

Rotary indexer
TMF
Assembly instructions

Version 1.0
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1 About these instructions

1.1 Purpose

The purpose of these Assembly Instructions is to provide users with all the information necessary for proper and safe installation of the rotary indexer in a complete machine.

1.2 Contact information

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1.3 Product designation

Product designation: Rotary indexer

Product type: TMF

1.4 Symbols

The following symbols are used in these instructions:

Instructions and directions

Requirements for performing an instruction are indicated by a check mark.

The action steps to be executed are numbered.

The results of individual action steps are indicated by a black arrow. The overall result of an instruction is marked by a white arrow in a black circle.

Example

- ✓ Requirement
 - 1. Instruction (step 1)
 - 2. Instruction (step 2)
 - ⇒ Result or response of system to step 2
 - 3. Instruction (step 3)
- ➡ Overall result of the instruction

Enumerations

Enumerations in no strict order are indicated as follows:

- Property A
 - Detail 1
 - Detail 2
- Property B
 - Detail 1
 - Detail 2

2 Safety

2.1 Safety instructions

General safety instructions

- Read through these instructions completely
- Observe the information and instructions in these instructions
- Keep unauthorized persons away from the working area
- Work on electrical systems may only be carried out by qualified electricians
- Keep the instructions in a safe place and make them available to all employees
- Observe the documentation of the supplier components

2.2 Warnings

2.2.1 Structure of the warnings

All the warnings in these instructions have the following structure:

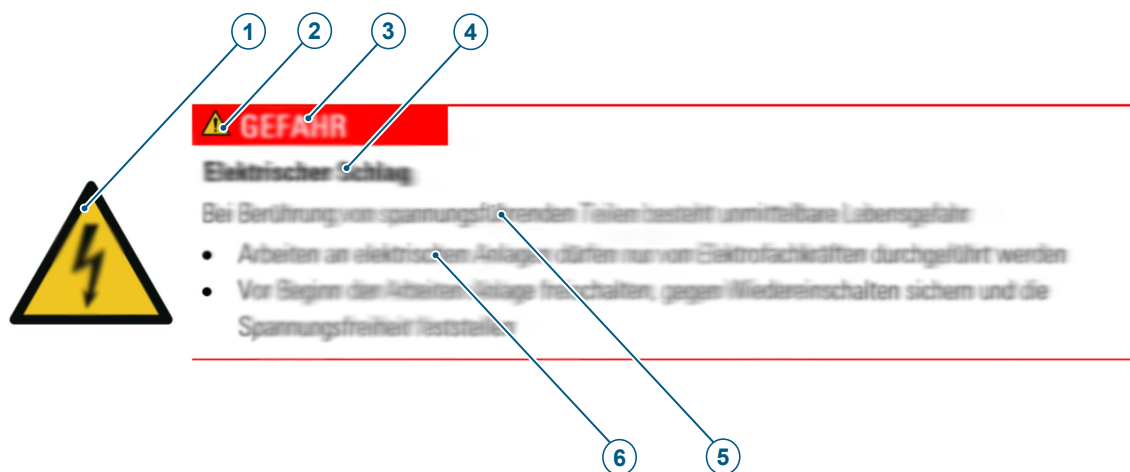


Fig. 1: Structure of the warnings

1	Hazard-specific symbol	2	Hazard symbol
3	Signal word	4	Type and source of danger
5	Possible consequences of non-observance	6	Procedure for hazard prevention

2.2.2 Meaning of the signal words and symbols

The following signal words are used in this document:

Signal word	Meaning
DANGER	Indicates a hazardous situation which will result in death or serious injury.
WARNING	Indicates a potentially hazardous situation which may result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which may result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which may result in property and environmental damage.

The following symbols for dangers, warnings, mandatory requirements and prohibitions are used in this document:

	General warning sign
	Warning: Electrical voltage
	Warning: Suspended load
	Wear head protection
	Wear eye protection
	Wear foot protection
	Wear hand protection

2.3 Requirements for personnel

The activities described in these instructions may only be performed by qualified personnel.

Qualified personnel are persons who are able to carry out the work assigned to them due to their technical training, knowledge and experience. They are familiar with the relevant standards and regulations and are able to recognize potential hazards on their own.

2.4 Personal protective equipment

Personal protective equipment is used to protect personnel from impairments to safety and health during work. Personnel must wear the personal protective equipment when performing all of the activities described in these instructions. The required personal protective equipment is indicated in the different chapters of these instructions.

2.5 Requirements for incorporation into a complete machine

The rotary indexer is partly completed machinery. Operation of the rotary indexer is only permitted in a complete, CE-compliant machine or system.

The manufacturer of the complete machinery or system is responsible for integrating the rotary indexer into the system in such a way that completely safe operation is guaranteed.

- During operation, it is prohibited to remain in the immediate vicinity of the rotary indexer. Staying in the vicinity of the rotary indexer is only permitted within the scope of inspection tasks, maintenance or servicing work by specially trained personnel.
- Maintenance work must be carried out in accordance with the maintenance plan and the operating instructions.
- All tasks on or at the rotary indexer may only be carried out by trained, qualified personnel.

3 Product description

3.1 Intended use

The rotary indexer is designed for incorporation in CE-compliant complete machinery or an overall system. The rotary indexer turns and tilts loads about the vertical rotary axis. To this end, customer attachments can be mounted on the rotary indexer.

All applications deviating from this intended use are not permitted.

