

Keckley Ball Valves

Installation, Operating, and Maintenance Instructions

UniBody Flanged End Ball Valve: (BVF1)

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. Tighten Part #9, “Packing Gland” to 75 in-lbs on ½” to 1” sizes. On 1½” to 6” sizes, **evenly** tighten the two “Packing Nuts”, Part #19, 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 BV15 and BV17 - 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 Part #2 “ Tailpiece” to disassemble and reassemble valve - secure table or bench to floor or wall.**
- E. Obtain “male” hexagon drivers of the following sizes:

Valve Size	Hexagon Driver (Across-Flats)	Valve Size	Hexagon Driver (Across-Flats)
½”	10MM or 13/32”	2½”	2-1/8”
¾”	5/8”	3”	2-17/32”
1”	13/16”	4”	3-13/32”
1½”	1¼”	6”	5-3/16”
2”	1-11/16”		

- F. Engage “male” hexagon driver into female hexagon drive in Part #2 “Tailpiece”.
- G. Using “six-point” sockets of $\frac{3}{4}$ ” or 1” drive size to engage “male” drivers, or large pipe wrench, apply counter-clockwise torque to drivers to remove Part #2 “Tailpiece”.
- H. Move handle to “closed” position, and remove ball and seats from body cavity. **Handle ball carefully to prevent damage.**
- I. For $\frac{1}{2}$ ” to 1” sizes:
 - a. Remove “Handle” #12.
 - b. Remove “Packing Gland” #9.
 - c. Push “Stem” #4 down into body cavity and remove from body bore.
 - d. Remove “Packing” #7 with packing hook - **DO NOT DAMAGE PACKING BORE.**
- J. For $1\frac{1}{2}$ ” to 6” sizes:
 - a. Remove “Handle” #12.
 - b. Remove “Retaining Ring” #9 and “Stop Plate” #10.
 - c. Remove “Packing Nuts” #19, “Belleville Washers” #18, “Packing Bolts” #17 and “Packing Gland” #8.
 - d. Push “Stem” #4 down into body cavity and remove from body bore.
 - e. Remove “Packing” #7 with packing hook - **DO NOT DAMAGE PACKING BORE.**

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 “Tailpiece” #2 - press into seat recess.
- F. Install new “Body Seal” #11 onto “Tailpiece” #2 counter-bore, and apply anti-seize compound to insert threads and/or body threads.
- G. Hand tighten “Tailpiece” #2 into Body **using caution to protect “Body Seal” #11 and to insure “Seat” #5 stays in seat recess.**
- H. 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.**
- I. For $\frac{1}{2}$ ” to 1” sizes:
 - a. Install “Packing Gland” #9, torque to 75 in-lbs.
 - a. Install “Handle” #12, “Lock Washer” #8, and “Handle Nut” #10.
- J. For $1\frac{1}{2}$ ” to 6” sizes:
 - a. Install “Packing Gland” #8, “Packing Bolts” #17, Belleville Washers” #18, and “Packing Nuts” #19 - torque evenly to 30-40 in-lbs.
 - a. Install “Lock Plate” #10, “Snap Ring” #9, and “Handle” #12.
- K. Place valve assembly on table or bench with “Tailpiece” #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:

ASSEMBLY TORQUES

Valve Size	Assembly Torque (Ft-Lbs)
1/2"	147
3/4"	147
1"	347
1 1/2"	453
2"	547
2 1/2"	786
3"	918
4"	1179
6"	1445

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