



## 德國WEISS高精度分度台

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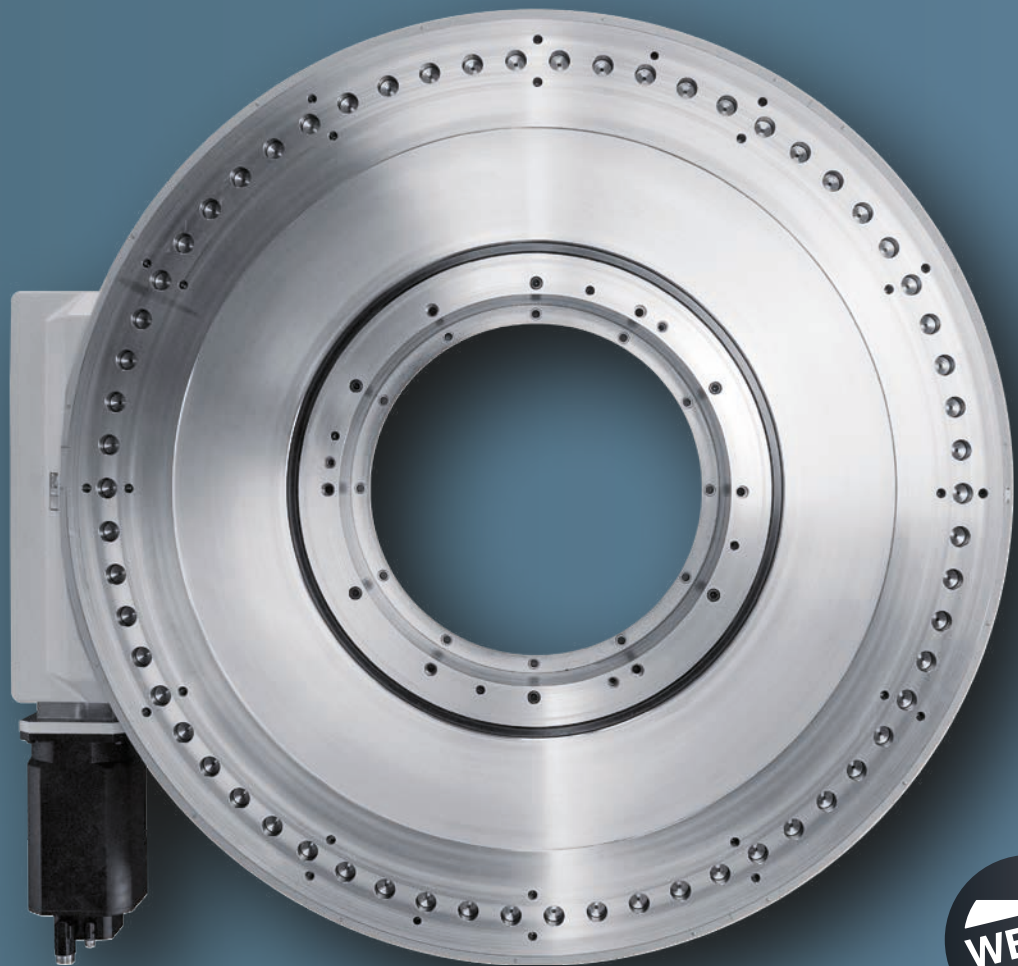


- ✓ 來自德國自動化技術領域熱銷產品
- ✓ 最可靠、最穩健、使用壽命極長，分度速度驚人
- ✓ 可進行編程，且適合在無塵室中使用
- ✓ 在最短的轉換時間內達到最高的精確度
- ✓ 具有抗急推和抗衝擊性能，應用於汽車裝配精密設計

INSPIRING PEOPLE  
GREAT SOLUTIONS

# PRODUCT RANGE

ROTARY TABLES  
LINEAR SYSTEM  
HANDLING  
SOFTWARE





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**FIXED-STATION ROTARY INDEXING TABLES**



TC Rotary indexing table	14
TR Rotary indexing ring table	36
EF2 Rotary table control system	48
TS 004E Control card	50

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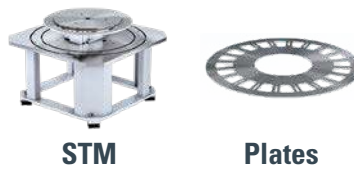
**FREELY PROGRAMMABLE ROTARY TABLES**



NC Rotary table	54
NR Rotary ring table	64
CR/TH Heavy duty rotary table	76
TO Torque rotary table	96
ST Torque Rotating Unit	110
TW Rotary table with hybrid drive	118

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**CUSTOMER-SPECIFIC SOLUTIONS**



SR/SK Indexing machine bases	130
Plates	138

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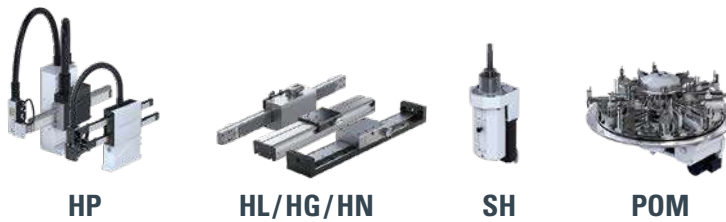
**LINEAR ASSEMBLY SYSTEM**



LS280 Linear Assembly System	142
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**HANDLING MODULES**



HP Pick & Place	164
HL Linear axis	170
HG/HN Linear axis	176
SH 75 Lifting-rotating unit	190
Pick-o-Mat automated assembly system	194

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**WEISS APPLICATION SOFTWARE**



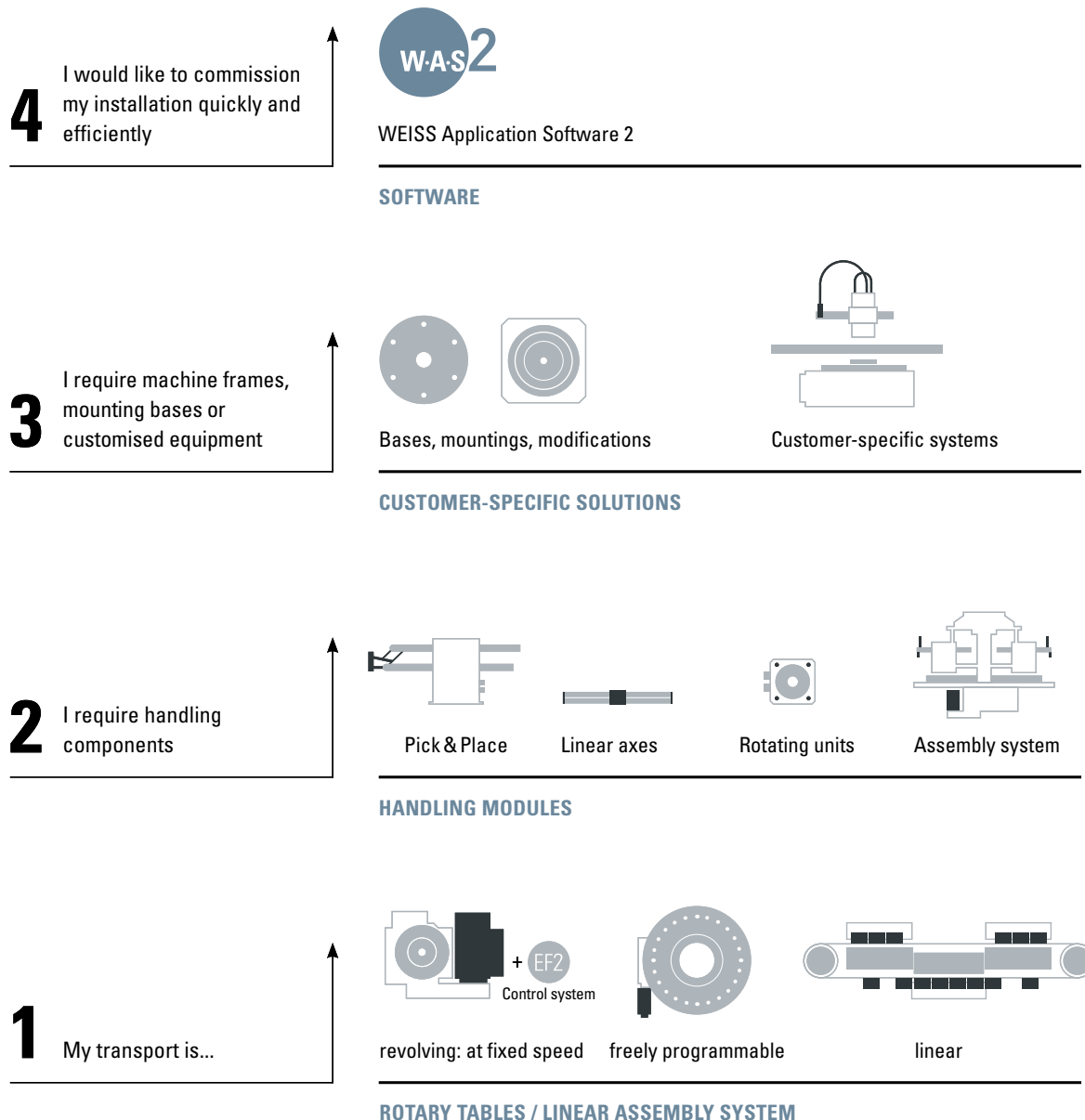
W.A.S. 2	208
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W.A.S. 2

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# FOUR STEPS TO PERFECT AUTOMATION

Experience a product portfolio with unparalleled scope: from basic machines, through handling units, right up to plates, attachments and custom solutions. All components can be controlled using the WEISS Application Software (W.A.S. 2) for fast and easy commissioning.





INSPIRING PEOPLE

**GREAT SOLUTIONS**



# 22,000 m<sup>2</sup>

PRODUCTION / MANUFACTURING AREA

DEVELOPMENT

DESIGN

MILLING

TURNING

DRILLING

MESHING

GRINDING

PAINTING

FITTING

MEASURING



For us, quality comes first. Our rotary indexing tables and automation components have earned a legendary reputation in terms of reliability, robustness and precision. Our comprehensive manufacturing expertise plays a key part in this regard. Working in interdisciplinary teams, we develop precise solutions for our customers – with the right technical and economic attributes. Our new measuring centre at the production location in Buchen also supports this high quality standard. All large components with diameters in excess of 800 mm are measured with extreme precision here prior to fitting.

MANUFACTURING  
EXPERTISE

SINCE **1969**



WEISS QUALITY FROM CLEVELAND TO SHANGHAI:

→ SUBSIDIARIES IN **13** COUNTRIES

→ REPRESENTED IN **50** COUNTRIES

→ **13** YEARS OF PRODUCING LINEAR ASSEMBLY SYSTEMS

→ MACHINING OF PLATES WITH DIAMETERS OF UP TO **2,800** MM



ASIA CHINA GERMANY GREAT BRITAIN ITALY CANADA NETHERLANDS NORTH AMERICA SWITZERLAND SPAIN B  
NORWAY AUSTRIA POLAND PORTUGAL RUSSIA SWEDEN SINGAPORE



CYLINDER LOCK MANUFACTURING WITH THE LS LINEAR ASSEMBLY SYSTEM  
AT AUMAT MASCHINENBAU GMBH:

→ 12-METRE-LONG SYSTEM

BELGIUM BRAZIL DENMARK FINLAND FRANCE INDIA INDONESIA ISRAEL KOREA LUXEMBOURG MALAYSIA MEXICO  
POLAND SLOVAKIA SLOVENIA SOUTH AFRICA TAIWAN THAILAND CZECH REPUBLIC TURKEY UKRAINE VIETNAM BELARUS



CUSTOMERS IN OVER **40** COUNTRIES

AVAILABLE **TO YOU** LOCALLY WHEN YOU NEED US

We are more than just a component supplier for our customers. In fact, we are a solution partner that can help you reduce time and costs – with products, services and matching consulting. We provide support in selecting the right product(s) and optimising processes, all the way up to designing and commissioning complete installations.

We offer customer proximity in every sense of the term. We are never far away from our customers, no matter where in the world they are located, and speak their language. But every market is different. Whether automotive, medical or consumer – we also understand the respective industry, including its special characteristics and processes.

→ **15** PROCESSING STATIONS

→ PROCESSING OF **360** CYLINDER LOCKS PER HOUR



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WE COMBINE EXPERTISE WITH SOLUTIONS –  
AND SOLUTIONS WITH MARKETS  
**NO MATTER WHERE**

We are represented worldwide, wherever our customers need us. We can be on site quickly thanks to our network of subsidiaries and offices, as well as our own service and support teams. Regional inventories at dedicated logistics hubs allow us to cater to local requirements quickly and effectively. Our subsidiaries also offer maximum mobility so that we can react to specific market requirements flexibly. Yet even with maximum flexibility and adaptability, one thing always remains the same: at its heart, WEISS is always WEISS.





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FIXED-STATION ROTARY INDEXING TABLES

# TC

FIXED-STATION ROTARY INDEXING TABLES | TC ROTARY INDEXING TABLE



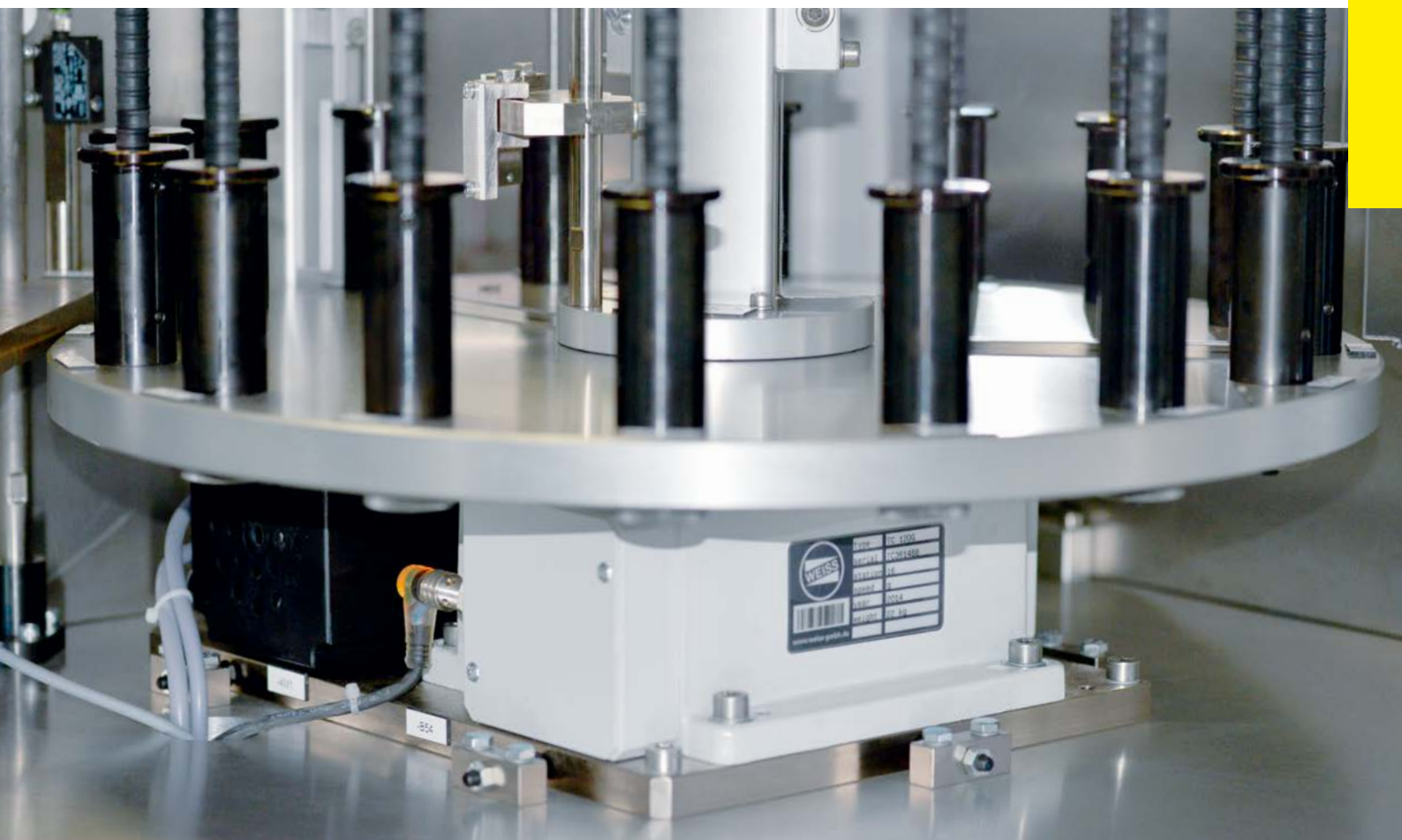
## TC ROTARY INDEXING TABLE: RELIABILITY FOR A LIFETIME

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### EXTENDED WARRANTY

Using our rotary table control system minimises brake wear. This makes the rotary indexing table virtually maintenance-free throughout its entire service life. And using this control system also extends the warranty to four years.





Custom machine for an automotive supplier. The assembly of sealing rings for injection pumps requires maximum precision. The TC 150 rotary indexing table with matched rotating plate delivers this.

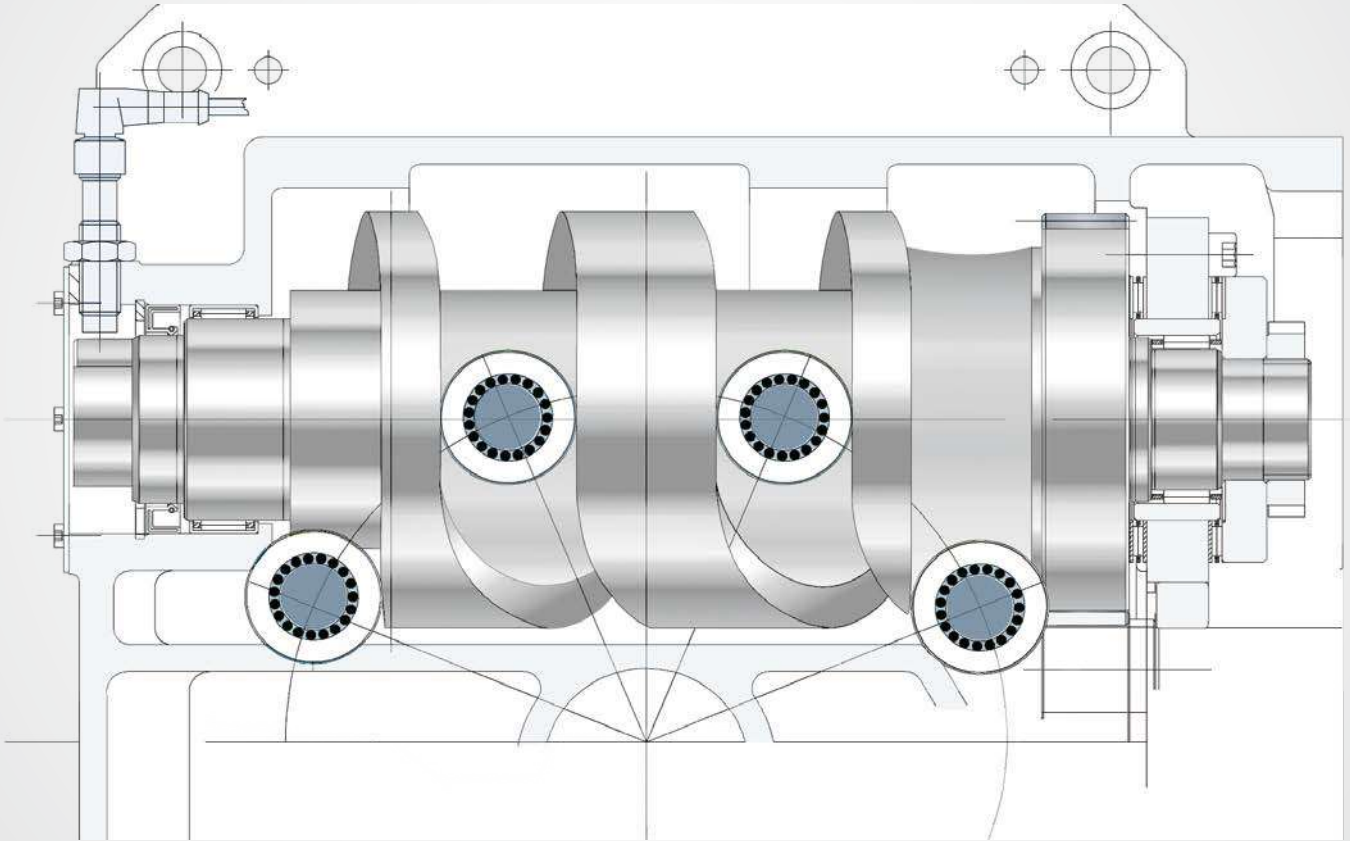
One of the most reliable and robust rotary indexing tables available worldwide. Your most popular partner in the field of automation technology. Extremely long service life combined with impressively fast switching. Now in its third generation. Robust rotary indexing table with smooth, jerk and impact-free running and extremely long service life. When using a WEISS rotary table control system, we extend the warranty from one to four years.

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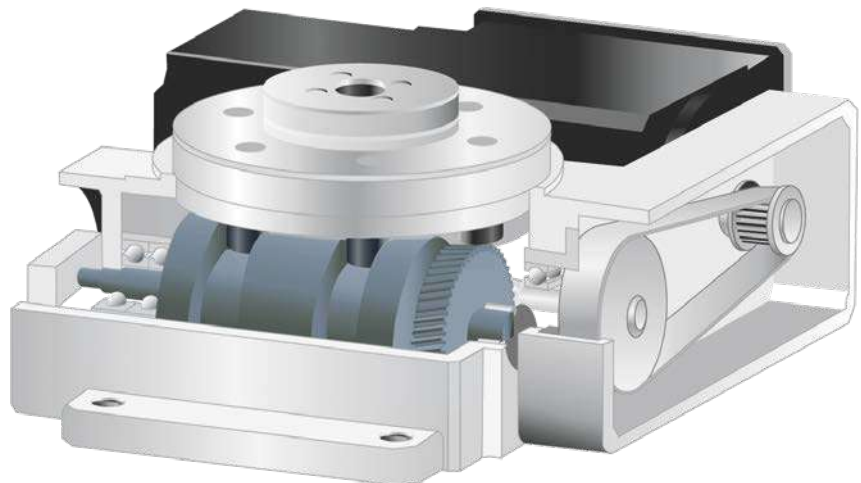
## ADVANTAGES

- Powerful upright centre part
- Large central bore and opening in the housing for media feed-through on models TC0120 to TC0320
- Plate gasket with soiling lip
- Precise, high-load plate bearing
- Cam rollers mounted on needle bearings
- Grey iron housing
- Hardened plates, soft mounting surface
- EWR electronic wear compensation
- Extremely high precision which always comes with an approval certificate.





The TC is one of the most reliable and robust rotary indexing tables available worldwide. Our roller cam drives are dimensioned as large as possible. And the full length of the cams is used here.



The fastest switching times and an extremely long service life – we achieve this with high-precision drive cams made by our in-house manufacturing department.

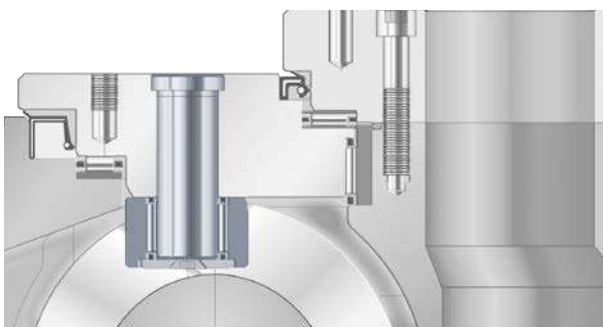
# DELIVERS WHAT IT PROMISES – THAT'S A PROMISE.

## GENERAL INFORMATION ON THE MODEL RANGE

- TC rotary indexing tables can be operated clockwise, anti-clockwise and also in reversing mode.
- The drive can be swung downward. You can do the conversion work yourself.
- The TC rotary indexing tables are "lubricated for life"!
- The maximum switching frequency is up to 220 cycles per minute, depending on the size, the system's mass moment of inertia and the angle of rotation.
- All TC rotary indexing tables are equipped with asynchronous brake motors. The size of the motors is optimally matched to the respective rotary indexing table configuration, so the drive can never damage the rotary indexing table.
- The maximum stated radial force and torque of the stationary central section and the output flange refer only to the rotary indexing table.
- When determining the maximum actual load of the overall system, the influence of the plate material and the plate attachment means must also be taken into account.
- We would be happy to advise and support you in dimensioning your overall system.
- Note on indexing times (TC 120-TC 500): The actual measured rotation time (from the start signal to the electrical in-position signal) comprises the calculated rotation motion time given in the tables and type-related delays. Electrical signal processing times, as well as setting up and optimising the ideal start position represent an important part.

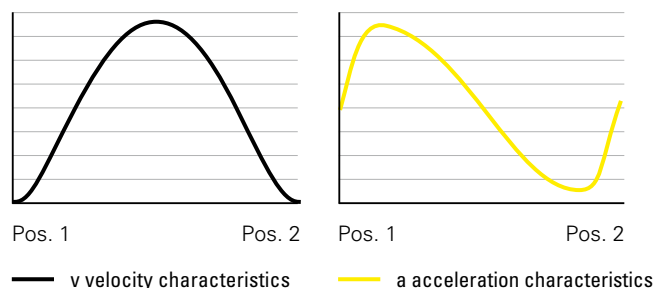
## OPTIMISED BEARINGS

To achieve maximum quality and reliability, even when under load, all roller bearings run in an oil bath and the plate cam rollers are mounted on needle bearings.

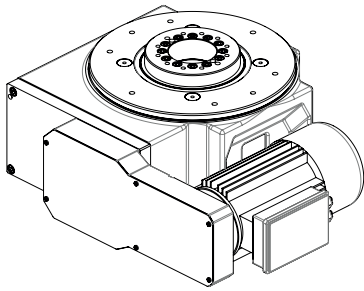


## GENTLE MOVEMENTS

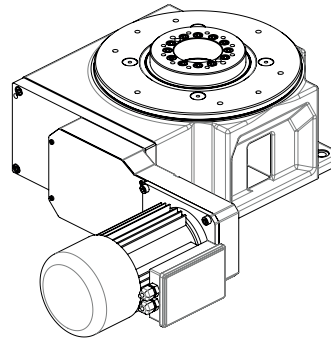
Thanks to the cam profile with modified sine wave, we are able to achieve very gentle and smooth movements. This is the prerequisite for the fastest indexing times and a long service life.



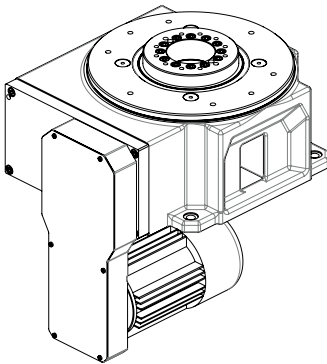
VERSIONS: DRIVE POSITION



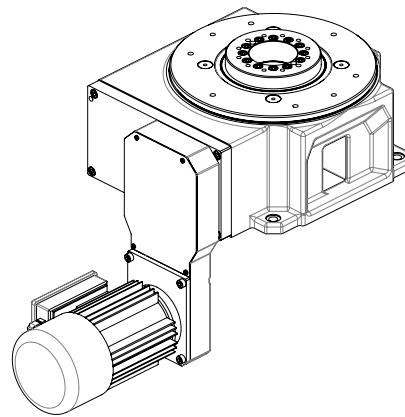
LATERAL INSIDE/DP 1



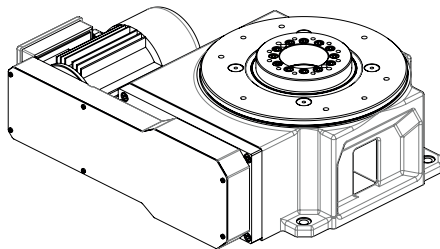
LATERAL OUTSIDE/DP 2



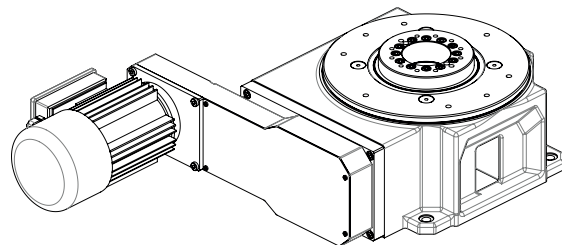
BELOW INSIDE/DP 3



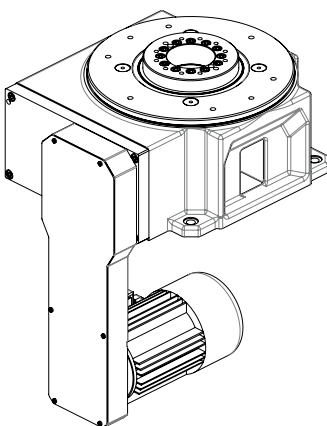
BELOW OUTSIDE/DP 4



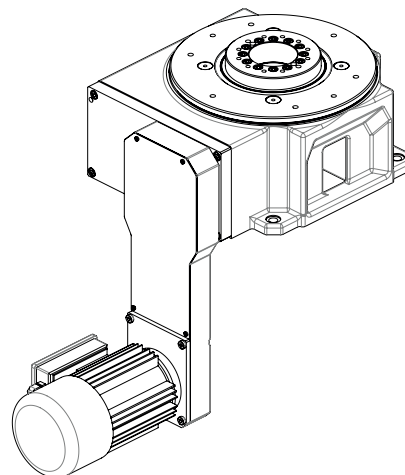
LATERAL INSIDE  
MOTOR ON CAM SIDE/DP 5



LATERAL OUTSIDE  
LONG DRIVE HOUSING/DP 6

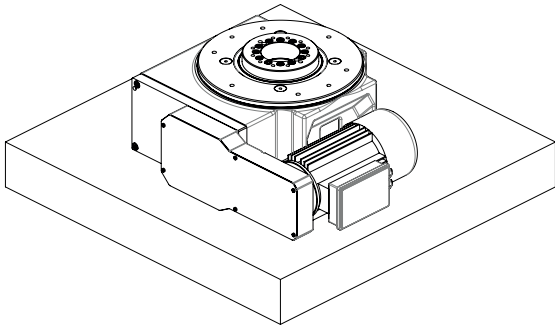


BELOW INSIDE  
LONG DRIVE HOUSING/DP 7

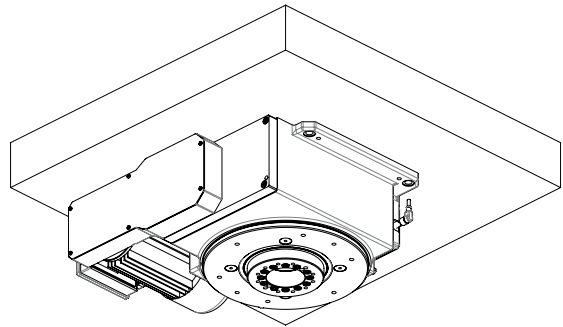


BELOW OUTSIDE  
LONG DRIVE HOUSING/DP 8

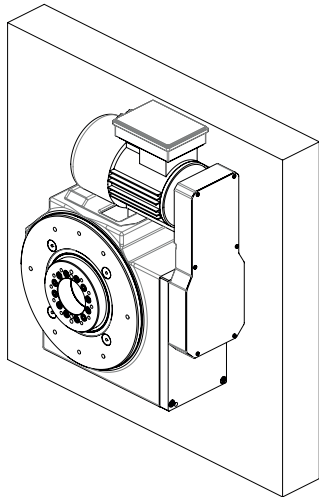
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**VERSIONS: MOUNTING POSITION**


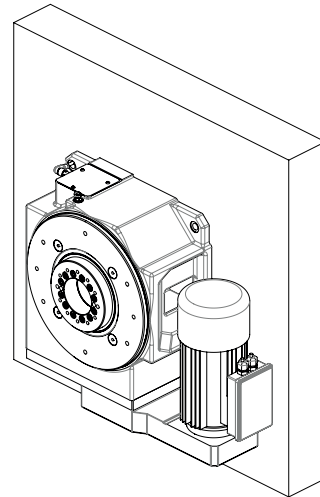
STANDARD /MP 1



OVERHEAD /MP 2



VERTICAL, DRIVE ON RIGHT /MP 3



VERTICAL, DRIVE AT BASE /MP 4

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**OPTIONS**

- If necessary, the stationary central section can be raised 5 mm or 10 mm.
- All sizes in the TC model range can optionally be equipped with a DRIVE-CLiQ absolute encoder.
- In connection with the new 2.1 version of the EF2 control system software, the rotary encoder offers the following options:
  - » Cam switching mechanism: 16 user-programmable electronic cams allow early triggering of process actuators or help reduce the cycle time with load-ing/unloading axes
  - » Segment detection: The index of the current nest is reflected in the locking position on the fieldbus or, where applicable, digital I/Os. This eliminates the need for retrofit equipment to determine the current position of the component nests on the rotating plate.
- Standard colour: RAL7035 (other colours available on request)
- Please get in touch with us if you are looking for a solution for cleanroom applications.

# TC 120G



## GENERAL INFORMATION

- Maximum recommended equipment diameter  $D_{tp}$ : approximately 600 mm
- Custom option for TC0120T: screw-on mounting from above (please request drawing)

## TECHNICAL DATA

<b>U</b>	Voltage (custom voltages available on request):	230 / 400 V
<b>f</b>	Frequency:	50 Hz
	Indexing precision*:	Indexing 2-10: 90 arcsec ( $\pm 45''$ ) Indexing 12-20: 110 arcsec ( $\pm 55''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing$ 120 mm) 0.02 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.02 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	(at $\varnothing$ 120 mm) 0.04 mm
<b>m</b>	Total weight, including motor:	22 kg

\* Positioning accuracy can be improved by 10 arcsec on request.

## LOAD DATA (for the stationary central part)

Due to the necessary layout of the drilling pattern, the stationary central section should only be used for attaching sensor technology or similar small components.

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

<b>T<sub>2 stat</sub></b>	Static torque:	120 Nm
<b>M<sub>2T dyn</sub></b>	Permitted dynamic tilting moment:	200 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	3300 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	1500 N

## LOAD TABLE 50 Hz (On request: higher loads / custom indexing and switching times for 60 hz mains frequency)

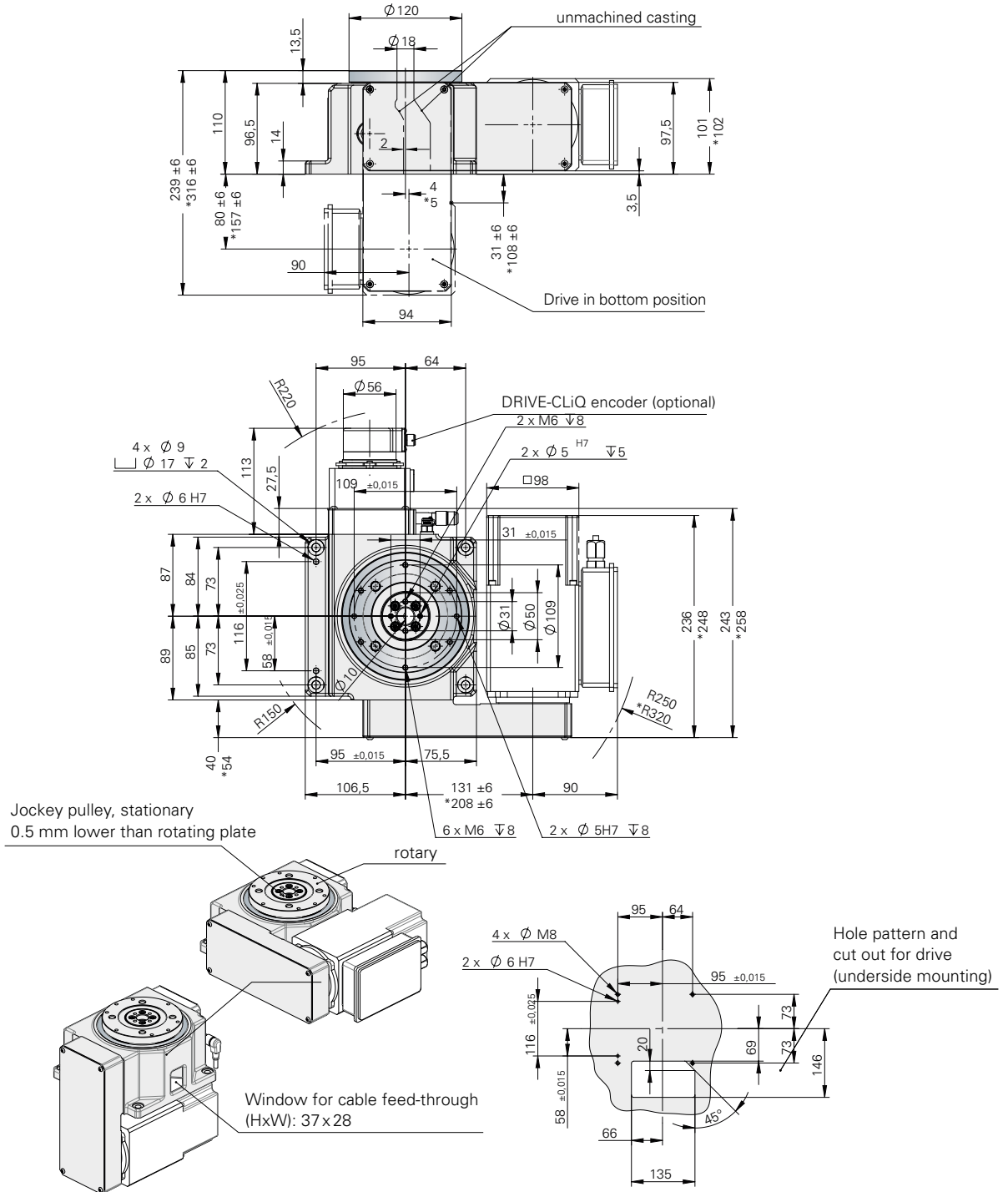
Indexing	Speed level	2-stage										
		s	a	b	c	d	e	f	g	h	i	j
2	<b>J<sub>2 Max</sub></b>	-	-	-	<b>0.06</b>	<b>0.1</b>	<b>0.174</b>	<b>0.285</b>	<b>0.505</b>	<b>1.15</b>	<b>2.03</b>	<b>4.94</b>
	t <sub>i</sub>	-	-	-	0.41	0.51	0.63	0.78	0.99	1.42	1.81	2.66
4	<b>J<sub>2 Max</sub></b>	-	<b>0.1 *</b>	<b>0.19</b>	<b>0.29</b>	<b>0.47</b>	<b>0.67</b>	<b>1.25</b>	<b>1.95</b>	<b>5.11</b>	<b>8.95</b>	<b>19.5</b>
	t <sub>i</sub>	-	0.24 *	0.31	0.37	0.46	0.57	0.70	0.89	1.28	1.63	2.39
5	<b>J<sub>2 Max</sub></b>	-	<b>0.16 *</b>	<b>0.33</b>	<b>0.5</b>	<b>0.808</b>	<b>1.05</b>	<b>1.95</b>	<b>3</b>	<b>8.7</b>	<b>14.1</b>	<b>30.5</b>
	t <sub>i</sub>	-	0.24 *	0.31	0.37	0.46	0.57	0.70	0.89	1.28	1.63	2.39
6	<b>J<sub>2 Max</sub></b>	<b>0.136 *</b>	<b>0.23 *</b>	<b>0.408</b>	<b>0.62</b>	<b>1</b>	<b>1.5</b>	<b>2.70</b>	<b>4.4</b>	<b>10.7</b>	<b>18.8</b>	<b>44</b>
	t <sub>i</sub>	0.21 *	0.24 *	0.31	0.37	0.46	0.57	0.70	0.89	1.28	1.63	2.39
8	<b>J<sub>2 Max</sub></b>	<b>0.248 *</b>	<b>0.41 *</b>	<b>0.85</b>	<b>1.28</b>	<b>2.07</b>	<b>2.7</b>	<b>5</b>	<b>7.8</b>	<b>21.4</b>	<b>34.9</b>	<b>75.5</b>
	t <sub>i</sub>	0.21 *	0.24 *	0.31	0.37	0.46	0.57	0.70	0.89	1.28	1.63	2.39
10	<b>J<sub>2 Max</sub></b>	<b>0.35 *</b>	<b>0.57 *</b>	<b>1</b>	<b>1.51</b>	<b>2.44</b>	<b>4.08</b>	<b>6.55</b>	<b>10.7</b>	<b>21.8</b>	<b>35.5</b>	<b>76.8</b>
	t <sub>i</sub>	0.21 *	0.24 *	0.31	0.37	0.46	0.57	0.70	0.89	1.28	1.63	2.39
12	<b>J<sub>2 Max</sub></b>	-	-	-	-	<b>0.47 *</b>	<b>0.67</b>	<b>1.25</b>	<b>1.95</b>	<b>5.08</b>	<b>8.9</b>	<b>19.6</b>
	t <sub>i</sub>	-	-	-	-	0.22 *	0.27	0.34	0.43	0.61	0.78	1.15
16	<b>J<sub>v</sub></b>	-	-	-	-	<b>0.55 *</b>	<b>0.92</b>	<b>1.49</b>	<b>2.6</b>	<b>5.9</b>	<b>10.3</b>	<b>25.2</b>
	t <sub>i</sub>	-	-	-	-	0.22 *	0.27	0.34	0.43	0.61	0.78	1.15
20	<b>J<sub>2 Max</sub></b>	-	-	-	-	<b>0.86 *</b>	<b>1.44</b>	<b>2.32</b>	<b>4.06</b>	<b>9.2</b>	<b>16.1</b>	<b>35.5</b>
	t <sub>i</sub>	-	-	-	-	0.22 *	0.27	0.34	0.43	0.61	0.78	1.15

**J<sub>2 Max</sub>** = max admissible mass inertia loading (kgm<sup>2</sup>) **t<sub>i</sub>** = cycle time (sec.) 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 (see also the note on page 17).

\***EF2** - Control recommended to minimise brake wear (see page 48).

**DIMENSIONS**

If you require subsequent drilling work on the indexing table, please request information on permissible drilling depths. The illustrated rotating plate position corresponds to the basic position of the rotary indexing table (Position when delivered).



\* Dimensions for speed levels: h, i, j (2-stage)

Max. centre line deviation between stationary centre section and dial:  $\pm 180''$

Max. centre line deviation between dial and indexer housing:  $\pm 120''$

**Note:** Please ensure motor and brake are accessible for servicing!

# TC 150T



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 800 mm

## TECHNICAL DATA

<b>U</b>	Voltage (custom voltages available on request):	230 / 400 V
<b>f</b>	Frequency:	50 Hz
	Indexing precision*:	Indexing 2-12: 60 arcsec ( $\pm 30''$ ) Indexing 16-24: 90 arcsec ( $\pm 45''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing$ 150 mm) 0.01 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.01 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	(at $\varnothing$ 150 mm) 0.03 mm
<b>m</b>	Total weight, including motor:	24 kg
<b>D<sub>i</sub></b>	Min. inside diameter of the rotary plate:	80 mm

\* Positioning accuracy can be improved by 10 arcsec on request.

## LOAD DATA (for the stationary central part)

<b>T<sub>SP</sub></b>	Permitted torque:	140 Nm
<b>M<sub>T SP</sub></b>	Permitted tilting moment:	200 Nm
<b>F<sub>A SP</sub></b>	Permitted axial force:	3500 N
<b>F<sub>R SP</sub></b>	Permitted radial force:	2500 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

<b>T<sub>2 stat</sub></b>	Static torque:	150 Nm
<b>M<sub>2T dyn</sub></b>	Permitted dynamic tilting moment:	500 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	5500 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	6000 N

## LOAD TABLE 50 Hz (On request: higher loads / custom indexing and switching times for 60 hz mains frequency)

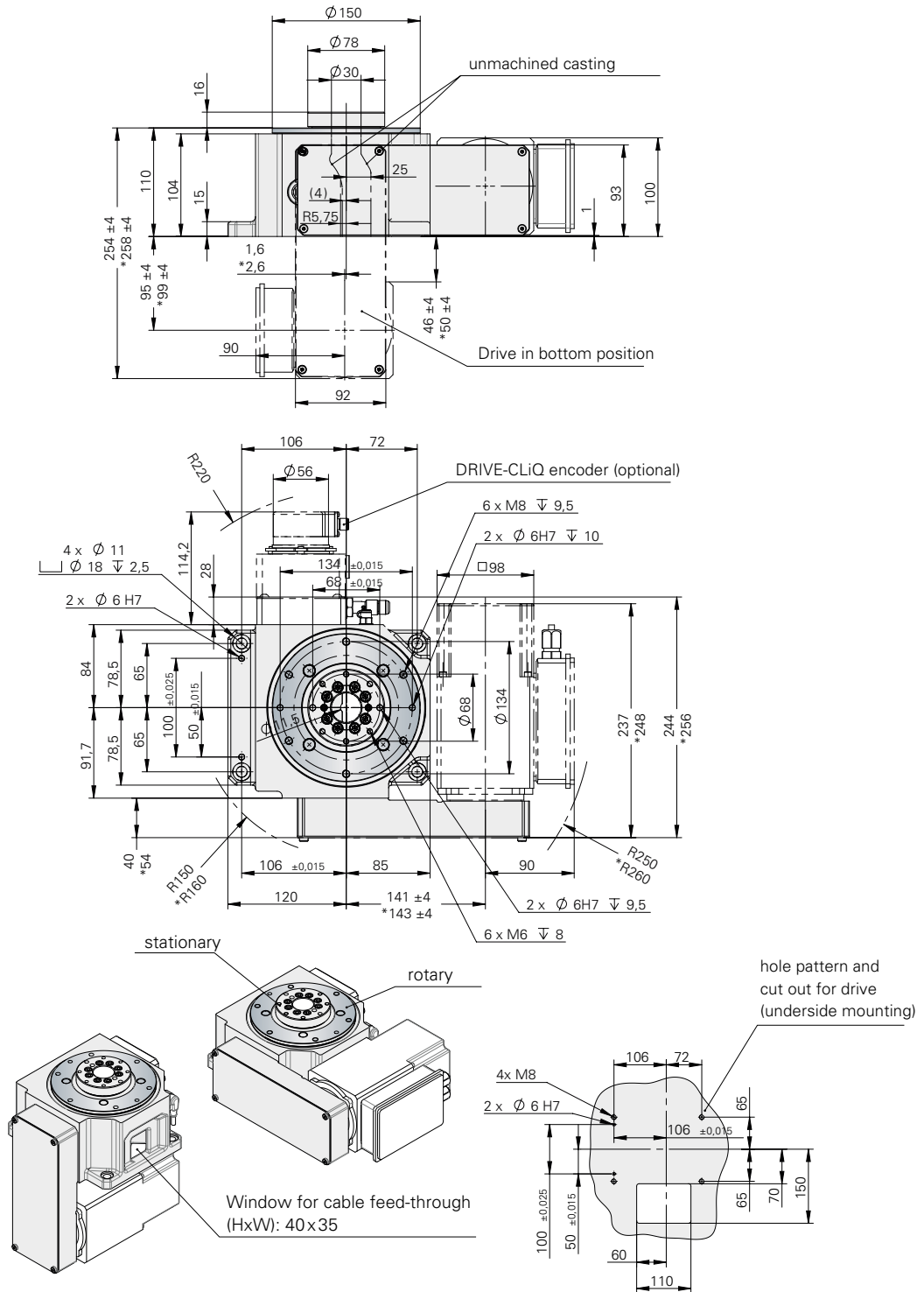
Indexing	Speed level	2-stage										
		s	a	b	c	d	e	f	g	h	i	j
<b>2</b>	<b>J<sub>2 Max</sub></b>	-	-	-	<b>0.09</b>	<b>0.149</b>	<b>0.255</b>	<b>0.415</b>	<b>0.73</b>	<b>1.67</b>	<b>2.93</b>	<b>7.12</b>
	t <sub>i</sub>	-	-	-	0.43	0.53	0.66	0.81	1.03	1.47	1.88	2.76
<b>3</b>	<b>J<sub>2 Max</sub></b>	-	-	-	<b>0.14</b>	<b>0.23</b>	<b>0.39</b>	<b>0.63</b>	<b>1.1</b>	<b>2.53</b>	<b>4.43</b>	<b>10.7</b>
	t <sub>i</sub>	-	-	-	0.43	0.53	0.66	0.81	1.03	1.47	1.88	2.76
<b>4</b>	<b>J<sub>2 Max</sub></b>	-	<b>0.11 *</b>	<b>0.23</b>	<b>0.37</b>	<b>0.59</b>	<b>0.75</b>	<b>1.4</b>	<b>2.17</b>	<b>6.4</b>	<b>11.3</b>	<b>26.4</b>
	t <sub>i</sub>	-	0.25 *	0.32	0.39	0.47	0.59	0.73	0.93	1.33	1.69	2.49
<b>6</b>	<b>J<sub>2 Max</sub></b>	<b>0.155 *</b>	<b>0.26 *</b>	<b>0.53</b>	<b>0.8</b>	<b>1.29</b>	<b>1.69</b>	<b>3.15</b>	<b>4.9</b>	<b>13.9</b>	<b>24.3</b>	<b>59</b>
	t <sub>i</sub>	0.21 *	0.25 *	0.32	0.39	0.47	0.59	0.73	0.93	1.33	1.69	2.49
<b>8</b>	<b>J<sub>2 Max</sub></b>	<b>0.28 *</b>	<b>0.46 *</b>	<b>0.96</b>	<b>1.62</b>	<b>2.61</b>	<b>3.02</b>	<b>5.61</b>	<b>8.71</b>	<b>25.3</b>	<b>48.8</b>	<b>105</b>
	t <sub>i</sub>	0.21 *	0.25 *	0.32	0.39	0.47	0.59	0.73	0.93	1.33	1.69	2.49
<b>10</b>	<b>J<sub>2 Max</sub></b>	<b>0.44 *</b>	<b>0.72 *</b>	<b>1.42</b>	<b>2.14</b>	<b>3.45</b>	<b>4.72</b>	<b>8.80</b>	<b>13.5</b>	<b>36.8</b>	<b>61</b>	<b>132</b>
	t <sub>i</sub>	0.21 *	0.25 *	0.32	0.39	0.47	0.59	0.73	0.93	1.33	1.69	2.49
<b>12</b>	<b>J<sub>2 Max</sub></b>	<b>0.64 *</b>	<b>1.04 *</b>	<b>1.82</b>	<b>2.75</b>	<b>4.42</b>	<b>6.8</b>	<b>11.9</b>	<b>19.8</b>	<b>45.2</b>	<b>73.4</b>	<b>158</b>
	t <sub>i</sub>	0.21 *	0.25 *	0.32	0.39	0.47	0.59	0.73	0.93	1.33	1.69	2.49
<b>16</b>	<b>J<sub>v</sub></b>	-	-	-	<b>0.55</b>	<b>0.88</b>	<b>1.34</b>	<b>2.4</b>	<b>3.9</b>	<b>9.5</b>	<b>16.7</b>	<b>40.6</b>
	t <sub>i</sub>	-	-	-	0.19	0.23	0.29	0.35	0.45	0.64	0.81	1.20
<b>20</b>	<b>J<sub>v</sub></b>	-	-	-	<b>0.69</b>	<b>1.11</b>	<b>1.86</b>	<b>3.01</b>	<b>5.26</b>	<b>11.95</b>	<b>20.9</b>	<b>50.7</b>
	t <sub>i</sub>	-	-	-	0.19	0.23	0.29	0.35	0.45	0.64	0.81	1.20
<b>24</b>	<b>J<sub>2 Max</sub></b>	-	-	-	<b>0.83 *</b>	<b>1.33 *</b>	<b>2.24</b>	<b>3.61</b>	<b>6.3</b>	<b>14.35</b>	<b>25.1</b>	<b>60.90</b>
	t <sub>i</sub>	-	-	-	0.19 *	0.23 *	0.29	0.35	0.45	0.64	0.81	1.20

$J_{2Max}$  = max admissible mass inertia loading (kgm<sup>2</sup>)  $t_i$  = cycle time (sec.) 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 (see also the note on page 17).

\*EF2 - Control recommended to minimise brake wear (see page 48).

**DIMENSIONS**

If you require subsequent drilling work on the indexing table, please request information on permissible drilling depths. The illustrated rotating plate position corresponds to the basic position of the rotary indexing table (Position when delivered).



\* Dimensions for speed levels: h, i, j (2-stage)

Max. centre line deviation between stationary centre section and dial: ± 180"

Max. centre line deviation between dial and indexer housing: ± 120"

**Note:** Please ensure motor and brake are accessible for servicing!



# TC 220T



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 1100 mm

## TECHNICAL DATA

<b>U</b>	Voltage (custom voltages available on request):	230 / 400 V
<b>f</b>	Frequency:	50 Hz
	Indexing precision*:	Indexing 2-12: 40 arcsec ( $\pm 20''$ ) Indexing 16-24: 60 arcsec ( $\pm 30''$ ) Indexing 30-36: 80 arcsec ( $\pm 40''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing 220$ mm) 0.01 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.01 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	(at $\varnothing 220$ mm) 0.03 mm
<b>m</b>	Total weight, including motor:	44 kg
<b>D<sub>i</sub></b>	Min. inside diameter of the rotary plate:	96 mm

\* Positioning accuracy can be improved by 10 arcsec on request.

## LOAD DATA (for the stationary central part)

<b>T<sub>SP</sub></b>	Permitted torque:	145 Nm
<b>M<sub>T SP</sub></b>	Permitted tilting moment:	300 Nm
<b>F<sub>A SP</sub></b>	Permitted axial force:	5000 N
<b>F<sub>R SP</sub></b>	Permitted radial force:	4000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

<b>T<sub>2 stat</sub></b>	Static torque:	200 Nm
<b>M<sub>2T dyn</sub></b>	Permitted dynamic tilting moment:	700 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	7500 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	8000 N

## LOAD TABLE 50 Hz (On request: higher loads / custom indexing and switching times for 60 hz mains frequency)

Indexing	Speed level												2-stage			Using the BG 71 motor					
		b	c	d	e	f	g	h	i	j	k	l	m	n	o	b	c	d	e	f	g
2	<b>J<sub>2 Max</sub></b>	-	-	0.15	0.36	0.58	0.76	1.3	2.02	3.55	9.6	13.30	35.6	96	167	-	-	-	-	-	-
	t <sub>i</sub>	-	-	0.35	0.50	0.60	0.67	0.84	1.02	1.30	1.99	2.30	3.53	5.42	6.91	-	-	-	-	-	-
3	<b>J<sub>2 Max</sub></b>	-	0.18*	0.3	0.69	1.09	1.43	2.41	3.73	6.54	17.65	24.55	65.5	176	308	-	-	-	-	-	-
	t <sub>i</sub>	-	0.29*	0.35	0.50	0.60	0.67	0.84	1.02	1.30	1.99	2.30	3.53	5.42	6.91	-	-	-	-	-	-
4	<b>J<sub>2 Max</sub></b>	0.12*	0.24*	0.46	1.34	2.38	3.36	6.6	11.6	17.3	31.5	48.5	144	340	552	0.19*	0.37*	0.69	1.97	3.5	4.61
	t <sub>i</sub>	0.22*	0.26*	0.32	0.45	0.54	0.61	0.76	0.92	1.17	1.80	2.07	3.17	4.88	6.22	0.22*	0.26*	0.32	0.45	0.54	0.61
6	<b>J<sub>2 Max</sub></b>	0.31*	0.58*	1.06	3.05	5.4	7.6	14.9	24.9	26	70.9	109	324	765	1240	0.48*	0.87*	1.59	4.53	7.45	-
	t <sub>i</sub>	0.22*	0.26*	0.32	0.45	0.54	0.61	0.76	0.92	1.17	1.80	2.07	3.17	4.88	6.22	0.22*	0.26*	0.32	0.45	0.54	-
8	<b>J<sub>2 Max</sub></b>	0.58*	1.06*	1.92	5.44	9.63	13.55	19.05	33.5	46.2	126	195	495	1170	1900	0.87*	1.58*	2.85	6.92	10.7	-
	t <sub>i</sub>	0.22*	0.26*	0.32	0.45	0.54	0.61	0.76	0.92	1.17	1.80	2.07	3.17	4.88	6.22	0.22*	0.26*	0.32	0.45	0.54	-
10	<b>J<sub>2 Max</sub></b>	0.92*	1.67*	3.01	8.48	14.55	18.88	29.8	48.7	72	192	257	600	1420	2300	1.37*	2.48*	4.24	9.4	-	-
	t <sub>i</sub>	0.22*	0.26*	0.32	0.45	0.54	0.61	0.76	0.92	1.17	1.80	2.07	3.17	4.88	6.22	0.22*	0.26*	0.32	0.45	-	-
12	<b>J<sub>2 Max</sub></b>	1.34*	2.41*	4.35	10.7	16	20.1	31.5	45.9	74.6	176.4	235.2	551	1300	2110	1.96*	3.08*	-	-	-	-
	t <sub>i</sub>	0.22*	0.26*	0.32	0.45	0.54	0.61	0.76	0.92	1.17	1.80	2.07	3.17	4.88	6.22	0.22*	0.26*	-	-	-	-
16	<b>J<sub>v</sub></b>	-	-	-	2*	3.1*	4.03	6.74	9.95	18.2	49.1	68.30	182	490	855	-	-	-	-	-	-
	t <sub>i</sub>	-	-	-	0.22*	0.26*	0.29	0.37	0.44	0.56	0.86	1.00	1.53	2.35	2.99	-	-	-	-	-	-
20	<b>J<sub>v</sub></b>	-	-	-	3.05*	4.72*	6.14	10.2	15.6	27.7	68.1	90.9	213	500	815	-	-	-	-	-	-
	t <sub>i</sub>	-	-	-	0.22*	0.26*	0.29	0.37	0.44	0.56	0.86	1.00	1.53	2.35	2.99	-	-	-	-	-	-
24	<b>J<sub>v</sub></b>	-	-	-	3.67*	5.68*	7.38*	12.35	19	33.3	81.7	109	255	600	980	-	-	-	-	-	-
	t <sub>i</sub>	-	-	-	0.22*	0.26*	0.29*	0.37	0.44	0.56	0.86	1.00	1.53	2.35	2.99	-	-	-	-	-	-
30	<b>J<sub>v</sub></b>	-	-	-	-	-	3.59*	6.01*	9.29*	16.2	43.7	60.9	162	420	680	-	-	-	-	-	-
	t <sub>i</sub>	-	-	-	-	-	0.19*	0.24*	0.29*	0.37	0.57	0.65	1.00	1.54	1.96	-	-	-	-	-	-
36	<b>J<sub>2 Max</sub></b>	-	-	-	-	-	4.32*	7.23*	11.15*	19.5	52	69.5	163	385	625	-	-	-	-	-	-
	t <sub>i</sub>	-	-	-	-	-	0.19*	0.24*	0.29*	0.37	0.57	0.65	1.00	1.54	1.96	-	-	-	-	-	-

**J<sub>2 Max</sub>** = max admissible mass inertia loading (kgm<sup>2</sup>) **t<sub>i</sub>** = cycle time (sec.) 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. (see also the note on page 17).

**\*EF2** - Control recommended to minimise brake wear (see page 48).

The values in the second table apply for the maximum permitted mass moment of inertia when using the size 71 motor.



# TC 320T



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 1400 mm

## TECHNICAL DATA

<b>U</b>	Voltage (custom voltages available on request):	230 / 400 V
<b>f</b>	Frequency:	50 Hz
	Indexing precision*:	Indexing 2-12: 40 arcsec ( $\pm 20''$ ) Indexing 16-24: 60 arcsec ( $\pm 30''$ ) Indexing 30-36: 70 arcsec ( $\pm 35''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\emptyset$ 320 mm) 0.01 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.01 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	(at $\emptyset$ 320 mm) 0.03 mm
<b>m</b>	Total weight, including motor:	112 kg
<b>D<sub>i</sub></b>	Min. inside diameter of the rotary plate:	150 mm

\* Positioning accuracy can be improved by 10 arcsec on request.

## LOAD DATA (for the stationary central part)

<b>T<sub>SP</sub></b>	Permitted torque:	800 Nm
<b>M<sub>T SP</sub></b>	Permitted tilting moment:	1800 Nm
<b>F<sub>A SP</sub></b>	Permitted axial force:	18000 N
<b>F<sub>R SP</sub></b>	Permitted radial force:	10000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

<b>T<sub>2 stat</sub></b>	Static torque:	600 Nm
<b>M<sub>2T dyn</sub></b>	Permitted dynamic tilting moment:	2250 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	15000 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	13000 N

## LOAD TABLE 50 Hz (On request: higher loads / custom indexing and switching times for 60 hz mains frequency)

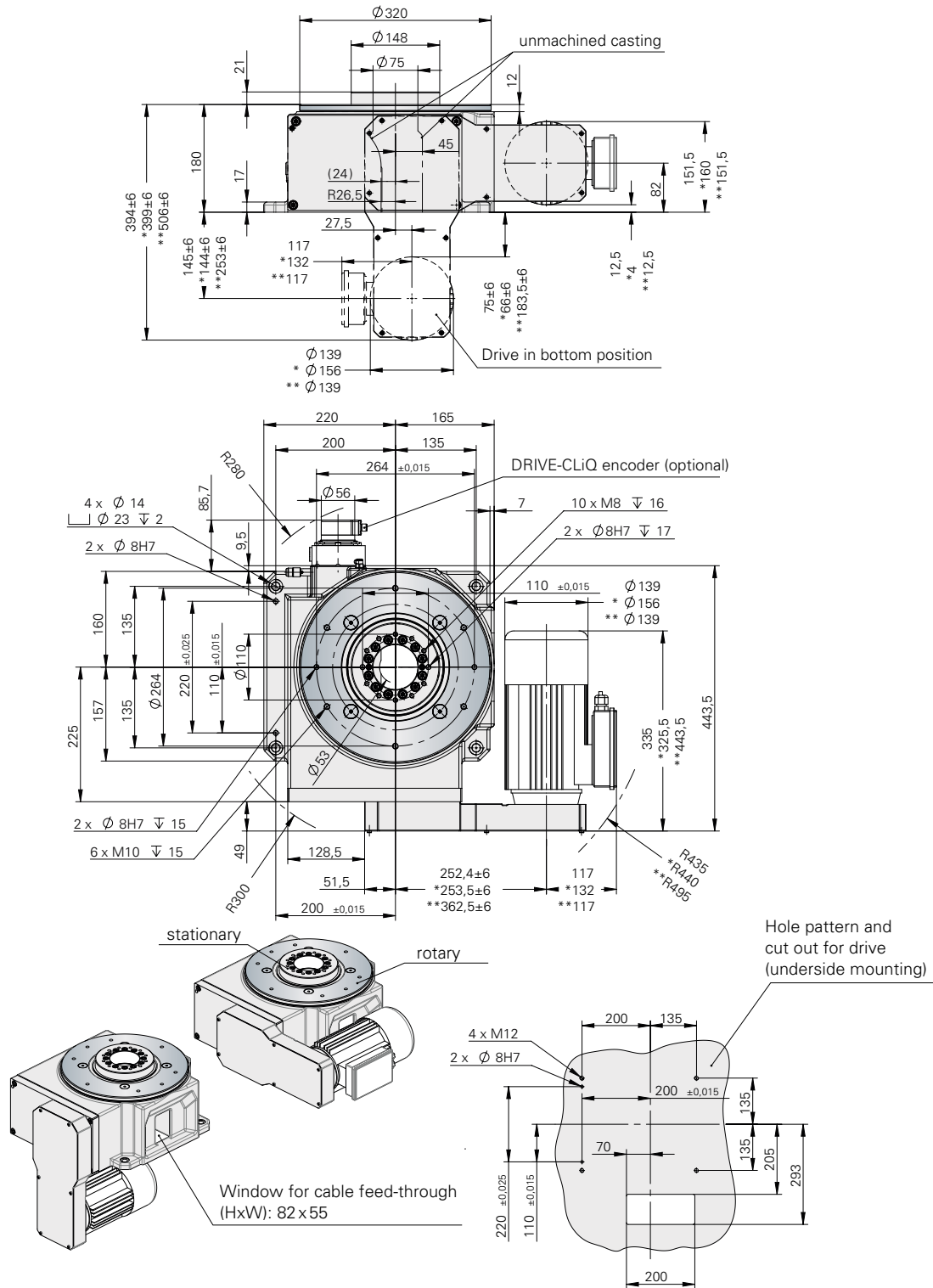
Indexing	Speed level																	2-stage		
		s	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	
2	<b>J<sub>2 Max</sub></b>	-	-	-	-	-	2.67	3.51	4.3	6.27	9.79	18	27.3	36.6	72	95.5	106	143	214	
	t <sub>i</sub>	-	-	-	-	-	0.61	0.69	0.75	0.89	1.06	1.37	1.64	2.07	2.64	3.04	3.3	3.72	4.55	
3	<b>J<sub>2 Max</sub></b>	-	-	-	-	3.15	4.26	5.58	6.81	10.3	15.3	28.1	42.6	72.8	127	175	212	280	446	
	t <sub>i</sub>	-	-	-	-	0.54	0.61	0.69	0.75	0.89	1.06	1.37	1.64	2.07	2.64	3.04	3.3	3.72	4.55	
4	<b>J<sub>2 Max</sub></b>	1.62 *	2.95 *	4.59	5.6	7.33	9.83	11.8	15.2	23.4	31.8	58.1	83.4	109	215	285	318	427	640	
	t <sub>i</sub>	0.3 *	0.36 *	0.42	0.45	0.51	0.57	0.64	0.7	0.83	0.99	1.28	1.53	1.93	2.46	2.83	3.08	3.47	4.25	
6	<b>J<sub>2 Max</sub></b>	3.9 *	6.89 *	9.57	11.6	15.1	20.2	26.2	31.9	48	71.1	129	187	246	485	641	716	961	1440	
	t <sub>i</sub>	0.3 *	0.36 *	0.42	0.45	0.51	0.57	0.64	0.7	0.83	0.99	1.28	1.53	1.93	2.46	2.83	3.08	3.47	4.25	
8	<b>J<sub>2 Max</sub></b>	7.1 *	12.4 *	18.97	24.2	31.4	42	54.4	66.1	98.4	128	233	334	439	862	1140	1270	1700	2560	
	t <sub>i</sub>	0.3 *	0.36 *	0.42	0.45	0.51	0.57	0.64	0.7	0.83	0.99	1.28	1.53	1.93	2.46	2.83	3.08	3.47	4.25	
10	<b>J<sub>2 Max</sub></b>	10 *	17.19 *	23.7	28.8	37.5	50	64.8	78.7	118	174	318	456	615	1170	1550	1780	2330	3500	
	t <sub>i</sub>	0.29 *	0.35 *	0.4	0.44	0.49	0.55	0.62	0.67	0.8	0.95	1.24	1.48	1.87	2.38	2.73	2.97	3.35	4.1	
12	<b>J<sub>2 Max</sub></b>	13.5 *	20.7 *	28.6	34.7	45.1	60.1	77.9	94.7	142	210	382	547	871	1410	1860	2200	2800	4200	
	t <sub>i</sub>	0.29 *	0.35 *	0.4	0.44	0.49	0.55	0.62	0.67	0.8	0.95	1.24	1.48	1.87	2.38	2.73	2.97	3.35	4.1	
16	<b>J<sub>v</sub></b>	-	-	-	-	8.15 *	10.9 *	14.2	17.2	26	38.5	70.4	105	138	271	359	400	538	806	
	t <sub>i</sub>	-	-	-	-	0.22 *	0.25 *	0.28	0.3	0.36	0.42	0.55	0.66	0.83	1.06	1.21	1.32	1.49	1.82	
20	<b>J<sub>v</sub></b>	-	-	-	-	12.29 *	16.4 *	21.3	25.9	37.7	57.7	105	159	215	424	561	626	841	1260	
	t <sub>i</sub>	-	-	-	-	0.22 *	0.25 *	0.28	0.3	0.36	0.42	0.55	0.66	0.83	1.06	1.21	1.32	1.49	1.82	
24	<b>J<sub>v</sub></b>	-	-	-	-	-	17.24 *	22.3	27.2	40.9	60.5	110	167	285	498	686	872	1100	1650	
	t <sub>i</sub>	-	-	-	-	-	0.25 *	0.28	0.3	0.36	0.42	0.55	0.66	0.83	1.06	1.21	1.32	1.49	1.82	
30	<b>J<sub>v</sub></b>	-	-	-	-	-	-	-	14.16 *	21.3 *	31.6	57.7	87.5	143	260	359	418	560	840	
	t <sub>i</sub>	-	-	-	-	-	-	-	0.2 *	0.24 *	0.28	0.37	0.44	0.55	0.7	0.81	0.88	0.99	1.21	
36	<b>J<sub>2 Max</sub></b>	-	-	-	-	-	-	-	17.03 *	25.6 *	37.9	69.3	103	179	308	431	581	738	1100	
	t <sub>i</sub>	-	-	-	-	-	-	-	0.2 *	0.24 *	0.28	0.37	0.44	0.55	0.7	0.81	0.88	0.99	1.21	

**J<sub>2 Max</sub>** = max admissible mass inertia loading (kgm<sup>2</sup>) **t<sub>i</sub>** = cycle time (sec.) 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 (see also the note on page 17).

\*EF2 - Control recommended to minimise brake wear (see page 48).

**DIMENSIONS**

If you require subsequent drilling work on the indexing table, please request information on permissible drilling depths. The illustrated rotating plate position corresponds to the basic position of the rotary indexing table (Position when delivered).



- \* Dimensions for motor BG80
- \*\* Dimensions for speed levels: o, p, q (2-stage)

Max. centre line deviation between stationary centre section and dial: ± 130"

Max. centre line deviation between dial and indexer housing: ± 80"

**Note:** Please ensure motor and brake are accessible for servicing!

# TC 500T



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 2000 mm

## TECHNICAL DATA

<b>U</b>	Voltage (custom voltages available on request):	230 / 400 V
<b>f</b>	Frequency:	50 Hz
	Indexing precision*:	Indexing 2-12: 30 arcsec ( $\pm 15''$ ) Indexing 16-48: 40 arcsec ( $\pm 20''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing$ 500 mm) 0.015 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.015 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	(at $\varnothing$ 500 mm) 0.03 mm
<b>m</b>	Total weight, including motor:	305 kg
<b>D<sub>i</sub></b>	Min. inside diameter of the rotary plate:	242 mm

\* Positioning accuracy can be improved by 10 arcsec on request.

## LOAD DATA (for the stationary central part)

<b>T<sub>SP</sub></b>	Permitted torque:	800 Nm
<b>M<sub>T SP</sub></b>	Permitted tilting moment:	2500 Nm
<b>F<sub>A SP</sub></b>	Permitted axial force:	25000 N
<b>F<sub>R SP</sub></b>	Permitted radial force:	15000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

<b>T<sub>2 stat</sub></b>	Static torque:	1000 Nm
<b>M<sub>2T dyn</sub></b>	Permitted dynamic tilting moment:	6000 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	25000 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	20000 N

## LOAD TABLE 50 Hz (On request: higher loads / custom indexing and switching times for 60 hz mains frequency)

Indexing	Speed level																2-stage		
		s	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
2	<b>J<sub>2 Max</sub></b>	-	-	-	<b>6.2</b>	<b>9.3</b>	<b>12</b>	<b>18</b>	<b>24.3</b>	<b>36.4</b>	<b>55.6</b>	<b>100</b>	<b>172</b>	<b>233</b>	<b>274</b>	<b>474</b>	<b>805</b>	<b>1010</b>	<b>1650</b>
	t <sub>i</sub>	-	-	-	0.68	0.79	0.87	1.02	1.16	1.36	1.66	2.10	2.67	3.02	3.26	4.28	5.80	6.26	8.23
3	<b>J<sub>2 Max</sub></b>	-	-	-	<b>7.8</b>	<b>11.5</b>	<b>14.9</b>	<b>22.1</b>	<b>29.7</b>	<b>44.2</b>	<b>70.7</b>	<b>121</b>	<b>213</b>	<b>282</b>	<b>337</b>	<b>634</b>	<b>1270</b>	<b>1520</b>	<b>2850</b>
	t <sub>i</sub>	-	-	-	0.68	0.79	0.87	1.02	1.16	1.36	1.66	2.10	2.67	3.02	3.26	4.28	5.80	6.26	8.23
4	<b>J<sub>2 Max</sub></b>	-	<b>7.1 *</b>	<b>10.6</b>	<b>18</b>	<b>25.9</b>	<b>32.9</b>	<b>48.1</b>	<b>64</b>	<b>94.6</b>	<b>150</b>	<b>257</b>	<b>450</b>	<b>595</b>	<b>710</b>	<b>1260</b>	<b>2150</b>	<b>2710</b>	<b>4430</b>
	t <sub>i</sub>	-	0.43*	0.50	0.61	0.71	0.79	0.92	1.04	1.23	1.50	1.89	2.41	2.72	2.93	3.85	5.22	5.64	7.40
6	<b>J<sub>2 Max</sub></b>	<b>10.2*</b>	<b>14.7*</b>	<b>22.20</b>	<b>35.9</b>	<b>51.1</b>	<b>64.4</b>	<b>93.5</b>	<b>124</b>	<b>182</b>	<b>289</b>	<b>493</b>	<b>862</b>	<b>1140</b>	<b>1360</b>	<b>2550</b>	<b>4840</b>	<b>6100</b>	<b>9980</b>
	t <sub>i</sub>	0.37*	0.43*	0.50	0.61	0.71	0.79	0.92	1.04	1.23	1.50	1.89	2.41	2.72	2.93	3.85	5.22	5.64	7.40
8	<b>J<sub>2 Max</sub></b>	<b>23.8*</b>	<b>34.2*</b>	<b>49</b>	<b>79.5</b>	<b>112</b>	<b>140</b>	<b>204</b>	<b>270</b>	<b>397</b>	<b>628</b>	<b>1070</b>	<b>1850</b>	<b>2350</b>	<b>2740</b>	<b>4740</b>	<b>8620</b>	<b>10100</b>	<b>17500</b>
	t <sub>i</sub>	0.37*	0.43*	0.50	0.61	0.71	0.79	0.92	1.04	1.23	1.50	1.89	2.41	2.72	2.93	3.85	5.22	5.64	7.40
10	<b>J<sub>2 Max</sub></b>	<b>30.2*</b>	<b>43.1*</b>	<b>61.5</b>	<b>99.7</b>	<b>140</b>	<b>177</b>	<b>255</b>	<b>338</b>	<b>497</b>	<b>785</b>	<b>1330</b>	<b>2330</b>	<b>2980</b>	<b>3480</b>	<b>6010</b>	<b>11000</b>	<b>12800</b>	<b>22000</b>
	t <sub>i</sub>	0.37*	0.43*	0.50	0.61	0.71	0.79	0.92	1.04	1.23	1.50	1.89	2.41	2.72	2.93	3.85	5.22	5.64	7.40
12	<b>J<sub>2 Max</sub></b>	<b>36.5*</b>	<b>52 *</b>	<b>73.3</b>	<b>120</b>	<b>169</b>	<b>212</b>	<b>307</b>	<b>406</b>	<b>595</b>	<b>941</b>	<b>1600</b>	<b>2800</b>	<b>3580</b>	<b>4180</b>	<b>7210</b>	<b>13200</b>	<b>15400</b>	<b>26600</b>
	t <sub>i</sub>	0.37*	0.43*	0.50	0.61	0.71	0.79	0.92	1.04	1.23	1.50	1.89	2.41	2.72	2.93	3.85	5.22	5.64	7.40
16	<b>J<sub>v</sub></b>	-	-	<b>11.7*</b>	<b>19.8*</b>	<b>28.4</b>	<b>36</b>	<b>52.6</b>	<b>70</b>	<b>103</b>	<b>164</b>	<b>280</b>	<b>490</b>	<b>629</b>	<b>775</b>	<b>1450</b>	<b>2920</b>	<b>3480</b>	<b>6230</b>
	t <sub>i</sub>	-	-	0.22*	0.27*	0.32	0.35	0.41	0.46	0.55	0.67	0.84	1.07	1.21	1.30	1.71	2.32	2.50	3.29
20	<b>J<sub>v</sub></b>	-	-	-	<b>31.8*</b>	<b>45.3</b>	<b>57.2</b>	<b>83.1</b>	<b>110</b>	<b>162</b>	<b>257</b>	<b>439</b>	<b>768</b>	<b>1010</b>	<b>1210</b>	<b>2270</b>	<b>4340</b>	<b>5060</b>	<b>8750</b>
	t <sub>i</sub>	-	-	-	0.27*	0.32	0.35	0.41	0.46	0.55	0.67	0.84	1.07	1.21	1.30	1.71	2.32	2.50	3.29
24	<b>J<sub>v</sub></b>	-	-	-	<b>38.5*</b>	<b>54.7</b>	<b>68.2</b>	<b>100</b>	<b>132</b>	<b>193</b>	<b>309</b>	<b>528</b>	<b>923</b>	<b>1220</b>	<b>1450</b>	<b>2700</b>	<b>5200</b>	<b>6080</b>	<b>10500</b>
	t <sub>i</sub>	-	-	-	0.27*	0.32	0.35	0.41	0.46	0.55	0.67	0.84	1.07	1.21	1.30	1.71	2.32	2.50	3.29
30	<b>J<sub>v</sub></b>	-	-	-	-	-	<b>34.9*</b>	<b>50.9*</b>	<b>67.8</b>	<b>100</b>	<b>158</b>	<b>271</b>	<b>455</b>	<b>629</b>	<b>751</b>	<b>1400</b>	<b>2820</b>	<b>3370</b>	<b>5830</b>
	t <sub>i</sub>	-	-	-	-	-	0.23*	0.27*	0.31	0.36	0.44	0.56	0.71	0.80	0.87	1.14	1.55	1.67	2.19
36	<b>J<sub>2 Max</sub></b>	-	-	-	-	-	<b>34.2*</b>	<b>49.8*</b>	<b>66.4</b>	<b>98.1</b>	<b>155</b>	<b>266</b>	<b>466</b>	<b>616</b>	<b>736</b>	<b>1350</b>	<b>2470</b>	<b>2880</b>	<b>4950</b>
	t <sub>i</sub>	-	-	-	-	-	0.23*	0.27*	0.31	0.36	0.44	0.56	0.71	0.80	0.87	1.14	1.55	1.67	2.19
48	<b>J<sub>2 Max</sub></b>	-	-	-	-	-	<b>46.2*</b>	<b>67.1*</b>	<b>89.3</b>	<b>131</b>	<b>208</b>	<b>356</b>	<b>623</b>	<b>824</b>	<b>984</b>	<b>1800</b>	<b>3300</b>	<b>3850</b>	<b>6650</b>
	t <sub>i</sub>	-	-	-	-	-	0.23*	0.27*	0.31	0.36	0.44	0.56	0.71	0.80	0.87	1.14	1.55	1.67	2.19

**J<sub>2 Max</sub>** = max admissible mass inertia loading (kgm<sup>2</sup>) **t<sub>i</sub>** = cycle time (sec.) 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 (see also the note on page 17).

\*EF2 - Control recommended to minimise brake wear (see page 48).



# TC 700T



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 3000 mm

## TECHNICAL DATA

<b>U</b>	Voltage (custom voltages available on request):	230 / 400 V
<b>f</b>	Frequency:	50 Hz
	Indexing precision*:	Indexing 2-12: 24 arcsec ( $\pm 12''$ ) Indexing 16-60: 32 arcsec ( $\pm 16''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing$ 700 mm) 0.02 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.02 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	(at $\varnothing$ 700 mm) 0.03 mm
<b>m</b>	Total weight, including motor:	660 kg
<b>D<sub>i</sub></b>	Min. inside diameter of the rotary plate:	242 mm

\* Positioning accuracy can be improved by 10 arcsec on request.

