REC1

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ISO9001
JMI-0205
Head office & Factories

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The MIYAWAKI REC1 pressure reducing valve is a stainless steel direct-action pressure reducing valve that has superior durability. In order to get maximum benefit from this product, be sure read this manual before installing it.

MIYAWAKI INC.

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.

1 Specifications and markings

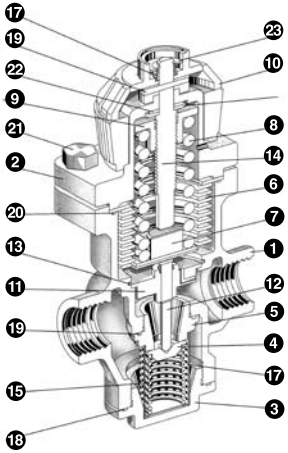
Note	Install this product properly, and do not use it in conditions outside the scope of the specifications.

The following items are described on the product's nameplate or on the side of the main body. Review these items to avoid using the product incorrectly.

(1) Nominal diameter: Given in mm or inch.
(2) Fluid: The fluid that the product was designed for is written here.
The correct fluid for this product is steam.
(3) Primary-side pressure range (PRIMARY P.):
Range of the pressure in the primary side at which the pressure reducing valve will operate properly.
(4) Adjustment range of the secondary pressure (SECONDARY P.): The range of reduced pressure on the secondary side that can be set.
(5) Maximum working temperature (MAX. T.): Maximum temperature at which the pressure reducing valve will operate properly
(6) Date of manufacture: This shows the date when the product was manufactured. For more details, refer to section 8. S. No. marking.
(7) Flow direction: The direction in which the fluid flows is shown by the arrow.
(8) Material: The material used for the main body. The material used in the main body of this product is SCS14.

For dimensions and other specifications, refer to the other documents such as the product catalog.

2 Compunents

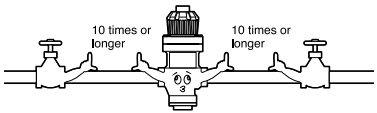


1. Body
2. Cover
3. Plug
4. Valve
5. Valve seat
6. Bellows
7. Spring stay
8. Adjustment spring
9. Sleeve
10. Handle
11. Orifice plate
12. Shaft
13. Stop ring
14. Adjustment bolt
15. Valve return spring
16. Screen
17. Spring
18. Plug gasket
19. Valve seat gasket
20. Cover gasket
21. Bolt
22. Seat
23. Push nut

3 Installation

Warning	· Do not touch the pressure reducing valve, the safety valve (relief valve) or the opening section on the pipe outlet side with your bare hand. If there is steam present, you may be seriously injured. · Before supply of steam, check whether there will be any danger if the steam reaches the end of the pipe and whether all the pipe joints have been connected. When the steam is released, you may be seriously injured.
Note	· Before installing the pressure reducing valve on a pipe, discharge all the steam in the pipe and remove any dust or scale that may keep the pressure reducing valve from operating properly. . Pay attention to the following items when installing the pipes.

1) Remove the dust seals covering the inlet/outlet connecting sections of the pressure reducing valve body.
2) To prevent installing the valve the wrong way around, check the direction of the flow by finding the arrow on the side of the pressure reducing valve body.
3) Be sure to install sections of straight pipe that are at least 10 times longer than the pipe diameter just before and after the pressure reducing valve (behind the reducer).

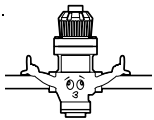


4) To avoid reducing the pressure before it reaches the valve, do not install pipes that reduce the path size on the primary side.

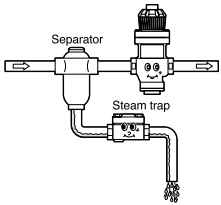
5) Install a pressure gauge and a stop valve both before and after a pressure reducing valve, and always install a bypass line.
Be sure to install a strainer on the primary side (normally 60 - 80 mesh, or 100 mesh in places where there is lots of scale or dirt present). Thestrainer should be installed in such a way that the screen will point sidewards to avoid the accumulation of condensate in the area of the screen. (Refer to the plumbing example described later.)

6) Install a steam trap on the secondary side of the pressure reducing valve so that the condensate can be discharged when equipment or systems stop being used.

