OM No. E-T51-100428-1

INSTALLATION, OPERATION and MAINTENANCE MANUAL

Temperature Control Steam Trap

MODEL: TB 51

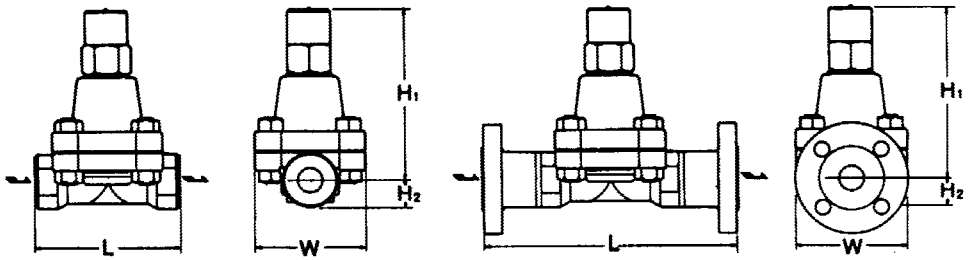
MIYAWAKI INC.

Osaka, Japan

SAFETY INSTRUCTION

Prior to using the type TB 51, 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 main tenance of the Steam Traps.
We ask you to contact MIYAWAKI or its local representative if further information is required.

1. Dimensions and Technical Specification



Model	Connec - tion	Size mm (inch)	Max. Oper. Pressure Mpa (psig)	Max. Oper. Temp. °C (°F)	Adjust. Temp. °C (°F)	Dimensions mm (inch)				Body Mater.	Weight kg (lb)
						L	H1	H2	W		
TB51-45	Screwed Rc, NPT	15-25 (1/2"- 1")	4,4 (640)	425 (800)	100-220 (212-428)	130 (5.1)	156 (6.1)	25 (1)	100 (3.9)	Forged Steel A 105	5,0 (11)
TB51-65			6,4 (925)		100-240 (212-464)						
TB51F-45	Flanged ANSI, JIS, DIN	15-25 (1/2"- 1")	4,4 (640)	425 (800)	100-220 (212-428)	Ref. Table 1	156 (6.1)	25 (1)	100 (3.9)		Ref. Table 1
TB51F-65			6,4 (925)		100-240 (212-464)						
TB51W-45	Socket Weld ANSI, JIS, DIN	15-25 (1/2"- 1")	4,4 (640)	425 (800)	100-220 (212-428)	130 (5.1)	156 (6.1)	25 (1)	100 (3.9)		5,0 (11)
TB51W-65			6,4 (925)		100-240 (212-464)						

Table 1 (Face-to-face dimensions and weight of the flanged types)

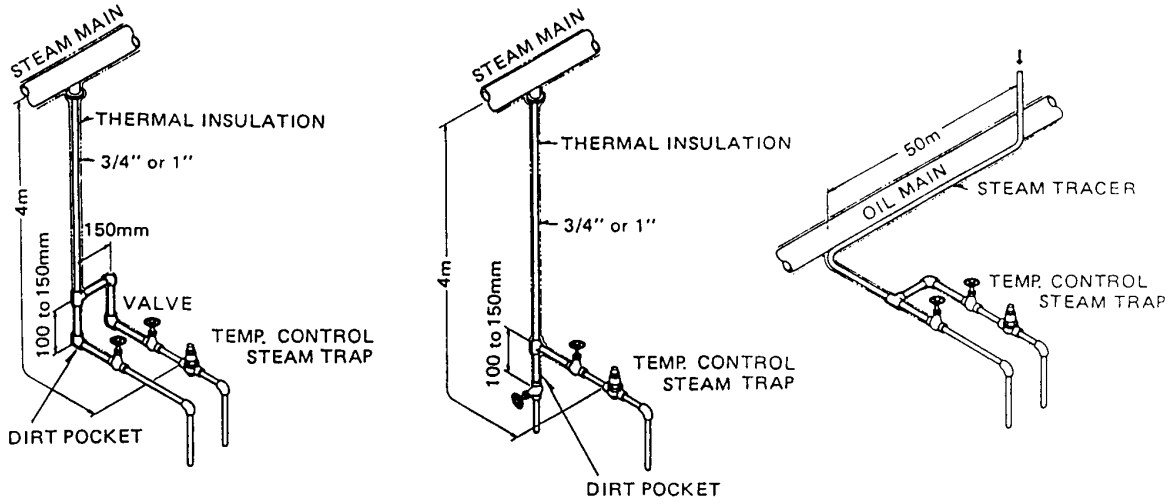
Model	Size mm (inch)	JIS 20 - 40K ANSI 150,300 lb		ANSI 600 lb		DIN PN 63 / 100		JIS 63 K ANSI 900 lb	
		mm/in.	kg/lb	mm/in.	kg/lb	mm/in.	kg/lb	mm/in.	kg/lb
TB51F-45 TB51F-65	15 (1/2")	200/7.9	8/17.6	200/7.9	8,8/19.4	210/8.3	8,8/19.4	220/8.7	9/19.8
	20 (3/4")	210/8.3	8,3/18.3	210/8.3	10,2/22.4	210/8.3	10,2/22.4	230/9.1	10.2/22.4
	25 (1")	240/9.5	9,7/21.3	240/9.5	11,2/24.6	230/9.1	11/24.2	240/9.5	11,2/24.6

2. Installation

CAUTION	Before installing the trap, always blow down the piping that leads to the trap's inlet.

