

BUTTERFLY VALVE

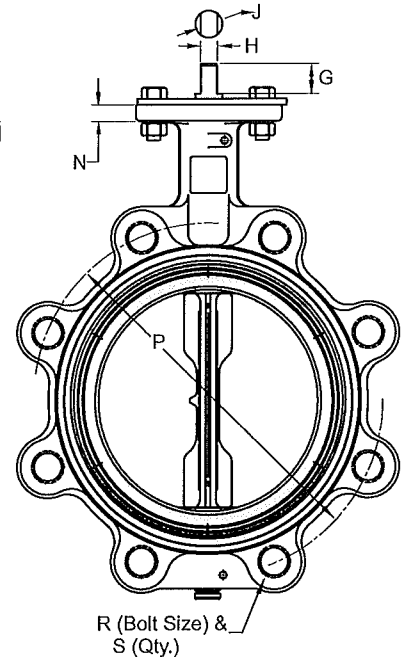
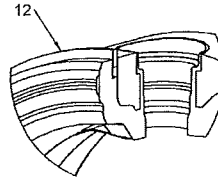
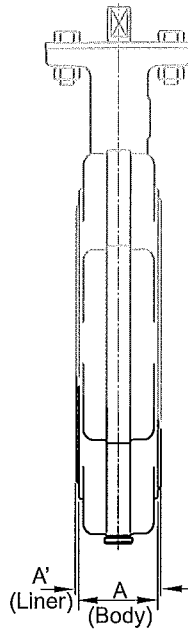
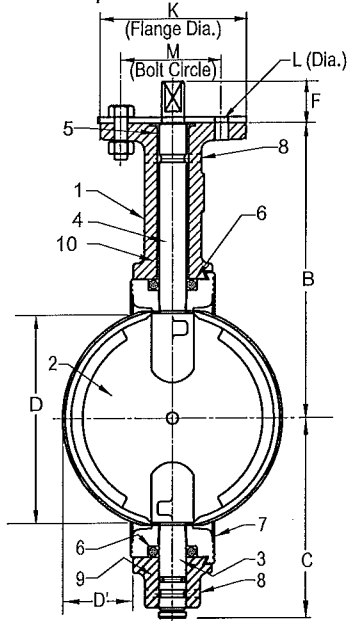
CL SERIES-REV. D

2"-12" - 200 PSI (1380 kPa)

Bi-Directional Dead End Service to 200 PSI Max.
Field Repairable.

SPECIFICATIONS

MSS SP-67
API-609



Approved by U.S. Coast Guard
for use in Category A service as
described in Title 46 Code of
Federal Regulations 46.20-15.

DIMENSIONS

ITEM	PARTS NAME	MATERIAL
1	BODY	CAST IRON-ASTM A126 CL B
2	DISC	ALUMINUM BRONZE- ASTM A351 B 148
3	BOTTOM STEM	STAINLESS STEEL TYPE 416
4	TOP STEM	STAINLESS STEEL TYPE 416
5	TOP BEARING	THERMOSET POLYMER
6	SEAL	EPDM
7	LINER	EPDM
8	ROLL PIN	STAINLESS STEEL
9	STEM SEAL	EPDM
10	LOWER BEARING	THERMOSET POLYMER
11	OPERATOR	LEVER HANDLE (EPOXY COATED LEVER)
		GEAR OPERATOR
		GEAR OPERATOR WITH MEMORY STOP
		GEAR OPERATOR WITH LOCK
		ACTUATOR-AIR/AIR
12	RETAINING RING	ACTUATOR-AIR/SPRING
		ACTUATOR-ELECTRIC
		1066 SPRING STEEL (65Mn)

