GC20

ISO9001
JMI-0205
Head office & Factories

ISO14001
JQA-EM1403
Head office & Factories

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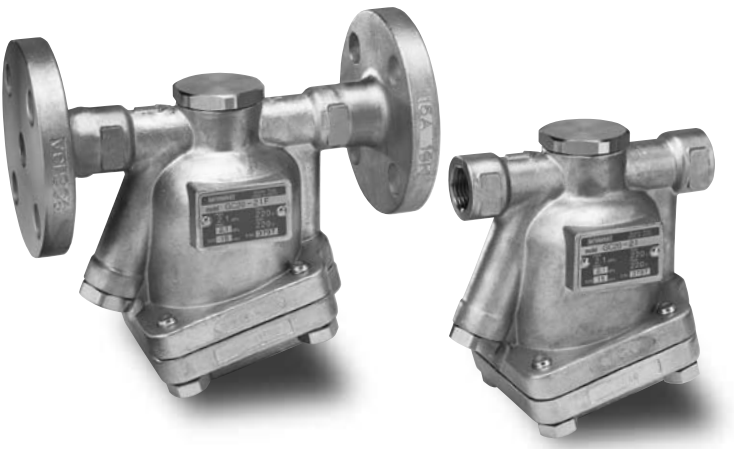


The MIYAWAKI GC20 steam trap is a stainless steel, ball float steam trap that has superior durability and uses a membrane capsule type air vent. In order to get maximum benefit from this product, be sure to read this manual before installing it.

MIYAWAKI INC.

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

WARNING	Failure to observe this type of precaution may lead to serious injury or death.
CAUTION	Failure to follow this type of precaution can lead to injury or damage to equipment and property.

1 Specifications and markings

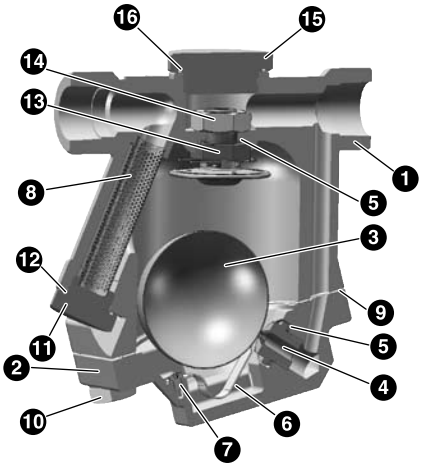
WARNING	Be sure not to use this product at higher pressures than the specified maximum allowable pressure (PMA) or at temperatures higher than the specified maximum allowable temperature (TMA).

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

(1) Maximum allowable pressure (PMA): 2.1MPa (305psig)
(2) Maximum allowable temperature (TMA): 220˚C (428°F)
(3) Maximum operating pressure (PMO):
0.3MPa (43psig), 0.8MPa (116psig), 2.1MPa (305psig)
(4) Maximum operating temperature (TMO): 220˚C (428°F)
(5) Size: 15mm (1/2"), 20mm (3/4"), 25mm (1")
(6) Year of production: The two leftmost digits in the four-digit 'S No.' on the nameplate are the last two digits of the year of production.
(7) Flow direction: Shown by an arrow.
(8) Body material: Stainless Steel SCS13A

* Refer to the leaflet for details about dimensions and other specifications.

2 Construction details



1. Body
2. Bottom cover
3. Float
4. Valve seat
5. Valve seat gasket
   Air vent seat gasket
6. Bimetal
7. Screw (Phillips)
8. Screen
   (20 mesh or equivalent)
9. Cover gasket
10. Hexagon bolt
11. Screen plug
12. Screen plug gasket
13. Air vent
14. Nut
15. Air vent plug
16. Air vent plug gasket

* The air vent seat gasket (5) and the valve seat gasket (5) have the same part number.

3 Installation

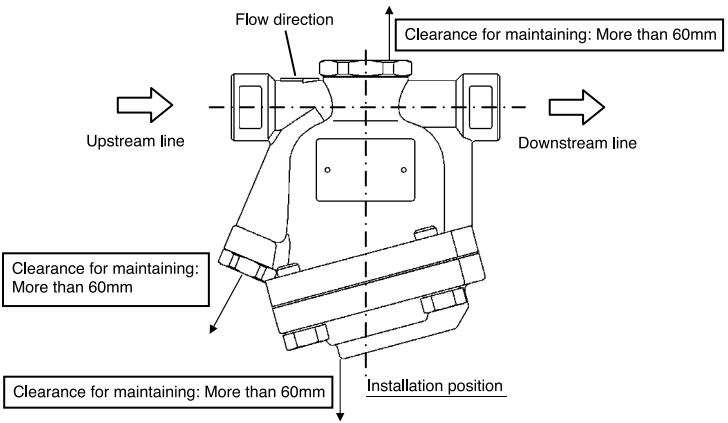
WARNING	・Pay very careful attention when working in hazardous environments. There is a risk of explosion and the possibility of dangerous gases leaking. Always check whether the pipeline contains flammable, high pressure or high temperature materials before starting to work.

