Installation, Operation and Maintenance Manual

for the

MOGAS G-Series Ball Valve

PREPARE THE VALVE FOR INSTALLATION

ACTUATE THE VALVE

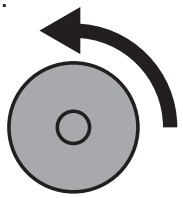
INSTALL THE VALVE PROPERLY

MAINTAIN THE VALVE FOR OPTIMAL OPERATION AND PERFORMANCE

MOGAS®

Read Before Installing Valve

All MOGAS valves operate **counter-clockwise to open, clockwise to close**.



OPEN

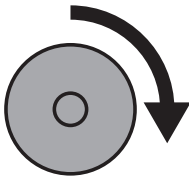
MOGAS valves are supplied in a variety of operator configurations based upon customer requirements, and may be operated by

- manual actuation (handlever)
- worm gear actuation (handwheel)
- pneumatic actuation
- hydraulic actuation

Each of these operator configurations may be installed and tested prior to shipping, or shipped separately, depending on customer requirements.

Some valves are supplied with a bare stem or stem adaptor kits to accommodate a variety of manual or actuated operators.

Please note the configuration of each individual valve and proceed with any necessary operator adaption procedures prior to installing the valve.



CLOSE

How to Read this Manual

All information within this manual is relevant to the safe and proper care of your MOGAS ball valve. Please understand the following examples of instructional information:

5 **INSTALL STEM ADAPTOR**
Align stem adaptor **13** so the keyways on stem adaptor correspond with the keys **6** on stem **5**.

Sequential procedure *required to perform operation.*

Bold *numbers correspond with items shown in the* ***Valve Item Reference Number*** *sections.*

▶ **PRE-INSTALLATION STORAGE**
Valves shall remain stored in their shipping crates with the lids secured.

General information *or an alternate / variation procedure.*

CAUTION!
Ensure key length provides and maintains full engagement.

THIS WILL AFFECT THE VALVE WARRANTY.

Warning statement *to prevent unwanted consequence.*

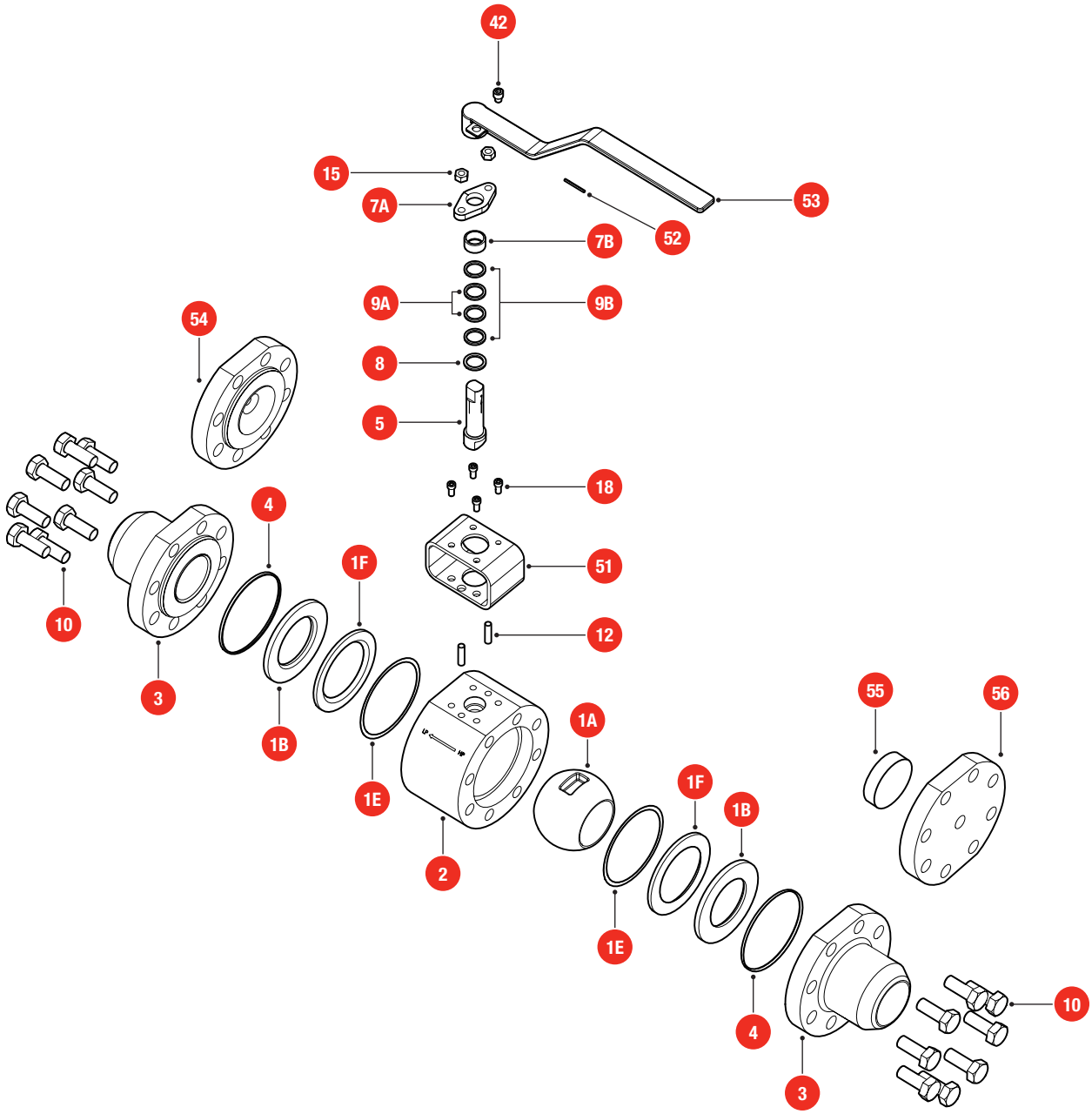
Note:
The normal direction of flow is from the higher pressure end (upstream) to lower pressure end when the valve is ***closed****.*

Note(s) *to support procedure.*

Contents

Valve Item Reference Number

Manual Adaption (Handlever)



Valve Item Reference Number

Manual Adaption (Handlever)

Valve Part Reference Number	
Item	**Description**
1A	Ball
1B	Seat
1E	Seat Gasket
1F	Seat Retainer
2	Body
3	End Connection
4	Body Gasket
5	Stem
7A	Gland Flange
7B	Gland Flange Thruster
8	Inner Stem Seal
9A	Ring Stem Packing
9B	Ring Anti Extrusion
10	Bolt
12	Gland Stud
15	Gland Nut
18	Mounting Bracket Bolt
42	Hand Lever Bolt
51	Mounting Bracket
52	Pin
53	Hand Lever
54	Low Pressure Coining Flange
55	Coining Insert
56	High Pressure Coining Flange

Transport and Storage

These procedures outline the general requirements for storage of MOGAS valves.

TRANSPORT

For export shipping, valves will be shipped in sea-worthy, export-packed, plastic-lined wooden crates.

Upon arrival at the site, inspect the general condition of the valve (and actuator, if supplied) for any potential shipping damage.

PRE-INSTALLATION STORAGE

Valves shall remain stored in their shipping crates, or on their pallets, with the lids secured.

Valves are shipped with corrosion-resistant paint and desiccant dries (dryer bags) for storage up to six months.

For long-term storage, the machined internal parts of carbon and low alloy steel valves should be sprayed with a rust preventative.

Keep all protective covers and plastic liners in place.

REMOVING VALVE FROM SERVICE

Before the valve is removed from the line, it should be placed in the partially **open** position to relieve trapped pressure and prevent further internal damage to valve components.

Do not place the valve in the fully open position until it has been cleaned of service debris in the next step.

The valve should be placed in a vertical position, or raised at an angle. The bore of the valve should be either steamed cleaned or power washed to remove slurry and debris.

Rotate the valve to the fully open position to drain and dry. A petroleum-based rust inhibitor should be applied through the bore of the valve immediately after the valve is dry.

Flange protectors need to be secured to each end of the valve to prevent any foreign debris from entering the valve. It is recommended to place desiccant dryer bags inside the valve before storage.

The valve should be stored in the vertical position, out of the weather (inside), until repairs can be made.

Pre-Installation

1 REMOVE VALVE

Remove the valve (and actuator, if supplied) carefully from the shipping crate or pallet using lifting lugs or nylon straps around the **valve body** and sturdy section of the actuator. **Do not** lift by the actuator alone.

2 INSPECT VALVE

Inspect the general condition of the valve (and actuator, if supplied) for any potential shipping damage.

Review the valve manual, assembly drawing with the bill of materials, and the actuator manual (if supplied) shipped with the valve.

3 REMOVE PROTECTIVE COVERS

Remove protective covers from the valve ends.

Inspect internally for shipping debris or damage.

4 INSTALL OPERATOR

The valve comes configured with a handlever from MOGAS, it should arrive pre-assembled and tested from the factory. If already assembled, proceed to **Installation** (page 11) and continue with the valve installation.

If the valve **does not** have a handlever installed, you **must** install the appropriate adaptor and handlever to open and close the valve prior to valve installation. Proceed to **Install Operator – Manual Operation (Handlever)** (page 8).

Install Operator

Manual Operation (Handlever)

These procedures apply only to manual operation (handlever) supplied by MOGAS or a MOGAS authorized distributor.

Note:

*Valve item numbers shown in **bold** correspond with items shown in the **Valve Item Reference Number, Manual Adaption** section (pages 4 and 5) of this document.*

CAUTION!

It is **extremely important** to follow these steps to ensure maximum valve performance.

THIS WILL AFFECT THE VALVE WARRANTY.

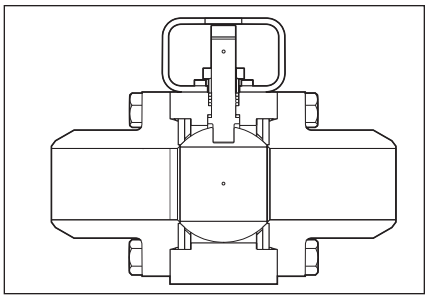
1 VALVE ORIENTATION

Secure the valve in a horizontal position.

The bore should be horizontal, with the stem in a vertical position.

Note:

The bore of the ball should be located in the upstream side while the valve is in the closed position.

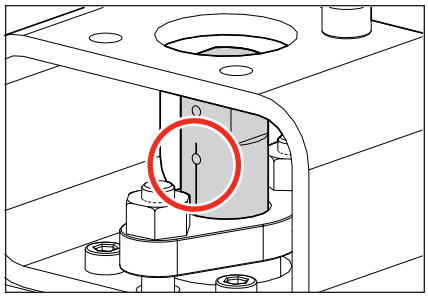


2 STEM ORIENTATION

Verify that the scribe line on the side of the valve stem **5** is oriented properly.

When the valve is **closed**, the scribe line should face the end connection **3**, or bolting side of valve.

When the valve is **open**, the scribe line should face 90° counter-clockwise from the end connection **3**, or bolting side of the valve.

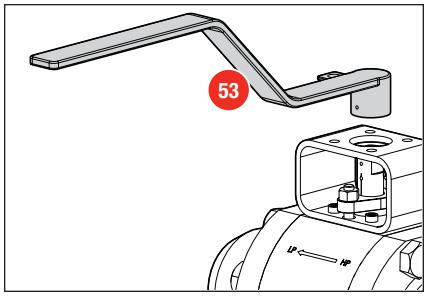


Install Operator

Manual Operation (Handlever)

3 INSTALL HANDLEVER

Align length of handlever **53** inline with scribe line on stem **5**. Handlever should slide into place.



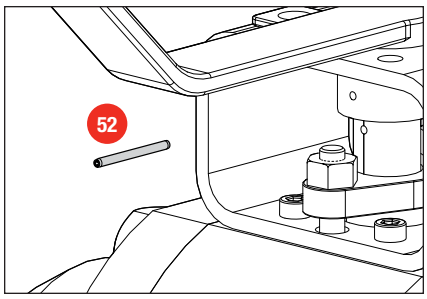
4 SECURE HANDLEVER

Tap pin **52** through hole in handle and stem.

CAUTION!

Ensure key length provides and maintains full engagement.

THIS WILL AFFECT THE VALVE WARRANTY.

