

ROTARY INDEXING TABLE NC0150T / NC0220T / NC0320T

MOUNTING INSTRUCTIONS

TD0068A-EN00-0000-00

022019_4.0_EN



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1 Introduction

1.1 About these mounting instructions

These mounting instructions describe the product "Rotary Indexing Table NC0150T / NC0220T / NC0320T" (also referred to as "product" in this document).

These mounting instructions are part of the product.

- You may only use the product if you have fully read and understood these mounting instructions.
- Verify that these mounting instructions are always accessible for any type of work performed on or with the product.
- Pass these mounting instructions as well as all other product-related documents on to all owners of the product.
- If you feel that these mounting instructions contain errors, inconsistencies, ambiguities or other issues, contact the manufacturer prior to using the product.

These mounting instructions are protected by copyright and may only be used as provided for by the corresponding copyright legislation. We reserve the right to modifications.

The manufacturer shall not be liable in any form whatsoever for direct or consequential damage resulting from failure to observe these mounting instructions or from failure to comply with directives, regulations and standards and any other statutory requirements applicable at the installation site of the product.

1.2 Intended use

The product is a partly complete machine pursuant to Directive 2006/42/EU, articles 1g and 2g. The product is only intended to be incorporated into or assembled with other machinery or other partly completed machinery or equipment, thereby forming machinery to which Directive 2006/42/EU applies.

The product may only be used within the limits specified in these mounting instructions and in the applicable documents. The applicable documents are also part of the product.

The machinery must not be put into service until the machinery into which the product has been incorporated has been determined and declared in conformity with the provisions of Directive 2006/42/EU and with all other applicable directives and regulations.

In addition, perform a risk assessment in view of the planned application, according to an approved risk assessment method, and implement the appropriate safety measures, based on the results of the risk assessment. Take into account the consequences of installing or integrating the product into a system or a plant.

When using the product, perform all work and all other activities in conjunction with the product in compliance with the conditions specified in the mounting instructions, in the applicable documents, and on the nameplate, as well as with all directives, standards, and safety regulations applicable at the installation site of the product.

1.3 Predictable incorrect application

Any use of the product beyond the explicitly indicated intended use is an impermissible, incorrect application of the product.

The product must never be used in the following cases, under the following conditions, and for the following purposes:

- Operation in residential environments
- Operation in life-supporting systems
- Operation in potentially explosive atmospheres/hazardous areas
- Operation on ships, in rail vehicles, land craft or in aircraft
- Operation in military facilities
- Operation outside of the specified order data
- Applications involving transportation of persons (fairground rides)

1.4 Applicable documents

In addition to these mounting instructions, the following documents are binding for and apply to any type of use of the product:

- Order data (including, but not limited to, design data, load data, performance data, transportation and storage instructions, information attached to the product and the package, as well as other specifications).
- Documentations of the manufacturers of all products belonging to the scope of delivery (for example, motor, accessories, attachment parts). This includes, among other things:

Type of manual	Type	Manufacturer	Delivery	
			Paper format	Electronic
User manual	Three-phase motor 8LS...-3	B&R Industrial Au- tomation GmbH	-	X
Data sheet	Servo motor MS2N...	Bosch Rexroth AG	-	X
Product information	Encoder ROQ 425	DR. JOHANNES HEIDENHAIN GmbH	-	X
Data sheet	Vent screw with transportation lock HN Lü-OR TD	Heinrichs & Co. KG	-	X
Safety data sheet	Lubricant Omala S2 G 220	Shell Deutschland Oil GmbH	-	X

In the case of delivery with WEISS GmbH controller/software package:			Delivery	
			Paper format	Electronic
User manual	"W.A.S. 2 COMPACT" TD0079A-XX00-0000-00	WEISS GmbH	-	X



In the case of delivery with WEISS GmbH controller/software package:			Delivery	
			Paper format	Electronic
User manual	"W.A.S. 2 SCALABLE" TD0081A-XX00-0000-00	WEISS GmbH	-	X
Electrical documenta- tion	List of applicable documents, per product (see documents on the CD delivered with the product)	WEISS GmbH	-	X

1.5 Warranty

See our website for our General Terms and Conditions at www.weiss-international.com or your purchase order.

2 Safety

2.1 Safety messages and hazard categories

These mounting instructions contain safety messages to alert you to potential hazards and risks. Safety messages in these mounting instructions are highlighted with warning symbols and warning words.

The signal word describes the source of the hazard. The text contains instructions on how to avoid the hazard as well as the consequence resulting from failure to follow the instructions given in the safety message.

Depending on the severity of a hazard, the safety messages are classified according to different hazard categories.



⚠ DANGER

DANGER indicates an immediately hazardous situation, which, if not avoided, will result in death or serious injury.



⚠ WARNING

WARNING indicates a hazardous situation, which, if not avoided, can result in death or serious injury or equipment damage.



⚠ CAUTION

CAUTION indicates a hazardous situation, which, if not avoided, can result in injury or equipment damage.

NOTICE

NOTICE indicates a hazardous situation, which, if not avoided, can result in equipment damage.

In addition to the instructions and safety messages provided in these mounting instructions, you must comply with all directives, standards, and safety regulations applicable at the installation site of the product.

2.2 Hazard symbols

The following symbols are used in these mounting instructions:



This is the general safety alert symbol. It alerts to injury hazards or equipment damage. Comply with all safety instructions in conjunction with this symbol to help avoid possible death, injury, or equipment damage.



This symbol alerts to hazardous electrical voltage. If this symbol is used in a safety message, there is a hazard of electric shock.

Hazard symbols may also be attached to the product.



Hazard of hot surface



Hazard of magnetic field



No access for persons with heart pacemakers or other medical implants

2.3 Responsibilities of the system integrator and/or operator

The system integrator (the person who incorporates the product in a machine pursuant to Directive 2006/42/EU, i.e., for example, the machine builder) and/or the operator must ensure the following:

- The application and use of the product must be limited to the specified intended use.
- In the integration of the product, all functional safety requirements must be met.
- All directives, standards, and safety regulations, including all regulations concerning workplace safety and prevention of accidents, applicable at the installation site of the product must be complied with.
- Any type of work whatsoever on and with the product may only be performed by qualified personnel.
- The product may only be operated when it is in flawless, fully functional condition.
- All safety equipment must operate as required and planned.
- The personal protective equipment for the personnel/operator must be available and must be used.
- The mounting instructions and all applicable documents must always be accessible in their entirety to the personnel at the installation site of the product.
- Safety instructions, labels, and any other information attached to the product must not be removed.
- A complete manual must be available for the machine into which the product is incorporated; this manual must describe all types of work on and with the machine and contain all information relevant with regard to the product.

If the system integrator himself is not in the position to comply with any of these obligations, the system integrator must impose compliance with these obligations on the operator.

2.4 Qualification of personnel

Only trained personnel who have fully read and understood the mounting instructions and all applicable documents for the product may perform work on and with the product.

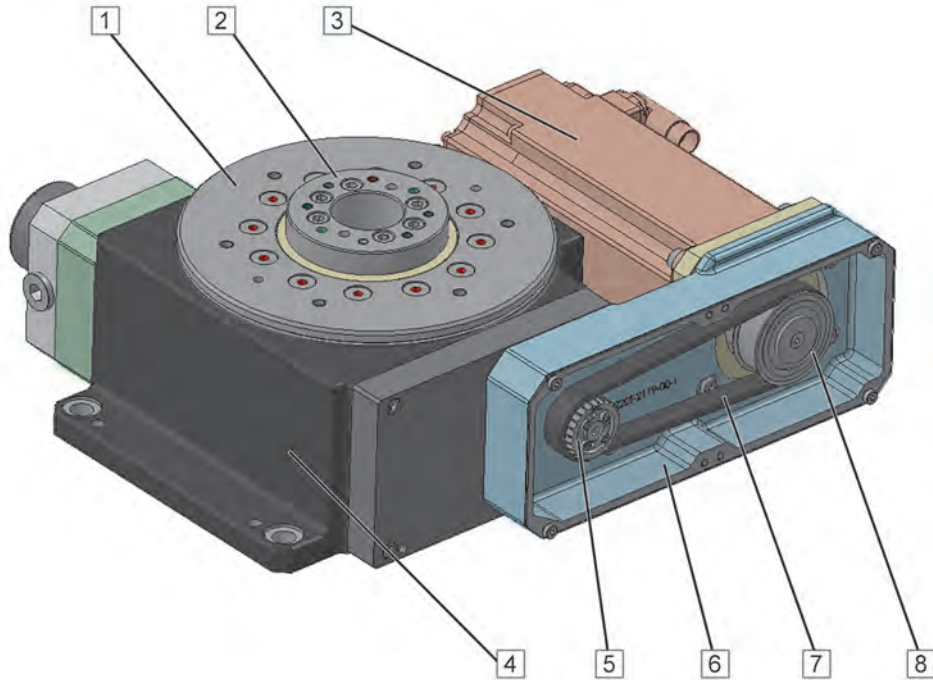
This trained personnel must have sufficient technical training, knowledge, and experience, and be able to foresee and detect potential hazards that may be caused by using the product.

All trained personnel working on and with the product must be fully familiar with all directives, standards, and safety regulations that must be observed for performing such work.

3 Product description

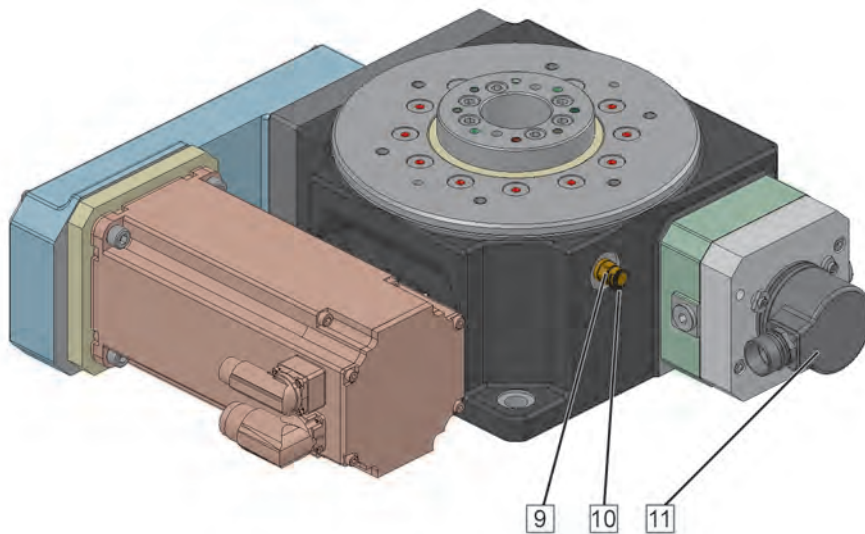
3.1 Overview

The product consists of the following components:



- 1 Output flange
- 2 Stationary center part
- 3 Motor
- 4 Housing

- 5 Toothed belt pulley (gear)
- 6 Drive housing
- 7 Toothed belt
- 8 Toothed belt pulley (motor)



9 Vent screw

10 Transportation lock of vent screw

11 Additional encoder (optional)

3.2 Function description

The product is freely programmable. The position of the output flange is detected by the encoder (absolute encoder).

