

**INSTALLATION, OPERATION and
MAINTENANCE MANUAL**

**Balanced Pressure Thermostatic Steam Trap
MODEL: DF1- 21**



MIYAWAKI INC.

Osaka, Japan

SAFETY INSTRUCTION

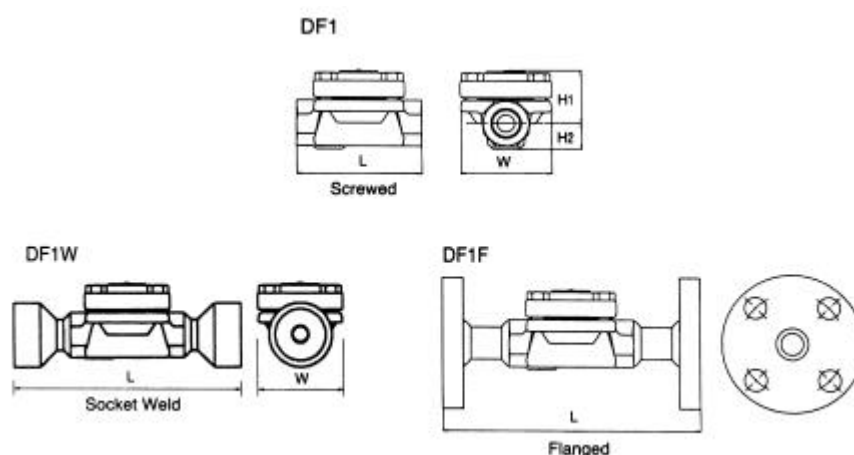
Prior to using the DF1-21 steam trap, read this manual thoroughly to understand the correct handling and operating procedure.

The manual should be used by experienced personnel as a guide to the installation and maintenance of the Steam Traps.

We ask you to contact MIYAWAKI or its local representative if further information is required.

1. Dimensions and Technical Specification

The balanced pressure thermostatic steam trap DF 1-21 is equipped with a membrane capsule („Dia-Thermo“) and can be used up-to an operating pressure of 2,1 MPa (305 psig) . The steam trap discharges the condensate automatically at a temperature 5°C/9°F (Dia-Thermo H) or 15 °C/27°F (Dia-Thermo L) below saturation temperature.



Model	Connection	Size	Max. Operating Pressure		Max. Operating Temperature		Dimension mm (inch)				Weight					
			MPa	psig	°C	°F	L	H ₁	H ₂	W	kg	lb				
DF1-21	screwed RC, NPT	½"	2,1	305	235	455	85 (3.4)	36 (1.4)	18 (0.7)	62 (2.4)	1,0	2.2				
		¾"					100 (3.9)	40 (1.6)	23 (0.9)							
		1"														
DF1-21W	socket weld JIS, ANSI, DIN	½"									160 (6.3)	36 (1.4)	18 (0.7)	62 (2.4)	1,4	3.1
		¾"														
		1"														
DF1-21F	flanged JIS	½"									175 (6.9)	36 (1.4)	18 (0.7)	62 (2.4)	2,3	5.1
		¾"									195 (7.7)	40 (1.6)	23 (0.9)			
		1"									215 (8.5)					
DF1-21F	flanged ANSI, DIN	½"					150 (5.9)	36 (1.4)	18 (0.7)	62 (2.4)	2,3	5.1				
		¾"					40 (1.6)	23 (0.9)	3,6 7.9							
		1"					160 (6.3)						4,3 9.5			

2. Installation

CAUTION	Before installing the trap, always blow down the piping that leads to the trap's inlet.
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1. The steam trap DF1-21 can be installed either horizontally or vertically.
2. Install the trap at the lowest point of the steam using equipment to be drained.
3. Install the trap so that the condensate will flow naturally into the trap.
4. The trap is equipped with an integral strainer. But in case of dirty steam it is recommended to install additionally a strainer upstream the trap.

3. Trouble-shooting

The steam trap should be checked for proper operation at least once a year.

The thermostatic steam trap DF1-21 is discharging the condensate intermittently.

