

BALL FLOAT STEAM TRAP

GTH10

USER'S MANUAL



SAFETY GUIDE

The model GTH10 is a cast steel ball float steam trap for high pressure applications.

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



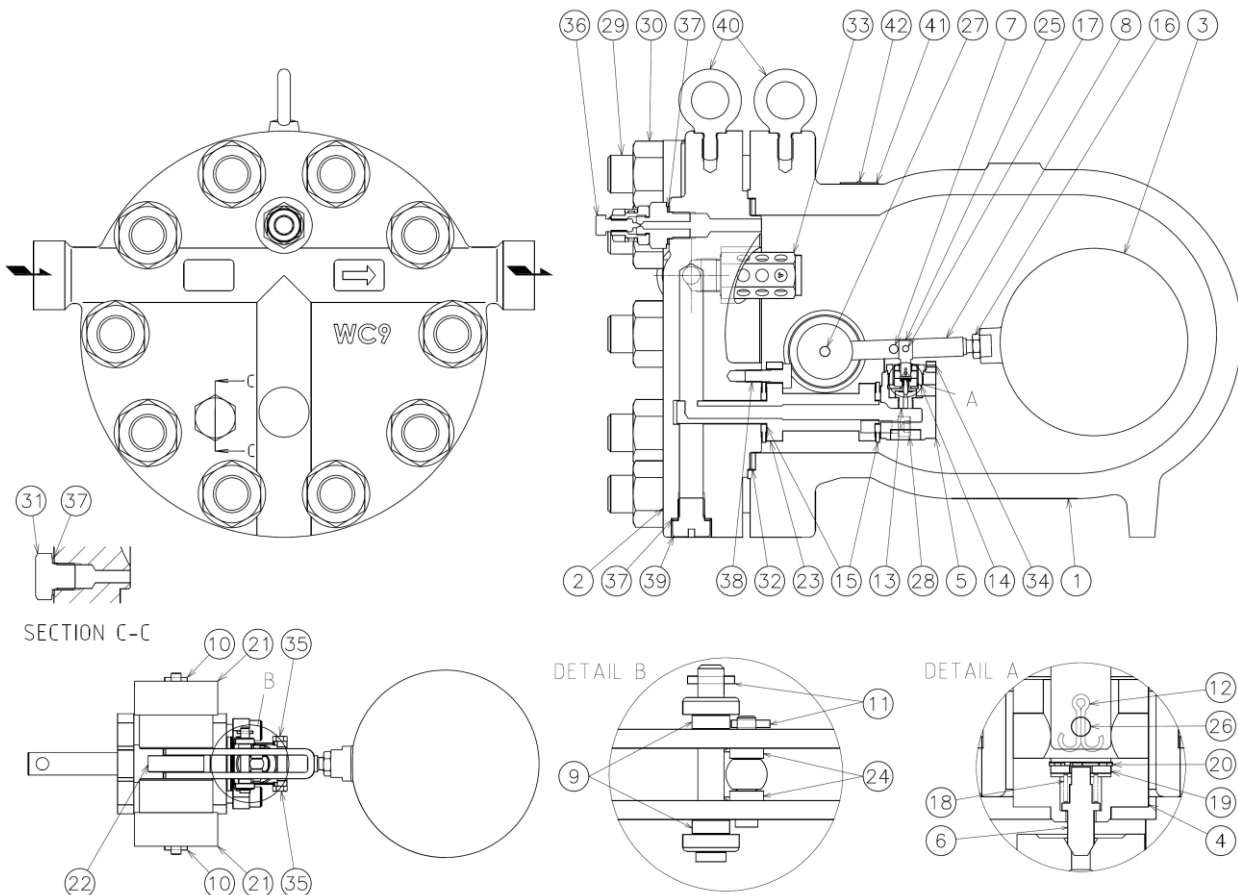
WARNING

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

The following items are displayed on the name plate or the side of the product. Check each item to avoid misuse of the product.

- (1) Maximum allowable pressure (PMA): 16.0 MPa (2320 psig) @ 300 °C (572 °F)
 - (2) Maximum allowable temperature (TMA): 550 °C (1022 °F) @ 5.18 MPa (751 psig)
 - (3) Maximum operating pressure (PMO):
GTH10-100: 10.0 MPa (1450 psig) @ 500 °C (932 °F)
GTH10-150: 15.0 MPa (2175 psig) @ 379 °C (714 °F)
 - (4) Maximum operating temperature (TMO): 550 °C @ 5.18 MPa (751 psig)
 - (5) Sizes: 15 mm (1/2"), 20 mm (3/4"), 25 mm (1")
 - (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: A217 WC9
 - (9) Model symbol: Showing the product name
- Some pictures and illustrations in this manual are examples of the a.m. models. For more details regarding dimensions and other specifications, please refer to the catalog.