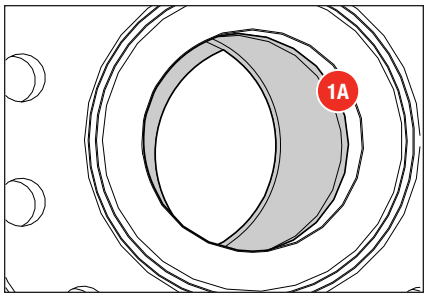


5 VERIFY OPERATION

Note:

The MOGAS valve operates ***counter-clockwise to open, clockwise to close****.*

Using the handlever **53**, stroke the ball **1A** to ensure it is rotating properly, and that the ball's position matches the **open** / **closed** position of the handlever.



Stroke the ball to ensure proper rotation.

Install Operator

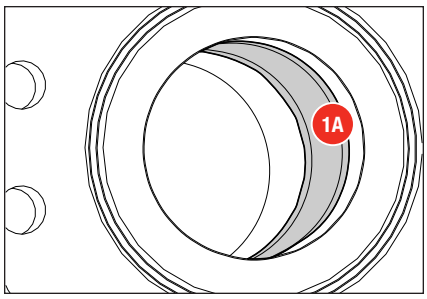
Manual Operation (Handlever)

6 SET STOP POSITIONS

To adjust stop positions, loosen the mounting bracket bolts **18** and carefully reposition the mounting bracket **51** as required.

The **fully open** position is the most important position to set. It is preferred that the **open** position be set **before** the valve is installed in the pipeline.

The **fully open** position should properly align the bore, ensuring that no edges of the ball **1A** are exposed to the flow.



Fully OPEN position.

For visual verification of **open** / **closed**, locate the **scribed lines** on the stem **5** and gland flange **7A**. These lines are approximate locations and should not be used for setting the **open** stop. For best results, ensure the lines never under travel — a minimum travel of 96° is required.

When the **open** / **closed** position is properly set, the scribed lines on the stem adaptor, stem and gland flange should match.

Fully tighten mounting bracket bolts **18** to secure the mounting flange **51** in place.

CAUTION!

Misalignment can result in valve under- or over-stroke, creating a potential leak path.

THIS WILL AFFECT THE VALVE WARRANTY.

Installation

Note:
*Valve item numbers shown in **bold** correspond with items shown in the **Valve Item Reference Number** section (pages 4 – 5) of this document.*

1 VERIFY OPERATING POSITION

Note:
*The MOGAS valve operates **counter-clockwise to open, clockwise to close**.*

While looking in the bore, **open** and **close** the valve.

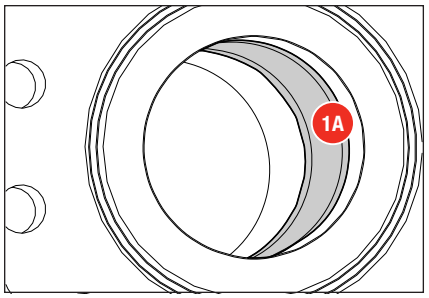
Note:
Larger valves may require the actuator to be in place to rotate the ball.

Verify that the ball **open** / **closed** position matches the handlever or actuator **open** / **closed** position indicators.

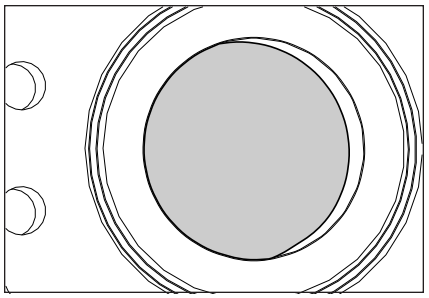
Verify that the scribed lines on the stem **5** align with the scribed lines on the gland flange **7A**. These lines are approximate indications. For best results, make sure the lines never under travel — a minimum travel of 96° is required.

Note:
Misalignment can result in valve under- or over-stroke, creating a potential leak path and affecting warranty.

The **fully open** position is the most important position to set. It is preferred that the **open** position be set while the valve is not installed in the pipeline. This allows for the bore to be properly aligned, ensuring that no edges are exposed to the flow.



Fully OPEN position.


Fully CLOSED position.

CAUTION!

The actuator, if supplied, must not be re-oriented without removal from the valve. This prevents 180° rotation of the ball and assures the mate-lapped ball and seat surfaces match. (Seat leakage may occur when the ball and seat surfaces are not matched per the engineered design.)

THIS WILL AFFECT THE VALVE WARRANTY.

Installation

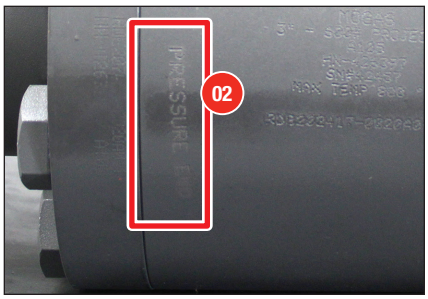
CAUTION!

All welding / grinding debris must be thoroughly flushed from all associated piping before valve is installed.

THIS WILL AFFECT THE VALVE WARRANTY.

2 IDENTIFY SEALING DIRECTION

Identify the preferred sealing direction of the valve, indicated by **Pressure End** stamped on the valve body **2**.



Note:

*The normal direction of flow is from the higher pressure end (upstream) to lower pressure end when the valve is **closed**.*

*In certain conditions, proper operation may require the indicated flow be opposed to the line flow. Make sure that the **Pressure End** is positioned toward the highest pressure against the valve in the **closed** position.*

3 POSITION VALVE IN PIPING

Verify that the valve and actuator / handlever orientation is correct.

Verify that the valve is in the **open** position to prevent any damage to the ball surface from debris.

Position the valve in line with mating flanges.

Note:

Support or lift as required, using lifting lugs or nylon straps around the valve body. Do not lift or support by the actuator alone.

4 SECURE VALVE IN PLACE

To secure welded end types please reference the PWHT IOM.

Installation

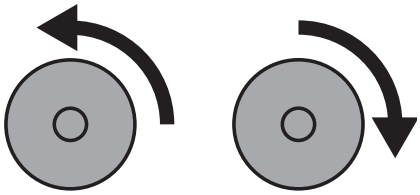
5 VERIFY OPERATION

After installation, **open** and **close** several times to ensure smooth operation.

▶ OPEN / CLOSE

All MOGAS ball valves are designed for on / off services only.

To operate, turn **counter-clockwise to open** and **clockwise to close**.



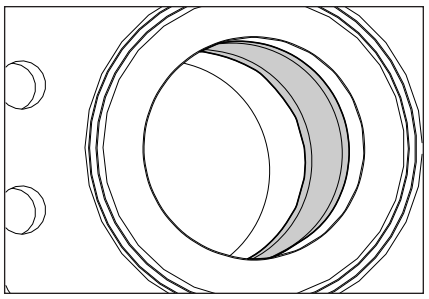
Note:

*When cycling the valve **open** or **close**, make sure that the valve is **fully opened** and **fully closed**. This wipes debris from the ball and ensures optimal performance and long valve life.*

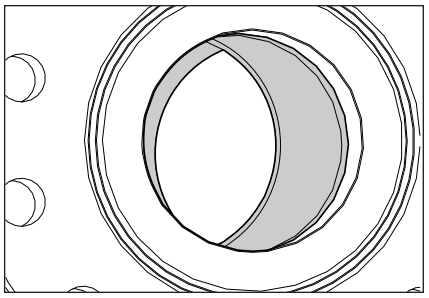
CAUTION!

Throttling with ball valves is **NOT** recommended. Prolonged exposure of a portion of the ball to flow can compromise the sealing integrity of the valve.

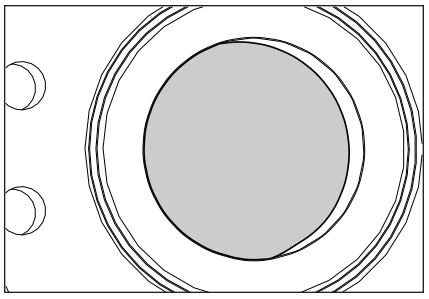
THIS WILL AFFECT THE VALVE WARRANTY.



Fully OPEN position.



Partially OPEN position (not recommended).



Fully CLOSED position.

Maintenance

CAUTION!

It is **extremely important** to follow these steps to ensure maximum valve performance.

THIS WILL AFFECT THE VALVE WARRANTY.

VERIFY BOLTING TORQUE

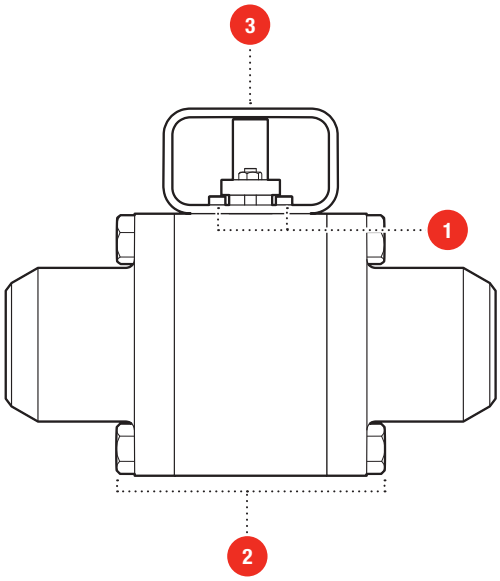
After the first exposure to elevated temperature and the valve has completely cooled-down, verify bolting torque at these locations:

1 Packing gland flange

2 Body to end connection

3 Mounting bracket

Check the bolting at these same locations periodically.



CAUTION!

If bolting torque is lower than specified values on the **test certificate** provided for each **individual** valve serial number, re-torque bolting as necessary.

Bolting torque should be applied to the specified values in three equal steps utilizing a ‘star’ pattern, followed by one last check applying the specified torque to each fastener sequentially in a clockwise pattern.

THIS WILL AFFECT THE VALVE WARRANTY.

OPEN / CLOSE VALVE REGULARLY

Valves remaining **open** or **closed** for a long period of time should should be, at a minimum, partially stroked every six months.

In potentially fouling services, valves should always be **fully opened** and **fully closed** to wipe away any accumulation on the sealing surfaces.

ACTUATOR LUBRICATION

Keep hydraulic, pneumatic and worm gear actuators fully lubricated according to actuator manufacturer’s specifications.

Remove Operator

Manual Operation (Handlever)

These procedures apply only to manual operation (handlever) supplied by MOGAS or a MOGAS authorized distributor.

Note:

*Valve item numbers shown in **bold** correspond with items shown in the **Valve Item Reference Number** section (pages 4 and 5).*

CAUTION!

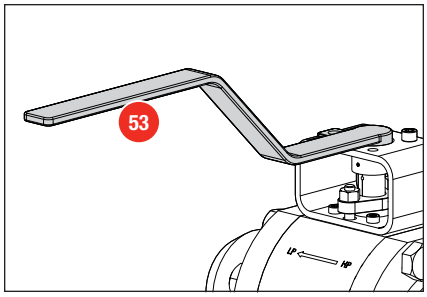
It is **extremely important** to follow these steps to ensure maximum valve performance.

MOGAS does not recommend removing the operator while valve is subject to operating conditions.

THIS WILL AFFECT THE VALVE WARRANTY.

1 **POSITION HANDLEVER**

Ensure handlever **53** is aligned so the valve is in the closed position. This will allow easy access to the pin.

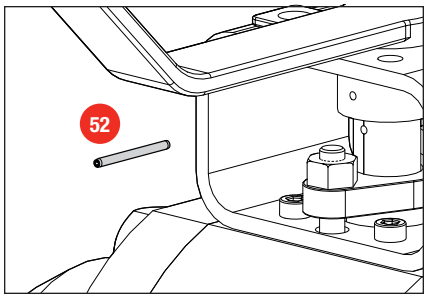


▶ **STOP POSITIONS**

In most cases, it is recommended to leave the mounting bracket **51** in place to maintain accurate **open** / **closed** stop positions.

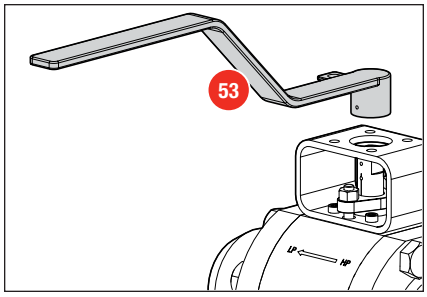
2 **REMOVE PIN**

Using a small punch tool or screwdriver, tap out the pin **52** holding the handlever in place.



