GC1/GC1V

ISO9001
JMI-0205
Head office & Factories

ISO14001
JQA-EM1403
Head office & Factories

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The GC1/GC1V ball float steam trap is highly durable and suitable for steam mains that generate relatively small amounts of condensate. In order to get maximum benefit from this product, be sure to read this manual before installation.

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

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) : 350℃(662℉)

③ Maximum differential pressure (⊿PMX) : 1.0MPa(145psig), 1.6MPa(230psig), or 2.1MPa(305psig)

④ Maximum operating temperature (TMO) : 350℃(662℉)

⑤ Size : 15mm(1/2"), 20mm(3/4"), or 25mm(1")

⑥ Year of production : The two leftmost digits in the four-digit 'S.No.' are the last two digits of the year of production.

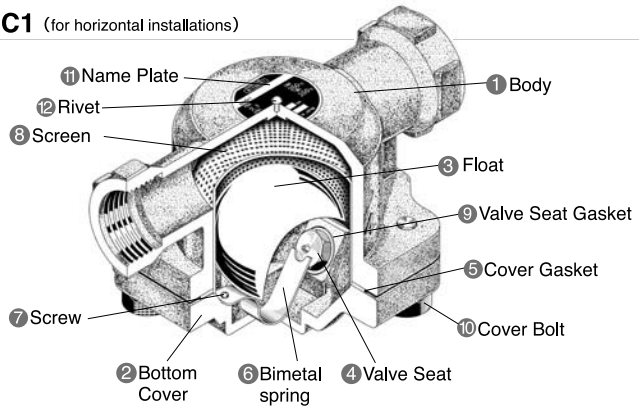
⑦ Flow direction : shown by an arrow.

⑧ Body material : SCS14

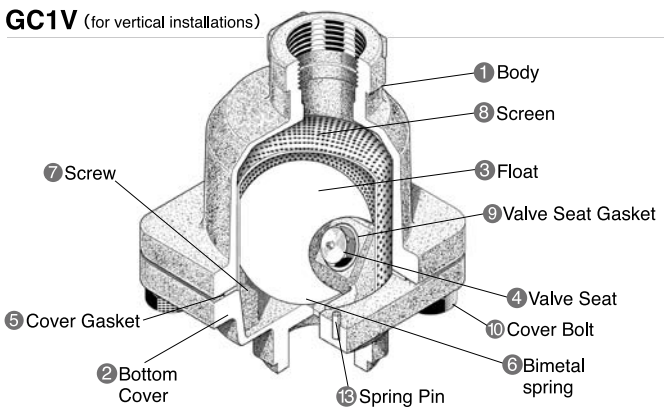
* Refer to the leaflet for details about dimensions and other specifications.

2 Construction details

GC1 (for horizontal installations)



GC1V (for vertical installations)



① Body	⑥ Bimetal spring	⑩ Cover Bolt
② Bottom Cover	⑦ Screw	⑪ Name Plate
③ Float	⑧ Screen	⑫ Rivet
④ Valve Seat	⑨ Valve Seat Gasket	⑬ Spring Pin
⑤ Cover Gasket		

3 Installation

⚠ **Warning**	Pay very careful attention when working in hazardous environments such as this. 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 absolutely sure that isolation valves are installed on both the upstream and downstream lines.

⚠ **Caution**	Before installing the product, open the both isolation valves, and the bypass valve, if it exists, to blow out any debris or dust inside the pipeline. After blowing out the line, before starting to work, close the isolation valves and allow time for the temperature to become normal. When installing the product, be sure to allow clearance for maintaining it.

* When installing new pipelines, be sure to allow a slight slope to the pipeline, so that any condensate will flow smoothly.

* Remove the dustproof seals covering both connections.
* Check the flow direction indicated on the nameplate or on the side of the body.
* When installing a GC1, make sure the normal line is on the side, at a right angle to a plumb line (basically horizontal).
* When installing a GC1V, make sure to keep the flow direction parallel to a plumb line (basically pointing up or down).
* If the installation angle slants more than five degrees away from the angles described above, the operating performance may be reduced.
* 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 the 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 steam leaks 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, or lower.

