

VDWB-M Variable angle of rotation limiter

for ...Max actuators – size M

Subject to change!

Description

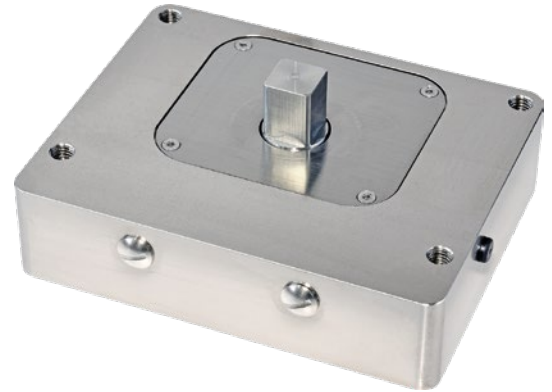
The VDWB-M is an angle of rotation limiter and an adapter for industrial valves with ISO flanges F05, F07 and F10 in acc. with EN ISO 5211 at the same time.

Depending on the application you have several type-specific options to limit the actuator's 95° angle of rotation:

- The angle of rotation of the actuator is limited to 90° instead of 95°, this means the hollow shaft starts to turn from end position 0° (factory setting of VDWB-M).
- The angle of rotation can be adjusted to any value between 0° and 95°.
- The range of rotation is variably adjustable, i.e. the end positions can individually be adjusted.

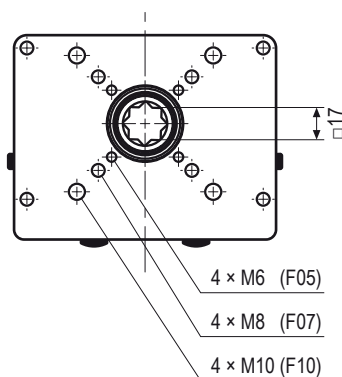
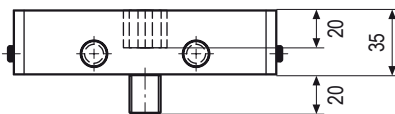
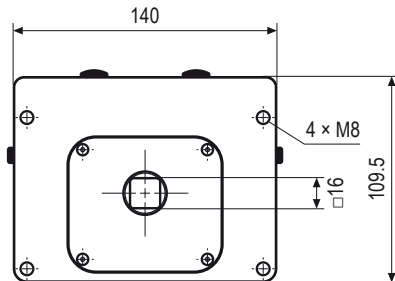
Definitions

1. Angle of rotation
The actuator's angle of rotation denotes the maximum rotary distance of the hollow shaft from end position to end position (blockade position).
2. Range of rotation
The actuator's range of rotation denotes the location of the blockade positions between which the hollow shaft rotates.
3. cw, ccw
cw : clockwise.
ccw: counterclockwise.



Dimensions

Dimensioning in mm



Attention

Ensure ingress protection!

- Make sure to put the provided 2 sealing plugs and 2 sealing screws back in to maintain the IP rating.

Factory setting:

1. Angle of rotation: 90°
2. Adjustment screws ① and ②: 0° position

Technical specification

Adaption for ISO flanges	F05, F07, F10 in acc. with EN ISO 5211
Ambients	-40...+60 °C
Material	Stainless steel, parts nickel-plated
Dimensions (L x W x H)	140 x 110 x 35 mm (without coupling)
Weight	~ 1.6 kg (3.5 lbs)
Scope of delivery	VDWB-M, 2 Allen keys (2 mm, 5 mm)

Marking

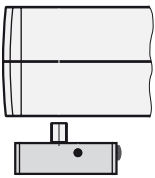
Enclosure protection	IP66, IP67 in acc. with EN 60529
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Mounting options

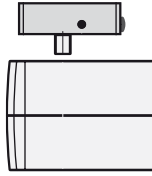
► Determine the arrangement of the components for your application.

