

**INDEX**  
**SERIES 50-SC SWING CHECK VALVE**



	<b>PAGE</b>
<b>INTRODUCTION AND HISTORY</b> .....	7B-2
<b>FEATURES AND BENEFITS</b> .....	7B-3
<b>SPECIFICATIONS</b> .....	7B-4
<b>ORDERING</b>	
Dimensions:	
Standard .....	7B-5
Lever and Weight .....	7B-6
Lever and Spring .....	7B-7
Optional Tap Locations .....	7B-8
Weights .....	7B-9
Submittal Sheet .....	7B-10
<b>INSTALLATION AND TESTING</b> .....	7B-11
<b>OPERATION, MAINTENANCE, SPARE PARTS</b> .....	7B-12
<b>REPAIRS</b>	
Parts Lists:	
Standard .....	7B-13
Lever and Weight .....	7B-14
Lever and Spring .....	7B-15



# AMERICAN FLOW CONTROL SERIES 50-SC SWING CHECK VALVE

American Flow Control has incorporated significant and innovative design changes to prolong service life for **swing check valves** in water, heavy sludge and raw sewage service. Traditionally, **swing check valves** have been manufactured with bronze clapper arm shafts. Under severe service conditions where grit or sand has been present, these bronze shafts have a tendency to wear. American Flow Control **SERIES 50-SC swing check valves** incorporate design features to increase service life.

## SERIES 50-SC FEATURES AND BENEFITS



American Flow Control has incorporated significant and innovative design changes to prolong service life for swing check valves in water, heavy sludge and raw sewage service. Traditionally, swing check valves have been manufactured with bronze clapper arm shafts. Under severe service conditions where grit or sand has been present, these bronze shafts have a tendency to wear. American Flow Control 50-SC swing check valves incorporate the following design features to increase service life.

### BODIES AND BONNETS

Valve bodies and bonnets are made of gray iron. Generous clearances are provided between the disc circumference and body as well as the clapper hub and body which prevents the possibility of binding. Internal contours are specifically designed to provide a smooth flow passage and reduce head loss through the valve. The entire clapper arm and disc assembly are easily removed through the bonnet opening while the valve is installed in the line.

### CLAPPER ARMS

The clapper arms are made of ductile iron. The clapper arm shaft hole and disc stud hole are bushed with bronze for wear and corrosion resistance.

### CLAPPER ARM SHAFTS

Clapper arm shafts are made of high tensile strength, corrosion resistant, stainless steel. Extended shafts are fitted with octagon nuts to permit field adjustment of lever orientation.

### RETAINING PLUGS

Clapper arm shafts are retained and located in retaining plugs made of bronze. These plugs act as corrosion and wear-resistant bearings for the clapper arm shaft. The plug design incorporates straight threading, gasketing and a hexagon wrench hold to allow easy removal in the field for disassembly of internal parts from the valve.

### DISCS

Discs on check valves 4" and larger are made of gray iron with bronze disc rings securely fastened into grooves machined in the disc. The connection between the disc and clapper arm is designed with sufficient clearance to allow the disc to adjust to the seat.

American Flow Control 50-SC Swing Check Valves have these standard features:

- Gray Iron Valve Bodies
- Comply with ANSI/AWWA C508
- Stainless Steel Clapper Arm Shafts
- Full Diameter Waterway
- Solid Ductile Iron Clapper Arm
- Bronze Retaining Plugs



