



**Made in USA**

# **FLOATING BALL VALVE INSTALLATION, MAINTENANCE, REPAIR MANUAL**

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**WARNING: BEFORE ATTEMPTING TO REPAIR A VALVE THAT HAS BEEN IN SERVICE BE SURE TO BLOCK THE ENDS AND SLOWLY OPEN AND CLOSE THE VALVE TO VENT ANY INTERNAL PRESSURE.**

## **BALON BALL VALVE STORAGE**

Balon Corporation ships ball valves in the open position. In order to protect valves during shipment, Balon ships valves in cardboard cartons or wooden boxes. The hand wheels on gear-operated valves are removed and secured to the valves for shipment. With the exception of Series 'LM' and Series 'LS' valves, valve handles are sold and shipped separately from the valves.

Valves should always be stored in the fully open position and should be kept indoors under clean, dry conditions.

## **BALON BALL VALVE INSTALLATION**

With the exception of freeze resistant uni-directional valves, Balon ball valves seal bi-directionally and may be installed in either direction.

Balon valves may be ordered as freeze resistant uni-directional valves. An arrow on the stem of a Balon uni-directional valve indicates the required flow direction. These valves are not bi-directional.

Valves should be installed in the open position. Heavy valves should be lifted into position using suitable straps.

Industry accepted make-up practice should be followed when installing flanged end valves.

Balon recommends the use of a high quality thread compound when installing threaded end valves. A back-up wrench should be placed on the valve component (body or end adapter) nearest to the pipe connection that is being adjusted.

Trash, such as welding slag, dirt, sand, and other foreign matter, should always be flushed from the line before operating any valve. It is recommended to fill and drain water while the valve is fully open to avoid trapping debris.

Piping systems are often pressure tested prior to their being placed in service. With valves in the open position or partially open position, valve shell testing may be done at a pressure up to 1.5 times the rated working pressure of the valves. Valves should be kept in the open position or partially open position during shell testing. Valve shell testing should never be done with the valves in the closed position.

With valves in the fully closed position, valve seat testing may be done at pressures up to 1.1 times the rated working pressure of the valves.

The pressure test medium should be eliminated from the system after testing has been completed. Water that is allowed to remain trapped inside valves can freeze. Water that freezes inside valves can damage the valves and associated pipe.

## **MAINTENANCE FOR BALON BALL VALVES**

Balon valves require no regular maintenance to maintain proper operation and sealing. Balon stems require no adjustment or greasing for proper sealing and operation.

## BALON BALL VALVE OPERATION

A ball valve is designed to be used in the fully open or fully closed position. Using a ball valve in the partially open position can result in seat damage and, under certain conditions, damage to other valve components. Applying excessive torque in an attempt to turn a ball beyond its 90 degree stop point could damage the valve stops and misalign the ball.

It is good practice to operate any valve periodically in order to assure that the ball is able to move freely.

A valve should always be operated within its pressure and temperature limits. Pressure and temperature limits are based on shell components and seating material combination. See Table 1 and Table 2 for limits.

Table 1: WCB / A105 Pressure (psi) and Temperature (F°) Limits					
Pressure Class →	150	300	600	900	1500
-20° - 100°	285	740	1480	2220	3705
Nylon / 212°	256	677	1354	2026	3380
Peek / 350°	215	645	1287	1932	3220

Table 2: LCC / LF2 Class 1 Pressure (psi) and Temperature (F°) Limits					
Pressure Class →	150	300	600	900	1500
-50° - 100°	285	740	1480	2220	3705
Nylon / 212°	256	677	1354	2026	3380
Peek / 350°	215	645	1287	1932	3220

NOTE: For pressure and temperature limits on TFE seated ball valves, consult the ratings chart on Balon's website (<http://www.Balon.com>) or contact Balon at [sales@balon.com](mailto:sales@balon.com) or at 405-677-3321.

