



AME 20



AME 23

Electrical actuators

AME 20/23

Description

Actuator with safety function (AME 23) and actuator without safety function (AME 20) are mainly used with VS, VM, VB, and AVQM valves.

Safety version is activated automatically in case of power failure or if the power supply is switched off by the safety thermostat. Actuators automatically adapt stroke to valve end positions which reduces commissioning time.

Features & benefits

- The advanced design incorporates load related 'switch-off' to ensure that actuators and valves are not exposed to overload.
- Digital feedback end position indication signal for valve end position is available by terminal 4 or 5.
- Robust design and low weight.
- The advanced design incorporates a diagnostic LED and operational data capture.
- DIN EN 14597 certified safety function.

Ordering

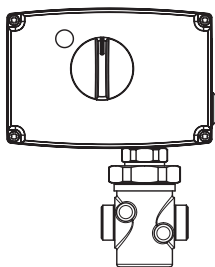
Product code numbers

Type	Code number
AME 20	082G3015
AME 23	082G3016

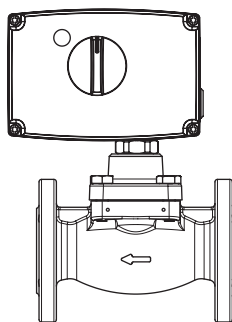
Overview

Product portfolio

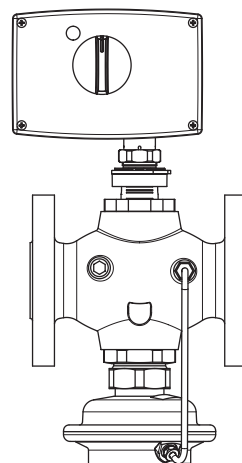
Actuator - valve combinations



AME 20, AME 23 +
VS2 (DN 20* - 25)
VM2 (DN 15 - 50)



AME 20, AME 23 +
VB2 (DN 15 - 50)



AME 20, AME 23 +
AVQM (see AVQM data sheet)

* The use of AME actuators together with VS2 DN 15 is not recommendable. Linear characteristics as in VS2 DN 15 valves is not recommendable in DHW production.

Functions

Settings

Commissioning

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

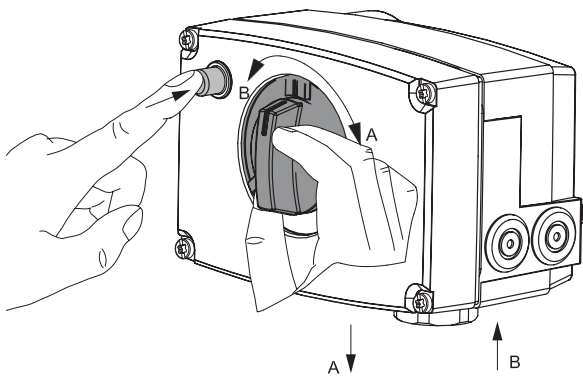
- Isolate control medium. (e.g. self-adjustment in a steam application without suitable mechanical isolation could cause a hazard).
- Apply the power. Note that the actuator will now perform the self-adjustment procedure.
- Apply the appropriate control signal and check the valve stem direction is correct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

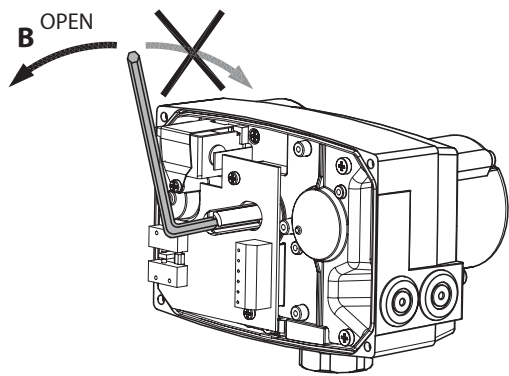
The actuator can be driven to the fully open or closed positions (depending on valve type) by connecting SN to terminals 1 or 3.

