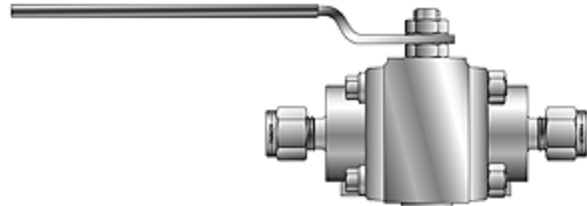


SB Series Swing-Out Ball Valve



INSTALLATION

1. SB Series Swing-out Ball Valves may be installed for flow in either direction. Use care to exclude pipe sealants from the valve cavity. Valves upstream relief hole in ball (vented option) are one way valves.
2. SBXD Valves (Diverter) may be installed using the bottom port as the inlet port. The flow can then be diverted to either one of the two side ports.
3. SBX Valves (Selector) may be installed using any of the ports as inlet or outlet ports. The source can be selected from either of two sources to be directed toward one outlet. It can be selected from one source to one outlet and then by rotating the valve, use that outlet as an inlet and use the third port as the new outlet. The 3 way valve does not have separate body seats. This function is incorporated into the valve seat. Therefore, more care than normal must be taken to not damage the back face of this seat upon disassembly and reassembly.

CAUTION

Parker recommends that all product which must be stored prior to installation be stored indoors, in an environment suitable for human occupancy. Do not store product in areas where exposure to relative humidity above 85%, acid or alkali fumes, radiation above normal background, ultraviolet light, or temperatures above 120 °F (48 °C) or below 40 °F (4 °C) may occur. Do not store within 50 feet of any source of ozone.

PACKING MAINTENANCE

Tighten the retaining nut if leakage is observed at the stem. For maximum packing life, proper stem seal adjustment procedures must be followed.

1. Tighten the bottom retaining nut until the bellville washers are flat (the nut will bottom).
2. Loosen the retaining nut 1/16 turn. NOTE: Excessive tightening causes higher torque and shorter seal life.
3. Tighten the handle nut securely to lock the retaining nut in place.

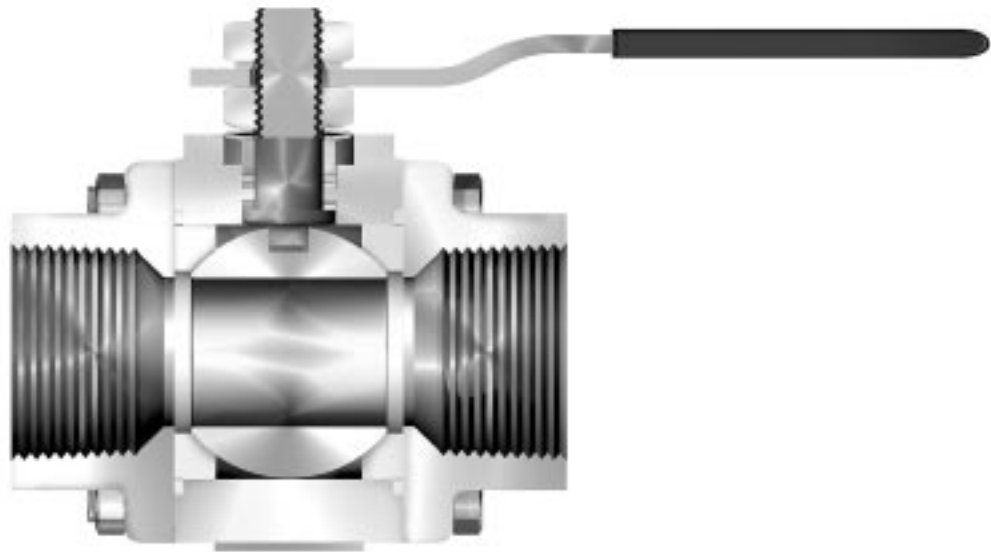


Figure 1: SB Series Swing-Out Ball Valve Cross Sectional View

OPERATION

- a. Operation consists of turning the handle.
- b. These valves will provide bubble-tight shut-off when used in accordance with published pressure versus temperature curves.
- c. It is not good practice to leave a ball valve partly open (throttling operation).
- d. As shipped, valves contain a silicone-based lubricant. This is for break-in, and may be removed if it is objectionable for an application by disassembling and solvent washing.
- e. Media which may solidify, crystallize, or polymerize should not be allowed to stand in the ball valve cavity.

Torque Requirements

Torque requirements are subject to variability depending on the length of time between operations and the media in the valve. All figures below are based on laboratory tests with water as the media. They are measured at rated pressure, 70 °F (21 °C), with clean tap water after 24 hours. Breakaway torque is that force which must be exerted to cause the ball to begin to move.

