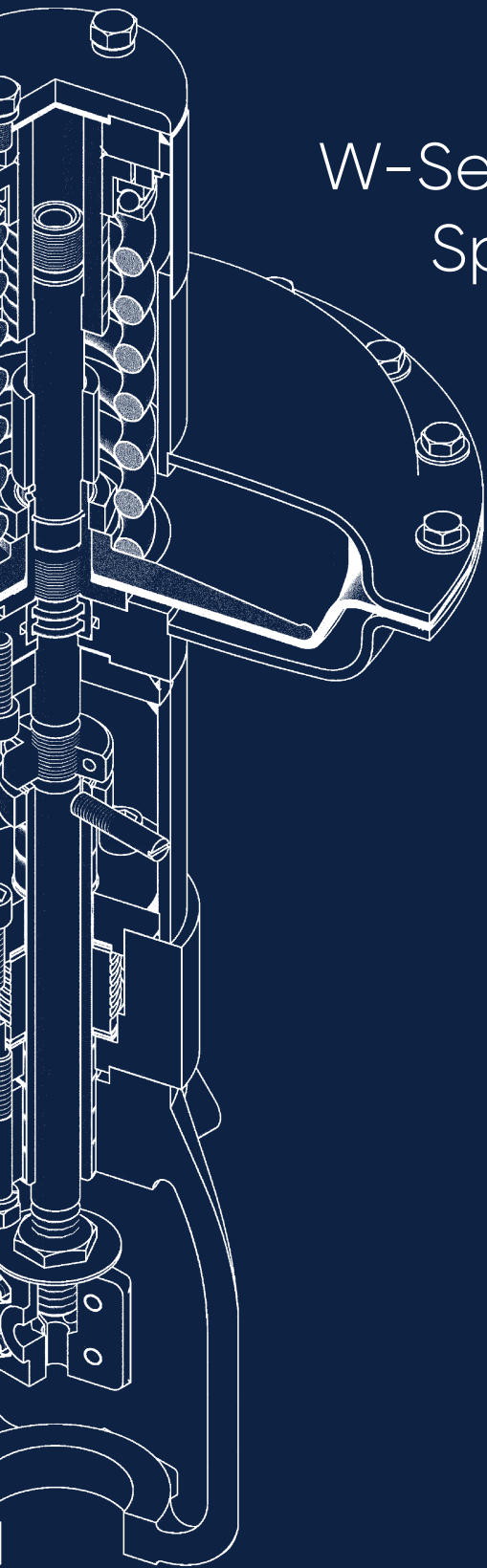


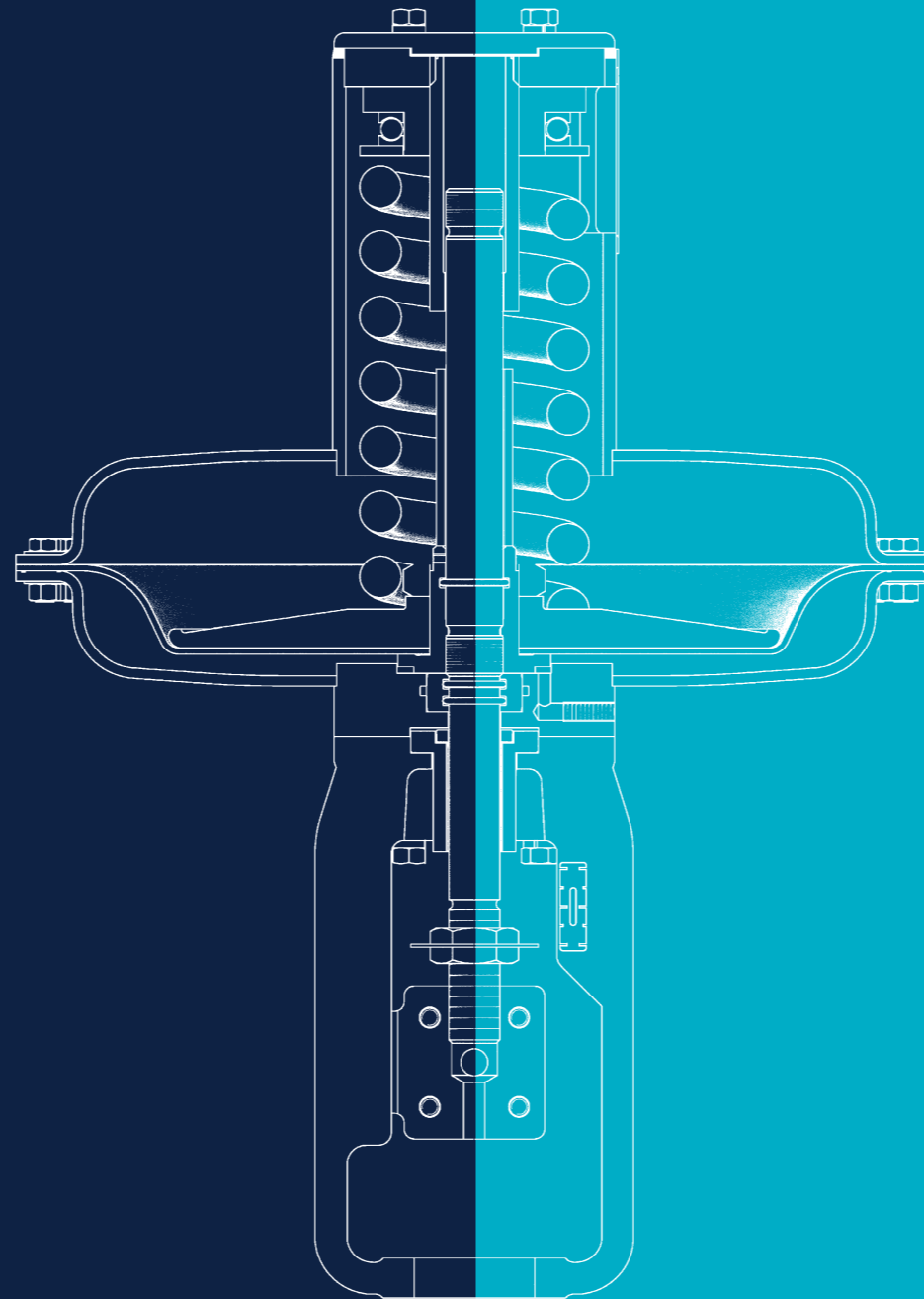
# W-Series Pneumatically Operated Spring & Diaphragm Actuators



It all flows from expertise.

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## W-SERIES ACTUATOR

The W-Series Pneumatically Operated Spring & Diaphragm Actuator is designed to satisfy the majority of general control valve applications.

With proven reliability, even in the most adverse climate conditions and temperatures, the range comprises three basic actuator sizes which, when combined with different spring ranges, provide a travel capability of up to 3½ (89mm). The spring air fail action delivers crucial reliability for critical applications and a pre-compressed bench set is available across the range of fitted springs.



## Design features

- ✓ High power, fast response
- ✓ Operates from low-pressure air supply
- ✓ Low-stressed, positive spring fail action in either air fail open or close orientation
- ✓ Field reversible to change fail safe position
- ✓ Steel construction with minimal parts for low-cost, trouble-free operation and maintenance. The assembly is bolted to a cast yoke combining lightness with mechanical strength.

## Performance benefits

- ✓ Proven, reliable, low-cost performance
- ✓ Fire-resistant construction, with positive fail position
- ✓ Adjustable pre-compressed spring forces
- ✓ High degree of reliability with low hysteresis
- ✓ Epoxy paint system used as standard
- ✓ Manufactured to ISO 9001 certification

