

SIGHT GLASS

T3

USER'S MANUAL



 **MIYAWAKI INC.**

SAFETY GUIDE

The model T3 is a sight glass used for visual checking of steam traps, especially when the condensate is discharged into a closed return system. It can be used also for checking the operation of valves which are installed in steam, hot water and water lines.

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



WARNING

Be sure not to use this product at higher pressures than the specified maximum operating pressure (PMO) or at temperatures higher than the specified maximum operating temperature (TMO).

Check the operating characteristics to avoid misuse of the product.

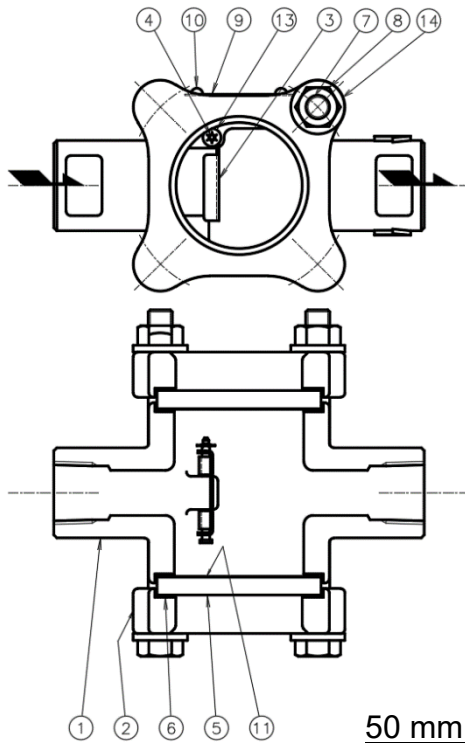
- 1) Maximum allowable pressure (PMA): 1.0 MPa (145 psig)
- 2) Maximum allowable temperature (TMA): 183 °C (361 °F)
- 3) Maximum operating pressure (PMO): 1.0 MPa (145 psig)
- 4) Maximum operating temperature (TMO): 183 °C (361 °F)
- 5) Size: 15 – 50 mm (1/2" – 2")
- 6) Year of production: The two leftmost digits in the four-digit or nine-digit 'S. No.' are the last two digits of the year of production.
- 7) Flow direction: Shown by an arrow
- 8) Body material: Sizes 15 – 40 mm (1/2" – 1 1/2"): Cast steel A216 WCB
Size 50 mm (2"): Cast iron FC200
- 9) Model: Showing the product model name

- Some pictures and illustrations in this manual are examples of T3 models. For more details regarding dimensions and other specifications, please refer to the catalog.

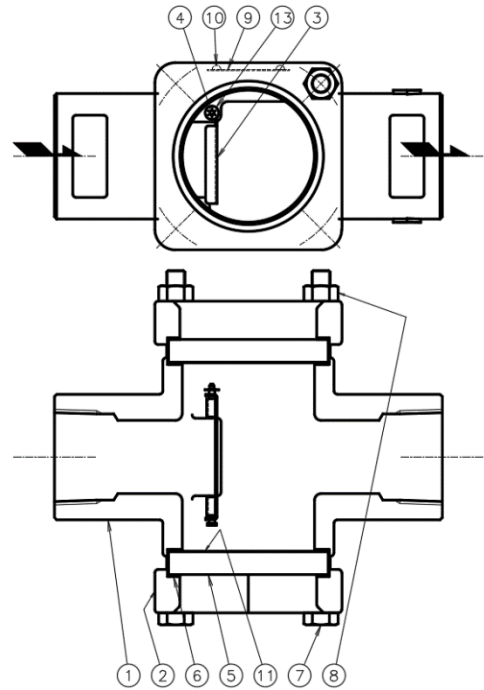
The model T3 fully complies with the requirements of the European Pressure Equipment Directive 2014/68/EU. It is classified according to Article 4, Section 3 of the PED, which does not allow to bear the CE marking.

