

INSTALLATION AND OPERATING MANUAL



EB 28k

Translation of the original manual



BR 28k head station • DIN and ANSI version
to combine with actuators and manual gears,
for use in pig-enabled pipes

July 2024 edition



Note regarding this installation and operating manual

This Installation and Operating Manual (EB) provides guidance for safe assembly and operation.

The notes and instructions in this EB are binding when handling PFEIFFER devices. The figures and illustrations in this EB are examples and must therefore be considered as such.

- ⇒ For safe and correct use, read this EB carefully prior to use and keep it for later reference.
- ⇒ In the case of questions that go beyond the scope of this EB, please contact the After Sales Service at PFEIFFER Chemie-Armaturenbau GmbH.
- ⇒ This manual only applies to the head station itself, the respective additional manual applies for the mounted gear.

Definition of signal words

DANGER

Hazardous situations that lead to death or serious injuries

WARNING

Situations that can lead to death or serious injuries

NOTE

Property damage and malfunctions

Info

Additional information

Tip

Recommended action

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1 Safety instructions and safety measures

Intended use

The **BR 28k** head station consists of a pipe, fitted with the required connections for the pig control, a **BR 28e** pig loading ball valve with blind hole and a **BR 28y** piggable ball valve as the head station's shut-off element.

The **BR 28e** pig loading ball valve is manually operated and the piggable ball valve is manually operated or in combination with an actuator for the input or output of pigs in a pig pipe system.

- The head station is designed for precisely defined conditions (e.g. operating pressure, medium used, temperature).

Therefore the operator must make sure that the head station is only used when the conditions of use comply with the design criteria defined in the order.

If the operator would like to use the head station in other applications or environments, they must contact PFEIFFER.

- The head station is only intended for use, after installation in a pig pipe system and after connecting a drive to the control, to input and output the pig within the permitted pressure and temperature limits in the system.
- The data sheet contains the permissible pressure and temperature range for this head station, see ► TB 28k.
- Further relevant data are provided in the data sheets of the ► TB 28e pig loading ball valve and the ► TB 28y piggable ball valve.
- The same safety regulations for the pipe system they are installed in also apply for head stations.

This manual only provides safety instructions that are to be observed additionally for head stations.

- It is assumed that this chapter is observed when using the valve as intended.

Reasonably foreseeable erroneous use and unintended use

The head station is not suited for the following areas of use:

- Use outside of the technical data and the limits defined by the design.
- Use outside of the limited defined by the peripheral devices installed on the head station.

Furthermore, the following activities are considered unintended use:

- Use of third-party spare parts.
- Performance of maintenance and repair work that is not described.

Qualification of operating personnel

The ball valve may only be disassembled, dismantled, assembled and commissioned by qualified specialist personnel trained in pressurised pipes and piggable pipes who are familiar with the assembly, commissioning and operation of this product.

- Specialist personnel in terms of this installation and operating manual are persons who, on the basis of their vocational education, knowledge and experience and knowledge of the relevant standards, are capable of evaluating the assigned tasks and identifying possible hazards.

Personal protective equipment

Depending on the medium used, PFEIFFER recommends the following protective equipment:

- Protective garments, protective gloves and eye protection when using hot, cold, aggressive and/or corrosive media.
- Hearing protection when working in the vicinity of the head station.
- Request additional protective equipment from the plant operator.

Prohibition of modifications

Changes to the head station are not permitted without consulting PFEIFFER. Non-compliance invalidates the product guarantee. PFEIFFER shall not be held liable for any resulting property damage or personal injury.

Protective devices

- Automation of the **BR 28e** pig loading ball valve must always be prevented for safety reasons!
- In the case of a power supply failure, the automated **BR 28y** piggable ball valve automatically switches to a certain fail-safe position, see fail-safe positions in chapter "3 Design and principle of operation".
The fail-safe position corresponds to the effective direction and is indicated on the type plate of PFEIFFER actuators, see the actuator documentation.
- The valve is to be included in the equipotential bonding of the plant.

Warning of residual risks

To prevent personal injury or property damage, the operator and operating personnel must use suitable measures to prevent the hazards that can result from the flow medium and operating pressure as well as moving parts of the head station.

- Therefore, the operator and operating personnel must observe all the hazard information, warning information and information in this installation and operating manual.

Obligation of the operator to exercise diligence

The operator is responsible for proper operation as well as compliance with the safety regulations.

- The operator is responsible for providing operating personnel with this installation and operating manual as well as the applicable documents and to provide instructions on proper operation.
- Furthermore, the operator must ensure that operating personnel and third parties are not endangered.

It is not the responsibility of PFEIFFER and therefore when using the head station ensure that:

- The head station is only used as intended as described in this chapter.
- The pipe system has been properly installed and is regularly checked.

The wall thickness of the head station body is measured such that an additional load of the usual magnitude is taken into account for a pipe system installed properly in this way.
- The head station is connected properly to these systems.
- The customary flow rates in continuous operation are not exceeded in this pipe system.
- PFEIFFER shall be contacted in the case of abnormal operating conditions, such as vibrations, hydraulic shocks, cavitation and also small amounts of solid matter in the medium, especially abrasive matter.

Obligation of operating personnel to exercise diligence

Operating personnel must be familiar with this installation and operating manual and the applicable documents and comply with the indicated hazard information, warning information and other information. Furthermore, operating personnel must be familiar with the applicable regulations concerning occupational safety and accident prevention and observe them.

Applicable standards and directives

- The ball valves fulfil the requirements of the European Pressure Equipment Directive 2014/68/EU. In the case of ball valves provided with a CE marking, the Declaration of Conformity provides information about the conformity assessment procedure that was used. The corresponding declarations of conformity are available in the Annex of this EB, see chapter "14 Certificates".
- According to an ignition hazard assessment according to DIN EN ISO 80079-36, PFEIFFER ball valves do not have any own potential ignition sources and therefore are not subject to Directive 2014/34/EU. CE marking based on this standard is not permitted. The inclusion of valves in the equipotential bonding of a plant applies independently of the directive for all metal parts in potentially explosive areas.

Applicable documents

- BR 28k head station
 - Data sheet for ► TB 28k
 - Safety manual for ► SH 28k
- BR 28e pig loading ball valve
 - Data sheet for ► TB 28e
 - Installation and operating manual for ► EB 28e
- BR 28y piggable ball valve
 - Data sheet for ► TB 28y
 - Installation and operating manual for ► EB 28y
 - Safety manual for ► SH 28y
- Control Unit BR 28s
 - Data sheet for ► TB 28s
 - Installation and operating manual for ► EB 28s

1.1 Notes regarding possible severe personnel injury

DANGER

Hazards and ineffectiveness of the warranty!

In the case of non-compliance with the following hazard and warning information, hazards may arise and the warranty provided by PFEIFFER may become invalid.

- ⇒ Observe the following hazards and warning information.
- ⇒ Contact PFEIFFER in the case of questions:

Hazards and damage due to unsuitable head stations!

Head stations whose permissible pressure/temperature range (= "rating") is not sufficient for the operating conditions can pose a danger to the user and cause damage to the pipe system.

- ⇒ Only operate head stations whose permissible pressure/temperature range (= "rating") is sufficient for the operating conditions, see the data sheet ► TB 28k.

Risk of bursting of the pressure equipment!

Head stations and pipes are pressure equipment. Improper opening can cause the bursting of components.

- ⇒ Observe the maximum permissible pressure for the head station and plant.
- ⇒ Before working on the head station, depressurise the concerned plant parts and the head station.
- ⇒ Before removing the head station from the pipe, completely release the pressure in the pipe so that the medium does not escape uncontrolled from the pipe.
- ⇒ Bring the ball valves into the open position so the pressure is released from the ball.
- ⇒ Empty the medium from the concerned plant parts and head station. (Wear protective equipment).

1.2 Notes regarding possible personnel injury

WARNING

Danger of injury during the switching operation if performing test runs on ball valves not installed in the pipe!

- ⇒ Do not reach into the head station. This can result in serious injuries.

Danger of crushing due to moving parts!

The head station contains moving parts (switching shaft and hand lever) that can lead to crushing if reaching into it.

- ⇒ Do not reach into the bracket during operation.
- ⇒ When working on the head station, interrupt and lock pneumatic energy and the control signal.

Danger of burning due to hot or cold components and pipes!

Depending on the utilised medium, components and pipes can become very hot or very cold and cause burns upon contact.

- ⇒ The head stations must be protected against contact in the case of operating temperatures $>+50^{\circ}\text{C}$ or $<-20^{\circ}\text{C}$ together with the pipe connections.

! WARNING**Danger of injury due to venting the actuator!**

During operation, when regulating or opening and closing the head station, the actuator can be ventilated.

- ⇒ Install the head station such that the actuator does not ventilate at eye level.
- ⇒ Use suitable silencers and plugs.
- ⇒ Wear eye protection when working near the valves and hearing protection as required.

Danger of injury due to preloaded springs!

Head stations that are equipped with preloaded actuator springs are under mechanical tension.

- ⇒ Before working on the actuator, release the compression from the preloaded springs, see the corresponding actuator documentation.

Danger of injury due to residual medium in the head station!

When a head station must be removed from a pipe, medium can escape from the pipe or the ball valve.

- ⇒ In the case of media that is harmful to health or hazardous, the pipe must be completely emptied before a head station can be removed.
- ⇒ Pay attention to the afterflow of residuals or residuals that remain in dead spots.

Danger of injury due to the releasing of head station screw connections!

