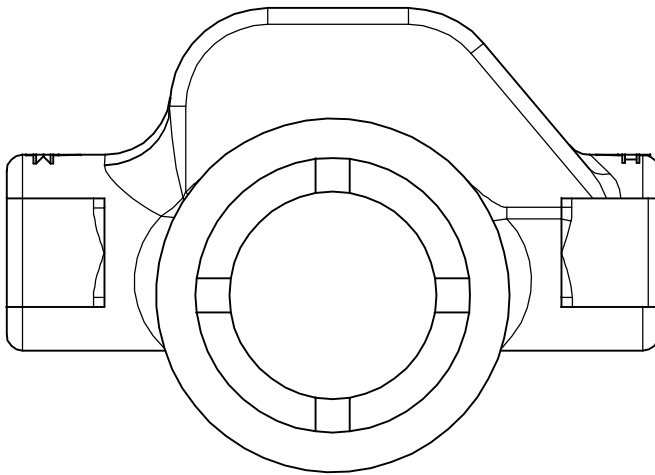


# Installation and Maintenance Manual

## Forbes Marshall View Glass

VU30



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**PLEASE NOTE - Throughout this manual this cautionary symbol is used to describe a potential damage or injury that might occur if the safety considerations are overlooked. This symbol denotes CAUTION, WARNING or DANGER.**



## 1. Preface:

This manual is intended for anyone using, commissioning, servicing, or disposing the below mentioned products safely and efficiently.

**Forbes Marshall View Glass [VU30].**

**Sizes: DN15 (1/2"), DN20 (3/4"), DN25 (1")**

### **PLEASE NOTE:**

Throughout this manual the following cautionary symbol is used to describe a potential damage or injury that might occur if the safety considerations are overlooked.

## 2. Important Safety Notes:



Read this section carefully before installing/operating/maintaining the product. The precautions listed in this manual are provided for personnel and equipment safety. Furthermore, Forbes Marshall accepts no responsibility for accidents or damage occurring as a result of failure to observe these precautions. Note that the product is designed to perform for non-contaminated fluids only. A contamination in the form of chemical, foreign particle etc. can lead to problem with product performance and life of the product.

If these products in compliance with the operating instructions are, properly installed, commissioned, maintained and installed by qualified personnel (refer Section 2.7) the safety operations of these products can be guaranteed. General instructions for proper use of tools and safety of equipments, pipeline and plant construction must also be complied with.

### **2.1 Intended use:**

Check if the product is suitable for intended use/ application by referring to the installation and maintenance instructions, name plates and technical information sheets.

- i) The product is suitable for use as defined in the technical information sheet. In case the need arises to use the product on any other fluid please contact Forbes Marshall for assistance.
- ii) Check for the suitability in conformance to the limiting conditions specified in technical information sheet of the product.
- iii) The correct installation and direction of fluid flow has to be determined.
- iv) Forbes Marshall products are not intended to resist external stresses, hence necessary precautions to be taken to minimize the same.

### **2.2 Accessibility and Lighting:**

Safe accessibility and working conditions are to be ensured prior to working on the product.

### **2.3 Hazardous environment and media:**

The product has to be protected from hazardous environment and check to ensure that no hazardous liquids or gases pass through the product.

#### **2.4 Depressurizing of systems and normalizing of temperature:**

Ensure isolation and safety venting of any pressure to the atmospheric pressure. Even if the pressure gauge indicates zero, do not make an assumption that the system has been depressurized.

To avoid danger of burns allow temperature to normalize after isolation.

#### **2.5 Tools and consumables:**

Ensure you have appropriate tools and / or consumables available before starting the work. Use of original Forbes Marshall replacement parts is recommended.

#### **2.6 Protective clothing:**

Consider for the requirement of any protective clothing for you/ or others in the vicinity for protection against hazards of temperature (high or low), chemicals, radiation, dangers to eyes and face, noise and falling objects

#### **2.7 Permits to work:**

All work to be carried out under supervision of a competent person. Training should be imparted to operating personnel on correct usage of product as per Installation and Maintenance instruction. "Permit to work" to be complied with (wherever applicable), in case of absence of this system a responsible person should have complete information and knowledge on what work is going on and where required, arrange to have an assistant with his primary goal and responsibility being safety. "Warning Notices" should be posted wherever necessary

#### **2.8 Handling:**

There is a risk of injury if heavy products are handled manually. Analyze the risk and use appropriate handling method by taking into consideration the task, individual, the working environment and the load.

