

APCO SWING CHECK VALVE OPERATION & MAINTENANCE MANUAL

EAST AREA WQCF IMPROVEMENTS ATLANTA, GEORGIA

ENGINEER

ARCADIS/BPA JV
2839 Paces Ferry Road, Suite 900
Atlanta, GA 30339

CONTRACTOR

Lakeshore Engineering, LLC
1259 Ellsworth Drive
Atlanta, GA 30318

VENDOR

Eco-Tech, Inc.
156 Hickory Springs Industrial Drive
Canton, Georgia 30115

September 28, 2022

East Area WQCF Improvements Atlanta, Georgia

Contractor: Lakeshore Engineering, LLC
1259 Ellsworth Drive
Atlanta, GA 30318
Ph: 404-355-3976

Description: APCO Swing Check Valve

Supplier: Eco-Tech, Inc.
156 Hickory Springs Industrial Drive
Canton, GA 30115
Ph: (770) 345-2118
Contact: Heather Bame
Email: hbame@eco-tech.net

Manufacturers: DeZurik/APCO/Hilton
250 Riverside Avenue North
Sartell, MN 56377
Ph: 320-259-2000
Website: www.dezurik.com

Service Center: Eco-Tech, Inc.
156 Hickory Springs Industrial Drive
Canton, GA 30115
Ph: (770) 345-2118
Contact: Kelsie Gibson
Email: kgibson@eco-tech.net

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D12003 – APCO CVS-250/250A Swing Check Valves

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Submittal Data Sheet

Date: 08/04/22

ECO TECH INC
PO BOX 956
HOLLY SPRINGS, GA
30142

P.O. 20143-16
FACTORY ORDER NO 143541
FACTORY SALES ORDER NO 626554
REV 0

PROJ. NAME East Area WQCF

Fact. ITEM	Cust. ITEM	QTY	DESCRIPTION	PART NO. 9688883
1	1	8	CVS,4,250A,F1,DI,DI-S11-S2-NBR,AIS*LW	

Style	CVS	APCO Swing Check Valves
Size	4	4 Inch (100mm)
Body Style	250A	Series 250 Swing Check Valve
End Connection	F1	Flanged; ASME 125/150
Body Material	DI	Ductile Iron
Disc Material	DI	Ductile Iron
Shaft Material	S11	303 Stainless Steel
Body Seat Material	S2	316 Stainless Steel
Disc Seat Material	NBR	Acrylonitrile-Butadiene (NBR)
Option	AIS	USA Iron & Steel
Coating		12 mils minimum (non-stainless steel parts) of Blue DeZURIK Epoxy (NSF Std. 61) on Interior and Exterior with Standard (SP10) surface prep
Act Type	LW	Lever & Weight

RELATED DOCUMENTS

A70021	DWG INST CVS F1 LW 2-36" 250/2
A70161	DWG VALVE ASSY CVS 2-20" 250/2
A70064	DWG ASSY 250/250A LW CLOSURE C
D12003	IM VALVE CVS SWING CHECK (250/

FEATURES

TAG: CV2

EQUIPMENT DATA FORM (MAINTENANCE SUMMARY FORM)

PROJECT:	East Area WQCF		
PURCHASE ORDER:	20143-16		
EQUIPMENT ITEM:	4 Inch Swing Check 250(A)		
EQUIPMENT / TAG NUMBERS:	TAG: CV2		
WEIGHT (APPROX.)	145 Lbs.		
MANUFACTURER: DeZURIK	WORK ORDER:	143541-1	
PART NUMBER:	9688883		
MANUFACTURER'S LOCAL REPRESENTATIVE:			
ECO TECH INC	Telephone:		770-345-2118
156 HICKORY SPRINGS IND DR, PO BOX 956, HOLLY SPRINGS, GA, 30142			
MOTOR DATA PLATE (HP, Voltage, Speed, etc.)			

MAINTENANCE REQUIREMENTS

- DeZURIK recommends exercising your valve every 30 days.
- Valve lubrication required upon disassembly only.
- For valve maintenance and lubrication refer to instruction manual(s): D12003
- For actuator maintenance and lubrication refer to instruction manual(s):

RECOMMENDED SPARE PARTS

See Drawing(s) A70161.

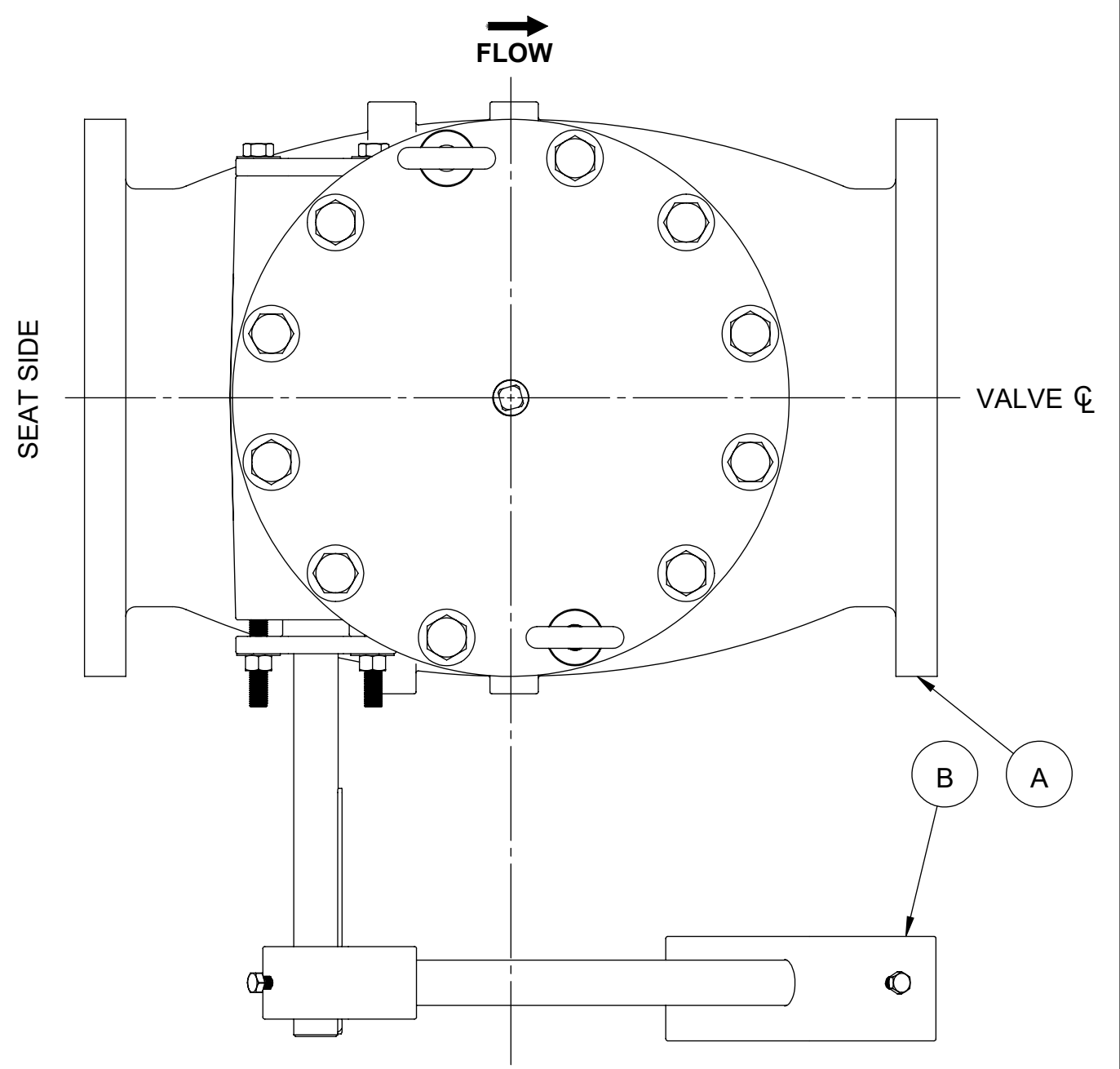
PART NO.	DESCRIPTION:	QUANTITY	LINE
1439734	GASKET 9.250X6.000X0.063 W/HOLES 3760U	1	A03
1720759	4" DISC SEAT NBR60	1	A06
1721363	O-RING 1.73IDX2.09ODX0.18CS DIA NBR70	1	A18
1720772	4" SEAT RETAINING RING 304	1	A31
1247381	O-RING-246 4.48IDX4.76ODX.14CSDIA NBR	1	A43

For current spare parts pricing, contact local manufacturer's representative listed above.

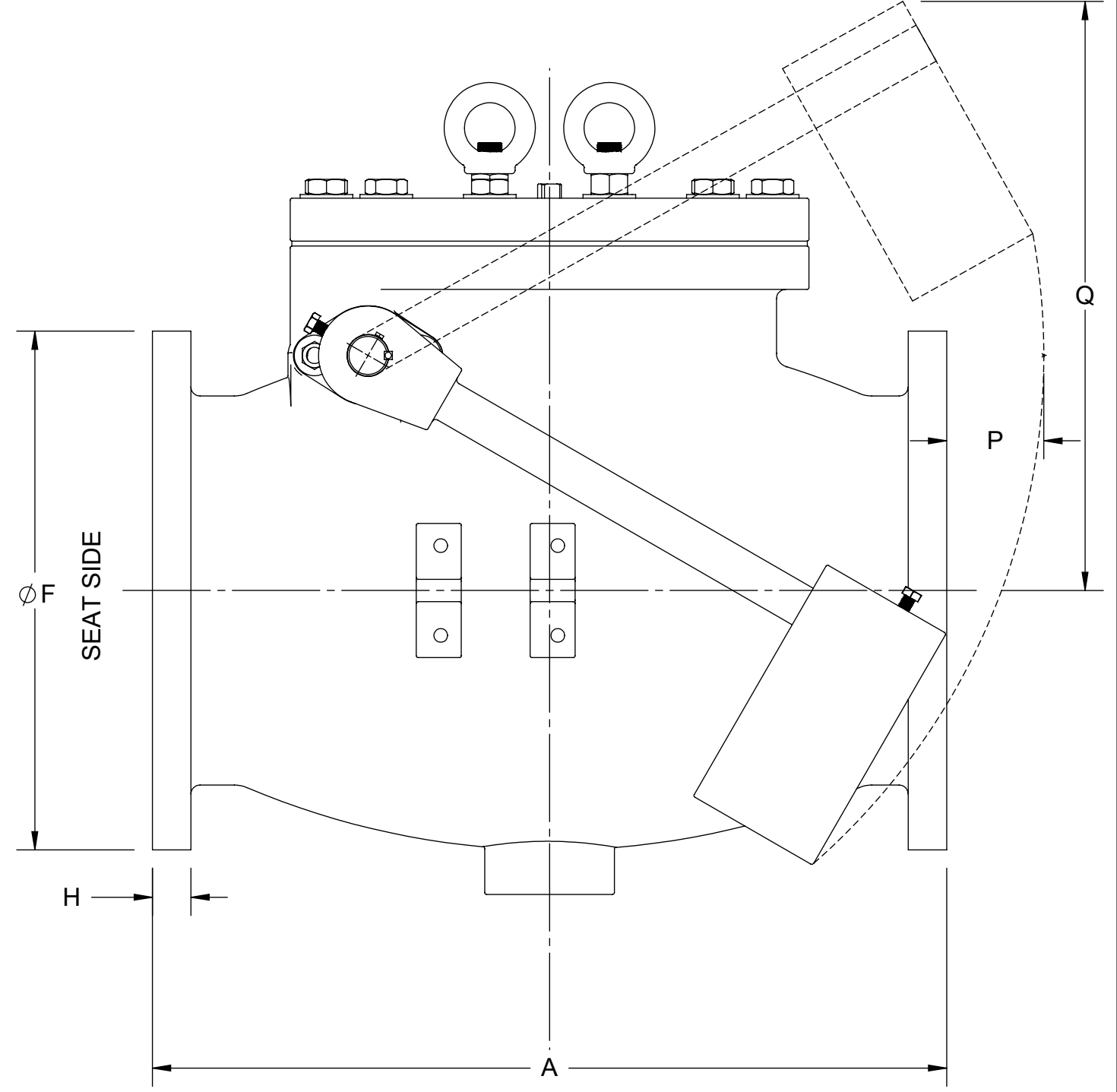
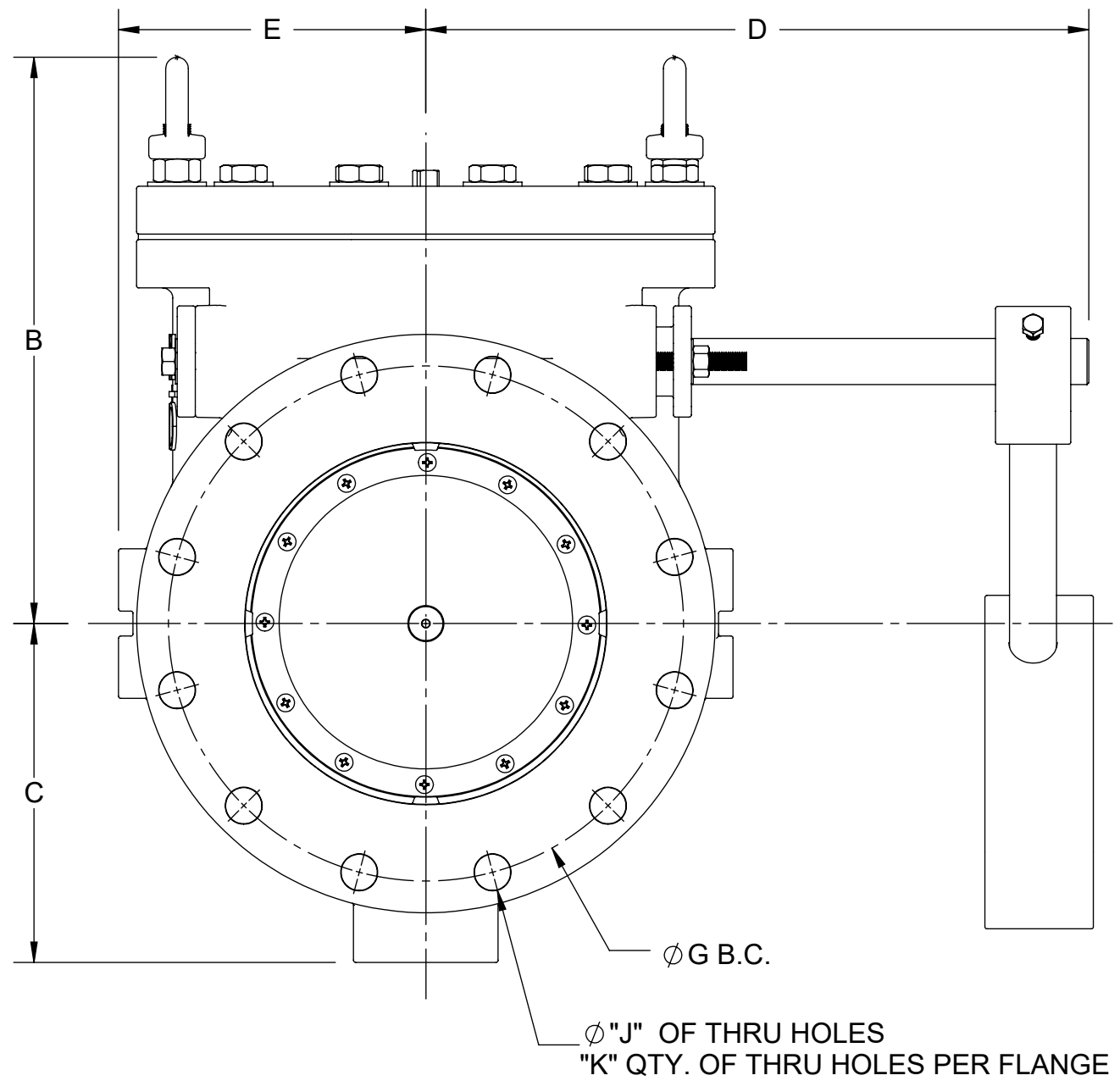
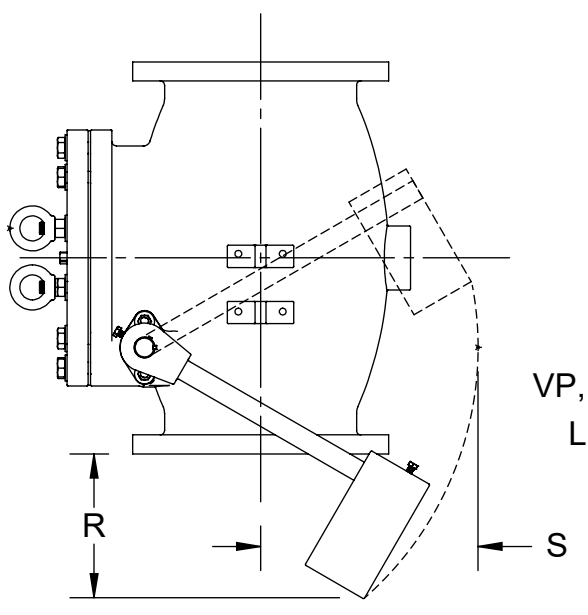
VALVE SIZE	DIMENSIONS (INCHES / MM)																
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
2	8.00 203.2	10.00 254.0	3.50 88.9	10.92 277.4	4.12 104.6	6.00 152.4	4.75 120.7	0.63 16.0	-	-	4	5/8-11	0.62 15.7	7.00 177.8	10.00 254.0	6.00 152.4	9.38 238.1
2.5	8.50 215.9	9.72 246.8	3.50 88.9	10.92 277.4	4.12 104.6	7.00 177.8	5.50 139.7	0.88 22.4	-	-	4	5/8-11	0.88 22.4	6.50 165.1	9.88 250.8	6.13 155.6	9.38 238.1
3	9.50 241.3	10.00 254.0	4.50 114.3	11.00 279.4	4.00 101.6	7.50 190.5	6.00 152.4	0.75 19.1	-	-	4	5/8-11	0.75 19.1	5.88 149.2	10.13 257.2	5.50 139.7	9.25 235.0
4	11.50 292.1	10.75 273.1	5.00 127.0	11.75 298.5	5.00 127.0	9.00 228.6	7.50 190.5	0.94 23.8	0.75 19.7	6	2	5/8-11	0.94 23.8	4.88 123.8	10.75 273.1	4.88 123.8	8.75 222.3
6	14.00 355.6	11.75 298.5	5.75 146.1	13.50 342.9	6.50 165.1	11.00 279.4	9.50 241.3	1.00 25.4	0.88 22.2	6	2	3/4-10	1.00 25.4	2.13 54.0	11.63 295.3	4.63 117.5	7.88 200.0
8	19.50 495.3	13.75 349.3	7.25 184.2	17.00 431.8	7.50 190.5	13.50 342.9	11.75 298.5	1.13 28.6	0.88 22.2	8	-	-	-	2.00 50.8	15.50 393.7	5.88 149.2	10.38 263.5
10	24.50 622.3	15.00 381.0	9.38 238.1	16.25 412.8	9.00 228.6	16.00 406.4	14.25 362.0	1.19 30.2	1.00 25.4	12	-	-	-	3.00 76.2	18.38 466.7	9.00 228.6	13.63 346.1
12	27.50 698.5	19.00 482.6	11.00 279.4	18.25 463.6	11.00 279.4	19.00 482.6	17.00 431.8	1.25 31.8	1.00 25.4	12	-	-	-	3.25 82.6	21.13 536.6	9.00 228.6	14.25 362.0
14	31.00 787.4	22.50 571.5	13.50 342.9	26.00 660.4	14.00 355.6	21.00 533.4	18.75 476.3	1.38 34.9	1.13 28.6	12	-	-	-	6.63 168.3	25.88 657.2	11.75 298.5	18.75 476.3
16	36.00 914.4	24.50 622.3	14.25 362.0	29.50 749.3	15.00 381.0	23.50 596.9	21.25 539.8	1.44 36.5	1.13 28.6	16	-	-	-	2.00 50.8	32.00 812.8	7.25 184.2	15.88 403.2
18	40.00 1016.0	26.50 673.1	17.38 441.3	31.00 787.4	18.63 473.1	25.00 635.0	22.75 577.9	1.56 39.7	1.25 31.8	16	-	-	-	7.00 177.8	36.00 914.4	9.25 235.0	21.25 539.8
20	40.00 1016.0	28.75 730.3	17.63 447.7	32.38 822.3	18.63 473.1	27.50 698.5	25.00 635.0	1.69 42.9	1.25 31.8	20	-	-	-	6.00 152.4	41.00 1041.4	-	-
24	48.00 1219.2	32.50 825.5	20.13 511.2	34.00 863.6	21.00 533.4	32.00 812.8	29.50 749.3	1.88 47.6	1.38 34.9	20	-	-	-	0	38.00 965.2	8.75 222.3	19.25 489.0
30	56.00 1422.4	37.20 945.0	21.85 555.0	39.00 990.6	24.00 609.6	38.75 984.3	36.00 914.4	2.13 54.0	1.38 34.9	28	-	-	-	14.13 358.8	53.13 1349.4	15.50 393.7	24.00 609.6
36	63.00 1600.2	42.91 1090.0	26.38 670.0	42.00 1066.8	27.00 685.8	46.00 1168.4	42.75 1085.9	2.38 60.3	1.63 41.3	32	-	-	-	14.63 371.5	57.50 1460.5	15.00 381.0	21.00 533.4
42	70.00 1778.0	56.30 1430.0	32.28 820.0	39.29 998	33.27 845	53.00 1346.2	49.50 1257.3	2.63 66.7	1.63 41.3	36	-	-	-	19.69 500.0	53.54 1360.0	22.83 580.0	14.17 360.0

