THERMOSTATIC RADIATOR TRAP

W

USER'S MANUAL

W1

W2

W3

MIYAWAKI INC.

SAFETY GUIDE

The models of the series W are steam traps designed for space heating equipment, such as radiators and convectors. They are available as angle type (W1 and W2) or as straight type (W3).

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.

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.

Table of Contents

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).

Check each item to avoid misuse of the product.

1) Maximum allowable pressure (PMA): 0.3 MPa (44 psig)
2) Maximum allowable temperature (TMA): 150 °C (302 °F)
3) Maximum operating pressure (PMO):
   (Shown as W.P. on the name plate)

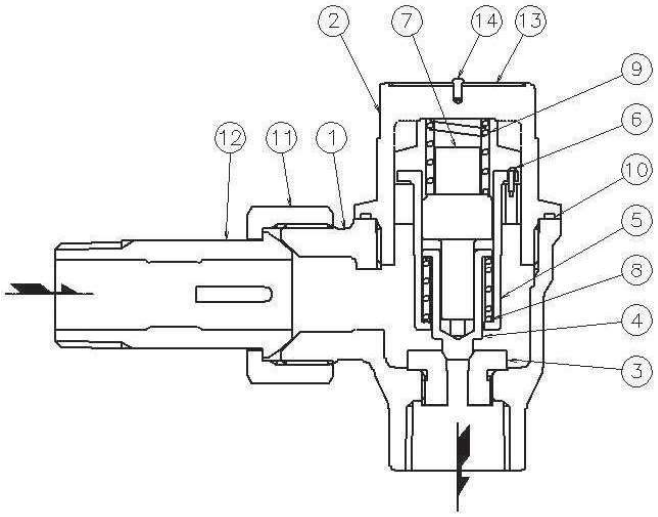
   W1-1.5, W2-1.5, W3-1.5: 0.15 MPa (22 psig)
   W1-3, W2-3, W3-3: 0.3 MPa (44 psig)

4) Maximum operating temperature (TMO): 150 °C (302 °F)
   (Not shown on the name plate)
5) Size: 15 mm (1/2”) or 20 mm (3/4”)
6) 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.
7) Flow direction: Shown by an arrow
8) Body material: Brass
9) Model symbol: Showing the product model name

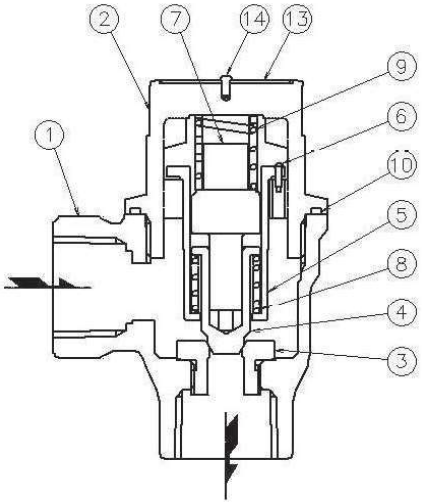
- Some pictures and illustrations in this manual are examples of W1, W2, W3 models. For more details regarding dimensions and other specifications, please refer to the catalog.

The models W1, W2, W3 fully comply with the requirements of the European Pressure Equipment Directive 2014/68/EU. They are classified according to Article 4, Section 3 of the PED, which does not allow to bear the CE marking.

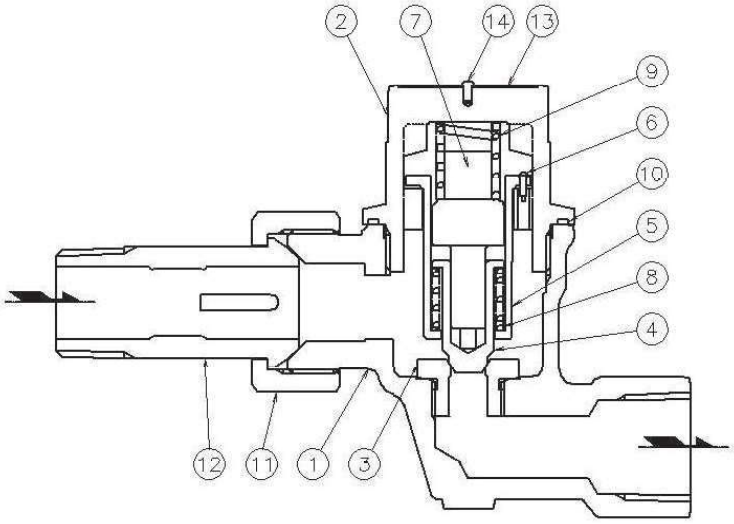
2 CONSTRUCTION DETAILS



W1



W2



W3

1. Body
2. Cover
3. Valve Seat
4. Valve
5. Guide Tube
6. Guide Stopper
7. Thermo Element
8. Spring
9. Spring
10. Gasket
11. Union Nut (W1/W3 only)
12. Nipple (W1/W3 only)
13. Name Plate
14. Rivet