Mounting option 1

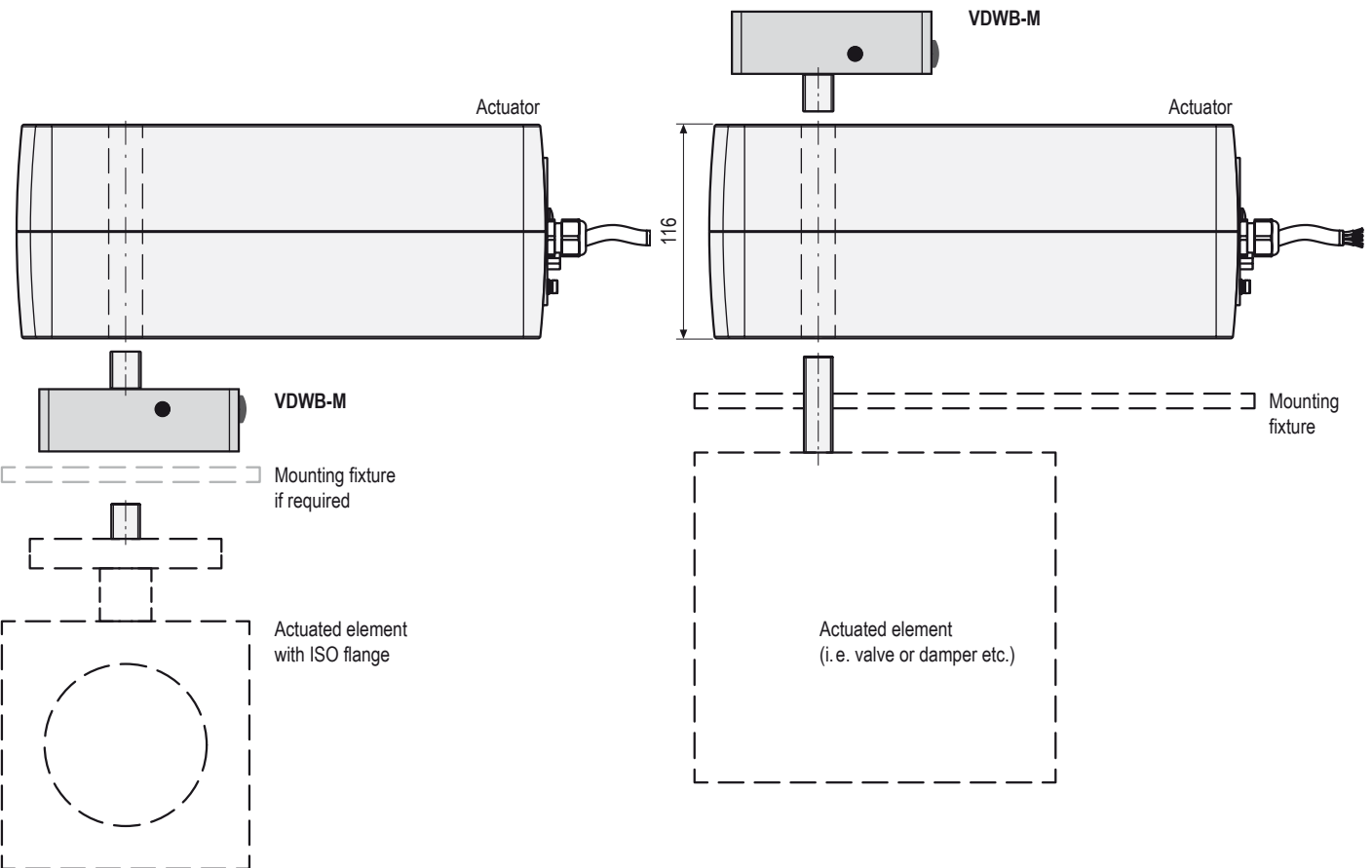


VDWB-M is mounted between actuator and actuated element.
Furthermore the VDWB-M can be used at the same time as an adaption for ISO flange armatures, e.g. typically for valve applications.

Mounting option 2



The actuator is mounted between VDWB-M and actuated element.
For this arrangement a mounting fixture is necessary to mount the actuator to the actuating element, e.g. damper or valve.



Direction of rotation

...Max actuators are built in an axially symmetrical manner, this means the hollow shaft's direction of rotation is determined by its mounting direction to the actuated element. Upon delivery, the position indicator is located in the hollow shaft's opening at the enclosure's top, on the type label is "Top" (Side R) visible. Being mounted to the actuating element in this manner, the actuator's hollow shaft is "left-turning" (ccw). The motor turns the hollow shaft counterclockwise.

