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**Date:** 11/9/2023

**Return Request:** 11/19/2023

**Project:** UCA Snow – Fine Arts Center

**Supplier:** Fluid Solutions

**Manufacturer:** Griswold

**Submittal:** Hydronic Piping (Valve Packages)

**Submittal Number:** 23 21 13-02

**Drawing # and Installation:** Mechanical Drawings

**ARCHITECT**

H+N Architects  
1009 Main Street  
Conway, AR 72032  
501-327-7525

**ENGINEER**

Pettit & Pettit  
201 E. Markham St. #400  
Little Rock, AR 72201  
501-374-3731

**GENERAL CONTRACTOR**

Wagner General Contractors  
600 W. Race Ave.  
Searcy, AR 72143  
501-203-0704

**MECHANICAL SUBCONTRACTOR**

Comfort Systems USA (Arkansas), Inc.  
9924 Landers Rd.  
N. Little Rock, AR 72117  
501-834-3320

Notes:

**CSUSA PROJECT NO.**

**23-2020**

[chowell@comfortar.com](mailto:chowell@comfortar.com)



**SUBMITTAL DATA**

DATE: November 6, 2023

PROJECT: UCA Snow Fine Arts

CONTRACTOR: Comfort Systems USA

ENGINEER: Pettit & Pettit Engineers

**GRISWOLD VALVE PACKAGES**

\*Pipe, 2-Way/3-Way ATC Valve (by others), and coil sizes will be coordinated in the field. We will coordinate actual sizes with approved equipment submittals before ordering.

\*TBD - Incoming line sizes will also be coordinated with field conditions.

TAG	MODEL	Pipe Size	Coil Size	GPM	ATC Size
VAV	CPP2IRIS	¾"	TBD	As Scheduled	TBD
RHC-1	CPP2IRIS	Per Plans	TBD	As Scheduled	TBD
RTU-1 HW	CPP2IRIS	Per Plans	TBD	As Scheduled	TBD
AH-6 HW	CPP2IRIS	Per Plans	TBD	As Scheduled	TBD
RTU-1 CW	CPPAHU	Per Plans	TBD	As Scheduled	TBD
AH-6 CW	CPPAHU	Per Plans	TBD	As Scheduled	TBD

**Isolator R:** Automatic Flow Limiting Valve

**Isolator U:** Union with CPTA (Optional CPTA and Coin-Op Airvent or CPTA and Drain Valve)

**Control Valve (CV):** Supplied By Others

**Isolator S:** Combination Y-Strainer and Ball Valve with CPTA & Drain Valve (Optional 2<sup>nd</sup> CPTA)

**2-WAY ATC F x F**

<b>LINE TYPE:</b>		<b>COIL TYPE:</b>	
<input type="checkbox"/> FNPT	<input type="checkbox"/> SWT	<input type="checkbox"/> FNPT	<input type="checkbox"/> SWT <input type="checkbox"/> MNPT
<input type="checkbox"/> QuickPress <sup>1</sup>		<input type="checkbox"/> QuickPress <sup>1</sup>	
<b>LINE SIZE:</b>	<b>COIL SIZE:</b>	<b>CV SIZE:</b>	
<input type="checkbox"/> 1/2"	<input type="checkbox"/> 1/2"	<input type="checkbox"/> 1/2"	
<input type="checkbox"/> 3/4"	<input type="checkbox"/> 3/4"	<input type="checkbox"/> 3/4"	
<input type="checkbox"/> 1"	<input type="checkbox"/> 1"	<input type="checkbox"/> 1"	
<input type="checkbox"/> 1-1/4"	<input type="checkbox"/> 1-1/4"	<input type="checkbox"/> 1-1/4"	
<input type="checkbox"/> 1-1/2"	<input type="checkbox"/> 1-1/2"	<input type="checkbox"/> 1-1/2"	
<input type="checkbox"/> 2"	<input type="checkbox"/> 2"	<input type="checkbox"/> 2"	
<b>BALL &amp; STEM:</b>			
<input type="checkbox"/> Nickel-plated brass ball & brass stem			
<input type="checkbox"/> Stainless Steel ball & stem			
<b>COMPONENT OPTIONS:</b>			
<input type="checkbox"/> 1-1/2" Ext Kit		<input type="checkbox"/> 2" Ext Kit	
<input type="checkbox"/> Strainer 20 Mesh		<input type="checkbox"/> Strainer 50 Mesh	
<input type="checkbox"/> Isolator S 2 <sup>nd</sup> CPTA		<input type="checkbox"/> Union Coin-Op	
<b>HOSE OPTIONS (FNPT COIL):</b>			
<b>Swivel Type:</b> <input type="checkbox"/> MNPT <input type="checkbox"/> SWT			
<b>Length:</b> <input type="checkbox"/> 12" <input type="checkbox"/> 18" <input type="checkbox"/> 24" <input type="checkbox"/> 36"			
<b>CONTROL VALVE (CV):</b>			
<input type="checkbox"/> Customer Supplied and Installed CV			
<input type="checkbox"/> Customer Supplied CV - Installed By Griswold Controls			

## SPECIFICATIONS

**Isolator R:** Forged brass (ASTM B283) automatic flow control valve assembly includes integrated isolation ball valve and stainless steel flow control cartridge. Cartridge can be removed for inspection, or can be replaced without disturbing piping connections. Valve housing includes field repairable dual Teflon and EPDM o-ring seal stem, with Nickel plated ball. Valve includes one fixed end connection and one union connection. Union end includes union nut and EPDM o-ring. Valve body has two ports with (1) Pressure/Temperature Test Valves, and (1) combination Pressure/Temperature Test Valves and manual air vent (CPTA). PSI/Temp Rating: 1/2"-1-1/2": 600WOG-400PSI/250°F. 1-1/2"L-3": 400WOG-275PSI/250°F

**Isolator S:** Ball valve and integrated strainer. Valve housing is forged brass with field repairable dual Teflon and EPDM o-ring seal stem. Strainer is 20 mesh Stainless Steel and can be removed from housing without disturbing pipe connections for inspection or replacement. Valve includes one fixed connection and one union connection. Union end includes union nut and EPDM o-ring. Body has one port with combination Pressure/Temperature Test Valves (CPTA). Assembly includes drain valve with 3/4" hose connection with cap. PSI/Temp Rating: 1/2"-1-1/2":600WOG-400PSI/250°F. 1-1/2"L-3":400WOG-275PSI/250°F

**Union:** Forged brass (ASTM B283) union. Union includes one fixed end (FNPT or SWT) connection and one union (MNPT) connection. Union end includes union nut and EPDM o-ring. Union body has one port with combination Pressure/Temperature Test Valves and manual air vent (CPTA). PSI/Temp Rating: 400PSI/250°F

**Drain Valve:** Brass housing, Nickel plated ball. 1/2"-1":1/2"UNF x 3/4" NPSH. 1-1/4"-2":3/4"UNF x 3/4" NPSH. Rated 300PSI/250°F

**Combination Pressure/Test Valve & Manual Air Vent (CPTA):** Brass Housing, EPDM Seal. Rated 1000PSI/350°F Pressure/Temperature Test Valve works in conjunction with valve body feature to function as Manual Air Vent. Requires both components to operate as manual air vent.

## NOTES

<sup>1</sup> QuickPress connections are compatible with popular press tools and are rated for maximum 200 PSI.