2 CONSTRUCTION DETAILS



- | | | |
|-------------------|-----------------|-------------------|
| 1. Body | 16. Nut | 31. Cover Plug |
| 2. Cover | 17. Pin | 32. Cover Gasket |
| 3. Float | 18. Spring | 33. Screen Unit |
| 4. Valve Guard | 19. Washer | 34. Stopper |
| 5. Holder | 20. C-Ring | 35. Bolt |
| 6. Valve | 21. Weight A | 36. Air Vent Unit |
| 7. Pin | 22. Weight B | 37. Plug Gasket |
| 8. Lever | 23. Spacer | 38. Spacer Bolt |
| 9. Collar | 24. Collar | 39. Cover Plug |
| 10. Split Pin | 25. Connector | 40. Eye Bolt |
| 11. Split Pin | 26. Pin | 41. Name Plate |
| 12. Split Pin | 27. Pin | 42. Rivet |
| 13. Valve Seat | 28. Holder Bolt | |
| 14. Bush | 29. Cover Bolt | |
| 15. Holder Gasket | 30. Cover Nut | |

* Do not remove the cover plug (39). Special tools are required for disassembling and assembling the cover plug (39).

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.

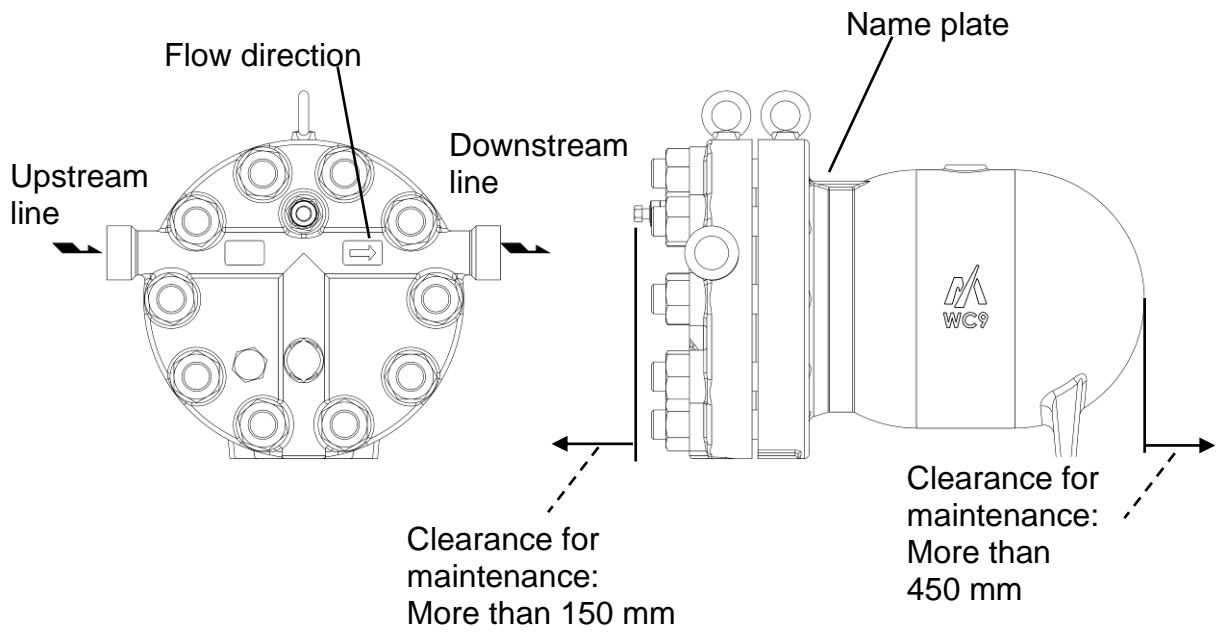
- Make sure that isolation valves are installed on both the upstream and downstream lines.