ITEM NO.	DESCRIPTION
A	VALVE
B	LEVER & WEIGHT CLOSURE CONTROL

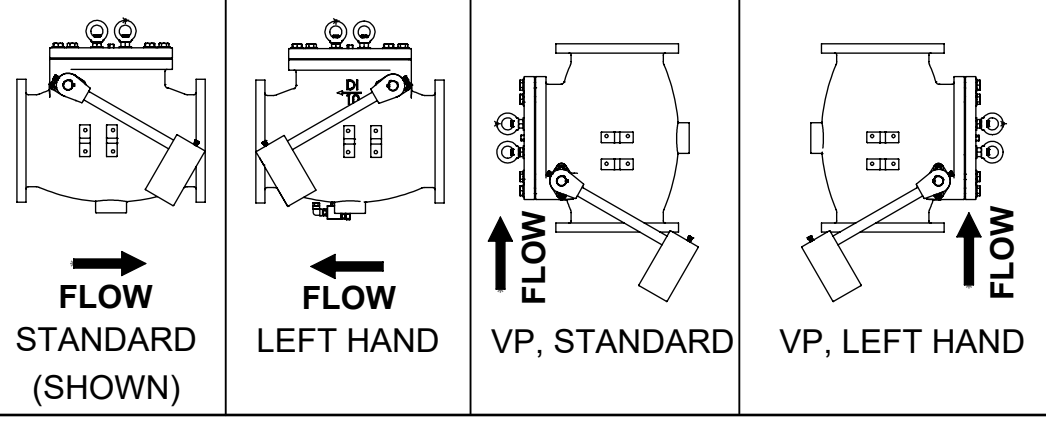
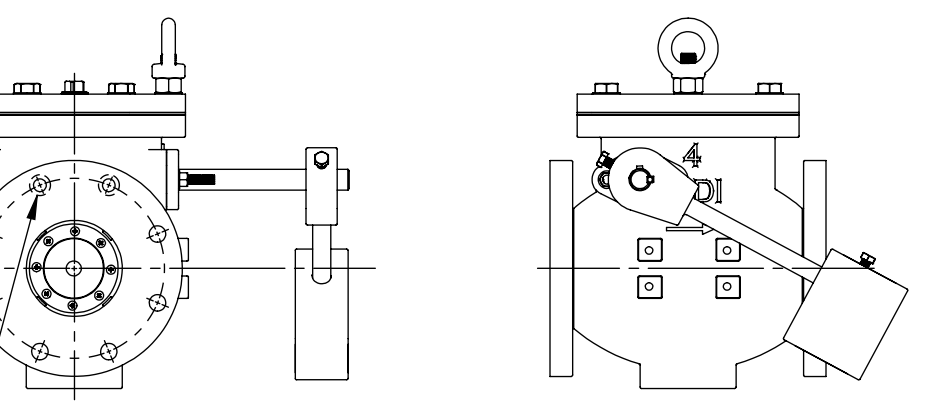
NOTE:
 1. VALVE SIZES 2" THRU 14" ARE 250A BODY STYLE.
 2. LEVER ARM IS ANGLED 30° BELOW THE HORIZONTAL WHEN VALVE IS CLOSED. LEVER ARM HAS A MAXIMUM OF 60° OF TRAVEL.
 3. FACE TO FACE DIMENSIONS ARE IN COMPLIANCE WITH AWWA C508.



NOTICE
 THIS DRAWING DOES NOT SHOW ACCESSORIES. IF ACCESSORIES ARE REQUIRED, REFER TO THE APPROPRIATE ACCESSORY INSTALLATION DRAWING FOR DIMENSIONS AND OTHER RELATED INFORMATION.



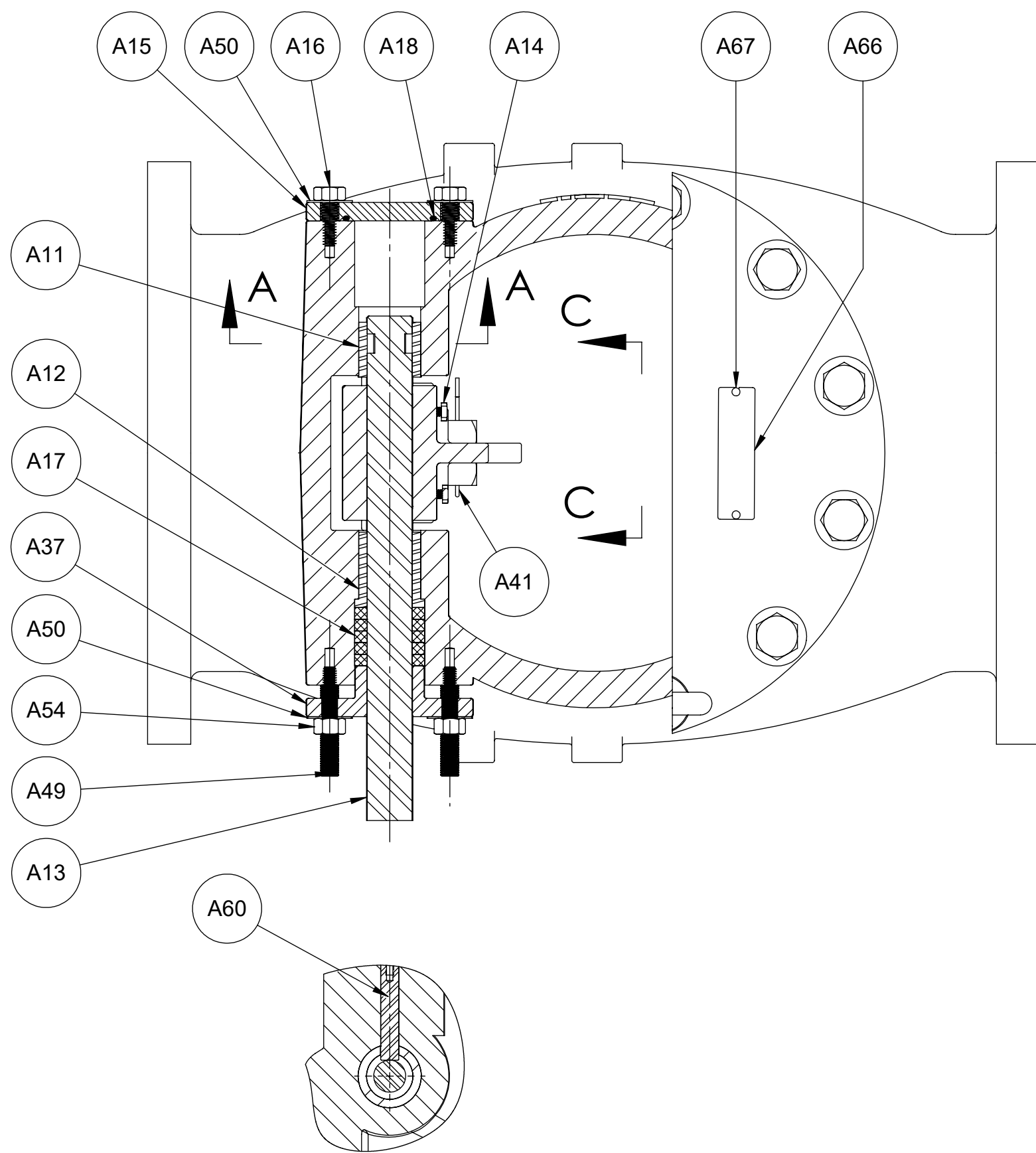
"L" QTY. OF TAP HOLES PER FLANGE
 "M" TAP HOLE SIZE
 "N" DEPTH OF TAP HOLE



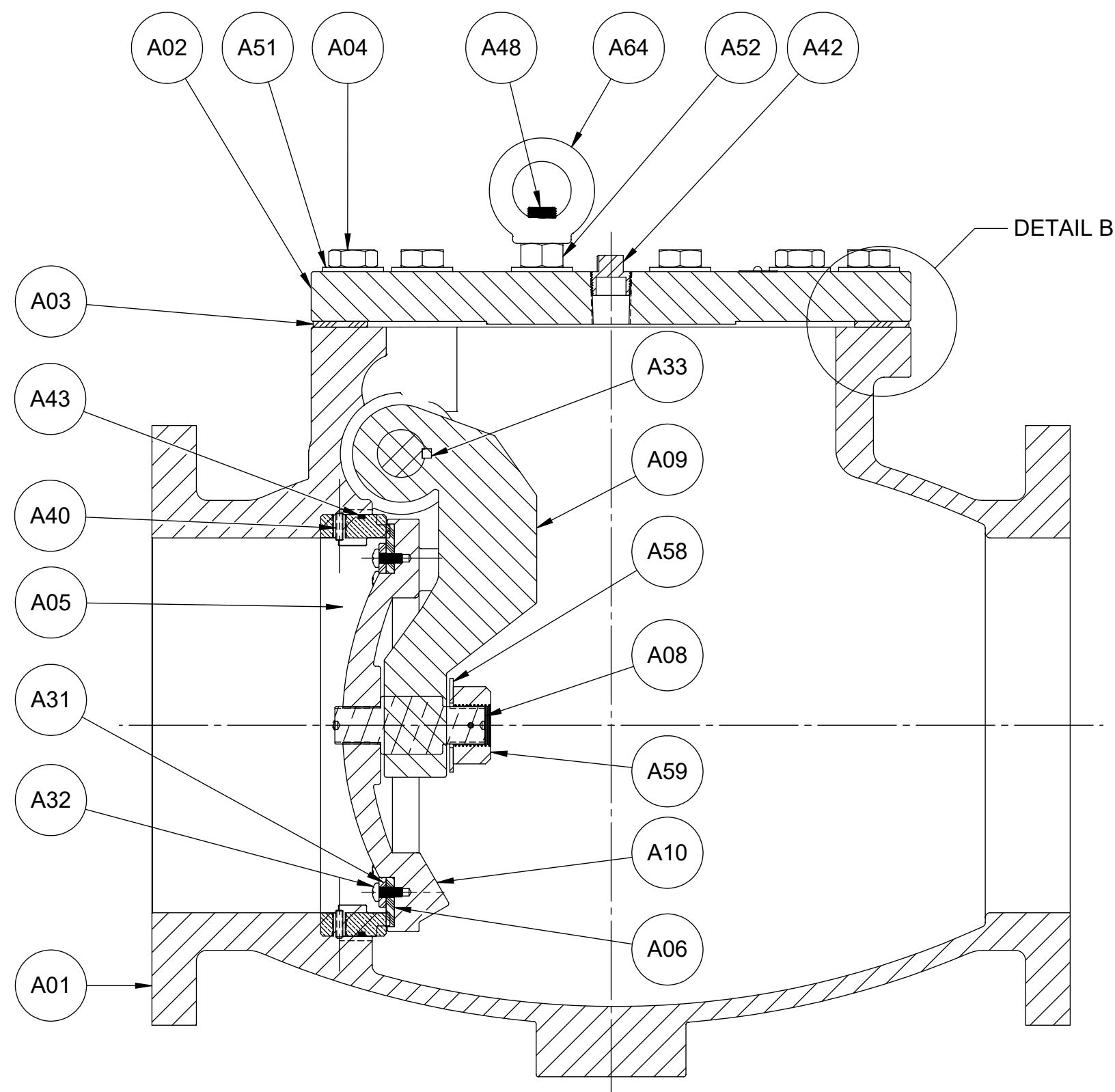
U	L	W	D	C	B	A
					50312	7/11/17



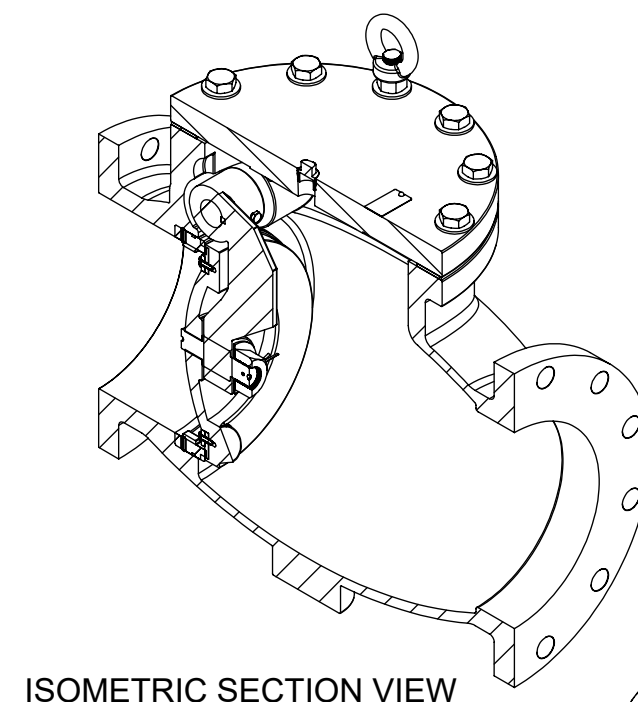
APCO CVS SWING CHECK VALVE, SIZES 2" THRU 36" 250 SERIES, LEVER & WEIGHT CLOSURE CONTROL			
DOCT. CODE	DRAWN	APPROVED	
C1	DWZ	JPD	TMO
CHECKED	DATE		
	10/23/2013		
			A70021



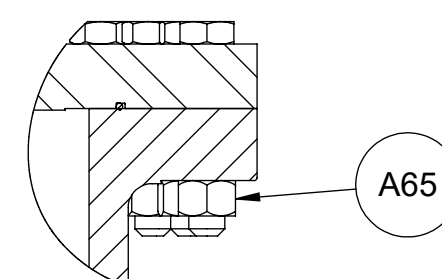
SECTION A-A



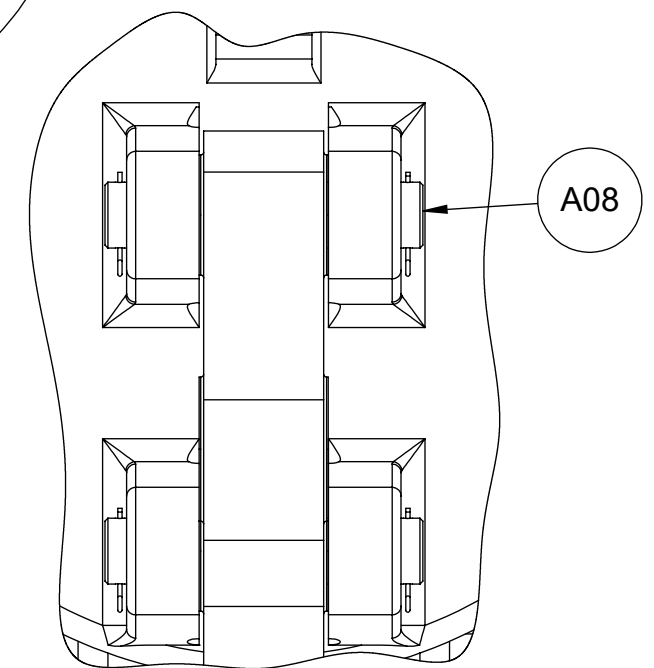
DETAIL B
30" & 36" COVER CONNECTION



ISOMETRIC SECTION VIEW



DETAIL B
30" & 36" COVER CONNECTION



VIEW C-C
30" & 36" DOUBLE CLEVIS CONNECTION

ITEM NO.	DESCRIPTION	QTY
A01	BODY	1
A02	COVER	1
A03	COVER SEAL ³	1
A04	COVER BOLT	-
A05	BODY SEAT RING	1
A06	DISC SEAT ³	1
A08	DISC STEM / PIN	1
A09	DISC ARM	1
A10	DISC	1
A11	PIVOT SHAFT STRAIGHT BUSHING ¹	1
A12	PIVOT SHAFT FLANGED BUSHING ¹	1
A13	PIVOT SHAFT	1
A14	DISC ARM RETAINING SCREW	-
A15	PIVOT SHAFT COVER	1
A16	PIVOT SHAFT COVER BOLT	-
A17	PACKING ⁴	1
A18	PIVOT SHAFT COVER SEAL ³	1
A31	SEAT RETAINING RING ³	1
A32	SEAT RETAINING SCREW ³	-
A33	DISC ARM KEY (4" & UP)	1
A37	PACKING GLAND	1
A40	BODY SEAT RETAINING SCREW	4
A41	DISC PIN RETAINER	1
A42	COVER PIPE PLUG	1
A43	BODY SEAT SEAL	1
A48	COVER STUD ²	2
A49	PACKING GLAND STUD	2
A50	WASHER	4
A51	COVER BOLT WASHER	-
A52	COVER NUT	2
A54	PACKING GLAND NUT	-
A58	DISC ARM WASHER ²	1
A59	DISC STEM NUT ²	1
A60	SHAFT RETAINING PIN	1
A64	COVER EYE NUT ²	2
A65	COVER NUT (30 & 36")	-
A66	DATA PLATE	1
A67	DRIVE SCREWS	2

NOTES:

- ITEMS A11 & A12 ARE NOT USED ON VALVE SIZES 2", 2.5", OR 3".
- ITEMS A48, A58, A59, A64 ARE NOT INCLUDED ON VALVE SIZES 30" & 36".
- RECOMMENDED SPARES: A03, A06, A17, A18, A31, A32.