**SERIES "F" AND "S" FLANGED END AND SCREWED END  
(LEVER OPERATED AND GEAR OPERATED)  
SERIES "LM" AND "LS" SCREWED END**

**SEAL KIT CONTENTS: SERIES "F" AND "S" LEVER OPERATED**

1. Seal kits are available for Balon Series "F" and "S" ball valves. Each kit contains the following parts:
  - A. 2 - Ball Seats
  - B. 1 - Body O-Ring
  - C. 1 - Stem TFE Thrust Washer
  - D. 1 - Stem O-Ring
  - E. 1 - Stem Stop Plate Retainer Ring
  - F. 1 - Stem Weather Guard
  - G. 1 - Dust Cover
  - H. 1 - Stop Plate Retainer
  - I. 1 - Stop Plate

**SEAL KIT CONTENTS: SERIES "F" GEAR OPERATED**

1. Seal kits are available for Balon Series "F" Flanged End Gear Operated ball valves. Each kit contains the following parts:
  - A. 2 - Ball Seats
  - B. 1 - Body O-Ring
  - C. 1 - Stem TFE Thrust Washer
  - D. 1 - Stem O-Ring
  - E. 1 - Stem Stop Plate Retainer Ring
  - G. 1 - Stem Key

**SEAL KIT CONTENTS: SERIES "LM" AND "LS"**

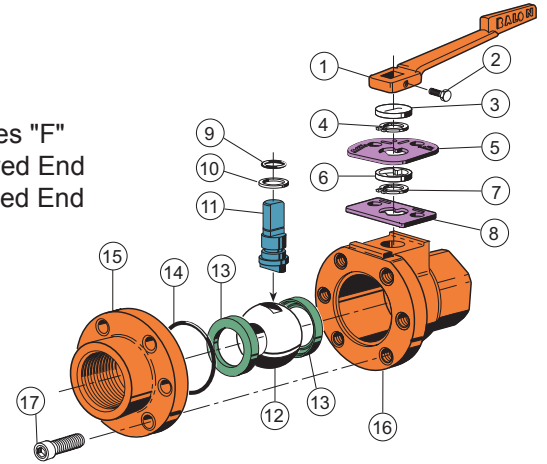
1. Seal kits are available for Balon Series "LM" and "LS" ball valves. Each kit contains the following parts:
  - A. 2 - Ball Seats
  - B. 1 - Weather Guard
  - C. 1 - Stem Washer
  - D. 1 - Stem Seal
  - E. 1 - Body Seal

Seal kits are sold by valve ball bore size and will fit any Balon ball valve with that bore size, regardless of valve material, end style, or working pressure. (Must specify NACE seal kit if valve has NACE trim. The valve will have letter N in valve part number tag, such as 2R-F63N-RF.) Otherwise, order standard seal kit. If letters TFE appear on valve tag, order Teflon seats.

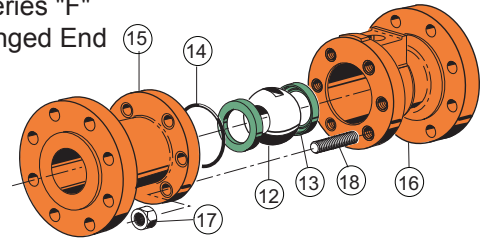
# BALON BALL VALVE PARTS LIST SERIES "F" AND "S" (LEVER OPERATED)

ITEM	PART NAME
1	Handle
2	Handle Bolt
3	Weather Guard
4	Lock Plate Retainer
5	Lock Plate
6	Dust Cover
7	Stop Plate Retainer
8	Stop Plate
9	Stem O-Ring
10	Stem Seal
11	Stem
12	Ball
13	Ball Seat
14	Body O-Ring
15	End Adapter
16	Body
17	Body Stud Nuts
18	Body Stud Bolts
19	Body Bolts

