Submittals Review

Project: GCPL Xenia Community Library Renovation
Architect: K4 – proj no 22-2038
Spec Section: 230923.11, 232114
Product: AHU VAV coil connections

PAINT ALL EXPOSED CONNECTIONS TO MATCH ADJACENT UNIT/CEILING COLOR. K4: BBJ - 7.3.23

Items	quantity	date received
Strainers, balancing valves at AHU and VAV coil connections.	1	6-15-23

Comments		
no.	description	action
1	Combination strainer with isolation ball valve submitted; please provide with solid stainless steel ball in the ball valves.	B, E
2	For strainers, please provide start-up strainer, and final strainer of stainless steel #30 mesh.	B, E
3	Please provide bronze body strainer to 2", cast iron body strainer for 2-1/2 inch or larger applications.	B, E
4	Combination manual balancing valve and isolation valve submitted. Intent is for isolation valves to be independent of the control valves; and that the control valves perform temperature control and pressure-independent control to balance flows as single device at each coil (a pressure-independent temperature control valve at each coil), without a supplemental manual balancing valve. Please provide additional selection/submittal.	D
5	Field verify all dimensions, left-or-right side, connection sizes, clearances and service access.	B, E

A	Approved without comments
B	Provide as noted
C	Revise/Resubmit
D	Additional Submittal needed
E	Submit for Record
F	Rejected

BAL VALVE BY TAG TABLE PAGE 6

Enhanse

2235 Williams Avenue
Cincinnati, Ohio, 45212

Review is for general compliance with contract documents only. The contractor has responsibility for confirming and correlating quantities, dimensions, tolerances, clearances, installation means and methods, field conditions, coordination with all trades and full compliance with contract documents for performing work in a safe and satisfactory manner.

Disposition			
Items	quantity	destination	date sent
Strainers, balancing valves at AHU and VAV coil connections.	1	B Bruner	6-28-23

Enhanse

2235 Williams Avenue
Cincinnati, Ohio, 45212

Project Name: GCPL Xenia Library Renovation

Submittal #: 052

Date: 6/21/23

Specification Section: N/A

Description: AHU VAV Box Coil Connections

Comments:

Attn: Brian Bruner and Rick Posey

Lead time from Approval:

- ☐ Product Data
- ☐ Shop Drawings
- ☐ LEED Information
- ☐ Samples
- ☐ Maintenance Data or Installation Instructions
- ☐ Warranty Information
- ☐ Other:

Contractor Stamp:

Staffco Construction
REVIEWED
06/21/2023

Approver Stamp:

Comments:

4401 Springfield St.
Dayton, OH 45431
OH LIC # 24297
937.254.3235
800.254.9455
msdinc.net

SUBMITTAL COVER SHEET

PROJECT

Xenia Community Library

ENGINEER	ARCHITECT
Enhanse	K4 Architecture

SPECIFICATIONS NO.	ITEM
No Spec Provided	Coil Connections

Submittal # 032.1

- [x] Approved
- [ ] Disapproved

Date: 6/20/2023

Submitted by: Greg Hamm

BLB Equipment Sales Co., dba
BC Engineering Company
bceng@yahoo.com
4417 Kitty Lane ■ Batavia, Ohio 45103
Phone: (513) 943-7900 ■ Fax: (513) 943-9625

SUBMITTAL

Project: GCPL Xenia Community Library

Contractor: Mechanical Services & Design

Manufacturer: IMI Flow Design Inc. Dallas, TX

Location: VAV, UH, CH, AHU

Balancing Type: Manual Balancing

Models: UA, YC, UP, AF, CY

Sizes: To match pipe sizes shown on plans

Submittal Prepared By: Justin Brown

GCPL Xenia Community Library

Tagging information

Model	Venturi #	GPM	Range	TAG INFO	QTY	GRP	
UA075	3	2	CS-26	VAV-1-1	1	A	0.75
UA075	3	2	CS-25	VAV-1-2	1	A	
UA075	3	2	CS-27	VAV-1-3	1	A	
UA075	4	3.2	CS-21	VAV-1-4	1	A	
UA075	4	2.9	CS-28	VAV-1-5	1	A	
UA075	3	2.2	CS-30	VAV-1-6	1	A	
UA075	3	2.2	CS-29	VAV-1-7	1	A	
UA075	4	2.8	CS-16	VAV-2-1	1	A	
UA075	3	1.3	CS-18	VAV-2-2	1	A	
UA075	3	1.3	CS-19	VAV-2-3	1	A	
UA075	4	2.5	CS-23	VAV-2-5	1	A	
UA075	3	2	CS-24	VAV-2-6	1	A	
UA075	3	2.2	CS-11	VAV-3-1	1	A	
UA075	3	1.7	CS-9	VAV-3-2	1	A	
UA075	3	2	CS-10	VAV-3-3	1	A	
UA075	2	0.7	CS-14	VAV-3-4	1	A	
UA075	2	0.7	CS-2	VAV-4-1	1	A	
UA075	2	0.7	CS-4	VAV-4-2	1	A	
UA075	2	0.7	CS-3	VAV-4-3	1	A	
UA075	3	2	CS-15	VAV-4-4	1	A	
UA075	4	3.5	CS-20	VAV-4-5	1	A	
UA075	3	2	CS-42	VVR-1-1	1	A	
UA075	3	2	CS-44	VVR-1-2	1	A	
UA075	3	2.1	CS-40	VVR-1-3	1	A	
UA075	4	3.4	CS-43	VVR-1-4	1	A	
UA075	4	3.6	CS-41	VVR-1-5	1	A	
UA075	3	2.2	CS-49	VVR-2-1	1	A	
UA075	3	1.3	CS-45	VVR-2-2	1	A	
UA075	4	3.3	CS-46	VVR-2-3	1	A	
UA075	3	2.1	CS-48	VVR-2-4	1	A	
UA075	3	1.5	CS-47	VVR-2-5	1	A	
UA075	3	2.4	CS-39	VA5-1	1	A	
UA075	2	1.1	CS-37	VA5-2	1	A	
UA075	3	2	CS-38	VA5-3	1	A	
UA075	3	1.3	CS-35	VA5-4	1	A	
UA075	3	2	CS-34	VA5-5	1	A	
UA075	4	3.5	CS-33	VA5-6	1	A	
UA075	3	2	CS-31	VA5-7	1	A	
UA075	3	2	CS-32	VA5-8	1	A	
UA075	3	2	CS-36	VA5-9	1	A	
UA100	4	3.7	CS-22	VAV-2-4	1	B	1.00
UA075	3	2	CS-5	UH-1	1	A	0.75
UA075	2	1	CS-7	UH-2	1	A	
UA075	3	2.2	CS-8	CH-1	1	A	
UA075	4	3.3	CS-17	CH-2	1	A	
UA075	4	3.3	CS-13	CH-3	1	A	
UA075	3	2	CS-12	CH-4	1	A	
UA075	3	1.3	CS-6	CH-5	1	A	

GRP A - 0.75"
GRP B - 1.00"
GRP C - 1.00"
GRP D - 1.25"
GRP E - 1.50"
GRP F - 2.00"
GRP G - 2.50"

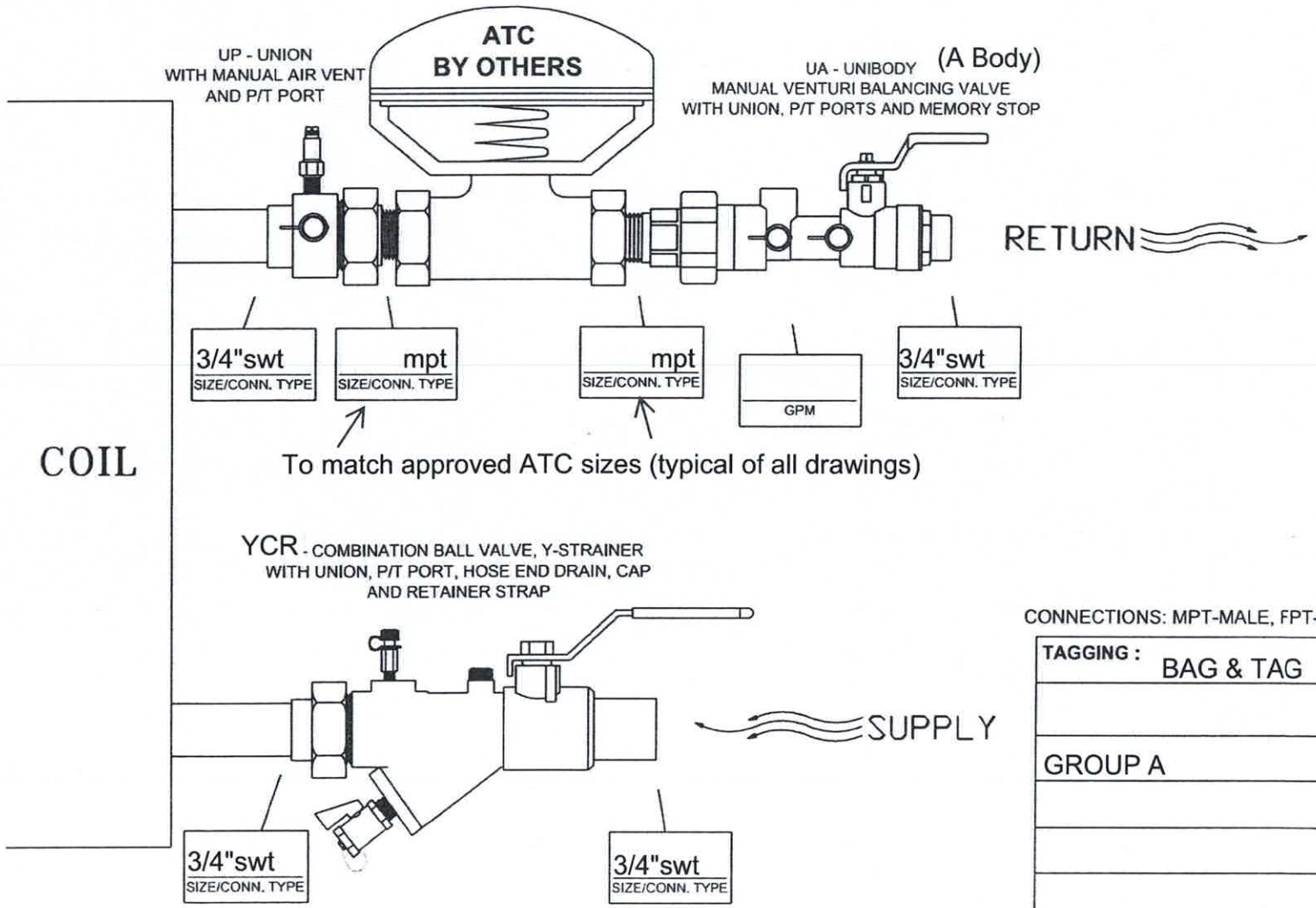
UA100	5	6.9	CS-52	AHU-3 HW	1	C	1.00
UA100	6	8.7	CS-51	AHU-5 HW	1	C	
UA125	6	9.2	CS-53	AHU-1 HW	1	D	1.25
UA125	6	10.1	CS-50	AHU-2 HW	1	D	
UA150	7	22	CS-5	AHU-3 CHW	1	E	1.50
UA200	8	40.4	CS-4	AHU-5 CHW	1	F	2.00
AF250	L	48.2	CS-3	AHU-1 CHW	1	G	2.50
AF250	L	47.6	CS-2	AHU-2 CHW	1	G	

GRP A - 0.75"
GRP B - 1.00"
GRP C - 1.00"
GRP D - 1.25"
GRP E - 1.50"
GRP F - 2.00"
GRP G - 2.50"

FDI
FLOW DESIGN INC.

