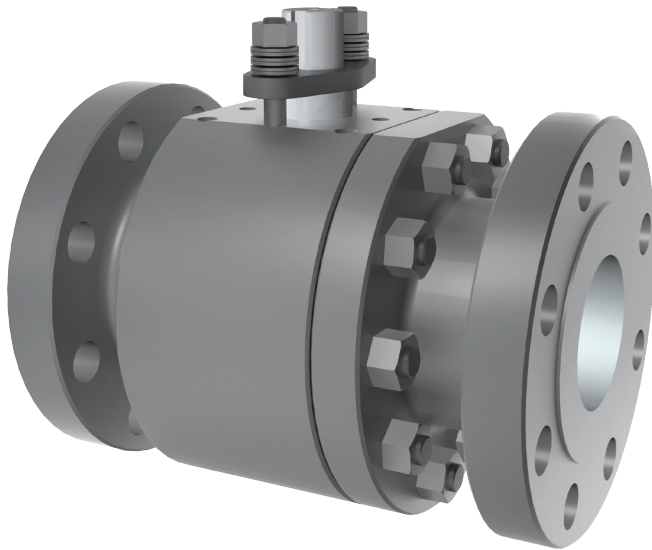

Installation, Operation and Maintenance Manual

for the
MOGAS ISOLATOR 2.0 Floating Ball Valve
1, 1.5, 2, 3 and 4 inch



**PREPARE THE VALVE FOR
INSTALLATION**

**INSTALL THE VALVE
PROPERLY**

**MAINTAIN THE VALVE FOR
OPTIMAL OPERATION
AND PERFORMANCE**

MOGAS[®]

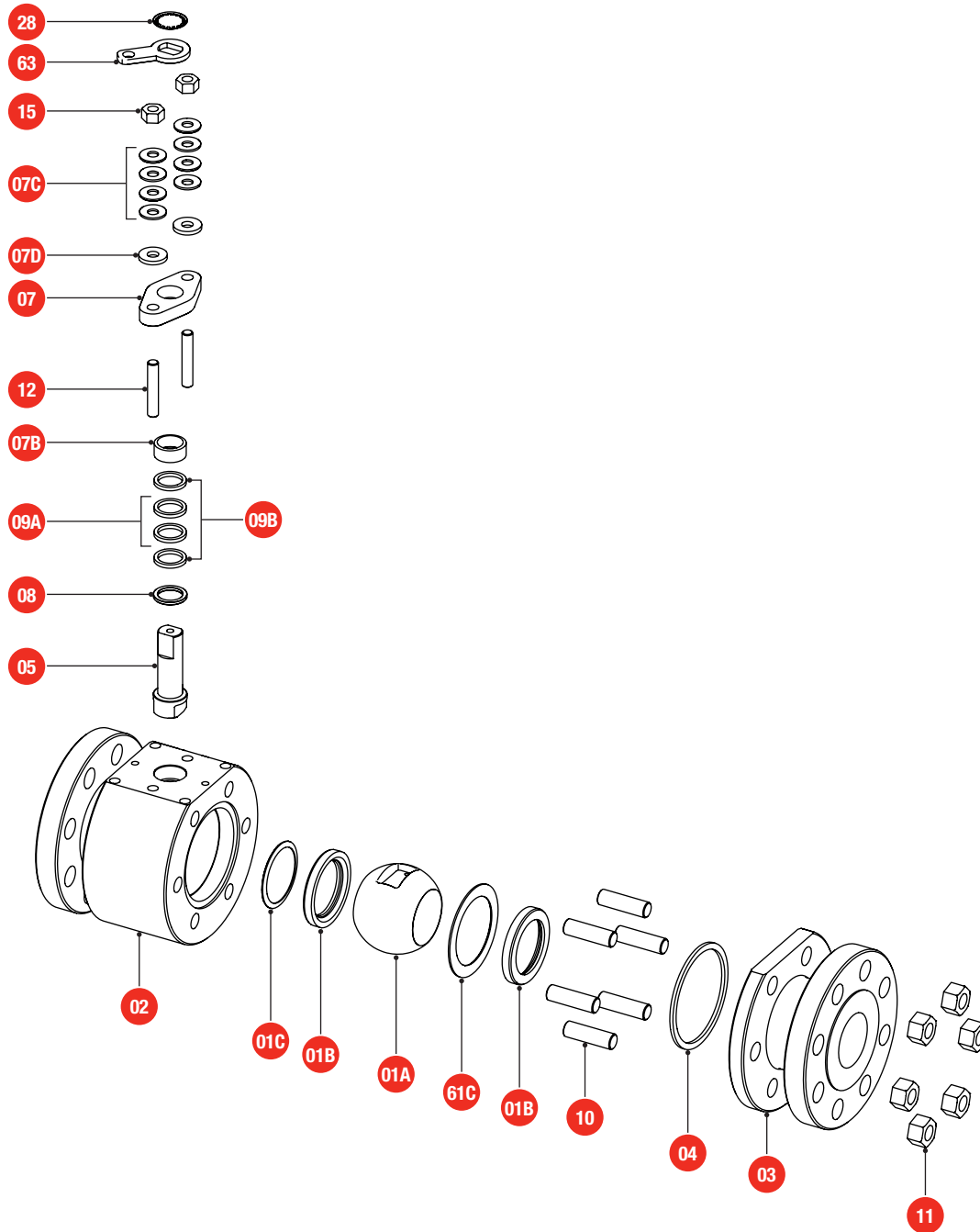
THIS PAGE INTENTIONALLY LEFT BLANK

Contents

| | |
|--|-----------|
| VALVE ITEM REFERENCE NUMBER | |
| 1, 1 1/2, 2 INCH | 4 |
| 3, 4 INCH | 6 |
| READ BEFORE INSTALLING VALVE | 8 |
| TRANSPORT AND STORAGE | 9 |
| CORRECT VALVE ORIENTATION | 10 |
| PRE-INSTALLATION | 11 |
| INSTALLATION | 12 |
| OPERATION | 14 |
| MAINTENANCE | 15 |
| REPLACE STEM PACKING | 16 |
| DISASSEMBLY | 20 |
| EVALUATION AND REWORK | 25 |
| ASSEMBLY | 26 |
| LOCATE VALVE INFORMATION | 34 |
| RETURN MERCHANDISE AUTHORIZATIONS (RMA) | 35 |
| SERVICE CONTACT | 36 |

Valve Item Reference Number

Size 1 inch / 1½ inch / 2 inch



Valve Item Reference Number

Size 1 inch / 1½ inch / 2 inch

| Valve Part Reference Number | | | | |
|-----------------------------|--------------------------------------|---------------|--------------------|-------------------------|
| Item | Description | Titanium, F53 | All Other Material | Recommended Spare Parts |
| 01A | Ball | • | • | • |
| 01B | Seat Ring | • | • | • |
| 01C | Spring Disc | • | • | • |
| 02 | Body | • | • | — |
| 03 | End Connection | • | • | — |
| 04 | Gasket, Spiral Wound | • | • | • |
| 05 | Stem | • | • | — |
| 07 | Gland Flange | • | • | — |
| 07B | Thruster, Gland Flange | • | • | — |
| 07C | Spring Discs (Live Loading) | • | • | — |
| 07D | Washer, Flat | • | • | — |
| 08 | Bearing, Stem Seal | • | • | • |
| 09A | Ring, Stem Packing | • | • | • |
| 09B | Ring, Anti-Extrusion | • | • | • |
| 10 | Stud, Body | • | • | — |
| 11 | Nut, Body | • | • | — |
| 12 | Stud, Gland | • | • | — |
| 15 | Nut, Gland | • | • | — |
| 28 | Retainer Ring, External Self-locking | • | • | • |
| 61A | Wave Spring Ring, Seat-locking | — | — | — |
| 61B | Ring, Seat-locking | — | — | — |
| 61C | Retaining Ring, Seat | • | • | • |
| 62 | Seat-locking Screws | — | — | — |
| 63 | Stop Plate | • | • | — |