2 CONSTRUCTION DETAILS

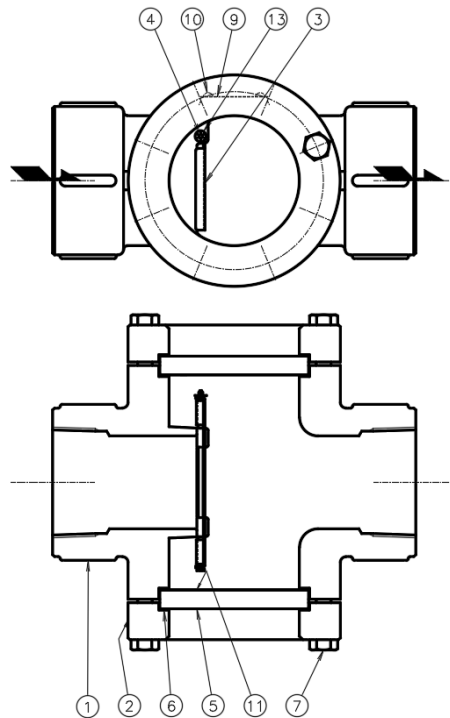
15-25 mm (1/2" – 1")



32-40 mm (1 1/4" – 1 1/2")



50 mm (2")



- | | |
|----------------|----------------------------|
| 1. Body | 8. Nut (for 1/2" – 1 1/2") |
| 2. Cover | 9. Name Plate |
| 3. Flapper | 10. Rivet |
| 4. Pin | 11. Mica Plate |
| 5. Sight Glass | 13. Push Nut |
| 6. Gasket | 14. Washer (for 1/2" – 1") |
| 7. Bolt | |

3 INSTALLATION



WARNING

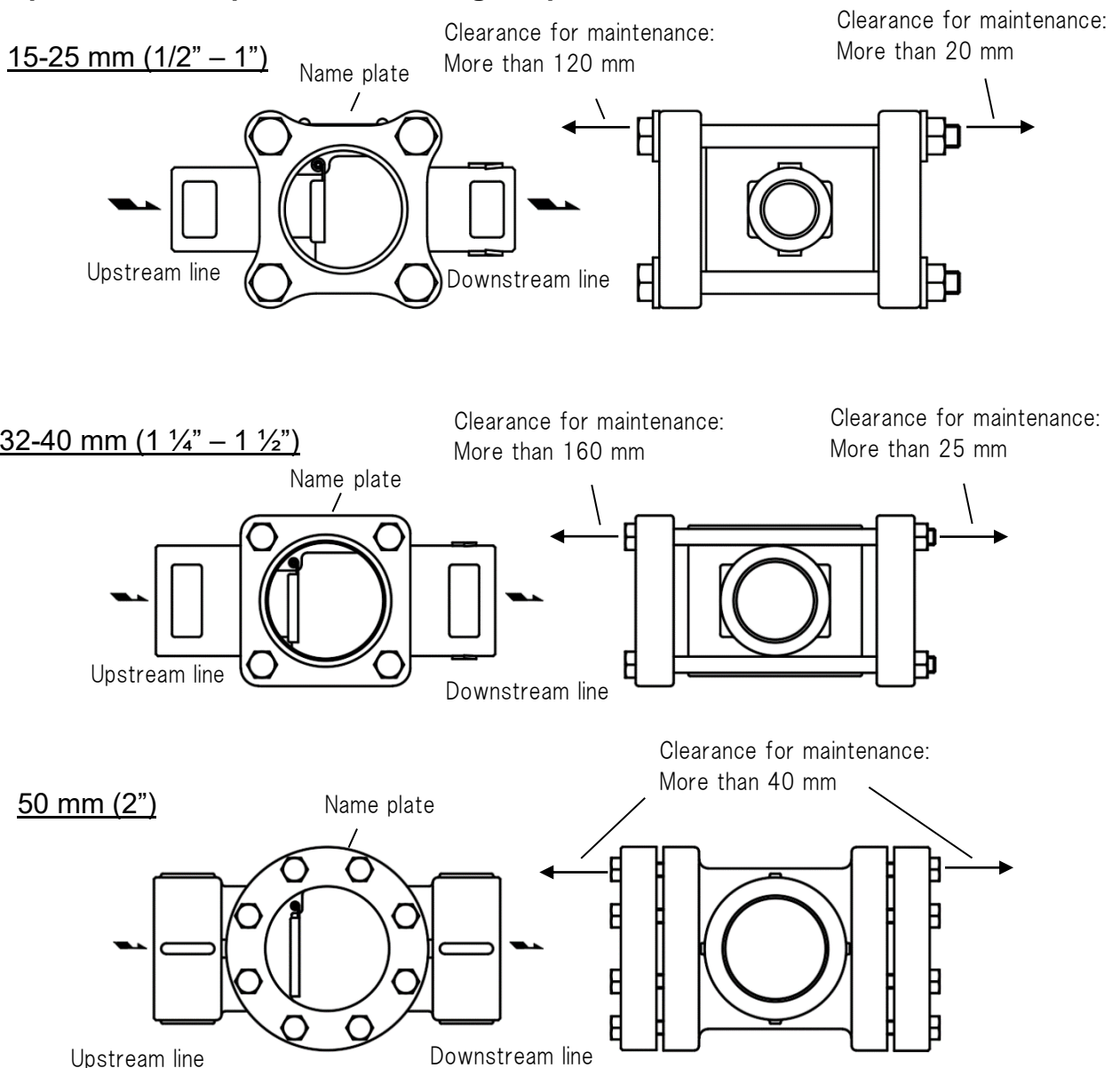
Pay very careful attention when working in hazardous environments. There is a risk of explosion and the possibility of dangerous gases leaking. Always check whether the pipeline contains flammable, high pressure or high temperature materials before starting to work.

