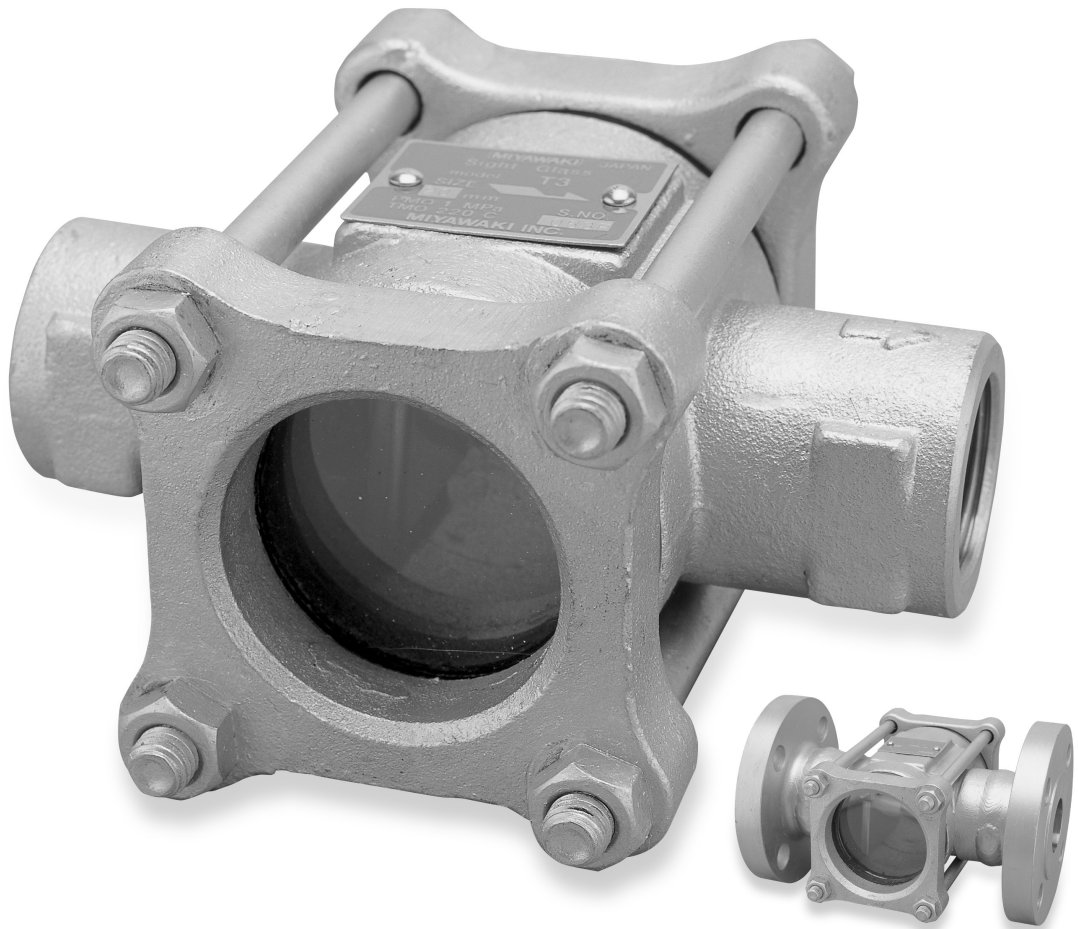


SIGHT GLASS

# T3

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USER'S MANUAL



 **MIYAWAKI INC.**

# SAFETY GUIDE

The model T3 sight glass should be installed at the downstream (outlet) side of the steam trap. You can observe the trap operation by monitoring the movement of the flapper through the glass window. This helps you easily find steam leaks or steam trap problems at early stage. It is especially useful when checking a steam trap used in the condensate recovery line. Also, it is useful when checking the flow conditions of fluids such as water.

In order to get maximum benefit from this product, be sure to read this manual before installing it.

The following warnings and cautions are shown at appropriate places in this manual.



Failure to observe this type of precaution may lead to serious injury or death.



