

WZIFLOW CONTROL

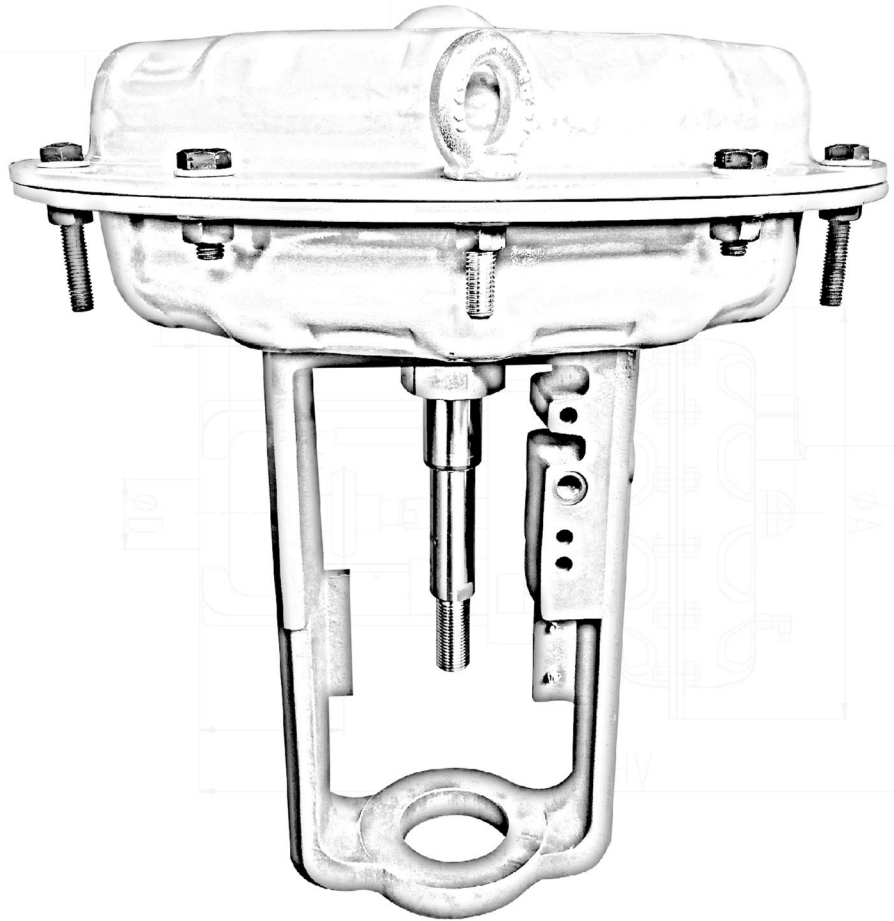


SERIES MF

SPRING & DIAPHRAGM ACTUATOR

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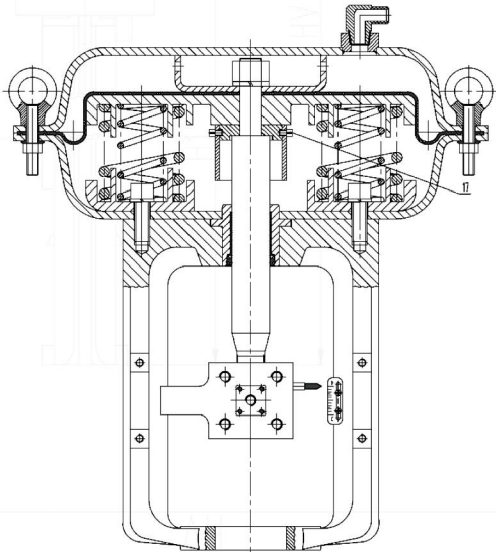


