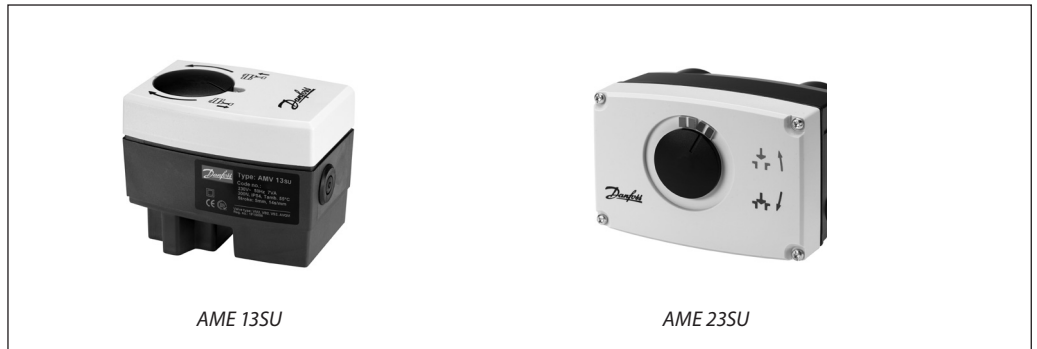


Data sheet

Actuators for modulating control

AME 13SU, AME 23SU - safety function (spring up)

Description



The actuators with safety function are mainly used with VZ valve (AME 13SU) or with VS, VM and VB valves (AME 13SU, AME 23SU) or AVQM (AME 23SU). Safety version is activated automatically in case of power failure or if the power supply is switched off by the safety thermostat.

The actuator has some special features:

- The advanced design incorporates load related 'switch-off' to ensure that actuators and valves are not exposed to overload;
- The advanced design incorporates a diagnostic LED, operational data capture and self-adjusting feature;
- Low weight and robust;

- Safety function (spring up).

Main data:

- Nominal voltage:
 - 24 Vac, 50 Hz/60 Hz
- Force:
 - AME 13 SU.....300 N
 - AME 23 SU450 N
- Stroke:
 - AME 13 SU.....5.5 mm
 - AME 23 SU10 mm
- Speed:
 - AME 13 SU.....14 s/mm
 - AME 23 SU15 s/mm
- Max. medium temperature: 130 °C
- Self stroking

Ordering

Type	Supply voltage (V)	Code No.
AME 13SU	24	082H3044
AME 23SU		082G3042

Technical data

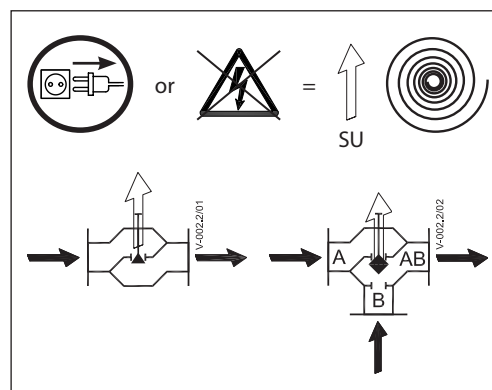
Type		AME 13SU	AME 23SU
Power supply	Vac	24; +10 to -15 %	
Power consumption	VA	9	
Frequency	Hz	50/60	
Control input Y	Vdc	0-10 (2-10)	
	mA	0-20 (4-20)	
Output signal X	Vdc	0-10 (2-10)	
Closing force	N	300	450
Max. stroke	mm	5.5	10
Speed	s/mm	14	15
Max. medium temperature	°C	130	
Ambient temperature		0 ... 55	
Storage and transport temp.		-40 ... 70	
Ambient humidity		5-95 % r.h., non-condensing	
Protection Class		II	I (230V); III(24V)
Grade of enclosure		IP 54	
Weight	kg	0.8	1.45
marking in accordance with standards		Low Voltage Directive (LVD) 2014/35/EU: EN 60730-1, EN 60730-2-14 Electromagnetic Compatibility Directive (EMC) 2014/30/EU: EN 61000-6-2, EN 61000-6-3	

Safety function

The safety function will fully open or close the valve when the power is removed, depending upon the spring action selected. Valve selection will also affect the spring action. The safety function unit is factory fitted to the rear of the actuator.