## MODEL NUMBER SELECTION (R.)

Size	Model Number- FNPT Line	Model Number- SWT Line	Model Number- PRESS Line	Select Coil Size & Type <sup>2</sup> for Model Number	Select CV Size for Model Number
1/2"	CP2R0_E_B0	CP2R0_L_B0	CP2R0_2_B0	FNPT:(E=1/2,F=3/4) MNPT:(H=1/2, I=3/4) SWT: (K=3/8",L=1/2,M=3/4) PRESS:(2=1/2,3=3/4)	MNPT:(H=1/2)
3/4"	CP2R0_F_B0	CP2R0_M_B0	CP2R0_3_B0		MNPT:(1/2=H,I=3/4)
1/2"L	CP2R1_E_B0	CP2R1_L_B0	CP2R1_2_B0	FNPT:(E=1/2,F=3/4,G=1) MNPT:(H=1/2,I=3/4,J=1) SWT:(L=1/2,M=3/4,N=1) PRESS:(2=1/2,3=3/4,1=1)	MNPT:(H=1/2)
3/4"L	CP2R1_F_B0	CP2R1_M_B0	CP2R1_3_B0		MNPT:(1/2=H,I=3/4)
1"	CP2R1_G_B0	CP2R1_N_B0	CP2R1_1_B0	FNPT:(G=1,P=1-1/4,Q=1-1/2) MNPT:(J=1,S=1- 1/4,T=1-1/2) SWT:(N=1,K=1-1/4,W=1-1/2) PRESS:(1=1, 4=1-1/4, 5=1-1/2)	MNPT:(1/2=H,I=3/4,J=1)
1"L	CP2R2_G_B0	CP2R2_N_B0	CP2R2_1_B0		MNPT:(1/2=H,I=3/4,J=1)
1-1/4"	CP2R2_P_B0	CP2R2_K_B0	CP2R2_4_B0	FNPT:(P=1-1/4,Q=1-1/2,R=2) MNPT:(S=1-1/4, T=1-1/2,U=2) SWT:(K=1-1/4,W=1-1/2,Y=2) PRESS:(4=1-1/4, 5=1-1/2, 6=2)	MNPT:(1/2=H,I=3/4,J=1,S=1-1/4)
1-1/2"	CP2R2_Q_B0	CP2R2_W_B0	CP2R2_5_B0		MNPT:(1/2=H,I=3/4,J=1,S=1-1/4,T=1-1/2)
1-1/2"L	CP2R3_Q_B0	CP2R3_W_B0	CP2R3_5_B0	FNPT:(P=1-1/4,Q=1-1/2,R=2) MNPT:(S=1-1/4, T=1-1/2,U=2) SWT:(K=1-1/4,W=1-1/2,Y=2) PRESS:(4=1-1/4, 5=1-1/2, 6=2)	MNPT:(S=1-1/4,T=1-1/2)
2"	CP2R3_R_B0	CP2R3_Y_B0	CP2R3_6_B0		MNPT:(S=1-1/4,T=1-1/2,U=2)

## NOTES:

- Standard CPPs include nickel-plated brass ball and brass stem. For optional Stainless Steel ball and stem change "CP" to "CS" in model number.
- Insert PSID Code in 6<sup>th</sup> digit. Insert "0" for No-Cartridge option.
- Insert Coil Size & Type in 8<sup>th</sup> digit.
- Insert Control Valve (CV) Size in 9<sup>th</sup> digit.
- Standard CPPs include (1) CPTA in Isolator S with 20 mesh strainer. For optional 2<sup>nd</sup> CPTA change "B" to "D" (20 mesh) or "G" (1 CPTA – 50 mesh) or "J" (2 CPTA – 50 mesh).
- Optional Extension Kit- includes cap and tube for insulation around handle and appropriate number of extensions for PT/CPTA included in package. Change "0" to "1" for 1-1/2" extension option or "2" for 2" extension option.<sup>3</sup>
- If Control Valve (CV) is installed at the factory by Griswold Controls add an "A" to end of model number.

## FLOW RATES (+/-5%)

SIZE	IR MODEL NO. FOR REFERENCE	HEAD LOSS IN FEET <sup>4</sup>	PSID RANGE <sup>5</sup>	GPM
1/2", 3/4"	IR02__	7.4	2-32	0.25, 0.33, 0.50, 0.60, 0.75, 0.85, 1.00, 1.25, 1.50, 2.00, 2.50, 3.00
	IR04__	13.4	4-57	0.50, 1.00, 1.50, 2.00, 2.50, 3.00
1/2"L, 3/4", 1"	IR11__	3.5	1-14	0.33, 0.50, 0.67, 1.00, 1.33, 1.67, 2.00, 2.33, 2.67, 3.33, 4.00, 4.67, 5.00
	IR12__	7.4	2-32	0.55, 0.75, 1.00, 1.25, 1.50, 1.75, 2.00, 2.25, 2.50, 2.75, 3.00, 3.50, 4.00, 5.00, 6.00, 7.00, 8.00
	IR14__	13.4	4-57	0.75, 1.00, 1.33, 2.00, 2.67, 3.33, 4.00, 4.67, 5.33, 6.67, 8.00, 9.33, 10.00, 11.00
	IR18__	30.0	8-128	1.10, 1.50, 2.00, 3.00, 4.00, 5.00, 6.00, 7.00, 8.00, 10.0, 12.0, 14.0, 16.0
1"L, 1-1/4", 1-1/2"	IR21__	3.5	1-14	5.33, 6.00, 6.67, 7.33, 8.00, 8.67, 9.33, 10.00, 10.67, 11.33, 12.00, 12.67, 13.33, 14.00, 14.67
	IR22__	7.4	2-32	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, 21.0, 22.0
	IR24__	13.4	4-57	10.67, 12.00, 13.33, 14.67, 16.00, 17.33, 18.67, 20.00, 21.33, 22.67, 24.00, 25.33, 26.67, 28.00, 29.33
1-1/2"L - 2"	IR28__	30.0	8-128	16.0, 18.0, 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
	IR31__	3.5	1-14	12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38
	IR32__	7.4	2-32	18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57
	IR34__	13.4	4-57	24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76
1-1/2"L - 2"	IR38__	30.0	8-128	36, 42, 48, 54, 60, 66, 72, 78, 84, 90, 96, 102, 108, 114

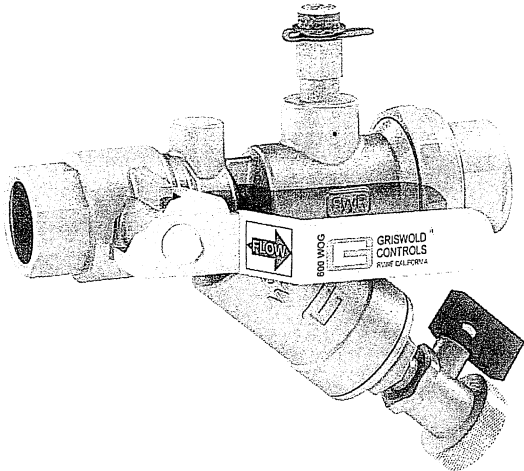
## NOTES

<sup>2</sup> Coil Type must be FNPT if hoses are required.

<sup>3</sup> Extension Option includes handle cover and accessory extensions for either 1-1/2" or 2" Insulation.

<sup>4</sup> Head Loss in Feet is provided for pump head calculations. (1 PSI = 2.307 Feet of Water)

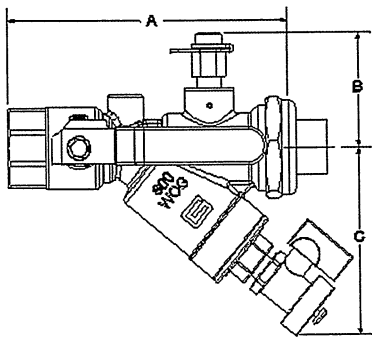
<sup>5</sup> Systems with entrained air and fluid velocities less than 4FPS are susceptible to noise when using the 2-32 cartridge. If your system has entrained air and flowrates less than 2GPM please consider using the 4-57 cartridge.



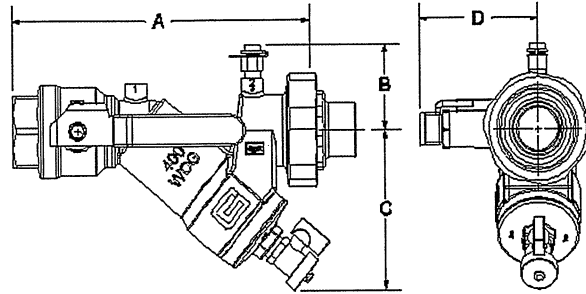
**SPECIFICATIONS**

- PSI/Temperature Rating:** 1/2"-1-1/2": 600 WOG 400 PSI / 250° F  
1-1/2"L-3": 400 WOG 275 PSI / 250° F
- Body Material:** 1/2"-1-1/2": Forged Brass ASTM B283-06  
1-1/2"L-3": Cast brass
- End Connections:** Brass – NPT, Sweat, QuickPress<sup>1</sup>, Grooved<sup>2</sup>
- Ball Valve Seals:** Teflon
- Union Seal:** EPDM O-Ring
- Body Tappings<sup>3</sup>:** (3) Bosses for CPTAs and Drain Valve
- Ball Valve:** Nickel-plated brass ball  
Optional: Stainless Steel ball
- Field Repairable Stem:** Dual Teflon seals and EPDM O-ring
- Strainer:** 20 mesh stainless steel (optional 50 mesh)
- Options:** Combination P/T Test Valve and Manual Air Vent (CPTA), Drain Valve, or 1/2" Bypass<sup>4</sup>, Extension Option

**1/2" – 1-1/2" Housing**



**1-1/2"L - 3" Housing**



**DIMENSIONS & WEIGHTS (NOMINAL)**

All dimensions are for planning purposes only and may change without notice.