SERIES MF FEATURES

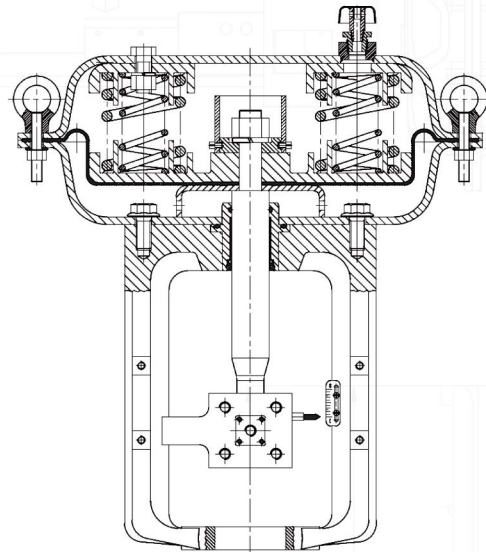
- **Pneumatically Operated Multi-Spring Actuator**-Field Reversible on most sizes
- **Direct or NAMUR Mounting**-(Tubeless Option), Instrument Air Supply Between Positioner and Actuator is Attained Through Bores Inside the Yoke Providing Reliability and Space on Conventional Designs
- **Integrated Compression Springs**-Ensures Fail Position
- **Manual Override**-Optional
- **Multi-Spring Design**-Allows interchanging of springs for multiple spring rates, smaller springs have lower stresses and and higher fatigue life, designed for 1,000,000+ cycles
- **Travel Stop**-Optional

MATERIALS OF CONSTRUCTION

KEY COMPONENTS



Direct Acting



Reverse Acting

Series	MF2, MF3, MF4, MF5
Type	Multi-Spring Pneumatic Diaphragm Actuator
Size	320cm ² (50in ²), 720cm ² (112in ²), 1100 cm ² (170 in ²), 1510 cm ² (234 in ²)
Function	Direct Acting (DA): Air Extends Shaft / Reverse Acting (RA): Air Retracts Shaft
Output Force	2.4 - 66 kN (540 - 14835 lbf)
Stroke	10 - 120 mm (0.4 - 4.7 inch)
Air Supply	1.2 - 6.0 Bar (18 - 87 PSIG) (See actuator data for sizes and rating)
Performance	Hysteresis: Less than 1% of Full Stroke with Positioner Less than 3% of Full Stroke without Positioner Linearity: Less than +/- 1% of Full Stroke with Positioner Less than +/- 5% of Full Stroke without Positioner
Temperature Range	Standard: -29°C to +80°C (-20°F - +180°F) Low Temp: -46°C to +60°C (-50°F - +140°F)
Materials	Diaphragm Case: Carbon Steel Diaphragm: NBR (STD) HNBR: Low Temp Drive Shaft: 304 Yoke: Ductile Iron
Painting	Blue, Options Available
Accessories	Smart Positioner E/P Positioner, P/P Positioner, Air-Set, Booster Relay, Air-Valve, Limit Switch, Solenoid Valve, Lock-Valve, Speed Controller, Position Transmitter, Other Options: Consult Factory
Option	Manual Handwheel, Yoke Material, Special Air Piping, Special Air Fittings, Low-Temp Service, High-Temp Service, Tropical Area Proof, Salt Environment Proof, Cold Area Proof, Various Painting Options