U	L	W	D	C	B	A
						50312
						03/02/2020



APCO CVS - SWING CHECK VALVE, 250 SERIES,
2" THRU 36" BASIC VALVE ASSEMBLY W/ SLIP IN SEAT

DOCT. CODE	DRAWN	DWZ	APPROVED	DWZ
C1	CHECKED	MJS	DATE	12/18/15

A70161



MATERIALS OF CONSTRUCTION

DRAWING(S): A70161

WORK ORDER: 143541

PART NO: 9688883

DESCRIPTION: CVS,4,250A,F1,DI,DI-S11-S2-NBR,AIS*LW

ITEM	MATERIAL
A01	DUCTILE IRON, ASTM A536, GRADE 65-45-12, USA FOUNDRY
A02	STEEL, WROUGHT, ASTM A36, AISI 1020, USA MILL
A03	GASKET MATERIAL, GARLOCK MULTI-SWELL STYLE 3760-U, NON-ASBESTOS
A04	STAINLESS STEEL, TYPE 316
A05	STAINLESS STEEL, TYPE CF-8M, ASTM A743, USA FOUNDRY
A06	ACRYLONITRILE-BUTADIENE (NBR)
A08	STAINLESS STEEL, TYPE 303, ASTM A582, CONDITION A
A09	DUCTILE IRON, ASTM A536, GRADE 65-45-12, USA FOUNDRY
A10	DUCTILE IRON, ASTM A536, GRADE 65-45-12, USA FOUNDRY
A11	STAINLESS STEEL, TYPE 304
A12	STAINLESS STEEL, TYPE 304
A13	STAINLESS STEEL, WROUGHT, TYPE 303, ASTM 582, USA MILL
A14	STAINLESS STEEL, TYPE 316
A15	DUCTILE IRON, ASTM A536, GRADE 65-45-12
A16	STAINLESS STEEL, TYPE 304
A17	VIRGIN PTFE
A18	ACRYLONITRILE-BUTADIENE (NBR), 70 DUROMETER
A31	STAINLESS STEEL, TYPE 304, ASTM A276, CONDITION A
A32	STAINLESS STEEL, TYPE 316
A33	STAINLESS STEEL, TYPE 18-8
A37	DUCTILE IRON, ASTM A536, GRADE 65-45-12
A40	STAINLESS STEEL, TYPE 316
A41	STAINLESS STEEL
A42	STAINLESS STEEL, TYPE 304
A43	ACRYLONITRILE-BUTADIENE (NBR)
A48	STAINLESS STEEL, TYPE 316
A49	STAINLESS STEEL, TYPE 304
A50	STAINLESS STEEL, TYPE 18-8
A51	STAINLESS STEEL, TYPE 316
A52	STAINLESS STEEL, TYPE 316
A54	STAINLESS STEEL, TYPE 304
A58	STAINLESS STEEL, TYPE 316
A59	STAINLESS STEEL, TYPE 304
A60	STAINLESS STEEL, TYPE 304, ASTM A276, CONDITION A
A64	CARBON STEEL, ZINC PLATED
A66	STAINLESS STEEL, TYPE 316
A67	STAINLESS STEEL, TYPE 18-8



Submittal Data Sheet

Date: 08/04/22

ECO TECH INC
PO BOX 956
HOLLY SPRINGS, GA
30142

P.O. 20143-16
FACTORY ORDER NO 143541
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REV 0

PROJ. NAME East Area WQCF

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Act Type	LW	Lever & Weight

RELATED DOCUMENTS

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A70064	DWG ASSY 250/250A LW CLOSURE C
D12003	IM VALVE CVS SWING CHECK (250/

FEATURES

TAG: CV3

EQUIPMENT DATA FORM (MAINTENANCE SUMMARY FORM)

PROJECT:	East Area WQCF		
PURCHASE ORDER:	20143-16		
EQUIPMENT ITEM:	4 Inch Swing Check 250(A)		
EQUIPMENT / TAG NUMBERS:	TAG: CV3		
WEIGHT (APPROX.)	145 Lbs.		
MANUFACTURER: DeZURIK	WORK ORDER:	143541-2	
PART NUMBER:	9688883		
MANUFACTURER'S LOCAL REPRESENTATIVE:			
ECO TECH INC	Telephone:		770-345-2118
156 HICKORY SPRINGS IND DR, PO BOX 956, HOLLY SPRINGS, GA, 30142			
MOTOR DATA PLATE (HP, Voltage, Speed, etc.)			

MAINTENANCE REQUIREMENTS

- DeZURIK recommends exercising your valve every 30 days.
- Valve lubrication required upon disassembly only.
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RECOMMENDED SPARE PARTS

See Drawing(s) A70161.

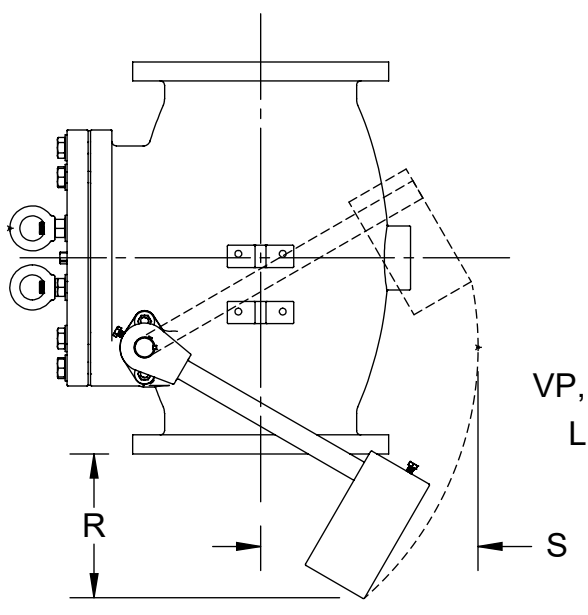
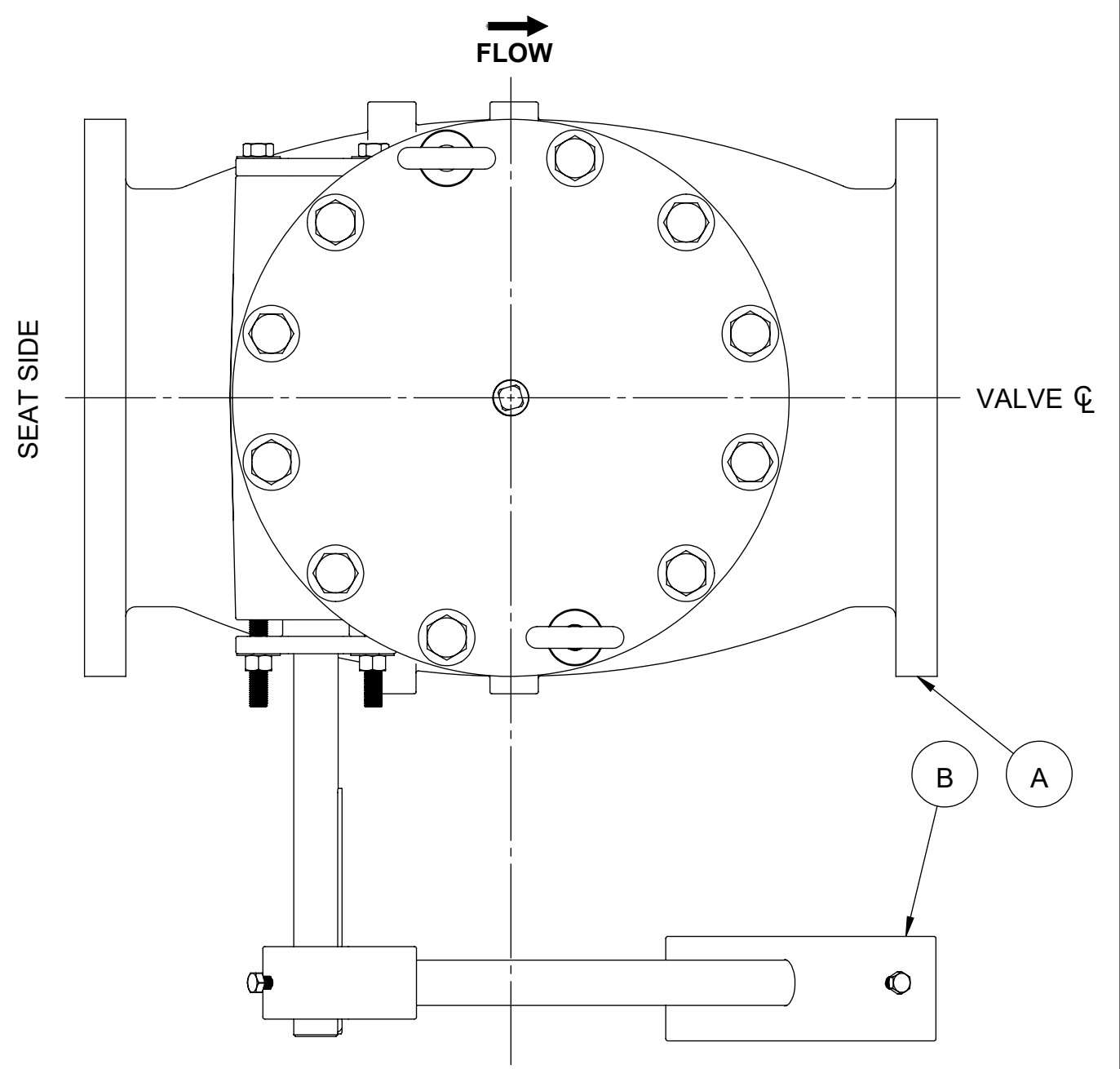
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1439734	GASKET 9.250X6.000X0.063 W/HOLES 3760U	1	A03
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1721363	O-RING 1.73IDX2.09ODX0.18CS DIA NBR70	1	A18
1720772	4" SEAT RETAINING RING 304	1	A31
1247381	O-RING-246 4.48IDX4.76ODX.14CSDIA NBR	1	A43

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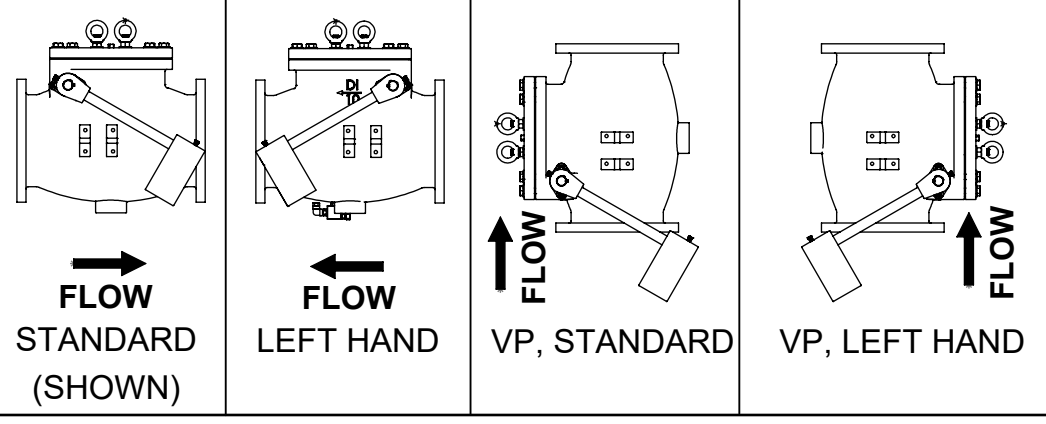
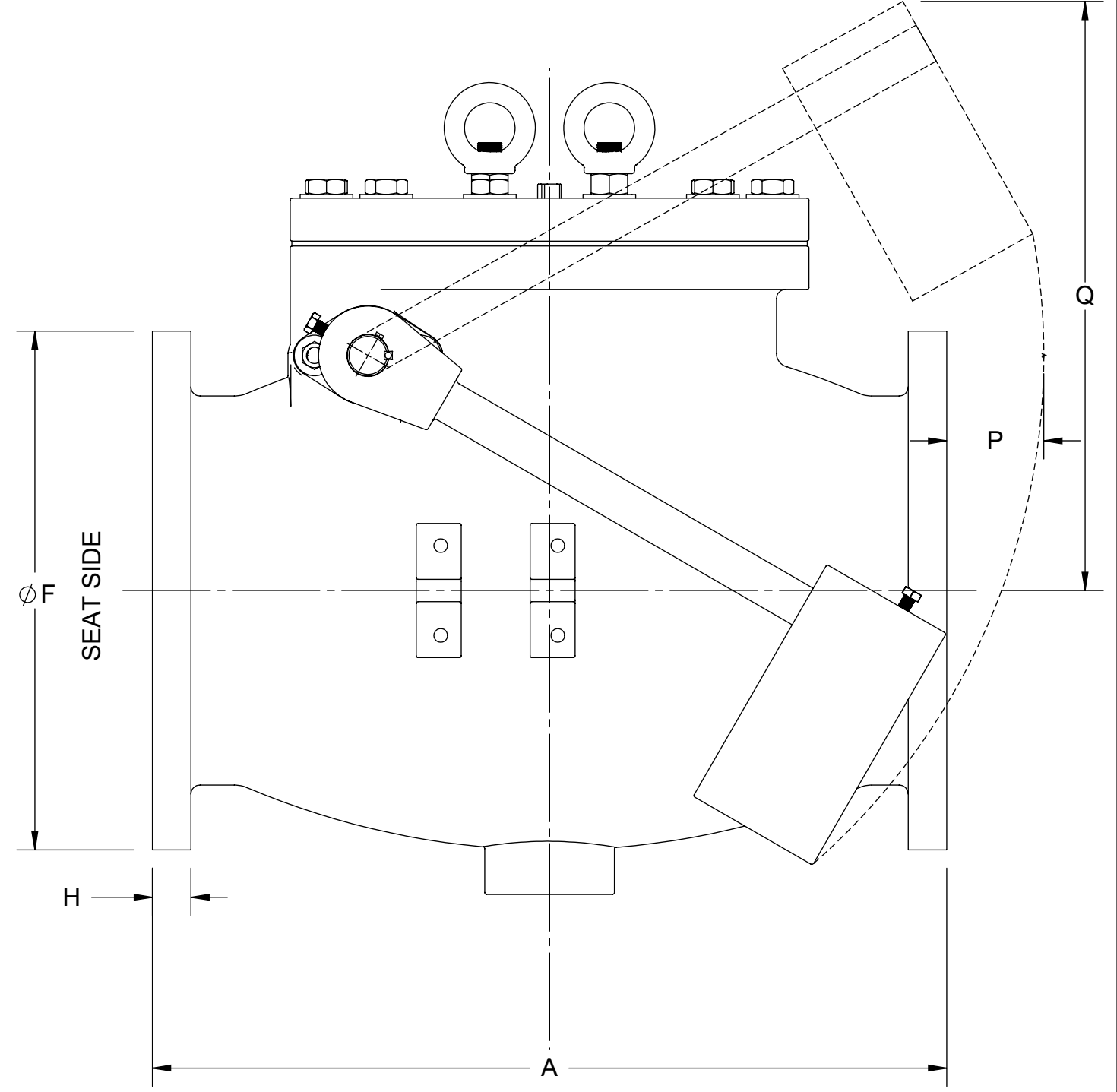
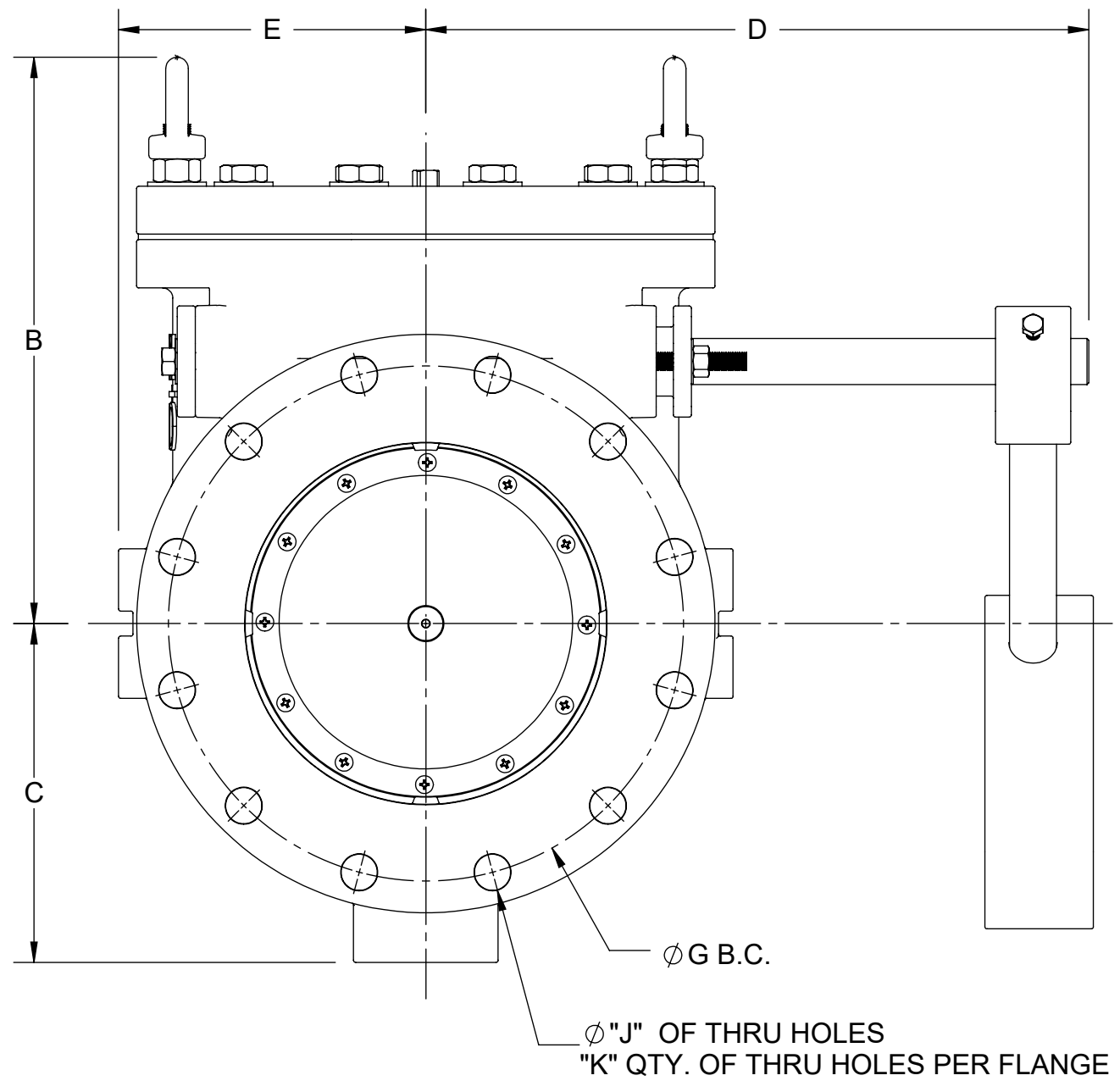
VALVE SIZE	DIMENSIONS (INCHES / MM)																
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
2	8.00 203.2	10.00 254.0	3.50 88.9	10.92 277.4	4.12 104.6	6.00 152.4	4.75 120.7	0.63 16.0	-	-	4	5/8-11	0.62 15.7	7.00 177.8	10.00 254.0	6.00 152.4	9.38 238.1
2.5	8.50 215.9	9.72 246.8	3.50 88.9	10.92 277.4	4.12 104.6	7.00 177.8	5.50 139.7	0.88 22.4	-	-	4	5/8-11	0.88 22.4	6.50 165.1	9.88 250.8	6.13 155.6	9.38 238.1
3	9.50 241.3	10.00 254.0	4.50 114.3	11.00 279.4	4.00 101.6	7.50 190.5	6.00 152.4	0.75 19.1	-	-	4	5/8-11	0.75 19.1	5.88 149.2	10.13 257.2	5.50 139.7	9.25 235.0
4	11.50 292.1	10.75 273.1	5.00 127.0	11.75 298.5	5.00 127.0	9.00 228.6	7.50 190.5	0.94 23.8	0.75 19.7	6	2	5/8-11	0.94 23.8	4.88 123.8	10.75 273.1	4.88 123.8	8.75 222.3
6	14.00 355.6	11.75 298.5	5.75 146.1	13.50 342.9	6.50 165.1	11.00 279.4	9.50 241.3	1.00 25.4	0.88 22.2	6	2	3/4-10	1.00 25.4	2.13 54.0	11.63 295.3	4.63 117.5	7.88 200.0
8	19.50 495.3	13.75 349.3	7.25 184.2	17.00 431.8	7.50 190.5	13.50 342.9	11.75 298.5	1.13 28.6	0.88 22.2	8	-	-	-	2.00 50.8	15.50 393.7	5.88 149.2	10.38 263.5
10	24.50 622.3	15.00 381.0	9.38 238.1	16.25 412.8	9.00 228.6	16.00 406.4	14.25 362.0	1.19 30.2	1.00 25.4	12	-	-	-	3.00 76.2	18.38 466.7	9.00 228.6	13.63 346.1
12	27.50 698.5	19.00 482.6	11.00 279.4	18.25 463.6	11.00 279.4	19.00 482.6	17.00 431.8	1.25 31.8	1.00 25.4	12	-	-	-	3.25 82.6	21.13 536.6	9.00 228.6	14.25 362.0
14	31.00 787.4	22.50 571.5	13.50 342.9	26.00 660.4	14.00 355.6	21.00 533.4	18.75 476.3	1.38 34.9	1.13 28.6	12	-	-	-	6.63 168.3	25.88 657.2	11.75 298.5	18.75 476.3
16	36.00 914.4	24.50 622.3	14.25 362.0	29.50 749.3	15.00 381.0	23.50 596.9	21.25 539.8	1.44 36.5	1.13 28.6	16	-	-	-	2.00 50.8	32.00 812.8	7.25 184.2	15.88 403.2
18	40.00 1016.0	26.50 673.1	17.38 441.3	31.00 787.4	18.63 473.1	25.00 635.0	22.75 577.9	1.56 39.7	1.25 31.8	16	-	-	-	7.00 177.8	36.00 914.4	9.25 235.0	21.25 539.8
20	40.00 1016.0	28.75 730.3	17.63 447.7	32.38 822.3	18.63 473.1	27.50 698.5	25.00 635.0	1.69 42.9	1.25 31.8	20	-	-	-	6.00 152.4	41.00 1041.4	-	-
24	48.00 1219.2	32.50 825.5	20.13 511.2	34.00 863.6	21.00 533.4	32.00 812.8	29.50 749.3	1.88 47.6	1.38 34.9	20	-	-	-	0	38.00 965.2	8.75 222.3	19.25 489.0
30	56.00 1422.4	37.20 945.0	21.85 555.0	39.00 990.6	24.00 609.6	38.75 984.3	36.00 914.4	2.13 54.0	1.38 34.9	28	-	-	-	14.13 358.8	53.13 1349.4	15.50 393.7	24.00 609.6
36	63.00 1600.2	42.91 1090.0	26.38 670.0	42.00 1066.8	27.00 685.8	46.00 1168.4	42.75 1085.9	2.38 60.3	1.63 41.3	32	-	-	-	14.63 371.5	57.50 1460.5	15.00 381.0	21.00 533.4
42	70.00 1778.0	56.30 1430.0	32.28 820.0	39.29 998	33.27 845	53.00 1346.2	49.50 1257.3	2.63 66.7	1.63 41.3	36	-	-	-	19.69 500.0	53.54 1360.0	22.83 580.0	14.17 360.0

