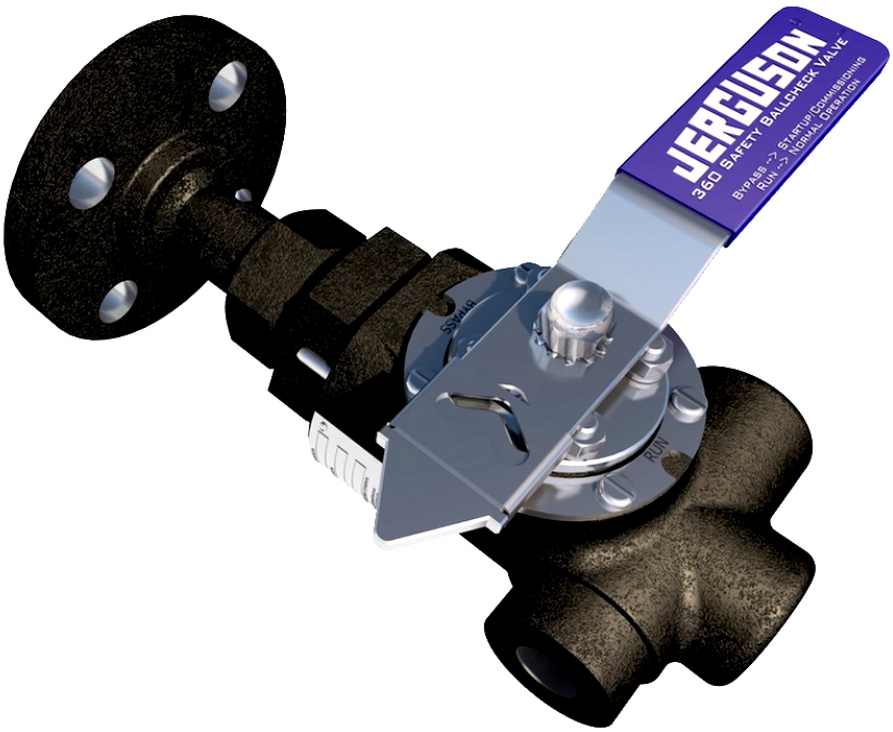
Installation, Operation, & Maintenance Instructions
IOM J500.36
2017.10

360 Series
Safety Ballcheck Valves



JERGUSON®
A PRODUCT OF CLARK-RELIANCE

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1.Introduction

Clark-Reliance is a global leader in the level indication and control, sight-flow indication, and filtration and separation industries. Clark-Reliance is dedicated to offering the largest and broadest range of instrumentation products and being the single-source for every type of level measurement and control to meet the varying demands of the process industry.

Jerguson® Gage and Valve, a leading supplier of level gaging products, offers the world's largest selection of liquid level glass gages, magnetic level gages, liquid level switches and level transmitters. Since 1905, Jerguson® gages and valves have been installed in a wide variety of liquid level applications, from basic chemical storage tanks to the most advanced nuclear aircraft carriers. With complete product offerings in both traditional glass gages and magnetic gages, Jerguson® is able to satisfy customers' diverse needs.

2. Warranty

Clark-Reliance warranties its manufactured goods as being free from defects in material and workmanship for one (1) year from the date of shipment. If any of the goods are found by the seller to be defective, such goods will be replaced or repaired at the seller's cost. Refer to the Clark-Reliance Terms & Conditions for full warranty details.

3. About This Manual

This manual is designed to aid and guide in the installation, operation and maintenance of the Jerguson 360 Series family of valves. Authorized personnel must read and understand all instructions before attempting to install, operate or maintain this equipment. Only persons certified to perform work described herein should attempt any actions suggested. Safety precautions and company safety standards should be observed at all times when performing the activities described in this manual.

4. Inspection & Delivery

Upon receiving valves, check all components carefully for damage incurred during shipping. Sign for the shipment noting "damaged" and immediately notify the shipping firm of any such damage and request damage inspection. Confirm valve model number, pressure and temperature ratings (on nameplate) meet application specifications. Also confirm that the material of construction is compatible with both the process fluid and surrounding atmosphere.

