Installation, Operation and Maintenance Manual

for the

MOGAS ISOLATOR 2.0 Floating Ball Valve 6, 8, 10 and 12 inch

PREPARE THE VALVE FOR INSTALLATION

INSTALL THE VALVE PROPERLY

MAINTAIN THE VALVE FOR OPTIMAL OPERATION AND PERFORMANCE

MOGAS®

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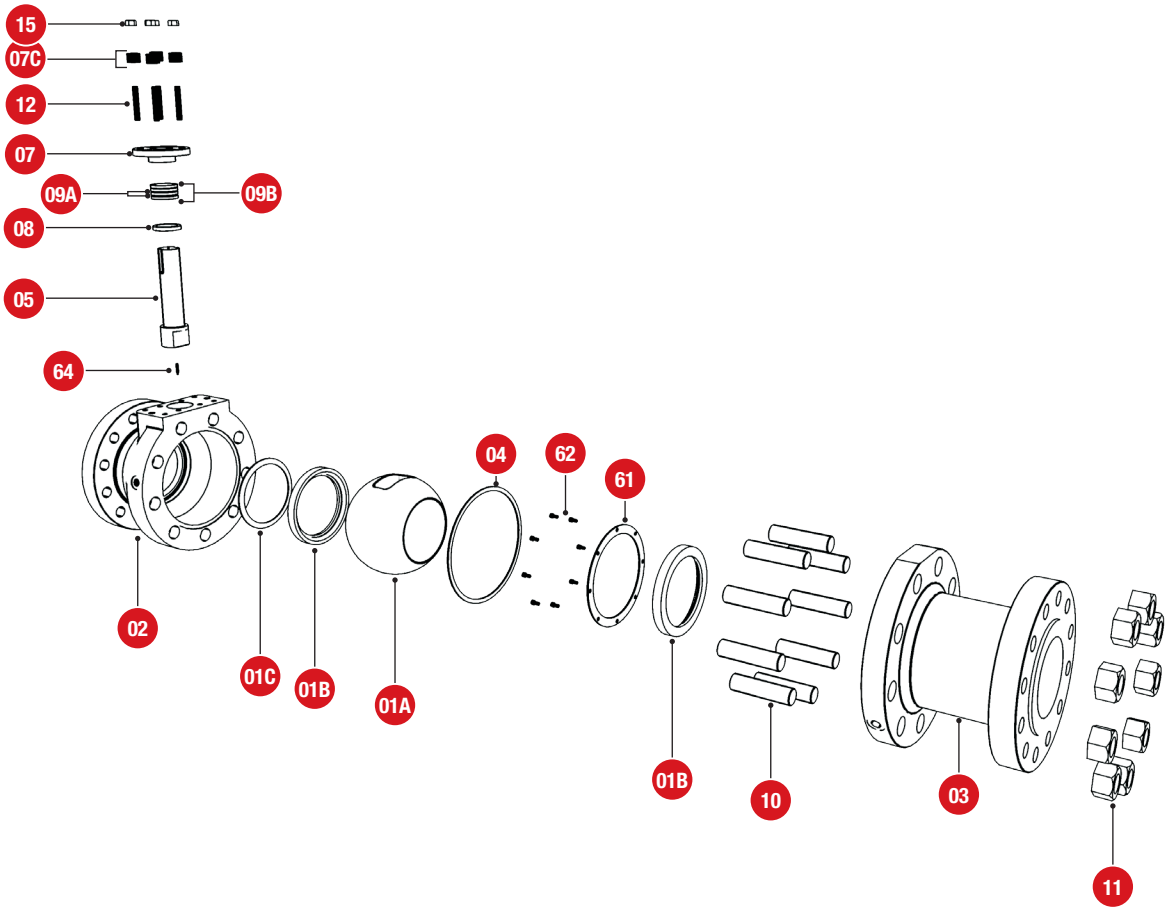
Contents

Valve Item Reference Number

Size 6, 8, 10 and 12 inch



Valve Item Reference Number

Size 6, 8, 10 and 12 inch

Valve Part Reference Number

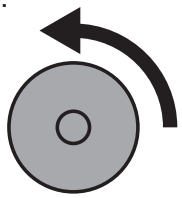
Item	Description	Titanium, F53	All Other Material	Recommended Spare Parts
01A	Ball	•	•	•
01B	Seat	•	•	•
01C	Spring Disc	•	•	•
02	Body	•	•	—
03	End Connect	•	•	—
04	Gasket, Spiral Wound	•	•	•
05	Stem	•	•	—
07	Gland Flange	•	•	—
07C	Spring Discs (Live Loaded)	•	•	—
08	Inner Stem Seal	•	•	•
09A	Ring, Stem Packing	•	•	•
09B	Ring, Anti-Extrusion	•	•	•
10	Stud, Body	•	•	—
11	Nut, Body	•	•	—
12	Stud, Gland	•	•	—
15	Nut, Gland	•	•	—
61	Ring, Seat-locking	•	•	•
62	Seat-locking Screws	•	•	•
64	Anti-Static Device	—	•	—

VERIFY SPARE PARTS

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

Read Before Installing Valve

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



OPEN

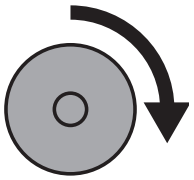
MOGAS valves are supplied in a variety of operator configurations based upon customer requirements, and may be operated by

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

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

Valves can be supplied bare stem or with adaption to accommodate a variety of gears or actuators.

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 **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.

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.*

Transport and Storage

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

TRANSPORT

Valves will be shipped and packaged per customer's requirements.

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 unless for flanged valves.

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

The valve should be stored in the vertical position inside until repairs can be made.

