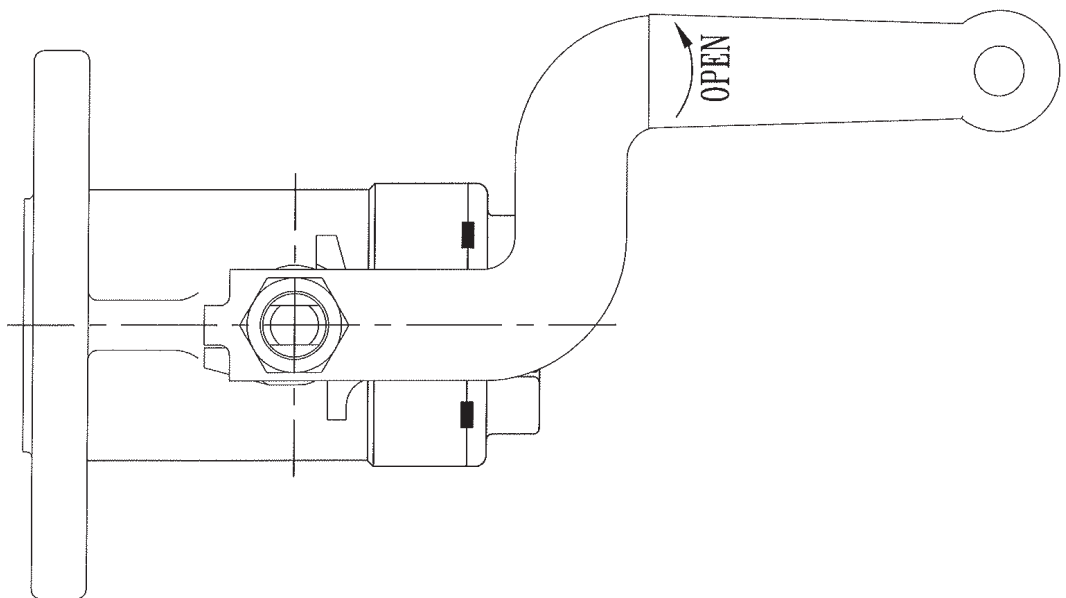


# Jamesbury valves

## 2-piece flanged ball valves

series 6FRF Value-Line™  
1", 2" & 3" (DN 25, 50 & 80)

Installation, maintenance and  
operating instructions



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**READ THESE INSTRUCTIONS FIRST!**

These instructions provide information about safe handling and operation of the valve.

If you require additional assistance, please contact the manufacturer or manufacturer's representative.

**SAVE THESE INSTRUCTIONS!**

Addresses and phone numbers are printed on the back cover.

# 1. GENERAL

## 1.1 SCOPE OF THE MANUAL

This instruction manual contains important information regarding the installation, maintenance, and troubleshooting of Jamesbury™ Series 6FRF 2-piece Ball Valve. Please read these instructions carefully and save them for further reference.

**WARNING:**

THE USE OF A VALVE IS APPLICATION SPECIFIC. BE SURE THE VALVE IS SUITABLE FOR ITS INTENDED SERVICE. IF YOU HAVE ANY QUESTION OR DOUBT, ASK YOUR SUPERVISOR. MIS-APPLIED VALVES CAN RESULT IN THE SUDDEN RELEASE OF PRESSURE, DAMAGE OR PERSONAL INJURY.

## 1.2 VALVE MARKINGS

The valve has an identification marking stamped on bottom of valve. (See **Figure 1**)

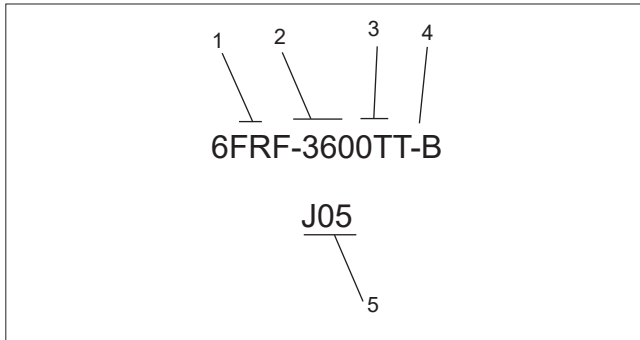


Figure 1. Valve ID

Identification markings:

