

## Data sheet

# Actuators for modulating control

## AME 85, AME 86

## Description



The actuators AME 85 and AME 86 are used with VFM 2 (DN 150-250), VFS 2 (DN 65-100), VF2/3 (DN 125, 150) and AFQM (DN150-250) valves.

**Features:**

- "Self stroking" function
- Load related "Switch off" function that prevents overloading
- Manual operation
- Diagnostic LED

**Main data:**

- Nominal voltage:
  - 24 VAC , 50 Hz/60 Hz
- Control input signal:
  - 0(4)-20 mA
  - 0(2)-10 V
- Force: 5000 N
- Stroke: 40 mm
- Speed: 8 s/mm (AME 85), 3 s/mm (AME 86)
- Max. medium temperature: 200 °C
- Manual operation

## Ordering


**Actuator**

| Type   | Power supply | Speed  | Code No.        |
|--------|--------------|--------|-----------------|
| AME 85 | 24 V~        | 8 s/mm | <b>082G1452</b> |
| AME 86 | 24 V~        | 3 s/mm | <b>082G1462</b> |

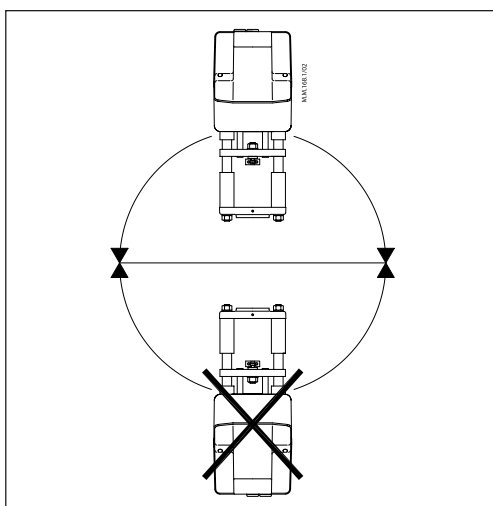
**Accessories**

| Type                          | Code No.        |
|-------------------------------|-----------------|
| Stem heater                   | <b>065Z7021</b> |
| AM-PBU 25 - Power backup unit | <b>082H7090</b> |

## Technical data

| Type   |      | AME 85   | AME 86 |
|--|------|--|--------|
| Power supply   | V    | 24 AC +10 to -15%  |        |
| Power consumption  | VA   | 12.5   | 25     |
| Frequency  | Hz   | 50 / 60  |        |
| Control input Y  | V    | 0 to 10 (2 to 10) Ri = 50 Ω,   |        |
|  | mA   | 0 to 20 (4 to 20) Ri = 500 Ω   |        |
| Output signal X  | V    | 0 to 10 (2 to 10)  |        |
| EMC  |      | IEC 801/2 - 5  |        |
| Closing force  | N    | 5000   |        |
| Max. stroke  | mm   | 40   |        |
| Speed  | s/mm | 8  | 3      |
| Max. medium temperature  |      | 200  |        |
| Ambient temperature  | °C   | 0 to 55  |        |
| Storage and transport temperature  |      | -40 to +70   |        |
| Protection Class   |      | III (24 V)   |        |
| Grade of enclosure   |      | IP 54  |        |
| Weight   | kg   | 9.8  | 10.0   |
|  - marking in accordance with the standards |      | Low Voltage Directive 73/23/EEC and 93/68/EEC, EN 60730/2/14             |        |
|  |      | EMC Directive 89/336/EEC, 92/31/EEC, 93/68/EEC, EN 50081-1 and EN50082-1 |        |

## Installation



### Mechanical

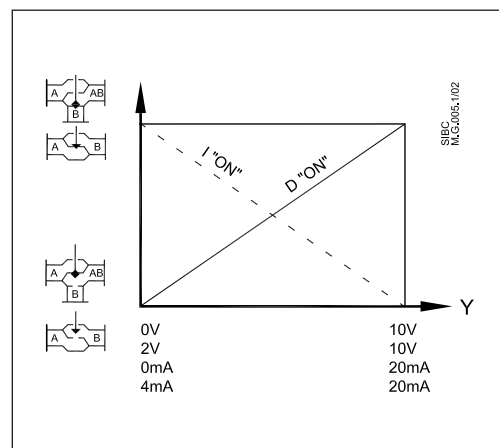
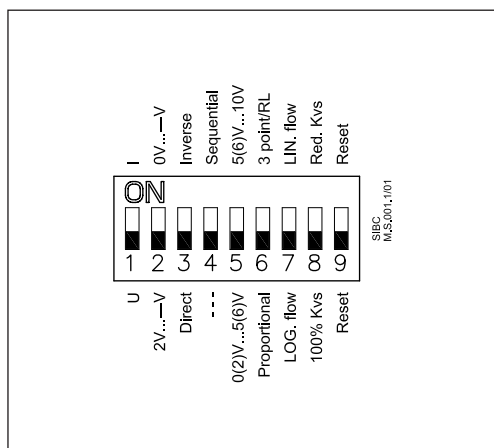
The actuator should be mounted with the valve stem in either horizontal position or pointing upwards. Use the 57 mm castellated nut (supplied) to fit the actuator to the valve body. While the actuator is being fitted, a 8 mm Allen key can be used to tighten the pinch screw in the valve body ring to stop the valve turning.

