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Installation & Operation

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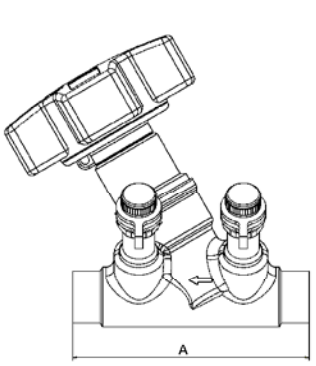
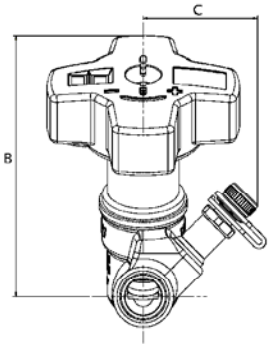
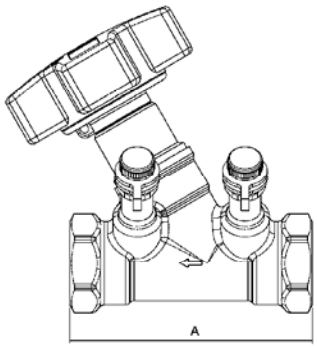
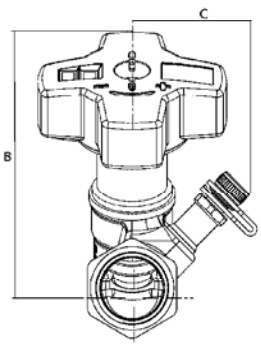
MACON® BALANCING

Model STVL / STV
Submittal Data









STVL SERIES - Specifications

Connection	Solder, Sweat	
Maximum Working Pressure	300 psi/20 Bar (PN 20)	
Operating Temperature Range	-22° F to 250° F (-30° C to 120° C)	
Materials of Construction	Body, Bonnet	Dezincification Resistant Brass
	Gaskets	EPDM
	Seat Seal	EPDM
	Handwheel	Polyamide Plastic

STV SERIES - Specifications

Connection	NPT (Fem.)	
Maximum Working Pressure	300 psi/20 Bar (PN 20)	
Operating Temperature Range	-22° F to 250° F (-30° C to 120° C)	
Materials of Construction	Body, Bonnet	Dezincification Resistant Brass
	Gaskets	EPDM
	Seat Seal	EPDM
	Handwheel	Polyamide Plastic

STVL

Valve Size		Dimensions			Approx. Weight	Handwheel Turns
Nominal Dimensions		Inches/mm				
Inches	mm	A - Length	B - Height	C - P/T Offset	lbs./kg	
1/2	DN 15	**3.39** / 86	**3.74** / 95	**1.57** / 40	**1.2** / 0.53	10
3/4	DN 20	**3.54** / 90	**3.74** / 95	**1.65** / 42	**1.3** / 0.58	10
1	DN 25	**4.02** / 102	**3.78** / 96	**1.73** / 44	**1.7** / 0.77	10
1 1/4	DN 32	**4.72** / 120	**3.78** / 96	**1.85** / 47	**2.7** / 1.2	10
1 1/2	DN 40	**5.2** / 132	**4.25** / 108	**1.93** / 49	**3.3** / 1.5	10
2	DN 50	**6.46** / 164	**4.37** / 111	**2.09** / 53	**5.1** / 2.3	10

STV

Valve Size		Dimensions			Approx. Weight	Handwheel Turns
Nominal Dimensions		Inches/mm				
Inches	mm	A - Length	B - Height	C - P/T Offset	lbs./kg	
1/2	DN 15	**3.39** / 86	**3.74** / 95	**1.57** / 40	**1.2** / 0.53	10
3/4	DN 20	**3.54** / 90	**3.74** / 95	**1.65** / 42	**1.3** / 0.58	10
1	DN 25	**4.02** / 102	**3.78** / 96	**1.73** / 44	**1.7** / 0.77	10
1 1/4	DN 32	**4.72** / 120	**3.78** / 96	**1.85** / 47	**2.7** / 1.2	10
1 1/2	DN 40	**5.2** / 132	**4.25** / 108	**1.93** / 49	**3.3** / 1.5	10
2	DN 50	**6.06** / 154	**4.37** / 111	**2.09** / 53	**5.1** / 2.3	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
1/2	DN 15	**0.14** / .52	**0.5 - 3.8** / 1.89 - 14.36	**12.1** / 45.7
3/4	DN 20	**.26** / .98	**3.8 - 5.5** / 14.36 - 20.8	**17.4** / 65.7
1	DN 25	**.37** / 1.38	**5.5 - 9.5** / 20.8 - 36	**30** / 113.4
1 1/4	DN 32	**.60** / 2.28	**9.5 - 14** / 36 - 53	**44.6** / 169
1 1/2	DN 40	**.91** / 3.46	**14 - 20** / 53 - 76	**66.4** / 251
2	DN 50	**1.52** / 5.76	**20 - 33** / 76 - 125	**107.2** / 406

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)

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

PRESSURE DROP TABLES

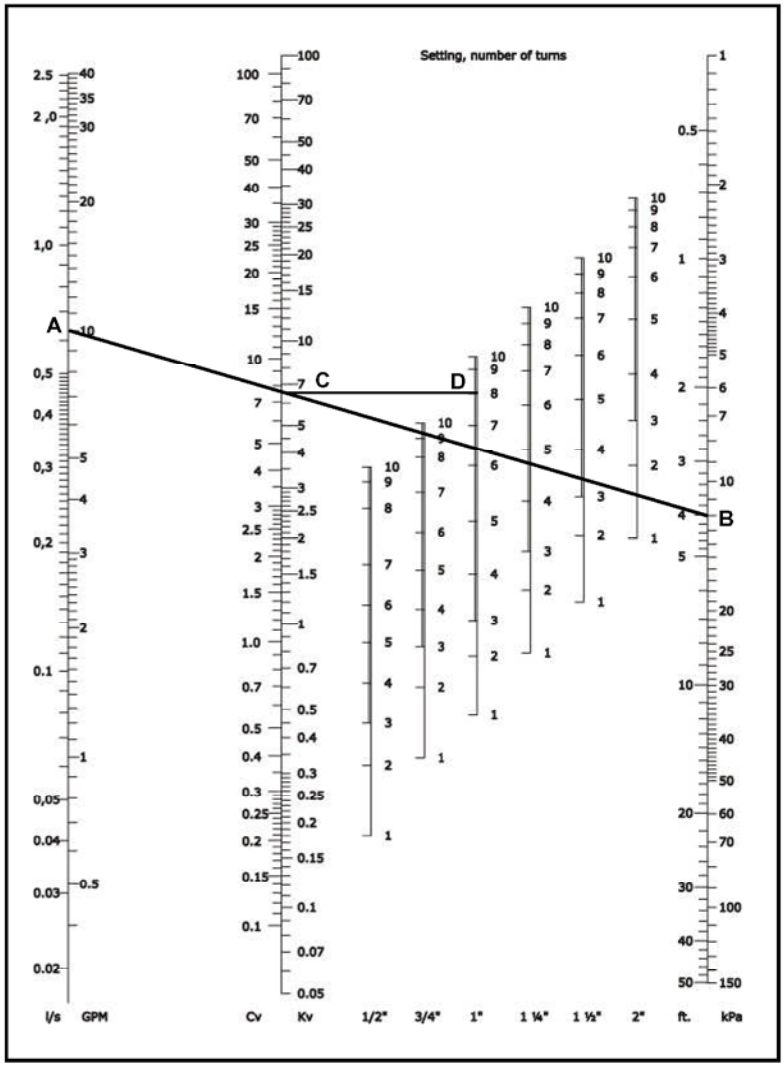
Series STVL & STV, 1/2" - 2"

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.



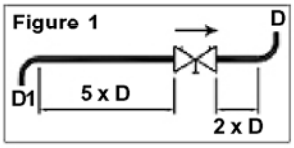
Example: *a 1" valve is required to be open 8 turns for a Cv value of 7.5 at a flow rate of 10 gpm and a pressure drop of 4 ft.*

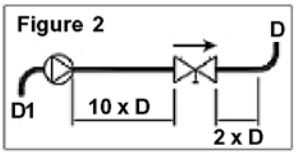
Cv Values for Valve Series STVL, STV

Flow coefficient values (Cvs) at various handwheel settings						
Handwheel Setting	1/2" DN 15	3/4" DN 20	1" DN 25	1 1/4" DN 32	1 1/2" DN 40	2" DN 50
1	0.21	0.39	0.56	0.92	1.39	2.32
1.5	0.29	0.56	0.75	1.28	1.97	3.25
2	0.37	0.7	0.89	1.53	2.38	4.18
2.5	0.44	0.82	1.04	1.8	2.78	5.1
3	0.52	0.96	1.19	2.09	3.25	6.03
3.2	0.56	1.02	1.28	2.26	3.48	6.5
3.4	0.59	1.09	1.39	2.44	3.71	6.96
3.6	0.63	1.16	1.51	2.67	4.06	7.54
3.8	0.67	1.23	1.62	2.9	4.41	8.12
4	0.72	1.31	1.74	3.13	4.76	8.82
4.2	0.77	1.39	1.91	3.42	5.1	9.74
4.4	0.81	1.48	2.09	3.71	5.57	10.7
4.6	0.87	1.58	2.26	4.06	6.03	11.7
4.8	0.93	1.68	2.44	4.41	6.61	12.8
5	1	1.8	2.67	4.76	7.19	13.8
5.2	1.07	1.91	2.9	5.16	7.77	15
5.4	1.14	2.03	3.19	5.57	8.35	16
5.6	1.21	2.16	3.48	5.97	8.93	17.2
5.8	1.28	2.3	3.83	6.38	9.63	18.3
6	1.36	2.44	4.18	6.84	10.3	19.4
6.2	1.44	2.6	4.47	7.25	11	20.4
6.4	1.52	2.76	4.76	7.66	11.8	21.5
6.6	1.62	2.96	5.1	8.12	12.5	22.5
6.8	1.74	3.16	5.54	8.58	13.2	23.5
7	1.88	3.36	5.8	9.05	13.9	24.6
7.2	2.06	3.6	6.15	9.51	14.6	25.5
7.4	2.26	3.83	6.5	9.98	15.3	26.4
7.6	2.49	4.06	6.84	10.4	15.9	27.4
7.8	2.73	4.27	7.19	10.8	16.5	28.2
8	2.96	4.47	7.54	11.3	17.1	29
8.2	3.13	4.63	7.89	11.7	17.6	29.9
8.4	3.29	4.78	8.24	12.2	18.2	30.7
8.6	3.42	4.93	8.58	12.6	18.8	31.6
8.8	3.54	5.08	8.87	13	19.4	32.4
9	3.65	5.22	9.16	13.3	19.8	33.2
9.2	3.77	5.36	9.4	13.7	20.3	33.9
9.4	3.87	5.5	9.63	14.2	20.9	34.6
9.6	3.98	5.64	9.86	14.5	21.5	35.3
9.8	4.06	5.78	10	14.8	22	36
10	4.12*	5.92*	10.2*	15.2*	22.6*	36.5*

** 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.

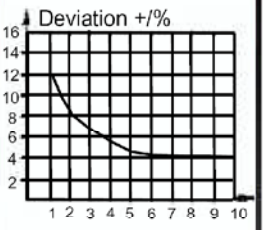
Flow Measurement & Accuracy
The measuring instrument connects to the test ports of the valve and is pre-programmed with Macon Balancing characteristics. The pressure drop and flow readings can be read off the display. If access to a Macon Balancing instrument is unavailable, other industry standard models 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



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

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

q in GPM, Δ p in Ft. of H2O

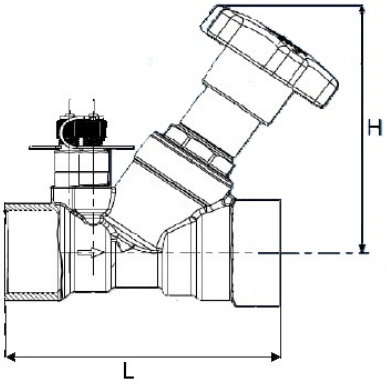
$$C_v = \frac{q}{\sqrt{\Delta p}}$$

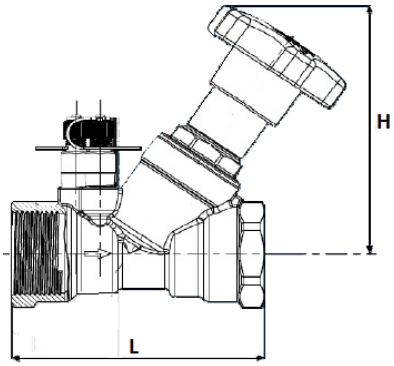
q in GPM, √ p in PSI

Tunstall Corporation
118 Exchange Street · Chicopee, MA 01013
Phone: (413) 594-8695 · Fax: (413) 598-8109
www.tunstall-inc.com

MACON® BALANCING

Model LPb - STV / STVL (LEAD FREE) Submittal Data





LPb - STVL Series – Specifications

Connection	Solder, Sweat	
Maximum Working Pressure	300 PSI / 20 Bar (PN 20)	
Operating Temperature Range	15°F to 260°F	
Materials of construction	Body / Bonnet	DZR Brass
	Gasket	PTFE
	Seat Seal	DZR Brass
	Handwheel	ABS (blue)
	Venturi Insert	DZR Brass

LPb - STV Series - Specifications

Connection	NPT (Fem.)	
Maximum Working Pressure	300 PSI / 20 Bar (PN 20)	
Operating Temperature Range	15°F to 260°F	
Materials of construction	Body / Bonnet	DZR Brass
	Gasket	PTFE
	Seat Seal	DZR Brass
	Handwheel	ABS (blue)
	Venturi Insert	DZR Brass

LPb - STVL

Valve Size		Dimensions		Approx Weight	Handwheel Turns
Nominal Dimensions		Inches / mm			
Inches	mm	L - Length	H - Height	Lbs.	
1/2	DN 15	3.76	4.06	1.16	4
3/4	DN 20	4.18	4.06	1.34	4
1	DN 25	4.57	4.06	1.55	4
1 1/4	DN 32	5.28	4.85	2.53	4
1 1/2	DN 40	5.90	4.94	3.16	4
2	DN 50	6.73	5.34	4.46	4

LPb - STV

Valve Size		Dimensions		Approx Weight	Handwheel Turns
Nominal Dimensions		Inches / mm			
Inches	mm	L - Length	H - Height	Lbs.	
1/2	DN 15	3.46	4.06	1.21	4
3/4	DN 20	3.78	4.06	1.43	4
1	DN 25	3.94	4.06	1.73	4
1 1/4	DN 32	4.63	4.85	2.78	4
1 1/2	DN 40	5.00	4.94	3.50	4
2	DN 50	5.72	5.34	4.80	4

Product Features

- ***Lead Free**
- **Fixed Orifice Design**
- **Accurate and Precise Flow Balancing**
- **Accurate and Precise Flow Measure**
- **Positive Shut-off**
- **"Y" Pattern, Globe Style Design**
- **Multi-turn, 360° Hand wheel with Vernier Scale and Digital Readout**
- **Built-in Memory Stop**

Valve Selection Guide

Valve Size		
Nominal Dimensions		Nominal Range Of Flow
Inches	mm	**GPM**/LPM
1/2 ULF	DN 15	**0.27 - 0.71** / 1.02 – 2.69
1/2 LF	DN 15	**0.49 – 1.17** / 1.85 – 4.43
1/2	DN 15	**0.98 – 2.35** / 3.71 – 8.89
3/4	DN 20	**2.19 – 5.15** / 8.29 – 19.49
1	DN 25	**4.09 – 9.56** / 15.48 – 36.18
1 1/4	DN 32	**8.56 – 19.81** / 32.40 – 74.98
1 1/2	DN 40	**12.84 – 29.80** / 48.60 – 112.79
2	DN 50	**24.09 – 55.63** / 91.18 – 210.54

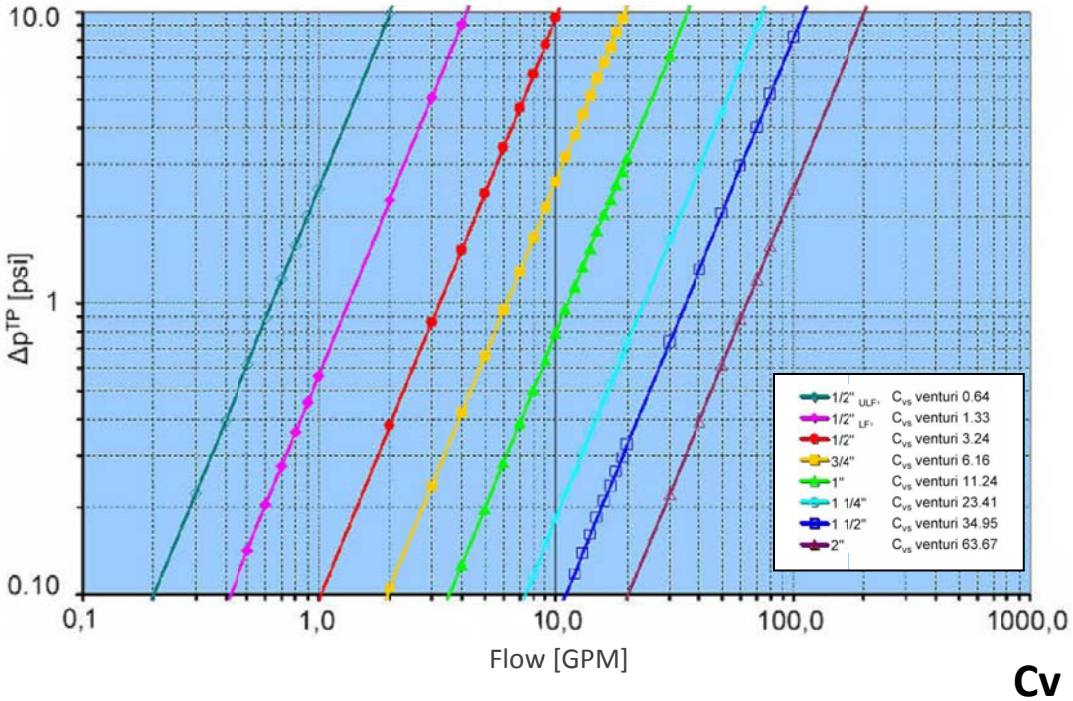
Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model LPb - STV / STVL (LEAD FREE) Submittal Data

Flow Rate Diagram:



(Flow Measuring Function)

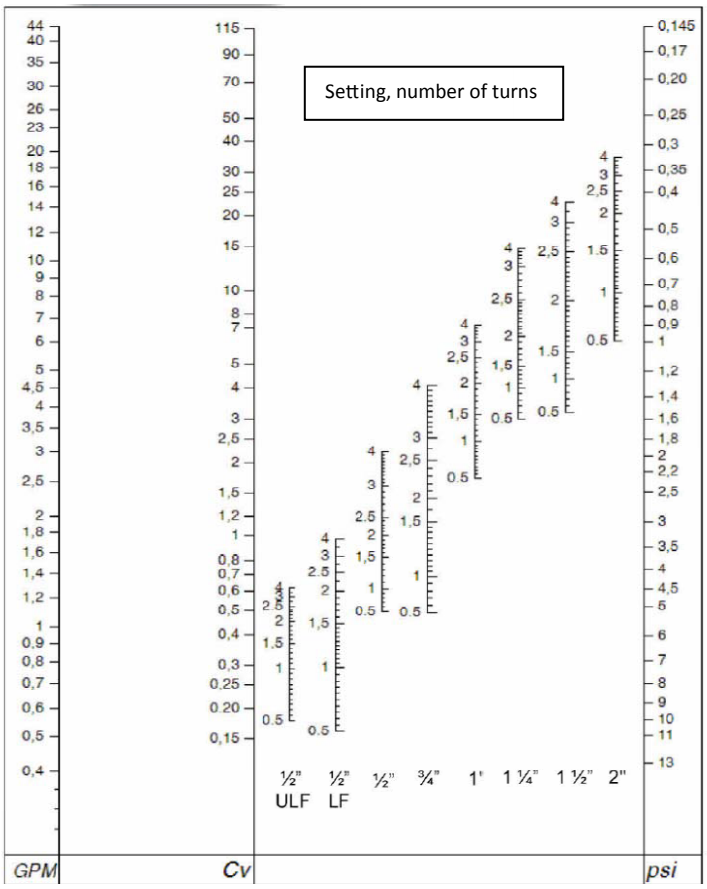
Q = Flow rate in GPM

Δp = Differential pressure signal generated through the pressure test points independent of handwheel position

Cvs = Flow coefficient

$$Q = C_{vs}^{venturi} \bullet \sqrt{\Delta p^{TP}}$$

Presetting



Cv Chart:

(Relative to handwheel position)

Handwheel Position	Cv (GPM/psi$^{0.5}$)							
	1/2" ULF	1/2" LF	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
.5	0.177	0.160	0.474	0.474	1.70	2.96	3.14	6.20
.7	0.206	0.186	0.474	0.543	2.00	3.38	3.61	7.56
1.0	0.283	0.287	0.613	0.671	2.42	3.95	4.27	9.65
1.3	0.331	0.394	0.717	0.902	2.82	4.49	4.96	12.19
1.5	0.355	0.440	0.809	1.12	3.12	4.83	5.57	14.30
1.7	0.387	0.501	0.902	1.25	3.48	5.25	6.60	16.64
2.0	0.445	0.586	0.994	1.39	4.13	6.27	8.99	20.17
2.3	0.511	0.669	1.10	1.62	4.83	7.82	12.08	23.35
2.5	0.517	0.696	1.18	1.99	5.28	9.16	14.21	25.12
2.7	0.527	0.743	1.32	2.24	5.63	10.46	16.34	26.66
3.0	0.563	0.828	1.60	2.46	6.09	12.21	18.89	28.72
3.3	0.578	0.864	1.88	2.94	6.49	13.39	20.67	30.57
3.5	0.594	0.891	2.03	3.39	6.64	13.94	21.54	31.72
3.7	0.595	0.925	2.12	3.75	6.80	14.34	22.16	32.86
4.0	0.603	0.953	2.19	4.06	7.10	14.50	22.65	34.36
4.4	0.605	0.985	2.22	4.24	7.21	-	-	-

Using the diagram left, determine the presetting position of the valve with the given design flow rate and headloss:
1) Draw a straight line joining design flowrate and design headloss;
2) Determine design C_v value as intersection of drawn line and C_v axis;
3) Draw a straight horizontal line from intersection previously identified and the specific valve size axis
4) Intersection determines handwheel position to use for presetting

NSF Certified to NSF/ANSI 61-G

FM APPROVED

NSF/ANSI 61
NSF/ANSI 372

Tunstall®

Tunstall Corporation
118 Exchange Street · Chicopee, MA 01013

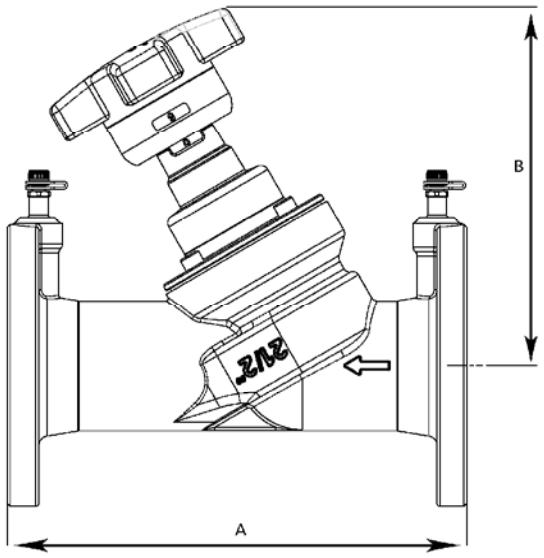
Phone: (413) 594-8695 · Fax: (413) 598-8109
www.tunstall-inc.com

MACON® BALANCING

Model STVA
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)

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

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118 Exchange Street
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MACON® BALANCING

PRESSURE DROP TABLES

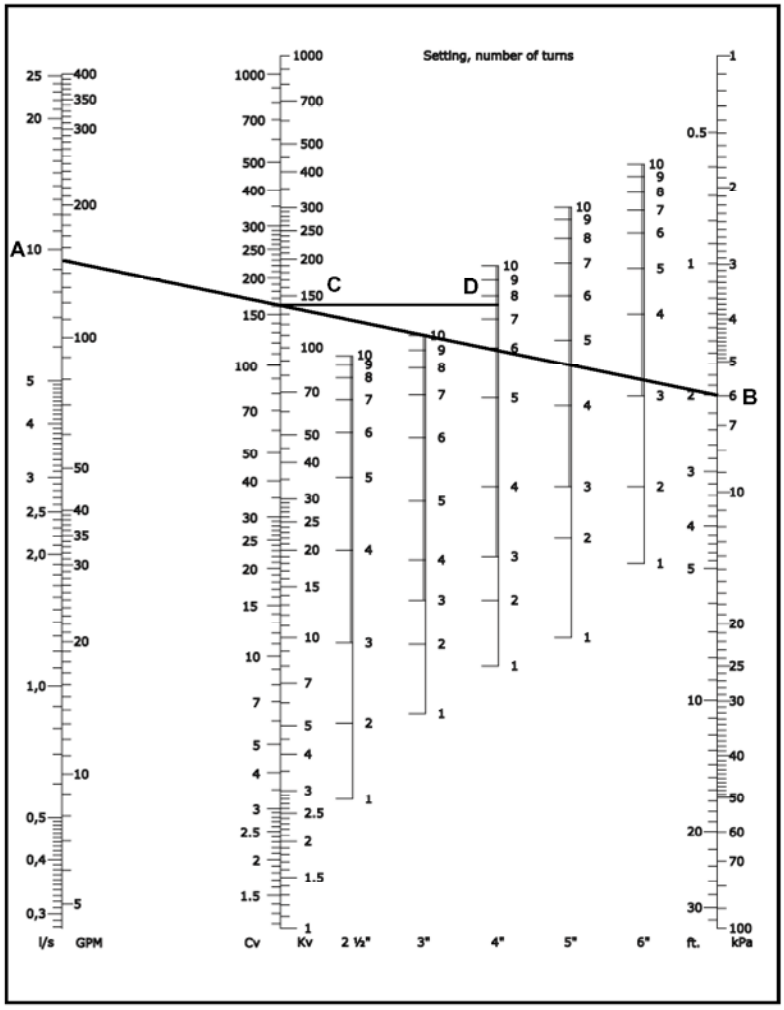
Series STVA, 2 1/2" - 6"

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.



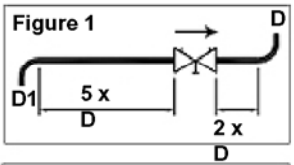
Example: *a 4" valve is required to be open 7.5 turns for a Cv value of 160 at a flow rate of 150 gpm and a pressure drop of 2 ft.*

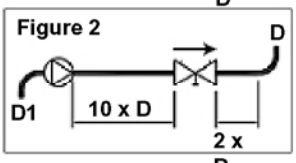
Cv Values for Valve Series STVA

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.

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

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

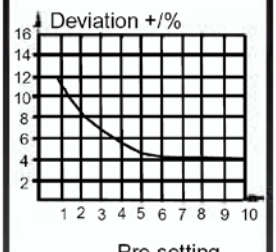
$$C_v = 1.52 \frac{q}{\sqrt{\Delta p}}$$

q in GPM, Δp in Ft. of H2O

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

q in GPM, √p in PSI

Figure 3



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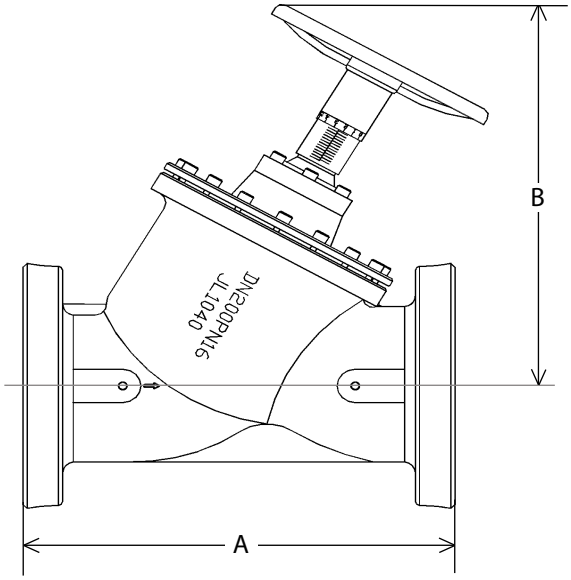
MACON® BALANCING

Model STVC-D
Submittal Data

STVC-D 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



STVC-D					
Valve Size		Dimensions		Approx. Weight	Handwheel Turns
Nominal Dimensions		Inches/mm			
Inches	mm	A - Length	B - Height	lbs./kg	
8	DN 200	**23.6** / 600	**23.0** / 580	**324** / 147	27
10	DN 250	**28.7** / 730	**26.0** / 665	**475** / 215	33
12	DN 300	**33.5** / 850	**25.0** / 640	**617** / 280	34

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
8	DN 200	**30.3** / 114	**440 - 650** / 1663 - 2460	**2100** / 7940
10	DN 250	**76.3** / 289	**650 - 1300** / 2460 - 4915	**4050** / 15300
12	DN 300	**76.3** / 289	**1300 - 1600** / 4915 - 6050	**4750** / 17590

The Minimum Flow is calculated from the minimum recommended pressure drop 1 . 5 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)

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

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MACON® BALANCING

Model STVC-D
Submittal Data

PRESSURE DROP TABLES

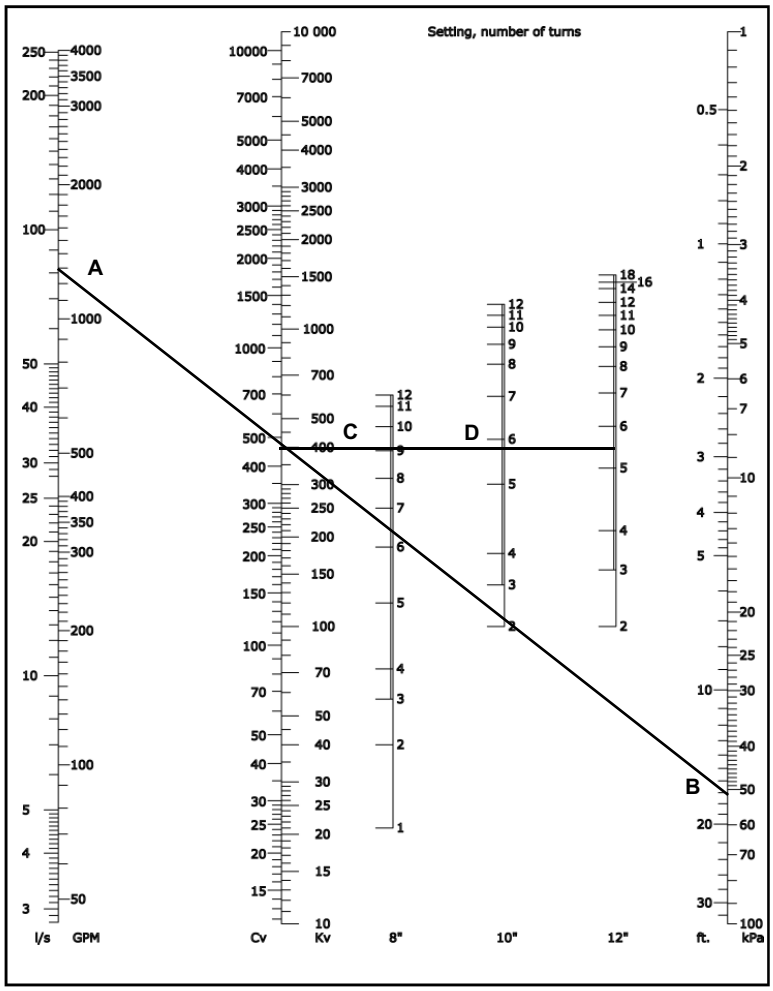
Series STVC-D, 8" - 12"

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.



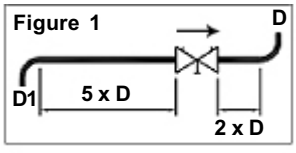
Cv Values for Valve Series STVC-D

Flow coefficient values (Cv's) at various handwheel settings			
Handwheel Setting	**8" DN 200**	**10" DN 250**	**12" DN 300**
1	55	74	85
2	88	112	144
3	122	147	203
4	153	188	262
5	186	230	321
6	218	269	380
7	249	305	429
8	282	348	477
9	313	385	541
10	343	426	603
11	379	464	640
12	412	519	677
13	443	544	715
14	478	587	752
15	512	625	789
16	553	664	889
17	601	705	988
18	641	749	1,089
19	684	793	1,189
20	728	836	1,289
21	775	884	1,340
22	820	937	1,391
23	870	984	1,442
24	916	1,034	1,493
25	957	1,079	1,544
26	1,006	1,138	1,604
27	1,056	1,196	1,666
28	-	1,250	1,726
29	-	1,306	1,786
30	-	1,361	1,847
31	-	1,412	1,891
32	-	1,458	1,935
33	-	1,510	1,978
33.3	-	-	1,993

Example: *a 10" valve is required to be open 8 turns for a Cv value of 890 at a flow rate of 1000 gpm and a pressure drop of 3 ft.*

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).

Figure 1



For Series STVC-D, 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.

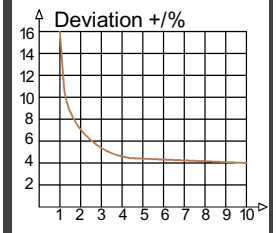
Flow Measurement & Accuracy
The measuring instrument connects to the test ports of the valve and is pre-programmed with Macon Balancing characteristics. The pressure drop and flow readings can be read off the display. If access to a Macon Balancing instrument is unavailable, other industry standard models 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



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

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

q in GPM, Δp in Ft. of H2O

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

q in GPM, √p in PSI

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model STVG
Submittal Data

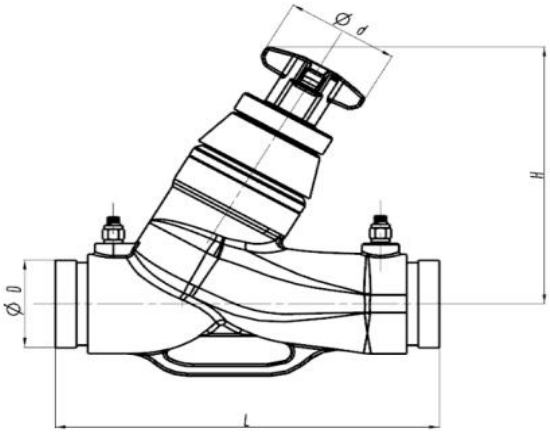
Specifications		
Connection	300# Grooved	
Maximum Working Pressure	235 psi / 16 Bar (PN 16)	
Operating Temperature Rating	-14 F to 250° F (-10° C to 120° C)	
Materials of Construction	Body	Ductile Iron
	Stem	Stainless Steel (AISI 420)
	Seat Seal	EPDM Perox
	Handwheel	1 1/2" to 6", Polyamide Plastic With 30% Glass Fiber; 8" to 12", Ductile Iron

Product Features

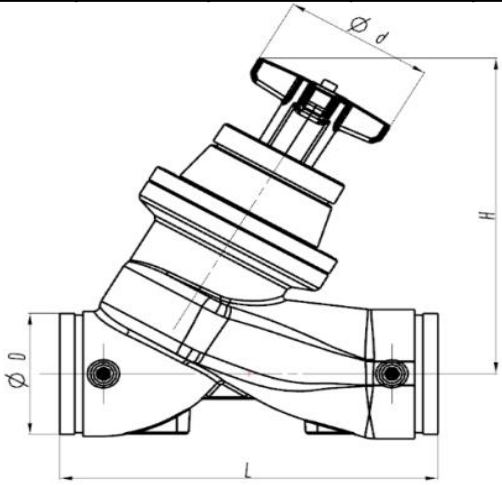
- *Accurate and precise flow measurement*
- *Accurate and precise flow balancing*
- *Positive Shut-off*
- *"Y" Pattern, Globe style design*
- *Multi-turn, 360° handwheel*
- *Built in memory stop*

Dimensions

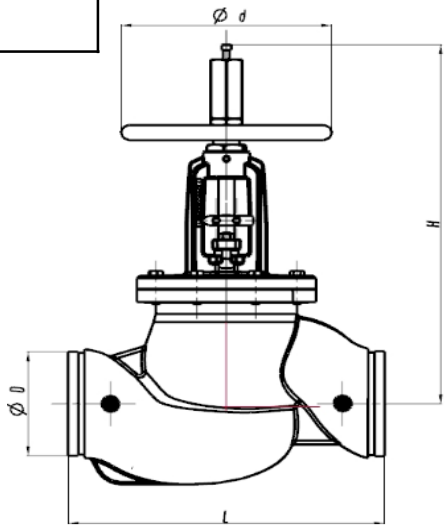
Size in (DN)	Connection	Dimension in / (mm) L	Dimension in / (mm) H	Diameter in / (mm) D	Handwheel Diameter in / (mm) d	Weight lbs (kg)	Handwheel Turns
2 1/2" (DN 65)	Groove	11.42 (290)	8.5 (216)	2.875 (73)	3.35 (85)	23.8 (10.8)	8
3" (DN 80)	Groove	12.2 (310)	8.86 (225)	3.500 (88.9)	3.35 (85)	33 (15)	8
4" (DN 100)	Groove	13.78 (350)	13.19 (335)	4.500 (114.3)	6.18 (157)	60.3 (27.4)	8
5" (DN 125)	Groove	15.75 (400)	14.57 (370)	5.563 (141.3)	6.18 (157)	103.8 (47.2)	10
6" (DN 150)	Groove	18.9 (480)	15.98 (406)	6.625 (168.3)	6.18 (157)	143.2 (65.1)	10
8" (DN 200)	Groove	23.62 (600)	30.04 (763)	8.625 (219.1)	15.75 (400)	363 (165)	12
10" (DN 250)	Groove	28.74 (730)	35.12 (892)	10.750 (273)	15.75 (400)	506 (230)	12
12" (DN 300)	Groove	33.46 (850)	37.24 (946)	12.750 (323.9)	15.75 (400)	638 (290)	14



2-1/2" to 4" (DN 40 to 100)



5" & 6" (DN 125 to 150)



8" to 12" (DN 200 to 300)

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

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Chicopee, MA 01013

MACON® BALANCING

Model STVG
Submittal Data

Flow coefficient values (Cv's) at various handwheel settings								
Handwheel Setting	2 1/2" DN 65	3" DN 80	4" DN 100	5" DN 125	6" DN 150	8" DN 200	10" DN 250	12" DN 300
1.00	8	17	24	81	52	126	250	298
1.25	10	20	27	97	56	162	303	346
1.50	12	22	29	113	59	198	354	452
1.75	15	25	32	129	62	233	399	448
2.00	19	27	35	143	66	274	444	499
2.25	24	30	38	158	70	316	480	553
2.50	30	33	31	171	74	360	513	618
2.75	36	36	48	184	78	401	543	682
3.00	42	40	55	197	81	437	574	750
3.25	47	45	64	209	84	466	605	819
3.50	53	51	73	223	87	488	635	887
3.75	57	58	84	235	92	508	668	946
4.00	62	64	95	247	99	528	697	995
4.25	66	71	106	259	111	547	722	1,025
4.50	70	77	116	271	124	569	745	1,045
4.75	74	84	127	282	138	589	764	1,064
5.00	77	90	137	294	150	610	780	1,091
5.25	80	97	147	305	158	631	792	1,131
5.50	82	104	157	317	164	650	802	1,183
5.75	84	110	167	327	169	667	810	1,231
6.00	85	115	177	338	175	682	817	1,273
6.25	87	121	188	347	183	692	825	1,303
6.50	88	125	197	355	194	700	833	1,320
6.75	89	128	206	362	211	707	839	1,332
7.00	89	131	213	368	233	716	846	1,343
7.25	90	133	219	374	261	727	852	1,356
7.50	91	134	223	379	292	740	858	1,371
7.75	92	135	226	384	323	754	864	1,384
8.00	93	136	229	390	349	767	872	1,395
8.25				396	369	780	881	1,400
8.50				403	382	791	892	1,404
8.75				410	394	799	901	1,412
9.00				415	408	802	908	1,430
9.25				418	424	801	912	1,457
9.50				419	444	798	915	1,491
9.75				419	466	795	917	1,526
10.00				419	489	796	922	1,554
10.25						803	929	1,567
10.50						813	939	1,570
10.75						824	949	1,568
11.00						834	960	1,565
11.25						840	969	1,565
11.50						842	976	1,567
11.75						843	983	1,571
12.00						843	989	1,575
12.25								1,578
12.50								1,581
12.75								1,584
13.00								1,588
13.25								1,592
13.50								1,598
13.75								1,605
14.00								1,611

Valve is fully open

Valve Selection Guide			
Valve Size		Nominal Range of Flow	
Nominal Dimensions			
Inches	mm	GPM	(l/h)
2 1/2	DN 65	39 - 87	(10k - 25k)
3	DN 80	87 - 125	(25k - 31k)
4	DN 100	125 - 213	(31k - 50k)
5	DN 125	213 - 300	(50k - 76k)
6	DN 150	300 - 450	(76k - 108k)
8	DN 200	450 - 760	(108k - 190k)
10	DN 250	760 - 920	(190k - 340k)
12	DN 300	920 - 1500	(340k - 377k)

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

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

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

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

q in GPM, Δ p in Ft. of H2O

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

q in GPM, √ p in PSI

INSTALLATION RECOMMENDATIONS

GROOVED END VALVE CONNECTIONS

Grease the pipe ends, valve ends and rubber gasket lips with grease, graphite paste or similar grease.
Slip the rubber gasket over the pipe end of each joint. Slide the gasket past the grooves. Position the grooved end valve between the pipe ends and slide the gaskets back into the central spanned position.
All products have a flow direction arrow. Make sure that it is pointing in the direction of the flow. Apply grease on the outside of the gasket. Install housing clamps over the gasket – insert bolts and nuts.

Tighten nuts evenly, using socket or other wrench. Tighten so that housing clamps come together evenly. The connection is complete when housing clamps meet metal to metal, further tightening of bolts is not necessary.
Pre-assemble large diameter multi-segment housing clamps loosely and install them as half-housings. Take up evenly from top to bottom on alternate bolts.

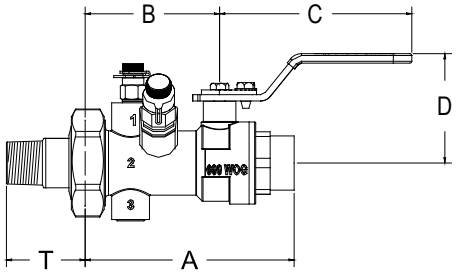
Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

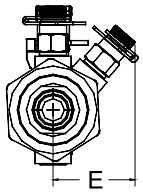
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model MB
Submittal Data

Model MB is a venturi style manual balancing valve with 100% positive shut-off full port plated ball. Permanently installed venturi section, Teflon seats, double o-ring shaft seals, Pressure/Temperature readout ports, adjustable memory stop with position indicator, and union end with o-ring seal. Available with multiple combinations of end connection types and sizes.





SPECIFICATIONS

Pressure Ratings:	600 PSI (4140 kPa)
Temperature Ratings:	250°F (120°C)
Flow Element:	Brass Venturi, Permanently installed
Accuracy:	± 3% of flow rate
Body Material:	Forged Brass
End Connections:	Brass – Fixed End:SWT, FNPT; Union End: SWT, FNPT,& MNPT
Seals:	EPDM
Ball:	Chrome Plated Brass, full port, 100% positive shut-off. *Optional 316 Stainless Steel.*
Steam:	Brass. *Optional 316 Stainless Steel.*
Handle:	Full size Zinc Plated lever with Vinyl Grip
Memory Stop	Zinc Plated Steel
Available Options:	"PTV" combination PT & air vent, hose end drain valve, & extensions

NOMINAL DIMENSIONS & WEIGHTS

Size		Flow Range		A		B	C	D	E	*T	Cv	Wgt	
in	mm	GPM (10"-100")		FNPT	SWT					MPT		lbs	kg
1/2"	15	(L) 0.4 - 1.3	in	3.46	3.55	2.30	3.66	1.98	1.82	1.50	(L) 2.0	1.31	0.59
		(H) 1.3 - 4.0	mm	87.78	90.25	58.42	93.02	50.29	46.20	38.10	(H) 5.9		
3/4"R	20	(L) 0.4 - 1.3	in	3.60	3.67	2.30	3.66	1.98	1.82	1.55	(L) 2.0	1.34	0.61
		(H) 1.3 - 4.0	mm	91.47	93.27	58.42	93.02	50.29	46.20	39.37	(H) 5.9		
3/4"	20	(L) 1.6 - 5.0	in	3.87	3.98	2.56	3.66	2.08	2.05	1.56	(L) 7.6	1.81	0.82
		(H) 4.0 - 13.0	mm	98.30	101.12	65.05	93.01	52.83	52.07	39.70	(H) 13.0		
1"R	25	(L) 1.6 - 5.0	in	4.00	4.14	2.56	3.66	2.08	2.05	1.75	(L) 7.6	1.81	0.82
		(H) 4.0 - 13.0	mm	101.60	105.16	65.03	92.96	52.83	52.07	44.45	(H) 13.0		
1-1/4"	32	7.25 - 23.0	in	5.39	5.56	3.70	5.03	2.44	2.43	1.80	29.00	4.59	2.08
			mm	136.83	141.25	93.95	127.76	61.90	61.74	45.72			
1-1/2"	40	9.5 - 30.0	in	6.06	6.38	4.16	5.66	2.83	2.43	1.80	45.00	4.97	2.25
			mm	153.92	162.05	105.66	143.76	71.88	61.74	45.72			
2"R	50	15.0 - 50.0	in	6.57	7.36	4.45	5.66	2.83	2.74	1.98	77.40	7.10	3.20
			mm	166.90	187.00	113.00	143.60	71.90	69.67	50.29			

* Please reference the tailpiece data sheet (Form #M-TP) for other sizes and connections.
Dimensions not for construction purposes unless certified by factory.

STANDARD COMPONENTS

Pressure/Temperature test port with brass body, dual durometer EPDM core, brass cap with O-ring seal and neoprene retainer strap. Accepts standard 1/8" (4mm) gauge adapter or thermometer stem. Rated to 500 PSI (3450 kPa) and 275°F (135°C).

Memory stop with position indicator, zinc coated steel.

Please reference data sheet (Form #M-ACC) for optional accessories.

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model MB Venturi Type Balancing Valve 0.50" - 2.00"

Differential Pressure: Inches W.C

	Model MB –								Model MB –		
Flow GPM	050L 075RL 075CL	050H 075RH 075CH	075L 100RL 100CL	075H 100RH 100CH	100	125	150	***Flow GPM***	125	150	200 200C
0.10	1							18.00	**62**	**36**	**14**
0.20	2							19.00	**69**	**41**	**15**
0.30	5							20.00	**76**	**45**	**17**
0.42	**10**	1						21.00	**84**	**50**	**19**
0.50	**14**	1.5	1					22.00	**92**	**54**	**21**
0.75	**31**	3	2					23.00	**101**	**60**	**23**
1.00	**55**	6	4		1			24.00	110	**65**	**25**
1.25	**86**	9	6		1.5			25.00	119	**70**	**27**
1.35	**101**	**11**	7	1	2			26.00	129	**76**	**29**
1.50	124	**13**	**9**	1.4	2.3			27.00	139	**82**	**31**
2.00	221	**23**	**16**	2.5	4			28.00	149	**88**	**34**
2.25		**29**	**21**	3	5			29.00	160	**95**	**36**
2.50		**36**	**25**	4	6	1.2		30.00	171	**101**	**39**
3.00		**52**	**36**	6	9	1.7		31.00	183	108	**41**
3.50		**71**	**50**	8	**13**	2.3	1.4	32.00	195	115	**44**
4.00		**92**	**65**	**10**	**16**	3	1.8	33.00	207	122	**47**
4.50		117	**82**	**13**	**21**	4	2.3	34.00	220	130	**50**
5.00		144	**101**	**15**	**26**	5	3	35.00	233	138	**53**
5.50		175	123	**19**	**31**	6	3.4	36.00		146	**56**
6.00		208	146	**22**	**37**	7	4	37.00		154	**59**
6.50		244	171	**26**	**43**	8	5	39.00		171	**65**
7.25			213	**33**	**54**	**10**	6	40.00		180	**69**
7.50			228	**35**	**58**	**11**	6.4	41.00		189	**72**
8.00				**40**	**65**	**12**	7	42.00		198	**76**
8.50				**45**	**74**	**14**	8	43.00		208	**79**
9.00				**50**	**83**	**15**	9	44.00		218	**83**
9.50				**56**	**92**	**17**	**10**	45.00		228	**87**
10.00				**62**	**102**	**19**	**11**	48.50			**101**
10.50				**68**	113	**21**	**12**	55.00			130
11.00				**75**	124	**23**	**14**	60.00			154
11.50				**82**	135	**25**	**15**	65.00			181
12.00				**89**	147	**27**	**16**	70.00			210
12.50				**97**	160	**30**	**18**	75.00			241
13.00				105	173	**32**	**19**				
14.00				121	200	**37**	**22**				
15.00				139		**43**	**25**				
16.00				159		**49**	**29**				
17.00				179		**55**	**33**				
Size	0.50" L 0.75" RL 0.75" CL	0.50" H 0.75" RH 0.75" CH	0.75"L 1.00" RL 1.00" CL	0.75" H 1.00" RL 1.00" CL	1.00"	1.25"	1.50"		1.25"	1.50"	2.00" 2.00" C
FF	0.1346	0.4163	0.4967	1.2704	0.9889	2.2921	2.9816		2.2921	2.9816	4.8274

Flow Formulas

GPM = FF x (√DP)

DP = $(GPM/FF)^2$

PPL= DP*0.12

Notes

1) Accuracy ± 3% of flow rate 2) Repeatability +/- 0.25% of rate

3) Values in **BOLD** type represents traditional 10" to 100" sizing range

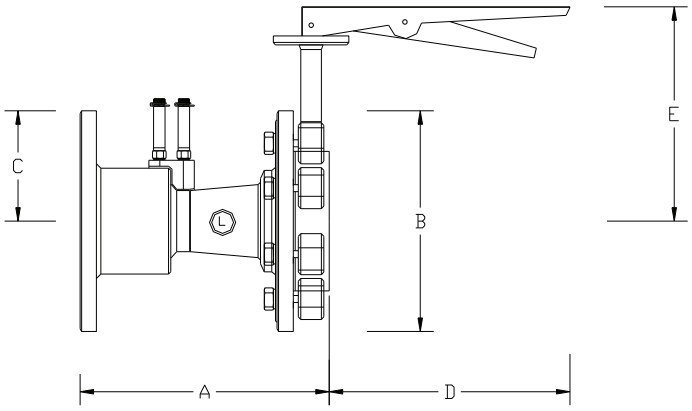
4) All valves will function above and below ranges shown. Pressure drop and readability should be taken into account.

MACON® BALANCING

Model MBF
Submittal Data

2.50"– 6.00" MBF

Macon's MBF Manual Balancing Valve features a cast steel venturi flow element. The precisioned machined throat provides measurement accuracy of ±3% of flow rate. Mounted on the discharge is a ductile iron lug type butterfly valve with adjustable flow positioning plate. ANSI 125/150 flanged end connections. Dual extended length Pressure / Temperature Ports. Hanging I.D. Tag.



SPECIFICATIONS

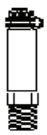
Pressure Ratings:	200 PSIG (1380 kPa)
Temperature Ratings:	225ºF (107ºC)
Accuracy:	± 3% of Rate
Body Material: Venturi	Carbon Steel ASTM A-120
Butterfly Valve	Ductile Iron A536 65-45-12
Disc:	Aluminum Bronze B148 C954
Stem:	Stainless Steel 416 A582
Seat:	EPDM with Phenolic Backing
Bushing:	Teflon/Fiberglass Backed
Seal:	EPDM
End Connections:	ANSI Class 125/150# Flanged
Metering Ports:	Extended Length Pressure/Temperature test ports
Available Options:	"PTV" combination PT and air vent

NOMINAL DIMENSIONS & WEIGHTS

Size			A	B	C	D	E	Wgt	
in	mm							lbs	kg
2-1/2"	65	in	8.75	7.00	4.20	9.13	8.13	32.00	14.51
		mm	222.25	177.80	106.65	231.9	206.50		
3"	75	in	9.78	7.50	4.54	9.13	8.38	38.00	17.23
		mm	248.41	190.50	115.29	231.90	212.85		
4"	100	in	11.50	9.00	5.02	9.00	9.13	55.00	24.94
		mm	292.10	228.60	127.48	228.60	231.90		
5"	125	in	13.13	10.00	5.53	9.00	9.63	79.00	35.83
		mm	333.50	254.00	140.49	228.60	244.60		
6"	150	in	14.73	11.00	6.04	8.88	10.13	92.00	41.73
		mm	374.14	279.40	153.39	225.55	257.30		

- Please reference the tailpiece data sheet for other sizes and connections.
- Dimensions not for construction purposes unless certified by factory.

STANDARD COMPONENTS



Pressure/Temperature test port with brass body, dual durometer EPDM core, PTE Extender, brass cap with O-ring seal and neoprene retainer strap. Accepts standard 1/8" (4mm) gauge adapter or thermometer stem. Rated to 500 PSI (3450 kPa) and 275°F (135°C).

Please reference Tunstall Corporation data sheet for optional accessories

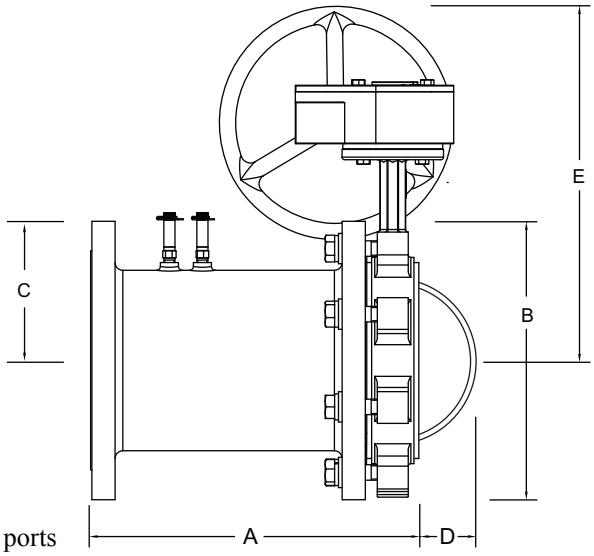
Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model MBF
Submittal Data
8"– 12.00" MBF

Macon's MBF Manual Balancing Valve features a fabricated steel venturi flow element. Mounted on the discharge is a ductile iron lug type butterfly valve with gear operator. ANSI 125/150 flanged end connections. Dual extended length Pressure / Temperature Ports. Hanging I.D. Tag.



SPECIFICATIONS

Pressure Ratings:	200 PSIG (1380 kPa)
Temperature Ratings:	225ºF (107ºC)
Accuracy:	± 3% of Rate
Body Material: Venturi	Carbon Steel ASTM A-120
Butterfly Valve	Ductile Iron A536 65-45-12
Disc:	Aluminum Bronze B148 C954
Stem:	Stainless Steel 416 A582
Seat:	EPDM with Phenolic Backing
Bushing:	Teflon/Fiberglass Backed
Seal:	EPDM
End Connections:	ANSI Class 125/150# Flanged
Metering Ports:	Extended Length Pressure/Temperature test ports
Available Options:	"PTV" combination PT and air vent

NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE			A	B	C	D	E	Wgt	
	in	mm							lbs	kg
MBF-800L	8.0"	200	in	15.88	13.50	6.75	2.72	17.46	145	65.77
			mm	403.35	342.90	171.45	69.15	443.50		
MBF-1000L	10.0"	250	in	17.06	16.00	8.00	3.52	18.72	200	90.71
			mm	433.32	406.40	203.20	89.31	475.50		
MBF-1200L	12.0"	300	in	19.30	19.00	9.50	4.34	20.63	333	153.04
			mm	490.22	482.60	241.30	110.25	524.00		

Cv VALUE(US-GPM @1ΔP) *Cv Value when valve is in different opening angle*

MODEL	SIZE	10°	20°	30°	40°	50°	60°	70°	80°	90°
MBF-800L	8.0"	3	89	188	408	727	1202	1903	2854	3136
MBF-1000L	10.0"	4	151	320	694	1237	2047	3240	4859	5340
MBF-1200L	12.0"	5	234	495	1072	1911	3162	5005	7507	8250

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

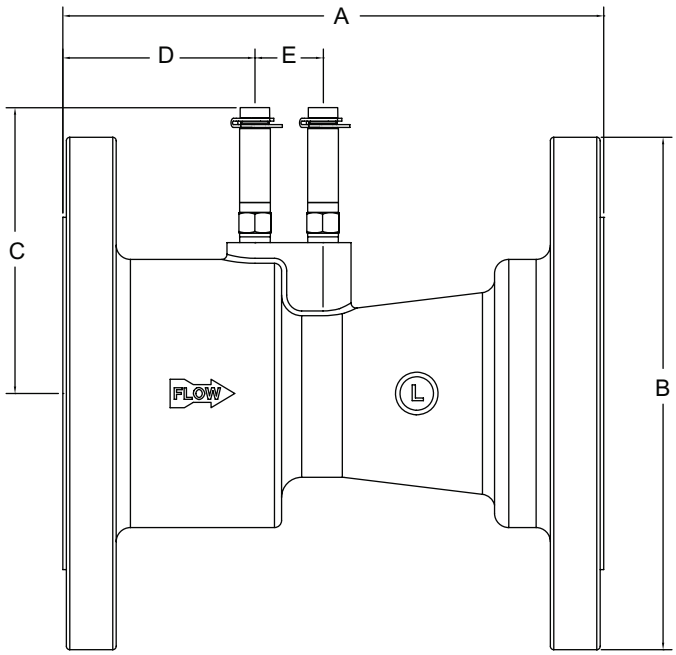
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model VF
Submittal Data
2.5” - 6.0” VF

Macon’s VF Venturi Flowmeter features a cast steel venturi flow element. The precisioned machined throat provides measurement accuracy of +3% of flow rate.
ANSI 150 flanged end connections.
Dual extended length Pressure / Temperature Ports and Hanging I.D. Tag.

