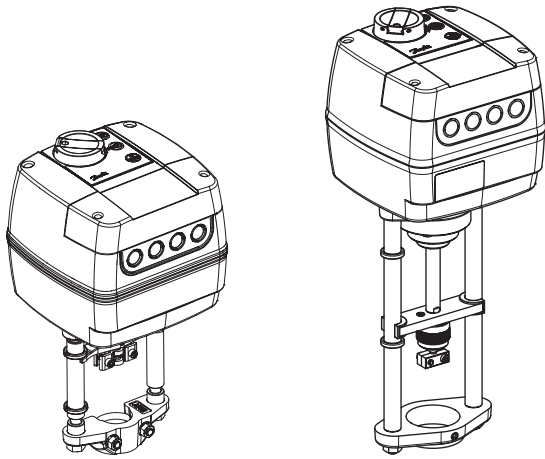
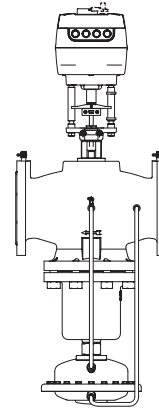


Operating Guide

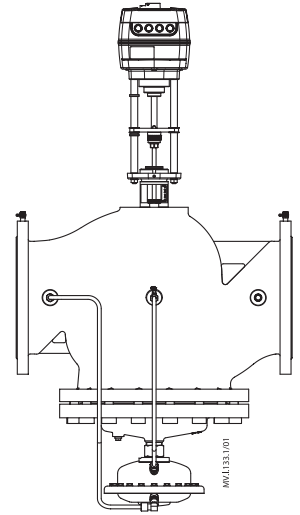
AME 655-1/658 SD-1/658 SU-1 & AME 685-1



| Actuator type | AME 655-1 | AME 658 SD-1 | AME 658 SU-1 | AME 685-1 |
|---------------|-------------|--------------|--------------|-------------|
| Stem Travel | 32 mm | | | 32 mm |
| Travel Speed | 2 or 6 s/mm | 4 or 6 s/mm | | 3 or 6 s/mm |



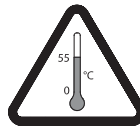
AME 655-1/658 SD-1/658 SU-1
(AB-QM 5" & 6" / 5" & 6" HF)



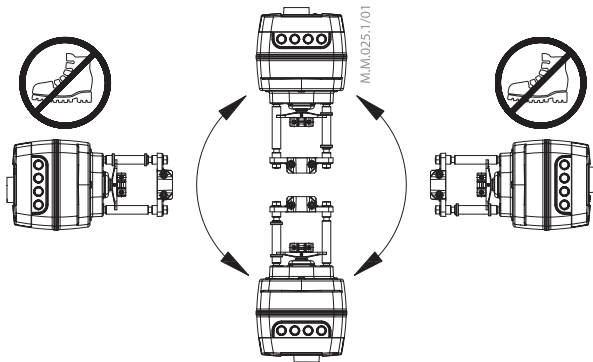
AME 685-1
(AB-QM 8"-10")



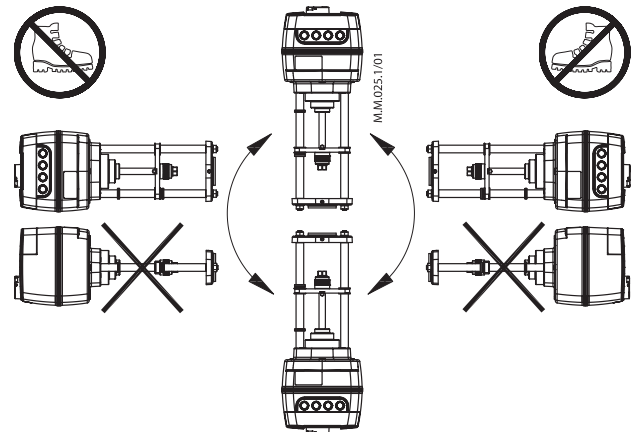
MAINTENANCE
FREE



5-95 % RH
no condensing



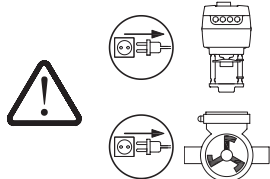
AME 655-1/658 SD-1/658 SU-1



AME 685-1

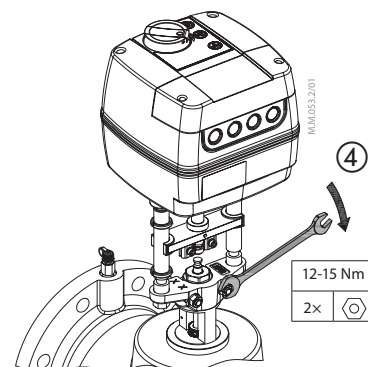
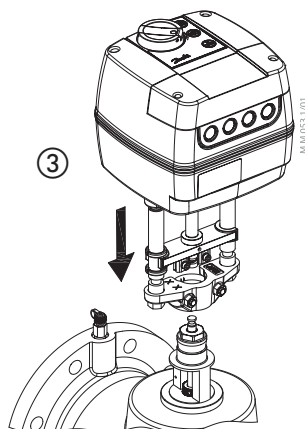
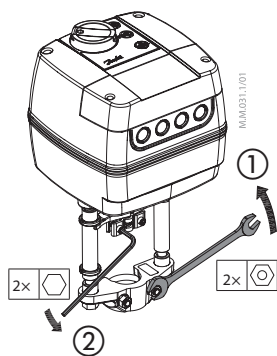
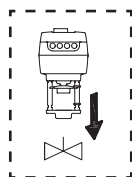
AME 655-1/658 SD-1/658 SU-1 & AME 685-1

1 AME 655-1/658 SD-1/658 SU-1

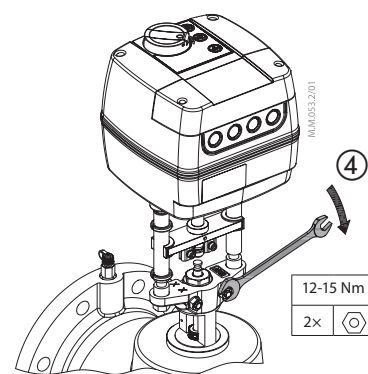
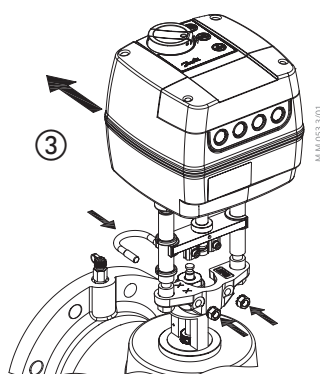
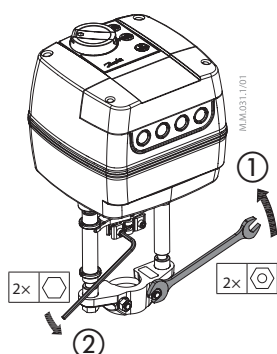
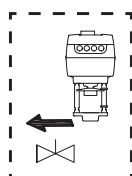