Valve	Breakaway Torque
SB8	30 inch pounds
SB12	45 inch pounds
SB16	100 inch pounds
SB20	200 inch pounds
SB24	300 inch pounds
SB32	400 inch pounds

BALL VALVE REPAIR KIT INSTRUCTIONS

WARNING: Ball valves can trap fluids in ball cavity when closed.

If the valve has been used to control hazardous media, it must be decontaminated before disassembly. It is recommended the following steps are taken for safe removal and disassembly:

- Relieve the line pressure.
- Place the valve in half-open position and flush the line to remove any hazardous material from valve.
- All persons involved in the removal and disassembly of the valve should wear the proper protective clothing such as face shield, gloves, apron, etc.

NOTE: Repair kits with “SS” gasket body seals **cannot** be used on valves with stainless bodies with cast surfaces or serrations in the body seal area.

DISASSEMBLY

1. Place the valve in open position, remove the three body bolts and nuts and swing out center section from between pipe ends.
2. Close the valve and remove the body seals, seats and ball.
3. Remove the handle nut, lockwasher and handle. Using a wrench to prevent stem from turning, remove the retaining nut, belleville washers and follower. Push the stem into body cavity and remove the thrustbearing, stem seal, and stem seal protector (if any) from body cavity or stem.

VISUAL INSPECTION

1. The ball and the surfaces against which the seats are installed should be free of pit marks and scratches. Light marring from the action of the ball against the seats is normal and will not affect the operation of the valve. Flaws which can be seen but not detected with finger tips are acceptable. The stem surfaces that the thrustbearing and stem seal contact should be free from pit marks and scratches.

CAUTIONS

1. If the seats and seals installed differ from those removed, the valve nameplate **must** be replaced or remarked to indicate the altered materials and ratings.
2. The PTFE and UHMWPE body seals and the coated stainless steel “SS” gasket body seals make an excellent seal. However, some points of caution in their use need emphasizing:
 - a. No PTFE or UHMWPE part (except seals) is reusable. “SS” gasket body seals are also not reusable. Upon disassembly of the valve, they should be discarded and replaced with new parts.
 - b. Care must be taken to avoid scratching the PTFE or UHMWPE body seals, or the coating of the “SS” gaskets during installation.
 - c. The Selector valve (SBX) does not have a separate seat and body seal. This function is incorporated into the 3-way seat. Therefore, more care than normal must be taken to not damage the back face of this seat during disassembly and reassembly.

REASSEMBLY

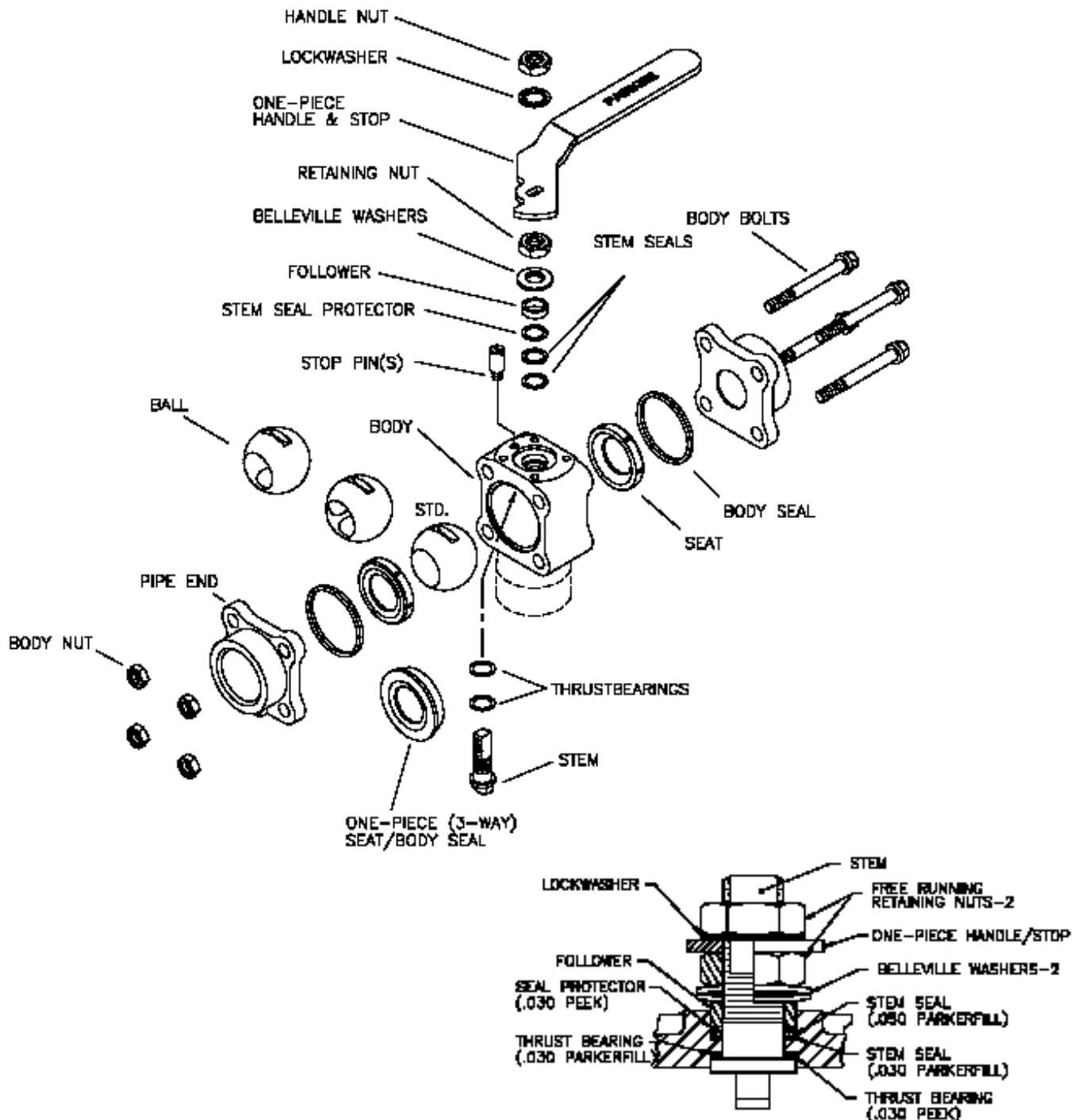
NOTE: Valves with a pressure relief hole in the ball must be reassembled and installed with the hole upstream when valve is closed. Any valve with the pressure relief hole option will have an arrow on the body pointing downstream. This arrow will be stamped on the body or on a separate metal tag.