ITEM NO.	DESCRIPTION
A	VALVE
B	LEVER & WEIGHT CLOSURE CONTROL

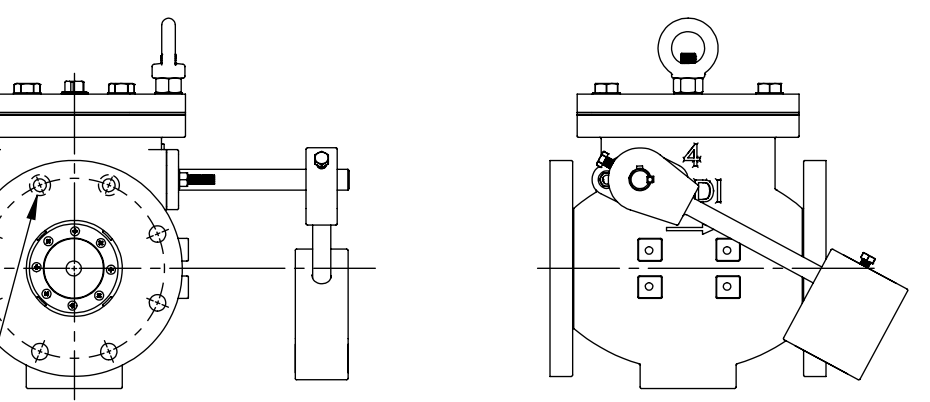
NOTE:
 1. VALVE SIZES 2" THRU 14" ARE 250A BODY STYLE.
 2. LEVER ARM IS ANGLED 30° BELOW THE HORIZONTAL WHEN VALVE IS CLOSED. LEVER ARM HAS A MAXIMUM OF 60° OF TRAVEL.
 3. FACE TO FACE DIMENSIONS ARE IN COMPLIANCE WITH AWWA C508.



NOTICE
 THIS DRAWING DOES NOT SHOW ACCESSORIES. IF ACCESSORIES ARE REQUIRED, REFER TO THE APPROPRIATE ACCESSORY INSTALLATION DRAWING FOR DIMENSIONS AND OTHER RELATED INFORMATION.



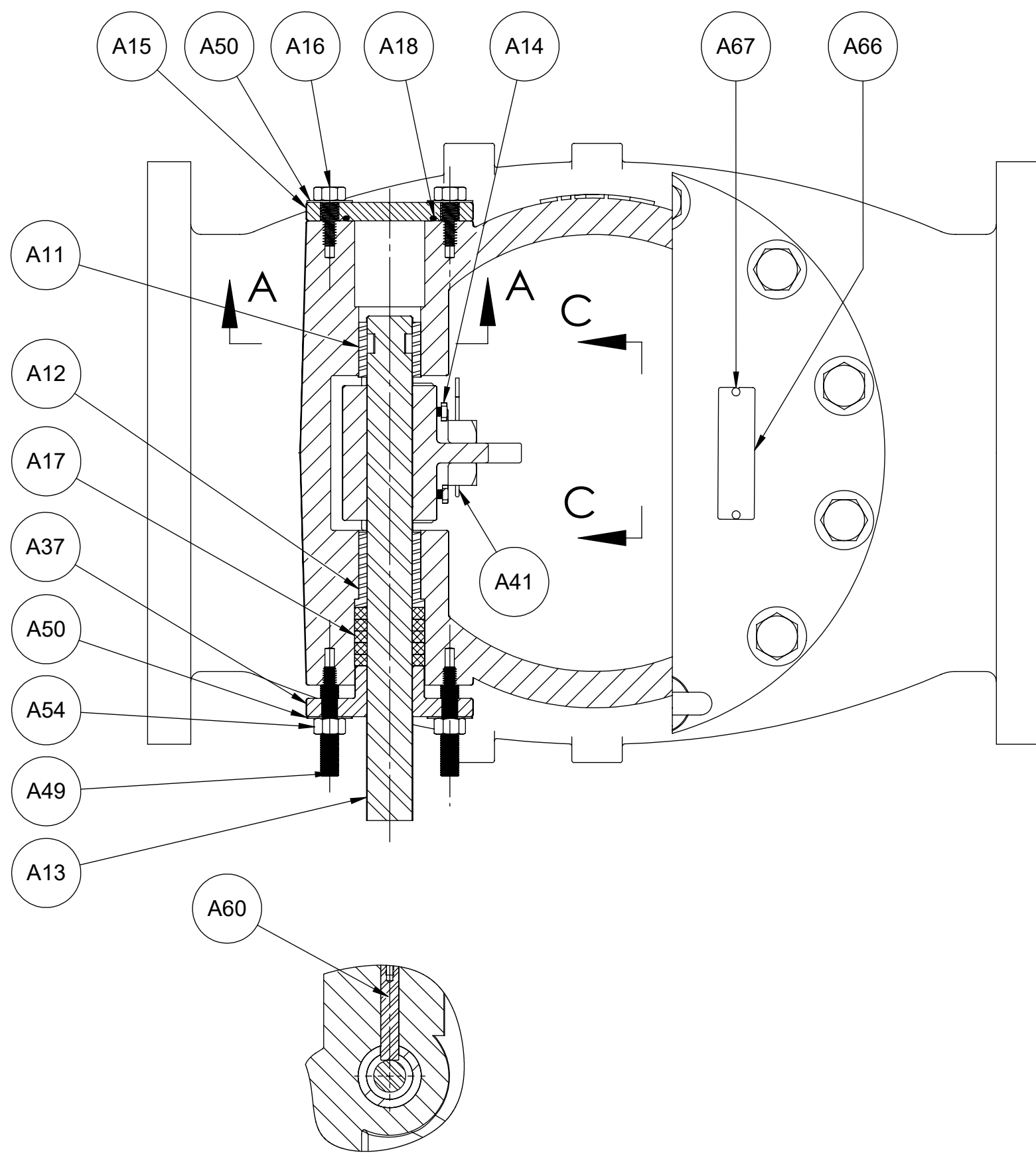
"L" QTY. OF TAP HOLES PER FLANGE
 "M" TAP HOLE SIZE
 "N" DEPTH OF TAP HOLE



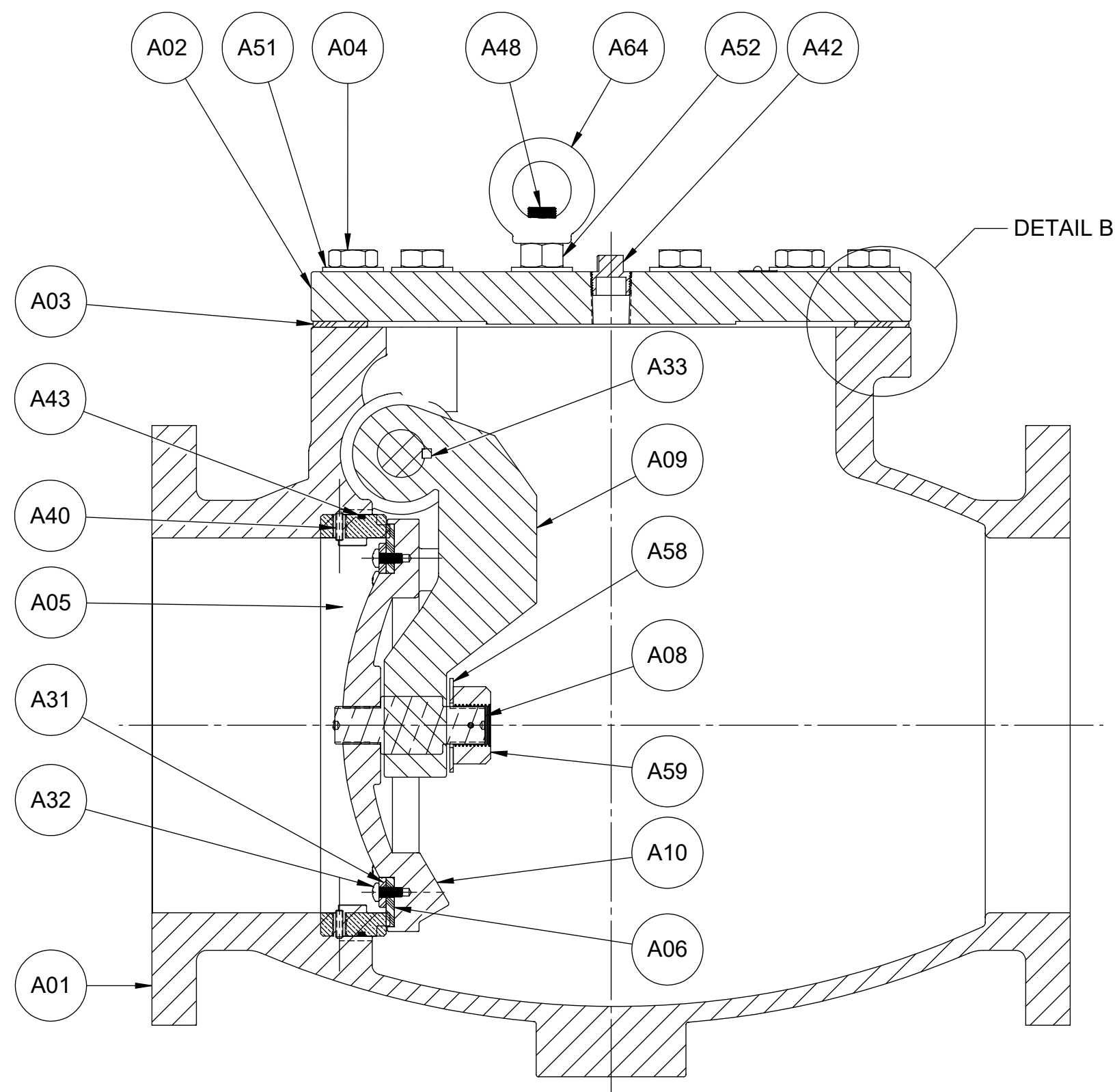
U	L	W	D	C	B	A
					50312	7/11/17



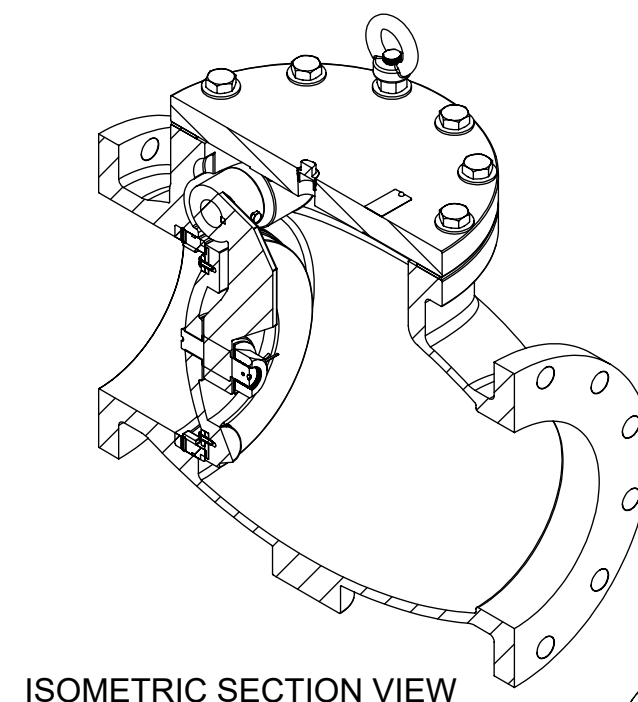
APCO CVS SWING CHECK VALVE, SIZES 2" THRU 36" 250 SERIES, LEVER & WEIGHT CLOSURE CONTROL			
DOCT. CODE	DRAWN	APPROVED	
C1	DWZ	JPD	TMO
	CHECKED	DATE	
	DWZ	10/23/2013	
			A70021



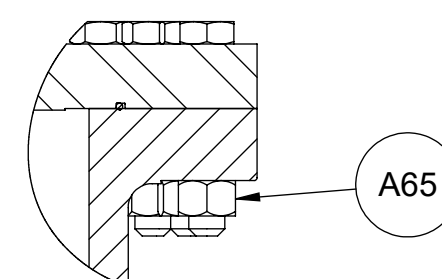
SECTION A-A



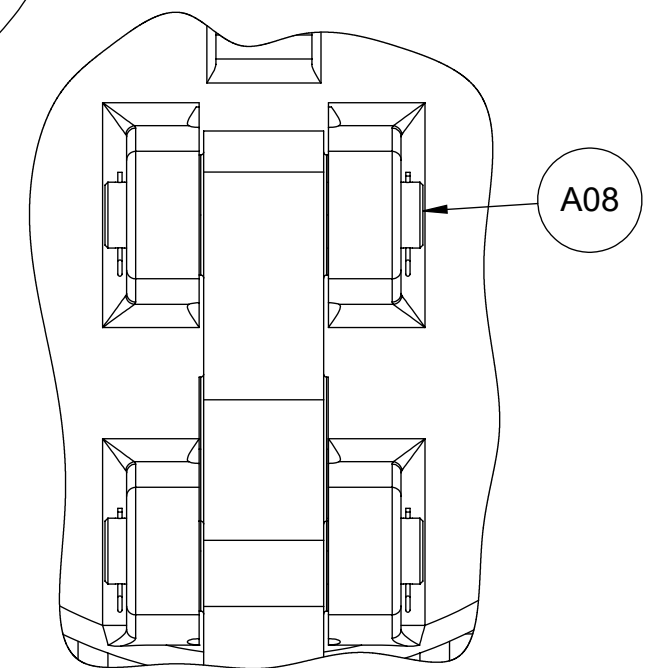
DETAIL B
30" & 36" COVER CONNECTION



ISOMETRIC SECTION VIEW



DETAIL B
30" & 36" COVER CONNECTION



VIEW C-C
30" & 36" DOUBLE CLEVIS CONNECTION

ITEM NO.	DESCRIPTION	QTY
A01	BODY	1
A02	COVER	1
A03	COVER SEAL ³	1
A04	COVER BOLT	-
A05	BODY SEAT RING	1
A06	DISC SEAT ³	1
A08	DISC STEM / PIN	1
A09	DISC ARM	1
A10	DISC	1
A11	PIVOT SHAFT STRAIGHT BUSHING ¹	1
A12	PIVOT SHAFT FLANGED BUSHING ¹	1
A13	PIVOT SHAFT	1
A14	DISC ARM RETAINING SCREW	-
A15	PIVOT SHAFT COVER	1
A16	PIVOT SHAFT COVER BOLT	-
A17	PACKING ⁴	1
A18	PIVOT SHAFT COVER SEAL ³	1
A31	SEAT RETAINING RING ³	1
A32	SEAT RETAINING SCREW ³	-
A33	DISC ARM KEY (4" & UP)	1
A37	PACKING GLAND	1
A40	BODY SEAT RETAINING SCREW	4
A41	DISC PIN RETAINER	1
A42	COVER PIPE PLUG	1
A43	BODY SEAT SEAL	1
A48	COVER STUD ²	2
A49	PACKING GLAND STUD	2
A50	WASHER	4
A51	COVER BOLT WASHER	-
A52	COVER NUT	2
A54	PACKING GLAND NUT	-
A58	DISC ARM WASHER ²	1
A59	DISC STEM NUT ²	1
A60	SHAFT RETAINING PIN	1
A64	COVER EYE NUT ²	2
A65	COVER NUT (30 & 36")	-
A66	DATA PLATE	1
A67	DRIVE SCREWS	2

NOTES:

- ITEMS A11 & A12 ARE NOT USED ON VALVE SIZES 2", 2.5", OR 3".
- ITEMS A48, A58, A59, A64 ARE NOT INCLUDED ON VALVE SIZES 30" & 36".
- RECOMMENDED SPARES: A03, A06, A17, A18, A31, A32.