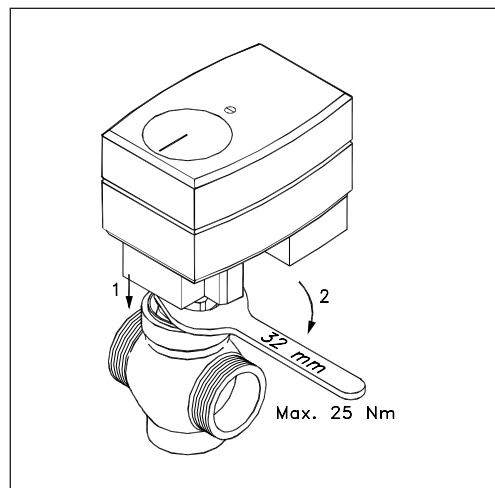
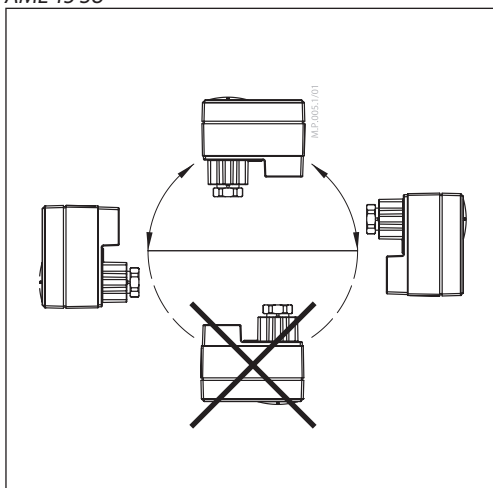
Valve type	If safety version is activated than port A-AB will be
VZ	CLOSED
VS	OPENED
VM	OPENED
VB	OPENED

Note: Do not use safety activations for ON/OFF regulation.

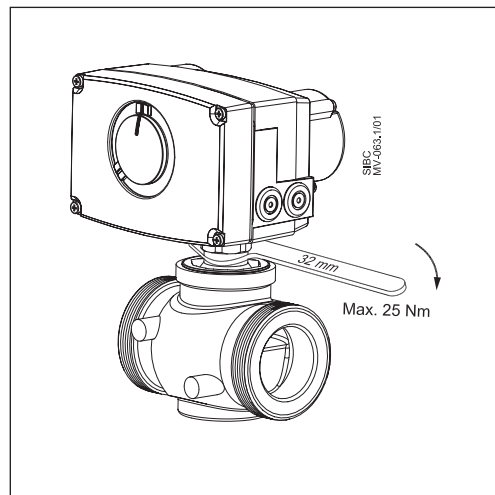
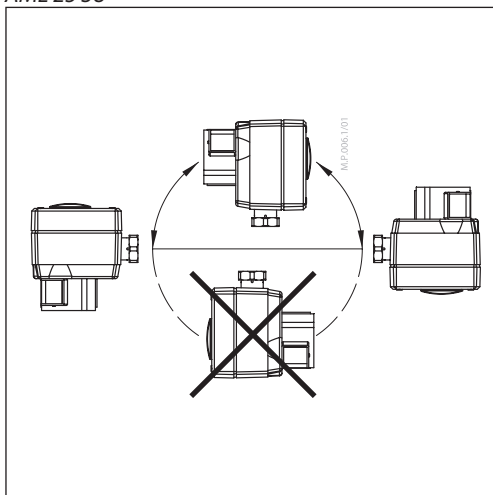


Installation

AME 13 SU



AME 23 SU



Mechanical

The actuator should be mounted with the valve stem in either horizontal position or pointing upwards.

The actuator is fixed to the valve body by means of a mounting ring, which requires no tools for mounting. The ring should be tightened by hand.

Electrical

Important: It is strongly recommended that the mechanical installation is completed before the electrical installation.

Note: Two cable entries are provided for M 16x1.5 cable glands. One entry is provided with a rubber grommet. Note that in order to maintain the enclosure's IP rating, appropriate cable glands must be used.

