



KEYSTONE MODEL WINN HISEAL HIGH PERFORMANCE BUTTERFLY VALVES

OPERATION, INSTALLATION AND MAINTENANCE INSTRUCTIONS

Before installation these instructions must be fully read and understood

1 STORAGE/SELECTION/PROTECTION

Storage

When valves are to be stored for some time before being fitted, storage should be in the original delivery crates with any waterproof lining and/or desiccant remaining in place. Storage should be off the ground in a clean, dry indoor area. If storage is for a period exceeding six months the desiccant bags (if supplied) should be changed at this interval.

Selection

Ensure that the materials of construction and pressure/temperature limits shown on the valve identification label, are suitable for the process fluid and conditions. If in doubt, contact the factory.

Protection

Keystone Butterfly valves are delivered with protection according to customer's specification, or in accordance with the Quality Manual, to protect the valve seats and disc from damage. Wrapping and/or covers should be left in place until immediately before fitting to the pipe.

2 INSTALLATION

1. Ensure that mating flanges and gaskets are clean and undamaged.
2. Remove protective covers from valve faces.
3. With the valve in the closed position, fit into pipework tightening the flange bolts in a diagonal pattern.

Refer to the following notes regarding the individual valve body type.

a. Wafer design

The wafer design is intended for sandwiching between two pipe flanges by means of through bolting. The body incorporates locating holes or lugs to enable the valve to be positioned centrally in the pipeline thus ensuring the disc does not foul when opening.

b. Lugged design

The lugged configuration facilitates independent bolting of the valve to either the upstream or downstream flanges and is fully rated for end-of-line applications.

Centralization of the valve to the pipework is more readily achieved than with the wafer type, however care should be taken to ensure that the disc does not foul the mating flange or pipework when opening the valve.

c. Double flange design

As Lugged design above.

NOTE

- a. Keystone Winn HiSeal valves are bi-directional and may be fitted either direction relative to the flow.
- b. Installation may be carried out with shaft displaced through any angle permitted by the bolting.

3 ROUTINE MAINTENANCE AND OPERATIONAL SPARES

Routine maintenance

No routine maintenance is required other than periodic inspection to ensure satisfactory operation and sealing. Any sign of leakage from the gland packing should be addressed immediately by tightening the gland nuts gradually and evenly. If no further adjustment is possible the packing should be renewed by following instructions in paragraph 4.1.

Spare parts

Keystone valves are identified by a figure number, which is stamped on the identification plate, located on the valve body yoke. This reference should be quoted in respect of any after sales queries, spare parts or repair enquiries/orders.

Two year operational spares

Soft Goods Kits only, are recommended for the first two years of operation, as follows:

Soft-seated and Firesafe valves

- 1 Seat ring
- 2 Body gaskets
- 1 Set of gland packing

Metal-seated valves

- 1 Metal seat ring
- 2 Body gaskets
- 1 Set of gland packing

The number of kits required will be recommended by our Technical Sales department on request.

Other metallic components are not normally replaced in the initial 2 year period. Any damage to metallic components such as retaining ring, metal seat (seat energizer) or disc may necessitate replacement of additional components.

Consult Technical Sales department for advice.

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4 MAINTENANCE

CAUTION

Before attempting any maintenance, ensure that the system has been depressurized and if necessary, drained of any dangerous fluid.

Parts identification

The illustrations on page 5 show the parts comprising Firesafe and Soft Seated valves. Either type is available with wafer, lugged or double flanged body.

4.1 Replacement of gland packing

If further adjustment of the gland packing is inappropriate, adopt the following procedure for its removal and replacement.

1. Remove the operator (lever, gearbox or actuator) in accordance with Instructions in paragraph 4.5.
2. a. Remove key from shaft.
b. Remove gland nuts (16).
c. Remove gland follower flange (14).
d. Remove gland follower (13).
e. Remove gland packing rings (12) using a pointed instrument.
3. a. Fit new gland packing rings (12).
b. Refit gland follower (13).
c. Refit gland follower flange (14).
d. Refit gland nuts (16) tightening evenly until heavy resistance is felt. During this operation turn the stem to ensure that the packing is not overtightened.
4. Refit the operator [see paragraph 4.5].

4.2 Replacement of valve seats

Firesafe and soft seated valves

1. Remove retaining ring (4) in accordance with procedure described in paragraph 4.4.
2. a. Remove first body gasket (11).
b. Remove metal seal or energizer (5).
c. Remove second body gasket (11).
d. Remove PTFE seat (6).
If the seat is tight move the disc to the open position and, if still tight, gently drive the seat out of its housing from the back face of the valve using a smooth blunt instrument.
3. **Ensure that all components are clean. Position the disc in the closed position.**
4. Refit all components by reversing the steps shown in (2) above.

