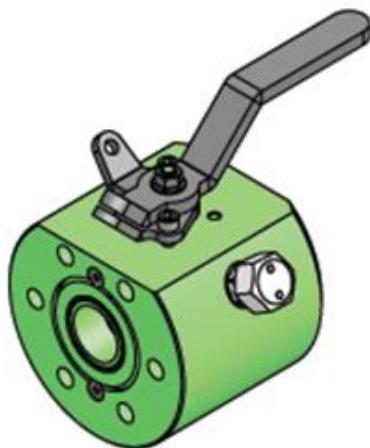


Red Deer Ironworks



2" Ball Valve (BV2IN) Maintenance Manual

Parts Covered: BV2IN, BV2INBWS160, BV2INNPT

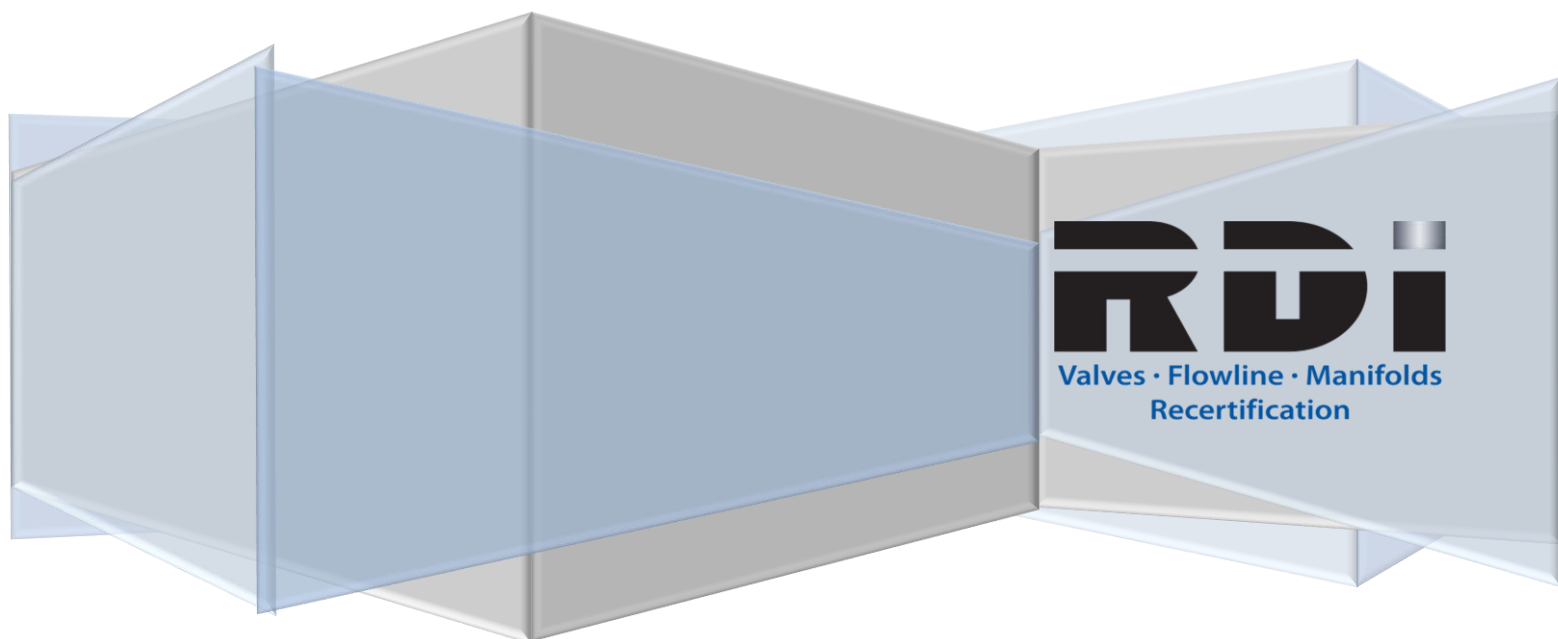