## SERIES 50-SC SPECIFICATIONS

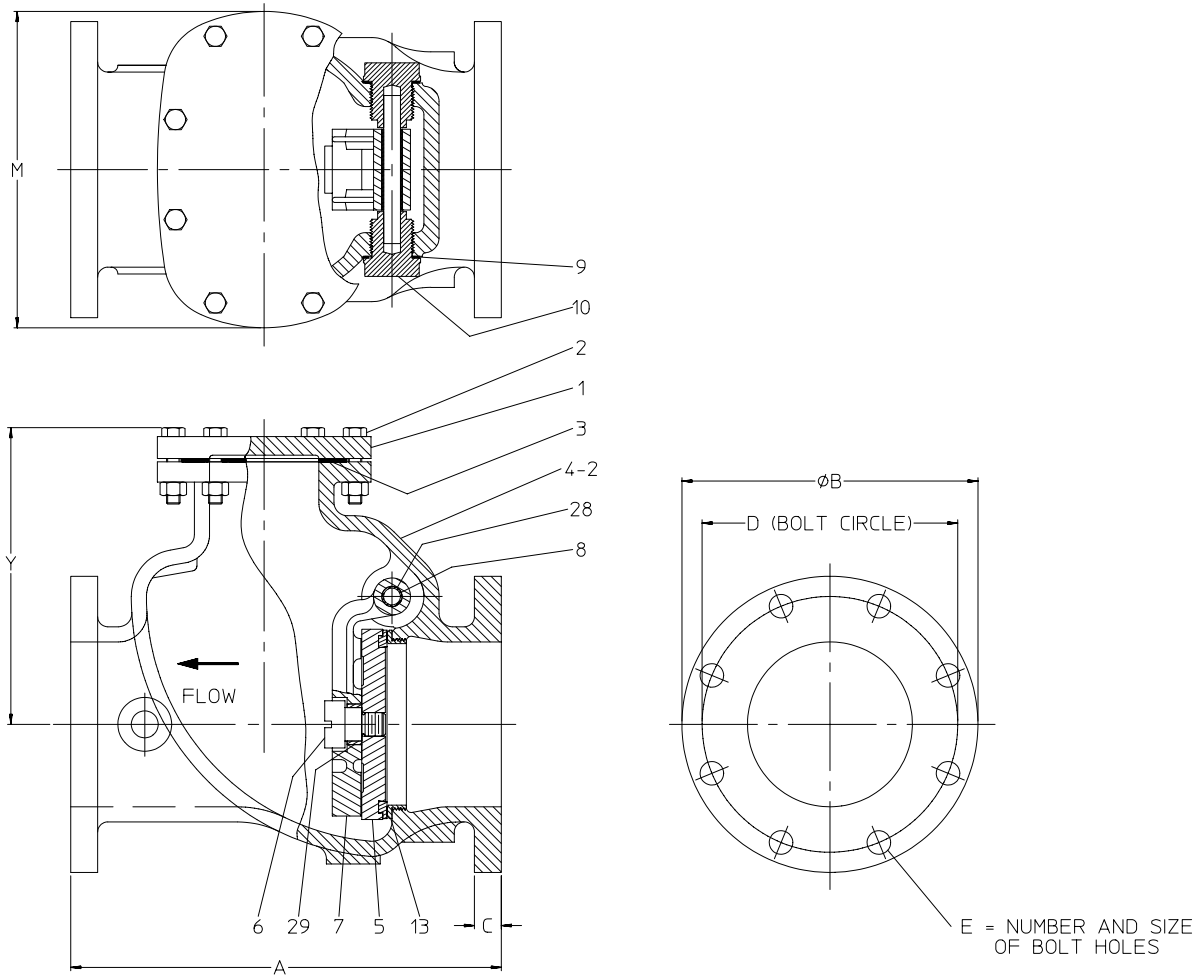
**Swing check valves** shall be manufactured from gray iron meeting or exceeding ASTM A126 Grade B. Valves to comply with ANSI/AWWA C508, latest revision and NSF-61 approved. Valves shall be designed to permit a clear waterway opening for utilization of pipeline cleaning apparatus. Disassembly of valve internals to require no special tools other than standard socket wrenches. Clapper arm shall be made of ductile iron conforming to ASTM A536 Grade 65-45-12. The disc shall not contact the body when the valve is in the full open position.

**Check valve** shafts to be stainless steel with corrosion-resistant bearings provided at each end. Shaft and bearings are to be completely replaceable, if necessary, with valve remaining in the pipeline. If the valve shaft is extended outside the body, a double-O-ring seal fully contained within the shaft bearing shall be provided. There shall be a grease fitting for lubrication between the O-rings for double protection against foreign matter reaching bearing surfaces. Different lever orientation shall be possible in the field in increments of 45 degrees without shaft modifications or extra drilling.

**Check valve** seating surfaces shall be bronze. The mating seat in the valve body shall be field removable and replaceable, if necessary, without removing the valve from the pipeline. Valve design shall be such that the valve remains in the closed position when installed in horizontal pipeline under no-flow condition.

**Check valves** to have all internal ferrous surfaces coated with a NSF-61 approved coating. Valves to be American Flow Control **50-SC Swing Check Valves**.

