

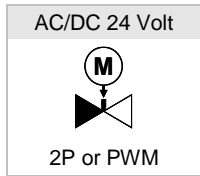


BA4008

F20181002003

Thermoelectric actuators, type BA4008

- Power supply Uv : AC/DC 24 Volt
- Control signal: On/Off or PWM
- Stroke : max. 4,5mm
- Force : max. 115N
- Normally closed version (NC)
- Mounting: with universal 1-for-all valve adapter
- Automatic compensation of the closing extent with the *Auto-Fit* function
- Electrical connection via 2-wire connection cable (pluggable)
- Quiet operation (0dbA) and no maintenance required
- Position indicator ∪ 360°
- OEM- version normally open (NO) on request



Advantages

- ✓ Easy mounting
- ✓ 1-for-all valve adapter concept
- ✓ *Auto-Fit* of valve closing dimension
- ✓ low power consumption
- ✓ modular system cable with connector
- ✓ NC (normally closed) or NO
- ✓ ∪ 360° position indicator
- ✓ long life span
- ✓ absolutely quiet operation

Description

The thermoelectric actuators, series BA4008, have been developed for energy efficient readjustment in various HVAC applications like heating and cooling applications, IRC individual room control or zone control.

The actuators can be used for the efficient control of systems with an average inertia, such as radiators, cooling beams and radiation cooling ceilings, as well as for inert systems such as climate ceilings and cooling systems or thermoactive building systems (TABS). With the application of the right control strategy, these actuators contribute to energy savings.

These actuators use a PTC resistor heated wax element and a spring loaded piston. The wax element is heated up by applying the power supply, and is then moving the internal piston. The force generated by this movement is transferred to the stem of the valve, thus opening or closing the valve. The actuator operates silently and is maintenance-free.

The BA4008 series (NC) offers a positioning force of 115N for a traveling stroke of 4,5mm. The mechanical position indication offers a clear ∪ 360° view on the open or closed position of the valve.

Content

Nomenclature	2
Technical data	3
Functional diagram	3
Cable for electrical wiring	4
Dimensioning	5
Dimensions	5
Mounting	5
<i>Auto-Fit</i> function	6
Closing dimensions	6
Overview	7
Ordering example	9

Nomenclature

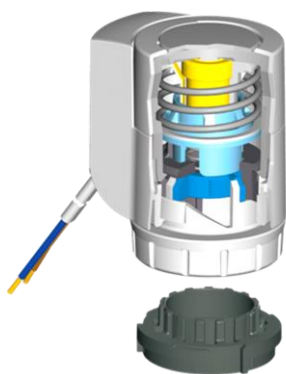
BA	4	0	0	8	80	01	-	
BA								Type of actuator BA Belparts Actuator for thermal controls ▲
	2							Power supply & control signal 2 AC 230 Volt (datasheet 6.108)
	4							4 AC/DC 24 Volt ▲
	6							6 AC 24 Volt, Y: 0(2)..10Vdc (datasheet 6.128)
		0						Stroke & behavior (NC/NO) 0 NC, max. 4,5mm ▲
		1						1 NO, max. 4,5mm △
			0					Various versions 0 Complete actuator ▲
			1					1 Compose your own actuator △
				8				Auto-Fit function 8 with Auto-Fit function ▲
					80			Valve adapter ¹⁾ 80 with AV80, universal 1-for-all valve adapter ▲
b						00	00	Delivery without cable (to be ordered separately)
						01	01	Cable length 1m (PVC) ▲
						02	02	Cable length 2m (PVC) △
								Options - - No special options HF HF Halogen-free △

Remark : for a complete list of existing types, see "Overview", page 7

¹⁾ overview of alternative valve adapters : see page 8

²⁾ cables to be ordered separately available on request

▲ default
△ on request



F20181001005

Technical data		
Power supply U _v		AC/DC 24 Volt
Tolerance		-20%..+20%, 50/60 Hz
Control		On/Off or PWM
Power consumption		3W (when on)
Start-up consumption	current	5W / 5VA 220 mA
Stroke		max. 4,5mm
Running time		min. 4,5 minutes
Force	BA4008 (NC) BA4108 (NO)	max. 115N max. 110N
Housing		white (RAL 9010)
Electrical wiring ¹⁾		2x 0,5mm ² , PVC, 1m, plug-in
Degree of protection		IP54 (EN 60529)
Protection class		III (EN 60730-1)
CE conformity		<i>Electrical safety</i> 2006/95/EC cable type 0,50mm ² : EN 60335-1 cable type 0,75mm ² : EN 60730-1,-2-14 <i>EMC Directive</i> 2014/30/EU EN 61000-6-1/EN 61000-6-2 EN 61000-6-3/EN 61000-6-4
Temperature	stock keeping ambient medium	-25..+70°C 0..+50°C 0..+100°C max.
Relative humidity		85% rH, condensation-free
Maintenance		No maintenance required
Weight		180g (1m cable included)

