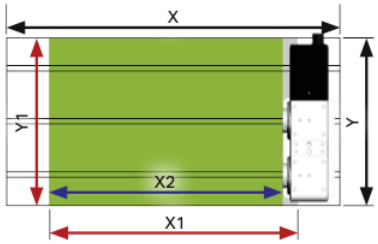
Machine combinations with M-type rotary tables

Explanations for pp. 8 to 11

The recommendations are for information purposes only. We recommend that you verify the effective dimensions prior to ordering. Modifications on the machine can lead to collisions and affect the dimensions X2 and Y2.

	M2-507	M2-510	M3-507	M3-510
	X2			
CM-1				
DM(DT)-1				
DM(DT)-2				
(S)MINIMILL (EDU)	432	422	432	422
(S)MINIMILL2				
TM-1(P)				
TM-2(P)				
TM-3(P)				
VF-1				
VF-1YT	358			
VF-2(SS)				
VF-2(SS)YT	610			
VF-3(SS)	892			
VF-3(SS)YT	967	957	967	957
VF-4(SS)	1'069			
VF-5/(SS)(40)(50)	1'069	1'059	1'069	
VF-5/40(50)XT	1'321	1'311	1'321	
VF-6/(SS)(40)(50)	1'402	1'392	1'402	1'392
VM-2	610			
VM-3	967	957	967	957
VM-6	1'402	1'392	1'402	1'392

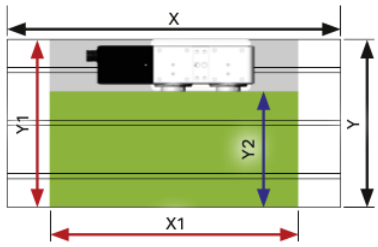
Y-mounting



Rotary table installation with pL clamping claws in accordance with the operating manual

	M2-507	M2-510	M3-507	M3-510
	Y2			
CM-1				
DM(DT)-1	167			
DM(DT)-2	167			
(S)MINIMILL (EDU)				
(S)MINIMILL2		147	157	147
TM-1(P)				52
TM-2(P)				
TM-3(P)				
VF-1	157	147	157	147
VF-1YT		248	258	248
VF-2(SS)		147	157	147
VF-2(SS)YT		248	258	248
VF-3(SS)				248
VF-3(SS)YT				
VF-4(SS)				248
VF-5/(SS)(40)(50)				384
VF-5/40(50)XT				
VF-6/(SS)(40)(50)				
VM-2		248	258	248
VM-3				
VM-6				

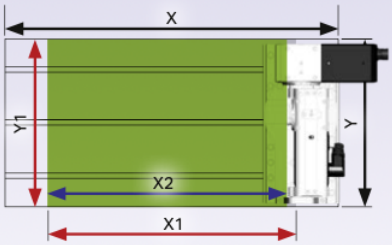
X-mounting



Rotary table installation with pL clamping claws in accordance with the operating manual

Machine combinations with T-type rotary tables

Y-mounting



Rotary table installation using hole pattern in base plate

TIP1

TAP1

TOP1.2

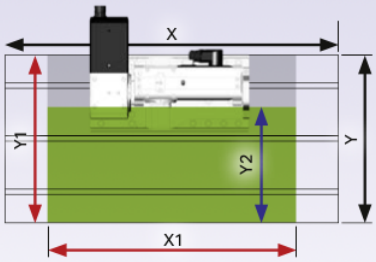
Important remark: The tilting range of 180° (order no. SWB.5xx-180) can be used under usual reserve only, because the limit switches are also used as reference switches.

	TIP1c TF-507510 X2	TIP2c TF-510520 X2	TIP3c TF-520530 X2	TAP1c T1-507510 X2	TAP2c T1-510520 X2	TAP3c T1-520530 X2	TAP1 T1-507510 X2	TAP2 T1-510520 X2	TAP3 T1-520530 X2	TOP1 T1-507510 X2
CM-1										
DM(DT)-1										
DM(DT)-2										
(S)MINIMILL (EDU)	528	484		488			488			488
(S)MINIMILL2										
TM-1(P)										
TM-2(P)										
TM-3(P)										
VF-1										
VF-1YT	454									
VF-2(SS)										
VF-2(SS)YT	706									
VF-3(SS)	988									
VF-3(SS)YT	1'063	1'019	999	1'023	1'003	969	1'023	1'003		1'023
VF-4(SS)	1'165									
VF-5/(SS)(40)(50)	1'165	1'121	1'101	1'125	1'105		1'125			1'125
VF-5/40(50)XT	1'417	1'373	1'353	1'377	1'357		1'377			1'377
VF-6/(SS)(40)(50)	1'498	1'454	1'434	1'458	1'438	1'404	1'458	1'438	1'404	1'458
VM-2	706									
VM-3	1'063	1'019	999	1'023	1'003	969	1'023	1'003		1'023
VM-6	1'498	1'454	1'434	1'458	1'438	1'404	1'458	1'438	1'404	1'458