## Engineering data

### Actuator sizes

Available in 75in<sup>2</sup>, 150in<sup>2</sup> and 300in<sup>2</sup>

### Pneumatic supply pressure & connection sizes

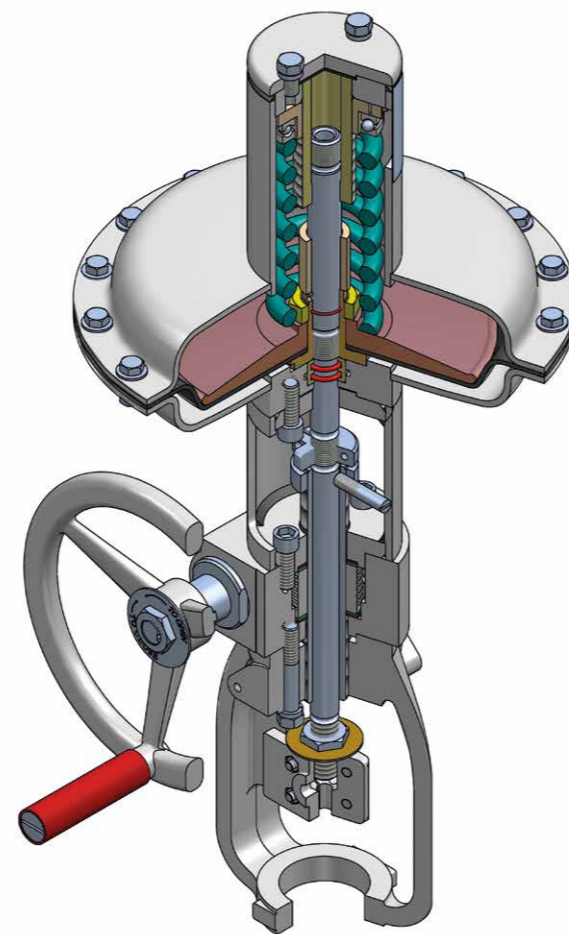
1/4 in NPT Female. For other sizes please contact us. Minimum pneumatic supply pressure 5psig (0.35bar) above calculated actuator requirement. Maximum pneumatic pressure for actuator sizes 75in<sup>2</sup>, 150in<sup>2</sup> is 60psig (4.1bar). For 300in<sup>2</sup> actuator the maximum pneumatic pressure is 50psig (3.4bar).

### Temperature limits

Minimum working temperature: -40 °C  
 Maximum working temperature: 90 °C  
 Minimum storage temperature: -55 °C

### Design option

Upper and lower limit stops  
 Side mounted hand wheel  
 Geared side mounted hand wheel  
 Top mounted and geared manual operators



W-Series Pneumatically Operated Spring & Diaphragm Actuator with side mounted hand wheel

