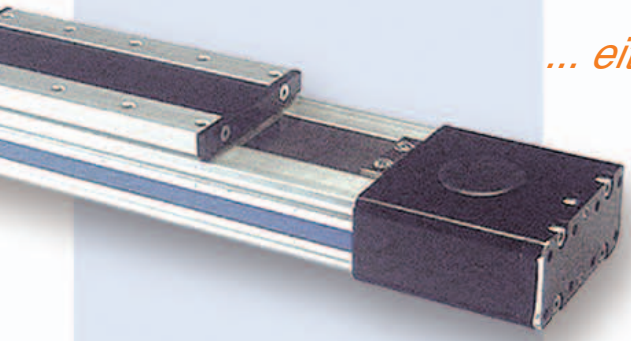
There are many positioning systems ... but the Franke system is the most versatile



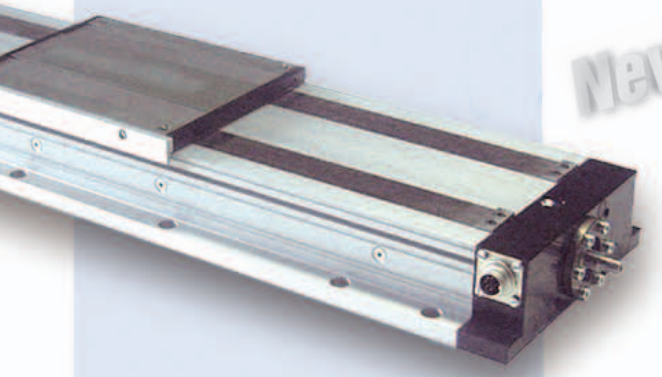
... either linear tables or linear modules

1. Positioning, automation, production with the innovative Franke technology

Franke linear modules of the series TLH and TLP are equipped with the proven components of the aluminium roller guide and combine high transfer speeds with low weight and compact design.
The drive is produced either by means of a toothed belt or by a spindle. Stroke lengths up to 7 m and many accessories make Franke linear modules very versatile and competitive motion units.

2. Linear modules of series TLP

Optionally with toothed belt or spindle drive
Franke linear modules of series TLP are based on the proven Franke aluminium roller guide. The cassette rests on a closed aluminium profile and can be driven either by a spindle or a toothed belt. The drive unit is totally encased. The two versions are available in stroke lengths up to 3400mm and are convince the customers by their favourable price.

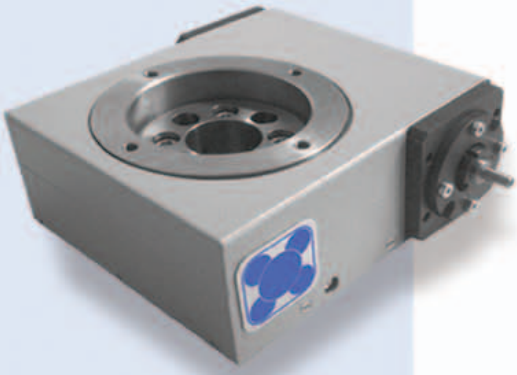


New

3. Compact, strong and totally encased:

Linear tables of series TSA with re-circulating ball guide
These are the power units of our programme: the new linear tables of series TSA with Franke re-circulating ball guide from aluminium. High precision and load capacity are the outstanding features of these tables which are mainly used e.g. in positioning and machining of work pieces.
The programme is completed by other series of linear tables which are found on the following pages. All series can be combined with each other thus producing multi-axis units.

... or rotary tables



4. Franke rotary tables for precise rotations

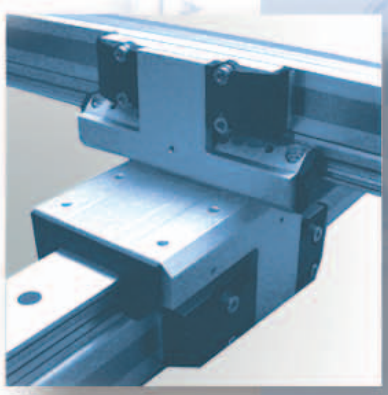
Franke antifriction bearings are integrated in our high-grade rotary tables. There are several series comprising a wide range of tables e.g. high-precision tables for measuring and testing tasks, or splash-proof variants for rough operating conditions, or a very compact, economically favourable table for high RPMs.
All tables can be equipped with motors; and if you use our special adapting and mounting plates they fit perfectly into the Franke positioning kit. Franke positioning systems are freely programmable motion units and are mainly used in the construction of machines and equipment.

...specific solutions for optimum performance in particular branches

Machine building

The feeding of grinding discs or the application of sealing material on complicated contours are application examples where Franke linear and rotary tables perform at a high level. Bearing and guide systems are well protected against environmental influences by metal covers or bellows.

The movable parts rest on the 4-point bearing system thus providing high load capacity for loads from whatever direction.

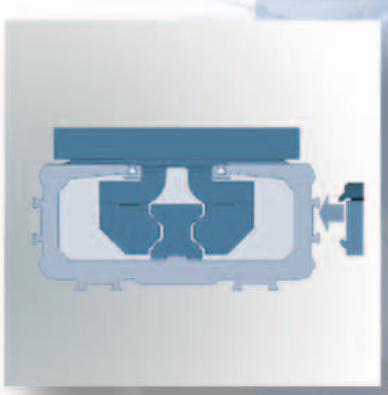


Pick & Place / Robots

compact
light
modular

The modular design of linear tables enables them to be adapted perfectly to any application. Numerous adapter parts and accessories complete the products to a kit. Particularly our modules of series TLH impress the customers by their versatility and their compact mounting dimensions.

Even long stroke distances are bridged without problems and work pieces or tools are quickly put to the desired place. Strong toothed belts provide quick propulsion. The light aluminium basic bodies together with the large rollers and the guide units accelerate very quickly in an energy-saving way.



Portal robots

fast
versatile
performing

Franke linear modules are also used in light robot portals for quick machining work. They are light and sturdy and form a perfect symbiosis with the aluminium carriers. If you use them together with a centre support which is available as accessory, they take the function of a girder.

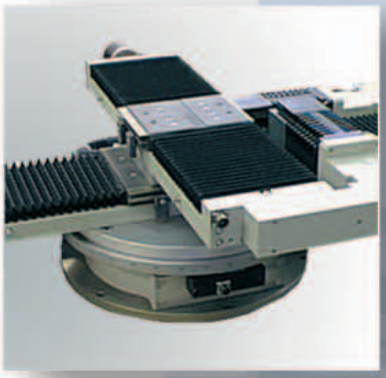
The integrated aluminium roller guide guarantees trouble-free running and maintenance-free operation during the whole lifetime.

Institutes and Research

high-precision
combinable
ready-to-use

In the research sector Franke positioning systems are well-known products. There are many applications for Franke components in spectrometers, climate chambers, laser positioning, and the orientation of samples.

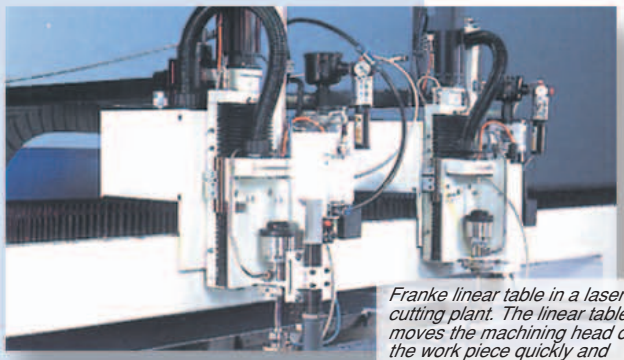
Linear and rotary tables can be adapted individually to the requirements. Where they are combined with electronic systems, software, and accessories the designer obtains complete units which are ready for use in research and experimentation.
Famous universities range among the users of Franke systems.



Measuring and testing technique

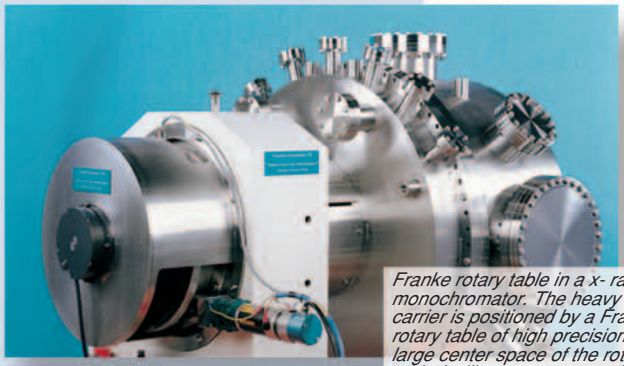
Measuring and testing of material samples often demand multi-axis setups with very high positioning accuracy. Our systems are used for example in 3 dimensional computer tomographs and laser applications. With Franke positioning systems the volume data of samples and work pieces are analysed in an easy and economically favourable way.

Application examples Positioning systems



Franke linear table in a laser cutting plant. The linear table moves the machining head over the work piece quickly and precisely. The positioning accuracy is about 0.01 mm.

(Photo Trumpf/SWS)



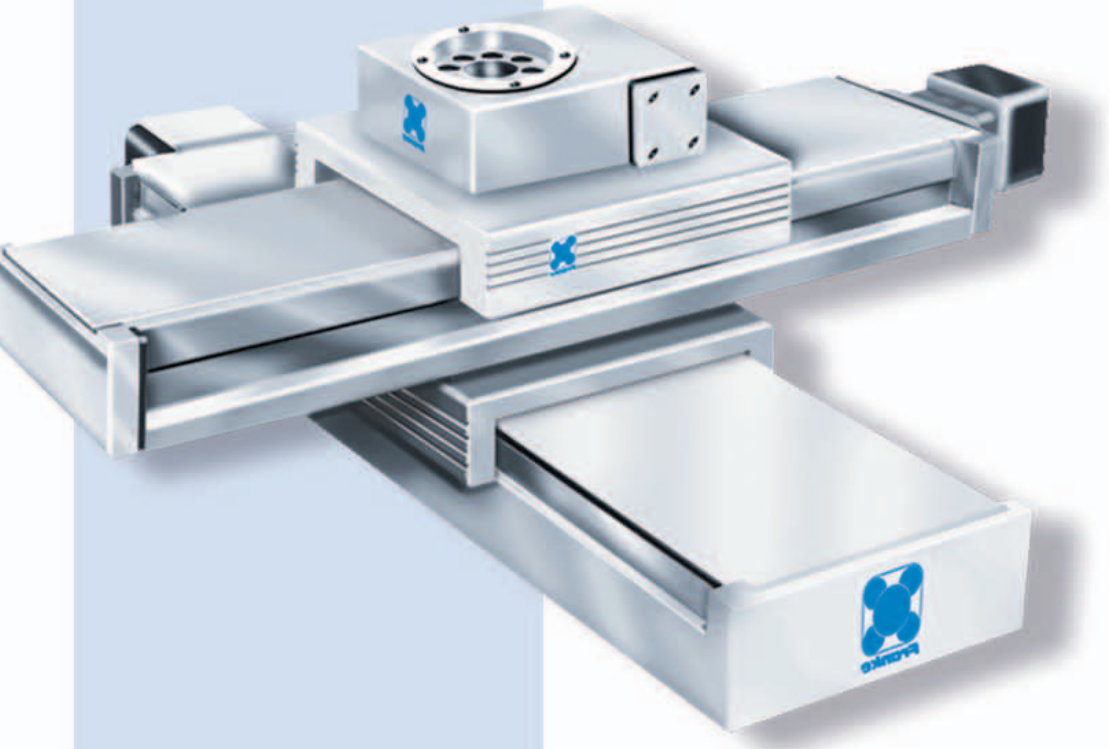
Franke rotary table in a x- ray monochromator. The heavy sample carrier is positioned by a Franke rotary table of high precision. The large center space of the rotary table facilitates easy centering of the x-ray.

(Photo Vacuum Gener.)

Franke positioining systems comprise several series of linear modules, linear tables and rotary tables. In addition we supply precision roller tables for manual displacement. Sturdy guide blocks with or without pneumatic drive complete our programme.

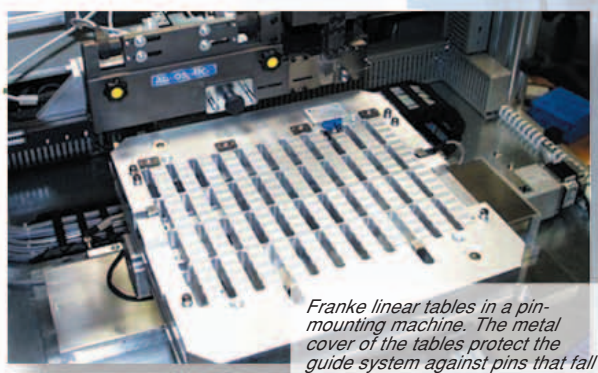
The modular design of the components facilitates the set-up of multi-axis positioning systems.

Well-performing CNC control systems complete our programme offering ready-to-use units completely mounted and well adapted to the intended application.



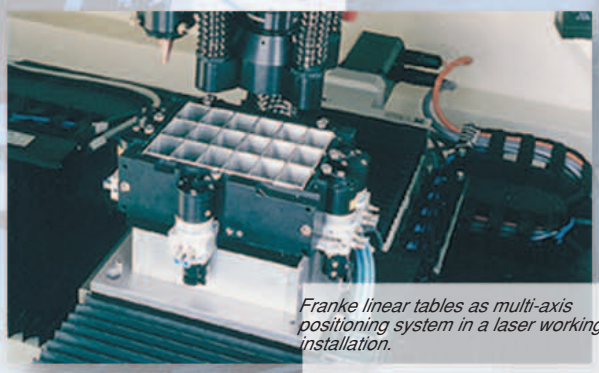
... visit our website

www.franke-gmbh.com



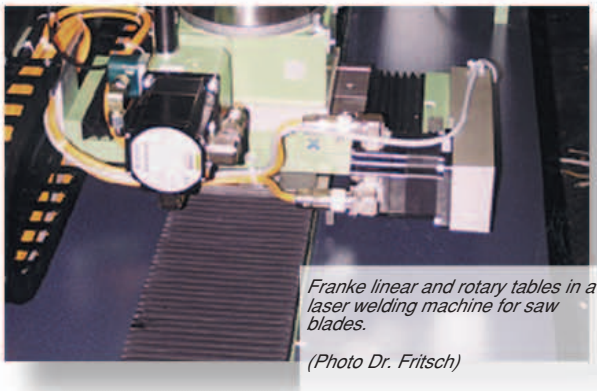
Franke linear tables in a pin-mounting machine. The metal cover of the tables protect the guide system against pins that fall down from the mounting plate.

(Photo Autosplice)



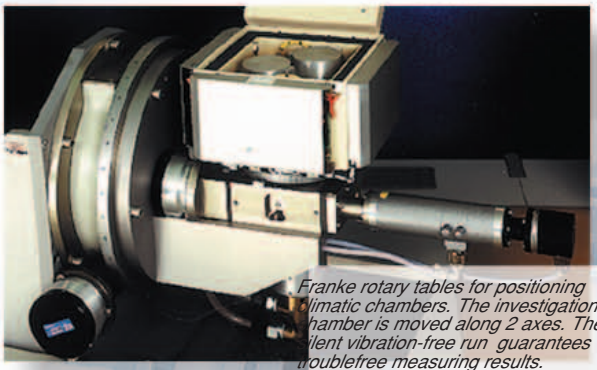
Franke linear tables as multi-axis positioning system in a laser working installation.

(Photo Innolas)



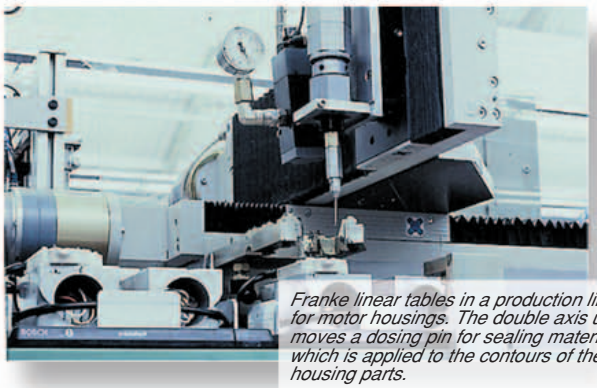
Franke linear and rotary tables in a laser welding machine for saw blades.