1. Valve Series
2. Body/Trim Material
3. Seat/Seal Material
4. Model
5. Assembly date

The valve also has marking cast into the sides of the valve. On one side is cast the valve cold working pressure (CWP) in psi. (See **Figure 2**)



Figure 2. Valve Rating

On the opposite side of the valve is the cast in size and body material. (See **Figure 3**)



Figure 3. Size/Material

## 1.3 SAFETY PRECAUTIONS

**WARNING:**

DOUBLE-SEATED BALL VALVE DESIGNS, LIKE THE SERIES 6F, CAN UNDER CERTAIN CONDITIONS TRAP FLUID IN THE BALL CAVITY. RAISING THE TEMPERATURE OF THE TRAPPED FLUID CAUSES THE INTERNAL VALVE PRESSURE TO RISE. EXTREME TEMPERATURE RISE CAN BUILD UP EXCESSIVE PRESSURE WHICH COULD LEAD TO UNCONTROLLED PRESSURE RELEASE. DAMAGE OR PERSONAL INJURY MAY RESULT!

**WARNING:**

**DO NOT EXCEED THE VALVE PERFORMANCE LIMITATIONS!**

EXCEEDING THE PRESSURE OR TEMPERATURE LIMITATIONS MARKED ON THE VALVE IDENTIFICATION PLATE, OR BODY, MAY CAUSE DAMAGE AND LEAD TO UNCONTROLLED PRESSURE RELEASE. DAMAGE OR PERSONAL INJURY MAY RESULT!

**WARNING:**

**SEAT AND BODY RATINGS! (NON-ASME RATED VALVES)**

THE PRACTICAL AND SAFE USE OF THIS PRODUCT IS DETERMINED BY BOTH THE CWP RATINGS: CAREFULLY CHECK BOTH RATINGS. THIS IS THE SAFE USE PRESSURE FOR THE VALVE BETWEEN -20 TO 100 °F (-29 TO 38 °C). **DO NOT EXCEED THESE RATINGS!** FOR INSTALLATION TEMPERATURES BELOW AND ABOVE THESE LIMITS, CONTACT VALMET.

**WARNING:**

**BEWARE OF BALL MOVEMENT!**

KEEP HANDS, OTHER PARTS OF THE BODY, TOOLS AND OTHER OBJECTS OUT OF THE OPEN FLOW PORT. LEAVE NO FOREIGN OBJECTS INSIDE THE VALVE OR TANK CAR. WHEN THE VALVE IS ACTUATED, THE BALL FUNCTIONS AS A CUTTING DEVICE. DISCONNECT ANY PNEUMATIC SUPPLY LINES, ANY ELECTRICAL POWER SOURCES AND MAKE SURE SPRINGS IN SPRING RETURN ACTUATORS ARE IN THE FULL EXTENDED/RELAXED STATE BEFORE PERFORMING AND VALVE MAINTENANCE. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULTS IN DAMAGE OR PERSONAL INJURY!

**WARNING:**

**BEWARE OF NOISE EMISSIONS!**

THE VALVE MAY PRODUCE NOISE IN THE TANK CAR. THE NOISE LEVEL DEPENDS ON THE APPLICATION. OBSERVE THE RELEVANT WORK ENVIRONMENT REGULATIONS ON NOISE EMISSION.

## 2. TRANSPORTATION AND STORAGE

Check the valve for any damage that may have occurred during transport.

Store the valve carefully. Storage indoors in a dry place is recommended.

Do not remove the flow port protectors until installing the valve.

Move the valve to its intended location just before installation.

The valve is usually delivered in the open position.

## 3. INSTALLATION

### 3.1 GENERAL

Remove the protective packaging and flow port protectors and check that the valve is clean inside. Clean valve if necessary.