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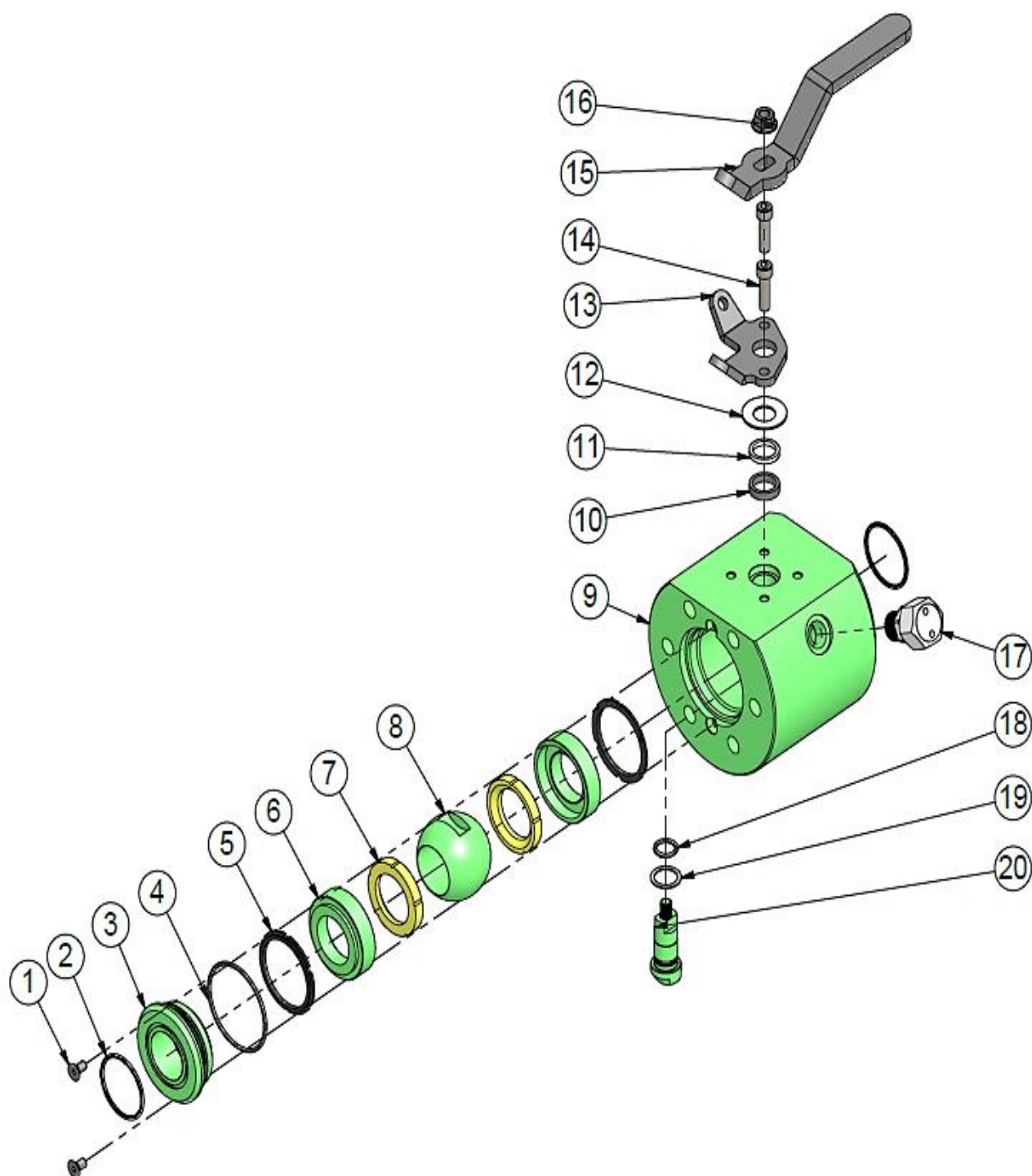
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RDI Sales & Service Centers **Error! Bookmark not defined.**