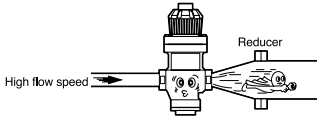
7) The pressure reducing valve should be installed in a oorizontal pipe with the operating part including the adiust unit turned upward.



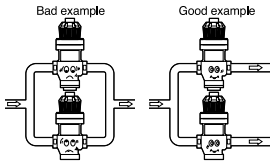
8) When condensate flows into the pressure reducing valve, hunting or vibration may occur. Therefore, be sure to install a steam trap just before the pressure reducing valve



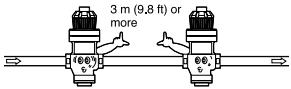
9) A reducer is recommended when the standard flow speed (30 m/sec) is likely to be exceeded.



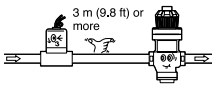
10) Avoid using pressure reducing valves in parallel. Pressure reducing valves are standalone devices, and each has its own variation in sensitivity and responsiveness to pressure. Therefore, since two pressure reducing valves cannot be activated exactly the same, only one valve would actually be doing the work. That's why they need to be used independently.



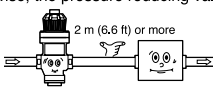
11) When the pressure reducing ratio exceeds the maximum pressure reducing ratio, perform a double pressure reduction.
Stay 3 m (9.8 ft) or more away from any pressure reducing valve.



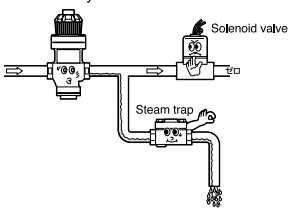
12) When installing a solenoid valve (ON-OFF valve) on the primary or secondary side of the pressure reducing valve, install the solenoid valve so that the distance between the pressure reducing valve and the solenoid valve is 3 m (9.8 ft) or more.
(Otherwise, the pressure reducing valve operation may be unstable.)



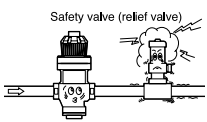
13) When using a control valve on the secondary side of the pressure reducing valve, install the control valve so that the distance between the pressure reducing valve and the control valve is 2 m (6.6 ft) or more.(Otherwise, the pressure reducing valve operation may be unstable.)



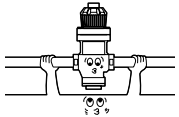
14) The steam pressure reducing valve does not close fully. Therefore, when the amount of steam used is close to zero (at the end of service for example),
install a steam trap on the secondary side.



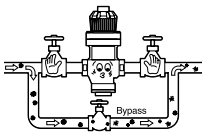
15) To keep the secondary-side pressure from rising abnormally, install a safety valve. If regulations cover the place that the safety valve is installed, use a safety valve which vents as specified in the regulations.
A warning safety valve (relief valve) that is used to warn of an abnormal pressure rise should be able to blowoff at least 10% more than the rated flow of the pressure reducing valve.



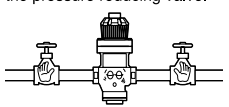
16) Secure or support the pipe so that any load, bending or vibration in the pipe is not transmitted directly to the pressure reducing valve.



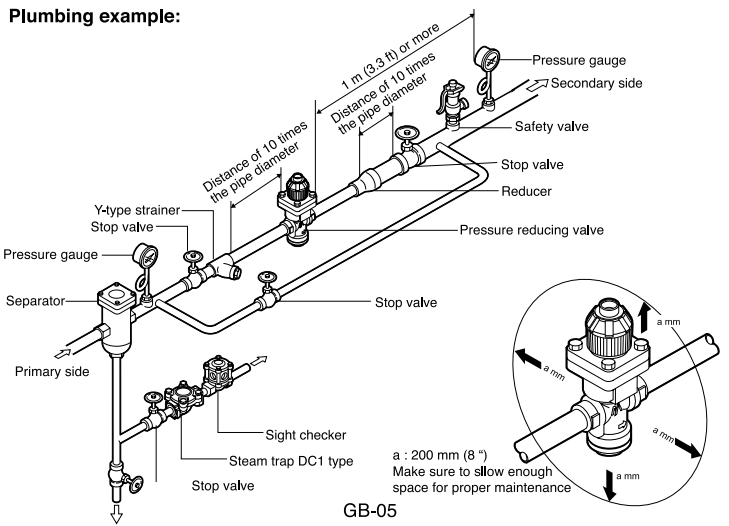
17) Most complaints about pressure reducing valves installed in new pipes or in pipes that have not been used for a long time are due to dirt and scale in the pipes. Therefore, before sending steam into the pressure reducing valve, Install the bypass line and the main pipe horizontally.



