DERWENT
FLOW CONTROL

IOM
KARX

COMBINATION
AIR RELEASE VALVE

INSTALLATION

OPERATION

MAINTENANCE

AFC

ALPINE FLOW CONTROL CO., LTD.

Please carefully read below guides:

This mark indicates important information and safety guides.

Potential risks may occur if

- Safety guidelines are ignored
- Equipment is used improperly
- Operators are insufficiently qualified

The applications fields should be permitted by the pressure/temperature of P/T.

Keep routine inspection of the basic points and performance of valves.

INSTALLATION OPERATION AND MAINTENANCE INSTRUCTION MANUAL

1. STORAGE & TRANSPORTATION

1.1. PROTECTION

Delivery of valve should be strictly under ”engineering instruction” protection requirements, to ensure that the flange sealing surface remains undamaged.

1.2. STORAGE

If the valves need to be stored before installation for some time, they should be kept in the wood (wicker) boxes of the original delivery, off the ground, and in a clean, dry indoor area.

1.3. TRANSPORTATION

- **PACKED VALVES**

  When removing the valve from its wooden box or other packaging, if the valve cannot be carried by one person (over 25Kgs), suitable lifting equipment must be used. Attach lifting hooks to the specified (or appropriate) lifting points. All packaging materials comply with local safety regulations and requirements to ensure safe transportation.

® Copyright by Derwent Industries Pty Ltd E & O.E

- **UNPACKED VALVES**

  Use appropriate method to lift and transport the unpacked valves and within the carrying limit by tray and protect the machined surface (flange) from damage.

  Ensure that lifting ropes are kept a safe distance from the dust cover, the screen and the valve body to prevent damage to the paint. When lifting large-diameter valves (generally above DN150 mm), use proper lifting tools to load and lift them (such as trays, hooks, or fasteners) and with loading balance tools, to avoid slipping or shifting during lifting and transport.

  If lifting with an excavator, use appropriate methods to protect the entire valve and prevent damage.

2. INSTALLATION TO THE PIPELINE

WARNING!

- The installation operator must use appropriate tools and wear the required personal protective equipment (PPE).
- The pipeline pressure must be fully released before installation.
- Only qualified personnel with mechanical training are permitted to install the valves.
- Verify that the pipeline pressure and temperature limits comply with the valve's application standards.
- Ensure the compatibility between the fluid medium in the pipeline and the valve's intended application.

2.1. WITNESS VIEWING

2.1.1. Carefully remove the valve from its packaging without causing damage to the body, cover, screen, or other components.

2.1.2. Check that the materials indicated on the rating label are suitable for the intended use, including temperature and pressure limits. If there is no rating label, the valve is suitable for general water service under PN16 pressure and a temperature range of 0–80°C.

2.1.3. Do not use components from third parties, as this may affect the service life of the valve.

® Copyright by Derwent Industries Pty Ltd E & O.E

2.2. FITNESS OF FLANGE AND PIPELINE

- Before installation, check that the sealing method and drilling between the valve and pipeline are compatible.

2.3. INSTALLATION

- Install the air release valve at the top of the pipeline.
- A shut-off valve (such as a gate valve or butterfly valve) must be installed before the air release valve to facilitate easy maintenance.
- Remove any debris or foreign material from the pipeline before installation.
- Ensure sufficient space above the valve to allow for proper air release.

REMARK: Lifting and handling of the valve must be carried out in accordance with Section 1.3.

2.3.1. Installation

IMPORTANT NOTICE

Before installation, check that:

- The matching flange surfaces are in good condition.
- There is no debris in the wedge or valve interior.
- The pipeline has been properly cleaned and prepared for installation.
- Check that all flange bolts are in normal condition before installation.
- Install the shut-off valve and securely tighten it using flange bolts.
- Install the air release valve and securely tighten it using flange bolts.
- Apply the correct torque when fastening the valve to prevent potential damage.

2.4. POSSIBLE RISK:

2.4.1. **MECHANICAL:**
When operating the valve manually, ensure there is sufficient space to perform the operation safely and avoid hand injuries or entrapment.