* 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.

* 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 installing a GC20, install it so that the flow from the inlet to the outlet is horizontal and the air vent plug (15) is on the top. Install the GC20 on a pipe angling down so that condensate flows into the steam trap easily.
4) Open the isolation valve on the upstream line slowly and make sure the product works normally.



4 Maintenance

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 seat. To keep steam control systems and equipment working well, periodic maintenance of steam traps is essential.

○**Tools for testing steam traps**

In order to test steam traps, ultrasonic testers, sound detectors, and thermometers have been used for years. These tools are relatively easy to use and are useful for making rough estimates of the level of deterioration in a defective trap. However, to determine deterioration levels and steam losses quantitatively, special tools for testing steam traps are required.

Dr. Trap and Dr. Trap Jr. are testing equipment that was developed specifically for diagnosing steam traps and analyzing survey results automatically. Use these tools to avoid tiresome jobs on site and save working time.

○ **Working conditions of a steam trap**

Steam trap failures can be classified as either 'Leaking' or 'Plugged'. The level of a steam leak is generally determined by the intensity of the ultrasonic vibration generated in the valve seat inside of a steam trap. Plugging is diagnosed by measuring the surface temperature. As plugging progresses due to a buildup of dirt in the trap, it finally becomes completely plugged. Then the surface temperature will drop to around 40 degrees centigrade, or lower.

○ **Repairs**

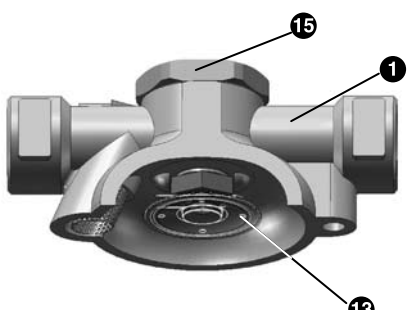
When a trap fails, it is necessary to clean the internal parts and to replace damaged parts. Take the failed trap apart following the steps below.

Disassembling the trap

1) Loosen the four hexagon bolts (10) and remove the bottom cover (2).
2) Remove the float (3), valve seat (4), seat gasket (5), and bimetal (6).The bimetal (6) is secured to the cover (2) with a screw (Phillips head screw) (7).

Disassembling the air vent

1) Remove the bottom cover (2), the same way as described in the procedure for “Disassembling the trap” above.
2) Remove the air vent plug (15).
3) While holding the air vent (13), loosen the nut (14) and remove the air vent from beneath.



Disassembling the screen

1) Remove the screen plug (11).
2) Remove the screen (8) from the body (1).

Take appropriate measures, as described in Section 6, “Troubleshooting”. Reassemble the parts according to the following procedure, by reversing the procedure used to disassemble them. Refer to the torque table for the correct torque for each part.

Reassembling the screen

1) Attach the screen (8) to the screen plug (11).
2) Fit the screen plug (11) into the body (1) and tighten it.
   *In this case, be careful to store the tip of the screen pointing into the place where it fits into the body.

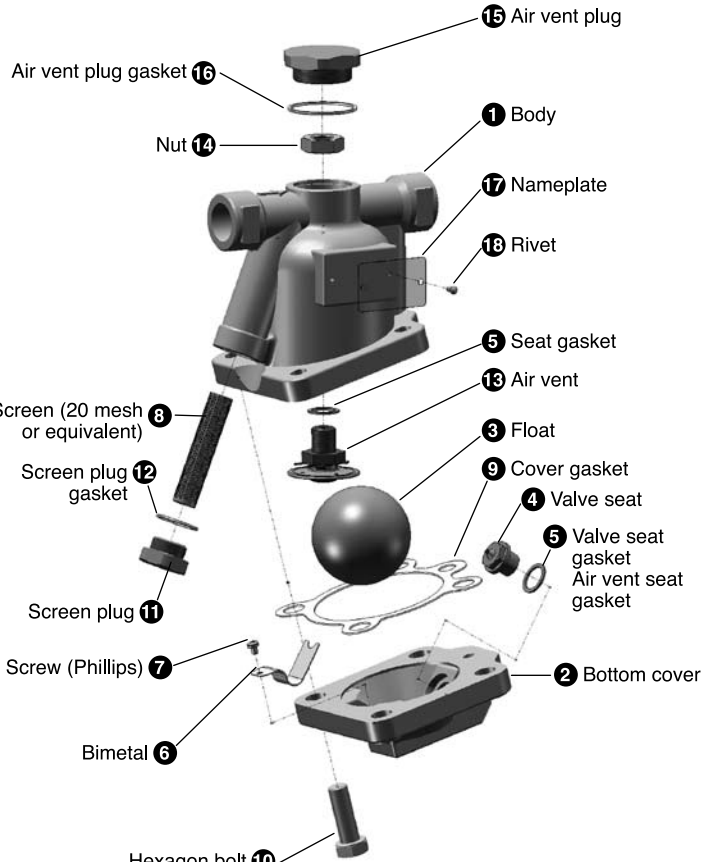
Reassembling the air vent

1) Attach the seat gasket (5) to the air vent (13).
2) Insert the air vent (13) from the bottom of the body (1), and lift it up to the air vent mounting position.
3) Tighten the nut (14) and the air vent (13) at the air vent plug on the top of the body (1).
   *In this case, fit the hexagonal opposite side of the air vent into the part that prevents the body (1) from turning with it.
4) Secure the air vent plug (15) to the body (1).