Modular Component Drawing

2-Way Manual Balancing Package
1/2" thru 2"



CONNECTIONS: MPT-MALE, FPT-FEMALE, SWT-SWEAT

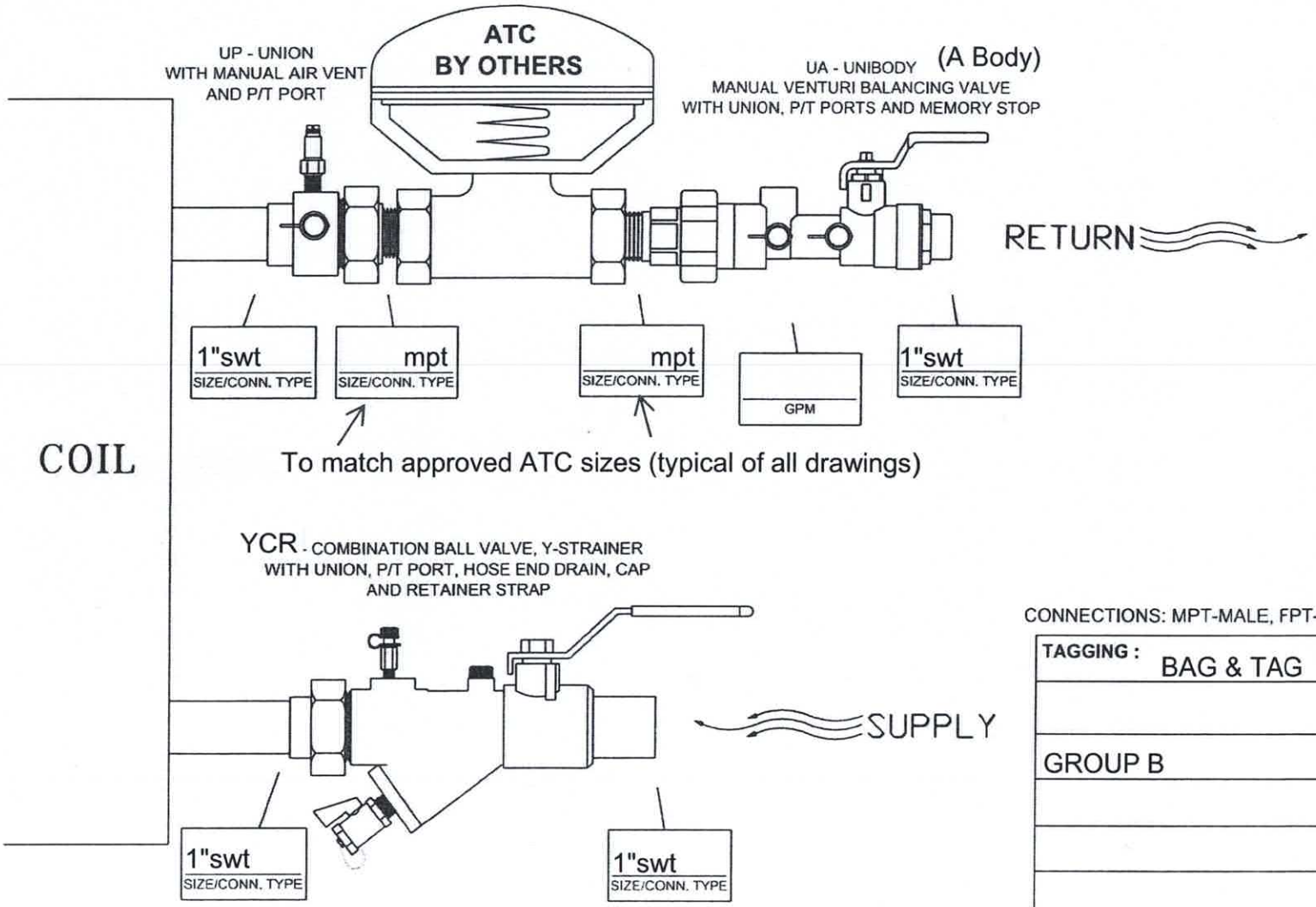
TAGGING : BAG & TAG
GROUP A

Note: Coil hook-up drawings are provided as a service by Flow Design Inc. These Drawings are a visual representation of our interpretation of possible coil configurations. They are not based on specific engineering requirements and Flow Design Inc. is not responsible for orders placed using unverified drawings. The purpose of Flow Design Inc.'s hook-up drawings is to show a "plan view" of the components comprising the coil hook-up rather than an exact "as-built" layout.

FDI
FLOW DESIGN INC.

Modular Component Drawing

2-Way Manual Balancing Package
1/2" thru 2"



CONNECTIONS: MPT-MALE, FPT-FEMALE, SWT-SWEAT

TAGGING : BAG & TAG
GROUP B

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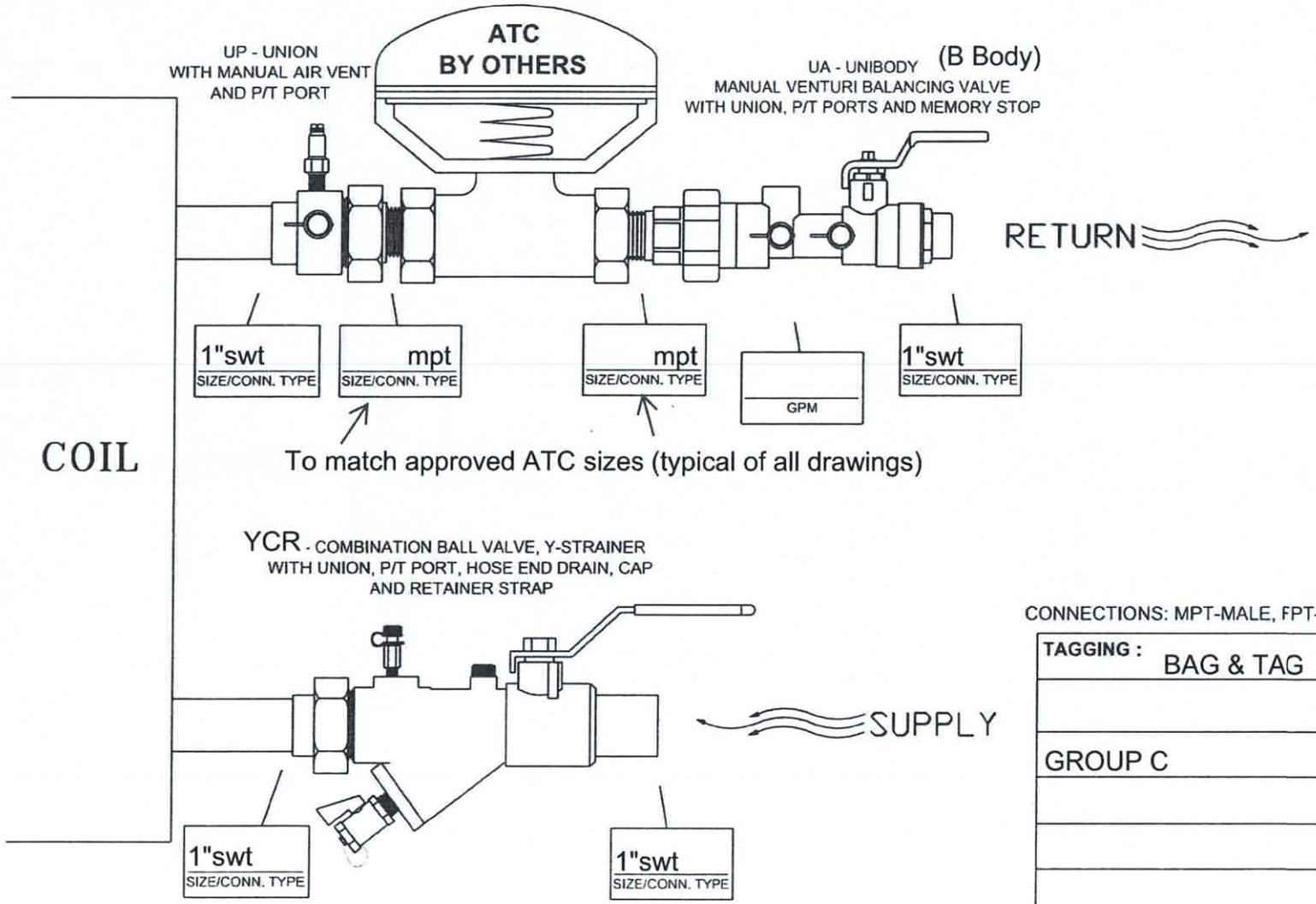
FDI
FLOW DESIGN INC.

Modular Component Drawing

2-Way Manual Balancing Package

1/2" thru 2"



CONNECTIONS: MPT-MALE, FPT-FEMALE, SWT-SWEAT

TAGGING : BAG & TAG
GROUP C

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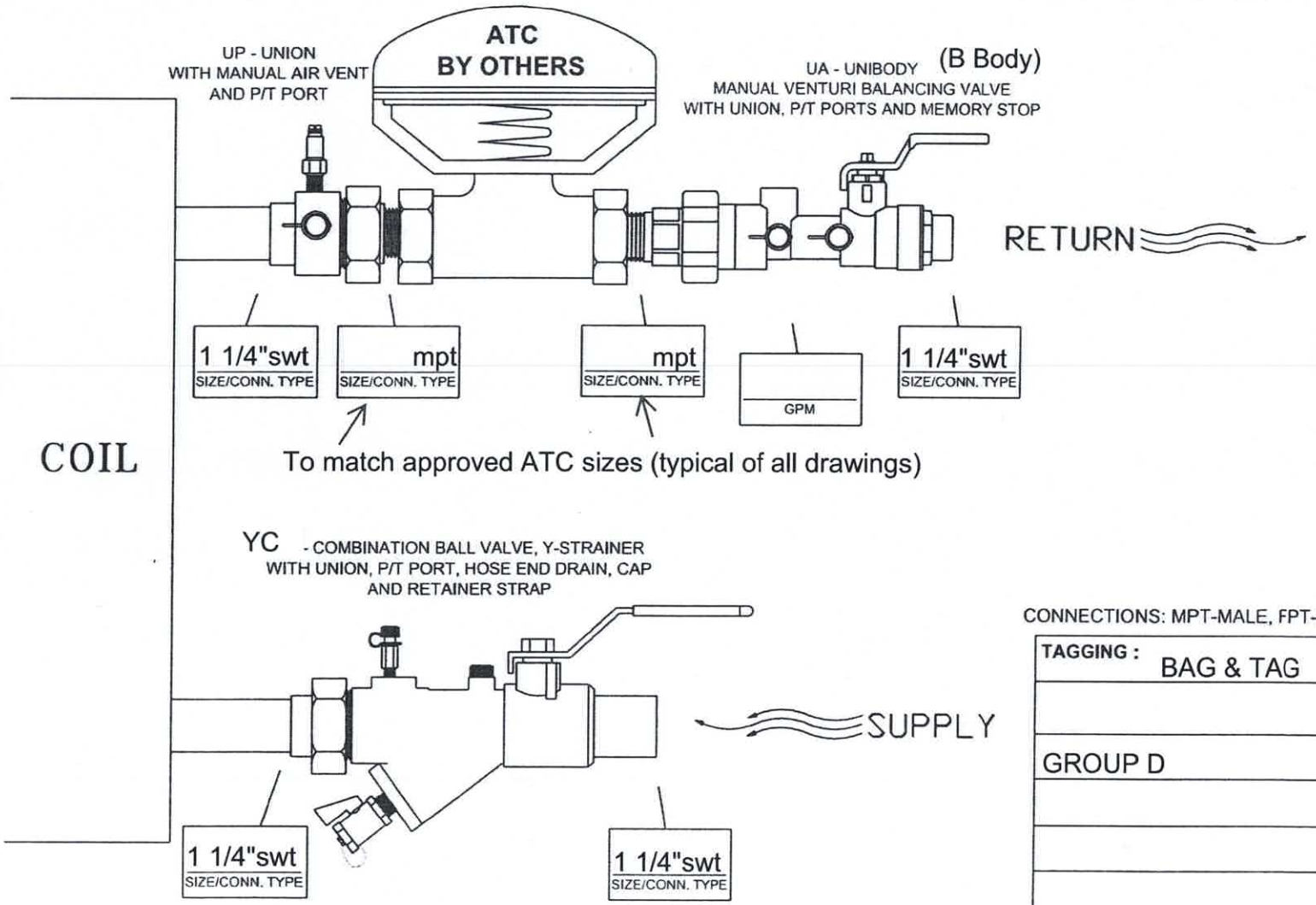
FDI
FLOW DESIGN INC.

Modular Component Drawing

2-Way Manual Balancing Package

1/2" thru 2"



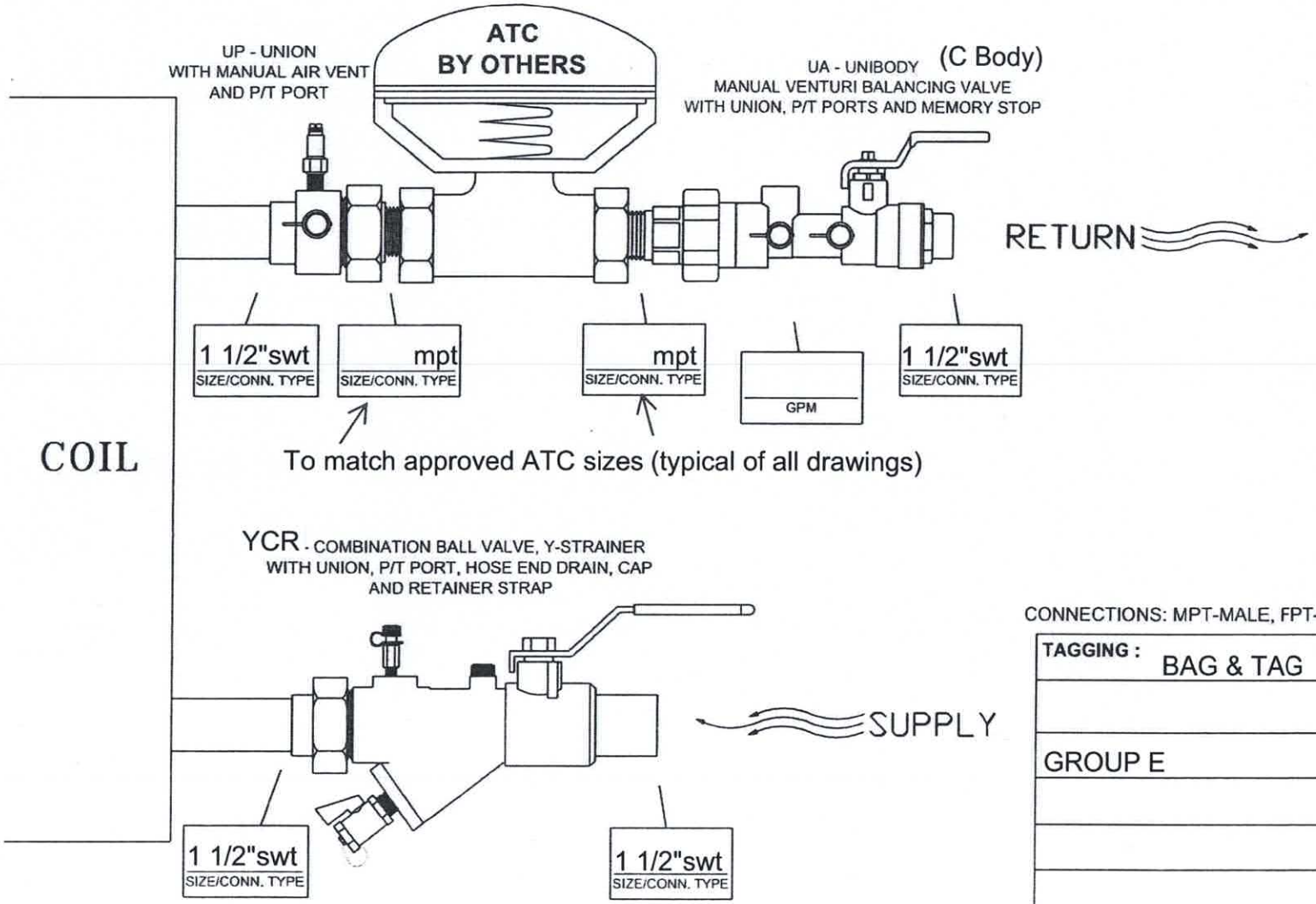
CONNECTIONS: MPT-MALE, FPT-FEMALE, SWT-SWEAT

TAGGING : BAG & TAG
GROUP D

Note: Coil hook-up drawings are provided as a service by Flow Design Inc. These Drawings are a visual representation of our interpretation of possible coil configurations. They are not based on specific engineering requirements and Flow Design Inc. is not responsible for orders placed using unverified drawings. The purpose of Flow Design Inc.'s hook-up drawings is to show a "plan view" of the components comprising the coil hook-up rather than an exact "as-built" layout.

