

# **Glenfield**

## **OPERATION AND MAINTENANCE INSTRUCTIONS**



## **SERIES 851 DOUBLE ORIFICE AIR RELIEF VALVE**

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#### **HEALTH AND SAFETY AT WORK**

**Please ensure that all relevant Health and Safety issues and regulations are strictly adhered to, prior to and during any installation or maintenance work carried out on these valves.**

**It is essential that wherever work is being undertaken on a valve that may involve the release of any internal pressure, the valve is fully depressurised prior to any work being carried out, and the line drained.**

**It is also essential that the user handling the valve is aware of the weight of the components or assemblies to be handled and manipulated during installation and maintenance. It is the end users responsibility to ensure that safe working practices are followed at all times.**

Whenever Glenfield Valves products are installed, operated, or maintained, the inherent dangers of pressurised liquids and gasses, which can be severe, must be addressed.

Therefore, it is essential that staff undertaking these operations are adequately trained and it is the responsibility of the end user to ensure that only trained and competent staff undertake these duties.

This manual has been designed to assist, but it can never fully replace quality training in the workplace. However, Glenfield Valves technical staff are always available to answer any questions relating to specific problems that may not be covered by this manual.

Glenfield Valves products are designed and manufactured to be fit for purpose, and to a high and reliable standard. This provides a safe product with minimum risk to health when used correctly for the purpose for which it was designed.

However, this assumes that the equipment is used and maintained in accordance with this manual, and the user is advised to study this manual, and to make it available to all staff that may need to refer to it.

Glenfield Valves cannot be held responsible for any incidents arising from incorrect installation, operation or maintenance. The responsibility for this must rest wholly with the end user.

#### **STORAGE AND HANDLING**

##### **Storage**

- If valves are to be stored in the open for some time, protection should be provided to keep the valves clear of sand and mud
- Protection against weather should be provided. Ideally, valves should be kept indoors, with the actual valve temperature always higher than the dew point. If outdoor storage is unavoidable, valves should be supported off the ground and protected by a weather proof cover
- Valves may be stacked and the upper open end covered with waterproof material and boarded over

## Handling

- When handling valves, it is preferable to lift by means of shackles using the lifting eyes/points provided on the valve body/cover
- Where slings are employed the valves should only slung by the main body casting only. No contact should be made with the lever or guard where fitted.
- Valves should be lowered gently onto wooden battens placed on firm ground, clear of mud and water

## 1. INSTALLATION

- 1.1 These valves can be fitted at any peak on a pipeline where the pressure is greater than 0.1 bar and up to the maximum working pressure.
- 1.2 They should be installed in a vertical position to allow smooth float movement and proper seating on the large orifice valve, and to ensure that the lever operated small orifice valve will seal the orifice efficiently, and also re-open for air release under the correct working conditions.
- 1.3 The space round the valve should be kept free of any obstructions, which would prevent the free flow of air.
- 1.4 When the valves are located below ground level, ample venting area should provided for discharging and admitting large volumes of air during pipe filling and emptying operations
- 1.5 It is recommended that an isolating valve be fitted between the valve and the pipeline.

## 2. OPERATION

These valves are completely automatic in operation and are capable of fulfilling the venting requirement of the pipeline, and will release any air or gas under pressure, which has accumulated in the system, without any manual aid.

## 3. MAINTENANCE

- 3.1 The cover bolts on the large orifice valve, and the nuts holding the small orifice valve to the main body should be checked occasionally for tightness, especially where the valve is subject to vibration. (Bolt torque 320Nm).

Isolate the valve and dismantle both the large and small orifice valves for examination.

- 3.2 Remove the cover and cover, withdraw the plastic float, guide assembly, seat ring and rubber seal ring.

If on examination, any of these components show signs of cracking, ageing etc., replacement is necessary.

Careful examination is required at the float sealing edge of the rubber seal ring and also on the outside rim, which acts as a static cover seal.

- 3.3 Any growth formed within the valve should be removed.

Surface corrosion on the machined recess on the top of the body should be removed with emery, and its surface smeared with silicon grease (MOLYKOTE 111).