Flush the tank car carefully before installing the valve. Foreign objects, such as sand or pieces of welding electrodes, will damage the ball and seats.

Read and follow all **WARNINGS!**

Refer to the Section 4, **MAINTENANCE** for stem seal adjustment. If there is weepage past the stem seals upon installation, it means the valve may have been subject to wide temperature variations in shipment. Leak-tight performance will be restored by a simple stem seal adjustment described in the **MAINTENANCE** section.

**WARNING:**

SERIES 6F VALVES ARE DESIGNED FOR MANUAL USE ONLY AND ARE NOT INTENDED FOR AUTOMATION! DO NOT FABRICATE OR ADD ON ANY TYPE OF AUTOMATING ACCESSORY.

Thread-end valves like the Series 6F have NPT threads. To insure a leak tight joint, liberal use of a compatible pipe joint compound is necessary.

**WARNING:**

ANY COMPOUND OR LUBRICANT USED ON THREADS SHALL BE SUITABLE FOR THE SERVICE CONDITIONS AND SHALL NOT REACT UNFAVORABLY WITH EITHER THE SERVICE FLUID OR THE PIPING MATERIAL.

Flow through the *Jamesbury* Series 6F valve can be in either direction, but the preferred method to install the valve is with the insert end upstream.

Use standard piping practices when installing the valves with threaded connections. When tightening the valve to the pipe, apply the wrench to the end nearest the pipe being worked.

### 3.2 HANDLES

If the Series 6F valve handle (15) has to be removed for any reason, the handles must be remounted with the handle stop tang as shown in **Figure 5**.

**WARNING:**

FAILURE TO PROPERLY MOUNT THE HANDLE MAY RESULT IN IMPROPER VALVE OPERATION, DAMAGE OR PERSONAL INJURY MAY RESULT.

### 3.3 COMMISSIONING

Ensure that there is no dirt or foreign objects left inside the valve or tank car. Flush the tank car carefully. Make sure that the valve is fully open when flushing.

**WARNING:**

GOOD PRACTICE DICTATES THAT ONCE INSTALLED, BUT PRIOR TO FIRST USE, THE VALVE IS LEAK TESTED IN PLACE TO ASSURE LEAK-TIGHTNESS HAS NOT BEEN COMPROMISED BY THE INSTALLATION PROCESS. INSTALLATION ACTIONS THAT CAN CAUSE LEAKAGE INCLUDE, BUT ARE NOT LIMITED TO; WRENCHING, SOLDERING, WELDING AND/OR HOISTING.

## 4. MAINTENANCE

### 4.1 GENERAL

Good operating procedure requires periodic observation to ensure that the valve is functioning well. The frequency of observation will depend on the application. Routine maintenance consists of tightening the lower stem nut (16) 1/4 turn periodically to compensate for wear caused by the stem turning against the seal. Loosen the upper stem nut (16) on top of the handle (15) before tightening the lower stem nut. Retighten the upper stem nut after tightening the lower stem nut. (See **Figure 5**)

**WARNING:**

FOR YOUR SAFETY, IT IS IMPORTANT THE FOLLOWING PRECAUTIONS BE TAKEN PRIOR TO REMOVAL OF THE VALVE FROM THE TANK CAR OR BEFORE ANY DISASSEMBLY:

1. BE SURE YOU KNOW WHAT FLUID IS IN THE TANK CAR. IF THERE IS ANY DOUBT, DOUBLE-CHECK WITH THE PROPER SUPERVISOR.
2. WEAR ANY PPE (PROTECTIVE CLOTHING OR EQUIPMENT) NORMALLY REQUIRED WHEN WORKING WITH THE FLUID INVOLVED.
3. DEPRESSURIZE THE TANK CAR AND CYCLE THE VALVE AS FOLLOWS:
  - A. PLACE THE VALVE IN THE OPEN POSITION AND DRAIN THE TANK CAR.
  - B. CYCLE THE VALVE TO RELIEVE RESIDUAL PRESSURE IN THE BODY CAVITY BEFORE REMOVAL FROM THE TANK CAR.
  - C. AFTER REMOVAL AND BEFORE ANY DISASSEMBLY, CYCLE THE VALVE AGAIN SEVERAL TIMES.

