

ANTI-FREEZING VALVE

# F1 / F1B

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USER'S MANUAL

# SAFETY GUIDE

The model F1/F1B is an anti-freezing valve which discharges residual condensate out of steam traps and pipe lines when the operation is stopped. The model F1B is equipped with a ball 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.



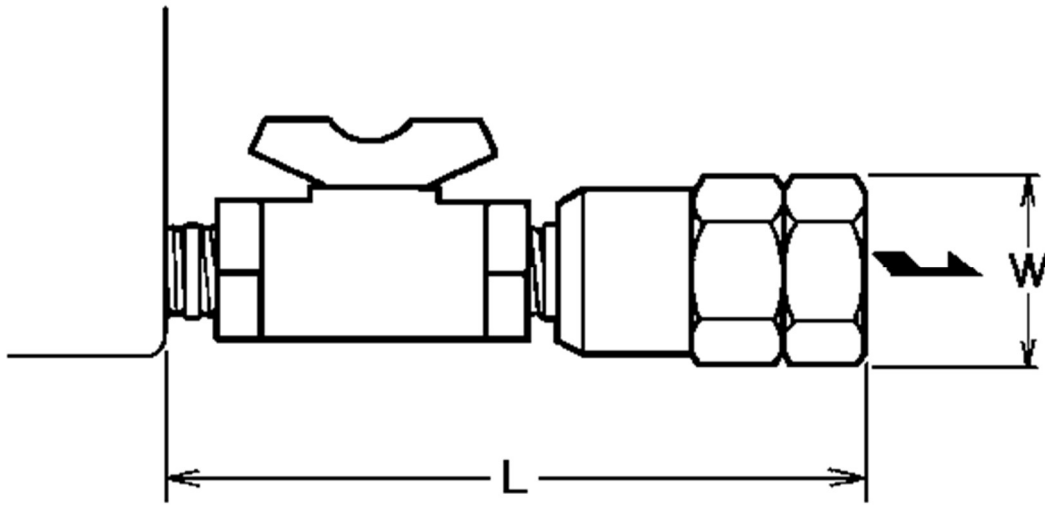
Failure to follow this type of precaution can lead to injury or damage to equipment and property.

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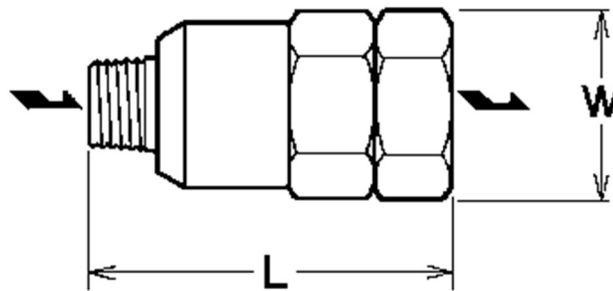
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# 1 SPECIFICATIONS AND MARKINGS



