

OPERATION MANUAL
FOR
PRESSURE REDUCING VALVE
MODEL : RE10N



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.

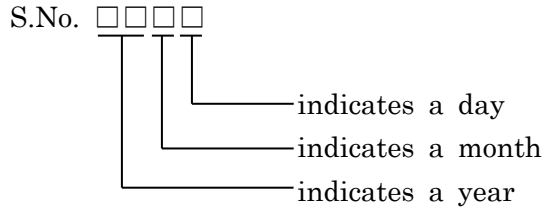


CAUTION

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

06 → 2006 16 → 2016

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 0616, the manufacturing date is January 6, 2006

In case that S.No. is 16XM, the manufacturing date is October 21, 2016

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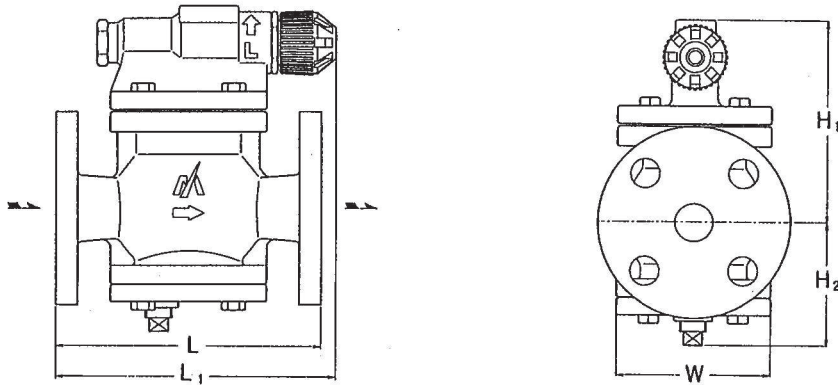
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1. Introduction

Model RE10N are micro bellows type pilot activated Pressure reducing valve for steam usage.

This manual contains Installations, Trouble Shooting and Maintenance etc., Never fail to read them to the end before using.

2. Dimensions and Specifications



Model		RE10N					
Connections		Flanged					
Size		15A	20A	25A	32A	40A	50A
Max. Prim (Upstream) Pressure		0.1~1.6MPa (1~16kgf/cm ²)					
Adjustable sec. (Downstream) Pressure		0.03~1.2MPa (0.35~12kgf/cm ²)					
Temp.		Saturated Temp.					
Max.Reducing ratio		20:1					
Min.differential pressure		0.07MPa (0.7kgf/cm ²)					
Dimensions (mm)	L	160	160	170	200	200	220
	L ₁	175	175	180	210	210	220
	H ₁	133	133	133	154	154	154
	H ₂	80	80	80	103	103	103
	W	100	100	100	130	130	130
Weight (kg)		7.0	7.3	8.3	14.0	14.1	15.3

3. Installations

- 1) Pressure reducing valve itself is to be installed so that the operating part is on the top side levelled horizontally to the piping.
- 2) A steam trap must be fixed in front of the pressure reducing valve, as it will cause hunting or vibration when the condensed water comes into the pressure reducing valve.
- 3) It is recommendable to use a reducer, in case when the velocity flow is expected to exceed the standard flow of 30m/sec.
- 4) Please avoid to use the pressure reducing valves arranged in a line, Each valve is a self function type and to be used independently, because there will be fluctuation in sensitivity and in response to the pressure, and two units cannot be functioned as the same.
- 5) In case when the ratio of reduced pressure exceeds 10:1 (established pressure is blow 1kgf/cm² when 10kgf/cm² at the primary side), Pressure reducing is to be made in two stages. At that time, distance between each pressure reducing valve is to be kept more than 3meters.
- 6) In case when providing on-off by establishing a magnetic valve (on-off valve) at the primary side or secondary side of the pressure reducing valve. distance between a pressure reducing valve and a magnetic valve should be kept more than 3meters. (It may happen to cause unstable function)
- 7) In case when establishing a control valve at the secondary side of a pressure reducing valve, distance between a pressure reducing valve and a control valve is to be more than 2meters. (It may happen to cause unstable function)
- 8) In case when the steam trap consumption volume may come down near to zero (dead end service), Please establish a steam trap at the secondary side, as the pressure reducing valve, for steam use, cannot be closed completely tight.
- 9) In order to prevent unusual pressure raise at the secondary side, Please establish a safety valve, In case when the position to used is stipulated by the laws and regulations, please install a safety valve which has a standard blow up volume, Or, the blow up volume of the alarm safety valve (relief valve), which is to be used for warning unusual pressure raise, should be more than 10% of the rating flow of the pressure reducing valve.
- 10) Please fix and support the piping, so that the load, bend and vibration of the piping. will not give influence direct to the pressure reducing valve.
- 11) Before passing steam through the pressure reducing valve, Please remove completely the foreign matter remaining inside the piping by brushing through the by-path pipe, because most of claim on pressure reducing valve in newly installed piping and at piping left unused for a long period, are caused by foreign matter remaining inside the piping.
- 12) In case when stop using for a long period, please drain completely the condensed water from the piping and close the stop valves which are fixed before and behind the pressure reducing valve.

