

# Installation and Maintenance Manual

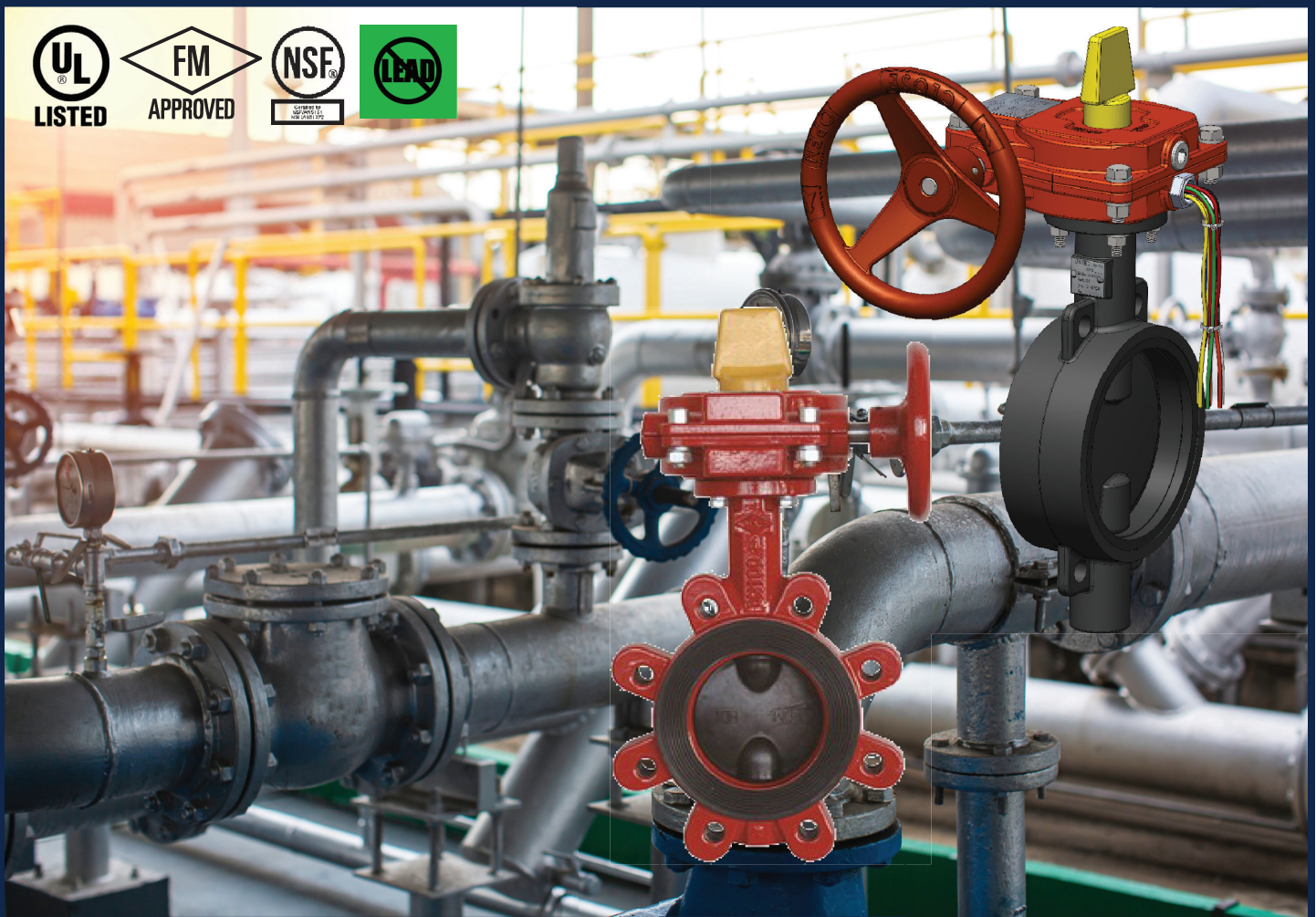
## Model 2400-L & 2400-W

### Lug and Wafer Butterfly Valve with Tamper Switch

MSS-SP-67

300 PSI Working Pressure: 2"~8"

250 PSI Working Pressure: 10"~12"



# Table of Contents

<b>1. Product Overview</b> .....	2
1.1 Application.....	2
1.2 Product Feature.....	2
<b>2. Technical Parameters</b> .....	2
2.1 Guiding Standards.....	2
2.2 Model Designation.....	2
2.3 Statement of Connection.....	4
2.4 Material Specification.....	4
<b>3. Supervisory Switch</b> .....	4
3.1 Power Instructions.....	4
3.2 Wiring Instructions.....	4
3.3 Application Environment.....	4
<b>4. Installation &amp; Application</b> .....	5
4.1 Installation.....	5
4.2 Application.....	6
<b>5. Problems and Proposed Solutions</b> .....	7
<b>6. Care &amp; Maintenance</b> .....	7

# 1. Product Review

## 1.1 Application:

UNITED Lug & Wafer Butterfly Valves are designed to be used as shut-off valves or throttling valves in water supply, fire protection, and many other piping systems.

## 1.2 Product Features:

1. Design Standard: MSS-SP-67 & API 609
2. EPDM Encapsulated ductile iron disc for bubble-tight shut off
3. Flag type position indicator
4. Low torque operation
5. High cycle life
6. Built-in supervisory switch
7. Top flange to ISO 5211/1
8. Flange connection ANSI B16.1 Class 125/ANSI B16.5 Class 150
9. Working Pressure: 2”~8”: 300 psi, 10” & 12”: 250 psi
10. Working Temperature: 33°F to 176°F (0°C to 80°C)