5. Product Description

The Jerguson® 360 Series Valve is unlike any other safety ballcheck valve on the market, featuring an innovative core design locating a ballcheck within a metal-seated valve. The handle is quarter-turn position visible so that you can easily see valve status (open or closed). A cleanout port opposite the vessel connection allows you to maintain the valve by flushing out the internals, even while mounted to the vessel. Each valve is equipped with locking pin and lock-out tag-out slot to enhance plant safety. As a standard these valves are low emission certified to API 641 and ISO 15848-1. Valves meet API Class V shutoff requirements, and have wetted components that comply with NACE MR0103 and MR0175. Equipped on a Jerguson® armored glass gage, these valves eliminate common commissioning mistakes while enhancing plant safety.

These valves must be installed, operated and maintained with reasonable care and due regard for the applications and environment if they are to provide safety and reliability for their service lifetime.

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6. Specifications

How to Specify 360 Series Safety Ballcheck Valves

364S – A – 1 – A04 – A04 – A04 –

Gage Connection Type

Code	Description
3S	Set, Non-Union Gage Connection
4S	Set, Union Gage Connection
3T	Top Valve, Non-Union Gage Connection
3B	Bottom Valve, Non-Union Gage Connection
4T	Top Valve, Union Gage Connection
4B	Bottom Valve, Union Gage Connection

Body Material

Code	Description
A	A105N Carbon Steel
T	A182 316/316L Stainless Steel
LC	Hastelloy C276

Trim Material

Code	Description
1	316SS Nitride Coated Seat & Ball; Inconel Stem
2	Hastelloy C276 Ball & Stem; Teflon Seat

Process Connection

Style Code	Description	*Size* Code	Description	Sizes Valid with Styles
A	FNPT	04	1/2" (DN15)	A, B, C, D, F, G
B	FSW	06	3/4" (DN20)	A, C, D, F, G
C	MNPT	08	1" (DN25)	C, D, F, G
D	MSW	12	1-1/2" (DN40)	F, G
F	RF ASME Flange	16	2" (DN50)	F, G
G	RF DIN Flange	00	N/A	K
K	No Connection			

Options

Code	Description
Blank	Standard
WN	Weld Neck Flanges
RJ	Ring Joint Flanges
SG	Spherical Union Gage Connection

Clean-Out Connection Size

Code	Description	Note
A04	1/2" FNPT	Factory Default when 1/2" size vent/drain is specified
A06	3/4" FNPT	Factory Default when 3/4" size vent/drain is specified

**Contact factory for special connections*

Vent or Drain Connection

Style Code	Description	*Size* Code	Description	Sizes Valid with Styles
A	FNPT	04	1/2" (DN15)	A, B, F, G
B	FSW	06	3/4" (DN20)	A, B, F, G
F	RF ASME Flange	08	1" (DN25)	F, G
G	RF DIN Flange	12	1-1/2" (DN40)	F, G
K	No Connnection	16	2" (DN50)	F, G
		00	N/A	K

Carbon Steel
Series 360 Temperature / Pressure

Temperature		Pressure			
°F	°C	PSI	BarG	Kg/cm²	kPaG
100	38	2220	153	156	15306
200	93	2035	140	143	14031
300	149	1965	135	138	13548
400	204	1900	131	134	13100
500	260	1810	125	127	12480
600	316	1705	118	120	11756
700	371	1590	110	112	10963
800	427	1235	85	87	8515

316SS
Series 360 Temperature / Pressure

Temperature		Pressure			
°F	°C	PSI	BarG	Kg/cm²	kPaG
100	38	2160	149	152	14893
200	93	1860	128	131	12824
300	149	1680	116	118	11583
400	204	1540	106	108	10618
500	260	1435	99	101	9894
600	316	1355	93	95	9342
700	371	1305	90	92	8998
800	427	1265	87	89	8722