4. Piping Example

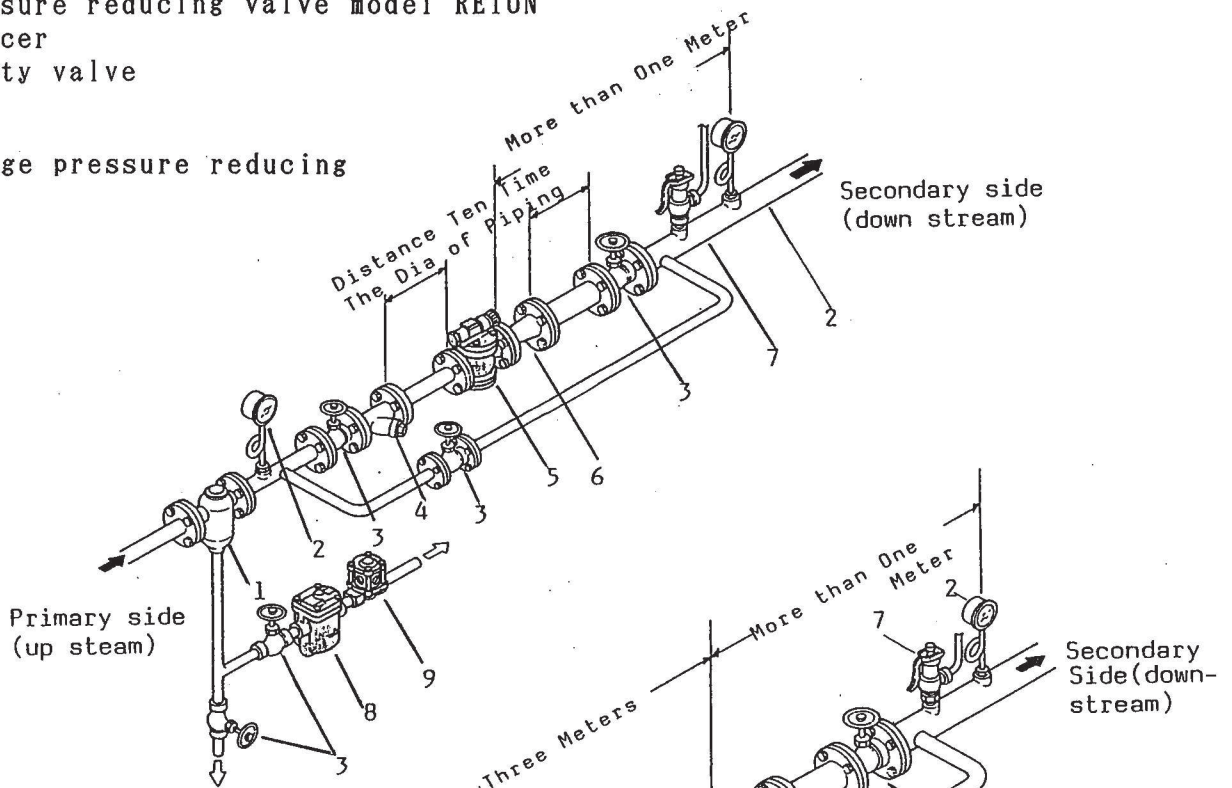
※One stage pressure reducing

1. Separator
2. Pressure gage
3. Stop valve
4. Strainer Y type
5. Pressure reducing valve model RE10N
6. Reducer
7. Safety valve

