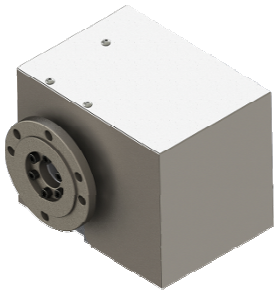
Rotary Axis 5M-6-100A

1. contents:



2. general information:

The rotary axis is suitable for enabling an angularly accurate rotary movement. This can, for example, add a fourth axis to a CNC machine with the aid of a stepper motor driver.

The rotary axis provides a rotational movement and positioning for machining workpieces that can be clamped in suitable clamping devices on machines with grooved plates (for assembly). As a basic system, it can be flexibly extended using suitable accessories.

The rotary axis has a mounting disk to which Ø 100 mm jaw chucks can be attached.

In these operating instructions, you will find the electrical and mechanical data as well as instructions for operating the rotary axis.

It is essential that you read the safety instructions in this document before putting the rotary axis into operation, working with it or making additions or changes to the electrical system of the rotary axis.

3. safety instructions:

Ignoring the following points can result in accidents and injuries:

- Read these instructions carefully before use and keep for future reference. If anything is unclear, ask the supplier and/or a specialist for advice.
- Ensure that the rotary axis can only be used by qualified or instructed persons. Children must be excluded.
- The rotary axis may only be used if the machine used is approved for this purpose and offers the required safety functions. This also applies to the accessory components.
- If the rotary axis malfunctions or is damaged, switch it off immediately and stop using it
- Only use suitable accessories; we recommend the accessories listed in these instructions.
- Only operate the rotary axis with the protective cover fitted
- Ensure proper access protection in automatic mode
- The rotary axis is not intended for operation in a damp environment. Observe the IP protection class.
- Do not reach into/on the rotating rotary axis.
- Personal protective equipment Wear safety goggles and a protective hairnet.

Pictographs			
			
Work to be carried out by qualified personnel only	Read the data and instructions carefully before using the device for the first time	Danger of being drawn in. Do not reach into the running machine!	Attention! Important information!

4. technical data:

a. components

Basic system (included in the scope of delivery):

- Rotary axis with mechanical reference switch and protective cover

Additional components (not included in the scope of delivery):

- Shielded connection cable, 7 × 0.5 mm² with 2.5 m length. Optionally with 7-pin round plug or with D-SUB-9 plug

RARC-60V:

D-SUB-9:

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- 3- or 4-jaw chuck including inner and outer jaws and matching square wrench

3-jaw chuck:

4-jaw chuck:

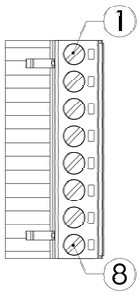
- Tailstock FWD-65M:

- Stepper motor driver:

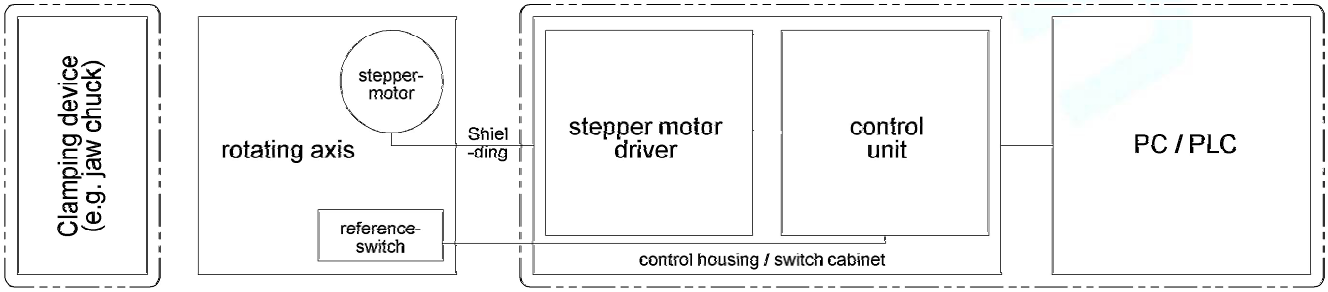
e.g. Mecheltron DM556M:

b. operational data:

rotary axis					
rpm in automatic mode (operational limit)			90	rpm	
rpm in setup mode (operational limit)			10	rpm	
chuck size			100	mm	
minimum rotation angle increment			0.3 (in full-step-mode)	°	
IP protection class with protective cover installed			20		
stepper motor 57BYGH250E-BRD			**micro switch DV16-A05-KK1-100E-000**		
number of phases:		2	connections:		NO, NC, COM
rated voltage:	(VDC)	4.2	maximum voltage:	(VDC)	60
rated current:	(A)	3.0	rated current:	(A)	2
resistance:	(Ω)	1.4			
inductivity:	(mH)	3.5			
maximum voltage:	(VDC)	60			
For detailed data, please refer to the stepper motor data sheet			For detailed data, please refer to the microswitch data sheet		
8-pole connecting terminal					
cable cross section:	(mm²)	0.5 – 2.5			
rated voltage:	(VAC)	60			
rated current:	(A)	4			

