

Keckley Ball Valves

Installation, Operating, and Maintenance Instructions

Split Body Flanged End Ball Valve: (BVF2 Class 150/300)

I. Initial Inspection

- A. Remove valve from packaging; remove flange protectors and discard, if so equipped.
- B. Inspect flange faces for any damage caused in shipment or handling.
- C. Confirm Valve Size and Class is correct for installation.

II. Installation

- A. Confirm flanges installed on adjacent piping are correct pressure class and match valve flange pattern.
- B. Confirm “lay-length” between piping flanges matches valve “lay-length”.
- C. Slide valve between piping flanges, then insert first spiral wound flange gasket between one valve flange and piping flange.
- D. Insert flange bolts and hand tighten flange nuts on first side.
- E. Insert second spiral wound flange gasket between opposite valve flange and piping flange.
- F. Insert flange bolts, and hand tighten flange nuts on second side.
- G. With a torque wrench having capacity to apply torque as recommended by flange gasket manufacturer, start to torque first side flange bolts to 25% of recommended final torque, using an alternating “across flange” torquing sequence to insure correct gasket compression.
- H. Using same “across flange” torquing sequence, increase torque to 50% of recommended flange bolt final torque.
- I. Using same “across flange” torquing sequence, increase torque to 75% of recommended flange bolt final torque.
- J. Using same “across flange” torquing sequence, increase torque to recommended flange bolt final torque.
- K. Perform steps “G” through “J” on opposite flange connection.

III. Operation

- A. After Installation, confirm handle has adequate clearance by rotating 90 degrees from open to closed position and back to open.
- B. All Keckley ball valves are designed for on-off operation only. DO NOT attempt to “throttle” with Keckley ball valves, unless they are specifically designed for and tagged “FOR THROTTLING SERVICE”.
- C. If application is in STEAM PIPING, be cautious when operating valve-handle will be HOT!



IV. Initial Pressurization of System

- A. Upon initial pressurization of piping system, check all connections for leaks and correct if required.
- B. Once system reaches “Steady State” conditions of operating pressure and operating temperature, it will be necessary to make initial stem packing adjustment. **Evenly** tighten the two “Packing Nuts”, Part #20, to 30-40 in-lbs.

V. Maintenance

- A. Keckley Ball Valves require no maintenance other than periodic stem packing adjustment in applications where many cycles of on-off operation occur on a weekly basis.
- B. In high-cycle applications, check stem packing area regularly to confirm there is no leakage from stem packing. If leakage occurs, follow step #IV-B to correct.

VI. Repair and Reconditioning

NOTE: Refer to Assembly Drawings and Parts Lists as shown in Keckley Folder BVF2 - this can be downloaded at www.KECKLEY.com or see Keckley Engineering Binder under “Flanged End Ball Valves”.

- A. De-pressurize line, drain fluid.
- B. Remove flange bolting, slide valve from between piping flanges, discard spiral wound flange gasket.
- C. Place valve assembly on a secure table surface with Part #2 “Tailpiece” facing up, and opposite body flange contacting table surface. Table or bench must be equipped with “studs” or bolts to engage body flange holes, and **must have a protective surface to prevent damage to body flange face.**
- D. Note: **Significant torques are required to be applied to “Body Nuts” #22 to disassemble and reassemble valve - secure table or bench to floor or wall.**
- E. Using “six-point” sockets, loosen “Body Nuts” #22 and remove.
- F. Carefully lift “adapter” #2 upward away from “Body” #1.
- G. Move handle to “closed” position, and remove “Ball” #3 and “Seat” #5 from body cavity. **Handle ball carefully to prevent damage.**
- H. Remove second “Seat” #5 from “Adapter” #2.
- I. For 1½” to 8” sizes:
 - a. Remove “Handle” #12.
 - b. Remove “Snap Ring” #9 and “Stop Plate” #10.
 - c. Remove “Packing Nuts” #20, “Belleville Washers” #19, “Packing Bolts” #18, and “Gland Flange” #8.
 - d. Remove “Gland” #8.
 - e. Push “Stem” #4 down into body cavity and remove from body bore.
 - f. Remove “Packing” #7 with packing hook - **DO NOT DAMAGE PACKING BORE.**
 - g. Discard: “Seats” #5, “Packing” #7, “Thrust Washer” #6, and “Body Seal” #11. New parts are included in repair kit.

Reassembly:

- A. Inspect “Ball” #3 and “Stem” #4 for any damage or wear - replace if required.
- B. Apply lubricant to (1) new “Seat” #5 and install in “Body” #1 - press into seat recess.
- C. Install new “Thrust Washer” #6 on “Stem” #4 and insert through body bore and up through stem bore - seat “Thrust Washer” #6 against recess face.
- D. Move stem to “closed” position so that internal stem “tang” is parallel to body length centerline and install “Ball” #3.
- E. Apply lubricant to second “Seat” #5 and install into “Adapter” #2 - press into seat recess.
- F. Install new “Body Seal” #11 onto “Body” #1 counter-bore, and apply anti-seize compound to “Stud Bolts” #21.
- G. Lift “Adaptor” #2 and align flange bolting with opposite body flange, while aligning cast stiffening ribs on “Adaptor” to be located aligned with stem and body base. **Use caution to protect “Body Seal” #11 and to insure “Seat” #5 stays in seat recess.**
- H. Hand tighten “Body Nuts” #22 to “Studs” #21.
- I. Install new “Stem Packing” #7 using caution to prevent damage to packing rings. **NOTE: for PTFE Packing, the “chevron” (^) points upwards toward handle, and upper & lower rings are “flat” on one side.**
- J. For 1½” to 8” sizes:
 - a. Install “Gland Flange” # 8, “Packing Bolts” #18, “Belleville Washers” #19, “Packing Nuts” #20 - torque evenly to 30-40 in-lbs.
 - b. Install “Stop Plate” #10, “Snap Ring” #9, and “Handle” #12.
- K. Place valve assembly on table or bench with “Adaptor” #2 facing up and opposite body flange engaged with studs or bolts - **protect flange surfaces.**
- L. Using a torque wrench capable of producing the required final torques listed below, torque “Body Nuts” #22 to “Studs” #21 as follows:
 - a. Using an alternating “across flange” torque sequence, torque “Body Nuts” to 25% of final recommended torque.
 - b. Using same procedure, torque to 50% of final torque.
 - c. Using same procedure, torque to 75% of final torque.
 - d. Using same procedure, torque to final torque.

BODY NUT ASSEMBLY TORQUES

Valve Size	Assembly Torque (In-Lbs)	Assembly Torque (In-Lbs)
	Class 150	Class 300
1”	3/8”-16 UNC: 400	3/8”-16 UNC: 400
1½”	1/2”-13 UNC: 750	1/2”-13 UNC: 750
2”	7/16”-14 UNC: 535	7/16”-14 UNC: 535
2½”	1/2”-13 UNC: 750	N/A
3”	5/8”-11 UNC: 885	5/8”-11 UNC: 885
4”	5/8”-11 UNC: 885	5/8”-11 UNC: 885
6”	5/8”-11 UNC: 885	3/4”-10 UNC: 1700
8”	7/8”-9 UNC: 4000	N/A

- M. Retest valve assembly per API 598 or ASME B16.34.
- N. Re-install per Section II.