

OPERATING MANUAL
FOR
Balanced Pressure Thermostatic Steam Trap
DF1



SAFETY

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.

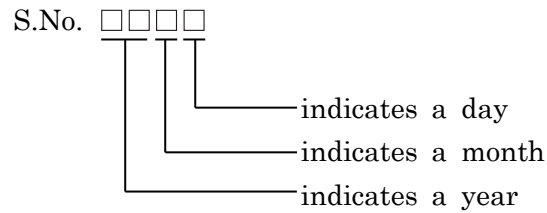


CAUTION

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

S No. on the name plate of our product indicates a manufacturing date.

Indicating method of S No.



Example of indicating a year

05 → 2005 15 → 2015

Method of indicating a month

Mark	Month	Mark	Month	Mark	Month	Mark	Month
1	January	4	April	7	July	X	October
2	February	5	May	8	August	Y	November
3	March	6	June	9	September	Z	December

Method of indicating a day

Mark	Day	Mark	Day	Mark	Day	Mark	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)

In case that S.No. is 0516, the manufacturing date is January 6, 2005

In case that S.No. is 15XM, the manufacturing date is October 21, 2015

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1. INTRODUCTION

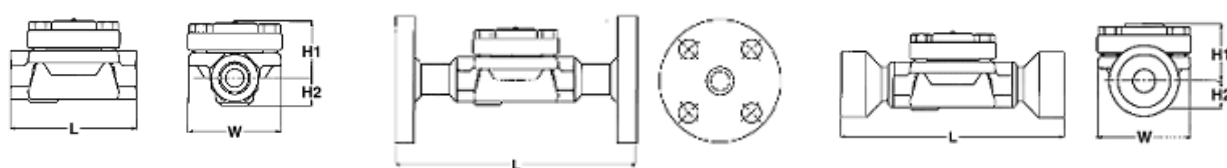
Balanced pressure thermostatic steam trap Model DF1-21 is equipped with a membrane capsule(“Dia-Thermo”) and can be used up to an operating pressure of 2.1 MPa.

The steam trap discharge the condensate automatically at a temperature 5°C /9°F(Dia-Thermo H) or 15°C/27°F(Dia-Thermo L) below saturation temperature.

This manual contains INSTALLATION, TROUBLE SHOOTING and MAINTENANCE etc..


Never fail to read them to the end before using.

2. DIMENSIONS AND SPECIFICATIONS



Model No.	Connection	Size mm (inch)	Operating Pressure (MPa)	Maximum Temperature °C(°F)	Material of Body	Dimensions (mm)				Weight (kg)
						L	H1	H2	W	
DF1-21H DF1-21L	Screwed	15(1/2)	0.01 to 2.1	235 (455)	Forged Steel (A105)	85	36	18	62	1.0
		100				40	23	1.2		
		25(1)								
DF1-21HF DF1-21LF	Flanged	15(1/2)				175	36	18	62	2.3
		20(3/4)				195	40	23		3.6
		25(1)				215				4.3
DF1-21HW DF1-21LW	Socket Weld	15(1/2)				160	36	18	62	1.4
20(3/4)										
		25(1)								

3. INSTALLATIONS

 CAUTIONS	Before installing the trap always blow off the slugges, scales, etc. from the piping.
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- 1) Install the trap according to the direction of the arrow on the body which indicates the direction of flow.
- 2) This steam trap can be installed either horizontally and vertically.
- 3) Make an adequate incline (about 1 degree) in the direction of the flow.
- 4) Do not thermal insulate the trap itself.
- 5) The trap has an integral strainer screen of 80 mesh, but for piping where the dirt conditions are bad install Y-type strainer or dirt pocket before the trap as shown on the diagram below.
- 6) It is requested to design the piping as in the diagram below. It will make the trap trouble free and easy to maintain. It is also requested to install the trap at the by-pass side.
- 7) For steam mains, make the size of branch lines 3/4" or 1".

4. TROUBLESHOOTING

Sympton	Cause	Remedy
Intermittent Operation	A.Normal.	
Continuous discharge of condensate with flash steam	A.Normal.	
Steam is leaking or blowing through	A.Over pressure.	A.Check operating conditions Reduce the inlet pressure or change to another trap with higher pressure capability.
	B.Scales etc. lodged between the Thermo Element(3) and the Valve Seat(4).	B.Disassemble the trap according to Maintenance, Disassembling and Assembling (Clause 5). Clean the Thermo Element(3) and Valve Seat(4).
	C.The Thermo Elemnt(3) and/or the Valve Seat(4) are worn or damaged.	C.Disassemble the trap according to Maintenance, Disassembling and Assembling(Claue 5). Replace The Thermo Element(3) and/or the Valve Seat(4).
No discharge	A.Wrong installation (inlet/ outlet)of the steam trap.	A.Install the Steam Trap according to Installations(Claue 3).
	B.Closed upsteam valve.	B.Open it!
	C.Clogged Screen(12).	C.Disassemble the trap according to disassembling. Clean the surface of the screen (12).