Fire-Tested Repair Kits include two seats (5), two stem seals (7), two stem bearings (8), a secondary seal (13), and one body seal (6) (see **Table 1**).

## 4.2 DISASSEMBLY

**NOTE:** If complete disassembly becomes necessary, replacement of all seats and seals is recommended. Refer to Repair Kit chart.

1. Close the valve. Then remove the handle nut (16), handle (15) and lower stem nut (19).
2. Remove the compression ring (18).
3. Hand grind the existing tack welds, and then chisel, to break the remaining weld. Unscrew and remove the body cap (2) and body seal (6).
4. If the ball (3) and seats (5) do not fall from the body with the ball in the fully closed position, use a piece of wood or some other soft material to gently tap the ball (from the end opposite body cap). This will unseat these parts without damaging the ball.

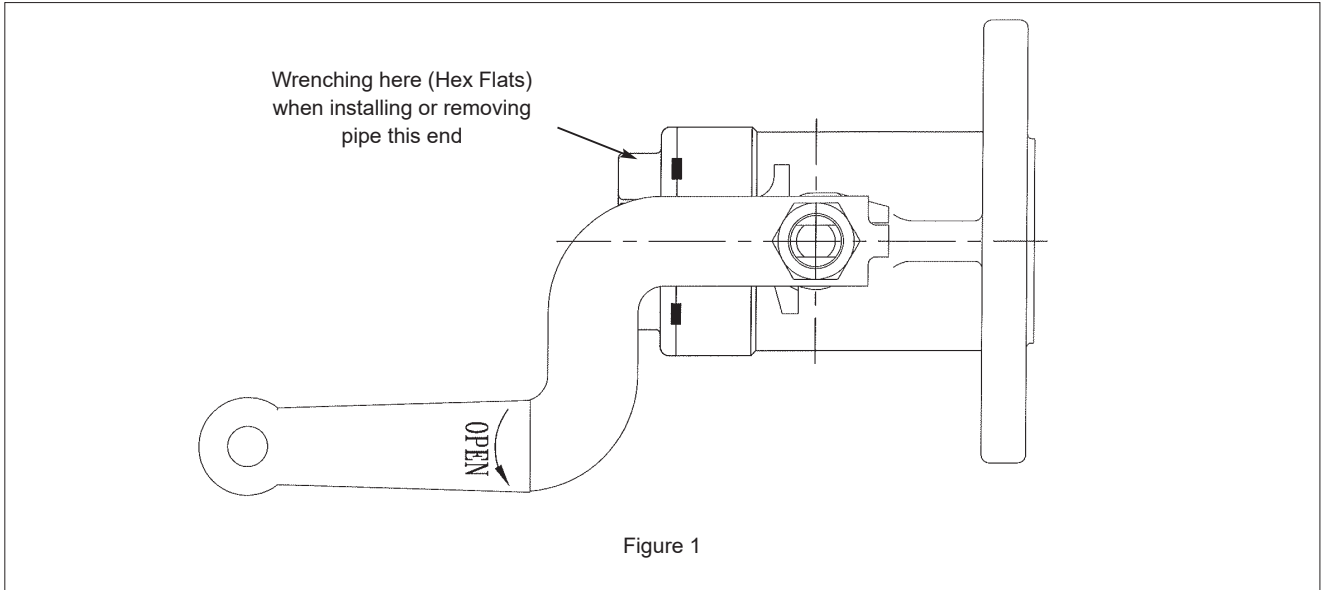


Figure 1

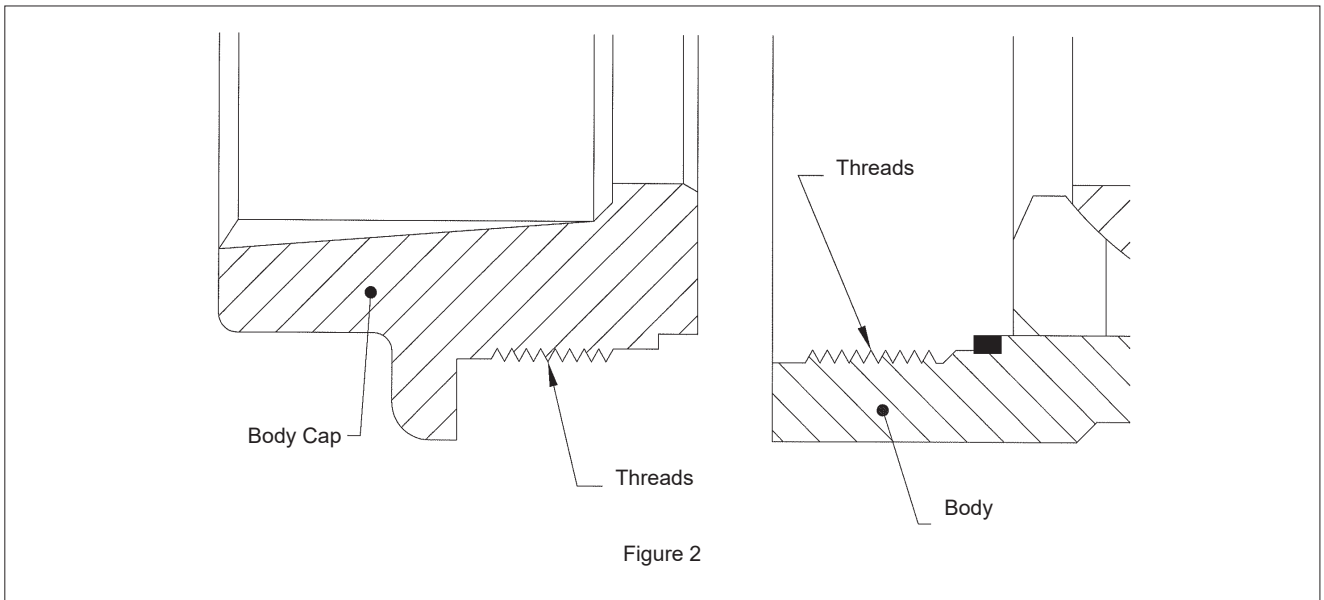


Figure 2

5. Press the stem (4) from the top into the valve body and remove it through the body cap end of the body.
6. Using a wire brush, clean the internal body cap thread and internal body threads (see **Figure 2**).
7. Remove and discard the old stem seals (7), stem bearings (8) and sec. stem seal (13). Be very careful not to scratch any sealing surfaces in the valve body (surfaces on which seats and seal rest).

### 4.3 ASSEMBLY

1. Clamping valve body (1) lightly but securely in a vise, drop in one seat (5) with the flat surface on the bottom.
