



FLANGE USA

CTS Velocity Balancing Valve

The CTS stainless Velocity Balancing Valve provides accurate flow measurement and shut-off for heating and cooling hydronic systems.

CTS presents an innovative Velocity Balancing Valve to ensure evenly distributed flow in zones, branches, risers & terminal units in commercial installations.

- ▶ Stainless Steel 316L casing with unique synthetic polymer Venturi providing superior corrosion resistance
- ▶ Floating CTS flanges for ease of alignment
- ▶ Seamless construction with no welds or joints
- ▶ Light weight for ease of installation
- ▶ 'In field' maintainability - serviceable on site
- ▶ Range of sizes from 2½" to 8"
(10 & 12" available upon request)
- ▶ Available in ANSI 150LB and roll groove end connections
(ANSI 300LB available upon request)
- ▶ Butterfly valve includes 10 pos N-plate, MSN-plate optional
- ▶ Patent Pending AUS2017902434



Synthetic polymer Venturi insert



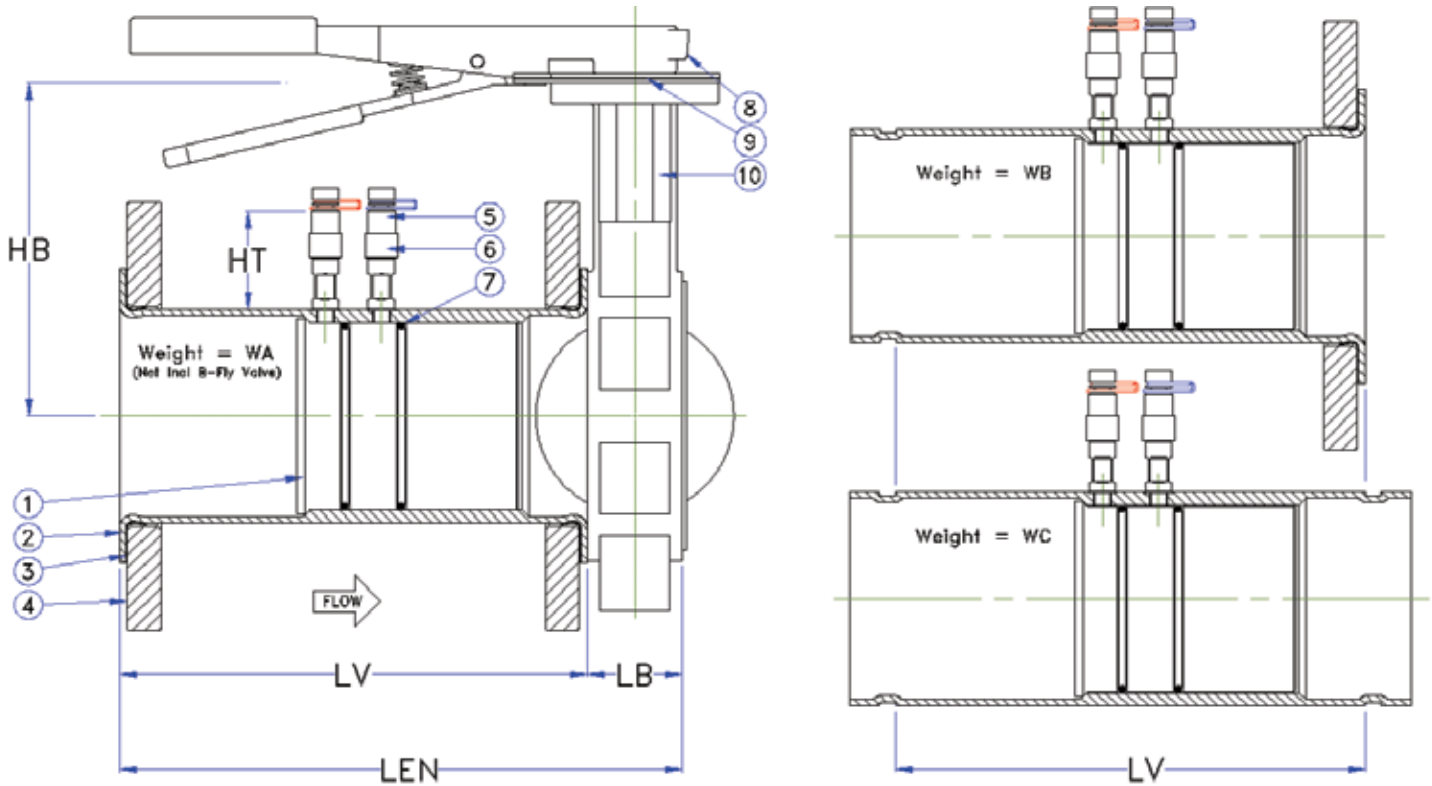
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Available from your local CTS Agent
ctsflange.com

Specification data correct at time of printing.