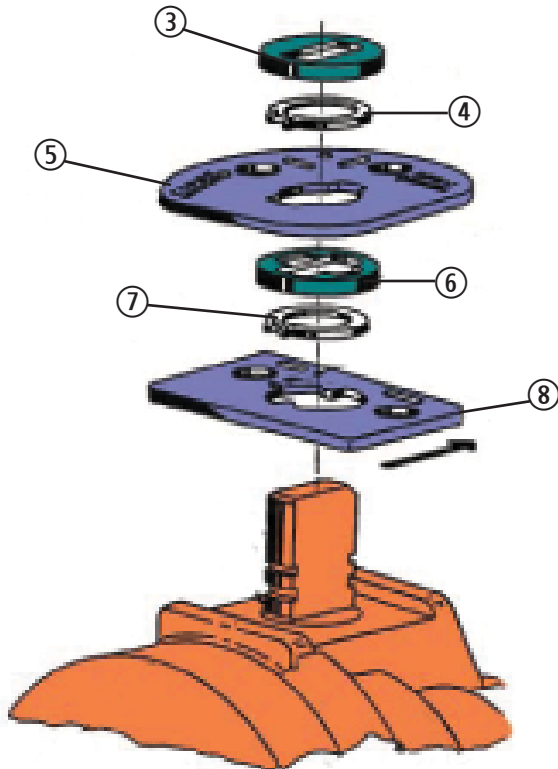
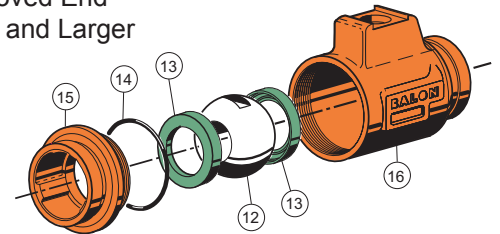
Series "F"  
Screwed End  
Grooved End



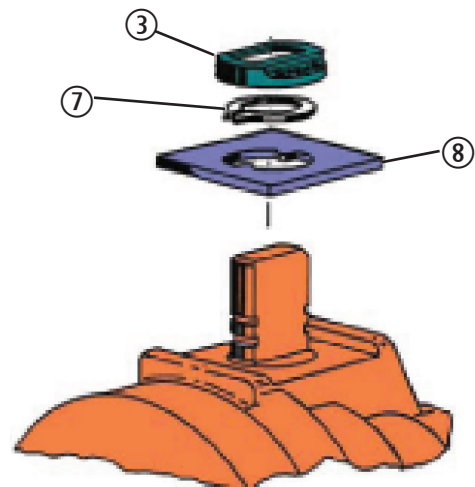
Series "F"  
Flanged End



Series "F"  
Screwed End  
Grooved End  
1" Full and Larger



WITH SAFETY LOCK DEVICE  
FIGURE 1



WITHOUT SAFETY LOCK DEVICE  
FIGURE 1

**WARNING:** BEFORE ATTEMPTING TO REPAIR A VALVE THAT HAS BEEN IN SERVICE BE SURE TO BLOCK THE ENDS AND SLOWLY OPEN AND CLOSE THE VALVE TO VENT ANY INTERNAL PRESSURE.