- 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.



- 1) Remove the dustproof seals covering both connections.
※Products shipped in plastic bags may not have dustproof seals.
- 2) Check the flow direction indicated on the body.
- 3) The T3 can only be installed horizontally. When installing the product in the horizontal position, the name plate must be facing up.
- 4) Install the sight glass about 1 m away from the downstream side of the steam trap when using in the steam piping.
- 5) Install it at a point where it can be easily observed.



WARNING

Do not use for piping where water hammer may occur.

4 OPERATION



CAUTION

Before starting operation, open the bypass valve or blow valve completely and blow off the scale in the piping.

4.1 Operation procedure

- 1) After blowing off the scale from the piping, close the bypass valve or blow valve.
- 2) Open the isolation valve on the trap outlet side.
- 3) Open the isolation valve on the trap inlet side.

4.2 Stop procedure

- 1) Close the isolation valve on the trap inlet side.
- 2) Close the isolation valve on the trap outlet side.

* When stopping for a long time, completely drain the condensate from the piping and trap and close the valves before and after the trap.



WARNING

This product uses tempered glass, but the glass may be damaged if a sudden temperature change will happen.

When you start using it, open the inlet valve slowly to avoid water hammer and sudden temperature changes.

Also, if the inside of the main body is hot, be careful not to cool the glass from the outside.

5 MAINTENANCE



WARNING

- Before removing the sight glass from the pipe or disassembling it, be sure to close the isolation valves. Then, release the residual pressure from the valve body (make sure that the pressure in the main body is equal to the atmospheric pressure). After it has fully cooled down (after the temperature of the main body has reached ambient temperature), confirm for safe conditions and then begin to work.
- Even when the isolation valves are closed, there may be residual internal pressure due to leaks from the isolation valves. Therefore, be very careful.



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 operating well, periodic maintenance is essential. It is necessary to check carefully whether the glass and mica plate are damaged. If they are damaged, replace them. Since the glass and the mica plate are consumable items, it is recommended to replace them once a year.

5.1 Repairs

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

5.1.1 Disassembling the sight glass

- 1) Unscrew the bolts (7) and nuts (8) for sizes $\frac{1}{2}$ " – $1\frac{1}{2}$ " and take off the cover (2). The size 2" is not equipped with nuts. Unscrew only the bolts (7).
- 2) Remove the gaskets (6), the sight glasses (5) and the Mica plates (11).
- 3) Inspect all parts, clean them and replace worn parts with new ones.



CAUTION

Clean the body with care not to damage the sealing surface. Scratches on the sealing surface may cause leakage.

5.1.2 Reassembling the sight glass

- 1) Reinstall one gasket (6), one Mica plate (11), one sight glass (5) and one gasket (6) in that order on each of both sides of the body (1). Put a new gasket (6) into the body (1).
- 2) Fix both covers (2) on the body (1) and pass the bolts (7) through the two covers. Tighten the nuts (8) for sizes $\frac{1}{2}$ " – $1\frac{1}{2}$ " or only the bolts (7) for size 2".

