Data sheet

AME 658 SU/ SD – with safety function

Motorized actuators for AB-QM™ valves

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Description

The actuators AME 658 series are designed to regulate the AB-QM valve in applications involving heating and chiller applications.

The available options include input signals of modulating or 3-point floating and actuators that have a safety function in either spring open or close during a power failure.

Main data:

- 24V AC/DC powered actuators
- Control input signal: modulating or 3-point
- Selectable actuator speed
- Max. medium temperature: 392 °F (200 °C)

Features:

- Manual operation either mechanical and/or electrical
- Output signal
- Visible LED feedback operation
- Selectable stem travel speed
- Inverse functionality
- Self calibration of acuator stem travel
- Integrated external switch
- Characteristic optimization
- Stem travel limitation
- Pulse or continuous output signal
- Voltage or current input signal Y
- Voltage or current output signal X
- External reset button
- Auto detection of Y signal
- X and Y galvanic insulation
- Thermic and overload protection

Ordering

Actuators

Code No.	Type	Power Supply	Input Signal	Safety Func. w/o power
082G3450	AME 658	24V	3-point floating or Modulating	Spring up
082G3448	AME 658			Spring down

Technical data

Actuator type		AME 658 SU/SD
Power supply		24 V AC or DC; +10 … −15% @ 50 or 60 Hz
Power consumption	VA	19.2
Control input		3-point floating or Modulating
Position in power failure		Open or close
Control input Y	VDC	0-10 (2-10) [Ri = 40 kΩ]
	mA	0-20 (4-20) [Ri = 500 Ω]
		3-point (wiring auto-detection)
Control output X	VDC	0-10 (2-10) [Ri = 10 kΩ]
	mA	0-20 (4-20) [Ri = 510 Ω]
Closing force	N	2000
Max. travel distance	mm	50
Speed (selectable)	s/mm	4 or 6
Max. medium temperature		392 °F (200 °C) (350 with extension piece for VFGS)
Ambient temperature		32 to 131 °F (0 to 55 °C)
Storage and transport temperature		-40 to 158 °F (-40 to 70 °C) (storing for 3 days)
Humidity		5-95%
Protection class		II
Grade of enclosure		IP 54 (NEMA 13)
Weight		18.9 lb (8.6 kg)
Safety function		Yes
Spring return runtime	sec	120
Manual operation		Electrical and mechanical
Power failure response		SU - Valve is open SD- Valve is closed
CE - marking in accordance with the standards		Low Voltage Directive 2006/95/EEC EMC Directive 2004/108/EEC

Disposal

The actuator must be dismantled and the elements sorted into various material groups before disposal.

Commissioning

Complete the mechanical and electrical installation (see instructions) and perform the necessary checks and tests:

- Power the actuator
- Set the appropriate control signal and check that the valve stem direction is correct for the application.

The unit is now fully commissioned.

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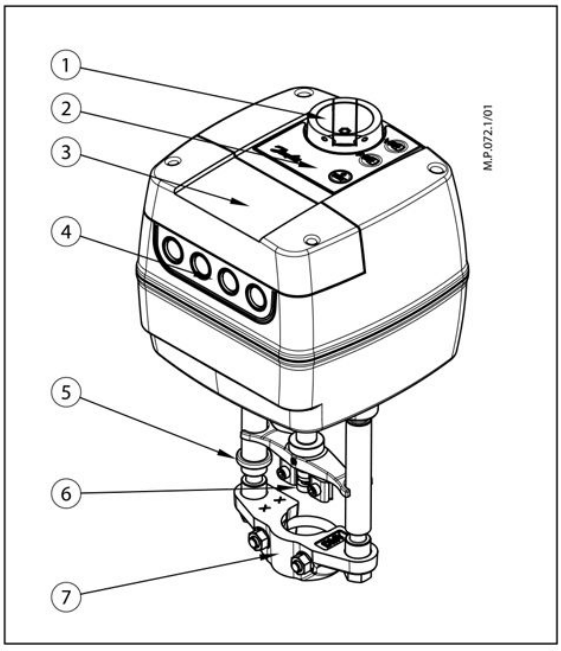
Design



1. Manual operation knob
2. Function buttons
3. Panel cover
4. Removable gland support
5. Position indication ring
6. Stem connector
7. Valve connector