U	L	W	D	C	B	A
						50312
						03/02/2020



APCO CVS - SWING CHECK VALVE, 250 SERIES,
2" THRU 36" BASIC VALVE ASSEMBLY W/ SLIP IN SEAT

DOCT. CODE	DRAWN	DWZ	APPROVED	DWZ
C1	CHECKED	MJS	DATE	12/18/15

A70161



MATERIALS OF CONSTRUCTION

DRAWING(S): A70161

WORK ORDER: 143541

PART NO: 9688883

DESCRIPTION: CVS,4,250A,F1,DI,DI-S11-S2-NBR,AIS*LW

ITEM	MATERIAL
A01	DUCTILE IRON, ASTM A536, GRADE 65-45-12, USA FOUNDRY
A02	STEEL, WROUGHT, ASTM A36, AISI 1020, USA MILL
A03	GASKET MATERIAL, GARLOCK MULTI-SWELL STYLE 3760-U, NON-ASBESTOS
A04	STAINLESS STEEL, TYPE 316
A05	STAINLESS STEEL, TYPE CF-8M, ASTM A743, USA FOUNDRY
A06	ACRYLONITRILE-BUTADIENE (NBR)
A08	STAINLESS STEEL, TYPE 303, ASTM A582, CONDITION A
A09	DUCTILE IRON, ASTM A536, GRADE 65-45-12, USA FOUNDRY
A10	DUCTILE IRON, ASTM A536, GRADE 65-45-12, USA FOUNDRY
A11	STAINLESS STEEL, TYPE 304
A12	STAINLESS STEEL, TYPE 304
A13	STAINLESS STEEL, WROUGHT, TYPE 303, ASTM 582, USA MILL
A14	STAINLESS STEEL, TYPE 316
A15	DUCTILE IRON, ASTM A536, GRADE 65-45-12
A16	STAINLESS STEEL, TYPE 304
A17	VIRGIN PTFE
A18	ACRYLONITRILE-BUTADIENE (NBR), 70 DUROMETER
A31	STAINLESS STEEL, TYPE 304, ASTM A276, CONDITION A
A32	STAINLESS STEEL, TYPE 316
A33	STAINLESS STEEL, TYPE 18-8
A37	DUCTILE IRON, ASTM A536, GRADE 65-45-12
A40	STAINLESS STEEL, TYPE 316
A41	STAINLESS STEEL
A42	STAINLESS STEEL, TYPE 304
A43	ACRYLONITRILE-BUTADIENE (NBR)
A48	STAINLESS STEEL, TYPE 316
A49	STAINLESS STEEL, TYPE 304
A50	STAINLESS STEEL, TYPE 18-8
A51	STAINLESS STEEL, TYPE 316
A52	STAINLESS STEEL, TYPE 316
A54	STAINLESS STEEL, TYPE 304
A58	STAINLESS STEEL, TYPE 316
A59	STAINLESS STEEL, TYPE 304
A60	STAINLESS STEEL, TYPE 304, ASTM A276, CONDITION A
A64	CARBON STEEL, ZINC PLATED
A66	STAINLESS STEEL, TYPE 316
A67	STAINLESS STEEL, TYPE 18-8



Submittal Data Sheet

Date: 08/04/22

ECO TECH INC
PO BOX 956
HOLLY SPRINGS, GA
30142

P.O. 20143-16
FACTORY ORDER NO 143541
FACTORY SALES ORDER NO 626554
REV 0

PROJ. NAME East Area WQCF

Fact. ITEM	Cust. ITEM	QTY	DESCRIPTION	PART NO. 9688883
3	3	1	CVS,4,250A,F1,DI,DI-S11-S2-NBR,AIS*LW	

Style	CVS	APCO Swing Check Valves
Size	4	4 Inch (100mm)
Body Style	250A	Series 250 Swing Check Valve
End Connection	F1	Flanged; ASME 125/150
Body Material	DI	Ductile Iron
Disc Material	DI	Ductile Iron
Shaft Material	S11	303 Stainless Steel
Body Seat Material	S2	316 Stainless Steel
Disc Seat Material	NBR	Acrylonitrile-Butadiene (NBR)
Option	AIS	USA Iron & Steel
Coating		12 mils minimum (non-stainless steel parts) of Blue DeZURIK Epoxy (NSF Std. 61) on Interior and Exterior with Standard (SP10) surface prep
Act Type	LW	Lever & Weight

RELATED DOCUMENTS

A70021	DWG INST CVS F1 LW 2-36" 250/2
A70161	DWG VALVE ASSY CVS 2-20" 250/2
A70064	DWG ASSY 250/250A LW CLOSURE C
D12003	IM VALVE CVS SWING CHECK (250/

FEATURES

TAG: 4" 250A CVS SPARE

EQUIPMENT DATA FORM (MAINTENANCE SUMMARY FORM)

PROJECT:	East Area WQCF		
PURCHASE ORDER:	20143-16		
EQUIPMENT ITEM:	4 Inch Swing Check 250(A)		
EQUIPMENT / TAG NUMBERS:	TAG: 4" 250A CVS SPARE		
WEIGHT (APPROX.)	145 Lbs.		
MANUFACTURER: DeZURIK	WORK ORDER:	143541-3	
PART NUMBER:	9688883		
MANUFACTURER'S LOCAL REPRESENTATIVE:			
ECO TECH INC	Telephone:	770-345-2118	
156 HICKORY SPRINGS IND DR, PO BOX 956, HOLLY SPRINGS, GA, 30142			
MOTOR DATA PLATE (HP, Voltage, Speed, etc.)			

MAINTENANCE REQUIREMENTS

- DeZURIK recommends exercising your valve every 30 days.
- Valve lubrication required upon disassembly only.
- For valve maintenance and lubrication refer to instruction manual(s): D12003
- For actuator maintenance and lubrication refer to instruction manual(s):

RECOMMENDED SPARE PARTS

See Drawing(s) A70161.

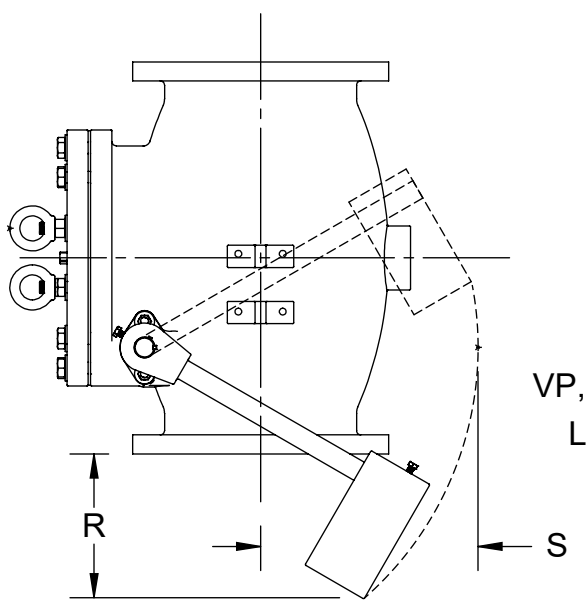
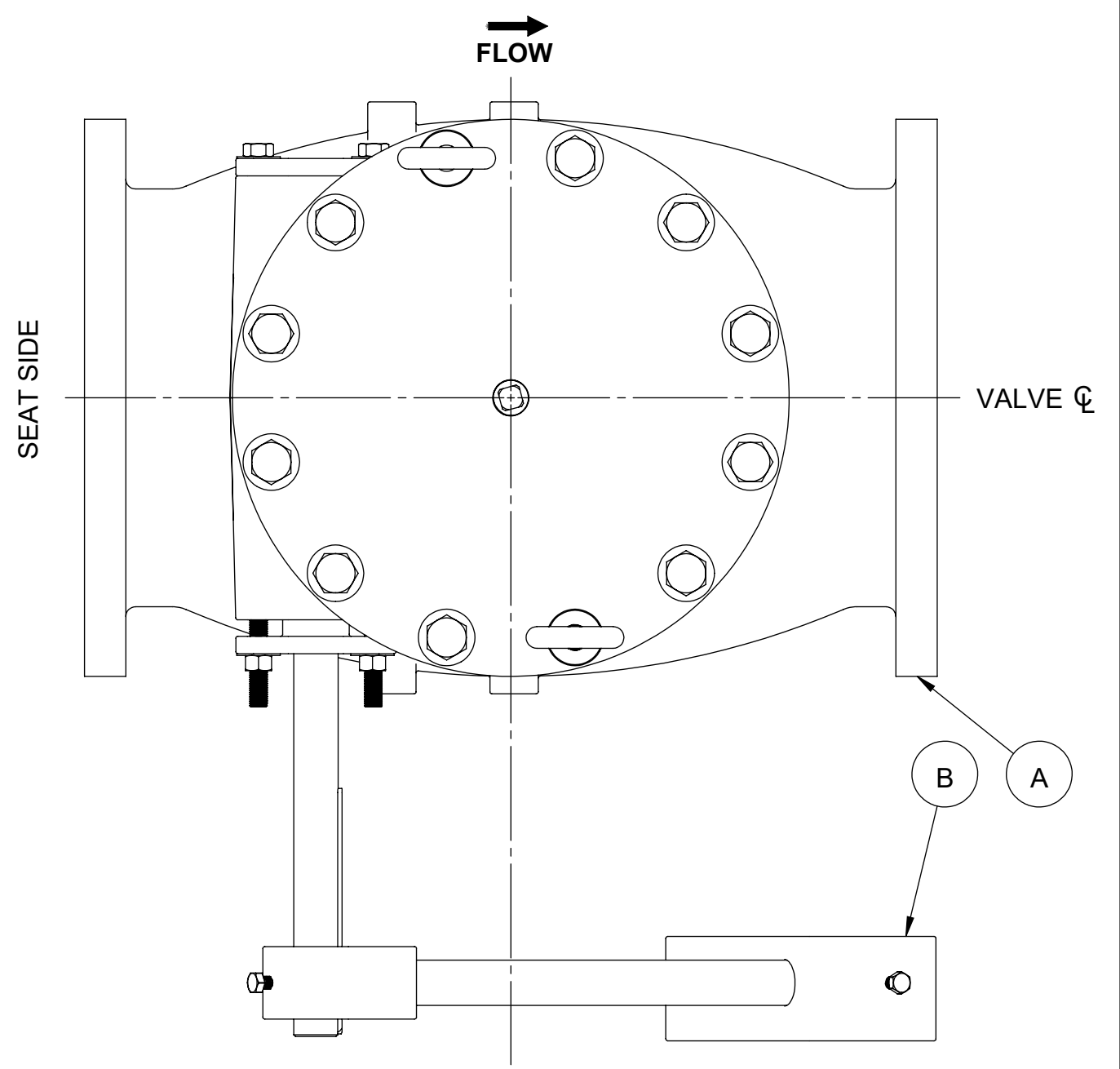
PART NO.	DESCRIPTION:	QUANTITY	LINE
1439734	GASKET 9.250X6.000X0.063 W/HOLES 3760U	1	A03
1720759	4" DISC SEAT NBR60	1	A06
1721363	O-RING 1.73IDX2.09ODX0.18CS DIA NBR70	1	A18
1720772	4" SEAT RETAINING RING 304	1	A31
1247381	O-RING-246 4.48IDX4.76ODX.14CSDIA NBR	1	A43

For current spare parts pricing, contact local manufacturer's representative listed above.

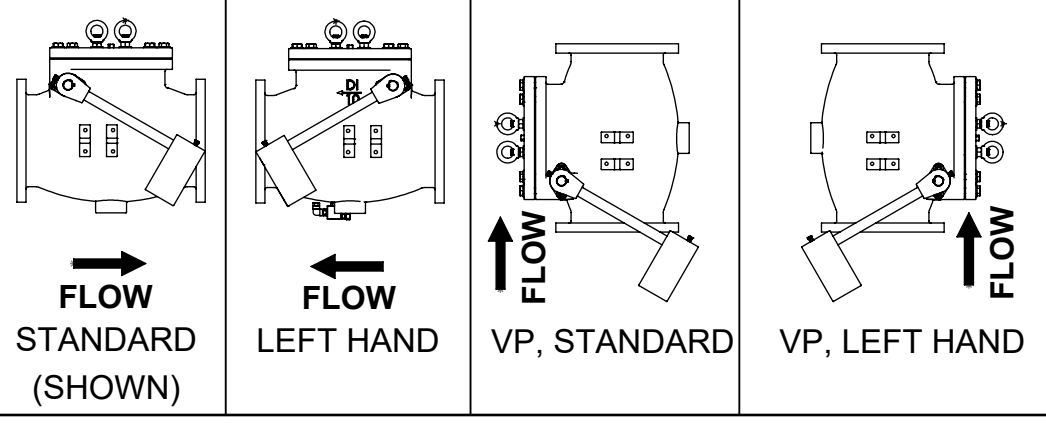
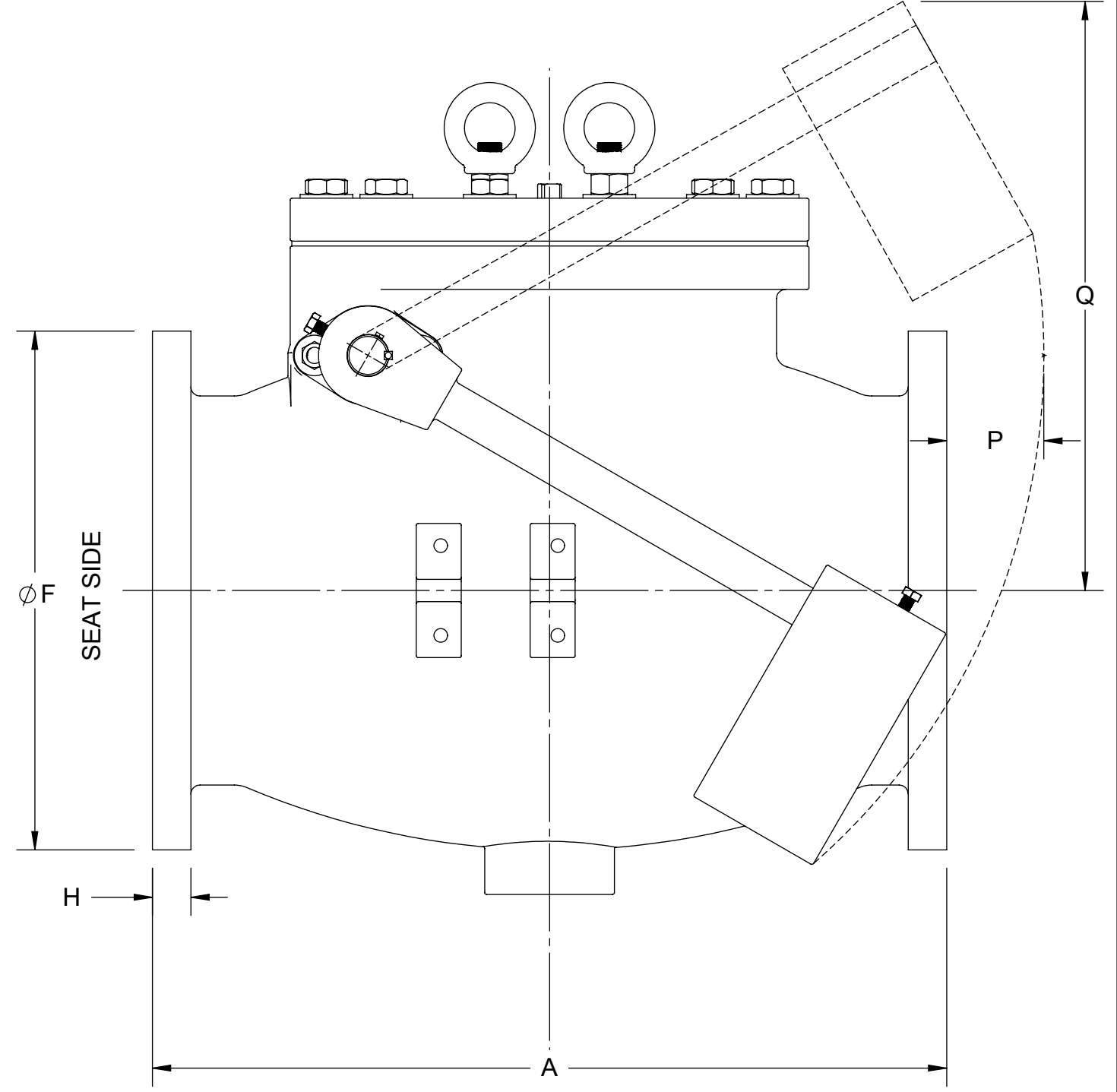
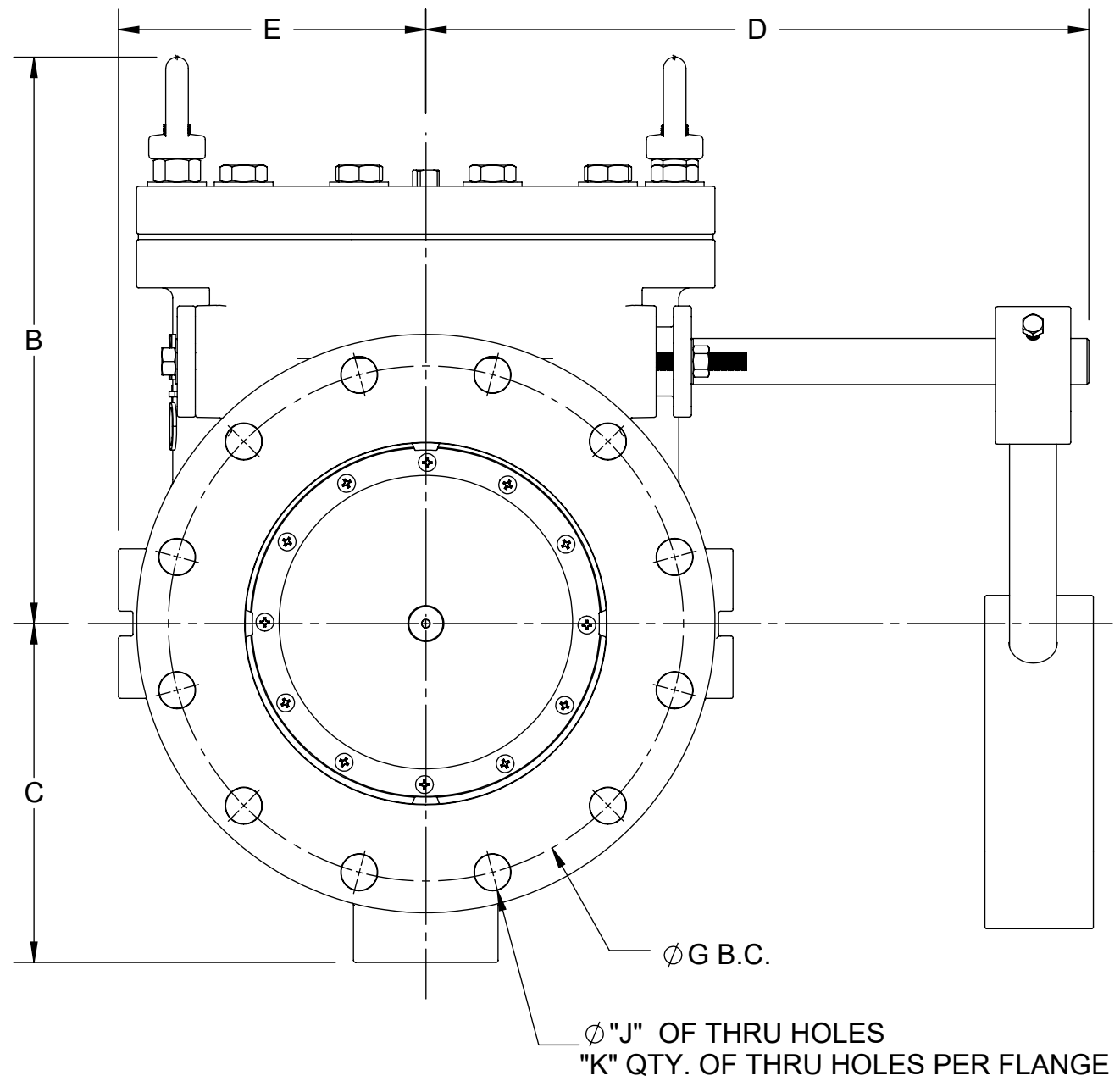
VALVE SIZE	DIMENSIONS (INCHES / MM)																
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
2	8.00 203.2	10.00 254.0	3.50 88.9	10.92 277.4	4.12 104.6	6.00 152.4	4.75 120.7	0.63 16.0	-	-	4	5/8-11	0.62 15.7	7.00 177.8	10.00 254.0	6.00 152.4	9.38 238.1
2.5	8.50 215.9	9.72 246.8	3.50 88.9	10.92 277.4	4.12 104.6	7.00 177.8	5.50 139.7	0.88 22.4	-	-	4	5/8-11	0.88 22.4	6.50 165.1	9.88 250.8	6.13 155.6	9.38 238.1
3	9.50 241.3	10.00 254.0	4.50 114.3	11.00 279.4	4.00 101.6	7.50 190.5	6.00 152.4	0.75 19.1	-	-	4	5/8-11	0.75 19.1	5.88 149.2	10.13 257.2	5.50 139.7	9.25 235.0
4	11.50 292.1	10.75 273.1	5.00 127.0	11.75 298.5	5.00 127.0	9.00 228.6	7.50 190.5	0.94 23.8	0.75 19.7	6	2	5/8-11	0.94 23.8	4.88 123.8	10.75 273.1	4.88 123.8	8.75 222.3
6	14.00 355.6	11.75 298.5	5.75 146.1	13.50 342.9	6.50 165.1	11.00 279.4	9.50 241.3	1.00 25.4	0.88 22.2	6	2	3/4-10	1.00 25.4	2.13 54.0	11.63 295.3	4.63 117.5	7.88 200.0
8	19.50 495.3	13.75 349.3	7.25 184.2	17.00 431.8	7.50 190.5	13.50 342.9	11.75 298.5	1.13 28.6	0.88 22.2	8	-	-	-	2.00 50.8	15.50 393.7	5.88 149.2	10.38 263.5
10	24.50 622.3	15.00 381.0	9.38 238.1	16.25 412.8	9.00 228.6	16.00 406.4	14.25 362.0	1.19 30.2	1.00 25.4	12	-	-	-	3.00 76.2	18.38 466.7	9.00 228.6	13.63 346.1
12	27.50 698.5	19.00 482.6	11.00 279.4	18.25 463.6	11.00 279.4	19.00 482.6	17.00 431.8	1.25 31.8	1.00 25.4	12	-	-	-	3.25 82.6	21.13 536.6	9.00 228.6	14.25 362.0
14	31.00 787.4	22.50 571.5	13.50 342.9	26.00 660.4	14.00 355.6	21.00 533.4	18.75 476.3	1.38 34.9	1.13 28.6	12	-	-	-	6.63 168.3	25.88 657.2	11.75 298.5	18.75 476.3
16	36.00 914.4	24.50 622.3	14.25 362.0	29.50 749.3	15.00 381.0	23.50 596.9	21.25 539.8	1.44 36.5	1.13 28.6	16	-	-	-	2.00 50.8	32.00 812.8	7.25 184.2	15.88 403.2
18	40.00 1016.0	26.50 673.1	17.38 441.3	31.00 787.4	18.63 473.1	25.00 635.0	22.75 577.9	1.56 39.7	1.25 31.8	16	-	-	-	7.00 177.8	36.00 914.4	9.25 235.0	21.25 539.8
20	40.00 1016.0	28.75 730.3	17.63 447.7	32.38 822.3	18.63 473.1	27.50 698.5	25.00 635.0	1.69 42.9	1.25 31.8	20	-	-	-	6.00 152.4	41.00 1041.4	-	-
24	48.00 1219.2	32.50 825.5	20.13 511.2	34.00 863.6	21.00 533.4	32.00 812.8	29.50 749.3	1.88 47.6	1.38 34.9	20	-	-	-	0	38.00 965.2	8.75 222.3	19.25 489.0
30	56.00 1422.4	37.20 945.0	21.85 555.0	39.00 990.6	24.00 609.6	38.75 984.3	36.00 914.4	2.13 54.0	1.38 34.9	28	-	-	-	14.13 358.8	53.13 1349.4	15.50 393.7	24.00 609.6
36	63.00 1600.2	42.91 1090.0	26.38 670.0	42.00 1066.8	27.00 685.8	46.00 1168.4	42.75 1085.9	2.38 60.3	1.63 41.3	32	-	-	-	14.63 371.5	57.50 1460.5	15.00 381.0	21.00 533.4
42	70.00 1778.0	56.30 1430.0	32.28 820.0	39.29 998	33.27 845	53.00 1346.2	49.50 1257.3	2.63 66.7	1.63 41.3	36	-	-	-	19.69 500.0	53.54 1360.0	22.83 580.0	14.17 360.0