When you turn over the actuator, "Bottom" (Side L) is visible on the type label. Mounted by this means, the actuator's hollow shaft is "right-turning" (cw). Mounting the actuator to an actuating element is described in the ①Extra information document.

► Read and adhere to the instructions in the actuator's documentation.

- Determine the actuator's direction of rotation for your application.
 - If your valve or damper is opened by turning its shaft clockwise then you should mount the actuator clockwise.
 - If your valve or damper is opened by turning its shaft counterclockwise then you should mount the actuator counterclockwise.

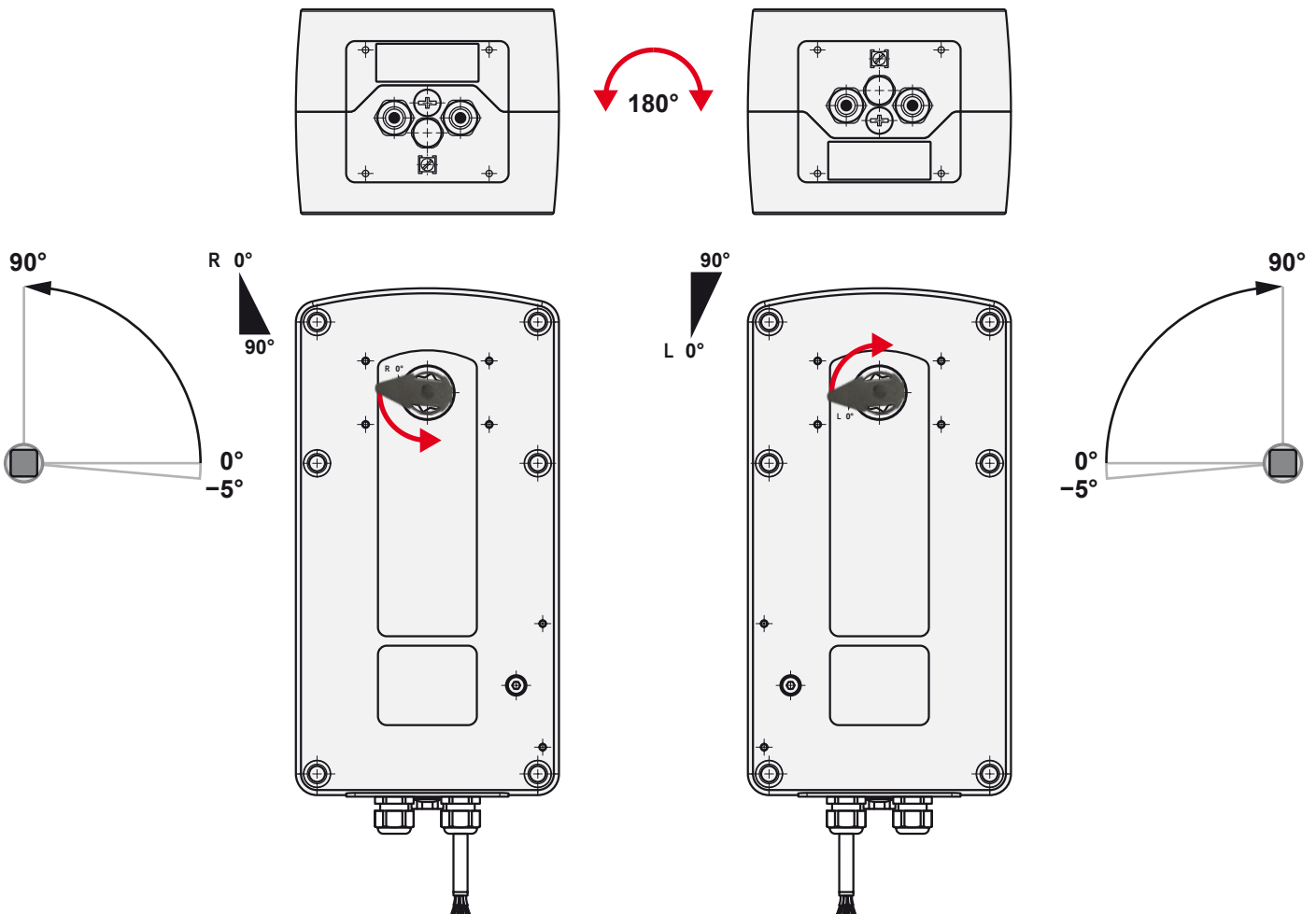
Ccw installed actuator

From the actuator's rest position the hollow shaft turns **counterclockwise**.