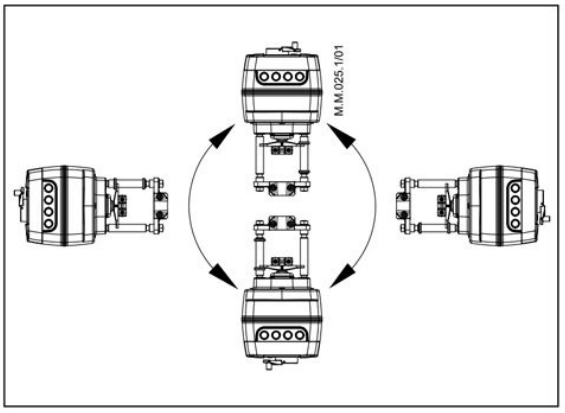
Installation

Mechanical

The allowable orientation of the actuator can be installed in all positions. Allow for necessary clearance for maintainance and for the mounting of the actuator to the valve. A M8 socket to mount the actuator to the valve and a 4mm Allen key to link the valve stem to the actuator.

Electrical

Electrical connections can be accessed by removing the service cover. Four cable entries are available (Two M16 x 1.5 and two M20 x 1.5) Note in order to maintain the enclosure IP rating, appropriate electrical nuts must be used.



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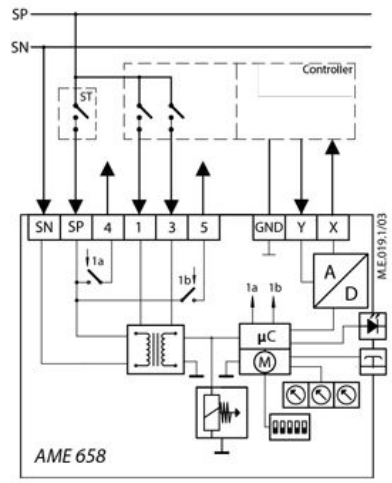
Wiring

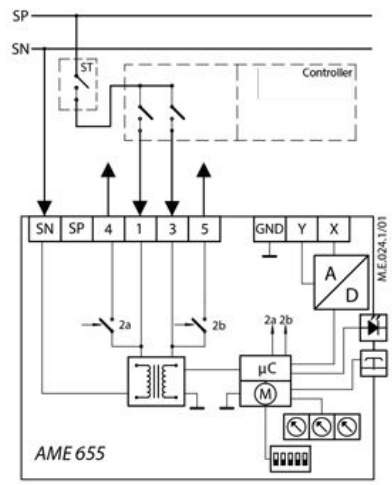
AME 658

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.



SN	0 V	Neutral
SP	24VAC/DC	Power supply
4, 5	SP(AC)	Powered contact output
GND	0 V	Neutral
Y	0(2)-10 V 0(4)-20 mA	Input
X	0(2)-10 V 0(4)-20 mA	Output

AME 658 wired as 3-point floating



SN	0 V	Neutral
1	24V AC/DC	Input
3	24V AC/DC	Input
4, 5	SP(AC)	Powered contact output

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DIP switch setting

AME 658

DIP1: FAST/SLOW – Speed selection
- Speed of actuator travel: 3 (4) or 6 s/mm

DIP2: DIR/INV – Direct or inverse acting selector (Fig. 2)**:**
- Direction of the actuator movement based input signal:
  - Opens on increase of input signal
  - Closes on increase of input signal

DIP3: 2-10V/0-10V – Input/output
- Selection of available input signal range. Signal range selector sets input (Y) and ouput (X) signal.
  - 0-10VDC / 0-20 mA
  - 2-10VDC / 4-20 mA

DIP4: LIN/MDF – Characteristic modification function (Fig. 3)**:**
- Determines the charactersitic of the actuator as either a linear or logarithmic (MDF selection). Under MDF the characteristic curve can be fine tuned by the setting of the potentiometer CM.

DIP5: 100%/95% – Stem travel limitation:
- Selectable full travel (100%) or limited to 95% stem travel.

DIP6: C/P – Output signal mode selector (Fig. 4.)**:**
- Reaction of terminal 4 & 5 based upon input signal. Under selection C potentiometers S4 & S5 can be adjusted.
  - C: activates with modulating signal
  - P: activates with 3-point floating signal

DIP7: Uy/Iy –Input signal type selector:
- Selection between voltage or current input signal

DIP8: Ux/Ix –Output signal type selector:
- Selection between voltage or current output signal

