OPERATING MANUAL

FOR

INVERTED BUCKET STEAM TRAP

MODEL:ES10

MIYAWAKI INC.

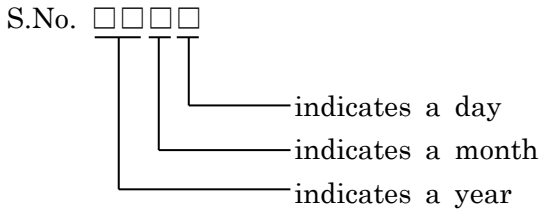
SAFETY

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

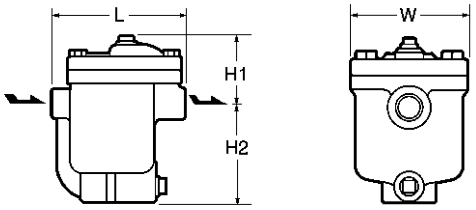
In case that S.No. is 13XM, the manufacturing date is October 21, 2013

CONTENTS

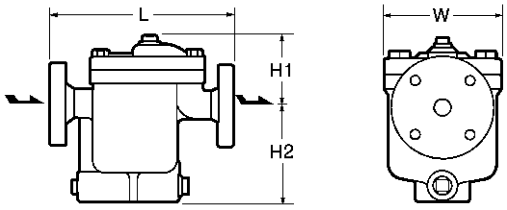
1. Introduction

Inverted Bucket steam trap, inverted bucket Model ES10 Series using our highly durable SCCV valve system is for all round purpose.
This manual contains Installations, Trouble Shooting and Maintenance etc..
Never fail to read them to the end before using.

2. Dimensions and Specifications



ES10



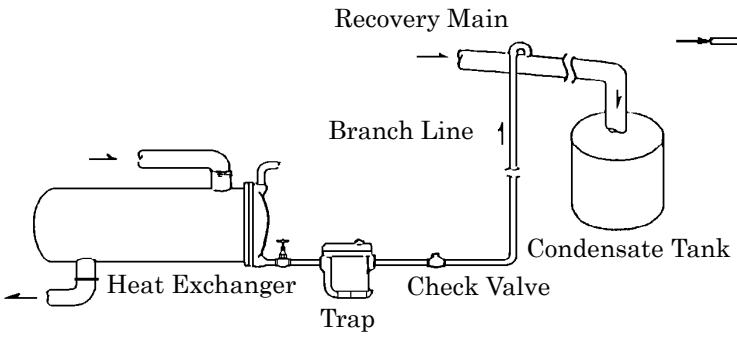
ES10F

Model No.	Connections	Size mm (inch)	Operating Pressure (MPa)	Maximum Temperature ℃(℉)	Material of Body	Dimensions (mm)				Weight (kg)
						L	H1	H2	W	
ES10-8	Screwed	20(3/4)	0.01 to 0.8	220 (428)	Cast Iron (FC250)	190	102	134	120	9.3
		25(1)								
		32(1 1/4)								
		40(1 1/2)								
ES10-12		20(3/4)	0.01 to 1.2			190	102	134	120	9.3
		25(1)								
		32(1 1/4)								
		40(1 1/2)								
ES10-16		20(3/4)	0.01 to 1.6			190	102	134	120	9.3
		25(1)								
		32(1 1/4)								
		40(1 1/2)								
ES10F-8	Flanged	15(1/2)	0.01 to 0.8	220 (428)	Cast Iron (FC250)	254	102	134	120	12.7
		20(3/4)								
		25(1)								
		32(1 1/4)				260				14.2
		40(1 1/2)								
		50(2)								
ES10F-12		15(1/2)	0.01 to 1.2			254	102	134	120	12.7
		20(3/4)								
		25(1)								
		32(1 1/4)				260				14.2
		40(1 1/2)								
		50(2)								
ES10F-16		15(1/2)	0.01 to 1.6			254	102	134	120	12.7
		20(3/4)								
		25(1)								
		32(1 1/4)				260				14.2
		40(1 1/2)								
		50(2)								