	TOP2 T1-510520 X2	TOP3 T1-520530 X2	TAP1c.2 T1-507510 X2	TAP2c.2 T1-510520 X2	TAP3c.2 T1-520530 X2	TAP1.2 T1-507510 X2	TAP2.2 T1-510520 X2	TAP3.2 T1-520530 X2	TOP1.2 T2-507510 X2	TOP2.2 T2-510520 X2	TOP3.2 T2-520530 X2
CM-1											
DM(DT)-1											
DM(DT)-2											
(S)MINIMILL (EDU)			488			488			488		
(S)MINIMILL2											
TM-1(P)											
TM-2(P)											
TM-3(P)											
VF-1											
VF-1YT											
VF-2(SS)											
VF-2(SS)YT											
VF-3(SS)											
VF-3(SS)YT			1'023								
VF-4(SS)											
VF-5/(SS)(40)(50)											
VF-5/40(50)XT											
VF-6/(SS)(40)(50)	1'438		1'458			1'458			1'458		
VM-2											
VM-3			1'023								
VM-6	1'438		1'458			1'458			1'458		

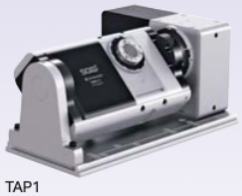
Machine combinations with T-type rotary tables

X-mounting



Rotary table installation using hole pattern in base plate

TIP1



TAP1

TOP1.2

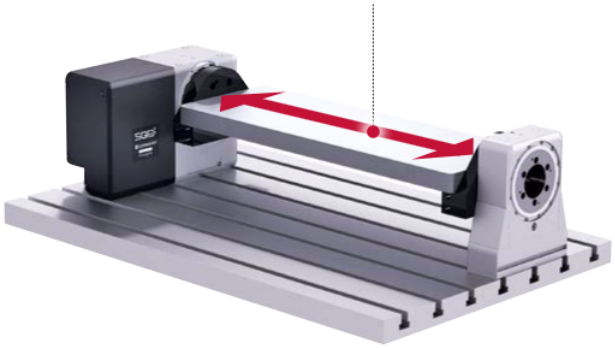
Important remark: The tilting range of 180° (order no. SWB.5xx-180) can be used under usual reserve only, because the limit switches are also used as reference switches.

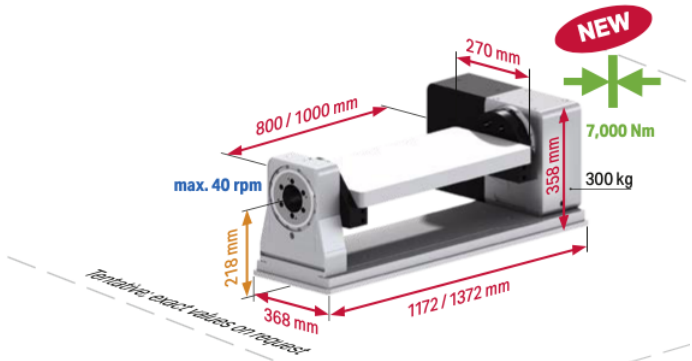
	TIP1c TF-507510 Y2	TIP2c TF-510520 Y2	TIP3c TF-520530 Y2	TAP1c T1-507510 Y2	TAP2c T1-510520 Y2	TAP3c T1-520530 Y2	TAP1 T1-507510 Y2	TAP2 T1-510520 Y2	TAP3 T1-520530 Y2	TOP1 T1-507510 Y2
CM-1										
DM(DT)-1	263									
DM(DT)-2	263									
(S)MINIMILL (EDU)										
(S)MINIMILL2		209		213			213			213
TM-1(P)			94					98		118
TM-2(P)										
TM-3(P)										
VF-1	253	209	189	213	193	159	213	193		213
VF-1YT		310	290	314	294	260	314	294		314
VF-2(SS)	253	209	189	213	193	159	213	193	159	213
VF-2(SS)YT		310	290	314	294	260	314	294	260	314
VF-3(SS)			290			260		294	260	
VF-3(SS)YT									426	
VF-4(SS)						260			260	
VF-5/(SS)(40)(50)						396			396	
VF-5/40(50)XT										
VF-6/(SS)(40)(50)										
VM-2		310	290	314	294	260	314	294	260	314
VM-3									426	
VM-6										

