

Mounting Pad 1-Piece Flanged Ball Valve Series MU1F

Installation, Operation,
& Maintenance Manual

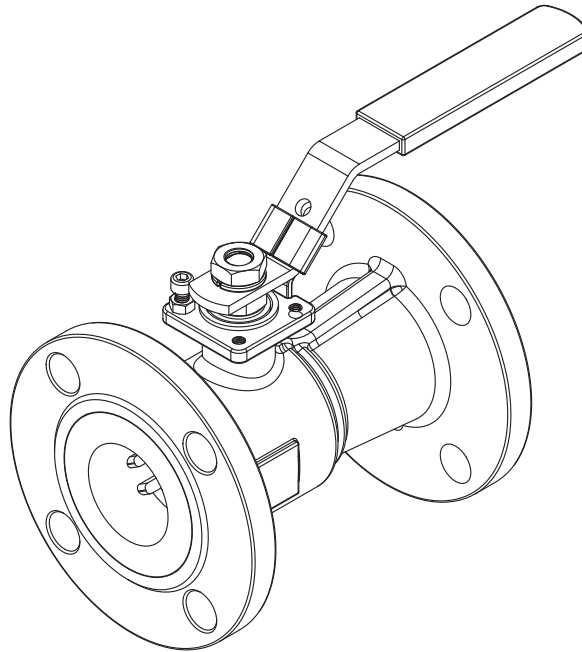


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Chapter I

Introduction

This manual is provided to ensure proper installation, operation, and maintenance for Series MU1F Mounting Pad 1-Piece Flanged Ball Valves, manufactured and supplied by Sesto Valves. Each valve can be identified by a marking on the body, a name plate, or both.

1.1 Contact Information

For information concerning warranties, or for questions pertaining to installation, operation or maintenance of Sesto Valves products, contact:

Sesto Valves.
114 Resource Drive
Wentzville, MO 63385
United States

Phone: +1-636-856-8576
Fax: +1-636-856-8930
Email: sales@sestovalves.com

To order replacement parts, contact Sesto Valves using the information listed above.

1.2 General Notes

The following instructions refer to Sesto Valves Series MU1F Mounting Pad 1-Piece Flanged Ball Valves, as described in the Sesto Valves current catalog.

Keep the protective covers in place until the valve is ready for installation. Valve performance depends upon prevention of damage to ball surface. After removing the cover, make sure that the valve is completely open and free of obstructions, dirt, particles, or any materials that may cause seat or seal damage.

Valves may contain a silicon-based lubricant for transportation, which aids in the assembly of the valve. Lubricant may be removed with a solvent if found objectionable. Alternatively, valves can be ordered free of lubricants upon request.

Certain ferrous valves contain phosphate material and are oil dipped during the manufacturing process. However, the processes used are completely non-toxic.

1.3 Precautions and Warnings

Carefully review application criteria before selecting valve materials. The user should be aware of the operating conditions, fluid properties, and the potential outcomes of implementing valves into their pipeline system. Sesto Valves suggests that the user be prepared with this information before submitting an inquiry.

Fluids can experience property changes under a variety of conditions, especially when left inside the sealed cavity. Failure may occur when temperature and pressure exceed the valves operational capacity. Users should be aware of that excessive pressure and temperature at nearby pipeline system can also cause valve failure as well.

The Series MU1F Mounting Pad 1-Piece Flanged Ball Valves are generally not recommend for throttling services as this can deform the resilient ball seats and cause leakage issues. Additionally, high fluid velocity or the presence of solid particles in suspension will further reduce seat life in throttling applications.

For safety, unstable fluid should not be used in the pipeline system, unless otherwise specified with the category III in Declaration of conformation.

CAUTION:

Before removing valve from pipeline, operator should be aware that media flowing through the valve may be: corrosive, toxic, flammable, or contaminating in nature. The utmost care must be taken when hazardous fluids have been recently present in the valve. Sesto Valves suggests that the following safety precautions be taken when handling valves:

- 1) Always wear eye protection.
- 2) Always wear protective gloves and footwear.
- 3) Wear protective headgear.
- 4) Ensure that running water is readily accessible.
- 5) Fire extinguisher must be obtainable if media is flammable.

