

TR

FIXED-STATION ROTARY INDEXING TABLES | TR ROTARY INDEXING RING TABLE



Additional indexing plates are not included in the standard delivery scope. They are calculated separately as per your details.

TR ROTARY INDEXING RING TABLE: NEW APPLICATION POSSIBILITIES

THE TR FULL SOLUTION

Tailor-made electrical accessories. Control card, electronic contactor or frequency converter.



OR RATHER A HEAVY DUTY ROTARY TABLE?

Our user programmable CR heavy duty rotary table range is available for heavy loads.





Kugler-Womako produces machines for print finishing and the stationery industry. Something genuinely new in the paper industry: rather than standard linear transfer systems, the TR 750 rotary indexing ring table is used.

Rotary indexing ring table with very large central opening, extremely flat design and high parts accuracy. The ring-shaped design allows extra free design space. The rotating aluminium ring can be adjusted to your specifications in terms of diameter and thickness.

ADVANTAGES

- Ring-shaped rotary indexing table with very large central opening
- High level of parts accuracy through locking on the outer edges
- Highly dynamic with smooth acceleration
- Flat, compact design – compatible with our tried and tested machines
- Four sizes
- Available as a user-programmable NR version (please also see the „User-programmable rotary tables“ section)
- NR version with absolute measuring system
- Simplest control system, identical to our rotary indexing tables
- Excellent price-performance
- Appealing design

TR 750A

TECHNICAL DATA

Dial ring inside diameter:	Max. 490 mm	Indexing precision (arcsec):	± 18"
Dial ring outside diameter:	Min. 750 mm	Indexing precision in radian measurement:	± 0.033 mm (at Ø 750 mm)
Surface of the dial ring:	Anodised	Max. axial run-out of the ring:	* 0.05 mm (at Ø 750 mm)
Direction of rotation:	Clockwise - counter clockwise or reciprocating	Max. concentricity:	* 0.03 mm
Cycle rate:	Up to approx. 120 cycles/min, depending on mass moment of inertia and angle of rotation	Max. parallelism of rotating plate surface to bottom housing surface:	* 0.05 mm (at Ø 750 mm)
Voltage:	230 / 400 V 50 Hz special voltages upon request	Max. outer diameter:	1500 mm (or following consultation)
Weight:	Approx. 230 kg		
Mounting position:	Dial ring horizontal		

* Attention! In order to reach the above axial and radial run-out tolerances, please ensure that the axial run-out of the mounting plate is accurate.

LOAD DATA (for indexing ring)

Vertical force on the locked ring

F_N : 3500 N

Perm. tilting moment acting on the locked ring

M_K : 750 Nm

Perm. tangential moment acting on the locked ring

T_R : 2500 Nm

Perm. radial force acting on the locked ring

F_R : 7000 N

Max. central load on the ring at $M_K = 0$ Nm and $F_R = 0$ N on demand. Combined loads only after inspection by WEISS.

LOAD TABLE (Only valid for 50 Hz)

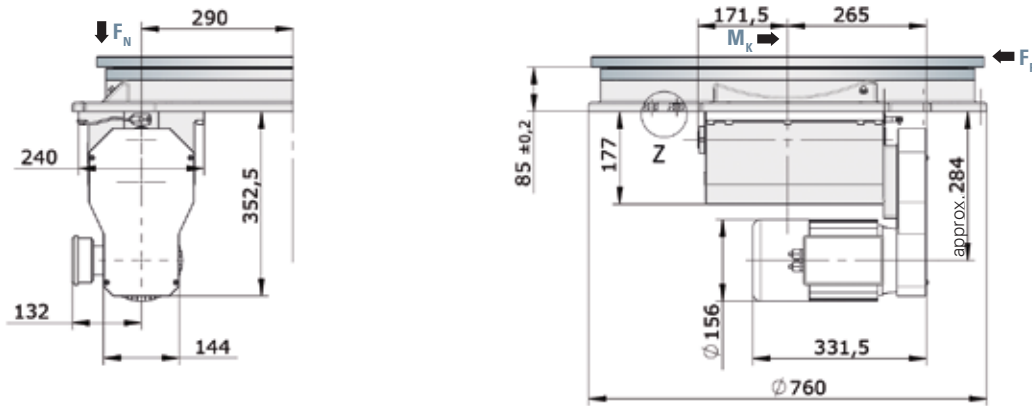
Indexing	Speed Step									
		s	a	b	c	d	e	f	g	h
4	J_{max}	-	3.4	9.9	15.2	32.2	58.9	86.9	218.5	327
	t_s	-	0.42	0.53	0.66	0.81	1.01	1.26	1.94	2.48
6	J_{max}	-	12	22	36	57	90	144	345	560
	t_s	-	0.42	0.53	0.66	0.81	1.01	1.26	1.94	2.48
8	J_{max}	-	19 *	31	49	78	120	195	460	750
	t_s	-	0.42 *	0.53	0.66	0.81	1.01	1.26	1.94	2.48
10	J_{max}	-	31 *	50	79	125	190	305	720	1170
	t_s	-	0.40 *	0.50	0.62	0.77	0.96	1.20	1.85	2.35
12	J_{max}	18 *	45 *	72	112	175	270	425	1015	1650
	t_s	0.27 *	0.40 *	0.50	0.62	0.77	0.96	1.20	1.85	2.35
16	J_{max}	20 *	57 *	90	140	190	335	530	1260	2045
	t_s	0.26 *	0.39 *	0.48	0.60	0.74	0.92	1.16	1.78	2.27
20	J_{max}	29 *	72 *	115	175	275	420	665	1575	2560
	t_s	0.26 *	0.39 *	0.48	0.60	0.74	0.92	1.16	1.78	2.27
24	J_v	35 *	85 *	135	210	330	505	800	1890	3070
	t_s	0.26 *	0.39 *	0.48	0.60	0.74	0.92	1.16	1.78	2.27
30	J_{max}	35 *	110 *	170	265	410	635	1000	2365	3840
	t_s	0.26 *	0.39 *	0.48	0.60	0.74	0.92	1.16	1.78	2.27

J = max. admissible mass inertia loading (kgm²) t_s = cycle time (seconds). Depending on motor size, electronics and time optimisation settings, the cycle time measured from the start signal to the electric position indication is approx. 80 - 130 ms longer than the value specified in the table.