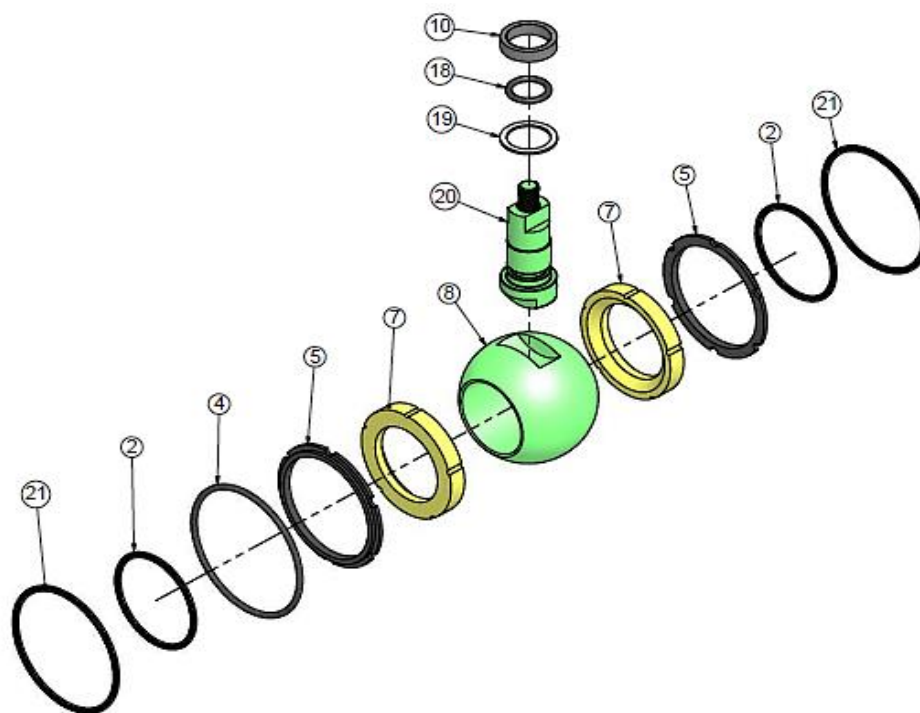
Exploded View - 2" Ball Valve (BV2IN)



Parts Listing - 2" Ball Valve (BV2IN)

| Item | Qty | Description | Part # |
|------|-----|---|---|
| 1 | 2 | Countersunk Screw, Socket Head, Hex, 1/4-20 X 1/2 X 1/2 Thread Length | SCHCSCREW 0.25-20x0.5x0.5-HX-N |
| 2 | 2 | O-Ring 133 | OR-H80-133 |
| 3 | 1 | Seat Retainer | BV2INRET |
| 4 | 1 | O-Ring 144 | OR-H80-144 |
| 5 | 2 | L-Seal, 2in Ball Valve | BV2INLSEAL |
| 6 | 2 | Seat Carrier | BV2INSC |
| 7 | 2 | Ball Valve Seat | BV26SEAT |
| 8 | 1 | Ball Valve Ball | BVBALL |
| 9 | 1 | Ball Valve Body | BV2IN |
| 10 | 1 | Ball Valve Stem Packing | BVPACKING |
| 11 | 1 | Ball Valve Packing Ring | BVPACKINGRING |
| 12 | 1 | Belleville Washer (K1500-I-060-7) | BVWASH |
| 13 | 1 | Ball Valve Gland Plate | BVGPLATE |
| 14 | 2 | Cap Screw, Socket Head, Hex - M8 X 1.25 X 30 X 30 Thread Length | B18.3.1M - 8 x 1.25 x 30 Hex SHCS -- 30NHX |
| 15 | 1 | Ball Valve Handle | BV2INHDL |
| 16 | 1 | Hex Flange Nut, M10 X 1.5, with 15 WAF --N | B18.2.2.4M - Hex flange nut, M10 x 1.5, with 15 WAF --N |
| 17 | 1 | Body Grease Fitting 1/2 NPT with Venting Cap (GBH12-BGF) | SH-031 |
| 18 | 1 | O-Ring 114 | OR-H80-114 |
| 19 | 1 | Ball Valve Stem Washer | BV26STEMWASH |
| 20 | 1 | Ball Valve Stem | BVSTEM |