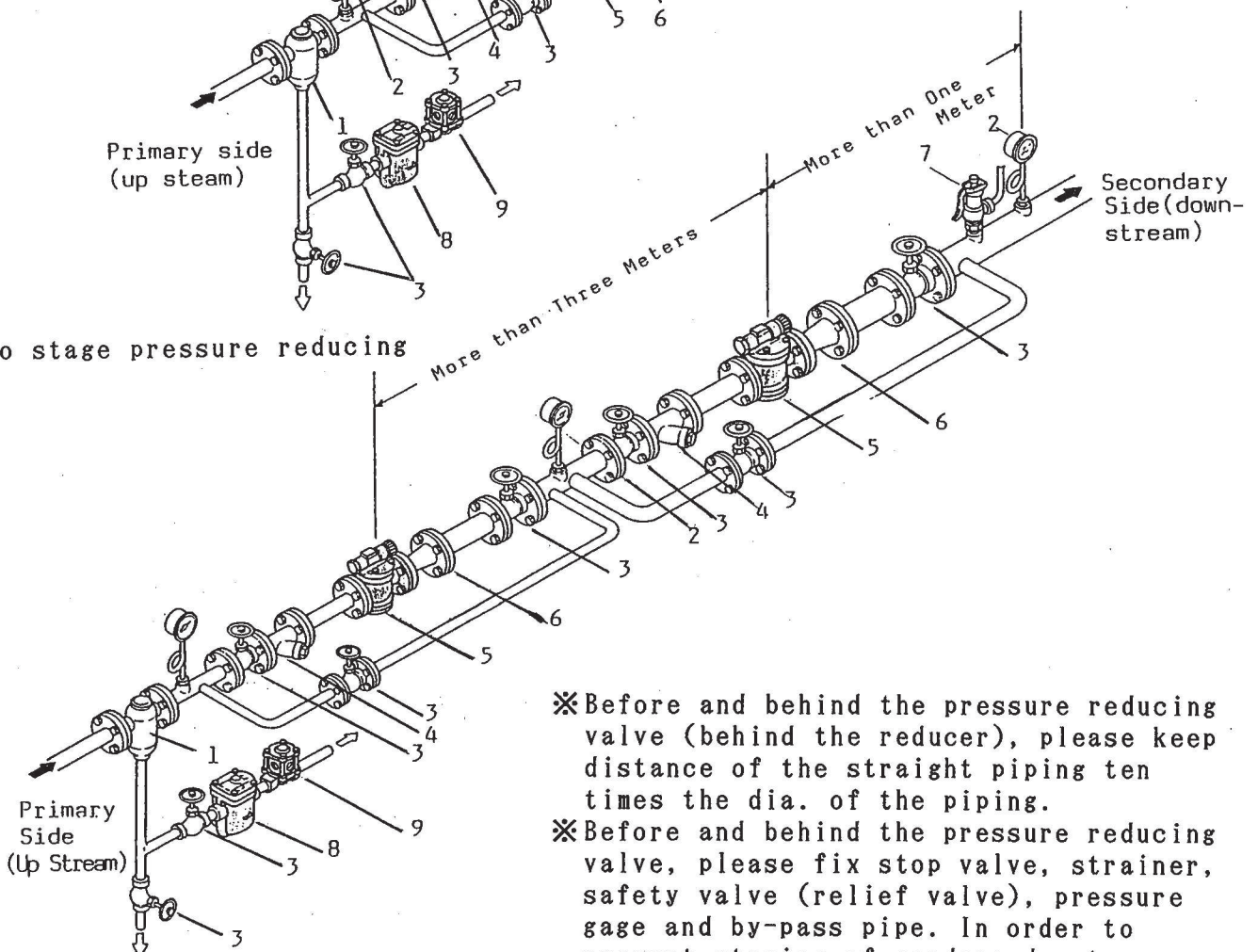
8. Bell mighty model ES

9. Sight checker model TS1

※One stage pressure reducing



※Two stage pressure reducing

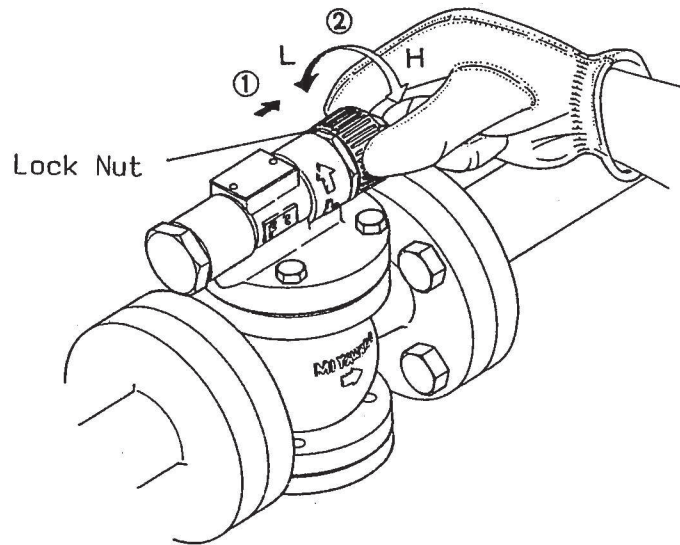


※Before and behind the pressure reducing valve (behind the reducer), please keep distance of the straight piping ten times the dia. of the piping.

※Before and behind the pressure reducing valve, please fix stop valve, strainer, safety valve (relief valve), pressure gage and by-pass pipe. In order to prevent staying of condensed water, Please install the strainer (60mesh) in the horizontal level.

※Distance from the pressure reducing valve to the pressure gage on the secondary side, is to be more than 1meter.

5. Adjustment



- 1) After installing the pressure reducing valve, before adjusting the pressure, please shut the stop valves which are fixed before and behind the pressure reducing valve and then by opening the by-pass valve, blow out for a while to remove the initial condensed water and other foreign matter inside the piping. (please mind that, if you fail to follow this operation, it may ruin the function of pressure reducing valve)
- 2) Please make sure that the stop valve and the by-pass valve, which are fixed before and behind the pressure reducing valve, are closed tightly.
- 3) ① pull lightly the handle. ② turn it to the right (towards the arrow L) and make free the adjusting spring. (If the spring is in its free condition, handle turning is very light)
- 4) After opening a little the stop valve at the secondary side, open slowly it full the stop valve at the primary side.
- 5) ① pull lightly the handle. ② turn it to the left (towards the arrow H) and by watching the pressure gauge, turn it slowly until the pressure reaches the established point.
- 6) Handle will be locked when you let go the handle.
- 7) Open fully the stop valve at the secondary side and adjustment is completed.
- 8) When stopping the flow, please shut the stop valve at the secondary side and then shut the stop valve at the primary side.

Notes:

- 1) Be sure to wear gloves when adjusting.
- 2) Don't touch the lock nut except when disassembling, because it is locked with stop cover.