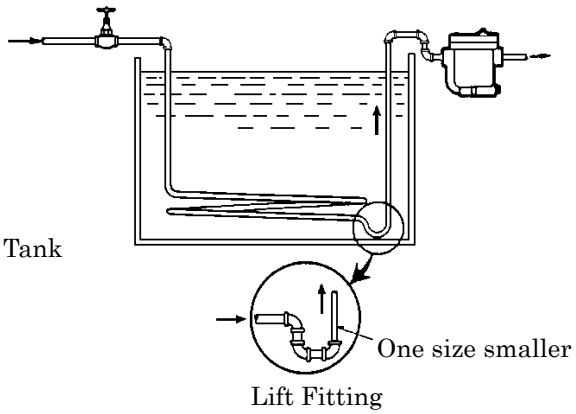
3. Installations

⚠ CAUTIONS	●Before installing the trap always blow off the sludge, scales, etc. from the piping. ●This trap can be installed horizontally.

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 Bolts(20),(22) evenly.
   b) Leak from the Plug(3),(4),(23),(24).
      Re-tighten them.



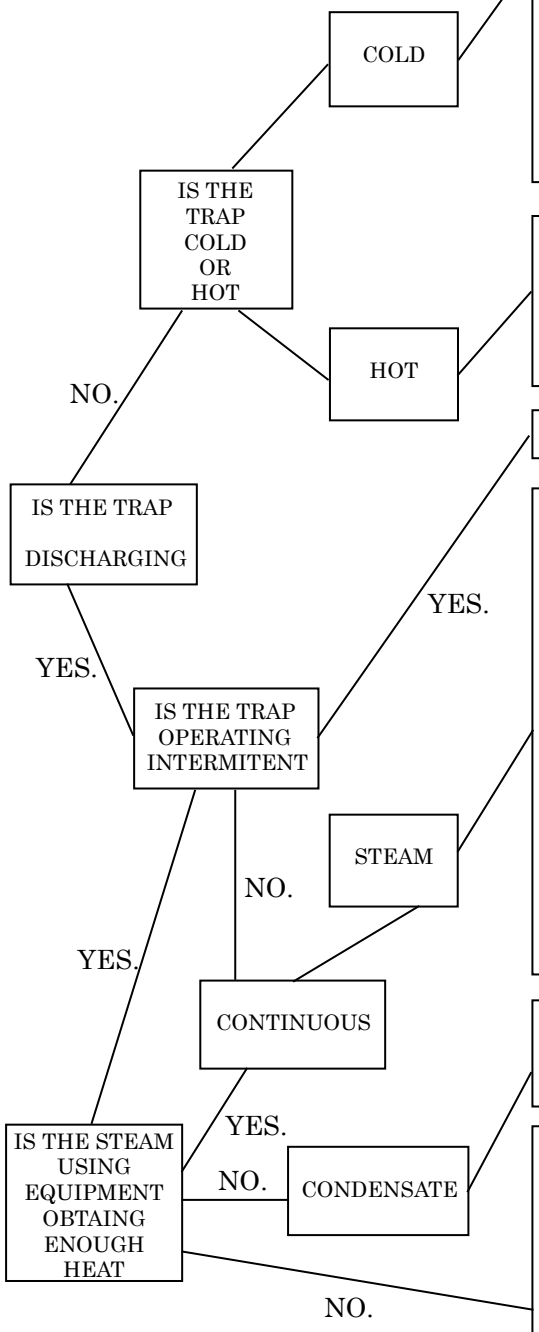
Drawing A



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.



1)Inlet valve closed.
2)Over pressure
A)Check operating conditions reduce inlet pressure or change Valve(6) and Valve Seat(5) to higher pressure.
3)Plugged Strainer
A)Disassemble Body Plug(3) and clean the strainer Screen(17)
4)Plugged air vent.
A)Disassemble Cover(2) clean the air vent on the Bucket(9).
B)To prevent further clogging scrabble wire can be installed.
5)Plugged orifice on Valve Seat(5).
A)Disassemble Cover(2) clean the orifice on the Valve Seat(5).
6)Bucket out of place with valve closed.
A)Disassemble Cover(2) install Bucket(9) in correct place.