Manual Override



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A ↓	CLOSE
	
B ↑	OPEN
	

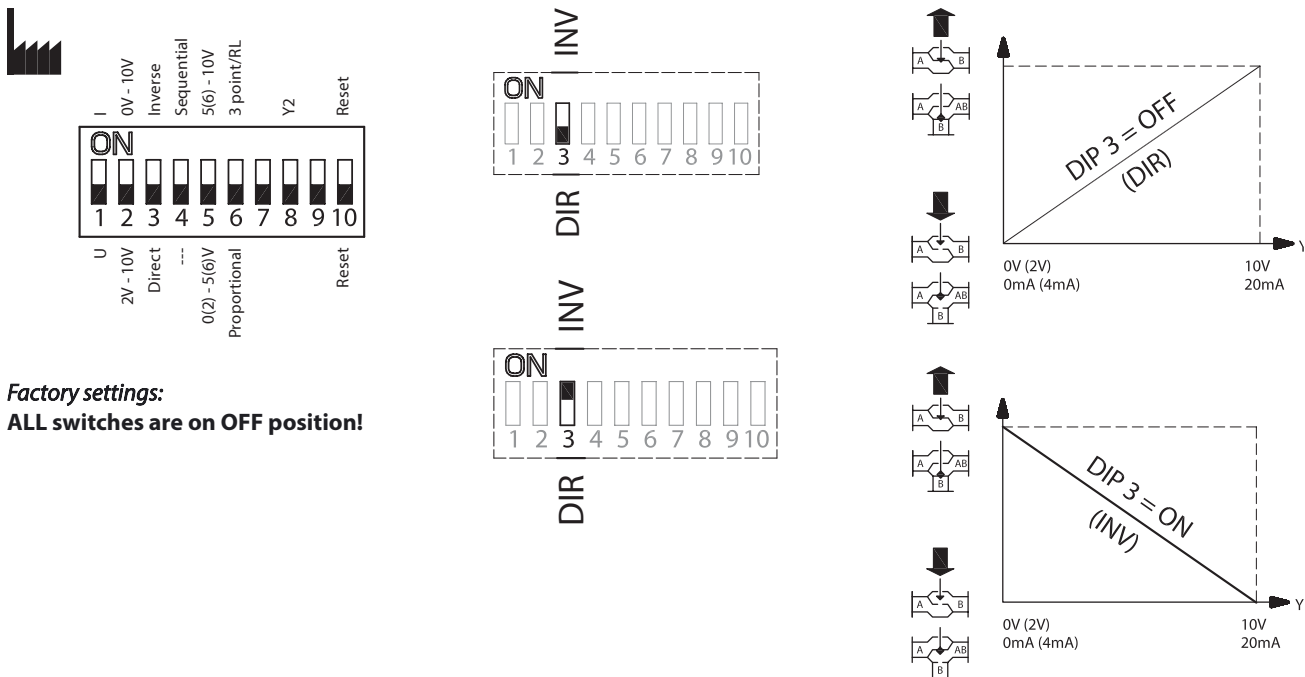


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B ↑	OPEN
	

DIP switch settings

The actuator has a selection of DIP switches under the removable cover.



Note: All combinations of DIP switches are allowed. All functions that are selected are added consecutively. There is only one logic override of functionalities i.e. the switch No.6 Proportional/3 point, which sets actuator to ignore control signal and works as a “simple” 3-point actuator.

The switches provide the following functions:

SW1: U/I

Factory settings:

Voltage control signal (0-10 V).

Actuator can respond to a voltage or current control signal. With switch No.1: U/I actuator can be set either to operate with a voltage control signal (actuator responds to signal between 0-10 V), or current control signal (actuator responds to signal between 0-20 mA).

SW2: 2-10 V/0-10 V

Factory settings:

2-10 V.

