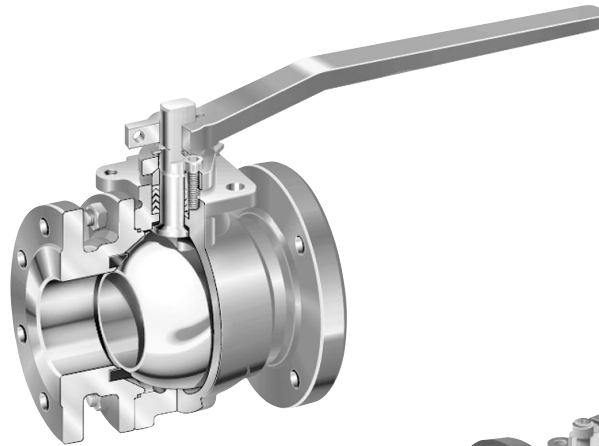
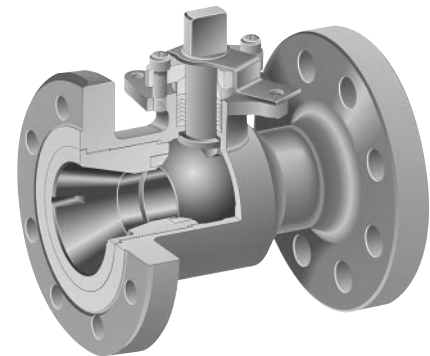


# W-K-M<sup>®</sup> DynaSeal<sup>®</sup> 310D Ball Valve



*310D 2-piece Ball Valve*

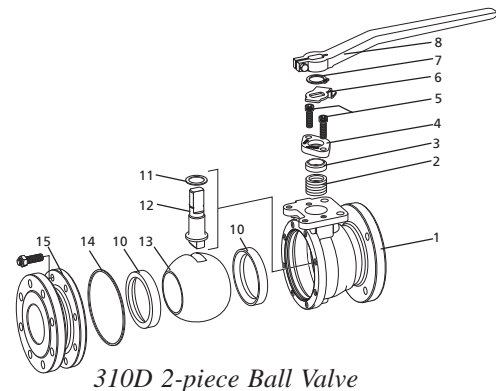


*310D Unibody Ball Valve*

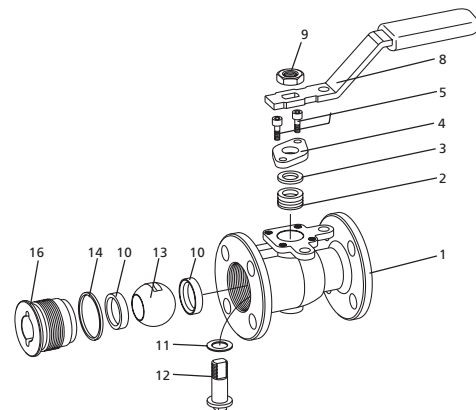
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| Item | Description      |
|------|------------------|
| 1    | Body             |
| 2    | Packing          |
| 3    | Compression Ring |
| 4    | Bonnet Cap       |
| 5    | Cap Screws       |
| 6    | Stop Plate       |
| 7    | Retainer Ring    |
| 8    | Lever/Handle     |
| 9    | Lock Nut         |
| 10   | Seat Ring        |
| 11   | Stem Seal        |
| 12   | Stem             |
| 13   | Ball             |
| 14   | Tailpiece Gasket |
| 15   | Tailpiece        |
| 16   | Seat Retainer    |



*310D 2-piece Ball Valve*

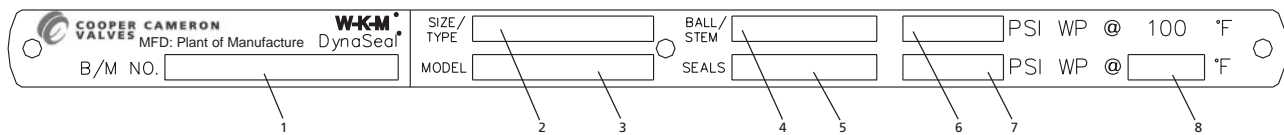


*310D Unibody Ball Valve*

## Scope

The W-K-M DynaSeal 310D ball valve is designed to meet tougher industry requirements while maintaining key features of the W-K-M floating ball valve design. It has deep-pocketed seats, an adjustable replaceable stem packing and is available in carbon and stainless steel. The 310D design is offered in sizes 1/2" to 4" x 3" class 150 and 300 flanged ends. The 1 1/2", 2" and 3" full port valves are a two-piece design. All other sizes are the "unibody" design.

