

## Technical data sheet

# 225C-024T-05

## Rotary actuator

### Description

Rotary actuator for adjusting dampers in HVAC installations

- Running time 60...120 s / 90°
- Torque 5 Nm
- Nominal voltage 24 VAC/DC
- Control continuous control (0)2...10 VDC
- Damper size up to approx. 1 m<sup>2</sup>
- Shaft coupling clamp  $\varnothing$  8-12 mm /  $\varnothing$  8-16 mm



### Technical data

<b>Electrical data</b>	Nominal voltage	24 VAC/DC, 50/60 Hz
	Nominal voltage range	19...29 VAC/DC
	Power consumption motor (motion)	2,0 W
	Power consumption standby (end position)	1,0 W
	Wire sizing	3,0 VA
	Control	continuous control (0)2...10 VDC / Ri > (100 k $\Omega$ ) 50 k $\Omega$ (0)4...20 mA
	Feedback signal	(0)2...10 VDC, max. 5 mA
	Auxiliary switch	-
	Contact load	-
	Switching point	-
	Connection motor	screw terminals, 4-pin 0,5...1,5 mm <sup>2</sup>
	Connection feedback potentiometer	-
	Connection auxiliary switch	-
	Connection GUAC	-
	<b>Functional data</b>	Torque

## Technical data

<b>Functional data</b>	Damper size	up to approx. 1 m <sup>2</sup>
	Synchronised speed	-
	Direction of rotation	selected by switch
	Manual override	gearing latch disengaged with pushbutton, self-resetting
	Angle of rotation	0°...max. 95° can be limited with adjustable mechanical end stops
	Running time	60...120 s / 90° (load-dependent)
	Sound power level	< 45 dB(A)
	Shaft coupling	clamp Ø 8-12 mm / Ø 8-16 mm
	Position indication	mechanical with pointer
	Service life	> 60 000 cycles (0°...95°...0°)
	<b>Safety</b>	Protection class
Degree of protection		IP 52 (cable port downwards)
EMC		CE (2014/30/EU)
LVD		CE (2014/35/EU)
RoHS		CE (2011/65/EU - 2015/863/EU - 2017/2102/EU)
Mode of operation		Typ 1 (EN 60730-1)
Rated impulse voltage		0,8 kV (EN 60730-1)
Control pollution degree		3 (EN 60730-1)
Ambient temperature normal operation		-30°C...+50°C
Storage temperature		-30°C...+80°C
Ambient humidity		5...95% r.H., non condensing (EN 60730-1)
Maintenance	maintenance free	
<b>Dimensions / Weight</b>	Dimensions	145 x 70 x 61 mm
	Weight	450 g

## Functionality / Properties

### Operating mode

Connect power supply to terminal 1+2 and a reference signal Y to terminal 3 in range of (0)2...10 VDC, actuator drives to its specified position. The actual damper position (0...100%) is a feedback signal U on terminal 4 for example to share with other actuators.

The actuator is overload-proof, requires no limit switches and automatically stops, when the end stop is reached.

### Operating mode

Connect power supply to wire 1+2 and a reference signal Y to wire 3 in range of (0)2...10 VDC, actuator drives to its specified position.

The actual damper position (0...100%) is a feedback signal U on wire 4 for example to share with other actuators.

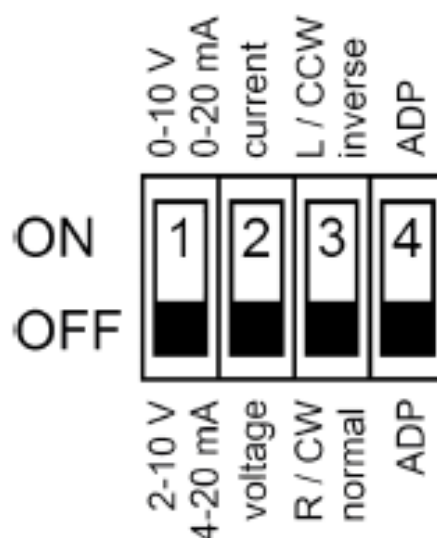
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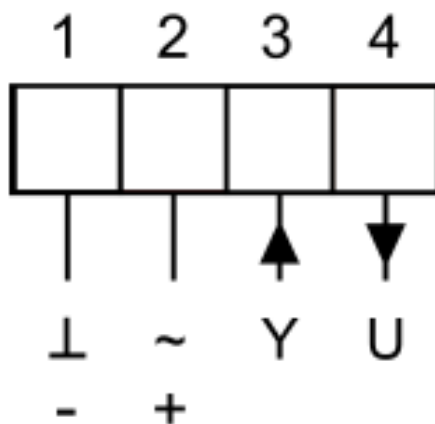
### Direct mounting

Simple direct mounting on the damper shaft with a clamp, protection against rotating with enclosed anti-rotation lock or rather at intended attachment points.