CAUTION

- Before installing the product, open both isolation valves 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.
 - The model GTH10 is a heavy product. You are recommended to reinforce the pipe line to support the product's weight.
- (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 cover.
 - (3) When installing the model GTH10, install it so that the flow from the upstream line to the downstream line is horizontal and the top label or the name plate is on the top side of the body. Install the GTH10 at a pipe that is angling down, so that condensate flows easily into the steam trap.
 - (4) Open the isolation valve on the upstream line slowly and make sure the product works normally.

Model GTH10



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

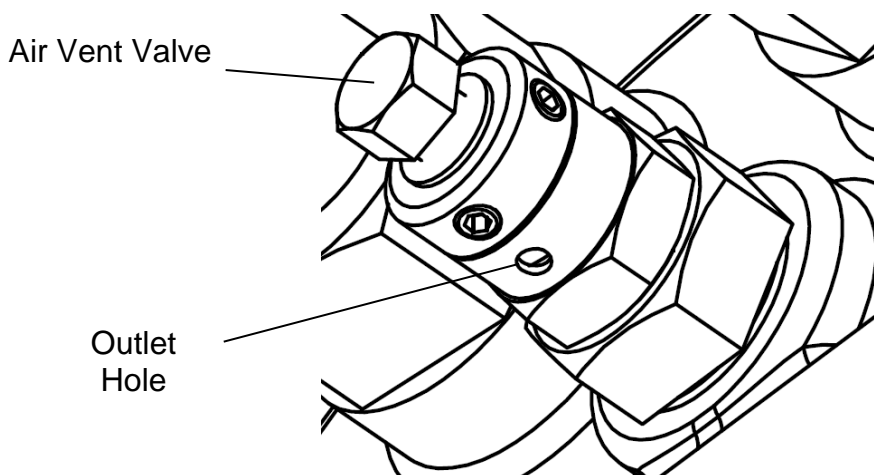
- 1) After blowing off the scale from the piping, close the bypass valve or blow valve.
- 2) Open the stop valve on the trap outlet side.
- 3) Open the stop valve on the trap inlet side.

4.2 Stop procedure

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

4.3 How to operate the manual air vent

- 1) Check the direction of the air vent outlet hole.
 - * Hot air or steam will blow out, so make sure the outlet hole is facing in a direction with no danger.
- 2) Slowly loosen the air vent valve counterclockwise to discharge the air.
- 3) Turn the air vent valve clockwise to close it.



5 MAINTENANCE



WARNING

- Before removing the trap from the pipe or disassembling it, be sure to close the isolation valves. Then, release the residual pressure from the trap 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 steam traps deteriorates gradually over time due to wear, corrosion or dirt accumulating around the valve and the valve seat. Please conduct periodic diagnosis of traps in order to keep steam control systems and equipment working well.

5.1 Tools for Diagnosing Steam Traps

■ Dr. Trap

Dr. Trap is a sophisticated steam trap management system for diagnosing steam traps automatically by measuring the vibration and temperature of the steam trap. Survey results are stored in the testing equipment and transferred to a steam trap analysis software. The software aggregates and analyses steam trap survey data, identifying faulty steam traps, providing steam loss and financial loss data, estimating CO₂ emissions corresponding to leaking steam traps and providing many other analyze possibilities to manage the steam trap population easily.

■ Dr. Trap Jr.

Dr. Trap Jr. is an inexpensive and easily to handle steam trap diagnostic system consisting of an ultrasonic checker, temperature probe and a sophisticated analysis software. The software allows to determine the condition of a steam trap, to estimate steam and financial losses and the related CO₂ emissions.

For more details, please, check our homepage:

https://www.miyawaki-inc.com/en/diagnosis/trap_survey

or ask our local representative.

5.2 Repairs

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

5.2.1 Disassembling the trap

- 1) Loosen the 10 cover nuts (30) and remove the body (1). The internal unit is attached to the cover (2).
- 2) Untighten the four holder bolts (28) and remove the internal unit while the spacer (23) remains attached to the cover (2),
Basically, it is not necessary to remove the spacer (23), but when removing it, remove the five spacer bolts (38) and remove the spacer (23) from the cover (2). If you remove the spacer (23), do not reuse the holder gasket (15) and replace it with a new one.
- 3) Remove the split pin (11) from the pin (7) and pull the pin (7) out of the holder (5) to remove the lever (8) with the float (3), weight A (21), weight B (22) and a set of valves from the holder (5).
- 4) Remove the split pin (11) from the pin (17) and remove the pin (17) from the lever (8) to remove the complete valve unit from the lever (8).
- 5) Do not remove the bush (14) and valve seat (13) from the holder (5).
- 6) The float (3) can be removed by fixing the lever (8) to a vise, loosening the nut (16) and turning it by hand.
- 7) Clean and inspect the inside of the body (1) and each part.