FDI
FLOW DESIGN INC.

Modular Component Drawing
2-Way Manual Balancing Package
1/2" thru 2"



CONNECTIONS: MPT-MALE, FPT-FEMALE, SWT-SWEAT

TAGGING : BAG & TAG
GROUP E

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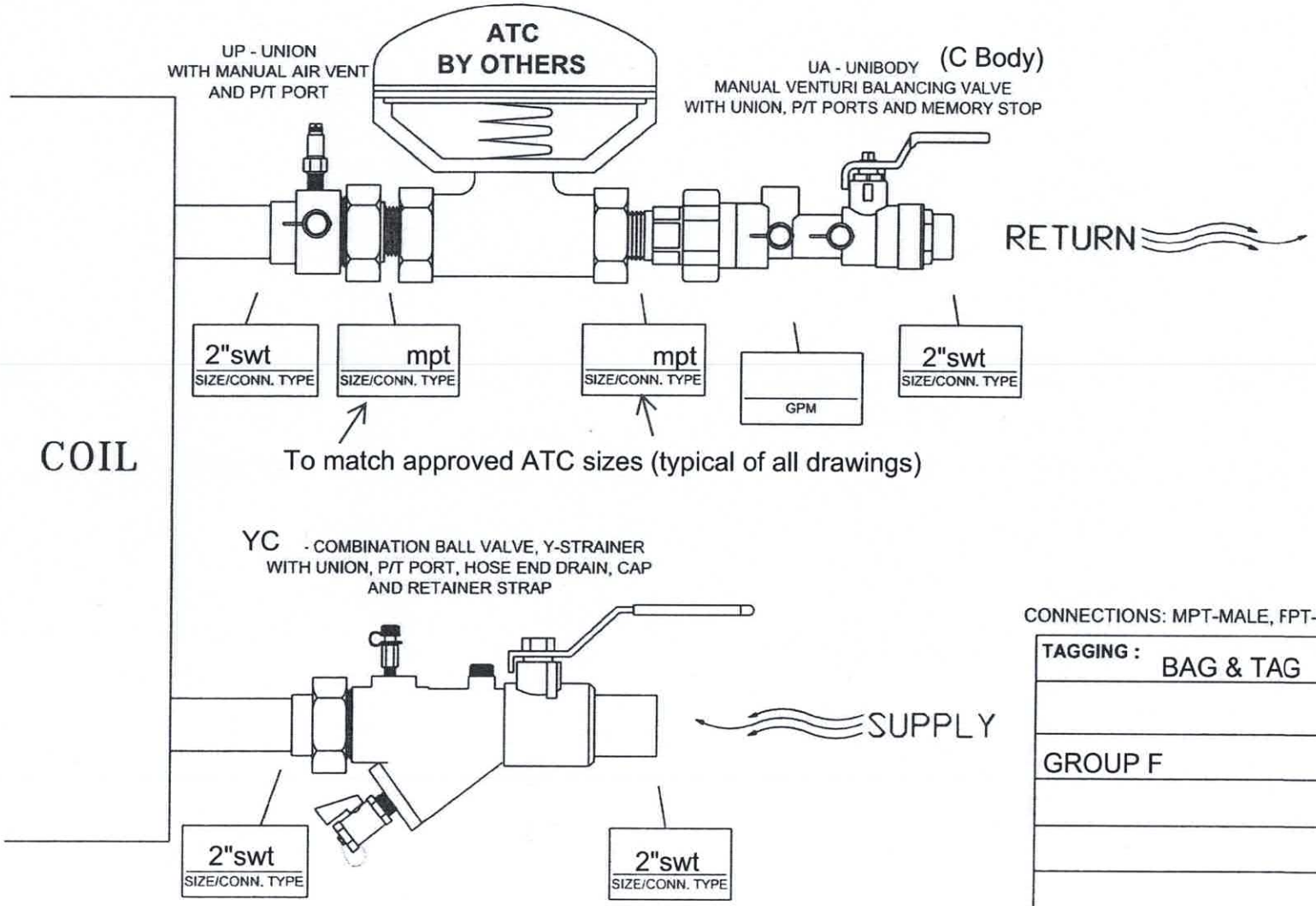
FDI
FLOW DESIGN INC.

Modular Component Drawing

2-Way Manual Balancing Package

1/2" thru 2"



CONNECTIONS: MPT-MALE, FPT-FEMALE, SWT-SWEAT

TAGGING : BAG & TAG
GROUP F

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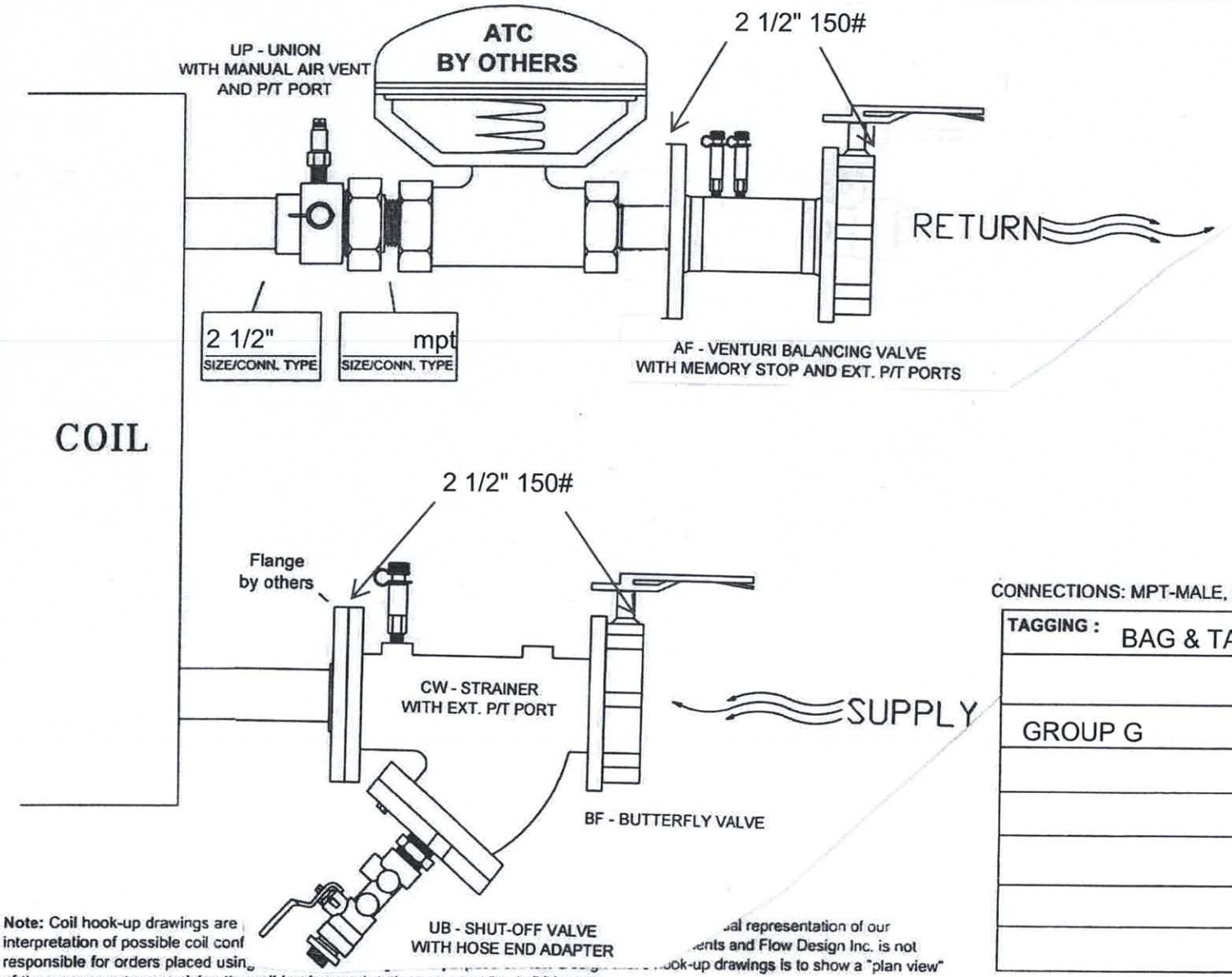
FDI
FLOW DESIGN INC.

Modular Component Drawing
2-Way Manual Balancing Package



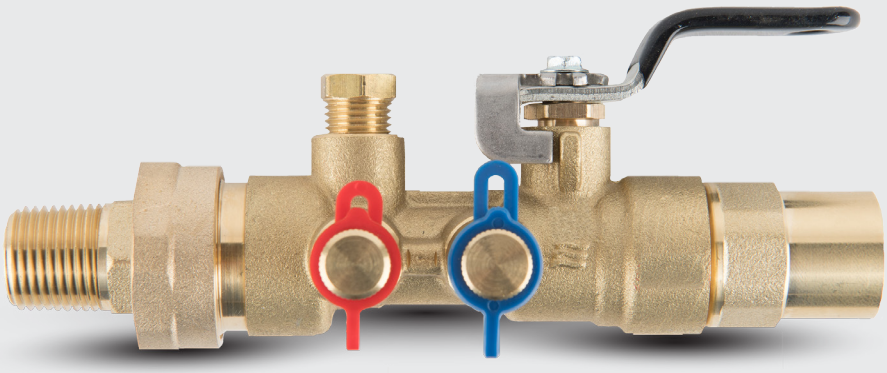
CONNECTIONS: MPT-MALE, FPT-FEMALE, SWT-SWEAT

TAGGING :	BAG & TAG
GROUP G	

Note: Coil hook-up drawings are ... interpretation of possible coil conf... responsible for orders placed usin... ...ook-up drawings is to show a "plan view" of the components comprising the coil hook-up rather than an exact "as-built" layout.

IMI FLOW DESIGN

UA



Manual Venturi Balancing

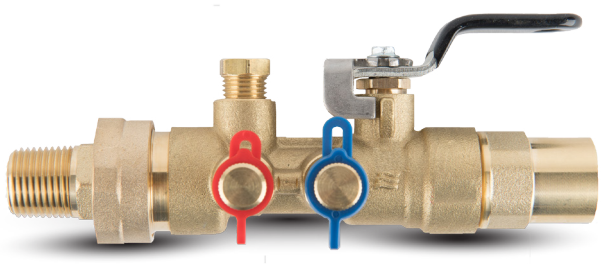
Venturi ball valve

Engineering GREAT Solutions

IMI Hydronic Engineering

UA

Model UA is a shutoff and manual throttling venturi valve with large diameter plated ball and PTFE seats. Stem is blowout proof with EPDM O-ring and PTFE packing with packing nut. Micro handle customary on the A and M body, and standard handle customary on the B and C bodies both utilize a standard ad justable memory stop for shutoff and resetting and vinyl coated grip. Dual Pressure / Temperature ports are standard on all UA bodies. Models A, B and C are available with union connection or fixed threaded or sweat connections each with a metaltometal and EPDM O-ring seal.