If the screw connections of the individual components or the body screw connections must be released, medium can escape from the head station.

- ⇒ The screw connections on the connection of the body parts may only be released or loosened after the head station has been removed.
- ⇒ During reassembly, tighten the screws of the components according to Table 15-1 in Chapter "15.1.1 Tightening torques" using a torque wrench.
- ⇒ The body sections and stuffing box flange as well as possibly installed packing bearings and bearing journals are screwed in accordance with the details in Chapter "15.1.1 Tightening torques" of the respective installation and operating manual, see ► EB 28e and ► EB 28y.

Dangers due to incorrect head stations use!

The incorrect use of the head station can represent a hazard for the user and cause damage to the pipe system that are then no longer the responsibility of PFEIFFER.

- ⇒ The material selected for the parts of the head station that come into contact with the media must be suitable for the utilised media, pressures and temperatures.

Dangers due to use of wrong pig!

Use of incorrect pigs can pose a danger to the user and cause damage to the pipe system.

The head station has been adjusted in shape and size to the used pigs in accordance with the customer's details.

- ⇒ If other pigs are used, have them checked and approved by PFEIFFER.

! WARNING**Dangers due to use as an end fitting!**

During normal operation, in particular with hot and/or hazardous media, spraying medium can cause hazards. It must be kept in mind that the media is usually hazardous!

- ⇒ On the free connecting pieces the end station must be secured against unauthorised actuation.
- ⇒ If a pig loading ball valve used as an end fitting in a pressurised line is actuated, this may only be done with extreme caution so that the escaping medium does not cause any damage.

1.3 Notes regarding possible property damage

! NOTE**Damage to the head station due to contamination!**

Contamination (e.g. solid particles) in the pipes can damage the head station.

- ⇒ The plant operator is responsible for cleaning the pipes in the plant.
- ⇒ Rinse the pipes prior to commissioning.
- ⇒ Observe the maximum permissible pressure for the head station and plant.

Damage to the head station due to unsuitable medium properties!

The head station is designed for a medium with certain properties. Other media can damage the head station.

- ⇒ Only use a medium that meets the design criteria.

Damage to the head station and leakage due to excessively high or low tightening torques!

The parts and components must be tightened with specific torques. Deviating torques can lead to head station leakage or damage.

- ⇒ Excessively tightened components are subject to increased wear.
- ⇒ Insufficiently tightened components can cause leakage.
- ⇒ Observe the tightening torques of the components, see Table 15-1 in Chapter "15.1.1 Tightening torques".
- ⇒ Observe the tightening torques of the body screws, see ► EB 28e and ► EB 28y.

Deviation of the breakaway and actuating forces due to non-actuation of the head station!

Depending on the period of time of non-actuation, the breakaway and actuation forces can deviate considerably from the actuating power data in the data sheets.

It is recommended the head station be actuated at regular intervals.

- ⇒ In consideration of the design, actuation must take place during the year.
- ⇒ Indicate the duration of non-actuation when making an enquiry, so that this condition is taken into consideration.

NOTE

Damage to the head station due to plant vibrations!

⇒ If necessary, secure hand-operated components of the head station in the case of plant vibrations with a locking device to prevent it from moving by itself.

Damage to the head station due to unsuitable tools!

Unsuitable tools can damage the head station.

⇒ Suitable tools are required to work on the head station, see Chapter "15.1.3 Tools".

Damage to the head station due to unsuitable lubricants!

Unsuitable lubricants can corrode and damage the surface.

⇒ The head station material requires suitable lubricants, see Chapter "15.1.2 Lubricants".

1.4 Warning notes on the device

Warning of moving parts

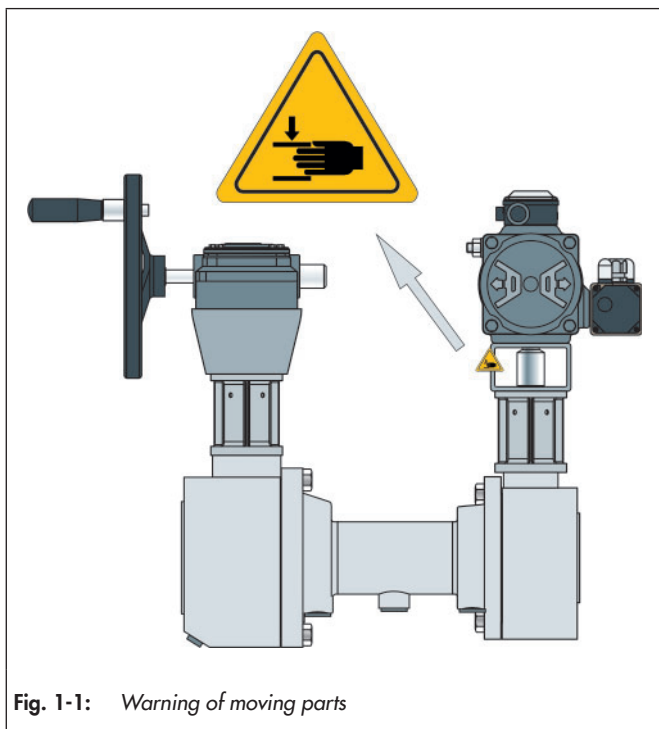


Fig. 1-1: Warning of moving parts

There is a danger of crushing due to the rotary movements of the actuator- and switching shaft when reaching into the bracket as long as the pneumatic power is connected to the actuator. A warning sign can be attached to the valve at the operator's request.

2 Markings on the device

Each head station usually has the following marking.

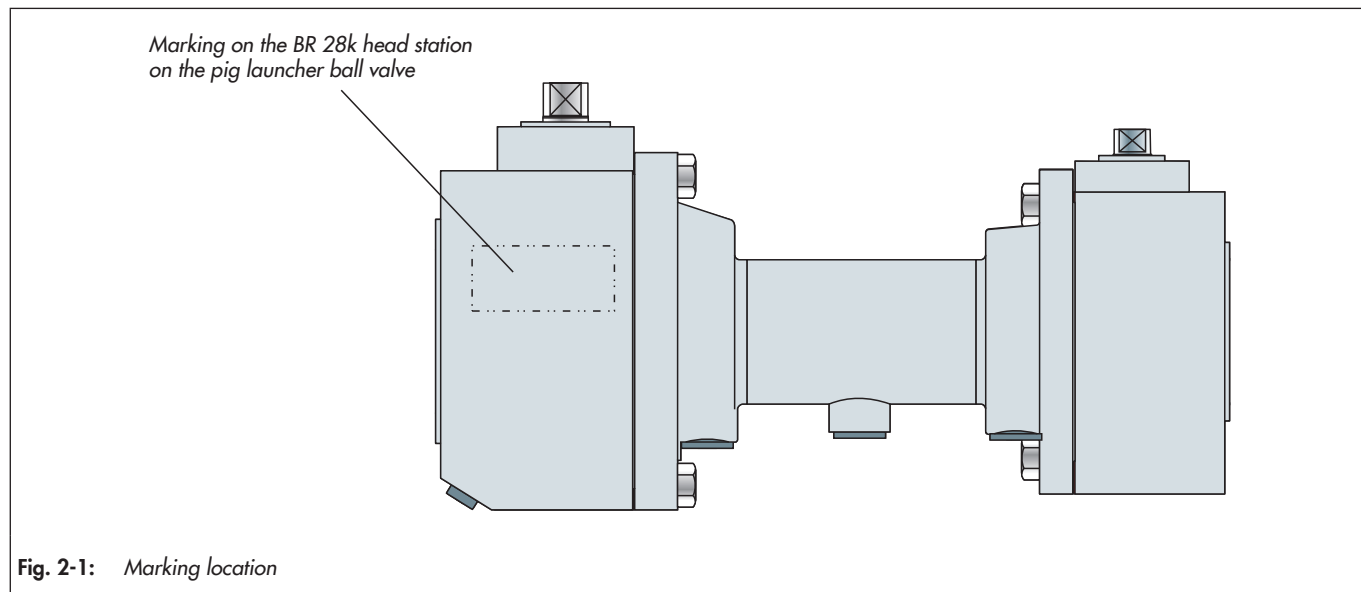
Table 2-1: Marking on the type plate and on the body of the head station

Item	For	Marking	Remark
1	Manufacturer	PFEIFFER	Address see chapter "1.5.3 Service"
2	Valve type	BR (and number value)	e.g. BR 28k = Series 28k, see the PFEIFFER catalogue
3	Body material	e.g. 1.4571	Material standard according to DIN EN 10272
4	Size	DN (and number value)	Number value in [mm], e.g. DN 100/ number value in [inches], e.g. NPS4
5	Maximum pressure	PN (and number value)	Number value in [bar], e.g. PN 40 / number value in [inches], e.g. c1 50 at room temperature
6	Max. permissible operating temperature	TS (and number value)	PS and TS are related values here at the max. permissible operating temperature with the max. permissible operating overpressure, see the Pressure-Temperature Diagram on the data sheet ▶ TB 28e
	Max. permissible operating pressure	PS (and number value)	
7	Test pressure	PT (and number value)	The test pressure must be observed depending on the device
8	Manufacturer number from 2018	e.g. 331234/001/001	33 1234 /001 /001
	Manufacturer number 2009 to 2017	e.g. 211234/001/001	21 1234 /001 /001
	Manufacturer number until 2008	e.g. 2071234/001/001	207 1234 /001 /001
9	Year of manufacture	e.g. 2023	Upon customer request, the year of manufacture can also be indicated on the ball valve
10	DataMatrix code		
11	Conformity	CE	Conformity is certified separately by PFEIFFER
	Code No.	0035	"Notified body" according to EU Directive = TÜV Rheinland Service GmbH
12	Flow direction	➔	Attention: see the note in Chapter "5.4 Installing the ball valve in the pipe"

i Info

Markings on the body and the type plate must be permanent so that the ball valve remains identifiable.