Check the line gauge to ensure that no pressure is present at the valve. Ensure that media is released by operating valve slowly to the half open position. Ideally, the valve should be decontaminated when the ball is at this position.

These valves, when installed, have body connections which form an integral part of the pipeline. The valve cannot be removed from the pipeline without being dismantled.

1.4 Storage

If the valves will not be immediately installed, it is preferable to store them indoors and in a clean dry place. The valve ports should be sealed by plastic caps to prevent dirt from entering and damaging interior parts.

Chapter II Installation

Flush the pipeline carefully before installing the valve. Dirt, welding, or other debris particles may damage the balls sealing surface and seats. Before installation, check all valve and mating flanges to ensure gasket surfaces are free from defects.

⚠ CAUTION:

Do not exceed the valve performance limitations.

⚠ CAUTION:

Before installing, make sure the line pressure has been relieved and any hazardous fluids have been drained or purged from the system.

2.1 General Notes

1) Direction

Standard Series MU1F Ball Valves are bi-directionally sealed unless otherwise specified.

Note:

If ordered, valves with an upstream pressure relief hole in their ball are one-way valves.

2) Position

The body, cap, and gasket are in the connection area of ball valve and pipeline. The bear weight ability and gradient are very important to the pipe installation. Do not allow the pressure and stress from the pipeline to concentrate on the connecting area of the body and cap. Otherwise, the ball, seat, and stem could be damaged, deformed, and leak.

Note:

Most Series MU1F Ball Valves are not restricted by the flow direction during intallation. However, Sesto Valves suggests vertical or horizontal orientations to maximize the sealing capacity and reduce the change of accumulation. If installing vertically, upstream pressure should be located above to promote the sealing of the floating ball design.

3) Fittings

Select the correct fitting sizes according to the pipeline specifications and mate the valve to the pipeline adequately with appropriate bolts. Do

not attempt to correct pipeline misalignment using the flanged bolting.

Note:

Over tightening of any side may cause leakage.

4) Systems Hydrostatic Test

Before delivery, valves are tested in the OPEN position to 1.5 times the allowable pressure under ambient conditions. **However, after installation, the piping system may need to be re-tested, if possible, to ensure the application conditions do not exceed the tolerable pressure of the valve.**

5) Pre-Installation Wash

Before installing the valve, clean the pipelines of the system to remove any foreign deposits. Clean the connecting flanged end surfaces as well to ensure a tight and uncompressed seal.

2.2 Installation of Flanged Ends

1. Before installing the valves, make sure the flanges and the pipe are free from grit, dirt or burrs. The flanges must be aligned in parallel at the correct distance to allow the valves face-to-face length and gaskets to fit between the gap.
2. Tighten the flange bolts in a crossover pattern. The gasket type, bolts, flange, and lubricant affect the tightening torque values so it is important to review this information first.
3. Note that the bolts must be tightened in uniform order to create a parallel movement of the two flanges therefore a uniform deformation of the gasket in between them.
4. Before pressure testing the valves, bring them to the half OPEN position to ensure pressure reaches the stem seals and to avoid unnecessary loading of the seats. Fail-CLOSE actuated valves should be brought to the half-OPEN position as well.

Note:

Do not fasten supports to the flange bolting or the actuator.

2.3 Pneumatic and Electrical Connections

If a Series MU1F ball valve and actuator can not direct-mount, a bracket and coupler mounting kit may be used instead. See Figure 2.1 for an example. The mounting pad patterns are made in accordance with ISO 5211 Standards. Users can make bracket and couplers according to this standard and the mounting pattern of the actuator. Please refer to the valve DATASHEET to validate the design of a mounting kit.

When installing the actuator, determining the OPEN/CLOSED status of the valve is a top priority. The stem of the Series MU1F ball valve is a Double D design which indicates whether the valve is OPEN or CLOSED. Please refer to Figure 2.2 for details.