Key features

> **Fixed Measures Element**
Reading depends on flow only

> **Optional Connections**
Unions, fixed and sweat

Technical description

Application:
Hydronic Balancing

Functions:
Balancing, Measuring and Isolation

Dimensions:
1/2" - 2"

Rating:
Body M: 400 psig at 250° F (25 Bar at 120° C)
Bodies A, B & C: 600 psig at 250° F (40 Bar at 120° C)

Accuracy:
±3%

Material:
Body: DZR Brass
Union (Optional): Brass with EPDM O-ring
Fixed Connection: DZR Brass

Configuration Information

Body	Venturi No.	Venturi Flow Ranges* gpm (lps)	Cv (Kv)	Inlet Connections in. (mm)	Outlet Connections in. (mm)
M	1	0.2 - 0.9 (0.01 - 0.04)	.28	1/2 (15) M	1/2 (15) S, F
	2	0.5 - 2.0 (0.03 - 0.12)	.77		3/4 (20) S, F
	3	1.0 - 4.6 (0.06 - 0.29)	2.2		
	4	2.2 - 10.0 (0.14 - 0.63)	4.8		
A	1	0.2 - 0.7 (0.01 - 0.04)	.28	1/2 (15) S, F, M	- -
	2	0.4 - 1.5 (0.03 - 0.09)	.77	3/4 (20) S, F, M	1/2 (15) S, F, M
	3	1.0 - 3.4 (0.06 - 0.21)	2.2	1 (25) S, F, M	3/4 (20) S, M
	4	2.2 - 7.5 (0.14 - 0.47)	4.8		
B	5	2.6 - 9.5 (0.16 - 0.6)	6.0	1/2 (15) S, F, M	1/2 (15) S, F, M
	6	5.8 - 21.0 (0.37 - 1.32)	18.0	3/4 (20) S, F, M	3/4 (20) S, M
				1 (25) S, F, M	1 (25) S, F, M
				1 1/4 (32) S, F, M	1 1/4 (32) S, F, M
C	7	9.5 - 37.0 (0.6 - 2.33)	18.0	1 1/4 (32) S, F, M	1 1/4 (32) S, F, M
	8	22.0 - 80.0 (1.39 - 5.05)	68.0	1 1/2 (40) S, F, M	1 1/2 (40) S, F, M
				2 (50) S, F, M	2 (50) S, F, M

Notes

* Flow range is from the minimum recommended differential pressure 24” to 500” W.C. (5.97 to 124.42 kPa)
See installation and operation manual (Flowset)

Connection / Weights

Body	Connection Type	Weight (lbs./kg)			
		1/2 (15mm)	**3/4** (20mm)	**1** (25mm)	-
A	S	0.1 (.05)	0.1 (.05)	0.2 (.08)	-
	F	0.1 (.06)	0.2 (.08)	0.4 (.16)	-
	Union S	0.4 (.20)	0.4 (.20)	-	-
	Union F	-	0.5 (.21)	-	-
	Union M	0.5 (.24)	0.5 (.20)	-	-
		1/2 (15mm)	**3/4** (20mm)	**1** (25mm)	**1 1/4** (32mm)
B	S	0.2 (.07)	0.2 (.08)	0.1 (.05)	0.3 (.20)
	F	0.2 (.08)	0.2 (.09)	0.3 (.13)	0.4 (.12)
	Union S	0.4 (.20)	0.5 (.20)	2.7 (1.21)	1.2 (.54)
	Union F	0.5 (.22)	0.5 (.22)	2.8 (1.25)	1.3 (.57)
	Union M	0.6 (.26)	0.6 (.28)	3.0 (1.34)	1.5 (.69)
		1 1/4 (32mm)	**1 1/2** (40mm)	**2** (50mm)	-
C	S	0.7 (.31)	0.6 (.28)	0.7 (.29)	-
	F	0.8 (.34)	0.6 (.29)	0.6 (.29)	-
	Union S	2.4 (1.10)	2.4 (1.10)	2.8 (1.27)	-
	Union F	2.7 (1.24)	2.7 (1.24)	3.1 (1.38)	-
	Union M	2.8 (1.28)	3.0 (1.37	2.8 (1.29)	-

S = female sweat **F** = female NPT **M** = male NPT

Model UA Order Designation

UA	A	075	S	-	050	M	V1	AV2	MI

MODEL
BODY
SIZE
CONNECTION (ball valve end)
CONNECTION (ball valve end)
CONNECTION (union end)
CONNECTION (union end)
VENTURI #
OPTION
OPTION

S = female sweat **F** = female NPT **M** = male npt

½" - 2" AccuSetter Products (Model UA)

Connections (Inlet)

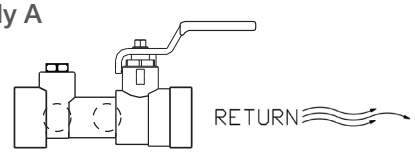
Union


U ⅜" S
U ½" S
U ¾" S


U ½" F
U ¾" F


U ½" M
U ¾" M

Body A

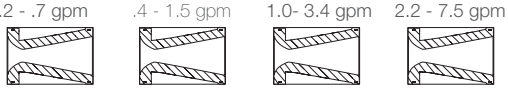


Includes Venturi, two P/T ports & Memory Stop

Venturis

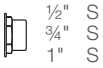
(Choose One)

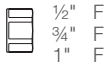
Venturi #1	*Venturi #2*	*Venturi #3*	*Venturi #4*
.2 - .7 gpm	.4 - 1.5 gpm	1.0- 3.4 gpm	2.2 - 7.5 gpm

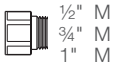


Connections (Outlet)

Fixed


½" S
¾" S
1" S


½" F
¾" F
1" F


½" M
¾" M
1" M

1" inlet connection not available

Connections (Inlet)

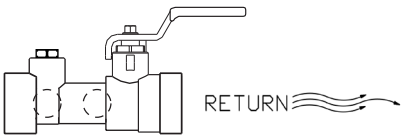
Union


U ½" S
U ¾" S
U 1" S
U 1 ¼" S


U ½" F
U ¾" F
U 1" F
U 1 ¼" F


U ½" M
U ¾" M
U 1" M
U 1 ¼"

Body B



Includes Venturi, two P/T ports & Memory Stop

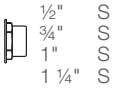
Venturis

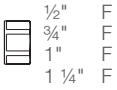
(Choose One)

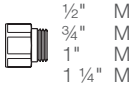
Venturi #5	*Venturi #6*
2.6- 9.5 gpm	5.8 - 21.0 gpm

Connections (Outlet)

Fixed


½" S
¾" S
1" S
1 ¼" S


½" F
¾" F
1" F
1 ¼" F


½" M
¾" M
1" M
1 ¼" M

Connections (Inlet)

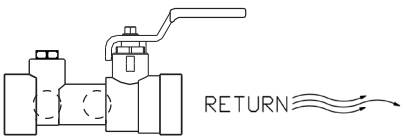
Union


U 1 ¼" S
U 1 ½" S
U 2" S


U 1 ¼" F
U 1 ½" F
U 2" F


U 1 ¼" M
U 1 ½" M
U2" M

Body C



Includes Venturi, two P/T ports & Memory Stop

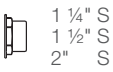
Venturis

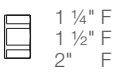
(Choose One)

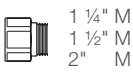
Venturi #7	*Venturi #8*
9.5- 37.0 gpm	22.0 - 80.0 gpm

Connections (Outlet)

Fixed


1 ¼" S
1 ½" S
2" S


1 ¼" F
1 ½" F
2" F


1 ¼" M
1 ½" M
2" M

Options Available

***AA** Automatic Air Vent

***AV** Manual Air Vent

***DX** Two Extended P/T Ports

***EH** Extended Handle

***MH** Micro Handle (optional on B Body)

***MI** Metal ID Tag

***PI** Plastic ID Tag

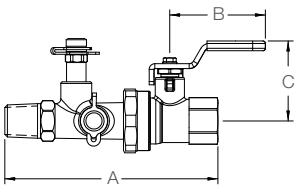
***PL** Plug

***SE** Stem Extender

Notes

* Only available on A, B, C bodies

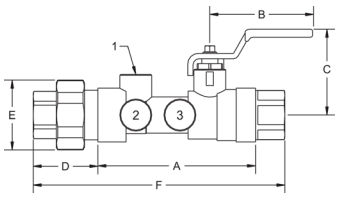
Articles



M Body

Body Dimensions

Body	A in.	A (mm)	B in.	B (mm)	C in.	C (mm)	Weight lb.	Weight (kg)
M	5.3	(132)	2.3	(59)	1.9	(48)	1.1	(0.5)
A	3.5	(90)	2.3	(58)	2.1	(53)	0.8	(0.4)
B	3.8	(97)	2.3	(58)	2.2	(56)	1.2	(0.5)
C	5.4	(137)	5.5	(140)	3.5	(89)	3.6	(1.6)



A, B, C Bodies

Connection Dimensions

Body	Connection Type	D in./(mm)				E in./(mm)			
		3/8 (10)	**1/2** (15)	**3/4** (20)	**1** (25)	**3/8** (10)	**1/2** (15)	**3/4** (20)	**1** (25)
	S	—	0.5 (14)	0.8 (20)	1.2 (29)	—	1.1 (28)	1.2 (29)	1.5 (29)
	F	—	0.7 (17)	0.8 (20)	1.1 (29)	—	1.1 (28)	13 (33)	1.6 (29)
A	Union S	1.4 (35)	1.5 (37)	1.6 (40)	—	1.6 (39)	1.6 (39)	1.6 (39)	—
	Union F	—	1.5 (37)	—	—	—	1.6 (39)	—	—
	Union M	—	2.4 (61)	2.2 (57)	—	—	1.6 (39)	1.6 (39)	—
		1/2 (15)	**3/4** (20)	**1** (25)	**1 1/4** (32)	1/2 (15)	**3/4** (20)	**1** (25)	**1 1/4** (32)
	S	0.5 (14)	0.8 (19)	1.0 (25)	1.2 (28)	1.3 (34	1.3 (34)	1.5 (37)	1.8 (51)
	F	0.7 (18)	0.7 (19)	0.9 (24)	1.1 (32)	1.3 (34)	1.3 (34)	1.6 (41)	2.0 (45)
B	Union S	1.5 (37)	1.7 (43)	1.7 (42)	1.8 (45)	2.1 (53)	2.1 (53)	2.4 (60)	2.8 (72)
	Union F	1.5 (39)	1.6 (40)	1.7 (43)	1.7 (43)	2.1 (53)	2.1 (53)	2.4 (60)	2.8 (72)
	Union M	2.4 (60)	2.2 (56)	2.5 (63)	2.5 (64)	2.1 (53)	2.1 (53)	2.4 (60)	2.8 (72)
			1 1/4 (32)	**1 1/2** (40)	**2** (50)		**1 1/4** (32)	**1 1/2** (40)	**2** (50)
	S		1.2 (29)	1.2 (31)	1.7 (42)		2.4 (62)	2.4 (62)	2.7 (69)
	F		0.9 (23)	0.9 (23)	1.2 (29)		2.4 (62)	2.4 (62)	2.9 (72)
C	Union S		2.0 (51)	2.1 (54)	2.4 (61)		3.5 (88)	3.5 (88)	3.8 (97)
	Union F		1.9 (49)	1.9 (49)	2.0 (50)		3.5 (88)	3.5 (88)	3.8 (97)
	Union M		3.0 (75)	3.0 (76)	2.8 (72)		3.5 (88)	3.5 (88)	3.8 (97)

S = female sweat **F** = female NPT **M** = male NPT

Articles

Weights

Body Size	Connection Type	Weight lb./(kg)			
		3/8 (10mm)	**1/2** (15mm)	**3/4** (20mm)	**1** (25mm)
A	S	—	0.1 (.05)	0.1 (.05)	0.2 (.08)
	F	—	0.1 (.06)	0.2 (.08)	0.4 (.16)
	Union S	0.5 (.20)	0.4 (.20)	0.4 (.20)	—
	Union F	—	—	0.5 (.21)	—
	Union M	—	0.5 (.24)	0.5 (.20)	—
		1/2 (15mm)	**3/4** (20mm)	**1** (25mm)	**1 1/4** (32mm)
B	S	0.2 (.07)	0.2 (.08)	0.1 (.05)	0.3 (.20)
	F	0.2 (0.8)	0.2 (.09)	0.3 (.13)	0.4 (.12)
	Union S	0.4 (.20)	0.5 (.20)	2.7 (1.21)	1.2 (.54)
	Union F	0.5 (.22)	0.5 (.22)	2.8 (1.25)	1.3 (.57)
	Union M	0.6 (.26)	0.6 (.28)	3.0 (1.34)	1.5 (.69)
			1 1/4 (32mm)	**1 1/2** (40mm)	**2** (50mm)
C	S	—	0.7 (.31)	0.6 (.28)	0.7 (.29)
	F	—	0.8 (.34)	0.6 (.29)	0.6 (.29)
	Union S	—	2.4 (1.10)	2.4 (1.10)	2.8 (1.27)
	Union F	—	2.7 (1.24)	2.7 (1.24)	3.1 (1.38)
	Union M	—	2.8 (1.28)	3.0 (1.37)	2.8 (1.29)

S = female sweat **F** = female NPT **M** = male NPT

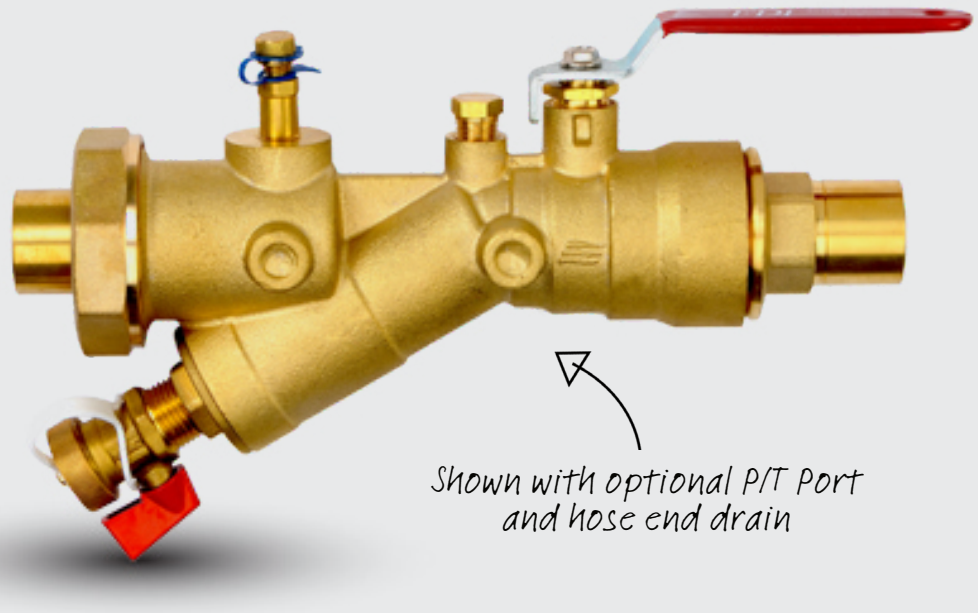
Notes

All weights and dimensions are subject to minor changes.