Model F1B



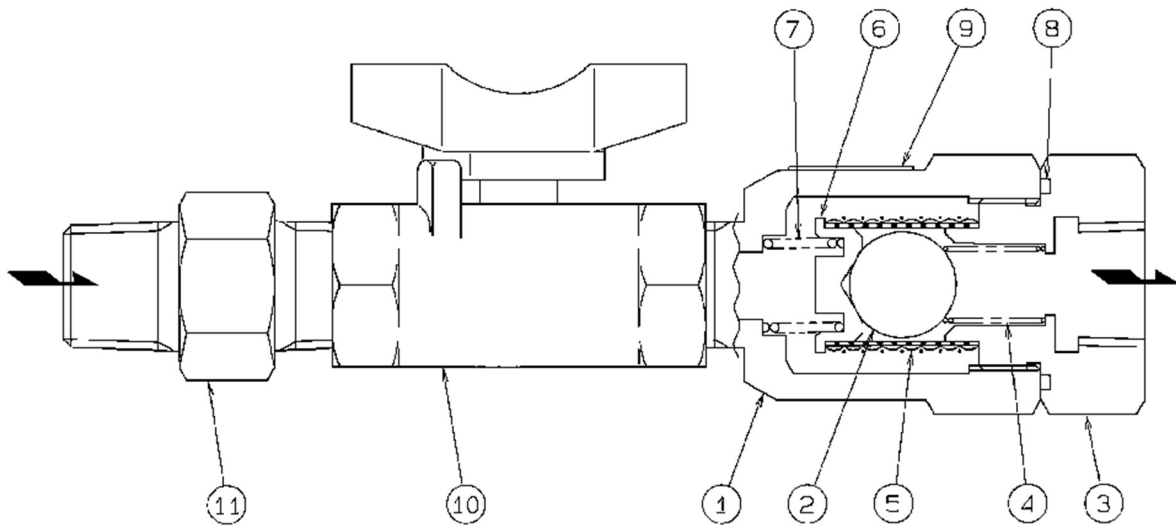
Model F1

Model	Connection		Operating pressure (MPa)		Maximum operating		Body material	Dimensions (mm)		Weight (kg)
	Connection	Nominal dia. (A)	Cracking	Closing	Pressure (MPa)	Temperature (°C)		L	W	
F1B	Threaded	8	0.01~0.04	0.02~0.05	1.0	183	Brass (C3771)	113	27	0.19
		10						119		0.23
F1		8 · 10						52		0.13

- Year of production: The two leftmost digits in the four-digit 'S No.' on the plug (3) are the last two digits of the year of production.
- Flow direction: Shown by an arrow
- Model symbol: Showing the product model name
- Pressure conversion: 1 MPa = 10.197 kgf/cm<sup>2</sup>

## 2 CONSTRUCTION DETAILS

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1. Body
2. Valve
3. Valve seat
4. Spring
5. Screen
6. Guide
7. Spring
8. Gasket
9. Name label
10. Ball valve (F1B only)
11. Nipple (F1B only)

### 3 INSTALLATION

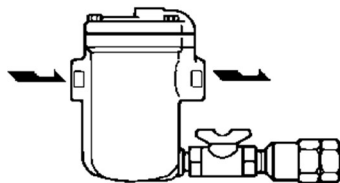
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- (1) Make the discharge pipe as short as possible.
- (2) Maintain a slight slope to the line, so that any condensate will flow smoothly.
- (3) Provide the discharge pipe with thermal insulation if possible.
- (4) When the connection diameter is bigger than 15A (1/2"), use a bushing to adjust the size.

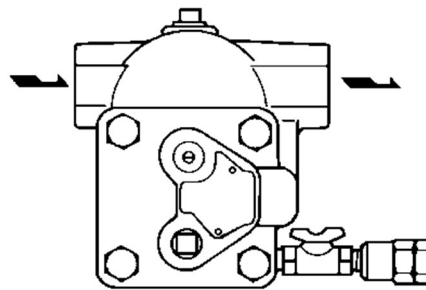
#### <Applicable models and example of installation>

##### Applicable models

(1) Model F1B (8A)

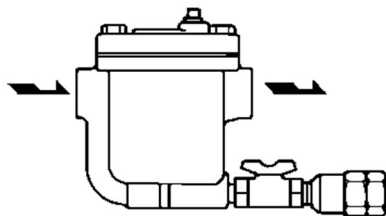


Model ES5

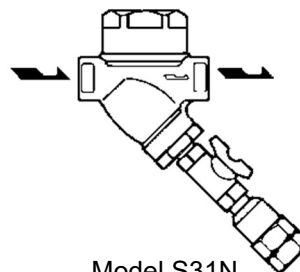


Model G11N / G12N

(2) Model F1B (10A)