| | | | |
|--|--------|-------|------|
| | = AUTO | | |
| | = | 13 mm | 4 mm |

A



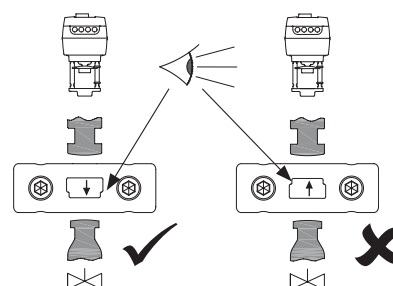
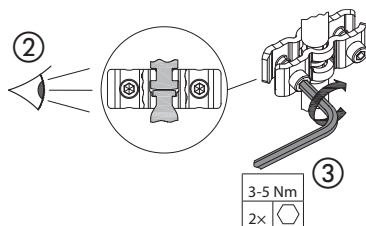
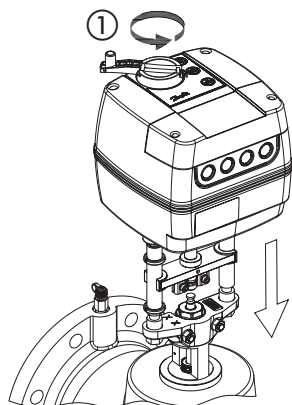
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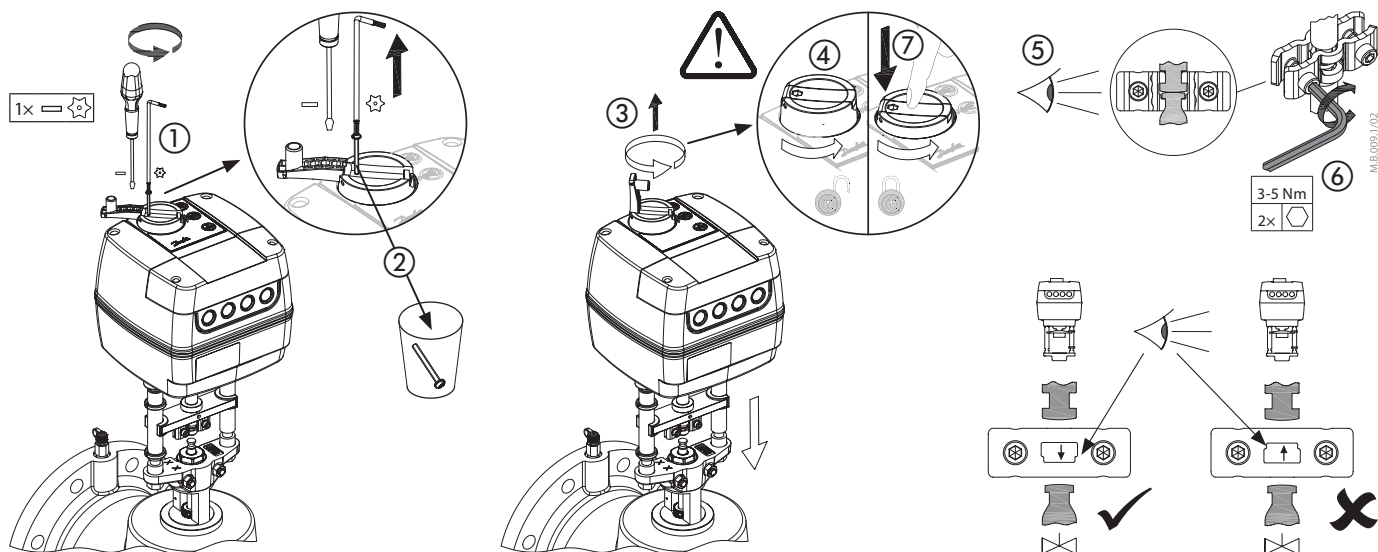
2

A AME 655-1

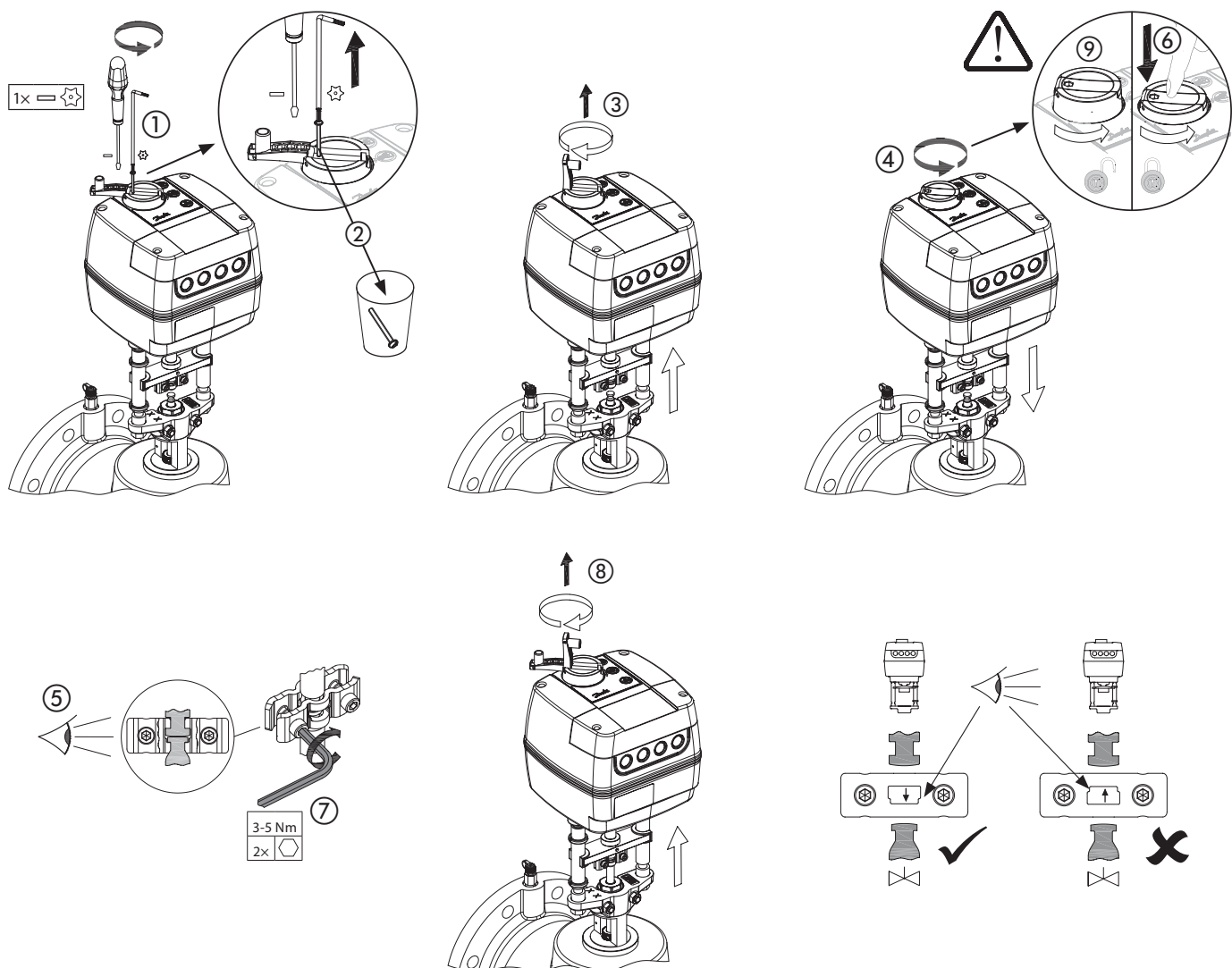
| | | | | |
|--|--------|-------------------------|------|------|
| | = AUTO | | | |
| | = | 3,5 - 4,5 mm x 0,7mm | 4 mm | T 10 |