Repairs

⚠ Warning	Pay very careful attention when working in hazardous environments such as this. 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.

⚠ Caution	After blowing out the line, before starting to work, close the isolation valves and allow time for the temperature to become normal.

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.

1) Remove the four cover bolts (10), and detach the bottom cover (2), while keeping the trap erect.

2) Remove the screen (8), the float (3), and the cover gasket (5) in that order.

3) Repair the trap according to the instructions in Chapter 6. 'Troubleshooting'.

4) After repairing the trap, re-assemble the parts in reverse order.

* When putting the body (1) and the bottom cover (2) of a GC1 together, be careful to orient the body and cover correctly to each other.

* When putting the body (1) and the bottom cover (2) of a GC1V together, orient the body and cover by inserting the spring pin (13) in the body (1) into the hole on the bottom cover (2).

*When fastening the four cover bolts (10), tighten each one the same amount, going around the four bolts several times.

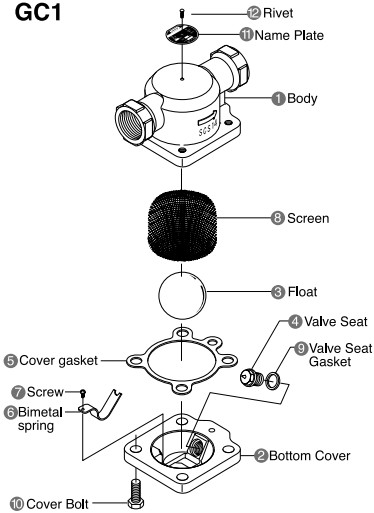
*The cover gasket (5) must be replaced with a new one each time the trap is taken apart.

*The valve seat gasket (9) must be replaced with a new one each time the valve seat is detached from the botom cover (2)

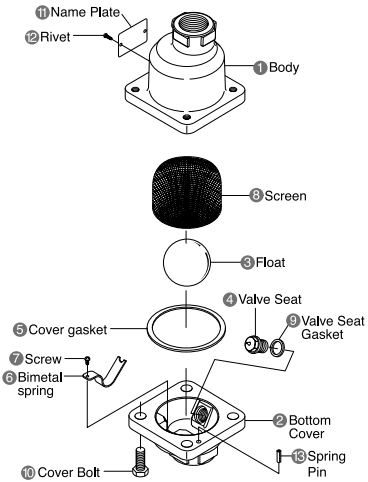
Parts	Tools	Across the flats	Torque
Valve seat (4)	Torque wrench	13mm (0.51in)	250kgf*cm (217 lbf*in)
Screw (7)	Torque screwdriver (Standard or Phillips)	-	3.0kgf*cm (2.6lbf*in)
Cover bolt (10)	Torque wrench	17mm (0.67in)	280kgf*cm (243 lbf*in)

5 Details

GC1



GC1V



6 Troubleshooting

Problem	Possible causes	Solution
Steam leaks or blow through.	Stuck valve or dirt accumulated around the valve or valve seat.	Clean the valve and the valve seat.
	Damage, erosion or corrosion of the valve seat.	Replace the valve seat.
	The valve seat is loose.	* Tighten the valve seat.
	The float is damaged.	Replace the float.
	Inappropriate installation angle.	Correct the installation angle. Refer to Chapter 3.
	The bimetal spring is damaged.	Replace the bimetal spring.
Steam leaks from the body.	The bolts are loose.	* Tighten the bolts.
	The cover gasket is damaged or worn.	Replace the cover gasket.
	The sealing surface on the body or the bottom cover is damaged.	Replace the body and the bottom cover.
Insufficient condensate discharged, or no condensate discharged.	The screen is clogged.	Clean the screen.
	Dirt has built up on or around the valve seat.	Clean the valve seat.
	The float is damaged.	Replace the float.
	Inappropriate installation angle.	Correct the installation angle. Refer to Chapter 3.
	The bimetal spring is damaged.	Replace the bimetal spring.
	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.

* : See the torque table in Chapter 4.

7 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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