Torque table

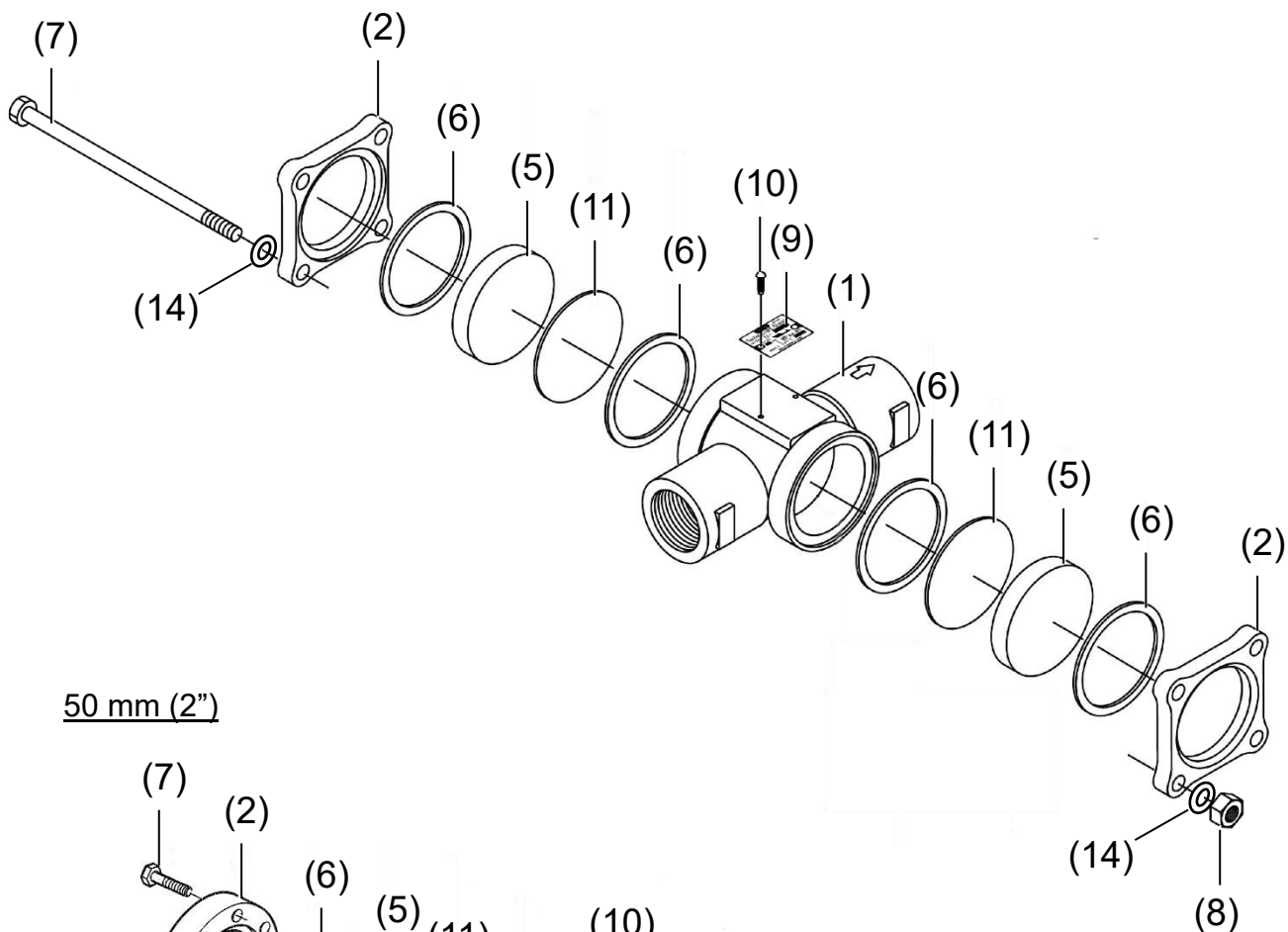
Parts	Tools	Across the flats	Torque
Bolt (7) and Nut (8) for $\frac{1}{2}$ " – 1"	Torque wrench	13 mm (0.51")	20 N·m
Bolt (7) and Nut (8) for $1\frac{1}{4}$ " – $1\frac{1}{2}$ "	Torque wrench	13 mm (0.51")	17 N·m
Bolt (7) for 2"	Torque wrench	13 mm (0.51")	10 N·m