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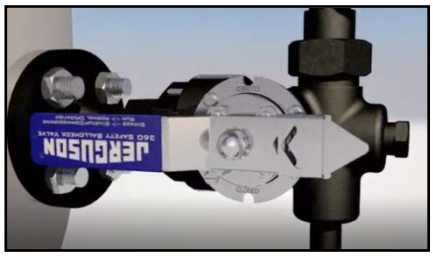
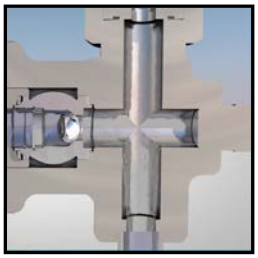
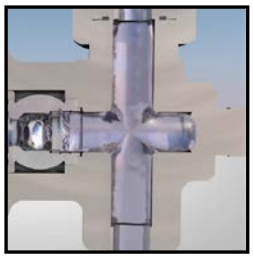
7. Method Of Operation

Run Mode:
When the arrow on the handle of the valve is pointed towards the gage (opposite the vessel connection) the valve is in the Run Position.

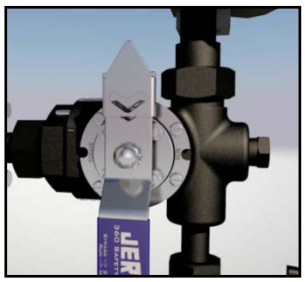

The function of the Run Position is intended for when the gage is in normal operation. This mode positions the seating surface of the internal ballcheck towards the armored glass gage allowing the ballcheck to seat in the case of a catastrophic event. The pressure differential required to seat the ballcheck is ~5 psi.

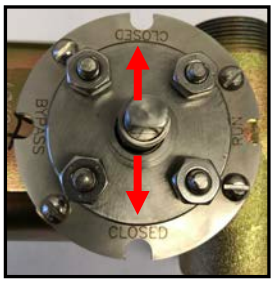
Bypass Mode:
When the arrow on the handle of the valve is pointed in the direction of the process connection the valve is in the Bypass Position.




The Bypass Position is intended for use while the gage is being commissioned when there is already liquid present in the vessel. This mode of operation positions the internal ball mechanism such that there is a retainer plate towards the armored glass gage connection. In this scenario the ballcheck cannot seat as the ballcheck seating surface is upstream of the ball. Fluid will flow around the ball, through the retainer plate, and into the gage while it is being commissioned.

Closed Mode:
When the arrow on the handle of the valve is pointed perpendicular to the valve (either pointing up or down), the valve is in the closed position.





The closed position is intended for use when the operator intends to isolate the gage from the vessel. This mode of operation positions internal ball mechanism such that it blocks the process port preventing fluid from entering the gage or draining back to the vessel.