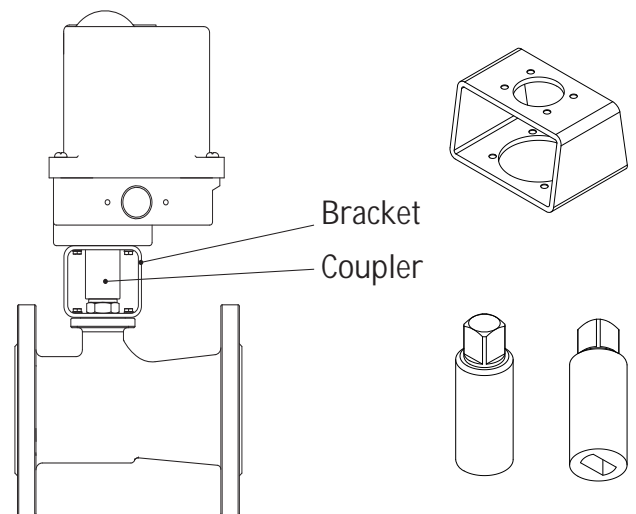


Figure 2.1 Installation between a valve and actuator with a bracket and adaptor.

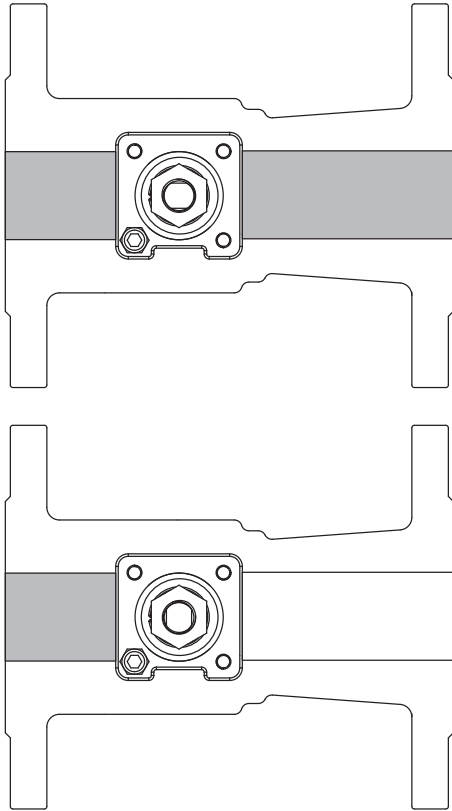


Figure 2.2 Top view of Double D stem direction and OPEN/CLOSED status.

Chapter III Operation

For manual operation, shift the handle in clockwise direction to CLOSE the valve and counter-clockwise to OPEN it.

If the handle is parallel to the direction of flow, the valve is OPEN. If the handle is perpendicular to the direction of flow, the valve is CLOSED. Figure 3.1 provides a visual guide to this process.

The line on the top of the stem also indicates whether the valve is in OPEN or in CLOSED position.

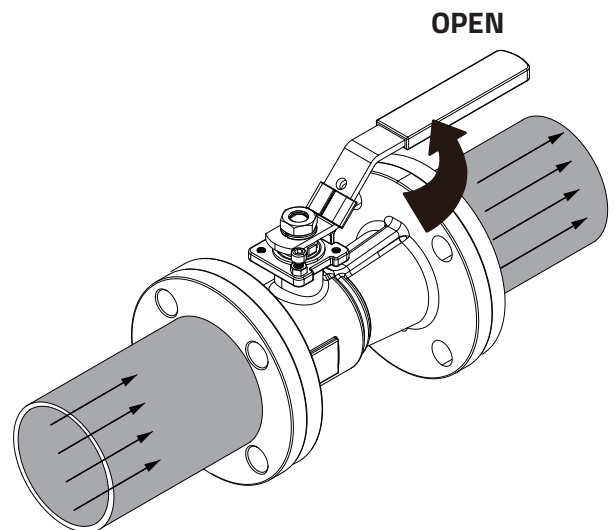
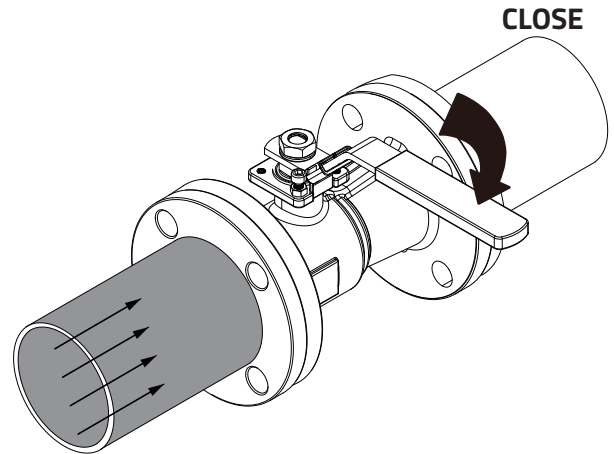