Cw installed actuator

From the the actuator's rest position the hollow shaft turns **clockwise**.

► Insert the position indicator in the hollow shaft.

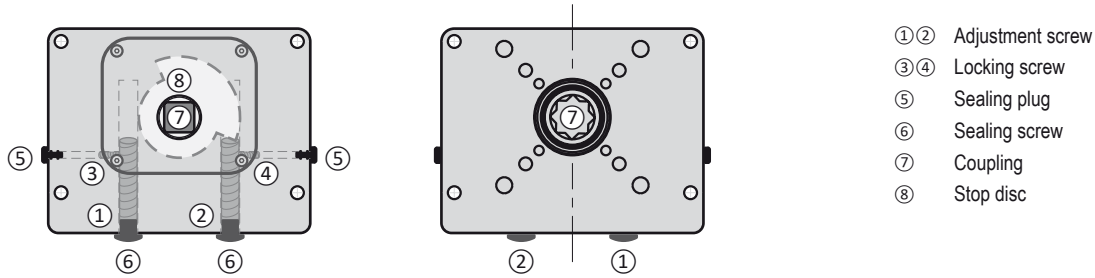


VDWB-M + Actuator	Angle of rotation		
	90°	≥ 45°	≤ 45°
▪ without spring return	•	•	•
▪ with 3 s spring return *	•	•	on request**
▪ with 20 s spring return	•	•	•

**Contact us at Schischek or your nearest Rotork office.

* ...F3 actuators are those which have the character string "F3" in the model code. When the VDWB-M is used with "F3" actuators the spring return cycle has to end at the -5°...0° position. Contact us for details.

Construction



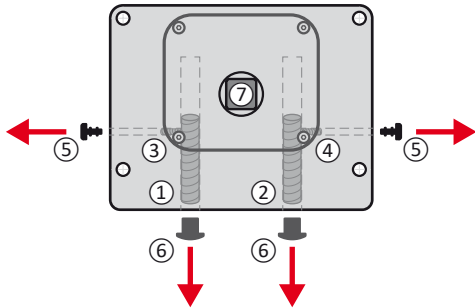
- ①② Adjustment screw
- ③④ Locking screw
- ⑤ Sealing plug
- ⑥ Sealing screw
- ⑦ Coupling
- ⑧ Stop disc

Preparing VDWB-M to vary the 90° angle of rotation

Note:
The following instructions assume that the VDWB-M is in the factory setting state.

Before adjusting the angle of rotation

- ▶ Make sure the adjustment screws ① and ② are set to 90° angle of rotation.
- ▶ Check the position of the adjustment screws:
Turn the coupling ⑦ all the way cw and ccw to the stop.
The coupling's outline ⑦ is in line with the VDWB-M, i.e. the sides are parallel.



Removing the sealing parts

- ▶ Unplug the sealing plugs ⑤ and unscrew the sealing screws ⑥.

Note:

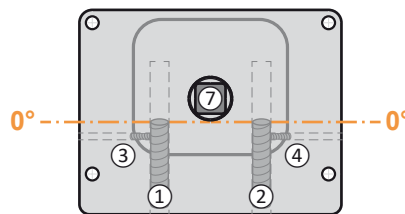
- The locking screws ③ and ④ and the adjustment screws ① and ② should only be loosened, not completely unscrewed.
- ▶ Loosen the locking screws ③ and ④ with the Allen key size 2.

The adjustment screws ① and ② can be adjusted with the Allen key size 5.