- 3.4 Assembly consists of locating the float guide with float into the recess. Assemble the rubber seal ring on the plastic seat ring with the plain rubber face, towards the plastic seat. Place both into recess on the top of the guide ring, rubber face down, using a slightly turning motion. Replace the cover and tighten down metal to metal. Fit the cowl.

- 3.5 The float guide assembly consists of 3 pieces, the 'U' legs sit on the cone shape above the body throat, thus transmitting float impact direct to the body. The top ring is assembled with large inside diameter. of the taper facing into the valve, the 'U' legs located in this top ring, but free to be pushed down to touch the taper in the body.

### Small Orifice

- 3.6 The small orifice valve body should be unbolted from the large orifice valve, the float and orifice bracket assembly removed after unscrewing the orifice cover and the following points examined.

- 3.7 Check the float for freedom of movement and inspect the fulcrum pin and bearing, on the glass filled nylon lugs, for excessive wear.

- 3.8 Inspect the rubber seat in the float lever for deterioration or excessive permanent set. In early valve types the seats are held in position by interference ribs in the recess. These can be simply inverted in the recess to obtain a new sealing surface.

The later types are bonded in using an M.E.K. solvent, if removal is necessary, the rubber must be removed and a new seat solvent cemented in position.

### 3.9 Adjusting screw

The purpose of this screw is to limit the degree of compression by the orifice sealing lip on the rubber face.

It is set at the initial assembly so that when the orifice is just seating, there is a clearance of 0.7 to 1mm (0.030" to 0.040") between the top of the orifice bracket. This would not normally require resetting.

3.10 Check that the nylon orifice is not damaged and that the air passageway is clear through to the valve exterior.

3.11 Inspect the plastic float for leaks or ageing, and replace if necessary.

3.12 When installing the float assembly into the body, easier location can be achieved by having the body inverted i.e. the mounting hole is facing downwards, and the screwed part of the orifice bracket is lowered onto it, being held in location until the orifice cover is screwed on. Care must be taken to tighten the cover so that the float will swing on the plane of the central axis of the body, and not foul the interior wall.

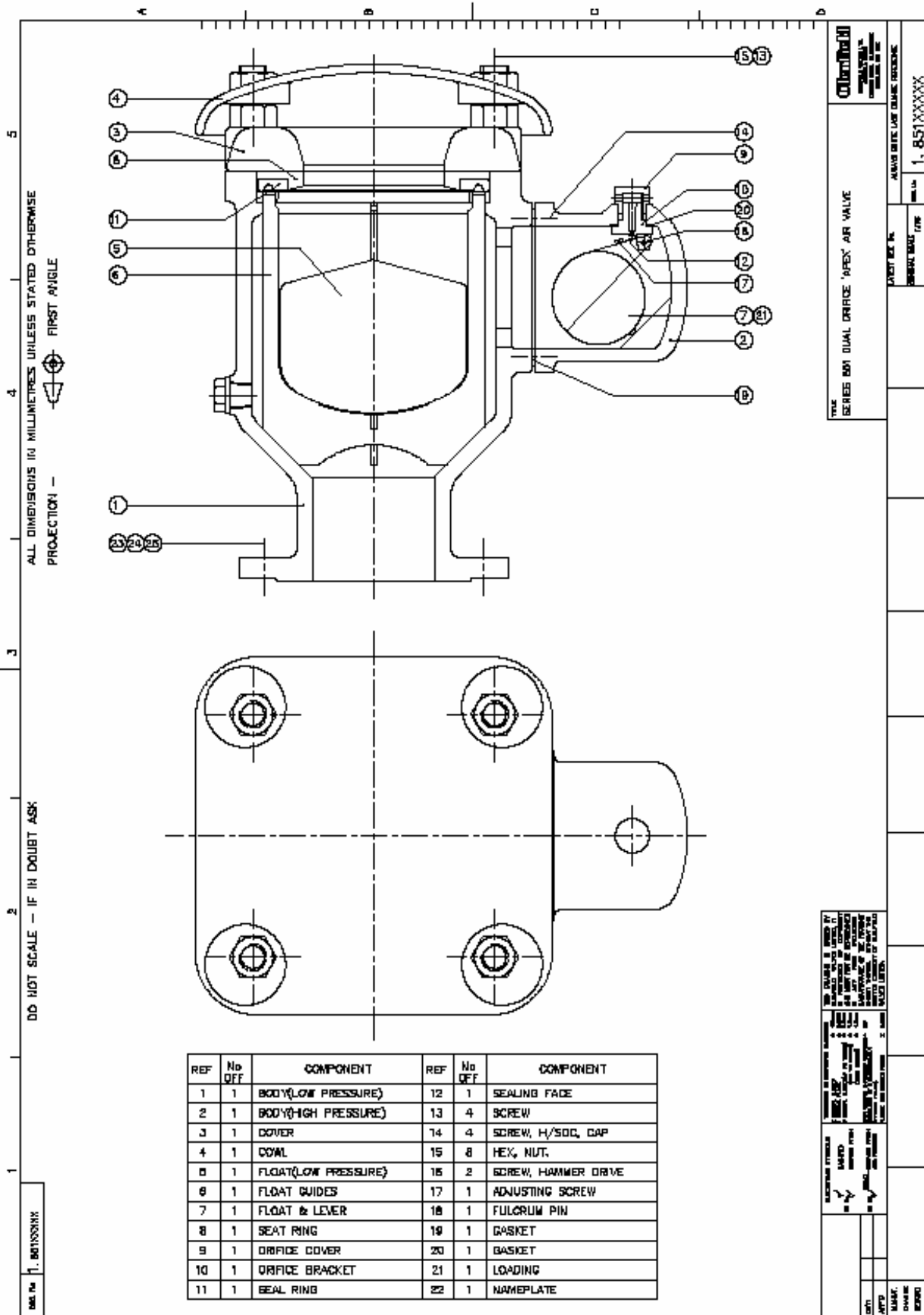
**NOTE:** The orifice cover should not be tightened after this body is assembled to the main valve, since the float assembly is not located against turning. Any rotation out of the central position could cause jamming or restricted float travel.