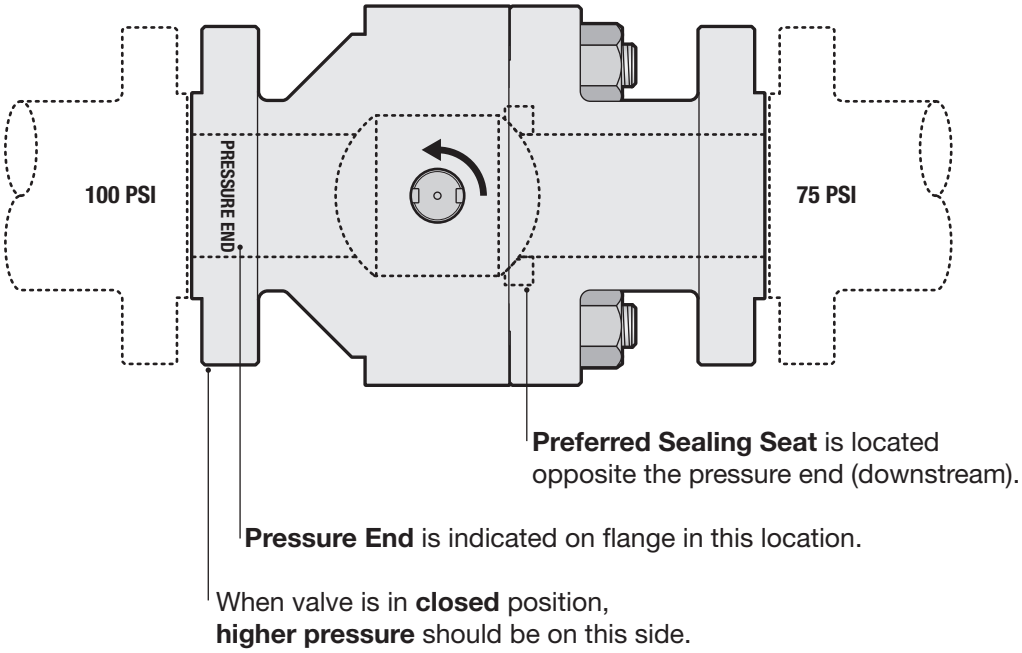
Any valve returned for service should be accompanied by safety data sheets for process media.

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**. **Do not** lift by the operator.

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 the travel stops 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 flanged end connections. When securing other end types, please contact MOGAS Service for proper procedures.

Notes:
*Valve item numbers shown in **bold** correspond with items shown in the **Valve Item Reference Number** section (pages 4–5) of this document.*
MOGAS ships valves in the open position unless operator is fail closed.

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.

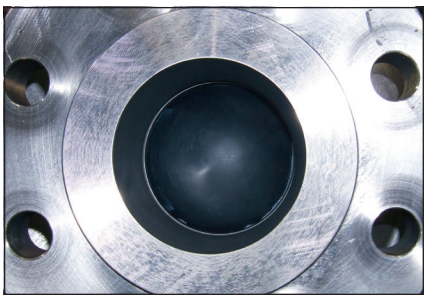
Verify that the ball **open** / **closed** position matches the gear or actuator **open** / **closed** position indicators.

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 97° 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** stop 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. Contact MOGAS service. (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. Valve should always remain in the open position.

THIS WILL AFFECT THE VALVE WARRANTY.

2 IDENTIFY PRESSURE END 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. This is not necessary for flanged valves.

Position the valve in line with corresponding flanges.

Note:

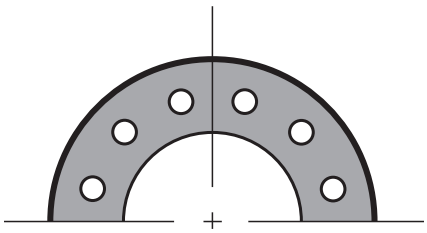
Support or lift as required, using lifting lugs or nylon straps around the valve body. Do not lift or support by the actuator alone.

4 SECURE VALVE IN PLACE

Install flange gaskets and bolting per industry requirements. Always tighten in star pattern to prevent leaks. Torque as required.

Note:

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



Straddle centerline hole orientation

5 VERIFY OPERATION

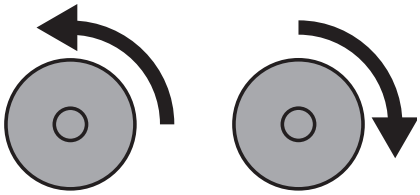
After installation, **open** and **close** several times to ensure smooth operation.

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**.



OPEN *CLOSE*

Note:

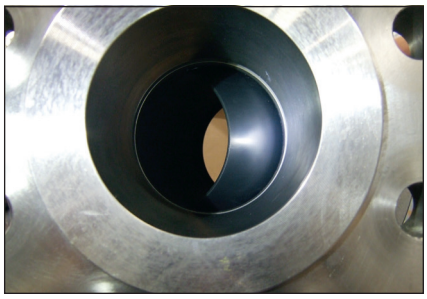
*When cycling the valve **open** or **close**, make sure that the valve is **fully opened** and **fully closed**. This wipes debris from the ball and ensures optimal performance and long valve life.*

CAUTION!

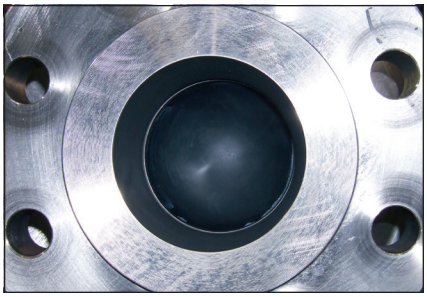
Throttling with MOGAS isolation ball valves is **NOT** recommended. Exposure of a portion of the ball/seat to flow can compromise the sealing integrity of the valve.

THIS WILL AFFECT THE VALVE WARRANTY.

Fully OPEN position.



Partially OPEN position (not recommended).



Fully CLOSED position.

Maintenance

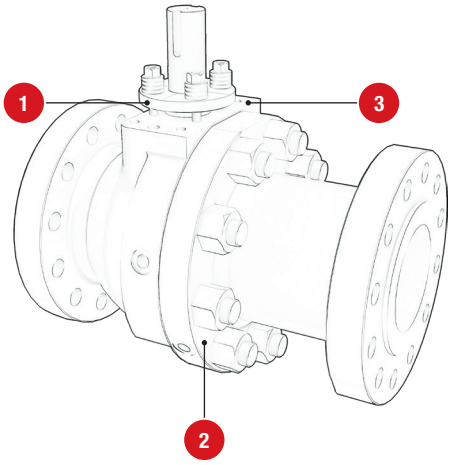
CAUTION!

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 **cycled full open/closed** to wipe away any media accumulation on the sealing surfaces.

ACTUATOR LUBRICATION

Keep hydraulic and worm gear actuators fully lubricated according to actuator manufacturer's specifications. See actuator manufacturer's specification or product manual.