(Photo Dr. Fritsch)



Franke rotary tables for positioning climatic chambers. The investigation chamber is moved along 2 axes. The silent vibration-free run guarantees troublefree measuring results.

(Photo Litef)

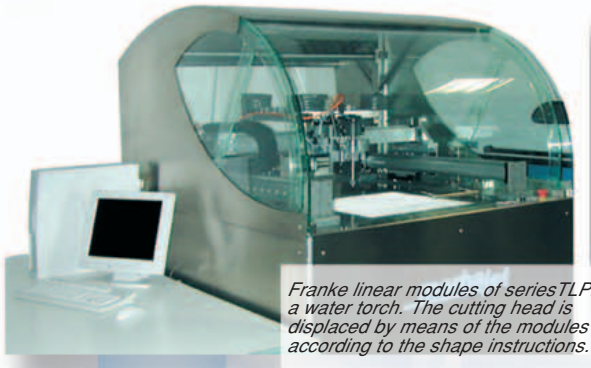


Franke linear tables in a production line for motor housings. The double axis unit moves a dosing pin for sealing material which is applied to the contours of the housing parts.

(Photo SWF)

Franke linear table in a laser portal for versatile machining tasks. Due to the clearance-free adjustment the displacement is accurate to the spot.

(Photo SITEC)



Franke linear modules of series TLPin a water torch. The cutting head is displaced by means of the modules according to the shape instructions.

(Photo MARBACH)

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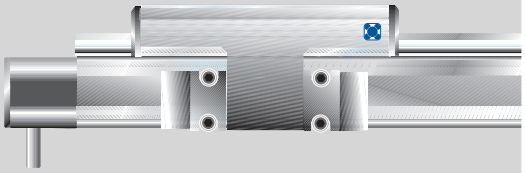
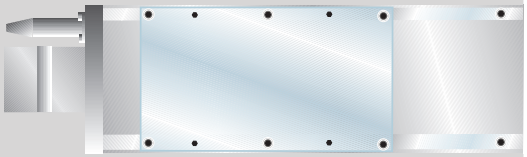
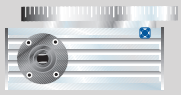
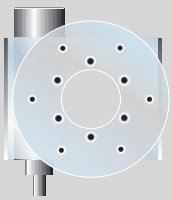
Survey of Franke Positioning systems

	Series	Features	Capacity	Precision	Speed	Flexibility
Linear modules						
	**Linear module TLP**	*the flexible* Linear modules with toothed belt or spindle drive and outer aluminium roller guide for highly dynamical applications up to 5m/s with light and medium loads. Very smooth and silent run.	◐	◔	●	◔
	**Linear module TLH**	*the powerful* Compact linear modules with integrated aluminium roller guides and toothed belt drive. Suitable for high speed up to 10m/s, dynamic acceleration up to 40m/s^2.	◔	◔	●	●
Linear tables						
	**Linear table TLA light series**	*the economical* Compact linear modules with integrated roller guide and spindle drive. Aluminium body with metal cover. For light and medium loads with high requirements for positioning and repetitive accuracy.	◔	◔	◑	●
	**Linear table TSA Heavy duty**	*the heavy-duty* Linear tables with recirculating elements and spindle, aluminium body and bellows. For maximum loads and very high requirements for positioning and repetitive accuracy.	●	●	◑	◔
Rotary tables						
	**Rotary tables TSD**	*the rotating* Franke 4-point-contact-bearings in aluminium housings with worm gear and transmission from 18:1 to 360:1. Either for high loads or high RPMs. Splash-proof versions, high precision.	●	●	◑	◔
						
CNC-control system						
	**CNC-control system**	*the controlling* CNC/SPS-control units for 1 to 8 axes. Wide selection range and individual design of the technical features. Hard- and software especially for your application, ready-to-use with Franke positioning systems such as linear modules and tables.				

● top ◔ very good ◑ good ◔ soph

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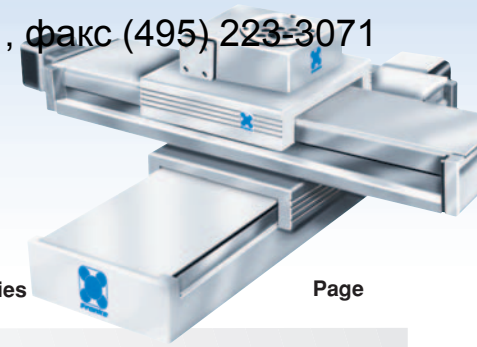


Toothed belt
Linear motor
Spindle
Worm gear

Stroke/resp. diameter [mm]
0 200 500 1000 2000 4000 7000

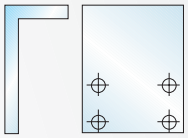
Load rating [kN]
5 10 15 20 25 30 35

Page
82- 83
84 - 85
86 - 87
88 - 89
90 - 92
93 - 95

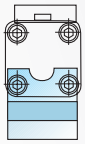
Accessories

Page

Mounting angle

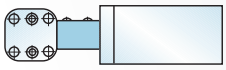


Central support

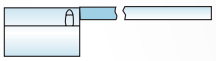


Connection shaft

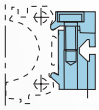
Motor fastening



Elec. connection



T-groove connection



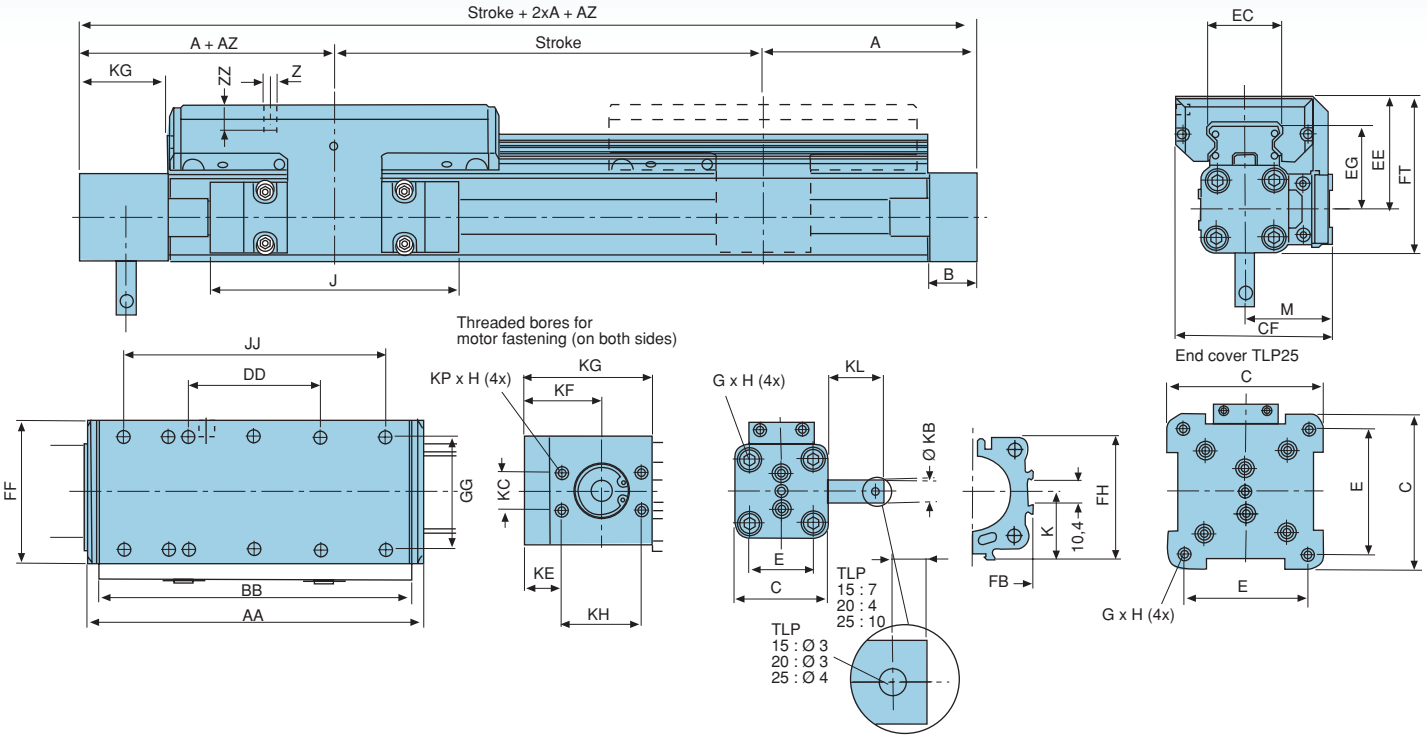
96 - 100

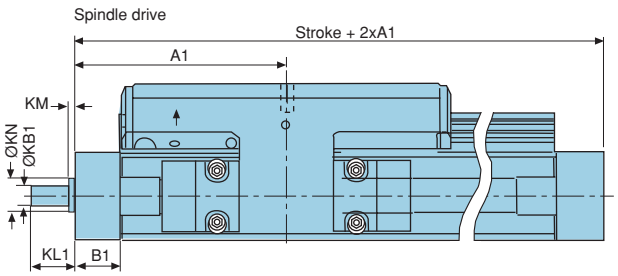
isted

Linear modules

The Flexible

Series TLP15R-25R with toothed belt drive





Series	A	A1	B	B1	C	E	G	H	J	K	M	Z
TLP15	125	100	22	22,0	41	27	M5	10	117	21,5	40,5	M6
TLP20	150	125	25	25,5	52	36	M6	12	152	28,5	49,0	M6
TLP25	200	175	25	33,0	87	70	M6	12	200	43	62	M6

Series	Load rating		AA	AZ	BB	DD	CF	EC	EE	EG	FB	FF	FH	FT	GG	JJ	KB	KB1 ^{h7}	KC	KE	KF	KG	KH	KL	KL1	KM	KN	KP	ZZ
	Co	C																											
TLP15	7500	5900	154	10	144	60	72,5	32,5	53	39	40	64	39,5	73,5	50	120	10_{j6}	6	15	22,0	37,0	57	30	24	17	2	13	M5	12
TLP20	8500	6700	197	11	187	80	91,0	42,0	62	48	52	84	51,7	88,0	64	160	10_{j6}	10	18	17,5	36,5	61	38	26	31	2	20	M6	12
TLP25	23700	16900	276	24	266	120	117,0	63,0	75	57	76	110	77,0	118,5	90	240	16_{j6}	15	32	23,5	48,5	85	50	34	43	3	28	M8	16

Dimensions [mm]

Consist of:
- Anodized Aluminium body
- External Aluminium roller guide
- Integrated toothed belt

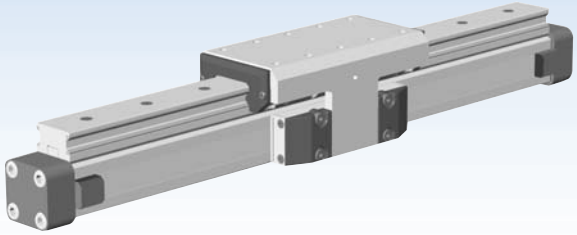
Features:
- Fast and dynamic movements
- Light and compact design
- Cassettes with felt seal
- Strokes up to 3400 mm
- Toothed belt inside aluminium housing with steel cover
- Temperature range -30°C up to 80°C
- Low maintenance due to lifetime lubrication

Load capacity:
- See survey on page 80-81
- We are gladly prepared to calculate the loads in your application

Options:
- Motor-/gear assembly by hollow shaft
- Custom specified Motor-/gear assemblies
- With stepper- or servomotors
- Counterwise actuating direction (1) or bi-parting version (2 carriers)
- Unit switches fixed at dovetail grooves
- Multi axis assemblies including intermediate drive shafts, adapter plates and profile mountings
- Solutions for integrated Automation applications including
- Franke CNC/PLC-controller (1-8 axis)

Material: Grooved profiled tube from aluminium, anodized, toothed belt from polyurethane steel cord fabric, belt wheels from aluminium, cover tape from corrosion-free tempering steel, roller guide, and slider from anodized aluminium, rolling elements from ball bearing steel 100 Cr 6, carrying rail from anodized aluminium and steel.

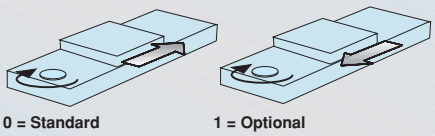
Further Informations: accessories, technical information page 99-101

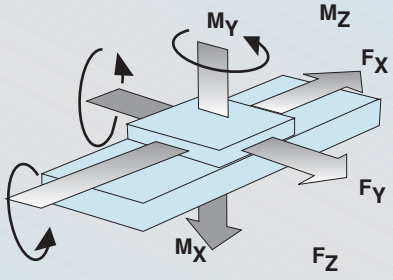


		Stroke [mm]	Order number TLP15 with tooth belt	TLP15 with spindle	TLP20 with tooth belt	TLP20 with spindle	TLP25 with tooth belt	TLP25 with spindle
Linear modules		100	92700A	92700S	92734A	92734S	92768A	92768S
total length: Stroke + 2 x A + AZ		200	92701A	92701S	92735A	92735S	92769A	92769S
		300	92702A	92702S	92736A	92736S	92770A	92770S
		400	92703A	92703S	92737A	92737S	92771A	92771S
		500	92704A	92704S	92738A	92738S	92772A	92772S
		600	92705A	92705S	92739A	92739S	92773A	92773S
		700	92706A	92706S	92740A	92740S	92774A	92774S
		800	92707A	92707S	92741A	92741S	92775A	92775S
		900	92708A	92708S	92742A	92742S	92776A	92776S
		1000	92709A	92709S	92743A	92743S	92777A	92777S
		1100	92710A	92710S	92744A	92744S	92778A	92778S
		1200	92711A		92745A	92745S	92779A	92779S
		1300	92712A		92746A	92746S	92780A	92780S
		1400	92713A		92747A	92747SB	92781A	92781S
		1500	92714A		92748A	92748S	92782A	92782S
		1600	92715A		92749A	92749S	92783A	92783S
		1700	92716A		92750A	92750S	92784A	92784S
		1800	92717A		92751A	92751S	92785A	92785S
		1900	92718A		92752A	92752S	92786A	92786S
		2000	92719A		92753A	92753S	92787A	92787S
		2100	92720A		92754A		92788A	92788S
		2200	92721A		92755A		92789A	92789S
		2300	92722A		92756A		92790A	92790S
		2400	92723A		92757A		92791A	92791S
		2500	92724A		92758A		92792A	92792S
		2600	92725A		92759A		92793A	92793S
		2700	92726A		92760A		92794A	92794S
		2800	92727A		92761A		92795A	92795S
		2900	92728A		92762A		92796A	92796S
		3000	92729A		92763A		92797A	92797S
		3100	92730A		92764A		92798A	92798S
		3200	92731A		92765A		92799A	92799S
		3300	92732A		92766A		92800A	92800S
		3400	92733A		92767A			
Performance:								
Max. exerted force (N)		F_Z / F_Y		857		1171		3111
Max. moment (Nm)		M_Y, M_Z / M_X		55/18		91/36		313/139
Load rating: stat. / dyn.		Co / C		3400/4200		5400/5400		15100/13500
Max speed		(m/s)	2	0,25	3	0,25/0,5	5	0,25/0,5/1,25/2,5
Linear way per revolution of motor		(mm)	60	5	60	5/10	100	5/10/25/50
Max. RPM of drive axis		(min^{-1})		2000		3000		3000
Max. acting force F_X	< 1 m/s	(N)	55	250		600		1500
at speed	1-2 m/s	(N)	50	250	150	600	425	1500
	> 2 m/s	(N)	-	-	120	-	375	-
Max.permissible driving moment	< 1 m/s	(Nm)	0,9	-	100	1,5/2,8	300	4,2/7,5/20/20
at speed	1-2 m/s	(Nm)	0,9	0,6	2,3	-	10,0	-
	> 2 m/s	(Nm)	-	-	2,0	-	9,5	-
Max. acceleration / retardation		(m/s^2)	10	10	1,8	10	7,5	10
Repetitive accuracy		(mm/m)		±0,05	10	±0,05	10	±0,05
Positioning accuracy*		(mm/m)		±0,15		±0,15		±0,15
Running accuracy		(mm)		±0,03		±0,03		±0,03
Mass (stroke Ø) / add. per 100mm / carriage		(kg)		18/0,43/0,75	1,9/0,36/0,75	3,7/0,7/1,18	8,2/1,32/2,5	8,8/1,01/2,5