3 **REMOVE HANDLE**

Lift handlever **53**. up and off stem **5**.



Replace Stem Packing

CAUTION!

It is **extremely important** to follow these steps to ensure maximum valve performance.

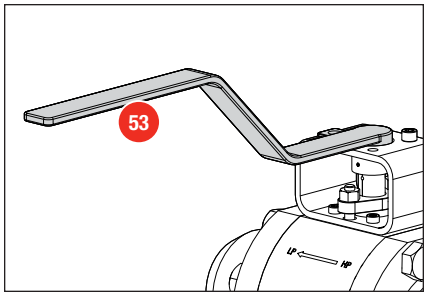
THIS WILL AFFECT THE VALVE WARRANTY.

Note:

Mark any matching components with a marker, tape, etc., prior to disassembly, for ease of reassembly.

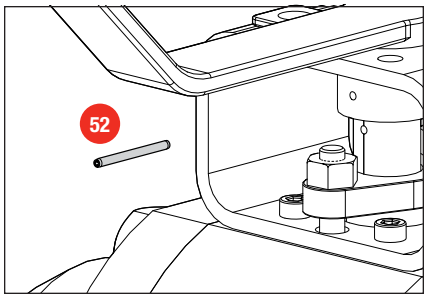
1 **POSITION HANDLEVER**

Ensure handlever **53** is aligned so the valve is in the closed position. This will allow easy access to the pin.



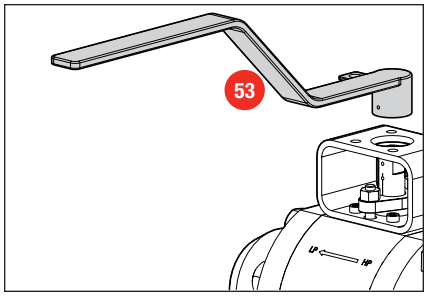
2 **REMOVE PIN**

Remove the pin **52** holding the handlever in place.



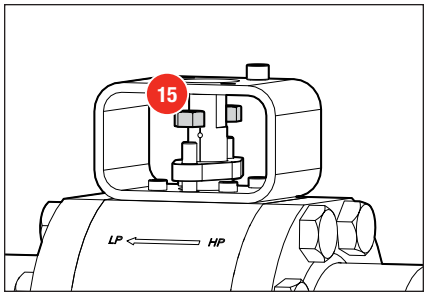
3 **REMOVE HANDLE**

Lift handlever **53**. up and off stem **5**.

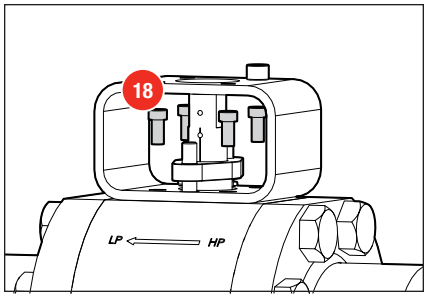


Replace Stem Packing

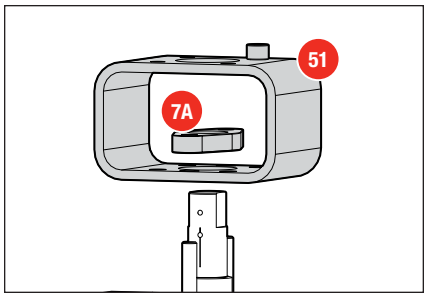
4 **REMOVE NUTS**
Remove gland nuts **15** evenly to avoid binding.



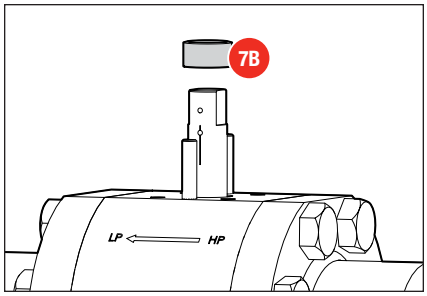
5 **REMOVE BOLTS**
Remove mounting bracket bolts **18**.



6 **REMOVE GLAND FLANGE**
Remove gland flange **7A** and mounting bracket **51** together over the stem **5** and gland studs **12**.



7 **REMOVE THRUSTER**
Remove gland flange thruster **7B**.

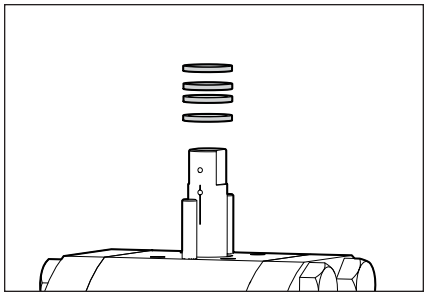


Replace Stem Packing

8 REMOVE STEM PACKING

Using a small pick or scribe, carefully remove the packing material **9A** and **9B**.

Make sure that all of the packing is removed.



CAUTION!

Do not scratch the stem or the packing bore in the body. Scratches could cause a leak.

THIS WILL AFFECT THE VALVE WARRANTY.

9 CLEAN PACKING BOX

Before installing the new packing, make sure the packing box is clean.

If needed, use an air hose to clean debris from packing box before installing new packing rings.

Note:

Always wear a face shield or goggles to protect eyes from flying debris.

▶ PACKING RING SET

The new packing ring set will contain four to five rings total: two rope-like anti-extrusion rings **9B** and two or three die-form stem packing rings **9A**.

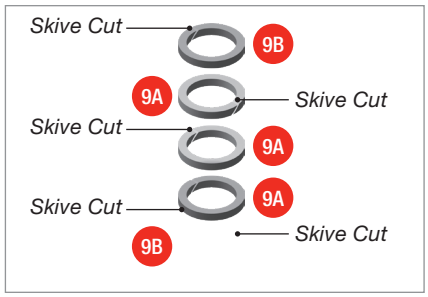
Note:

Refer to Bill of Materials supplied with each individual valve serial number for specific quantity.

CAUTION!

If you have rings that contain skive cuts (see illustration), the location of **each** skive cut must be staggered or alternated during installation. This is done to prevent formation of a possible leak path.

THIS WILL AFFECT THE VALVE WARRANTY.



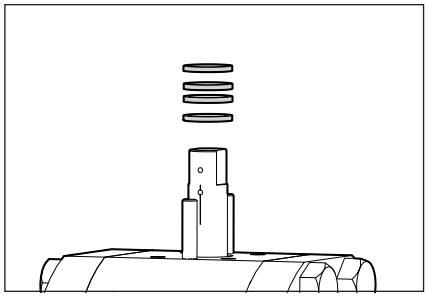
Correct staggered or alternating skive cut positioning.

Replace Stem Packing

10 INSTALL NEW PACKING RINGS

Note:

Applying a spray lubricant to packing ring surfaces may ease the installation process.



Install the rings one at a time (one anti-extrusion ring **9B** first, then each stem packing ring **9A** and then the second anti-extrusion ring **9B**) using the gland flange **7A** as a packing tool to stuff each packing ring all the way down against the previous ring.

Make sure scribe line of stem is lined up with scribe line of packing gland.

▶ CHECK POCKET DEPTH

Before installing the second anti-extrusion ring **9B** ensure there is enough depth for the anti-extrusion ring to fit flush in the pocket.

11 FINAL PACKING RING

If there is enough depth for the second anti-extrusion ring **9B** to fit flush in the pocket, install the anti-extrusion ring **9B**.

▶ CHECK POCKET DEPTH

If there is not enough depth for the second anti-extrusion ring **9B** to fit flush in the pocket, do not install the anti-extrusion ring **9B**.

Use the gland flange **7A** to compress the packing rings enough to fit the second anti-extrusion ring **9B** flush into the pocket. (Make sure scribe line of stem is lined up with scribe line of packing gland.) To do this,

Install the gland flange **7A**.

Apply anti-seize compound onto gland studs **12** and gland nuts **15**.

Install the gland nuts **15**, tightening all nuts evenly until there is enough depth for the second anti-extrusion ring to fit flush into the pocket.

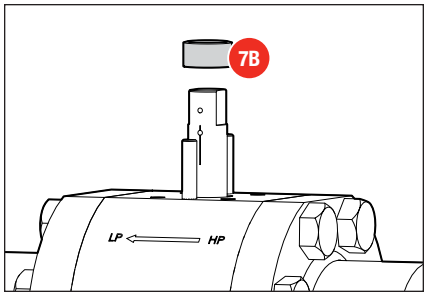
Then remove the gland nuts **15** and the gland flange **7A**.

Install the second anti-extrusion ring **9B**.

Replace Stem Packing

12 INSTALL THRUSTER

Install gland flange thruster **7B**.

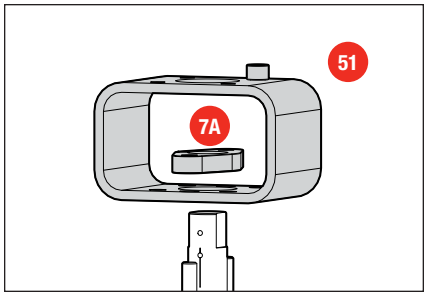


13 INSTALL GLAND FLANGE

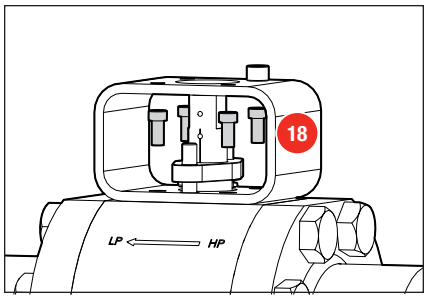
Ensure gland studs **12** are in place. If necessary, install gland studs **12** using anti-seize compound.

Apply anti-seize compound onto gland studs **12** and gland nuts **15**.

Install gland flange **7A** and mounting bracket together **51** over stem **5** and onto gland studs **12**.



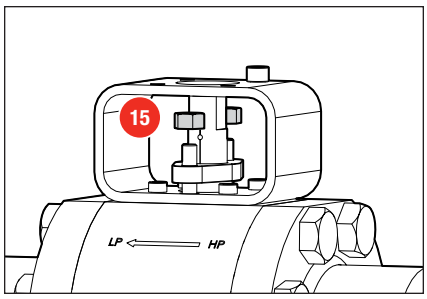
Install mounting bracket bolts **18** and gland nuts **15**, and torque bolts and nuts **evenly** per the specifications included with the **test certificate** for each individual valve serial number.



CAUTION!

The gland flange **must** be pulled down evenly to prevent “cocking” or side loading, as this could cause damage to the packing and prevent the valve from operating properly.

Watch the gland flange to ensure that it remains **perpendicular** to the stem, and the gap around the stem remains **concentric** during the tightening process.

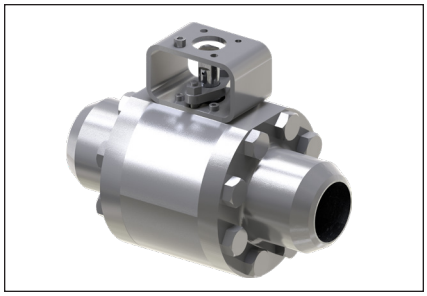


Do not over-tighten nuts. Torque should be applied to the specified values in three equal steps utilizing a ‘star’ pattern, followed by one last check applying the specified torque to each fastener sequentially in a clockwise pattern.

THIS WILL AFFECT THE VALVE WARRANTY.

14 PRESSURE TEST AND INSTALL OPERATOR

Perform the appropriate pressure test and **Install Operator** (page 8) as required.



Disassembly

CAUTION!

If you disassemble, rework and re-assemble this ball valve, **YOU WILL VOID YOUR WARRANTY**.

Before beginning any work, identify the valve model by checking the number on the side of the valve body. To locate the model number, see page 41, **Locate Valve Information**.

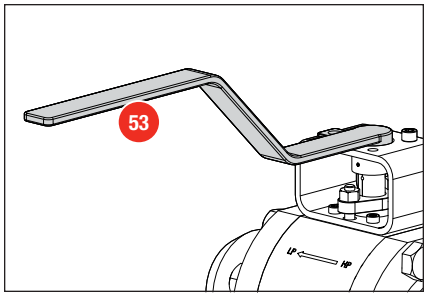
Mark any matching components with a marker, tape, etc., prior to disassembly, for ease of reassembly.