*The F dimension may be calculated by using two D dimensions and adding them to the A dimension of the valve body.

IMI FLOW DESIGN

YC



Shown with optional P/T Port and hose end drain

Hook-up Components

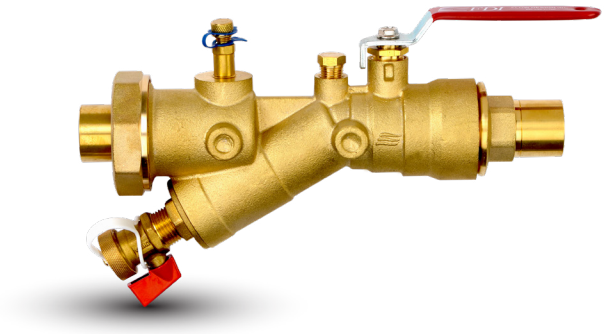
Y-strainer, ball valve and union

Engineering **GREAT** Solutions

IMI Hydronic Engineering

YC

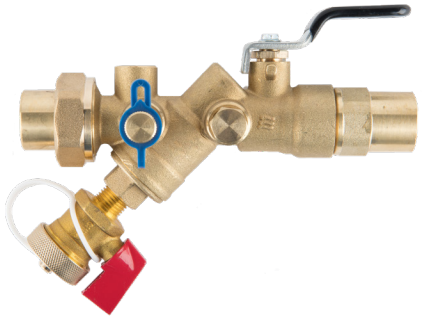
Combination ball valve, y-strainer and union with up to five (5) accessory port locations. 20 mesh stainless steel strainer is removable from the valve body for inspection and cleaning without breaking the main piping. The ball valve has PTFE packing, brass packing nut and blowout-proof stem, large diameter plated ball and a full size steel handle with vinyl grip. The union has a EPDM “O”-ring and tailpiece available in M, F, and S connections. Ball valve end only available in FPT or SWT. One size reduction available for union section. Port 1 available with maximum 1/2” tap for bypass line (option T2).



Both valves shown with optional P/T Port and hose end drain

YCR

Compact, Y-shaped combination ball valve, strainer and union with four accessory port locations.



Key features

> **Combination Valve**
Reduces field connections and total installed size

> **Removable Strainer**
Ease of inspection/cleaning

> **Multiple Ports**
Configure exactly what you need

Technical description

Application:
Coil Isolation and Protection

Functions:
Union, strainer, ball valve

Dimensions:
1/2” - 2”

Pressure class:
400 psig at 250° F (25 Bar at 120° C)

Material:
Body: DZR Brass
Strainer: 20 mesh stainless steel

Connections

YC

Model	Size in./(mm)	Fixed Conn. (Inlet) in./(mm)	Union Conn. (Outlet) in./(mm)
YC0050	1/2 (15)	1/2 (15) S, F	1/2 (15) F, M, S 3/4 (20) F, M, S
YC0075	3/4 (20)	3/4 (20) S, F	1/2 (15) F, M, S 3/4 (20) F, M, S 1 (25) M, S
YC0100	1 (25)	1 (25) S, F	1/2 (15) M, S 3/4 (20) F, M, S 1 (25) F, M, S 1 1/4 (32) F, M, S
YC0125	1 1/4 (32)	1 1/4 (32) S, F	1/2 (15) M, S 3/4 (20) F, M, S 1 (25) F, M, S 1 1/4 (32) F, M, S 1 1/2 (40) M, S
YC0150	1 1/2 (40)	1 1/2 (40) S, F	1 (25) F, M, S 1 1/4 (32) F, M, S 1 1/2 (40) F, M, S 2 (50) F, M, S
YC0200	2 (50)	2 (50) S, F	1 1/4 (32) F, M, S 1 1/2 (40) F, M, S 2 (50) F, M, S

YCR

Model	Size in./(mm)	Fixed Conn. (Inlet) in./(mm)	Union Conn. (Outlet) in./(mm)
YCR0050	1/2 (15)	1/2 (15) S, F	1/2 (15) F, M, S 3/4 (20) F, M, S
YCR0075	3/4 (20)	3/4 (20) S, F	
YCR0100*	1 (25)	1 (25) S, F	1/2 (15) F, M, S 3/4 (20) F, M, S 1 (25) M, S
YCR0150*	1 1/2 (40)	1 1/2 (40) S, F	3/4 (20) F, M, S 1 (25) F, M, S 1 1/4 (32) F, M, S 1 1/2 (40) M, S

S = sweat **F** = female NPT **M** = male NPT

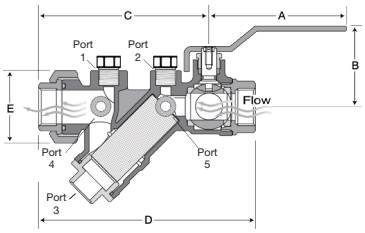
Notes

T2 bypass not available for sizes 1/2 & 3/4

*Denotes female thread not available on union end.

Articles

YC



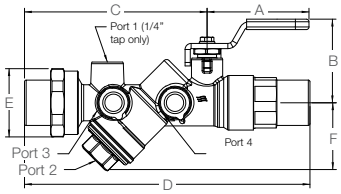
Dimensions

Model	Size in./(mm)	A in./(mm)	B in./(mm)	C in./(mm)	D in./(mm)	E in./(mm)	Strainer Basket area in^2
YC0050	1/2 (15)	4.1 (103)	2.0 (52)	4.8 (122	6.7 (169)	2.1 (53)	7.5
YC0075	3/4 (20)	4.1 (103)	2.0 (52)	4.9 (124)	6.7 (170)	2.1 (53)	7.5
YC0100	1 (25)	4.7 (119)	2.7 (68)	6.6 (169)	9.5 (241)	2.8 (71)	14.2
YC0125	1 1/4 (32)	4.7 (119)	2.7 (68)	6.6 (169)	9.6 (245)	2.8 (71)	14.2
YC0150	1 1/2 (40)	5.6 (141)	3.6 (93)	8.4 (212)	11.7 (297)	3.8 (97)	26.7
YC0200	2 (50)	5.6 (141)	3.6 (93)	8.5 (217)	12.0 (305)	3.8 (97)	26.7

Notes

Dimensions based on F X F connections and will vary with mixed options/connections

Dimensions are subject to minor changes



YCR

Dimensions

Model	Size in./(mm)	A in./(mm)	B in./(mm)	C in./(mm)	D in./(mm)	E in./(mm)	F in./(mm)	Strainer Basket area in^2
YCR0050	1/2 (15)	2.3 (58)	1.9 (48)	4.0 (102)	6.0 (152)	1.6 (41)	1.5 (38)	3.0
YCR075	3/4 (20)	2.3 (58)	1.9 (48)	4.1 (104)	6.5 (165)	1.6 (41)	1.5 (38	3.0
YCR0100	1 (25)	4.1 (103)	2.0 (52)	5.5 (140)	7.6 (192)	2.1 (53)	1.97 (50)	7.5
YCR0150	1 1/2 (40)	4.7 (119)	2.7 (68)	7.9 (200)	10.7 (273)	2.8 (71)	2.64 (67)	14.2

Notes

Dimensions based on S X S connections and will vary with mixed options/connections.

Dimensions are subject to minor changes.

Weight / Cv

YC

Model	Weight lb./(kg)		Cv (Kv)	
YC0050	2.3	(1.05)	7.9	(6.8)
YC0075	2.3	(1.06)	8.8	(7.6)
YC0100	5.9	(2.66)	19.7	(17.0)
YC0125	5.8	(2.64)	20.4	(17.6)
YC0150	14.8	(6.72)	52.7	(45.6)
YC0200	14.8	(6.63)	55.1	(47.7)

Notes

Weights based on F X F connections and will vary with mixed options/connections
Weights are subject to minor changes
Cv's based on a clean 20 mesh stainless steel strainer
See operation manual for Installation and Maintenance F033

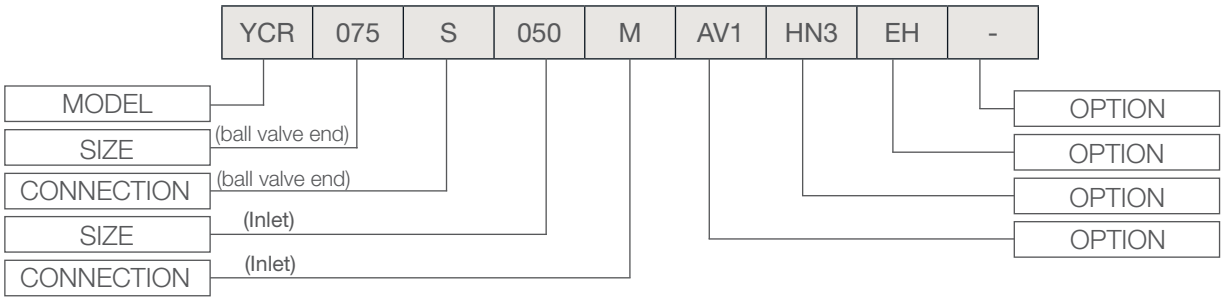
YCR

Model	Weight lb./(kg)		Cv (Kv)	
YCR050	1.5	(0.68)	5.7	(4.9)
YCR075	1.5	(0.73)	5.7	(4.9)
YCR100	2.3	(1.06)	8.8	(7.6)
YCR150	6.4	(2.93)	20.4	(17.6)

Notes

Weights based on S X S connections and will vary with mixed options/connections.
Weights are subject to minor changes.
Cv's based on a clean 20 mesh stainless steel strainer

Model Order Designation



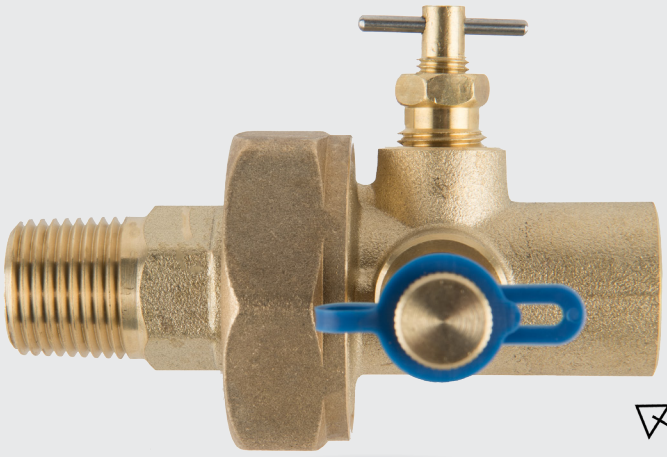
S = female sweat **F** = female NPT **M** = male npt

Options

AA Automatic Air Vent
AV Manual Air Vent
EH Extended Handle
HN Hose End Drain Valve with Cap
MI Metal ID Tag
PI Plastic ID Tag
PL Plug
PP Propress®
SE Stem Extender
T2 1/2" F Tap
T4 1/4" F Tap
XL Ext. P/T Port
60 60 Mesh Stainless Steel Start up Screen

IMI FLOW DESIGN

UP



Shown with optional
manual air vent and p/t port

Hook-up Components

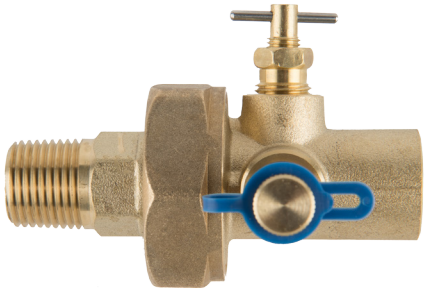
Union and port section

Engineering
GREAT Solutions

IMI Hydronic Engineering

UP

Model UP is a union and port section with two (2) option locations. One size reduction available on union end only (F, M, S sizes 1/2” - 2”, and F or M size 2 1/2”). Port section available F, M or S sizes 1/2” - 2”, and F or M size 2 1/2”. Union end available F, M or S sizes 1/2” - 2”, and F or M size 2 1/2”. Provided with EPDM “o”-ring.