ACTUATOR SPRING RANGES

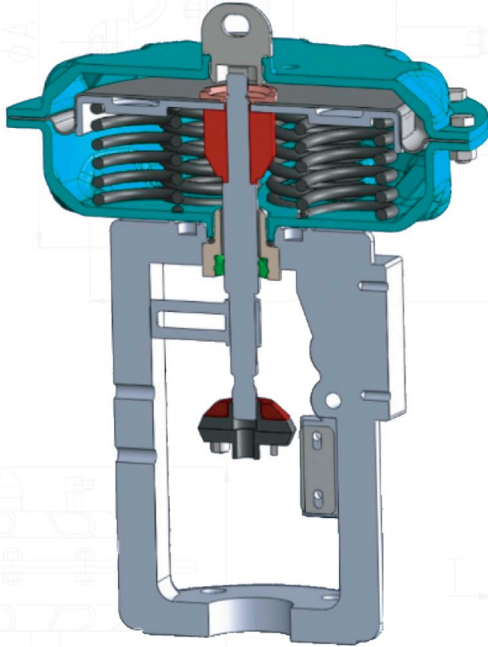


Fig. #1 Direct Acting

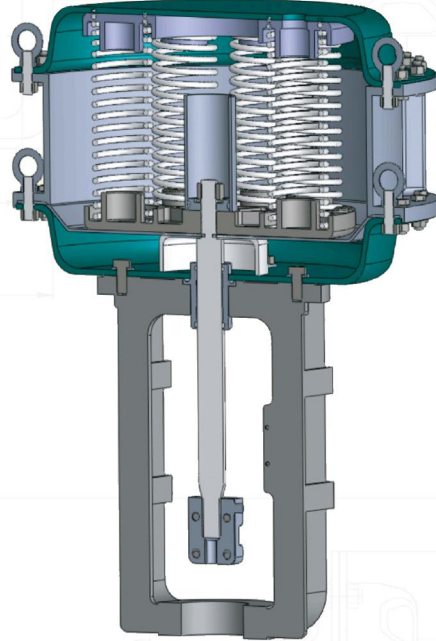


Fig. #2 Reverse Acting

Table 1: MF2 Actuators Spring Ranges

	Type	Springs Number	Stroke		Spring Range					Type	Springs Number	Stroke		Spring Range			
			mm	inch	bar	psi	bar	psi				mm	inch	bar	psi		
Direct Acting (Air to Close)	MF2D-73B	3	30	1.18	0.75	1.50	10.9	21.8	Reverse Acting (Air to Open)	MF2R-73B	3	30	1.18	0.75	1.50	10.9	21.8
	MF2D-76B	6			1.50	3.00	21.8	43.5		MF2R-76B	6			1.50	3.00	21.8	43.5
	MF2D-83B	3	30	1.18	0.75	1.50	10.9	21.8		MF2R-83B	3	30	1.18	0.75	1.50	10.9	21.8
	MF2D-86B	6			1.50	3.00	21.8	43.5		MF2R-86B	6			1.50	3.00	21.8	43.5
	MF2D-93B	3	20	0.79	0.75	1.50	10.9	21.8		MF2R-93B	3	20	0.79	0.75	1.50	10.9	21.8
	MF2D-96B	6			1.50	3.00	21.8	43.5		MF2R-96B	6			1.50	3.00	21.8	43.5

NOTES:

- 1) Actuator area is 320cm², 50in²
- 2) Maximum air supply is 6 barg, 87 psig
- 3) Full stroke spring ranges of the actuator springs are shown, partial stroke versions of the actuator are available

Table 2: MF3 Actuator Spring Ranges

	Type	Springs Number	Stroke		Spring Range					Type	Springs Number	Stroke		Spring Range			
			mm	inch	bar	psi	bar	psi				mm	inch	bar	psi		
Direct Acting (Air to Close)	MF3D-33B	3	30	1.18	0.75	1.50	10.9	21.8	Reverse Acting (Air to Open)	MF3R-33B	3	30	1.18	0.75	1.50	10.9	21.8
	MF3D-36B	6			1.50	3.00	21.8	43.5		MF3R-36B	6			1.50	3.00	21.8	43.5
	MF3D-39B	9			1.80	3.70	26.1	53.7		MF3R-39B	9			1.80	3.70	26.1	53.7
	MF3D-30B	12			2.20	4.40	31.9	63.8		MF3R-30B	12			2.20	4.40	31.9	63.8
	MF3D-43B	3	60	2.36	0.75	1.50	10.9	21.8		MF3R-43B	3	60	2.36	0.75	1.50	10.9	21.8
	MF3D-46B	6			1.50	3.00	21.8	43.5		MF3R-46B	6			1.50	3.00	21.8	43.5
	MF3D-49B	9			1.70	3.60	24.7	52.2		MF3R-49B	9			1.70	3.60	24.7	52.2
	MF3D-40B	12			2.00	4.30	29.0	62.4		MF3R-40B	12			2.00	4.30	29.0	62.4

NOTES:

- 1) Actuator area is 720cm², 112in²
- 2) Maximum air supply is 6 barg, 87 psig
- 3) Full stroke spring ranges of the actuator springs are shown, partial stroke versions of the actuator are available