SIZE	A - FIXED END CONNECTION		UNION END CONNECTION <sup>5</sup>						B	C	D <sup>6</sup>	Cv <sup>7</sup>	WEIGHT (LBS.)	
	FNPT	SWT	FNPT		MNPT		SWT							
1/2"	3.9	3.8	1/2":1.0	3/4":N/A <sup>8</sup>	1/2":1.0	3/4":1.2	3/8",1/2":0.8	3/4":1.1	1.9	2.9	0.5,1.5 2.2	4.7	0.9	
3/4"	3.9	4.0												
3/4"L	5.4	5.4	1/2",3/4":1.0	1":N/A <sup>8</sup>	1/2"-3/4":1.0	1":1.4	3/8",3/4":1.0	1/2":0.7	1":1.3	2.2	3.6	2.6, 3.2	9.1	2.3
1"	5.4	5.6												
1-1/4"	7.6	7.7	1",1-1/4",1-1/2":1.7	1",1-1/4",1-1/2":1.7 <sup>9</sup>	1",1-1/4":1.7	1-1/2":1.4	2.5	3.1	3.1, 3.7	24.6	5.0			
1-1/2"	7.5	7.9												
1-1/2"L, 2"	9.3	9.8	1-1/4", 1-1/2":1.6	2": N/A <sup>8</sup>	1",1-1/4":1.8	1-1/2", 2":1.6	1-1/4",2":1.6	1-1/2":1.7	2.6	3.7	3.7, 4.3	35	8.8	
2"L	10.9	11.2	2": 2.5		2": 1.6		2": 1.6		2.9	4.0	4.0, 4.6	60	12.4	
2-1/2"	11.1	N/A	N/A <sup>10</sup>											
3"	11.3	N/A	N/A <sup>10</sup>											

For QuickPress connections add 3.1" (1/2") 3.6" (3/4", 3/4"L), 4.1" (1"), to the FNPT length (A) listed for a valve.

**NOTES**

- <sup>1</sup> QuickPress is available on 1/2" to 1" valves only. Connections are compatible with popular press tools and are rated for maximum 200 PSI.
- <sup>2</sup> Grooved End connection is available on 2-1/2" and 3" valves only.
- <sup>3</sup> Body Tappings for accessories are a leak proof metal to metal seal and do not require pipe dope or tape. Tape or dope should not be used.
- <sup>4</sup> Bypass is only available on 1/2" to 1-1/2" valves.
- <sup>5</sup> For overall length, add union end connection length to body length.
- <sup>6</sup> Space Saver handle standard on 1/2"-3/4" valves. Standard handle on 1" to 3" valves and 1-1/2" extended handle in 1/2" to 3" is compatible with 1-1/2" insulation. Largest extended handle is compatible with 2" insulation.
- <sup>7</sup> Cv's are based on a clean 20 mesh stainless steel strainer. When a 50 mesh screen is used, multiply PSID by 1.3.
- <sup>8</sup> Tailpiece is not available for this size. Male tailpiece used with coupling.
- <sup>9</sup> 1-1/4"-1-1/2" valves can also take 1/2"-3/4" MNPT tailpieces.
- <sup>10</sup> 2-1/2" and 3" Valves are fixed end by fixed end connection. Union connection is not available.

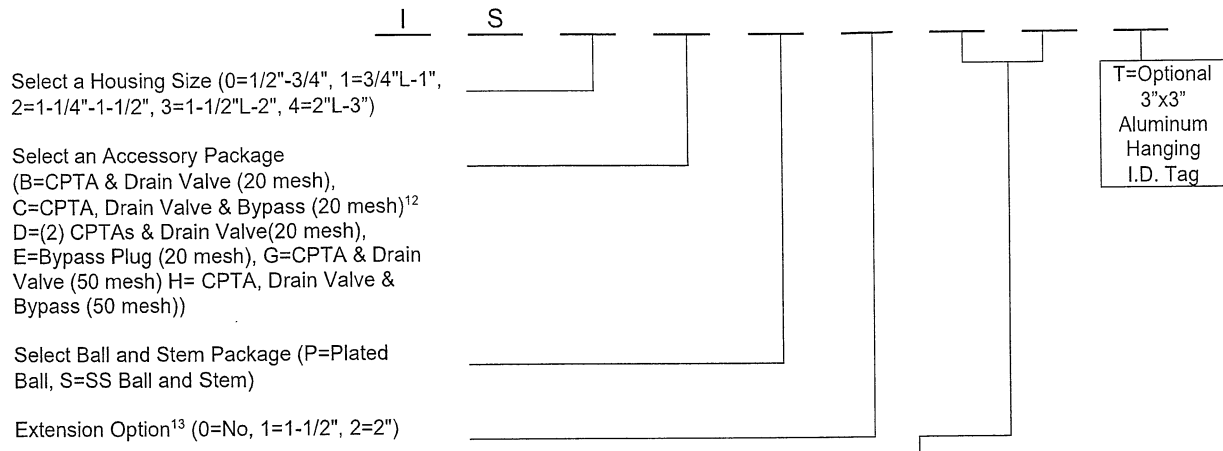
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MODEL NUMBER SELECTION<sup>11</sup>



Select a Housing Size (0=1/2"-3/4", 1=3/4"L-1", 2=1-1/4"-1-1/2", 3=1-1/2"L-2", 4=2"L-3")

Select an Accessory Package  
 (B=CPTA & Drain Valve (20 mesh),  
 C=CPTA, Drain Valve & Bypass (20 mesh)<sup>12</sup>  
 D=(2) CPTAs & Drain Valve(20 mesh),  
 E=Bypass Plug (20 mesh), G=CPTA & Drain  
 Valve (50 mesh) H= CPTA, Drain Valve &  
 Bypass (50 mesh))

Select Ball and Stem Package (P=Plated  
 Ball, S=SS Ball and Stem)

Extension Option<sup>13</sup> (0=No, 1=1-1/2", 2=2")

T=Optional  
 3"x3"  
 Aluminum  
 Hanging  
 I.D. Tag

Valve	FIXED END OR UNION END <sup>14</sup> (No Union Tailpiece=Z)			UNION END ONLY <sup>14</sup>
	Female Threaded	Female Sweat	QuickPress	Male Threaded
IS0	1/2"=E, 3/4"=F <sup>15</sup>	3/8"=K <sup>16</sup> , 1/2"=L, 3/4"=M	1/2"=2, 3/4"=3	1/2"=H, 3/4"=I
IS1	1/2"=E <sup>16</sup> , 3/4"=F, 1"=G <sup>15</sup>	3/8"=K <sup>16</sup> , 1/2"=L <sup>16</sup> , 3/4"=M, 1"=N	1/2"=2 <sup>16</sup> , 3/4"=3, 1"=1	1/2"=H, 3/4"=I, 1"=J
IS2	1"=G <sup>16</sup> , 1-1/4"=P, 1-1/2"=Q	1"=N <sup>16</sup> , 1-1/4"=K, 1-1/2"=W	N/A	1/2"=H, 3/4"=I, 1"=J, 1-1/4"=S, 1-1/2"=T
IS3	1-1/4"=P <sup>16</sup> , 1-1/2"=Q, 2"=R <sup>15</sup>	1-1/4"=K <sup>16</sup> , 1-1/2"=W, 2"=Y	N/A	1-1/4"=S, 1-1/2"=T, 2"=U
IS4 <sup>14</sup> (Union)	2"=L	2"=Y	N/A	1-1/4"=S, 1-1/2"=T, 2"=U
IS4 <sup>14</sup> (Fixed End)	2"=L, 2-1/2"=M, 3"=N <sup>17</sup>	N/A	N/A	N/A