## Nameplate Information



| Item | Description                             |
|------|---|
| 1    | Assembly part number                    |
| 2    | Nominal valve size and type designation |
| 3    | Model number                            |
| 4    | Ball–Stem material designation          |
| 5    | Seat–seal code designation              |
| 6    | Maximum operating pressure              |
| 7    | Maximum working pressure                |
| 8    | Maximum temperature                     |

## Storage

After valves are assembled and tested, they are placed in the full open position, flange seal surfaces and bores are greased and end protectors are installed. This will provide adequate protection for indoor storage. Extended outdoor storage requires periodic inspection and the addition of a corrosion inhibitor. Contact your CCV representative for extended storage guidelines. Valves should only be stored in the full open or full close position to prevent seat distortion.

## Installation

DynaSeal 310D ball valves may be installed in any position with flow from either direction. However, for best service life there is a *preferred* vertical or horizontal position to maximize sealing and minimize the accumulation of sediment. In the vertical position it is preferred to have the upstream pressure from above so the weight of the ball will assist the pressure in sealing. With the run of the valve in a horizontal position, it is preferred to have the stem lying horizontal (i.e. toward the viewer) with pressure from the right. During operation, flow will act as a siphon and minimize retention of sediment.

When handling or installing a valve, keep the valve in the full open position whenever possible to prevent foreign object damage to the ball.

*Flanged-End* valves may be bolted into the line using two open or boxed end wrenches.

1. Threads of flange bolts and nuts should be lubricated to obtain maximum loading of bolts.
2. Finger tighten all nuts first.
3. When tightening bolts, use the crisscross method and torque each bolt to ANSI or gasket manufacturers specifications.

Field testing, if performed after the valve has been properly installed into the line, should be done in accordance with the following procedure:

**Caution: Ensure that all test fluids contain corrosion inhibitors and are compatible with valve seat and seal material.**

1. Preliminary Testing – Completely flush the system or the line to minimize damage to the seats and ball surface which might be caused by weld slag or other foreign matter resulting from installation procedures.
2. Line Testing – When performing this test, the valve should be in the half-open position to ensure that the body cavity is completely filled with the test media and to prevent accidental over pressure of the seats. NOTE: Line may be tested at a maximum of 1 1/2 times the valve's cold working pressure rating without consulting the factory.
3. Seat Testing – When testing the seats with the valve in the closed position, do not exceed the valve's cold working pressure rating.

- Upon completion of testing, purge all test fluids from the valve.

## Operation

DynaSeal 310D ball valves operate from fully open to fully close by a 90 degree turn of the handle. The handle aligned with the pipe always means the valve is open and with the handle perpendicular to the pipe means the valve is closed. Additionally, the stems have flats that align the handle and can be used to indicate ball position. The bore of the ball is parallel with the faces of the stem flats.

DynaSeal 310D valves may be power actuated. Pneumatic and hydraulic actuators, whether of the fail-open, fail-close, or fail-last position type, have "OPEN – CLOSE" indicators on the top of each unit. On a pneumatic actuator, make sure filters and lubricators (if recommended by the actuator manufacturer) are installed prior to valve and actuator installation. Should any maintenance be necessary, obtain the part number from the unit's nameplate and contact Cooper Cameron Valves or the nearest representative.

## Routine Maintenance

Due to its design and simplicity the 310D ball valve requires very little maintenance. It's non-lubricated, self-cleaning ball can provide reliable, leak free performance over a long period of time.

The only preventative maintenance recommended is to periodically inspect the valve for leaks around the stem or actuator. Should a leak be noticed, the following procedure is for adjusting the packing.

### Stem Packing Adjustment –

- With an Allen wrench, snug up each of the two packing adjustment screws in a clockwise direction.
- Snug up each screw an equal amount only as much as required to stop the leak, not to exceed the maximum specified in the following table.