11. Fusion bonded epoxy powder coated to AWWA C550.
12. Listed / FM Approved for indoor or outdoor use.

# 2. Technical Parameters

## 2.1 Guiding Standards:

### 2.1.1 Design Standards:

*BS EN 593 Industrial valves—Metallic butterfly valves*

*MSS SP-67 Butterfly Valves*

### 2.1.2 Approval Standards:

*UL 1091 Butterfly Valves for Fire Protection*

*FM 1112 Indicating Valves (Butterfly Type)*

### 2.1.3 Flange Connection: ISO5211, BS EN 1092-2 PN10/PN16, ASME B16.1

CL125, ASME B16.5 CL150, JIS B2210 10K;

### 2.1.4 Face to Face dimension: ISO 5752, Series 20;

### 2.1.5 Pressure Testing:

Tightness Test: 1.1 times of rated working pressure;

Shell Test: 1.5 times of rated working pressure

## 2.2 Model Designation

Description	Model	Pressure Rating	Size Designation	Temperature
Wafer Butterfly Valve Manually Gear Operated with Tamper Switch	2400-W-....	300	2" ~ 8"	33°F to 176° F (0°C to 80°C)
Wafer Butterfly Valve Manually Gear Operated with Tamper Switch	2400-W-...	250	10" & 12"	33°F to 176° F (0°C to 80°C)
Lug Wafer Butterfly Valve Manually Gear Operated with Tamper Switch	2400-L-....	300	2" ~ 8"	33°F to 176° F (0°C to 80°C)
Lug Wafer Butterfly Valve Manually Gear Operated with Tamper Switch	2400-L-...	250	10" & 12"	33°F to 176° F (0°C to 80°C)

## 2.3 Statement of Connection

2.3.1 The valves are of wafer or lug wafer connection for installation on pipe lines; The

2.3.2 valves can be operated by lever handle, gear box, gear box with tamper switch, electrical actuator, pneumatic actuator, etc.

