



# techsystem

automatyka klimatyzacja wentylacja

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## MP8000 Pneumatic Actuator

### Introduction

The MP8000 series pneumatic valve-actuators are designed to accurately position valve plugs in larger chilled water, hot water and steam applications in response to a pneumatic signal from a controller. A pneumatic positioner is also available for use in applications where sequential operation is desired or more positioning power and accuracy are required. They can be ordered as a factory fitted and ready-to-install valve/actuator combination or separately for local installation.

This robust actuator can be combined with VBD and VG8000 series flanged valves in accordance with the maximum close-off pressure ratings specified.



MP8000 pneumatic actuator with positioner on VG8000 valve

### Features and Benefits

- |   |   |
|---|---|
| <input type="checkbox"/> <b>Pneumatic positioner.</b>   | For greater accuracy in sequential operation or for when greater positioning accuracy and power are required. |
| <input type="checkbox"/> <b>Quick-fit coupler system.</b>   | Quick and easy actuator attachment to flanged valves with slotted stem. Cuts installation costs.              |
| <input type="checkbox"/> <b>Action reversible in-situ.</b>  | Provides spring-return-retracts-stem or spring-return-extends-stem action for PDTTC valves.                   |
| <input type="checkbox"/> <b>Optional hand wheel for factory or in-situ installation.</b>          | Allows manual positioning of valve plug.  |
| <input type="checkbox"/> <b>Optional auxiliary switches and feedback potentiometer available.</b> | Provides free contacts for customer usage and monitoring of the actuator's position.                          |

## Ordering data

Ordering data for MP8000 series pneumatic actuators

MP8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20
<b>Accessories</b>						
0	Standard					
2	(2) Aux. Switches & 2 k $\Omega$ position feedback pot.					
<b>Positioner and hand wheel</b>						
5	None					
6	DA positioner					
7	DA Positioner & hand wheel					
8	Hand wheel					
<b>Spring range</b>						
C	20 – 50 kPa					
E	60 – 90 kPa					
<b>Stroke</b>						
2	13 mm					
<b>Action mode</b>						
2	Direct Acting*					
3	Reverse Acting*					

\* 160 mm<sup>2</sup> diaphragm

## Ordering procedure

The actuator can be ordered as a separate unit or a factory fitted valve/actuator combination. Should the latter be requested, please just add “+M” to the end of the actuator ordering code.

**For example:**

Item 1 **VG82C1S1N** (valve body)  
Item 2 **MP822C6020** (actuator)

Alternatively, to order a factory fitted combination.

Item 1 **VG82C1S1N** (valve body)  
Item 2 **MP822C6020+M** (actuator)



### Warning

The actuator housing is under spring pressure. When replacing the seal or diaphragm the service and data information instructions are to be strictly adhered to.

## Actuator/valve combinations

The MP8000 pneumatic actuators can be combined with two-way and three-way valve configurations.

All actuators are reversible for direct acting or reverse acting operation.

The actuator can also be optionally equipped with a factory fitted positioner and/or a hand wheel. Both can be ordered as retrofit kits. The PY-1010 positioner is direct acting and can be used with DA or RA actuators.

The ordering data for valve bodies is as follows:

### ● VG8000N series (PN 16 flanged valves)

VG82	<input type="checkbox"/>	<input type="checkbox"/>	S1N	2-way PDTC (NO)	DN 15...40
VG88	<input type="checkbox"/>	<input type="checkbox"/>	S1N	3-way mixing	DN 15...40
VG89	<input type="checkbox"/>	<input type="checkbox"/>	S1N	3-way diverting	DN 15...40

### ● VG8000V series (PN 16 flanged valves)

VG82	<input type="checkbox"/>	<input type="checkbox"/>	V1N	2-way PDTC	DN 15...40
VG88	<input type="checkbox"/>	<input type="checkbox"/>	V1N	3-way mixing	DN 15...40

### ● VBD series (PN 25 flanged valves)

VBD-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2-520	<input type="checkbox"/>	2-way PDTO	DN 15... 40
VBD-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8-520	<input type="checkbox"/>	3-way mixing	DN 15... 40

## Mounting kits for in-situ installation:

Hand wheel, feedback assembly and auxiliary switches are available on request.

Order No.	Description	Comments
PY - 1010 - 3000	Pneumatic positioner (PY-1010)	Every accessory device requires an accessory kit
PQ - 1000 - 3020	(2) auxiliary switches and 2k $\Omega$ feedback pot.	
PQ - 2713 - 3011	Universal accessory fitting kit	
111 6128 011	DA Hand wheel (for MP822...)	
111 6129 011	RA Hand wheel (for MP832...)	

