



Thermal actuators

Actuator ABN A5 for AB-QM,
On/Off

Description

The ABN A5 on/off thermal actuator has been specifically designed for use with AB-QM valves DN10-32/½-1¼ inch in heating and cooling applications.

The actuator can be controlled with an on/off or PWM controller which is provided either by a room thermostat or by a central direct digital control (DDC) system.

Features & benefits

- Stroke 5.0 mm
- Available as normally closed (NC) or normally open (NO)
- Power consumption 1W
- Plug-in cable
- Simple snap-on installation
- IP54 in any installation position
- First-Open function
- Compact size, small dimensions
- All round function indicator
- Noiseless and maintenance-free
 - Certified by TÜV

Ordering

Product code numbers

| Type | Description | Supply voltage [V] | De-energized position | End-switch | Cable included | Code number |
|---------------|---|--------------------|-----------------------|------------|----------------|-------------|
| ABN A5 On/Off | ABN A5 thermal actuator | 24 V AC/DC | Normally closed | NO | No | 082F1150 |
| ABN A5 On/Off | ABN A5 thermal actuator | 24 V AC/DC | Normally open | NO | No | 082F1151 |
| ABN A5 On/Off | ABN A5 thermal actuator | 230 V AC | Normally closed | NO | No | 082F1152 |
| ABN A5 On/Off | ABN A5 thermal actuator | 230 V AC | Normally open | No | No | 082F1153 |
| ABN A5 On/Off | ABN A5 thermal actuator with End Switch | 230 V AC | Normally closed | yes | Yes | 082F1154 |
| ABN A5 On/Off | ABN A5 thermal actuator | 120V AC | Normally closed | No | No | 082F1156 |
| ABN A5 On/Off | ABN A5 thermal actuator | 120V AC | Normally open | No | No | 082F1157 |

Cables

Cables are not included and should be ordered separately (not valid version with end switch). It is possible to select between different lengths and standard or halogen free material.

| Cables | Material | Code No. |
|-----------|----------------|----------|
| 1 meter | Standard (PVC) | 082F1144 |
| 5 metres | Standard (PVC) | 082F1145 |
| 10 metres | Standard (PVC) | 082F1146 |
| 1 meter | Halogen free | 082F1147 |
| 5 metres | Halogen free | 082F1148 |
| 10 metres | Halogen free | 082F1149 |

Functions

The actuator mechanism of the ABN A5 actuator uses a positive temperature coefficient (PTC) resistor heated wax element and a compression spring. The wax element is heated by applying the operating voltage and moves the integrated piston. The force generated by this movement is transferred to the piston, thus opening or closing the valve.

First open function (for NC versions only)

In its delivery condition, the ABN A5 is kept open when de-energized due to the first open function (filling). This enables heating/cooling operation during the carcass construction phase even when the electric wiring is not yet complete. During the later electrical start-up, the first open function is unlocked by applying the operating voltage for more than 6 minutes and the ABN A5 will then be completely operable.

Version NC “normally closed” (valve closed)

In case of the normally closed version, the valve is opened steadily by the ram motion upon switching on the operating voltage and after expiry of the dead time. After the operating voltage is cut and after expiry of the hold time, the valve is closed evenly by the closing force of the compression spring. The closing force of the actuator is matched to AB-QM DN10-32 valves and keeps the valve closed when de-energised.

Version NO “normally open”

In case of the normally open version, the valve is closed steadily by the ram motion upon switching on the operating voltage and after expiry of the dead time. After the operating voltage is cut and after expiry of the hold time, the valve is opened evenly by the compressive force of the valve spring.

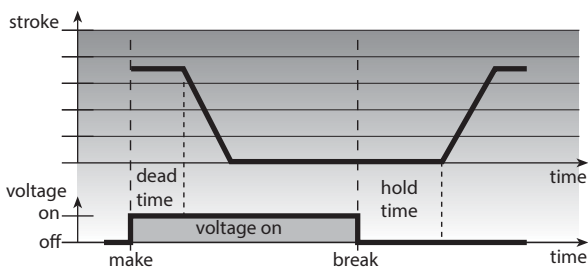


Fig. 3: Example of closing curve.

Function display

The function display of the ABN A5 (all-round display) allows identifying the operating condition (valve open or closed) at a glance.

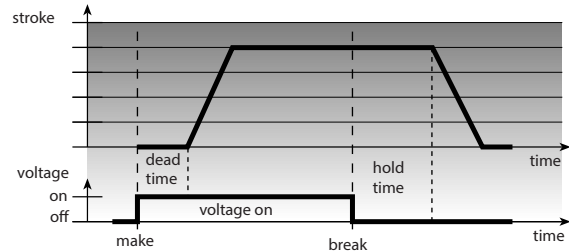


Fig. 1: Example of opening curve.

