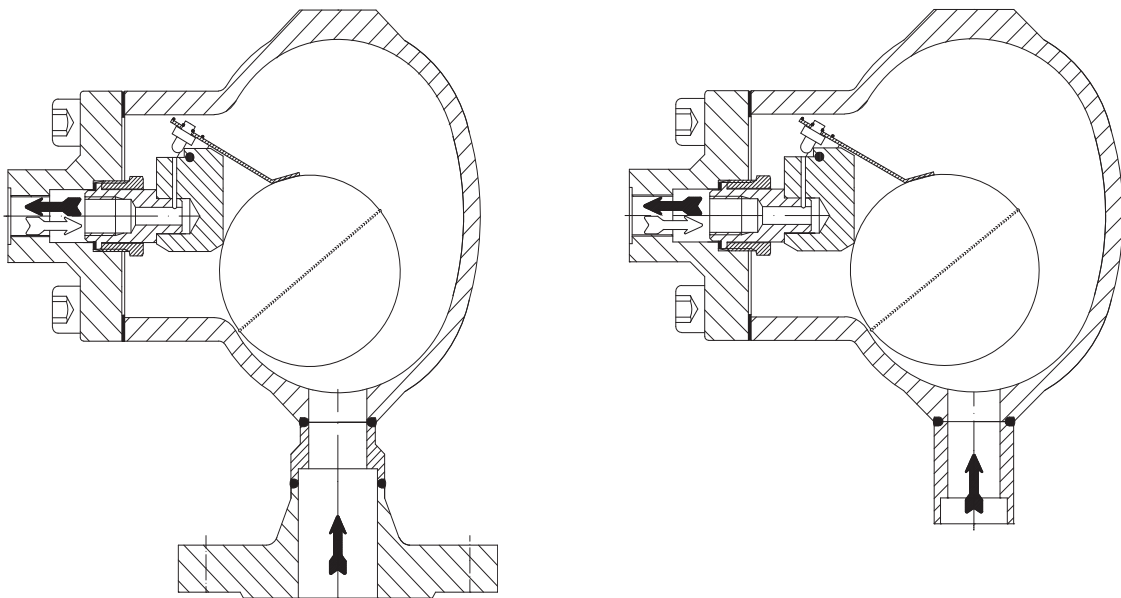


# Operating and installation instructions

## Automatic air vent

### (PN16 - 40)



#### PN16 / PN25 / PN40

- with flanges (series 656....1)
- with screwed sockets (series 656....2)
- with socket weld ends (series 656....3)
- with butt weld ends (series 656....4)

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## 1.0 General information on operating instructions

These operating instructions provide information on mounting and maintaining the fittings. Please contact the supplier or the manufacturer in case of problems which cannot be solved by reference to the operating instructions.

They are binding on the transport, storage, installation, start-up, operation, maintenance and repair.

The notes and warnings must be observed and adhered to.

- Handling and all work must be carried out by expert personnel or all activities must be supervised and checked.

It is the owner's responsibility to define areas of responsibility and competence and to monitor the personnel.

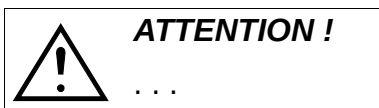
- In addition, current regional safety requirements must be applied and observed when taking the fittings out of service as well as when maintaining and repairing them.

The manufacturer reserves the right to introduce technical modifications at any time.

These Operating Instructions comply with the requirements of EU Directives.

## 2.0 Notes on possible dangers

### 2.1 Significance of symbols



Warning of general danger.

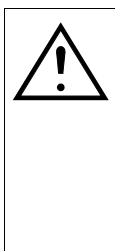
### 2.2 Explanatory notes on safety information

In these Operating and Installation Instructions dangers, risks and items of safety information are highlighted to attract special attention.