1)No condensate coming to the trap.
A)Leaking by-pass-valve or flanges upstream.
B)For cylinder dryers, broken or damaged siphon tubing.
C)Vacuum created on the upstream piping.
Install vacuum breaker upstream.

1)Normal Function

1)Loss of prime
A)Out ES Series has self-priming effect. If normal amount on condensate flows into the trap it will self-prime.
B)Close the upstream valve for a few minute and open the valve gradually.
C)It is not recommended to install inverted bucket on super heated lines and lines that pressure fluctuates.
2)Scales lodged between Valve(6) and Valve Seat(5).
A)Disassemble Cover(2) clean the Valve(6) and Valve Seat(5).
3)Worn Parts
Disassemble Cover(2) exchange the Valve(6) and Valve Seat(5).
4)Bucket out of place with valve opened.
Disassemble Cover(2) install Bucket(9) in correct place.

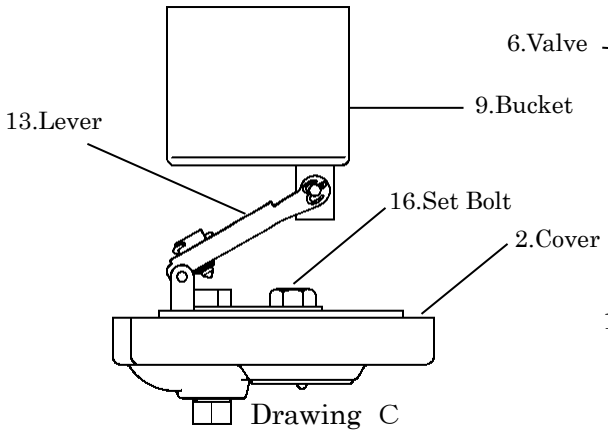
A)Lack of capacity
Check the operating conditions, replace the trap with larger capacity.

1)By installing one trap to several lines short circuiting will occur.
A)Install trap to each line.
2)Steam locking-Cylinder Dryer.
A)Having steam formed inside the siphon tube, although condensate is made in the cylinder dryer, the trap might lack capacity.
Replace to another type with larger capacity.
3)Steam locking-Submerged coils, and similar conditions:
A)By not having lift fitting structure steam will come to the trap even though condensate formed.
Check the upstream piping and install lift fitting.

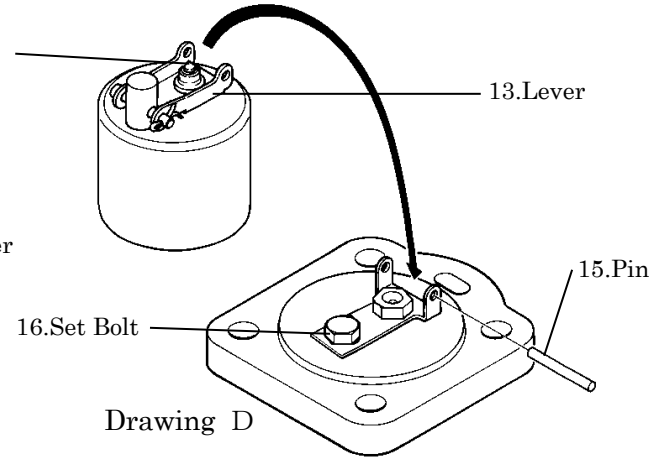
5.Maintenance, Disassembling and Assembling

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

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), Eyebolt(10), Eyebolt Pin(12), Lever(13), Bracket(14), Pin(15), Set Bolt(16)) will come together as the drawing C.