2.1 Marking Guidelines BR 28k



2.2 Material marking

The ball valves are marked on the body with material specification, see "Table 2-1". Marking on the type plate and on the body of the ball valve."

Further specifications can be requested from PFEIFFER.

3 Design and principle of operation

Properties

- Floating ball, i.e. both seat rings sealing or trunnion-mounted ball
- With disc springs, spring-loaded seat rings
- Control shaft seal with disc spring preloaded V-ring packing
- Anti-blowout control shaft
- Anti-static version with conductive shaft bearing
- Piggable flange in the ball valve's passage in accordance with DIN 2430-2 with projection. Not piggable flanges are designed in accordance with DIN EN 1092-1 with B1 sealing strip or according to customer-specific requests.
- Mounting flange for fittings in accordance with DIN ISO 5211

Versions

The valve fulfils the following functions in the various plant types:

- As head station in the **One/Two-pigging system**
- As head station in the **One-pigging system**

NOTE

Automation of the BR 28e pig loading ball valve must always be prevented for safety reasons!

Optional material combinations:

- Control shaft and ball on request
- Seat rings in PTFE compounds
- Sealing in graphite

Function and principle of operation

The BR 28k head station is integrated into a pigging pipe, to make the pigging easier.

The head station is at the beginning of a pig system and is used to lock the pig into the pipe and to launch it.

The pig is then sent back to the head station to lock it out.

A second head station can also be integrated at the end of the pipe for locking the pig out.

3.1 Variants

- With pig detector button with automated systems for mounting magnet-inductive pig sensors
- With pig buttons for manual detection
- Flushing function for pigs

3.2 Additional fittings

Insulation

The ball valves can be insulated to reduce the passage of heat energy. Observe the notes in Chapter "5 Assembly".

Test connection

The test connection can be used to detect the upper flange (e.g. G $\frac{1}{4}$ ") between the seat rings and the packing.

Grip protection

In the case of conditions of use that require a high level of safety (e. g. if the ball valve is freely accessible to untrained specialist personnel), PFEIFFER offers a safety guard to prevent the risk of crushing due to moving parts (switching shaft).

The risk assessment of the plant by the operator will indicate if the installation of this protective device is required for the safe operation of the ball valve in the plant.

3.3 Attachments

The following accessories are available for the valve either individually or in combinations:

- BR 28e pig loading ball valve
 - Hand lever (180°)
 - Manual gear (180°)
 - Shaft extension (100 mm standard)
 - Limit switch
 - Pig trap with/without cover
- BR 28y piggable ball valve
 - Hand lever (90°)
 - Manual gear (90°)
 - Shaft extension (100 mm standard)
 - Limit switch
 - Solenoid valves
 - Positioner
 - Filter - reducing station

Other additional equipment is possible according to specifications on request.

3.4 Technical data

The type plate of the head station offers information about the valve version, see Chapter "2 Markings on the device".

Info

- Detailed information is available on the data sheet ► TB 28k.
- The documentation for special BR 28k head stations that are not described in this chapter can be requested from PFEIFFER.

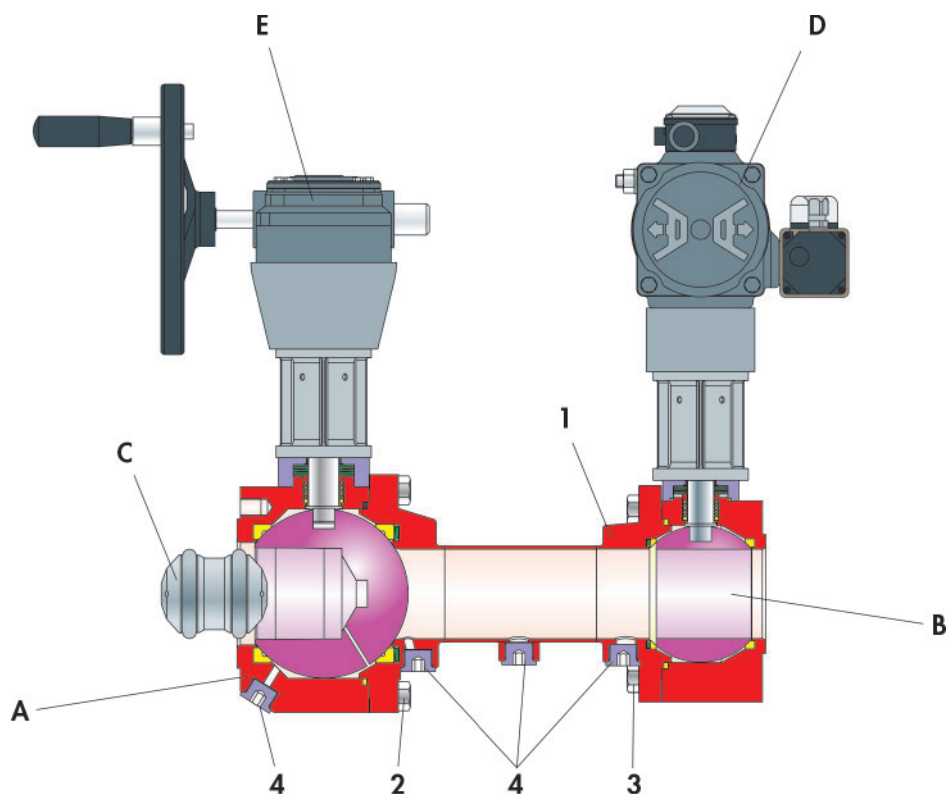


Fig. 3-1: Sectional drawing of the BR 28k head station

Table 3-1: Parts list

Item	Name ¹⁾	Accompanying documentation
1	Main body	-
2	Screw	-
3	Screw	-
4	Screw plug	-
A	BR 28e pig loading ball valve	Mounting and operating instructions for ► EB 28e
B	BR 28y piggable ball valve	Mounting and operating instructions for ► EB 28y
C	BR 28m pig (accessories)	Mounting and operating instructions for ► EB 28m
D	BR 31a quarter-turn actuator	Mounting and operating instructions for ► EB 31a
E	Hand lever or manual gear, 180°	Respective manufacturer documentation
Not marked	Control Unit BR 28s (required for head station control) and is connected at the respective connections (4).	Mounting and operating instructions for ► EB 28s

¹⁾ Further versions are possible on request

3.5 Head station assembly

Before assembly

To assemble the head station, all parts and components must be prepared, i.e. everything is carefully cleaned and placed on a soft mat (rubber mat or other).

Keep in mind that plastic parts are almost always very soft and very delicate, and in particular the sealing surfaces may not be damaged.

! NOTE

Damage due to cold welding of the screws in the body!

- ⇒ For head stations PFEIFFER recommends a heavy-duty grease paste, e.g. Gleitmo 805 from Fuchs.
- ⇒ Do not use this product for head stations with use of oxygen. A suitable lubricant must be selected for grease-free ball valves, especially for use with oxygen.

3.5.1 Preassembly of the pig loading ball valve

The **BR 28e** pig loading ball valve serves as the base for the component **(B)**.

This component is preassembled, apart from the side body, see ► EB 28e installation and operating manual, Chapter 3-5.

Observe the respective version here.

3.5.2 Preassembly of the piggable ball valve

The **BR 28y** piggable ball valve serves as the base for the component **(B)**.

This component is preassembled, apart from the side body, see ► EB 28e installation and operating manual, Chapter 3-5.

Observe the respective version here.

3.5.3 Head station assembly

i Info

The position and arrangement of the individual parts shown in Fig. 3-1 must be observed during assembly.

- ⇒ The main body (1), which resembles a pipe with flanges, is screwed with the components (A) and (B).
- ⇒ To screw the component (A), of the BR 28e pig launcher ball valve, with the main body (1) the screws (2) are tightened alternately and evenly.

i Info

The permissible torque for retightening the component (A) can be found in Table 15-1 in Chapter "15.1.1 Tightening torques".

- ⇒ To screw the component (B), of the BR 28y piggable ball valve, with the main body (1) the screws (3) are tightened alternately and evenly.

i Info

The permissible torque for retightening the component (B) can be found in Table 15-1 in Chapter "15.1.1 Tightening torques".

- ⇒ Where required carefully screw in screw plugs (4).

3.5.4 Fitting further components

Fitting further components, such as the actuator **(D)** or the manual gear **(E)**, to the head station is described in Chapter "5 Installation".

3.5.5 Locking the pig in and out

Locking the pig **(C)** in and out is described in Chapter "7 Operation".

4 Shipment and on-site transport

The work described in this chapter may only be performed by specialist personnel qualified to perform the corresponding task.

! NOTE

Damage to the head station due to improper transport and storage!

- ⇒ Head stations must be handled, transported and stored with care.

4.1 Accepting delivery

Perform the following steps after receiving the goods:

- ⇒ Check the scope of supply. Compare the delivered goods with the delivery note.
- ⇒ Check the delivery for transport damage. Report transport damage to PFEIFFER and the transport company (see the delivery note).