Commissioning

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

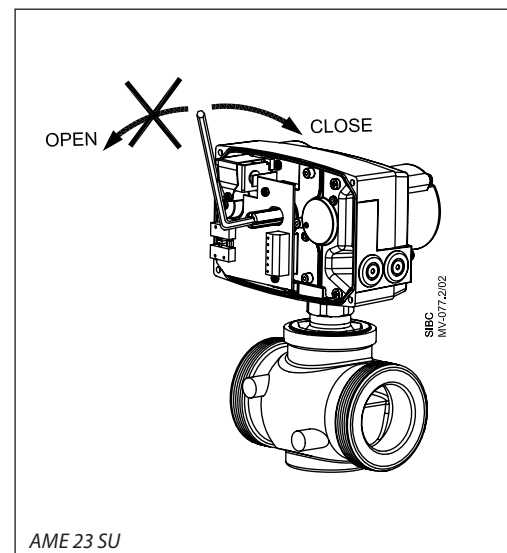
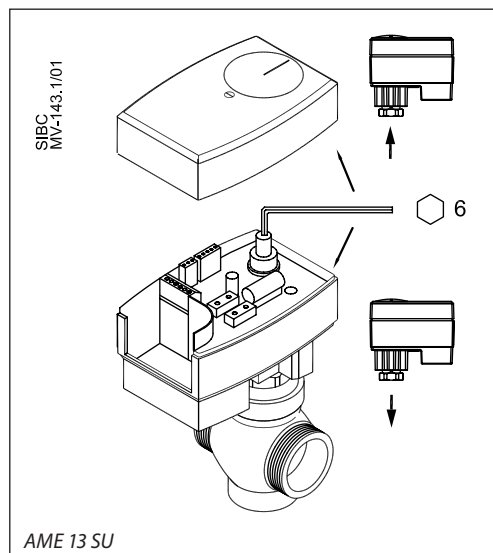
- Isolate control medium. (e.g. self-adjusting in a steam application without suitable mechanical isolation could cause a hazard).
- Apply the power. Note that the actuator will now perform the self-adjusting function.
- Apply the appropriate control signal and check the valve stem direction is correct 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.

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.

The unit is now fully commissioned.

Manual override



On spring versions manual override is achieved by disconnecting the power supply, removing the cover and inserting a 6 mm Allen key for AME 13 SU, a 5 mm Allen key for AME 23 SU (not supplied) into the top of the positioning spindle and turning the key against the spring. Observe the direction of rotation symbol. To hold a manual override position, the key must be wedged.

If manual override has been used then X and Y signal are not correct until the actuator reaches its end position. If this is not accepted reset the actuator.

DIP switch setting

The diagram illustrates the DIP switch settings for the actuator. It shows a cover with 9 switches, each with an 'ON' position. The functions for each switch are:

- 1: U/I - Input signal type selector
- 2: 0/2 - Input signal range selector
- 3: D/I - Direct or inverse acting selector
- 4: —/Seq - Normal or sequential mode selector
- 5: 0-5 V/5-10 V - Input signal range in sequential mode
- 6: Prop./3-pnt - Modulating or 3-point mode selector
- 7: LOG/LIN - Not in use
- 8: 100 % Kvs/Reduced Kvs - Not in use
- 9: Reset

Two detailed views of switches 3 and 4 are shown. The top view shows switch 3 in the 'OFF' position (DIR) and switch 4 in the 'ON' position (INV). The bottom view shows switch 3 in the 'ON' position (INV) and switch 4 in the 'OFF' position (DIR).

Two graphs show the relationship between input voltage/current and output signal for different DIP 3 settings. The top graph shows 'DIP 3 = OFF (DIR)' with a linear relationship between input (0V to 10V) and output (0mA to 20mA). The bottom graph shows 'DIP 3 = ON (INV)' with an inverse relationship between input (0V to 10V) and output (20mA to 0mA).

The actuator has a selection of DIP switches under the removable cover. The switch provides the following functions:

DIP1: U/I - Input signal type selector:

- If set to OFF position, input signal Y is set to voltage (V).
If set to ON position, input signal Y is set to be current (mA).

DIP2: 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).

DIP3: D/I - Direct or inverse acting selector:

- If set to OFF position, the actuator is direct acting (actuator's stem extends by voltage increase). If actuator is set to ON position the actuator is inverse acting (actuator's stem retracts by voltage increase).

DIP4: —/Seq - Normal or sequential mode selector:

- Two actuators can be set to work parallel with one control signal. If the SEQUENTIAL is set than an actuator responds to split control signal (see 0(2) V ... 5(6) V / 5(6) V ... 10 V).

