

OPERATION MANUAL
FOR
INVERTED BUCKET STEAM TRAP
MODEL:ES12N SERIES



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.

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1. Introduction

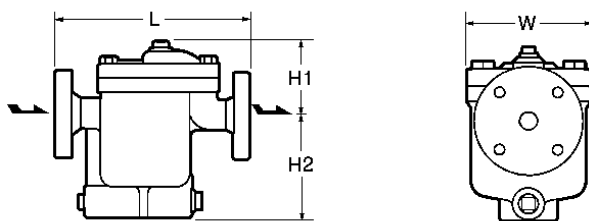
Inverted Bucket steam trap, inverted bucket Model ES12N Series is for multipurpose steam trap using our high durable SCCV(Self Closing and Centering Valve) System.

It is made in flanged connection.

This manual contains Installations, Trouble Shooting and Maintenance etc..


Never fail to read them to the end before using.

2. Dimensions and Specifications

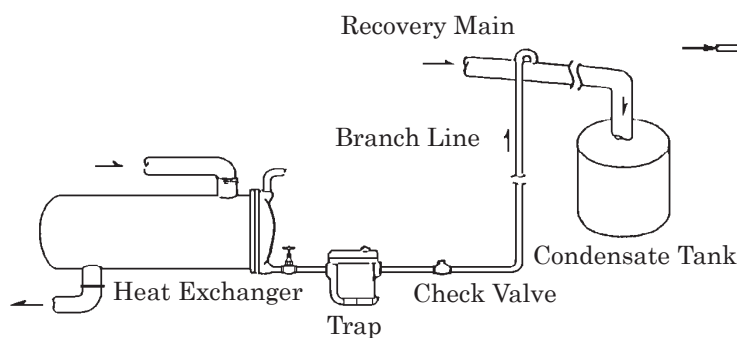


Model No.	Connections	Size mm (inch)	Operating Pressure (MPa)	Maximum Temperature °C(°F)	Material of Body	Dimensions (mm)				Weight (kg)
						L	H1	H2	W	
ES12N-16	Flanged	15(1/2)	0.01 to 1.6	220 (428)	Cast Iron (FC250)	270	140	140	120	13.5
		20(3/4)								
		25(1)								
		32(1 1/4)				280	150	130		15.1
		40(1 1/2)								
		50(2)								

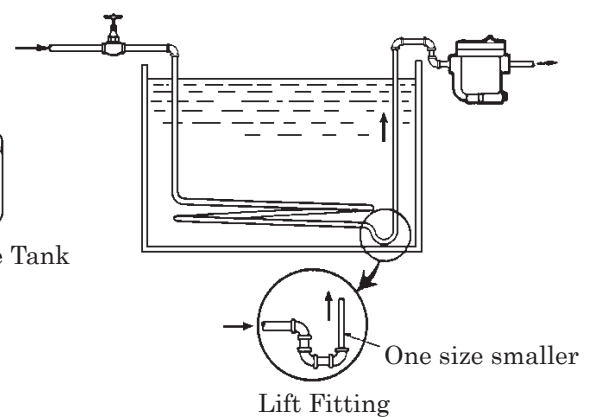
3. Installationsns

 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),(23),(24).
Re-tighten them.