PART	MATERIALS
Venturi	Carbon Steel ASTM A-120
End Conn.	ANSI Class 150# Flanged *Optional ANSI Class 300# Flanged*
Metering Ports	Extended Length Pressure / Temperature
RATINGS	Pressures to 240 PSIG (1655 kPa) Temperatures to 250 °F (120° C)
ACCURACY	± 3% of flow rate
Available Options	“PTV” Combination PT and Air Vent



NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE in	SIZE mm		A	B	C	D	E	Wgt lbs	Wgt kg
VF-250L	2.50"	65	in	7	7	4.2	3.12	.74	20	9.08
			mm	177.80	177.8	106.65	79.38	18.75		
VF-300L	3.00"	75	in	8	7.5	4.54	3.38	.88	25	11.35
			mm	203.20	190.5	115.29	85.73	24.48		
VF-400L	4.00"	100	in	9.5	9	5.02	3.38	1.19	36	16.33
			mm	241.30	228.6	127.48	85.73	30.35		
VF-500L	5.00"	125	in	11	10	5.53	3.88	1.31	45	20.41
			mm	279.40	254	140.49	98.43	33.27		
VF-600L	6.00"	150	in	12.5	11	6.04	3.88	1.60	55	24.95
			mm	317.50	279.4	153.39	98.43	40.64		

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

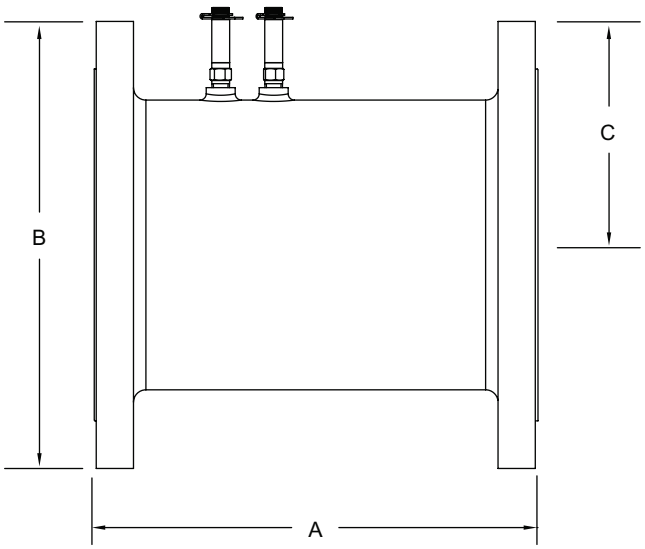
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model VF
Submittal Data

8.0” - 16.0” VF

Macon’s VF Venturi Flowmeter features a fabricated steel venturi flow element. The welded steel insert provides measurement accuracy of +3% of flow rate.
ANSI 150 flanged end connections.
Dual extended length Pressure / Temperature Ports and Hanging I.D. Tag.



PART	MATERIALS
Venturi	Carbon Steel ASTM A-120
End Conn.	ANSI Class 150# Flanged *Optional ANSI Class 300# Flanged*
Metering Ports	Extended Length Pressure / Temperature
RATINGS	Pressures to 200 PSIG (1380 kPa) Temperatures to 250 °F (107 °C)
ACCURACY	± 3% of flow rate
Available Options	“PTV” Combination PT and Air Vent

NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE			A	B	C	WEIGHT	
	in	mm					lbs	kg
VF-800L	8.00"	203.2	in	13.50	13.50	6.75	91.0	41.27
			mm	342.9	342.9	171.45		
VF-1000L	10.00"	254.0	in	14.50	16.00	8.00	117.5	53.29
			mm	368.3	406.4	203.2		
VF-1200L	12.00"	304.8	in	21.00	19.00	9.50	218.0	98.88
			mm	533.4	482.6	241.3		
VF-1400L	14.00"	355.6	in	24.00	21.00	10.50	305.0	138.34
			mm	609.6	533.6	266.7		
VF-1600L	16.00"	406.4	in	36.00	23.50	11.75	435.0	197.31
			mm	914.4	596.9	298.45		

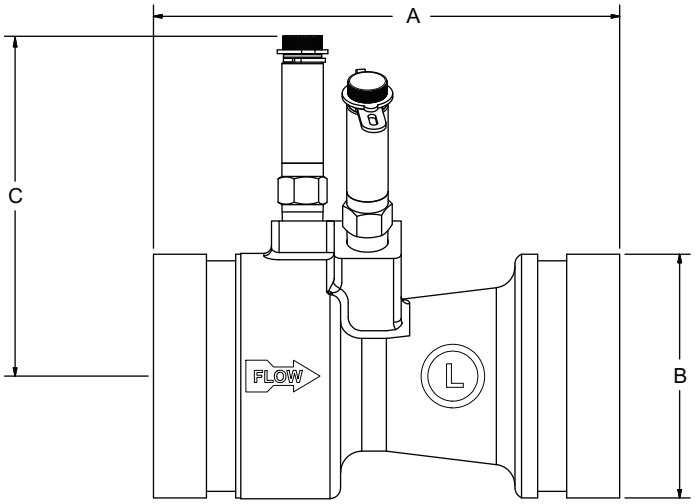
Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model VG / VW
Submittal Data

Macon's VG/VW Venturi Flowmeter features a carbon steel venturi flow element. The precisioned machined throats provides measurement accuracy of ±3% of flow rate. Model VG offers Grooved end connections; Model VW offeres Weld end connections. Dual extended length Pressure / Temperature Ports and Hanging I.D. Tag.



PART	MATERIALS
Venturi	
Size 2.5" – 6.0"	ASTM A-216 Grade WCB
Size 8.0" – 16.0"	ASTM A-120
End Conn.	VG = Grooved End connections
	VW = Weld End connections
Metering Ports	Extended Length Pressure / Temperature
RATINGS	Pressures to 400 PSIG (2758 kPa)
	Temperatures to 250°F (107°C)
ACCURACY	± 3% of flow rate
Available Options	"PTV" Combination PT and Air Vent

NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE			A	B	C	Wgt	
	in	mm					lbs	kg
VG-250L	2.50"	65	in	5.50	2.88	4.25	3.39	1.54
			mm	139.70	73.15	107.90		
VG-300L	3.00"	75	in	6.00	3.50	4.59	4.91	2.23
			mm	152.40	88.90	116.59		
VG-400L	4.00"	100	in	7.50	4.50	5.07	8.27	3.75
			mm	190.50	114.30	128.78		
VG-500L	5.00"	125	in	8.75	5.56	5.58	13.02	5.91
			mm	222.25	141.22	141.73		
VG-600L	6.00"	150	in	10.25	6.63	6.09	18.78	8.52
			mm	260.35	168.40	154.69		
VG-800L	8.00"	200	in	12.50	8.63	7.05	34.00	15.42
			mm	317.50	219.20	179.07		
VG-1000L	10.00"	250	in	13.50	10.75	8.11	54.00	24.49
			mm	342.90	273.05	206.00		
VG-1200L	12.00"	300	in	12.00	12.75	7.63	54.00	24.49
			mm	304.80	323.85	193.80		
VG-1400L	14.00"	355	in	19.00	14.00	8.25	72.30	32.79
			mm	482.60	355.60	209.55		
VG-1600L	16.00"	406	in	26.00	16.00	9.25	144.00	65.31
			mm	660.40	406.40	234.95		

MODEL	SIZE			A	B	C	Wgt	
	in	mm					lbs	kg
VW-250L	2.50"	65	in	5.50	2.88	4.25	3.50	1.59
			mm	139.70	73.15	107.95		
VW-300L	3.00"	75	in	6.00	3.50	4.59	5.02	2.28
			mm	152.40	88.90	116.59		
VW-400L	4.00"	100	in	7.50	4.50	5.07	8.40	3.81
			mm	190.50	114.3	128.78		
VW-500L	5.00"	125	in	8.75	5.56	5.58	13.14	5.96
			mm	222.25	141.22	141.73		
VW-600L	6.00"	150	in	10.25	6.63	6.09	18.94	8.59
			mm	260.35	168.40	154.69		
VW-800L	8.00"	200	in	12.50	8.63	7.05	29.70	13.47
			mm	317.50	219.20	179.07		
VW-1000L	10.00"	250	in	13.50	10.75	8.11	45.50	20.63
			mm	342.90	273.05	206.00		
VW-1200L	12.00"	300	in	12.00	12.75	7.63	54.00	24.49
			mm	304.80	323.85	193.80		
VW-1400L	14.00"	355	in	19.00	14.00	8.25	72.30	32.79
			mm	482.60	355.60	209.55		
VW-1600L	16.00"	406	in	26.00	16.00	9.25	144.00	65.31
			mm	660.40	406.40	234.95		

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

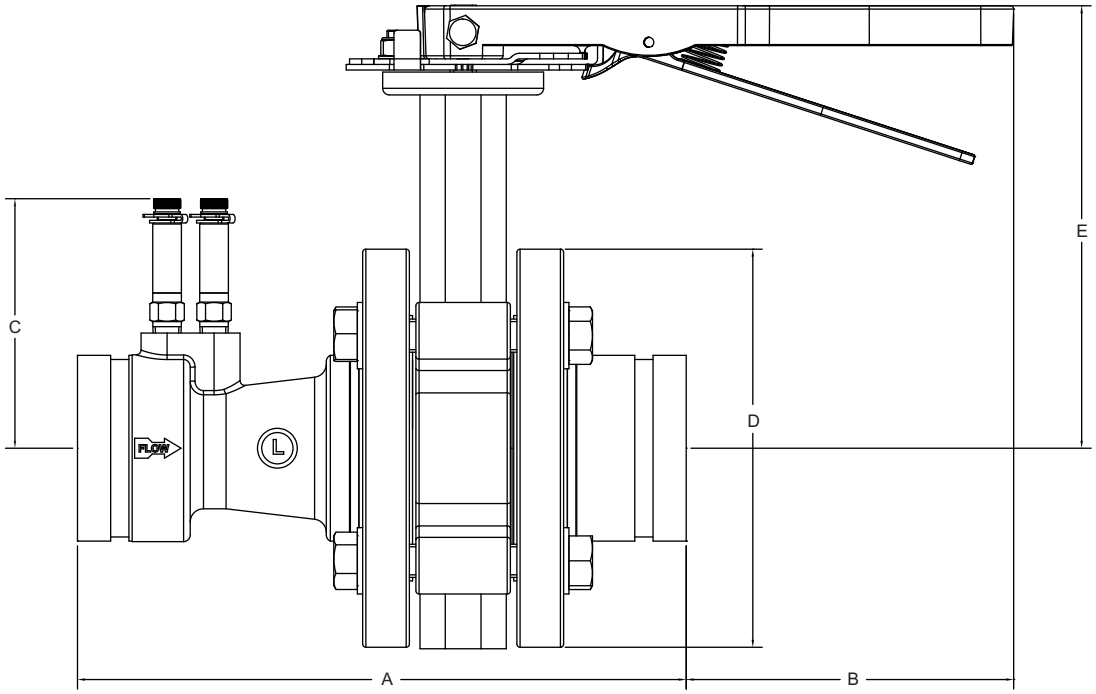
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model MG
Submittal Data

2.50” – 6.00" MG Manual Balancing Valve

(Model MBF With Groove x Flange Adaptors)



NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE			A	B	C	D	E	WEIGHT	
	in	mm							lbs	kg
MG-250L	2.50"	63	in	10.87	6.22	4.36	7.00	8.10	23.5	10.66
			mm	276.10	157.99	110.74	177.80	205.74		
MG-300L	3.00"	76	in	11.47	6.17	4.70	7.50	8.34	28.4	12.88
			mm	291.34	156.72	119.38	190.50	211.84		
MG-400L	4.00"	101	in	13.62	5.91	5.18	9.00	9.09	43	19.50
			mm	345.95	150.11	131.57	228.60	230.89		
MG-500L	5.00"	127	in	14.64	5.97	5.69	10.00	9.60	73	33.11
			mm	371.86	151.64	144.53	254.00	243.84		
MG-600L	6.00"	152	in	17.05	5.21	6.20	11.00	10.11	89.9	40.78
			mm	433.07	132.33	157.48	279.40	256.79		

Optional features and accessories available
for this Macon product are an extra charge,
and not included in the standard model price.

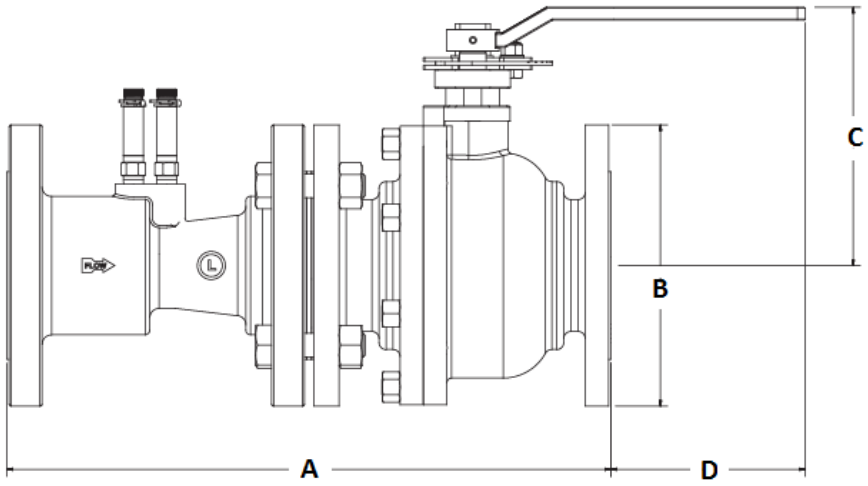
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

Model MP
Submittal Data

2.5" – 6.0" MP

Macon's MP Manual Balancing Valve features a cast steel venture flow element. The precisioned machined throat provides measurement accuracy of ± 3% of flow rate. Mounted on the discharge is a cast steel ball valve with adjustable flow positioning plate.
ANSI 150 flanged end connections.
Dual extended length Pressure / Temperature Ports, and Hanging I.D. Tag

PART	MATERIALS
Venturi	Carbon Steel ASTM A-120
End Conn.	ANSI Class 150# Flanged *Optional ANSI Class 300# Flanged*
Metering Ports	Extended Length Pressure/Temperature
RATINGS	Pressures to 240 PSIG (1654 kPa) Temperature to 250°F (107°C)
ACCURACY	±3% of flow rate
Available Options	"PTV" Combination PT and Air Vent



NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE			A	B	C	D	Wgt	
	in	mm						lbs	kg
MP-250L	2.50"	65	in	14.61	7	6.1	6.5	49.5	22.5
			mm	371	180	155	165		
MP-300L	3.00"	75	in	16.12	7.5	7.4	6	54.9	24.9
			mm	409.4	190	188	153		
MP-400L	4.00"	100	in	18.64	9	8.1	7.8	99.5	45.1
			mm	473.5	230	206	198		
MP-500L	5.00"	125	in	25.14	10	10.0	18	146	66.2
			mm	638.6	255	254	457		
MP-600L	6.00"	150	in	28.14	11	11.0	17.5	197.8	89.7
			mm	714.7	280	280	445		

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON BALANCING

Manual Balancing Flow Chart

Submittal Data

Model MBF / MF – MBG / MG – MP – VF – VG – VW 2.50" – 6.00"

Differential Pressure : Inches W.C

	Models						Models		
Flow GPM	250L	300L	400L	500L	600L	**Flow GPM**	400L	500L	600L
24.0	**10**					300.0	123	**32**	**18**
26.0	**12**					325.0	144	**38**	**21**
28.0	**14**					350.0	167	**44**	**24**
30.0	**16**					375.0	191	**50**	**28**
32.0	**18**					400.0		**57**	**32**
34.0	**20**					425.0		**64**	**36**
36.0	**22**					450.0		**72**	**40**
38.0	**25**					475.0		**80**	**45**
40.0	**28**					500.0		**89**	**50**
42.0	**31**					525.0		**98**	**55**
44.0	**34**	8				550.0		108	**60**
46.0	**37**	9				575.0		118	**66**
48.0	**40**	**10**				600.0		128	**71**
50.0	**43**	**11**	3			625.0		139	**78**
55.0	**52**	**13**	4			650.0		150	**84**
60.0	**62**	**15**	5			675.0		162	**90**
65.0	**73**	**18**	6			700.0		175	**97**
70.0	**85**	**21**	7			725.0		187	104
75.0	**97**	**24**	8			750.0		200	112
80.0	111	**27**	9			775.0			119
85.0	125	**31**	**10**			800.0			127
90.0	140	**35**	**11**			825.0			135
95.0	156	**39**	**12**			850.0			143
100.0	173	**43**	**14**			900.0			161
110.0		**52**	**16**	4		925.0			170
120.0		**62**	**20**	8		950.0			179
130.0		**72**	**23**	6		975.0			189
140.0		**84**	**27**	7		1000.0			199
150.0		**96**	**31**	8		1100.0			
160.0		109	**35**	9		1200.0			
170.0		124	**39**	**10**		1300.0			
180.0		138	**44**	**12**	6	1400.0			
190.0		154	**49**	**13**	7	1500.0			
200.0		171	**54**	**14**	8				
220.0			**66**	**17**	**10**				
240.0			**78**	**21**	**11**				
260.0			**92**	**24**	**13**				
280.0			107	**28**	**16**				
Size	2.50"	3.0"	4.0"	5.0"	6.0"		4.0"	5.0"	6.0"
FF	7.600	15.297	27.104	52.986	70.972		27.104	52.986	70.972

Flow Formulas

GPM = FF x (ΔDP)

DP = (GPM/FF)^2

RPL = DP*0.12

Notes

1.) Accuracy ± 3% of flow rate
2.) Repeatability ± 0.25% of rate
3.) Values in **BOLD** type represents traditional 10" to 100" sizing range
4.) All valves will function above and below ranges shown. Pressure drop and readability should be taken into account.

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model MBF/MF - MBG/MG 8.00" – 12.00" / VF – VG – VW 8.00" – 16.00"

Differential Pressure: Inches W.C

Flow GPM	Models 800L	Models 1000L
400.0	**10**	
425.0	**12**	
450.0	**13**	
475.0	**15**	
500.0	**16**	
525.0	**18**	
550.0	**20**	**10**
575.0	**21**	**11**
600.0	**23**	**12**
625.0	**25**	**13**
650.0	**27**	**14**
675.0	**29**	**15**
700.0	**32**	**16**
725.0	**34**	**17**
750.0	**36**	**18**
775.0	**39**	**20**
800.0	**41**	**21**
825.0	**44**	**22**
850.0	**47**	**24**
875.0	**50**	**25**
900.0	**52**	**27**
925.0	**55**	**28**
950.0	**58**	**30**
975.0	**62**	**31**
1000.0	**65**	**33**
1100.0	**78**	**40**
1200.0	**93**	**47**
1300.0	**109**	**55**
1400.0	**127**	**64**
1500.0	**146**	**74**
1600.0	**166**	**84**
1700.0	**187**	**95**
1800.0	**210**	106
1900.0		118
2000.0		131
2200.0		159
2400.0		189
Size	8"	10"
FF	130.61	192.54

Flow GPM	Models 1200L	Models 1400L	Models 1600L
1000.0	7		
1100.0	9		
1200.0	**10**		
1300.0	**12**	**7**	
1400.0	**14**	**8**	
1500.0	**16**	**9**	
1600.0	**19**	**11**	
1700.0	**21**	**12**	
1800.0	**23**	**13**	
1900.0	**26**	**15**	**8**
2000.0	**29**	**17**	**9**
2200.0	**35**	**20**	**11**
2400.0	**42**	**24**	**13**
2600.0	**49**	**28**	**16**
2800.0	**57**	**33**	**18**
3000.0	**65**	**37**	**21**
3200.0	**74**	**43**	**24**
3400.0	**84**	**48**	**27**
3600.0	**94**	**54**	**30**
3800.0	105	**60**	**34**
4000.0	116	**67**	**37**
4200.0	128	**73**	**41**
4400.0	140	**81**	**45**
4500.0		**84**	**47**
4600.0		**88**	**49**
4700.0		92	**51**
4800.0		96	**54**
5000.0		104	**58**
5200.0			**63**
5400.0			**68**
5600.0			**73**
5800.0			**78**
6000.0			**84**
6400.0			95
6800.0			108
Size	12"	14"	16"
FF	371.4	490.29	655.0

Flow Formulas

GPM = FF x (?DP)

DP = (GPM/FF²)

PPL= DP*0.12

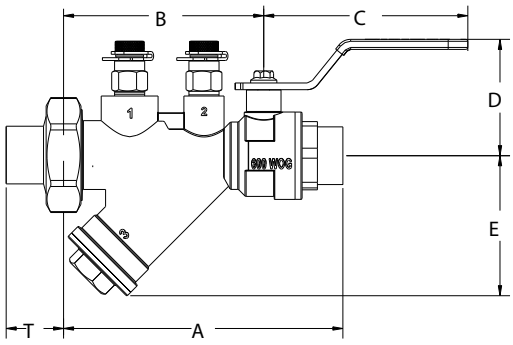
Notes:

1) Accuracy ± 3% of flow rate
2) Repeatability +/- 0.25% of rate
3) Values in **BOLD** type represents traditional 10" to 100" sizing range
4) All valves will function above and below ranges shown. Pressure drop and readability should be taken into account.

MACON® BALANCING

Model AB
Submittal Data

Model AB Automatic Balancing Valve is a combination ball valve, automatic flow control device and union. The removable flow cartridge is factory set to automatically limit the GPM to within +5% of the specified flow. The ball valve has a chrome plated ball, Teflon seats and a blowout proof stem with double EPDM O-ring seals. The union has an EPDM O-ring seal and tailpiece available in MNPT, FNPT, and SWT end connections. Standard features include Memory Stop and Dual Pressure / Temperature Ports.



SPECIFICATIONS

Pressure Ratings:	600 PSI (4140 kPa)
Temperature Ratings:	250˚F (120˚C)
Body Material:	Forged Brass
End Connections:	Brass – Fixed End:SWT, FNPT; Union End: SWT, FNPT,& MNPT
Flow Cartridge: 1/2" thru 1-1/2"	Ultrason® Composite
2"	Stainless Steel
Accuracy:	± 5% of flow rate
Seals:	EPDM
Ball:	Chrome Plated Brass, full port, 100% positive shut-off. *Optional 316 Stainless Steel.*
Stem:	Brass. *Optional 316 Stainless Steel.*
Handle:	Full size Zinc Plated lever with Vinyl Grip
Available Options:	"PTV" combination PT & air vent, hose end drain,valve, & extensions

NOMINAL DIMENSIONS & WEIGHTS

SIZE			A		B	C	D	E	*T	Wgt	GPM SETTINGS
in	mm		FNPT	SWT					SWT	lbs	2-32 PSID
1/2"	15	in	4.96	4.95	3.67	3.66	2.08	2.15	0.83	2.09	0.35, 0.5, 0.75, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0
		mm	126	125.7	93.23	92.96	52.83	54.61	21.08		
3/4"	20	in	4.97	5.09	3.67	3.66	2.08	2.15	0.98	2.09	
		mm	126.24	129.29	93.23	92.96	52.83	54.61	24.89		
1" R	25	in	5.11	5.25	3.67	3.66	2.08	2.15	0.92	5.05	
		mm	129.79	133.35	93.23	92.96	52.83	54.61	23.37		
1" H	25	in	6.98	7.18	5.38	5.03	2.44	3.61	1.41	5.05	5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0
		mm	177.29	182.37	136.65	127.76	61.98	91.69	35.81		
1-1/4"	32	in	7.06	7.24	5.38	5.03	2.44	3.61	1.43	5.17	5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0
		mm	179.32	183.90	136.65	127.76	61.98	91.69	36.32		
1-1/2" R	40	in	7.06	7.37	5.38	5.03	2.44	3.61	1.17	5.17	
		mm	179.32	187.2	136.65	127.76	61.98	91.69	29.72		
1-1/2" H	40	in	9.59	9.91	7.44	5.66	2.83	3.91	1.17	8.63	5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 22.0, 24.0, 26.0, 28.0, 30.0
		mm	249.6	251.7	189.0	143.6	71.9	99.5	29.72		
2"	50	in	9.56	10.35	7.44	5.65	2.83	3.92	1.5	8.65	20.0, 22.0, 24.0, 26.0, 28.0, 30.0, 32.0, 34.0, 36.0, 38.0, 40.0, 42.0, 44.0, 45.0, 48.0, 50.0
		mm	242.82	262.89	188.98	143.51	71.88	99.57	38.1		

5-60 PSID
52.0, 54.0, 56.0, 58.0, 60.0, 62.0, 64.0, 66.0, 68.0, 70.0

* Please reference the tailpiece data sheet for other sizes and connections.
Dimensions not for construction purposes unless certified by factory

STANDARD COMPONENTS

Pressure/Temperature test port with brass body, dual durometer EPDM core, brass cap with O-ring seal and neoprene retainer strap. Accepts standard 1/8" (4mm) gauge adapter or thermometer stem. Rated to 500 PSI (3450 kPa) and 275˚F (135˚C).

Memor y stop with position indicat or, zinc coated steel.

Please reference data sheet (Form #M-TP) for optional accessories.

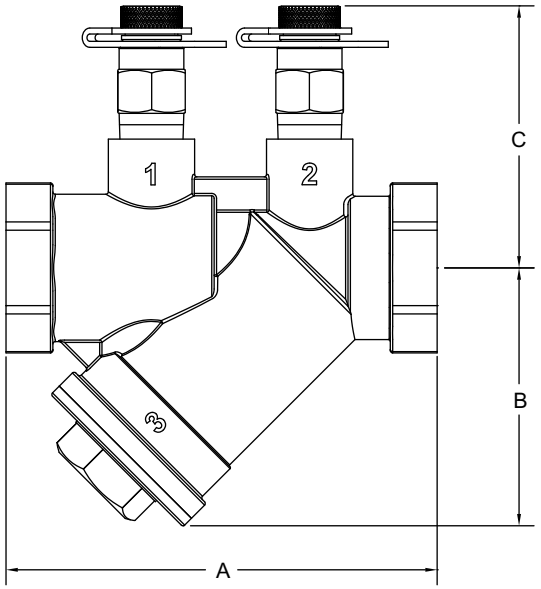
Optional features and accessories available
for this Macon product are an extra charge,
and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

Model AR
Submittal Data

0.50” - 1.00” AR Automatic Balancing Valve

Macon’s AR is an automatic flowcontrol device. The removable flow cartridge is factory set to automatically limit the GPM to within ± 5% of the specified flow.
Standard features include EPDM O-rings and seals, FNPT end connections and Dual Pressure / Temperature Ports.

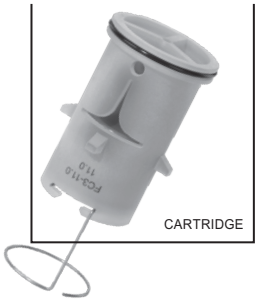


SPECIFICATIONS

Pressure Ratings:	400 PSI (2758 kPa)
Temperature Ratings:	250˚F (120˚C)
Body Material:	DZR Brass
End Connections:	FNPT, Inlet and Outlet
Flow Cartridge: 1/2” thru 1”	Ultrason® Composite
Accuracy:	± 5% of flow rate
Seals:	EPDM
Available Options:	“PTV” Combination PT & Air Vent

NOMINAL DIMENSIONS & WEIGHTS

SIZE			A	B	C	Weight		GPM SETTINGS 2-32 PSID
in	mm					lbs	kg	
1/2”	15	in	3.43	2.15	2.19	0.98	0.44	0.35, 0.5, 0.75, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0
		mm	87.10	54.60	55.60			
3/4”	20	in	3.60	2.15	2.19	1.04	0.47	
		mm	91.40	54.60	55.60			
1”	25	in	3.92	2.15	2.19	1.20	0.54	
		mm	99.60	54.60	55.60			



* Dimensions not for construction purposes unless certified by factory

STANDARD COMPONENTS

Pressure/Temperature test port with brass body, dual durometer EPDM core, brass cap with O-ring seal and neoprene retainer strap. Accepts standard 1/8” (4mm) gauge adapter or thermometer stem. Rated to 500 PSI (3450 kPa) and 275˚F (135˚C).

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

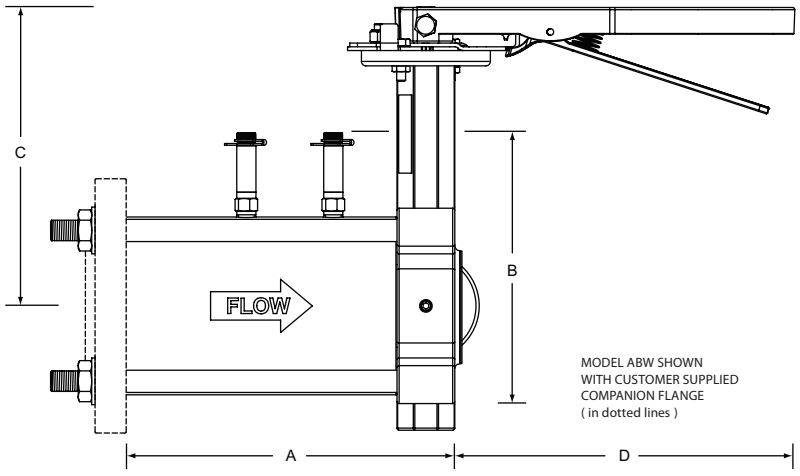
MACON® BALANCING

Model ABW
Submittal Data

Macon's ABW Automatic Balancing Valve incorporates a wafer style ductile iron body and lug type butterfly valve with adjustable flow positioning plate. The removeable flow cartridge(s) is factory set to automatically limit the GPM to within ± 5% of the specified flow. Shipped with Rods and Nuts for use with customer supplied companion flange. Standard features include Dual Extended Pressure / Temperature Ports.

SPECIFICATIONS

PART	MATERIALS
Body (Wafer)	Ductile Iron
Cartridge(s)	Stainless Steel Wear Surfaces with Stainless Steel Springs
Butterfly Valve	Ductile Iron A536 65-45-12
Disc	Aluminum Bronze B148 C954
Stem	Stainless Steel 416 A582
Seat	EPDM with Phenolic Backing
Bushing	Teflon/Fiberglass Backed
Seal	EPDM
End Conn.	ANSI Class 125/150# Flanged
RATINGS	Pressures to 200 PSIG (1380 kPa)
	Temperatures to 250°F (107°C)
ACCURACY	± 5% of flow rate
Available Options	"PTV"Combination PT & Air Vent



NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE			A	B	C	D	WEIGHT		Max.No. Cartrides	Maximum gpm *(lps)* Control Range psi (kPA)	
	in	mm						lbs	kg		2-32 (14-221)	5-60 (34-414)
ABW-250	2.50"	65	in	7.50	7.00	7.20	9.00	23.0	13.5	1	80 (5.0)	120 (7.6)
			mm	190	180	185	230					
ABW-300	3.00"	80	in	10.60	7.50	7.60	9.00	34.0	18.0	1	135 (8.5)	170 (10.7)
			mm	255	190	195	230					
ABW-400	4.00"	100	in	11.70	9.00	8.40	9.00	53.0	29.9	2	270 (17.0)	340 (21.4)
			mm	295	230	215	230					
ABW-500	5.00"	125	in	12.30	10.00	8.90	9.00	86.0	39.2	3	405 (25.5)	510 (32.1)
			mm	315	255	225	230					
ABW-600	6.00"	150	in	12.40	11.00	9.60	9.00	103.0	46.7	4	540 (34.0)	680 (42.8)
			mm	315	280	245	230					
ABW-800	8.00"	200	in	13.40	13.50	10.80	5.00	151.0	68.6	7	945 (59.5)	1190 (75.0)
			mm	340	345	275	130					

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

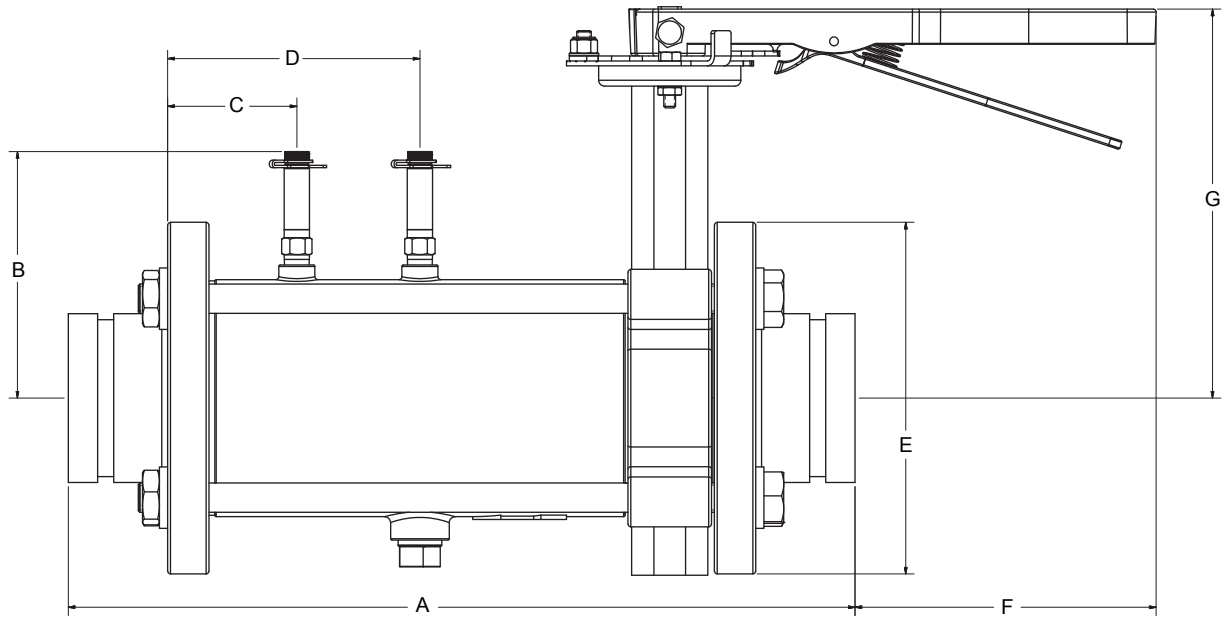
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model ABG
Submittal Data

2.50”- 6.00" ABG AUTOMATIC BALANCING VALVE WITH BUTTERFLY VALVE

(Model ABW with Groove x Flange Adaptors)



NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE			A	B	C	D	E	F	G	WEIGHT		Max.No. Cartrides	Maximum gpm (lps) Control Range psi (kPA)	
	in	mm									lbs	kg		2-32 (14-221)	5-60 (34-414)
ABG-250	2.50"	65	in	13.88	4.58	2.19	4.29	7.00	6.13	8.13	33.48	15.19	1	80 (5.0)	120 (7.6)
			mm	523.62	116.33	54.50	108.97	177.80	155.70	206.50					
ABG-300	3.00"	80	in	16.79	5.26	2.75	5.38	7.50	6.13	8.38	43.43	19.70	1	135 (8.5)	170 (10.7)
			mm	426.47	133.60	69.72	136.65	190.50	155.70	212.85					
ABG-400	4.00"	100	in	17.87	6.22	3.39	7.46	9.00	6.00	9.13	68.45	31.05	2	270 (17.0)	340 (21.4)
			mm	453.90	158.00	85.99	189.36	228.60	152.40	213.90					
ABG-500	5.00"	125	in	18.77	6.61	3.45	7.04	10.00	5.00	9.63	81.30	36.88	3	405 (25.5)	510 (32.1)
			mm	476.76	167.90	87.50	178.69	254.00	127.00	244.60					
ABG-600	6.00"	150	in	20.62	7.05	3.22	7.18	11.00	4.88	10.13	101.12	45.87	4	540 (34.0)	680 (42.8)
			mm	523.75	179.10	81.66	182.25	279.40	123.95	257.30					

Optional features and accessories available
for this Macon product are an extra charge,
and not included in the standard model price.

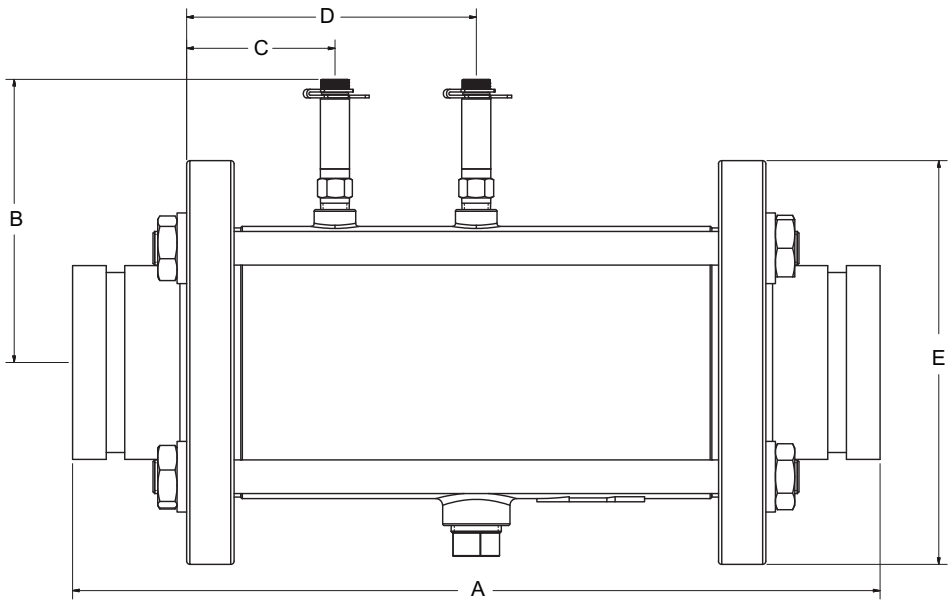
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model AG
Submittal Data

2.50” - 6.00” AG AUTOMATIC BALANCING VALVE

(AW With Groove x Flange Adaptors)



NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE			A	B	C	D	E	WEIGHT		Max.No. Cartrides	Maximum gpm (lps) Control Range psi (kPA)	
	in	mm							lbs	kg		2-32 (14-221)	5-60 (34-414)
AG-250	2.50"	65	in	12.07	4.58	2.19	4.29	7.00	24.00	10.89	1	80 (5.0)	120 (7.6)
			mm	306.58	116.33	54.50	108.97	177.80					
AG-300	3.00"	80	in	15.00	5.26	2.75	5.38	7.50	32.84	14.90	1	135 (8.5)	170 (10.7)
			mm	381.00	133.60	69.72	136.65	190.50					
AG-400	4.00"	100	in	15.81	6.22	3.39	7.46	9.00	51.26	23.25	2	270 (17.0)	340 (21.4)
			mm	401.57	158.00	85.99	189.36	228.60					
AG-500	5.00"	125	in	18.25	6.61	3.45	7.04	10.00	58.59	26.58	3	405 (25.5)	510 (32.1)
			mm	463.55	167.90	87.50	178.69	254.00					
AG-600	6.00"	150	in	18.41	7.05	3.22	7.18	11.00	74.00	33.57	4	540 (34.0)	680 (42.8)
			mm	467.61	179.10	81.66	182.25	279.40					

Optional features and accessories available
for this Macon product are an extra charge,
and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

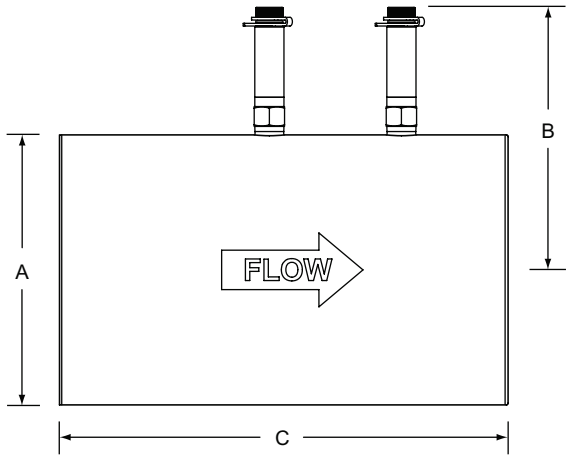
MACON® BALANCING

Model AW
Submittal Data

Macon's AW Automatic Balancing Valve incorporates a wafer style ductile iron body. The removeable flow cartridge(s) is factory set to automatically limit the GPM to within ± 5% of the specified flow. Shipped with Rods and Nuts for use with customer supplied companion flange. Standard features include Dual Extended Pressure / Temperature Ports.

SPECIFICATIONS

PART	MATERIALS
Body	Ductile Iron
End Conn.	Wafer Style
Cartridge	Stainless Steel Wear Surfaces with Stainless Steel Springs
RATINGS	Pressures to 600 PSIG (4140 kPa) Temperatures to 250°F (120°C)
ACCURACY	± 5% of flow rate
Available Options	"PTV"Combination PT and Air Vent



NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE			A	B	C	WEIGHT		Max.No. Cartrides	Maximum gpm (lps) Control Range psi (kPA)	
	in	mm					lbs	kg		2-32 (14-221)	5-60 (34-414)
AW-250	2.50"	65	in	4.30	4.80	5.82	13.0	5.9	1	80 (5.0)	120 (7.6)
			mm	109	122	148					
AW-300	3.00"	80	in	5.00	5.15	8.78	22.0	10.0	1	135 (8.5)	170 (10.7)
			mm	127	131	223					
AW-400	4.00"	100	in	6.80	6.00	9.60	35.0	15.9	2	270 (17.0)	340 (21.4)
			mm	173	152	244					
AW-500	5.00"	125	in	7.60	6.50	10.00	56.0	25.4	3	405 (25.5)	510 (32.1)
			mm	193	165	254					
AW-600	6.00"	150	in	8.50	6.80	10.16	67.0	30.4	4	540 (34.0)	680 (42.8)
			mm	216	173	258					
AW-800	8.00"	200	in	11.00	8.00	11.00	81.0	36.7	7	945 (59.5)	1190 (75.0)
			mm	279	203	279					
AW-1000	10.00"	250	in	13.30	9.30	11.00	121.0	54.9	11	1485 (93.6)	1870 (118.0)
			mm	338	236	279					
AW-1200	12.00"	300	in	15.90	10.60	11.00	157.0	71.2	15	2025 (128.0)	2550 (161.0)
			mm	404	269	279					

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model BFV
Submittal Data

PART	MATERIALS
Body	Ductile Iron ASTM A 536 65-45-12
Disc	Aluminum Bronze ASTM B 148 C 95400
Shaft	Stainless Steel 416 ASTM A582
Seat	EPDM
Bushing	Teflon
Seal	EPDM
Pin	Stainless Steel
RATINGS	Pressures to 200 PSIG (13.89 BAR) Temperatures to 250° F (107° C)

Macon's BFV Butterfly Valves are Lug Type. The heavy duty one piece body is designed to be installed between all types of ANSI 125 / 150 flanges. Resilient seat provides bubble tight shut off. Blowout proof stem with pinned disc. Universal mounting flange conforms to ISO-5211. The 2.5" through 6.0" sizes are supplied with an adjustable flow positioning plate. This unique design provides quick and easy setting of the valve flow position, requires less hardware, will not slip and allows the valve to be easily moved to the closed or full open position without disturbing the flow positioning set point. The 8.0" through 12.0" size Butterfly Valves feature a gear operator.

PERFORMANCE

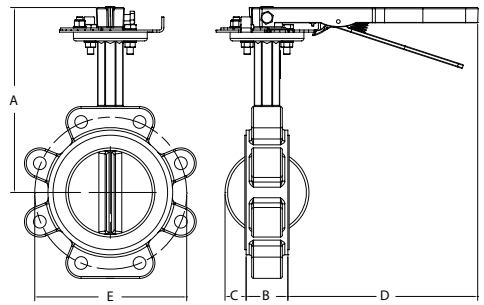
Cv VALUES(GPM@1PSID) - DISC POSITION (DEGREES)

MODEL	SIZE	10°	20°	30°	40°	50°	60°	70°	80°	90°
BFV-250	2.5" 65mm	0.2	8	20	37	65	98	144	204	220
BFV-300	3.0" 80mm	0.3	12	22	39	70	116	183	275	302
BFV-400	4.0" 100mm	0.5	17	36	78	139	230	364	546	600
BFV-500	5.0" 125mm	0.8	29	61	133	237	392	620	930	1022
BFV-600	6.0" 150mm	2	45	95	205	36 6	605	958	1437	1579
BFV-800	8.0" 200mm	3	89	188	408	727	1202	1903	2854	3136
BFV-1000	10.0" 250mm	4	151	320	694	1237	2047	3240	4859	5340
BFV-1200	12.0" 300mm	5	234	495	1072	1911	3162	5005	7507	8250

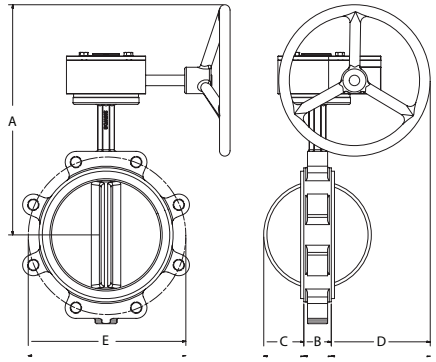
DIMENSION / WEIGHT

MODEL	SIZE	A		B		C		D		E		VALVE WEIGHT (lbs)
		in	mm	in	mm	in	mm	in	mm	in	mm	
BFV-250	2.5" 65mm	8.15	207	1.93	49.1	0.30	7.6	9.39	238.5	5.50	139.7	9.5
BFV-300	3.0" 80mm	8.39	213	1.90	48.4	0.60	15.2	9.41	239	6.00	152.4	10.6
BFV-400	4.0" 100mm	9.13	232	2.17	55.3	0.96	24.35	9.27	235.5	7.50	190.5	17.2
BFV-500	5.0" 125mm	9.65	245	2.31	58.8	1.27	32.25	9.20	233.7	8.50	215.9	22.7
BFV-600	6.0" 150mm	10.16	258	2.32	59.1	1.90	48.3	9.20	233.7	9.50	241.3	27.1
BFV-800	8.0" 200mm	17.44	443	2.38	60.5	2.79	70.92	7.00	177.7	11.75	298.4	57.5
BFV-1000	10.0" 250mm	18.70	475	2.67	68.0	3.59	91.21	6.85	174	14.25	361.9	84.0
BFV-1200	12.0" 300mm	20.59	523	3.02	76.9	4.42	112.3	7.42	188.55	17.00	431.8	135.8

2.5 " – 6. 0" BUTTERFLY VALVES



8.0 " – 12. 0" BUTTERFLY VALVES



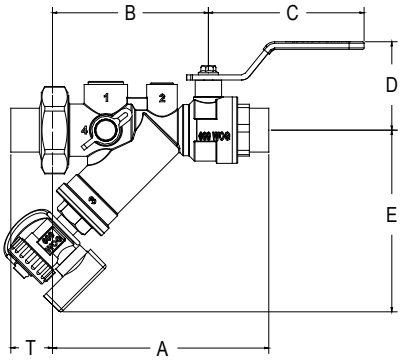
Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

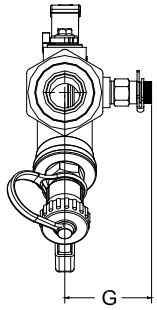
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model SV
Submittal Data

Model SV is a combination ball valve, wye strainer, and union. The 20 mesh stainless steel strainer is removable for cleaning and inspection. The ball valve has a chrome plated ball with Teflon seats, blowout proof stem with double EPDM O-ring seals. The union has an EPDM O-ring seal and tailpiece available in MNPT, FNPT, and SWT end connections. Standard features include Pressure/Temperature Port, Hose End Drain Valve and plugged Bypass port.





SPECIFICATIONS

Pressure Ratings:	600 PSI (4140 kPa)
Temperature Ratings:	250F (120C)
Body Material:	Forged Brass
End Connections:	Brass - Fixed End: SWT, FNPT; Union End: SWT, FNPT, & MNPT
Seals:	EPDM
Ball:	Chrome Plated Brass, full port, 100% positive shut-off. *Optional 316 Stainless Steel.*
Stem:	Brass. *Optional 316 Stainless Steel.*
Handle:	Full size Zinc Plated lever with Vinyl Grip
Available Options:	"PTV" combination PT & air vent, automatic air vent, handle and PT extensions.

NOMINAL DIMENSIONS & WEIGHTS

Size			A		B	C	D	E	G	*T	Bypass	Wgt	
in	mm		FNPT	SWT						SWT	Port	lbs	kg
1/2"	15	in	4.16	4.25	3.00	3.66	1.98	3.41	1.83	0.83	1/2"	1.80	0.82
		mm	105.56	107.95	76.20	93.96	50.29	86.48	46.45	21.08			
3/4" R	20	in	4.30	4.37	3.00	3.66	1.98	3.41	1.83	0.98	1/2"	1.81	0.82
		mm	109.25	111.05	76.20	92.96	50.29	86.48	46.45	24.89			
3/4"	20	in	4.97	5.09	3.67	3.66	2.08	3.88	2.06	0.98	1/2"	2.45	1.11
		mm	126.24	129.21	93.22	92.96	52.74	98.55	52.34	24.89			
1" R	25	in	5.11	5.25	3.67	3.66	2.08	3.88	2.06	0.92	1/2"	2.46	1.12
		mm	129.79	133.35	93.22	92.96	52.74	98.55	52.34	23.37			
1-1/4"	32	in	6.63	6.80	4.94	5.03	2.44	5.62	2.43	1.43	3/4"	5.41	2.45
		mm	168.30	172.72	125.48	127.76	61.90	142.98	61.74	36.32			
1-1/2" R	40	in	6.63	6.93	4.94	5.03	2.44	5.62	2.43	1.17	3/4"	5.25	2.38
		mm	168.30	176.02	125.43	127.76	61.90	142.98	61.74	29.77			
2" R	50	in	9.56	10.35	7.44	5.66	2.83	5.31	2.74	1.50	1-1/4"	9.42	4.82
		mm	232.13	262.89	188.98	143.76	71.88	134.87	69.54	38.10			

* Please reference the tailpiece data sheet (Form #M-TP) for other sizes and connections.
Dimensions not for construction purposes unless certified by factory.

STANDARD COMPONENTS

Pressure/Temperature test port with brass body, dual durometer EPDM core, brass cap with O-ring seal and neoprene retainer strap. Accepts standard 1/8" (4mm) gauge adapter or thermometer stem. Rated to 500 PSI (3450 kPa) and 275°F (135°C).

Drain valve with forged brass body, chrome plated ball, Teflon seats, double EPDM O-ring stem seals, aluminum handle, ¾" hose connection with cap and plastic retainer strap. Rated to 600 PSI (4140 kPa) WOG and 250°F (120°C).

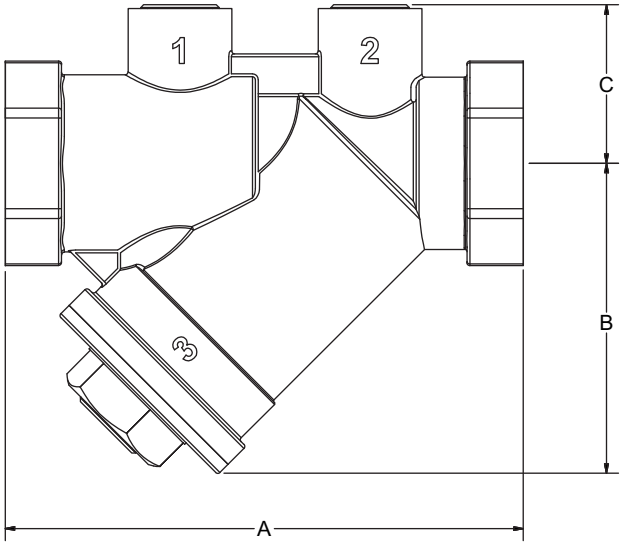
Please reference data sheet (Form #M-ACC) for optional accessories.

Optional features and accessories available
for this Macon product are an extra charge,
and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

Model ST
Submittal Data

Model ST is a wye strainer with dual 0.25" plugged accessory ports and FNPT end connections. The 20 mesh stainless steel stainer is removeable for cleaning and inspection.



SPECIFICATIONS

Pressure Ratings:	400 PSI (2758 kPa)
Temperature Ratings:	250°F (120°C)
Body Material:	DZR Brass
End Connections:	FNPT, Inlet and Outlet
Seals:	EPDM
Strainer:	20 Mesh Stainless Steel
Available Options:	"PT" Pessure/Temperature Port, "PTV" combination PT & air vent, automatic air vent, hose end drain valve and PT extensions.

NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE			A	B	C	WEIGHT	
	in	mm					lbs	kg
ST-050	0.50	15	in	3.43	2.15	1.10	0.98	0.44
			mm	87.10	54.60	27.90		
ST-075	0.75	20	in	3.60	2.15	1.10	1.04	0.47
			mm	91.40	54.60	27.90		
ST-100	1.00	25	in	3.92	2.15	1.10	1.20	0.54
			mm	99.60	54.60	27.90		

* Please reference the tailpiece data sheet (Form #M-TP) for other sizes and connections.
Dimensions not for construction purposes unless certified by factory.

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

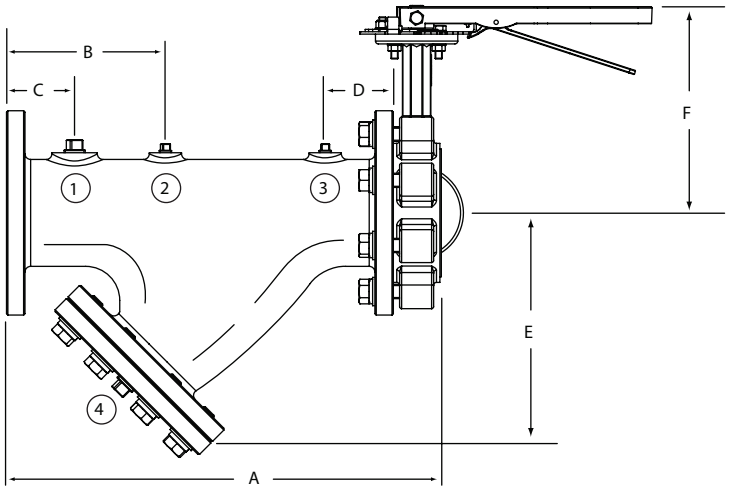
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model SVF
Submittal Data

PART	MATERIALS
Strainer Body	Cast Iron ASTM A 126 Class B
Screen	S/S Type 304, ASTM A 167
Screen Opening	2"– 6" 0.045 perf. 8"– 12" 0.125 perf.
Cover Gasket	Fiber
End Connections	Flanged ANSI 12 5# drilling
Butterfly Valve	Ductile Iron ASTM A 536 65-45-12
Disc	Aluminium Bronze ASTM B 148 C 95400
Stem	Stainless Steel 416 ASTM A582
Seat	EPDM
Bushing	Teflon Fiberglass Backed
Seal	EPDM
RATINGS	Pressures to 175 PSIG (2775 kP a) Temperatures to 250°F (107°C)
Available Options	"PT" Pressure/Temperature Port, "PTV" Combination PT and Air Vent and Drain Valve

Macon's SVF combination strainer valve features a cast iron wye strainer with removeable stainless steel strainer screen, bolted cover with blow down connection and ANSI 125# Flanged End Connections. Moutned on the inlet is a ductile iron Lug type Butterfly Valve. Strainer body features three threaded Accessory ports.



NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE in	SIZE mm		A	B	C	D	E	F	1 NPT	2 NPT	3 NPT	4 NPT	Wgt lbs
S VF-250	2.50"	65	in	13.18	5.00	3.00	3.00	7.60	8.15	0.75"	0.25"	0.25"	1.0"	49.0
			mm	334.77	127.00	76.20	76.20	193.00	207.00					
S VF-300	3.00"	75	in	14.40	6.00	3.00	3.00	8.30	8.39	0.75"	0.25"	0.25"	1.0"	58.0
			mm	365.76	152.40	76.20	76.20	210.80	213.00					
S VF-400	4.00"	100	in	17.04	7.00	3.00	3.00	10.10	9.13	0.75"	0.25"	0.25"	1.25"	91.0
			mm	432.82	177.80	76.20	76.20	256.50	232.00					
S VF-500	5.00"	125	in	20.25	9.00	3.50	3.50	11.90	9.65	0.75"	0.25"	0.25"	1.25"	145.0
			mm	514.35	228.60	88.90	88.90	302.30	245.00					
S VF-600	6.00"	150	in	22.69	10.00	4.00	4.00	17.40	10.16	0.75"	0.25"	0.25"	1.50"	179.0
			mm	576.33	254.00	101.60	101.60	442.00	258.00					
S VF-800	8.00"	200	in	26.39	12.00	4.00	4.00	17.40	13.50	0.75"	0.25"	0.25"	1.50"	328.0
			mm	670.31	304.80	101.60	101.60	441.96	343.00					
S VF-1000	10.00"	250	in	32.08	15.00	5.00	5.00	20.88	14.75	0.75"	0.25"	0.25"	2.0"	530.0
			mm	814.83	367.50	127.00	127.00	530.35	375.00					
S VF-1200	12.00"	300	in	36.78	17.00	5.00	5.00	23.31	16.50	0.75"	0.25"	0.25"	2.0"	714.0
			mm	934.21	431.80	127.00	127.00	592.00	419.00					

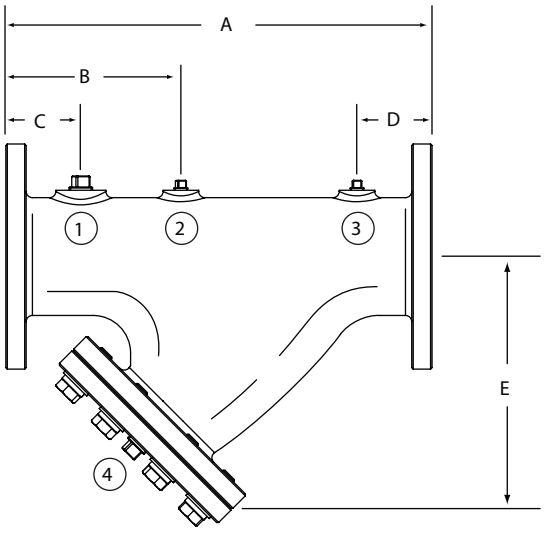
Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model SF
Submittal Data

Macon's SF Strainer features a cast iron wye strainer with removeable stainless steel strainer screen, bolted cover with blow down connection and ANSI 125# Flanged End Connections. Strainer body features three threaded Accessory Ports.