NOTE

The body gaskets of lugged valves require holes for cap screws pressing in on assembly.

Metal seat valves

Follow the above instructions, ignoring reference to soft seats.

4.3 Replacement of shaft bearings

Removal

1. Remove operator in accordance with the procedure detailed in paragraph 4.5.
2. Remove the Gland Packing in accordance with the procedure detailed in paragraph 4.1.
3. Remove the seat assembly, in accordance with paragraph 4.2.
OR
Seat assembly may remain in situ to prevent accidental damage.
4. With the disc in the fully open position and its weight supported;
 - a. Drive out the disc retention pins (spiral or taper)(7) using a punch.
 - b. Withdraw the shaft (3) from the body.
 - c. Remove the disc through the back face of the valve body.
5. The bearings (9) / (10) are now exposed and may be removed.

Refitting

1. Clean out bearing cavities and fit new bearings.
2. Re-introduce the disc into the body in the open attitude through the back face and support its weight.
3. Refit the shaft ensuring that the shaft key-way is on the same side as the disc Stop.
4. Refit the disc pins.
5. Reassemble gland assembly (see paragraph 4.1).
6. Refit seat assembly (see paragraph 4.2).
7. Refit operator (see paragraph 4.5)

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4.4 Removal and refitting of retaining ring Wafer body models

Removal

The retaining Ring is held in position by the retaining ring spring.

1. Insert two pieces of bar into the tapped holes in the retaining ring.
2. Rotate anti-clockwise and lift. The retaining ring will wind out of the valve body recess within two complete turns.
3. Assess the condition of the retaining ring spring (8) and replace if necessary.

Refitting

1. Position the retaining ring spring (8) in the recess of the retaining ring (4).
2. Place the retaining ring in the body recess and, applying light pressure, turn the ring clockwise.
3. The retaining ring will then wind into position within two complete turns.

Lugged body models

The retaining ring is held in position by cap screws (8) so that the ring is able to hold full differential pressure in an end-of-line application.

Removal

1. Remove the cap screws (8) and lift out retaining ring.

Refitting

1. Introduce the retaining ring into the body recess and secure with cap screws (8).

4.5 Removal and refitting of operator

Lever removal

1. Release locking screw securing lever to shaft.
2. Lift or prise the lever from the shaft, taking care to retain the drive key.
3. Remove the lever stop plate by removing the two securing screws.

Lever refitting

1. Secure lever stop plate to valve yoke by means of two screws.
2. Fit thrust washer.
3. Position drive key in slot on shaft.
4. Fit lever to shaft and secure with locking screw.

Lever adjustment

1. Hold the disc in the closed position (0.25 mm off the body stop).
2. Rotate the cam adjuster until it aligns the stop plate with the lever.
3. Tighten the stop plate securing screws.

Gearbox removal – direct mounted type

1. Remove top cover of gearbox.
2. Remove securing bolts fixing gearbox to valve yoke.

This may necessitate partial rotation of the gearbox quadrant to expose the fasteners.

Gearbox removal when mounted via an adaptor plate

1. Remove bolting fixing gearbox to adaptor plate (directly accessible).

Gearbox refitting

Reverse the above procedures

Actuator removal and refitting

Actuators are fitted via a mounting bracket and are readily removed and refitted by directly accessible bolting.

4.6 Setting of travel stops on gearbox operators

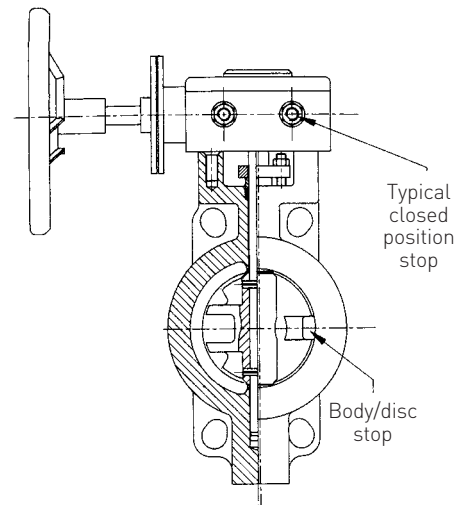
- a. With valve out of pipeline
 1. Open valve
 2. Wind off closed position stop
 3. Close valve with 0.25 mm (0.010 ins) feeler gauge under body/disc stop
 4. Wind in closed position stop until resistance is felt and lock in position
 5. Open valve and fully close against gearbox/actuator stop
 6. Check gap under body stop and adjust if necessary until 0.25 mm (0.010 ins) gap is achieved
- b. With valve in pipeline
 1. Open valve
 2. Wind off closed position stop
 3. Carefully close valve until disc/stop is in contact
 4. Wind in closed position stop until resistance is felt
 5. Open valve
 6. Wind in closed position stop a further 1/2-turn and lock in position

NOTE

For the setting of stops on Double acting pneumatic actuators, with the air supply disconnected, methods (a) and (b) can be applied.