Version NC with end switch (082F1154)

The integrated micro switch is switched at a travel path of approx. 2 mm. After the operating voltage is cut and after expiry of the hold time the valve is closed evenly by the closing force of the compression spring. The integrated switch is closed after an actuator travel of approx. 2 mm. The closing force of the compression spring is matched to the closing force of commercially available valves and keeps the valve closed when de-energised.

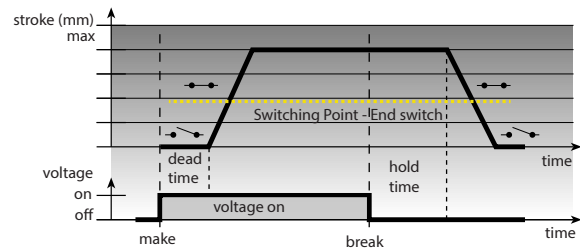


Fig. 2: Example of opening curve.

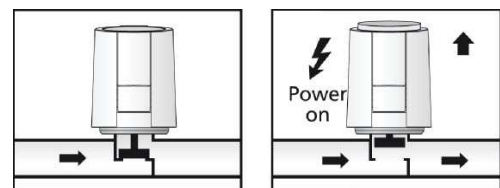


Fig. 4: Function display for NC versions extends proportionally with actuator opening from 0 mm to 5-6 mm.

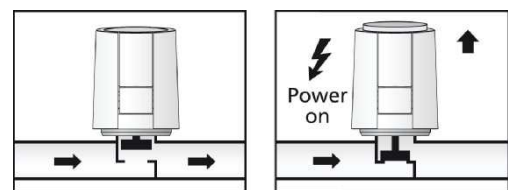
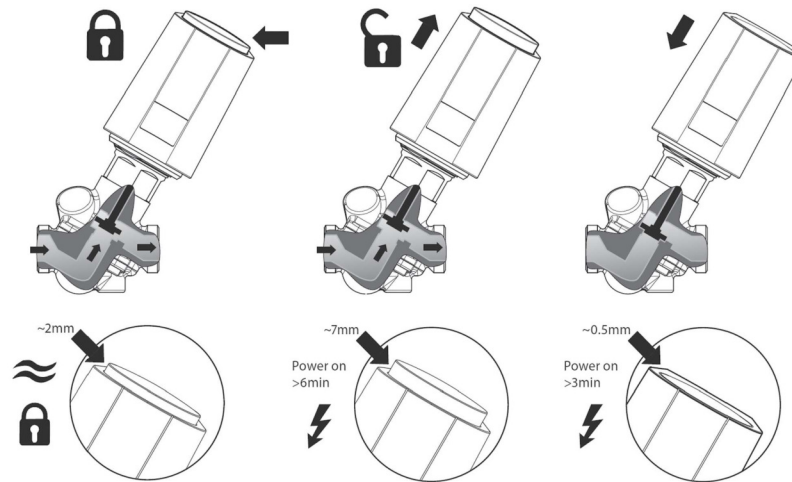


Fig. 5: Function display for NO versions extends only when valve is fully closed by approx. 0.5 mm.

First Open Function



Presentation of First Open Function (Unlock NC version).

Product details

General data

Data

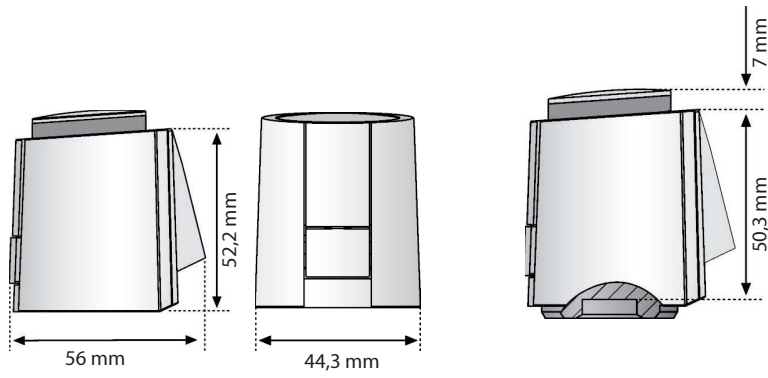
| ABN A5 type | 24 V | 230 V |
|----------------------------------|--|---|
| Version | NC/NO | NC/NO |
| Voltage | 24 V AC/DC, +20 %...-10 %, 0-60 Hz | 230 V AC, +10 %...-10 %, 50/60 Hz |
| Max. inrush current | < 300 mA during max. 2 min. | < 550 mA during max. 200 ms |
| Operating power | 1 W ¹⁾ | 1 W ¹⁾ |
| Control voltage | On/Off | On/Off |
| Actuator travel | 5 mm | 5 mm |
| Actuating force | 100 N | 100 N |
| Closing and opening time | ~4 min. | ~4 min. |
| Fluid temperature | 0 - 100 °C | 0 - 100 °C |
| Storage temperature | -25 to 65 °C | -25 to 65 °C |
| Ambient temperature | 0 to 60 °C | 0 to 60 °C |
| Ambient humidity | 95% r.h., non-condensing | |
| Degree/class of protection | IP54 ²⁾ /III safety extra-low voltage | IP54 ²⁾ /II |
| CE conformity according to | EN60730, UL60730 | EN60730, UL60730 |
| Housing/housing colour | Polyamid/White RAL9003 | Polyamid/White RAL9003 |
| Connecting cable | 2 x 0.75 mm ² PVC, or halogen free | 2 x 0.75 mm ² PVC, or halogen free |
| Adapter (included) | VA 41 | VA 41 |
| Overvoltage resistance EN60730-1 | min. 2.5 kV | min. 2.5 kV |
| Weight | 0.1 kg | 0.1 kg |

¹⁾ Measured with precision reference instrument LMG95.