5.2.2 Disassembling the air vent unit

- 1) Turn the air vent valve (36-5) counterclockwise to remove it.
- 2) Loosen the hexagon socket head screw and remove the set collar (36-4) and nozzle ring (36-3).
- 3) Turn the air vent cover (36-2) counterclockwise to remove it.
- 4) Turn the air vent body (36-1) counterclockwise to remove it.

5.2.3 Disassembling the screen unit

- 1) Turn the screen unit (33) counterclockwise and remove it from the cover (2). (The screen (33-2) can be cleaned without removing it from the cover (2).)
- 2) Remove the C-ring (33-4), and remove the support (33-3) and screen (33-2).
- 3) Clean the screen (33-2).

Take appropriate measures according to "6 TROUBLESHOOTING ". Assemble in the reverse order of disassembling as follows. Please refer to the tightening torque table for each part.

5.3 Gasket replacement

- 1) When disassembling, be sure to replace the cover gasket (32), holder gasket (15) and plug gasket (37) with new ones.
- 2) Before assembling, thoroughly remove debris and rust without damaging the gasket seat.
- 3) When assembling, be careful not to get foreign material or dust caught between the gasket and seat surface.

5.4 Reassembling

5.4.1 Reassembling the screen unit

- 1) Attach the screen (33-2) to the screen holder (33-1).
- 2) Insert the support (33-3) and attach the C-ring (33-4).
- 3) Fit the screen unit (33) to the cover (2) and tighten it.

5.4.2 Reassembling the air vent unit

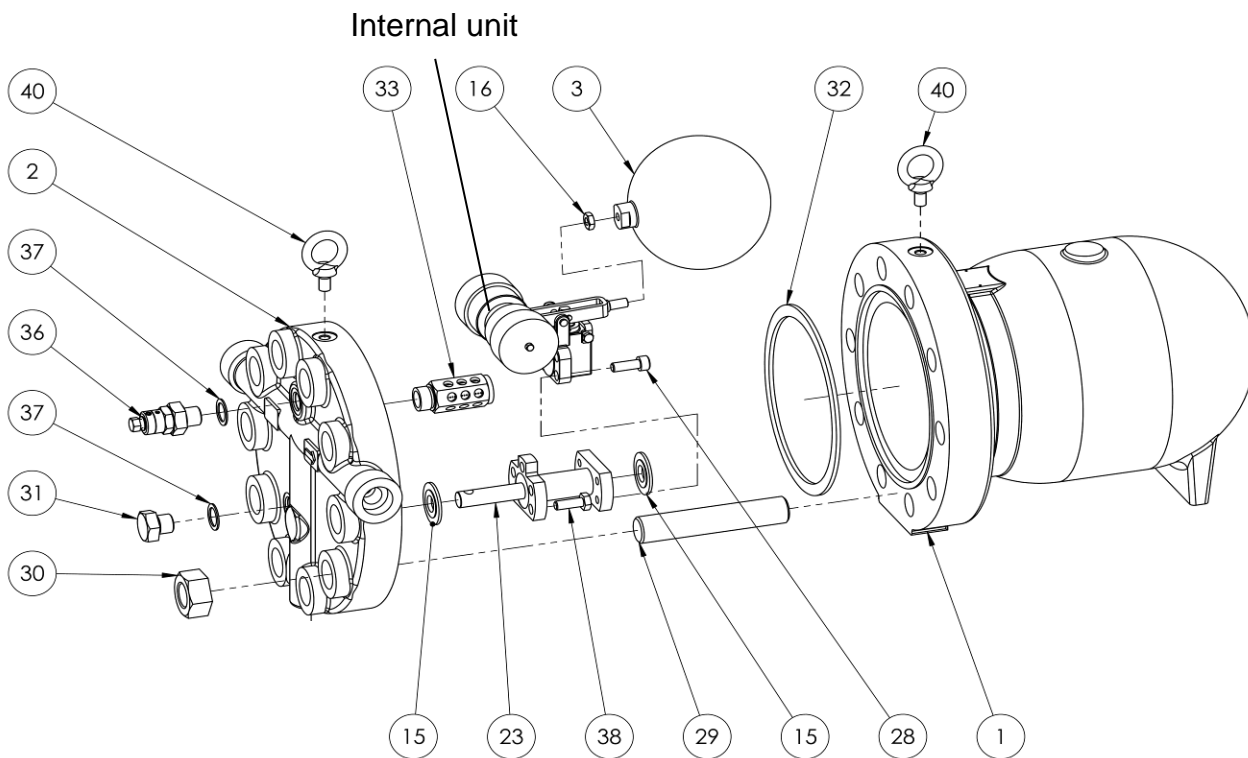
- 1) Screw the air vent body (36-1) into the cover (2) and tighten it.
- 2) Screw the air vent cover (36-2) into the air vent body (36-1) and tighten it.
- 3) Fit the nozzle ring (36-3) and then the set collar (36-4) into the air vent cover (36-2) in this order, and tighten and fix the two hexagon socket screws attached to the set collar (36-4).
- 4) Screw the air vent valve (36-5) into the air vent cover (36-2) and tighten it.