To further improve indexing accuracy, a second encoder (absolute encoder) which is directly connected to the driving cam can be delivered. In this version, the second encoder (absolute encoder) provides the signal for position control of the product.

The motor drives a toothed belt, a single-stage gear and the driving cam. The motor is switched off when the output flange has reached one of the possible positions. The electromechanical holding brake is released by applying the brake voltage.

During the rotation phase, the cam rollers (with needle bearings) follow the curved path of the driving cam. When the output flange is at a standstill, two pre-tensioned cam rollers are in contact with the driving cam.

3.3 Nameplate

The nameplate is attached to the housing of the product; it contains the following information:



Figure 1: Example of nameplate

1	Type	6	Year of manufacture
2	Serial number	7	Weight
3	Gear ratio	8	QR code company website
4	Input speed of rotation	9	DM code serial number
5	Input torque		

The scope of delivery contains a second nameplate. If the factory-mounted nameplate is covered by attachments, the second nameplate can be attached at a readily visible position of the product or machine for identification of the product.

3.4 Type code

Structure of the type code:

Type	Size	Version	Encoder	Gear stage	Motor
NC	0150	T	A (Incremental) B (Absolute) X (Special) - (Without)	A (1590:11) B (848:11) X (Special)	A (Standard B&R) B (Standard Bosch) X (Special) - (Without)
	0220			A (29952:175) B (2496:35) X (Special)	
	0320			A (665:4) B (2261:20) X (Special)	

3.5 Mounting positions

NOTICE

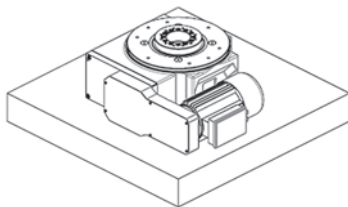
OIL LOSS OR DRY RUN DUE TO INCORRECT MOUNTING POSITION

Failure to follow these instructions can result in equipment damage.

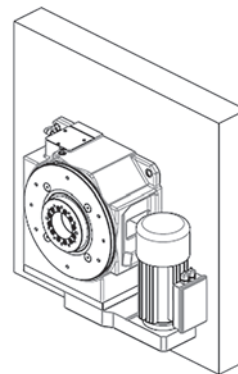
- Verify that you only use the standard mounting positions approved in these mounting instructions.

Permissible standard mounting positions

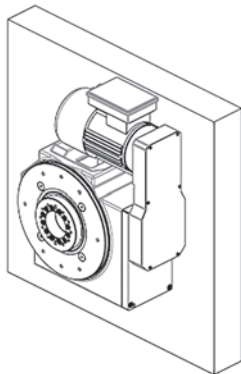
The product may only be mounted as shown below.



Normal / MP 1



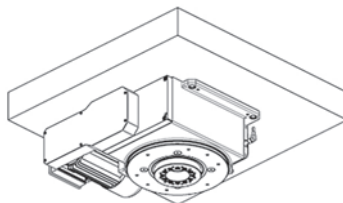
Vertical, drive at the bottom / MP 4



Vertical, drive at the right / MP 3

Special mounting positions

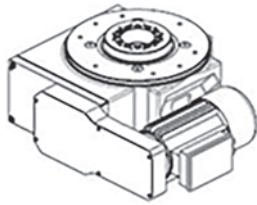
The following special mounting positions require explicit approval of the manufacturer for the product.



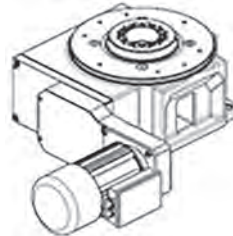
Upside down / MP 2

3.6 Drive positions

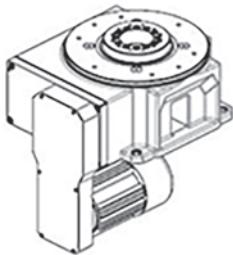
The product is delivered with the drive position specified in the order. Permissible drive positions for the product types NC0150T, NC0220T, NC0320T:



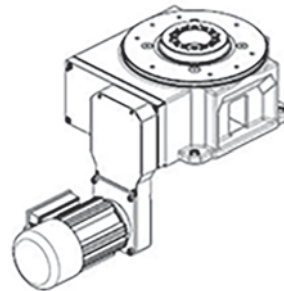
At the side, inside / DP 1



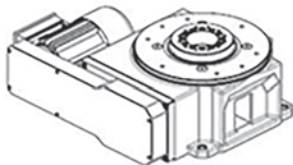
At the side, outside / DP 2



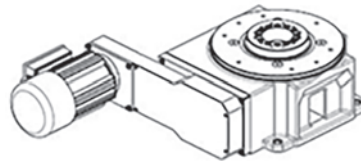
At the bottom, inside / DP 3



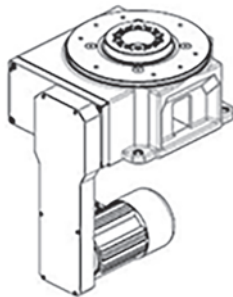
At the bottom, outside / DP 4



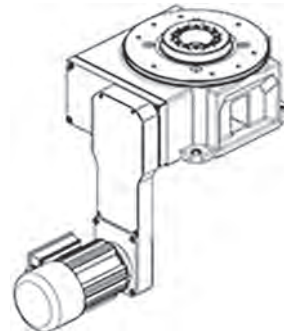
At the side, inside, motor at cam side / DP 5



At the side, inside, long drive housing / DP 6



At the bottom, inside, long drive housing / DP 7

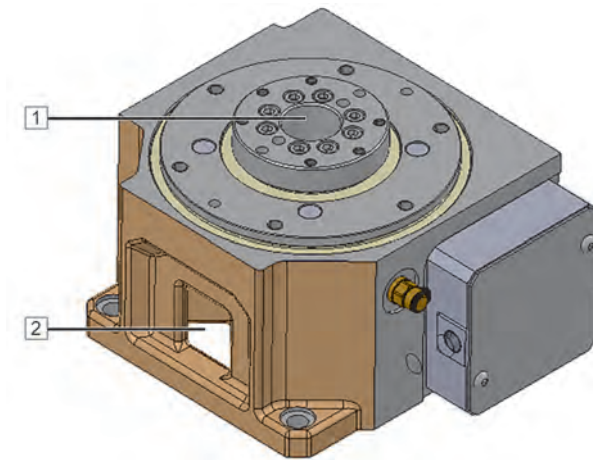


At the bottom, outside, long drive housing / DP 8

The drive positions described are permissible for all mounting positions, [see chapter 3.5](#).

The drive position can be modified by changing the position of the housing, [see chapter 8.6](#).

3.7 Passage of media



The large center hole [1] and the opening in the housing [2] can be used for the passage of media.

4 Technical data

4.1 General

Characteristic	Unit	Value		
		NC0150T	NC0220T	NC0320T
Direction of rotation	-	Left, right, or alternating		
Recommended maximum diameter of attachment	mm	Approximately 800	Approximately 1100	Approximately 1400
Diameter output flange	mm	150	220	320
Maximum speed of rotation motor	1/min	4500	4000	4000
Maximum output speed of rotation	1/min	58	56	35
Total gear ratio	-	Stage A: 144.545 Stage B: 77.091	Stage A: 171.45 Stage B: 71.314	Stage A: 166.25 Stage B: 113.05
Indexing accuracy without additional encoder	arcsec	100 (± 50)	90 (± 45)	80 (± 40)
Indexing accuracy with additional encoder	arcsec	80 (± 40)	70 (± 35)	60 (± 30)
Maximum axial runout output flange	mm	0.01 at Ø 150	0.01 at Ø 220	0.01 at Ø 320
Maximum radial runout output flange	mm	0.01	0.01	0.01
Maximum error in parallelism between output flange and mounting surface housing	mm	0.03	0.03	0.03
Minimum inside diameter of attachment plate	mm	80	96	150
Weight	kg	24	44	112
Weight with packaging	kg	See bill of delivery		
Sound pressure	dB(A)	< 70		
Lubricant	-	Shell Omala S2 G 220		
Lubricant volume	ml	150	300	2000

4.2 Motor

Refer to the documentations of the manufacturer for the technical data of the motor; see applicable documents.

Depending on the product type, the following motors are integrated:

Manufacturer B&R Industrial Automation GmbH

Characteristic	Unit	Value		
		NC0150T	NC0220T	NC0320T
Motor designation	-	8LSA34	8LSA44	8LSA46
Nominal speed of rotation	1/min	4500	4500	4500
Nominal torque	Nm	1.3	3.6	6

Manufacturer Bosch Rexroth AG

Characteristic	Unit	Value			
		NC0150T	NC0220T		NC0320T
Motor designation	-	MS2N04	MS2N04 (at stage A)	MS2N05 (at stage B)	MS2N05
Nominal speed of rotation	1/min	4980	4980	4090	4090
Nominal torque	Nm	1.09	1.09	3052	3052

4.3 Holding brake

Refer to the documentation of the manufacturer for the technical data of the holding brake; see applicable documents.

Depending on the product type, the following holding brakes are integrated:

Characteristic	Unit	Value		
		NC0150T	NC0220T	NC0320T
Braking torque (for B&R Industrial Automation GmbH motor)	Nm	4	8	8
Braking torque (with Bosch Rexroth AG motor)	Nm	5	5 (at stage A)	10
			10 (at stage B)	

4.4 Additional encoder (optional)

Refer to the documentations of the manufacturer for the technical data of the additional encoder; see applicable documents.