Information marked with the above symbol and "**ATTENTION!**" describe practices, a failure to comply with which can result in serious injury or danger of death for users or third parties or in material damage to the system or the environment. It is vital to comply with these practices and to monitor compliance.

All other information not specifically emphasised such as transport, installation, operating and maintenance instructions as well as technical data (in the operating instructions, product documentation and on the device itself) must also be complied with to the fullest extent in order to avoid faults which in turn can cause serious injury to persons or damage to property.

## 3.0 Storage and transport

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>ATTENTION !</b></p> <ul style="list-style-type: none"><li>- <i>Protect against external force (like impact, vibration, etc.).</i></li><li>- <i>Valves must not be used to take external forces, e.g. they are not designed for use as climbing aids, or as connecting points for lifting gear.</i></li><li>- <i>Suitable materials handling and lifting equipment should be used.</i></li></ul> <p><i>See catalog sheet for weights.</i></p> |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- At -20°C to +65°C.

- The paint is a base coat to protect against corrosion during transportation and storage. Do not damage paint protection.

## 4.0 Description

### 4.1 Scope of application

Automatic air vents with level regulation are used for the de-aeration and venting of pipeline systems.



#### **ATTENTION !**

- Refer to the data sheet for applications, limits on use and possibilities.
- Certain media require or preclude the use of special materials.
- The valves are designed for standard operating conditions. If conditions exceed these requirements, e.g. aggressive or abrasive media, the operator should state the higher requirements when ordering.
- Valves made from grey cast iron are not authorised for use in systems subject to TRD 110.

The information complies to the Pressure Equipment Directive 2014/68/EU.

It is the responsibility of the machine planner to ensure compliance.

The special markings on the valve must be taken into account.

Refer to the catalogue sheet to see which materials are used in standard versions.

Please contact the supplier or the manufacturer if you have any questions.

### 4.2 Operating principles

(refer to Fig. 3 page 8)

Deaeration and venting is controlled by a swivel-mounted ball float (Pos. 24.16).

As the automatic air vent is installed at the highest point of the pipeline system or vessel, any air in the pipeline system or vessel is led to the automatic air vent.

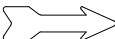
As long as no liquid flows into the automatic air vent, the float controller (Pos. 24) stays open, and air is discharged.

If liquid enters the automatic air vent, the ball float (Pos. 24.16) rises with the liquid level and the valve plug (Pos. 24.4) seals the outlet of the controller (Pos. 24). The pipeline system or vessel is closed to the outside. No liquid can escape from the system via the automatic air vent.

If the liquid in the pipeline system or vessel falls, the ball float (Pos. 24.1) drops down and the controller orifice is opened.

For increased venting power use a version with built-on venting valve.