4.2 Unpack head station

Carry out the following steps:

- ⇒ Unpack the head station directly before lifting for installation into the pipe.
- ⇒ Leave the head station on the pallet or in the transport container for on-site transport.
- ⇒ The protective caps on the head station inlets and outlets prevent foreign matter from entering the head station and damaging it. Only remove the protective caps prior to installation in the pipe.
- ⇒ Dispose of the packaging properly.

4.3 Transporting and lifting the head station

! DANGER

Danger due to falling of suspended loads!

Do not stand under suspended loads.

! WARNING

Overturning of the lifting equipment and damage to the load lifting equipment by exceeding the lifting capacity!

- ⇒ Only used approved lifting equipment and load lifting equipment whose lifting capacity corresponds at least to the weight of the head station including the actuator.
- ⇒ Take the weights from the respective data sheet.

! WARNING

Danger of injury due to the tipping of the head station!

- ⇒ Observe the centre of gravity of the head station.
- ⇒ Secure the head station against tipping and twisting.

! NOTE

Damage to the head station due to improper fastening of the sling!

The screwed-in lifting eyes on the manual gear are used only for gear assembling and disassembling as well as for lifting the gear without the head station. These lifting eyes are not intended for lifting the complete head station.

- ⇒ When lifting the head station, make sure that the entire load is carried by the sling that is fastened to the head station body.
- ⇒ Do not fasten the load-bearing sling to the gear, hand wheel or other components.
- ⇒ Do not use accessories or other components with safety functions for suspension or damage them.

4.3.1 Transporting

The head station can be transported using lifting equipment such as a crane or a forklift.

- ⇒ Leave the head station on the pallet or in the transport container for transport.
- ⇒ Head stations that weigh more than approx. 10 kg should be transported on a pallet (or supported similarly) (also to the installation site). The packaging should protect the head station from damage.
- ⇒ Comply with the transport conditions.

Transport conditions

- ⇒ Protect the head station from external influences, such as impacts.
- ⇒ Do not damage the corrosion protection (paint, surface coating). Repair damage immediately.
- ⇒ Protect the head station from moisture and dirt.

4.3.2 Lifting

When installing the head station in the pipe, larger head stations can be lifted using lifting equipment such as a crane or forklift.

Conditions for lifting

- ⇒ Use a hook with a safety clamp as the suspension element so that the sling cannot slip off the hook during lifting and transport, see fig. 4-1.
- ⇒ Secure the sling against shifting and slipping off.

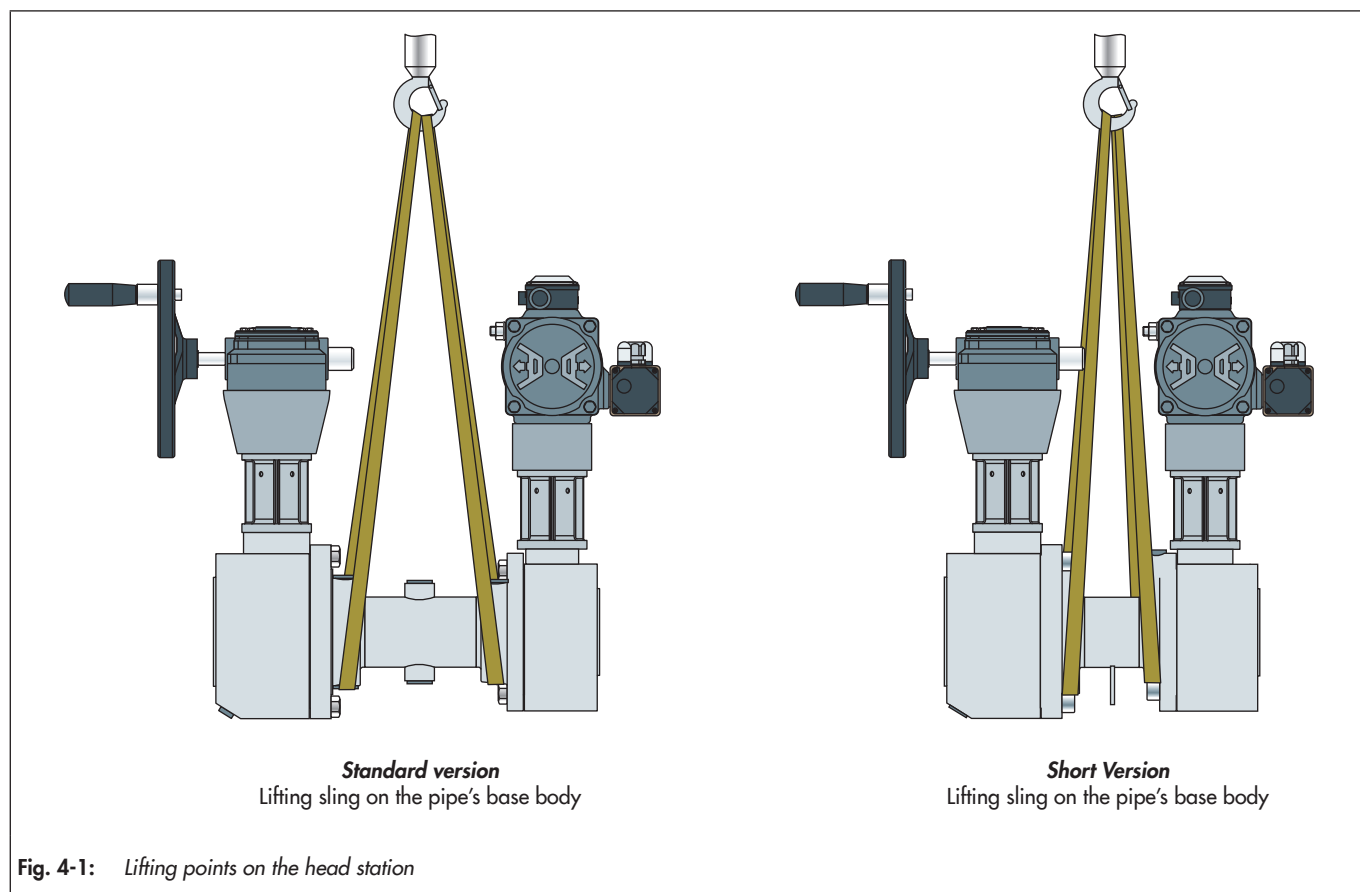


Fig. 4-1: Lifting points on the head station

- ⇒ Fasten the sling such that it can be removed again after installation in the pipe.
- ⇒ Avoid swinging and tipping the head station.
- ⇒ In the case of interruptions in work, do not leave the lifting equipment suspended in the air for a long period of time.
- ⇒ Lift the head station aligned in the same direction in which it will be installed in the pipe.
- ⇒ Always lift the head station in the centre of gravity of the load to prevent uncontrolled tipping.
- ⇒ Make sure that any slings between the lifting eyes on the manual gear and suspension element are not loaded. These slings are used only to secure the load against turning over while lifting. Before lifting the head station, pretension this sling so it is taut.

⚠ WARNING

Danger due to incorrect lifting and transport!

The lifting points for the lifting slings shown in the schematic drawing serve as examples for most valve variants. On site the conditions for lifting and transporting the valve can change however.

- ⇒ The operator makes sure that the valve is lifted and transported safely.

4.3.3 Lifting points on the main body

- ⇒ Fasten a lifting sling to each flange of the main body and on the suspension element (e.g. hook) of the crane or forklift, see fig. 4-1. When doing so, ensure the safety, bearing capacity and length of the lifting slings
- ⇒ In the case of an actuator with a lifting eye: fasten additional lifting slings to the lifting eye on the actuator and on the suspension element.
- ⇒ Lift the head station carefully. Check if the load lifting equipment holds.
- ⇒ Move the head station at a constant speed to the installation site.
- ⇒ Install the head station in the pipe, see Chapter 5.4.
- ⇒ After installation in the pipe: Check that the flanges are firmly tightened and that the head station holds in the pipe.
- ⇒ Remove the lifting slings.

4.4 Storing the head station

! NOTE**Damage to the head station due to improper storage!**

- ⇒ Comply with the storage conditions
 - ⇒ Avoid long storage periods
 - ⇒ In the case of deviating storage conditions and a longer storage period, contact PFEIFFER.
-

i Info

PFEIFFER recommends checking the head station and the storage conditions regularly during a longer storage period.

- ⇒ In the case of storage prior to installation, the valve should normally be stored in a closed room where it is protected against harmful influences such as impacts, dirt or moisture. A room temperature of $25^{\circ}\text{C} \pm 1.5^{\circ}\text{C}$ is recommended.
- ⇒ In particular the ends of the head station to the pipe connection may not be damaged by mechanical or any other influences.
- ⇒ Do not stack head stations.
- ⇒ Prevent condensation in damp rooms. Use a desiccant or heater.
- ⇒ The head station must be stored in its protective packaging and/or with the protective caps on the connection ends.
- ⇒ Head stations that weigh more than approx. 10 kg should be stored on a pallet (or supported similarly).
- ⇒ Head stations are usually delivered in a completely open position. They must be stored in the position in which they were delivered. The lever/the gear must not be actuated.
- ⇒ Do not place any objects on the head station.

5 Installation

The work described in this chapter may only be performed by specialist personnel qualified to perform the corresponding task. The following instructions apply additionally for head stations. Observe chapter "4.3 Transporting and lifting head stations" for transport to the installation site.

5.1 Installation conditions

Operator level

The operator level for the head station is the front view on all operating elements of the head station including the attachments and lock-in and lock-out area from the perspective of operating personnel.