PART	MATERIALS
Strainer Body	Cast Iron ASTM A 126 Class B
Screen	S/S Type 304, ASTM A 167
Screen Opening	2"– 6" 0.045 perf. 8"– 12" 0.125 perf.
Cover Gasket	Fiber
End Connections	Flanged ANSI 12 5# drilling
RATINGS	Pressures to 175 PSIG (2775 kPa) Temperatures to 250°F (107°C)
Available Options	"PT" Pressure/Temperature Port, "PTV"Combination PT and Air Vent and Drain Valve

NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE in	SIZE mm		A	B	C	D	E	1 NPT	2 NPT	3 NPT	4 NPT	Wgt lbs
SF-200	2.00"	50	in	9.87	5.00	2.50	2.50	5.68	0.75"	0.25"	0.25"	0.50"	22.0
			mm	250.80	127.00	63.50	63.50	144.30					
SF-250	2.50"	65	in	11.25	5.00	3.00	3.00	7.60	0.75"	0.25"	0.25"	1.0"	36.0
			mm	285.80	127.00	76.20	76.20	193.00					
SF-300	3.00"	75	in	12.50	6.00	3.00	3.00	8.30	0.75"	0.25"	0.25"	1.0"	44.0
			mm	317.50	152.40	76.20	76.20	210.80					
SF-400	4.00"	100	in	14.87	7.00	3.00	3.00	10.10	0.75"	0.25"	0.25"	1.25"	68.0
			mm	377.80	177.80	76.20	76.20	256.50					
SF-500	5.00"	125	in	17.94	9.00	3.50	3.50	11.90	0.75"	0.25"	0.25"	1.25"	117.0
			mm	455.60	228.60	88.90	88.90	302.30					
SF-600	6.00"	150	in	20.37	10.00	4.00	4.00	17.40	0.75"	0.25"	0.25"	1.50"	147.0
			mm	517.50	254.00	101.60	101.60	442.00					
SF-800	8.00"	200	in	24.00	12.00	4.00	4.00	17.40	0.75"	0.25"	0.25"	1.50"	246.0
			mm	609.60	304.80	101.60	101.60	441.96					
SF-1000	10.00"	250	in	29.50	15.00	5.00	5.00	20.88	0.75"	0.25"	0.25"	2.0"	425.0
			mm	749.30	367.50	127.00	127.00	530.35					
SF-1200	12.00"	300	in	33.75	17.00	5.00	5.00	23.31	0.75"	0.25"	0.25"	2.0"	568.0
			mm	857.25	431.80	127.00	127.00	592.00					

Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

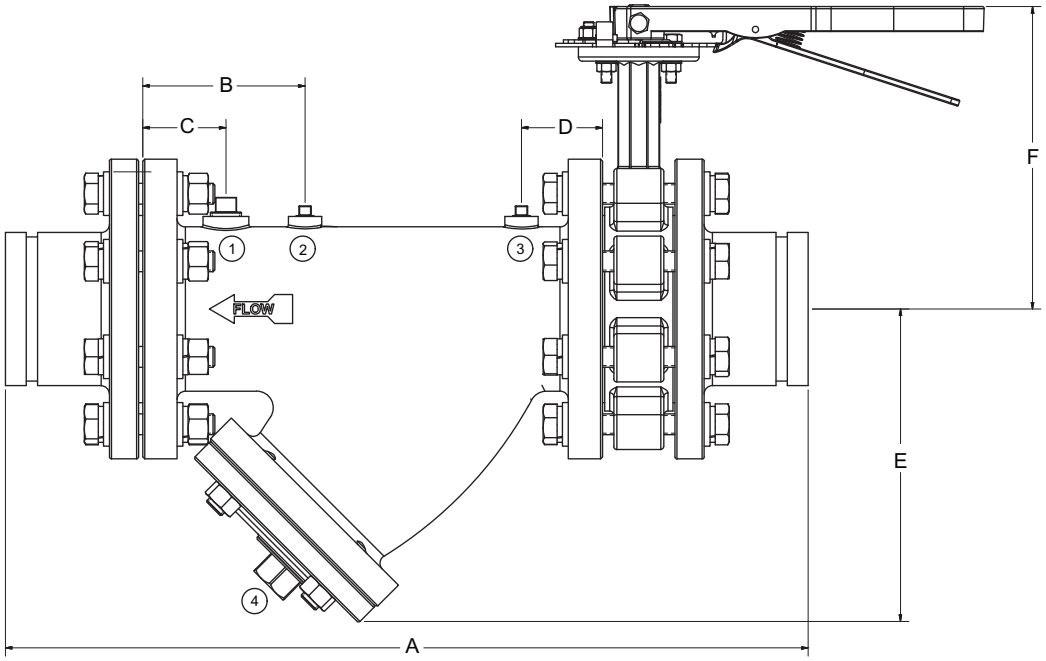
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model SG
Submittal Data

2.50" – 12.00" SG CAST IRON STRAINER & BUTTERFLY VALVE

(Model SVF With Groove x Flange Adaptors)



NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE			A	B	C	D	E	F	1	2	3	4	WEIGHT	
	in	mm								NPT	NPT	NPT	NPT	lbs	kg
SG-250	2.5"	65	in	18.96	5.00	3.00	3.00	7.60	8.15	0.75"	0.25"	0.25"	1.0"	65.6	29.8
			mm	481.58	127.00	76.20	76.20	193.00	207.00						
SG-300	3.0"	75	in	19.73	6.00	3.00	3.00	8.30	8.39	0.75"	0.25"	0.25"	1.0"	78.0	35.4
			mm	501.14	152.40	76.20	76.20	210.80	213.00						
SG-400	4.0"	100	in	22.09	7.00	3.00	3.00	10.10	9.13	0.75"	0.25"	0.25"	1.25"	118.6	57.8
			mm	561.08	177.80	76.20	76.20	256.50	232.00						
SG-500	5.0"	125	in	28.38	9.00	3.50	3.50	11.90	9.65	0.75"	0.25"	0.25"	1.25"	179.2	81.3
			mm	720.85	228.60	88.90	88.90	302.30	245.00						
SG-600	6.0"	150	in	30.82	10.00	4.00	4.00	17.40	10.16	0.75"	0.25"	0.25"	1.50"	221.2	100.3
			mm	782.83	254.00	101.60	101.60	442.00	258.00						
SG-800	8.0"	200	in	36.52	12.00	4.00	4.00	17.40	13.50	0.75"	0.25"	0.25"	1.50"	408.2	185.2
			mm	927.61	304.80	101.60	101.60	442.00	343.00						
SG-1000	10.0"	250	in	42.21	15.00	5.00	5.00	20.88	14.75	0.75"	0.25"	0.25"	2.00"	639.6	290.1
			mm	1072.14	367.50	127.00	127.00	530.35	375.00						
SG-1200	12.0"	300	in	48.91	17.00	5.00	5.00	23.31	16.50	0.75"	0.25"	0.25"	2.00"	884.6	401.3
			mm	1242.32	431.80	127.00	127.00	592.00	419.00						

Optional features and accessories available
for this Macon product are an extra charge,
and not included in the standard model price.

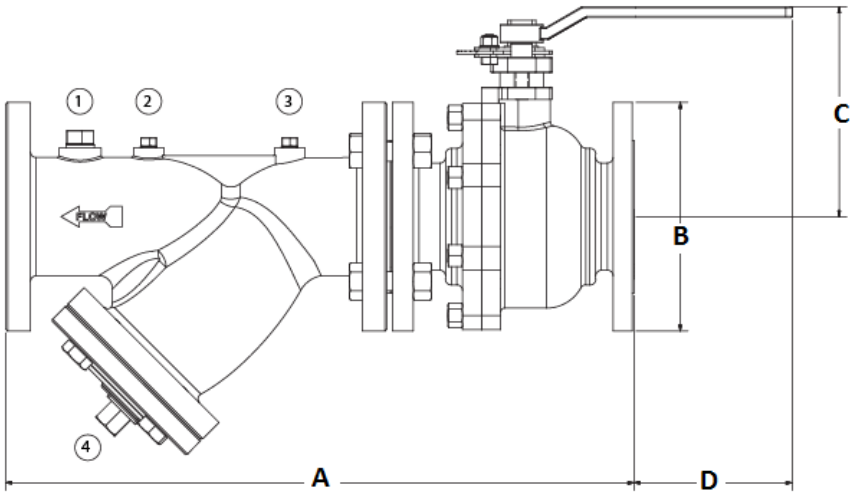
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

Model SP
Submittal Data

2.5” – 6.0” SP

Macon’s SP Combination Strainer Valve is a “Y” (wye) strainer with removable stainless steel strainer screen, bolted cover with blow down and ANSI 125# flanged end connections.
Mounted on the inlet is a cast steel Ball Valve with adjustable flow positioning plate.
Strainer body features three threaded Accessory Ports.

PART	MATERIALS
Strainer Body	2.5”- 4” Ductile Iron 5” & 6” Cast Iron ASTM A 126 Class B
Screen	S/S Type 304 ASTM A 167
Screen Opening	2.5”- 4” 0.045 perf.
Cover Gasket	Fiber
End Conn.	ANSI Class 125# Flanged
RATINGS	Pressures to 175 PSIG (2775 kPa) Temperatures to 250°F (107°C)
Available Options	“PT” Pressure/Temperature Port, “PTV” Combination PT and Air Vent and Drain Valve by others



NOMINAL DIMENSIONS & WEIGHTS

MODEL	SIZE in	SIZE mm		A	B	C	D	1 NPT	2 NPT	3 NPT	4 NPT	Wgt lbs	Wgt kg
SP-250L	2.50”	65	in	18.86	7	6.1	6.5	0.75”	0.25”	0.25”	1.00”	49.5	22.5
			mm	479	180	155	165						
SP-300L	3.00”	75	in	20.62	7.5	7.4	6	0.75”	0.25”	0.25”	1.00”	54.9	24.9
			mm	523.7	190	188	153						
SP-400L	4.00”	100	in	24.00	9	8.1	7.8	0.75”	0.25”	0.25”	1.00”	99.5	45.1
			mm	610	230	206	198						
SP-500L	5.00”	125	in	32.08	10	10.0	17	0.75”	0.25”	0.25”	1.00”	146	66.2
			mm	814.8	254	254	432						
SP-600L	6.00”	150	in	36.00	11	11.0	17.5	0.75”	0.25”	0.25”	1.00”	197.8	89.7
			mm	915	279	279	445						

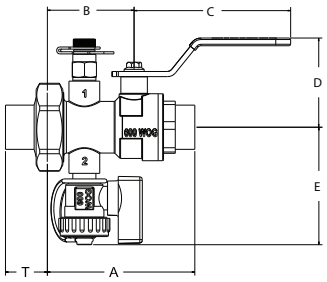
Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model SB
Submittal Data

Model SB Union End Ball Valve offers positive shut-off and pressure/temperature measurement. The ball valve has a chrome plated ball with Teflon seats, blowout proof stem with double EPDM O-ring seals. The union has an EPDM O-ring seal and tailpiece available in MNPT, FNPT and SWT end connections. Standard features include Pressure/Temperature Port and Hose End Drain Valve.



SPECIFICATIONS

Pressure Ratings:	600 PSI (4140 kPa)
Temperature Ratings:	250°F (120°C)
Body Material:	Forged Brass
End Connections:	Brass - Fixed End: SWT, FNPT; Union End: SWT, FNPT, & MNPT
Seals:	EPDM
Ball:	Chrome Plated Brass, full port, 100% positive shut-off. *Optional 316 Stainless Steel.*
Stem:	Brass. *Optional 316 Stainless Steel.*
Handle:	Full size Zinc Plated lever with Vinyl Grip
Available Options:	"PTV" combination PT & air vent, hose end drain valve, handle & port extensions.

NOMINAL DIMENSIONS & WEIGTHS

Size			A						*T	Wgt	
in	mm		FNPT	SWT	B	C	D	E	SWT	lbs	kg
1/2"	15	in	3.19	3.29	2.03	3.66	1.98	2.53	0.83	1.45	0.66
		mm	81.03	83.57	51.56	92.96	50.29	64.26	21.08		
3/4" R	20	in	3.34	3.41	2.03	3.66	1.98	2.53	0.98	1.45	0.66
		mm	84.84	86.61	51.56	92.96	50.29	64.26	24.89		
3/4"	20	in	3.33	3.45	2.03	3.66	2.08	2.74	0.98	1.73	0.78
		mm	84.58	87.63	51.56	92.96	52.83	69.60	24.89		
1" R	25	in	3.48	3.61	2.03	3.66	2.08	2.74	0.92	1.73	0.78
		mm	88.39	91.69	51.56	92.96	52.83	69.60	23.27		
1-1/4"	32	in	4.02	4.19	2.33	5.03	2.22	3.12	0.92	3.73	1.69
		mm	101.11	106.43	59.18	127.76	61.98	79.25	36.32		
1-1/2"	40	in	4.44	4.74	2.52	5.66	2.83	3.12	1.17	4.86	2.20
		mm	112.78	120.40	64.00	143.76	71.88	79.25	29.72		
2" R	50	in	5.03	5.82	2.90	5.66	2.83	3.51	1.50	5.72	2.60
		mm	127.76	148.83	73.66	143.76	71.88	89.15	38.10		

∗Please reference the tailpiece data sheet (Form #M-TP) for other sizes and connections.
Dimensions not for construction purposes unless certified by factory.

STANDARD COMPONENTS

Pressure/Temperature test port with brass body, dual durometer EPDM core, brass cap with o-ring seal and neoprene retainer strap. Accepts standard 1/8" (4mm) gauge adapter or thermometer stem. Rated to 500 PSI (3450 kPa) and 275°F (135°C).

Drain valve with forged brass body, chrome plated ball, Teflon seats, double EPDM O-ring stem seals, aluminum handle, ¾" hose connection wit cap and plastic retainer strap. Rated to 600 PSI (4140 kPa) WOG and 250°F (120°C).

Please reference data sheet (Form #M-ACC) for optional accessories.

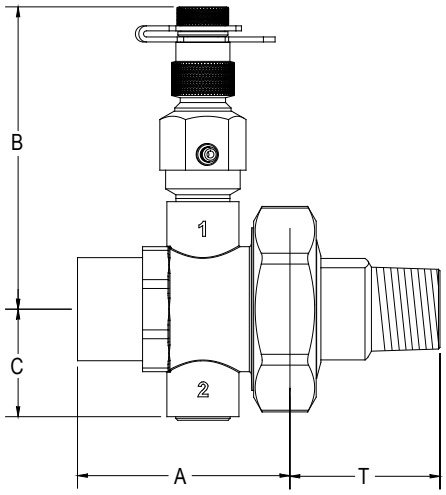
Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model URP
Submittal Data

Model URP Union offers numerous end connections, pressure/temperature measurement and vent.
The union has an EPDM O-ring seal and tailpiece available in MNPT, FNPT and SWT end connections. Standard features include "PTV" Combination PT and Air Vent.



SPECIFICATIONS

Pressure Ratings:	600 PSI (4140 kPa)
Temperature Ratings:	250 ˚F (120 ˚C)
Body Material:	Forged Brass
End Connections:	Brass - Fixed End: SWT, FNPT Union End: SWT, FNPT,& MNPT
Seals:	EPDM
Available Options:	Hose end drain valve, port extensions.

NOMINAL DIMENSIONS & WEIGHTS

Size			A		B	C	*T	Wgt	
in	mm		FNPT	SWT			MPT	lbs	kg
3/8"	10	in	N/A	1.88	2.78	0.87	N/A	0.76	0.35
		mm	N/A	47.68	70.61	22.10	N/A		
1/2"	15	in	1.99	1.88	2.78	0.87	1.50	0.86	0.39
		mm	50.47	47.68	70.25	22.10	38.10		
3/4"R	20	in	2.04	2.12	2.78	0.87	1.55	0.79	0.36
		mm	51.82	53.90	70.61	22.10	39.37		
3/4"	20	in	2.04	2.12	3.02	1.11	1.56	1.06	0.48
		mm	51.82	53.90	76.65	28.19	39.70		
1"	25	in	2.15	2.28	3.02	1.11	1.75	1.16	0.53
		mm	54.56	57.85	76.65	28.19	44.72		
1-1/4"	32	in	2.39	2.56	3.39	1.49	1.80	2.20	1.00
		mm	60.63	65.05	86.18	36.98	45.72		
1-1/2"	40	in	2.39	2.69	3.39	1.49	1.80	2.42	1.10
		mm	60.63	68.35	86.18	36.98	45.72		
2"	50	in	2.49	3.03	3.70	1.80	1.98	3.42	1.55
		mm	63.30	76.96	94.08	44.75	50.17		

* Please reference the tailpiece data sheet (Form #M-TP) for other sizes and connections.
Dimensions not for construction purposes unless certified by factory.

STANDARD COMPONENTS

Combination manual air vent and pressure/temperature test port with brass body, dual durometer EPDM core, blowout-proof stem, side discharge vent with 1/8" (4mm) hose barb, threaded brass cap with O-ring seal and neoprene retainer strap. Accepts standard 1/8" (4mm) gauge adapter or thermometer stem. Rated to 250 PSI (1725 kPa) and 250°F (120°C)

Please reference data sheet (Form #M-ACC) for optional accessories.

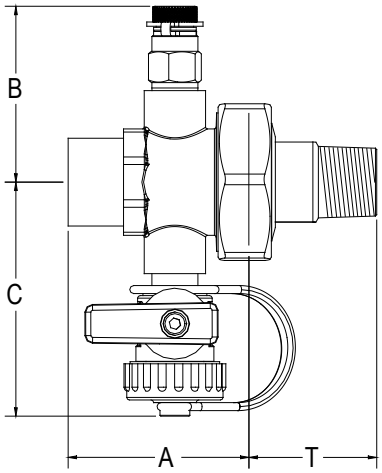
Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model US
Submittal Data

Model US Union offers numerous end connections, pressure/temperature measurement and drain.
The union has an EPDM O-ring seal and tailpiece available in MNPT, FNPT and SWT end connections. Standard features include Pressure/ Temperature Port, and Hose End Drain Valve.



SPECIFICATIONS

Pressure Ratings:	600 PSI (4140 kPa)
Temperature Ratings:	250°F (120°C)
Body Material:	Forged Brass
End Connections:	Brass - Fixed End: SWT, FNPT; Union End: SWT, FNPT, & MNPT
Seals:	EPDM
Available Options:	"PTV" combination PT & air vent, port extensions.

NOMINAL DIMENSIONS & WEIGHTS

Size			A		B	C	*T	Wgt	
in	mm		FNPT	SWT			MPT	lbs	kg
3/8"	10	in	N/A	1.86	2.52	1.83	0.75	0.94	0.43
		mm	N/A	47.24	64.00	46.48	19.05		
1/2"	15	in	1.99	1.88	2.52	1.83	0.38	1.04	0.49
		mm	50.47	47.68	64.00	46.48	21.08		
3/4"R	20R	in	2.04	2.12	2.75	2.07	0.98	0.97	0.44
		mm	51.82	53.90	69.85	52.56	24.89		
3/4"	20	in	2.04	2.12	2.52	1.83	0.98	1.24	0.56
		mm	51.82	53.90	64.00	46.48	24.89		
1"	25	in	2.15	2.28	2.75	2.07	0.92	1.39	0.69
		mm	54.56	57.85	69.85	52.56	23.37		
1-1/4"	32	in	2.39	2.56	3.11	2.45	1.43	2.48	1.18
		mm	60.63	65.05	78.99	62.23	36.32		
1-1/2"	40	in	2.39	2.69	3.11	2.48	1.17	2.79	1.33
		mm	60.63	68.35	78.99	60.96	29.72		
2"	50	in	2.49	3.03	3.43	2.75	1.50	3.77	1.82
		mm	63.30	76.96	87.12	69.85	38.10		

* Please reference the tailpiece data sheet (Form #M-TP) for other sizes and connections.
Dimensions not for construction purposes unless certified by factory.

STANDARD COMPONENTS

Pressure/Temperature test port with brass body, dual durometer EPDM core, brass cap with O-ring seal and neoprene retainer strap. Accepts standard 1/8" (4mm) gauge adapter or thermometer stem. Rated to 500 PSI (3450 kPa) and 275°F (135°C).

Drain valve with forged brass body, chrome plated ball, Teflon seats, double EPDM O-ring stem seals, aluminum handle, ¾" hose connection with cap and plastic retainer strap. Rated to 600 PSI (4140 kPa) WOG and 250°F (120°C).

Please reference data sheet (Form #M-ACC) for optional accessories.

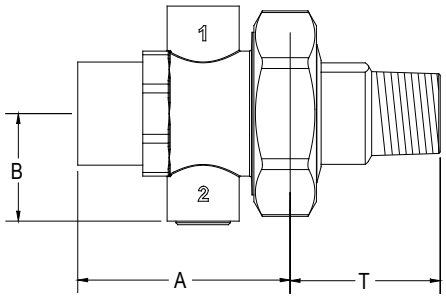
Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model UB
Submittal Data

Macon's Model UB Union offers numerous End Connections with two 1/4" plugged accessory ports. The union has an EPDM O-ring seal and Fixed End Connections available in FNPT or SWT. Tailpiece connections are available in MNPT, FNPT, or SWT.



SPECIFICATIONS

Pressure Ratings:	600 PSI (4140 kPa)
Temperature Ratings:	250 ˚F (120 ˚C)
Body Material:	Forged Brass
End Connections:	Brass - Fixed End: SWT, FNPT Union End: SWT, FNPT,& MNPT
Seals:	EPDM
Available Options:	Hose end drain valve.

NOMINAL DIMENSIONS & WEIGHTS

SIZE			A				* T	
in	mm		FNPT	SWT	B	C	MNPT	Wgt lbs
3/8"	10	in	N/A	1.86	.84	.84	N/A	0.56
		mm	N/A	47.29	21.34	21.34	N/A	
1/2"	15	in	1.90	1.88	.84	.84	1.50	0.59
		mm	48.26	47.75	21.34	21.34	38.10	
3/4"R SWT	20 SWT	in	1.98	2.12	.84	.84	1.55	0.59
		mm	50.29	53.85	21.34	21.34	39.37	
3/4" FNPT	20 FNPT	in	1.98	2.12	1.08	1.08	1.56	0.82
		mm	50.29	53.85	27.43	27.43	39.62	
1"	25	in	2.15	2.28	1.08	1.08	1.75	.90
		mm	54.61	57.91	27.43	27.43	44.45	
1 1/4"	32	in	2.39	2.56	1.46	1.46	1.80	1.82
		mm	60.71	65.02	37.08	37.08	45.72	
1 1/2"	40	in	2.39	2.69	1.46	1.46	1.80	1.91
		mm	60.71	68.32	37.08	37.08	45.72	
2"	50	in	2.49	3.03	1.76	1.76	1.98	2.79
		mm	63.25	76.96	44.70	44.70	50.29	

* Please reference the tailpiece data sheet (Form #M-TP) for other sizes and connections.
Dimensions not for construction purposes unless certified by factory.

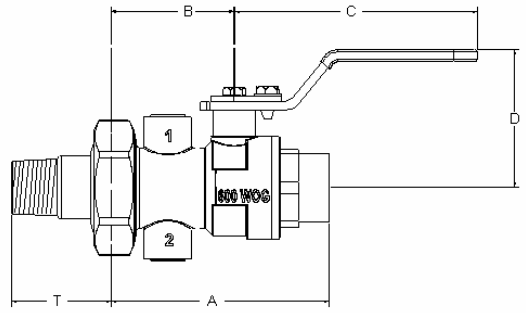
Optional features and accessories available for this Macon product are an extra charge, and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model BB
Submittal Data

Model BB Union End Ball Valve offers shutoff and throttling. The position indicating Memory Stop provides quick and easy flow setting with a single screw adjustment. The ball valve has a chrome plated ball with Teflon seats, blowout proof stem with double EPDM O-ring seals. The union has an EPDM O-ring seal and tailpiece available in MNPT, FNPT and SWT end connections. Standard features include Adjustable Memory Stop and dual plugged accessory ports.



SPECIFICATIONS

Pressure Ratings:	600 PSI (4140 kPa)
Temperature Ratings:	250˚F (120˚C)
Body Material:	Forged Brass
End Connections:	Brass - Fixed End: SWT, FNPT; Union End: SWT, FNPT,& MNPT
Seals:	EPDM
Ball:	Chrome Plated Brass, full port, 100% positive shut-off. *Optional 316 Stainless Steel.*
Stem:	Brass. *Optional 316 Stainless Steel.*
Handle:	Full size Zinc Plated lever with Vinyl Grip
Memory Stop:	Zinc Plated Steel with position indicator
Available Options:	"PTV" combination PT & air vent, hose end drain valve, handle & port extensions.

NOMINAL DIMENSIONS & WEIGHTS

Size			A		B	C	D	*T	Wgt	
in	mm		FNPT	SWT				MPT	lbs	kg
1/2"	15	in	3.19	3.29	2.03	3.66	1.98	1.50	1.21	0.55
		mm	81.03	83.49	51.64	92.96	50.50	38.10		
3/4"R	20	in	3.34	3.41	2.03	3.66	1.98	1.50	1.25	0.57
		mm	84.84	86.61	51.64	92.96	50.50	38.10		
3/4"	20	in	3.33	3.45	2.03	3.66	2.08	1.56	1.47	0.67
		mm	84.58	87.63	51.64	92.96	52.83	39.70		
1"R	25	in	3.48	3.61	2.03	3.66	2.08	1.80	1.55	0.70
		mm	88.39	91.69	51.64	92.96	56.31	45.72		
1-1/4"	32	in	4.02	4.19	2.33	5.03	2.44	1.80	3.43	1.56
		mm	101.11	106.43	59.18	127.76	61.90	45.72		
1-1/2"	40	in	4.44	4.74	2.52	5.65	2.83	1.80	4.75	2.15
		mm	112.78	120.40	64.00	143.59	71.81	45.72		
2"R	50	in	5.03	5.82	2.90	5.65	2.83	1.98	5.68	2.58
		mm	127.76	148.83	73.66	143.59	78.56	50.17		

* Please reference the tailpiece data sheet (Form #M-TP) for other sizes and connections.
Dimensions not for construction purposes unless certified by factory.

STANDARD COMPONENTS

Memory stop with position indicator, zinc coated steel.

Please reference data sheet (Form #M-ACC) for optional accessories.

Optional features and accessories available
for this Macon product are an extra charge,
and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model MS
Submittal Data

The following formula can be used by referencing the following flow table and product graph..

Flow Rate

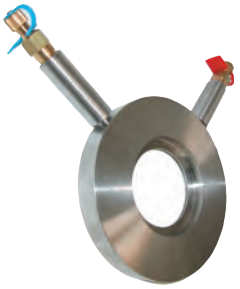
$$Q = C_{VS} \cdot \sqrt{\Delta p_S}$$

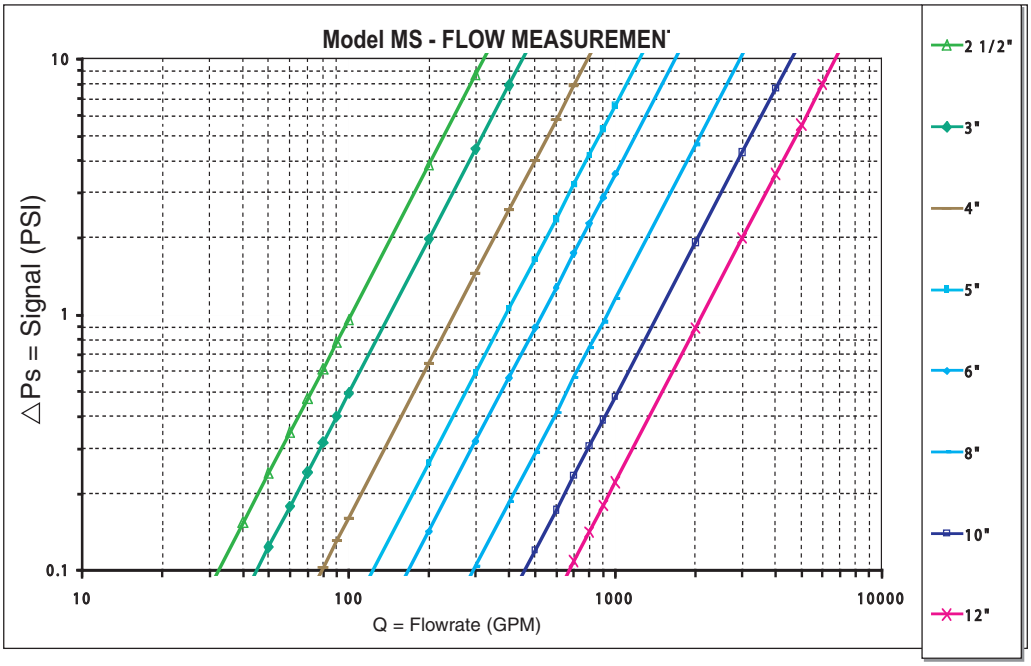
Q = Flow rate (GPM)
△Ps = Differential pressure (signal) through the test points of the valve (psi)
Cvs = Flow coefficient through the test points of the valve (GPM/psi$^{1/2}$)

Pressure Loss

$$C_V = \frac{Q}{\sqrt{\Delta p}}$$

Q = Flow Rate (GPM)
△P = Differential pressure (pressure loss) across the valve (psi)
Cv = Flow through valve (GPM @ 1psi pressure drop)





Size	Cvs	Cv
2-1/2”	102	175.4
3”	142.2	261.6
4”	249.3	426.3
6”	389.5	654.2
6”	530.2	901.4
8”	929.4	1635.9
10”	1444	2497.2
12”	2122.6	3693.7

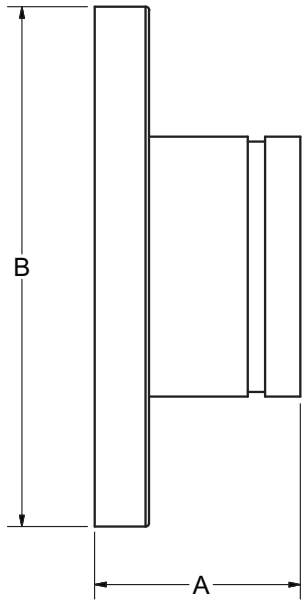
Optional features and accessories available
for this Macon product are an extra charge,
and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

Model GF
Submittal Data

Macon's GF is a fabricated Groove x Flange Adaptor.
150# Plate Flange with schedule 40 grooved steel pipe section.



SPECIFICATIONS

PART	MATERIALS
Flange	Steel
Pipe Section	Steel, Schedule 40
End Connection	150# Plate Flange X Schedule 40 steel pipe
RATINGS	Pressures to 200 PSIG (1380 kPa) Temperatures to 250°F (120°C)

NOMINAL DIMENSIONS & WEIGHTS

MODEL	FLANGE PIPE SIZE	"A"		"B"		WEIGHT	
		INCH	MM	INCH	MM	LB	KG
GF-250	2.50"	3.00"	76.2	7.00	177.8	8.3	3.76
GF-300	3.00"	3.00"	76.2	7.50	190.5	10.0	4.54
GF-400	4.00"	3.00"	76.2	9.00	228.6	13.8	6.26
GF-500	5.00"	4.00"	101.6	10.00	254.0	17.1	7.76
GF-600	6.00"	4.00"	101.6	11.00	279.4	21.1	9.57
GF-800	8.00"	6.00"	152.4	13.50	342.9	40.1	18.19
GF-1000	10.00"	6.00"	152.4	16.00	406.4	54.8	24.86
GF-1200	12.00"	6.00"	152.4	21.00	533.4	85.3	38.69

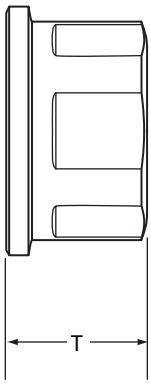
Optional features and accessories available
for this Macon product are an extra charge,
and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

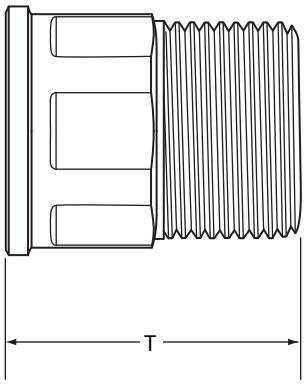
MACON® BALANCING

Tailpiece
Dimension Data

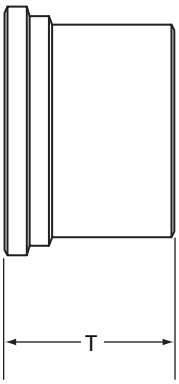
FNPT



MNPT



SWT



NOMINAL DIMENSIONS

Model Number	Conn. Size		FNPT "T"		MNPT "T"		SWT "T"		Fits Valve Size
	in	mm	in	mm	in	mm	in	mm	
TP1-038(*)	3/8"	10	N/A	N/A	N/A	N/A	0.75	19.05	1/2", 3/4" R
TP1-050(*)	1/2"	15	0.83	21.08	1.50	38.10	0.83	21.08	1/2", 3/4" R
TP1-075(*)	3/4"	20	1.29	32.77	1.55	39.37	0.98	24.89	1/2", 3/4" R
TP2-038(*)	3/8"	10	N/A	N/A	N/A	N/A	0.75	19.05	3/4", 1" R, 1"
TP2-050(*)	1/2"	15	0.83	21.08	1.50	38.10	0.87	22.10	3/4", 1" R, 1"
TP2-075(*)	3/4"	20	0.83	21.08	1.56	39.62	0.98	24.89	3/4", 1" R, 1"
TP2-100(*)	1"	25	1.40	35.56	1.75	44.45	1.00	23.37	3/4", 1" R, 1"
TP3-050(*)	1/2"	15	N/A	N/A	2.13	54.10	N/A	N/A	1" H, 1-1/4", 1-1/2"
TP3-075(*)	3/4"	20	0.79	20.07	1.80	45.72	1.28	32.51	1" H, 1-1/4", 1-1/2"
TP3-100(*)	1"	25	0.98	24.89	1.80	45.72	1.41	35.81	1" H, 1-1/4", 1-1/2"
TP3-125(*)	1-1/4"	32	1.00	25.40	1.80	45.72	1.43	36.32	1" H, 1-1/4", 1-1/2"
TP3-150(*)	1-1/2"	40	1.75	44.45	1.80	45.72	1.17	29.72	1" H, 1-1/4", 1-1/2"
TP4-100(*)	1"	25	1.98	50.29	2.51	63.75	1.98	50.29	2"
TP4-125(*)	1-1/4"	32	N/A	N/A	1.98	50.29	1.49	37.85	2"
TP4-150(*)	1-1/2"	40	1.98	50.29	1.98	50.29	1.59	40.39	2"
TP4-200(*)	2"	50	1.80	45.72	1.98	50.29	1.50	38.10	2"

* Indicates end connection type.
Not for construction purposes unless certified by factory.

Optional features and accessories available
for this Macon product are an extra charge,
and not included in the standard model price.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON BALANCING

Flexible Hose Connectors

MECHANICAL SPECIFICATIONS

These hoses have been specially designed for operating conditions in heating and air conditioning, the elastomer is not sensitive to Glycol or water treatment products.

Each hose is made up of several quality components and the special crimping on the ferrule under strict quality control gives this hose security against any leakage.

The special EPDM core meets a fully defined specification: Shore hardness, resistance to ageing, mechanical resistance (elasticity, tensile fracture, stretching), ability to accept chemical agents in contact with the elastomer and non-toxic. ASTM Fire rated hoses meet 25/50 flammability and smoke development classification requirements of codes and specifications when tested by ASTM E 84 method.

HOSES ARE DESIGNED FOR HYDRONIC HEATING/COOLING, NOT FOR GAS.

Temperature Ratings:

All Sizes: 5 Deg. F to 230 Deg. F
Less than 41 Deg. F with use of Glycol additive.

Max. Operating & Burst Pressure Rating:

1/2" 375 PSI OP/ 1500 PSI BP
3/4" 300 PSI OP / 1200 PSI BP
1" 225 PSI OP / 900 PSI BP
1-1/4" 200 PSI OP / 800 PSI BP
1-1/2" 175 PSI OP / 600 PSI BP
2" 150 PSI OP / 500 PSI BP

Dimensional Information & Material Specifications:

½" - 1" MNPT x Female swivel NPSM Male Cone x Hose Adaptor (Gasket Less Connection)
1-1/4" - 2" MNPT X Female swivel Male x BA-U Gasket & Hose Adaptor
***Adaptor connections : Male NPT, Female NPT & Copper Swt.**

Model # Size	HCA	HCB	HCC	HCD	HCE	HCF
12" LENGTH	1/2"	3/4"	1"	NA	NA	NA
18" LENGTH	1/2"	3/4"	1"	1-1/4"	1-1/2"	NA
24" LENGTH	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
36" LENGTH	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
External Braiding:	Stainless Steel AISI 304					
Crimping Ferrules:	Stainless Steel AISI 304					
Connectors:	Machined Brass / Nickel Plated Brass					
Fiber Gasket:	BA-U Fiber Washer					
Core:	Formulated EPDM					

CV*	½"	3/4"	1"	1-1/4"	1-1/2"	2"
12" LENGTH	3.3	11.0	20.9	NA	NA	NA
18" LENGTH	3.2	10.7	20.3	37.9	64.4	NA
24" LENGTH	3.1	9.9	19.5	36.9	61.0	110.7
36" LENGTH	3.0	9.3	18.2	34.7	55.0	100.8

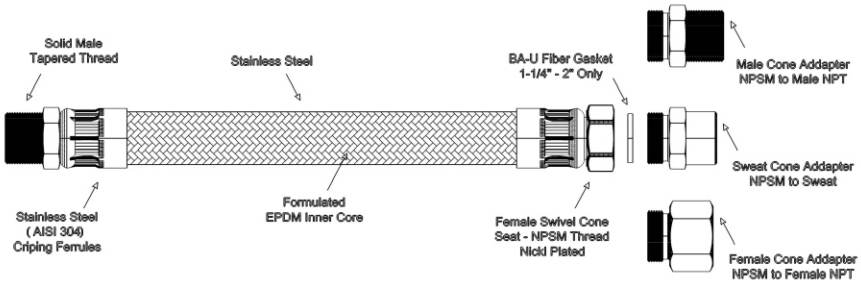
Note the CV factor is the flow rate, in GPM through the hose at 1 PSID

Specs for application and installation:

1. ON INSTALLATION : Avoid absolutely any tension due to stretching, twisting or torsion during the course of tightening the connectors.
A. Install and tighten the fixed male connector (if applicable)
B. Install and tighten the union adaptor (if applicable)
C. Install and tighten the swivel nut
Use two spanners in order to screw in the union: One to hold the hexagon of the adaptor. The other to tighten the nut at the same time.

IMPORTANT - Do not re-screw the fixed connector or adaptor after tightening of the swivel nut; this will cause tensioning of the flexible with a risk of rapid deterioration at this point. On removal, take the same precautions. If the flexible incorporates two fixed connectors, at least one must be installed on a counter-part fitted with a screw connector.

***BEFORE INSTALLING REFER TO THE INSTALLATION & OPERATION INSTRUCTIONS FOR COMPLETE DETAILS. WARNING: FAILURE TO FOLLOW THE INSTALLATION & OPERATION INSTRUCTIONS COULD RESULT IN IMPROPER INSTALLATION.**



Gasket Less Swivel Connection ½" -1"
BA-U Fiber Gasket 1-1/4" - 2"

Typical Specifications:

Furnish and install where indicated on plans ***Flexible Connectors*** as provided by ***Macon Balancing.*** Hoses shall be temperature rated: 5 Deg. T o 230 Deg. F. Pressured rated from 375 PSI to 150 PSI based on hose diameter . Constructed specifically for operating conditions in heating and air conditioning with solid brass connectors, stainless steel ferrules, AISI 304 stainless steel braid, and formulated EPDM inner core design to not be sensitive to Glycol or water treatment products. Hoses shall meet 25/50 flammability and smoke development classification requirements of codes and specifications when tested by ASTM E 84 method.

JOB: _____ **ENGINEER:** _____

REP: _____ **CONTRACTOR:** _____

Tunstall®

Tunstall Corporation
118 Exchange Street · Chicopee, MA 01013
Phone: (413) 594-8695 · Fax: (413) 598-8109
www.tunstall-inc.com

Maximum Operating Pressure - 500 P.S.I.G. (34.7 bar)
Maximum Operating Temperature - 150°F, (66°C)

STANDARD MATERIAL SPECIFICATIONS

GAUGE - Aluminum Body, Stainless Steel Internals, Buna-N-Seals, 2-1/2" Dial. Dial Ranges - 0-50" H_20 through 0-100 PSID.

TUBING & FITTINGS - Brass

HOSES - Nitrile Jacket and "Schrader" 1/4" Brass Coupler. (Connects with 1/4" 37° Flare Male Fittings).

FILTERS - 90 Micron Brass (For Replacement Filter Elements, Order Kit No. 98008).

CAUTION: Severe damage may occur if this test kit is subjected to freezing temperature. Drain the kit after use.

For additional information about this test kit, or other Macon Balancing products, please contact your local Macon representative or the factory direct.

MACON® BALANCING

MODEL 841 TEST KIT

This test kit is equipped with a rugged differential pressure gauge with an accuracy of + 3-2-3% full scale (ascending) ideally suited for measuring the pressure drop across various types of equipment (i.e. filters, pumps, balancing valves, etc.).

MODEL 841 TEST KIT
BASIC OPERATING INSTRUCTIONS

1. Connect hoses to test connections - red high pressure hose upstream; green low pressure hose downstream.

2. Open valves on device being tested, and read differential (or flow).

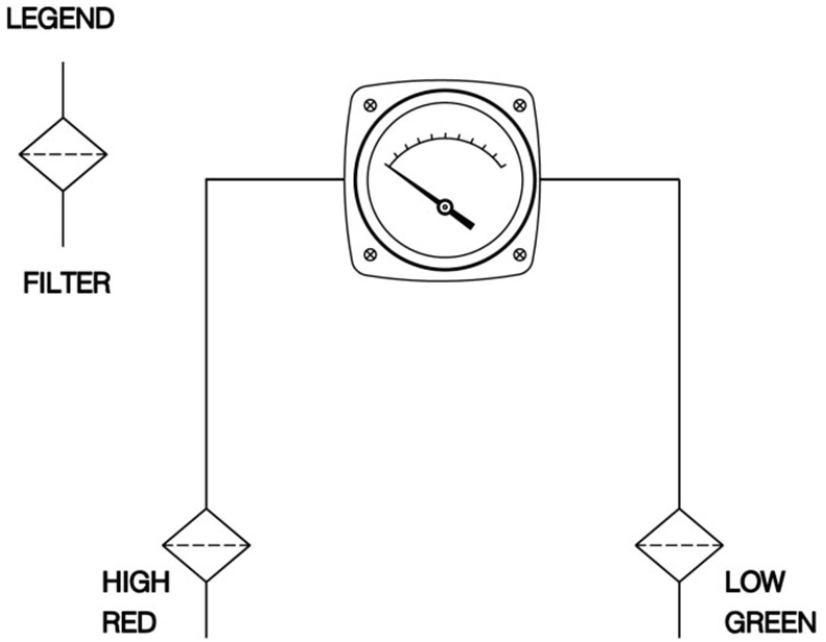
3. Upon completion of test, close valves, disconnect hoses and store them in test kit case.

NOTE: The 841 Test Kit is equipped with filters near the ends of the hoses. If the gauge responds slowly to changes in differential pressure, the filter elements may be partially plugged. To remedy this, unscrew the two halves of the filter housing and remove the brass filter element. It may be cleaned by flushing with a mild detergent and water. If, after reassembly, this has not satisfactorily improved the response time, replacement filter element kits (#98008) should be installed.

Please see back page for standard materials of construction, maximum safe working pressure, temperature limitations, replacement parts information, etc.

MACON® BALANCING

MODEL 841 TEST KIT
SCHEMATIC DIAGRAM



NOTE: This Test Kit is plumbed for water service. Contact the factory before using on other liquids or gases.

MACON® BALANCING

A precision instrument for the measuring and documentation of water flow in heating, cooling and drinking water systems.

PFM-2000 is a meter for pressure and flow measurements across, for example, balancing valves. Valve characteristics for a number of valves from different manufacturers are stored in the PFM-2000's memory. The valve database is updated continuously. Every instrument unit is delivered with a CD-ROM containing demo programs, valve data and manuals.

Technical Specifications

Measuring Range

Pressure Difference:	up to 150 kPa
	at total pressure < 1000 kPa
	Max 2000 kPa
Static Pressure:	up to 1000 kPa

Accuracy

Pressure Difference:	< 10 kPa + / - 0.1 kPa
	> 10 kPa + / - 1% of metered value
Flow:	As for pressure + the valve's deviation

Resolution

Pressure Difference:	0.01 kPa, at total pressure < 100 kPa
	0.1 kPa, at total pressure > 100 kPa
Static Pressure:	10 kPa
Flow:	0.001 l/s

Included in Delivery

Meter x1
Sensor x1
Cable x1
Hoses & Connectors x2
Battery charger x1
Durable case x1
Allen key, 3mm, x1
Allen key, 5mm, x1
Manual x1
Program disc x1
Calibration protocol, x1

Environment

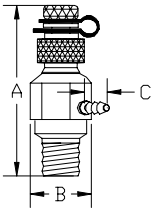
Temperature Media:	-10° C to 100°C
Temperature, Storage:	-20° C to 60°C
Humidity, not controlled:	Max 90% RH

Power Supply

Capacity: R6 rechargeable NiMH - batteries (6)	1500 mAh

MACON® BALANCING

PTV—PRESSURE / TEMPERATURE VENT

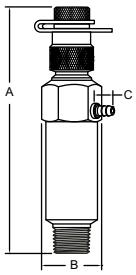


PATENT #6899317

Combination manual air vent and pressure/temperature test port with brass body, dual durometer EPDM core, blowout-proof stem, side discharge vent with 1/8" (4mm) hose barb, threaded brass cap with O-ring seal and neoprene retainer strap. Accepts standard 1/8" (4mm) gauge adapter or thermometer stem. Rated to 250 PSI (1725 kPa) and 250°F (120°C).

MODEL	NPT	A		B		C		WRENCH	WEIGHT	
	CONN	in	mm	in	mm	in	mm	SIZE	lbs	kg
PTV-025	1/4"	1.50	40	0.84	21	0.32	9	3/4"	0.154	0.07
PTV-050	1/2"	1.50	40	0.98	25	0.32	9	3/4"	0.225	0.10

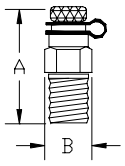
EPTV - PRESSURE / TEMPERATURE VENT



Extended combination manual air vent and pressure/temperature test port with brass body, dual durometer EPDM core, blowout-proof stem, side discharge vent with 1/8" (4mm) hose barb, threaded brass cap with O-ring seal and neoprene retainer strap. Accepts standard 1/8" (4mm) gauge adapter or thermometer stem. Rated to 250 PSI (1725 kPa) and 250°F (120°C).

MODEL	NPT	A		B		C		WRENCH	WEIGHT	
	CONN	in	mm	in	mm	in	mm	SIZE	lbs	kg
EPTV-025	1/4"	3.60	91	0.87	21	0.31	8	3/4"	0.28	0.12

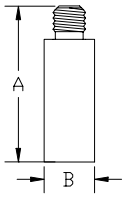
PT—PRESSURE / TEMPERATURE PORT



Pressure/Temperature test port with brass body, dual durometer EPDM core, brass cap with O-ring seal and neoprene retainer strap. Accepts standard 1/8" (4mm) gauge adapter or thermometer stem. Rated to 500 PSI (3450 kPa) and 275°F (135°C).

MODEL	NPT	A		B		WRENCH	WEIGHT	
	CONN	in	mm	in	mm	SIZE	lbs	kg
PT-025	1/4"	1.36	34	0.65	16	9/16"	0.06	0.03
PT-050	1/2"	1.36	34	1.01	25	7/8"	0.18	0.08

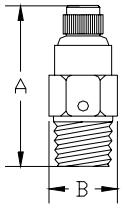
PTE—PTV/PT EXTENDER



Single and Dual Extender for PTV and PT models, used on insulated piping systems or where extended length is desired. The PTE is installed above the PTV or PT core with an O-ring seal. The PTE can be installed in the field without removing the PTV or PT from the piping system. Brass body with EPDM O-ring seal. Rated to 500 PSI (3450 kPa) and 250°F (120°C).

MODEL	A		B		WEIGHT	
	in	mm	in	mm	lbs	kg
PTE/One	1.59	41	0.54	14	0.90	0.04
PTE/Two	1.59	41	0.54	14	0.90	0.04

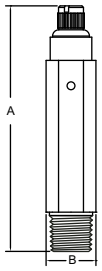
MAV—MANUAL AIR VENT



Manual air vent with brass body, knurled operator with screwdriver slot, blowout-proof stem, and side discharge vent. Rated to 400 PSI (2760 kPa) and 250°F (120°C).

MODEL	NPT CONN	A		B		WRENCH SIZE	WEIGHT	
		in	mm	in	mm		lbs	kg
MAV-025	1/4"	1.75	44	0.625	16	9/16"	0.80	0.36

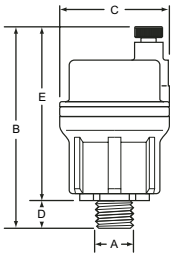
EMAV - EXTENDED MANUAL AIR VENT



Extended manual air vent with brass body, knurled operator with screwdriver slot, blowout-proof stem, and side discharge vent. Rated to 400 PSI (2760 kPa) and 250°F (120°C).

MODEL	NPT CONN	A		B		WRENCH SIZE	WEIGHT	
		in	mm	in	mm		lbs	kg
MAV-025	1/4"	1.75	44	0.62	16	9/16"	0.80	0.36

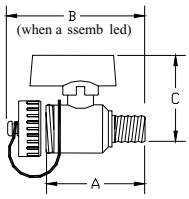
AAV—AUTOMATIC AIR VENT



Automatic air vent with brass body, plastic float, brass seat, and EPDM seal.
Rated to 150 PSI (1035 kPa) and 240°F (115°C).

MODEL	NPT CONN	lbs	A	B	C	D	E	WRENCH SIZE	WEIGHT	
										kg
AAV-025	1/4"	in	0.25	3.62	1.56	0.50	2.62	7/8"	0.31	0.14
		mm	6.35	92	40	13	66	22		

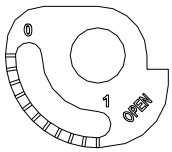
DV—DRAIN VALVE



Drain valve with forged brass body, chrome plated ball, Teflon seats, double EPDM O-ring stem seals, aluminum handle, ¾" hose connection with cap and plastic retainer strap.
Rated to 600 PSI (4140 kPa) WOG and 250°F (120°C).

MODEL	NPT CONN	A		B		C		WEIGHT	
		in	mm	in	mm	in	mm	lbs	kg
DV-025	1/4"	1.72	44	2.04	52	1.37	34	0.30	0.13
DV-050	1/2"	2.45	61	2.77	70	1.46	37	0.44	0.20

MS—MEMORY STOP



Memory stop, Zinc plated steel with position indicator and position lock screw.
For use with valve handles.

EH-EXTENDED HANDLE

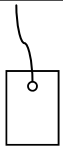
Handle Extension, forged brass stem & collar, for extending existing handle 2”

MODEL	FITS
EH-1	1/2", 3/4", & 1”R, AB, BB, MB, SB, SV, 1” SV
EH-2	1" & 1-1/4" AB, BB, MB, SB, 1-1/4” & 1-1/2” SV, AB
EH-3	1-1/2" & 2" BB,MB,SB, 2" SV, AB

SH-SHORT LEVER HANDLE

Short lever valve handle, zinc plated steel.

HT-HANGING TAG



Hanging Tag, plastic with chain for valve identification

Balancing valve PVM

Areas of use

Macon Balancing PVM is used to distribute the flow within different areas in heating and cooling systems.

Description

PVM is a dynamic valve unit developed to regulate pressure drop. A fully open STV mounted on the intake, and a PV differential pressure valve on the return. The pressure-compensating mains control valve ensures problem-free setting of the various mains. The PVM valve is equipped with a signalling circuit, cut-off valve, drain valve and measurement socket as standard.
The PVM valve guarantees 100% differential pressure regulation under all conditions, regardless of whether changes are made in the system.
The valve regulates the system and removes noise problems due to high pressure drop. After setting the valve no further adjustment to the valves is necessary.

Technical data

Max. temperature
248°F

Min. temperature
14°F

Material
Brass CW617N
Gaskets EPDM

	1/2”	3/4”	1”	1 1/4”	1 1/2”	2”
Flow range - gpm						
	0.22	0.44	2.65	3.08	4.4	22
	2.65	4.4	11	18.5	22	66

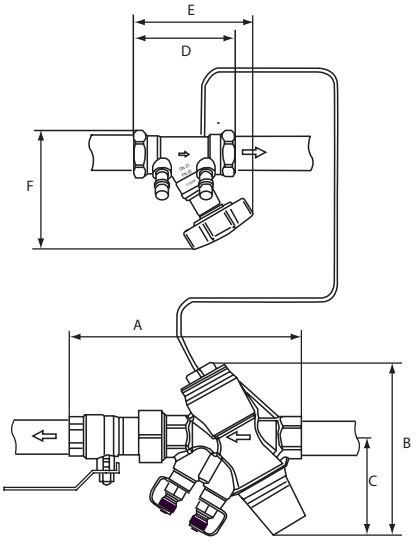
Presetting on delivery

1/2”, 3/4”	5 turns
1”	8 turns
1 1/4”, 1 1/2” , 2”	2 turns

Max. pressure psi
58 psi

Min. pressure psi
0.73-4.35 psi 1/2”-1”, 2.9-11.6 psi 1 1/4”-2”

Pressure class
PN16



Dimensions (inches)

	Dim	A	B	C	D	E	F	Weight (lbs)
PVM	1/2”	6.57	5.83	3.78	3.39	4.37	3.74	5.811
PVM	3/4”	6.81	5.94	3.86	3.54	4.49	3.74	4.389
PVM	1”	7.95	6.1	4.02	4.02	4.72	3.78	5.884
PVM	1 1/4”	9.25	7.4	4.52	4.72	5	3.78	10.020
PVM	1 1/2”	10.12	8.11	4.69	5.2	5.47	4.25	13.348
PVM	2”	11.26	6.22	4.96	6.06	5.83	4.37	18.992

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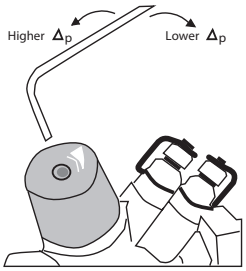
Setting

The valve is easy to set on the knob using a 4 mm Allen key. The setting is read off the pressure drop diagram for each dimension.
When presetting the valve, start by screwing the setting to minimum. Then open the valve to the required value according to the diagram.
The STV valve is used solely for shutting off and flow measurement, it must not be set in any position other than open.



Presetting

The PVM valve is preset according to the diagram.
The curves (the oblique lines that indicate the pressure in the main line) are shown in intervals of 0.73 psi to make it simple to take a reading. The curves can be moved so that the valve setting can be produced if, for example, 1.74 psi is selected in a pipe instead.
Example: We decide to maintain 1.74 psi differential pressure in the main at a flow of 2.2 gpm (2.2 gpm comes from the presetting on the radiators).
From the point where 1.74 psi cuts the horizontal line (flow 2.2 gpm) a vertical line is taken down to the x-axis.
It is then easy to read off that the valve should be set at approx. 7 turns. The minimum pressure drop will then be 0.28 psi over the valve.
Total pressure drop:
To dimension the pump it will be:
$\Delta P = \Delta Ps + \Delta Pv = 1.74 + 0.28 = 2.02$ psi
Also include the pipe pressure drop from the valve to the pump.
The pump can subsequently be adjusted optimally by measuring the differential pressure from PF to P- (ΔP pump). To verify the secondary pressure drop calculated, it can be checked by measuring PF to P+ and the result should then be 1.74 psi.

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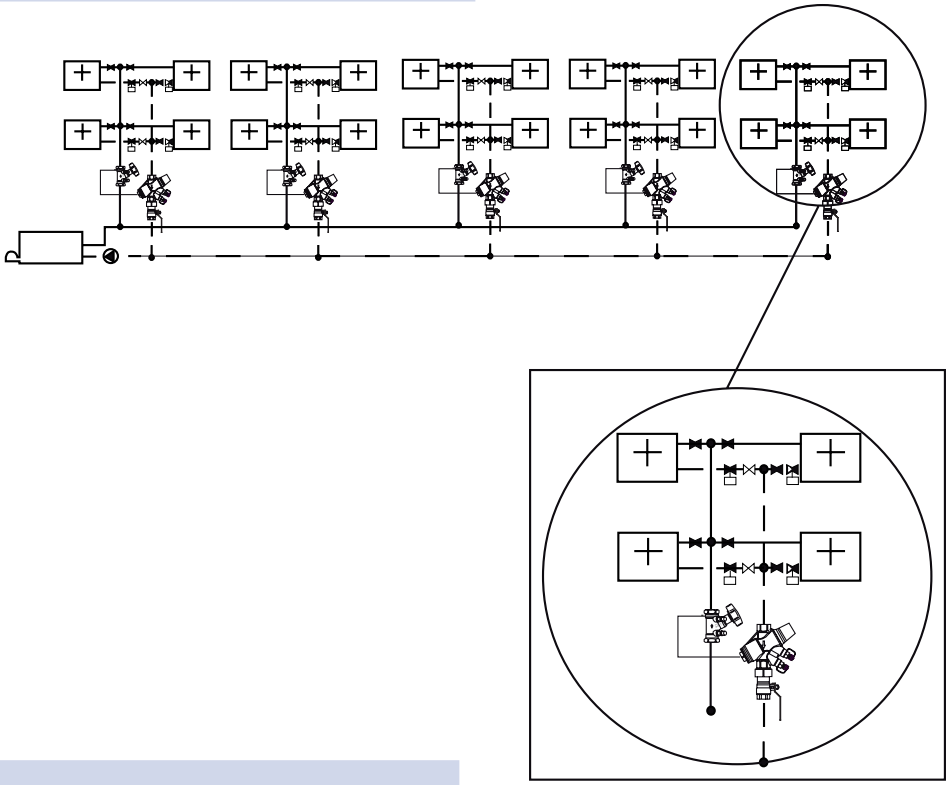
Installation example

Overview of a heating system with 5 staircases with 4 apartments on each one.
The critical valve, defined as the valve with the lowest pressure drop as a rule of thumb this will be the valve positioned furthest away from the pump, is used to lower the pump pressure so that the valve achieves the correct pressure. The lowest possible pressure is then obtained in the system. See dimensioning pump pressure.

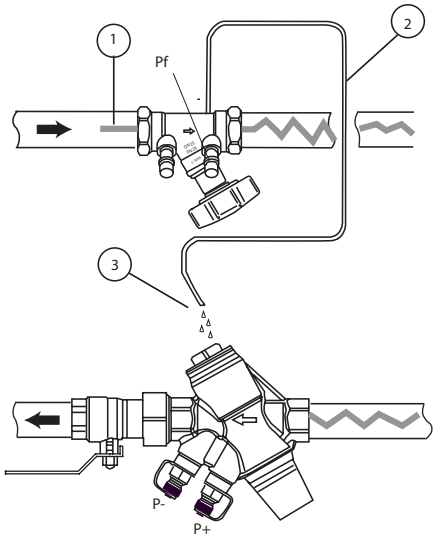


The critical point

Standard application

PVM is fitted in the intake, the signal pipe is to be connected at the low pressure side of the STV valve. The valve can be fitted irrespective of whether it is a straight length of pipe. Bends, tubes etc. can be installed immediately after the valve.

1. Flush the system before fitting signal pipe.
2. Install t-pipe with measurement socket on the STV valve.
3. Install signal pipe on the t-pipe and flush to ensure that there is no air in the signal pipe.
4. Install the signal pipe on the PVM valve on the return pipe.



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Dimensioning

Selecting the right valve in an installation requires some data about the system.

ΔP pump	available differential pressure from pump
ΔP load	differential pressure for circulation
ΔP STVP	pressure drop over valve fully open (diagram)
ΔP PVM	pressure drop over the PVM valve (diagram)

Example:
Calculated value for a valve is 6.34 gpm.
7.25 psi is available differential pressure for circulation ΔP load 2.9 psi is required for the main.

We find the minimum differential pressure required for the PVM valve to achieve minimum working pressure in the diagram.
Two valves can deliver 6.34 gpm 1" and 1 1/4".

Adjustment and measuring

When adjusting, the differential pressure on the PVM valve is measured and adjusted to 10 kPa. At least one radiator valve needs to be slightly open.
When measuring of the flow use the STV valve and a measuringtool. To be able to measure the flow may the STV valves wheel be set lower to have a higher differential pressure over the STV valve. Note that the differential pressure over the STV valve will not be to high so that the min differential pressure over the PVM valve will be to low and the PVM valve stop to regulate. After the measruing of the flow open the STV valve fully again.

Optimising pump pressure

Lowering to minimum possible pump differential pressure is carried out by measuring at the PVM valve and obtaining at least 1.91 psi, this is the pump's lowest level at which the PVM can be regulated.