Actuator can be set to response on a control signal from 2 V, or 0 V. If the actuator is set to current signal then it responds to control signal from 4 mA or 0 mA.

SW3: Direct/Inverse

Factory settings:

DIRECT

Actuator can be set for spindle to travel downwards on rising control signal (DIRECT), OR for spindle to travel upwards on rising control signal (INVERSE). Setting affects return signal the same way.

SW4:---/Sequential

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

Note: This combination works in combination with switch No.5: 0(2)-5(6) V/5(6)-10 V

SW5: 0(2)-5(6) V/5(6)-10 V

Note: This function is available if switch No.4: ---/Sequential is set.

SW6: Proportional/3 point

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

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).

Factory set DIP 6 to OFF for operating actuator in Modulating mode.

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.

Set DIP 6 to ON for operating actuator in 3 point mode.

Look carefully at the wiring diagram as wiring is different for controllers with triac output (ECL) in comparison to controllers with relay output.

Return signal X indicates the correct position.

Note: If 3 point function is selected actuator does not respond to any control signal on port Y. It only rises and lowers spindle if power is supplied on port 1 or 3.

SW7: Not in use.

SW8: Y2

Input 1 functions as an analog input Y2, which overrides and takes control of the Y input when the input signal is within the range of 2–10 V.

SW9: Not in use.

SW10: Reset

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. The duration depends on the spindle travel and will normally last a few minutes. The stroke length of the valve is stored in the memory after self adjustment has been completed. To restart self adjustment, change the position of RESET switch (switch No.10).

Product details

General data

Technical data

Type	AME 20	AME 23
Power supply	24 V AC/DC; $\pm 20\%$	24 V AC/DC; $\pm 20\%$
Power consumption, peak	4.9 VA (AC) / 1.3 W (DC)	9.4 VA (AC) / 8.9 W (DC)
Power consumption, running	1.7 W (AC) / 1.1 W (DC)	2.6 W (AC) / 2.4 W (DC)
Power consumption, standby	0.5 W (AC) / 0.4 W (DC)	1.4 W (AC) / 1.7 W (DC)
Frequency (Hz)	50/60	50/60
Safety function	-	yes
Number of spring return activations	-	30.000
Safety function runtime, 10 mm stroke	-	8 s
Control input Y (Vdc)	0-10 (2-10) $R_i = 24 \text{ k}\Omega$	0-10 (2-10) $R_i = 24 \text{ k}\Omega$
Control input Y (mA)	0-20 (4-20) $R_i = 500 \Omega$	0-20 (4-20) $R_i = 500 \Omega$
Output signal X (Vdc)	0-10 (2-10)	0-10 (2-10)
Closing force (N)	450	450
Max. stroke (mm)	10	10
Speed (s/mm)	15	15
Max. medium temperature (°C)	150	150
Ambient temperature (°C)	0 ... 55	0 ... 55
Storage and transport temperature (°C)	-40 ... 70	-40 ... 70
Ambient humidity	5-95 % r.h., non-condensing	5-95 % r.h., non-condensing
Protection Class	III(24V)	III(24V)
Grade of enclosure	IP 54	IP 54
Weight (kg)	1.45	1.5

Main functionalities

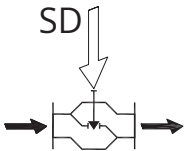
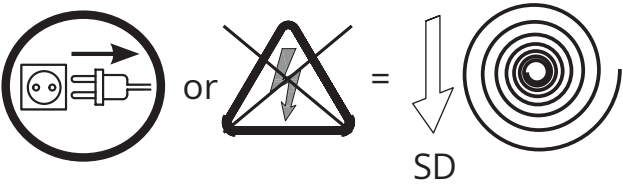
Safety function