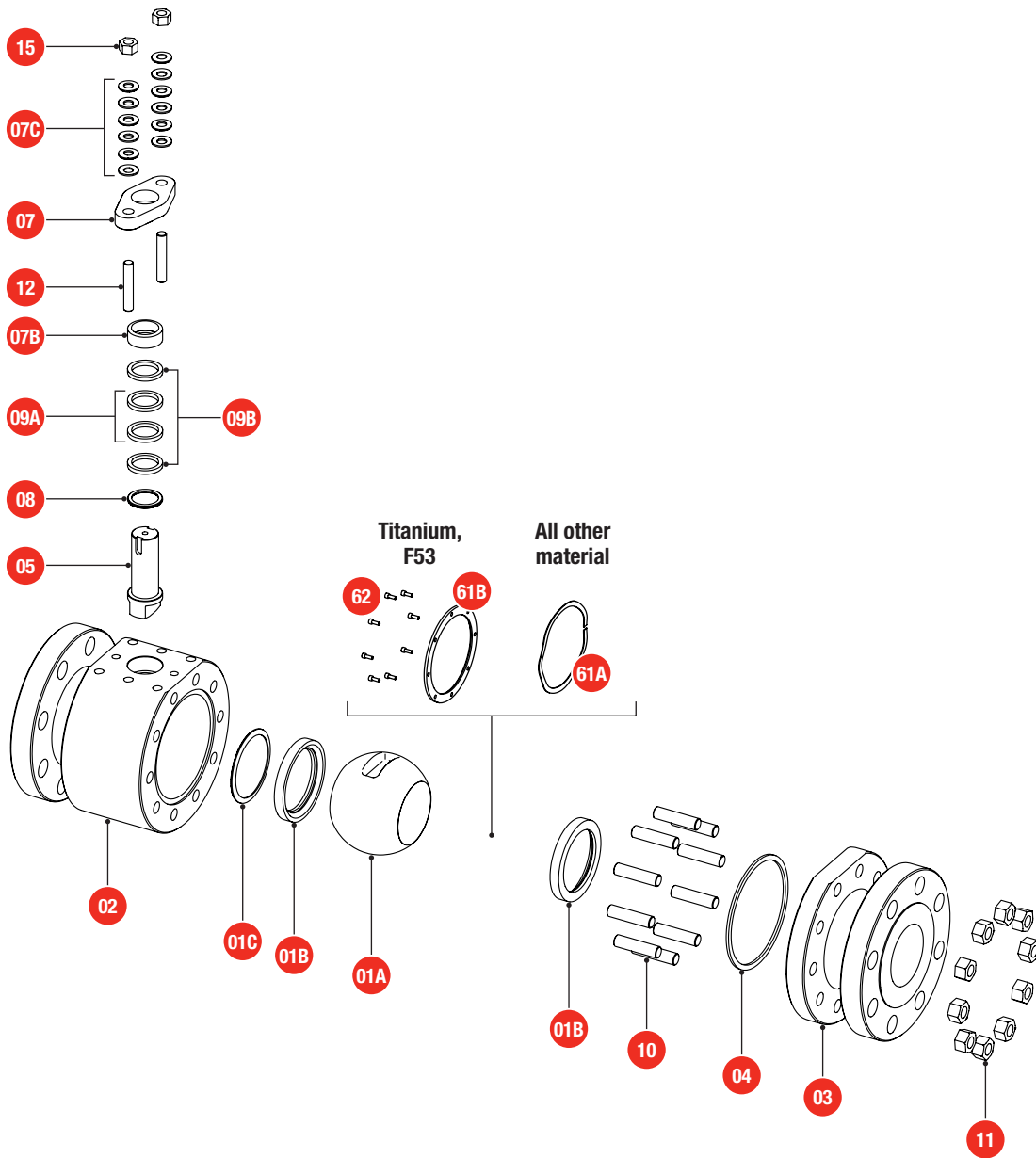


VERIFY SPARE PARTS

Contact MOGAS or a MOGAS Authorized Repair Center to determine the spare parts and quantities required for your specific circumstance.

Valve Item Reference Number

Size 3 inch / 4 inch



Valve Item Reference Number

Size 3 inch / 4 inch

| Valve Part Reference Number | | | | |
|-----------------------------|--------------------------------------|---------------|--------------------|-------------------------|
| Item | Description | Titanium, F53 | All Other Material | Recommended Spare Parts |
| 01A | Ball | • | • | • |
| 01B | Seat Ring | • | • | • |
| 01C | Spring Disc | • | • | • |
| 02 | Body | • | • | — |
| 03 | End Connection | • | • | — |
| 04 | Gasket, Spiral Wound | • | • | • |
| 05 | Stem | • | • | — |
| 07 | Gland Flange | • | • | — |
| 07B | Thruster, Gland Flange | • | • | — |
| 07C | Spring Discs (Live Loading) | • | • | — |
| 07D | Washer, Flat | — | — | — |
| 08 | Bearing, Stem Seal | • | • | • |
| 09A | Ring, Stem Packing | • | • | • |
| 09B | Ring, Anti-Extrusion | • | • | • |
| 10 | Stud, Body | • | • | — |
| 11 | Nut, Body | • | • | — |
| 12 | Stud, Gland | • | • | — |
| 15 | Nut, Gland | • | • | — |
| 28 | Retainer Ring, External Self-locking | — | — | — |
| 61A | Wave Spring Ring, Seat-locking | — | • | • |
| 61B | Ring, Seat-locking | • | — | • |
| 61C | Retaining Ring, Seat | — | — | — |
| 62 | Seat-locking Screws | • | — | • |
| 63 | Stop Plate | — | — | — |

► VERIFY SPARE PARTS

Contact MOGAS or a MOGAS Authorized Repair Center to determine the spare parts and quantities required for your specific circumstance.

Read Before Installing Valve

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

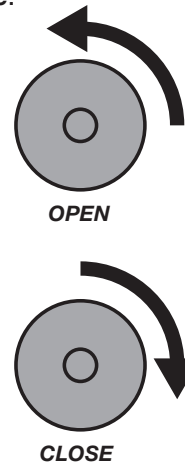
MOGAS valves are supplied in a variety of operator configurations based upon customer requirements, and may be operated by

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



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 **06** on stem **05**.

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.

Warning statement
to prevent unwanted
consequence.

THIS WILL AFFECT THE VALVE WARRANTY.

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.

Transport and Storage

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

▶ **TRANSPORT**

Valves will be shipped in seaworthy export packed wooden crates that are plastic lined.

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.

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

All protective covers and plastic liners should remain in place.

REMOVING VALVE FROM SERVICE

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



Once removed, 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.

The valve should be allowed 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.

