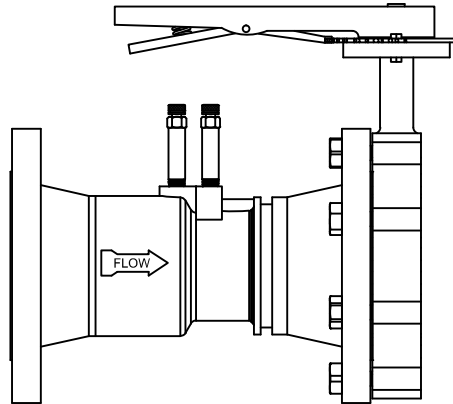


PRO *Hydronic* Specialties

CBVF Series Specifications

Combination Butterfly/Venturi with Flange



PRODUCT DESCRIPTION: The CBVF is a combination butterfly valve and flanged style venturi. The carbon steel venturi connects to standard ANSI Class 150 pound flanges, and is combined with a lug type butterfly valve for throttling. The cast iron butterfly valve has a combination infinite/10 position memory stop plate, a one piece disc/shaft, a triple shaft bearing, an aluminum-bronze disc for sizes 2½" - 8", a nickel plated disc for the 10" and 12" sizes, and an EPDM standard liner. The CBVF comes standard with two pressure/temperature ports.

Nominal Line Size	Model No.	Lower Flow Range (GPM)	Upper Flow Range (GPM)	Flow Factor (FF)	Weight (Lbs)	STANDARD MATERIAL SPECIFICATIONS		
						Component	Material	
2½"	CBVF250L	30	100	147	35	Venturi	Steel Casting, Carbon ASTM A216 Grade WCB	
	CBVF250H	40	220	319	35	Flange	Forged Carbon Steel ASTM A105	
3"	CBVF300L	30	160	227	43	Butterfly Valve	Nodular Cast Iron ASTM A536 60-4-18	
	CBVF300H	80	400	578	41	Seat	EPDM Rubber	
4"	CBVF400L	80	430	611	60	Disc (2½ - 8")	Aluminum-Bronze Sand Casting, ASTM B148 C95800	
	CBVF400H	130	720	1029	56	Disc (10 & 12")	Nickel Plated Aluminum-Bronze Sand Casting, ASTM B148 C95800	
5"	CBVF500	160	880	1267	76	Shaft	Stainless Steel AISI 410	
6"	CBVF600	200	1100	1551	101	O-Ring	EPDM Rubber	
8"	CBVF800	520	2000	2824	172	Bearing	Copper ASTM B45	
10"	CBVF1000	580	2950	4164	281	Bearing Bush	PTFE	
12"	CBVF1200	1250	6700	9670	422	Hand Lever	Nodular Cast Iron ASTM A536 60-4-18	
CONNECTIONS:		Inlet - Raised Face Flange Outlet - Lug Butterfly Valve				CALCULATIONS:		D.P. = (GPM * 17.3 / FF) ² GPM = √(D.P. * FF / 17.3)
<p>Specification information is provided to assist and is given without obligation or warranty. The Company reserves the right to make changes in design, materials, and/or specifications without notice or liability.</p>								

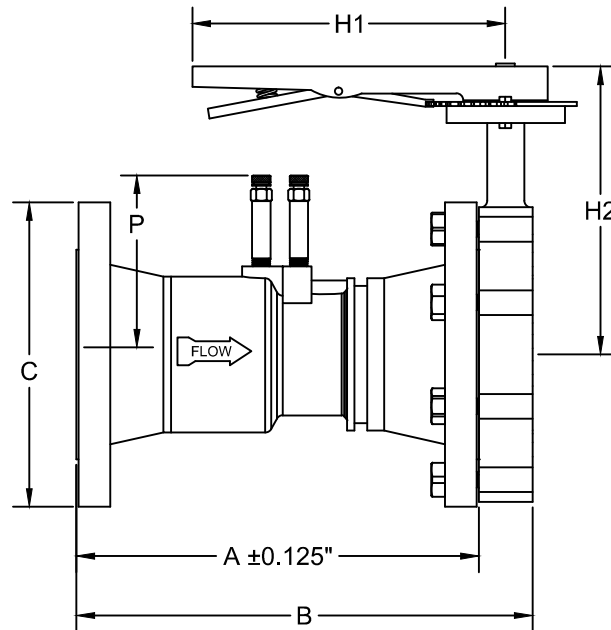
PRODUCT SPECIFICATIONS:

- Butterfly valve is rated at 150 PSIG and is suitable for dead-end service
- Maximum pressure loss 6% of differential pressure
- The carbon steel Venturi accuracy rating: ±1% Between 10" w.c. and 70" w.c. based on Coefficient of Discharge
±3% Between 5" w.c. and 150" w.c.

PRO *Hydronic* Specialties

CBVF Series Dimensions

Combination Butterfly/Venturi with Flange



SIZE	A	B	C	H1	H2	P
2½" L & H	10.9	12.7	7.0	10.5	8.1	5.3
3" L & H	11.3	13.1	7.5	10.5	8.2	5.5
4" L & H	12.5	14.5	9.0	10.5	9.0	6.0
5"	12.5	14.6	10.0	10.5	9.4	6.6
6"	15.0	17.2	11.0	10.5	10.2	7.2
8"	16.9	19.3	13.5	*	*	8.4
10"	20.6	23.2	16.0	*	*	8.5
12"	26.3	29.3	19.0	*	*	12.4

* Denotes a gear operated valve.

Note: All dimensions and materials are subject to minor variations. Consult with factory for confirmation of dimensions and material specifications at the time of order.



**Flow Rates For Models:
CBVF, CBVW, CBVG, SFV, SWV, SGV**

±1% Between 10" W.C. and 70" W.C.
±3% Between 5" W.C. and 150" W.C.
±5% Less than 5" W.C. and Over 150" W.C.
Pressure Loss 6% of Differential Pressure

DIFFERENTIAL PRESSURE: INCHES W.C.

GPM	2½" Low	2½" High	3" Low	3" High	4" Low	4" High	5"	6"
30	12.5	2.6	5.2					
40	22.2	4.7	9.3					
50	34.6	7.4	14.5	2.2				
60	49.9	10.6	20.9	3.2	2.9			
70	67.9	14.4	28.5	4.4	3.9			
80	88.6	18.8	37.2	5.7	5.1			
90	112	23.8	47.0	7.3	6.5	2.3		
100	139	29.4	58.1	9.0	8.0	2.8		
110	168	35.6	70.3	10.8	9.7	3.4	2.3	
120	199	42.4	83.6	12.9	11.5	4.1	2.7	

GPM	3" High	4" Low	4" High	5"	6"
430	166	148	52.3	34.5	23.0
440	173	155	54.7	36.1	24.1
450	181	162	57.2	37.8	25.2
460	190	170	59.8	39.5	26.3
470	198	177	62.4	41.2	27.5
480	206	185	65.1	43.0	28.7
490	215	192	67.9	44.8	29.9
500	224	200	70.7	46.6	31.1
510	233	209	73.5	48.5	32.4
520	242	217	76.4	50.4	33.6

130	234	49.7	98.2	15.1	13.5	4.8	3.2	2.1
140	271	57.6	114	17.6	15.7	5.5	3.7	2.4
150		66.2	131	20.2	18.0	6.4	4.2	2.8
160		75.3	149	22.9	20.5	7.2	4.8	3.2
170		85.0	168	25.9	23.2	8.2	5.4	3.6
180		95.3	188	29.0	26.0	9.2	6.0	4.0
190		106	210	32.3	28.9	10.2	6.7	4.5
200		118	232	35.8	32.1	11.3	7.5	5.0
210		130	256	39.5	35.4	12.5	8.2	5.5
220		142	281	43.4	38.8	13.7	9.0	6.0

540	261	234	82.4	54.4	36.3
560	281	251	88.6	58.5	39.0
580	301	270	95.1	62.7	41.9
600		289	101	67.1	44.8
620			109	72	47.8
640			116	76	51.0
660			123	81	54.2
680			131	86	57.5
700			139	91	61.0
720			147	97	64.5