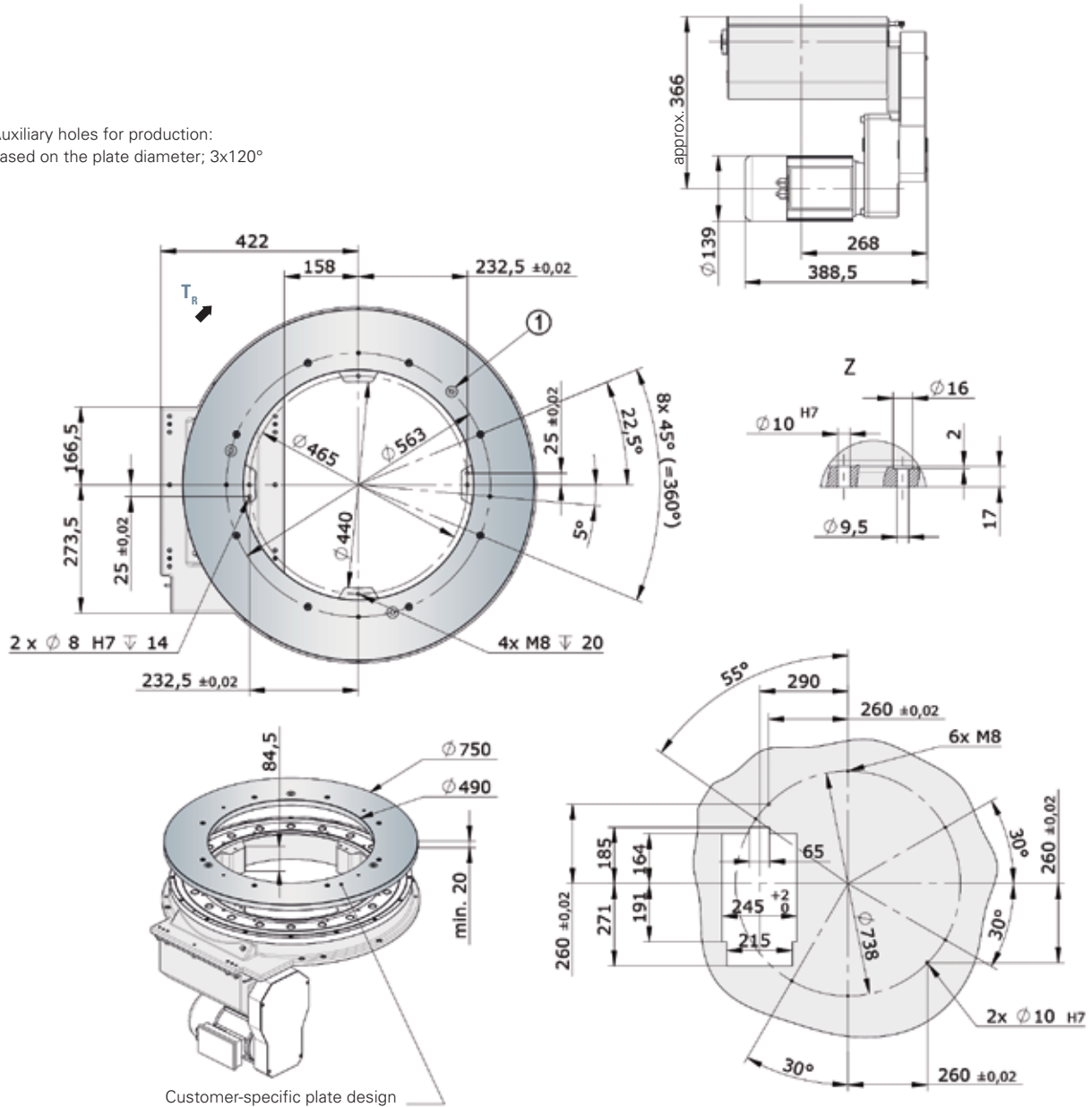
*EF2 - control system for brake wear reduction recommended (see page 58).

DIMENSIONS

The shown position of the rotating ring corresponds to the home position (state of delivery). Additional indexing plates are not included in the standard delivery scope and are subject to an extra charge. They are calculated separately as per your details.



- ① Auxiliary holes for production:
based on the plate diameter; 3x120°



TR 1100A

TECHNICAL DATA

Dial ring inside diameter:	Max. 800 mm	Indexing precision (arcsec):	± 18"
Dial ring outside diameter:	Min. 1100 mm	Indexing precision in radian measurement:	± 0.048 mm (at Ø 1100 mm)
Surface of the dial ring:	Anodised	Max. axial run-out of the ring:	* 0.06 mm (at Ø 1100 mm)
Direction of rotation:	Clockwise - counter clockwise or reciprocating	Max. concentricity:	* 0.04 mm
Cycle rate:	Up to approx. 120 cycles/min, depending on mass moment of inertia and angle of rotation	Max. parallelism of rotating plate surface to bottom housing surface:	* 0.06 mm (at Ø 1100 mm)
Voltage:	230 / 400 V 50 Hz, special voltages upon request	Max. outer diameter:	2200 mm (or following consultation)
Weight:	Approx. 310 kg		
Mounting position:	Dial ring horizontal		

* Attention! In order to reach the above axial and radial run-out tolerances, please ensure that the axial run-out of the mounting plate is accurate.

LOAD DATA (for indexing ring)

Vertical force on the locked ring

F_N : 6000 N

Perm. tilting moment acting on the locked ring

M_K : 2500 Nm

Perm. tangential moment acting on the locked ring

T_R : 3500 Nm

Perm. radial force acting on the locked ring

F_R : 12000 N

Max. central load on the ring at $M_K = 0$ Nm and $F_R = 0$ N on demand. Combined loads only after inspection by WEISS.