## LOAD DATA (for the stationary central part)

<b>T<sub>SP</sub></b>	Permitted torque:	1000 Nm
<b>M<sub>T SP</sub></b>	Permitted tilting moment:	3000 Nm
<b>F<sub>A SP</sub></b>	Permitted axial force:	30000 N
<b>F<sub>R SP</sub></b>	Permitted radial force:	15000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

<b>T<sub>2 stat</sub></b>	Static torque:	1400 Nm
<b>M<sub>2T dyn</sub></b>	Permitted dynamic tilting moment:	10000 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	40000 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	27000 N

## LOAD TABLE 50 Hz (On request: higher loads / custom indexing and switching times for 60 hz mains frequency)

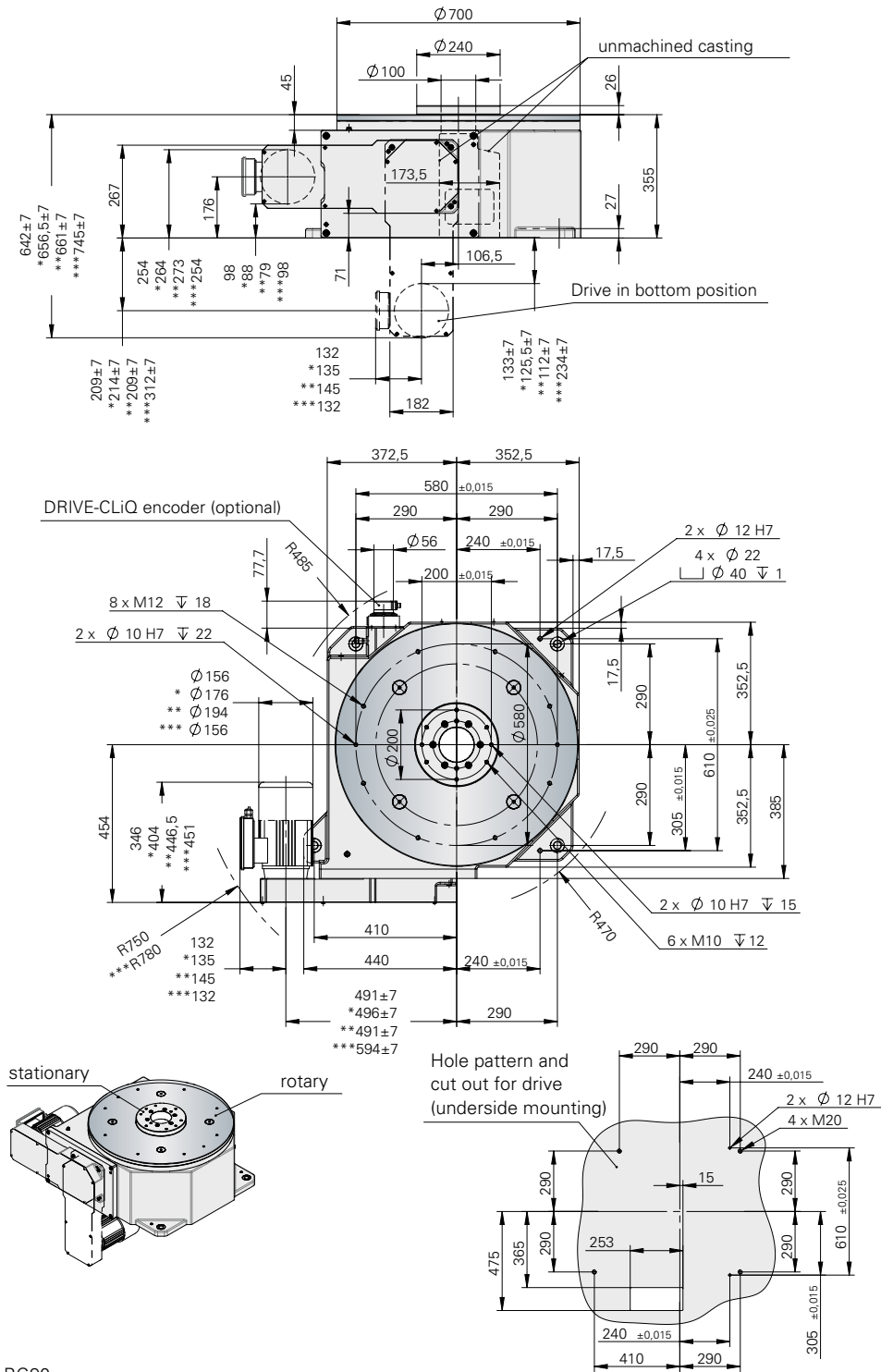
Indexing	Speed level													2-stage		
		s	a	b	c	d	e	f	g	h	i	j	k	l	m	n
2	<b>J<sub>2 Max</sub></b>	-	9	19	37	56.7	104	149	213	335	587	1010	1650	2920	4650	6700
	t <sub>i</sub>	-	0.69	0.81	0.98	1.14	1.46	1.69	1.96	2.40	3.01	3.84	4.70	6.18	7.37	9.04
3	<b>J<sub>2 Max</sub></b>	-	24	37.6	62.4	93.4	165	239	340	547	927	1620	2590	4850	7320	11700
	t <sub>i</sub>	-	0.69	0.81	0.98	1.14	1.46	1.69	1.96	2.40	3.01	3.84	4.70	6.18	7.37	9.04
4	<b>J<sub>max</sub></b>	20	36	62	115	169	294	424	601	909	1630	2730	4550	7800	12500	17900
	t <sub>s</sub>	0.53	0.62	0.73	0.88	1.03	1.31	1.52	1.76	2.16	2.71	3.45	4.23	5.56	6.64	8.13
6	<b>J<sub>max</sub></b>	53	90	149	233	342	604	845	1190	1910	3230	5640	9020	16900	25300	40300
	t <sub>s</sub>	0.53	0.62	0.73	0.88	1.03	1.31	1.52	1.76	2.16	2.71	3.45	4.23	5.56	6.64	8.13
8	<b>J<sub>max</sub></b>	101	166	270	484	702	1200	1720	2430	3650	6560	10900	18300	31200	48800	71500
	t <sub>s</sub>	0.53	0.62	0.73	0.88	1.03	1.31	1.52	1.76	2.16	2.71	3.45	4.23	5.56	6.64	8.13
10	<b>J<sub>max</sub></b>	161	263	412	641	900	1630	2280	3220	5150	8670	15100	24200	41800	59500	89500
	t <sub>s</sub>	0.53	0.62	0.73	0.88	1.03	1.31	1.52	1.76	2.16	2.71	3.45	4.23	5.56	6.64	8.13
12	<b>J<sub>max</sub></b>	236	360	518	803	1170	2050	2850	4040	6460	10900	19000	29100	50200	71500	107000
	t <sub>s</sub>	0.53	0.62	0.73	0.88	1.03	1.31	1.52	1.76	2.16	2.71	3.45	4.23	5.56	6.64	8.13
16	<b>J<sub>v</sub></b>	-	-	-	-	195	346	486	688	1100	1850	3250	5210	9760	14600	23400
	t <sub>i</sub>	-	-	-	-	0.46	0.58	0.67	0.78	0.96	1.20	1.53	1.88	2.47	2.95	3.62
20	<b>J<sub>v</sub></b>	-	-	-	-	302	533	747	1050	1690	2850	4980	7960	14900	22400	35400
	t <sub>i</sub>	-	-	-	-	0.46	0.58	0.67	0.78	0.96	1.20	1.53	1.88	2.47	2.95	3.62
24	<b>J<sub>v</sub></b>	-	-	-	-	364	642	898	1270	2030	3430	5990	9570	17900	26800	42400
	t <sub>i</sub>	-	-	-	-	0.46	0.58	0.67	0.78	0.96	1.20	1.53	1.88	2.47	2.95	3.62
30	<b>J<sub>v</sub></b>	-	-	-	-	179	252	356	577	978	1710	2740	5130	7710	12300	
	t <sub>i</sub>	-	-	-	-	0.39	0.45	0.52	0.64	0.80	1.02	1.25	1.65	1.97	2.41	
36	<b>J<sub>2 Max</sub></b>	-	-	-	-	216	304	432	694	1170	2040	3280	6160	9250	14700	
	t <sub>i</sub>	-	-	-	-	0.39	0.45	0.52	0.64	0.80	1.02	1.25	1.65	1.97	2.41	
48	<b>J<sub>2 Max</sub></b>	-	-	-	-	291	408	579	930	1570	2740	4390	8240	12300	19700	
	t <sub>i</sub>	-	-	-	-	0.39	0.45	0.52	0.64	0.80	1.02	1.25	1.65	1.97	2.41	
60	<b>J<sub>2 Max</sub></b>	-	-	-	-	250	351	498	800	1350	2360	3780	7100	10600	17000	
	t <sub>i</sub>	-	-	-	-	0.39	0.45	0.52	0.64	0.80	1.02	1.25	1.65	1.97	2.41	

**J<sub>2 Max</sub>** = max admissible mass inertia loading (kgm<sup>2</sup>) **t<sub>i</sub>** = cycle time (sec.) 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 recommended to minimise brake wear (see page 48).

**DIMENSIONS**

If you require subsequent drilling work on the indexing table, please request information on permissible drilling depths. The illustrated rotating plate position corresponds to the basic position of the rotary indexing table (Position when delivered).



- \* Dimensions for motor BG90
- \*\* Dimensions for motor BG100
- \*\*\* Dimensions for speed levels: m, n (2-stage)

Max. centre line deviation between stationary centre section and dial: ± 60"

Max. centre line deviation between dial and indexer housing: ± 40"

**Note:** Please ensure motor and brake are accessible for servicing!



# TC 1000T



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 5000 mm

## TECHNICAL DATA

<b>U</b>	Voltage (custom voltages available on request):	230 / 400 V
<b>f</b>	Frequency:	50 Hz
	Indexing precision*:	Indexing 2-20: 24 arcsec ( $\pm 12''$ ) Indexing 24-36: 32 arcsec ( $\pm 16''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing$ 1000 mm) 0.03 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.03 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	(at $\varnothing$ 1000 mm) 0.05 mm
<b>m</b>	Total weight, including motor:	1530 kg
<b>D<sub>i</sub></b>	Min. inside diameter of the rotary plate:	522 mm

\* Positioning accuracy can be improved by 10 arcsec on request.

## LOAD DATA (for the stationary central part)

<b>T<sub>SP</sub></b>	Permitted torque:	1800 Nm
<b>M<sub>T SP</sub></b>	Permitted tilting moment:	5000 Nm
<b>F<sub>A SP</sub></b>	Permitted axial force:	40000 N
<b>F<sub>R SP</sub></b>	Permitted radial force:	17000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

<b>T<sub>2 stat</sub></b>	Static torque:	2200 Nm
<b>M<sub>2T dyn</sub></b>	Permitted dynamic tilting moment:	13000 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	80000 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	45000 N

## LOAD TABLE 50 Hz (On request: higher loads / custom indexing and switching times for 60 hz mains frequency)

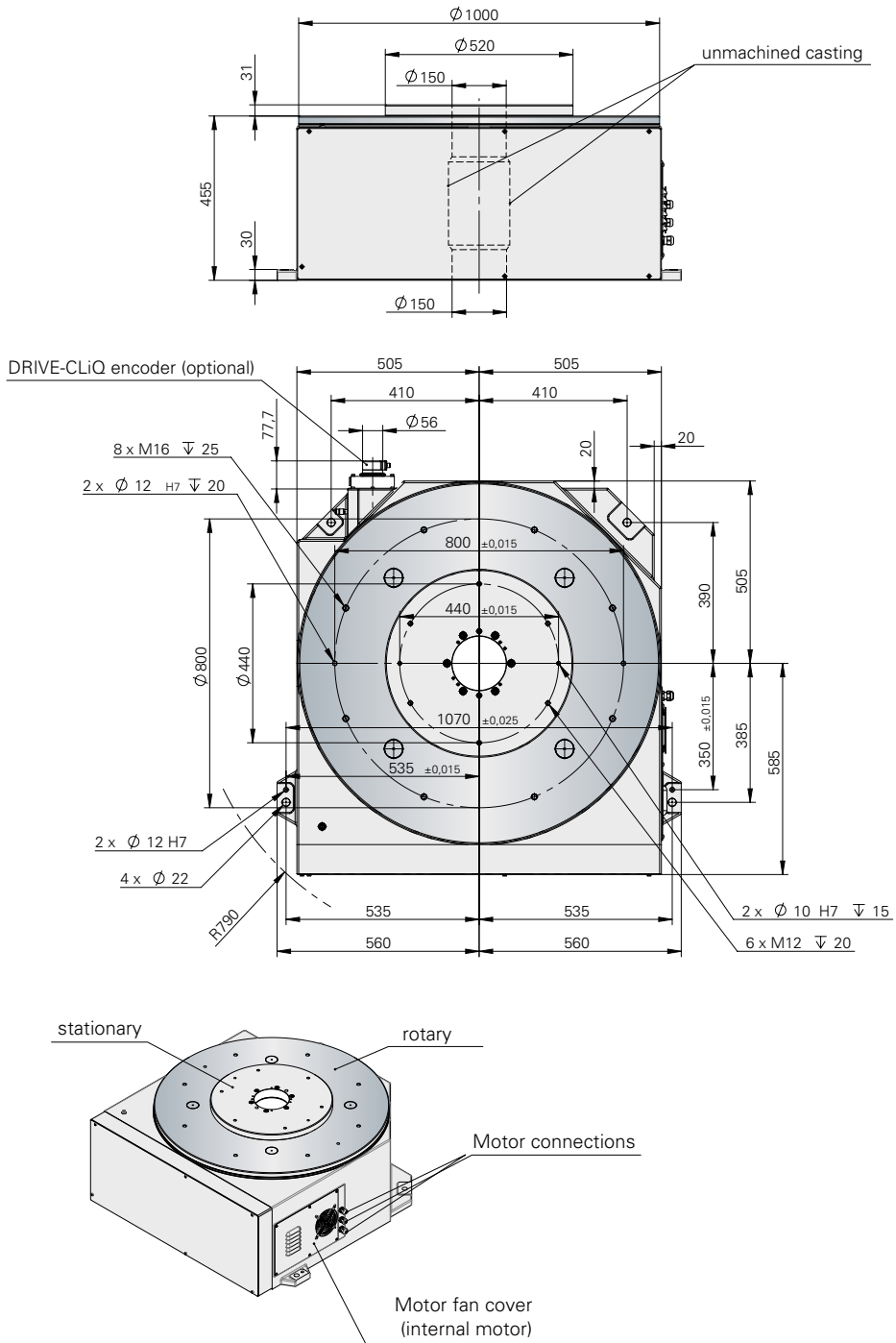
Indexing	Speed level	2-stage									
		a	b	c	d	e	f	g	h	i	j
2	<b>J<sub>2 Max</sub></b>	<b>108</b>	<b>173</b>	<b>333</b>	<b>695</b>	<b>1130</b>	<b>1930</b>	<b>2820</b>	<b>4910</b>	<b>14900</b>	<b>19700</b>
	t <sub>i</sub>	1.28	1.50	1.92	2.57	3.15	3.96	5.04	6.18	10.74	12.33
3	<b>J<sub>2 Max</sub></b>	<b>182</b>	<b>280</b>	<b>521</b>	<b>1060</b>	<b>1720</b>	<b>2920</b>	<b>4670</b>	<b>8230</b>	<b>29400</b>	<b>40500</b>
	t <sub>i</sub>	1.28	1.50	1.92	2.57	3.15	3.96	5.04	6.18	10.74	12.33
4	<b>J<sub>2 Max</sub></b>	<b>406</b>	<b>604</b>	<b>1080</b>	<b>1990</b>	<b>3410</b>	<b>5370</b>	<b>7600</b>	<b>13200</b>	<b>39900</b>	<b>52700</b>
	t <sub>i</sub>	1.15	1.35	1.73	2.32	2.84	3.56	4.54	5.56	9.67	11.10
6	<b>J<sub>2 Max</sub></b>	<b>807</b>	<b>1180</b>	<b>2100</b>	<b>4170</b>	<b>6680</b>	<b>11200</b>	<b>17100</b>	<b>29700</b>	<b>89900</b>	<b>118000</b>
	t <sub>i</sub>	1.15	1.35	1.73	2.32	2.84	3.56	4.54	5.56	9.67	11.10
8	<b>J<sub>2 Max</sub></b>	<b>1710</b>	<b>2480</b>	<b>4380</b>	<b>8080</b>	<b>13700</b>	<b>21600</b>	<b>30500</b>	<b>52900</b>	<b>160000</b>	<b>210000</b>
	t <sub>i</sub>	1.15	1.35	1.73	2.32	2.84	3.56	4.54	5.56	9.67	11.10
10	<b>J<sub>2 Max</sub></b>	<b>2147</b>	<b>3110</b>	<b>5480</b>	<b>10800</b>	<b>17300</b>	<b>28100</b>	<b>35000</b>	<b>64400</b>	<b>207000</b>	<b>273000</b>
	t <sub>i</sub>	1.15	1.35	1.73	2.32	2.84	3.56	4.54	5.56	9.67	11.10
12	<b>J<sub>2 Max</sub></b>	<b>2585</b>	<b>3750</b>	<b>6590</b>	<b>13000</b>	<b>20800</b>	<b>33700</b>	<b>54800</b>	<b>82400</b>	<b>249000</b>	<b>328000</b>
	t <sub>i</sub>	1.15	1.35	1.73	2.32	2.84	3.56	4.54	5.56	9.67	11.10
16	<b>J<sub>v</sub></b>	<b>3459</b>	<b>5010</b>	<b>8800</b>	<b>17300</b>	<b>27700</b>	<b>45000</b>	<b>73000</b>	<b>109000</b>	<b>332000</b>	<b>437000</b>
	t <sub>i</sub>	1.15	1.35	1.73	2.32	2.84	3.56	4.54	5.56	9.67	11.10
24	<b>J<sub>v</sub></b>	<b>730</b>	<b>1070</b>	<b>1900</b>	<b>3780</b>	<b>6070</b>	<b>10200</b>	<b>17600</b>	<b>28600</b>	<b>98400</b>	<b>129000</b>
	t <sub>i</sub>	0.51	0.60	0.77	1.03	1.26	1.58	2.02	2.47	4.30	4.93
36	<b>J<sub>2 Max</sub></b>	-	-	<b>1109</b>	<b>2220</b>	<b>3570</b>	<b>6040</b>	<b>10500</b>	<b>16900</b>	<b>60400</b>	<b>83000</b>
	t <sub>i</sub>	-	-	0.51	0.69	0.84	1.06	1.34	1.65	2.86	3.29

**J<sub>2 Max</sub>** = max admissible mass inertia loading (kgm<sup>2</sup>) **t<sub>i</sub>** = cycle time (sec.) 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 recommended to minimise brake wear (see page 48).

## DIMENSIONS

If you require subsequent drilling work on the indexing table, please request information on permissible drilling depths. The illustrated rotating plate position corresponds to the basic position of the rotary indexing table (Position when delivered).



\* Dimensions for speed levels: h, i, j (2-stage)

Max. centre line deviation between stationary centre section and dial:  $\pm 45''$

Max. centre line deviation between dial and indexer housing:  $\pm 35''$

**Note:** Please ensure motor and brake are accessible for servicing!

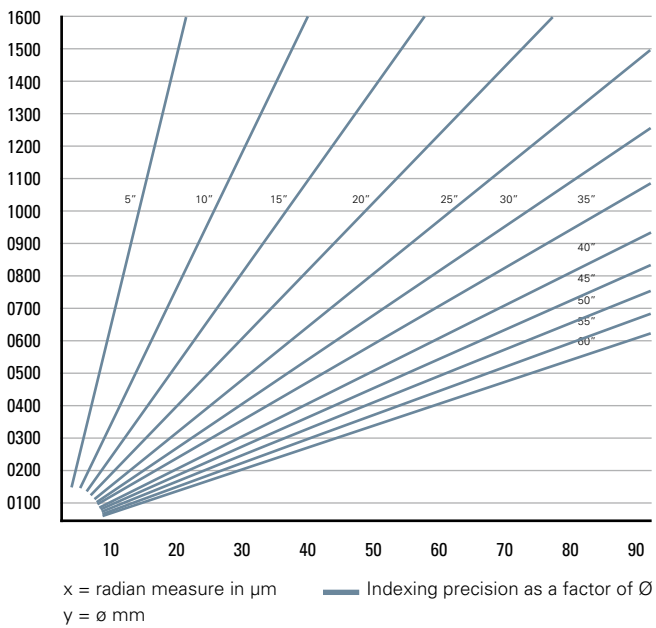
## ROTARY PLATE



We manufacture rotary plates to your specifications from steel, aluminium or high-strength aluminium. Particularly when working with aluminium plates (material AlMg4,5Mn F28), we pay

attention to ensuring that the material is free of tension. If desired, the aluminium plates can also be anodised (natural or colour). Steel plates are chemically nickel-plated.

## CALCULATION



$$\text{Nominal indexing precision} = \pm \frac{\pi \times D \times T_g}{360 \times 3600}$$

D = Pitch circle diameter  
 $T_g$  = Brochure precision

Accuracy of circular run-out for additional plates

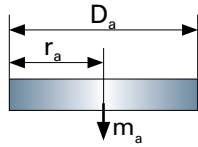
Diameter (mm)	Thickness (mm)	Flatness Quality A (mm)	Flatness Quality B (mm)
≤ 600	≥ 20	0.04	0.10
	< 20	0.06	0.15
≤ 800	≥ 20	0.06	0.15
	< 20	0.07	0.18
≤ 1100	≥ 20	0.07	0.18
	< 20	0.08	0.20
≤ 1400	≥ 25	0.08	0.20
	< 25	0.10	0.25
≤ 1800	≥ 25	0.10	0.25
	< 25	0.20	0.50
≤ 2500	≥ 30	0.15	0.40
	< 30	0.25	0.55

If we machine your additional indexing plate,  $\pm 3''$  needs to be added to the indexing precision of the rotary indexing table specified in the diagram.

CALCULATION OF THE MOMENT OF MASS INERTIA

Solid body:

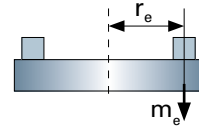
$J = 0.5 \times r_a^2 \times m_a$   
 or  
 $J = 0.125 \times m_a \times D_a^2$



$r_a$  = radius in m  
 $m_a$  = mass (weight) in kg  
 $D_a$  = diameter in m

Individual weights (approximation formula):

$J = 1.1 \times r_e^2 \times m_e \times n$



$r_e$  = radius in m  
 $m_e$  = mass (weight) in kg  
 $n$  = number of individual masses

YOU CAN FIND DETAILED INFORMATION IN THE CHAPTER ENTITLED "INDEXING MACHINE BASES"

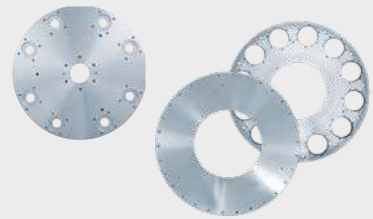
BASIC IDEA



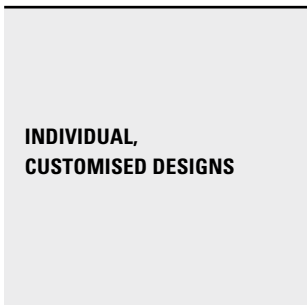
INDEXING MACHINE BASES



STATIONARY AND ROTARY PLATES



EXAMPLES



CUSTOM EQUIPMENT



Tried-and-tested standard modules form the basis for perfectly matched system solutions. From the design, through the requisite precision and dimensions, all the way up to the colour: customers can select all parameters individually. You receive an acceptance certificate and the confidence of knowing that everything works together perfectly. Take advantage of our complete package for rotary table-based basic machines.

We support you in optimising time, costs and resources when creating your system. You have a single contact and receive everything from a single source, so you do not need to worry about interface problems.

# 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

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### THE TR FULL SOLUTION

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



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### 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.

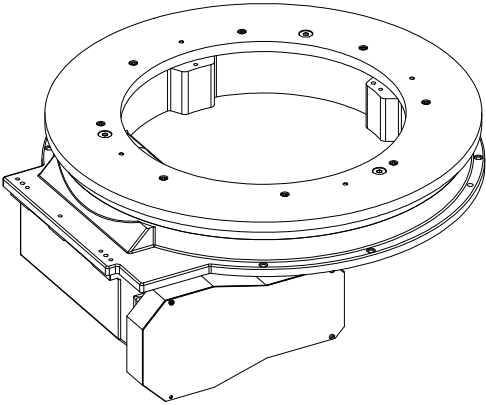
Rotary indexing ring table with very large central opening, extremely flat design and high parts accuracy. The ring-shaped design allows extra free design space. The rotating aluminium ring can be adjusted to your specifications in terms of diameter and thickness.

---

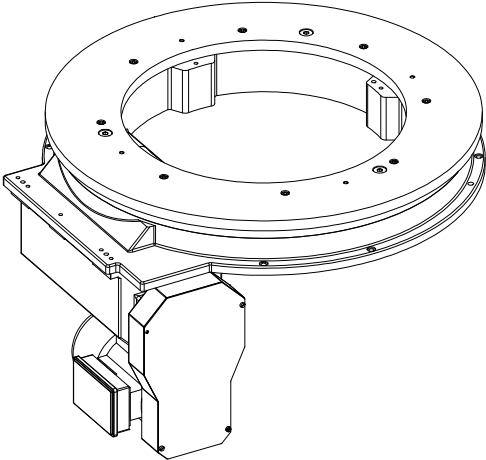
## ADVANTAGES

- 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 “Freely programmable rotary tables” section)
- Simplest control system, identical to our TC rotary indexing tables
- Excellent price-performance
- Appealing design

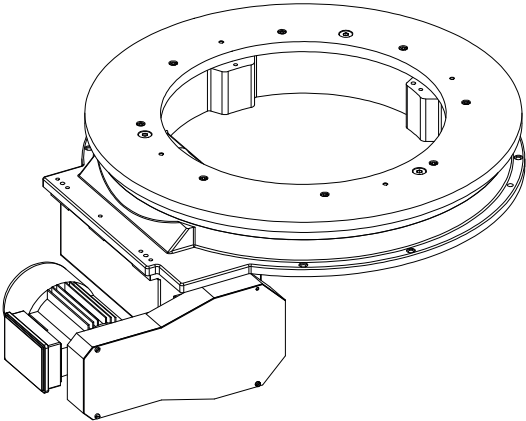
VERSIONS: DRIVE POSITION



DRIVE HOUSING INSIDE / DP 1

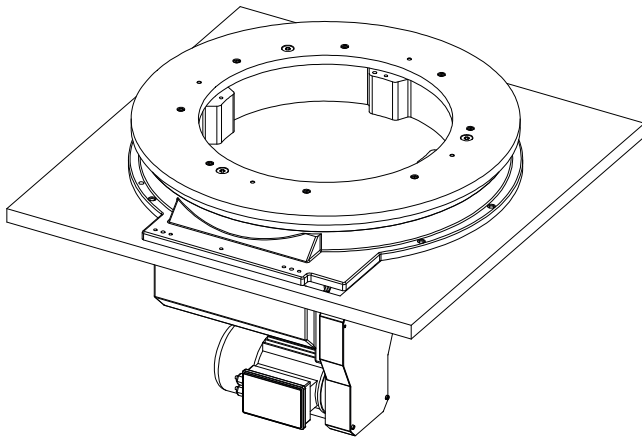


DRIVE HOUSING BELOW / DP 2

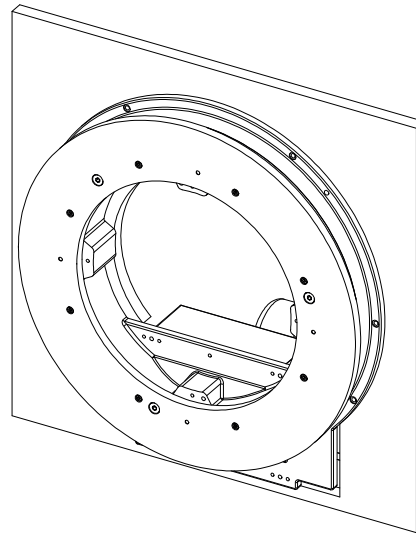


DRIVE HOUSING OUTSIDE / DP 3

## VERSIONS: MOUNTING POSITION



STANDARD / MP 1



VERTICAL DRIVE AT BASE / MP 2  
(only possible for model TR0750A)

## GENERAL INFORMATION ON THE MODEL RANGE

- TR rotary indexing tables can be operated clockwise, anti-clockwise and also in reversing mode.
- The TR rotary indexing rings are “lubricated for life”!
- All TR rotary indexing tables are equipped with asynchronous brake motors. The size of the motors is optimally matched to the respective rotary indexing table configuration, so the drive can never damage the rotary indexing ring.
- The maximum switching frequency is up to 120 cycles per minute, depending on the system’s mass moment of inertia and the angle of rotation.
- Note on indexing times (TC 120-TC 500): The actual measured rotation time (from the start signal to the electrical inposition signal) comprises the calculated rotation motion time given in the tables and type-related delays. Electrical signal processing times, as well as setting up and optimising the ideal start position represent an important part.

## OPTIONS

- Possible installation location: vertical rotary axis with output flange at the top
- Custom installation location, only possible for the TR0750A: horizontal rotary axis with cam housing at the base
- Sizes TR0750A to TR1500A can optionally be equipped with a DRIVE-CLiQ absolute encoder.
- In connection with the new 2.1 version of the EF2 control system software, the rotary encoder offers the following options:
  - » Cam switching mechanism: 16 user-programmable electronic cams allow early triggering of process actuators or help reduce the cycle time with load-ing/unloading axes
  - » Segment detection: The index of the current nest is reflected in the locking position on the fieldbus or, where applicable, digital I/Os. This eliminates the need for retrofit equipment to determine the current position of the component nests on the rotating plate.
- Standard colour: RAL7035 (other colours available on request)



# TR 750A



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 1500 mm

## TECHNICAL DATA

<b>U</b>	Voltage (custom voltages available on request):	230 / 400 V
<b>f</b>	Frequency:	50 Hz
	Indexing precision:	36 arcsec ( $\pm 18''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing$ 635 mm) 0.05 mm
<b>A<sub>r</sub></b>	Axial run-out, including the rotary ring:	(at $\varnothing$ 750 mm) 0.07 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.03 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	0.05 mm
<b>m</b>	Total weight, including motor:	230 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the output flange)

<b>T<sub>2 stat</sub></b>	Static torque:	2500 Nm
<b>M<sub>2T dyn</sub></b>	Permitted dynamic tilting moment:	750 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	7000 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	7000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD TABLE 50 Hz (On request: higher loads / custom indexing and switching times for 60 Hz mains frequency)

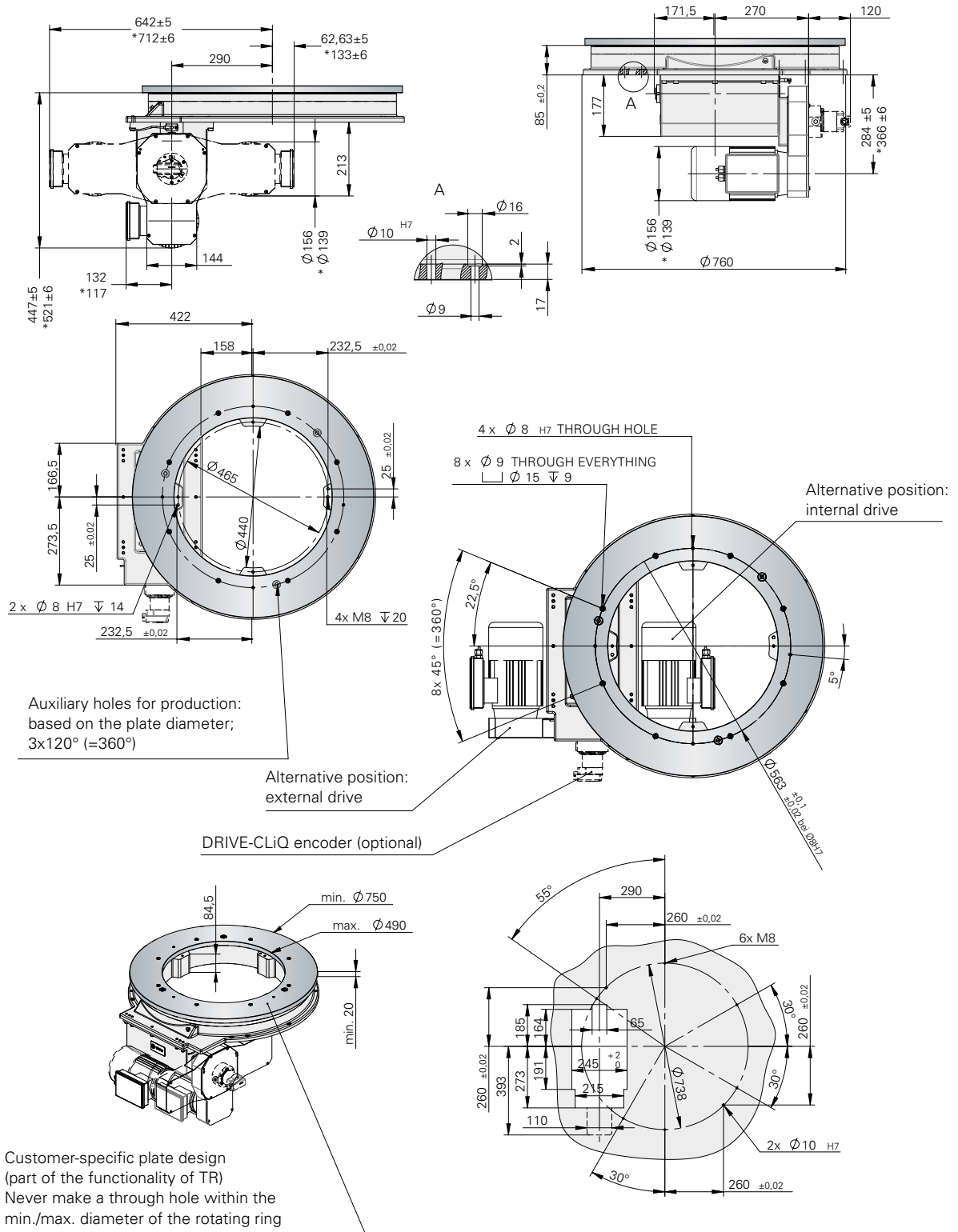
Indexing	Speed level	2-stage								
		s	a	b	c	d	e	f	g	h
4	<b>J<sub>2 Max</sub></b>	-	<b>7</b>	<b>14</b>	<b>22</b>	<b>37</b>	<b>59</b>	<b>87</b>	<b>220</b>	<b>325</b>
	t <sub>i</sub>	-	0.42	0.53	0.66	0.81	1.01	1.26	1.94	2.48
6	<b>J<sub>2 Max</sub></b>	-	<b>12</b>	<b>22</b>	<b>36</b>	<b>57</b>	<b>90</b>	<b>144</b>	<b>345</b>	<b>560</b>
	t <sub>i</sub>	-	0.42	0.53	0.66	0.81	1.01	1.26	1.94	2.48
8	<b>J<sub>2 Max</sub></b>	-	<b>19</b> *	<b>31</b>	<b>49</b>	<b>78</b>	<b>120</b>	<b>195</b>	<b>460</b>	<b>750</b>
	t <sub>i</sub>	-	0.42 *	0.53	0.66	0.81	1.01	1.26	1.94	2.48
10	<b>J<sub>2 Max</sub></b>	-	<b>31</b> *	<b>50</b>	<b>79</b>	<b>125</b>	<b>190</b>	<b>305</b>	<b>720</b>	<b>1170</b>
	t <sub>i</sub>	-	0.40 *	0.50	0.62	0.77	0.96	1.20	1.85	2.35
12	<b>J<sub>2 Max</sub></b>	<b>18</b> *	<b>45</b> *	<b>72</b>	<b>112</b>	<b>175</b>	<b>270</b>	<b>425</b>	<b>1015</b>	<b>1650</b>
	t <sub>i</sub>	0.27 *	0.40 *	0.50	0.62	0.77	0.96	1.20	1.85	2.35
16	<b>J<sub>2 Max</sub></b>	<b>20</b> *	<b>57</b> *	<b>90</b>	<b>140</b>	<b>190</b>	<b>335</b>	<b>530</b>	<b>1260</b>	<b>2045</b>
	t <sub>i</sub>	0.26 *	0.39 *	0.48	0.60	0.74	0.92	1.16	1.78	2.27
20	<b>J<sub>2 Max</sub></b>	<b>29</b> *	<b>72</b> *	<b>115</b>	<b>175</b>	<b>275</b>	<b>420</b>	<b>665</b>	<b>1575</b>	<b>2560</b>
	t <sub>i</sub>	0.26 *	0.39 *	0.48	0.60	0.74	0.92	1.16	1.78	2.27
24	<b>J<sub>v</sub></b>	<b>35</b> *	<b>85</b> *	<b>135</b>	<b>210</b>	<b>330</b>	<b>505</b>	<b>800</b>	<b>1890</b>	<b>3070</b>
	t <sub>i</sub>	0.26 *	0.39 *	0.48	0.60	0.74	0.92	1.16	1.78	2.27
30	<b>J<sub>2 Max</sub></b>	<b>35</b> *	<b>110</b> *	<b>170</b>	<b>265</b>	<b>410</b>	<b>635</b>	<b>1000</b>	<b>2365</b>	<b>3840</b>
	t <sub>i</sub>	0.26 *	0.39 *	0.48	0.60	0.74	0.92	1.16	1.78	2.27

**J<sub>2 Max</sub>** = max admissible mass inertia loading (kgm<sup>2</sup>) **t<sub>i</sub>** = cycle time (sec.) 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 (see also the note on page 17).

\*EF2 - Control recommended to minimise brake wear (see page 48).

**DIMENSIONS**

The position shown for the output flange with rotary ring corresponds to the home position (delivery state). The additional rotating ring is not included in the standard delivery scope and is subject to an extra charge. It is calculated separately as per your details.



\* Dimensions for motor BG 71 (2-stage)

# TR 1100A



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately. 2200 mm

## TECHNICAL DATA

<b>U</b>	Voltage (custom voltages available on request):	230 / 400 V
<b>f</b>	Frequency:	50 Hz
	Indexing precision:	36 arcsec ( $\pm 18''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing$ 945 mm) 0.06 mm
<b>A<sub>i</sub></b>	Axial run-out, including the rotary ring:	(at $\varnothing$ 1100 mm) 0.07 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.04 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	0.06 mm
<b>m</b>	Total weight, including motor:	310 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the output flange)

<b>T<sub>2 stat</sub></b>	Static torque:	3500 Nm
<b>M<sub>2T dyn</sub></b>	Permitted dynamic tilting moment:	2500 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	12000 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	12000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD TABLE 50 Hz (On request: higher loads / custom indexing and switching times for 60 Hz mains frequency)

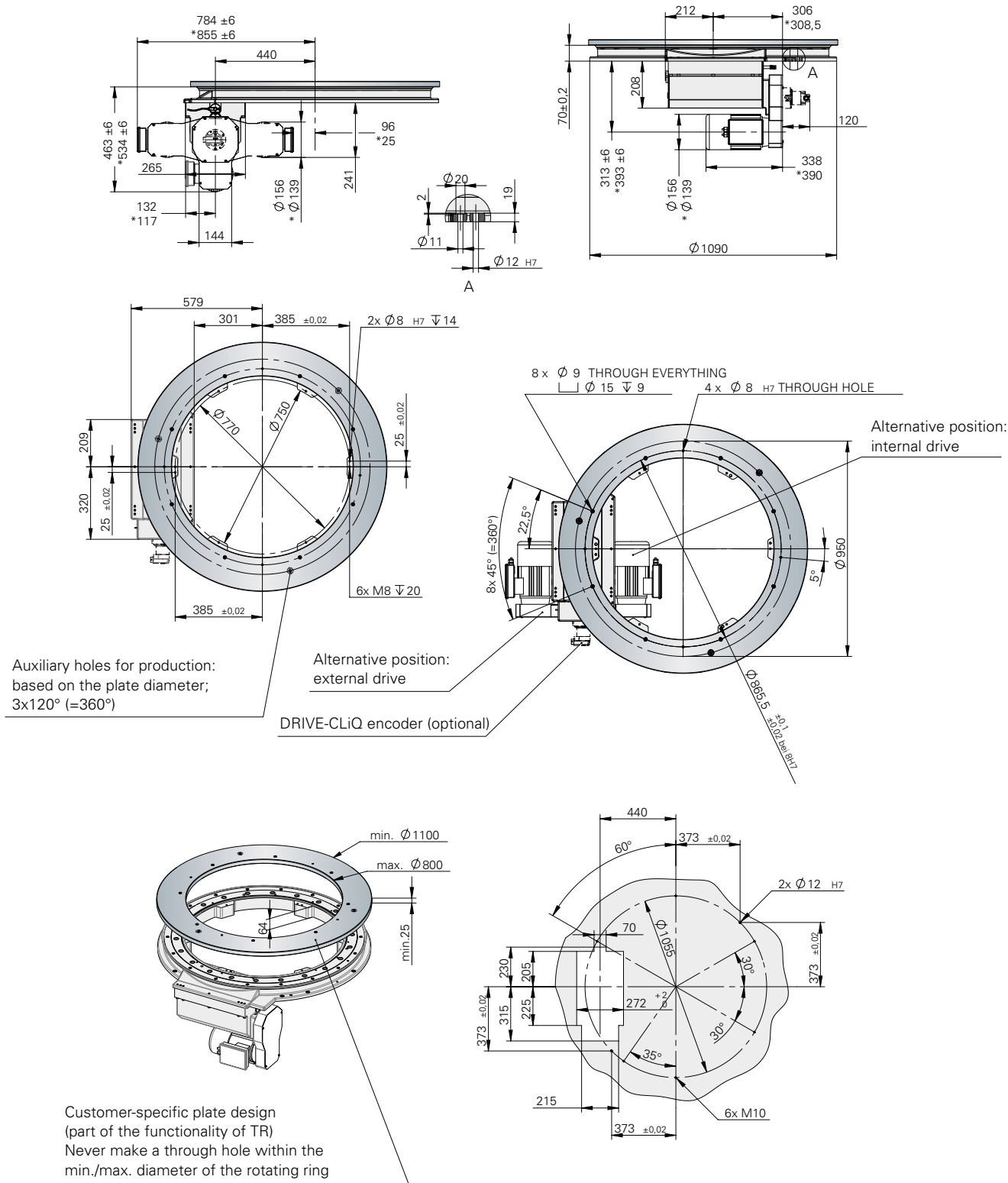
Indexing	Speed level	Speed level							2-stage		
		s	a	b	c	d	e	f	g	h	i
4	<b>J<sub>2 Max</sub></b>	-	-	11	19	41	57	60	180	295	445
	t <sub>i</sub>	-	-	0.53	0.59	0.82	0.90	1.15	1.41	2.16	2.75
6	<b>J<sub>2 Max</sub></b>	-	13	34	43	92	114	190	290	675	1010
	t <sub>i</sub>	-	0.42	0.53	0.59	0.82	0.90	1.15	1.41	2.16	2.75
8	<b>J<sub>2 Max</sub></b>	-	26 *	48	61	126	155	255	385	925	1510
	t <sub>i</sub>	-	0.42 *	0.53	0.59	0.82	0.90	1.15	1.41	2.16	2.75
10	<b>J<sub>2 Max</sub></b>	-	35 *	62	78	160	195	325	485	1160	1890
	t <sub>i</sub>	-	0.39 *	0.51	0.56	0.78	0.86	1.09	1.33	2.05	2.61
12	<b>J<sub>2 Max</sub></b>	21 *	62 *	116	143	260	350	495	860	2045	3325
	t <sub>i</sub>	0.29	0.39 *	0.51	0.56	0.78	0.86	1.09	1.33	2.05	2.61
16	<b>J<sub>2 Max</sub></b>	38 *	86 *	146	180	355	435	715	1070	2540	4125
	t <sub>i</sub>	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
20	<b>J<sub>2 Max</sub></b>	57 *	109 *	185	225	450	550	895	1340	3175	5160
	t <sub>i</sub>	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
24	<b>J<sub>v</sub></b>	65 *	135 *	225	275	540	660	1075	1605	3810	6190
	t <sub>i</sub>	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
30	<b>J<sub>2 Max</sub></b>	90 *	170 *	280	345	675	825	1345	2010	4765	7740
	t <sub>i</sub>	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
36	<b>J<sub>2 Max</sub></b>	110 *	205 *	340	415	815	995	1620	2415	5720	9290
	t <sub>i</sub>	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52

**J<sub>2 Max</sub>** = max admissible mass inertia loading (kgm<sup>2</sup>) t<sub>i</sub> = cycle time (sec.) 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 recommended to minimise brake wear (see page 48).

**DIMENSIONS**

The position shown for the output flange with rotary ring corresponds to the home position (delivery state). The additional rotating ring is not included in the standard delivery scope and is subject to an extra charge. It is calculated separately as per your details.



\* Dimensions for motor BG 71 (2-stage)

# TR 1500A



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 3000 mm

## TECHNICAL DATA

<b>U</b>	Voltage (custom voltages available on request):	230 / 400 V
<b>f</b>	Frequency:	50 Hz
	Indexing precision:	30 arcsec ( $\pm 15''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing 1275$ mm) 0.08 mm
<b>A<sub>r</sub></b>	Axial run-out, including the rotary ring:	(at $\varnothing 1500$ mm) 0.1 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.04 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	0.08 mm
<b>m</b>	Total weight, including motor:	400 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the output flange)

<b>T<sub>2 stat</sub></b>	Static torque:	5000 Nm
<b>M<sub>2T dyn</sub></b>	Permitted dynamic tilting moment:	3200 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	16000 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	16000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD TABLE 50 Hz (On request: higher loads / custom indexing and switching times for 60 Hz mains frequency)

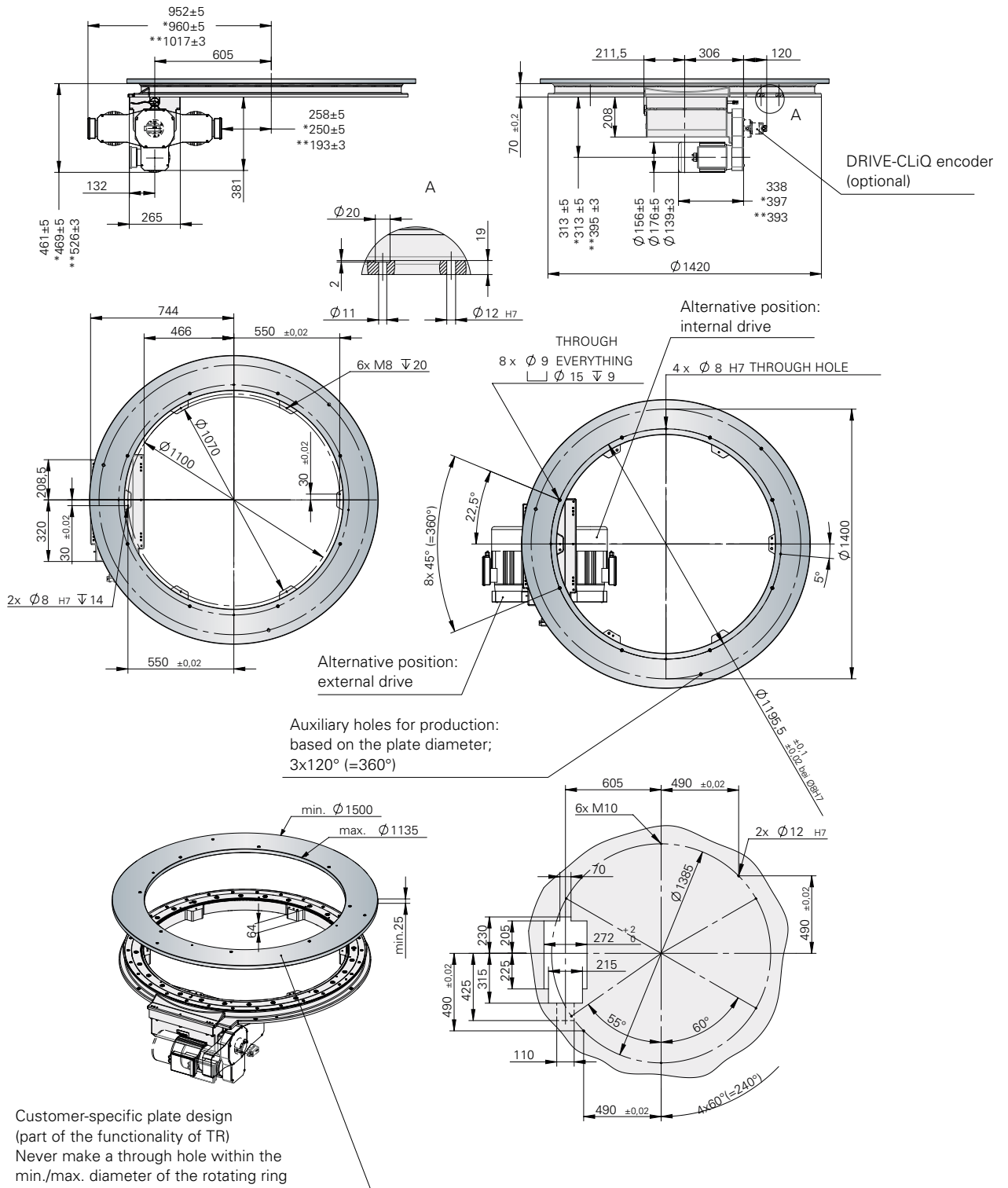
Indexing	Speed level	2-stufig									
		s	a	b	c	d	e	f	g	h	i
<b>8</b>	<b>J<sub>2 Max</sub></b>	-	-	<b>57</b>	<b>74</b>	<b>163</b>	<b>203</b>	<b>342</b>	<b>520</b>	<b>1258</b>	<b>1792</b>
	t <sub>i</sub>	-	-	0.53	0.59	0.82	0.90	1.15	1.41	2.16	2.75
<b>10</b>	<b>J<sub>2 Max</sub></b>	-	<b>48</b>	<b>100</b>	<b>127</b>	<b>265</b>	<b>330</b>	<b>545</b>	<b>825</b>	<b>1975</b>	<b>2395</b>
	t <sub>i</sub>	-	0.39	0.51	0.56	0.78	0.86	1.09	1.33	2.05	2.61
<b>12</b>	<b>J<sub>2 Max</sub></b>	-	<b>75 *</b>	<b>149</b>	<b>185</b>	<b>380</b>	<b>470</b>	<b>775</b>	<b>1165</b>	<b>2785</b>	<b>3330</b>
	t <sub>i</sub>	-	0.39 *	0.51	0.56	0.78	0.86	1.09	1.33	2.05	2.61
<b>16</b>	<b>J<sub>2 Max</sub></b>	<b>43</b>	<b>108 *</b>	<b>190</b>	<b>235</b>	<b>480</b>	<b>590</b>	<b>965</b>	<b>1440</b>	<b>3460</b>	<b>5325</b>
	t <sub>i</sub>	0.28	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
<b>20</b>	<b>J<sub>2 Max</sub></b>	<b>69 *</b>	<b>140 *</b>	<b>243</b>	<b>301</b>	<b>605</b>	<b>740</b>	<b>1215</b>	<b>1820</b>	<b>4330</b>	<b>7040</b>
	t <sub>i</sub>	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
<b>24</b>	<b>J<sub>2 Max</sub></b>	<b>87 *</b>	<b>172 *</b>	<b>295</b>	<b>365</b>	<b>730</b>	<b>890</b>	<b>1460</b>	<b>2185</b>	<b>5200</b>	<b>8455</b>
	t <sub>i</sub>	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
<b>30</b>	<b>J<sub>2 Max</sub></b>	<b>114 *</b>	<b>221 *</b>	<b>375</b>	<b>460</b>	<b>915</b>	<b>1120</b>	<b>1830</b>	<b>2740</b>	<b>6505</b>	<b>10570</b>
	t <sub>i</sub>	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
<b>36</b>	<b>J<sub>v</sub></b>	<b>141 *</b>	<b>270 *</b>	<b>455</b>	<b>560</b>	<b>1105</b>	<b>1350</b>	<b>2200</b>	<b>3290</b>	<b>7810</b>	<b>12690</b>
	t <sub>i</sub>	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52
<b>48</b>	<b>J<sub>2 Max</sub></b>	<b>324 *</b>	<b>600 *</b>	<b>995</b>	<b>1215</b>	<b>2375</b>	<b>2900</b>	<b>4720</b>	<b>7045</b>	<b>16685</b>	<b>27095</b>
	t <sub>i</sub>	0.28 *	0.38 *	0.49	0.54	0.75	0.83	1.05	1.29	1.98	2.52

**J<sub>2 Max</sub>** = max admissible mass inertia loading (kgm<sup>2</sup>) **t<sub>i</sub>** = cycle time (sec.) 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 recommended to minimise brake wear (see page 48).

**DIMENSIONS**

The position shown for the output flange with rotary ring corresponds to the home position (delivery state). The additional rotating ring is not included in the standard delivery scope and is subject to an extra charge. It is calculated separately as per your details.



\* Dimensions for motor BG 90  
 \*\* Dimensions for motor BG 71 (2-stage)

# TR 2200A



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 4400 mm

## TECHNICAL DATA

<b>U</b>	Voltage (custom voltages available on request):	230 / 400 V
<b>f</b>	Frequency:	50 Hz
	Indexing precision*:	24 arcsec ( $\pm 12''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing$ 1990 mm) 0.08 mm
<b>A<sub>r</sub></b>	Axial run-out, including the rotary ring:	(at $\varnothing$ 2200 mm) 0.15 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.05 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	0.08 mm
<b>m</b>	Total weight, including motor:	950 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the output flange)

<b>T<sub>2 stat</sub></b>	Static torque:	15000 Nm
<b>M<sub>2T dyn</sub></b>	Permitted dynamic tilting moment:	4500 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	30000 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	30000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD TABLE 50 Hz (On request: higher loads / custom indexing and switching times for 60 Hz mains frequency)

Indexing		Speed level						
		a	b	c	d	e	f	g
<b>14</b>	<b>J<sub>2 Max</sub></b>	-	-	-	<b>525</b>	<b>720</b>	<b>1010</b>	<b>2400</b>
	t <sub>i</sub>	-	-	-	0.77	0.86	0.97	1.48
<b>16</b>	<b>J<sub>2 Max</sub></b>	-	-	<b>420</b>	<b>995</b>	<b>1030</b>	<b>1640</b>	<b>3075</b>
	t <sub>i</sub>	-	-	0.62	0.77	0.86	0.97	1.48
<b>18</b>	<b>J<sub>2 Max</sub></b>	-	-	<b>600</b>	<b>1325</b>	<b>1370</b>	<b>2140</b>	<b>3955</b>
	t <sub>i</sub>	-	-	0.62	0.77	0.86	0.97	1.48
<b>20</b>	<b>J<sub>2 Max</sub></b>	-	<b>511</b>	<b>797</b>	<b>1550</b>	<b>1750</b>	<b>2670</b>	<b>4945</b>
	t <sub>i</sub>	-	0.50	0.62	0.77	0.86	0.97	1.48
<b>24</b>	<b>J<sub>2 Max</sub></b>	-	<b>665</b>	<b>1180</b>	<b>1805</b>	<b>2455</b>	<b>3255</b>	<b>7230</b>
	t <sub>i</sub>	-	0.50	0.62	0.77	0.86	0.97	1.48
<b>30</b>	<b>J<sub>2 Max</sub></b>	-	<b>707</b>	<b>1245</b>	<b>2010</b>	<b>2580</b>	<b>3420</b>	<b>8240</b>
	t <sub>i</sub>	-	0.46	0.57	0.70	0.78	0.89	1.36
<b>36</b>	<b>J<sub>2 Max</sub></b>	<b>465</b>	<b>900</b>	<b>1545</b>	<b>2465</b>	<b>3135</b>	<b>4155</b>	<b>9940</b>
	t <sub>i</sub>	0.37	0.46	0.57	0.70	0.78	0.89	1.36
<b>48</b>	<b>J<sub>v</sub></b>	<b>762</b>	<b>1281</b>	<b>2140</b>	<b>3370</b>	<b>4165</b>	<b>5625</b>	<b>13335</b>
	t <sub>i</sub>	0.37	0.46	0.57	0.70	0.78	0.89	1.36

**J<sub>2 Max</sub>** = max admissible mass inertia loading (kgm<sup>2</sup>) **t<sub>i</sub>** = cycle time (sec.) 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 recommended to minimise brake wear (see page 48).





# EF2

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

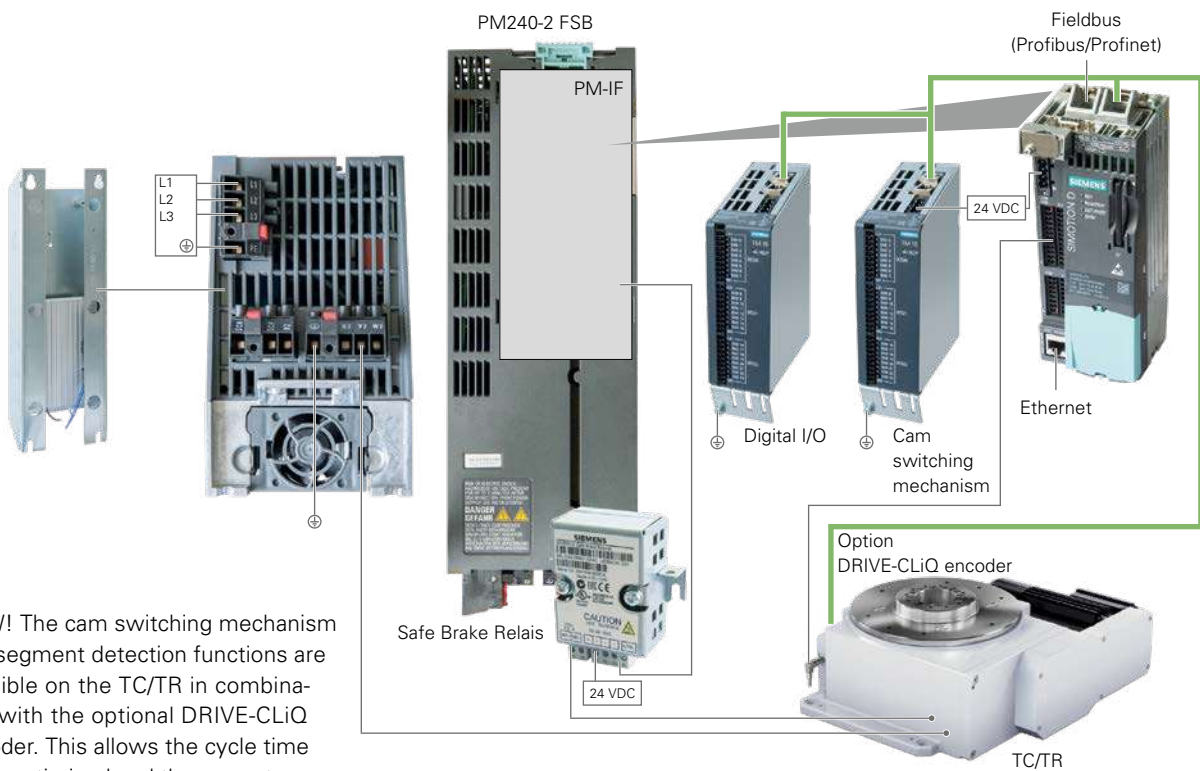
## ADVANTAGES

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



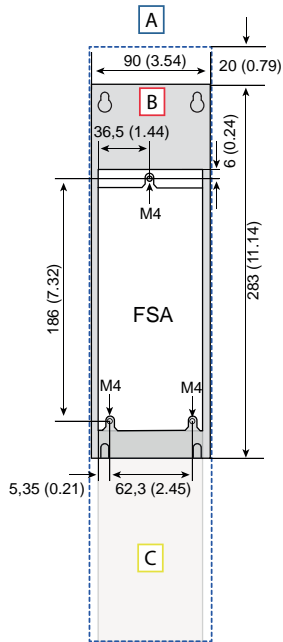
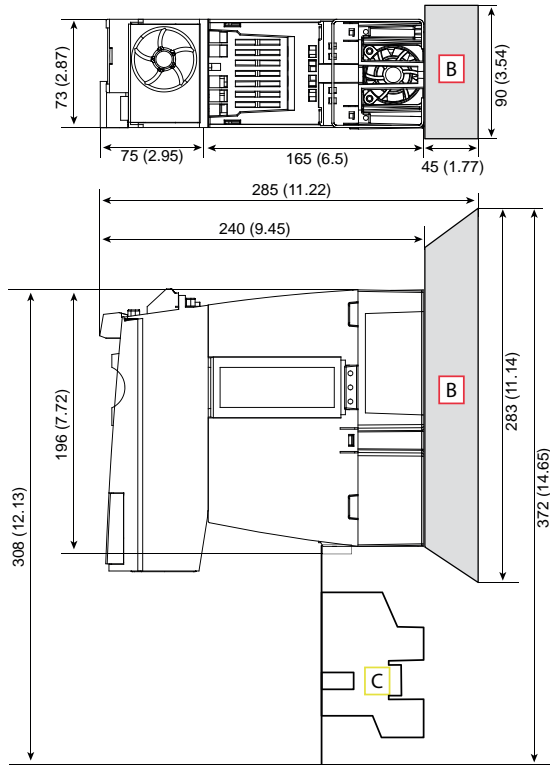
## BLOCK DIAGRAM



NEW! The cam switching mechanism and segment detection functions are possible on the TC/TR in combination with the optional DRIVE-CLiQ encoder. This allows the cycle time to be optimised and the current process status in all nests to be reliably detected.

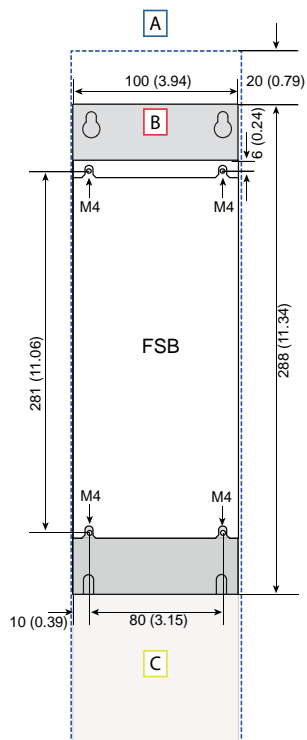
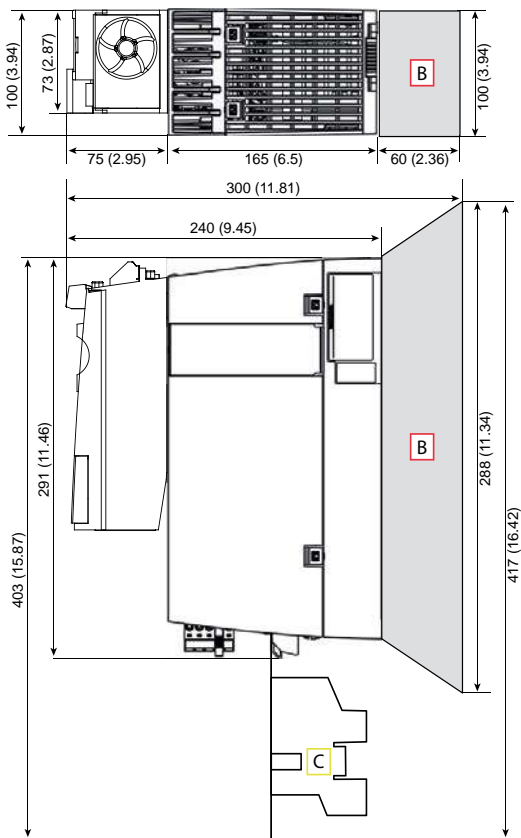
DIMENSIONS

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



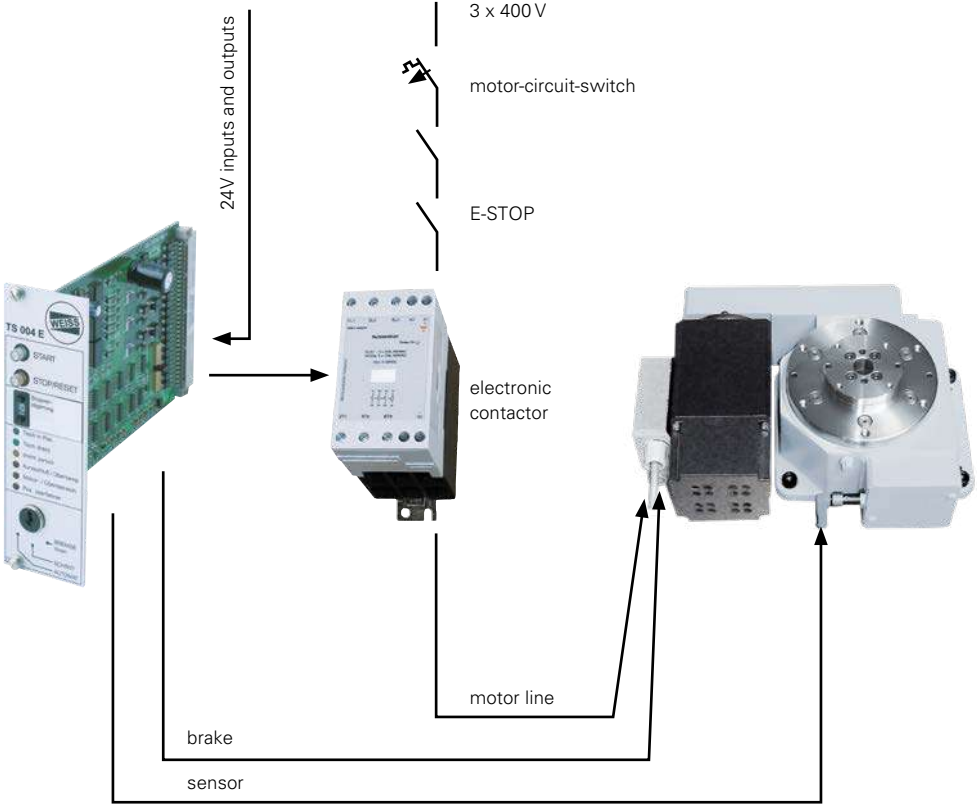
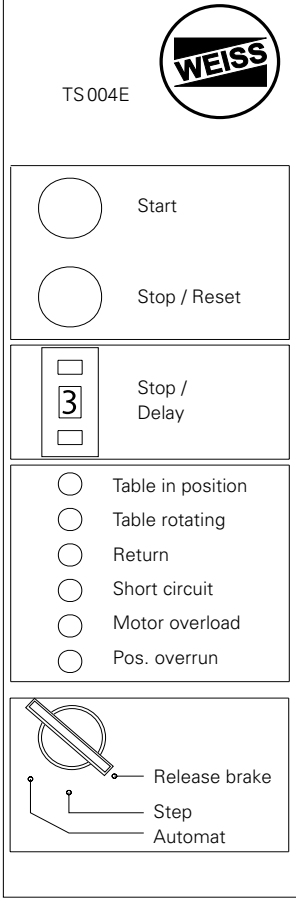
### ABMESSUNGEN

- 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

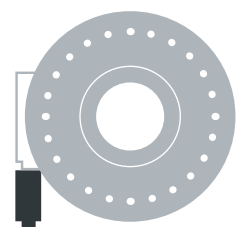
### INSTALLATION OPTIONS

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

BLOCK DIAGRAM







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FREELY PROGRAMMABLE ROTARY TABLES

# NC

FREELY PROGRAMMABLE ROTARY TABLES | NC ROTARY TABLE



## NC ROTARY TABLE: USER-PROGRAMMABLE AND ROBUST

### OPTIMISED BEARINGS

To achieve maximum quality and reliability, even when under load, all roller bearings run in an oil bath and the plate cam rollers are mounted on needle bearings.



### FREELY AND INTUITIVELY PROGRAMMABLE

W.A.S. 2 – WEISS Application Software: secure and fast commissioning with free-of-charge user software.





Custom machine for an automotive supplier. A user-programmable NC320 represents the heart of the system. It brings the seal and springs together and forwards the components to the other tables.

The NC combines robustness and durability with the advantages of a freely programmable rotary table offering a high level of torque. The NC differs from the TC range through its use of a brushless AC servo motor drive. In addition, the drive curve has a constant rise. The NC-T is capable of positioning large loads dynamically and precisely at freely selectable angles.

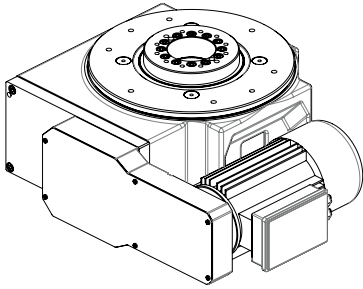
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## ADVANTAGES

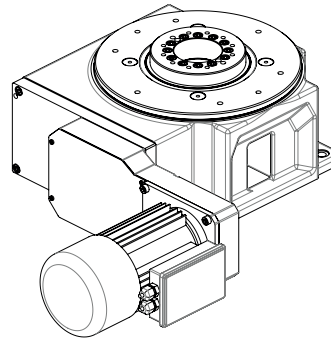
- User-programmable
- High level of torque
- Absolute encoder (option)
- High-precision, rigid rotating plate bearing mounting
- Various sizes
- Large central bore and opening in the housing for media feed-through
- Mechanical interfaces for connecting customer-specific servo motors
- High degree of synchronism
- High degree of repeat accuracy



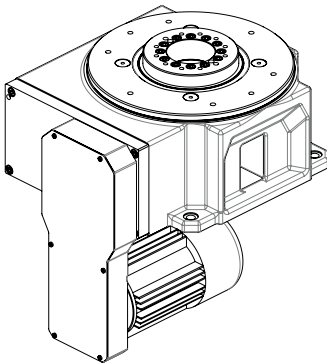
VERSIONS: DRIVE POSITION



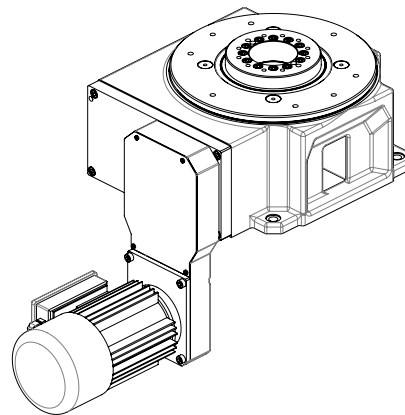
LATERAL INSIDE/DP 1



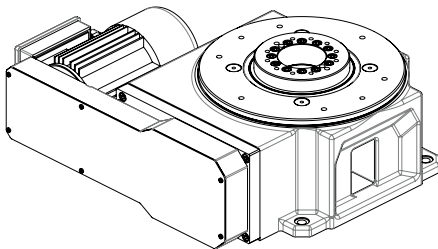
LATERAL OUTSIDE/DP 2



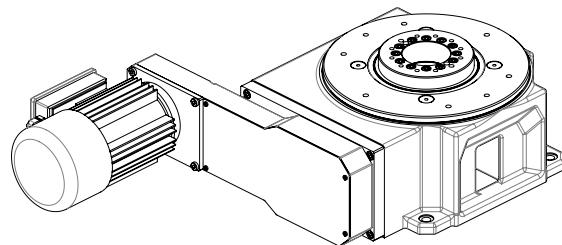
BELOW INSIDE/DP 3



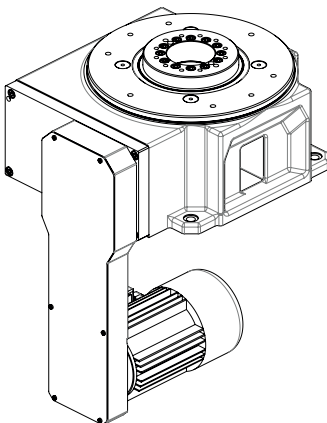
BELOW OUTSIDE/DP 4



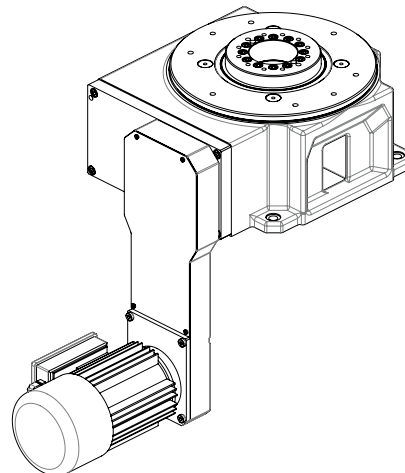
LATERAL INSIDE  
MOTOR ON CAM SIDE/DP 5



LATERAL OUTSIDE  
LONG DRIVE HOUSING/DP 6

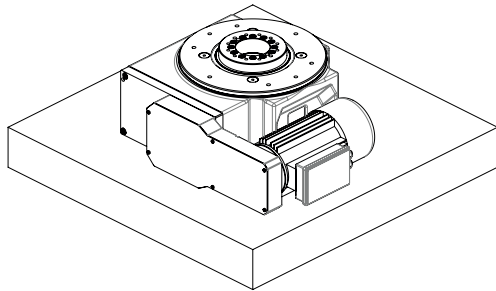


BELOW INSIDE  
LONG DRIVE HOUSING/DP 7

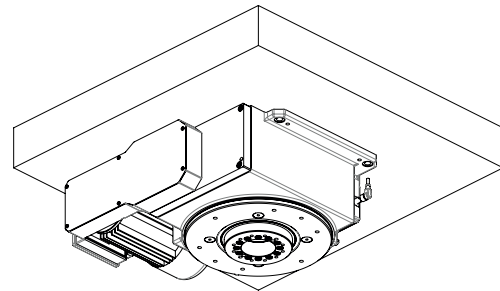


BELOW OUTSIDE  
LONG DRIVE HOUSING/DP 8

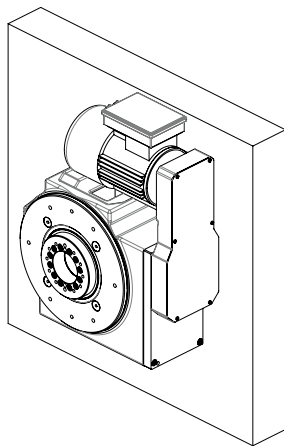
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**VERSIONS: MOUNTING POSITION**


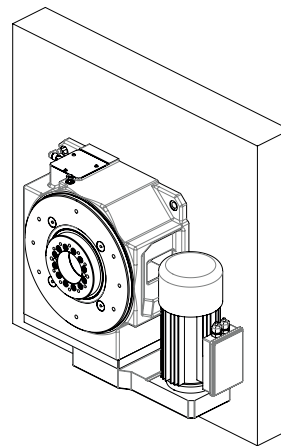
STANDARD / MP 1



OVERHEAD / MP 2



VERTICAL, DRIVE ON RIGHT / MP 3



VERTICAL, DRIVE AT BASE / MP 4

---

**GENERAL INFORMATION ON THE MODEL RANGE**

- NC rotary tables can be operated clockwise, anti-clockwise and also in reversing mode.
- The NC rotary tables are “lubricated for life”!
- The maximum stated radial force and torque of the stationary central section and the output flange refer only to the rotary table.
- When determining the maximum actual load of the overall system, the influence of the plate material and the plate attachment means must also be taken into account.
- We would be happy to advise and support you in dimensioning your overall system.