230		156		47.4	42.4	15.0	9.9	6.6
240		169		51.6	46.2	16.3	10.7	7.2
250		184		56.0	50.1	17.7	11.7	7.8
260		199		60.6	54.2	19.1	12.6	8.4
270		214		65.3	58.4	20.6	13.6	9.1
280		231		70.2	62.9	22.2	14.6	9.8
290		247		75.3	67.4	23.8	15.7	10.5
300		265		80.6	72.2	25.4	16.8	11.2
310		283		86.1	77.0	27.2	17.9	12.0
320		301		91.7	82.1	28.9	19.1	12.7

740			155	102	68.1
760			163	108	71.9
780			172	113	75.7
800			181	119	79.6
820			190	125	83.7
840			199	132	87.8
860			209	138	92.0
880			219	144	96.3
900			229	151	101
950			255	168	112

330				97.6	87.3	30.8	20.3	13.5
340				104	92.7	32.7	21.6	14.4
350				110	98	34.6	22.8	15.2
360				116	104	36.6	24.2	16.1
370				123	110	38.7	25.5	17.0
380				129	116	40.8	26.9	18.0
390				136	122	43.0	28.4	18.9
400				143	128	45.2	29.8	19.9
410				151	135	47.5	31.3	20.9
420				158	141	49.9	32.9	21.9

1000			283	186	124
1050				206	137
1100				226	151
1150				247	165
1200				268	179
1250				291	194
1300					210
1350					227
1400					244
1500					280

Flow Factors for calculating Delta Pressure
D.P. = (GPM * 17.3 / FF)²

Flow Factors for calculating Gallons per Minute
GPM = √DP * FF / 17.3

2½" Low	2½" High	3" Low	3" High	4" Low	4" High	5"	6"	8"	10"	12"
147	319	227	578	611	1029	1267	1551	2824	4164	9670

±1% Between 10" W.C. and 70" W.C.
 ±3% Between 5" W.C. and 150" W.C.
 ±5% Less than 5" W.C. and Over 150" W.C.
 Pressure Loss 6% of Differential Pressure

DIFFERENTIAL PRESSURE: INCHES W.C.

GPM	8"	10"	12"	GPM	8"	10"	12"	GPM	12"
520	10.1	4.7		2500	234.6	107.9	20.2	5050	81.6
540	10.9	5.0		2550	244.0	112.2	20.8	5100	83.2
560	11.8	5.4		2600	253.7	116.7	21.6	5150	84.9
580	12.6	5.8		2650	263.5	121.2	22.5	5200	86.5
600	13.5	6.2		2700	273.6	125.8	23.3	5250	88.2
620	14.4	6.6		2750	283.8	130.5	24.2	5300	89.9
640	15.4	7.1		2800	294.2	135.3	25.1	5350	91.6
660	16.3	7.5		2850	304.8	140.2	26.0	5400	93.3
680	17.4	8.0		2900	315.6	145.2	26.9	5500	96.8
700	18.4	8.5		2950	326.6	150.2	27.9	5700	104.0

720	19.5	8.9		3000		155.4	28.8	5900	111.4
740	20.6	9.5		3050		160.6	29.8	6100	119.1
760	21.7	10.0		3100		165.9	30.8	6300	127.0
780	22.8	10.5		3150		171.3	31.8	6500	135.2
800	24.0	11.0		3200		176.8	32.5	6700	143.7
820	25.2	11.6		3250		182.3	33.8	6900	152.4
840	26.5	12.2		3300		188.0	34.9	7100	161.3
860	27.8	12.8		3350		193.7	35.9	7300	170.6
880	29.1	13.4		3400		199.5	37.0	7500	180.0
900	30.4	14.0		3450		205.5	38.1	7700	189.8