LOAD TABLE (Only valid for 50 Hz)

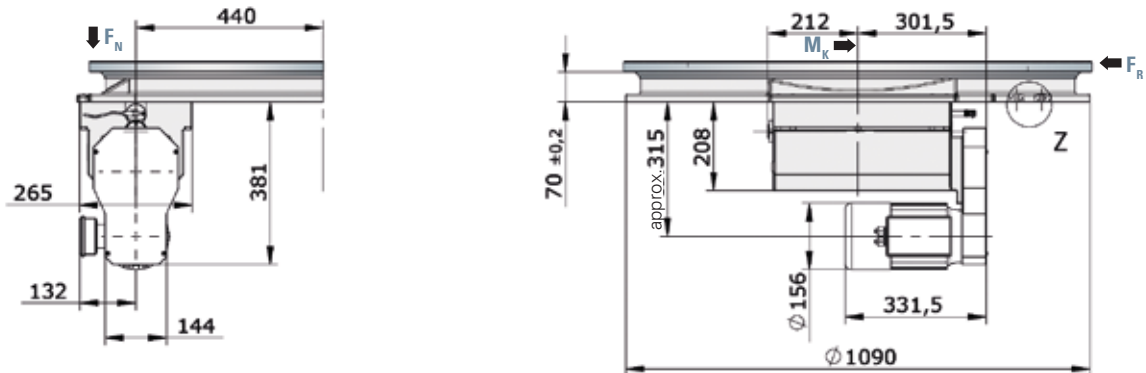
Indexing	Speed Step										
		s	a	b	c	d	e	f	g	h	i
4	J_{max}	-	-	11	19	41	57	60	180	295	445
	t_s	-	-	0.53	0.59	0.82	0.90	1.15	1.41	2.16	2.75
6	J_{max}	-	13	34	43	92	114	190	290	675	1010
	t_s	-	0.42	0.53	0.59	0.82	0.90	1.15	1.41	2.16	2.75
8	J_{max}	-	26 *	48	61	126	155	255	385	925	1510
	t_s	-	0.42 *	0.53	0.59	0.82	0.90	1.15	1.41	2.16	2.75
10	J_{max}	-	35 *	62	78	160	195	325	485	1160	1890
	t_s	-	0.39 *	0.51	0.56	0.78	0.86	1.09	1.33	2.05	2.61
12	J_{max}	21 *	62 *	116	143	260	350	495	860	2045	3325
	t_s	0.29	0.39 *	0.51	0.56	0.78	0.86	1.09	1.33	2.05	2.61
16	J_{max}	38 *	86 *	146	180	355	435	715	1070	2540	4125
	t_s	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
20	J_{max}	57 *	109 *	185	225	450	550	895	1340	3175	5160
	t_s	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
24	J_v	65 *	135 *	225	275	540	660	1075	1605	3810	6190
	t_s	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
30	J_{max}	90 *	170 *	280	345	675	825	1345	2010	4765	7740
	t_s	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
36	J_{max}	110 *	205 *	340	415	815	995	1620	2415	5720	9290
	t_s	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52

J = max. admissible mass inertia loading (kgm²) **t_s** = cycle time (seconds). Depending on motor size, electronics and time optimisation settings, the cycle time measured from the start signal to the electric position indication is approx. 80 - 130 ms longer than the value specified in the table.

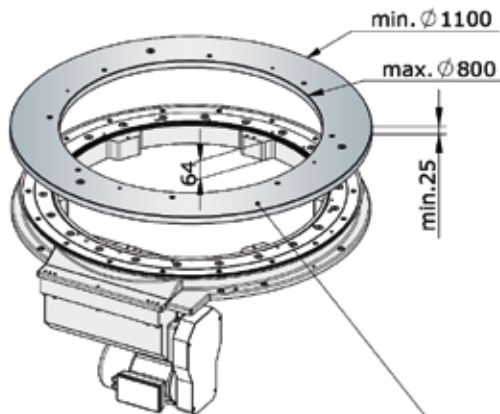
*EF2 - control system for brake wear reduction recommended (see page 58).

DIMENSIONS

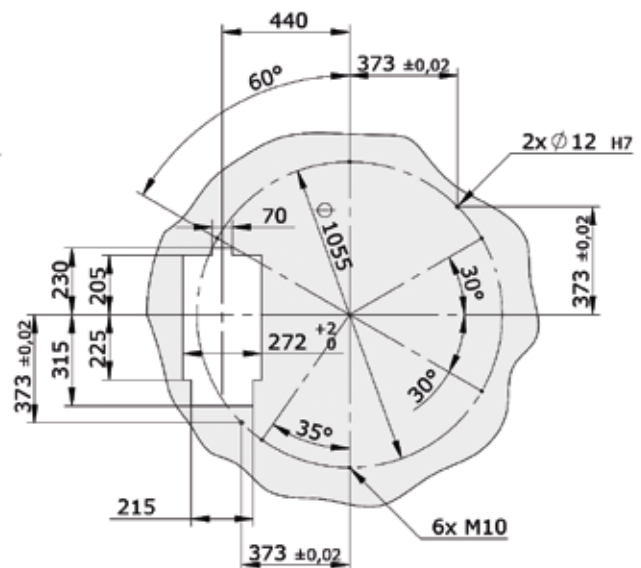
The shown position of the rotating ring corresponds to the home position (state of delivery). Additional indexing plates are not included in the standard delivery scope and are subject to an extra charge. They are calculated separately as per your details.



- ① Auxiliary holes for production: based on the plate diameter; 3x120°



Customer-specific plate design (included in the scope of functions offered by the TR)
Do not drill through the plate in the min/max area



TR 1500A

TECHNICAL DATA

Dial ring inside diameter:	Max. 1135 mm	Indexing precision (arcsec):	± 15"
Dial ring outside diameter:	Min. 1500 mm	Indexing precision in radian measurement:	± 0.055 mm (at Ø 1500 mm)
Surface of the dial ring:	Anodised	Max. axial run-out of the ring:	* 0.08 mm (at Ø 1500 mm)
Direction of rotation:	Clockwise - counter clockwise or reciprocating	Max. concentricity:	* 0.04 mm
Cycle rate:	Up to approx. 120 cycles/min, depending on mass moment of inertia and angle of rotation	Max. parallelism of rotating plate surface to bottom housing surface:	* 0.08 mm (at Ø 1500 mm)
Voltage:	230 / 400 V 50 Hz special voltages upon request	Max. outer diameter:	3000 mm (or following consultation)
Weight:	Approx. 400 kg		
Mounting position:	Dial ring horizontal		

* Attention! In order to reach the above axial and radial run-out tolerances, please ensure that the axial run-out of the mounting plate is accurate.

LOAD DATA (for indexing ring)

Vertical force on the locked ring

F_N : 8000 N

Perm. tilting moment acting on the locked ring

M_K : 3200 Nm

Perm. tangential moment acting on the locked ring

T_R : 5000 Nm

Perm. radial force acting on the locked ring

F_R : 16000 N

Max. central load on the ring at $M_K = 0$ Nm and $F_R = 0$ N on demand. Combined loads only after inspection by WEISS.

