MP953A,B,C,D PNEUMATIC VALVE ACTUATORS

PRODUCT DATA



GENERAL

MP953 Pneumatic Valve Actuators are suitable for use in conjunction with valves V5011, V5013, V5015, V5016, V5025, V5049, V5050, V5328, and V5329 to provide proportional control of steam or hot and cold water in HVAC systems.

SPECIFICATIONS

Max. operating pressure Max. safe air pressure Air connection 140 kPa 210 kPa barb fitting for PE tube 6x1 or ¼ " outer diameter

DIMENSIONS

See also Table 2.





Fig. 1. MP953A,C (left) and MP953B,D

Table 1. Dimensions

Model	EØ	F	G	Н	K
MP953A, 125 (5")	120	192		120	
MP953C, 125 (5")	130		120	120	
MP953A, 200 (8")	210	237		140	
MP953C, 200 (8")	210		165	140	
MP953A, 330 (13")	242	327		200	
MP953C, 330 (13")	343		255	200	
MP953B, 180 (7")	100	242		120	107
MP953D, 180 (7")	160		137	120	

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order no.	pressure range (kPa)	adjustable start point	positioner	diaphragm Ø	stroke	stem action	max. operating temperature
MP953A5005				125 mm (5")	20		
MP953A5039	245	20 7 42 00		200 mm (8")	20	extends	70 %0
MP953A5054	34.5 OF 69	20.7 to 69	yes	330 mm (13")	38		70 °C
MP953B5003				180 mm (7")		retracts	
MP953C5001	13.8 to 48.3						
MP953C5019	55.2 to 82.8			125 mm (5")			
MP953C5027	27.6 to 75.9		no		20 00 mm (8")	extends	120 °C
MP953C5068	13.8 to 48.3			200 mm (8")			
MP953C5076	55.2 to 82.8						
MP953C5084	27.6 to 75.9	no					
MP953C5142	13.8 to 48.3			000 (40!!)	00		
MP953C5159	27.6 to 75.9			330 mm (13°)	38		
MP953D5009	55.2 to 82.8		400 mana (7")	20	natua ata		
MP953D5025	27.6 to 75.9			100 mm (7)	20	renacts	

Table 2. Specifications

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FEATURES

- Rolling diaphragm for long life and low hysteresis
- Easily attached to valve assembly
- May be installed after valve piping
- Slide lock feature permits simple engagement to valve stem
- Models with positive-positioning relay available

ACCESSORIES

Extension Yokes

The extension yoke (see also Fig. 7) provides for extra air circulation and less conduction of heat from the valve body to the pneumatic actuator.

Recommended if the medium temperature in the valve body is in the range of from 150 to 220 °C. Table 3. Extension vokes

part no.	applied to valves			
	V5049A	DN 1565	DN 25/40	
	V5050A	DN 1580	11123/40	
	V5025A	DN 1580	PN 25	
43161276-001	V5016A	DN 1580		
	V5328A		PN 16	
	V5329A	DN 4000		
	V5329C	DN 4080	PN 6	
43297431-001	V5011R,S			
	V5013R,E	DN 15 32	DN 16	
	V5328A	DIN 1002		
	V5329A			
	V5329C	DN 1532	PN 6	

Repair Kit Diaphragm

Table 4. Repair kit diaphragms

part no.	model
R43312760-001	MP953A,C 125 (5")
R43161319-001	MP953A,C 200 (8")
R43161320-001	MP953A,C 330 (13")
R43180626-001 (diaphragm. a. sleeve	MP953B,D 180 (7")
R43161322-001 (sleeve)	MP953B,D 180 (7")

TYPICAL OPERATION

In a direct-acting (normally-open valve) system, an increase in control air pressure will force the actuator diaphragm and cup downward, forcing the valve stem down to proportionally close off the flow through the valve.

Operators without the positive positioner have branch line pressure applied to the diaphragm. Operators with positive positioners have up to full main air pressure applied to the diaphragm to ensure that the valve is positioned proportionally to the branch line pressure.



Fig. 2. Typical operation

INSTALLATION General

Ensure that the actuator has the correct size and travel to match the valve body. Refer to the corresponding valve product literature.

Mounting the MP953A,C (Size 5")

- 1. Pull the valve stem up.
- 2. Position the stem-locking slide so that the large hole is in view (see also Fig. 3).
- 3. Set the actuator on the valve bonnet. Ensure that the stem button passes through the hole in the stem-locking slide and that the actuator is down flush on the shoulder of the valve bonnet.
- 4. Rotate the actuator on the valve bonnet to the desired position and tighten both actuator set screws.
- 5. Apply air pressure until the diaphragm cup contacts the stem button and secure the stem button with the stem-locking slide.