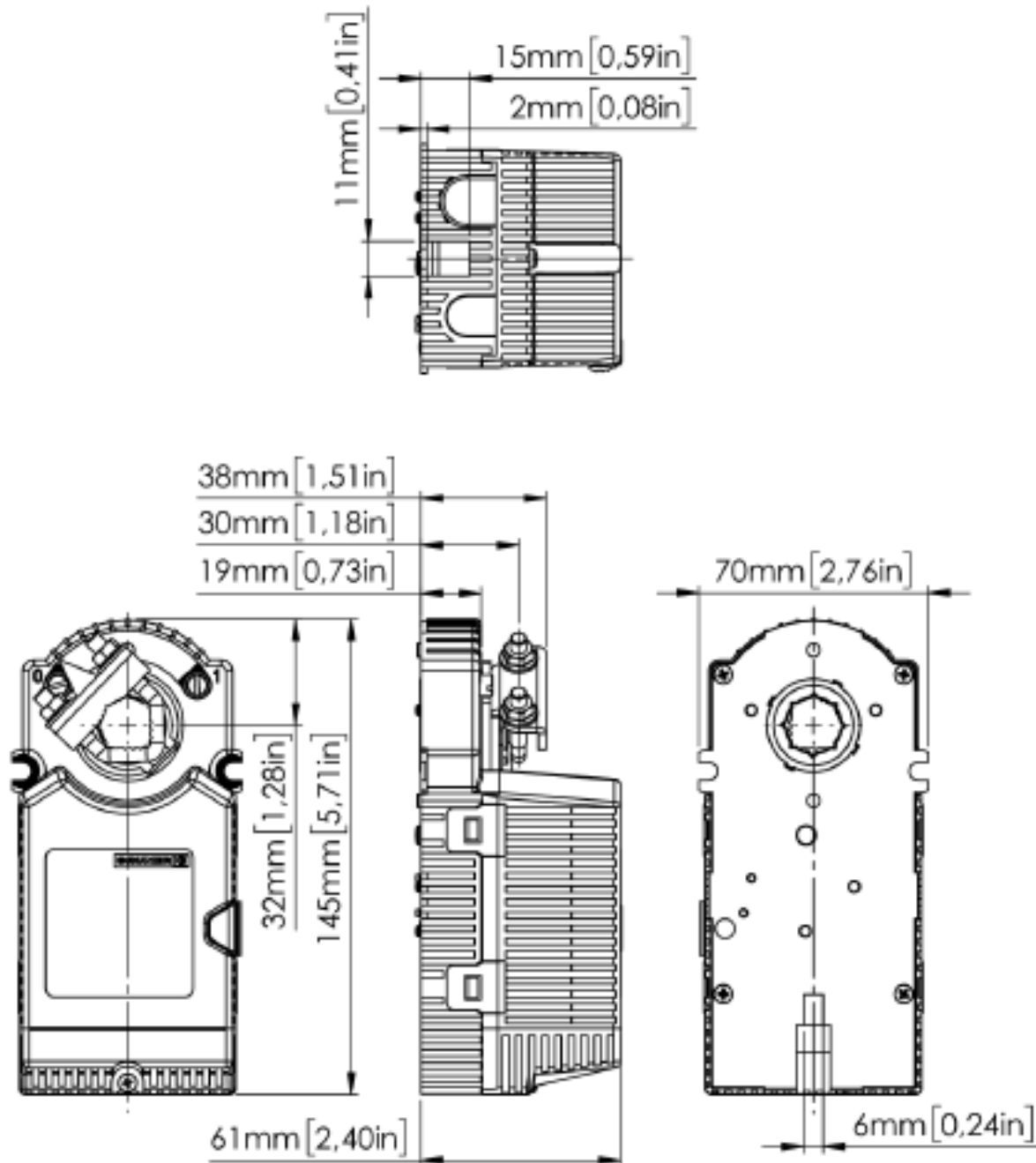
### Manual override

Manual override with self-resetting pushbutton possible (the gear is disengaged as long as the button is pressed).