### 4.3 Diagram

 aeration  
 venting

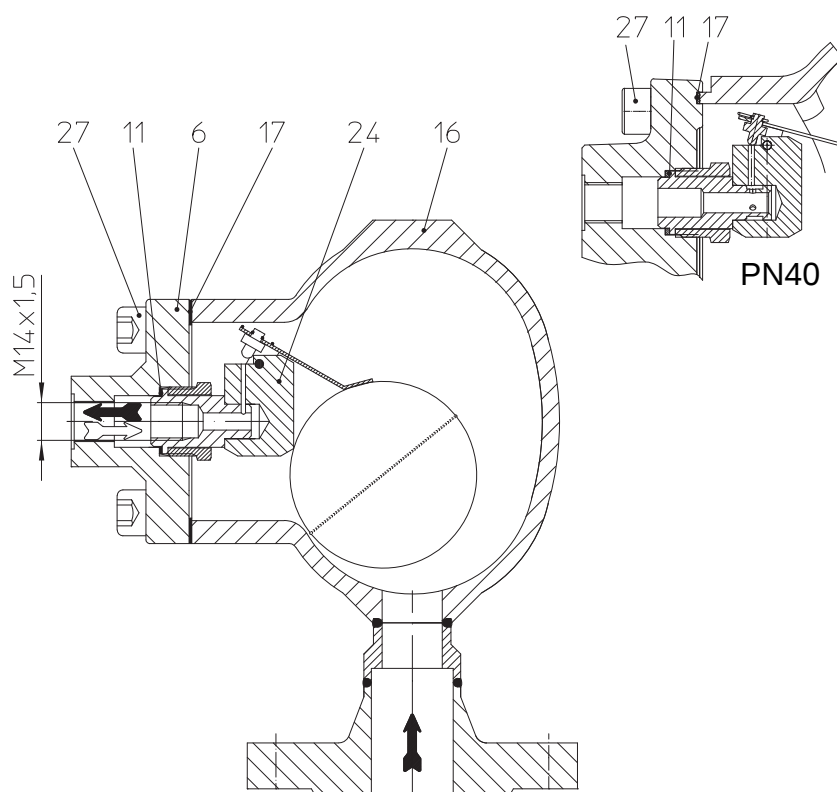


Fig. 1: Automatic air vent - series 656 PN16-25

 aeration  
 venting

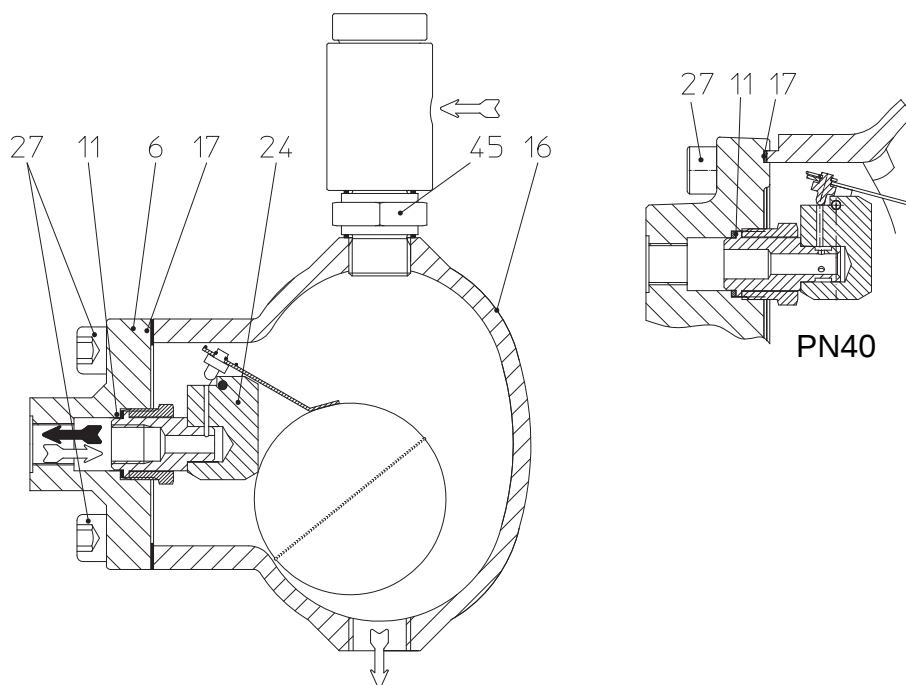


Fig. 2: Automatic air vent - series 656 PN16-25

For higher performance with mounted vacuum breaker series 655

Refer to the data sheet for information about materials with designations and figure numbers.

### 4.4 Technical data - remarks

for

- Principal dimensions,
- Pressure-temperature-ratings, operating limits,
- Valves with different types of connection , etc.  
refer to datasheet.

### 4.5 Marking

AWH Manufacturer

Anschrift des Herstellers:  
siehe Pkt 11.0 Garantie / Gewährleistung

Typ    Type

Bj.    Year of manufacture

According to the Pressure Equipment Directive appendix 2 diagram 7 valves acc. to article 1 paragraph 2.1.2 (pipes) only shows the CE-marking from DN40 onwards.