CAUTION!

Verify that the ball is in the **fully closed** position prior to valve disassembly.

1 **POSITION HANDLEVER**

Ensure handlever **53** is aligned so the valve is in the closed position. This will allow easy access to the pin.

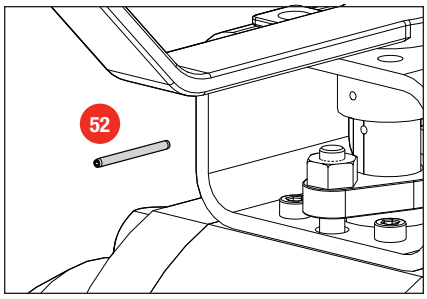


▶ **STOP POSITIONS**

In most cases, it is recommended to leave the mounting bracket **51** in place to maintain accurate **open** / **closed** stop positions.

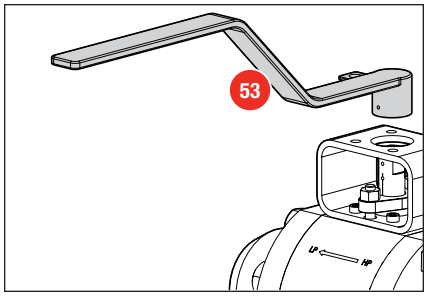
2 **REMOVE PIN**

Using a small punch tool or screwdriver, tap out the pin **52** holding the handlever in place.



3 **REMOVE HANDLE**

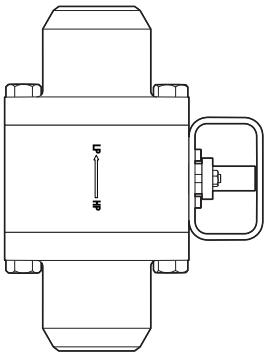
Lift handlever **53**. up and off stem **5**.



Disassembly

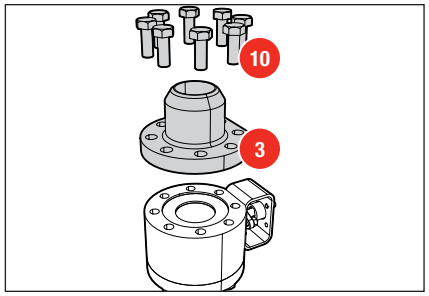
4 REPOSITION VALVE

Turn valve on either end to allow for easier disassembly



5 REMOVE BOLTS

Remove bolts **10** and end connection **3**.

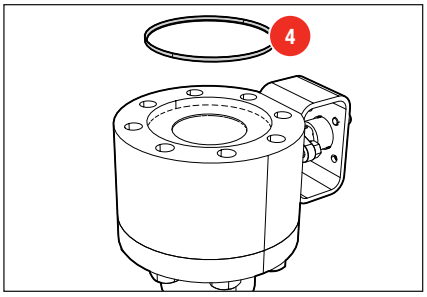


6 REMOVE BODY GASKET

Remove body gasket **4** and clean the sealing surface of the end connect.

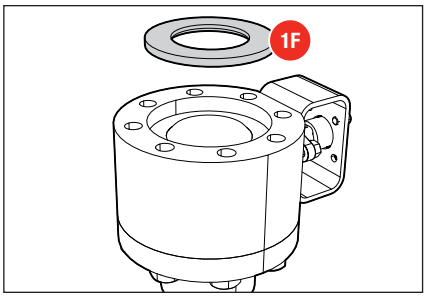
CAUTION!

Do not damage sealing surface inside body gasket.



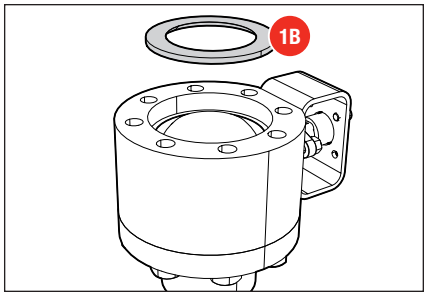
7 REMOVE SEAT RETAINER

Remove the seat retainer **1F**.

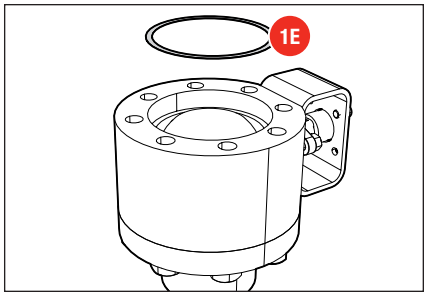


Disassembly

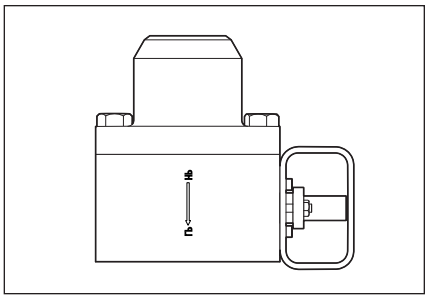
8 **REMOVE SEAT**
Remove the seat **1B**.



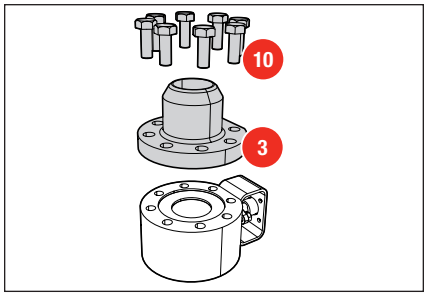
9 **REMOVE SEAT GASKET**
Remove the seat gasket **1E** and clean the valve internal especially the sealing surfaces.



10 **REPOSITION VALVE**
Turn valve on opposite end to continue disassembly.



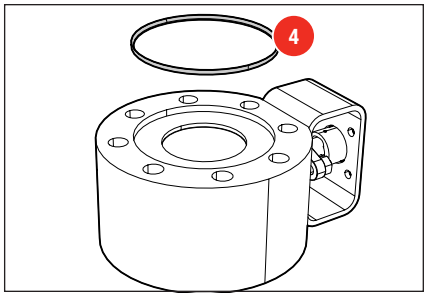
11 **REMOVE BOLTS**
Remove bolts **10** and end connection **3**.



Disassembly

12 REMOVE BODY GASKET

Remove body gasket **4** and clean the sealing surface of the end connect.

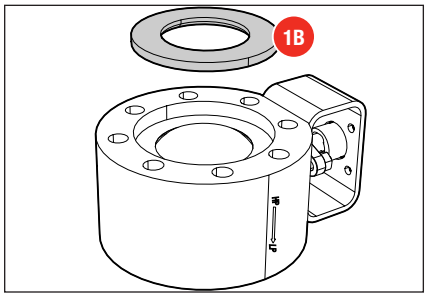


CAUTION!

Do not damage sealing surface inside body gasket.

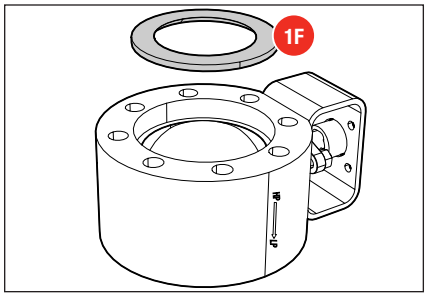
13 REMOVE SEAT

Remove the seat **1B**.



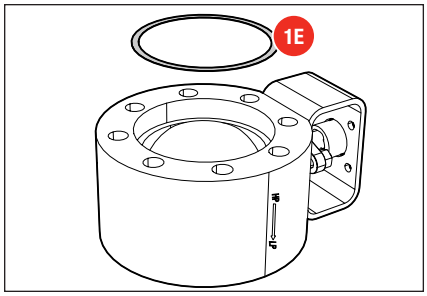
14 REMOVE SEAT RETAINER

Remove the seat retainer **1F**.



15 REMOVE SEAT GASKET

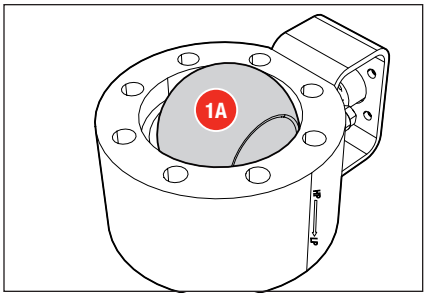
Remove the seat gasket **1E** and clean the valve internal especially the sealing surfaces.



Disassembly

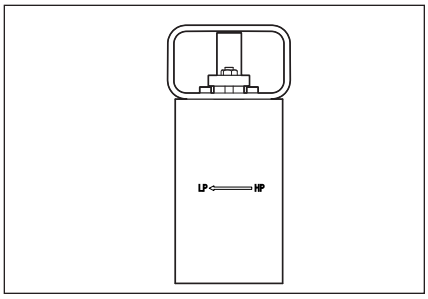
16 REMOVE BALL

Remove ball by lifting the end opposite stem **1A** and "rolling it out" until ball **1A** is clear of body **2**.



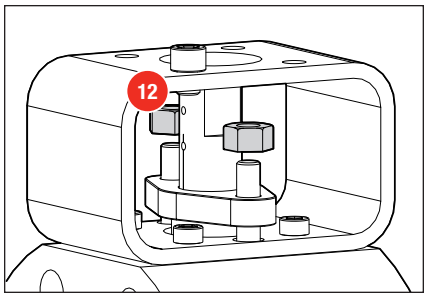
17 REPOSITION VALVE

Set valve upright to rest on its body to continue disassembly.



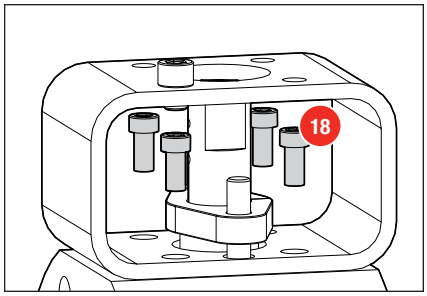
18 REMOVE GLAND NUTS

Remove gland nuts **12**.



19 REMOVE MOUNTING BRACKET BOLTS

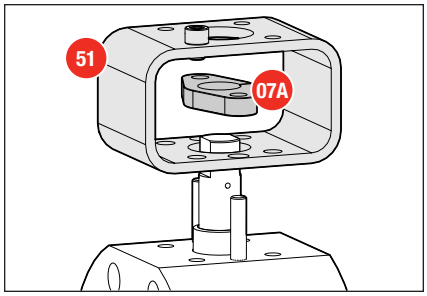
Remove mounting bracket bolts **18**.



Disassembly

20 REMOVE GLAND FLANGE

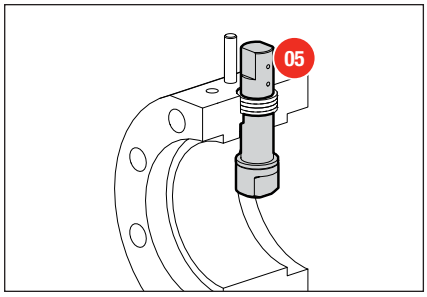
Remove gland flange **7A** and mounting bracket **51** together over the stem and off gland studs.



21 REMOVE STEM

Push stem **05** into body cavity.

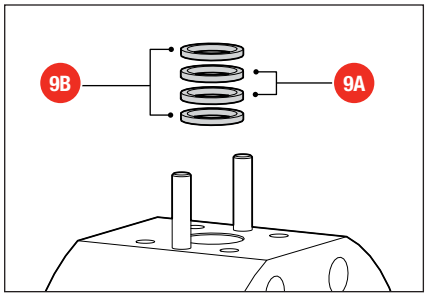
Carefully remove stem through access port or body cavity.



22 REMOVE STEM PACKING

Using a small pick or scribe, carefully remove the packing material **9A** and **9B**.

Make sure that all of the packing is removed.



CAUTION!

Do not scratch the stem or the packing bore in the body. Scratches could cause a leak.

23 CLEAN PACKING BOX

Before installing the new packing, make sure the packing box is clean.

If needed, use an air hose to clean debris from packing box before installing new packing rings.

Note:

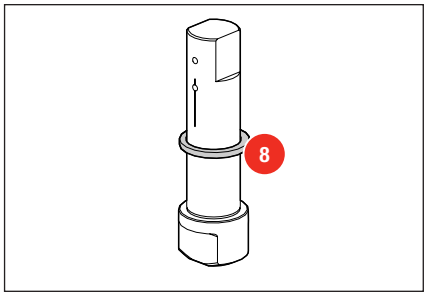
Always wear a face shield or mono-goggles to protect eyes from flying debris.

