

WAFER BUTTERFLY VALVE INSTALLATION INSTRUCTIONS

This instruction covers general installation for all PVC & CPVC Wafer Butterfly Valves. All applicable instructions and procedures should be read thoroughly before starting. CAUTION: Connecting Flanges must have an inside diameter not less than that of PVC Schedule 80 Pipe (ASTM D 1784) to maintain clearance with the disc. Use with ANSI Class 125/150 bolt pattern flanges.

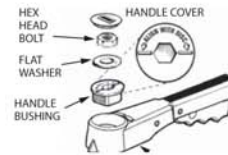


WBF-3A-0912

Wafer Butterfly Valves are designed with lay lengths that allow direct replacement of common Cast Iron valves. Wafer Butterfly Valves may be installed in any Class 150 Bolt Pattern dual-flange system. Valve can be installed for flow in either direction in a replacement or new system installation.

NOTE: FLANGE GASKETS ARE NOT REQUIRED.
Wafer Butterfly Valves have **built-in** TPE gaskets.

Handle Components



HANDLE INSTALLATION

Certain valve sizes are shipped with handle loose and will need to be installed.



1. Place handle and bushing over metal stem in desired position being sure that pointer on handle aligns with disc.
2. Install hex nut & flat washer onto top of stem, tighten and torque to 40 in-lb.
3. Snap cover back to handle body.

HANDLE REVERSAL

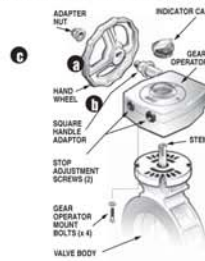
Relocate handle operation to the opposite side.



1. Remove cover, hex nut & flat washer from handle top.
2. Lift handle & bushing assembly from valve stem and turn 180°. Match handle body pointer and lines on bushing with disc.
3. Tighten nut with flat washer, torque to 40 in-lb.
4. Reinstall cap. Test to make sure handle and disc align and are bind-free.

GEAR OPERATOR HAND WHEEL INSTALLATION

Gear Operator Valves are shipped with hand wheel loose and will need to be installed. Place hand wheel hub (a) over square handle adaptor (b) and install the adaptor nut (c). Torque to 10 ft-lb.



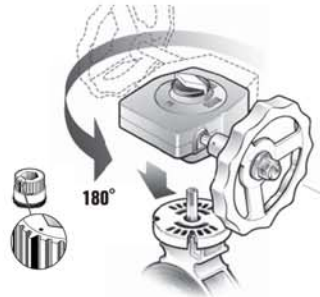
1. Rotate the handwheel clockwise to set the valve in the closed (SHUT) position.
2. Remove the Position Indicator Cap & remove retaining hex bolt & washer.
3. Remove the 4 mounting bolts & flat washers that secure the gear operator to the valve body.



4. Lift the gear box assembly from the valve stem.

GEAR OPERATOR REVERSAL

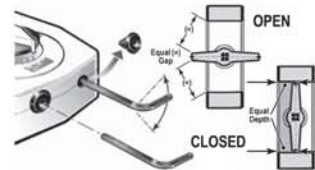
5. From the bottom, reinsert the drive bushing into the gear box. NOTE: Drive bushing is timed to operator with a single oversize spline tooth & index mark (see below).



6. Turn gear operator assembly 180° and place onto valve stem. Reinstall all mounting bolts & flat washers. Torque each to 10 ft-lb. Replace indicator cap.

GEAR OPERATOR DISC ALIGNMENT

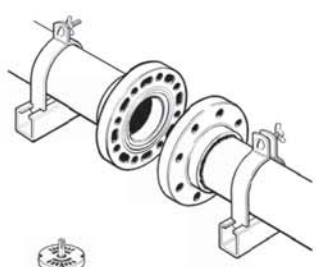
NOTE: Spears' Gear Operated Wafer Butterfly Valve "stops" are set before shipping. Check disc alignment before installation to assure maximum product performance.



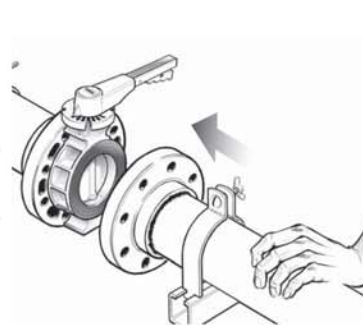
1. Rotate handwheel counter-clockwise to fully OPEN position.
2. Check disc alignment. If it is off-center, adjust disc position as follows:
3. Remove rubber grommet from the Stop Adjustment hole in Gear Operator under the letter "N" of the word OPEN. Using an Allen Wrench, adjust Stop until disc is centered. Replace grommet.
4. Rotate the handwheel clockwise until fully closed. Repeat steps 2 & 3 using the SHUT adjustment screw located under the "O" of OPEN.

GENERAL INSTALLATION PROCEDURE

STEP 1 If not already installed, cut & prep plastic pipe and install slip-on or thread-on Class 150 flanges (see Spears' Solvent Cementing & Threaded Joint Guide, SOLV-3P-1006).