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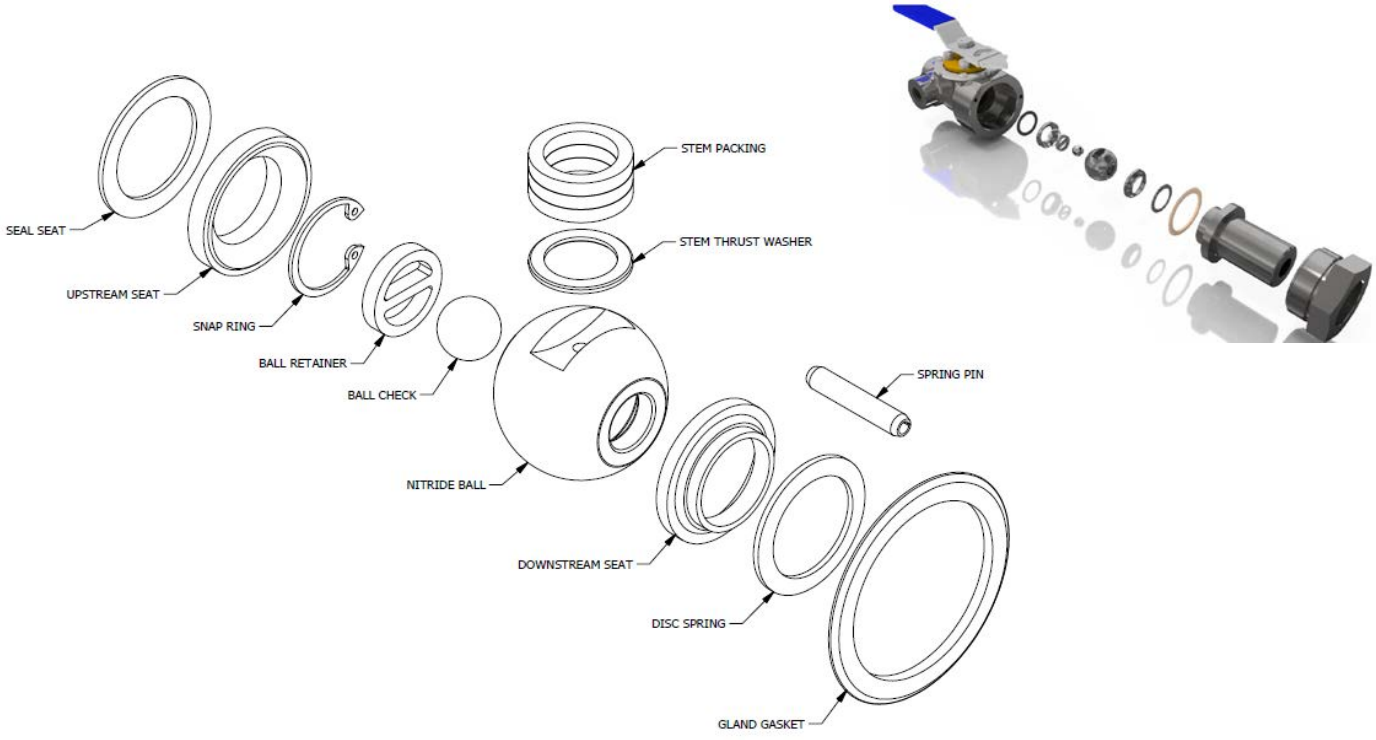
8. Recommended Commissioning Procedure

1. If the vessel does not contain any process fluid, move the top then bottom valve to the run position. As long as liquid slowly fills the gage, the ballcheck will not engage. If there is concern over the rate at which fluid will enter the gage, then follow the remaining steps in this procedure.
2. When there is already liquid present in the vessel open the top valve to the bypass position. It is best practice when commissioning any level gage to open the top valve first. This allows the pressure of the vessel to equalize with the gage.
3. Open the bottom valve to the bypass position. This will allow liquid to flow from the vessel through the valve and into the gage. Note: While the valve is in bypass mode the ballcheck cannot seat.
4. Wait until the fluid stops rising.
5. Operate the handle on the top valve and move the arrow to the run position.
6. Operate the handle on the bottom valve and move the arrow to the run position. The gage is now ready for normal operation. In the event of a catastrophic failure the ballchecks will seat isolating the gage from service.

Visit **http://www.Jerguson.com/360-series** for a video demonstration of the proper procedure for commissioning a glass level gage equipped with the 360 series safety ballcheck valves.

9. Maintenance

Rebuild Kit Exploded View (Part# S25189)



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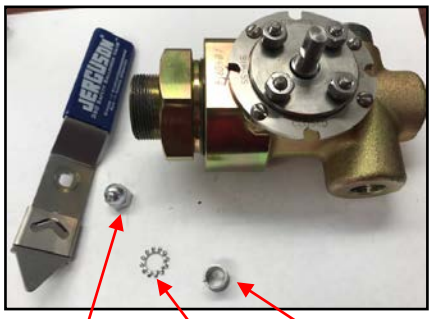
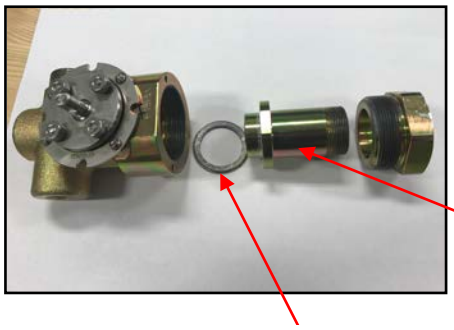
Rebuild Kit Disassembly