Problem	Reason
Steam is leaking or blowing through	<ul style="list-style-type: none">- Too high operating pressure- Scale is lodged between the membrane capsule and the seat.- The membrane capsule and/or the seat are worn or damaged.
No discharge	<ul style="list-style-type: none">- The seat is plugged.- The strainer is plugged.- Damaged membrane capsule.
The requested temperature level of the equipment which should be drained cannot be reached	<ul style="list-style-type: none">- Wrong installation (inlet / outlet) of the steam trap- The steam inlet pressure is too low.- Air cannot be vented from the equipment- Discharge capacity of the trap is too low.

4. Maintenance, Disassembling and Assembling

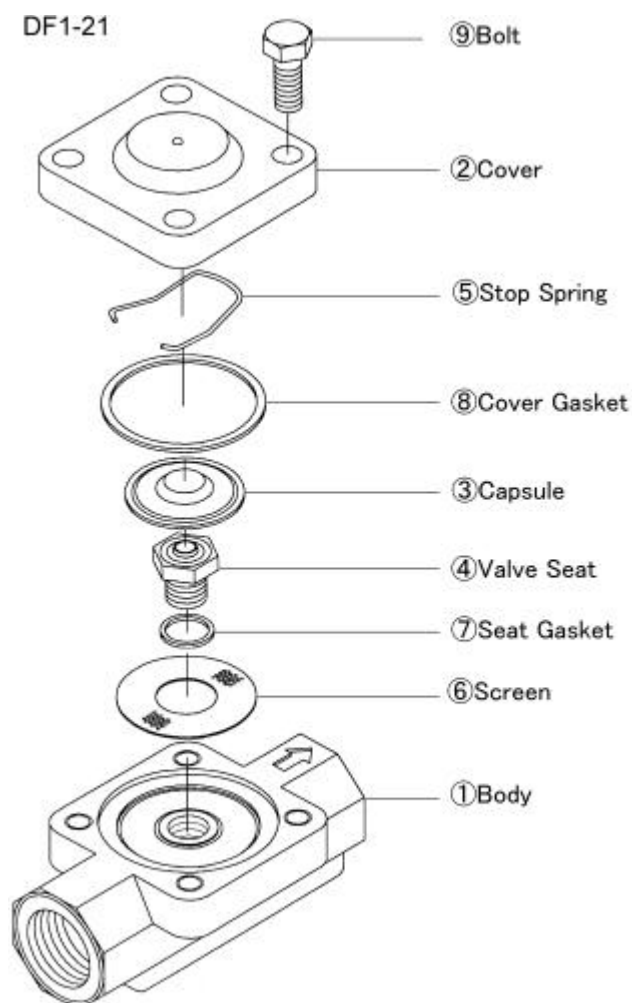
WARNING	Before disassembling a steam trap be sure to close the valves in both supply and discharge lines, reduce the pressure inside the trap to atmospheric pressure, and allow the trap to cool before opening it.
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This trap can be repaired and disassembled without removing the trap from the pipe line.

For cleaning purposes or for changing parts perform the following steps:

- 4.1. Untighten the bolts (9) of the cover (2) (wrench size 13 mm) and remove the cover. Now the stop spring (15) and the „Dia-Thermo“ – element can be taken out.
- 4.2. Untighten the seat (4) (wrench size 17 mm) and unscrew it. Take the seat, the seat gasket (7) and the screen (6) out.
- 4.3. Clean the body and the screen.
- 4.4. Check the parts and replace worn or damaged ones.
- 4.5. Assemble the trap in the opposite way.
- 4.6. At first put in the screen, then tighten the seat (torque: 220 kgf·cm). Don't forget the seat gasket (7) !
- 4.7. Put the „Dia-Thermo“ element on the seat and put the stop ring into the cover. Put a new cover gasket on the body and tighten the cover bolts (torque: 180 kgf·cm).

5. Details and Spare Parts List



Spare parts

3	„Dia-Thermo“ element H or L
4	Valve seat
6	Screen
7	Seat gasket
8	Cover gasket