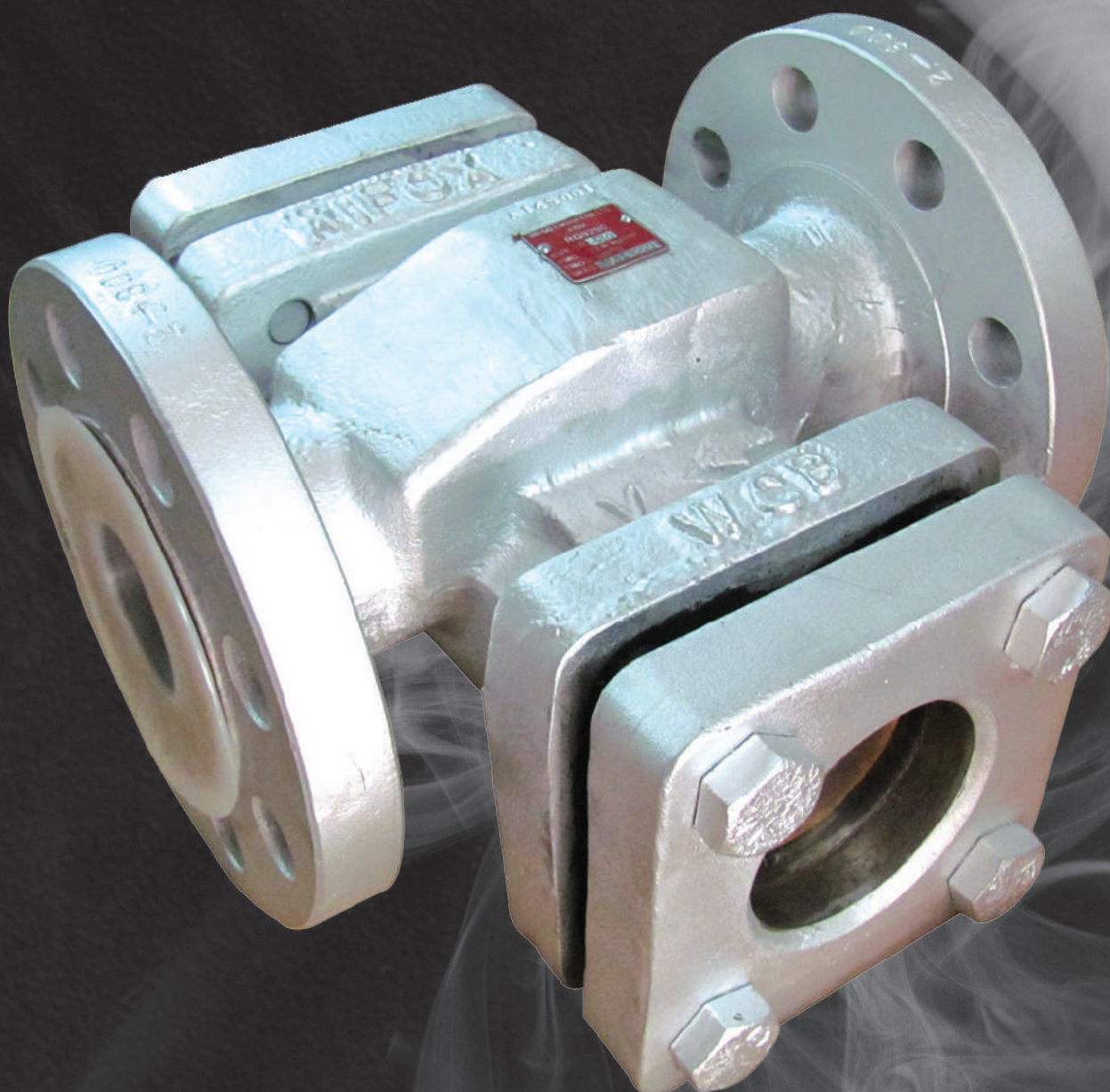


Double Window Sight Glass

User Manual



1 Important Safety Instructions to the Users

- This manual presents information that will help to install, operate and maintain the equipment properly. It is expected that the contents be carefully read before handling the equipment.
- All safety instructions and warnings given in these mounting and operating instructions, particularly those concerning installation, start-up and maintenance, must be strictly observed.
- To ensure appropriate use, only use the double window sight glass in applications where the operating pressure and temperatures do not exceed the specifications used for sizing at the ordering stage.
- The manufacturer does not assume any responsibility for damage caused by external forces or any other external factors.
- Any hazards that could be caused in the double window sight glass by the process medium, operating pressure or by moving parts are to be prevented by taking appropriate precautions.
- A good installation is a permanent asset while a bad one can be a constant source of trouble. It can cost much more to correct a bad installation than to put a new one.
- The double window sight glass is a product of many years of knowledge, field experience & engineering effort, to provide long life & excellent service to the users. This unit will provide continued trouble-free service, if instructions on installation, operation and maintenance are properly followed.
- It is expected that the personal involved in Installation, Operation & Maintenance possess necessary qualification, competence, license & authority (if applicable) only should handle the product. It is solely the responsibility of the equipment owner & user to ensure that all applicable statutory (if applicable) norms are adhered to during Installation, Operation & Maintenance of this equipment.
- The mechanical devices supplied as a part of the unit are chosen because of their known ability to perform, with

proper operating techniques and maintenance procedures. Tampering with the safeties & controls or bypassing any of these is not permissible at any time.

- Any “Automatic” features included in the design do not relieve the attendant of any responsibility. Such features may free him of certain repetitive chores and give him more time to devote to the proper upkeep of the equipment.
- No amount of written communication can replace intelligent thinking & reasoning.

The following symbols/terms have been used in this manual at the end of some chapters for the attention of the users:



This is a symbol of “**warning**” to the equipment user & provides information about practices or circumstances that should never be allowed as can lead to personal injury or death, property damage, or economic loss.



This symbol is for hot surface areas where there is chance of temperatures above ambient temperatures which causes injuries.



This symbol is to avoid hand/fingers getting crushed with the flange joints/pipes.