Failure to follow this type of precaution can lead to injury or damage to equipment and property.

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# 1 SPECIFICATIONS AND MARKINGS

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## WARNING

Be sure not to use this product at higher pressures than the specified maximum allowable pressure (PMA) or at temperatures higher than the specified maximum allowable temperature (TMA).

The following items are displayed on the name label or the side of the product.

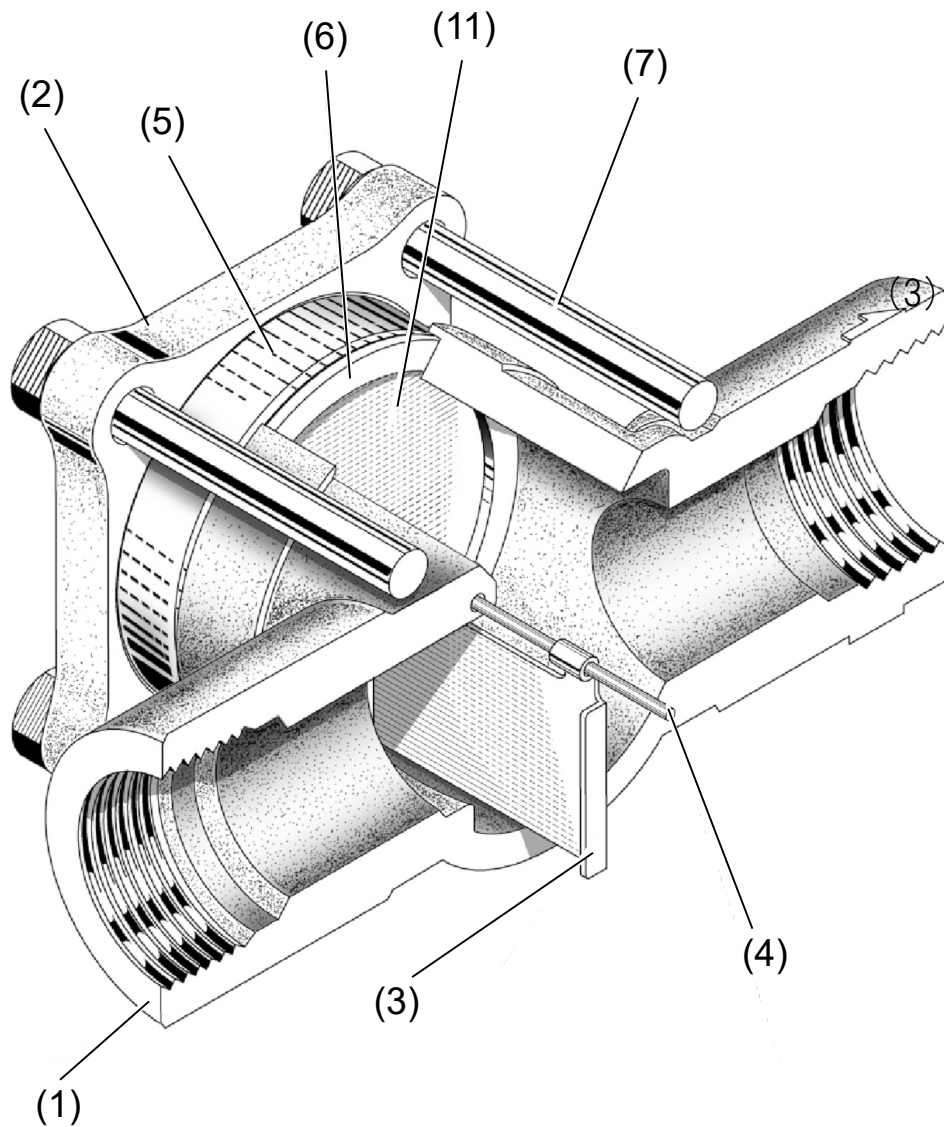
Check each item to avoid misuse of the product.