---

**OPTIONEN**

- If necessary, the stationary central section can be raised 5 mm or 10 mm.
- All sizes in the NC model range can optionally be equipped with an absolute encoder. (standard encoder: Heidenhain ROQ425)
- The rotary encoder provides improved single-side positioning accuracy and also improves controllability.
- A second measuring system input is required on the servo controller to evaluate this rotary encoder.
- The 8LSA model range from B+R or the MS2N model range from Bosch Rexroth are available as standard servo motors.
- It is possible to fit popular alternative motors from various manufacturers.
- For a surcharge, a positioning accuracy measurement report can also be drawn up and a compensation table incorporated for error compensation in a further step. However, this requires a mechanical zero point alignment.
- Standard colour: RAL7035 (other colours available on request)

# NC 150T



## GENERAL INFORMATION

- Maximum recommended equipment diameter  $D_{tp}$ : approximately 800 mm

## TECHNICAL DATA

$n_{1\text{Max}}$	Max. motor speed:	4500 1/min
$n_{2\text{Max}}$	Max. output speed:	58 1/min
$i_{\text{tot}}$	Overall gear ratio:	Level A: 144.545 Level B: 77.091
	Indexing precision without additional rotary encoder:	100 arcsec ( $\pm 50''$ )
	Indexing precision with additional rotary encoder:	80 arcsec ( $\pm 40''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 150$ mm) 0.01 mm
$C_r$	Concentricity of the output flange:	0.01 mm
$P$	Parallelism between the output flange and screw-on surface of the housing:	0.03 mm
$m$	Total weight, including motor:	approximately 24 kg
$D_i$	Min. inside diameter of the rotary plate:	80 mm

## LOAD DATA (for the stationary central part)

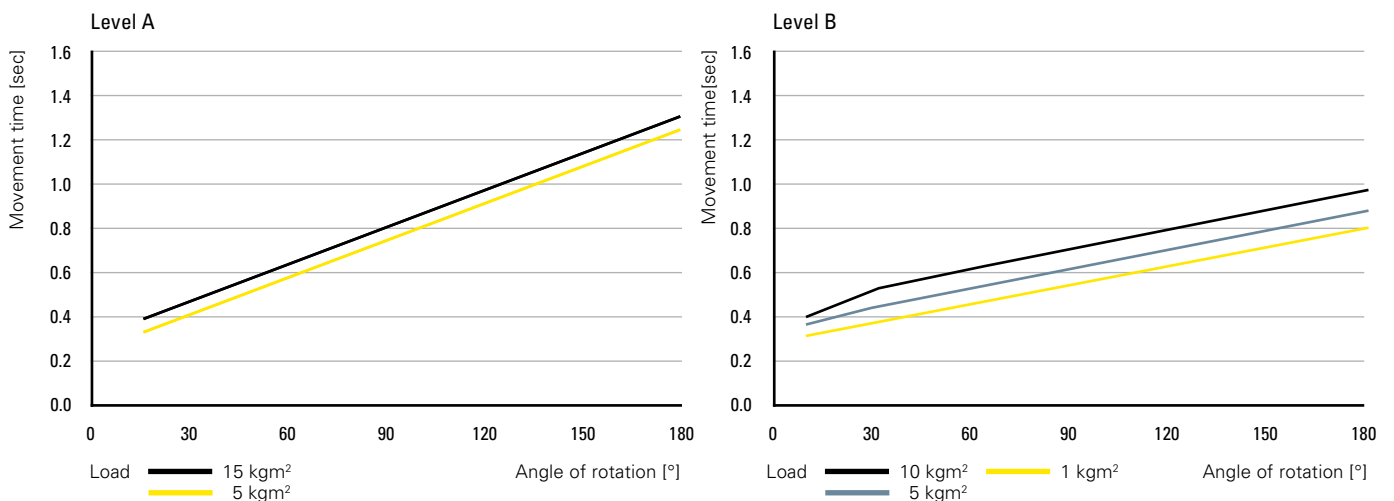
$T_{SP}$	Permitted torque:	140 Nm
$M_{TSP}$	Permitted tilting moment:	200 Nm
$F_{ASP}$	Permitted axial force:	3500 N
$F_{RSP}$	Permitted radial force:	2500 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

$M_{2T\text{dyn}}$	Permitted dynamic tilting moment:	500 Nm
$F_{2A\text{dyn}}$	Permitted dynamic axial force:	5500 N
$F_{2R\text{dyn}}$	Permitted dynamic radial force:	6000 N

## TIMING DIAGRAM





# NC 220T



## GENERAL INFORMATION

- Maximum recommended equipment diameter  $D_{tp}$ : approximately 1100 mm

## TECHNICAL DATA

$n_{1\text{Max}}$	Max. motor speed:	4000 1/min
$n_{2\text{Max}}$	Max. output speed:	56 1/min
$i_{\text{tot}}$	Overall gear ratio:	Level A: 171.145 Level B: 71.314
	Indexing precision without additional rotary encoder:	90 arcsec ( $\pm 45''$ )
	Indexing precision with additional rotary encoder:	70 arcsec ( $\pm 35''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 220$ mm) 0.01 mm
$C_r$	Concentricity of the output flange:	0.01 mm
$P$	Parallelism between the output flange and screw-on surface of the housing:	0.03 mm
$m$	Total weight, including motor:	approximately 44 kg
$D_i$	Min. inside diameter of the rotary plate:	96 mm

## LOAD DATA (for the stationary central part)

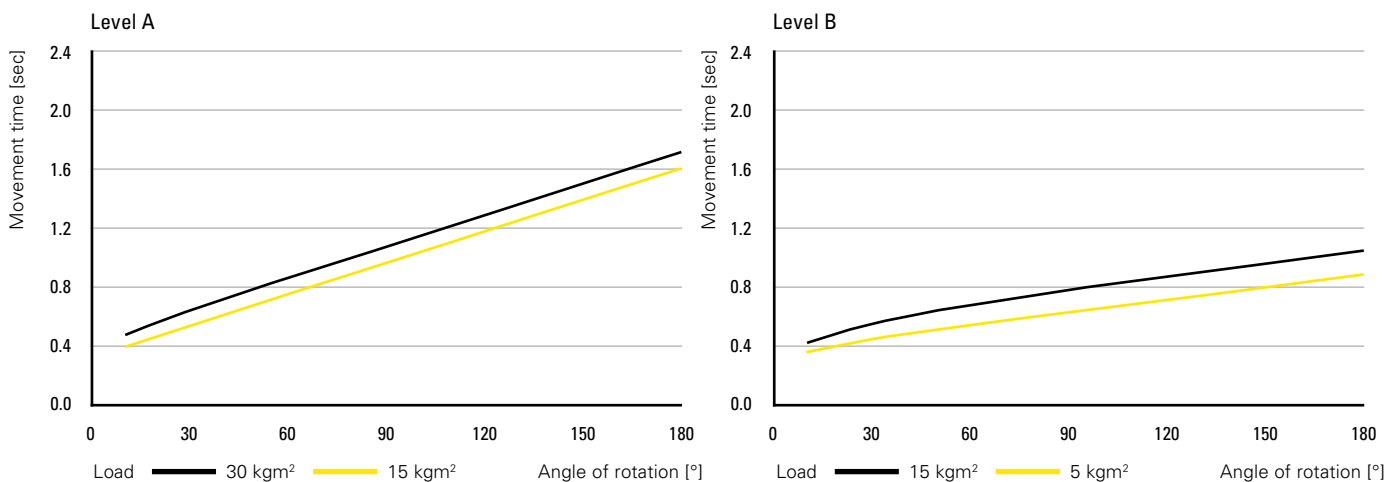
$T_{SP}$	Permitted torque:	145 Nm
$M_{T\text{SP}}$	Permitted tilting moment:	300 Nm
$F_{A\text{SP}}$	Permitted axial force:	5000 N
$F_{R\text{SP}}$	Permitted radial force:	4000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

$M_{2T\text{dyn}}$	Permitted dynamic tilting moment:	700 Nm
$F_{2A\text{dyn}}$	Permitted dynamic axial force:	7500 N
$F_{2R\text{dyn}}$	Permitted dynamic radial force:	8000 N

## TIMING DIAGRAM





# NC 320T



## GENERAL INFORMATION

- Maximum recommended equipment diameter  $D_{tp}$ : approximately 1400 mm

## TECHNICAL DATA

$n_{1 \text{ Max}}$	Max. motor speed:	4000 1/min
$n_{2 \text{ Max}}$	Max. output speed:	35 1/min
$i_{\text{tot}}$	Overall gear ratio:	Level A: 166.25 Level B: 113.05
	Indexing precision without additional rotary encoder:	80 arcsec ( $\pm 40''$ )
	Indexing precision with additional rotary encoder:	60 arcsec ( $\pm 30''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 320$ mm) 0.01 mm
$C_r$	Concentricity of the output flange:	0.01 mm
$P$	Parallelism between the output flange and screw-on surface of the housing:	0.03 mm
$m$	Total weight, including motor:	approximately 112 kg
$D_i$	Min. inside diameter of the rotary plate:	150 mm

## LOAD DATA (for the stationary central part)

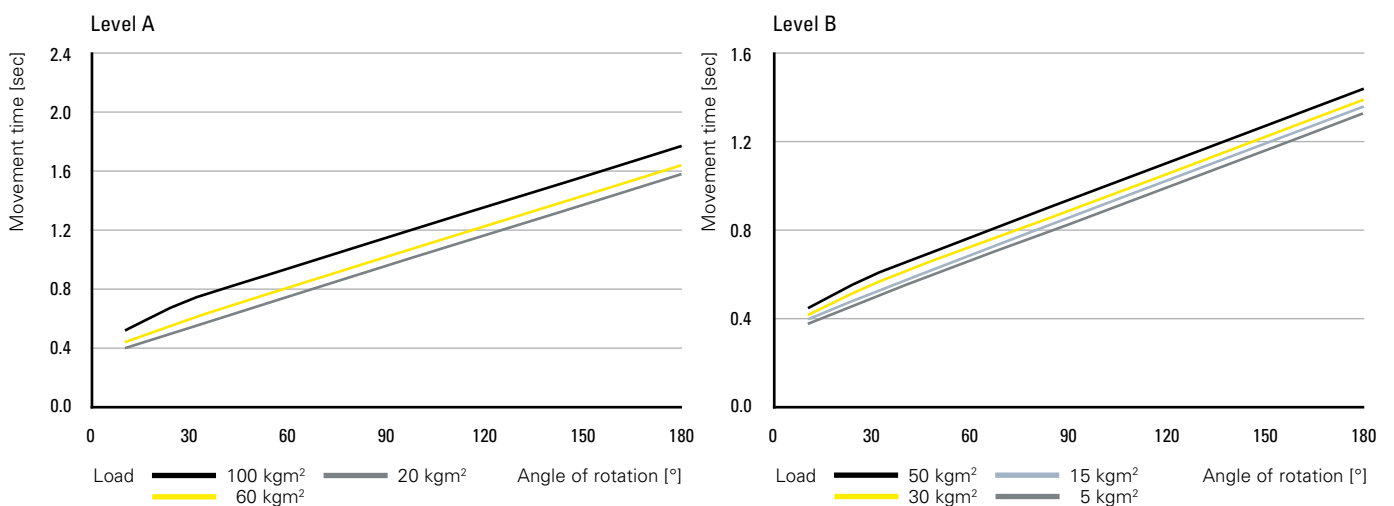
$T_{SP}$	Permitted torque:	800 Nm
$M_{T \text{ SP}}$	Permitted tilting moment:	1800 Nm
$F_{A \text{ SP}}$	Permitted axial force:	18000 N
$F_{R \text{ SP}}$	Permitted radial force:	10000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

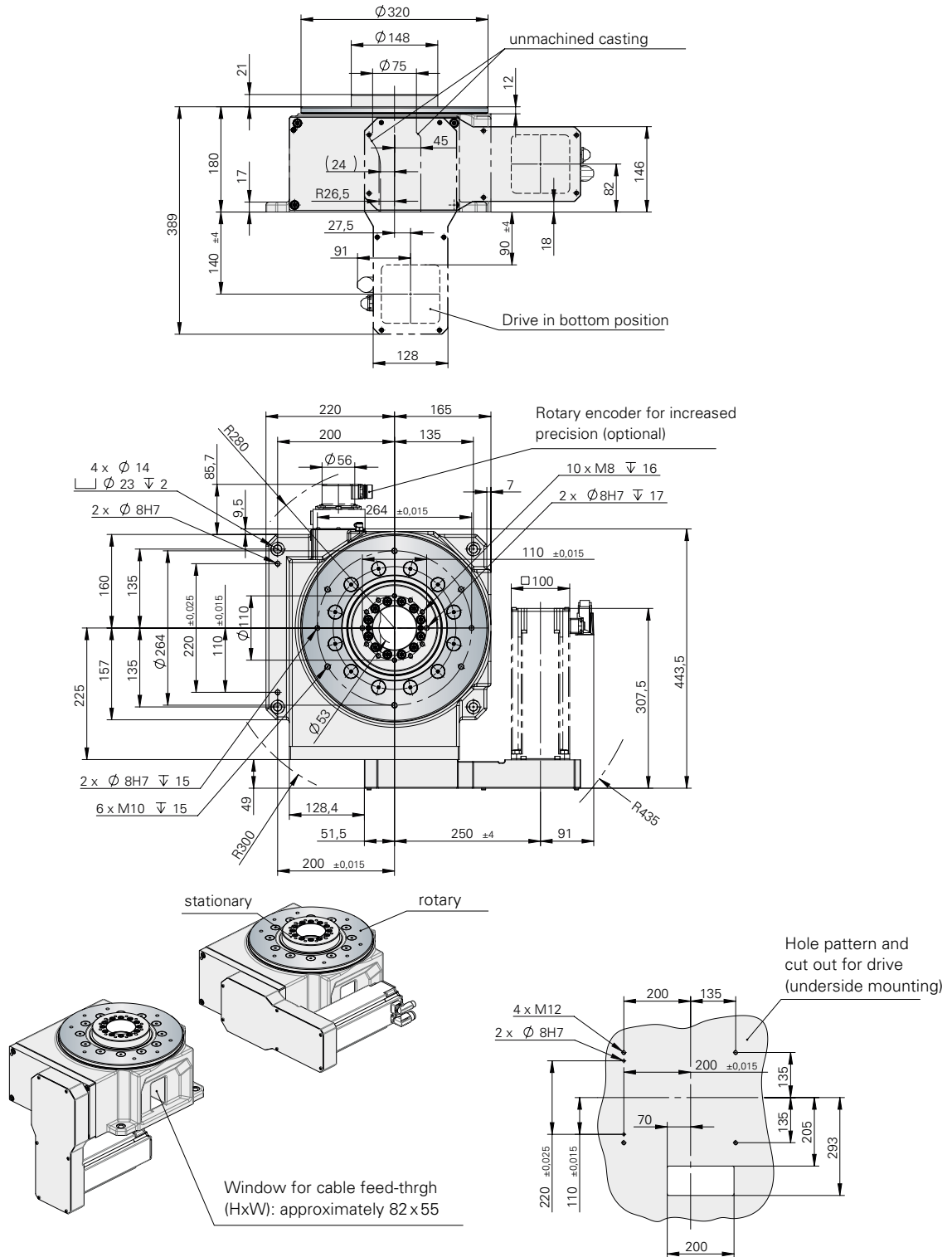
$M_{2T \text{ dyn}}$	Permitted dynamic tilting moment:	2250 Nm
$F_{2A \text{ dyn}}$	Permitted dynamic axial force:	15000 N
$F_{2R \text{ dyn}}$	Permitted dynamic radial force:	13000 N

## TIMING DIAGRAM



## DIMENSIONS

The output flange position shown corresponds to the home position of the rotary table (delivery state).  
It is possible to fit popular alternative motors from various manufacturers. The drive flange geometries are motor-dependent.



### Note:

The motor must be accessible for servicing! Please leave the necessary space for motor plug and cable outlet.  
If you require subsequent drilling work on the rotary table, please request information on permissible drilling depths.



# NR

FREELY PROGRAMMABLE ROTARY TABLES | NR ROTARY RING TABLE



All NR rings allow customer-specific drive motors to be connected

## NR ROTARY RING TABLE: FLEXIBLE IN EVERY RESPECT

### WHEN IT'S GOT TO BE EXACT

We manufacture high-precision plates from AlMg4.5Mn (also available anodised on request), as well as steel plates (also available chemically nickel-plated on request), as per your drawings. With test protocol – everything from a single source.

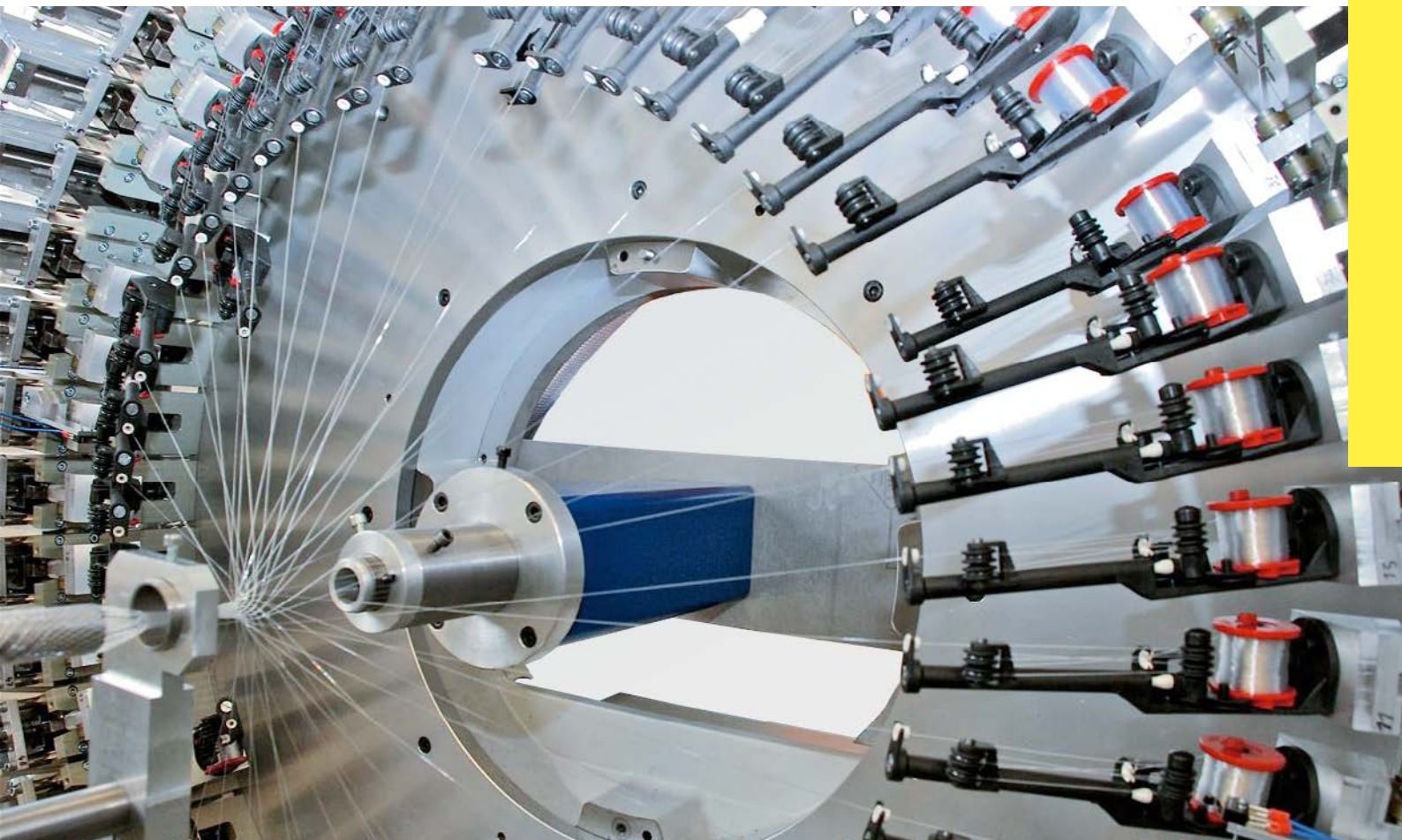


### FREELY AND INTUITIVELY PROGRAMMABLE

W.A.S. 2 – WEISS Application Software: secure and fast commissioning with free-of-charge user software.



Production of technical braidings at Bossert + Kast: the NR 750 rotary ring table is used as a gear-driven turntable: large bearing, integrated gears, large central opening.

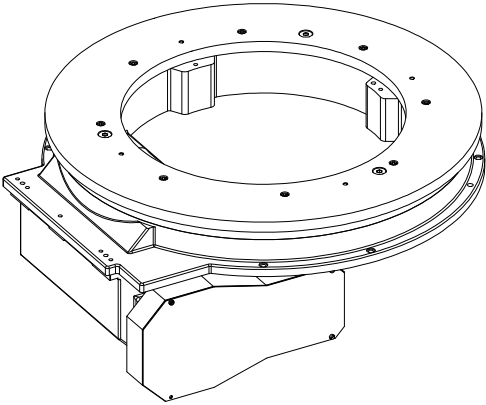


Rotary ring table with very large central opening, extremely flat design and high parts accuracy. The ring-shaped design allows extra free design space. The rotating aluminium ring can be adjusted to your specifications in terms of diameter and thickness.

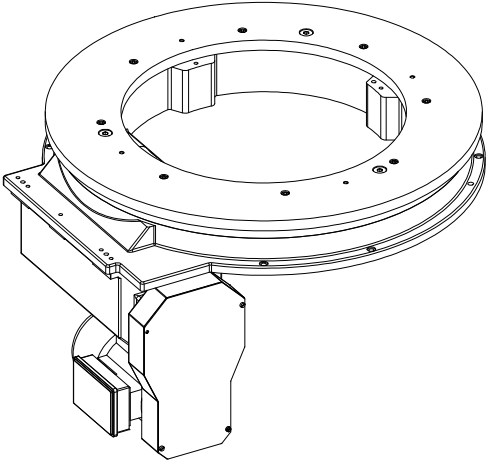
## ADVANTAGES

- Ring-shaped rotary 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
- Excellent price-performance
- Appealing design
- Optionally available with standard motor and control package with W.A.S. 2

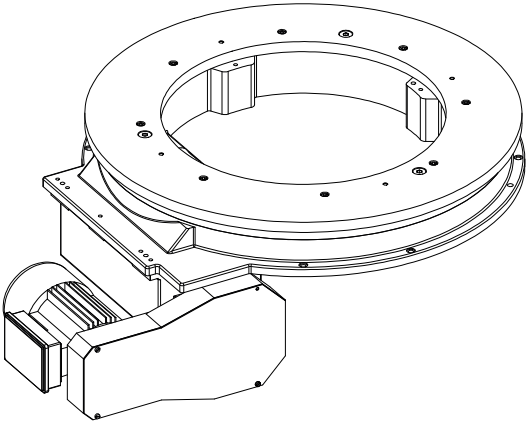
VERSIONS: DRIVE POSITION



DRIVE HOUSING INSIDE / DP 1

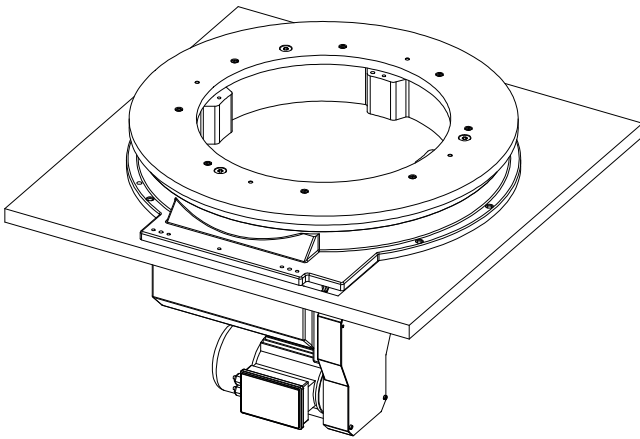


DRIVE HOUSING BELOW / DP 2

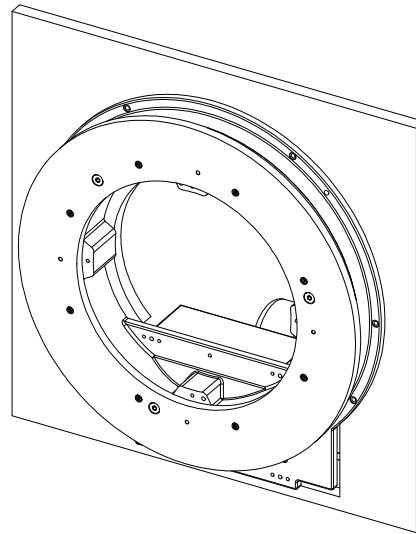


DRIVE HOUSING OUTSIDE / DP 3

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**VERSIONS: MOUNTING POSITION**


STANDARD / MP 1


 VERTICAL DRIVE AT BASE / MP 2  
 (only possible for model NR0750A)

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**GENERAL INFORMATION ON THE MODEL RANGE**

- NR rotary ring table can be operated clockwise, anti-clockwise and also in reversing mode.
- The NR rotary ring tables are “lubricated for life”!
- All NR rotary indexing rings can be equipped with servo motors. The size of the motors should be optimally matched to the respective rotary indexing ring configuration so that the drive can never damage the rotary indexing ring.
- The aluminium rotating ring should be anodised so that the seal at the bottom runs on a low-wear surface.

---

**OPTIONS**

- Possible installation location: vertical rotary axis with output flange at the top
- Custom installation location, only possible for the NR0750A: horizontal rotary axis with cam housing at the base
- The 8LSA model range from B+R or the MS2N model range from Bosch Rexroth are available as standard servo motors.
- It is possible to fit popular alternative motors from various manufacturers.
- Standard colour: RAL7035 (other colours available on request)

# NR 750Z



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 1500 mm

## TECHNICAL DATA

$n_{2 \text{ Max}}$	Max. output speed:	23 1/min
$i_{\text{tot}}$	Overall gear ratio:	Level K: 90 Level G: 180
	Indexing precision:	36 arcsec ( $\pm 18''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 635 \text{ mm}$ ) 0.05 mm
$A_r$	Axial run-out, including the rotary ring:	(at $\varnothing 750 \text{ mm}$ ) 0.07 mm
$C_r$	Concentricity of the output flange:	0.03 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	0.05 mm
<b>m</b>	Total weight without rotary ring or motor:	230 kg

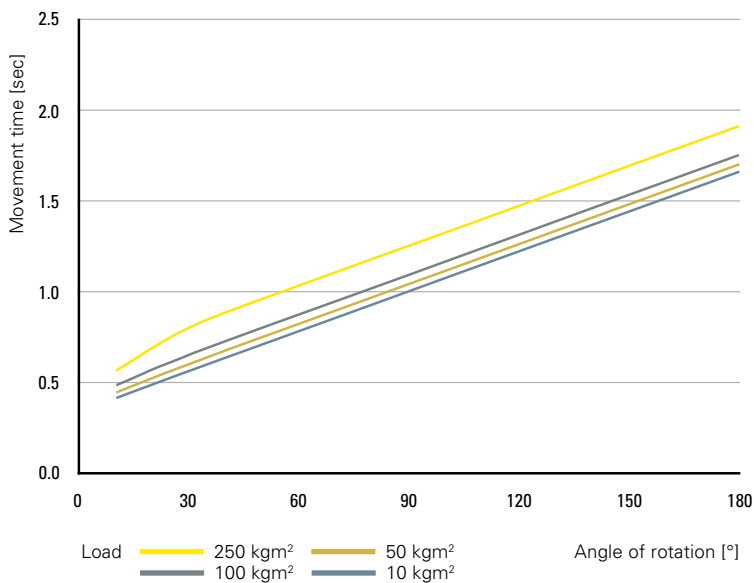
The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the output flange)

$M_{2T \text{ dyn}}$	Permitted dynamic tilting moment:	750 Nm
$F_{2A \text{ dyn}}$	Permitted dynamic axial force:	7000 N
$F_{2R \text{ dyn}}$	Permitted dynamic radial force:	7000 N

Combined loads and permitted process forces only after inspection by WEISS.

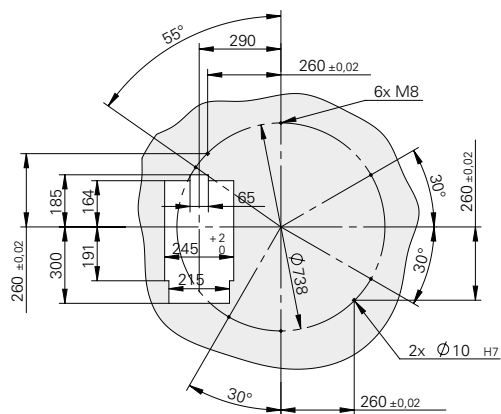
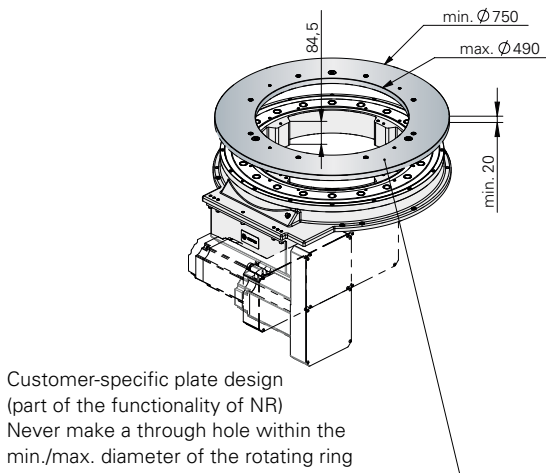
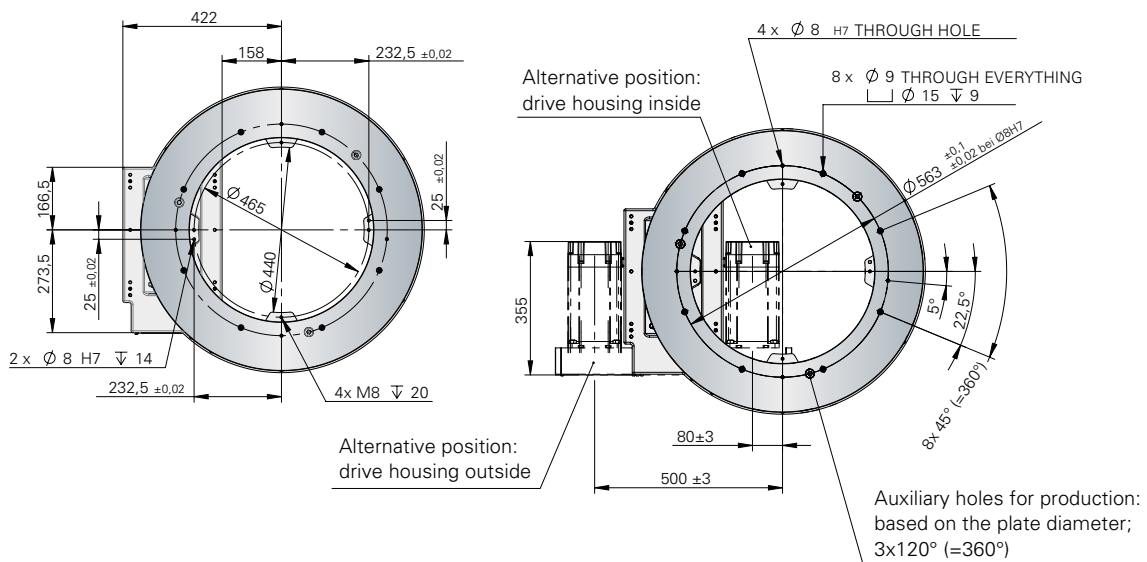
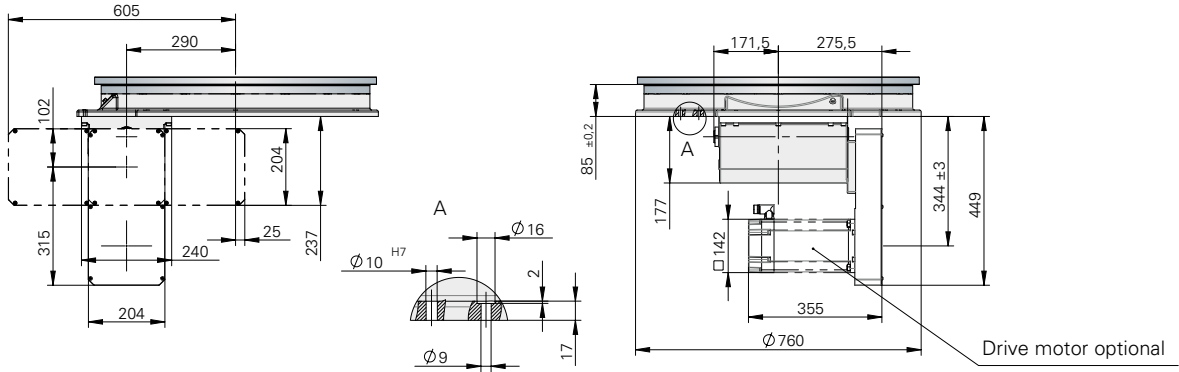
## TIMING DIAGRAM



The mass moment of inertia of the aluminium rotary ring in standard dimensions is 1.4 kgm².

**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.



# NR 1100Z



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 2200 mm

## TECHNICAL DATA

$n_{2\text{Max}}$	Max. output speed:	23 1/min
$i_{\text{tot}}$	Overall gear ratio:	Level K: 88 Level G: 176
	Indexing precision:	36 arcsec ( $\pm 18''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 945$ mm) 0.06 mm
$A_r$	Axial run-out, including the rotary ring:	(at $\varnothing 1100$ mm) 0.07 mm
$C_r$	Concentricity of the output flange:	0.04 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	0.06 mm
<b>m</b>	Total weight without rotary ring or motor:	310 kg

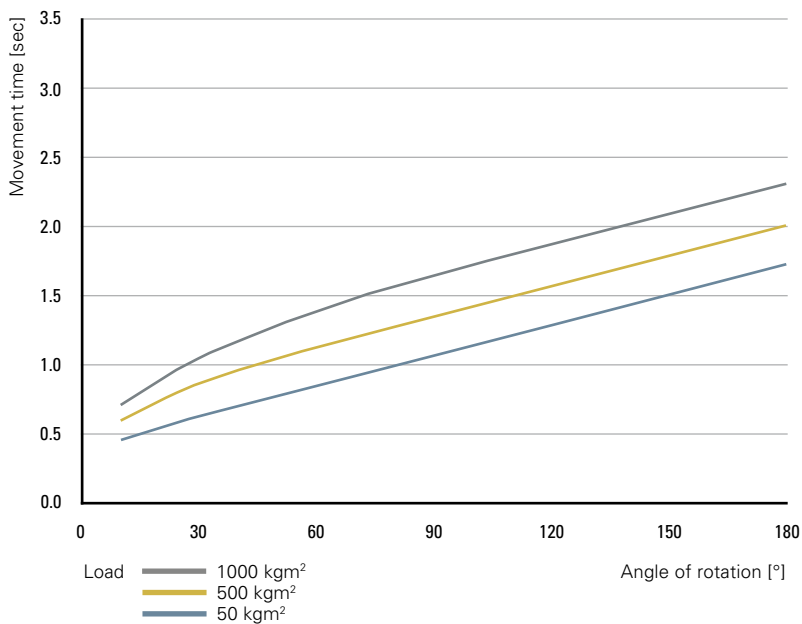
The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the output flange)

$M_{2T\text{ dyn}}$	Permitted dynamic tilting moment:	2500 Nm
$F_{2A\text{ dyn}}$	Permitted dynamic axial force:	12000 N
$F_{2R\text{ dyn}}$	Permitted dynamic radial force:	12000 N

Combined loads and permitted process forces only after inspection by WEISS.

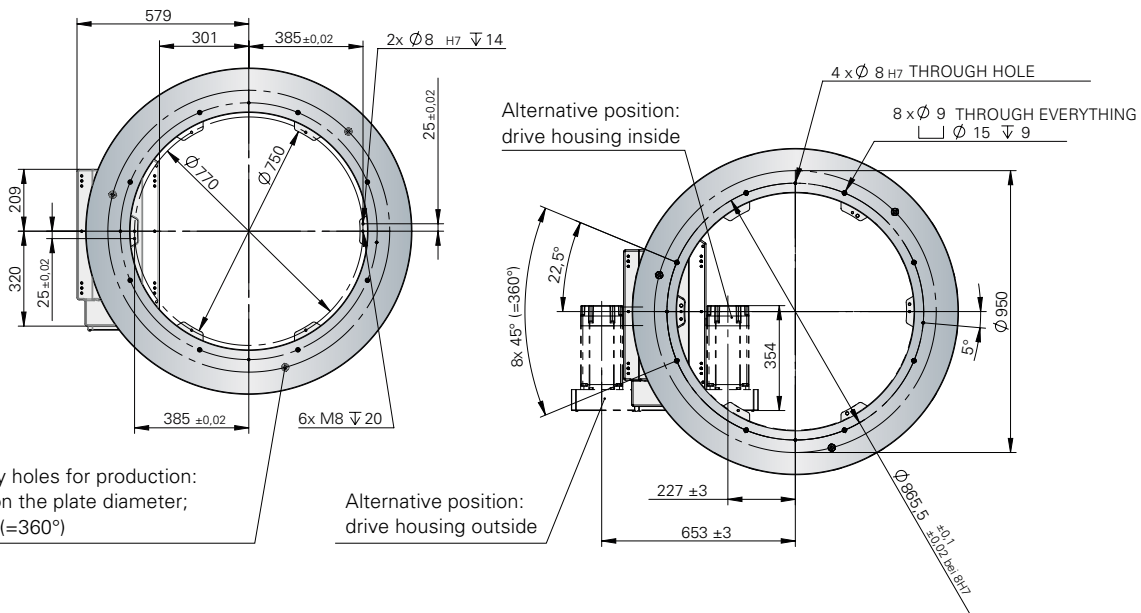
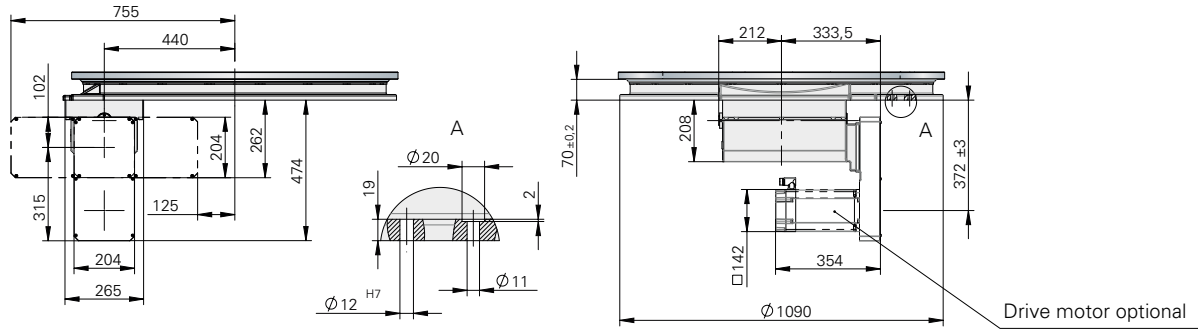
## TIMING DIAGRAM



The mass moment of inertia of the aluminium rotary ring in standard dimensions is 7.0 kgm<sup>2</sup>.

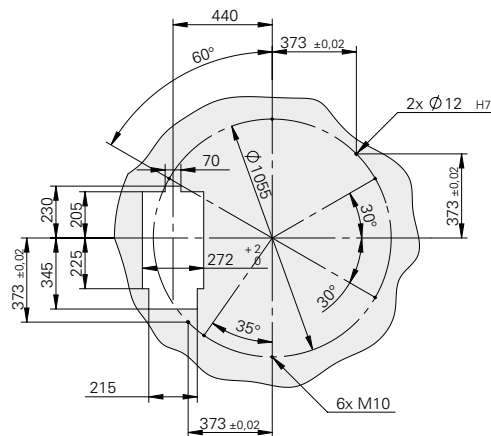
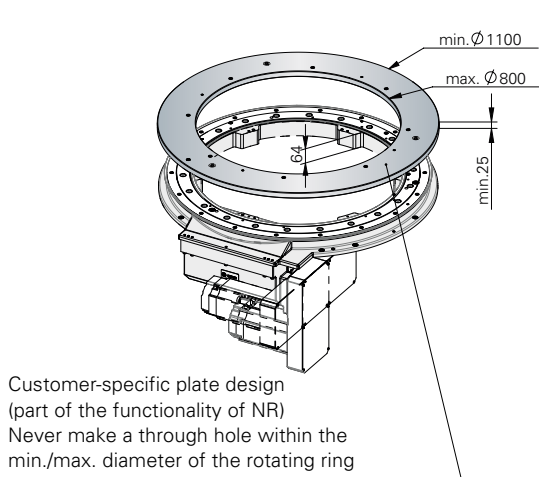
### DIMENSIONS

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.



Auxiliary holes for production:  
based on the plate diameter;  
3x120° ( $\approx 360^\circ$ )

Alternative position:  
drive housing outside





# NR 1500Z



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 3000 mm

## TECHNICAL DATA

$n_{2\text{Max}}$	Max. output speed:	18 1/min
$i_{\text{tot}}$	Overall gear ratio:	Level K: 112 Level G: 224
	Indexing precision:	30 arcsec ( $\pm 15''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing$ 1275 mm) 0.08 mm
$A_r$	Axial run-out, including the rotary ring:	(at $\varnothing$ 1500 mm) 0.1 mm
$C_r$	Concentricity of the output flange:	0.04 mm
<b>P</b>	Parallelism between the output flange and screw-on surface of the housing:	0.08 mm
<b>m</b>	Total weight without rotary ring or motor:	400 kg

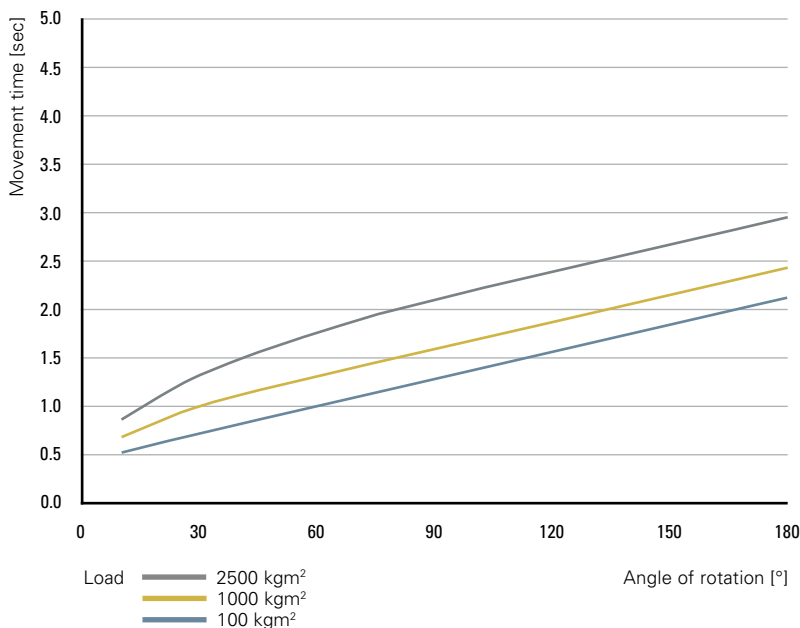
The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the output flange)

$M_{2T\text{ dyn}}$	Permitted dynamic tilting moment:	3200 Nm
$F_{2A\text{ dyn}}$	Permitted dynamic axial force:	16000 N
$F_{2R\text{ dyn}}$	Permitted dynamic radial force:	16000 N

Combined loads and permitted process forces only after inspection by WEISS.

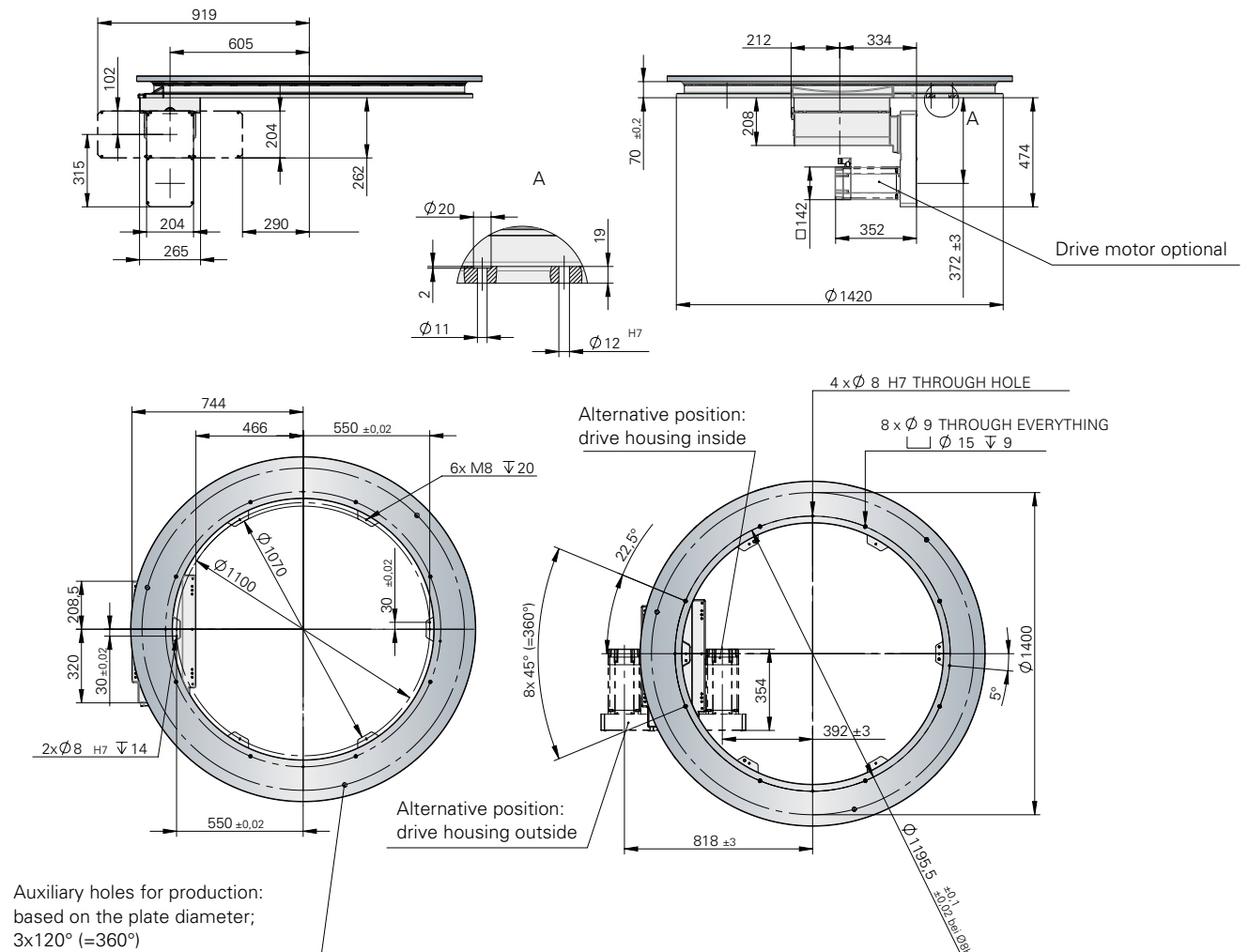
## TIMING DIAGRAM



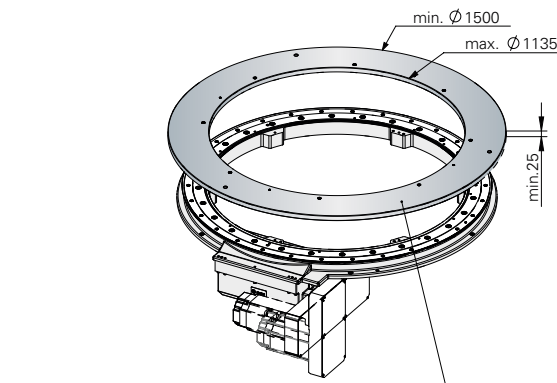
The mass moment of inertia of the aluminium rotary ring in standard dimensions is 22.5 kgm<sup>2</sup>.

**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.



Auxiliary holes for production:  
based on the plate diameter;  
3x120° (=360°)



Customer-specific plate design  
(part of the functionality of NR)  
Never make a through hole within the  
min./max. diameter of the rotating ring

# NR 2200Z



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 4400 mm

## TECHNICAL DATA

$n_{2\text{Max}}$	Max. output speed:	9 1/min
$i_{\text{tot}}$	Overall gear ratio:	Level K: 220 Level G: 440
	Indexing precision:	24 arcsec ( $\pm 12''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 1990$ mm) 0.08 mm
$A_r$	Axial run-out, including the rotary ring:	(at $\varnothing 2200$ mm) 0.15 mm
$C_r$	Concentricity of the output flange:	0.05 mm
$P$	Parallelism between the output flange and screw-on surface of the housing:	0.08 mm
$m$	Total weight without rotary ring or motor:	950 kg

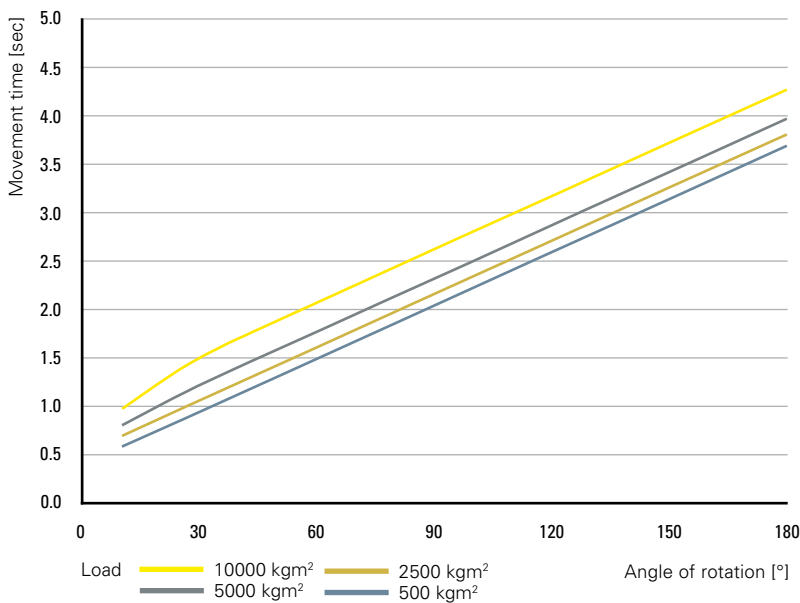
The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the output flange)

$M_{2T\text{ dyn}}$	Permitted dynamic tilting moment:	4500 Nm
$F_{2A\text{ dyn}}$	Permitted dynamic axial force:	30000 N
$F_{2R\text{ dyn}}$	Permitted dynamic radial force:	30000 N

Combined loads and permitted process forces only after inspection by WEISS.

## TIMING DIAGRAM



The mass moment of inertia of the aluminium rotary ring in standard dimensions is 111.7 kgm<sup>2</sup>.



# CR/TH

FREELY PROGRAMMABLE ROTARY TABLES | CR/TH HEAVY DUTY ROTARY TABLE



## CR/TH HEAVY DUTY ROTARY TABLE: MAKES LIGHT WORK OF HEAVY LOADS

### FOR HORIZONTAL AXES

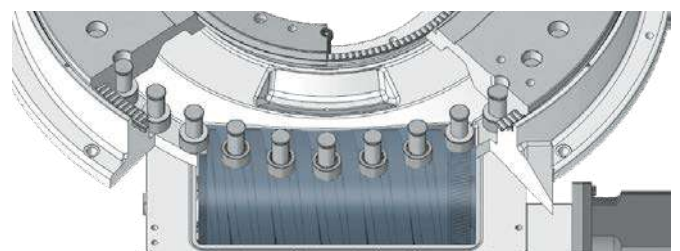
User-programmable rotary barrel drive of the TH range for horizontal loads and high breakdown torque levels. With screw-on surfaces for Buhl pinning and optional rotary encoder.

### FREELY AND INTUITIVELY PROGRAMMABLE

W.A.S. 2 – WEISS Application Software: secure and fast commissioning with free-of-charge user software.

### THE TECHNOLOGY MAKES THE DIFFERENCE

The cam drive, positioned far toward the outside, enables the highest precision and dynamic performance.



This cooling carousel at one of Cirex's casting stations in the Netherlands has a diameter of 10 metres and weighs 30 tonnes. It is driven by a CR. A special bearing has been fitted to handle the high tilting moment as a result of the uneven load.



Flat heavy duty rotary table with large central opening. A real powerhouse. User-programmable. The flat design frees up space for ergonomically optimal workplaces.

## ADVANTAGES

- Extremely flat design
- Large central opening for optimum feed-through of supply cables
- Extremely smooth and quiet running (<70 dBA)
- Splashproof
- Covered gaskets for protection from welding sparks
- The flexible motor flange principle makes it easy to connect third-party motors
- Maximum power transmission with zero backlash thanks to multiple cam rollers that are tensioned against one another and meshed
- positioning and repeatability accuracy
- CR range with available manual hand crank
- Impressive price-performance
- Mounted on high-precision needle bearings to handle the heaviest loads in both the axial and radial direction
- Permanent status monitoring through W.A.S. 2 – WEISS Application Software mit unserem Standard-Steuerungspaket

## GENERAL INFORMATION

- CR/TH heavy duty rotary indexing tables are user-programmable
- CR/TH heavy duty rotary indexing tables are "lubricated for life"!
- Freely accessible square shaft available for attaching a hand-wheel or hand crank (except on CR0400 model).

## OPTIONS

- Possible installation location: vertical rotary axis (please consult WEISS for overhead or other installation positions).
- Additional rotary encoder option: standard manufacturer Heidenhain, type ROQ 425 with the EnDat 2.1 interface (other types or manufacturers available on request).
- For a surcharge, a positioning accuracy measurement report can also be drawn up and a compensation table incorporated for error compensation in a further step. However, this requires a mechanical zero point alignment.
- Standard colour: RAL7035 (other colours available on request)

# CR 300E

## TECHNICAL DATA

$n_{1\text{Max}}$	Max. motor speed:	2000 1/min
$n_{2\text{Max}}$	Max. output speed:	20 1/min
$i_{\text{tot}}$	Overall gear ratio:	130.2
	Indexing precision:	60 arcsec ( $\pm 30''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 280$ mm) 0.01 mm
$C_r$	Concentricity of the output flange:	0.01 mm
$m$	Total weight, including motor:	approximately 210 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the stationary central part)

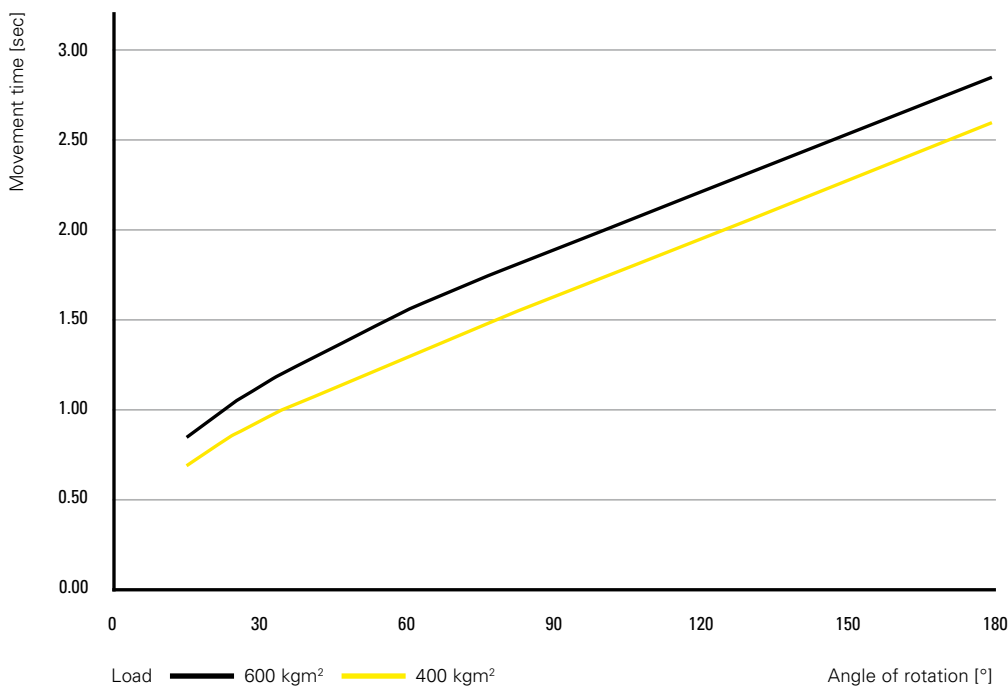
$T_{\text{SP}}$	Permitted torque:	150 Nm
$M_{\text{TSP}}$	Permitted tilting moment:	300 Nm
$F_{\text{ASP}}$	Permitted axial force:	6500 N
$F_{\text{RSP}}$	Permitted radial force:	3500 N

Combined loads and permitted process forces only after inspection by WEISS.

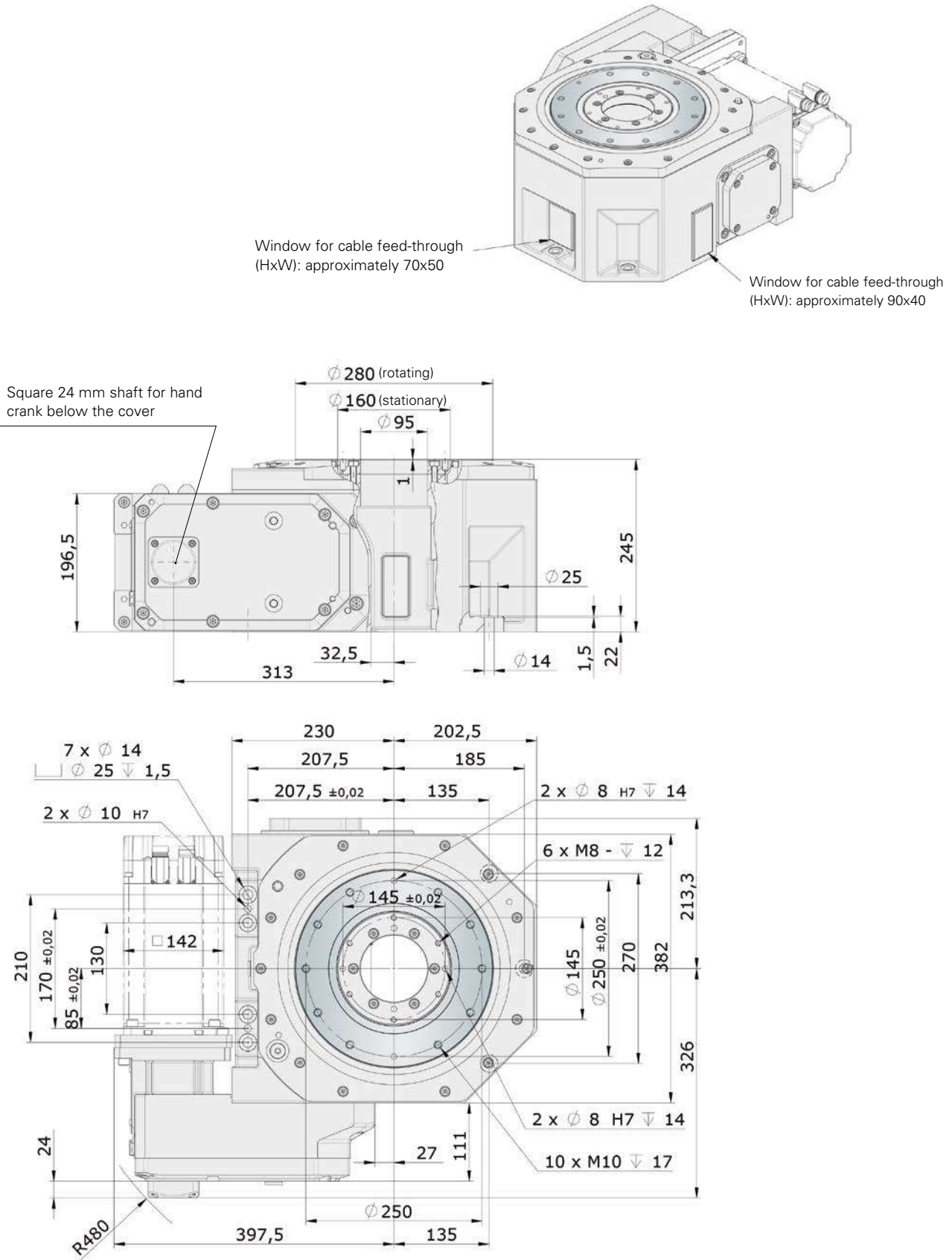
## LOAD DATA (for the output flange)

$M_{2\text{T dyn}}$	Permitted dynamic tilting moment:	3000 Nm
$F_{2\text{A dyn}}$	Permitted dynamic axial force:	20000 N
$F_{2\text{R dyn}}$	Permitted dynamic radial force:	5500 N

## TIMING DIAGRAM (please contact us for other requests)



DIMENSIONS



It is possible to fit popular alternative motors from various manufacturers. The drive flange geometries are motor-dependent. A taller central section is available on request.



# CR 400E

## TECHNICAL DATA

$n_{1\text{Max}}$	Max. motor speed:	3000 1/min
$n_{2\text{Max}}$	Max. output speed:	13.5 1/min
$i_{\text{tot}}$	Overall gear ratio:	222.04
	Indexing precision:	100 arcsec ( $\pm 50''$ )
	Axial run-out of the drive flange:	30 arcsec ( $\pm 15''$ )
$A_r$	Concentricity of the output flange:	(at $\varnothing 400$ mm) 0.015 mm
$C_r$	Total weight, including motor:	0.015 mm
$m$	Gesamtgewicht inkl. Motor:	approximately 300 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the stationary central part)

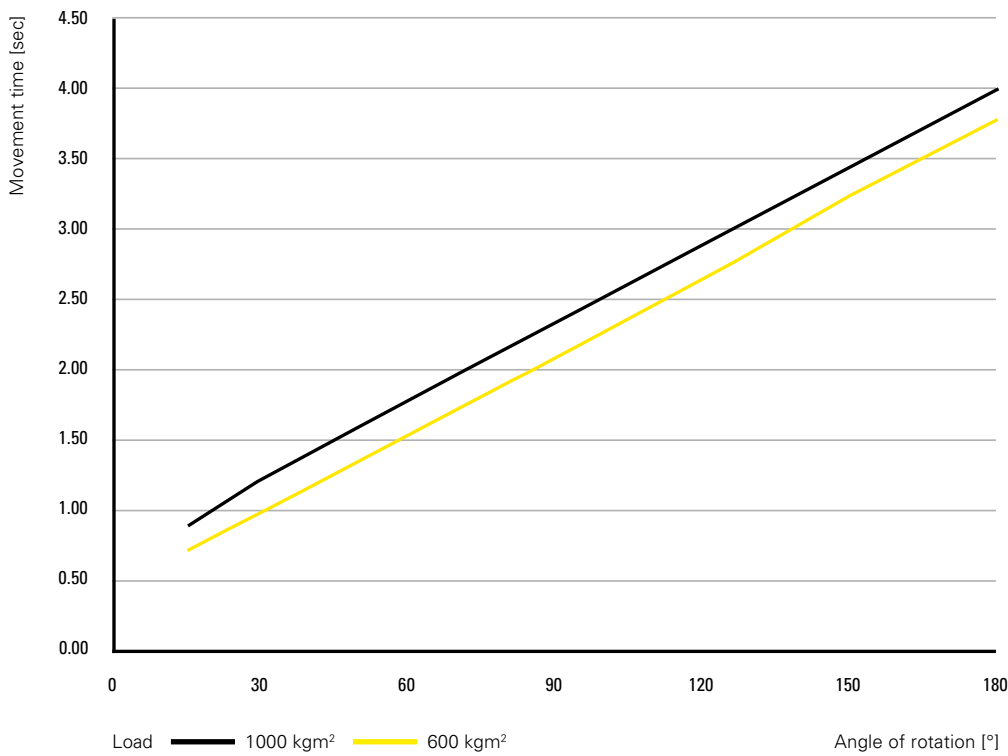
$T_{\text{SP}}$	Permitted torque:	300 Nm
$M_{\text{TSP}}$	Permitted tilting moment:	650 Nm
$F_{\text{ASP}}$	Permitted axial force:	10000 N
$F_{\text{RSP}}$	Permitted radial force:	6000 N

Combined loads and permitted process forces only after inspection by WEISS.

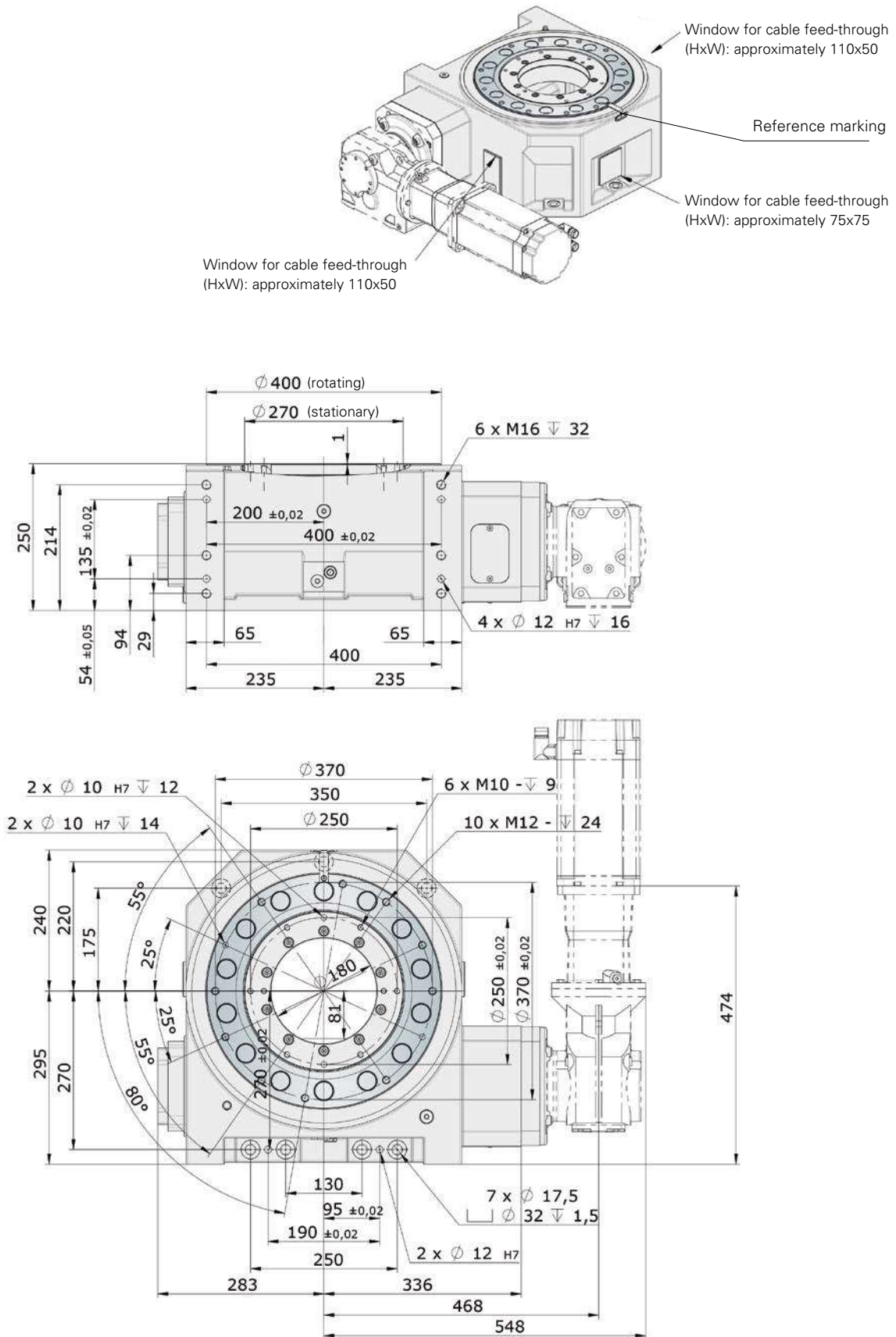
## LOAD DATA (for the output flange)

$M_{2\text{T dyn}}$	Permitted dynamic tilting moment:	3000 Nm
$F_{2\text{A dyn}}$	Permitted dynamic axial force:	30000 N
$F_{2\text{R dyn}}$	Permitted dynamic radial force:	8000 N

## TIMING DIAGRAM (please contact us for other requests)



DIMENSIONS



The shown position of the dial plate corresponds to the home position (state of delivery).

It is possible to fit popular alternative motors from various manufacturers. The drive flange geometries are motor-dependent.

A taller central section is available on request.

# CR 500E

## TECHNICAL DATA

$n_{1\text{Max}}$	Max. motor speed:	2000 1/min
$n_{2\text{Max}}$	Max. output speed:	13 1/min
$i_{\text{tot}}$	Overall gear ratio:	163.69
	Indexing precision:	50 arcsec ( $\pm 25''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 445$ mm) 0.015 mm
$C_r$	Concentricity of the output flange:	0.015 mm
$m$	Total weight, including motor:	approximately 420 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the stationary central part)

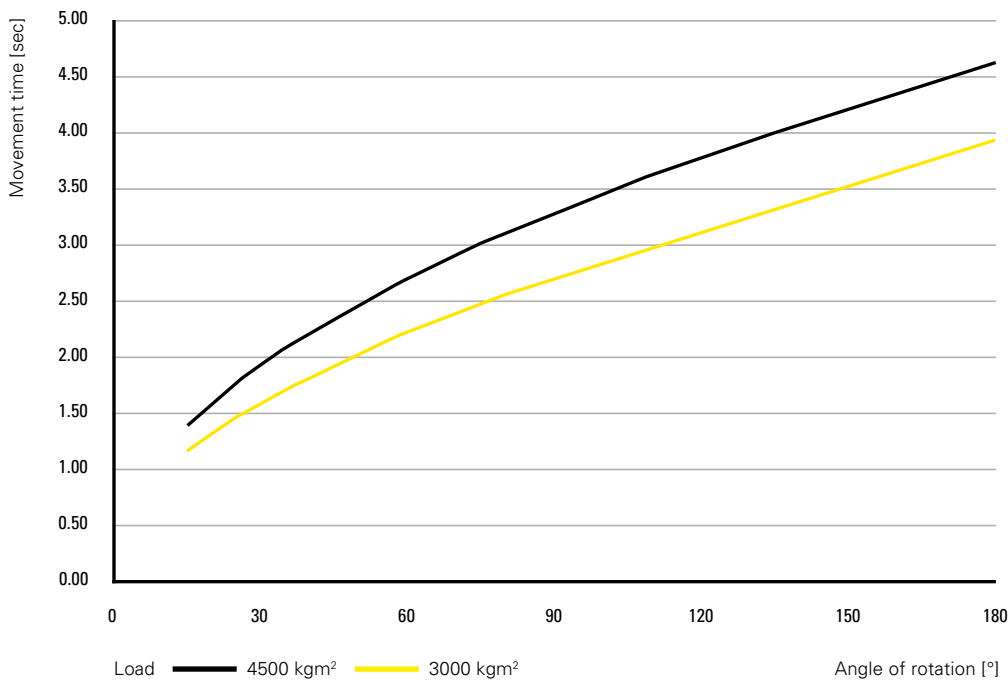
$T_{\text{SP}}$	Permitted torque:	500 Nm
$M_{\text{TSP}}$	Permitted tilting moment:	1500 Nm
$F_{\text{ASP}}$	Permitted axial force:	18000 N
$F_{\text{RSP}}$	Permitted radial force:	10000 N

Combined loads and permitted process forces only after inspection by WEISS.

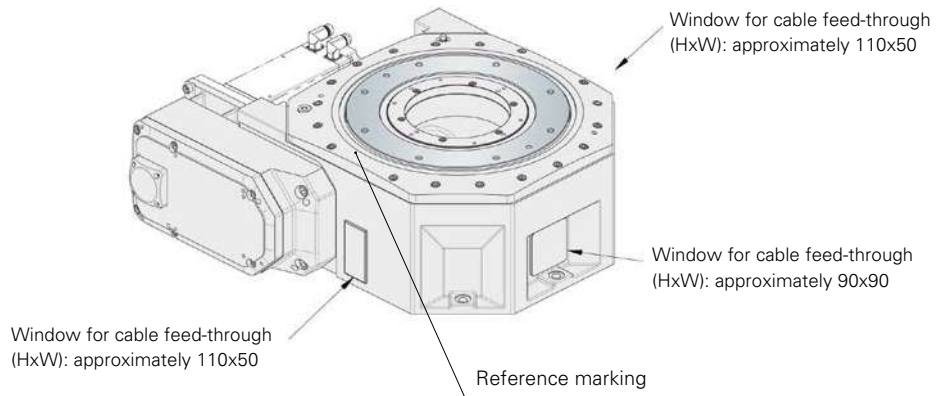
## LOAD DATA (for the output flange)

$M_{2T\text{dyn}}$	Permitted dynamic tilting moment:	3500 Nm
$F_{2A\text{dyn}}$	Permitted dynamic axial force:	40000 N
$F_{2R\text{dyn}}$	Permitted dynamic radial force:	15000 N

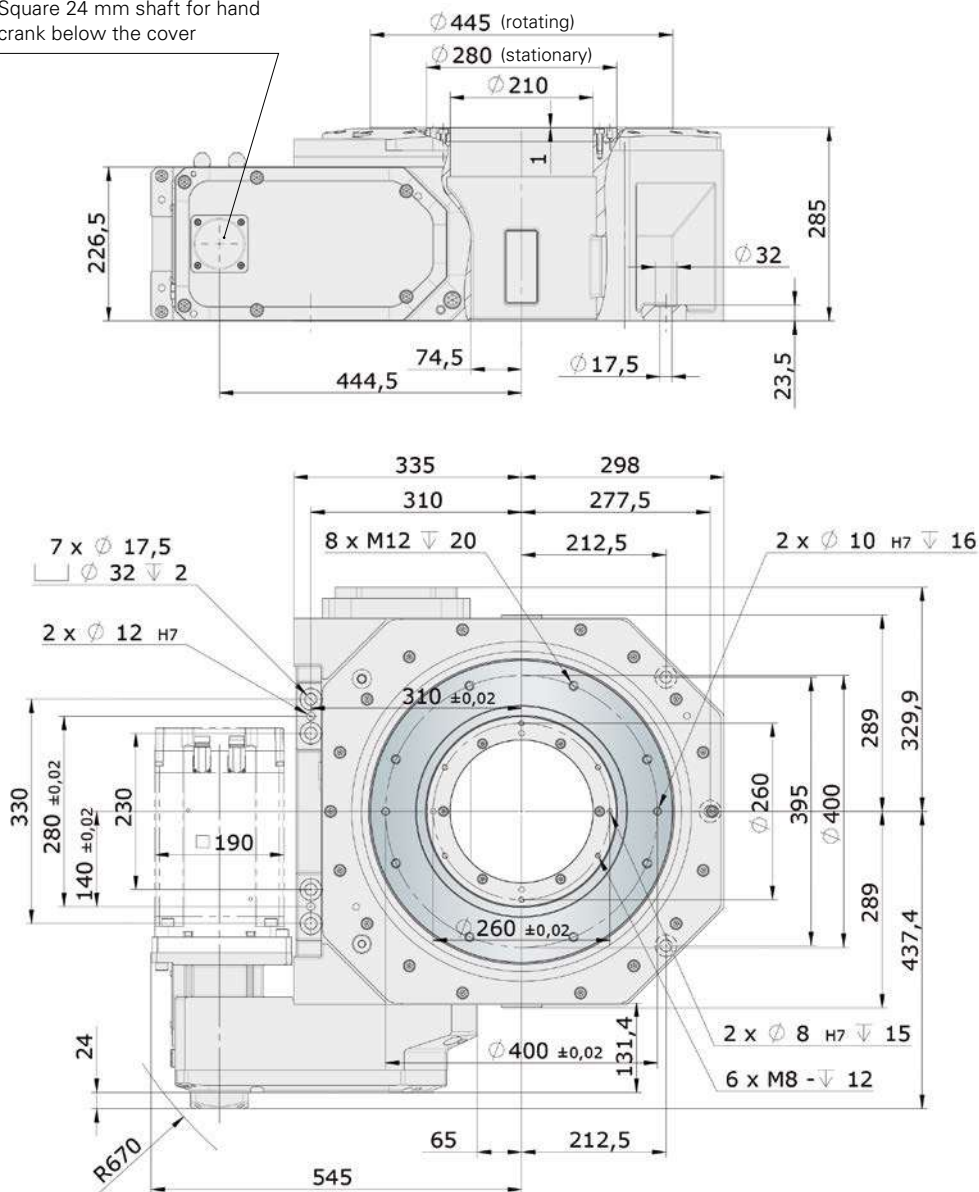
## TIMING DIAGRAM (please contact us for other requests)



DIMENSIONS



Square 24 mm shaft for hand crank below the cover



It is possible to fit popular alternative motors from various manufacturers. The drive flange geometries are motor-dependent. A taller central section is available on request.

# CR 700C

## TECHNICAL DATA

$n_{1 \text{ Max}}$	Max. motor speed:	2000 1/min
$n_{2 \text{ Max}}$	Max. output speed:	14 1/min
$i_{\text{tot}}$	Overall gear ratio:	144
	Indexing precision:	30 arcsec ( $\pm 15''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 700$ mm) 0.02 mm
$C_r$	Concentricity of the output flange:	0.02 mm
$m$	Total weight, including motor:	approximately 630 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the stationary central part)

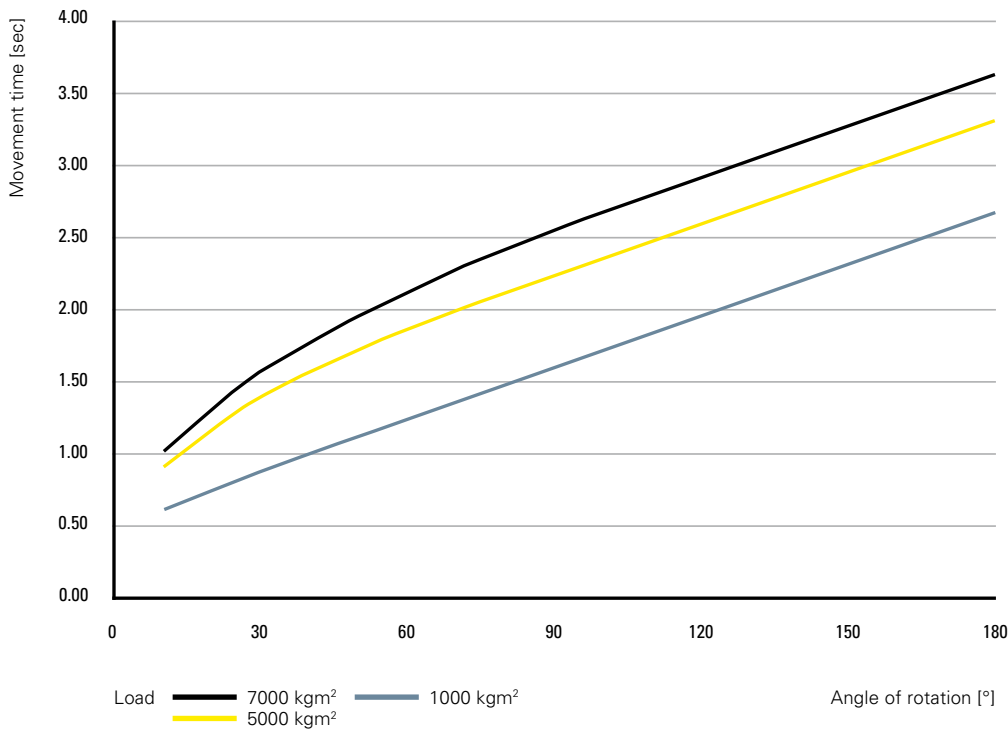
$T_{\text{SP}}$	Permitted torque:	1700 Nm
$M_{\text{T SP}}$	Permitted tilting moment:	3500 Nm
$F_{\text{A SP}}$	Permitted axial force:	35000 N
$F_{\text{R SP}}$	Permitted radial force:	19000 N

Combined loads and permitted process forces only after inspection by WEISS.

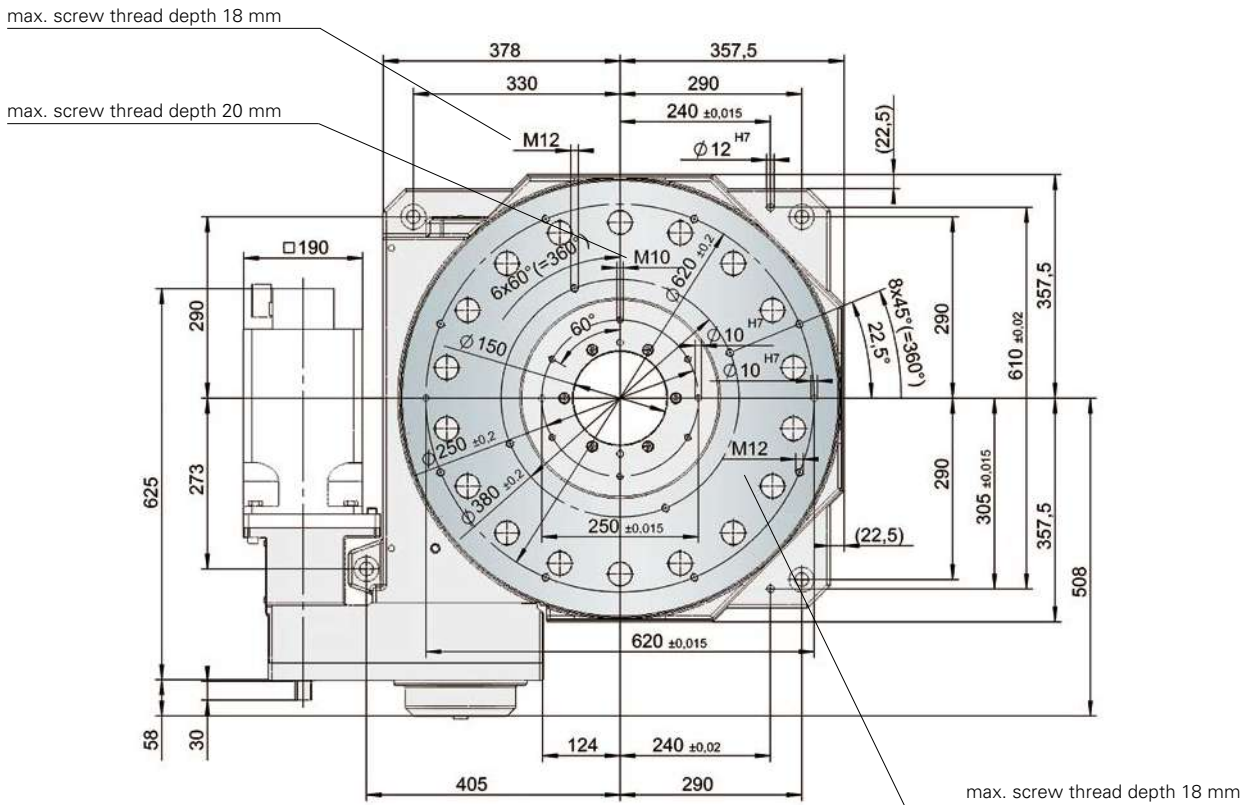
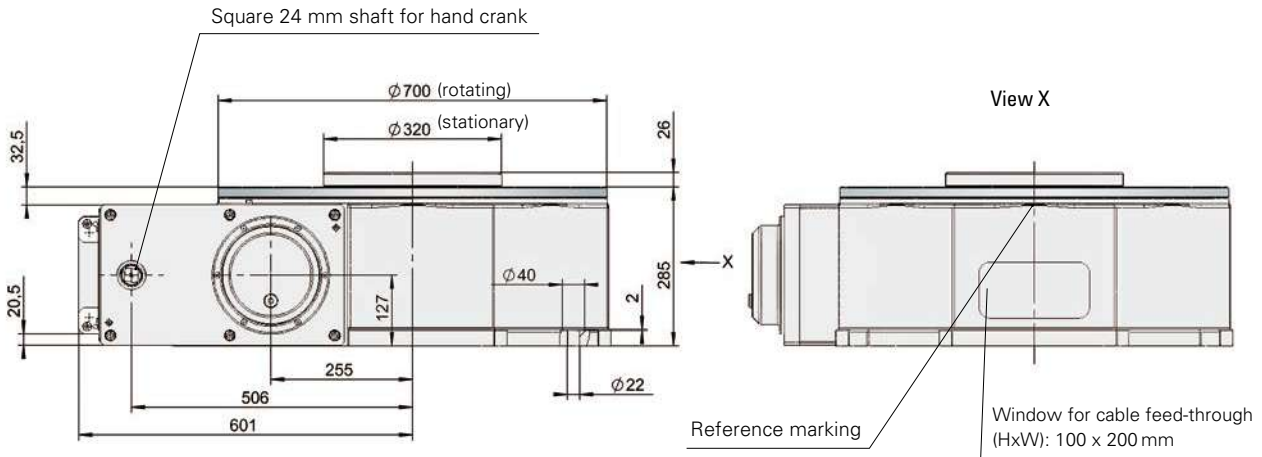
## LOAD DATA (for the output flange)

$M_{\text{2T dyn}}$	Permitted dynamic tilting moment:	10000 Nm
$F_{\text{2A dyn}}$	Permitted dynamic axial force:	70000 N
$F_{\text{2R dyn}}$	Permitted dynamic radial force:	30000 N

## TIMING DIAGRAM (please contact us for other requests)



DIMENSIONS



The shown position of the dial plate corresponds to the home position (state of delivery).  
It is possible to fit popular alternative motors from various manufacturers.