Re-Assembly

1 **CLEAN ALL PARTS**
Clean all parts before assembly and / or parts replacement.

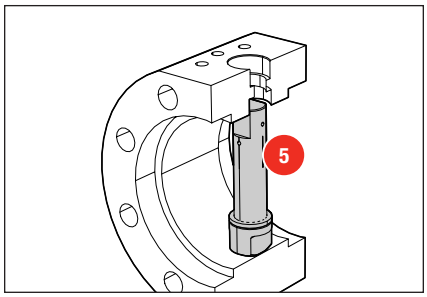
CAUTION!
If you disassemble, rework and re-assemble this ball valve, **YOU WILL VOID YOUR WARRANTY**.

2 **INSTALL STEM SEAL**
Slide the inner stem seal **8** onto the stem **5**.



3 **INSERT STEM**
Insert the stem **5** into the body **2** and through the top stem bore.

▶ **MAINTAIN PRESSURE**
Use a jacking bolt or similar tool to maintain light pressure between the bottom of the stem and the inside of the valve body cavity. This prevents movement of the stem while installing packing rings.



CAUTION!
To prevent damage to inner stem seals, do not use excessive force when using jack bolt or similar tool.

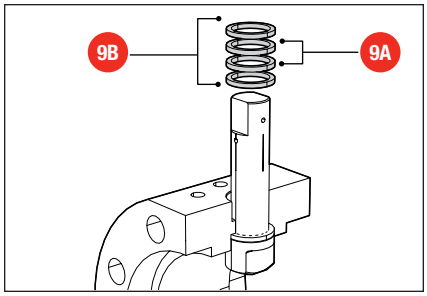
Re-Assembly

4 INSTALL NEW PACKING RING SET

The new packing ring set will contain four to five rings total: two rope-like anti-extrusion rings **9B** and two or three die-form stem packing rings **9A**.

Note:

Refer to Bill of Materials supplied with each individual valve serial number for specific quantity.



Install the rings one at a time (one anti-extrusion ring **9B** first, then each stem packing ring **9A** and then the second anti-extrusion ring **9B**) using the gland flange thruster **7B** as a packing tool to stuff each packing ring all the way down against the previous ring.

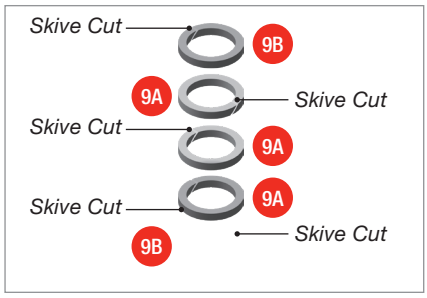
Make sure scribe line of stem **5** is lined up with scribe line of packing gland **7A**.

▶ CHECK POCKET DEPTH

Before installing the second anti-extrusion ring **9B** ensure there is enough depth for the anti-extrusion ring to fit flush in the pocket.

CAUTION!

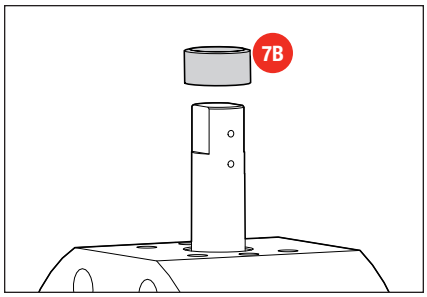
If you have rings that contain skive cuts (see illustration), the location of **each** skive cut must be staggered or alternated during installation. This is done to prevent formation of a possible leak path.



Correct staggered or alternating skive cut positioning.

5 INSTALL THRUSTER

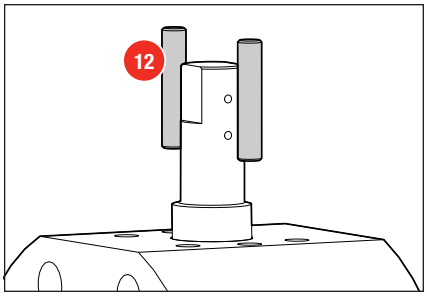
Slide the gland flange thruster **7B** over the stem **5**.



Re-Assembly

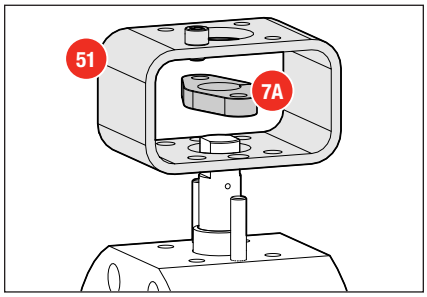
6 INSTALL STUDS

Apply anti-seize compound before inserting the gland studs **12**. Turn the threads until they reach the bottom, then back out one-half turn.



7 PLACE FLANGE AND BRACKET

Place gland flange **7A** and mounting bracket **51** together over the stem and onto the gland studs.

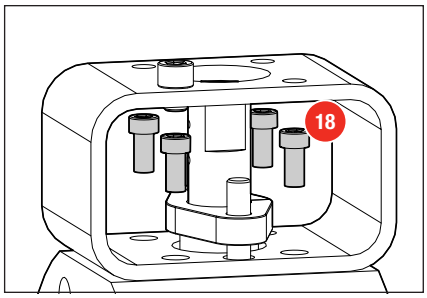


8 INSERT BOLTS

Install mounting bracket bolts **18**.

Note:

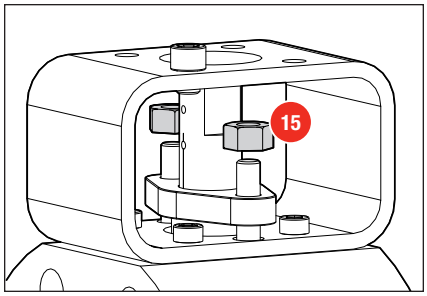
Refer to Bill of Materials supplied with each individual valve serial number for specific quantity.



Re-Assembly

9 INSTALL GLAND NUTS

Install the gland nuts **15** and evenly torque to specification.



CAUTION!

The gland flange **must** be pulled down evenly to prevent “cocking” or side loading, as this could cause damage to the packing and prevent the valve from operating properly.

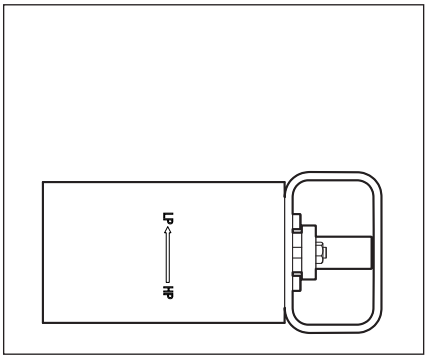
Watch the gland flange to ensure that it remains **perpendicular** to the stem, and the gap around the stem remains **concentric** during the tightening process.

Do not over-tighten nuts. Torque all nuts **evenly** per the specifications included with the **test certificate** for each individual valve serial number.

If a jacking bolt (or similar tool) was used, it should now be removed.

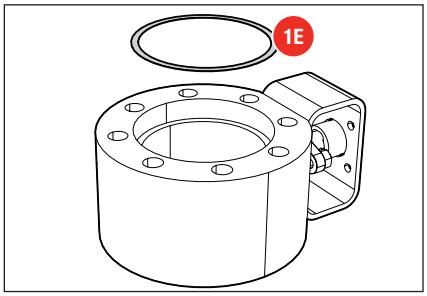
10 REPOSITION VALVE

Turn valve on either end to allow for easier re-assembly.



11 INSTALL SEAT GASKET

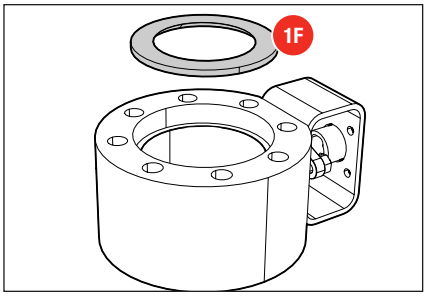
Install seat gasket **1E** into the body face goove.



Re-Assembly

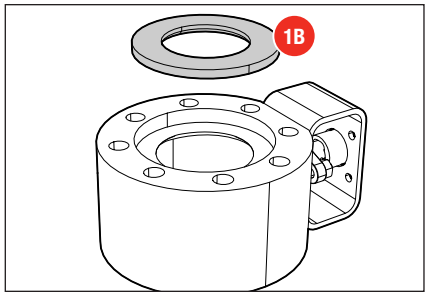
12 INSTALL SEAT RETAINER

Insert seat retainer **1F** with the curve facing the ball side.



13 INSERT SEAT

Insert seat **1B** where the curved sealing face facing the ball side. Typically this is done by gently tapping on the graphite seat until it is pushed all the way in the body face groove.

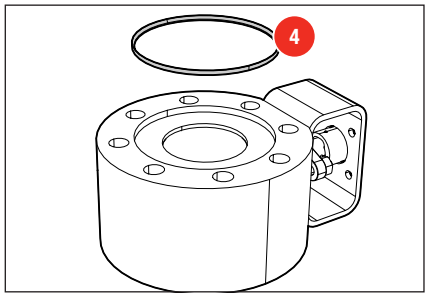


14 INSTALL BODY GASKET

Install body gasket **4** on top of the seat **1B**.

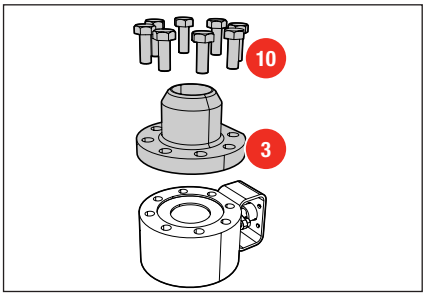
Note:

The cross section of the body gasket is a v-shape. The flat face should sit on the seat. The correct installation of the ring is critical for sealing and the valve passing the shell leakage test. It's expected for the body gasket not to go all the way in the body face groove, but it should not all be sticking out.



15 INSTALL THE END CONNECT

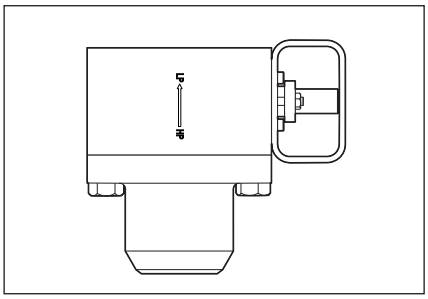
Install end connect **3** and bolts **10**. Do not torque bolts. Only finger tighten the bolts so the second end connect can be assembled. There should be a visible gap between the body and end connect.



Re-Assembly

16 REPOSITION VALVE

Turn valve on opposite end to continue re-assembly.



17 INSERT BALL

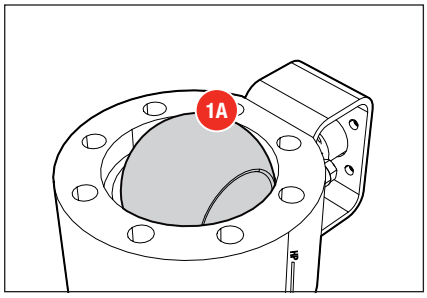
Lubricate the ball with silicon or another light lubricant. Insert ball **1A** in the closed position.

CAUTION!

Do not use WD-40 as lubricant.

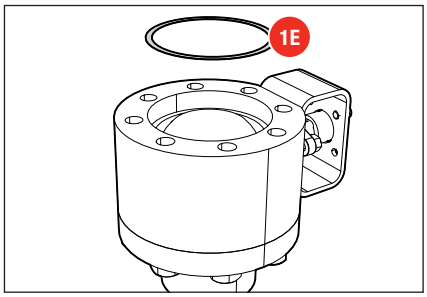
Note:

The small hole in the ball should face the upstream side while the ball is in the closed position



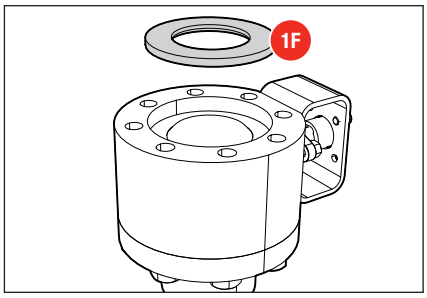
18 INSTALL SEAT GASKET

Install seat gasket **1E** into the body face goove.



