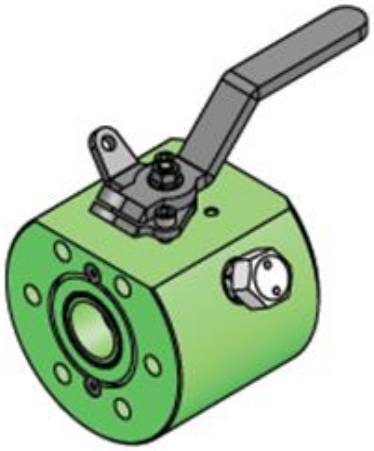
Red Deer Ironworks



2” Ball Valve (BV2IN) Maintenance Manual

Parts Covered: BV2IN, BV2INBWS160, BV2INNPT

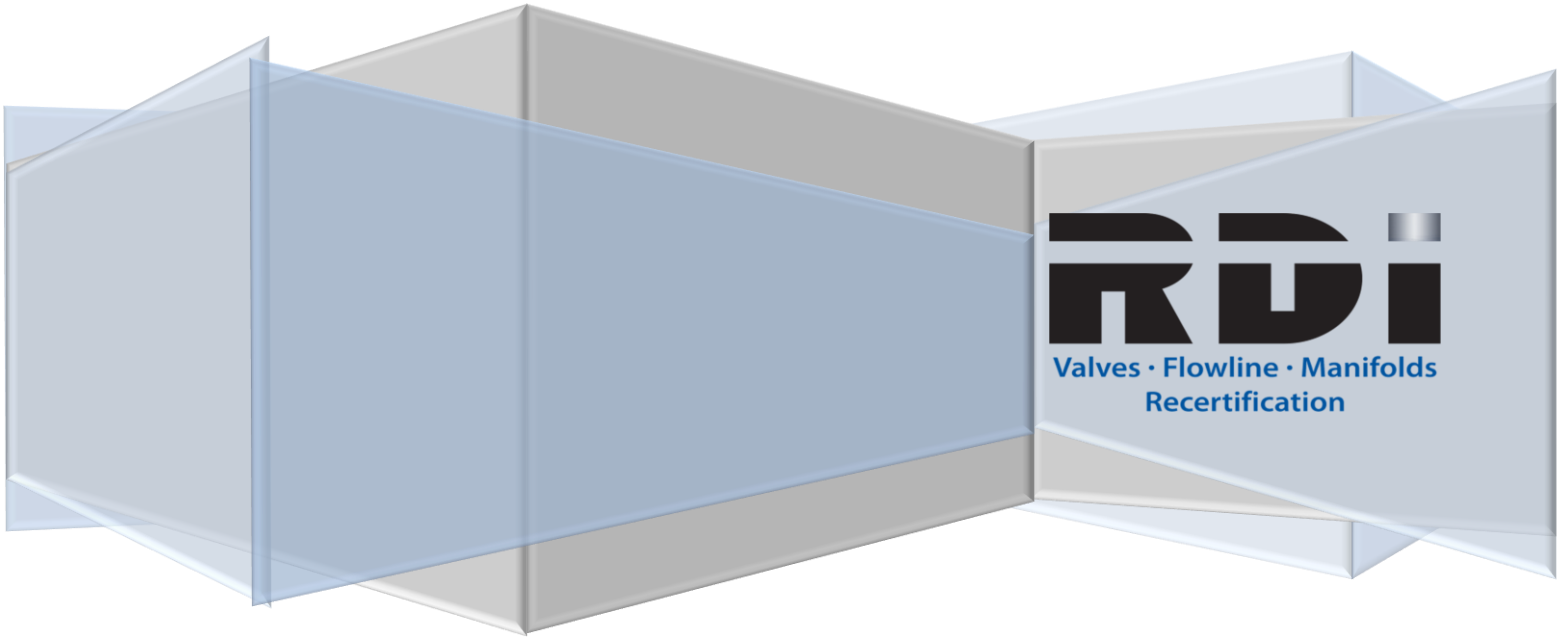
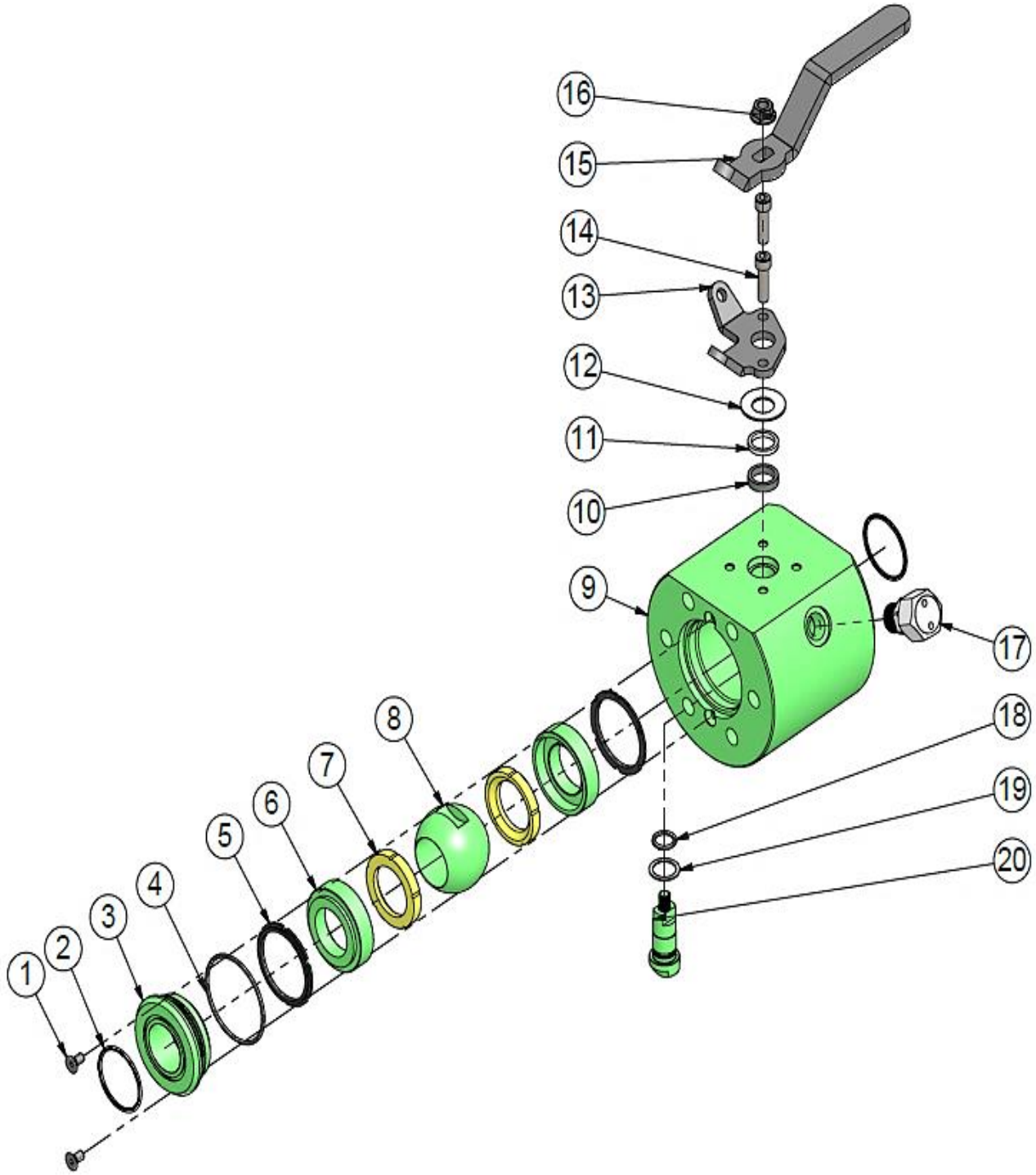