Replace Stem Packing

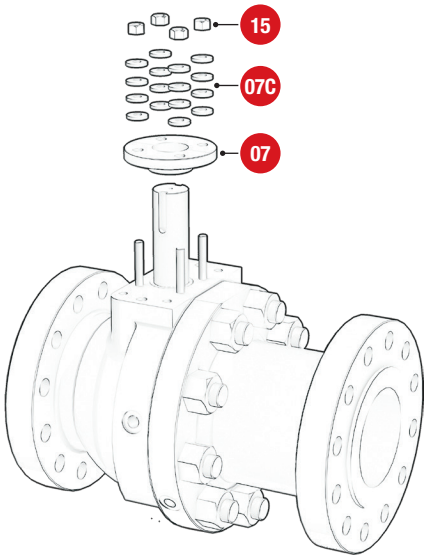
CAUTION!

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 GLAND NUTS

Remove the packing gland nuts **15** and spring discs (live loading) **07C**.

3 REMOVE GLAND FLANGE

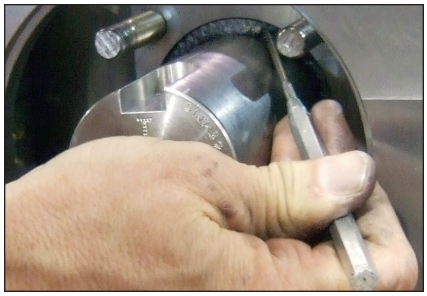
Lift upward to remove the packing gland flange **07**.

Replace Stem Packing

4 REMOVE STEM PACKING

Using a small pick or scribe, carefully remove the fugitive emission 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.

5 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.

PREPARE PACKING RING SET

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

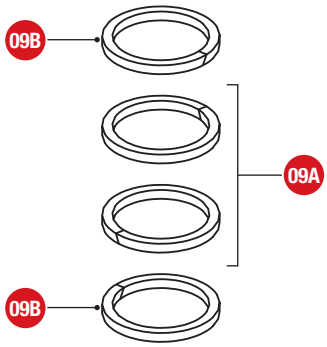
Note:

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.

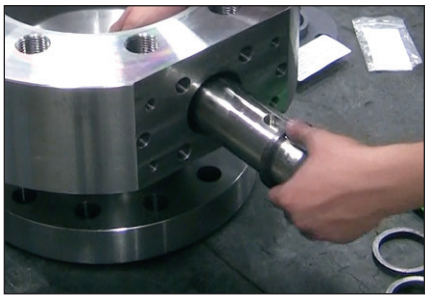
Replace Stem Packing

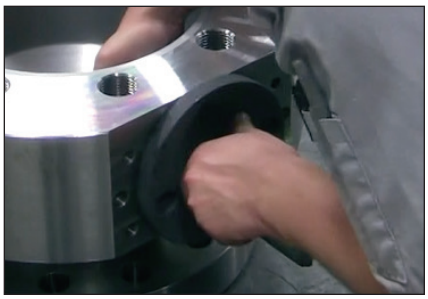
6 INSTALL PACKING RING SET

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 **07** 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.

7 INSTALL FINAL ANTI-EXTRUSION RING

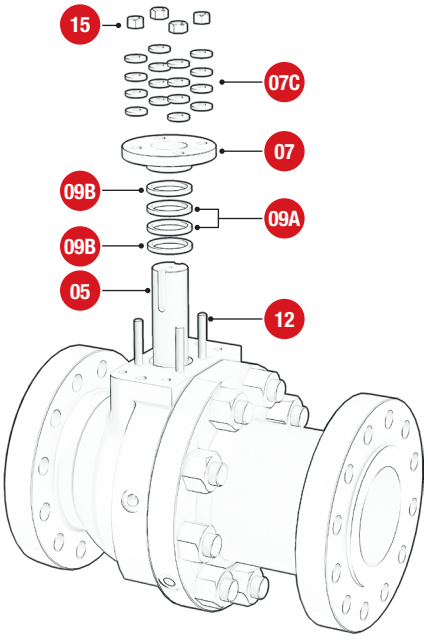
If there is enough depth for the final anti-extrusion ring to fit flush in the pocket, install the anti-extrusion ring **09B**.

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 **07** over stem **05** and gland nuts **15** over gland studs **12**. 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** and gland flange **07**.

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



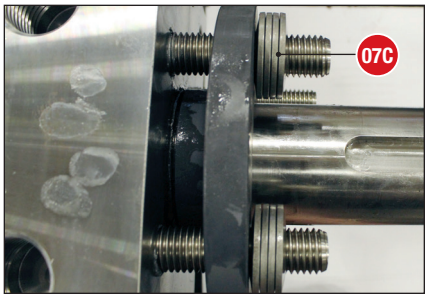
Replace Stem Packing

8 INSTALL GLAND FLANGE

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

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

Install spring discs (live loading) **07C** over gland studs.
Note: *Spring discs must be installed in opposing pairs. Number of spring discs may vary depending upon size of valve.*

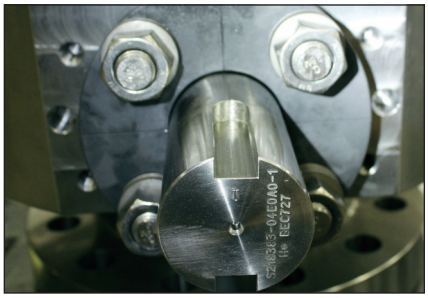


Apply anti-seize compound onto gland studs **12** and gland nuts **15**.

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

9 INSTALLATION PROCEDURE FOR STEM PACKING

After installing the packing ring set **09A** and **09B** apply a gasket stress of 60 MPa. Stand by for five minutes. Actuate the stem **05** five times. Reduce the gasket stress until 0 MPa. Repeat this process three times. Apply a final gasket stress per test certificate.



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.

10 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.

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 **32**, **Locate Valve Information**.

Apply match marks on all mating 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** to rotate the ball position prior to disassembly. Secure tightly if stroking after removing from pipe.*

*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

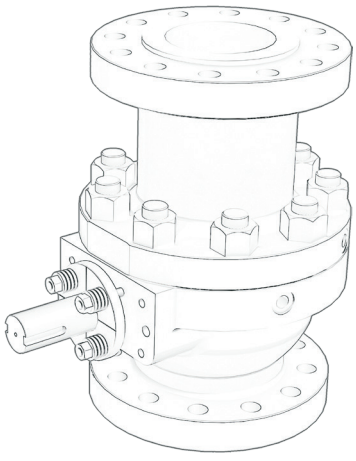
If operator is present, remove per instructions provided by manufacturer.

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

4 **REMOVE BODY NUTS**

Remove body nuts **11**.