1. Lightly lubricate the ball, seats, body seals, stem seal, stem seal protector (if any), and thrustbearing with a lubricant compatible with the media being handled. White petroleum jelly is a good general purpose lubricant.
2. Place the new thrustbearing on stem and insert thru body cavity. Thrustbearing is generally thinner than stem seal. Place the new stem seal, stem seal protector, if any (See NOTE), follower, and belleville washers on stem. (The belleville washers must have the larger diameter side touching each other.) Assemble retaining nut and tighten using a wrench to prevent stem from turning. Tighten retaining nut until the belleville washers are flat, then loosen nut 1/6 turn. Excessive tightening only causes higher torque and shorter seal life.

3. Install the stop, handle, lockwasher and handle nut on the stem. Tighten the handle nut securely to lock retaining nut in place. With the stem in the closed position, replace ball and seats. SBX valves have a one-piece seat/seal and it is inserted with valve in closed position. Rotate stem and ball to open position. Insert new body seals and place center section between pipe ends.

NOTE: When replacing the optional stainless steel "SS" gasket body seal, the wide flange is placed against body of the valve.

4. The body bolts of the valve should be tightened evenly. Tighten one side snugly, then the one diagonally across. Repeat for the other bolts bringing them all down tightly in sequence to the torques on Page 5.



WELDED PORT CONNECTIONS

Notes

- a. Always consult your authorized Parker representative if questions arise.
- b. Careful welding procedures are recommended and welding should be performed by trained, qualified personnel. Socket weld ports require the tube be inserted into the socket until bottomed against the stop. The tube is then to be backed out approximately 1/16 of an inch and then welded. This procedure will help in avoiding excessive static stress on the weld.
- c. Prior to Welding or Brazing THOROUGHLY CLEAN ALL JOINT SURFACES to remove surface protective coatings.

Procedure

1. Tack weld the valve in place.
2. Remove all body bolts except one. Open the valve. Loosen the last bolt. Swing the body out. Remove all bolts and spread the flange ends to clear the body seals. Remove the body seals, seats, and ball (turn valve handle to the closed position to remove the ball). Place the body back into the line and tighten diagonally with two body bolts.
3. Finish Welding (If gas welding or brazing, do not place flame directly on valve body.
4. Allow valve to cool, re-assemble the valve. Install new body seals, if they were shipped separately from the valve. Temporary BUNA body seals, found in the valve as received are not to be reused. If "SS" gasket body seals are used, the wide face of the gasket must be the face of the valve body.
5. Note: Care must be taken to avoid scratching the body seats.
6. Tighten the body bolts evenly and diagonally opposite each other, alternating in a criss-cross pattern. Use the torque figures shown in the following tables.