Type	Manufacturer
ROQ 425	DR. JOHANNES HEIDENHAIN GmbH

4.5 Climatic environmental conditions "Operation"

Characteristic	Unit	Value
Ambient temperature	°C	+10 ... +40
Relative humidity, non-condensing	%	+5 ... +95
Maximum surface temperature	°C	+100
Maximum installation altitude above mean sea level without derating motor and drive/frequency inverter	m	1000

4.6 Climatic environmental conditions "Transportation and Storage"

Characteristic	Unit	Value
Ambient temperature	°C	+5 ... +60
Relative humidity, non-condensing	%	+5 ... +95
Maximum storage duration of the mechanical components; see below for conditions	-	see chapter 7

4.7 Dimensions

Product type: NC0150T

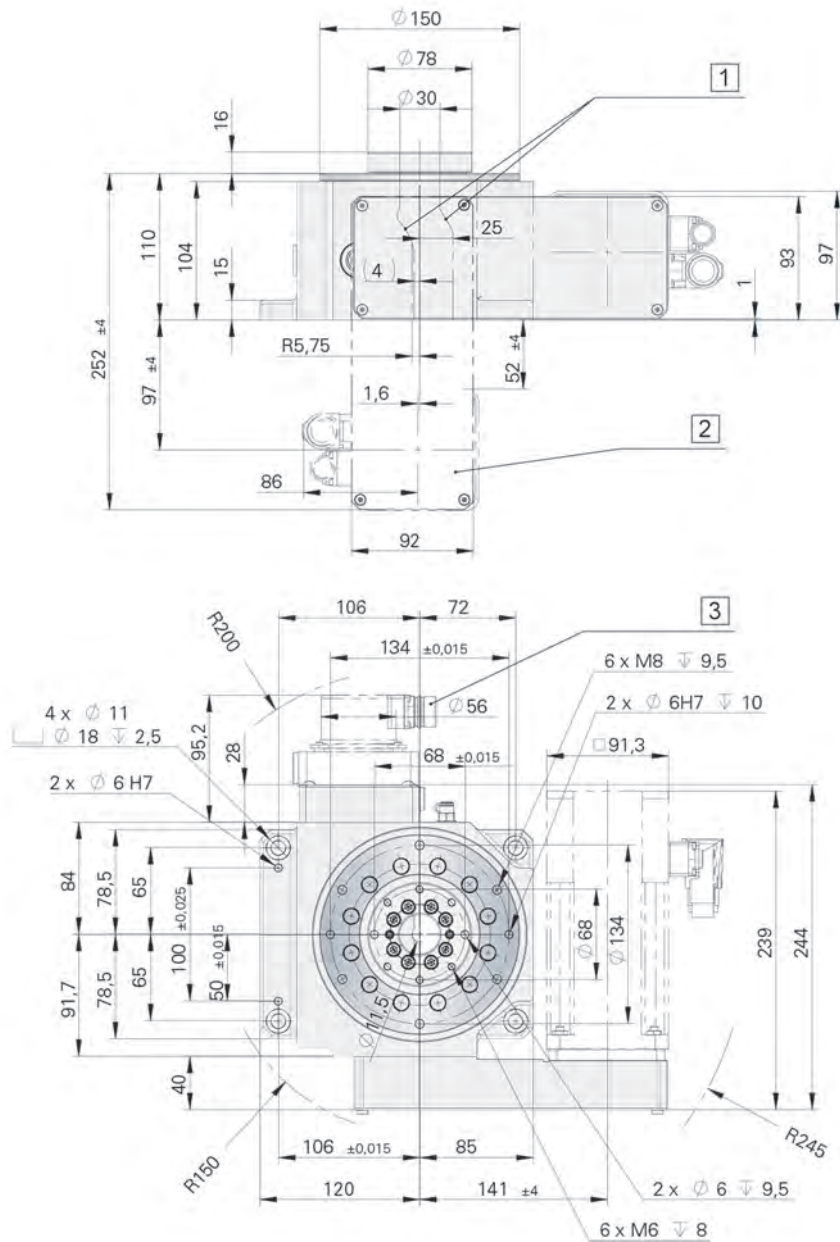


Figure 2: Lengths and diameters in mm

- | | |
|---|--|
| <p>1 Unmachined cast edge</p> <p>2 Drive position, drive at the top</p> | <p>3 Additional encoder (optional)</p> |
|---|--|

Product type: NC0220T

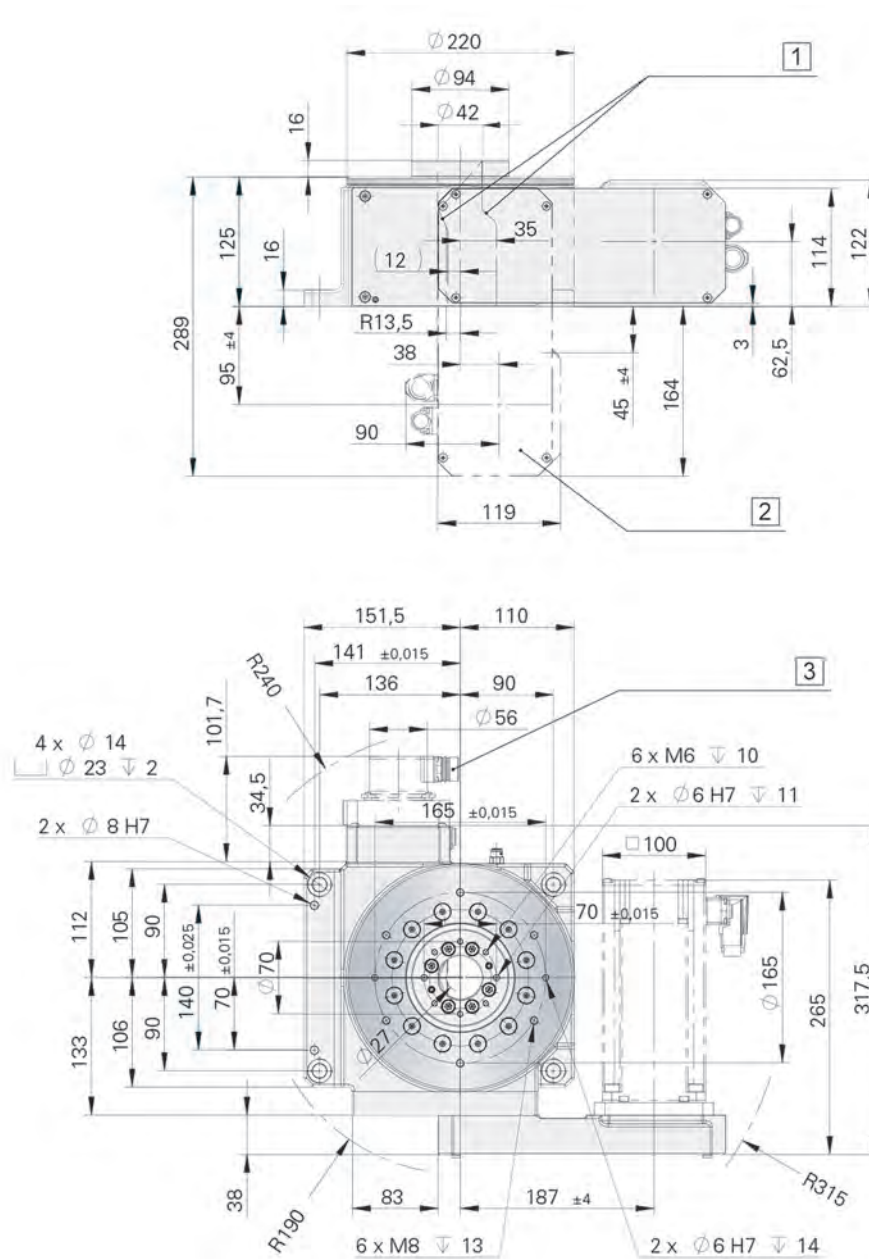


Figure 3: Lengths and diameters in mm

- | | |
|---|--|
| <p>1 Unmachined cast edge</p> <p>2 Drive position, drive at the top</p> | <p>3 Additional encoder (optional)</p> |
|---|--|

Product type: NC0320T

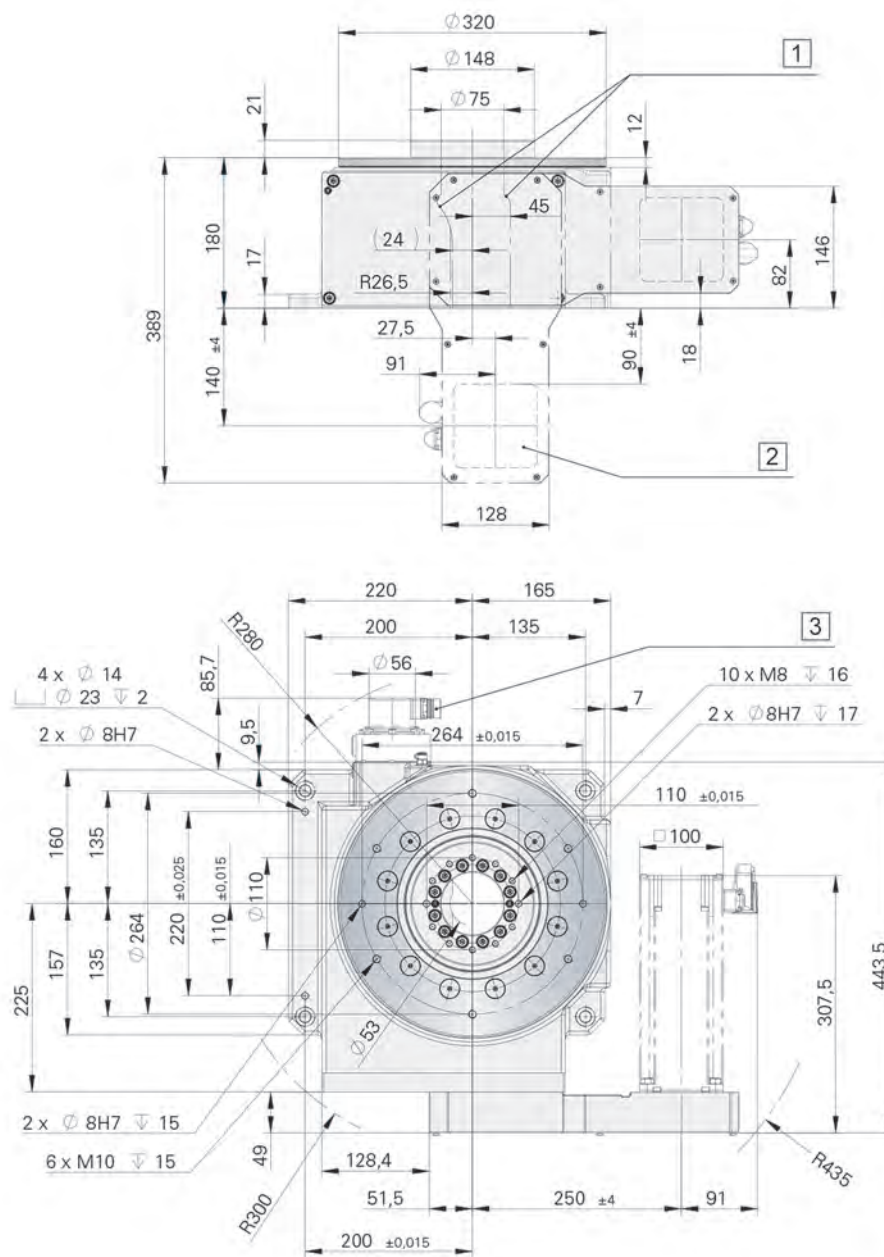


Figure 4: Lengths and diameters in mm

- | | |
|---|--|
| <p>1 Unmachined cast edge</p> <p>2 Drive position, drive at the top</p> | <p>3 Additional encoder (optional)</p> |
|---|--|

4.8 Load data

Load data for stationary center part

Characteristic	Unit	NC0150T	NC0220T	NC0320T
Permissible torque	Nm	140	145	800
Permissible moment of tilt	Nm	200	300	1800
Permissible axial force	N	3500	5000	18000
Permissible radial force	N	2500	4000	10000

Load data for output flange

Characteristic	Unit	NC0150T	NC0220T	NC0320T
Permissible moment of tilt during movement	Nm	500	700	2250
Permissible axial force during movement	N	5500	7500	15000
Permissible radial force during movement	N	6000	8000	13000

5 Packaging

5.1 Types of packaging



Packaging in Europe

The product is factory-treated with anti-corrosion agent, packaged in film and screwed onto a palette.