The plant operator must make sure that operating personnel can carry out all work after the device is installed safely and can access it easily from the operator level.

Pipe routing

The same instructions for connecting pipes and similar pipe elements also apply for the installation of head stations in a pipe.

Install the head station so there is low vibration and no mechanical stress. Observe the sections "Installation orientation" and "Support and mounting" in this chapter.

Install the head station so there is enough space to replace the manual gear, actuator and head station as well as to perform maintenance work.

Installation position

Head stations must only be installed in pipes so that the pig trap is aligned as horizontally as possible.

Sufficient space for the lock-in and lock-out and handling the pig must remain free on the head station.

Dimensions for this must be agreed with the plant operator.

Support and mounting

The plant manufacturer is responsible for the selection and implementation of a suitable support or mounting for the installed ball valve as well as the pipe.

PFEIFFER can develop and deliver the corresponding frames.

NOTE

Damage to the head station due to improper support!

- ⇒ Support the head station in the piping only at the body.
- ⇒ Support must be vibration-free.

Venting

Vents are screwed into the exhaust air connections of pneumatic and electropneumatic devices to ensure that the generated exhaust air can be released to the outside (protection against overpressure in the device). Furthermore, vents allow the intake of air (protection against underpressure in the device).

- ⇒ Carry out venting on the side that faces away from the operator level.
- ⇒ When connecting the attachments, make sure that they can be accessed from the operator level safely and easily.

5.2 Preparing for assembly

Head stations must be handled, transported and stored with care, see chapter "4 Shipment and on-site transport".

Perform the following steps after receiving the goods:

- ⇒ Check the scope of supply. Compare the delivered goods with the delivery note.
- ⇒ Check the delivery for transport damage. Report transport damage to PFEIFFER and the transport company (see the delivery note).

Ensure the following conditions prior to assembly:

- The head station valve is clean.
- The head station data on the type plate (type, nominal size, material, nominal pressure and temperature range) matches the plant conditions (nominal size and nominal pressure of the pipe, medium temperature, etc.). For details about the marking, see chapter "2 Markings on the device".
- Desired or required additional fittings, see chapter "3.2 Additional fittings", are installed or prepared as far as necessary before the assembly of the head station.

5.3 Assemble the head station and actuator or manual gear

The head stations are supplied in working order. In individual cases, the actuator, manual gear and head station are delivered separately and must be assembled.

The work steps necessary for assembly and prior to the commissioning of the head station are listed below.

WARNING

Danger and damage due to retrofitting an actuator unit or a manual gear!

The subsequent fitting of an actuator unit or a manual gear can pose a danger to the user and cause damage to the pipe system.

- ⇒ The torque, rotation direction, actuation angle and adjustment of the "OPEN" and "CLOSED" end stops must be adapted to the head station.

Danger and damage due to incorrect actuator setting!

With subsequent fitting of an actuator unit or a manual gear it must be ensured that the ball bore is 100% in line with the passage of the head station and the pipe.

- ⇒ To adjust the ball, remove the ball valve from the pipe sufficiently so that the ball's position is visible.
- ⇒ To adjust the ball, use actuators with adjusting screws.

⚠ WARNING

Danger and damage due to use of an electrical actuator!

- ⇒ It must be ensured that the actuator in the end positions is turned off by the limit switch signal.
- ⇒ If shut-off takes place in an intermediate position due to the signal of the torque switch, this signal should be used in addition for an error message. The fault must be remedied as soon as possible see Chapter "8 Malfunction".
- ⇒ For further instructions, see the electrical actuator manual.

Danger and damage due to high external loads on an actuator unit and a manual gear!

Actuators and manual gears are not "stepladders".

- ⇒ Loads may not be applied to the actuators and gears as they can damage or destroy the head station.
- ⇒ Manual gears must not be extended or used with additional levers.

Danger and damage due to heavy actuator units and manual gears!

Actuators and gears that are heavier than the weight of the head station can pose a danger to the user and cause damage to the pipe system.

- ⇒ These actuators and gears must be supported if they generate a bending stress on the ball valve due to their size and/or installation situation.

! NOTE

Damage to the head station due to the incorrect setting of the end stops!

The actuating device is adjusted to the operating data specified in the order.

- ⇒ The adjustment of the "OPEN" and "CLOSED" end stops is the responsibility of the user.

5.4 Installing the head station in the pipe

5.4.1 General

- ⇒ Transport the valve in its original packaging to the installation site and unpack it only there.
- ⇒ Check the head station, actuator and manual gear for transport damage. Damaged head stations, actuators or manual gears must not be installed.
- ⇒ A functional test is to be carried out at the beginning of installation for manually-operated head stations: The head station must close and open correctly. Detected malfunctions must be fixed before commissioning. See also chapter 8 "Malfunction".
- ⇒ Make sure that only head stations are installed whose pressure classes, connection type and connection dimensions match the conditions of use. See the corresponding marking on the ball valve.

- ⇒ Handle head stations with care and observe the instructions for the flange connection.
- ⇒ Counterflanges must have corresponding types of grooved flanges in accordance with DIN 2430-2. Other flange shapes must be agreed upon with PFEIFFER.
- ⇒ Head station mounted on a flange, which is attached on the end of a pipe and is aligned horizontally.

⚠ DANGER

Danger due to exceeding the limits of use!

Exceeding the limits of use can pose a danger to the user and cause damage to the pipe system.

- ⇒ No head station may be installed whose permissible pressure/temperature range is not sufficient for the operating conditions.
- ⇒ The max. permissible limits of use are marked on the head station, see chapter "2 Markings on the device".
- ⇒ The permissible range is defined in chapter "1 Safety instructions and safety measures".

- ⇒ The connection ends of the pipe must align with the head station connections and have plane-parallel ends.
- ⇒ The connection data for the actuator unit must match the control data. See the type plate(s) on the actuator unit.
- ⇒ Prior to installation, the head station and the connected pipe must be carefully cleaned of any contamination, in particular solid foreign matter.
- ⇒ The sealing surfaces on the flange connection and the utilized flange seals must in particular be free of all contamination during installation.
- ⇒ Optionally, an arrow is marked on the body. The direction of the arrow must correspond to the direction of flow in the pipe.

! NOTE

Damage to the sealing surfaces and seals or untight flange connection due to improper assembly!

- ⇒ Tighten the flange connections evenly and in a criss-cross pattern with the torques indicated in Table 15-2 in Chapter "15.1.1 Tightening torques".
- ⇒ After longer storage of the ball valve, retighten the body screws after installation with the corresponding tightening torques according to Table 15-1 in Chapter "15.1.1 Tightening torques".
- ⇒ Vents are screwed into the exhaust air connections of pneumatic and electropneumatic devices to ensure that the generated exhaust air can be released to the outside (protection against overpressure in the device). Furthermore, vents allow the intake of air (protection against underpressure in the device).
- ⇒ Carry out venting on the side that faces away from the working area of operating personnel.
- ⇒ When installing peripheral devices, make sure that they can be operated from the working area of operating personnel.

5.4.2 Installing the head station

- ⇒ Close the head station in the pipe for the duration of the installation with the lock to the outside.
- ⇒ Remove the protective caps on the openings prior to installation.
- ⇒ Lift the head station with suitable lifting equipment at the installation site, see Chapter "4.3 Transporting and lifting the head station". When doing so observe the flow direction of the head station. An arrow on the head station indicates the optional flow direction.
- ⇒ Use correct flange seals.
- ⇒ Clean the sealing surfaces on the head station and pipe if necessary.
- ⇒ Screw the pipe together with the head station without tension.
- ⇒ After installing the head station, press it slowly in the pipe.

! NOTE

Damage to the head station due to a sudden pressure increase and resulting high flow speed!

Open the head station slowly in the pipe during commissioning.

- ⇒ The accompanying instructions apply for connecting the actuator unit to the control unit.
- ⇒ Check the correct function of the head station.

5.5 Checking the assembled head station

5.5.1 Functional test

! WARNING

Danger of injury due to pressurised components and escaping medium!

- ⇒ Do not loosen the screw of an optional test connection while the head station is pressurised.

Danger of crushing due to moving actuator- and control shaft!

- ⇒ Do not reach into the bracket as long as the pneumatic power is connected to the actuator.
- ⇒ Before working on the head station, interrupt and lock pneumatic energy and the control signal.
- ⇒ Vent the actuator.
- ⇒ Do not allow the jamming of objects in the bracket to hinder the operation of the actuator- and control shaft.
- ⇒ If the actuator- and control shaft are blocked (e.g. due to "seizure" if not actuated for a long period of time), release the residual energy of the actuator (spring tension) before releasing the blockage, see the corresponding actuator documentation.

! WARNING

Danger of injury due to escaping exhaust air!

During operation, when regulating or when opening and closing the head station, exhaust air can escape, for example from the actuator.

- ⇒ Wear eye protection when working near the valves and hearing protection as required.

- ⇒ At the end of installation, perform a functional test with the control signals:

The head station must close and open correctly according to the control commands. Detected malfunctions must be fixed before commissioning, see chapter "8 Malfunction".

! WARNING

Danger due to improperly executed control commands!

Incorrectly executed control commands can cause serious injuries or even death and cause damage to the pipe system.

- ⇒ Check the actuator unit and control command., see chapter "8 Malfunction".