Mounting the MP953A,C (Size 8" and 13")

- If converting from smaller-size actuator, remove the actuator by following, in reverse order, the steps outlined in section "Mounting the MP953A,C (Size 5")".
- **2.** Remove the stem button (see also Fig. 5).
- 3. Screw the stem button on the (single or double) stem extension until it bottoms.
- 4. Screw the stem extension on the stem until it bottoms (flats or locking-pin hole provided).
- Rotate the stem extension as required to adjust dimension "Y" as per Table 5 to the value listed, then lock the stem extension in place by tightening the hex nut.



Fig. 3. Stem-locking slide

Table	5	Dime	nsion	ns Y	in	mm
Iable	э.		5113101	13 1		

	5", 7"	8"	13"	action
valve size	DN	DN	DN	to open
valve series	1580 Y ₁	1580 Y ₂	100150 Y ₃	
V5016A				
V5025A	89	133	190	1
V5328A				
V5011R,S	89	133		↑
V5013R,E	107	151		
V5015A			227	1
V5050A	107	151	221	Ļ
V5329A,C	107	151		
valve size	DN	DN	DN	action
valve series	1565	1565	80100	to open
V5049A	89	133	190	↑

Mounting the MP953B,D

- 1. Pull the valve stem up.
- 2. Attach the stem connector screw to stem button (Fig. 4).
- 3. Place the actuator on the valve without pushing the stem down.



Fig. 4. Attaching the stem connector screw

- 4. Turn the stem connector screw by its screw-slot counterclockwise to back out the stem button until the actuator is in contact with the shoulder of the stem button.
- 5. Push the actuator onto the valve bonnet and hold it firmly in place; tighten the two set screws
- 6. Load the stem by turning the stem connector screw clockwise by its screw slot.
 - a) On a straight-through valve (position 1), turn the stem connector screw until a clearance A of approx. 3 mm (1/8") exists between the spring and the actuator spider.
 - b) On a three-way valve, a clearance A and B of approx.
 1.5 mm each is required at both ends of the stroke to permit proper close-off. If there is no air on the actuator, adjust the A clearance approx.
 1.5 mm and recheck the B clearance when air is available.
- 7. If clearances A and B cannot be adjusted following the procedure outlined above, check the stem height "y" and adjust, if necessary.



Fig. 5. Stem extensions

ADJUSTMENTS

NOTE: Adjustments are necessary only for the GRADUTROL-Relay used with the MP953A, B.

The range is adjusted using six adjustment screws (see also Fig. 6). Note label on body of GRADUTROL-Relay. All devices are factory-set for 35 kPa range. This point is adjusted by turning the adjustment knob. The graduations of the external calibration scale on the knob present various values within the different ranges. All devices are factory-set for 35 kPa start point. After completing the adjustment procedure, do not change the position of GRADUTROL-Relay (with respect to the actuator).



Fig. 6. Adjustments of ranges and start points

Adjustment Check

- 1. Install a gauge in the pilot air line (P).
- 2. Adjust the set screw (see Fig. 6) so that travel just begins.
- Increase pilot pressure (P) until travel is complete. If the adjustment is correct, the gauge should read this pressure within ±5 kPa of the start point pressure plus the range setting.

EXAMPLE: Range setting 35 kPa start point setting 21 kPa. The gauge should then read 56 ± 5 kPa after the travel is completed.

4. If the measured pressure should not be within the permissible variation, fine adjustments must be done (if necessary) using the start point adjustment knob.

MOUNTING WITH EXTENSION YOKE

For working temperatures of 150 to 220 °C (300 to 425 °F), use of an extension yoke is mandatory for the MP953A,C (5" and 8") and the MP953B,D actuators to protect the diaphragm against excessive heat. Screw the stem extension (for the 5" size) onto the stem, with the stem either pulled out or pushed in (see Fig. 7), and adjust dimension "y" to the value listed in Table 6. Lock stem extension into place by tightening the hex nut, and attach the yoke.

Table 6. Mounting actuators with extension yoke

actuator	"y" (mm)	valve
MP953A,C, 5"	89	V5011R,S, V5328A, V5016A, V5025A, V5049A
MP953B,D	107	V5013R,E, V5329A,C, V5050A
MP953A,C, 8"	133	V5011R,S, V5328A, V5016A, V5025A, V5049A
	151	V5013R,E, V5329A,C, V5050A



Fig. 7. Extension yoke