## SERIES 50-SC STANDARD DIMENSIONS



IL1483

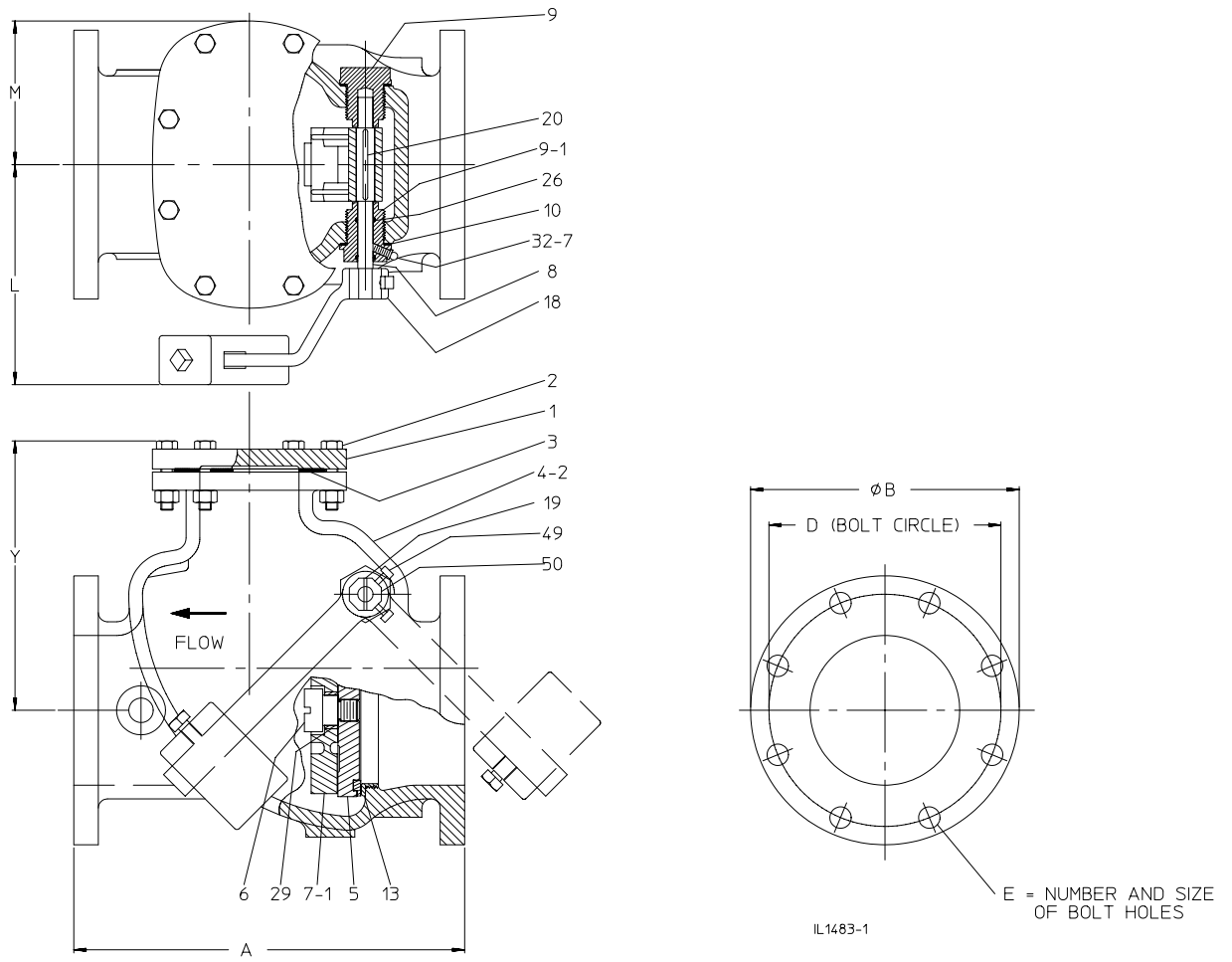
Valve Size	A	B	C	D	E	M	Y
3"	11.00	7.50	.75	6.00	4-0.75	7.88	7.38
4"	13.00	9.00	.94	7.50	8-0.75	9.00	9.00
6"	16.00	11.00	1.00	9.50	8-0.88	11.75	10.75
8"	19.50	13.50	1.13	11.75	8-0.88	14.25	12.75
10"	24.50	16.00	1.19	14.25	12-1.00	16.38	14.75
12"	27.50	19.00	1.25	17.00	12-1.00	19.00	18.00
14"	31.00	21.00	1.38	18.75	12-1.12	22.25	20.38
16"	32.50	23.50	1.44	21.25	16-1.12	24.25	21.75