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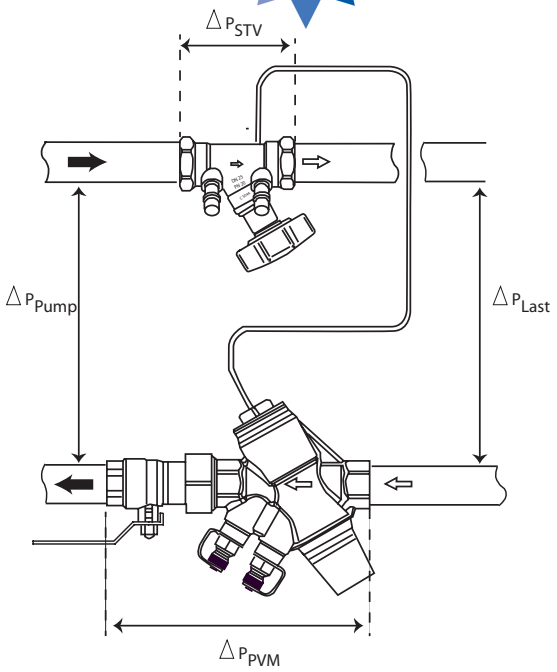

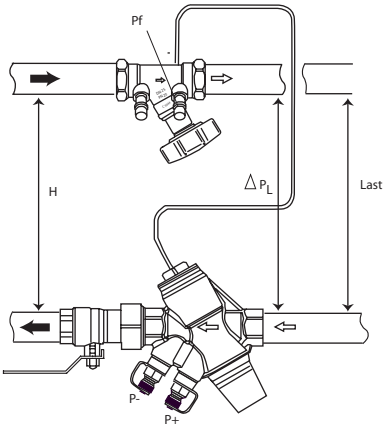

cv-value the STV valve

Number of turns	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
1	0.21	0.39	0.55	0.91	1.39	2.31
2	0.37	0.69	0.89	1.53	2.37	4.16
3	0.52	0.96	1.19	2.08	3.24	6.01
4	0.72	1.31	1.73	3.12	4.74	8.79
5	0.99	1.79	2.66	4.74	7.17	13.76
6	1.35	2.43	4.16	6.82	10.29	19.31
7	1.87	3.35	5.78	9.02	13.87	24.51
8	2.95	4.45	7.51	11.21	16.99	28.90
9	3.64	5.20	9.13	13.30	19.77	33.06
10	4.10	5.90	10.17	15.14	22.54	36.42

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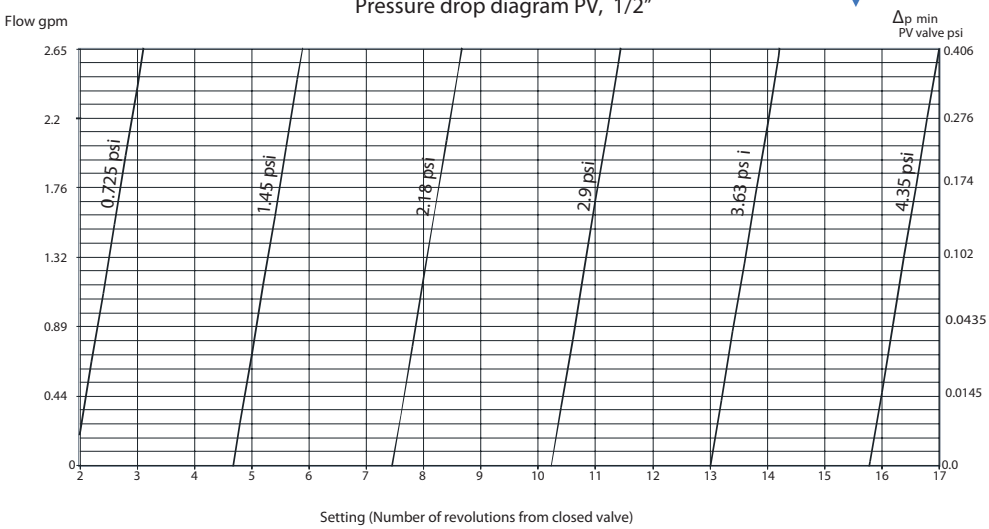
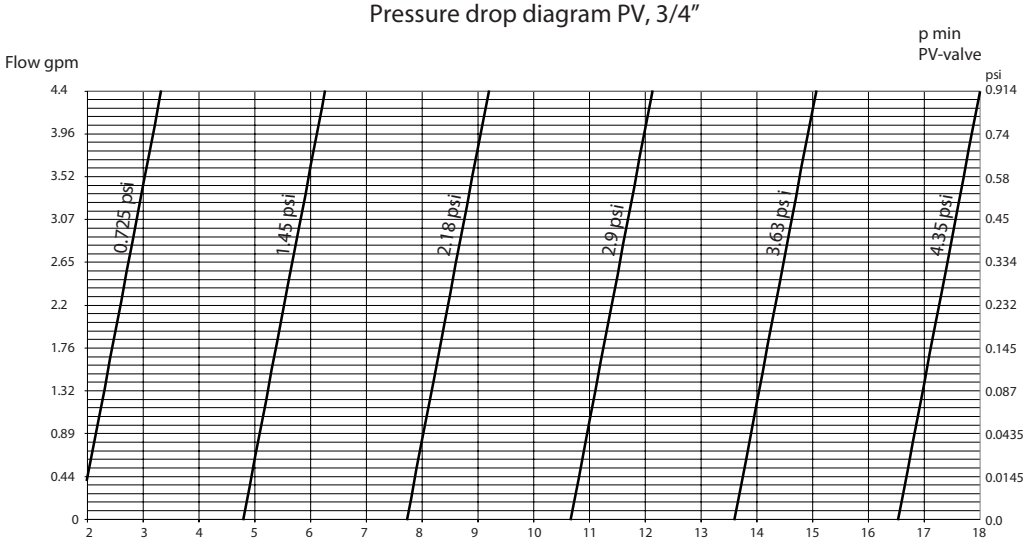
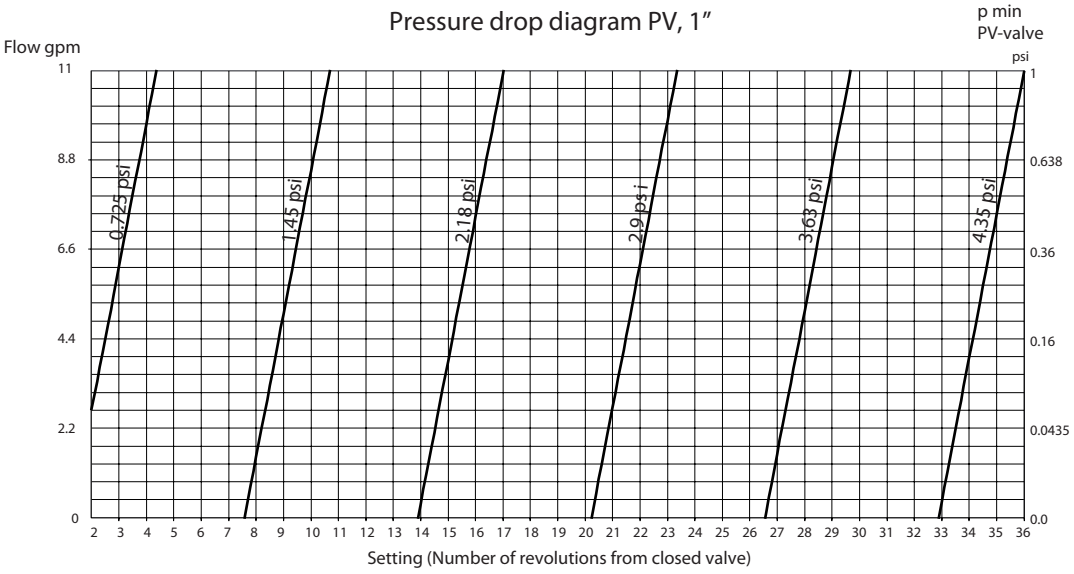
Pressure drop diagram PV, 1/2"



Pressure drop diagram PV, 3/4"



Pressure drop diagram PV, 1"



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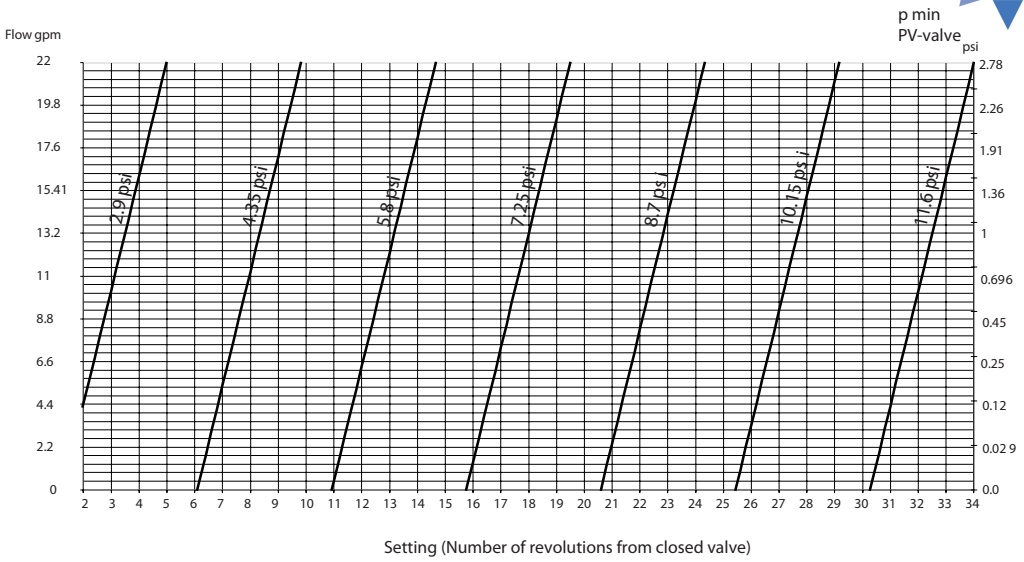
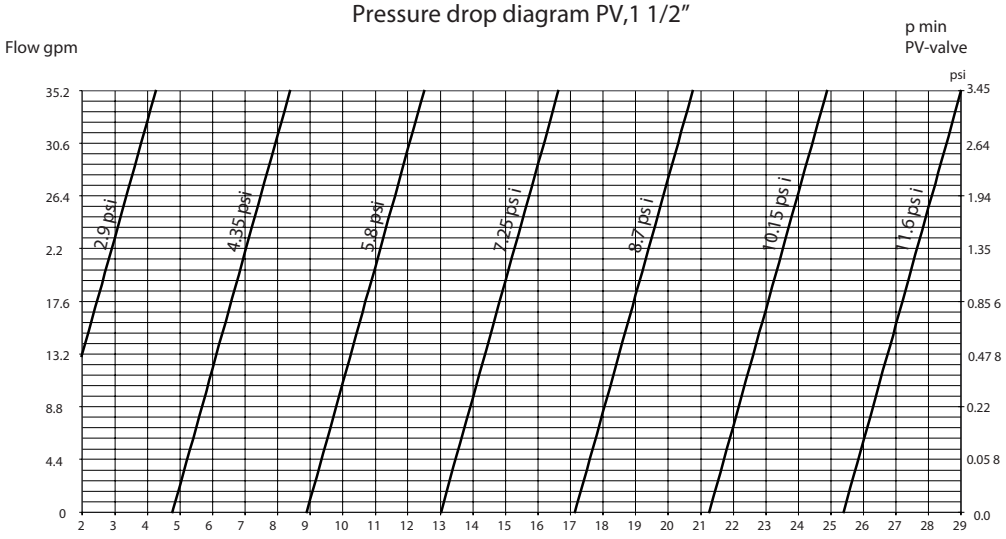
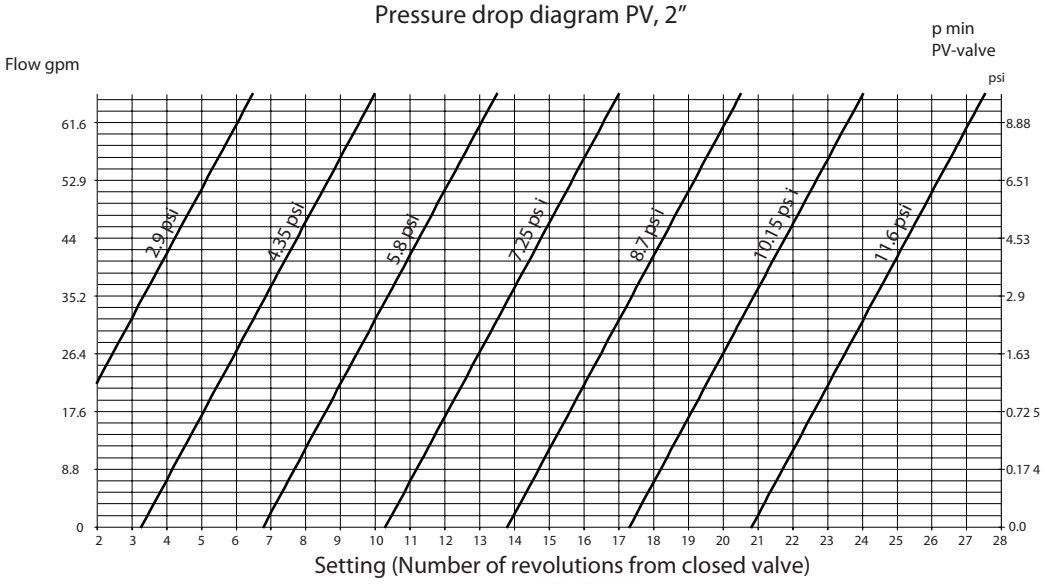
Pressure drop diagram PV, 1 1/4"



Pressure drop diagram PV,1 1/2"



Pressure drop diagram PV, 2"



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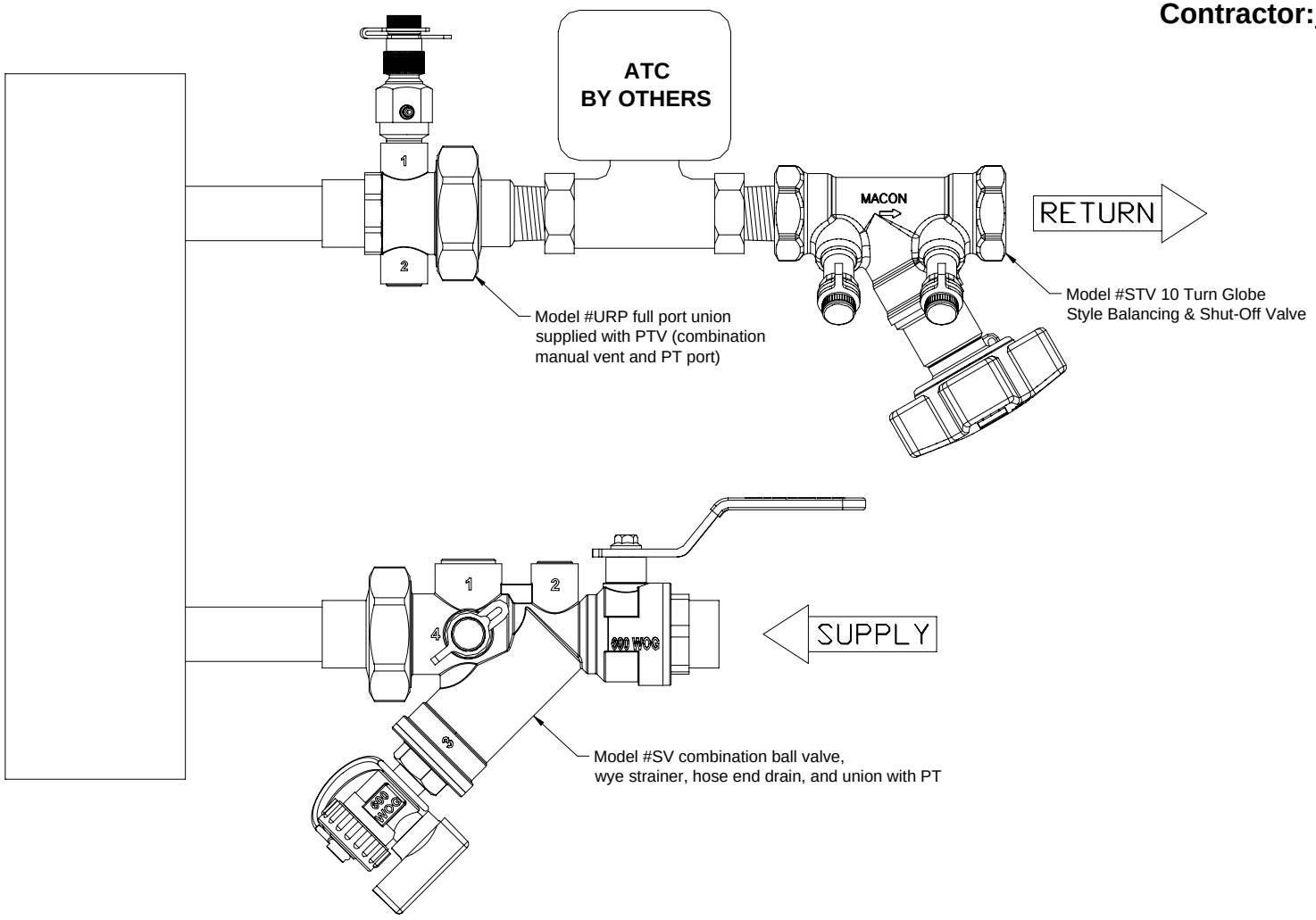
Valve Package (Model # 2RS-CS)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Valve Package (Model # 2RS-CS-FLEX)

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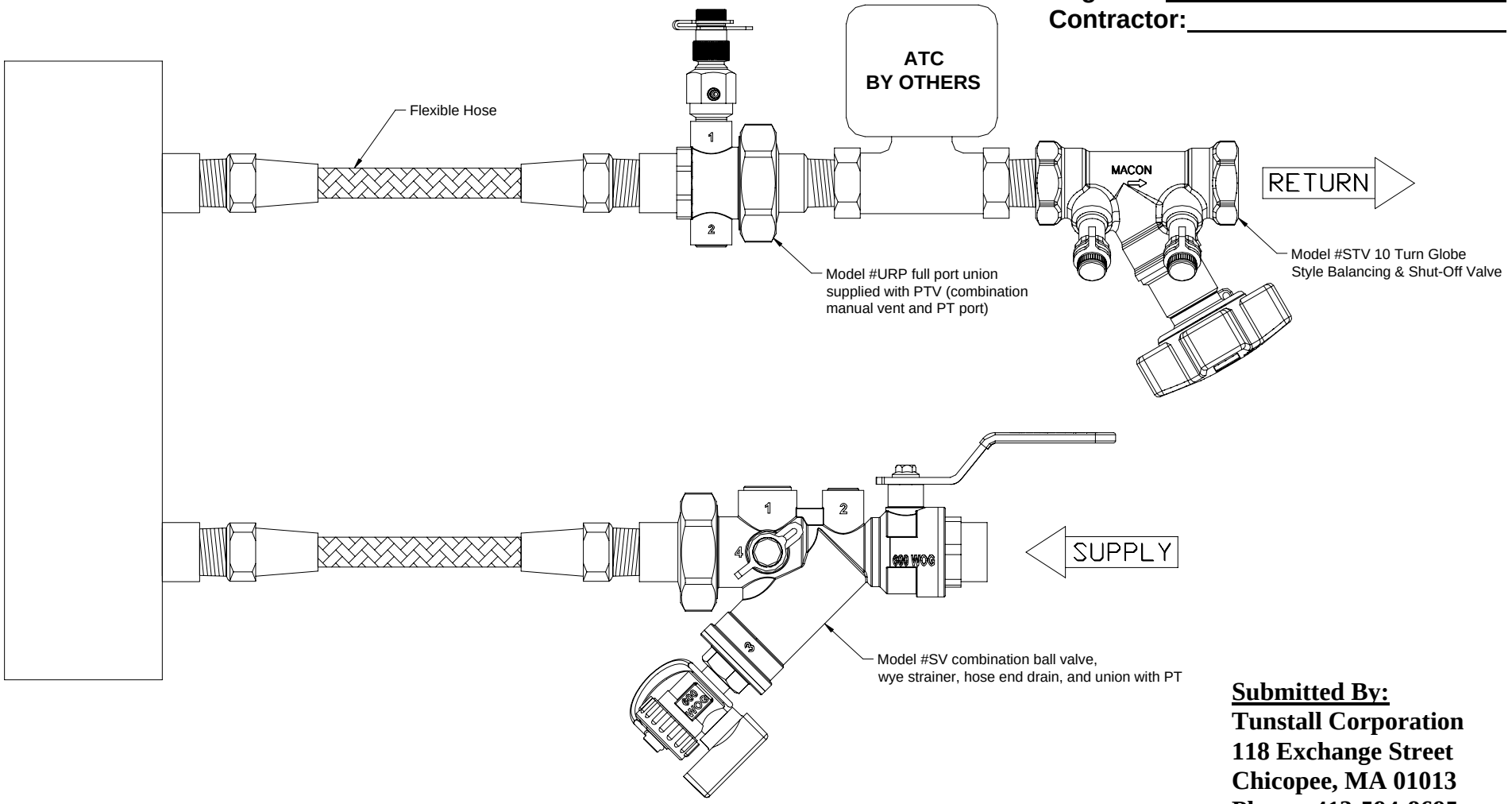
Location:_____
Engineer:_____
Contractor:_____



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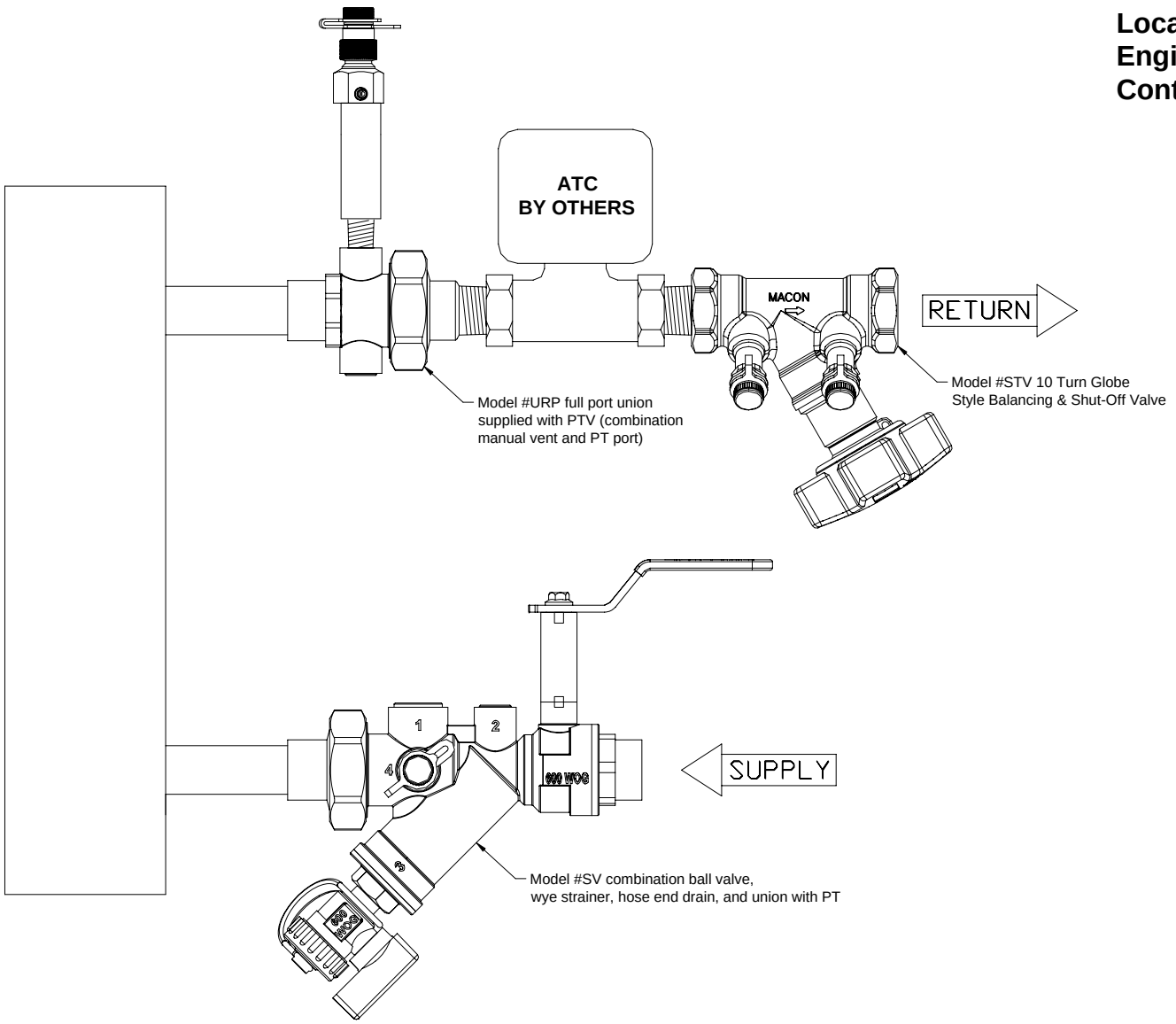
Valve Package (Model # 2RS-CS-EXT)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Valve Package (Model # 2SS-CS)

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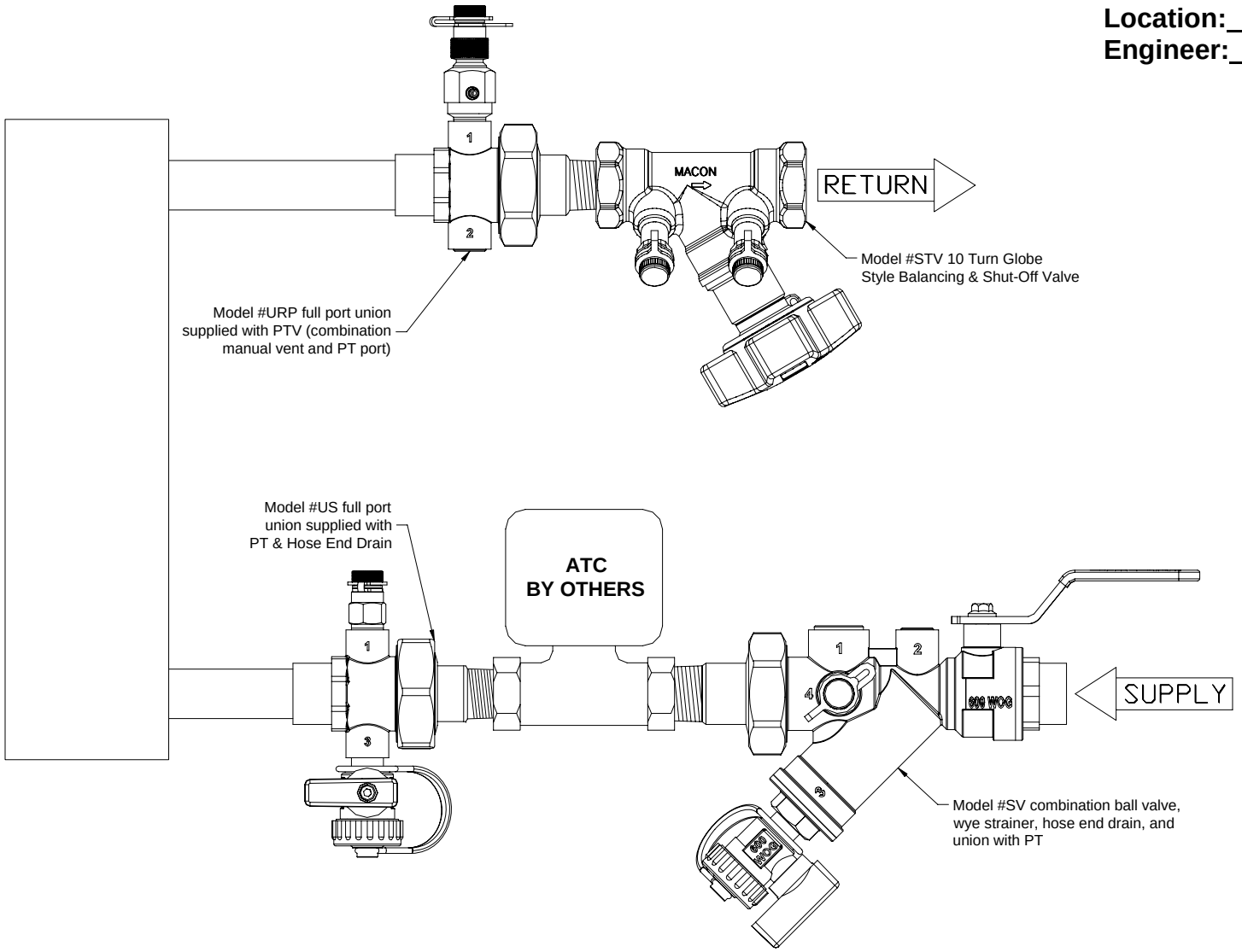
Location:_____
Engineer:___



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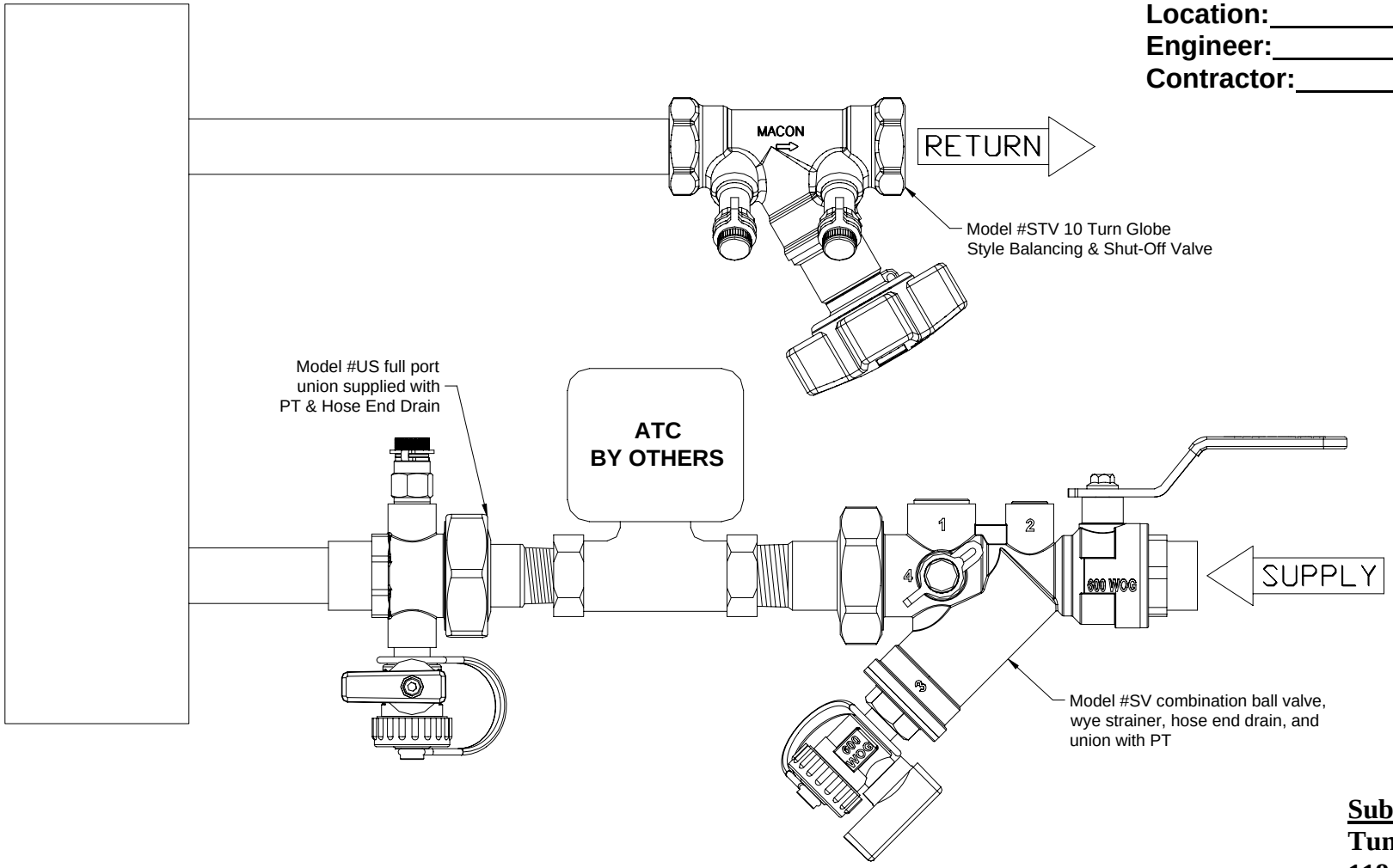
Valve Package (Model # 2SS-CSX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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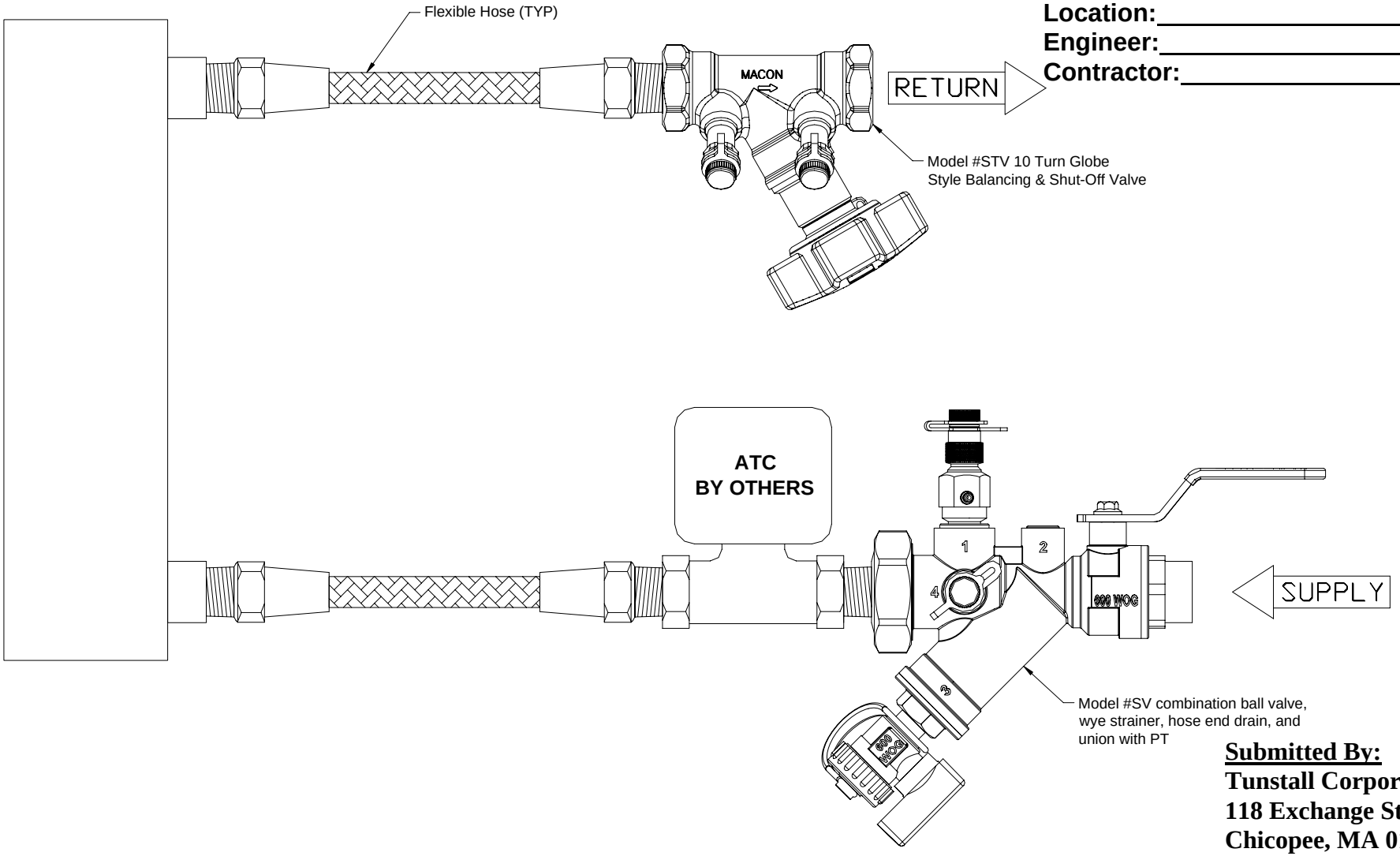
Valve Package (Model # 2SSX-CS-FLEX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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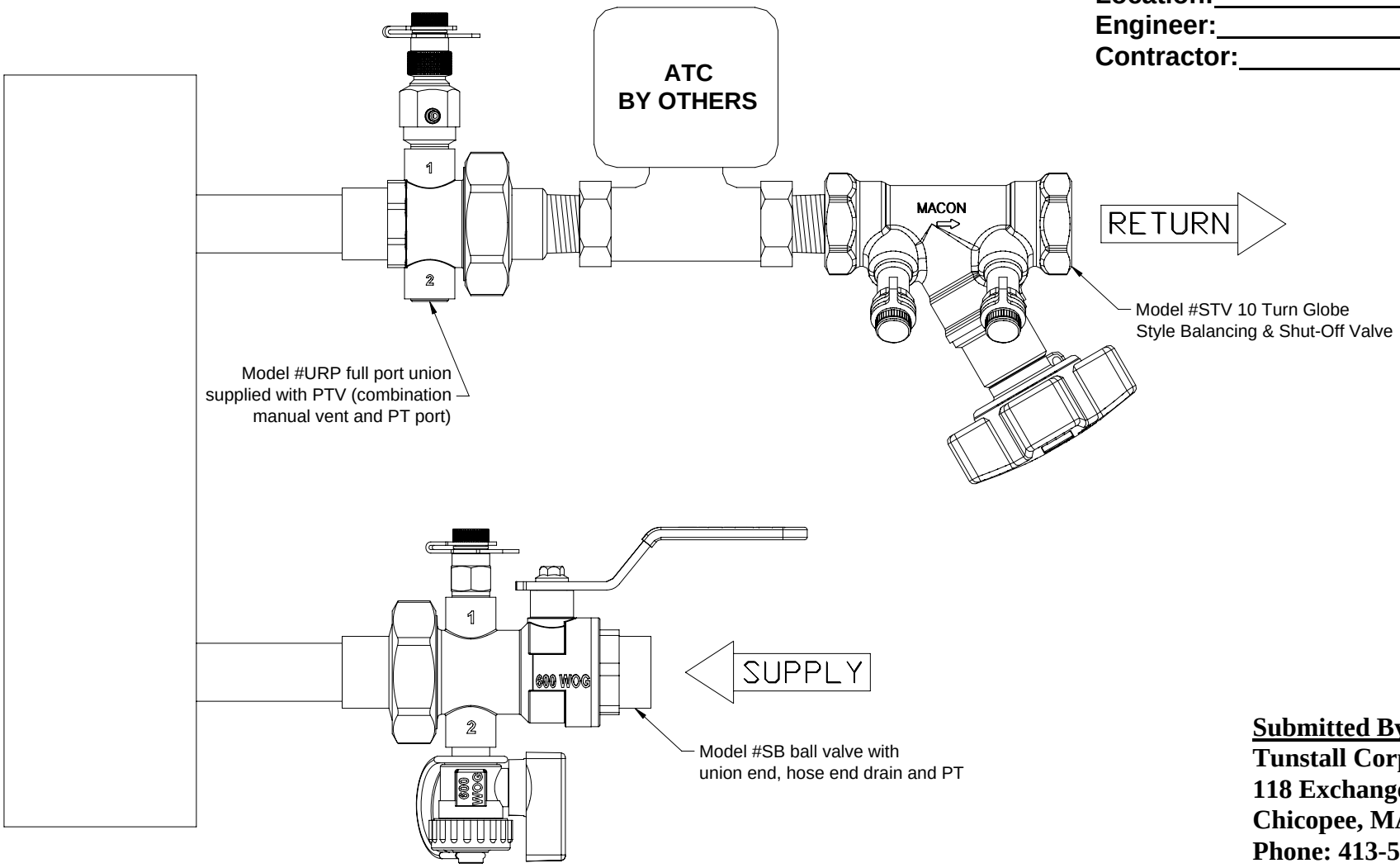
Valve Package (Model # 2RB-CS)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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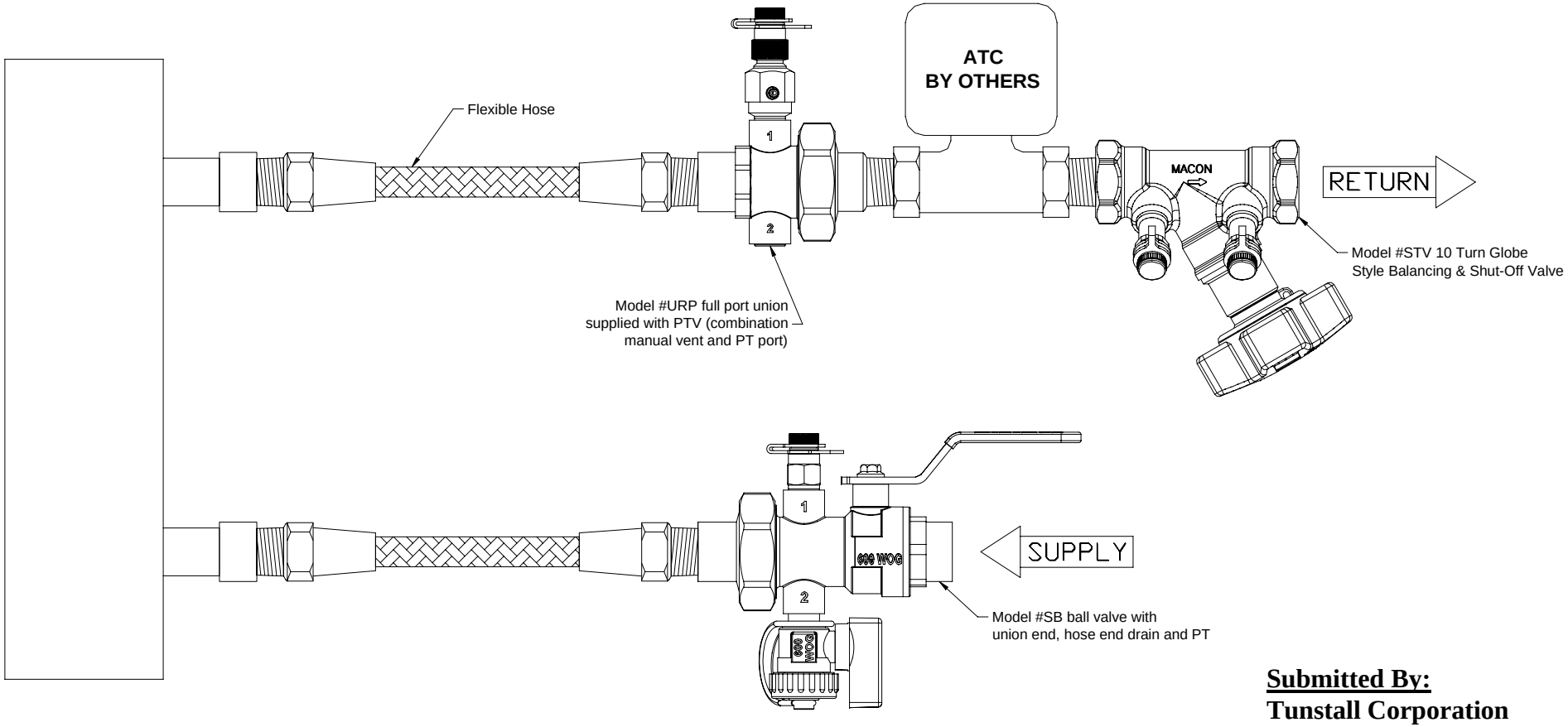
Valve Package (Model # 2RB-CS-FLEX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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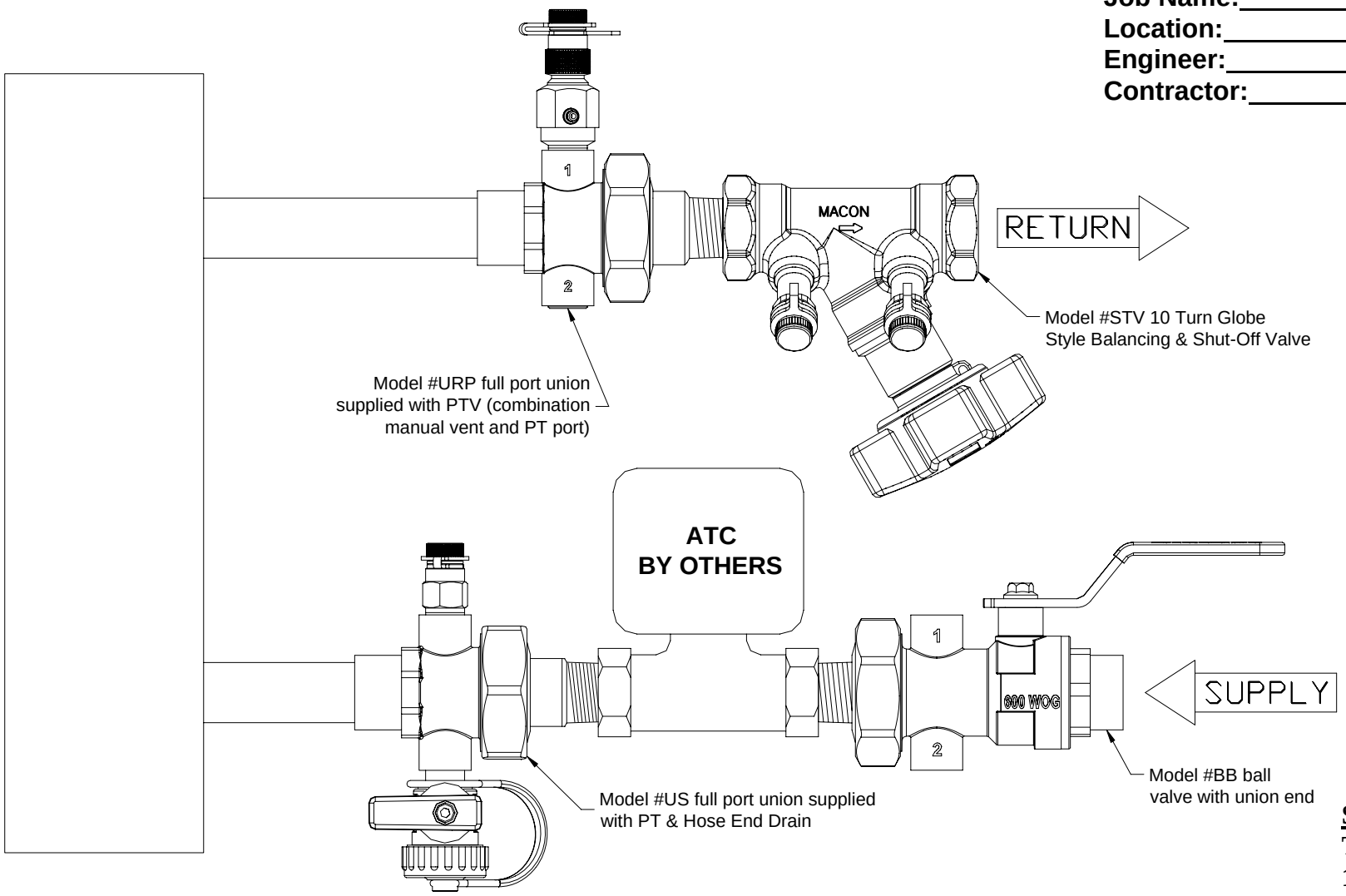
Valve Package (Model # 2SB-CS)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Valve Package (Model # 2SB-CS-FLEX)

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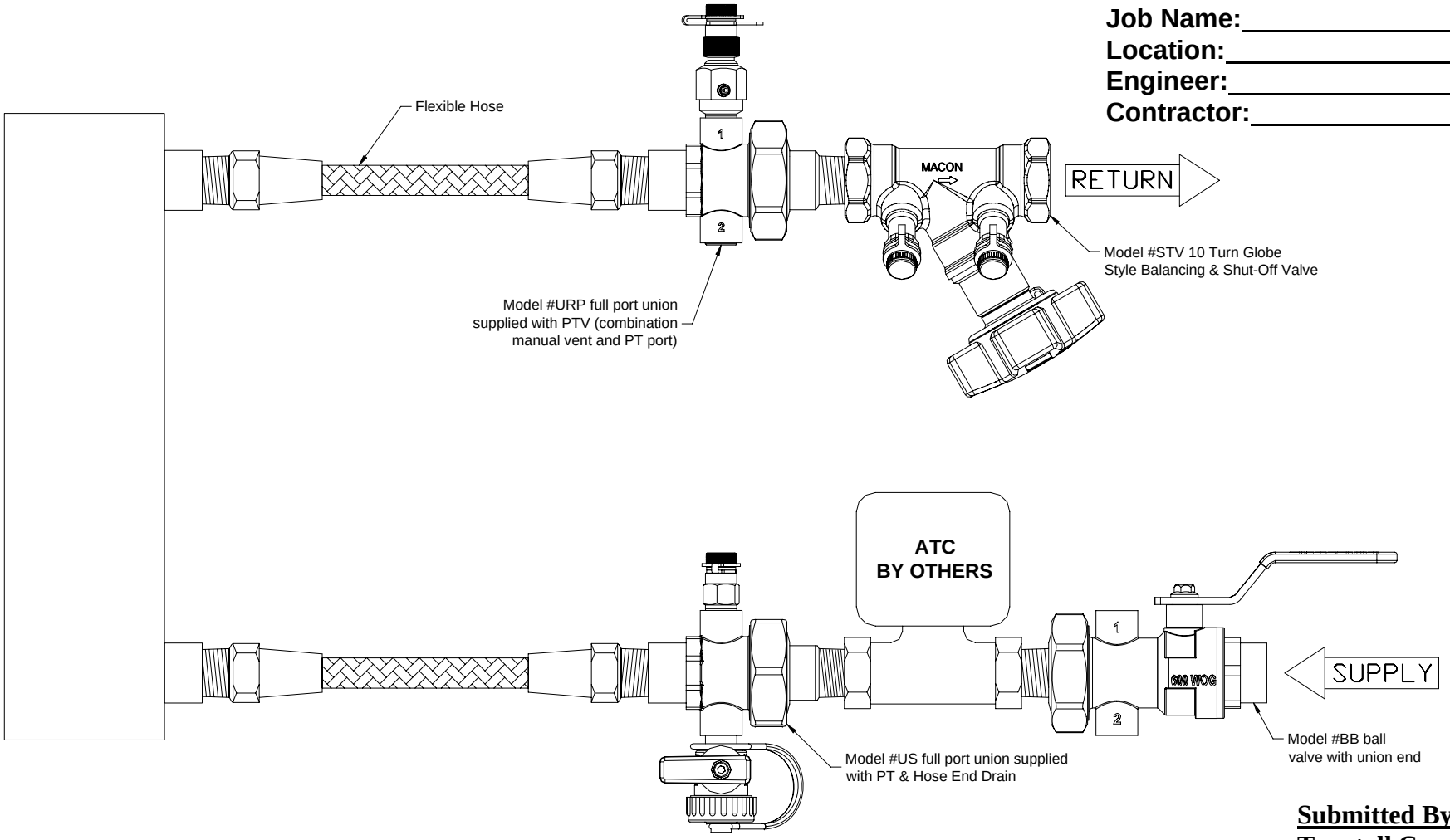
Location:_____
Engineer:_____
Contractor:_____



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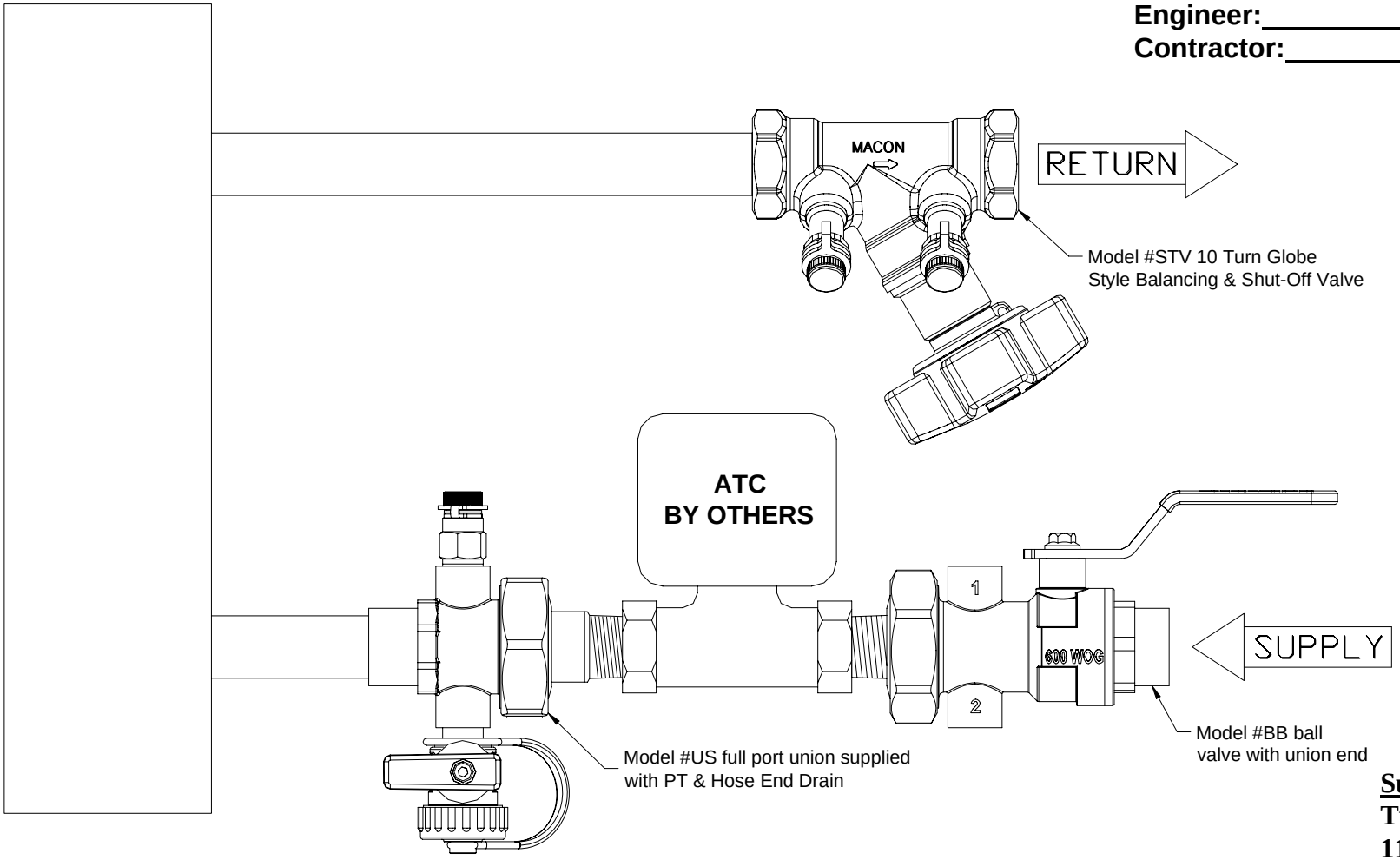

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Valve Package (Model # 2SBX-CS-FLEX)

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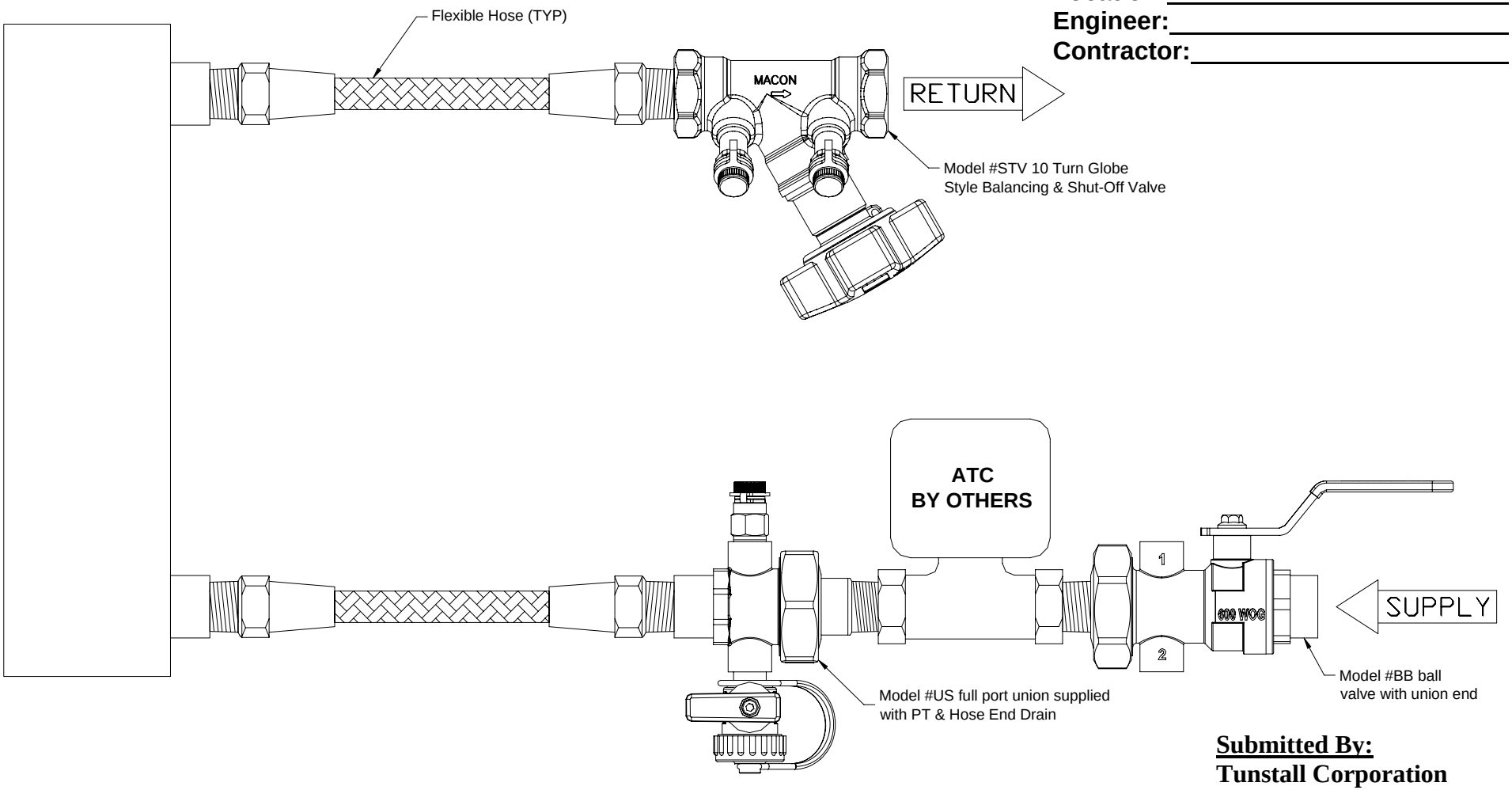
Location: _____
Engineer: _____
Contractor: _____