ITEM NO.	DESCRIPTION
A	VALVE
B	LEVER & WEIGHT CLOSURE CONTROL

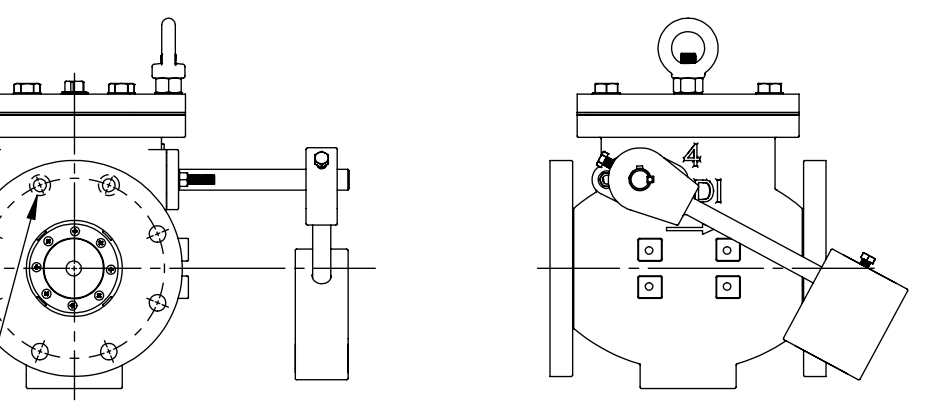
NOTE:
 1. VALVE SIZES 2" THRU 14" ARE 250A BODY STYLE.
 2. LEVER ARM IS ANGLED 30° BELOW THE HORIZONTAL WHEN VALVE IS CLOSED. LEVER ARM HAS A MAXIMUM OF 60° OF TRAVEL.
 3. FACE TO FACE DIMENSIONS ARE IN COMPLIANCE WITH AWWA C508.



NOTICE
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"L" QTY. OF TAP HOLES PER FLANGE
 "M" TAP HOLE SIZE
 "N" DEPTH OF TAP HOLE

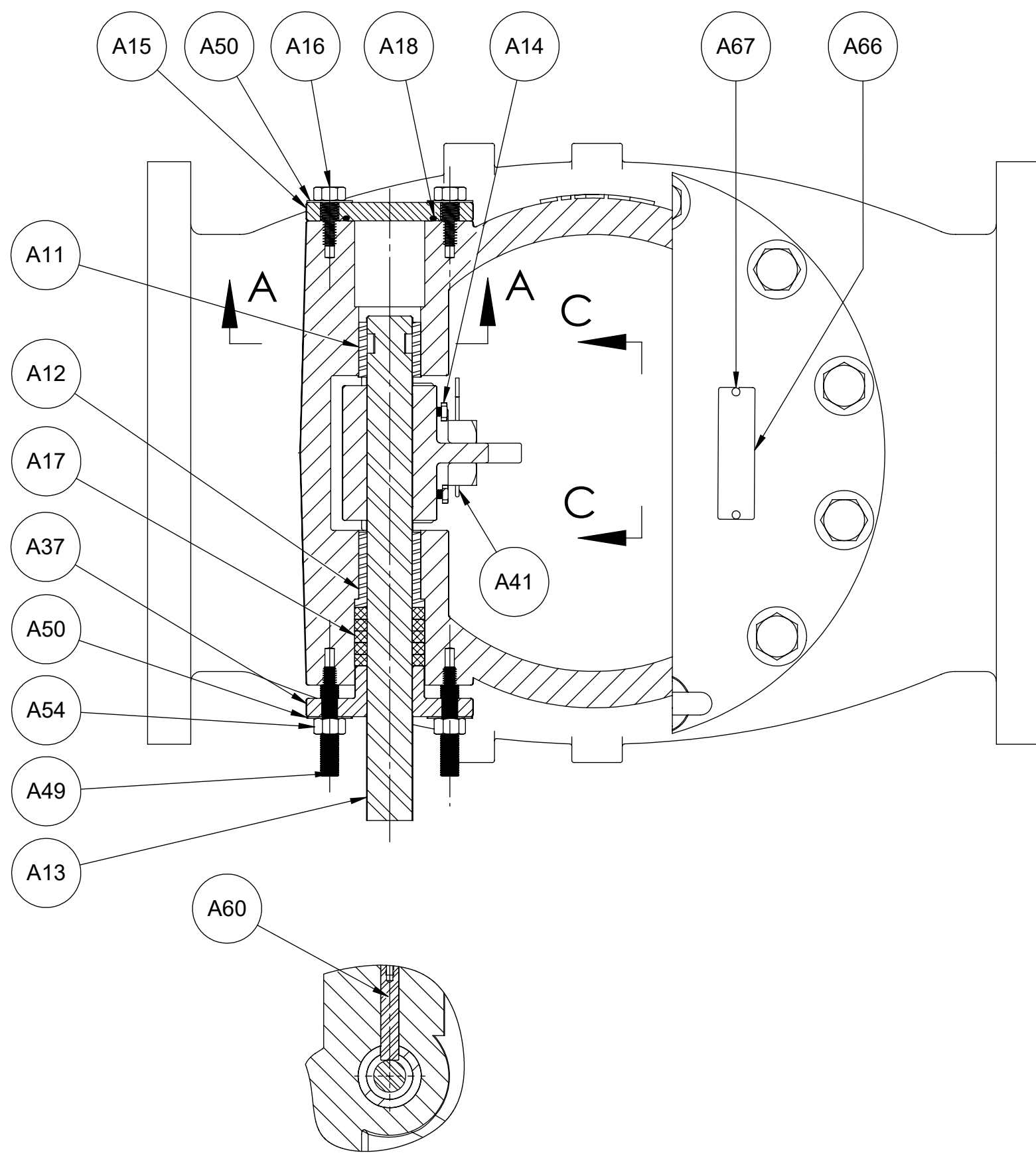


SIZES 2" THRU 6" VALVE BODY CONFIGURATION

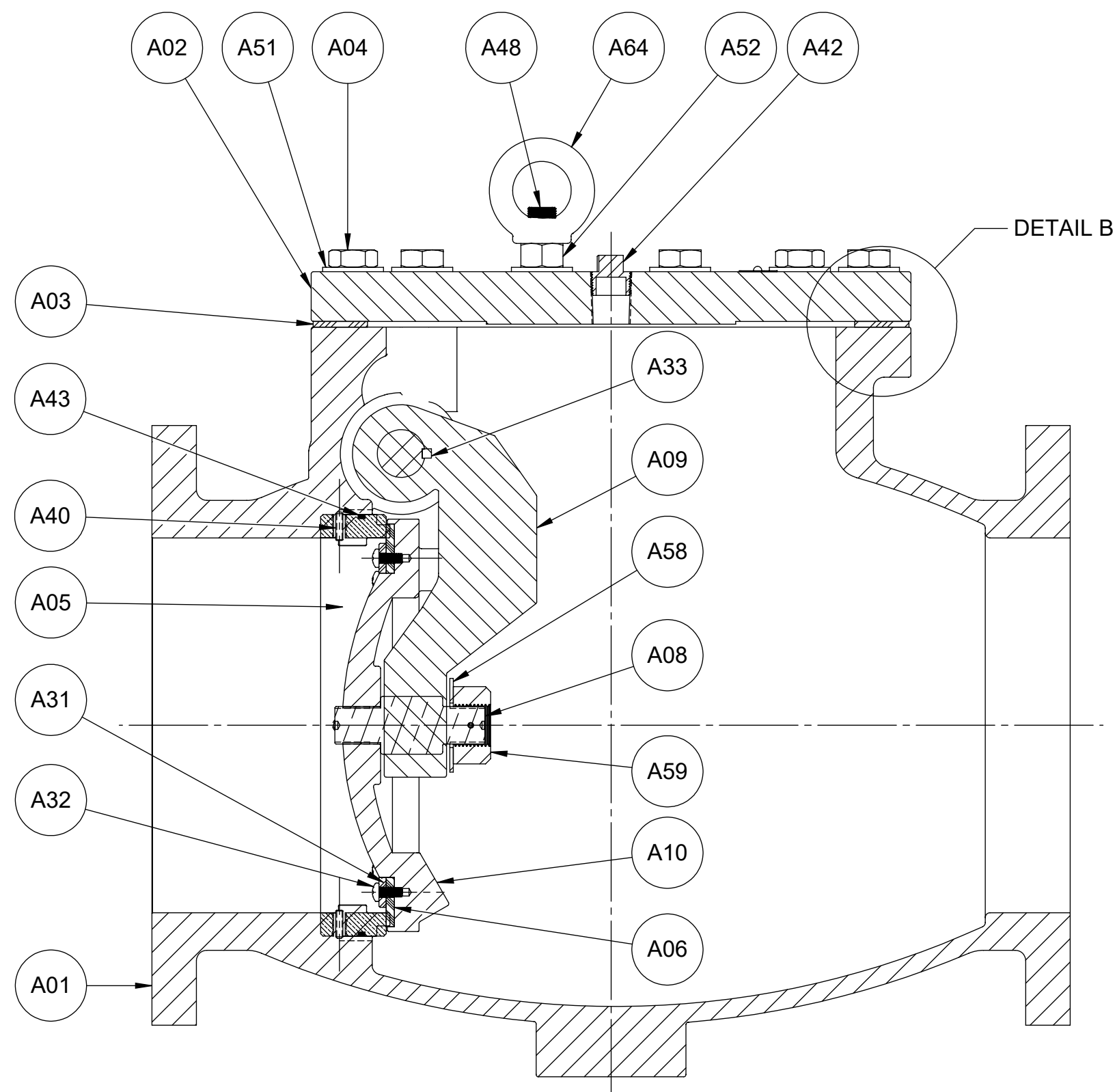
C	L	W	D	C	B	A
					50312	7/11/17



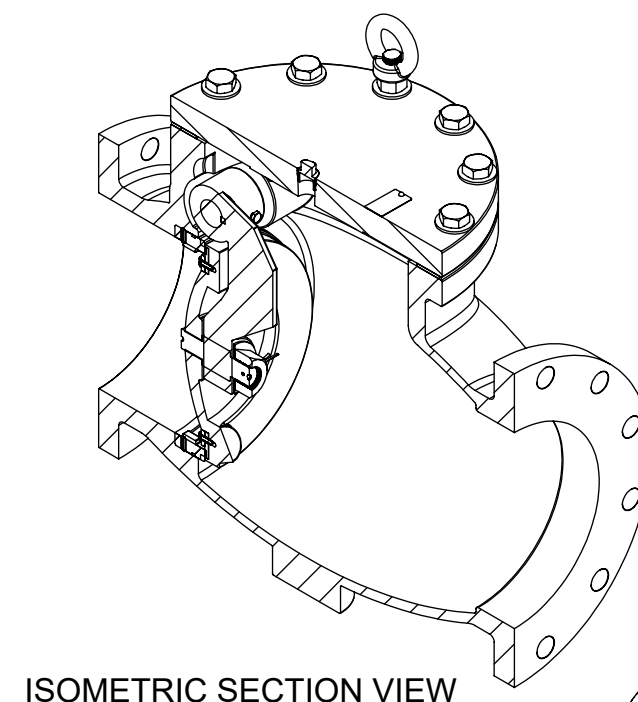
APCO CVS SWING CHECK VALVE, SIZES 2" THRU 36" 250 SERIES, LEVER & WEIGHT CLOSURE CONTROL			
DOCT. CODE	DRAWN	APPROVED	
C1	JPD	TMO	
CHECKED	DATE		
DWZ	10/23/2013		
			A70021



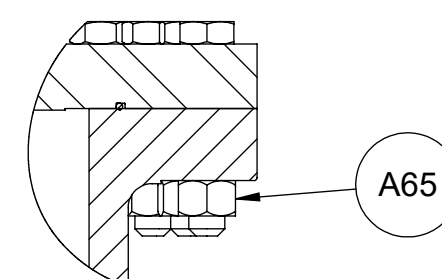
SECTION A-A



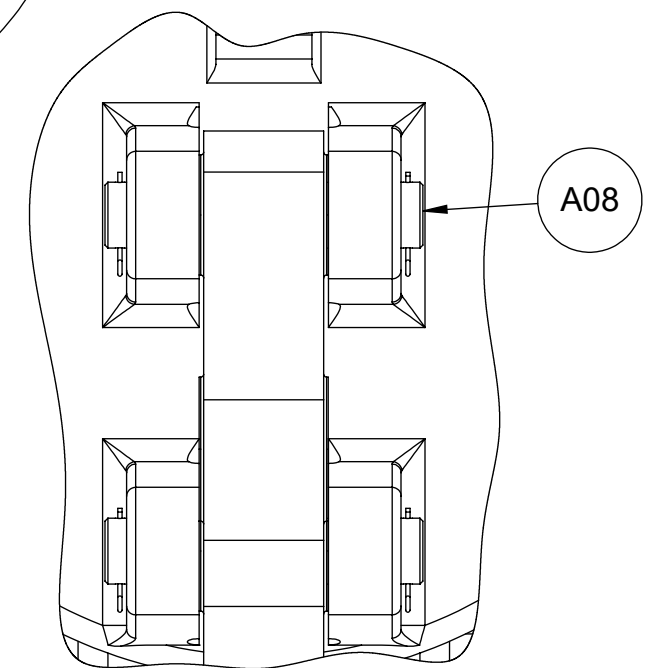
DETAIL B
30" & 36" COVER CONNECTION



ISOMETRIC SECTION VIEW



DETAIL B
30" & 36" COVER CONNECTION



VIEW C-C
30" & 36" DOUBLE CLEVIS CONNECTION

ITEM NO.	DESCRIPTION	QTY
A01	BODY	1
A02	COVER	1
A03	COVER SEAL ³	1
A04	COVER BOLT	-
A05	BODY SEAT RING	1
A06	DISC SEAT ³	1
A08	DISC STEM / PIN	1
A09	DISC ARM	1
A10	DISC	1
A11	PIVOT SHAFT STRAIGHT BUSHING ¹	1
A12	PIVOT SHAFT FLANGED BUSHING ¹	1
A13	PIVOT SHAFT	1
A14	DISC ARM RETAINING SCREW	-
A15	PIVOT SHAFT COVER	1
A16	PIVOT SHAFT COVER BOLT	-
A17	PACKING ⁴	1
A18	PIVOT SHAFT COVER SEAL ³	1
A31	SEAT RETAINING RING ³	1
A32	SEAT RETAINING SCREW ³	-
A33	DISC ARM KEY (4" & UP)	1
A37	PACKING GLAND	1
A40	BODY SEAT RETAINING SCREW	4
A41	DISC PIN RETAINER	1
A42	COVER PIPE PLUG	1
A43	BODY SEAT SEAL	1
A48	COVER STUD ²	2
A49	PACKING GLAND STUD	2
A50	WASHER	4
A51	COVER BOLT WASHER	-
A52	COVER NUT	2
A54	PACKING GLAND NUT	-
A58	DISC ARM WASHER ²	1
A59	DISC STEM NUT ²	1
A60	SHAFT RETAINING PIN	1
A64	COVER EYE NUT ²	2
A65	COVER NUT (30 & 36")	-
A66	DATA PLATE	1
A67	DRIVE SCREWS	2

NOTES:

- ITEMS A11 & A12 ARE NOT USED ON VALVE SIZES 2", 2.5", OR 3".
- ITEMS A48, A58, A59, A64 ARE NOT INCLUDED ON VALVE SIZES 30" & 36".
- RECOMMENDED SPARES: A03, A06, A17, A18, A31, A32.

U	L	W	D	C	B	A
						50312
						03/02/2020



APCO CVS - SWING CHECK VALVE, 250 SERIES, 2" THRU 36" BASIC VALVE ASSEMBLY W/ SLIP IN SEAT			
DOCT. CODE	DRAWN	APPROVED	
C1	DWZ	DWZ	
CHECKED	DATE		
MJS	12/18/15		

A70161



MATERIALS OF CONSTRUCTION

DRAWING(S): A70161

WORK ORDER: 143541

PART NO: 9688883

DESCRIPTION: CVS,4,250A,F1,DI,DI-S11-S2-NBR,AIS*LW

ITEM	MATERIAL
A01	DUCTILE IRON, ASTM A536, GRADE 65-45-12, USA FOUNDRY
A02	STEEL, WROUGHT, ASTM A36, AISI 1020, USA MILL
A03	GASKET MATERIAL, GARLOCK MULTI-SWELL STYLE 3760-U, NON-ASBESTOS
A04	STAINLESS STEEL, TYPE 316
A05	STAINLESS STEEL, TYPE CF-8M, ASTM A743, USA FOUNDRY
A06	ACRYLONITRILE-BUTADIENE (NBR)
A08	STAINLESS STEEL, TYPE 303, ASTM A582, CONDITION A
A09	DUCTILE IRON, ASTM A536, GRADE 65-45-12, USA FOUNDRY
A10	DUCTILE IRON, ASTM A536, GRADE 65-45-12, USA FOUNDRY
A11	STAINLESS STEEL, TYPE 304
A12	STAINLESS STEEL, TYPE 304
A13	STAINLESS STEEL, WROUGHT, TYPE 303, ASTM 582, USA MILL
A14	STAINLESS STEEL, TYPE 316
A15	DUCTILE IRON, ASTM A536, GRADE 65-45-12
A16	STAINLESS STEEL, TYPE 304
A17	VIRGIN PTFE
A18	ACRYLONITRILE-BUTADIENE (NBR), 70 DUROMETER
A31	STAINLESS STEEL, TYPE 304, ASTM A276, CONDITION A
A32	STAINLESS STEEL, TYPE 316
A33	STAINLESS STEEL, TYPE 18-8
A37	DUCTILE IRON, ASTM A536, GRADE 65-45-12
A40	STAINLESS STEEL, TYPE 316
A41	STAINLESS STEEL
A42	STAINLESS STEEL, TYPE 304
A43	ACRYLONITRILE-BUTADIENE (NBR)
A48	STAINLESS STEEL, TYPE 316
A49	STAINLESS STEEL, TYPE 304
A50	STAINLESS STEEL, TYPE 18-8
A51	STAINLESS STEEL, TYPE 316
A52	STAINLESS STEEL, TYPE 316
A54	STAINLESS STEEL, TYPE 304
A58	STAINLESS STEEL, TYPE 316
A59	STAINLESS STEEL, TYPE 304
A60	STAINLESS STEEL, TYPE 304, ASTM A276, CONDITION A
A64	CARBON STEEL, ZINC PLATED
A66	STAINLESS STEEL, TYPE 316
A67	STAINLESS STEEL, TYPE 18-8

APCO CVS-250/250A SWING CHECK VALVES



Instruction **D12003**
October 2018

Instructions

These instructions provide installation, operation and maintenance information for APCO CVS-250/250A Swing Check Valves. They are for use by personnel who are responsible for installation, operation and maintenance of APCO CVS-250/250A Swing Check Valves.