Packaging for air and sea freight

The product is factory-treated with anti-corrosion agent, packaged in Corpac-coex-VCI film, screwed onto a palette, and then packed into a wooden box with foam plastic material.

5.2 Unpacking the product

1. Do not remove the packaging until immediately prior to mounting.
2. Dispose of the packaging material in compliance with all directives, standards, and safety regulations applicable at the installation site.

5.3 Verification of the delivery

- Check the delivery for completeness and transportation damage upon reception.
- In the case of damage, reject the delivery or accept it only conditionally.
- Document the damage in the transportation documents/bill of delivery (any damage detected must be immediately reported to the forwarding agent and confirmed by the forwarding agent).
- Take photographs of the damage.
- Report the damage to WEISS GmbH.

6 Transportation



▲ WARNING

FALLING, TOPPLING, OR LOWERING LOADS

Insufficiently rated load lifting and handling equipment may break. Transportation vehicles, lifting gear, chains, belts, and other equipment not rated for the product may fail or tilt.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Only use transportation vehicles, lifting gear, chains, belts, and other lifting and handling equipment that comply with all applicable regulations and that are rated for the weight of the product including packaging.
- Verify that there are no persons in the danger zone.
- Verify that the product is properly secured against falling and toppling.

6.1 Transporting the product

Packages fastened to a pallet can be transported with a fork lift truck, a pallet jack or similar transportation means. Verify that the transportation means used is suitable and approved for the weight and the dimensions of the package.



1. Place the forks below the pallet.
2. Verify that the pallet with the package fully rests on the forks.
3. Fasten the pallet with the package using additional straps if the center of gravity is not in the center of the pallet.

6.2 Load lifting and handling equipment



Use properly rated load lifting and handling equipment and hoisting belts/hoisting equipment for transporting the product. Eyebolts must not be used as load lifting and handling equipment.

6.3 Fastening the load lifting and handling equipment



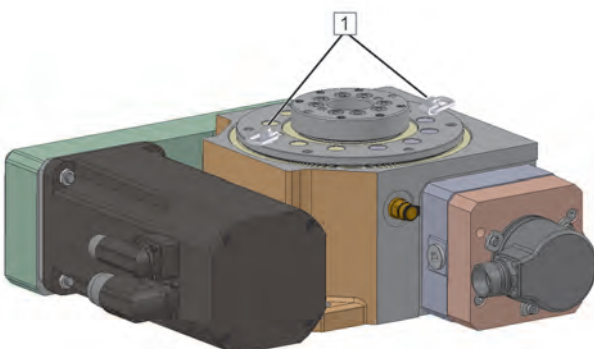
▲ WARNING

FALLING, TOPPLING, OR LOWERING LOADS

Insufficiently rated load lifting and handling equipment may break. Transportation vehicles, lifting gear, chains, belts, and other equipment not rated for the product may fail or tilt.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Only use transportation vehicles, lifting gear, chains, belts, and other lifting and handling equipment that comply with all applicable regulations and that are rated for the weight of the product including packaging.
- Verify that there are no persons in the danger zone.
- Verify that the product is properly secured against falling and toppling.



1. Use properly rated load lifting and handling equipment and hoisting belts/hoisting equipment for transporting the product.
2. Screw the load lifting and handling equipment [1] (see table) into the outer threads of the output flange.
3. Fasten the hoisting belts or the hoisting equipment to the eyelets of the load lifting or load handling equipment.

Product type	Number of pieces of load lifting and handling equipment	Thread
NC0150T, NC0220T	2	M8



Product type	Number of pieces of load lifting and handling equipment	Thread
NC0320T	2	M10

7 Storage

7.1 Storing the product

NOTICE

INCORRECT STORAGE

Failure to follow these instructions can result in equipment damage.

- Verify compliance with all conditions specified in these mounting instructions and all applicable documents when storing the product.

The mechanical components of the product can be stored for a period of up to two years.

Conditions for the specified maximum storage duration:

- Storage in original packaging
- Compliance with all specified storage conditions
- Storage in suitable closed, dry, dust-free room, protected against direct sunlight
- No contact with corrosive media
- Corrosion protection intact

The electrical components have a different maximum storage duration (see documentations of the manufacturers).

If the maximum storage duration has been exceeded, you must contact the manufacturer prior to commissioning the product. This also applies if the machine in which the product has been incorporated has not been operated for a period of time exceeding the maximum storage durations specified for the mechanical and electrical components.

If you plan to store the product for a period of time exceeding the maximum permissible storage duration specified for the mechanical components, you must uninstall the electrical components prior to storing the product. The electrical components must be stored according to the specifications of the manufacturers (see documentations of the manufacturers).

If the product is to be stored for a period of more than three months, the product must first be preserved. If the factory-applied anti-corrosion agent is no longer intact, you must request preservation instructions from the manufacturer.

8 Mounting

8.1 Prerequisites for mounting

NOTICE

DAMAGE TO SHAFT SEALING RINGS

Failure to follow these instructions can result in equipment damage.

- Avoid any contact of the sealing lips of the shaft sealing rings with the solvent.

Motor and holding brake must remain accessible for service and maintenance work.

Prior to mounting, the anti-corrosion and any pollution must be removed with a standard solvent.

Prior to mounting, verify that the dimensions of the installation site and construction conditions meet the requirements and the dimensions specified in these mounting instructions and the applicable documents.

- Verify that the supporting base is level and rigid.

Product type	Maximum permissible flatness error	Maximum permissible surface roughness
NC0150T	0.046 mm	Rz 6.3 ... Rz 16
NC0220T	0.052 mm	
NC0320T	0.057 mm	

- Verify that the supporting structure at the installation site has a sufficient structural strength to carry the weight of the product and of all loads.
- Verify that the motor is easily accessible for service and maintenance work.
- Verify that there is a minimum distance of 100 mm between the motor fan and other assemblies.
- Verify that free convection for removing the hot air is not obstructed.

8.2 Equipment and tools

The following is required for mounting:

- Set of wrenches
- Set of hex keys
- Set of screwdrivers
- St feeler gauges
- Torque wrench
- Plastic hammer
- Vernier caliper
- Mounting levers
- Circlip pliers
- Cotter pin punch (for mounting the parallel pins)
- Mounting grease
- Brush (for mounting grease)
- Ball pane hammer

8.3 Tightening torques and property classes

For fastening the product, only use screws with the property class shown in the following table unless a different property class is explicitly specified for a screw connection.

Use the tightening torque shown in the following table unless a different tightening torque is explicitly specified for a screw connection.

Property class of screws	10.9 (coefficient of friction $\mu_{\text{tot.}}$ 0.12)	
Product type	NC0150T	NC0220T, NC0320T
Thread	M10	M12
Tightening torque	68 Nm	117 Nm

8.4 Displacing the vent screw and the screw plug

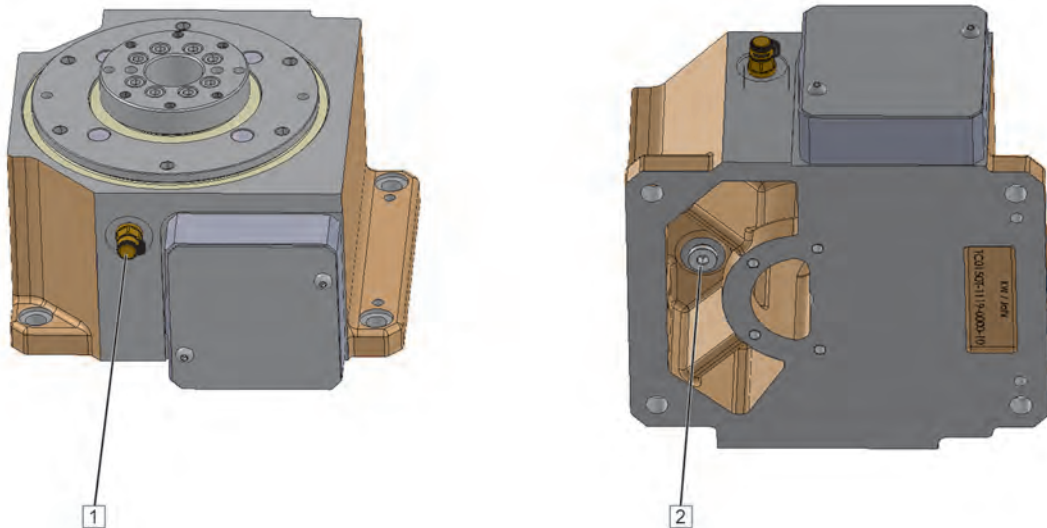
NOTICE

OIL LOSS OR DRY RUN DUE TO INCORRECT MOUNTING POSITION

Failure to follow these instructions can result in equipment damage.

- Verify that you only use the standard mounting positions approved in these mounting instructions.

1. The vent screw and the screw plug are factory-mounted according to the mounting position you specify in your order. If you want to modify the mounting position, you must displace the vent screw and the screw plug.



	Normal	Vertical, drive at the right	Vertical, drive at the bottom	Upside down
Mounting position				
Position vent screw	1	2	1	2
Position screw plug	2	1	2	1

8.5 Bolting down the product



WARNING

FALLING, TOPPLING, OR LOWERING LOADS

Insufficiently rated load lifting and handling equipment may break. Transportation vehicles, lifting gear, chains, belts, and other equipment not rated for the product may fail or tilt.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Only use transportation vehicles, lifting gear, chains, belts, and other lifting and handling equipment that comply with all applicable regulations and that are rated for the weight of the product including packaging.
- Verify that there are no persons in the danger zone.
- Verify that the product is properly secured against falling and toppling.

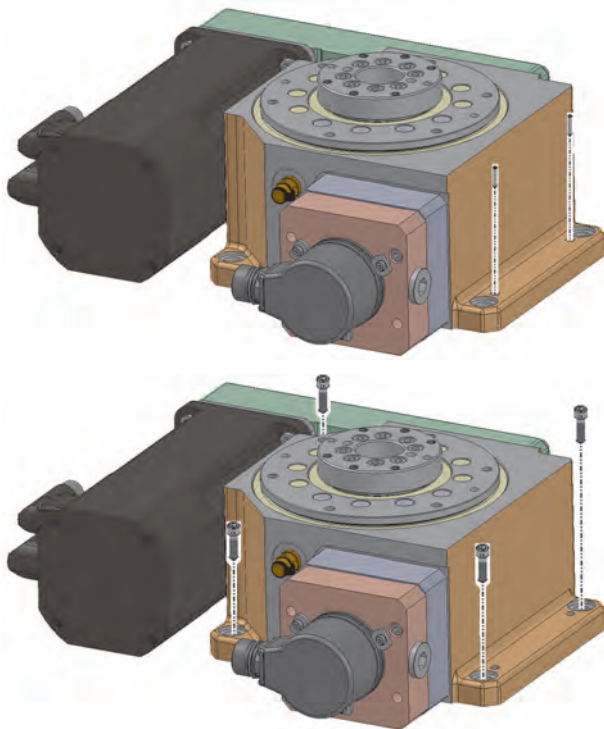


WARNING

IMPROPERLY FASTENED PARTS

Failure to follow these instructions can result in death, serious injury, and equipment damage.