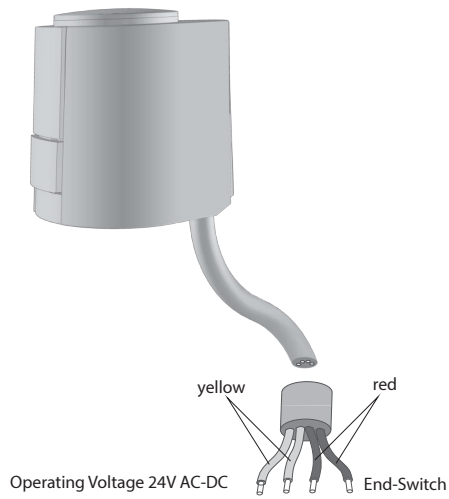
²⁾ In all installation positions.

End switch version. Switching current for micro switch :24V, 3A resistive load, 1A inductive load.

Dimensions



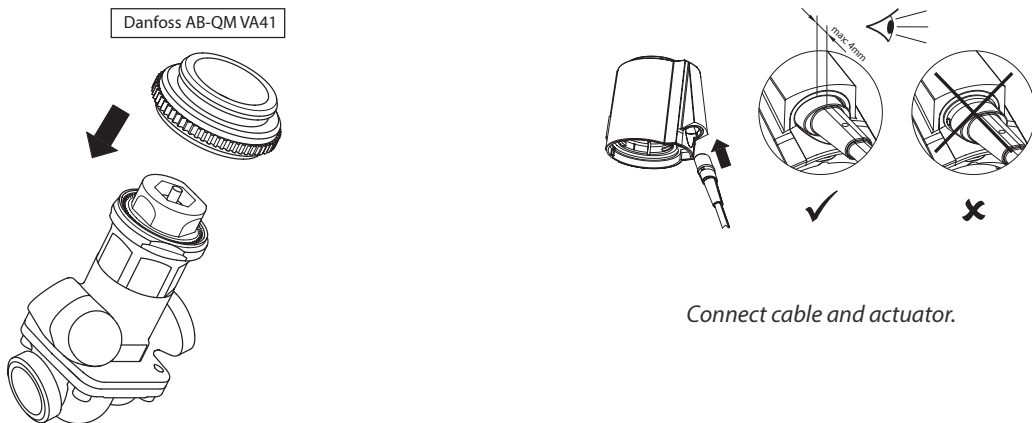
Connections



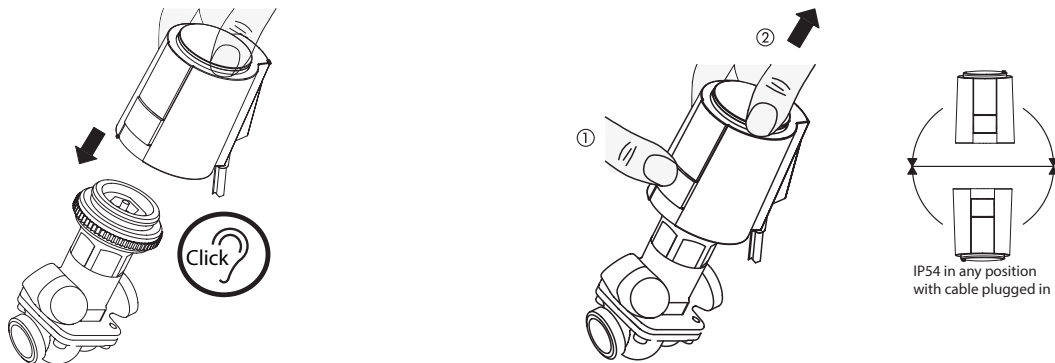
Cable connection of version with end switch 082F1154.

Installation

Installation with valve adapter



Screw the valve adapter manually onto the valve.



Place the actuator vertically on the valve adapter. The actuator snaps onto the valve adapter with a "click" when pressed down vertically by hand.

The actuator is dismounted by pressing the knob and pull of the actuator vertically.

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 | Certification body | Approval topic |
|----------------------------|--|--------------------|------------------|
| EU Declaration | Danfoss EU BF343634241375en-000301.02 | Danfoss | EMC, MD, EU RoHS |
| Export Control Declaration | Gear and Thermal actuators | Danfoss | |

Contact details

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