SERIES 50-SC STANDARD DIMENSIONS

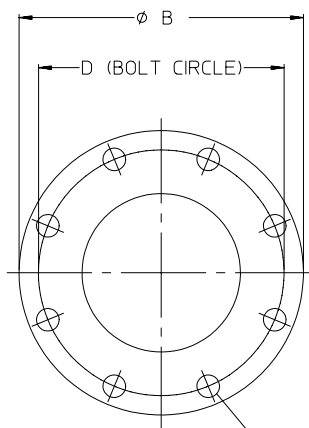
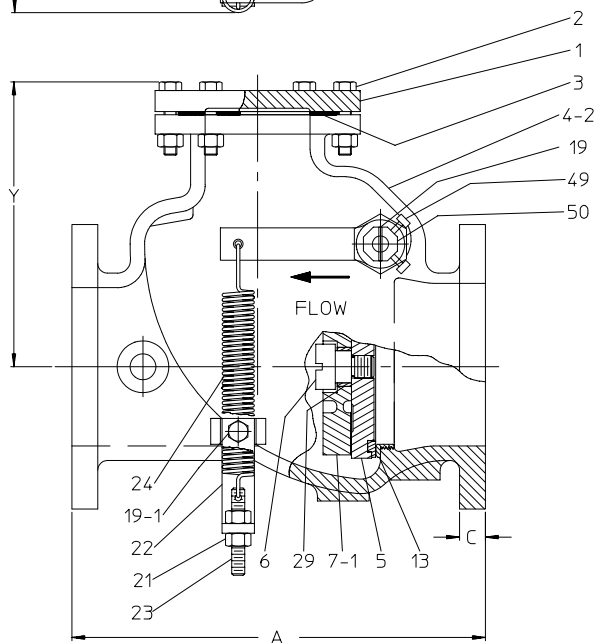
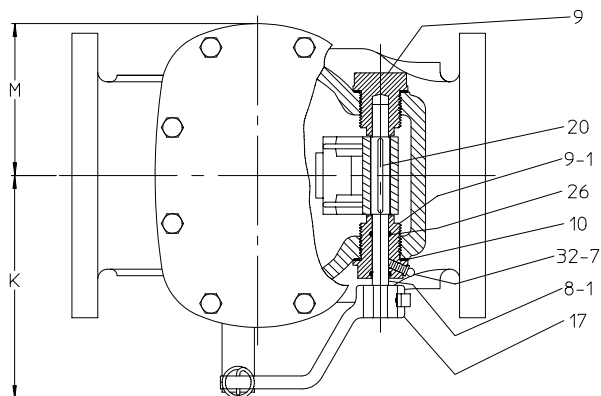


**SERIES 50-SC LEVER AND WEIGHT DIMENSIONS**



Valve Size	A	B	C	D	E	L	M	Y
3"	11.00	7.50	.75	6.00	4-0.75	5.75	4.00	7.38
4"	13.00	9.00	.94	7.50	8-0.75	6.38	4.50	9.00
6"	16.00	11.00	1.00	9.50	8-0.88	9.25	5.88	10.75
8"	19.50	13.50	1.13	11.75	8-0.88	10.38	7.13	12.75
10"	24.50	16.00	1.19	14.25	12-1.00	12.13	8.25	14.75
12"	27.50	19.00	1.25	17.00	12-1.00	13.00	9.50	18.00
14"	31.00	21.00	1.38	18.75	12-1.12	15.00	11.12	20.38
16"	32.50	23.50	1.44	21.25	16-1.12	16.75	12.12	21.75

## SERIES 50-SC LEVER AND SPRING DIMENSIONS



E = NUMBER AND SIZE OF BOLT HOLES

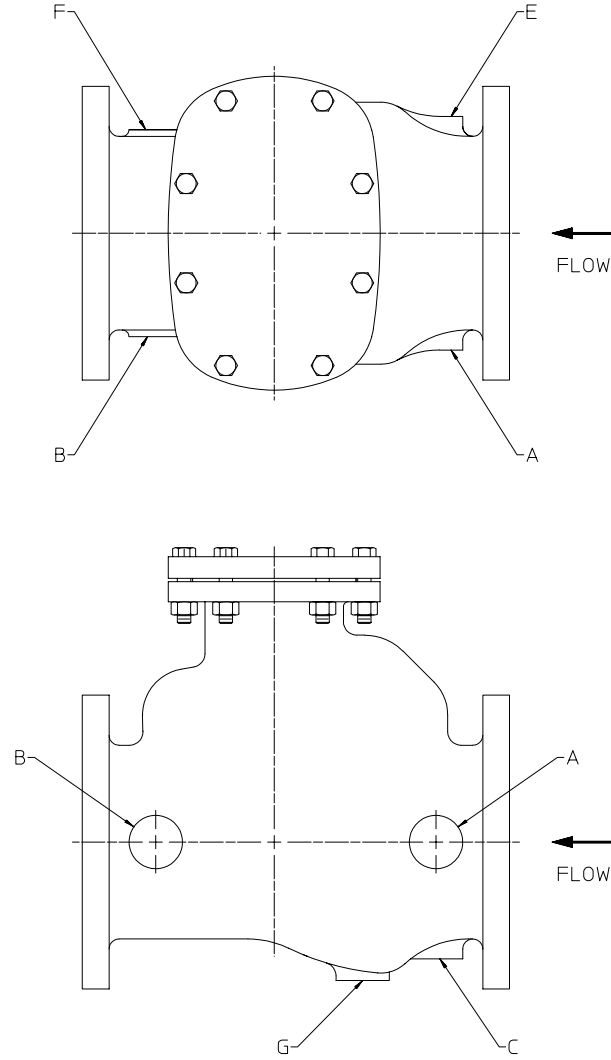
IL1483-2

Valve Size	A	B	C	D	E	K	M	Y
3"	11.00	7.50	.75	6.00	4-0.75	5.63	4.00	7.38
4"	13.00	9.00	.94	7.50	8-0.75	6.25	4.50	9.00
6"	16.00	11.00	1.00	9.50	8-0.88	8.25	5.88	10.75
8"	19.50	13.50	1.13	11.75	8-0.88	9.68	7.13	12.75
10"	24.50	16.00	1.19	14.25	12-1.00	11.38	8.25	14.75
12"	27.50	19.00	1.25	17.00	12-1.00	12.19	9.50	18.00
14"	31.00	21.00	1.38	18.75	12-1.12	14.25	11.12	20.38
16"	32.50	23.50	1.44	21.25	16-1.12	15.50	12.12	21.75