- Modifications must be approved by TAKTOMAT
- The rotary indexer may only be operated within the defined operating parameters
- Use of the rotary indexer in the food sector is not permitted

3.2 Technical data

3.2.1 Operating conditions

Application range	indoors/in enclosed spaces: the installation room must be dry, clean and low-vibration
Temperature range [°C]	+10 to +40
Relative humidity [%]	40 to 70
Media	do not expose to aggressive media

3.2.2 Storage conditions

Application range	indoors
Temperature range [°C]	-22 to +50
Relative humidity [%]	40 to 70
Media	do not expose to aggressive media
Storage period > 6 months	provide additional corrosion protection

3.2.3 Dimensions

TMF350

Roll star / output flange Ø [mm]	140
Overall height (roll star mounting surface) [mm]	84
Internal diameter Ø [mm]	50
Internal transmission ratio [i]	10
Precision of absolute positioning in angular seconds ["]	± 6
Precision of relative positioning in angular seconds ["]	± 40
Length × Width × Height [mm]	187 × 200 × 84
Rotary indexer without drive approx. [kg]	13.5
Direction of rotation	clockwise, counterclockwise, oscillating
Installation position	horizontal, overhead

TMF1000

Roll star / output flange Ø [mm]	438
Overall height (roll star mounting surface) [mm]	195
Internal diameter Ø [mm]	165
Internal transmission ratio [i]	14
Precision of absolute positioning in angular seconds ["]	± 6
Precision of relative positioning in angular seconds ["]	± 40
Length × Width × Height [mm]	461.5 × 656 × 195
Rotary indexer without drive approx. [kg]	120
Direction of rotation	clockwise, counterclockwise, oscillating
Installation position	horizontal, overhead

TMF2000

Roll star / output flange Ø [mm]	560
Overall height (roll star mounting surface) [mm]	285
Internal diameter Ø [mm]	190
Internal transmission ratio [i]	14
Indexing accuracy in angular seconds ["]	8
Length × Width × Height [mm]	688.5 × 877 × 285
Rotary indexer without drive approx. [kg]	350
Direction of rotation	clockwise, counterclockwise, oscillating
Installation position	horizontal

TMF3000

Roll star / output flange Ø [mm]	800
Overall height (roll star mounting surface / output flange) [mm]	330
Internal diameter Ø [mm]	280
Internal transmission ratio [i]	18
Indexing accuracy in angular seconds ["]	8
Length × Width × Height [mm]	800 × 1028 × 330
Rotary indexer without drive approx. [kg]	480
Direction of rotation	clockwise, counterclockwise, oscillating
Installation position	horizontal

TMF4000

Roll star / output flange Ø [mm]	1030
Overall height (roll star mounting surface / output flange) [mm]	355
Internal diameter Ø [mm]	450
Internal transmission ratio [i]	20
Indexing accuracy in angular seconds ["]	8
Length × Width × Height [mm]	1055 × 1318 × 355
Rotary indexer without drive approx. [kg]	800
Direction of rotation	clockwise, counterclockwise, oscillating
Installation position	horizontal

TMF5000

Roll star / output flange Ø [mm]	1360
Overall height (roll star mounting surface / output flange) [mm]	405
Internal diameter Ø [mm]	750
Internal transmission ratio [i]	24
Indexing accuracy in angular seconds ["]	8
Length × Width × Height [mm]	1385 × 1632 × 405
Rotary indexer without drive approx. [kg]	1275
Direction of rotation	clockwise, counterclockwise, oscillating
Installation position	horizontal

TMF8000

Roll star / output flange Ø [mm]	2300
Overall height (roll star mounting surface / output flange) [mm]	440
Internal diameter Ø [mm]	1520
Internal transmission ratio [i]	40
Indexing accuracy in angular seconds ["]	8
Length × Width × Height [mm]	2300 × 2310 × 440
Rotary indexer without drive approx. [kg]	3800
Direction of rotation	clockwise, counterclockwise, oscillating
Installation position	horizontal

3.3 Product overview

3.3.1 TMF350

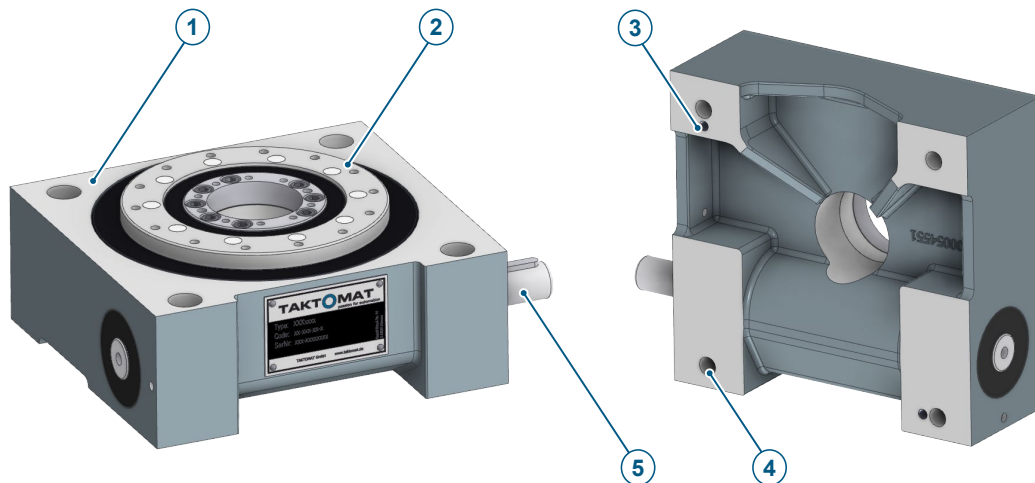


Fig. 2: Rotary indexer structure: TMF350

1	Housing	2	Roll star (output)
3	Fixing hole Ø 6H7 (2x)	4	Mounting hole for M10 (4x)
5	Input shaft (drive)		

3.3.2 TMF850-2000

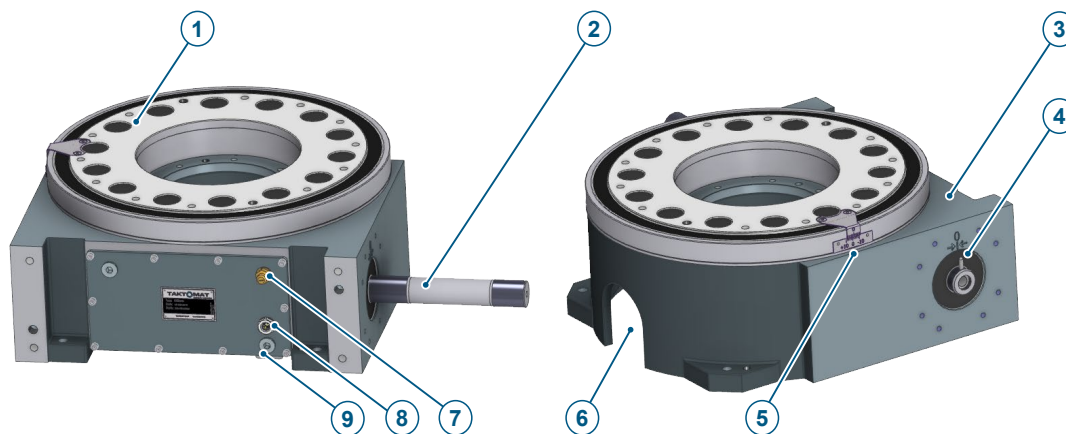


Fig. 3: Rotary indexer structure: TMF850 – TMF2000

1	Roll star / output flange (output)	2	Input shaft (drive)
3	Housing	4	Position indicator
5	Vernier	6	Cable aperture
7	Service apertures	8	Oil sight glass
9	Oil drain plug		