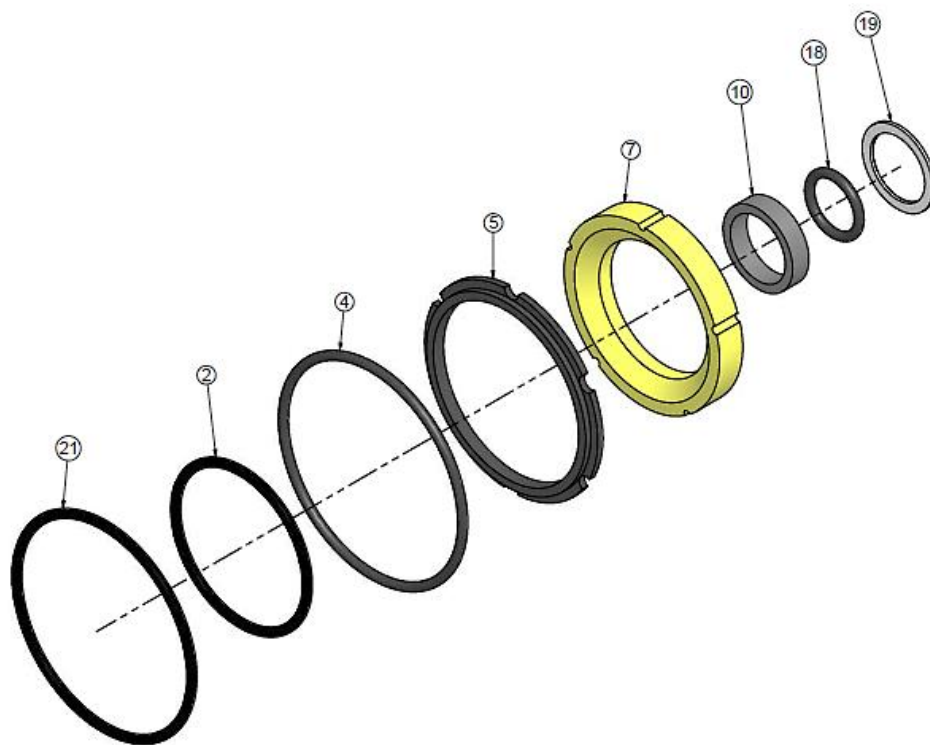
Major Repair Kit Parts Listing - 2" Ball Valve (BV2IN)



| Item | Qty | Description | Part # |
|------|-----|-------------------------|-------------------|
| | | Major Repair Kit | BVRK2INMAJ |
| 2 | 2 | O-Ring 133 | OR-H80-133 |
| 4 | 1 | O-Ring 144 | OR-H80-144 |
| 5 | 2 | L-Seal, 2in Ball Valve | BV2INLSEAL |
| 7 | 2 | Ball Valve Seat | BV26SEAT |
| 8 | 1 | Ball Valve Ball | BVBALL |
| 10 | 1 | Ball Valve Stem Packing | BVPACKING |
| 18 | 1 | O-Ring 114 | OR-H80-114 |
| 19 | 1 | Ball Valve Stem Washer | BV26STEMWASH |
| 20 | 1 | Ball Valve Stem | BVSTEM |
| 21 | 2 | *O-Ring 143 | OR-H80-143 |