2. Insert from the inside a stem bearing (8), a sec. stem seal (13), and another stem bearing (8) into the lower stem bore of the body.
3. Insert the stem (4) through the open end of the body (1), being careful not to scratch the stem bearings and stem bearing surfaces. Press it gently up into the stem hole.
4. Holding the stem in place from inside the valve, install two stem seals (7), the compression ring (18), and thread on the stem nut (19) until the stem starts to turn.
5. Place a wrench through the body on the bottom of the stem blade to hold the stem stationary. Place another wrench on the stem nut (19), and turn the nut down until the seals bottom and the stem comes snugly in place. Tighten the stem nut (19) until snug, plus an additional 1/4 - 1/2 turn. Also see **Table 2**.
6. Align the stem blade inside the valve body (1) with the ball (3). Insert the ball (3) and rotate the stem (4) to the ball fully closed position.
7. Insert second seat (5) into the body (1) so that the sealing surface of the seat is towards the ball. Insert the body seal (6).
8. Insert the body cap (2), screw it down and tighten to the required torque (see **Table 1 for Body Cap Torque specifications**).
9. Place the handle (15) and handle nut (16) over the stem (4). Tighten the handle nut (16) until snug.
10. Cycle the valve slowly twice to ensure permanent position of the ball between the two seats.
11. Tack weld the body cap to the body following the instructions in (Table 3). Tack welds must be equally spaced  $\pm 10^\circ$ . Weld not to exceed 1/8" (3.175 mm) depth of penetration.