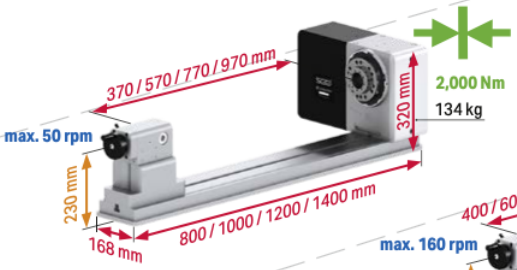
	TOP2 T1-510520 Y2	TOP3 T1-520530 Y2	TAP1c.2 T1-507510 Y2	TAP2c.2 T1-510520 Y2	TAP3c.2 T1-520530 Y2	TAP1.2 T1-507510 Y2	TAP2.2 T1-510520 Y2	TAP3.2 T1-520530 Y2	TOP1.2 T2-507510 Y2	TOP2.2 T2-510520 Y2	TOP3.2 T2-520530 Y2
CM-1											
DM(DT)-1											
DM(DT)-2											
(S)MINIMILL (EDU)											
(S)MINIMILL2			213			213			213		
TM-1(P)	98		118	98		118	98		118	98	
TM-2(P)				148			148		168	148	
TM-3(P)				249			249		269	249	
VF-1	193		213			213					
VF-1YT	294		314			314					
VF-2(SS)	193	159	213	193		213	193		213	193	
VF-2(SS)YT	294	260	314	294		314	294		314	294	
VF-3(SS)	294	260	314	294	260	314	294	260	314	294	260
VF-3(SS)YT	460	426		460	426	480	460	426	480	460	426
VF-4(SS)	294	260	314	294	260	314	294	260	314	294	260
VF-5/(SS)(40)(50)	430	396	450	430	396	450	430	396	450	430	396
VF-5/40(50)XT		396		430	396		430	396		430	396
VF-6/(SS)(40)(50)		538		572	538		572	538		572	538
VM-2	294	260	314	294		314	294		314	294	
VM-3	460	426		460	426	480	460	426	480	460	426
VM-6		538		572	538		572	538		572	538