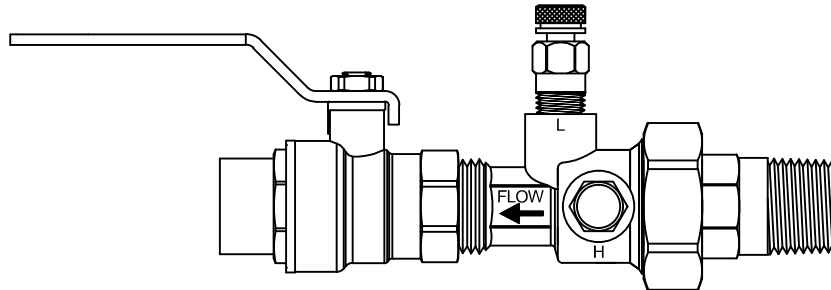
950	33.9	15.6	2.9	3500		211.4	39.2	7900	199.8
1000	37.5	17.3	3.2	3550		217.5	40.3	8100	210.2
1050	41.4	19.0	3.5	3600		223.7	41.5	8300	220.5
1100	45.4	20.9	3.9	3650		230.0	42.6	8500	231.2
1150	49.6	22.8	4.2	3700		236.3	43.8	8700	242.3
1200	54.0	24.9	4.6	3750		242.7	45.0	8900	256.5
1250	58.6	27.0	5.0	3800		249.3	46.2	9100	265.0
1300	63.4	29.2	5.4	3850		255.6	47.4	9300	276.8
1350	68.4	31.5	5.8	3900		262.5	48.7	9500	288.9
1400	73.6	33.8	6.3	3950		269.3	49.9	9700	301.1

1450	78.9	36.3	6.7	4000		276.2	51.2	9900	313.7
1500	84.4	38.8	7.2	4050		283.1	52.5	10100	326.5
1550	90.2	41.5	7.7	4100		290.2	53.8	10300	339.6
1600	96.1	44.2	8.2	4150		297.3	55.1	10500	352.9
1650	102.2	47.0	8.7	4200			56.5	10700	366.4
1700	108.5	49.9	9.2	4250			57.8	10900	380.3
1750	114.9	52.9	9.8	4300			59.2	11100	394.4
1800	121.6	55.9	10.4	4350			60.6	11300	408.7
1850	128.4	59.1	11.0	4400			62.0	11500	423.3
1900	135.5	62.3	11.6	4450			63.4	11700	438.1

1950	142.7	65.6	12.2	4500			64.8	11900	453.2
2000	150.1	69.0	12.8	4550			66.3	12100	468.6
2050	157.7	72.5	13.5	4600			67.7	12300	484.2
2100	165.5	76.1	14.1	4650			69.2		
2150	173.5	79.8	14.8	4700			70.7		
2200	181.6	83.5	15.5	4750			72.2		
2250	190.0	87.4	16.2	4800			73.7		
2300	198.5	91.3	16.9	4850			75.3		
2350	207.3	95.3	17.7	4900			76.8		
2400	216.2	99.4	18.4	4950			78.4		
2450	225.3	103.6	19.2	5000			80.0		



CBV Series Specifications Combination Ball Valve/Venturi



PRODUCT DESCRIPTION: The CBV flow balancing brass venturi provides highly accurate flow measurement capabilities rated at 600 WOG / CWP @ 250°F. The efficient low loss venturi design provides effective flow balancing with minimal system pressure loss. The CBV includes a standard port ball valve with memory stop, a venturi with an integral union on the inlet side, and a fixed FNPT or SWT on the run-out side. The CBV comes standard with two pressure/temperature ports for instrument readings. The union side incorporates an o-ring for maximum sealing protection. The union connection options include MNPT, FNPT, SWT, and a variety of reductions.

NOTE: If the same size male, female, sweat, or an reducing male tail piece is used, no extra pipe diameter is required.

RECOMMENDED FLOW RANGES (GPM)					STANDARD MATERIAL SPECIFICATIONS	
Model	Size	Minimum	@ 100"	@ 200"		
CBV050L	½	0.3	1.1	1.5	Venturi	Cast Brass ASTM B763-08A
CBV050H	½	0.9	3.0	4.2	Ball Valve	Forged Brass ASTM B283-06
CBV075UL	¾	0.3	1.1	1.5	O-ring	EPDM
CBV075L	¾	0.9	3.0	4.2	Tail Piece	Brass ASTM B124-09, B228-06, or B763-08A
CBV075H	¾	1.8	6.0	8.5	PT Seal	EPDM Dual Durometer Core
CBV100	1	2.8	9.5	14.0	Handle	Chrome Plated Steel
CBV125	1¼	5.4	17.0	24.0	Stem	Brass ASTM B124-09 - Explosion Proof
CBV150	1½	9.0	26.0	36.0	Ball	Chrome Plated Brass - Standard Port
CBV200	2	16.0	46.0	66.0	Ball Seat	Teflon
					Specification information is provided to assist and is given without obligation or warranty. The Company reserves the right to make changes in design, materials, and/or specifications without notice or liability.	