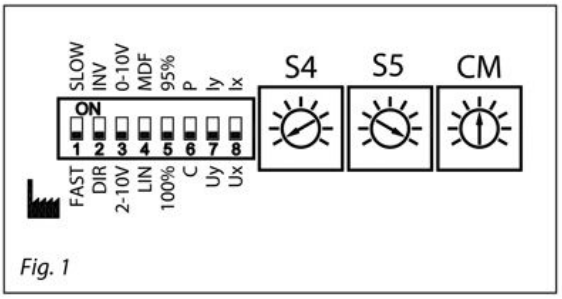

Fig. 1

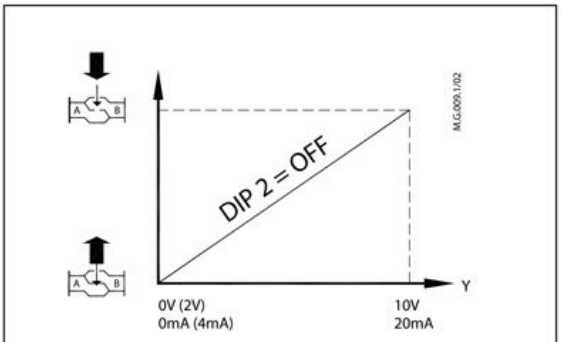

Fig. 2

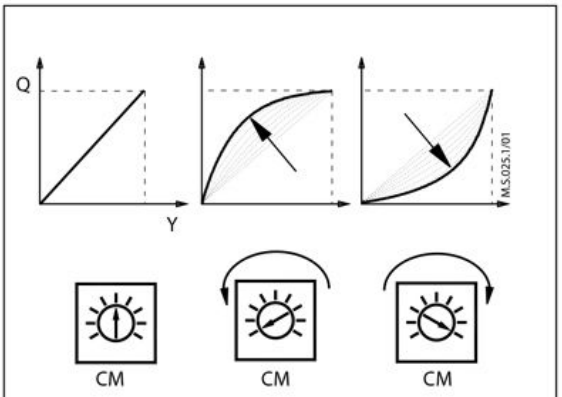

Fig. 3

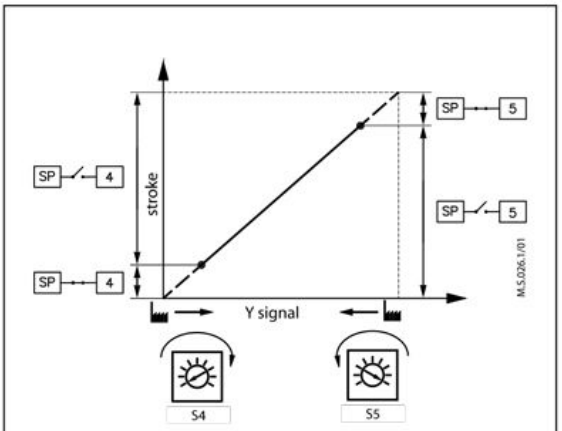

Fig. 4

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LED signalling / actuator operating modes

LED operating mode indicator

The two LED's located on the actuator cover provides three different color feedback (green/ yellow/red). Based upon the color and if they flash, will indicate different operating situations.

RESET button

The external RESET button is located on the top cover of the actuator next to LED indicators. Pressing this button once will enter or exit the Stand-By mode. For the AME series of actuators holding the button for 5 secs will initiate the calibration mode.

Operating modes

- **Stand-By mode**
  The actuator stops in current position and does not react to the control signal. In this mode the actuator can be manual operated via mechanical handle or control buttons. To exit Stand-By mode the RESET button is pressed again.

- **Calibration mode**
  The actuator will enter this mode when it is powered for the first time or if the Reset Button is pressed down for 5 secs. During calibration the actuator will determine the full travel of the valve. When calibration is completed the actuator will be in normal operation responding to the control signal.

LED indication, AME 658

LED	Flashing		Constantly Lit	
GREEN	☼ ○	Calibration mode, opening the valve	○ ○	Receiving signal, opening valve
	○ ☼	Calibration mode, closing the valve	○ ○	Receiving signal, closing valve
YELLOW	☼ ☼	Awaiting control signal	○ ○	Actuator has reached full open
			○ ○	Actuator has reached full close
RED	☼ ☼	Error in actuator operation	○ ○	Stand-by mode
DARK	No power to actuator / No control signal			

Manual operation

⚠ Mechanical and electrical operation are not allowed to be used at the same time!

Actuators AME 658 can be manually positioned when in Stand-By mode or when there is no power supply (mechanically).