B AME 658 SD-1

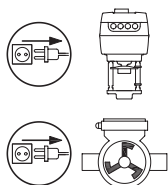


C AME 658 SU-1



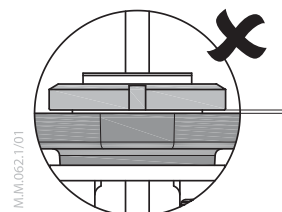
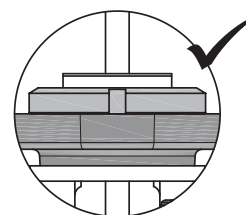
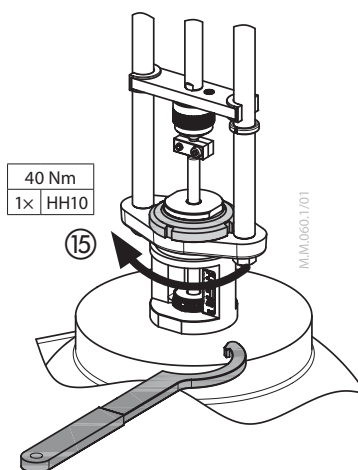
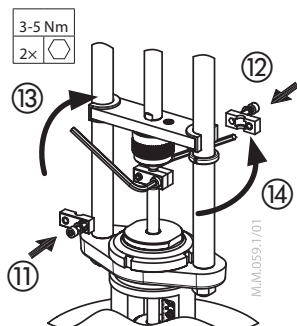
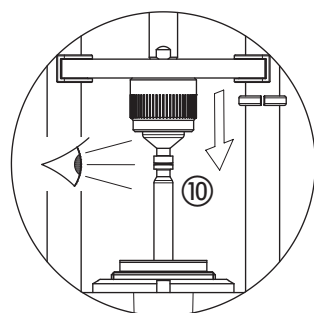
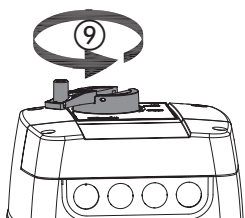
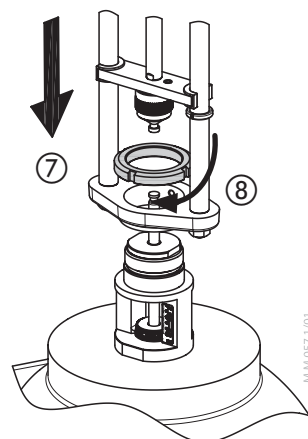
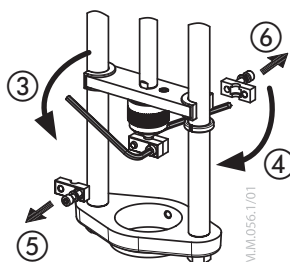
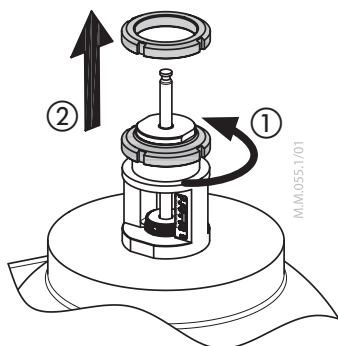
AME 655-1/658 SD-1/658 SU-1 & AME 685-1

3 AME 685-1

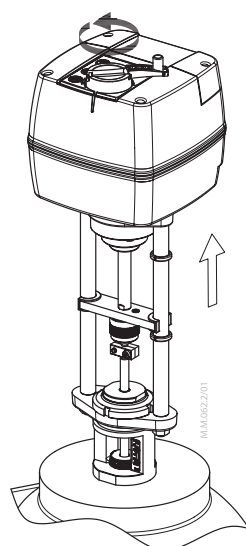
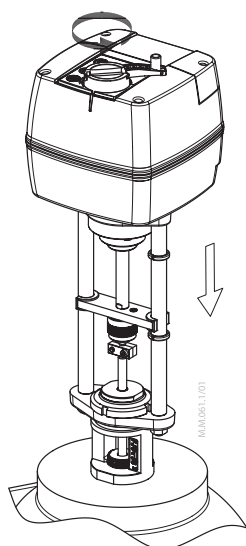


