

OPERATING/INSTALLATION INSTRUCTIONS

(Translation)



Pigging station, manual

DN25 - DN100

OD1" - OD 4"

DN25 ISO - DN100 ISO

SMS25 - SMS76

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NOTE



These instructions are a component part of the pigging station and must be available to operating and maintenance personnel at all times. The safety precautions contained therein must be observed.

If the pigging station is sold on, the manual must be included in the delivery or downloaded from the following Internet page: <http://www.awh.eu/de/downloads>.

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1 Introduction

These operating/installation instructions (hereinafter referred to as the “manual”) provide you with all the information you need to operate the pigging station smoothly (hereinafter also referred to as the “fitting”).

In principle, this manual applies to all designs. In the event of differences between the designs, this will be pointed out clearly.

The manual must be read, understood, and applied by all persons assigned with the assembly, maintenance, cleaning and troubleshooting of the fitting. This applies in particular to the listed safety instructions.

After studying the manual, you will be able to

- Assemble and operate the fitting safely,
- Clean and service the fitting correctly and
- Take the correct measures if a fault occurs.

In addition to this manual, generally valid, statutory and other binding regulations in regard of accident prevention and in regard of environmental protection in the country of use must also be observed.

The manual must always be kept or made available at the place of use of the fitting. If necessary, download the manual from the <http://www.awh.eu/de/downloads> Internet page.

1.1 Means of Presentation

As an instruction and for directly warning against danger, statements where special attention needs to be paid are identified as follows in this manual:



DANGER

This warning notice describes a hazard with a high level of risk that will result in death or serious injury if not avoided.



WARNING

This warning notice describes a hazard with a medium level of risk that could result in death or serious injury if not avoided.



CAUTION

This warning notice describes a hazard with a low level of risk that could result in minor or moderate injury if not avoided.

NOTE

This warning notice describes a hazard with a low level of risk that could result in damage to property if not avoided.



The “info” symbol provides useful information.

The following means of presentation are also used:

- Texts which follow this mark are bulleted lists.
- Texts following this mark describe activities that need to be carried out in the specified order.
- “ ” Texts in quotation marks are references to other chapters or sections.

Symbols Used



Crushing hazards are indicated by this symbol.



Burn hazards are indicated by this symbol.



Warnings about potentially explosive atmospheres are indicated by this symbol.



Warnings about strong magnetic fields are indicated by this symbol.



“Observe manual” is indicated by this symbol.



Environmental measures are indicated by this symbol.

1.2 Abbreviations

ATEX	“ A tmosphère exp losible”; includes measures to be taken for explosive atmospheres / explosion protection
AWH	Armaturenwerk Hötensleben GmbH
C/C	Clamp/clamp (connection variant)
D _A	Outer diameter
D _I	Inner diameter
DN	Nominal width
EPDM	Ethylene propylene diene monomer rubber (sealing material)
FKM	Fluorinated rubber (sealing material)
T/F	Thread/flange (connection variant)
T/T	Thread/thread (connection variant)
T/W	Thread/weld-on end (connection variant)
HNBR	Hydrogenated acrylonitrile butadiene rubber (sealing material)
Ra	Average roughness value (dimension for the surface roughness)
W/W	Weld-on/weld-on (weld-on ends; connection variant)
VMQ	Silicone rubber (sealing material)

1.3 Guarantee, Warranty and Liability

Guarantee

The statutory guarantee applies when the fitting is used as intended. Exceptions to this are wear parts (gaskets, bushings etc.)

Increased wear due to aggressive and/or abrasive media is not a product defect. Any claims resulting from this cannot be taken into account as part of the warranty.

Warranty and Liability

The commitments agreed to in the delivery contract, the general terms and conditions and the terms of delivery of Armaturenwerk Hötensleben GmbH shall apply, in addition to the statutory regulations valid at the time the contract was concluded.

Warranty and liability claims in case of personal injury and damage to property shall be excluded, in particular if these can be attributed to one or more of the following causes:

- Improper or incorrect use of the fitting,
- Incorrect assembly, commissioning, operation and maintenance of the fitting,
- Failure to observe the instructions in the manual in terms of assembly, commissioning, operation and maintenance of the fitting,
- Structural modifications to the fitting
(Conversions or other modifications to the fitting must not be carried out without previous written approval from Armaturenwerk Hötensleben GmbH.
In case of infringement, the fitting will lose its EC conformity and the operating license.),
- Use of spare parts that do not comply with the specified technical requirements,
- Improperly performed repairs,
- Disasters, the effects of foreign objects and force majeure.

Disclaimer

The Armaturenwerk Hötensleben GmbH (hereinafter called AWH) reserves the right to make alterations to this document at any time and without prior notice. AWH provides no guarantee (neither expressed nor implied) with regard to all information in this document, including but not limited to the implied warranty of merchantability and suitability for a particular purpose. Furthermore, AWH does not guarantee the correctness or completeness of information, text, graphics or other parts in this document.

2 Safety

2.1 Intended Use

The pigging station is designated for installation in pipelines for the infeed and outfeed of a pig suitable for that purpose in commercial and industrial operations (food, cosmetic, chemical and pharmaceutical industries and low-germ processes).

Suitable flow media include water, steam, mineral oil, food, and liquids from the cosmetic, chemical and pharmaceutical industries, in addition to pasty media which are subject to a hygienic standard.

Handling and operation are manual with such activities.



The fitting can be integrated in automatic processes when suitable prerequisites are in place.

Misuse, such as operation of a standard design fitting in a potentially explosive atmosphere or when potentially explosive media are used, shall be precluded and must be covered by a separate agreement.



WARNING

In the event of improper use, there is a risk of serious injury

This fitting was designed exclusively for the purposes described above. Any other use beyond that described here or alteration of the fitting without written approval from AWH is considered contrary to the intended use. AWH accepts no liability for damages arising from such use. The operating company is solely responsible for the risk. The fitting may only be commissioned once it is certain that all the safety systems are fully functioning, and the facility in which the fitting is installed meets the safety requirements of all relevant EC directives.

NOTE

Use only AWH pigs or pigs approved by AWH for operation.

NOTE

The fitting may be installed only by an expert.

The work described in this manual is described in a way intended to be understood and carried out by experts only (see section “2.6 Qualification Requirements for Personnel”).

The intended use also includes compliance with this manual, including the maintenance conditions.

2.2 Labeling the Fitting

The following details can be found on the fitting:

- Manufacturer's stamp
- Material code number for the housing material

2.3 Danger Warnings

The safety systems and safety instructions described in these instructions must be adhered to.

Actuation is performed manually at the valve.

2.3.1 Dangers

NOTE

Risk of damage to the fitting!

The fitting, length and quality of the lines must meet the requirements. Assembly is to be carried out by specialist personnel.

Make sure that only the media specified in the manual are used. The parameters listed in the manual must always be complied with (see chapter "4 Technical Data").



WARNING



Risk of burns due to hot media!

There is a risk of burning during operation or maintenance if flow media have temperatures over +60 °C / +140 °F.

- Allow the flow medium to cool down before performing any work on the fitting.
- Empty the pipelines prior to assembly or disassembly work.



WARNING



Danger caused by pressurized pipe systems!

This pig is an essential part of the pipe system. There is a risk of fingers and hands being crushed when system pressure is in effect and the fastener is used to open the cover.

- Depressurize the pipe system before performing any work on the fitting.
- Empty the pipelines prior to assembly or disassembly work.



WARNING



Danger caused by strong magnetic fields!

Pigs are equipped with strong permanent magnets for detectability. The function of sensitive electrical devices (e.g. cardiac pacemakers) could become impaired or disrupted as a result.

- Keep sensitive devices away from pigs.
- Personnel who depend on such devices should maintain a safety distance of at least one meter.

2.3.2 Hazardous Area of the Fitting



CAUTION

The hazardous area during setup, maintenance and repair work extends to 1 m around the fitting. Take into consideration the swing range of any switch cabinet doors that can open. The operator shall ensure that persons are prevented from entering the hazard area during motion sequences.

2.3.3 Installation of Replacement Parts and Wearing Parts

Replacement and accessory parts not supplied by AWH have not been checked or approved by AWH. Installing and/or using this type of product can therefore negatively alter the structural properties of your facility, under certain circumstances. AWH accepts no liability for any damage arising from the use of non-original parts or non-original accessory parts. Standard parts can be obtained from specialist dealers.

2.3.4 Switch-off Procedures



WARNING

Risk due to moving parts and escaping compressed air or media at high pressure!

There is a risk of fingers and hands being crushed when the fastener is used to close the pigging station.

There is a risk of fingers and hands being crushed when the pressurized pigging station is being operated/opened.

Escaping compressed air or flow media at high pressure poses a risk of serious eye or skin injuries or of burns.

The following shutdown procedure must always be completed prior to operation (by specialist personnel only).