Figure 3.1 Rotation Direction for CLOSED and OPEN positions

3.1 Handling

Lift small individual valves by the body during installation. When using a cable or other overhead lifting device make sure it is strong enough to safely handle the weight and follow strict procedure. Never lift the automation package by the actuator, positioner, limit switch, or piping. Always lift or secure straps/cables to the valve body during installation. Follow these steps to prevent valve damage or human injury.

3.2 Cleaning

No matter the circumstance, the operator must check for any foreign body or dust particles inside the bore. If anything is present, clean the valve before installation using water, compressed air, or steam. However, valve automation packages shall be cleaned only with water or steam. **Using compressed air to clean the valve automation devices is strictly prohibited.** To clean, place the valve bore perpendicular to the ground and clean until all debris has been removed from the bore. Then check and clean the bores on all of the connecting pipes and connection areas. To avoid the blocking and leakage, no flush, rust, or foreign bodies are allowed within the bore.

3.3 Manual Operation

Sesto Valves Series MU1F Ball Valves have $\frac{1}{4}$ turn operation opening in a counter-clockwise direction. When the handle is positioned across the pipeline, this indicates that the valve is closed. When the handle is positioned parallel with the pipeline, this indicates the valve is open.

3.4 Remote Operation

Where manual operation is not required, valves may be automated for remote operation, instrument controls etc. Sesto Valves offers a wide range of pneumatic and electric actuators for different working conditions.

When automated with an actuator, no travel stop plate is installed since this is controlled by the actuator. Operation will be in accordance with Sesto Valves Installation, Operation and Maintenance Instructions for the relevant actuator.

Chapter IV: Maintenance



CAUTION:

Do not dismantle the valve or remove it from the pipeline while the valve is pressurized.

4.1 General Notes

Sesto Valves valves can have a long lifetime with little required maintenance. They may be refurbished using a minimal number of components, none of which require machining. The valves are designed for easy service and assembly in the field.

Before performing maintenance, the user should check on the availability of Series MU1F Ball Valve repair kits. We strongly recommend using the genuine repair kit produced directly from the manufacture facility. For more information, please contact your Sesto Valves representatives. Repair kits may be available locally; however, Sesto Valves is not responsible for any of the valve damage caused by using non-genuine spare parts.

4.2 Maintenance Frequency

The maintenance frequency is determined by the application of the valve. Users should consider the following factors when determining a suitable maintenance schedule: fluid type, flow velocity, operation frequency, pressure, and temperature.

Note:

For the Series MU1F Mounting Pad 1-Piece Flanged Ball Valve, Sesto Valves recommends inspecting the valve at least once per year.

Note:

Please use genuine spare parts to ensure the valve functions well.

Note:

When sending back the valve to Sesto Valves for investigation, do not disassemble it. Clean the valve carefully and flush the valve internals. If possible, inform us of the service conditions.

4.3 Disassembly

⚠ CAUTION:

Pipeline and valve must be depressurized by shutting off the valve and bleed line, cycle the valve once and leave it half OPEN to relieve the pressure from the body cavity.

