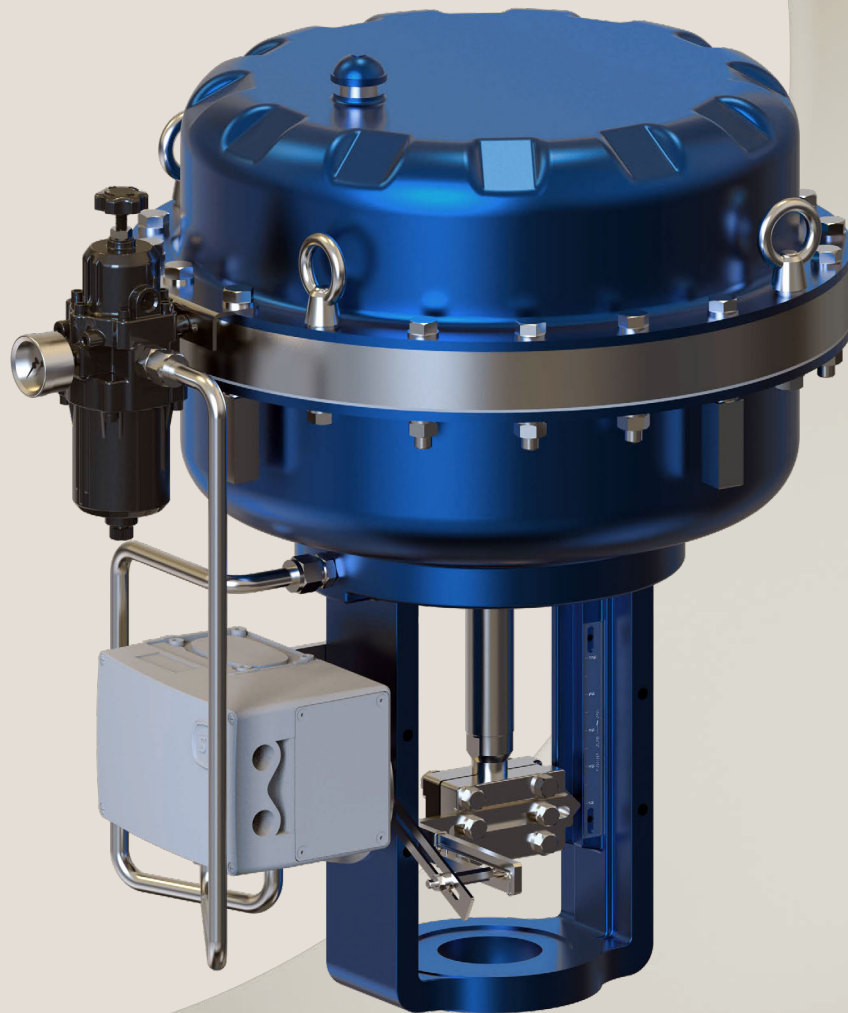


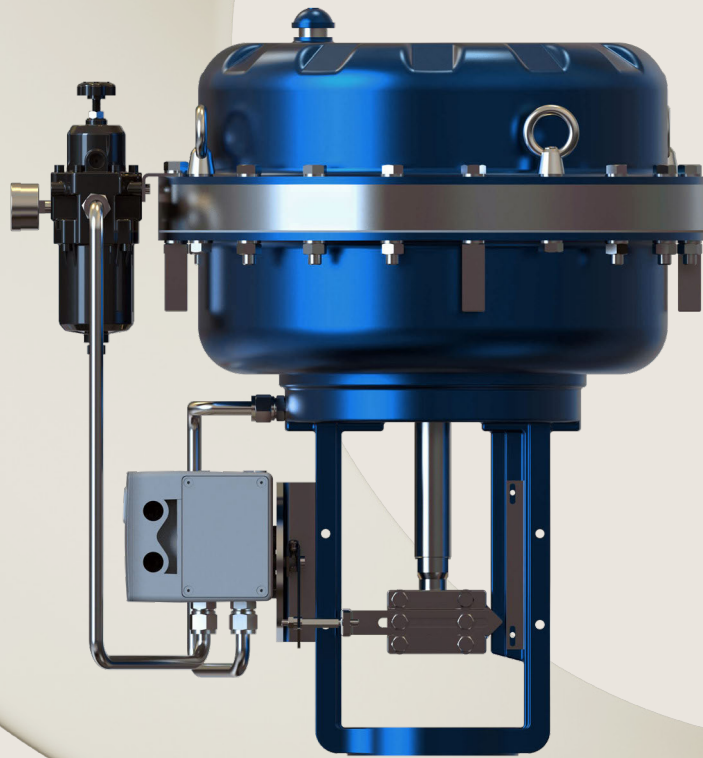
Process Automation

IMI CCI

MSD-III

Pneumatic
Diaphragm
Actuator





MSD-III

Pneumatic Diaphragm Actuator

The MSD-III is a pneumatic diaphragm actuator with a robust rolling diaphragm and multi-spring design. It is available in direct-acting (DA) and reverse-acting (RA) configurations. Fail open and close are achieved by the multi-spring force or compressed air.

Additionally, the rugged one-piece cast yoke, pressed diaphragm case, and special nylon-reinforced diaphragm provide dependable high-force actuation performance. The MSD-III is available in five sizes to cover a wide range of applications. A manual handwheel is an optional extra on both direct-acting (DA) and reverse-acting (RA) actuators.

Benefits

- **Excellent performance**

As a multi-spring type, operation is precise and repeatability is excellent, minimising the hysteresis error

- **Fast response**

The actuator air chamber volume is minimised to reduce dead-time and be more responsive to changes in air pressure

- **Rugged construction**

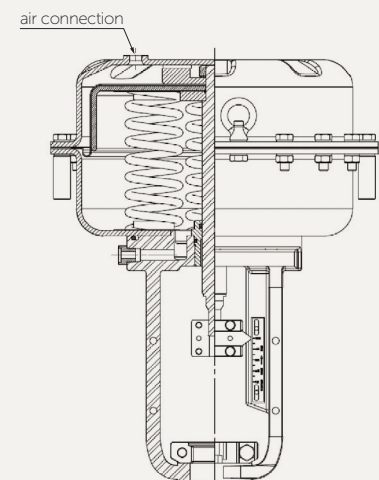
The MSD-III diaphragm actuator has undergone extreme durability tests and with numerous installations over 20 years, it has proven to be a reliable solution for control valves

Key features

- Multi-spring design**
 Excellent long-term accuracy and fail mode reliability are achieved through the multiple spring design with high compression force
- Diaphragm case**
 Pressed steel case provides high mechanical strength and protection in the event of over-pressurisation. Further reinforcements are provided for actuator sizes greater than 290 to ensure safe operation
- Diaphragm**
 Moulded elastomer with fabric insert for strength, long life and high sensitivity. The precisely formed diaphragm eliminates any friction and reduces variations in the effective areas during linear operation
- Rugged one-piece yoke**
 Provides maximum strength and rigidity
- Thrust & stroke capability**
 Two actuator types and five sizes allow a wide range of applications
- Various air connection sizes**
 Various air connection sizes provide various accessory applications
- Linearity**
 The moulded rolling diaphragm and deep cases minimise area change and provide a linear relation between travel and air pressure