	INCHES	2	2-1/2	3	4	5	6	8	10	12
	mm	50	65	80	100	125	150	200	250	300
A (Body)	INCHES	1.69	1.81	1.81	2.07	2.19	2.19	2.38	2.69	3.06
	mm	42.9	46.1	46.0	52.5	55.6	55.6	60.3	68.3	78.0
A' (Liner)	INCHES	1.82	1.94	1.94	2.20	2.32	2.31	2.51	2.82	3.21
	mm	46.1	49.1	49.1	55.8	58.8	58.7	63.6	71.5	82.0
B	INCHES	5.50	6.00	6.25	7.00	7.53	8.00	9.38	10.56	12.06
	mm	139.7	152.4	158.8	177.8	191.3	203.2	238.1	268.3	306.4
C	INCHES	3.06	3.31	3.75	4.25	4.94	5.56	6.56	7.88	9.25
	mm	77.8	84.1	95.3	108.0	125.4	141.3	166.7	200.0	235.0
D (Chord Dia)	INCHES	1.49	2.01	2.64	3.67	4.71	5.66	7.72	9.70	11.68
	mm	37.8	51.1	67.1	93.2	119.6	143.8	196.1	246.4	296.7
D' (Intrusion)	INCHES	0.28	0.44	0.69	1.06	1.50	1.94	2.84	3.69	4.50
	mm	7.1	11.1	17.5	27.0	38.1	49.2	72.2	93.7	114.3
F	INCHES	1.13	1.13	1.13	1.13	1.13	1.13	1.50	1.50	1.50
	mm	28.6	28.6	28.6	28.6	28.6	28.6	38.1	38.1	38.1
G	INCHES	0.81	0.81	0.81	0.81	0.81	0.81	1.06	1.06	1.06
	mm	20.6	20.6	20.6	20.6	20.6	20.6	27.0	27.0	27.0
H	INCHES	0.35	0.35	0.35	0.40	0.40	0.44	0.53	0.71	0.71
	mm	8.9	8.9	8.9	10.2	10.2	11.2	13.5	18.0	18.0
J	INCHES	0.50	0.50	0.50	0.56	0.56	0.62	0.75	1.00	1.00
	mm	12.6	12.6	12.6	14.2	14.2	15.8	19.0	25.4	25.4
K		4	4	4	4	4	4	6	6	6
L (Dia)	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.56	0.56	0.56
	mm	11.1	11.1	11.1	11.1	11.1	11.1	14.3	14.3	14.3
M	INCHES	3.25	3.25	3.25	3.25	3.25	3.25	5.00	5.00	5.00
	mm	82.6	82.6	82.6	82.6	82.6	82.6	127.0	127.0	127.0
N	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.50	0.50	0.50
	mm	11.1	11.1	11.1	11.1	11.1	11.1	12.7	12.7	12.7
P	INCHES	4.75	5.50	6.00	7.50	8.50	9.50	11.75	14.25	17.00
	mm	120.7	139.7	152.4	190.5	215.9	241.3	298.5	362.0	431.8
R		5/8-11	5/8-11	5/8-11	5/8-11	3/4-10	3/4-10	3/4-10	7/8-9	7/8-9
S		4	4	4	8	8	8	8	12	12

Rev. 1

The information presented on this sheet is correct at the time of publication. Milwaukee Valve reserves the right to change design, and/or material specifications without notice. For the Installation, Operation and Maintenance Manual (IOM) see the engineering section on our website. For the most current information access www.milwaukeevalve.com