1. Depressurize and empty the fluid before disassembly. Be cautious of residual fluid inside the valve as it may be hazardous depending on the service conditions.
2. While holding the BODY (1), position the valve vertically on a clean surface; preferably on top of a on a rubber sheet. Turn the HANDLE (16/24) so the valve is in the CLOSED position; otherwise, the valve BALL (3) cannot be removed from the bore later.
3. Remove the HANDLE NUT (23)/SADDLE BOLT (15), HANDLE WASHER (14)/HANDLE ADAPTOR (17), and HANDLE (16)/TRAVEL STOPPER (12) from the STEM (9).
4. Flatten the LOCK SADDLE (13) and then loosen the STEM NUT (14).
5. Carefully remove the CAP INSERT (2) from the bore using the correct tools.
6. The BODY SEAL (5) and BALL SEAT (4) can be taken out from the BODY (1) accordingly.
7. Carefully remove the BALL (3) from the BODY (1).
8. Remove STEM NUT (14), LOCK SADDLE (13), BELLEVILLE WASHER (11) and Gland (10).
9. Push the STEM (6) into the bore and remove it.
10. Remove upper THRUST WASHER (7) and STEM PACKINGS (9) by using a packing hook or similar tool.
11. Remove STEM SEAL (8) and THRUST WASHER (7) from the STEM (6).
12. Remove the other BALL SEAT (4) by using a packing hook or similar tool.

4.4 Reassembly

1. Before reassembly, inspect the interior and exterior of the valve for any damage.
2. Repeat Step 1 from Section 4.3
3. Insert one BALL SEAT (4) into position.
4. Insert the THRUST WASHER (7) and STEM SEAL

- (8) on the STEM (6). Then install the STEM (6) through the bore of the BODY (1) inside.
4. Align the STEM (6) parallel with the body bore.
5. Gently slide the BALL (3) over the stem so that the STEM (6) and the BALL (3) are interlocked.
6. Place other BALL SEAT (4) into the bore .
7. Screw in the CAP INSERT (2) and the BODY SEAL (5) into the BODY (1).
8. Insert the STEM PACKING (9), upper THRUST WASHER (7), GLAND (10), BELLEVILLE WASHER (11) into the stem.
9. Ensure proper locking of stem with LOCK SADDLE (13) and STEM NUT (14).
10. For valve sizes 2" (DN50) or smaller, place the HANDLE (24) on the top of STEM (6). Tighten the HANDLE NUT(15) and HANDLE WASHER (14) to secure the handle. For valve sizes 2-1/2" (DN65) or larger, place the TRAVEL STOPPER (12) and HANDLE ADAPTOR (17) on the top of STEM (6). Fix the HANDLE (16) and the HANDLE ADAPTOR (17) using the HANDLE ADAPTOR BOLT (15).
11. Ensure smooth operation of the valve during opening and closing.