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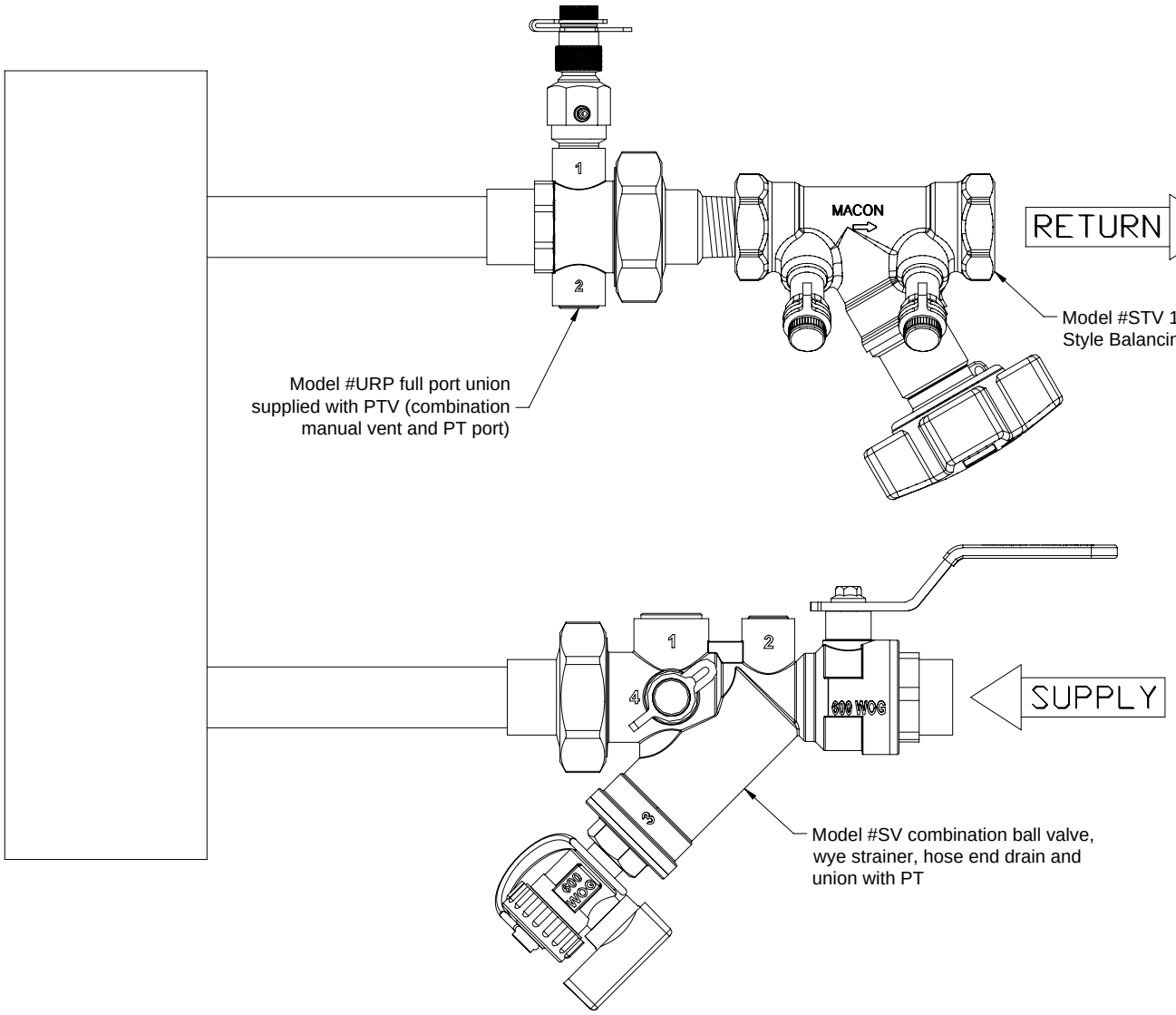
Valve Package (Model # XXS-CS)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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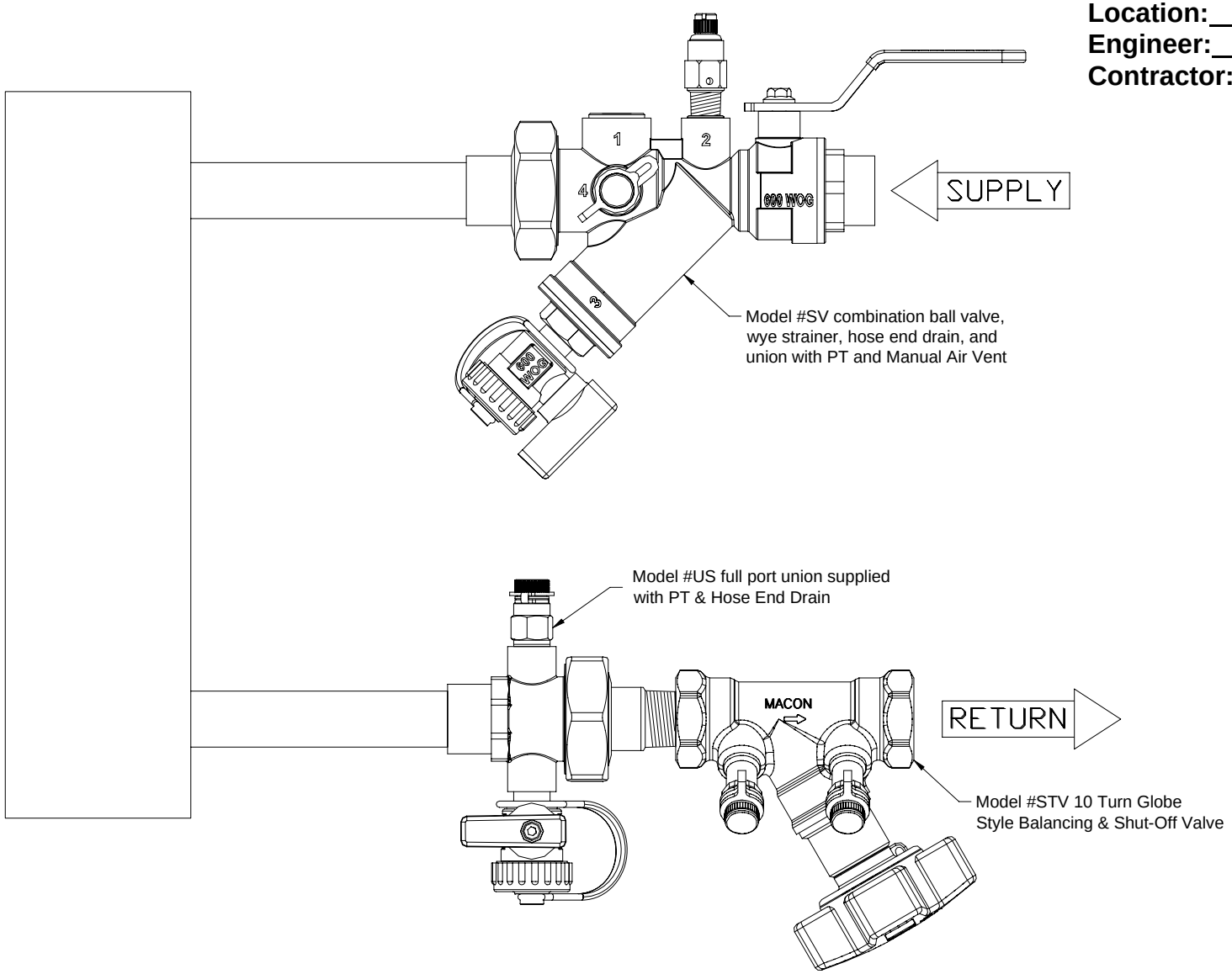
Valve Package (Model # XXUS-CS)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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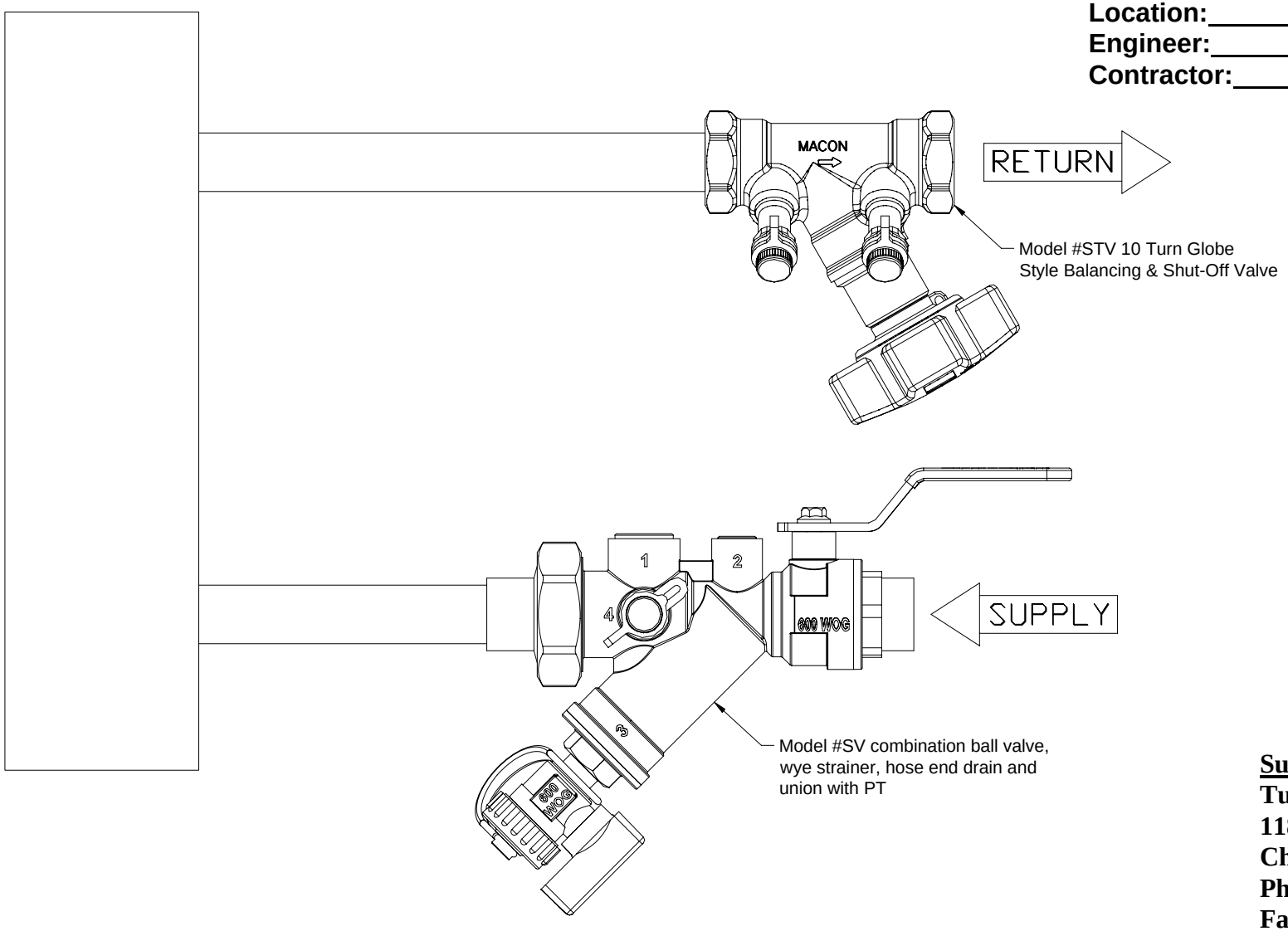
Valve Package (Model # XS-CSX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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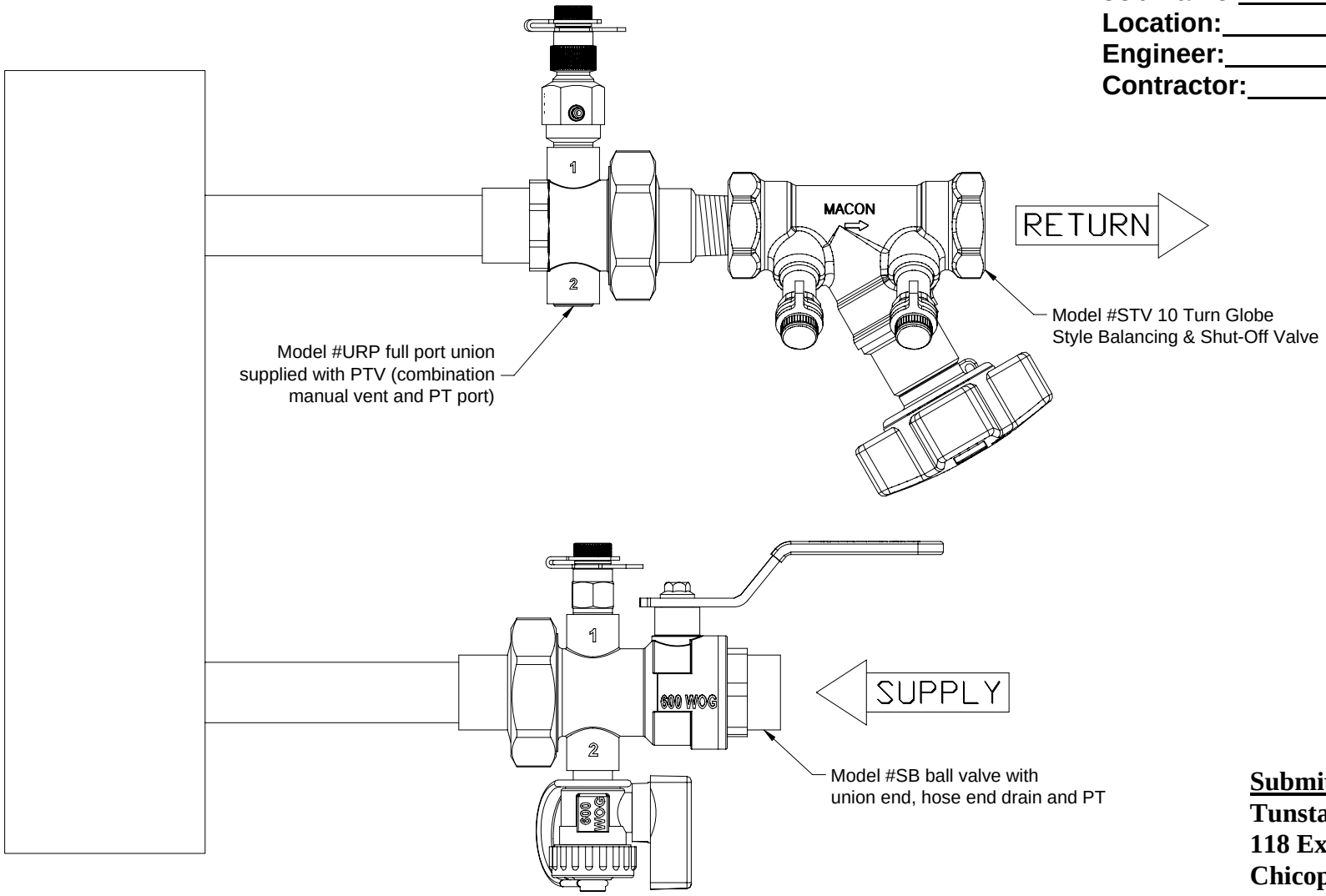
Valve Package (Model # XXB-CS)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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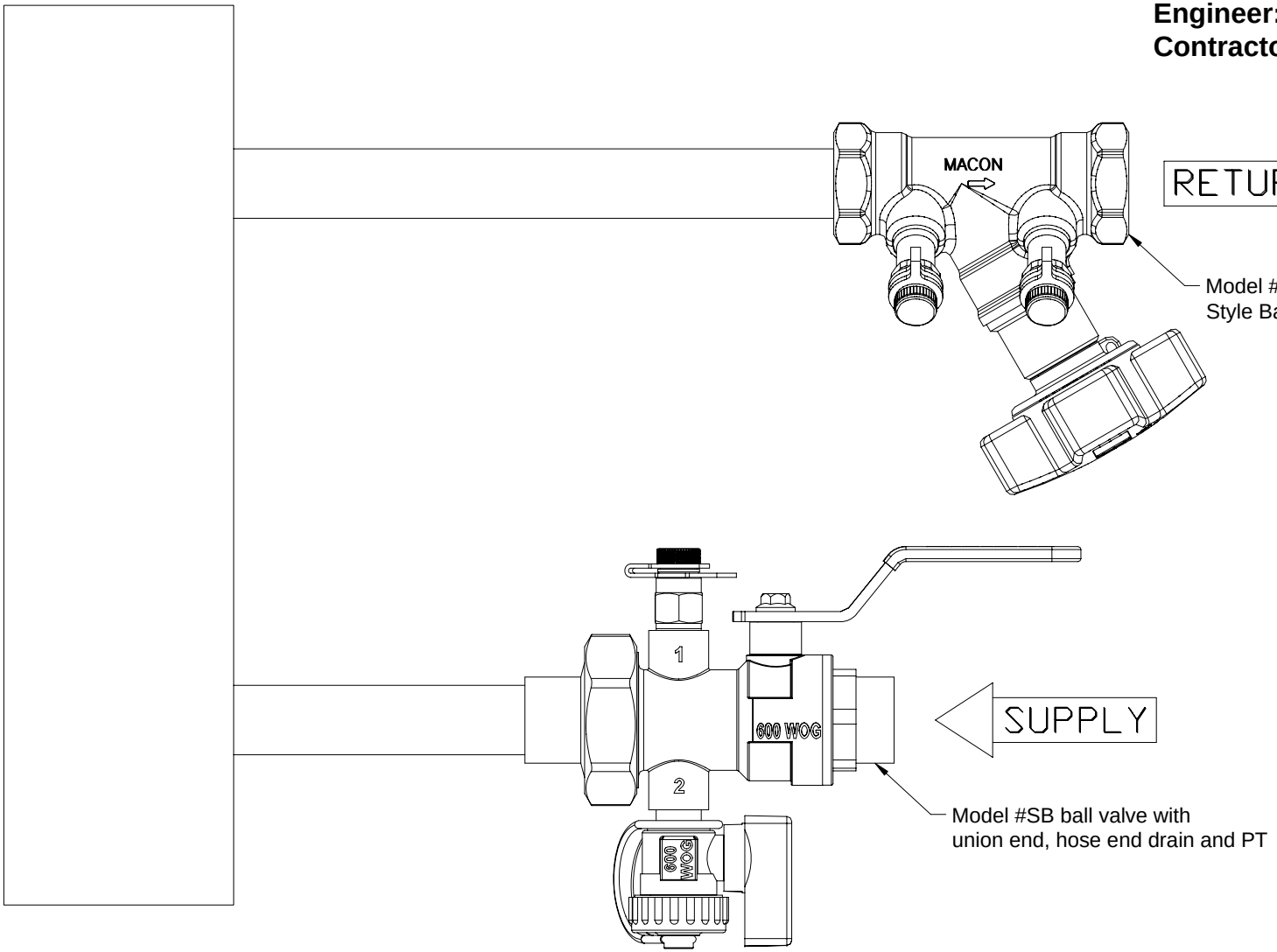
Valve Package (Model # XB-CSX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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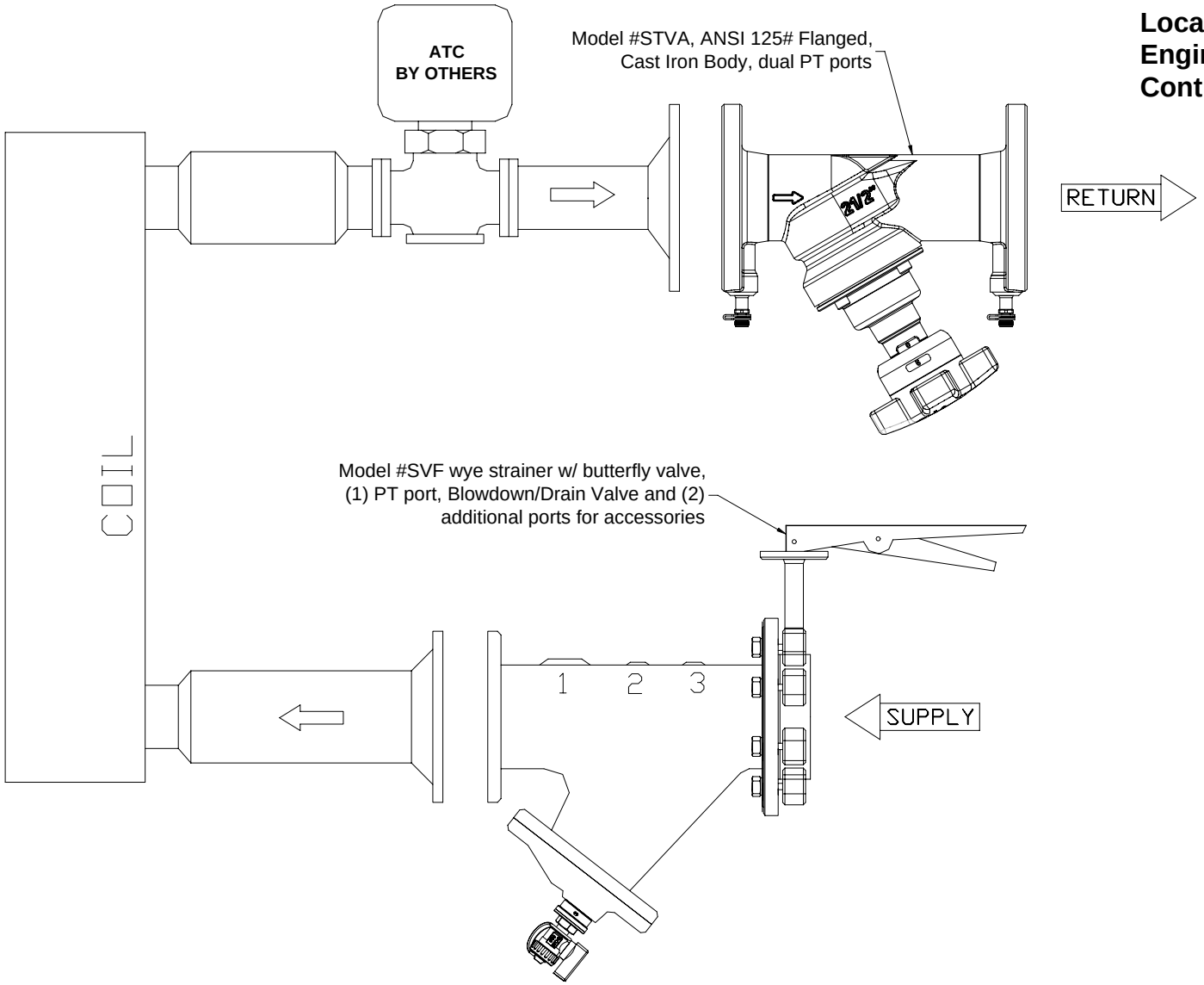
Valve Package (Model #STVA w/ SVF)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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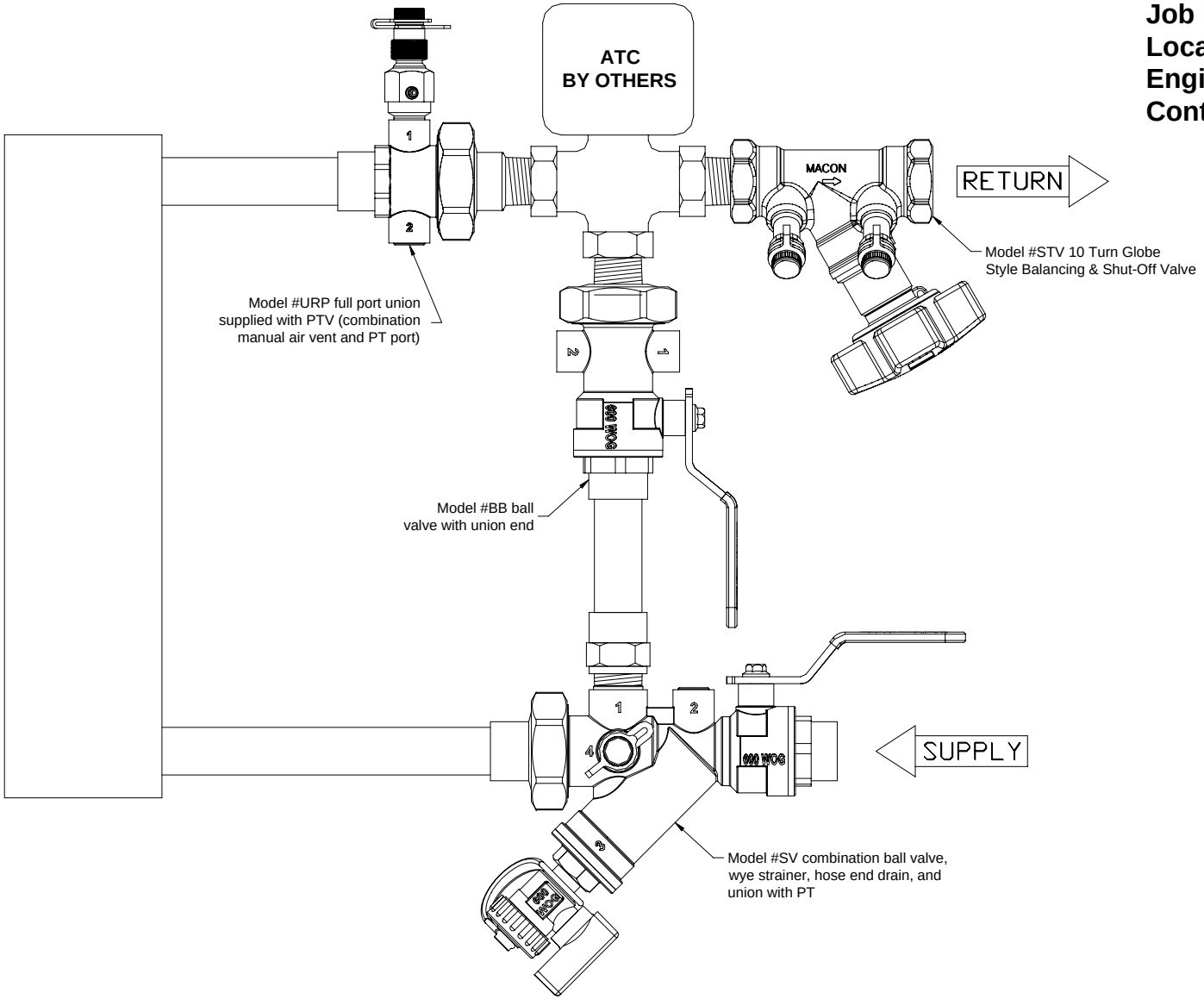
Valve Package (Model # 3RS-CS)



Job Name:_____
Location:_____
Engineer:_____
Contractor:_____

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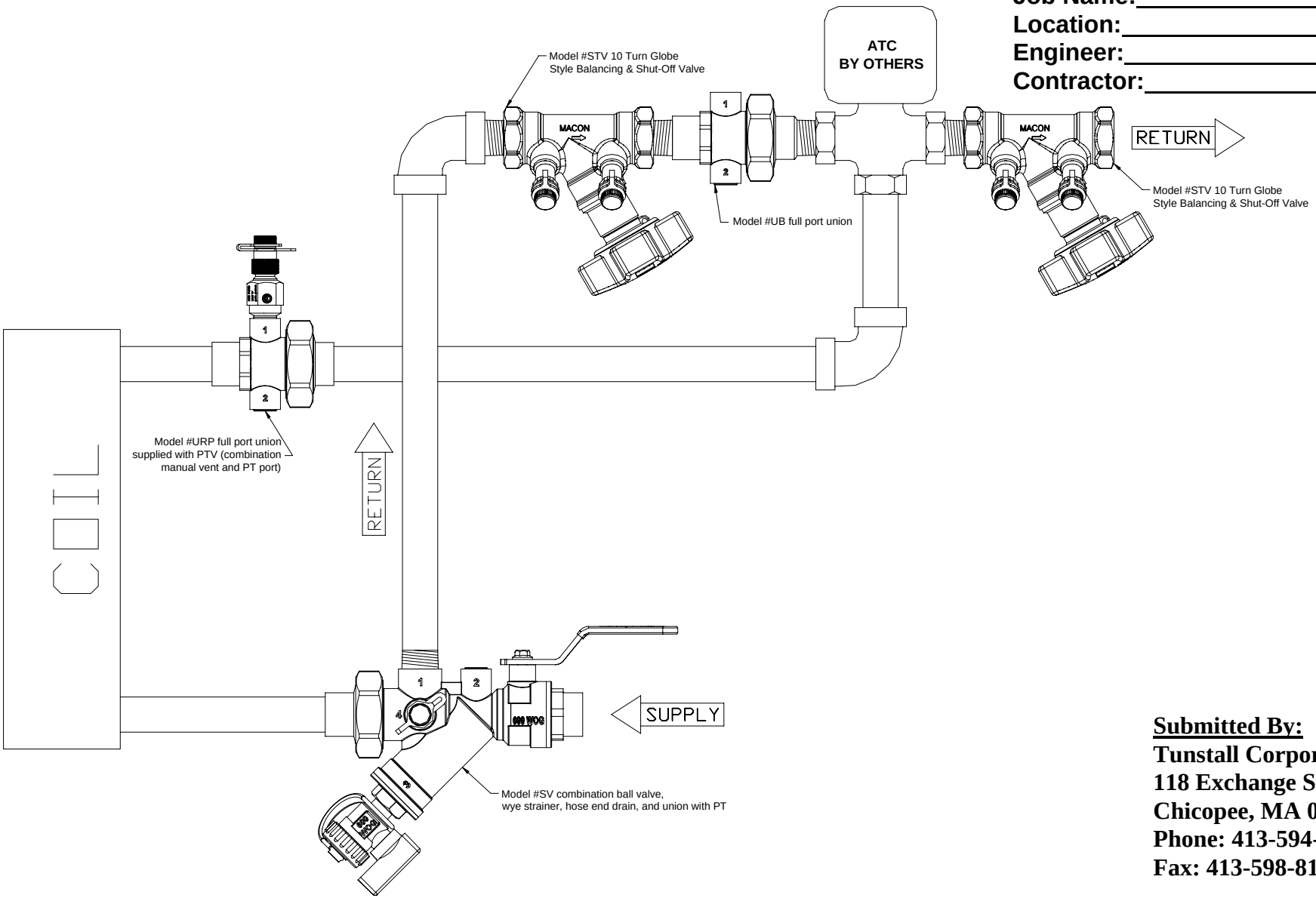
Valve Package (Model # 3RS-CS-A)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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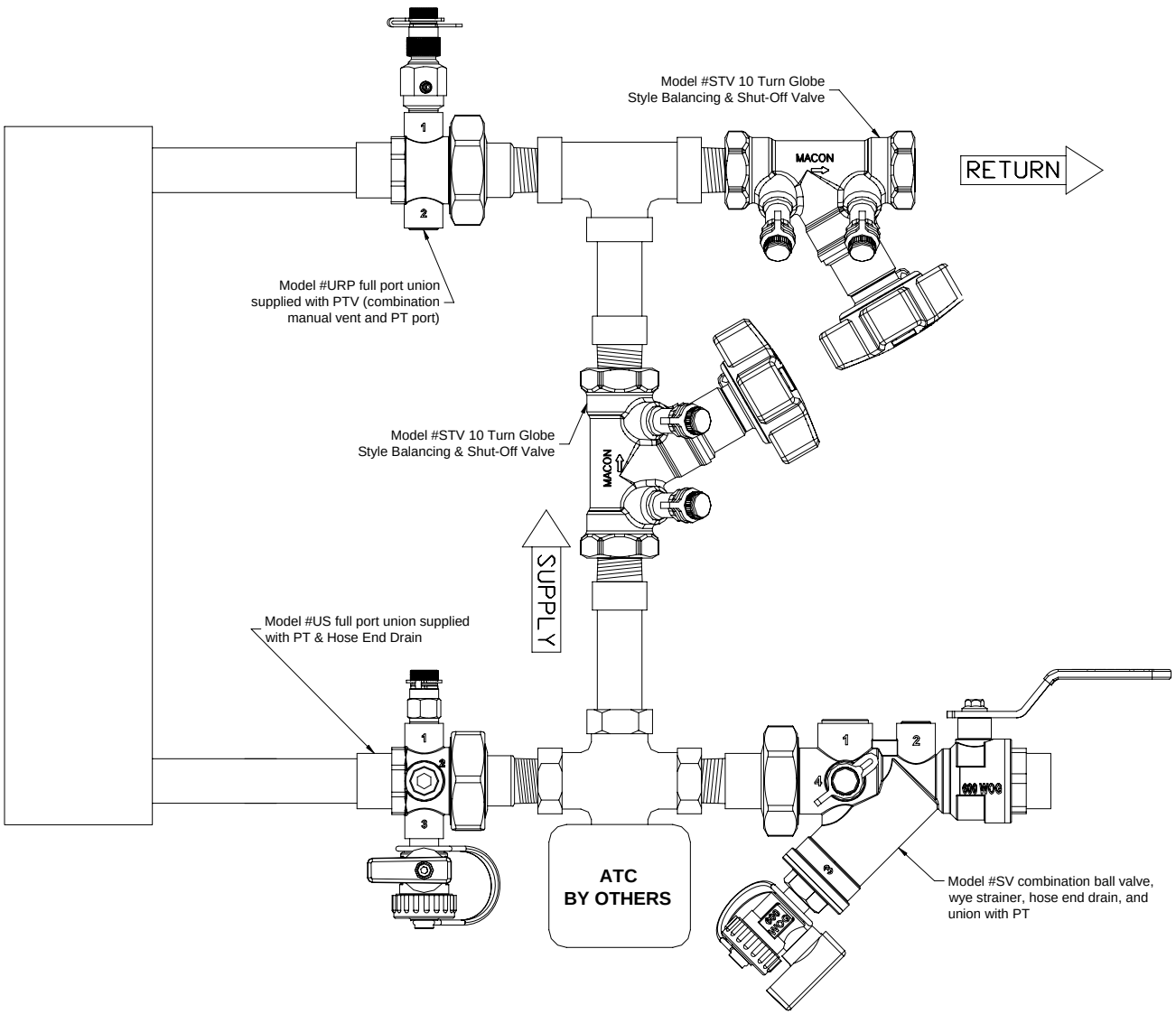
Valve Package (Model # 3SS-CS(2))

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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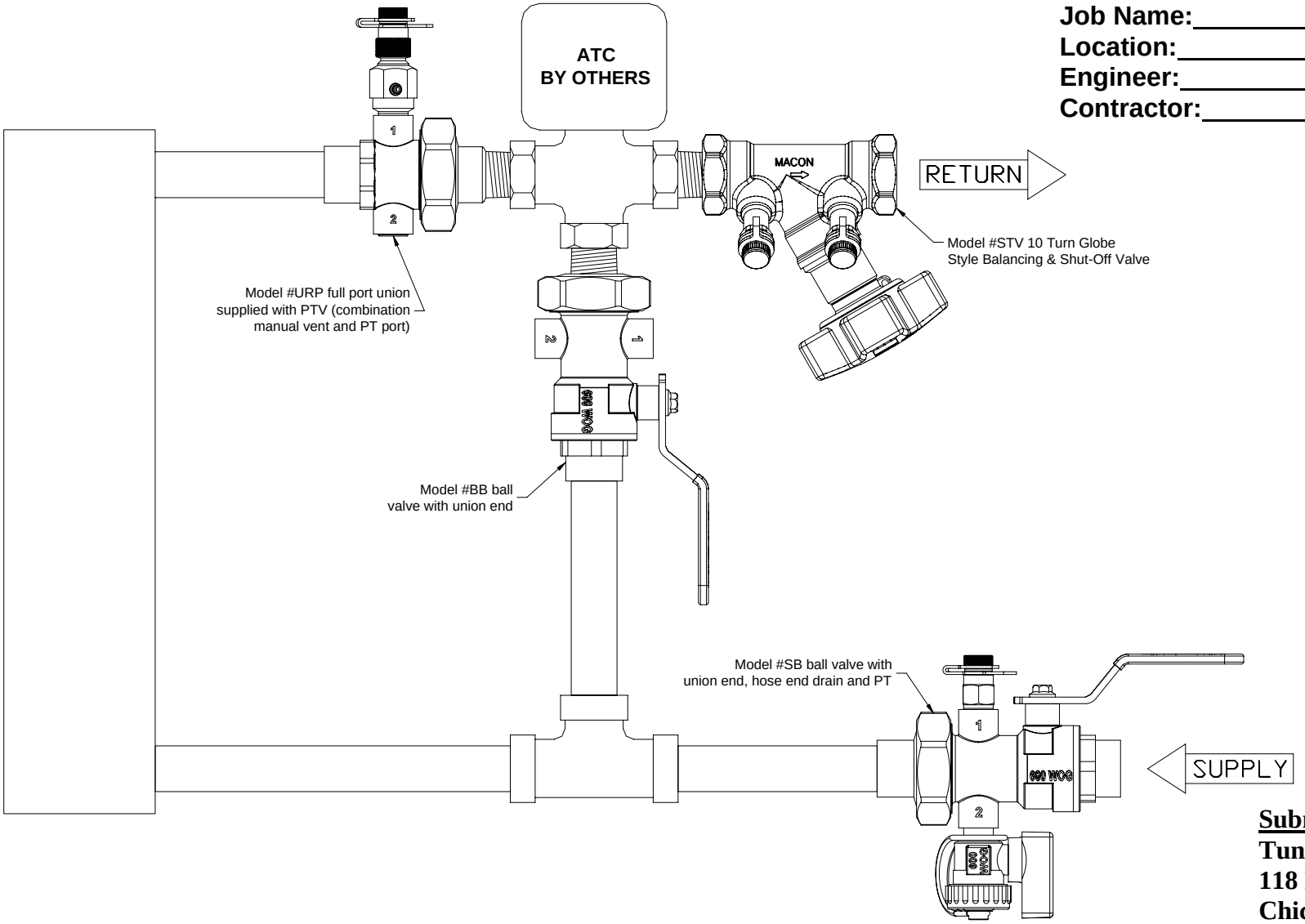
Valve Package (Model # 3RB-CS)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

MACON® BALANCING

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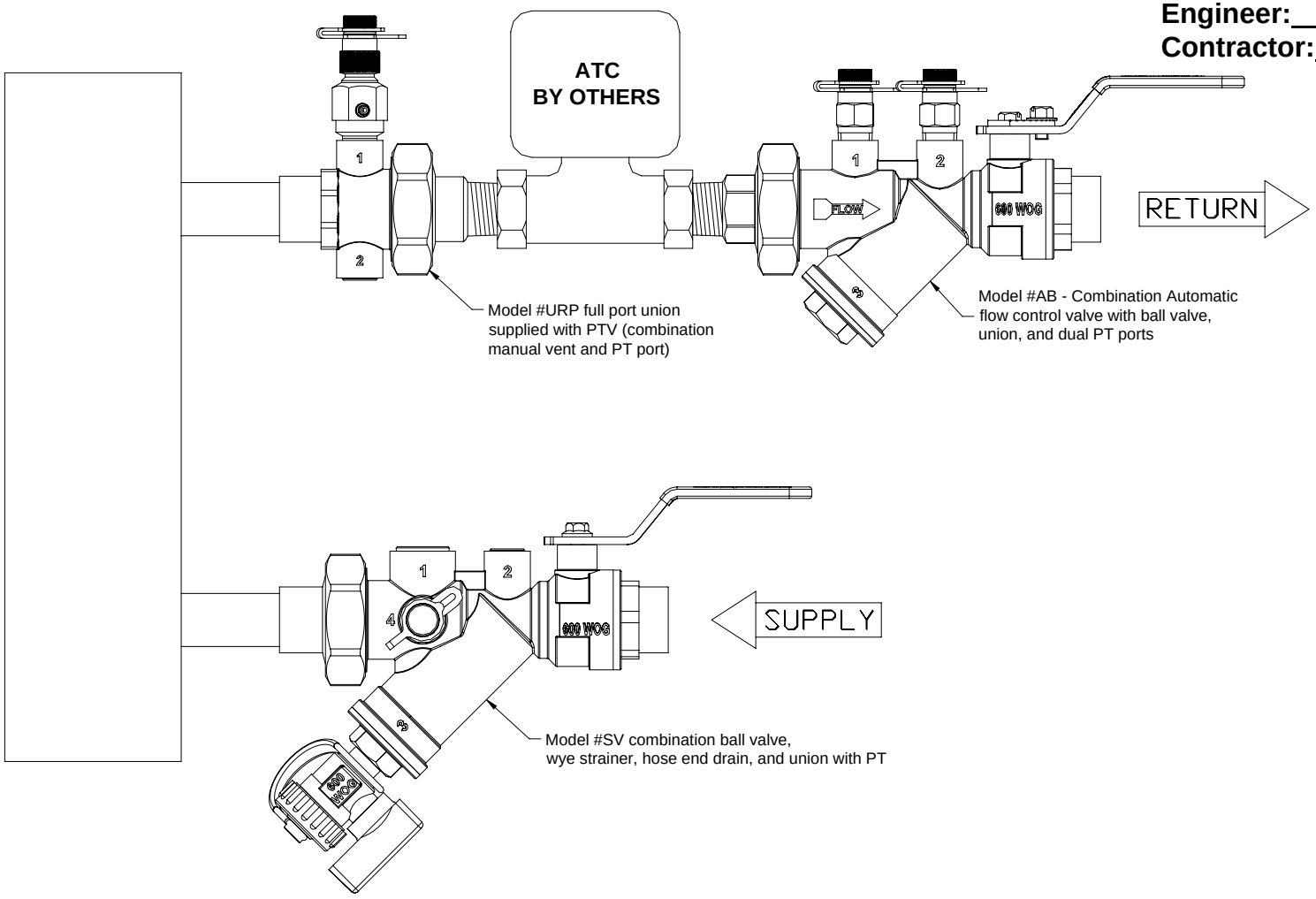
Valve Package (Model # 2RS-AB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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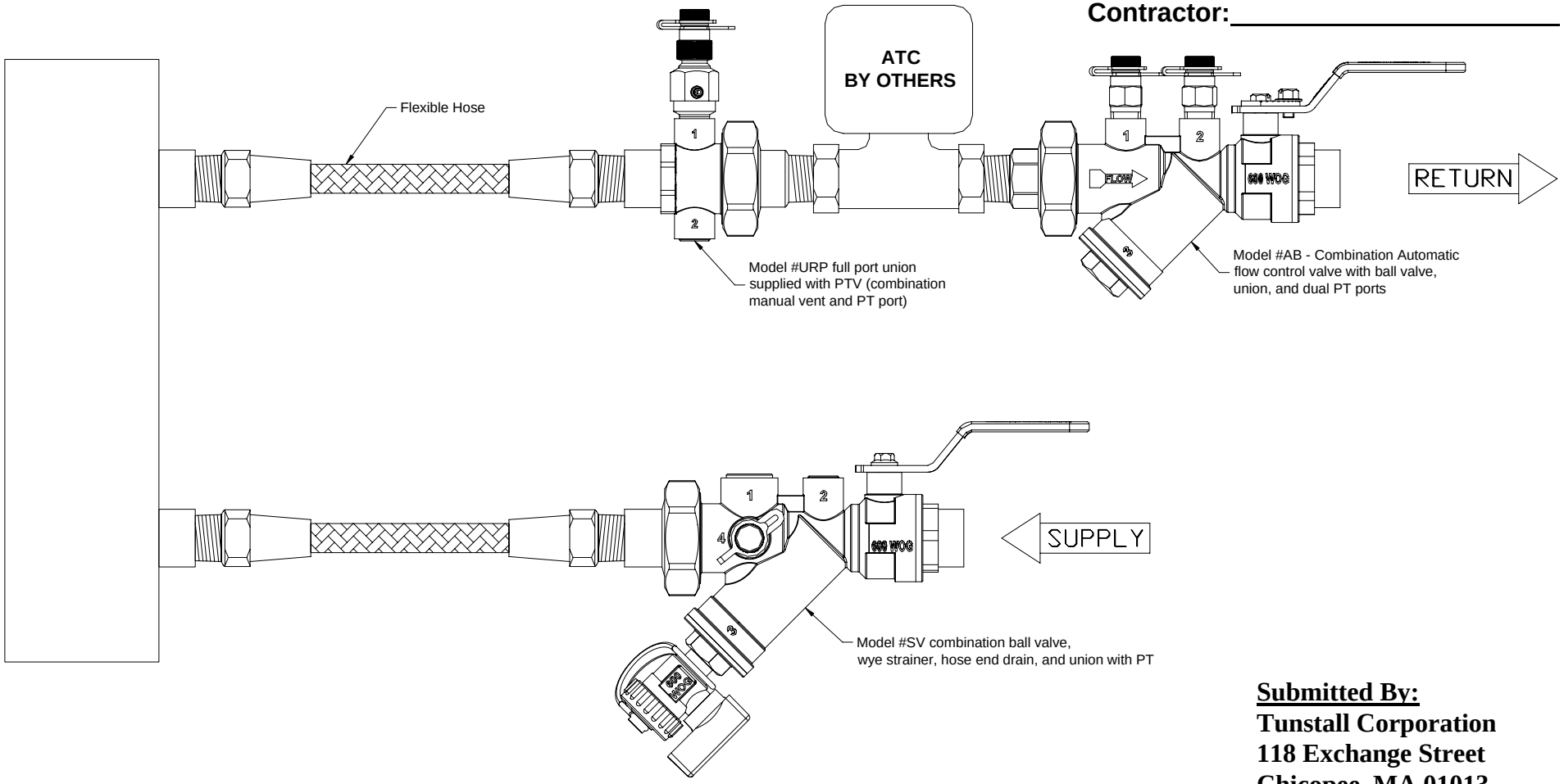
Valve Package (Model # 2RS-AB-FLEX)

Job Name: _____

Location: _____

Engineer: _____

Contractor: _____



Submitted By:

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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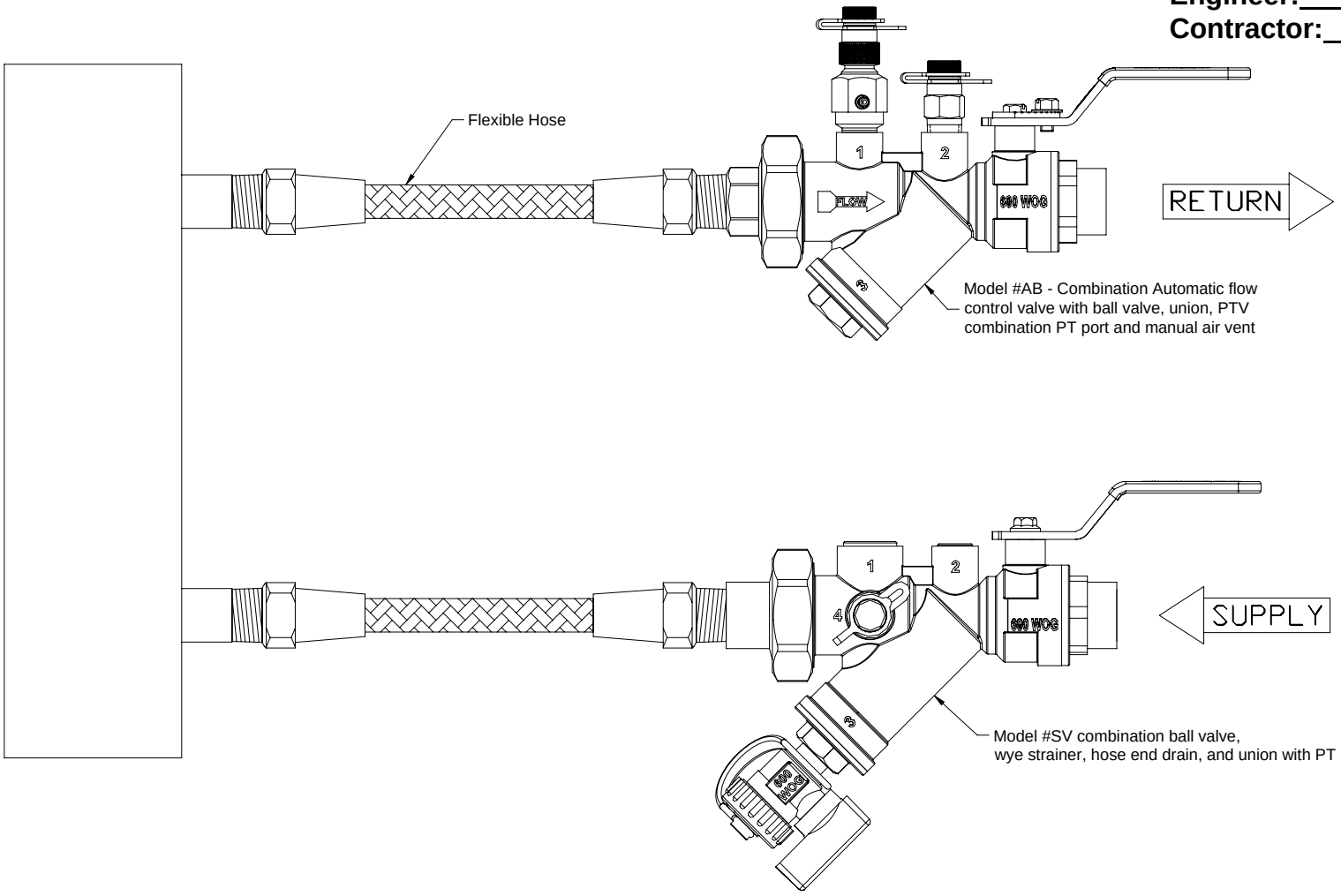
Valve Package (Model # 2RSX-AB-FLEX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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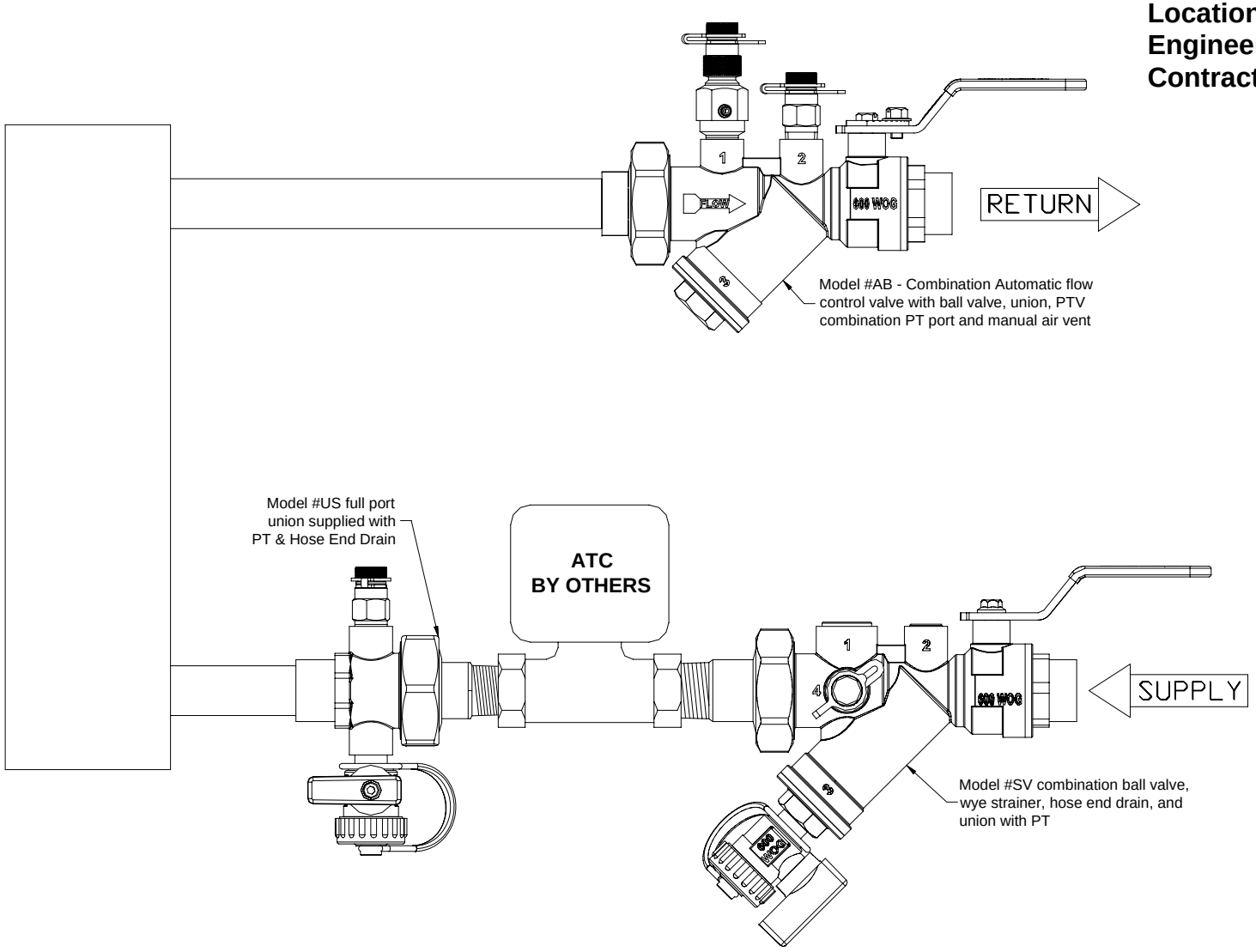
Valve Package (Model # 2SS-AB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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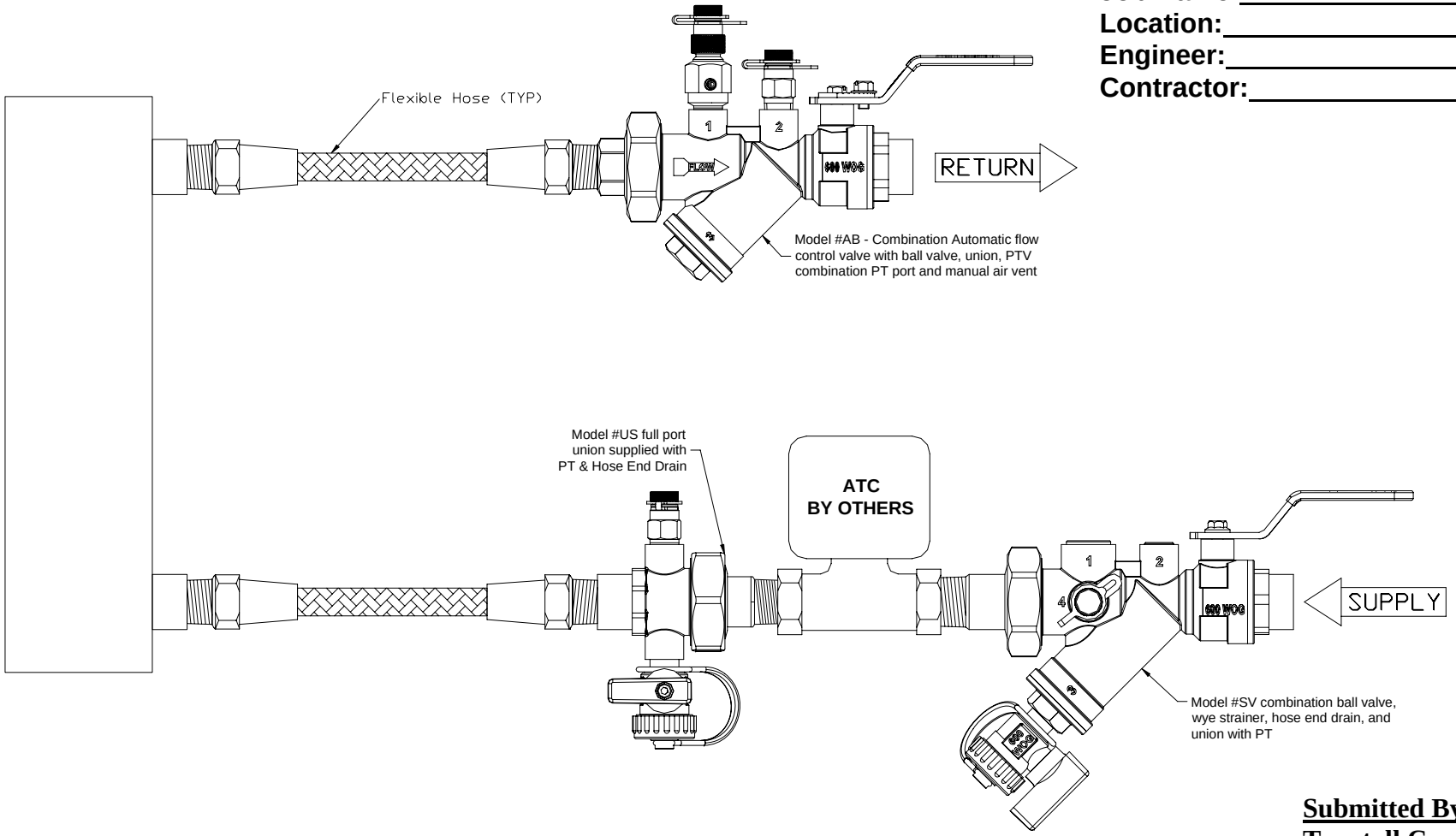
Valve Package (Model # 2SS-AB-FLEX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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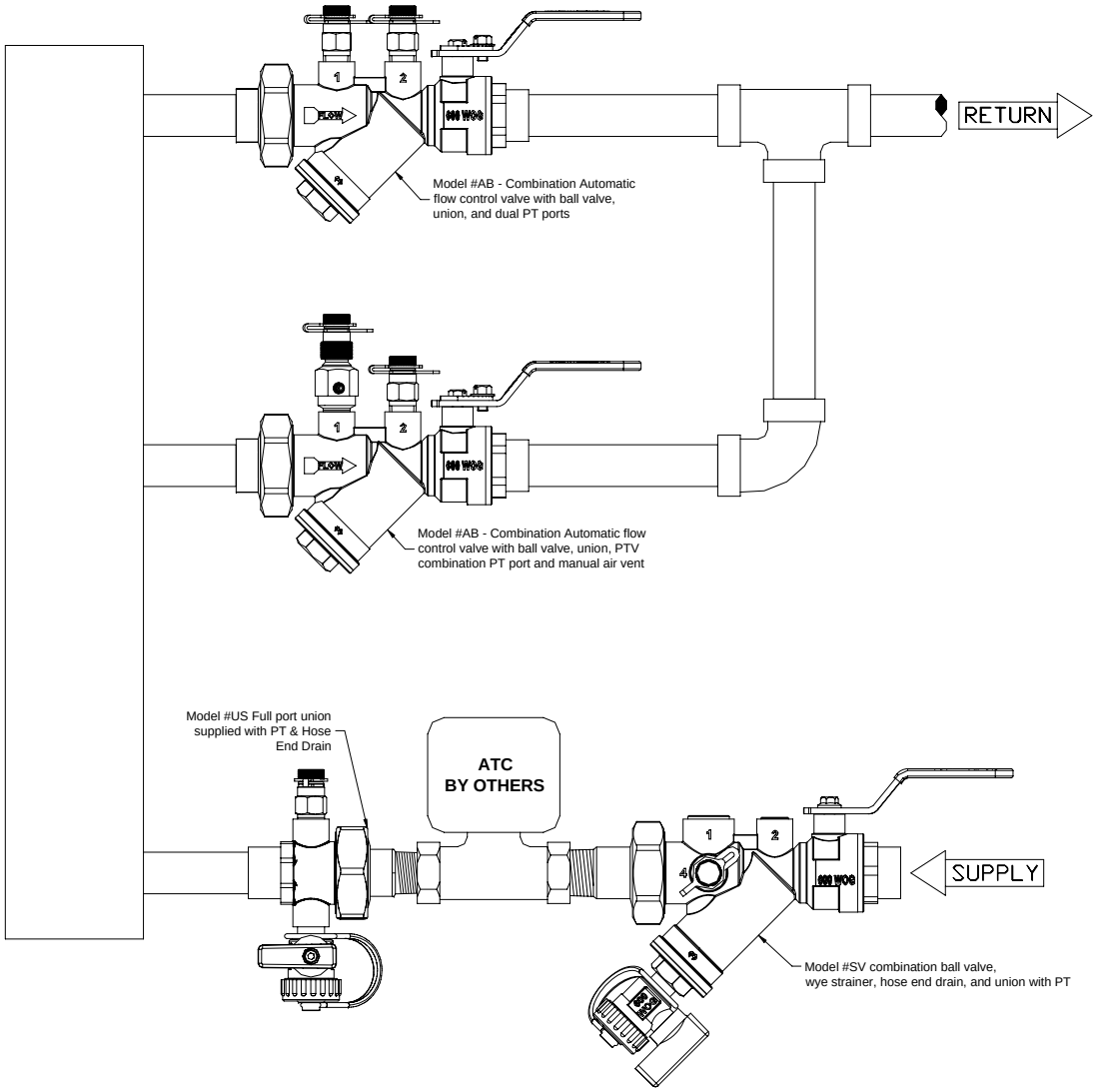
Valve Package (Model # 2SS-2AB)