5.5.2 Pressure test of the pipe section

The pressure test was already performed on the head stations by PFEIFFER. Observe the following for the pressure test of a pipe section with an installed head station:

- ⇒ First carefully rinse newly installed pipe systems in order to wash out all foreign matter.
- ⇒ Ensure the following conditions for the pressure test:
 - Head station open: The test pressure may not exceed the value $1.5 \times PN$ (according to the type plate).
 - Head station closed: The test pressure may not exceed the value $1.1 \times PN$ (according to the type plate).

If a head station leaks, observe chapter "8 Malfunction".

i Info

The plant operator is responsible for performing the pressure test. After Sales Service at PFEIFFER can provide you with support for the planning and implementation of a pressure test specific to your plant.

5.5.3 Swivelling movement

The swivelling movement of the actuator- and control shaft must be linear without any jerky movements.

- ⇒ Open and close the head station. When doing so, observe the movement of the actuator shafts.
- ⇒ Check the end positions of the valves.
- ⇒ Check the display on the position indicator.

5.5.4 Fail-safe position

- ⇒ Close the signal pressure line.
- ⇒ Check whether the head station moves to the fail-safe position, see "Fail-safe positions" in Chapter "3 Design and principle of operation".

6 Start-up

The work described in this chapter may only be performed by specialist personnel qualified to perform the corresponding task.

WARNING

Danger of burning due to hot or cold components and pipe!

Component parts and pipes can become very hot or very cold during operation and cause burns upon contact.

- ⇒ Let the components and pipes cool down or warm up.
- ⇒ Wear protective garments and protective gloves.

Danger of injury due to pressurised components and escaping medium!

- ⇒ Do not loosen the screw of the optional test connection while the head station is pressurised.

Danger of crushing due to moving actuator- and control shaft!

- ⇒ Do not reach into the bracket as long as the pneumatic power is connected to the actuator.
- ⇒ Before working on the head station, interrupt and lock pneumatic energy and the control signal.
- ⇒ Vent the actuator.
- ⇒ Do not allow the jamming of objects in the bracket to hinder the operation of the actuator- and control shaft.
- ⇒ If the actuator- and control shaft are blocked (e.g. due to "seizure" if not actuated for a long period of time"), release the residual energy of the actuator (spring tension) before releasing the blockage, see the corresponding actuator documentation.

Danger of injury due to escaping exhaust air!

During operation, when regulating or when opening and closing the head station, exhaust air can escape, for example from the actuator.

- ⇒ Wear eye protection when working near the valves and hearing protection as required.

Commissioning/recommissioning

- ⇒ Open the head station slowly in the pipe. Opening slowly prevents a sudden increase in pressure and a resulting high flow speed that damages the head station.
- ⇒ Check the correct function of the head station.

Ensure the following conditions prior to commissioning/recommissioning:

- The head station is installed properly in the pipe, see chapter "5 Installation".
- The leak and function tests have been completed successfully, see chapter "5.1 Installation conditions".
- The current conditions in the affected plant section correspond to the design of the head station, see "Intended use" in chapter "1 Safety instructions and safety measures".

7 Operation

7.1 General

As soon as the commissioning/recommissioning work is complete, see chapter "6 Start-up", the head station is ready for operation.

⚠ WARNING

Danger of burning due to hot or cold components and pipe!

Ball valve components and pipes can become very hot or very cold during operation and cause burns upon contact.

- ⇒ Let the components and pipes cool down or warm up.
- ⇒ Wear protective garments and protective gloves.

Danger of injury due to pressurised components and escaping medium!

- ⇒ Do not loosen the screw of the optional test connection while the head station is pressurised.

Danger of crushing due to moving actuator- and control shafts!

- ⇒ Do not reach into the bracket as long as the pneumatic power is connected to the actuator.
- ⇒ Before working on the head station, interrupt and lock pneumatic energy and the control signal.
- ⇒ Vent the actuator.
- ⇒ Do not allow the jamming of objects in the bracket to hinder the operation of the actuator- and control shaft.
- ⇒ If the actuator- and control shaft are blocked (e.g. due to "seizure" if not actuated for a long period of time"), release the residual energy of the actuator (spring tension) before releasing the blockage, see the corresponding actuator documentation.

Danger of injury due to escaping exhaust air!

- ⇒ During operation, when regulating or when opening and closing the head station, exhaust air can escape, for example from the actuator.
- ⇒ Wear eye protection when working near the valves and hearing protection as required.

Observe the following points during operation:

- If required, after commissioning and reaching the operating temperature, tighten all flange connections between the pipe and head station with the corresponding tightening torques, see Table 15-2 in chapter "15.1.1 Tightening torques".
- It can also be necessary to retighten the screw connections on the body sections with the corresponding tightening torques according to Table 15-1 and in chapter "15.1.1 Tightening torques".

- The head station/actuator unit must be actuated with the control signals.
- Head stations that were delivered from the factory with an actuator or manual gear are precisely adjusted. The user is responsible for any changes they make.
- For the manual operation normal manual forces are sufficient and the use of extensions to increase the actuation torque is not permitted.
- In the case of head stations with a hand lever, the position of the hand lever indicates the location of the bore in the ball. The hand lever moves in general parallel to the bore. Special versions are to be taken from the respective order.

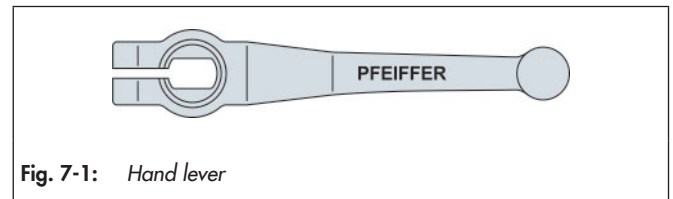


Fig. 7-1: Hand lever

⚠ DANGER

Danger of injury due to jerky operation of the head station!

The failure to observe these warnings can cause danger for persons or for the pipe system.

- ⇒ Do not open and close the head station suddenly to prevent pressure surges and/or a temperature shock in the pipe system.

- If a head station leaks, observe chapter "8 Malfunction".

7.2 Operating the head station

The head station is operated individually for each pig system in combination with the Control Unit BR 28s, see ► TB 28s data sheet.

7.3 Example operation

7.3.1 Pig change with single pig system

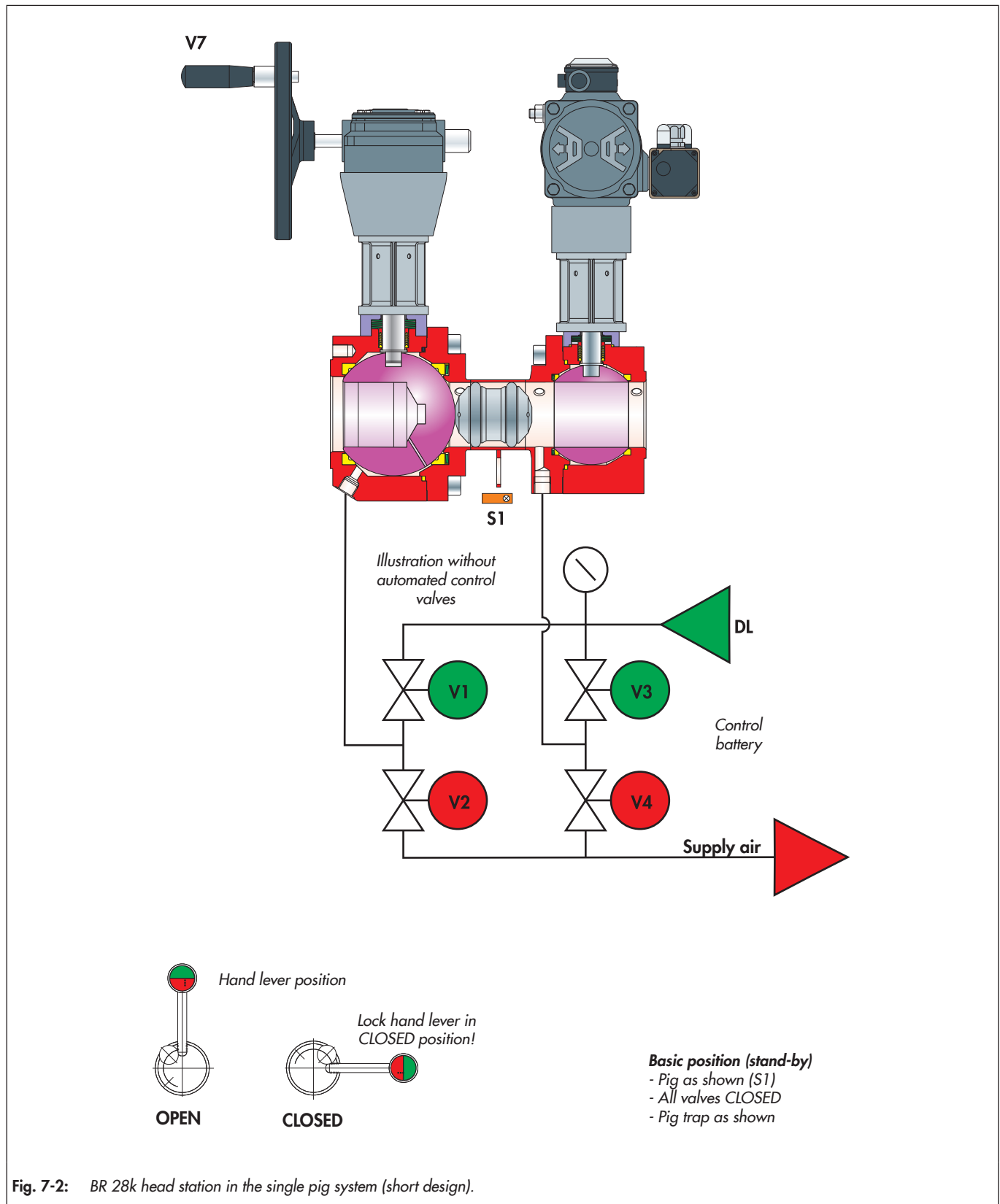


Fig. 7-2: BR 28k head station in the single pig system (short design).