3.3.3 TMF3000-5000

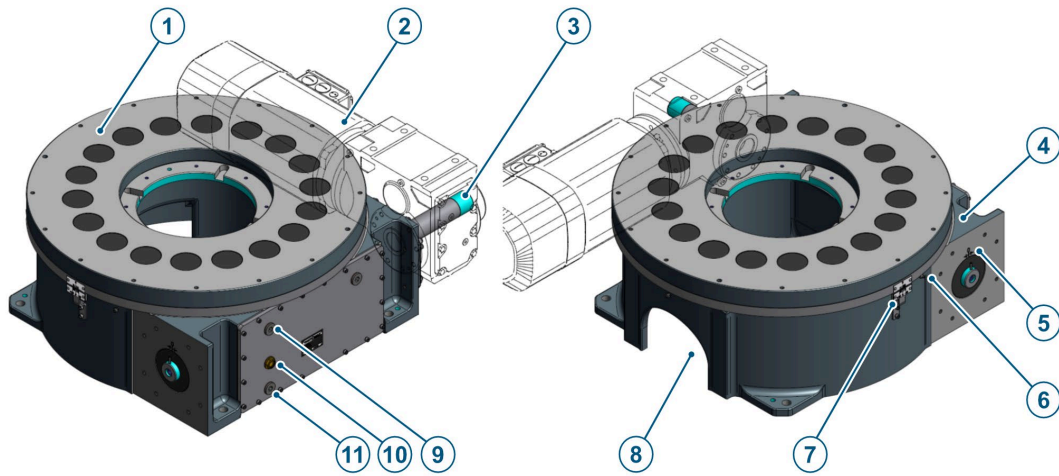


Fig. 4: Rotary indexer structure: TMF3000 – TMF5000

1	Roll star / output flange (output)	2	Drive unit
3	Input shaft (drive)	4	Housing
5	Position indicator	6	Grease nipple
7	Vernier	8	Cable aperture
9	Service apertures	10	Oil sight glass
11	Oil drain plug		

3.3.4 TMF8000

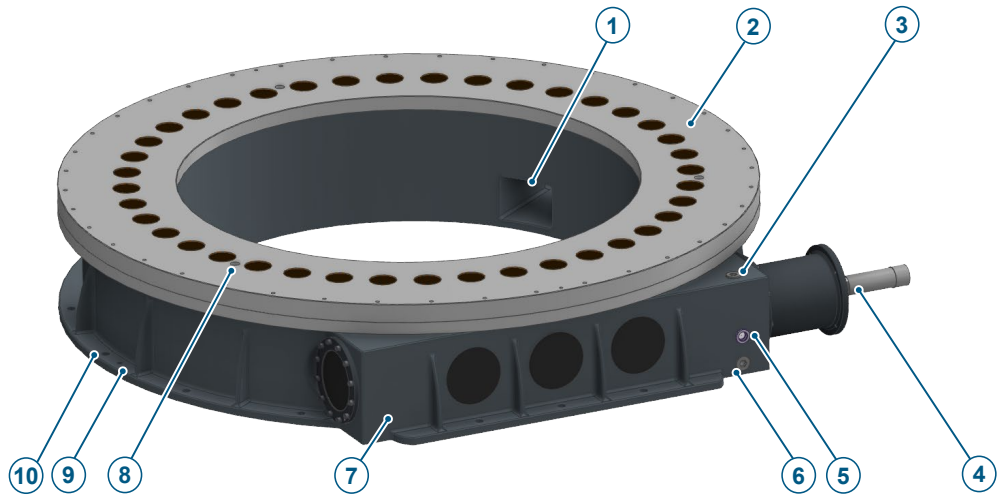


Fig. 5: Rotary indexer structure: TMF8000

1	Cable aperture (2x)	2	Roll star (output)
3	Oil filler plug	4	Input shaft (drive)
5	Oil sight glass	6	Oil drain plug
7	Housing	8	Threaded hole M36 (3x) for eyebolt
9	Mounting hole Ø 26 (15x)	10	Fixing hole Ø16H7 (2x)

4 Transport

Required personal protective equipment



WARNING

Tipping or falling loads



Suspended loads can tip or fall down. This can cause serious or fatal injuries to persons.

- Do not step under suspended loads
- Keep unauthorized persons out of the danger zone
- Observe the weight and centre of gravity
- Only use suitable, approved and undamaged load handling attachments

NOTICE



Damage to components

Improper transport can cause material damage

- Carry out transport carefully and note the symbols on the packaging
- Align the lifting eyes in the direction of the load
- Follow the operating instructions for the lifting gear

Check the delivery immediately on receipt for completeness and transport damage.

In the event of externally visible transport damage, observe the following:

- Do not accept the delivery or accept it only with reservations
- Note the extent of the damage on the transport documents or on the transport delivery note
- Report material damage to the manufacturer immediately

4.1 Transport with slings

Attach the slings at the attachment points as shown below and make sure they are functioning properly.

The angle between the vertical and the chain sling or sling strap must be between 0 and 45°.