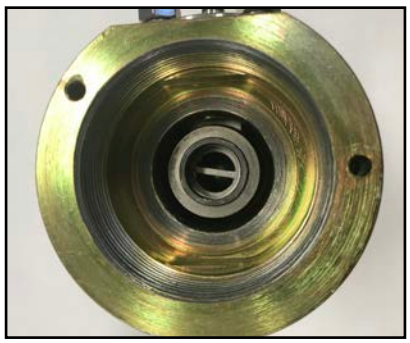
1. Remove handle from valve by taking off the the acorn nut, lock washer, and spacer. Secure valve into a vice with the large compression nut facing upward. Take care not to damage any of the external components. Remove anti rotation pin and discard. Use large wrench to remove the compression nut



2. Remove the inlet gland, and inlet gland spiral wound gasket.



3. Remove Disc Spring, and Downstream Seat.



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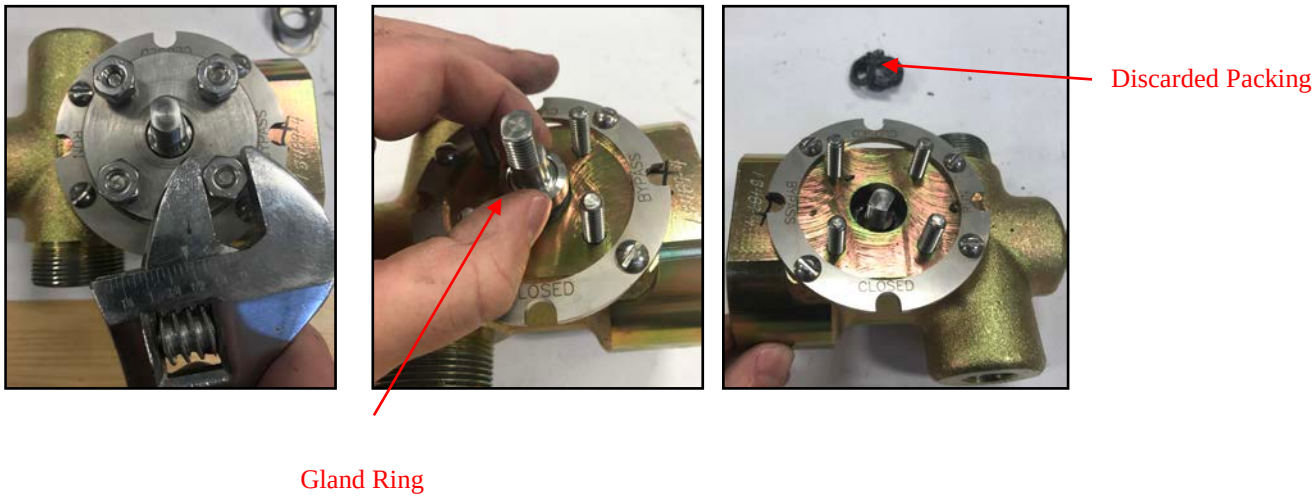
4. Temporarily put the handle back onto the valve and rotate to the closed position and remove the ball mechanism by sliding it off of the stem through the process opening.

5. If you wish to replace or remove the internal ballcheck, remove the ball retainer clip. If not continue to step 6.
6. Remove upstream seat, and seal from the inside of the valve.

7. Remove gland follower by taking off the four nuts shown in the picture below, also remove the gland ring. Pull out the -3- stem packing rings packing rings and discard.



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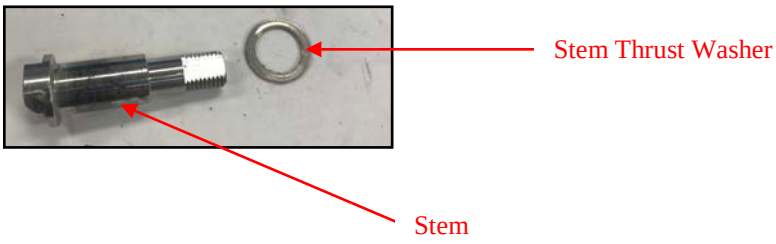
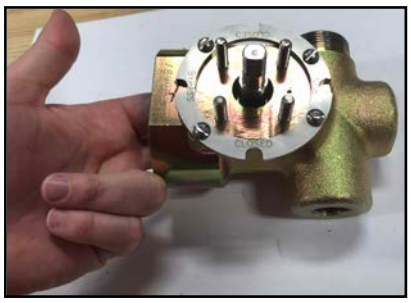
8. Gently tap the stem into the valve body and pull out through the process port. The valve is now fully disassembled.