## Component list and materials of construction

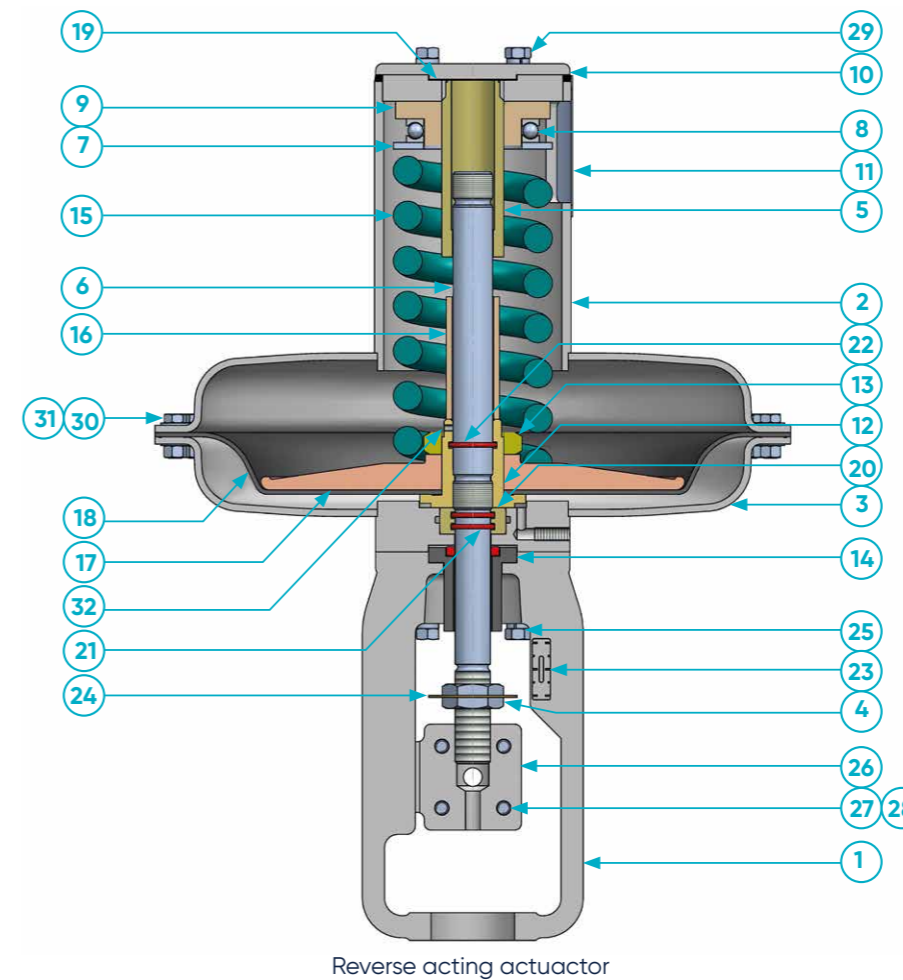


Table 1: Materials of construction

Key No.	Component	Material of construction	Key No.	Component	Material of construction
1	Yoke	Cast steel / SG iron	17	Diaphragm button	Die cast aluminium
2	Spring tube assembly	Mild steel	18	Diaphragm*	Neoprene / Laminate nylon
3	Diaphragm case assembly	Mild steel	19	Cover plate joint*	Rubber
4	Travel stop nuts	Mild steel	20	Seal box	13% Cr. stainless steel
5	Spring adjusting screw	Mild steel	21	Seal box O ring*	Neoprene
6	Actuator stem	Stainless steel	22	Diaphragm collar O ring*	Neoprene
7	Spring carrier	Mild steel	23	Travel indicator plate	Stainless steel
8	Spring thrust bearing	Steel	24	Travel indicator pointer	Stainless steel
9	Spring adjuster	Cast iron	25	Yoke screws	Steel
10	Cover plate	Aluminium	26	Stem coupling	Steel
11	Spring cover plate	Stainless steel	27	Stem coupling screw	Steel
12	Diaphragm collar	Mild steel	28	Stem coupling screw nut	Steel
13	Collar nut	Mild steel	29	Cover plate screws	Steel
14	Stem guide	13% Cr. stainless steel	30	Diaphragm case screws	Steel
15	Spring	Chrome vanadium steel	31	Diaphragm case screw nuts	Steel
16	Travel stop tube	Mild steel	32	Grub screws**	Steel

\* Denotes recommended spare parts. \*\* Stainless steel bolting option available on request.

Note: When hand wheel is added to standard actuator wiper ring, wiper ring retainer and stem guide are deleted. The actuator stem is replaced with a longer stem to accommodate the hand wheel.

# Specifications

**Table 2: Capacities**

Actuator	Actuator travel		Zero volume		Swept volume		Volume at full travel	
	in	mm	in <sup>2</sup>	cm <sup>2</sup>	in <sup>2</sup>	cm <sup>2</sup>	in <sup>2</sup>	cm <sup>2</sup>
75	1 1/8	28	32	524	83	1360	115	1884
150	1 1/2	38	92	1508	228	3737	320	5245
150	2 1/4	57	92	1508	343	5622	435	7130
300	2 1/4	57	255	4180	707	1.16 x 10 <sup>2</sup>	962	1.57 x 10 <sup>2</sup>
300	3 1/2	89	255	4180	1100	1.8 x 10 <sup>2</sup>	1355	2.22 x 10 <sup>2</sup>