ACTUATOR SPRING RANGES

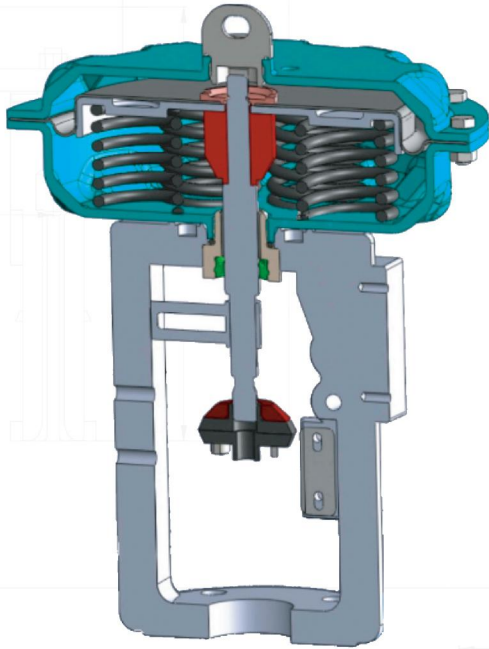


Fig. #1 Direct Acting

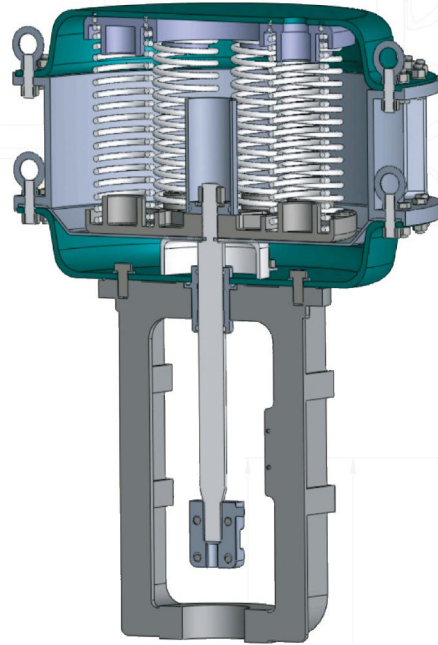


Fig. #2 Reverse Acting

Table 3: MF4 Actuator Spring Ranges

	Type	Springs Number	Stroke		Spring Range					Type	Springs Number	Stroke		Spring Range			
			mm	inch	bar	psi	mm	inch				bar	psi				
Direct Acting (Air to Close)	MF4D-23	3	30	1.18	0.80	1.40	11.6	20.3	Reverse Acting (Air to Open)	MF4R-23	3	30	1.18	0.80	1.40	11.6	20.3
	MF4D-26	6			1.70	2.90	24.7	42.1		MF4R-26	6			1.70	2.90	24.7	42.1
	MF4D-29	9			2.00	3.60	29.0	52.2		MF4R-29	9			2.00	3.60	29.0	52.2
	MF4D-20	12			2.50	4.50	36.3	65.3		MF4R-20	12			2.50	4.50	36.3	65.3
	MF4D-33	3	60	2.36	0.80	1.40	11.6	20.3		MF4R-33	3	60	2.36	0.80	1.40	11.6	20.3
	MF4D-36	6			1.50	2.50	21.8	36.3		MF4R-36	6			1.70	2.90	24.7	42.1
	MF4D-43	3	38	1.50	0.80	1.40	11.6	20.3		MF4R-43	3	38	1.50	0.80	1.40	11.6	20.3
	MF4D-46	6	40	1.57	1.50	2.50	21.8	36.3		MF4R-46	6	40	1.57	1.50	2.50	21.8	36.3
	MF4D-53	3	50	1.97	0.80	1.40	11.6	20.3		MF4R-53	3	50	1.97	0.80	1.40	11.6	20.3
	MF4D-56	6			1.50	2.50	21.8	36.3		MF4R-56	6			1.50	2.50	21.8	36.3
	MF4D-63	3	60	2.36	0.80	1.40	11.6	20.3		MF4R-63	3	60	2.36	0.80	1.40	11.6	20.3
	MF4D-66	6			1.50	2.50	21.8	36.3		MF4R-66	6			1.50	2.50	21.8	36.3
	MF4D-73	3	75	2.95	0.80	1.40	11.6	20.3		MF4R-73	3	75	2.95	0.80	1.40	11.6	20.3
	MF4D-76	6			1.50	3.00	21.8	43.5		MF4R-76	6			1.50	3.00	21.8	43.5

NOTES:

- 1) Actuator area is 1100cm², 170in²
- 2) Maximum air supply is 5.5 barg, 80 psig
- 3) Full stroke ranges of the actuator springs are shown, partial stroke versions of the actuator are available



