

## FlowCon SM 15-40mm

*Dynamic Self Balancing Control Valve*



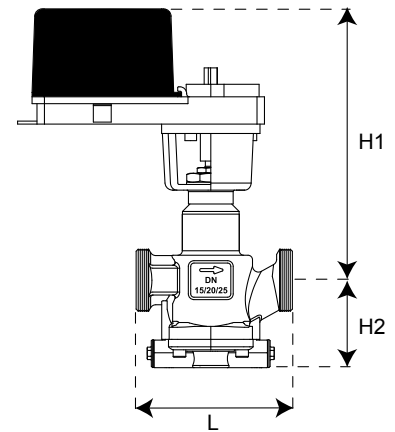
### SPECIFICATIONS

Pressure rating:	2500 kPa, 363 psi
Temperature rating, media:	-20°C to +120°C, -4°F to +248°F
Temperature rating, ambient:	-10°C to +54°C, +14°F to +131°F
Material:	
- Body:	Forged Brass ASTM B584
- Union end connections:	Brass alloy ISO, NPT or sweat
- Diaphragm:	Hydrogenated acrylonitrile-butadiene-rubber
- Internal components:	Stainless steel
- O-ring:	EPDM
Body tappings :	1/4" NPT
Maximum close off pressure:	700 kPa, 101 psi
Maximum operational $\Delta P$ :	320 kPaD, 46 psid

## DIMENSIONS AND WEIGHTS (NOMINAL) (measured in mm unless noted)

Model no.	Size	L	H1	H2	End connections C' (not shown)			Weight <sup>2</sup> (kgs.) w/o end conn.)
					ISO Female	ISO Male	Sweat	
SM.1.1	15	108	182	59	22	25	20	1.8
	20				22	25	20	
	25				-	39	22	
SM.2.1	25	149	232	63	35	40	34	4.2
	32				35	40	37	
	40				40	42	-	

Note 1: Add end connection length to body length.  
Note 2: Weight includes valve and actuators.



## FLOW RATE TABLE

Model no.	Size		Control range		Maximum setting			Minimum setting			Shut-off leakage
	mm	inch	kPaD	psid	l/sec	l/hr	GPM	l/sec	l/hr	GPM	
SM.1.1	15	1/2"	32-320	4.6-46	0,685	2470	10,9	0,176	634	2,79	Leakage<0.05% of Kvs Kvs=4.4m³/hr
	20	3/4"									
	25	1"									
SM.2.1	25	1"	40-320	5.8-46	2,34	8420	37,1	0,513	1850	8,14	Leakage<0.05% of Kvs Kvs=12m³/hr
	32	1 1/4"									
	40	1 1/2"									

## MODEL NUMBER SELECTION

**SM . 1 . . . . .**

Insert body size:  
**1**=15-25mm, 1/2"-1"    **2**=25-40mm, 1"-1 1/2" \_\_\_\_\_

Insert dP control range:  
**1**=standard \_\_\_\_\_

Insert p/t plug requirements:  
**B**=pressure/temperature plugs    **P**=taps plugged (standard) \_\_\_\_\_

Insert actuator selection:  
**1**=brush/display    **2**=brush/failsafe and display    **3**=display    **4**=fail safe and display \_\_\_\_\_

Insert inlet x outlet union end connections:

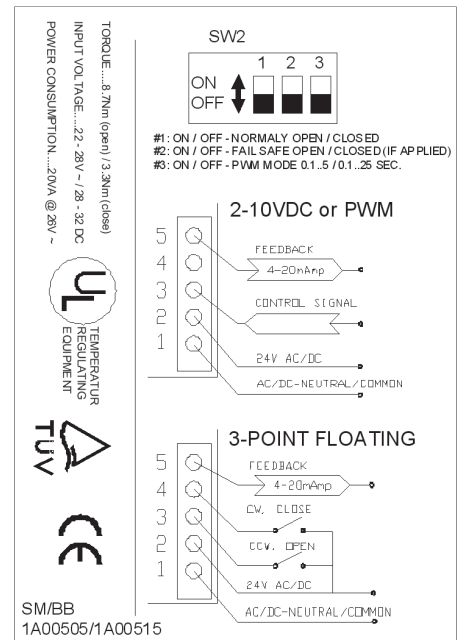
Body size	Female threaded	Male treaded	Sweat
15-25mm, 1/2"-1"	<b>E</b> =15mm=1/2" <b>F</b> =20mm=3/4"	<b>H</b> =15mm=1/2" <b>I</b> =20mm=3/4" <b>J</b> =25mm=1"	<b>K</b> =15mm <b>L</b> =18mm <b>M</b> =22mm
25-40mm, 1"-1 1/2"	<b>G</b> =25mm=1" <b>P</b> =32mm=1 1/4" <b>Q</b> =40mm=1 1/2"	<b>J</b> =25mm=1" <b>S</b> =32mm=1 1/4" <b>T</b> =40mm=1 1/2"	<b>N</b> =28mm <b>W</b> =35mm