5 **REMOVE END CONNECTION**

Remove end connection **03** from body **02** .

CAUTION!

Do not damage sealing surface inside body gasket counter bore.

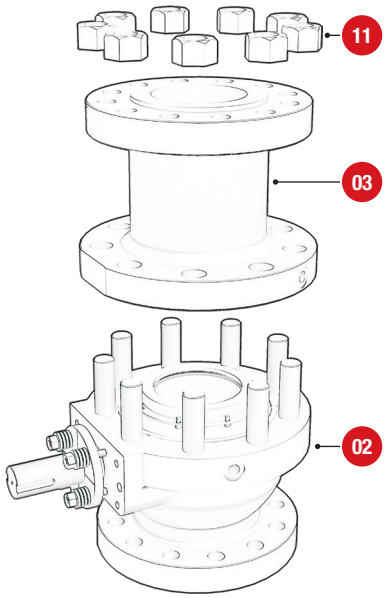
▶ Place end connection on a flat surface in the vertical position with flanged-end down.

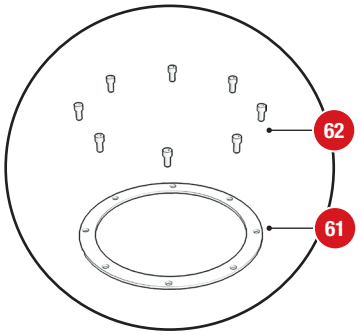
6 **REMOVE SEAT RING**

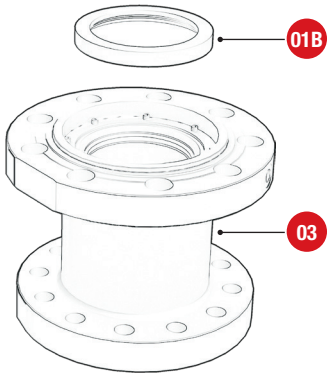
Remove seat-locking ring **61** and seat locking screws **62** located in end connection. These must be removed before removing seat ring **01B**.
Seat locking screws are tac-welded during original assembly. The tac should break when using the allen wrench to remove the screws.

CAUTION!

Do not damage seat pocket when removing seat ring.







Disassembly

7 **REMOVE BODY STUDS**
Remove body studs **10** from body **02**.

8 **REMOVE BODY GASKET**
Remove body gasket **04** from body **02**.

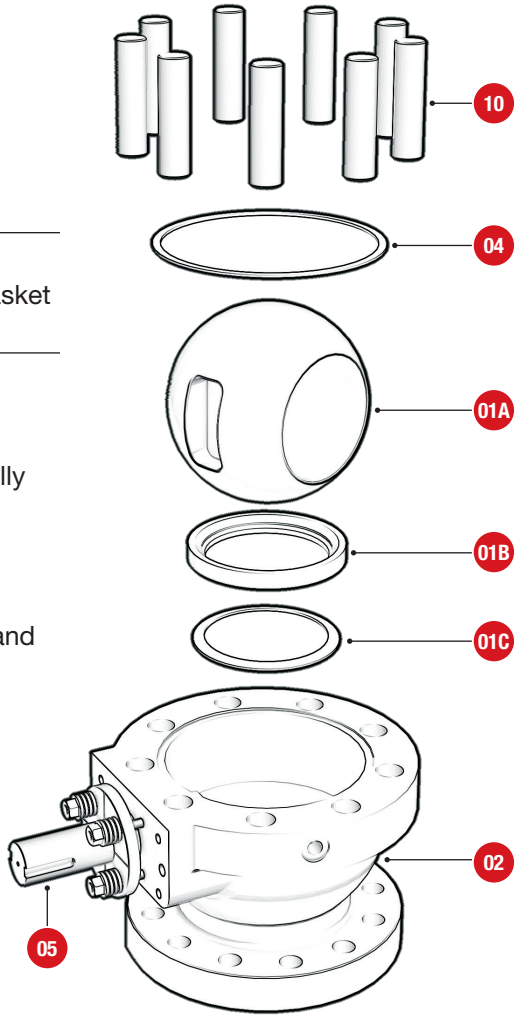
CAUTION!
Do not damage sealing surface inside body gasket counter bore.

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

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

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

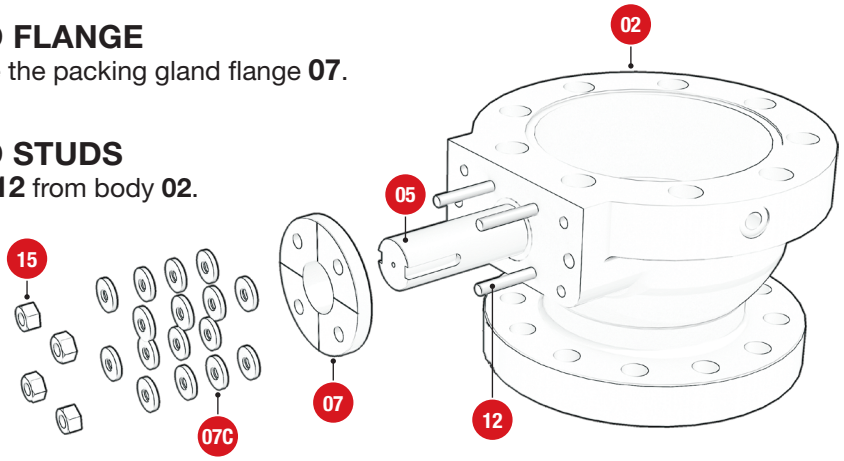
12 **REMOVE SPRING DISC**
Remove spring disc **01C** from body **02**.



13 **REMOVE GLAND NUTS**
Remove the packing gland nuts **15** and spring discs (live loading) **07C**.

14 **REMOVE GLAND FLANGE**
Lift upward to remove the packing gland flange **07**.

15 **REMOVE GLAND STUDS**
Remove gland studs **12** from body **02**.

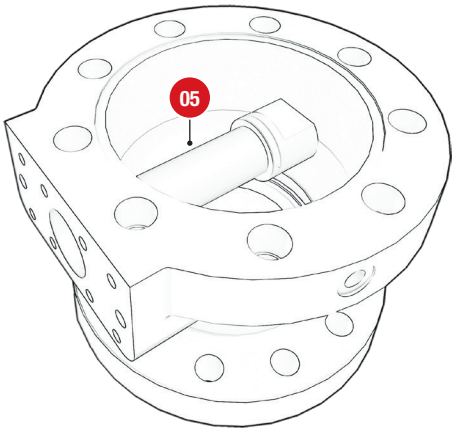


Disassembly

16 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.