3 INSTALLATION

WARNING

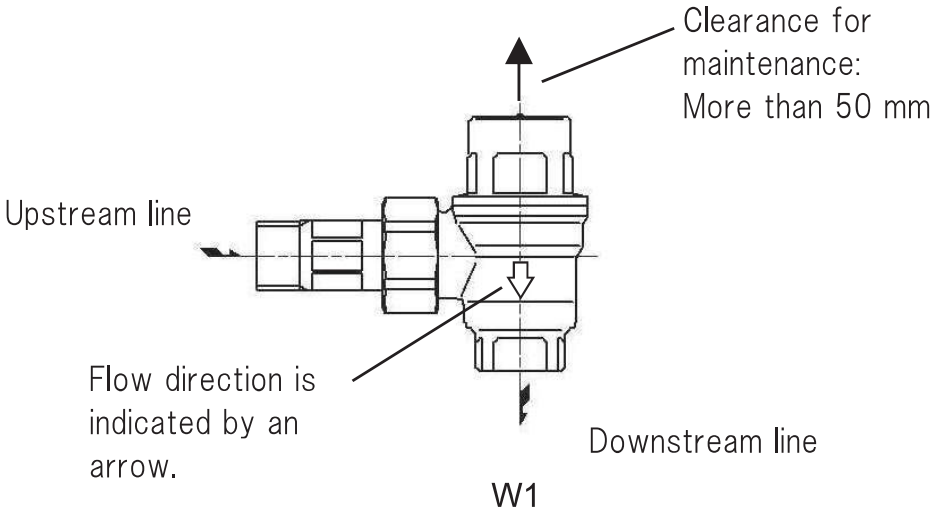
Pay very careful attention when working in hazardous environments. There is a risk of explosion and the possibility of dangerous gases leaking. Always check whether the pipeline contains flammable, high pressure or high temperature materials before starting to work.

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

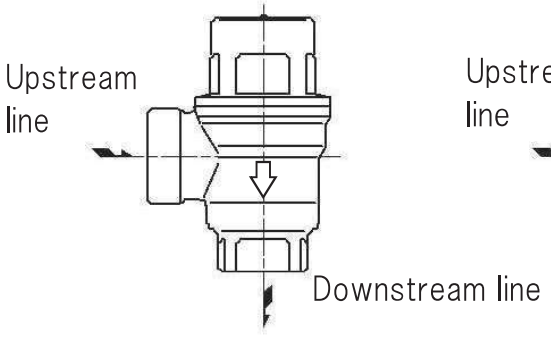
CAUTION

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.

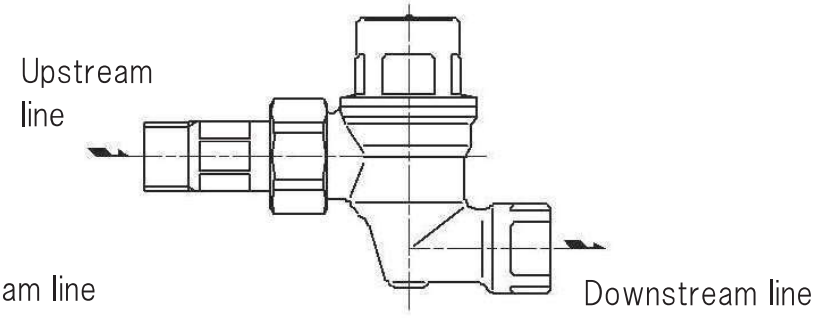
When installing the product, be sure to leave clearance for maintaining it.