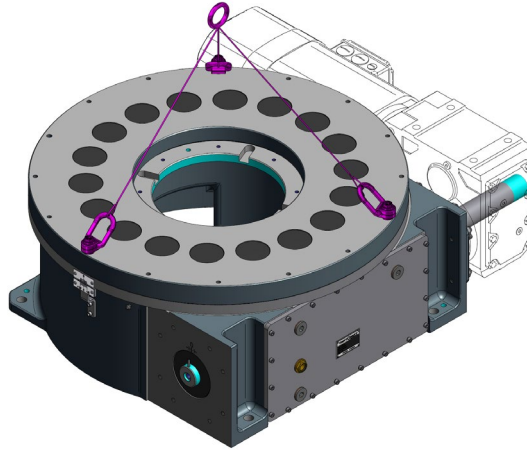


Fig. 6: Transport with eyebolts

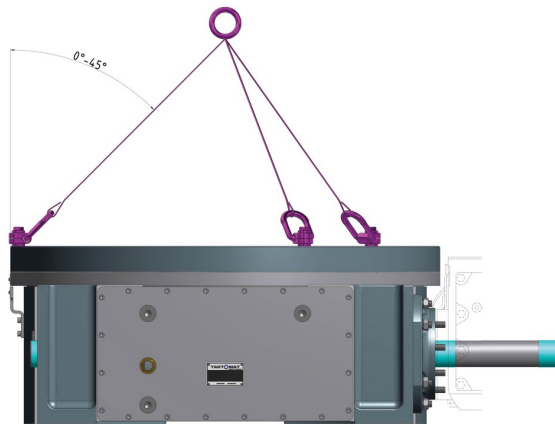


Fig. 7: Lifting instructions

Recommended slings

Type	Quantity	Sling	Screw size
TMF1000	3	VLBG 0.63t	M10
TMF2000	3	VLBG 1t	M12
TMF3000	3	VLBG 1t	M12
TMF4000	4	VLBG 1t	M12
TMF5000	4	VLBG 1t	M12
TMF8000	3	VLBG 8t	M36

5 Assembly

Required personal protective equipment



5.1 Attachment positions

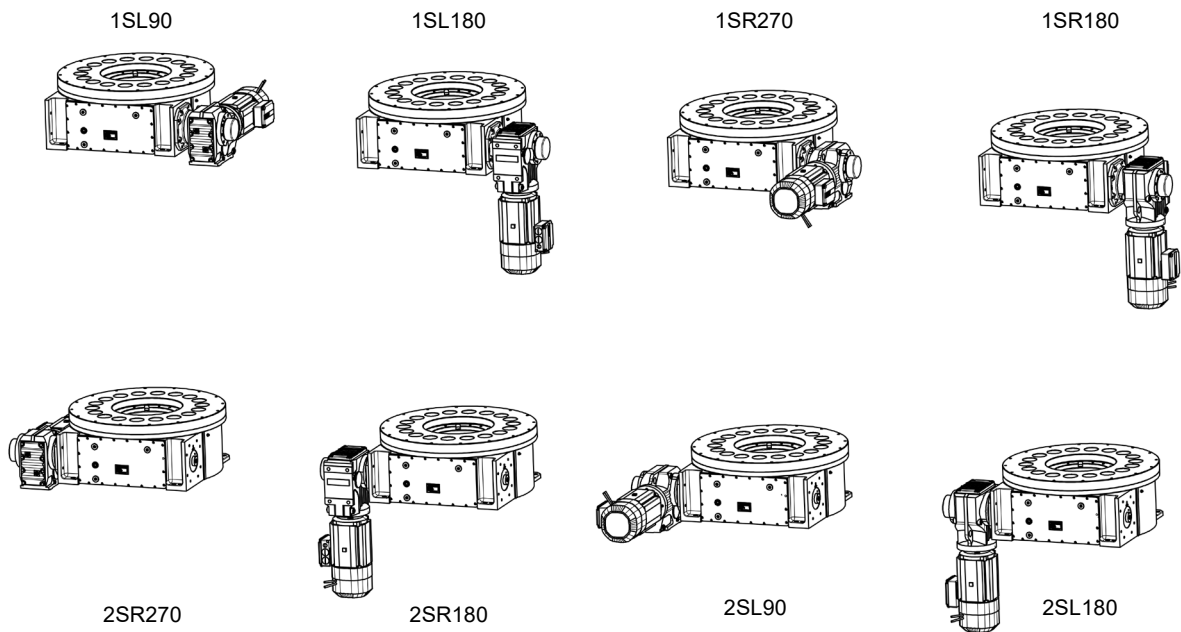


Fig. 8: TMF1000 – TMF5000 drive attachment positions

5.2 Drive attachment

NOTICE

Damage to components

Improper attachment of the drive can cause material damage



- The type of drive, e.g. a servomotor or three-phase a.c. motor must be agreed with TAKTOMAT
- On attaching the drive, note and follow the manufacturer's operating instructions
- The oil level check and drain plugs and the vent valves must be freely accessible
- Note the spatial positions of the drive
- Fix the drive in the specified mounting points
- Tighten the screws to the specified torque

Recommended tools

The tools are not included in the standard scope of supply. They must be ordered from TAKTOMAT separately.

Type	Clearance hole	Designation	Quantity	Size	Item no.
Drive flange	Ø 9 mm	Assembly screw TMF1000	2	M8	ART00332104
Drive flange	Ø 13.5 mm	Assembly screw TMF2000	2	M12	ART00332101
Drive flange	Ø 13.5 mm	Assembly screw TMF3000	2	M12	ART00332101
Drive flange	Ø 17.5 mm	Assembly screw TMF4000	2	M16	ART00332103
Drive flange	Ø 17.5 mm	Assembly screw TMF5000	2	M16	ART00332103

5.2.1 Attachment with cast flange

Mounting the cast flange on the complete drive

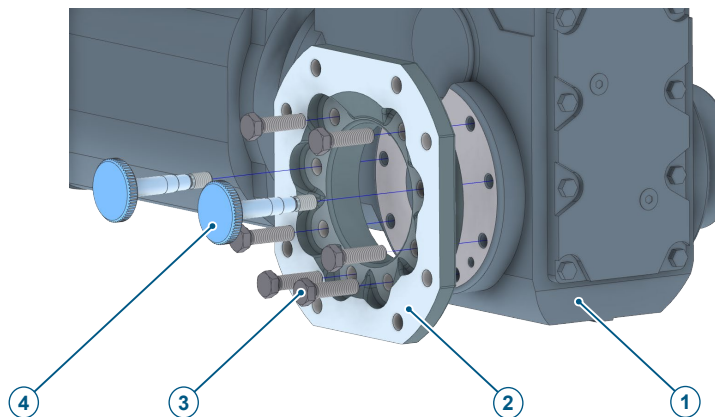


Fig. 9: Cast flange mounting

1	Complete drive	2	Cast flange
3	Hexagon head screw DIN933 with lock washer, Type S (8x)	4	Assembly screw (2x)

Mount the cast flange on the complete drive as follows:

1. Use the assembly screws (4) to align and fix the cast flange (2) on the complete drive (1).
 2. Fix the cast flange (2) with six hexagon head screws (3). Tighten the screws to the specified torque.
 3. Undo and remove the assembly screws (4).
 4. Screw in the remaining two hexagon head screws (3). Tighten the screws to the specified torque.
- ➡ The complete drive can be mounted on the rotary indexer.