## Tools and spares for in-situ repair

Order No.	Description	Comments
111 6235 010	Ring nut wrench	-
111 5330 010	Circlip pliers	For seal and diaphragm change
111 5520 010	Grease (silicone free)	60 g tube for actuator
111 6145 010	Diaphragm	-
111 6146 010	Seal	-

## Operation

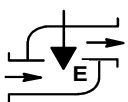


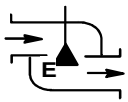


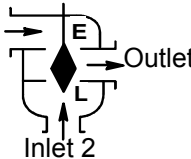


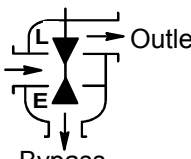


The MP8000 actuator is a diaphragm actuator and is predominantly used to operate control valves in chilled water, hot water and steam. **Direct Acting (DA)** and **Reverse Acting (RA)** actuators are provided.

With **DA** actuators the stem is extended by air pressure.



With **RA** actuators the stem is retracted by air pressure.

The action mode can be changed through an in-situ modification. Greater accuracy of control and sequencing are achieved by use of the PY-10 10 pneumatic-actuator positioner.

## Fail-safe position selection table

Valve function	Actuator action	Air pressure	Spring force	Fail-safe position
 2-way PDTC VG82xxV1N VG82xxS1N	DA MP82...	extends stem	retracts stem	 open
	RA MP83...	retracts stem	extends stem	 closed
 2-way PDTO VG84xxS1N VBDxx252xx	DA MP82...	extends stem	retracts stem	 closed
	RA MP83...	retracts stem	extends stem	 open
 Inlet 1 Inlet 2 Outlet	DA MP82...	extends stem	retracts stem	 Inlet 1 closed
	RA MP83...	retracts stem	extends stem	 Inlet 1 open
 Inlet 1 Outlet Bypass	DA MP82...	extends stem	retracts stem	 Bypass closed
	RA MP83...	retracts stem	extends stem	 Outlet closed

**E = Equal percent**  
**L = Linear**

 = Flow  
 = No flow

## C lose-off pressures

DN	$k_{vs}$	Actuator	Fail-safe (spring)		Air pressure					
			0 kPa		120 kPa		140 kPa		160 kPa	
			Spring Pressure range [kPa]		Spring pressure range [kPa]		Spring pressure range [kPa]		Spring pressure range [kPa]	
			20 - 50	60 - 90	20 - 50	60 - 90	20 - 50	60 - 90	20 - 50	60 - 90
			Identification No.		Identification No.		Identification No.		Identification No.	
			23	63	23	63	23	63	23	63

### VG8000 series

15	0.1-1.6	MP8x2	1600	1600	1600	1600	1600	1600	1600	1600
15	2.5-4		600	1600	1600	1600	1600	1600	1600	1600
20	4 / 6.3		200	1600	1600	890	1600	1600	1600	1600
25	6.3 / 10		80	1600	1600	560	1600	1600	1600	1600
32	10 / 16		-	1000	1250	230	1600	740	1600	1250
40	16 / 25		-	580	740	100	1060	420	1380	740

### VBD series

15	0.63 + 1	MP8x2	2500	2500	2500	2500	2500	2500	2500	2500
15	1.6 + 2.5		370	2500	2500	2500	2500	2500	2500	2500
15	4		-	2500	2500	1150	2500	2500	2500	2500
25	6.3 / 10		-	900	1330	-	2150	480	2500	1330
40	16 / 25		-	130	270	-	550	-	830	270

## Mounting instructions

When fitting the actuator to a valve please follow the instructions below:

- It is recommended that the valves be mounted within 90° of the upright position, in an easily accessible location. When mounting in an *inclined to horizontal* position, the yoke should be fitted such that the stanchions are aligned vertically one above the other.

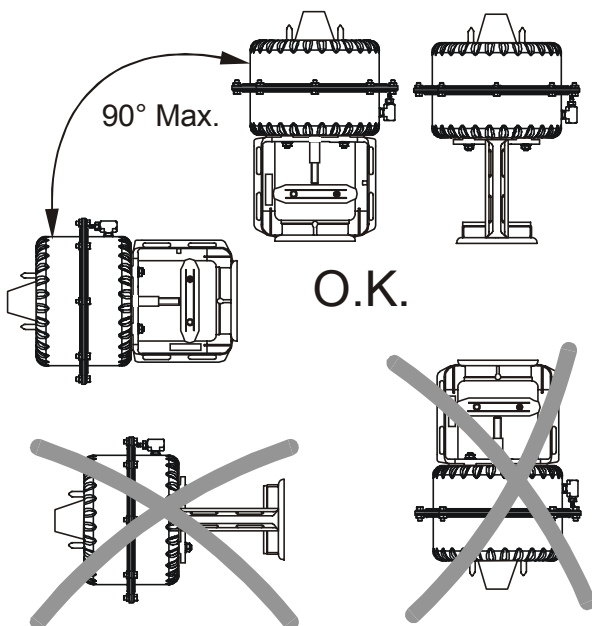
- Sufficient clearance must be allowed for actuator removal (refer to the dimension drawings).
- The valve must be installed so that the plug seats against the flow as indicated by the arrow(s) on the valve.