PRODUCT SPECIFICATIONS:

- Devices shall have a 15° regain chamber for optimal pressure regain and minimal permanent pressure drop
- Venturi tube shall be independent of the throttling valve
- Venturi tube shall include proper pipe diameters for optimal accuracy
- Valve shall be designed with memory stop to limit flow once balanced
- The Model CBV shall have an accuracy rating of:
 - ±1% between 10" W.C. and 70" W.C.
 - ±3% between 5" W.C. and 150" W.C.
 - ±5% less than 5" W.C. and over 150" W.C.



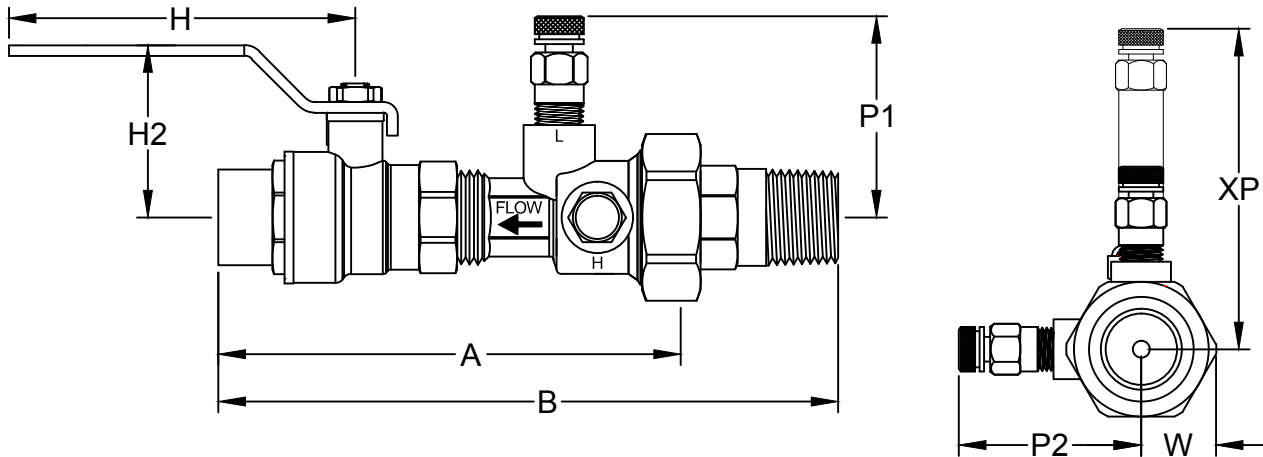
Flow Rates For Models CBV, VU

±1% Between 10" W.C. and 70" W.C.
 ±3% Between 5" W.C. and 150" W.C.
 ±5% Less than 5" W.C. and Over 150" W.C.