- *Disconnect the higher-level system/machine from the power supply.*
- *Shut off the pneumatic system.*
 - *Close the shut-off valve.*
 - *Check that the facility is depressurized.*
 - *Secure the shut-off valve against reopening.*
- *Shut off the media supply. Relieve the pressure in the pipelines (take particular care with hazardous materials). Check that there is no risk of media being supplied (insert dummy discs if necessary). Observe a cooling-down phase for media temperatures over +60 °C / +140 °F*

It is imperative that the following switch-off procedure is observed before cleaning, maintenance or repair work is carried out (by specialist personnel only).

- *Disconnect the higher-level system/machine from the power supply.*
- *Shut off the pneumatic system.*
 - *Close the shut-off valve.*
 - *Check that the facility is depressurized.*
 - *Secure the shut-off valve against reopening.*
- *Shut off the media supply. Relieve the pressure in the pipelines and then drain them (take particular care with hazardous materials). Check that there is no risk of media being supplied (insert dummy discs if necessary). Observe a cooling-down phase for media temperatures over +60 °C / +140 °F.*

2.4 Duties of the Operating Company

The fitting is used in the commercial sector. The operating company is thus subject to the legal obligations regarding occupational safety.

In the EEA (European Economic Area), the national implementations of the framework directive (89/391/EEC) on carrying out measures for improving safety and protecting the health of employees

during work, as well as the associated individual directives on the minimum specifications for safety and health protection of employees using work equipment, shall be observed and complied with in their currently valid versions.

As a basic rule, the operating company in Germany must observe the Industrial Safety Ordinance (BetrSichV).

In other countries, the respective national guidelines, statutes and country-specific regulations regarding occupational safety and accident prevention must be complied with. At the same time, the following, non-exhaustive instructions apply in particular:

- The owner/operating company must ensure that the fitting is only used as intended (see section “2.1 Intended Use”).
- The owner/operating company must keep itself informed of locally applicable industrial safety regulations, and - in addition - use a risk assessment to determine the hazards resulting from the specific working conditions at the place of use of the fitting. This must then be implemented in the form of operating instructions for the operation of the fitting.
- When using hazardous materials, protective measures must be specified in accordance with the safety data sheets and operating instructions shall be compiled for hazardous materials. Personnel must be briefed accordingly.
This also applies to hazardous substances that may arise during work processes.
- A continuous risk assessment must be carried out for workplaces, including temperature conditions for the medium and the place of use (falling). The measures must be recorded in operating instructions, and personnel must be instructed accordingly.
- Supervisors must monitor compliance with the measures specified in the operating instructions.
- Throughout the entire operating period of the fitting, the owner/operating company must check whether the operating instructions that they have compiled actually correspond to the current status of the regulations, and adjust the instructions if necessary.
- The operating company must clearly regulate and specify the responsibilities of personnel (for example, for operation, maintenance and cleaning).
- The owner/operating company must allow only sufficiently qualified and authorized personnel to work on the fitting.
- The owner/operating company must ensure that all employees handling the fitting have read and understood the manual.
Furthermore, it must provide personnel with training at regular intervals with certification and inform them of the hazards.
- The operating company must provide sufficient workplace lighting at the plant in accordance with the locally applicable regulations for occupational health and safety, in order to prevent hazards occurring as a result of poor lighting.
- The owner/operating company must provide personnel with personal protective equipment and make sure that this is used (see section “2.7 Personal Protective Equipment”).
- The owner/operating company must make sure that no person works on the fitting whose ability to respond is impaired through drugs, alcohol, medication or similar.
- The owner/operating company must use appropriate measures to inform groups of persons who are not planned for direct contact with the fitting (e.g. visitor groups) about the potential dangers involved.
- The owner/operating company is obliged to operate the fitting in perfect condition at all times.

- Wherever high pneumatic pressures occur, there is a possibility of sudden failure of or damage to the lines and connections. This poses a hazard. The operating company must instruct operating and maintenance personnel at least once a year on the possible hazards.
- The constructor of the overall plant must install the switching and safety devices required for setting up, inspection, shutting down (including emergency shutdown), operating, maintenance, cleaning and repair, and provide proof of their installation.
- The operating company must provide fire safety devices, for example, the appropriate quantity of suitable hand-held fire extinguishers of the appropriate size, in easily accessible places and provide employees with training on fire safety.
- Warnings in the documentation for externally supplied assembly groups must be adhered to and incorporated into the risk assessments for the specific workplace.

Connections

- Before operating the machine with the fitting, the owner/operating company shall ensure that the local specifications were followed during assembly and commissioning, if these were carried out by the owner/operating company.

2.5 Safety Measures (to Be Implemented by Owner/Operating Company)

- The owner/operating company must ensure that unauthorized persons (not operating or maintenance personnel) are prevented from entering the hazardous area of the system (in which the fitting is installed).
- The owner/operating company must empty the pipelines prior to operation tasks on the fitting.
- The owner/operating company must empty the pipelines prior to assembly and maintenance work on the fitting.
- The disconnection of energy sources from the system shall be designed technically by the owner/operating company so as to enable compliance with the switch-off procedures described in section 2.3.4.
- This manual must be retained for future reference.
It must be available in the vicinity of the system in which the fitting is installed.
- The operating company must define and adhere to the intervals for inspections and control measures in accordance with the environment and media used.
- The work described in the chapters Transport, Installation, Assembly, Maintenance, Malfunctions and Disassembly/Disposal must be carried out only by experts.

2.6 Qualification Requirements for Personnel

The fitting must be operated, maintained and repaired only by persons who have the appropriate qualifications. These persons must be familiar with this manual and act in accordance with them. The respective authorizations for personnel must be clearly defined.

The following qualifications are designated in the manual for various fields of activity:

Expert/Specialist Personnel

A person with appropriate training, suitable apprenticeship and experience who is in a position to identify risks and avoid dangers.

An expert is a person whose professional training, knowledge and experience, and whose knowledge of the relevant standards and regulations, enables them to carry out work on the fitting, identify potential risks independently and to avoid them.

Only personnel with the following specific knowledge may be employed for work on the fitting:

- **Assembly/disassembly:** Industrial mechanic or similar training, practical experience in the assembly/disassembly of fittings
- **Welding work:** Welder qualification in pipeline engineering or similar apprenticeship
- **Electrical work:** Electrician; person with appropriate specialized apprenticeship, knowledge and experience, enabling them to identify and avoid the risks that may arise from working with electricity

2.7 Personal Protective Equipment

In order to minimize health risks, personal protective equipment must be worn when working on the fitting.



Protective work clothing

Protective work clothing is tight-fitting work clothing with low resistance to tearing, with close-fitting sleeves and without protruding parts. It is mainly used for protection against becoming entangled in moving components.

Do not wear any rings, necklaces or other jewelry.



Safety shoes

Wear slip-resistant safety shoes for protection from heavy, falling objects and to prevent slipping on slippery surfaces.



Protective gloves

Wear protective gloves to protect your hands against friction, grazes, punctures or deeper injuries and against coming into contact with hot surfaces or chemical substances.



Protective goggles

Wear protective goggles for protection against media escaping at high pressure and against flying objects.

**Hardhat**

Wear a hardhat for protection against falling or flying objects.

**Welding hood**

Wear a welding hood for protection from damage to the eyes or skin due to the welding arc, and from burns caused by flying particles during welding.

Personal protective equipment must be provided by the operating company in accordance with the valid requirements.

Furthermore, both the national regulations and, if necessary, the internal instructions from the operating company, must be observed.