CAUTION	The Temperature Control Trap TB can be installed either horizontally, or vertically.

A. Install the trap according to the direction of the arrow on the body.
B. Install the trap so that the condensate will flow naturally into the trap.
C. Don't insulate the trap.
D. The trap has an integral strainer screen of 100 mesh. If the steam/condensate are very dirty install additionally a strainer or a dirt pocket before the trap.
E. It is recommended to design the piping as shown in the drawings below. Install the trap at the bypass side.
G. In case of draining steam mains use branch lines of a size of ¾" or 1". Don't insulate the pipe at a length of 1-2 m before the trap.



3. Trouble-shooting

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

The Temperature Control steam trap TB discharges the condensate usually continuously. If the trap is setted at a temperature near to the saturation temperature and the condensate load is very low the trap may discharge intermittently.

Problem	Reason
The trap is not discharging condensate.	A. At time of installation the inlet and outlet of the trap had been confused. B. The operating pressure is higher than the maximum allowable operating pressure of the trap. C. The strainer is plugged. D. The valve seat is plugged.
The trap is blowing through steam.	A. The setting temperature is not correct (Considering the operating pressure, the temperature is setted too high. The valve cannot close). Adjust the trap again. B. Scale is lodged between the valve and the seat. C. The valve or the valve seat are worn or damaged. D. The valve seat has loosened.
The temperature of the discharging condensate is substantially lower than the setted temperature.	A. The capacity of the trap is too low.

4. Adjustment of the Discharging Temperature

The temperature adjustment is required initially and at times when the operating conditions have changed.

Usually the trap had been adjusted at the factory according to the operating conditions of t he customer and must not be readjusted.

To readjust the trap perform the following steps:

A. 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 adjusting it.

B. Remove the cap (16).

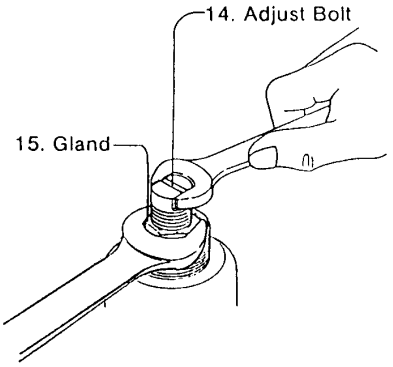
C. Loosen the gland (15) while holding the adjust Bolt (14).

D. Turn the adjust bolt (14) clockwise until it stops at the zero point.

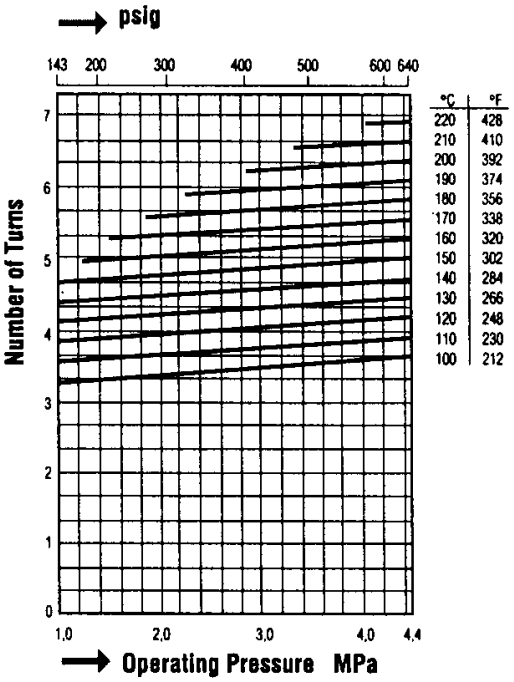
E. Check the number of turns you need for setting the appropriate temperature by using the temperature stroke chart.