LOAD TABLE (Only valid for 50 Hz)

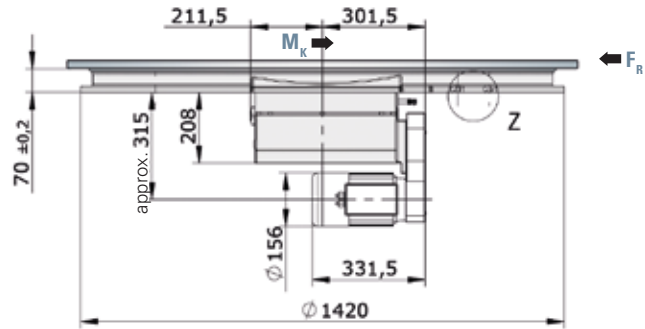
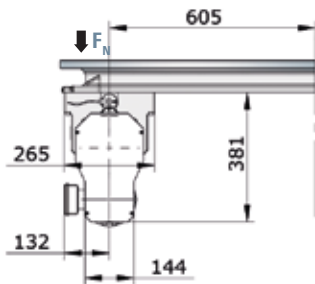
Indexing	Speed Step										
		s	a	b	c	d	e	f	g	h	i
8	J_{max}	-	-	57	74	163	203	342	520	1258	1792
	t_s	-	-	0.53	0.59	0.82	0.90	1.15	1.41	2.16	2.75
10	J_{max}	-	48	100	127	265	330	545	825	1975	2395
	t_s	-	0.39	0.51	0.56	0.78	0.86	1.09	1.33	2.05	2.61
12	J_{max}	-	75 *	149	185	380	470	775	1165	2785	3330
	t_s	-	0.39 *	0.51	0.56	0.78	0.86	1.09	1.33	2.05	2.61
16	J_{max}	43	108 *	190	235	480	590	965	1440	3460	5325
	t_s	0.28	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
20	J_{max}	69 *	140 *	243	301	605	740	1215	1820	4330	7040
	t_s	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
24	J_{max}	87 *	172 *	295	365	730	890	1460	2185	5200	8455
	t_s	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
30	J_{max}	114 *	221 *	375	460	915	1120	1830	2740	6505	10570
	t_s	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
36	J_v	141 *	270 *	455	560	1105	1350	2200	3290	7810	12690
	t_s	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
48	J_{max}	324 *	600 *	995	1215	2375	2900	4720	7045	16685	27095
	t_s	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52

J = max. admissible mass inertia loading (kgm²) t_s = cycle time (seconds). Depending on motor size, electronics and time optimisation settings, the cycle time measured from the start signal to the electric position indication is approx. 80 - 130 ms longer than the value specified in the table.

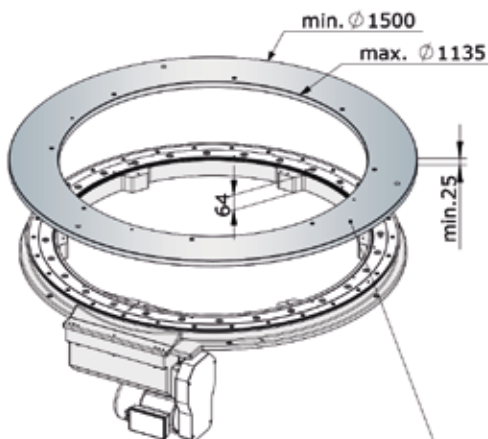
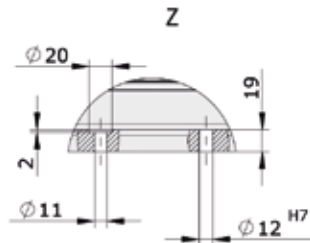
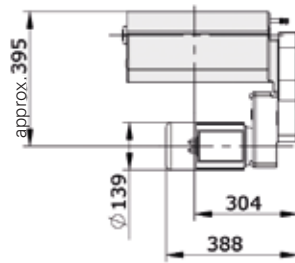
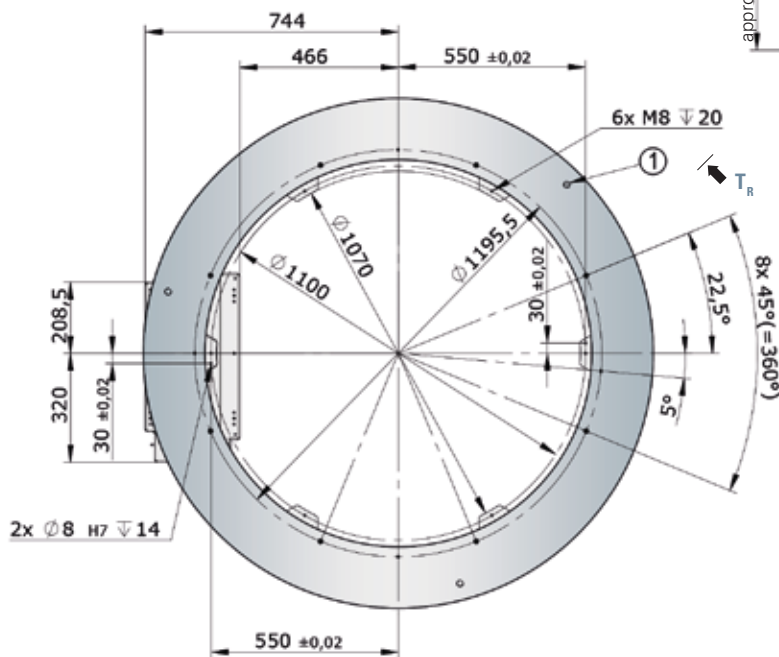
*EF2 - control system for brake wear reduction recommended (see page 58).