Table of Contents

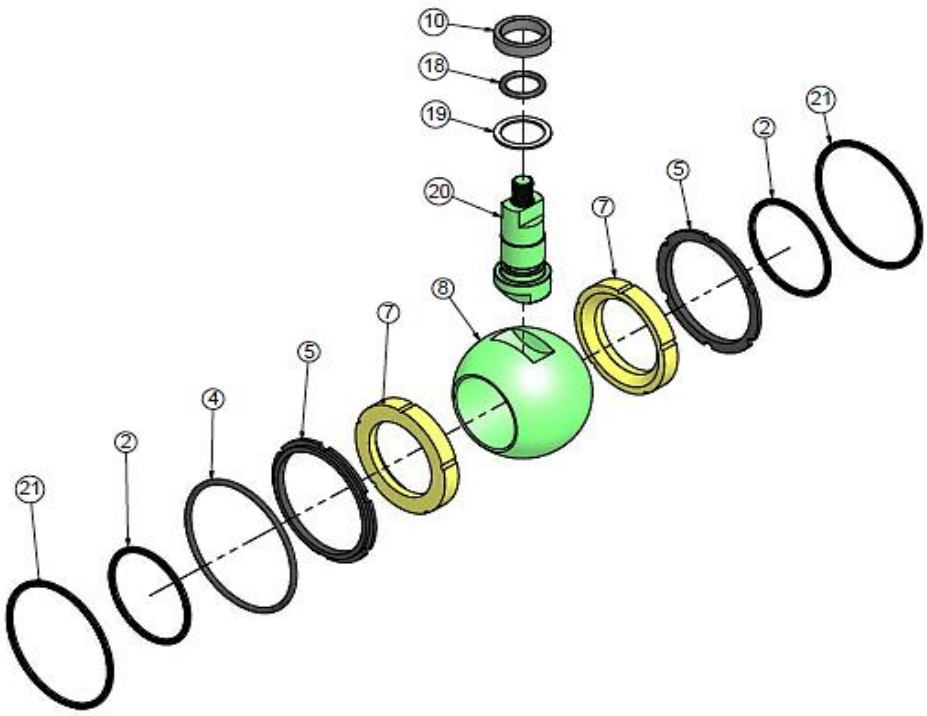
Exploded View - 2” Ball Valve (BV2IN)