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

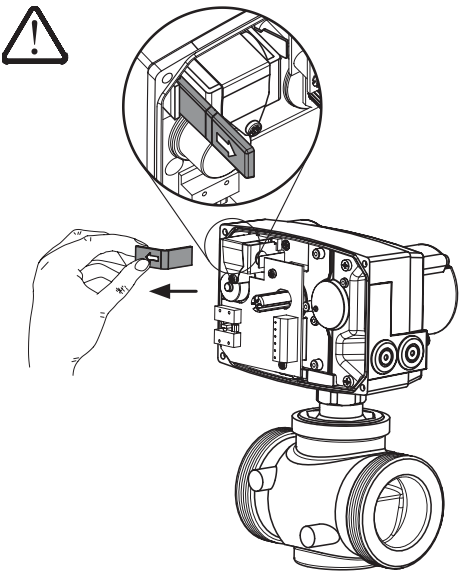
The safety function will fully open or close the valve by power failure, depending upon the chosen safety action (SD = safety down). Valve selection will also affect the safety action. The safety function unit is factory fitted to the rear of the actuator.

Valve type	Safety action selection will	
	Close port A-AB	Open port A-AB
VS	SD ¹⁾	-
VM (DN 15-50)	SD ¹⁾	-
VB (DN 15-50)	SD ¹⁾	-
AVQM (DN 15-50)	SD ¹⁾	-