Safety Messages

All safety messages in the instructions are flagged with an exclamation symbol and the word Caution, Warning or Danger. These messages indicate procedures that must be followed exactly to avoid equipment damage, personal injury or death.

Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact DeZURIK for replacement label(s).



WARNING!

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves, which have been removed from service with suitable protection for any potential pipeline material in the valve.

Inspection

Your APCO CVS-250/250A Swing Check Valve has been packaged to provide protection during shipment; however, it can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Recommended spare parts are listed on the assembly drawing. These parts should be stocked to minimize downtime. Order parts from your local DeZURIK sales representative, or directly from DeZURIK. When ordering parts please choose from the following:

If the valve has a DeZURIK APCO nameplate please include the 7-digit part number and 4-digit revision number (example: 9999999R000) located on the data plate attached to the valve assembly. Also include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

If there isn't any nameplate visible on the valve, please include Valve Model number, the part name, and item number from the assembly drawing. You may contact your local DeZURIK APCO Representative to help you identify your valve.

DeZURIK Service

DeZURIK service personnel are available to maintain and repair all DeZURIK products. DeZURIK also offers customized training programs and consultation services.

For more information, contact your local DeZURIK sales representative or visit our website at www.dezurik.com.

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Description

A swing check valve consists of a valve body, a cover, and a disc that is connected to a hinge. The disc swings away from the valve-seat to allow flow in the forward direction, and returns to valve-seat when upstream flow is stopped, to prevent backflow. The valve is equipped with either a lever & weight, an air cushion with lever & weight, or a lever & spring to assist with closing the valve.

Handling and Storage

Lifting the valve improperly may damage it. Do not fasten lifting devices to the lever arm actuator or through the seat opening in the body. Lift the valve with slings, chains or cables fastened around the valve body, or fastened to bolts or rods through bolt holes in the flanges.

If installation will be delayed, place valve indoors in secure, weather tight storage. If temporary outside storage is unavoidable, make sure a vermin proof rain cover (water shedding tarp, etc.) is secured around/over the equipment to keep off rain and mud. Skid and set the assembly on a flat, solid, and well drained surface for protection from ground moisture, runoff and pooled rain water.

Installation

- The APCO CVS 250/250A Swing Check Valve may be installed in a horizontal or vertical position (with the flow upward). In either case, the Counterweight Arm (B19) should be set in horizontal position. Unless otherwise specified, the valves are shipped for horizontal installation.
 - To change the counterweight arm position, loosen the Lever Arm Bolt Set Screw (B55), slide the counterweight arm assembly off the Pivot Shaft (A13), rotate the counterweight arm assembly and slide it back onto the Pivot Shaft (A13) using the appropriate keyway shown in Figure 1. See Figure 2 for component identification.

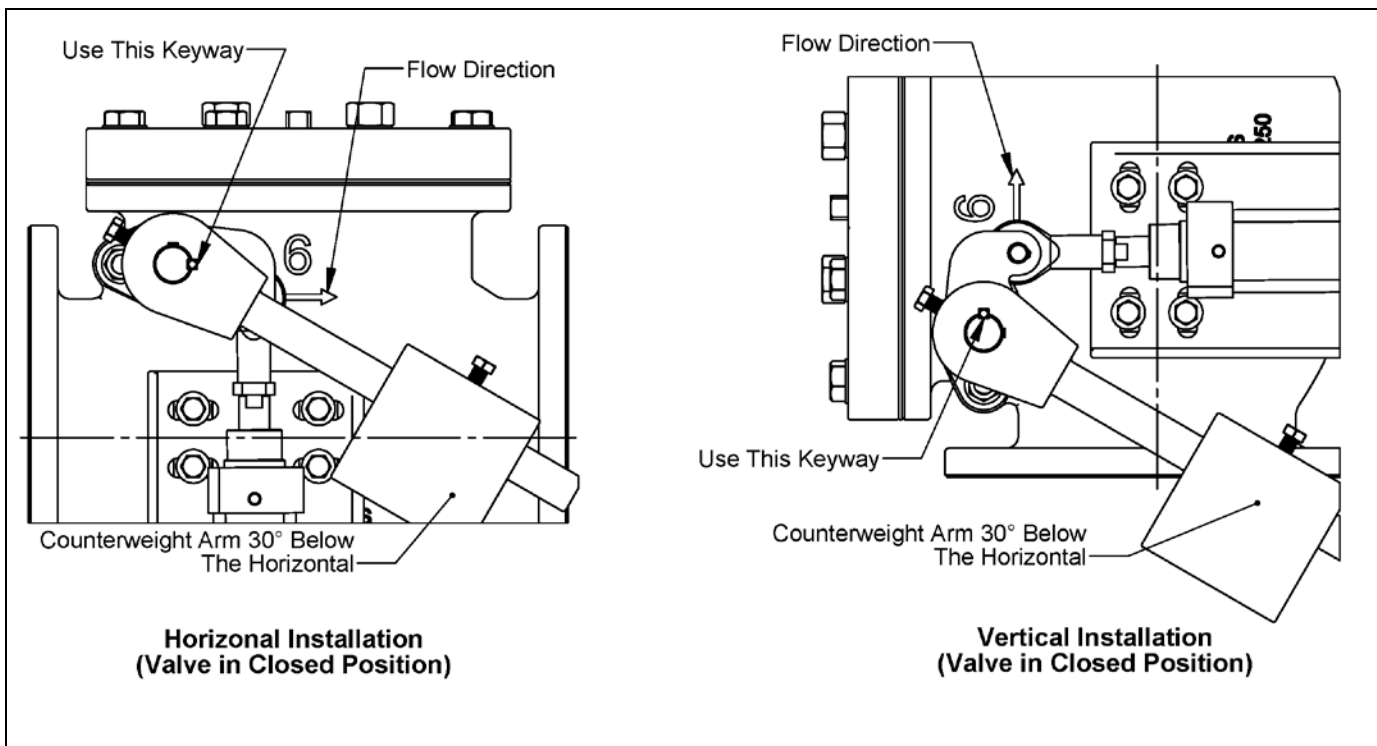


Figure 1 – Counterweight Arm Position

APCO CVS-250/250A Swing Check Valves

Installation *(Continued)*

- Before installation, remove foreign material such as weld spatter, oil, grease, and dirt from the pipeline.
- Prepare pipe ends and install valves in accordance with the pipe manufacture's instructions for the joint used.

**CAUTION!**

Do not deflect the pipe-valve joint. Minimize bending stresses in the valve end connection with pipe loading.

If excessive seat leakage occurs during start-up, recheck the installation and eliminate any distortion to the valve body.

- Ensure the valve and pipeline flanges are concentric to ensure proper flange sealing and seat leakage control.
- Tighten the flange bolts or studs in a crisscross pattern and minimum of four stages.

Fusion/Powder Coated Valves

**CAUTION!**

Valves with fusion/powder coated exterior paint require flat washers to be installed under the flange nuts when installing the valve to the pipeline flange to prevent the paint from cracking or chipping.

Maintenance

It is suggested that these valves, which do not require routine scheduled maintenance, be included as part of the normal facility equipment inspections for any malfunction while under normal usage conditions.

Shaft Packing Adjustment

Packing adjustment may be needed to optimize packing life on initial start-up.

**WARNING!**

These valves may open or close, swinging the counterweight/spring lever arm without warning due to flow changes from pumps starting and stopping. Servicing or working around these valves while the pipeline is under pressure can cause personal injury or equipment damage.

Workers must be cautious when working around these valves. Relieve pipeline pressure and lockout the pumps before servicing the valve.

Tighten the gland nuts (A54) evenly only until the packing leak stops.

Caution: Do not over-tighten Packing Gland. Valve can remain open during operation if packing is too tight. After packing adjustments are made and pipeline is pressurized, visually inspect valve stroke to ensure proper operation.

Note: Do not continue tightening after leak stops. If packing leak cannot be stopped by tightening the gland nuts, the packing must be replaced.

Maintenance *(Continued)****Shaft Packing Replacement***

Removal of the valve from the line for shaft packing replacement is not required as long as the shaft is accessible.

**WARNING!**

These valves may open or close, swinging the counterweight/spring loaded arm without warning due to flow changes from pumps starting and stopping. Servicing or working around these valves while the pipeline is under pressure can cause personal injury or equipment damage.

Workers must be cautious when working around these valves. Relieve pipeline pressure and lockout the pumps before servicing the valve.

1. Relieve the pressure in the pipeline and close the valve.
2. If needed, remove Counter Weight Arm Assembly (B19), Cushion Lever (B27). Then, remove the Packing Gland Nuts (A54), Washers (A50), and Packing Gland (A37) from Pivot Shaft (A13).
3. Remove the packing (A17) with a flexible packing hook or similar tool. Clean the packing area, being careful not to damage it.
4. Obtain the proper size packing from the parts list. Cut the packing rings to fit around the shaft. Install one ring at a time. Make sure it is clean and has not picked up any dirt in handling before installing it. Lubricate I.D. of each packing ring. Joints of successive rings should be staggered at least 90 degrees apart. Each ring should be firmly seated with a tamping tool. Do not depend on the packing gland entirely to seat the set of rings properly. This practice will jam the last rings installed but leave the first ones loose in the box.
5. See "Shaft Packing Adjustment" section to adjust packing after replacing.

Disc Seat Replacement

**WARNING!**

These valves may open or close, swinging the counterweight/spring loaded arm without warning due to flow changes from pumps starting and stopping. Servicing the valve while the pipeline is under pressure can cause personal injury or equipment damage.

Workers must be cautious when working around these valves. Relieve pipeline pressure and lockout the pumps before servicing the valve.

1. Relieve the pressure in the pipeline and close the valve. Lockout the pumps.
2. Remove Seat Retaining Ring (A31) from Disc (A10).
3. Remove old Disc Seat (A06) and replace with new Disc Seat.
4. Re-install Seat Retaining Ring (A31).

Maintenance *(Continued)****Changing Counterweight or Spring Assembly to Opposite Side of Valve***

**WARNING!**

These valves may open or close, swinging the counterweight/spring loaded arm without warning due to flow changes from pumps starting and stopping. Servicing or working around these valves while the pipeline is under pressure can cause personal injury or equipment damage.

Workers must be cautious when working around these valves. Relieve pipeline pressure and lockout the pumps before servicing the valve.

1. Relieve the pressure in the pipeline and close the valve. Lockout the pumps.
2. Loosen the Screw (B55) and remove the Counter Weight Arm (B19) and Weight (B29) assembly or Spring (B59) with Spring Bracket (B60). (Note that a special spring bracket may be required to change lever & spring assembly to opposite side of valve.)
3. If the valve is equipped with an Air Cylinder (B20):
 - a. Remove the Retaining Rings (B60) and Clevis Pin (B59) from the cylinder rod eye.
 - b. Remove the Cushion Cylinder (B20) and Bracket (B24) assembly from the Body (A01).
 - c. Remove the Cushion Lever (B27) from the Pivot Shaft (A13).
4. Remove the Packing Gland (A37), Packing (A17) and Studs (A49) from the Body (A01).
5. Remove the Screws (A16) and Pivot Shaft Cover (A15) from the Body (A01)
6. Remove the Eye Nuts (A64), Nuts (A52), Screws (A04), Washers (A51) and Cover (A02) from the Body (A01).
7. Loosen the Screws (A14) in the Disc Arm (A09).
8. Insert a threaded bolt (1/4-20) into the Pivot Shaft Retaining Pin (A60) and remove the pin from the pin hole in the top of the Body (A01).
9. Remove the Pivot Shaft (A13) from the Body (A01). The Packing (A17), Flanged Bushing (A12, on 4" and larger valves) and the Pivot Shaft Disc Key (A33) will be removed along with the shaft.
10. Remove the Straight Bushing (A11), on 4" and larger valves from the Body (A01) and install it on the opposite side of the body aligning it with the pin hole in the top of the body.
11. Align the Disc Arm (A09) with the holes in the Body (A01) for the Pivot Shaft (A13); insert the pivot shaft with the Pivot Shaft Disc Key (A33) with the groove and shorter keyway end first into the opposite side of the body, through the disc arm and align the pivot shaft retaining groove with the pin hole in the body.
12. Insert the Pivot Shaft Retaining Pin (A60) thru the hole in the top of the Body (A01) so the pin goes thru the Straight Bushing (A11), on 4" and larger valves in into the groove in the Pivot Shaft (A13). The pin should be flush with the top of the body.
13. Center the Disc (A10) assembly and the Body Seat (A05).
14. Tighten the Screws (A14) in the Disc Arm (A09).

Maintenance *(Continued)*

15. Slide the Flanged Bushing (A12), on 4" and larger valves over the Pivot Shaft (A13) and into the Body (A01).
16. Install one Packing Ring (A17) at a time. Make sure it is clean and has not picked up any dirt in handling before installing it. Lubricate I.D. of each packing ring. Joints of successive rings should be staggered at least 90 degrees apart. Each ring should be firmly seated with a tamping tool.
17. Install the Studs (A49), Packing Gland (A37), Washers (A50), Nuts (A54) and adjust packing.
18. Install the Pivot Shaft Cover (A15) with Screws (A16) and Washers (A50).
19. Install the Cover (A02) to the Body (A01) with Eye Nuts (A64), Nuts (A52), Screws (A04) and Washers (A51).
20. If the valve is equipped with an Air Cylinder (B20):
 - a. Install the Cushion Lever (B27) and Key (B34) on the Pivot Shaft (A13). Secure to Pivot Shaft by tightening Cushion Lever Screw.
 - b. Install the Cushion Cylinder (B20) and Bracket (B24) assembly to the Body (A01) using Hex Bolts (B21) and Washers (B22).
 - c. Install the Retaining Rings (B60) and Clevis Pin (B59) to secure the Cushion Arm to the cylinder rod eye.
21. Install Counter Weight Arm (B19) and Weight (B29) or Spring (B59) to the Pivot Shaft (A13). If equipped with lever & spring, install Spring Bracket (B60) assembly to Body (A01) using Spring Bracket Bolts (B62); then hook end of spring thru Eye Bolt (B61).

Adding Air Cushion Assembly to Valve

**WARNING!**

These valves may open or close, swinging the counterweight/spring loaded arm without warning due to flow changes from pumps starting and stopping. Servicing or working around these valves while the pipeline is under pressure can cause personal injury or equipment damage.

Workers must be cautious when working around these valves. Relieve pipeline pressure and lockout the pumps before servicing the valve.

1. Relieve the pressure in the pipeline and close the valve. Lockout the pumps.
2. Loosen the Screw (B55) and remove the Counter Weight Arm (B19) and Weight (B29) assembly or Spring (B59) with Spring Bracket (B60). (Note that a special spring bracket is required to add an air cylinder to a lever & spring valve.)
3. If Clevis Pin (B59) is installed in cylinder rod eye, uninstall retaining rings (B60) and Clevis Pin
4. Install the Cushion Lever (B27) and Key (B34) on the Pivot Shaft (A13). Secure to Pivot Shaft by tightening Cushion Lever Screw.
5. Install the Cushion Cylinder (B20) and Bracket (B24) assembly to the Body (A01) using Hex Bolts (B21) and Washers (B22). If equipped with lever & spring, install Spring Bracket (B60) as shown on special assembly drawing provided.

Maintenance *(Continued)*

6. Install the Retaining Rings (B60) and Clevis Pin (B59) to secure the Cushion Arm to the cylinder rod eye.
7. Install Counter Weight Arm (B19) and Weight (B29) or Spring (B59) to the Pivot Shaft (A13). If equipped with lever & spring, then hook end of spring thru Eye Bolt (B61).

Operation

**WARNING!**

These valves may open or close, swinging the counterweight/spring loaded arm without warning due to flow changes from pumps starting and stopping. Servicing or working around these valves while the pipeline is under pressure can cause personal injury or equipment damage.

Workers must be cautious when working around these valves. Relieve pipeline pressure and lockout the pumps before servicing the valve.

The flow from the pump opens the Disc (A10) and raises the Counterweight Arm (B19). If the valve is equipped with an Air Cushion, the cylinder piston is pulled upward, drawing air freely into the cylinder through the small flow control valve. If the valve is equipped with a lever & spring, the spring (B59) is extended by the Lever Arm (B19) raising up.

When the pump is shut off, the decreased flow allows gravity to close the Disc (A10) towards the Body Seat Ring (A05). For valves equipped with a lever & weight, the weight causes the disc close faster or slower depending on its position along the lever. For valves equipped with an air cushion, the closure speed can be dampened by the air cylinder (B20). As the Disc (A10) closes, the cylinder piston is pushed downwards and the compressed air can only escape through the flow control valve on the bottom of the cylinder. The exhausting air can be adjusted with the flow control valve to suit the best performance for the installation. For valves equipped with a lever & spring, the stored energy in the extended spring (B59) causes the disc to close in addition to weight of the disc (A10).

System static pressure (downstream of the check valve) keeps the disc (A10) and disc seat (A06) closed and seated against the body seat (A05).

Closure Speed Control Adjustment (Valves with Lever & Weight)

- Faster Disc closing - Move Counterweight away from the pivot shaft.
- Slower Disc closing – Move Counterweight towards pivot shaft.

Closure Speed Control Adjustment (Valves with Air Cushion)

- Increase cushioning - Turn adjusting screw of Flow Control Valve clockwise.
- Decrease cushioning - Turn adjusting screw of Flow Control Valve counterclockwise
- Faster Disc closing - Move Counterweight away from the pivot shaft.
- Slower Disc closing – Move Counterweight towards pivot shaft.

Operation *(Continued)***Start-up Procedure**

1. Ensure the Counterweight Arm (B19) is angled 30° below the horizontal.
2. Throttle down mainline isolation valve (furnished by others) on discharge side of Swing Check Valve to approximately 1/3 open to prevent severe slamming during initial pump shutdown testing.
3. Position Counterweight (B29) midway on the lever and lock in place.
4. If valve has an Air Cushion: Turn adjusting screw of flow control valve two (2) turns counterclockwise from fully closed position.
5. Start and stop pump and observe rate of closing.

Adjustment (Valves with Air Cushion with Lever & Weight)

Condition	Adjustment
Check valve slams	Turn adjusting screw of Flow Control Valve one-half (1/2) turn clockwise. Repeat start and stop. If slam persists, continue turning adjusting screw in ½ turn increments. Be careful not to fully close Flow Control Valve.
Slam persists	Move weight towards end of lever a couple of inches. Repeat start and stop.
Slam still persists	Continue repeating above steps until satisfactory closing is achieved. Then increase opening discharge isolation valve to ½ open. Repeat start and stop pump sequence and above steps until isolation valve is full open.

Adjustment (Valves with Lever & Weight)

Condition	Adjustment
Check valve slams	Move weight towards end of lever a couple of inches. Repeat start and stop.
Slam persist	Repeat above step.

Notes:

1. Testing must be conducted carefully and adjustments made in small increments to arrive at the optimum where the swing check valve shuts off just prior to or at zero reverse flow.
2. The APCO CVS-250/250A Swing Check Valve is not a silent closing check valve.