# CR 1000C

## TECHNICAL DATA

$n_{1\text{Max}}$	Max. motor speed:	2400 1/min
$n_{2\text{Max}}$	Max. output speed:	12 1/min
$i_{\text{tot}}$	Overall gear ratio:	200
	Indexing precision:	30 arcsec ( $\pm 15''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 1000$ mm) 0.03 mm
$C_r$	Concentricity of the output flange:	0.03 mm
$m$	Total weight, including motor:	approximately 1450 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the stationary central part)

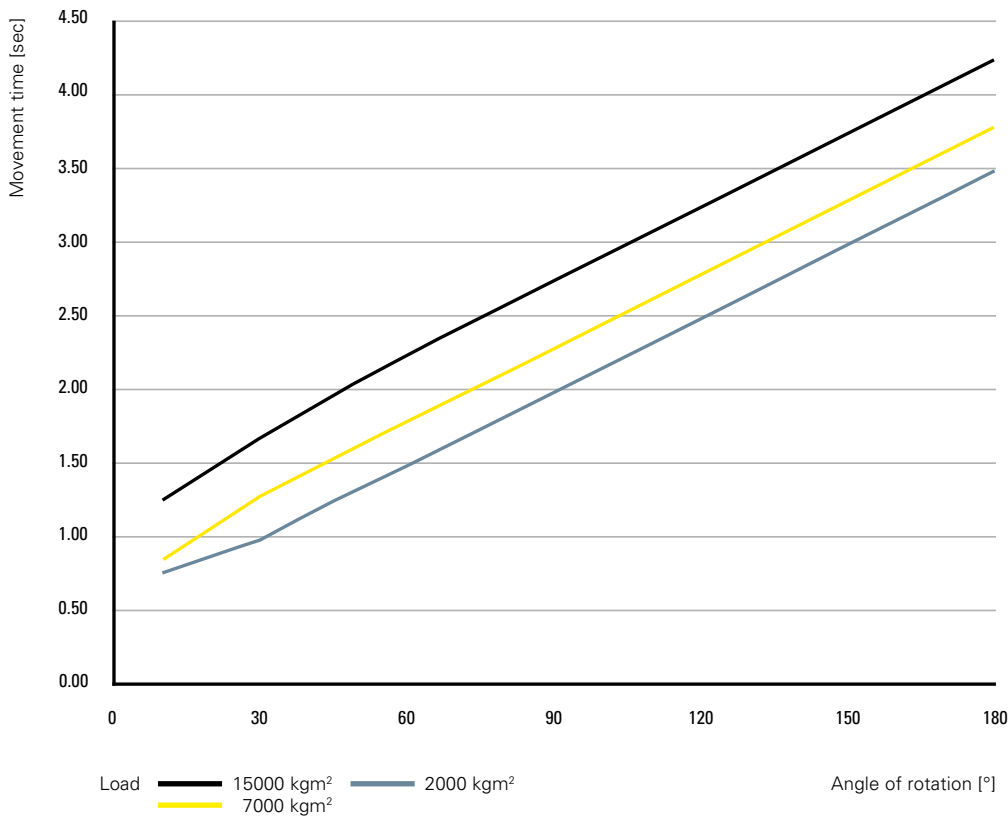
$T_{\text{SP}}$	Permitted torque:	2000 Nm
$M_{\text{TSP}}$	Permitted tilting moment:	6000 Nm
$F_{\text{ASP}}$	Permitted axial force:	45000 N
$F_{\text{RSP}}$	Permitted radial force:	19000 N

Combined loads and permitted process forces only after inspection by WEISS.

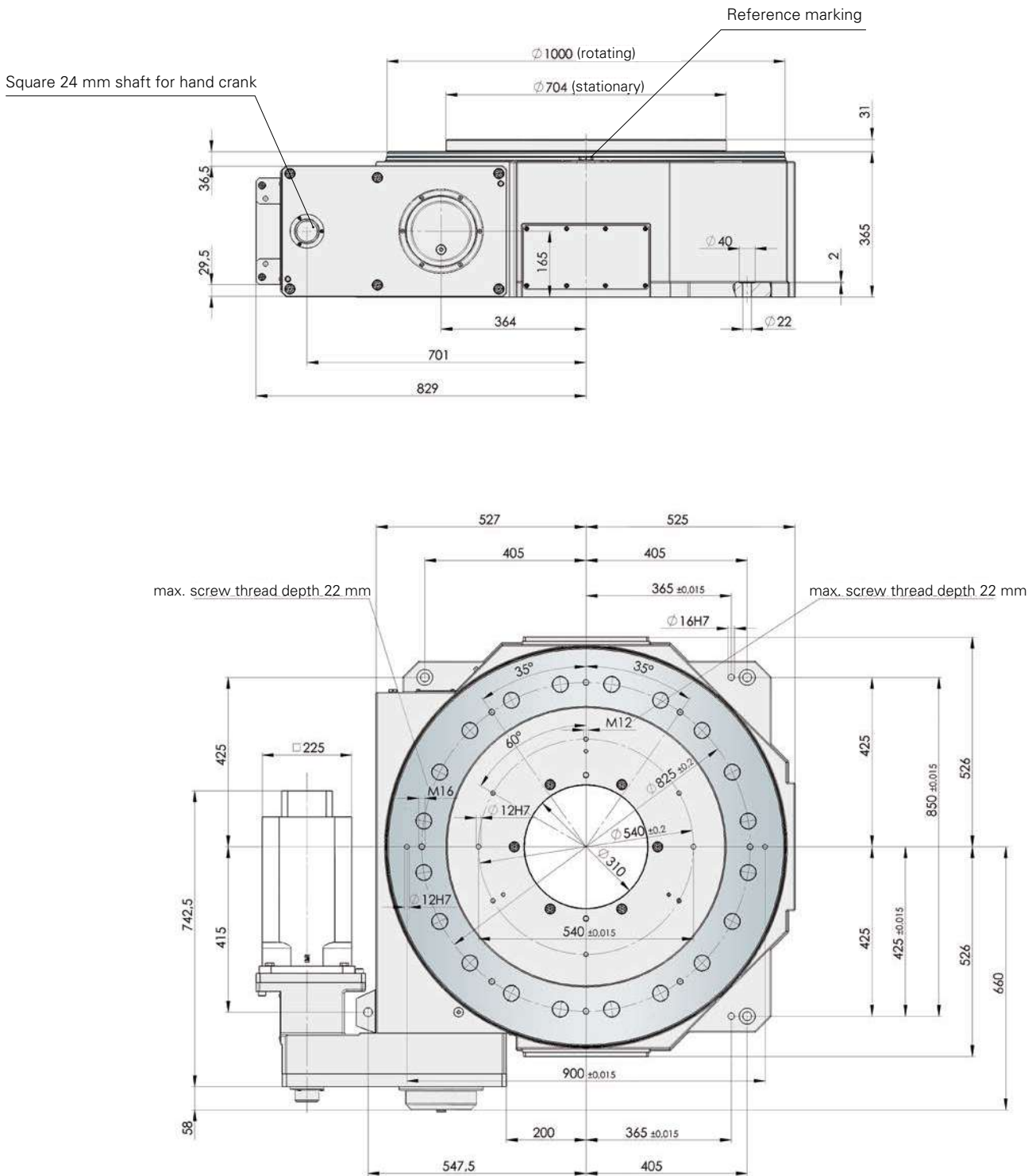
## LOAD DATA (for the output flange)

$M_{2T\text{ dyn}}$	Permitted dynamic tilting moment:	25000 Nm
$F_{2A\text{ dyn}}$	Permitted dynamic axial force:	120000 N
$F_{2R\text{ dyn}}$	Permitted dynamic radial force:	100000 N

## TIMING DIAGRAM (please contact us for other requests)



DIMENSIONS



The shown position of the dial plate corresponds to the home position (state of delivery).  
 The motor dimensions refer to the model 8LSA84.E1022D200-0 by B&R.  
 It is possible to fit alternative motors from various manufacturers.



# CR 1300C

## TECHNICAL DATA

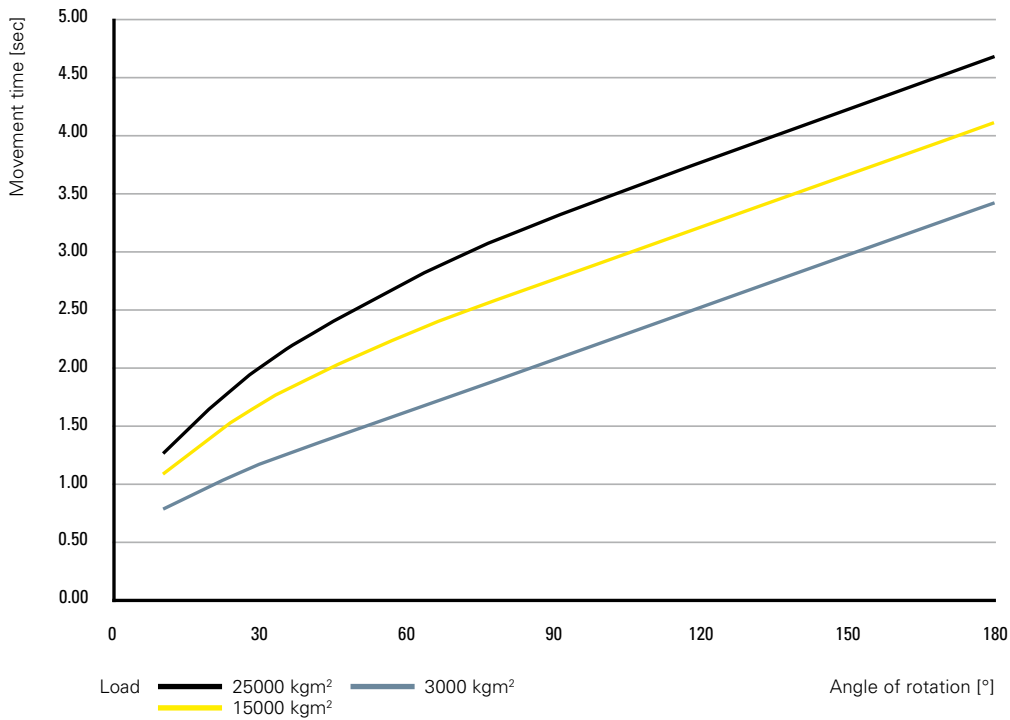
$n_{1 \text{ Max}}$	Max. motor speed:	2000 1/min
$n_{2 \text{ Max}}$	Max. output speed:	11 1/min
$i_{\text{tot}}$	Overall gear ratio:	180
	Indexing precision:	24 arcsec ( $\pm 12''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing$ 1248 mm) 0.03 mm
$C_r$	Concentricity of the output flange:	0.03 mm
$m$	Total weight, including motor:	approximately 2000 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

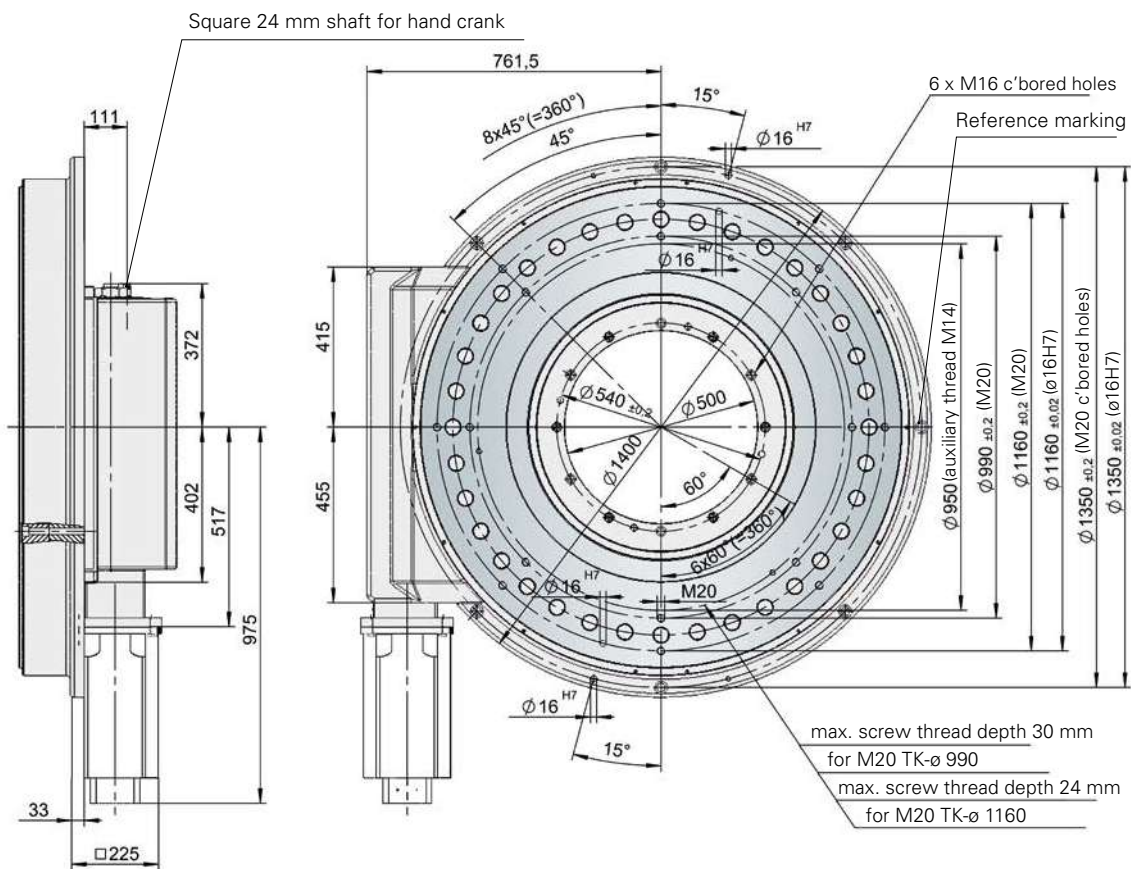
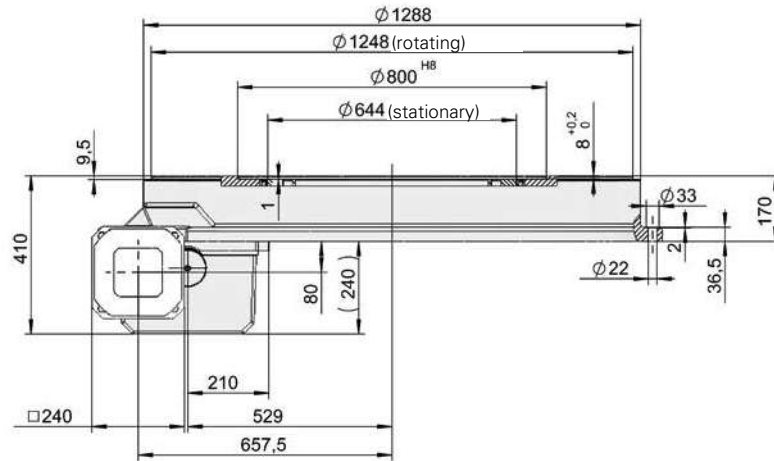
## LOAD DATA (for the output flange)

$M_{2T \text{ dyn}}$	Permitted dynamic tilting moment:	35000 Nm
$F_{2A \text{ dyn}}$	Permitted dynamic axial force:	150000 N
$F_{2R \text{ dyn}}$	Permitted dynamic radial force:	100000 N

## TIMING DIAGRAM (please contact us for other requests)



DIMENSIONS



The shown position of the dial plate corresponds to the home position (state of delivery).

The motor dimensions refer to the model 8LSA84.E1022D200-0 by B&R. It is possible to fit alternative motors from various manufacturers. An additional reduction gear may be required with several motors.

# CR 2000C

## TECHNICAL DATA

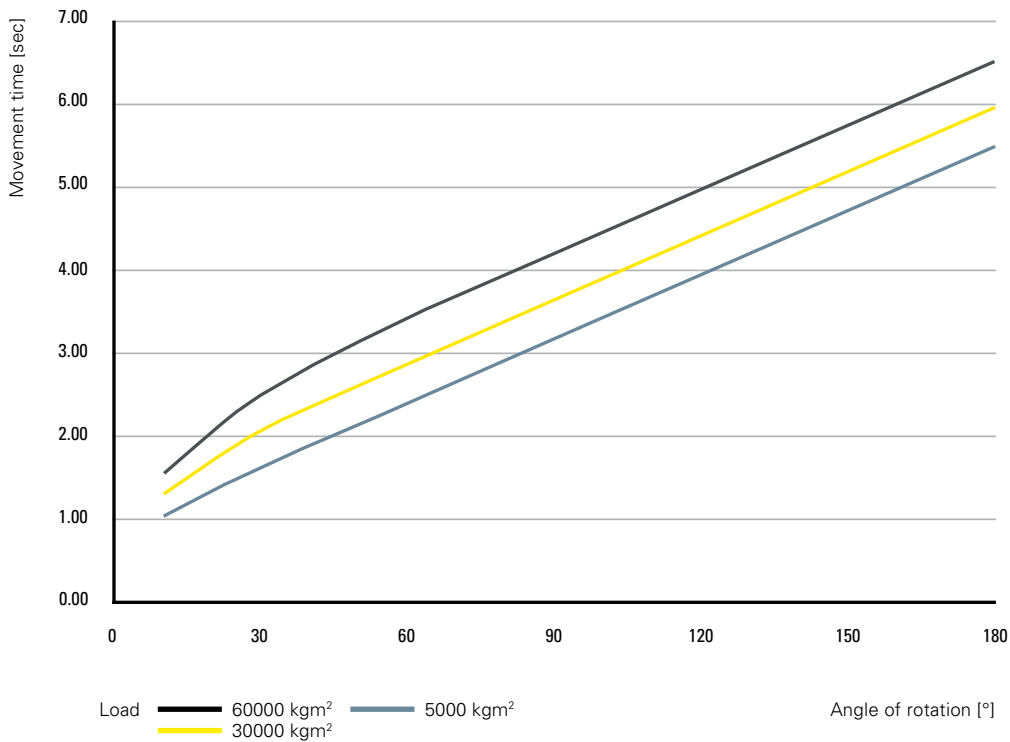
<b>n<sub>1 Max</sub></b>	Max. motor speed:	2000 1/min
<b>n<sub>2 Max</sub></b>	Max. output speed:	6.5 1/min
<b>i<sub>tot</sub></b>	Overall gear ratio:	310
	Indexing precision:	20 arcsec ( $\pm 10''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing 1874$ mm) 0.03 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.03 mm
<b>m</b>	Total weight, including motor:	approximately 3600 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the output flange)

<b>M<sub>2T dyn</sub></b>	Permitted dynamic tilting moment:	55000 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	250000 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	125000 N

## TIMING DIAGRAM (please contact us for other requests)





# TH 700F

## TECHNICAL DATA

$n_{1\text{Max}}$	Max. motor speed:	2000 1/min
$n_{2\text{Max}}$	Max. output speed:	14 1/min
$i_{\text{tot}}$	Overall gear ratio:	144
	Indexing precision:	30 arcsec ( $\pm 15''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 700$ mm) 0.02 mm
$C_r$	Concentricity of the output flange:	0.02 mm
$m$	Total weight, including motor:	approximately 630 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the stationary central part)

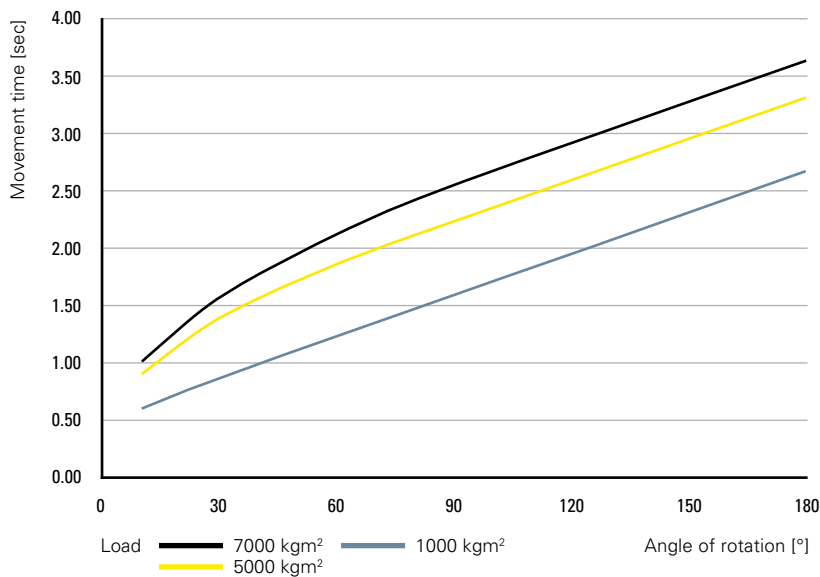
$T_{\text{SP}}$	Permitted torque:	1700 Nm
$M_{\text{TSP}}$	Permitted tilting moment:	3500 Nm
$F_{\text{ASP}}$	Permitted axial force:	35000 N
$F_{\text{RSP}}$	Permitted radial force:	19000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

$M_{2T\text{ dyn}}$	Permitted dynamic tilting moment:	10000 Nm
$F_{2A\text{ dyn}}$	Permitted dynamic axial force:	70000 N
$F_{2R\text{ dyn}}$	Permitted dynamic radial force:	30000 N

## TIMING DIAGRAM (please contact us for other requests)





# TH 1000F

## TECHNICAL DATA

$n_{1 \text{ Max}}$	Max. motor speed:	2400 1/min
$n_{2 \text{ Max}}$	Max. output speed:	12 1/min
$i_{\text{tot}}$	Overall gear ratio:	200
	Indexing precision:	30 arcsec ( $\pm 15''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing$ 1000 mm) 0.03 mm
$C_r$	Concentricity of the output flange:	0.03 mm
$m$	Total weight, including motor:	approximately 1500 kg

The values stated for axial run-out and concentricity can only be achieved with precise mounting surfaces.

## LOAD DATA (for the stationary central part)

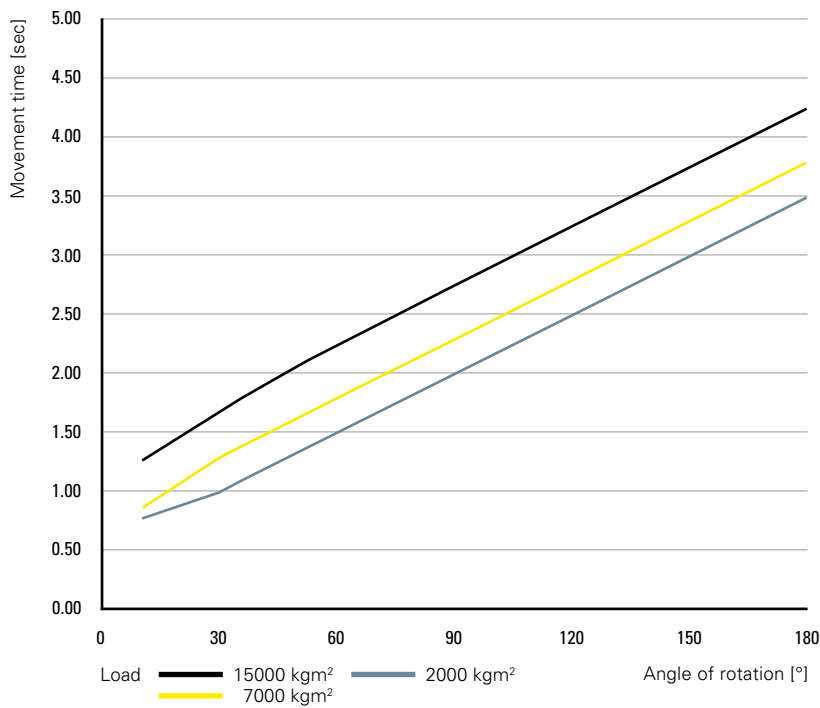
$T_{\text{SP}}$	Permitted torque:	2000 Nm
$M_{\text{T SP}}$	Permitted tilting moment:	6000 Nm
$F_{\text{A SP}}$	Permitted axial force:	45000 N
$F_{\text{R SP}}$	Permitted radial force:	19000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

$M_{2T \text{ dyn}}$	Permitted dynamic tilting moment:	25000 Nm
$F_{2A \text{ dyn}}$	Permitted dynamic axial force:	120000 N
$F_{2R \text{ dyn}}$	Permitted dynamic radial force:	100000 N

## TIMING DIAGRAM (please contact us for other requests)







# TO

FREELY PROGRAMMABLE ROTARY TABLES | TO TORQUE ROTARY TABLE



Precise and fast mechanical integration through pin holes, secure electrical commissioning through perfectly matched control packages.

## TO TORQUE ROTARY TABLE: DYNAMIC, FLEXIBLE, PRECISE

### MATCHED BASE FRAMES AND PLATES

Simple integration into existing equipment. Highly dynamic, high-precision and ready-for-installation rotary table solution with unbeatable price-performance.

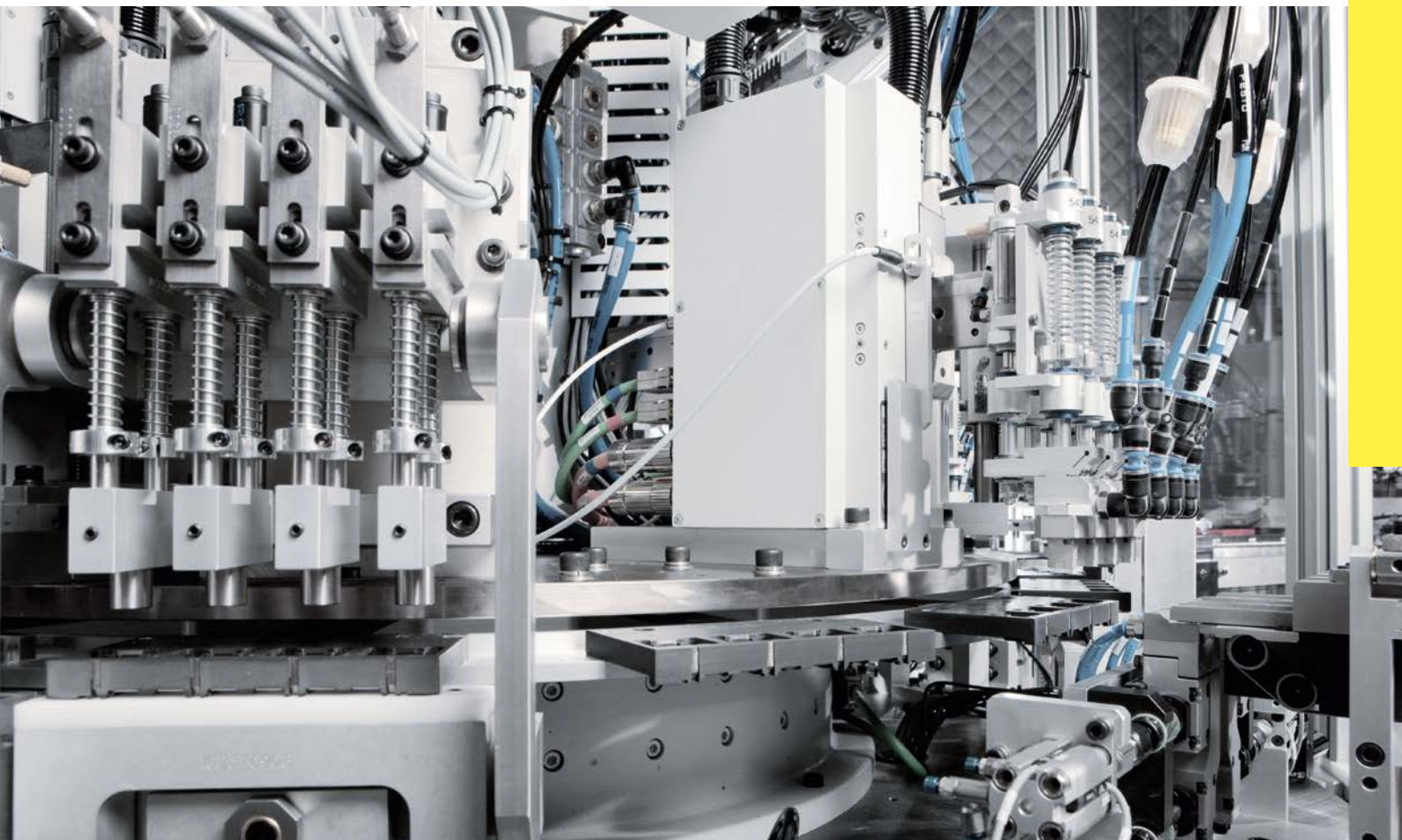


### THE CLEANLINE. FOR CLEANROOM APPLICATIONS.

Comparable to air purity class 1 as per US Standard 209E.



The custom machine from INNOVATIVE Products & Equipment assembles and tests plastic parts for irrigation systems. The heart of the installation, a TO 750, beats at 75 cycles per minute. The four-track design allows production of 300 components per minute. The HP140 Pick&Place units perform component handling.



Direct drive rotary table with impressive dynamics and extremely high degree of repeat accuracy. User-programmable and also suitable for use in clean rooms. The direct drive rotary table allows the shortest indexing times at the highest precision.

---

## ADVANTAGES

- Extremely dynamic
- Extremely high repeat accuracy
- Absolute measuring system
- High degree of reliability, long service life
- Zero backlash
- No wearing parts
- Direct, rigid connection of the load to the drive
- Compact design, small footprint, high level of torque

---

## GENERAL INFORMATION

- Direction of rotation: user-programmable
- All motors are equipped with overtemperature protection (PTC)
- Possible installation location: any (Please consult WEISS for overhead mounting positions)
- The TO rotary tables are “lubricated for life”
- For a surcharge, a positioning accuracy measurement report can also be drawn up and a compensation table incorporated for error compensation in a further step. However, this requires a mechanical zero point alignment.

# TO 150C

## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 750 mm

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V
<b>n<sub>2 Max</sub></b>	Max. output speed (230 V):	60 1/min
<b>n<sub>2 Max</sub></b>	Max. output speed (400 V):	200 1/min
<b>T<sub>2N</sub></b>	Nominal torque:	15 Nm
<b>T<sub>2P</sub></b>	Peak torque:	45 Nm
<b>I<sub>p</sub></b>	Peak current:	6.23 A
	Indexing precision:	50 arcsec (± 25") 30 arcsec (± 15") (optional)
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at Ø 150 mm) 0.02 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.02 mm
<b>m</b>	Weight:	16 kg

## LOAD DATA (for the output flange)

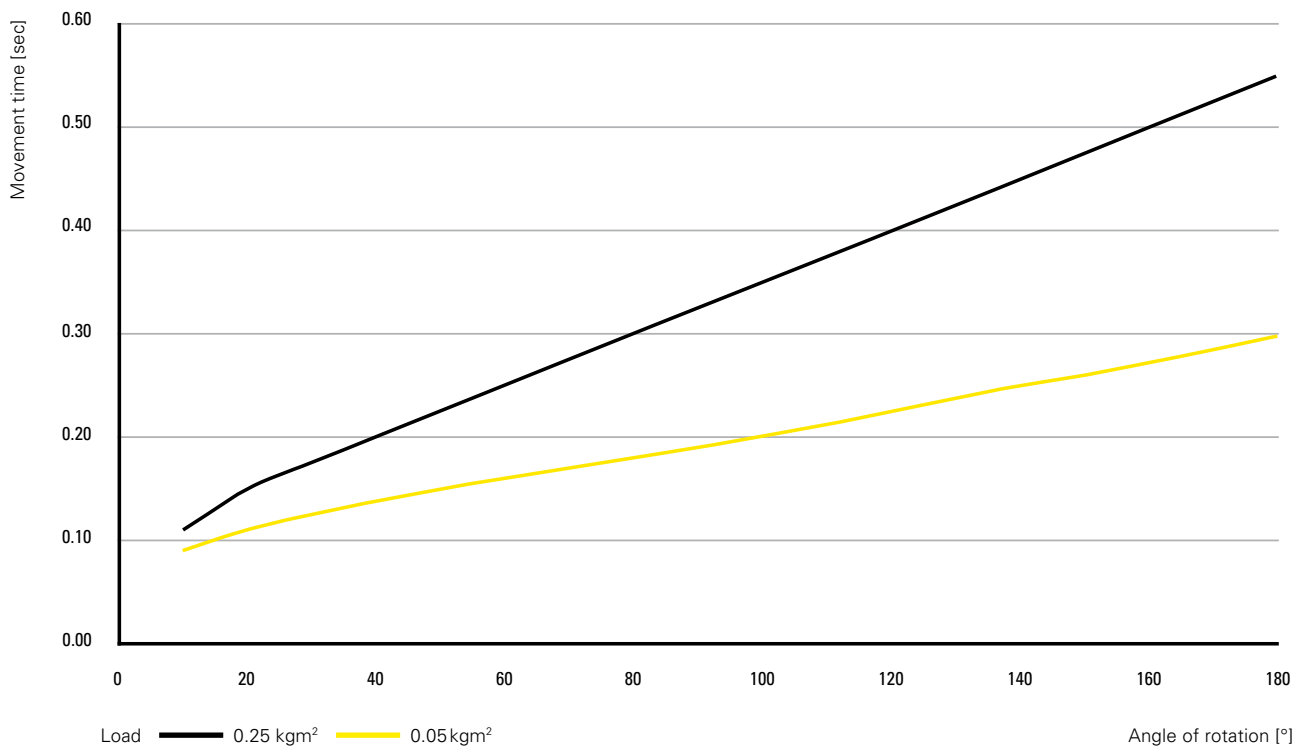
<b>M<sub>2T stat</sub></b>	Permitted static tilting moment:	600 Nm
<b>F<sub>2A stat</sub></b>	Permitted static axial force:	6000 N
<b>F<sub>2R stat</sub></b>	Permitted static radial force:	10000 N

Combined loads and permitted process forces only after inspection by WEISS.

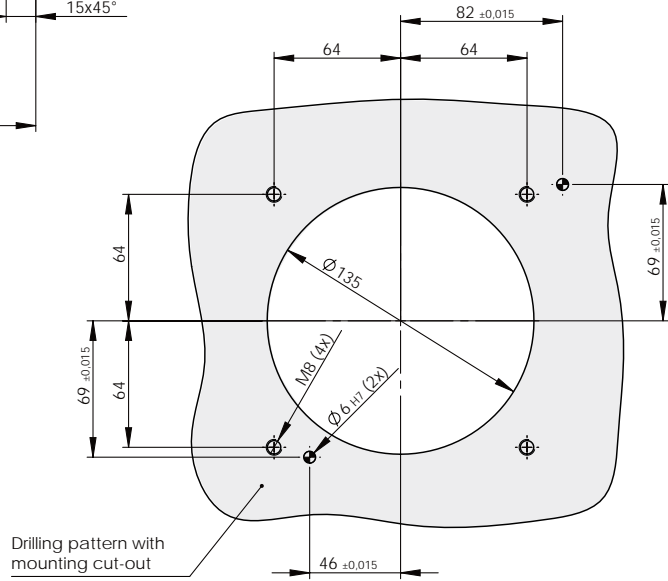
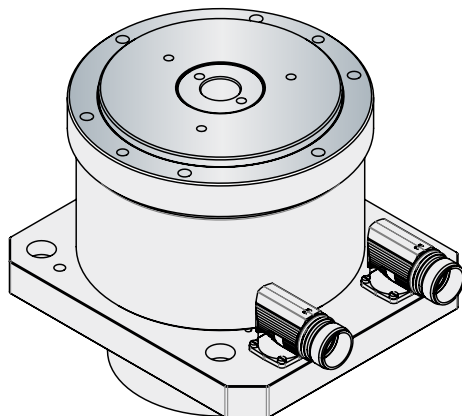
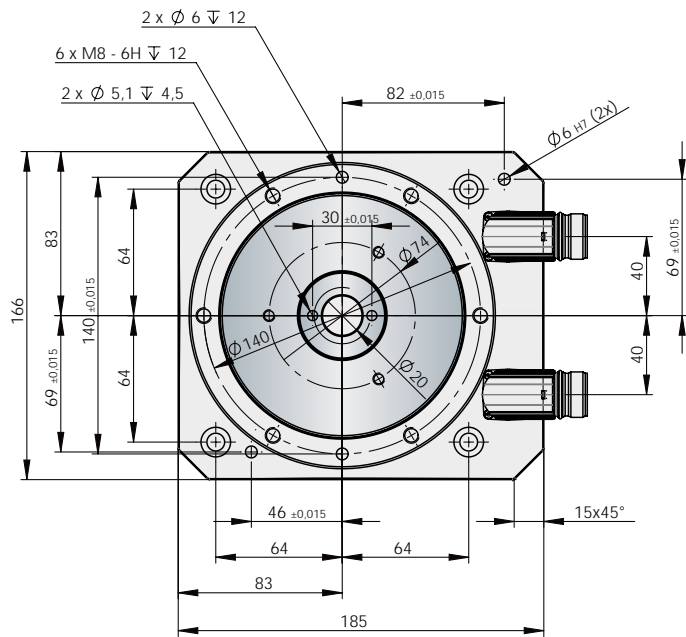
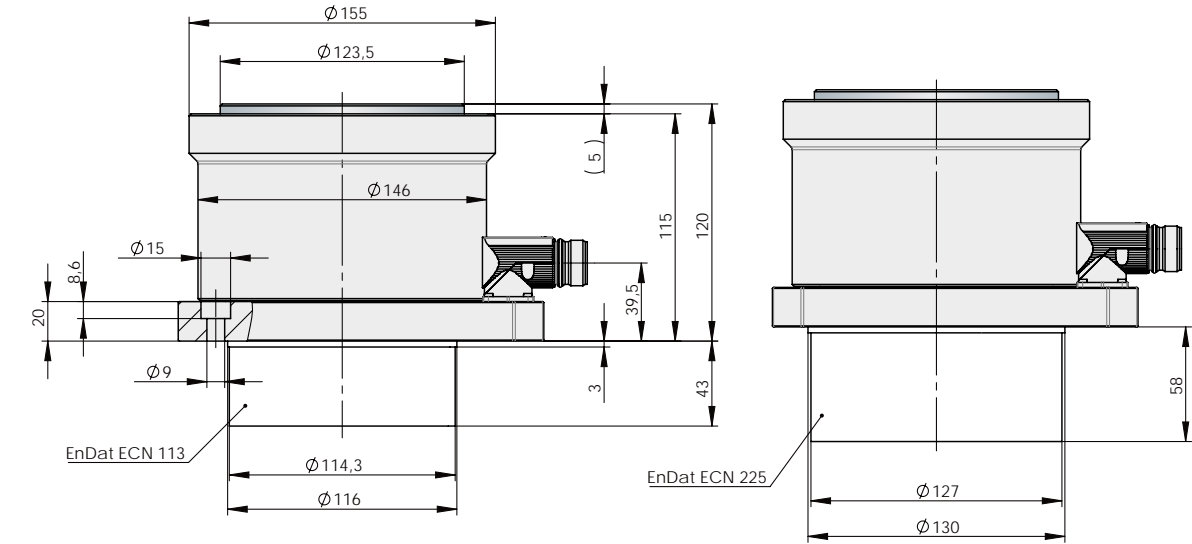
## ENCODER

Heidenhain ECN113 (absolute)	EnDat 2.1 (± 25")
Heidenhain ECN225 (absolute)	EnDat 2.1 (± 15")

## TIMING DIAGRAM



DIMENSIONS



# TO 220C-1

## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 1100 mm

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V
<b><math>n_{2Max}</math></b>	Max. output speed (230 V):	80 1/min
<b><math>n_{2Max}</math></b>	Max. output speed (400 V):	250 1/min
<b><math>T_{2N}</math></b>	Nominal torque:	54 Nm
<b><math>T_{2P}</math></b>	Peak torque:	130 Nm
<b><math>I_p</math></b>	Peak current:	9 A
	Indexing precision:	50 arcsec ( $\pm 25''$ ) 30 arcsec ( $\pm 15''$ ) (optional)
<b><math>A_r</math></b>	Axial run-out of the drive flange:	(at $\varnothing 220$ mm) 0.02 mm
<b><math>C_r</math></b>	Concentricity of the output flange:	0.02 mm
<b>m</b>	Weight:	32 kg

## LOAD DATA (for the output flange)

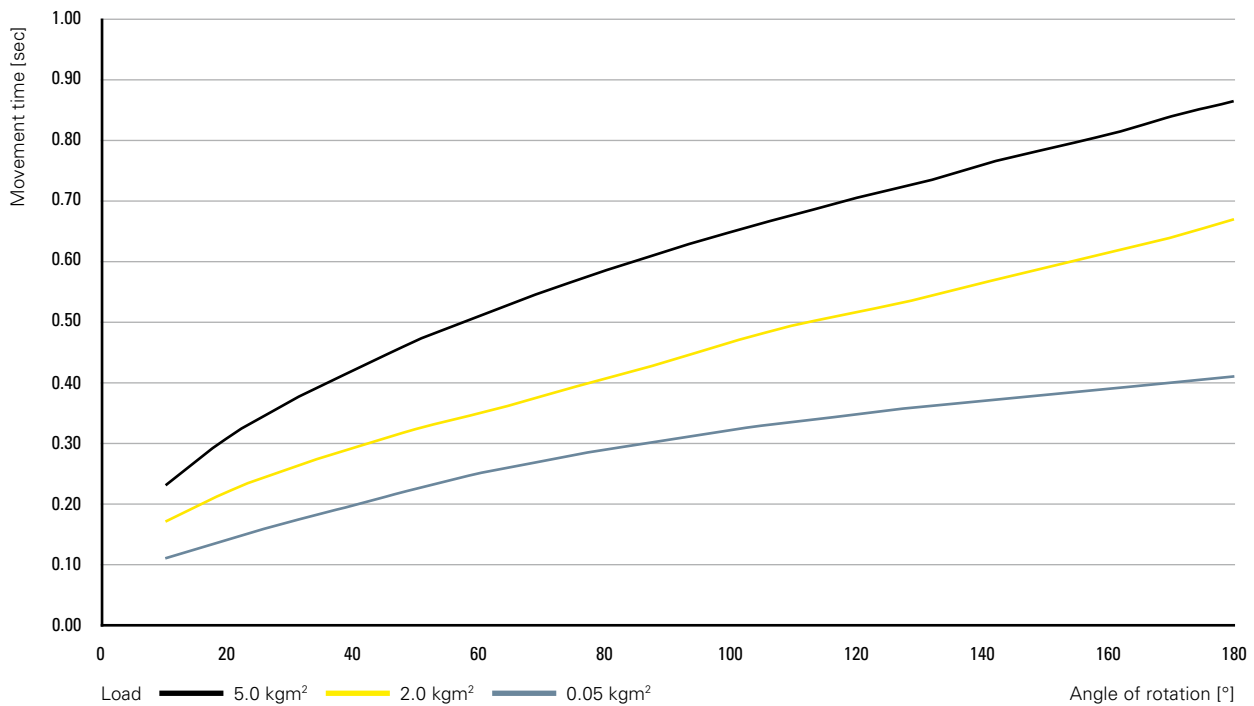
<b><math>M_{2T stat}</math></b>	Permitted static tilting moment:	1000 Nm
<b><math>F_{2A stat}</math></b>	Permitted static axial force:	10000 N
<b><math>F_{2R stat}</math></b>	Permitted static radial force:	15000 N

Combined loads and permitted process forces only after inspection by WEISS.

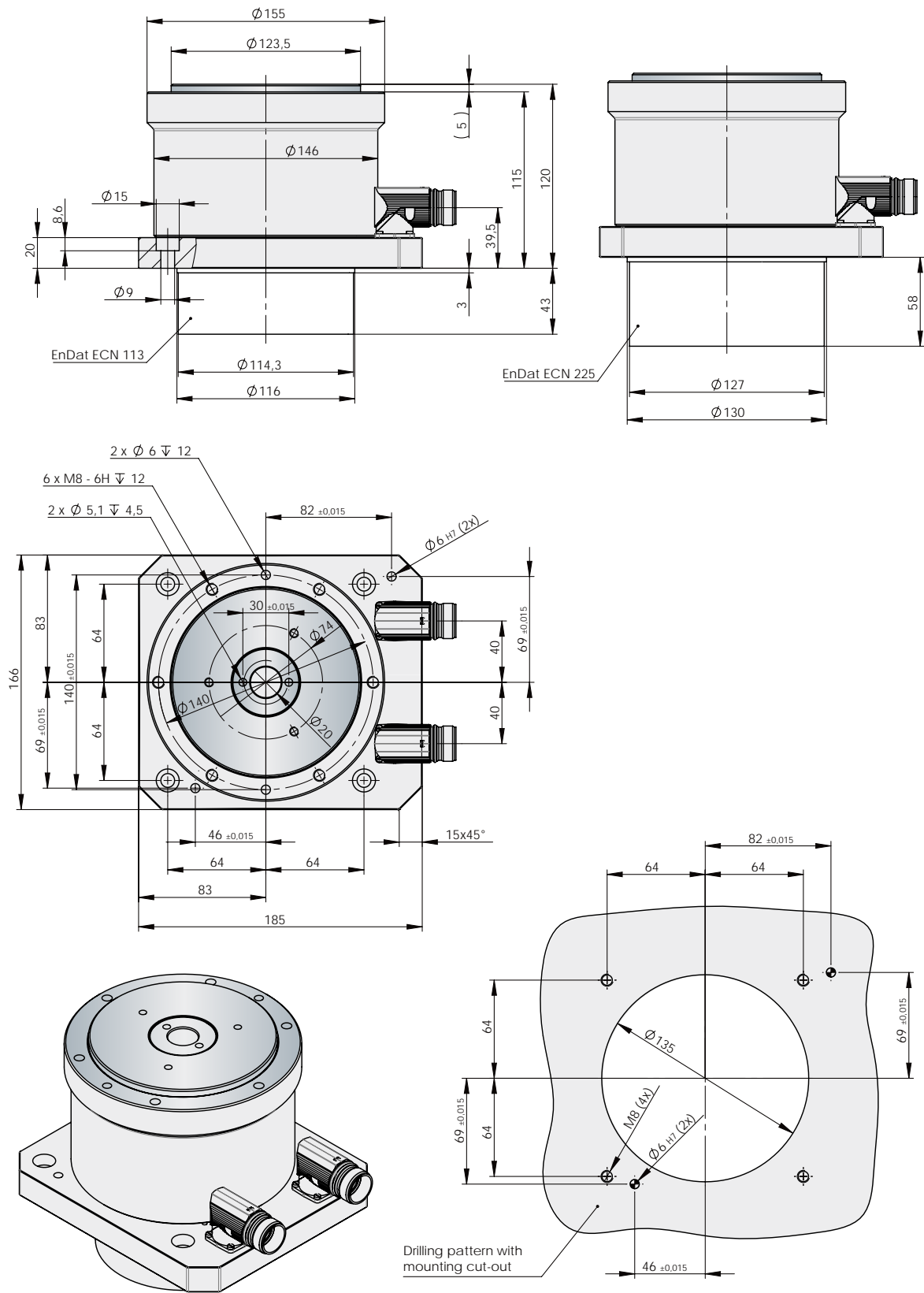
## ENCODER

Heidenhain ECN113 (absolute)	EnDat 2.1 ( $\pm 25''$ )
Heidenhain ECN225 (absolute)	EnDat 2.1 ( $\pm 15''$ )

## TIMING DIAGRAM



DIMENSIONS



# TO 220C-2

## GENERAL INFORMATION

- Maximum recommended equipment diameter  $D_{tp}$ : approximately 1100 mm
- The rotary table can also be water-cooled for even shorter cycle times and greater precision

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V
<b><math>n_{2Max}</math></b>	Max. output speed (400 V):	110 1/min
<b><math>T_{2N}</math></b>	Nominal torque without water cooling:	123 Nm
<b><math>T_{2N}</math></b>	Nominal torque with water cooling:	194 Nm
<b><math>T_{2P}</math></b>	Peak torque:	260 Nm
<b><math>I_p</math></b>	Peak current:	18 A
	Indexing precision:	30 arcsec ( $\pm 15''$ )
<b><math>A_r</math></b>	Axial run-out of the drive flange:	(at $\varnothing 220$ mm) 0.02 mm
<b><math>C_r</math></b>	Concentricity of the output flange:	0.02 mm
<b>m</b>	Weight:	42 kg

## LOAD DATA (for the stationary central part)

<b><math>T_{SP}</math></b>	Permitted torque:	200 Nm
<b><math>M_{TSP}</math></b>	Permitted tilting moment:	500 Nm
<b><math>F_{ASP}</math></b>	Permitted axial force:	5000 N
<b><math>F_{RSP}</math></b>	Permitted radial force:	5000 N

## LOAD DATA (for the output flange)

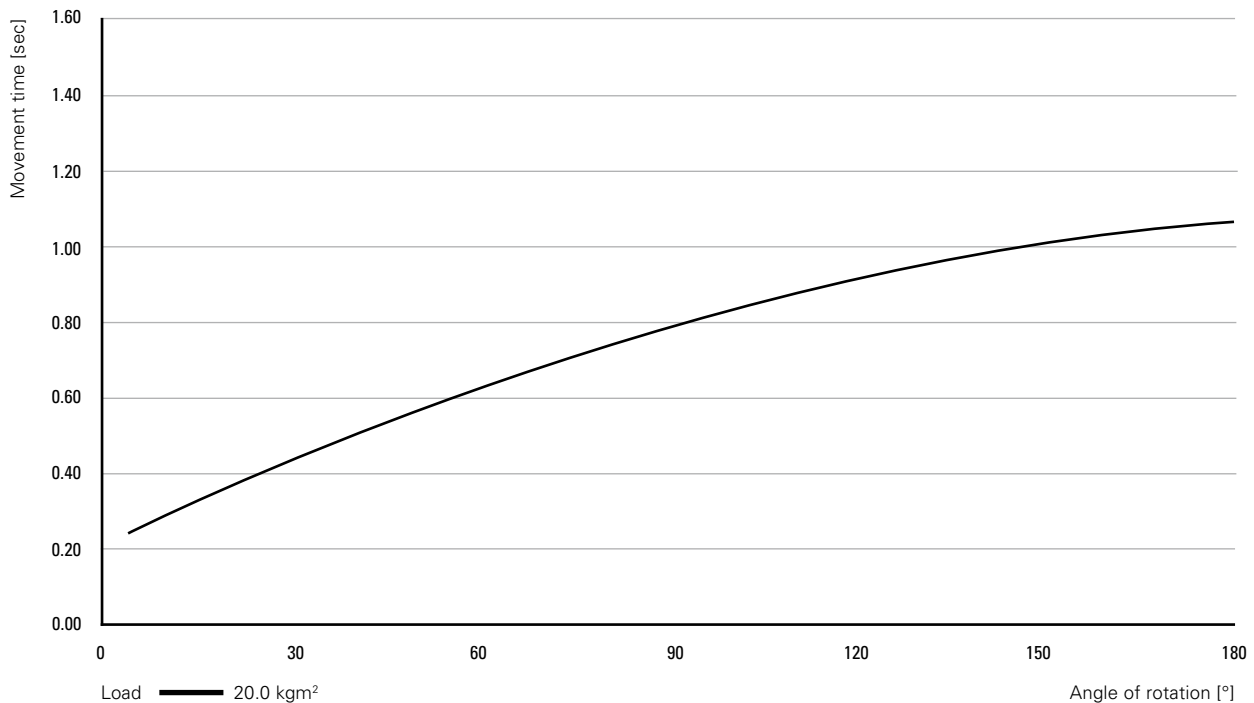
<b><math>M_{2Tstat}</math></b>	Permitted static tilting moment:	1000 Nm
<b><math>F_{2Astat}</math></b>	Permitted static axial force:	10000 N
<b><math>F_{2Rstat}</math></b>	Permitted static radial force:	15000 N

Combined loads and permitted process forces only after inspection by WEISS.

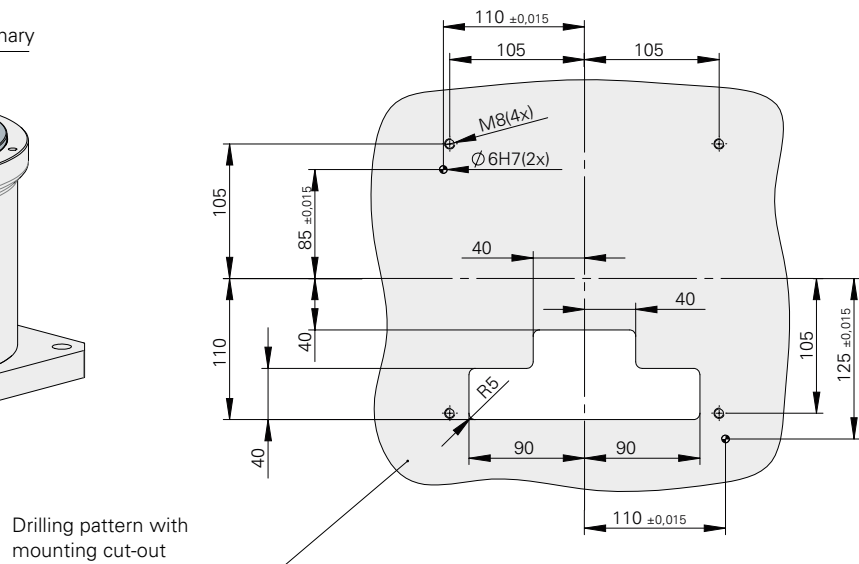
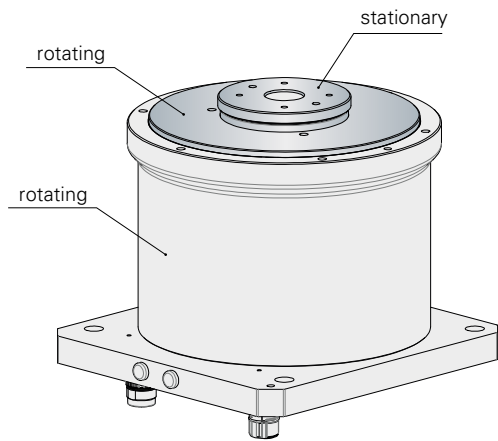
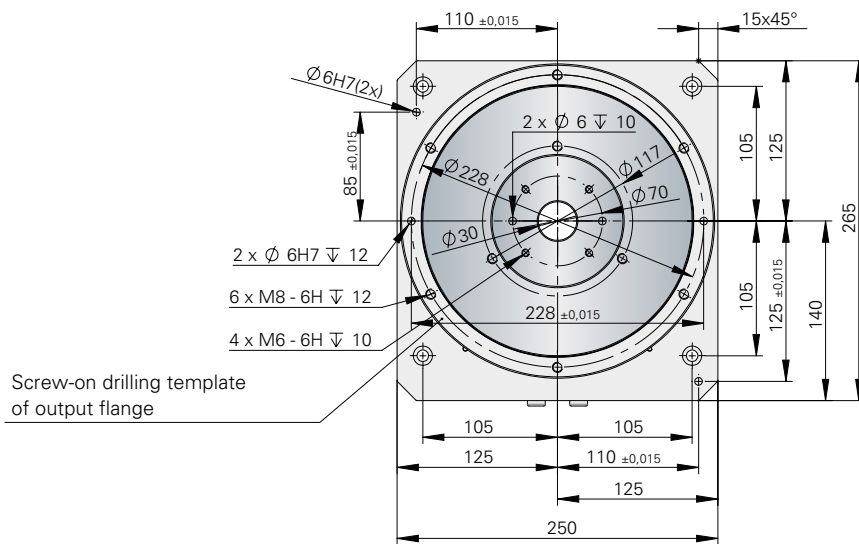
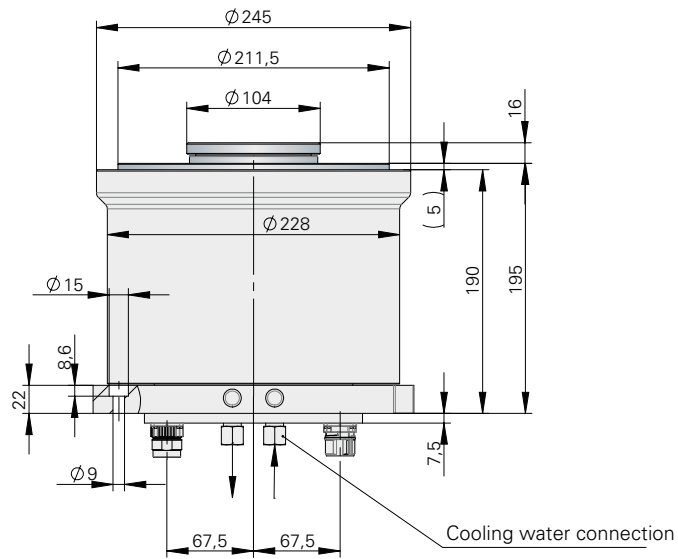
## ENCODER

Heidenhain ECN225 (absolute)	EnDat 2.1 ( $\pm 15''$ )
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## TIMING DIAGRAM



DIMENSIONS





# TO 400C

## GENERAL INFORMATION

- Maximum recommended equipment diameter  $D_{tp}$ : approximately 1400 mm
- The TO rotary table can optionally be supplied with a brake
- The rotary table can also be water-cooled for even shorter cycle times and greater precision

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V
<b>n<sub>2Max</sub></b>	Max. output speed (400 V):	100 1/min
<b>T<sub>2N</sub></b>	Nominal torque without water cooling:	525 Nm
<b>T<sub>2N</sub></b>	Nominal torque with water cooling:	1240 Nm
<b>T<sub>2P</sub></b>	Peak torque:	2120 Nm
<b>I<sub>p</sub></b>	Peak current:	175 A
	Indexing precision:	20 arcsec ( $\pm 10''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing$ 400 mm) 0.03 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.03 mm
<b>p<sub>a</sub></b>	Clamping element opening pressure (pressure monitoring recommended)	4 bar (optional)
<b>m</b>	Weight:	290 kg

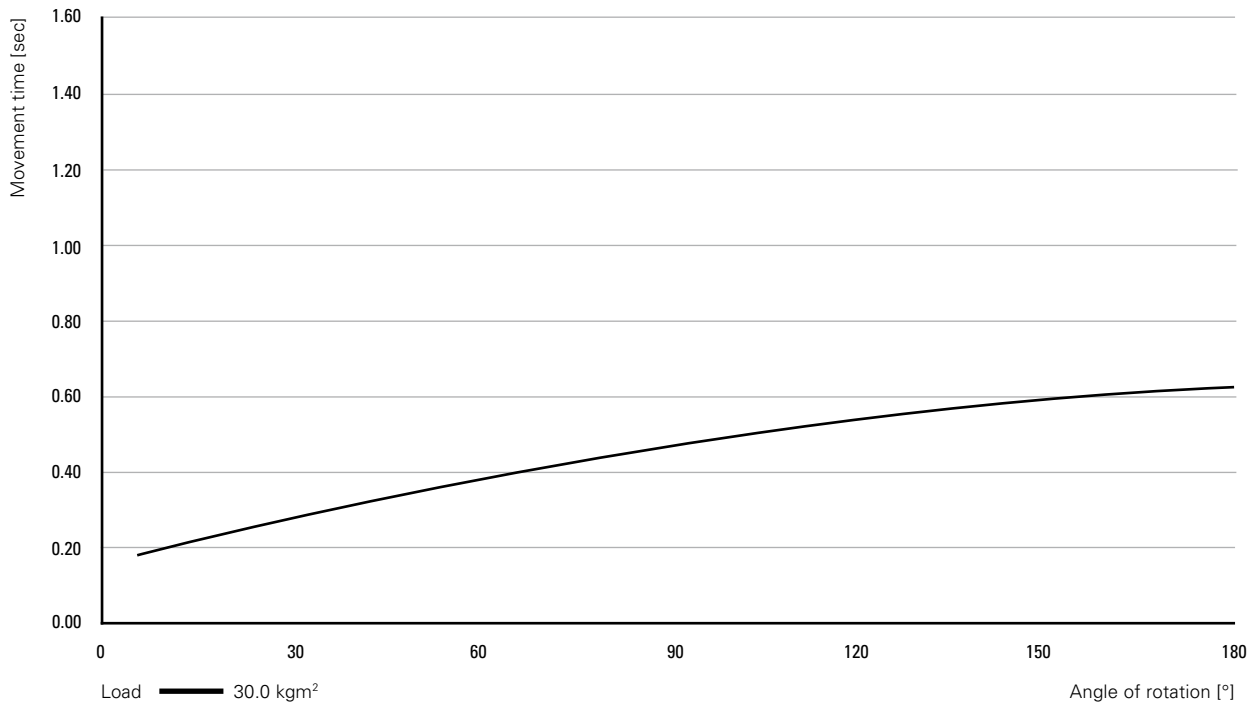
## LOAD DATA (for the output flange)

<b>M<sub>2T stat</sub></b>	Permitted static tilting moment:	8000 Nm
<b>F<sub>2A stat</sub></b>	Permitted static axial force:	40000 N
<b>F<sub>2R stat</sub></b>	Permitted static radial force:	50000 N

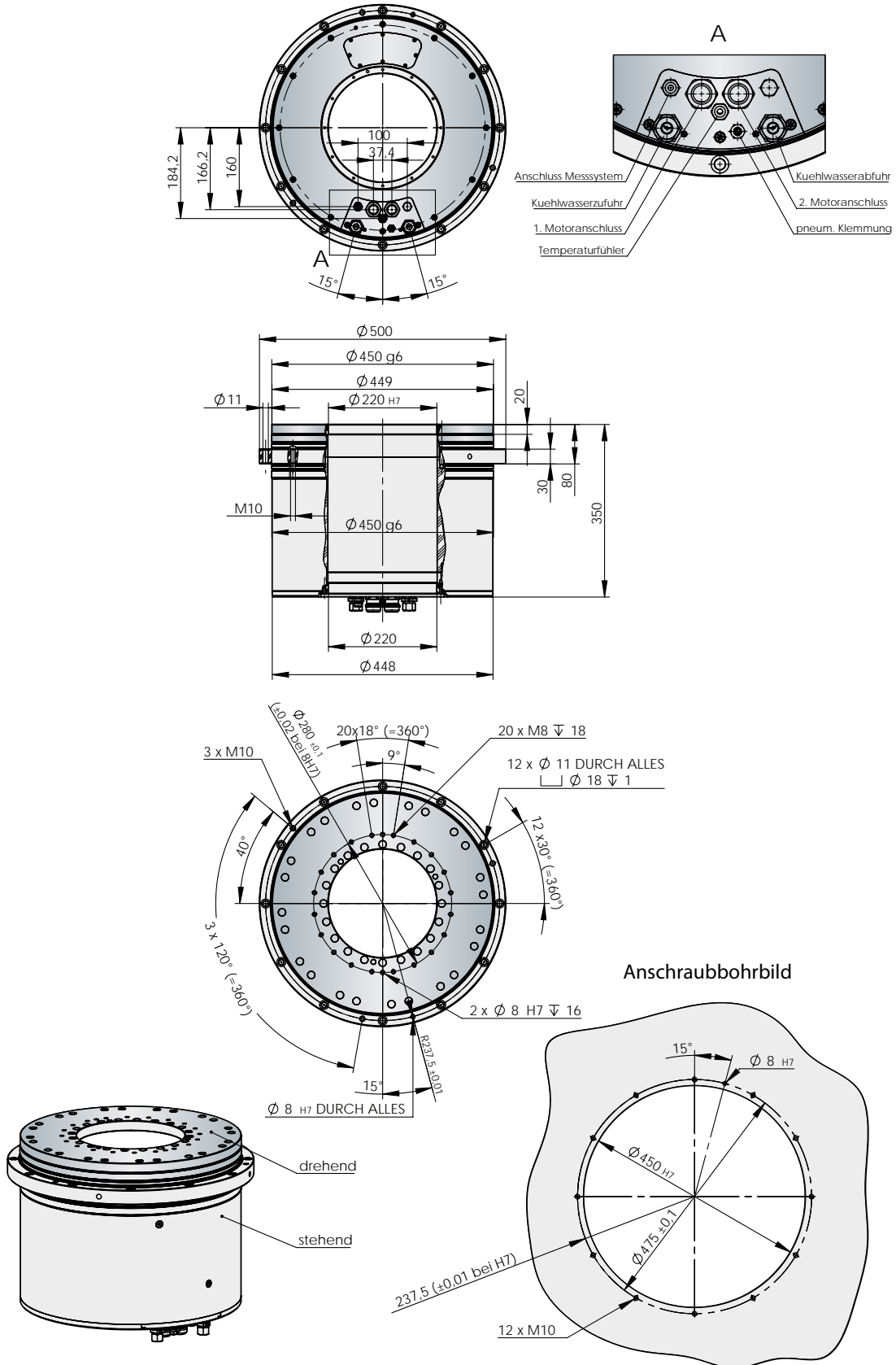
## ENCODER

Renishaw Resolute (absolute)	BISS
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## TIMING DIAGRAM



DIMENSIONS



# TO 750C

## GENERAL INFORMATION

- Maximum recommended equipment diameter  $D_{tp}$ : approximately 2500 mm
- The TO rotary table can optionally be supplied with a brake
- The rotary table can also be water-cooled for even shorter cycle times and greater precision
- In some cases, the rotary table can be equipped with functional safety (on request)

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V
<b><math>n_{2Max}</math></b>	Max. output speed (400 V):	50 1/min
<b><math>T_{2N}</math></b>	Nominal torque without water cooling:	623 Nm
<b><math>T_{2N}</math></b>	Nominal torque with water cooling:	1700 Nm
<b><math>T_{2P}</math></b>	Peak torque:	3500 Nm
<b><math>I_P</math></b>	Peak current:	75 A
	Indexing precision:	20 arcsec ( $\pm 10''$ )
<b><math>A_f</math></b>	Axial run-out of the drive flange:	(at $\varnothing 750$ mm) 0.02 mm
<b><math>C_f</math></b>	Concentricity of the output flange:	0.02 mm
<b><math>p_a</math></b>	Clamping element opening pressure (pressure monitoring recommended)	4 bar (optional)
<b>m</b>	Weight:	270 kg

## LOAD DATA (for the stationary central part)

<b><math>T_{SP}</math></b>	Permitted torque:	800 Nm
<b><math>M_{TSP}</math></b>	Permitted tilting moment:	2500 Nm
<b><math>F_{ASP}</math></b>	Permitted axial force:	25000 N
<b><math>F_{RSP}</math></b>	Permitted radial force:	15000 N

## LOAD DATA (for the output flange)

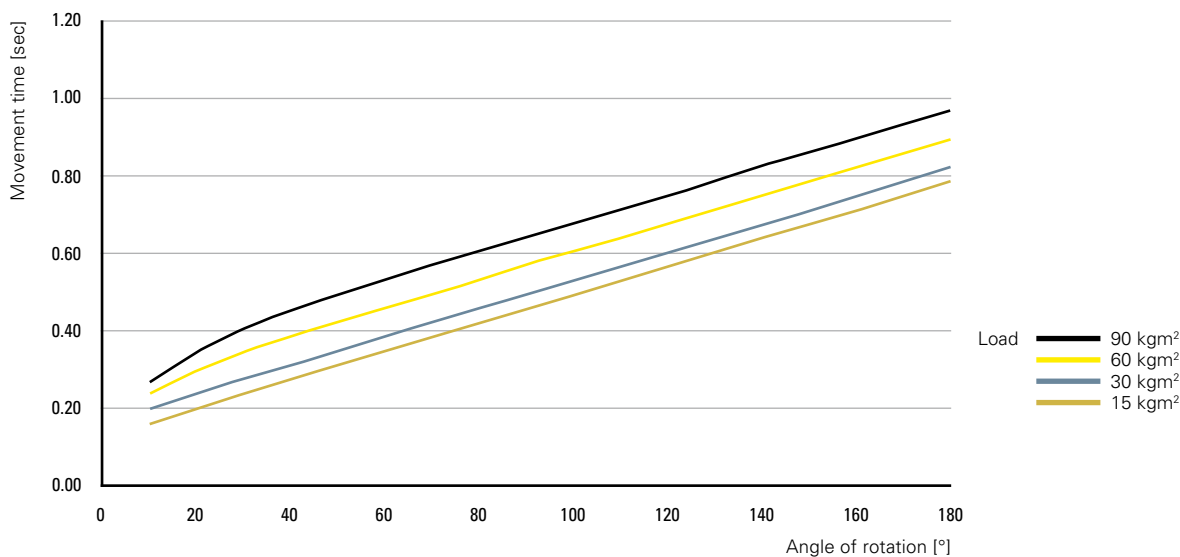
<b><math>M_{2Tstat}</math></b>	Permitted static tilting moment:	6000 Nm
<b><math>F_{2Astat}</math></b>	Permitted static axial force:	25000 N
<b><math>F_{2Rstat}</math></b>	Permitted static radial force:	25000 N

Combined loads and permitted process forces only after inspection by WEISS.

## ENCODER

Renishaw Signum (incremental)	sin/cos
Renishaw Resolute (absolute)	BISS
Renishaw Resolute (absolute)	DRIVE-CLiQ
Heidenhain ECN 4410 FS (absolute)	EnDat 2.2

## TIMING DIAGRAM



DIMENSIONS

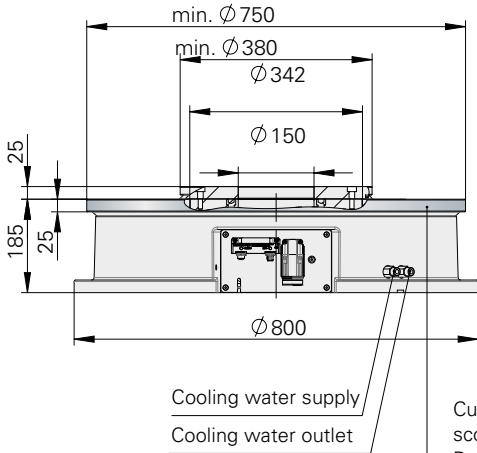
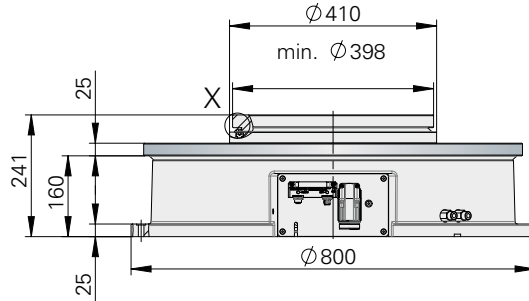
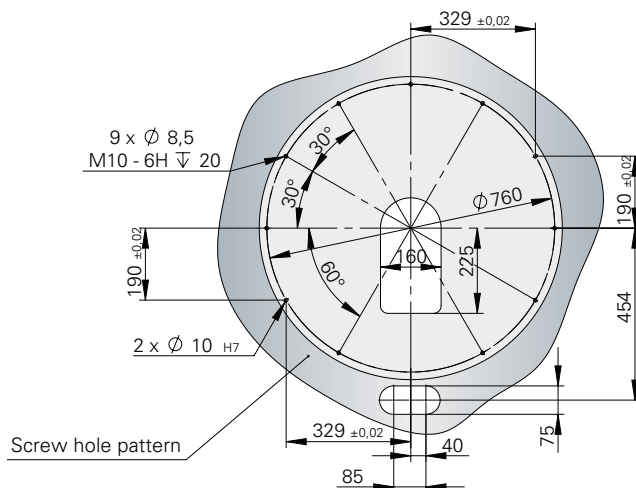
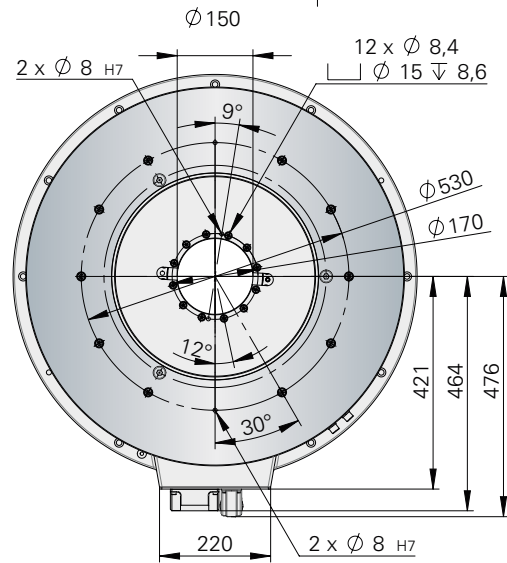
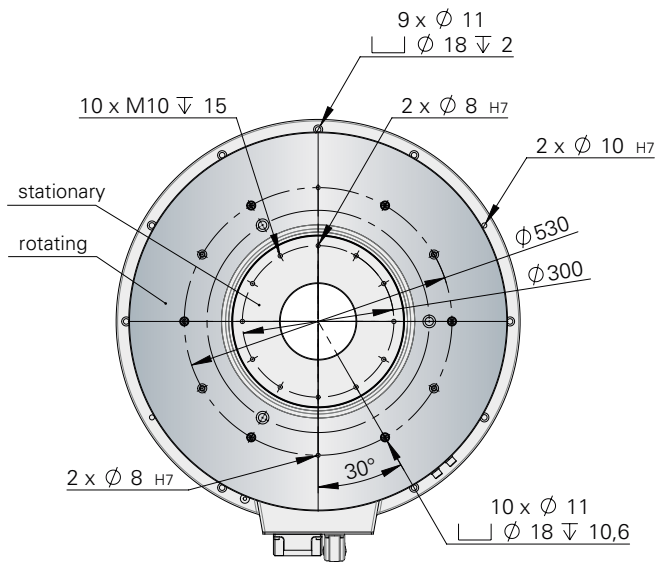
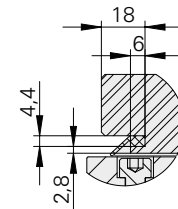


Diagram with holding brake option



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



# TO 1300C

## GENERAL INFORMATION

- Maximum recommended equipment diameter  $D_{tp}$ : approximately 3500 mm
- The TO rotary table can optionally be supplied with a brake
- The rotary table can also be water-cooled for even shorter cycle times and greater precision

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V
<b>n<sub>2Max</sub></b>	Max. output speed (400 V):	80 1/min
<b>T<sub>2N</sub></b>	Nominal torque without water cooling:	6460 Nm
<b>T<sub>2N</sub></b>	Nominal torque with water cooling:	15200 Nm
<b>T<sub>2P</sub></b>	Peak torque:	26600 Nm
<b>I<sub>p</sub></b>	Peak current:	888 A
	Indexing precision:	20 arcsec ( $\pm 10''$ )
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	(at $\varnothing$ 1300 mm) 0.04 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	0.03 mm
<b>p<sub>cc</sub></b>	Clamping element opening pressure (pressure monitoring recommended)	6 bar
<b>m</b>	Weight:	1350 kg

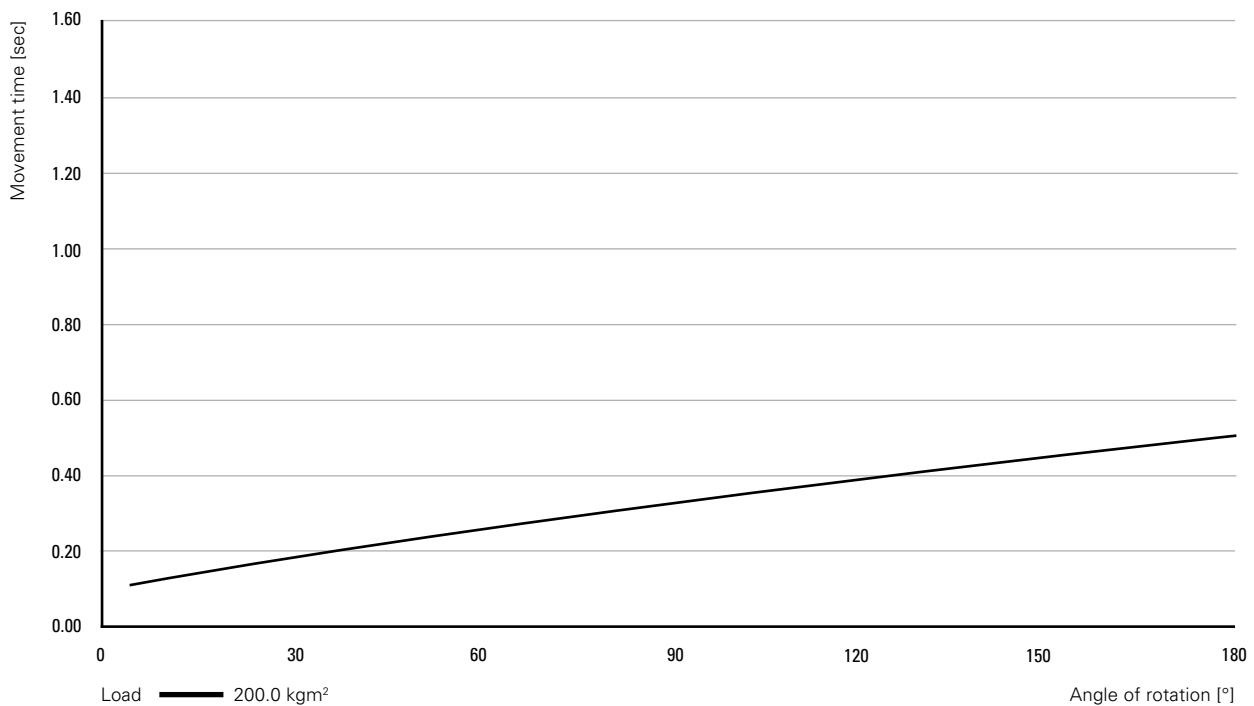
## LOAD DATA (for the output flange)

<b>M<sub>2T stat</sub></b>	Permitted static tilting moment:	26000 Nm
<b>F<sub>2A stat</sub></b>	Permitted static axial force:	100000 N
<b>F<sub>2R stat</sub></b>	Permitted static radial force:	115000 N

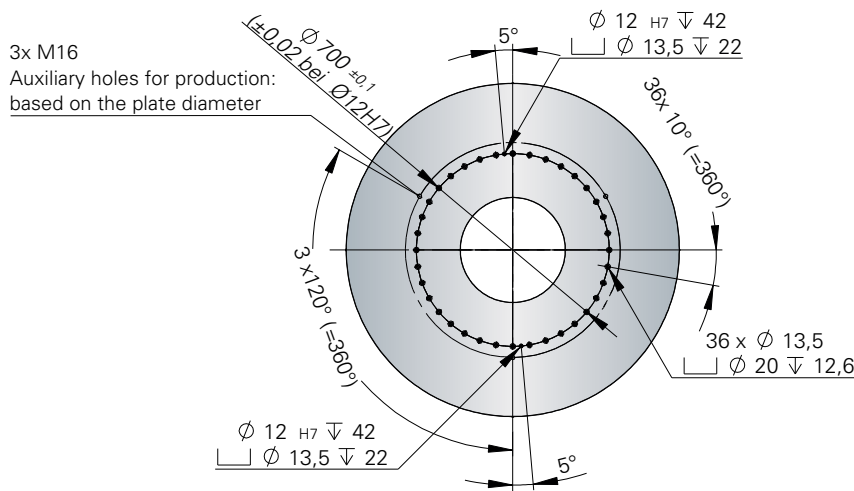
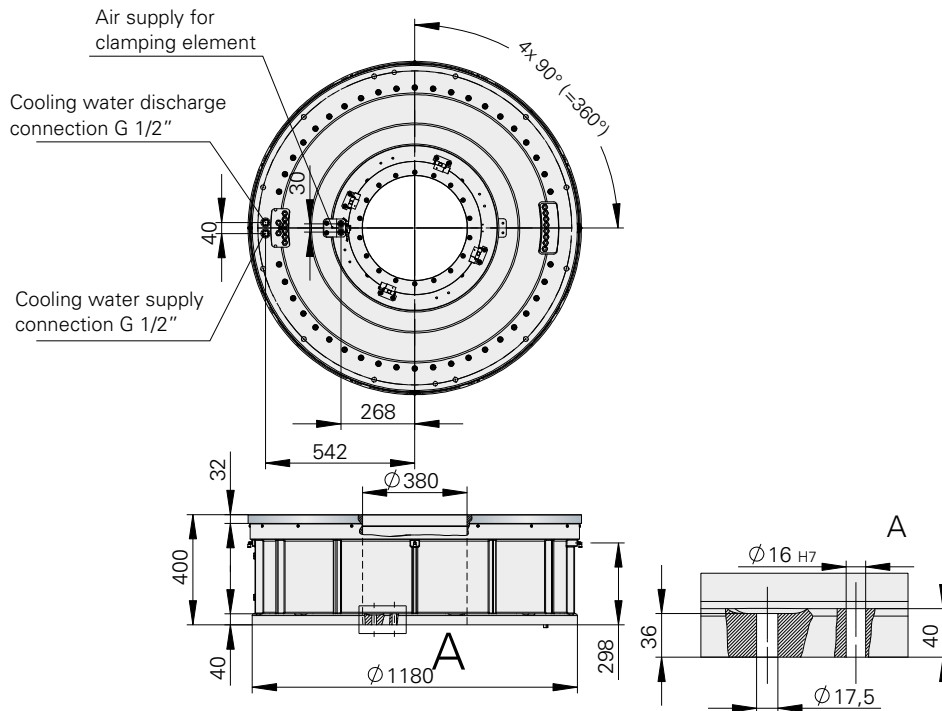
## ENCODER

AMO (absolute)	SSI
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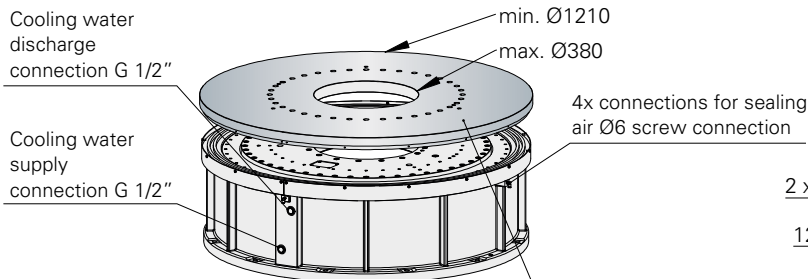
## TIMING DIAGRAM



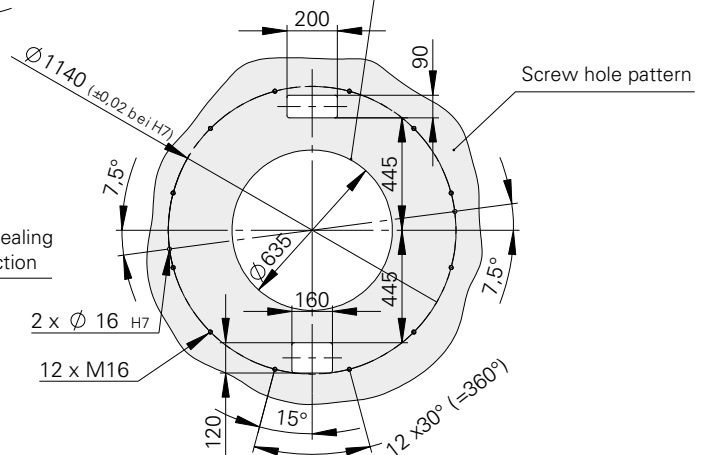
DIMENSIONS



Base plate breakthrough for using the central bore or for access to the measuring system and clamping element



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



# ST

ROTATING UNITS | ST TORQUE ROTATING UNIT



## ST TORQUE ROTARY UNITS

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### CABLE CONNECTION

Compact connector for any orientation of cable connection



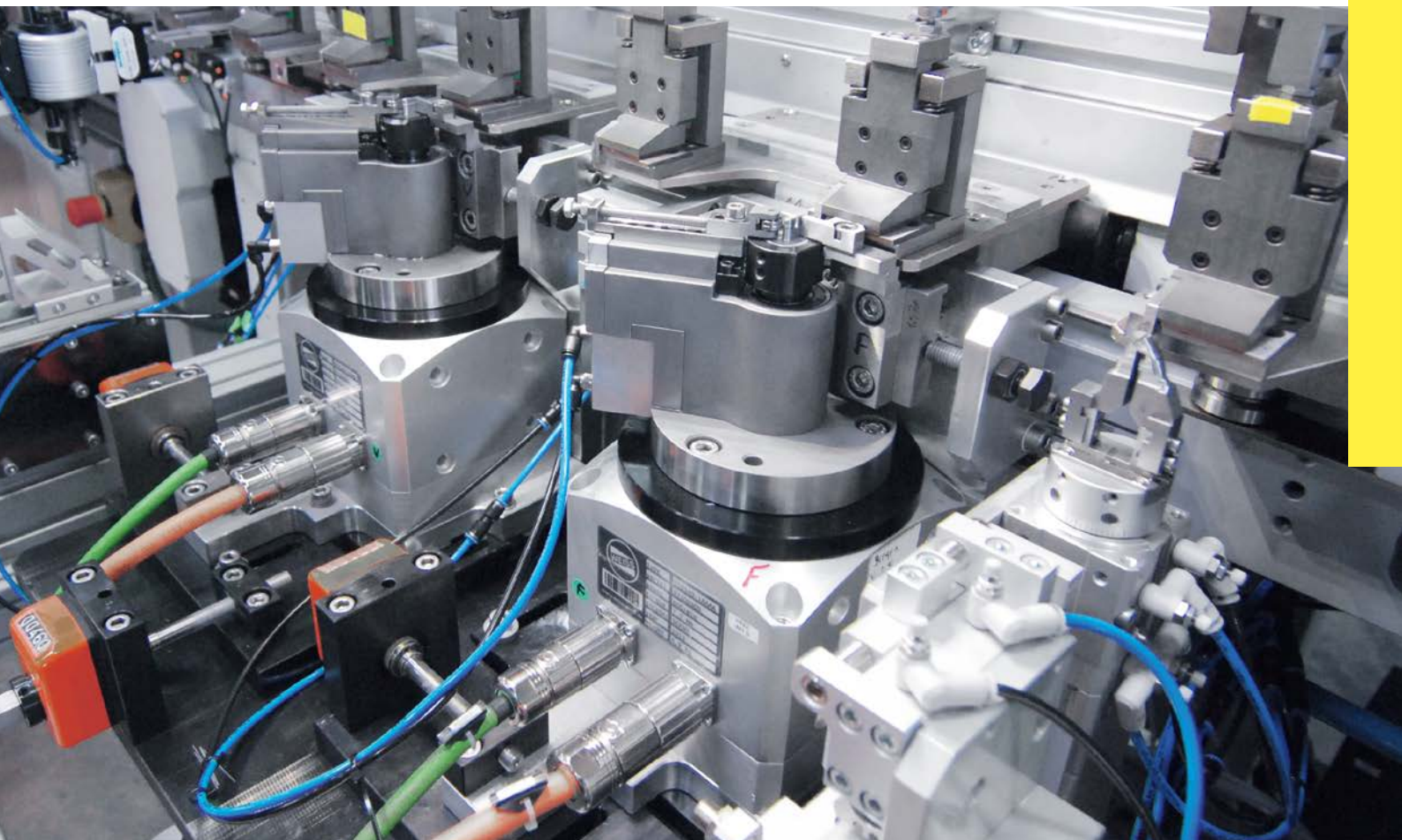
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### FREELY AND INTUITIVELY PROGRAMMABLE

W.A.S. 2 – WEISS Application Software: secure and fast commissioning with free-of-charge user software.