DIMENSIONS & WEIGHTS

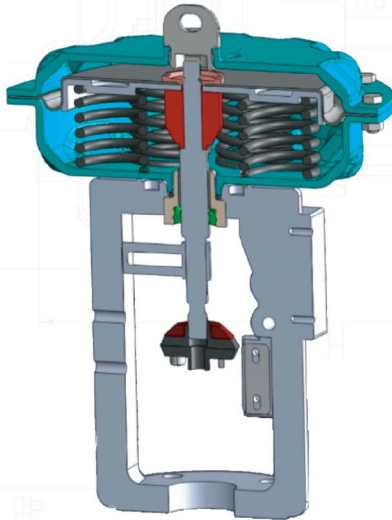


Fig. #1 Direct Acting

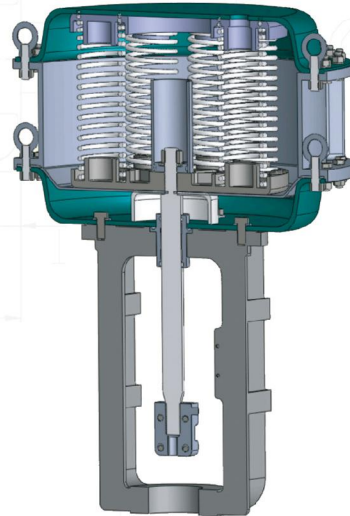


Fig. #2 Reverse Acting

Table 4.1: MF5D Actuator Spring Ranges

	Type	Springs Number	Stroke		Spring Range			
			mm	inch	bar		psi	
Direct Acting (Air to Close)	MF5D-14	3	38	1.50	1.1	1.57	16.0	22.8
	MF5D-16	6			1.63	2.36	23.6	34.2
	MF5D-18	8	50	1.97	2.17	3.15	31.5	45.7
	MF5D-24	4			1.10	1.69	16.0	24.5
	MF5D-26	6			1.63	2.54	23.6	36.8
	MF5D-34,84	4	60	2.36	1.10	1.81	16.0	26.2
	MF5D-36,86	6			1.63	2.72	23.6	39.4
	MF5D-44	4			1.10	2.00	16.0	29.0
	MF5D-46	6	75	2.95	1.63	3.00	23.6	43.5
	MF5D-54,74	4			1.10	2.50	16.0	36.3
	MF5D-56,76	6	100	3.94	1.65	3.75	23.9	54.4
	MF5D-64	4			0.82	2.50	11.9	36.3
	MF5D-66	6	120	4.72	1.22	3.75	17.7	54.4

Table 4.2: MF5R Actuator Spring Ranges

	Type	Springs Number	Stroke		Spring Range			
			mm	inch	bar		psi	
Reverse Acting (Air to Open)	MF5R-14	4	38	1.50	1.33	1.81	19.3	26.2
	MF5R-16	6			1.99	2.72	28.9	39.4
	MF5R-18	8	50	1.97	2.65	3.63	38.4	52.6
	MF5R-24	4			1.33	1.93	19.3	28.0
	MF5R-26	6			1.99	2.90	28.9	42.1
	MF5R-34	4	60	2.36	1.33	2.05	19.3	29.7
	MF5R-36	6			1.99	3.08	28.9	44.7
	MF5R-38	8			2.65	4.10	38.4	59.5
	MF5R-44	4	75	2.95	1.33	2.24	19.3	32.5
	MF5R-46	6			1.99	3.35	28.9	48.6
	MF5R-48	8			2.65	4.47	38.4	64.8
	MF5R-54	4	100	3.94	1.09	2.50	15.8	36.3
	MF5R-56	6			1.65	3.75	23.9	54.4
	MF5R-58	8			2.19	5.00	31.8	72.5
	MF5R-66	6	120	4.72	1.22	3.75	17.7	54.4
	MF5R-68	8			1.63	5.00	23.6	72.5

NOTES:

- 1) Actuator area is 1510cm², 234in²
- 2) Maximum air supply is 6 barg, 87 psig
- 3) Full stroke ranges of the actuator springs are shown, partial stroke versions of the actuator are available