*** Item 21 is used for BV2INNPT only**

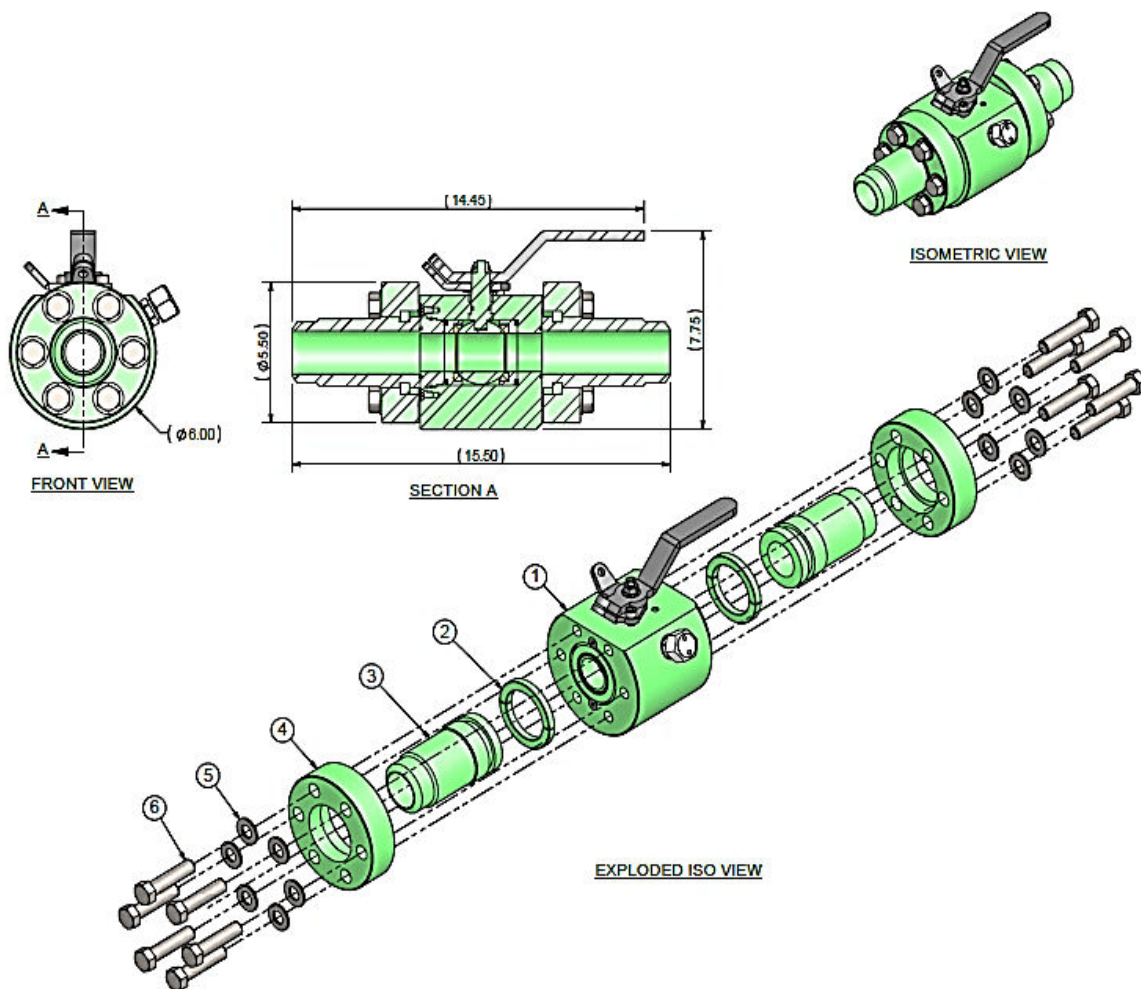
Minor Repair Kit Parts Listing - 2" Ball Valve (BV2IN)



| Item | Qty | Description | Part # |
|------|-----|-------------------------|-------------------|
| | | Minor Repair Kit | BVRK2INMIN |
| 2 | 1 | O-Ring 133 | OR-H80 -133 |
| 4 | 2 | O-Ring 144 | OR-H80 -144 |
| 5 | 2 | L-Seal, 2in Ball Valve | BV2INLSEAL |
| 7 | 2 | Ball Valve Seat | BV26SEAT |
| 10 | 1 | Ball Valve Stem Packing | BVPACKING |
| 18 | 1 | O-Ring 114 | OR-H80 - 114 |
| 19 | 1 | Ball Valve Stem Washer | BV26STEMWASH |
| 21 | 1 | *O-Ring 143 | OR H80-143 |