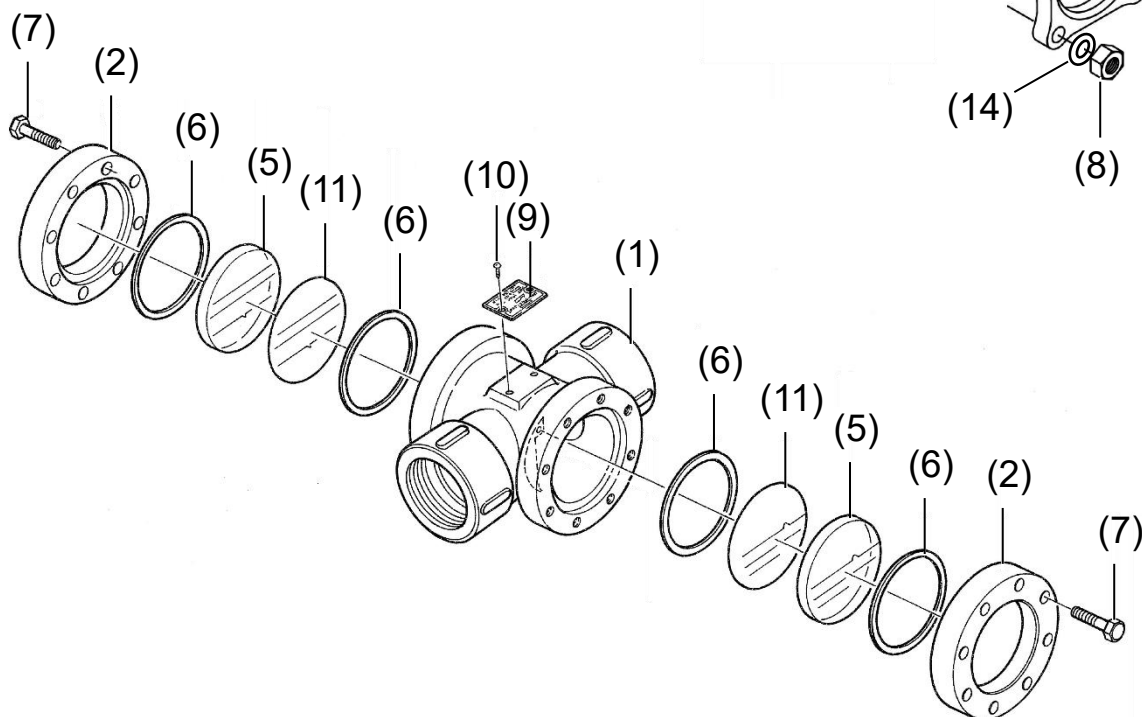
CAUTION

When reassembling always replace the gaskets (6) with new ones. Replace the sight glasses (5) and mica plates (11) once a year with new ones. Always tighten the bolts and nuts evenly crosswise.

15-40 mm (1/2" – 1 1/2")



50 mm (2")



- | | |
|----------------|----------------------------|
| 1. Body | 8. Nut (for 1/2" – 1 1/2") |
| 2. Cover | 9. Name Plate |
| 3. Flapper | 10. Rivet |
| 4. Pin | 11. Mica Plate |
| 5. Sight Glass | 13. Push Nut |
| 6. Gasket | 14. Washer (for 1/2" – 1") |
| 7. Bolt | |

6 TROUBLESHOOTING

Problem	Possible cause	Solution
Poor operation or operation cannot be checked.	Wrong installation direction or wrong installation position	Reinstall the product in the correct direction.
	The flapper (3) is damaged.	Replace the product.
	The sight glass (5) is dirty.	Clean the sight glass (5).
Steam and/or air leaks from the connection between the body and the cover.	The bolts (7) or nuts (8) are loose.	Tighten the bolts (7) and nuts (8). *1
	The gasket (6) is damaged.	Replace the gasket (6). *2
	The sight glass (5) is damaged.	Replace the sight glass (5). *3

- *1: Refer to the torque table in Section 5, "Maintenance" to retighten the parts with the correct torque.
- *2: When the steam and/or air leak doesn't stop after replacing the gaskets, it is recommended to replace the sight glasses and the mica plate.
- *3: Whenever the sight glasses are replaced, the mica plate must always be replaced.