Avoid the injuries while working in steam leaking areas.



This is a symbol of “**Caution**” to the equipment user & provides information about the care to be taken on the actions or procedures which if not performed correctly may lead to personal injury or incorrect function of the instrument or connected equipment.



Recommended action

2 Abstract

Thank you for choosing sustainable solutions in energy and environment which helps in conserving resources and preserving the future. This manual describes the principle of operation, instructions for installation, operation & maintenance of “Double Window Sight Glass” supplied by Thermax Ltd. The General Instructions which are not detailed

out in this document to be performed in accordance with standard and safe acceptable practices as may be required by local codes, specifications and or regulations. The instruction contained within this manual must be read before undertaking any work on the equipment supplied and for any queries please contact Thermax Limited.

3 Product Identification

The product and its specifications, details are identified as per the figure 3.1A. The same will be shown on the name plate on the product.



For all maintenance, service & spares requests, it is important to mention the serial identification number as mentioned in the name plate details of your product to Thermax Ltd.



Figure 3.1A

4 Unloading Receiving and Inspection

The Double Window Sight Glass are supplied in assembled condition, duly packed which can be directly installation at site.



Ensure that the wooden cases should not be dropped or turned to any other position other than marked on the cases.

At the time of receipt at site, a thorough visual inspection of the product should be made for evidence of damage during shipment. Packaging slip should be referred for checking the items supplied for the system.

On receipt of the consignment at site, check that all the cases have been received per delivery documents & packing slip.

By careful inspection, determine whether any damage/loss has occurred in transit, in spite of proper Checking and loading of each component/equipment, at our factory before dispatch.

In the event of any damage is noted, the company should be notified at once so they can start claims procedure for repairs or replacements as per applicable clauses of contract.

Your product is carefully manufactured, assembled and inspected at each level before dispatch. Sometimes during transit there is possibility of piping connections getting loose. The same to be tightened at site during installation if found loose.

5 Storage

The place of storage of these equipment should be:

- Dust free, Clean, Dry and well ventilated

A) All the material should be stored under roof and should be protected from rain, water or direct sunlight.

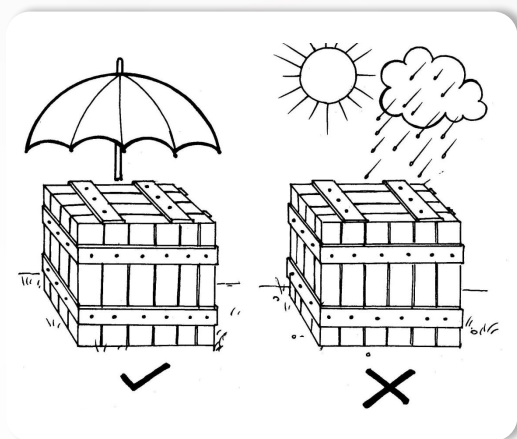


Figure No 5.1A: Material should be stored under roof.

- Do not pile up cases.

