FlowCon SH

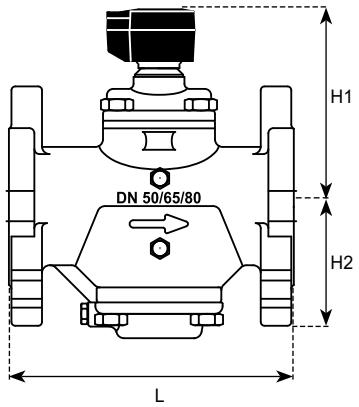
Externally Adjustable Dynamic Self-Balancing Valve
DN50-250 / 2”-10”

SPECIFICATIONS

Static pressure:	4000 kPa / 580 psi
Ambient temperature:	-10°C to +50°C / +14°F to +122°F
Media temperature:	-20°C to +120°C / -4°F to +248°F
Material:	
- Housing and covers:	Ductile iron, ASTM A395 Grade 60-40-18
- Other metal components (internal):	Stainless steel
- Stem seal and O-rings:	EPDM
- Diaphragm:	Hydrogenated acrylonitrile-butadiene-rubber
Maximum close off pressure:	800 kPa / 116 psi
Maximum operational ΔP:	800 kPaD / 116 psid
Flow rate range:	1.48-76.8 l/sec / 23.4-1220 GPM
End connection:	Universal flange connections which can be used with both ISO and ANSI flanges. Mounting kits are not supplied by FlowCon
Housing taps:	1/4” ISO

DIMENSIONS AND WEIGHT (NOMINAL)

Model no.	Valve size mm (in)	L mm (in)	H1 mm (in)	H2 mm (in)	Weight kg (lb)
SH.3.X	50 (2)	224 (8.82)	152 (5.98)	95.0 (3.74)	13
	65 (2 1/2)				
	80 (3)				
SH.4.X	80 (3)	320 (12.6)	196 (7.72)	135 (5.31)	30
	100 (4)				31 (SH.4.3)
SH.5.X	125 (5)	422 (16.6)	244 (9.61)	180 (7.09)	60
	150 (6)				
SH.6.2	200 (8)	725 (28.5)	379 (14.9)	292 (11.5)	247
	250 (10)				



MODEL NUMBER SELECTION

SH . . . B . 0 . 0 . 0 . 3-0

Valve size:
3 = DN50-80 / 2”-3”
4 = DN80-100 / 3”-4”
5 = DN125-150 / 5”-6”
6 = DN200-250 / 8”-10”

ΔP control range:
0 = 30-800 kPaD / 4.4-116 psid (SH.3 only)
1 = 30-800 kPaD / 4.4-116 psid
2 = 35-800 kPaD / 5.1-116 psid
3 = 50-800 kPaD / 7.3-116 psid (SH.4 only)

P/t plug requirements:
B = p/t plugs (standard)

Setting:
3-0 = standard setting 3.0

Example:
SH.3.1.B.0.0.0.3-1 = SH DN50-80 (2”-3”) housing with p/t plugs, ΔP range 30-800 kPaD (4.4-116 psid), standard setting 3.0.

FLANGE MATCH

Model no.	Flange size (inch)	ASME B16.5 weld neck		Flange size (mm)	EN1092-1 weld neck			
		Class 150	Class 300		PN10	PN16	PN25	PN40
SH.3.X	2			50	✓	✓	✓	✓
	2 1/2	✓	✓	65	✓	✓	✓	✓
	3	✓	✓	80	✓	✓	✓	✓
SH.4.X	3	✓	✓	80	✓	✓	✓	✓
	4	✓	✓	100	✓	✓	✓	✓
SH.5.X	5	✓	✓	125	✓	✓	✓	✓
	6	✓		150	✓	✓	✓	✓
SH.6.2	8		✓	200			✓	✓
	10	✓		250	✓	✓	✓	✓

