

Operation & Maintenance Manual

Place this manual with valve or person responsible for maintenance of the valve



90CS

YOUR PRODUCT INFORMATION:

Model Number: _____

Date of Manufacture: _____

Valve Size: _____

High Quality Valves Built to Last...

FLOMATIC® VALVES

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AIR CUSHIONED SWING CHECK VALVE Operation & Maintenance Manual

The Air Cushioned Swing Check Valve is designed to minimize slamming and water hammer. The adjustable counterweight causes rapid closure of the disc for approximately 90% of its travel and air, which is compressed in the cylinder, provides a cushion for final 10% of closure to reduce slam.

A separate flow control may be installed on the top cylinder exhaust to permit adjustable opening speed. (Model 90CO)

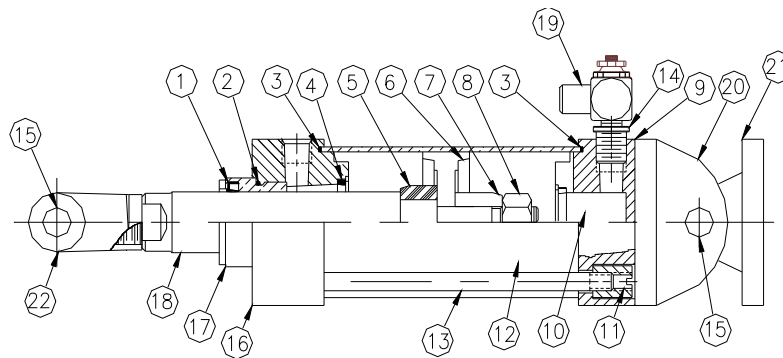
SHIPMENT:

When shipped, the air cylinder is mounted on the valve and the assembled counterweight with arm is disconnected.

INSTALLATION:

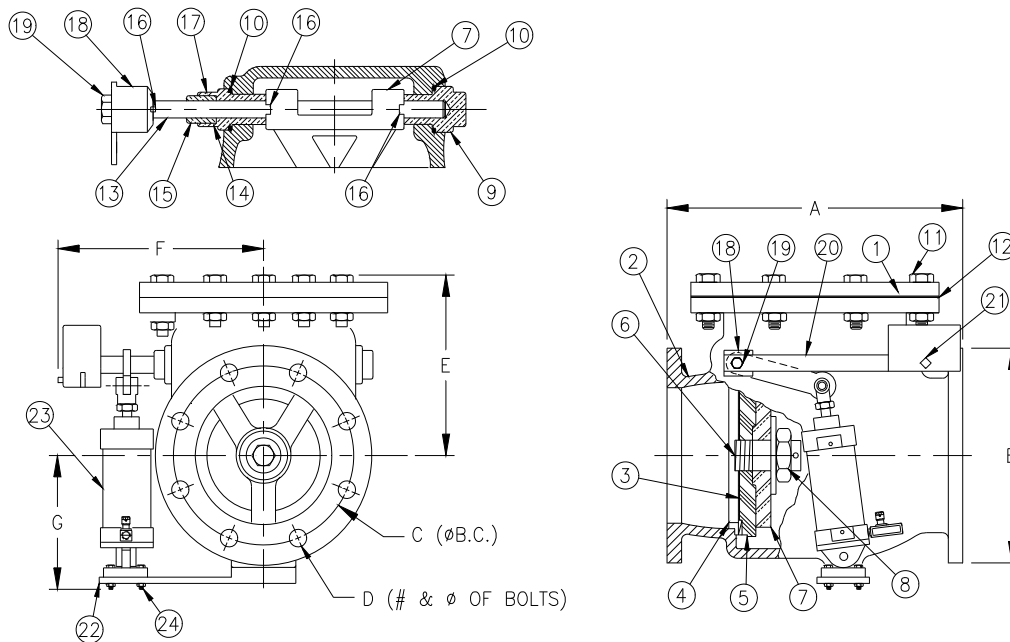
1. Install the check valve with the disc (clapper) positioned so that it will permit flow in the desired direction and prevent back flow when pumping stops (or pressure reverses).
2. Attach counterweight arm to shaft. (The arm should be approximately horizontal, 108 when the check valve is closed.)
3. Before placing the check valve in service manually open the valve by lifting the counterweight arm and then release to permit closure. (Full closure indicates that no damage or misalignment had occurred during shipment.)