| | | |
|----------|-------|------|
| → = AUTO | | |
| → = | HN 10 | 5 mm |

A

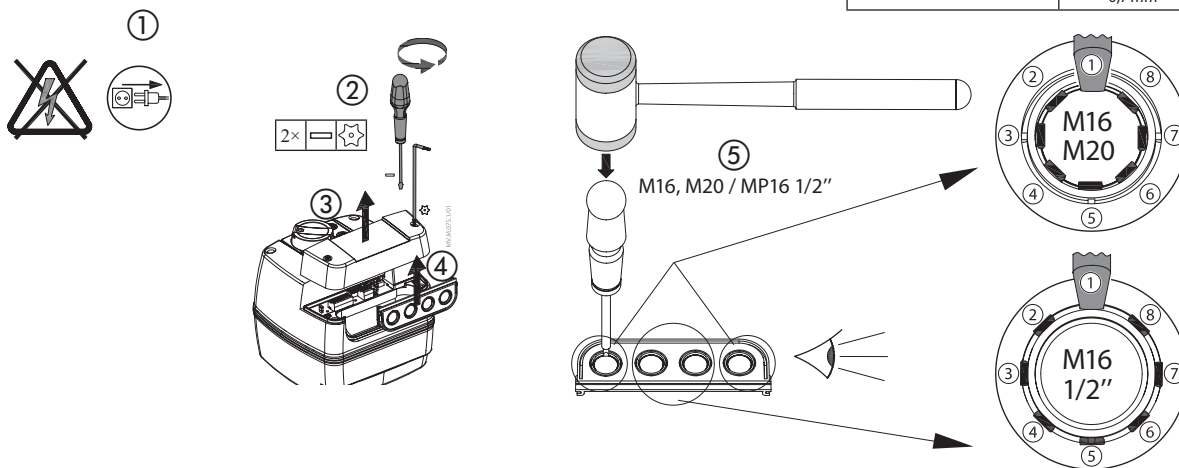


4 AME 685-1

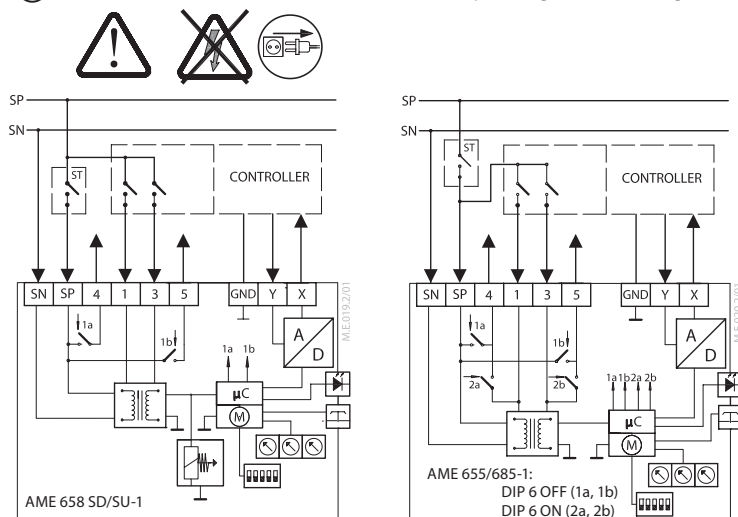


AME 655-1/658 SD-1/658 SU-1 & AME 685-1

5



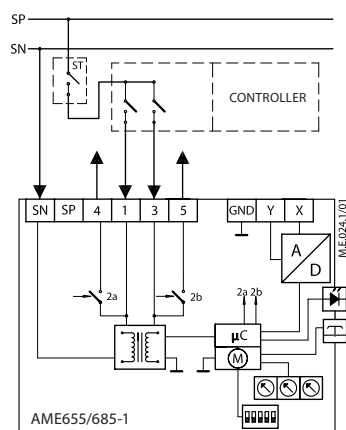
6 AME 655-1/658 SD-1/658 SU-1 & AME 685-1 operating as modulating version



7

| | | |
|------|-------------------------|-----------------------------------|
| SN | 0 V | Neutral |
| SP | 24 V AC/DC | Power supply |
| 4, 5 | SP (AC) | SP output -max 4 A -min 3 W |
| 1 | SP | Input |
| 3 | SP | Input |
| GND | 0 V | Neutral |
| Y | 0(2)-10 V 0(4)-20 mA | Input |
| X | 0(2)-10 V 0(4)-20 mA | Output |

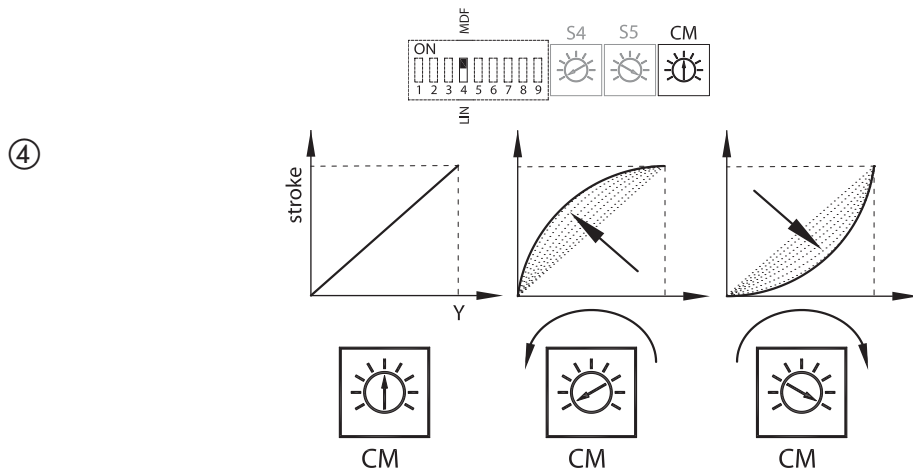
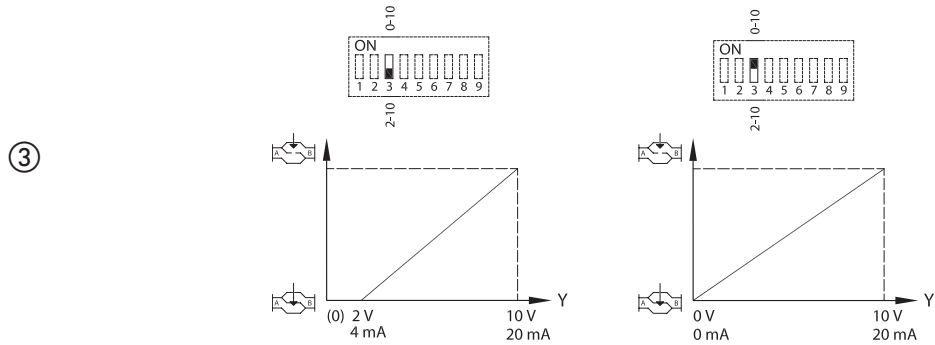
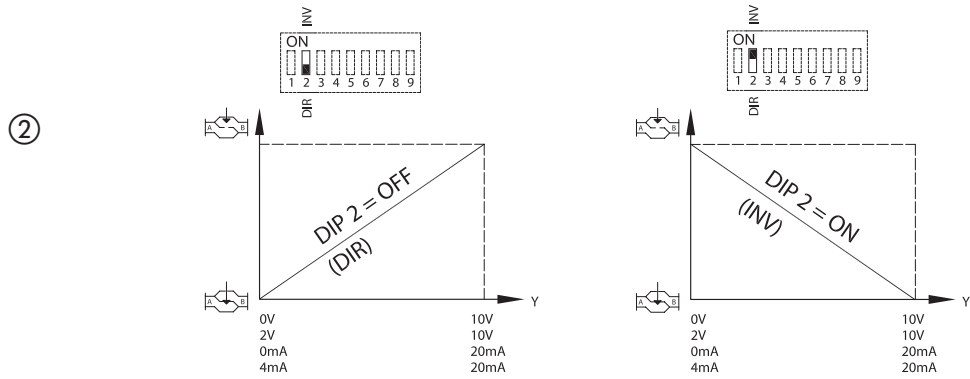
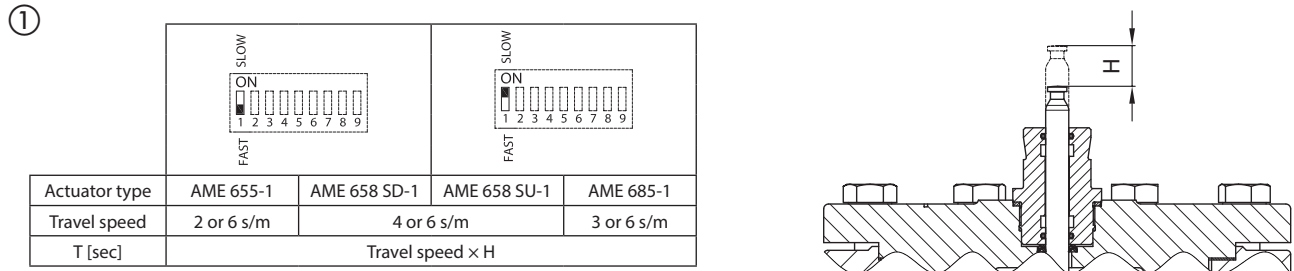
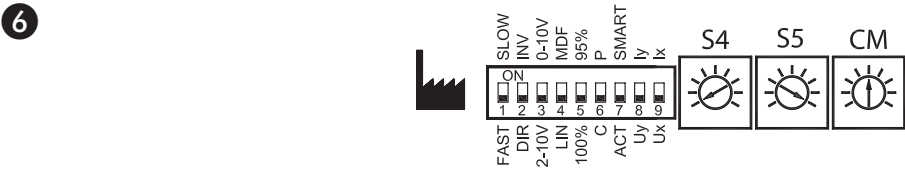
8 AME 655/685-1 operating as 3-point version