DIMENSIONS

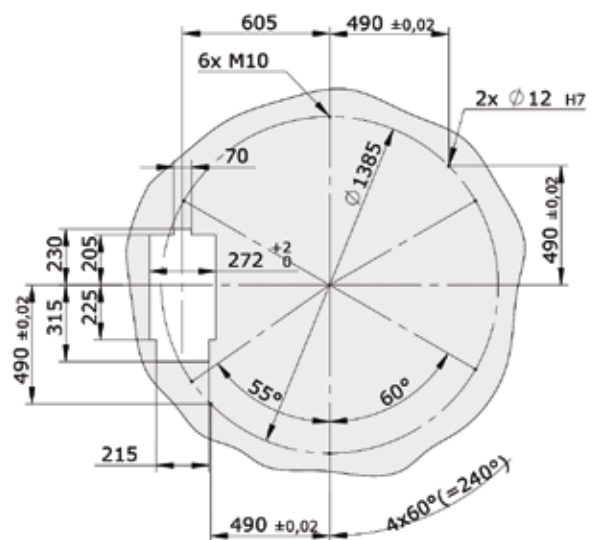
The shown position of the rotating ring corresponds to the home position (state of delivery). Additional indexing plates are not included in the standard delivery scope and are subject to an extra charge. They are calculated separately as per your details.



- ① Auxiliary holes for production:
based on the plate diameter;
3x120°



Customer-specific plate design (included in the scope of functions offered by the TR)
Do not drill through the plate in the min/max area



TR 2200A

TECHNICAL DATA

Dial ring inside diameter:	Max. 1750 mm	Indexing precision (arcsec):	± 12"
Dial ring outside diameter:	Min. 2200 mm	Indexing precision in radian measurement:	± 0.064 mm (at Ø 2200 mm)
Surface of the dial ring:	Anodised	Max. axial run-out of the ring:	* 0.08 mm (at Ø 2200 mm)
Direction of rotation:	Clockwise - counter clockwise or reciprocating	Max. concentricity:	* 0.05 mm
Cycle rate:	Up to approx. 120 cycles/min, depending on mass moment of inertia and angle of rotation	Max. parallelism of rotating plate surface to bottom housing surface:	* 0.08 mm (at Ø 2200 mm)
Voltage:	230 / 400 V 50 Hz, special voltages upon request	Max. outer diameter:	4400 mm (or following consultation)
Weight:	Approx. 950 kg	* Attention! In order to reach the above axial and radial run-out tolerances, please ensure that the axial run-out of the mounting plate is accurate.	
Mounting position:	Dial ring horizontal		

LOAD DATA (for indexing ring)

Vertical force on the locked ring

F_N: 15000 N

Perm. tilting moment acting on the locked ring

M_K: 4500 Nm

Perm. tangential moment acting on the locked ring

T_R: 15000 Nm

Perm. radial force acting on the locked ring

F_R: 30000 N

Max. central load on the ring at MK = 0 Nm and FR = 0 N on demand. Combined loads only after inspection by WEISS.

LOAD TABLE (Only valid for 50 Hz)

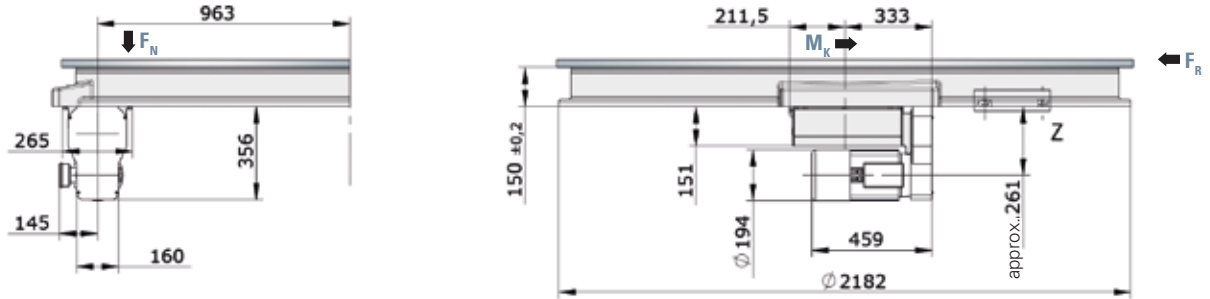
Indexing	Speed Step							
		a	b	c	d	e	f	g
14	J _{max}	-	-	-	525	720	1010	2400
	t _s	-	-	-	0.77	0.86	0.97	1.48
16	J _{max}	-	-	420	995	1030	1640	3075
	t _s	-	-	0.62	0.77	0.86	0.97	1.48
18	J _{max}	-	-	600	1325	1370	2140	3955
	t _s	-	-	0.62	0.77	0.86	0.97	1.48
20	J _{max}	-	511	797	1550	1750	2670	4945
	t _s	-	0.50	0.62	0.77	0.86	0.97	1.48
24	J _{max}	-	665	1180	1805	2455	3255	7230
	t _s	-	0.50	0.62	0.77	0.86	0.97	1.48
30	J _{max}	-	707	1245	2010	2580	3420	8240
	t _s	-	0.46	0.57	0.70	0.78	0.89	1.36
36	J _{max}	465	* 900	1545	2465	3135	4155	9940
	t _s	0.37	* 0.46	0.57	0.70	0.78	0.89	1.36
48	J _v	762	* 1281	2140	3370	4165	5625	13335
	t _s	0.37	* 0.46	0.57	0.70	0.78	0.89	1.36

J = max. admissible mass inertia loading (kgm²) t_s = cycle time (seconds). Depending on motor size, electronics and time optimisation settings, the cycle time measured from the start signal to the electric position indication is approx. 80 - 130 ms longer than the value specified in the table.