Drawing A



Drawing B

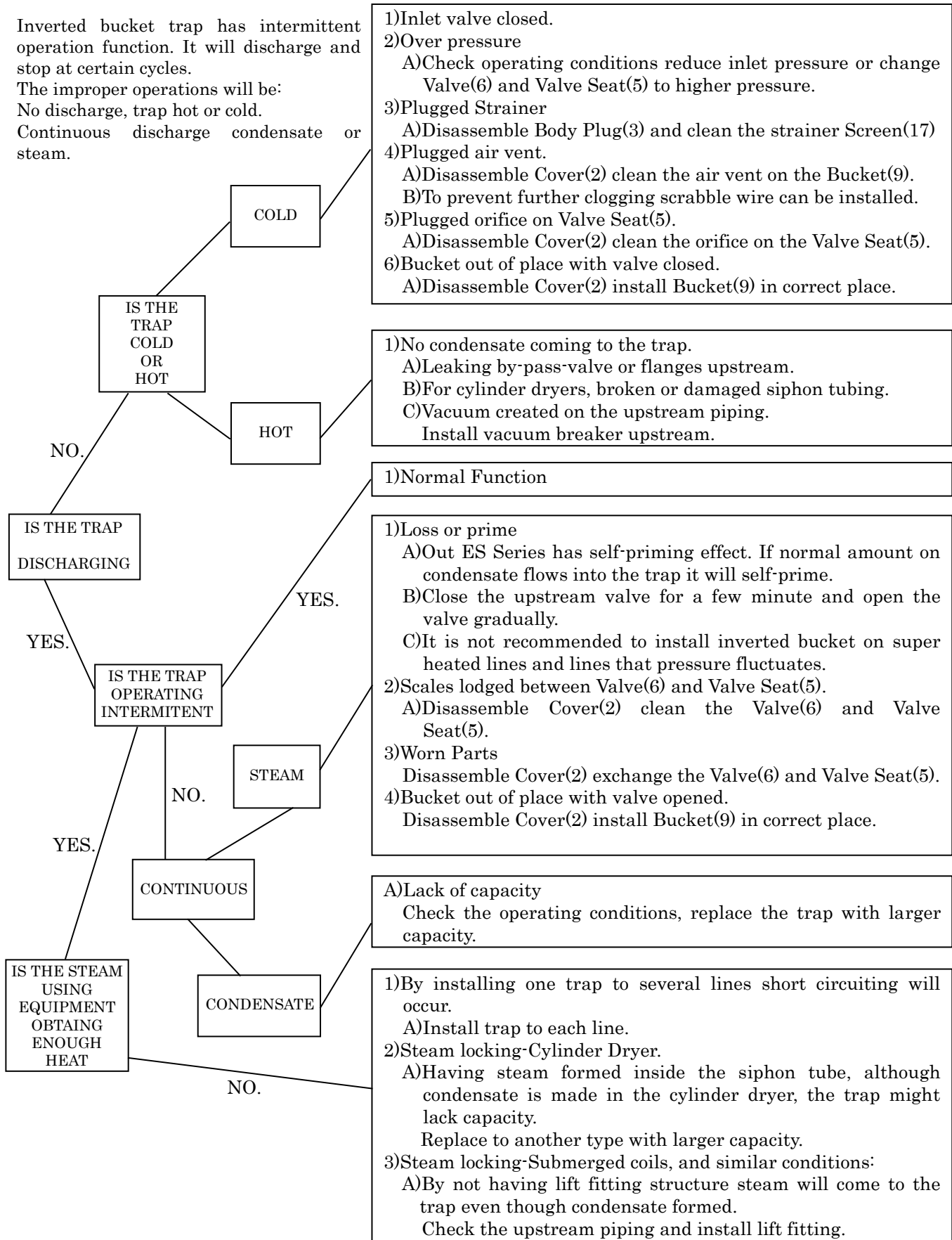
4. Trouble Shooting

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.



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.
 CAUTIONS	When replacing parts, make sure the replacement parts are supplied by Miyawaki.

The performance of steam traps deteriorates gradually over time due to wear, corrosion or dirt accumulating around the valve and the valve seat. Please conduct periodic diagnosis of traps in order to keep steam control systems and equipment working well.

Tools for Diagnosis Steam Traps

☐ Dr. Trap

It is a diagnostic tool with hardware (diagnostic equipment) that performs automatic diagnosis at high speed (maximum 10 seconds) and exclusive aggregate analysis software from the vibration and temperature information of the trap.

Diagnostic information is recorded in the diagnostic equipment and data can be transferred to the software. As a result, high-speed aggregate analysis, quantitative grasp of steam leakage and loss amount are possible.

☐ Dr. Trap Jr.

It is an inexpensive and simple diagnostic tool using hardware (steam trap checker) with vibration sensor, temperature sensor and exclusive aggregate analysis software.

From the vibration and temperature information of the trap, the judgment such as good or fail is made by a diagnostician. By inputting the vibration value detected by the steam trap checker to the aggregate analysis software, it is possible to quantitatively grasp the amount of steam leakage and money loss.