**Connector / Security Note**

**Safety remarks**

- Connect via safety isolation transformer!
- The device is not allowed to be used outside the specified field of application, especially in airplanes.
- It may only be installed by suitably trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.
- The device may only be opened at the manufacturer's site.
- The device is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- When calculating the required torque, the specifications supplied by the damper manufacturer's (cross-section, design, installation site), and the air flow conditions must be observed.

**Technical Drawing**


Technical data sheet

**Control ball valve**  
**BOFB...K...B (2-way valve)**  
**BOLB...K...B (3-way valve)**

Description

Control ball valve to control the flow of hot and cold water and Glykol solutions (max. 50%) in HVAC systems conjunction with a rotary actuator



Technical data

<b>Valve</b>	Flow disc	with and without flow disk
	Media	- hot and cold water (VDI 2035) - water with glycol (max. 50%) - steam 121°C at 103 kPa
	Temperature of medium	-30°C...+140°C
	Body pressure rating	PN 40
	Close-off pressure ps	1380 kPa
	Differential pressure pmax	600 kPa (without flow disk) 340 kPa (with flow disk)
	Differential pressure note	240 kPa (low noise operation)
	Flow characteristic	equal percentage at 2-way/3-way valve linear at 3-way valve in bypass (VDI/VDE 2178)
	Leakage rate	< 0.01% from the Kvs, < 1% for bypass port leak-proof
	Connection	female thread (Rp, ISO 7/1)
	Angle of rotation	0...max. 90°
	Mounting position	vertical to horizontal (in relation to shaft)
<b>Materials</b>	Case	brass (DIN EN 12165, CW617N)

## Technical data

<b>Materials</b>	Valve ball	stainless steel (EN 10088-2)
	Valve shaft	stainless steel (EN 10088-2)
	Valve shaft gasket	2 x EPDM O-ring
	Gasket	PTFE with graphite part and EPDM O-ring
	Flow disc	AMODEL AS 1145HS
	Lubrication	accordance with approval
<b>Safety</b>	CE	PED 97/23/EC
	Maintenance	maintenance free
<b>Equipment</b>	Equipment	couplings inserts adapter
<b>Dimensions / weight</b>	Dimensions	see technical drawing

## Functionality / Properties

### Combination with actuator

The valves are according to the application with the listed actuators combined.

IP52:  
- 225 - 24/230 VAC/DC - 5 Nm

IP54:  
- 227 - 24/230 VAC/DC - 5; 10; 15 Nm  
- 341 - 24/230 VAC/DC - 3; 5 Nm

### Ball valve flow

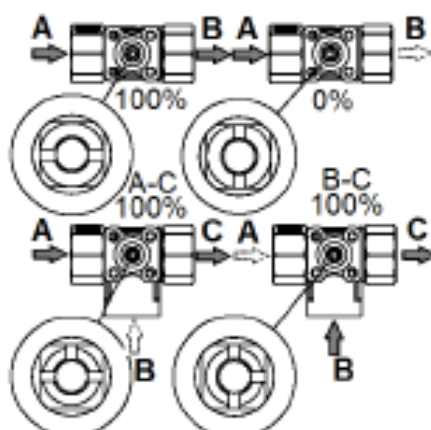
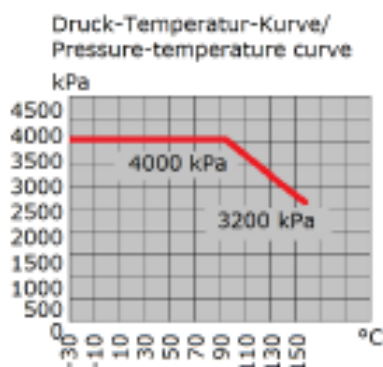
Kvs [m <sup>3</sup> /h]	DN	Kvs [m <sup>3</sup> /h]	DN
0,4	15	10	32
0,63		16	
1		• 25	
1,6		16	
2,5	20	25	40
4,0		• 40	
• 10		25	
4,0		40	
6,3	25	• 63	50
• 10		• without flow disk	
6,3			
10	25	• without flow disk	50
• 16			

### Direct mounting

Simple direct mounting on the ball valve by closing the form of the shaft and screw, securing against rotation by twisting the adapter.