THREE-PIECE VALVES BODY BOLT TORQUE (TORQUE ON NUT SIDE)

SB8- SB32 STANDARD VALVES WITH CARBON STEEL BOLTS

VALVE SIZES	BOLT DIAMETER	IN-LBS	FT-LBS	N-M
SB8-SB12	1/4	96-120	8-10	10.8-13.6
SB16	5/16	156-204	13-17	17.6-23.0
SB20	3/8	216-264	18-22	24.4-29.8
SB24	7/16	480-540	40-45	54.2-61.0
SB32	1/2	720-780	60-65	81.3-88.1

SB8 - SB32 STANDARD VALVES WITH STAINLESS STEEL OR ALLOY 20 BOLTS

VALVE SIZES	BOLT DIAMETER	IN-LBS	FT-LBS	N-M
SB8-SB12	1/4	72-94	6-8	8.1-10.6
SB16	5/16	120-144	10-12	13.6-16.3
SB20	3/8	192-216	16-18	21.7-24.4
SB24	7/16	336-384	28-32	38.0-43.4
SB32	1/2	504-552	42-46	56.9-62.4

NOTE: Stainless steel bolts and nuts are generally used in all 3-piece valves with stainless steel bodies.

VALVE CONNECTOR MAKE-UP INSTRUCTIONS

MALE AND FEMALE PIPE PORTS

Wrench flats are provided on the Valve Body. It is recommended a smooth-jawed wrench or vise be used to grip the Valve Body.

1. On the male threaded part of the connection, apply a high quality pipe joint compound or PTFE tape made for this purpose. When PTFE tape is used, it is recommended two full turns of tape be applied. PTFE tape should not be overhanging or covering the first thread
2. Engage the Valve and the other component part together, until hand-tight.
3. With a proper wrench, holding both the Valve and the component part, continue to tighten to achieve a leak-tight joint.

ULTRASEAL CONNECTIONS

1. Insert the proper O-Ring into the UltraSeal fitting's O-Ring groove. Position the UltraSeal gland sealing face against the O-Ring, and then advance the Nut to a finger-tight position.
2. A positive seal is obtained by advancing the Nut no less than 1/4 turn from the finger-tight position. Proper UltraSeal make-up is achieved when a sharp rise in required application torque occurs, which indicates proper seal face contact and O-Ring seal compression into the UltraSeal groove.

VACUSEAL CONNECTIONS

1. A positive seal is obtained by advancing the Nut 1/8 turn from the finger-tight position.
2. A new gasket should be installed upon each fitting re-make to insure system pressure integrity.

TUBE FITTING CONNECTIONS

1. Insert the tube into the Valve port until the tube bottoms out in the Valve Body. Care should be exercised to insure the tube is properly aligned with the Valve Body and port.
2. Normal make-up for US Customary port sizes 1 thru 3 (1/16 thru 3/16 inch) and SI port sizes 2 thru 4 (2 thru 4 mm) is 3/4 turn from finger tight. Normal make-up for US Customary port sizes 4 thru 16 (1/4 thru 1 inch) and SI port sizes 5 thru 25 (5 thru 25 mm) is 1 1/4 turn from finger tight. For larger port sizes consult Parker Ferrule Presetting Tool Instructions.

PLEASE FOLLOW THE ABOVE DIRECTIONS FOR COUNTING THE NUMBER OF TURNS FOR PROPER FITTING MAKE-UP. DO NOT MAKE-UP TUBE FITTINGS BY TORQUE OR "FEEL". VARIABLES SUCH AS TUBING AND FITTING TOLERANCES, TUBE WALL THICKNESS, AND THE LUBRICITY OF NUT LUBRICANTS CAN RESULT IN AN IMPROPERLY ASSEMBLED TUBE FITTING CONNECTION.

A -Two ferrule A-LOK®
compression port



Z -Single ferrule CPI™
compression port



F -ANSI/ASME B1.20.1
Internal pipe threads



V -VacuSeal face
seal port



Q -UltraSeal face
seal port



M -ANSI/ASME B1.20.1
External pipe threads



WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

ALL PARKER VALVES MUST PASS A RIGID OPERATIONAL AND LEAKAGE TEST BEFORE LEAVING THE FACTORY. IT IS RECOMMENDED AFTER ANY REASSEMBLY, THE VALVE SHOULD BE TESTED BY THE USER FOR OPERATION AND LEAKAGE. IF THESE INSTRUCTIONS ARE NOT FULLY COMPLIED WITH, THE REPAIRED PRODUCT MAY FAIL AND CAUSE DAMAGE TO PROPERTY OR INJURY TO PERSONS. PARKER HANNIFIN CANNOT ASSUME RESPONSIBILITY FOR PERFORMANCE OF A CUSTOMER SERVICED VALVE.