Shown with optional manual air vent @ 12:00 and p/t port @ 3:00

Key features

> **End Connections**
Multiple reductions available

> **Two Port Sections**
Add accessories as needed

Technical description

Application:
Hydronic Balancing

Dimensions:
1/2” - 2 1/2”

Material:
Body: DZR Brass

Functions:
Union and port sections

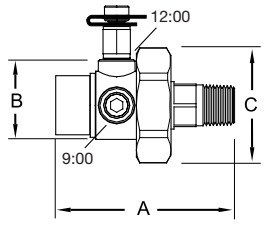
Pressure class:
400 psig at 250° F

Connections

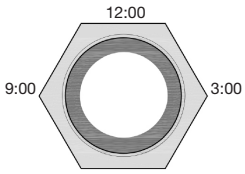
Model	Size in./mm	Port Section Connections in./mm	Union Connections in./mm
UP0050	1/2" (15)	1/2 (15) F, M, S	3/8 (10) S 1/2 (15) F, M, S 3/4 (20) F, M, S
UP0075	3/4" (20)	3/4 (20) F, M, S	3/8 (10) S 1/2 (15) F, M, S 3/4 (20) F, M, S 1 (25) M, S
UP00100	1" (25)	1 (25) F, M, S	1/2 (15) M, S 3/4 (20) F, M, S 1 (25) F, M, S 1 1/4 (32) M, S
UP0125	1 1/4" (32)	1 1/4 (32) F, M, S	3/4 (20) F, M, S 1 (25) F, M, S 1 1/4 (32) F, M, S 1 1/2 (40) M, S
UP0150	1 1/2" (40)	1 1/2 (40) F, M, S	1 (25) F, M, S 1 1/4 (32) F, M, S 1 1/2 (40) F, M, S 2 (50) M, S
UP0200	2" (50)	2 (50) F, M, S	1 1/4 (32) F, M, S 1 1/2 (40) F, M, S 2 (50) F, M, S 2 1/2 (65) M
UP0250	2 1/2" (65)	2 1/2 (65) F, M	2 1/2 (65) F, M 2 (50) F, M

S = female sweat **F** = female NPT **M** = male NPT

Articles



UP shown with P/T @ 12:00



Tailpiece End View

Dimensions

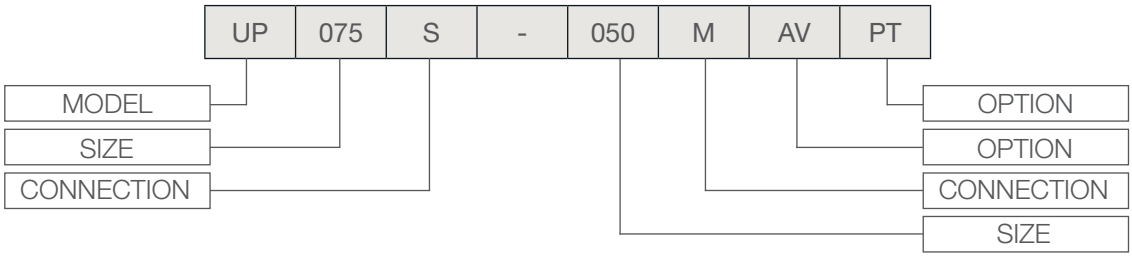
Nominal Dimensions / Weights

Model	Size in. / (mm)	A in. / (mm)	B in. / (mm)	C in. / (mm)	Weight lb./kg
UP0050	1/2 (15)	3.5 (89)	0.8 (19)	1.6 (39)	0.6 (0.28)
UP0075	3/4 (20)	3.7 (94)	0.9 (23)	2.2 (56)	1.0 (0.45)
UP0100	1 (25)	4.1 (104)	1.0 (25)	2.4 (60)	1.2 (0.56)
UP0125	1 1/4 (32)	4.3 (109)	1.2 (30)	2.9 (74)	2.8 (1.28)
UP0150	1 1/2 (40)	4.4 (112)	1.3 (32)	3.5 (88)	3.5 (1.57)
UP0200	2 (50)	4.6 (116)	1.7 (43)	3.9 (99)	5.9 (2.66)
UP250	2 1/2 (65)	5.2 (133)	1.9 (47)	4.0 (102)	8.3 (3.78)

Notes

Weights based on F X M connections and will vary with mixed options/connections.
All weights and dimensions given are in pounds and inches and are subject to minor changes.

Model Order Designation



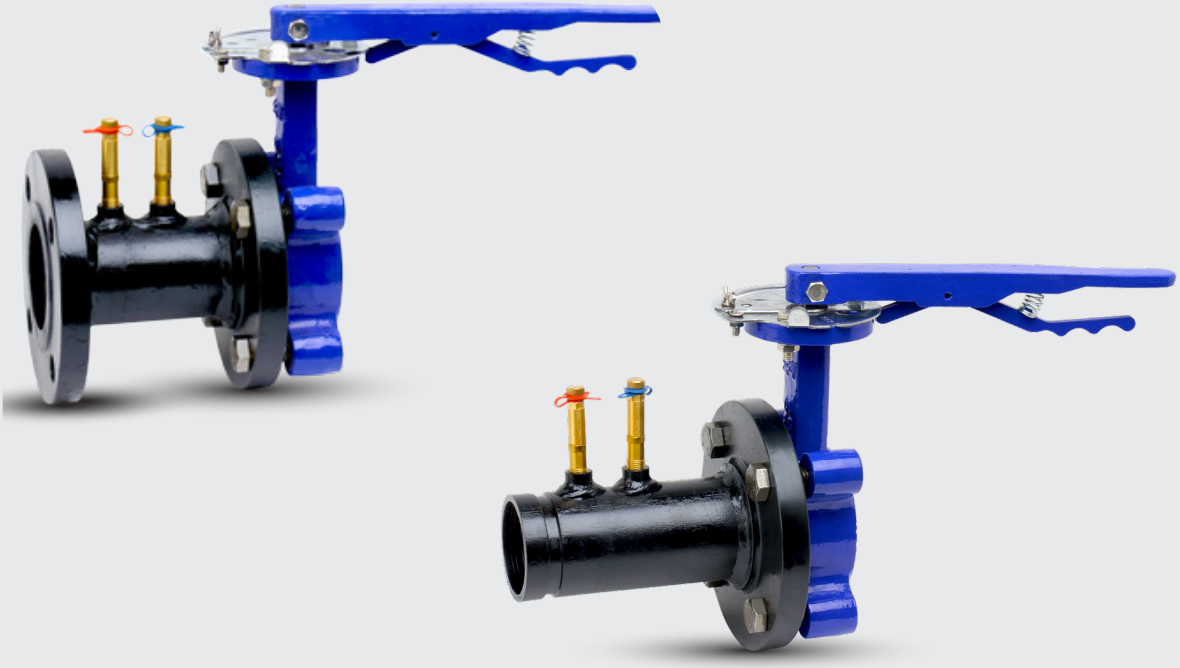
S = female sweat **F** = female NPT **M** = male npt

Options Available

AA Automatic Air Vent
AV Manual Air Vent
DX Ext. P/T Ports
HN Hose End Drain
MI Metal ID Tag
PI Plastic ID Tag
PL Plug
PP ProPress®
SE Stem Extender
T4 1/4" Tap

IMI FLOW DESIGN

AF AG



Manual Balancing Valves

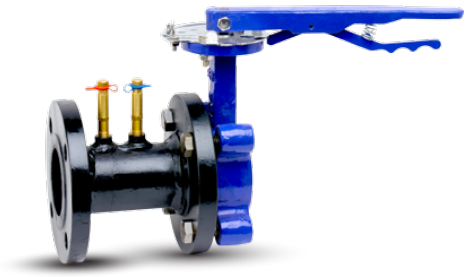
2”-16” Steel venturi with butterfly Valve

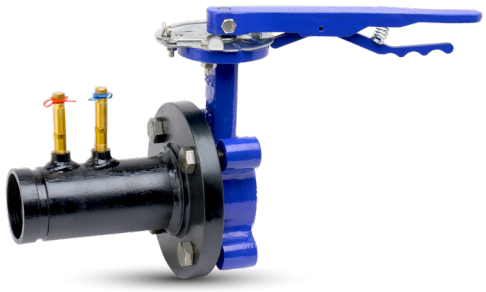
Engineering GREAT Solutions

IMI Hydronic Engineering

AF AG

The AccuSetter uses a low-loss venturi to obtain a measurement accuracy of 3% F. S. The butterfly has a 2” extended neck above the flange for insulation. The valve handle has an infinite-position memory stop for sizes 2” to 6” and a gear operator on 8” to 16” sizes. The total pressure drop added to the pump head seldom exceeds one foot. The exact drop can be calculated using the formula on Form F199. Flow measurement can be obtained with a differential pressure meter reading across the venturi taps. The GPM can be calculated using the formula on Form F199. (See “Flow Measurement Test Kits,” form F011 for the differential pressure meter kits.) The design flow can be obtained by adjusting the valve operator until the desired GPM is reached. The set handle position is maintained by using the memory stop.





Key features

> **Low Loss Venturi**
Measure with 3% accuracy

> **Infinite Position**
Fine adjustment

> **Memory Stop**
2” - 8”

Technical description

Application:
Hydronic Balancing

Functions:
Balancing, measurement, shut-off

Dimensions:
2” - 6”, 8”,10”,12”,14”,16”

Accuracy:
±3% F.S.

Design:
Low loss piezo-ring throat

Pressure class:
240 psig at 250° F (1655 kPa at 120° C)

Material:
Venturi Body: Steel ASTM - A120
Instrument Valve: Extended SuperSeal P/T Test Ports
Butterfly Valve Body: Ductile Iron, full-lug type body, ANSI Class 125/150
Seat & Gasket: EPDM
Stem: Stainless Steel
Bearings: Nylon
Disc: Stainless Steel
(if Al-Bronze is required please consult factory)

Model Information

Model AF

Model AF AccuSetter includes a flanged venturi with a lug butterfly valve attached to the downstream side. Extended Pressure/Temperature Ports are standard.

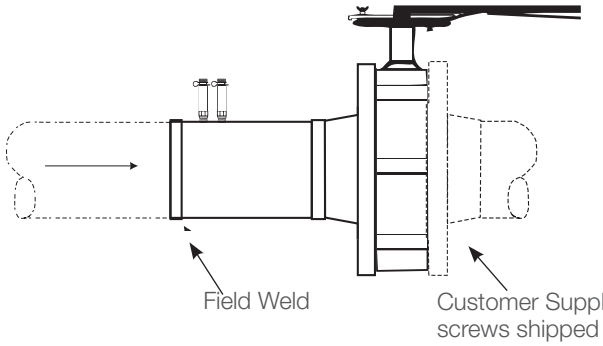
- Field installation requires one 150# mating flange. Cap screws are included to mate the butterfly and the customer-supplied flange.

Model AG

Model AG AccuSetter includes a grooved venturi on the entry with a lug butterfly valve mounted on the downstream exit end. The Model FG is also available as an option on all sizes. Extended Pressure/Temperature Ports are standard.

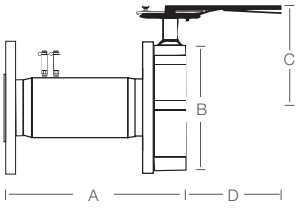
- Field installation requires one standard grooved coupling for the upstream attachment.

Supplemental Installation Instructions



See Venturi & AccuSetter Valves Installation, Operation & Maintenance (F033) for more information

Articles

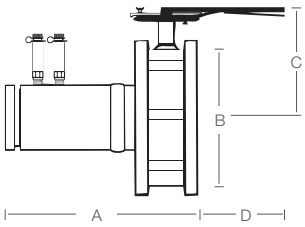


Model AF

Dimensions

Model	Size	Connections	A	B	C	D	Weight
AG0200(*)	2”	Grooved	10.5	6.0	6.6	10.0	19.3
AF0200(*)		150# Flange	8.3	6.0	6.6	10.0	20.6
AG0250(*)	2 ½”	Grooved	10.7	7.0	7.2	10.0	25.2
AF0250(*)		150# Flange	8.3	7.0	7.2	10.0	27.6
AG0300(*)	3”	Grooved	11.3	7.5	7.6	10.0	34.0
AF0300(*)		150# Flange	10.9	7.5	7.6	10.0	35.0
AG0400(*)	4”	Grooved	14.3	9.0	8.4	10.0	53.0
AF0400(*)		150# Flange	13.9	9.0	8.4	10.0	53.7
AG0500(*)	5”	Grooved	14.9	10.0	9.0	10.0	61.3
AF0500(*)		150# Flange	14.5	10.0	9.0	10.0	64.7
AG0600(*)	6”	Grooved	15.6	11.0	9.7	10.0	78.6
AF0600(*)		150# Flange	15.1	11.0	9.7	10.0	86.6

Articles



Model AG

Dimensions

Model	Size	Connections	A	B	C	D	Weight
AG0800(*)	8”	Grooved	16.6	13.5	7.5	8.0	123.3
AF0800(*)		150# Flange	16.0	13.5	7.5	8.0	135.7
AG1000(*)	10”	Grooved	18.1	16.0	7.5	9.0	178.3
AF1000(*)		150# Flange	17.4	16.0	7.5	9.0	194.5
AG1200(*)	12”	Grooved	20.3	19.0	7.5	9.0	279.6
AF1200(*)		150# Flange	19.5	19.0	7.5	9.0	307.0
AG1400(*)	14”	Grooved	26.9	21.0	11.8	9.0	399.3
AF1400(*)		150# Flange	21.6	21.0	11.8	9.0	372.9
AG1600L	16”	Grooved	27.8	16.0	11.8	9.0	550.9
AF1600L		150# Flange	22.5	23.5	11.8	9.0	539.9

Notes

(*) denotes L (low flow) or H (high flow) must be specified.
All weights and dimensions given are in pounds and inches and are subject to change.
Venturi products made from fabricated materials may vary ±1/16 inch per component.