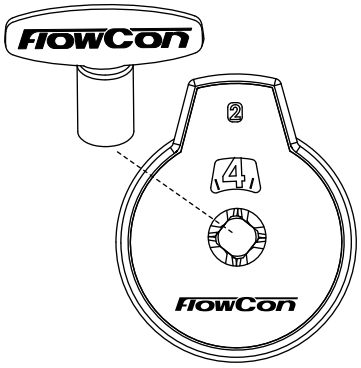
FLOW RATE TABLE

Model no.	Valve size		Control range		Lowest settable max flow			Highest settable max flow		
	mm	inch	kPaD	psid	l/sec	l/hr	GPM	l/sec	l/hr	GPM
SH.3.0	50/65/80	2 / 2 1/2 / 3	30-800	4.4-116	1.48	5310	23.4	4.16	15000	65.9
SH.3.1	50/65/80	2 / 2 1/2 / 3	30-800	4.4-116	2.57	9240	40.7	7.15	25700	113
SH.3.2	50/65/80	2 / 2 1/2 / 3	35-800	5.1-116	3.55	12800	56.3	9.89	35600	157
SH.4.1	80/100	3 / 4	30-800	4.4-116	3.49	12600	55.4	9.38	33800	149
SH.4.2	80/100	3 / 4	35-800	5.1-116	4.73	17000	75.0	14.2	51000	225
SH.4.3	80/100	3 / 4	50-800	7.3-116	3.68	13300	58.3	20.2	72700	320
SH.5.1	125/150	5 / 6	30-800	4.4-116	6.48	23300	103	23.3	83800	369
SH.5.2	125/150	5 / 6	35-800	5.1-116	7.10	25600	113	29.5	106000	468
SH.6.2	200/250	8 / 10	35-800	5.1-116	9.21	33100	146	76.8	277000	1220