#### **2.9 Freezing:**

Provision should be made to protect systems which are not self-draining, against frost damage (in environment where they may be exposed to temperatures below freezing point) to be made.

#### **2.10 Product Disposal:**

It is necessary to dispose this product only in accordance with local regulations at the authorized, qualified collecting point specified for equipment<sup>s</sup> and its parts—Please refer the part details mentioned in the material table of this manual. Please follow all waste disposal guidelines (Management & Handling) as published by local governing authorities in India & abroad

#### **2.11 Returning products:**

Customers and Stockist are reminded that, when returning products to Forbes Marshall they must provide information on any hazards and the precautions to be taken due to contamination residues or mechanical damage which may present a health, safety or environmental risk.

This information must be provided in writing including Health and Safety data sheets relating to any substances identified as hazardous or potentially hazardous.

### 3. Brief Product Information:

#### 3.1 Description:

The Forbes Marshall View Glass, VU30, is a novel product that allows you to visualise the flow of steam, water or oil inside a pipeline. The visualisation of flow will help you diagnose problems occurring in equipment upstream or downstream of the sight glass. The VU30 overcomes the problem of poor visibility and improper distinction between vapour and condensate flow by using a deflector plate to separate the vapour and condensate. This new design is ideal for applications in which one wants a clear indication of flow, such as downstream of paper drying cylinders, in DM water lines or for monitoring steam traps and heat exchangers.

#### 3.2 Sizes and Pipe Connections:

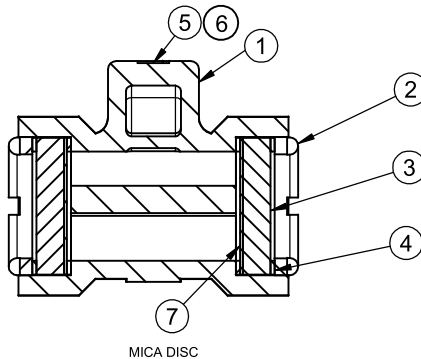
DN 15,20 and 25

Screwed BSPT/NPT

**Note : Available with IBR certificate**

#### 3.3 Limiting Conditions:

PMO-Max. operating pressure	13 bar g
TMO-Max. operating temperature	220°C
TMO-Max. operating temperature	20 bar g

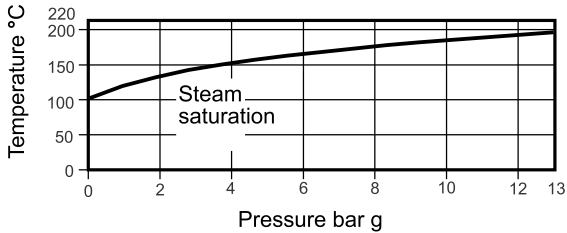


**Figure 1: Forbes Marshall View Glass**

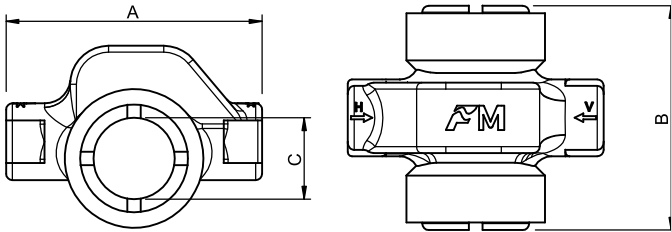
#### Material:

Sr. No.	Part	Material	Standard
1	Body	Cast Iron	IS 210 Gr. FG 260
2	Bezel Cap	Brass	IS 6912
3	Glass	Borosilicate oil lapped glass	DIN 7080 / 7081
4	Gasket	SS Exfoliated Graphite	
5	Name Plate	AISI 304	
6	Rivets	Mild Steel	
7	Mica Disc	Mica	

### 3.4 Operating Range:



### 3.5 Product Dimension and Drawing:



**Figure 2: Dimensional Drawing of VU30**

**Dimensions (approx.) in mm:**

Size	A	B	C	Weight
DN 15	120	105	40	2.5Kg
DN 20	120	105	40	2.5Kg
DN 25	120	105	53	4Kg

### 3.6 Salient Features:

The two large windows of oil lapped toughened borosilicate glass, which resist the etching and sludge built up (common to the normal glass used in other sight glasses) further improve visibility in the VU30. The borosilicate glass remains clear, preventing the request of glass replacement necessary with other sight glasses, and the double glass configuration keeps the flow back for better viewing.