Drawing C

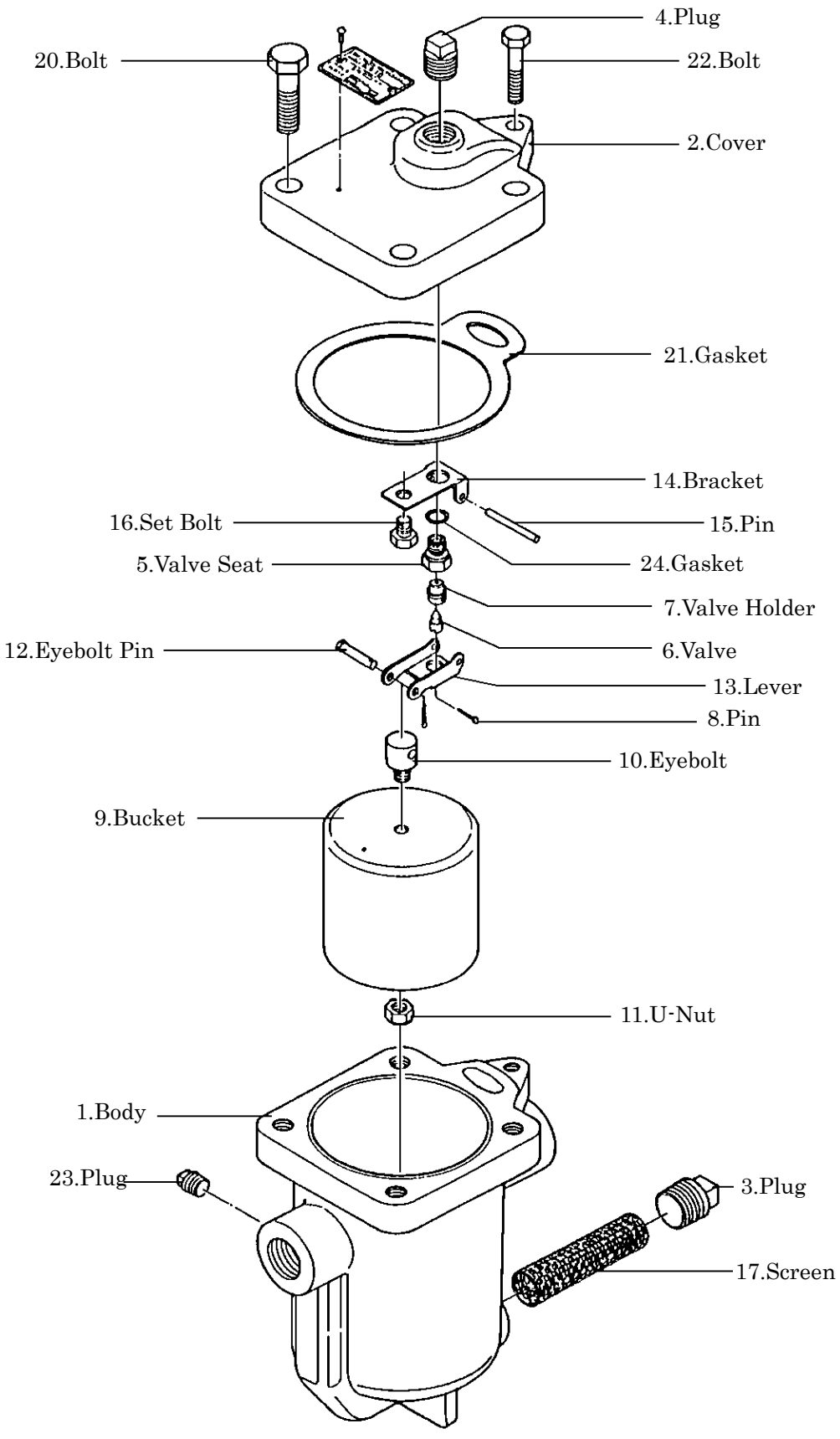


Drawing D

3. Take off the Pin(15), Valve(6), Valve Holder(7), Pin(8), Bucket(9), Eyebolt(10), Eyebolt Pin(12), Lever(13) come apart together from the Cover(2) as the drawing D.
4. Unscrew the Set Bolt(16) also unscrew the Valve Seat(5) with a wrench.
5. Take off the Pin(8), the Valve(6) and Valve Holder(7) come apart from the Lever(13).
6. Take off the split pin and Eyebolt Pin(12) the Bucket(9) will come apart.
7. 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.