* depending on several factors

Running direction

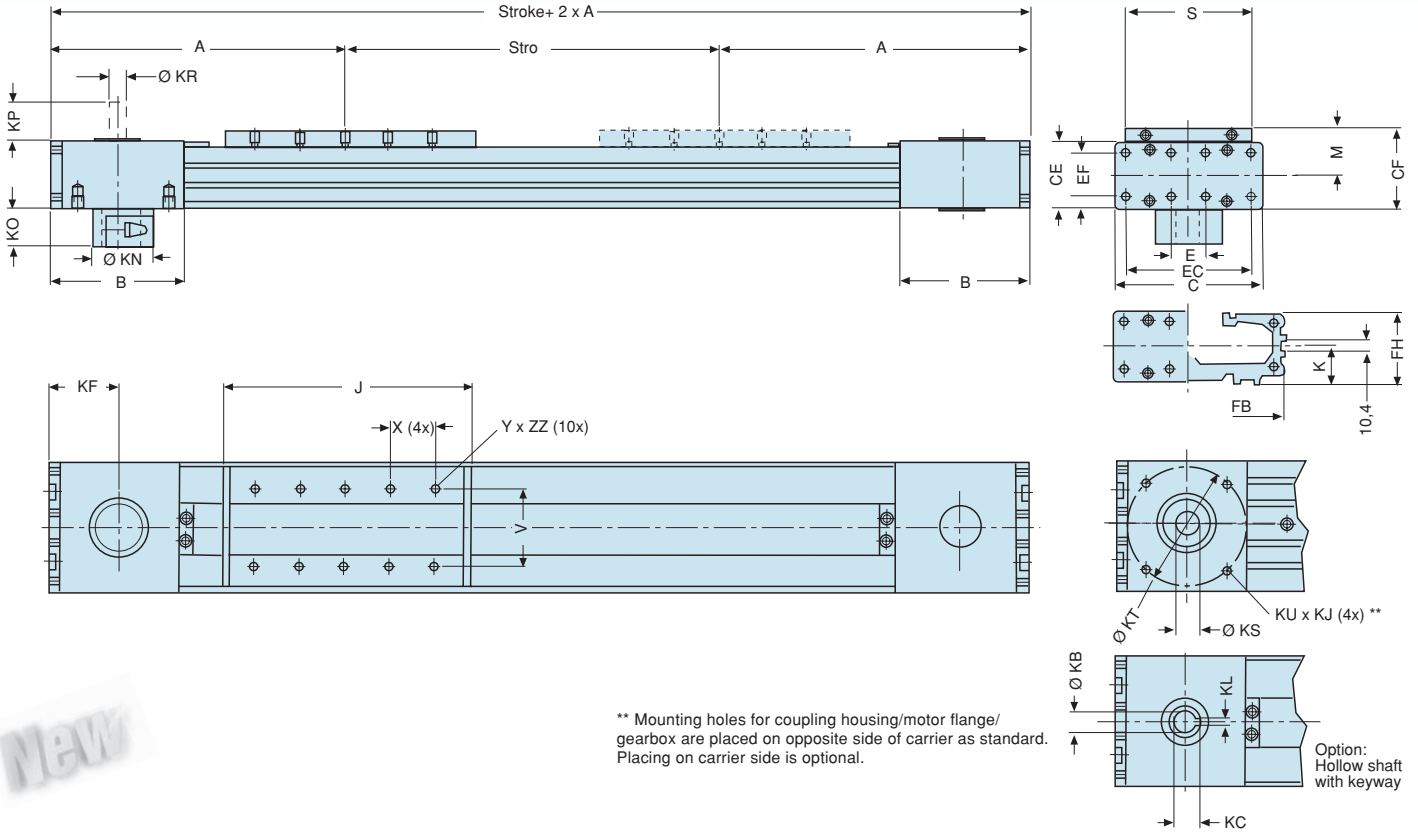




Linear modules

The Powerful

Series TLH15 - 35



New

** Mounting holes for coupling housing/motor flange/ gearbox are placed on opposite side of carrier as standard. Placing on carrier side is optional.

Series	Dimensions																												
	A	B	C	E	G	H	J	K	M	S	V	X	Y	CE	CF	EC	EF	FB	FH	KF	KB*	KC	KL	KJ	KN	KO	KP	KR	KS*	KT	KU	ZZ
15	218	88	93	25	M5	10	178	21,5	31	85	64	40	M6	42	52,5	79	27	92	39,5	49,0	16^{H7}	18,3	5	8	34	21,7	30	16^{h7}	16^{H7}	82	M8	8
20	262	112	116	28	M6	12	218	28,5	38	100	64	40	M6	56	66,5	100	36	116	51,7	62,0	22^{H7}	24,8	6	12	53	30,0	30	22^{h7}	22^{H7}	106	M10	10
35	347	147	175	18	M6	12	263	43,0	49	124	90	60	M6	87	92,5	158	70	164	77,0	79,5	32^{H7}	35,3	10	19	75	41,0	35	32^{h7}	32^{H7}	144	M12	10

Dimensions [mm] * other dimensions for KS andKB on request

Components:
- Slotted profile with dovetail grooves
- Integrated aluminium roller guide
- Integrated toothed belt drive

Characteristics:
- High speed and accelerations
- Compact design
- Strokes up to 7000 mm
- Ideal for multi-axis applications
- Aluminium roller guide and toothed belt-drive in slotted profile integrated and covered with stainless steel sealing band
- Ambient temperature range: -30°C up to 80°C

Loadings:
- See performance overview
  Use our technical service for calculations

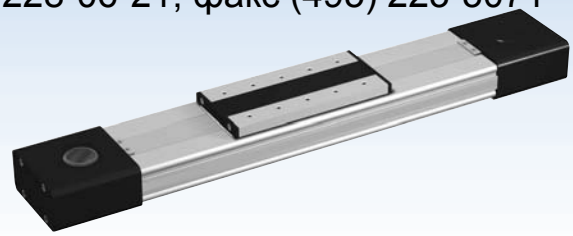
Mounting position:
- Optional. For vertical movements we recommend a brake
- Speed up to 10 m/s
- Acceleration up to 40 m/s²

Maintenance:
- Low maintenance due to lifetime lubrication

Options:
- Integrated planetery gearbox
- Motor-/gear assembly by hollow shaft with keyway
- Custom specified motor-/gear assemblies
- With stepper- or servomotors
- Counterwice actuating direction (1) or bi-parting version (2 carriers)
- Unit switches fixed at dovetail grooves
- Multi axis assemblies including intermediate drive shafts, adapter plates and profile mountings
- Solutions for integrated automation applications including Franke CNC/PLC-controller (1-8 axis)

Material: Grooved profiled tube from aluminium, anodized, toothed belt from polyurethane steel cord fabric, belt wheels from aluminium, cover from corrosion-free tempering steel, roller guide and slider from anodized aluminium, rolling elements from ball bearing steel 100 Cr 6, carrying rail from anodized aluminium and steel, temperature range.

Further informations: accessories, technical information page 99-101.



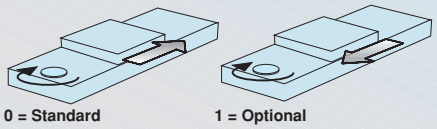
	Stroke [mm]	Order number TLH15 without motor	TLH20 without motor	TLH35 without motor
	100	92900A	92925A	92950A
	200	92901A	92926A	92951A
	300	92902A	92927A	92952A
	400	92903A	92928A	92953A
	500	92904A	92929A	92954A
	600	92905A	92930A	92955A
	700	92906A	92931A	92956A
	800	92907A	92932A	92957A
	900	92908A	92933A	92958A
	1000	92909A	92934A	92959A
	1200	92910A	92935A	92960A
	1400	92911A	92936A	92961A
	1600	92912A	92937A	92962A
	1800	92913A	92938A	92963A
	2000	92914A	92939A	92964A
	2500	92915A	92940A	92965A
	3000	92916A	92941A	92966A
	3500	92917A	92942A	92967A
	4000	92918A	92943A	92968A
	4500	92919A	92944A	92969A
	5000	92920A	92945A	92970A
	5500	92921A	92946A	92971A
	6000	92922A	92947A	92972A
	6500	92923A	92948A	92973A
	7000	92924A	92949A	92974A

Performance:

Load rating: stat. / dyn.		Co / C	3400 / 4200	5400 / 5400	18000 / 12500
Max. moment (Nm)		M_x, M_y, M_z	45 / 274	76 / 460	294 / 1233
Max speed		(m /s)	10	10	10
Max. acceleration / retardation		(m/s^2)	40	40	40
Max. acting force F_x	< 1m/s	(N)	1070	1870	3120
at speed	1-3 m/s	(N)	890	1560	2660
	> 3 m/s		550	1030	1940
Driving moment(without load)		(Nm)	1,2	2,2	3,2
Mass (stroke 0) / add per m / carriage		(kg)	3,8 / 4,3 / 1,0	7,7 / 6,7 / 1,9	22,6 / 15,2 / 4,7
Max.permissible driving moment	< 1 m/s	(Nm)	31	71	174
at speed	1-3 m/s	(Nm)	25	60	148
	> 3 m/s	(Nm)	16	39	108
Max. acceleration / retardation		(mm)	180	240	350
Max. speed at shaft (rpm)		(min $^{-1}$)	3000	2500	1700
Repetitive accuracy		(mm/m)	+/-0,05	+/-0,05	+/-0,05
Positioning accuracy*		(mm/m)	+/-0,15	+/-0,15	+/-0,15
Running accuracy		(mm)	+/-0,03 / 300	+/-0,03 / 300	+/-0,03 / 300

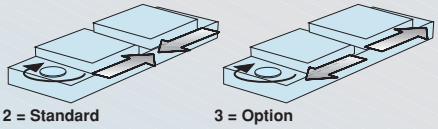
* depending on several factors

Running direction

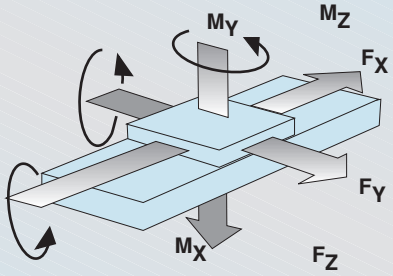


0 = Standard 1 = Optional

Bi-direct. Application



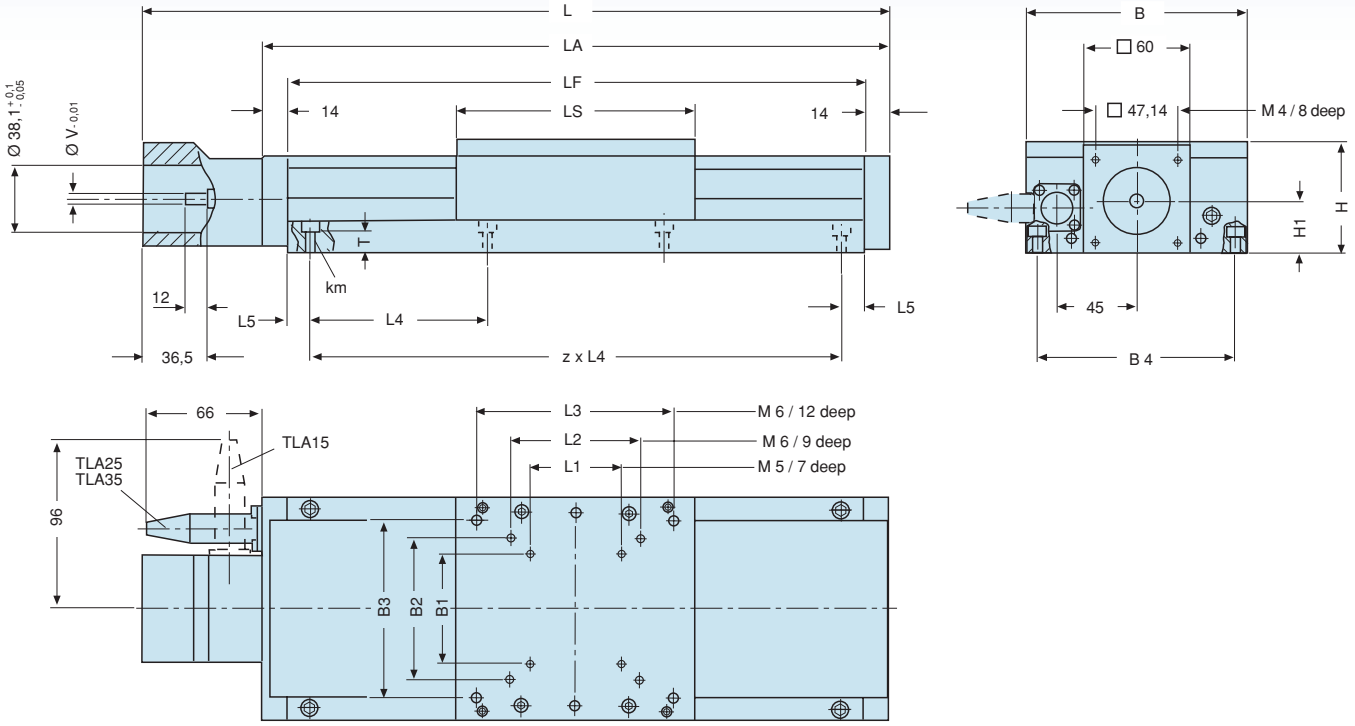
2 = Standard 3 = Option



Linear tables

The Economical with metal cover

Series TLA15 - 35



Size	Main dimensions				Bore configuration										Mount. dim. motor	
	L	LS	B	H	B1	B2	B3	B4	L1	L2	L3	L4	km DIN74	T	H1	ØV
15	352-952	135	125	63	100	-	-	112	112	-	-	100	5	6	29,0	6
25	392-992	175	165	75	100	120	-	150	112	150	-	120	6	6	31,0	6
35	452-1048	230	220	90	100	120	160	200	112	150	200	160	6	6	32,5	6

Dimensions [mm]

Consist of:
- Anodized body
- Integrated Aluminium roller guide
- Recirculating ball screw spindle drive

Features:
- Light and compact design
- Smooth and silent running
- Metal cover, metal strip
- Strokes up to 700mm

Spindle:
- Preloaded ball screw spindle, 5mm pitch
- Other spindles on request

Mounting position:
- Optional, with vertical position we recommend a brake

Positioning accuracy:
- Due to spindle pitch +/-0,05/300mm
- Other accuracies on request

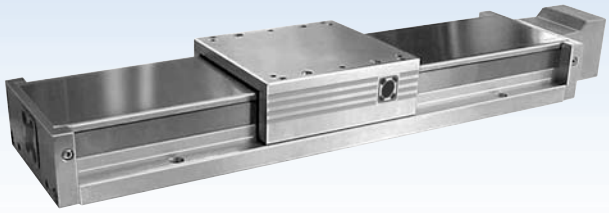
Repetitive accuracy:
- ≤ 0,01mm

Lubrication:
- Lifetime lubrication with bearing grease (see page 102)

Load capacity:
- See table (loads, moments)
- With loads without acceleration or moment loads static safety S≥3. with dynamic moments S ≥6. We are gladly prepared to calculate the static safety and lifetime in your application.

Operation temperature:
- -10°C to +75°C (other temperatures on request)

Options:
- Limit switches integrated inside the table
- Reference switches
- Adapting plates for motors of your choice
- Other motors
- Complete positioning systems including Franke CNC-control units and software (1-8 axes), see page 94-95.
- Please consult us.