18) When a pressure reducing valve will not be used for a long time, the remaining pressure in the pipe should be released. Discharge all the condensate from the pipe, and close the stop valves before and after the pressure reducing valve.



Plumbing example:



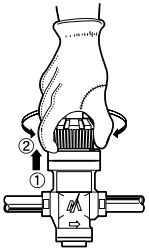
4 Pressure adjustment method

Warning

- Since the handle gets hot when the pressure is adjusted, wear work gloves or leather gloves. Otherwise, you may be burned.
- Do not touch the pressure reducing valve, the safety valve (relief valve) or the opening section on the pipe outlet side with your bare hand. If there is steam present, you may be seriously injured.

Note

- After installing a pressure reducing valve, open the bypass valve before adjusting the pressure and blow all the initial low-temperature condensate, dust, foreign objects, etc. out of the pipe.



1) After making sure that each of the stop valves and bypass valves before and after the pressure reducing valve are closed:
   (1) Pull up gently on the pressure reducing valve adjusting handle. (2) Turn it clockwise (in the direction indicated by arrow L) to free the adjusting spring. (When the spring is free, the handle will turn easily.)
2) After opening the secondary-side stop valve a little, open the primary-side stop valve slowly all the way.
3) (1) Pull up gently on the handle. (2) Turn it counterclockwise (in the direction indicated by arrow H). While looking at the pressure gauge, turn the handle slowly so that a given pressure is obtained.
4) When the handle is released, it will be locked in position.
5) Open the secondary-side stop valve fully. That completes the adjustment.
6) in case pf a shut-down of the equipment, close the secondary-side stop valve and then close the primary-side stop valve.

5 Maintenance

Warning

- Before removing the pressure reducing valve from the pipe or disassembling it, be sure to close the stop valves at the inlet and outlet of the pressure reducing valve. Then, release the remaining pressure in the pressure reducing valve body (check whether the pressure in the main body has reached 0 MPa (0 bar)), and let it cool down completely (check whether the surface temperature of the main body is at room temperature). Then, make a safety check and start the maintenance operation.If there is any pressure or temperature in the pressure reducing valve body, you may be seriously burned due to the venting of steam or condensate.

Note

- When replacing parts, use maintenance parts supplied by us.

When disassembling the pressure reducing valve body for inspection, refer to section “2) Disassembly and reassembly” described later, and work with due care.

1) Inspection

(1) Inspecting the parts inside the pressure reducing valve
Since it is always necessary to keep the valve, valve seat, sliding section, and the surface of the screen clean, we recommend that the inside of the pressure reducing valve should be cleaned regularly. If parts are damaged, replace them with new ones.

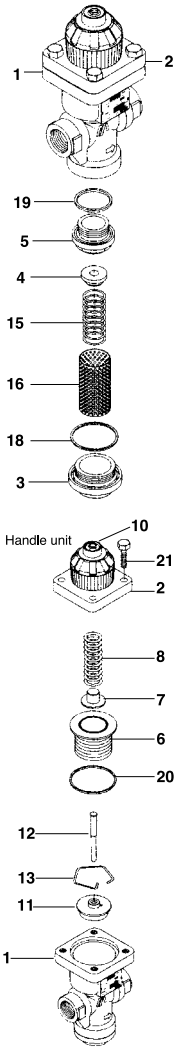
Parts to be inspected:

○Valve section
- ·Surface of the area between the valve (4) and the valve seat (5)
- ·Surface of the screen (16)

○Shaft section
- ·Sliding section between the shaft (12) and the orifice plate (11)

We recommend regularly cleaning the screens in the strainers installed around the pressure reducing valve.

2) Disassembly and reassembly



(1) Replacing the valve section

○Disassembly

- When the plug (3) is removed from the bottom of the body (1) using a tool, the screen (16) can be taken out with the plug (3).
- The return spring (15) and the valve (4) can be removed at this time, together with the screen (16). (There is a plate on the bottom of the screen (16).)
- Remove the valve seat (5) from the body (1) using a tool.