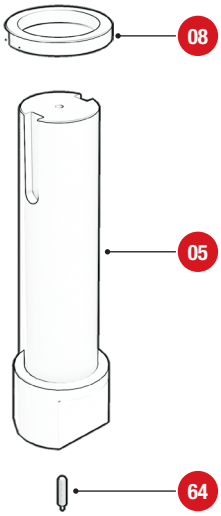


17 REMOVE INNER STEM SEAL

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

18 REMOVE ANTI-STATIC DEVICE

Using a flat head screwdriver, remove anti-static pin device **64** from stem **05**.

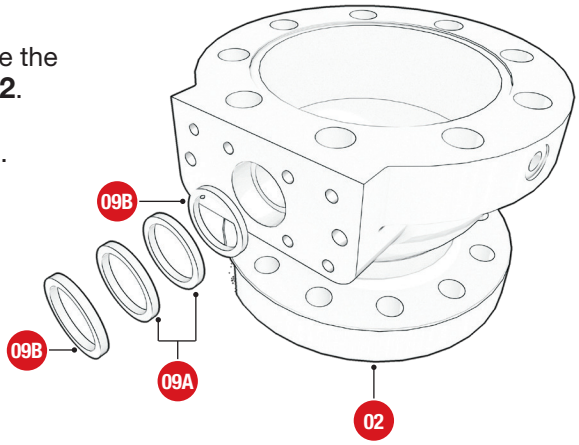


Disassembly

19 REMOVE STEM PACKING

Using a small pick or scribe, carefully remove the packing material **09A** and **09B** from body **02**.

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.

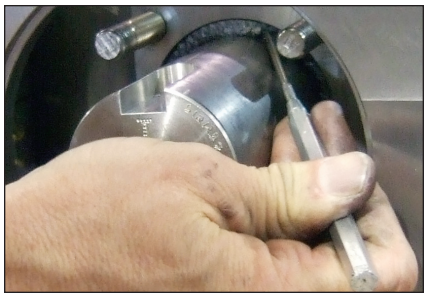
20 CLEAN PACKING BOX

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:

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.

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.

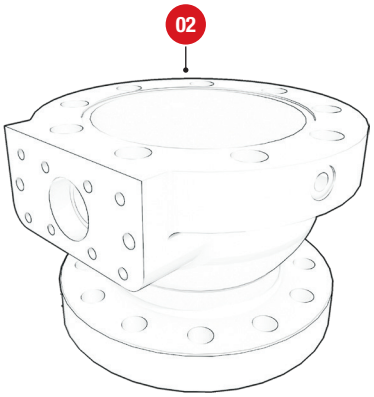
If you do not have a spare parts kit, refer to **Valve Item Reference Number** (page 5 and 7) for a recommended spare parts list.

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

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 4–5) for identification of all seals, gaskets, spring(s) and packing.*

▶ **POSITION VALVE BODY**

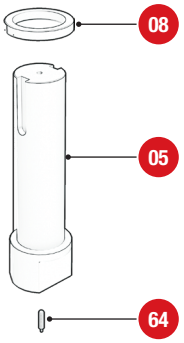
Prior to assembly, verify that the valve body **02** is resting on a flat surface in the vertical position with the flanged-end down and body cavity upright. Valve must stay in this position until completely reassembled.

1 **CLEAN ALL PARTS**

Clean all parts before assembly and / or parts replacement.

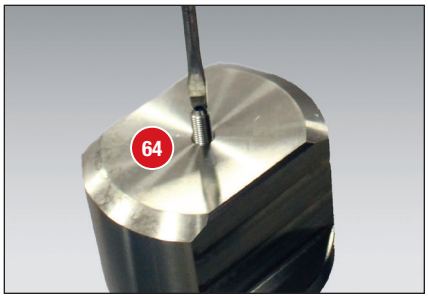
2 **INSTALL ANTI-STATIC DEVICE**

Lubricate anti-static pin device **64** and insert into bottom of stem **05**. Turn pin by hand until tight. Using a flat head screwdriver, hold pin device in place, while turning stem with hand until fully installed. Pin should spring up and down by touch.



3 **INSTALL STEM SEAL**

Apply electrical insulating compaound to base of stem and place inner stem seal **08** on stem **05**.

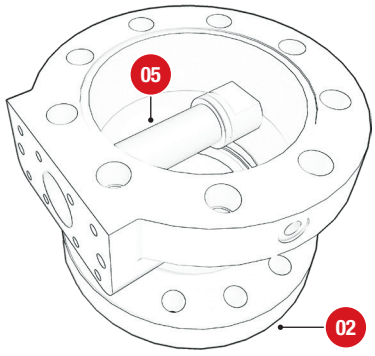


CAUTION!

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

4 **INSERT STEM**

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



▶ **STEM ORIENTATION**

Keyway on stem **05** faces the direction of the valve bore / end connects. Stem groove should align and center facing upwards.

Assembly

5 STABILIZE STEM

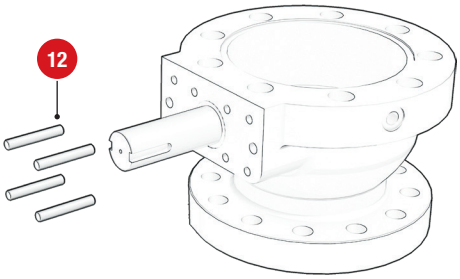
Use a jacking bolt (or similar tool) to maintain light pressure between bottom of stem and inside of valve body cavity. This prevents movement of the stem while installing packing rings.

CAUTION!

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

6 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. Studs should be coated with electrical insulating compound before installation.



7 PREPARE PACKING RING SET

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

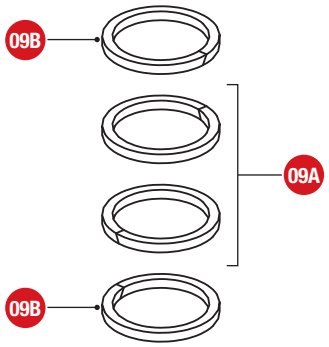
Note:

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.