FLOW RATE SETTING - VALVE SIZE DN50-DN80

Flow rate									Setting
Valve size: DN50-DN80 · 2”-3”									
30-800 kPaD · 4.4-116 psid			30-800 kPaD · 4.4-116 psid			35-800 kPaD · 5.1-116 psid			
SH.3.0			SH.3.1			SH.3.2			
l/sec	l/hr	GPM	l/sec	l/hr	GPM	l/sec	l/hr	GPM	
1.48	5310	23.4	2.57	9240	40.7	3.55	12800	56.3	1.0
1.58	5700	25.1	2.81	10100	44.6	3.85	13900	61.0	1.1
1.69	6080	26.8	3.05	11000	48.3	4.13	14900	65.5	1.2
1.79	6460	28.4	3.27	11800	51.9	4.41	15900	69.9	1.3
1.90	6830	30.1	3.49	12500	55.2	4.67	16800	74.0	1.4
2.00	7190	31.6	3.69	13300	58.4	4.92	17700	78.0	1.5
2.09	7540	33.2	3.88	14000	61.5	5.16	18600	81.7	1.6
2.19	7880	34.7	4.06	14600	64.3	5.38	19400	85.3	1.7
2.28	8220	36.2	4.23	15200	67.0	5.60	20200	88.8	1.8
2.37	8540	37.6	4.39	15800	69.6	5.81	20900	92.1	1.9
2.46	8860	39.0	4.54	16300	72.0	6.01	21600	95.2	2.0
2.55	9170	40.4	4.68	16900	74.2	6.19	22300	98.2	2.1
2.63	9470	41.7	4.82	17300	76.4	6.37	22900	101	2.2
2.71	9770	43.0	4.94	17800	78.4	6.54	23600	104	2.3
2.79	10100	44.3	5.06	18200	80.2	6.71	24100	106	2.4
2.87	10300	45.5	5.17	18600	82.0	6.86	24700	109	2.5
2.95	10600	46.7	5.28	19000	83.7	7.00	25200	111	2.6
3.02	10900	47.8	5.38	19400	85.2	7.14	25700	113	2.7
3.09	11100	49.0	5.47	19700	86.6	7.28	26200	115	2.8
3.16	11400	50.0	5.55	20000	88.0	7.40	26600	117	2.9
3.22	11600	51.1	5.63	20300	89.2	7.52	27100	119	3.0
3.29	11800	52.1	5.70	20500	90.4	7.63	27500	121	3.1
3.35	12000	53.1	5.77	20800	91.5	7.74	27900	123	3.2
3.41	12300	54.0	5.84	21000	92.5	7.84	28200	124	3.3
3.46	12500	54.9	5.90	21200	93.5	7.94	28600	126	3.4
3.52	12700	55.8	5.96	21400	94.4	8.03	28900	127	3.5
3.57	12900	56.6	6.01	21600	95.2	8.12	29200	129	3.6
3.62	13000	57.4	6.06	21800	96.0	8.20	29500	130	3.7
3.67	13200	58.2	6.10	22000	96.8	8.28	29800	131	3.8
3.72	13400	58.9	6.15	22100	97.5	8.36	30100	133	3.9
3.76	13500	59.6	6.19	22300	98.2	8.44	30400	134	4.0
3.80	13700	60.2	6.23	22400	98.8	8.51	30600	135	4.1
3.84	13800	60.9	6.27	22600	99.4	8.58	30900	136	4.2
3.88	14000	61.4	6.31	22700	101	8.65	31100	137	4.3
3.91	14100	62.0	6.35	22900	101	8.72	31400	138	4.4
3.94	14200	62.5	6.39	23000	101	8.78	31600	139	4.5
3.97	14300	63.0	6.42	23100	102	8.85	31900	140	4.6
4.00	14400	63.4	6.46	23300	102	8.91	32100	141	4.7
4.03	14500	63.8	6.50	23400	103	8.98	32300	142	4.8
4.05	14600	64.2	6.54	23500	104	9.04	32600	143	4.9
4.07	14700	64.5	6.58	23700	104	9.11	32800	144	5.0
4.09	14700	64.8	6.62	23800	105	9.18	33000	145	5.1
4.11	14800	65.1	6.67	24000	106	9.25	33300	147	5.2
4.12	14800	65.3	6.72	24200	106	9.32	33500	148	5.3
4.13	14900	65.5	6.77	24400	107	9.39	33800	149	5.4
4.14	14900	65.7	6.82	24600	108	9.46	34100	150	5.5
4.15	14900	65.8	6.88	24800	109	9.54	34300	151	5.6
4.16	15000	65.9	6.94	25000	110	9.62	34600	153	5.7
4.16	15000	65.9	7.01	25200	111	9.71	34900	154	5.8
4.16	15000	65.9	7.08	25500	112	9.79	35300	155	5.9
4.16	15000	65.9	7.15	25700	113	9.89	35600	157	6.0

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



Use the special key (FlowCon part no. ACC0001) for micro-meter setting.

A micrometer setting at 2.4 as illustrated above corresponds to a flow rate of:

2.79 l/sec
- (type 0, range 30-800 kPaD)

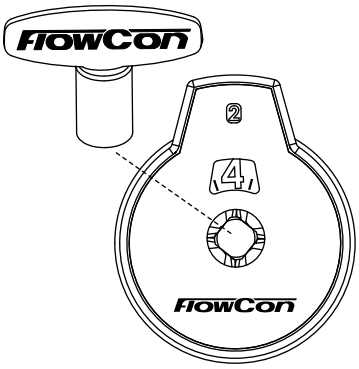
5.06 l/sec
- (type 1, range 30-800 kPaD)

6.71 l/sec
- (type 2, range 35-800 kPaD)