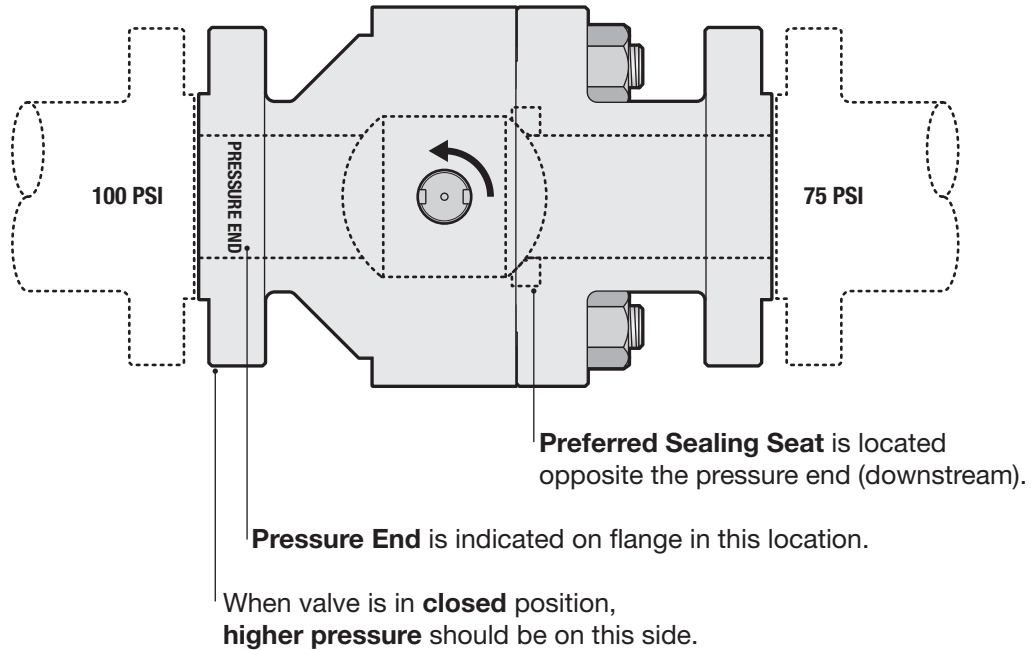
The valve should be stored in the vertical position, out of the weather (inside), until repairs can be made.

Correct Valve Orientation

Identify Preferred Sealing Seat

2-PIECE BODY

Viewed from TOP



► For correct installation, you must verify:

Flow Direction – The preferred 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 sealing seat be positioned **opposed** to the flow direction.

Pressure End – Always marked on the valve prior to leaving the factory.

Preferred Sealing Seat – Located **opposite** the marked pressure end, in the downstream position.

The valve must be installed with the **marked pressure end** positioned toward the **higher pressure** when in the **closed** position.

Pre-Installation

1 REMOVE VALVE

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

If the valve was ordered with a gear or actuator from MOGAS, it should arrive pre-assembled and tested from the factory. If already assembled, continue with the valve installation.

If the valve **does not** have a gear or actuator installed, you **must** install the appropriate adaptor and operator to open and close the valve prior to valve installation.



CAUTION!

Do not install valve for pressures or temperatures higher than rated.

THIS WILL AFFECT THE VALVE WARRANTY AND SAFE OPERATION.

Installation

- ▶ These procedures are for raised-face flange connections. When securing other end types, please contact MOGAS Service for proper procedures.

Note:

Valve item numbers shown in **bold** correspond with items shown in the **Valve Item Reference Number** section (pages 4–7) 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 operator to be in place to rotate the ball.

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

Note:

ISOLATOR 2.0 valves 3-inch or larger have scribed lines on stem.

ISOLATOR 2.0 valves 2-inch or smaller do not have scribed lines on stem.

If present, verify that the scribed lines on the stem **05** align with the scribed lines on the gland flange **07**. These lines are approximate indications. For best results, make sure the lines never under travel — a minimum travel of 96° is required.

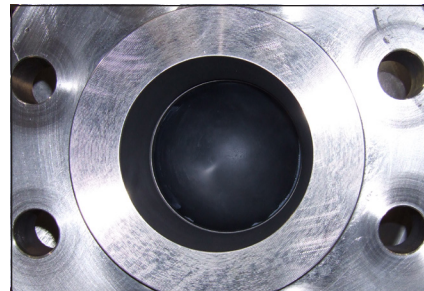
Note:

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 operator 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** indicated on the valve body **02**.

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:

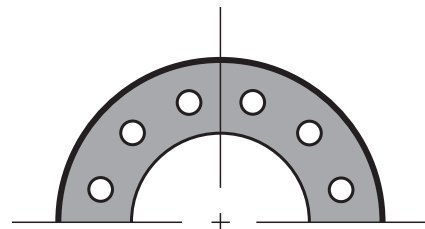
Support or lift as required, using lifting lugs or nylon straps around the valve body. Do not lift or support by the actuator alone.

4 SECURE VALVE IN PLACE

Install flange gaskets and bolting per customer requirements.

Note:

MOGAS valve flanges are supplied in the customary "straddle centerline" hole orientation, unless otherwise specified.



Straddle centerline hole orientation

5 VERIFY OPERATION

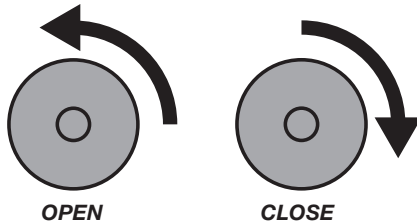
After installation, **open** and **close** several times to ensure smooth operation.

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.



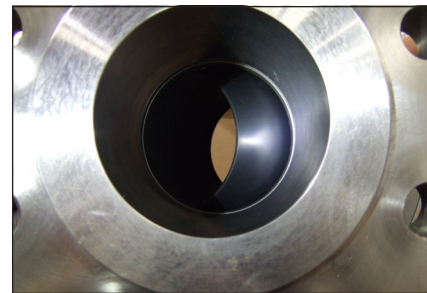
CAUTION!

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.

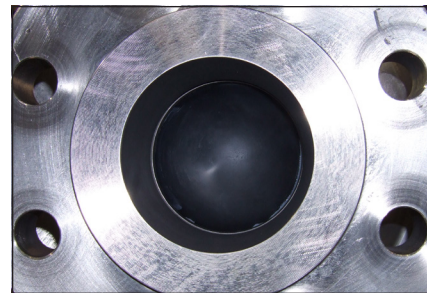
THIS WILL AFFECT THE VALVE WARRANTY.



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.

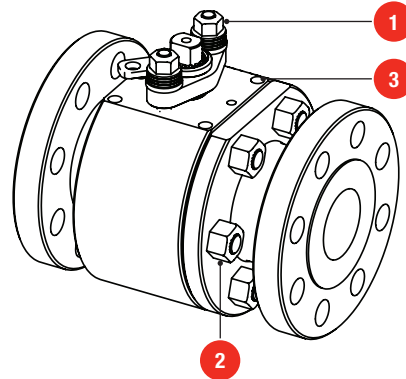


VERIFY BOLTING TORQUE

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 Actuator to valve mounting (if present)

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.

THIS WILL AFFECT THE VALVE WARRANTY.



OPEN / CLOSE VALVE REGULARLY

Valves remaining **open** or **closed** for a long period of time should be cycled **open / closed** at least once a year.

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.

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 REMOVE OPERATOR

If operator is present, remove per instructions provided by manufacturer, or consult MOGAS for assistance.