○Reassembly

- After replacing the valve seat (5) with a new one, secure the new valve seat (5) in the body (1).
- After replacing the valve (4) with a new one, put the return spring (15) into the screen (16). Then, put the new valve (4) on the return spring (the curved side of the valve faces the return spring (15)), and reinstall them in the plug (3).
- Secure the plug (3) in the body (1).
  The valve may be misaligned during assembly. Therefore, after tightening the plug, remove the handle unit according to rhe procedure described in the next Step (2). To center the valve (4), push lightly on the end of the shaft (12) several times.
  Replace the plug gasket (18) and the valve seat gasket (19) with new ones. (Before reassembly, put new gaskets (18) and (19) in the gasket grooves in the valve seat (5) and plug (3)).

Note:

- Check whether the surface and sealing face of each part are clean, and then attach them.
- Clean the surface of the screen (16), and attach it.
  If the screen is deformed or has flaws, replace it with a new one.

(2) Replacing the bellows and shaft sections

○Disassembly

- Lift the handle (10) gently, turn it clockwise (in the direction indicated by arrow L) to free the adjustment spring (8) and then remove the four bolts (23) using a tool.
- Remove the cover (2) (handle unit), and take out the adjustment spring (8).
- Remove the bellows (6) from the body (1), and take out the shaft (12).
- Take out the spring stay (7) inside the bellows (6).
  Remove the stop ring (13) from the groove in the body (1) using the tip of a flatblade screwdriver.
- Remove the stop ring (13) and the orifice plate (11) from the body (1).

○Reassembly

- When replacing the orifice plate (11) with a new one, reinstall it so that the small hole of the orifice plate is on the outlet side of the body (1).
- Put the bottom of the fold on the stop ring (13) on the face of the orifice plate (11). Then, push the five edges into the grooved section on the body (1) using the tip of a flatblade screwdriver, to secure the orifice plate (11). Do not allow the small hole in the orifice plate (11) to be blocked by the stop ring (13).
- After replacing the shaft (12) with a new one, insert the spherical surface of the new shaft into the sliding section of the orifice plate (11).
  Make sure the shaft (12) moves smoothly by pushing the end of the shaft (12) lightly several times.
- After replacing the bellows (6) with a new one, reinstall the spring stay (7) (the curved side faces up), and the adjustment spring (8) in the new bellows (6). Then, reinstall the bellows in the body (1).
  The cover (2) has a hole on its side (the lower part of the handle). Therefore, install the cover so that the position of the hole is in parallel to the pipe. Then tighten the bolts (21).
  Be careful to tighten the bolts evenly. Replace the cover gasket (20) with a new one.
  (Before reassembly, put the new gasket (20) in the gasket groove in the body (1).)

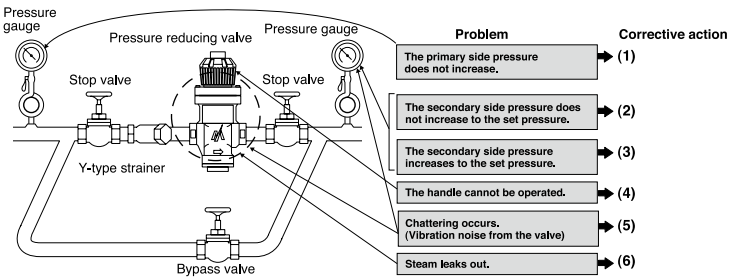
Note:

- Check whether the surface and sliding face of each part are clean, and then attach them.

Part No.	Part name	Tool	Opposite side	Torque
3	Plug	Torque wrench	32 mm (1.26 “)	800 kgf*cm (695 lbf*in)
5	Valve seat	Torque wrench	27 mm (1.06 “)	600 kgf*cm (520 lbf*in)
21	Bolt	Torque wrench	13 mm (0.51 “)	140 kgf*cm (122 lbf*in)

Apply a anti-seizing agent to the threaded sections.
Apply a small amount of anti-seizing agent to the threaded sections on the plug (3) and valve seat (5). However, do not cause the anti-seizing agent to squeeze out of the seal face.

6 Cause of problem and corrective action



(1) Symptom: The primary side pressure does not increase.