TLA15

Stroke	Load rating C [N]	Moments Mcx [Nm]	Moments Mcy,Mcz [Nm]	Length L5	Length L	Length LA	Length LF	Length Z [Anzahl]	Traverse speed max. [m/min.]	RPM Spindle max. [min.-1]	Spindle-Ø x -pitch	Fast. screw DIN912 with wash. DIN433 [Anz.x Gr.]	Weight [kg]	Order number
100	3000	187	228	78	352	284	256	1	15	3000	12x5	4xM5	3,0	92600A
200	3000	187	228	28	452	384	356	3	15	3000	12x5	8xM5	3,8	92601A
300	3000	187	228	78	552	484	456	3	15	3000	12x5	8xM5	4,8	92602A
400	3000	187	228	28	652	584	556	5	15	3000	12x5	12xM5	5,6	92603A
500	3000	187	228	78	752	684	656	5	11	2200	12x5	12xM5	6,4	92604A
600	3000	187	228	28	852	784	756	7	11	2200	12x5	16xM5	7,4	92605A
700	3000	187	228	78	952	884	856	7	10	2000	12x5	16xM5	8,5	92606A

Dimensions [mm], Load rating [N], Moments [Nm]

TLA25

Stroke	Load rating C [N]	Moments Mcx [Nm]	Moments Mcy,Mcz [Nm]	Length L5	Length L	Length LA	Length LF	Length Z [Anzahl]	Traverse speed max. [m/min.]	RPM Spindle max. [min.-1]	Spindle-Ø x -pitch	Fast. screw DIN912 with wash. DIN433 [Anz.x Gr.]	Weight [kg]	Order number
100	6000	433	551	88	392	324	296	1	15	3000	12x5	4xM6	5,8	92607A
200	6000	433	551	18	492	424	396	3	15	3000	12x5	8xM6	7,0	92608A
300	6000	433	551	68	592	524	496	3	15	3000	12x5	8xM6	8,2	92609A
400	6000	433	551	118	692	624	596	3	15	3000	12x5	8xM6	9,4	92610A
500	6000	433	551	48	792	724	696	5	11	2200	12x5	12xM6	10,6	92611A
600	6000	433	551	98	892	824	796	5	11	2200	12x5	12xM6	11,8	92612A
700	6000	433	551	28	992	924	896	7	10	2000	12x5	16xM6	12,0	92613A

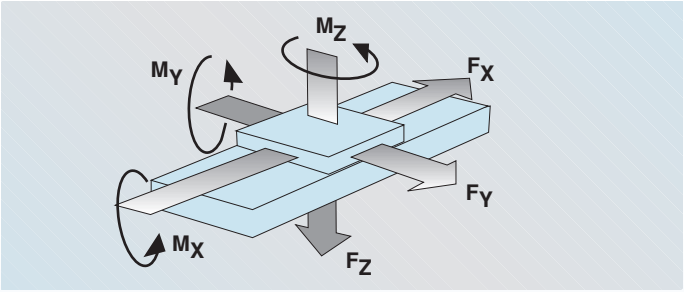
Dimensions [mm], Load rating [N], Moments [Nm]

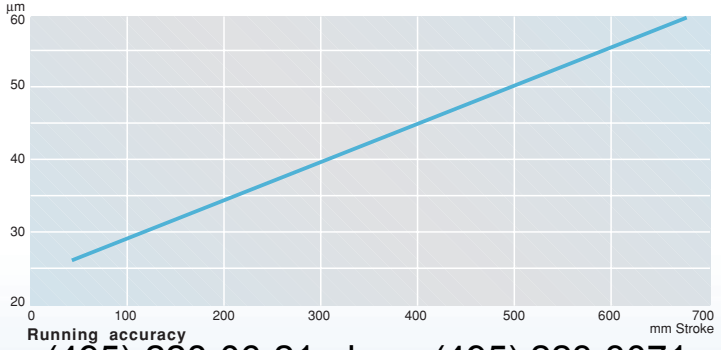
TLA35

New

Stroke	Load rating C [N]	Moments Mcx [Nm]	Moments Mcy,Mcz [Nm]	Length L5	Length L	Length LA	Length LF	Length Z [Anzahl]	Traverse speed max. [m/min.]	RPM Spindle max. [min.-1]	Spindle-Ø x -steig.	Fast. screw DIN912 with wash. DIN433 [Anz.x Gr.]	Weight [kg]	Order number
100	9000	995	1308	98	452	384	356	1	15	3000	12x5	4xM6	17,0	92614A
200	9000	995	1308	148	552	484	456	1	15	3000	12x5	4xM6	19,1	92615A
300	9000	995	1308	38	652	584	556	3	15	3000	12x5	8xM6	21,2	92616A
400	9000	995	1308	88	752	684	656	3	11	2200	12x5	8xM6	23,3	92617A
500	9000	995	1308	138	852	784	756	3	11	2200	12x5	8xM6	25,4	92618A
600	9000	995	1308	28	952	884	856	5	10	2000	12x5	12xM6	27,5	92619A
700	9000	995	1308	76	1048	980	952	5	10	2000	12x5	12xM6	29,6	92620A

Dimensions [mm], Load rating [N], Moments [Nm]

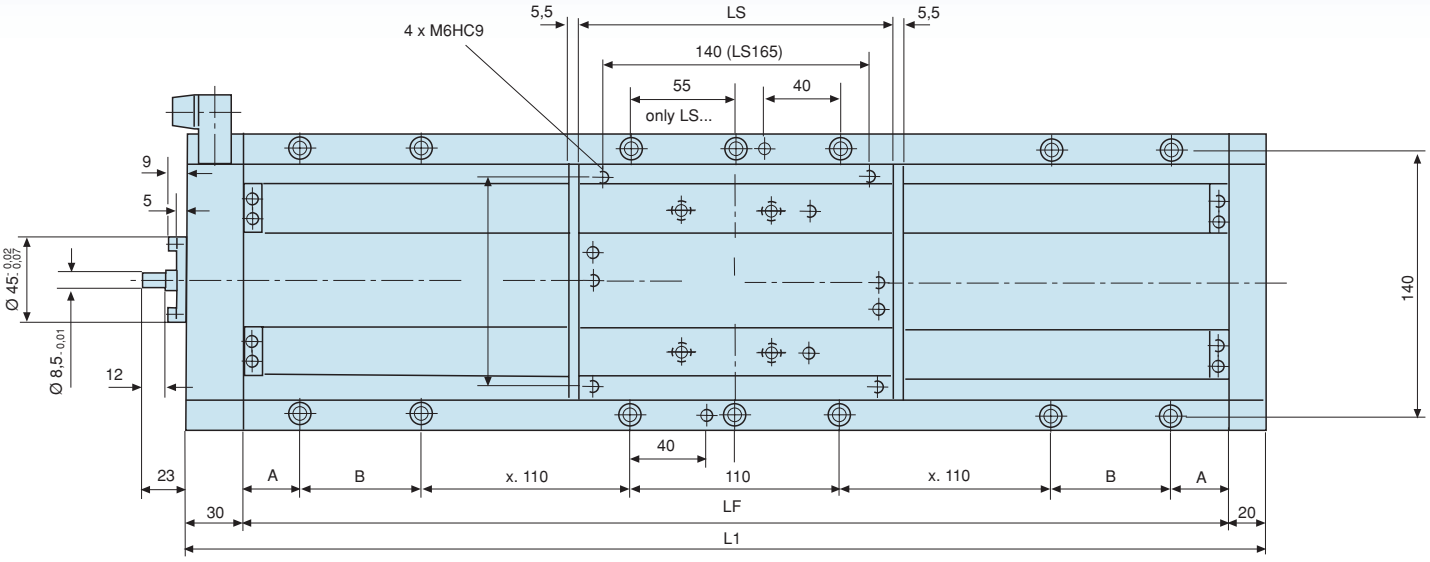


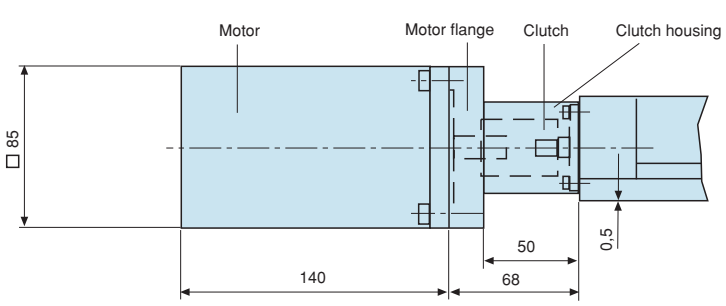


Linear tables

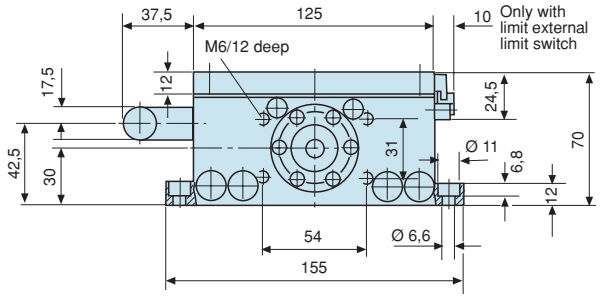
The Heavy-duty with metal cover

Series TSA06





Example: VRDM3910



Components:
- Anodized aluminium basic body
- Integrated re-circulating guide system from aluminium
- Ball screw

Features:
- Light and compact
- Smooth and silent run
- Metal cover, lateral cover by metal tape for perfect all-around protection
- Strokes up to 1500 mm

Spindle:
- Preloaded ball screw, pitch 5mm
- Other spindles respectively other pitches on request

Mounting position:
- Optional, for vertical operation we recommend a stop respectively a brake

Positioning accuracy:
- According to the spindle and pitch precision +/- 0.025/300 mm.
- Other precision on request

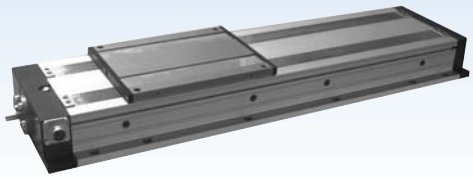
Repetitive accuracy:
- ≤ 0.01 mm

Lubrication:
- Lifetime lubrication with ball bearing grease (see also page 102)

Load capacity: see table (load rating, moments)
- With simple load without acceleration or moment loads
- Safety S≥ 3. With dynamic moment loads we recommend S≥6.

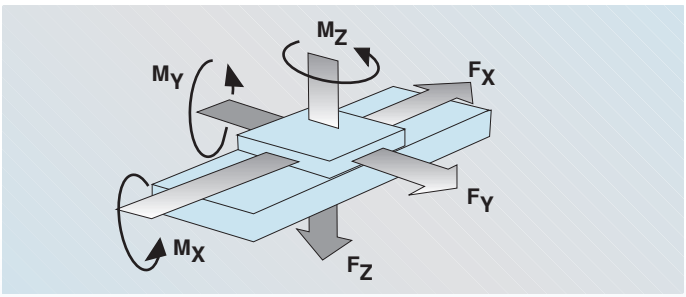
Operating temperature:
- -10 up to +75°C (enlarged temperature range on request).

Options:
- Inductive proximity switch integrated inside the table, adjusted to stroke end position
- Reference switch
- Attachment sets for motors according to the customer's demand
- Motors according to application, either stepping or AC motors
- Attachment of measuring systems (linear scale or shaft encoder)
- Complete automation units including Franke CNC/SPS control systems (1-8 axes) see page 94-95. Please consult us.

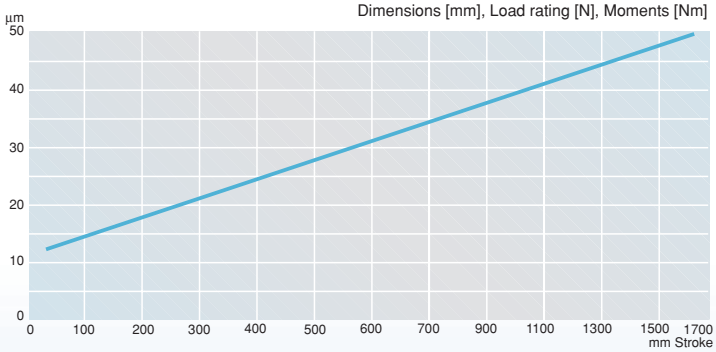


TSA06

Stroke	Load rating	Moments		Dimensions						Spindle		Speed of displ. (m/min.)		Spindle RPM (min^{-1})		Fastening Screws DIN912	Weight	Order No.
	C	Mcx	Mcy, Mcz	A	B	LS	LF-0,3	L1	(Number) X x 110	Ø	Steig.	Stand.	max.	Stand.	max.	(No.xSiz.)		
100	15000	670	1220	30,0	72,5	165	315	365	3 x 110	16	5	8	15	1600	3000	8 x M6	6,4	92621A
200	15000	670	1220	42,5		165	415	465	3 x 110	16	5	8	15	1600	3000	8 x M6	7,5	92622A
300	15000	670	1220	92,5		165	515	565	3 x 110	16	5	8	15	1600	3000	8 x M6	8,6	92623A
400	15000	670	1220	32,5		165	615	665	5 x 110	16	5	8	15	1600	3000	12 x M6	9,7	92624A
500	15000	670	1220	82,5		165	715	765	5 x 110	16	5	8	15	1600	3000	12 x M6	10,8	92625A
700	15000	670	1220	22,5		165	915	965	7 x 110	16	5	6	14	1200	2800	16 x M6	13,0	92626A
1000	15000	670	1220	97,5		165	1215	1265	7 x 110	16	10	12	25	1200	2500	16 x M6	16,3	92627A
1200	15000	670	1220	17,5		165	1415	1465	13 x 110	16	10	8	12	800	1200	28 x M6	18,5	92629A
1500	15000	670	1220	32,5		165	1715	1765	15 x 110	16	10	6	8	600	800	32 x M6	21,8	92629A
100	30000	1380	1930			280	430	480	3 x 110	16	5	8	15	1600	3000	8 x M6	7,5	92630A
200	30000	1380	1930			280	530	580	3 x 110	16	5	8	15	1600	3000	8 x M6	8,6	92631A
300	30000	1380	1930			280	630	680	5 x 110	16	5	8	15	1600	3000	12 x M6	9,7	92632A
400	30000	1380	1930			280	730	780	5 x 110	16	5	8	15	1600	3000	12 x M6	10,8	92633A
500	30000	1380	1930			280	830	880	7 x 110	16	5	8	15	1600	3000	16 x M6	11,9	92634A
700	30000	1380	1930			280	1030	1080	9 x 110	16	5	6	14	1200	2800	20 x M6	14,1	92635A
1000	30000	1380	1930			280	1330	1380	11 x 110	16	10	12	25	1200	2500	24 x M6	17,4	92636A
1200	30000	1380	1930			280	1530	1580	13 x 110	16	10	8	12	800	1200	28 x M6	19,6	92637A
1500	30000	1380	1930			280	1830	1880	15 x 110	16	10	6	8	600	800	32 x M6	22,9	92638A



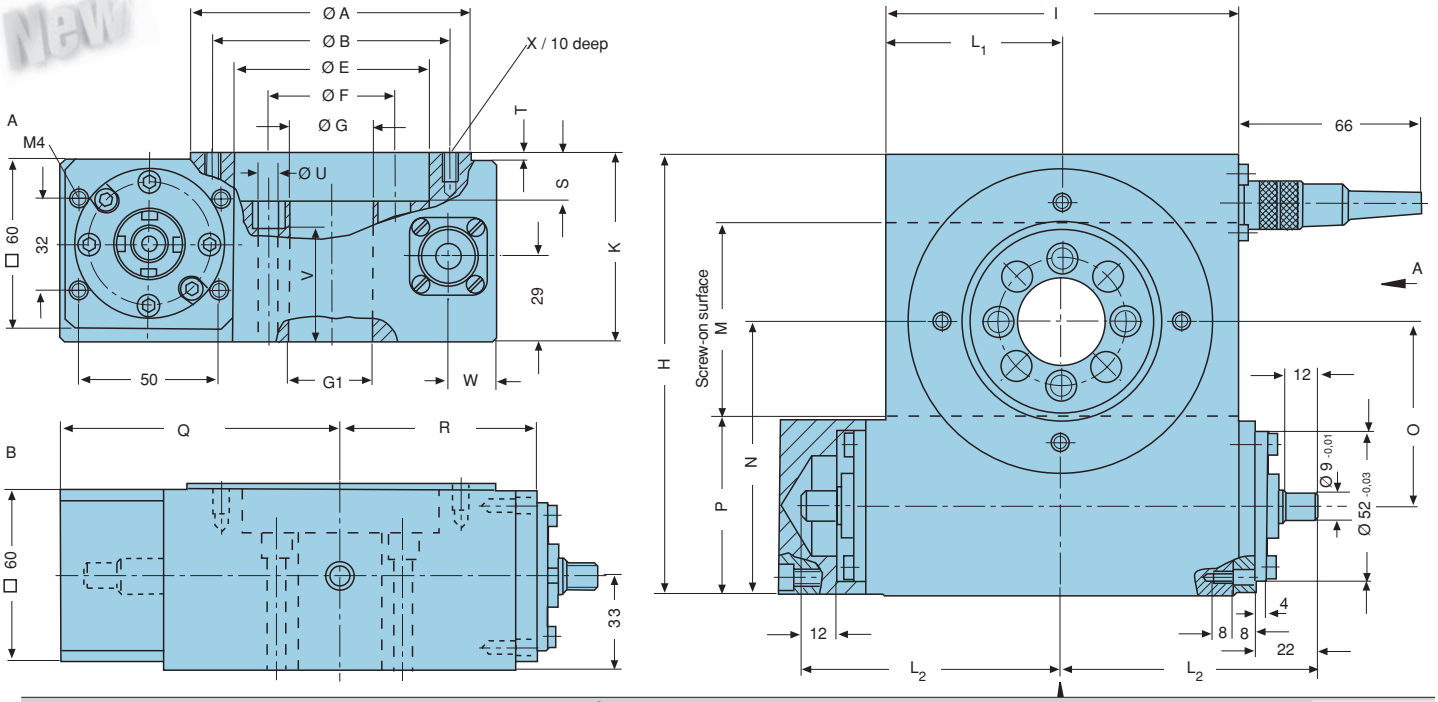
Dimensions [mm], Load rating [N], Moments [Nm]