6. Trouble Shooting

Sympton	Cause	Remedy
When the pressure at the secondary side(downstream) do not fixed pressure.	Mistake in fixed pressure.	Turn handle to readjust.
	Closed up of inlet valve.	Open the inlet valve.
	Closed up of outlet valve.	Open the outlet valve.
	Out of order in pressure gauge	Replace the pressure gauge.
	Short supply of steam volume at primary side.	Readjust the flow volume with by-pass valve.
	Insufficient capacity of pressure reducing valve.	Readjust the flow volume with by-pass valve. Re-select the capacity of pressure reducing valve.
	Stuff up of inlet opening.	Remove cover ^② and clean the strainer screen.
	Stuff up of screen	Remove plug ^⑩ and clean screen
	Un-smooth movement of pilot valve ^⑪ owing to dirt.	Remove plug ^⑩ and clean pilot valve.
	Un-smooth movement of main valve ^④ owing to dirt.	Remove bottom flange ^③ and clean main valve.
	Un-smooth movement of piston ^⑦ owing to dirt.	Remove cover ^② and clean piston.
	Wear and tear of piston ^⑦ and cylinder liner ^⑧ .	Replace piston ^⑦ and cylinder liner ^⑧ .
When the pressure at the secondary side (downstream) raised over the fixed pressure.	Mistake in fixed pressure.	Turn handle to readjust.
	Mistake on direction to install inlet and outlet.	To install it correctly to the flow direction.
	Close up of outlet valve.	Open the outlet valve.
	Forgotten to close the by-pass valve or leaking.	Close the by-pass valve, or replace it, if leaking.
	Out of order in pressure gauge	Replace the pressure gauge.
	Un-smooth movement of pilot valve ^⑪ owing to dirt.	Remove plug ^⑩ and clean pilot valve ^⑪ .
	Un-smooth movement of main valve ^④ owing to dirt.	Remove bottom flange ^③ and clean main valve ^④ .
	Un-smooth movement of piston ^⑦ owing to dirt.	Remove cover ^② and clean piston.
	Leakage owing to biting dust in pilot valve ^⑪ .	Remove bottom flange ^③ , clean main valve ^④ and valve sheet ^⑤ and then make it lap smooth.
	Damage of bellows ^⑭ or seal leakage.	Remove adjust cover ^⑨ and replace bellows ^⑭ .
	When consumption volume is near to zero at the secondary sude piping.	Install trap and of safety valve (relief valve) at the secondary side of pressure reducing valve.