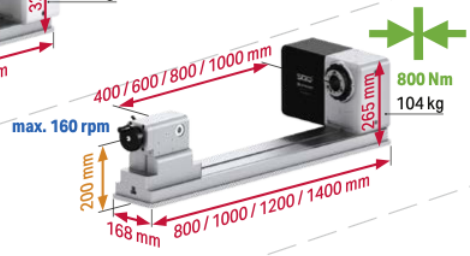
Overview of E-Series

More space for
workpieces and fixtures









530

520

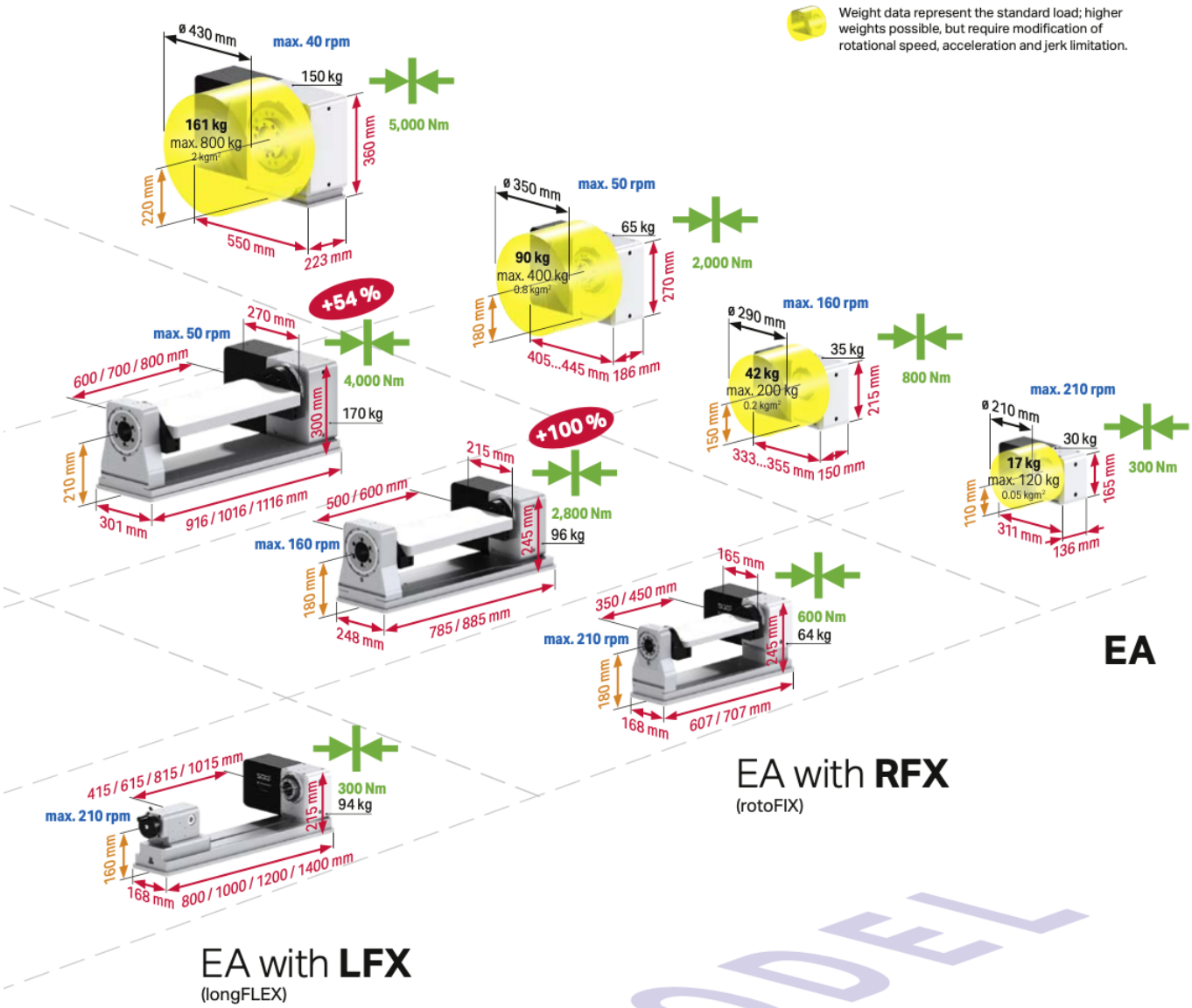
51X

SIZE

50X

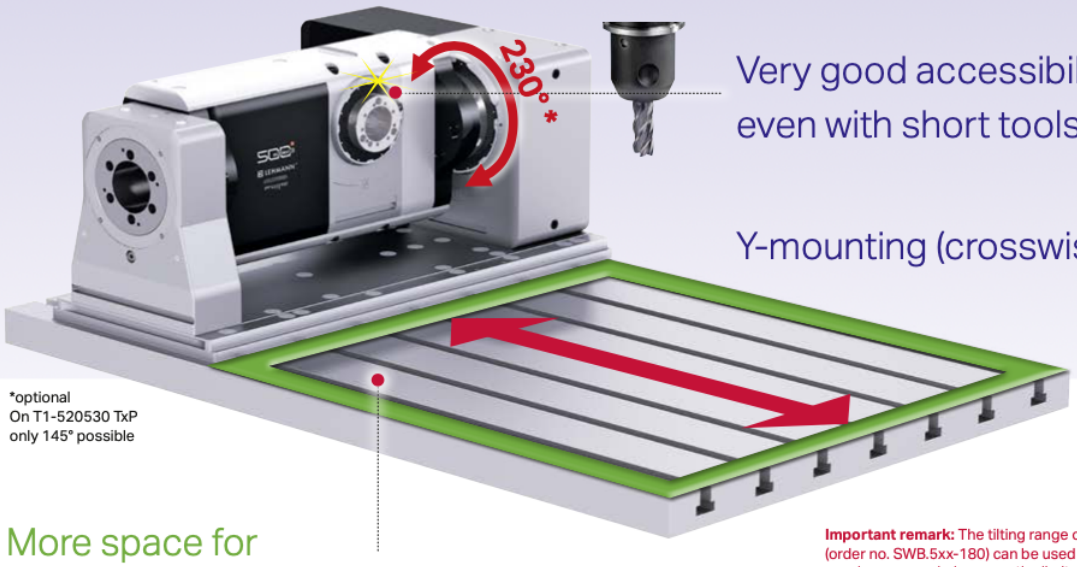
News in brief

1. High speed up to 210 rpm
2. Feed torque up to 850 Nm (tentative)
3. Steel base plates with hole pattern (suitable for slot spacing of 100 and 125 mm)
4. Cycle time 90° as fast as 0.21 sec.