Caution:

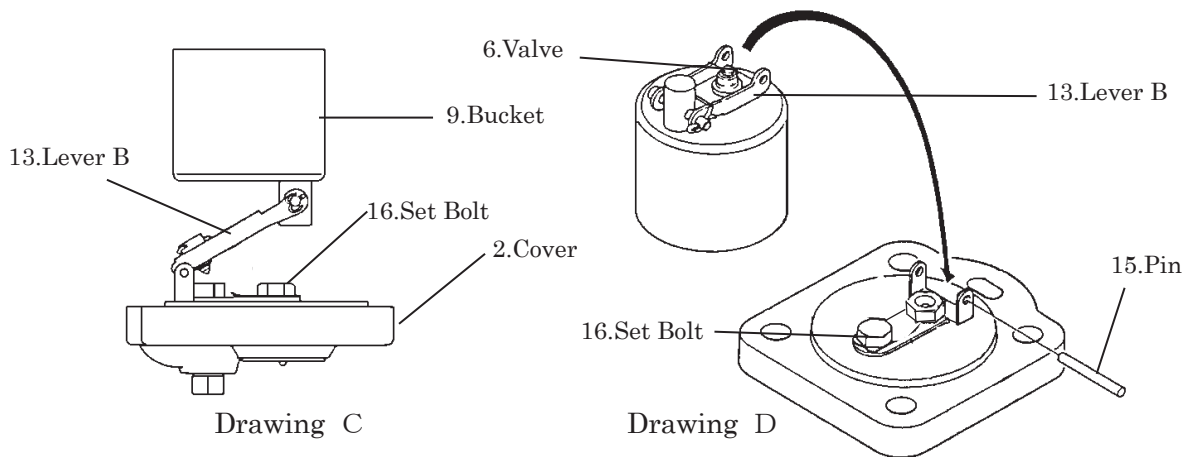
Even if both diagnostic tools are used, accurate diagnosis results may not be obtained depending on the location and installation status of the steam trap, or the type and operating condition of the steam trap.

For details, please contact MIYAWAKI, our local authorized agent, or the place where you purchased.


☐ Disassembling/Assembling

When a trap fails, it is necessary to clean the internal parts and to replace damaged parts. Take the failed trap apart following the steps below.