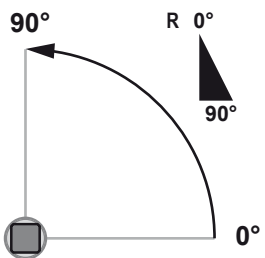
1. Angle of rotation 90°

Starting position:
Adjustment screws ①② 0° position,
fixed with ③ and ④
Coupling ⑦ horizontal (parallel to the 0° position)

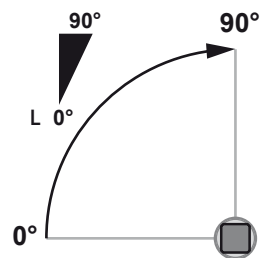
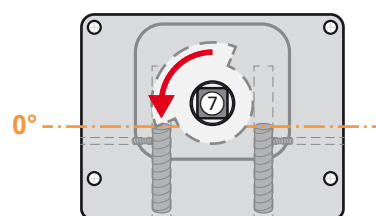
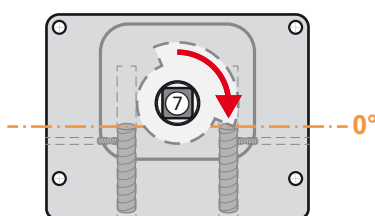
Factory setting



Ccw installed actuator



Cw installed actuator



▶ Rotate coupling ⑦ clockwise to the end stop.

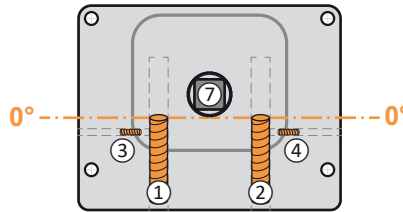
▶ Rotate coupling ⑦ counterclockwise to the end stop.

▶ Continue with section "Ensuring ingress protection".

2. Angle of rotation $\geq 45^\circ$

Prepared VDBW-M, starting position:

- Adjustment screws ① ② 0° position
- Coupling ⑦ horizontal (parallel to the 0° position)



2.1 Range of rotation 0...<90°

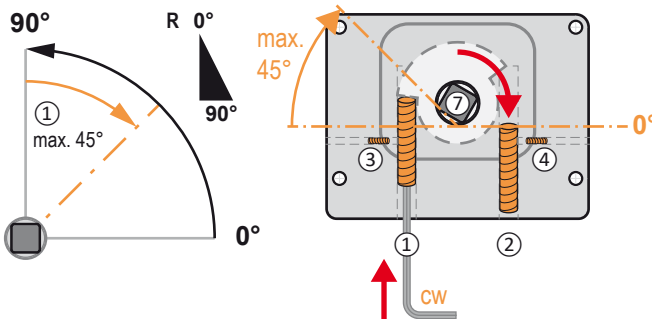
► Calculate the adjustment screws' turns for limiting the angle of rotation.

Example:

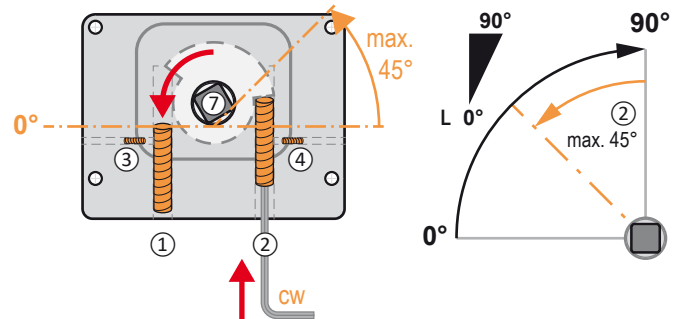
- Desired angle of rotation: 60°
- Limitation of angle of rotation = $90^\circ - 60^\circ = 30^\circ$
- Required turns (cw) = $30^\circ : 3^\circ = 10$ turns

Adjustment screw ①, ②:
1 turn $\approx 3^\circ$ angle of rotation

Ccw installed actuator

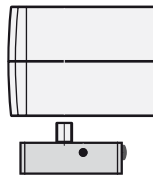


Cw installed actuator



Adjusting the angle of rotation

- Turn adjustment screw ① clockwise by the number calculated.
 - Fix the adjustment screws ① and ② with the locking screws ③ and ④.
 - Turn the coupling ⑦ clockwise all the way to the stop at adjustment screw ② (for the actuator's 0° end position).
- The coupling is aligned horizontally (parallel to the 0° position).