Mounting the complete drive on the rotary indexer

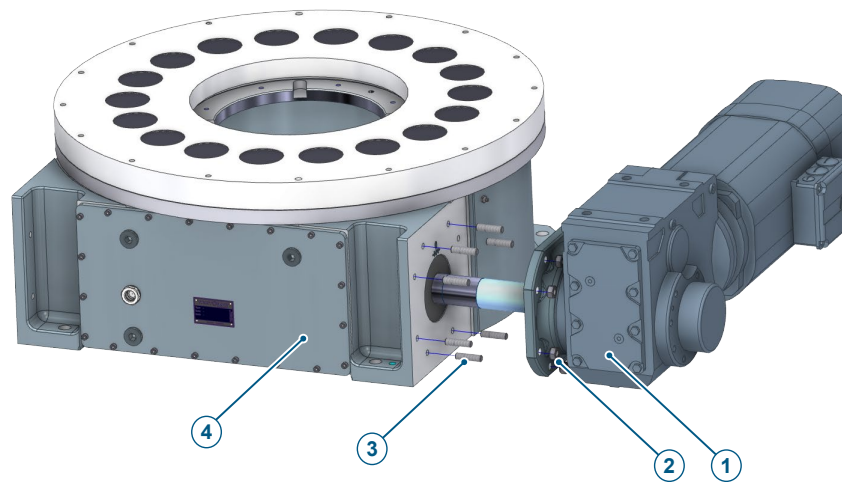


Fig. 10: Mounting the complete drive on the rotary indexer

1	Complete drive with cast flange	2	Nut DIN 939 with lock washer, Type S (8x)
3	Stud DIN 939 (8x)	4	Rotary indexer

Attach the complete drive to the rotary indexer as follows:

- ✓ The cast flange is mounted on the complete drive.
 1. Screw in the eight studs (3) up to the limit stop.
 2. Push the complete drive (1) onto the drive shaft until the cast flange is positioned flush against the rotary indexer.
 3. Fix the complete drive on the rotary indexer (4) using eight nuts (2) and lock washers. Tighten the nuts to the specified torque.

5.2.2 Attachment with flange plate

Mounting the flange plate on the complete drive

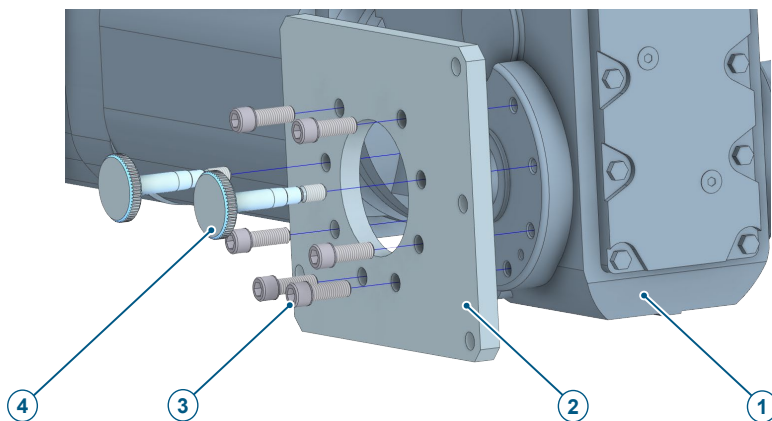


Fig. 11: Mounting the flange plate on the complete drive

1	Complete drive	2	Flange plate
3	Cylinder head screw EN ISO 4762 with lock washer, Type S (8x)	4	Assembly screw (2x)

Mount the flange plate on the complete drive as follows:

1. Use the assembly screws (4) to align and fix the flange plate (2) on the complete drive (1).
 2. Fix the flange plate (2) with six hexagon socket head cap screws (3). Tighten the screws to the specified torque.
 3. Undo and remove the assembly screws (4).
 4. Screw in the remaining two hexagon socket head cap screws (3). Tighten the screws to the specified torque.
- ➔ The complete drive can be mounted on the rotary indexer.

Mounting the complete drive on the rotary indexer

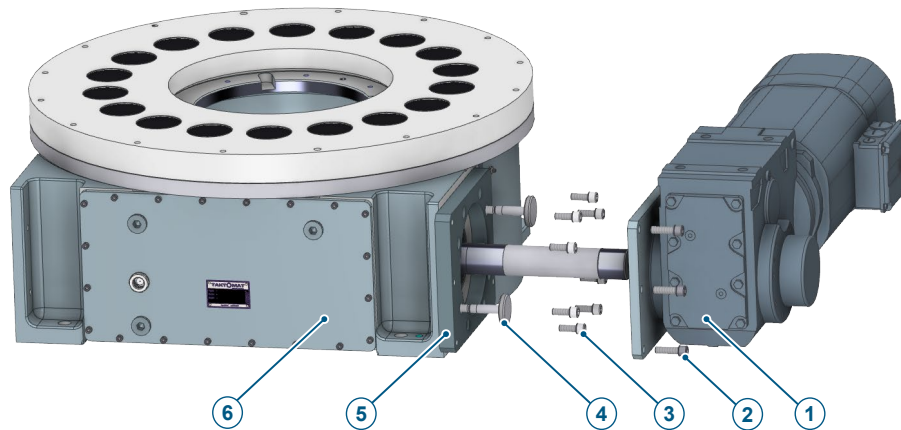


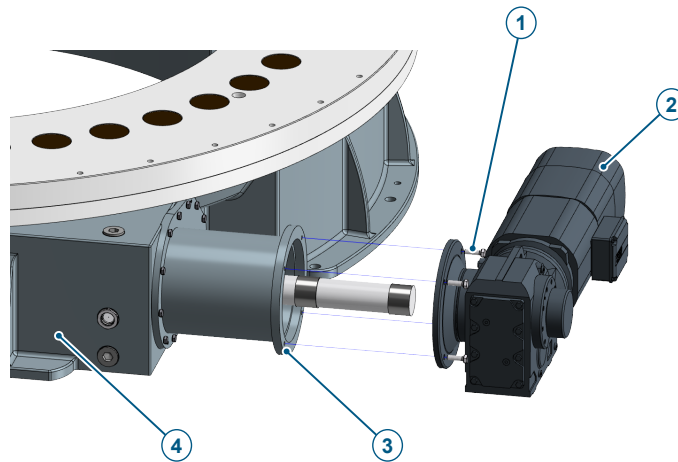
Fig. 12: Mounting the complete drive on the rotary indexer