Job Name:_____
Location:_____
Engineer:_____
Contractor:_____

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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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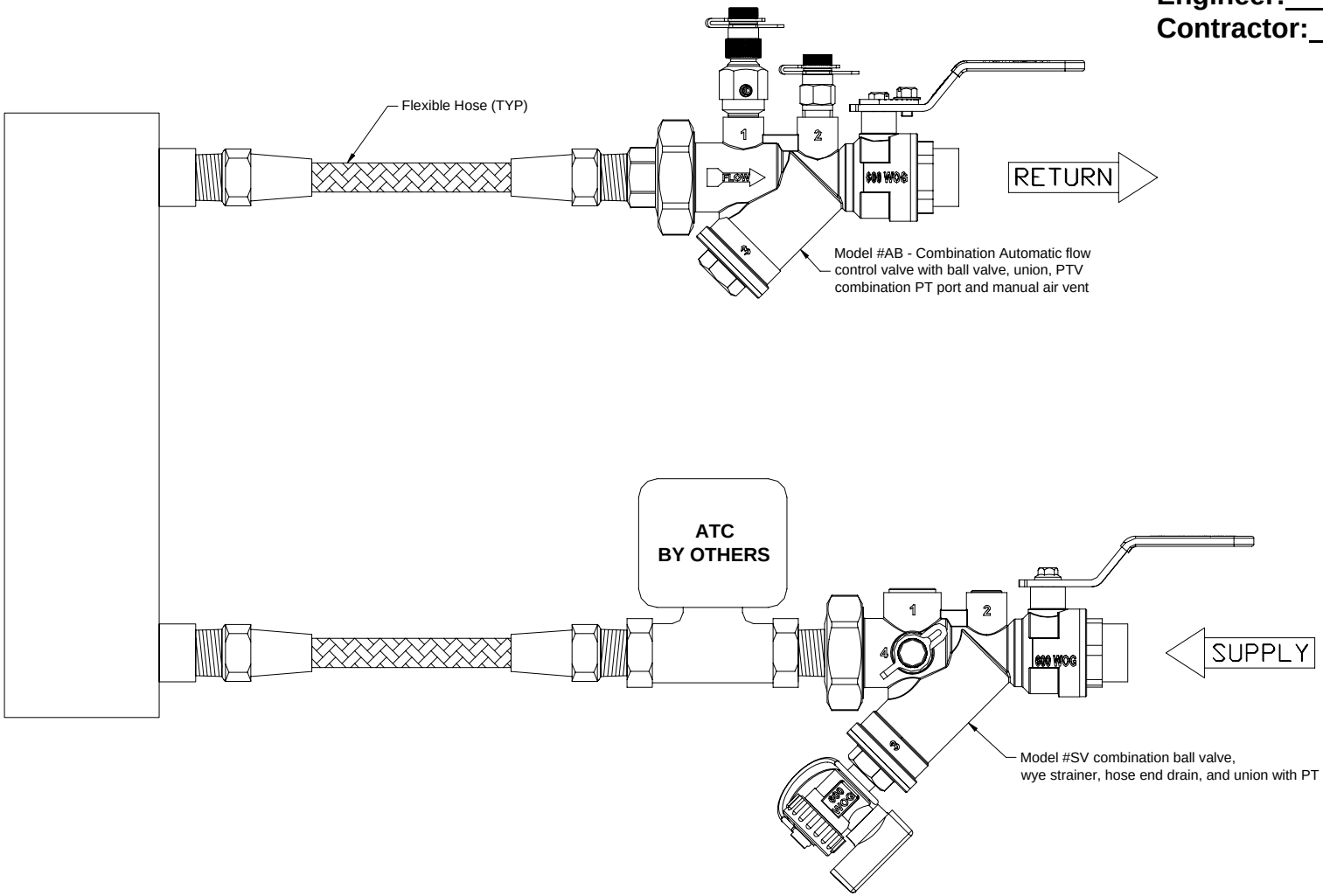
Valve Package (Model # 2SSX-AB-FLEX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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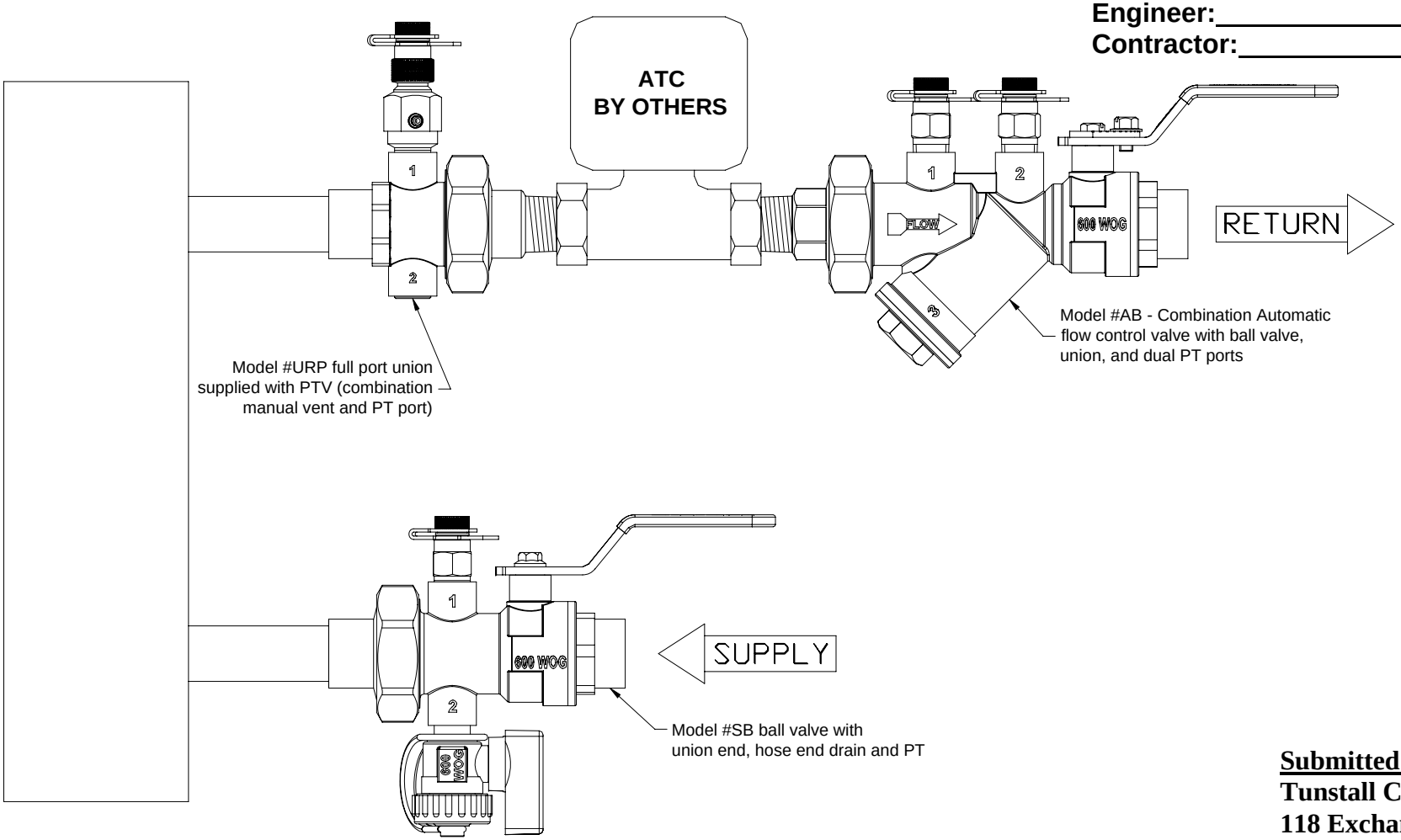
Valve Package (Model # 2RB-AB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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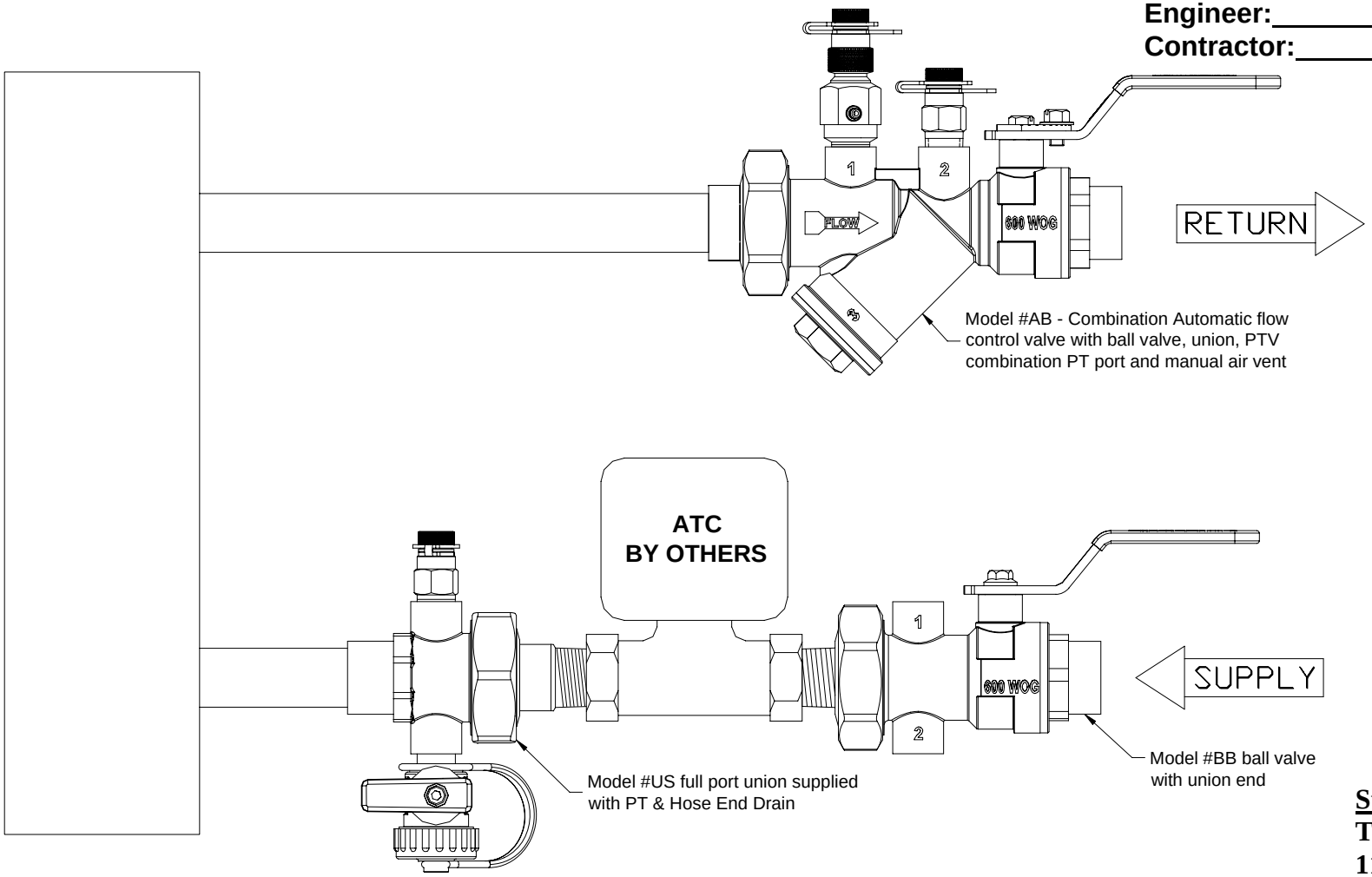
Valve Package (Model # 2SB-AB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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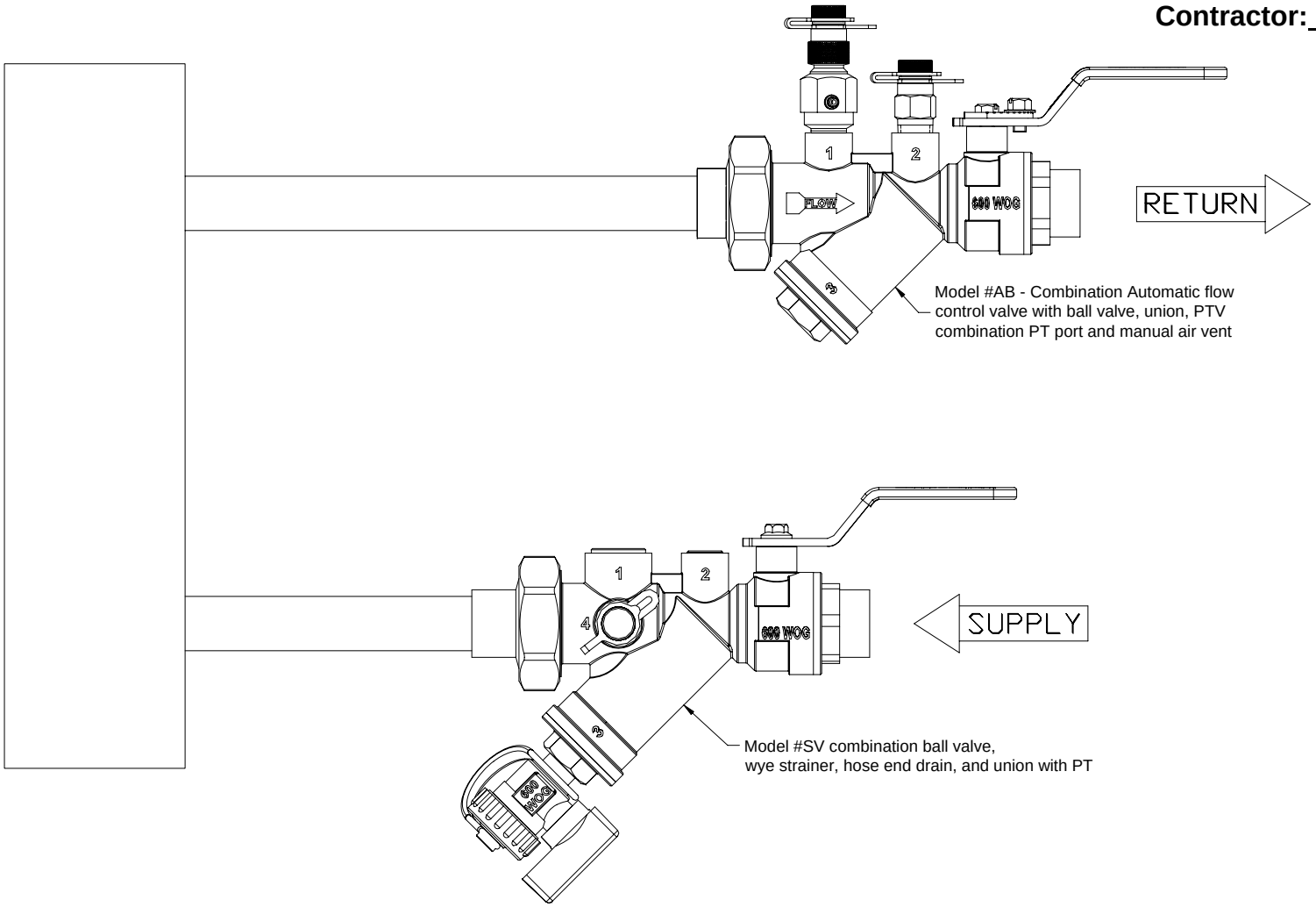
Valve Package (Model # XXS-AB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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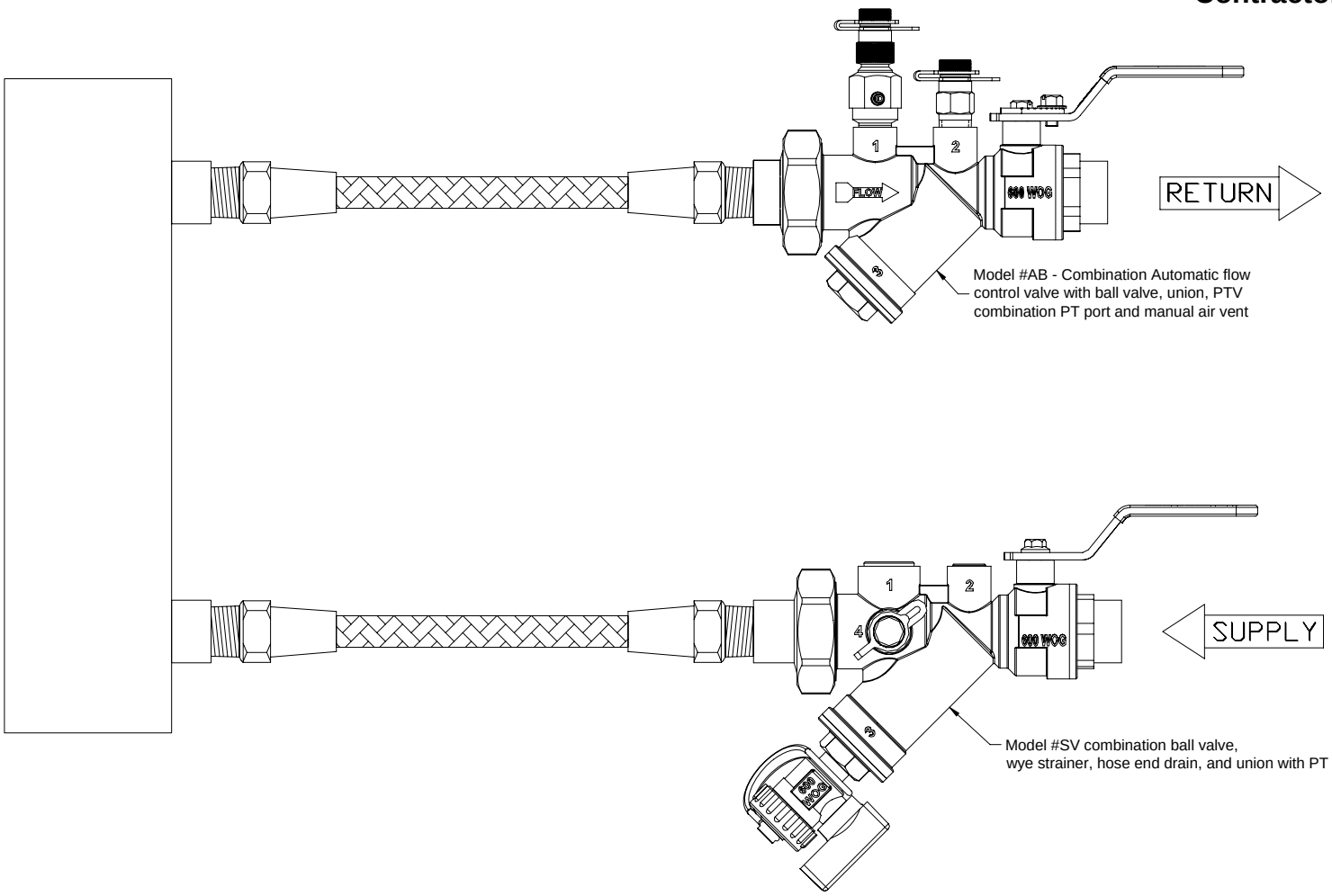
Valve Package (Model # XXS-AB-FLEX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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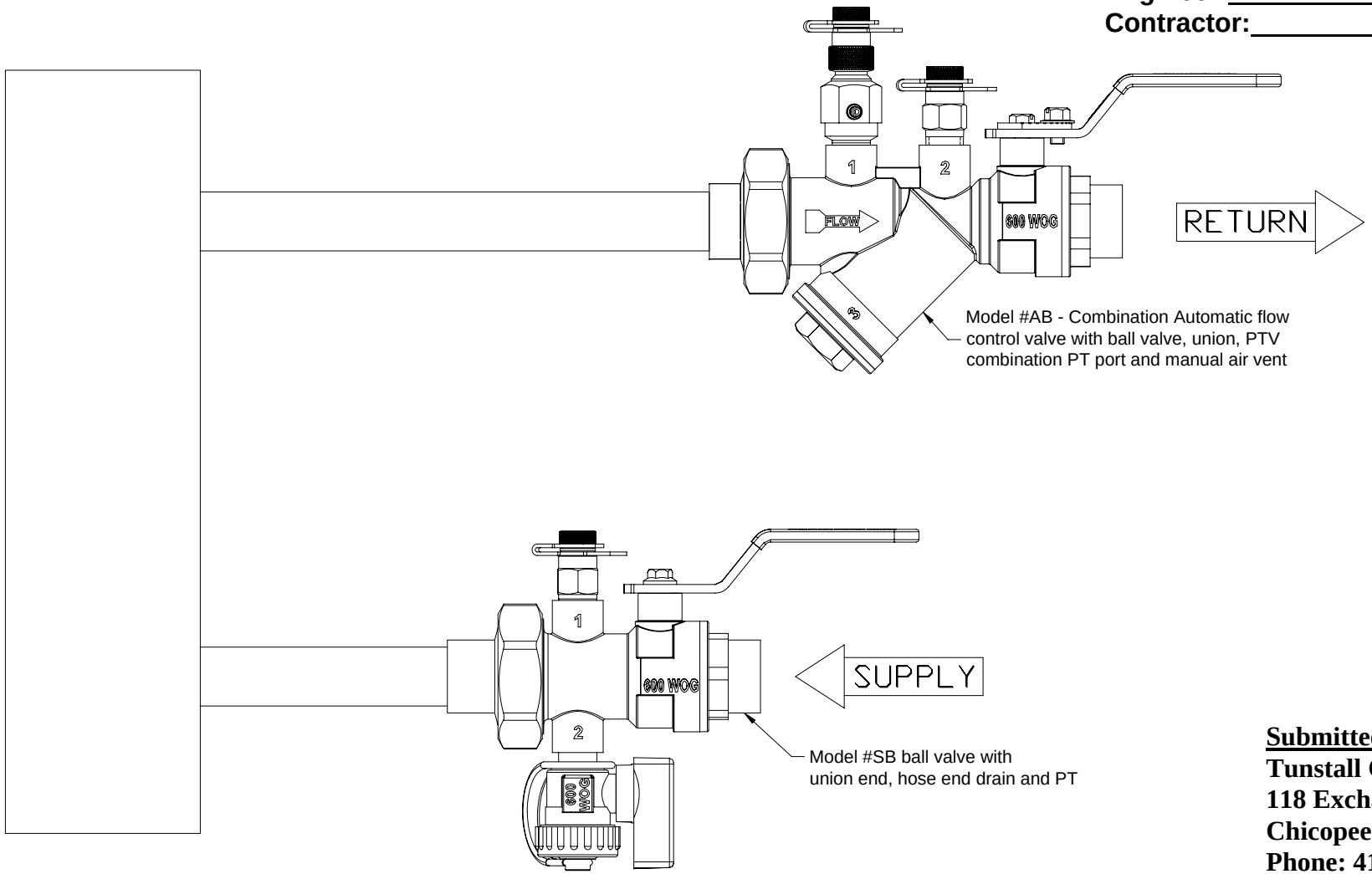
Valve Package (Model # XXB-AB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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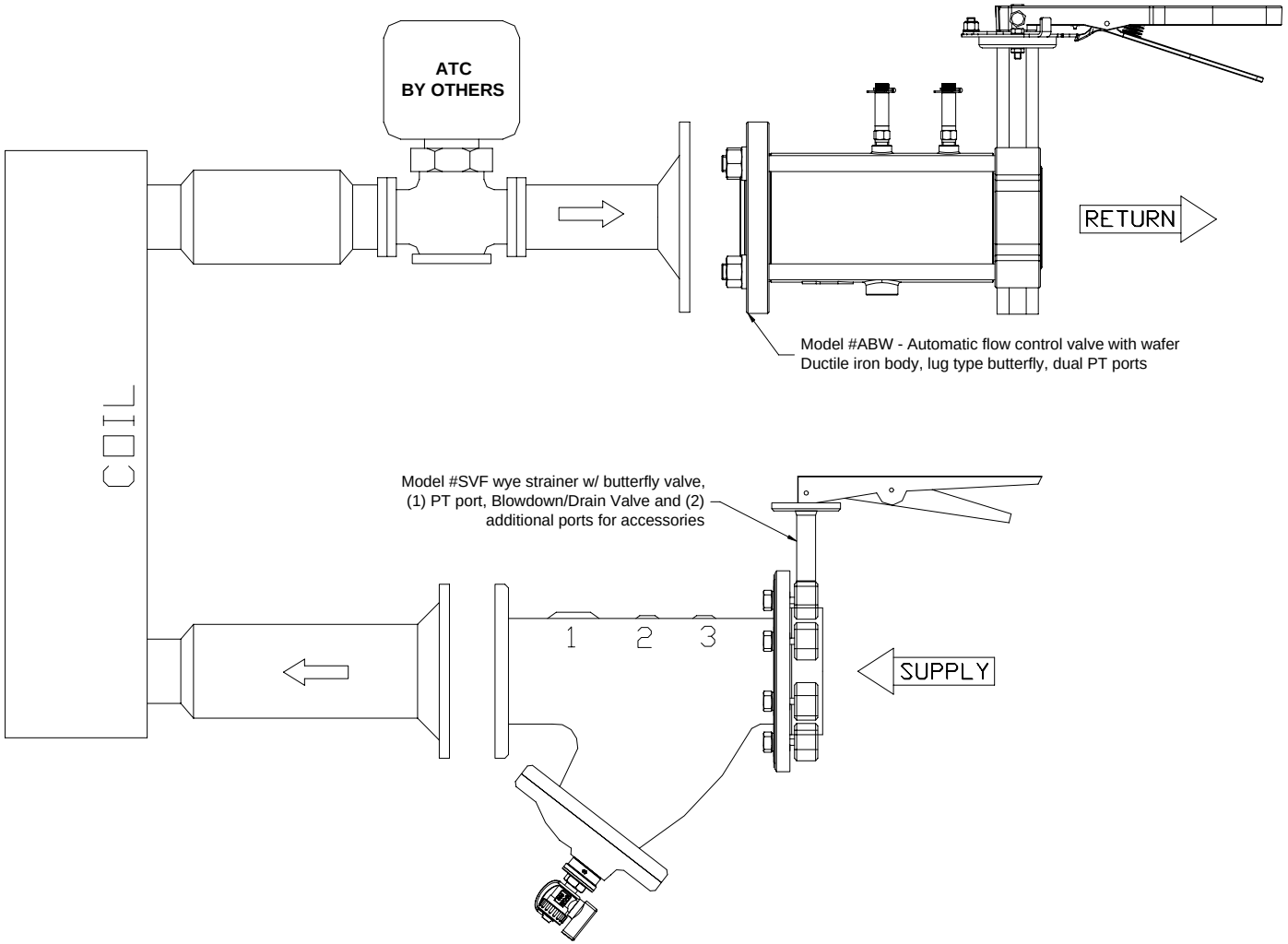
Valve Package (Model # ABW w/ SVF)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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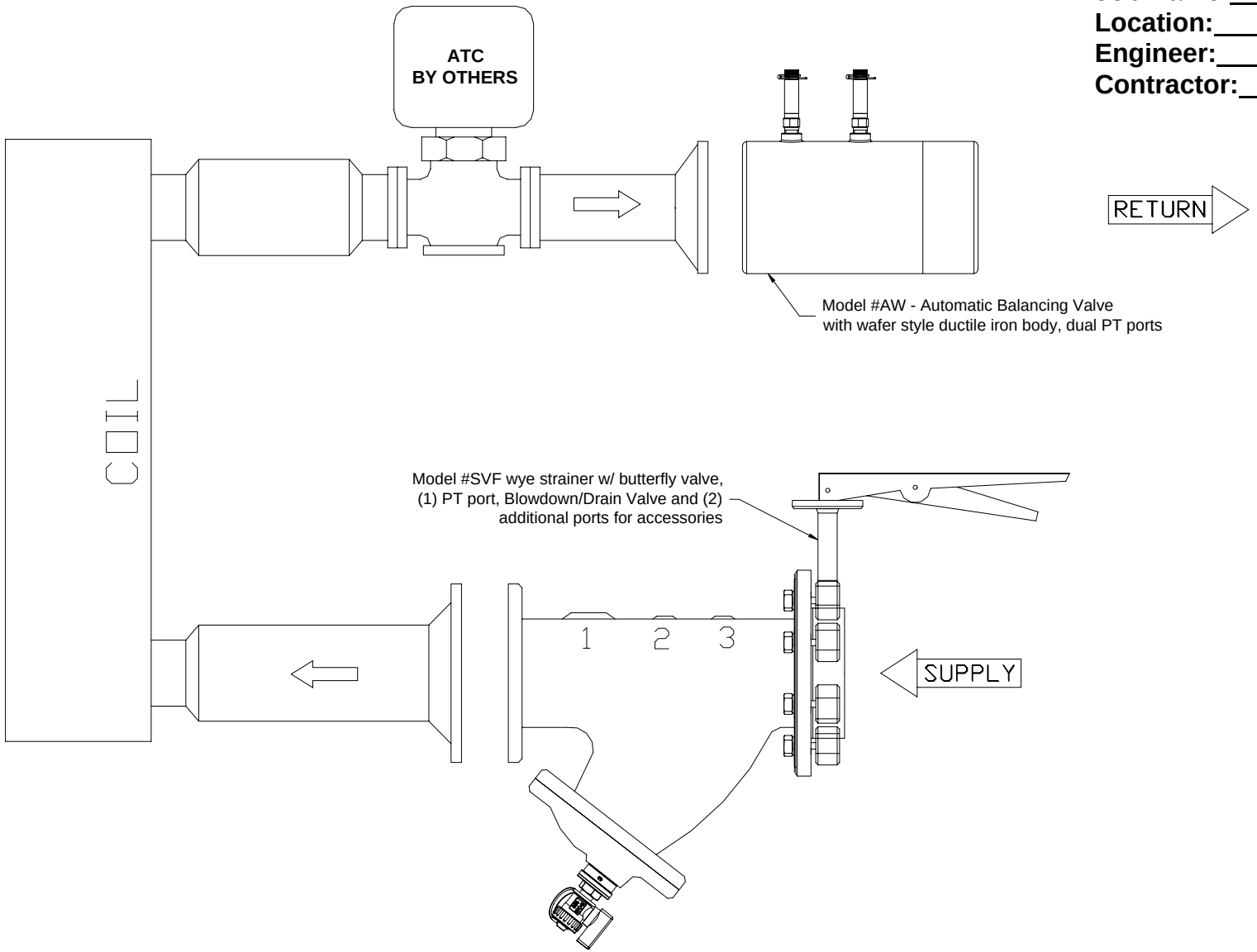
Valve Package (Model # AW w/ SVF)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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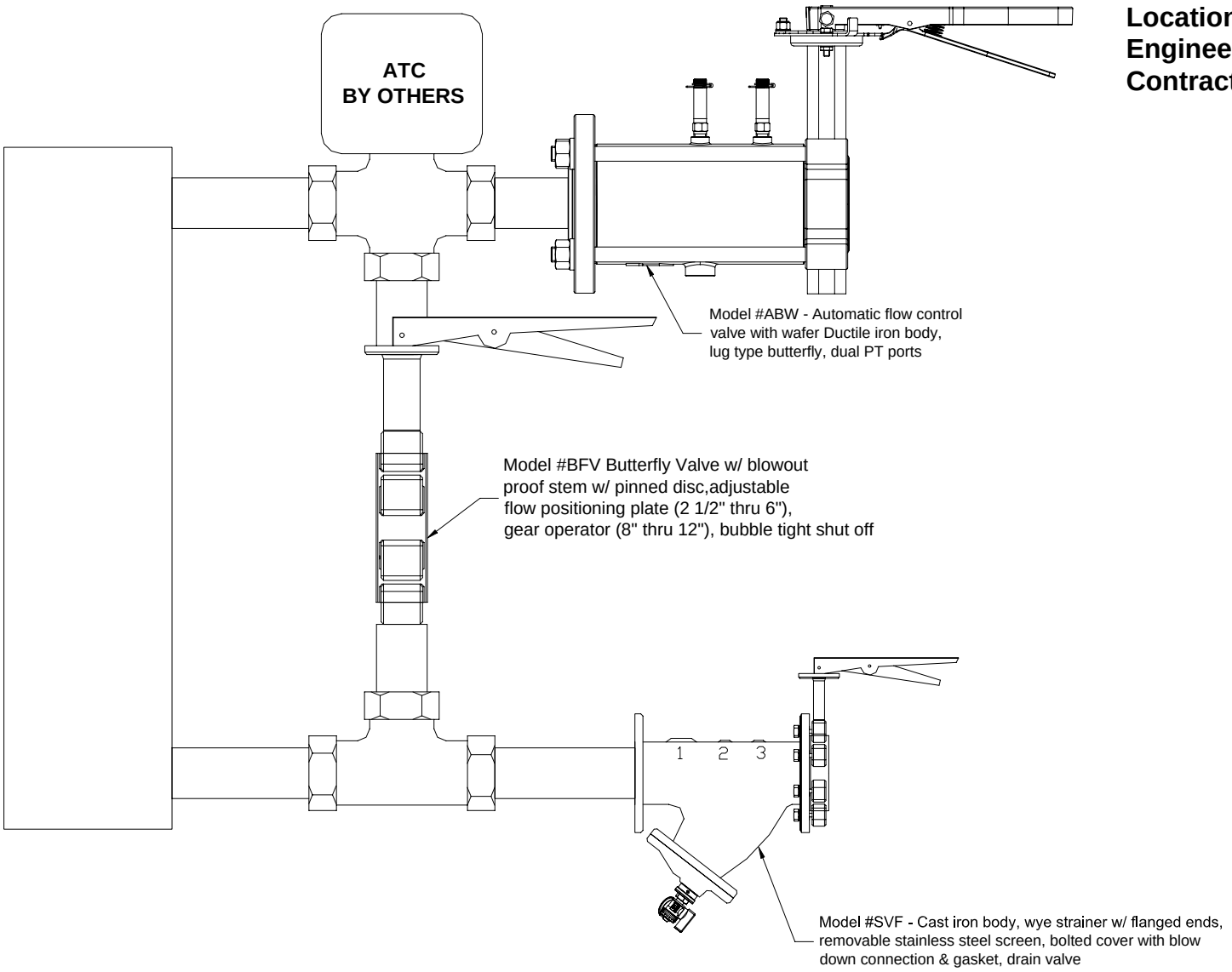
Valve Package (Model # 3BV-AB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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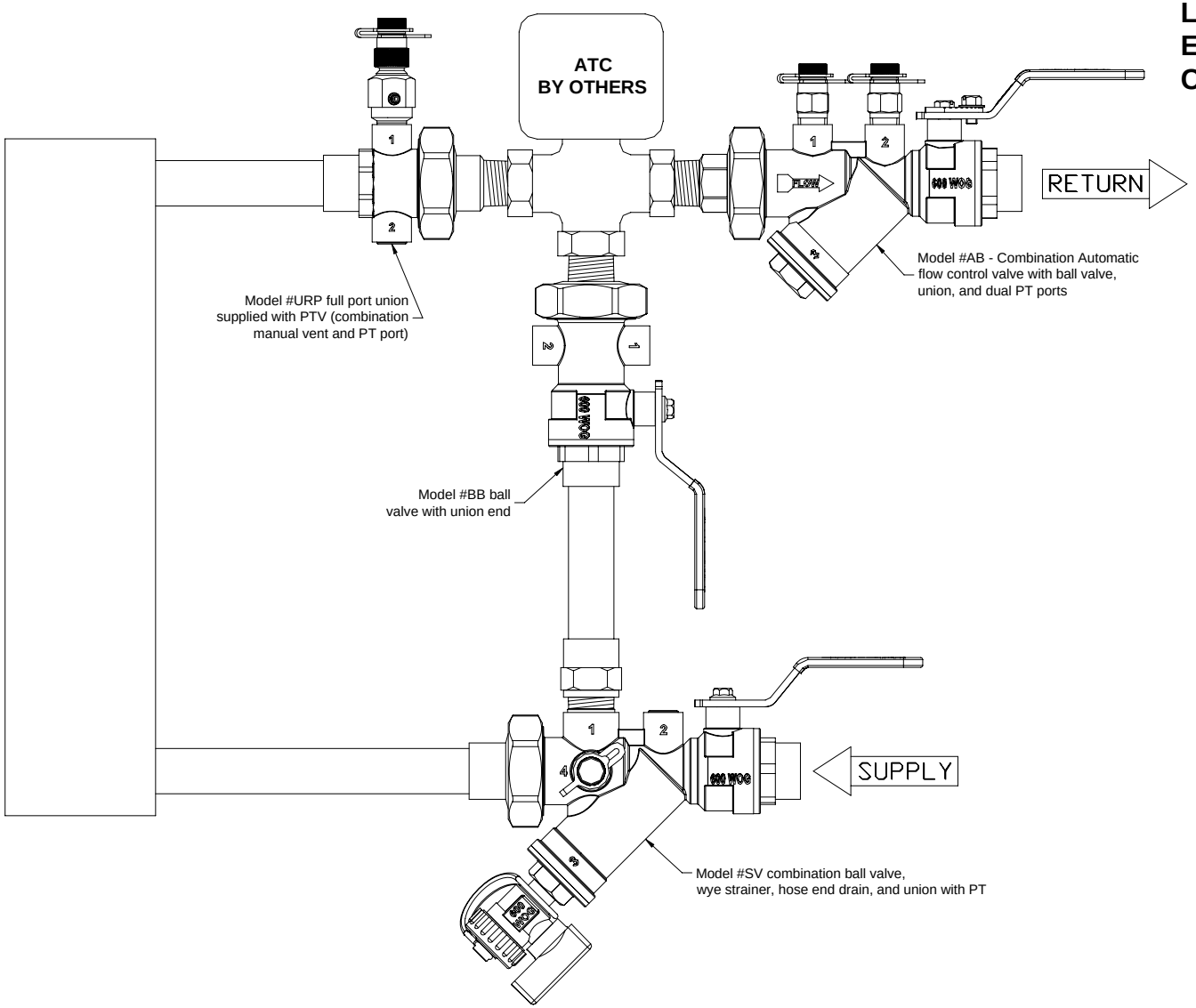
Valve Package (Model # 3RS-AB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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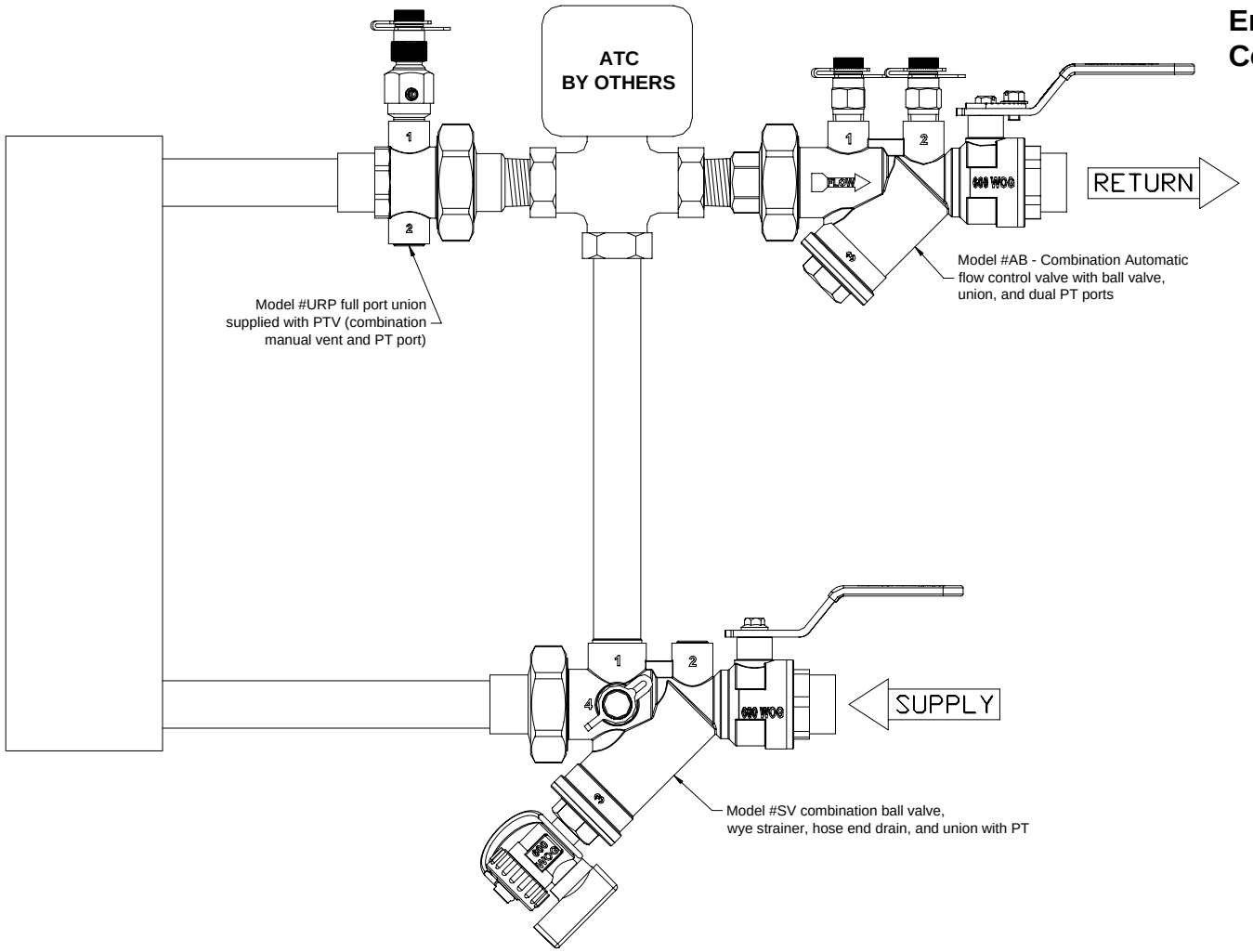
Valve Package (Model # 3RS-AB2)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