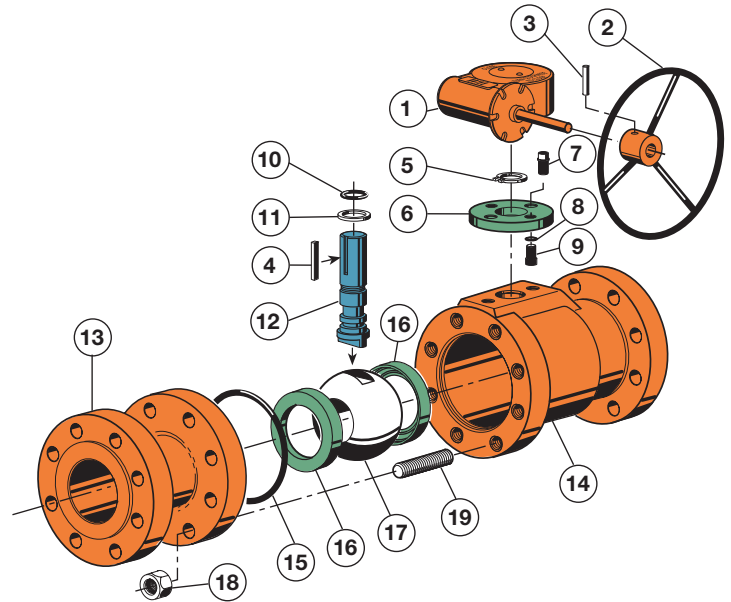
**BALON BALL VALVE REPAIR  
SERIES "F" AND "S"  
(LEVER OPERATED)**

1. **WARNING: BEFORE ATTEMPTING TO REPAIR A VALVE THAT HAS BEEN IN SERVICE BE SURE TO BLOCK THE ENDS AND SLOWLY OPEN AND CLOSE THE VALVE TO VENT ANY INTERNAL PRESSURE.**
2. Disassemble valve body and adapter.
3. With valve in closed position remove ball seat (13), body O-Ring (14), and ball (12).
4. Remove stem top works. (Note position of all components.)
5. Before removing stem, carefully file all edges of stem wrench flats and stop plate area to remove any burrs or permanent damage may occur to the stem bore. (FIG. 1)
6. Remove stem (11), stem O-Ring (9), and stem washer (10).
7. Clean all valve components thoroughly.
8. Install new stem seals (9) and (10) and grease.
9. Install stem (11) in valve. Install stop plate (8) and stop plate retainer (7) and fill cavity around stem with grease. **(IF VALVE IS NOT EQUIPPED WITH STANDARD SAFETY LOCK DEVICE (FIG. 2) SKIP TO STEP 10.)** Install dust cover (6). Install lock plate (5). Check for proper alignment, one hole and one slot on lock plate should line up with one hole and one slot on stop plate when fully open or closed. Install lock plate retainer (4). Grease snap ring area and install weather guard (3).
10. Install new ball seats (13) and body O-Ring (14), and grease.
11. Install ball (12).
12. Assemble valve. When installing body to end adapter, be careful not to pinch or damage O-Ring.
13. After valve is assembled, cycle to assure free and easy operation.

**SYNTHETIC GREASE THAT IS MOISTURE RESISTANT SHOULD BE USED.  
IF ANY PROBLEMS ARE ENCOUNTERED, CONTACT BALON CORPORATION AT 405-677-3321.**

**BALON BALL VALVE PARTS LIST  
SERIES "F" FLANGED END  
(GEAR OPERATED)**

ITEM	PART NAME
1	Gear Operator
2	Hand Wheel
3	Drive Pin
4	Stem Key
5	Stem Retainer Ring
6	Mounting Plate
7	Mounting Plate Screws
8	Lock Washers
9	Mounting Screws
10	Stem O-Ring
11	Stem Seal
12	Stem
13	End Adapter
14	Body
15	Body O-Ring
16	Ball Seats
17	Ball
18	Body Stud Nuts
19	Body Stud Bolts



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**BALON BALL VALVE DISASSEMBLY REPAIR  
SERIES "F" FLANGED END  
(GEAR OPERATED)**

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**DISASSEMBLY PROCEDURE FOR BALON BALL VALVES:**

- 1. NOTE: SEE WARNING ABOVE BEFORE BEGINNING REPAIR OR SERVICE WORK.**
2. After the valve has been removed from the line, place the valve in the vertical position with the valve body section (14) on the bottom. Remove body stud nuts (18). Be careful to protect the machined faces. Lift off end adapter (13).
3. Using gear operator, rotate the stem and ball to the closed position and lift out the ball (17).
4. Remove gear operator mounting screws (9). Pull gear operator off of mounting plate (6).
5. Remove stem retainer ring (5) and stem key (4). Carefully file outside of stem to remove any burrs or **permanent damage** to stem bore can occur.
6. Push stem (12) down into body housing and remove.
7. Remove all seats, seals and O-Rings, part numbers (10), (11), (15), (16).