CTS Velocity Balancing Valve Specification Data

Venturi Flow Meter with Butterfly Valve



Dimensions - Inches:

Size	2.5"	3"	4"	5"	6"	8"	10"	12"
LV	6.89	7.87	9.84	10.83	11.81	13.78	15.75	17.71
LB	1.81	1.81	2.05	2.20	2.20	2.36	2.68	3.07
LEN	8.7	9.7	11.9	13.0	14.0	16.1	18.4	20.8
HT	2.0*	2.0*	2.0*	2.0*	2.0*	2.0*	2.0*	2.0*
HB	6.9	7.1	7.9	8.4	8.9	10.2	11.5	13.3
WA	15LB	18LB	28LB	36LB	48LB	78LB	TBC	TBC
WB	10LB	12LB	19LB	26LB	35LB	59LB	TBC	TBC
WC	5LB	6LB	10LB	15LB	21LB	40LB	TBC	TBC

*Accessory Test Point Extensions Available

Components / Materials

No.	Part	Notes
1	Venturi	PPS GF-40 Plastic
2	Housing	ASTM-A312 Sch10 316L St-Stl
3	Insulator	EPDM
4	Flange	Powder Coated Steel
5	Test Point	DZR Brass - EPDM
6	Spacer (T.Pt.)	DZR Brass
7	O-Ring	EPDM (other materials available)
8	Lever	Iron
9	M-Stop N-Plate	Plated Steel
10	Lugged B-Fly	Valve trim as specified

Ideal Min / Max Flow Guide

Size	MIN Flow GPM	MAX Flow GPM	Pressure Loss
Inches	@100 INWC	@1000 INWC	PSI @MAX Flow
2.5"	26	82	0.8
3"	50	159	0.7
4"	89	282	0.6
5"	132	416	0.5
6"	241	762	0.4
8"	405	1280	0.4
10"	595	1881	0.4
12"	1046	3307	0.3
Note:	ΔP T. Pt.	ΔP T. Pt.	DP Assembly

Technical Details

Working Pressure	200 PSIG^ (Higher Optional)
Working Temperature	-20-250°F^ (Higher Optional)
Flanges	ANSI-150LB (300LB available)
Roll Groove	Suit American Standard Pipe
Flow Accuracy	+/-2.5%
Accessory Bolt Kit	Zinc Plated Steel
Accessory Gear Operator	Available
Special Tools	ΔP Gauge / Flow Computer