19 INSTALL SEAT RETAINER

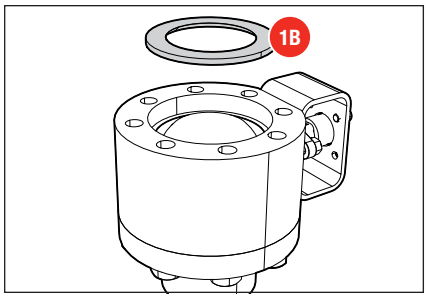
Insert seat retainer **1F** with the curve facing the ball side.



Re-Assembly

20 INSERT SEAT

Insert seat **1B** with the curved sealing face facing the ball side. Typically this is done by gently tapping on the graphite seat until it is pushed all the way in the body face groove.

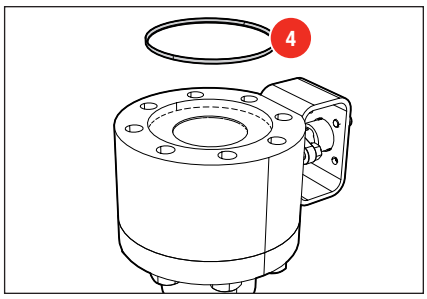


21 INSTALL BODY GASKET

Install body gasket **4** on top of the seat **1B**.

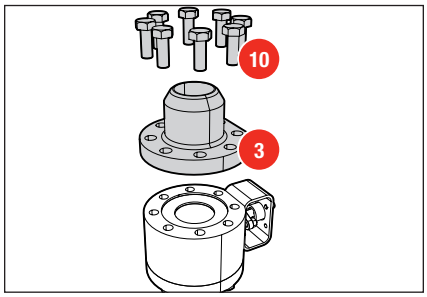
Note:

The cross section of the body gasket is a v-shape. The flat face should sit on the seat. The correct installation of the ring is critical for sealing and the valve passing the shell leakage test. It's expected for the body gasket not to go all the way in the body face groove, but it should not all be sticking out.



22 INSTALL THE END CONNECT

Install end connect **3** and body bolts **10**. Do not torque the bolts down. Only finger tighten the bolts.



23 TORQUE BOLTS

Torque all body bolts **10** (both end connections) to the applicable torque bolt value. Torque values vary depenging on body and bolt material. See the table below.

Bolting torque should be applied to the specified values in three equal steps utilizing a ‘star’ pattern, followed by one last check applying the specified torque to each fastener sequentially in a clockwise pattern.

Torque Body Bolting

NPS	Bolt Size	B8M Torque, ft-lb (N-m)	B7 Torque, ft-lb (N-m)
1	1/2–13	35 (48)	58 (79)
1.5	1/2–13	35 (48)	58 (79)
2	9/16–12	51 (69)	84 (114)
3	3/4–10	124 (168)	206 (279)

Stem Torque Values

NPS	Nominal Stem Diameter, in (DN)	Stem MAST, in-lb (N-m)
1	0.5 (13)	618 (70)
1.5	0.56 (14)	1592 (180)
2	0.56 (14)	1592 (180)
3	1 (25)	6,655 (752)

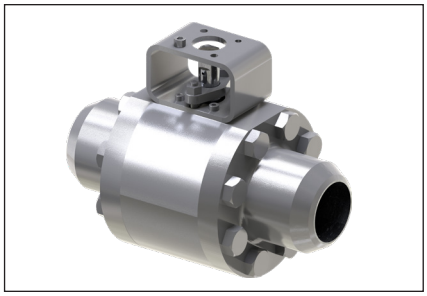
▶ Initially the valve is expected to have very high friction torques. Extra care should be taken to not twist the stem.

If stroking the valve is not possible due to high initial torque, loosen one side of the end connect and stroke the valve 10 times. Tighten the bolts to 80% of the bolt torques and then stroke the valve 10 more times. Then torque the bolts to 90% of the bolt torque value and stroke the valve 10 more times.

Torque the bolts to the full torque valvue and stroke the valve to make sure the ball can turn with the full bolt torque applied.

Re-Assembly

24 PRESSURE TESTS



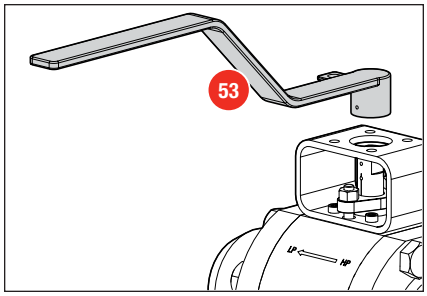
Hydrostatic Shell Test
This test is performed at MOGAS while the ball is partially open. This test is not possible at the field. If partially opening the ball is not possible due to high initial torque, pressure the valve from one side to about 1000 psi while ball is closed. This will reduce the initial breaking torque significantly. Partially open the ball to start the Hydro shell test.

Refer to MOGAS test certificate for pressures or allowable leak rates.

Seat Leakage Test
Verify that the valve is fully closed. Conduct a seat leakage test at 1.1 CWP (cold working pressure).

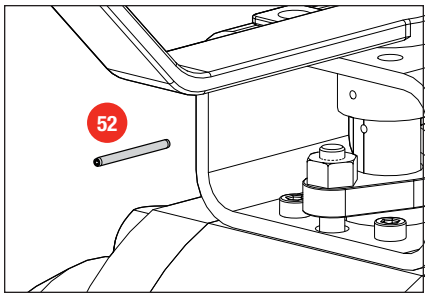
25 INSTALL HANDLEVER

Align length of handlever **53** inline with scribe line on stem **5**. Handlever should slide into place.



26 SECURE HANDLEVER

Tap pin **52** through hole in handle and stem.



CAUTION!

Ensure key length provides and maintains full engagement.

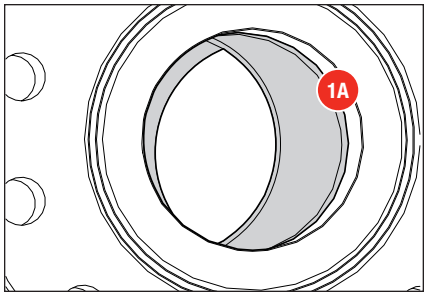
THIS WILL AFFECT THE VALVE WARRANTY.

27 VERIFY OPERATION

Note:

The MOGAS valve operates ***counter-clockwise to open, clockwise to close****.*

Using the handlever **53**, stroke the ball **1A** to ensure it is rotating properly, and that the ball's position matches the **open** / **closed** position of the handlever.

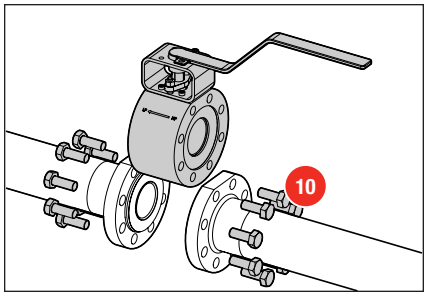


Stroke the ball to ensure proper rotation.

Inline Repairability

1 REMOVE VALVE CENTER FROM LINE

Uninstall the bolts **10** from both sides and remove the center piece from the line.

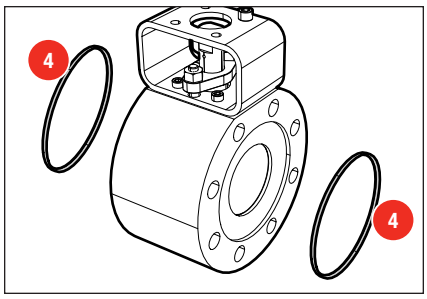


2 REMOVE BODY GASKETS

Remove both downstream and upstream body gaskets **4** and clean the sealing surfaces of the end-connects.

Note:

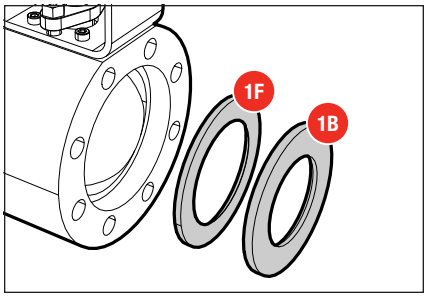
The body gaskets may stay seated on the end connects during removal.



3 REMOVE SEAT AND SEAT RETAINER

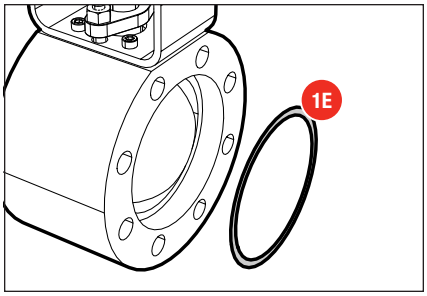
For easier seat removal, ensure the ball is in the closed position.

Tap in one side of the closed ball to push out the opposite seat **1B**, and seat retainer **1F**.



4 REMOVE SEAT GASKET

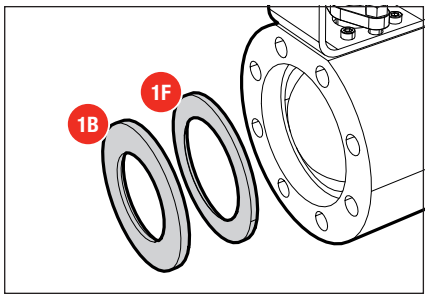
Remove the seat gasket **1E** and clean valve internals, especially the sealing surfaces.



Inline Repairability

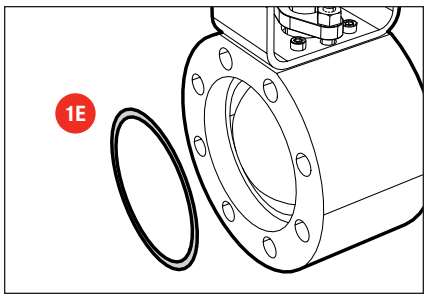
5 REMOVE SEAT AND SEAT RETAINER

Tap in the other side of the closed ball to push out the opposite seat **1B**, and seat retainer **1F**.



6 REMOVE SEAT GASKET

Remove the seat gasket **1E** and clean valve internals, especially the sealing surfaces.

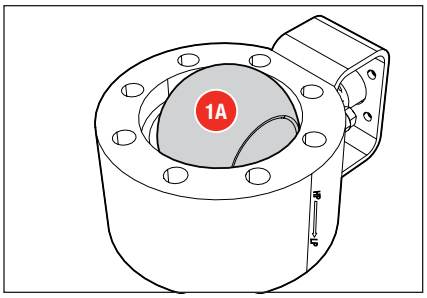


7 REMOVE AND CLEAN BALL

Reposition the body to lay flat.

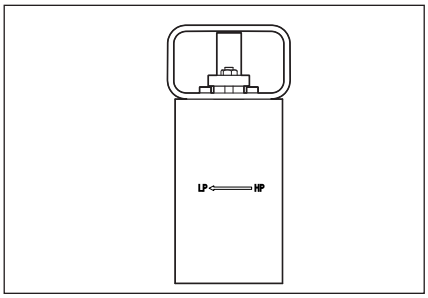
Remove ball by lifting the end opposite stem **1A** and "rolling it out" until ball **1A** is clear of body **2**.

Clean the ball.



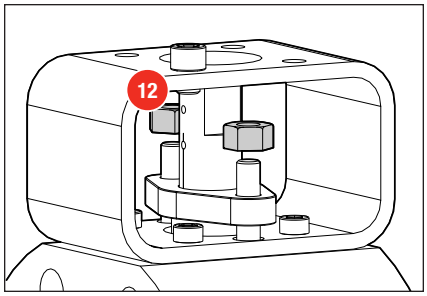
8 REPOSITION VALVE

Set valve upright to rest on its body to continue disassembly.

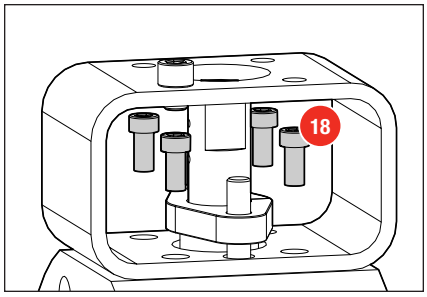


Inline Repairability

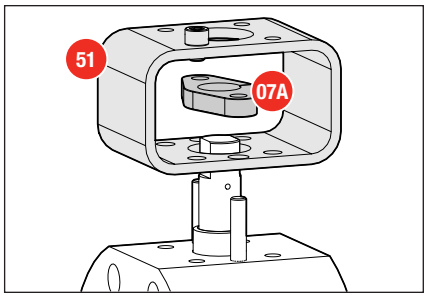
9 **REMOVE GLAND NUTS**
Remove gland nuts **12**.