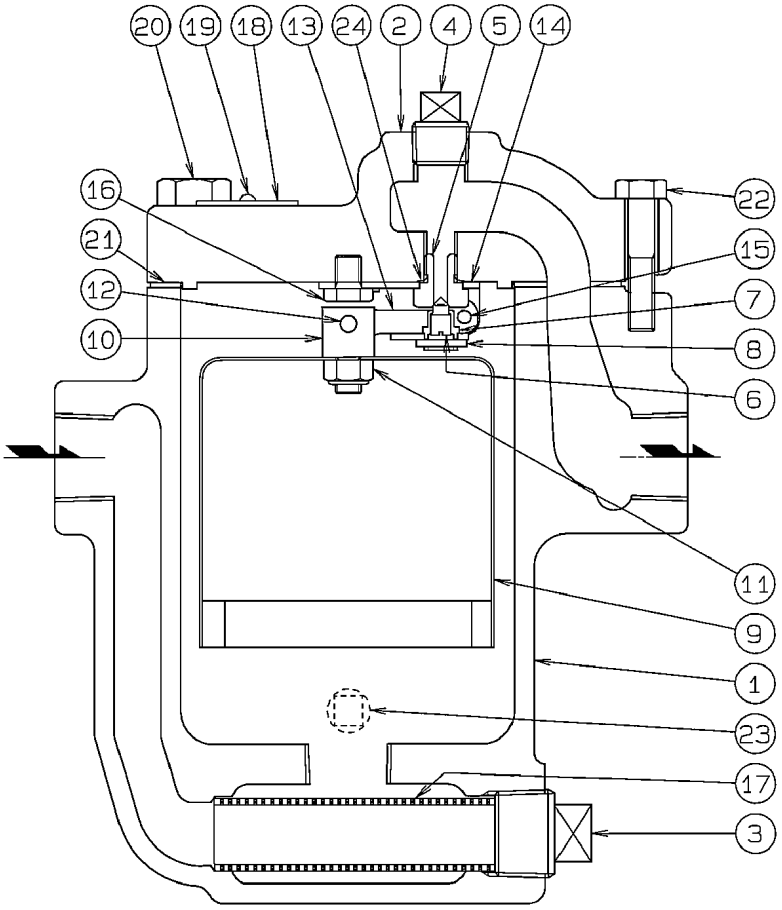
⚠ CAUTIONS	●When reassembling always replace the Gasket(21) to new one. ●Also Bolt(20),(22) should be tightened evenly.

No.	Parts	Size	Shape	Clamp Torque	Tools
5	Valve Seat	14mm	Hexagon	18N·m (180kgf·cm)	Wrench
16	Set Bolt	13mm	Hexagon	11N·m (110kgf·cm)	Wrench
20	Bolt	19mm	Hexagon	80N·m (800kgf·cm)	Wrench
22	Bolt	13mm	Hexagon	20N·m (200kgf·cm)	Wrench


4.Plug
20.Bolt
22.Bolt
2.Cover
21.Gasket
14.Bracket
16.Set Bolt
15.Pin
5.Valve Seat
24.Gasket
7.Valve Holder
12.Eyebolt Pin
6.Valve
13.Lever
8.Pin
10.Eyebolt
9.Bucket
11.U-Nut
1.Body
23.Plug
3.Plug
17.Screen

