Torque Motor
Rotary indexing tables TO
Technology that inspires

With its torque series (TO) WEISS has opened up a new era in the history of the rotary indexing table.

The directly driven rotary indexing table offers faster indexing times at maximum precision. The option of a substantially more versatile application – including re-use – opens up new value-added potentials for our customers. Over the last 40 years as indexing table builders we have got to know many different customers with many different application areas. Each of these customers expects an optimum indexing table solution, a system tailor-made to suit their specific needs. With the directly driven torque rotary indexing table we have developed the solution which meets fully with these individual requirements and also offers enough scope to meet new requirements.

Simple integration in existing structures. The mechanical interfaces between the TC and TO model series are identical. Highly dynamic, high-precision, ready-to-install rotary indexing table solution at an unbeatable price/performance ratio.

Everything from a one-stop shop – high-precision plates of ALMg4,5Mn, anodized on request, as well as steel plates can be constructed in accordance with your drawings.
Faster, stronger, more compact...

Precise and rapid mechanical integration due to pin borings, secure electrical start-up due to perfect hardware

Fast, convenient and reliable start-up due to unique user software – simple control – practical clear text

Advantages at a glance

- Extremely dynamic
- Extremely high repeat accuracy
- No crash risk as power transmission only magnetic
- Absolute measuring system
- Highly reliable, long life
- Zero backlash
- No wearing parts
- Direct, rigid link of the load with the drive
- Overload protection
- Absolutely rust-free, all surfaces are treated
- No cooling units necessary
- Compact construction, minimum installation space, high torque
Technical data

Plate Ø: 155 mm
Direction of rotation: freely programmable
Max. plate speed: 100 rpm
Weight: 13 kg
Installation position: any
Positioning precision: ± 25" (on request 10" improved indexing precision)
Max. axial wobble of the plate: 0.01 mm (at Ø 155 mm)
Max. radial wobble: 0.01 mm

Shaft encoder data

Absolute measurement system: Heidenhain EnDat ECN 113

Motor data

Nom: 25 Nm
Peak: 45 Nm

Load data

Load data (for the turnplate)

permissible moment of tilt at the indexing plate: 600 Nm
permissible processing force (vertically effective on the indexing plate within the nominal Ø): 6000 N
permissible tangential moment on the indexing plate: 25 Nm

permissible radial force at the indexing plate: 10000 N

Load

- 1kgm²
- 2kgm²
- 5kgm²

Indexing time [sec] vs. angle of rotation [°]
TO 150C Dimensions

Thread screwing depth:
M8 max. 12 mm

Fit depth:
Ø6H7 max. 10 mm

 Shaft encoder connection
Motor connection
TO 220C

Technical data

Plate Ø: 245 mm
Direction of rotation: freely programmable
Max. plate speed: 100 rpm
Weight: 32 kg
Installation position: any
Positioning precision: ± 25° (on request 10°)
Max. axial wobble of the plate: 0.01 mm (at Ø 245 mm)
Max. radial wobble: 0.01 mm

Shaft encoder data

Absolute measurement system: Heidenhain EnDat ECN 113

Load data (for the turnplate)

permissible moment of tilt at the indexing plate 1000 Nm
permissible radial force at the indexing plate 15000 N

Motor data

Nom: 100 Nm
Peak: 180 Nm

Shaft encoder data

Absolute measurement system: Heidenhain EnDat ECN 113

Load data (for the turnplate)

permissible moment of tilt at the indexing plate 1000 Nm
permissible radial force at the indexing plate 15000 N

Motor data

Nom: 100 Nm
Peak: 180 Nm
TO 220C Dimensions

Thread screwing depth:
M8 max. 12 mm

Fit depth:
Ø6H7 max. 10 mm

Shaft encoder connection

Motor connection
Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Ø</td>
<td>1200 mm</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>freely programmable</td>
</tr>
<tr>
<td>Max. plate speed</td>
<td>100 rpm</td>
</tr>
<tr>
<td>Weight</td>
<td>270 kg</td>
</tr>
<tr>
<td>Repeating accuracy</td>
<td>± 7”</td>
</tr>
<tr>
<td>Max. axial wobble at the runner</td>
<td>± 2”</td>
</tr>
<tr>
<td>Max. radial wobble at the runner</td>
<td>0.01 mm (at Ø 500 mm)</td>
</tr>
<tr>
<td>Max. axial wobble of the plate</td>
<td>0.01 mm (at Ø 500 mm)</td>
</tr>
<tr>
<td>Max. radial wobble of the plate</td>
<td>0.08 mm (at Ø 1200 mm)</td>
</tr>
<tr>
<td>Max. radial wobble of the plate</td>
<td>0.02 mm (at Ø 1200 mm)</td>
</tr>
</tbody>
</table>

Shaft encoder data

| Absolute measurement system                  | Heidenhain ERM 280         |

Motor data

| Nom                                           | 800 Nm                     |
| Peak                                          | 2400 Nm                    |

Load data (for the standing centre part)

| Permissible moment of tilt at the centre part | 2500 Nm                    |
| Permissible radial force at the centre part  | 20000 N                    |
| Permissible moment of tilt at the centre part| 1100 Nm                    |