GPM	DIFFERENTIAL PRESSURE: INCHES W.C.					GPM	DIFFERENTIAL PRESSURE: INCHES W.C.				
	½" LB ¾" UB	½" HB ¾" LB	¾" HB	1"	1¼"		¾" HB	1"	1¼"	1½"	2"
0.3	7					7.5	145	61	24	11	
0.4	13					8	164	68	27	13	
0.5	19					8.5	183	77	30	14	
0.6	27					9	203	85	33	16	
0.7	36					9.5	225	94	37	17	
0.8	46	10				10	247	103	40	19	
0.9	57	11				11	295	123	48	23	
1	69	14				12	346	145	56	27	10
1.1	83	17				13	402	168	65	31	12
1.2	97	19				14	461	193	75	36	14
1.3	113	22				15		219	85	41	16
1.4	129	26				16		247	96	46	18
1.5	147	29				17		276	107	51	20
1.6	165	33				18		307	119	57	22
1.7	185	37				19		339	132	63	24
1.8	206	41	10			20		373	145	69	27
1.9	227	45	11			22		444	173	83	32
2	250	50	13			24			203	97	38
2.2	298	60	15			26			235	113	44
2.4	350	70	18			28			270	129	50
2.6	406	81	20			30			307	147	57
2.8	466	93	23	10		32			345	165	64
3		106	27	11		34			386	185	72
3.2		119	30	13		36			430	206	79
3.4		133	34	14		38				227	88
3.6		148	37	16		40				250	97
3.8		164	41	17		42				273	106
4		180	45	19		44				298	115
4.2		197	50	21		46				324	125
4.4		215	54	23		48				350	135
4.5		224	56	24		50				378	146
4.6		233	59	25		52				406	157
4.8		252	64	27	10	54				435	168
5		272	69	29	11	56					180
5.2		292	77	31	12	58					192
5.4		313	79	33	13	60					205
5.5		324	82	34	13	62					217
5.6		335	85	35	14	64					230
5.8		358	90	38	15	66					244
6		381	96	40	16	68					258
6.2		405	102	43	17	70					272
6.4		429	108	45	18	75					309
6.5		442	111	47	18	80					348
6.6		454	115	48	19	85					390
6.8			121	51	20	90					433
7			128	53	21	95					
7.5			145	61	24	100					

PRO Hydronic Specialties

CBV Series Dimensions Combination Ball Valve/Venturi



Model	Size	A		H	H2	P1	P2	W	Option XP	Cv **
		FPT	SWT							
CBV050L	½"	4.5	4.9	3.5	1.3	2.1	2.1	0.8	3.3	1.1
CBV050H	½"	4.5	4.9	3.5	1.3	2.1	2.1	0.8	3.3	3.8
CBV075UL*	¾"	5.1	5.3	3.7	1.5	2.1	2.1	1.0	3.3	1.1
CBV075L	¾"	4.7	5.0	3.7	1.5	2.1	2.1	1.0	3.3	2.3
CBV075H	¾"	4.7	5.0	3.7	1.5	2.1	2.1	1.0	3.3	8.0
CBV100	1"	5.1	5.4	4.5	1.8	2.3	2.3	1.1	3.4	13.4
CBV125	1¼"	5.6	6.0	5.5	2.1	2.4	2.4	1.4	3.6	25
CBV150	1½"	7.0	7.3	5.5	2.5	2.8	-	1.7	3.9	31
CBV200	2"	7.6	8.1	5.9	2.6	3.0	-	2.0	4.1	87

Size	Tail Piece	B	Weight	Size	Tail Piece	B	Weight
½" SWT	- M	6.4	1.2	½" FPT	- M	6.0	1.2
	½" - F	5.5	1.1		½" - F	5.1	1.1
	- S	5.5	1.1		- S	5.1	1.1
¾" SWT	- M	6.7	1.6	¾" FPT	- M	6.4	1.6
	½" - F	5.8	1.6		½" - F	5.5	1.6
	- S	5.7	1.5		- S	5.4	1.4
	- M	7.0	1.6		- M	6.2	1.5
	¾" - F	7.0	1.5		¾" - F	5.8	1.5
	- S	5.8	1.4		- S	5.4	1.4
1" SWT	½" - M	7.4	2.3	1" FPT	½" - M	7.1	2.3
	¾" - M	6.3	2.0		¾" - M	6.0	2.3
	- S	6.4	2.1		- S	6.1	2.1
	- M	7.2	2.3		- M	7.1	2.3
1¼" SWT	1" - F	7.4	2.1	1¼" FPT	1" - F	7.1	2.1
	- S	7.4	2.1		- S	6.0	2.1
	½" - M	8.0	3.5		½" - M	7.6	3.5
	¾" - M	7.0	3.7		¾" - M	6.6	3.7
	1" - M	7.1	3.7		1" - M	6.6	3.6
	- M	7.7	3.7		- M	7.4	3.8
1½" SWT	1¼" - F	8.0	3.6	1½" FPT	1¼" - F	7.6	3.6
	- S	8.0	3.3		- S	7.6	3.3
	¾" - M	9.8	6.0		¾" - M	9.4	6.0
	1" - M	8.8	4.9		1" - M	8.2	5.8
	1¼" - M	8.5	5.9		1¼" - M	8.1	5.8
	- M	9.2	5.8		- M	8.8	5.9
2" SWT	1½" - F	9.8	5.5	2" FPT	1½" - F	9.4	5.5
	- S	9.8	4.3		- S	9.4	5.3
	1" - M	11.1	9.2		1" - M	10.1	9.0
	1¼" - M	9.2	9.1		1¼" - M	8.7	9.0
	1½" - M	9.5	9.0		1½" - M	9.0	8.8
	- M	10.1	9.0		- M	9.6	8.8
2" SWT	2" - F	11.1	8.3	2" FPT	2" - F	10.6	8.1
	- S	11.1	7.9		- S	10.6	7.8