**Table 3: Actuator forces**

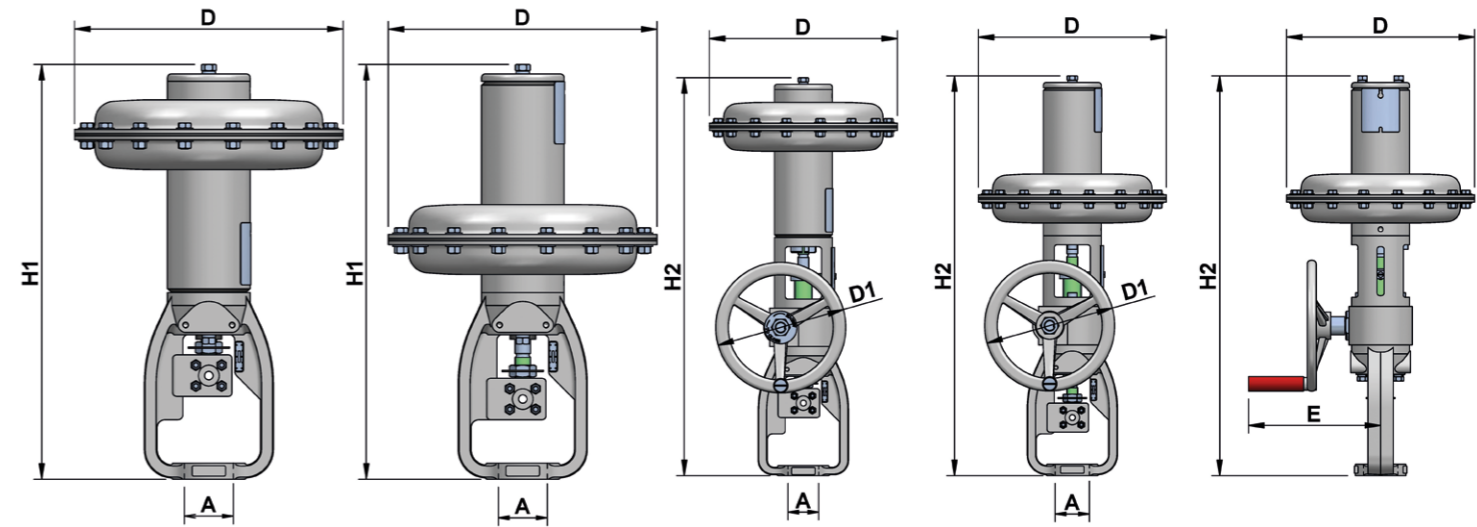
Actuator	Spring range *		Max working pressure		Gross thrust		Nett thrust **		Spring force (extended)	
	lbf/in <sup>2</sup>	bar	lbf/in <sup>2</sup>	bar	lbf	kgf	lbf	kgf	lbf	kgf
75	3-15	0.2-1.0	60	4.1	4500	2040	3375	1530	225	102
	6-30	0.4-2.0					2250	1020	450	204
	3-9	0.2-0.6					3825	1735	225	102
150	3-15	0.2-1.0	60	4.1	9000	4080	6750	3020	450	204
	6-30	0.4-2.0					4500	2040	900	408
	3-9	0.2-0.6					7650	3470	450	204
300	3-15	0.2-1.0	50	3.4	15000	6800	10500	4760	900	408
	6-30	0.4-2.0					6000	2720	1800	816
	3-9	0.2-0.6					12300	5580	900	408
	12-24	0.8-1.6					7800	3539	3600	1632
300X	20-40	1.4-2.8	50	3.4	15000	6800	3000	1360	6000	2721

\* Standard spring without and bench pre-set  
 \*\* Nett thrust is available after compressing spring.

**Table 4: Part numbering system**

W	2	J	N	225	0618	XX
A	B	C	D	EEE	FFFF	GG
A	W: Basic actuator model					
B	1: Direct acting, 2: Reverse acting					
C	H: 75in <sup>2</sup> , J: 150in <sup>2</sup> , K: 300in <sup>2</sup>					
D	H: Side mounted hand wheel, T: Top mounted hand wheel, N: None					
EEE	075:0.75", 113:1 1/8", 150:1 1/2", 225:2 1/4", 350:3 1/2"					
FFFF	Spring range					
GG	Special requirements					