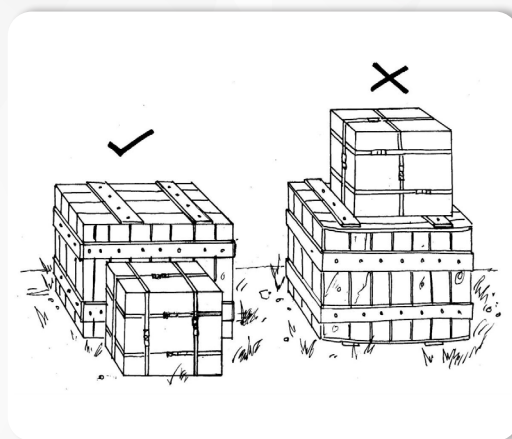


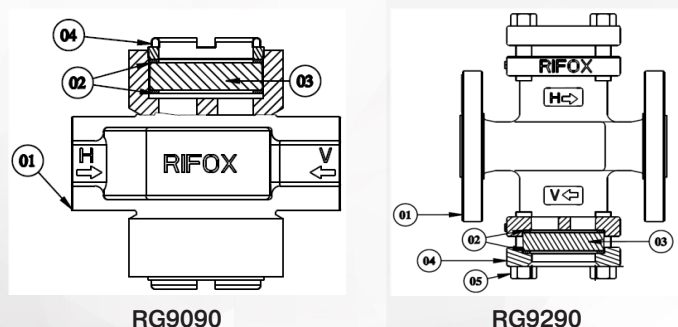
Figure No 5.1B: Do not pile up cases.

- Do not store heavy material on soft soil.
- Parts should not be stored under corrosive atmosphere.
- Periodically, the unit should be inspected to make sure no damage, such as corrosion, is taking place.

6 General description and use

The double window sight glass is designed for the visualization of condensate from steam or compressed air or pressurized gas system.

6.1 Design of sight glass



Sr. No.	RG9090	RG9290
01	Body	Body
02	Gasket	Gasket
03	Borosilicate Glass	Borosilicate Glass
04	Retainer	Cover Flange
05	-----	Bolts

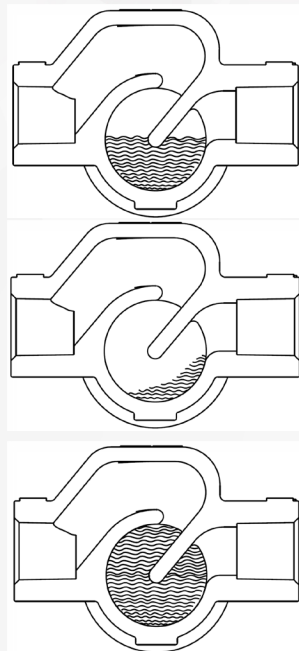
6.2 Operating conditions (Design)

PMO: Maximum operating pressure &
TMO: Maximum operating temperature

Model	Component	Material	PMO (kg/cm ²)	TMO (°C)
RG 9090	Body	IS 210 Gr. FG 260	13.2	220
RG 9290	Body	ASTM A216 Gr. WCB	32.6	280

6.3 Function / Diagnosis

This sight glass should be mounted upstream of the steam trap for monitoring of the flow.



When the steam trap is working normally, the condensate flows under the baffle of RIFOGlass or just touching the baffle of RIFOGlass.

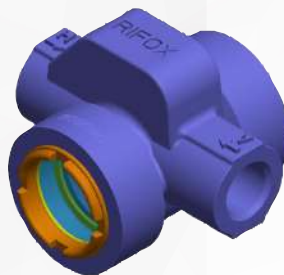
When steam also passes along with the condensate, due to the density difference and pressure of steam, condensate in RIFOGlass is forced to get depressed as shown in the adjacent figure.

When the steam trap is water logged or incase the steam trap is undersized condensate accumulates in RIFOGlass flooding it completely.

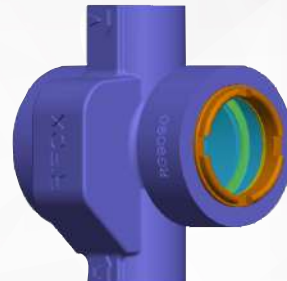
7 Assembly

7.1 Flow direction

The sight glass can be used in both vertical and horizontal flow directions as shown. No change in assembly is needed for change in direction. Follow the instructions given in 8.2 for the respective direction of flow.



Horizontal flow



Vertical flow

7.2 Installation

1. The sight glass should be installed **upstream of the steam trap**.
2. Remove protective caps from inlet and outlet ends of the sight glass
3. The sight glass should be screwed / flanged to the pipeline.
4. Follow arrow accompanying letter "H" for horizontal direction and "V" for vertical direction installation.
5. Position the sight glass according to the figure shown in section 8.1 by referring to the arrow on the body.
6. The condensate flow should be in the direction of the arrow.