### SERIES 50-SC OPTIONAL TAP LOCATIONS



IL1483-3

Valve Size	Maximum Tap Size for Bosses A, B, C, E, F & G
3"	1/2 NPT
4"	3/4 NPT
6"	1 NPT
8"	1 NPT
10"	2 NPT
12"	2 NPT
14"	2 NPT
16"	2 NPT

## SERIES 50-SC WEIGHTS



Valve Size	Standard	Lever / Spring	Lever / Weight
3"	61	63	64
4"	98	102	104
6"	167	170	173
8"	274	288	295
10"	445	450	470
12"	620	655	655
14"	1010	1080	1080
16"	1180	1250	1250

**NOTE: All weights are in pounds.**

SERIES 50-SC WEIGHTS



# SERIES 50-SC INSTALLATION AND TESTING



## INSTALLATION

This standard is issued as a recommendation to the customer for the proper use of swing check valves.

1. When valves are received, they should be unloaded carefully and stored with clapper still braced in closed position. Leave end protectors in place after initial examination for damage due to handling in transit. Protect stored valves from the elements and from undue damage in handling.
2. At the time of installation, remove the bracing from the swing check clapper and make sure that the clapper swings freely from the closed position to the stop in the open position. Check the direction of flow in the pipeline and make sure that the arrow cast on the side of the valve body agrees with this direction of flow so that the clapper will swing open with flow through the valve.
3. Valves without external shafts equipped with weights or springs are designed for operation with the centerline of the ports in a horizontal position with the bonnet on the top side of the line. These valves will operate satisfactorily if oriented not more than 45° from the horizontal with the flow upward.
4. The problem of swing check slam on high back pressure service, such as steep gradient lines or pump manifolding where pumps are shut down individually, is met by using check valves with extended shaft equipped with lever and spring or weight. This brings the disc to the seated position as soon as flow stops and before back flow can commence. In this way, dangerous back surges, slam and water hammer are reduced or eliminated. In any service where the possibility of slamming exists, it is recommended that check valves be equipped with lever and spring or lever and weight.
5. Check valves equipped with lever and spring can be used in a horizontal pipeline or in a vertical pipeline when flow is upward. Check valves equipped with lever and weight can also be used in either a horizontal pipeline or a vertical pipeline, but lever must be positioned on a shaft in correct position for desired direction of flow. The correct position of lever and weight when valve is installed in a horizontal line is 45° below the horizontal centerline of pipe, on downstream side of check valve disc. If check valve is to be installed in a vertical line with upward flow, the lever should be moved 90° counterclockwise from this position.
6. Do not install check valves in a vertical line with downward flow.
7. Check valve levers are installed on an eight-sided shaft nut and held in place by two set screws. To change position of lever, loosen the two set screws and move lever to desired position at 45° intervals, tightening the set screws securely after lever is moved to a different position.
8. At the time of installation, make sure that the pipe and valve are properly placed and supported so that excessive line strains are not exerted on the valved body. Especially in cases where the valve is to be inserted as a final step in the piping, make sure that the piping is properly lined up and spaced so that the bolting of the valve in the line is not used to correct any errors in piping alignment or spacing.

## TESTING

AFC does not recommend backfilling around buried valves before hydrostatic system test. Leave the valve exposed while the pipeline is being pressure tested (Per ANSI/AWWA C600).

Check to see that all valve joints and pressure containing bolts are tight.

After testing, relieve excess pressure from upstream side of the valve.



## SERIES 50-SC OPERATION AND MAINTENANCE

### OPERATION

1. On the swing check valve without external shafts, there are no directions as to operation since the valve is actuated by line flow.
2. In certain instances, swing check valves will be supplied with external loading on the clapper arm shaft to counteract slamming and surges. If spring loading is used, increase the tension on the spring to reduce slamming. If a weight is used, increase the moment arm of the weight on the lever arm to reduce slamming and in extreme cases, increase weight at maximum moment arm.