2 REMOVE STOP PLATE

Use a flathead screwdriver to pry the retaining ring **28** up and off the stem. Then, slide the stop plate **63** up and off the stem.

Note:

ISOLATOR 2.0 models 3-inch and larger will not have a retaining ring or stop plate.

3 REMOVE GLAND NUTS

Remove the packing gland nuts **15** and spring discs (live loading) **07C**. Remove flat washers **07D**, if present.

Note:

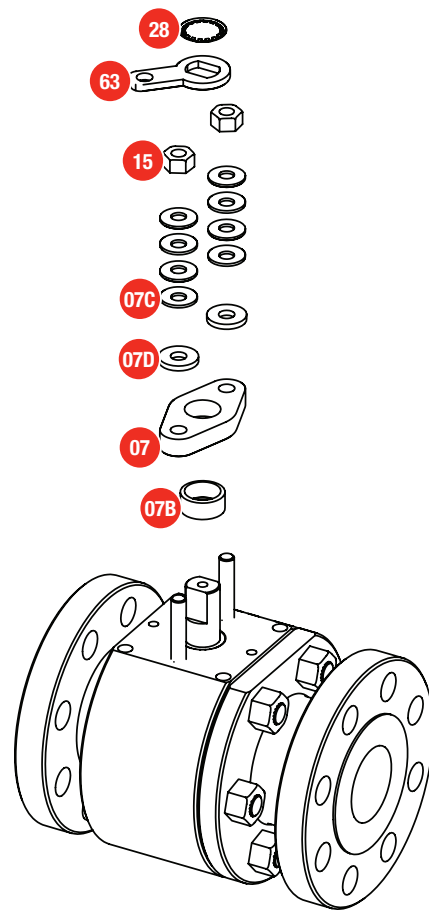
ISOLATOR 2.0 models 3-inch and larger will not have flat washers.

4 REMOVE GLAND FLANGE

Lift upward to remove the packing gland flange **07**.

5 REMOVE GLAND FLANGE THRUSTER

Lift upward to remove the packing gland flange thruster **07B**.



Replace Stem Packing

6 REMOVE STEM PACKING

Using a small pick or scribe, carefully remove the packing material **09A** and **09B**.

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.



7 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.

8 PREPARE PACKING RING SET

The new packing ring set will contain four rings total, (two anti-extrusion rings **09B** and two packing rings **09A**).

Note:

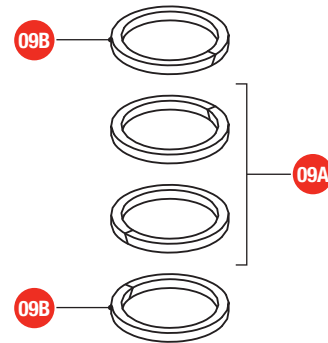
The rings must be installed in the order shown. Refer to Bill of Materials supplied with each individual valve serial number for specific quantity.



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

9 INSTALL PACKING RING SET

Note:

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

Install the rings one at a time (one anti-extrusion ring **09B** first, then two stem packing rings **09A**, then the final anti-extrusion ring **09B**) using the gland flange thruster **07B** as a packing tool to stuff each packing ring all the way down against the previous ring.

▶ CHECK POCKET DEPTH

Before installing the final anti-extrusion ring **09B**, ensure there is enough depth for the anti-extrusion ring to fit flush in the pocket.

10 INSTALL FINAL ANTI-EXTRUSION RING

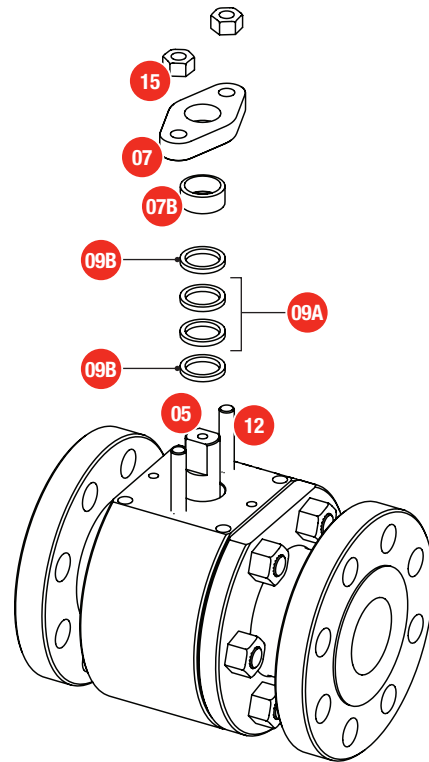
If there is enough depth for the final anti-extrusion ring to fit flush in the pocket, install the anti-extrusion ring **09B**.

If there is not enough depth for the final anti-extrusion ring to fit flush in the pocket, the packing rings must be compressed.

To compress packing rings, temporarily install the gland flange thruster **07B** over stem **05**, then the gland flange **07** and gland nuts **15** over gland studs **12**. (If necessary, install gland studs, using anti-seize compound.) Tighten all nuts **evenly** until there is enough depth for the final anti-extrusion ring **09B** to fit flush into the pocket.

Once this is accomplished, remove the gland nuts **15**, gland flange **07** and gland flange thruster **07B**.

Install the final anti-extrusion ring **09B**.



Replace Stem Packing

11 INSTALL GLAND FLANGE

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

Install gland flange thruster **07B** over stem **05**.

Install gland flange **07** over stem and gland studs.

Install flat washers **07D**, if present, over gland studs.

Note: ISOLATOR 2.0 models 3-inch and larger will not have flat washers.

Install spring discs (live loading) **07C** over gland studs.

Note: Spring discs must be installed in opposing pairs.

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

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

THIS WILL AFFECT THE VALVE WARRANTY.

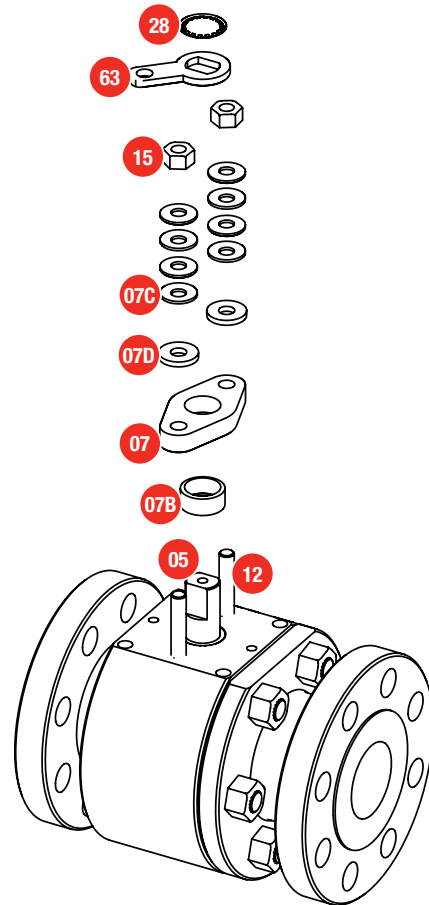
12 CHECK FOR OPERATOR

If valve requires actuator, install per instructions provided by manufacturer or consult MOGAS for assistance.

If valve uses handlever operator, install stop plate first.

13 INSTALL STOP PLATE

Slide stop plate **63** over stem, pushing down until it is flush with the gland flange **07**. Push retaining ring **28** down over stem **05** until it is flush with stop plate **63**.



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 **34, 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 actuator removal and valve disassembly.