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

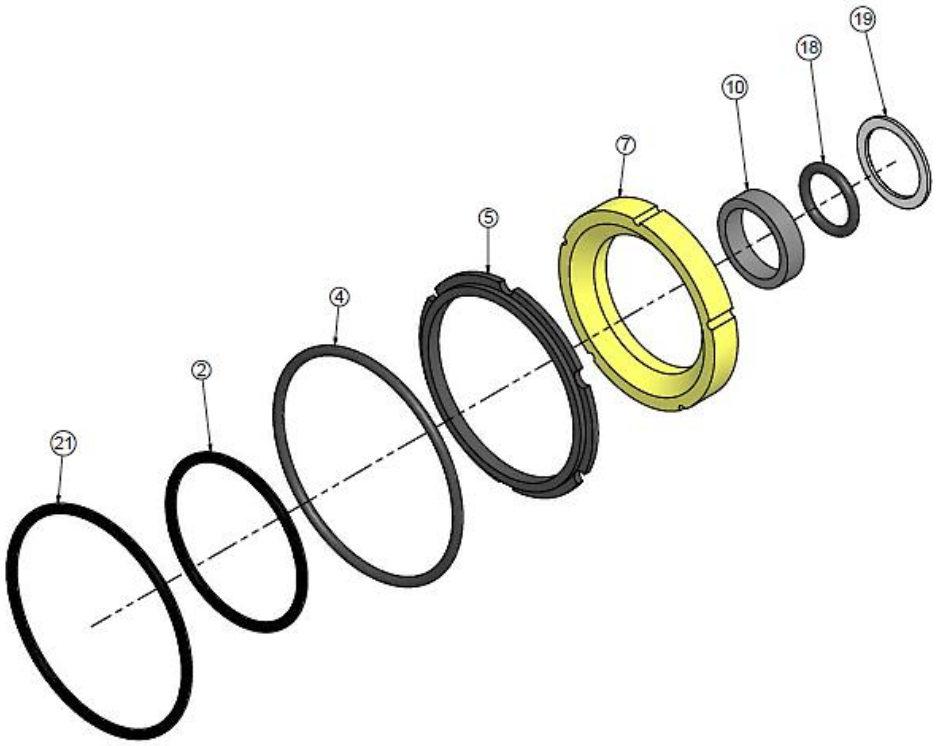
Major Repair Kit Parts Listing - 2” Ball Valve (BV2IN)