### Operating pressure connection:

The actuator is fitted with an air connector for 4x6 mm tubing. The maximum operating temperature of the tubing must be observed.

Detailed technical information is contained in the **Service and Data Information** sheet provided as a by-pack with the actuator when delivered.

SDI No. 111 6138 050.

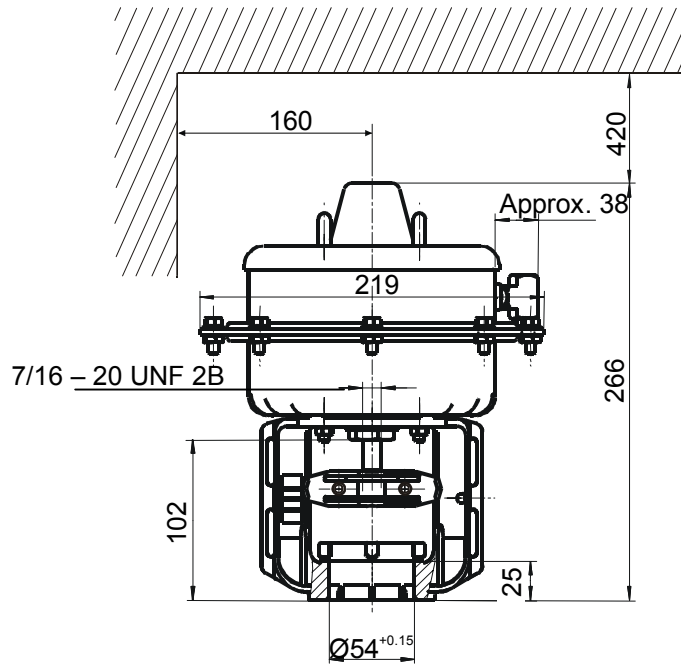


### Warning

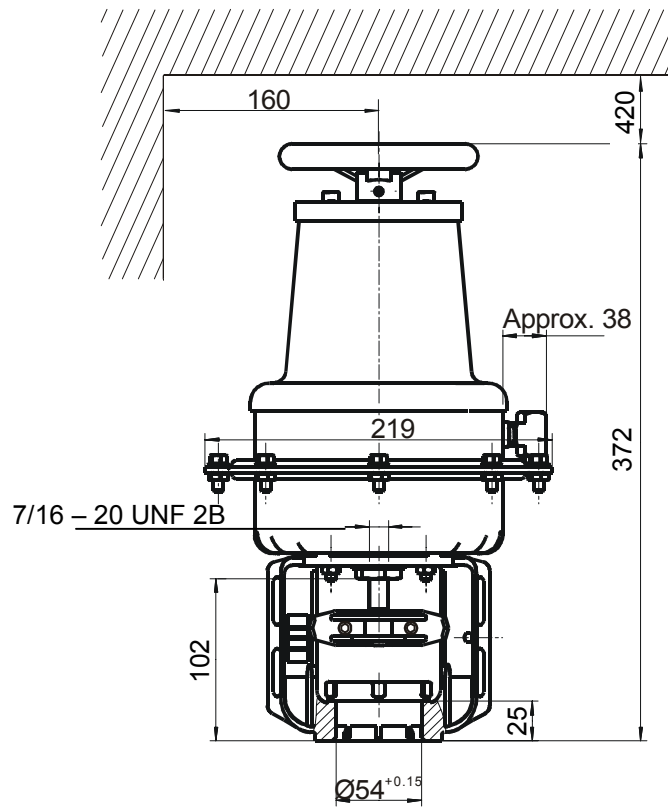
Do not attempt to open the pneumatic actuator or remove the spring of a pneumatic actuator from its housing. Disregarding this warning could lead to injury or equipment damage.