Product specification

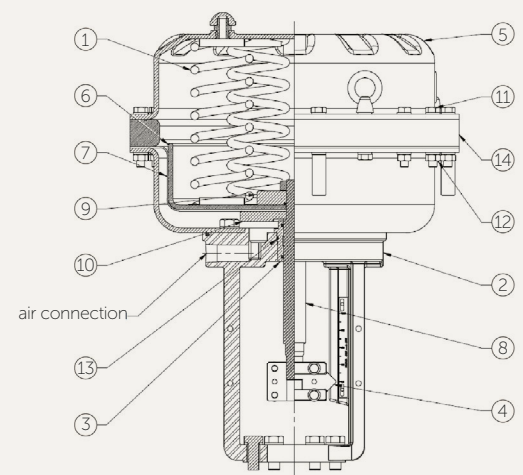
Type	Pneumatic multi-spring diaphragm actuator
Spring action	Direct Acting (DA, springs to open) Reverse Acting (RA, springs to close)
Temperature	-29°C to 80°C (optional -45°C)
Operation pressure	4.2 kgf/cm ² to 5.0 kgf/cm ²
Stroke range	20mm to 130mm
Optional manual override	Top handwheel (250, 290, 370) Top mounted side handwheel (480, 550)
Certificates	SIL, TRCU, ATEX



Direct Acting (DA)

Standard materials

1	Spring	Cr-Si coil spring wire
2	Yoke	A216 WCB
3	Guide bush	Bronze
4	Stem clamp	304 SS
5	Diaphragm case (upper/lower)	Carbon steel
6	Diaphragm plate	Carbon steel
7	Diaphragm	EPDM
8	Actuator stem	304 SS
9	Spacer	Carbon steel
10	Diaphragm washer	Carbon steel
11	Bolt	304 SS
12	Nut	304 SS
13	O-ring	EPDM
14	Extension adaptor	Aluminum

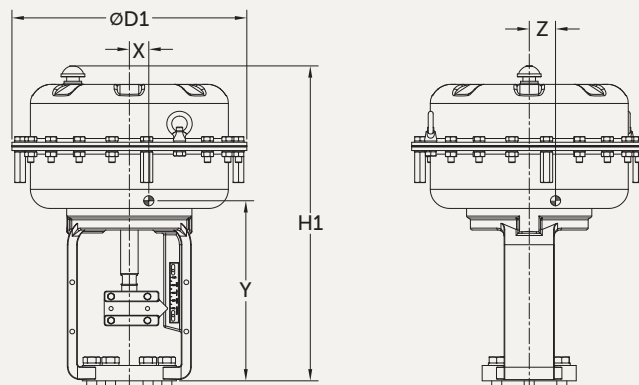


Reverse Acting (RA)