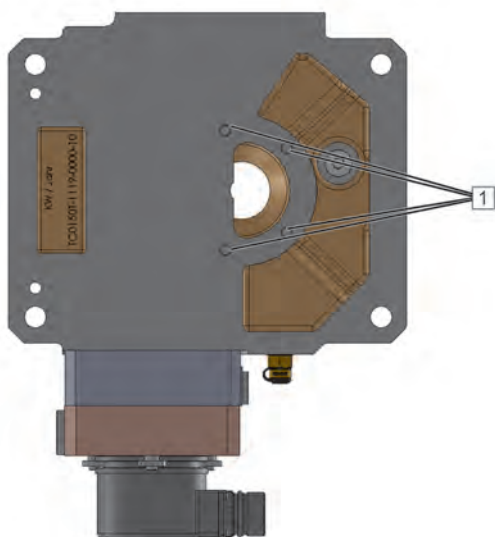
- Verify that the supporting structure and/or the frame and/or the mounting surface for fastening the product are sufficiently rated to withstand all static and dynamic loads and forces during operation.
- Verify that the fastening parts comply with the specifications indicated and that they are sufficiently rated for all load conditions during operation.



Use screws with the property class specified to mount the product. When determining the length of the screws, take into account the loads and forces acting in your application as well as the characteristics of the supporting structure to which the product is mounted.

1. Place the product at the mounting site in compliance with the transportation instructions.
2. Center the product with the two parallel pins with reference to the holes and then drive in the first parallel pin by one third.
3. Screw the four screws into the holes and tighten them.
4. Drive in all parallel pins (positive fit, the parallel pin must be in contact with the housing of the indexing table and the mounting plate/mounting surface).
5. Tighten the four screws in the holes cross-wise with the specified tightening torque.

Additional fastening options



Additional threads [1] are provided for fastening of the product for the following mounting positions:

- Vertical, drive at the bottom,
- Vertical, drive at the right,
- Upside down

The additional threads [1] must not be used as the only way of fastening the product.

8.6 Displacing the drive unit with the motor



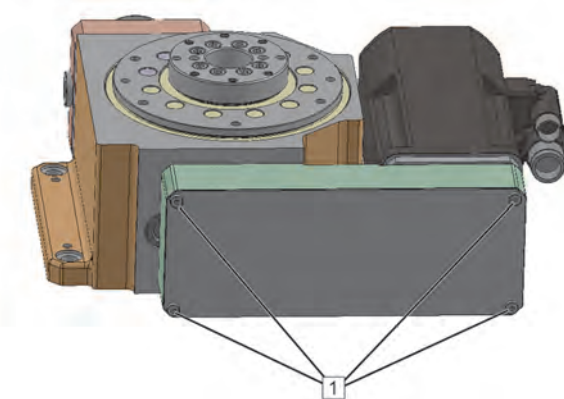
⚠ WARNING

FALLING PARTS

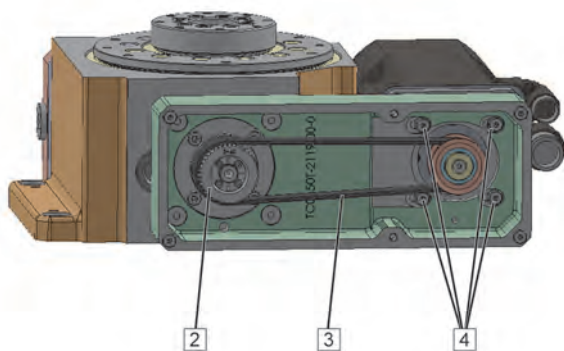
Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Secure the motor so it cannot fall down before loosening the screws.

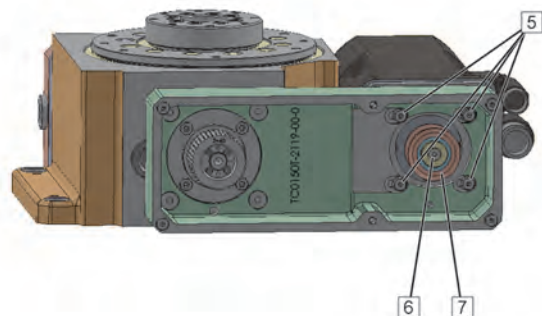
The drive unit is factory-mounted according to the drive position you specify in your order. The drive unit can be moved to the permissible drive positions, [see chapter 3.6](#).



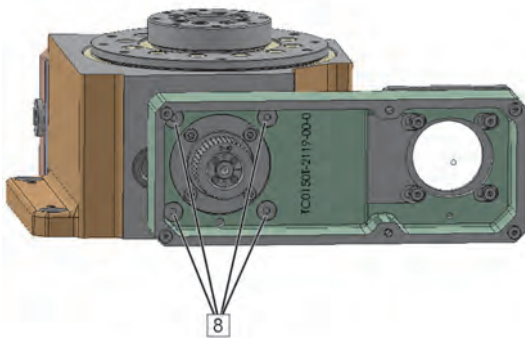
1. Loosen the screws [1].
2. Remove the cover.



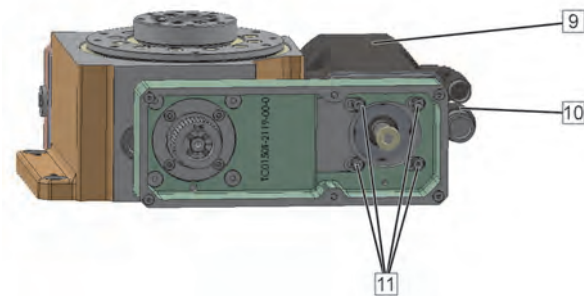
3. Loosen the four screws [4] of the motor flange.
4. Slacken the toothed belt [3] by moving the motor in the motor in the elongated holes.
5. To remove the toothed belt, start by pulling the toothed belt off of the toothed belt pulley (gear) [2].



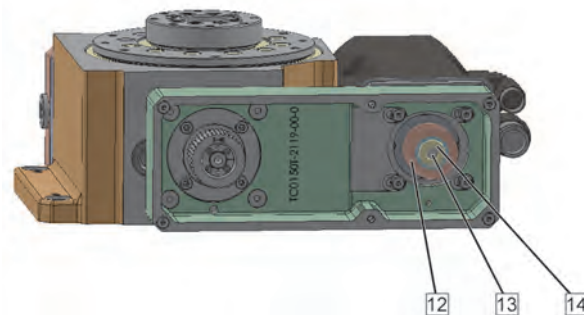
- If the size of the toothed belt pulley (motor) [7] is greater than the opening in the drive housing, the toothed belt pulley (motor) [7] must be dismantled.
6. Remove the screw of the pulley [6].
 7. Pull the toothed belt pulley (motor) [7] off of the motor shaft.
 8. Remove the four screws [5] from the motor flange.
 9. Remove the motor.



10. Remove the four screws [8] of the drive unit.
11. Turn the drive unit to the required drive position.
12. Fit the four screws [8] of the drive unit.
13. Tighten the four screws of the drive unit cross-wise.

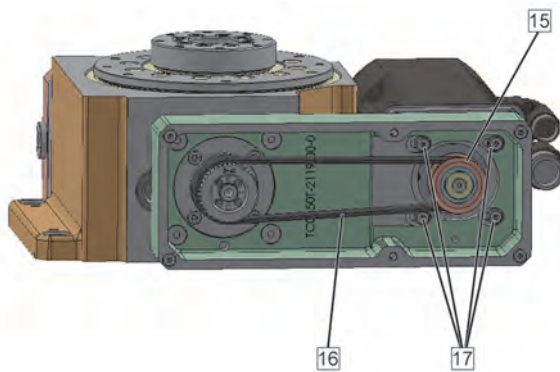


14. Fit the motor [9] with the required position of the motor connections [10].
15. Slightly tighten the four screws [11] of the motor flange.
16. Grease the motor shaft.



17. Grease the toothed belt pulley (motor).
18. Push the toothed belt pulley (motor) [12] onto the motor shaft all the way to the stop. If you encounter resistance, use a plastic hammer.
19. Fit the disk [14] onto the toothed belt pulley (motor).
20. Fasten the pulley with the screw [13].

Mounting



21. First, fit the toothed belt [16] around the toothed belt pulley (motor) [15].
22. Mount the toothed belt [16].
23. Tension the toothed belt to the correct belt tension by moving the motor in the elongated holes and tighten the four screws [17] of the motor flange.
 - ✓ The toothed belt is correctly tensioned if it can be manually twisted by - depending on the length of the toothed belt - 45° to 90° along the longitudinal axis in the center between the two pulleys.
 - ✓ Contact WEISS GmbH if you need the frequency for adjusting the toothed belt with a belt tension meter.
24. Mount the cover by means of the screws.
25. Remove all tools and equipment.
26. Perform a test run.

8.7 Mounting additional components



⚠ WARNING

IMPROPERLY FASTENED PARTS

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Verify that the supporting structure and/or the frame and/or the mounting surface for fastening the product are sufficiently rated to withstand all static and dynamic loads and forces during operation.
- Verify that the fastening parts comply with the specifications indicated and that they are sufficiently rated for all load conditions during operation.



⚠ CAUTION

MECHANICAL DAMAGE

Failure to follow these instructions can result in injury or equipment damage.

- Only mount components to the output flange/stationary center part that are approved by the manufacturer.
- Only use existing holes in the output flange/stationary center part for mounting additional components to the output flange/stationary center part.
- After mounting, do not drill holes into the output flange/stationary center part.

NOTICE**BLOCKING OF THE PRODUCT DUE TO EXTRANEIOUS OBJECTS**

Mounting an additional indexing plate or an attachment plate creates a gap through which extraneous objects can get into the product.

Failure to follow these instructions can result in equipment damage.

- Mount a suitable lip seal between the rotating plate and the stationary plate.
- Verify that the lip seal does not collide with the existing holes.

Mounting the rotary plate

A rotary plate may only be mounted via the fit holes or threads.

If there is a centering collar at the stationary center part of the product, this centering collar must not be used to fasten an additional indexing plate.

For this reason, the center hole of a rotary plate must be approx. 2 mm larger than the centering collar. When determining the length of the screws, take into account the loads and forces acting in your application as well as the characteristics of the supporting structure to which the product is mounted.

1. Fit the rotary plate.
2. Center the parallel pins and then drive in the first parallel pin by one third of the way.
3. Screw in the screws and tighten them.
4. Fully drive in the second parallel pin.
5. Fully drive in the first parallel pin.
6. Tighten the screws cross-wise with a tightening torque suitable for the application.