Model ES8N

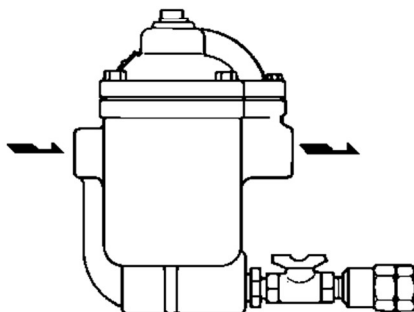


Model S31N

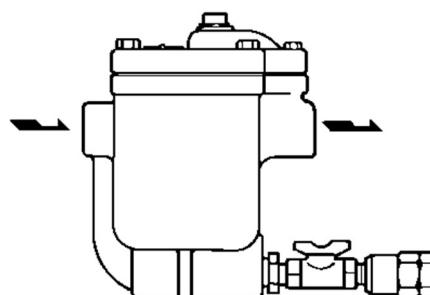
(3) Models installed by connecting a bushing to Model F1B valves (10A)

- Bushing size: Rc 3/4 × Rc 3/8

- Bushing size: Rc 3/4 × Rc 3/8



Model ER105



Model ES10

## 4 MAINTENANCE

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### WARNING

- Before removing the trap from the pipe or disassembling it, be sure to close the isolation valves on the inlet and outlet sides of the anti-freezing valve. Then, release the residual pressure from the anti-freezing valve (make sure that the pressure in the 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.



### CAUTION

- When replacing parts, make sure the replacement parts are supplied by Miyawaki.

#### 4.1 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.

##### 4.1.1 Disassembling procedure

- 1) When the valve seat (3) is removed, the internal parts (screen (5), spring (4), valve (2), guide (6), and spring (7)) can be removed.  
\*The guide (6) and the spring (7) can be removed together.
- 2) Clean and check each part.

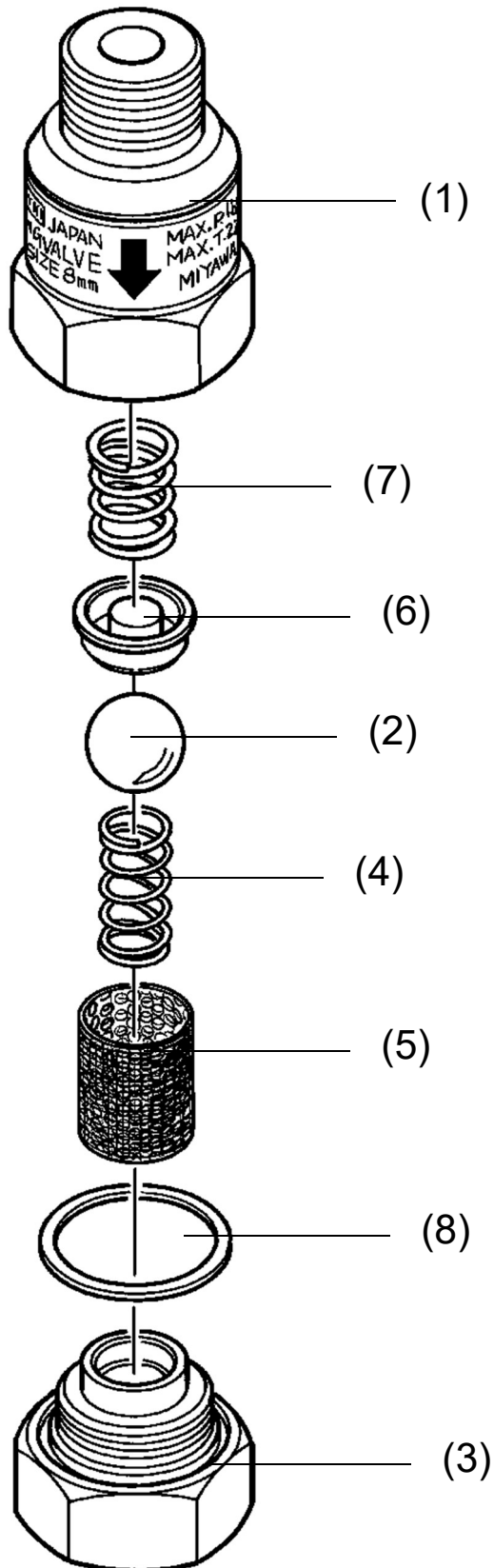
**Set the body in a vertical position and assemble the internal parts.**

##### 4.1.2 Assembling procedure

- 1) Insert the spring (4) into the valve seat (3) and attach the screen (5).
- 2) Place the valve (2) on top of the spring (4) and place the guide (6) (the spring (7) is combined with the guide) on top of the valve.
- 3) Tighten the valve seat (3) so that the spring (7) properly fits inside the body (1).