**NOTE: SEE PAGE 9 FOR ASSEMBLY PROCEDURE.**

**SYNTHETIC GREASE THAT IS MOISTURE RESISTANT SHOULD BE USED.  
IF ANY PROBLEMS ARE ENCOUNTERED, CONTACT BALON CORPORATION AT 405-677-3321.**

**BALON BALL VALVE ASSEMBLY REPAIR  
SERIES "F" FLANGED END  
(GEAR OPERATED)**

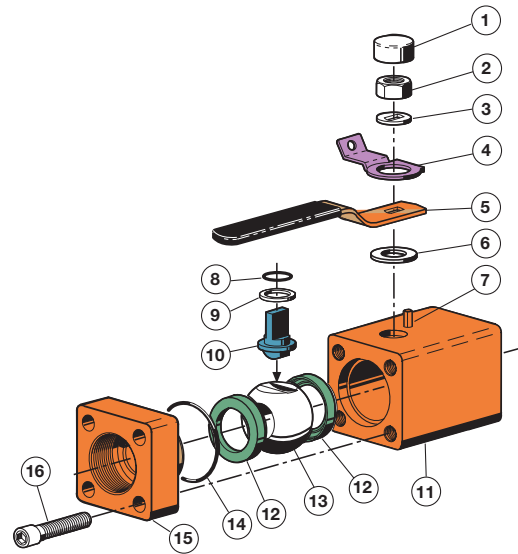
**ASSEMBLY PROCEDURE FOR BALON BALL VALVES:**

1. Clean all valve components thoroughly and check for corrosion, excessive wear, scoring, etc. (Note: If there is excessive corrosion in seat cavities or stem bore area the valve may not seal nor operate properly when re-assembled.)
2. Install new stem seal (11) and stem O-Ring (10). Grease O-Ring and stem with good quality water impervious grease and install in valve body (14).
3. Install stem retainer ring (5).
4. Install new ball seats (16) in body and adapter cavity and grease seat faces.
5. Grease retainer ring area of stem. Install stem key (4) in stem slot. Mount gear operator (1) on top of stem and rotate gear operator to align its pins with the mating holes on the adapter plate (6). Push Gear Operator down to the adapter plate. Install mounting screws (9) and lock washers (8) and tighten.
6. Using gear operator, rotate stem to closed position. Line up slot on ball with male end of stem in the body cavity and install ball into body cavity.
7. Align the bolt holes on the body and adapter. (Note: On flanged end valves be sure the flanged end bolt holes are aligned with each other.)
8. Set adapter on body. Be careful not to pinch or damage body O-Ring (15). Using hand pressure, push the adapter down to seat the O-Ring.
9. Install nuts and studs or bolts. Tighten bolts, alternating from one side to the opposite side bolt in a clockwise direction.
10. After valve is assembled, cycle to assure free and easy operation.

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## BALON BALL VALVE PARTS LIST AND REPAIR SERIES "LM"

ITEM	PART NAME
1	Weather Guard
2	Stem Nut
3	Spacer
4	Lock Plate
5	Handle
6	Stem Washer
7	Stop Pin
8	Stem O-Ring
9	Stem Seal
10	Stem
11	Body
12	Ball Seat
13	Ball
14	Body Seal
15	End Adapter
16	Body Bolts