FLOW RATE SETTING - VALVE SIZE DN80 AND DN100

Flow rate									Setting
Valve size: 80mm, 100mm · 3", 4"									
30-800 kPaD · 4.4-116 psid			35-800 kPaD · 5.1-116 psid			50-800 kPaD · 7.3-116 psid			
SH.4.1			SH.4.2			SH.4.3			
l/sec	l/hr	GPM	l/sec	l/hr	GPM	l/sec	l/hr	GPM	
3.49	12600	55.4	4.73	17000	75.0	3.68	13300	58.3	1.0
3.88	14000	61.6	5.29	19000	83.8	4.42	15900	70.0	1.1
4.26	15300	67.5	5.82	21000	92.3	5.13	18500	81.3	1.2
4.61	16600	73.0	8.33	22800	100	5.82	21000	92.3	1.3
4.94	17800	78.4	6.82	24500	108	6.50	23400	103	1.4
5.26	18900	83.4	7.28	26200	115	7.15	25700	113	1.5
5.56	20000	88.1	7.72	27800	122	7.78	28000	123	1.6
5.84	21000	92.6	8.14	29300	129	8.40	30200	133	1.7
6.11	22000	96.9	8.54	30700	135	8.99	32400	142	1.8
6.36	22900	101	8.91	32100	141	9.57	34400	152	1.9
6.60	23800	105	9.27	33400	147	10.1	36400	160	2.0
6.82	24600	108	9.61	34600	152	10.7	38400	169	2.1
7.03	25300	111	9.93	35700	157	11.2	40200	177	2.2
7.23	26000	115	10.2	36800	162	11.7	42100	185	2.3
7.41	26700	117	10.5	37800	167	12.2	43800	193	2.4
7.58	27300	120	10.8	38800	171	12.6	45500	200	2.5
7.73	27800	123	11.0	39700	175	13.1	47100	207	2.6
7.88	28400	125	11.3	40500	178	13.5	48700	214	2.7
8.01	28800	127	11.5	41300	182	13.9	50200	221	2.8
8.14	29300	129	11.7	42000	185	14.3	51600	227	2.9
8.25	29700	131	11.9	42700	188	14.7	53000	233	3.0
8.35	30100	132	12.0	43400	191	15.1	54300	239	3.1
8.45	30400	134	12.2	43900	194	15.4	55600	245	3.2
8.53	30700	135	12.4	44500	196	15.8	56800	250	3.3
8.61	31000	137	12.5	45000	198	16.1	58000	255	3.4
8.68	31300	138	12.6	45500	200	16.4	59100	260	3.5
8.75	31500	139	12.7	45900	202	16.7	60200	265	3.6
8.80	31700	140	12.9	46300	204	17.0	61200	269	3.7
8.85	31900	140	13.0	46700	205	17.3	62100	274	3.8
8.90	32000	141	13.1	47000	207	17.5	63000	278	3.9
8.94	32200	142	13.1	47300	208	17.8	63900	281	4.0
8.97	32300	142	13.2	47600	209	18.0	64700	285	4.1
9.00	32400	143	13.3	47800	210	18.2	65500	288	4.2
9.03	32500	143	13.4	48100	212	18.4	66200	292	4.3
9.05	32600	143	13.4	48300	213	18.6	66900	295	4.4
9.07	32600	144	13.5	48500	214	18.8	67600	297	4.5
9.09	32700	144	13.5	48700	214	18.9	68200	300	4.6
9.10	32800	144	13.6	48800	215	19.1	68700	303	4.7
9.12	32800	145	13.6	49000	216	19.2	69200	305	4.8
9.13	32900	145	13.7	49200	217	19.4	69700	307	4.9
9.15	32900	145	13.7	49300	217	19.5	70200	309	5.0
9.16	33000	145	13.7	49500	218	19.6	70600	311	5.1
9.18	33000	145	13.8	49600	218	19.7	70900	312	5.2
9.19	33100	146	13.8	49800	219	19.8	71300	314	5.3
9.21	33200	146	13.9	49900	220	19.9	71600	315	5.4
9.23	33200	146	13.9	50100	220	20.0	71900	316	5.5
9.25	33300	147	14.0	50200	221	20.0	72100	317	5.6
9.28	33400	147	14.0	50400	222	20.1	72300	318	5.7
9.31	33500	148	14.1	50600	223	20.1	72500	319	5.8
9.34	33600	148	14.1	50800	224	20.2	72600	320	5.9
9.38	33800	149	14.2	51000	225	20.2	72700	320	6.0

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



Use the special key (FlowCon part no. ACC0001) for micrometer setting.