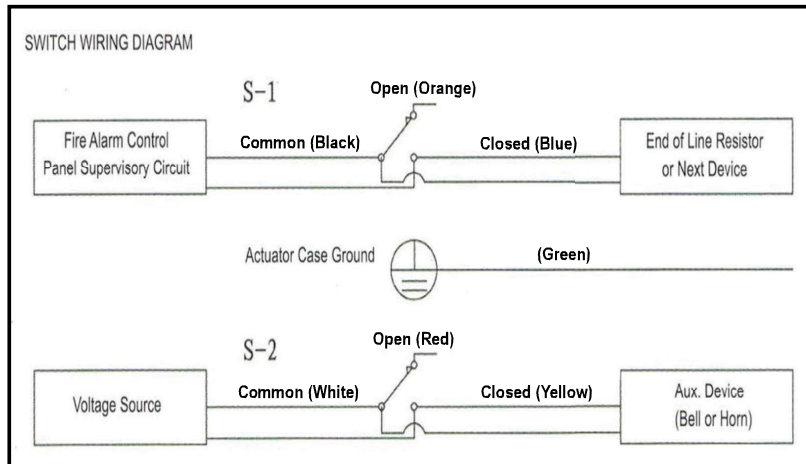
## 2.4 Material Specification

Part No.	Part	Material Specification
1	Valve Body	Ductile Iron ASTM A536, 65-45-12
2	Disc	Ductile Iron ASTM A536, 65-45-12 SS304, SS316, AL-Bronze C95400
3	Stem	SS420, 304, 316, 416, 431
4	Bushing	PTFE, Nylon 1010
5	Seat	EPDM, NBR

### 3. Supervisory Switch

#### 3.1 Power Instructions: 5A 250VAC

#### 3.2 Wiring Instructions



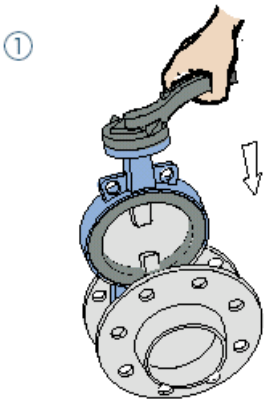
#### 3.3 Application Environment

Both indoor and outdoor.

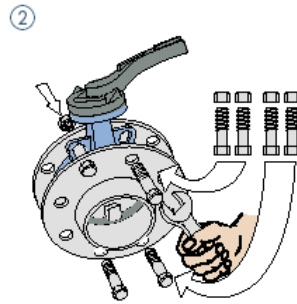
### 4. Installation & Application

#### 4.1 Installation

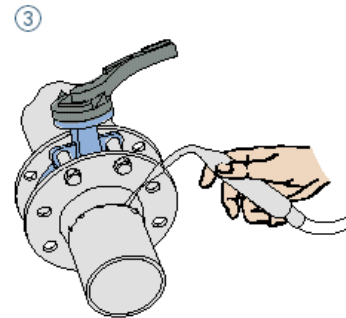
- a) Check the system requirements, especially for operating pressure and temperature, and ensure it is within the performance capability of the valve being installed.
- b) Be careful when opening the packing crates to avoid damage to the valves and valve parts inside. Inspect the contents carefully prior to use.
- c) Inspect the waterways and sealing surfaces on the valves being installed and adjoining pipes or fittings for damage; and clear away any dirt or debris.
- d) Make sure there is sufficient support for the valves being installed.
- e) Make sure that the disc is in the closed position, so that debris cannot block the seating surface of the valve.
- f) Operate the valve to the full open and closed positions to check that it is functioning properly.
- g) Proceed to install the valve in accordance with the following 10 step illustrated guide.



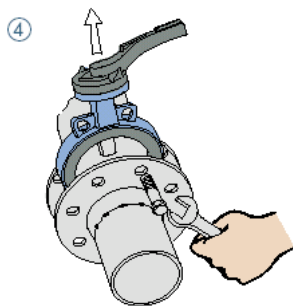
Put the butterfly valve between the two mating flanges to be installed on the pipeline.



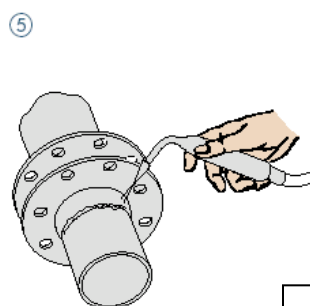
As illustrated above, insert 4 bolts and screw in the nuts slightly.