8 Maintenance / Inspection

8.1 Dismantling the sight glass for replacement of the glass.

1. The sight glass must be depressurized.
2. For **RG9090**, remove the retainer (04) followed by the outer gasket (02). Tap gently on the top surface until the glass (03) is just out of the body (01). Remove the glass carefully with outer gasket. For **RG9290**, remove the bolts (05) and cover flange (04) by supporting the glass by one hand. Remove the glass carefully with outer gasket.
3. Remove the inner gasket (02)
4. Re-assemble the sight glass with new set of glasses and gaskets. While re-assembling observe the taper along the width of the glass. Ensure that the larger diameter of the glass is towards the pressure side.

5. Tighten the retainer/bolts with the respective torques mentioned in the table below after coating the threads with temperature-resistant lubricant.

Size	Tightening torque Nm	
	Retainer	Bolts
DN15/20	65	20
DN25	100	20
DN40/50	----	40

8.2 Care and maintenance

1. The sight glass does not require periodic dismantling for any sort of maintenance. But care should be taken that the glass should be free from dust and dirt. Frequent cleaning of outer surface of glass can be done as per the environmental conditions.
2. Even if a single, tiny hair line crack is noticed, immediately replace the glass. Always use new set of gaskets when the glass is dismantled.

3. In case the condensate contains any corrosive elements, thinning of the glass may take place from the inner surface subjected to pressure. In such cases the inner surface should be checked periodically. If any damage to the glass has occurred it should be replaced immediately.

4. Protective measures should be taken to cover the eyes at the time of replacement of the glass.

9 Warranty

Only trained or instructed personnel may be assigned to operation or servicing.

All our equipment is thoroughly inspected before dispatch and therefore can be depended upon for long and trouble-free services. We undertake to make goods by replacement or repair, defects arising out of faulty design, materials or workmanship within 12 (Twelve) months of the date of commissioning or 18 (Eighteen) months from the date of dispatch whichever is earlier subjected to mentioned in your purchase order warranty terms. The parts, in respect of which a claim is made, must be sent to our works at buyer's expenses. If the claim is found to be legitimate, we shall refund such expenses.

Warranty Excludes:-

- Normal Wear & Tear
- Damages/defects due to wrong operation at the purchaser's end, and/or arising out of forced major.
- Bought out components are guaranteed by us only to the extent of guarantees given to us by our suppliers.
- Electrical components such as heaters, motors, contactors etc. Rubber components and instruments such as pressure gauges, thermometers, Controllers, etc. are however, not covered under this warranty.

This warranty is valid subject to the following conditions:-

- Installation completed within three months from the date of dispatch of the equipment and as per our installation instructions.
- The supply/ installation formally accepted as per the handing over clause.
- Use of specified utilities in technical quotation.
- The equipment being operated and maintained as per our Operation and Maintenance Manual.
- The equipment or part thereof not being subject to accident, alteration, abuse or misuse.
- Any replacements/repairs required under provisions of the above warranty will be carried out either at site or at works. In the latter case, Buyer will send the defective parts to our works at Buyer's cost & liability.
- Warranty period for the entire equipment including replaced or repaired parts will be limited to the unexpired portion of the total warranty period.
- Accessories and fittings not manufactured by us, form an integral part of the equipment supplied, the warranty for such accessories & fitting will be in line with main equipment.
- If the purchaser delays to lift the equipment up its readiness, the warranty will be limited to 18 months from the date of readiness at our works.
- Any repair / replacement on our equipment during the warranty period shall be carried out by authorized representatives in writing from us.
- The warranty obligations will be honoured by us, provided the Buyer has fulfilled obligations under the order relating to release of due payments, etc.
- After repairs/replacement, warranty period for the entire equipment including replaced or repaired parts will be limited to the unexpired portion of the total warranty period.
- Any short supply or damages to the equipment to be intimated to Thermax within 15 days of receipt of material at site. Any late report will void the warranty.
- If the transit insurance is in client scope, damages and missing items during transit to be claimed by clients directly.
- Any improper use, intervention in the design and deviation from the design data will automatically lead to termination of the warranty.

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Preserving the Future.



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Control



Boiler and
Heater



Build-Own
-Operate



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Cooling



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Energy
Solutions



Process
Heating



Renewable
Energy



Water and Waste
Solutions

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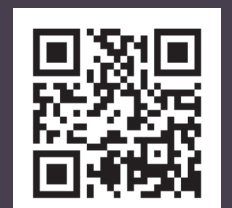
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