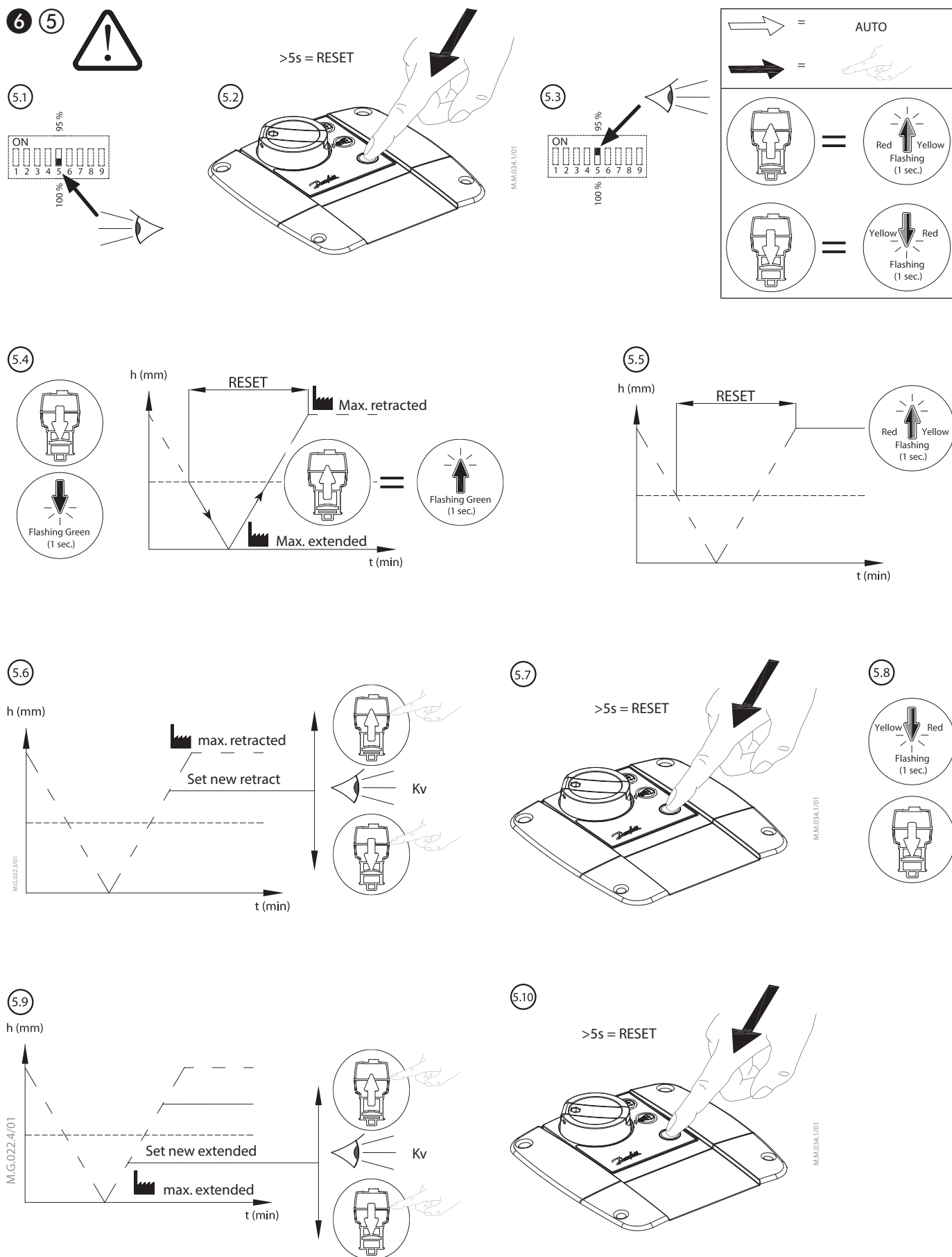
7

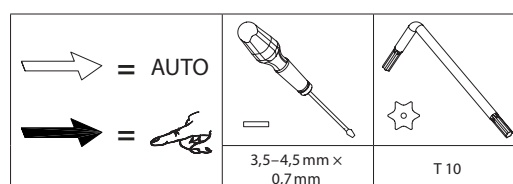
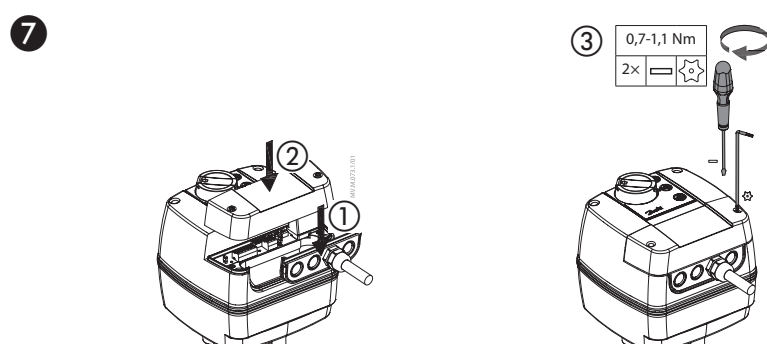
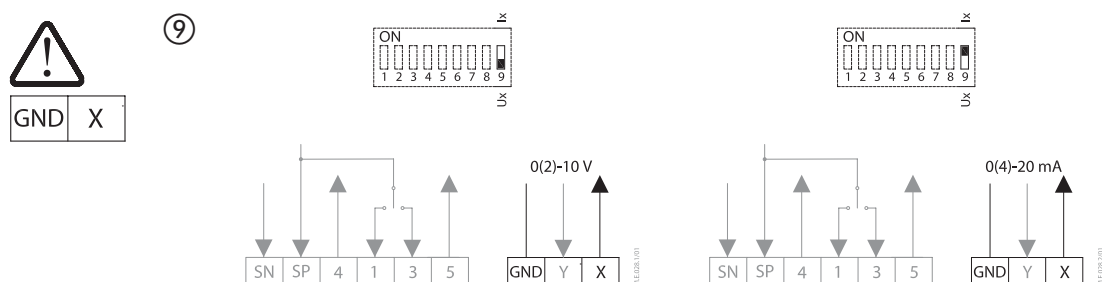
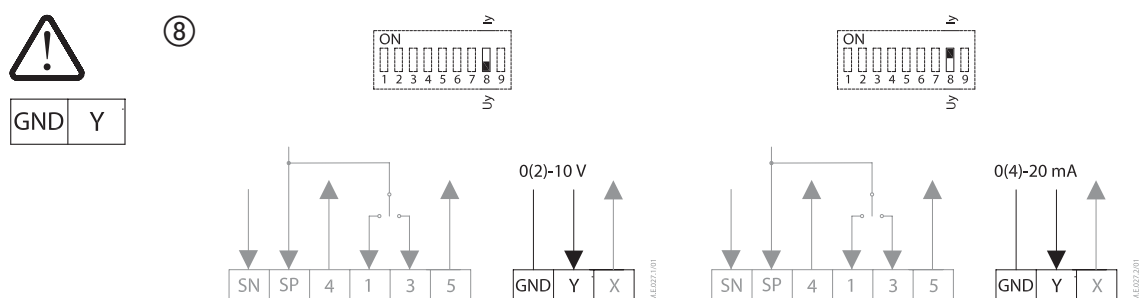
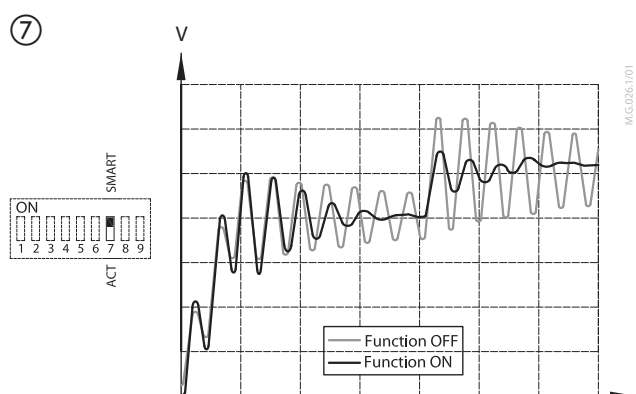
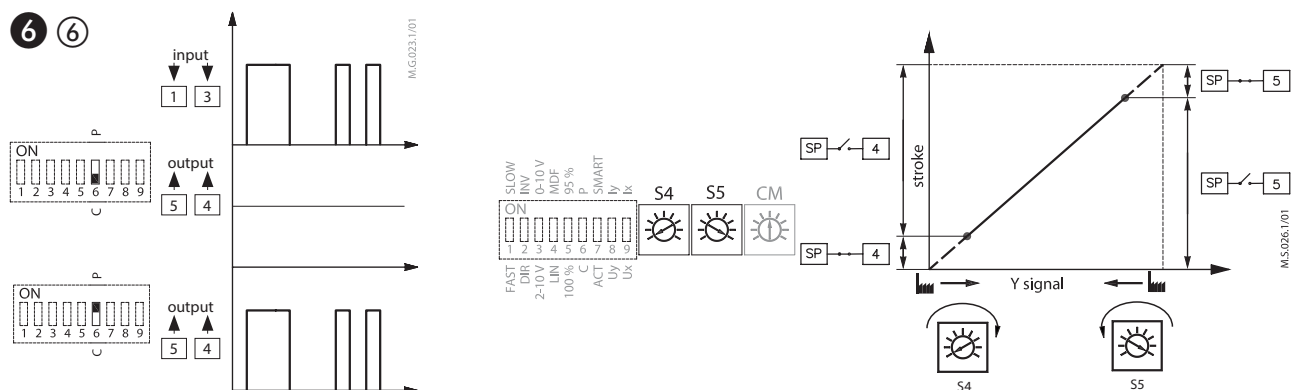
| | | |
|------|------------|------------------------------------|
| SN | 0 V | Neutral |
| 1,3 | 24 V AC/DC | Power supply |
| 4, 5 | SP(AC) | 24~ output -max 4 A -min 3 W |
| 1 | SP | Input |
| 3 | SP | Input |

AME 655-1/658 SD-1/658 SU-1 & AME 685-1



AME 655-1/658 SD-1/658 SU-1 & AME 685-1

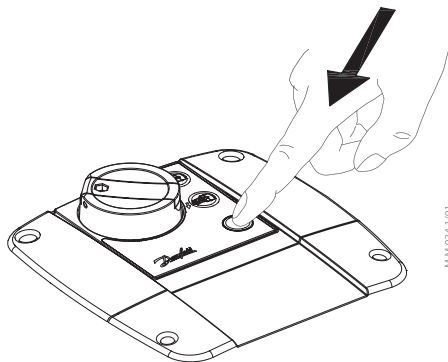




8

| LED | Indication type | | | Operating mode |
|-----------------|-----------------|--|----------------------|--|
| Green LED: | | | Constantly lit | Positioning mode - Actuator is retracting the stem |
| | | | Constantly lit | Positioning mode - Actuator is extending the stem |
| | | | Flashing (1 s cycle) | Self stroking mode - Actuator is retracting the stem |
| | | | Flashing (1 s cycle) | Self stroking mode - Actuator is extending the stem |
| Yellow LED: | | | Constantly lit | Stationary mode - Actuator has reached upper end position (retracted stem) |
| | | | Constantly lit | Stationary mode - Actuator has reached bottom end position (extended stem) |
| | | | Flashing | Stationary mode - Single blink when Y signal is presents and double blinks when Y signal is not connected) |
| Red LED: | | | Constantly lit | Stand-By mode |
| | | | Flashing | Error Mode |
| Red/ Yellow LED | | | Flashing (1 s cycle) | Set up stroke limitation (retracted stem) |
| | | | Flashing (1 s cycle) | Set up stroke limitation (extended stem) |
| Dark | No indication | | | No power supply |