NOTE: This combination works in combination with DIP 5: 0(2) V ... 5(6) V / 5(6) V ... 10 V

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

- This function is available if DIP 4: --- / Sequential is set. Actuator can be set to match the range of the control signal:
2 ... 6 V (DIP 2: 2 V ... 10)
0 ... 5 V (DIP 2: 0 V ... 10)
4 ... 12 mA (DIP 2: 2 V ... 10)
0 ... 10 mA (DIP 2: 0 ... 10)

OR

- 6 ... 10 V (DIP 2: 2 V ... 10)
- 5 ... 10 V (DIP 2: 0 V ... 10)
- 12 ... 20 mA (DIP 2: 2 V ... 10)
- 10 ... 20 mA (DIP 2: 0 ... 10)

DIP6: Prop./3-pnt - Modulating or 3-point mode selector:

Actuator can operate in modulating (DIP 6 to OFF) or in "simple" 3-point mode, if the 3-point function is selected (DIP 6 to ON).

Modulating mode: DIP 6 set to OFF (factory setting)

- After the actuator has been connected to power supply, the actuator will start the self-adjustment procedure. The indicator LED flashes until self-adjustment is finished.
- Actuator's stem will run to its totally extended or retracted position by bridging SN signal to terminals 1 or 3 and will remain in this position as long as potential is present.
It is not allowed to bridge SP to terminal 1 or 3 when DIP 6 is set to OFF .

3-point mode: DIP 6 set to On

Look carefully wiring diagrams as wiring is different for controllers with triacs output (ECL) in comparison to controllers with relay output.

- Connect SN (Neutral) and power supply (24Vac) via controller to terminals 1 or 3.
- Return signal X (depends on DIP 2, 3, 4 & 5) is possible if connected power supply to SP and SN.

DIP7: LOG/LIN - Not in use.

DIP8: 100 % Kvs/Reduced Kvs - Not in use.

DIP9: Reset:

- Changing this switch position will cause the actuator to go through a self-adjustment procedure.

Wiring



24 Vac only.

* Only for actuators with safety function

DIP 6 = OFF **Wiring for modulating mode**

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

Actuator needs to perform Self stroking prior changing DIP 6 to ON.
Output signal depends on DIP 2, 3&5 setting.

* Only for actuators with safety function

DIP 6 = ON **Wiring for 3-point floating mode / Controller with relay output**

SN	0 V	Neutral
SP	24 Vac	Power supply
1	SP	Input
3		
X	0(2)-10 Vdc	Output

DIP 6 = ON **Wiring for 3-point floating mode / Controller with triacs output**

SN	0 V	Neutral
SP	24 Vac	Power supply
1	SP	Input
3		
X	0(2)-10 Vdc	Output

* Only for actuators with safety function
**R1, **R2=2.6 kΩ (0.5W)

Automatic self-adjustment feature

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

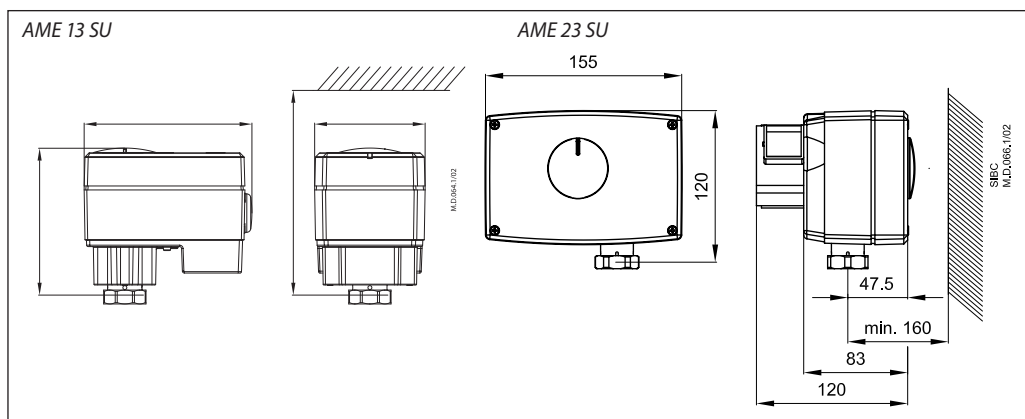
Wiring length	Recommended square of the wiring
0-50 m	0.75 mm ²
> 50 m	1.5 mm ²