The ST 140 rotary unit operating in perfect harmony with the LS 280 linear assembly system. The installation at Jouhsen-bündgens Maschinenbau GmbH is used to produce medical needles at high speeds. Thanks to the new system, it has been possible to almost double the output.



The ST rotating units with absolute rotary encoder are the ideal choice for precise and highly dynamic rotary, swivel and gripping movements. Whether used to supply and position components, as swivel units for grippers or as a replacement for servomotors with planetary gears, the ST rotating units offer the perfect solution. Their compactness, light weight, versatile attachment options, as well as the various designs and other options available allow a broad range of applications to be covered.

---

## ADVANTAGES

- Extremely dynamic
- Long lifetime
- No maintenance cost
- Compact design – low weight
- Rigid mechanical design
- Absolute encoder
- High power density
- Optionally available with electric holding brake

## ALLGEMEINE ANGABEN

- The ST model range comprises direct-drive rotating units (with the exception of ST55)
- ST rotating units are user-programmable
- Possible installation location: any
- The ST rotating units are “lubricated for life”
- All motors are equipped with overtemperature protection (PTC)
- For a surcharge, a positioning accuracy measurement report can also be drawn up and a compensation table incorporated for error compensation in a further step. However, this requires a mechanical zero point alignment.



# ST 55 A

## GENERAL INFORMATION

- Max. recommended diameter of rotating plate  $D_{tp}$ : approximately 200 mm
- Lightweight and compact rotating unit with transmission for end-of-arm applications

## TECHNICAL DATA

<b>U</b>	Voltage range:	230 V
<b>n<sub>2N</sub></b>	Nominal speed:	30 1/min
<b>n<sub>2Max</sub></b>	Max. output speed:	70 1/min
<b>T<sub>2P</sub></b>	Peak torque:	36 Nm
<b>I<sub>P</sub></b>	Peak current:	2.9 A
	Indexing precision:	60 arcsec ( $\pm 30''$ )
<b>m</b>	Weight:	1.1 kg

## LOAD DATA (for the output flange)

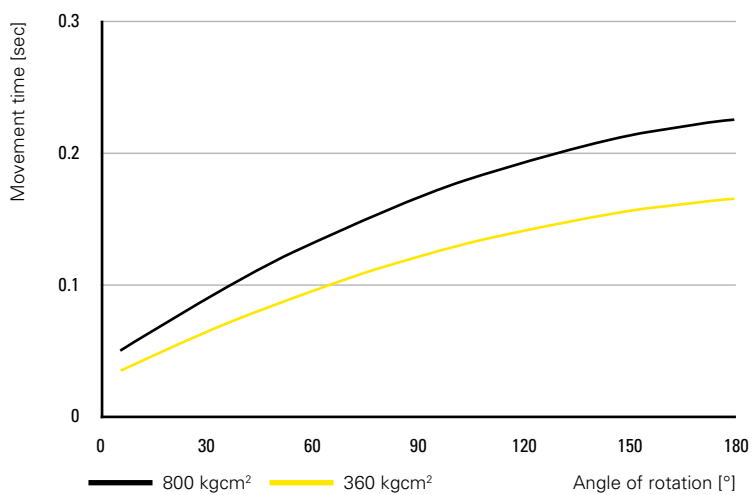
<b>M<sub>2T stat</sub></b>	Permitted static tilting moment:	44 Nm
<b>F<sub>2A stat</sub></b>	Permitted static axial force:	1900 N
<b>F<sub>2R stat</sub></b>	Permitted static radial force:	1440 N

Combined loads and permitted process forces only after inspection by WEISS.

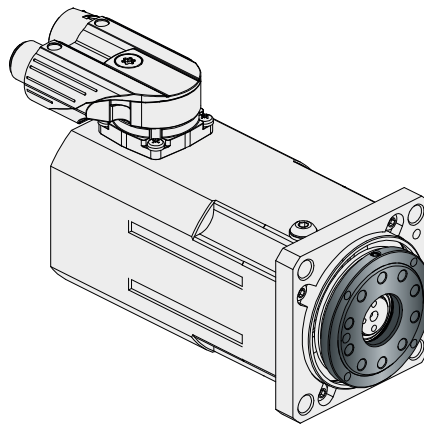
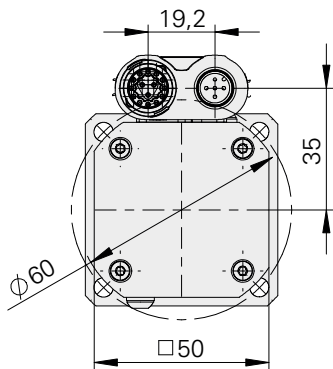
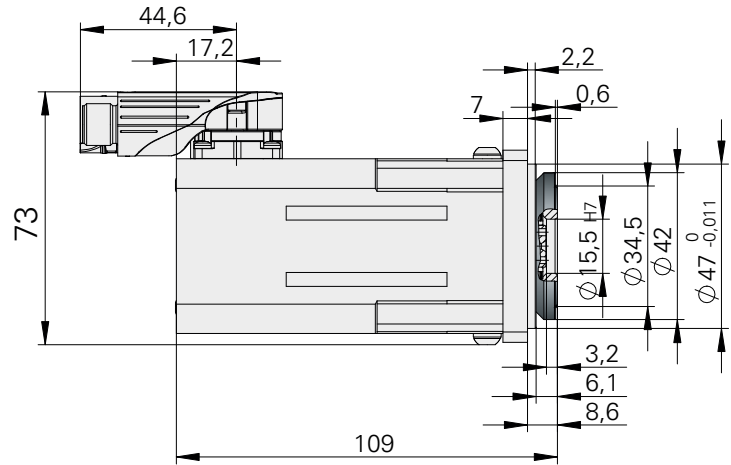
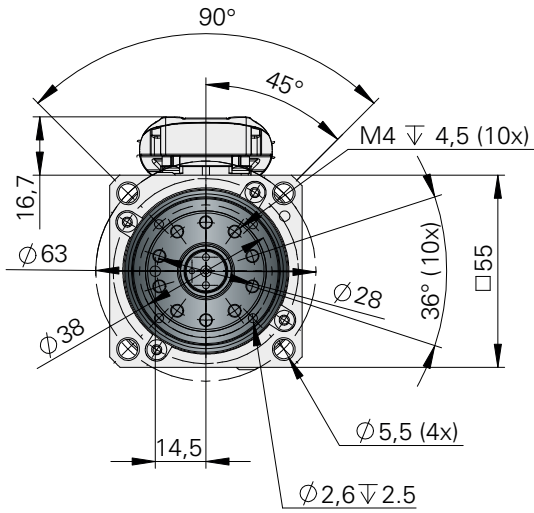
## ENCODER

Sick-Stegmann SEL37	Hiperface
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## TIMING DIAGRAM



DIMENSIONS



# ST 75 A

## GENERAL INFORMATION

- Max. recommended diameter of rotating plate  $D_{tp}$ : approximately 400 mm
- Small compact rotating units for end-of-arm or small rotary applications
- The rotating units are available in three different motor sizes with the same flange dimensions

## OPTIONS

- The rotating units can optionally be equipped with a brake
- A choice of various encoder accuracies ensures maximum design flexibility

## TECHNICAL DATA

		ST 75-1	ST 75-2	ST 75-3
<b>U</b>	Voltage range:	200-600 V	200-600 V	200-600 V
<b>n<sub>1 Max</sub></b>	Max. speed(230 V):	1000 1/min	400 1/min	450 1/min
<b>n<sub>1 Max</sub></b>	Max. speed (400 V):	3100 1/min	1700 1/min	1600 1/min
<b>T<sub>1N</sub></b>	Nominal torque:	0.5 Nm	1.0 Nm	1.4 Nm
<b>T<sub>1P</sub></b>	Peak torque:	1.4 Nm	2.8 Nm	4.2 Nm
<b>I<sub>P</sub></b>	Peak current:	1.6 A	1.9 A	2.2 A
	Indexing precision:	s. encoder	s. encoder	s. encoder
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	± 0.01 mm	± 0.01 mm	± 0.01 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	± 0.01 mm	± 0.01 mm	± 0.01 mm
<b>m</b>	Weight:	1.7 kg	2.2 kg	2.7 kg

## LOAD DATA (for rotary plate)

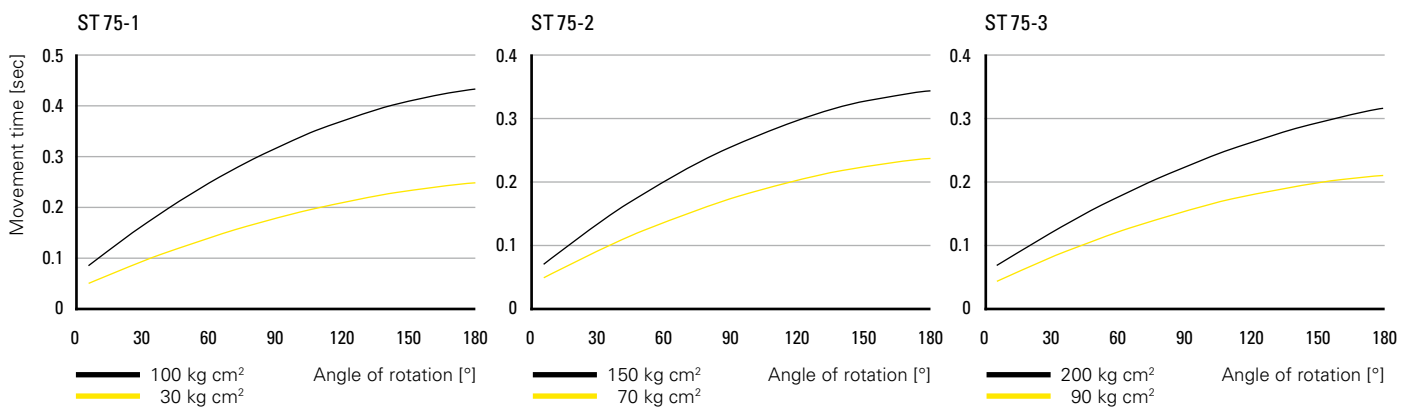
		ST 75-1	ST 75-2	ST 75-3
<b>M<sub>2T dyn</sub></b>	Perm. dynamic tilting moment:	20 Nm	25 Nm	35 Nm
<b>M<sub>2T stat</sub></b>	Perm. static tilting moment:	40 Nm	50 Nm	70 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	150 N	150 N	150 N
<b>F<sub>2A stat</sub></b>	Permitted static axial force:	500 N	500 N	500 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	200 N	220 N	250 N
<b>F<sub>2R stat</sub></b>	Permitted static radial force:	500 N	650 N	800 N

Combined loads and permitted process forces only after inspection by WEISS.

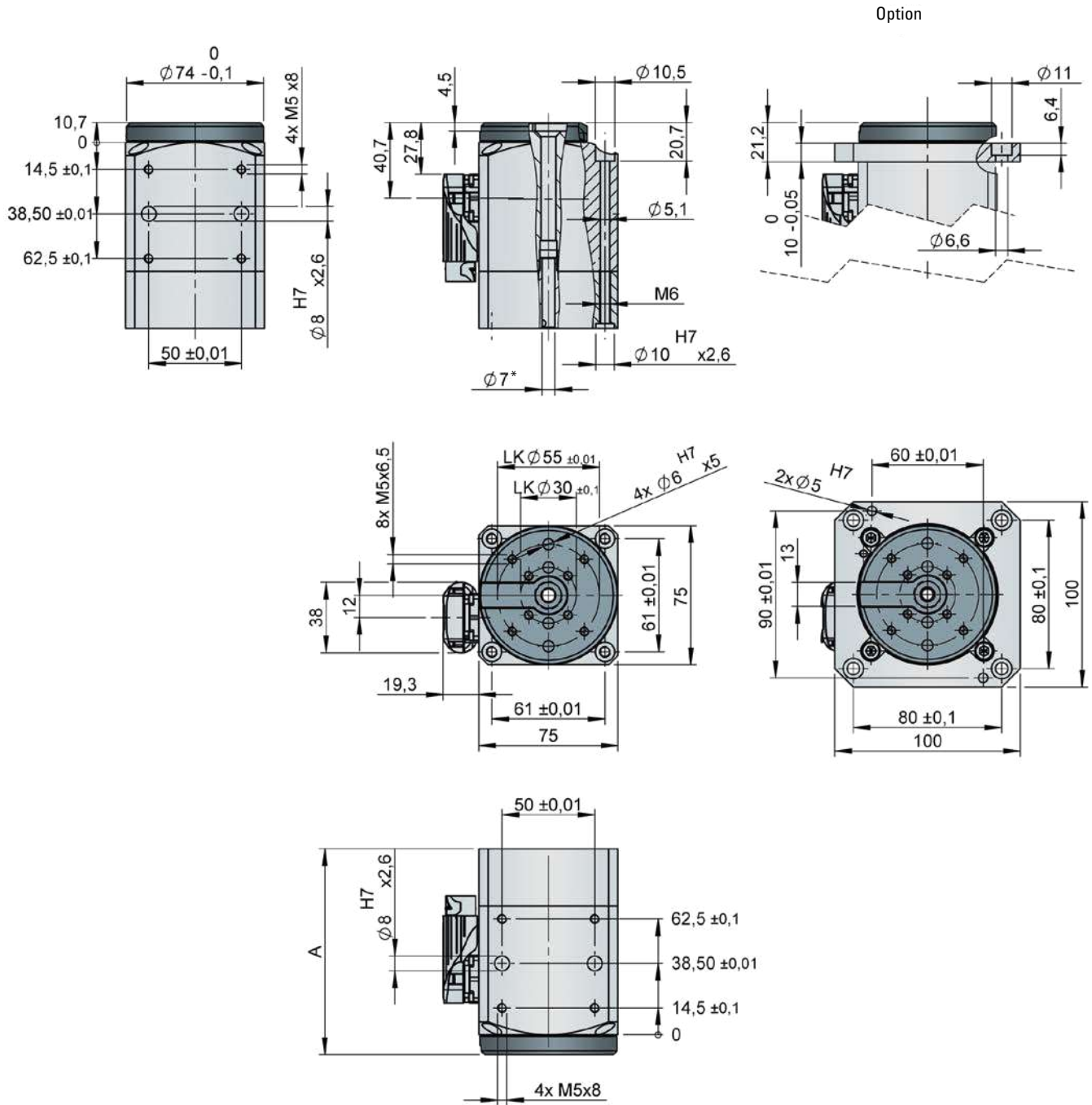
## ENCODER

Sick-Stegmann SEK52 (absolute):	560 arcsec (± 280") Hiperface
Sick-Stegmann SKS36 (absolute):	240 arcsec (± 120") Hiperface
Heidenhain ECN413 (absolute):	120 arcsec (± 60") EnDat 2.1
Heidenhain ECN413 (absolute):	40 arcsec (± 20") EnDat 2.1

## TIMING DIAGRAM



DIMENSIONS



\* only with encoder SEK52"

	A					
	SEK52		SKS36		ECN413	
		Brake		Brake		Brake
ST0075-1	111	150	123	165	143	181
ST0075-2	131	170	143	185	163	201
ST0075-3	151	190	163	205	183	221

Length depending on encoder and brake options

# ST 140 A

## GENERAL INFORMATION

- Max. recommended diameter of rotating plate  $D_{tp}$ : approximately 700 mm
- Compact rotating units for end-of-arm or small rotary applications
- The rotating units are available in two different motor sizes with the same flange dimensions

## OPTIONS

- The rotating units can optionally be equipped with a brake
- The connector outlet can be straight or angled 90° downward
- A choice of various encoder accuracies ensures maximum design flexibility

## TECHNICAL DATA

		ST 140-1	ST 140-2
<b>U</b>	Voltage range:	200-600 V	200-600 V
<b>n<sub>1 Max</sub></b>	Max. speed(230 V):	600 1/min	600 1/min
<b>n<sub>1 Max</sub></b>	Max. speed (400 V):	1400 1/min	1200 1/min
<b>T<sub>1N</sub></b>	Nominal torque:	6 Nm	12 Nm
<b>T<sub>1P</sub></b>	Peak torque:	18 Nm	36 Nm
<b>I<sub>P</sub></b>	Peak current:	5.6 A	10.5 A
	Indexing precision:	s. encoder	s. encoder
<b>A<sub>r</sub></b>	Axial run-out of the drive flange:	± 0.01 mm	± 0.01 mm
<b>C<sub>r</sub></b>	Concentricity of the output flange:	± 0.01 mm	± 0.01 mm
<b>m</b>	Weight:	6.9 kg	8.6 kg

## LOAD DATA (for rotary plate)

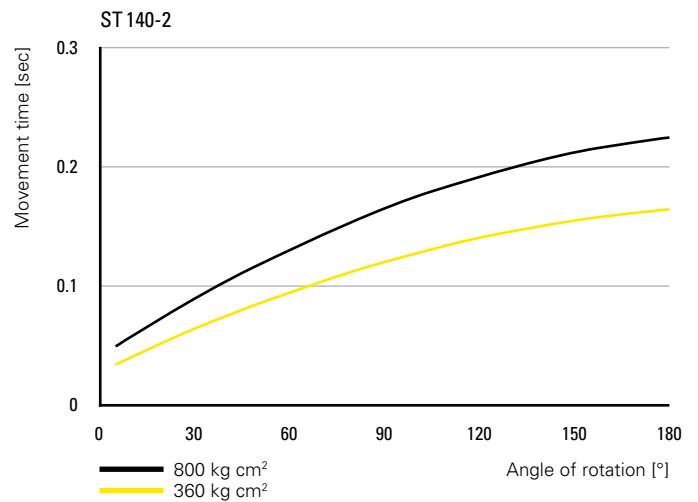
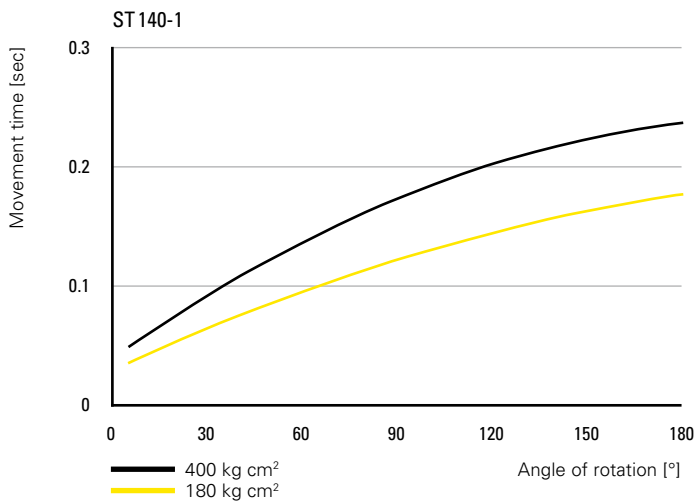
		ST 140-1	ST 140-2
<b>M<sub>ZT dyn</sub></b>	Permitted dynamic tilting moment:	65 Nm	90 Nm
<b>M<sub>ZT stat</sub></b>	Permitted static tilting moment:	130 Nm	180 Nm
<b>F<sub>2A dyn</sub></b>	Permitted dynamic axial force:	300 N	300 N
<b>F<sub>2A stat</sub></b>	Permitted static axial force:	800 N	800 N
<b>F<sub>2R dyn</sub></b>	Permitted dynamic radial force:	400 N	500 N
<b>F<sub>2R stat</sub></b>	Permitted static radial force:	800 N	1000 N

Combined loads and permitted process forces only after inspection by WEISS.

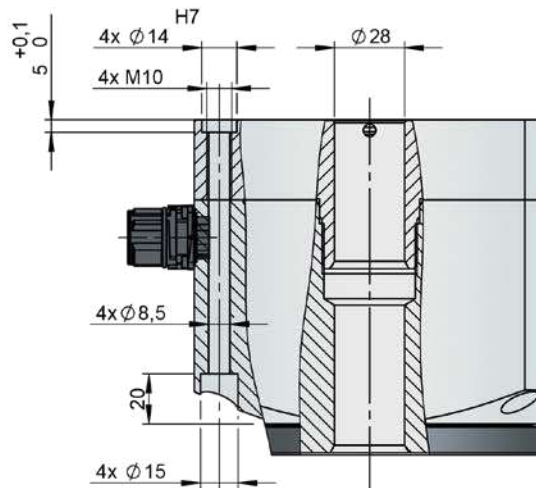
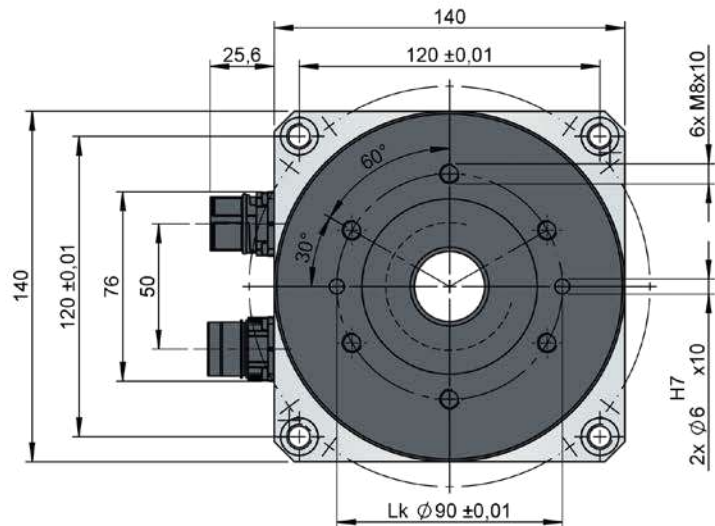
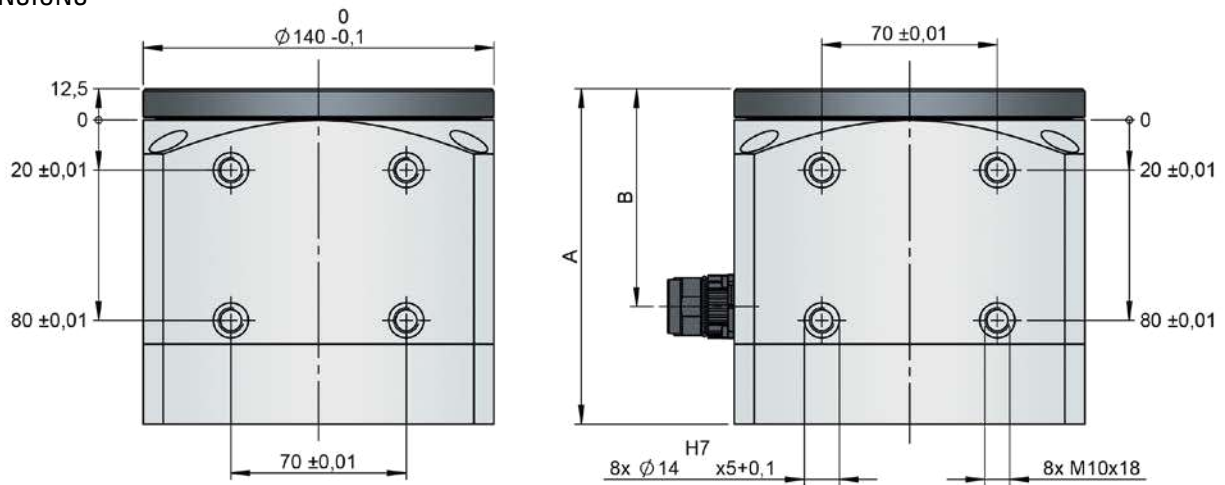
## ENCODER

Sick-Stegmann SEK90 (absolute)	240 arcsec (± 120") Hiperface
Heidenhain ECN113 (absolute)	50 arcsec (± 25") EnDat 2.1
Heidenhain ECN225 (absolute)	30 arcsec (± 15") EnDat 2.1

## TIMING DIAGRAM



DIMENSIONS



	A						B
	SEK90		ECN113		ECN225		
		Brake		Brake		Brake	
ST0140-1	134	189.5	168	224	168	224	87
ST0140-2	161.5	217	195.5	251.5	195.5	251.5	114.5

Length depending on encoder and brake options

# TW

FREELY PROGRAMMABLE ROTARY TABLES | TW ROTARY TABLE WITH HYBRID DRIVE



## DER TW MIT HYBRID-DRIVE

### FREELY AND INTUITIVELY PROGRAMMABLE

W.A.S. 2 – WEISS Application Software: secure and fast commissioning with free-of-charge user software.

### SMALL, MEDIUM, LARGE

Available in three sizes!





A direct drive motor integrated with a high-precision gear, absolute encoder and built-in brake combined with a robust mechanical platform. The TW sets new standards in the compact rotary table-area in the following characteristics: dynamic, precision, user programmable and ease of use, power density and the precise and robust WEISS mechanics.

These products are designed to greatly outperform any pneumatic indexing solutions available. Additional user benefits: Comparable in cost to pneumatic solutions, a clear cost advantage is developed through enhancement in productivity, lower operating cost and reduced maintenance cost.

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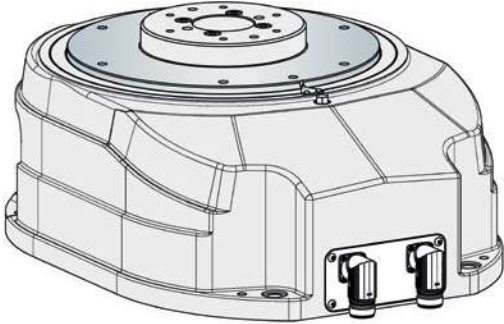
## ADVANTAGES

- Much faster than pneumatic solution
- Much more precise than pneumatic solution
- Higher power density than pneumatic solution
- Very little dwelltime
- Absolute encoder
- Precise zero-point through locating holes in the body
- No wear
- Precise teaching of each position
- Rigid stationary center section in various levels
- Electronic overload protection
- Any mounting position possible
- High energy efficiency
- Integrated holding brake

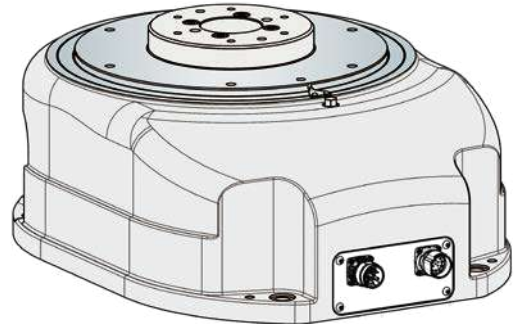


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VERSIONS: CONNECTOR OUTLET



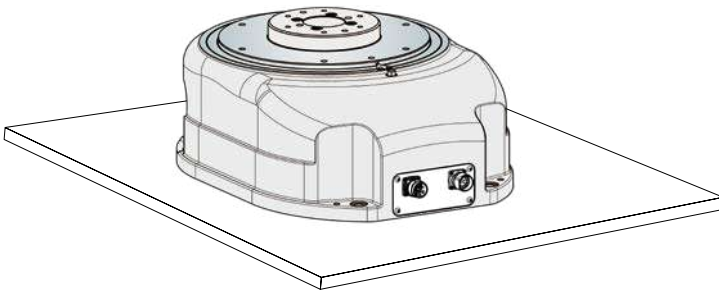
ANGLED 90° DOWNWARD



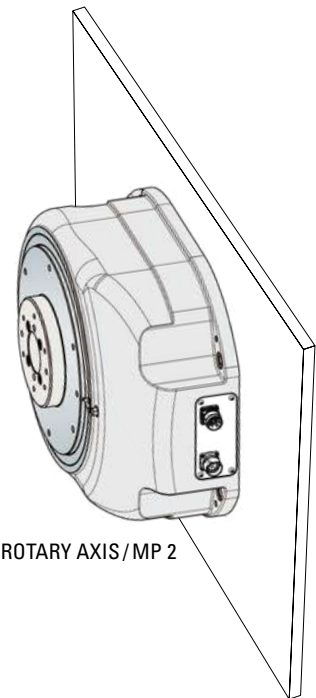
STRAIGHT

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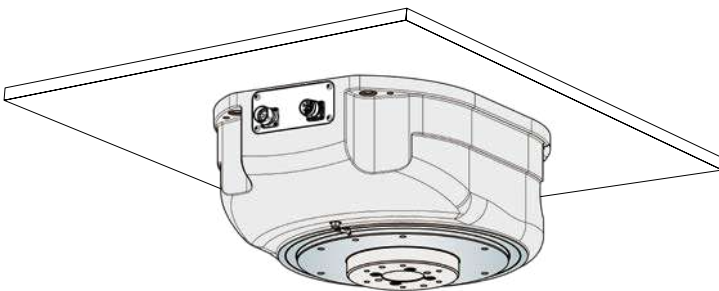
VERSIONS: MOUNTING POSITION



STANDARD / MP 1



VERTICAL ROTARY AXIS / MP 2



OVERHEAD / MP 3

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## GENERAL INFORMATION ON THE MODEL RANGE

- TW Rotary tables with hybrid drive are user-programmable
- TW Rotary tables with hybrid drive are “lubricated for life”!
- The maximum stated radial force and torque of the stationary central section and the output flange refer only to the rotary indexing table.
- When determining the maximum actual load of the overall system, the influence of the plate material and the plate attachment means must also be taken into account.
- We would be happy to advise and support you in dimensioning your overall system.

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## OPTIONS

- Possible mounting positions: vertical rotary axis, standard or overhead (Please consult WEISS for overhead mounting positions)
- With the TW0150 and TW0200 models, users can choose between a lowered or raised central section.
- With the TW0300 model, only the version with raised central section is available.
- All sizes in the TW model range can optionally be equipped with an absolute encoder.
  - » Standard: Sick-Stegmann, type SEL52 – Hiperface interface
  - » Custom option: Heidenhain, type EQI 1130 – EnDat 2.1 interface
- Connector outlet straight or angled 90° downward
- Standard colour: RAL7035 (other colours available on request)

# TW 150A



## GENERAL INFORMATION

· Maximum recommended equipment diameter  $D_{tp}$ : approximately 800 mm

## TECHNICAL DATA

$n_{2Max}$	Max. motor speed:	100 1/min
$i_{tot}$	Overall gear ratio:	9
$T_{2Stat}$	Static torque (braked):	13.5 Nm
	Indexing precision:	130 arcsec ( $\pm 65''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 140$ mm) 0.02 mm
$C_r$	Concentricity of the output flange:	0.02 mm
$P$	Parallelism between the output flange and screw-on surface of the housing:	0.03 mm
$m$	Total weight, including motor:	approximately 27 kg
$D_i$	Min. inside diameter of the rotary plate (on variant with raised stationary central section)	100 mm
	max. play of the holding brake at output flange	$\pm 0,12$ mm

## LOAD DATA (for the stationary central part)

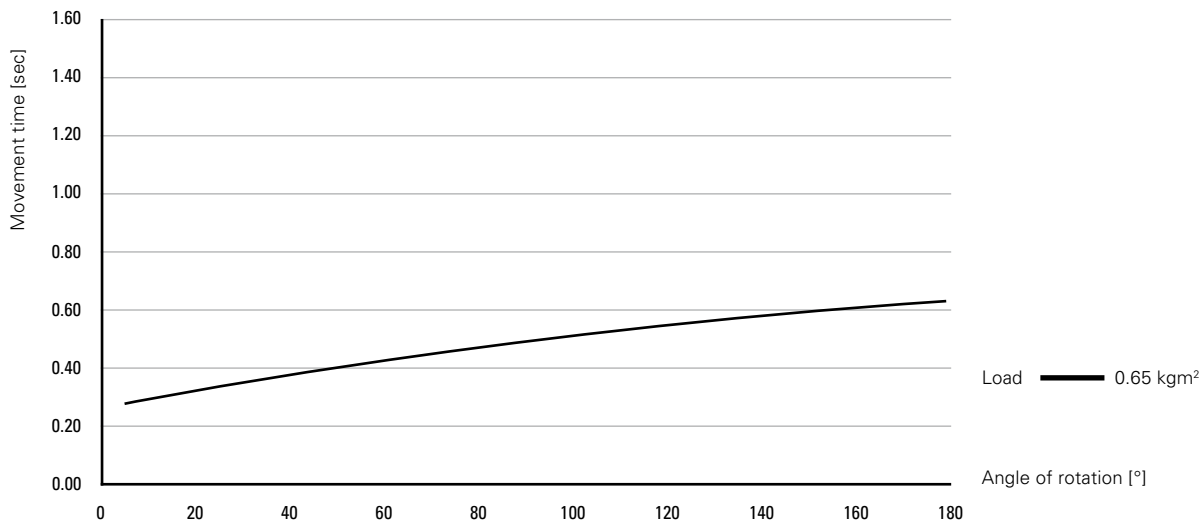
$T_{SP}$	Permitted torque:	140 Nm
$M_{TSP}$	Permitted tilting moment:	200 Nm
$F_{ASP}$	Permitted axial force:	3500 N
$F_{RSP}$	Permitted radial force:	2500 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

$T_{2A}$	Max. acceleration torque:	60 Nm
$T_{2N}$	Nom. torque:	30 Nm
$M_{2T dyn}$	Permitted dynamic tilting moment:	500 Nm
$F_{2A dyn}$	Permitted dynamic axial force:	5500 N
$F_{2R dyn}$	Permitted dynamic radial force:	6000 N

## TIMING DIAGRAM





# TW 200A



## GENERAL INFORMATION

- Maximum recommended equipment diameter  $D_{tp}$ : approximately 1100 mm

## TECHNICAL DATA

$n_{2Max}$	Max. motor speed:	120 1/min
$i_{tot}$	Overall gear ratio:	10
$T_{2Stat}$	Static torque (braked):	75 Nm
	Indexing precision:	110 arcsec ( $\pm 55''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 190$ mm) 0.02 mm
$C_r$	Concentricity of the output flange:	0.02 mm
$P$	Parallelism between the output flange and screw-on surface of the housing:	0.03 mm
$m$	Total weight, including motor:	approximately 40 kg
$D_i$	Min. inside diameter of the rotary plate (on variant with raised stationary central section)	110 mm
	max. play of the holding brake at output flange	$\pm 0,12$ mm

## LOAD DATA (for the stationary central part)

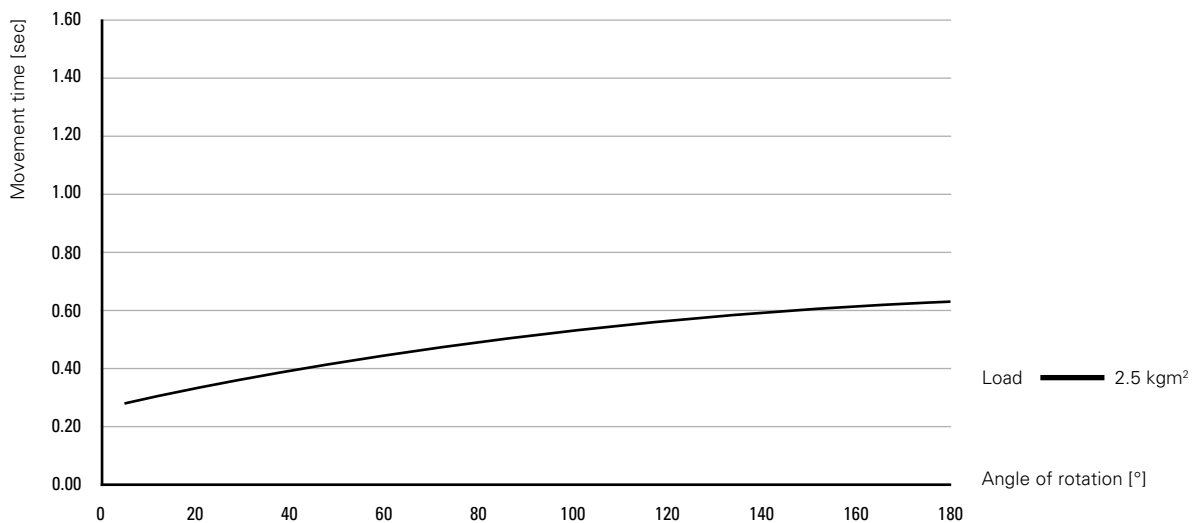
$T_{SP}$	Permitted torque:	145 Nm
$M_{TSP}$	Permitted tilting moment:	300 Nm
$F_{ASP}$	Permitted axial force:	5000 N
$F_{RSP}$	Permitted radial force:	4000 N

Combined loads and permitted process forces only after inspection by WEISS.

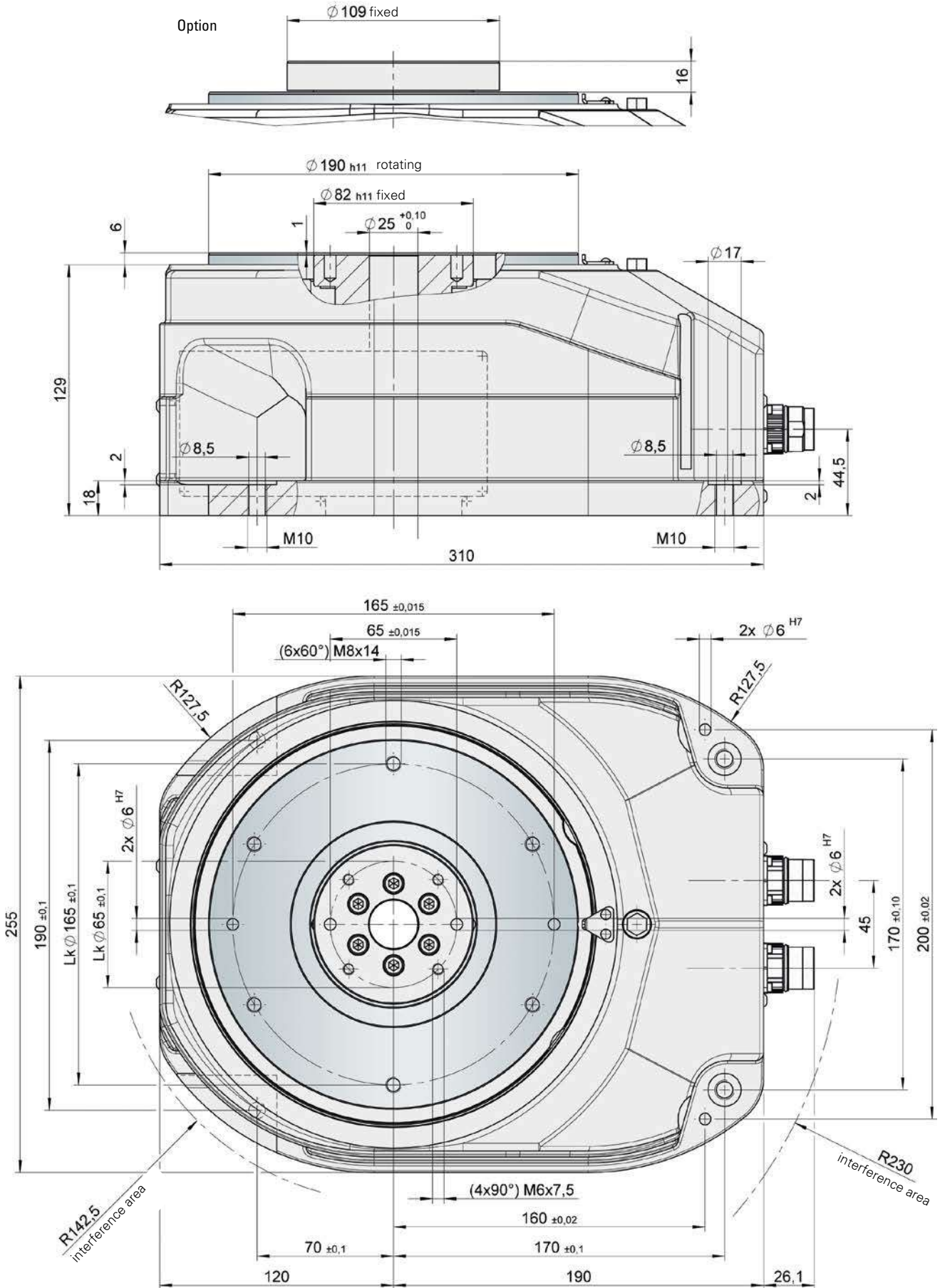
## LOAD DATA (for the output flange)

$T_{2A}$	Max. acceleration torque:	180 Nm
$T_{2N}$	Nom. torque:	90 Nm
$M_{2T dyn}$	Permitted dynamic tilting moment:	700 Nm
$F_{2A dyn}$	Permitted dynamic axial force:	7500 N
$F_{2R dyn}$	Permitted dynamic radial force:	8000 N

## TIMING DIAGRAM



DIMENSIONS



Max. center line deviation between stationary center section and housing  $\pm 250''$

# TW 300A



## GENERAL INFORMATION

- Maximum recommended equipment diameter  $D_{tp}$ : approximately 1400 mm

## TECHNICAL DATA

$n_{2Max}$	Max. motor speed:	110 1/min
$i_{tot}$	Overall gear ratio:	11
$T_{2Stat}$	Static torque (braked):	165 Nm
	Indexing precision:	90 arcsec ( $\pm 45''$ )
$A_r$	Axial run-out of the drive flange:	(at $\varnothing 280$ mm) 0.02 mm
$C_r$	Concentricity of the output flange:	0.02 mm
$P$	Parallelism between the output flange and screw-on surface of the housing:	0.03 mm
$m$	Total weight, including motor:	approximately 106 kg
$D_i$	Min. inside diameter of the rotary plate	150 mm
	max. play of the holding brake at output flange	$\pm 0,12$ mm

## LOAD DATA (for the stationary central part)

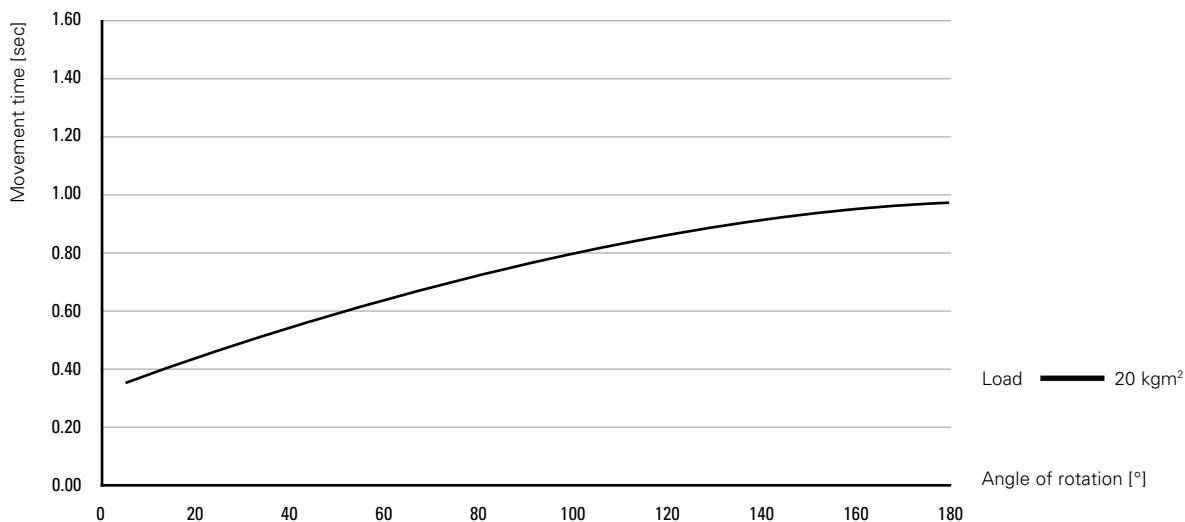
$T_{SP}$	Permitted torque:	800 Nm
$M_{TSP}$	Permitted tilting moment:	1800 Nm
$F_{ASP}$	Permitted axial force:	18000 N
$F_{RSP}$	Permitted radial force:	6000 N

Combined loads and permitted process forces only after inspection by WEISS.

## LOAD DATA (for the output flange)

$T_{2A}$	Max. acceleration torque:	450 Nm
$T_{2N}$	Nom. torque:	225 Nm
$M_{2T dyn}$	Permitted dynamic tilting moment:	2250 Nm
$F_{2A dyn}$	Permitted dynamic axial force:	15000 N
$F_{2R dyn}$	Permitted dynamic radial force:	13000 N

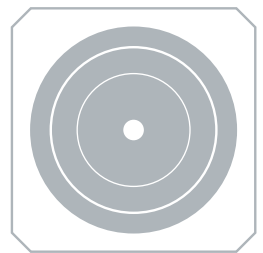
## TIMING DIAGRAM











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CUSTOMER-SPECIFIC SOLUTIONS

# SR/SK

CUSTOMER-SPECIFIC SOLUTIONS | SR/SK INDEXING MACHINE BASES



## CUSTOMER-SPECIFIC SOLUTIONS: A SYSTEM OF MATCHED COMPONENTS

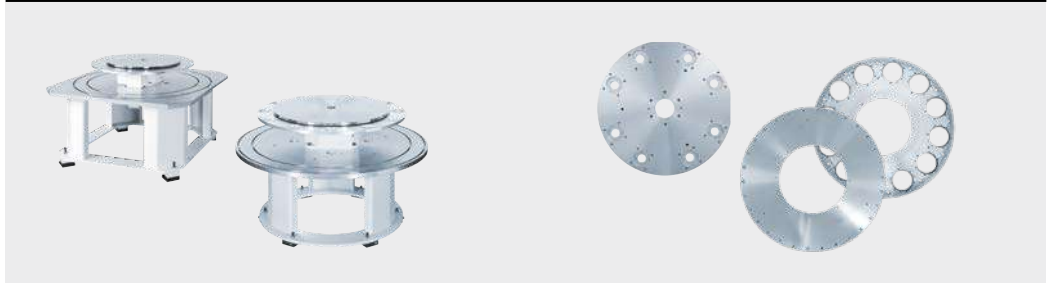
### ADVANTAGES

- **Guaranteed quality**  
No nasty surprises. We produce and supply your machine from a single source as per your own specifications in terms of design, precision, dimensions and even colour – all guaranteed and documented. You receive a test report with every machine.
- **Fastest delivery time**  
There's no need to reinvent the wheel: based on optimised standards, we implement your solution precisely with a keen focus on your goals and requirements. We then supply your machine within four to eight weeks.
- **Time and cost savings**  
Reduced total costs through assumption of project management and engineering work, no interface problems and one allocated contact.
- **Surface treatment**  
We are happy to offer all components in whatever surface finish you desire:
  - Anodised (available in 5 standard colours, others on request, Al)
  - Hard-coated (Al)
  - Bronzed (steel)
  - Nickel-plated (Al or steel)

BASIC IDEA .....>

INDEXING MACHINE BASES

STATIONARY AND ROTARY PLATES



EXAMPLES .....>

CUSTOM EQUIPMENT

**INDIVIDUAL, CUSTOMISED  
DESIGNS**

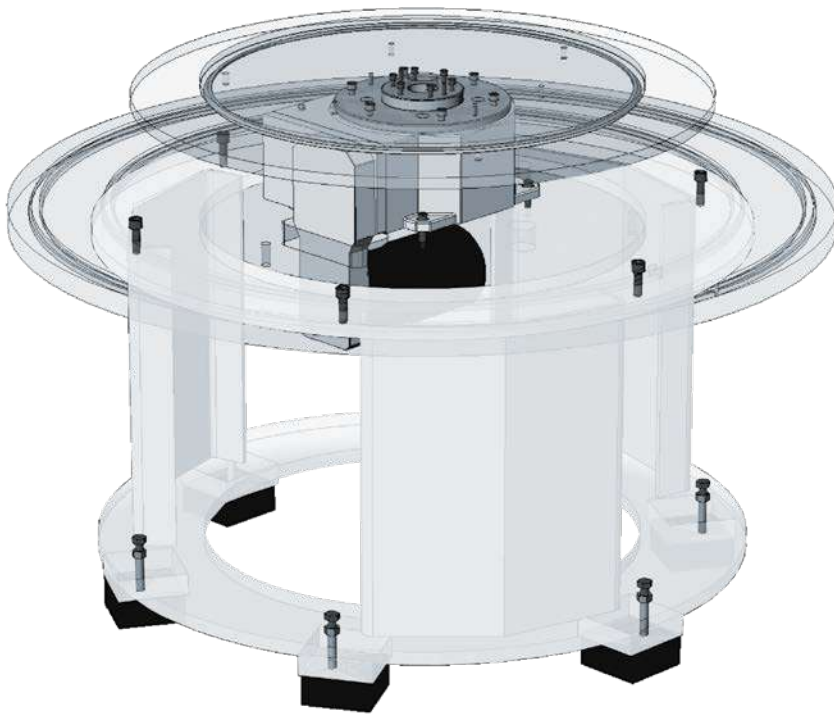


Tried-and-tested standard modules form the basis for perfectly matched system solutions. From the design, through the requisite precision and dimensions, all the way up to the colour: customers can select all parameters individually. You receive an acceptance certificate and the confidence of knowing that everything works together perfectly. Take advantage of our complete package for rotary table-based basic machines.

We support you in optimising time, costs and resources when creating your system. You have a single contact and receive everything from a single source, so you do not need to worry about interface problems.



**FINAL INSPECTION  
AND TEST PROTOCOL**



## SR SERIES

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### SPECIAL FEATURES:

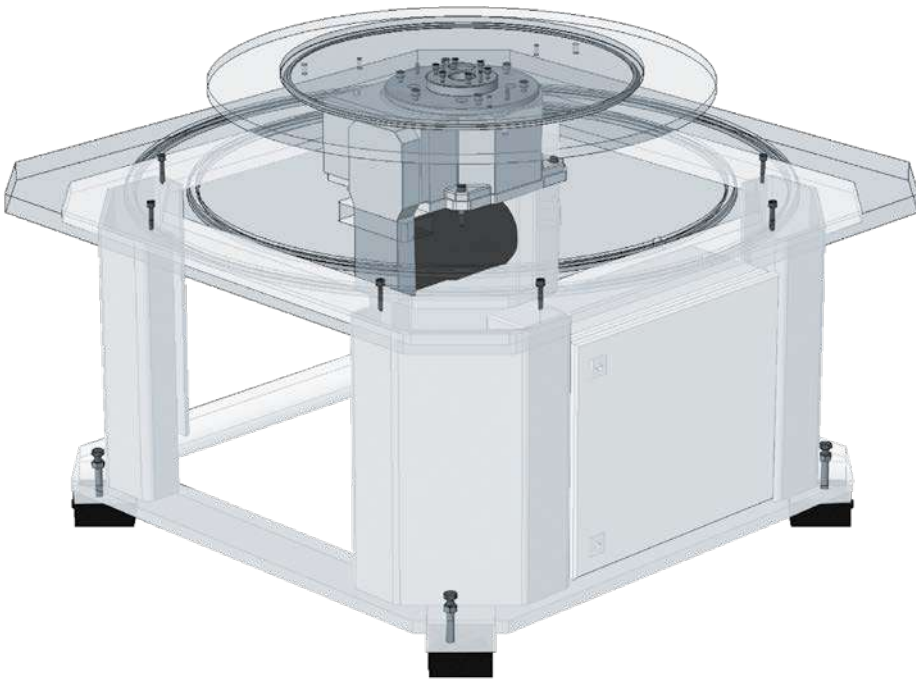
- Standard sizes:  
SR 100B, SR 200B, SR 300B, SR 400B, SR 500B
- 2 - 4 standard ribbed legs depending on diameter (custom arrangement available on request)
- Customised diameters
- Customised sizes available upon request

### ROTARY INDEXING TABLES

- Select the rotary indexing table suitable for your application
- Series TC/NC, TR/NR, TW, TO, CR all are available in various model sizes
- The overall height of your machine will be determined by the height of the indexing unit used and the length of the support legs.
- Laser measurement of the indexing precision possible on request

### ROTARY PLATE

- Ultimate precision and machining on the latest CNC drilling machines in climate-controlled rooms
- Dimensions, manufacturing and surface treatments according to your specification
- Supplied with a quality certificate



## SK SERIES

### SPECIAL FEATURES:

- Standard sizes: SK 100B, SK 200B, SK 300B
- Integrated switch cabinets available
- Any edge dimensions possible
- Customised sizes available upon request

### BASE PLATES

- Round, square or rectangular
- Dimensions, material and processing according to your specification
- Machining according to your drawing
- T-slots possible
- Cable ducts standard

### STATIONARY PLATE

- With integrated lip seal between stationary and rotating indexing plate
- In aluminium or steel, manufactured according to your drawing
- T-grooves possible for variable module arrangement

### BASE FRAMES

- Round and square standard sizes
- Height adjustment possible
- Customised design upon request
- High quality rigid fabricated construction
- Control cabinets for the square model
- Height-adjustable and shock-absorbing feet

# SR SERIES

TABLE OF DIMENSIONS FOR STANDARD VERSION (Attention! New type designation)

Type	Recommended rotary table type	ØA (Standard)	B	B*	H	ØI	ØJ	ØK
<b>SR 100B</b>	<b>TC/NC 150 – 320, TW 150 – 300 TO 150 – 220, CR 300</b>	<b>1300</b>	<b>35</b>	<b>40</b>	<b>575</b>	<b>960</b>	<b>615</b>	<b>960</b>
<b>SR 200B</b>	TC/NC 220 – 320T, TC 500, CR 400 TR/NR 750, PM 1100, TO 750, TW 200 – 300	1500	35	40	485	1200	815	1200
<b>SR 300B</b>	<b>TC/NC 320, TC 500, TC 700, TW 300 TR/NR 750, TR/NR 1100, PM 1500, CR 400 – 700</b>	<b>1800</b>	<b>35</b>	<b>40</b>	<b>615</b>	<b>1350</b>	<b>967</b>	<b>1350</b>
<b>SR 400B</b>	TC 500 – 700, TR/NR 1100, TR/NR 1500 CR 700 – 1000C	2200	35	40	690	1800	1357	1800
<b>SR 500B</b>	<b>TR/NR 1500, TR/NR 2200, CR 1000–1300</b>	<b>2500</b>	<b>35</b>	<b>40</b>	<b>656</b>	<b>2200</b>	<b>1700</b>	<b>2200</b>

General tolerances in conformity with DIN ISO 2768-m. Special tolerances upon request/dimensions variable.

\* with T-slots

**Notes:** For the permissible loads of the stationary or rotary indexing plates, please refer to the "Rotary indexing table" chapter. Special machining according your drawing.

Rotary indexing ring table with base frame and raised supports

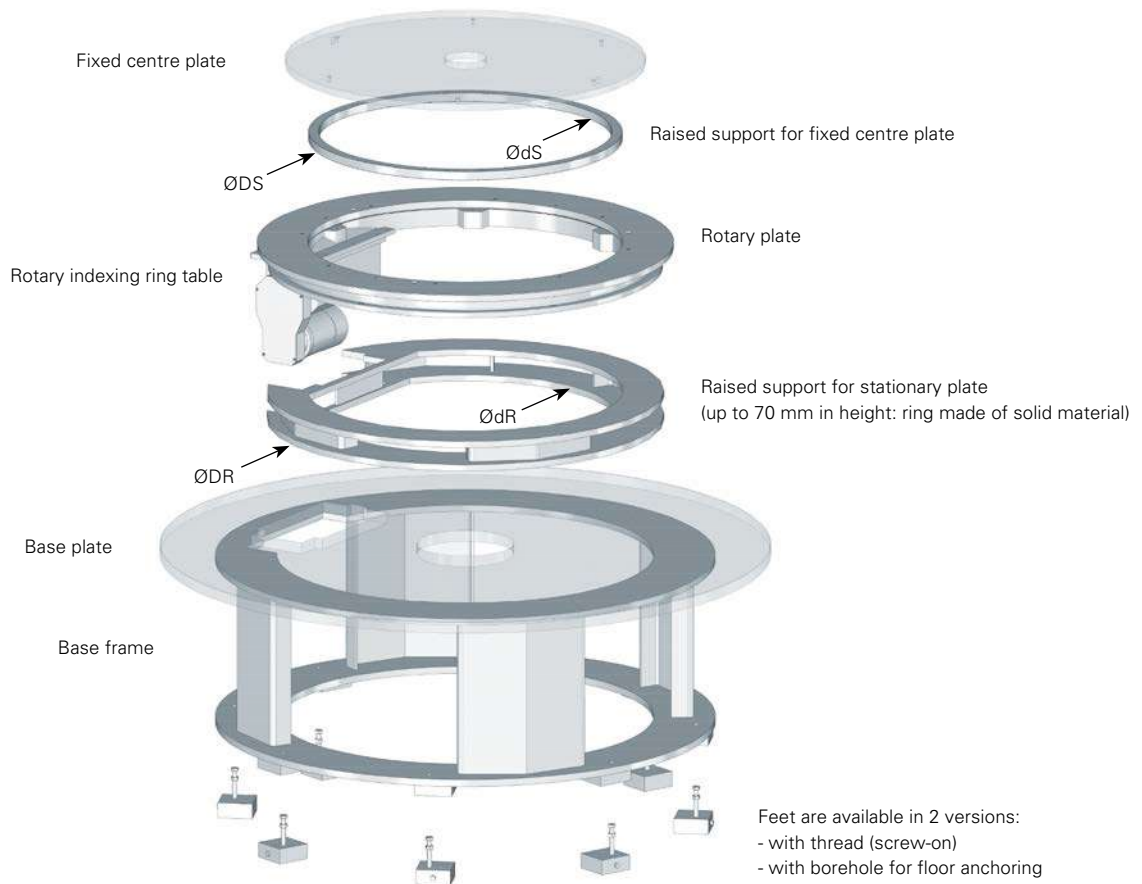
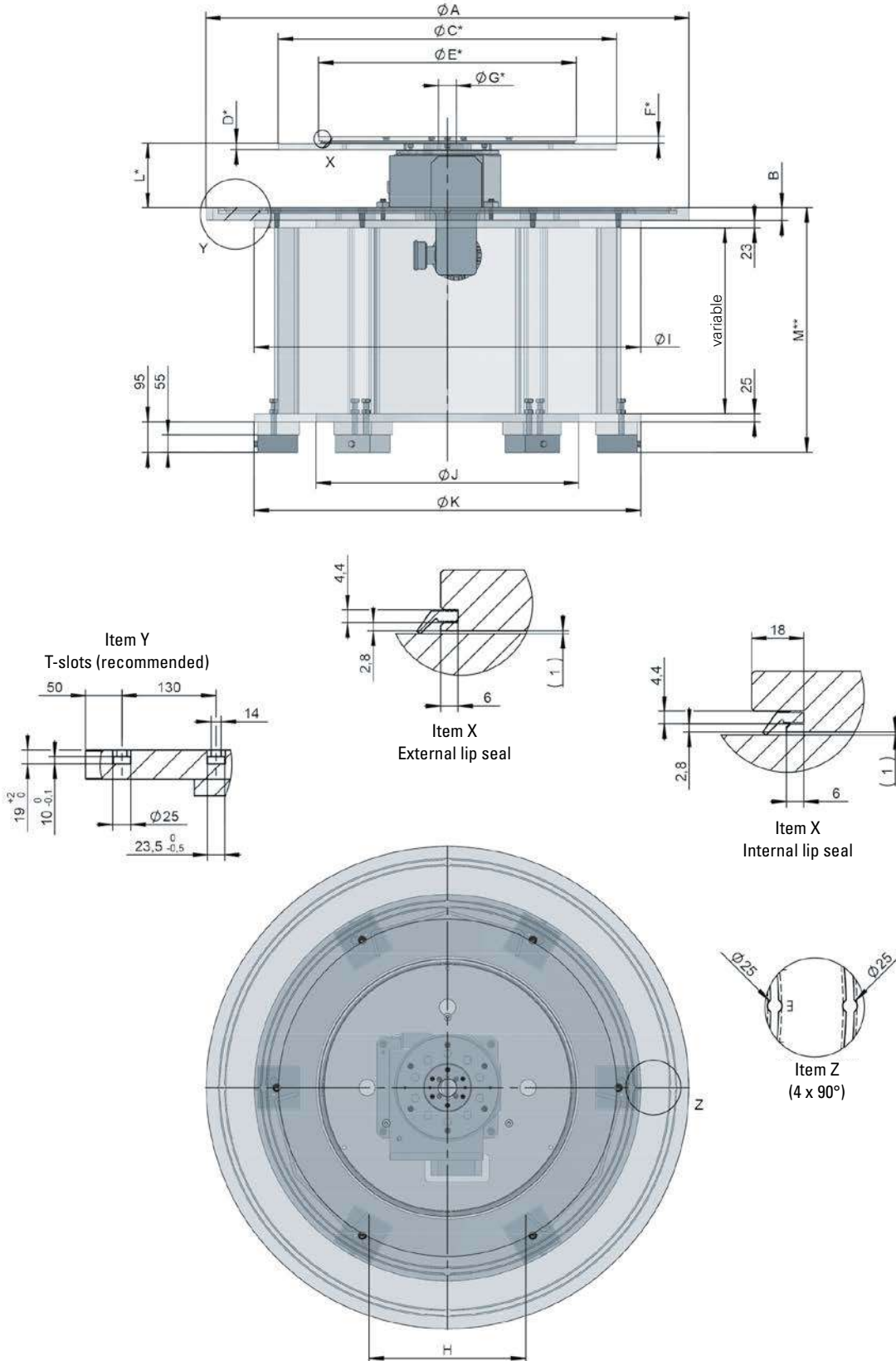


TABLE OF DIMENSIONS FOR RAISED SUPPORTS Raised supports are optionally available for TR/NR rotary indexing rings tables.

Table type	Raised support for fixed centre plate			Raised support for rotary indexing ring tables		
	ØDS	ØdS	Height	ØDR	ØdR	Height
<b>TR/NR 750</b>	<b>485</b>	<b>410</b>	<b>21.5</b>	<b>770</b>	<b>440</b>	<b>variable</b>
<b>TR/NR 1100</b>	795	720	32	1100	740	variable
<b>TR/NR 1500</b>	<b>1130</b>	<b>1055</b>	<b>32</b>	<b>1420</b>	<b>1080</b>	<b>variable</b>
<b>TR/NR 2200</b>	1745	1655	37	2200	1660	variable

### DIMENSIONS

Please download the selected machine base from the internet (in 2D or 3D) directly into your CAD drawing. This will ensure you are using the latest model.



\* For recommended dimensions and diameters, see "Rotary tables"

\*\* Distance M varies according to the ridge height and can be changed by  $\pm 3$  mm by adjusting the feet



# SK SERIES

TABLE OF DIMENSIONS FOR STANDARD VERSION (Attention! New type designation)

Type	Recommended rotary table type	□A (Standard)	B	B*	H	□I	□J	□K
<b>SK 100B</b>	<b>TC/NC 150 – 320, TW 150 – 300 TO 150 – 220, CR 300</b>	<b>1300</b>	<b>35</b>	<b>40</b>	<b>410</b>	<b>1000</b>	<b>615</b>	<b>1000</b>
<b>SK 200B</b>	TC/NC 220–320, TW 200–300 TR/NR 750, CR 400, TO 750	1480	35	40	610	1300	1007	1300
<b>SK 300B</b>	<b>TC/NC 320, TC 500 – 700, TW 300, TR/NR 750, TR/NR 1100, CR 400 – 700, PM 1100, PM 1500</b>	<b>1800</b>	<b>35</b>	<b>40</b>	<b>710</b>	<b>1610</b>	<b>1310</b>	<b>1610</b>

General tolerances in conformity with DIN ISO 2768-m. Special tolerances upon request/dimensions variable.

\* with T-slots

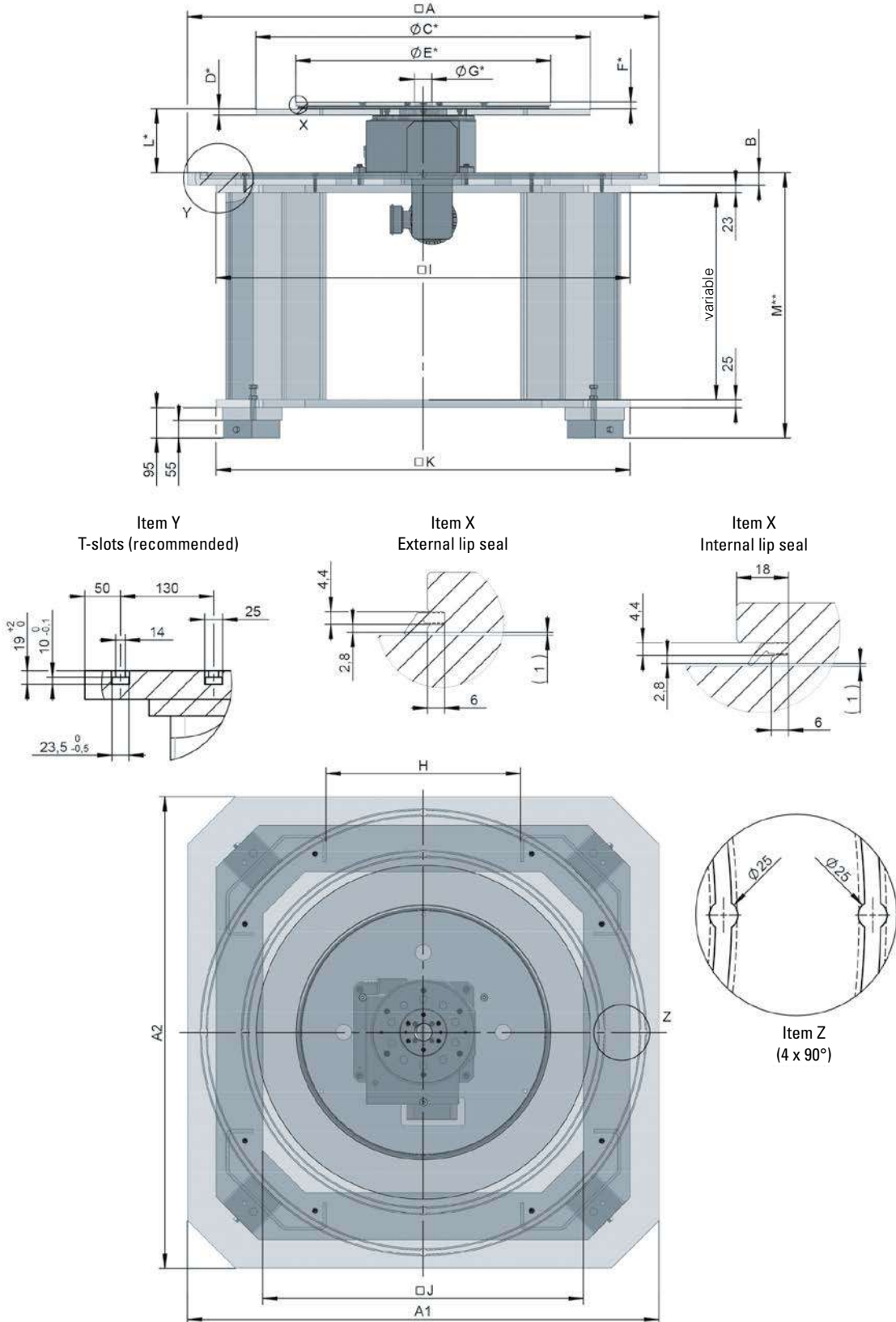
**Notes:** For the permissible loads of the stationary or rotary indexing plates, please refer to the „Rotary indexing table“ chapter. Special machining according your drawing.



Example detailing SK300B, TC320T, dial and stationary plates.

**DIMENSIONS**

Please download the selected machine base from the internet (in 2D or 3D) directly into your CAD drawing. This will ensure you are using the latest model.



\* For recommended dimensions and diameters, see "Rotary indexing tables"

\*\* Distance M varies according to the ridge height and can be changed by ±3 mm by adjusting the feet

# PLATES

CUSTOMER-SPECIFIC SOLUTIONS | PLATES

## STATIONARY PLATE

- Standard model with integrated sealing lip between stationary and rotating plate in steel or aluminium
- Delivered with assembly hole and bore pattern (incl. middle bore) appropriate for the table, T-slots possible
- Manufactured in Flatness Quality B including 3 off blanked machining holes
- Please note! All drill holes are blind in order to avoid the accidental blocking of the rotary indexing table

## ROTARY PLATE

- Precision machined from aged material in a controlled temperature environment
- Recommended to be manufactured from aluminium to minimise weight
- With appropriate assembly holes and bore patterns (plate is located on the rotary indexing table with two dowel pins)

## BASE PLATE

- 3 cable ducts as standard
- Including cut out for drive when mounted on underside, if required
- Prior to positioning your automation equipment please observe the standard hole pattern for fixing the base plate to the base frame
- T-slots possible

## GUARANTEED PRECISION

- We guarantee the highest precision for flatness and repeatability. Measurements are taken from the indexing dial plate when assembled to the rotary indexing unit. The precision is documented in an inspection certificate.
- Indexing accuracy of hole patterns – up to  $\varnothing 1800 \text{ mm} \pm 3''$  over  $\varnothing 1800 \text{ mm} \pm 8''$
- Laser measurement of the indexing precision possible
- Indicate machining concerning the bore pattern
- Please forward your drawing by E-Mail in pdf or DXF format

## MANUFACTURING NOTE

Dial plates with a diameter more than 550 mm will have 3 auxiliary threads. At stationary plates these threads are closed by plugs. We will inform you about the possible pitch diameter and the thread size if necessary.

## DELIVERY TIME

- Depending on the diameter, between four and eight weeks – including drilling work
- Standard dimensions can be supplied at short notice. (outer diameters: 600, 700, 800, 1000, 1100, 1200 and 1600)
- Surface treatment: 1 week additional processing time required
- Aluminium: anodised
- Steel: chemically nickel-plated



## AXIAL ACCURACY FOR ROTARY TABLES WITH PLATES

Diameter (mm)	Thickness (mm)	Flatness Quality A (mm)	Flatness Quality B (mm)
<b>&lt; 600</b>	≥ 20	<b>0.04</b>	<b>0.10</b>
	< 20	<b>0.06</b>	<b>0.15</b>
<b>&lt; 800</b>	≥ 20	0.06	0.15
	< 20	0.07	0.18
<b>&lt; 1100</b>	≥ 20	<b>0.07</b>	<b>0.18</b>
	< 20	<b>0.08</b>	<b>0.20</b>
<b>&lt; 1400</b>	≥ 25	0.08	0.20
	< 25	0.10	0.25
<b>&lt; 1800</b>	≥ 25	<b>0.10</b>	<b>0.25</b>
	< 25	<b>0.20</b>	<b>0.50</b>
<b>&lt; 2500</b>	≥ 30	0.15	0.40
	< 30	0.25	0.55





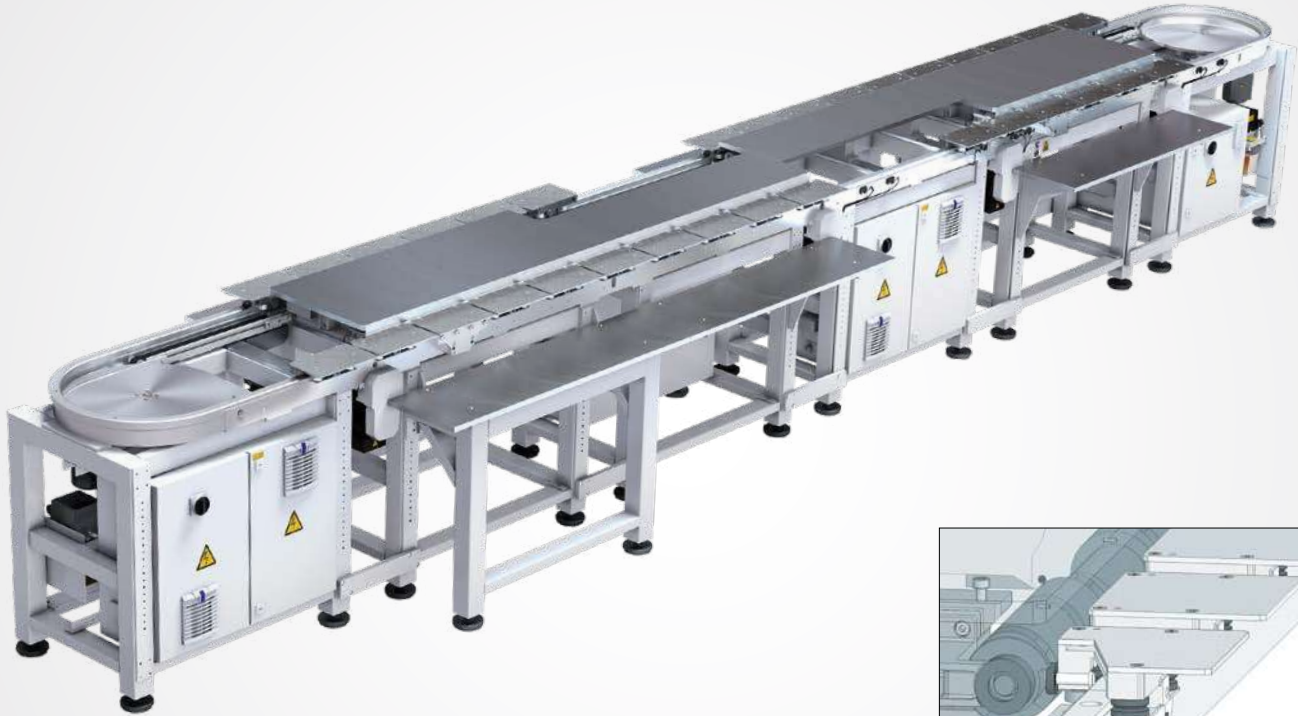


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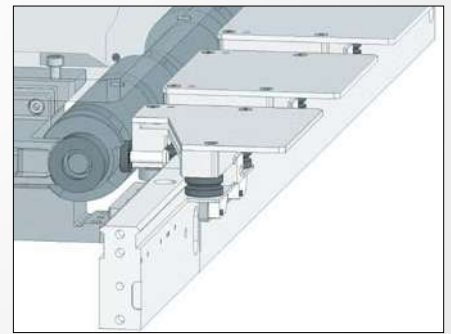
LINEAR ASSEMBLY SYSTEM

# LS

LS 280 LINEAR ASSEMBLY SYSTEM



Linear Assembly System LS280 consisting of four assembly cells with locking station and base frame, as well as of belt sections, corner units and workpiece carriers.