Load data (for the turnplate)

| Permissible moment of tilt at the indexing plate | 6000 Nm                     |
| Permissible radial force at the indexing plate  | 25000 N                     |
| Permissible tangential moment on the indexing plate: | 800 Nm                     |
| Duration                                        | 800 Nm                     |
| Peak                                           | 2400 Nm                    |

Drive time with amplifier 80 A

Ratio of drive time : pause time

Load

- 150 kg m²
- 100 kg m²
- 70 kg m²
- 30 kg m²
- 15 kg m²
TO 750C Dimensions

(Standard dimension. Other dimensions on request)

Standing plate
Rotating plate

Plug swivels at 90°

The baseplate must have a large steel bearing surface.

For connection underneath: opening for connection cable

Screw hole pattern

The baseplate must have a large steel bearing surface.

For connection underneath: opening for connection cable
In addition to the basic functions of the handheld device, WAS – (Weiss Application Software) also gives you easy access to the various options offered by the table drive.

- All ramps, angles and speeds are freely programmable
- Can be taught up to 128 positions
- Up to 10 programs possible
- Freely selectable language
- Simple access to axis parameters
- Diagnosis options, remote maintenance
- Force inputs and outputs (e.g. for start-up)
- Software cam can be defined
- Error history

Perfect Hardware

**Design and connection**

- All components integrated / pluggable to the front side
- Cables oil-resistant and drag-chain compatible
- Cable available in different lengths

**Safety und service**

- Absolute measuring system
- Integrated restart protection (Category 3 in accordance with EN954-1)
- World-wide service / complete UL approval
- Comprehensive safety and monitoring functions

**Communication**

The following interfaces are available:

- digital I/O, (24 V inputs and outputs
- Profibus DP
- Free ASCII protocol
- CANopen

<table>
<thead>
<tr>
<th>Electrical data</th>
<th>TO 150C</th>
<th>TO 220C</th>
<th>TO 750C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mains supply:</td>
<td>3 x 400 VAC to 480 VAC +/- 10%</td>
<td>3 x 400 VAC to 480 VAC +/- 10%</td>
<td>3 x 400 VAC to 480 VAC +/- 10%</td>
</tr>
<tr>
<td>24V supply:</td>
<td>24 VDC +/- 5%; 5 A</td>
<td>24 VDC +/- 5%; 5 A</td>
<td>24 VDC +/- 5%; 2.5 A</td>
</tr>
<tr>
<td>Connection power:</td>
<td>3 KVA</td>
<td>3 KVA</td>
<td>80 KVA</td>
</tr>
<tr>
<td>Installation dimensions</td>
<td>W x D x H: 70 x 375 x 236 mm</td>
<td>70 x 375 x 236 mm</td>
<td>200 x 375 x 234 mm</td>
</tr>
</tbody>
</table>
Dear Customer,

We are delighted that you are interested in our TO indexing table. In order to lay out the indexing table to suit your specific application, we request that you answer the following questions:

**Model**
- [ ] TO 150C
- [ ] TO 220C
- [ ] TO 750C
- [ ] Improved indexing precision (for models TO 150 and TO 220)

**Colour of the indexing table**
- [ ] RAL 7035 (light grey)
- [ ] Special colour RAL ________________ (subject to surcharge)

**Calculation of the total mass moment of inertia**
The following data on the intended construction are particularly important with regard to the determination of the shortest possible switch time. Please send us the following specification for the calculation:

<table>
<thead>
<tr>
<th>Tool holders and parts</th>
<th>Calculation of the total mass moment of inertia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity:</td>
<td></td>
</tr>
<tr>
<td>Weight per station:</td>
<td></td>
</tr>
<tr>
<td>Centre of gravity diameter:</td>
<td></td>
</tr>
<tr>
<td>If necessary, please include a sketch to explain the planned construction.</td>
<td></td>
</tr>
<tr>
<td>Mass inertia:</td>
<td></td>
</tr>
</tbody>
</table>

**Switch-on time**

Switch time $t_s$ __________  Standstill time __________

**Set of cables (standard cable length: 5 m)**
- [ ] Special length: _____ m (in steps of 5 m up to max. 25 m)

**Additional indexing plate / device**

External diameter: __________________ mm
Inside diameter: __________________ mm
Thickness: __________________ mm
Material: __________________

**For technical enquiries**

Company: __________________ Name: __________________ Department: __________________

Desired delivery date: __________________ Phone: __________________ Fax: __________________

eMail: __________________

10/2006
Technology that inspires

- Rotary Indexing Tables TC
- Rotary Indexing Rings TR/NR
- Numeric Controlled Heavy Duty Indexing Ring CR
- Numeric Controlled Indexing Tables NC
- Torque Motor TO Compact model
- Torque Motor TO Ring construction
- Handling device HP 140
- Flexible Assembly Machine Pick-o-Mat
- Side loading rotary unit TH
- www.pm1100.de
- www.ls280.de
- Fast Cycling Linear Assembly System LS 280
- Indexing Machine Bases SR/SK
- Additional indexing plate

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