3 Overview

3.1 Pigging Station, Manual

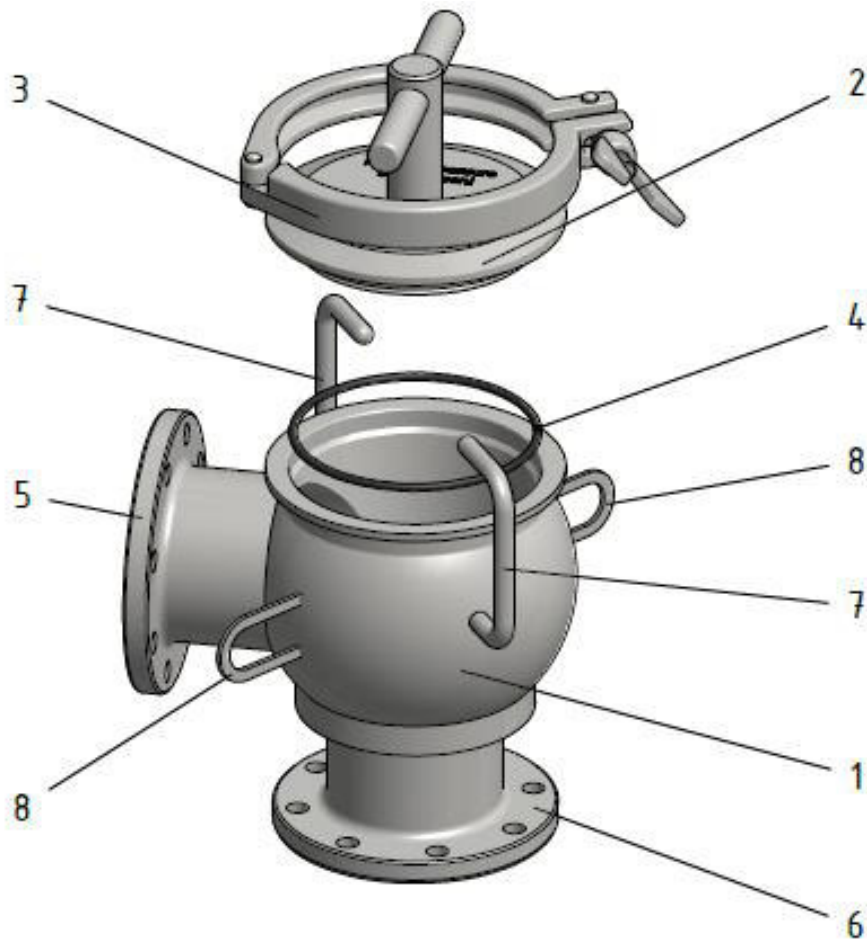


Fig. 3-1: Overview of pigging station, manual

- | | | | |
|---|---------------|---|----------------------------------|
| 1 | Housing | 5 | Connection flange (liner flange) |
| 2 | Housing cover | 6 | Connection flange (nut flange) |
| 3 | Sealing clamp | 7 | Securing bracket |
| 4 | O-ring | 8 | Holding plate (sensor) |

3.2 Pig dynamics

Principle

Pigging refers to a process by which a body is propelled through a pipe system by external energy. The pig in turn presses the content of the pipe system in front of it and thus out of the pipe.

This energy is usually present in the form of pressure and acts directly on the pig. Fluids as well as gases can be used as the transmission medium.

In order to be able to use the driving energy, the pig must be reliably sealed against the interior surface of the pipe and is slightly larger than the cross-section of the pipe. An elastomer provides the possibility of compensation. AWH Product Recovery Technology recommends that the pig be pushed with a liquid propellant.

Gaseous propellant media can only be used if there is sufficient liquid in front of the pig or a sufficiently high sliding friction is present. AWH does not guarantee processes that work exclusively with gaseous propellant media.



WARNING

Danger of injury to personnel!

Uncontrolled pigging in the system poses a potential danger to personnel and plant components. Undefined and excessively large force may destroy parts of the higher-level plant. Personnel injury could occur.

- Do not feed any product in an uncontrolled manner.*
- Feed the drive medium only in a controlled manner.*
- Feed the product and drive medium in a controlled manner.*

Physical conditions

The pig is subject to Newton's Law.

The acceleration of a mass results in a force:

$$F = m \times a$$

The maximum acceleration on the pig should not exceed 10 m/s². At the same time, the maximum speed of the pig should be similar to the conveying speed of the medium and lie within a range of 0.3 - 1 m/s. The conveying speed is modified and limited by the regulation of the pressure (in cases of fluids) or of the volume flow rate (in cases of gases).

The speed of the pig must be controlled by throttling the inlet and outlet valves.

The conditions for passing through are not constant but dynamic. The energy to be applied must be continuously regulated due to differences in height, different quantities of residual media in the pipe, pipe connections and bends.

Liquid drive media

Liquids are not compressible. Their use as drive medium ensures a quiet, uniform running of the pig. The speed of the pig can be determined by the flow rate.

Gaseous drive media

Gases are compressible in their behavior and can form gas cushions.

Driving the pig at an insufficiently high standard flow rate causes its movement to alternate between abrupt forward movement and periods of non-movement. The consequence is the undesirable “slip/stick effect”.

It is for this reason that the volume flow rate and not the pressure is to be kept constant with the aid of a driving pressure regulator. The propellant gas must be supplied with a sufficiently high volumetric flow rate at the level of the required driving pressure.

4 Technical Data

4.1 General Data

	Standard design
Ambient temperature range:	
Lower limit temperature:	+5 °C / +41 °F
Upper limit temperature:	+60 °C / +140 °F
Max. permissible operating pressure:	
DN25–DN100; Inches 1"–4";	10 bar/145 psi
ISO 33,7-88,9; SMS 25-76:	
Max. permissible operating temperature:	+100 °C / +212 °F
(depends on the sealing material and medium)	

4.2 Materials in Contact with the Product

See Fig. 3-1

Housing (Item 1):	1.4307/1.4404
Housing cover (Item 2):	1.4307/1.4404
Sealing clamp (Item 3):	1.4308
O-ring (Item 4):	Selected according to operating conditions
Connection flange (Item 5):	1.4307/1.4404
Connection flange (Item 6):	1.4307/1.4404
Securing bracket (Item 7):	1.4301
Holding plate (Item 8):	1.4301

Sealing material

EPDM:	Sterilization temperature: Short-term max. +140 °C/+284 °F
VMQ (silicone):	Sterilization temperature: Short-term max. +130 °C/+266 °F
FKM:	Sterilization temperature: Short-term max. +130 °C/+266 °F
HNBR:	Sterilization temperature: Short-term max. +140 °C/+284 °F
PTFE:	Sterilization temperature: Short-term max. +140 °C/+284 °F



Sterilization may only be carried out when the fitting is closed.



The area of application for the fitting must always be adjusted to the corresponding operating conditions and the materials that come into contact with the product.

The maximum continuous temperature is dependent on the media.

Surfaces

Exterior surface:	bare metal/precision machined
Inner surfaces in contact with the product:	Ra < 0.8 µm

The service life of the fitting is approximately 10 years when chlorine-free drinking water is used. If used with caustic media, the service life is correspondingly shorter.

4.3 Energy Supply

4.3.1 Electrical Energy Supply

(with Equipment via Detection Sensor System for Pig)

Refer to the external data sheets and manufacturer's instructions for the data on the energy supply for connection of proximity switches (< 50 V).

4.4 Connection Variants, Type Series, Dimensions

4.4.1 Pig Station with Flange Connection (Standard Design)



The pigging station is standard-equipped with flange connection.

The installation position corresponds to the illustrated depiction in the drawings.

The dimensions can be found in the tables (all details - except for nominal width (DN) in millimeters).

You can find the technical data on the product pages of the current AWH catalog, on the Internet or you can request it directly from AWH. The product identification numbers in the catalog and in the manual must be identical.

Other customer requirements can be fulfilled following prior consultation, e.g. welding ends, clamp connection, thread connection, custom versions and heated versions.