- 1) Maximum Operating pressure (PMO): 1.0MPa (145psig)
- 2) Maximum operating temperature (TMO): 183°C (361°F)
- 3) Size: 15 mm(1/2"), 20mm(3/4"), 25mm(1"), 32mm(1 1/4"), 40mm(1 1/2"), 50mm(2")
- 4) Year of production: The two leftmost digits in the four-digit 'S No.' on the name plate are the last two digits of the year of production.
- 5) Flow direction: Shown by an arrow
- 6) Body material: WCB (FC200 for the size 50 mm (2"))
- 7) Model symbol: Showing the product model name

Some pictures and illustrations in this manual are that of the representative model. For more details regarding dimensions and other specifications, please refer to the catalog.

## 2 CONSTRUCTION DETAILS

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- 
- |            |                |
|------------|----------------|
| 1. Body    | 5. Sight Glass |
| 2. Cover   | 6. Gasket      |
| 3. Flapper | 7. Bolt        |
| 4. Pin     | 11. Mica Plate |

### **3 INSTALLATION**

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#### **WARNING**

**Pay very careful attention when working in hazardous environments. There is a risk of explosion and the possibility of dangerous gases leaking. Always check whether the pipeline contains flammable, high pressure or high temperature materials before starting to work.**

- **Make sure that isolation valves are installed on both the upstream and downstream lines.**



#### **CAUTION**

**Before installing the product, open both isolation valves and the bypass valve, if one exists, to blow out any debris or dirt inside the pipeline. After blowing out the line, before starting to work, close the isolation valves and allow time for the temperature to drop to a safe working temperature.**

**When installing the product, be sure to leave clearance for maintaining it.**

- 1) Remove the dustproof seals covering both connections.
- 2) Check the flow direction indicated on the side of the body.
- 3) When the T3 is used in steam pipelines, where steam traps are installed, install the T3 at least 1 m (3.28 ft) away from the steam trap.
- 4) Install the T3 so that the inlet and the outlet are kept horizontal and the face of the sight glass is vertical.
- 5) Open the isolation valve on the upstream line slowly and make sure the product works normally.

## 4 MAINTENANCE

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### CAUTION

- **When replacing parts, make sure the replacement parts are supplied by Miyawaki.**

The performance of the T3 deteriorates gradually, over time, due to wear, corrosion, or dirt accumulating around the sight glass. To keep the T3 in good operation, periodic maintenance is essential. It is necessary to check carefully whether the sight glass and mica plate are damaged. If they are damaged, replace them. Since the sight glass and the mica plate are consumable items, it is recommended to replace them once a year.

### 4.1 Repairs

When the T3 fails, it is necessary to clean the internal parts and replace damaged parts. Take the T3 apart following the steps below.

#### 4.1.1 Disassembling the sight glass

- 1) Remove the bolt (7), the nut (8) (when the connection size is 50mm (2"), remove only the bolt) and the cover (2).
- 2) Remove the gasket (6), the sight glass (5), and then the mica plate (11) can be removed by hand.