8.8 Mounting safety equipment

The product is a partly complete machine pursuant to Directive 2006/42/EU and intended to be incorporated into or assembled with other machinery. The requirements concerning functional safety and the corresponding safety equipment result from the risk analysis and the risk assessment for the final machine or plant.

Selection, mounting, installation, commissioning, operation and maintenance of the safety equipment must be performed by the system integrator (the person who incorporates the product in a machine pursuant to Directive 2006/42/EU, i.e., for example, the machine builder) and/or the operator.

The product requires at least the following safety equipment:

- Emergency Stop system as per IEC 60204-1 / ISO 13850
- Lockable main switch to interrupt the complete power supply to all electrical components of the product

9 Electrical connection



⚠ DANGER

ELECTRIC SHOCK CAUSED BY LIVE PARTS

Failure to follow these instructions will result in death or serious injury.

- Disconnect the mains supply voltage before performing the work and ensure that it cannot be switched on.
- Verify that no hazards can be caused by electrically conductive objects.
- Verify that all cables for the power supply are disconnected from power.



⚠ DANGER

ELECTRIC SHOCK DUE TO MISSING COVERS

Failure to follow these instructions will result in death or serious injury.

- Verify that all removed covers are re-installed, and all terminal boxes are closed after you have performed work.



⚠ WARNING

UNANTICIPATED MOVEMENT

Interchanging the motor connections inverts the direction of rotation of the motor.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Verify correct wiring and connection of all electrical connections.



⚠ CAUTION

IMPROPERLY INSTALLED CABLES

Failure to follow these instructions can result in injury or equipment damage.

- Verify that the cables are correctly routed.
- Verify compliance with the bend radius specifications for the electrical lines.
- Only use cables with the correct cross sections.
- Verify that the electrical cables are correctly connected to the terminals.

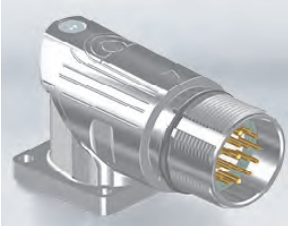

The following components must be connected for the motor:

- Lockable main switch
- Suitable Emergency Stop equipment (as per IEC 60204-1 / EN ISO 13850)

9.1 Connection assignment "Additional Encoder"(optional)

The additional encoder is optionally available. Refer to the documentation of the manufacturer for the technical data of the additional encoder; see applicable documents.

Connection assignment additional encoder

Encoder connector with male thread M23	Isolation piece 17-pin E	Pin assignment		
		Pin	Designation	Function
		1	Sense 5 V	Sense + 5 V
		2	---	---
		3	---	---
		4	Sense GND	Sense GND
		5	---	---
		6	---	---
		7	5 V	Encoder 5 V
		8	CLOCK+	Clock
		9	CLOCK-	Clock inverted
		10	GND	GND
		11	---	---
		12	B+	Sine
		13	B-	Sine inverted
		14	DATA+	Data
		15	A+	Cosine
		16	A-	Cosine inverted
		17	DATA-	Data inverted

10 Controller

10.1 Basic information on control



▲ WARNING

LOSS OF CONTROL

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Consider all potential failure modes of all control paths in your control concept.
- Implement means and measures for all critical functions to achieve a safe state if a control path fails (for example, emergency stop, overtravel of positions, power outage, and restart).
- Implement separate or redundant control paths for all critical functions.
- If the control system of the machine comprises communication links, consider the consequences of unanticipated transmission delays or failures of the link and implement appropriate measures.
- Subject each machine in which the product described in these mounting instructions is used to a comprehensive and thorough commissioning test before operating the machine.

The output flange can be operated with the following directions of movement: left, right, or alternating.

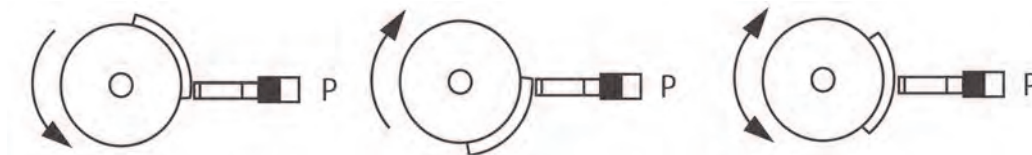


Figure 5: Direction of rotation left, right, or alternating

A movement of the output flange is started by sending a start signal to the motor and applying the holding brake voltage. This releases the holding brake and the motor accelerates.

To stop the movement of the output flange, a stop signal is sent to the motor and the motor decelerates to a standstill. After the motor has decelerated to a standstill, the supply voltage to the holding brake is removed. This applies the holding brake. The output flange is at one of the possible positions.

This sequence of acceleration, deceleration, and standstill of the output flange is cyclically repeated.

The controller determines the cycle. The required signals for the motor and the holding brake are generated by means of the encoder (absolute encoder) of the servo motor or by a second encoder (absolute encoder, optional).

10.2 WEISS GmbH controller/software package (optional)

WEISS GmbH offers a controller/software package for controlling the product.

If this option is used, you must follow all instructions in the corresponding documentations. The documentations can be found on the CD shipped with the product in the controller/software package.

11 Commissioning

11.1 Prerequisites for commissioning

The following requirements must be met before the product may be commissioned:

- The product is properly mounted.
- The electrical equipment for the power supply of the motor and the holding brake is mounted correctly.
- All cables are properly routed and connected.
- All electrical connections have been made properly.
- All parts of the system are properly grounded in compliance with all applicable directives, regulations, and standards.
- All safety equipment and EMERGENCY-STOP circuits are operational.
- The drive is not damaged and not blocked.
- All environmental conditions are respected.
- All protective covers are properly mounted.
- The toothed belt has the correct tension.
- All tools, equipment, and other objects have been removed from the zone of operation of the product.
- All hazards are excluded.

Prior to commissioning, perform a test for each prerequisite mentioned and verify compliance with all information and specifications contained in these mounting instructions, in all applicable documents, and in all applicable directives, regulations, and standards.

11.2 Performing commissioning



WARNING

UNANTICIPATED MOVEMENT

Incorrect connections or external influences on electrical equipment can cause unanticipated movements.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Verify correct wiring.
- Verify that there are no persons or obstacles in the danger zone of the product before starting the product.
- Perform initial test movements without loads and without other processing units.
- Verify that all safety equipment and EMERGENCY STOP circuits are activated prior to commissioning.



⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Incorrect or unsuitable parameter values or settings can cause unintended movements, trigger signals, and compromise functional safety.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Verify that parameter values and settings can only be modified by authorized personnel who fully understand each and every effect of such a modification.
- Verify that all parameter values and settings are correct by performing a test run.



⚠ WARNING

ELECTROMAGNETIC RADIATION

Failure to follow these instructions can result in death, serious injury, and equipment damage.



- Verify compliance with all international, national, and local directives, standards, and safety regulations, including all regulations concerning workplace safety and prevention of accidents, with regard to electromagnetic radiation.
- Take all necessary measures to ensure that persons with active medical implants (such as heart pacemakers or insulin pumps), metal implants, and magnetically or electrically conductive objects are not exposed to the electromagnetic fields generated by the motor.



⚠ WARNING

HOT SURFACES

The temperature of the motor and the holding brake can exceed 100 °C during operation.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive objects in the vicinity of hot surfaces.
- Before performing work on the motor or the holding brake, verify that you wait for a sufficient period of time to allow such parts to cool down to a temperature that allows for safe contact.

Power on the power supply to the product via the main switch.

Check the following points during commissioning:

- Operating state, potential error conditions, and protective equipment
 - During commissioning, perform tests for all operating states and error conditions. In doing so, verify that all protective equipment operates as planned and required.
- Correct operation of the motor
 - There are no overloads.
 - There are no unusual fluctuations in the speed of rotation. Immediately stop the product in the case of overloads or unusual fluctuations in the speed of rotation and verify correct mounting.
- Noise emission

Commissioning

- Excessive noise emission can be an indication of incorrect mounting, for example, an uneven ground that causes mechanical stress at the output flange. Immediately stop the product in the case of high noise emission and verify correct mounting.
- Heat
 - Verify that the heat dissipation is sufficient and that the specified climatic environmental conditions are respected by performing a test run under maximum load conditions.

If the product and/or the machine into which the product is incorporated is temporarily decommissioned, it must be recommissioned. For recommissioning, the same prerequisites must be met as for initial commissioning.

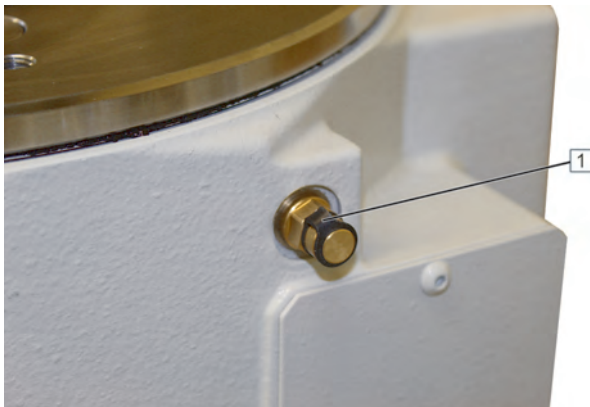
Perform the same tests for each recommissioning of the product as for initial commissioning.

11.3 Removing the transportation lock at the vent screw

NOTICE**OIL LOSS AND DRY RUN IF TRANSPORTATION LOCK OF VENT SCREW IS NOT REMOVED**

Failure to follow these instructions can result in equipment damage.

- Verify that the transportation lock at the vent screw has been removed prior to commissioning.



1. Pull the transportation lock [1] off the vent screw.

Refer to the documentation of the manufacturer for the technical data of the vent screw; see applicable documents.

12 Operation

12.1 Basic information on operation



⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Incorrect or unsuitable parameter values or settings can cause unintended movements, trigger signals, and compromise functional safety.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Verify that parameter values and settings can only be modified by authorized personnel who fully understand each and every effect of such a modification.
- Verify that all parameter values and settings are correct by performing a test run.



⚠ WARNING

UNANTICIPATED MOVEMENT OF THE OUTPUT FLANGE

If the holding brake becomes inoperative, the output flange can move even if the motor is at a standstill.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Block or safeguard the output flange in such a way that a movement of the output flange is safely prevented before starting work on the output flange.

The product is a partly complete machine pursuant to Directive 2006/42/EU and intended to be incorporated into or assembled with other machinery. The information required for operation results from the functionality of the machine or system into which the product is incorporated and from the application implemented with it.

The instructions for the safe operation of the final machine or system must be provided by the system integrator (the person who incorporates the product in a machine pursuant to Directive 2006/42/EU) and/or the operator in the form of a manual with operating instructions ([see chapter 2.3](#)).

These operating instructions must be a complete manual which describes all work on and with the product and which contains all information relevant to the product. The system integrator and/or operator must ensure compliance of the operating instructions with all applicable directives, regulations, and standards.

13 Troubleshooting

13.1 Issue, cause and remedy



⚠ DANGER

ELECTRIC SHOCK CAUSED BY LIVE PARTS

Failure to follow these instructions will result in death or serious injury.