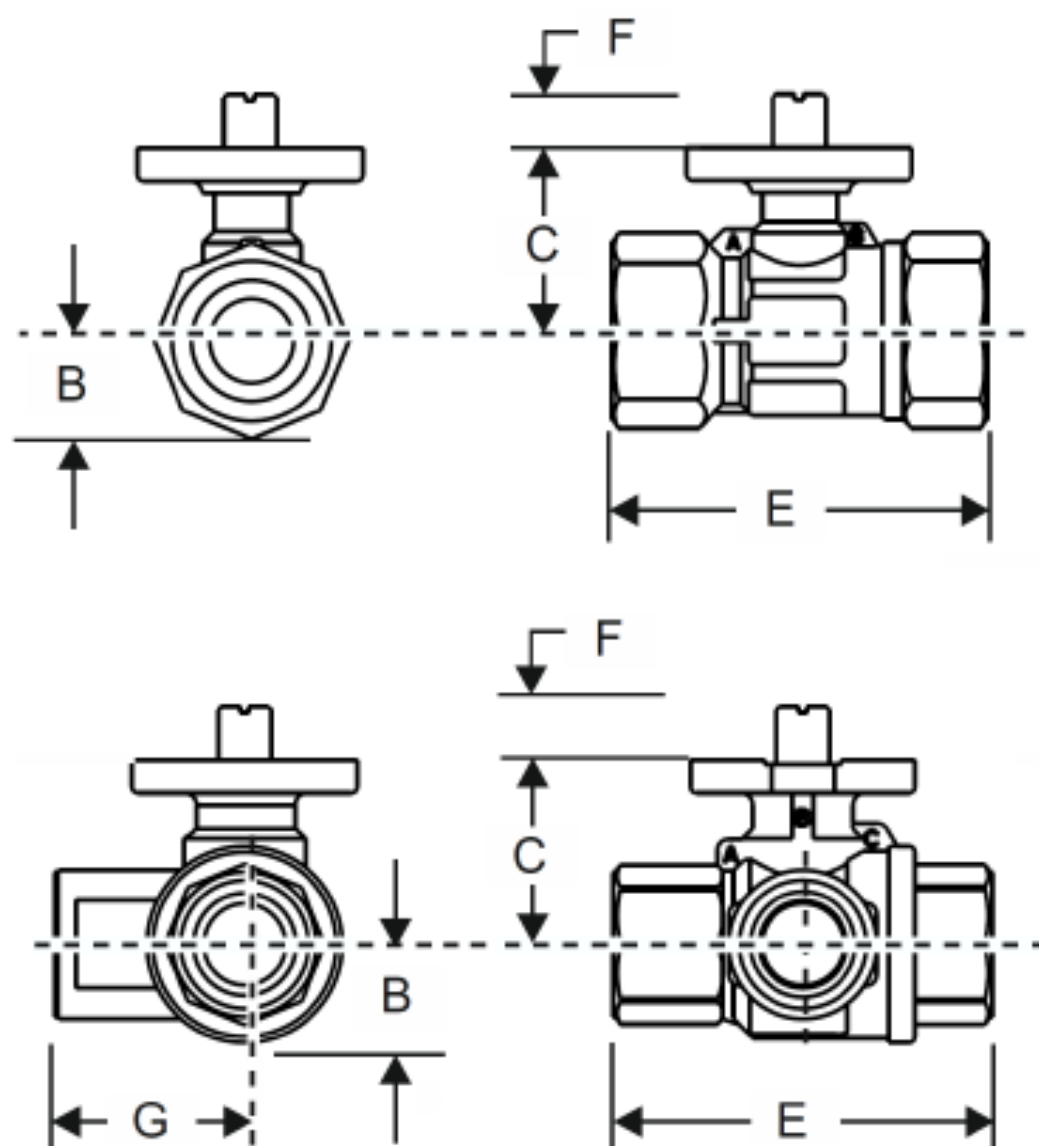
## Connector / Security Note



## Safety remarks

- The device is not allowed to be used outside the specified field of application, especially in airplanes.
- It may only be installed by suitably trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.
- When determining the flow characteristic the accepted directives must be observed.
- The device is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