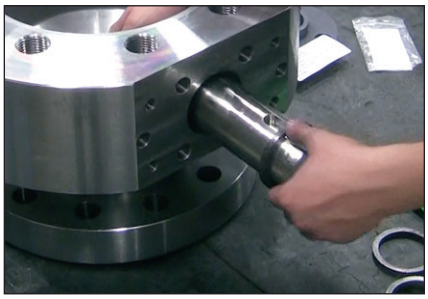
Assembly

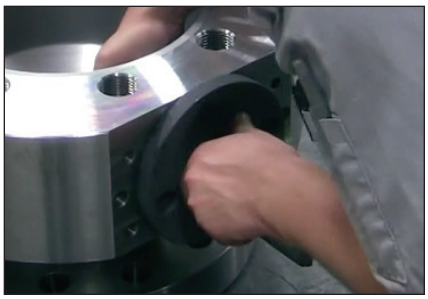
8 INSTALL PACKING RING SET

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 **07** 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.

9 INSTALL FINAL ANTI-EXTRUSION RING

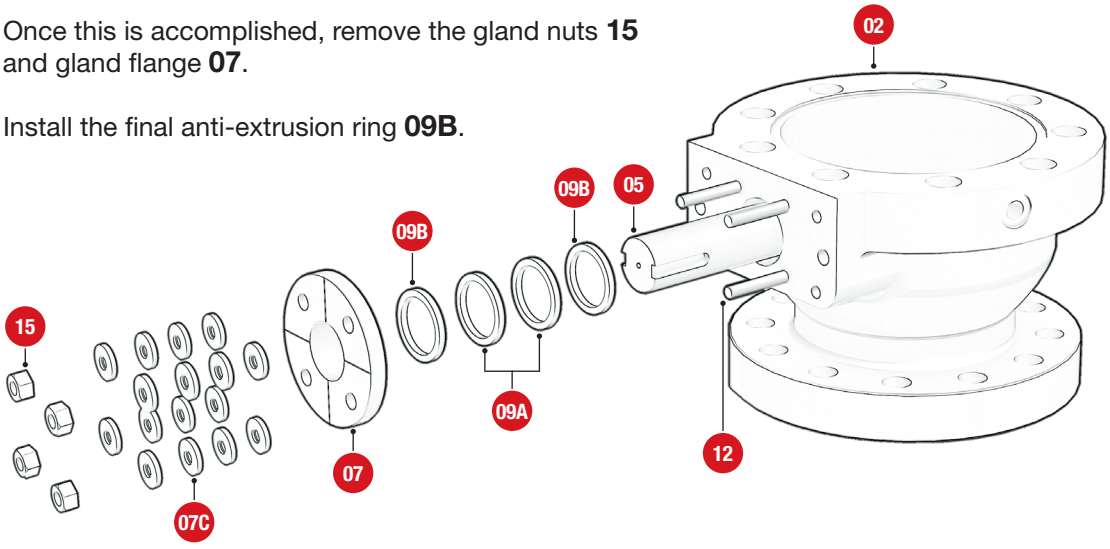
If there is enough depth for the final anti-extrusion ring to fit flush in the pocket, install the anti-extrusion ring **09B**.

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 **07** over stem **05** and gland nuts **15** over gland studs **12**. 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** and gland flange **07**.

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



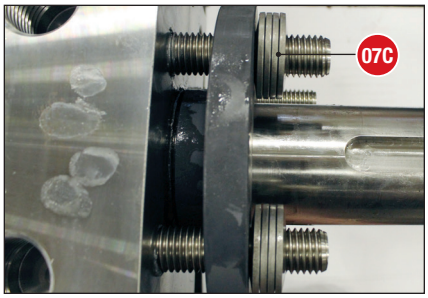
Assembly

10 INSTALL GLAND FLANGE

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

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

Install spring discs (live loading) **07C** over gland studs.
Note: *Spring discs must be installed in opposing pairs. Number of spring discs may vary depending upon size of valve.*

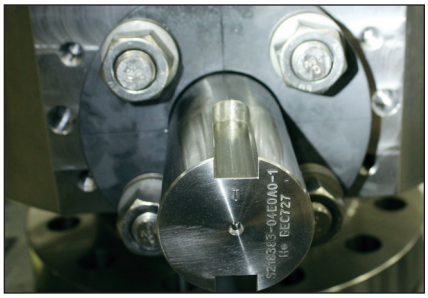


Apply anti-seize compound onto gland studs **12** and gland nuts **15**.

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

11 INSTALLATION PROCEDURE FOR STEM PACKING

After installing the packing ring set **09A** and **09B** apply a gasket stress of 60 MPa. Stand by for five minutes. Actuate the stem **05** five times. Reduce the gasket stress until 0 MPa. Repeat this process three times. Apply a final gasket stress per test certificate.



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 in appendix on page 34 (standard configurations only) or that were 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

12 CLEAN AND INSPECT

Clean all parts thoroughly before assembly.

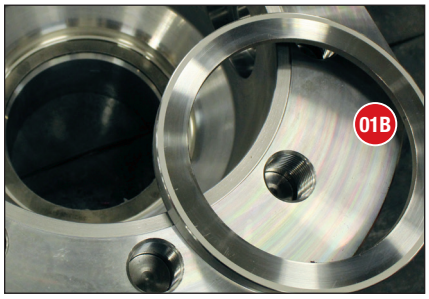
Inspect seats and landing surfaces to ensure full contact.

CAUTION!

Any surface imperfections may create a leak.

13 INSTALL SPRING DISC

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



14 INSTALL SEAT RING

Apply lubricant to landing area of upstream 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.*

15 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.

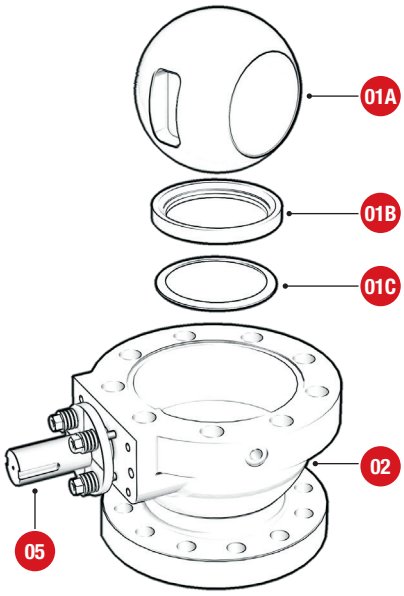
Seat ring identification is also provided inside the stem slot of the ball to ensure correct assembly.

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

16 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. Writing on nuts should be visible. The bottom of the nuts have no writing. Same applies to studs **10**.