- Disconnect the mains supply voltage before performing the work and ensure that it cannot be switched on.
- Verify that no hazards can be caused by electrically conductive objects.
- Verify that all cables for the power supply are disconnected from power.



⚠ WARNING

MOVING PARTS

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Verify that the zone of operation of the moving parts of the product/machine is safeguarded.



⚠ WARNING

HOT SURFACES

The temperature of the motor and the holding brake can exceed 100 °C during operation.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive objects in the vicinity of hot surfaces.
- Before performing work on the motor or the holding brake, verify that you wait for a sufficient period of time to allow such parts to cool down to a temperature that allows for safe contact.

Issue	Cause	Remedy
Output flange does not rotate or does not reach the next position	Toothed belt between motor and gear is torn	▪ Replace the toothed belt, see chapter 15.4
	No motor supply voltage	<ul style="list-style-type: none"> ▪ Measure the voltage ▪ Check all fuses ▪ Check the motor protection switch
	Motor is inoperable	▪ Replace the motor, see chapter 15.3

Issue	Cause	Remedy
	Output flange is mechanically blocked	<ul style="list-style-type: none"> ▪ Verify that the output flange is not mechanically blocked at the top or the underside ▪ Remove the cause of the block
	Pollution between rotary plate and output flange and stationary center part or tensioning disk	<ul style="list-style-type: none"> ▪ Check the gap between the rotary and stationary plate for extraneous objects ▪ Remove extraneous objects
	During initial commissioning: The output flange is subject to mechanical tension	<ul style="list-style-type: none"> ▪ Remove the rotary plate and the stationary center part and clean them ▪ Perform a test run without the rotary plate and the stationary center part
		<ul style="list-style-type: none"> ▪ Verify that the mounting site is level und verify correct mounting ▪ Verify the installation

14 Cleaning

14.1 Performing cleaning



⚠ DANGER

ELECTRIC SHOCK CAUSED BY LIVE PARTS

Failure to follow these instructions will result in death or serious injury.

- Disconnect the mains supply voltage before performing the work and ensure that it cannot be switched on.
- Verify that no hazards can be caused by electrically conductive objects.
- Verify that all cables for the power supply are disconnected from power.



⚠ WARNING

HOT SURFACES

The temperature of the motor and the holding brake can exceed 100 °C during operation.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive objects in the vicinity of hot surfaces.
- Before performing work on the motor or the holding brake, verify that you wait for a sufficient period of time to allow such parts to cool down to a temperature that allows for safe contact.

For cleaning of electrical components and additional components, respect the instructions in the documentations of the manufacturer; refer to the applicable documents.

Use the following cleaning agents for cleaning the product.

Component	Cleaning agents
Housing	Neutral, mildly alkaline
Output flange	
Stationary center part	
Motor	Dry cleaning

1. Remove fine impurities and dust with a dry, lint-free cloth.
2. Use a wet cloth and a neutral, mildly alkaline cleaning agent to remove stains on the housing and/ or on the output flange.
3. Dry the cleaned areas.
4. Remove all equipment from the product.
5. Restore the readiness for operation of the product.

15 Maintenance

15.1 Maintenance plan

When	Activity
At least once per year	<ul style="list-style-type: none"> ▪ Clean all surfaces of the product, see chapter 14.1
	<ul style="list-style-type: none"> ▪ Verify all screw connections of the product for correct tightening torque
	<ul style="list-style-type: none"> ▪ Verify correct connection of all plug connections
At least every 2 million cycles or once per year	<ul style="list-style-type: none"> ▪ Inspect the toothed belt, see chapter 15.4
If required	<ul style="list-style-type: none"> ▪ Replace the motor, see chapter 15.3
	<ul style="list-style-type: none"> ▪ Replace the toothed belt, see chapter 15.4
	<ul style="list-style-type: none"> ▪ Replace the additional encoder, see chapter 15.5

15.2 Lubricant

The product features lifetime lubrication.

Refer to the safety datasheet of the manufacturer for information on the lubricants used; see applicable documents.

15.3 Replacing the motor



⚠ DANGER

ELECTRIC SHOCK CAUSED BY LIVE PARTS

Failure to follow these instructions will result in death or serious injury.

- Disconnect the mains supply voltage before performing the work and ensure that it cannot be switched on.
- Verify that no hazards can be caused by electrically conductive objects.
- Verify that all cables for the power supply are disconnected from power.

**⚠ WARNING****UNANTICIPATED MOVEMENT OF THE OUTPUT FLANGE IN CASE OF VERTICAL MOUNTING POSITION**

In the case of vertical installation of the product (horizontal axis of rotation), the output flange can move due to forces of gravity or the load when the holding brake is released or when the drive and the output flange are decoupled.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Block or safeguard the output flange ring in such a way that a movement of the output flange is safely prevented before releasing the holding brake or decoupling the drive and the output flange.

**⚠ WARNING****MISSING PROTECTIVE EQUIPMENT**

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Immediately reinstall protective equipment that you may have removed to perform maintenance work after having completed the maintenance work and verify the effectiveness of the protective equipment.

**⚠ WARNING****MOVING PARTS**

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Verify that the zone of operation of the moving parts of the product/machine is safeguarded.

**⚠ WARNING****FALLING PARTS**

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Secure the motor so it cannot fall down before loosening the screws.

**⚠ WARNING****HOT SURFACES**

The temperature of the motor and the holding brake can exceed 100 °C during operation.

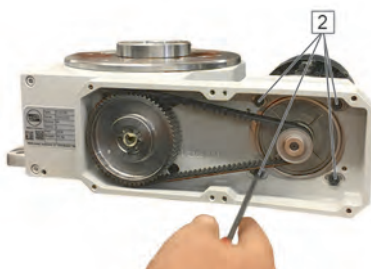
Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive objects in the vicinity of hot surfaces.
- Before performing work on the motor or the holding brake, verify that you wait for a sufficient period of time to allow such parts to cool down to a temperature that allows for safe contact.

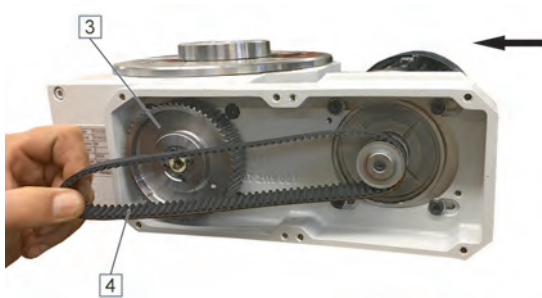
Dismounting the motor



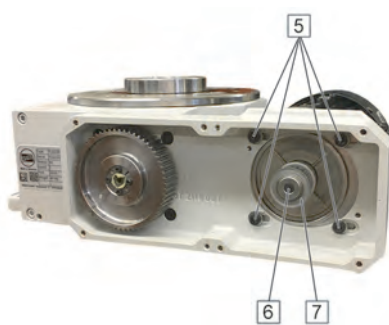
1. Unplug the connector from the motor.
2. Remove the cover [1] by removing the screws.



3. Loosen the four screws [2] of the motor flange.



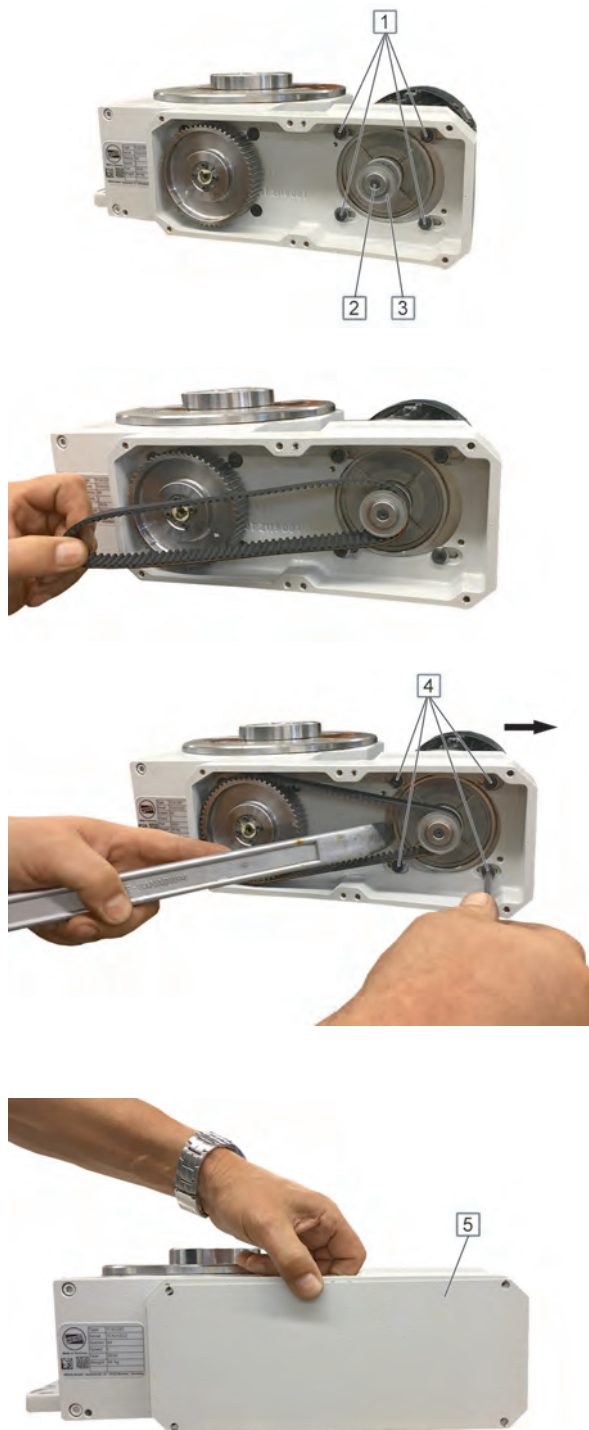
4. Slacken the toothed belt [4] by moving the motor in the motor in the elongated holes.
5. To remove the toothed belt [4], start by pulling the toothed belt off of the toothed belt pulley (gear) [3].



If the size of the toothed belt pulley (motor) [7] is greater than the opening in the drive housing, the toothed belt pulley (motor) [7] must be dismantled.

6. Remove the screw of the pulley [6].
7. Pull the toothed belt pulley (motor) [7] off of the motor shaft.
8. Loosen the four screws [5] of the motor flange.
9. Remove the motor.

Mounting the motor



1. Fit the new motor.
2. Slightly tighten the four screws [1] of the motor flange.
3. Grease the motor shaft.
4. Push the toothed belt pulley (motor) [3] onto the motor shaft all the way to the stop. If you encounter resistance, use a plastic hammer.
5. Fit the disk [2] onto the toothed belt pulley (motor) [3] and fasten it with the screw.
6. First, fit the toothed belt around the toothed belt pulley (motor).
7. Mount the toothed belt.
8. Tension the toothed belt to the correct belt tension by moving the motor in the elongated holes and tighten the four screws [4] of the motor flange.
 - ✓ The toothed belt is correctly tensioned if it can be manually twisted by - depending on the length of the toothed belt - 45° to 90° along the longitudinal axis in the center between the two pulleys.
 - ✓ Contact WEISS GmbH if you need the frequency for adjusting the toothed belt with a belt tension meter.
9. Mount the cover [5] by means of the screws.
10. Reconnect the motor and the holding brake.
11. Remove all tools and equipment.
12. Perform a test run.