### 3.7 Applications:

**Condensate lines:** VU30 can be fitted on a condensate line to monitor steam following with the condensate. Because of the improved visibility it offers, VU30 is especially suited for use in lines with high speed flow.

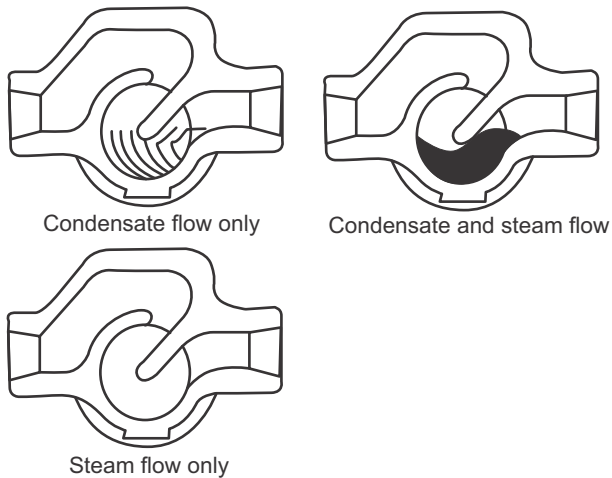
**DM water lines:** Due to turbulence effect at the deflector plate, very clear fluids can be monitored using VU30. Thus, VU30 fitted on a DM water line can indicate flow of DM water.

**On lines:** The flow of oil and oil vapour can be visualized using VU30.

**Heat exchangers:** VU30 can be used to check the efficiency of heat exchangers, especially in condenser. A VU30 can be fitted downstream of a condenser. The flow of

**4. Operation :**

Forbes Marshall View Glass is designed to give you clear visualization of flow conditions with the unique feature of its deflector plate stationed in the sight chamber. Under normal conditions, a pool of condensate forms at the bottom of the sight chamber. When steam is also passing through the pipeline, the steam is guided by the deflector plate into the pool of condensate. The density difference between the steam and condensate causes the pool of condensate to be come depressed, thereby indicating flow of vapor. Mica disc provided on the inner surface of the glass protect the view glass from high temperature of fluid passing through it, retains basic strength and increases service life



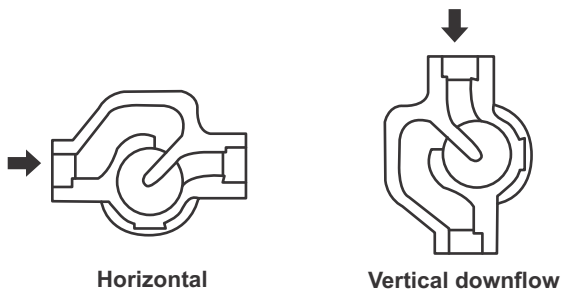
**Figure3 :Operation of View Glass**

**5. Installation Guidelines:**

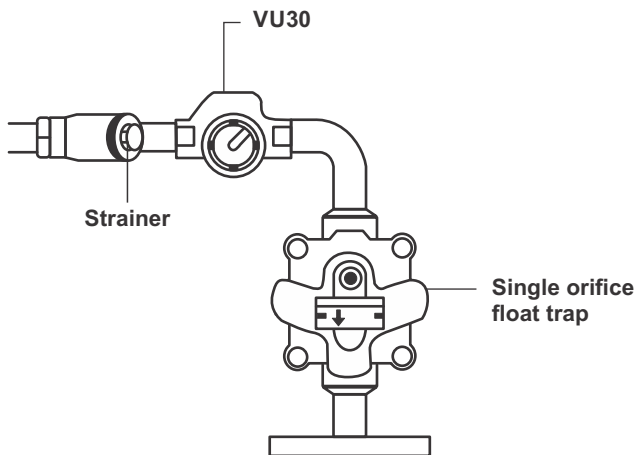


**Note: Before implementing any installations observe the 'Important Safety notes' in section 2. Referring to the Installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended installation.**

The arrow with the letter 'H' for horizontal and 'V' for vertical mounting on the casting and on the nameplate indicates the flow direction. **Refer Figure 4** for position of deflector plate. It is necessary to fit the View Glass before inlet of the steam trap (**Refer to figure 5**).