### MAINTENANCE

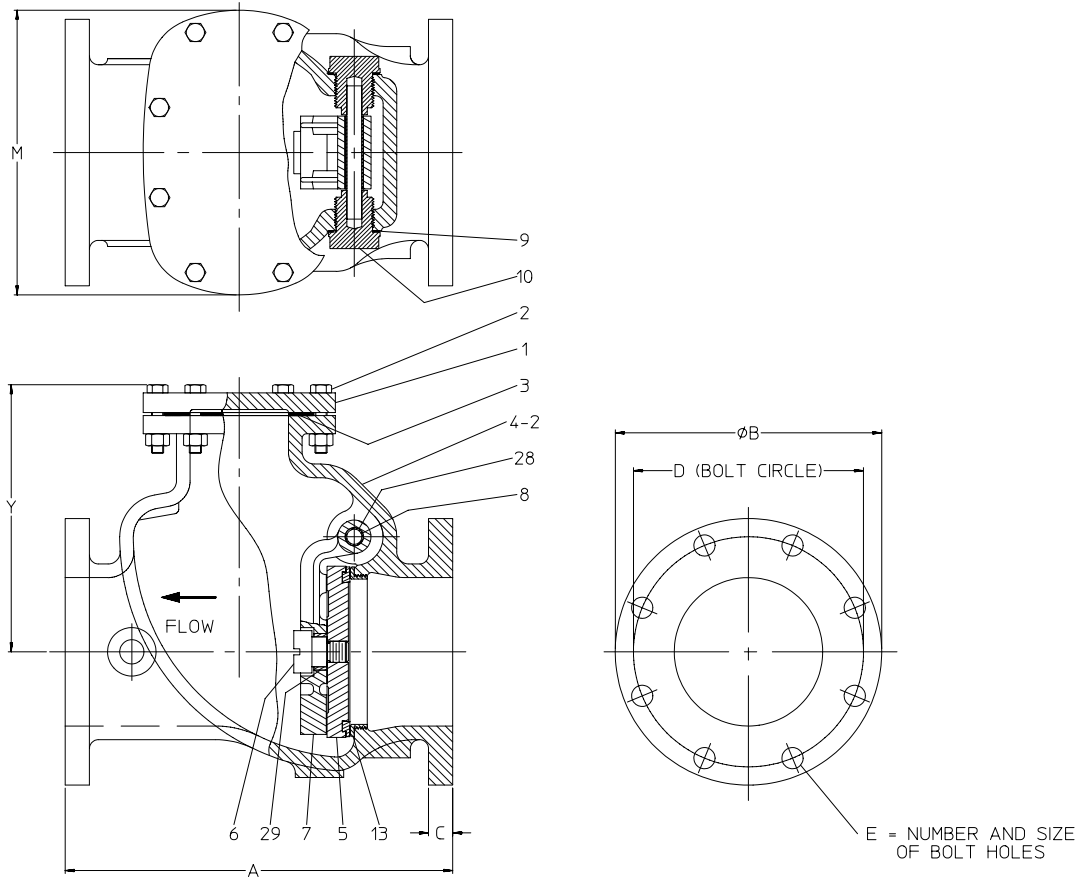
1. On standard check valves, disassemble once a year. Check for wear at clapper arm shaft bore, clapper arm shaft and disc to clapper arm connection. Depressurize valve for this inspection.
2. On extended shaft valves, every six months add #1 cup grease fitting between O-rings until resistance to flow is felt on the grease gun lever. If leakage occurs due to oscillation, replace O-rings by removing retainer plug. Be sure to pressurize space between O-rings with grease after reassembly. Look for excessive wear on extended shaft and bearing bore that would prevent O-ring sealing.

### SPARE PARTS

Under most conditions the only spare parts needed for swing check valves would be bonnet gasket, retaining plug gasket and O-rings if valve is equipped with extended shaft.

Under certain conditions of operation where very frequent oscillation of a clapper is expected or experienced, it is recommended that a spare shaft and shaft retainer plugs be kept in stock.

## SERIES 50-SC STANDARD PARTS LIST



IL1483

Ref No.	Description	Material	Quantity
1	Bonnet	Gray Iron (See Note 4)	1
2	Bonnet Bolt & Nut	Plated Steel	Varies
3	Bonnet Gasket	Composition Rubber	1
4-2	Flanged End Case	Gray Iron (See Note 4)	1
5	Disc	See Note 6	1
6	Disc Stud	Bronze	1
7	Clapper Arm	Ductile Iron	1
8	Clapper Arm Shaft	See Note 5	1
9	Retaining Plug	Bronze	2
10	Retaining Plug Gasket	Composition Rubber	2
13	Seat Ring	Bronze	1
28	Shaft Bushing	Bronze (See Note 7)	1
29	Disc Stud Bushing	Bronze	1