Model Order Designation

Model Size
100mm AG Shown

Flow Range
Low Flow Range Shown

Option w/ Locations
Metal ID TagShown

AG0400L - MI

L = Low Flange Range

H = High Flange Range

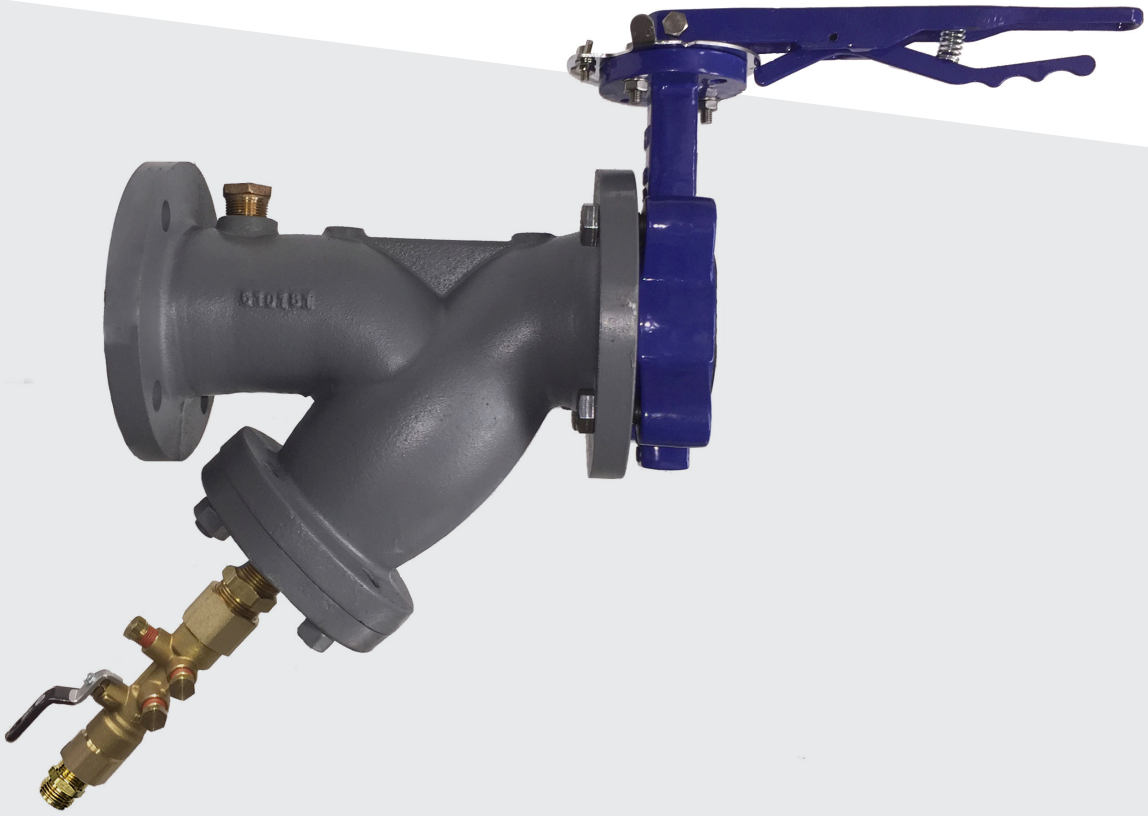
Options Available

AV Manual Air Vent
C2 1/2” Accessory Port
C3 3/4” Accessory Port
C4 1/4” Accessory Port
CPT Capillary Port/Tee
HN Hose End Drain
PI Plastic ID Tag
MI Metal ID Tag

IMI Hydronic Engineering

IMI FLOW DESIGN

CY



Hook-up Components

Cast-Iron Flanged Strainer
with Butterfly Valve

Engineering
GREAT Solutions

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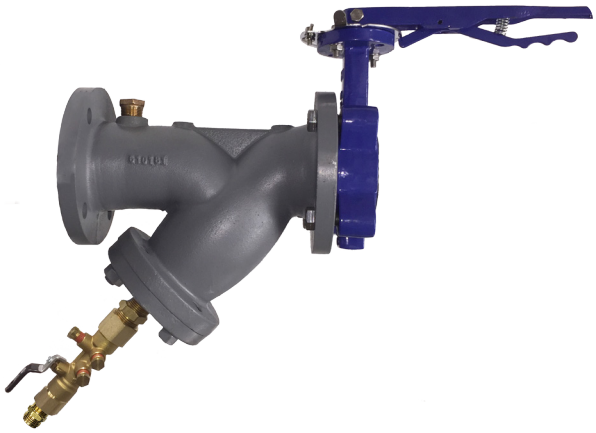
CY

The CY brings the CW cast-iron flanged strainer, the BF butterfly valve and UB drain valve with hose end adapter together in one complete package, preassembled in the factory for time-saving installation in the field and simplified pricing for customers. With the CY, you have everything needed for the supply side of a steel hookup.



CY Components

> **CW cast-iron flanged strainer**, designed to protect the coil and other hookup components from debris. Featuring a machined tapered seal, ensuring a perfect fit for the removable, stainless steel screen, and offering ¼" ports for additional options. All sizes come complete with flanged blow-off cover, gasket and plug. Can be installed in vertical or horizontal pipe lines with blow-off connection at the lower end of the screen.

> **BF lug type butterfly valve**, designed for shut-off. Featuring a reliable bubble tight shut-off when the valve is closed and streamlined disc shape, ensuring low flow resistance when the valve is open. The spherical disc seal surface produces a high efficiency seal, lower torque and longer seal life. The three bearings ensure perfect shaft turning and shaft centric position. With compact construction, the body is drilled and tapped for mounting with ANSI flanges. The extended neck provides a minimum of 2" clearance for insulation. A standard infinite position memory stop lever handle is provided on 2" to 6" models and a gear operator is provided for 8".

> **UB drain with hose end adapter**, designed with a large diameter plated ball, PTFE seals, a blowout proof stem with EPDM O-ring and PTFE packing with packing nut. A micro handle is customary on the A body and a standard handle is customary on the B and C bodies.

Key features

> **Drain Valve**
Micro handle

> **Shut-off Valve**
Butterfly - Extended Neck

> **Machine Tapered Seat**
Removable stainless steel screen

> **1/4" Ports Available**
Additional options

> **Infinite Position**
Allow fine adjustment

Technical description

Application:
HVAC Hydronic Systems

Functions:
Strainer, shut-off

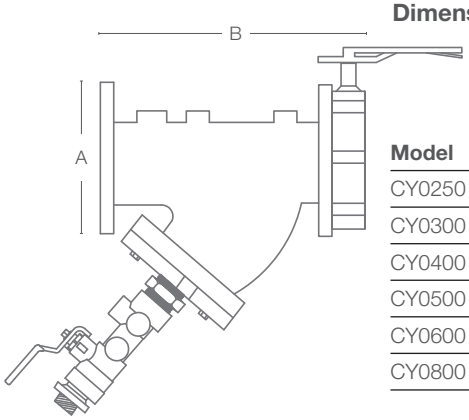
Dimensions:
2-1/2" - 6", 8"

Pressure class:
CW - 125 psig at 250° F
BF - 240 psig at 250° F

BF Material:
Body: Ductile iron, Lug Type ANSI CLass 125/150
Upper/Lower Stem: 410 Stainless Steel
Seat & Gasket: EPDM and NBR
Bearings: PTFE
Disc: Stainless Steel

CW Material:
Body: High Tensile ASTM A126 Class B Cast Iron
Screen: Stainlees Steel

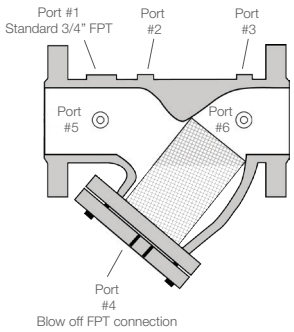
Articles



Dimensions

Model	Size	A	B	Blow Off NPT	Weight	Cv	Screens Mesh	Screens Opening	Strainer Basket area in^2
CY0250	2 1/2”	7	13.11	1	44	115.34	0.045”	0.045”	45
CY0300	3”	7.5	14.31	1	59	158.93	0.045”	0.045”	59
CY0400	4”	9	16.96	1.25	86	224.90	1/8”	0.125”	94
CY0500	5”	10	20.09	1.25	141	458.23	1/8”	0.125”	137
CY0600	6”	11	20.99	1.5	175	674.41	1/8”	0.125”	242
CY0800	8”	13.5	23.68	1.5	331	1022.02	1/8”	0.125”	327

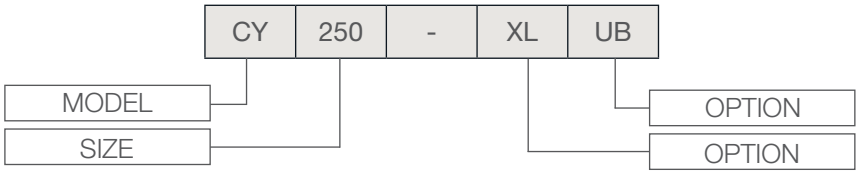
Port Locations



Notes

All weights and dimensions given are in pounds and inches and are subject to minor changes.
Port #1 standard, 3/4” FPT & 1/4” ports available at additional cost.
For BF dimensions please refer to form F215.

Model Order Designation



Options Available

AA Automatic Air Vent

AV Manual Air Vent

EH Ext. Handle UB Drain Valve

FG Accessory Flange, Grooved

XL Extended P/T Port

MI Metal ID Tag

PI Plastic ID Tag

T4 1/4" Tap

US F406.0 BF 4.2018

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IMI FLOW DESIGN

Brass Model UA

Venturi Balancing Data:

Flow (gpm) versus Differential Pressure (in W.C.)

Engineering GREAT Solutions

IMI Hydronic Engineering

Brass Model UA

Venturi Balacing Data: Flow (gpm) versus Differential Pressure (in W.C.)

Using the Differential Pressure (D.P.) Tables

1. **The recommended ranges are shown in bold.**
2. Generally, the recommended low DP signal is 24" so it can be read on most instuments.
3. The upper limit is an effort to minimize the permanent pressure drop. However, any model can be operated above the limit if the permanent drop is acceptable.
4. The following equation has been approximated from the differential pressure table:

   $INWC = (B \bullet gpm)^2$
5. The permanent pressure loss can be calculated in the standard way from the valve's CV and flow rate:

   $PSID = (gpm/Cv)^2$

Venturi No.	B	Cv
1	24.4	0.283
2	11.1	0.771
3	4.86	2.15
4	2.21	4.79
5	1.78	5.95
6	0.819	17.5
7	0.467	18.4
8	0.217	68.5

Flow Rate (gpm)	1	2	3	4	5	6	7	8
0.1	7.3							
0.2	**27.1**	5.5						
0.3	**58.6**	12.1						
0.4	**101.2**	**21.2**						
0.5	**154.7**	**32.7**	6.7					
0.6	**218.8**	**46.7**	9.5					
0.65	**254.7**	**54.6**	11.1					
0.7	**293.3**	**63.1**	12.8					
0.8	378.0	**81.9**	**16.6**					
0.9	472.8	**103.1**	**20.9**					
0.95	524.0	**114.6**	**23.2**					
1.0		**126.7**	**25.6**					
1.1		**152.6**	**30.8**	5.4				
1.2		**180.9**	**36.5**	6.5	5.1			
1.3		**211.5**	**42.6**	7.6	6.0			
1.4		**244.4**	**49.1**	8.9	6.9			
1.5		279.6	**56.2**	10.2	7.9			
1.6		317.2	**63.6**	11.6	9.0			
1.7		357.1	**71.6**	13.2	10.1			
1.8		399.2	**79.9**	14.8	11.3			
1.9		443.7	**88.7**	16.5	12.6			
2.0		490.4	**98.0**	18.4	13.9			
2.2			**117.9**	**22.3**	16.7			
2.4			**139.5**	**26.7**	19.8			
2.6			**162.8**	**31.4**	**23.2**	5.0		
2.8			**188.0**	**36.6**	**26.8**	5.8		
3.0			**214.8**	**42.1**	**30.7**	6.7		

Brass Model UA

Venturi Balacing Data: Flow (gpm) versus Differential Pressure (in W.C.)

Flow Rate (gpm)	1	2	3	4	5	6	7	8
3.2			**243.4**	**48.0**	**34.8**	7.6		
3.4			273.7	**54.4**	**39.2**	8.5		
3.6			305.7	**61.1**	**43.9**	9.5		
3.8			339.4	**68.2**	**48.7**	10.6		
4.0			374.8	**75.8**	**53.9**	11.7		
4.2			412.0	**83.7**	**59.3**	12.8	5.3	
4.4			450.8	**92.1**	**64.9**	14.1	5.7	
4.6			491.3	**100.9**	**70.8**	15.3	6.2	
4.8			533.5	**110.0**	**77.0**	16.7	6.7	
5.0				**119.6**	**83.4**	18.0	7.3	
5.2				**129.6**	**90.1**	19.5	7.8	
5.4				**140.0**	**97.0**	21.0	8.4	
5.6				**150.8**	**104.1**	22.5	9.0	
5.8				**162.0**	**111.5**	**24.1**	9.6	
6.0				**173.6**	**119.2**	**25.7**	10.2	
6.2				**185.7**	**127.1**	**27.4**	10.8	
6.4				**198.1**	**135.2**	**29.2**	11.5	
6.6				**211.0**	**143.6**	**31.0**	12.2	
6.8				**224.2**	**152.2**	**32.9**	12.9	
7.0				**237.9**	**161.1**	**34.8**	13.6	
7.5				274.0	**184.4**	**39.8**	15.4	
8.0				312.6	**209.2**	**45.1**	17.4	
8.5				353.8	**235.6**	**50.8**	19.5	
9.0				397.7	263.5	**56.8**	21.6	
9.5				444.2	292.9	**63.1**	**23.9**	
10.0				493.3	323.8	**69.7**	**26.3**	5.1
11.0					390.2	**83.9**	**31.4**	6.2
12.0					462.7	**99.4**	**36.9**	7.3
13.0					541.1	**116.2**	**42.8**	8.6
14.0						**134.3**	**49.2**	9.9
15.0						**153.6**	**55.9**	11.4
16.0						**174.2**	**63.0**	12.9
17.0						**196.0**	**70.5**	14.5
18.0						**219.2**	**78.4**	16.2
19.0						**243.5**	**86.7**	18.0
20.0						269.1	**95.3**	20.0
21.0						296.0	**104.4**	22.0
22.0						324.1	**113.8**	**24.1**
23.0						353.4	**123.6**	**26.3**
24.0						384.0	**133.7**	**28.5**
25.0						415.8	**144.3**	**30.9**

Brass Model UA

Venturi Balacing Data: Flow (gpm) versus Differential Pressure (in W.C.)