NOTES

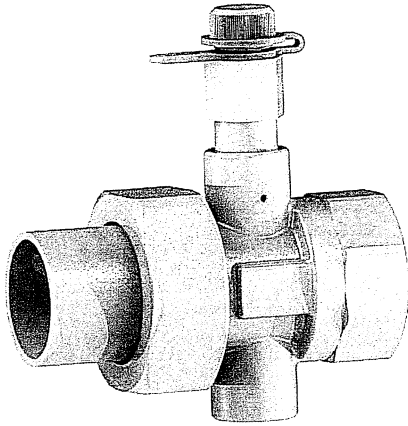
- <sup>11</sup> Model no. and flow rate are indicated on label affixed to body.
- <sup>12</sup> C option with bypass is only available for 1/2" to 1-1/2" size.
- <sup>13</sup> Extension Option includes handle cover and accessory extensions for either 1-1/2" or 2" insulation.
- <sup>14</sup> Select the Fixed End First and the Union End Second. For 2-1/2" and 3" size select a 2<sup>nd</sup> fixed end instead of a union end.
- <sup>15</sup> Tailpiece is not available for this size. Male tailpiece used with coupling.
- <sup>16</sup> Fixed end not available for this size. Union tailpiece only.
- <sup>17</sup> For Grooved End option use MG=2-1/2" and NG=3".

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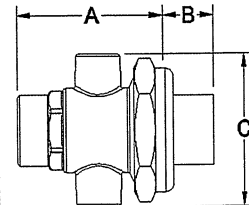
SPECIFICATIONS

**PSI / Temperature Rating:** 400 PSI / 250°F  
**Body Material:** Forged Brass ASTM B283-06  
**End Connections:** Brass – NPT, Sweat or QuickPress<sup>1</sup>  
**Union Seal:** EPDM O-ring  
**Body Tappings<sup>2</sup>:** (2) Bosses for CPTAs, Airvent. and Drain Valve  
**Options:** Combination P/T Test Valve and Manual Air Vent (CPTA), Drain Valve, Coin Operated Airvent, Extension Option

DIMENSIONS & WEIGHTS (NOMINAL)

All dimensions are for planning purposes only and may change without notice.

SIZE	A - FIXED END CONNECTION		B - UNION END CONNECTION <sup>3</sup>						C	WEIGHT (LBS.)		
	FNPT	SWT	FNPT		MNPT		SWT					
3/8"	N/A	1.7										
1/2"	2.0	1.9	1/2":1.0	3/4":N/A <sup>4</sup>	1/2":1.0	3/4":1.2	3/8",1/2":0.8	3/4":1.1	1.2	0.3		
3/4"	1.9	1.9										
1"	2.2	2.2	1/2",3/4":1.0	1":N/A <sup>4</sup>	1/2"-3/4":1.0	1":1.4	3/8",3/4":1.0	1/2":0.7	1":1.3	2.0	1.1	
1-1/4"	2.6	2.6	1",1-1/4",1-1/2":1.7		1",1-1/4",1-1/2":1.7 <sup>5</sup>		1",1-1/4":1.7		1-1/2":1.4		2.7	2.4
1-1/2"	2.8	2.8										
2"	2.8	2.8	1-1/4",1-1/2":1.6	2": N/A <sup>4</sup>	1",1-1/4":1.8	1-1/2",2":1.6	1-1/4",2":1.6		1-1/2":1.7		3.4	3.2
2-1/2"	3.0	N/A	1-1/2" – 2-1/2":1.2	3": 2.2	1-1/2"-2-1/2":1.5	3": 2.5	2":2.0				3.7	5.1
3"	3.2	N/A										5.6



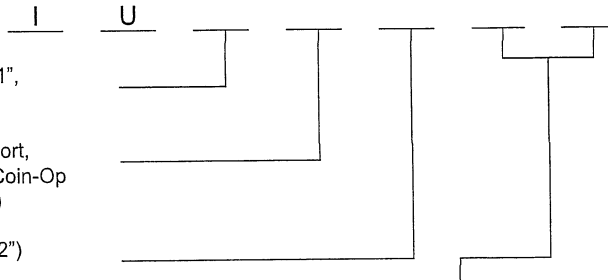
For QuickPress connections add 3.1" (1/2"), 3.6" (3/4"), 4.1" (1") to the FNPT length (A) listed for a valve.

MODEL NUMBER SELECTION

Select a Housing Size (0=1/2"-3/4", 1=1", 2=1-1/4"-1-1/2", 3=2", 4=2-1/2"-3")

Select an Accessory Package (0=No Port, B=CPTA, C=CPTA & Drain Valve, D=Coin-Op Airvent, E=Coin-Op Airvent and CPTA)

Extension Option<sup>6</sup> (0=No, 1=1-1/2", 2=2")

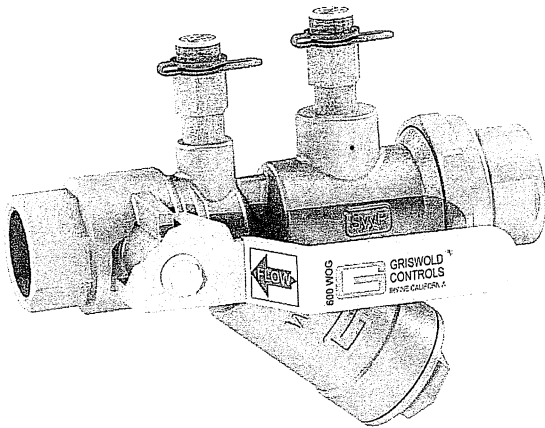


Valve	FIXED END OR UNION END <sup>7</sup> (No Union Tailpiece=Z)			UNION END ONLY <sup>7</sup>
	Female Threaded	Female Sweat	QuickPress	Male Threaded
IU0	1/2"=E, 3/4"=F <sup>4</sup>	3/8"=K, 1/2"=L, 3/4"=M	1/2"=2, 3/4"=3	1/2"=H, 3/4"=I
IU1	1/2"=E <sup>8</sup> , 3/4"=F <sup>8</sup> , 1"=G <sup>4</sup>	3/8"=K <sup>8</sup> , 1/2"=L <sup>8</sup> , 3/4"=M <sup>8</sup> , 1"=N	1/2"=2 <sup>8</sup> , 3/4"=3 <sup>8</sup> , 1"=1	1/2"=H, 3/4"=I, 1"=J
IU2	1"=G <sup>8</sup> , 1-1/4"=P, 1-1/2"=Q	1"=N <sup>8</sup> , 1-1/4"=K, 1-1/2"=W	N/A	1/2"=H, 3/4"=I, 1"=J, 1-1/4"=S, 1-1/2"=T
IU3	1-1/4"=P <sup>8</sup> , 1-1/2"=Q <sup>8</sup> , 2"=R <sup>4</sup>	1-1/4"=K <sup>8</sup> , 1-1/2"=W <sup>8</sup> , 2"=Y	N/A	1-1/4"=S, 1-1/2"=T, 2"=U
IU4	1-1/2"=Q <sup>8</sup> , 2"=R <sup>8</sup> , 2-1/2"=A, 3"=B	2"=Y <sup>8</sup>	N/A	1-1/2"=T, 2"=U, 2-1/2"=C, 3"=D

NOTES

- QuickPress is available on 1/2" to 1" valves. Connections are compatible with popular press tools and are rated for maximum 200 PSI.
- Body Tappings for accessories are a leak proof metal to metal seal and do not require pipe dope or tape. Tape or dope should not be used.
- For overall length, add union end connection length to body length.
- Tailpiece is not available for this size. Male tailpiece used with coupling.
- 1-1/4"-1-1/2" valves can also take 1/2"-3/4" MNPT tailpieces.
- Extension Option includes accessory extensions for either 1-1/2" or 2" insulation.
- Select the Fixed End First and the Union End Second.
- Fixed end not available for this size. Union tailpiece only.