5.4.3 Reassembling the trap

- 1) Connect the float (3) to the lever (8).
- 2) After connecting the lever (8) with the float (3), weight A (21), weight B (22) to the valve unit with pins (17) and split pins (11), assemble the internal unit by connecting it to the holder (5) with the pin (7) and the split pin (11).
- 3) Attach the holder gasket (15) to the spacer (23).
- 4) Attach the internal unit to the spacer (23) with the holder bolt (28).
*Tighten the holder bolts (28) in a crosswise pattern to avoid uneven tightening.
- 5) Attach the cover gasket (32) to the cover (2) and attach the body.
At this time, be careful not to damage the internal unit when assembling.
Also, be careful not to slide the cover gasket (32).
Tighten with 10 cover nuts (30).
*Tighten the cover nuts (30) in a crosswise pattern to avoid uneven tightening.

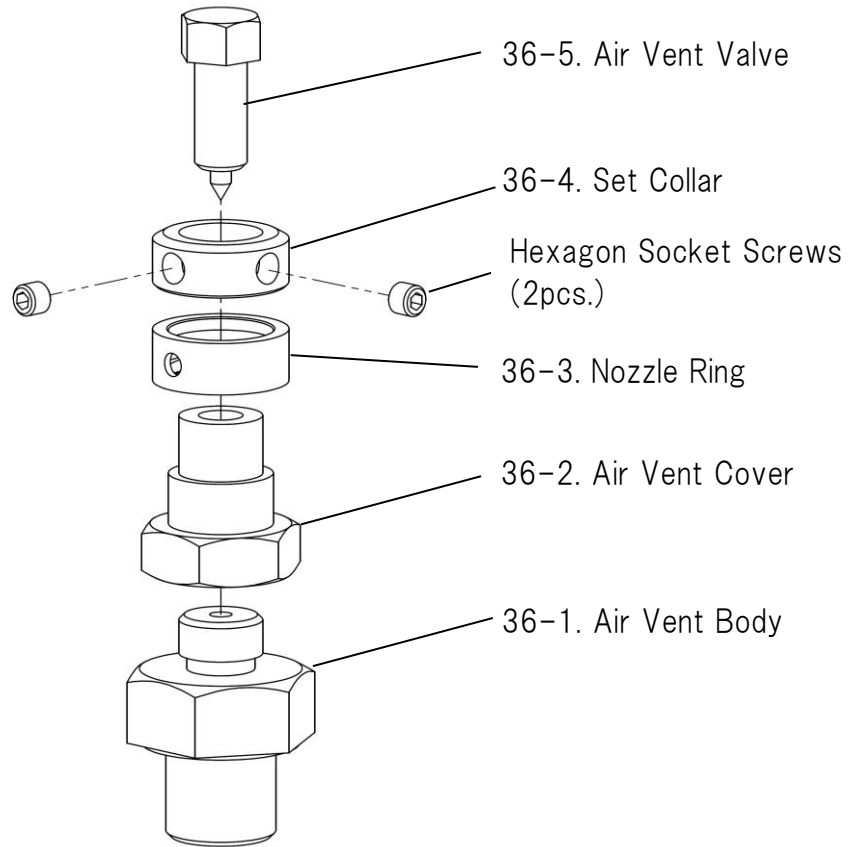
Torque table

Parts	Tools	Across the flats	Torque
Nut (16)	Torque Spanner	17 mm (0.67")	25N·m
Holder Bolt (28)	Torque wrench	8 mm (0.32")	28 N·m
Cover Nut (30)	Torque wrench	46 mm (1.81")	750 N·m
Cover Plug (31)	Torque wrench	32 mm (1.26")	200 N·m
Screen Unit (33)	Torque wrench	32 mm (1.26")	30 N·m
Spacer Bolt (38)	Torque Spanner	17 mm (0.67")	28 N·m
Air Vent Body (36-1)	Torque wrench	32 mm (1.26")	200 N·m
Air Vent Cover (36-2)	Torque wrench	27 mm (1.06")	100 N·m

