Date: _____

Job Name: _____

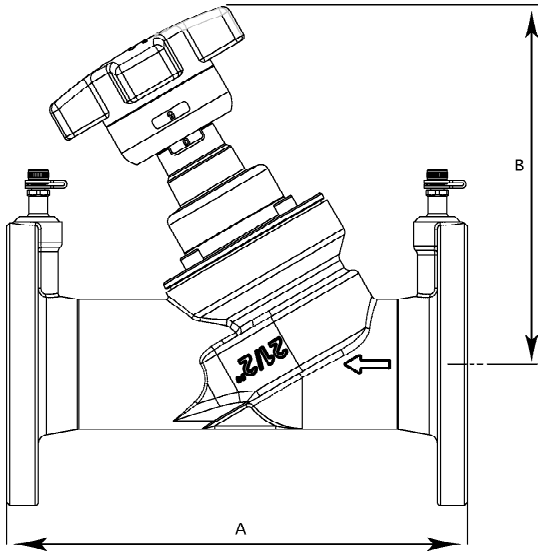
Contractor: _____

MACON BALANCING MMA

STVA Series
Submittal Data

STVA SERIES - Specifications

Connection	ANSI 125# Flanged	
Maximum Working Pressure	250 psi/16 Bar (PN 16)	
Operating Temperature Range	-14° F to 250° F (-10° C to 120° C)	
Materials of Construction	Body, Bonnet	Cast Iron
	Gaskets	EPDM
	Seat Seal	PTFE
	Handwheel	Polyamide Plastic



STVA					
Valve Size		Dimensions		Approx. Weight	Handwheel Turns
Nominal Dimensions		Inches/mm			
Inches	mm	A - Length	B - Height	lbs./kg	
2 1/2	DN 65	**11.42** / 290	**8.94** / 226	**30.9** / 14	10
3	DN 80	**12.2** / 310	**9.5** / 241	**44.1** / 20	10
4	DN 100	**13.78** / 350	**10.2** / 259	**57.3** / 26	10
5	DN 125	**15.75** / 400	**11.73** / 298	**88.2** / 40	10
6	DN 150	**18.9** / 480	**12.05** / 306	**110.2** / 50	10

Product Features

- **Accurate and precise flow measurement**
- **Accurate and precise flow balancing**
- **Positive Shut-off**
- **Offsetting Pressure/ Temperature ports, Self sealing with optional Drain Kits**
- **"Y" Pattern, Globe style design**
- **Multi-turn, 360° handwheel with vernier scale and digital readout**
- **Built in memory stop**
- **Wide variety of accessories available**

Valve Selection Guide				
Valve Size		Minimum Flow	Nominal Range of Flow	Maximum Flow
Nominal Dimensions				
Inches	mm	GPM/LPM	GPM/LPM	GPM/LPM
2 1/2	DN 65	**2.13** / 8.07	**33 - 100** / 125 - 378	**318.3** / 1205
3	DN 80	**4.19** / 15.9	**100 - 117** / 378 - 442	**374.5** / 1418
4	DN 100	**6.09** / 23	**117 - 200** / 442 - 756	**646.8** / 2448
5	DN 125	**7.61** / 28.8	**200 - 320** / 756 - 1210	**1025** / 3879
6	DN 150	**13.7** / 51.9	**320 - 440** / 1210 - 1663	**1447** / 5477

The Minimum Flow is calculated from the minimum recommended pressure drop 1 ft. WG (=3.0 kPa)

The Nominal Flow is from the maximum setting of the valve and the minimum recommended pressure drop, 2 ft WG (=6.0 kPa)

The Max Flow is calculated from the maximum setting of the valve and the max pressure drop, 20 ft WG (=60.0 kPa)

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PRESSURE DROP TABLES

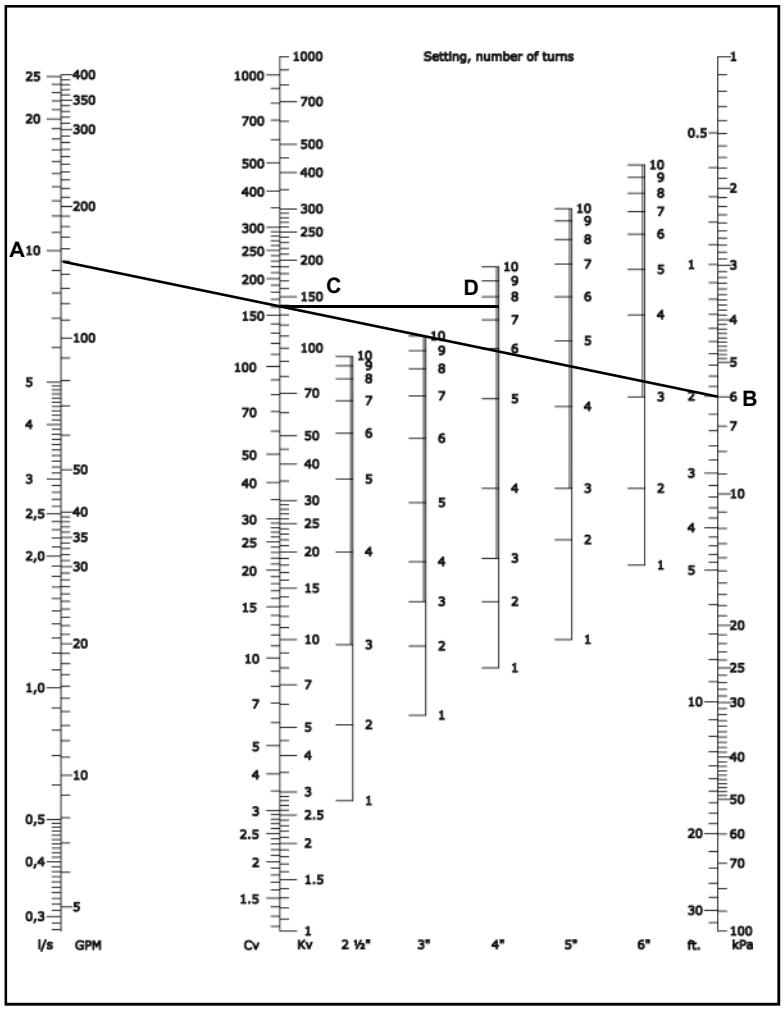
Series STVA, 2 1/2" - 6"

This diagram details the relationship between flow, pressure drop and valve preset points. Use the diagram to select the correct valve size and corresponding handwheel setting to fulfill the application requirements.