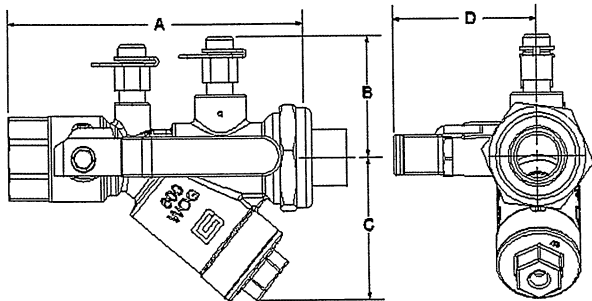
**ACCESSIBLE CARTRIDGE**



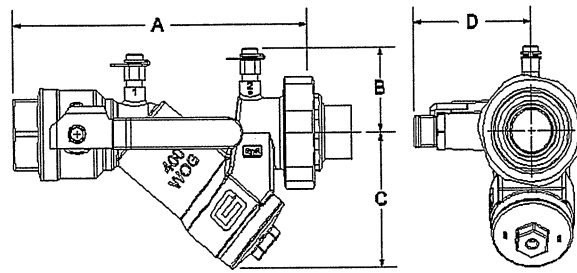
**SPECIFICATIONS**

- PSI/Temperature Rating:** 1/2"-1-1/2": 600 WOG 400 PSI / 250° F  
1-1/2"L-3": 400 WOG 275 PSI / 250° F
- Cartridge:** AISI Type 304 stainless steel  
AISI Type 17-7 PH stainless steel spring
- Body Material:** 1/2"-1-1/2": Forged brass ASTM B283-06  
1-1/2"L-3": Cast brass
- End Connections:** Brass – NPT, Sweat or QuickPress<sup>1</sup>
- Ball Valve Seals:** Teflon
- Union Seal:** EPDM O-Ring
- Body Tappings<sup>2</sup>:** Two Combination P/T Test Valve and Manual Air Vent (CPTA)
- Ball Valve:** Nickel-plated brass ball  
Optional: Stainless Steel ball
- Field Repairable Stem:** Dual Teflon seals and EPDM O-ring

**1/2" – 1-1/2" Housing**



**1-1/2"L – 3" Housing**



**DIMENSIONS & WEIGHTS (NOMINAL)**

All dimensions are for planning purposes only and may change without notice.

SIZE	A - FIXED END CONNECTION		UNION END CONNECTION <sup>3</sup>						B	C	D <sup>4</sup>	Cv <sup>5</sup>	WEIGHT (LBS.)	
	FNPT	SWT	FNPT		MNPT		SWT							
1/2"	3.9	3.8	1/2":1.0	3/4":N/A <sup>6</sup>	1/2":1.0	3/4":1.2	3/8", 1/2":0.8	3/4":1.1	1.9	2.9	0.5,1.5 2.2	2.3	1.0	
3/4"	3.9	4.0												
1/2"L	5.3	5.5									1.6, 2.6, 3.2	10.9	2.3	
3/4"L	5.4	5.4	1/2", 3/4":1.0	1":N/A <sup>6</sup>	1/2"-3/4":1.0	1":1.4	3/8", 3/4": 1.0	1/2":0.7	1":1.3	2.2	3.6	2.6,3.2		
1"	5.4	5.6												
1"L	8.0	8.2												
1-1/4"	7.6	7.7	1", 1-1/4", 1-1/2":1.7		1", 1-1/4", 1-1/2":1.7 <sup>7</sup>		1", 1-1/4":1.7		1-1/2":1.4	2.5	3.1	3.1, 3.7	28.5	5.0
1-1/2"	7.5	7.9												
1-1/2"L	9.4	9.6	1-1/4", 1-1/2":1.6	2": N/A <sup>6</sup>	1", 1-1/4":1.8	1-1/2", 2":1.6	1-1/4", 2":1.6		1-1/2":1.7	2.6	3.7	3.7, 4.3	40	8.8
2"	9.3	9.8												
2"L	10.9	11.2	2": 2.5		2": 1.6		2": 1.6							
2-1/2"	12.1	N/A	N/A <sup>8</sup>											
3"	12.3	N/A												

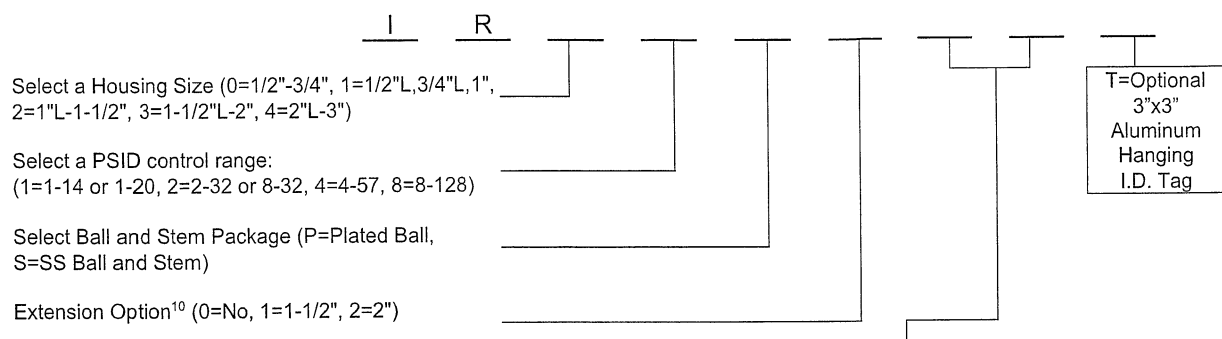
For QuickPress connections add 3.1" (1/2", 1/2"L) 3.6" (3/4", 3/4"L), 4.1" (1") to the FNPT length (A) listed for a valve.

**NOTES**

- <sup>1</sup> QuickPress is available on 1/2" to 1" valves. Connections are compatible with popular press tools and are rated for maximum 200 PSI.
- <sup>2</sup> Body Tappings for accessories are a leak proof metal to metal seal and do not require pipe dope or tape. Tape or dope should not be used.
- <sup>3</sup> For overall length, add union end connection length to body length.
- <sup>4</sup> Space Saver handle standard on 1/2"-3/4" valves. Standard handle on 1" to 3" valves and 1-1/2" extended handle in 1/2" to 3" is compatible with 1-1/2" insulation. Largest extended handle is compatible with 2" insulation.
- <sup>5</sup> Cv's are based on housing without cartridge.
- <sup>6</sup> Tailpiece is not available for this size. Male tailpiece used with ASME B16.15 Class 125 coupling.
- <sup>7</sup> 1-1/4"-1-1/2" valves can also take 1/2"-3/4" MNPT tailpieces.
- <sup>8</sup> 2-1/2" and 3" Valves are fixed end by fixed end connection. Union connection is not available.



**MODEL NUMBER SELECTION<sup>9</sup>**



Valve	FIXED END OR UNION END <sup>11</sup> (No Union Tailpiece=Z)			UNION END ONLY <sup>11</sup>
	Female Threaded	Female Sweat	QuickPress	Male Threaded
IR0	1/2"=E, 3/4"=F <sup>12</sup>	3/8"=K <sup>13</sup> , 1/2"=L, 3/4"=M	1/2"=2, 3/4"=3	1/2"=H, 3/4"=I
IR1	1/2"=E, 3/4"=F, 1"=G <sup>12</sup>	3/8"=K <sup>13</sup> , 1/2"=L, 3/4"=M, 1"=N	1/2"=2, 3/4"=3, 1"=1	1/2"=H, 3/4"=I, 1"=J
IR2	1"=G, 1-1/4"=P, 1-1/2"=Q	1"=N, 1-1/4"=K, 1-1/2"=W	N/A	1/2"=H, 3/4"=I, 1"=J, 1-1/4"=S, 1-1/2"=T
IR3	1-1/4"=P <sup>13</sup> , 1-1/2"=Q, 2"=R <sup>12</sup>	1-1/4"=K <sup>13</sup> , 1-1/2"=W, 2"=Y	N/A	1-1/4"=S, 1-1/2"=T, 2"=U
IR4 <sup>11</sup> (Union)	2"=L	2"=Y	N/A	1-1/4"=S, 1-1/2"=T, 2"=U
IR4 <sup>11</sup> (Fixed End)	2"=L, 2-1/2"=M, 3"=N	N/A	N/A	N/A