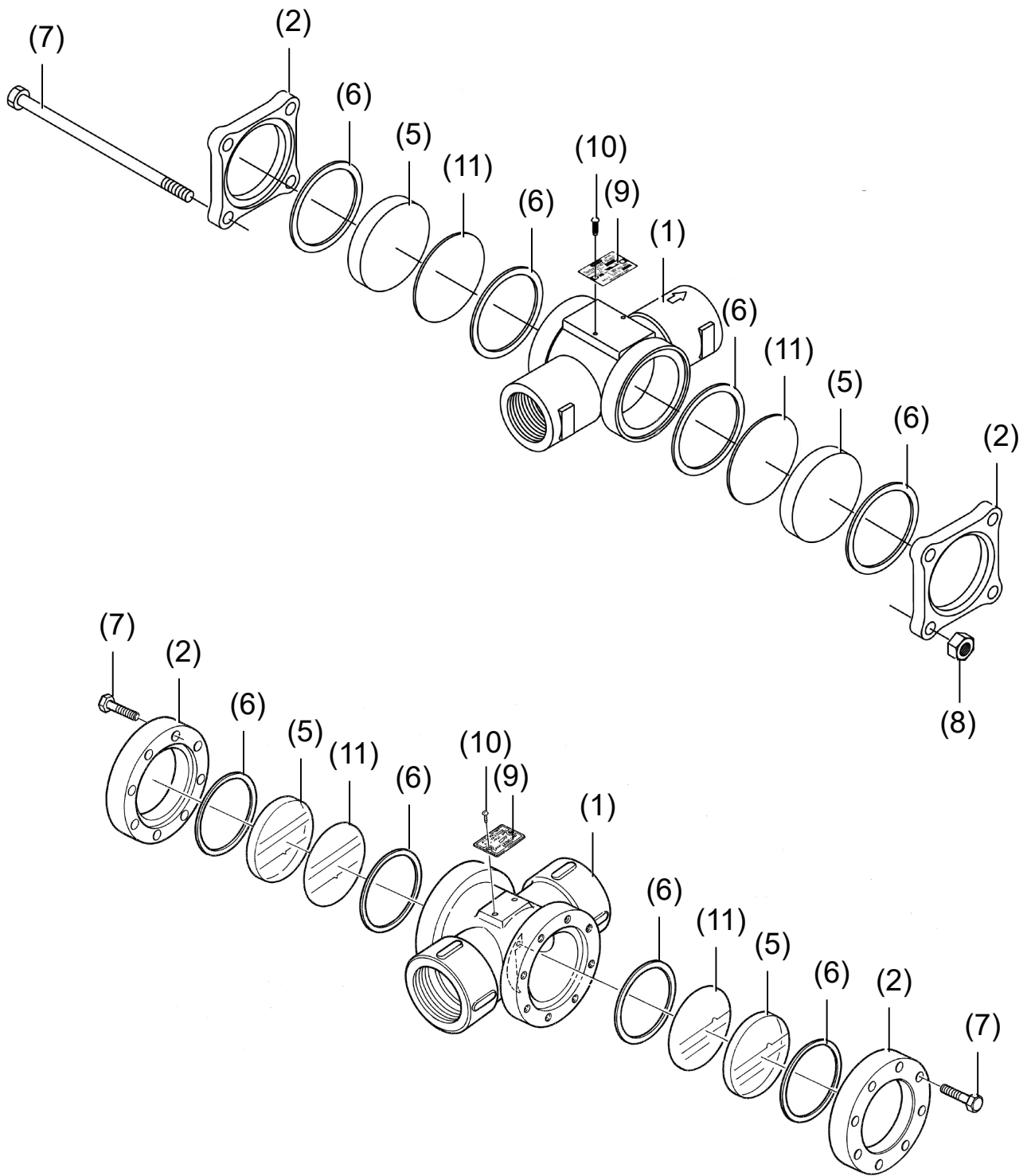
**After repairing the sight glass, re-assemble the parts in reverse order as follows.**

#### 4.1.2 Reassembling the sight glass

- 1) Reinstall the gasket (6), the mica plate (11), the sight glass (5), and the gasket (6), in that order, in the body (1).
- 2) Then, pass the bolts (7) through the two covers (2) and fasten the nuts (8) (when the connection size is 50mm (2"), install only the bolt) so that the mica plate (11), the sight glass (5) and the gaskets (6) will not become misaligned.

- The torques for the bolt (7) and nut (8) are as shown in the following table.