¹⁾ in compliance with DIN EN 14597

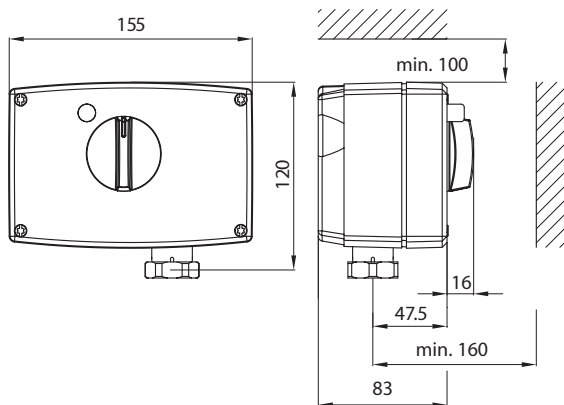


VS, VM, VB, AVQM

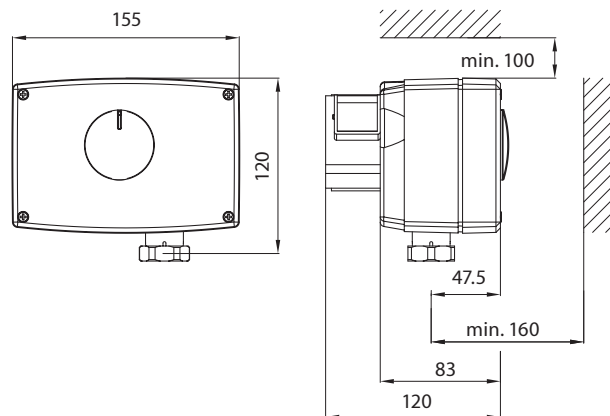


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Dimensions

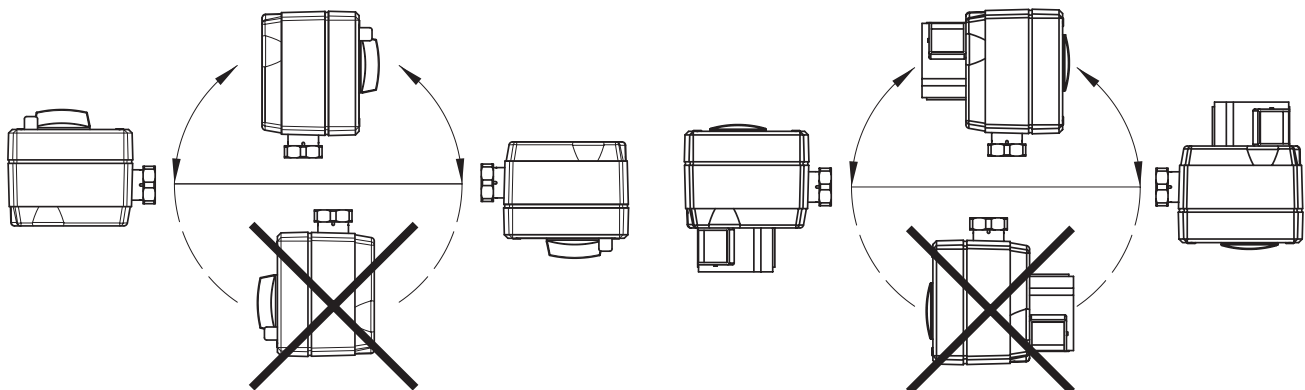


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Installation



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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.

Wiring



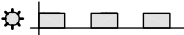
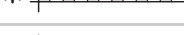
24 Vac only.

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 DIP10.

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

LED signalisation

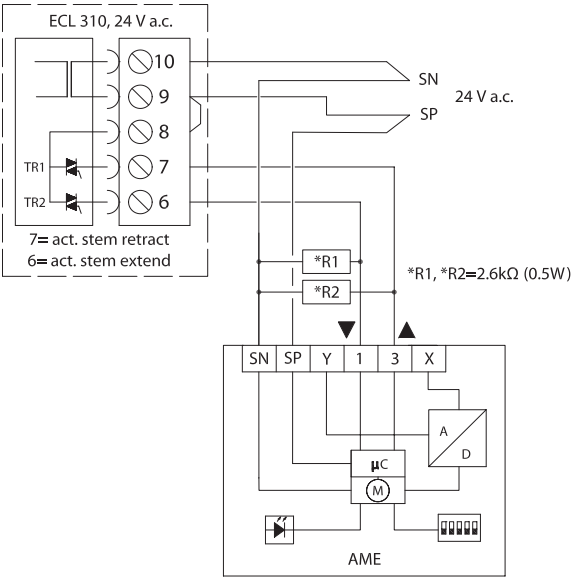
LED	Indication type	Operating mode
Red LED	 Flashing (1 s cycle)	Calibration - Self stroking mode - Actuator is extending or retracting the stem
Green LED	 Flashing (1 s cycle)	Movement - Retracting stem Positioning mode - Actuator is retracting the stem
Yellow LED	 Flashing (1 s cycle)	Movement - Extending stem Positioning mode - Actuator is extending the stem
Green LED	 Constantly lit	Retracted position achieved (UP) - Stationary mode - Actuator has reached upper end position (retracted stem)
Yellow LED	 Constantly lit	Extended position achieved (DOWN) - Stationary mode - Actuator has reached bottom end position (extended stem)
Green/Yellow LED	 Flashing (0.5 s cycle)	Actuator positioned on Y signal
Red/Yellow LED	 Flashing (0.5 s cycle)	Power supply or temperature too high or too low, calibration out of range
Red LED	 Flashing (0.3 s cycle)	Error (calibration not completed, motor or internal error)

* If multiple status messages are active simultaneously, each status will be displayed sequentially. Every status is shown for 3 seconds, followed by a 1-second pause, after which the next active status will be displayed for 3 seconds. This sequence will continue until all active statuses have been shown.



DIP 6 = ON

Wiring for 3-point floating mode / Controller with triacs output



* Only for actuators with safety function

*R1, *R2=2.6 kΩ (0.5W)

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

Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Issuer	Approval topic
UA Declaration	UA Actuators 2024-06-27	Danfoss	LVD
Export Control Declaration	Actuators pressure flow and temperature	Danfoss	
EU Declaration	Danfoss EU 221011EN0815101	Danfoss	LVD
EU Declaration	Packaging EU Declaration of Conformity 260707EN0801	Danfoss	Packaging

Contact details

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