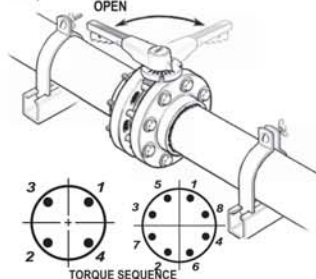


STEP 2 Fully close the valve, then place the valve between the flanges (DO NOT add flange gaskets) and hold in place. Use the pipe to close gap between flanges and valve until flush against valve faces. Insert correct length bolts with washers through flange/valve/flange assembly. Attach nuts with washers finger-tight.



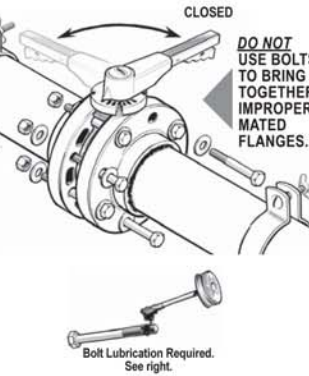
NOTE: ADDITIONAL FLANGE GASKETS ARE NOT REQUIRED.

STEP 4 Return valve to the fully open position. Using a 180° opposing sequence, tighten flange bolts in 5 ft-lb increments to required specifications (See Torque Sequence Chart).



Recommended Torque (ft. lbs.)	Flange Size (in.)
15	2
19	2-1/2
19	3
22	4
30	6
37	8
41	10
44	12

STEP 3 Fully open the valve to assure disk is centered and does not touch flange face. Adjust fit as necessary and secure all nuts/bolts. Further tighten nuts by hand until they are snug. Fully close valve to check for interference & alignment. No more than 1/8" displacement from the pipe centerline is allowed.



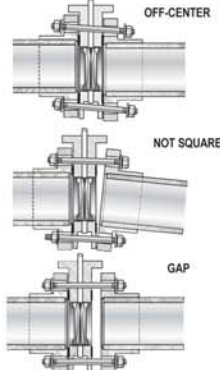
BOLT LUBRICATION

Use of well lubricated bolts & flat washers are required. An anti-seize thread lubricant (IMS Copperflake or equivalent) is highly recommended. **WARNING:** Some Lubricants, including vegetable oils, are known to cause stress cracking in thermoplastic materials. Formulation changes by lubricant manufacturers may alter compatibility of previously acceptable materials and are beyond our control.

BOLT SPECIFICATIONS			
Valve Size (in.)	Flange Holes ¹	Length ² (in.)	Diameter (in.)
2	4	3-3/4	5/8
2-1/2	4	4-1/4	5/8
3	4	4-1/4	5/8
4	8	4-1/2	5/8
6	8	5-1/4	3/4
8	8	5-3/4	3/4
10	7/8	7	12
12	7/8	7-1/2	12

¹ Minimum bolt lengths based on use of standard S.A.E. hex bolts and Standard Plate "W" Series flat washers.
² Minimum bolt length through 2-Spears' flanges, 2-Flat washers and 1-valve body.
³ Compatible with ANSI/AIME B16.5 Class 150 Bolt Pattern Spears' Flanges.

DO NOT USE BOLTS TO BRING TOGETHER IMPROPERLY MATED FLANGES



PRECAUTIONS AND WARNINGS

Suitability of the intended service application should be determined before installation. Plastic piping systems should be engineered, installed, operated & maintained in accordance with accepted standards and procedures for plastic piping systems.

CAUTION: The system must be designed and installed so as not to pull the components in any direction. Pipe system must be cut and installed in such a manner as to avoid all stress loads associated with bending, pulling, or shifting. All piping systems must be supported.

DO NOT ATTEMPT TO DRAW TOGETHER ANY GAPS.

ALLOW FREE MOVEMENT TO ONE SIDE OF THE SYSTEM CONNECTION. ADJUST VALVE POSITION AS NECESSARY.

WARNING: NOT FOR DISTRIBUTION OF COMPRESSED AIR OR GAS

All air must be bled from the system during the initial fluid fill. Pressure testing of the system must not be made until all solvent cement joints have properly cured. Initial pressure testing must be made at approximately 10% of the system hydrostatic pressure rating to identify potential problems prior to testing at higher pressures.

WARNING: Systems must not be operated or flushed out at flow velocities greater than 5 feet per second.



WAFER BUTTERFLY VALVE GEAR OPERATOR KIT & CHAINWHEEL OPERATOR KIT INSTALLATION INSTRUCTIONS

WBF-3B-0110

Operator or Chainwheel Operator mounts directly to Wafer Butterfly Valve stem shaft using the following kit components:

Gear Operator Kit
Gear Operator Assembly
Handwheel & Nut
Drive Bushing
Mounting Bolts (4)
Lock Washers (4)
Nuts (4)

Chainwheel Operator Kit
Gear Operator
Chainwheel Assembly
Drive Bushing
Mounting Bolts (4)
Lock Washers (4)
Nuts (4)



Please read all instructions carefully before proceeding. "Unit Installation" and "Position Adjustment" instructions apply to both Gear Operator Kits and Chainwheel Operator Kits.