MACON® BALANCING
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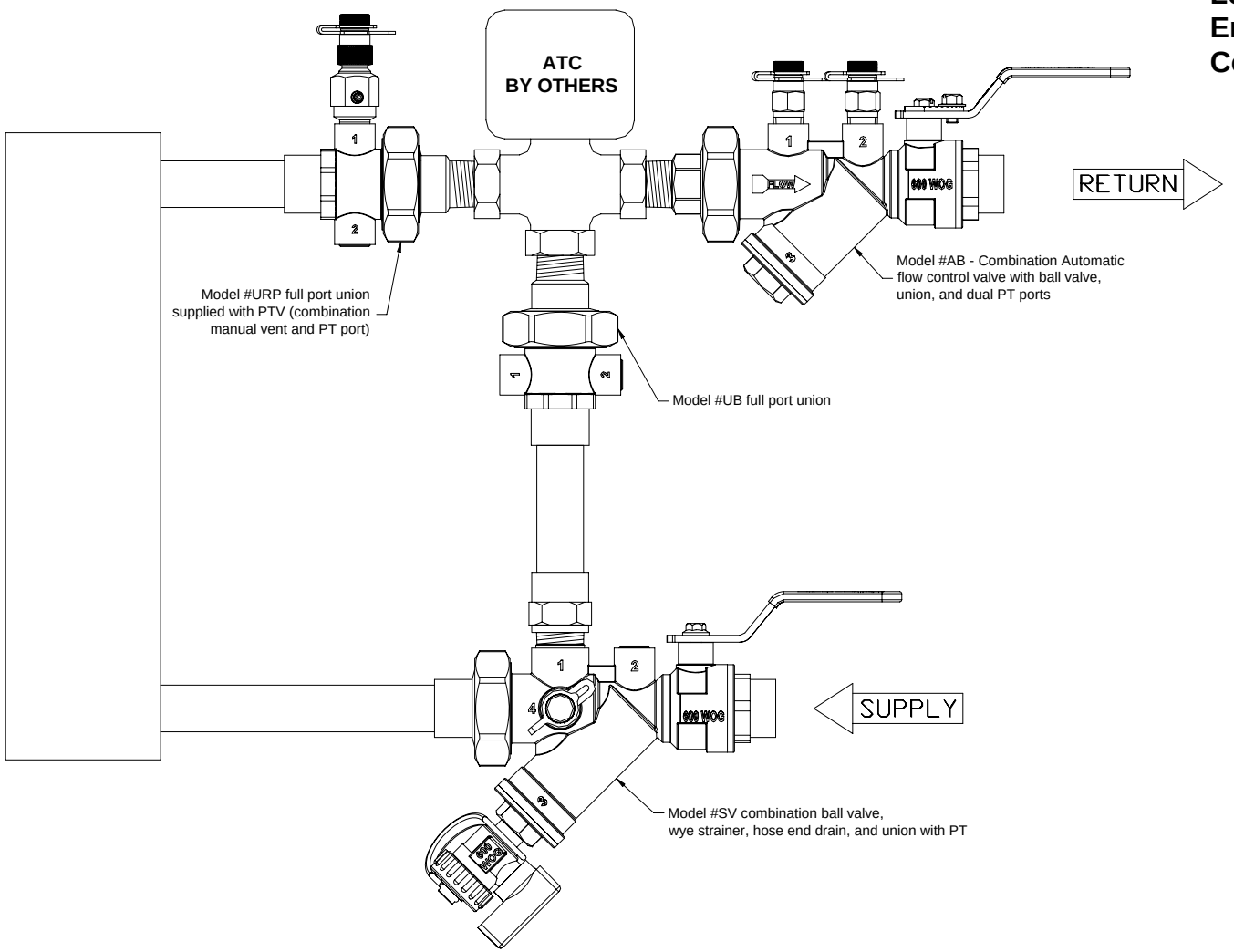
Valve Package (Model # 3RS-ABX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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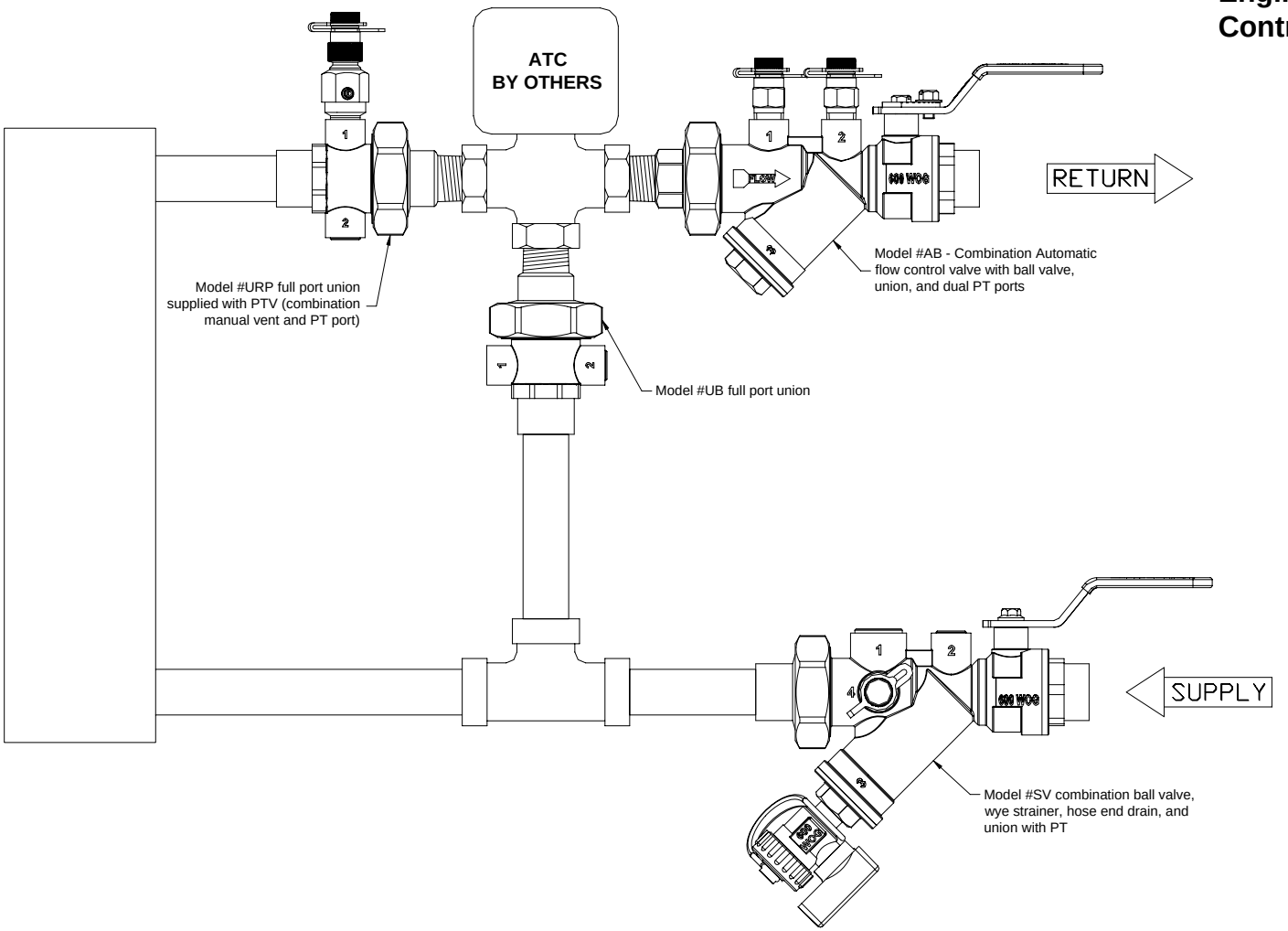
Valve Package (Model # 3RS-ABX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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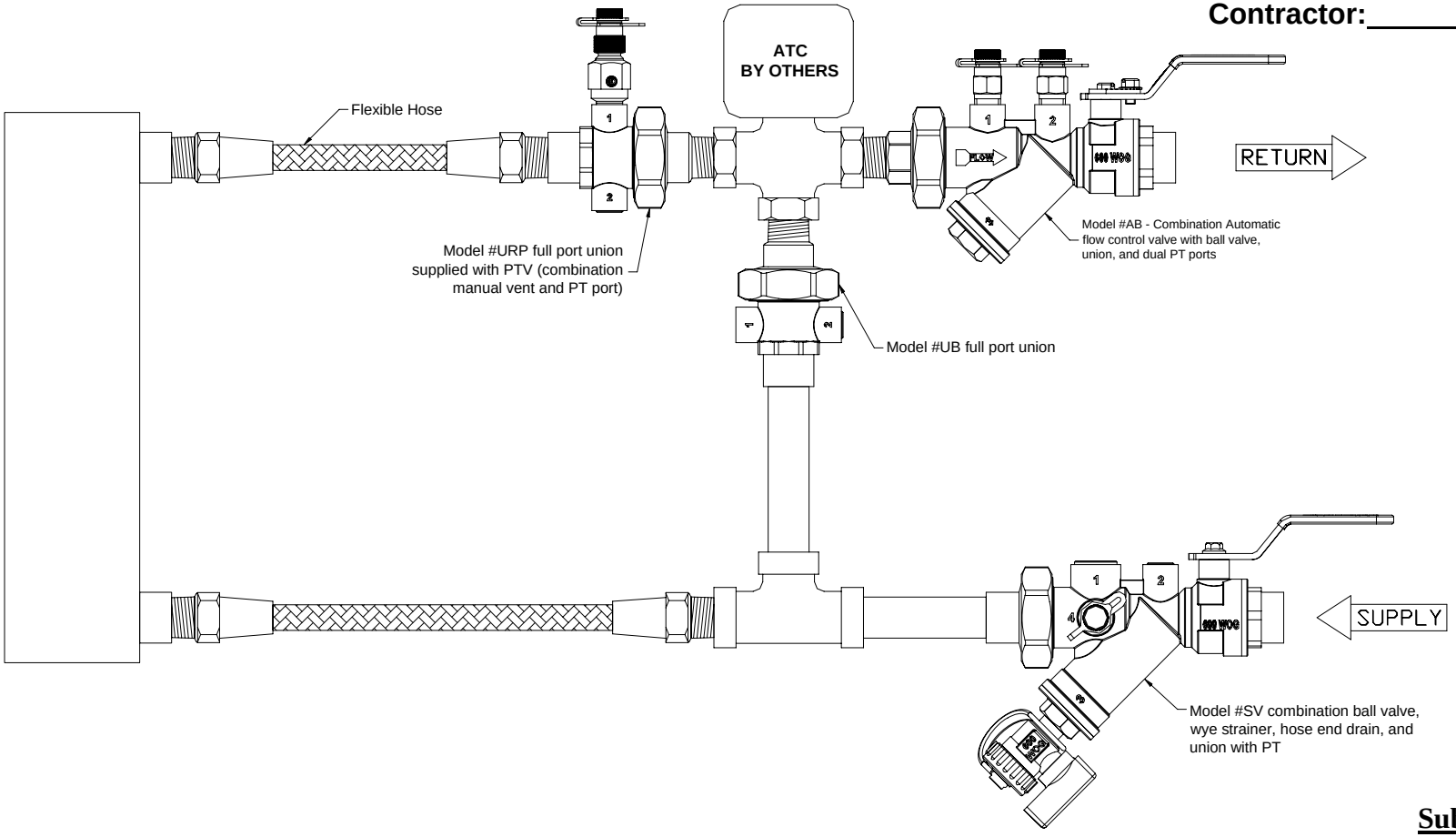
Valve Package (Model # 3RS-ABX-FLEX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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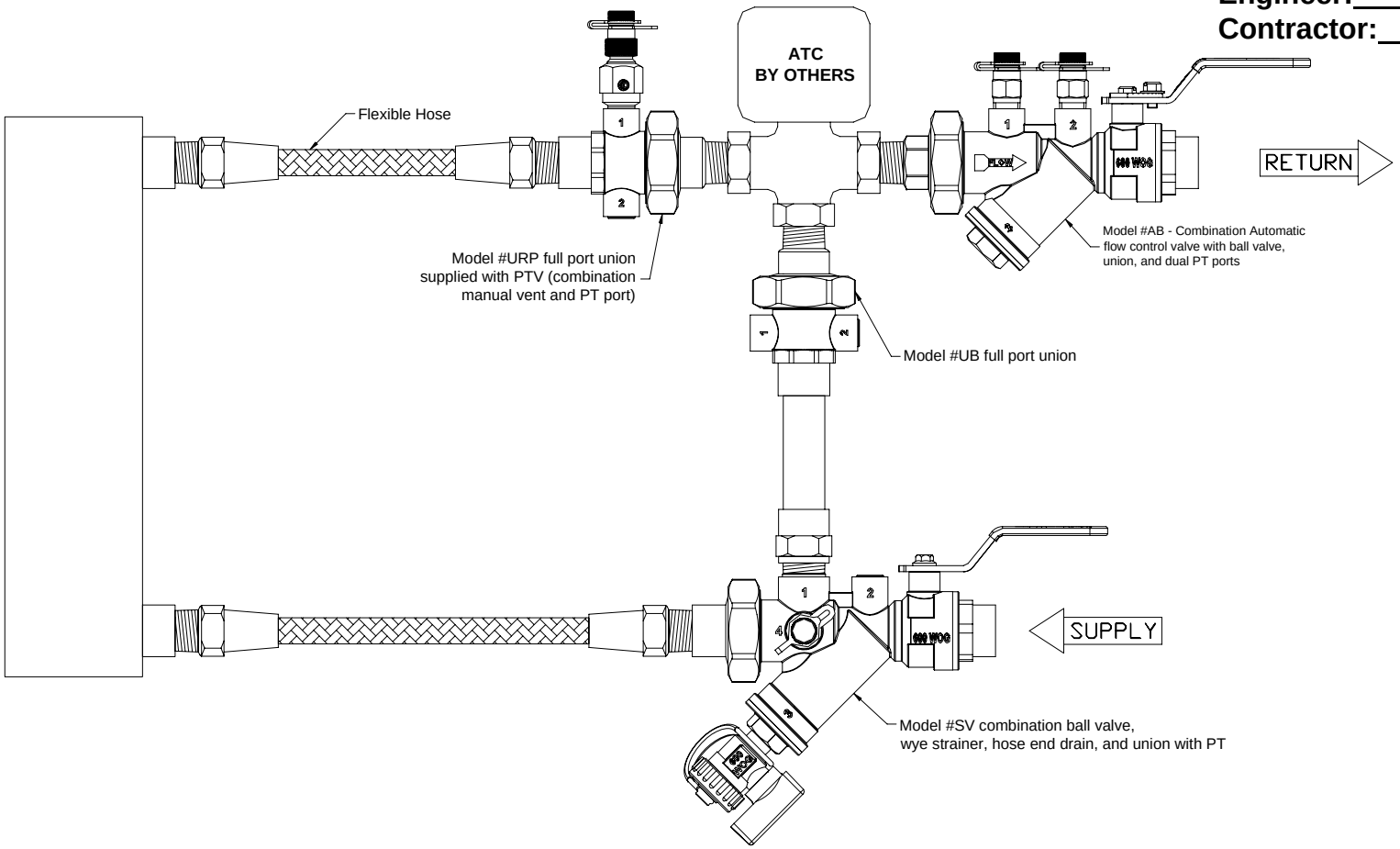
Valve Package (Model # 3RS-ABX-FLEX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
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Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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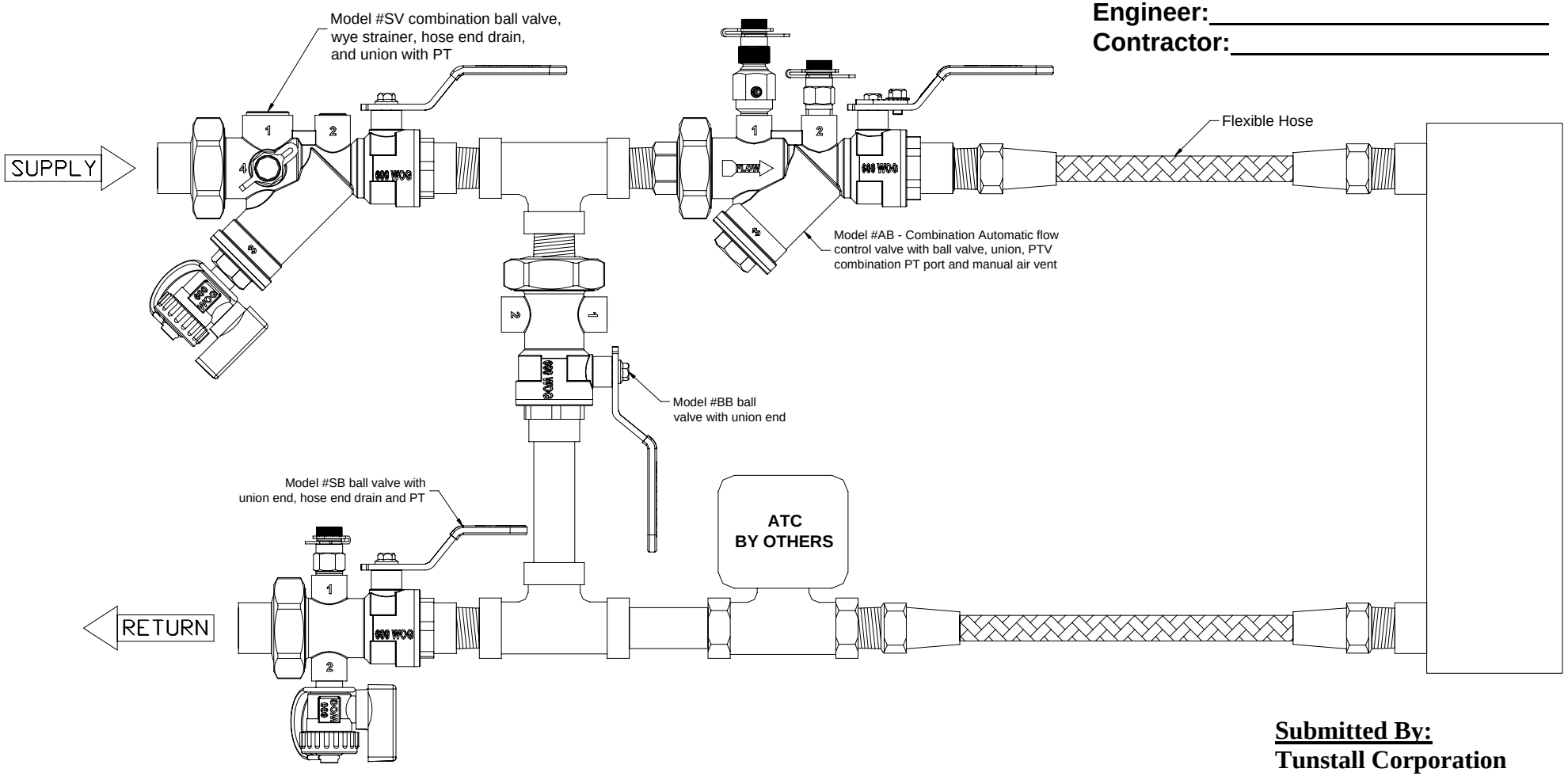
Valve Package (Model # 3RSX-ABX-FLEX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Chicopee, MA 01013
Phone: 413-594-8695
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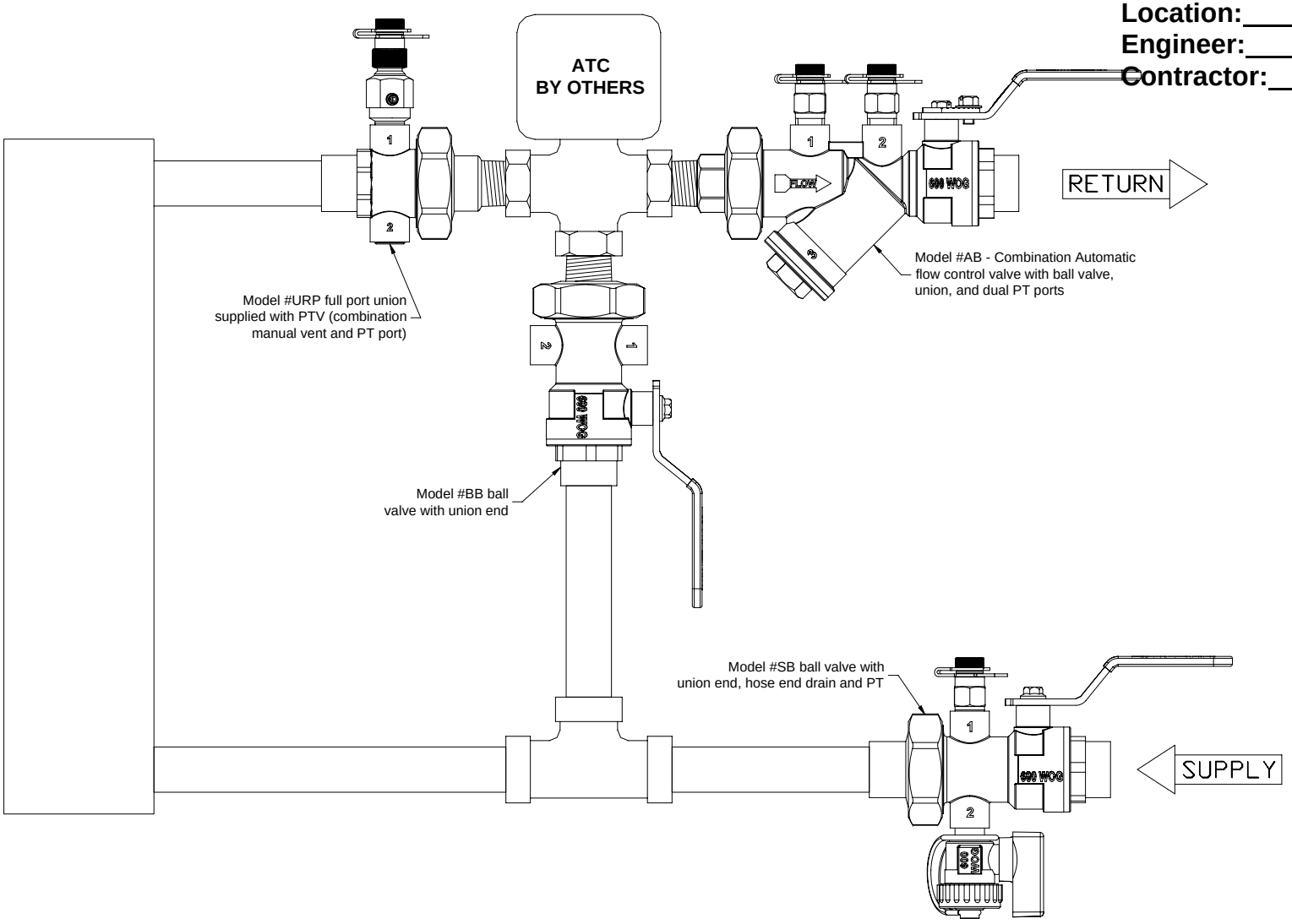
Valve Package (Model # 3RB-AB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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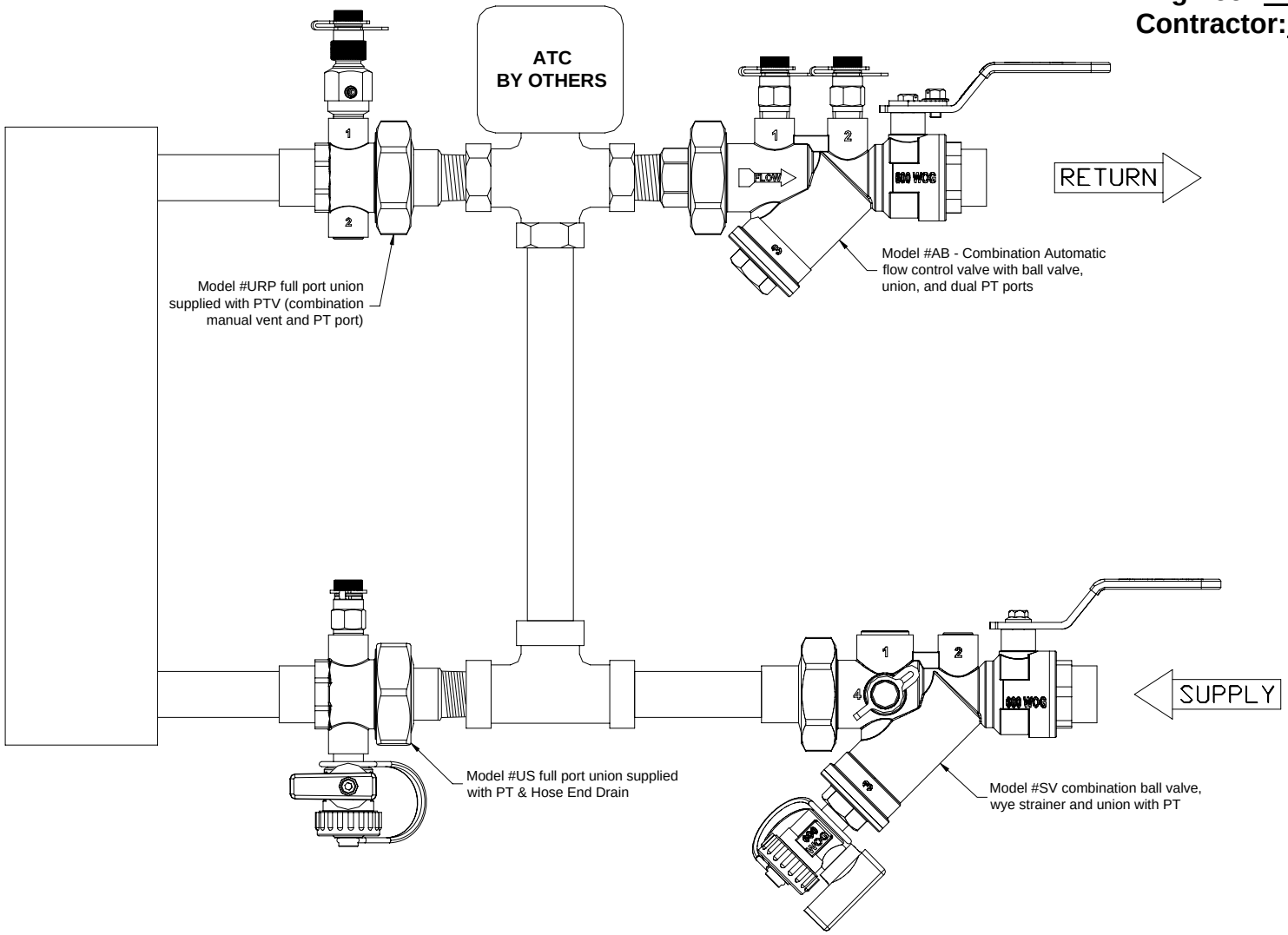
Valve Package (Model # 3RU-AB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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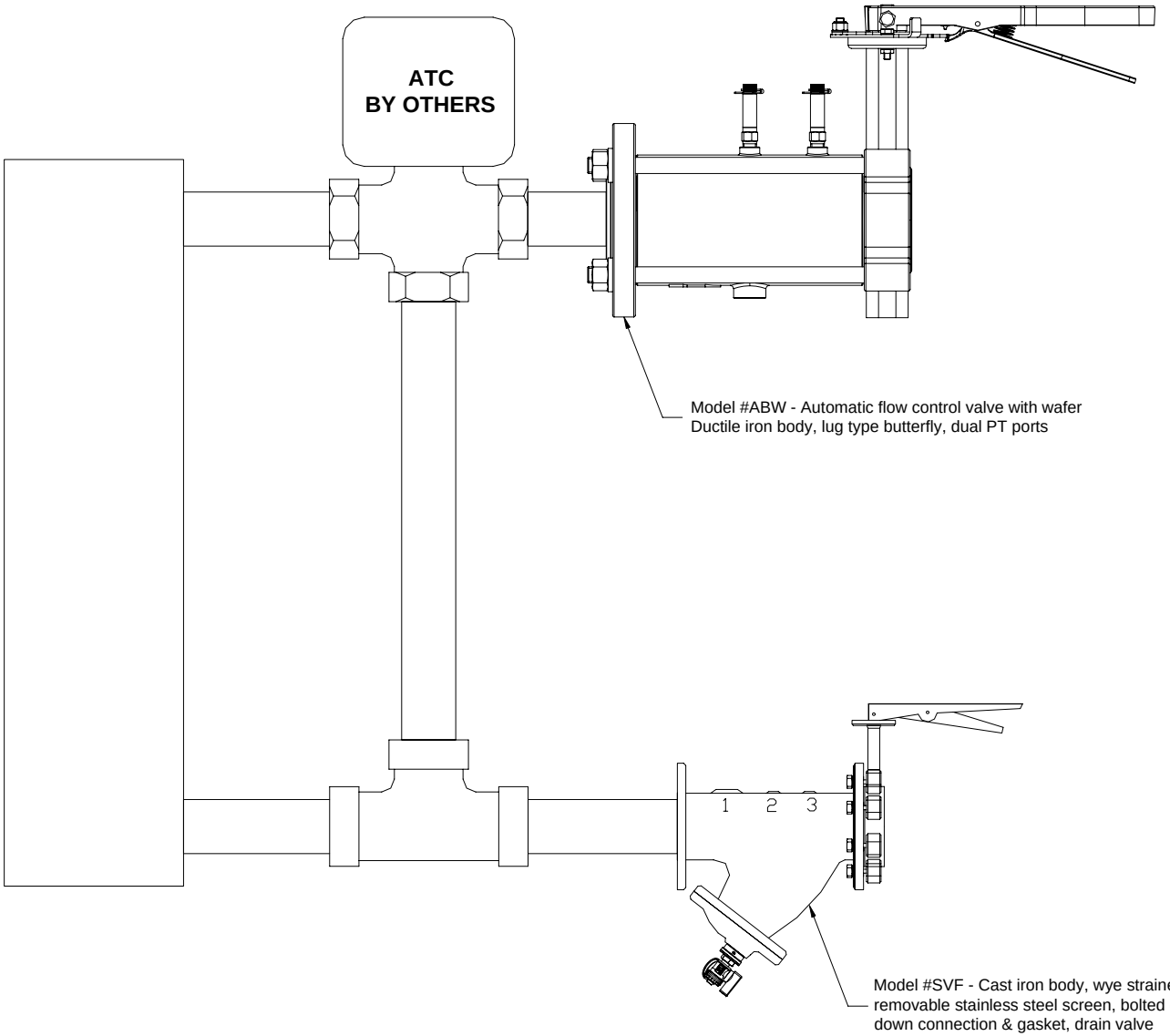
Valve Package (Model # 3SW-AB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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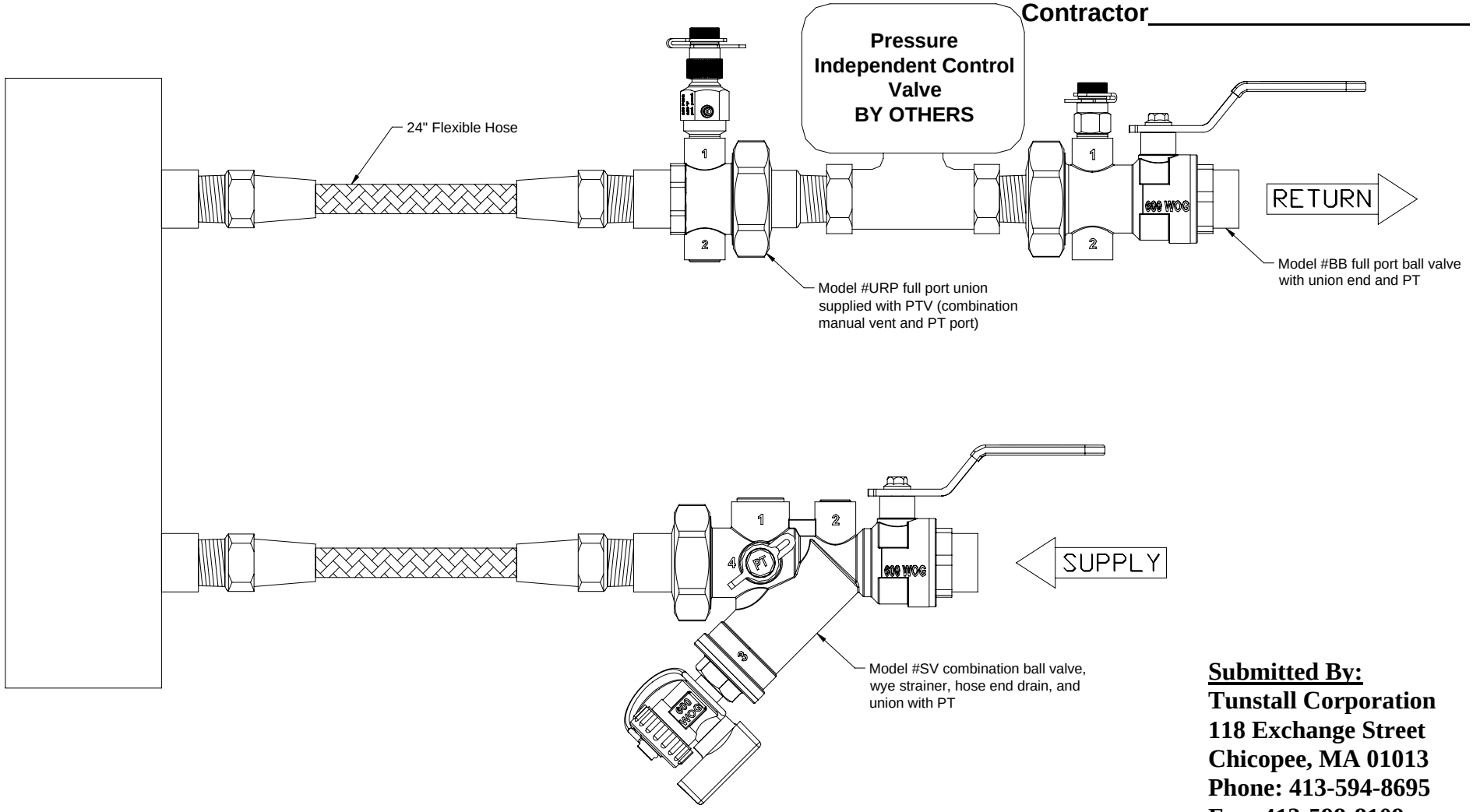
Valve Package (Model # 2RS-BB-FLEX)

Job Name:_____
Location:_____
Engineer:_____
Contractor_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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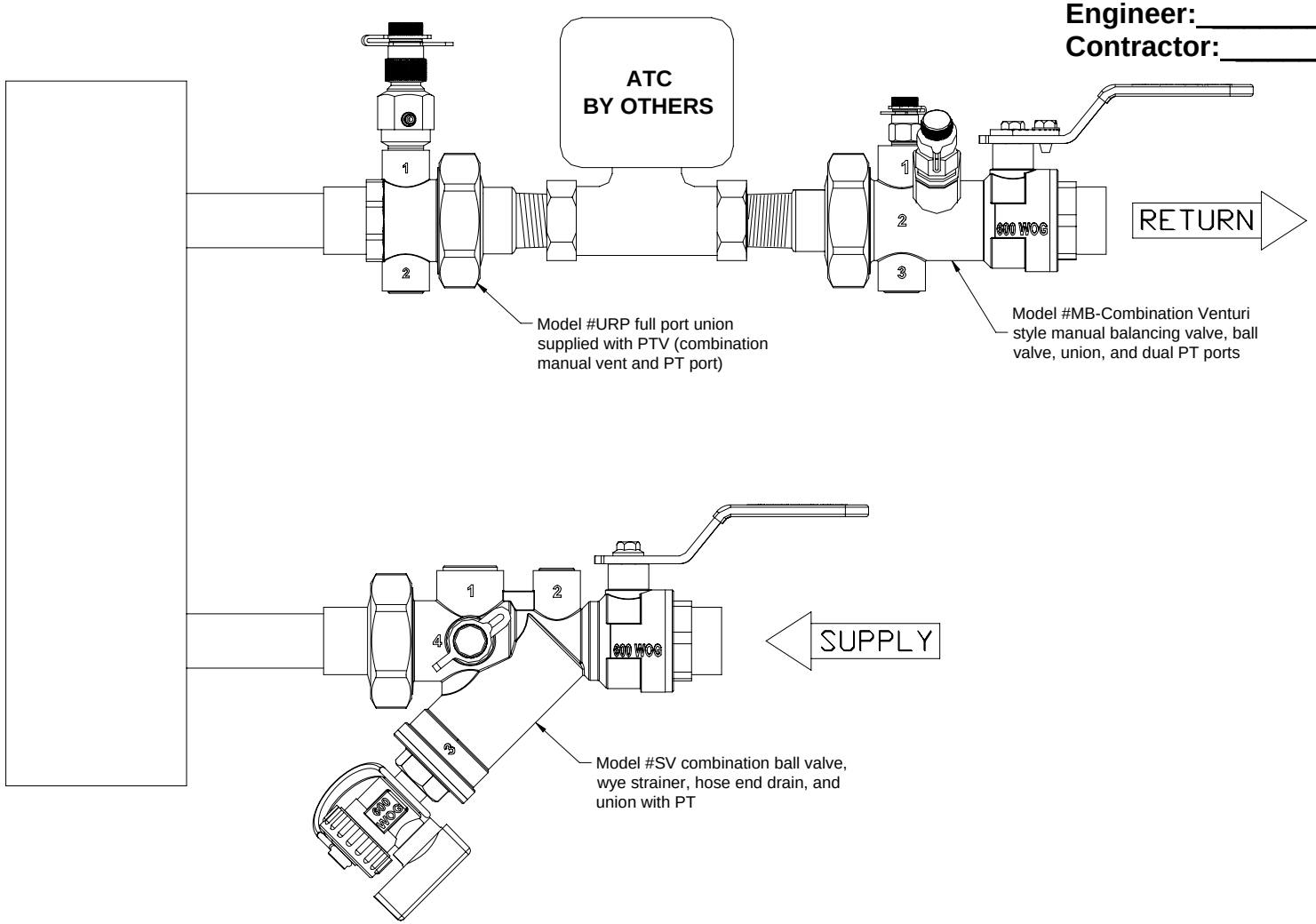
Valve Package (Model # 2RS-MV)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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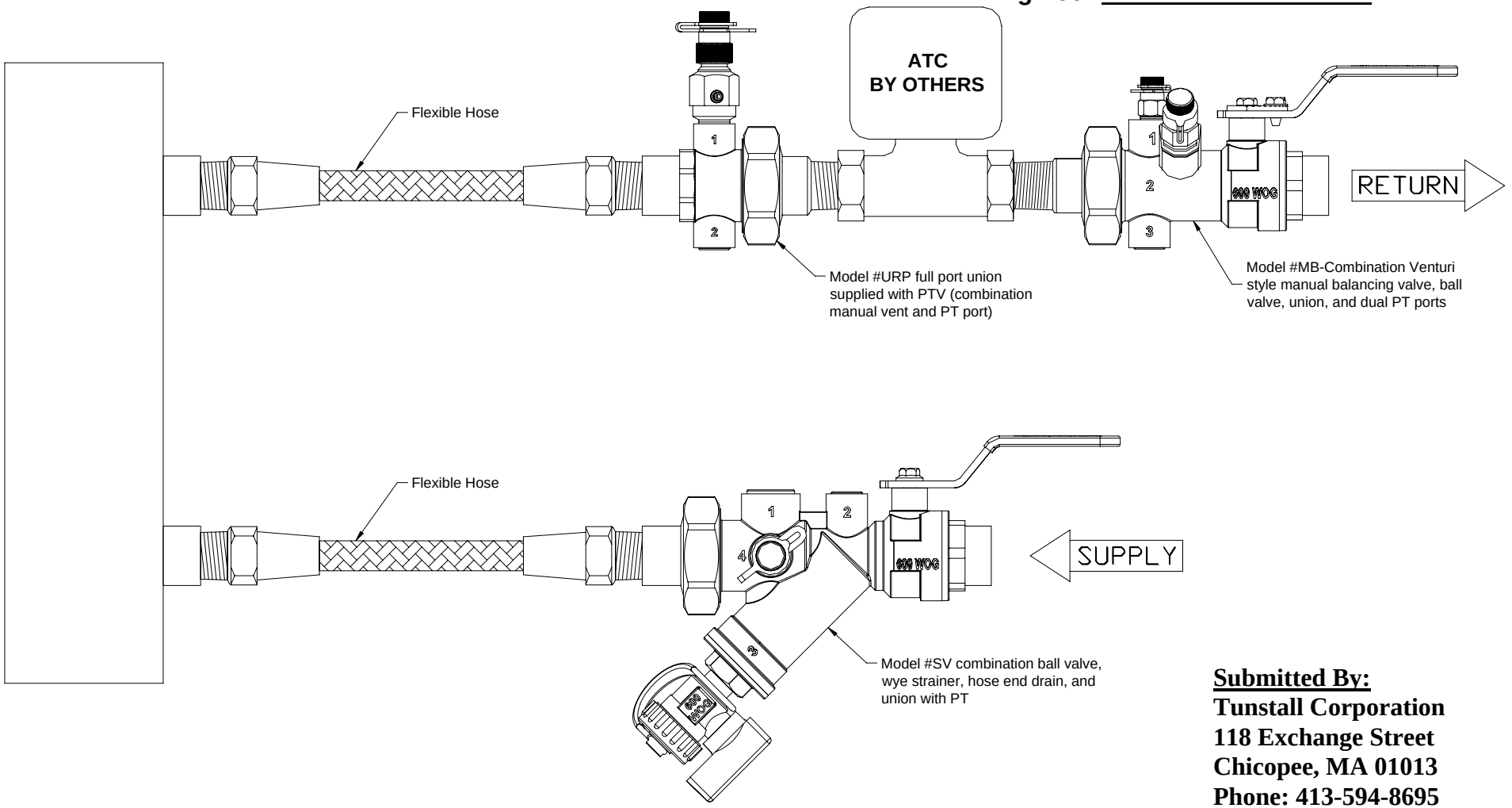
Valve Package (Model # 2RS-MV-FLEX)

Job Name:_____
Location: _____
Engineer:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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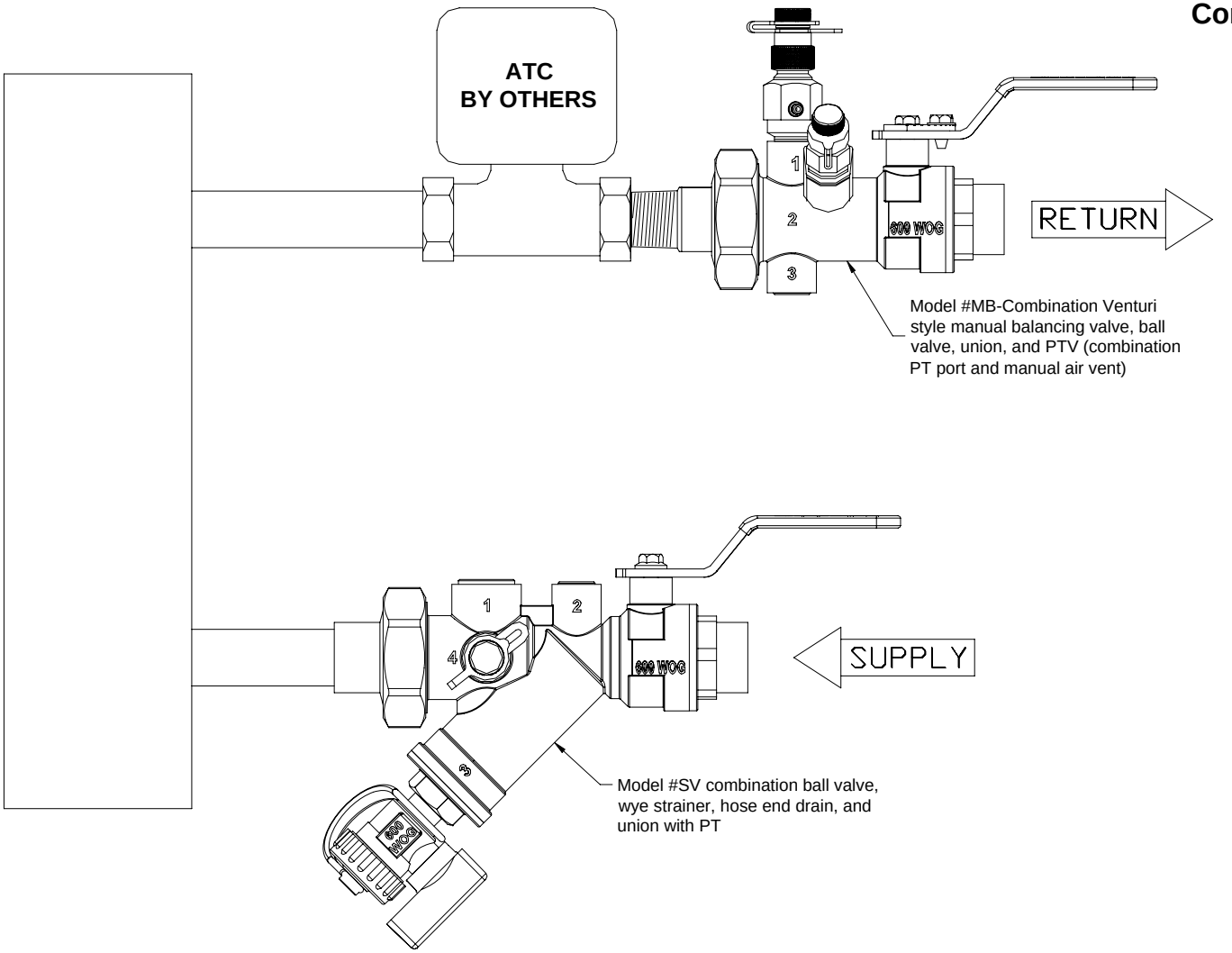
Valve Package (Model # 2RS-MV-X)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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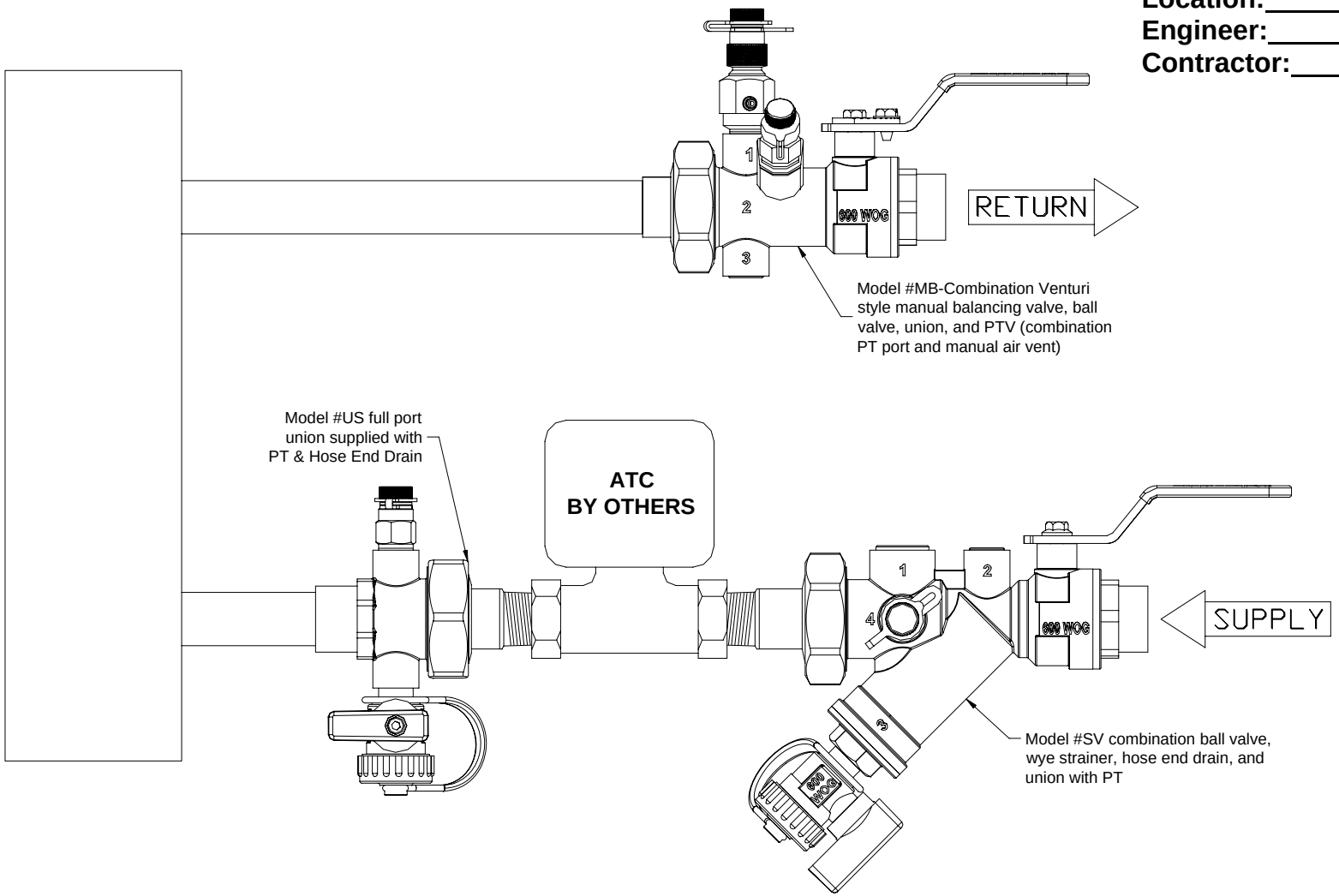
Valve Package (Model # 2SS-MV)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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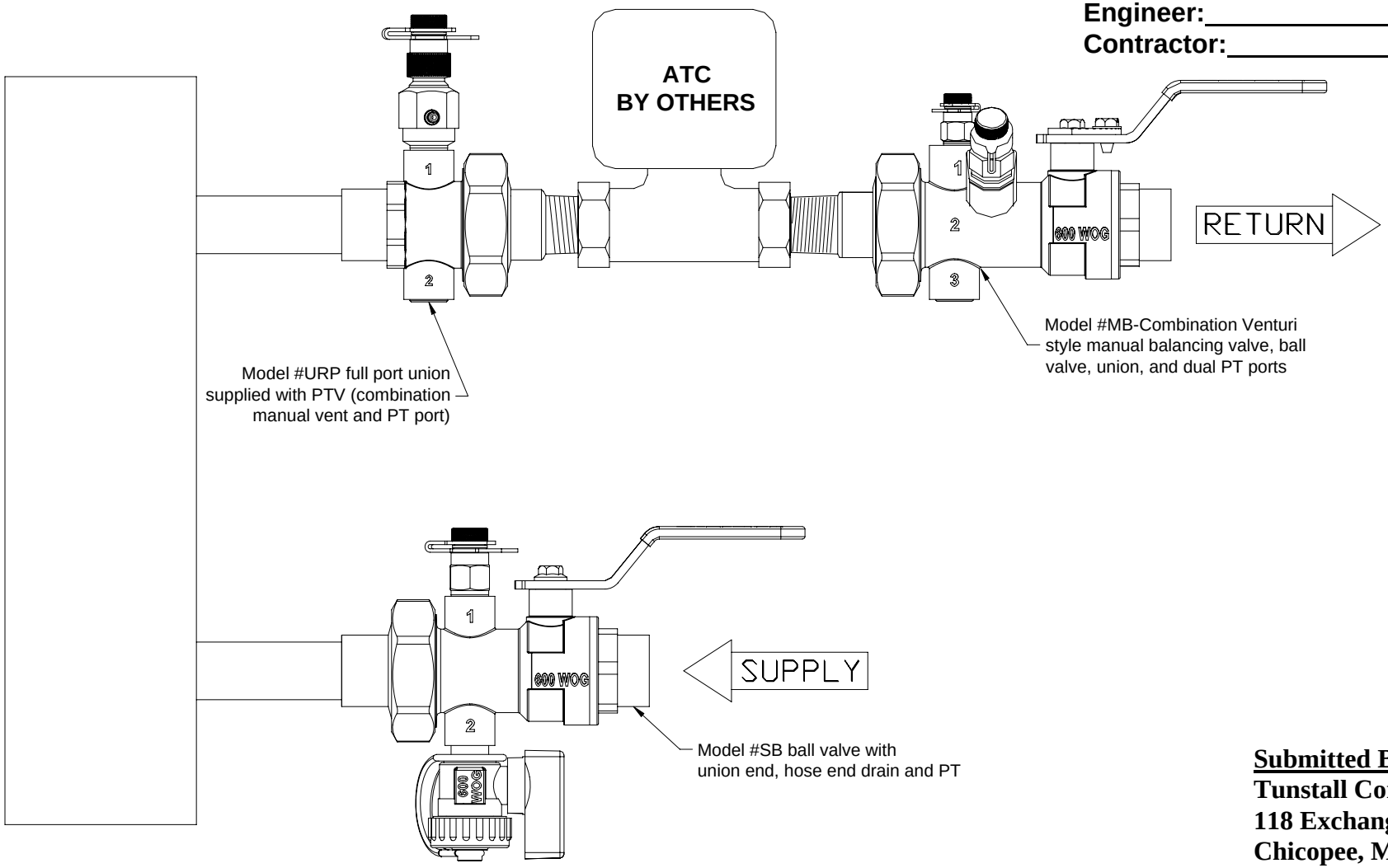
Valve Package (Model # 2RB-MV)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
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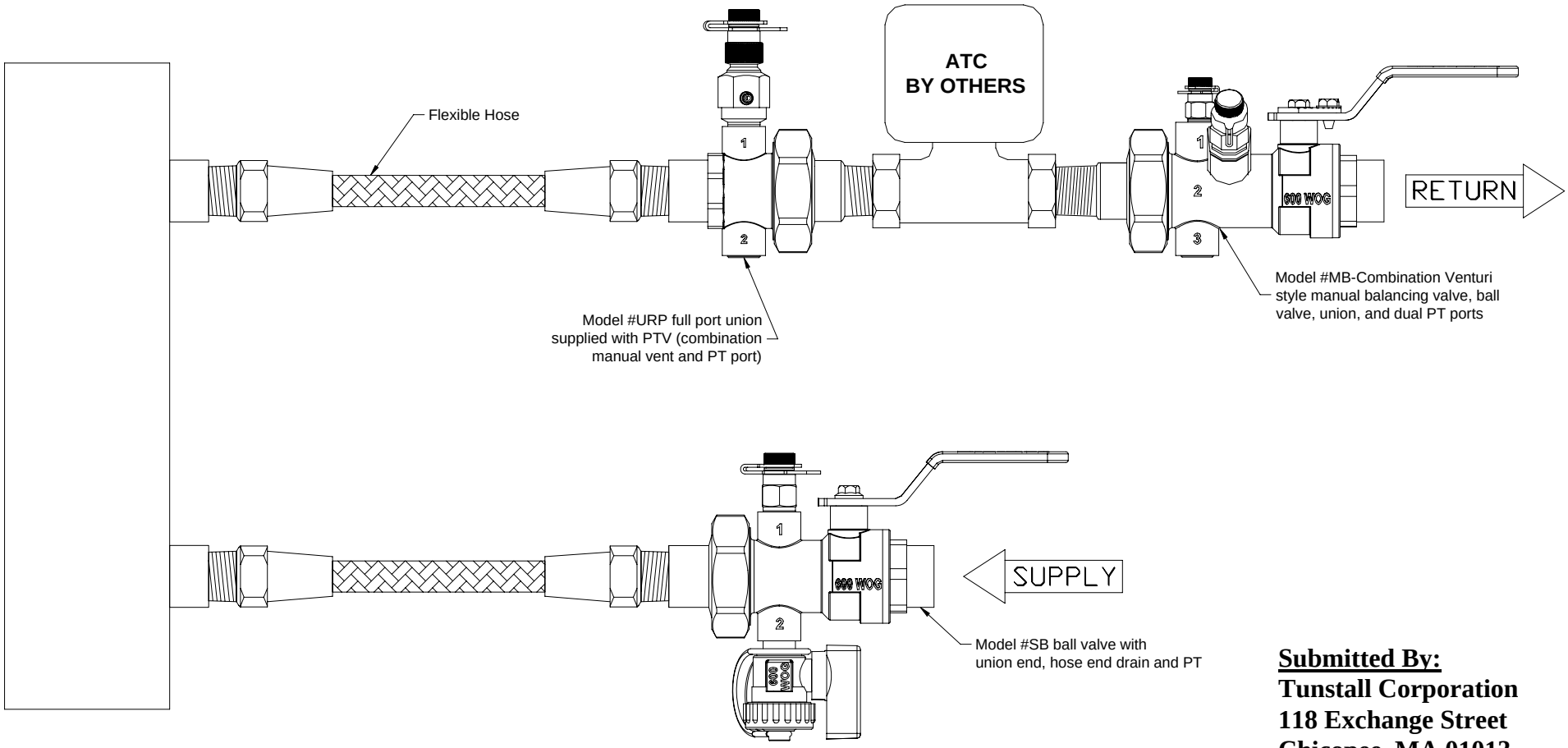
Valve Package (Model # 2RB-MV-FLEX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
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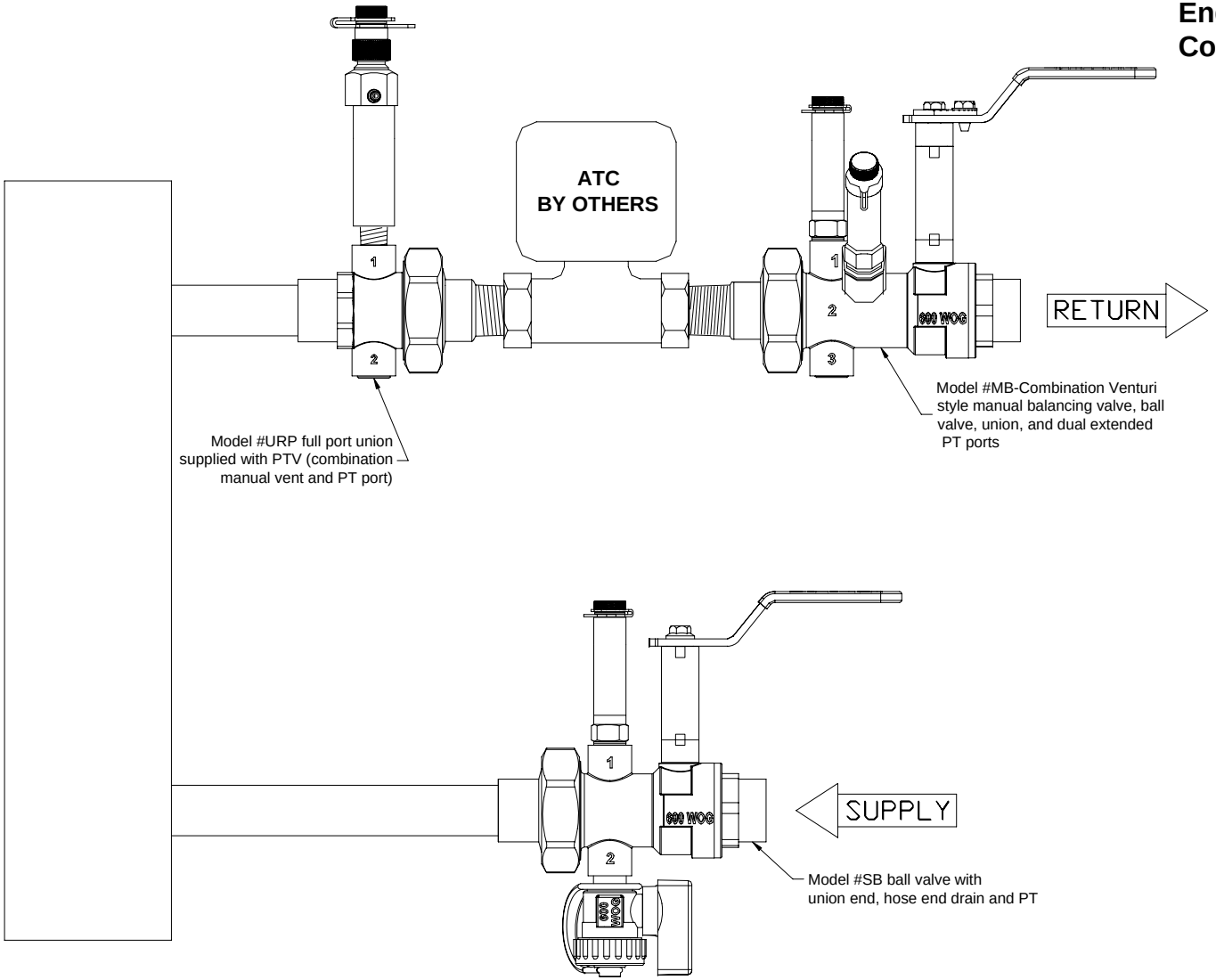
Valve Package (Model # 2RB-MV-EXT)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