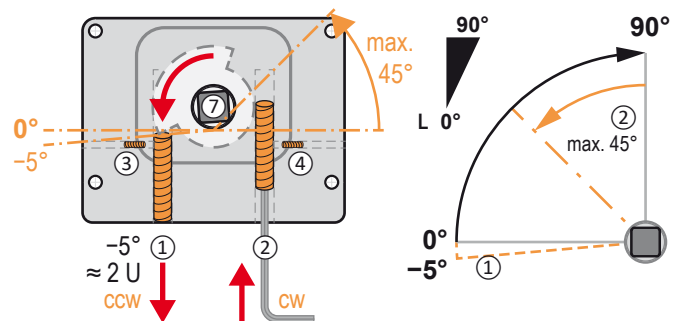
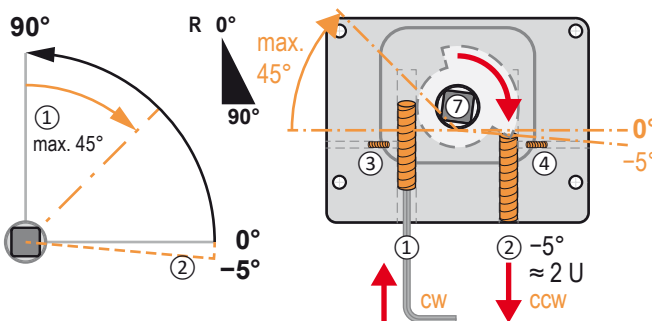


Adjusting the angle of rotation

- Turn adjustment screw ② clockwise by the number calculated.
 - Fix the adjustment screws ① and ② with the locking screws ③ and ④.
 - Turn the coupling ⑦ counterclockwise all the way to the stop at adjustment screw ① (for the actuator's 0° end position).
- The coupling is aligned horizontally (parallel to the 0° position).

► Continue with section "Ensuring ingress protection".

2.2 Range of rotation -5...<90°



Adjusting the angle of rotation with an additional angle of rotation of max. 5°

- Turn adjustment screw ① clockwise by the number calculated.
 - Turn adjustment screw ② counterclockwise approximately 2 turns.
 - Fix the adjustment screws ① and ② with the locking screws ③ and ④.
 - Turn the coupling ⑦ cw all the way to the stop at adjustment screw ②.
- The coupling is turned -5° off the horizontal position.

Adjusting the angle of rotation with an additional angle of rotation of max. 5°

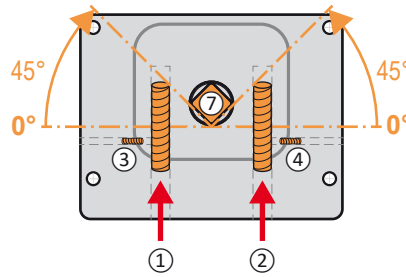
- Turn adjustment screw ② clockwise by the number calculated.
 - Turn adjustment screw ① counterclockwise approximately 2 turns.
 - Fix the adjustment screws ① and ② with the locking screws ③ and ④.
 - Turn the coupling ⑦ ccw all the way to the stop at adjustment screw ①.
- The coupling is turned -5° off the horizontal position.

► Continue with section "Ensuring ingress protection".

3. Angle of rotation ≤ 45°

Prepared VDBW-M, starting position:

- Adjustment screws ① ② 0° position
- Coupling ⑦ horizontal (parallel to the 0° position)
- ▶ Turn coupling ⑦ into the 45° position.
- ▶ Turn the adjustment screws ① and ② all the way in (approx. 15 turns).



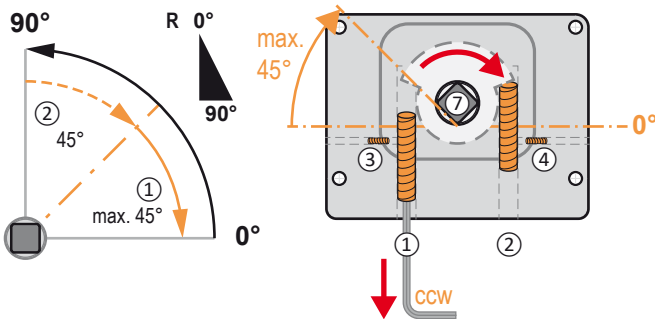
NOTICE:
Do not apply to ...F3 actuators with 3 s spring return.

- ▶ Calculate the adjustment screws' turns for limiting the angle of rotation.