**FLOW RATES (+/-5%)**

SIZE	MODEL NO.	HEAD LOSS IN FEET <sup>14</sup>	PSID RANGE <sup>15</sup>	GPM						
				GPM			HEAD LOSS IN FEET <sup>14</sup>	PSID RANGE	HIGHER FLOW RATES/ NO INCREMENTS	
				MIN.	INCREMENT	MAX				
1/2", 3/4"	IR02	7.4	2-32	0.25, 0.33, 0.50, 0.60, 0.75, 0.85, 1.00, 1.25, 1.50, 2.00, 2.50, 3.00						
	IR04	13.4	4-57	0.50, 1.00, 1.50, 2.00, 2.50, 3.00						
1/2"L, 3/4", 1"	IR11	3.5	1-14	0.33, 0.50, 0.67, 1.00, 1.33, 1.67, 2.00, 2.33, 2.67, 3.33, 4.00, 4.67, 5.00						
	IR12	7.4	2-32	0.55, 0.75, 1.00, 1.25, 1.50, 1.75, 2.00, 2.25, 2.50, 2.75, 3.00, 3.50, 4.00, 5.00, 6.00, 7.00, 8.00						
	IR14	13.4	4-57	0.75, 1.00, 1.33, 2.00, 2.67, 3.33, 4.00, 4.67, 5.33, 6.67, 8.00, 9.33, 10.00, 11.00						
	IR18	30.0	8-128	1.10, 1.50, 2.00, 3.00, 4.00, 5.00, 6.00, 7.00, 8.00, 10.0, 12.0, 14.0, 16.0						
1"L, 1-1/4", 1-1/2"	IR21	3.5	1-14	5.33, 6.0, 6.67, 7.33, 8.0, 8.67, 9.33, 10.0, 10.67, 11.33, 12.0, 12.67, 13.33, 14.0, 14.67						
	IR22	7.4	2-32	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, 21.0, 22.0						
	IR24	13.4	4-57	10.67, 12.00, 13.33, 14.67, 16.00, 17.33, 18.67, 20.00, 21.33, 22.67, 24.00, 25.33, 26.67, 28.00, 29.33						
1-1/2"L - 2"	IR28	30.0	8-128	16.0, 18.0, 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						
	IR31	3.5	1-14	12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38						
	IR32	7.4	2-32	18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57						
	IR34	13.4	4-57	24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76						
2"L, 2-1/2", 3"	IR38	30.0	8-128	36, 42, 48, 54, 60, 66, 72, 78, 84, 90, 96, 102, 108, 114						
	IR41	3.5	1-20	14.0	2.0	60	9.2	4-20	90, 110, 130	
	IR42	7.4	2-32	17.5	2.5	75	18.4	8-32	110, 135, 160	
	IR44	13.4	4-57	23.33	3.33	100	NONE			
2"L, 2-1/2", 3"	IR48	30.0	8-128	35.0	5.0	150	NONE			

**NOTES**

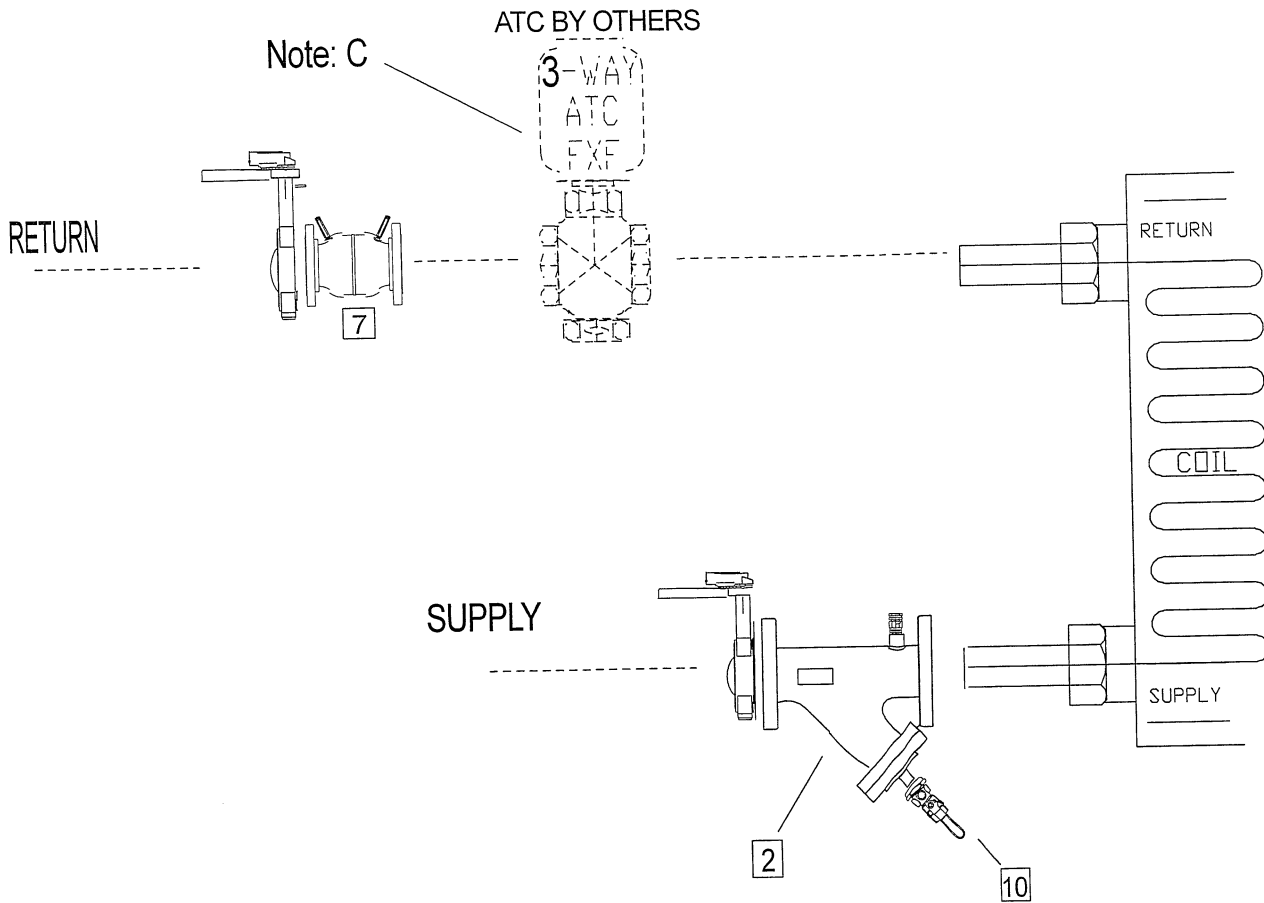
- <sup>9</sup> Model no. and flow rate are indicated on label affixed to body.
- <sup>10</sup> Extension Option includes handle cover and accessory extensions for either 1-1/2" or 2" Insulation.
- <sup>11</sup> Select the Fixed End First and the Union End Second. For 2-1/2" and 3" size select a 2<sup>nd</sup> fixed end instead of a union end.
- <sup>12</sup> Tailpiece is not available for this size. Male tailpiece used with ASME B16.15 Class 125 coupling.
- <sup>13</sup> Fixed end not available for this size. Union tailpiece only.
- <sup>14</sup> Head Loss in Feet is provided for pump head calculations. (1 PSI = 2.307 Feet of Water)
- <sup>15</sup> Systems with entrained air and fluid velocities less than 4FPS are susceptible to noise when using the 2-32 cartridge. If your system has entrained air and flowrates less than 2GPM please consider using the 4-57 cartridge.

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# Air Handling Unit Packages

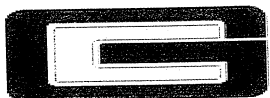


### NOTES:

- A. All piping, elbows, and tees are by others.
- B. All PT's, and air vents will be provided with extensions.
- C. ATC valve is provided & Installed by others.

