

THERMODYNAMIC STEAM TRAP

SV1

USER'S MANUAL



 MIYAWAKI INC.

SAFETY GUIDE

The model SV1 is a compact, disc type steam trap that also serves as a bypass valve.

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).

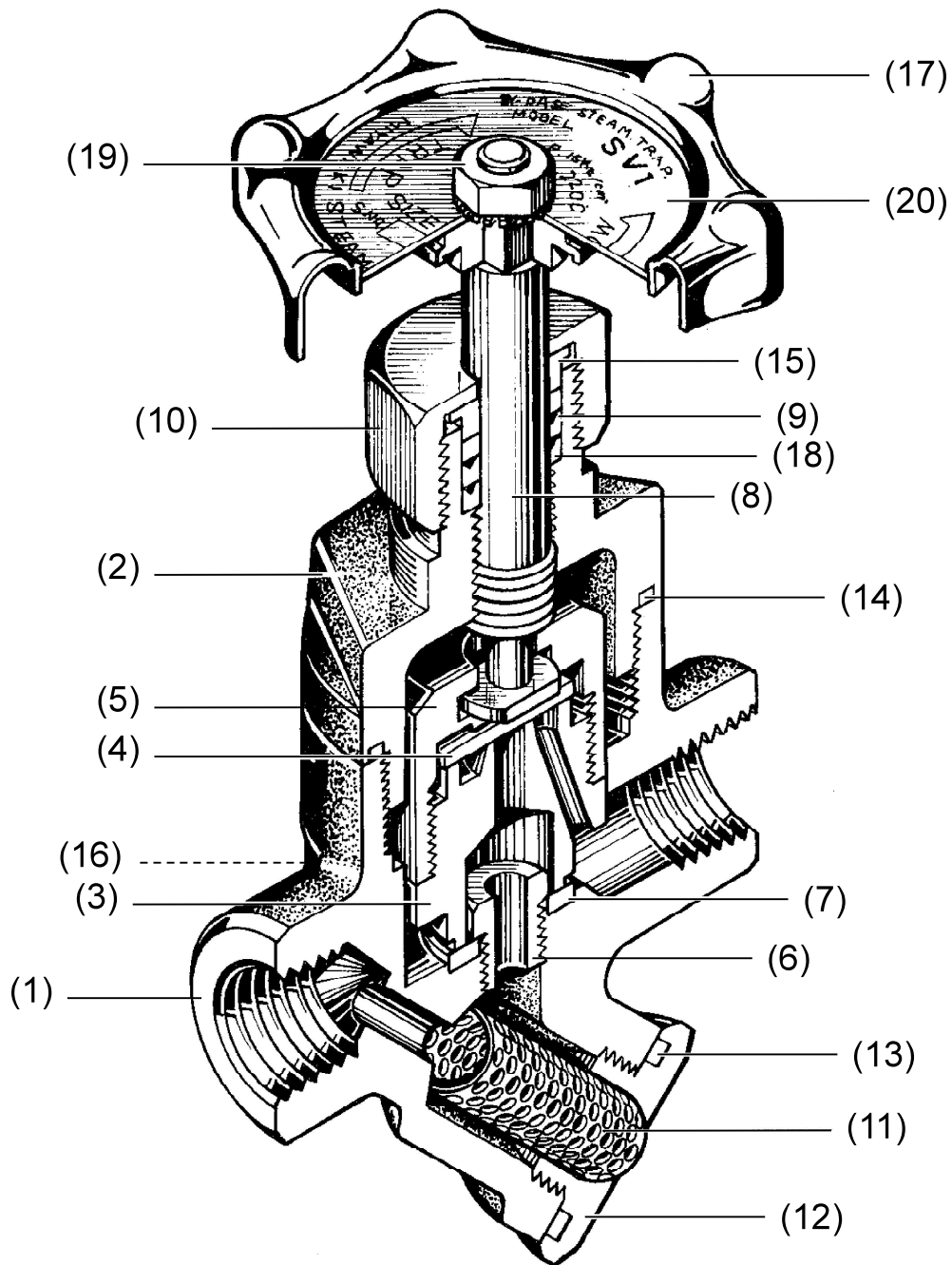
The following items are displayed on the name label or the side of the product.

Check each item to avoid misuse of the product.