F. Turn the adjust bolt counter-clockwise the number of turns which are required.

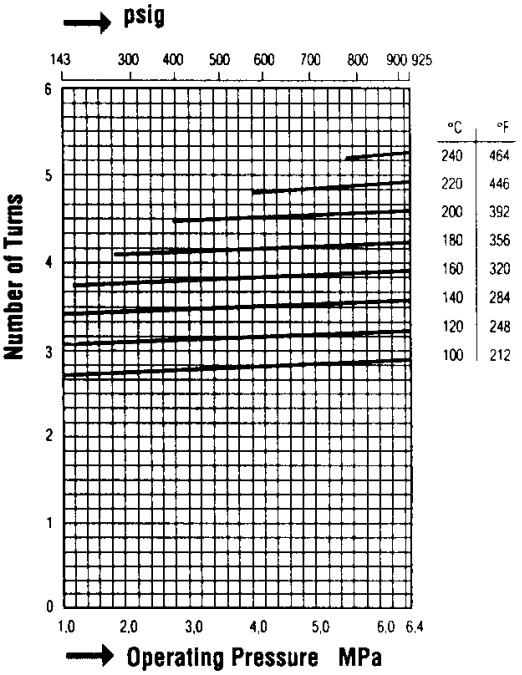
G. Fix the adjust bolt with the gland and tighten the cap.



TB 51-45



TB 51-65



5. 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.

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

A. Remove the Cover Bolts and Nuts (23). Take off the Cover (2) together with all fixed parts - Cap (16), Gasket (22), Gland (15), Packing (19,20), Adjust Bolt (14). Don't touch and remove the adjust bolt. You will not have to readjust the trap after maintenance.

B. Now you can remove separately the following parts:

Bimetal unit (10,12), Bush (9), Holder (6), Valve (4), Spring (5,8), Spring plate (7), Screen (17).

Don't disassemble the bimetal unit.

C. The valve seat (3) can be unscrewed witha box wrench.

D. Clean and inspect all parts. Replace any that are worn or damaged.
Assemble in the opposite way as disassembling.

Especially thoroughly check the Valve (4) and the Valve Seat (3).
When there will be the necessity to replace the Valve (4) and/or the Valve Seat (3) always replace both together as they are lapped together in the factory.

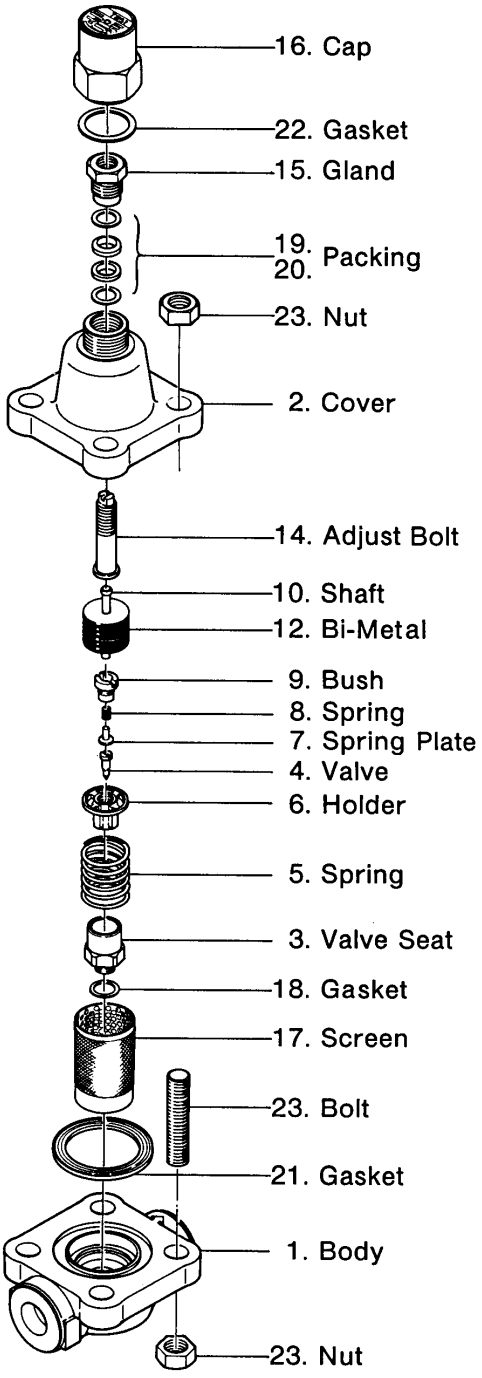
CAUTION	When reassembling always replace the Cover Gasket (21) by a new one.

CAUTION	Tighten the Cover Bolts (23) evenly crosswise.

Wrench Sizes and Torques

Parts Number	Parts Name	Wrench Size	Torque
3	Valve Seat	23 mm	480 kgf·cm
16	Cap	38 mm	2,000 kgf·cm
15	Gland	22 mm	> 450 kgf·cm
23	Bolt, Nut	22 mm	800 kgf·cm

5. Details and Spare Parts List



SPARE PARTS LIST

No.	Parts / Unit Name
3,4, 6 - 9, 18	Valve & Valve Seat Unit
22	Cap Gasket
21	Cover Gasket
17	Screen