PIPING SPECIFICATION

Rev. A

Date: 5-24-16

No.	PIPE SYSTEM	SIZE	PIPE MATERIAL	CONNECTION TYPE	FITTING MATERIAL	FITTINGS					VALVES							NOTES
						UNIONS	JOINT COMPOUNDS	FLANGES	GASKETS	BOLTS AND NUTS	BALL	BUTTERFLY	CHECK	DIAPHRAGM	GATE	GLOBE	PLUG	
1	CHILLED , HEAT RECOVERY (GLYCOL), AND HEATING WATER	2" and Under	Copper, Type L, (ASTM B88)	Press	Wrought Copper (ASTM B584)	N/A	N/A	N/A	EPDM	N/A	Milwaukee BA-480B		Milwaukee 509-P2		Milwaukee 148	Milwaukee 502		14
													MilwaukeeSilent Check 548T-P2		Apollo 101TLF-PR (threaded)	Apollo 120TLF-PR (threaded)		
													Apollo 163TLF-PR (threaded)					
		2" and Under	Carbon Steel, Sch 40, Electric Resistance Weld ERW, Black (ASTM A53)	Threaded	Malliable Iron, Class 150 (ASTM A47)	Acceptable	TFE Tape	Class 150; Raised Face; Forged Carbon Steel Threaded (ASTM A105)	N/A	N/A	Milwaukee BA-400s		Milwaukee 509Y					1, 14
													Milwaukee Silent Check 548T		Milwaukee 148	Milwaukee 502		
		2-1/2" to 12"	Carbon Steel, Sch 40, Electric Resistance Weld ERW, Black (ASTM A53)	Butt-Weld	Carbon Steel, Sch 40, Seamless, (ASTM A234-WPB)	Flanges	N/A	Class 150; Raised Face; Forged Carbon Steel Weld Neck (ASTM A105)	Garlock 2900	SAE J429 Grade 5 bolts and SAEJ5 Grade 5 Hex	Milwaukee F201CSN2	Milwaukee CL Series (Import)2-12 Figure# CL223E Lever Handle, Figure# CL323E	Milwaukee 2974A (Domestic) 2-12"		Milwaukee 2885M (Import) 2-12"	Milwaukee 2981A (Domestic) 2-10"		1, 14
													Milwaukee 2974M (Import);		Milwaukee 2885A (Domestic) 2-12"	Milwaukee 2981M (Import) 2-10"		
												Milwaukee ML Series (Domestic) 2-12 Figure # ML233E Lever Handle; Figure ML333E Gear, Operated	Milwaukee Silent Check Fig # 1800			Armstrong Circuit Balancing Valves		
		2-1/2" to 12"	Carbon Steel, Sch 40, Electric Resistance Weld ERW, Black (ASTM A53)	Grooved	Ductile Iron (ASTM A 536)	N/A	N/A	Flange Adapter Available	EPDM	Galvanized Carbon Steel ASTM A 183 and ASTM A 563	Gruvlok Fig # 7500		Milwaukee Silent Check Fig # 1800		Milwaukee 2885M (Import) 2-12"	Milwaukee 2981A (Domestic) 2-10"		1,2, 14
												Gruvlok Fig # 7700	Milwaukee 2974M (Import);		Milwaukee 2885A (Domestic) 2-12"	Milwaukee 2981M (Import) 2-10"		
													Milwaukee 2974A (Domestic) 2-12"					
													Gruvlok Fig # 7800					
2	COOLING COIL DRAINS	2" and Under	Copper, Type M, (ASTM B88)	Press	Wrought Copper (ASTM B584)	N/A	N/A	N/A	EPDM	N/A	Milwaukee BA-480B		Milwaukee 509-P2		Milwaukee 148	Milwaukee 502		1
													MilwaukeeSilent Check 548T-P2		Apollo 101TLF-PR (threaded)	Apollo 120TLF-PR (threaded)		
													Apollo 163TLF-PR (threaded)					

4	REFRIGERANT	2" and Under	Copper, Type ARC, (ASTM B280)	Socket, Brazed	Wrought Copper (ASTM B584)	N/A	Stay-Brite Solder	N/A	N/A	N/A								14
5	MAKEUP WATER; CHEMICAL FEED	2" and Under	Copper, Type L, (ASTM B88)	Press	Wrought Copper (ASTM B584)	N/A	N/A	N/A	EPDM	N/A	Milwaukee BA-480B		Milwaukee 509-P2		Milwaukee 148	Milwaukee 502		1,14
													MilwaukeeSilent Check 548T-P2		Apollo 101TLF-PR (threaded)	Apollo 120TLF-PR (threaded)		

7	RELIEF VENTS	2" and Under	Carbon Steel, Sch 40, Electric Resistance Weld ERW, Black (ASTM A53)	Threaded	Malliable Iron, Class 150 (ASTM A47)	Acceptable	TFE Tape	Class 150; Raised Face; Forged Carbon Steel Threaded (ASTM A105)	N/A	N/A								1, 15
		2-1/2" to 12"	Carbon Steel, Sch 40, Electric Resistance Weld ERW, Black (ASTM A53)	Butt-Weld	Carbon Steel, Sch 40, Seamless, (ASTM A234-WPB)	Flanges	N/A	Class 150; Raised Face; Forged Carbon Steel Weld Neck (ASTM A105)	Garlock 2900	SAE J429 Grade 5 bolts and SAEJ5 Grade 5 Hex								1, 15
8	NATURAL GAS	2 1/2" and Under	Carbon Steel, Sch 40, Electric Resistance Weld ERW, Black (ASTM A53)	Threaded	Malliable Iron, Class 150 (ASTM A47)	N/A	N/A	Adapter Available	EPDM	SAE J429 Grade 5 bolts and SAEJ5 Grade 5 Hex	Milwaukee 22CSOR-02-LL						Nordstrum 142	1, 16
											Apollo 80-100 Series							
		3" to 12"	Carbon Steel, Sch 40, Electric Resistance Weld ERW, Black (ASTM A53)	Butt-Weld	Carbon Steel, Sch 40, Seamless, (ASTM A234-WPB)	Flanges	N/A	Class 150; Raised Face; Forged Carbon Steel Weld Neck (ASTM A105)	Garlock 5500	SAE J429 Grade 5 bolts and SAEJ5 Grade 5 Hex	PBV C4510-31-2236-FY-NL						Nordstrum 143	1, 16