17 INSTALL SEAT RING

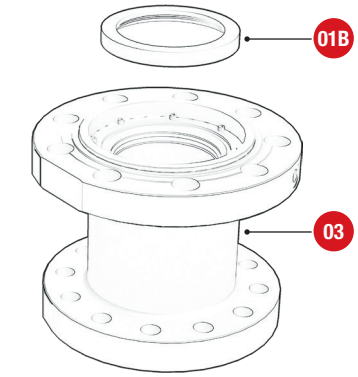
Install downstream seat ring **01B** into end connection **03** seat pocket.

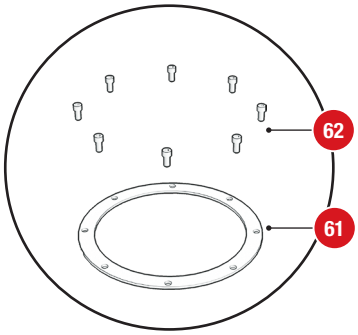
Note:

*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.*

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.

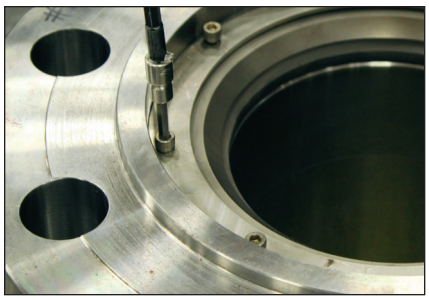
Titanium or F53 materials use a seat-locking ring **61B** and seat locking screws **62** to be installed into end connection after seat ring.





18 INSTALL SEAT LOCKING RING

Install seat locking ring **61** in position over ball. Serial number on ring should face up. Install seat locking screws **62** by hand loosley in a star shaped pattern one by one. Follow up by using a flathead screwdriver to tighten in same pattern. End by tac-welding screws to locking ring.



19 INSTALL BODY GASKET

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

Assembly

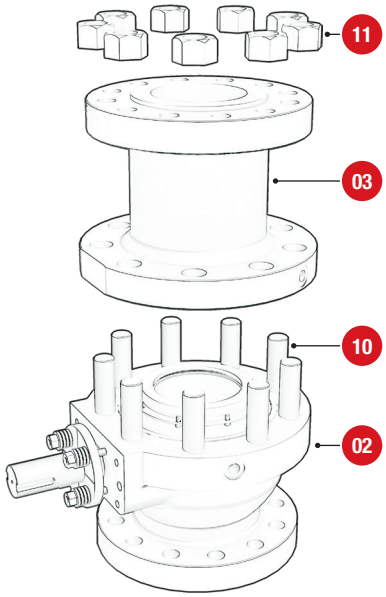
20 INSTALL END CONNECTION

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.

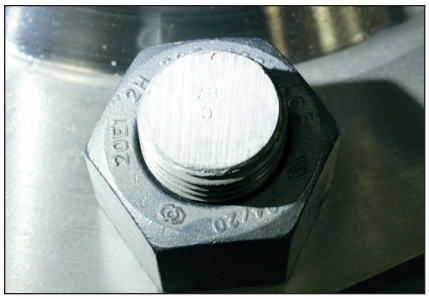


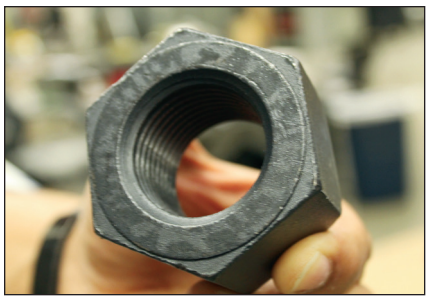
21 SECURE END CONNECTION

Apply anti-seize compound on body studs **10**.

Install nuts **11**, alternately tightening all nuts. Writing on nuts should be visible. The bottom of the nuts have no writing. Same applies to studs **10**.

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





Assembly

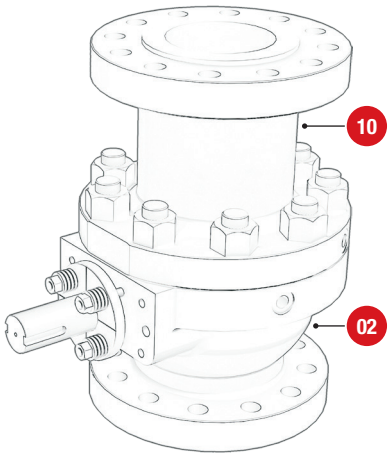
22 VERIFY OPERATION

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.



23 TORQUE BODY BOLTING

Torque the valve body bolting to secure the body **02** and end connection **03** assembly. Bolting should be done sequently in a starshaped pattern.

CAUTION!

Torque the valve body bolting per the specifications included in appendix on page 35 (standard configurations only) or with the **test certificate** for each individual valve serial number.

24 CHECK FOR OPERATOR

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

25 FIELD HYDROSTATIC TEST

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

26 INSTALL VALVE

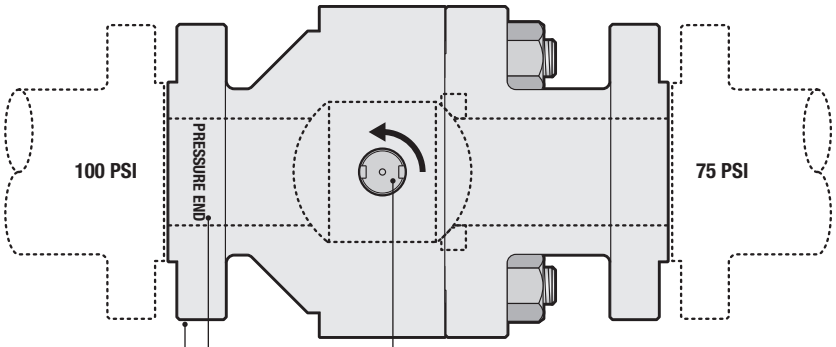
Install valve in piping as required.

Refer to **Installation** (page **8**).