4.4.1.1 Pipe Standard DIN

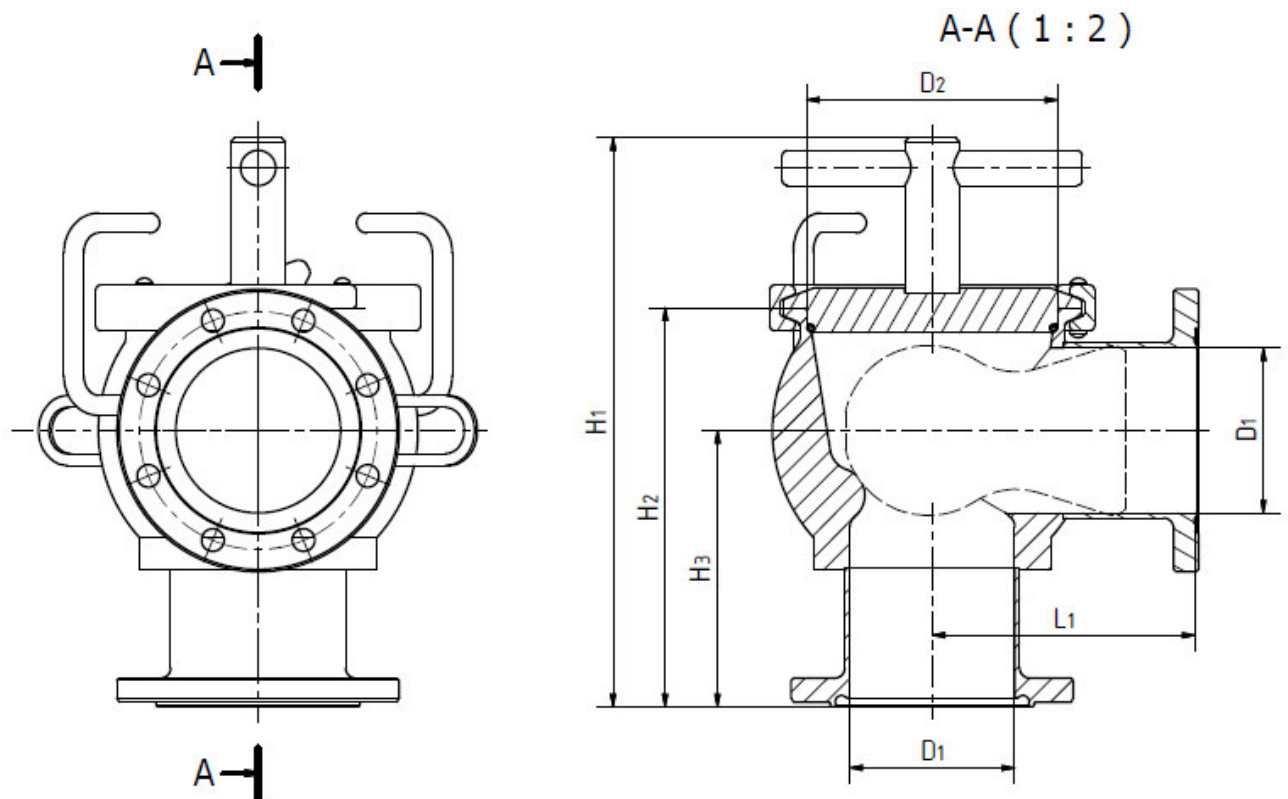


Fig. 4-1: Pigging station DIN with connection flange DIN11864-2

DN	D1	D2	H1	H2	H3	L1
25	26	44.5	145	100	66.5	64
40	38	66.5	172	114	78.5	80
50	50	81.5	190	132	89.5	88
65	66	100.5	229	161	111.5	105
80	81	125.5	256	182	116.5	126
100	100	150.5	282	208	127.5	141

4.4.1.2 Pipe Standard ASME-BPE (Inch)

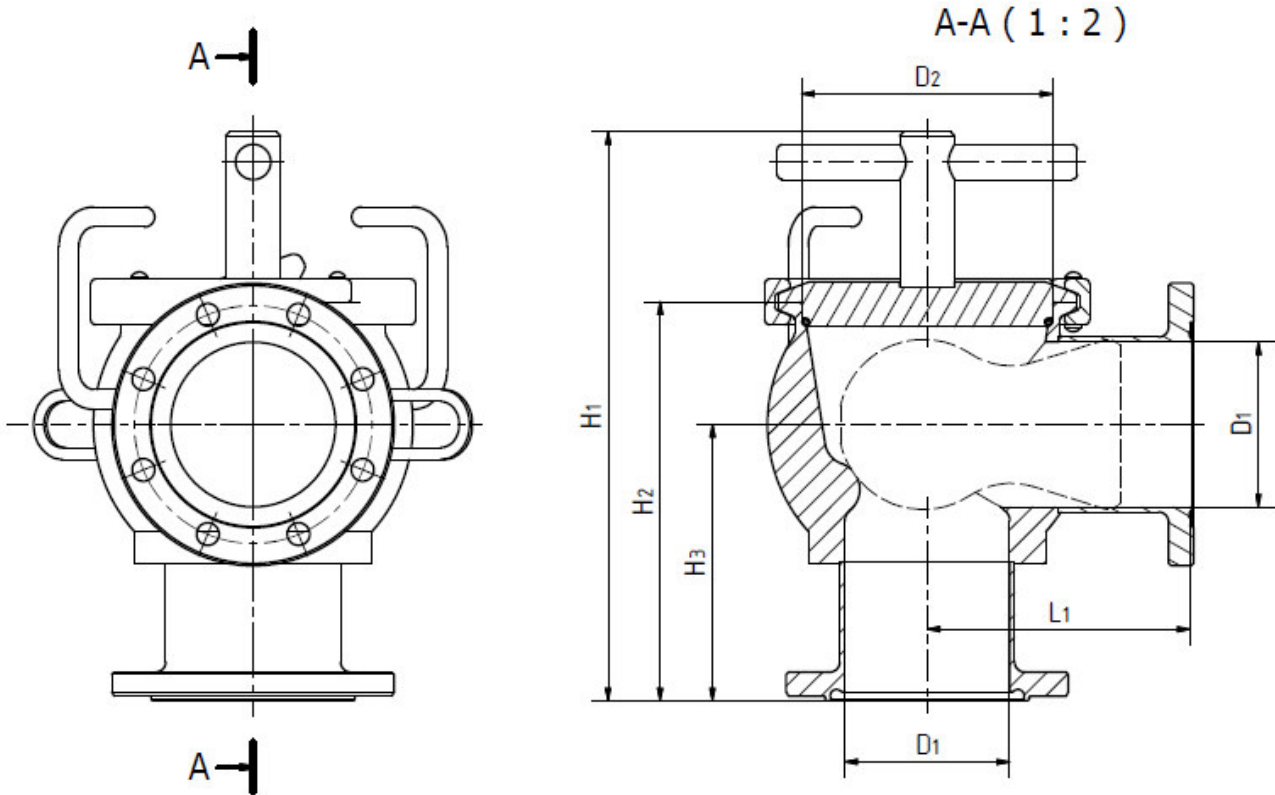


Fig. 4-2: Pigging station ASME-BPE with connection flange DIN11864-2

OD	D1	D2	H1	H2	H3	L1
1"	22.1	44.5	145	100	67.5	64.5
1 ½"	34.8	66.5	172	114	78.5	80.5
2"	47.5	81.5	190	132	89.5	88.5
2 ½"	60.2	100.5	229	161	111.5	107
3"	72.9	125.5	254	180	114.5	126.5
4"	97.4	150.5	282	208	127.5	141.5

4.4.1.3 Pipe Standard ISO

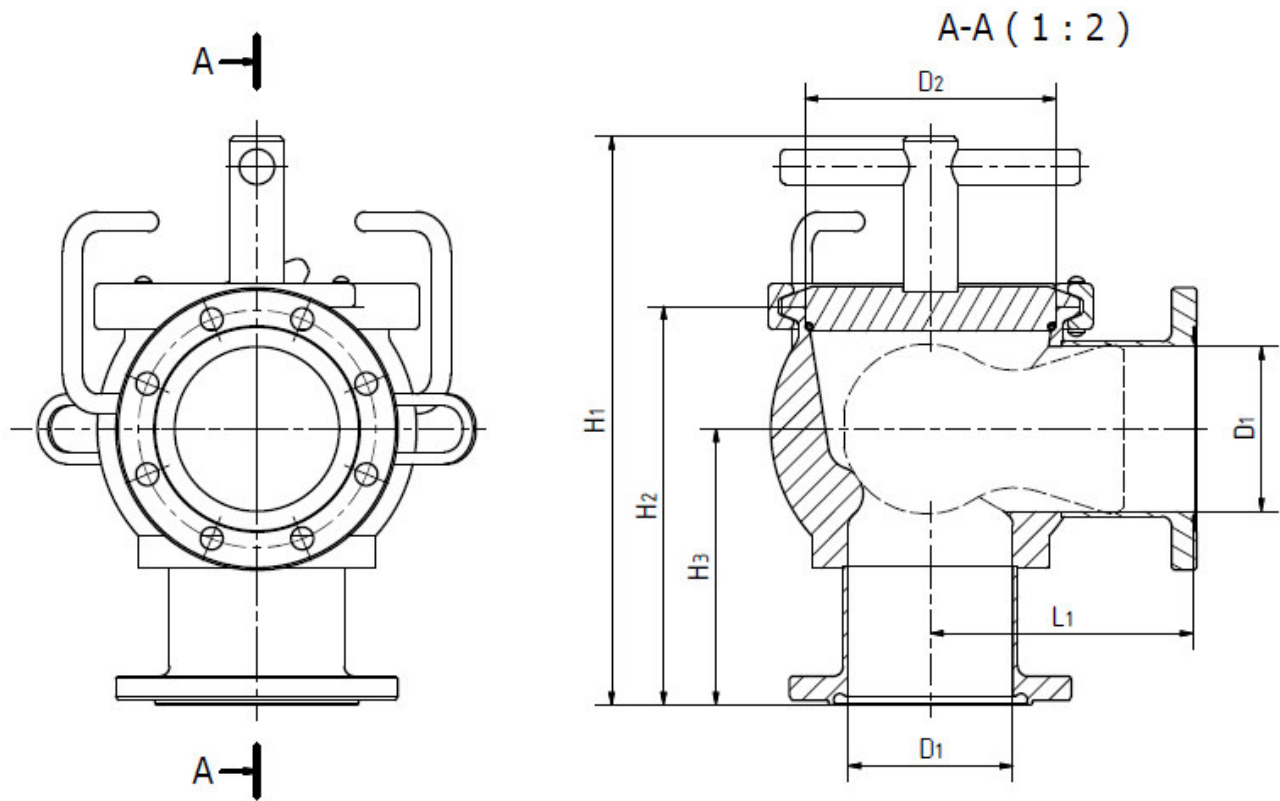


Fig. 4-3: Pigging station ISO with connection flange DIN11864-2

DN ISO	D1	D2	H1	H2	H3	L1
25	29.7	44.5	150	105	72.5	62.5
40	44.3	81.5	180	122	83.5	87.5
50	56.3	100.5	228	154	104.5	106
65	72.1	100.5	244	169	116.5	108.5
80	84.3	125.5	256	182	116.5	125
100	109.7	150.5	285	211	130.5	137.5