2.4.2. **TEMPERATURE:**
If the outside temperature is below 5°C or above 40°C, the valve surface may become very cold or hot. Take appropriate measures to protect both the valve's internal components (such as O-rings and rubber seals) and the operator. Personnel handling or operating the valve must wear suitable protective equipment.

® Copyright by Derwent Industries Pty Ltd E & O.E

3. OPERATION

3.1. After filling the pipeline with water, the large volume of air inside will be gradually discharged through the orifice of the secondary sealing arc during the filling process. This helps to reduce water hammer and pressure shock.

3.2. When the water level reaches the valve, the float will rise and close the large valve nozzle.

3.3. Compressed air inside the pipeline, as well as air generated during water flow, will be released through the small orifice.

3.4. When the water flow stops, the float and sealing arc will drop rapidly, allowing a large volume of air to be drawn into the pipeline to maintain balance.

NOTICE:

If the valve is closed and intermittent pressurised air continues to vent through the small orifice, this is normal operation (air venting).

POSSIBLE FAULT & SOLUTION

FAULT	POSSIBLE CAUSE	SOLUTIONS
Leakage from the large orifice	Seat damaged/ O-ring fail	Replace the seat/ O-ring..
	Debris in the valve	Disassemble the valve, and remove debris.
Leakage from the small orifice	Nozzle Seat damaged	Replace the Nozzle Seat
	Small orifice clogged	Disassemble the valve, and remove debris..

® Copyright by Derwent Industries Pty Ltd E & O.E

4. MAINTENANCE

Our valve requires only minimal maintenance!

WARNING!

- **SITE MAINTENANCE** - Close the bottom gate valve or butterfly valve before disassembling the air valve, and ensure all pressure is released.
  Any maintenance work must be carried out only when the pipeline is fully depressurised.
  If the valve is still under pressure, loosen a few flange bolts slightly to relieve residual pressure and prevent injury as a final check of pressure only.
- If it is necessary to remove the air valve from the pipeline, first close any isolation valve (such as a gate valve or butterfly valve).
  Ensure that the valve body temperature is below 40 °C before handling.
- All personnel performing adjustments or repairs must use proper equipment and wear appropriate safety gear.
- Only qualified mechanically trained personnel are permitted to adjust or repair the valves.

4.1. DAILY MAINTENANCE

Apart from routine inspections to ensure proper operation and sealing, regular maintenance and lubrication are not required