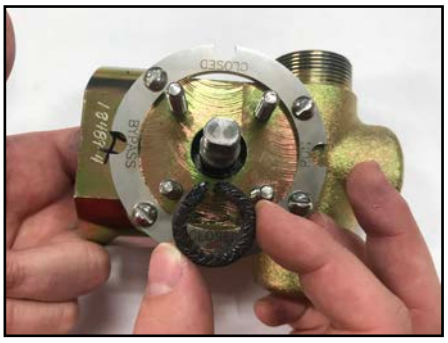


Reassembly (Replacing the stem packing Part# G294 – Set of 3)

1. Replace thrust washer on stem flange. Align side with chamfer on ID with face of stem flange. Angle the stem and insert into valve body.



2. Holding stem flange and washer pressed up against top of body, install -3- new packing rings into stuffing box. Insert first ring and hand press in as deep as possible. Align second ring with slit 180 degrees from first ring and hand press in as deep as possible. Align third ring with slit 90 degrees from second ring and hand press in as deep as possible. Third ring should be about flush with top of valve face.



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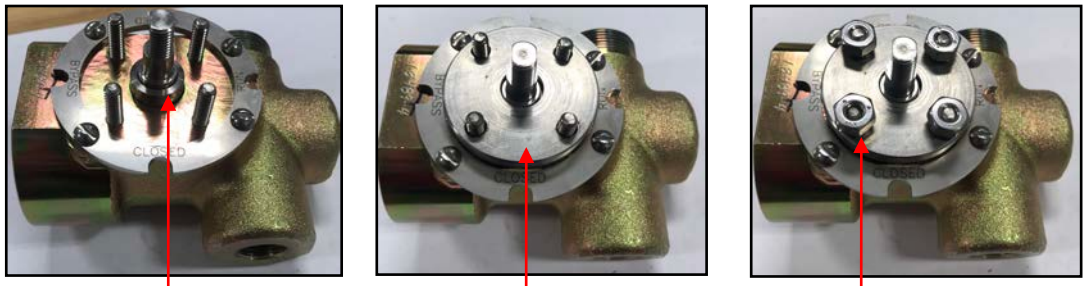
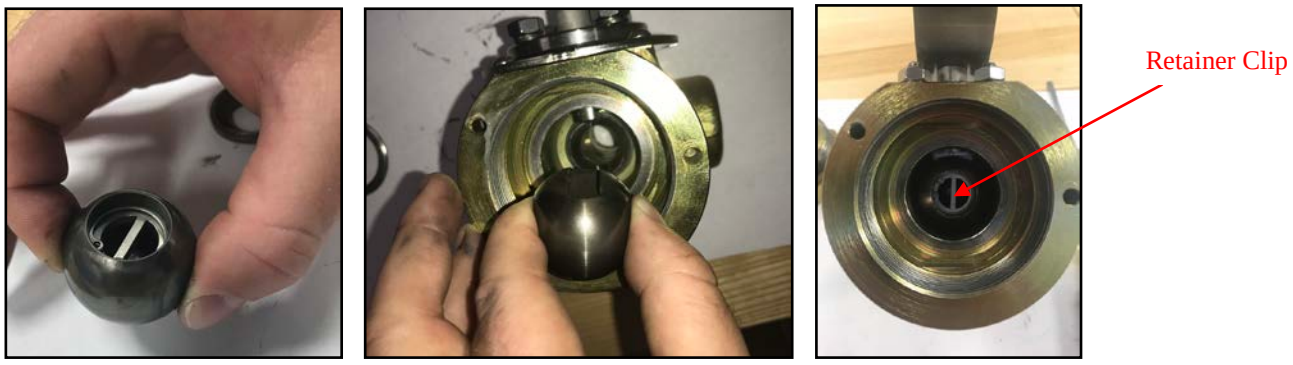
3. Install gland ring with bevel side up. Align gland follower over studs with bevel side down and press flush onto gland. Place Belleville washers onto studs over gland follower, with first washer cupped up and second washer cupped down, to form a diamond shape. Thread nuts onto studs and hand tighten in “X” pattern until snug. Torque nuts in “X” pattern to 15-20 in-lb. Visually confirm gland follower is level.