Determine the required flow in the circuit (A) and the pressure drop (B). Draw a line between these two values. Read off the corresponding Cv value on the Cv scale (C).

Determine the valve setting, in handwheel turns, by drawing a horizontal line (D) from the intersection point on the Cv scale to the corresponding valve setting position.

For the highest level of accuracy, it is recommended to choose a valve that has at least 3 open turns.



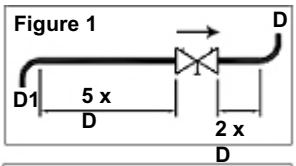
***Example:** a 4" valve is required to be open 7.5 turns for a Cv value of 160 at a flow rate of 150 gpm and a pressure drop of 2 ft.*

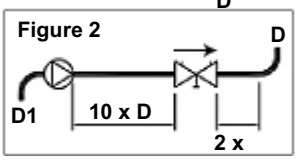
Cv Values for Valve Series STVA

Flow coefficient values (Cvs) at various handwheel settings					
Handwheel Setting	2 1/2" DN 65	3" DN 80	4" DN 100	5" DN 125	6" DN 150
1	3.2	6.4	9.3	11.6	20.9
1.5	4.6	8.7	12.8	19.7	29
2	5.9	11	15.7	25.5	38.3
2.5	8.5	13.3	19.1	30.2	53.4
3	11.1	15.7	22	38.3	78.9
3.2	13.1	16.6	23.8	42.9	90.5
3.4	15.1	17.5	25.5	48.7	103
3.6	17.4	18.6	29	55.7	118
3.8	20.3	19.7	33.6	63.8	135
4	23.2	21.5	38.3	73.1	151
4.2	26.8	23.2	45.2	82.4	164
4.4	30.4	24.9	53.4	91.6	176
4.6	34	27.3	61.5	102	189
4.8	37.6	30.7	69.6	113	202
5	41.2	34.2	77.7	123	216
5.2	44.8	38.3	85.8	135	231
5.4	48.4	42.9	94	146	246
5.6	52	47.6	102	157	260
5.8	55.6	52.2	109	166	273
6	59.2	56.8	115	174	285
6.2	62.6	61.5	122	183	298
6.4	66.1	66.1	129	194	311
6.6	69.6	70.8	135	204	322
6.8	73.1	75.4	140	215	332
7	76.6	79.5	145	225	341
7.2	80	83.5	151	235	351
7.4	82.9	87.6	157	246	363
7.6	85.8	91.6	162	255	374
7.8	88.7	95.1	168	264	384
8	91.1	98.6	174	274	394
8.2	93.4	102	180	283	406
8.4	95.7	105	186	292	418
8.6	97.4	108	190	302	428
8.8	99.2	111	194	310	437
9	101	114	197	317	447
9.2	103	116	202	324	456
9.4	104	119	206	331	465
9.6	106	123	211	338	474
9.8	107	125	126	343	484
10	108*	128*	220*	349*	493*

** Valve is fully open*

Installation Recommendations
Install the valve in the correct flow direction according to the arrow on the valve body and the distance parameters detailed in Figure 1 (Note: D = pipe diameter).





For Series STVL, cover the valve body with a wet cloth when soldering to prevent premature deterioration of valve components.

When used with a pump, it is recommended to use a straight length of pipe totaling 10 x D (instead of 5 x D) upstream or downstream to avoid turbulence that will affect the measuring accuracy. See Figure 2.

Turbulence can influence the measurements by up to 20% if this recommendation is not followed.

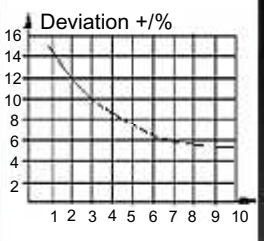
Flow Measurement & Accuracy
The measuring instrument connects to the test ports of the valve and is pre-programmed with Macon Balancing characteristics. The pressure drop and flow readings can be read off the display. If access to a Macon Balancing instrument is unavailable, other industry standard models are compatible. In addition, the flow can be determined using the pressure drop diagram that is included in the operating instructions with each Macon Balancing valve.

The accuracy is highest when the valve is fully open. Therefore, it is recommended to choose a valve that can be opened at least three turns at the calculated pre-setting value. Figure 3 represents the flow measurement deviation in relation to handwheel turns.

Correction For Liquids
Applies to liquids other than water. Correct the measured flow (q) by the density (γ) according to this formula.

Sizing a Balancing Valve
When the differential pressure and design flow are known, use this formula to calculate Cv value.

Figure 3



$$\textbf{Actual Flow} = \frac{q_{CBI}}{\sqrt{\gamma}}$$

$$C_v = 1.52 \frac{q}{\sqrt{\Delta p}}$$

q in GPM, Δp in Ft. of H2O

$$C_v = \frac{q}{\sqrt{\Delta p}}$$

q in GPM, √p in PSI

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