APCO CVS-250/250A Swing Check Valves

Drawings

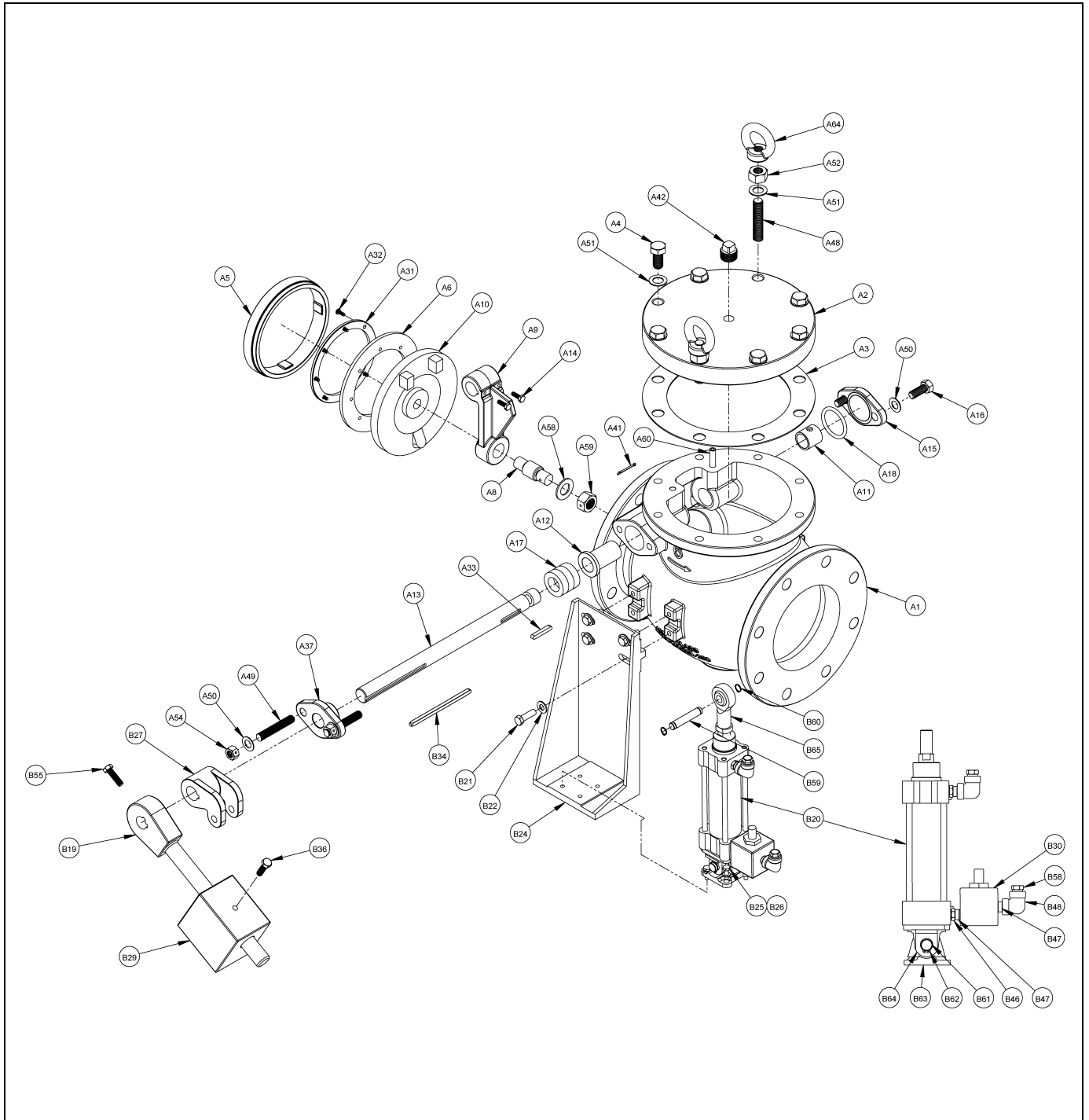


Figure 2 – APCO CVS-250/250A Swing Check Valve (with Air Cushion)

Drawings (Continued)

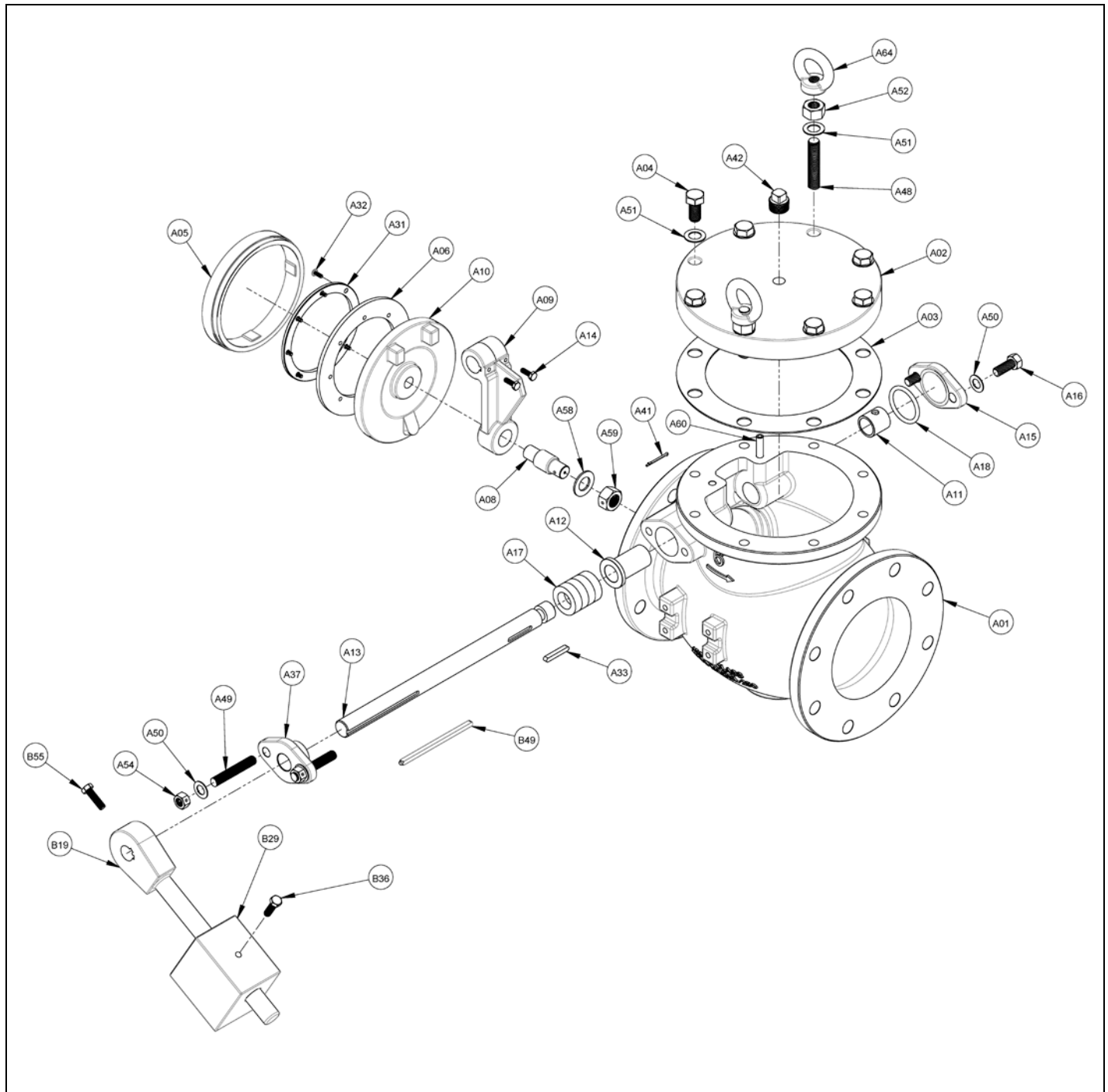


Figure 3 - CVS-250/250A Swing Check Valve (Lever & Weight)

APCO CVS-250/250A Swing Check Valves**Drawings (Continued)****Table 1 - CVS-250/250A Swing Check Valve Parts**

Item Number	Description
A01	Body
A02	Cover
A03	Cover Gasket
A04	Hex Bolt
A05	Body Seat Ring
A06	Disc Seat
A08	Disc Stem
A09	Disc Arm
A10	Disc
A11	Straight Bushing
A12	Flanged Bushing
A13	Pivot Shaft
A14	Hex Bolt
A15	Pivot Shaft Cover
A16	Hex Bolt
A17	Packing
A18	Shaft Cover Seal
A31	Seat Retaining Ring
A32	Machine Screw
A33	Pivot Shaft Disc Key
A37	Packing Gland
A41	Cotter Pin
A42	Pipe Plug
A48	Stud
A49	Stud
A50	Washer
A51	Washer
A52	Hex Eye Nut
A54	Hex Nut
A58	Washer
A59	Hex Nut with Drilled Hole
A59	Spring
A60	Pivot Shaft Retaining Pin
A64	Eye Nut
A65	Cover Nut (30" & 36" only)

Note: Items A11 and A12 are not included in the 2" and 3" valve sizes.

Lever & Weight and Cylinder Parts

Item Number	Description
B19	Counter Weight Arm Assembly
B20	Cylinder Assembly (Air Cushion only)
B21	Hex Bolt (Air Cushion only)
B22	Washer (Air Cushion only)
B24	Cylinder Bracket (Air Cushion only)
B25	Hex Bolt
B26	Split Washer
B27	Cushion Lever (Air Cushion only)
B29	Counter Weight
B30	Flow Control Valve
B34	Pivot Shaft Key (Air Cushion only)
B36	Counterweight Arm Retaining Screw
B46	Reducer Bushing (8"-42")
B47	Pipe Nipple
B48	Pipe Elbow
B55	Lever Arm Bolt (Weighted Lever only)
B58	Air Breather
B59	Cushion Lever Clevis Pin (Air Cushion only)
B60	Retaining Ring (Air Cushion only)
B61	Clevis Pin (Air Cushion only)
B62	Retaining Ring (Air Cushion only)
B63	Male Clevis Bracket (Air Cushion only)
B64	Female Clevis Bracket (Air Cushion only)
B65	Yoke (Air Cushion only)

Note: Items B30, B46, B47, B48, B58, B61, B62, B63 & B64 are included with B20 Cylinder Assembly.

Drawings (Continued)

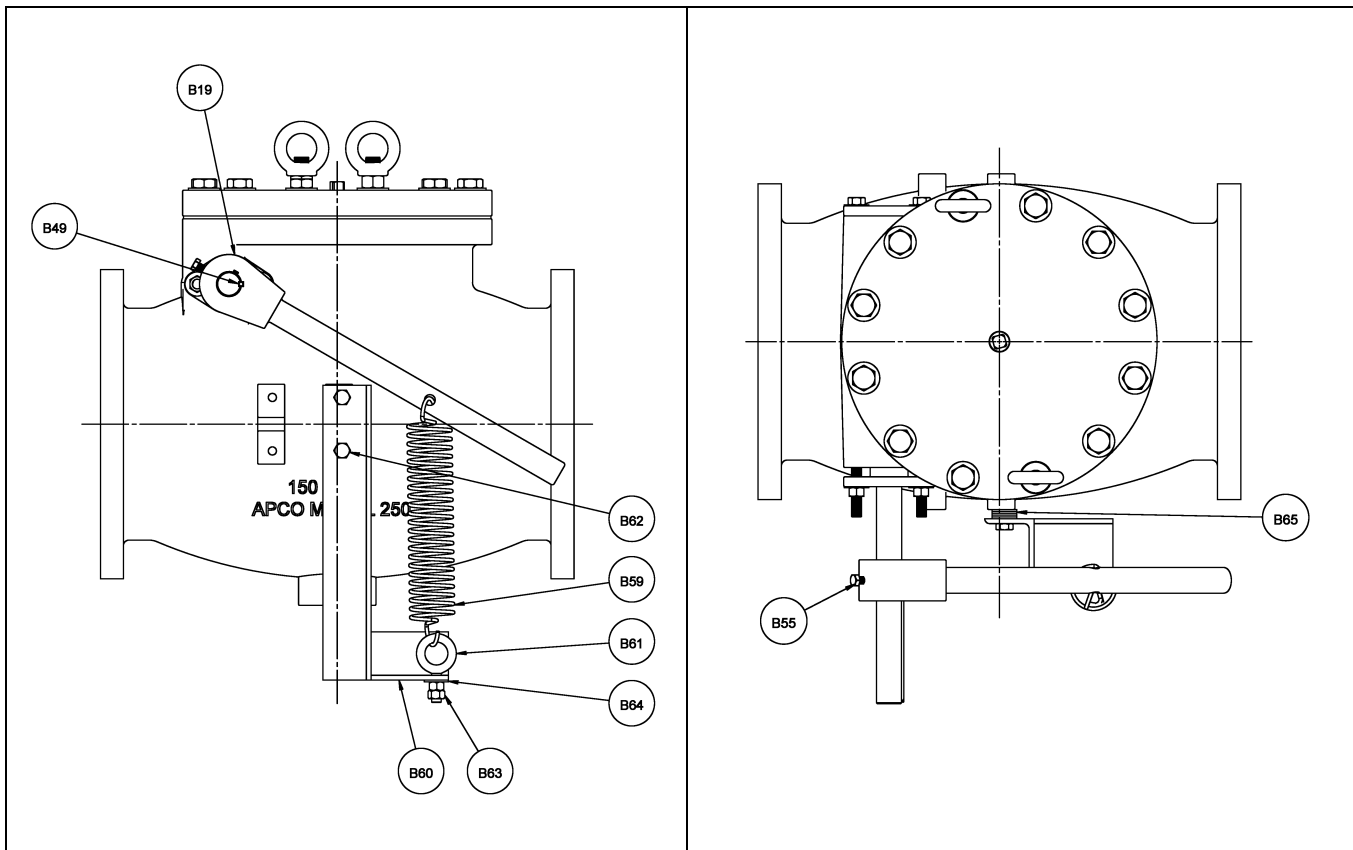


Figure 4 - CVS-250/250A Swing Check Valve (Lever & Spring)

Table 2 –Lever & Spring Parts

Item Number	Description
B19	Lever Arm (Spring Only)
B49	Spring Lever Arm Key (Spring Only)
B55	Spring Lever Arm Retainer Screw (Spring Only)
B59	Spring (Spring Only)
B60	Spring Bracket (Spring Only)
B61	Eye Bolt (Spring Only)
B62	Spring Bracket Bolt (Spring Only)
B63	Eye Bolt Retaining Nut (Spring Only)
B64	Spring Bracket Washer (Spring Only)
B65	Washer (Spring Only)

APCO CVS-250/250A Swing Check Valves

Troubleshooting

Condition	Possible Cause	Corrective Action
Shaft seal leaks.	Packing is worn. Packing is not tight.	Replace Packing. Adjust packing.
Valve leaks excessively from one side of the disc to the other.	Foreign matter caught between disc and seat.	Fully open valve to remove object.
	Disc seat is worn or damaged.	Repair disc seat or replace valve.
Valve leaks at flange joint.	Loose flange bolting.	Tighten flange bolting.
	Blown flange gasket.	Replace flange gasket.
	Misalignment or damage to field piping and supports.	Adjust misalignment or repair piping or supports.
	Damaged flange face/s or improper flange connections.	Repair flange, replace valve body or adjust flange connections.
Valve does not fully close.	Object is wedged between seat and disc.	Fully open valve to remove object.
	Packing Gland is too tight	Loosen packing gland fasteners. Packing may need to be replaced if leakage occurs.

August 4, 2022

ECO TECH INC
PO BOX 956
HOLLY SPRINGS, GA 30142

Subject: American Iron and Steel Step Certification for Project “East Area WQCF”

Work Order # “143541”

I, Rachael Nieland, certify that the (melting, bending, galvanizing, cutting, etc.) processes for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with AIS requirement as mandated by Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A – Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference.

Item, Products and/or materials:

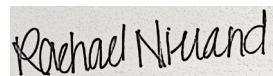
Model CVS, Swing Check Valves

Manufacturing processes of the above products take place at the following location:

DeZURIK - Sartell Plant
250 Riverside Ave North
Sartell, Minnesota 56377
320-259-2000

This certification is to be submitted upon request to interested parties (e.g. municipalities, consulting engineers, general contractors, etc.)

If any of the above compliance statements change while providing materials to this project, please immediately notify the person(s) who is requesting to use your product(s).



Rachael Nieland

*Project Management &
Order Administration Manager*
320-259- 2137Office
Rachael.nieland@dezurik.com

RECOMMENDED LONG & SHORT TERM STORAGE PROCEDURES

LONG TERM STORAGE (6 MONTHS +)

1. All valves shall be stored in the position in which they were shipped.
2. Valves shall be stored fully enclosed in a crate or on a skid. It is acceptable to store the valves uncrated but protected from any dirt, debris or UV exposure as long as the environmental conditions as described in item 3 are met. Any desiccant packages received with the original shipment should be replaced before putting valves into long term storage. Please follow your desiccant manufacturer's recommended usage of any desiccant based on the volume of the enclosed area.
3. Valves shall be stored in a well ventilated, clean, dry indoor facility on skids or raised racks with temperatures ranging from 35°F to 95°F (2°C to 35°C) with humidity levels not exceeding 50%.
4. If the above conditions cannot be met, valves shall be separately packaged inside sealed heavy duty plastic sheeting and a weather resistant enclosure, or a standard crate lined with moisture proof paper, to protect the valves from dirt, debris and UV exposure. Desiccant packages shall be used to control moisture both inside the enclosure and the sealed heavy duty plastic covering. Please follow your desiccant manufacturer's recommended usage of any desiccant based on the volume of the enclosed area.
5. Do not store valves next to operating electric motors or equipment which may emit ozone, which can cause deterioration of valve elastomers. Store in an environment with less than 0.1 ppm concentration, at least 25 feet from ozone emitting devices, with ventilation.
6. Valves with cylinder actuators and control valves which are stored for extended periods may be subject to cylinder blow-by caused by permanent distortion of any of the seals. Valves should be operated prior to installation and damaged seals replaced. If possible, it is recommended that cylinders be cycled every 4-6 months to maintain seals.
7. Valves with electric motor operators shall be stored in accordance with the individual motor manufacturer's recommended long term storage procedures.

8. All electrical components shall be visually inspected prior to valve installation.

SHORT TERM STORAGE (LESS THAN 6 MONTHS)

1. All valves shall be stored in the position in which they were shipped.
2. Valves shall be protected from dirt, debris, excessive moisture and UV exposure. Store at temperatures ranging from 35°F to 95°F (2°C to 35°C) with humidity levels not exceeding 50%.

Form 1454 Rev A
(Y67834 references this form)

Manufacturer's Warranty

Products, auxiliaries and parts thereof, of DeZurik's manufacture, are guaranteed for a period of twenty four (24) months from date of shipment against defective workmanship and material only, when properly installed, operated and serviced in accordance with DeZurik's recommendations. Replacement for items of DeZurik's manufacture will be made free of charge if provided to be defective within such time. No claim for transportation, labor or special or consequential damages shall be allowed. Purchaser shall be solely responsible for determining suitability for use and in no event shall DeZurik be liable in this respect. Equipment or parts manufactured by others but furnished by DeZurik will be repaired or replaced, but only to the extent provided in the original manufacturer's warranty to DeZurik. DeZurik does not guarantee resistance to corrosion, erosion, abrasion or other sources of failure, nor does DeZurik guarantee a minimum length of service. Failure of purchaser to give prompt written notice of any alleged defect under this guarantee forthwith upon its discovery, or use possession thereof after an attempt has been made and completed by someone other than DeZurik or an authorized representative to remedy the defects therein, or failure to return product or parts for replacement as herein provided, or failure to install and operate said products and parts according to instructions furnished by DeZurik, or failure to pay entire contract price when due, shall be a waiver by purchaser of all rights under these representations. The foregoing guarantee shall be null and void if, after shipment from our factory, the item is modified in any way or a component of another manufacturer, such as, but not limited to, an actuator, is attached to the item by anyone other than DeZurik Factory Service personnel. All orders accepted shall be deemed accepted subject to this guarantee, which shall be exclusive of any other or previous guarantee, and this shall be the only effective guarantee or warranty binding on DeZurik, anything to the contrary contained in the purchase order or represented by any agent or employee of DeZurik, in writing or otherwise, notwithstanding, including but not limited to implied warranties.