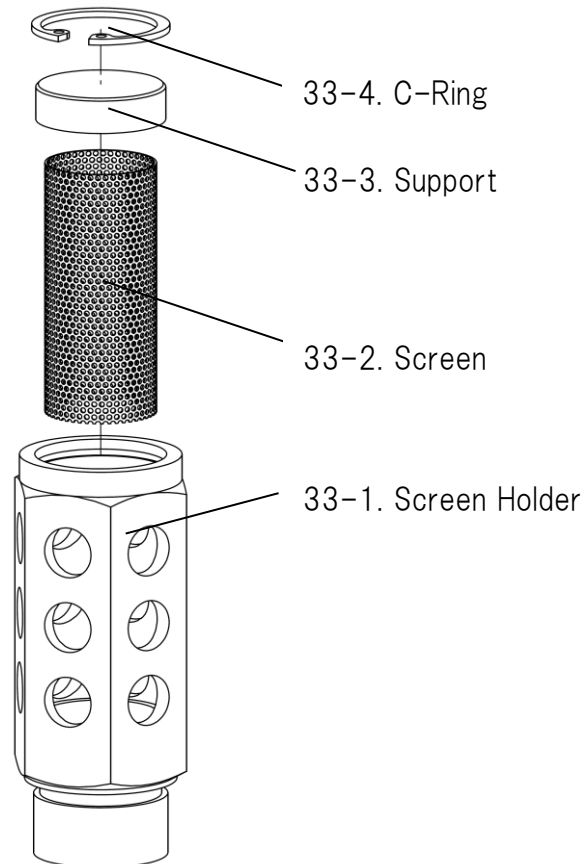


- | | |
|-------------------|-------------------|
| 1. Body | 31. Cover Plug |
| 2. Cover | 32. Cover Gasket |
| 3. Float | 33. Screen Unit |
| 15. Holder Gasket | 36. Air Vent Unit |
| 16. Nut | 37. Plug Gasket |
| 23. Spacer | 38. Spacer Bolt |
| 28. Holder Bolt | 40. Eye Bolt |
| 29. Cover Bolt | |
| 30. Cover Nut | |

<Air Vent Unit>



<Screen Unit>



6 TROUBLESHOOTING

Problem		Possible cause	Solution	
Steam leaks or blows through.		Foreign material such as scale or dirt is stuck between the valve (6), the valve seat (13) and/or the holder (5) of the valve unit.	Disassemble the valve unit and remove the material.	
		The valve (6), the valve seat (13) and/or the holder (5) are damaged, worn or corroded.	Replace the valve unit.	
		The valve seat (13) or the threads of the holder (5) of the valve unit are loose.	Retighten the valve seat (13) or the threads of the holder (5) in the valve unit. *1	
		The holder bolts (28) or spacer bolts (38) are loose.	Retighten the holder bolts (28) or spacer bolts (38). *2	
		The holder gasket (15) is damaged.	Replace the holder gasket (15).	
		Wrong installation position	Change the installation so that the name plate is on the top side of the body (1).	
		Wrong installation direction	Make sure the arrow on the cover (2) matches the flow direction of the fluid.	
Steam leaks from the body.	From between the body and cover	The cover nuts (30) are loose.	Retighten the cover nuts (30). *3	
		Damage, erosion or deterioration of the cover gasket (32).	Replace the cover gasket (32).	
		The gasket sealing surface of the body (1) or cover (2) are damaged.	Replace the body (1) or the cover (2) with a new one.	
	From between the cover and plug or air vent.	Foreign material such as scale or dirt sticks to the air vent unit.(36).	Disassemble the air vent unit (36) and remove the material.	
		The sealing surfaces of the valve (36-5) or the valve seat (36-1) in the air vent unit (36) are damaged, worn or corroded	Replace the air vent unit (36).	
		The plug (31) and air vent unit (36) are loose.	Retighten the plug (31) and air vent unit (36). *4	
		The plug gasket (37) is damaged.	Replace the plug gasket (37).	
		The sealing surface of the cover (2) or plug (31) are damaged.	Replace the cover (2) or the plug (31) with a new one.	
	Insufficient condensate discharged, or no condensate discharged.		The screen (33-2) is clogged.	Clean the screen (33-2).
			Foreign material such as a scale or dirt is stuck in the valve seat (13).	Clean the valve seat (13).
The float (3) is damaged.			Replace the float (3).	
The air vent unit (36) is damaged.			Replace the air vent unit (36).	
Wrong installation position			Correct the installation position.	
The steam pressure exceeds the specified maximum operating pressure.			Reduce the pressure or replace the trap with a higher maximum operating pressure trap.	
Insufficient condensate capacity.			Replace the trap with a larger capacity trap.	