10 **REMOVE MOUNTING BRACKET BOLTS**
Remove mounting bracket bolts **18**.

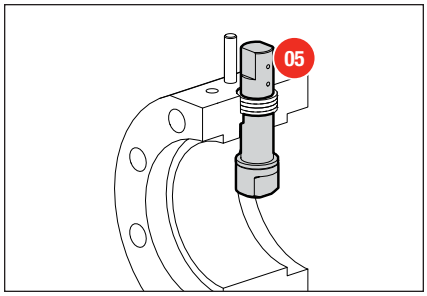


11 **REMOVE GLAND FLANGE**
Remove gland flange **7A** and mounting bracket **51** together over the stem and off gland studs.



12 **REMOVE STEM**
Push stem **05** into body cavity.

Carefully remove stem through access port or body cavity.

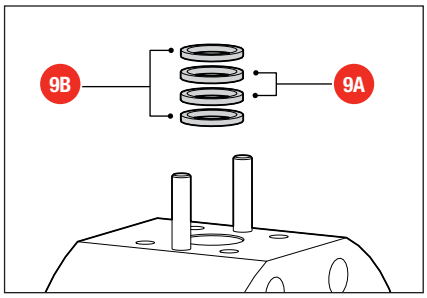


Inline Repairability

13 REMOVE STEM PACKING

Using a small pick or scribe, carefully remove the packing material **9A** and **9B**.

Make sure that all of the packing is removed.



CAUTION!

Do not scratch the stem or the packing bore in the body. Scratches could cause a leak.

14 CLEAN PACKING BOX

Before installing the new packing, make sure the packing box is clean.

If needed, use an air hose to clean debris from packing box before installing new packing rings.

Note:

Always wear a face shield or mono-goggles to protect eyes from flying debris.

15 CLEAN ALL PARTS

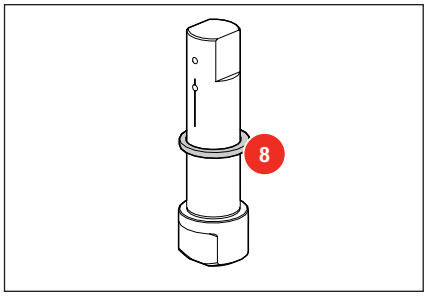
Clean all parts before assembly and / or parts replacement.

CAUTION!

If you disassemble, rework and re-assemble this ball valve, **YOU WILL VOID YOUR WARRANTY**.

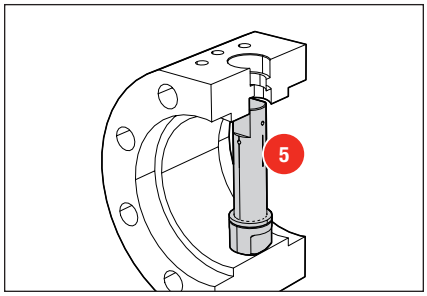
16 INSTALL STEM SEAL

Slide the inner stem seal **8** onto the stem **5**.



17 INSERT STEM

Insert the stem **5** into the body **2** and through the top stem bore.



▶ MAINTAIN PRESSURE

Use a jacking bolt or similar tool to maintain light pressure between the bottom of the stem and the inside of the valve body cavity. This prevents movement of the stem while installing packing rings.

CAUTION!

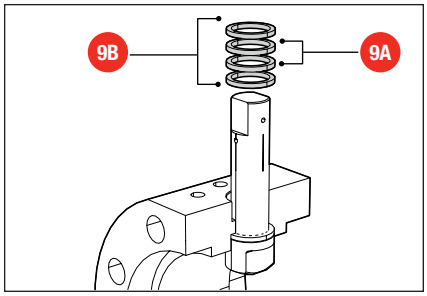
To prevent damage to inner stem seals, do not use excessive force when using jack bolt or similar tool.

18 INSTALL NEW PACKING RING SET

The new packing ring set will contain four to five rings total: two rope-like anti-extrusion rings **9B** and two or three die-form stem packing rings **9A**.

Note:

Refer to Bill of Materials supplied with each individual valve serial number for specific quantity.



Install the rings one at a time (one anti-extrusion ring **9B** first, then each stem packing ring **9A** and then the second anti-extrusion ring **9B**) using the gland flange thruster **7B** as a packing tool to stuff each packing ring all the way down against the previous ring.

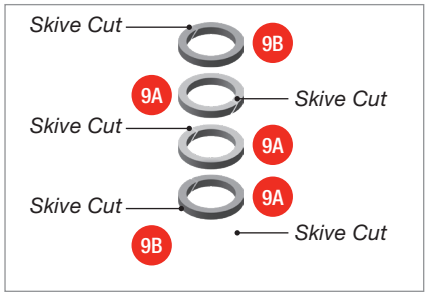
Make sure scribe line of stem **5** is lined up with scribe line of packing gland **7A**.

▶ CHECK POCKET DEPTH

Before installing the second anti-extrusion ring **9B** ensure there is enough depth for the anti-extrusion ring to fit flush in the pocket.

CAUTION!

If you have rings that contain skive cuts (see illustration), the location of **each** skive cut must be staggered or alternated during installation. This is done to prevent formation of a possible leak path.

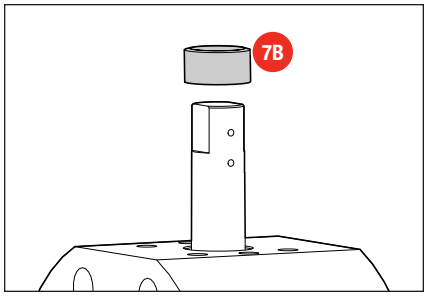


Correct staggered or alternating skive cut positioning.

Inline Repairability

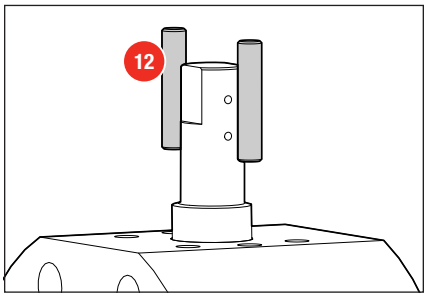
19 INSTALL THRUSTER

Slide the gland flange thruster **7B** over the stem **5**.



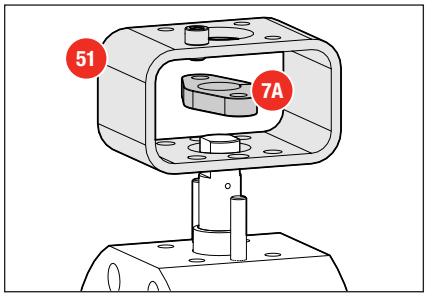
20 INSTALL STUDS

Apply anti-seize compound before inserting the gland studs **12**. Turn the threads until they reach the bottom, then back out one-half turn.



21 PLACE FLANGE AND BRACKET

Place gland flange **7A** and mounting bracket **51** together over the stem and onto the gland studs.

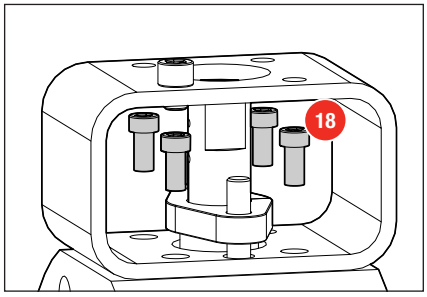


22 INSERT BOLTS

Install mounting bracket bolts **18**.

Note:

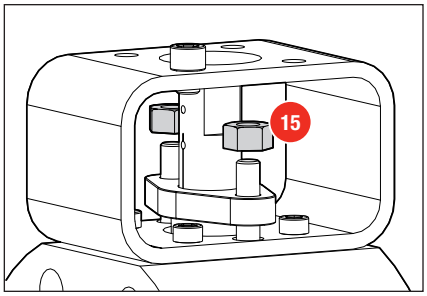
Refer to Bill of Materials supplied with each individual valve serial number for specific quantity.



Inline Repairability

23 INSTALL GLAND NUTS

Install the gland nuts **15** and evenly torque to specification.



CAUTION!

The gland flange **must** be pulled down evenly to prevent “cocking” or side loading, as this could cause damage to the packing and prevent the valve from operating properly.

Watch the gland flange to ensure that it remains **perpendicular** to the stem, and the gap around the stem remains **concentric** during the tightening process.

Do not over-tighten nuts. Torque all nuts **evenly** per the specifications included with the **test certificate** for each individual valve serial number.

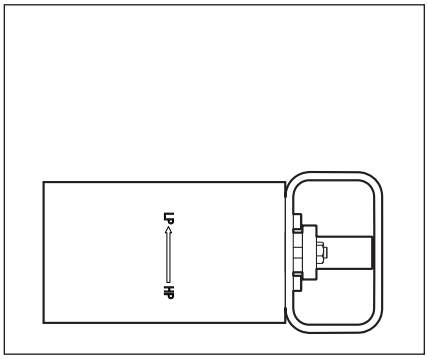
If a jacking bolt (or similar tool) was used, it should now be removed.

24 REPOSITION VALVE

Turn valve on high pressure (HP) end, with low pressure (LP) facing up to allow for easier re-assembly.

Notes:

Before beginning assembly you will need to locate the appropriate coining tool kit.

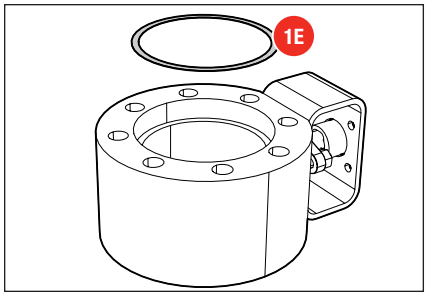


In-Line Repair Coining Tool Kit			
TF213406 In-Line Repair Coining Tool Kit 1”		**TF213406 In-Line Repair Coining Tool Kit 2”**	
TF212276-0020DH	LP Test Flange G-Series 1	TF212220-0020DH	LP Test Flange G-Series 2
TF213491-0020DH	HP Coining Flange G-Series 1	TF213475-0020DH	HP Coining Flange G-Series 2
TF213408-06M0A0	Coining Insert G-Series 1	TF213402-06M0A0	Coining Insert G-Series 2
TF213414 In-Line Repair Coining Tool Kit 1.5”		**TF213406 In-Line Repair Coining Tool Kit 3”**	
TF214078-0020DH	LP Test Flange G-Series 1.5	TF214085-0020DH	LP Test Flange G-Series 3
TF214079-0020DH	HP Coining Flange G-Series 1.5	TF214077-0020DH	HP Coining Flange G-Series 3
TF213417-06M0A0	Coining Insert G-Series 1.5	TF213423-06M0A0	Coining Insert G-Series 3

Inline Repairability

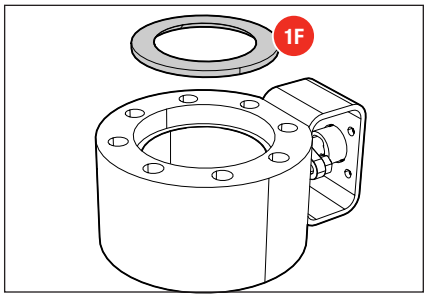
25 INSTALL SEAT GASKET

Install seat gasket **1E**, into the body face groove.



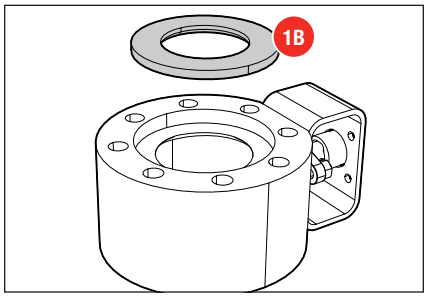
26 INSTALL SEAT RETAINER

Install seat retainer **1F** with the curve facing the ball side.



27 INSTALL SEAT

Install seat **1B** where the curved sealing face facing the ball side. Typically this is done by gently tapping on the graphite seat until it is pushed all the way in the body face groove.