Insert connections standard:  
**I**=ISO    **N**=NPT/ANSI \_\_\_\_\_

Example: SM.2.1.B.3.Q.Q.I=SM 25-40mm body, standard dP range, with p/t plugs, display actuator and 40mm ISO female connections.

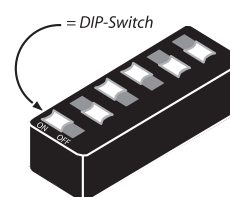
## ACTUATOR SPECIFICATIONS

Supply voltage:	22-28V AC or 28-32V DC
Power consumption:	20VA @ 26V AC
Frequency:	50/60 HZ
Control input:	2-10V DC 4-20mA 3-point floating PWM
Position output:	2-10V DC 4-20mA
Turn time:	150 seconds (from closed to fully open valve)
Electrical connection:	15mm grommet connection
Direction of rotation:	Bi-directional
Humidity rating:	Fully coated electronic board
Housing material:	Aluminium
Housing insulation:	IP42.



## FLOW RATE SETTING - VALVE SIZE DN15-DN40

Maximum Flow Rate						Maximum Flow Rate DIP Switch Settings						Stem Rotations From Closed
DN15-DN25 · 1/2"-1"			DN25-DN40 · 1"-1 1/2"									
32-320 kPaD · 4.6-46 psid			40-320 kPaD · 5.8-46 psid									
SM.1.1			SM.2.1									
l/sec	l/hr	GPM	l/sec	l/hr	GPM	1	2	3	4	5	6	Rotations
0.176	634	2.79	0.513	1850	8.14	ON	ON	ON	ON	ON	ON	1
0.195	703	3.10	0.573	2060	9.09	OFF	ON	ON	ON	ON	ON	1.1
0.214	771	3.40	0.632	2280	10.0	ON	OFF	ON	ON	ON	ON	1.2
0.233	838	3.69	0.690	2480	10.9	OFF	OFF	ON	ON	ON	ON	1.3
0.251	902	3.97	0.746	2690	11.8	ON	ON	OFF	ON	ON	ON	1.4
0.268	964	4.25	0.802	2890	12.7	OFF	ON	OFF	ON	ON	ON	1.5
0.285	1020	4.52	0.856	3080	13.6	ON	OFF	OFF	ON	ON	ON	1.6
0.301	1080	4.78	0.909	3270	14.4	OFF	OFF	OFF	ON	ON	ON	1.7
0.317	1140	5.03	0.961	3460	15.2	ON	ON	ON	OFF	ON	ON	1.8
0.332	1200	5.27	1.01	3640	16.0	OFF	ON	ON	OFF	ON	ON	1.9
0.347	1250	5.51	1.06	3820	16.8	ON	OFF	ON	OFF	ON	ON	2
0.362	1300	5.74	1.11	4000	17.6	OFF	OFF	ON	OFF	ON	ON	2.1
0.376	1350	5.96	1.16	4170	18.4	ON	ON	OFF	OFF	ON	ON	2.2
0.390	1400	6.18	1.20	4330	19.1	OFF	ON	OFF	OFF	ON	ON	2.3
0.403	1450	6.39	1.25	4500	19.8	ON	OFF	OFF	OFF	ON	ON	2.4
0.416	1500	6.60	1.29	4660	20.5	OFF	OFF	OFF	OFF	ON	ON	2.5
0.428	1540	6.79	1.34	4810	21.2	ON	ON	ON	ON	OFF	ON	2.6
0.440	1590	6.98	1.38	4970	21.9	OFF	ON	ON	ON	OFF	ON	2.7
0.452	1630	7.17	1.42	5120	22.5	ON	OFF	ON	ON	OFF	ON	2.8
0.463	1670	7.35	1.46	5260	23.2	OFF	OFF	ON	ON	OFF	ON	2.9
0.474	1710	7.52	1.50	5400	23.8	ON	ON	OFF	ON	OFF	ON	3
0.485	1750	7.69	1.54	5540	24.4	OFF	ON	OFF	ON	OFF	ON	3.1
0.495	1780	7.86	1.58	5680	25.0	ON	OFF	OFF	ON	OFF	ON	3.2
0.505	1820	8.01	1.61	5810	25.6	OFF	OFF	OFF	ON	OFF	ON	3.3