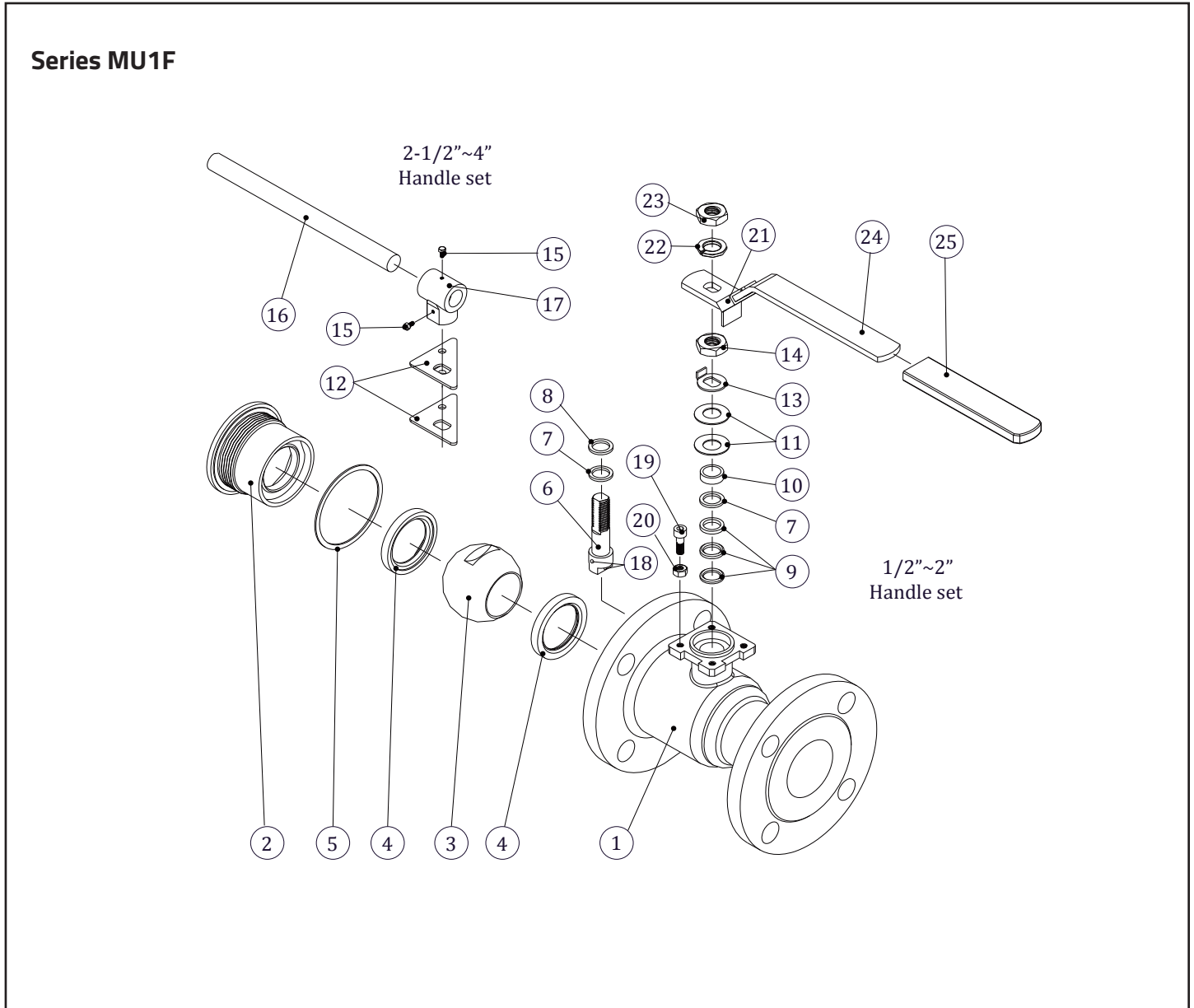
4.5 Troubleshooting

The following table lists the possible malfunctions.

Table 4.1 Troubleshooting Table

Symptom	Possible fault	Actions
Leakage through a closed Valve (Internal Leakage)	Damaged ball surface	Replace the ball
	Damaged seats	Replace seats
	Ball might not be fully closed	Realign the ball
Irregular ball movement	Fluid accumulated on the surface.	Flush the ball from inside
	Ball or seat damaged	Clean or replace the ball or seat
Leaking from stem (External Leakage)	Stem nuts are loosened	Tighten the stem nuts
	Parts are worn or damaged	Replace the necessary parts
Valve leaking from body and cap joint (External Leakage)	Damaged or breakage of gasket	Replace gaskets
	Relaxation of studs due to gasket creep	Re-tighten the studs evenly
Valve too hard to operate	Damaged seats	Replace seats
	High pressure	Confirm the pressure rating
	Foreign particles in valve	Clean the internals

4.6 Technical Data and Product Information



NO	PART NAME	MATERIAL
1	BODY	CF8M/WCB
2	CAP INSERT	CF8M/WCB
3	SOLID BALL	CF8M
4	BALL SEAT	RTFE
5	BODY SEAL	MG1241
6	STEM	SS 316
7	THRUST WASHER	50%PTFE +50%SS
8	STEM SEAL	PTFE
9	STEM PACKING	PTFE
10	GLAND	SS 304
11	BELLEVILLE WASHER	SS 301
12	TRAVEL STOPPER	SS 304
13	LOCK SADDLE	SS 304

NO	PART NAME	MATERIAL
14	STEM NUT	SS 304
15	HANDLE ADAPTOR BOLT	SS 304
16	HANDLE	SS 304
17	HANDLE ADAPTOR	SS 304
18	ANTI-STATIC DEVICE	SS 304
19	STOP BOLT	SS 304
20	STOP NUT	SS 304
21	LOCKING DEVICE	SS 304
22	SPRING WASHER	SS 304
23	HANDLE NUT	SS 304
24	HANDLE	SS 304
25	HANDLE SLEEVE	VINYL