DIMENSIONS & WEIGHTS

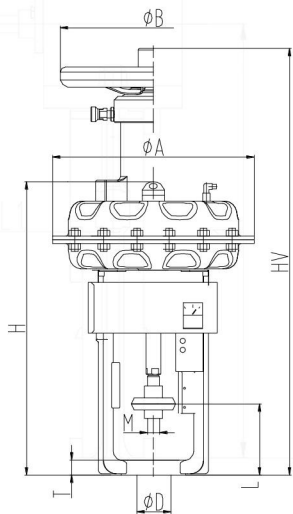


Fig. 3.1 Actuator with or without Top Mounted Handwheel

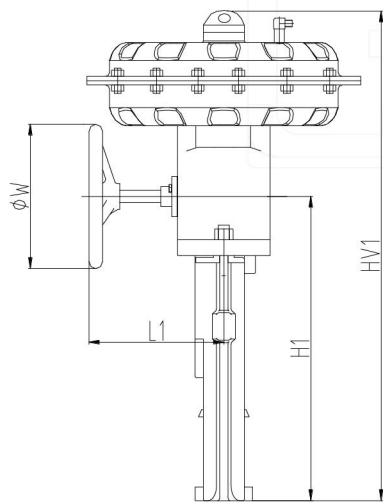


Fig. 3.2 Actuator with Side Mounted Handwheel

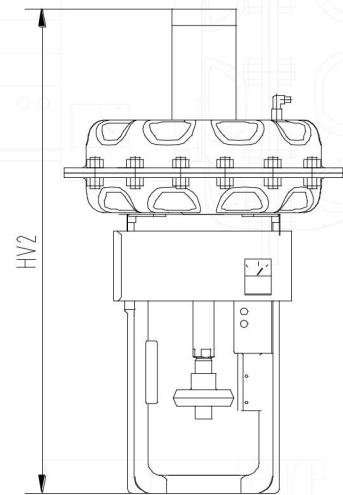


Fig. 3.3 Actuator with Mechanical Stop

Table 5: Dimensions for MF2 and MF3 Actuators, Imperial/Metric

Model	Stroke		φA		φD		M	H		L		T		Weight	
	mm	inch	mm	inch	mm	inch		mm	mm	inch	mm	inch	mm	inch	kg
MF2D/R-7X	16/20	.39/.63/.79	270	10.6	65	2.60	M12	380	15.0	120	4.7	20	0.8	16	35
MF2D/R-8X	20/30	.79/1.18	270	10.6	76	3.00	M14/M18X1.5	425	16.7	142	5.6	25	1.0	18	40
MF2D/R-9X	20	0.79	270	10.6	76	3.00	M18X1.5	405	15.9	142	5.6	25	1.0	18	40
MF3D/R-3X	10/20/30	.39/.79/1.18	400	15.7	76	3.00	M14	505	19.9	142	5.6	25	1.0	36	79
MF3D/R-4X	45/60	1.77/2.36	400	15.7	76	3.00	M18x1.5	595	23.4	192	7.6	30	1.2	44	97
MF3D/R-6X	10/16/20	.39/.63/.79	400	15.7	65	2.60	M14	505	19.9	142	5.6	20	0.8	36	79

Table 6.1: Dimensions for MF2 and MF3 Actuators, Metric

Type	Stroke	φB	HV	L1	H1	φW	HV1	HV2	Weight side handwheel	Weight top handwheel	Weight mechanical limit stop
	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg	kg
MF2D/R-7X	10/16/20	200	540	159	308	200	500	550	25	24	20
MF2D/R-8X	20/30		580		331		545	595	28	27	22
MF2D/R-9X	20		560		331		525	550	28	27	22
MF3D/R-3X	10/20/30	250	780	197	424	250	685	690	59	58	44
MF3D/R-4X	45/60		920		498		825	830	65	64	52
MF3D/R-6X	10/16/20		780		424		685	690	59	58	44

Table 6.2: Dimensions for MF2 and MF3 Actuators, Imperial

Type	Stroke	φB	HV	L1	H1	φW	HV1	HV2	Weight side handwheel	Weight top handwheel	Weight mechanical limit stop
	inch	inch	inch	inch	inch	inch	inch	inch	lb.	lb.	lb.
MF2D/R-7X	.39/.63/.79	8.0	21.0	6.0	12.0	8	20	22	55	53	44
MF2D/R-8X	.79/1.18		23.0		13.0		21	23	62	59	48
MF2D/R-9X	0.79		22.0		13.0		21	22	62	59	48
MF3D/R-3X	.39/.63/.79	10.0	31.0	8.0	17.0	10	27	27	130	128	97
MF3D/R-4X	1.77/2.36		36.0		20.0		32	33	143	141	114
MF3D/R-6X	.39/.63/.79		31.0		17.0		27	27	130	128	97