Unit Installation

IMPORTANT:

Chainwheel operated valves should be mounted in the inverted (stem down) position to assure proper chain clearance with piping system.

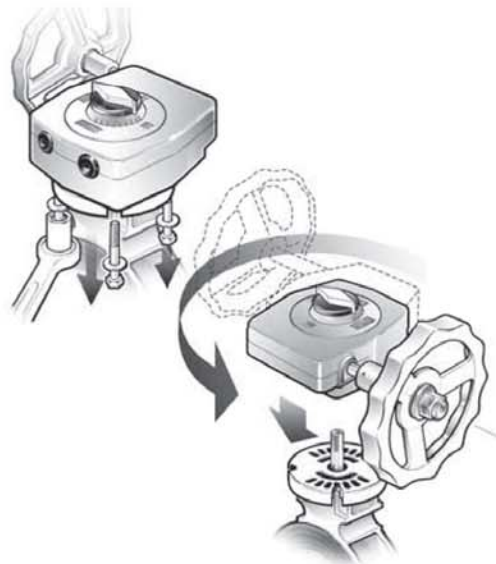
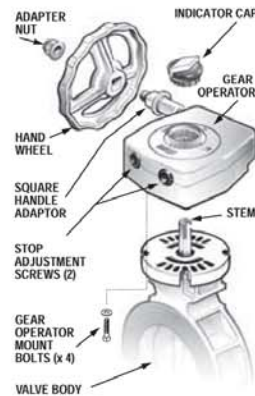
Step 1 Install Handwheel onto Gear Operator shaft adapter and secure with Nut. Tighten snug (Chainwheel is pre-assembled onto Gear Operator shaft).

Step 2 Rotate valve Disc to full closed position. Rotate handwheel to position Gear operator at full closed position (as indicated on top indicator).

Step 3 Drive Bushing is timed to Gear Operator and Valve Stem with a large spline tooth and index mark on Drive Bushing. Gear Operator is shipped with Drive Bushing permanently installed.

Step 4 Place Gear Operator housing on Wafer Butterfly Valve stem being sure to align housing so that the Gear Operator shaft is perpendicular (90°) to the direction of Flow. If operational interference is encountered, remove Gear Operator housing and rotate 180°. Note: Do not mount the Gear Operator with the Gear Operator Shaft directly over the pipe.

Step 5 Align mounting holes on valve platform with Gear Operator and install Mounting Bolts & Nuts with Lock Washers. (Note: Handwheel/Chainwheel can be rotated open slightly to aid alignment and mounting.) Tighten Mounting Bolts to 10 ft-lbs torque.



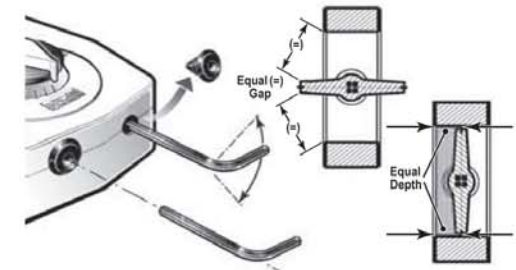
Position Adjustment

Step 1 Remove (2) rubber grommets from end of Gear Operator housing adjacent to "OPEN" designation to give access to stop adjustment screws.

Step 2 Closed Adjustment: Rotate Handwheel/Chainwheel to full closed position. Measure distance from both leading edges of the disc (perpendicular to stem) to the gasket sealing surface on the seat side of valve. These distances should be equal when properly adjusted for the closed position. If not, use an Allen wrench to adjust the stop located on the "O" side of the "OPEN" designation until proper position is reached.

Step 3 Open Adjustment: Rotate Handwheel/Chainwheel to full open position. Disc should be positioned squarely at 90° to valve body when properly adjusted for the open position. If not, use an Allen wrench to adjust the stop located on the "N" side of the "OPEN" designation until proper position is reached.

Step 4 Re-install rubber grommets in operator housing. Valve is now ready to be placed into service.



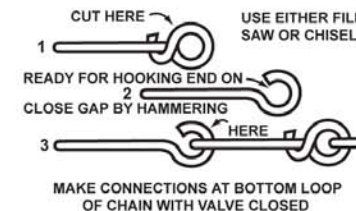
Chain Installation (Chainwheel Operator only):

Step 1 Special Lock Link chain (purchased separately) is required and should be ordered to the desired length. Chain length is determined by Chainwheel height from floor. Refer to "HOW TO ORDER CHAIN" on price schedule.

Step 2 Insert a minimum chain length of 3-feet through lower side of the Chain Guide eyelet. Lay chain links over each tooth on the upper side of the Chainwheel Sprocket being sure that chain is not twisted. Thread chain down through the opposite Chain Guide eyelet.

Step 3 Attach chain ends according to the following directions:

Directions For Making Endless Chain



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