15.4 Replacing the toothed belt



⚠ DANGER

ELECTRIC SHOCK CAUSED BY LIVE PARTS

Failure to follow these instructions will result in death or serious injury.

- Disconnect the mains supply voltage before performing the work and ensure that it cannot be switched on.
- Verify that no hazards can be caused by electrically conductive objects.
- Verify that all cables for the power supply are disconnected from power.



⚠ WARNING

UNANTICIPATED MOVEMENT OF THE OUTPUT FLANGE IN CASE OF VERTICAL MOUNTING POSITION

In the case of vertical installation of the product (horizontal axis of rotation), the output flange can move due to forces of gravity or the load when the holding brake is released or when the drive and the output flange are decoupled.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Block or safeguard the output flange ring in such a way that a movement of the output flange is safely prevented before releasing the holding brake or decoupling the drive and the output flange.



⚠ WARNING

MISSING PROTECTIVE EQUIPMENT

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Immediately reinstall protective equipment that you may have removed to perform maintenance work after having completed the maintenance work and verify the effectiveness of the protective equipment.



⚠ WARNING

MOVING PARTS

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Verify that the zone of operation of the moving parts of the product/machine is safeguarded.



⚠ WARNING

FALLING PARTS

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Secure the motor so it cannot fall down before loosening the screws.


▲ WARNING
HOT SURFACES

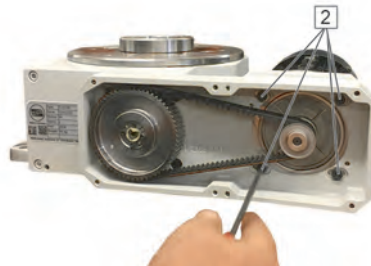
The temperature of the motor and the holding brake can exceed 100 °C during operation.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

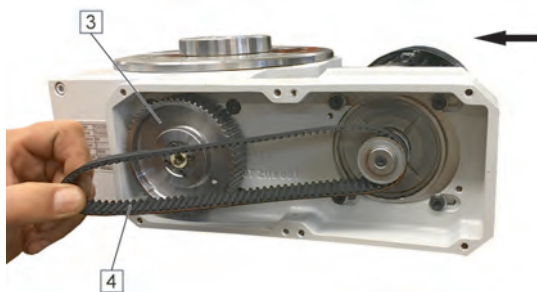
- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive objects in the vicinity of hot surfaces.
- Before performing work on the motor or the holding brake, verify that you wait for a sufficient period of time to allow such parts to cool down to a temperature that allows for safe contact.

Dismounting the toothed belt


1. Unplug the connector from the motor.
2. Remove the cover [1] by removing the screws.

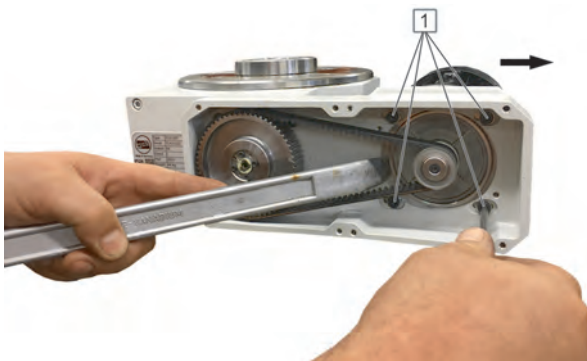
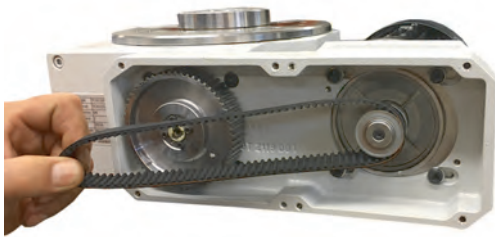


3. Loosen the four screws [2] of the motor flange.



4. Slacken the toothed belt [4] by moving the motor in the motor in the elongated holes.
5. To remove the toothed belt [4], start by pulling the toothed belt off of the toothed belt pulley (gear) [3].

Mounting the toothed belt



1. First, fit the new toothed belt around the toothed belt pulley (motor).
2. Mount the toothed belt.
3. Tension the toothed belt to the correct belt tension by moving the motor in the elongated holes and tighten the four screws [1] of the motor flange.
 - ✓ The toothed belt is correctly tensioned if it can be manually twisted by - depending on the length of the toothed belt - 45° to 90° along the longitudinal axis in the center between the two pulleys.
 - ✓ Contact WEISS GmbH if you need the frequency for adjusting the toothed belt with a belt tension meter.
4. Mount the cover [2] by means of the screws.
5. Reconnect the motor and the holding brake (see operating instructions of the motor manufacturer).
6. Remove all tools and equipment.
7. Perform a test run.

15.5 Replacing the additional encoder



⚠ WARNING

MOVING PARTS

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Verify that the zone of operation of the moving parts of the product/machine is safeguarded.

**⚠ WARNING****UNANTICIPATED MOVEMENT OF THE OUTPUT FLANGE IN CASE OF VERTICAL MOUNTING POSITION**

In the case of vertical installation of the product (horizontal axis of rotation), the output flange can move due to forces of gravity or the load when the holding brake is released or when the drive and the output flange are decoupled.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Block or safeguard the output flange ring in such a way that a movement of the output flange is safely prevented before releasing the holding brake or decoupling the drive and the output flange.

**⚠ WARNING****HOT SURFACES**

The temperature of the motor and the holding brake can exceed 100 °C during operation.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive objects in the vicinity of hot surfaces.
- Before performing work on the motor or the holding brake, verify that you wait for a sufficient period of time to allow such parts to cool down to a temperature that allows for safe contact.

**⚠ WARNING****MISSING PROTECTIVE EQUIPMENT**

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Immediately reinstall protective equipment that you may have removed to perform maintenance work after having completed the maintenance work and verify the effectiveness of the protective equipment.

Dismounting the additional encoder



1. Rotate the output flange/rotary plate via the controller in operating mode Jog until the screw of the coupling of the encoder is visible.
2. Loosen the first screw (wrench size 2) of the coupling of the encoder.
3. Rotate the output flange/rotary plate via the controller in operating mode Jog until the second screw of the coupling of the encoder is visible.
4. Disconnect the mains supply voltage and ensure that it cannot be switched on.
5. Loosen the second screw (wrench size 2) of the coupling of the encoder.
6. Disconnect the encoder cable from the encoder connector.



7. Loosen the three screws (wrench size 2.5) at the flange of the encoder.
8. Pull the encoder out of the flange.



9. Measure the distance between the end of the coupling and the encoder flange and record the measured value.



10. Loosen the two screws (wrench size 2) offset by 90° at the coupling part of the encoder.





11. Remove the coupling from the encoder shaft.

Mounting the additional encoder

It is advisable to install a new coupling when the encoder is replaced.



1. Push the coupling onto the encoder shaft.
2. Consult the previously measured distance value and push the coupling to this position.



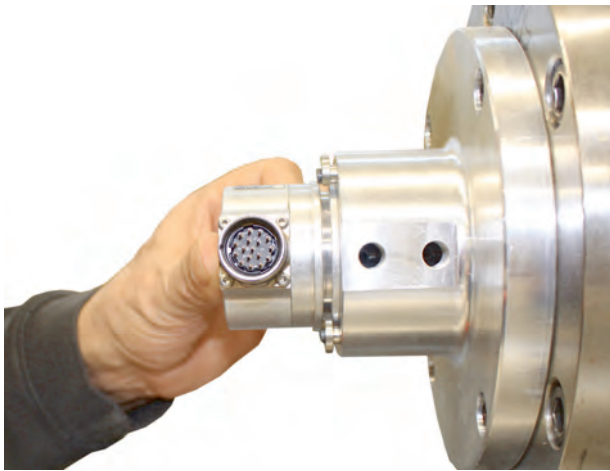


3. Tighten the two screws offset by 90° at the encoder end of the coupling with a tightening torque of 1.2 Nm.





4. Insert the encoder into the flange.
 5. Verify that both screws of the coupling point towards the holes at the flange.
- ✓ It must be possible to insert the encoder into the flange without applying force.



6. Tighten the right screw (wrench size 2) with a tightening torque of 1.2 Nm.



7. Tighten the three screws (wrench size 2.5) at the flange of the encoder.



8. Connect the encoder cable to the encoder.



9. Apply mains voltage.
10. Set the zero point.
11. Rotate the output flange/rotary plate via the controller in operating mode Jog until the second screw of the coupling of the encoder is visible.
12. Disconnect the mains supply voltage and ensure that it cannot be switched on.
13. Tighten the screw offset by 90° at the coupling with a tightening torque of 1.2 Nm.
14. Remove all tools and equipment.
15. Apply mains voltage.

16 Decommissioning

16.1 Decommissioning the product

1. Switch off the product and secure it against unintended switching on.
2. Remove all workpieces and all other objects not belonging to the product from the product.
3. In the case of recommissioning, follow the instructions described, [see chapter 11](#).

17 Dismounting

17.1 Dismounting the product



⚠ WARNING

FALLING, TOPPLING, OR LOWERING LOADS

Insufficiently rated load lifting and handling equipment may break. Transportation vehicles, lifting gear, chains, belts, and other equipment not rated for the product may fail or tilt.

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Only use transportation vehicles, lifting gear, chains, belts, and other lifting and handling equipment that comply with all applicable regulations and that are rated for the weight of the product including packaging.
- Verify that there are no persons in the danger zone.
- Verify that the product is properly secured against falling and toppling.

1. Switch off the supply voltage.
2. Dismount the product (reverse sequence of steps), [see chapter 8](#).

18 Disposal

18.1 Disposing of the product

Dispose of the product in compliance with all applicable directives, standards, and safety regulations.

Environmental protection

Dispose of lubricants, greases, residue of cleaning agents and other non-recyclable materials according to the applicable directives, standards, and safety regulations.

19 Service and spare parts

19.1 Worldwide service

If you need the assistance of our service departments, please provide the following information:

- Serial number of the product (see nameplate)
- Description of the problem
- Time of occurrence and circumstances of the problem
- Suspected cause

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19.2 Ordering spare parts



⚠ WARNING

UNSUITABLE SPARE PARTS AND ACCESSORIES

Failure to follow these instructions can result in death, serious injury, and equipment damage.

- Only use spare parts and accessories which are approved by the manufacturer.

Please provide the following information when ordering spare parts:

- Serial number of the product (see nameplate)
- Part number of the spare part according to spare parts list
- Quantity of spare parts required



**INSPIRING PEOPLE
GREAT SOLUTIONS**

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