Note: All dimensions, weights, and materials are subject to minor variations. Consult with factory for confirmation of dimensions, weights, and material specifications.

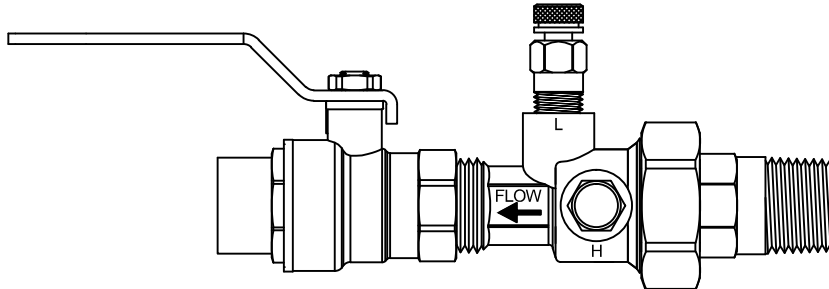
* CBV075UL Tailpiece size is ½"

** Cv = Estimated with Union connection same as inlet, no reductions.

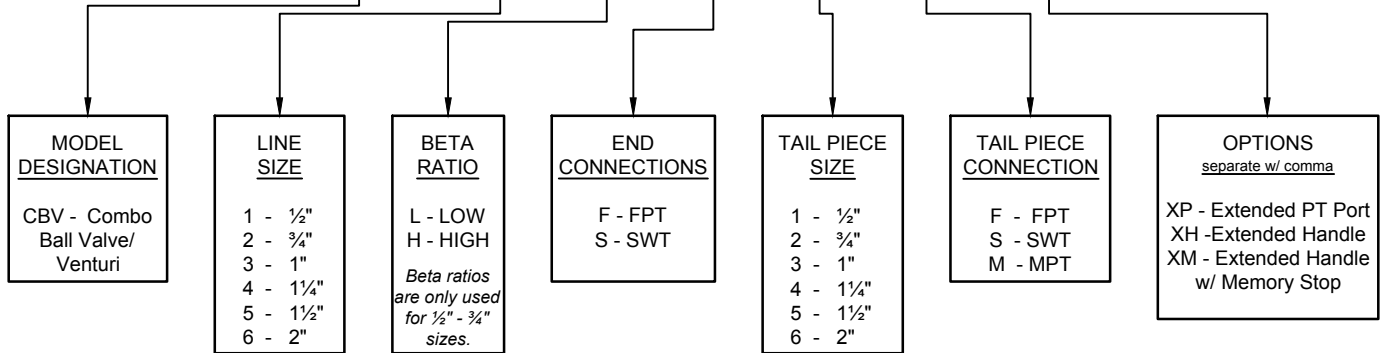
Note: Sweat size listed is nominal and will differ from the actual, measurable size.

PRO Hydronic Specialties

CBV Series Submittal Combination Ball Valve/Venturi



CBV - X - X - X - X - X - XX,



JOB NAME:		CUSTOMER:	
ENGINEER:		REF/PO#:	DATE:
CONTRACTOR:		SUBMITTED BY:	DATE:
PART # (See table above)	TAGGING/JOB INFORMATION	GPM	QUANTITY