W1



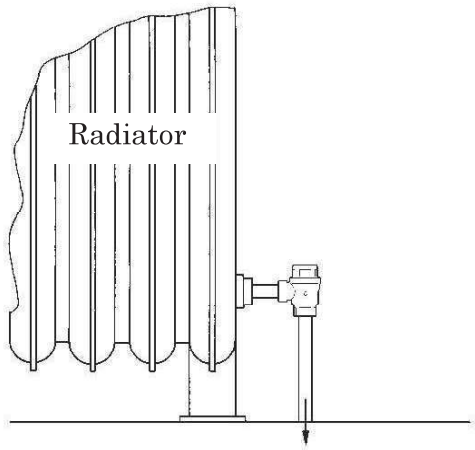
W2



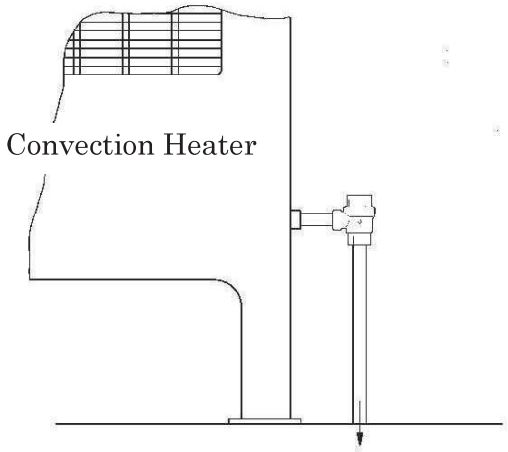
W3

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 side of the body.
3) W series can be used for both horizontal and vertical lines. However, installing the trap in a horizontal line, be sure to maintain a slight slope of the line, so that any condensate will flow smoothly to the trap.
4) Open the isolation valve on the upstream line and make sure the product works normally.

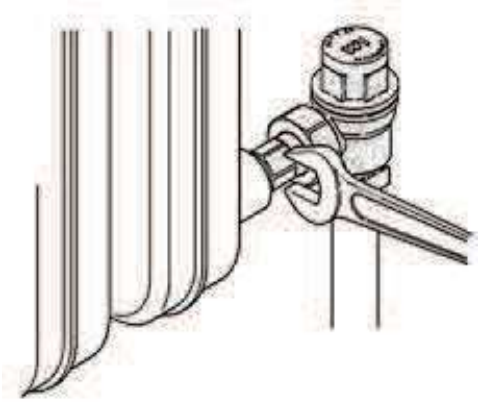
* The models of the series W should be installed at the lowest point of the steam using equipment. Refer to the drawing A, B.
* Dismantling and installations from and to the equipment is easy by the hexagon shaped nipple. The size of the hexagon is 19mm for 1/2 inch and 25mm for 3/4 inch size. Refer to the drawing C.
* Do not insulate the trap.
* Install an “Y” type strainer upstream of the trap to prevent the flow of dirt into the trap.



A



B



C

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.

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 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 Diagnosis 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 CO_2 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 CO_2 emissions.

For more details, please, check our homepage:

https://www.miyawaki.net/en/products/steam-trap-management-system

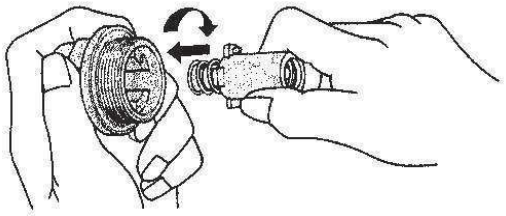
or ask our local representative.

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) Remove the cover (2). * All internal parts excluding the valve seat (3) will be taken apart with the cover (2).
2) The internal parts installed in the cover (2) can be dismantled by hand. First, push and turn the guide tube (5) 45 degrees as the drawing on the right. The guide tube (5), guide stopper (6), spring (8,9) valve (4), thermo element (7) will come apart.
   * There is a pin inside the thermo-element (7), please do not dismantle from the thermo-element.