Rotary tables

Series TSD...A

New



Nom. Ø	Load rating		Load moment	RPM input	Gear down	RPM output	max. input torque RPM	max. output torque RPM	Weight	Order no.
	C_0 (KN)	C(KN)	M_{C0} (Nm)	$N_{1\,max}$ C	i	$N_{2\,max}$ (Nm)	$M_{1\,max}$ (Nm)	$M_{2\,max}$ (Nm)	(kg)	
100	17,5	9	289	1800	18	100	5	54	5,5	91800A
200	43,0	18	433	2200	36	61	5	108	10,0	91801A

Nom. Ø	A	B	ØE H7/10 tief	ØF	ØG	ØG1 H7/12 tief	H	I	K	L1	L2	M	N	O	P	Q	R	S	T	U	V	W	X
100	85		70	45	30	30	155	125	65	62,5	91,5	70	96,0	65,0	61	99,5	69,5	17	2	4xØ6,6	39	17	4xM6
200	175		160	130	110	110	255	220	70	110,0	139,0	165	145,5	114,5	63	147,0	117,0	22	7	6xØ6,6	39	22	4xM6

			Ø100	Ø200
Radial/axial accuracy	µm		30	30
Positioning accuracy	"	+/-	60	40
Repititive accuracy	"	+/-	10	7

Dimensions [mm]

Consist of:
- Aluminium body with metal cover of non-corrosive steel
- Integrated Franke bearing with worm gear
- Big dimensioned worm drive for long lifetime

Features:
- Light and compact design
- Suitable for high revolutions
- High load capacity
- Centre-free construction

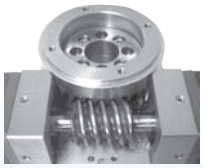
Load capacity:
- See load rating in the table
- Static safety without levers and moments S ≥3, static safety with levers and moments S ≥6.
- We are gladly prepared to calculate the loads and lifetime for your application.

Operation temperature:
- -10°C to +80°C
- Other temperatures on request

Options:
- 1 or 2 limit switches inside the table body with freely adjustable control cams
- Mounting flanges for special motors
- Stepping or servo motors according to your application
- Shaft encoder placed on the other end of the gear shaft
- Complete positioning systems including Franke CNC-control unit and software (1-8 axes), see page 94-95. Please consult us.

Lubrication:
- With bearing grease according to our maintenance instructions

Material:
Basic body: aluminium
Raceways: high alloy spring steel
Balls: steel
Worm gear: steel-bronce
Worm shaft: CK45N, ground and hardened
Housing: non corrosive steel



High performance worm gear drive in compact design

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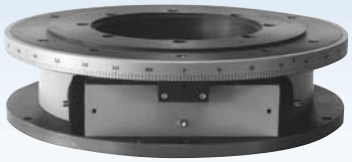
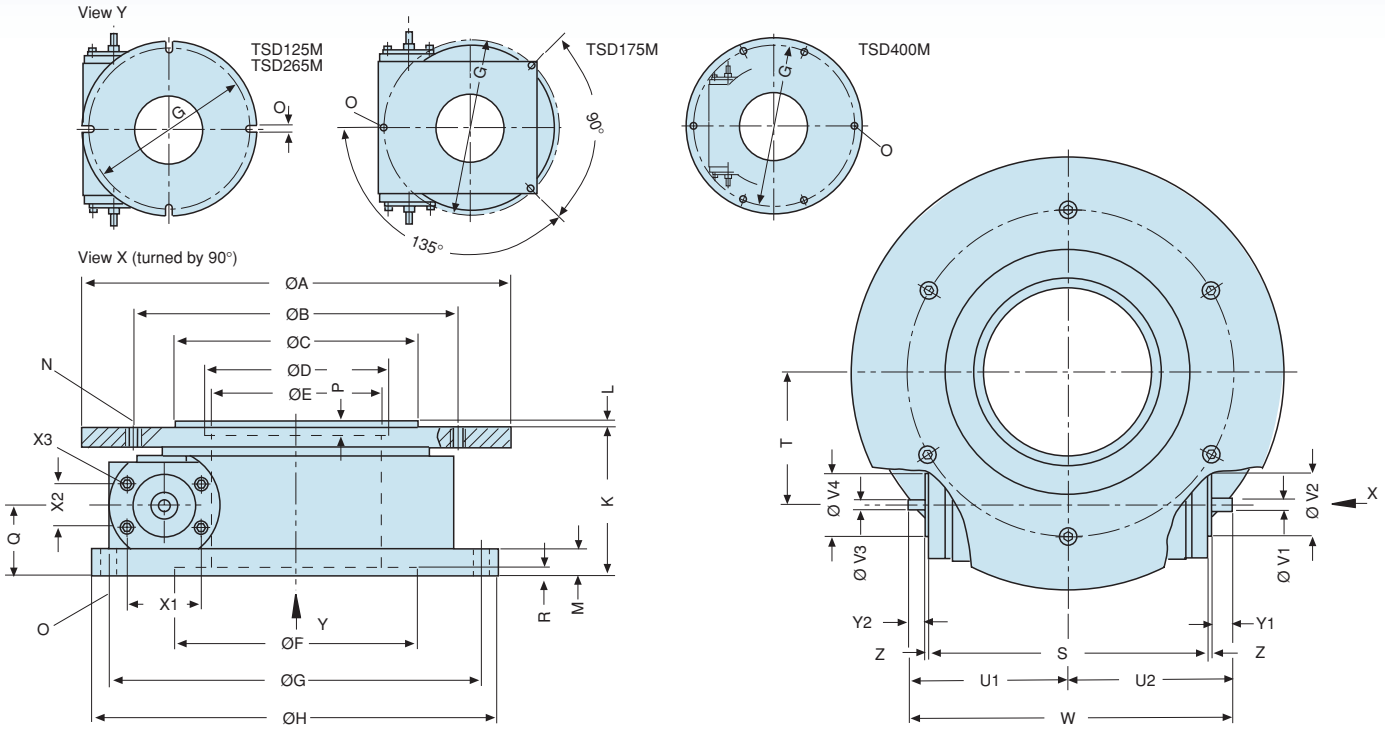


Series TSD...M



Nom. Ø A	Load rating C_0	Tilting moment C_{0M}	A	B	C^{g6}	D^{H7}	E	F^{H7}	G	H	K	L	M	N	O	P	Q	R	S	T	U1	U2	V_1^{g6}	V_2^{g6}	V_3^{g6}	V_4^{g6}	W	Weight	Order number
125	1950	110	125	100	-	70	70	100	150	165	75	-	10	4xM5	4x7,0	5	34	14	112	60	67,5	67,5	6	22	6	22	135	3	91042A
175	2550	140	175	126	-	102	70	102	178	-	82	-	12	6xM6	3x6,6	4	31	4	152	63	98,0	98,0	6	52	6	52	196	6	91043A
265	4200	310	265	200	150	-	105	150	230	250	90	4	16	6xM10	4x10,0	-	43	4	171	81	95,0	98,0	8	38	6	38	193	10	91044A
400	14100	1780	400	340	300	200	190	270	380	400	100	4	16	6xM10	6x11,0	5	43	5	229	139	124,0	127,0	8	38	6	38	251	27	91045A

Size	X_1	X_2	X_3	Y_1	Y_2	Z	Transmission	N max. [U/min]
		2 x M4/ 8 deep						
125	21,8	26,0	2 x M4/16 deep	8,0	9,0	2,8	360 : 1	7
175	50,0	32,0	4 x M4/13 deep	18,0	18,0	4,0	360 : 1	7
265	45,0	26,0	4 x M5/24 deep	10,0	7,0	2,5	360 : 1	7
400	45,0	26,0	4 x M5/24deep	9,0	6,0	2,5	360 : 1	7

Nominal-Ø [mm]		125	175	265	400
Radial / axial accuracy	µm	20	20	20	30
Positioning accuracy	" +/-	40	40	35	25
Repititive accuracy	" +/-	8	7	5	4
Max. input torque	Nm	0,7	0,9	1,5	2
Max. output torque	Nm	70	75	160	290

Dimensions [mm], Weight [kg], Load rating [N], Moments [Nm]

Consists of:
- Aluminium body with metal cover
- High precision worm drive

Features:
- Light and compact design
- High stiffness
- High accuracy
- Centre-free construction

Load capacity:
- see load rating in the table. For best accuracy und lifetime we recommend a static safety of S ≥ 3. We are gladly prepared to calculate the load situation of your application for you.

Operating temperature: -10°C to 80°C, other temperatures on request.

Adjustment:
- Antifriction bearing and precision worm gear are adjusted without clearance.

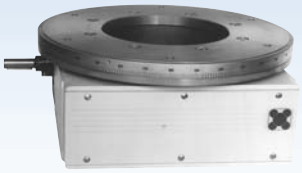
Lubrication:
- With bearing grease according to our maintenance instructions

Options:
- 1 or 2 limit switches inside the table body with freely adjustable control cams
- Mounting flanges for special motors
- Stepping or servo motors according to your application
- Shaft encoder placed on the other end of the gear shaft
- Complete positioning systems including Franke CNC-control units and software (1-8 axes), see page 94-95. Please consult us.

Material: Table body: aluminium
Raceways: high alloy spring steel
Balls: steel
Worm gear: steel-bronce
Vaccuum and partly non-magnetic version on request

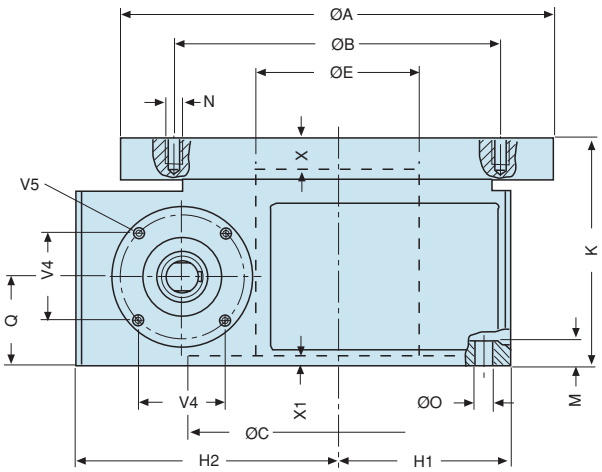
Rotary tables

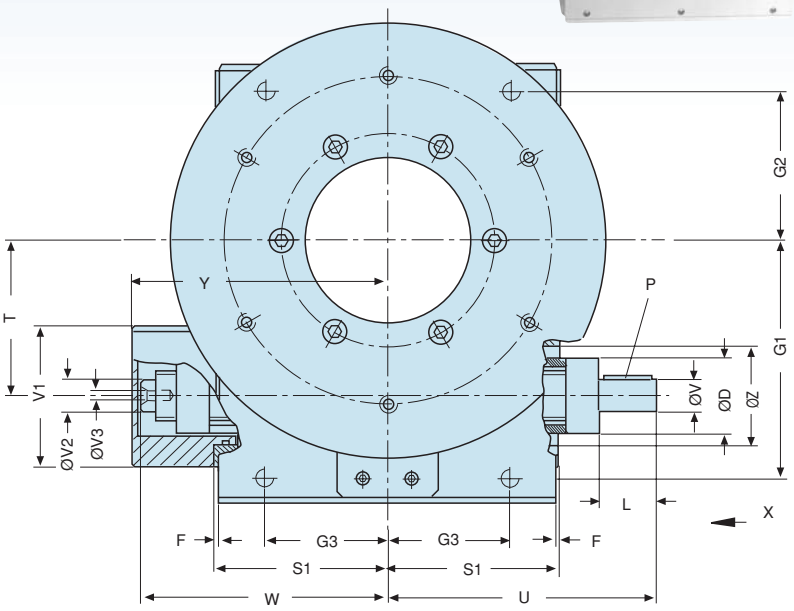
robust, splash-proof



Series TSD...S

View X (turned by 90°)





Nom. Ø	Load rating	Tilting moments															Weight	Order number
A	C_{0A}	C_{0M}	A	B	C^{H7}	D	E^{H7}	F	G1	G2	G3	H1	H2	K	L	M	N		
175	2500	75	175	126	-	40	40	-	89	79	58	94	104	110	35	81*	M6,10 tief	9	91186A
265	7800	610	265	200	198	48	100	2	145	90	75	106	160	138	35	15	M10,15 tief	22	91187G
400	16000	2000	400	340	206	62	200	4	235	155	135	175	255	165	55	25	M10,15 tief	48	91214A

A	O		P	Q	S1	T	U**	V	V1	V2	V3	V4	V5	W**	X	X^1	Y	Z	
Ø	Ø							Ø	□	Ø	Ø								
175	9	DIN 6885 A4 x 4x28	47	68	53	127	12j6	80	10j6/12lg.	-	47	M6,11 tief	118	5	-	124	56^{H8}	91186A
265	11	DIN 6885 A6 x 6x30	54	105	95	164	19g6	85	19/ 9 lg.	6^{H7}/18lg.	53	M6,14 tief	151	20	6	156	60^{H7}	91187G
400	14	DIN 6885 A6 x 6x45	64	170	159	246	19j6	120	26/ 8 lg.	14^{H8}/20lg	96	M8,16 tief	220	8	12	227	90^{F8}	91214A

* Bore through housing ** Dim. U and W variables for clearance setting

Trans-mission *	N max. [U/min.]	Nominal-Ø [mm]			175	265	400
90 : 1	20 min^{-1}	Radial / axial accuracy	µm		30	40	40
		Positioning accuracy	"	+/-	50	45	40
		Repititive accuracy	"	+/-	8	7	6
		Max. input torque	Nm		1,4	4,6	8,5
		Max. output drive	Nm		70	270	580

* other transmissions on request

Dimensions [mm], Weight [kg], Load rating [N], Moments [Nm]

Consist of:
- Aluminium body with metal cover
- High precision worm drive

Features:
- Splash-proof
- High stiffness
- High accuracy
- Centre-free construction

Load capacity:
- See load rating in the table. For best accuracy und lifetime we recommend a static safety of S ≥ 3. We are gladly prepared to calculate the load situation of your application for you.

Operation temperature:
- -10°C up to +80° C. Other temperatures on request.

Adjustment:
- Antifriction bearing and precision worm gear are adjusted without clearance.

Lubrication:
- With bearing grease according to our maintenance instructions

Options:
- 1 or 2 limit switches inside the table body with freely adjustable control cams
- Mounting flanges for special motors
- Stepping or servo motors according to your application
- Shaft encoder placed on the other end of the gear shaft
- Complete positioning systems including Franke CNC-control units and software (1-8 axes), see page 94-95. Please consult us.

Material: Table body: aluminium
Raceways: high alloy spring steel
Balls: steel
Worm gear: steel-bronce
Vaccuum-fit and partly non-magnetic version on request

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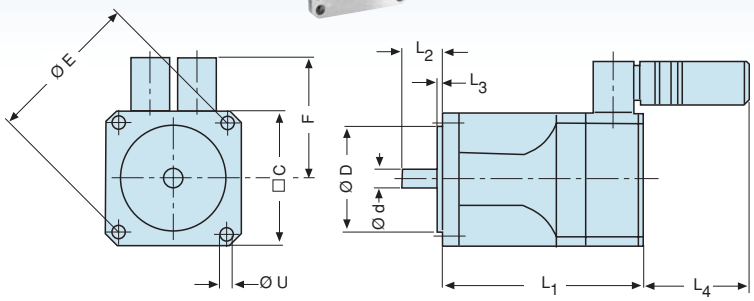
Motors

AC-Servomotor Typ DBL.....