## LINEAR ASSEMBLY SYSTEM LS: SOPHISTICATED, MODULAR CELL DESIGN

### FREELY AND INTUITIVELY PROGRAMMABLE

W.A.S. 2 LS – WEISS Application Software: secure and fast commissioning with free-of-charge user software.



### THE SOLUTION FOR CLEANROOMS

LS280 CL – The solution for the cleanroom: The Linear Assembly System LS280 CL has been designed for use in cleanrooms and is certified to air purity class 6 in line with ISO 14644-1.



Fully automatic production system for lighting terminals. A 13-metre-long LS 280 linear assembly system with seven autonomous processing cells and a total of 45 processing positions forms the basis. Operating at a cycle time of 2.4 seconds, some 24,000 lighting terminals are manufactured per hour.



The advantages of the LS 280 result from a completely new, elegant drive principle. It combines a rotary indexing table with a transfer system, hence a cam drive with a belt system. This results in a radical reduction of the transport times as well as in an enormously high productivity. The modular designed cell concept also allows a flexible and extendable system design.

## ADVANTAGES

- Proven cam drive
- Smooth, impact free motion sequence
- Short workpiece exchange times
- High positioning precision without additional stopping or indexing modules
- High level of availability
- Modular system design
- Independently functional assembly cells
- Adjustment of varying processing times
- High degree of reusability
- Stable basic structure made of steel
- Delivery with complete cell wiring
- High degree of reliability
- Maintenance free
- Complete functional and quality inspection
- Short implementation time
- Fast build-up assembly
- W.A.S. 2 – WEISS Application Software for easy and fast start-up
- Convincing price / quality ratio
- ESD-capability



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## HIGHER NUMBER OF CYCLES – MORE OUTPUT

The LS 280 achieves – due to the shortening of transport times – a cycle speed, which others can only dream of. The conventional workpiece carrier exchange – transporting, stopping, lifting and positioning – is replaced by one smooth and fast motion sequence – absolutely jerk and impact-free with up to 60 cycles per minute. With this exclusive drive principle the LS 280 combines the speed, precision and reliability of a rotary indexing table with the flexibility of a transfer system.

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## SIMPLE MOTION PRINCIPLE – HIGH LEVEL OF AVAILABILITY

What does not exist cannot break down. The simple and precise motion principle of the transport cam and the modular cell design considerably reduce the number of mechanical and electrical components. The availability of the LS 280 increases to the same degree. The single cells are uncoupled through “intelligent” belt sections. Short idle times between these assembly cells can be compensated by small buffers.

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## JERK AND IMPACT-FREE CARRIER TRANSPORTATION – NO VIBRATIONS AT THE CUSTOMER PRODUCT

The modified sinusoidal motion sequence within the transport cam together with the speed controlled belt sections in front of a cell provide transport through the system that is continuously smooth and impact-free. The frequency controlled belt drive unit reduces the transport energy of the workpiece carrier prior to the approach to the cam intake to one-hundredth in comparison with normal transport. This ensures that vibrations are avoided at the customer product.

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## MODULAR SYSTEM DESIGN – LOWER INVESTMENT COSTS

The LS 280 is based on a clear modular cell design. The elaborate design with a low number of components offers solutions of great simplicity and elegance – tailored for individual requirements. Additional components for stopping and indexing of the carriers are not required. The clearly defined cell modules keep labour costs low for build-up and start-up. Stability and reliability allow a three-shift operation with a minimum of service staff.

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## ADJUSTMENT OF VARYING PROCESSING TIMES – INCREASE OF PRODUCTIVITY

On a rotary indexing table, the longest processing time determines the cycle time of the system. The LS 280 however, allows the combination of different indexing pitches within one system through the simultaneous transfer of several workpiece carriers to execute time consuming operations parallel in line. Without elaborate lock out different processing times can be decoupled integrated to achieve a higher production output. The fast total frequency of the system remains in place.

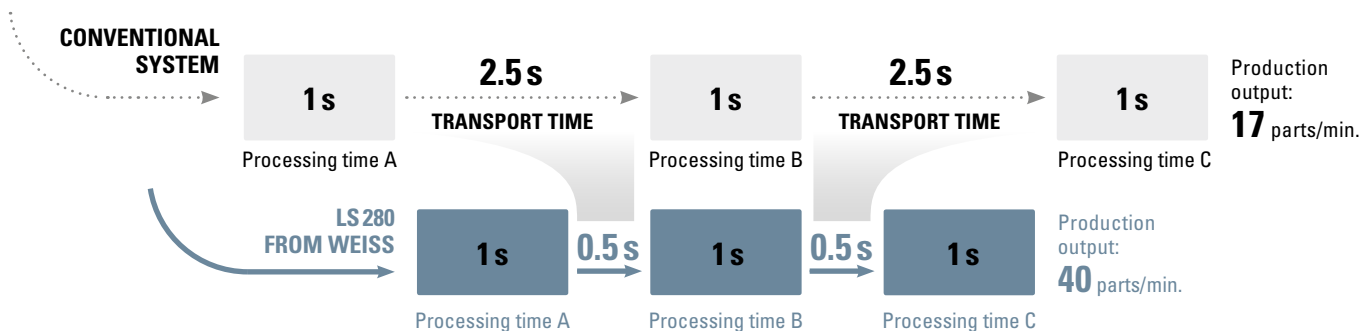
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## MAINTENANCE-FREE OPERATION – HIGH RELIABILITY

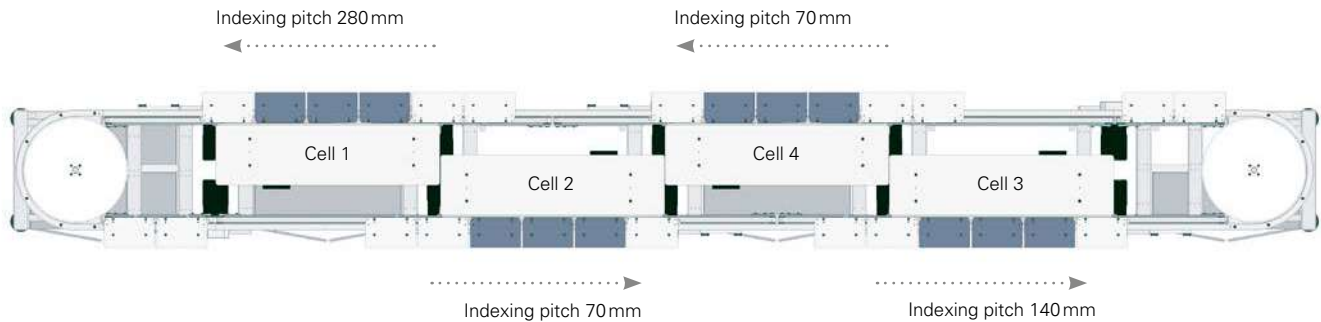
The LS 280 allows a fully automatic and maintenance-free three shift operation due to hardened and ground motion tracks in connection with an integrated central lubrication system as well as ball bearing rollers at the workpiece carrier. The monitoring functions integrated in the control guarantee the maximum degree of operation reliability.

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## COMPARISON OF WORKPIECE EXCHANGE TIMES



**TIME AND LAYOUT EXAMPLE OF A LS 280 WITH DIFFERENT CUSTOMER PROCESSING TIMES AT THE INDIVIDUAL ASSEMBLY CELLS**



Indexing pitch of the cell (mm)	Workpiece exchange time (sec.)	Processing time customer (sec.)	Cycle time of a cell (sec.)	Resulting cycle time per part (sec.)
<b>70</b>	<b>0.4</b>	<b>0.8</b>	<b>1.2</b> (1)	<b>1.2</b>
140	0.5	1.9	2.4 (2)	1.2
<b>280</b>	<b>0.6</b>	<b>4.2</b>	<b>4.8</b> (3)	<b>1.2</b>

- (1) sequential processing per part
- (2) parallel processing at 2 parts
- (3) parallel processing at 4 parts

**ESD-CAPABILITY – ANTISTATIC TRANSPORT**

There is no electrostatic charging due to the continuous steel design of the system which ensures that every workpiece carrier is earthed.

**INDEPENDENTLY FUNCTIONAL ASSEMBLY CELLS – FLEXIBLE AND EXTENDABLE SYSTEM DESIGN**

The LS280 is designed mechanically as well as from the control side as a cell concept. The single assembly cells contain decentralised control packages, which communicate with the PLC by a system bus. This ensures that subsequent extensions to a system or a division of a total system into separate sub-systems are possible without any problems. The stable basic design of the cells also ensures that no adjustments are required after the re-assembly.

**SHORT REALISATION TIMES – TIME TO MARKET**

Complete base machines can be set up with just a few stockable standard components in a very short time. Each system is performance tested and quality controlled prior to delivery. The parameter set of the system is therefore already individually adjusted and optimised.

We manufacture the mechanical interfaces such as mounting plates, workpiece carrier plates etc. according to customer drawings. The autonomous working assembly cells even allow the split-up of the work content to several suppliers. The above issues result in a time saving of several weeks for the customer.

## CELL WITH LOCKING STATION



The locking stations serve primarily for simultaneous transport and positioning of a number of workpiece carriers. Depending on the indexing pitch and station type, the user has a varying number of locked processing positions at his disposal.

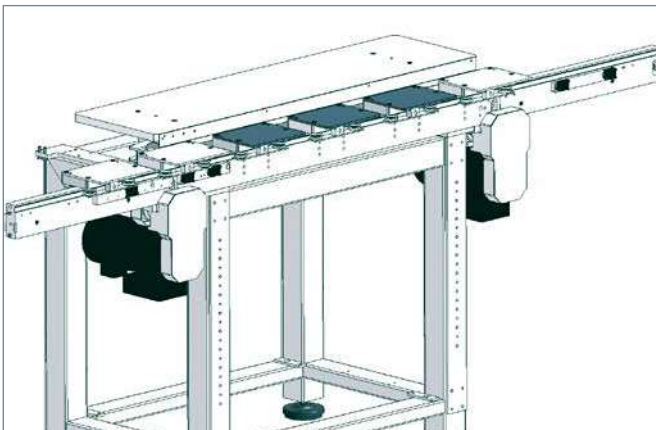
Along with stable steel base frames and top support plates the locking stations form the basis of an assembly cell of the Linear Assembly System LS 280.

The main item of the stations is formed by a cylindrical cam with which the workpiece carriers are engaged, transported and mechanically locked in a single motion sequence. This reliable drive principle enables shortest workpiece exchange times combined with a high positioning accuracy.

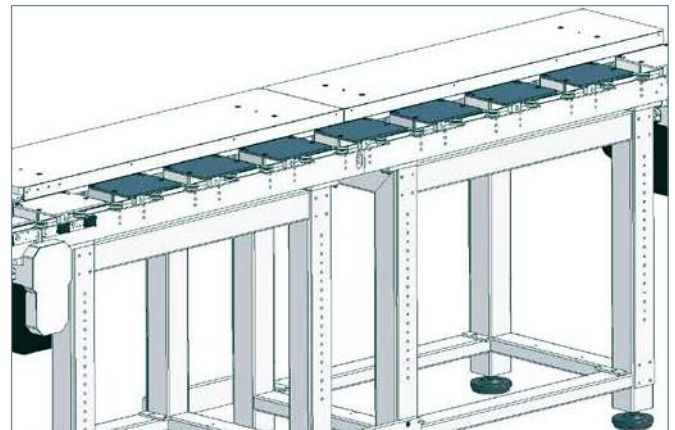
Despite working at high speed, the sinusoidal motion curve within the cylindrical cam guarantees a smooth, impact-free transportation of the workpiece carriers and therefore avoid vibrations at the transported product.

Two versions of the locking stations are available, single and double locking station. Both modules have the same drive concept, but differ through the number of available locked positions and the module length of 1200 mm or 2400 mm.

A twin cell configuration provides two independent working locking stations mounted back to back on one base frame. A common bigger top support plate is used in this case.



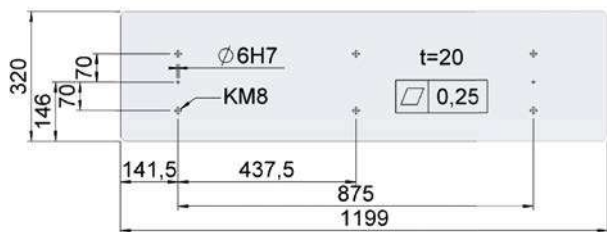
Single locking station



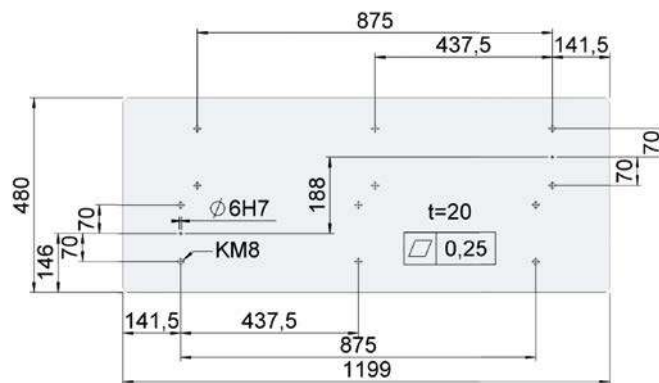
Double locking station

The locking stations are also designed to provide a mounting surface for handling modules, which are directly mounted on top of the assembly cell.

The top support plates are made of anodised aluminium or nickel-plated steel in the standard version. They can also be manufactured in accordance with customer specifications.



“One-sided” top support plate with standard hole pattern



“Twin” top support plate with standard hole pattern

### TECHNICAL DATA OF THE LOCKING STATIONS

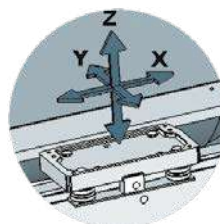
Indexing pitch of the cell (mm)	Workpiece exchange time (sec.)	Number of available locked positions at each indexing pitch:	
		Single locking station	Double locking station
<b>70</b>	<b>0.4*</b>	<b>10 positions</b>	<b>28 positions</b>
140	0.5*	5 positions	14 positions
<b>280</b>	<b>0.6*</b>	<b>3 positions</b>	<b>7 positions</b>
560	1.2*	2 positions (1 x 2 pos. parallel)	6 positions (3 x 2 pos. parallel)

\* Time from input of the start signal in the control of the cell to the output of the position signal from the control system.

Positioning precision: X / Y axis +/- 0.03 mm  
Z axis: +/- 0.06 mm

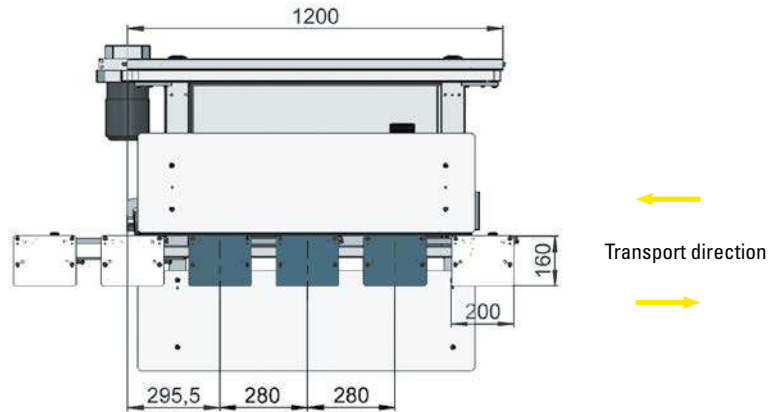
Transport direction: Counter-clockwise

Type of drive: Three-phase motor

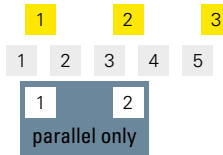


## CELL WITH SINGLE LOCKING STATION – AVAILABLE LOCKED POSITIONS

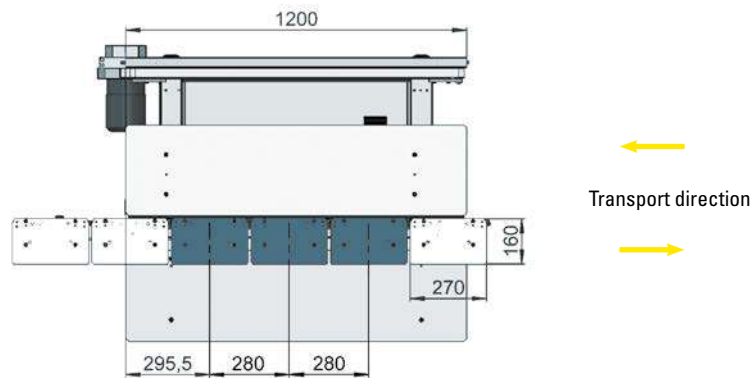
Stationary and rotating plates according to customer drawings form part of our scope of delivery and are offered separately.



Indexing pitch: **280**  
 Indexing pitch: **140**  
 Indexing pitch: **560**



Number of available locked positions at each cycle



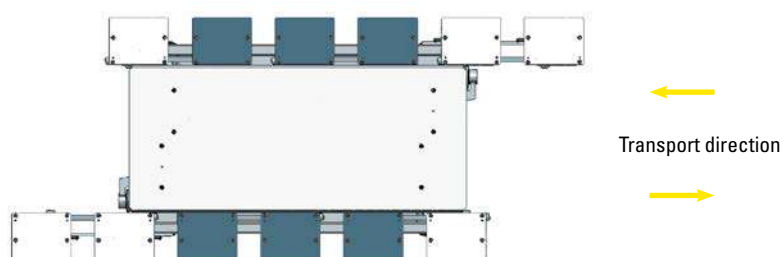
Indexing pitch: **70**



Number of available locked positions at each cycle

## CELL WITH TWO SINGLE LOCKING STATIONS – TWIN ARRANGEMENT

Stationary and rotating plates according to customer drawings form part of our scope of delivery and are offered separately.

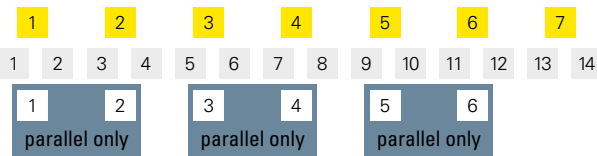


### CELL WITH DOUBLE LOCKING STATION – AVAILABLE LOCKED POSITIONS

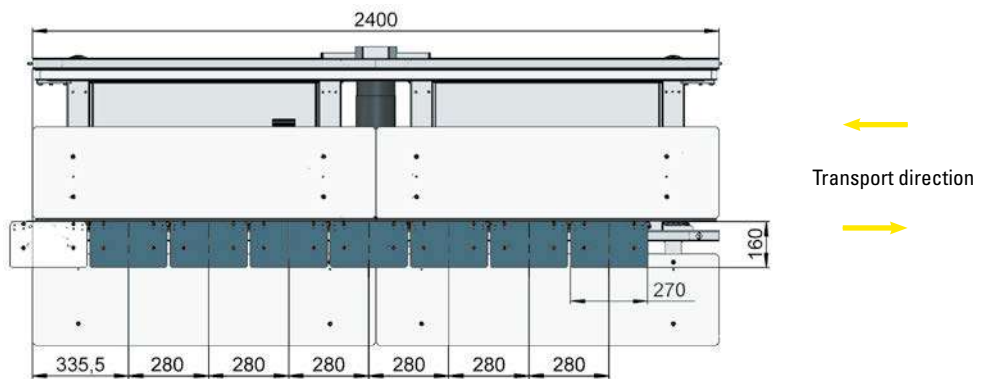
Stationary and rotating plates according to customer drawings form part of our scope of delivery and are offered separately.



Indexing pitch: **280**  
 Indexing pitch: **140**  
 Indexing pitch: **560**



Number of available locked positions at each cycle



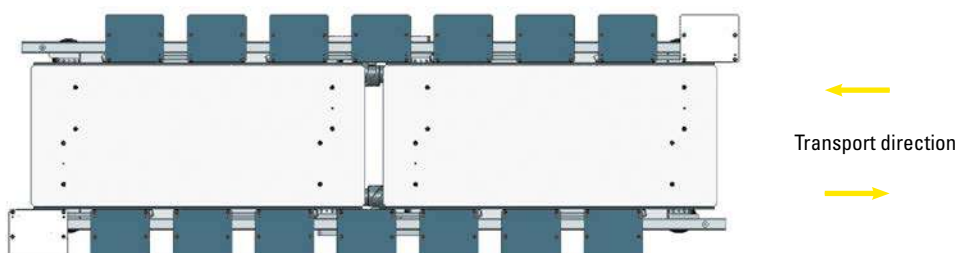
Indexing pitch: **70**



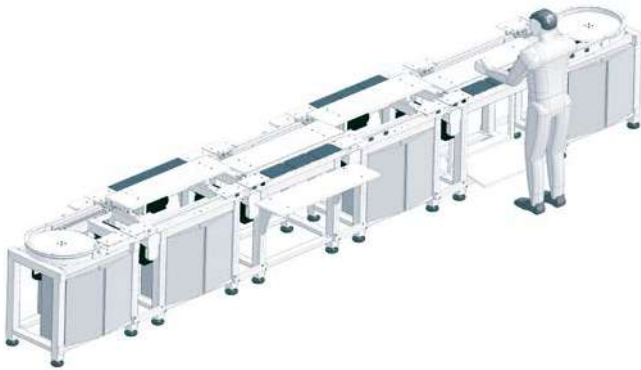
Number of available locked positions at each cycle

### CELL WITH TWO DOUBLE LOCKING STATIONS – TWIN ARRANGEMENT

Stationary and rotating plates according to customer drawings form part of our scope of delivery and are offered separately.



## BELT SECTION



The belt sections are used for the transport of the workpiece carriers between locking stations. This ensures a decoupling of the individual cell modules and also serves as a small buffer between the processing stations. The workpiece carriers are friction driven on a transport belt. The belt sections are available in different lengths for individual layouts.

The outgoing belt section after a locking station runs with constant high speed while the ingoing belt section in front of a locking station is always speed controlled. This provides a rapid and impact-free transportation of the workpiece carriers between stations.

The high transport speeds also ensure a reduced number of required workpiece carriers on the free belt sections. The integrated control functions to regulate the transport speed as well as the weight independent pressing force of the carrier to the toothed transport belt, guarantee that wear is kept to a minimum.



Belt section with toothed transport belt

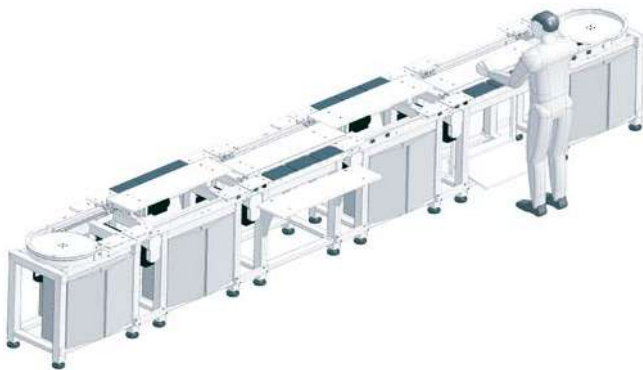


Driving unit with motor

## TECHNICAL DATA OF THE BELT SECTION

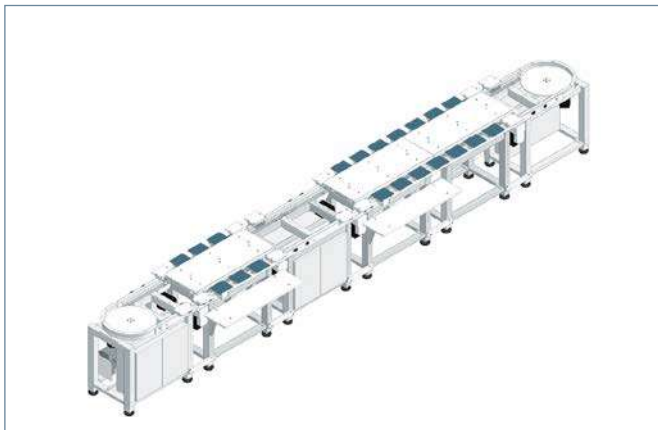
Belt section lengths:	600, 1200, 1500, 1800, 2400 mm
Min. length between two cells:	1200 mm
Transport speeds:	19 m/min; 26 m/min; 41 m/min (at 50 Hz) (reduced speeds possible by additional feed rate reduction)
Toothed transport belt:	PU-belt, Nylon coated
Type of drive:	Three-phase motor

CORNER UNIT

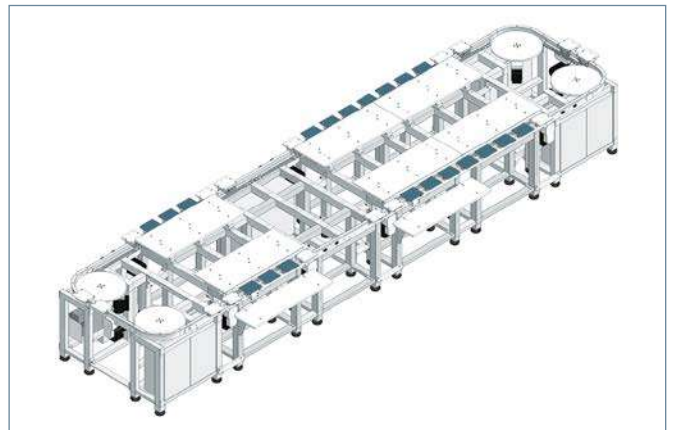


180° and 90° corner units are available for the design of the system layout. They determine the geometric execution of the two possible layout types.

The workpiece carriers are friction driven on the anodised aluminium disk.



Example of 180° system layout



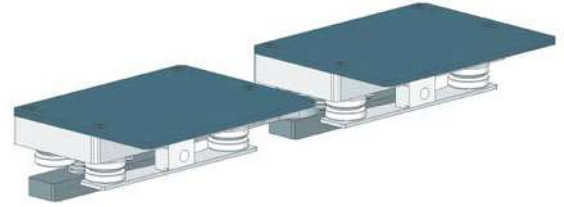
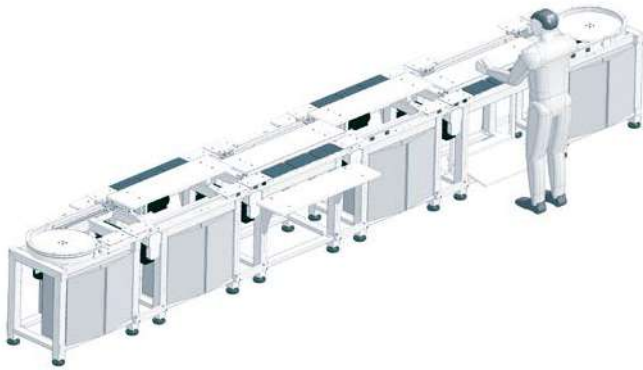
Example of 90° system layout

TECHNICAL DATA OF THE CORNER UNITS

Transport speeds:	15 m/min; 21 m/min; 34 m/min (at 50 Hz)
Type of drive:	Three-phase motor

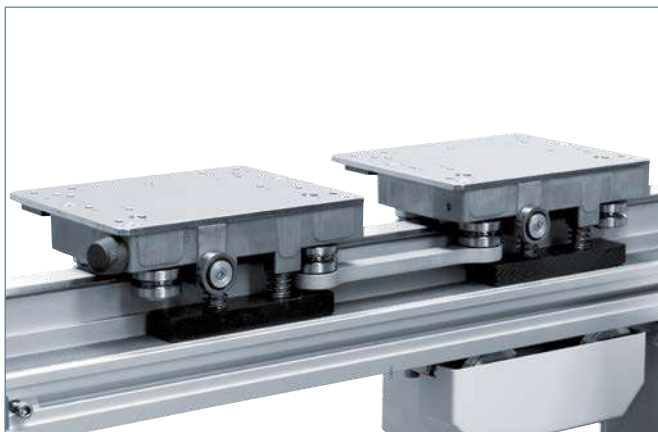


## WORKPIECE CARRIER

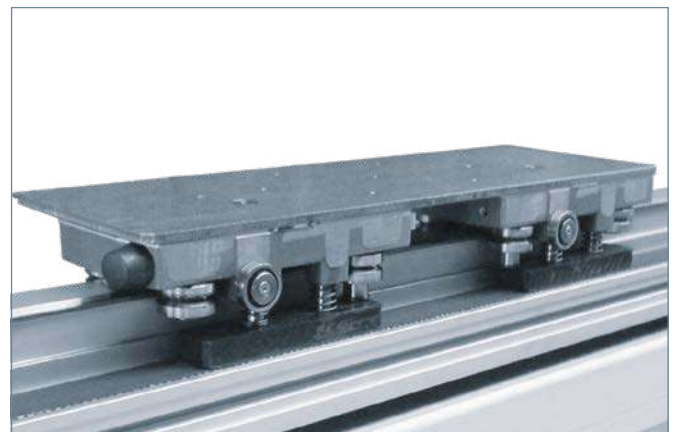


The workpiece carrier train consists of two workpiece carriers linked together by a connection rod. This forms the basis of the fixture of the workpiece. With longer workpieces the two carriers are linked together by a common carrier plate. The workpieces are guided on a continuous hardened and ground steel guide rail. On belt sections and corner units transport is provided by friction via a spring loaded plastic

shoe which is fitted to the underside of the workpiece carrier. This shoe exerts a constant pressure on the transport belts and corner units. Inside the locking station the workpiece carriers are moved and precisely positioned with the transport cam by the engagement of a cam roller.

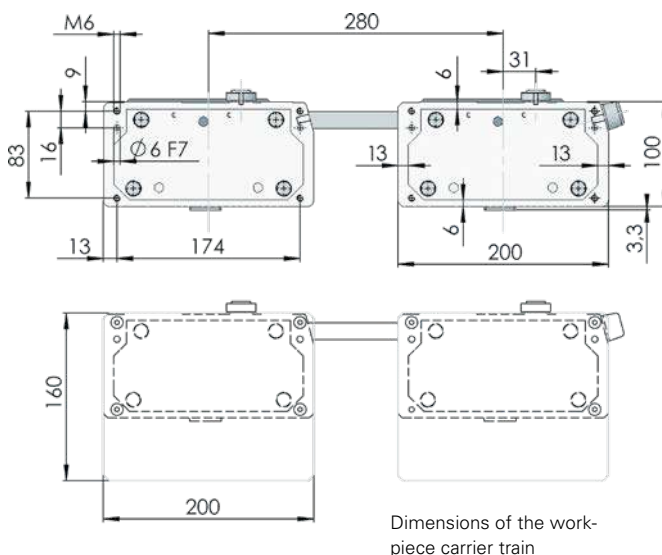


Workpiece carrier train with two single carrier plates



Workpiece carrier train with one common carrier plate

## DIMENSIONS



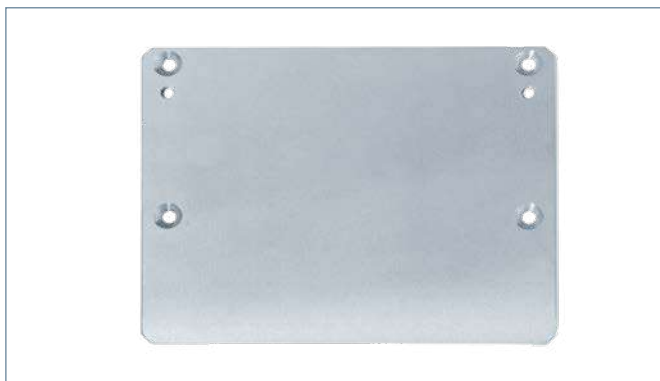
### Note:

The design of the workpiece carrier pin holes enables the manual fitting of the carrier plate or the fixture. The mounting pins have a press fit in the carrier plate and a sliding fit in the workpiece carrier.

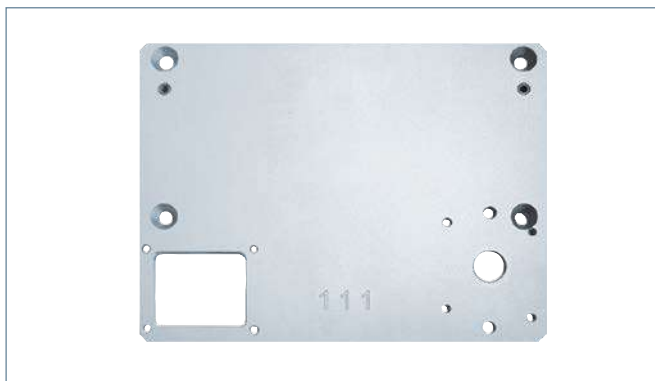
## CARRIER PLATE

The carrier plates are designed to carry the product fixture of the customer. They project outwards over the carrier basic body and form the outermost contour of the system.

This design allows accessibility to the product from underneath as well as the possibility to support by vertical process forces. Components can also be suspended outside or through the carrier plates.



Carrier plate with standard hole pattern



Carrier plate with customer-specific hole pattern

## TECHNICAL DATA OF THE CARRIER PLATES

Material:	Steel, chemically nickel-plated
Standard dimensions (L x W x H):	200 x 160 x 5 mm (for pitch 140, 280, 560) 270 x 160 x 5 mm (for pitch 70, 140, 280, 560) 480 x 160 x 6 mm (for pitch 560 / common carrier plate) (other dimensions and designs on request)
Payload:	The maximum payload depends on the location of the customer fixture on the carrier plate and the cycle time of the system. The maximum payload is 4 kg.

## SUPPORT IN THE CASE OF VERTICAL PROCESS FORCES

If vertical process forces occur in an application, for example when joining components, the carrier plates must be relieved by a stationary support from below. The carrier plates, which have an additional hardened rail underneath are driven to the

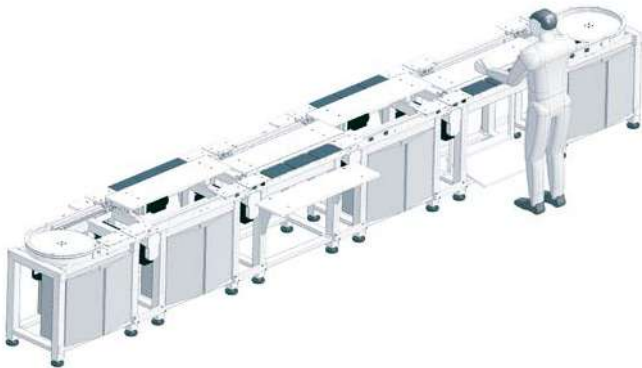
stationary cam rollers in the required positions. This type of support can take vertical process forces of up to approx. 3000 N. Depending on the point of force transmission, the supports in the outer area can be individually designed.



Stationary support



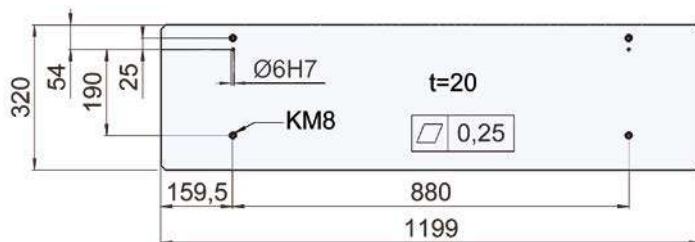
## BASE FRAME WITH ACCESSORIES



The stable steel base frames form the basis for the locking stations of the linear Assembly System LS280. Handling modules can be installed directly on the locking stations and require no further supporting structure.

The working height of the assembly cell is 1020mm. The frame height can also be adapted in accordance with customer specifications. If the locking station is integrated into an existing customer machine frame, the frame feet can be dispensed with and the station is supplied on a flat base frame.

The base frame legs are machined flat on the front and rear sides complete with a standard fixing hole pattern. This allows for the fixing of optionally available aluminium side assembly plates. The fixing holes are precisely machined in steps of 50mm to provide height adjustment.



"Side" assembly plate with standard hole pattern

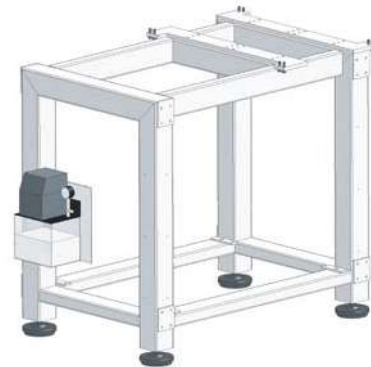
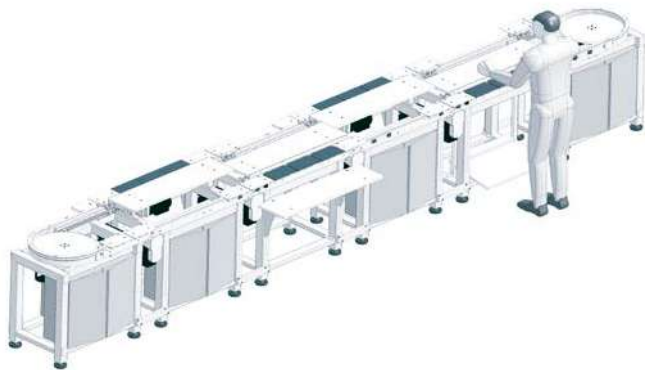
A high-quality switch cabinet is available for the cells, which is precisely integrated at the front or rear side of the base frames. The cabinet has the dimensions: 788 x 630 x 300 mm (W x H x D).

When using a side assembly plate it must be noted that the switch cabinet can only be opened if the plate is mounted in the uppermost position (dimension X = 200 mm between upper edge of the mounting plate and upper edge of the carrier plate).



Integrated switch cabinet on base frame

## CENTRAL LUBRICATION SYSTEM



In order to ensure reliable, wear-free operation of the system, the guide rail tracks and transport cams are automatically lubricated

by the integrated central lubrication unit. The lubrication quantity and intervals are preset prior to delivery.



Central lubrication unit



Lubrication point in guide rail

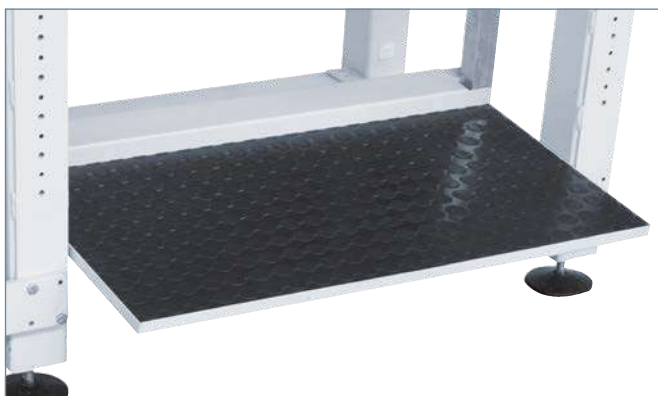
## MANUAL OPERATIONS

With processes that are difficult to automate, with fluctuating or uncertain production quantities, the user has the possibility to execute manual operations at a cell module.

With increasing production quantities, the manual operations

can be replaced by automated process stations, without mechanical modifications at the cell module.

Optionally, a height-adjustable footboard can be integrated into the base frame of this cell module.



Footboard integrated in the base frame (optionally available)

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## CONTROL SYSTEM

- One master PLC per LS280 basic machine
- Decentralised control packages per assembly cell
- Cell communication via system bus
- Centrally saved parameter file
- Fieldbus interfaces for customer interface
- W.A.S. 2 LS software



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## CELL WIRING

The wiring concept follows the decentralised cell structure of the LS 280 and has a standardised "WEISS" design, based on DIN EN 60204. Basic commissioning of the LS 280 is therefore already performed in the factory, which secures a faster start-up on the customer's premises.

The solution includes:

- Creation of a project-specific circuit diagram
- Wiring of the LS components in the local cell control cabinet of the respective LS cell
- Installation of the wiring in line with WEISS specifications with individual core and cable labelling, including the connection points on the control cabinets
- Installation of electrical interfaces within the LS280 wiring at the mechanical interfaces of the transport units
- Commissioning and test run of the LS280 with control system

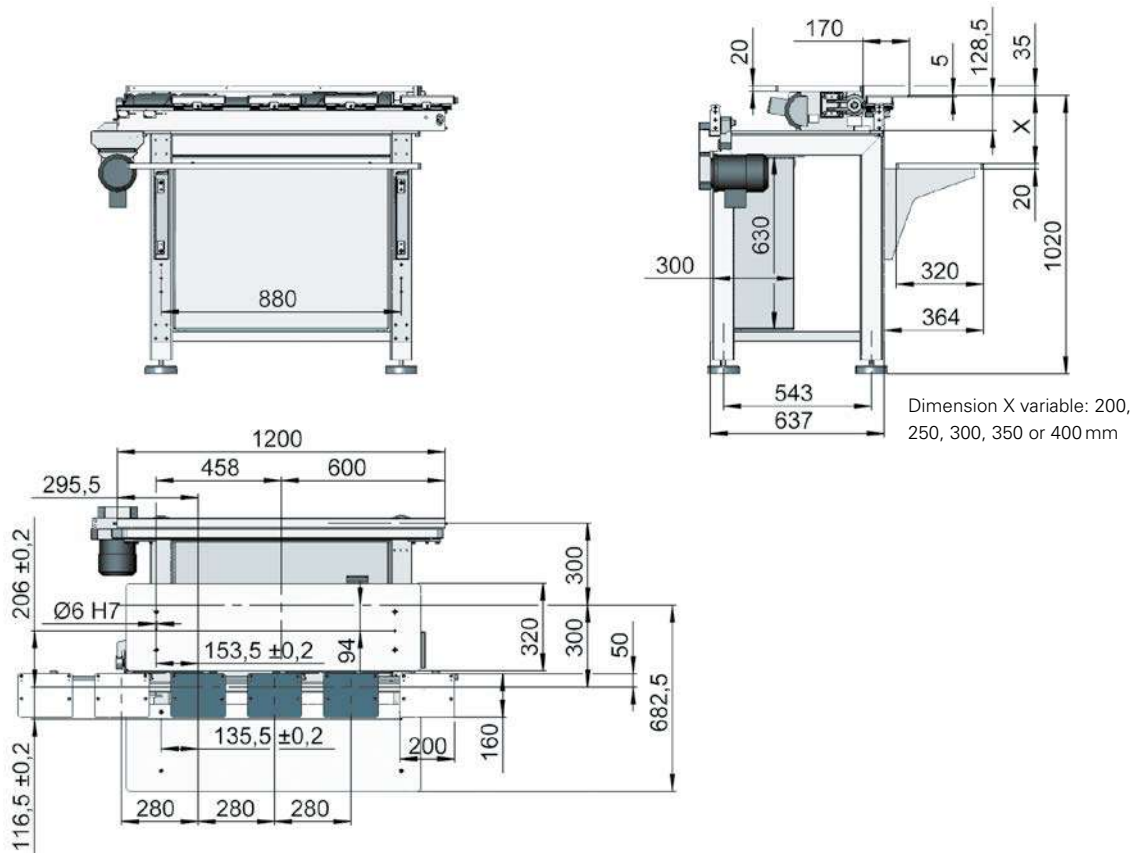


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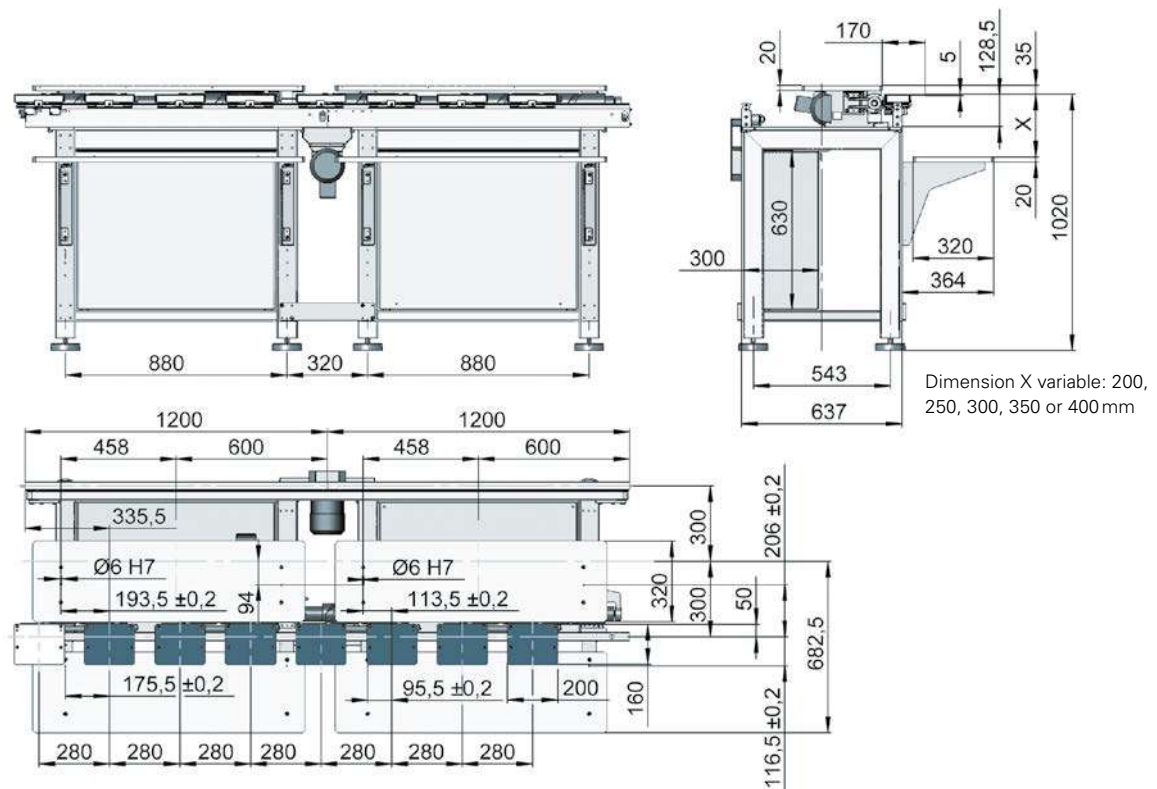
## SAFETY AND SERVICE

- Frequency converter with integrated Safe Torque Off restart lock (SIL2, PL "d")
- Depending on the brand, configuration and wiring of the frequency converter, Safe Torque Off (SIL3, PL "e") can also be achieved
- Comprehensive monitoring functions
- Remote maintenance
- Global service

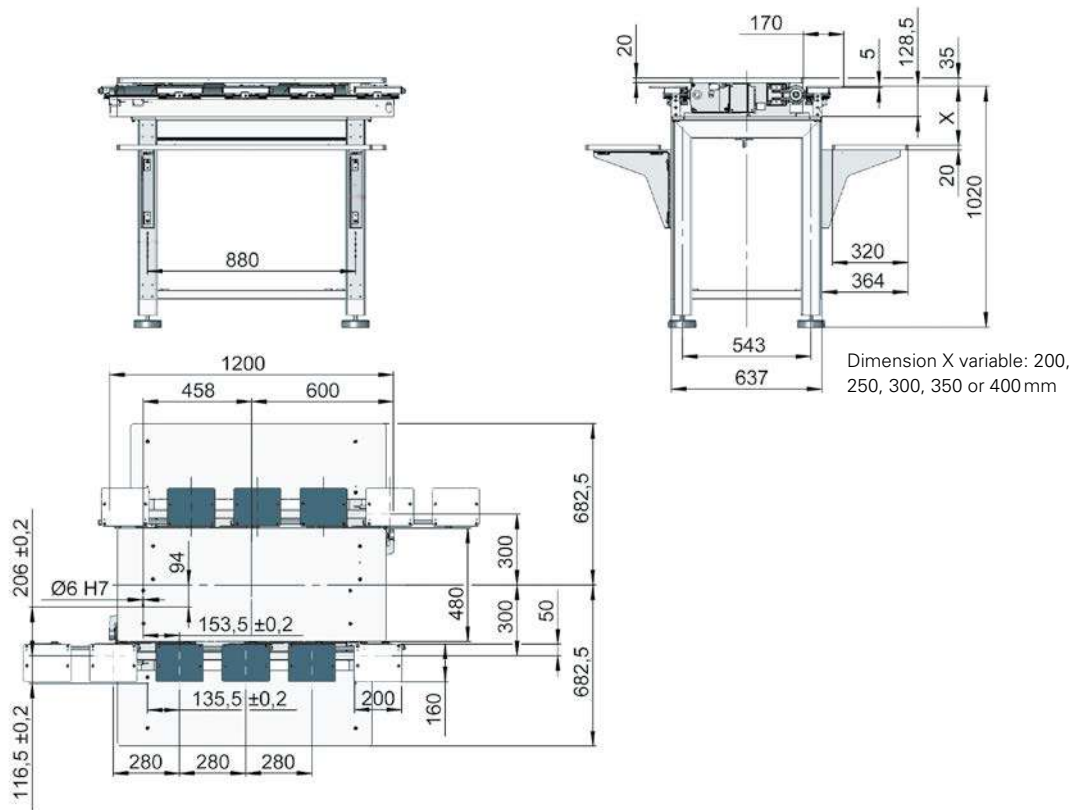
DIMENSIONS – LS 280 ASSEMBLY CELL WITH SINGLE LOCKING STATION



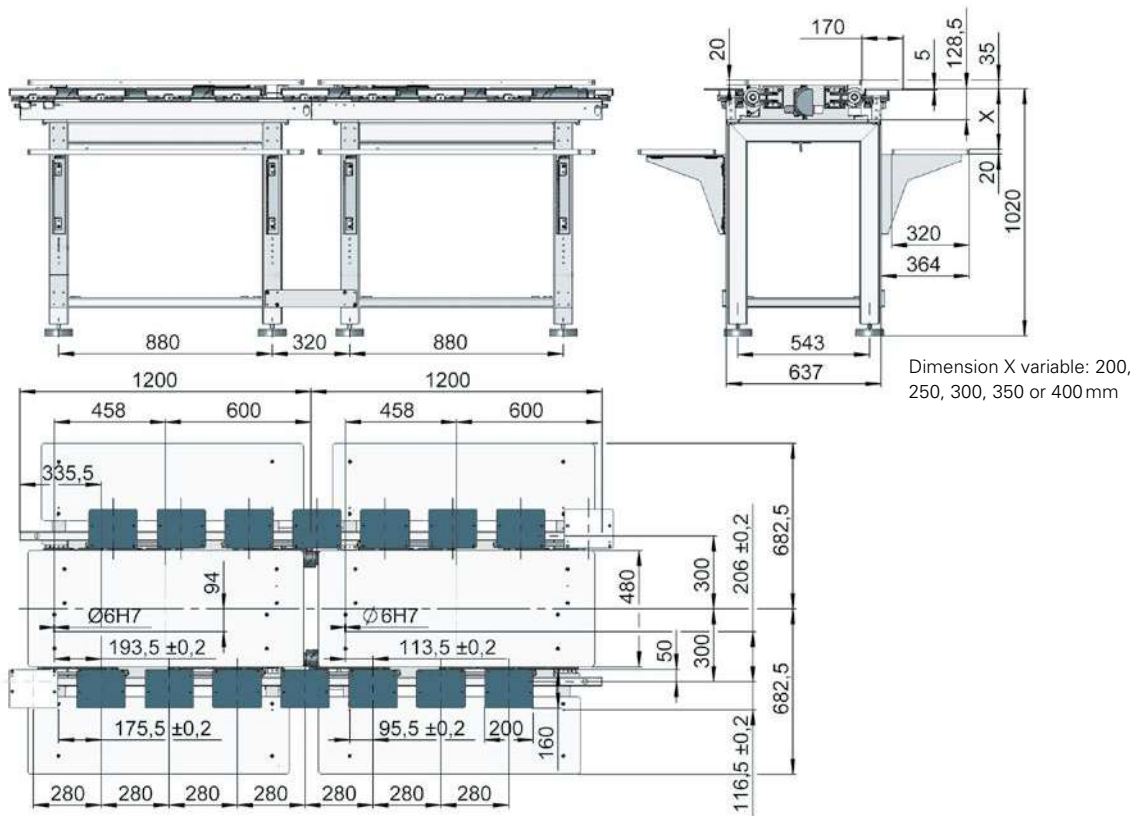
DIMENSIONS – LS 280 ASSEMBLY CELL WITH TWIN LOCKING STATION



**DIMENSIONS – LS 280 ASSEMBLY CELL WITH TWO SINGLE LOCKING STATIONS IN TWIN ARRANGEMENT**

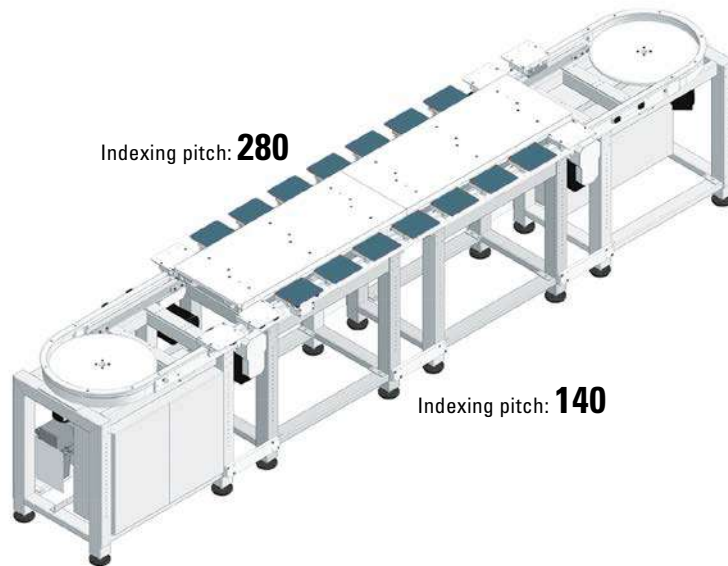


**DIMENSIONS – LS 280 ASSEMBLY CELL WITH TWO DOUBLE LOCKING STATIONS IN TWIN ARRANGEMENT**

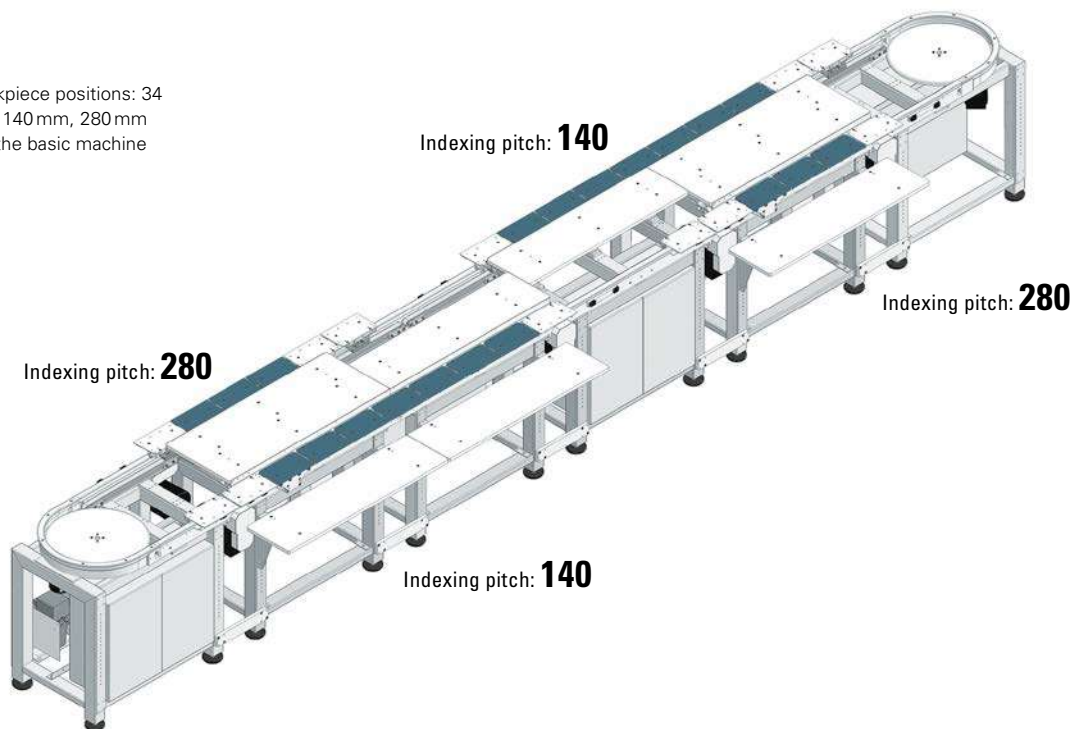


LAYOUT EXAMPLES FOR 180° SYSTEM

Number of locked workpiece positions: 21  
 Indexing pitches used: 140 mm, 280 mm  
 Space requirement of the basic machine  
 (L x W): 4.8m x 0.9m



Number of locked workpiece positions: 34  
 Indexing pitches used: 140 mm, 280 mm  
 Space requirement of the basic machine  
 (L x W): 7.2m x 1.1 m

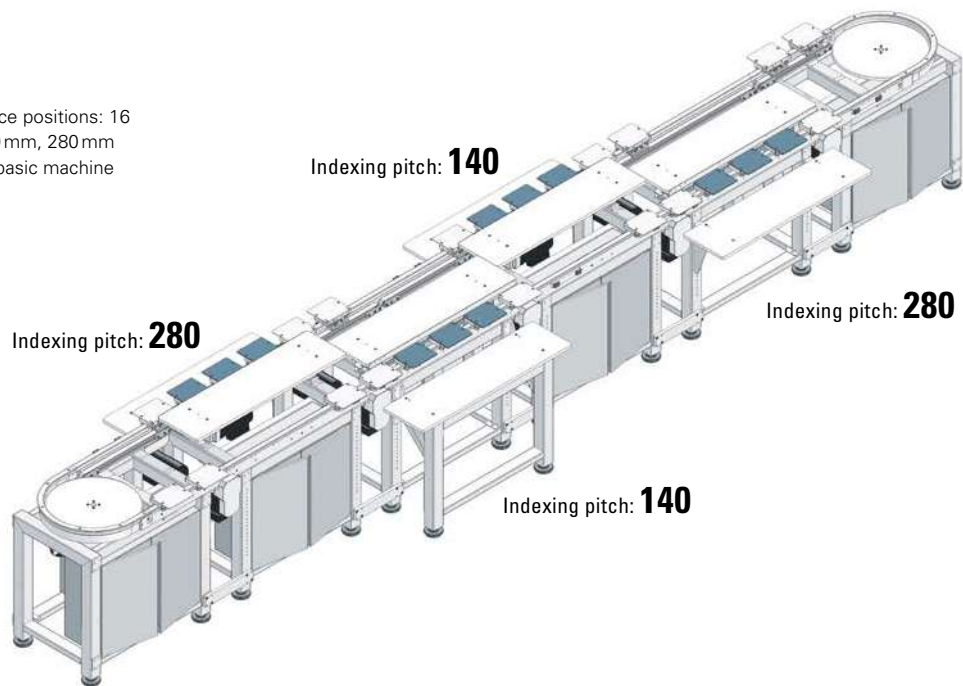


A selection of layout examples of the LS 280 linear assembly system is available as a CAD file at [www.weiss-international.com](http://www.weiss-international.com).

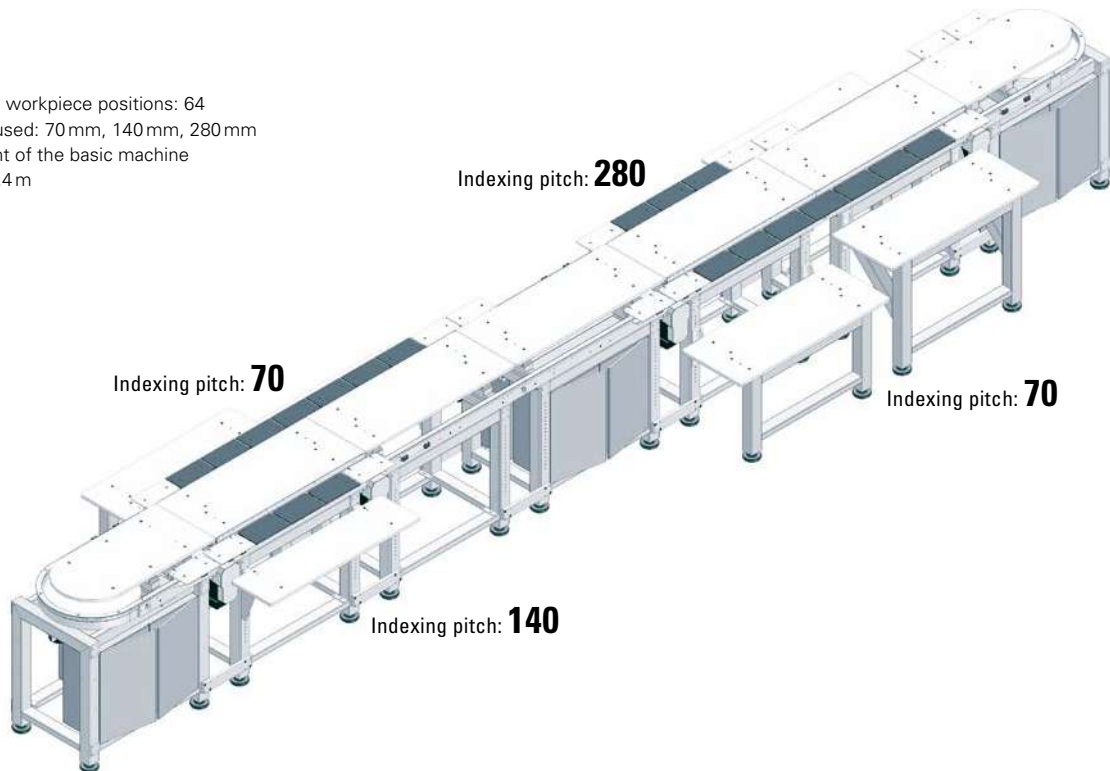


## LAYOUT EXAMPLES 180° SYSTEM

Number of locked workpiece positions: 16  
Indexing pitches used: 140 mm, 280 mm  
Space requirement of the basic machine  
(L x W): 7.2 m x 1.4 m



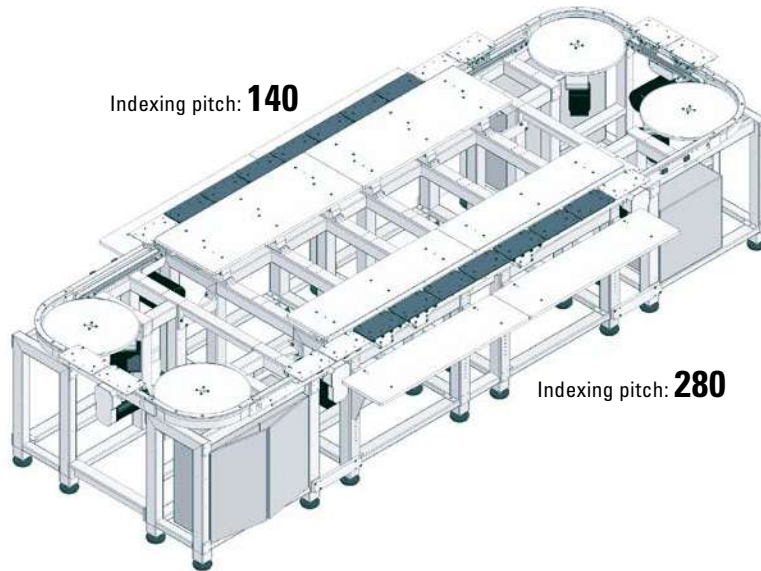
Number of locked workpiece positions: 64  
Indexing pitches used: 70 mm, 140 mm, 280 mm  
Space requirement of the basic machine  
(L x W): 8.4 m x 1.4 m



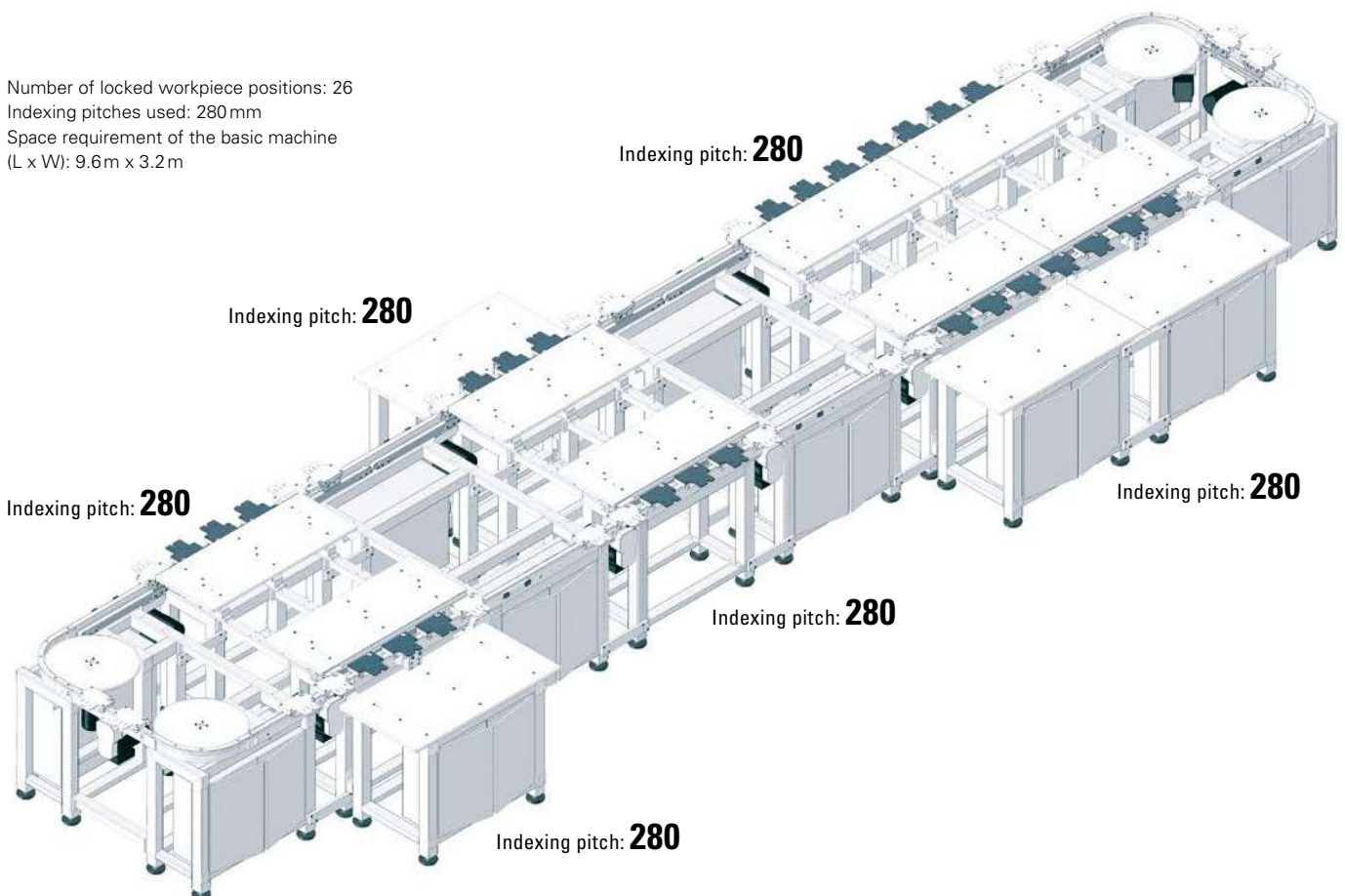
A selection of layout examples of the LS280 linear assembly system is available as a CAD file at [www.weiss-international.com](http://www.weiss-international.com).

LAYOUT EXAMPLES 90° SYSTEM

Number of locked workpiece positions: 21  
 Indexing pitches used: 140 mm, 280 mm  
 Space requirement of the basic machine  
 (L x W): 4.8 m x 2.3 m

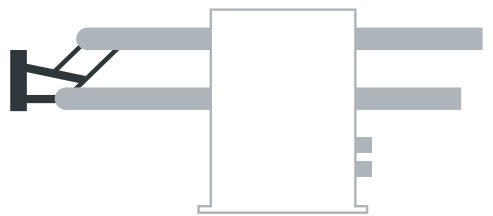


Number of locked workpiece positions: 26  
 Indexing pitches used: 280 mm  
 Space requirement of the basic machine  
 (L x W): 9.6 m x 3.2 m



A selection of layout examples of the LS 280 linear assembly system is available as a CAD file at [www.weiss-international.com](http://www.weiss-international.com).



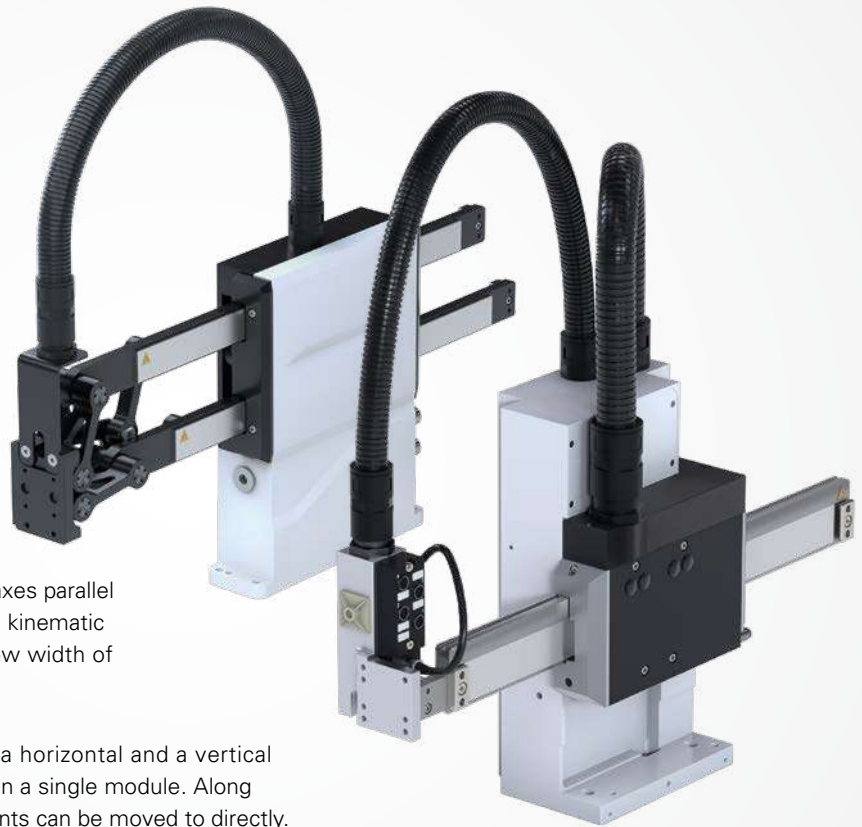


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HANDLING MODULES

# HP

HANDLING MODULES | HP PICK & PLACE



Pick & Place HP 70: two horizontal linear axes parallel on top of each other, connected through a kinematic unit. Because of the construction a narrow width of only 60 mm is possible.

Pick & Place HP 140: a horizontal and a vertical linear axis integrated in a single module. Along these two axes all points can be moved to directly.

## HP PICK & PLACE: THE DIRECT ALTERNATIVE

### THE SOLUTION FOR CLEANROOMS

The HP 140T CL 6 Pick & Place has been designed for use in cleanrooms and is certified to air purity class 6 in line with ISO 14644-1.

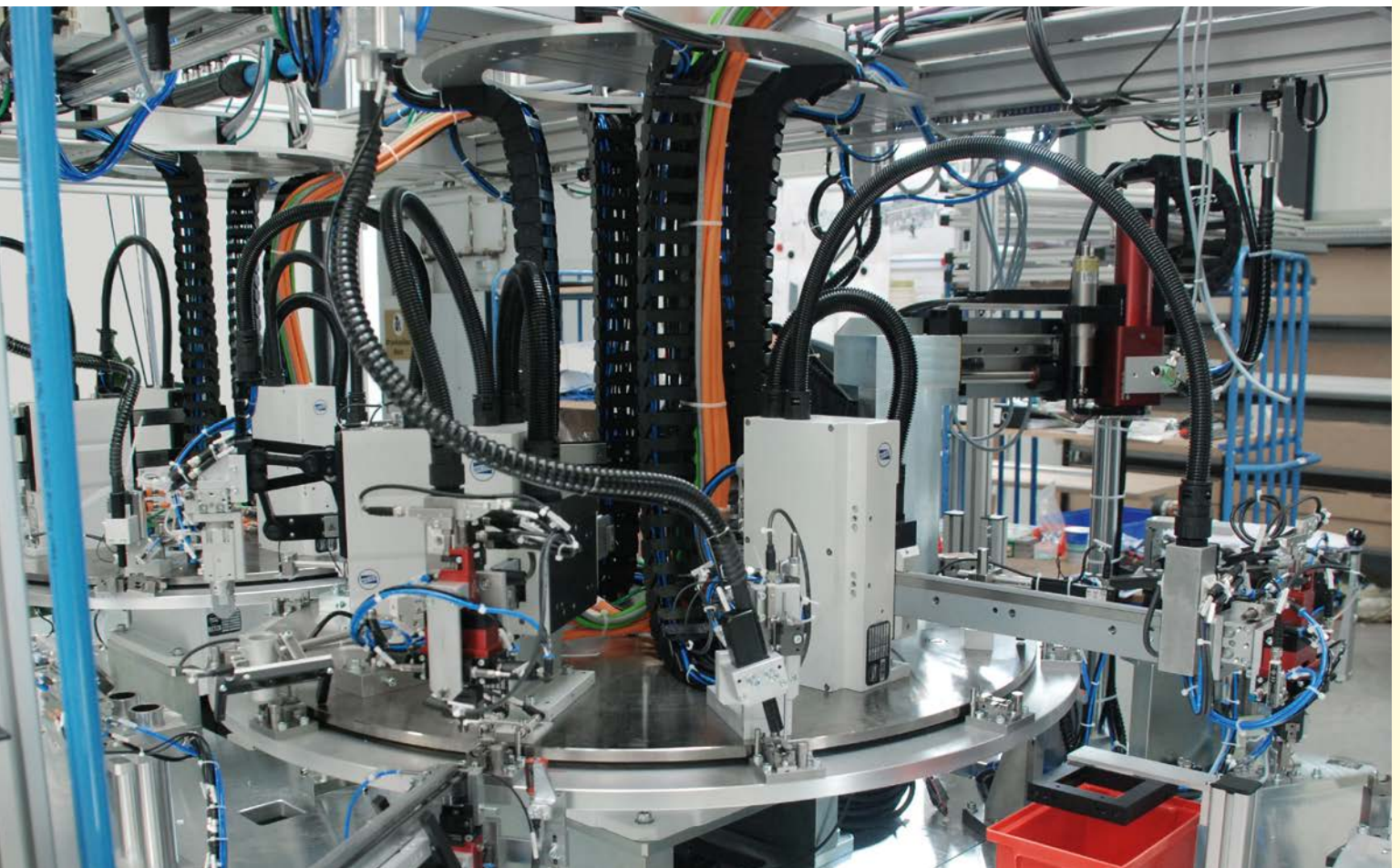


### FREELY AND INTUITIVELY PROGRAMMABLE

W.A.S. 2 – WEISS Application Software: secure and fast commissioning with free-of-charge user software.



Automated assembly system for electromechanical sensors from UBH Mechanical Engineering: eleven Pick & Place units achieve the required repeat accuracy of 0.02 mm – at a cycle time of 1.5 s.



Whether HP 140 or HP 70: The Pick & Place from WEISS works with two linear axes and therefore profit from all advantages of a direct drive: rapid dynamic performance, free user-programmability, minimal wear and highest precision. The HP overcomes limits of traditional pneumatic systems regarding variability, dynamic performance and efficiency.

---

## ADVANTAGES

- Extremely high dynamic performance thanks to direct drive
- Ready-to-install complete solution
- Free programmability
- Permanent feedback of position, process forces, speed (adjustable control circuit)
- Low maintenance costs
- Significantly lower energy consumption, in particular in comparison with pneumatic systems
- Very compact and slim design, offering greater flexibility for integration and assembly of the machine
- W.A.S. 2 – WEISS Application Software for simple commissioning
- Impressive price-performance

---

## GENERAL INFORMATION

- All motors are equipped with overtemperature protection (PTC)

---

## OPTIONS

- The Pick & Place units can be equipped with manual or automatic lubrication
- For efficient cable laying to the screw-on surface, the HP units can optionally be equipped with a tool connector. In addition to this, up to 2 valves can be installed directly in the housing (screwed down to the tool connector)
- Absolute measuring systems
- Functional safety (secure encoder attachment)

# HP 70T

## GENERAL INFORMATION

- The HP 70 can be used in any installation situation and therefore offers a maximum degree of flexibility
- Drawings of the HP 70 for custom installation locations are available on request

## OPTIONS

- The Pick&Place unit can optionally be supplied with a clamping element for the y-axis and z-axis

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V <sub>AC rms</sub>
<b>a<sub>Max</sub></b>	Max. acceleration:	40 m/s <sup>2</sup>
<b>v<sub>Max</sub></b>	Max. speed:	3.6 m/s
<b>F<sub>N mot</sub></b>	Nominal force:	65 N
<b>F<sub>P mot</sub></b>	Peak force:	180 N
<b>s<sub>h Max</sub></b>	Horizontal stroke:	125, 225, 325 mm
<b>s<sub>v Max</sub></b>	Vertical stroke:	70 mm
<b>m</b>	Weight:	9 kg
	Repeat accuracy:	0.005 mm
<b>m<sub>rec</sub></b>	Max. recommended load:	1 kg

## LOAD DATA

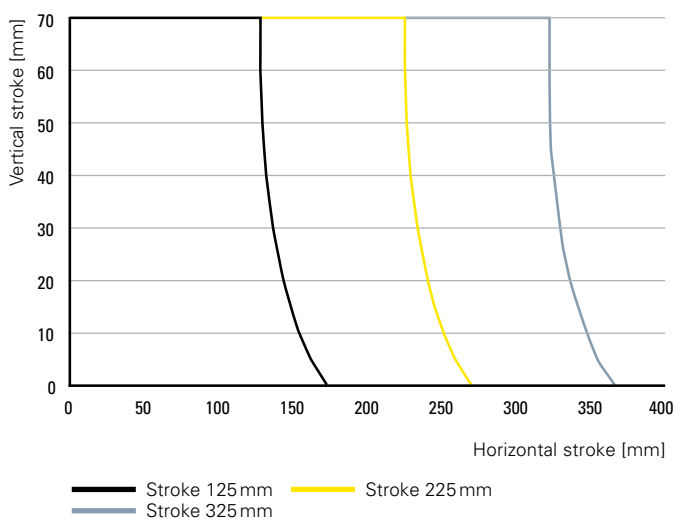
<b>M<sub>X stat</sub></b>	Max. static moment about the X-axis:	61 Nm
<b>M<sub>Y stat</sub></b>	Max. static moment about the Y-axis:	41 Nm
<b>M<sub>Z stat</sub></b>	Max. static moment about the Z-axis:	120 Nm
<b>F<sub>Y stat</sub></b>	Max. static force in the Y-axis:	100 N
<b>F<sub>Z stat</sub></b>	Max. static force in the Z-axis:	100 N

Please do not exceed the given forces – especially during pick or place operations. The accuracy is given for constant temperature and without outside forces.