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

Overview of T-Series



Very good accessibility, even with short tools

Y-mounting (crosswise)

*optional
On T1-520530 TxP
only 145° possible

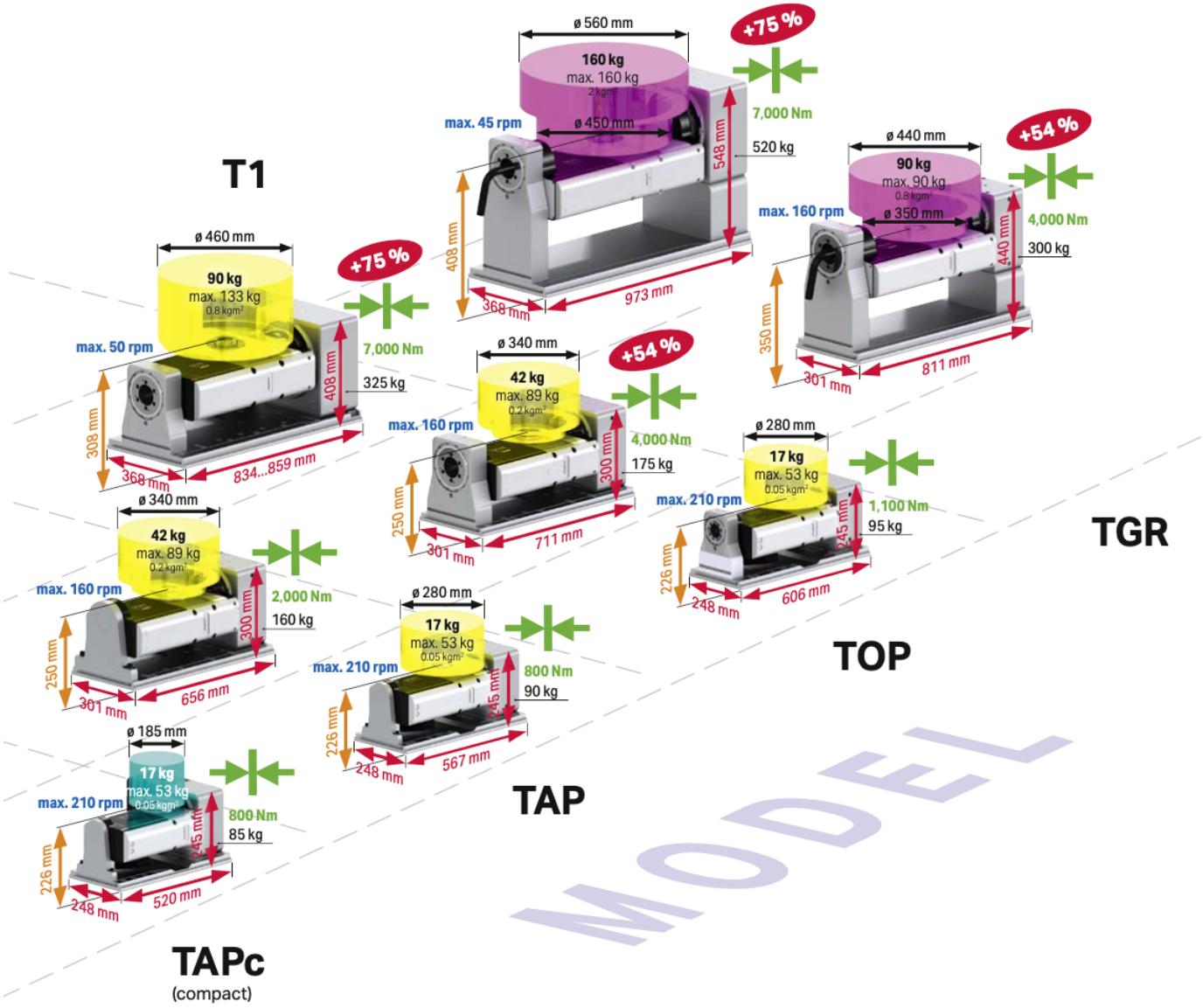
More space for workpiece and fixtures

Important remark: The tilting range of 180° (order no. SWB.5xx-180) can be used under usual reserve only, because the limit switches are also used as reference switches.