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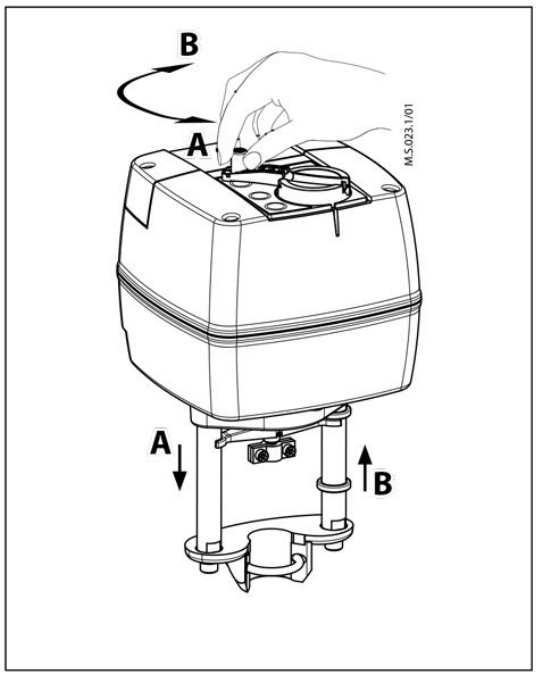
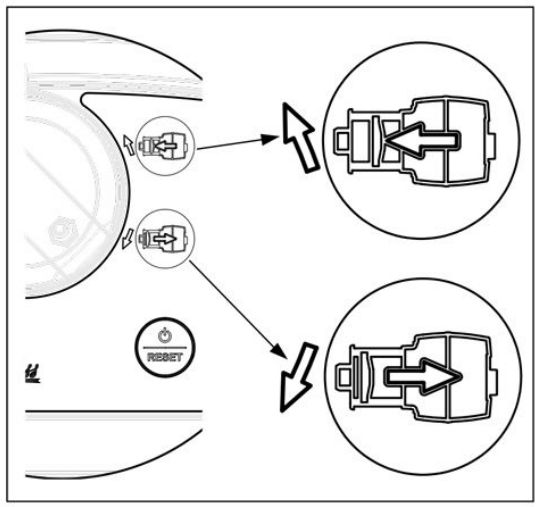
Manual operation, continued



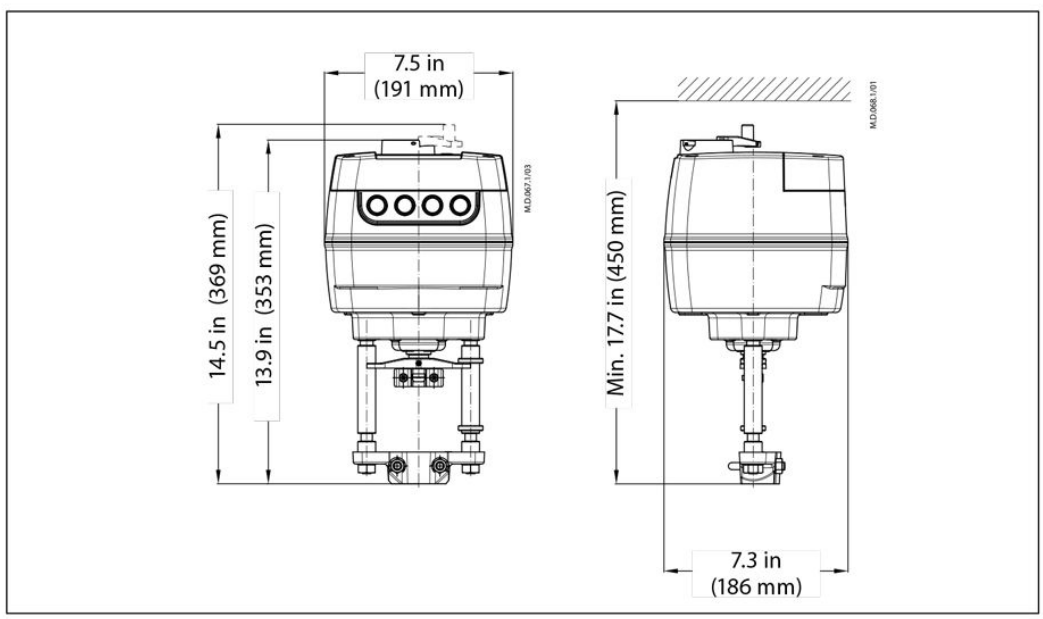
Mechanical manual operation
Actuators AME 658 have a manual operation knob on the top of the housing which enables hand positioning of the actuator.

Prior to the use of the mechanical knob there should be no power to the actuator.



Electrical manual operation
Actuators AME 658 have two buttons on the top of the housing that are used for electrical manual positioning (up or down) if the actuator is in Stand-By mode. First press the RESET button until the actuator goes to Stand-By mode (red LEDs are lit). By pressing the upper button the stem will be lifted and by pressing the lower button the stem will be pushed down.

Dimensions



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