*1, *2, *3 and *4: Refer to the torque tables in Section 5, "Maintenance" to retighten the parts with the correct torque.

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

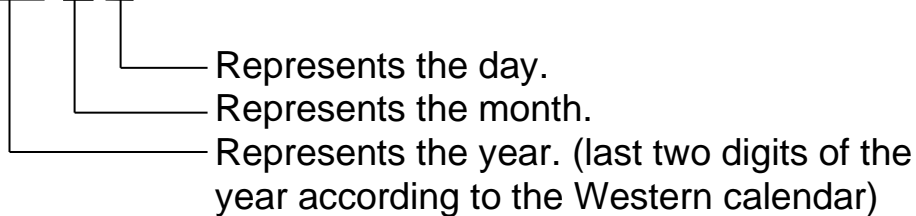
The remedy available under the warranty shall not exceed the sales price of the products delivered, for any cause whatsoever.

8 SERIAL NUMBER (S. No.) DESIGNATION

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

- For 4-digit display

S.No. □□□□



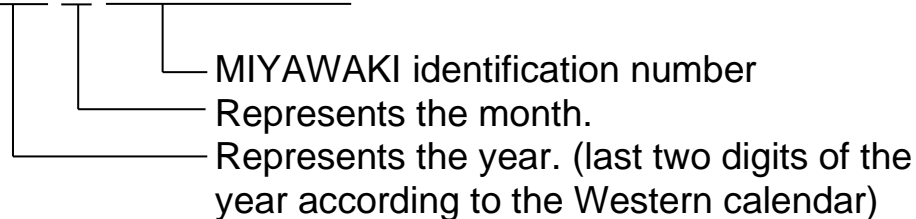
Example of serial number designation

1 7 1 1 → Jan.1, 2017

2 9 X M → Oct. 21, 2029

- For 9-digit display

S.No. □□□□□□□□□



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

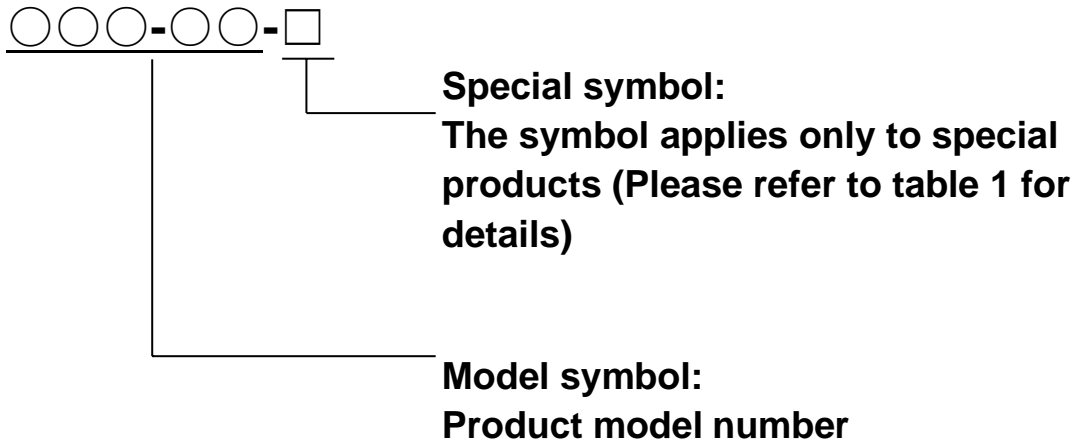


Table 1 Symbol description

Suffix	Special contents
A	Trap for high-pressure gas installed property
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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- 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 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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