### LEGEND

- |                                             |                                                         |
|---------------------------------------------|---------------------------------------------------------|
| 1 Butterfly Valve                           | 8 Automatic Flow Control                                |
| 2 Strainer                                  | 9 Accessory Flange                                      |
| 3 Flanged Reducer                           | 10 Drain Valve (Typical) w/ hose adapter- Shipped Loose |
| 4 Flanged Tee                               | 11 PT Port                                              |
| 5 Threaded Flange (Typical) - Shipped Loose | 12 Air Vent (Typical) - Shipped Loose                   |
| 6 Union                                     | 13 Shutoff Valve w/ Union End                           |
| 7 Manual Balance Valve                      |                                                         |



**Griswold Controls**

Representative:  
**Fluid Solutions, Inc.**

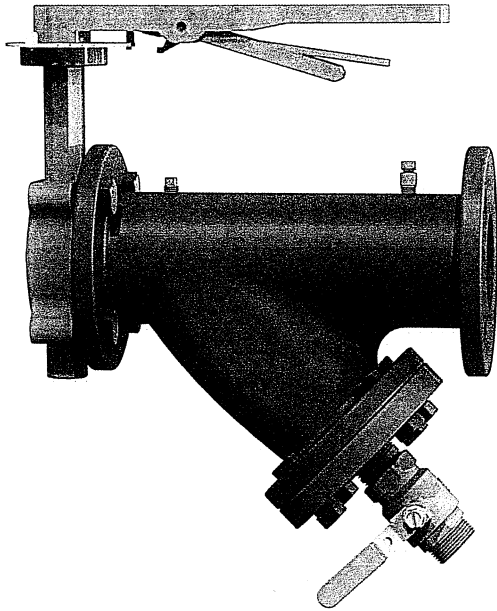
PROJECT: \_\_\_\_\_

ENGINEER: \_\_\_\_\_

TAG: \_\_\_\_\_



10350 Riverview Corporate Drive  
North Little Rock, AR 72113  
Phone: 501-663-8886 • Fax: 501-663-8738  
[www.fluidsolutionsinc.com](http://www.fluidsolutionsinc.com)



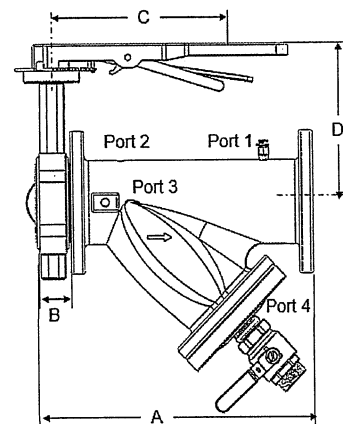
**SPECIFICATIONS**

**PSI/Temperature Rating:** 175 PSI / 150° F  
**Body Material:** Cast Iron ASTM A126 Class B  
**End Connections:** Flanges ANSI B16.1 Class 125  
**Body Tappings:** Port 1: 1/4" NPT with PT; Port 2: 1/4" NPT; Port 3: 3/4" NPT; Port 4: Ball Valve to be used as drain valve  
**Strainer:** Stainless steel 304 ASTM 167  
**Butterfly Valve:** Cast Iron ASTM A126 Class B EPDM, Aluminum bronze, stainless steel stem  
**Assembly:** Valve comes fully assembled. Mating flanges supplied by others.

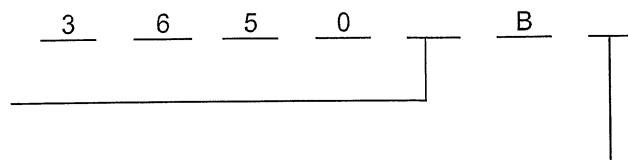
**DIMENSIONS & WEIGHTS (NOMINAL)**

All dimensions are for planning purposes only and may change without notice.

SIZE	A LENGTH	B <sup>3</sup>	C	D	HOLE Dia.	# OF HOLES	DRAIN SIZE	WEIGHT (LBS.)
2-1/2"	12.8	1.8	10.5	6.0	0.75	4	1"	57
3"	16.4	1.8	10.5	6.3	0.75	4	1"	86
4"	15.9	2.0	10.5	7.0	0.88	8	1-1/4"	90
5"	18.1	2.1	10.5	7.5	0.88	8	1-1/4"	150
6"	21.1	2.1	10.5	8.0	0.88	8	1-1/2"	196
8"	26.1	2.5	14.0	9.5	0.88	8	1-1/2"	245



**MODEL NUMBER SELECTION**



Insert M=2-1/2", N=3", P=4", Q=5", R=6", S=8"

Add "W" for optional weldneck flanges

**OPTIONS (ORDER AS SEPARATE LINE ITEMS, INSTALLED IN THE FIELD):**

Pressure/Temperature Test Valve – 1/4": 6889  
 Manual Air Vent – 1/4": 738-01

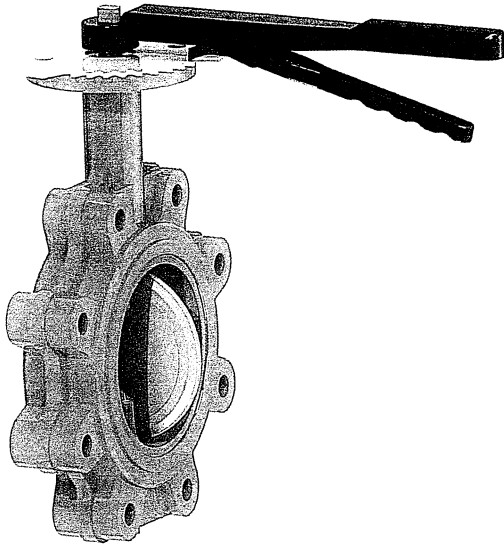
**NOTES**

<sup>3</sup> B dimension does not include seat.

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6/21  
F-2368N

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**SPECIFICATIONS**

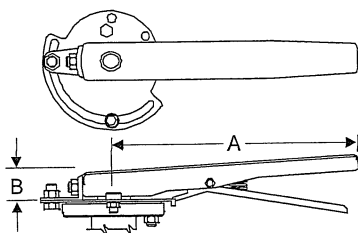
<b>PSI/Temp Rating:</b>	2-1/2" - 12": 200PSI/275°F 14" - 20": 150PSI/275°F
<b>Body:</b>	Ductile Iron
<b>Disc:</b>	Aluminum Bronze (Optional Stainless Steel Disc)
<b>Shaft:</b>	316/416 Stainless Steel
<b>Bushing:</b>	PTFE
<b>Seat:</b>	EPDM Standard
<b>Key:</b>	Carbon Steel
<b>O-Ring:</b>	NBR
<b>Plate:</b>	2-1/2" – 6": Infinite Adjustable <sup>1</sup>
<b>Service:</b>	Bi-directional or Dead End
<b>Standard:</b>	MSS-SP-67
<b>Options:</b>	Stainless Steel Plate to convert valve to outdoor use <sup>2</sup>

**DIMENSIONS & WEIGHTS (NOMINAL)**

All dimensions are for planning purposes only and may change without notice.

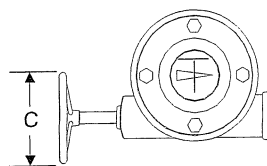
DIM	SIZE											
	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"
<b>A</b>	6.9	7.1	7.9	8.4	8.9	10.3	11.5	13.3	14.5	15.8	16.6	18.9
<b>B</b>	5.5	6.0	7.5	8.5	9.5	11.8	14.3	17.0	18.8	21.3	22.8	25.0
<b>C<sup>3</sup></b>	1.8	1.8	2.1	2.2	2.2	2.4	2.7	3.1	3.1	4.0	4.5	5.0
<b>D</b>	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	1.8	2.0	2.0	2.5
<b>L</b>	5.5	6.0	7.5	8.5	9.5	11.8	14.3	17.0	18.8	21.3	22.8	25.0
<b>M</b>	4	4	8	8	8	8	12	12	12	16	16	20
<b>Weight</b>	10	16	28	30	33	72	95	128	178	255	290	494

**Infinite Adjustable Lever Handle**

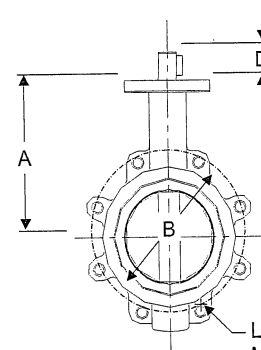
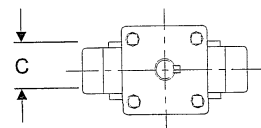


Size	Bore for Shaft	A	B
2-1/2"-3"	0.50	10.5	1.06
4"	0.63	10.5	1.06
5"-6"	0.75	10.5	1.06

**Gear Operator**



Size	C
8"-18"	11.8
20"	15.8



**NOTES:**

- <sup>1</sup> Infinite Adjustable Plate not available on "MADE IN USA" butterfly valves or valves with Stainless Steel Disc
- <sup>2</sup> Stainless Steel Plate for outdoor use compatible with Infinite Adjustable valves.
- <sup>3</sup> C dimension does not include seat.