- 1) Maximum Operating pressure (MAX. P.): 1.6MPa (230psig)
- 2) Maximum operating temperature (MAX. T.): 220°C (428°F)
- 3) Size: 10 mm (3/8"), 15 mm (1/2"), 20 mm (3/4") or 25 mm (1")
- 4) Year of production: The two leftmost digits in the four-digit or nine-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
- 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



- | | | |
|---------------|-------------------|------------------|
| 1. Body | 8. Spindle | 15. Gland bush B |
| 2. Bonnet | 9. Gland Packing | 16. Pin |
| 3. Seat | 10. Gland Nut | 17. Handle |
| 4. Disc | 11. Screen | 18. Gland Bush A |
| 5. Cap | 12. Plug | 19. Nut |
| 6. Bush | 13. Plug Gasket | 20. Name Plate |
| 7. Valve Seat | 14. Bonnet Gasket | |

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) The SV1 can be used for both horizontal and vertical lines. However, when installing a SV1 in a horizontal line, be sure to maintain a slight slope to the line, so that any condensate will flow smoothly.
- 4) Open the isolation valve on the upstream line and make sure the product works normally.

4 OPERATION



CAUTION

- In normal operation, use the SV1 with the bypass valve closed (with the handle turned fully clockwise).
- If the SV1 is used for a long time with the bypass valve open, there is a possibility that parts such as the Valve Seat may be damaged.

Model SV1 functions as blow off of by-pass valve when handle is turned counter clockwise, and will function as thermodynamic steam trap when handle is turned clockwise to full stop.

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

5.1 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.

5.2 Working Conditions of a Steam Trap

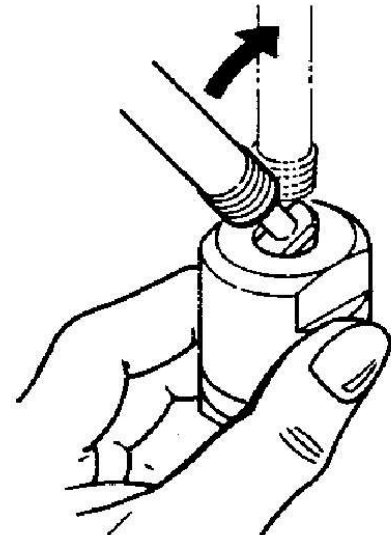
Steam trap failures can be classified as either “Leaking” or “Plugged”. The level of steam leaks is generally determined by the intensity of the ultrasonic vibration generated in the valve seat inside of a steam trap. Plugging is diagnosed by measuring the surface temperature. As plugging progresses due to a buildup of dirt in the trap, it finally becomes completely plugged. Then the surface temperature will drop to around 40°C (104°F), or lower.

5.3 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.

5.3.1 Disassembling the trap

- 1) Remove the bonnet (2).
- 2) The trap unit, including the handle (17), can be taken out as one unit.
- 3) When the handle (17) turns clockwise, it will come into contact with the gland nut (10).
- 4) When the spindle (8) connected to the handle (17) is tilted against the trap unit, as shown in the figure on the right, it can be taken out.
- 5) Take the cap (5) off the seat (3) of the trap unit, and then remove the disc (4).



5.3.2 Disassembling the bonnet

- 1) Remove the nut (19) from the spindle (8).
- 2) Remove the name plate (20) and the handle (17).
- 3) Remove the gland nut (10) and then remove the gland bush B (15), two gland packings (9), and the gland bush A (18).

5.3.3 Disassembling the screen

- 1) Turn the plug (12) counterclockwise to remove it, and remove the plug gasket (13).
- 2) Remove the screen (11).

After repairing the trap, re-assemble the parts in reverse order as follows.

5.3.4 Reassembling the screen

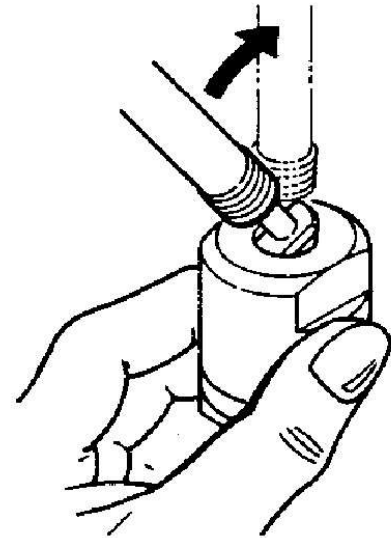
- 1) Put the screen (11) and the plug gasket (13) back on the plug (12).
- 2) Then fasten the plug.

5.3.5 Reassembling the bonnet

- 1) Put the gland bush A (18), two gland packings (9), and the gland bush B (15) on the bonnet (2), in that order.
- 2) Screw the gland nut (10) onto the bonnet (2).
- 3) Put the handle (17) on the spindle (8), and tighten the nut (19).