¹⁾ other cable lengths or halogen-free cables available on request

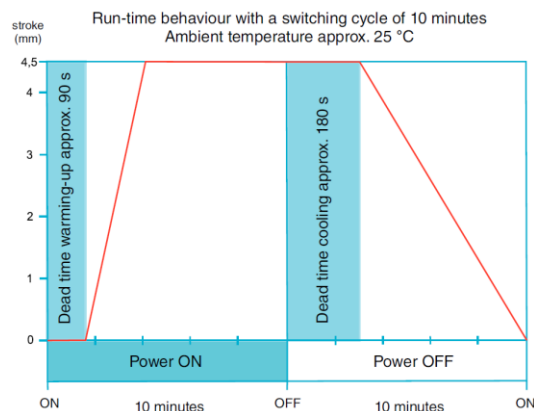
Functional diagram

When the power of the actuator is switched on in 'cold condition' (ambient temperature approx. +25°C), the valve starts to open after a warming-up time of approx. 1,5 minute.

After an additional period of approx. 3 minutes, the actuator has executed a stroke of 4,5 mm.

When the power of the actuator is switched off, the expansion element cools down and the valve is closed by the internal piston.

With a "pulse-pause" control signal that periodically opens or closes the actuator, it is possible to obtain a quasi-continuous control.



Cable for electrical wiring



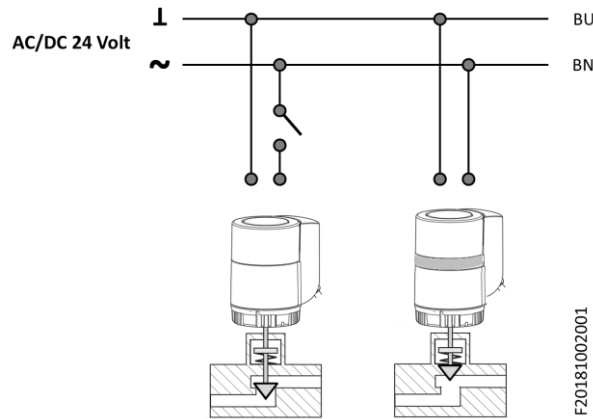
The BA4008 actuators are provided by default with a plug-in connection cable in PVC, length 1m (2x0,5mm²).

The plug-in cable (with plug) simplifies the custom-made adjustment and allows the actuator to be fitted with the cable length of choice (max.15m). Halogen-free connection cables can also be supplied on request.

NC – Normally closed (default version)

After mounting the actuator on the control valve, the control valve will be closed when in 'idle state'. When the power of the actuator is switched on, the actuator shaft moves inwards and the valve shaft extends outwards while the control valve opens. Valve position in combination with actuator with power off: CLOSED.

BA4008 (NC)

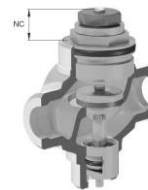
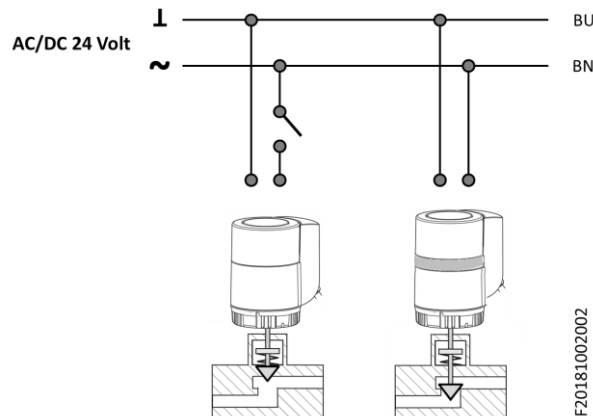


With control valve type : NO

NO – Normally open (OEM version) ¹⁾

After mounting the actuator on the control valve, the control valve will be open when in 'idle state'. When the power of the actuator is switched on, the actuator shaft extends outwards and the valve shaft moves inwards while the control valve closes. Valve position in combination with actuator with power off: OPEN.