DIMENSIONS & WEIGHTS

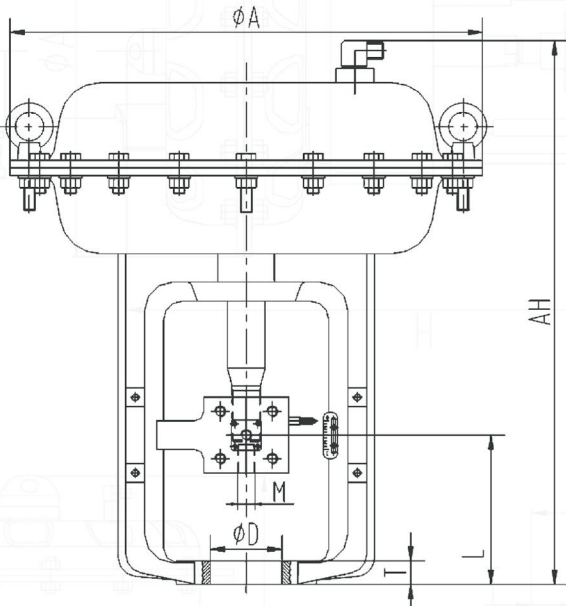


Fig. 4.1 Actuator without Handwheel

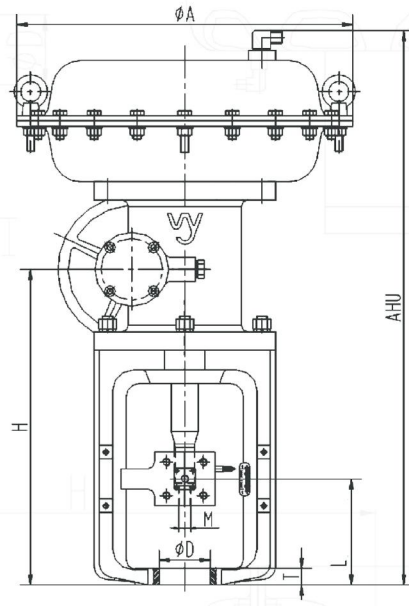


Fig. 4.2 Actuator with Side Mounted Handwheel

Table 7: MF4 without handwheel Dimensions

Model	Stroke		ΦA mm (inch)	ΦD mm (inch)	M	AHU		L Direct		L Reverse		T		Weight	
	mm	inch				mm	inch	mm	inch	mm	inch	mm	inch	kg	lb.
MF4D-1X	20	0.79	500 (19.7)	76 (3.00)	M18X1.5	590	23.2	148	5.8	112	4.4	25	1.0	95	210
MF4D-2X	30	1.18			M14/M18X1.5			158	6.2						
MF4D-3X	60	2.36			M18X1.5			210	8.3						
MF4D-4X	38/40	1.50/1.57		90 (3.54)	M18X1.5	750	29.5	226	8.9	172	6.8	35	1.4		
MF4D-5X	50	1.97						236	9.3						
MF4D-6X	60	2.36						246	9.7						
MF4D-7X	75	2.95						256	10.1						

Table 8: MF4 with handwheel Dimensions

Model	Stroke		ΦA mm (inch)	ΦD mm (inch)	M	AHU		L Direct		L Reverse		T		Weight	
	mm	inch				mm	inch	mm	inch	mm	inch	mm	inch	kg	lb.
MF4D-1X	20	0.79	500 (19.7)	76 (3.00)	M18X1.5	840	33	148	5.8	112	4.4	25	1.0	165	364
MF4D-2X	30	1.18			M14/M18X1.5			158	6.2						
MF4D-3X	60	2.36			M18X1.5			210	8.3						
MF4D-4X	38/40	1.50/1.57		90 (3.54)	M18X1.5	1065	42	226	8.9	172	6.8	35	1.4		
MF4D-5X	50	1.97						236	9.3						
MF4D-6X	60	2.36						246	9.7						
MF4D-7X	75	2.95						256	10.1						