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

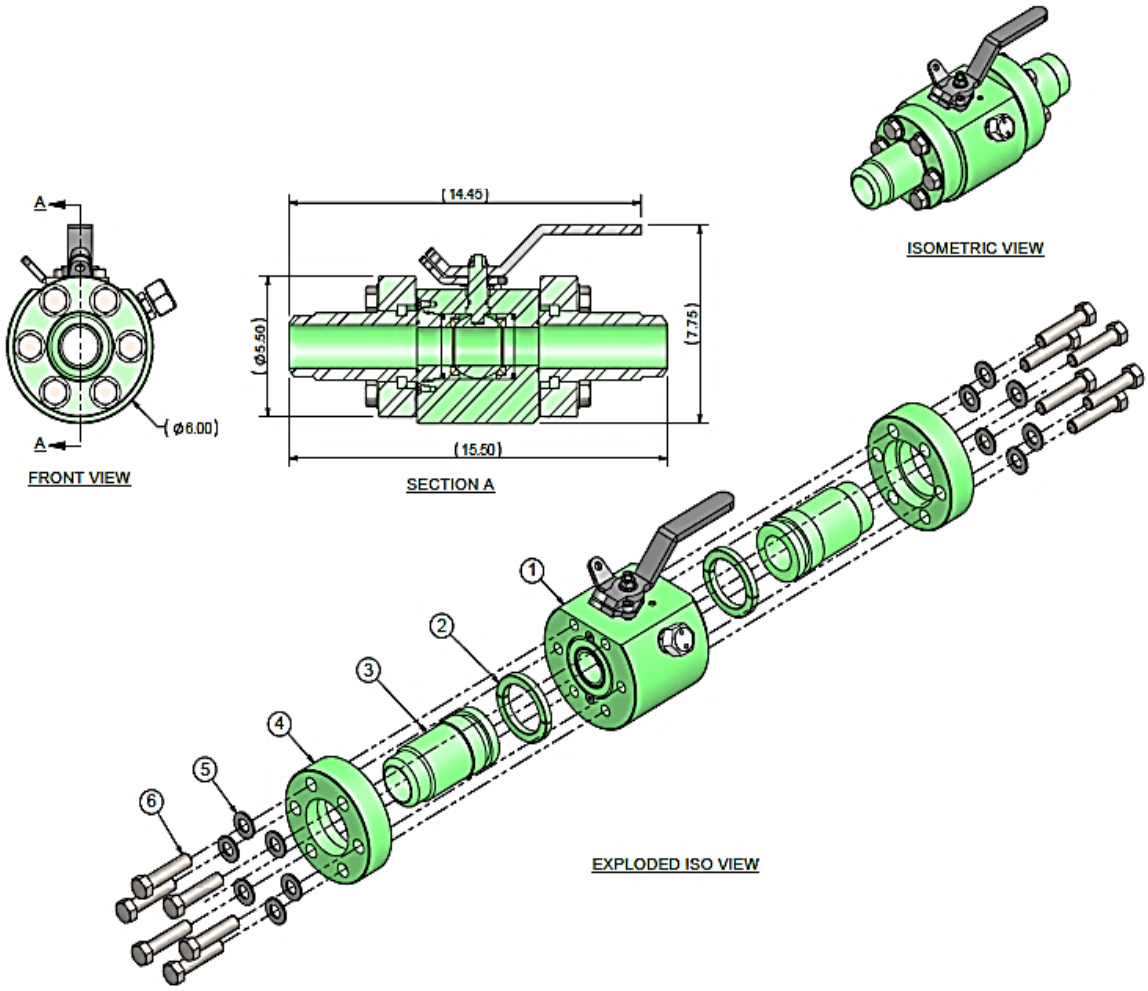
Minor Repair Kit Parts Listing - 2” Ball Valve (BV2IN)