Locate Valve Information

STEM ORIENTATION

Viewed from TOP

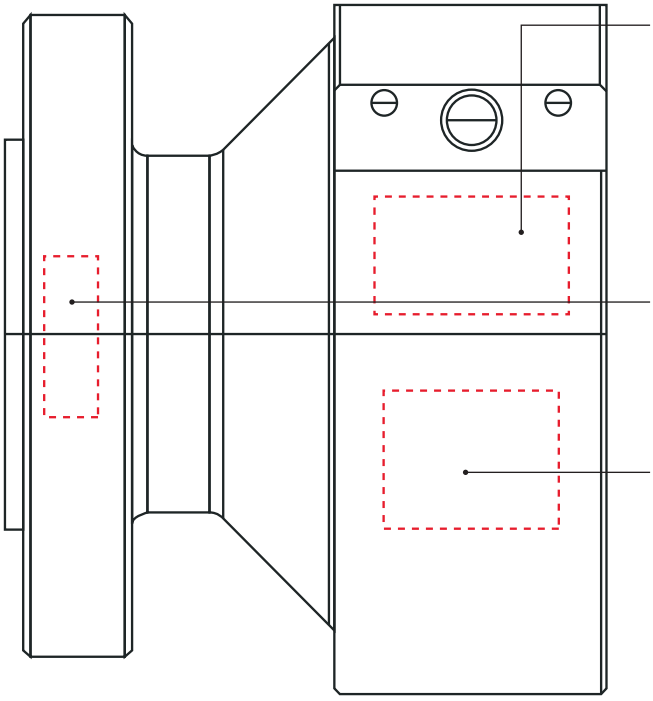


Stem turns 90° counter-clockwise to **open**.

This information is indicated on flange in this location.

Pressure End — When valve is in closed position, highest pressure should be on this side.

MARKING SPECIFICATIONS



Assembly Marking Area

M2: Indicates the field connection (Customer End)
S: Size
C: Pressure Class Rating
F: Customer End Configuration
E: Seal Size (is only needed when the end connect is an RTJ or HUB).

Note:

The marking orientation mus be perpendicular to the bore as shown if possible.

M1: Indicates the internal connection (MOGAS End)
P: Part Number
R: Revision Level
H: Heat Number
M: Material Grade
X: NCR or EDR Number

Note:

The marking orientation mus be parallel to the bore as shown if possible.

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**).

A Safety Data Sheet for process media must be included with shippment.

Service Contact

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

Telephone: **+1 281.449.0291**

Email: **service@mogas.com**

Appendix

Gland Stud Torques

NPS	Class	Packing	Stem Diameter (in)	Packing Overeall Diameter (in)	Quantity Packing Rings	Gland Stud	Quantity Gland Studs	Gland Stud Torque (ft lbs)
1	150	Chesterton 5300/1601	0.625	0.875	4	1/4-20 UNC	2	3
	300							
	600							
1.5	150	Chesterton 5300/1601	0.75	1	4	3/8-16 UNC	2	5
	300							
	600							
2	150	Chesterton 5300/1601	0.875	1.125	4	3/8-16 UNC	2	5
	300							
	600							
3	150	Chesterton 5300/1601	1.25	1.625	4	7/16-14 UNC	2	13
	300							
	600							
4	150	Chesterton 5300/1601	1.5	1.875	4	7/16-14 UNC	2	15
	300							
	600							
6	150	Chesterton 1622	2.125	2.625	5	3/4-10 UNC	4	50
	300							
	600		2.375	2.875				56
8	150	Chesterton 1622	2.25	2.75	5	3/4-10 UNC	4	53
	300		2.5	3				58
	600		3.125	3.875		1-8 UNC		148
10	150	Chesterton 1622	2.75	3.25	5	7/8-9 UNC	4	74
	300		3	3.5				80
	600		3.875	4.625		1 1/8-8 UN		202
12	150	Chesterton 1622	3.25	4	5	1 1/8-8 UN	4	172
	300		3.625	4.375				190
	600		4.625	5.375				237

Appendix

Body Stud Torques

NPS	Class	Body Material	Body Stud	Body Stud Material	Body Bolt Torque (ft lbs)
1	150	F316	3/8-16 UNC	B8M Cl 2	15
		A105		B7	19
	300	F316		B8M Cl 2	15
		A105		B7	19
	600	F316		B8M Cl 2	15
		A105		B7	19
1.5	150	F316	7/16-14 UNC	B8M Cl 2	24
		A105		B7	30
	300	F316		B8M Cl 2	24
		A105		B7	30
	600	F316	1/2-13 UNC	B8M Cl 2	36
		A105		B7	45
2	150	F316	1/2-13 UNC	B8M Cl 2	36
		A105		B7	45
	300	F316	9/16-12 UNC	B8M Cl 2	52
		A105		B7	64
	600	F316	1/2-13 UNC	B8M Cl 2	36
		A105		B7	45
3	150	F316	9/16-12 UNC	B8M Cl 2	52
		A105		B7	64
	300	F316		B8M Cl 2	52
		A105		B7	64
	600	F316	5/8-11 UNC	B8M Cl 2	71
		A105		B7	89
4	150	F316	9/16-12 UNC	B8M Cl 2	52
		A105		B7	64
	300	F316	5/8-11 UNC	B8M Cl 2	71
		A105		B7	89
	600	F316	7/8-9 UNC	B8M Cl 2	203
		A105		B7	253

Body Stud Torques

NPS	Class	Body Material	Body Stud	Body Stud Material	Body Bolt Torque (ft lbs)
6	150	WCB	1 3/8-8 UN	B7	1061
		C12		B16	
		CF8M		B8M Cl 2	849
	300	WCB		B7	1061
		C12		B16	
		CF8M		B8M Cl 2	849
	600	WCB		B7	1061
		C12		B16	
		CF8M		B8M Cl 2	849
8	150	WCB	1 1/4-8 UN	B7	782
		C12		B16	
		CF8M		B8M Cl 2	625
	300	WCB		B7	782
		C12		B7	
		CF8M		B8M Cl 2	625
	600	WCB	1 5/8-8 UN	B7	1803
		C12		B16	
		CF8M		B8M Cl 2	1442
10	150	WCB	1 1/4-8 UN	B7	782
		C12		B16	
		CF8M		B8M Cl 2	625
	300	WCB	1 3/8-8 UN	B7	1061
		C12		B16	
		CF8M		B8M Cl 2	849
	600	WCB	1 3/4-8 UN	B7	2278
		C12		B16	
		CF8M		B8M Cl 2	1822
12	150	WCB	1 3/8-8 UN	B7	1061
		C12		B16	
		CF8M		B8M Cl 2	849
	300	WCB	1 1/2-8 UN	B7	1399
		C12			
		CF8M		B8M Cl 2	1119
	600	WCB	2-8 UN	B7	3464
		C12		B16	
		CF8M		B8M Cl 2	2771

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

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