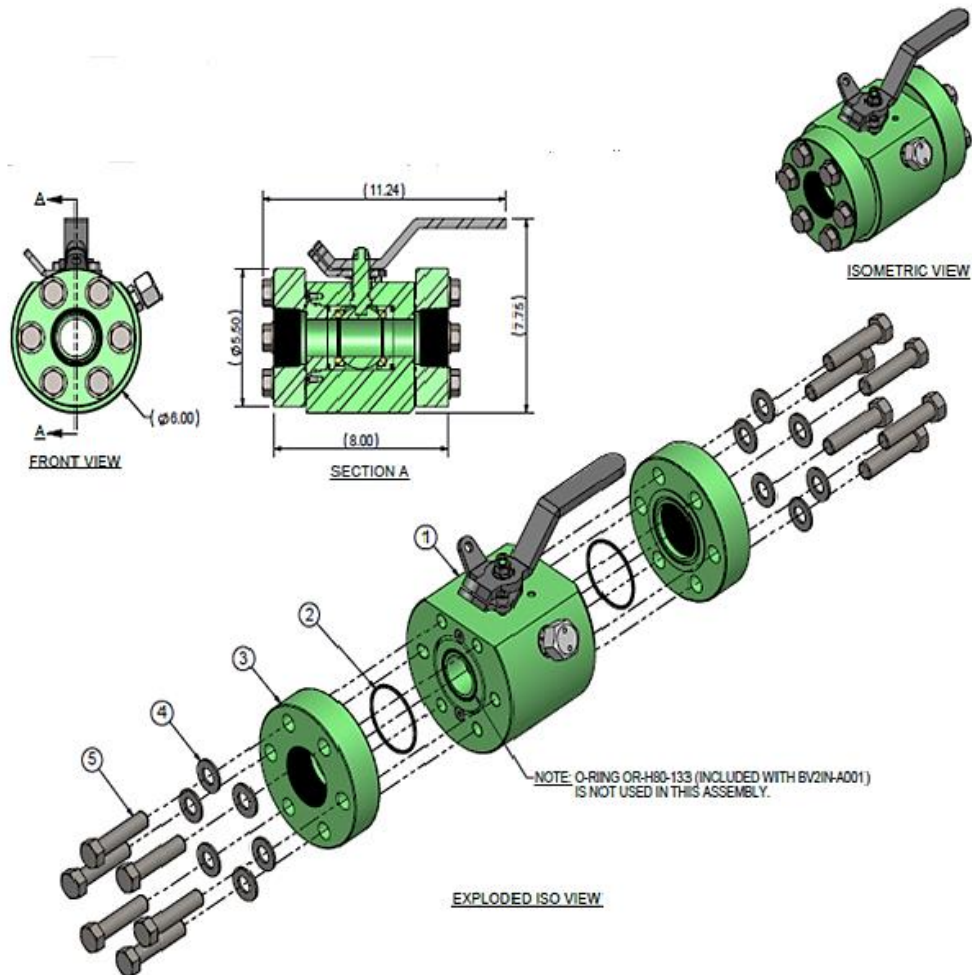
* Item 21 is used for BV2INNPT only

Exploded View - BV2INBWS160 End Connector



| Item | Qty | Description | Part # |
|------|-----|--|-----------------------------|
| 1 | 1 | Ball Valve - 2in 10,000PSI Sour Service | BV2IN |
| 2 | 2 | Half Ring Set | BV2INRING |
| 3 | 2 | Nipple | BV2INNIPPLES160 |
| 4 | 2 | BW Flange Ring | BV2INFLGBW |
| 5 | 12 | Flat Washer, Narrow - 5/8" | FWN 0.625 |
| 6 | 12 | Hex Bolt, 5/8-11 X 2-3/4 X 2-3/4 Thread Length | HBOLT 0.6250-11x2.75x2.75-N |