Sympton	Cause	Remedy
Cannot turn the handle	Mistake in the way of turning the handle.	Pull lightly handel and then turn it.
	Burning at sleeve⑰ and jacket bolt⑱.	Remove adjust cover⑨ and replace sleeve⑰ and adjust bolt⑱.
Chatter noise (vibration noise of valves etc).	Condensate flowing in from primary side.	Install trap at the promary side of pressure reducing valve.
	Using at the flow below the minimum adjustable volume.	Re-select the capacity of pressure reducing valve.
Leakage of steam out side.	Loose bolt.	Tighten the bolt at regulated torque.
	Breakage of gasket	Replace the gasket.
	Breakage of bellows⑭.	Replace the bellows⑭.

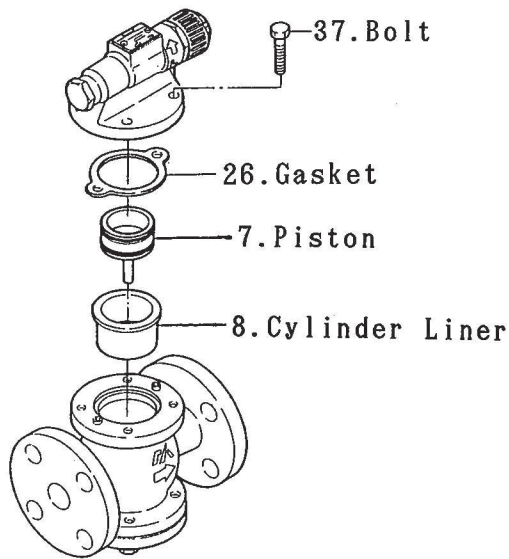
7. Maintenance

Maintenance of overhaul, assembly and replacement of the parts can be done with normal tools available in the market. The parts under the No. circled require tools.

Note

When overhauling, be sure to confirm the safety by extracting the pressure remaining in the pressure reducing valve.