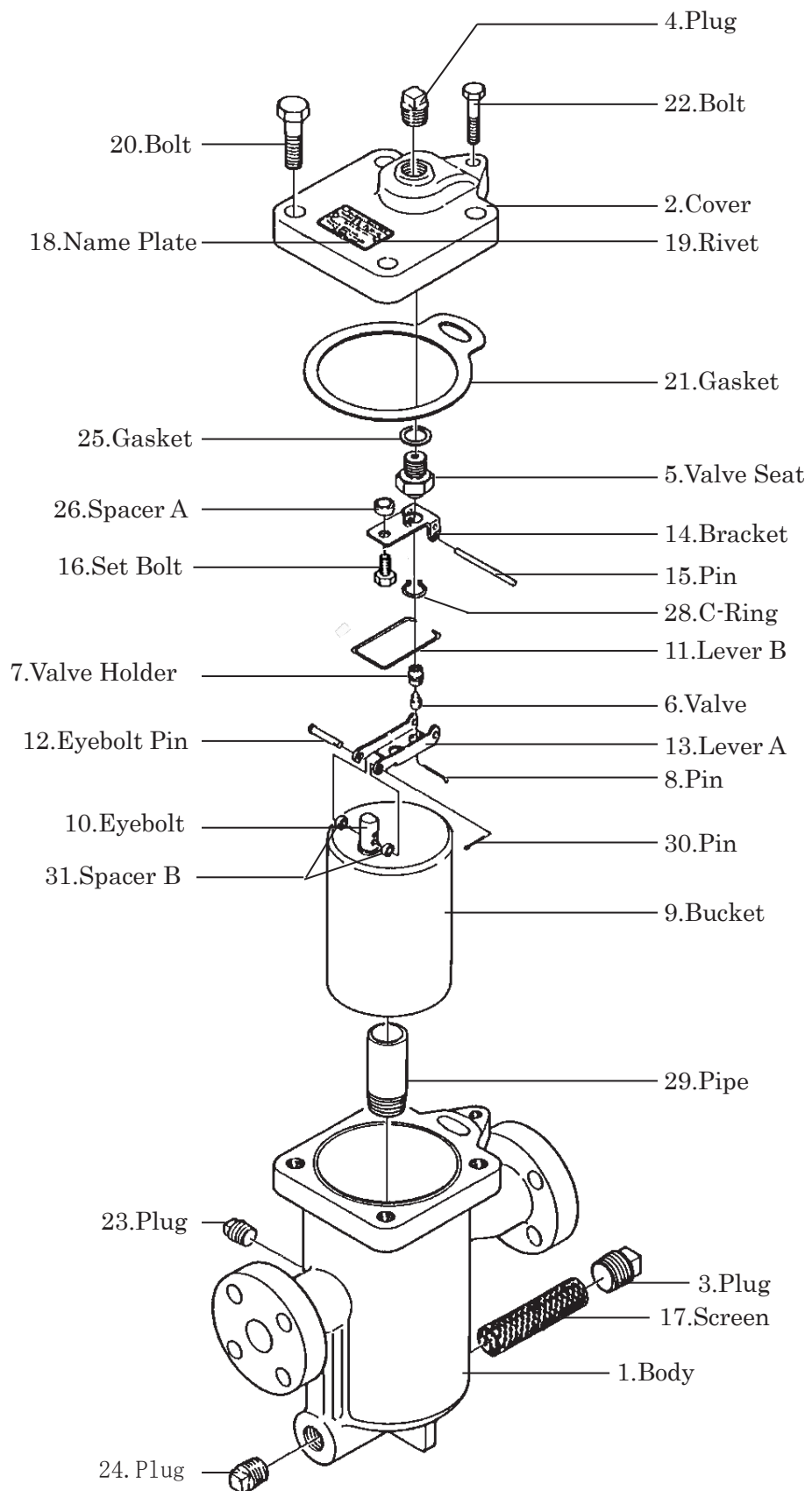
1. Disassemble Body Plug(3) take out the Screen(17) check and clean.
2. Disassemble Cover Bolt(20),(22) take off the Cover(2), the internals (Valve Seat(5), Valve(6), Valve Holder(7), Pin(8), Bucket(9), Eyebolt(10), Eyebolt Pin(12), Lever B(11), Lever A(13), Bracket(14), Pin(15), Set Bolt(16)) will come together as the drawing C.