0.515	1850	8.17	1.65	5940	26.2	ON	ON	ON	OFF	OFF	ON	3.4
0.524	1890	8.31	1.69	6070	26.7	OFF	ON	ON	OFF	OFF	ON	3.5
0.533	1920	8.46	1.72	6190	27.3	ON	OFF	ON	OFF	OFF	ON	3.6
0.542	1950	8.60	1.75	6310	27.8	OFF	OFF	ON	OFF	OFF	ON	3.7
0.550	1980	8.73	1.79	6430	28.3	ON	ON	OFF	OFF	OFF	ON	3.8
0.559	2010	8.86	1.82	6550	28.8	OFF	ON	OFF	OFF	OFF	ON	3.9
0.567	2040	8.99	1.85	6660	29.3	ON	OFF	OFF	OFF	OFF	ON	4
0.574	2070	9.11	1.88	6770	29.8	OFF	OFF	OFF	OFF	OFF	ON	4.1
0.582	2090	9.23	1.91	6870	30.3	ON	ON	ON	ON	ON	OFF	4.2
0.589	2120	9.34	1.94	6980	30.7	OFF	ON	ON	ON	ON	OFF	4.3
0.596	2150	9.45	1.97	7080	31.2	ON	OFF	ON	ON	ON	OFF	4.4
0.603	2170	9.56	1.99	7180	31.6	OFF	OFF	ON	ON	ON	OFF	4.5
0.609	2190	9.66	2.02	7280	32.1	ON	ON	OFF	ON	ON	OFF	4.6
0.616	2220	9.76	2.05	7370	32.5	OFF	ON	OFF	ON	ON	OFF	4.7
0.622	2240	9.86	2.07	7460	32.9	ON	OFF	OFF	ON	ON	OFF	4.8
0.628	2260	9.96	2.10	7550	33.3	OFF	OFF	OFF	ON	ON	OFF	4.9
0.634	2280	10.0	2.12	7640	33.7	ON	ON	ON	OFF	ON	OFF	5
0.639	2300	10.1	2.15	7730	34.0	OFF	ON	ON	OFF	ON	OFF	5.1
0.645	2320	10.2	2.17	7810	34.4	ON	OFF	ON	OFF	ON	OFF	5.2
0.650	2340	10.3	2.19	7890	34.8	OFF	OFF	ON	OFF	ON	OFF	5.3
0.655	2360	10.4	2.21	7970	35.1	ON	ON	OFF	OFF	ON	OFF	5.4
0.661	2380	10.5	2.24	8050	35.5	OFF	ON	OFF	OFF	ON	OFF	5.5
0.666	2400	10.6	2.26	8130	35.8	ON	OFF	OFF	OFF	ON	OFF	5.6
0.671	2410	10.6	2.28	8200	36.1	OFF	OFF	OFF	OFF	ON	OFF	5.7
0.676	2430	10.7	2.30	8280	36.5	ON	ON	ON	ON	OFF	OFF	5.8
0.680	2450	10.8	2.32	8350	36.8	OFF	ON	ON	ON	OFF	OFF	5.9
0.685	2470	10.9	2.34	8420	37.1	ON	OFF	ON	ON	OFF	OFF	6



Example illustrated above:

**ON-OFF-ON-ON-OFF-OFF**

which gives a max flow of:

**SM.1.1** - 0.685 l/sec and  
**SM.2.1** - 2.34 l/sec  
(rotation 6.0).

Accuracy: Greatest of either ±5% of controlled flow rate or ±2% of maximum flow rate.

## GENERAL DESCRIPTION

The SM Series are self balancing dynamic flow control valves that are pressure independent, two-way, modulating to accept digital or analog input signals. The valves accept 2 10V DC, 4 20 mA, digital 3-point floating or PWM input signals. Each valve has an adjustable maximum flow rate setting to enable flow limitation and balancing to the coils or zones that the valves are controlling.

All SM actuators are microprocessor based with a self-calibrating feature.

The valves are all designed for double union piping connection.