1) Piston and Cylinder Liner



37) Bolt

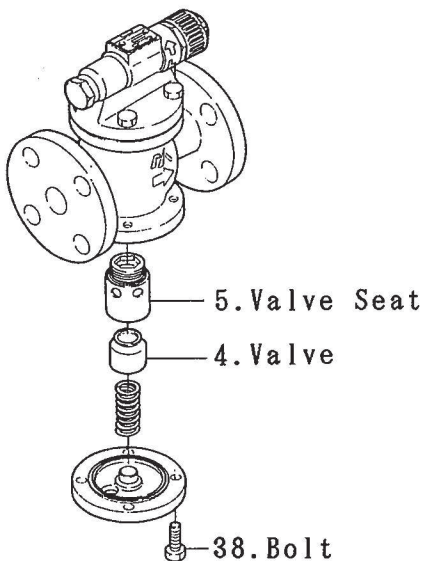
Tools to use: Socket

	15A	20A	25A	32A	40A	50A
Size	13mm			17mm		
Clamp torque	200kgf·cm			300kgf·cm		

Replacement parts for maintenance

Parts No.	Parts
26	Gasket
7	Piston
8	Cylinder Liner

2) Valve and Valve Seat



5) Valve Seat

Tools to use: Hexagon wrench

	15A	20A	25A	32A	40A	50A
Size	19mm			32mm		
Clamp torque	450kgf·cm			1600kgf·cm		

38) Bolt

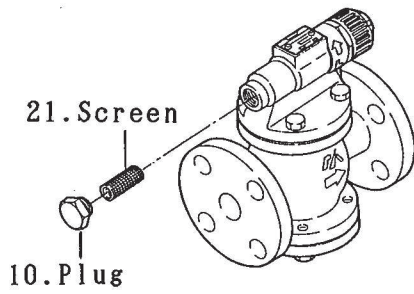
Tools to use: Socket

	15A	20A	25A	32A	40A	50A
Size	13mm			17mm		
Clamp torque	200kgf·cm			300kgf·cm		

Replacement parts for maintenance

Parts No.	Parts
5	Valve Seat
4	Valve

3) Pilot Screen

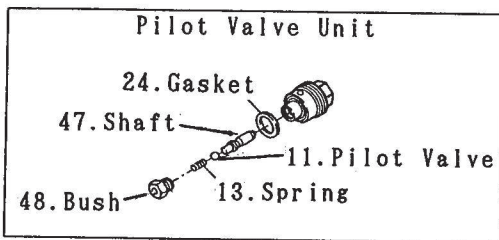


10) Plug

Tools to use: Wrench • Socket

Size	26mm
Clamp torque	200kgf•cm

4) Pilot Valve Unit • Micro Bellows



33) Biss

Tools to use: Plus driver

9) Adjust Cover

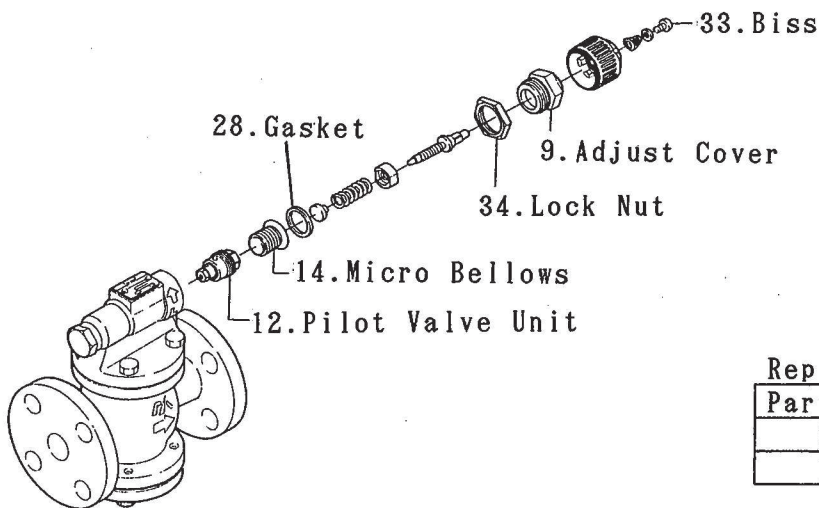
Tools to use: Socket

Size	30mm
Clamp torque	400kgf•cm

12) Pilot Valve Unit

Tools to use: Socket

Size	14mm
Clamp torque	300kgf•cm



34) Lock Nut

Tools to use: Wrench

Size	35mm
Clamp torque	130kgf•cm

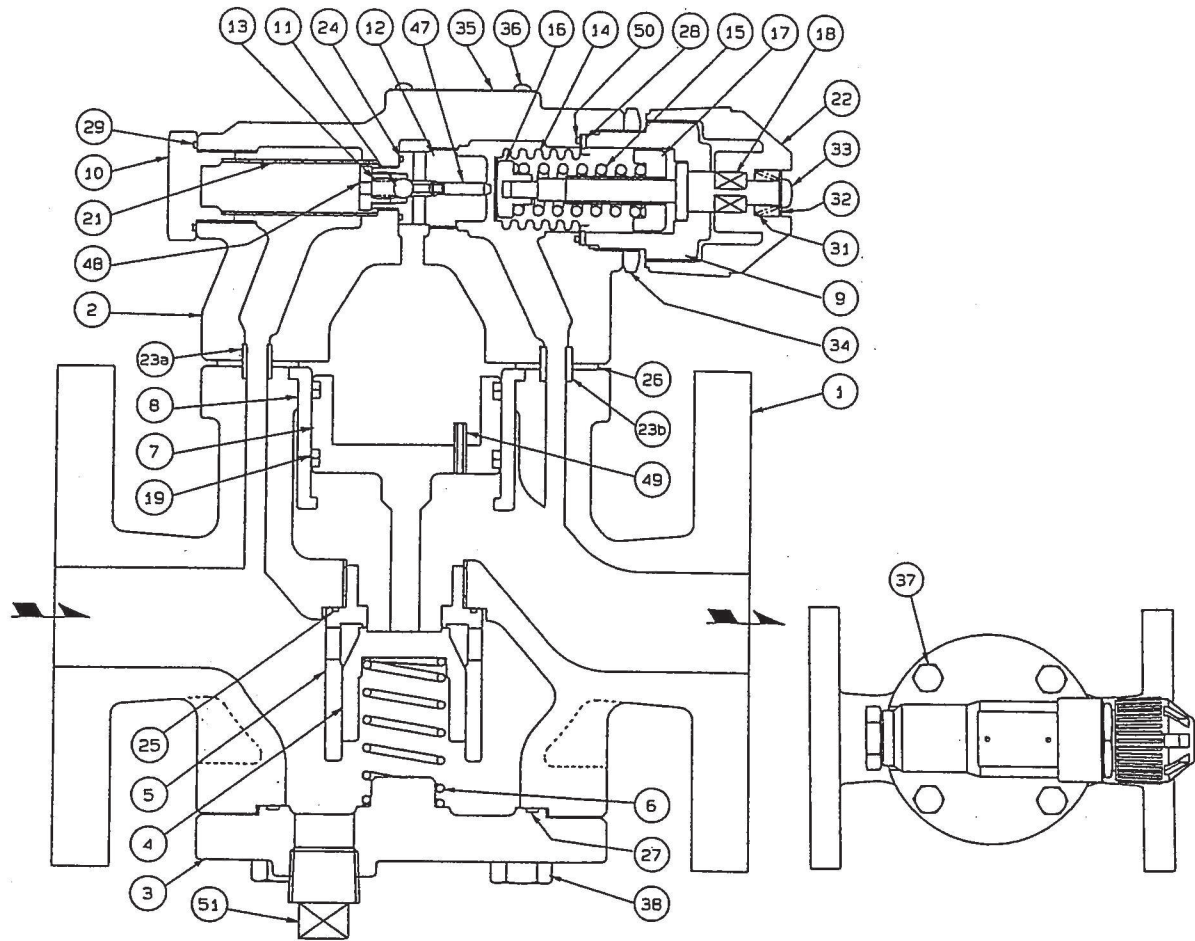
48) Bush

Tools to use: Wrench

