



1. INTRODUCTION

1.1. **WARNING**

Do not install, maintain or operate valves before having carefully read this IMO in order to avoid prospective damages to people and property. Always use the valves within the limit of the working conditions as described in International Standard Valve (ISV) technical documents, and/or nameplate.

For your safety and protection, follow essential and best safety practices prior to removing the valve from service and before any disassembly of the valve

- 1.2. Applicable safety regulations should be followed at all times.
- 1.3. Never loosen or remove any bolting or fittings while valve is under pressure.
- 1.4. Keep hands and objects out of the valve if there is a possibility of unexpected valve actuation in order to prevent serious damage or injury.
- 1.5. For proper handling and disposition, obtain a Material Safety Data Sheet (MSDS) of the media that the valve is exposed to and follow the material handling precautions associated with the media. Immediately contact the proper authority if there is any additional concern.
- 1.6. Wear protective clothing or equipment regularly required when working with the media involved.
- 1.7. Depressurize the line and valve as follows prior to removal of the valve or valve parts:
 - 1.7.1. Drain the line while the valve is in the open position.
 - 1.7.2. Close and open the valve to relieve any pressure that may be trapped in the valve body cavity prior to removal from service. Leave the valve in the open position.
 - 1.7.3. Remove the valve from the line carefully.
 - 1.7.4. Carefully open and close the valve several times while the valve bore is in vertical position to drain any remaining media before disassembly.
- 1.8. ISV assumes no liability for damages, failures, or any other occurrences resulting from unauthorized modification, misuse, or use of non-original manufactured equipment parts.
- 1.9. Any unauthorized repair or modification may void the product warranty; refer to ISV warranty information for details.
- 1.10. ISV withholds the right to revise the valve design. This IMO may not exactly represent your valve's construction. If there are any concerns, please contact the ISV Engineering department.

2. STORAGE

- 2.1. ISV valves are shipped in the full open position with the exception of valves that are equipped with fail-closed actuators. A corrosion inhibitor is applied to all end connections, flanged sealing surfaces and bores (non-stainless steel valves). End protectors are installed to prevent foreign material from entering the body cavity and from scratching and damaging the sealing surfaces of the end connections. This will provide adequate protection for indoor storage.
- 2.2. Do not remove the end protectors except for inspection or installation.



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IS01 – I Series Cast Oilfield (IA, IAH, IC, ICH)

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- 2.3. If valves require outdoor storage, ISV recommends a clean, dry, covered area off of the ground. Special packaging and additional lubrication may be required.
- 2.4. Never store the valve in a partially open position. If the valve is left in a partially open position for an extended period of time, the soft seat can be damaged.

3. INSTALLATION

- 3.1. Use proper handling equipment based on the weight of the valve. To avoid damage to the valve or personnel while handling, use a rig or sling if the weight is over 50lbs.
- 3.2. Valve can be installed in line bi-directionally.
- 3.3. With valves that have fittings or extensions, check and tighten before valve is put into service.
- 3.4. Stem grease fittings are for EMERGENCY USE ONLY.
- 3.5. When the valve is ready for installation, remove the end protectors from both ends.
- 3.6. Inspect the valve internals, valve pipe connections and adjoining pipe to make sure they are free of damage, dirt and debris.
- 3.7. To insure a leak tight threaded joint, use PTFE tape on the pipe before attaching valve.
- 3.8. Install the valve in open position.
- 3.9. **CAUTION: Tighten pipe into the end cap no more than 3/4 turn beyond hand tight to affect a seal. Tightening more than 3/4 a turn may cause damage.**
- 3.10. When using a pipe wrench, make sure the wrench is always on the end cap into which the pipe is being threaded to prevent twisting or misalignment.
- 3.11. Check with a piping engineer to assure that the pipeline stress is not concentrated on the valve.
- 3.12. For new construction, valve and line should be flushed to eliminate contaminants and debris prior to cycling the valve.

4. OPERATION

WARNING: To prolong the life of the seats, ensure that the ball valve is either fully OPEN or fully CLOSED. If the ball is left in the half-open position, damage could be caused to the soft seats.

- 4.1. Make sure the pipeline is clean.
- 4.2. Verify the valve threaded connections are tight.
- 4.3. Confirm that the ball is in the OPEN position when doing a pipeline pressure test.
- 4.4. Maximum permitted shell pressure test is 1.5 times working pressure of the valve.
- 4.5. Maximum permitted pipeline shell pressure test is 1.1 times working pressure of the valve while the valve is in closed position.
- 4.6. Directional closing is clockwise for both the lever and gear operated valves.
- 4.7. In the event a new operator such as lever, gear or actuator is installed, the open and close stops of the new operator shall be properly adjusted if needed and as minimum air seat test shall be performed prior to service.

5. MAINTENANCE



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- 5.1. Maintenance intervals should be established and performed by the operational personnel according to service conditions.
- 5.2. Maintenance consists of performance observations and should be done periodically to ensure safety and function.
 - 5.2.1. More frequent observation is recommended for valves under extreme conditions.
- 5.3. It is highly recommended to operate the valve at least once a month and generally as often as possible, to avoid torque increase and prevent deposit formations.

6. OVERHAUL MAINTENANCE

- 6.1. Overhaul maintenance consists of replacing the seats and all seals. Replacement of ball and stem may be required. See Warning, Disassembly and Assembly section for part replacement.

7. DISASSEMBLY

NOTE: If complete disassembly becomes necessary, replacement of all soft goods such as o-rings, gaskets, and packings is recommended. Prior to disassembly, read the complete IMO including the Warning section.