Note:

Larger valves may require that the actuator **remain installed** in order to rotate the ball position prior to the removal of valve from piping.

Larger valve / actuator combinations with limited clearance may require removal of the valve and the actuator from piping as **separate components.**

Smaller valve / actuator combinations with adequate clearance may typically be removed from piping as **one assembly.**

1 REMOVE OPERATOR

If operator is present, remove per instructions provided by manufacturer.

2 REMOVE MOUNTING FLANGE ADAPTOR

If mounting flange adaptor is present, it must be removed.

Note:

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

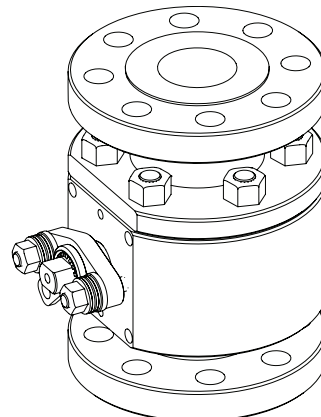
3 REMOVE VALVE

Remove valve from piping.

Note:

Support or lift as required.

Let valve rest on body end with bore vertical.



Disassembly

Note:

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

4 REMOVE BODY NUTS

Remove body nuts **11**.

5 REMOVE END CONNECTION

Remove end connection **03**.



CAUTION!

Do not damage sealing surface inside body gasket counter bore.



Place end connection on a flat surface in the vertical position with flanged-end down.

6 REMOVE SEAT RING

Note:

ISOLATOR 2.0 models and sizes have different seat retention designs.

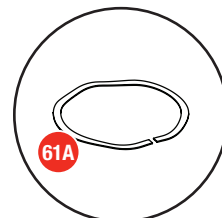
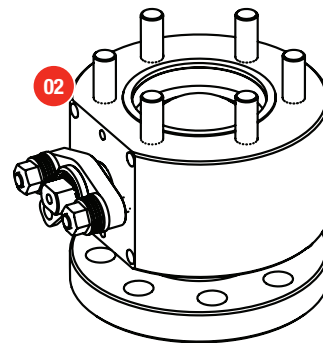
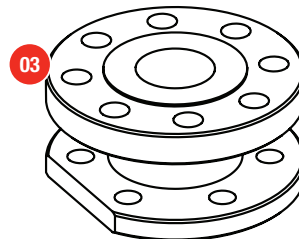
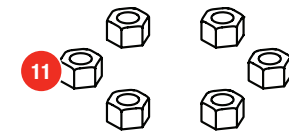
Sizes 2-inch or smaller use a seat retaining ring **61C** located in body cavity. The seat ring **01B** can be removed freely from end connection **03**.

Sizes 3-inch or larger use a seat-locking ring **61B** and seat locking screws **62**, or a seat-locking wave spring ring **61A**, located in end connection. These must be removed before removing seat ring **01B**.

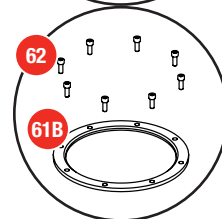


CAUTION!

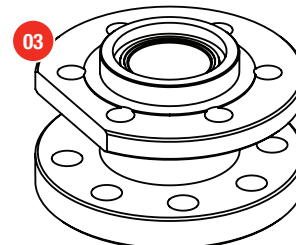
Do not damage seat pocket when removing seat ring.



Optional,
based on
model.



Optional,
based on
model.



Disassembly

- 07 REMOVE BODY STUDS**
Remove body studs **10** from body **02**.

- 08 REMOVE BODY GASKET**
Remove body gasket **04** from body **02**.



CAUTION!

Do not damage sealing surface inside body gasket counter bore.

- 09 REMOVE SEAT RETAINING RING**
If present, remove seat retaining ring **61C** from body **02**.

Note:

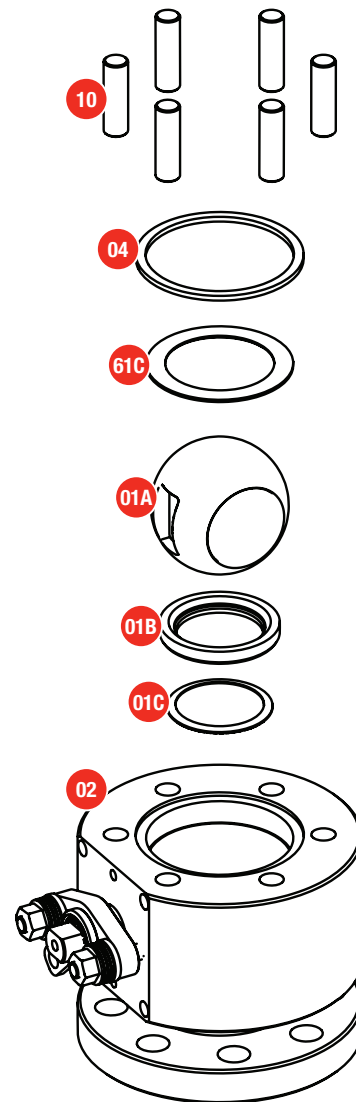
Some ISOLATOR 2.0 models have different seat retention devices that may have already been removed from end connection.

- 10 VERIFY CLOSED POSITION**
Verify that the ball **01A** has been rotated to the fully closed position.

- 11 REMOVE BALL**
Remove ball by lifting the end opposite stem **05** and “rolling it out” until ball **01A** is clear of body **02**.

- 12 REMOVE SEAT RING**
Remove seat ring **01B** from body **02**.

- 13 REMOVE SPRING DISC**
Remove spring disc **01C** from body **02**.



Disassembly

14 REMOVE STOP PLATE

Use a flathead screwdriver to pry the retaining ring **28** up and off the stem. Then, slide the stop plate **63** up and off the stem.

15 REMOVE GLAND NUTS

Remove the packing gland nuts **15** and spring discs (live loading) **07C**. Remove flat washers **07D** if present.

Note:

ISOLATOR 2.0 models 3-inch and larger will not have flat washers.

16 REMOVE GLAND FLANGE

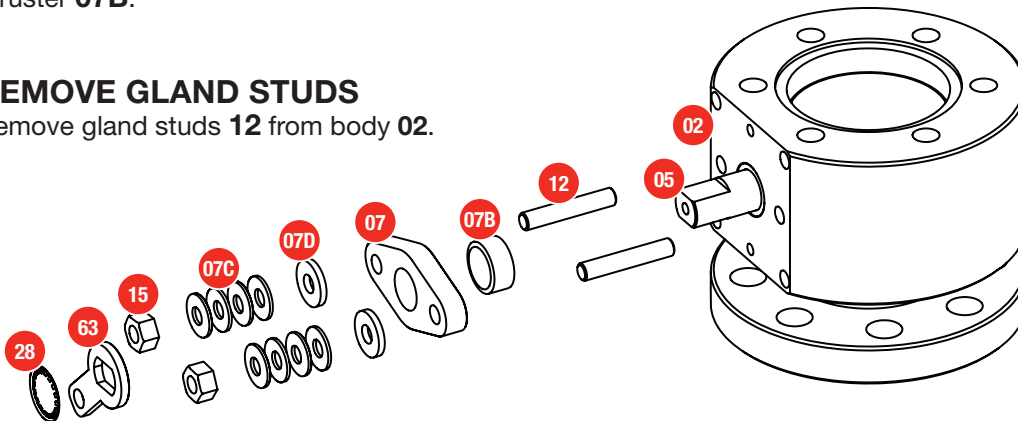
Lift upward to remove the packing gland flange **07**.