## 5.0 Installation

### 5.1 General notes on installation

The following points should be taken into account besides the general principles governing installation work:



#### **ATTENTION !**

- Remove flange covers if present.
- The interior of valve and pipeline must be free from foreign particles.
- Install at highest point of pipeline system, always supply media from below.  
Note installation position with reference to flow, see mark on valve.
- Steam line systems should be designed to prevent water accumulation.
- Lay pipelines so that damaging transverse, bending and torsional forces are avoided.
- Protect valves from dirt during construction work.
- Connection flanges must mate exactly.
- Valves must not be used to take external forces, e.g. they are not designed for use as climbing aids, or as connecting points for lifting gear.
- Suitable materials handling and lifting equipment should be used.  
See data sheet for weights.
- Centre gaskets between the flanges.
- Precautions against freezing should be taken in any systems susceptible to frost.

- Planners / construction companies or operators are responsible for positioning and installing products.
- The valves are designed for application, not influenced from weather.
- For application outside or in adverse environments like corrosion-promoting conditions (sea water, chemical vapours, etc.), special constructions or protective measures are recommended.

### 5.2 Installation instructions for welding

(refer to page 1)

Please note that only qualified persons using appropriate equipment and working in accordance with technical rules are allowed to install fittings by welding.

The responsibility for this lies with the system owner.

Please refer to the catalogue sheet for information on type and instructions relating to welding socket weld ends/butt weld ends.

When welding products to the pipeline system, they should be adequately cooled to prevent any adverse effect on the complete controller assembly (Pos. 24) or the flat gasket (Pos. 17). The heat-affected zone should be restricted to the immediate weld seam area! Note pre- and post-welding heat treatment in accordance with Material Fact Sheet DIN EN 10222.

If there are plans to acid clean the system before putting it into operation, the controllers (Pos. 24) should be dismantled completely, replaced by acid cleaning inserts, and reassembled after acid cleaning (see 7.1). In such an event please contact the manufacturer.

### 5.3 Controller adjustment

The controller is designed by the manufacturer for the relevant maximum operating pressure – 14 bar or 21 bar – and does not need changing.

### 5.4 Steam trap testing through ultrasonic measurement

Testing the operation of the steam trap in the installed state is straightforward with the “ARImetec®-S” multifunctional testing device.

Refer to data sheet “ARImetec®-S”.

### 5.5 Installation position

(refer to Fig. 1 and Fig. 2 page 4)

The automatic air vent is operated in a vertical installation position (system connection vertically downward). The arrow on the side of the cover (Pos. 6) indicates the direction of flow.

Always install the steam trap so that the ball float (Pos. 24.16) can work in a vertical plane.



#### **ATTENTION !**

*In principle the “TOP” mark on the hood must point vertically up.*

## 6.0 Putting the valve into operation



### **ATTENTION !**

- Before putting the valve into operation, check material, pressure, temperature and direction of flow.
  - Regional safety instructions must be adhered to.
  - Residues in piping and valves (dirt, weld beads, etc.) inevitably lead to leakage.
  - Touching the valve when it is operating at high ( $> 50\text{ °C}$ ) or low ( $< 0\text{ °C}$ ) media temperatures can cause injury.
- Affix warning notice or protective insulation as appropriate!*

*Before putting a new plant into operation or restarting a plant after repairs or modification, always make sure that:*

- All works has been completed!
- The valve is in the correct position for its function.
- Safety devices have been attached.

## 7.0 Care and maintenance

Maintenance and maintenance-intervals have to be defined by the operator according to the requirements.