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

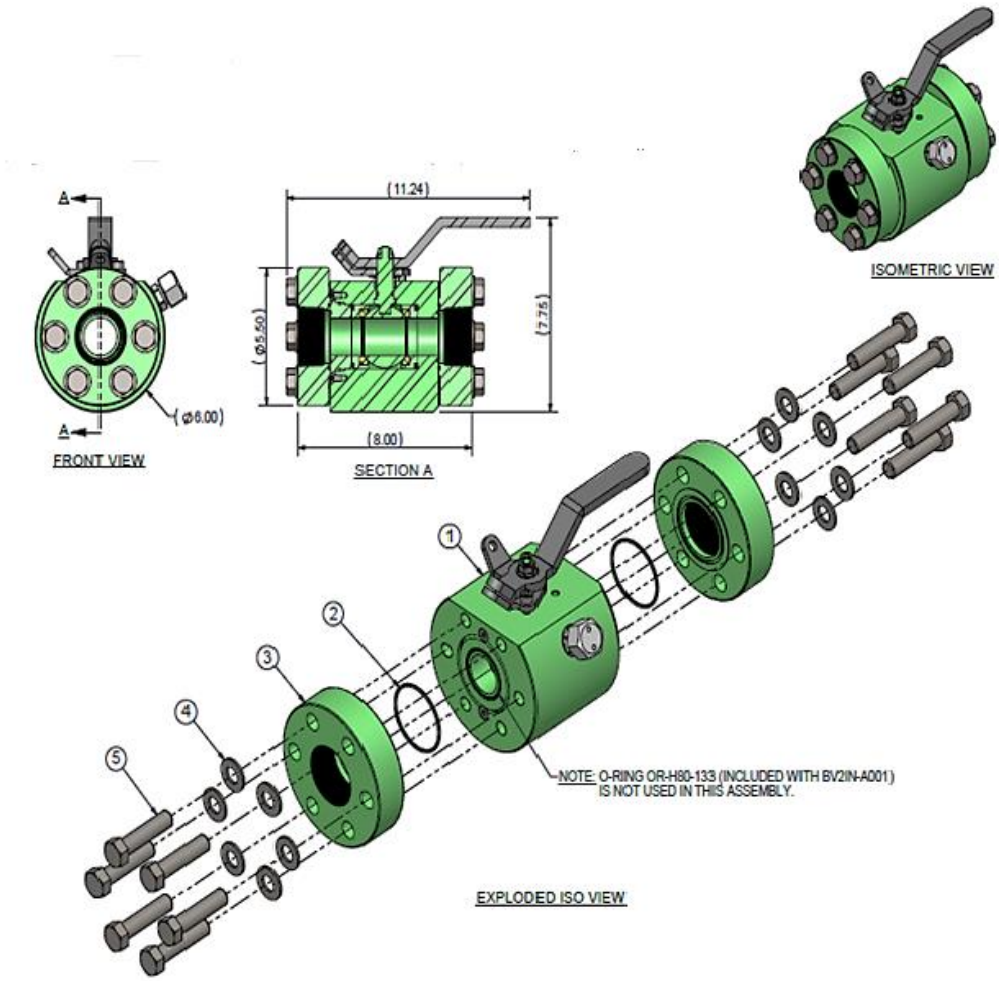
* **Item 21 is used for BV2INNPT only**

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.

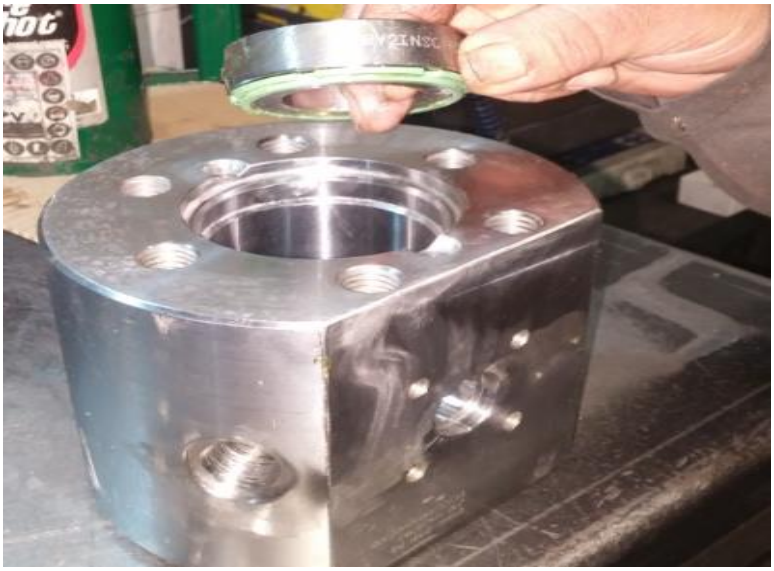
   Note: Angled side of **BV Seats** facing up.

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**.

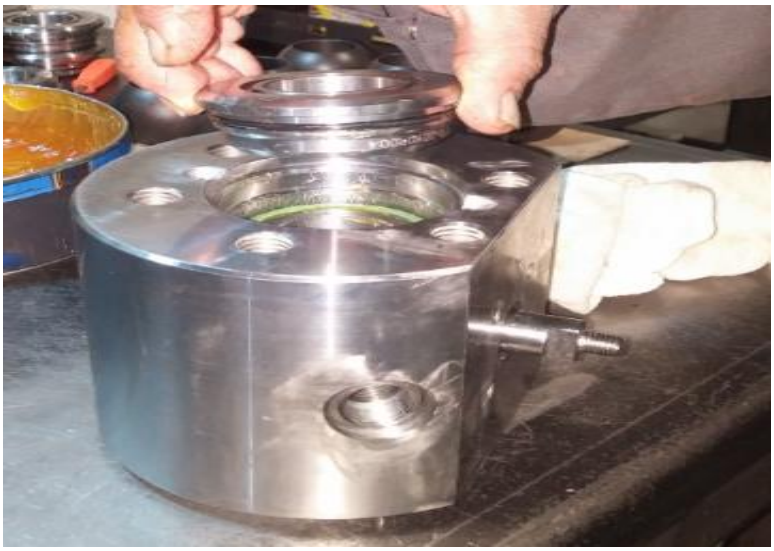
8. Insert the **BV Stem Assembly** into the “through hole” of the **BV Body** until fully engaged.

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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