DIMENSIONS & WEIGHTS

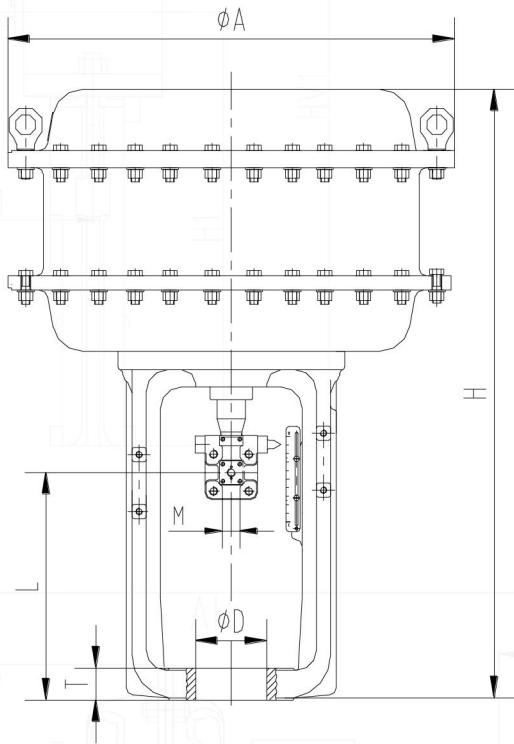


Fig. 5.1 Actuator without Handwheel

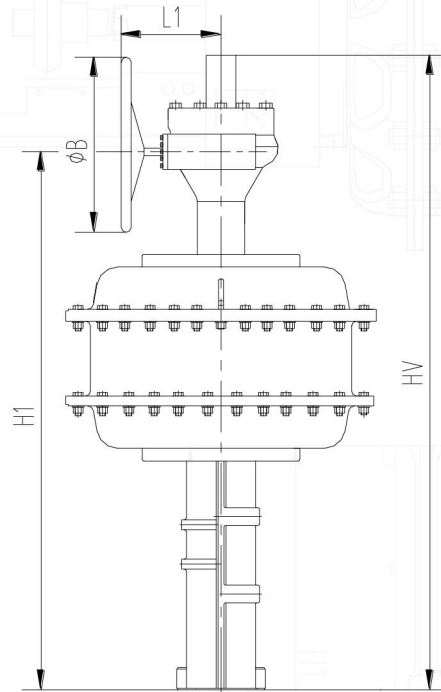


Fig. 5.2 Actuator with Side Mounted Handwheel

Table 9: MF5 Dimensions

Model	Stroke		ϕA mm (inch)	ϕB mm (inch)	ϕD		M	H		HV		L		T		Weight	
	mm	inch			mm	inch		mm	inch	mm	inch	mm	inch	mm	inch	kg	lb.
MF5D	45/60	1.77/2.36	630 (24.8)	350 (13.8)	76	2.99	M18X1.5	890	35	1265	50	198	7.8	30	1.2	150	330
	100	3.94			100	3.94	M27X2	920	36	1295	51	337	13.3	45	1.8	220	485
	120	4.72															
MF5R	45/60	1.77/2.36			76	2.99	M18X1.5	890	35	1370	54	137	5.4	30	1.2	150	330
	100	3.94			100	3.94	M27X2	920	36	1400	55	237	9.3	45	1.8	220	485
	120	4.72										216	8.5				

Table 10: MF5 Dimensions

Model	Stroke		ϕA mm (inch)	ϕB mm (inch)	ϕD		M	H		HV		L		T		Weight	
	mm	inch			mm	inch		mm	inch	mm	inch	mm	inch	mm	inch	kg	lb.
MF5D	38	1.50	630 (24.8)	350 (13.8)	90 110	3.54 4.33	M18X1.5 M24X1.5	890	35.0	1265	50.0	238	9.4	45	1.8	150	330
	40	1.57										255	10.0				
	50	1.97										268	10.6				
	60	2.36															
	75	2.95															
	100	3.94										312	12.3				
MF5R	38	1.50	630 (24.8)	350 (13.8)	90 110	3.54 4.33	M18X1.5 M24X1.5 M27X1.5	890	35.0	1370	54.0	191	7.5	45	1.8	150	330
	40	1.57															
	50	1.97															
	60	2.36															
	75	2.95															
	100	3.94										207	8.1				

WHO WE ARE

WZI Flow Control, Ltd., a subsidiary of WuZhong Instrument Company, Ltd., began business in 1959. As China's largest control valve manufacturer, WZI has a state of the art 2.8M ft² production, foundry and corporate office campus. With over 1000 employees, WZI is expanding globally with increased manufacturing, sales and service capabilities to better serve our rapidly growing global customer base.

As a member of the highly acclaimed China Automation Group (www.cag.com.hk), WZI has successfully supplied over 1 million valves for the global market. With our 100% Testing and Serialization Program, WZI prides itself on our high quality, competitively priced products with superior delivery from our new sales and service center located in Houston, Texas. Our Southern California office designs new products and makes continuous improvements to our broad existing product offering.

LET'S WORK TOGETHER

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WE'RE QUALIFIED

As a global manufacturing company, WZI Flow Control verifies that we are operating in full compliance with this partial list of industry standards. Our compliance includes additional standards not shown here. Please contact the factory for additional details.

> ISO 9001
> ISO 14001
> OHSAS 18001

> API Spec Q1
> API 6A
> API 6D

> API 6DSS
> API 17D
> API 609 Cat B

> API 607, 7th Edition
> API 6FA, 3rd Edition
> SIL-capable

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