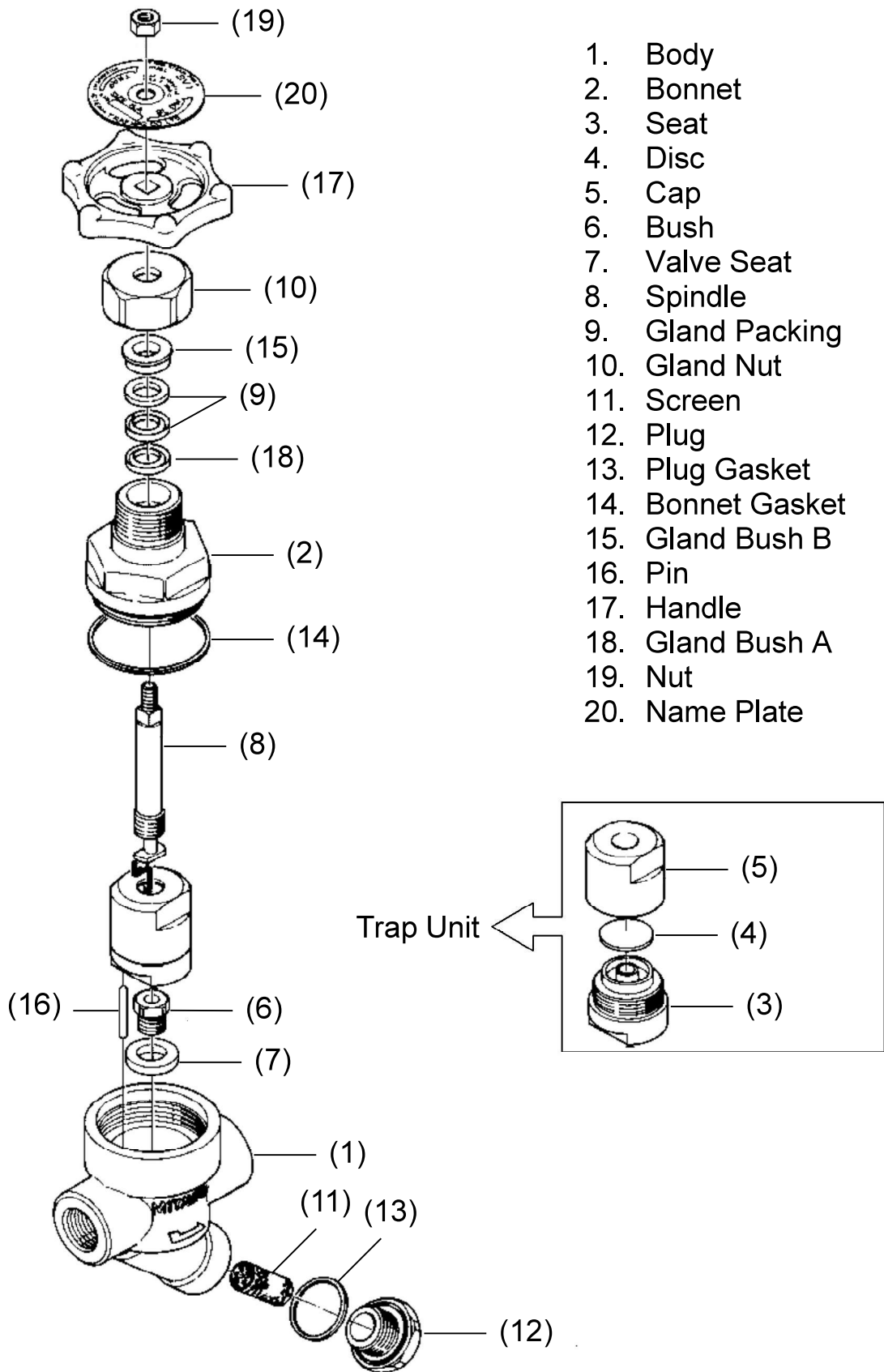
5.3.6 Reassembling the trap

- 1) Put the disc (4) on the surface of the seat (3) in the body (1).
*The disc with a groove should be facing down.
- 2) Fasten the cap (5) on the seat (3).
- 3) With the handle (17) touching the gland nut (10), connect the spindle (8) to the trap unit, as shown in the figure on the right.
- 4) Turn the handle (17) a little counterclockwise, so that the top of the trap unit is placed in the bonnet (2). (If the handle (17) is pulled up too much, the bottom of the trap unit will not be in the pin hole.)
- 5) Align the pin (16) with the position of the pin hole in the seat (3) of the trap unit and put the pin in.
- 6) Tighten the bonnet (2). When it becomes difficult to tighten the bonnet, turn the handle (17) about one turn counterclockwise and continue the tightening the bonnet (2). Repeat this operation until the space between the body (1) and the bonnet (2) disappears. Then, tighten the bonnet (2) fully.