# Standard dimensions & weights



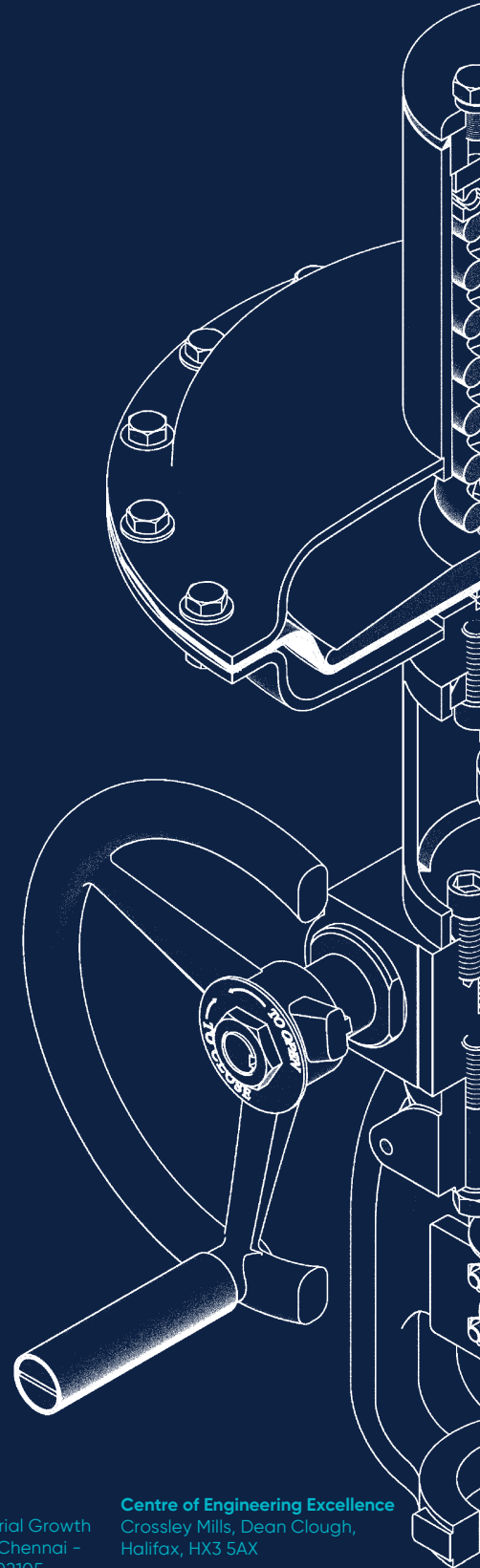
W-Series Operated Spring & Diaphragm Actuators

**Table 5: Dimensions**

Size	Effective area		Travel		Mounting dia "A"		DIM "H1"		DIM "H2"		Weights (kg)	
	in <sup>2</sup>	cm <sup>2</sup>	in	mm	in	mm	in	mm	in	mm	W HW	W/O HW
75	75	480	1/2	13	2 1/8	54	18.75	476	26.75	679	37.8	26.2
75	75	480	3/4	19	2 1/8	54	20.00	508	28.00	711	38.5	27.0
75	75	480	1 1/8	28	2 1/8	54	20.00	508	28.00	711	38.8	27.0
75	75	480	1 1/2	38	2 1/8	54	22.88	581	31.63	803	41.0	29.0
150	150	970	1 1/8	28	2 13/16	71.4	25.25	641	34.88	886	78.2	55.0
150	150	970	1 1/2	38	2 13/16	71.4	25.25	641	34.88	886	78.0	55.0
150	150	970	2 1/4	57	2 13/16	71.4	29.75	756	40.75	1035	83.5	59.0
150	150	970	2 1/4	57	3 9/16	90.5	29.75	756	40.75	1035	83.5	59.0
300	300	1930	2 1/4	57	3 9/16	90.5	36.88	937	49.25	1251	195.0	144.0
300	300	1930	3 1/2	89	3 9/16	90.5	41.00	1041	55.75	1416	204.0	148.5

**Table 5A: Dimensions**

Size	DIM "D"		DIM "D1"		DIM "E"	
	in	mm	in	mm	in	mm
75	13	330	9	229	9	229
150	18	457	12	305	10.5	267
300	24.25	616	15	381	12.5	318



Engineering  
Excellence

**Gloucester UK (HQ)**

Olympus Park,  
Quedgeley,  
Gloucester, GL2 4NF.

T: +44 (0)845 223 2040  
E: [sales@severnvalve.com](mailto:sales@severnvalve.com)

**Severn India (Unit 1)**

F96 & F97, SIPCOT Industrial Park,  
Irrungattukottai, Chennai,  
Tamilnadu, India - 602 117.

T: +91 44 4710 4200  
E: [sales@severnvalve.com](mailto:sales@severnvalve.com)

**Severn India (Unit 2)**

A-50, SIPCOT Industrial Growth  
Centre, Oragadam, Chennai -  
Tamilnadu, India - 602105

T: + 044 67123200  
E: [sales@severnvalve.com](mailto:sales@severnvalve.com)

**Centre of Engineering Excellence**

Crossley Mills, Dean Clough,  
Halifax, HX3 5AX

T: +44 (0)845 6070 710  
E: [sales@severnvalve.com](mailto:sales@severnvalve.com)

[www.severnvalve.com](http://www.severnvalve.com)

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