7.3.1.1 Pig output

- Basic position
- ⇒ Open **V4** – wait 5 seconds
- ⇒ Close **V4**
- Station is vented
- ⇒ Turn V7 pig trap in
- ⇒ Open **V2**
- ⇒ Open **V3**
- Pig runs into trap, LED S1 goes off
- ⇒ Close **V2+V3**
- ⇒ Open **V4** – wait 5 seconds
- ⇒ Close **V4**
- Station is vented
- ⇒ Turn V7 pig trap out
- ⇒ Open **V1** slowly
- ⇒ Hold running out pig firmly
- ⇒ Close **V1**

7.3.1.2 Pig input

- V7 pig trap is on the outside
- There is no pig in the station – LED S1 is off
- ⇒ Open **V2**
- ⇒ Manually push pig into trap
- ⇒ Close **V2**
- ⇒ Open **V4**
- ⇒ Turn V7 pig trap in
- ⇒ Open **V1**
- Pig runs up to ball valve, LED S1 lights
- ⇒ Close **V1+V4**
- ⇒ Open **V2** – wait 5 seconds
- ⇒ Close **V2**
- Station is vented
- ⇒ Turn V7 pig trap completely out
- Pig in basic position
- Basic position reached
 - Pig as shown (S1)
 - All valves CLOSED
 - Pig trap as shown

7.3.2 Pig change with double pig system

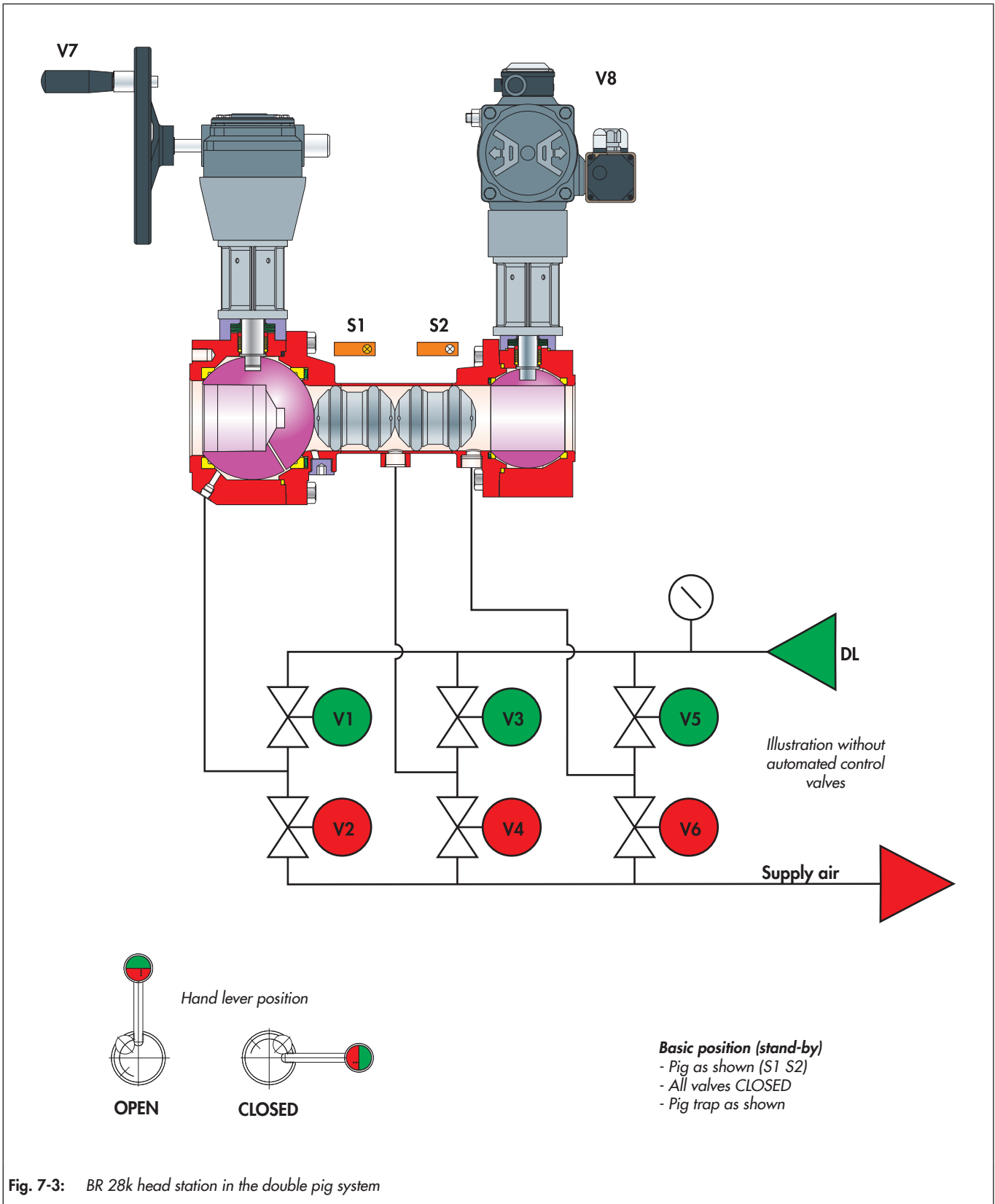


Fig. 7-3: BR 28k head station in the double pig system

7.3.2.1 Pig output

- Basic position
- ⇒ Open V4+V6 – wait 5 seconds
- ⇒ Close V4+V6
- Station is vented
- ⇒ Turn pig trap in
- ⇒ Open V2
- ⇒ Open V3
- ⇒ Pig 1 runs into V7 trap, LED S1 goes off
- ⇒ Close V2+V3
- ⇒ Open V4 – wait 5 seconds
- ⇒ Close V4
- Station is vented
- ⇒ Turn pig trap out
- ⇒ Open V1 slowly
- ⇒ Hold running out pig 1 firmly
- ⇒ Close V1
- ⇒ Turn pig trap in
- ⇒ Open V2
- ⇒ Open V5
- Pig 2 runs into V7 trap, LED S2 goes off
- ⇒ Close V2+V5
- ⇒ Open V6
- Station is vented
- ⇒ Turn pig trap out
- ⇒ Open V1 slowly
- ⇒ Hold running out pig 2 firmly
- ⇒ Close V1

7.3.2.2 Pig input

- V7 pig trap is on the outside
- V8 is closed
- There is no pig in the station – LED S1+S2 are off
- ⇒ Open V2
- ⇒ Manually push pig 2 into V7 trap
- ⇒ Close V2
- ⇒ Turn pig trap in
- ⇒ Open V6
- ⇒ Open V1
- Pig 2 runs up to V8 ball valve, LED S2 lights
- ⇒ Close V1+V6
- ⇒ Open V2
- Station is vented
- ⇒ Turn V7 pig trap out
- ⇒ Manually push pig 1 into trap
- ⇒ Close V2
- ⇒ Turn V7 pig trap in
- ⇒ Open V4
- ⇒ Open V1
- Pig 1 runs up to pig 2, LED S1 lights
- ⇒ Close V1+V4
- ⇒ Open V2
- Station is vented
- ⇒ Turn V7 pig trap out
- Pigs in basic position
- Basic position reached
 - Pig as shown (S1 S2)
 - All valves CLOSED
 - Pig trap as shown

8 Malfunction

When rectifying the faults, chapter "1 Safety instructions and safety measures" must be observed.

8.1 Detecting and rectifying errors

Type of fault	Possible cause	Measure
Leaks in the pipe connection	The flange connection of the head station is leaky	<p>Tighten the flange screws.</p> <hr/> <p>! NOTE</p> <p>An excessive tightening torque when retightening the flange screws can damage the head station and pipe!</p> <p><i>The permissible torque for retightening the pipe flange screws is limited.</i></p> <hr/> <p>Retighten the flange connection with the respective tightening torque, see Table 15-2 in chapter "15.1.1 Tightening torques".</p> <p>If necessary, increase the tightening torque to max. 20%.</p>
	The flange connection is still leaky after retightening	<p>Loosen the flange connection and remove the head station, see chapter "1 Safety instructions and safety measures".</p> <p>Check the plane parallelism of the flange connection and correct if it is not sufficient.</p> <p>Check the flange seals, if the seals are damaged, replace them.</p>
Leaks in the body sections	The body section connection loosened	Retighten the connection of the body sections with the respective tightening torque, see Table 15-1 in chapter "15.1.1 Tightening torques".
	Body sections untight after retightening	Replace the body sealing and/or ball valve, see chapter "1 Safety instructions and safety measures".
Increased medium flow rate with the head station closed	Leakage in the closed position	Remove and inspect the head station, see chapter "1 Safety instructions and safety measures".
	Head station is damaged	<p>Repairs are necessary</p> <p>Remove the head station, see chapter "1 Safety instructions and safety measures".</p> <p>Request spare parts from PFEIFFER, see chapter "15.2 Spare parts".</p> <p>For the required repair instructions, see chapter "12 Repairs".</p>
Leaks in the control shaft sealing	Medium escapes from the stuffing box	<p>Remove the head station, see chapter "1 Safety instructions and safety measures".</p> <p>Disassemble the head station and replace the control shaft sealing.</p> <p>Request spare parts from PFEIFFER, see chapter "15.2 Spare parts".</p> <p>For the required repair instructions, see chapter "12 Repairs".</p>
Malfunction	The actuator unit or control does not react	Check the actuator unit and control command.
	The actuator and control are OK	Remove and inspect the head station, see chapter "1 Safety instructions and safety measures".
	Head station is damaged	<p>Repairs are necessary.</p> <p>Remove the head station, see chapter "1 Safety instructions and safety measures".</p> <p>Request spare parts from PFEIFFER, see chapter "15.2 Spare parts".</p> <p>For the required repair instructions, see chapter "12 Repairs".</p>