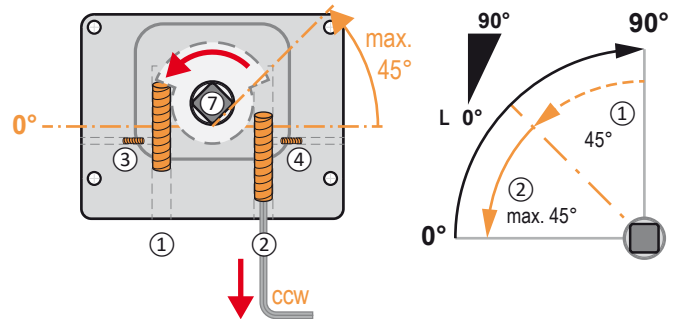
Example:
Desired angle of rotation: 30°
Required turns (ccw) = 30° : 3° = 10 turns

Adjustment screw ①, ②:
1 turn ≈ 3° angle of rotation

Ccw installed actuator

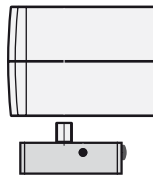


Cw installed actuator



Adjusting the angle of rotation

- ▶ Turn adjustment screw ① counterclockwise by the number calculated. The coupling is turned 45° off the horizontal position.
- ▶ Fix the adjustment screws ① and ② with the locking screws ③ and ④.

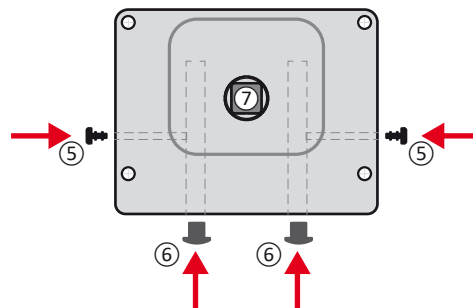


Adjusting the angle of rotation

- ▶ Turn adjustment screw ② counterclockwise by the number calculated. The coupling is turned 45° off the horizontal position.
- ▶ Fix the adjustment screws ① and ② with the locking screws ③ and ④.

▶ Continue with section "Ensuring ingress protection".

Ensuring ingress protection



▶ Close the openings with the provided sealing parts ⑤ and ⑥.

Mounting to actuator

Assembly work should only be conducted with the actuator disconnected from power.



CAUTION

Moveable parts can turn if the actuator is connected to a power source.

Risk of injury by moving parts.

- ▶ Disconnect the actuator from power.

NOTICE

External force applied to the hollow shaft may lead to mechanical damage of the actuator.

- ▶ Solely turn the hollow shaft via the socket for manual adjustment by means of a hexagonal mounting tool.

▪ **Actuators without spring return:**

Manual operation can appear to be stiff. The socket for the manual override may be subject to counteracting forces. Recommendation: For repeated use use the manual operator HV-MU instead of the delivered Allen key.

▪ **Actuators with spring return:**



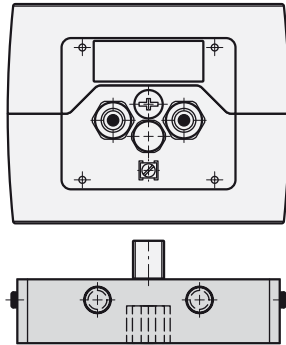
CAUTION

Expect significant forces acting on the socket of the manual operator. The Allen key rotates when the spring is not fully released.

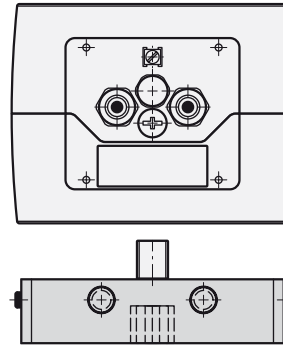
Risk of injury of hands.

- ▶ Use HV-MU instead of the Allen key when working with actuators with spring return.
- ▶ Read and follow the instructions accompanying the manual operator.

Ccw installed actuator



Cw installed actuator



Position the actuator

- ▶ Bring actuator and VDWB-M together so that the coupling ⑦ couples the shafts of both. VDWB and actuator will be 5° out of line due to the pretension of the actuator.
- ▶ Read and follow the instructions accompanying actuator and manual operator.

Adjustment of the angle of rotation

The angle of rotation can still be adjusted as described here after completion of the assembly.