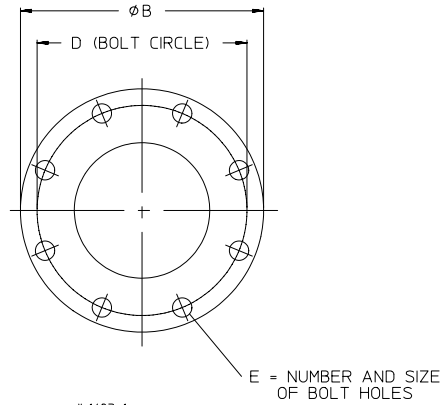
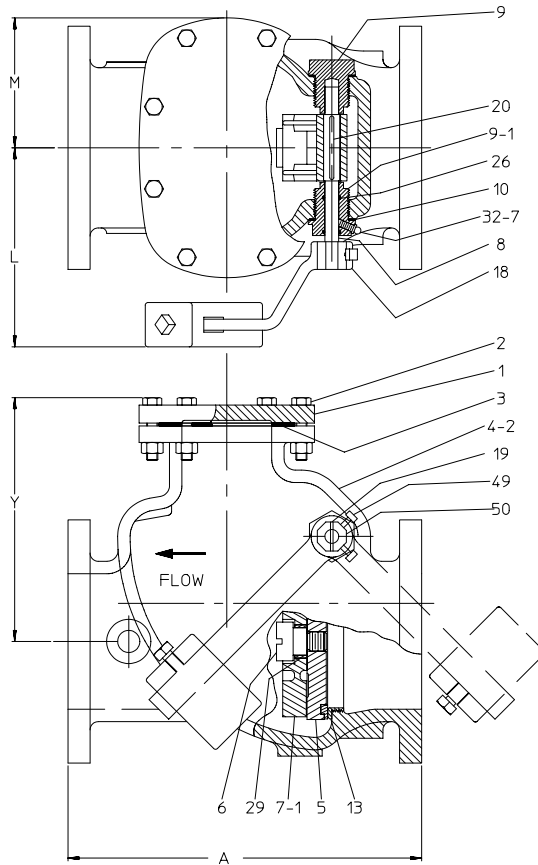
**NOTES:**

1. Construction, materials and testing comply with ANSI/AWWA C508.
2. End flanges conform to ANSI B16.1 Class 125 or ANSI/AWWA C110/A21.10.
3. Valves have manufacture's name, pressure class and year of manufacture cast on side of case.
4. All gray iron is ASTM A126 Class B.
5. Clapper arm shaft is stainless steel A582 type 416.
6. Disc on 3" are bronze ASTM B763 alloy 954. 4" and above are gray iron with bronze face (ASTM B763 alloy 8440) disc has lug on O.D. to prevent rotation.
7. Shaft bushings for valves 3" through 10" are bronze, 12" through 16" are nylon with molybdenum disulphide uniformly dispersed.