4. Install Handle Back onto valve and cycle the stem several times. Leave valve handle in the closed position.

5. Replace upstream seat, and seal. Place into valve body.

6. Clean new ball mechanism thoroughly and apply a thin film of molykote or equivalent grease. Install the ball into the valve taking care to ensure the slot matches the stem engagement. The ball mechanism will only slide on the stem in one way. If the valve handle is rotated to the run position the retainer clip should be showing out of the process opening as shown.



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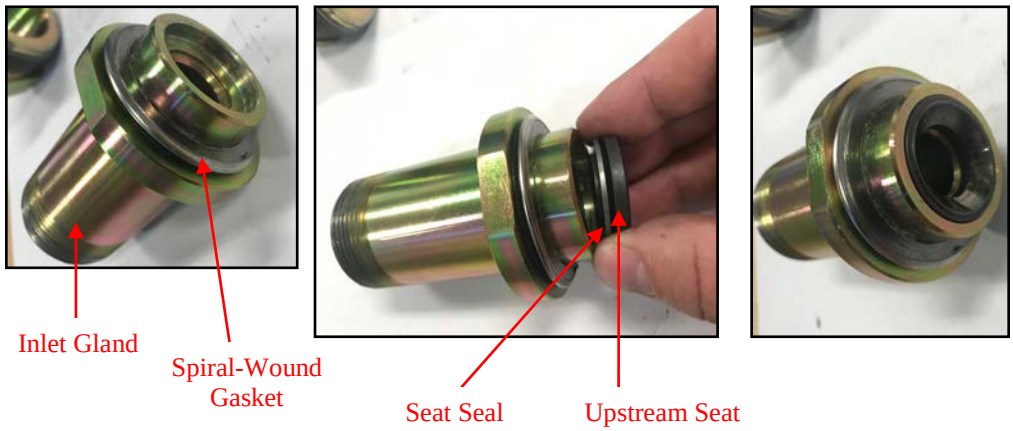
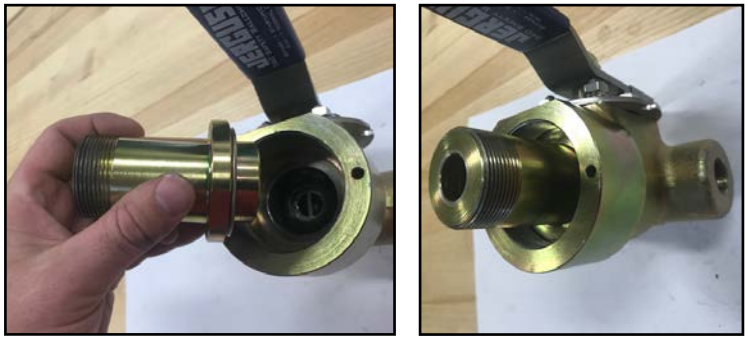
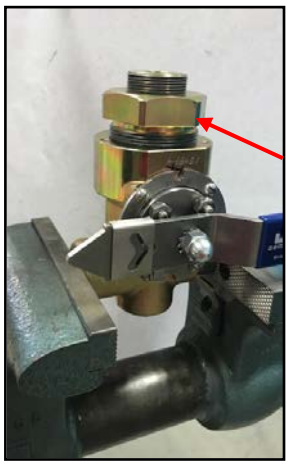
7. Place the new spiral-wound gasket on the underside of the inlet gland like shown. Place the new upstream seat and seal into the inlet gland opening.



8. Insert the inlet gland assembly from the previous step into the valve as shown.



9. Secure valve into a vice with the large compression nut facing upward. Using a large calibrated torque wrench, tighten compression nut to 500 Ft-Lbs. Install anti-rotation pin to lock nut in place. The valve is now ready to be hydro-tested.



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