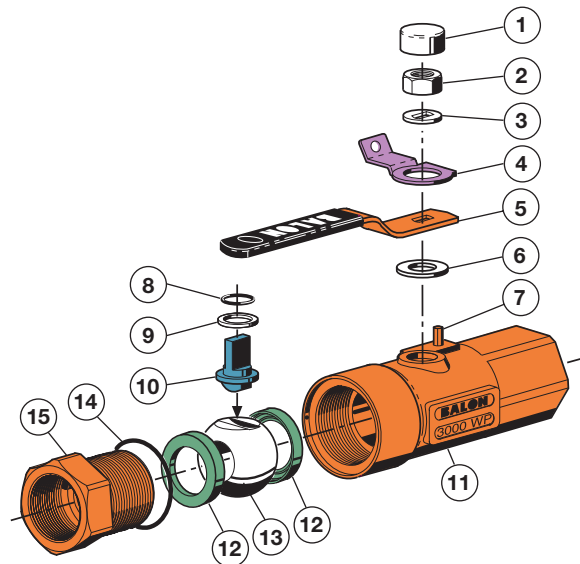
### INSTRUCTIONS FOR SEAL REPLACEMENT

1. **WARNING: BEFORE ATTEMPTING TO REPAIR A VALVE THAT HAS BEEN IN SERVICE BE SURE TO BLOCK THE ENDS AND SLOWLY OPEN AND CLOSE THE VALVE TO VENT ANY INTERNAL PRESSURE.**
2. Disassemble valve.
3. Remove all ball seats (12), body seal (14), stem O-Ring (8), and stem washer (6).
4. Clean all valve components thoroughly.
5. Install new stem O-Ring (8) on stem (10) and lubricate. Insert stem and stem seal into body. Then add the new stem washer (6), handle (5), lock plate (4) or lock washer if applicable, and stem nut (2). Tighten nut securely. If applicable, install weather guard (1).
6. Install new ball seats (12) and grease seat faces with a good quality grease.
7. Install body seal (14). NOTE: This kit contains 2 different types of body seals: A white Teflon ring and a rubber O-Ring. For proper seal, you must replace the body seal with the same type as the one that was originally installed.
8. Re-assemble valve. When installing body to end adapter be careful not to pinch or damage body seal.
9. After valve is assembled, cycle to assure free and easy operation.

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# BALON BALL VALVE PARTS LIST AND REPAIR SERIES "LS"

ITEM	PART NAME
1	Weather Guard
2	Stem Nut
3	Spacer
4	Lock Plate
5	Handle
6	Stem Washer
7	Stop Pin
8	Stem O-Ring
9	Stem Seal
10	Stem
11	Body
12	Ball Seat
13	Ball
14	Body O-Ring
15	Adapter



## **INSTRUCTIONS FOR SEAL REPLACEMENT:**

1. **WARNING:** BEFORE ATTEMPTING TO REPAIR A VALVE THAT HAS BEEN IN SERVICE BE SURE TO BLOCK THE ENDS AND SLOWLY OPEN AND CLOSE THE VALVE TO VENT ANY INTERNAL PRESSURE.
2. Disassemble the valve by unscrewing the end adapter.
3. Remove all ball seats (12), body seal (14), stem O-Ring (8), stem seal (9), and stem washer (6).
4. Clean all valve components thoroughly.
5. Install new stem O-Ring (8) and seal (9) on stem (10) and lubricate. Insert stem and stem seal into body. Then add the new stem washer (6), handle (5), lock plate (4) or lock washer if applicable, and stem nut (2). Tighten nut securely. If applicable, install weather guard (1).
6. Install new ball seats (12) and grease seat faces with a good quality grease.
7. Install body seal (14). NOTE: This kit contains 2 different types of body seals: A white Teflon ring and a rubber O-Ring. For proper seal, you must replace the body seal with the same type as the one that was originally installed.
8. Re-assemble valve. When installing body to end adapter be careful not to pinch or damage body seal.
9. After valve is assembled, crimp the end of the body tightly around the end adapter. Cycle to assure free and easy operation.

**SYNTHETIC GREASE THAT IS MOISTURE RESISTANT SHOULD BE USED.**

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