A micrometer setting at 2.4 as illustrated above corresponds to a flow rate of:

7.41 l/sec
- (type 1, range 30-800 kPaD)

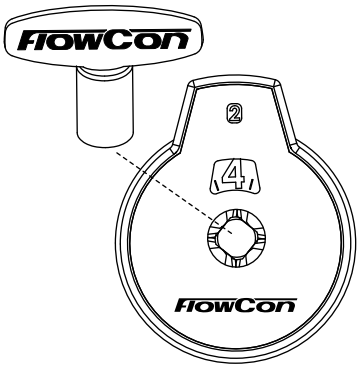
10.5 l/sec
- (type 2, range 35-800 kPaD)

12.2 l/sec
- (type 3, range 50-800 kPaD)

FLOW RATE SETTING - VALVE SIZE DN125 AND DN150

Flow rate						Setting
Valve size: DN125 and DN150 · 5” and 6”						
30-800 kPaD · 4.4-116 psid			35-800 kPaD · 5.1-116 psid			
SH.5.1			SH.5.2			
l/sec	l/hr	GPM	l/sec	l/hr	GPM	
6.48	23300	103	7.10	25600	113	1.0
7.24	26100	115	8.06	29000	128	1.1
7.98	28700	126	8.98	32300	142	1.2
8.70	31300	138	9.87	35500	157	1.3
9.39	33800	149	10.7	38600	170	1.4
10.1	36200	160	11.6	41600	183	1.5
10.7	38600	170	12.4	44500	196	1.6
11.4	40900	180	13.1	47300	208	1.7
12.0	43100	190	13.9	50000	220	1.8
12.6	45200	199	14.6	52600	232	1.9
13.1	47300	208	15.3	55100	243	2.0
13.7	49300	217	16.0	57500	253	2.1
14.2	51200	226	16.6	59800	264	2.2
14.8	53100	234	17.2	62100	273	2.3
15.3	54900	242	17.8	64200	283	2.4
15.7	56600	249	18.4	66300	292	2.5
16.2	58300	257	19.0	68300	301	2.6
16.6	59900	264	19.5	70200	309	2.7
17.1	61500	271	20.0	72100	317	2.8
17.5	63000	277	20.5	73800	325	2.9
17.9	64400	284	21.0	75500	333	3.0
18.3	65800	290	21.4	77200	340	3.1
18.6	67100	295	21.9	78700	347	3.2
19.0	68300	301	22.3	80200	353	3.3
19.3	69500	306	22.7	81700	360	3.4
19.6	70700	311	23.1	83100	366	3.5
19.9	71700	316	23.4	84400	372	3.6
20.2	72800	320	23.8	85700	377	3.7
20.5	73800	325	24.1	86900	383	3.8
20.7	74700	329	24.5	88100	388	3.9
21.0	75600	333	24.8	89200	393	4.0
21.2	76400	336	25.1	90300	398	4.1
21.4	77200	340	25.4	91400	402	4.2
21.6	77900	343	25.7	92400	407	4.3
21.8	78600	346	25.9	93400	411	4.4
22.0	79200	349	26.2	94300	415	4.5
22.2	79800	351	26.5	95200	419	4.6
22.3	80300	354	26.7	96100	423	4.7
22.5	80800	356	26.9	97000	427	4.8
22.6	81300	358	27.2	97800	431	4.9
22.7	81700	360	27.4	98600	434	5.0
22.8	82100	361	27.6	99400	438	5.1
22.9	82400	363	27.8	100000	441	5.2
23.0	82700	364	28.1	101000	445	5.3
23.0	83000	365	28.3	102000	448	5.4
23.1	83200	366	28.5	102000	451	5.5
23.2	83400	367	28.7	103000	455	5.6
23.2	83500	368	28.9	104000	458	5.7
23.2	83600	368	29.1	105000	461	5.8
23.3	83700	369	29.3	105000	464	5.9
23.3	83800	369	29.5	106000	468	6.0

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



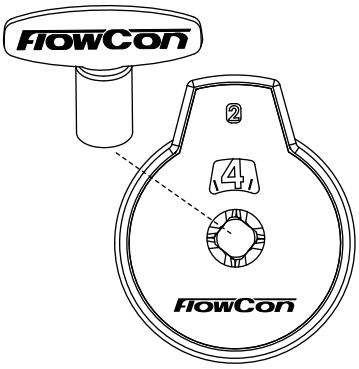
Use the special key (FlowCon part no. ACC0001) for micrometer setting.