17 REMOVE GLAND FLANGE THRUSTER

Lift upward to remove the packing gland flange thruster **07B**.

18 REMOVE GLAND STUDS

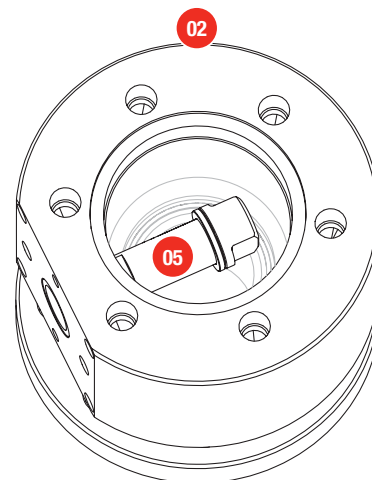
Remove gland studs **12** from body **02**.



19 REMOVE STEM

Using a hammer and brass or aluminum rod, or wooden block, tap stem **05** into body cavity.

Carefully remove stem through access port or body cavity.

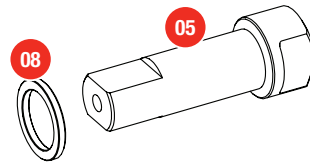


Disassembly

20

REMOVE STEM SEAL

Remove inner stem seal **08** from stem **05**.

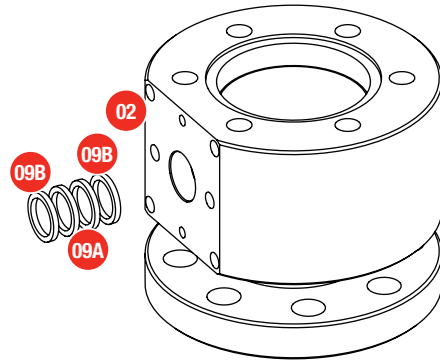


21

REMOVE STEM PACKING

Using a small pick or scribe, carefully remove the packing material **09A** and **09B**.

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.

22

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.

Evaluation and Rework



CAUTION!

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



EVALUATION

Contact MOGAS for inspection and evaluation to determine if rework of components may be necessary.

Note: For rework procedures, see C-Series IOM, which is available from our Media Centre at www.mogas.com.



SPARE PARTS KIT

If you have purchased a spare parts kit from MOGAS, prepare the parts for assembly now. The kit should include a matched ball and seats, in addition to any seals, gaskets, springs, packing and fasteners required.

If you do not have a spare parts kit, refer to **Valve Item Reference Number** (page 5 and 7) for a recommended spare parts list.

Contact MOGAS or a MOGAS Authorized Repair Center to determine the spare parts and quantities required for your specific circumstance.

Assembly



CAUTION!

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

- ▶ All seals, gaskets, springs and packing must be replaced with new materials during assembly to ensure proper valve operation.

Note:

Refer to **Valve Item Reference Number** drawings (pages 4–7) for identification of all seals, gaskets, spring(s) and packing.

- ▶ **POSITION VALVE BODY**

Prior to assembly, verify that the valve body **02** is resting on a flat surface in the vertical position with the flanged-end down and body cavity upright.

01 CLEAN ALL PARTS

Clean all parts before assembly and / or parts replacement.

02 INSTALL STEM SEAL

Place inner stem seal **08** on stem **05**.



CAUTION!

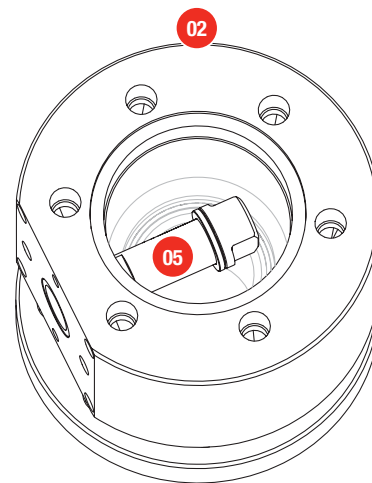
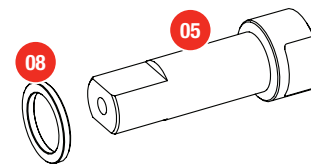
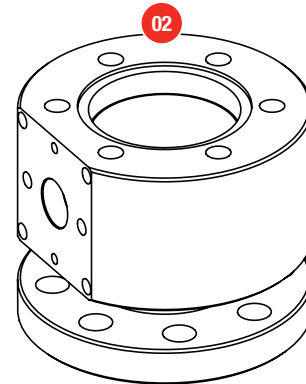
Inner stem seals are coated on both sides, so no special orientation is required.

03 INSERT STEM

Insert stem **05** through body **02** cavity and through top stem bore.

- ▶ **STEM ORIENTATION**

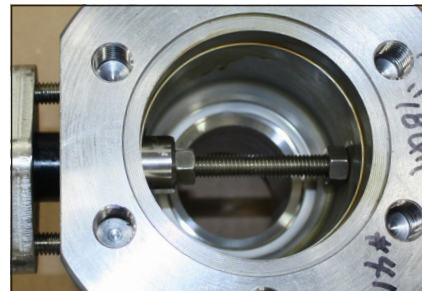
Flats on Double D stem **05** (or keyways on stems from larger valves) faces the direction of the valve bore / end connects



Assembly

04 STABILIZE STEM

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

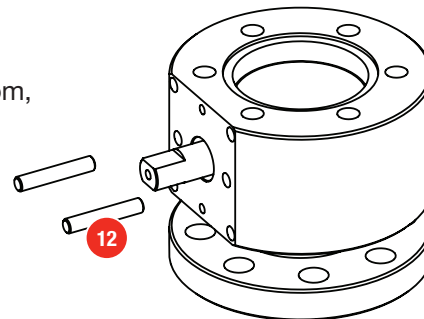


CAUTION!

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

05 INSTALL GLAND STUDS

Apply anti-seize compound before installing gland studs **12**. Turn threaded stud until it reaches bottom, then back-out one-half turn.



06 PREPARE PACKING RING SET

The new packing ring set will contain four rings total, (two anti-extrusion rings **09B** and two packing rings **09A**).

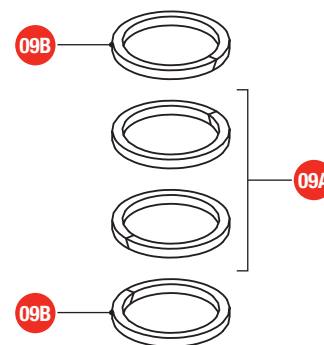
Note:

The rings must be installed in the order shown. 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.



Correct staggered or alternating skive cut positioning.

THIS WILL AFFECT THE VALVE WARRANTY.

Assembly

07 INSTALL PACKING RING SET

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 **09B** first, then two stem packing rings **09A**, then the final anti-extrusion ring **09B**) using the gland flange thruster **07B** as a packing tool to stuff each packing ring all the way down against the previous ring.

▶ CHECK POCKET DEPTH

Before installing the final anti-extrusion ring **09B**, ensure there is enough depth for the anti-extrusion ring to fit flush in the pocket.