X-mounting (lengthwise)

News in brief

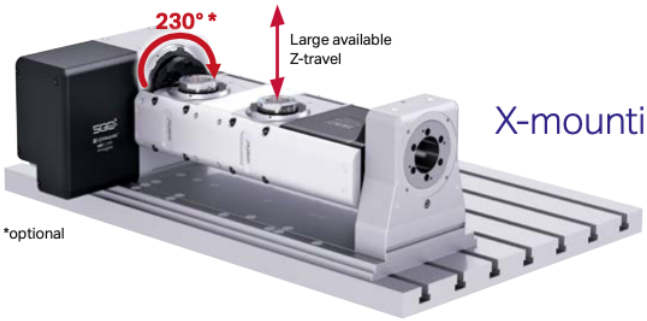
1. Up to 150 % higher clamping torque in tilting axis
2. Fewer variant – more solution
3. Larger workpiece ø possible
4. Spatially optimized arrangement of the dividing axis



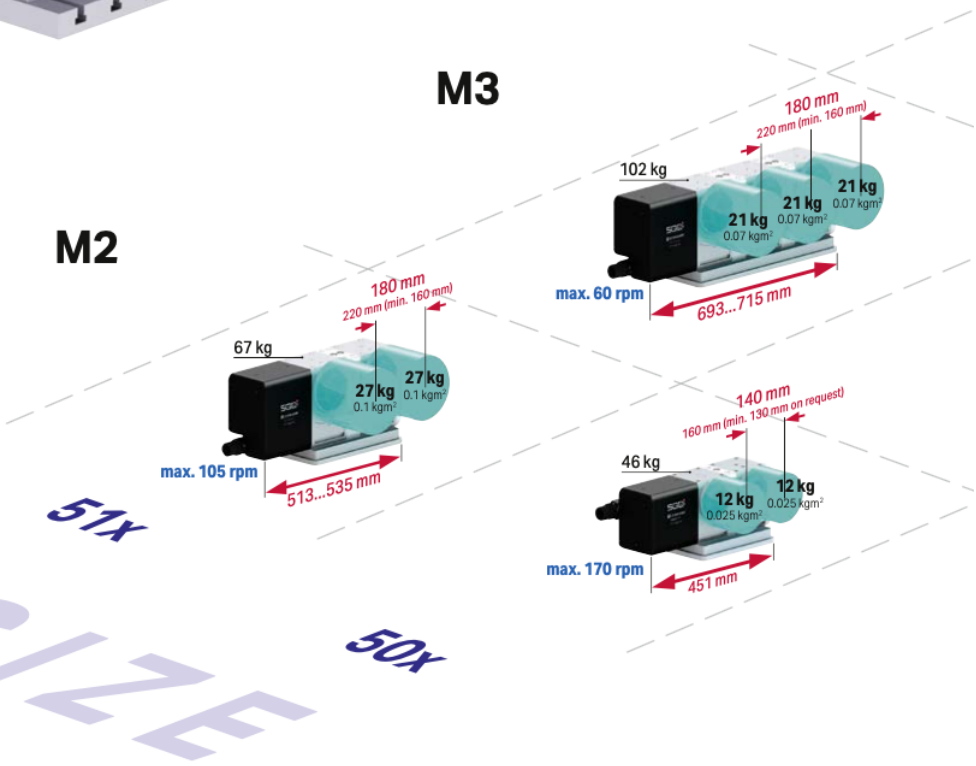
Weight data represent the standard load; higher weights possible, but require modification of rotational speed, acceleration and jerk limitation.

50x510	508510 (standard) or 508510 (high speed)
51x520	510520 (standard) or 511520 (high speed)
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