Parts	Models	Sizes	Tools	Across the flats	Torque
Bolt (7), Nut (8)	T3·T3F	15·20·25	Torque wrench	13mm (0.51")	20N·m
		32·40	Torque wrench	13mm (0.51")	17N·m
Bolt (7)		50	Torque wrench	13mm (0.51")	10N·m



- |          |                |               |                |
|----------|----------------|---------------|----------------|
| 1. Body  | 5. Sight Glass | 7. Bolt       | 10. Rivet      |
| 2. Cover | 6. Gasket      | 9. Name Plate | 11. Mica Plate |

## 5 TROUBLESHOOTING

Problem	Possible cause	Solution
<b>Poor operation or Operation cannot be checked.</b>	Wrong installation direction or wrong installation position	Reinstall the product in the correct direction.
	The flapper is damaged.	Replace the flapper.
	The sight glass is dirty.	Clean the sight glass.
<b>Steam leaks from the connection between the body and the cover.</b>	The bolts or nuts are loose.	Tighten the bolts and nuts. *1
	The gasket is damaged.	Replace the gasket. *2
	The sight glass is damaged.	Replace the sight glass. *3

\*1: Refer to the torque tables in Section 4, "Maintenance" to retighten the parts to the correct torque.

\*2: When the steam leak doesn't stop after replacing the gaskets, it is recommended that both the sight glass and the mica plate be replaced.

\*3: Whenever the sight glass is replaced, the mica plate must always be replaced.



## **6 WARRANTY**

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### **6.1 Warranty period**

The warranty period is 18 months after shipment or 12 months after installation, whichever occurs first.

### **6.2 Details of the warranty**

If the product stops working correctly within the warranty period, we will repair or replace the product free of charge if the cause of the trouble is not one of the following items.

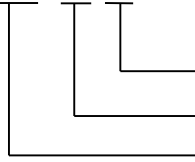
- 1) The precautions described in this manual were not observed.
- 2) User's errors or mistakes such as an inappropriate installation or incorrect handling, or an excessively large impact caused by dropping
- 3) Problems caused by devices or equipment other than ours, or a disallowed use environment
- 4) When a repair or modification has been performed by anyone other than us or people who are authorized to make such repairs
- 5) Intrusion of salt or other substances that promote significant rust or corrosion or problems from fluids that contain the same substances
- 6) Consumable parts such as Packing, Gasket, O-ring, Diaphragm, etc
- 7) Attachment or accumulation of foreign matter in the pipe, such as dust and scale
- 8) Problems from fires, natural disasters, or other force majeure which is not our responsibility

### **6.3 Warranty limitation**

The remedy available under the warranty shall not exceed the sales price of the products delivered, for any cause whatsoever.

## 7 SERIAL NUMBER (S. No.) DESIGNATION

S.No.



Represents the day.

Represents the month.

Represents the year. (last two digits of the year according to the Western calendar)

### Month designation system

Symbol	Month	Symbol	Month	Symbol	Month	Symbol	Month
1	1	4	4	7	7	X	10
2	2	5	5	8	8	Y	11
3	3	6	6	9	9	Z	12

### Day designation system

Symbol	Day	Symbol	Day	Symbol	Day	Symbol	Day
1	1	9	9	H	17	Q	25
2	2	A	10	J	18	R	26
3	3	B	11	K	19	S	27
4	4	C	12	L	20	T	28
5	5	D	13	M	21	U	29
6	6	E	14	N	22	V	30
7	7	F	15	O	23	W	31
8	8	G	16	P	24		

Example of serial number designation

1 7 1 1 → Jan 1, 2017

2 9 X M → Oct 21, 2029

## 8 GUIDANCE FOR READING SPECIAL PRODUCT NAME

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○○○-○○-□

**Special symbol:**  
**Symbol apply only to special product**  
**(Please refer to table 1 for details)**  
 English letter after “-“

**Model symbol:**  
**Product model number**

Table 1 Symbol description

Suffix	Special contents
A	Trap for high-pressure gas installed property (only for Gas Trap)
C	Blow valve attached
K	Change of gasket
L	Special face to face dimension
M	Change of parts material
P, T	Change of operating pressure, temperature, condensate capacity, etc
R	Change of screen mesh
V	Change of air vent
X	Other than mentioned above or complex of special contents above

- 
- For any questions about the product that you purchased or about the details in this user's manual, please contact the following.
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  - Some special specifications of the product you have, may found to be different from the ones in the user's manual. If you have any question, please contact MIYAWAKI, our local authorized agent, or the place where you purchased.
-



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**T3**