Reassembling the trap

1) Attach the seat gasket (5) to the bottom cover (2).
2) Screw the valve seat (4) into the bottom cover (4), and tighten it.
3) Secure the bimetal (6) to the bottom cover (2) with the screw (7).
4) Put the cover gasket (9) and the float (3) on the bottom cover (2), and attach them to the body (1). In this case, make sure that the body (1) and the bottom cover (2) are not in opposite directions to each other. Tighten the hexagon bolts (10) from the bottom cover (2) side.
   *In this case, tighten the bolts crosswise to avoid uneven tightening.
   *The torque for each part is shown in the following table.

Parts	Tools	Across the flats	Torque
Valve seat (4)	Torque wrench	13mm (0.51in)	25N-m (250kgf-cm)
Hexagon bolt (10)	Torque wrench	17mm (0.67in)	28N-m (280kgf-cm)
Screen plug (11)	Torque wrench	24mm (0.94in)	25N-m (250kgf-cm)
Nut (14)	Torque wrench	19mm (0.75in)	25N-m (250kgf-cm)
Air vent plug (15)	Torque wrench	38mm (1.50in)	50N-m (500kgf-cm)
Screw (7)	Torque screwdriver (Standard or Phillips)	———	0.3N-m (3kgf-cm)


15 Air vent plug
Air vent plug gasket 16
1 Body
Nut 14
17 Nameplate
18 Rivet
5 Seat gasket
13 Air vent
Screen (20 mesh or equivalent) 8
3 Float
Screen plug gasket 12
9 Cover gasket
4 Valve seat
5 Valve seat gasket
Air vent seat gasket
Screen plug 11
Screw (Phillips) 7
2 Bottom cover
Bimetal 6
Hexagon bolt 10

5 Troubleshooting

Problem		Possible cause	Solution
Steam leaks or blows through.		Stuck to valve or dirt accumulated around the valve or valve seat	Clean the valve seat.
		Damage, erosion or corrosion of the valve seat	Replace the valve seat.
		The valve seat is loose.	Retighten the valve seat.*1
		The float is damaged.	Replace the float.
		The air vent is damaged.	Replace the air vent.
		The nut is loose.	Retighten the nut.*2
		Inappropriate installation position	Change the installation so that the air vent plug is on the top.
		Improper installation direction	Make sure the arrow on the main body matches the flow direction of the fluid.
		The bimetal is damaged.	Replace the bimetal.
Steam leaks from the body.	**From the bottom cover connections**	The hexagon bolt is loose.	Retighten the hexagon bolt.*3
		Damage, erosion or deterioration of the cover gasket	Replace the cover gasket.
		The gasket sealing surface on the body or bottom cover is damaged.	Replace the body with a new one, or replace the bottom cover.
	From the plug connections	The plug is loose.	Retighten the plug.*4
		The gasket is damaged.	Replace the gasket.
		The gasket sealing surface on the body or plug is damaged.	Replace the body with a new one, or replace the plug.
Insufficient condensate discharged, or no condensate discharged.		The screen is clogged.	Clean the screen.
		Stuck to valve or dirt accumulated around the valve or valve seat	Clean the valve seat.
		The bimetal is damaged.	Replace the bimetal
		The air vent is damaged.	Replace the air vent.
		Inappropriate installation position	Correct the installation position.
		The steam pressure was over the specified maximum operating pressure.	Lower the pressure or replace the trap with one that has a higher maximum operating pressure.
		Insufficient condensate capacity.	Replace the trap with a larger capacity trap.

*1, *2, *3 and *4: Refer to the torque table in Section 4, “Maintenance” to retighten the parts to the correct torque.

6 Warranty

Warranty period

The warranty period shall last 12 months from the date of product delivery.

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 have 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) Extremely worn packing, gaskets, or other parts
7) Attachment or accumulation of foreign objects in the pipe, such as dust and scale
8) Problems from fires, natural disasters, or other force majeure which is not our responsibility

Warranty limitation

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

●お買い上げの製品及びこの取扱説明書内容についてのご質問は下記にお問い合わせください。
また、この取扱説明書を紛失したり、汚損により読めなくなった場合は、同じく下記にご請求ください。

For any questions about the product that you purchased or about the details in this instruction manual, please contact the following.
If you lose this user's manual or can no longer read it due to stains, please make a request to the following.

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