CYLINDER:



ITEM	QTY	DESCRIPTION	MATERIAL	ASTM
1	1	ROD WIPER-SEAL	BUNA-N	---
2	1	GLAND TO HEAD O'RING	BUNA-N	---
3	2	END SEAL GASKET	ARMSTRONG N8092	---
4	1	CUSHION CHECK SEAL HEAD	POLYURETHANE	---
5	1	CUSHION SLEEVE-HEAD END	POWDERED METAL M584-A	A-29
6	1	PISTON	STEEL CORE MOLDED URETHANE	---
7	1	CUSHION SLEEVE-CAP END	POWDERED METAL M584-A	A-29
8	1	PISTON TO ROD NUT	STEEL 12L14	A-108
9	1	CAP	ALUMINUM ALLOY	B85
10	1	CUSHION CHECK SEAL-CAP	POLYURETHANE	---
11	1	BARREL NUT	STEEL 12L14	A-108
12	1	CYLINDER BODY	ALUMINUM TUBING	B210
13	1	TIE RODS	STEEL BAR	A108 E112
14	1	BUSHING	ZINC PLT	---
15	1	PIVOT PIN	CARBON STEEL	---
16	1	HEAD	STAINLESS STEEL	B85
17	1	GLAND	CAST COPPER ALLOY	B505
18	1	PISTON ROD	ALUMINUM ALLOY	A108 E112
19	1	FLOW CONTROL	BRASS	---
20	1	CLEVIS BRACKET	CARBON STEEL	---
21	1	MOUNTING PLATE & EYE BRACKET	CARBON STEEL	---
22	1	FEMALE ROD CLEVIS	CARBON STEEL	---

VALVE ASSEMBLY:



SIZE(in.)	PART No.	A	B	C	D	E	F	G	WT. lbs.
3	2706CS	9 1/2	7 1/2	6	(4) 5/8	7 1/16	7	10 1/2	75
8	2710CS	19 1/2	13 1/2	11 3/4	(8) 3/4	12 3/8	12 7/8	8 1/4	350
10	2711CS	24 1/2	16	14 1/4	(12) 7/8	13 15/16	14 1/2	8 1/2	600
12	2712CS	27 1/2	19	17	(12) 7/8	16 3/16	15 1/4	10	825
14	2714CS	30	21	18 3/4	(12) 1	18 3/4	17	10 1/2	1150
16	2716CS	35	23 1/2	21 1/4	(16) 1	23	19 1/2	11 3/4	1630
18	2718CS	36 1/2	25	22 3/4	(16) 1 1/8	25	21	12 1/2	1835
20	2720CS	37 5/8	27 1/2	25	(20) 1 1/8	24 1/2	22 3/8	13 3/4	2470
24	2724CS	44	32	29 1/2	(20) 1 1/4	28	28 1/2	16	3415
30	2730CS	49 1/2	38 3/4	36	(28) 1 1/4	32 7/8	30 5/8	19 1/2	4950

*3" VALVES USE BRONZE

ITEM	QTY.	DESCRIPTION	MATERIAL	ASTM #
1	1	VALVE COVER	CAST IRON	A126 CLASS B
2	1	VALVE BODY	CAST IRON	A126 CLASS B
3	1	GATE	*CAST IRON	A126 CLASS B
4	1	SEAL RING	BRONZE	B62
5	1	GATE RING	BRONZE or BUNA-N	B62
6	1	GATE STUD	BRONZE	B134
7	1	HINGE	*DUCTILE IRON	A536
8	1	STUD NUT & PIN	BRONZE NUT, STN. ST. PIN	B134
9	1	SHAFT BEARING	BRONZE	B505
10	1	O-RING SEAL	RUBBER	---
11	AR	COVER BOLTS & NUTS	STEEL	A307
12	1	COVER GASKET	GARLOCK REINFORCED BUNA-N	---
13	1	SHAFT	STAINLESS STEEL	A276
14	1	PACKING	AWWA 508 STD	---
15	1	GLAND	BRONZE	A126 CLASS B
16	3	SHAFT KEYS	STAINLESS STEEL	A276
17	1	STUFFING BOX	BRONZE	B62
18	1	LEVER HUB	CAST IRON	A126 CLASS B
19	1	LEVER HUB CAP SCREWS & WASHERS	STEEL	A307
20	1	COUNTERWEIGHT LEVER ARM	STEEL	A307
21	1	COUNTERWEIGHT & SCREW	CAST IRON WEIGHT, STN. ST. SCREW	A126 CLASS B
22	1	CYLINDER MOUNTING PLATE	STEEL	A307
23	1	CYLINDER PISTON ASSY.	SEE DWG. NO. S90CSCYL	---
24	1	CYLINDER NUTS & BOLTS	PLATED STEEL	F467