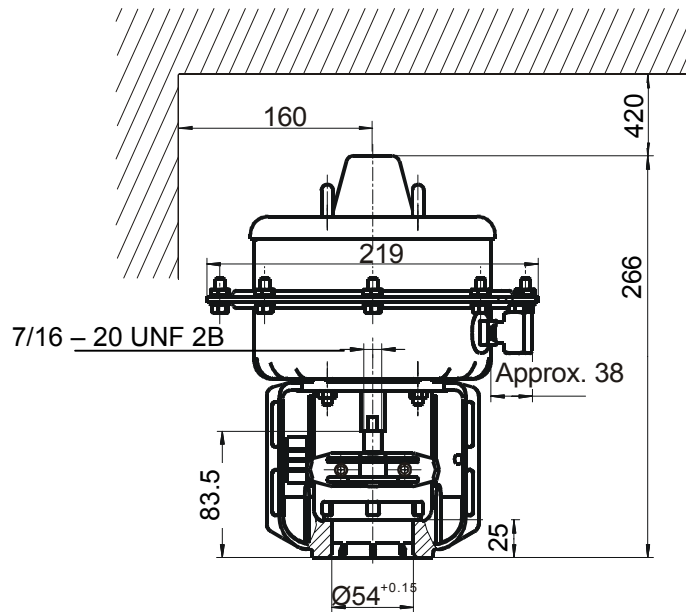
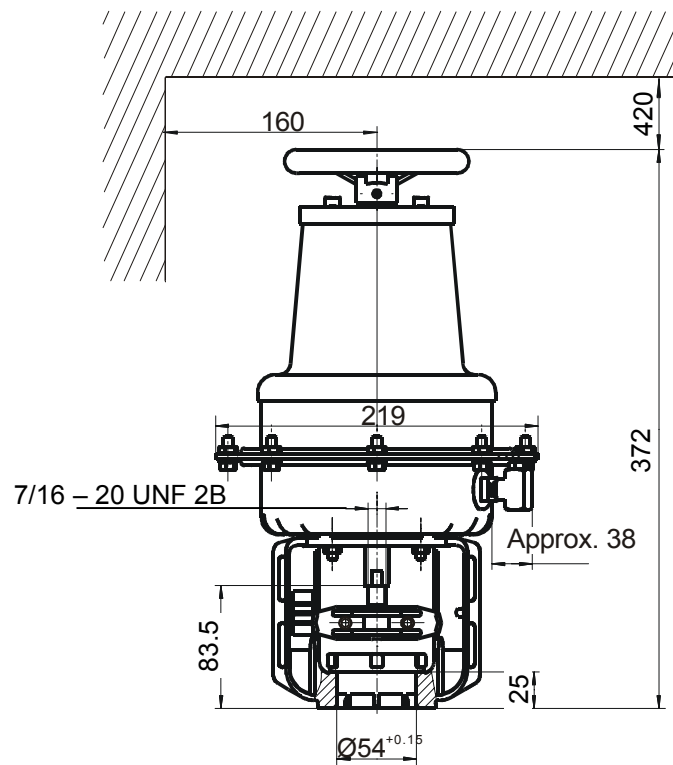
**D**imensions in mm

**MP8000 Direct Acting Actuator (DA)**



**MP8000 Direct Acting Actuator with Hand Wheel**



**D**imensions in mm**MP8000 Reverse Acting Actuator (RA)****MP8000 Reverse Acting Actuator with Hand Wheel**

**N**otes:

## Specifications

<b>Models</b>	<b>MP82...</b>	<b>MP83...</b>			
<b>Action</b>	DA	RA			
<b>Stroke</b>	13 mm				
<b>Diaphragm area</b>	160 mm <sup>2</sup>				
<b>Max. operating pressure</b>	160 kPa				
<b>Spring range</b>	20 – 50 kPa or 60 – 90 kPa				
<b>Materials:</b>					
<b>Stem</b>	9SMnPb36 (1.0737)				
<b>Housing</b>	Ck 10 (1.1121)				
<b>Diaphragm</b>	EPDM				
<b>Thrust:</b>	Spring range (kPa)	Spring force	Air pressure (kPa) to actuator		
			120	140	160
	20 – 50	<b>320 N</b>	<b>1120 N</b>	<b>1440 N</b>	<b>1760 N</b>
	60 – 90	<b>960 N</b>	<b>480 N</b>	<b>800 N</b>	<b>1120 N</b>
<b>Ambient Operating temp.</b>	-4 to +80°C				
<b>Ambient Storage temp</b>	-4 to +80°C				
<b>Weight</b>	Actuator: 4.0 kg Positioner: 1.0 kg Positioner indicator and limit switch: 1.0 kg DA hand wheel: 2.0 kg RA hand wheel: 2.4 kg				
<b>Approvals</b>	European Directives:	In regard to pressure devices 97/23/EC from 29.05.1997 and VDI/VDE 2174 from October 1967			

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office.

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Printed in Germany