	Cause of the problem	Corrective action	Reference item
Working conditions or plumbing materials	Shortage of steam volume supplied to the primary side.(The capacity of the boiler may be insufficient.)	Recheck the flow rate using the bypass valve.	-
		Review the system.	
	The steam valve is closed.	Open the steam valve.	
	The pipe on the primary side is too small.	Review the pipe size.	
	There is a throttle section in the primary side pipe.	Remove the throttle section.	

(2) Symptom: The secondary side pressure does not increase to the set pressure.

	Cause of the problem	Corrective action	Reference item
Working conditions or plumbing materials	Insufficient pressure reducing valve capacity	Recheck the flow rate using the bypass valve.	-
		Select pressure reducing valve with the proper capacity.	
	The difference between the primary side and secondary side pressures is below the minimum differential pressure.	Increase the primary side pressure.	
		Review the system.	
	Clogging in the inlet side strainer	Disassemble and clean.	
	The secondary side stop valve is closed.	Open the stop valve.	
	The secondary side pipe is small.	Review the pipe size.	
	There is a throttle section in the secondary side pipe.	Remove the throttle section.	
Due to internal parts	Clogged screen (16)	Clean the screen (16). If it is damaged, replace it with a new one.	item 5-2)-(1)
	Poor sliding of the shaft (12)	Clean the sliding section between the shaft (12) and the orifice plate (11). If the sliding section is damaged, replace it with a new one.	item 5-2)-(2)

(3) Symptom: The secondary side pressure increases beyond the set pressure.

	Cause of the problem	Corrective action	Reference item
Working conditions or plumbing materials	The consumption on the secondary side is close to zero.	Install a trap or a safety valve on the secondary side of the pressure reducing valve.	-
	The inlet or the outlet is installed incorrectly.	Install them correctly according to the flow direction.	
	The bypass valve is not closed. Pressure is leaking past the bypass valve.	Close the bypass valve. If the pressure is leaking, repair or replace the bypass valve.	
Due to internal parts	Pressure leaks past the valve (4) due to dirt and scale holding the valve open.	Clean the surfaces of the valve (4) and the valve seat (5).If either surface is damaged, replace the parts with new ones.	Item 5-2)-(1)
	Poor sliding of the shaft (12)	Clean the sliding section between the shaft (12) and the orifice plate (11). If the sliding section is damaged, replace it with	Item 5-2)-(2)
	Broken bellows (6)	Replace the bellows (6) with new ones.	

(4) Symptom: The handle cannot be operated.

	Cause of the problem	Corrective action	Reference item
Due to internal parts	Mishandling of the handle (10)	Pull the handle (10) up gently and turn it.	Item 4
	Sleeve (9) or adjustment bolt (14) has seized.	Replace the handle unit with a new one.	Item 5-2)-(2)

(5) Symptom: Chattering occurs. (Vibration noise from the valve)

	Cause of the problem	Corrective action	Reference item
Due to plumbing materials and internal parts	Condensate flows in from the primary side	Install a trap on the primary side of the pressure reducing valve.	-
	Used below the minimum adjustable flow rate.	Select a new pressure reducing valve.	Item 5-2)-(2) -
	Poor sliding of the shaft (12)	Clean the sliding section between the shaft (12) and the orifice plate (11). If the sliding section is damaged, replace it with a new one.	

(6) Symptom: Steam leaks outside.

	Cause of the problem	Corrective action	Reference item
Due to internal parts	Loose bolts and screws	Tighten them to the specified torque.	Items 5-2)-(1) and (2)
	The plug gasket (18) or the cover gasket (20) is broken	Replace the gasket with a new one.	Item 5-2)-(2)
	Broken bellows (6)	Replace the bellows (6) with a new one.	

7 Warranty

Warranty period

The warranty period shall last 12 months from the date of product delivery.

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 have 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) Extremely worn packing, gaskets, or other parts
7) Attachment or accumulation of foreign objects in the pipe, such as dust and scale
8) Problems from fires, natural disasters, or other force majeure which is not our responsibility

Warranty limitation

The remedy available under the warranty shall not exceed the sales price of the products delivered, for any cause whatsoever.

●お買い上げの製品及びこの取扱説明書内容についてのご質問は下記にお問い合わせください。
また、この取扱説明書を紛失したり、汚損により読めなくなった場合は、同じく下記にご請求ください。

For any questions about the product that you purchased or about the details in this instruction manual, please contact the following.
If you lose this user's manual or can no longer read it due to stains, please make a request to the following.

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