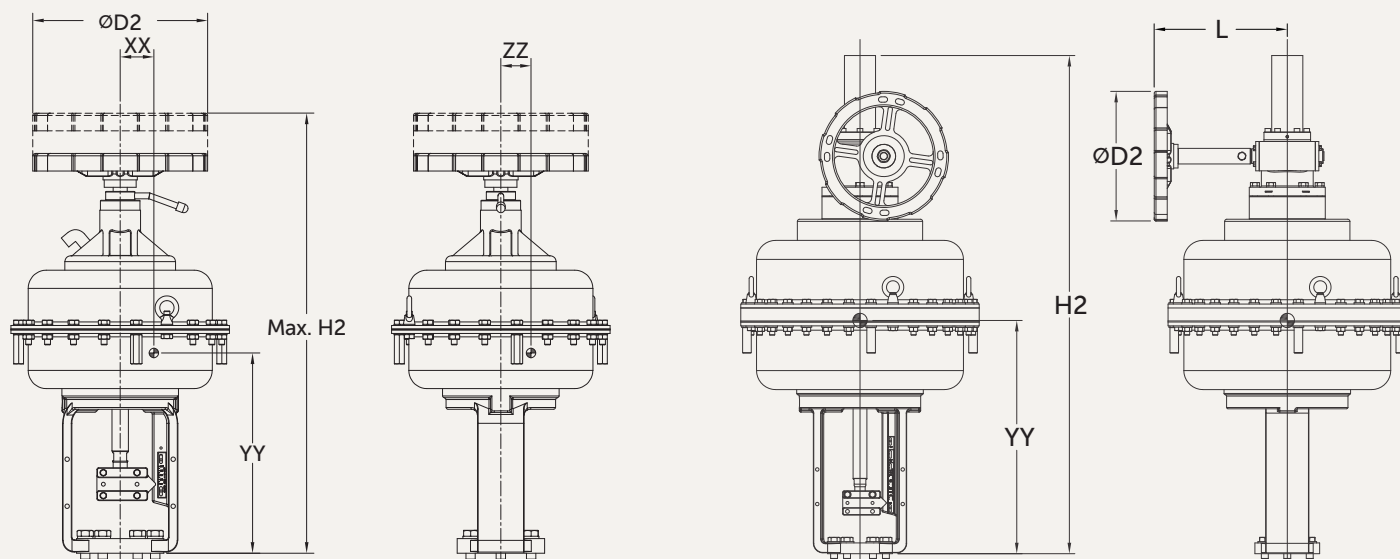
Spring bench set list

Actuator size	Effective area (cm ²)	Stroke (mm)	Spring range (kg/cm ²)		Seat thrust (kgf) @ 5kg/cm ²			
			RA	DA	RA	DA		
250	270	20	1.6 - 3.2	0.8 - 2.4	432	702		
			-	0.6 - 1.8	-	864		
		30	0.8 - 3.2	0.8 - 3.2	216	486		
			-	0.6 - 2.4	-	702		
290	350	20	2.5 - 4.0	0.7 - 1.7	875	1155		
			2.1 - 3.3	0.6 - 1.3	735	1295		
		30	1.8 - 4.0	0.7 - 2.2	630	980		
			1.5 - 3.3	0.6 - 1.7	525	1155		
		40	1.1 - 4.0	0.7 - 2.6	385	840		
			0.9 - 3.3	0.6 - 2.0	315	1050		
		370	625	30	2.6 - 4.4	0.8 - 2.1	1625	1813
					2.0 - 3.4	0.7 - 1.8	1250	2000
40	2.0 - 4.4			0.8 - 2.5	1250	1563		
	1.5 - 3.4			0.7 - 2.2	937.5	1750		
50	1.4 - 4.4			0.8 - 3.0	875	1250		
	1.0 - 3.4			0.7 - 2.6	625	1500		
480	1075	50	2.0 - 4.5	0.5 - 1.9	2150	3333		
			1.6 - 3.5	0.6 - 2.0	1720	3225		
		70	1.0 - 4.5	0.5 - 2.4	1075	2795		
			1.7 - 4.0	0.5 - 2.5	1827.5	2688		
			1.5 - 3.5	0.6 - 2.3	1612.5	2903		
			0.7 - 4.0	0.5 - 3.2	752.5	1935		
		100	0.6 - 3.5	0.6 - 3.0	645	2150		
			550	1490	70	1.6 - 4.2	0.5 - 1.8	2384
1.0 - 3.7	-	1490				-		
100	1.3 - 3.6	0.5 - 2.3			1937	4023		
130	0.6 - 3.6	0.5 - 2.8			894	3278		

Product dimensions



Standard type (without handwheel)



Top handwheel type (250, 290, 370)

Top mounted side handwheel type (480, 550)

Dimensions & weights

Actuator size	D1 (mm)	D2 (mm)	H1 (mm)	H2 (mm)	L (mm)	Weights (Kg)	
						Standard	With handle
250	250	300	380	580	N/A	15	24
290	292	300	430	620	N/A	22	30
370	375	400	520	730	N/A	48	59
480	482	300	660	1100	355	96	152
550	552	300	730	1200	355	150	214

Centre of gravity

Actuator size	Standard (mm)			With handle (mm)		
	X	Y	Z	XX	YY	ZZ
250	0.3	214	0	0.5	283	0
290	0.4	249	0	0.5	306	0
370	0.4	295	0	0.5	342	0
480	0.8	388	0	5.4	485	3.8
550	0.7	459	0	4.1	540	2.8

Process Automation

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IMI CCI

IMI plc
14 Dangdong 2-ro
Munsan-eup, Paju-si
Gyeonggi-do
Korea 10816

www.imiplc.com/process-automation

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