**NOTES**

1. Use flat faced flanges (ASTM A105) in raised face flange piping systems where required for mating with flat faced valves and equipment.
2. Use grooved valves for piping 6" and less or where required based on cost.
3. Only use AGS Victaulic connections for chilled water piping systems over 14". N/A
4. Use 14" and over pipe size grooved piping systems only in low risk location such as basements. N/A
5. Threaded connections allowed where required for equipment connection.
6. Medical gas fittings will be oxygen cleaned, capped and bagged.
7. The maximum operating pressure for PVC pipe is 140°F. The allowable working pressure is reduced by a de-rating factor above 73°F.
8. The maximum operating pressure for CPVC pipe is 200°F. The allowable working pressure is reduced by a de-rating factor above 73°F.
9. The maximum operating pressure for PP pipe is 200°F. The allowable working pressure is reduced by a de-rating factor above 73°F.
10. The maximum operating pressure for HDPE pipe is 140°F. The allowable working pressure is reduced by a de-rating factor above 73°F.
11. Use Solon washers where thermal cycling is a significant issue.
12. Use fire and smoke rated materials for piping in soffits.
13. Use di-electric nipples Gruvlok Figures 7088, 7089 or 7090 to address galvanic action for dissimilar materials.
14. Use silent check valves in pump discharge applications.
15. Relief valves and rupture discs, pressure regulator vents and gas pressure switch vents shall be piped full size of valve outlet to atmosphere outside building. For multiple valve installations common discharge pipe shall have cross-sectional area equal to the sum of the outlet area of the connected valves.
16. Gas piping installed in mechanical room plenums or in ceiling plenums or where concealed in inaccessible plenums and chases shall have welded joints and fittings and shall not have valves installed within the spaces.

Shop Drawing Submittal Review

Transmitted To: Cannon Design

Date: August 17, 2016

Attention: stl-cac@cannondesign.com

Contact Person / WTA Field Inspector:
Patrick Garner

Project Name: Webster University-**ISB**

Reviewed by: Mark Schaefer

Project No. WT 14127.01

☐

UPS

☐

Courier

☒

Email

Copies	No.	Description
1 PDF	230600M01	(Submittal No.'s) (R&B CxSRC)
		(Cannon #230600-004) - (Paric #15051-0181) – (WES #607)
		• HVAC Piping Product Data

***Submittal Review Comments**

3 inch and larger elbows shall be long radius as specified in section 230600.

c: Kelvin Patel
Kpatel@cannondesign.com

☐ Furnish as Submitted

☒ ***Furnish as Noted**

☐ Rejected

☐ Revise & Resubmit

☐ Reviewed

☐

Corrections or comments made on shop drawings during this review do not relieve contractor from compliance with requirements of drawings and specifications. This check is only for review of general conformance with the design concept of project and general compliance with information given in contract documents. Contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner.

SUBMITTAL IDENTIFICATION SHEET

To be completed by Contractor/CM

PROJECT NAME	
ADDRESS	
NUMBER	
OWNER	
ARCHITECT / ENGINEER	
SUBMITTED BY	
CONTRACTOR / CM SUBMITTAL NO.	CANNON DESIGN SUBMITTAL NO.
DRAWING / DETAIL REFERENCE	SPECIFICATION SECTION / PARAGRAPH
MANUFACTURER / SUPPLIER	ITEM / PRODUCT ID
REQUIRED DATE	PRIORITY
CRITICALITY	

To be completed by Reviewer

CANNON DESIGN SUBMITTAL NUMBER
RECEIVED DATE

- ☐ **A. No Exceptions Taken**
No further review of submittal is required.
- ☐ **B. Make Corrections Noted**
Incorporate corrections in work;
resubmission is not required.
- ☐ **C. Revise and Resubmit**
Revise as noted, and resubmit for review.
- ☐ **D. Rejected**
Submittal is not in compliance with Contract Documents;
provide new submittal.
- ☐ **E. For Record / Information Only**
Submittal was reviewed for Record / Information
purposes only.
- ☐ **F. Not Required for Review**
Submittal is not required by Contract Documents
and has not been reviewed.