The torque for each part is shown in the following table.

Parts	Tools	Across the flats	Torque
Bonnet (2)	Torque wrench	41 mm (1.61")	100N·m
Cap (5)	Spanner	24 mm (0,94")	60N·m
Bush (6)	Torque wrench	12 mm (0.47")	5-6 N·m
Gland Nut (10)	Torque wrench	29 mm (1.14")	25N·m
Plug (12)	Torque wrench	29 mm (1.14")	30N·m



6 TROUBLESHOOTING

Problem		Possible cause	Solution
Steam leaks or blows through.		Dirt is stuck around the disc (4) or seat (3).	Clean the disc (4) and the seat (3).
		Damage, wear or corrosion of the disc (4)	Replace the trap unit.
		Damage, wear or corrosion of the seat (3)	Replace the trap unit.
		The valve seat (7) is damaged.	Replace the valve seat (7).
		The back pressure is too high. (The back pressure must be less than 50% of the inlet pressure.)	Replace the trap with an appropriate trap.
		After using the blowoff valve, the manual handle was left open. Or it was poorly tightened.	Tighten the manual handle fully.
Steam leaks from the body.	From the bonnet connection	The bonnet (2) is loose.	Tighten the bonnet (2). *1
		The bonnet gasket (14) is damaged.	Replace the bonnet gasket (14).
		The sealing surface on the body (1) or bonnet (2) is damaged.	Replace the damaged part.
	From the bonnet and gland nut connection	Damage, wear or corrosion of the gland bush A (18) or the gland bush B (15), or the gland packing (9)	Replace the damaged part.
		The gland nut (10) is loose.	Tighten the gland nut (10). *2
	From the plug connection	The plug (12) is loose.	Tighten the plug (12). *3
		The plug gasket (13) is damaged.	Replace the plug gasket (13).
		The sealing surface on the body (1) or plug (12) is damaged.	Replace the damaged part.
	Insufficient condensate discharged, or no condensate discharged.		The screen (11) is clogged.
Dirt has built up around the seat (3).			Clean the seat (3).
Dirt has built up in the fluid path inside the trap unit.			Clean the trap unit.
Wrong installation direction			Reinstall the product in the correct direction.
Insufficient condensate capacity.			Replace the trap with a larger capacity trap.

*1, *2 and *3: Refer to the torque table in Section 4, "Maintenance" to retighten the parts to 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 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

7.3 Warranty limitation

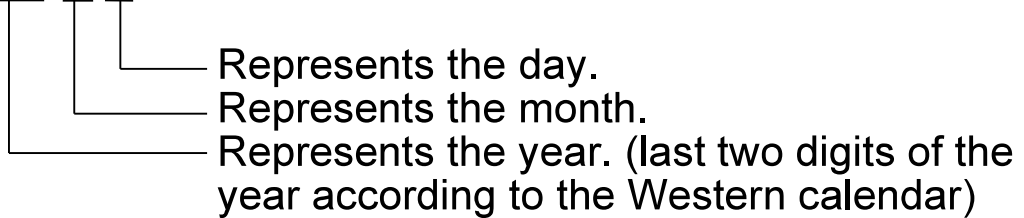
The remedy available under the warranty shall not exceed the sales price of the products delivered, for any cause whatsoever.

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. □□□□

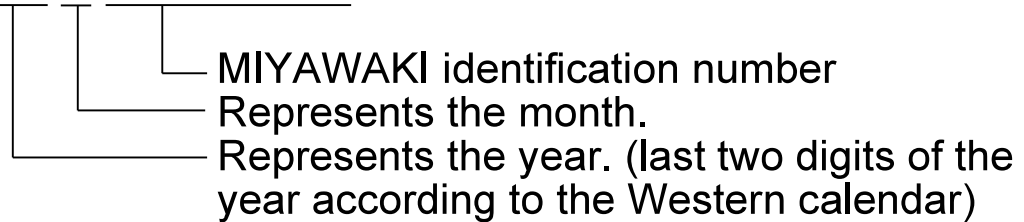


Example of serial number designation

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

○○○-○○-□

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

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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 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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