BA4108 (NO)



With control valve type : NC

¹⁾ on request

BU = blue / BN = brown

Dimensioning

A safety transformer must always be used in accordance with EN61558-2-6. The dimensioning of the transformer is based on the starting current of the actuator.

Rule of thumb : $P_{\text{transfo}} = 6W \times n$

n : number of transmissions

The following cable is recommended for 24 Volt installations:

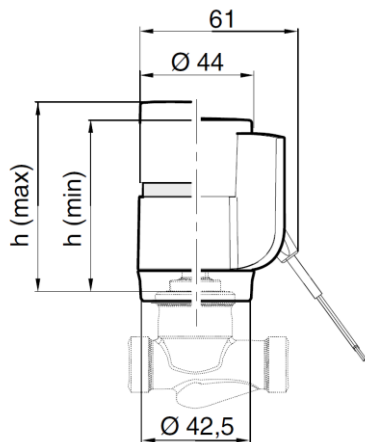
- J-Y(ST)Y 0,8mm²
- NYM 1,5mm²
- NYIF 1,5mm²

Rule of thumb, with regard to losses in the pipes (copper pipes), for calculating the maximum length in a 24 Volt installation:

$$L = K \times A / n$$

with L : cable length [m]
K : constant (269 m/mm²)
A : cable section [mm²]
n : number of transmissions, type BA..

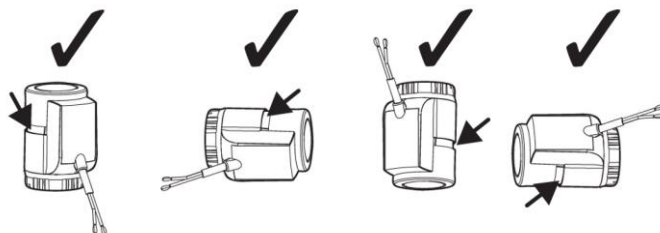
Dimensions



	BA4008	BA4108
	NC	NO
h min	59	59
h max	66	64


Mounting

IP54
EN60730

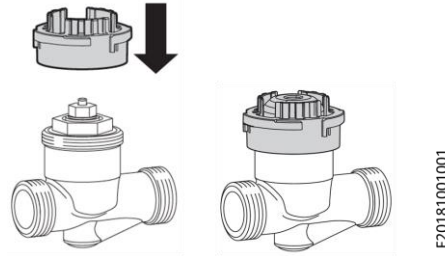


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Auto-Fit function


 1-for-all : only one valve adapter for all valves

Due to the **Auto-Fit** function, the closing extent of the valve will be automatically, mechanically compensated. This has the great advantage that the same valve adapter can be used for various control valves.

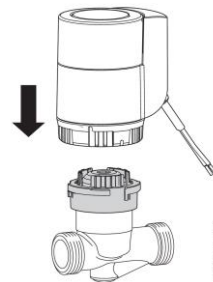


With the AV80 valve adapter supplied by default, the actuator can compensate for a closing extent from 8.5 mm to 13.5 mm and can therefore be combined with the most common control valves on the market.

When the valve adapter is rotated, a compensation pin is released in the actuator.

 Simple tension-free mounting

In addition, the actuator can be mounted tension-free on the control valve thanks to the unique LFL locking technology (LFL: low force locking).



When the actuator is removed from the control valve, the closing extent and pre-tension are released once again. The actuator is then in the state as delivered ex works and can be reused with full LFL functionality.