1	Complete drive	2	Hexagon socket head cap screw EN ISO 4762 with lock washer, Type S (4x)
3	Cylinder head screw EN ISO 4762 with lock washer, Type S (8x)	4	Assembly screw (2x)
5	Flange plate	6	Rotary indexer

Attach the complete drive to the rotary indexer as follows:

- ✓ The flange plate is mounted on the complete drive.
 1. Use the assembly screws (4) to align and fix the flange plate (5).
 2. Fix the flange plate (5) on the rotary indexer (6) with six hexagon socket head cap screws (3) and lock washers. Tighten the screws to the specified torque.
 3. Undo and remove the assembly screws (4).
 4. Screw in the remaining two hexagon socket head cap screws (3). Tighten the screws to the specified torque.
 5. Push the complete drive (1) onto the drive shaft.
 6. Screw the flange plates with four hexagon socket head cap screws (2) and lock washers. Tighten the screws to the specified torque.

5.2.3 TMF8000 attachment

*Fig. 13: TMF8000 attachment*

1	Screw M12 DIN 933 with lock washer S12	2	Complete drive
3	Spigot $\varnothing 230$	4	Housing TMF8000

Assemble the complete drive as follows:

1. Push the complete drive (2) onto the drive shaft, until it is positioned flush on the spigot (3).
2. Fix the complete drive with the screws (1). Tighten the screws to the specified torque.

5.3 Installation

⚠ DANGER

Electric shock



Touching live parts poses an immediate danger to life

- Work on electrical systems may only be carried out by qualified electricians
- Before starting work, disconnect the system, secure it against being switched on again and make sure that no voltage is present

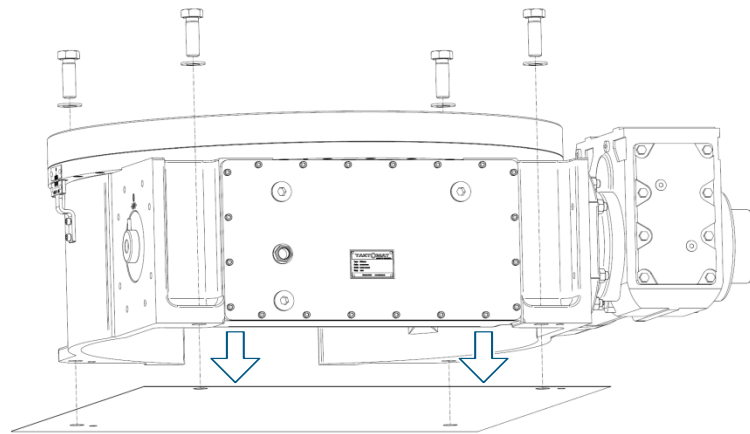


Fig. 14: Rotary indexer installation

- ✓ The mounting surface must be level.
 1. Clean the mounting surface and apply an oil film.
 2. Place the rotary indexer on the mounting surface.
 3. Fix the rotary indexer with screws and alignment pins according to the requirements.
 4. Compare the supply voltage with the data on the nameplate.
 5. Connect the drive unit.
 6. Earth the housing of the rotary indexer with an adequate cross-section.

Setting the zero point using the vernier

The vernier is used to set the zero point. The vernier can be used to always set the roll star / output flange to the factory zero position of the rotary indexer. This is necessary for applications that have a zero position or a reference point.

Roll star / output flange attachments

Note the following regarding attachments on the roll star / output flange:

- Maximum weight moved (according to TAKTOMAT project planning).
- Minimum time until positioning (according to TAKTOMAT project planning).
- Maximum overhang (tipping moment) (according to TAKTOMAT project planning).
- Do not exceed the max. tightening torque of the mounting screws.

6 Operation

NOTICE



Improper activation can cause material damage

- Inching mode is not permitted without a suitable universal controller (TIC)
- Use a suitable universal controller (TIC)

General requirements for operation

Operation of the rotary indexer is only permitted in a complete, CE-compliant machine or system.

The rotary indexer may not be operated with defective or disabled safety devices.

6.1 Operating modes

⚠ WARNING



Moving components

Moving components can cause serious injuries

- During operation, do not reach into moving components or work on moving components
- Do not dismantle or bypass protective covers

The rotary indexer is designed for different operating modes. These operating modes must be implemented by means of an external controller.

Normal operation

In normal operation, the roll star / output flange moves in one direction from one position to the next. The rotational direction of the roll star / output flange corresponds to the rotational direction of the drive. The rotational direction of a three-phase a.c. motor can be reversed by swapping two phases of the supply voltage.

Reversing operation (reciprocating operation)

In this mode the roll star / output flange oscillates (shuttles) continuously, back and forth between two positions. The drive of the partly completed machinery is reversed in the respective latching phase.

Inching mode

In inching mode, the roll star / output flange moves in small increments between two latching positions.

The cylinder is unable to accelerate and decelerate the accumulated load gently. As a result, high accelerations occur, which impact the mechanics. Inching may only be carried out with a suitable universal controller. A suitable controller is, for example, the TIC controller (TAKTOMAT Indexing Controller).

Emergency stop

The emergency stop stops the movement of the roll star / output flange immediately. The resultant load that is built up impacts the mechanics. The emergency stop should therefore only be used in emergency situations.