## SERIES 50-SC LEVER AND WEIGHT PARTS LIST



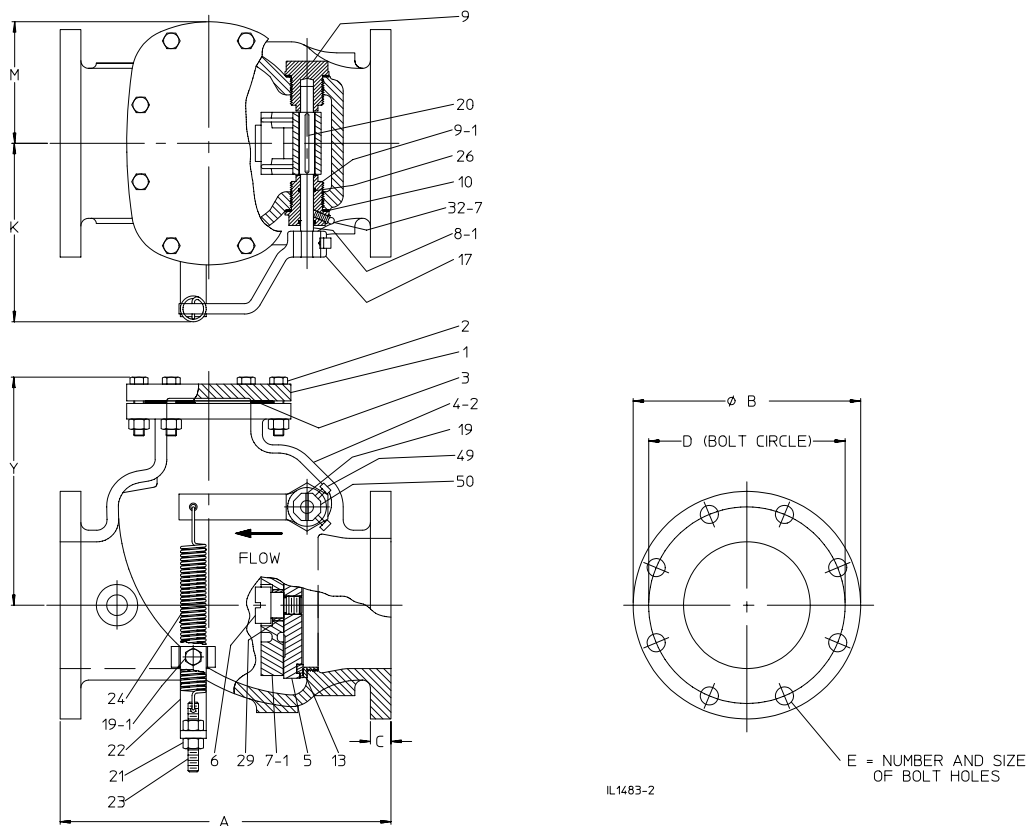
IL1483-1

Ref No.	Description	Material	Qty
1	Bonnet	Gray Iron	1
2	Bonnet Bolt & Nut	Plated Steel	Varies
3	Bonnet Gasket	Composition Rubber	1
4-2	Flange Ends Case	Gray Iron	1
5	Disc	See Note 6	1
6	Disc Stud	Bronze	1
7-1	Clapper Arm for Lever	Ductile Iron	1
8-1	Clapper Arm Shaft Assembly	Stainless Steel (See Note 5)	1
9	Retaining Plug	Bronze	1
9-1	Retaining Plug for Lever	Bronze	1
10	Retaining Plug Gasket	Composition Rubber	2
13	Seat Ring	Bronze	1
18	Lever for Weight	Ductile Iron	1
19	Lever Pin	Steel	1
20	Shaft Key	Stainless Steel	1
25	Weight for Lever	Gray Iron	1
26	O-ring	Carboxylated Nitrile	2
27	Weight Set Screw	Steel	1
29	Disc Stud Bushing	Bronze	1
32-7	Grease Fitting	Steel	1
49	Lever Set Screw	Steel	2
50	Shaft Nut	Ductile Iron	1

### NOTES:

- Construction, materials and testing comply with ANSI/AWWA C508.
- End flanges conform to ANSI B16.1 Class 125 or ANSI/AWWA C110/A21.10.
- Valves have manufacturer's name, pressure class and year of manufacture cast on side of case.
- All gray iron is ASTM A126 Class B.
- Clapper Arm shaft is stainless steel A582 type 416. Assembly includes lever, pin, key, set screw and octagon nut.
- Disc on 3" are bronze ASTM B763 alloy 954. 4" and above are gray iron with bronze face (ASTM B763 alloy 8440) disc has lug on O.D. to prevent rotation.
- Lever is furnished on side and position shown unless otherwise specified for lever and weight. Lever shown by dot and dash lines is the position furnished when valve is to be installed in a vertical line with upward flow for lever and weight.

## SERIES 50-SC LEVER AND SPRING PARTS LIST



Ref No.	Description	Material	Qty
1	Bonnet	Gray Iron	1
2	Bonnet Bolt & Nut	Plated Steel	Varies
3	Bonnet Gasket	Composition Rubber	1
4-2	Flange Ends Case	Gray Iron	1
5	Disc	See Note 6	1
6	Disc Stud	Bronze	1
7-1	Clapper Arm for Lever	Ductile Iron	1
8-1	Clapper Arm Shaft Assembly	Stainless Steel (See Note 5)	1
9	Retaining Plug	Bronze	1
9-1	Retaining Plug for Lever	Bronze	1
10	Retaining Plug Gasket	Composition Rubber	2
13	Seat Ring	Bronze	1
17	Lever for Spring	Ductile Iron	1
19	Lever Pin	Steel	1
19-1	Bracket Cap Screw	Steel	1
20	Shaft Key	Stainless Steel	1
21	Spring Bracket	Steel	1
22	Spring Link	Plated Steel	1
23	Link Nut	Plated Steel	2
24	Spring for Lever	Steel	1
26	O-ring	Carboxylated Nitrile	2
29	Disc Stud Bushing	Bronze	1
32-7	Grease Fitting	Steel	1
49	Lever Set Screw	Steel	2
50	Shaft Nut	Ductile Iron	1

### NOTES:

- Construction, materials and testing comply with ANSI/AWWA C508.
- End flanges conform to ANSI B16.1 Class 125 or ANSI/AWWA C110/A21.10.
- Valves have manufacturer's name, pressure class and year of manufacture cast on side of case.
- All gray iron is ASTM A126 Class B.
- Clapper Arm shaft is stainless steel A582 type 416. Assembly includes lever, pin, key, set screw and octagon nut.
- Disc on 3" are bronze ASTM B763 alloy 954. 4" and above are gray iron with bronze face (ASTM B763 alloy 8440) disc has lug on O.D. to prevent rotation.
- Lever is furnished on side and position shown unless otherwise specified for lever and spring.