Flow Rate (gpm)	1	2	3	4	5	6	7	8
26.0						448.8	**155.2**	**33.4**
27.0						483.1	**166.4**	**36.0**
28.0						518.5	**178.1**	**38.6**
29.0							**190.1**	**41.4**
30.0							**202.4**	**44.2**
31.0							**215.1**	**47.1**
32.0							**228.2**	**50.2**
33.0							**241.6**	**53.3**
34.0							255.3	**56.5**
35.0							269.5	**59.8**
36.0							283.9	**63.2**
37.0							298.7	**66.7**
38.0							313.9	**70.3**
39.0							329.4	**74.0**
40.0							345.3	**77.7**
41.0							361.5	**81.6**
42.0							378.0	**85.5**
43.0							394.9	**89.6**
44.0							412.1	**93.7**
45.0							429.7	**97.9**
46.0							447.6	**102.3**
47.0							465.8	**106.7**
48.0							484.4	**111.2**
49.0							503.3	**115.7**
50.0								**120.4**
52.0								**130.0**
54.0								**140.0**
56.0								**150.4**
58.0								**161.1**
60.0								**172.2**
62.0								**183.6**
64.0								**195.4**
66.0								**207.6**
68.0								**220.1**
70.0								**233.0**
72.0								**246.2**
74.0								**259.8**
76.0								**273.8**
78.0								**288.1**
80.0								**302.7**
82.0								**317.8**

Brass Model UA

Venturi Balacing Data: Flow (gpm) versus Differential Pressure (in W.C.)

Flow Rate (gpm)	1	2	3	4	5	6	7	8
84.0								**333.1**
86.0								**348.9**
88.0								**365.0**
90.0								**381.4**
92.0								**398.2**
94.0								**415.4**
96.0								432.9
98.0								450.8
100.0								469.0
102.0								487.6
104.0								506.5

IMI Hydronic Engineering

US F234.2 04.2015

IMI FLOW DESIGN

Steel Models

VW, VG, VF, AG, AF, EF, ER

Venturi GPM Flow vs Differential Pressure

16 to 775 GPM

Engineering GREAT Solutions

IMI Hydronic Engineering

Steel Models

VW, VG, VF, AW, AG, AF, EF, ER

Differential Pressure: Inches W.C. 16 to 260 GPM

Differential Pressure: Inches W.C.													
Flow GPM	Models												
	200L	200H	250L	250H	300L	300H	400L	400H	500L	500H	600L	600H	800L
16	10												
18	13												
20	16												
22	19												
24	23												
26	**27**	10	11										
28	**31**	11	12										
30	**36**	13	14										
32	**41**	15	16										
34	**46**	17	18										
36	**52**	19	20										
38	**58**	21	23										
40	**64**	23	**25**										
42	**71**	**26**	**28**										
44	**77**	**28**	**30**										
46	**85**	**31**	**33**										
48	**92**	**33**	**36**										
50	**100**	**36**	**39**										
55	121	**44**	**47**		11								
60	144	**52**	**56**	11	14								
65	169	**61**	**66**	13	16								
70	196	**71**	**77**	15	18								
75	225	**82**	**88**	17	21								
80	256	**93**	**100**	20	**24**								
85	289	**105**	**113**	22	**27**								
90	324	118	127	**25**	**30**								
95	361	131	141	**28**	**34**		10						
100	400	145	156	**31**	**38**		11						
120		209	225	**44**	**54**	13	16						
130		245	264	**52**	**64**	15	19	10	11				
140		285	306	**60**	**74**	17	**22**	12	12				
150		327	352	**69**	**85**	20	**25**	13	14				
160		372	400	**79**	**96**	23	**28**	15	16				
170		420	452	**89**	**109**	**26**	**32**	17	18				
180		470		**100**	122	**29**	**36**	19	20				
190				111	136	**32**	**40**	21	23				
200				123	151	**36**	**44**	**24**	**25**				
220				149	182	**43**	**54**	**29**	**30**				
240				178	217	**51**	**64**	**34**	**36**		10		
260				209	254	**60**	**75**	**40**	**42**	10	12		

Steel Models

VW, VG, VF, AW, AG, AF, EF, ER

Differential Pressure: Inches W.C. 280 to 775 GPM

Differential Pressure: Inches W.C.													
Flow GPM	Models												
	200L	200H	250L	250H	300L	300H	400L	400H	500L	500H	600L	600H	800L
280				242	295	**70**	**87**	**47**	**49**	12	14		
300				278	339	**80**	**100**	**54**	**56**	13	16		
325				326	396	**94**	117	**63**	**66**	16	19		
350				278	461	**109**	136	**73**	**77**	18	22		
375				434		125	156	**84**	**88**	21	**25**		
400				494		143	178	**95**	**100**	**24**	**28**		
425						161	201	107	113	**27**	**32**		11
450						180	225	120	127	**30**	**36**		12
475						201	251	134	141	**33**	**40**	10	13
500						223	278	149	156	**37**	**44**	11	15
525						246	305	164	172	**40**	**48**	13	16
550						270	336	180	189	**44**	**53**	14	18
575						295	367	197	207	**49**	**58**	15	19
600						321	400	214	225	**53**	**63**	16	21
625						348	434	232	244	**57**	**69**	18	**23**
650						376	469	251	264	**62**	**74**	19	**25**
675						406		271	285	**67**	**80**	21	**27**
700						437		291	306	**72**	**86**	22	**29**
725						468		313	329	**77**	**92**	**24**	**31**
750								335	352	**83**	**99**	**26**	**33**
775								357	375	**88**	**106**	**27**	**35**

Notes:

1. Permanent pressure loss equals 10 percent of differential pressure (DP).
2. The recommended ranges are shown in bold. All differentials have been rounded to the nearest inch.
3. Generally, the recommended low DP signal is 24” so it can be read on most HVAC instruments. DPs below 12” are not accurate on some sizes.
4. The upper DP limit is an effort to minimize the permanent pressure loss which is 10 percent of the DP signal. Any venturi can be operated above the recommended range if the permanent pressure drop is acceptable.
5. The DPs in the table were calculated using the following formula:

$$DP = \left(\frac{GPM * 17.3}{FF} \right)^2$$

Steel Models

VW, VG, VF, AW, AG, AF, EF, ER

Differential Pressure: Inches W.C. 16 to 260 GPM

Differential Pressure: Inches W.C.												
Flow GPM	Models											
	500H	600L	600H	800L	800H	1000L	1000H	1200L	1200H	1400L	1400H	1600L
775	**88**	106	**27**	**35**		16						
800	**94**	113	**29**	**38**		17						
825	**100**	120	**31**	**40**		18						
850	106	127	**33**	**42**		20						
875	112	135	**35**	**45**	10	21						
900	119	143	**37**	**47**	11	22						
925	126	151	**39**	**50**	11	23						
950	133	159	**41**	**53**	12	**24**						
975	140	167	**43**	**56**	13	**26**						
1000	147	176	**46**	**59**	13	**27**						
1100	178	213	**55**	**71**	16	**33**		11				
1200	212	253	**66**	**84**	19	**39**		13				
1300	248	297	**77**	**99**	**22**	**46**	11	16				
1400	288	345	**89**	115	**26**	**53**	12	18		10		
1500	331	396	**103**	132	**30**	**61**	14	21		11		
1600	376	450	117	150	**34**	**69**	16	**24**	11	13		
1700	425		132	169	**38**	**78**	18	**27**	12	14		10
1800	476		148	190	**43**	**88**	20	**30**	14	16	10	12
1900			165	212	**48**	**98**	**23**	**33**	15	18	11	13
2000			183	235	**53**	**109**	**25**	**37**	17	20	12	14
2200			221	284	**64**	131	**30**	**44**	20	**24**	15	17
2400			263	338	**76**	156	**36**	**53**	**24**	**29**	17	21
2600			309	396	**89**	183	**42**	**62**	**28**	**34**	21	**24**
2800			358	460	**104**	213	**49**	**72**	**33**	**39**	**24**	**28**
3000			411		119	244	**56**	**83**	**38**	**45**	**27**	**32**
3200			467		135	278	**64**	**94**	**43**	**51**	**31**	**37**
3400					153	314	**72**	**106**	**48**	**58**	**35**	**42**
3600					171	352	**81**	119	**54**	**65**	**39**	**47**
3800					191	392	**90**	133	**60**	**72**	**44**	**52**
4000					212	434	**100**	147	**67**	**80**	**49**	**58**
4200					233	479	110	162	**74**	**88**	**54**	**64**
4400					256		121	178	**81**	**97**	**59**	**70**
4600					280		132	194	**88**	106	**64**	**76**
4800					305		144	212	**96**	115	**70**	**83**
5000					331		156	230	**105**	125	**76**	**90**
5500					400		189	278	127	151	**92**	**109**
6000					476		225	331	151	180	**109**	**130**

Steel Models

VW, VG, VF, AW, AG, AF, EF, ER

Differential Pressure: Inches W.C. 6500 to 12500 GPM

Differential Pressure: Inches W.C.												
Flow GPM	Models											
	500H	600L	600H	800L	800H	1000L	1000H	1200L	1200H	1400L	1400H	1600L
6500							264	388	177	211	**128**	**152**
7000							306	450	205	245	149	**176**
7500							352		235	282	171	**203**
8000							400		268	320	194	**230**
8500							452		302	362	219	**260**
9000									339	405	246	292
9500									377	452	274	325
10000									418	500	304	360
10500									461		335	397
11000											367	436
11500											401	476
12000											437	
12500											474	

MODEL	200L	200H	250L	250H	300L	300H	400L	400H	500L	500H	600L
FF	86.5	143.6	138.4	311.4	282	580	519	709	692	1427	1304

MODEL	600H	800L	800H	1000L	1000H	1200L	1200H	1400L	1400H	1600L	
FF	2560	2259	4758	3322	6920	5709	8460	7733	9930	9117	

IMI Hydronic Engineering

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IMI FLOW DESIGN

FlowSet

Installation, Operation and Maintenance

Engineering GREAT Solutions

IMI Hydronic Engineering

Installation

IMI Flow Design's manual balancing valves & venturis are unidirectional, observe flow arrows. Models can be installed in horizontal or vertical lines.

Straight Run Requirements

1. For systems, where the elbow or the control valve is line sized, no additional pipe diameter straight run length shall be required upstream or down stream of all IMI Flow Design's manual balancing valves.
2. For systems, where the elbow or the control valve is not line sized, five pipe diameters of straight pipe shall be required upstream of the manual balancing valve to achieve 3% F.S. accuracy. No pipe diameter shall be required downstream of the manual balancing valve. IMI Flow Design's manual balancing valves UA, ET, EF and ER have the necessary straight run length built-in (for model UA with IMI Flow Design's end connections) and can be installed directly down stream of a 90° elbow or a control valve. All other IMI Flow Design's manual balancing valves shall require three (elbow) or five (control valve) pipe diameter of straight run upstream where the elbow or the control valve is not line sized.

Tap Locations (Pressure Taps or P/T Ports)

1. For portable D.P. metering, the P/T ports can be pointing at any clock position.
2. Options such as air vents should be up and drains down, otherwise the valve can be rotated so the handle and memory stop are convenient.
3. Insulation: On 1/2" to 2" models, the standard handle and P/T ports will clear 1" thick insulation. For thicker insulation, an extended handle (model EH) and port extension is available. Do not use model EH on hot water systems with glycol. On 2 1/2" and larger steel products, a butterfly valve handle and pressure ports will clear 2 1/2" insulation.

Products With Butterfly Valves

1. Assemble and tighten the flanges to the valve.
2. Align and place the assembly to the mating piping.
3. Tack weld the flange to the pipe.
   Warning: Do not finish welding the flanges to the pipe with the valve bolted between the flanges. This will result in serious heat damage to the valve seat.
4. Remove the flange bolting and valve from between the flanges.
5. Finish welding the flanges to the pipe and allow the flanges to cool completely before proceeding.
6. Install valve. Do not use flange gaskets. The molded valve gasket will seal against standard ANSI flanges.
7. Turn disk to full open position. Center valve and hand tighten bolts.
8. Slowly close to check for adequate disk clearance.
9. Return disk to full open position and cross-tighten all bolts.

Operation

1. The flow is determined by measuring the differential pressure (D.P.) across the high (Red) and low (Blue) P/T ports of the venturi. Convert the measured D.P. to inches W.C. and use the appropriate chart to read the flow. Request the proper chart from the selection below:

Chart Form*	Models
F234	Brass models - current models
F193	Steel models - current models (AF, AG, AW, EF, ER, VF, VG, VW)
F239	F239 Steel models - current models (ET only)

2. These models 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.
3. The meter used to measure the D.P. must be used in accordance with the specific instructions for that meter. All meters require purging of the air from the hoses. Also, care should be taken to attach the high pressure hose to the upstream P/T port (Red) and the low pressure hose to the other (Blue) P/Tport. The use of IMI Flow Design model 300.4 is highly recommended. Please refer to the included instructions if using this instrument.

Maintenance

1. There is no periodic maintenance required on any of these models.
2. Products with ball valves may have a stem packing gland to prevent leaking at the stem. Tighten the stem packing nut in 1/4 turn increments until the leak stops.

Troubleshooting Guide

Possible Cause	Possible Solution
PROBLEM: D.P. Guage Reading Zero or Very Low	
1. Valves closed on hoses or gauge	1. Open all high & low impulse line valves.
2. Zeroing manifold valve is open	2. Close by-pass or zero valve.
3. High & low impulse hoses reversed	3. Switch hoses.
4. Impulse ports clogged	4. Clean out P/T port or pressure ports.
5. No water flow	5. Make sure pipeline valves are open.
6. Defective D.P. meter	6. Use another meter or verify with the difference in gaug pressure readings on each port.
7. Beta ratio too high or wrong model used	7. Verify flow using D.P. across the wide-open ATC valve. Also check tag & location numbers.
PROBLEM: D.P. Guage Reading Too High	
1. Circuit unbalanced	1. Reduce flow by slowly closing ball or butterfly valve in the circuit.
2. Valve is closed on the low-pressure impulse line	2. Open all impulse lines.
3. Low (downstream) pressure or P/T port clogged	3. Clean ports.
4. Wrong product placed in circuit	4. Check model, tag and location number.

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