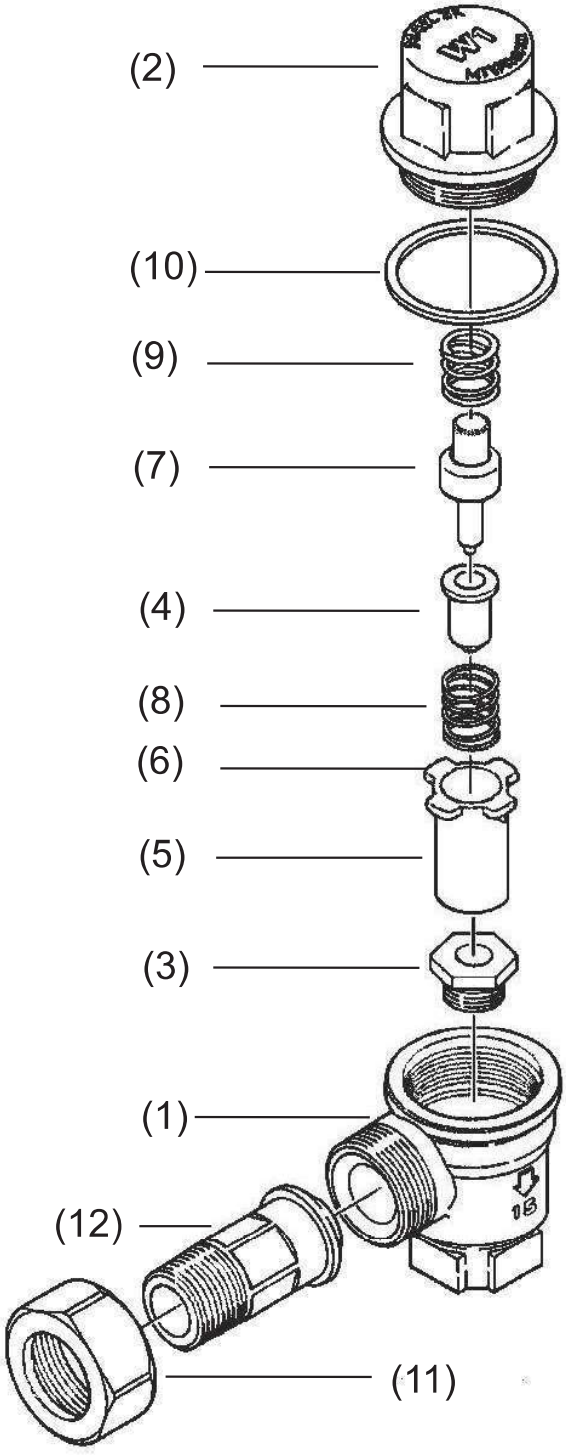
After cleaning the trap and replacing damaged parts, reassemble the parts in reverse order as follows.

5.2.2 Reassembling the trap

1) Insert the spring (8), valve (4), thermo element (7), and spring (9) into the guide tube (5).
   * The stronger spring (9) will be on the top and the weaker spring (8) will be at the bottom.
2) Reinstall the guide tube (5) to the cover (2).
   * Be sure to check that the guide stopper (6) has entered the hole in the cover (2).
3) Reinstall the cover (2) on the body (1).

Torque table

Parts	Tools	Across the flats	Torque
Valve Seat (3)	Socket wrench	17 mm (0.67”)	25 N·m
Cover (2)	Torque wrench	32 mm (1.26”)	50 N·m
Union Nut 15A (11)	Torque wrench	32 mm (1.26”)	50 N·m
Union Nut 20A (11)	Torque wrench	38 mm (1.50”)	60 N·m



1. Body
2. Cover
3. Valve Seat
4. Valve
5. Guide Tube
6. Guide Stopper
7. Thermo Element
8. Spring
9. Spring
10. Gasket
11. Union Nut
    (W1/W3 only)
12. Nipple
    (W1/W3 only)

6 TROUBLESHOOTING

Problem		Possible cause	Solution
Steam leaks or blows through.		Dirt is stuck around the valve (4) or valve seat (3).	Clean the valve (4) and the valve seat (3).
		The valve seat (3) is loose.	Tighten the valve seat (3). *1
		Damage, wear or corrosion of the valve (4).	Replace the damaged part.
		Damage, wear or corrosion of the valve seat (3).	Replace the damaged part.
		Temperature exceeding 150 ℃	Replace the thermo element (7).
Steam leaks from the body.	**From the cover connection**	The cover (2) is loose.	Tighten the cover (2). *2
		The gasket (10) is damaged.	Replace the gasket (10).
		The sealing surface on the body (1) or cover (2) is damaged.	Replace the damaged part.
	From the nipple connection	The union nut (11) is loose.	Tighten the union nut (11). *3
		The sealing surface on the body (1) or nipple (12) is damaged.	Replace the damaged part.
Insufficient condensate discharged, or no condensate discharged.		Dirt has built up around the valve seat (3).	Clean the valve seat (3).
		The thermo element (7) is damaged.	Replace the thermo element (7).
		Wrong installation direction	Reinstall the product in the correct direction.
		Insufficient condensate capacity.	Replace the trap with a larger capacity trap.

*1 to *3: Refer to the torque table 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. □□□□

- Represents the day.
- Represents the month.
- Represents the year. (last two digits of the year according to the Western calendar)

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. □□□□□□□□□

- MIYAWAKI identification number
- Represents the month.
- Represents the year. (last two digits of the year according to the Western calendar)

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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