- The following table gives torque values that will seal stem packing in good condition. Torque values above this indicate seals are worn and need replacement and excessive tightening will also cause an unacceptable increase in valve stem torque.

### Torque Values for Packing Adjustment Screws

| Valve Size     | Screw Size | Torque (Chevron Packing) |           |
|----------------|------------|--------------------------|-----------|
|                |            | in-lb                    | kg-m      |
| 1/2F, 3/4R, 1R | 10-24 NC   | 8-12                     | 0.09-0.14 |
| 1F, 1 1/2R     | 1/4-20 NC  | 12-60                    | 0.14-0.7  |
| 1 1/2F, 2R     | 5/16-18 NC | 60-120                   | 0.7-1.4   |
| 2F, 3R         | 3/8-16 NC  | 120-180                  | 1.4-2.1   |
| 3F, 4R         | 1/2-13 NC  | 180-240                  | 2.1-2.8   |

| Valve Size     | Screw Size | Torque (High Temp Packing - Seal Code 18, 60A, 92H) |           |
|----------------|------------|---|-----------|
|                |            | in-lb   | kg-m      |
| 1/2F, 3/4R, 1R | 10-24 NC   | 20-25   | 0.23-0.29 |
| 1F, 1 1/2R     | 1/4-20 NC  | 60-120  | 0.7-1.4   |
| 1 1/2F, 2R     | 5/16-18 NC | 120-180   | 1.4-2.1   |
| 2F, 3R         | 3/8-16 NC  | 180-240   | 2.1-2.8   |
| 3F, 4R         | 1/2-13 NC  | 240-300   | 2.8-3.5   |

**Warning:** Valves should be placed in a partially open position prior to working on a valve or removing it from service to vent pressure or drain product that may be trapped in the body cavity.

## Troubleshooting Chart

| Trouble                                   | Probable Cause  | Remedy  |
|---|---|---|
| Will not open or close                    | <ul style="list-style-type: none"> <li>a. Iced up due to restricted flow or low temperatures.</li> <li>b. Pressure locked. (Condition in which the body pressure exceeds the line pressure by an excessive amount)</li> </ul>   | <ul style="list-style-type: none"> <li>a. Flush out with warm material.</li> <li>b. Reduce valve temperature or pressurize line to rated working pressure to reduce pressure differential sufficient to operate valve.</li> </ul>   |
| Hard to operate                           | <ul style="list-style-type: none"> <li>a. Accumulation or solidification of material in the body of valve.</li> <li>b. Swelling seats.</li> <li>c. Corrosion between stem and valve body.</li> <li>d. Operator not installed properly.</li> <li>e. Body bolts adjusted unequally. (Two piece design)</li> </ul> | <ul style="list-style-type: none"> <li>a. Flush valve to get material out of body.</li> <li>b. Install correct trim.*</li> <li>c. Apply penetrating oil around stem. If still won't operate, disassemble valve and polish stem.*</li> <li>d. Check operator.</li> <li>e. Loosen bolts after removing from service and adjust equally to specified torque.*</li> </ul> |
| Will not seal properly                    | <ul style="list-style-type: none"> <li>a. Worn or damaged seats and/or ball.</li> <li>b. Foreign matter between seat and ball.</li> <li>c. Operator stops not set properly.</li> </ul>  | <ul style="list-style-type: none"> <li>a. Replace worn parts* (Requires valve removal and disassembly)</li> <li>b. Operate several times to wipe clean.</li> <li>c. Adjust stops to proper setting.</li> </ul>  |
| Valve leaking between body and tailpiece. | <ul style="list-style-type: none"> <li>a. Leaking tailpiece gasket.</li> <li>b. Tailpiece or seat retainer (unibody) and valve body are not tightened together properly.</li> </ul>   | <ul style="list-style-type: none"> <li>a. Replace gasket. *</li> <li>b. Tighten parts to specified torque. *</li> </ul>   |
| Leaking around stem                       | <ul style="list-style-type: none"> <li>a. Loose stem packing</li> <li>b. Worn or damaged stem packing.</li> </ul>   | <ul style="list-style-type: none"> <li>a. Adjust stem packing screws.</li> <li>b. Replace stem packing.*</li> </ul>   |

\* Contact your CCV representative for a Repair Manual.

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Installation, Operation and Maintenance Manual**