Allow for necessary clearance for maintenance purposes.

### Electrical

Electrical connections can be accessed by removing the cover. Two M16 x 1.5 cable entries are provided. Both entries are provided with a rubber grommet for use with flexible cable. Note that in order to maintain the enclosure IP rating, appropriate cable glands must be used.

## DIP switch setting



The actuator has a function selection DIP switch under the removable cover. In particular, if SW6 is set to ON, the actuator will perform as 3-point actuator.

The switch provides the following functions:

### • SW1: U/I - Input signal type selector:

If set to OFF position, voltage input is selected. If set to ON position, current input is selected.

### • SW2: 0/2 - Input signal range selector:

If set to OFF position, the input signal is in the range from 2 V to 10 V (voltage input) or from 4 mA to 20 mA (current input). If set to ON position, the input signal is in the range from 0 V to 10 V (voltage input) or from 0 mA to 20 mA (current input).

### • SW3: D/I - Direct or inverse acting selector:

If set to OFF position, the actuator is direct acting (stem lowers as voltage increases). If actuator is set to ON position the actuator is inverse acting (stem raises as voltage increases).

### • SW4: —/Seq - Normal or sequential mode selector:

If set to OFF position, the actuator is working in range 0(2)..10V or 0(4)..20mA. If set to ON position, the actuator is working in sequential range; 0(2)..5 (6)V or 0(4)..10 (12)mA or (5(6)..10V) or (10(12)..20mA).

### • SW5: 0..5V/5...10V - Input signal range in sequential mode:

If set to OFF position, the actuator is working in sequential range 0(2)..5 (6)V or 0(4)..10 (12)mA. If set to ON position, the actuator is working in sequential range; 5(6)..10V or 10(12)..20mA.

### • SW6: Prop./3-pnt - Modulating or 3-point mode selector:

If set to OFF position, the actuator is working normally according to control signal. If set to ON position, the actuator is working as 3-point actuator.

### • SW7: LOG/LIN - Equal percentage or linear flow through valve selector<sup>1</sup>:

If set to OFF position, the flow through valve is equal percentage. If set to ON position, the flow through valve is linear according to control signal.

### • SW8: 100% K<sub>VS</sub>/Reduced K<sub>VS</sub> - Flow reduction through valve selector<sup>1</sup>:

If set to OFF position, the flow through valve is not reduced. If set to ON position, the flow through valve reduced by half of increment standard K<sub>VS</sub> values (example: valve with K<sub>VS</sub> 16 and SW8 set to ON – maximum flow through the valve is K<sub>VS</sub> 13 (middle between standard K<sub>VS</sub> 16 and K<sub>VS</sub> 10)).

<sup>1</sup> NOTE: To be used only in combination with valves with equal percentage characteristic.

### • SW9: Reset:

Changing this switch position will cause the actuator to go through a self stroking cycle.

## Wiring



24 Vac only.

| Wiring length | Recommended square of the wiring |
|---------------|----------------------------------|
| 0 - 50 m      | 0.75 mm <sup>2</sup>             |
| > 50 m        | 1.5 mm <sup>2</sup>              |

### Automatic self stroking feature

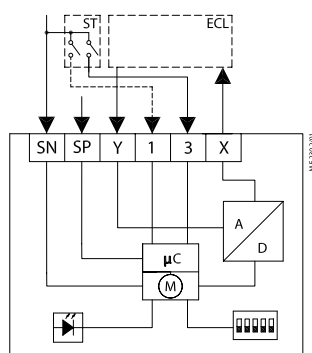
When power is first applied, the actuator will automatically adjust to the length of the valve stroke. Subsequently, the self stroking feature can be re-initialised by changing position of SW9.

### Diagnostic LED

The red diagnostic LED is located on the pcb under the cover. It provides indication of three operational states:

- Actuator Healthy (Permanently ON),
- Self Stroking (Flashes once per second),
- Error (Flashes 3 times per second - seek technical assistance).