\* The proper torque for the valve seat (3) is as shown in the following table.

No.	Part name	Width across flats	Tightening torque
3	Valve seat	24 mm (0.94")	30 N·m



- (1) Body
- (2) Valve
- (3) Valve seat
- (4) Spring
- (5) Screen
- (6) Guide
- (7) Spring
- (8) Gasket

## 5 TROUBLESHOOTING

Problem	Possible cause	Solution
Clogging	1) The inlet valve is closed (F1B).	1) Open the inlet valve.
	2) The pressure on the inlet side is equal to the cracking pressure or higher (normal closing condition).	2) Reduce the pressure on the inlet side to the cracking pressure or lower.
	3) The screen (5) is clogged with dust, scales, etc.	3) Clean the screen and remove the dust, scales, etc.
Abnormally high closing pressure	1) The pipe diameter on the outlet side is smaller than the diameter of the connection.	1) Change the pipe diameter on the outlet side equal to the diameter of the connection.
	2) The screen (5) is clogged with dust, scales, etc.	2) Clean the screen and remove the dust, scales, etc.
Steam blowing or valve leakage	1) The installation direction of the inlet or outlet is incorrect.	1) Install properly in accordance with the direction of flow.
	2) Dust, scales, etc. adhere to the sealing surface of the valve (2) and the valve seat (3). Alternatively, the sealing surface is damaged.	2) Disassemble and clean the sealing surface. In case of damage, replace the valve (2) and the valve seat (3) with new ones.



## **6 WARRANTY**

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### **6.1 Warranty period**

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

### **6.2 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.

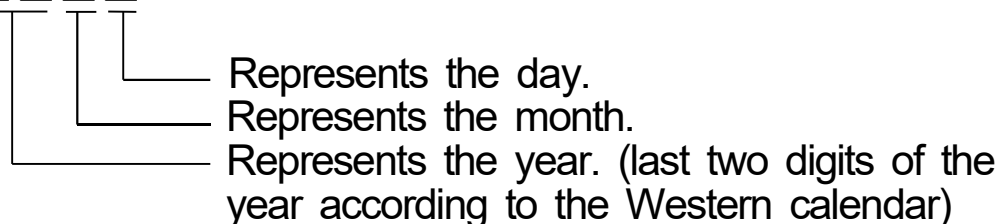
- 1) The precautions described in this manual were not observed.
- 2) User's errors or mistakes such as an inappropriate installation or incorrect handling, or an excessively large impact caused by dropping
- 3) Problems caused by devices or equipment other than ours, or a disallowed use environment
- 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

### **6.3 Warranty limitation**

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

## 7 SERIAL NUMBER (S. No.) DESIGNATION

S.No. □□□□



### Month designation system

Month	Symbol	Month	Symbol	Month	Symbol	Month	Symbol
1	1	4	4	7	7	X	10
2	2	5	5	8	8	Y	11
3	3	6	6	9	9	Z	12

### Day designation system

Symbol	Day	Symbol	Day	Symbol	Day	Symbol	Day
1	1	9	9	H	17	Q	25
2	2	A	10	J	18	R	26
3	3	B	11	K	19	S	27
4	4	C	12	L	20	T	28
5	5	D	13	M	21	U	29
6	6	E	14	N	22	V	30
7	7	F	15	O	23	W	31
8	8	G	16	P	24		

Example of serial number designation

1711 → Jan 1, 2017

29XM → Oct 21, 2029

## 8 GUIDANCE FOR READING SPECIAL PRODUCT NAME

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**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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**F1/F1B**