Review is for conformance with the design concept of this project and for general compliance with contract documents. Contractor is responsible for quantities, dimensions and compliance with contract documents and for information that pertains to fabrication processes, construction techniques and coordination of this work with all trades which will be affected thereby. This review is null and void if submittal deviates from contract documents and does not indicate or note deviations.

ITEM BEING SUBMITTED (check only one)

- ☐ Shop Drawings ☐ Certification / Qualifications ☐ Coordination Drawing
☐ Samples ☐ Record Documents ☐ Calculations
 (_____ copies) ☐ Product Data ☐ Schedules
☐ LEED Submittal ☐ O&M Manuals
☐ Other

ITEM BEING SUBMITTED FOR (check only one)

- ☐ Action ☐ Information Only ☐ Record

REMARKS OR DEVIATIONS

CONTRACTOR / CM CERTIFICATION
(SUBMITTALS NOT CERTIFIED WILL BE RETURNED WITHOUT REVIEW)



PARIC CORPORATION
SUBMITTAL STAMP

THIS SHOP DRAWING HAS BEEN REVIEWED BY PARIC CORPORATION

Subcontractor remains responsible for dimensions, quantities, coordination with other trades and compliance with contract documents.

Ry:

By:
Devin D. Gates

REVIEWED BY	DATE

A/E COMMENTS

- ☐
- See attached sheet(s) for additional comments

REVIEWED BY	DATE



77 Westport Plaza
Suite 250
St. Louis, MO 63146

TRANSMITTAL

No. 15051-0181

Paric Corporation

PROJECT: 15051-Webster University Interdisciplinary Science Building

DATE: 08/09/2016

TO: Cannon Design
1100 Clark Ave
St Louis MO 63102

RE: HVAC Piping Product Data

ATTN: Kelvin Patel

JOB: 15051

WE ARE SENDING:		SUBMITTED FOR:	ACTION TAKEN:
☐ Shop Drawings		☒ Approval	☐ Approved as Submitted
☐ Letter		☐ Your Use	☐ Approved as Noted
☐ Prints		☐ As Requested	☐ Returned After Loan
☐ Change Order		☐ Review and Comment	☐ Resubmit
☐ Plans			☐ Submit
☐ Samples		SENT VIA:	☐ Returned
☐ Specifications		☐ Attached	☐ Returned for Corrections
☒ Other: Product Data		☐ Separate Cover Via:	☐ Due Date:

<i>Item</i>	<i>Package</i>	<i>Code</i>	<i>Rev.</i>	<i>Copies</i>	<i>Date</i>	<i>Description</i>	<i>Status</i>
Submittal		230600-004	1		08/09/2016	HVAC Piping Product Data	Submitted

NOTES:

CC:

Signed: _____
Devin Gates



Mechanical

LETTER OF TRANSMITTAL

TO: Paric Corporation

77 West Port Plaza #250

St. Louis, MO 63146

ATTN: Jason Szachnieski, Devin Gates

DATE: 8/8/16

JOB #: 5768

RE: Webster ISB

We are sending you

☒

Shop drawings

☐ Attached

☐ Prints

☐ Under separate cover

☐ Plans

☐ Samples

☐ Specifications

☐ Copy of letter

☐ Change order

☐ Other

COPIES	DATE	NO.	DESCRIPTION
1	8/8/16	230600	Piping

These are transmitted as checked below:

☐ For signature

☐ For your use

☐ As requested

☐ For bids due

☒

For review and comment

☐ Approved as submitted

☐ Approved as noted

☐ Returned for corrections

☐ Prints returned after loan to us

☐ Other

☐ Resubmit

☒

Submit

☐ Return

☐ copies for approval

☐ copies for distribution

☐ corrected prints

Remarks: Please return by 8/18/16

COPY TO: file

SIGNED:

Alex Chambers



Mechanical

Webster University ISB Webster Groves, MO

Submittal #:

230600

Submittal Description:

Piping

Return By:

8/18/16

Please Note: To avoid scheduling delays and equipment release delays, please submit by the "Return By" date.

CHECKED BY:			
DESIGNER:		ENGINEER:	
☒	NO EXCEPTION TAKEN	☐	MAKE CORRECTIONS NOTED
☐	SUBMIT SPECIFIED ITEM	☐	REVISE AND RESUBMIT
☐	REJECTED	☐	
Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Equipment supplier is responsible for: dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and satisfactory performance of his work.			
		Job #:	5768
		Date:	8/8/16
		By:	ARC