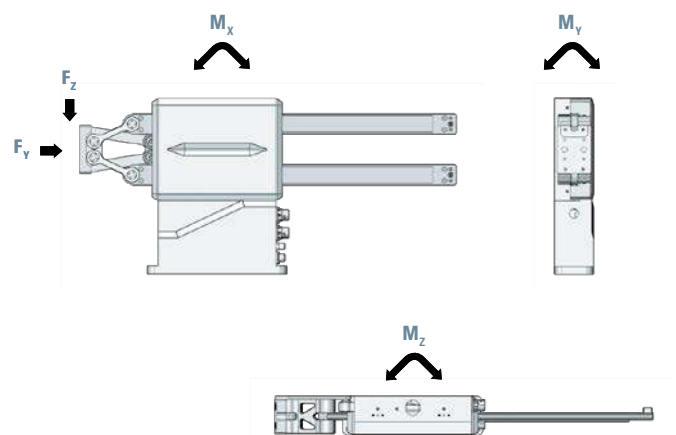
## ENCODER

Balluff	sin/cos
Balluff	BISS
Balluff	SSI

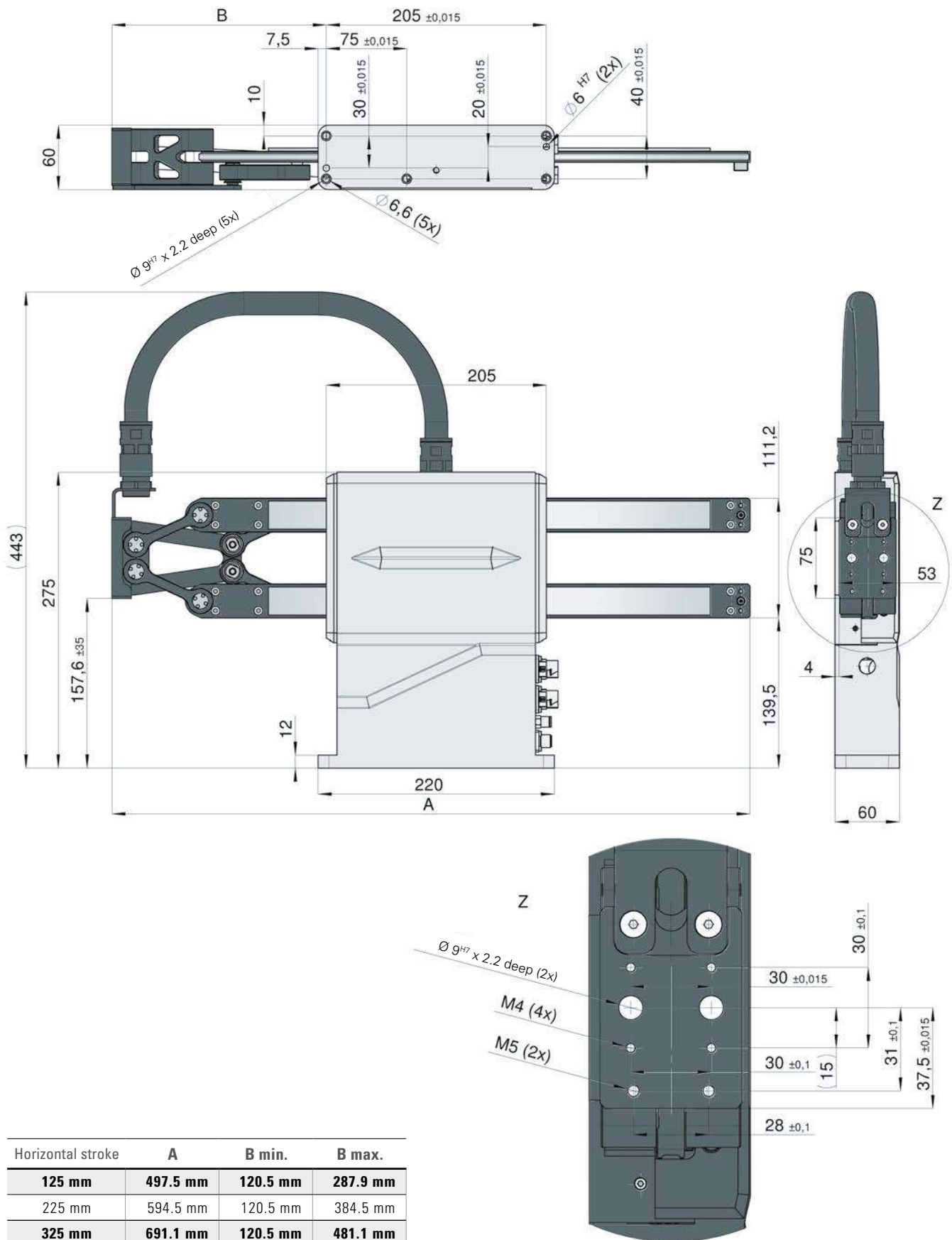
## MECHANICAL STROKE



## LOAD DATA



DIMENSIONS





# HP 140T

## GENERAL INFORMATION

- The HP140 is only suitable for horizontal installation

## OPTIONS

- The Pick&Place unit can optionally be designed with a clamping element for the z-axis

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V <sub>AC rms</sub>
<b>a<sub>Max</sub></b>	Max. acceleration:	40 m/s <sup>2</sup>
<b>v<sub>Max</sub></b>	Max. speed:	4 m/s
<b>F<sub>N mot</sub></b>	Nominal force:	100 N (Y), 150 N (Z)
<b>F<sub>P mot</sub></b>	Peak force:	240 N (Y), 370 N (Z)
<b>s<sub>h Max</sub></b>	Horizontal stroke:	160, 215, 270, 300, 400 mm
<b>s<sub>v Max</sub></b>	Vertical stroke:	65, 100, 150 mm
<b>m</b>	Weight:	11-18 kg
	Installation position::	horizontal
	Repeat accuracy:	0.005 mm
<b>m<sub>rec</sub></b>	Max. recommended load:	3 kg

## LOAD DATA

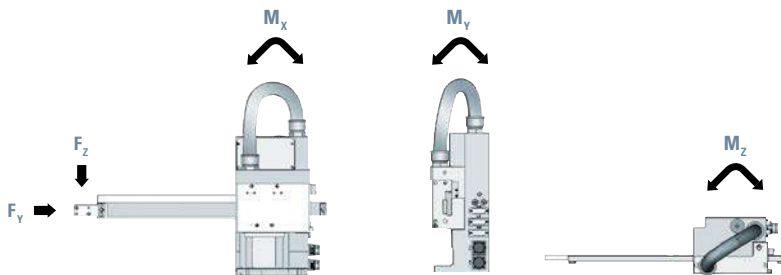
<b>M<sub>X stat</sub></b>	Max. static moment about the X-axis:	49 Nm
<b>M<sub>Y stat</sub></b>	Max. static moment about the Y-axis:	15 Nm
<b>M<sub>Z stat</sub></b>	Max. static moment about the Z-axis:	36 Nm
<b>F<sub>Y stat</sub></b>	Max. static force in the Y-axis:	100 N
<b>F<sub>Z stat</sub></b>	Max. static force in the Z-axis:	100 N

Please do not exceed the given forces – especially during pick or place operations. The accuracy is given for constant temperature and without outside forces.

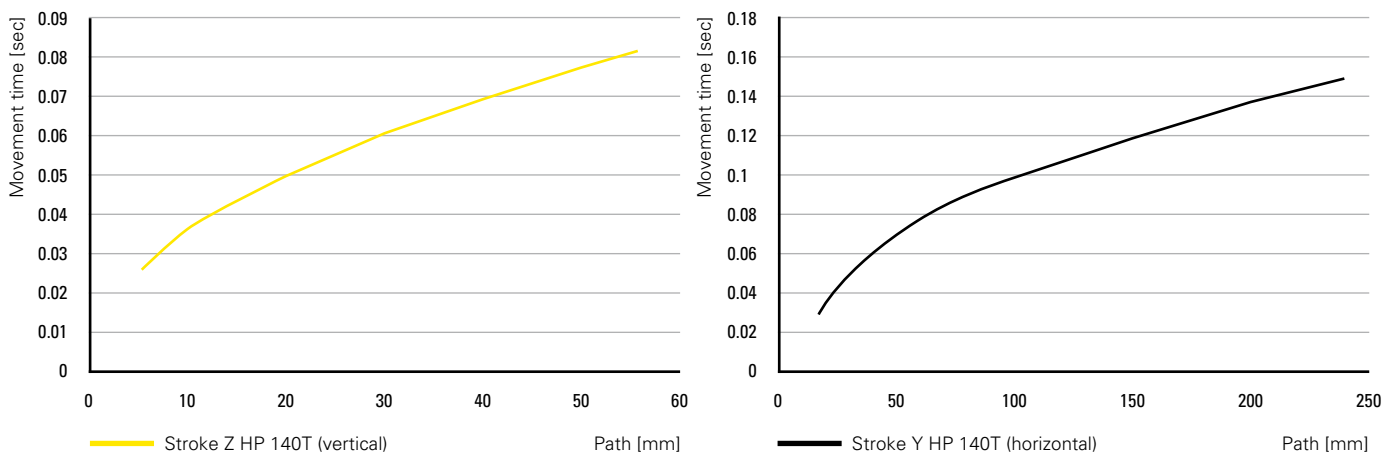
## ENCODER

Balluff	sin/cos
Balluff	BISS
Balluff	SSI

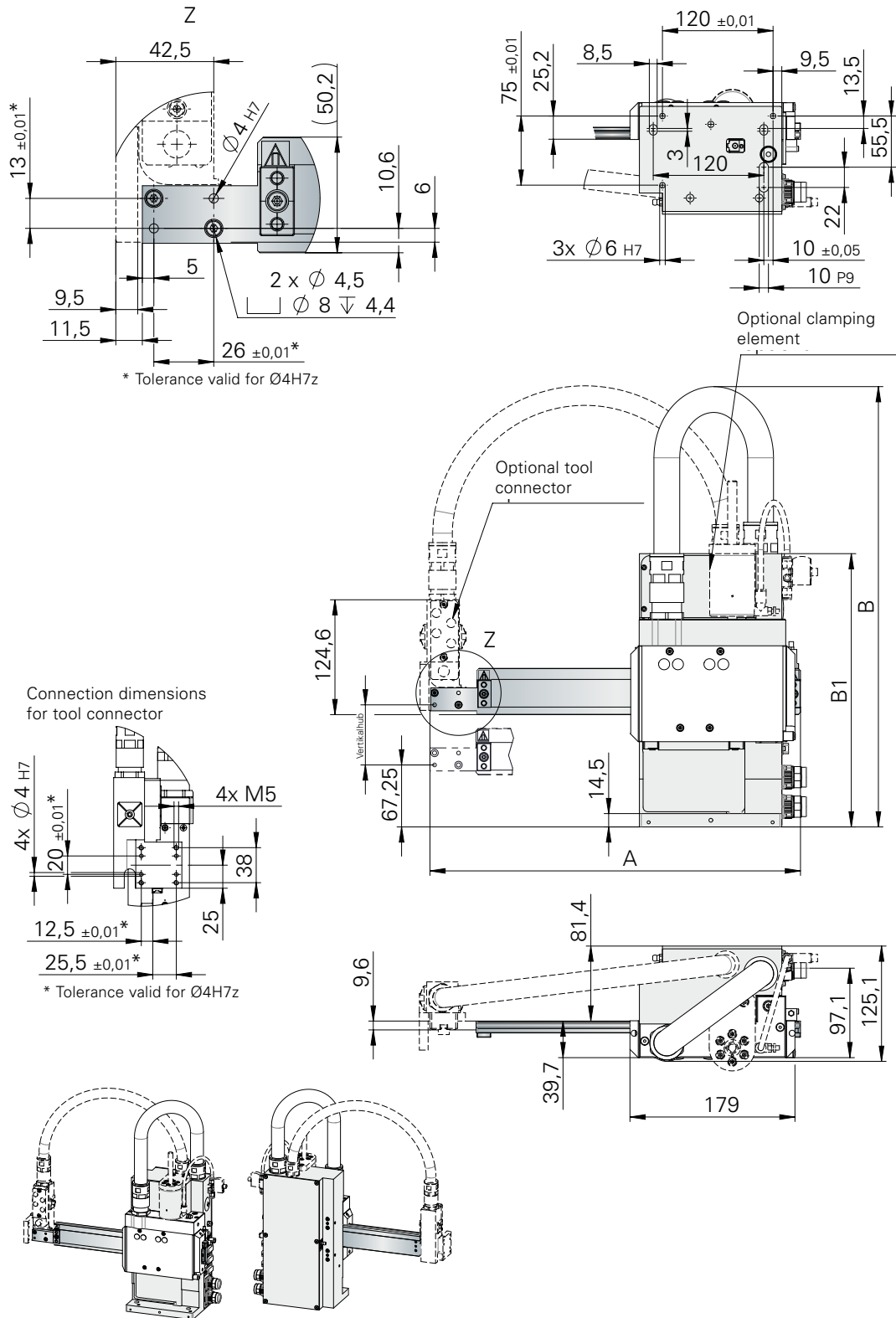
## LOAD DATA



**TIMING DIAGRAM** To help calculate the exact cycle time, please forward your proposed sequence.



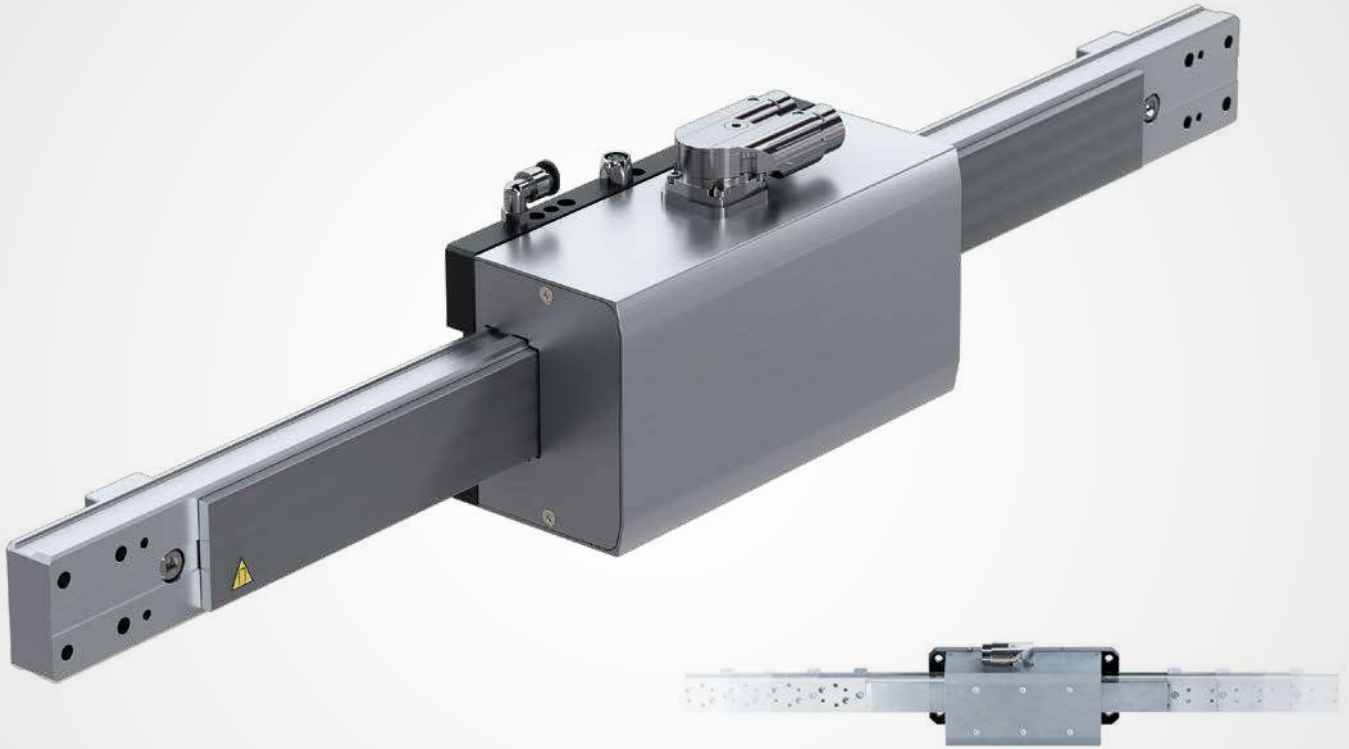
DIMENSIONS



Vertical stroke	B	B <sub>1</sub>	Horizontal stroke	A
65	478	296.5	160	402 *
100	581	371.5	270	512 *
150	653	471.5	300	542 *
			400	642 *

# HL

LINEAR MOTOR AXES | HL LINEAR AXIS



Various strokes up to 450 mm

## THE HIGHLY DYNAMIC LINEAR MOTOR AXIS HL

### OPTIONS AVAILABLE

- Tool connector; electrical and pneumatic supply is accessible
- Automatic grease pump for applications without maintenance

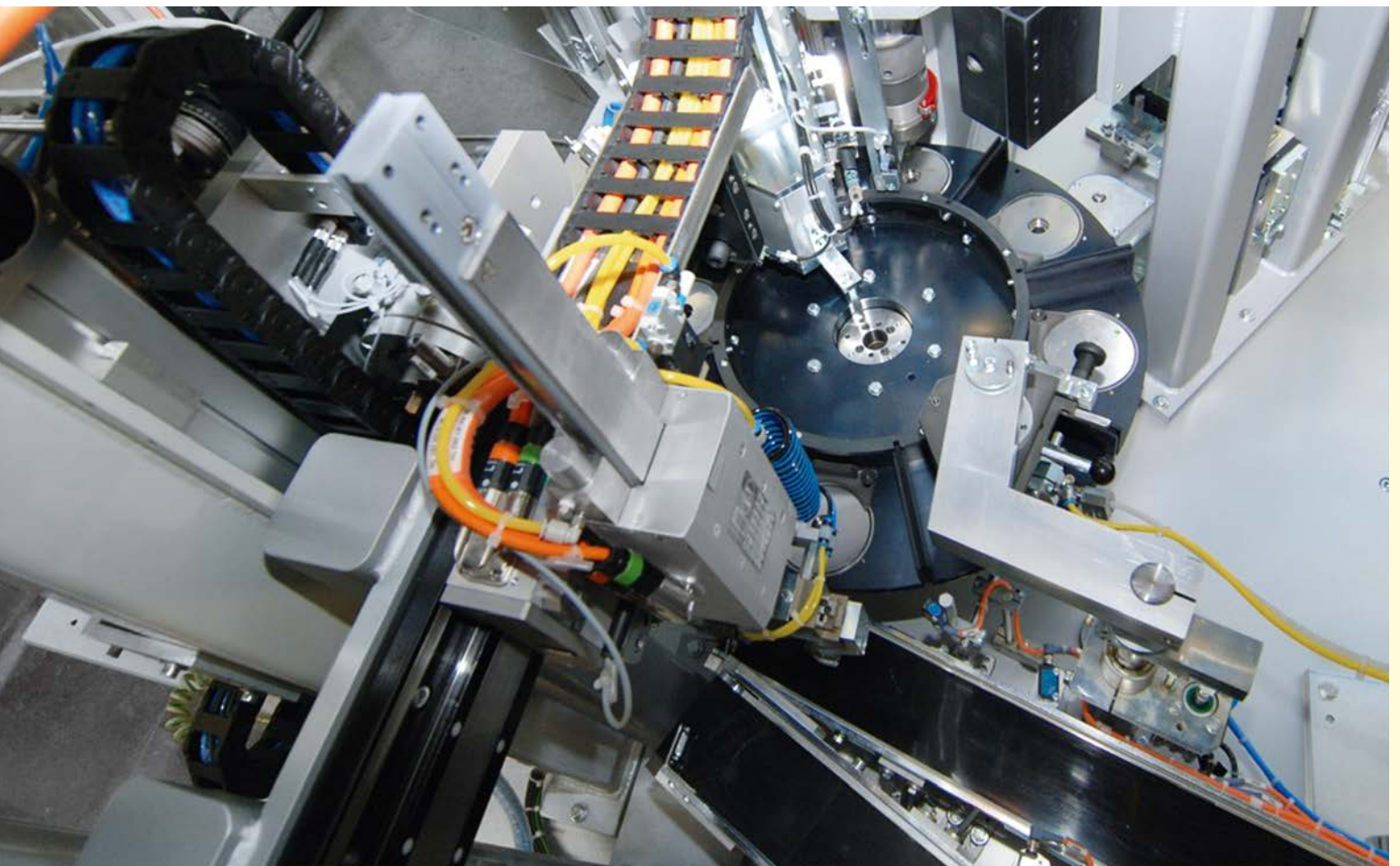


### FREELY AND INTUITIVELY PROGRAMMABLE

W.A.S. 2 – WEISS Application Software: secure and fast commissioning with free-of-charge user software.



OKU relies on the perfect combination of HN and HL axes for its ball bearing assembly cell. User-programmable linear motor axes are the ideal choice for extremely fast process movements and strict requirements in terms of both dynamic performance and precision.



The linear motor axis HL provides, without any doubt, the most modern drive technology which is highly integrated and ready to mount. Tight and precise recirculating ball bearings and an absolute measurement system as well as the automatic lubrication are all included in this product. The result: Rapid and harmonic movements, horizontal or vertical mounting and loading on the right or left side is possible.

---

## ADVANTAGES

- User programmable
- Extremely high dynamic performance thanks to direct drive
- Long lifetime
- Low maintenance costs
- Low energy costs
- Compact design – low weight
- Stiff mechanical assembling
- Very good repeat accuracy

---

## GENERAL INFORMATION

- In the HL model range, as little mass as possible is moved due to the moving guide rail. The axes then meet the requirements of vertical applications very efficiently
- All motors are equipped with overtemperature protection (PTC)
- The installation location of the HL axes can be freely chosen

---

## OPTIONS

- Absolute measuring systems
- Holding brake
- The linear axes can be equipped with manual or automatic lubrication
- Functional safety (secure encoder attachment)

# HL 50A

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V <sub>AC rms</sub>
<b>U<sub>Prüf</sub></b>	Test bench:	800 V <sub>AC</sub>
<b>a<sub>Max</sub></b>	Max. acceleration:	40 m/s <sup>2</sup>
<b>v<sub>Max</sub></b>	Max. speed:	4 m/s
<b>F<sub>N mot</sub></b>	Nominal force:	65 N
<b>F<sub>P mot</sub></b>	Peak force:	180 N
<b>I<sub>N</sub></b>	Nominal current:	2.4 A
<b>I<sub>P</sub></b>	Peak current:	6 A
<b>s<sub>Max</sub></b>	Max. stroke:	150-400 mm
<b>s<sub>red</sub></b>	Reduced stroke with brake:	49 mm
	Repeat accuracy:	0.005 mm
<b>m<sub>rec</sub></b>	Max. recommended load:	4 kg
<b>m<sub>gui 0</sub></b>	Mass of the guide rail with 0 mm stroke:	0.7 kg
<b>m<sub>gui 100</sub></b>	Mass of the guide rail per 100 mm stroke:	0.3 kg
<b>m<sub>carr</sub></b>	Mass of the carriage with motor:	2.1 kg
<b>m<sub>carr FI</sub></b>	Mass of the carriage with motor and flange:	2.2 kg
<b>m<sub>br</sub></b>	Mass of the brake:	0.4 kg
<b>F<sub>Br</sub></b>	Brake force:	145/250 N
<b>p<sub>Br</sub></b>	Opening pressure:	4/6 bar

## LOAD DATA (static)

<b>M<sub>X stat</sub></b>	Max. static moment about the X-axis:	200 Nm
<b>M<sub>Y stat</sub></b>	Max. static moment about the Y-axis:	50 Nm
<b>M<sub>Z stat</sub></b>	Max. static moment about the Z-axis:	300 N
<b>F<sub>X stat</sub></b>	Max. static force in the Y-axis:	500 N
<b>F<sub>Z stat</sub></b>	Max. static force in the Z-axis:	200 N

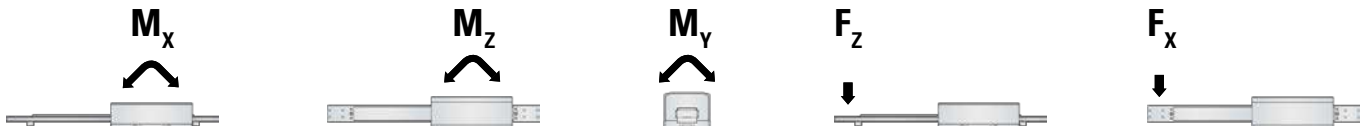
## LOAD DATA (dynamic)

<b>M<sub>X dyn</sub></b>	Max. dynamic moment about the X-axis:	20 Nm
<b>M<sub>Y dyn</sub></b>	Max. dynamic moment about the Y-axis:	10 Nm
<b>M<sub>Z dyn</sub></b>	Max. dynamic moment about the Z-axis:	30 Nm
<b>F<sub>X dyn</sub></b>	Max. dynamic force in the X-axis:	90 N
<b>F<sub>Z dyn</sub></b>	Max. dynamic force in the Z-axis:	60 N

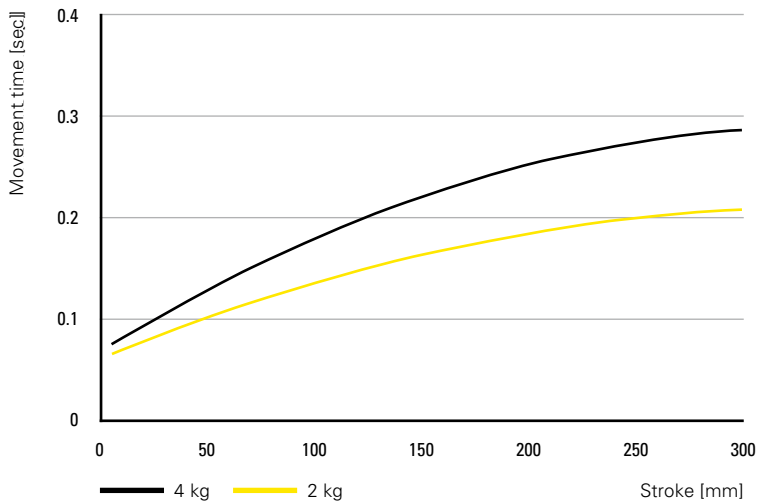
## ENCODER

Balluff	sin/cos
Balluff	BISS
Balluff	SSI

## LOAD DATA



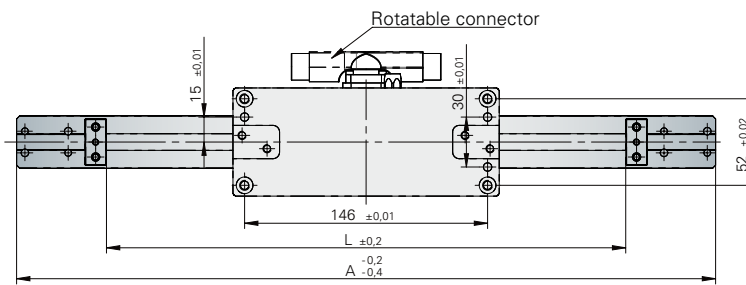
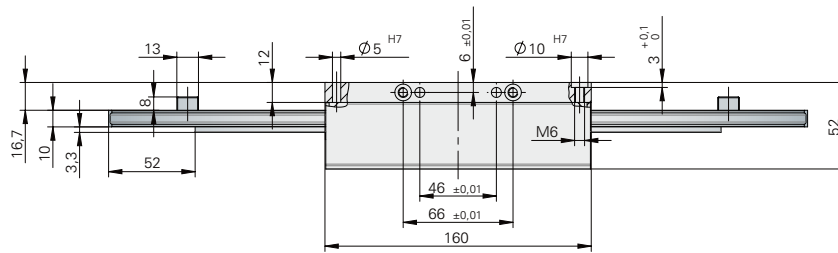
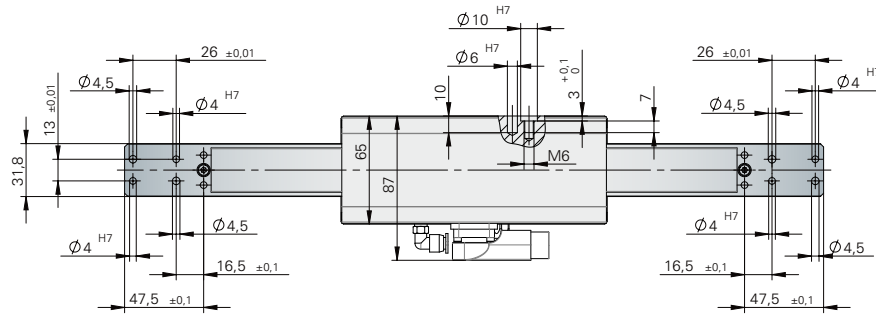
## TIMING DIAGRAM



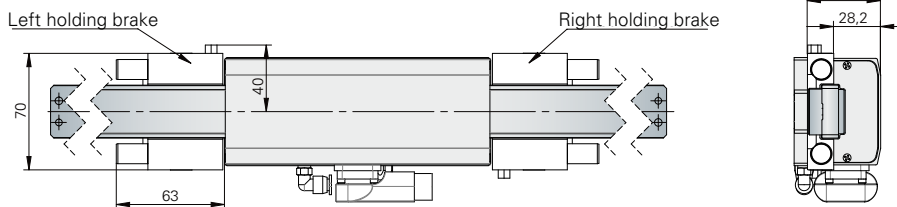
Stroke without brake in mm	Stroke with 1 brake in mm	Dimension L in mm	Dimension A in mm
150 *	100	312	420
200	150	361	469
250	200	410	518
300 *	250	462	570

\* Standard stroke

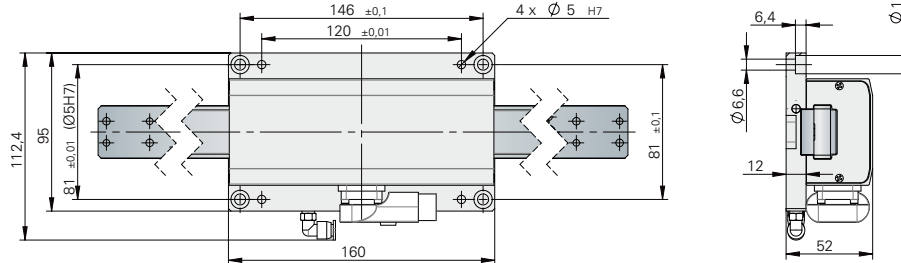
DIMENSIONS



Optionally with holding brake



Optionally with wide flange



# HL 100A

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V <sub>AC rms</sub>
<b>U<sub>Prüf</sub></b>	Test bench:	800 V <sub>AC</sub>
<b>a<sub>Max</sub></b>	Max. acceleration:	40 m/s <sup>2</sup>
<b>v<sub>Max</sub></b>	Max. speed:	4 m/s
<b>F<sub>N mot</sub></b>	Nominal force:	150 N
<b>F<sub>P mot</sub></b>	Peak force:	380 N
<b>I<sub>N</sub></b>	Nominal current:	3.6 A
<b>I<sub>p</sub></b>	Peak current:	9.5 A
<b>s<sub>Max</sub></b>	Max. stroke:	150-530 mm
<b>s<sub>red</sub></b>	Reduced stroke with brake:	40 mm
	Repeat accuracy:	0.005 mm
<b>m<sub>rec</sub></b>	Max. recommended load:	8 kg
<b>m<sub>gui 0</sub></b>	Mass of the guide rail with 0 mm stroke:	1.8 kg
<b>m<sub>gui 100</sub></b>	Mass of the guide rail per 100 mm stroke:	0.6 kg
<b>m<sub>carr</sub></b>	Mass of the carriage with motor:	3.6 kg
<b>m<sub>carr Fl</sub></b>	Mass of the carriage with motor and flange:	4 kg
<b>m<sub>br</sub></b>	Mass of the brake:	0.5 kg
<b>F<sub>Br</sub></b>	Brake force:	350 N
<b>p<sub>Br</sub></b>	Opening pressure:	6 bar

## LOAD DATA (static)

<b>M<sub>X stat</sub></b>	Max. static moment about the X-axis:	350 Nm
<b>M<sub>Y stat</sub></b>	Max. static moment about the Y-axis:	100 Nm
<b>M<sub>Z stat</sub></b>	Max. static moment about the Z-axis:	500 Nm
<b>F<sub>X stat</sub></b>	Max. static force in the Y-axis:	800 N
<b>F<sub>Z stat</sub></b>	Max. static force in the Z-axis:	400 N

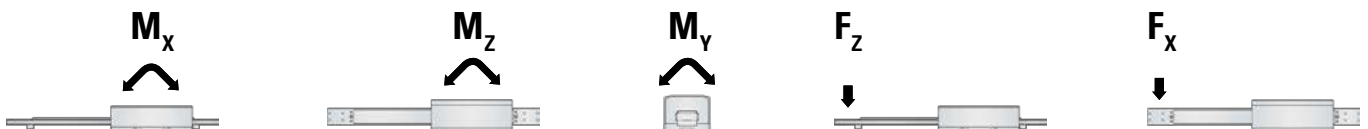
## LOAD DATA (dynamic)

<b>M<sub>X dyn</sub></b>	Max. dynamic moment about the X-axis:	35 Nm
<b>M<sub>Y dyn</sub></b>	Max. dynamic moment about the Y-axis:	15 Nm
<b>M<sub>Z dyn</sub></b>	Max. dynamic moment about the Z-axis:	40 Nm
<b>F<sub>X dyn</sub></b>	Max. dynamic force in the X-axis:	150 N
<b>F<sub>Z dyn</sub></b>	Max. dynamic force in the Z-axis:	100 N

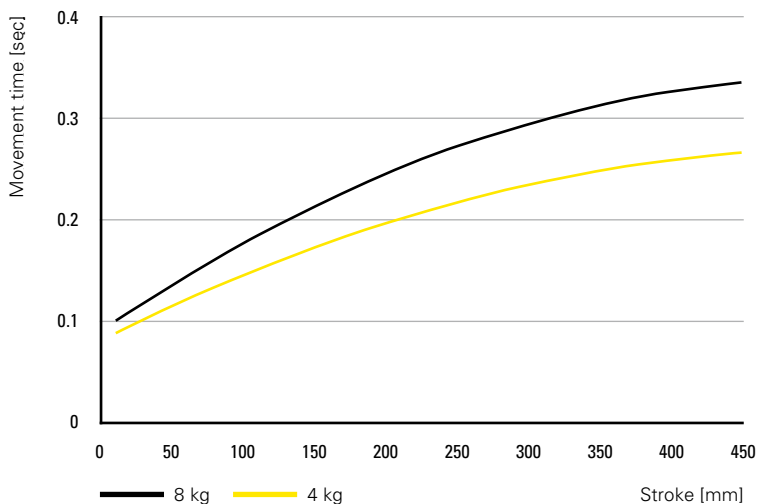
## ENCODER

Balluff	sin/cos
Balluff	BISS
Balluff	SSI

## LOAD DATA



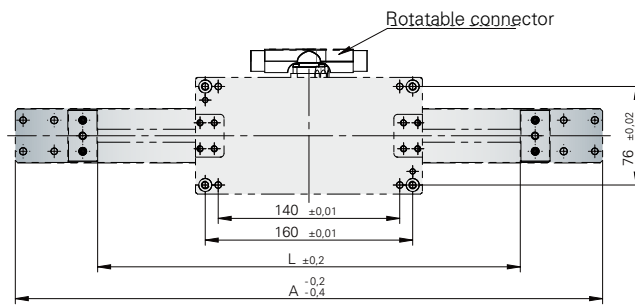
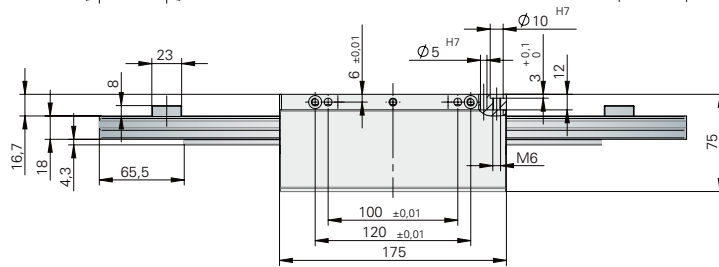
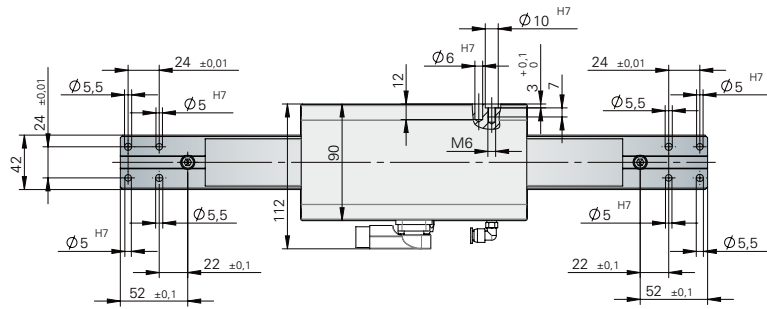
## TIMING DIAGRAM



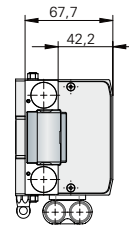
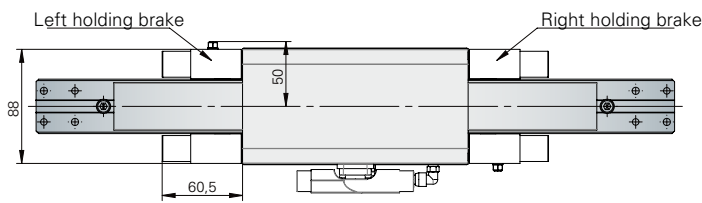
Stroke without brake in mm	Stroke with 1 brake in mm	Dimension L in mm	Dimension A in mm
150 *	110	326	453
190	150	365.5	492.5
230	190	405	532
300 *	260	476	603
340	300	515.5	642.5
380	340	555	682
450 *	410	626	753

\* Standard stroke

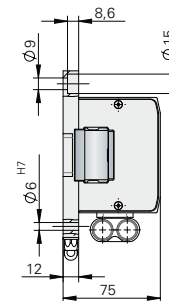
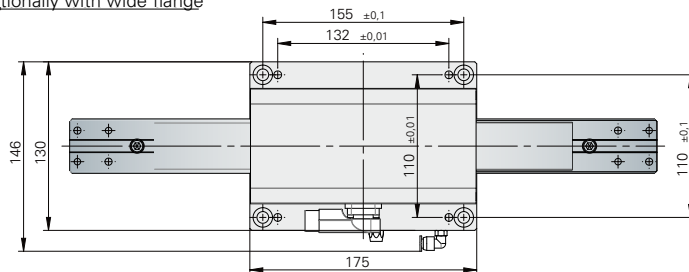
DIMENSIONS



Optionally with holding brake



Optionally with wide flange





# HG/HN

LINEAR MOTOR AXES | HG/HN LINEAR AXIS



## HG/HN LINEAR MOTOR AXES

### TWO SIZES

The two sizes of the HG axis: HG 25 with a peak force of 180 N, and HG 12 with a peak force of 110 N

### FREELY AND INTUITIVELY PROGRAMMABLE

W.A.S. 2 – WEISS Application Software: secure and fast commissioning with free-of-charge user software.



OKU relies on the perfect combination of HN and HL axes for its ball bearing assembly cell. User-programmable linear motor axes are the ideal choice for extremely fast process movements and strict requirements in terms of both dynamic performance and precision.



The latest in uncompromising, highly dynamic drive technology for your basic axis. Highly integrated and ready for installation. Compact and precise ball-type linear guides and an absolute measuring system are just as much a part of the concept as the automatic lubrication. The HN version is available in many different sizes – with a robust steel body or lightweight aluminium body. The aluminium profile-based HG axes can also be used in areas in which cost factors have typically made conventional drives the standard choice in the past: the most advanced linear technology at extremely attractive conditions. Both versions impress with their smooth movements and maximum dynamics.

---

## ADVANTAGES

- Freely positionable
- Extremely high dynamic performance thanks to direct drive
- Low maintenance costs
- Low energy costs
- Compact design
- Convincing price-quality ratio (particularly in the case of HG axes)
- HN axes with high power density available in many different sizes
- HG axes with covered guide profile with standard attachment options

---

## GENERAL INFORMATION

- The HG model range comes with lifetime lubrication, making maintenance intervals a thing of the past.
- All motors are equipped with overtemperature protection (PTC)
- The installation location of the linear axes can be freely chosen

---

## OPTIONS

- The HN linear axes can be equipped with manual or automatic lubrication
- Multiple carriages on a single axis
- Absolute measuring systems
- Functional safety (secure encoder attachment)

# HG 12A

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V <sub>AC rms</sub>
<b>a<sub>Max</sub></b>	Max. acceleration:	40 m/s <sup>2</sup>
<b>v<sub>Max</sub></b>	Max. speed:	4 m/s
<b>F<sub>N mot</sub></b>	Nominal force:	33 N
<b>F<sub>P mot</sub></b>	Peak force:	102 N
<b>I<sub>P</sub></b>	Peak current:	2 A
	Temperature monitoring:	PTC
<b>s<sub>Max</sub></b>	Max. stroke:	bis 1000 mm in 100 mm
	Repeat accuracy:	0.005 mm
<b>m<sub>rec</sub></b>	Max. recommended load:	5 kg
<b>m<sub>gui 0</sub></b>	Mass of the guide rail with 0 mm stroke:	1.44 kg
<b>m<sub>gui 100</sub></b>	Mass of the guide rail per 100 mm stroke:	0.72 kg
<b>m<sub>carr</sub></b>	Mass of the carriage with motor:	1.45 kg

## LOAD DATA (static)

<b>M<sub>X stat</sub></b>	Max. static moment about the X-axis:	150 Nm
<b>M<sub>Y stat</sub></b>	Max. static moment about the Y-axis:	40 Nm
<b>M<sub>Z stat</sub></b>	Max. static moment about the Z-axis:	150 Nm
<b>F<sub>X stat</sub></b>	Max. static force in the Y-axis:	150 N
<b>F<sub>Z stat</sub></b>	Max. static force in the Z-axis:	300 N

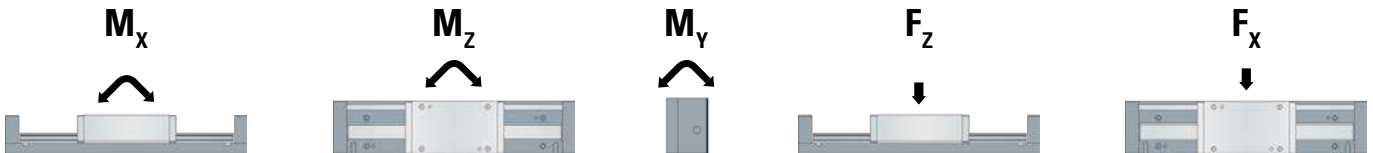
## LOAD DATA (dynamic)

<b>M<sub>X dyn</sub></b>	Max. dynamic moment about the X-axis:	20 Nm
<b>M<sub>Y dyn</sub></b>	Max. dynamic moment about the Y-axis:	8 Nm
<b>M<sub>Z dyn</sub></b>	Max. dynamic moment about the Z-axis:	20 Nm
<b>F<sub>X dyn</sub></b>	Max. dynamic force in the X-axis:	100 N
<b>F<sub>Z dyn</sub></b>	Max. dynamic force in the Z-axis:	150 N

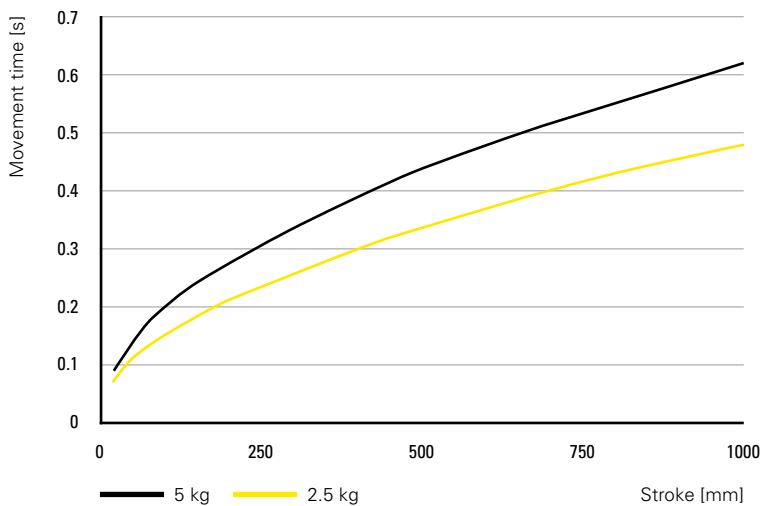
## ENCODER

Balluff	sin/cos
Balluff	BISS
Balluff	SSI
Balluff (Rockwell, Mitsubishi)	TTL

## LOAD DATA



## TIMING DIAGRAM





# HG 25A

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V <sub>AC rms</sub>
<b>a<sub>Max</sub></b>	Max. acceleration:	40 m/s <sup>2</sup>
<b>v<sub>Max</sub></b>	Max. speed:	4 m/s
<b>F<sub>N mot</sub></b>	Nominal force:	65 N
<b>F<sub>P mot</sub></b>	Peak force:	180 N
<b>I<sub>P</sub></b>	Peak current:	6 A
	Temperature monitoring:	PTC
<b>s<sub>Max</sub></b>	Max. stroke:	bis 1000 mm in 100 mm
	Repeat accuracy:	0.005 mm
<b>m<sub>rec</sub></b>	Max. recommended load:	10 kg
<b>m<sub>gui 0</sub></b>	Mass of the guide rail with 0 mm stroke:	2.24 kg
<b>m<sub>gui 100</sub></b>	Mass of the guide rail per 100 mm stroke:	1 kg
<b>m<sub>carr</sub></b>	Mass of the carriage with motor:	2.05 kg

## LOAD DATA (static)

<b>M<sub>X stat</sub></b>	Max. static moment about the X-axis:	200 Nm
<b>M<sub>Y stat</sub></b>	Max. static moment about the Y-axis:	100 Nm
<b>M<sub>Z stat</sub></b>	Max. static moment about the Z-axis:	200 Nm
<b>F<sub>X stat</sub></b>	Max. static force in the Y-axis:	250 N
<b>F<sub>Z stat</sub></b>	Max. static force in the Z-axis:	500 N

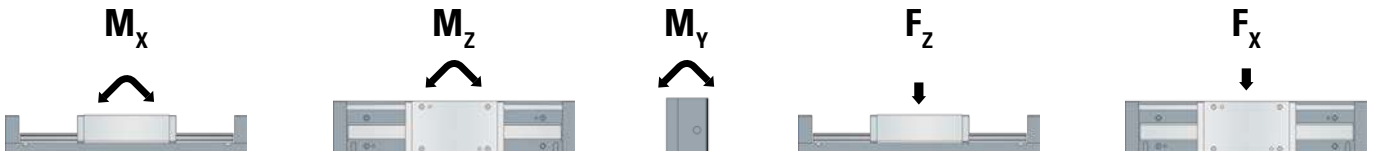
## LOAD DATA (dynamic)

<b>M<sub>X dyn</sub></b>	Max. dynamic moment about the X-axis:	30 Nm
<b>M<sub>Y dyn</sub></b>	Max. dynamic moment about the Y-axis:	15 Nm
<b>M<sub>Z dyn</sub></b>	Max. dynamic moment about the Z-axis:	30 Nm
<b>F<sub>X dyn</sub></b>	Max. dynamic force in the X-axis:	150 N
<b>F<sub>Z dyn</sub></b>	Max. dynamic force in the Z-axis:	200 N

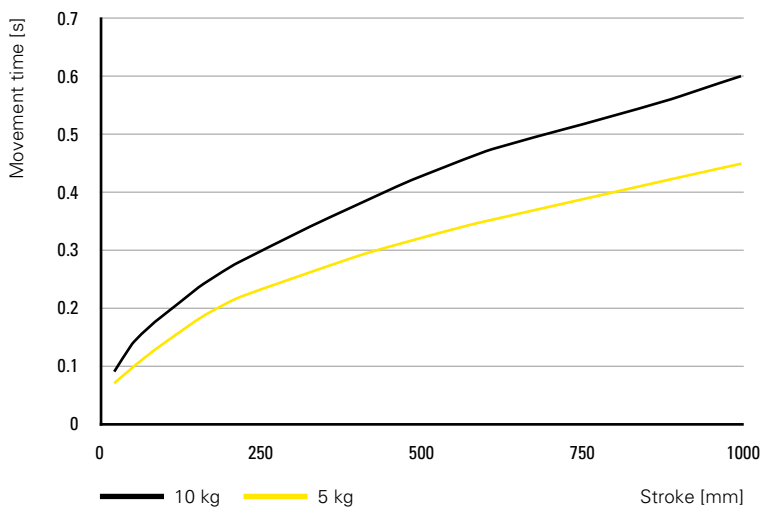
## ENCODER

Balluff	sin/cos
Balluff	BISS
Balluff	SSI
Balluff (Rockwell, Mitsubishi)	TTL

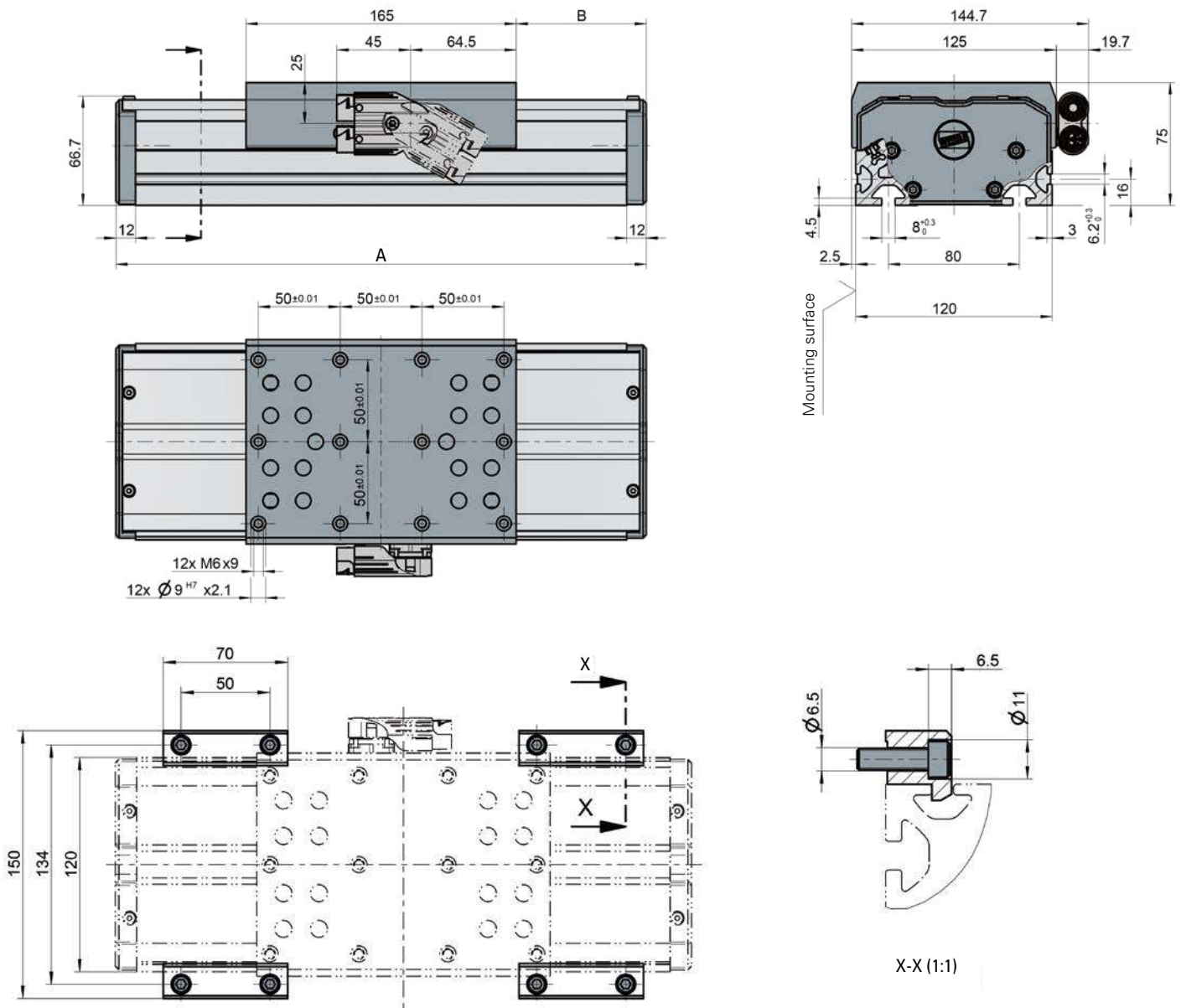
## LOAD DATA



## TIMING DIAGRAM



DIMENSIONS



Standardhöhe	A	B
<b>100</b>	<b>324</b>	<b>79,5</b>
200	424	129,5
<b>300</b>	<b>524</b>	<b>179,5</b>
400	624	229,5
<b>500</b>	<b>724</b>	<b>279,5</b>
600	824	329,5
<b>700</b>	<b>924</b>	<b>379,5</b>
800	1024	429,5
<b>900</b>	<b>1124</b>	<b>479,5</b>
1000	1224	529,5

# HN 50

## TECHNISCHE DATEN

<b>U</b>	Voltage range:	200-600 V <sub>AC rms</sub>
<b>a<sub>Max</sub></b>	Max. acceleration:	40 m/s <sup>2</sup>
<b>v<sub>Max</sub></b>	Max. speed:	4 m/s
<b>F<sub>N mot</sub></b>	Nominal force:	65 N
<b>F<sub>P mot</sub></b>	Peak force:	180 N
<b>I<sub>P</sub></b>	Peak current:	6 A
<b>s<sub>Max</sub></b>	Max. stroke:	bis 1000 mm in 100 mm
	Repeat accuracy:	0.005 mm
<b>m<sub>rec</sub></b>	Max. recommended load:	15 kg
<b>m<sub>gui 0</sub></b>	Mass of the guide rail with 0 mm stroke:	2.51 kg (Alu)
<b>m<sub>gui 100</sub></b>	Mass of the guide rail per 100 mm stroke:	0.83 kg (Alu)
<b>m<sub>carr</sub></b>	Mass of the carriage with motor:	2.2 kg (Alu)

## LOAD DATA (static)

<b>M<sub>X stat</sub></b>	Max. static moment about the X-axis:	200 Nm
<b>M<sub>Y stat</sub></b>	Max. static moment about the Y-axis:	50 Nm
<b>M<sub>Z stat</sub></b>	Max. static moment about the Z-axis:	200 Nm
<b>F<sub>X stat</sub></b>	Max. static force in the Y-axis:	250 N
<b>F<sub>Z stat</sub></b>	Max. static force in the Z-axis:	500 N

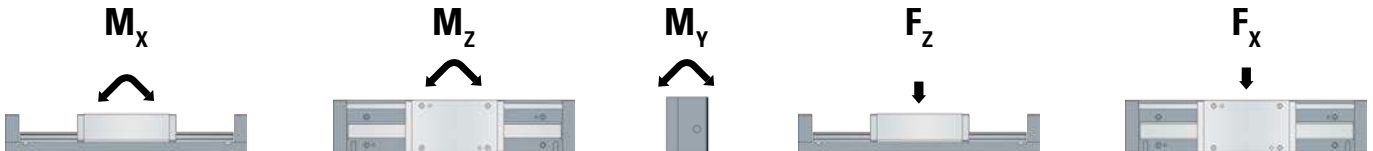
## LOAD DATA (dynamic)

<b>M<sub>X dyn</sub></b>	Max. dynamic moment about the X-axis:	20 Nm
<b>M<sub>Y dyn</sub></b>	Max. dynamic moment about the Y-axis:	10 Nm
<b>M<sub>Z dyn</sub></b>	Max. dynamic moment about the Z-axis:	20 Nm
<b>F<sub>X dyn</sub></b>	Max. dynamic force in the X-axis:	100 N
<b>F<sub>Z dyn</sub></b>	Max. dynamic force in the Z-axis:	150 N

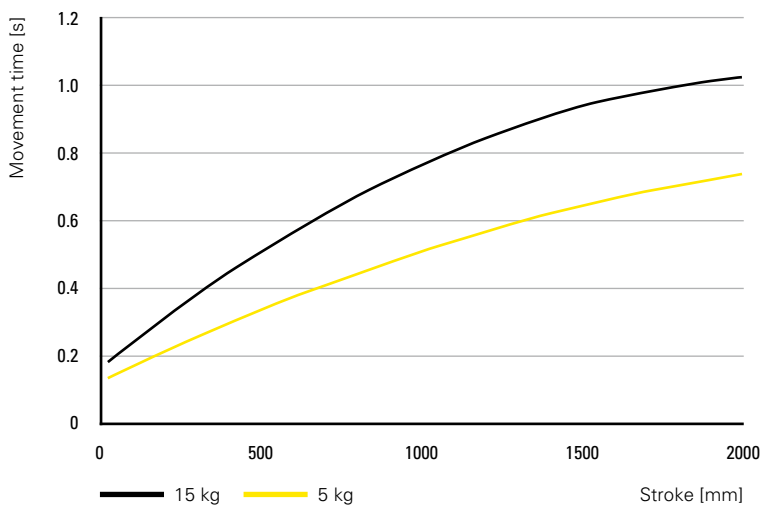
## ENCODER

Balluff	sin/cos
Balluff	BISS
Balluff	SSI

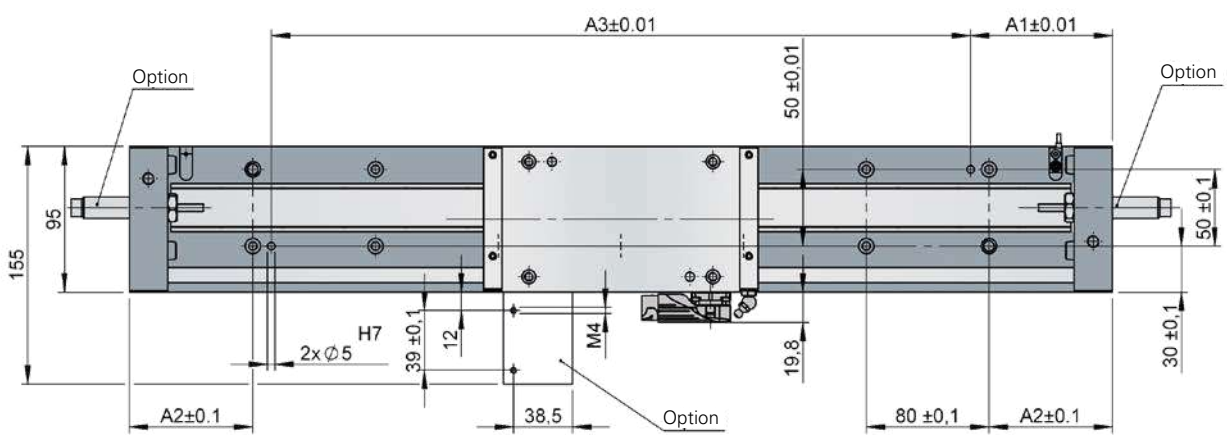
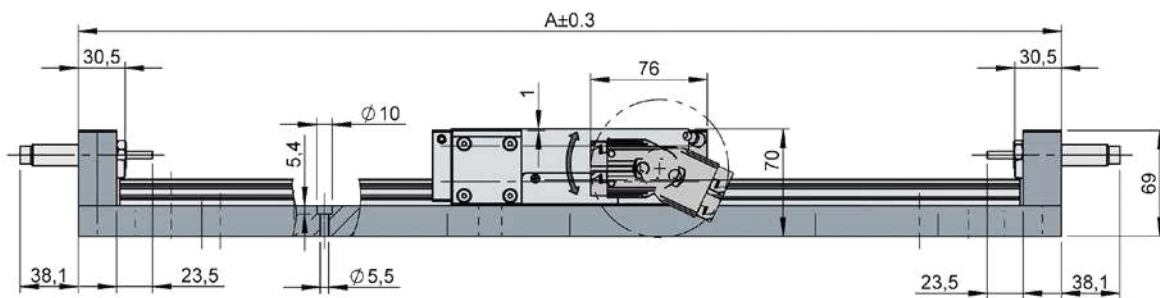
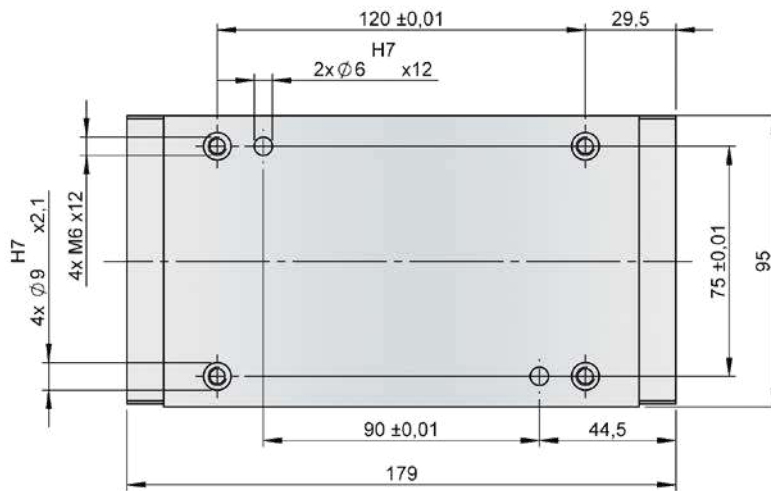
## LOAD DATA



## TIMING DIAGRAM



DIMENSIONS



Standard strokes (Examples)	A	A1	A2	A3
<b>300</b>	<b>730</b>	<b>100</b>	<b>125</b>	<b>530</b>
500	930	115	65	700
<b>1000</b>	<b>1430</b>	<b>115</b>	<b>75</b>	<b>1200</b>

Intermediate strokes available in 100 mm steps on request



# HN 100

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V <sub>AC rms</sub>
<b>a<sub>Max</sub></b>	Max. acceleration:	40 m/s <sup>2</sup>
<b>v<sub>Max</sub></b>	Max. speed:	4 m/s
<b>F<sub>N mot</sub></b>	Nominal force:	150 N
<b>F<sub>P mot</sub></b>	Peak force:	380 N
<b>I<sub>P</sub></b>	Peak current:	9.5 A
<b>s<sub>Max</sub></b>	Max. stroke:	bis 1000 mm in 100 mm; > 1000 mm auf Anfrage
	Repeat accuracy:	0.005 mm
<b>m<sub>rec</sub></b>	Max. recommended load:	25 kg
<b>m<sub>gui 0</sub></b>	Mass of the guide rail with 0 mm stroke:	5.59 kg (Alu)
<b>m<sub>gui 100</sub></b>	Mass of the guide rail per 100 mm stroke:	1.61 kg (Alu)
<b>m<sub>carr</sub></b>	Mass of the carriage with motor:	4.7 kg (Alu)

## LOAD DATA (static)

<b>M<sub>X stat</sub></b>	Max. static moment about the X-axis:	350 Nm
<b>M<sub>Y stat</sub></b>	Max. static moment about the Y-axis:	100 Nm
<b>M<sub>Z stat</sub></b>	Max. static moment about the Z-axis:	350 Nm
<b>F<sub>X stat</sub></b>	Max. static force in the Y-axis:	500 N
<b>F<sub>Z stat</sub></b>	Max. static force in the Z-axis:	750 N

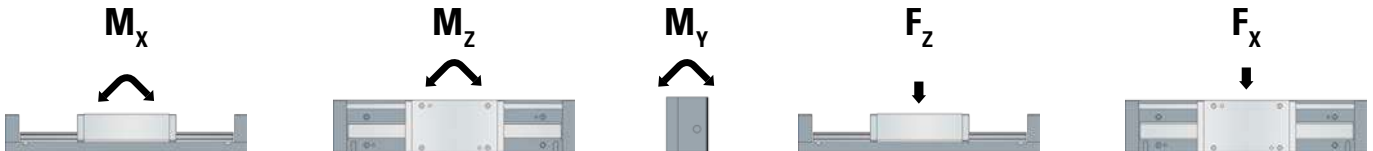
## LOAD DATA (dynamic)

<b>M<sub>X dyn</sub></b>	Max. dynamic moment about the X-axis:	40 Nm
<b>M<sub>Y dyn</sub></b>	Max. dynamic moment about the Y-axis:	15 Nm
<b>M<sub>Z dyn</sub></b>	Max. dynamic moment about the Z-axis:	40 Nm
<b>F<sub>X dyn</sub></b>	Max. dynamic force in the X-axis:	150 N
<b>F<sub>Z dyn</sub></b>	Max. dynamic force in the Z-axis:	150 N

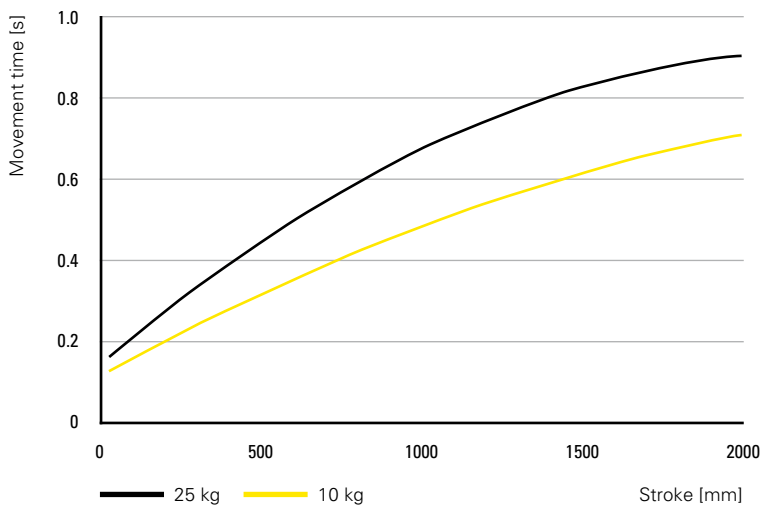
## ENCODER

Balluff	sin/cos
Balluff	BISS
Balluff	SSI

## LOAD DATA



## TIMING DIAGRAM





# HN 200

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V <sub>AC rms</sub>
<b>a<sub>Max</sub></b>	Max. acceleration:	40 m/s <sup>2</sup>
<b>v<sub>Max</sub></b>	Max. speed:	4 m/s
<b>F<sub>N mot</sub></b>	Nominal force:	250 N
<b>F<sub>P mot</sub></b>	Peak force:	700 N
<b>I<sub>P</sub></b>	Peak current:	11.2 A
<b>s<sub>Max</sub></b>	Max. stroke:	bis 1000 mm in 100 mm; > 1000 mm auf Anfrage
	Repeat accuracy:	0.005 mm
<b>m<sub>rec</sub></b>	Max. recommended load:	50 kg
<b>m<sub>gui 0</sub></b>	Mass of the guide rail with 0 mm stroke:	9.59 kg (Alu)
<b>m<sub>gui 100</sub></b>	Mass of the guide rail per 100 mm stroke:	2.22 kg (Alu)
<b>m<sub>carr</sub></b>	Mass of the carriage with motor:	8.1 kg (Alu)

## LOAD DATA (static)

<b>M<sub>X stat</sub></b>	Max. static moment about the X-axis:	500 Nm
<b>M<sub>Y stat</sub></b>	Max. static moment about the Y-axis:	200 Nm
<b>M<sub>Z stat</sub></b>	Max. static moment about the Z-axis:	500 Nm
<b>F<sub>X stat</sub></b>	Max. static force in the Y-axis:	750 N
<b>F<sub>Z stat</sub></b>	Max. static force in the Z-axis:	1000 N

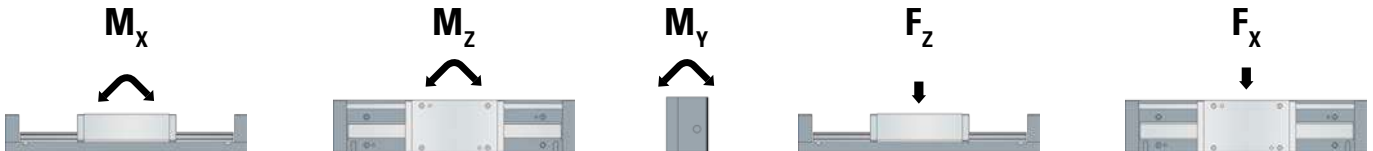
## LOAD DATA (dynamic)

<b>M<sub>X dyn</sub></b>	Max. dynamic moment about the X-axis:	80 Nm
<b>M<sub>Y dyn</sub></b>	Max. dynamic moment about the Y-axis:	40 Nm
<b>M<sub>Z dyn</sub></b>	Max. dynamic moment about the Z-axis:	80 Nm
<b>F<sub>X dyn</sub></b>	Max. dynamic force in the X-axis:	250 N
<b>F<sub>Z dyn</sub></b>	Max. dynamic force in the Z-axis:	500 N

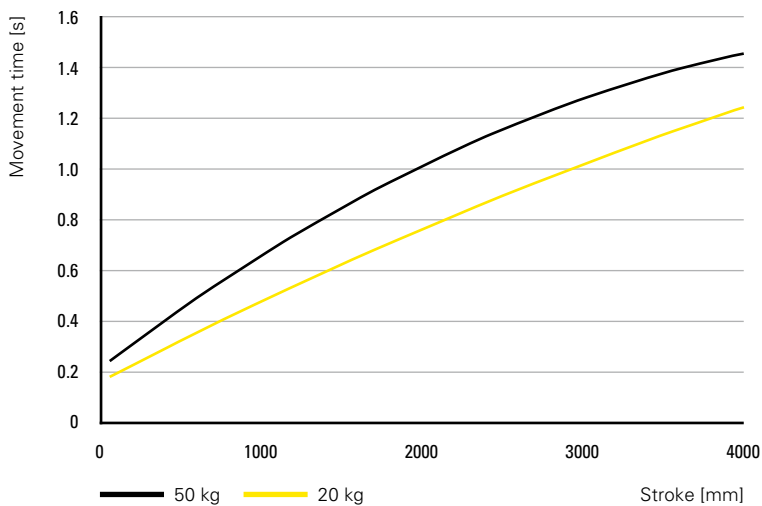
## ENCODER

Balluff	sin/cos
Balluff	BISS
Balluff	SSI

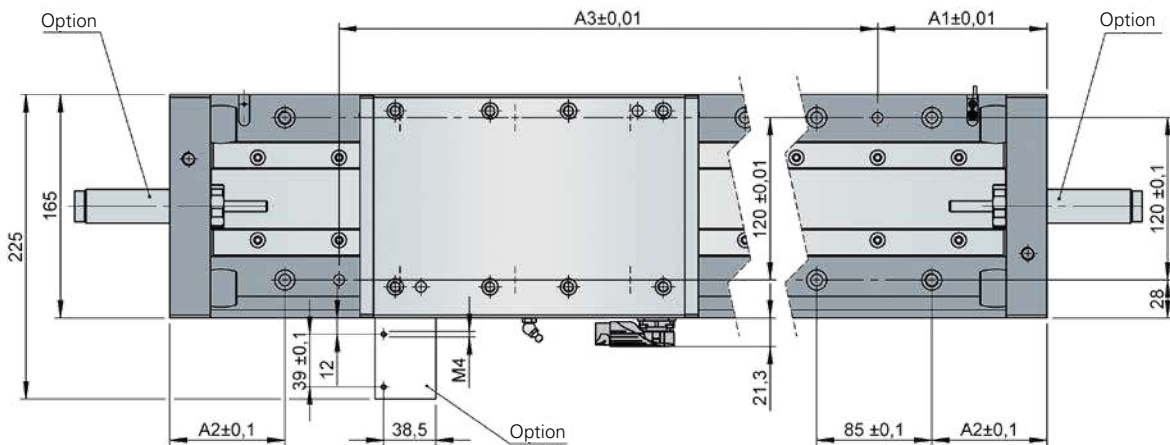
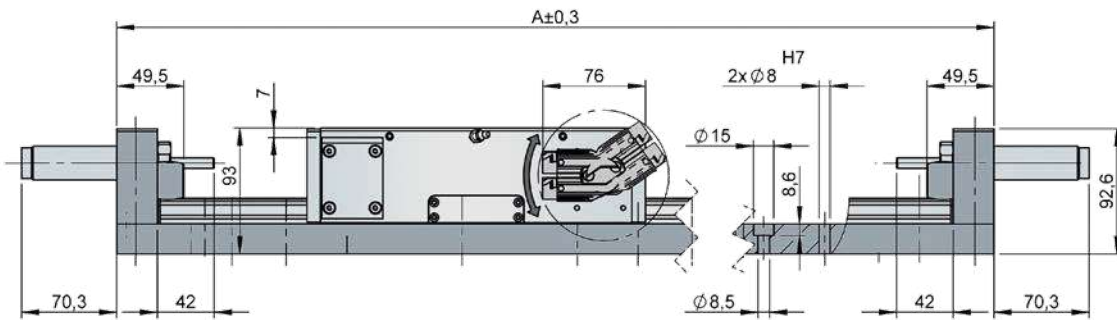
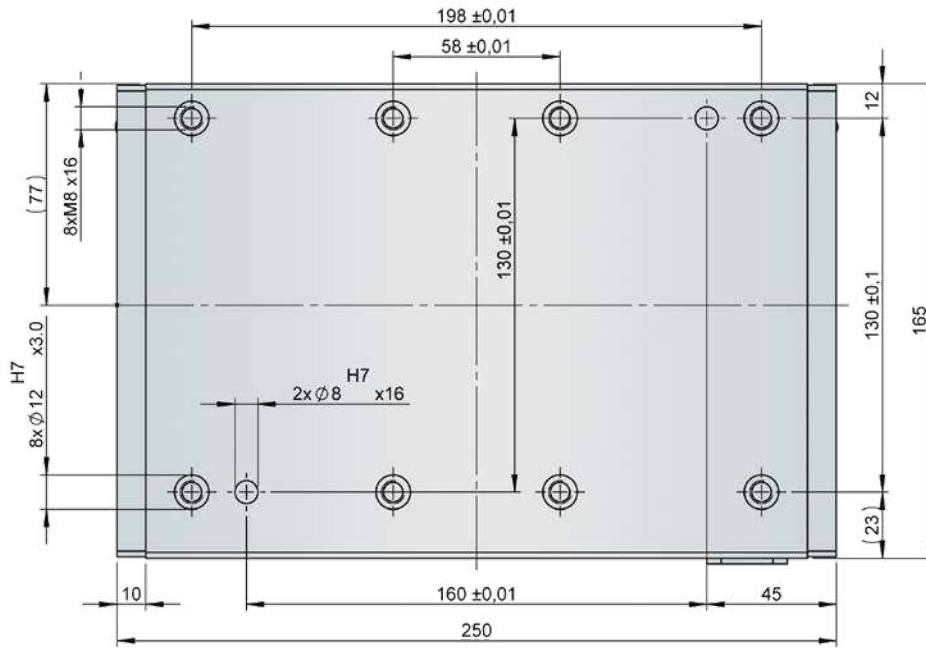
## LOAD DATA



## TIMING DIAGRAM



DIMENSIONS



Standard strokes (Examples)	A	A1	A2	A3
500	850	125	85	600
1000	1350	125	80	1100

Strokes larger than 1000 mm and intermediate strokes in 100 mm increments available on request

# HN 400

## TECHNICAL DATA

<b>U</b>	Voltage range:	200-600 V <sub>AC rms</sub>
<b>a<sub>Max</sub></b>	Max. acceleration:	40 m/s <sup>2</sup>
<b>v<sub>Max</sub></b>	Max. speed:	4 m/s
<b>F<sub>N mot</sub></b>	Nominal force:	500 N
<b>F<sub>P mot</sub></b>	Peak force:	1400 N
<b>I<sub>P</sub></b>	Peak current:	18 A
<b>s<sub>Max</sub></b>	Max. stroke:	bis 1000 mm in 100 mm; > 1000 mm auf Anfrage
	Repeat accuracy:	0.005 mm
<b>m<sub>rec</sub></b>	Max. recommended load:	100 kg
<b>m<sub>gui 0</sub></b>	Mass of the guide rail with 0 mm stroke:	15.11 kg (Alu)
<b>m<sub>gui 100</sub></b>	Mass of the guide rail per 100 mm stroke:	2.9 kg (Alu)
<b>m<sub>carr</sub></b>	Mass of the carriage with motor:	13.4 kg (Alu)

## LOAD DATA (static)

<b>M<sub>X stat</sub></b>	Max. static moment about the X-axis:	1000 Nm
<b>M<sub>Y stat</sub></b>	Max. static moment about the Y-axis:	500 Nm
<b>M<sub>Z stat</sub></b>	Max. static moment about the Z-axis:	1000 Nm
<b>F<sub>X stat</sub></b>	Max. static force in the Y-axis:	1000 N
<b>F<sub>Z stat</sub></b>	Max. static force in the Z-axis:	1500 N

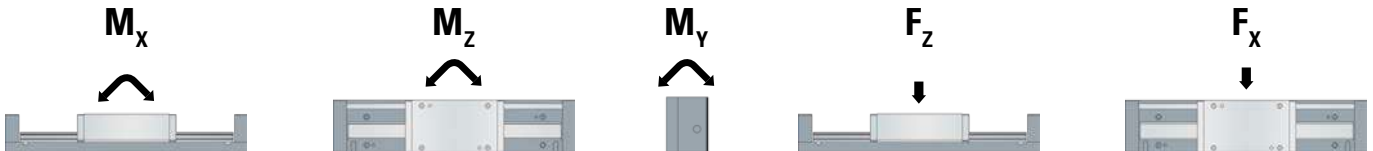
## LOAD DATA (dynamic)

<b>M<sub>X dyn</sub></b>	Max. dynamic moment about the X-axis:	140 Nm
<b>M<sub>Y dyn</sub></b>	Max. dynamic moment about the Y-axis:	60 Nm
<b>M<sub>Z dyn</sub></b>	Max. dynamic moment about the Z-axis:	140 Nm
<b>F<sub>X dyn</sub></b>	Max. dynamic force in the X-axis:	500 N
<b>F<sub>Z dyn</sub></b>	Max. dynamic force in the Z-axis:	1000 N

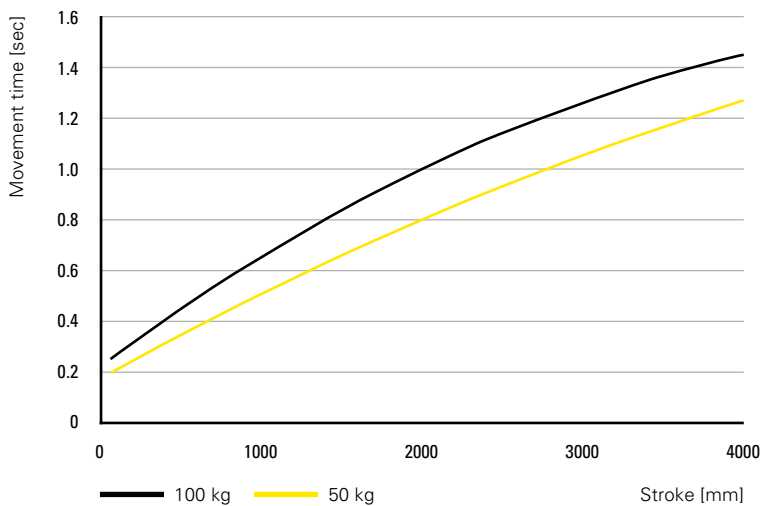
## ENCODER

Balluff	sin/cos
Balluff	BISS
Balluff	SSI

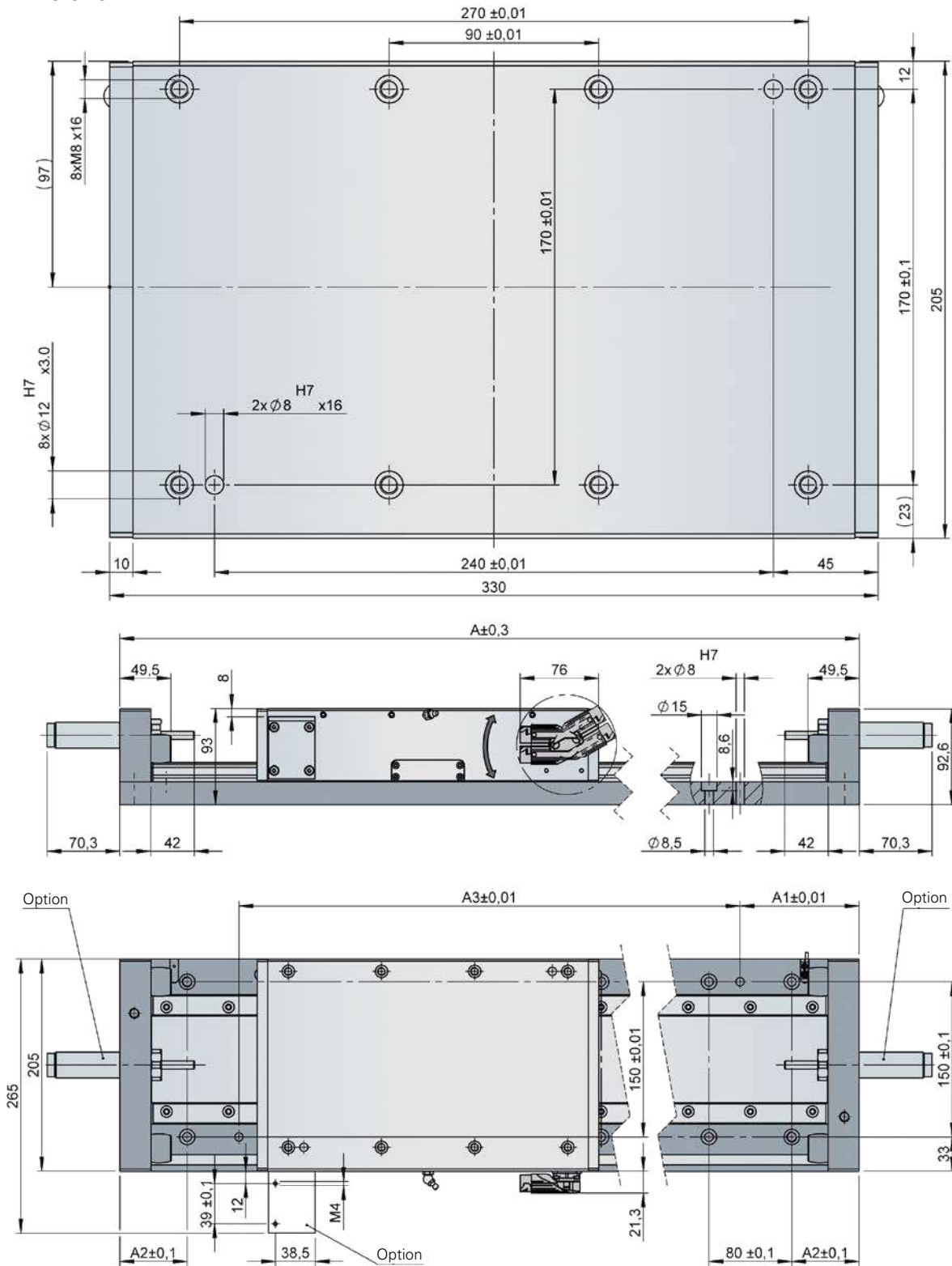
## LOAD DATA



## TIMING DIAGRAM



DIMENSIONS



Standard strokes (Examples)	A	A1	A2	A3
<b>500</b>	<b>930</b>	<b>115</b>	<b>65</b>	<b>700</b>
1000	1430	115	75	1200

Strokes larger than 1000 mm and intermediate strokes in 100 mm increments available on request

# SH 75

ROTATING UNITS | SH 75 LIFTING-ROTATING UNIT



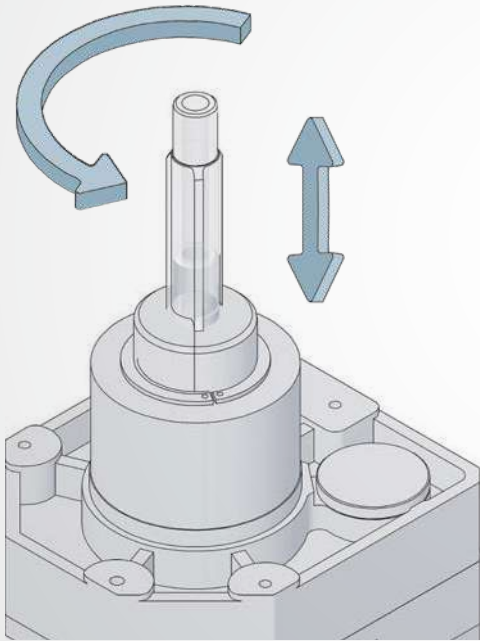
## SH LIFTING- ROTATING UNIT

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**FREELY AND INTUITIVELY PROGRAMMABLE**

W.A.S. 2 – WEISS Application Software: secure and fast commissioning with free-of-charge user software.