TROUBLE SHOOTING GUIDE

A. PROBLEM: Closure is not dampened and slam occurs.

CAUSE	CORRECTION
1. Part #19 (on cylinder) regulating valve is open to far.	1. Reduce opening of regulating valve by turning cap clockwise.
2. Piston (urethane) is worn.	2. Replace piston.
3. Cylinder is worn.	3. Replace cylinder.
4. Leak past check seal - cap or bottom end seal gasket.	4. Tighten tie rod nuts or replace.

B. PROBLEM: Water hammer is excessive.

CAUSE	CORRECTION
1. Counterweight is too close to shaft resulting in slow initial closure.	1. Move counterweight out on arm (usually to end of arm).
2. Dirt or corrosion on lever or pins.	2. Clean or lubricate.

CHECK VALVES SHALL BE OF SWING TYPE & SHALL MEET THE MATERIAL REQUIREMENTS OF AWWA SPECIFICATION C508.

THE VALVE SHALL CONTAIN THE FOLLOWING:

IRON BODY

SINGLE BRONZE MOUNTED GATE FOR NON-SHOCK WORKING PRESSURE OF 175 PSI FOR 2" THRU 12" SIZES, AND 150 PSI FOR 14" THRU 30" SIZES

HYDROSTATIC TESTING OF DOUBLE THE WORKING PRESSURE FOR ALL SIZES

THE SEAT RING (RENEWABLE) SHALL BE BRONZE: THE GATE RING (DISC RING) SHALL BE BRONZE OR BUNA-N AND THE ENDS SHALL BE FLANGED ANSI CLASS 125#

THE VALVE SHALL BE SO CONSTRUCTED THAT BY SIMPLY UNBOLTING AND LIFTING OFF THE COVER, THE INTERNAL WORKING PARTS MAY EASILY BE REMOVED AND REPLACED WITHOUT REMOVING THE VALVE FROM THE LINE. THE VALVE SHALL BE FURNISHED WITH AN OUTSIDE LEVER AND WEIGHT, SEALED END AIR CYLINDER FOR CUSHIONED CLOSURE AND AN ADJUSTABLE REGULATING VALVE TO CONTROL RELEASE OF COMPRESSED AIR. THE AIR CUSHIONED CYLINDER, WHEN USED IN CONJUNCTION WITH THE LEVER WEIGHT, SHALL PERMIT RAPID CLOSURE OVER APPROXIMATELY 90% OF ITS STROKE WITH A CUSHIONED, NON-SLAM OPERATION, THE WEIGHT, THE AIR EXHAUST NEEDLE VALVE, AND THE ADJUSTING SLEEVE SHALL BE FIELD ADJUSTABLE.

THE VALVE SHALL PERMIT FLOW IN ONE DIRECTION ONLY; BE TIGHT SEATING WHEN THE OUTLET PRESSURE EXCEEDS THE INLET PRESSURE AND BE SUITABLE FOR MOUNTING IN HORIZONTAL OR VERTICAL LINES.

THE VALVE SHALL HAVE A STAINLESS STEEL SHAFT (HINGE PIN) SUPPORTED BY BRONZE BEARING AND SEALED BY AN ADJUSTABLE PACKING GLAND WITH A COMPRESSION TYPE PACKING.

THE VALVE SHALL BE EQUAL IN ALL RESPECTS TO THE MODEL 90CS AS MANUFACTURED BY THE DANFOSS FLOMATIC CORPORATION.