

OPERATING MANUAL
FOR
BELL MIGHTY STEAM TRAP
MODEL:ESH8N



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.

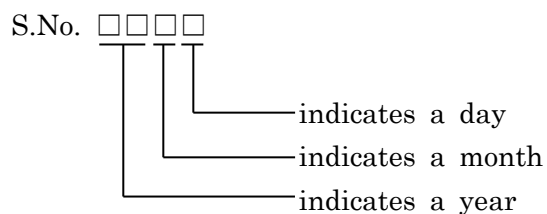


CAUTION

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

03 → 2003 13 → 2013

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 0316, the manufacturing date is January 6, 2003

In case that S.No. is 13XM, the manufacturing date is October 21, 2013

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1. Introduction

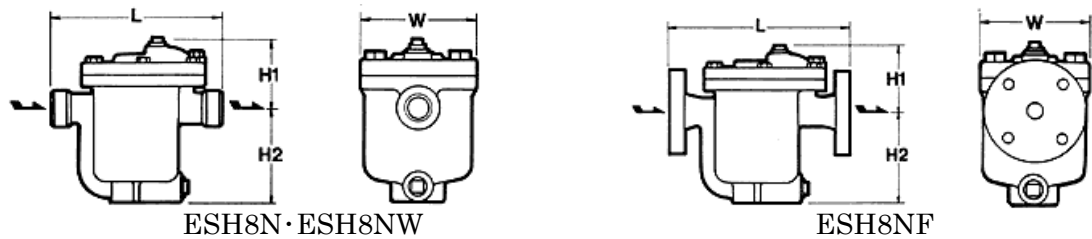
“Bell Mighty” inverted bucket Model ESH8N Series are for multipurpose steam traps especially for small capacities.

It is made in three connection types screw threaded, flanged and socket weld.

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.	Connections	Size mm (inch)	Maximum Operating Pressure PMO(MPa)	Maximum Operating Temperature ℃ (° F)	Material of Body	Dimensions (mm)				Weight (kg)			
						L	H1	H2	W				
ESH8N-21	Screwed	15(1/2)	2.1	400 (752)	Cast Carbon Steel (SCPH2)	220	114	111	146	11.0			
		20(3/4)											
		25(1)				224							
ESH8N-45		15(1/2)	4.4			220							
		20(3/4)											
		25(1)				224							
ESH8NF-21	Flanged	15(1/2)	2.1			250	114	111	146	Refer to Table A			
		20(3/4)											
		25(1)											
ESH8NF-45		15(1/2)	4.4										
		20(3/4)											
		25(1)											
ESH8NW-21	Socket Weld	15(1/2)	2.1			220	114	111	146	11.0			
		20(3/4)											
		25(1)											
ESH8NW-45		15(1/2)	4.4										
		20(3/4)											
		25(1)											


●Maximum allowable pressure(PMA) : 4.4MPa ●Maximum allowable temperature(TMA) : 400°C(752° F)

Table A : Weight of Flange Types

Weight : kg

Size	JIS				ASME/JPI		
	10K,16K	20K	30K	40K	150lb	300lb	600lb
15mm(1/2in.)	11.0		12.4	12.8	11.4	12.1	
20mm(3/4in.)	12.4		13.7	14.0	11.8	12.8	13.2
25mm(1 in.)	13.2	13.6	14.6	15.0	12.4	13.6	14.0

3. Installations

 CAUTIONS	<ul style="list-style-type: none"> •Before installing the trap always blow off the sludge, scales, etc. from the piping. •This trap can be installed horizontally.
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- 1) Install trap according to the direction of the arrow on the body.
- 2) Pipe the outlet condensate recovery piping at the lowest point of the steam using equipment.

The trap should be installed that condensate will flow naturally into the trap.

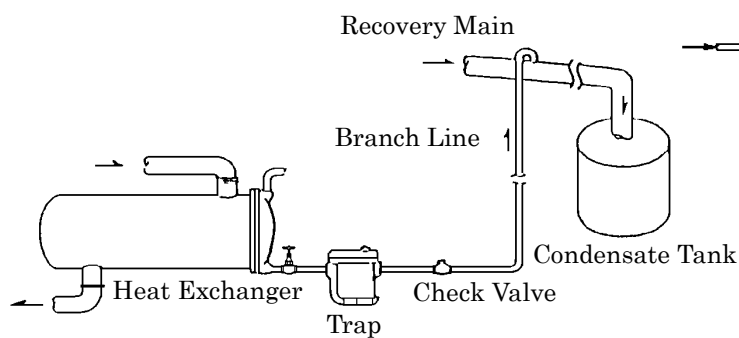
- 3) When recovering the condensate outlet branch line should be piped from the steam trap as the drawing A below.