Closing dimensions

Interface	Color	Closing size			
		standard AV	AV_H		
			-	N-insert	S-insert
<i>In combination with NC-actuator</i>					
M30 x 1	white	8.5 mm .. 13.5 mm	13.5 mm .. 18.5 mm	8.5 mm .. 13.5 mm	4.5 mm .. 9.5 mm
M30 x 1,5	black				
M28 x 1,5	grey				
<i>In combination with NO-actuator</i>					
M30 x 1	white	12.5 mm .. 17.5 mm	17.5 mm .. 22.5 mm	12.5 mm .. 17.5 mm	8.5 mm .. 13.5 mm
M30 x 1,5	black				
M28 x 1,5	grey				

Overview



Standard actuators AC/DC 24 Volt with *Auto-Fit*, 115N, 4.5mm NC, On/Off or PWM

Type		NC	NO	with <i>Auto-Fit</i> function	with plug-in cable	with 1x limit switch	length cable	with valve adapter AV80
BA4008.80.00	▲	●	-	●	●	-	¹⁾	M30x1,5
BA4008.80.01	▲	●	-	●	●	-	1m	M30x1,5
BA4008.80.02	▲	●	-	●	●	-	2m	M30x1,5
BA4018.80.01	△	●	-	●	²⁾	-	1m	M30x1,5

Special versions actuators AC/DC 24 Volt with *Auto-Fit*, 110N, 4.5mm NO, On/Off or PWM

Type		NC	NO	with <i>Auto-Fit</i> function	with plug-in cable	with 1x limit switch	length cable	with valve adapter AV80
BA4108.80.00	△	-	●	●	●	-	¹⁾	M30x1,5
BA4108.80.01	△	-	●	●	●	-	1m	M30x1,5
BA4108.80.02	△	-	●	●	●	-	2m	M30x1,5

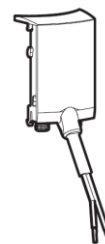
▲ default
△ on request

NC : normally closed
NO : normally open
AV.. : valve adapter

¹⁾ to be ordered separately (see pag.8)

²⁾ connection cable 1m supplied unmounted

Accessories



Connection cables as accessories for electrical connection

Type	Description		
AS8.2.01000	▲ connection cable 2x 0,5mm ² for BA4008, BA2008 actuators	L :	1m
AS8.2.02000	▲ connection cable 2x 0,5mm ² for BA4008, BA2008 actuators	L :	2m
AS8.2.03000	△ connection cable 2x 0,75mm ² for BA4008, BA2008 actuators	L :	3m
AS8.2.05000	△ connection cable 2x 0,75mm ² for BA4008, BA2008 actuators	L :	5m
AS8.2.10000	△ connection cable 2x 0,75mm ² for BA4008, BA2008 actuators	L :	10m
AS8.2.15000	△ connection cable 2x 0,75mm ² for BA4008, BA2008 actuators	L :	15m
AS8.2.20000	△ connection cable 2x 0,75mm ² for BA4008, BA2008 actuators	L :	20m
AS8.2.02000.HF	△ connection cable 2x 0,75mm ² for BA4008, BA2008 actuators	L : halogen-free	2m
AS8.2.05000.HF	△ connection cable 2x 0,75mm ² for BA4008, BA2008 actuators	L : halogen-free	5m
AS8.2.10000.HF	△ connection cable 2x 0,75mm ² for BA4008, BA2008 actuators	L : halogen-free	10m

Valve adapters as accessories ¹⁾



Type	Description	Interface	N-insert	S-insert
AV39H	△ valve adapter, type AV39H	M30 x 1	●	●
AV80	▲ valve adapter, type AV80	M30 x 1,5	-	-
AV80H	△ valve adapter, type AV80H	M30 x 1,5	●	●
AV70H	△ valve adapter, type AV70H	M28 x 1,5	●	●

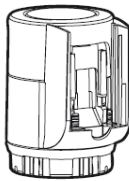
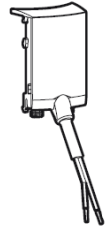
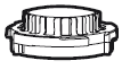
Other adapters such as for Giacomini R450, R452, R546 and the 60 series of Danfoss RA, RAV, RAVL available on request.

- ▲ default
- △ on request

Ordering example

Qty	Type	Description
1x	BA4008.80.01	Thermoelectric actuator with <i>Auto-Fit</i> , 4.5mm NC, AC/DC 24 Volt, 115N, control On/Off or PWM, with (plug-in) connection cable 1m and universal valve adapter type AV80.

Scope of supply

Qty	Type	Description	
1x	BA4008.00.01	Thermoelectric actuator with <i>Auto-Fit</i> 4.5mm NC AC/DC 24 Volt 115N control: On/Off or PWM	
		With plug-in connection cable 1m (pre-mounted)	
1x	AV80	Valve adapter type AV80 (separate delivery)	

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