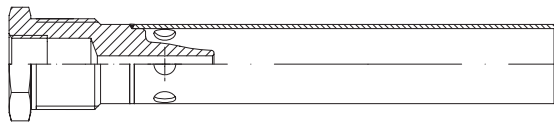


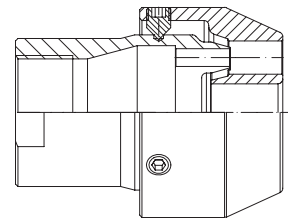
Operating and installation instructions

Steam injector

(PN25)



PN25
 - with internal thread Rp 1/2
 and external thread R1 (series 651....2)



PN25
 - with internal thread Rp1 - 1 1/2 (series 651....2)
 - with butt weld ends DN25 / 40 (series 651....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.

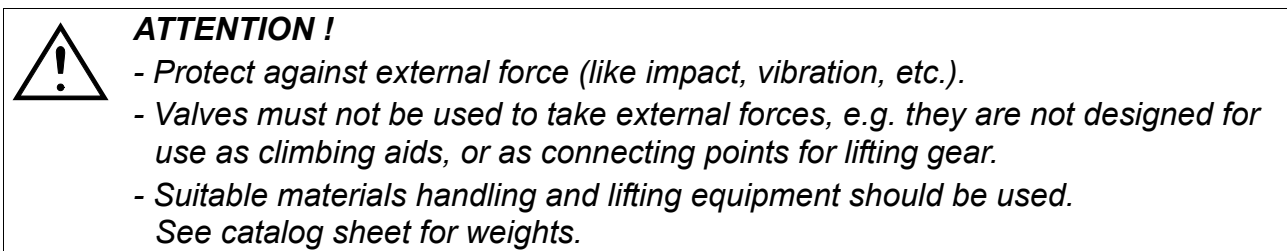
2.2 Explanatory notes on safety information

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



- At -20°C to +65°C.

4.0 Description

4.1 Scope of applications

Steam injectors are used for direct heating of water by means of steam. In open water tanks the final temperature should not exceed 90°C.



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.

The information complies to the Pressure Equipment Directive 97/23/EC.

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. 2 page 4)

Steam injectors are end pieces on steam-bearing pipes, which are directly immersed in the water tank to be heated. The injectors are to accomplish the phase transition from gaseous steam into liquid condensate, emitting the heat of vaporization. A low-noise operation has to be achieved. The injector has to carry out a continuously mixing and heat distribution on the water to be heated.

Steam injectors have to be installed as deep as possible below the water surface. However, a sufficient minimum distance from the container walls should be introduced to allow a free and continuously mixing of the water.

The services specified in the data sheet are related to a with saturated steam (vapour) heated open water tank. With increased power requirements, several steam injectors should be installed parallel.

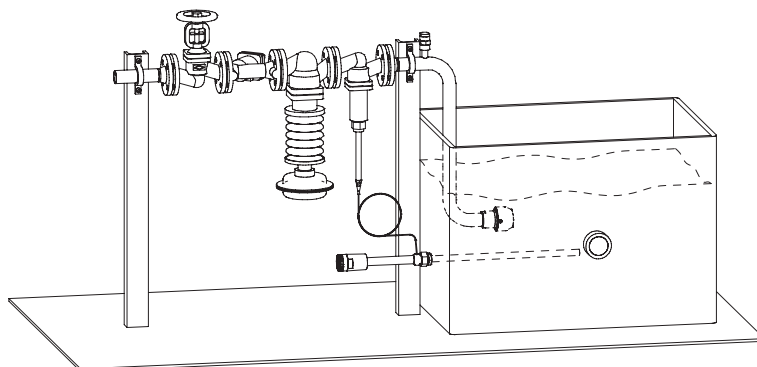


Fig. 1

4.3 Diagram

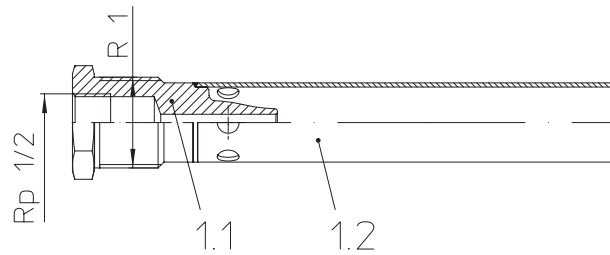


Fig. 2: Steam injector - series 651 PN25
internal thread Rp 1/2 and external thread R1

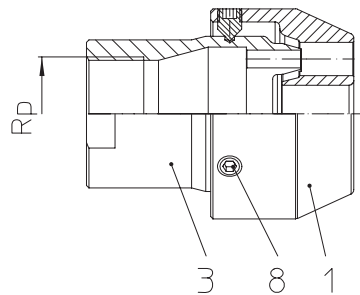


Fig. 3: Steam injector - series 651 PN25
(internal thread Rp 1 - 1 1/2)

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

4.4 Technical data - remarks

for

- Principal dimensions,
- Valves with different types of connection , etc.
refer to datasheet.

4.5 Marking

AWH Manufacturer

Typ Type

Bj. Year of manufacture

Address of manufacturer:

refer to item 11.0 Warranty / Guarantee

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.
- Installation in any position (except screw cap downwards). Note installation position with reference to flow, see mark on valve.
- Lay pipelines so that damaging transverse, bending and torsional forces are avoided.
- Protect valves from dirt during construction work.
- 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.
- Precautions against freezing should be taken as a matter of course in any facilities 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 position

(refer to Fig. 2 page 4)

The side-mounted arrow indicates the flow direction.

The injectors are preferably installed horizontally. With several parallel injectors, they have to be installed in the same horizontal level. The same flow direction is preferred.

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 !

7.1 Cleaning

Injectors have no moving parts. They can be cleaned after dismantling from the pipe.

7.2 Tightening torques

(refer to Fig. 2 page 4 - Fig. 3 page 4)

| Pos. | Steam injector PN25 | Torque (Nm) Rp 1 - 1 1/2 |
|------|---------------------|-----------------------------|
| 8 | Threaded pin | 50 |

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 eliminate 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 |
|-------------------------------------|---|--|
| Strong noise | Too low or too high steam pressure | Change steam pressure, - use more or less steam injectors. |
| Too long heating-up time | Heat output is too low | Rise steam pressure, -install more steam injectors |
| Steam bubbles come out of the water | Heat output is too high, -immersion depth is too low | Use smaller nominal diameter, -reduce steam pressure, -install injector deeper |

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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12.0 EC declaration of conformity



**AWH Armaturenwerk Halle GmbH,
Turmstrasse 118, D-06110 Halle/Saale**

EC declaration of conformity
as defined by
the Pressure Equipment Directive 97/23/EC

We hereby declare,

that pursuant to the aforementioned Pressure Equipment Directive the products listed below were executed and classified in accordance with Directive 97/23/EC (Article 3, paragraph 3).

Pursuant to Article 3, paragraph 3 these products should not carry a CE mark.

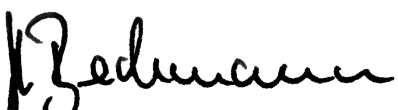
Steam injector

| Series | Nom. pressure | Material | DN |
|--------|---------------|---------------|--------------|
| 651 | PN 25 | 1.4301 | Rp 1/2 |
| 651 | PN 25 | 1.4305/1.4301 | Rp 1 - 1 1/2 |

Applied standards:

DIN 3840
AD 2000-leaflet
ASME VIII/1

Halle/Saale, 05.05.2010


.....
(Brechmann, Managing director)