Exploded View - BV2INNPT End Connector



| Item | Qty | Description | Part # |
|------|-----|--|-----------------------------|
| 1 | 1 | Ball Valve - 2in 10,000PSI Sour Service | BV2IN |
| 2 | 2 | O-Ring 143 | OR-H80-143 |
| 3 | 2 | Flange NPT | BV2INFLGNPT |
| 4 | 12 | Flat Washer, Narrow - 5/8" | FWN 0.625 |
| 5 | 12 | Hex Bolt, 5/8-11 X 2-3/4 X 2-3/4 Thread Length | HBOLT 0.6250-11x2.75x2.75-N |

Assembly Procedure

Pictorial – 2" Ball Valve (BV2IN)

It is important that the workstation is clean and free of any contaminants such as metal shavings, dirt, etc. Do not sand or de-burr any items while at the assembly workstation.

Note: RDI-6430 (assembly grease) and Nikal (anti-seize compound) are used in this procedure. Use of grease other than that listed in this manual is not recommended as it may adversely affect the performance and functionality of the Ball Valve.

1. Clean and inspect all parts for any damage (i.e. dents, scratches, sharp edges and burrs), particularly on the sealing areas and threads prior to assembly.



2. Apply a moderate amount of **grease** onto the seal pocket of the **Seat Carriers (#6)** and the **Ball Valve (BV) Seats (#7)**.



3. Install the **BV Seats** into the seal pocket of the **Seat Carriers** by tapping them with a rubber mallet until fully engaged.

Note: Angled side of **BV Seats** facing up.



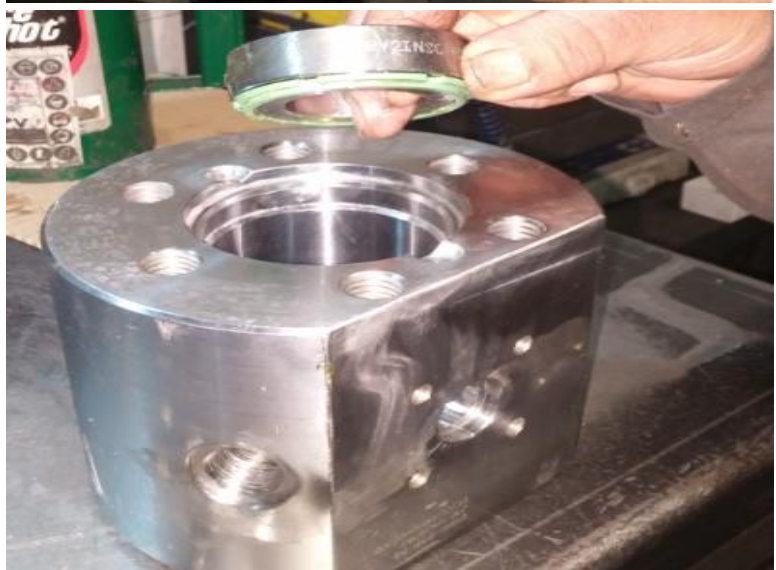
4. **Grease** the **L-Seals (#5)** then install them on the opposite side of the **Seat Carriers**.

Note: Flat side of the **L-Seal** goes on first.



5. Apply a moderate amount of **grease** onto the bottom seal pocket of the **BV Body (#9)** then install the first **Seat Carrier Assembly**.

Note: Ensure the **Seat Carrier Assembly** is evenly seated in the seal pocket and the **L-Seal** is facing down.