- Neodynium magnets for highly dynamic function
- Long life by virtue of brushless design
- Built-in resolver
- Low motor inertia
- Vibration class N according to DIN ISO 2373
- Insulation material class F according to DIN 57530
- Protection class IP 64
- Integrated sockets for resolver and power connections
- CE-conformity



Type	Main dimensions											Rated speed	Cont. torque at stall	Motor inertia	Cont. current at stall	Peak current	Torque const.	Rated mains voltage	Holding torque*	Oper. volt.*	Nom. of inertia	Weight	Order number	
	C	D_{i6}	d_{k6}	E	F	L_1	L_1 (-G*)	L_2	L_3	L_4	U	n_N [min^{-1}]	M_o [Nm]	J [kgcm^2]	I_o [A]	I_{omax} [A]	K [Nm/A]	UN [V]	M [Nm]*	U [VDC]*	J [kgcm^2]*	G [kg]	Standard	incl. Brake
..2H00040	50	40	9	63	62,5	122	155	24	2,5	75	5,8	6000	0,4	0,08	0,93	4,30	0,43	400	1,2	24	0,07	1,1	E8022	E8023
..2H00080	50	40	9	63	62,5	152	185	24	2,5	75	5,8	6000	0,8	0,13	1,49	6,80	0,54	400	1,2	24	0,07	1,5	E8024	E8025
..3N00130	74	60	11	90	69,5	134	167	23	2,5	75	5,8	6000	1,3	0,80	1,30	7,50	0,74	400	2,5	24	0,38	2,3	E8026	E8027
..4N00260	97	95	19	115	81	155	190	40	3,0	75	5,8	3000	2,6	2,10	1,90	8,60	1,36	400	5,0	24	1,06	4,5	E8028	E8029
..4N00530	97	95	19	115	81	185	220	40	3,0	75	9,0	3000	5,3	2,80	3,20	15,00	1,65	400	5,0	24	1,06	5,7	E8030	E8031
..4N00750	97	95	19	115	81	230	265	40	3,0	75	9,0	3000	7,5	4,30	4,10	19,00	1,85	400	5,0	24	1,06	7,6	E8032	E8033
..5N01050	127	130	24	165	-	186	229	50	3,5	-	11,0	3000	10,5	8,10	6,50	30,00	1,60	400	12,0	24	3,60	9,8	E8034	E8035
..5N01700	127	130	24	165	-	237	280	50	3,5	-	11,0	3000	17,0	11,30	10,40	48,00	1,64	400	12,0	24	3,60	14,0	E8036	E8037

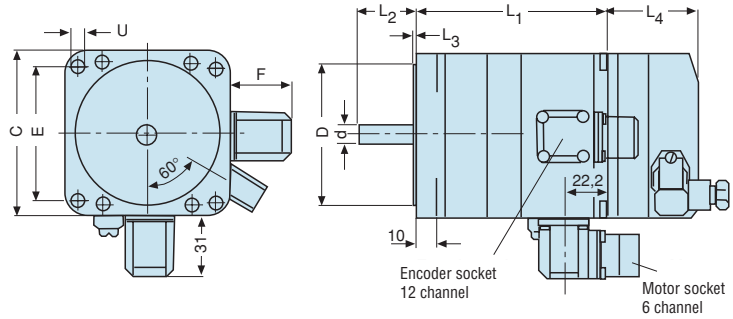
*G = with brake

Dimensions [mm]

* Stopbrake

3-Phase stepper motor Type VDRM.....LWC

- Quiet and virtually resonance -free run
- Resolutions from 200 up to 1000 steps/rotation
- Micro-step-mode from 2000 up to 10000 steps/rotation
- Insulation material class F according to DIN 57530
- Protection class IP 56
- Integrated sockets for power connections
- CE-conformity

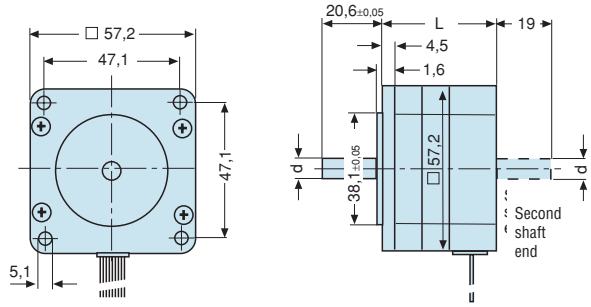


Type	Main dimensions										Peak torque	Cont. torque at stall	Motor inertia	max. start-frequency	Cont. current at stall	Rated mains voltage	Encoder-line count	Step count	Order number*	
	C	D_{i6}	d_{k6}	E	F	L_1	L_4	L2	L3	U	M_{max} [Nm]	M_H [Nm]	J [kgcm^2]	F [KHz]	I_N [A]	U [V]			Standard	inc. Brake
.... 368	57,2	38,1	8	47,14	31	110	41,0	21	2	5,2	150	174	0,38	6,0	0,8	325	1000		E7769	E8040
.... 397	85,0	60,0	12	70,00	31	110	46,5	30	2	6,5	200	226	1,10	5,3	1,8	325	1000		E7714	E8041
.... 3910	85,0	60,0	12	70,00	31	140	46,5	30	2	6,5	400	452	2,20	5,3	2,0	325	1000	200/400/500	E7593	E8042
.... 3913	85,0	60,0	14	70,00	31	170	46,5	30	2	6,5	600	678	3,30	5,3	2,3	325	1000	1000/2000/4000	E7721	E8043
.... 31117	110,0	56,0	19	89,00	31	180	52,7	40	3	9,0	1200	1392	10,50	4,7	4,1	325	1000	5000/10000	E8038	E8044
.... 31122	110,0	56,0	19	89,00	31	228	52,7	40	3	9,0	1650	1914	16,00	4,7	4,8	325	1000		E8039	E8045

Dimensions [mm]

2-Phase stepper motor Type VDRM...../50-L4A

- High quality motor design
- Maintenance free, long life
- Resolution 200 or 400 steps/rotation
- Powerful technique
- Insulation material class B
- CE-conformity



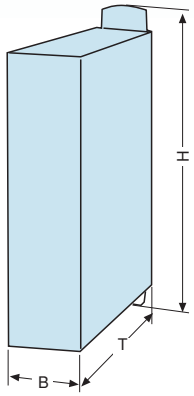
Type	Main dimensions		Peak torque	Cont. torque at stall	Motor inertia	Weight	Step count	Rated mains voltage	Encoder line count	Order number
	d	L	M_{max} [Nm]	M_H [Nm]	J [kgcm^2]	M [kg]		U [V]		
....264	6,35	41	40	45	0,09	0,50	200/400	35	4	E7770
....266	6,35	55	87	100	0,22	0,70	200/400	35	4	E7743
....268	8,00	77	130	150	0,38	1,05	200/400	35	4	E8046

Dimensions [mm]

Positioning systems

Single axis CNC-controller
Type TSC100-Servostar...

- Wide range of mains supply voltage
- Up to 20 Amps with integral mains filter
- All CE, UL and cUL conformities
- 2 analog inputs
- 6 digital in-/outputs
- Feedback from resolver or high resolution sin/cos encoder
- Integrated interface for stepper controllers
- CAN-Open integrated
- Fully programmable RS323 interface
- Integrated position controller with memory for 180 motion tasks
- Integrated interface for stepper controllers, master-slave, electrical gear, ...
- Extension soccets for PROFIBUS, I/O-extension, SERCOS, ... (optional)

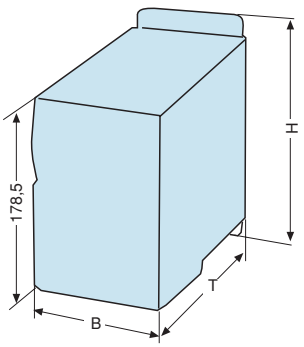


Type	Features	Rated supply voltage U_N [V]	Rated power supply (S1) P_N [kVA]	Rated output current I_N [A]	Peak output current I_{max} [A]	Dimensions H	B	T	Weight G	Order number
TSC100-Servostar 601	I_N = 1,5 A	3 x 230V$_{-10\%}$ ....480V$^{+10\%}$, 50 ...60Hz	1,0	1,5	3,0	275	70	265	4,0	**91699C**
TSC100-Servostar 603	I_N = 3,0 A		2,0	3,0	6,0	275	70	265	4,0	**91699B**
TSC100-Servostar 606	I_N = 6.0 A		4,0	6,0	12,0	275	70	265	4,0	**91699E**
TSC100-Servostar 610	I_N = 10,0 A		7,0	10,0	20,0	275	70	265	4,0	**91699F**
Optionen:										
Power supply LOGO power	24VDC / 1,3 A									**91703A**
Profibus	Profibus DP expansion cards									**91699G**
I/O-expansion card	14 dig. inputs, 8dig.outputs									**91699H**
Cable:										
Motor-/Resolver cable set	5m long, protected, with soccet									**91700A**
Motor-/Resolver cable set	10m long, protected, with soccet									**91700C**
Motor-/Resolver cable set	15m lang, protected, with soccet									**91700B**
Motor-/Resolver cable set	25m long, protected, with soccet									**91700D**
RS232-Cable	Interface cable PC-TSC100									**91702A**
Limit switch cable	5m long									**91701A**

Dimensions [mm], Weight [kg]

Single axis CNC-controller
Type TSC100-Twin Line...

- Integrated mains filters, cooler, ventilator
- CE, UL conformities
- Fully programmable RS323 interface for PC-connection optional: HMI-terminal plugable on frontside Programming system by IEC 1131
- Programming languages: KOP, FUP, AWL,...
- Integrated position controller with memory for 64 motion tasks
- Point to point mode, speed mode, electrical gear acceleration and deceleration ramps programmable integrated PLC functions
- Extension sockets for PROFIBUS, RS485... (optional)

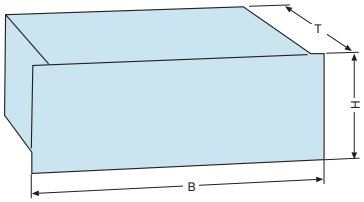


Type	Features	Rated supply voltage U_N [V]	Rated power supply P_N [kVA]	Rated supply current I [A]	Rated output current I_N [A]	Dimensions H	B	T	Weight G	Order number
TSC100-Twin Line TLC 611	I_N = 3,0 A	1 x 230V$_{+/-15\%}$ 47 ...63Hz	0,35	2,0	1,5	212,5	108	184,5	2,7	**91690A**
TSC100-Twin Line TLC 612	I_N = 7,0 A		0,75	5,0	3,0	212,5	108	184,5	2,7	**91690C**
Optionen:										
Power supply LOGO power	24VDC / 1,3 A									**91703A**
RS 485	RS485-Interface module									-
Profibus	Profibus DP -module									-
Control Tool CT	PC-programming-software									-
Cable:										
Motor cable	5m long, protected, with soccet									**91700E**
Motor cable	10m long, protected, with soccet									**91700F**
Motor cable	15m long, protected, with soccet									**91700G**
Motor cable	20m long, protected, with soccet									**91700H**
RS232- cable	interface cable PC-TSC100									**91702A**
Limit switch cable	5m long									**91701A**

Dimensions [mm], Weight [kg]

Continuous path control Type TSC320 (1-3 axis)

- Continuous path control unit to control 3 power amplifiers for stepper motors or servo motors
- Up to 3 integr. amplifiers for Servo- or stepper motors
- Integrated operating panel with foil keyboard, LCD display
- Emergency power off module
- menu driven user interface (multisignal)
- Command set for program flow control, register arithmetic, text display
- Axis management with linear-, circular- and helix-interpolation
- Integrated PLC device
- Encoder interface for incremental or absolute path measuring systems
- 20 opto decoupled inputs, 32 outputs, (24VDC max. 300mA)
- Analog voltage signal ± 10 V
- RS232 interface
- 19" design with integrated power supply



Type	Features	Dimensions			Weight	Order number
		Height (HE)	Width (")	Depth (mm)	(kg)	
TSC320-2x12/5/320R	2-axis Servo, 5A/320V	4	19	415	10	**91709A**
TSC320-3x12/5/320R	3-axis Servo, 5A/320V	4	19	415	12	**91710A**
TSC322-2x20/3/35	2-axis, 2PH-stepper motors, 3A/35V	4	19	415	10	**91711A**
TSC322-3x20/3/35	3-axis, 2PH-stepper motors, 3A/35V	4	19	415	12	**91712A**
TSC323-2x30/5.5/130	2-axis, 3PH-stepper motors, 5,5A/130V	4	19	415	10	**91713A**
TSC323-3x30/5.5/130	3-axis, 3PH-stepper motors, 5,5A/130V	4	19	415	12	**91714A**

Dimensions [mm]

Continuous path control Type TSC400 (4-8 axis)

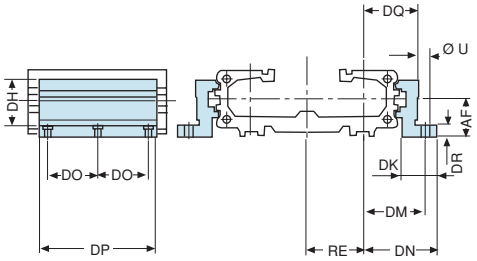
- Continuous path control unit to control 4 or 8 power amplifiers for stepper motors or servo motors
- Menu driven user interface with 7-inch screen or LCD-display
- Command set for program flow control, register arithmetic, text display, cutter compensation and engraving commands
- Axis management with linear-, circular- and helical-interpolation electrical gears and counter axis
- Program management on memory card 32kB to 256KB
- Integrated a PLC device (SM2) can be integrated
  Encoder interface for incremental path measuring systems
- 16 opto decoupled inputs and 8 relay outputs
- Expandable up to 64 inputs and 64 outputs
- Analog voltage signal ±10V DC
  Clock signal and direction signal up to 30 kHz
- RS232 interface
- 19" design with integrated power supply

Type	Features	Dimensions			Weight	Order number
		Height (HE)	Width (")	Depth (mm)	(kg)	
TSC420GT4-4x12/5/320R	4-axis Servo, 5A/320V	8	19	415	15	**91715A**
TSC422GT4-4x20/3/35	4-axis, 2PH-step.motor, 3A/35V	8	19	415	15	**91716C**
TSC423GT4-4x30/5.5/130	4-axis, 3PH-step.motor, 5,5A/130V	8	19	415	15	**91717A**
Software						
SM-Trans	comfortable data transfer PC to controller					**91685A**
SM-CAM	conversion program for DXF / HPGL into CNC program					**91685B**
Cable:						
Motor cable (2PH)	5m long, protected, with socket					**91700I**
Motor cable (3PH)	5m long, protected, with socket					**91700K**
Servomotor cable set	5m long, motor- und resolverkabel protected, with socket					**91700L**
Servomotor cable set	10m long, motor- und resolverkabel protected, with socket					**91700M**
RS232-cable	Interface cable PC-TSC					**91702A**
Limit switch cable	5m long					**E7703**

Dimensions [mm]

Accessories TLH

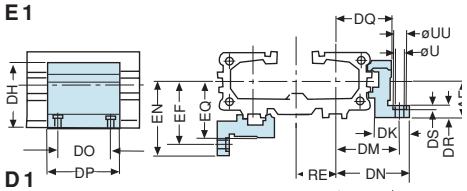
Intermediate drive shaft



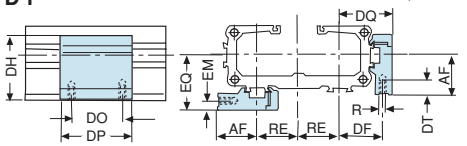
Series	Main dimensions																	Order number
	R	U	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DT	EF	EM	EN	EQ	RE	
MAE																			
15	M5	5,5	22	27	38	26	40	47,5	40	92	34,5	8	10	41,5	28,5	49	36	26	**92981A**
20	M5	5,5	30	33	46	27	46	54,5	40	92	40,5	10	10	48,5	35,5	57	43	32	**92982A**
35	M6	7,0	48	40	71	34	59	67,0	45	112	52,0	10	11	64,0	45,0	72	57	44	**92983A**