**Figure4: Product Installation**



**Figure5: VU30 Installed before the Single Orifice Float trap**

**6. Maintenance Guidelines: (Refer to Figure 1)**



Before undertaking any maintenance on the product it must be isolated from both supply line and return line and any pressure should be allowed to safely normalize to atmosphere.

VU30 is self-operated and does not require human intervention. It also does not require any elaborate or frequent maintenance. However for trouble free service ensure the following.

1. The drain plug must be opened to allow condensate to drain after every shut off. This practice prevents static retention of water, which could otherwise cause formation of rust and stains on the surface of the glass.
2. Regularly clean the glass with a mild detergent to prevent any dirt/dust from setting on the external surface of the glass.

For a detailed maintenance/replacement procedure of the View Glass, please refer to the instructions given in the subsequent sections;

1. Isolate the product upstream of the View Glass.
2. Remove the View Glass from the line and thoroughly clean it.
3. Undo the bezel cap **(2)**.
4. Remove the top gasket **(4)** and clean it. If damaged, replace it.
5. Clean the glass**(3)** and if damaged, replace it.
6. Remove the bottom gasket**(4)** and clean it. If damaged, replace it.

**Use the following tools and torque:**

Part	Tool required	Torque
Bezel	Spanner	15Nm

**7. Available Spares:**

<b>ÇÖNÖ</b>	<b>Description</b>
SPARE-1520VU30-BCKIT	VALVE SPARES, DN15/20 VU30 SPARE TYPE: BEZEL CAP KIT SPARE CONSISTS OF : BEZEL CAP 2 NO.S
SPARE-1520VU30-GGKIT	VALVE SPARES, DN15/20 VU30 SPARE TYPE: GLASS & GASKET KIT SPARE CONSISTS OF : GLASS WITH MICA DISC 2 NO.S , GASKET 4 NO.S
SPARE-1520VU30-GKIT	VALVE SPARES, DN15/20 VU30 SPARE TYPE: GASKET KIT SPARE CONSISTS OF : GASKET 4 NO.S
SPARE-1520VU30-GLKIT	VALVE SPARES, DN15/20 VU30 SPARE TYPE: GLASS KIT SPARE CONSISTS OF : GLASS PACK OF 2 NO.S
SPARE-1520VU30-MDKIT	FORBES MARSHALL STEAM ANCILLARY EQUIPMENTS, DN15/20 VU30 MICA DISC KIT: -MICA DISC 2 NO.S , GASKET 4 NO.S
SPARE-25VU30-BCKIT	VALVE SPARES, DN25 VU30 SPARE TYPE: BEZEL CAP KIT SPARE CONSISTS OF : BEZEL CAP 2 NO.S
SPARE-25VU30-GGKIT	VALVE SPARES, DN25 VU30 SPARE TYPE: GLASS & GASKET KIT SPARE CONSISTS OF : GLASS WITH MICA DISC 2 NO.S , GASKET 4 NO.S
SPARE-25VU30-GKIT	VALVE SPARES, DN25 VU30 SPARE TYPE: GASKET KIT SPARE CONSISTS OF : GASKET PACK OF 4 NO.S
SPARE-25VU30-GLKIT	VALVE SPARES, DN25 VU30 SPARE TYPE: GLASS KIT SPARE CONSISTS OF : GLASS PACK OF 2 NO.S
SPARE-25VU30-MDKIT	FORBES MARSHALL STEAM ANCILLARY EQUIPMENTS, DN25 VU30 MICA DISC KIT: -MICA DISC 2 NO.S , GASKET 4 NO.S

**How to Order:**

**Example: DN 15 BSPT Forbes Marshall View Glass VU30**

**How to order spares:**

Always order spares by using the description given under the column headed "Available Spares" in the user manual stating the size and type of VU30.

**Example: Glass and Gasket for DN 15 Forbes Marshall View Glass, VU30.**

**8. Warranty Period:**

As per the ordering information and agreement in the contract.





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