9



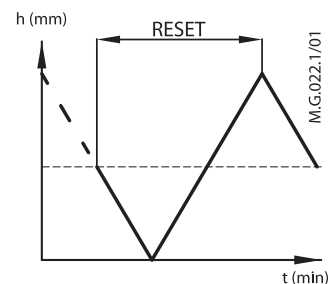
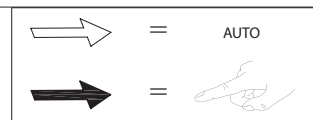
①
>5s = RESET

Flashing
(1 s cycle)

Flashing
(1 s cycle)

LED : Green

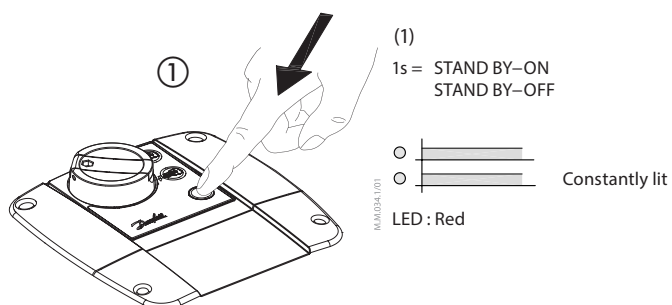
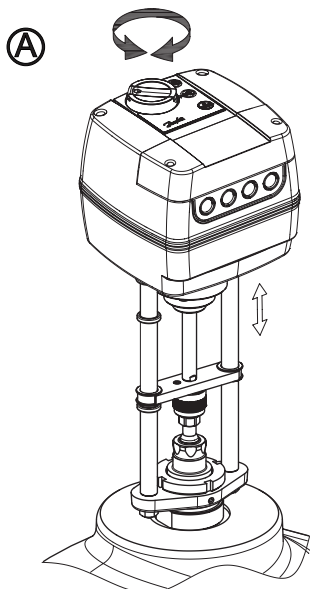
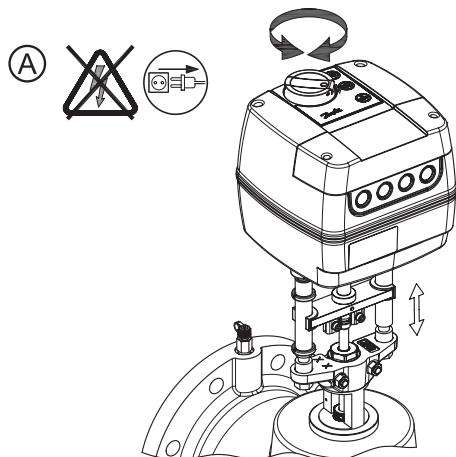
②
 Flashing
LED : Yellow



10

AME 655-1/658 SD-1/658 SU-1

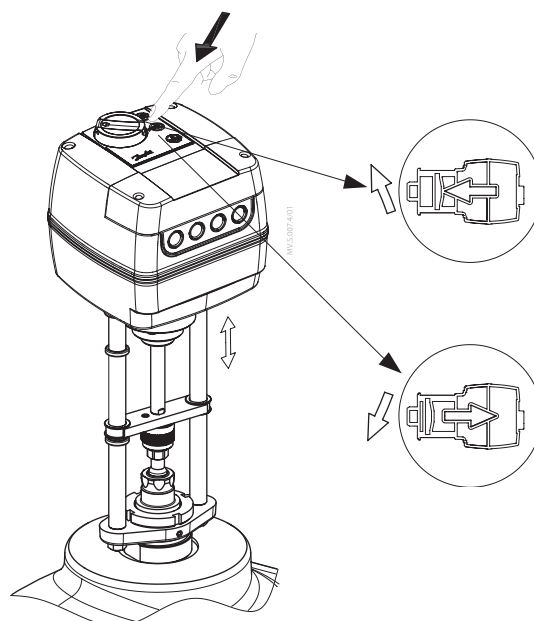
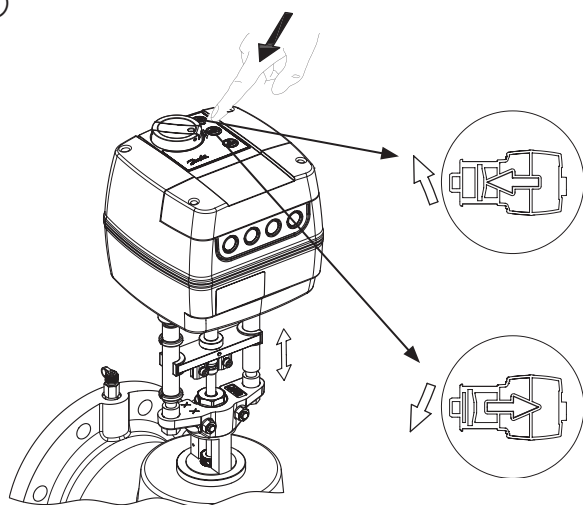
AME 685-1



(2)

AME 655-1/658 SD-1/658 SU-1

AME 685-1



ENGLISH

Safety Notes



To avoid personal injury and damage to devices, it is absolutely essential for these instructions and safety notes to be read carefully and reviewed prior to assembly and use.

Do not dismantle actuator with the safety spring function! There is risk of injury and death in the event of improper handling!

Switch off the pump and power line before mounting and wiring the actuator.

The actuator is heavy. Handle with care to avoid injury or product damage.

Wiring



Do not touch anything on the PCB!
Do not remove the service cover
before the power supply is fully
switched off.

Max. allowed current output on terminals 4 and 5 is 4 A. Min. power is 3W.

NOTE: Only basic function as SW1 (Fast/Slow) and SW2 (INV/DIR) are active when is no power supply on terminal SP and AME actuator operated as AMV.