6. Apply a moderate amount of **grease** on the **BV Stem (# 20)** and the **BV Stem Washer (#19)**. Slide the **Stem Washer** onto the **Stem** up against the shoulder.



7. Coat **O-Ring 114 (#18)** with **grease** then slide into the groove on the **BV Stem**.



8. Insert the **BV Stem Assembly** into the "through hole" of the **BV Body** until fully engaged.



9. Coat the **BV Ball (#8)** with **assembly grease**. Align the keyway of the **BV Ball** to the integral key of the **BV Stem** then slide it down against the bottom **BV Seat**.



10. Install the second **Seat Carrier Assembly** on top of the **BV Ball** with the **L-Seal** facing up.



11. Coat **O-Ring 144 (#4)** with **grease** then install it into the groove of the **Seat Retainer (#3)**.



12. Apply a moderate amount of **grease** onto the upper groove of the **BV Body** then install the **Seat Retainer Assembly**.



13. Apply **anti-seize compound** on the threads of the **Countersunk Screws (#1)** then thread them into the end of the **BV Body** and tighten them snugly.

Note: Ensure the **Seat Retainer** is flush with the **BV Body**. Rotate the **BV Stem** at least twice to ensure free movement of the **BV Ball**.



14. Coat **O-Rings (#2)** with **grease** then install them into the external groove of the **Seat Retainer** and on the other end of the **BV Body**.



15. Apply 3-4 turns of Teflon tape on the threads of the **Body Grease Fitting (#17)** then thread it into the side of the **BV Body** and tighten it snugly.



16. Slide the **BV Stem Packing (#10)** onto the **BV Stem** up into the seal pocket on the **BV Body**.



17. Slide the **BV Packing Ring (#11)** onto the **BV Stem** next to the **BV Stem Packing**.



18. Slide the **Belleville Washer (#12)** onto the **BV Stem** next to the **BV Packing Ring**.

Note: Concave side of the **Belleville Washer** must face outward.



19. Slide the **BV Gland Plate (#13)** onto the **BV Stem** up to the **Belleville Washer** with the orientation as shown. Apply **anti-seize compound** on the threads of the **Cap Screws (#14)** and insert them through the **BV Gland Plate** into the threaded holes on the **BV Body** and tighten until the **BV Gland Plate** is below the shoulder of the **BV Stem**.



20. Attach the **BV Handle (#15)** onto the **Stem** as shown then secure it with the **Hex Flange Nut (#16)**.

Note: Ensure the open/closed positions of the **Ball Valve Handle** correspond to the open/closed positions of the **Ball Valve Ball**.



Greasing Instructions

Ensure you have the most recent version of the RDI Greasing Instructions by visiting:

<https://rdironworks.com/products/plug-valves/>

or contact our sales team, toll-free:

1.855.973.4766

Grease Fitting ½ NPT

The image below is the Grease Fitting used on the RDI Ball Valves.



Tear-Down Procedure

WARNING: If the **Ball Valve Handle** is hard to cycle or turn and the **Ball Valve Ball** seems to be stuck or locked, there may be pressure trapped in the **Valve**, also known as “pressure locking”. If this happens, **DO NOT** continue to tear-down a **Pressure Locked Ball Valve**. (See Pressure Relieving Procedure for instructions).

Refer to the steps in the Assembly Procedure to tear-down the Ball Valve.

Thoroughly degrease and clean all parts that are disassembled. Check for any damage, replace as necessary.

Pressure Relieving Procedure

Pressure locking is caused by a rapid decrease in line pressure which traps fluid at the original line pressure. The trapped pressure causes a net upward force of the ball due to a differential in pressure area from top to bottom.

Best Practice for relieving trapped pressure in a **Ball Valve**. Connect the **Valve** and bring it to its last highest pressure. This will set the internal components in equilibrium and allow you to actuate the **Ball** while gradually decreasing the in-line pressure. This will ensure the **Ball** maintains freedom of rotation.

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