### **ATTENTION !**

- **refer to item 10.0 and 11.0 prior to dismantling and repair work!**
- **refer to item 6.0 before restarting the plant !**

*Prior to installation, threads and seal faces should be coated with temperature-stable lubricant (e.g. "OKS Anti-Seize Paste" white/metal-free for PN 16-40 or "Rivolta" lubricant and parting agent for PN 63 onwards).*

### 7.1 Cleaning / replacing controller assembly

(refer to Fig. 1 page 4- Fig. 2 page 4 and Fig. 3 page 8)

- Dismantle the hood (Pos. 16) by slackening cheese-head screw (Pos. 27).
- Remove dirt from cover (Pos. 6) and hood (Pos. 16); tiny dirt particles can be removed by flushing out the ducts and rinsing the cover (Pos. 6).
- If necessary dismantle the float controller (Pos. 24) and clean separately or replace the float controller.
- Unscrew the hollow-core screw (Pos. 24.10) of the float controller (Pos. 24) from the cover (Pos. 6).
- Pull complete float controller (Pos. 24) out, taking care with the sealing ring (Pos. 11).
- Check lifting force of ball float (Pos. 24.16) by immersing the whole controller (Pos. 24) in a water bath. When immersed in the water bath the ball float (Pos. 24.16) must float. If the ball float (Pos. 24.16) sinks (i.e. goes under) the complete controller (Pos 24) should be replaced.

- Assemble in reverse order (see 7.3).

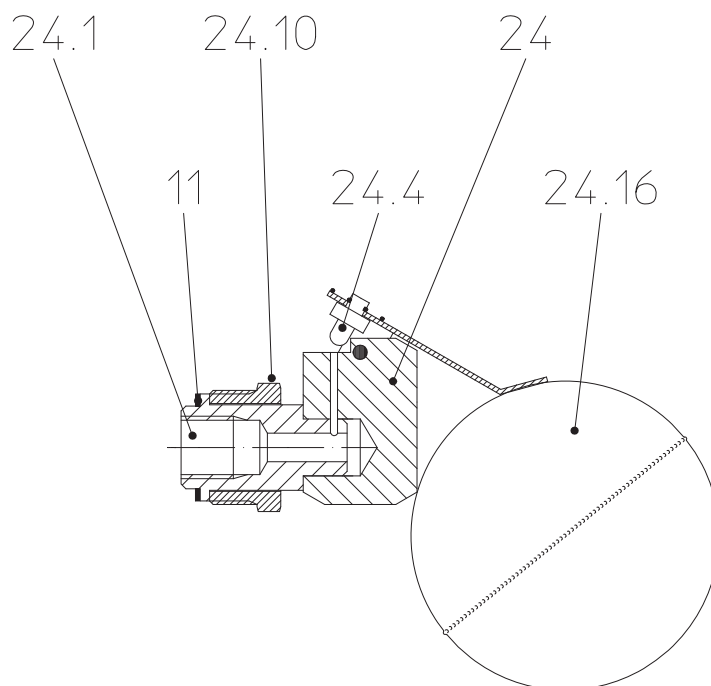


Fig. 3: Controller, cpl.

## 7.2 Option drip pipe with union joint

It is possible to install a drip line (Pos. 53/ 54) at the air inlet side to safely discharge any leaking liquid.

Note item 7.3 when installing the option.

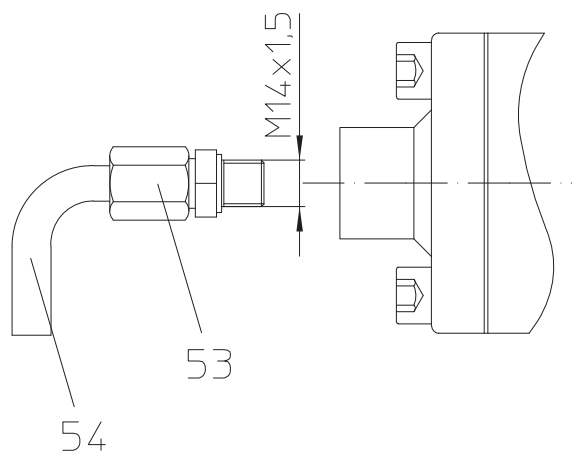


Fig. 4

## 7.3 Tightening torques

(refer to Fig. 1 page 4 - Fig. 3 page 8)

| Pos. | Automatic air vent PN16-40   | Torque (Nm)<br>DN15-25 |
|------|------------------------------|------------------------|
| 24   | Controller                   | 60                     |
| 27   | Cheese head screw M10        | 25                     |
| 53   | Union joint for drip pipe    | 60                     |
| 45   | Connector for vacuum breaker | 60                     |