Install a check valve on the downstream side on the trap.

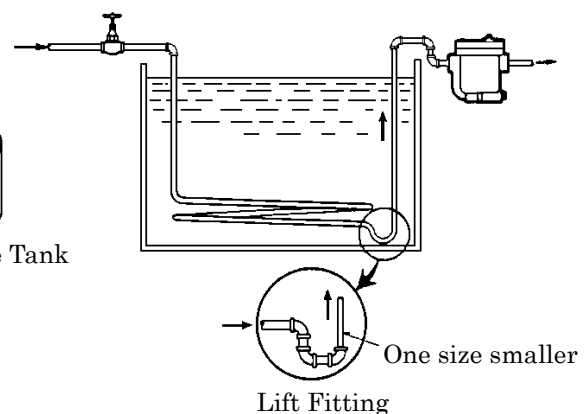
- 4) If the trap is installed higher than the steam using machinery please install lift fitting as drawing B below for better performance.
- 5) If installed on cylinder dryer please install lower than the lowest point of the cylinder and minimize the horizontal piping.

Also do not insulate the piping.

- 6) The trap should be installed for easy maintenance.
- 7) Upon start up inspect the followings.
 - a) Leak from the sealing of Body(1) and Cover(2) if leaking retighten the Cover Bolt(20),(22) evenly.
 - b) Leak from the Plug(3),(4),(28).
Re-tighten them.