4.2. VALVE REMOVAL

4.2.1. Before removing the valve, close the shut-off valve connected to the flange.

4.2.2. Loosen the flange bolts under safe conditions and allow the internal water to drain completely.

4.2.3. Remove the flange bolts to move the air release valve.

4.3. VALVE DISASSEMBLY

4.3.1. Remove the air release valve from the pipeline.

4.3.2. Remove the bolts, washers, cover, screen, and pillars of the air valve.

4.3.3. Remove the bonnet, seat, guide barrel, float, and nozzle seat.

4.3.4. Remove the O-ring and buffer.

4.3.5. Remove any bolts, screws, and washers attached to the pipeline.

4.3.6. Remember to keep all removed parts together in a box to prevent loss or mix-up.

® Copyright by Derwent Industries Pty Ltd E & O.E

4.4. VALVE REASSEMBLY AND INSTALLATION

4.4.1. Clean all components thoroughly and check that they are in good condition.

4.4.2. Place the nozzle seat onto the float.

4.4.3. Install the buffer onto the guide barrel and insert the float.

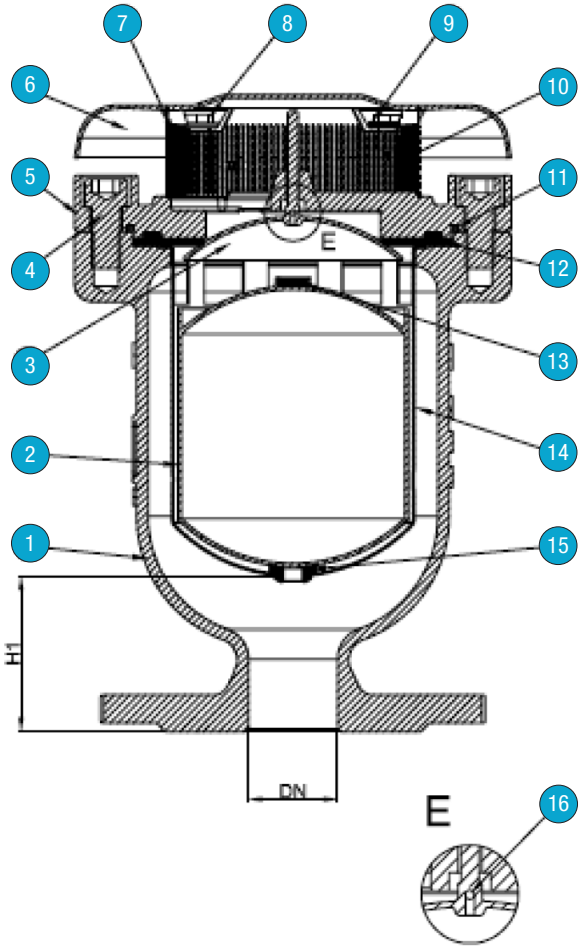
4.4.4. Insert the guide barrel into the valve body and position the nozzle seat in the groove.
(**Note:** Ensure the nozzle seat is in good condition—any damage will affect sealing performance)

4.4.5. Place the O-ring into the groove of the bonnet, then install the bonnet onto the valve body using bolts.
(**Note:** Tighten the bolts diagonally (in a criss-cross pattern) to ensure even pressure and correct positioning of the nozzle seat)

4.4.6. Install the pillar, screen, and cover, and fasten them securely with bolts.

4.4.7. Reinstall the air release valve onto the pipeline.

5. DRAWING AND PART LIST



NO.	PART DESCRIPTION	MATERIAL	STANDARD REF
1	Body	Ductile Iron	GJS 500-7
2	Float	Stainless Steel	AISI 304
3	Sealing Arc	Stainless Steel	AISI 304
4	In Hex Bolt	Stainless Steel	Commercial
5	Bonnet	Ductile Iron	GJS 500-7
6	Cover	Carbon Steel	Q235
7	Screen	Stainless Steel	AISI 304
8	Hex Bolt	Stainless Steel	Commercial
9	Washer	Stainless Steel	Commercial
10	Pillar	Aluminium	Commercial
11	O-Ring	Rubber	NBR
12	Seat	Rubber	EPDM
13	Nozzle Seat	Rubber	EPDM
14	Guide Barrel	Stainless Steel	AISI 304
15	Buffer	Rubber	EPDM
16	Small Nozzle	Stainless Steel	AISI 304

® Copyright by Derwent Industries Pty Ltd E & O.E

Derwent - Flow Control
ACN 096 997 152 ABN 48 096 997 152

EMAIL: sales@derwentindustries.com.au

WEB: www.derwentindustries.com.au

Brisbane:
Unit 2F
405 Newman Road
Geebung QL D 4034
Ph: 1300 789 256

Melbourne:
17 Metcalf Drive
Dandenong South, Vic 3175
Ph: 61 - 3 - 9792 1509

Melbourne - AVFI:
54 Enterprise Drive
Bundoora, Vic 3083
Ph: 1300 789 256

Sydney:
2 Ross Place
Wetherill Park, NSW 2164
Ph: 61 - 2 - 9136 0466

Tasmania:
102 - 104 Sunderland St
Derwent Park, Tas, 7009
Ph: 61 - 3 - 6273 0729

Wodonga:
36 Moloney Drive
Wodonga, Vic 3690
Ph: 61 - 2 - 6014 0100

Auckland:
Derwent Industries NZ Ltd
36 Rangi Road
Takanini, Auckland 2245
Ph: 64 - 9 - 218 4959