Overview of M-Series

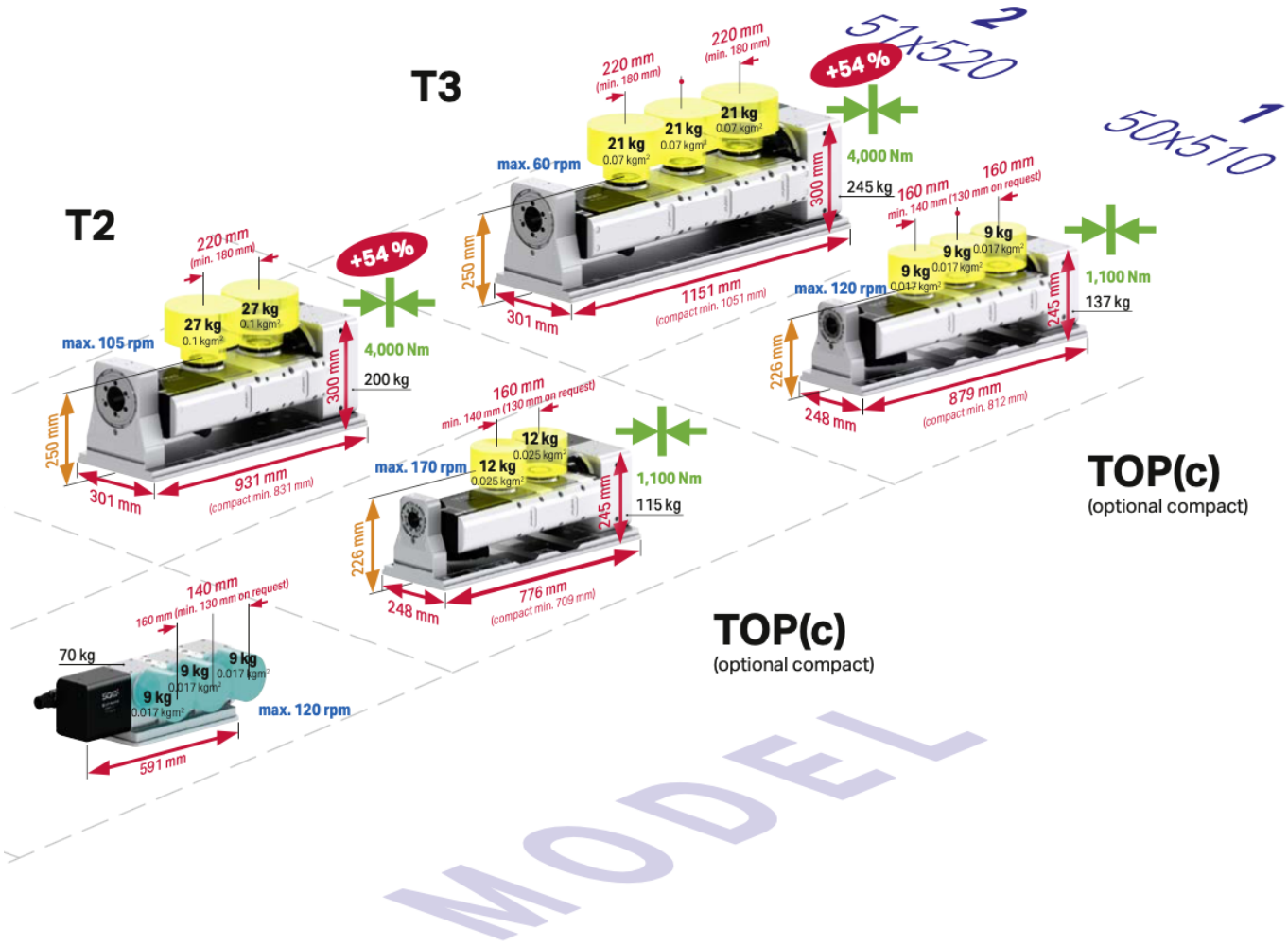


X-mounting (lengthwise)



News in brief

1. Up to 54 % higher clamping torque in tilting axis
2. Fewer variant – more solution
3. Spindle distance min. 130 mm
4. Spatially optimized arrangement of the dividing axis



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

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

Spindle System Accessories

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

Spindle accessories in rear

+ Rotary unions **up to 250 bar**
+ Clamping cylinder **23 kN at 120 bar**
+ Angular position measuring systems **as precise as ± 1 arcsec**

Spindle accessories in front

unique

AMF
EROWA
ftool INTERNATIONAL
GRESSEL Spanntechnik
HAINBUCH
LANG TECHNIK.de
NIEDERHAUSER SPANNTECHNIK UND SYSTEME
PAROTEC spanntechnik · robotik · engineering
ripas
ROEMHELD HILMA + STARK
SCHUNK
SwissChuck Precision Workholding
system 3R
ITG COLIN
Vischer & Bolli
YERLY

Tailstock and counter bearing

ripas zero point clamping system

EA-507 with ripas auto and ripas adapter

CAPTO clamping (on request)