A micrometer setting at 2.4 as illustrated above corresponds to a flow rate of:

15.3 l/sec (type 1, range 30-800 kPaD)

17.8 l/sec (type 2, range 35-800 kPaD)

FLOW RATE SETTING - VALVE SIZE DN200 AND DN250



Use the special key (FlowCon part no. ACC0001) for micrometer setting.

A micrometer setting at 2.4 as illustrated above corresponds to a flow rate of:

20.0 l/sec

Flow rate							
Valve size: DN200 and DN250 · 8” and 10”							
35-800 kPaD · 5.1-116 psid							
SH.6.2							
l/sec	l/hr	GPM	**Setting**	l/sec	l/hr	GPM	**Setting**
9.21	33100	146	1.0				
9.69	34900	154	1.1	58.3	210000	924	6.1
10.2	36800	162	1.2	59.1	213000	936	6.2
10.8	38900	171	1.3	59.8	215000	948	6.3
11.5	41200	182	1.4	60.6	218000	960	6.4
12.1	43700	192	1.5	61.3	221000	972	6.5
12.9	46300	204	1.6	62.0	223000	983	6.6
13.6	49100	216	1.7	62.7	226000	994	6.7
14.5	52000	229	1.8	63.4	228000	1000	6.8
15.3	55100	242	1.9	64.0	230000	1010	6.9
16.2	58200	256	2.0	64.6	233000	1020	7.0
17.1	61500	271	2.1	65.2	235000	1030	7.1
18.0	64900	286	2.2	65.8	237000	1040	7.2
19.0	68400	301	2.3	66.4	239000	1050	7.3
20.0	71900	317	2.4	66.9	241000	1060	7.4
21.0	75600	333	2.5	67.4	243000	1070	7.5
22.0	79300	349	2.6	68.0	245000	1080	7.6
23.1	83100	366	2.7	68.4	246000	1080	7.7
24.1	86900	383	2.8	68.9	248000	1090	7.8
25.2	90800	400	2.9	69.4	250000	1100	7.9
26.3	94700	417	3.0	69.8	251000	1110	8.0
27.4	98700	435	3.1	70.2	253000	1110	8.1
28.5	103000	452	3.2	70.6	254000	1120	8.2
29.6	107000	470	3.3	71.0	256000	1130	8.3
30.8	111000	488	3.4	71.4	257000	1130	8.4
31.9	115000	506	3.5	71.8	258000	1140	8.5
33.0	119000	523	3.6	72.1	260000	1140	8.6
34.2	123000	541	3.7	72.5	261000	1150	8.7
35.3	127000	559	3.8	72.8	262000	1150	8.8
36.4	131000	577	3.9	73.2	263000	1160	8.9
37.5	135000	595	4.0	73.5	265000	1170	9.0
38.6	139000	613	4.1	73.8	266000	1170	9.1
39.8	143000	630	4.2	74.2	267000	1180	9.2
40.9	147000	648	4.3	74.5	268000	1180	9.3
41.9	151000	665	4.4	74.8	269000	1190	9.4
43.0	155000	682	4.5	75.1	270000	1190	9.5
44.1	159000	699	4.6	75.5	272000	1200	9.6
45.2	163000	716	4.7	75.8	273000	1200	9.7
46.2	166000	732	4.8	76.1	274000	1210	9.8
47.2	170000	749	4.9	76.5	275000	1210	9.9
48.3	174000	765	5.0	76.8	277000	1220	10.0
49.3	177000	781	5.1				
50.2	181000	796	5.2				
51.2	184000	812	5.3				
52.2	188000	827	5.4				
53.1	191000	842	5.5				
54.0	194000	856	5.6				
54.9	198000	870	5.7				
55.8	201000	884	5.8				
56.6	204000	898	5.9				
57.5	207000	911	6.0				

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

ACCESSORIES

• Adjustment key: ACC0001 (key for adjusting the flow rate).