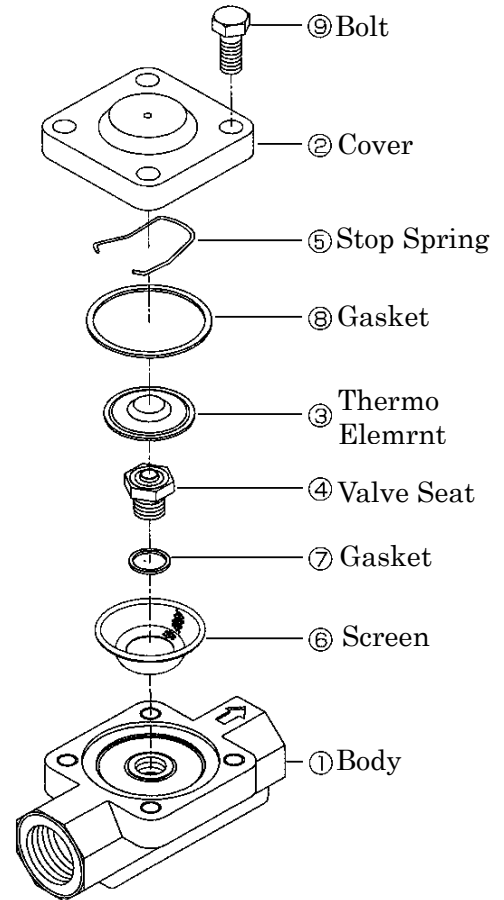
5. MAINTENANCE



WARNING

When disassembling a hot trap, be sure to release the pressure inside to atmospheric pressure, and cool the trap before the work.

1. Untightten the Bolt(9) of the Cover(2)and remove the Cover(2).
Now The “Dia-Thermo”- Element(3) can be taken out.
2. Untighten the Valve Seat(4) and unscrew it.Take the Valve Seat(4), the Seeat Gasket(7),and the Screen(6) out.
3. Clean the Body(1) and Screen(6).
If defected please replace it.
4. Check the Parts and replace worn or damaged ones.
5. Assemble the trap in the opposite way.
- 6.At first put in the Screen(6), then tighten the Valve Seat(4).
- 7.Put the “Dia-Thermo” element on the Valve Seat(4) and put the Stop Ring(5)into the Cover(2). Put a new cover Gasket(8) on the Body(1) and tighten the cover Bolts(9).



CAUTIONS

When reassembling always replace Gasket (7), (8) to new ones.

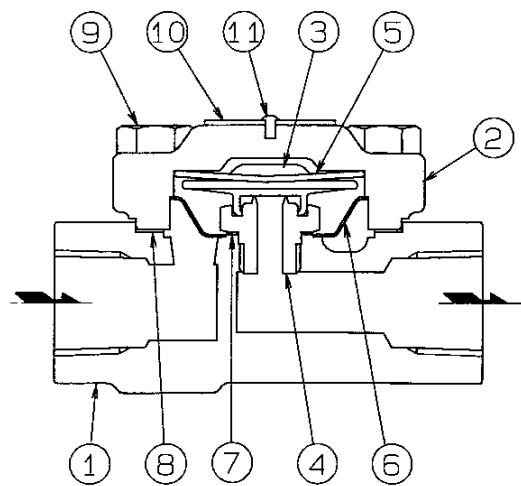


CAUTIONS

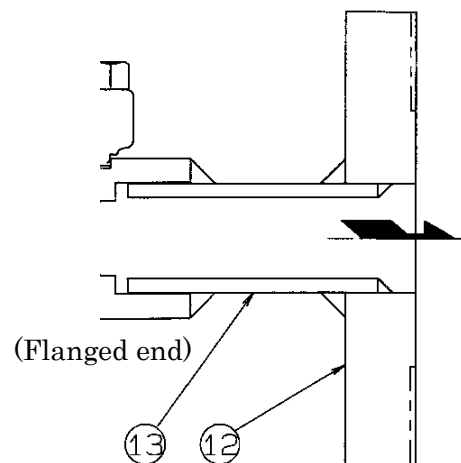
Also Bolt (9) should be tightened evenly.

No.	Parts	Size	Shape	Clamp Torque	Tools
4	Valve Seat	17mm	Hexagon	220kgf·cm	Wrench
9	Bolt	13mm	Hexagon	180kgf·cm	Wrench

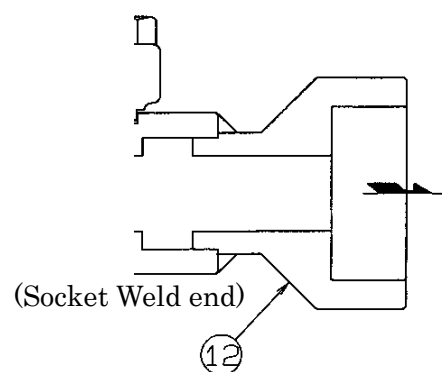
6. CONSTRUCTION



(Screwed end)



(Flanged end)



(Socket Weld end)

- 1.Body
- 2.Cover
- 3.Thermo Element(Dia-Thermo)
- 4.Valve Seat
- 5.Stop Spring
- 6.Screen
- 7.Gasket
- 8.Gasket
- 9.Bolt
- 10.Name Plate
- 11.Rivet

12.Flange(*For only Flanged connection)

13.Pipe(*For only Flanged connection)

12.Coupling(*For only Socket Weld connection)

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.

★ Guidance for reading special product name

○○○-○○-□

**Special symbol: symbol apply only to special product
(Please refer to table 1 for details)**

1 suffix English letter after “-”.

Model symbol: Product model number

Table 1 Symbol description

Suffix	Special contents
A	Approved high-pressure gas trap
C	Blow valve attached & countermeasure against scale
K	Change of gasket
L	Special face to face dimension
M	Change of parts material
P	Change of operating pressure
R	Change of screen mesh or countermeasure against scale
T	Parts are standards, and the specification (operating temp, press. etc.) is changed
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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