MACON® BALANCING
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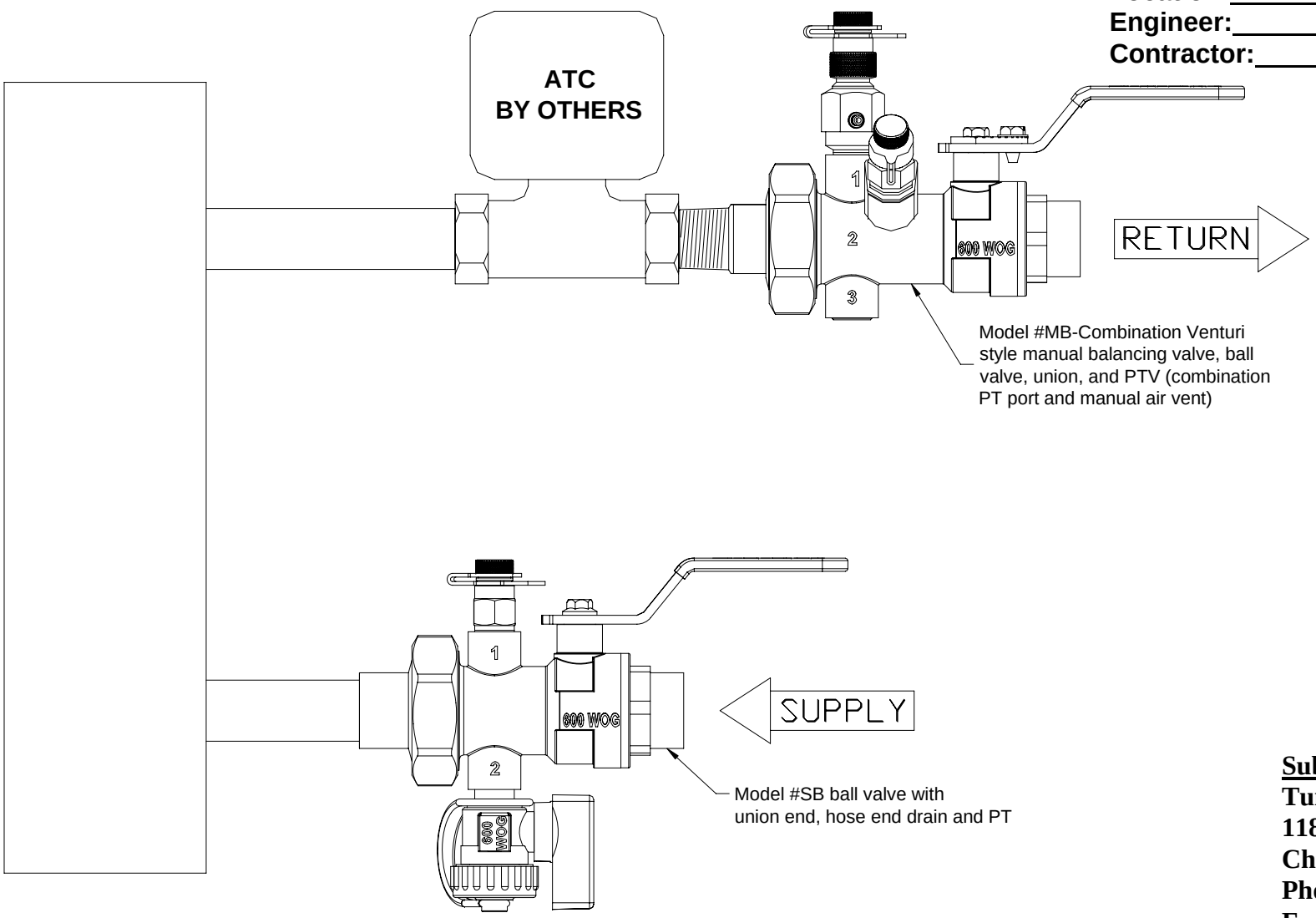
Valve Package (Model # 2RB-MV-X)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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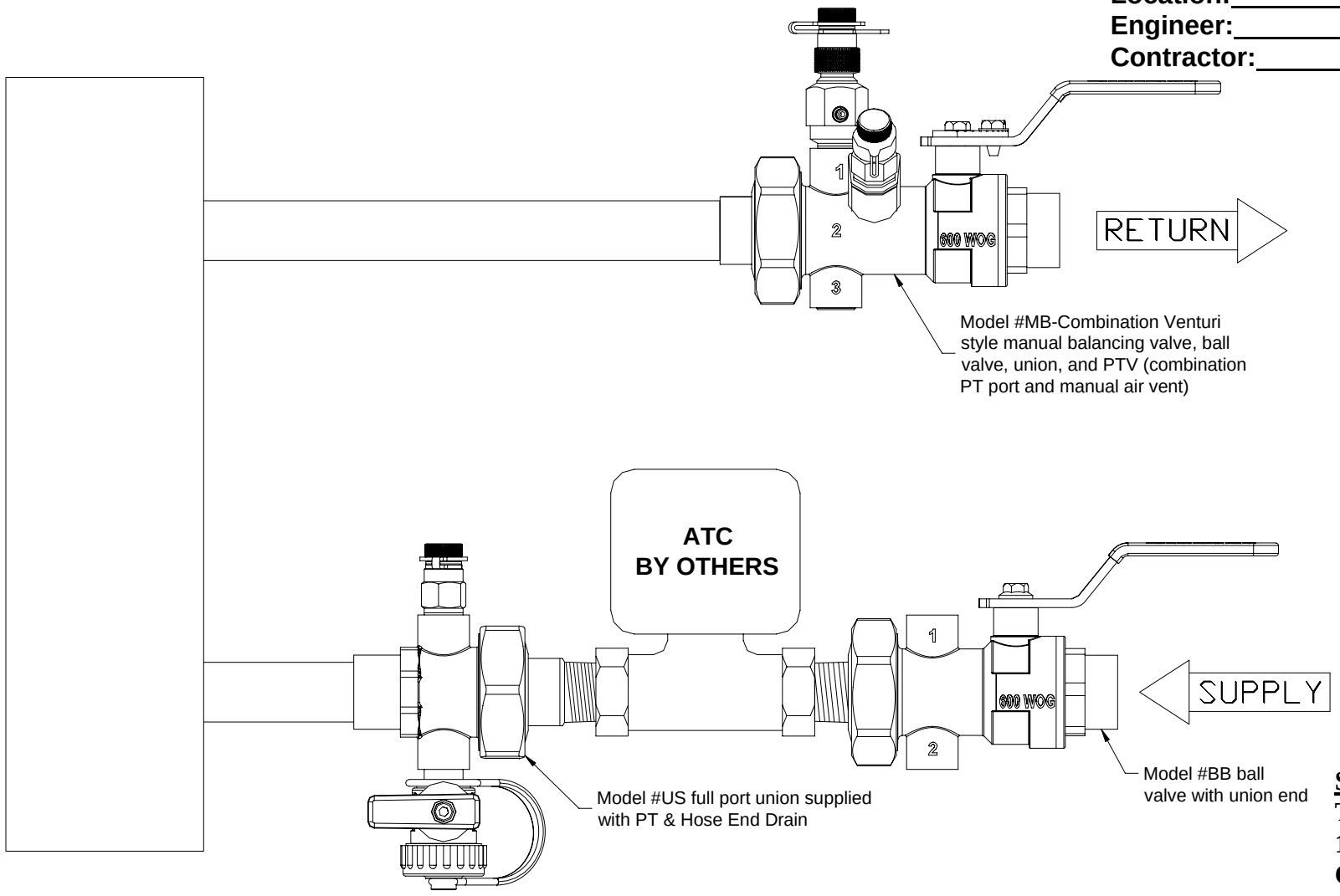
Valve Package (Model # 2SB-MV)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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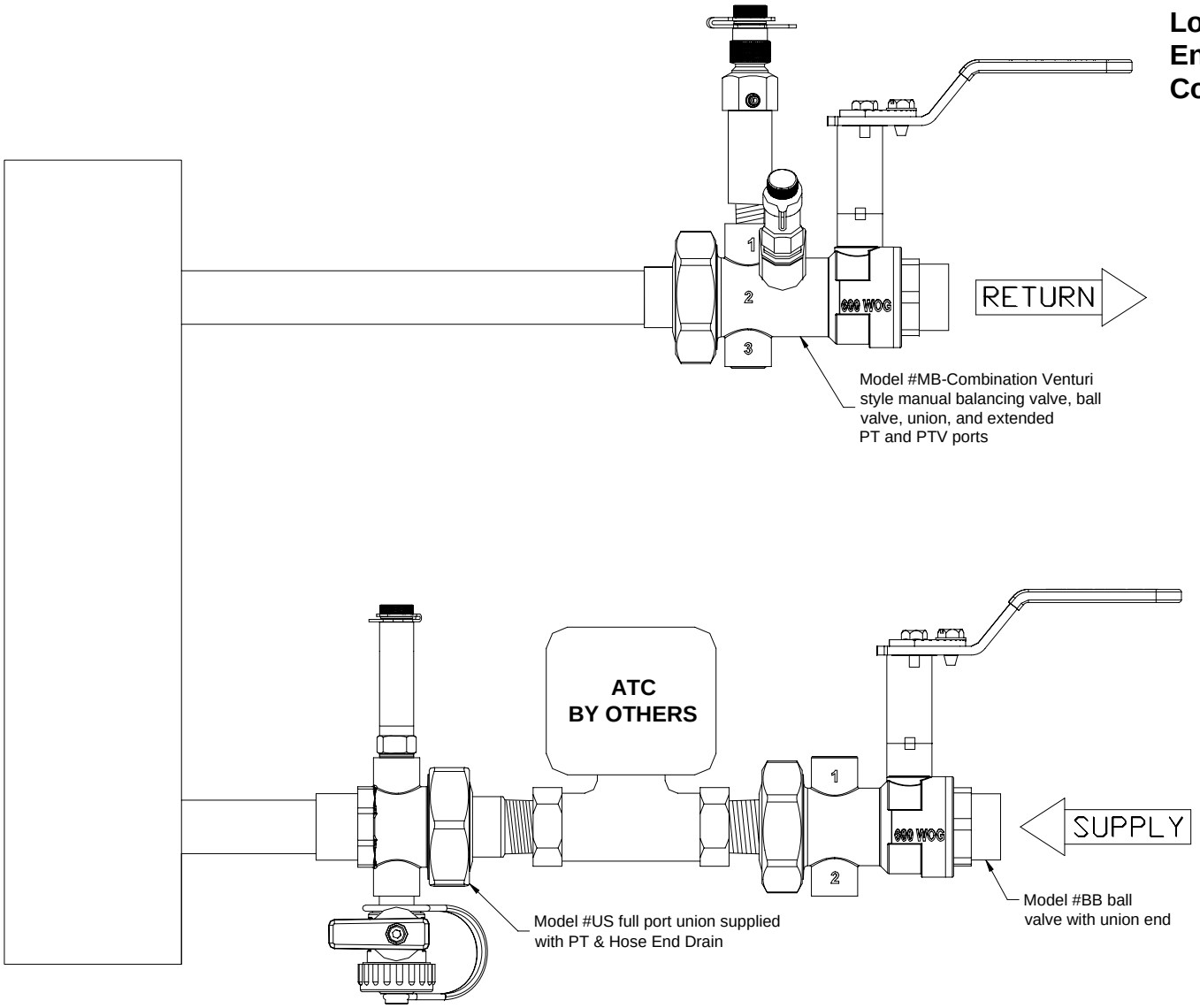
Valve Package (Model # 2SB-MV-EXT)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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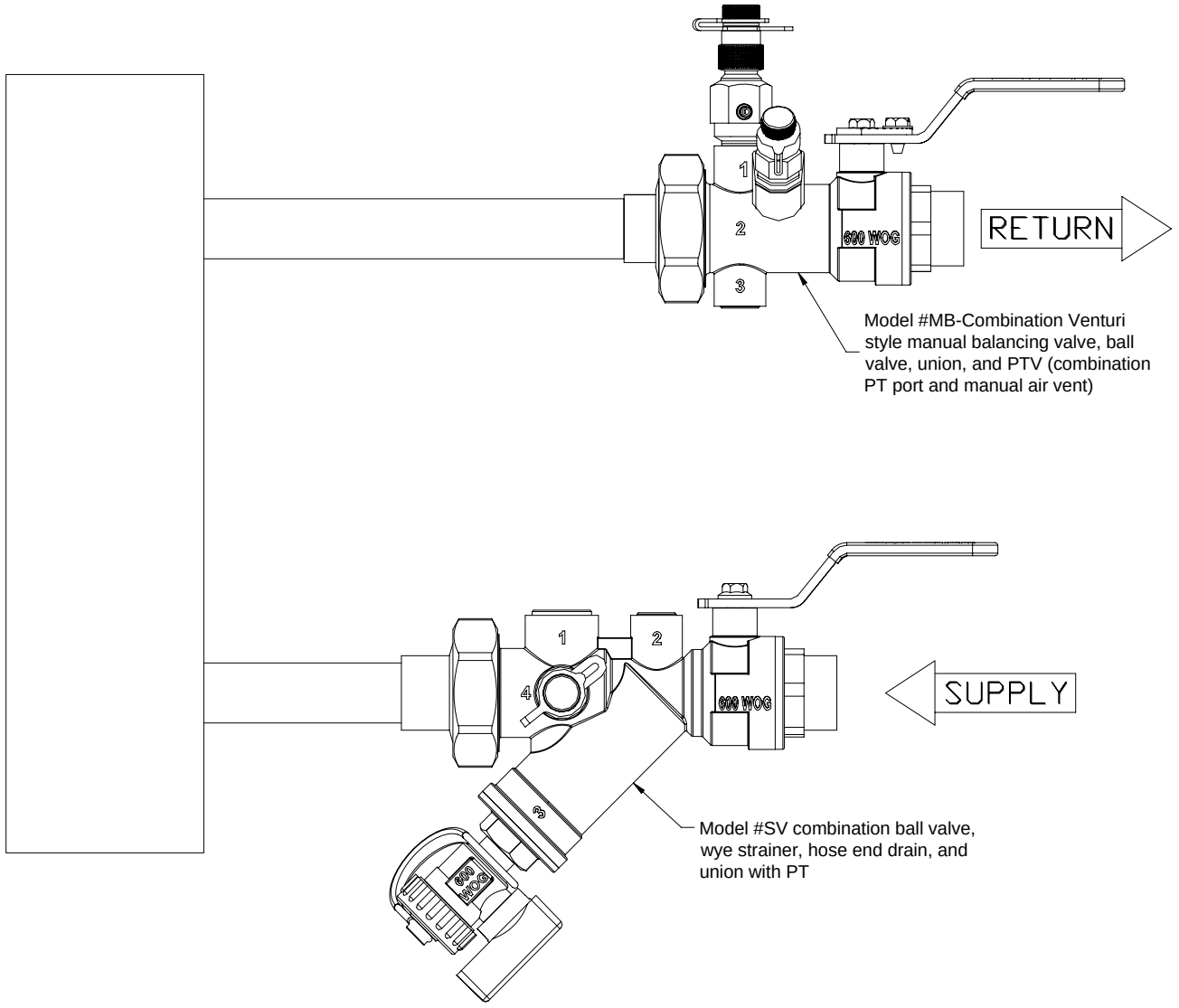
Valve Package (Model # XXS-MV)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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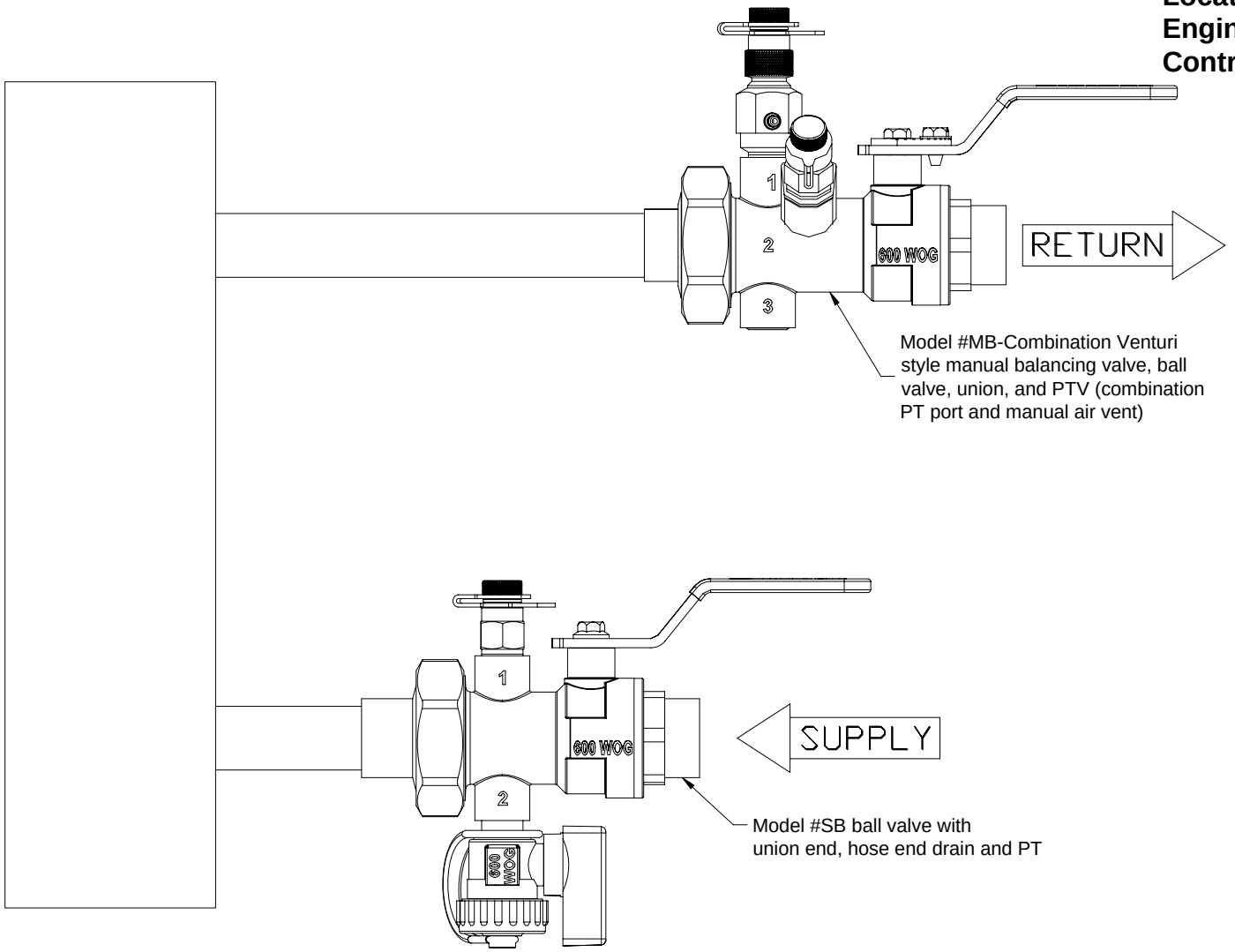
Valve Package (Model # XXB-MV)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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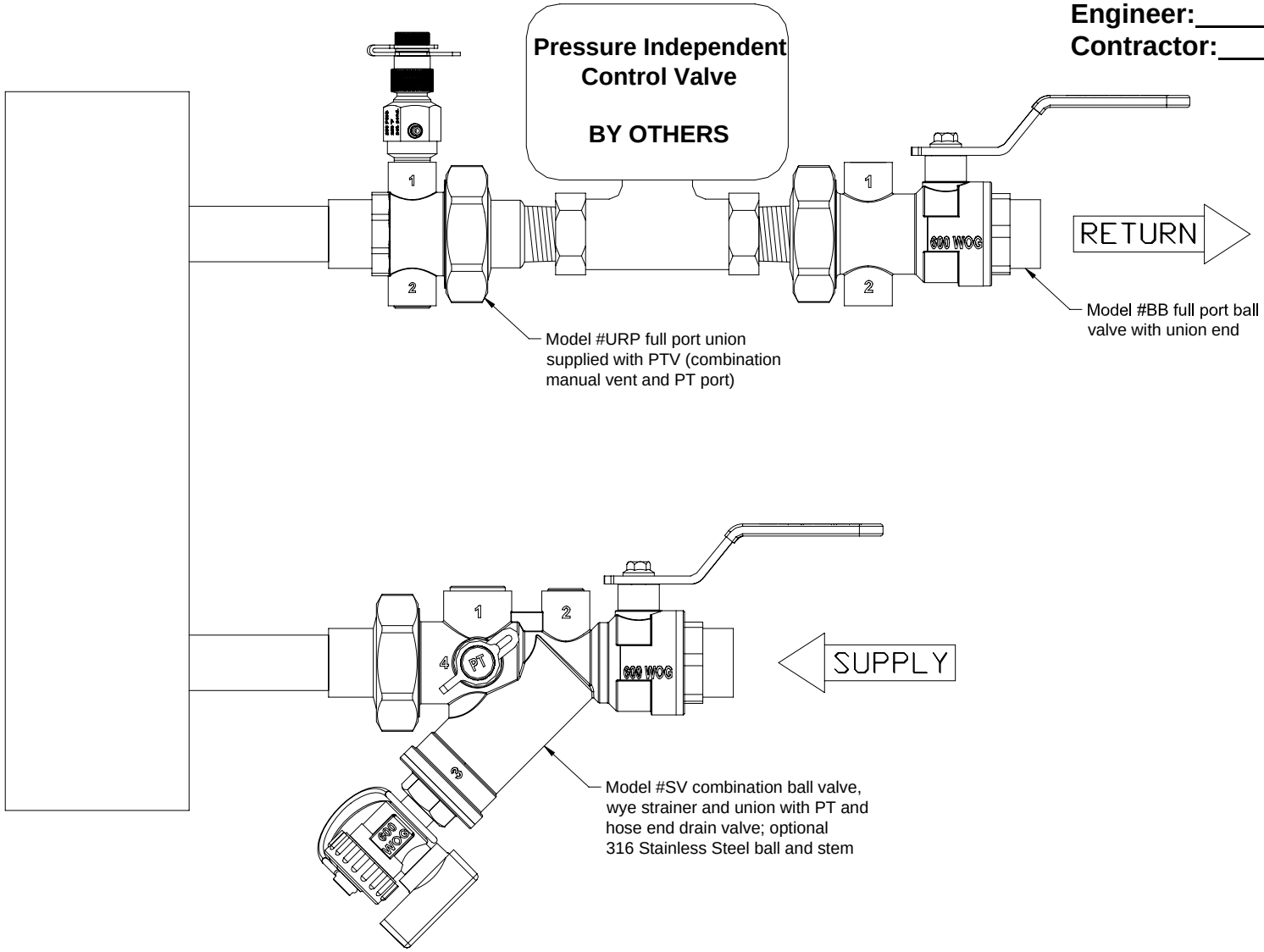
Valve Package (Model # 2RS-BB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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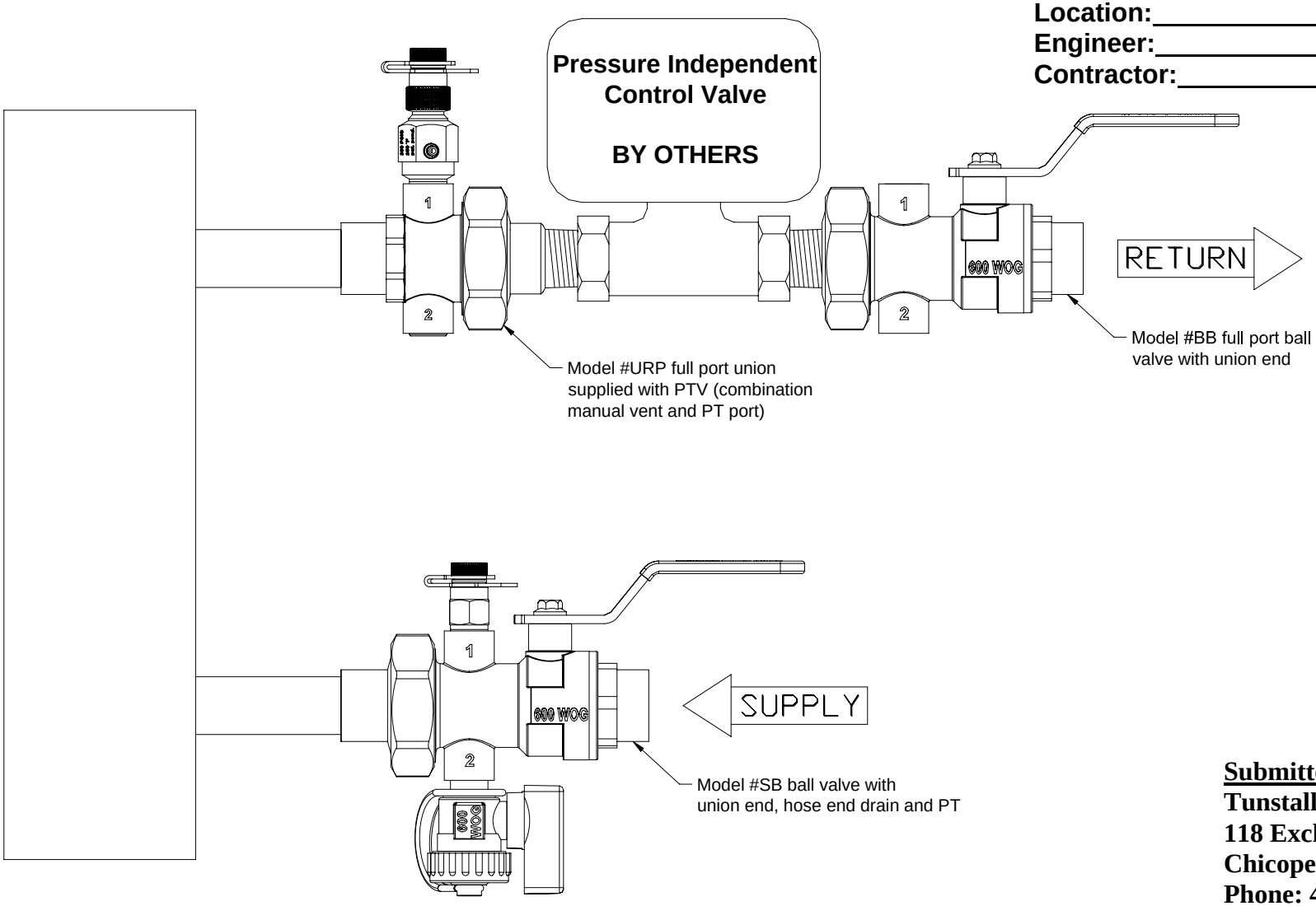
Valve Package (Model # 2RB-BB)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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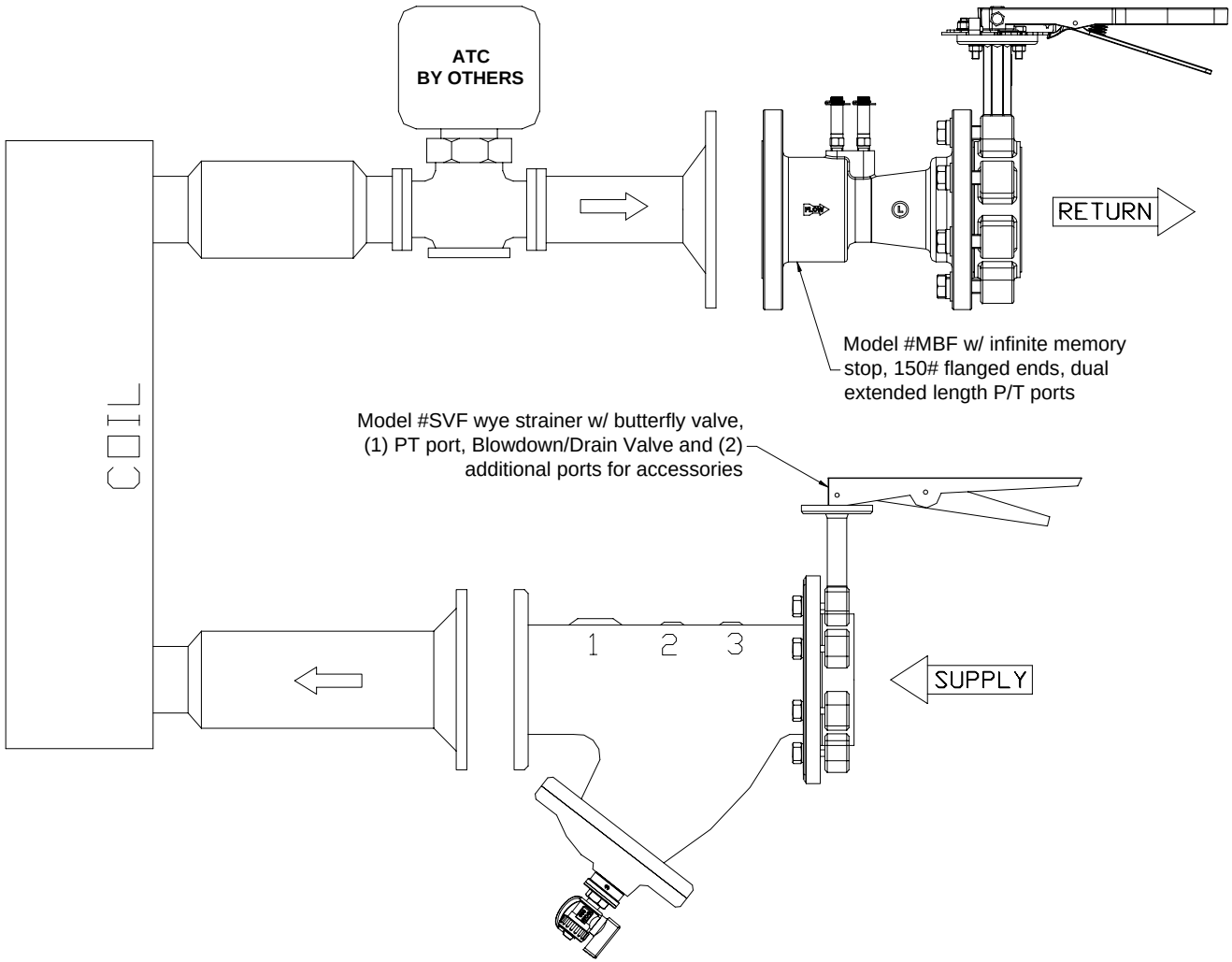
Valve Package (Model #MBF w/SVF)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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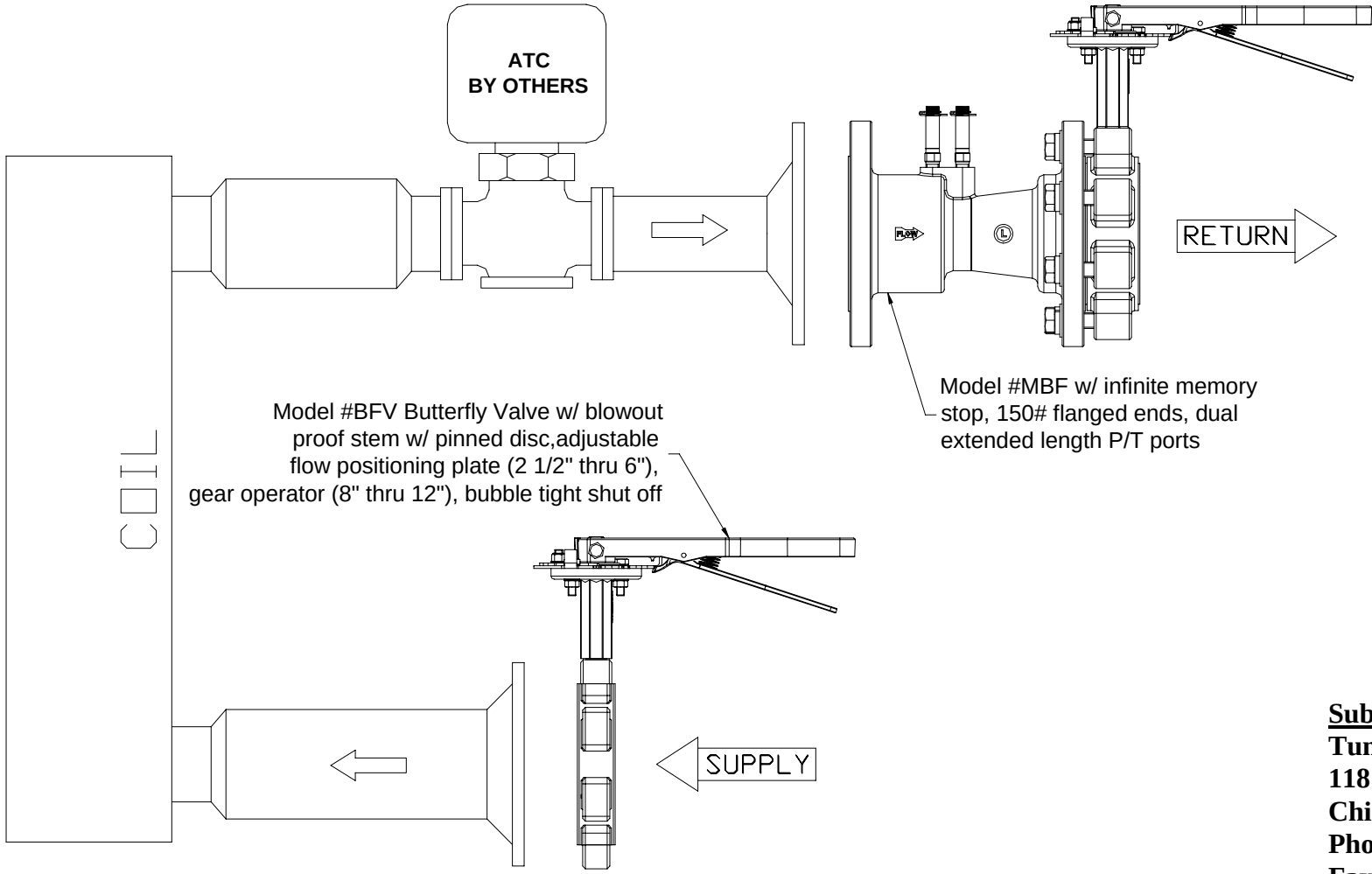
Valve Package (Model #MBF w/BFV)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

MACON® BALANCING
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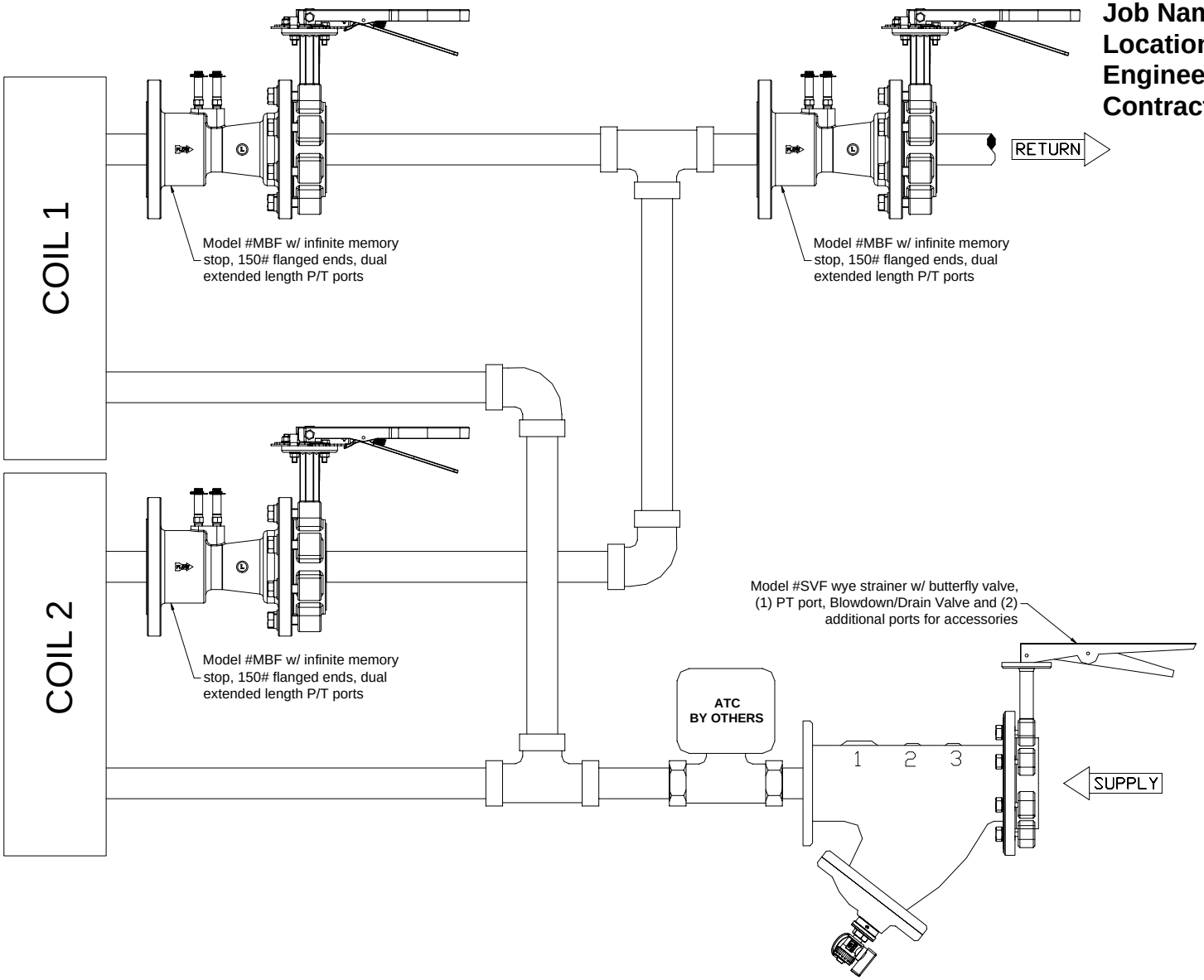
Valve Package (Model #MBF w/SVF DUAL COIL)

Job Name: _____
Location: _____
Engineer: _____
Contractor: _____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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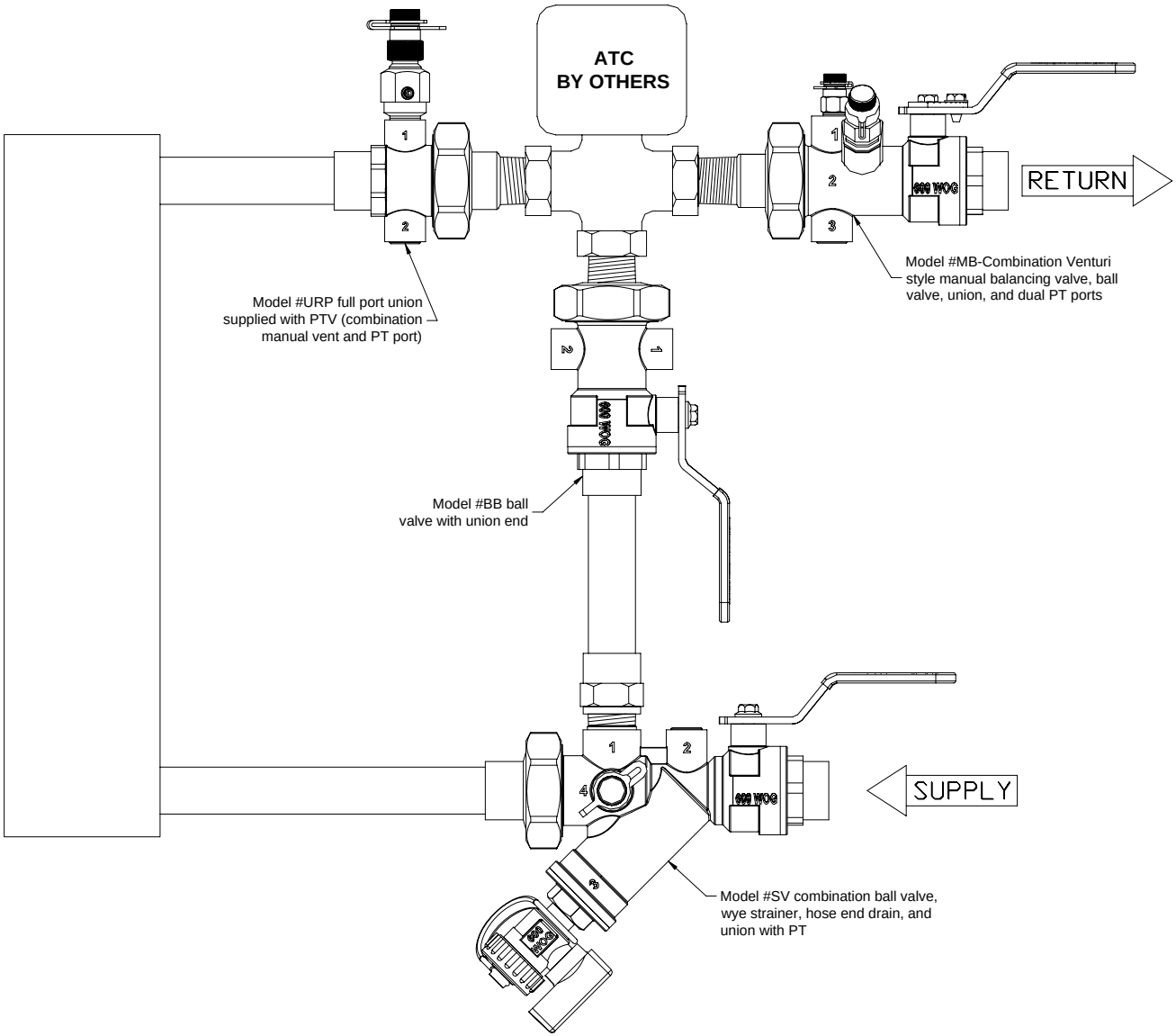
Valve Package (Model # 3RS-MV)



Job Name:_____
Location:_____
Engineer:_____
Contractor:_____

Submitted By:
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118 Exchange Street
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Phone: 413-594-8695
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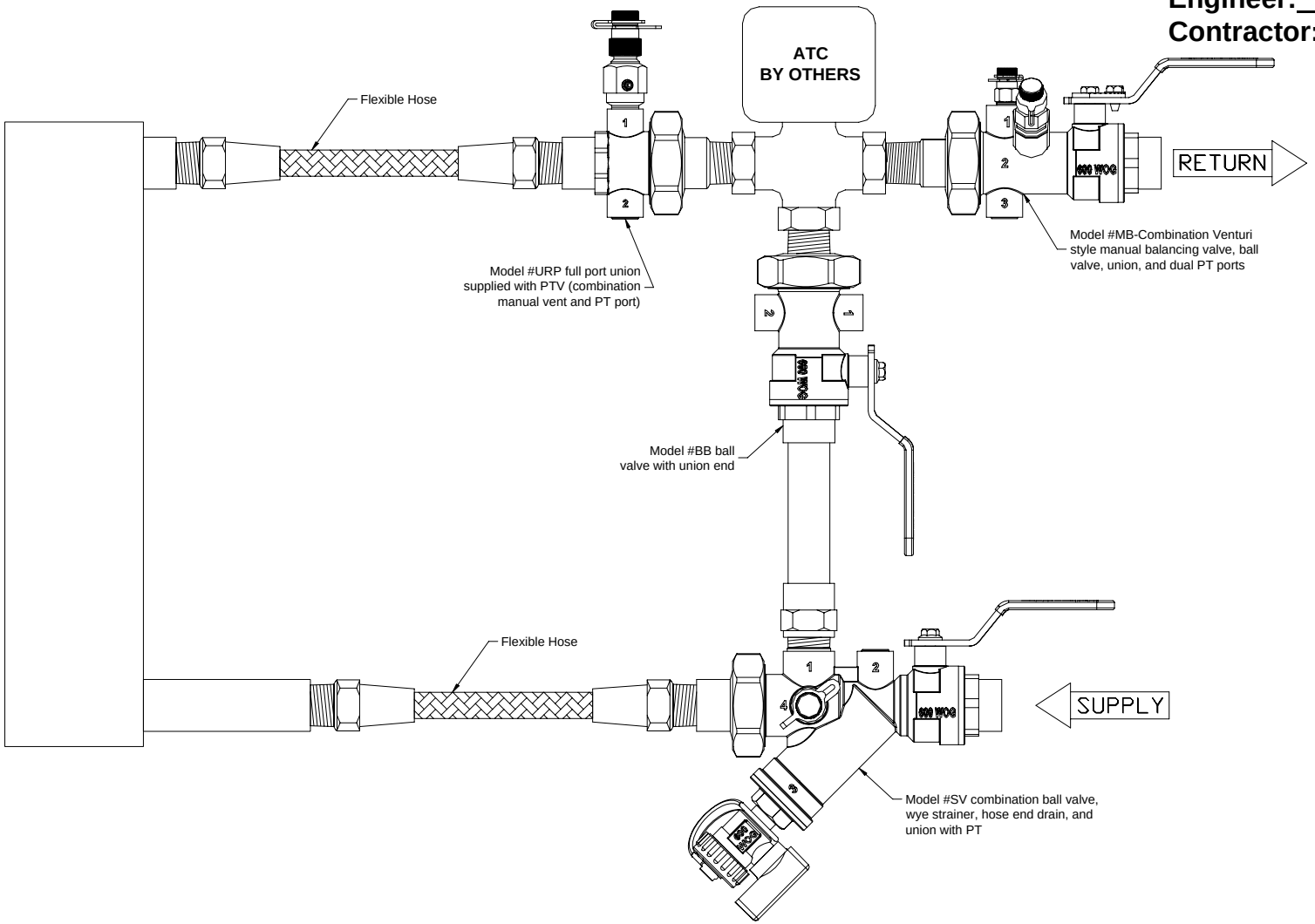
Valve Package (Model # 3RS-MV-FLEX)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



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Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

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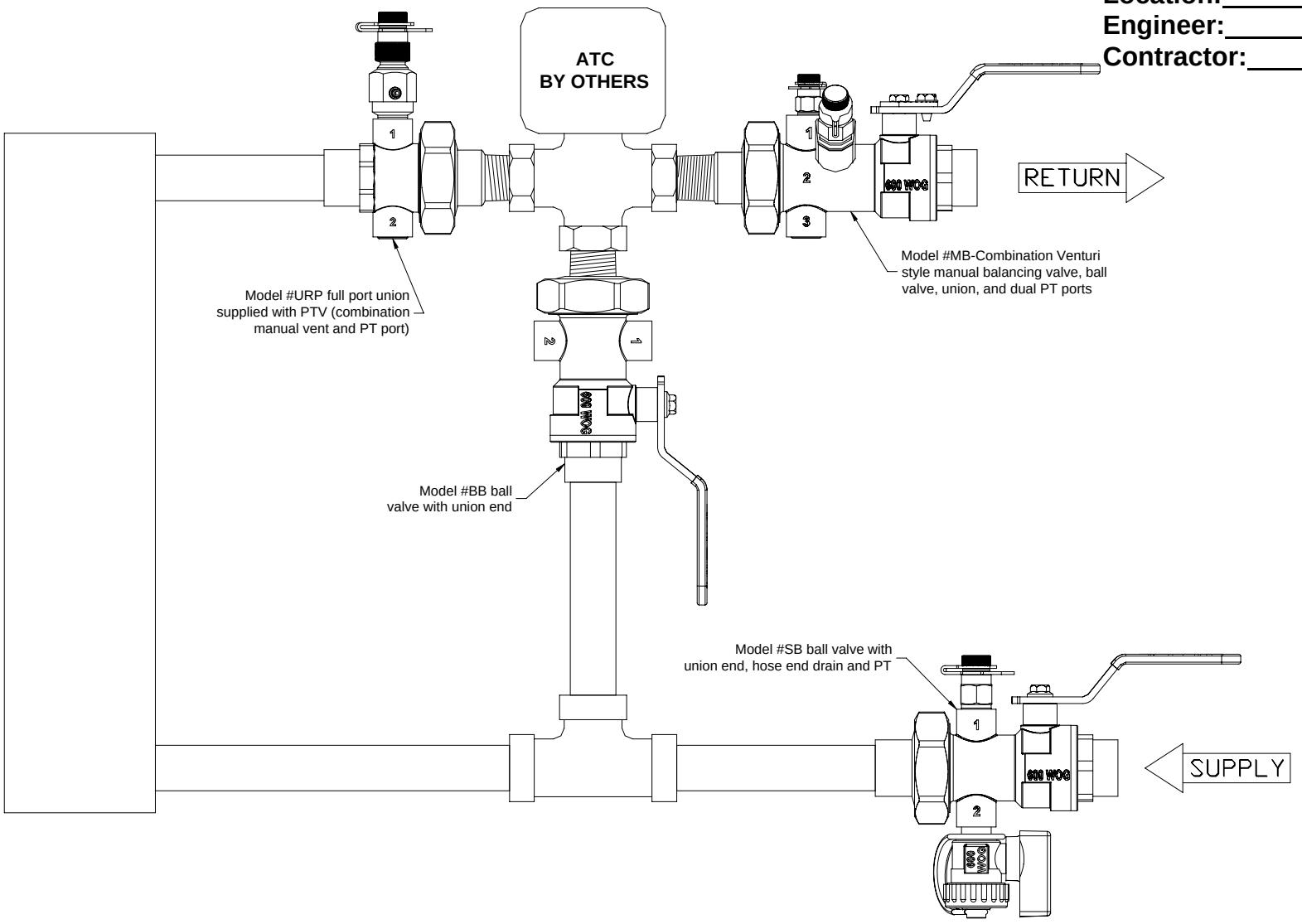
Valve Package (Model # 3RB-MV)

Job Name:_____
Location:_____
Engineer:_____
Contractor:_____



Submitted By:
Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013
Phone: 413-594-8695
Fax: 413-598-8109

MACON® BALANCING

INSTALLATION & OPERATING INSTRUCTIONS

THREADED VALVE CONNECTIONS

Macon threaded connections are tapered type (NPT) and should be made up according to industry standards.

Inspect and clean pipe threads on both components and piping.

Apply sealant, either sealing compound tape to the threads.

If the product contains a union nut, remove the nut and O-ring from the assembly. Place the union nut over the pipe past the threads. Install the tailpiece with a socket wrench.

Attach the body section to the other end of the piping.

Rotate the body using the hex flats nearest the joint being tightened. **Do not use a wrench on the main body of the component**. Position the body so that the PT Port, PTV, Vent, Drain Valve and or Valve Handle are in the proper position. Make sure that the flow arrow is pointing in the direction of the flow.

After both ends of the valve are assembled to the piping, reinstall the O-ring and tighten the union nut hand tight and then tighten an additional quarter turn. Care must be taken not to cut or pinch the O-ring.

SWEAT VALVE CONNECTIONS

Macon products with sweat connections are designed to be soft soldered.

Clean both copper tube and component ends with sand paper and / or a wire brush, wipe clean and apply flux uniformly.

If the product contains a union nut, remove the nut and O-ring from the assembly. Place the union nut over the copper tube past the flux surface. Install the tailpiece and / or body on the copper tube with a twisting motion to distribute the flux uniformly when inserted. Position the body so that the PT Port, PTV, Vent, Drain Valve and/or Valve Handle are in the proper position. Make sure that flow arrow is pointing in the direction of the flow.

A heat sink is required during soldering.

An appropriate heat sink is a wet rag wrapped around the component closest to the solder connection.

Ball valves are required to be fully closed during soldering to avoid deformation to the Teflon seat.

Valves should be allowed to cool before operating.

Apply heat with the flame directed way from the center of the body . Do not exceed the rated temperature of the component. Excessive heat will damage internal components such as O-rings, PT seals, and Teflon seats.

After the solder begins to melt, remove the flame and continue to apply solder until a ring is formed completely around the circumference of the joint. While the joint is still hot, remove excess flux and solder.

After both ends of the component have been assembled to the piping, reinstall the O-ring and tighten the union nut hand tight and then tighten an additional quarter turn. Care must be taken not to cut or pinch the O-ring.

The factory installed accessories (PT Port, PTV, Vent and Drain Valve) will withstand the solder temperatures if properly **heat-sinked with a wet cloth.**

Tunstall Corporation
118 Exchange Street
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INSTALLATION & OPERATING INSTRUCTIONS

FLANGE VALVE CONNECTIONS

Class 150 Valves are mechanically compatible with standard ANSI 150 lb, flat-faced or raised-faced steel flanges or with 125 lb, cast iron flanges.
Appropriated gasket material must be used when installing flanged-mounted flow control devices (for example 1/16" thick ring type fiber filled gaskets). (Not supplied by Macon). All products have a flow direction arrow. Make sure that it is pointing in the direction of the flow.
Installing the butterfly Valve:
Do not use flange gaskets.

The molded valve gasket will seal against the standard ANSI flanges.
Before tightening any bolts on the butterfly valve, turn the disk of the butterfly to the full open position. Center the valve and hand tighten all bolts. Slowly close the disk to check for adequate disk clearance. When properly aligned, return the disk to the open position and evenly cross-tighten all bolts. Make sure the disk opens and closes properly.

GROOVED END VALVE CONNECTIONS

Grease the pipe ends, valve ends and rubber gasket lips with grease, graphite paste or similar grease.
Slip the rubber gasket over the pipe end of each joint. Slide the gasket past the grooves. Position the grooved end valve between the pipe ends and slide the gaskets back into the central spanned position.
All products have a flow direction arrow. Make sure that it is pointing in the direction of the flow. Apply grease on the outside of the gasket. Install housing clamps over the gasket – insert bolts and nuts.

Tighten nuts evenly, using socket or other wrench. Tighten so that housing clamps come together evenly. The connection is complete when housing clamps meet metal to metal, further tightening of bolts is not necessary.
Pre-assemble large diameter multi-segment housing clamps loosely and install them as half-housings. Take up evenly from top to bottom on alternate bolts.

WELD END VALVE CONNECTIONS

Clean the end of the pipe and the valve where the welds will be made. Make up the assembly butting the connections together. All products have a flow direction arrow. Make sure it is facing in the direction of the flow. Tack weld the assembly together and observe the fit.

Warning: If the valve contains a butterfly valve do not finish welding the assembly with the butterfly valve installed between the flanges. This will result in serious damage to the valve seat.

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INSTALLATION & OPERATING INSTRUCTIONS

PRESSURE TEMPERATURE PORT (PT) / PRESSURE TEMPERATURE VENT(PTV)

PT Ports and PTV are typically factory installed.
Factory installed accessories (PT Port, PTV, Vent and Drain Valve) are installed with a hydraulic sealant and should not be disturbed. If it is absolutely necessary to remove, tighten and/or adjust an accessory, it should be cleaned and resealed with new sealant and/or Teflon tape.
Care should be taken not to over tighten.
Field installations are done in accordance with general plumbing/fitting practices. Pipe dope or Teflon tape should be used to seal threads.
Do not expose PT Ports and PTV to soldering, brazing or weld heat. Complete this work before installing the PT Ports and/or PTV.
The PTV should always be installed in a vertical position.
It is preferable to install the PT Port horizontally or higher.
Do not install down at the 6 o'clock position.

SAFETY INSTRUCTIONS

Seals are made of EPDM. EPDM is compatible with hot and cold water. EPDM is resistant to: glycol, alcohol, phosphates, esters, ketones and detergents.
Do not use with: Petroleum products, hydrocarbons solvents and/or oils, chlorinated hydrocarbon or turpentine.
Always wear eye protection when using PT Ports and/or PTV.

Attach a drain hose to the hose barb connection for collecting water or water vapor from the PTV.
Always use a pressure gauge with a rating greater than the pressure in the system.
Recommended for use in hydronic systems only.
Not recommended for gas, steam or high temperature hot water.

OPERATION

PTV Venting:
Venting is achieved by rotating the valve body ½ turn or until you hear air escape. Close valve when venting is completed.

PT Port and PTV Temperature/Pressure Readings:
Remove cap slowly, look and listen for leaks.
Remove any foreign material from the entrance hole.
Select either the pressure or the temperature device to be used. Examine the probe and remove any existing burrs. Apply silicone lubricant to the probe, especially for first time use. Insert probe slowly with a twisting motion. As soon as the necessary readings and adjustments are made, remove the probe and replace cap.

MAINTENANCE

If the device leaks persistently, replace it.
Keep debris out of the device and keep caps on.

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MACON® BALANCING

INSTALLATION & OPERATING INSTRUCTIONS

AUTOMATIC BALANCING VALVES

INSTALLATION

There are no minimum straight-piping requirements for the inlet or the outlet.
Valves may be installed in horizontal or vertical lines.
The flow arrow on the valve body must be pointed in the direction of flow.
Avoid placing the valve close to a pump discharge. Allow 10' before the valve if possible.

OPERATION

Macon Automatic Balancing Valves incorporate a removable flow cartridge that is factory set to limit the GPM to within ± 5% of the specified flow.
The flow can be verified by measuring the differential pressure (D.P.) across the valve using the PT Ports provided.
If it measures between 2-32 the flow is with in the specified flow range.

MAINTENANCE

There is no periodic maintenance required on the Automatic Balancing Valve.
Using a Y strainer is always recommended to prevent clogging. A 40 mesh screen is recommended for flow of 1.5 GPM or less.
The controlled flow rate can be changed in the field without having to remove the valve from the line.
Isolate the system, relieve pressure and drain water. Carefully remove the cap and pull out the cartridge with your fingers. When refitting make sure the O-ring on the cartridge and cap are in place.

MANUAL BALANCING VALVES

INSTALLATION

Macon Manual Balancing Valves & Venturi's are unidirectional, observe flow arrows.
All models can be installed in horizontal or vertical pipe.

STRAIGHT-RUN REQUIREMENTS

The MB models have the necessary straight-run length built in and can be installed directly downstream of a 90 degree elbow or a control valve. If the control valve is smaller then the MB, than the reduction can be done with a Macon tailpiece or reducing coupling to insure a proper reading.
Models MBF, MBG, VF, VG and VW can be installed with no additional pipe diameters upstream or down-stream for line size connections.

Tap Locations (Pressure Taps or PT Ports).
For portable D.P. metering, the taps can be pointing at any clock location, except at 6 o'clock.
Optional accessories such as air vents should always point up and drain down.

OPERATION

The flow is determined by measuring the differential pressure (D.P.) across the high (Red) and low (Blue) taps on the venturi. Convert the measured D.P. to inches W.C. and use the appropriate Macon chart to read the flow.

CHART	MODELS
FCMB-0413	.50" – 2.00" MB
FC1-0413	2.50" – 6.00" MBF, MBG, VF, VG, VW
FC2-0413	8.00" – 12.00" MBF, MBG, VF, VG, VW

Models MB and MBF are equipped with a downstream throttling valve to adjust the flow.
Slowly close the valve while reading the D.P. gauge until the desired flow is reached. Set the memory stop so the handle position is maintained even if the valve is temporarily closed.

MAINTENANCE

There is no periodic maintenance required on these devices.

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Form # IOM-03.14

Flexible Hoses

Installation:
1. Adhere to allowable radius of bend. (See table below)
2. Verify the installation conditions do not cause torsion of flexible. (See figure1 below)
3. If necessary modify the installation in the event that it is not possible to adhere to the allowable radius of bend (see paragraph 1 below). For example, add an intermediary right angle fitting (See figure 2 below).
4. Do not submit the connectors to tension, either from the installation, or as a result of pressure or expansion (see figure 3 below).
4. The braiding of the flexible must never be in contact with cement, plaster or all other materials or fluids capable of causing corrosion.

FIGURE 1

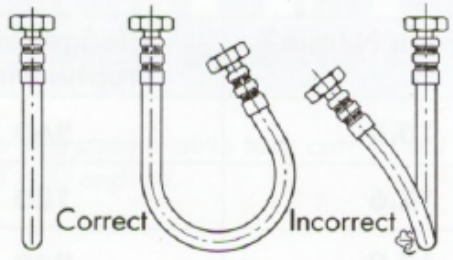


FIGURE 2

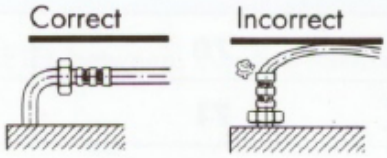
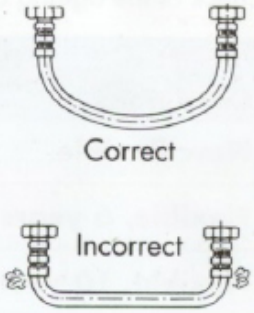


FIGURE 3



ON INSTALLATION: Avoid absolutely any tension due to stretching during the course of tightening the connectors. Do not turn fittings in the hose. Do not twist hose. Avoid sharp bends, kinking or twisting of the hose during installation. The ½", 3/4" and 1" hose connection is a metal to metal seal. The brass mating surfaces should be smooth and free of debris. The 1-1/4", 1-1/2" and 2" hose connection use a specially design gasket, do not install without the gasket. Do not use pipe dope or tape sealants on the metal to metal or gasket connection adapters when connecting to the swivel nut.

A. Install and tighten the fixed male connector.
B. Remove the swivel adapter from the swivel nut. Install and tighten the union adaptor.
C. Install and tighten the adapter to the swivel nut.
Use two spanners in order to screw the union together:
One to hold the hexagon of the adaptor.
The other to tighten the nut at the same time.

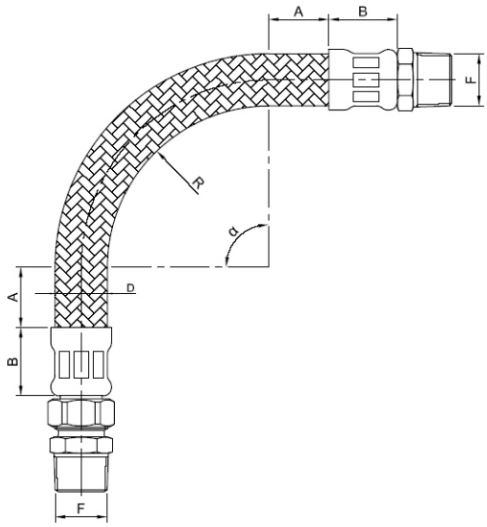
IMPORTANT: Do not re-screw the fixed connector or adaptor after tightening of the swivel nut ; this will cause tensioning of the flexible with a risk of rapid deterioration at this point.
On removal, take precautions. If the flexible incorporates two fixed connectors, at least one must be installed on a counter-part fitting with a swivel connector or a union, if not installation is impossible.

INSPECTION: Macon recommends a good maintenance practice and periodic inspections, typically when servicing other components at the unit or at the installation site. Check all hoses for small water leaks, residue, discoloration on the exterior braid and fittings. If a leak is detected, stop service to the unit and replace hose immediately. Do not attempt to the repair hose.

Caution: Introduction of chemicals into the system or unit may cause damage to the inner core of the hose. Consult a water treatment specialist for chemical compatibility before using any chemical additives.

Warning: Hoses are designed for hydronic heating and cooling service only, not for gas.

FLEXIBLE ALLOWING A BEND



I.D.	F	Length (inch)	R_{min} (mm)	A_{min} (mm)	B (mm)	D (mm)	α_{max}
13	1/2 - 14 NPT	12 "	60	40	23	17	89°
		18 "	60	40	23	17	180°
		24 "	60	40	23	17	180°
		36 "	60	40	23	17	180°
19	3/4 - 14 NPT	12 "	80	55	35	26	32°
		18 "	80	55	35	26	126°
		24 "	80	55	35	26	180°
		36 "	80	55	35	26	180°
25	1 - 11,5 NPT	12 "	110	65	35	35	5°
		18 "	110	65	35	35	75°
		24 "	110	65	35	35	142°
		36 "	110	65	35	35	180°
32	1¼ - 11,5 NPT	18 "	120	100	46	42	30°
		24 "	120	100	46	42	92°
		36 "	120	100	46	42	180°
40	1½ - 11,5 NPT	18 "	200	140	62	53	5°
		24 "	200	140	62	53	27°
		36 "	200	140	62	53	104°
50	2 - 11,5 NPT	24 "	280	230	57	63	5°
		36 "	280	230	57	63	42°

MACON® BALANCING

LIMITED WARRANTY

Macon warrants that our products are free from defects in material and workmanship and will possess the characteristics represented by us for a period of 12 months from the date of shipment.

Upon satisfactory proof of claim, we will, within a reasonable time, make any necessary repairs, additions or corrections or, at our option, replace defective parts free of charge. Charges for correcting defects or making additions will not be allowed, nor will we accept products returned for credit unless the return is authorized by us in writing.

This warranty shall not apply to any material which has been subject to misuse, negligence, modification, temperature or pressures in excess of the limits recommended by Macon.

Macon makes no other warranties either expressed or implied, including the warranties of mechanical ability or fitness for a particular purpose. The company neither assumes nor authorizes any other persons to assume for it any liability in connection with the sales of its parts and material except under the conditions of this warranty. There are no warranties which extend beyond the description on the face hereof.

Macon is not liable for incidental or consequential damages including, but not limited to, damage or delay, loss of profit or expense incurred by the purchaser.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

GUIDE SPECIFICATIONS – STVL / STV / STVA / STVC BALANCING VALVES

TYPICAL SPECIFICATION

All balancing valves shall be of one manufacturer.

Furnish and install, as shown on job plans and in accordance with manufacturers installation instructions, Macon Balancing Valves, Series STVL/STV/STVA/STVC. Valves are to be of "Y" pattern globe style design and perform the following functions: a) Flow balancing, b) Flow measurement, c) Positive shut-off.

All balancing valves must have a minimum ten (10) turn, 360° handwheel with digital and vernier scale readout for precise setting. Balancing handwheel must include a memory stop and locking feature to prevent tampering after pre-setting.

All balancing valves shall have self-sealing ports for measurement of differential pressure and fluid temperature using standard pressure and temperature test probes. Test ports shall be located at a 45° offsetting angle and be removable for implementation of optional drain kits where required.

All balancing valves in sizes 1/2" (DN 15) through 2" (DN 50) shall be made of dezincification resistant brass and have either sweat or NPT thread connections. Valve body sizes 2 1/2" (DN 65) through 12" (DN 300) shall be made of cast iron and flanged to 125 lb standard.

All balancing valves shall be manufactured by the company complying with international quality standard ISO 9001.

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MACON® BALANCING

GUIDE SPECIFICATIONS – AUTOMATIC BALANCING VALVES

MANUFACTURER

1. Macon Balancing, Models AB, ABW, ABG and AW.

DESIGN

1. The GPM for the automatic balancing valves shall be factory set and shall automatically limit the rate of flow to with in ±5% of the specified GPM over at least 95% of the control range.
2. For .50" through 2.0" the flow cartridge shall be removable from the Y Body housing without the use of special tools to provide access for cartridge change-out, inspection and cleaning without breaking the main piping.
3. PUMP HEAD REQUIREMENT:
   The permanent pressure loss added to the pump head shall not exceed seven feet.
4. Each valve shall have 2 P/T Ports.
5. The valve handle shall be fitted with a fine tuning memory stop handle to allow for adjusting the control range.

CONSTRUCTION

1. The internal wear surfaces of the valve cartridge shall be Ultrason® Composite or stainless steel.
2. The flow cartridge shall be permanently marked with the GPM and differential range.
3. For .50" through 2.0" pipe sizes: An assembly shall consist of a brass Y-type body, integral brass-body ball valve and O-ring type union.
   Macon model AB.
4. For 2.5" and larger flanged connections:
   Ductile-iron body, suitable for mounting wafer style between standard 150# or 300# flanges.
   The long flange bolts and nuts shall be provided with each control valve.
   Macon model AW.

MINIMUM RATINGS

1. For .50" through 2.0" pipe sizes
   600 PSI @ 250°F.
2. For 2.5” through 12.0” pipe sizes
   600 PSIG @ 250°F.

FLOW VERIFICATION (choose one)

1. The differential pressure across the Automatic Balancing Valve shall be measured for flow verification and to determine the amount of system over heading or under pumping.
2. The flow shall be verified by measuring the differential pressure across the coil served or the wide open temerature control valve and calculating the flow using the coil or valve Cv.

TEST KIT

1. A pressure and temperature test kit shall be provided with the ability to read differential pressure from 0 to 75 PSI, and temperature from -10 to 230° F.

INSTALLATION

1. Install automatic balancing valves on the return lines of coils as indicated on the plans. A balancing valve on the supply side is not acceptable.
2. The standard ports and handle shall clear 1.0" thick insulation. Do not insulate flow control valves used on heating coils.
3. Install, on the supply side of coils, a Y-strainer with brass blow down valve with .75" hose-end connection with cap. Inline basket strainer is not acceptable.

Tunstall Corporation
118 Exchange Street
Chicopee, MA 01013

MACON® BALANCING

GUIDE SPECIFICATIONS – MANUAL VENTURI BALANCING VALVES

MANUFACTURER

1. Macon Balancing, Models MB or MBF

DESIGN

1. Flow devises shall be Venturi type as recommended by ASHRAE.
2. Devices shall have a precision-machined throat and have a stated catalog accuracy of 3% of flow rate.
3. MINIMUM GAUGE READING:
   The gauge reading (flow signal) shall be at least two feet at the design flow with the valve in the wide open position.
4. The valves are to have differential readout ports fitted with check valve and protective cap, and are to have a memory stop to allow complete shut-off and return to set position with out losing the set point.
5. PUMP HEAD REQUIREMENTS:
   The permanent pressure loss added to the pump head shall not exceed two feet, per device, at the design GPM in the wide-open position.

CONSTRUCTION

1. All devices shall have a Venturi section and a throttling valve with a memory stop on the downstream side of the Venturi.
2. Sizes .50" - 2.0" shall have a brass alloy body with sweat or threaded (NPT) connections, ball valve shall have a plated brass ball, blowout-proof brass stem, union end which will except various type tailpieces, Teflon seat, EPDM o-ring seals, and a steel handle.

   Sizes 2.5" – 6" shall have a cast steel body. Flanges shall be compatible with ANSI B16.5-1968 150lb. Butterfly Valve shall be ductile iron lug type, with EPDM seats, 416 SS stem, Teflon bushing, aluminum/bronze disc.
3. All valves .50" – 2.0" shall be factory leak tested at 100PSI air under water.

MINIMUM RATINGS

1. Devises with sweat or NPT connections .50" – 2": 400 PSIG @ 250°F.
2. Devises with Flanged connections 2" – 10": 200 PSIG @ 250°F.

READOUT METER KIT

Provide a portable readout meter kit by the manufacturer of the balancing devices.

1. The meter shall be housed in a durable case complete with two 10’ color coded hoses with shut-off valves at the end that connects to the balancing valve so that water does not drain out between readings.
2. Meter shall have a 6" diameter face and ±1.75% full-scale accuracy.
3. Meter shall have a forged brass body and a three-valve manifold for over-range protection.
4. Meter shall have a dual scale reading inches and feet W.C.

INSTALLATION

1. The straight pipe required to achieve 3% F.S. accuracy shall be incorporated as an integral part of the .50" to 2" valve assembly. Five pipe diameters of straight pipe are required from a control valve for sizes 2.5" – 10".
2. Install balancing valves on the return lines of the coil as recommended by ASHRAE.
3. Install in accordance with the manufacturer’s instructions.

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MACON® BALANCING

GUIDE SPECIFICATIONS – HOOK–UP COMPONENTS

UNIONS

Manufacturer
Macon Balancing
Models UR, URP, US, UB.

Design and Material
.50" – 2.0" Brass O-ring type Union. EPDM O-ring. Fixed End available in FNPT or SWT. Tailpiece available in MNPT, FNPT, SWT or Press End. Size reductions available. Ground joint type not acceptable.

Minimum Ratings
600 PSIG @ 250°F

Y-STRAINERS

Manufacturer
Macon Balancing
Models SV, SVF.

Design and Material
.50" – 2.0" Forged or cast brass body. EPDM O-ring. Plated steel handle with vinyl grip. Blow out-proof stem. Chrome plated ball with Teflon seats. 20 mesh stainless steel screen with removable cap. Fixed End available in FNPT, SWT or Press End. Tailpiece available in MNPT, FNPT, SWT or Press End. Size reductions available. Strainer shall be fitted with a hose end blow down valve with cap and chain.
2.5" – 12.0" Cast iron body. Fiber gasket. Stainless steel strainer screen. ANSI 125# Flanged. Lug type ductile iron butterfly valve mounted on the inlet.

Minimum Rating
.50" – 2.0" 600 PSIG @ 250°F
2.5" – 12.0" 175 PSIG @ 250°F.

MANUAL AIR VENTS

Manufacturer
Macon Balancing
Models MAV, PTV.

Design and Material
MAV Brass body. Knurled slotted handle. Blowout-proof stem. Side vent. 1/4" NPT. Standard and Extended length.
PTV Brass body, EPDM core and O-rings. Knurled handle and cap. Blowout-proof stem. Side vent with 1/8" hose barb. 1/4" and 1/2" NPT. Standard and Extended length.

Minimum Ratings
MAV 400 PSIG @ 250°F
PTV 250 PSIG @ 250°F

AUTOMATIC AIR VENTS

Manufacturer
Macon Balancing
Model AAV

Design and Material
Forged brass body, manual shut-off cap. Polypropylene float. Body designed to be disassembled for cleaning. Vent capacity 1 SCFM @ 60 PSIG.

Minimum Ratings
150 PSIG @ 250°F

HOOK–UP COMPONENTS continued –

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MACON® BALANCING

GUIDE SPECIFICATIONS – HOOK–UP COMPONENTS cont.

HOSES

Manufacturer
Macon Balancing
Models FH

Design and Material
.50" – 2.0" inner core of EPDM suitable for water temperatures between 40°F and 230°F.
Outer braided cover of stainless steel with brass fittings. Double Crimp SS Ferrules.

Minimum Ratings
Temperature Range: 5°F to 212°F
1/2" 375 PSIG Operating, 1500 PSIG Burst
3/4" 300 PSIG Operating, 1200 PSIG Burst
1.0" 225 PSIG Operating, 900 PSIG Burst
1.25" 200 PSIG Operating, 800 PSIG Burst
1.50" 175 PSIG Operating, 600 PSIG Burst
2.0" 150 PSIG Operating, 500 PSIG Burst

BALL VALVES

Manufacturer
Macon Balancing
Models AB, BB, MB, SB

Design and Material
.50" – 2.0" forged or cast brass body.
EPDM O-ring. Plated steel handle with vinyl grip.
Blow out-proof stem. Chrome plated ball with Teflon seats. Fixed End available in FNPT, SWT or Press End. Tailpieces available in MNPT FNPT, SWT or Press End. Size reductions available.

Minimum Ratings
600 PSIG @ 250°F

PRESSURE / TEMPERATURE PORTS

Manufacturer
Macon Balancing
Models PT, PTV

Design and Materials
PT Brass body. Dual durometer EPDM core.
Brass cap with EPDM O-ring and neoprene strap.
Accepts 1/8" diameter gage adapter or thermometer stem. 1/4" and 1/2" NPT.
PTV Brass body. Dual durometer EPDM core.
Brass cap with EPDM O-ring and neoprene strap.
Side air vent with 1/8" hose barb. Accepts 1/8" diameter gage adapter or thermometer stem.
1/4" and 1/2" NPT.

Minimum Ratings
PT 500 PSIG @ 250°F
PTV 250 PSIG @ 250 °F

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