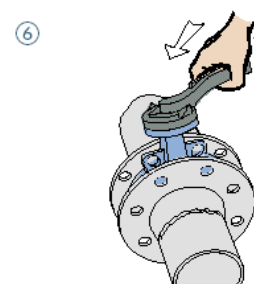
Fix the flange onto the pipeline by means of spot welding



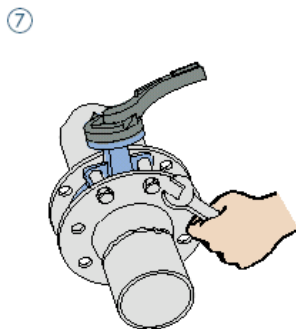
Unscrew the bolts and nuts and get the valve out



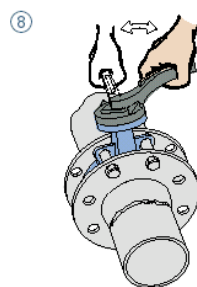
Weld the flange with the pipe securely



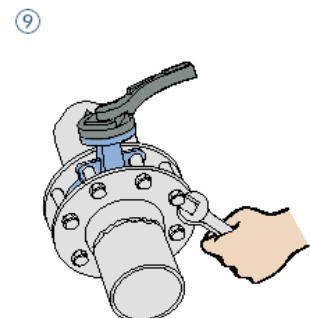
After welding seams cooled down, slide in the butterfly valve. Make sure there is enough space for the valve and the disc is slightly open.



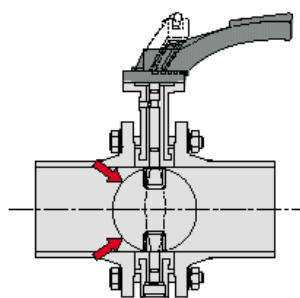
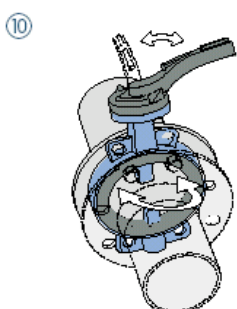
Position the valve against the mating flanges and tighten 4 bolts and nuts gradually. (Take care not to over-tighten the nuts and bolts.)



Open and close the valve to check if it's operating correctly and then open the disc slightly.



Tighten all the bolts and nuts evenly. (When do the tightening, do it with the opposite two bolts and nuts alternatively)



Check again the opening and closing of the valves to make sure that it's operating well, especially that the disc operation to the fully open position will not be obstructed.

## 4.2 Application

- a) Make sure that the flow medium through the valve does not contain hard particles which might cause damage to the sealing surface.
- b) The valves should be handled carefully to avoid breakage and damage to the valve parts.
- c) Make sure that the disc is in the open position when doing system pressure test.
- d) For butterfly valves with bypass, open the bypass first before opening of the valve.

## 5. Problems and Proposed Solutions

Possible Problems	Possible Causes	Proposed Solutions
Sealing Surface leakage	<ol style="list-style-type: none"><li>1. Debris lodged in the waterway around the seating area;</li><li>2. Sealing surface damaged;</li><li>3. Sealing surface worn out during operation</li></ol>	<ol style="list-style-type: none"><li>1. Clear out the impurities;</li><li>2. Replace rubber encapsulated disc;</li><li>3. Replace rubber encapsulated disc;</li></ol>
Lever handle not flexible or disc not able to open or close well.	<ol style="list-style-type: none"><li>1. Packing over pressed;</li><li>2. The packing cover is not accurately positioned;</li><li>3. Stem is damaged or there are impurities around stem;</li><li>4. Stem is bent;</li></ol>	<ol style="list-style-type: none"><li>1. Untighten the bolts and nuts on the packing cover a little bit;</li><li>2. Adjust the position of the packing cover;</li><li>3. Check the stem area and remove the impurities;</li><li>4. Change for a new stem</li></ol>

## 6. Care & Maintenance

- a) These valves should be stored in a cool and dry environment, with the two ends well protected from dirt or damage; When the valves are in storage for more than 6 months, check every 6 months the condition of the valves;
- b) Disc of the butterfly valves are designed to be installed aligned with the diameter of the pipelines. The discs are operated  $0^{\circ}\sim 90^{\circ}$  axially around the stem, and when it turns  $90^{\circ}$ , the valves come to fully open position;
- c) Butterfly valves are positioned between two mating flanges of the butterfly valves; Wafer butterfly valves are then fixed on the pipelines with bolts and nuts tightening the two mating flanges with the valve clamped in between, while for the Lug/Wafer butterfly valves the bolts and nuts connects the two sides of the valve with the two mating flanges on the pipeline respectively;
- d) For manual operation, the valve opens when operated anti-clockwise and the valve closes when operates clockwise; for operation with electric actuator, follow the instructions for the actuator.