Proximity sensors profile-mounting

E1

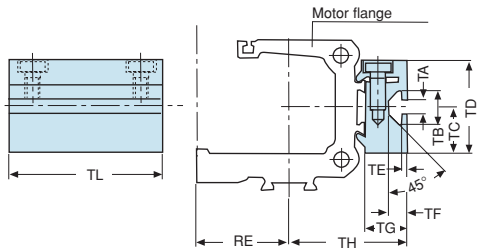


D1



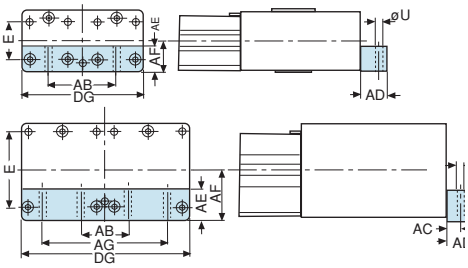
Series	Main dimensions																			Order number
	R	U	UU	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DS	DT	EF	EM	EN	EQ	RE	
E1																				
15	M5	5,5	10	22	27	38	26	40	47,5	36	50	34,5	8	5,7	10	41,5	28,5	49	36	26	**92821A**
20	M5	5,5	10	30	33	46	27	46	54,5	36	50	40,5	10	5,7	10	48,5	35,5	57	43	32	**92826A**
35	M6	7,0	-	48	40	71	34	59	67,0	45	60	52,0	10	-	11	64	45	72	57	44	**92831A**
D1																				
15	M5	5,5	10	22	27	38	26	40	47,5	36	50	34,5	8	5,7	10	41,5	28,5	49	36	26	**92820A**
20	M5	5,5	10	30	33	46	27	46	54,5	36	50	40,5	10	5,7	10	48,5	35,5	57	43	32	**92825A**
35	M6	7,0	-	48	40	71	34	59	67,0	45	60	52,0	10	-	11	64	45	72	57	44	**92830A**

T-nut profile



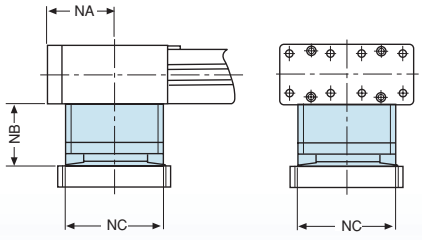
Series	Main dimensions									Order number
	RE	TA	TB	TC	TD	TE	TF	TG	TH	TL	
T											
15	26	5,0	11,5	16	32	1,8	6,4	14,5	34,5	50	**92835A**
20	32	5,0	11,5	16	32	1,8	6,4	14,5	40,5	50	**92836A**
35	44	8,2	20,0	20	43	4,5	12,3	20,0	58,0	80	**92837A**

End cap mounting



Series	Main Dimensions								Order number
	E	Ø U	AB	AC	AD	AE	AF	AG	DG	
C1										
15	27	6,6	52	16	25	25	22	-	91	**92978A**
20	36	9	64	18	25	25	30	-	114	**92979A**
35	70	9	48	12,5	30	30	48	128	174	**92980A**

Integreated planetary gear box



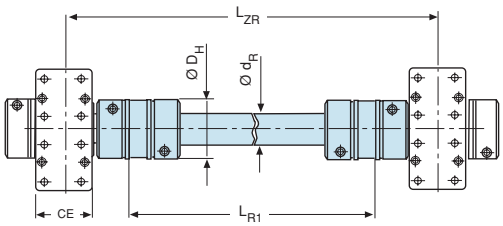
Series	Gear reduction i	Base torque Nm	Efficiency R	Reversal clearance	Nom.- incoming RPM	Max. incoming RPM	Main dimensions NA	NB	NC	Weight	Order number
P											
15	3/5/10	< 0,14	> 97 %	< 12	3700	6000	49,0	43,0	76	2,6	**92994A/B/C**
20	3/5/10	< 0,51	> 97 %	< 12	3400	6000	62,0	47,0	92	4,9	**92995A/B/C**
35	3/5/10	< 1,50	> 97 %	< 12	2600	6000	79,5	49,5	121	9,6	**92996A/B/C**

Dimensions [mm], Weight [kg]

www.bergab.ru Берг АБ bergab@ya.ru Тел. (495)-228-06-21, факс (495) 223-3071

Accessories TLH

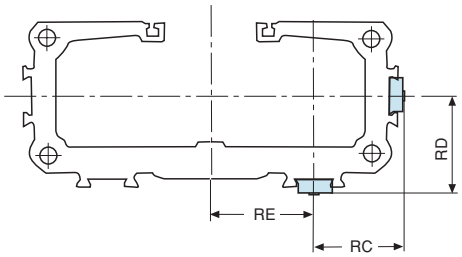
Connection shaft



Series	Max. Moments	Main dimensions						Order number
	[Nm]	DH	CE	LD	L_{ZR}	L_{R1}	d_R	(L_{R1} Length in mm)
W								
15	60	55	42	5	<3000	L_{ZR}-112	30x4.0	92997...
20	60	55	56	5	<3000	L_{ZR}-126	30x4.0	92998...
35	160	65	87	5	<3000	L_{ZR}-167	35x4.0	92999...

Dimensions [mm], Weight [kg]

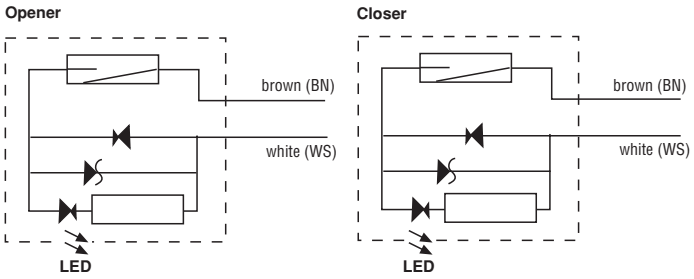
Mid section support



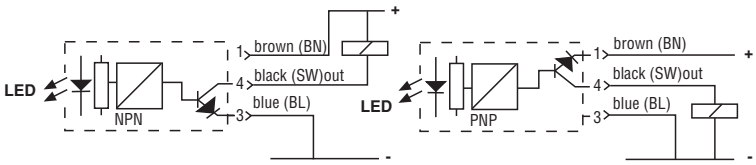
Series	Dimensions RC	RE	RD	Order number RS Reed Closer	RS Reed Opener	ES PNP Closer	ES NPN Closer
15	25	26	27	Typ:	Typ:	Typ:	Typ:
20	31	32	34	RS-K	RS-K	ES-S	ES-S
35	34	44	48	92841A	92842A	92844A	92845A
				RS-S	RS-S		
				92984A	92843A		
Connecting cable 5 m with plug and open end							
For signal trasmitter type Type ES-S/RS-S							92846A

Dimensions [mm]

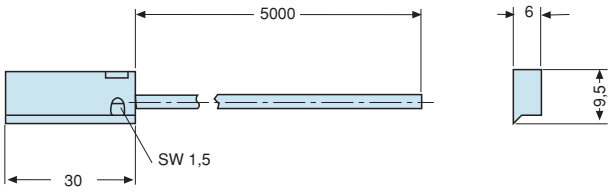
Elect. connection Type RS



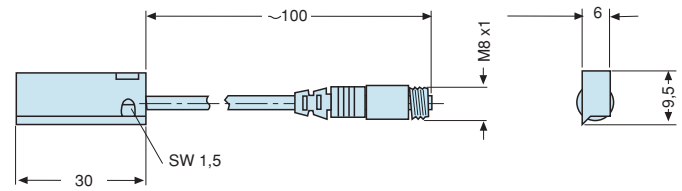
Elect. connection Typ ES

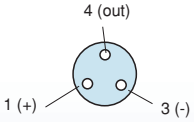


Dimensions Typ RS-K



Dimensions Typ ES-S / RS-S max 70 V





PIN (overview) DIN EN 50044

For electrical sensing of the carrier position, e.g. at the end positions, proximity sensors may be fitted.
Position sensing is contactless and is based on magnets fitted as standard to the carrier. A yellow LED indicates operating status.
Type RS: In the type RS contact is made by a mechanical reed switch encapsulated in glass. Direct connection with 2-pole cable, 5m long, open ended (Type RS-K). With 3-pole connector M8, cable length ca. 100mm (Type RS-S).
Type ES: In the type ES contact is made by an electronic switch - without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations. Connection is by 3-pole connector for easy disconnection. Fitted with connection cable 100mm long with connector.
A 5m cable with connector and open end can be ordered separatly.

Codes Electrical codes	Sign	Unit	Remark Typ RS	Type ES
Operating voltage	UB	V	10-244AC/DC(NO)	10-30DC
			10-150AC/DC(NC)	
			10-70AC/DC(DC)**	
Connecting technique			two wires	three wires
Exit function closer			normally open (NO)	PNP/Closer
Opener			normally closed (NC)	NPN/CloserMax.
perm. switching currentl.		mA	200	200
Max. switching capacity		VA (W)	10VA	-
Function display			LED, yellow	

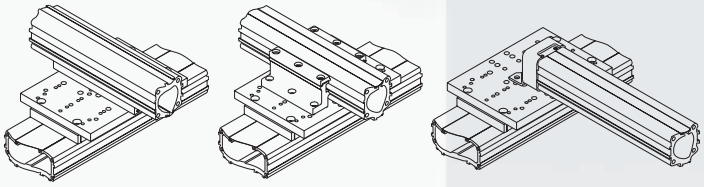
Electrical Service Life, protective measures: Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.
With resistive and capacitative loads with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths an voltages over 100V. In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

Application Examples Linear modules

Multi-axis-support

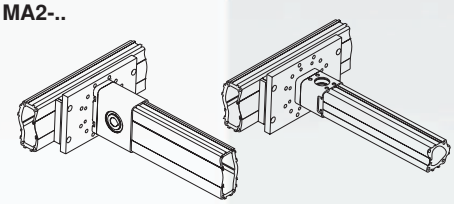
Adapting plate type MA1-..

for adapting of slider to slider,
slider to profile or slider to end cap



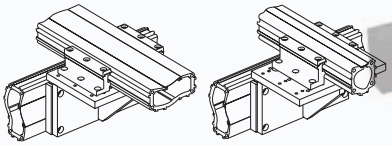
Adapting plate type MA2-..

for adapting of slider
to end cap

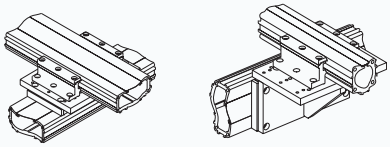


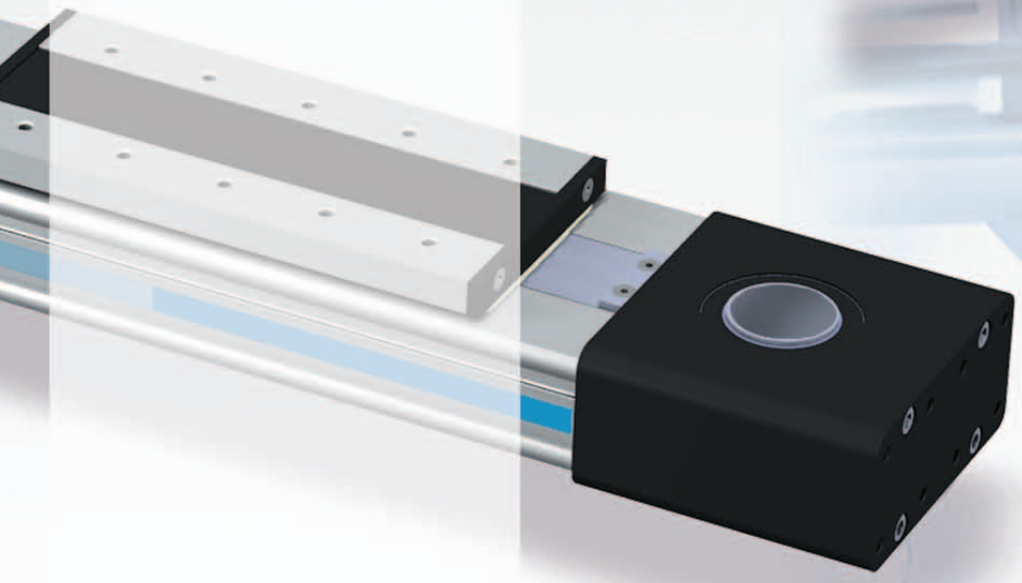
Adapting plate type MA3-..

for adapting of slider to profile
or slider to end cap with 90° degree angle



Profil mounting type MAE-..

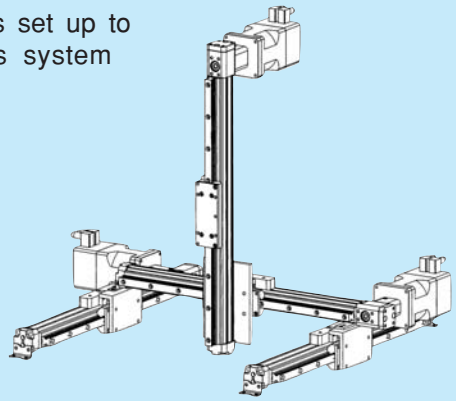




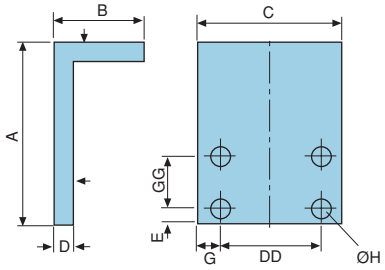
Accessories

Linear modules, Series TLP15 - 25

Examples set up to multi-axis system



Mounting angle



Possible combinations

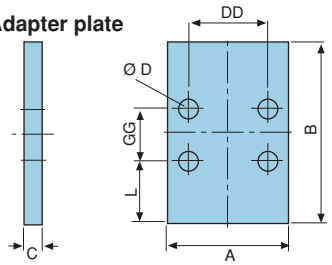
X-axisY-axis (straight)

Only with coverfastening from A2, C2; and central support from E2 without D1

Serie	A	B	C	D	E	GG	DD	G	ØH	Order number
TLP15	100	60	100	12	7	50	60	20	6,6	92801A
TLP20	120	70	110	12	10	64	80	15	6,6	92802A
TLP25	150	80	135	12	10	90	120	7,5	6,6	92803A

Dimensions [mm]

Adapter plate



Possible combinations

X-axis Z-axis

Only with coverfastening from A2, C2; and central support from E2 without D1

Serie	A	B	C	ØD	DD	GG	L	Order number
TLP15	100	325	12	6,6	60	50	112	92804A
TLP20	110	376	15	6,6	80	64	132	92805A
TLP25	135	463	20	6,6	120	90	164	92806A

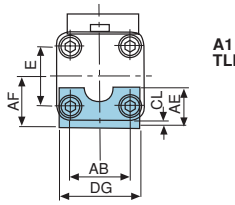
DD and GG for mounting to the y-axis

Dimensions [mm]

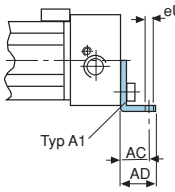
Cover fixtures, central support

At the end covers there are four inner threadings each in the front sides for fixation of the module. The distance between the holes is square so that fastening can be made either from the bottom, from top or laterally.

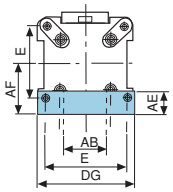
Material: The cover fixtures consist of galvanized steel, the central supports are made of aluminium.