- 7.1. Verify the valve has been fully drained and depressurized per section 1, and close the valve for disassembly.
- 7.2. Remove the lever and related hardware.
- 7.3. Remove the retainer ring (11) and stop plate (10), and washer (9).
- 7.4. Mark the body-end cap connection with a line of reference for reassembly.
- 7.5. Carefully unscrew and remove the end cap (2) and set it on a clean surface. This may require a vice and a wrench.
- 7.6. Remove the ball (3) while it is in the closed position, and set it on a clean surface.
- 7.7. To remove the stem sub-assembly, push the stem sub-assembly inward, through the body.
 - 7.7.1. Stem sub-assembly consists of stem (4), thrust washer (8), and stem o-ring (7).
 - 7.7.1.1. To disassemble the stem sub-assembly, separation of the remaining parts will complete this task.
- 7.8. Remove the seat (5) from the end cap (2) and body (1) seat pockets.
- 7.9. Clean all metallic parts with approved industrial cleaner.
- 7.10. Inspect all parts for scratches and damages on critical surfaces.
- 7.11. Only use OEM replacement parts as needed.

8. ASSEMBLY

- 8.1. Prior to assembly, verify all parts are free of scratches, damages, dirt and debris.
- 8.2. Lubricate all moving parts and threaded connections.
- 8.3. Assemble the stem sub-assembly.
- 8.4. Install the seat (5) into the body (1) and end cap (2) seat pockets.
- 8.5. Install the stem sub-assembly.
- 8.6. Install retaining ring (11) and stop plate (10), and washer (9).
- 8.7. Turn the stem to the closed position.
- 8.8. Place the ball (3) onto the seat (5) in the body (1).
- 8.9. Rotate the ball (3) to the open position.



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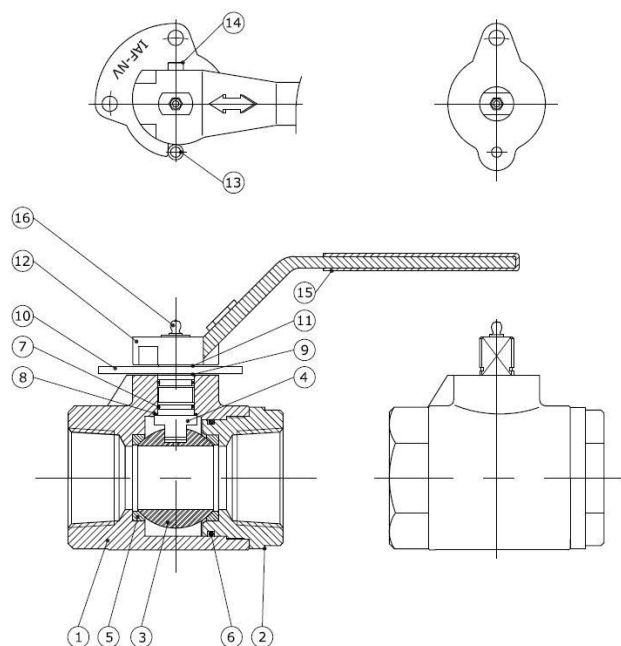
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- 8.10. Center the ball (3) in the valve body (1).
- 8.11. Install the end cap (2) into the body (1).
 - 8.11.1. When installing the end cap (2) into the body (1), use the line of reference as a guide for tightening.
- 8.12. Install lever and related hardware.
- 8.13. Verify the fully open and closed stops are set correctly.
- 8.14. After assembly, valve needs to be pressure tested per owner's specifications.
- 8.15. After testing, it is recommended to drain and dry the valve completely. Apply corrosive inhibitors to the machined surfaces, use protective end covers, and make sure the valve is in the fully open position.
- 8.16. Valve shall be marked as "repaired".

9. DISPOSAL

- 9.1. If disposal of the valve is necessary, check with local environment authorities for disposal regulations.
- 9.2. Remove ISV nameplate, logo and markings before disposal to prevent improper usage.

FIGURE 1 – LEVER OPERATED ISV 2pc ISCO SERIES VALVE



| PRODUCT STANDARDS | |
|-------------------|--------------------------|
| BASIC DESIGN: | MSS SP110 |
| END TO END: | MANUFACTURER'S STANDARD |
| END CONNECTION: | THREADED PER ASME B16.11 |
| COLOR: | BLUE |

| TEST STANDARDS: API 598 | | |
|-------------------------|-----------|-----|
| | psl | bar |
| SHELL | 1.5 X WOG | |
| SEAT (HIGH) | --- | --- |
| SEAT (LOW) | 100 | 6.9 |

| | |
|----|---------------------|
| 1 | BODY |
| 2 | END CAP |
| 3 | BALL |
| 4 | STEM |
| 5 | SEAT |
| 6 | BODY-CAP O-RING |
| 7 | STEM O-RING |
| 8 | THRUST WASHER |
| 9 | WASHER |
| 10 | STOP PLATE |
| 11 | RETAINING RING |
| 12 | LEVER |
| 13 | STOP SCREW |
| 14 | BOLT |
| 15 | PLASTIC SLEEVE |
| 16 | STEM GREASE FITTING |

NOTES:
 1.) MEETS NACE MR-0175/ISO-15156 AND MR-0103 PREDEFINED MATERIAL REQUIREMENTS.
 2.) RECOMMENDED SPARE PARTS.

*This sketch is provided for reference only. For detailed information contact the ISV Engineering Department.