## 8.0 Troubleshooting

In the event of malfunction or faulty operating performance check that the installation and adjustment work has been carried out and completed in accordance with these Operating Instructions.



### **ATTENTION !**

It is essential that the safety regulations are observed when identifying faults.

If malfunctions cannot be eliminated with the help of the following table "9.0 troubleshooting table", the supplier or manufacturer should be consulted.

## 9.0 Troubleshooting table



### **ATTENTION !**

- refer to item 10.0 and 11.0 prior to dismantling and repair work!
- refer to item 6.0 before restarting the plant !

| Fault                           | Possible cause                                                       | Corrective measures                                                                          |
|---------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| No flow                         | Installed in wrong flow direction                                    | Fit valve in direction of flow arrow.                                                        |
|                                 | Flange covers not removed                                            | Remove flange covers                                                                         |
|                                 | Ball float (Pos. 24.16) defective                                    | Check lifting force; refer to item 7.1                                                       |
| Little flow                     | Wrong installation position                                          | Note installation position; refer to item 5.5. Correct installation position                 |
|                                 | Piping system clogged                                                | Check piping system                                                                          |
|                                 | Wrong controller size chosen                                         | Correct selection acc. to flow diagram                                                       |
| No closure, or internal leakage | Controller clogged                                                   | Clean controller; refer to item 7.1                                                          |
|                                 | Controller worn out                                                  | Change controller; refer to item 7.1                                                         |
|                                 | Controller incorrectly screwed into body                             | Check seal face between body and controller, tighten controller correctly; refer to item 7.3 |
|                                 | Controller operated above safe operating pressure                    | Observe operating limits as per data sheet, i.e. possibly select different controller        |
| External leakage                | Hood (Pos. 16) not properly tightened<br>cheese-head screw (Pos. 27) | Tighten; refer to item 7.3                                                                   |
|                                 | Flat gasket (Pos. 17) defective.                                     | Change flat gasket;<br>refer to item 7.1                                                     |
|                                 | Connector (Pos. 45) for venting valve not properly tightened.        | Tighten; refer to item 7.3                                                                   |

## 10.0 Dismantling the valve or the body



### **ATTENTION !**

*The following points must be observed:*

- *Pressureless pipe system.*
- *Medium must be cool.*
- *Plant must be drained.*

## 11.0 Warranty / Guarantee

The extent and period of warranty cover are specified in the "Standard Terms and Conditions of Albert Richter GmbH & Co. KG" valid at the time of delivery or, by way of departure, in the contract of sale itself.

We guarantee freedom of faults in compliance with state-of-the-art technology and the confirmed application.

No warranty claims can be made for any damage caused as the result of incorrect handling or disregard of operating and installation instructions, datasheets and relevant regulations.

This warranty also does not cover any damage which occurs during operation under conditions deviating from those laid down by specifications or other agreements.

Justified complaints will be eliminated by repair carried out by us or by a specialist appointed by us.

No claims will be accepted beyond the scope of this warranty. The right to replacement delivery is excluded.

The warranty shall not cover maintenance work, installation of external parts, design modifications or natural wear.

Any damage incurred during transport should not be reported to us but *rather* to the competent cargo-handling depot, the railway company or carrier company immediately or else claims for replacements from these companies will be invalidated.



**Technology for the Future.**

**GERMAN QUALITY VALVES**

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