Replacement parts for maintenance

Parts No.	Parts
28	Gasket
14	Micro Bellows

8. Construction



- | | | |
|-------------------|-----------------|----------------|
| 1. Body | 15. Spring | 31. Spring |
| 2. Cover | 16. Spring Stay | 32. Washer |
| 3. Bottom Flange | 17. Sleeve | 33. Screw |
| 4. Valve | 18. Adjust Bolt | 34. Lock Nut |
| 5. Valve Seat | 19. Piston Ring | 35. Name Plate |
| 6. Spring | 21. Screen | 36. Rivet |
| 7. Piston | 22. Handle | 37. Bolt |
| 8. Cylinder Liner | 23. Collar | 38. Bolt |
| 9. Adjust Cover | 24. Gasket | 49. Spring Pin |
| 10. Plug | 25. Gasket | 50. Gasket |
| 11. Valve | 26. Gasket | 51. Plug |
| 12. Valve Seat | 27. Gasket | |
| 13. Spring | 28. Gasket | |
| 14. Bellows | 29. Gasket | |

9. Warranty

9.1 Warranty period

The warranty period is 18 months after shipment or 12 months after installation, whichever occurs first.

9.2 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

9.3 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

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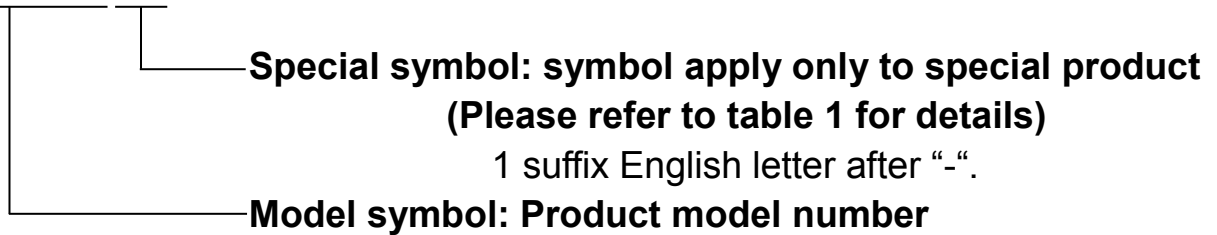


Table 1 Symbol description

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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