Diagnostic LED

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

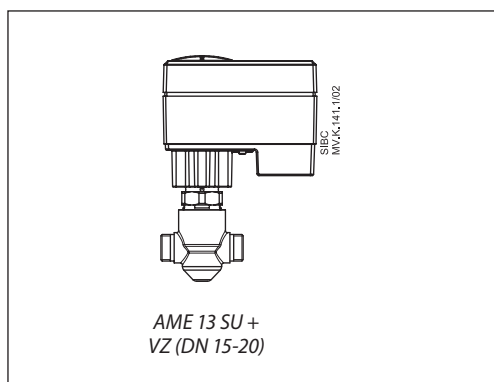
- Actuator Healthy (Permanently ON),
- Self Stroking (Flashes once per second),
- Error (Flashes 3 times per second - seek technical assistance).

Dimensions

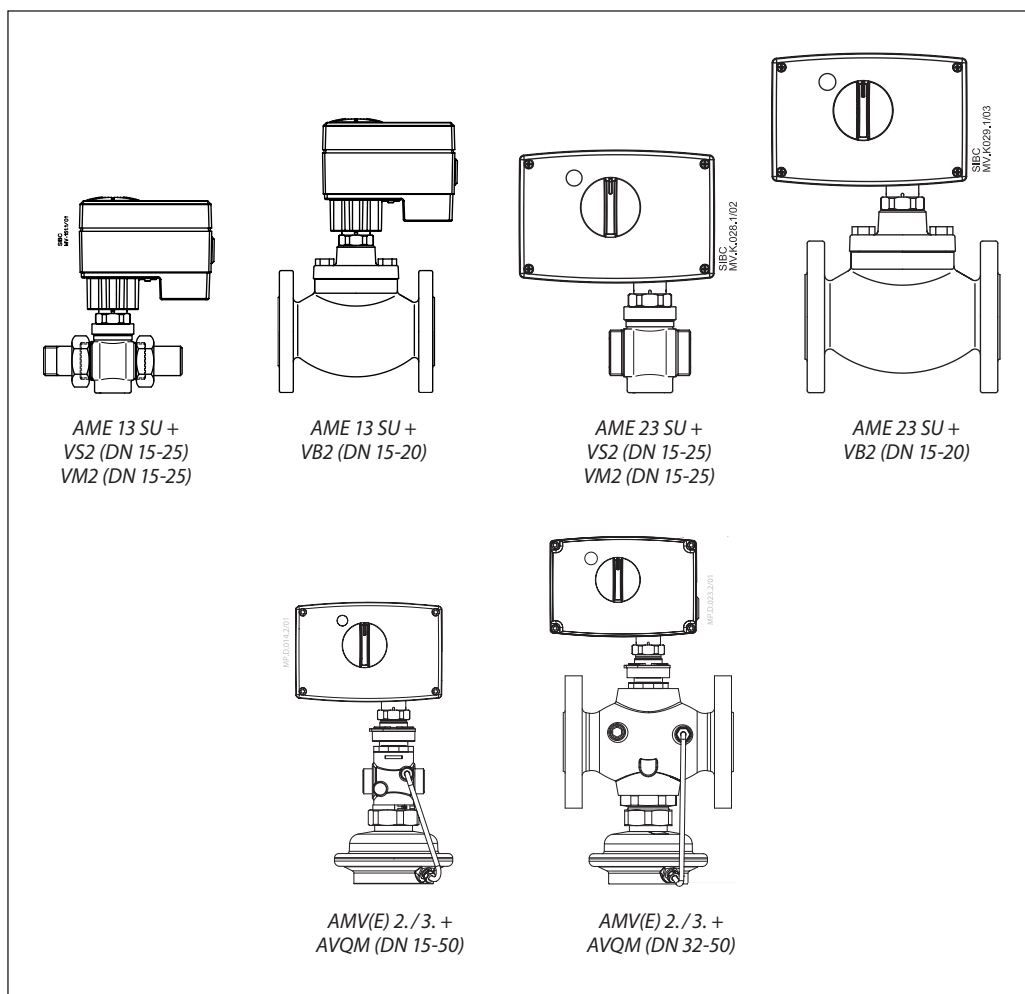


Actuator - valve combinations

- which close port A-AB if safety version is activated



- which open port A-AB if safety version is activated)





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