4.4.1.4 Pipe Standard SMS

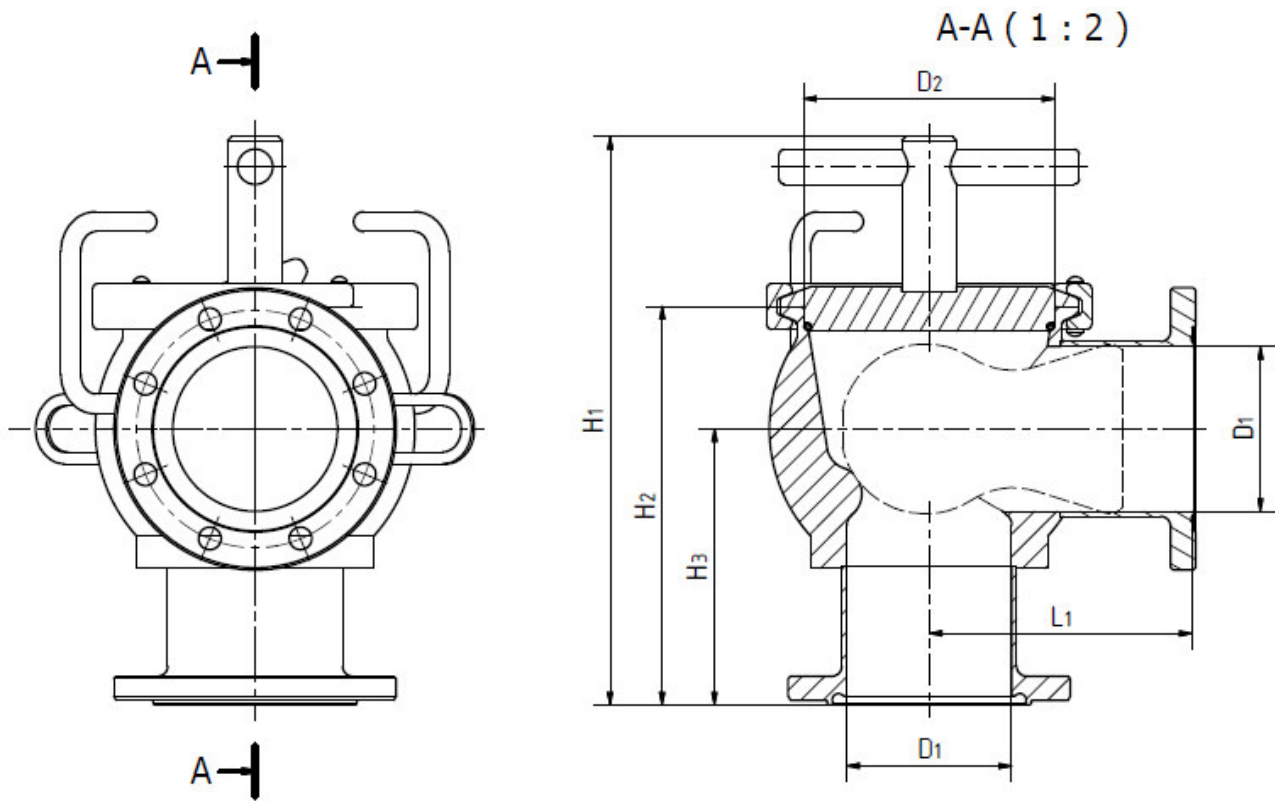


Fig. 4-4: Pigging station SMS with connection flange similar to DIN11864-2

SMS	D1	D2	H1	H2	H3	L1
25	22.5	44.5	145	100	67.5	64.5
38	35.5	66.5	172	114	78.5	80.5
51	48.5	81.5	190	132	89.5	88.5
63	60.5	100.5	235	161	111.5	107
76	72.9	125.5	254	180	114.5	126.5

5 Installation

5.1 Scope of Delivery



The detailed scope of delivery can also be found in the order confirmation.

5.2 Transport and Packaging

AWH products are carefully checked and packed before shipping. However, it is still possible for the product to become damaged during transport.



CAUTION



When setting down the packaging, there is a risk of minor injury being caused by crushing.

- When transporting the packaging, proceed with particular care.
- Wear safety shoes and protective gloves.

5.2.1 Delivery (Including for Spare and Replacement Parts)

Unpacking

- Remove the protective caps from the pipe connections (where applicable).
- Remove the remaining packaging.

Incoming Goods Inspection

- Check the product against the delivery note to ensure that it has been delivered in complete form.

In the Event of Damage

- Check the delivery for damage (visual inspection).

In the Event of Complaints

If the delivery has been damaged during transport:

- Contact the last shipping agent immediately.
- Retain the packaging (for possible inspection by the shipping agent or for return delivery).

Packaging for Return Delivery

If possible, use the original packaging and the original packaging material. If neither is available any more, request a packaging company with specialist personnel. Consult AWH if you have any questions regarding packaging and transport safety.

5.2.2 Temporary Storage

Storage in a closed room

Storage conditions:

- Temperature: +10 °C – +45 °C/+50 °F – +113 °F
- Humidity: < 60%

5.3 Installation



The fitting is installed in accordance with the structural layout of the pipe system and the technical data for the connection variants (see section 4.4). The installation position corresponds to the illustrated depiction.

See the dimensional drawings for the installation dimensions. Make sure sufficient space is available for operation and maintenance (1 m around the fitting).



WARNING

Risk of serious injury due to leaking pipe connections!

- The fitting may be installed only by an expert.
- Make sure that the flange connections and pipe connections do not have any leaks.
- After installation, tensile and compressive stress must be ruled out.

ATEX



WARNING



Risk of serious injury due to fire/explosion as a result of static charging!

- The fitting is not suitable for use in an explosive environment in the standard version.

5.3.1 Pigging Station Installation (Flange Connection)

When installing the fitting, ensure that the counter flange conforms to the same standard (e.g. DIN 11864). Correct pairing of the flange (groove flange and liner flange) is also required.

Before assembly, check the seal ring on the nut flange for damage and ensure that it is installed in the correct position. Replace if necessary.

NOTE

The threads must not be damaged during assembly!

The fitting is fastened using bolts and nuts and with the aid of suitable tools.

6 Disassembly/Assembly

WARNING

Risk of serious injury due to incorrect disassembly/assembly!

There is a risk of intoxication or chemical burns when using harmful or toxic media, or media which is hazardous in any other way!

- Disassembly should only be carried out by specialist personnel.
- Always adhere to the shutdown procedures before all installation, maintenance and repair work (see section 2.3.4).
- Wear work protective clothing, protective gloves and protective goggles when carrying out the work.
- If in doubt, contact a specialist company or AWH.

WARNING



Risk of burns due to hot media!

There is a risk of burning if flow media has temperatures over +60 °C/ +140 °F.

- Let the flow medium cool down prior to work.
- Empty the pipelines prior to assembly or disassembly work.

WARNING



Danger of exposure of sensitive devices to strong magnetic fields!

Pigs are equipped with strong magnets for detectability. The function of sensitive electrical devices (e.g. cardiac pacemakers) could become impaired or destroyed as a result.

- Keep sensitive devices away from pigs.
- Personnel who depend on such devices should maintain a safety distance of at least one meter.