7 WARRANTY

7.1 Warranty period

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

7.2 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 MIYAWAKI's, or a disallowed use environment
- 4) When a repair or modification has been performed by anyone other than MIYAWAKI 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 MIYAWAKI's responsibility

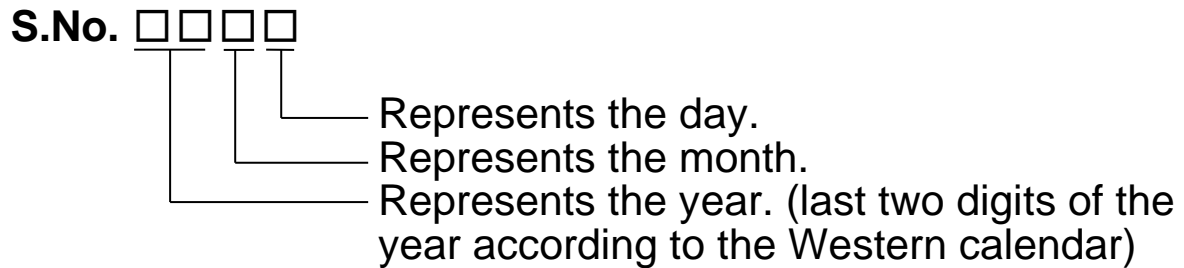
7.3 Warranty limitation

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

8 SERIAL NUMBER (S. No.) DESIGNATION

The following 4-digit or 9-digit 'S. No.' is displayed on the product.

- For 4-digit display

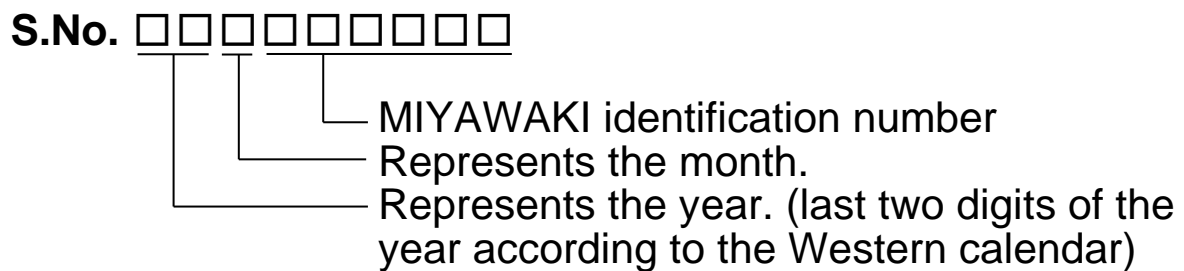


Example of serial number designation

1 7 1 1 → Jan.1, 2017

2 9 X M → Oct. 21, 2029

- For 9-digit display



Example of serial number designation

1 7 1 1 2 C 0 2 0 → Jan., 2017

2 9 X 0 5 M 0 5 0 → Oct., 2029

Month designation system

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

Day designation system

Day	1	2	3	4	5	6	7	8	9	10	11	12
Symbol	1	2	3	4	5	6	7	8	9	A	B	C

Day	13	14	15	16	17	18	19	20	21	22	23	24
Symbol	D	E	F	G	H	J	K	L	M	N	O	P

Day	25	26	27	28	29	30	31
Symbol	Q	R	S	T	U	V	W

9 GUIDANCE FOR READING SPECIAL PRODUCT NAME

○○○-○○-□

Special symbol:
The symbol applies only to
special products
(Please refer to table 1 for details)

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

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- 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 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 company where you purchased the product.
 - In the interest of the development and improvement of our products, MIYAWAKI Inc. reserves the right to change the specification of the products without prior notice.
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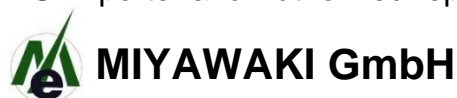


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MIYAWAKI INC.'s International Sales Dept. or its local representative.
By scanning QR Code, you can access inquiry form.



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