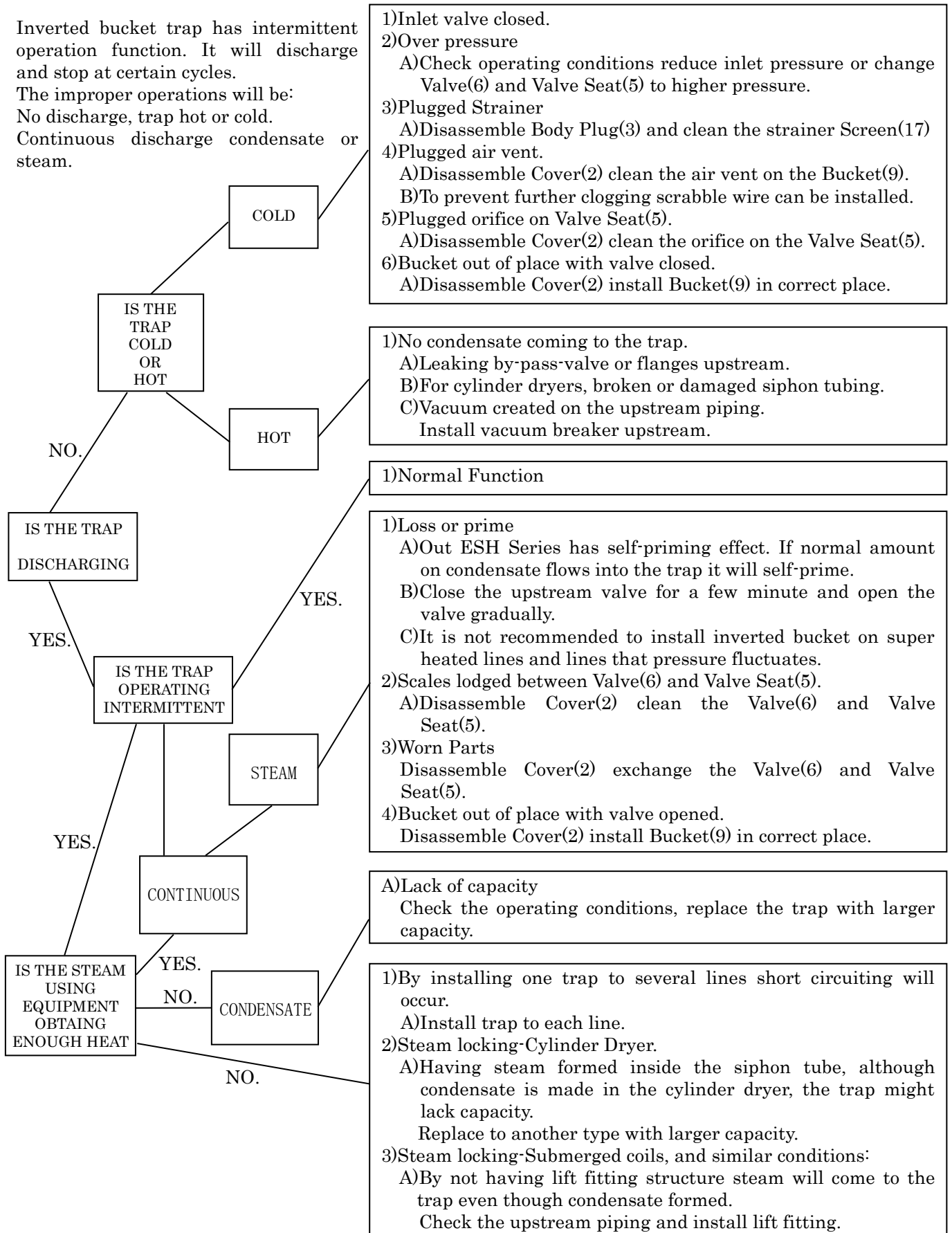
Drawing A




Drawing B

4. Trouble Shooting

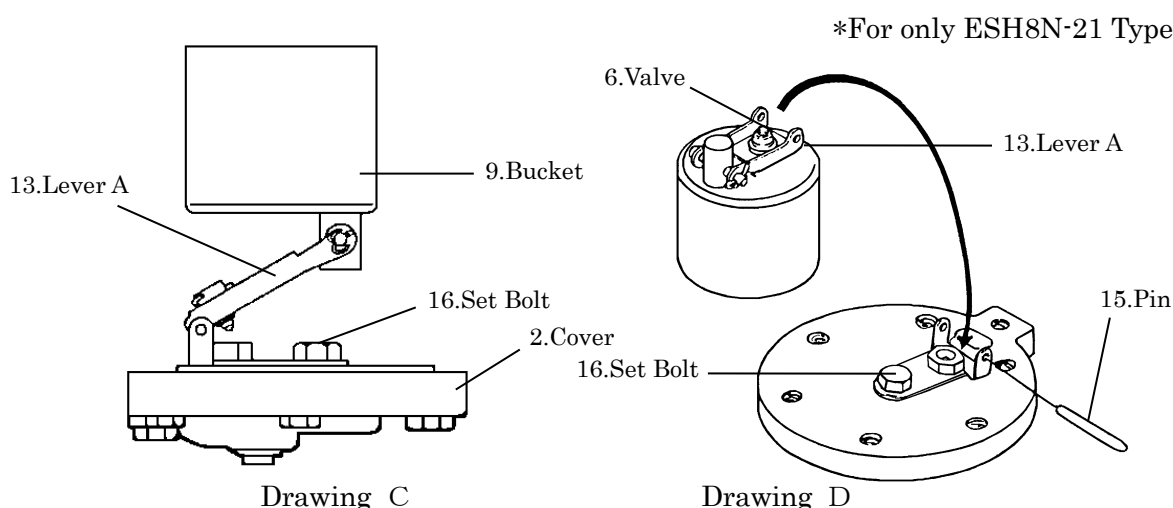
Inverted bucket trap has intermittent operation function. It will discharge and stop at certain cycles.
The improper operations will be:
No discharge, trap hot or cold.
Continuous discharge condensate or steam.