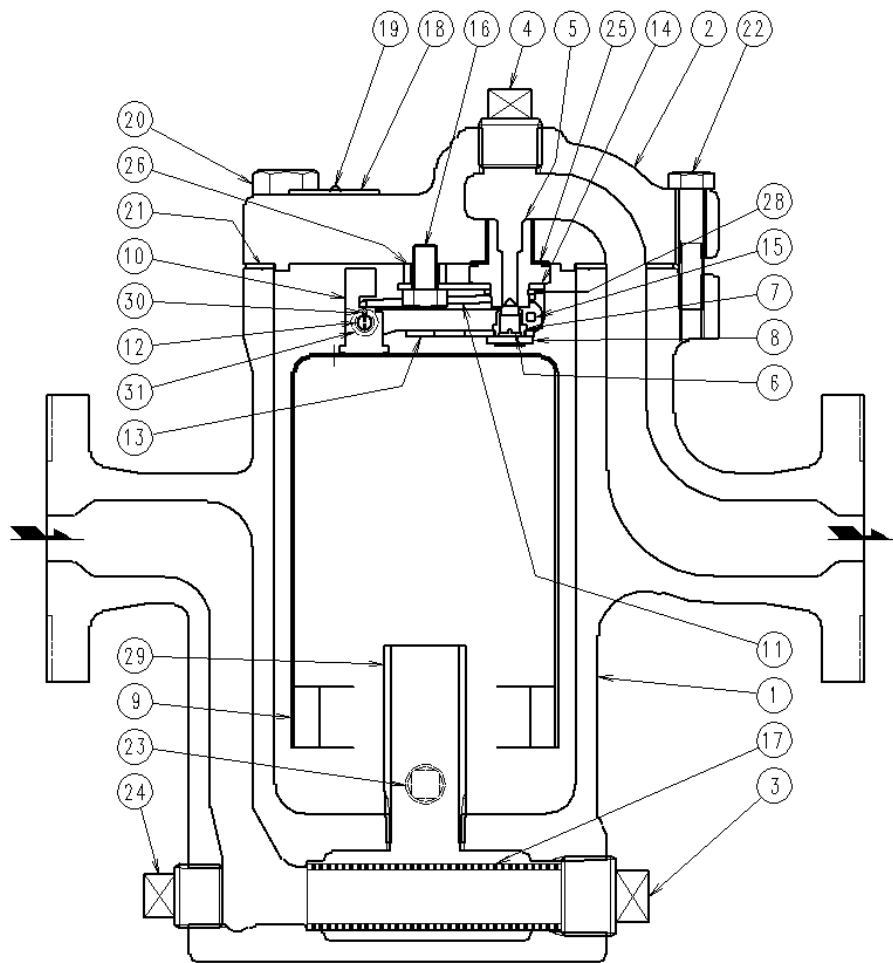
3. Take off the Pin(15), Valve(6), Valve Holder(7), Pin(8), Bucket(9), Eyebolt(10), Eyebolt Pin(12), Leber B(11), Lever A(13), come apart together from the Cover(2) as the drawing D.
4. Unscrew the Set Bolt(16) also unscrew the Valve Seat(5) with a wrench.
5. Take off the Pin(8), the Valve(6) and Valve Holder(7) comes apart from the Lever A(13).
6. Take off the pin(30) 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	<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	Shape	Clamp Torque	Tools
20	Bolt	19mm	Hexagon	80N·m	Wrench
22	Bolt	13mm	Hexagon	20N·m	Wrench



6. Construction



- | | |
|-----------------|----------------|
| 1. Body | 17. Screen |
| 2. Cover | 18. Name Plate |
| 3. Plug | 19. Rivet |
| 4. Plug | 20. Bolt |
| 5. Valve Seat | 21. Gasket |
| 6. Valve | 22. Bolt |
| 7. Valve Holder | 23. Plug |
| 8. Pin | 24. Plug |
| 9. Bucket | 25. Gasket |
| 10. Eyebolt | 26. Spacer A |
| 11. Lever B | 27. C-Ring |
| 12. Eyebolt Pin | 28. Pipe |
| 13. Lever A | 29. Pin |
| 14. Bracket | 30. Pin |
| 15. Pin | 31. Spacer B |
| 16. Set 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.

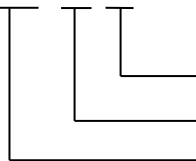
- 1) The precautions described in this manual were not observed
- 2) User's errors or mistakes such as an inappropriate installation or incorrect handling, or an excessively large impact caused by dropping
- 3) Problems caused by devices or equipment other than ours, or a disallowed use environment
- 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.

8. SERIAL NUMBER (S. No.) DESIGNATION

S.No.



Represents the day.

Represents the month.

Represents the year. (last two digits of the year according to the Western calendar)

Month designation system

Symbol	Month	Symbol	Month	Symbol	Month	Symbol	Month
1	1	4	4	7	7	X	10
2	2	5	5	8	8	Y	11
3	3	6	6	9	9	Z	12

Day designation system

Symbol	Day	Symbol	Day	Symbol	Day	Symbol	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 of serial number designation

1 7 1 1 → Jan 1, 2017

2 9 X M → Oct 21, 2029

9. GUIDANCE FOR READING SPECIAL PRODUCT NAME

○○○-○○-□

Special symbol:
Symbol apply only to special product
(Please refer to table 1 for details)
English letter after “-“

Model symbol:
Product model number

Table 1 Symbol description

Suffix	Special contents
A	Trap for high-pressure gas installed property (only for Gas Trap)
C	Blow valve attached
K	Change of gasket
L	Special face to face dimension
M	Change of parts material
P, T	Change of operating pressure, temperature, condensate capacity, etc
R	Change of screen mesh
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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