TABLE 1	
BODY CAP ASSEMBLY TORQUE	
Valve Size	Body Cap Torque
1" (DN 25)	225 FT•LBS (305 N•m)
2" (DN 50)	600 FT•LBS (814 N•m)
3" (DN 80)	600 FT•LBS (814 N•m)

TABLE 2	
STEM NUT TORQUE	
Valve Size	Torque
1" (DN 25)	200 IN•LBS
2" (DN 50)	240 IN•LBS
3" (DN 80)	600 IN•LBS

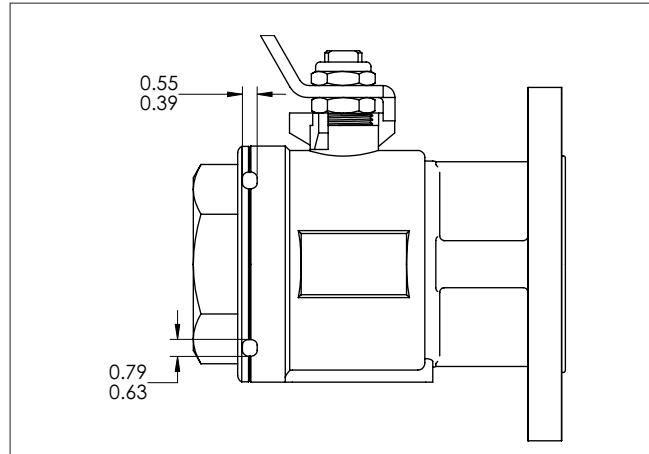


Figure 3

TABLE 3	
NUMBER OF WELDS	
Valve Size	No. of Welds Required
1" (DN 25)	3
2" (DN 50)	4
3" (DN 80)	

TABLE 4	
WELD ROD REQUIRED	
Valve Material	Welding Rod Required
Carbon Steel	AWS 80SD-2 or E70S-2 or E71T-1
Stainless Steel	AWS ER 316/312 or E316LTX-X

### 4.4 PRESSURE TESTING THE VALVE

**WARNING:**

WHEN PRESSURE TESTING, EXERCISE CAUTION AND MAKE SURE ALL EQUIPMENT USED IS IN GOOD WORKING CONDITION AND APPROPRIATE FOR THE INTENDED PRESSURE.

If the valve is to be tested prior to returning to service, make sure the test pressures are in accordance with an applicable standard.

When testing the valve for external tightness, keep the ball in the half open position.

If testing the valve seat tightness, please contact Valmet for advice.

**WARNING:**

WHEN PERFORMING ANY TESTS, NEVER EXCEED THE MAXIMUM OPERATING PRESSURE OR MAXIMUM SHUT-OFF PRESSURE LISTED ON THE IDENTIFICATION PLATE OR VALVE BODY!

## 5. REPAIR KITS

**FIRE-TESTED** Repair kits include two seats (5), two stem seals (7), two stem bearings (8), a secondary seal (13), and one body seal (6).

TABLE 5		
REPAIR KITS		
Valve Size	T Seats	M Seats
1" (DN 25)	RKN110-TT	RKN110-MT
2" (DN 50)	RKN198-TT	RKN198-MT
3" (DN 80)	RKN225-TT	RKN225-MT

## 6. SERVICE / SPARE PARTS

We recommend that valves be directed to our service centers for maintenance. The service centers are equipped to provide rapid turn-around at a reasonable cost and offer new valve warranty with all reconditioned valves.

**NOTE:** When sending goods to the service center for repair, do not disassemble them. Clean the valve carefully and flush the valve internals. Include the material safety datasheet(s) (MSDS) for all media flowing through the valve. Valves sent to the service center without MSDS datasheet(s) will not be accepted.