## 4. RECOMMENDED SPARES

Drawing No 1690801 Reference	Item Description
8	Seat Ring
5 & 6	Float & Guide SA
11	Seal Ring
7	Float & Lever SA
9	Orifice Cover
10	Orifice Bracket
18	Fulcrum Pin
19	Gasket
20	Gasket

Spares should be stored in a dry area out of direct sunlight.

# Glenfield



ALL DIMENSIONS IN MILLIMETRES UNLESS STATED OTHERWISE  
PROJECTION - FIRST ANGLE

DO NOT SCALE - IF IN DOUBT ASK

REF No. 1. 851XXXXX

REF	No OFF	COMPONENT	REF	No OFF	COMPONENT
1	1	BODY(LOW PRESSURE)	12	1	SEALING FACE
2	1	BODY(HIGH PRESSURE)	13	4	SCREW
3	1	COVER	14	4	SCREW, H/SOD, CAP
4	1	COVER	15	8	HEX. NUT.
5	1	FLOAT(LOW PRESSURE)	16	2	SCREW, HAMMER DRIVE
6	1	FLOAT GUIDES	17	1	ADJUSTING SCREW
7	1	FLOAT & LEVER	18	1	FULCRUM PIN
8	1	SEAT RING	19	1	GASKET
9	1	ORIFICE COVER	20	1	GASKET
10	1	ORIFICE BRACKET	21	1	LOADING
11	1	SEAL RING	22	1	NAMEPLATE

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**Glenfield Ltd**  
SHEFFIELD  
SHEFFIELD  
SHEFFIELD

TYPE SERIES 801 DUAL ORIFICE 'APEX' AIR VALVE

LASTY REF. NO. ALWAYS REFER TO THIS FIGURE

ORDER NO. 1. 851XXXXX

DATE: / /  
DRAWN BY:  
CHECKED BY:  
REVISION:

## Vented Non-Return Valve (Fig. 1291)

### **Function**

When fitted to an air valve, the 1291 valve will allow air to be drawn into a pipeline normally during the process of de-watering. The inflow rate is sufficiently high to prevent vacuum pressure from developing.

When air or gas pressure in the pipeline increases relative to the atmospheric pressure on outflow conditions, the main aperture will close and controlled emission of gases will occur, through the vent-regulating valve, until the main valve closes.