EA-507 with CAPTO retrofit kit

Sales and Service

Present in over 20 countries: from sales consultation to the final service

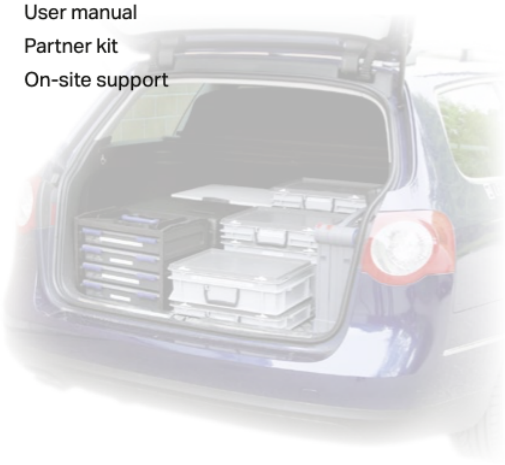
Services from A to Z

Pre Sales
+ First class literature
+ Application drawings 2D
+ 3D models
+ Example of applications

Sales & Post Sales
+ Specified offers for each machine
+ Wide range of workpiece clamping systems
+ Standardized interfaces

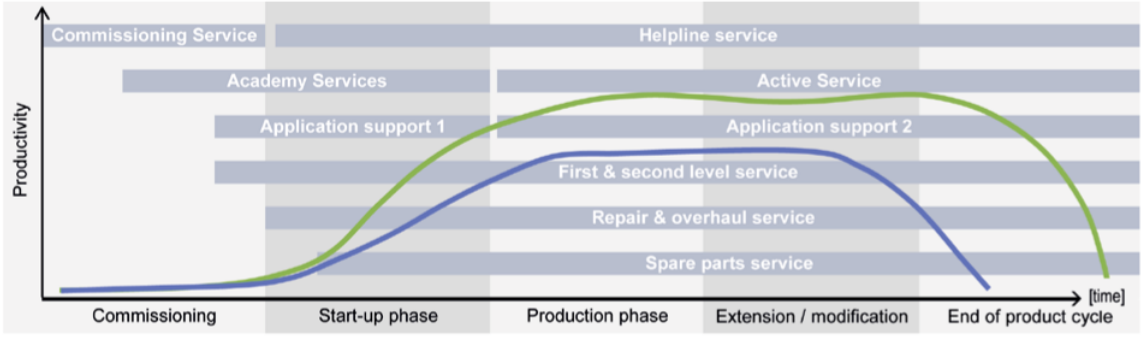
Commissioning
+ Parameter lists
+ Machine-specific commissioning instructions
+ User manual
+ Partner kit
+ On-site support

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

For more information please see www.lehmann-rotary-tables.com

LEHMANN®

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– Vietnam

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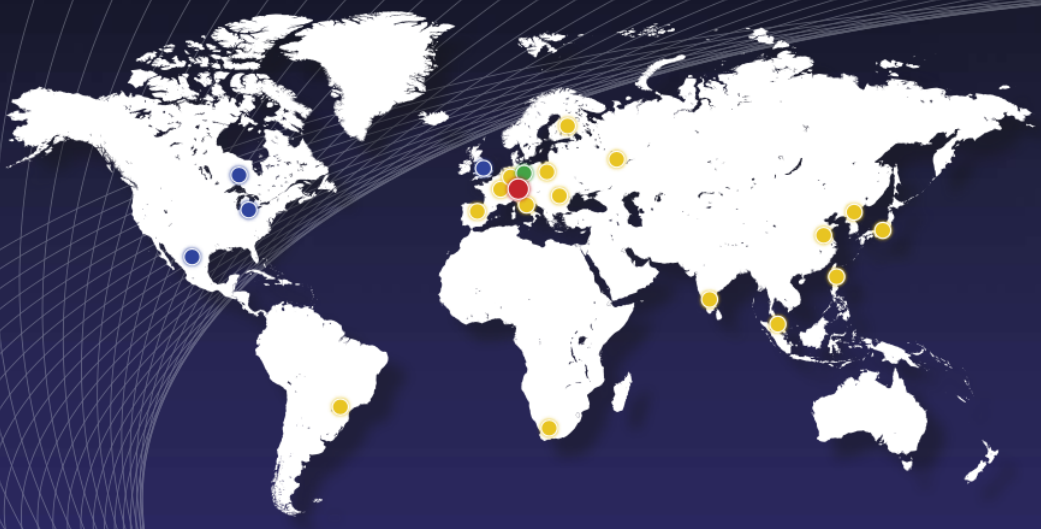
– South Africa



Headquarters direct sales partner pL Solutions® partner value added reseller & partner

More information (address, telephone number...) at www.lehmann-rotary-tables.com

Subject to change / Edition: 10/2018