Handling unit with independent servo axes for lifting and rotary movements

The resounding success enjoyed by the SH 75 is largely thanks to its versatile and flexible deployment options. The lifting and rotary axes are user-programmable independent of one another – making the axis combination suitable for a wide range of applications, including varying tasks. A high power density, extremely compact dimensions, as well as fast and convenient start-up using the WEISS Application Software are further plus points. The new integrated servo motors have catapulted the unit into new categories of dynamics and precision.

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#### ADVANTAGES

- Compact design with high power density
- Excellent dynamics thanks to use of the latest servo drives
- Flexible deployment options throughout varying tasks/processes
- User programmability of the two independent lifting and rotary axes
- WEISS Application Software (W.A.S. 2) for quick and easy start-up

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#### GENERAL INFORMATION

- The installation location of the SH unit can be freely chosen
- Both the rotary movement and the linear movement are user-programmable
- The lifting-rotating unit can optionally be equipped with a brake
- A clamping set is available for fitting the customer's attachments



# SH 75

## TECHNICAL DATA

- The lifting-rotating unit can be equipped with functional safety (on request)

### TECHNISCHE DATEN

<b>U</b>	Voltage range:	200-600 V <sub>AC rms</sub>
<b>I<sub>P</sub></b>	Peak current:	7.6 A
<b>n<sub>2 Max</sub></b>	Max. rotation speed:	220 min <sup>-1</sup>
<b>T<sub>2P</sub></b>	Max. acceleration torque:	12 Nm
<b>v<sub>2 Max</sub></b>	Max. speed:	0.5 m/s
<b>F<sub>2P</sub></b>	Peak force:	1200 N
<b>s<sub>Max</sub></b>	Max. stroke:	75 mm
	Repeat accuracy (rotation):	180 arcsec (± 90")
	Repeat accuracy (stroke):	0.02 mm
<b>J<sub>2 Max</sub></b>	Max. inertia:	0.06 kgm <sup>2</sup>
<b>m<sub>rec</sub></b>	Max. recommended load:	10 kg
<b>C<sub>r0</sub></b>	Concentricity when retracted:	0.06 mm
<b>C<sub>r75</sub></b>	Concentricity when extended:	0.08 mm

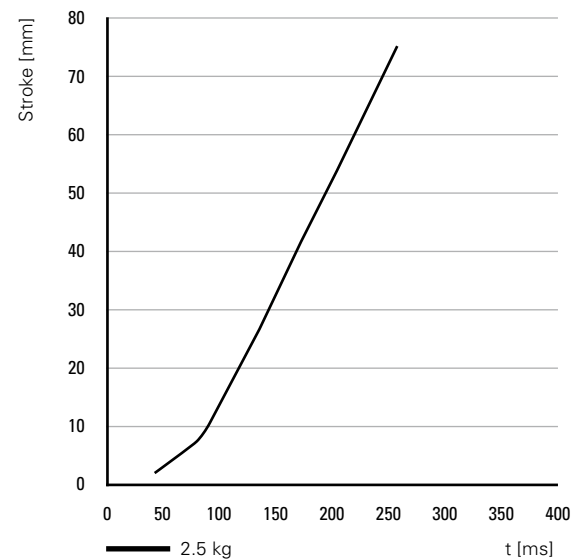
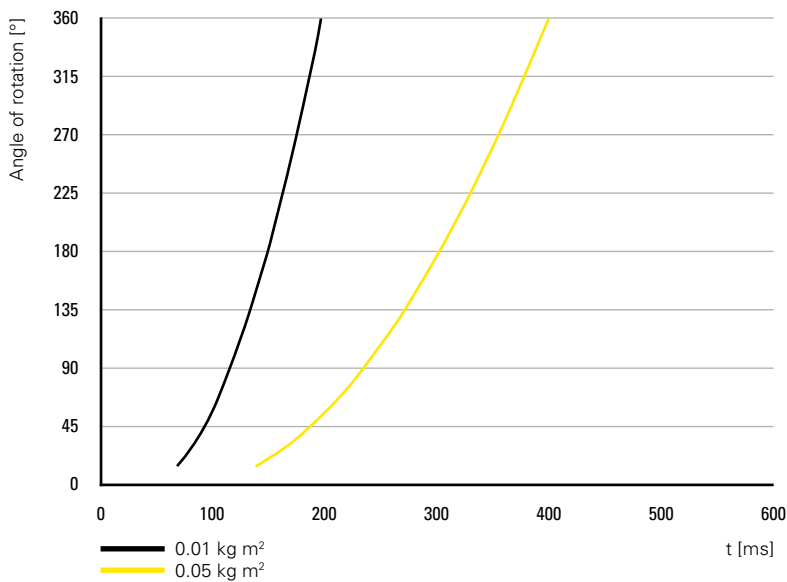
### LOAD DATA (on the drive shaft)

<b>F<sub>2A stat</sub></b>	Static axial force:	1200 N
<b>F<sub>2R stat</sub></b>	Static radial force (extended):	500 N
<b>F<sub>2R stat</sub></b>	Static radial force (retracted):	1500 Nm
<b>M<sub>2T stat</sub></b>	Static torque:	10 Nm

### ENCODER

Sick	Hiperface
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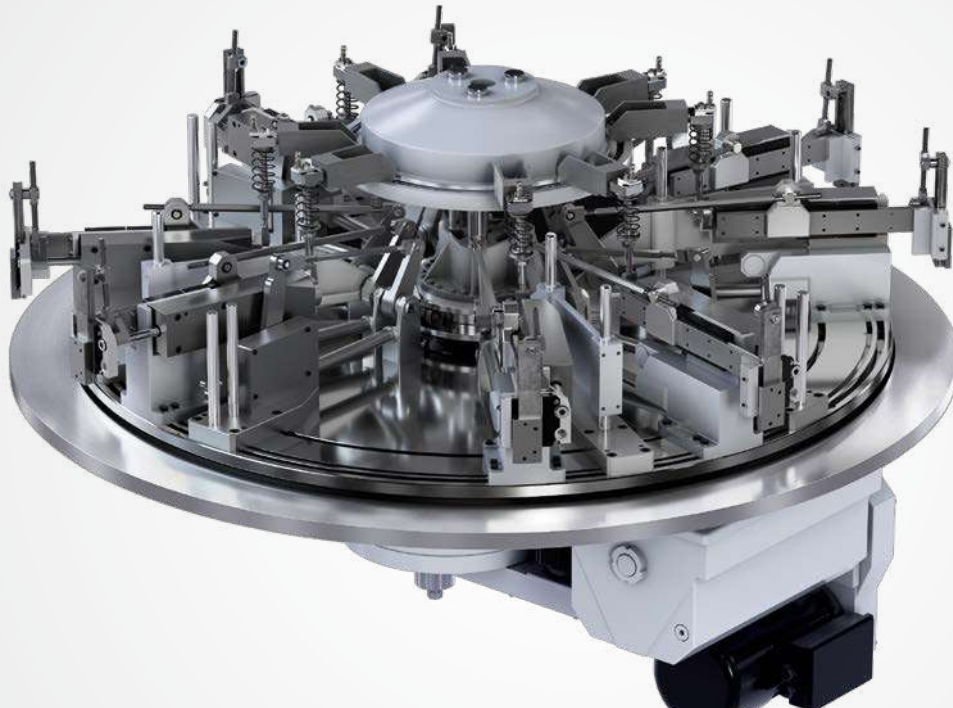
### TIMING DIAGRAM





# PICK-O-MAT

AUTOMATED ASSEMBLY SYSTEM | PICK-O-MAT AUTOMATED ASSEMBLY SYSTEM



Handling module



Lifting module

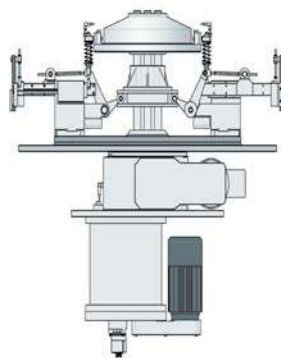


Pressing module

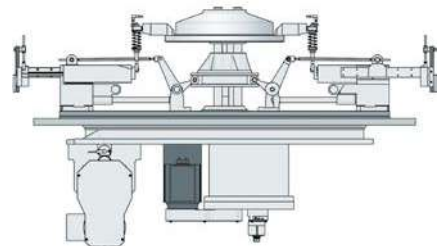
## PICK-O-MAT AUTOMATED ASSEMBLY SYSTEM: HIGH-PERFORMANCE AND EASY TO INTEGRATE

### THE SIZES

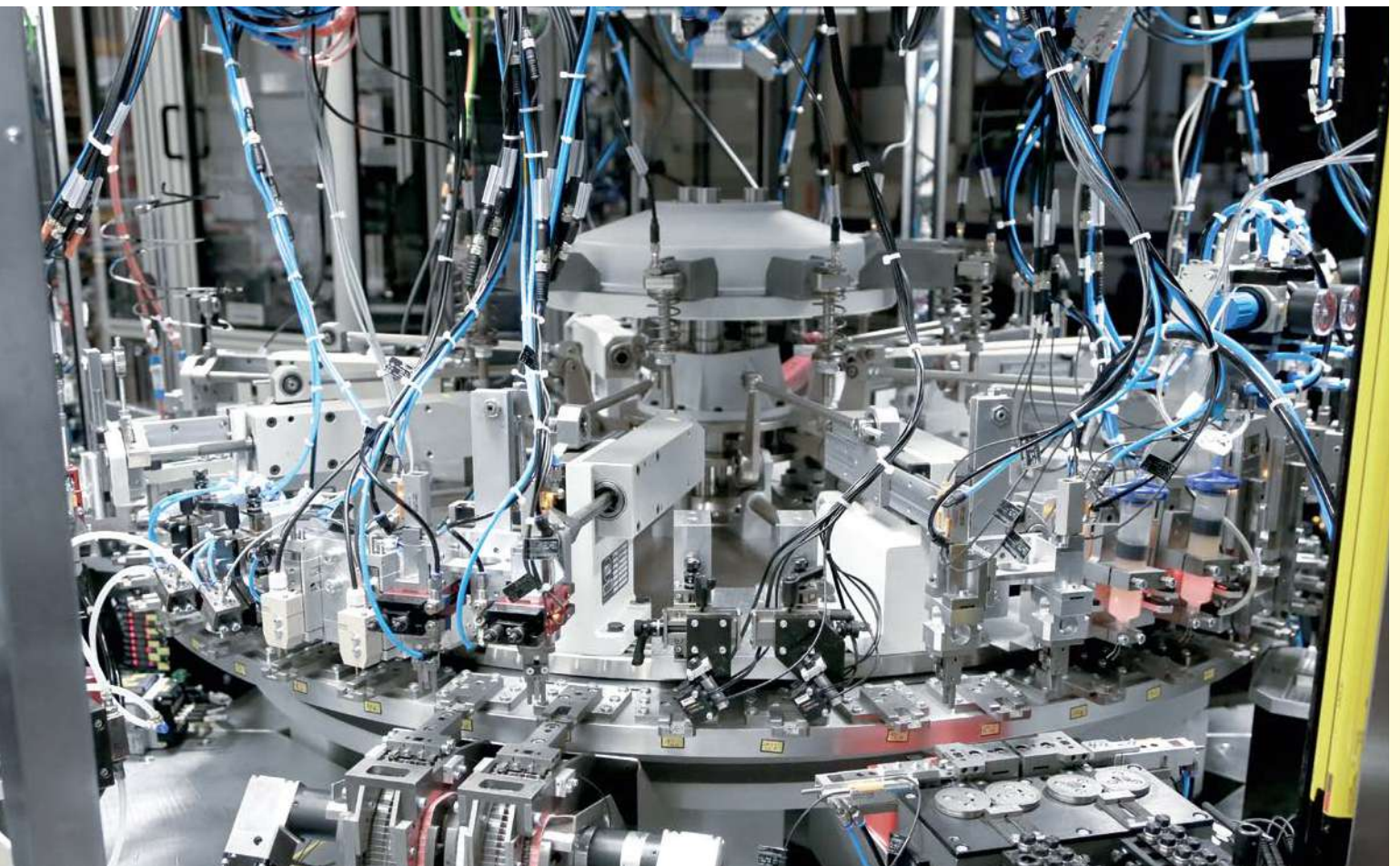
Available in two sizes, the PM 1100 and PM 1500 are the ideal basic machines for your specific application.



PM 1100



PM 1500



Assembly of small parts at Hammermeister Sondermaschinenentwicklung GmbH

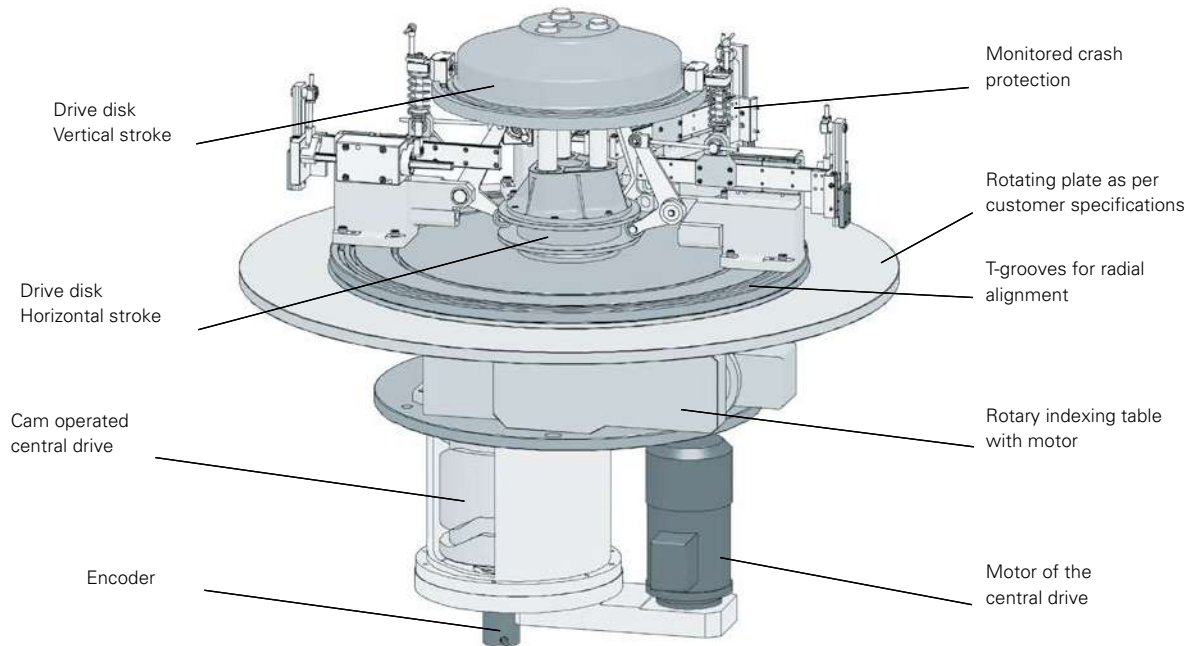
The Pick-o-Mat is in a class of its own: the electromechanical automated assembly system unites a rotary indexing table with up to 24 handling, pressing and lifting modules, which are synchronised via a central drive. Different stroke variants can be combined easily. The elegant and powerful drive solution works without pneumatic handling mechanisms and is available in two sizes.

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## ADVANTAGES

- Automated assembly system with rotary indexing table and up to 24 integrated handling, pressing and lifting modules
- Central cam drive for all module movements
- Powerful, affordable and easy-to-integrate complete solution also available on request with base plate, base frame (SR or SK model range) and control system

## CENTRAL DRIVE



### 360° BARREL CAM ROTATION = 4 VERTICAL STROKES + 2 HORIZONTAL STROKES = 1 COMPLETE CYCLE

A 360° rotation of the barrel cam of the central drive generates a complete cycle of the pick-and-place units. Lifting and pressing modules are moved by the lower drive disk (only).

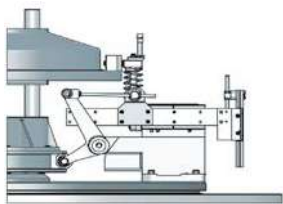


Figure 1: Pos. cam cylinder: 0°  
Pos. manipulator: down-retracted

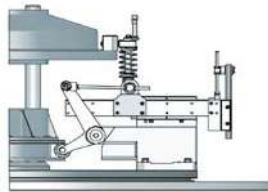


Figure 2: Pos. cam cylinder: 75°  
Pos. manipulator: up-retracted

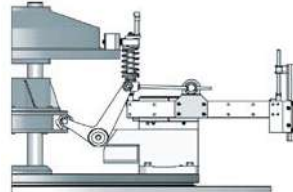


Figure 3: Pos. cam cylinder: 112°  
Pos. manipulator: up-extended

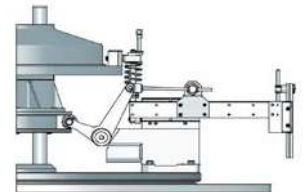


Figure 4: Pos. cam cylinder: 180°  
Pos. manipulator: down-extended

## TECHNICAL DATA

Repeatability:	± 0.03 mm	Drive of the rotary table and central unit:	AC brake motor
Max. horizontal stroke (handling module):	140 mm	Motor voltage:	400 V / 50 Hz or 440-480 V / 60 Hz
Max. vertical stroke (handling module):	50 mm	Drive output:	0.25 - 0.37 kW
Mechanical standard speeds/min. at 50 Hz:	32*, 48*, 60*, 75*	Monitoring sensor:	24 V, PNP N/O contact
Max. handling weight (kg):	2		

\* Reduction possible with frequency converter.

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## OPTIONS AND ADJUSTMENTS



To complete your Pick-o-Mat, plates and base frames can be manufactured as per your drawings



EF2 frequency converter control system for fast and simple start-up

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## STANDARDISED YET INDIVIDUAL

Alongside a large variety of parameters for adapting our standard components, we can manufacture the following components for adapting or completing your Pick-o-Mat in accordance with your drawings:

- Base frame with levelling elements for stable mounting of the basic machine (see also SR/SK model line)
- Base plate for mounting the central drive and your additional devices such as feeder equipment
- Rotary plate for mounting your workpiece carriers in accordance with your drilling pattern and with the desired outer diameter
- Adapter plate on the handling module for mounting your grippers

Looking at the CAD models of all standard modules of the Pick-o-Mat which have been made available on our website allows fast and secure project planning and design.

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## FAST START-UP AND GUARANTEED QUALITY

Every Pick-o-Mat is subjected to comprehensive testing and measurements prior to shipping, guaranteeing seamless integration into your complete system.

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## SIMPLE AND SECURE CONTROL

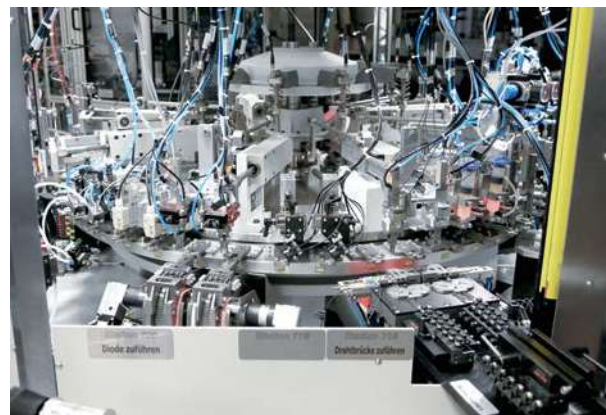
An encoder mounted on the cam axis of the central drive transmits the current position. The direct relationship between the rotation angle of the cam and the position of the gripper enables easy and secure control of all other modules within the rotary table.

Alongside the compact control and monitoring components offered by WEISS, the integrated mechanical overload protection ensures the safe operation of your machine.

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## AFFORDABLE AND QUICKLY AVAILABLE

Thanks to the combination of WEISS components manufactured in large numbers to make up your individual automated assembly systems, we can deliver the entire machine in a very short time and at an unbeatable price.



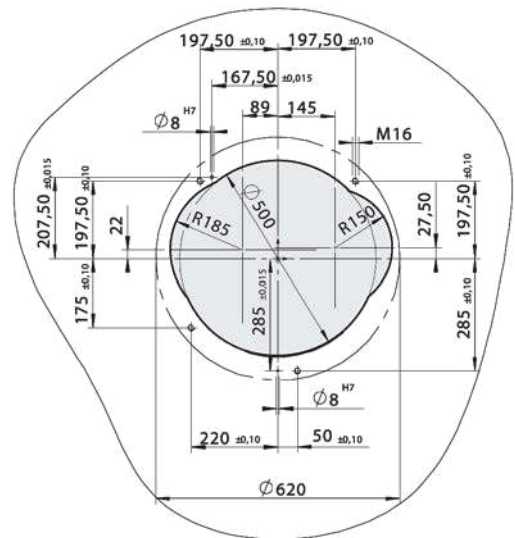
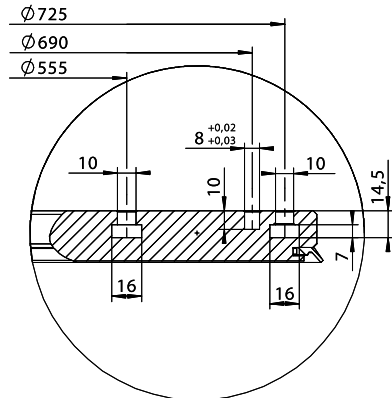
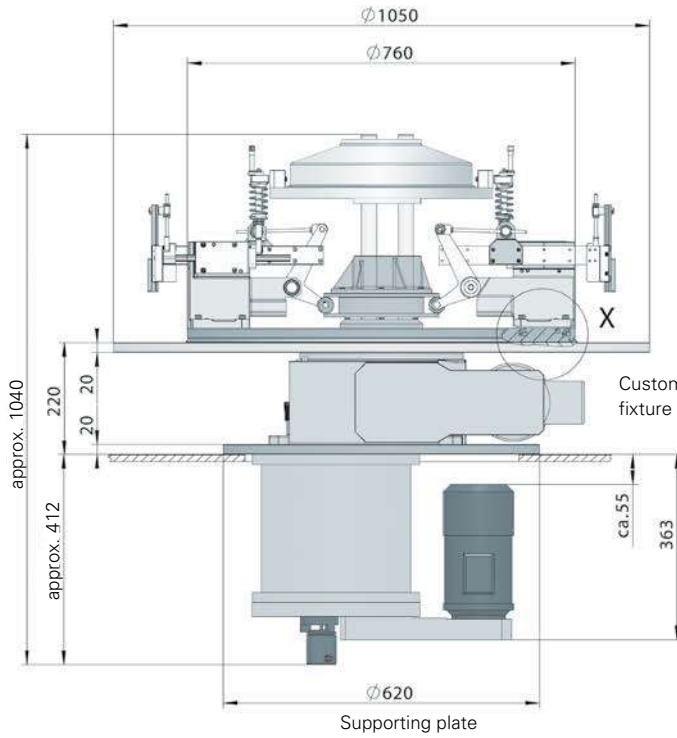
Application example for the assembly of small parts at Hammermeister Sondermaschinenentwicklung GmbH

# PM 1100

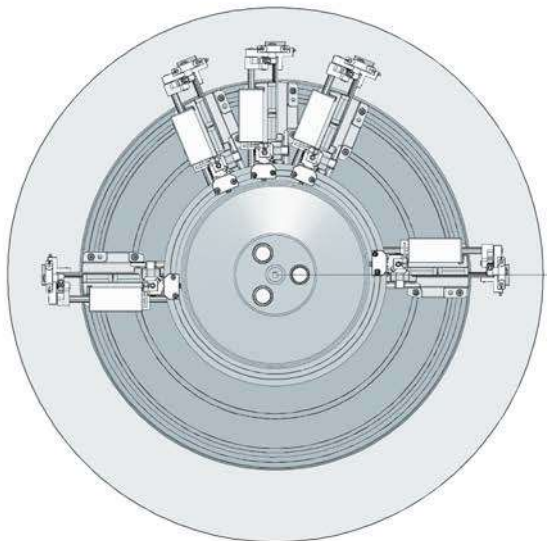
## TECHNICAL DATA

Rotary indexing table, basis:	TC 320T (for specifications, see TC-T rotary indexing tables)
Max. number of modules:	16
Number of stations on rotary table:	4 to 36

Diameter of stationary module plate:	760 mm
Diameter of rotary plate:	Standard 1050 mm (other diameters possible)
Available base frames:	SR0200B or SK 0300B



Drilling pattern with mounting hole in the base plate

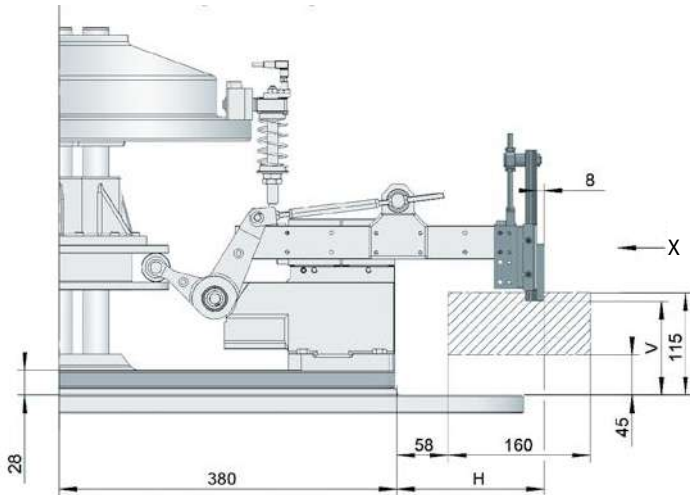


The maximum number of modules and the smallest spacing distance possible must be reviewed for each application from a design point of view and depend on the type of module and the desired sequence.

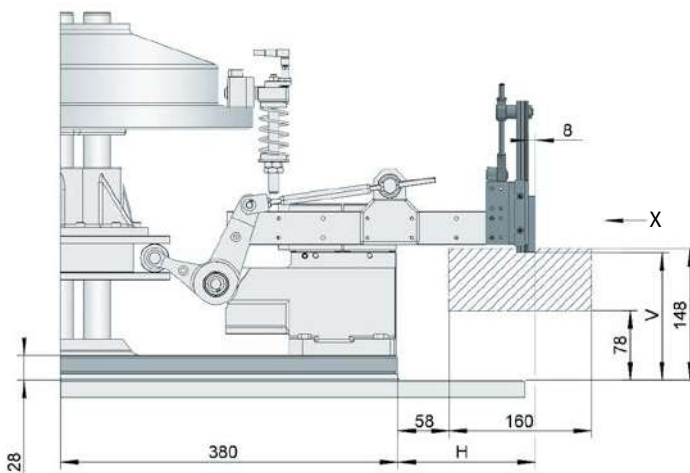
# PM 1100E HANDLING MODULE

If required, the vertical guide assembly can be mounted at two heights with a difference of 33 mm (see figures for assembly 1 and assembly 2).

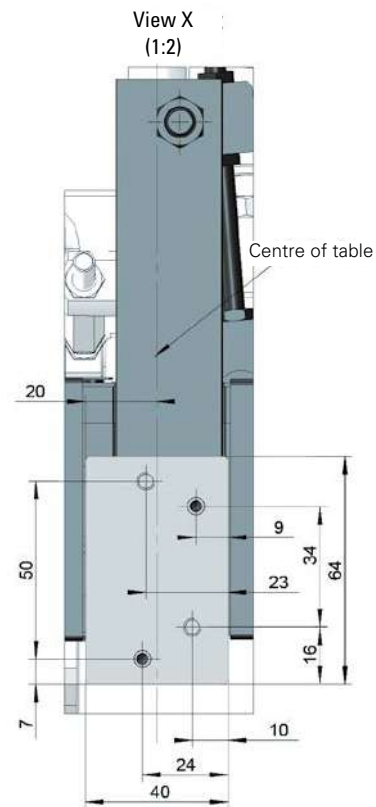
For all stroke variants, the stroke including adjustment limits can only lie within the grey shaded area. For pre-adjustment prior to assembly, the adjusting **dimensions H and V** must be specified when ordering. The final adjustment is performed by the customer after fitting the gripper.



**Assembly 1** – bottom vertical rail  
Position of the handling unit: top – outside



**Assembly 2** – top vertical rail  
Position of the handling unit: top – outside



Standard adapter plate (40 x 64 x 8 mm) with drilling pattern (2x DRM 5 H7; 2x M5) for mounting to the guide (customised configurations possible)

## TECHNICAL DATA

Maximum extra weight: 2 kg (depending on speed and number of modules)

Standard strokes:

Vertical stroke [mm]	30	40	50**		
of which linear without crossover (approx.) [mm]	25	30	37.5		
Horizontal stroke [mm]	80	90*	100	120	140
of which linear without crossover (approx.) [mm]	65	75	85	100	115

\* The horizontal stroke of 90 mm can only be realised in combination with vertical strokes of 40 mm and 50 mm.

\*\* Only **Assembly 1** possible, adjusting dimension V must be between 56mm and 120mm.



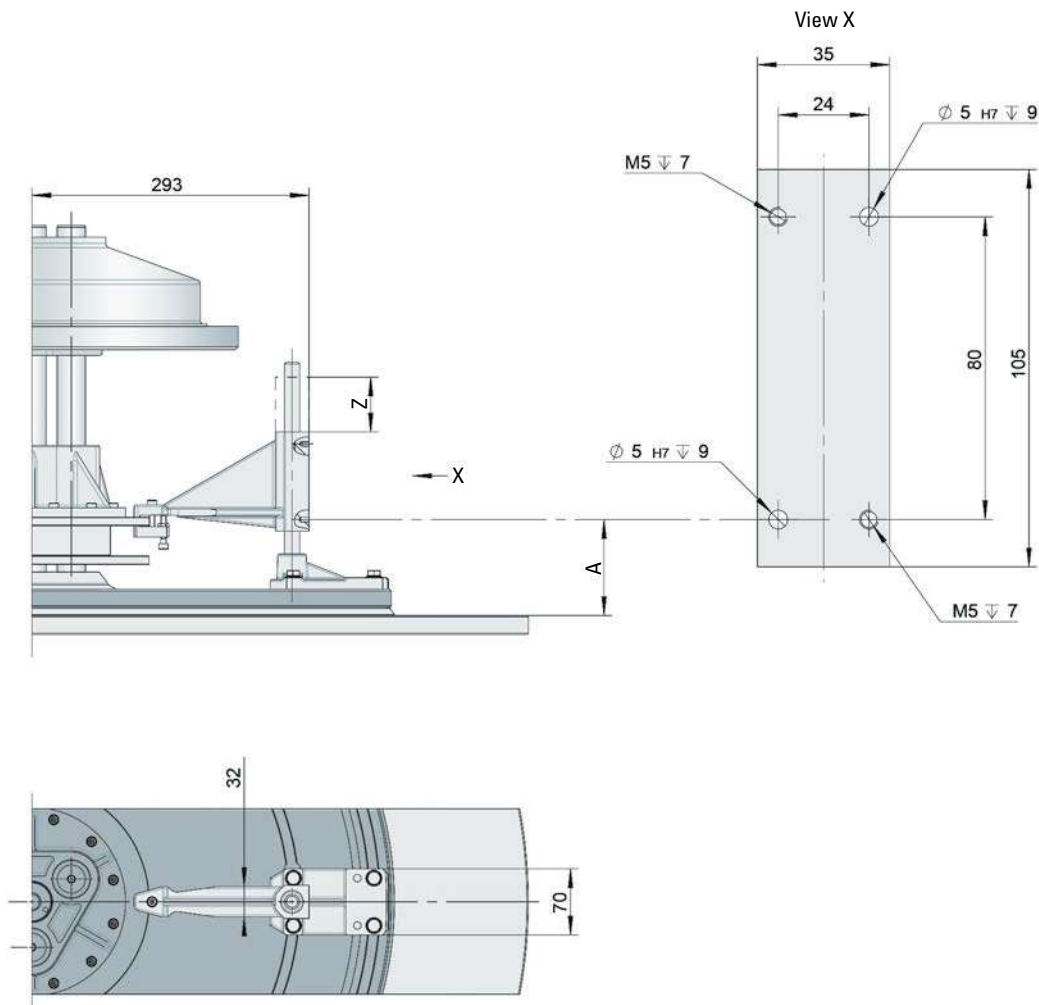
# PM 1100H LIFTING MODULE

## USING THE LIFTING MODULE

The lifting module can be used for the vertical movement of a test medium. In order to avoid crash situations, the test medium must contain a spring-mounted overload protection system that permits max. 50 N spring force and at least 71 mm spring travel.

## METHOD OF FUNCTIONING

The lifting module moves simultaneously with the horizontal stroke of the handling module. The downward movement is performed synchronously with the retraction of the handling module.



## TECHNICAL DATA

Maximum weight to be moved:	1.5 kg	
Stroke dependencies [mm]:		
Vertical stroke of the handling module	30.0	≥ 40.0
Stroke of the lifting module	58.3	70.0
Bottom position (distance A)	100.0	94.0

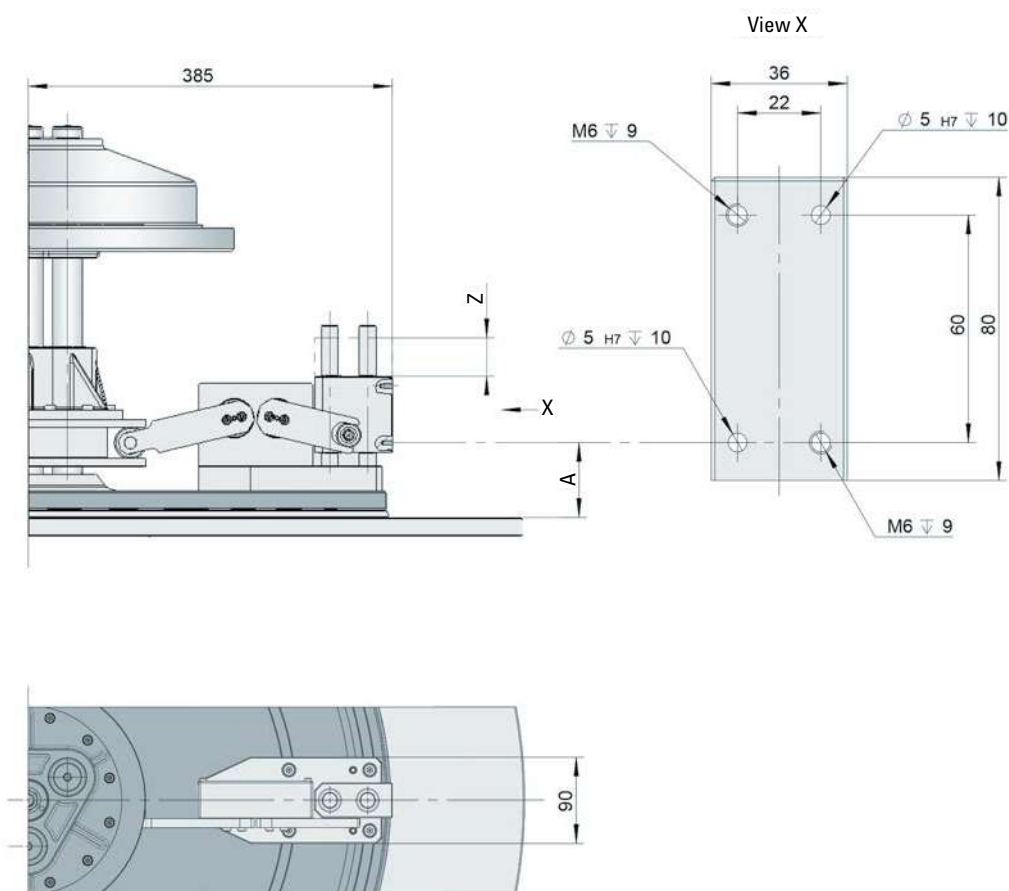
# PM 1100P PRESSING MODULE

## APPLICATION

The pressing module can move the press head to the workpiece to be joined in the vertical direction. In order to avoid crash situations, the press head must contain a spring-mounted overload protection system that permits max. 300 N spring force and at least 51 mm spring travel.

## METHOD OF FUNCTIONING

The pressing module moves simultaneously with the horizontal stroke of the handling module. The downward movement is performed synchronously with the retraction of the handling module.



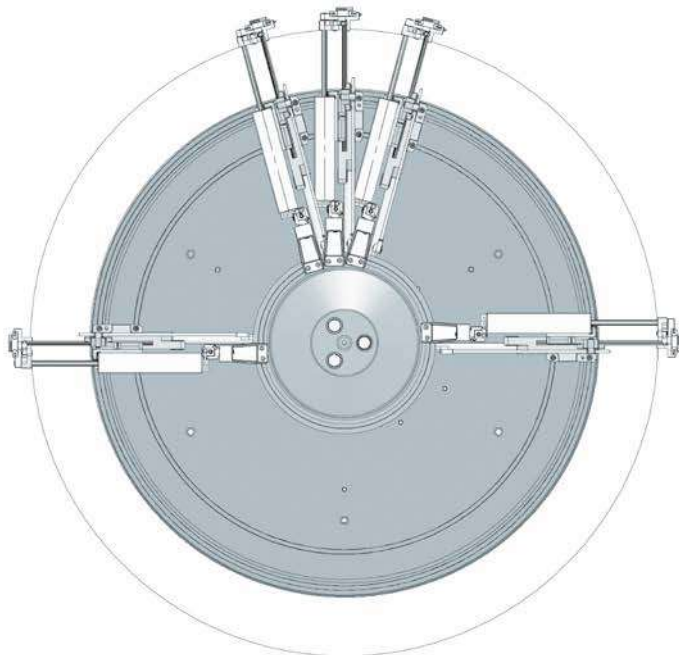
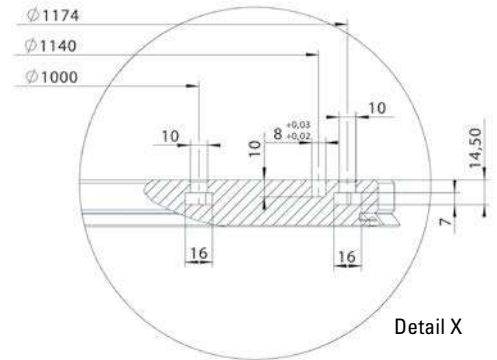
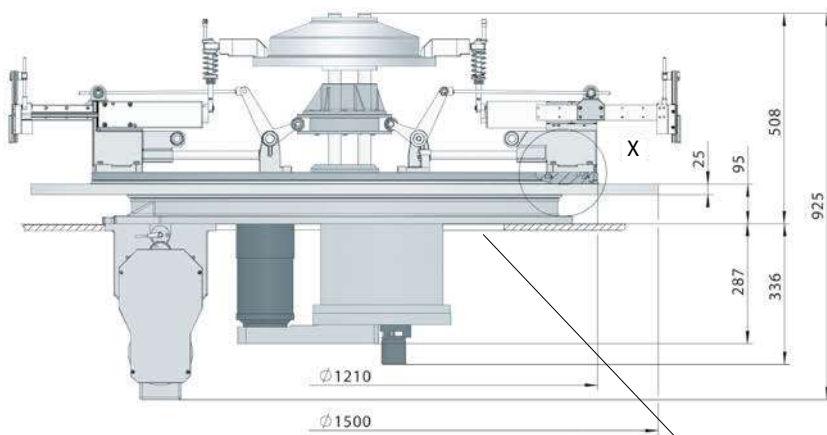
## TECHNICAL DATA

Maximum pressing force:	200 N	
Stroke dependencies [mm]:		
Vertical stroke of the handling module	30.0	≥ 40.0
Stroke of the pressing module	40.5	49.5
Bottom position (distance A)	79.3	75.0

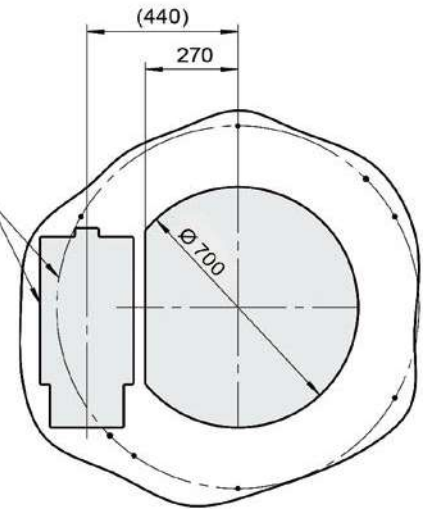
# PM 1500

## TECHNICAL DATA

Rotary indexing table, basis:	TR 1100A (for specifications, see TR rotary indexing tables)	Diameter of stationary module plate:	1210 mm
Max. number of modules:	24	Diameter of rotary ring:	Standard 1500 mm (other diameters possible)
Number of stations on rotary table:	6 to 36	Possible base frames:	SR0300B or SK0300B



Recess + drilling pattern TR 1100A



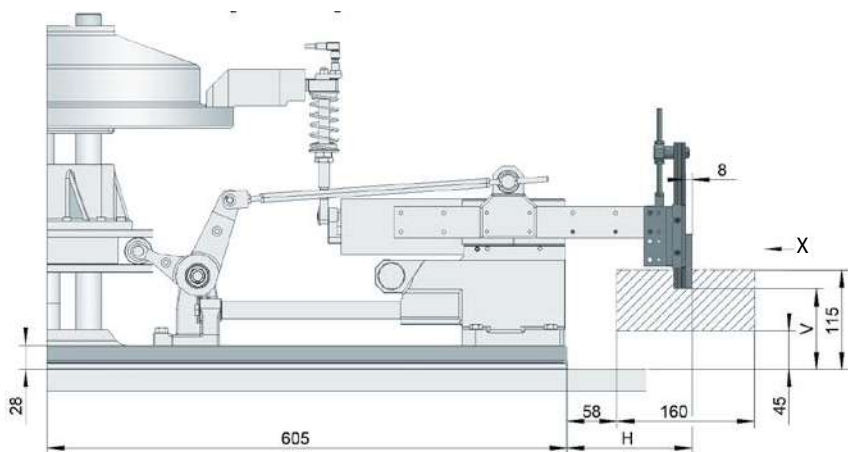
Recess in the base plate

The maximum number of modules and the smallest spacing distance possible must be reviewed for each application from a design point of view and depend on the type of module and the desired sequence.

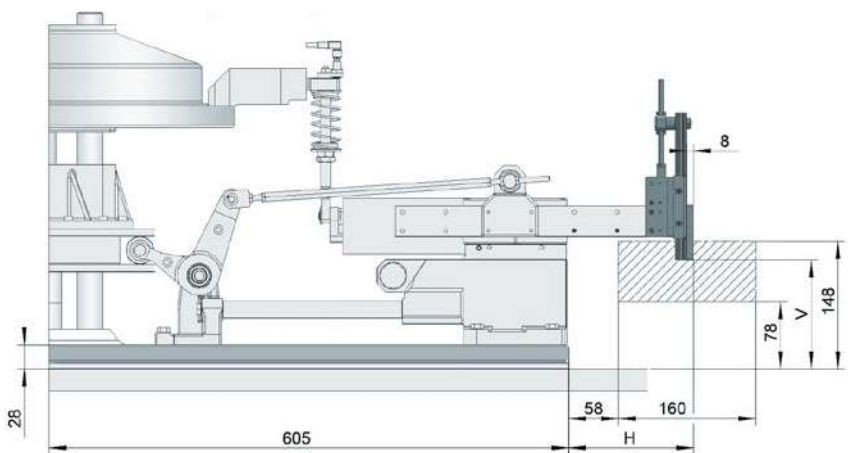
# PM 1500E HANDLING MODULE

If required, the vertical guide assembly can be mounted at two heights with a difference of 33 mm (see figures for assembly 1 and assembly 2).

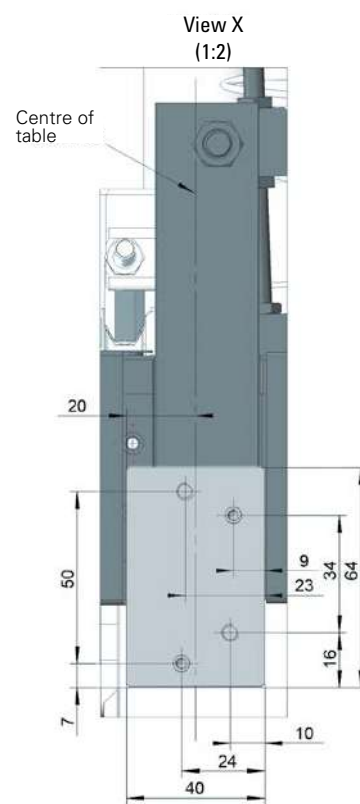
For all stroke variants, the stroke including adjustment limits can only lie within the grey shaded area. For pre-adjustment in the factory, the adjusting **dimensions H and V** must be specified when ordering. The final adjustment is performed by the customer after fitting the gripper.



**Assembly 1** – bottom vertical rail  
Position of the handling unit: top – outside



**Assembly 2** – top vertical rail  
Position of the handling unit: top – outside



Standard adapter plate (40 x 64 x 8 mm) with drilling pattern (2x DRM 5 H7; 2x M5) for mounting to the guide (customised configurations possible)

## TECHNICAL DATA

Maximum extra weight: 2kg (depending on speed and number of modules)

Standard strokes:

Vertical stroke [mm]	30	40	50**		
of which linear without crossover (approx.) [mm]	25	30	37.5		
Horizontal stroke [mm]	80	90*	100	120	140
of which linear without crossover (approx.) [mm]	65	75	85	100	115

\* The horizontal stroke of 90 mm can only be realised in combination with vertical strokes of 40 mm and 50 mm.

\*\* Only **Assembly 1** possible, adjusting dimension V must be between 56mm and 120mm.

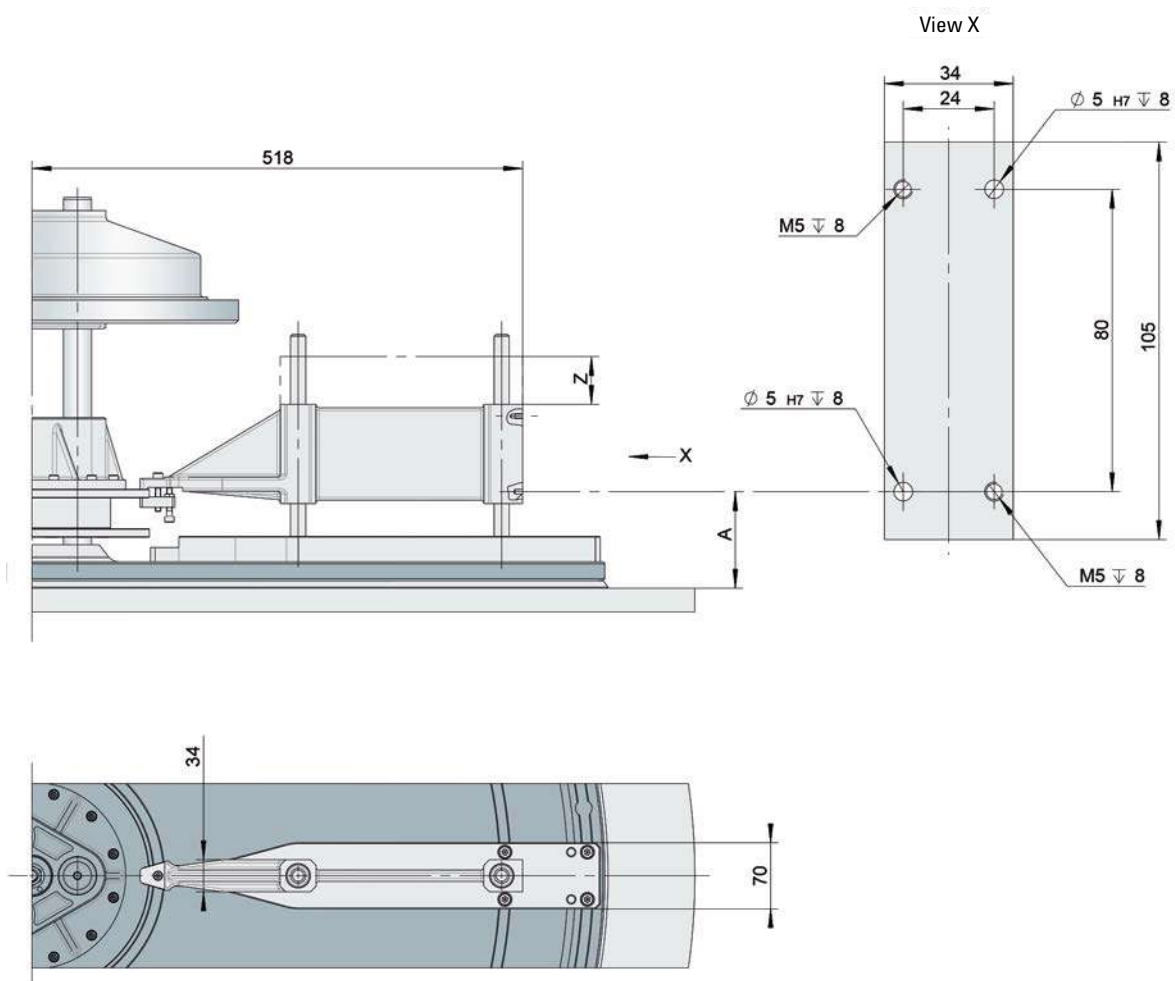
# PM 1500H LIFTING MODULE

## USING THE LIFTING MODULE

The lifting module can be used for vertical movement of test equipment. In order to avoid crash situations, the test medium must contain a spring-mounted overload protection system that permits max. 50 N spring force and at least 71 mm spring travel.

## METHOD OF FUNCTIONING

The lifting module moves simultaneously with the horizontal stroke of the handling module. The downward movement is performed synchronously with the retraction of the handling module.



## TECHNICAL DATA

Maximum weight to be moved:	1.5 kg	
Stroke dependencies [mm]:		
Vertical stroke of the handling module	30.0	≥ 40.0
Stroke of the lifting module	58.3	70.0
Bottom position (distance A)	100.0	94.0

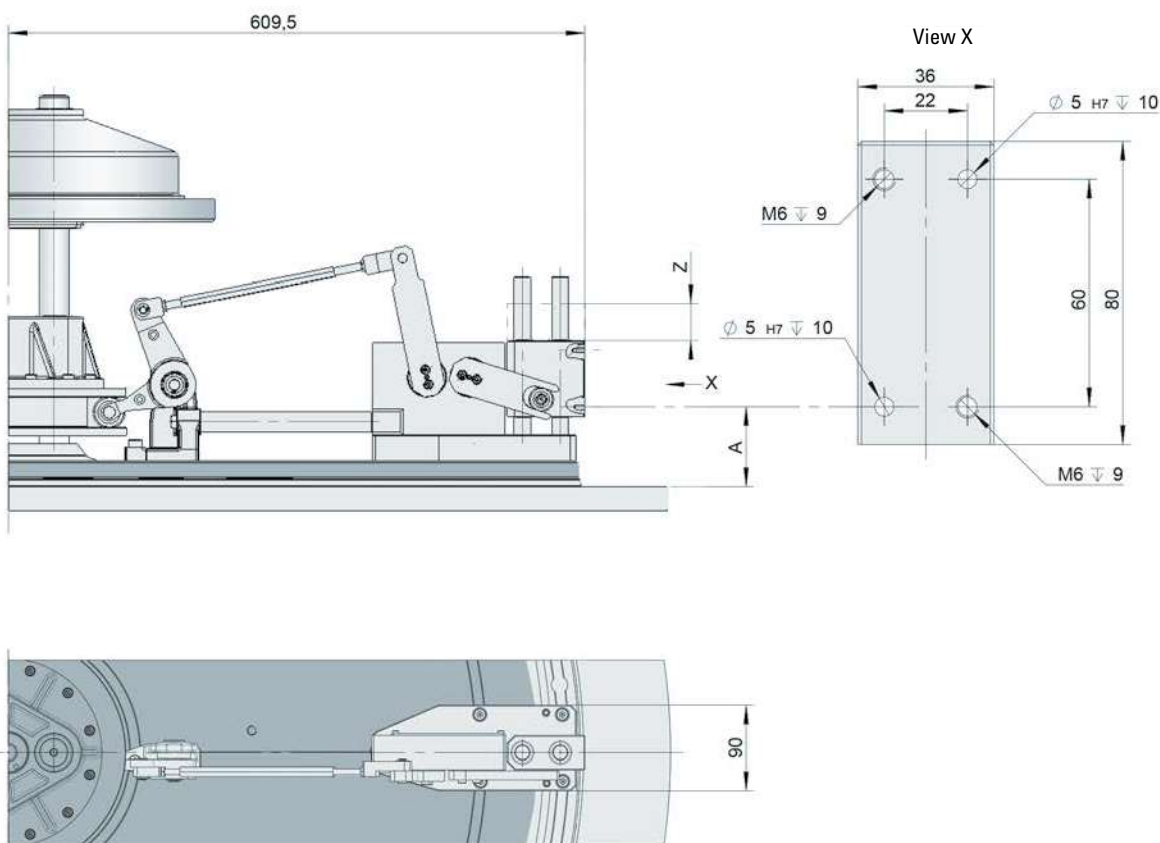
# PM 1500P PRESSING MODULE

## APPLICATION

The pressing module can move the press head to the workpiece to be joined in the vertical direction. In order to avoid crash situations, the press head must contain a spring-mounted overload protection system that permits max. 300 N spring force and at least 51 mm spring travel.

## METHOD OF FUNCTIONING

The pressing module moves simultaneously with the horizontal stroke of the handling module. The downward movement is performed synchronously with the retraction of the handling module.



## TECHNICAL DATA

Maximum pressing force:	200 N	
Stroke dependencies [mm]:		
Vertical stroke of the handling module	30.0	≥ 40.0
Stroke of the pressing module	41.5	50.5
Bottom position (distance A)	75-95	75-95

The stroke position can be adjusted by means of a threaded bar.





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WEISS APPLICATION SOFTWARE



# W.A.S. 2

WEISS APPLICATION SOFTWARE | W.A.S. 2



Intuitive operator concept: the elegant interface of W.A.S. 2 is also available for mobile devices as a Windows application or via a web interface.

## THE WHOLE WORLD OF WEISS COMPONENTS IN A SINGLE SOFTWARE PACKAGE: W.A.S. 2

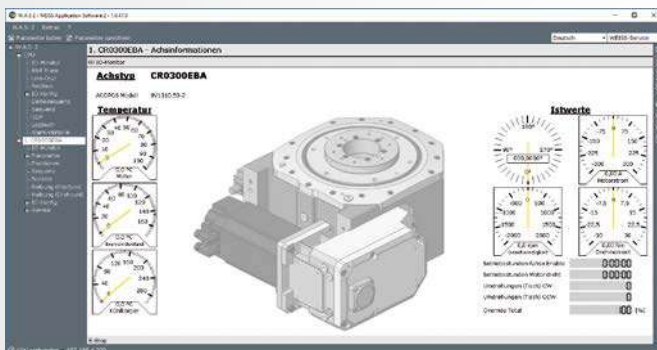
Discover the consistent further development of the WEISS Application Software. Easy-to-use, intuitive and compatible with all WEISS automation components – even for complete multi-axis systems and LS 280 (W.A.S. 2 LS)

### PLUG & WORK FOR STANDALONE OR SYSTEM MODULES

The new WEISS Application Software (W.A.S. 2) makes setting up and controlling all WEISS components a breeze – whether individually or in combination as a multi-axis system. All system combinations can be configured without any issues – whether electromechanical or servomechanical rotary tables with direct-drive rotary or linear units.

### MAXIMUM OPERATOR CONVENIENCE

Whether using the Windows programme or a web browser, the interface is so easy and intuitive to use that no detailed control system knowledge is required for commissioning. Even plant engineering firms without their own software specialists can set up their own modules without any problems.



Whether rotary table, handling unit or linear axis, the complete range of WEISS components can be controlled easily and precisely using W.A.S. 2.

## UP TO 30% HIGHER OUTPUT

The various modules communicate directly with one another – without having to bypass a higher-level control system. This saves valuable process time and significantly increases the cycle rate of the entire installation. The output can increase by up to 30% in high-speed applications.

## SMART ENERGY MANAGEMENT

Further advantages include the diverse monitoring and diagnostics functions. And when it comes to energy management: the software enables precise energy analysis with minute-by-minute measurement and saving of energy consumption values. Even energy recovery can be used with an active power supply unit.

## ADVANTAGES

- Quick and easy commissioning for complete multi-axis systems
- Plug & work even without any special knowledge
- Intuitive user interface that can be accessed via web browsers on both mobile terminals and PCs
- Output increase of up to 30% thanks to shorter process times
- Smart energy management for precise analyses
- Monitoring and diagnostic functions

# W.A.S. 2

## WEISS APPLICATION SOFTWARE

### WEISS APPLICATION SOFTWARE

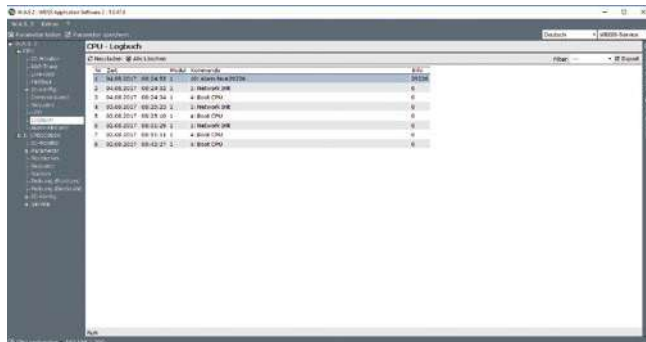
- Control packages matched to the respective requirements are available: SCALABLE, COMPACT and LS
- All positions and speeds are freely programmable
- Free language selection
- Easy access to all axis parameters
- Diagnostic functions
- Inputs and outputs can be forced (e.g. for start-up)
- Alarm history
- Logbook
- Oscilloscope software

### DESIGN AND CONNECTION

- Plug & Work
- Vorparametriertes Steuerpaket
- Finished parameter sets for all WEISS components
- Passend aufeinander abgestimmte Komponenten
- Große Flexibilität bezüglich Leitungslänge und Schnittstellen

### DIMENSIONS

- Based on the number of axes, the supply voltage, the configuration level and the hardware manufacturer(s)



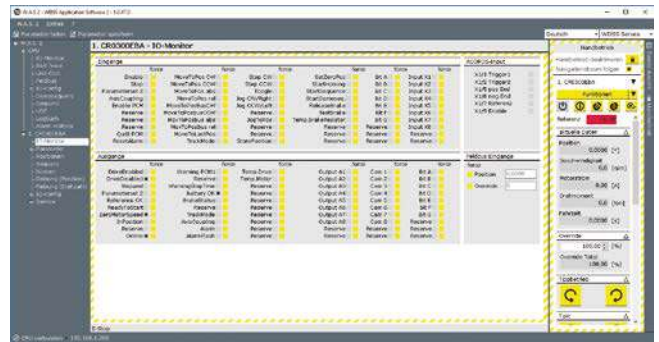
To perform diagnostics on the fieldbus interface, the logbook records the timing of the command sequence.

### COMMUNICATION

- Digital I/O (24 V inputs and outputs)
- Profibus-DP
- EtherNet/IP (Rockwell)
- PROFINET
- EtherCAT
- More available on request

### SAFETY AND SERVICE

- Safe torque off function integrated
- Safe Motion on request
- Worldwide service / complete UL approval
- Comprehensive safety and monitoring functions
- Remote maintenance



The I/O monitor is used for commissioning and for handshake diagnostics.

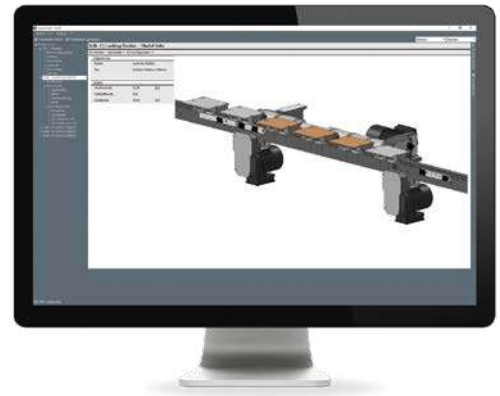
# W.A.S. 2 LS

## WEISS APPLICATION SOFTWARE

### WEISS APPLICATION SOFTWARE

The W.A.S. 2 LS (WEISS Application Software for LS 280) program for Windows is for controlling the linear assembly system while also acting as the interface to the higher-level customer control system. In addition to the basic functionality for the start-up the software provides many further functions.

- Visualisation
- Free language selection
- Status bar for the single cells
- Display of alarm messages
- Easy access to parameter of the cells
- Inputs and outputs can be forced
- Monitoring functions
- Alarm history
- Diagnostic functions
- Ethernet connection to the control
- Load and display a parameter set "offline"



### DESIGN AND CONNECTION

- One master PLC per base machine LS 280
- Decentralised control packages per assembly cell
- Communication of the cells via system bus
- Centrally saved parameter file
- Standardised design with plugable system
- Fieldbus interfaces for customer interface

### SAFETY AND SERVICE

- Frequency inverter with integrated restart protection  
Safe torque off (SIL 2, PL "d")
- Depending on brand, configuration and wiring of the frequency inverter, a Safe torque off (SIL 3, PL "e") can be reached.
- Comprehensive monitoring functions
- Remote maintenance
- Worldwide service

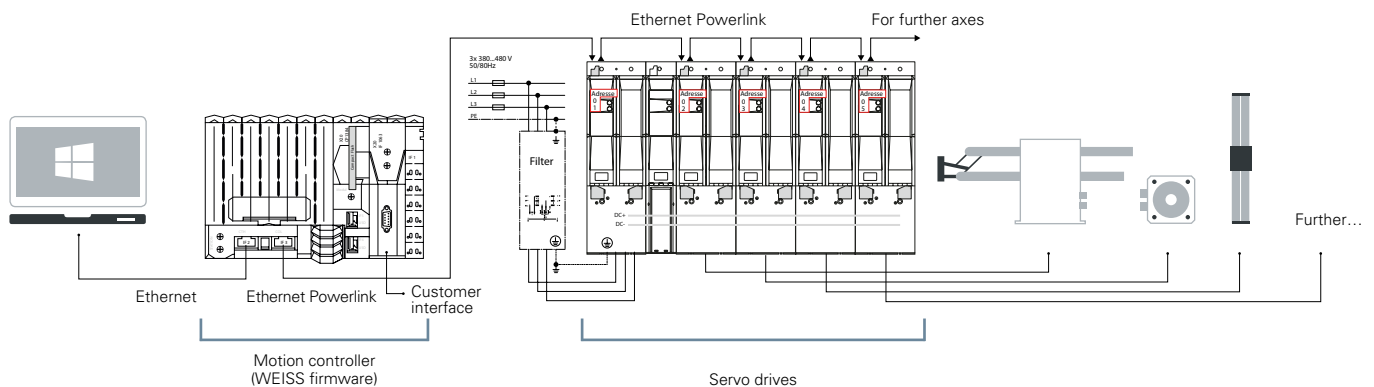
### COMMUNICATION

At the master PLC of the base machine LS 280 the following interfaces to the higher level main control system of the customer are available:

- Profibus-DP
- EtherNet/IP (Rockwell)
- PROFINET
- EtherCAT
- More available on request

# W.A.S. 2 SCALABLE

WEISS APPLICATION SOFTWARE



- 1 to 32 axes possible
- Large scope of functions, such as energy recovery
- Software cams
- Sequence programming
- PCM
- Friction measurement
- Easy to expand
- Configurable fieldbus telegram

## W.A.S. 2 SCALABLE ELECTRICAL DATA FOR THE CONTROL HARDWARE

Product	Mains voltage	Supply 24 V ± 5 %	Connected load max.	Installation dimensions WxHxD (without CPU)
NC 150T	230 V	1.47 A	1.35 kVA	60 x 257 x 220 mm
NC 150T	400 V	1.47 A	2.1 kVA	60 x 257 x 220 mm
NC 220T	230 V	1.47 A	2.1 kVA	60 x 257 x 220 mm
NC 220T	400 V	2.5 A	3 kVA	71 x 375 x 236 mm
NC 320T	230 V	1.47 A	2.1 kVA	60 x 257 x 220 mm
NC 320T	400 V	2.5 A	5 kVA	71 x 375 x 236 mm
NR 750Z	400 V	2.5 A	10 kVA	71 x 375 x 236 mm
NR 1100Z	400 V	2.8 A	17 kVA	200 x 375 x 234 mm
NR 1500Z	400 V	2.8 A	17 kVA	200 x 375 x 234 mm
NR 2200Z	400 V	2.8 A	17 kVA	200 x 375 x 234 mm
CR 1000C	400 V	2.8 A	30 kVA	200 x 375 x 234 mm
CR 1300C	400 V	2.8 A	30 kVA	200 x 375 x 234 mm
CR 2000C	400 V	4.6 A	54 kVA	276 x 460 x 295 mm
CR 300E	400 V	2.5 A	10 kVA	71 x 375 x 236 mm
CR 400E	400 V	2.5 A	10 kVA	71 x 375 x 236 mm
CR 500E	400 V	2.8 A	17 kVA	200 x 375 x 234 mm
CR 700C	400 V	2.8 A	17 kVA	200 x 375 x 234 mm
TH 700F	400 V	2.8 A	17 kVA	200 x 375 x 234 mm
TH 1000F	400 V	2.8 A	30 kVA	200 x 375 x 234 mm
TO 150C-B	230 V	1.47 A	2.1 kVA	60 x 257 x 220 mm
TO 150C-B	400 V	2.5 A	3 kVA	71 x 375 x 236 mm
TO 400	400 V	2.8 A	30 kVA	200 x 375 x 234 mm
TO 750C	400 V	2.8 A	30 kVA	200 x 375 x 234 mm
TO 1300	400 V		On request	
TO 220C-B	230 V	1.47 A	2.1 kVA	60 x 257 x 220 mm
TO 220C-B	400 V	2.5 A	5 kVA	71 x 375 x 236 mm
ST 55, ST 75-1-2-3	230 V	1.47 A	1.35 kVA	60 x 257 x 220 mm
ST 55, ST 75-1-2-3	400 V	1.47 A	1.35 kVA	60 x 257 x 220 mm

Product	Mains voltage	Supply 24 V $\pm$ 5 %	Connected load max.	Installation dimensions WxHxD (without CPU)
ST 140-1	230 V	1.47 A	1.35 kVA	60 x 257 x 220 mm
ST 140-1	400 V	2.5 A	3 kVA	71 x 375 x 236 mm
ST 140-2	230 V	1.47 A	2.1 kVA	60 x 257 x 220 mm
ST 140-2	400 V	2.5 A	5 kVA	71 x 375 x 236 mm
TW 150	230 V	1.47 A	2.1 kVA	60 x 257 x 220 mm
TW 150	400 V	2.5 A	5 kVA	71 x 375 x 236 mm
TW 200	230 V	1.47 A	2.1 kVA	60 x 257 x 220 mm
TW 200	400 V	2.5 A	5 kVA	71 x 375 x 236 mm
TW 300	400 V	2.5 A	5 kVA	71 x 375 x 236 mm
HP 70T	230 V	2.94 A	2.7 kVA	60 x 257 x 220 mm (x 2)
HP 70T	400 V	5 A	6 kVA	71 x 375 x 236 mm (x 2)
HP 140T	230 V	2.94 A	2.7 kVA	60 x 257 x 220 mm (x 2)
HP 140T	400 V	5 A	6 kVA	71 x 375 x 236 mm (x 2)
HL 50	230 V	1.47 A	1.35 kVA	60 x 257 x 220 mm
HL 50	400 V	2.5 A	3 kVA	71 x 375 x 236 mm
HL 100	230 V	1.47 A	2.1 kVA	60 x 257 x 220 mm
HL 100	400 V	2.5 A	5 kVA	71 x 375 x 236 mm
HG 0012	230 V	1.47 A	1.35 kVA	60 x 257 x 220 mm
HG 0012	400 V	1.47 A	1.35 kVA	60 x 257 x 220 mm
HG 0025	230 V	1.47 A	1.35 kVA	60 x 257 x 220 mm
HG 0025	400 V	2.5 A	3 kVA	71 x 375 x 236 mm
HN 50	230 V	1.47 A	1.35 kVA	60 x 257 x 220 mm
HN 50	400 V	2.5 A	3 kVA	71 x 375 x 236 mm
HN 100	230 V	1.47 A	2.1 kVA	60 x 257 x 220 mm
HN 100	400 V	2.5 A	5 kVA	71 x 375 x 236 mm
HN 200	230 V	1.47 A	2.1 kVA	60 x 257 x 220 mm
HN 200	400 V	2.5 A	5 kVA	71 x 375 x 236 mm
HN 400	400 V	2.5 A	5 kVA	71 x 375 x 236 mm
HN 400	230 V		On request	

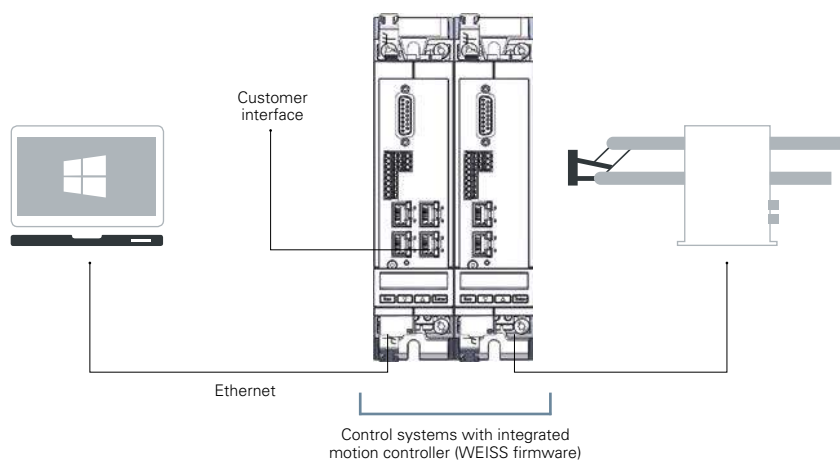
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**CPU MOTION CONTROLLER (ONE PER W.A.S. 2 SCALABLE SYSTEM)**

Supply 24 V $\pm$ 5 %	Installation dimensions WxHxD
1.5 A (without I/O current consumption)	150 x 99 x 85 mm

# W.A.S. 2 COMPACT

WEISS APPLICATION SOFTWARE



- 1 to 4 axes possible
- Defined interfaces
- Small installation space

## W.A.S. 2 COMPACT ELECTRICAL DATA FOR THE CONTROL HARDWARE

Product	Mains voltage	Supply 24 V ± 5 %	Connected load max.	Installation dimensions WxHxD
TO 150C-B	230 V	3.3 A	0.92 kVA	50 x 196 x 215 mm
TO 150C-B	400 V	3.3 A	1.54 kVA	50 x 196 x 215 mm
TO 400	400 V		On request	
TO 750C	400 V		On request	
TO 1300	400 V		On request	
TO 220C-B	230 V	3.3 A	1.55 kVA	50 x 196 x 215 mm
TO 220C-B	400 V	3.3 A	3.5 kVA	70 x 196 x 268 mm
ST 55, ST 75-1-2-3	230 V	3.3 A	0.92 kVA	50 x 196 x 215 mm
ST 55, ST 75-1-2-3	400 V	3.3 A	1.54 kVA	50 x 196 x 215 mm
ST 140-1	230 V	3.3 A	0.92 kVA	50 x 196 x 215 mm
ST 140-1	400 V	3.3 A	1.54 kVA	50 x 196 x 215 mm
ST 140-2	230 V	3.3 A	1.55 kVA	50 x 196 x 215 mm
ST 140-2	400 V	3.3 A	3.5 kVA	70 x 196 x 268 mm
TW 150	230 V	3.3 A	0.92 kVA	50 x 196 x 215 mm
TW 150	400 V	3.3 A	1.54 kVA	50 x 196 x 215 mm
TW 200	230 V	3.3 A	1.55 kVA	50 x 196 x 215 mm
TW 200	400 V	3.3 A	3.5 kVA	70 x 196 x 268 mm
TW 300	400 V	3.3 A	3.5 kVA	70 x 196 x 268 mm
HP 70T	230 V	6.6 A	1.84 kVA	50 x 196 x 215 mm (x 2)
HP 70T	400 V	6.6 A	3.08 kVA	50 x 196 x 215 mm (x 2)
HP 140T	230 V	6.6 A	1.84 kVA	50 x 196 x 215 mm (x 2)
HP 140T	400 V	6.6 A	3.08 kVA	50 x 196 x 215 mm (x 2)
HL 50	230 V	3.3 A	0.92 kVA	50 x 196 x 215 mm
HL 50	400 V	3.3 A	1.54 kVA	50 x 196 x 215 mm
HL 100	230 V	3.3 A	1.55 kVA	50 x 196 x 215 mm
HL 100	400 V	3.3 A	3.5 kVA	70 x 196 x 268 mm
HG 0012	230 V	3.3 A	0.92 kVA	50 x 196 x 215 mm
HG 0012	400 V	3.3 A	1.54 kVA	50 x 196 x 215 mm
HG 0025	230 V	3.3 A	0.92 kVA	50 x 196 x 215 mm

Product	Mains voltage	Supply 24 V $\pm$ 5 %	Connected load max.	Installation dimensions WxHxD
HG 0025	400 V	3.3 A	1.54 kVA	50 x 196 x 215 mm
HN 50	230 V	3.3 A	0.92 kVA	50 x 196 x 215 mm
HN 50	400 V	3.3 A	1.54 kVA	50 x 196 x 215 mm
HN 100	230 V	3.3 A	1.55 kVA	50 x 196 x 215 mm
HN 100	400 V	3.3 A	3.5 kVA	70 x 196 x 268 mm
HN 200	230 V	3.3 A	1.55 kVA	50 x 196 x 215 mm
HN 200	400 V	3.3 A	3.5 kVA	70 x 196 x 268 mm
HN 400	400 V	3.3 A	3.5 kVA	70 x 196 x 268 mm
SH 75T	230 V		On request	
SH 75T	400 V		On request	



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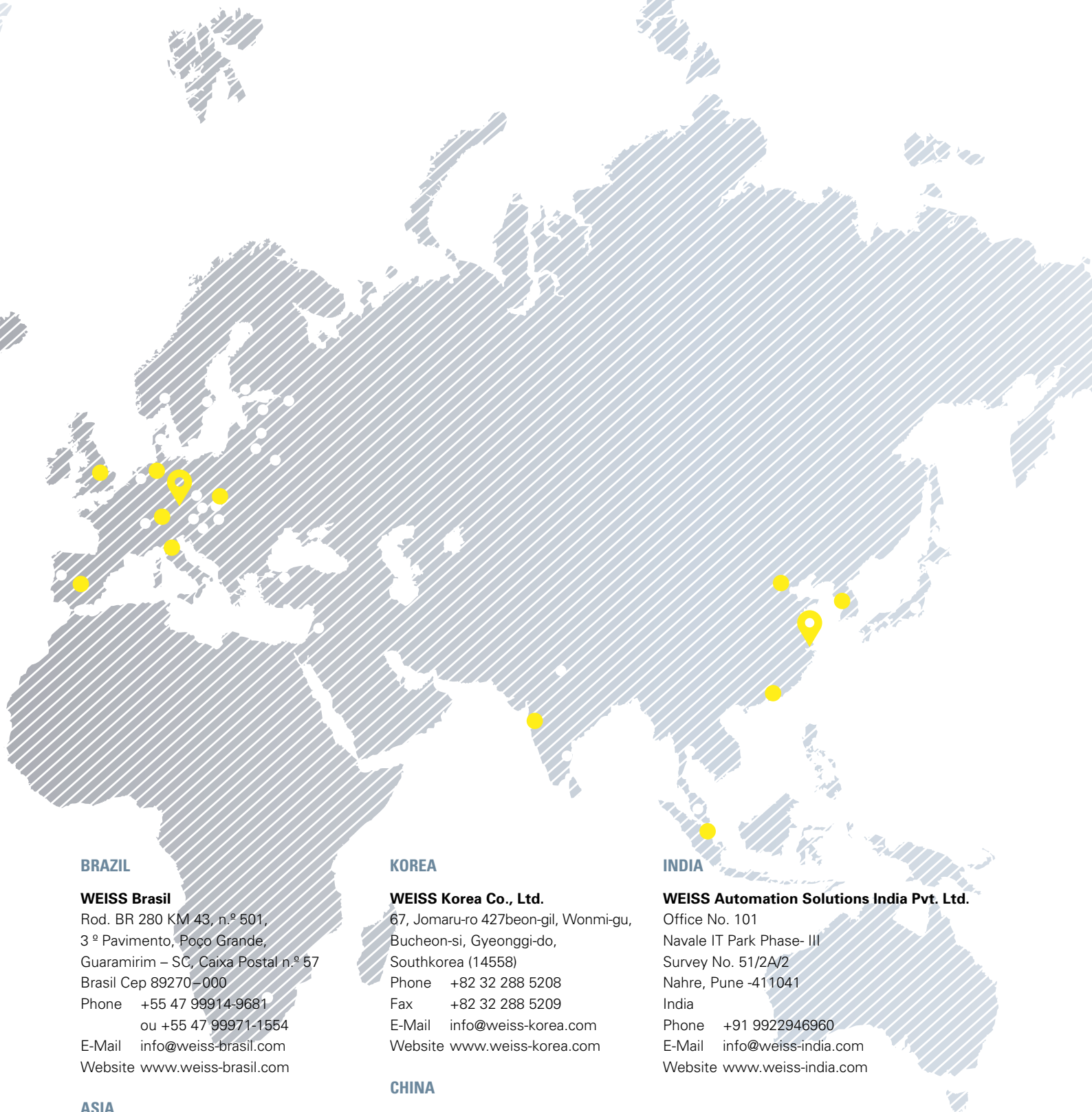
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