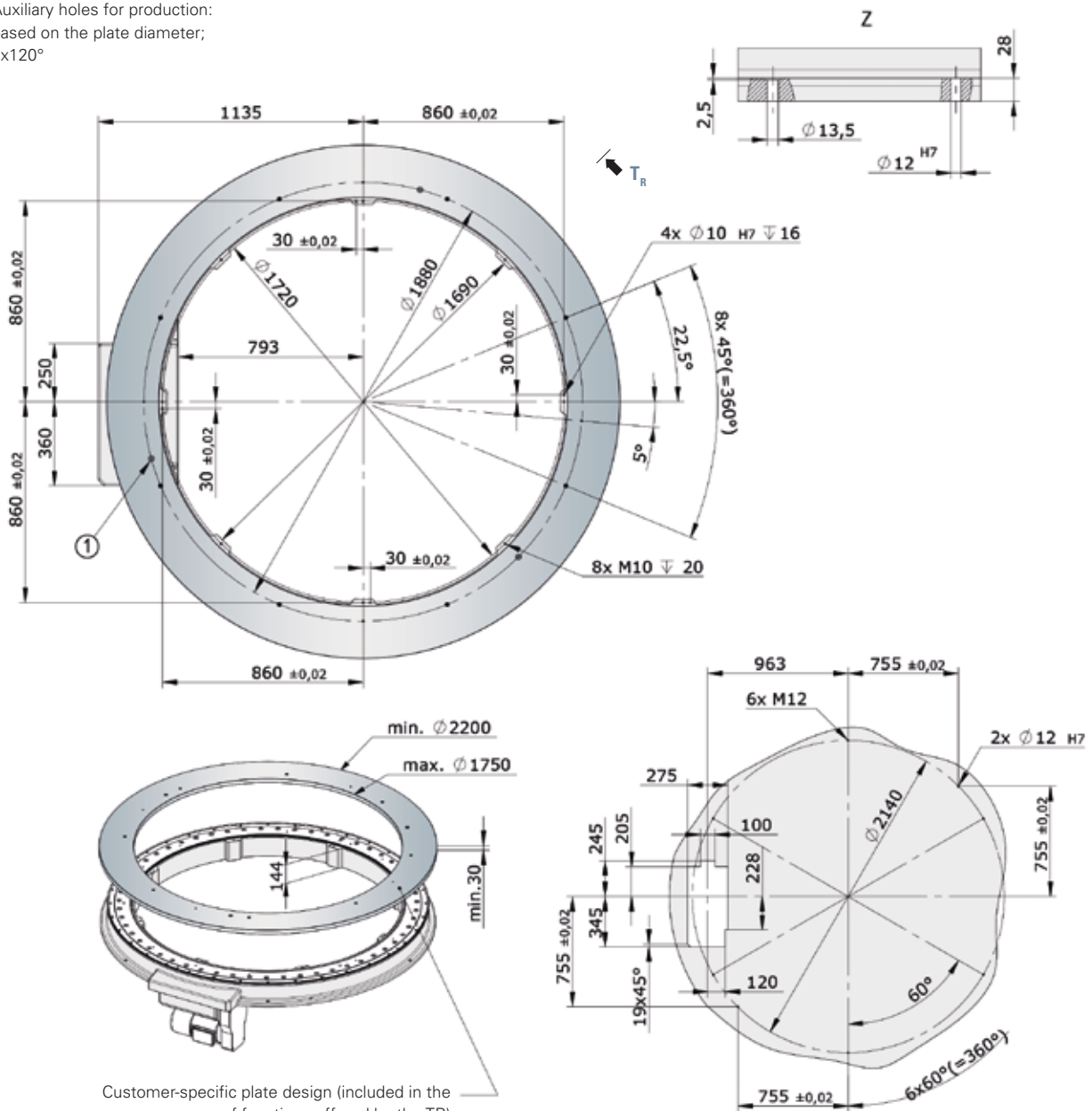
*EF2 - control system for brake wear reduction recommended (see page 58).

DIMENSIONS

The shown position of the rotating ring corresponds to the home position (state of delivery). Additional indexing plates are not included in the standard delivery scope and are subject to an extra charge. They are calculated separately as per your details.



- ① Auxiliary holes for production:
based on the plate diameter;
3x120°



Customer-specific plate design (included in the scope of functions offered by the TR)
Do not drill through the plate in the min/max area

EF2

FIXED-STATION ROTARY INDEXING TABLES | EF2 ROTARY TABLE CONTROL SYSTEM

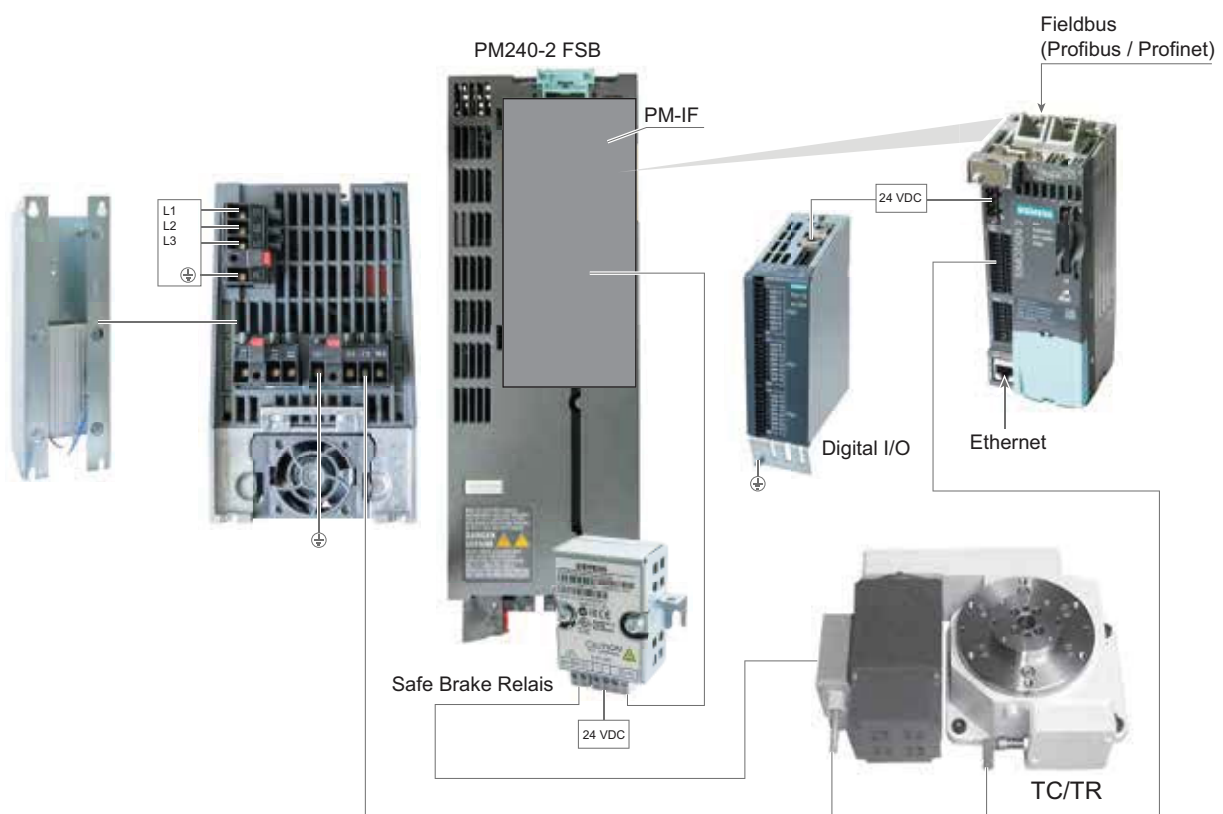
ADVANTAGES

The EF2 rotary table control system enables fast and convenient control of rotary indexing tables of all sizes belonging to the TC and TR series.