5.Maintenance, Disassembling and Assembling

 WARNING	When disassembling a hot trap, be sure to release the pressure inside to atmospheric pressure, and cool the trap before the work.
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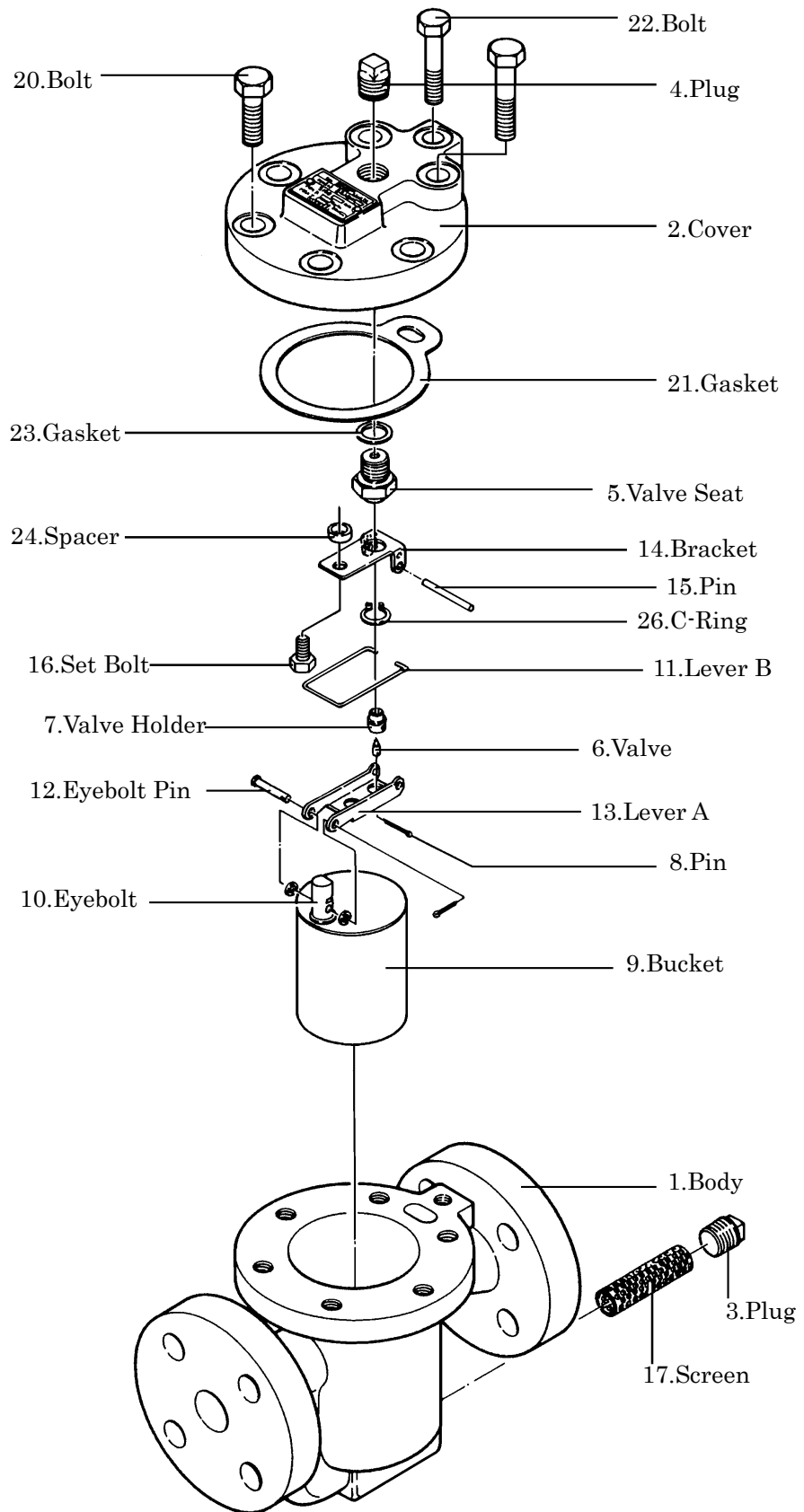
1. Disassemble Body Plug(3) take out the Screen(17) check and clean.
2. Disassemble Cover Bolt(20),(22) take off the Cover(2),the internals (Valve Seat(5), Valve(6), Valve Holder(7), Pin(8), Bucket(9), Eye Bolt(10), Eyebolt Pin(12), Lever B(11), Lever A(13), Bracket(14), Pin(15), Set Bolt(16) will come together as the drawing C.



3. Take off the Pin(15), unscrew the Set Bolt(16) also unscrew the Valve Seat(5) with a wrench.
4. Take off the Pin(8) the Valve(6) and Valve Holder(7) comes apart from the Lever A(13).
5. Teke off the split pin and Eyebolt Pin(12) the Bucket(9) will come apart.
6. Clean and check the parts accordingly if all the parts are in normal condition install in the opposite of disassembling. If parts are worn or defected please replace. Please thoroughly check the Valve(6), Valve Seat(5) and Valve Holder(7). When replacing the Valve(6) and Valve Seat(5) always replace the two together as they are lapped together in the factory.