6.1 Pig Station with Flange Connection (Standard Design)

6.1.1 Structure

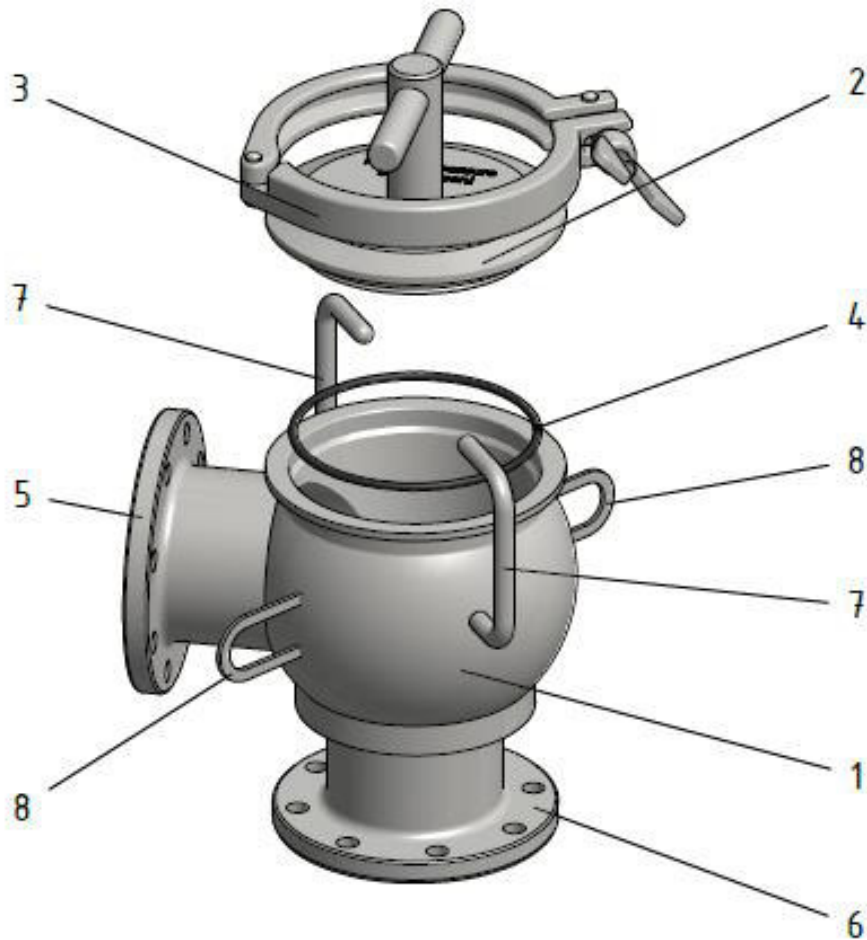


Fig. 6-1: Structure of pigging station with flange connection

- | | | | |
|---|---------------|---|----------------------------------|
| 1 | Housing | 5 | Connection flange (liner flange) |
| 2 | Housing cover | 6 | Connection flange (nut flange) |
| 3 | Sealing clamp | 7 | Securing bracket |
| 4 | O-ring | 8 | Holding plate (sensor) |

6.1.2 Removal from the Plant

When disassembling the fitting from the system, proceed as follows:

- Depressurize the pipe system.
- Drain the pipe system.
- Disconnect the electrical connections to sensors (if present).
- Loosen the wing nut on the sealing clamp (Fig. 6-1, Item 3).
- Remove the sealing clamp (Fig. 6-1, Item 3).
- Remove the housing cover (Fig. 6-1, Item 2).
- Disconnect the flange connections (Fig. 6-1, Item 5, Item 6).
- Remove the pigging station from the pipe system.

NOTE

Proceed carefully and meticulously to avoid damage.

6.1.3 Assembly with Gasket Replacement

For assembly with gasket replacement, proceed as follows:

- Clean the installation space on the housing (Fig. 6-1, Item 1) and check for any damage.
- Clean the installation spaces and flange connections (Fig. 6-1, Item 5, Item 6) on the housing (Fig. 6-1, Item 1) and check for any damage.
- Clean the installation spaces of the counter flange on the pipe system and check for any damage.
- Insert the O-rings of the flange connections
- Insert the housing (Fig. 6-1, Item 1) and ensure the flange connections with secure screw-fastening.
- Check the gasket (Fig. 6-1, Item 4) for damage.
- Clean the installation space on the housing cover (Fig. 6-1, Item 2) and check for any damage.
- Insert the O-ring (Fig. 6-1, Item 4) into the installation space on the housing cover (Fig. 6-1, Item 2) and lubricate the gasket (Fig. 6-1, Item 4) with approved grease (Unisilikon 641, e.g. from Klüber).
- Insert the housing cover (Fig. 6-1, Item 2) into the housing (Fig. 6-1, Item 1).
- Fasten the housing cover (Fig. 6-1, Item 2) with the sealing clamp (Fig. 6-1, Item 3).
- Connect the electrical connections to sensors (if present)
- Perform a leak test under operating conditions.

NOTE

Proceed carefully and meticulously to avoid damage. During assembly, gaskets must not move out of their installation spaces and must remain in the positions specified for them.

Install the components of the fitting in such a way that they are not subjected to tension.

NOTE

If leaks appear after installation, then you must remove the fitting and carefully remount it once again.

If in doubt, contact AWH.

6.2 Attaching and Adjusting the Pig Detection (Optimal)

6.2.1 Structure of the Pig Detection

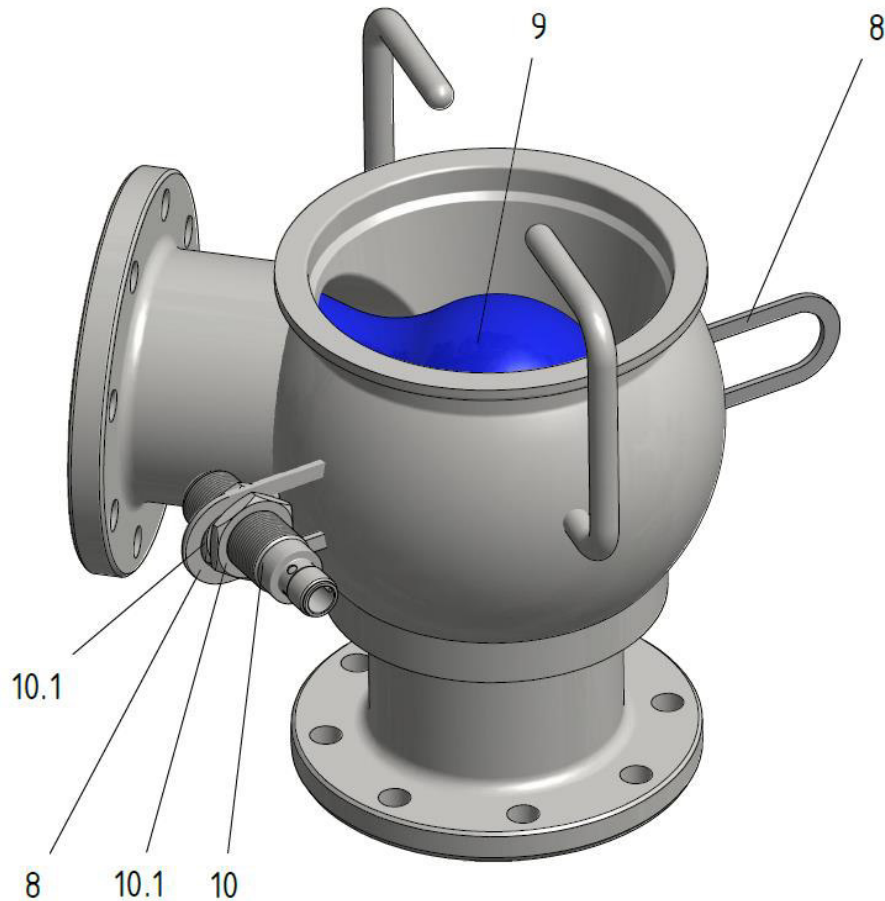


Fig. 6-2: Pigging station with pig detection

8	Holding plate
9	Pig
10	Sensor
10.1	Fastening nut

NOTE

Use only AWH pigs or pigs approved by AWH for operation.

6.2.2 Attaching and Adjusting the Pig Detection

To assemble the pig detection, proceed as follows:

- Insert a pig (Fig. 6-2, Item 9) into the pigging station.
- Remove one of the two fastening nuts (Fig. 6-2, Item 10.1)
- Insert the sensor (Fig. 6-2, Item 10) through the holding plate (Fig. 6-2, Item 8)
- Fasten the sensor (Fig. 6-2, Item 10) through the previously removed fastening nut (Fig. 6-2, Item 10.1).
- Use axial and radial shifting of the sensor (Fig. 6-2, Item 10) to set up the largest possible sensor coverage area.
- Secure the sensor (Fig. 6-2, Item 10) using firm tightening of the fastening nuts (Fig. 6-2, Item 10.1)
- Use a second sensor if required

7 Operation

WARNING

Risk of serious injury due to incorrect operation!

There is a risk of intoxication or chemical burns when using harmful or toxic media, or media which is hazardous in any other way!

- Work should only be carried out by specialist personnel.
- Always adhere to the switch-off procedure prior to operation (see section 2.3.4).
- Wear work protective clothing, protective gloves and protective goggles when carrying out the work.

WARNING

Danger caused by pressurized pipe systems!



This pig is an essential part of the pipe system. There is a risk of fingers and hands being crushed when system pressure is in effect and the fastener is used to open the cover.

- Depressurize the pipe system before performing any work on the fitting.

WARNING



Risk of burns due to hot media!

There is a risk of burning if flow media has temperatures over +60 °C/ +140 °F.

- Let the flow medium cool down prior to work.