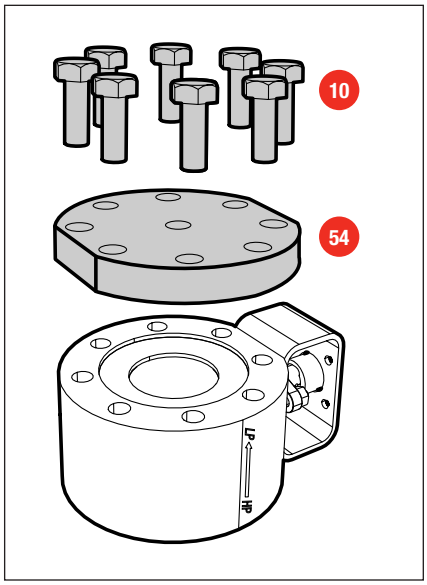


28 INSTALL LP COINING FLANGE

Install Low Pressure Coining Flange **54** using the existing body bolts **10** when removed from end connections in line.

Notes:

Ensure the coining flange being used matches the side of the valve being worked on (i.e. LP or HP). HP side coining flange includes machined flange with insert, while LP flange does not have an insert.



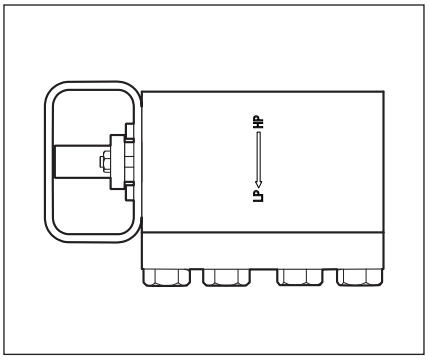
Torque Body Bolting

NPS	Bolt Size	B8M Torque, ft-lb (N-m)	B7 Torque, ft-lb (N-m)
1	1/2–13	35 (48)	58 (79)
1.5	1/2–13	35 (48)	58 (79)
2	9/16–12	51 (69)	84 (114)
3	3/4–10	124 (168)	206 (279)

Inline Repairability

29 REPOSITION VALVE

Turn valve on low pressure (LP) end, with high pressure (HP) facing up.



30 INSERT BALL

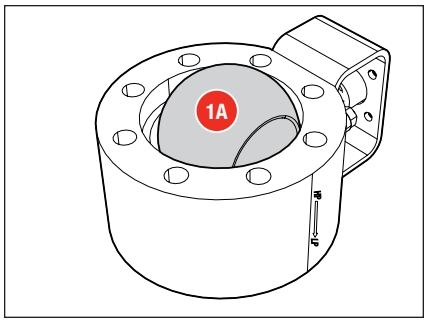
Lubricate the ball with silicon or another light lubricant. Insert ball **1A** in the closed position.

CAUTION!

Do not use WD-40 as lubricant.

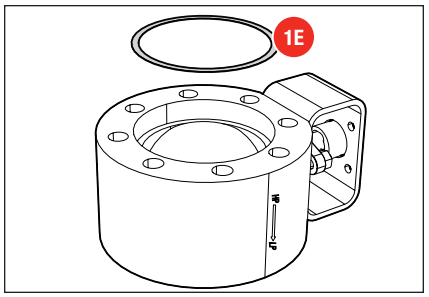
Note:

The small hole in the ball should face the upstream side (HP) while the ball is in the closed position



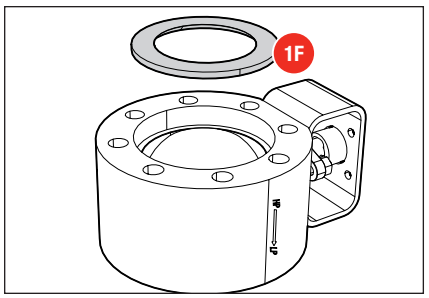
31 INSTALL SEAT GASKET

Install seat gasket **1E** into the body face goove.



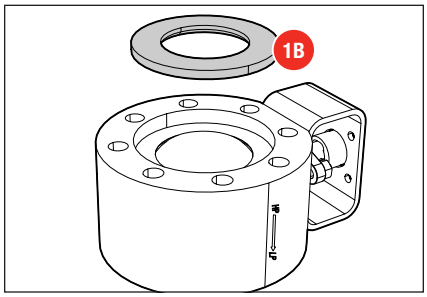
32 INSTALL SEAT RETAINER

Insert seat retainer **1F** with the curve facing the ball side.



33 INSERT SEAT

Insert seat **1B** with the curved sealing face facing the ball side. Typically this is done by gently tapping on the graphite seat until it is pushed all the way in the body face groove.

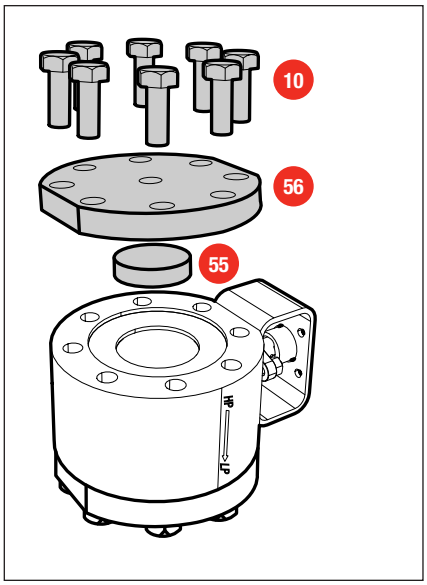


34 INSTALL HP COINING FLANGE

Install High Pressure Coining Flange **56** and Coining Insert **55** using the existing body bolts **10** when removed from end connections in line.

Notes:

Ensure the coining flange being used matches the side of the valve being worked on, either Low Pressure (LP) or High Pressure (HP). HP side coining flange includes machined flange with insert, while LP flange does not have an insert.



Torque Body Bolting

NPS	Bolt Size	B8M Torque, ft-lb (N-m)	B7 Torque, ft-lb (N-m)
1	1/2–13	35 (48)	58 (79)
1.5	1/2–13	35 (48)	58 (79)
2	9/16–12	51 (69)	84 (114)
3	3/4–10	124 (168)	206 (279)

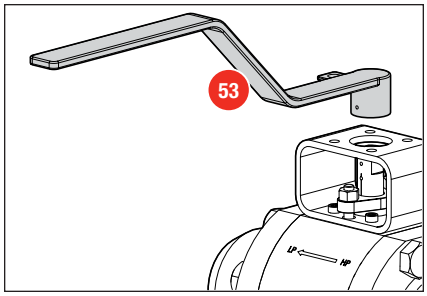
35 REMOVE COINING FLANGES

Remove all body bolts from both sides of the body to remove coining flanges and insert. Your center section, ball, and seat are mated and the valve is ready to install in line.

Inline Repairability

36 INSTALL HANDLEVER

Align length of handlever **53** inline with scribe line on stem **5**. Handlever should slide into place.



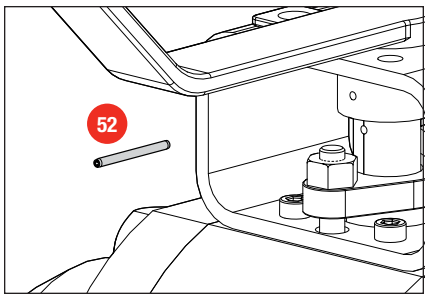
37 SECURE HANDLEVER

Tap pin **52** through hole in handle and stem.

CAUTION!

Ensure key length provides and maintains full engagement.

THIS WILL AFFECT THE VALVE WARRANTY.

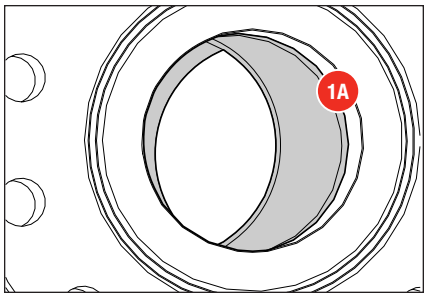


38 VERIFY OPERATION

Note:

The MOGAS valve operates ***counter-clockwise to open, clockwise to close****.*

Using the handlever **53**, stroke the ball **1A** to ensure it is rotating properly, and that the ball's position matches the **open** / **closed** position of the handlever.

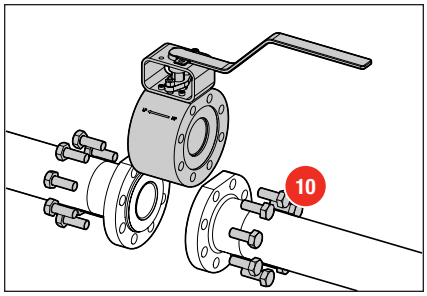


Stroke the ball to ensure proper rotation.

39

INSTALL IN LINE

Torque the bolts **10** until a metal-to-metal contact is achieved between the body and end-connects. Torque values vary depending on body and bolts material. Refer to the table below.



Bolting torque should be applied to the specified values in three equal steps utilizing a ‘star’ pattern, followed by one last check applying the specified torque to each fastener sequentially in a clockwise pattern.

Torque Body Bolting

NPS	Bolt Size	B8M Torque, ft-lb (N-m)	B7 Torque, ft-lb (N-m)
1	1/2–13	35 (48)	58 (79)
1.5	1/2–13	35 (48)	58 (79)
2	9/16–12	51 (69)	84 (114)
3	3/4–10	124 (168)	206 (279)

Stem Torque Values

NPS	Nominal Stem Diameter, in (DN)	Stem MAST, in-lb (N-m)
1	0.5 (13)	618 (70)
1.5	0.56 (14)	1592 (180)
2	0.56 (14)	1592 (180)
3	1 (25)	6,655 (752)

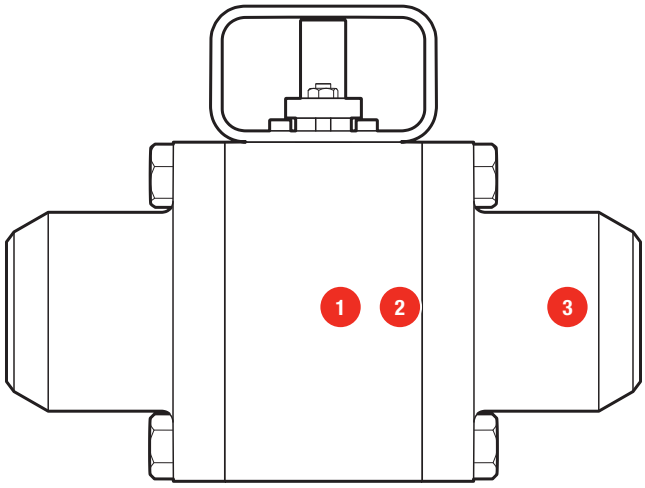
Initially the valve is expected to have very high friction torques. Extra care should be taken to not twist the stem.

If stroking the valve is not possible due to high initial torque, loosen one side of the end connect and stroke the valve 10 times. Tighten the bolts to 80% of the bolt torques and then stroke the valve 10 more times. Then torque the bolts to 90% of the bolt torque value and stroke the valve 10 more times.

Torque the bolts to the full torque value and stroke the valve to make sure the ball can turn with the full bolt torque applied.

Locate Valve Information

- Valve information is provided on the body in the locations shown.



1 BODY
MANUFACTURER
SIZE
PRESSURE CLASS
BODY MATERIAL
HEAT NUMBER
SERIAL NUMBER
BODY PART NUMBER

2 PRESSURE END

3 END CONNECTION
SIZE
PRESSURE CLASS

- Additional information may also be provided on identification tags per customer request.

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Return Merchandise Authorizations (RMA)

All valve or valve parts that are **returned** require a Return Merchandise Authorization (RMA). Please have the following information available prior to submitting an RMA request:

- Serial number
- Valve owner
- Application specifics (where the valve is used)
- Media (what goes through the valve)
- Total estimated cycles (from last installation)
- Operating temperature (max. F)
- Operating pressure (max. PSI)
- Actuator specifics

Contact the MOGAS Service department to obtain authorization and to receive shipping instructions. The RMA request may also be submitted online by accessing the **Service** page of our website (**www.mogas.com**).

Service Contact

MOGAS Service may be reached
24 hours per day / 7 days per week.

Telephone: **+1 281.449.0291**

Email: **service@mogas.com**