They are available in two different valve bodies with end connections from 15mm-40mm.

## GENERAL SPECIFICATIONS

### 1. PRESSURE INDEPENDENT DYNAMIC CONTROL VALVE FLOWCON SM

- 1.1. Contractor shall install dynamic control valves where indicated in drawings.
- 1.2. Valve shall be an electronic, dynamic, modulating, 2-way control device.
- 1.3. Dynamic control valve shall accurately control flow, independent of system pressure fluctuation.
- 1.4. Maximum flow setting shall be adjustable to 51 different settings within the range of the valve size.

### 2. VALVE ACTUATOR

- 2.1. Valve actuator housing shall be rated to IP42.
- 2.2. Actuator shall be driven by a 22-28V AC or 28-32V DC motor, and shall accept 2-10V DC, 4-20 mA, 3-point floating or pulse width modulation electric signal and shall include resistor to facilitate any of these signals.
- 2.3. Actuator shall be capable of providing 4-20 mA or 2-10V DC feedback signal to the control system.
- 2.4. Optional fail safe system to power valve to either open or closed position from any position in case of these signals.
- 2.5. External LED read-out of current valve position and maximum valve position setting shall be available.

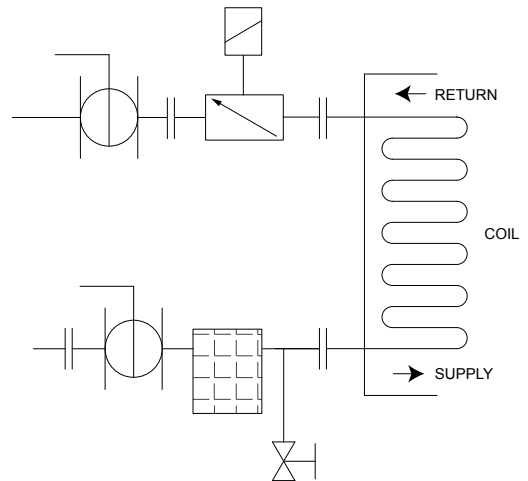
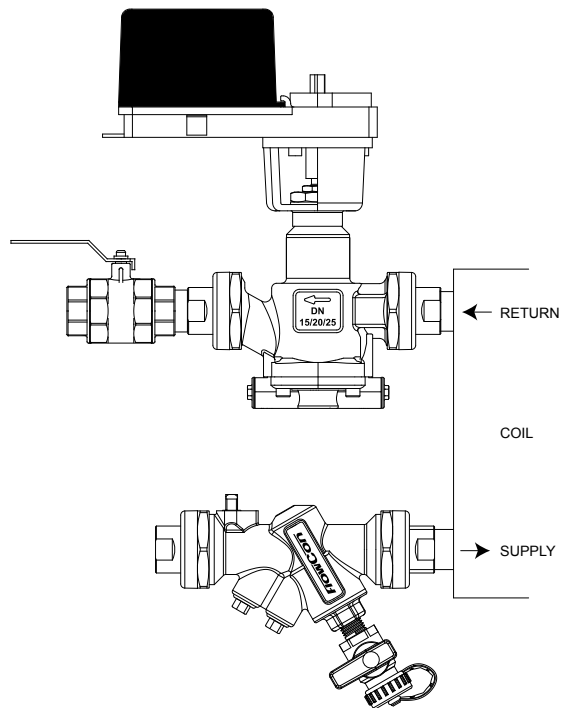
### 3. VALVE HOUSING

- 3.1. Housing shall be constructed of forged brass ASTM CuZn39Pb2 rated at no less than 2500 kPa static pressure and +120°C.
- 3.2. Valve housing shall be double union end construction with a range of pipe connections available for the appropriate pipe size.
- 3.3. Optional dual pressure/temperature test plugs for verifying accuracy of flow performance shall be available for all valve sizes.

### 4. FLOW REGULATOR / AUTOMATIC BALANCING UNIT

- 4.1. Flow regulation unit shall consist of stainless steel and hydrogenated acrylonitrile butadiene rubber and shall be capable of controlling flow within greatest of either  $\pm 5\%$  of rated flow rate or  $\pm 2\%$  of maximum flow rate.
- 4.2. Flow regulation unit shall be accessible for change-out or maintenance.

## APPLICATION AND SCHEMATIC EXAMPLE



## UPDATES

**For latest updates please see [www.flowcon.com](http://www.flowcon.com)**

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