### **Installation**

1291 cover and cowl replaces normal cover and cowl arrangement.

### **Operation**

These valves are completely automatic in operation and are capable of fulfilling the venting requirement of the pipeline, and will release any air or gas under pressure, which has accumulated in the system without any manual aid.

When the pressure in the pipeline is below atmospheric the valve disc will rise to open the valve and allow air intake. When line pressure increases the disc will fall and seal off the main aperture, while controlled air emission takes place through the vent hole via the regulating valve.

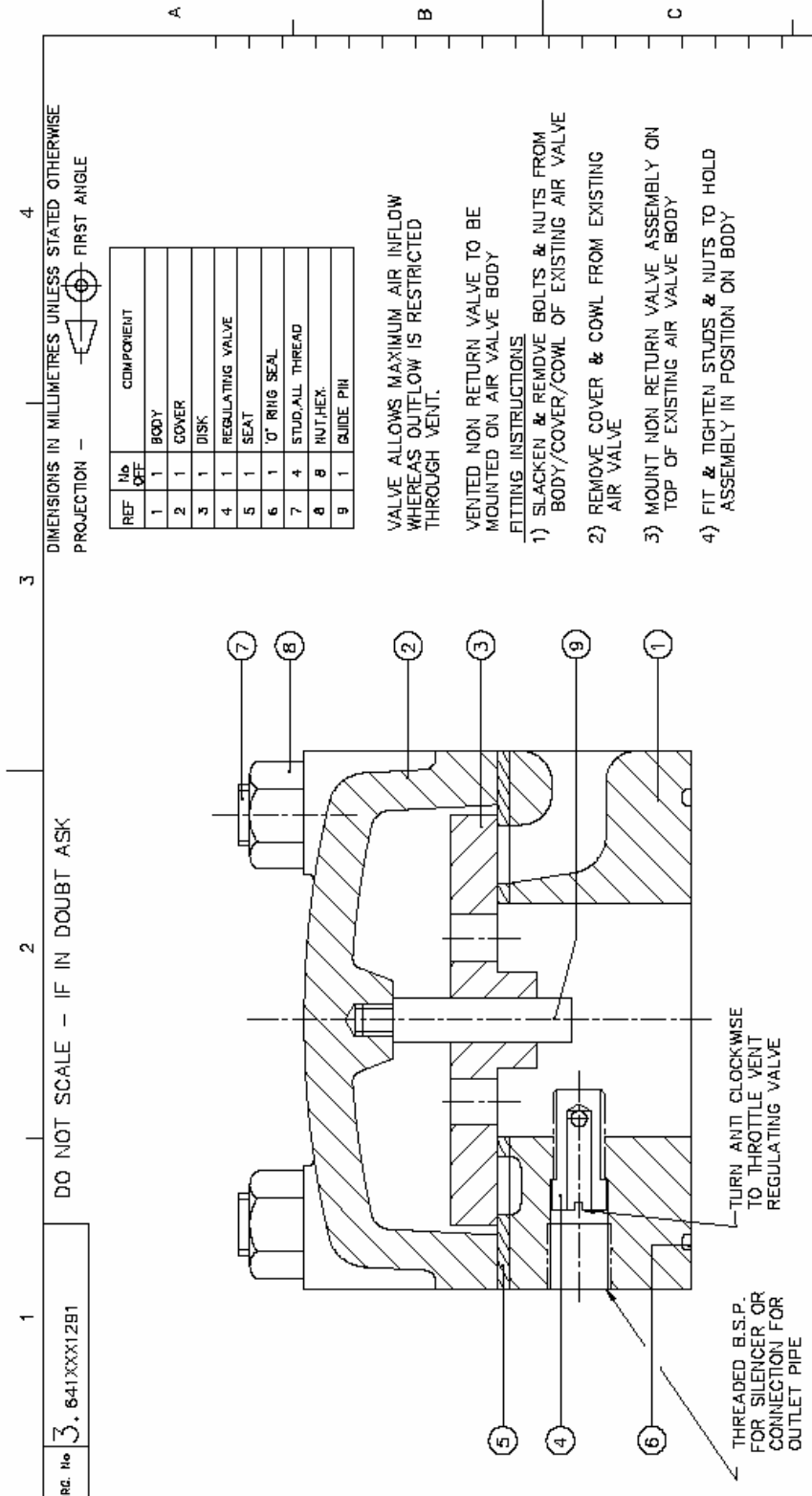
The regulating valve is set for maximum emission. If a reduced air emission is required, the regulating valve should be turned anti-clockwise. A slot is provided for regulating purposes. If when the regulating valve is at its maximum setting (i.e. full in) and the air emission is still insufficient, the regulating valve may be removed completely thereby giving increased air flow capacity, but of course no regulation is now possible.