DESCRIPTION

The SH series is a range of dynamic self-balancing valves that are pressure independent.

The valve self-adjusts for pressure differential and therefore eliminates the need for manual adjustment according to pressure differential after installation as is required with manual balancing valves. It self-adjusts to prevent exceeding design flow setting even as system pressure differential fluctuates with operation as long as the valve is within its pressure differential control range.

The larger range of SH-valves are all designed for double flange connection. They are available in four different valve housing sizes. Each valve has 51 different flow settings (91 different flow settings for DN200/250).

GENERAL SPECIFICATIONS

1. DYNAMIC BALANCING VALVES

1.1. Contractor shall install dynamic balancing valves where indicated in drawings.
1.2. Valve shall be a dynamic, adjustable flow limiting device, which limits flow independent of system pressure fluctuation.
1.3. Flow limiting device shall be externally adjustable to at least 51 different flow rates with the valve in-line and the system in operation.

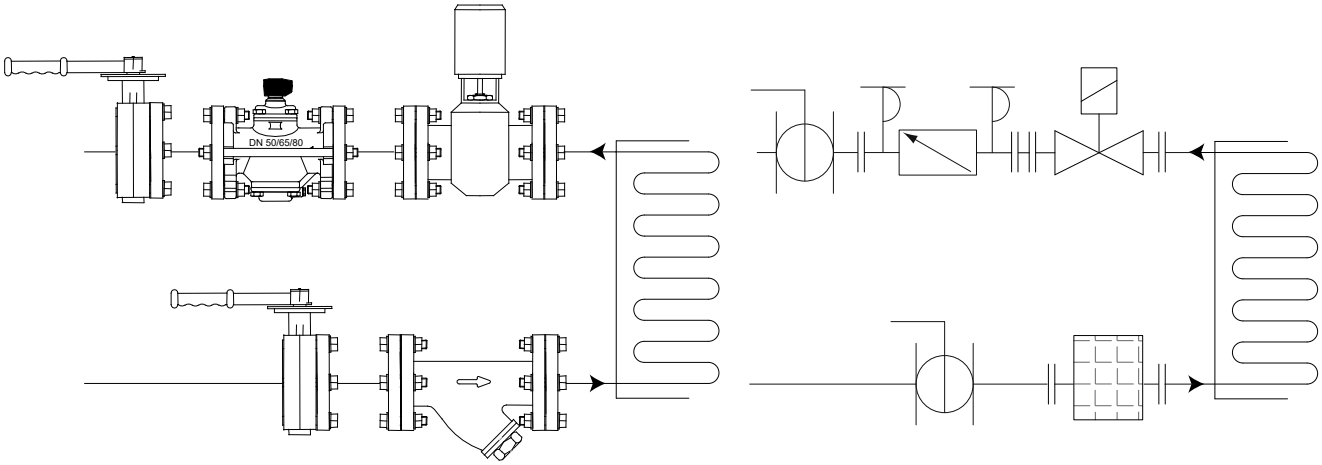
2. VALVE HOUSING

2.1. Housing shall consist of ductile iron ASTM A395 Grade 60-40-18 rated at no less than 4000 kPa (580 psi) static pressure and +120°C (+248°F).
2.2. Housing shall be permanently marked to show direction of flow.
2.3. Housing shall be for installation between flanges.
2.4. Dual pressure/temperature test plus for verifying accuracy of flow performance shall be standard on all valve sizes.
2.5. Identification label according to PED-requirements shall be available for all valves.

3. FLOW REGULATOR / AUTOMATIC BALANCING UNIT

3.1. Maximum flow setting shall be adjustable to minimum 51 different settings within the range of the valve size.
3.2. Flow regulation unit shall be manufactured of stainless steel and hydrogenated acrylonitrile-butadiene-rubber and shall be capable of controlling flow within ±5% of controlled flow rate or ±2% of maximum flow rate.
3.3. Flow regulation unit shall be accessible for change-out or maintenance.

APPLICATION AND SCHEMATIC EXAMPLE



UPDATES

For latest updates please see www.flowcon.com

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