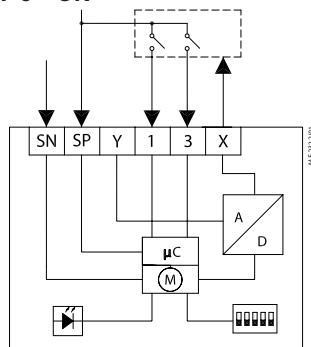
### DIP 6 = OFF



|    |            |              |
|----|------------|--------------|
| SN | 0 V        | Neutral      |
| SP | 24 VAC     | Power supply |
| Y  | 0(2)-10 V  | Input        |
|    | 0(4)-20 mA |              |
| 1  | 24 VAC     | Input        |
| 3  |            |              |
| X  | 0(2)-10 V  | Output       |

## Controller with relay output

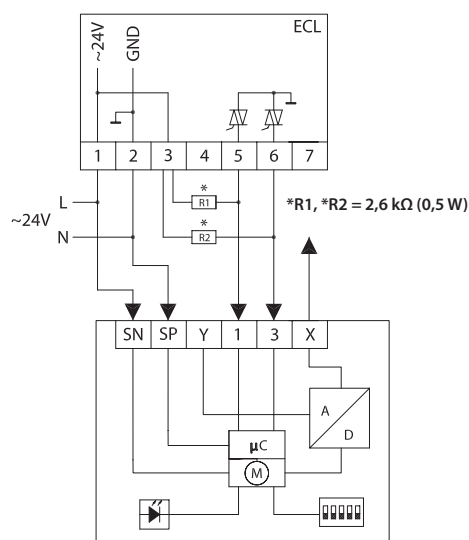
### DIP 6 = ON



|    |             |              |
|----|-------------|--------------|
| SN | 0 V         | Neutral      |
| SP | 24 VAC      | Power supply |
| 1  | 24 VAC      | Input        |
| 3  |             |              |
| X  | 0(2)-10 VDC | Output       |

## Controller with triacs output

### DIP 6 = ON



|    |        |              |
|----|--------|--------------|
| SN | 24 V   | Power supply |
| SP | 0 V    | Neutral      |
| 1  | 24 VAC | Input        |
| 3  |        |              |

## Commissioning

Complete the mechanical and electrical installation and perform the necessary checks and tests:

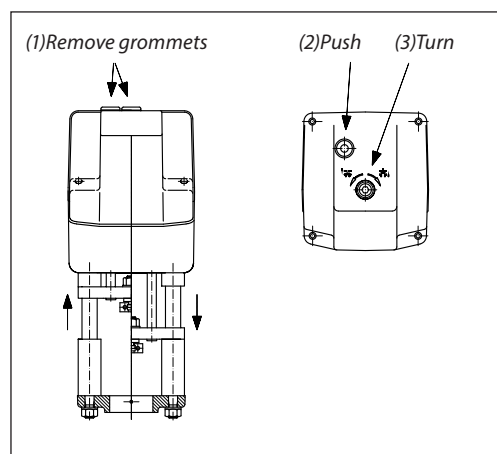
- Isolate control medium. (e.g. self stroking in a steam application without suitable mechanical isolation could cause a hazard).
- Apply the power. Note that the actuator will now perform the self stroking function.
- Apply the appropriate control signal and check the valve stem direction is correct for the application.
- Ensure that the actuator drives the valve over its full stroke, by applying the appropriate control signal. This action will set the valve stroke length.

The unit is now fully commissioned.

## Commissioning / testing feature

The actuator can be driven to the fully open or closed positions (depending on valve type) by connecting SN to terminals 1 or 3.