08 INSTALL FINAL ANTI-EXTRUSION RING

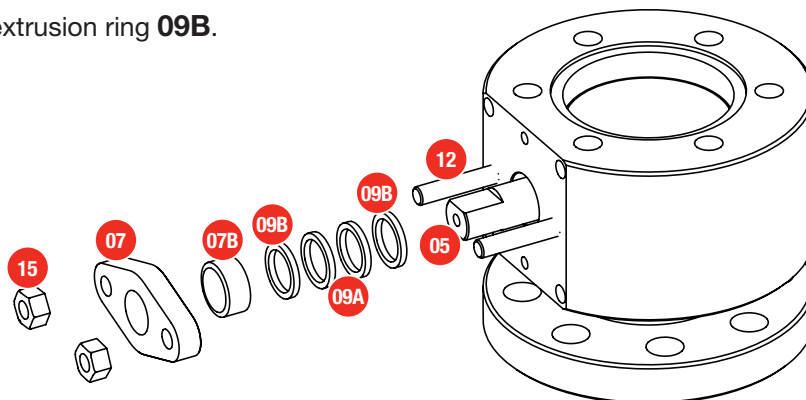
If there is enough depth for the final anti-extrusion ring to fit flush in the pocket, install the anti-extrusion ring **09B**.

If there is not enough depth for the final anti-extrusion ring to fit flush in the pocket, the packing rings must be compressed.

To compress packing rings, temporarily install the gland flange thruster **07B** over stem **05**, then the gland flange **07** and gland nuts **15** over gland studs **12**. (If necessary, install gland studs, using anti-seize compound.) Tighten all nuts **evenly** until there is enough depth for the final anti-extrusion ring **09B** to fit flush into the pocket.

Once this is accomplished, remove the gland nuts **15**, gland flange **07** and gland flange thruster **07B**.

Install the final anti-extrusion ring **09B**.



Assembly

09 INSTALL GLAND FLANGE

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

Install gland flange thruster **07B** over stem **05**.

Install gland flange **07** over stem and gland studs.

Install flat washers **07D**, if present, over gland studs.

Note: ISOLATOR 2.0 models 3-inch and larger will not have flat washers.

Install spring discs (live loading) **07C** over gland studs.

Note: Spring discs must be installed in opposing pairs.

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

Install gland nuts **15**, and torque all 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.

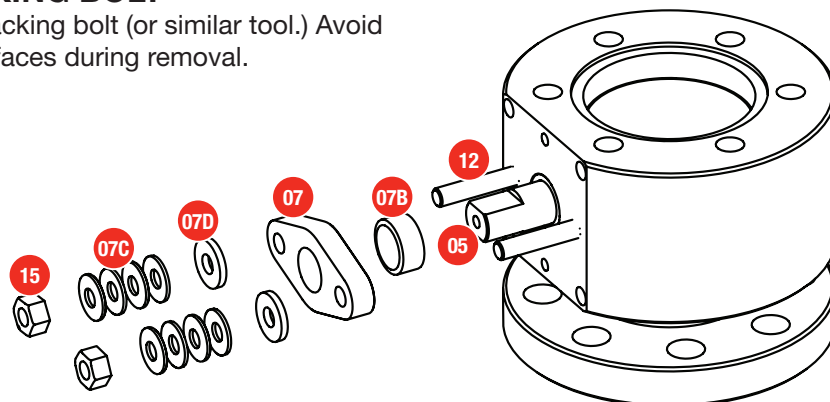
Do not over-tighten nuts. Torque all nuts **evenly** per the specifications included with the **test certificate** for each individual valve serial number.

THIS WILL AFFECT THE VALVE WARRANTY.



REMOVE JACKING BOLT

Carefully remove jacking bolt (or similar tool.) Avoid scratching any surfaces during removal.



Assembly

10 CLEAN AND INSPECT

Clean all parts thoroughly before assembly.

Inspect seats and landing surfaces to ensure full contact.



CAUTION!

Any surface imperfections may create a leak.

11 INSTALL SPRING DISC

Apply lubricant to spring disc landing area of body **02**.
Insert spring disc **01C** in place.

12 INSTALL SEAT RING

Apply lubricant to landing area of seat ring **01B**.
Install seat ring in pocket just above spring disc in body cavity.

Note:

The seat rings are uniquely identified to fit **only** a body or end connection. Seats identified with an odd number fit the body only; seats identified with an even number fit the end connection only. Seat ring identification is also provided inside the stem slot of the ball to ensure correct assembly.

13 INSTALL BALL

Note:

Matching Identification: The seat rings are uniquely mate-lapped to the ball. Seats identified with an odd number fit the body only; seats identified with an even number fit the end connection only.

Seat ring identification is also provided inside the stem slot of the ball to ensure correct assembly.

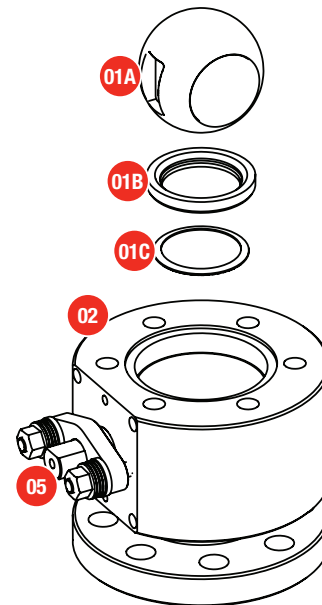
Lightly coat ball with a lubricant. Lower ball **01A** into body cavity over properly aligned stem **05**.

Roll ball **01A** into a fixed, closed position. Ball should “rock” when properly positioned.



CAUTION!

For larger valves, use nylon straps to prevent damage to ball coating.



Assembly

14 INSTALL BODY STUDS

Temporarily cover ball to protect coating from any debris during stud installation.

Install body studs **10** to body **02**, using anti-seize compound. Turn threaded stud until it reaches bottom, then back-out one-half turn.

15 INSTALL SEAT RETAINING RING

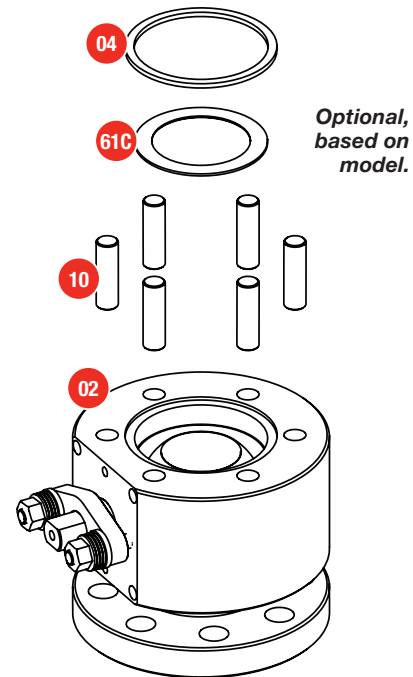
If present, install seat retaining ring **61C** in position over ball.

Note:

Some ISOLATOR 2.0 models have different seat retention devices that may require installation into end connection.

16 INSTALL BODY GASKET

Install body gasket **04** into groove in body face.



17 INSTALL SEAT RING

Install seat ring **01B** into end connection **03** seat pocket.