WARNING

Not to be attempted with spring return units.



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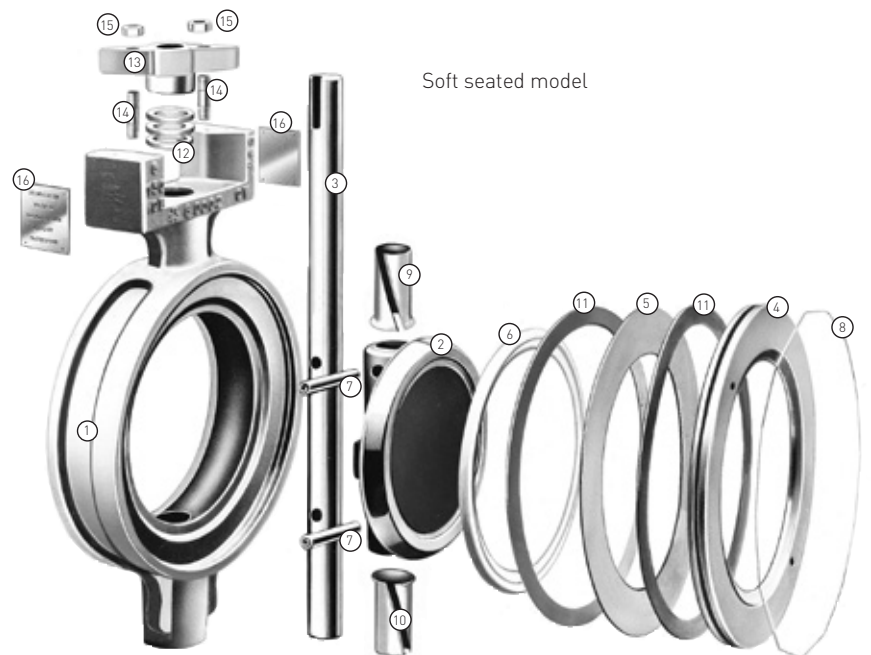
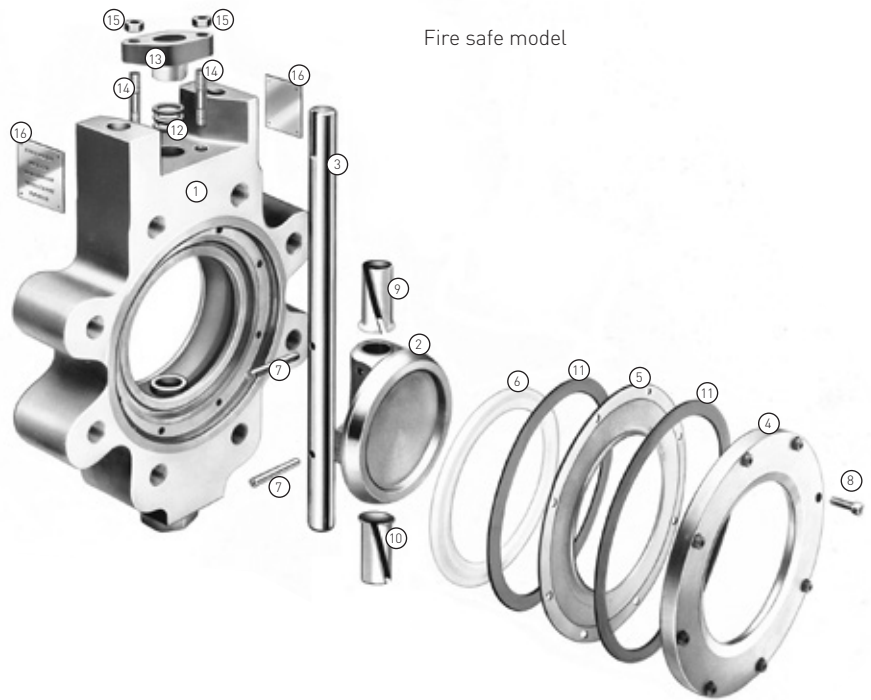
PARTS LIST

Fire safe models

Item	Description
1	Body
2	Disc
3	Shaft
4	Retaining ring
5	Metal seat
6	Soft seat
7	Disc pin
8	Retaining ring screw
9	Shaft bearing - top
10	Shaft bearing - bottom
11	Body gasket
12	Gland packing
13	Gland follower flange
14	Gland stud
15	Gland nut
16	Identification plate

Soft seated models as fire safe models, except

5	Seat energizer
8	Retaining ring spring



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