7 Maintenance

Required personal protective equipment



CAUTION

Harmful substances

Lubricants can cause health damage

- When using lubricants, note the information in the safety data sheets

7.1 Maintenance work

7.1.1 Maintenance plan

Interval	Activity	Personnel
Daily	<ul style="list-style-type: none"> • General visual inspection and check for noises 	Operator
Monthly	<ul style="list-style-type: none"> • Check the rotary indexer for oil leakage 	Operator
Monthly	<ul style="list-style-type: none"> • Check the oil level • Check the safety markings for legibility 	Operator
Half-yearly	<ul style="list-style-type: none"> • Check for damage (visual inspection) • Remove dust deposits (especially on the ventilation grille of the drive unit) • Check electric cables for damage 	Qualified personnel
Half-yearly (additionally for TMF8000)	<ul style="list-style-type: none"> • Visual inspection of the belt drive • Replace the belt drive if necessary 	Qualified personnel
Annually	<ul style="list-style-type: none"> • Check the rotary indexer for clearance • Lubricate the bearing of the rotary indexer 	Qualified personnel

7.1.2 Checking the oil level

NOTICE



Damage to components

Improper refilling of the lubricant can cause material damage.

- Before checking the oil level, the rotary indexer must stand still for at least 30 minutes
- Check the oil level only when the indexer is at a standstill
- Do not overfill oil. Fill the oil only up to the level of the oil sight glass.

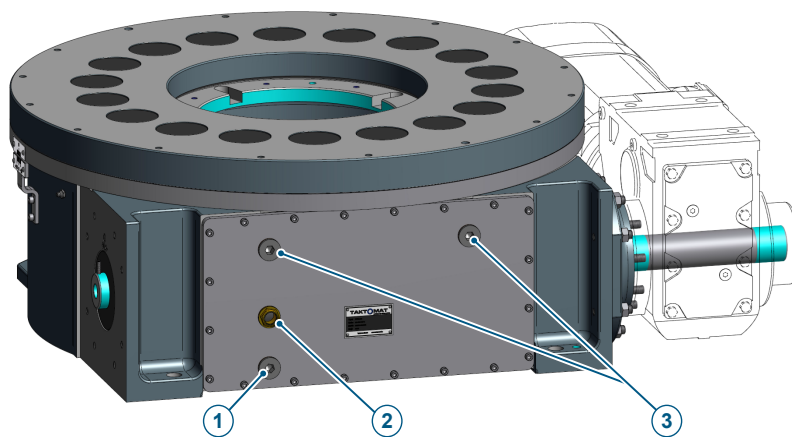


Fig. 15: Checking the oil level

1	Oil drain	2	Oil sight glass
3	Oil fill		

The rotary indexer has an oil sight glass and must be checked for correct oil level in accordance with the maintenance plan. The correct oil level is reached when the oil is in the middle of the oil sight glass (2). Top up oil if necessary.

7.1.3 Oil fill quantities

Gear type	Fill quantity [l]
TMF1000	1.0
TMF2000	4.5
TMF3000	6.0
TMF4000	6.0
TMF5000	14.0
TMF8000	45.0

7.2 Lubricating

7.2.1 Lubricant requirements

General

Careful lubrication is necessary to ensure operating reliability and a long life of the partly completed machinery. All lubricating points must be supplied with the specified oils and greases.

Clean soiled lubricating points carefully with petroleum or an appropriate means and then lubricate with new lubricant. After lubricating, the surplus lubricant must be removed and disposed of properly.

NOTICE



Component damage due to unsuitable lubricant

Mixing greases with different bases leads to gumming and decomposition of the greases and cancels the lubricating effect.

- Use lithium-saponified grease only for relubricating

Lubricating oils

Only use lubricating oils to DIN 51 517 (ISO VG 460).

Recommended gear oils

Manufacturer	Designation
Mobil	Mobilgear 600 XP 460
BP	Energol GR-XP 460
SHELL	Omala 460
LIQUI MOLY	meguin CLP 460 gear oil
Zeller+Gmelin	Divinol ICL ISO 460
Klüber	Klüberoil GEM 1 N

Lubricating greases

Only use lubricating greases to DIN 51 825-KP 2K.

Recommended grease

Manufacturer	Designation	Specification
Mobil	Mobilux EP2	KP2 K-30
BP	Energrease LS-EP 2	KP2 K-20
Aral	Aralub HLP 2	KP2 N-30
Fuchs-DEA	Renolit MP	KP2 K-40
Klüber	Centoplex 2	KP2 K-20
SHELL	Alvania G2	KP2 K-20

Overview of relubrication quantities for TMF series with grease nipple

Product	Divide the relubrication quantity between the respective number of grease nipples
TMF3000	26 g
TMF4000	34 g
TMF5000	49 g
TMF8000	128 g

7.3 Replacing the cam follower

⚠ WARNING
Unexpected start-up of movable components

Persons can be hit by moving components and seriously injured.

- Disconnect the power and/or energy supply before the assembly work and secure against reconnection


NOTICE
Damage to components

Insufficient protection against contamination/dirt can cause material damage.

- Do not allow foreign bodies to get inside the mechanics
- Cover holes to protect against penetrating dirt
- Clean clearance holes and shafts before assembly

If clearance occurs in one or multiple stations when checking the rotary indexer, the cam followers must be replaced.

The rotary indexer must be completely disconnected from the power supply to ensure that the dismantling and maintenance of the cam follower are carried out safely and efficiently. All external attachments that prevent access to the cam followers must be dismantled properly.

The following tools are required to prepare for dismantling of the cam followers:

- Double hook, slotted screwdriver
- Retaining ring pliers for internal rings
- Internal extractor
- Hexagon socket wrench for hexagon head screws

The following spare parts and wearing parts are recommended:

- Cap plug
- Retaining ring
- Schnorr lock washer
- TKR Taktomat cam follower

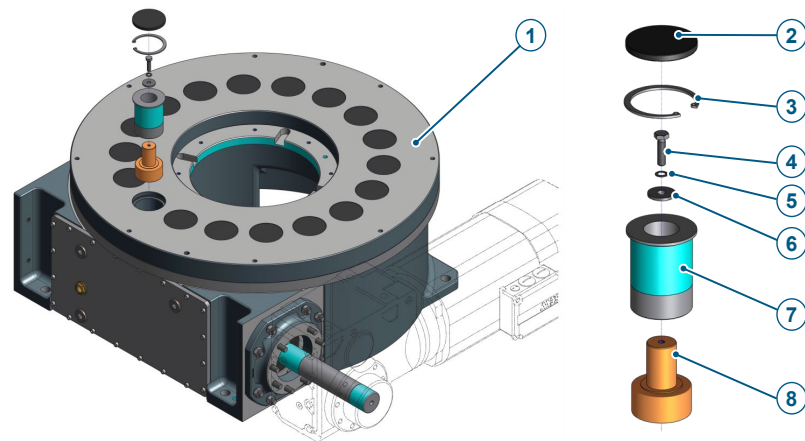


Fig. 16: Replacing the TMF2000 – TMF8000 cam follower

1	Roll star / output flange	2	Cap plug
3	Retaining ring	4	Hexagon head screw
5	Schnorr lock washer	6	Washer
7	Roll sleeve	8	TKR Taktomat cam follower

7.3.1 Dismantling the cam follower

1. Remove the cap plug (2) with a double hook.
2. Remove the retaining ring (3) with retaining ring pliers.
3. Dismantle the hexagon head screw (4) together with the two washers (5 and 6).
⇒ An internal thread inside the roll sleeve becomes exposed.
4. Screw an internal extractor into the internal thread of the roll sleeve (7).
5. With the preceding help of a lubricant, use the internal extractor to pull the roll sleeve (7) carefully out of the roll star.
6. Heat the outer surface of the roll sleeve (7). This makes it easier to dismantle the cam follower (8). Then use a suitable screw to press out the cam follower (8).

7.3.2 Installing the cam follower

NOTICE**Note the specified tightening torques**

- Tighten all screw connections to the specified/standardised torque
-

1. Heat the roll sleeve (7) to make the cam follower (8) easy to press in.
2. Press the cam follower (8) into the roll sleeve (7) up to the limit stop.
3. Allow it to cool for a short time.
4. Fit the washer (6), Schnorr lock washer (5) and hexagon head screw (4).
5. Tighten the hexagon head screw (4) to the specified torque.
6. Allow the roll sleeve (7) to cool to ensure easy assembly of the cam follower (8) in the roll start / output flange (1).
7. Press the roll sleeve (7), without canting, into the relevant hole in the roll star / output flange (1) up to the limit stop.
8. The roll sleeve (7) is held in position by fitting the retaining ring (3).
9. Press the cap plug (2) into the hole provided by approx. 0.5 mm deeper. The cap plugs (2) may not protrude beyond the roll star / output flange (1).
10. Before the rotary indexer is put back into service, re-check the position of all cap plugs (2).

8 Troubleshooting

Fault	Possible cause	Remedy
Drive does not turn	<ul style="list-style-type: none"> • No supply voltage • Drive contactor malfunction • Drive protection switch has triggered • Brake not released • Incorrectly connected or worn brake 	<ul style="list-style-type: none"> • Check power supply • Change contactor • Let the drive cool down; latch the drive protection switch
The drive turns but the rotary indexer does not turn and the roll star / output flange has <u>no</u> clearance	<ul style="list-style-type: none"> • Worm gear malfunction • Safety clutch overload / disengaged • Input shaft is broken 	<ul style="list-style-type: none"> • Remove the external blockage / engage the safety clutch • Contact TAKTOMAT GmbH
The drive turns but the rotary indexer does not turn and the roll star / output flange has clearance	<ul style="list-style-type: none"> • Cam follower ripped off by large overload 	<ul style="list-style-type: none"> • Contact TAKTOMAT GmbH
Drive turns with loud humming noises	<ul style="list-style-type: none"> • Drive operates on 2 phases only 	<ul style="list-style-type: none"> • Check fuses or drive contactor • Measure current in all 3 phases (voltage measurement is not enough)

9 Disposal

Required personal protective equipment



NOTICE

Environmental damage

Improper disposal may result in environmental damage

- Dispose of components and operating materials in accordance with local regulations
- Observe the safety data sheets of the operating materials

Materials used

The components are mainly made of the following materials:

- Copper (complete drive units, electrical cables)
- Steel and grey cast iron (housings, attachments, shafts, bearings)
- Plastic (toothed belts, insulation, bearings)

Preparation for disposal

1. Disconnect the system from all power supplies and secure it against being switched on again.
2. Wait 15 minutes until all live components are completely discharged.
3. Disassemble and dispose of assemblies and components in accordance with local environmental regulations.

10 Spare and wear parts



NOTICE

The use of unsuitable spare parts may result in material damage

Spare parts must comply with the technical requirements specified by the manufacturer


- Only use original spare parts
 - Check spare parts for faults or defects prior to installation
-

Spare and wear parts are always order-specific. A corresponding spare and wear parts list is available from TAKTOMAT on request. When ordering spare parts, always specify the serial number. The serial number is located on the nameplate.

11 Annexes

11.1 Content of the declaration of incorporation

(The original declaration of incorporation is included in the documentation)

<p>Translation of the original declaration of incorporation (in German) for partly completed machinery (Machinery Directive 2006/42/EC, Annex II 1 B)</p>		
<p>Manufacturer:</p> <p>TAKTOMAT GmbH Rudolf-Diesel-Straße 14 D-86554 Pöttmes</p>		
<p>Description and identification of the partly completed machinery:</p> <p>Your order No.: - Our order No.: - Product: Rotary indexer Type: TMF Serial number: - Commercial name: Rotary indexer TMF</p>		
<p>The manufacturer declares that the following essential requirements of the Machinery Directive 2006/42/EC have been applied and met:</p> <p>1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.3, 1.3.4, 1.3.7, 1.5.3, 1.5.4, 1.6.1, 1.6.4, 1.7.1, 1.7.4</p> <p>Reference of the applied harmonised standards according to Article 7 Section 2: EN ISO 12100:2010 Safety of machinery — General principles for design — Risk assessment and risk reduction</p> <p>Furthermore, it is declared that the relevant technical documentation for this partly completed machinery has been compiled according to Annex VII Part B. The manufacturer undertakes to transmit in electronic form relevant information on the partly completed machinery within a reasonable time in response to a reasoned request by the national authorities.</p>		
<p>The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared to be in conformity with the provisions of the Machinery Directive.</p>		
Responsible for the documentation:	TAKTOMAT GmbH	
Address:	Rudolf-Diesel-Straße 14, D-86554 Pöttmes	