## Manual override



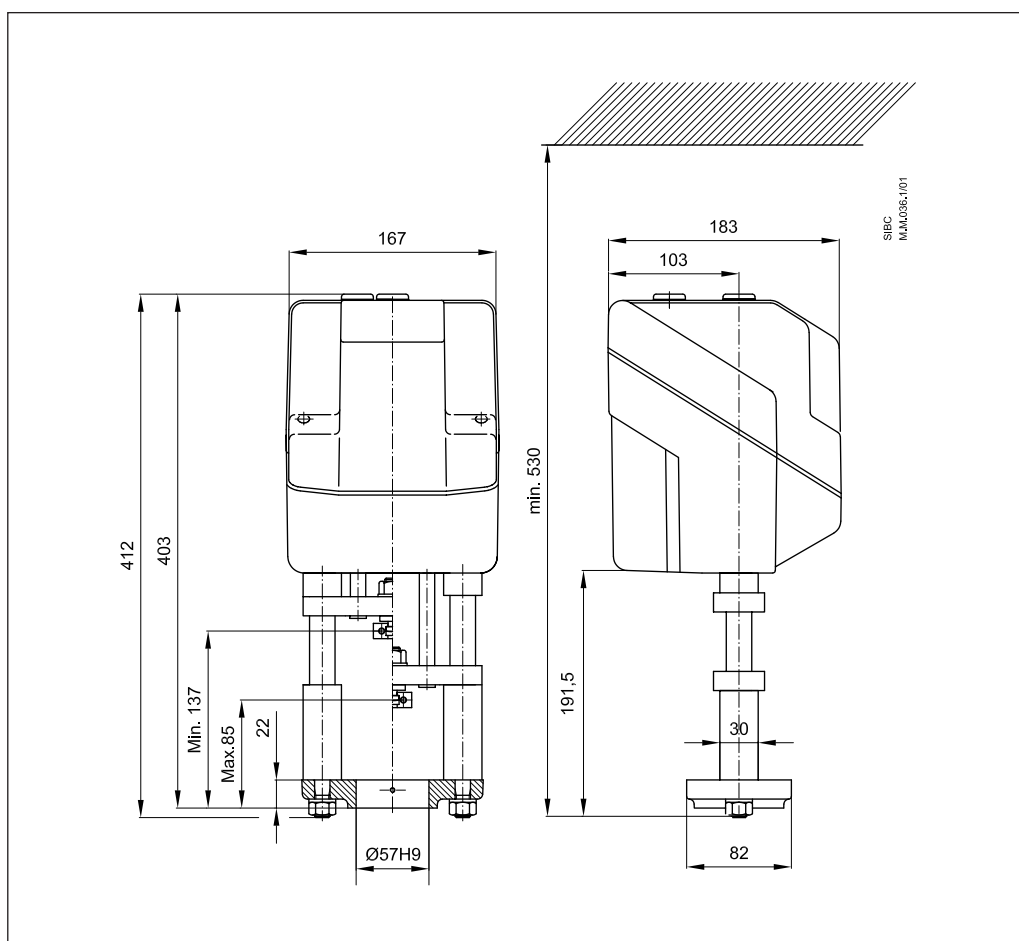
The manual override is applied by rotating the 8 mm Allen key (not supplied) to the required position. Observe the direction of rotation symbol.

- Disconnect power
- Remove grommets and push the button
- Adjust valve position using an 8 mm Allen key
- Set valve to closed position
- Restore power

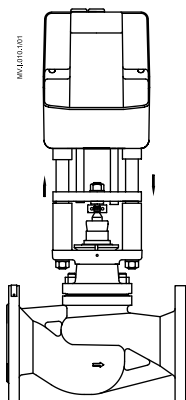
### Note:

**Actuator will restore position required by Y signal.**

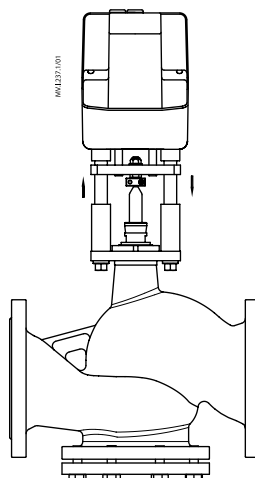
Dimensions



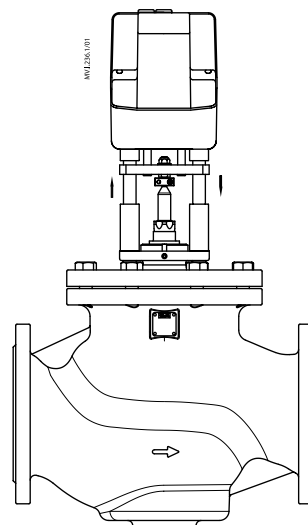
Actuator - valve combinations



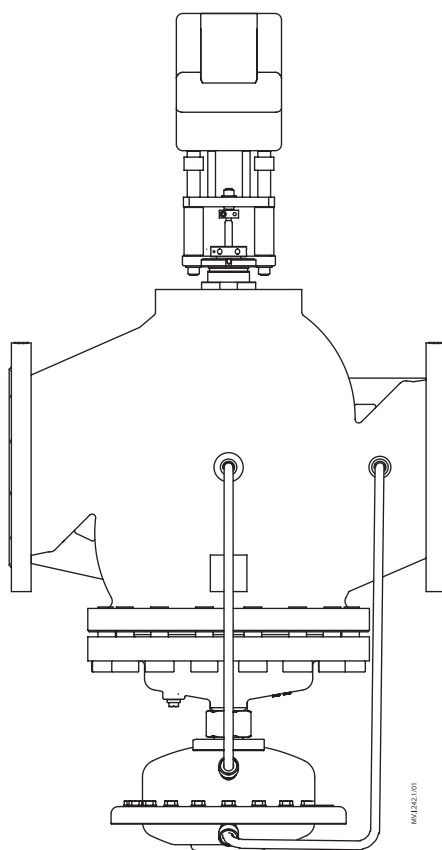
AME 85/86 + VFS 2 (DN 65 - 100)



AME 85/86 + VF 2 (DN 125 - 150)  
AME 85/86 + VF 3 (DN 125 - 150)



AME 85/86 + VFM 2 (DN 150-250)



AME 85/86 + AFQM (DN 150 - 250)



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