- Intuitive, web-based user interface for faster commissioning
- No brake wear, soft start-up from intermediate positions is gentle on gearing
- Increased performance through fully automatic optimisation cycle
- Remote support and remote diagnostics options
- Worldwide use thanks to various mains standards
- Compact hardware (all-in-one)
- Fieldbus connection: Profibus and Profinet
- Interface: Digital I/O
- Integrated SIL2 safety function
- Additional SIL3 measures possible
- Watchdog mechanism

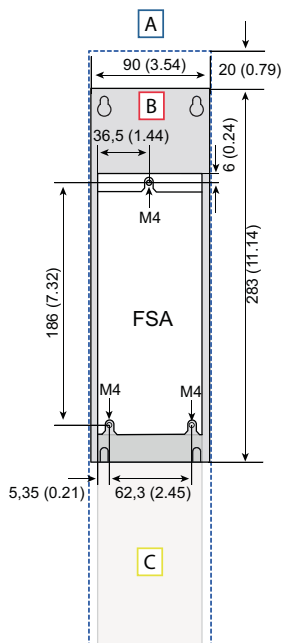
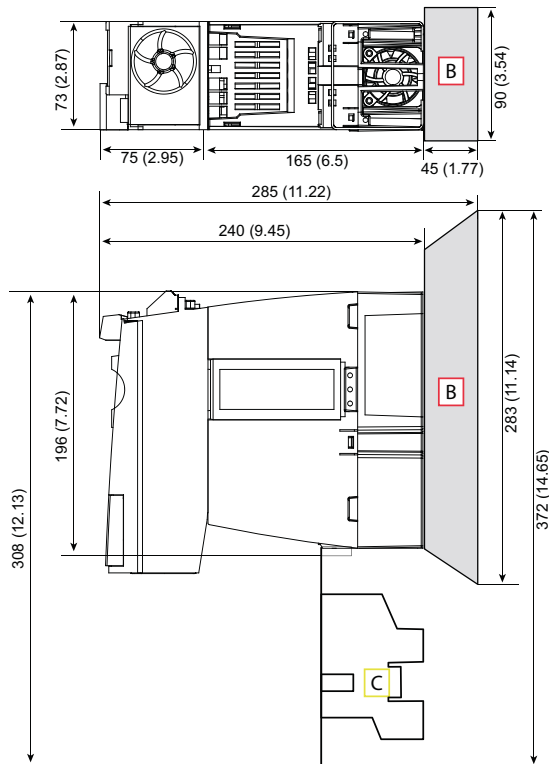


BLOCK DIAGRAM



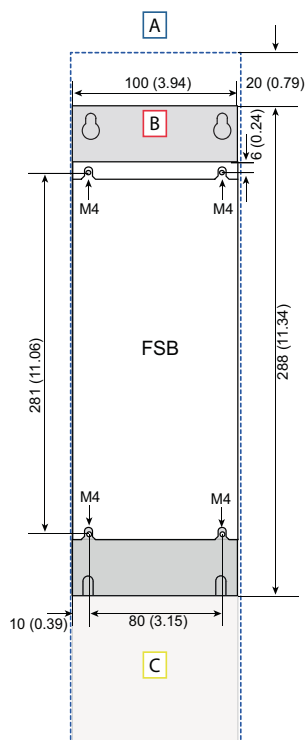
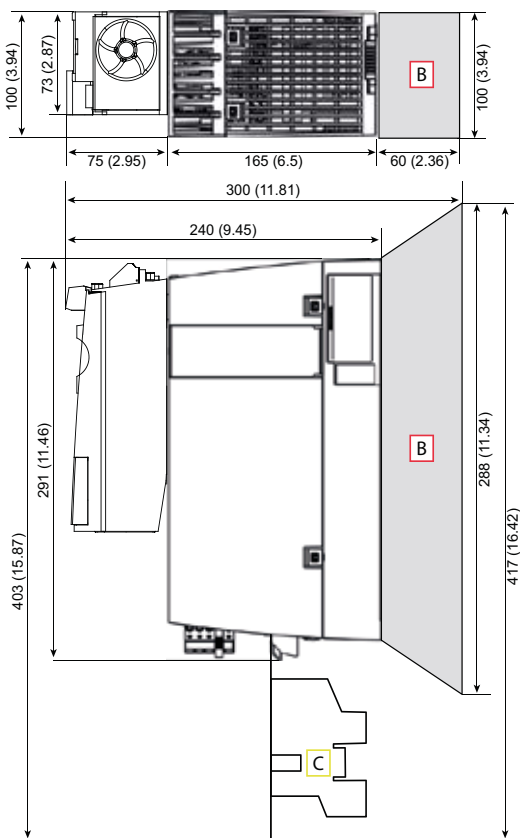
DIMENSIONS

FSA size (EF2037 to EF2220)