Actuator mounting to valve AME 655-1/658 SD-1/ 658 SU-1 ①

Stem connections AME 658 SD-1/ AME 658 SU-1 ②

Actuator mounting to valve AME 685-1 ③

Stem connections AME 685-1 ④

Electrical connection ⑤

DIP switch setting ⑥

SW1: FAST/SLOW – Speed selection ①

- FAST;
- SLOW;

SW2: DIR/INV – Direct or inverse acting selector ②

- DIR; the actuator is directly reacting to input signal
- INV; the actuator is inversely reacting to input signal

SW3: 2-10V/0-10V – Input/output ③

- 2-10V; the input signal ranges from 2-10 V (voltage input) or 4-20 mA (current input)
- 0-10V; the input signal ranges from 0-10 V (voltage input) or 0-20 mA (current input)

Signal range selector sets Y & X signals.

SW4: LIN/MDF – Characteristic modification function ④

- LIN; linear correlation between Y signal and stem position
- MDF (Modified); enables modified correlation between Y signal and stem position. Degree of modification depends on setting of potentiometer CM.

The function enables to change MCV (Motorised Control Valve) characteristic (for example linear to logarithmic and logarithmic to linear) and works with all combinations of DIP switch settings.

SW5: 100 %/95 % – Stroke limitation ⑤

Adjustable stroke limitation of retracted or extended actuator stem position. DIP 5 needs to be reset prior to procedure (5.2) to 100 % (5.1) and set to 95 % (5.3) until the self-stroking procedure has concluded (5.4). Retracted icon (5.5) on actuator will blink red-yellow when actuator stops at max. retracted stem position (5.5) and will blink as long as it is not set to a new retracted position (5.6) by pressing buttons to set the required position (observe flow on flow meter). Press and hold reset button for 5 seconds (5.7) and then set new extended stem position by pressing buttons . Extended icon (5.8) will blink red-yellow as long as it is not set to new extended position by pressing and holding reset button for 5 seconds.

SW6: C/P – Output signal mode selector ⑥

- ① An output signal is present on terminal 4 when the position of the actuator is equal to or lower than the S4 set point. An output signal is present on terminal 5 when the position of the actuator is equal to or higher than the S5 set point.

SW6: C; provides a constant output signal on terminals 4&5, regardless of the input signal.

SW6: P; provides a pulse signal through parallel or cascade electrical wiring input 1 & 3 depends from the controller to output terminals 4&5.

SW7: Smart function selector: ⑦

- OFF; the actuator does not try to detect oscillations in the system
- ON; the actuator enables special anti-oscillation algorithm – In case control signal Y on certain point oscillates looking from time perspective, algorithm starts to lower the amplification of the output to the valve. Instead of having static characteristics actuator changes to dynamic characteristics. After the control signal does not oscillate anymore, output to the valve slowly returns back to static characteristics.

SW8: Uy/Iy – Input signal type selector: ⑧

- Uy; input signal Y is set to voltage (V)
- Iy; input signal Y is set to current (mA)

SW9: Ux/Ix – Output signal type selector: ⑨

- Ux; output signal X is set to voltage (V)
- Ix; output signal X is set to current (mA)

NOTE: Y detection is disabled if SW8 is set to ON position and SW3 is set to OFF position.

Functions accessible from cover

RESET button

The actuators has an external RESET button, which is located on the top cover of the actuator next to the LED indicators. With this button you can enable or disable standby mode (press once) or self-stroking mode (press and hold for 5 seconds). See next paragraph for more details.

Final step of electrical connection ⑦

LED signalisation ⑧

Calibration mode ⑨

Calibration mode begins automatically the first time the actuator is powered on. To start the self-stroking procedure, **press and hold the RESET button for 5 seconds** ① until the green light starts flashing. End positions of the valve

are automatically set and the actuator goes into stationary mode ② and starts responding to the control signal.

Manual Operation ⑩



Mechanical and electrical operation must not be used at the same time!

AME 655-1/658 SD-1/658 SU-1 and AME 685-1 actuators can be manually positioned when in standby mode or when there is no power supply (mechanically).

| Actuator type | Mechanical operation | Electrical operation |
|-----------------|----------------------|----------------------|
| AME 655-1 | ✓ | ✓ |
| AME 658 SD/SU-1 | ✓ | ✓ |
| AME 685-1 | ✓ | ✓ |

Stand-By mode

Press the RESET button ① to enter standby mode. The actuator stops in the current position and stops responding to any control signal. A red light remains constantly lit. You can now manually operate the actuator ②.

Mechanical manual operation ①

AME 655-1/658 SD-1/658 SU-1 and AME 685-1 actuators have a knob & crank on the top of the housing which enables manual positioning of the actuator.



Use Mechanical manual operation only when the power is disconnected. Mechanical and electrical operation are not allowed to be used at the same time!

Electrical manual operation ②

AME 655-1/658 SD-1/658 SU-1 and AME 685-1 actuators have two buttons on the top of the housing that are used for electrical manual positioning (up or down) if the actuator is in standby mode. First, press and hold the RESET button ① until the actuator goes to standby mode (red LED is lit). By pressing the button, the stem will be extended and by pressing the button, the stem will be retracted.

The following information is provided on the device or on the instruction manual or datasheet:

- A) Purpose of control: Electrical Actuator
- B) Construction of control: Independently Mounted Control
- C) Method of mounting control
- D) Type 1 Action
- E) Pollution Degree 3
- F) Impulse Voltage: 500V
- G) Software Class A
- H) Mechanical and thermal ratings (ref to Ratings section for more details)
- I) "Use ½ inch flexible metal conduit for connection"
- J) "Use Listed Flexible Metal Conduit Fitting DWVT77"
- K) "Use 60°C/75°C copper (CU) conductor and wire size range (#) AWG, stranded or solid".
- "The terminal tightening torque of (#) Lb per In."
- L) Torque value for Cover screw: 1.8 Nm.

Note (#): Values depend by field wiring ratings of terminal block employed on the device construction.



AME 655-1/658 SD-1/658 SU-1 & AME 685-1

| Part Name / 部件名称 | Hazardous Substances Table / 有害物质表 | | | | | |
|--|------------------------------------|--------|--------|--------------|------------|--------------|
| | PB / 铅 | Hg / 汞 | Cd / 镉 | Cr(VI) / 六价铬 | PBB / 多溴联苯 | PBDE / 多溴二苯醚 |
| Motor / 电机 | X | O | O | O | O | O |
| Bearing cover / 轴承盖 | X | O | O | O | O | O |
| Nut insert / 插入螺母 | X | O | O | O | O | O |
| O: Indicates that this hazardous substance contained in all of the homogeneous material for this part is below the limit requirement in GB/T 26572; O: 表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。 | | | | | | |
| X: Indicates that this hazardous substance contained in at least one of the homogeneous material for this part is above the limit requirementw in GB/T 26572; X: 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。 | | | | | | |

Danfoss A/S
Climate Solutions • danfoss.com • +45 7488 2222

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