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**Cv VALUES - VALVE SIZING COEFFICIENTS**

SIZE	Cv
2-1/2"	196
3"	302
4"	600
5"	1022
6"	1320
8"	2165
10"	3353
12"	5827
14"	7037
16"	10416
18"	12215
20"	15959

**MODEL NUMBERS**

HANDLE TYPE	INFINITE ADJUSTABLE HANDLE - BRONZE DISC	STANDARD HANDLE - STAINLESS STEEL DISC	GEAR/ HAND WHEEL – BRONZE DISC	GEAR/ HAND WHEEL – STAINLESS STEEL DISC	
SIZE	2-1/2"	8278-28 <sup>4</sup> / 8278-108 <sup>5</sup>	8278-58	N/A	N/A
	3"	8278-29 <sup>4</sup> / 8278-109 <sup>5</sup>	8278-59	N/A	N/A
	4"	8278-30 <sup>4</sup> / 8278-104 <sup>5</sup>	8278-60	N/A	N/A
	5"	8278-31 <sup>4</sup> / 8278-119 <sup>5</sup>	8278-61	N/A	N/A
	6"	8278-32 <sup>4</sup> / 8278-105 <sup>5</sup>	8278-62	N/A	N/A
	8"	N/A	N/A	8278-55 <sup>4</sup>	8278-63
	10"	N/A	N/A	8278-07	8278-127
	12"	N/A	N/A	8278-08	8278-129
	14"	N/A	N/A	8278-09	8278-128
	16"	N/A	N/A	8278-56	N/A
	18"	N/A	N/A	8278-57	N/A
	20"	N/A	N/A	8278-125	N/A

For outdoor use please order Stainless Steel plate as separate line item. Plate to be installed in the field on Infinite Adjustable Butterfly Option.<sup>6</sup>

- 2-1/2" - 3": MNP5080Q (Compatible with 8278-28, 8278-29)
- 4": MNP100Q (Compatible with 8278-30)
- 5" - 6": MNP100150Q (Compatible with 8278-31, 8278-32)

**NOTES:**

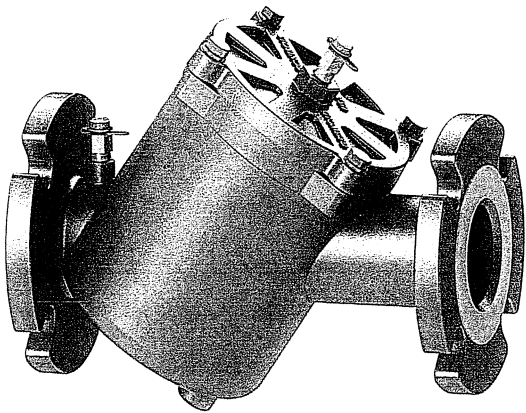
<sup>4</sup> Valve meets Buy American Act.  
<sup>5</sup> 8278-104 thru 8278-119 are special order valves that meet MADE IN USA requirements. Handle is not infinite adjustable.  
<sup>6</sup> Stainless Steel plate is not compatible with MADE IN USA valves or valves with Stainless Steel Disc.

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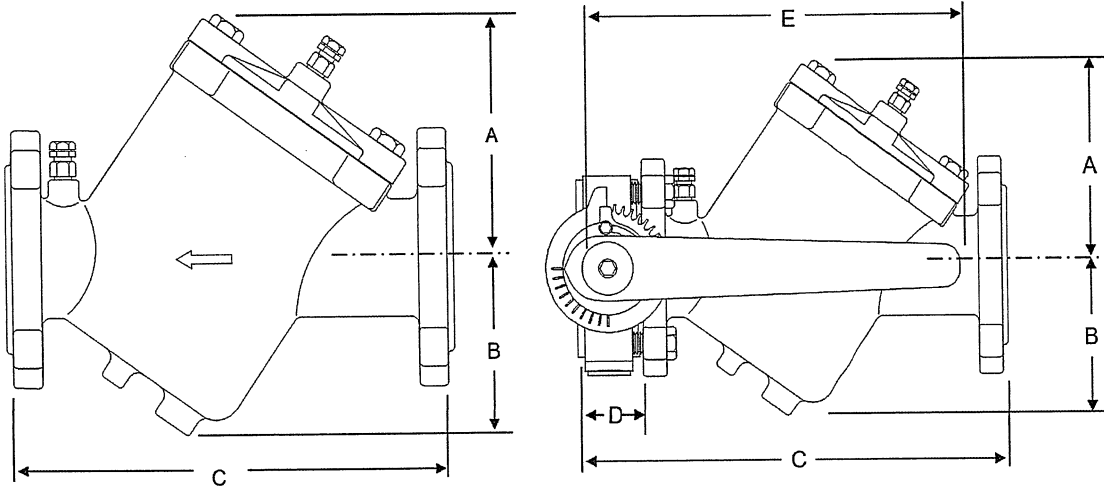


**ACCESSIBLE CARTRIDGE**



**SPECIFICATIONS**

**PSI / Temperature Rating:** 150 PSI / 275° F  
**Cartridge:** AISI Type 304 stainless steel  
 AISI Type 17-7 PH stainless steel spring  
**Body Material:** Ductile Iron ASTM A536-80  
 Class 50-40-18  
**End Connections:** ANSI 150 Lb. Flanges 2-1/2" and 3"  
**Seals:** EPDM O-Rings  
**Body Tappings:** 1/4" NPT with P/T test valves  
**Isolation Options:** Butterfly Valve



**DIMENSIONS & WEIGHTS (NOMINAL)**

All dimensions are for planning purposes only and may change without notice.

SIZE	MODEL NO.	A HEIGHT	B HEIGHT	C LENGTH	D	E	Cv <sup>1</sup>	WEIGHT (LBS.)
2-1/2", 3"	3UF_B_	5.3	4.3	11.9	N/A	N/A	119	28
2-1/2"	3UF_M_	5.3	4.3	13.6	1.8	10.7	119	40
3"	3UF_N_							

**NOTES**

<sup>1</sup> Cv measured without cartridge

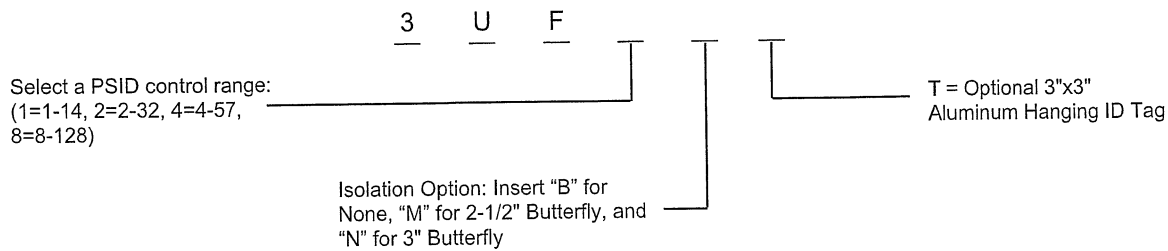
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**FLOW RATES (+/-5%)**

SIZE <sup>2</sup>	MODEL NO.	HEAD LOSS IN FEET <sup>3</sup>	PSID RANGE	GPM		
				MIN	INCREMENT	MAX
2-1/2", 3"	3UF1__	3.5	1-14	12.0	2.0	114.0
	3UF2__	7.4	2-32	18.0	3.0	171.0
	3UF4__	13.4	4-57	24.0	4.0	228.0
	3UF8__	30.0	8-128	36.0	6.0	342.0

**MODEL NUMBER SELECTION<sup>4</sup>**



**NOTES**

<sup>2</sup> 2" Reducing flanges can be used. Consult your local pipe fitting supply house or contact the factory for assistance.

<sup>3</sup> Head Loss in Feet is provided for pump head calculations. (1 PSI = 2.307 Feet of Water)

<sup>4</sup> Model no. and flow rate are indicated on label affixed to body.