## Vented Non-return Valve Maintenance

Fitting an isolating valve on this assembly will enable maintenance to be carried out while the line is still under pressure.

Maintenance can only be undertaken when pressure is removed from the pipeline, if there is no isolating valve is fitted.

- Fasteners should be checked for tightness, especially where the valve is subject to vibration.
- Remove fasteners securing the 1291 cover/cowl to the body. Remove 1291 cover and cowl from the valve body. Maintenance for the main part of the valve is per section 3.
- Inspect all air passages to ensure they are clean and free from blockages.
- Inspect vent regulating valve. If required note position, remove and clean.
- Inspect 'O' ring seal, seat and disk for signs of damage and replace if necessary.
- Reinstall in reverse order.
- Return flow to the pipeline and adjust regulating valve venting to suit if required.



DR'N APP'D MANUF. CHANGE RECORD	MACHINING SYMBOLS RA 12.5 ✓ MACHINED RA 12.5 ✓ SURFACE FINISH RA 12.5 ✓ SURFACE FINISH AND PROCESS	TOLERANCES TO UNFRACTIONED DIMENSIONS ± 0.2mm ± 0.1mm ± 0.05mm ± 0.02mm ± 0.01mm ± 0.005mm ± 0.002mm ± 0.001mm ± 0.0005mm ± 0.0002mm ± 0.0001mm ± 0.00005mm ± 0.00002mm ± 0.00001mm	THIS DRAWING IS ISSUED BY GLENFIELD AND KENNEDY LTD. IS PROTECTED BY COPYRIGHT AND MUST NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM WITHOUT THE WRITTEN CONSENT OF GLENFIELD AND KENNEDY LIMITED.	TITLE FIG.1281 VENTED NON-RETURN VALVE	GLENFIELD & KENNEDY LIMITED GLENFIELD WORKS BATHURST INDUSTRIAL PARK SCOTLAND, KA1 3PF.
		LATEST REV. No. A		ALWAYS QUOTE LAST CHANGE REFERENCE	
		ORIGINAL SCALE R.T.S.		DRG. No. 3.641XXX1291	

## Vented Non-Return Valve (Fig. 1292)

### **Function**

When fitted to an air valve, the 1292 valve will allow air to be drawn into a pipeline normally during the process of filling. The flow rate is sufficiently high to prevent back pressure restriction of liquid inflow rate to the pipeline. When the system pressure drops below atmospheric, the valve will close and remain closed thereby preventing air entry into the pipeline.

When air or gas pressure in the pipeline increases relative to the atmospheric pressure on outflow conditions, the main aperture will close and controlled emission of gases will occur, through the vent-regulating valve, until the main valve closes.

### **Installation**

1292 cover and cowl replaces normal cover and cowl arrangement.

### **Operation**

These valves are completely automatic in operation and are capable of fulfilling the venting requirement of the pipeline, and will release any air or gas under pressure, which has accumulated in the system without any manual aid.

### **Vented Non-return Valve Maintenance**

Fitting an isolating valve on this assembly will enable maintenance to be carried out while the line is still under pressure.

Maintenance can only be undertaken when pressure is removed from the pipeline, if there is no isolating valve is fitted.

- Fasteners should be checked for tightness, especially where the valve is subject to vibration.
- Remove fasteners securing the 1292 cover/cowl to the body. Remove 1292 cover and cowl from the valve body. Maintenance for the main part of the valve is per section 3.
- Inspect all air passages to ensure they are clean and free from blockages.
- Inspect 'O' ring seal, seat, disk and gasket for signs of damage and replace if necessary.
- Reinstall in reverse order.