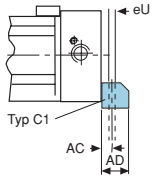
A1
TLP15-20

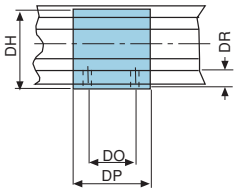


Cover fixtures

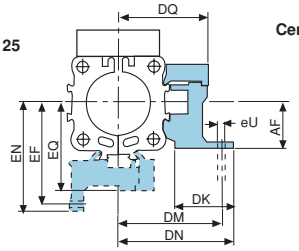


C1
TLP25

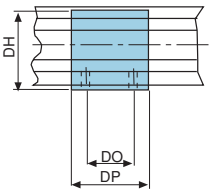




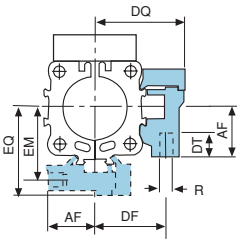
E1
TLP15, 20, 25



Central support



D1
TLP15, 20, 25



Type Series	Dim. AE A1	Dim. AE C1	Dim. DR E1	Dim. AF A1	Dim. AF C1	Dim. AF D1	Dim. AF E1
TLP15	18	-	8	22	-	22	22
TLP20	20	-	10	30	-	30	30
TLP25	-	30	10	-	48	48	48

Dim.	E	ØU	AB	AC	AD	CL	DG	R	U	DF	DH	DK	DM	DN	DD	DP	DQ	DT	EF	EM	EN	EQ
TLP15	27	5,8	27	16	22	2,5	39	M5	5,5	27	38	26	40	47,5	36	50	34,5	10	41,5	28,5	49	36
TLP20	36	6,6	36	18	26	3,0	50	M5	5,5	33	46	27	46	54,5	36	50	40,5	10	48,5	35,5	57	43
TLP25	70	9,0	40	12,5	24	-	86	M6	7	40	71	34	59	67	45	60	52,0	11	64	45,0	72	57

Dimensions (mm)

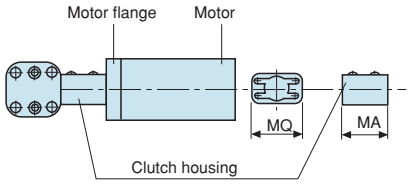
Cover fixtures Order number Typ	A1	C1	Central support Order number D1	E1
TLP15	92810A	-	92820A	92821A
TLP20	92813A	-	92825A	92826A
TLP25	-	92816A	92830A	92831A

Linear modules, Series TLP15 - 25

Motor fixtures, clutch housing

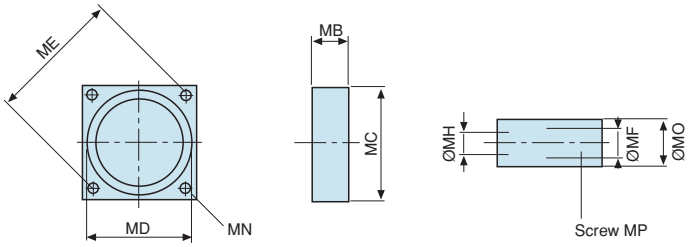
The the clutch housing is the basis for the assembly of the motor.
The following motor fixtures are designed for the available packets of acutators and stepping motors consisting of clutch housing, motor flange and clutch.

The motor flange can be optionally supplied without bore holes to allow any other bore configuration for other motors which might be desired by the customer.



Series	MA	MP	MQ	Order-number
TLP15	47	30	40	92460A
TLP20	49	38	49	92461A
TLP25	76	54	65	92462A

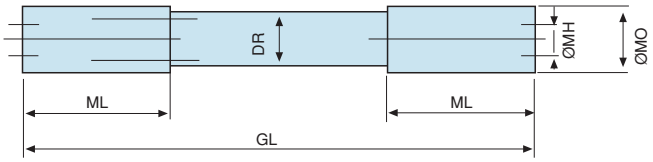
Dimensions [mm]



Series	Motor	MB	MC	MD	ME	MF Motor	MH	ML	MN	MO	MP	MT [Nm]	Motor Part Nr.	Order number Flange	Clutch
15	VRDM397	20	86	60	99	12	10	30	M6	22	M2,5	2,0	E7748	92467A	92470A
	3SM37L-4000	11	75	60	99	11	10	30	M5	20	M2,5	1,8	E7745	92467B	92470B
20	VRDM3910	18	86	60	99	12	10	35	M6	30	M3	4,0	E7727	92468A	92471A
	6SM47L-3000	15	92	80	100	14	10	35	M6	30	M3	3,0	E4746	92468B	92471B
35	VRDM3913	14	86	60	99	14	16	66	M6	40	M6	6,0	E7765	92469A	92472A
	6SM57M-3000	15	105	95	115	19	16	66	M8	40	M6	8,0	E7747	92469B	92472B

Dimensions [mm]

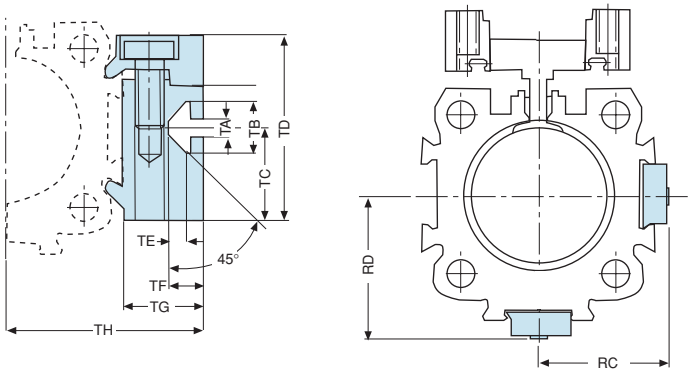
Connection shaft



Clutch (Rotex)

Series	ML	MO	MH	DR	GL*	ZR1 Clutch
TLP15	35	30	10	15	*GL due	14ZR1
TLP20	66	40	10	20	to	19/24ZR1
TLP25	78	55	16	25	specification	24/28ZR1

Dimensions [mm]



T-groove rail

Universal fastening facility of diverse elements by means of tenon blocks.

Series	TA	TB	TC	TD	TE	TF	TG	TH	TL	Order number Standard	Stainless
TLP15	5	11,5	16	32	1,8	6,4	14,5	34,5	50	92835A	92838A
TLP20	5	11,5	16	32	1,8	6,4	14,5	40,5	50	92836A	92839A
TLP25	8,2	20,0	20	43	4,5	12,3	20,0	58,0	80	92837A	92840A

Dimensions [mm]

Your application

Company:

Name:

Department:

Address:

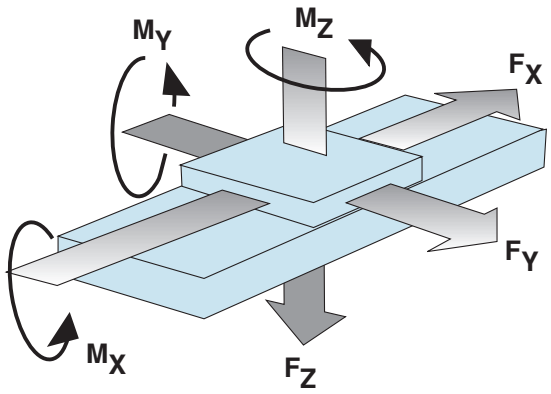
Phone:

Fax:

Email:

Branch:

Application:
short description



Order number:

Sketch:

Technical data:

Axes: _____ [Number]

Positioning accuracy: _____ [mm]

Repitive accuracy: _____ [mm]

Speed max: _____ [m/min.]

Life (desired): L _____ [km]

With multi-axis-units we need your loads data for each table.

Loads:

Forces / Lever arms

F_X = _____ [N] _____ M_X= _____ [Nm]

F_Y = _____ [N] _____ M_Y= _____ [Nm]

F_Z= _____ [N] _____ M_Z= _____ [Nm]

Environment:
(Dirt, humidity ...)

Please return the filled copy

Technical Information

Linear tables, rotary tables

References switches, measuring system: The standard version of our linear tables is equipped with inductive limit and reference switches PNP-nc 10-30 VDC. Optionally PNP-no NPN-no and NPN-nc - switches are available.

The attachment / integration of a length-measuring system with sinusoidal or rectangular signals is possible on request. Encoders can be mounted on the motor. We will be glad to consult you in finding the appropriate system for your application.

Multi-axis units: Franke-linear and rotary tables can easily be combined to multiaxis units. The angles and adapterplates which are neccessary for the mounting of the units will be constructed according to your requirements. We deliver completely mounted units cabled and adjusted, on request with further accessories.

Motors: many types of stepping and servomotors can be connected with our linear and rotary tables. Flanges and clutches are to be modified respectively. The customer can contribute own motors as well.

Motor reversal, gear: In our standard version the motor is mounted in extension of the stroke axis. Motor reversal via toothed belt or reversal gear can be supplied for special applications e.g. with limited mounting space.

Maintenance, lubrication: It is indispensable to supervise the bearings in the linear and rotary tables for lubrication. Relubrication periods depend on the environmental conditions and are mainly influenced by the ageing properties of the lubricant. For longtime lubrication completely synthetic lubricants are to be preferred. In our works we use the completely synthetic special grease ISOFLEX TOPAS NCA 52 (make KLÜBER). As alternative we recommend high-grade greases of lithium soap based on of mineral oil.

Where lubricants are to be mixed up the consistency regarding kind of basic oil, thickener, basic oil viscosity and NLGI class has to be ensured. With extreme operating conditions (vacuum, radiation, high temperatures) we recommend you to consult us or a lubricant producer.

Franke linear tables: Franke linear tables are almost maintenance-free. Except for the ball screw our linear tables get a lifetime lubrication in our works. Under normal operating conditions the ageing resistance of the lubricant exceeds the lifetime of the table. Ex works the ball screw is provided with a grease filling which is not a lifetime lubrication. It is a fact that some grease will leak by the ball screw shaft, therefore relubrication is necessary depending on the application. We recommend you to relubricate with about 1-2g grease after about 700 operating hours. At the same time as the relubrication we recommend you to check the inner space of the table and the guide paths for contamination and to clean them if possible. With this we recommend you to apply some grease to the guide paths.

Franke rotary tables: Generally all standard roatary tables are provided with long time lubrication ex works. Depending on the application we recommend relubrication every 6 -12 months. The quantity for relubrication should be as follows (approximate values in g per lubricating point):

Lubrication	left	right	top	bottom	sidewise
TSD175S	1	1	3	2	-
TSD265S	1	1	3	2	-
TSD400S	1	1	4	3	-
TSD125M	-	-	-	-	3
TSD175M	-	-	-	-	3
TSD265M	-	-	-	-	3
TSD400M	-	-	-	-	1
TSD100A	-	-	-	-	1
TSD200A	-	-	-	-	1

1. Accurracy

Running accuracy: The running accuracy is defined by the highest possible deviation of an optional point on the moven table surface from the ideal straight line when traversing the total stroke distance (responding to the accuracy of the substructure). Positionning accuracy: The positioning accuracy is defined by the deviation from a pre-selected point which is approached by a previously defined reference (zero) point. Repetitive accuracy: The repetitive accuracy is defined by multiple exact approaches at a preselected point which has to be reached. For the exact repetitive approach at programmed coordinates a reliable measuring system with direct measurements is of importance. Resolution: The resolution is defined by the smallest possible traverse distance of a positioning unit. It is determined e.g. by the spindle pitch, transmission, stepping angle, division of the measuring system. By means of the resolution deviations in the positioning and repetitive accuracy can be neutralized. Therefore the resolution should always be higher than the deviation from the permissible positioning accuracy.

2. Linear tables

2.1 Design
Franke linear tables are designed for the application in automation for the measuring and testing sector as well as for rationalization in handling and mounting. The selection range includes strokes from 40 mm up to 1200 mm, the movement is effected by means of a spindle. The ribbed aluminium structure in combination with the Franke guide system allows high load rating and moment loads whereas the weight is extremely low.

2.2 Limit switch/reference points
Franke linear tables of series TSL06U-16M are equipped with a cam strip and continuous control cams on the outer side of the slider part. Setting of the cams according to the required reference points and changing of these points is possible without dismantling the table. The limit switches of the tables TLA and TLL are in a fixed position which is adjusted for full stroke length. Linear tables series TSL06L are equipped with moveable control cams which are placed at the right slider part underneath the side cover. To adjust the cams the side cover has to be dismounted. After adjusting the cams the fixing of the side cover fastens the cams.

3. Rotary Tables

Franke rotary tables are compact and have high load capacity. They are particlularly used for mounting, measuring, and testing operations. The high-grade wormgear guarantees high precision in permanent operation. All rotary tables are equipped with aluminium housings; the integrated Franke guide system makes them extremely resistant to tilt while their own weight is very low. Please make use of our mounting and maintenance instructions which come with every consigment.

Please observe the separate mounting and maintenance instructions which are enclosed to every consignment.

Technical Information

Linear modules, Series TLP15-25

Necessary torque

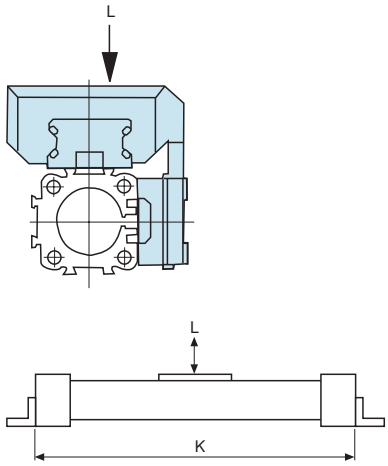
The size of the linear drive and the necessary torque can be determined by using the known mass, the mounting position and the desired acceleration according to the following diagrams. The mass on which the diagrams are based is composed of the external mass and the movable mass of the linear drive.

Please notice:
Where an additional guide is used the mass of the slider has to be taken into account.

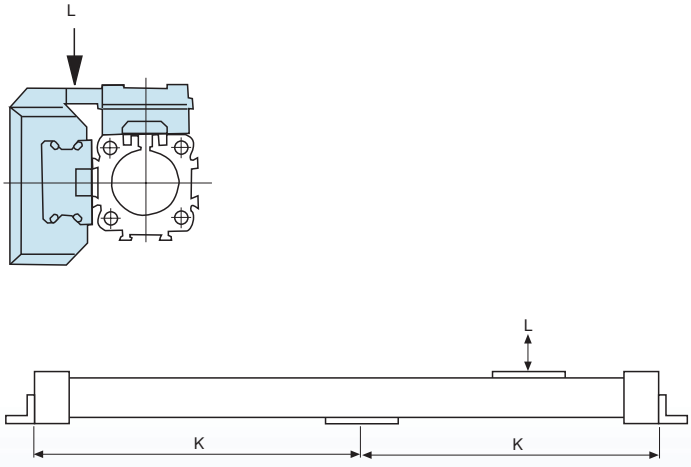
Central supports
(Explanations see page 79)

From certain stroke lengths on central supports are necessary to avoid deflexion and vibrations caused by the drive. The diagrams show the max. support width responding to the load. We have to make a difference between load example 1 and load example 2. A deflexion of max. 0.5mm between the supports is permissible.

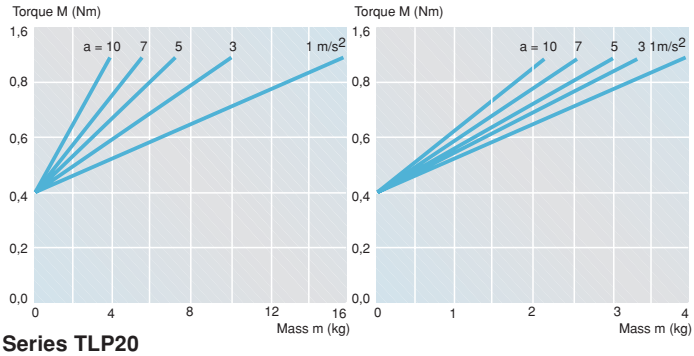
Load example 1



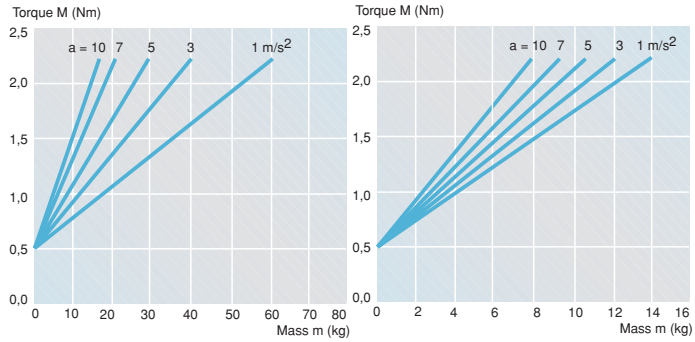
Load example 2



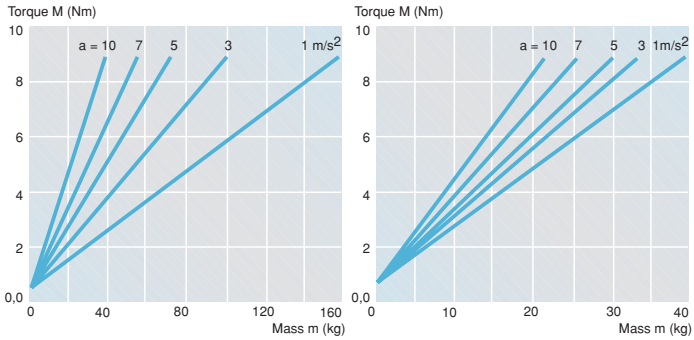
Series TLP15



Series TLP20



Series TLP25



Maximum support distance