^Rating as per 'Standard' Reilient Seated B-Fly Valve

Flow / Differential Pressure across Test Points

ΔP Reading		2.5"	3"	4"	5"	6"	8"	10"	12"
INWC	PSIG	GPM	GPM	GPM	GPM	GPM	GPM	GPM	GPM
5.0	0.18	18.3	35.6	63.0	93	170	286	421	739
7.5	0.27	22.4	43.6	77.1	114	208	350	515	905
10.0	0.36	25.8	50.4	89.1	132	241	405	595	1046
12.5	0.45	28.9	56.3	99.6	147	269	452	665	1169
15.0	0.54	31.6	61.7	109	161	295	496	729	1281
17.5	0.63	34.2	66.7	118	174	318	535	787	1383
20.0	0.72	36.5	71.3	126	186	341	572	841	1479
22.5	0.81	38.7	75.6	134	197	360	607	892	1568
25.0	0.90	40.8	79.7	141	208	381	640	940	1653
27.5	0.99	42.8	85.6	148	218	399	671	986	1734
30.0	1.08	43.2	87.3	154	228	417	701	1030	1811
32.5	1.17	46.6	90.8	161	237	433	730	1072	1885
35.0	1.26	48.3	94.3	167	246	451	757	1112	1956
37.5	1.35	50.0	97.6	172	255	465	784	1152	2025
40.0	1.44	51.6	101	178	263	481	809	1190	2091
42.5	1.53	53.2	104	184	271	495	834	1226	2156
45.0	1.62	54.8	107	189	279	511	859	1262	2218
47.5	1.71	56.3	110	194	287	524	882	1296	2279
50.0	1.80	57.7	113	199	294	539	905	1330	2338
52.5	1.89	59.2	115	204	301	551	927	1363	2396
55.0	1.98	60.6	118	209	308	565	949	1395	2452
57.5	2.07	61.9	121	214	315	576	970	1426	2507
60.0	2.16	63.3	123	218	322	590	991	1457	2561
62.5	2.26	64.6	126	223	329	601	1012	1487	2614
65.0	2.35	65.8	128	227	335	614	1032	1517	2665
67.5	2.44	67.1	131	231	342	624	1052	1545	2717
70.0	2.53	68.3	133	236	348	637	1071	1574	2766
72.5	2.62	69.5	136	240	354	652	1090	1602	2815
75.0	2.71	70.7	138	244	360	660	1108	1629	2864
77.5	2.80	71.9	140	248	366	669	1127	1656	2911
80.0	2.89	73.0	142	252	372	681	1145	1682	2957
82.5	3.00	74.2	145	256	378	690	1163	1709	3003
85.0	3.07	75.3	147	260	383	702	1180	1734	3048
87.5	3.16	76.4	149	263	389	711	1197	1760	3093
90.0	3.25	77.5	151	267	395	723	1214	1785	3137
	3.34	78.5	153	272	400	731	1231	1809	3180
95.0	3.43	79.6	155	275	405	743	1247	1833	3223
97.5	3.52	80.6	157	278	411	750	1264	1857	3265
100	3.61	81.7	159	282	416	762	1280	1881	3307
	Cvm	43.2	84.3	149	220	402	677	995	1749
	Cvs	90	195	415	580	1170	2200	2940	5600

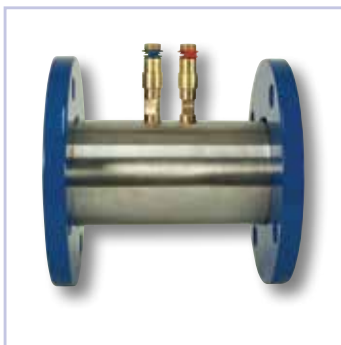
For quick reference the basic (uncorrected) Flow Equation

$$\sqrt{\Delta P \text{ (PSI)}} \times C_v = \text{GPM}$$

General Installation Notes:

CTS Velocity Balancing Valve

- The Velocity Balancing valve is a unidirectional device. The direction of the flow must be aligned with the flow direction arrow as affixed to the valve body.
- Butterfly valves should always be installed downstream of the Venturi and as per manufacturers installation recommendations. Appropriate gasketing material must be used when installing flange mounted butterfly valves.
- Velocity inlet flange connection requires a flange gasket to seal to the inlet pipe work flange, bolt tension should be as per ASME specifications.
- CTS Velocity can be installed in pipe work horizontally or vertically.
- To ensure measuring accuracy, a minimum of 5 x diameter of straight pipe should be installed upstream of the CTS Velocity.
- Generally, installation of a Y strainer upstream of a control valve, terminal unit or balancing valve is recommended, straight piping requirements prior to the balancing valve need to be considered.
- The elimination of air from the working fluid is required to promote thermal conductivity, quiet operation and the best system efficiency / system performance.
- Valves are ordered by line size. Flow rates are set by adjusting the butterfly valve via lever until the differential pressure reading across the valve corresponds with the required flow (GPM).
- A calibrated differential pressure gauge or balancing computer will be required to record the differential pressure across the venturi test points enabling the calculation / reading of flow.
- After balancing is completed the Velocity balancing valve set position can be locked in place by tightening the B-fly memory stop in position. The butterfly valve can then be closed if maintenance to the terminal unit the B-fly memory stop.
- Valve identification, differential Pressure, open position and calculated flow can be recorded as part of a balancing report, an important reference for future maintenance or diagnostics.



Pipe Spool with Sampling Points



Butterfly Valve