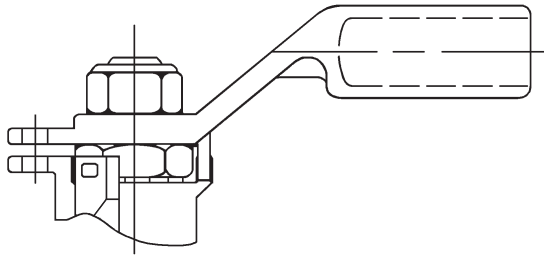
For further information on spare parts and service or assistance visit our web-site at [www.neles.com/products/valves/railroad-valves/catalogue-of-tank-car-valves/](http://www.neles.com/products/valves/railroad-valves/catalogue-of-tank-car-valves/).

**NOTE:** When ordering spare parts, always include the following information:

- a. Valve catalog code from identification plate,
- b. If the valve is serialized – the serial number (from identification plate)
- c. From **Figure 5**, the ballooned part number, part name and quantity required.

# EXPLODED VIEW & PARTS LIST

3" (DN 80) Valves Only



VALVE PARTS LIST		
ITEM	PART NAME	QTY
1	Body	1
2	Body Cap	1
3	Ball	1
4	Stem	1
5	Seat	2
6	Body Seal	1
7	Stem Seal	2
8	Stem Bearing	2
13	Sec. Stem Seal	1
15	Handle	1
16	Self Locking Nut	1
18	Compression Ring	1
19	Nut	1

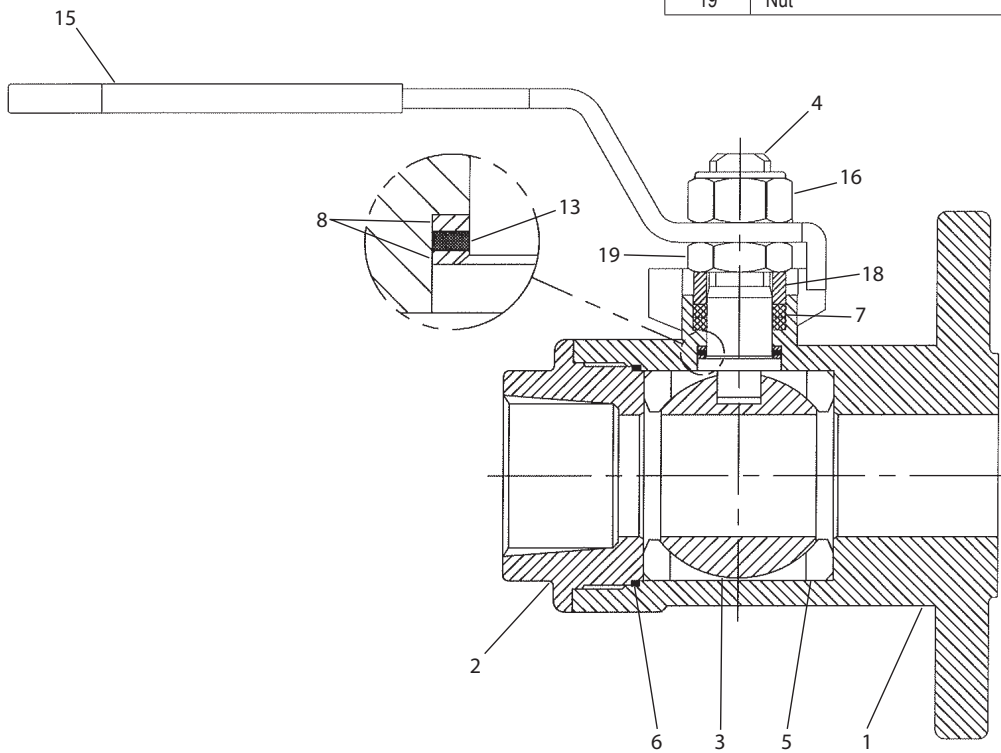


Figure 5

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