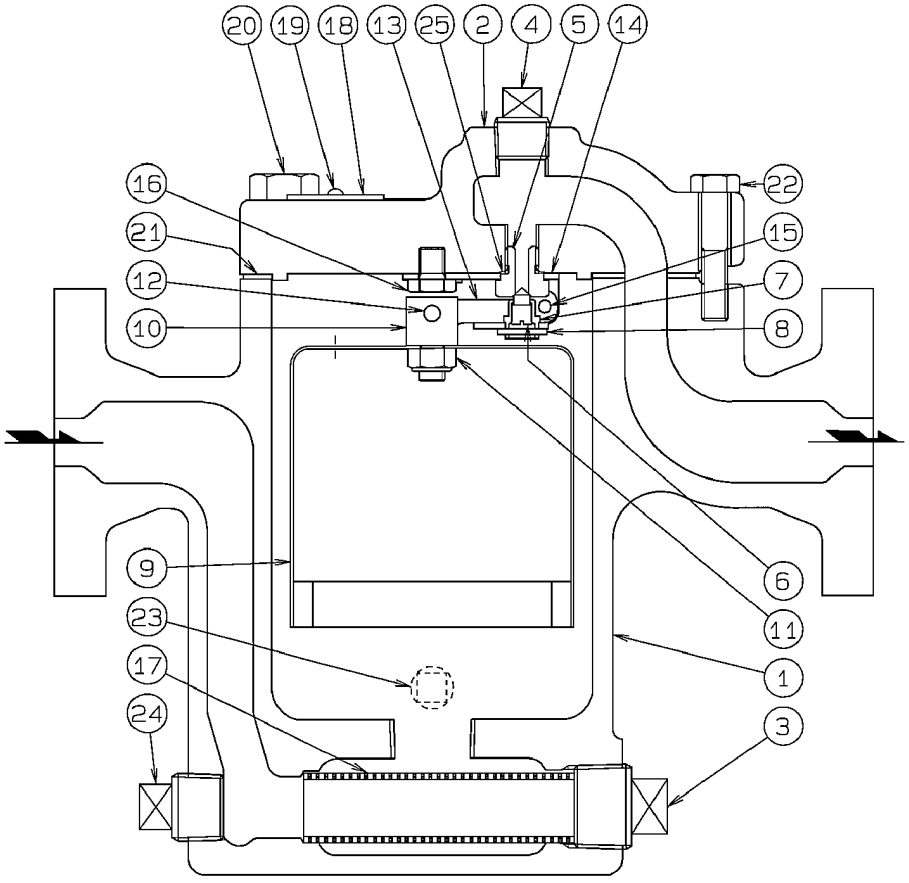
6.Construction

Model ES10



1. Body
2. Cover
3. Plug
4. Plug
5. Valve Seat
6. Valve
7. Valve Holder
8. Pin
9. Bucket
10. Eyebolt
11. U-Nut
12. Eyebolt Pin
13. Lever
14. Bracket
15. Pin
16. Set Bolt
17. Screen
18. Name Plate
19. Rivet
20. Bolt
21. Gasket
22. Bolt
23. Plug
24. Gasket

Model ES10NF (Flanged)



1. Body
2. Cover
3. Plug
4. Plug
5. Valve Seat
6. Valve
7. Valve Holder
8. Pin
9. Bucket
10. Eyebolt
11. U-Nut
12. Eyebolt Pin
13. Lever
14. Bracket
15. Pin
16. Sset Bolt
17. Screen
18. Name Plate
19. Rivet
20. Bolt
21. Gasket
22. Bolt
23. Plug
24. Plug
25. Gasket

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

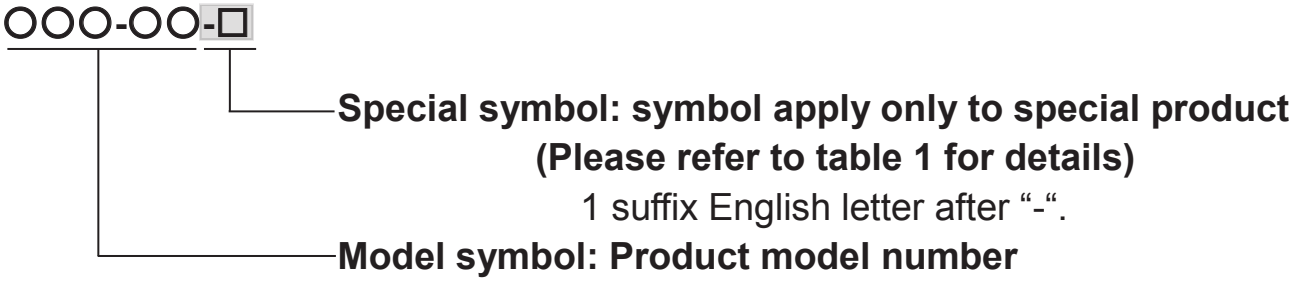


Table 1 Symbol description

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

- For any questions about the product that you purchased or about the details in this user’s manual, please contact the following.
-
- 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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