A = Ventilation clearance
 B = Brake resistance
 C = Shielding plate

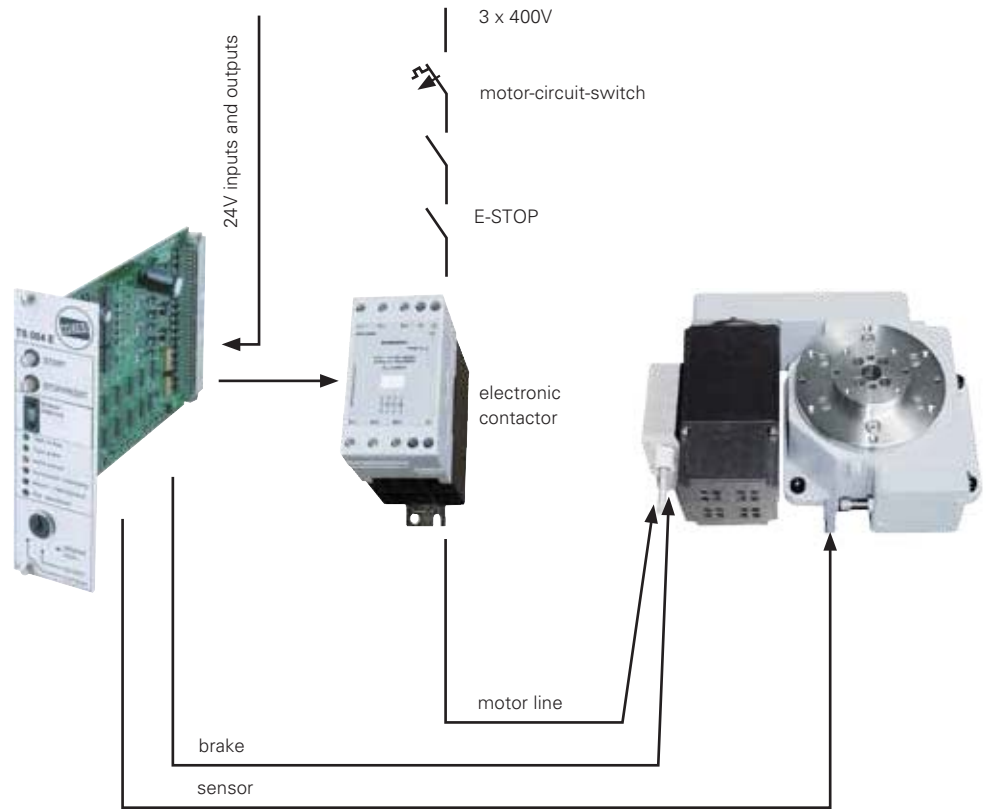
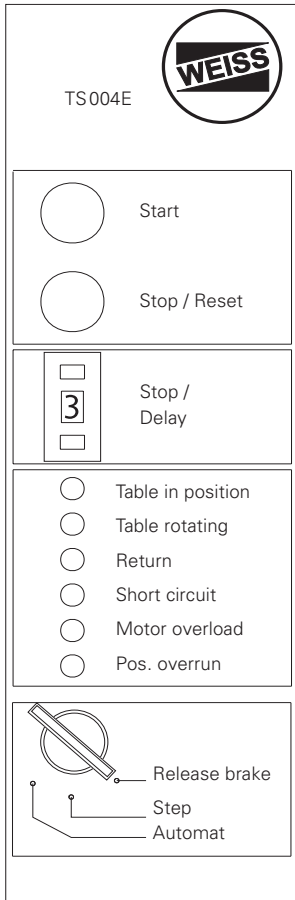
FSB size (EF2300)



A = Ventilation clearance
 B = Brake resistance
 C = Shielding plate

TS

FIXED-STATION ROTARY INDEXING TABLES | TS 004E CONTROL CARD



ADVANTAGES

- Instant start-up thanks to user-friendly push buttons on front panel
- Easy to optimize the cycle time of the indexer
- Motor protection through cycle time monitoring
- Allows failure analysis by telephone
- EWR: Considerable extension of the service life of the brake by reduction of the motor speed before braking

DIMENSIONS

- Control card:
 - Europecard 100 x 160 mm
 - Front plate 3HE/8TE
 - Multipoint plug, 64-pin in accordance with DIN 41612 Type B
- PCB holder: 220 x 130 x 50 mm
- Housing for rear wall mounting: 235 x 135 x 67 mm
- Housing for rail mounting: 245 x 135 x 67 mm
- Housing for front panel installation: 235 x 135 x 67 mm
- Installation opening: 136 x 68 mm

INSTALLATION OPTIONS

- In a 19" rack (in conjunction with terminal PCB TS 004 K1)
- In the PCB holder
- In the protective housing

MACHINE DESIGN TR

Fax to: +49 (0) 6281 5208-99 or just fill in the form online: www.weiss-international.com

Enquiry Attachment to order

Dear customer,

Thank you for your interest in our rotary indexing ring tables. To enable us to supply you with the correct unit for your application, we kindly ask you to answer the following questions:

Model

TR 750A TR 1100A Indexing _____
 TR 1500A TR 2200A Drive on the bottom

Indexing time

Based on the calculated mass moment of inertia, do you require:

- The shortest indexing time
- A longer indexing time of approx. _____ sec
- Angle of rotation _____ °
- Standing time _____ sec

Additional components (optional)

- Raised support for fixed stationary plate: H _____ mm
- Raised support for indexing ring: H _____ mm
- Base frame (Please refer to indexing machine bases)

Colour of the Rotary indexing ring table

- RAL 7035 (light grey-standard)
- Special colour RAL _____ (extra charge)
- Lugs used: Yes No (Lugs painted)

Required to specify your TR table

The following specification regarding your configuration is fundamental for the calculation of the mass moment of inertia.

Indexing ring

Outer diameter: _____ mm
 Inner diameter: _____ mm
 Thickness: _____ mm
 Material: AlMg4.5Mn Other _____

Fixtures and parts

Number: _____
 Weight per station: _____ kg
 Diameter of the center of gravity: _____ mm

Please draw a sketch of how your load is build on the table.

Total moment of mass inertia: _____ kgm² (additional indexing plate and add-ons)

Additional indexing plate

Included in the scope of offer and delivery
 Processing according to drawing No. _____

Control system EF1 / EF2 / TS 004 E

- Frequency converter control system EF1 (Lenze)
- Frequency converter control system EF2 (Siemens)
 Interface Profibus + ProfiNet onboard
 - TM 15 module for interface Digitale I/O
 - SIL3 (STO) - motor contactor + safety relay

Electrical data

Drive
 Three-phase braking motor (standard)
Motor
 Voltage 3 x 400 V / 50 Hz (standard)
 Other: _____ V / _____ Hz
Brake
 Braking voltage 24 V = (recommended)
 Other: _____ V

- Use of the WEISS control card TS 004 E
- Terminal PCB for 19" rack
- PCB card holder
- Protective housing for:
 - Rear wall mounting Front panel mounting
 - Rail mounting Frontdoor, lockable and transparent

We strongly recommend using solid-state relays for controlling the motors!

Electronic contactor* Electronic reversing contactor*

Front panel language for WEISS control card TS 004 E

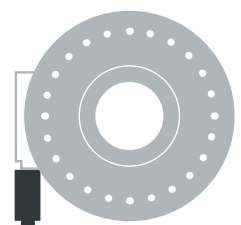
- German Italian English
- French Dutch Czech

*Not necessary with frequency converter control system EF1/EF2

For technical enquiries

Company: _____
 Name: _____
 Country: _____

Desired delivery date: _____
 Phone: _____ Fax: _____
 E-Mail: _____



FREELY PROGRAMMABLE ROTARY TABLES