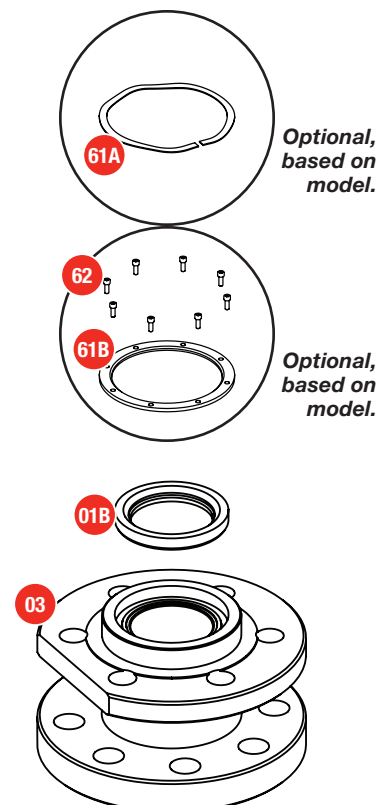
Note:

The seat rings are uniquely identified to fit **only** a body or end connection. Seats identified with an odd number fit the body only; seats identified with an even number fit the end connection only. Seat ring identification is also provided inside the stem slot of the ball to ensure correct assembly.

Sizes 2-inch or smaller use a seat retaining ring **61C**, already installed in body cavity. Apply silicone paste to coat the side of the seat ring that will face the end connection. Push coated side of seat ring against end connection and rotate 90°. This will keep the seat ring properly in place when the end connection is installed.

Sizes 3-inch or larger Titanium or F53 materials use a seat-locking ring **61B** and seat locking screws **62** to be installed into end connection after seat ring.

Sizes 3-inch or larger for all other materials use a seat-locking wave spring ring **61A** to be installed into end connection after seat ring.



Assembly

18 INSTALL END CONNECTION

Install end connection **03** assembly onto body **02** by positioning it (seat facing down) over body bore. Align bolt holes with studs and align bolt pattern of end flanges as well as match marks made during disassembly.

Note:

MOGAS valve flanges are supplied in the customary "straddle centerline" hole orientation, unless otherwise specified.

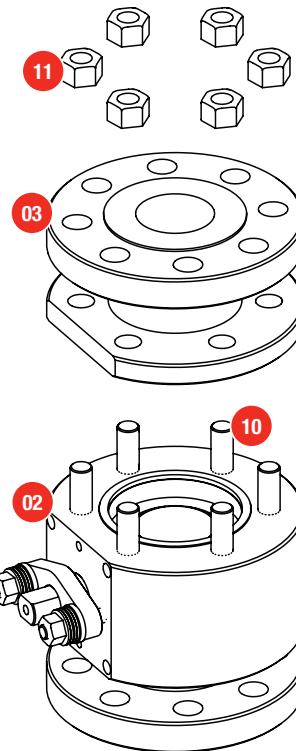
Lower end connection onto body face. Watch that seat ring does not fall out or crush body gasket.

19 SECURE END CONNECTION

Apply anti-seize compound on body studs **10** and nuts **11**.

Install nuts **11**, alternately tightening all nuts.

▶ **Do not** torque bolting at this time.



Assembly

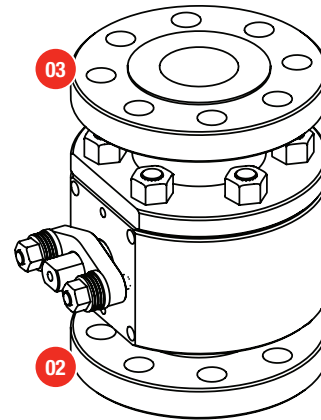
20 VERIFY OPERATION

The valve should be stroked one full cycle to ensure that the ball is rotating properly.

If valve does not stroke smoothly, disassemble and take corrective action.

Note:

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



21 TORQUE BODY BOLTING

Torque the valve body bolting to secure the body **02** and end connection **03** assembly.



CAUTION!

Torque the valve body bolting per the specifications included with the **test certificate** for each individual valve serial number.

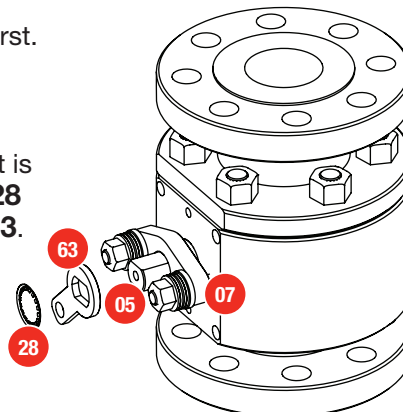
22 CHECK FOR OPERATOR

If valve requires actuator, install per instructions provided by manufacturer or consult MOGAS for assistance.

If valve uses handlever operator, install stop plate first.

23 INSTALL STOP PLATE

Slide stop plate **63** over stem, pushing down until it is flush with the gland flange **07**. Push retaining ring **28** down over stem **05** until it is flush with stop plate **63**.



24 FIELD HYDROSTATIC TEST

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

25 INSTALL VALVE

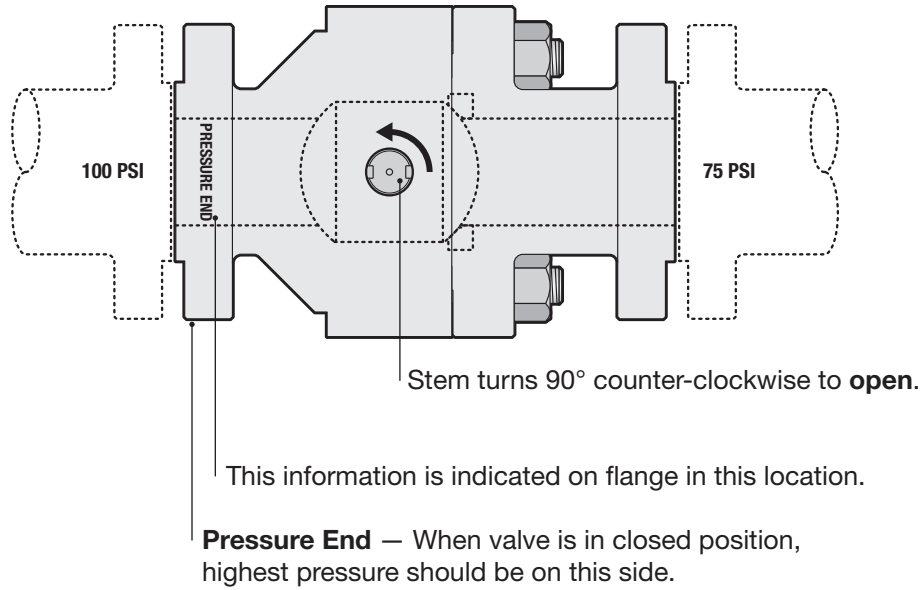
Install valve in piping as required.

Refer to **Installation** (page **12**).

Locate Valve Information

STEM ORIENTATION

Viewed from TOP



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**

Severe Service

The MOGAS Definition

- Extreme temperatures
- High pressures
- Abrasive particulates
- Acidic products
- Heavy solids build-up
- Critical plant safety
- Large pressure differentials
- Velocity control
- Noise control

MOGAS INDUSTRIES, INC.

Headquarters

14330 East Hardy Street
Houston, TX, USA 77039-1405
Phone: +1.281.449.0291
Fax: +1.281.590.3412
E-mail: mogas@mogas.com

AUSTRALIA

Phone: +61 (0)8.9456.3533

CANADA

Phone: +1 780.436.4485

CHINA

Phone: +86 (0)10.84549478

EUROPE

Phone: +44 (0)116.279.3367

MIDDLE EAST

Phone: +971 (0)4.880.8787

To locate a sales and
service center in your
area, visit us online at
www.mogas.com.

MOGAS[®]
SEVERE SERVICE BALL VALVES