WARNING



Danger of exposure of sensitive devices to strong magnetic fields!

Pigs are equipped with strong magnets for detectability. The function of sensitive electrical devices (e.g. cardiac pacemakers) could become impaired or destroyed as a result.

- Keep sensitive devices away from pigs.
- Personnel who depend on such devices should maintain a safety distance of at least one meter.

CAUTION



Risk of minor injury due to crushing.

There is a risk of crushing between individual components during cleaning, maintenance or repair work.

- Proceed with particular care with this type of work.

7.1 Inserting the Pig

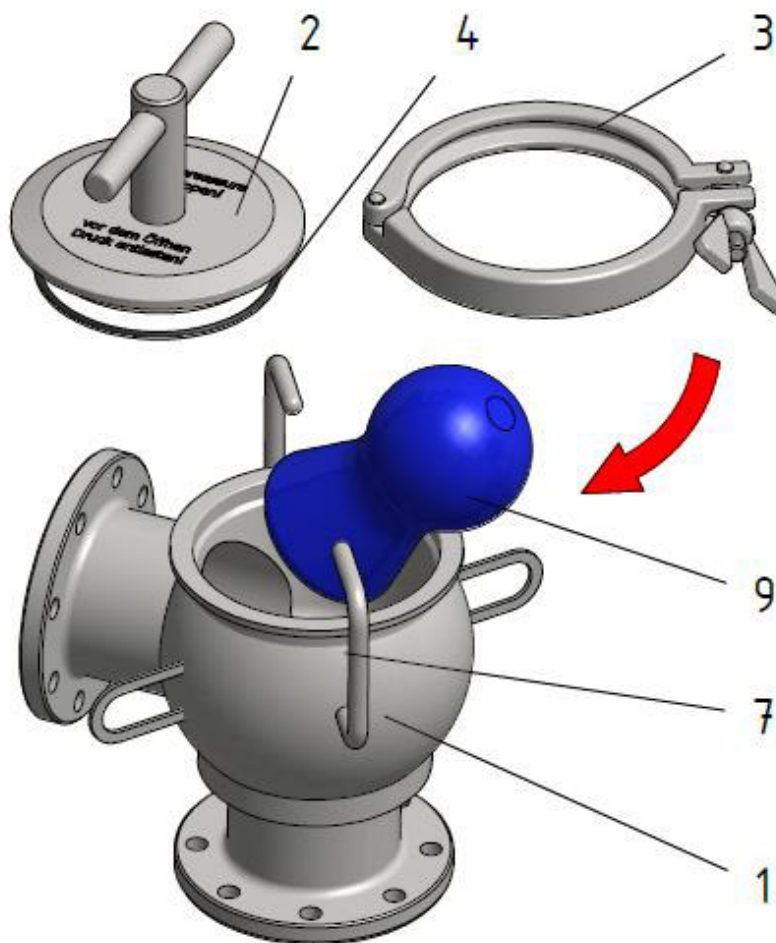


Fig 7-1.: Inserting the pig

- | | | | |
|---|---------------|---|------------------|
| 1 | Housing | 4 | O-ring |
| 2 | Housing cover | 7 | Securing bracket |
| 3 | Sealing clamp | 9 | Pig |

To insert the pig, proceed as follows:

- Release and remove the sealing clamp (Fig. 7-1, Item 3).
- Remove the cover (Fig. 7-1, Item 2) from the housing (Fig. 7-1, Item 1)
- Guide the pig (Fig. 7-1, Item 9) through the securing bracket (Fig. 7-1, Item 7) into the pipeline and up to the stop at the lower end of the housing (Fig. 7-1, Item 1)
- Clean the installation space on the housing (Fig. 7-1, Item 1) and check for any damage
- Clean and check the O-ring (Fig. 7-1, Item 4) for damage and lubricate the gasket with approved grease (Unisilikon 641, e.g. from Klüber)
- Close the housing (Fig. 7-1, Item 1) with the cover (Fig. 7-1, Item 2)
- Secure the cover (Fig. 7-1, Item 2) with the sealing clamp (Fig. 7-1, Item 3) by screwing tightly

NOTE

Proceed carefully and meticulously to avoid damage. During assembly, gaskets must not move out of their installation spaces and must remain in the positions specified for them.

Install the components of the fitting in such a way that they are not subjected to tension.

NOTE

Use only AWH pigs or pigs approved by AWH for operation.

7.2 Remove pig

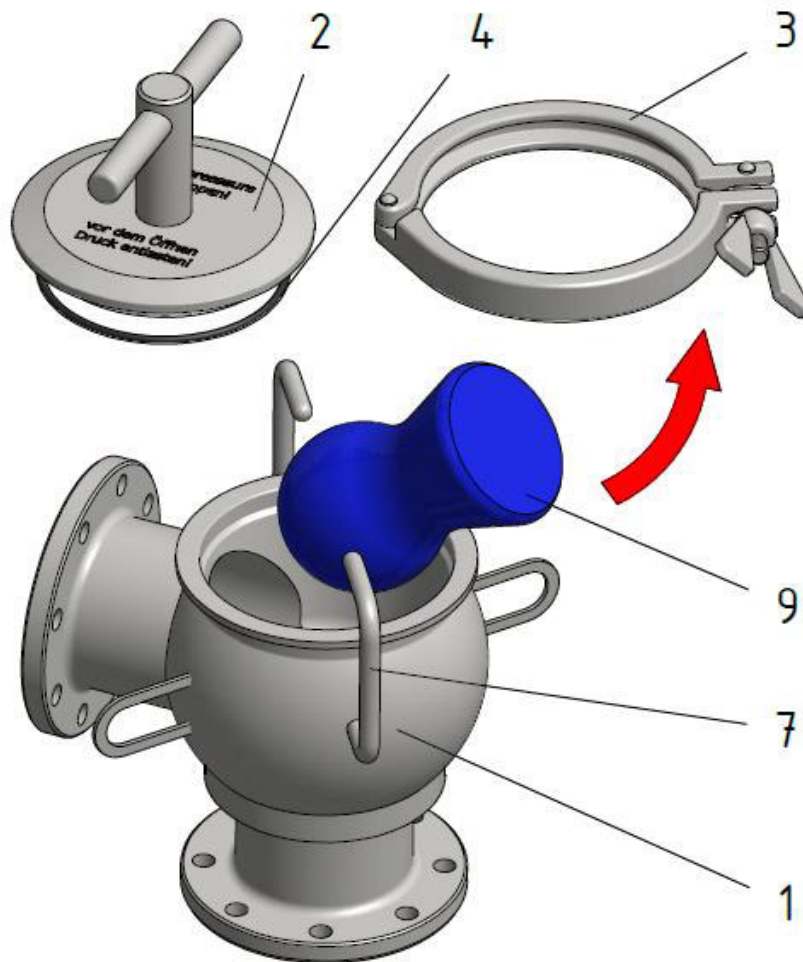


Fig 7-2: Remove pig

- | | |
|-----------------|--------------------|
| 1 Housing | 4 O-ring |
| 2 Housing cover | 7 Securing bracket |
| 3 Sealing clamp | 9 Pig |

To remove the pig, proceed as follows:

- Release and remove the sealing clamp (Fig. 7-2, Item 3).
- Remove the cover (Fig. 7-2, Item 2) from the housing (Fig. 7-2, Item 1)
- Remove the pig (Fig. 7-2, Item 9) along the securing bracket (Fig. 7-2, Item 7)
- Clean the installation space on the housing (Fig. 7-2, Item 1) and check for any damage
- Clean and check the O-ring (Fig. 7-2, Item 4) for damage and lubricate the gasket with approved grease (Unisilikon 641, e.g. from Klüber)
- Close the housing (Fig. 7-2, Item 1) with the cover (Fig. 7-2, Item 2)
- Secure the cover (Fig. 7-2, Item 2) with the sealing clamp (Fig. 7-2, Item 3) by screwing tightly

8 Maintenance / Cleaning

WARNING

Risk of serious injury due to incorrect maintenance!

There is a risk of intoxication or chemical burns when using harmful or toxic media, or media which is hazardous in any other way!

- Work should only be carried out by specialist personnel.
- Always adhere to the shutdown procedures before all cleaning, maintenance and repair work (see section 2.3.4).
- Wear work protective clothing, protective gloves and protective goggles when carrying out the work.
- If in doubt, contact AWH.

WARNING



Risk of burns due to hot media!

There is a risk of burning if flow media has temperatures over +60 °C/ +140 °F.

- Let the flow medium cool down prior to work.
- Empty the pipelines prior to cleaning, maintenance or repair work.

WARNING



Danger of exposure of sensitive devices to strong magnetic fields!

Pigs are equipped with strong magnets for detectability. The function of sensitive electrical devices (e.g. cardiac pacemakers) could become impaired or destroyed as a result.