 CAUTIONS	<ul style="list-style-type: none"> ●When reassembling always replace the Cover Gasket(21) to new one. ●Also the Cover Bolt(20),(22) should be tightened evenly.
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No.	Parts	Size	Clamp Torque	Tools
5	Valve Seat	23mm	120N·m (1200kgf·cm)	Wrench
16	Set Bolt	13mm	21N·m (210kgf·cm)	Wrench
20	Cover Bolt	19mm	120N·m (1200kgf·cm)	Wrench
22	Cover Bolt	17mm	80N·m (800kgf·cm)	Wrench



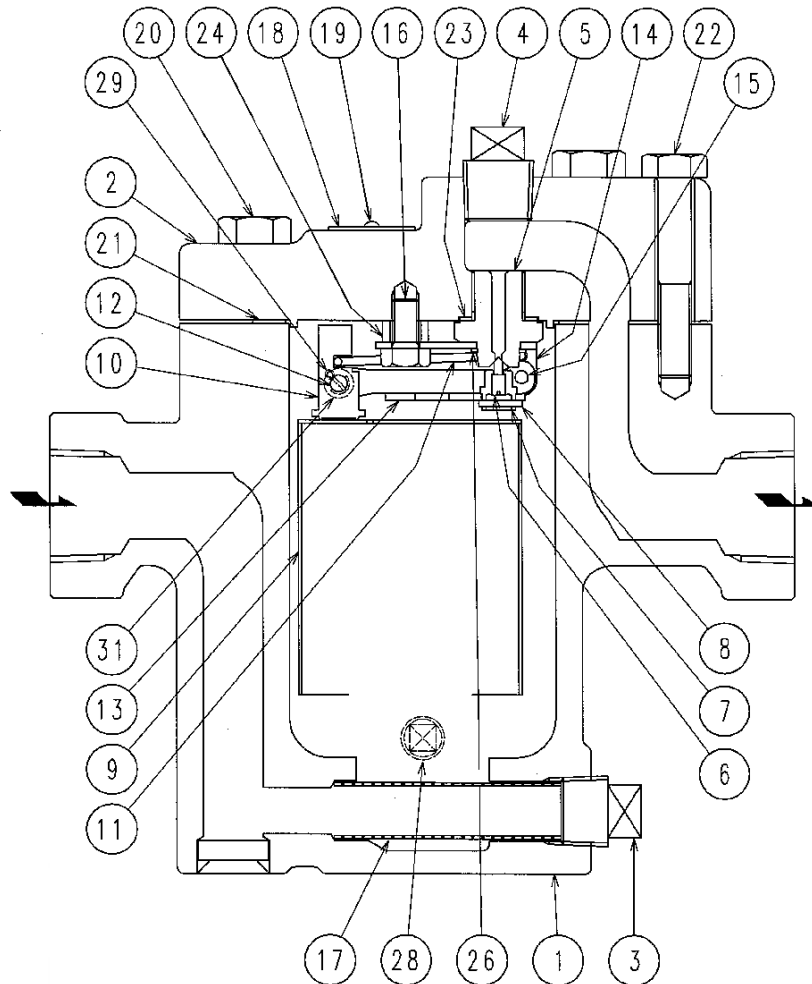
6. Construction

ESH8N

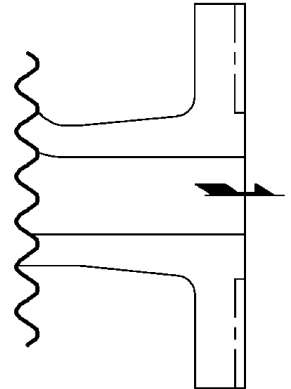
ESH8NF

ESH8NW

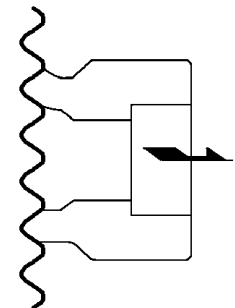
(Screwed end)



Flanged end



Socket Weld end



- | | | |
|-----------------|-----------------|------------|
| 1. Body | 11. Lever B | 21. Gasket |
| 2. Cover | 12. Eyebolt Pin | 22. Bolt |
| 3. Plug | 13. Lever A | 23. Gasket |
| 4. Plug | 14. Bracket | 24. Spacer |
| 5. Valve Seat | 15. Pin | 26. C-Ring |
| 6. Valve | 16. Set Bolt | 28. Plug |
| 7. Valve Holder | 17. Screen | 29. Pin |
| 8. Pin | 18. Name Plate | 31. Spacer |
| 9. Bucket | 19. Rivet | |
| 10. Eyebolt | 20. Bolt | |

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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