pin-assignment 8-pin connection terminal							
input			terminal		Cable	RA-RC-7	RA-DSUB-9
	color	signal		No.	wire color	Pin	Pin
motor-connections	RE (red)	A+		1	WH (white)	1	4
	GN (green)	A-		2	BN (brown)	2	3
	YE (yellow)	B+		3	GN (green)	3	2
	BU (blue)	B-		4	YE (yellow)	4	1
micro switch	BN (brown)	COM		5	GY (grey)	5	9
	BU (blue)	NC		6	PK (pink)	6	5
	BK (black)	NO		7	BU (blue)	7	6
shrink tube		shielding		8	shielding	housing	housing

c. connection diagram



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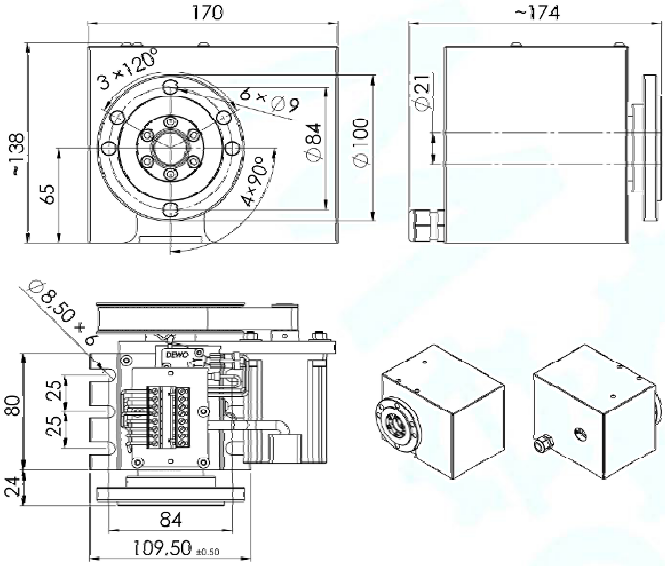
d. mechanical dimensions



-The Ø 9mm holes are divided into 3 × 120° for a 3- jaw chuck and 4 × 90° for a 4-jaw chuck.

-Ø 84 denotes the pitch circle diameter.

-Tip height is 65 mm

-Ratio of stepper motor to mounting disk is 1:6

-max. permissible speed is 90 rpm

-clearance in spindle and cover Ø 21 mm

5. Installation instructions

- Attach the rotary axis to a suitable clamping table. The rotary axis must not be operated unattached!
- Loosen the strain relief nut on the protective cover and slide it onto the cable.
- Push the wires of the cable through the cable gland. Leave the nut loose on the cable.
- Connect the wires as described in point 4.b.
- Lay the connection cable between the axis housing and the stepper motor and secure it with the pre-assembled cable clamp.
- Place the protective cover on the rotary axis and pull the cable through the cable gland to eliminate excess cable inside the protective cover. Do not place the cable under tension.
- Then tighten the union nut to ensure strain relief.
- When dismantling, make sure that the nut is loosened again BEFORE removing the protective cover so that the cable has enough length inside the protective cover to be able to detach it without tension.
- Fasten the protective cover with the screws provided.

6. commissioning

Only put the rotary axis into operation if the following points are fulfilled:

- Safety instructions have been read and understood
- There is no visible damage.
- The rotary axis is firmly mounted as described in 5. and the protective cover is installed.
- You have wired/connected the rotary axis correctly in accordance with the operating instructions for your control system/control cabinet.
- All technical data are limited according to the restrictions listed in this document (e.g. max. rpm etc.)

As there is a wide range of options for controlling the 5M-6-100A rotary axis, please observe the operating instructions for your control system.

7. maintenance instructions

- The rotary axis, including the axle bushes, is largely maintenance-free and has no wear parts worth mentioning apart from the toothed belt. Keeping it clean and a visual inspection after prolonged use is sufficient.
- Check the tension of the toothed belt regularly. The tension can be restored by loosening the 4 screws on the stepper motor and moving the motor until the tension is sufficient again. The 4 screws must then be tightened again.
- Check that the wiring is tight and retighten if necessary.
- Regularly check the mounting strength on the clamping table and the attached additional equipment (e.g. jaw chuck).

Maintenance intervals:

- Daily or before each start of work: Reference check before use.
- Weekly: Visual inspection for damage, loose parts.
- Monthly: Check the tension of the toothed belt.

8. declaration of conformity - extract

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Deutsche Originalausgabe

EU-Konformitätserklärung
EC-Declaration of Conformity

Die Firma
The company

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erklärt, dass das Produkt
declares that the product

Drehachse
rotary axis
5M-6-100A

auf das sich diese Erklärung bezieht, mit den wesentlichen Schutzanforderungen folgender Richtlinie(n) übereinstimmt:
is in conformity with the following standards or other normative documents:

2006/42/EG (ABl. L 157 vom 9. Juni 2006, S. 24–86) **(Maschinenrichtlinie/machine directive)**

- EN ISO 12100:2013 Safety of machinery - General principles for design - Risk assessment and risk reduction
- EN 60204-1: 2019 Safety of machinery – Electrical equipment of machines – Part 1: General requirements

2011/65/EU (ABl. L 174/88 S. 1.7.2011) **(RoHS)**
VO (EU) 2015/863 L 137/10 4.6.2015

- EN IEC 63000:2018

Rheinmünster, den 20.12.2023

Alexander Ludwig
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Managing Director

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