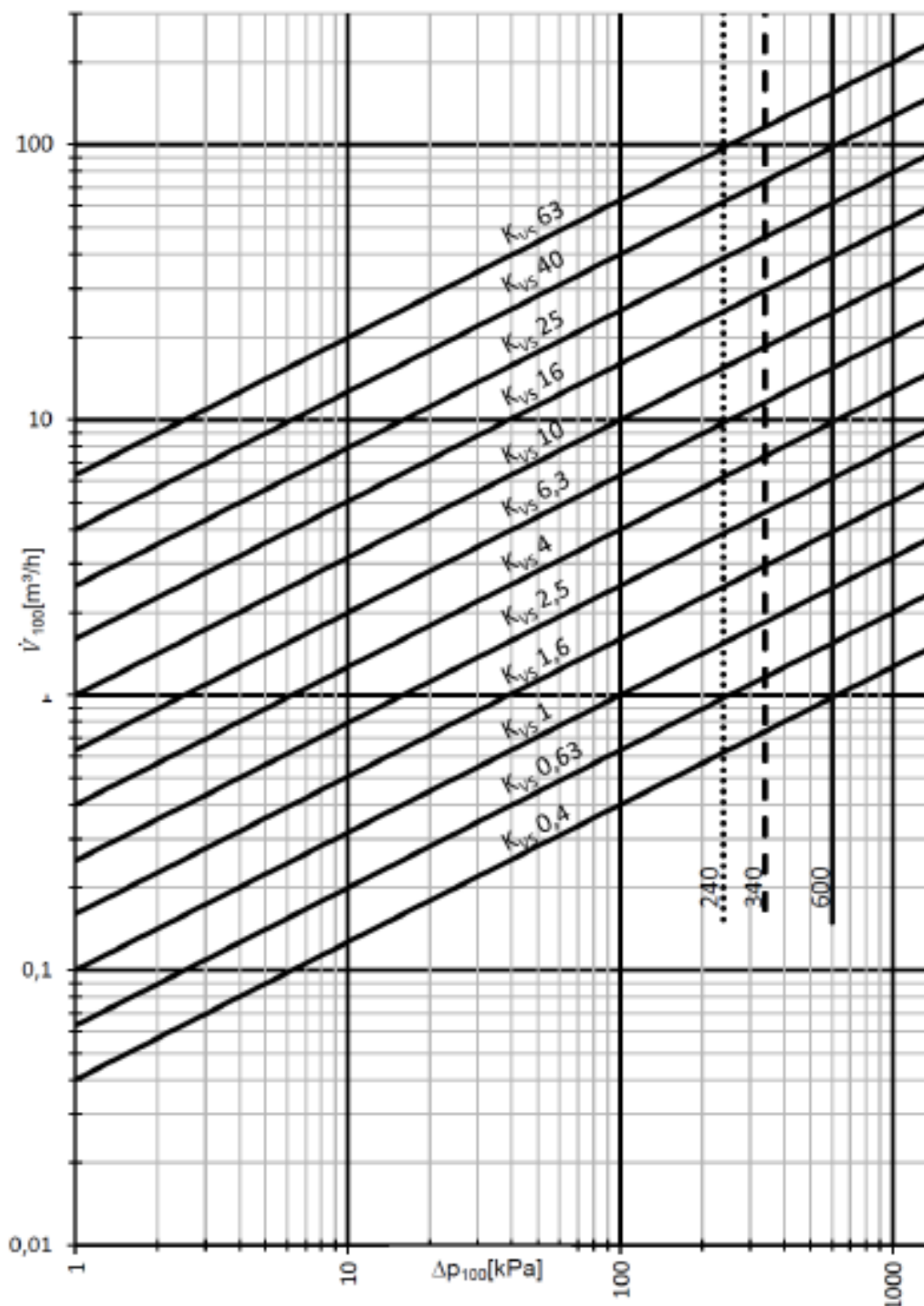


**Technical Drawing**


Valve	B	C	E	F	G*
DN 15	17	31	67	9	33
DN 20	17	31	75	9	38
DN 25	19	33	92	9	46
DN 32	26	44	109	9	54
DN 40	29	48	119	9	59
DN 50	37	53	139	9	74

\* Only for three-way valves

## Kvs diagram



Formel Kvs-Wert Wasser  
Formula Kvs for water

$$\begin{array}{l}
 \text{Kvs} \quad [\text{m}^3/\text{h}] \\
 \dot{V}_{100} \quad [\text{m}^3/\text{h}] \\
 \Delta p_{100} \quad [\text{kPa}]
 \end{array}
 \quad
 \text{Kvs} = \sqrt{\frac{\dot{V}_{100}}{\frac{\Delta p_{100}}{100}}}$$