- Keep sensitive devices away from pigs.
- Personnel who depend on such devices should maintain a safety distance of at least one meter.

CAUTION



Risk of minor injury due to crushing.

There is a risk of crushing between individual components during cleaning, maintenance or repair work.

- Proceed with particular care with this type of work.

8.1 Cleaning/Maintenance Intervals

- To ensure proper operation of the fitting, it must be cleaned and maintained at regular intervals. Define the cleaning interval depending on the operating environment and the type of flow medium used.
Define the inspection intervals for gaskets depending on the operating environment and the type of flow medium used.

NOTE

Pigs:

Pigs are also subject to wear and lose their ability to function when their wear limit is reached. Therefore, carry out inspections and maintenance at regular intervals on the pigs as well.

- The fitting is subject to vibrations during operation, which can loosen the screwed and clamp connections. To prevent damage, check the fitting for loose connections at regular intervals (recommended interval for single-shift operation: 3 months).



Refer to the relevant manufacturer's instructions for details on cleaning and maintenance work for supplier components.

8.2 Notes on Cleaning



WARNING



Risk of injury due to incorrect handling of cleaning agents!

- Store the cleaning agents in accordance with the relevant safety guidelines.
- When handling cleaning agents, follow the safety instructions on the cleaning agent manufacturer's data sheet.
- Always wear rubber gloves and protective goggles when cleaning.
- Take care not to touch the fitting or pipeline when processing hot media or during the sterilization process.

Cleaning takes place in installed and closed condition by simply washing the surfaces that come into contact with the media (CIP cleaning) while no pig is inserted.

Cleaning media:	3% nitric acid	max. +60 °C/ +140 °F
	3% caustic soda	max. +80 °C/ +176 °F

Please observe the following:

- Use only clean and chlorine-free water.
- Measure the quantities carefully to avoid overly strong concentrations of cleaning agent.
- Rinse with plenty of clean water after cleaning.

The pig is cleaned while outside the system.

8.3 Spare Parts Stock/Customer Service

When requesting spare parts, always specify the type of fitting.

The following details are important for all spare part requests or questions:

- Nominal width
- Sealing material
- Housing material
- Connection type (DIN 11851, DIN 11864, welding, etc.)
- Accessories (pig detection, etc.)



*Use only genuine spare parts, since only these will guarantee perfect functioning.
Contact AWH directly for spare parts and associated spare parts numbers.*

Customer Service



For technical questions or spare part requests, you can contact the Customer Service department as follows:

AWH Product Recovery Technology

Telephone +49 39405 92-422

Fax +49 39405 92-111

E-mail productrecovery@awh.eu

Internet <http://www.awh.eu>

9 Faults

9.1 Safety Instructions



WARNING

Risk of serious injury due to incorrectly performed repair work!

There is a risk of intoxication or chemical burns when using harmful or toxic media, or media which is hazardous in any other way!

- Troubleshooting work should be carried out only by specialist personnel.
- Always adhere to the shutdown procedures prior to repair work (see section 2.3.4).
- Wear work protective clothing, protective gloves and protective goggles when carrying out the work.
- If in doubt, contact AWH.



WARNING



Risk of burns due to hot media!

There is a risk of burning if flow media has temperatures over +60 °C/ +140 °F.

- Let the flow medium cool down prior to work.
- Empty the pipelines prior to repair work.



WARNING



Danger of exposure of sensitive devices to strong magnetic fields!

Pigs are equipped with strong magnets for detectability. The function of sensitive electrical devices (e.g. cardiac pacemakers) could become impaired or destroyed as a result.

- Keep sensitive devices away from pigs.
- Personnel who depend on such devices should maintain a safety distance of at least one meter.

9.2 Faults and Remedial Action

Fault	Cause	Remedy
Pig does not move when pigging process is initiated	Drive media pressure missing	Switch on the drive medium
	Media drain blocked	Open the outlet valve
	Pig inserted incorrectly	Check pig position
	Pig does not seal (worn)	Replace pig
	Pig does not seal / cannot be inserted	Check pig size
Cover jumps open and cannot be opened	System pressure is in effect	Depressurize the system
Cover cannot be inserted	Foreign objects in cover seat/cover fitting	Clean housing and cover
	Cover seat/cover fitting damaged	Replace cover
Cover leaking	Gasket not in incorrect position	Check installation position
	Gasket faulty	Replace gasket
	Sealing clamp not screwed tight	Check sealing clamp
Housing leaking	Seal rings in incorrect position	Check installation position
	Seal rings defective or worn	Replace seal rings
	Flange connections not screwed tight	Check screw connections

9.3 What to Do in Case of an Emergency

- Activate the emergency stop function on the higher-level plant (for example, by pressing the emergency stop switch).
- Shut off the media supply.

10 Disassembly/Disposal

10.1 Disassembly

WARNING

Risk of serious injury due to incorrect disassembly!

There is a risk of intoxication or chemical burns when using harmful or toxic media, or media which is hazardous in any other way!

- Disassembly work should be carried out only by specialist personnel.
- Always adhere to the switch-off procedure prior to disassembly work (see section 2.3.4).
- Wear work protective clothing, protective gloves and protective goggles when carrying out the work.
- If in doubt, contact AWH.

WARNING



Risk of burns due to hot media!

There is a risk of burning if flow media has temperatures over +60 °C/ +140 °F.

- Let the flow medium cool down prior to work.
- Drain the pipelines prior to disassembly work.

WARNING



Danger of exposure of sensitive devices to strong magnetic fields!

Pigs are equipped with strong magnets for detectability. The function of sensitive electrical devices (e.g. cardiac pacemakers) could become impaired or destroyed as a result.

- Keep sensitive devices away from pigs.
- Personnel who depend on such devices should maintain a safety distance of at least one meter.

10.2 Disposal

NOTE



The fitting is mainly made of stainless steel, and should be disposed of in accordance with the applicable local environmental regulations.

Oils and cleaning agents must be disposed of in accordance with local regulations and the information in the cleaning agent manufacturer's safety data sheets.

Contaminated cleaning tools (such as brushes, cloths etc.) must be disposed of in accordance with the manufacturer's specifications.

Packaging material must be disposed of in accordance with the environmental regulations and recycled.

11 Declarations

Declarations for Fittings pursuant to the Pressure Equipment Directive 2014/68/EU

Fittings that fall within the scope of Directive 2014/68/EC receive an EU Declaration of Conformity and a CE mark pursuant to said Directive.

Fittings that fall under Article 4, Paragraph 3 do not receive an EU Declaration of Conformity or a CE mark pursuant to said Directive.

Declarations for Fittings pursuant to the Machinery Directive 2006/42/EC

Fittings that fall within the scope of Directive 2006/42/EC are items of incomplete machinery, and receive a declaration for incorporation but no CE mark, as per said Directive.

11.1 Pigging station, manual

Armaturenwerk Hötensleben GmbH
Schulstraße 5-6
39393 Hötensleben, Germany

Declaration

In accordance with the

EC Pressure Equipment Directive 2014/68/EU

We hereby declare that the design of

Name: Pigging station, manual
Type: DN 25 - DN 100 / PN10
DN 1" - 4" / PN10
DN 25 ISO - DN 100 ISO / PN10
SMS 25 - SMS 76, DN 100 / PN10 (SMS FR)

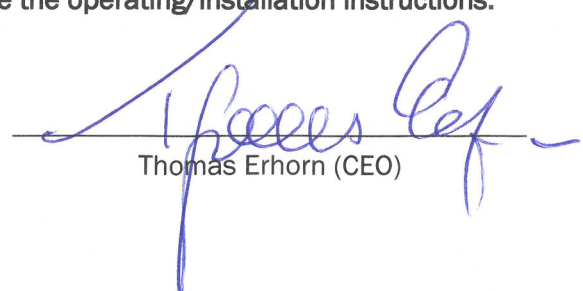
is consistent with the following directives and standards in its delivered version:

Directive/Standard	Title	Version	Comments
2014/68/EU	EU Pressure Equipment Directive	05/2014	
DIN EN 12516-2	Industrial valves - shell design strength - Part 2: Calculation method for pressurized shells of steel fittings	10/2004	
AD 2000 information sheets	Regulations for pressure vessels (national standards)		
The fittings are designed for fluids in fluid group 1 and for gases in fluid group 2. The specified nominal widths are classified in accordance with Article 4, Paragraph 3.			

If any modifications are made to the fitting without our agreement, this declaration shall become void.

Commissioning is prohibited until it is determined that the overall plant fulfills the provisions of the directives. For information about proper use of the fittings, see the operating/installation instructions.

Hötensleben, Germany, on 6. November 2019



Thomas Erhorn (CEO)

Person authorized to compile the technical documentation:

Armaturenwerk Hötensleben GmbH

Mr. Prost, Schulstr. 5/6, 39393 Hötensleben, Germany

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