Type of fault	Possible cause	Measure
Problems in the actuator unit	The pneumatic actuator must be removed.	Disconnect the connection to the control pressure. Remove the actuator from the head station (observe the "Safety instructions and safety measures", see the included actuator unit manuals).

i Info

- In the case of faults that are not listed in the table, contact the After Sales Service at PFEIFFER.
 - Spare parts must be ordered indicating all the data according to the head station marking. Only original parts from PFEIFFER may be installed.
 - If it is determined after removal that the head station material linings are not sufficiently resistant for the medium, parts must be selected made of a suitable material.
-

8.2 Carrying out emergency measures

The system operator is responsible for emergency measures.

In case of a head station fault:

- Troubleshoot the error, see chapter "8.1 Detecting and rectifying errors".
- Rectify the fault that can be fixed as indicated in the instructions provided in this installation and operating manual. For faults that cannot be fixed, contact the After Sales Service at PFEIFFER.

Recommissioning after faults

See Chapter "6 Start-up".

9 Servicing

The work described in this chapter may only be performed by specialist personnel qualified to perform the corresponding task. The following documents are also required for the maintenance of the head station:

- Installation and operating manual for ► EB 28e pig loading ball valve.
- Installation and operating manual for ► EB 28y piggable ball valve.
- Installation and operating manual for the installed actuator, e.g ► EB 31a for BR 31a rotary actuators or the corresponding actuator documentation of other manufacturers.
- Installation and operating manual for installed manual gear.

WARNING

Danger of burning due to hot or cold components and pipe!

Ball valve components and pipes can become very hot or very cold during operation and cause burns upon contact.

- ⇒ Let the components and pipes cool down or warm up.
- ⇒ Wear protective garments and protective gloves.

Danger of injury due to pressurised components and escaping medium!

- ⇒ Do not loosen the screw of the optional test connection while the head station is pressurised.

Danger of crushing due to moving actuator- and control shaft!

- ⇒ Do not reach into the bracket as long as the pneumatic power is connected to the actuator.
- ⇒ Before working on the head station, interrupt and lock pneumatic energy and the control signal.
- ⇒ Vent the actuator.
- ⇒ Do not allow the jamming of objects in the bracket to hinder the operation of the actuator- and control shaft.
- ⇒ If the actuator- and control shaft are blocked (e.g. due to "seizure" if not actuated for a long period of time"), release the residual energy of the actuator (spring tension) before releasing the blockage, see the corresponding actuator documentation.

Danger of injury due to escaping exhaust air!

During operation, when regulating or when opening and closing the head station, exhaust air can escape, for example from the actuator.

- ⇒ Wear eye protection when working near the valves and hearing protection as required.

Danger of injury due to preloaded springs!

Actuators with preloaded actuator springs are pressurised.

- ⇒ Release the compression from the preloaded springs before working on the actuator, see the corresponding actuator documentation.

WARNING

Danger of injury due to residual medium in the head station!

When working on the head station, residual medium can escape and, depending on the medium properties, cause injuries (e.g. scalding, chemical burns).

- ⇒ Wear protective garments, protective gloves and eye protection.
- ⇒ Do not loosen the screw of the optional test connection while the head station is pressurised.
- ⇒ Bring the head station into the open position so the pressure is released from the ball.

NOTE

Damage to the head station due to excessively high or low tightening torques!

The head station components must be tightened with specific torques. Excessively tightened components are subject to increased wear. Insufficiently tightened components can cause leakage.

- ⇒ Observe the tightening torques, see Table 15-1 in chapter "15.1.1 Tightening torques".

Damage to the head station due to unsuitable tools!

- ⇒ Only use tools approved by PFEIFFER, see chapter "15.1.3 Tools".

Damage to the head station due to unsuitable lubricants!

- ⇒ Only use lubricants approved by PFEIFFER, see chapter "15.1.2 Lubricants".

Info

The head station was checked by PFEIFFER prior to delivery.

- Certain test results certified by PFEIFFER are no longer valid when disassembling the head station. This includes the test for seat leakage and the leak test (outer tightness).
- If maintenance and repair work is performed without approval from the After Sales Service of PFEIFFER, the product guarantee will be voided.
- Only use original parts from PFEIFFER as spare parts that correspond to the original specification.
- Wear parts are not covered by the warranty.

9.1 Periodic tests

- ⇒ Depending on the conditions of use, the head station must be checked at defined intervals in order to take remedial measures prior to possible malfunctions. The plant operator is responsible for preparing a suitable test plan.
- ⇒ PFEIFFER recommends the following inspections that can be carried out during operation:

Test	Measures in the case of a negative test result
If present, check the optional test connection for tightness. WARNING! Danger of injury due to pressurised components and escaping medium! Do not loosen the screw of the test connection while the head station is pressurised.	Decommission the head station, see chapter "10 Decommissioning". Contact the After Sales Service at PFEIFFER for repairs, see chapter "12 Repairs".
Check the control shaft sealing for tightness from the outside.	The control shaft sealing with a PTFE V-ring packing is preloaded with a disc spring set and is therefore maintenance free.
Check the rotary movement of the actuator- and control shaft for smooth movement.	If the actuator- and control shaft are blocked, remove the blockage. WARNING! If the actuator- and control shaft are blocked (e.g. due to "seizure" if not actuated for a long period of time) they can release unexpectedly and move uncontrolled. This can lead to crushing if reaching into them.
Check pipe connections and seals of the pig launcher ball valve for leaks.	Regular maintenance work on the ball valve is not necessary, but when checking the pipe section, no medium may escape from the flange and screw connections of the body or from the control shaft sealing.

9.3 Ordering spare parts and consumables

Information about spare parts, lubricants and tools can be received from the After Sales Service at PFEIFFER.

Spare parts

Information on spare parts can be found in chapter "1.5.2 Spare parts".

Information on spare parts can also be found in the respective

► EB 28e and/or ► EB 28y installation and operating manual.

9.2 Maintenance work

- ⇒ The pig loading ball valve must be prepared before all maintenance work, see chapter 8 "Malfunction".
- ⇒ After all maintenance work, the ball valve must be checked prior to recommissioning, see chapter "5.5 Checking the mounted pig loading ball valve".

9.2.1 Replacing the seat rings and ball

- ⇒ Check the condition of the ball and seat rings.
- ⇒ Remove the seat rings of the component in question (A and/or B), see Chapter "12.2 Replacing the seat rings and the ball" in the respective ► EB 28e and/or ► EB 28y installation and operating manual
- ⇒ Check seat rings as well as all plastic parts for damage and if in doubt replace them.
- ⇒ Also remove the ball. Check the ball as well as all plastic parts for damage and if in doubt replace them.

10 Decommissioning

The work described in this chapter may only be performed by specialist personnel qualified to perform the corresponding task.

WARNING

Danger of burning due to hot or cold components and pipe!

Ball valve components and pipes can become very hot or very cold during operation and cause burns upon contact.

- ⇒ Let the components and pipes cool down or warm up.
- ⇒ Wear protective garments and protective gloves.

Danger of injury due to pressurised components and escaping medium!

- ⇒ Do not loosen the screw of the optional test connection while the head station is pressurised.

Danger of crushing due to moving actuator- and control shaft!

- ⇒ Do not reach into the bracket as long as the pneumatic power is connected to the actuator.
- ⇒ Before working on the head station, interrupt and lock pneumatic energy and the control signal.
- ⇒ Vent the actuator.
- ⇒ Do not allow the jamming of objects in the bracket to hinder the operation of the actuator- and control shaft.
- ⇒ If the actuator- and control shaft are blocked (e.g. due to "seizure" if not actuated for a long period of time), release the residual energy of the actuator (spring tension) before releasing the blockage, see the corresponding actuator documentation.

Danger of injury due to escaping exhaust air!

During operation, when regulating or when opening and closing the head station, exhaust air can escape, for example from the actuator.

- ⇒ Wear eye protection when working near the valves and hearing protection as required.

Danger of injury due to residual medium in the head station!

When working on the head station, residual medium can escape and, depending on the medium properties, cause injuries (e.g. scalding, chemical burns).

- ⇒ Wear protective garments, protective gloves and eye protection.
- ⇒ Do not loosen the screw of the optional test connection while the head station is pressurised.
- ⇒ Bring the head station into the open position so the pressure is released from the ball.

To decommission the head station for maintenance and repair work or for disassembly, perform the following steps:

- ⇒ Close the valves upstream and downstream of the head station so that no medium flows through the head station.
- ⇒ Empty the pipes and head station completely.
- ⇒ Shut off the pneumatic power and lock it, to depressurise the ball valve.
- ⇒ Let the pipe and ball valve components cool down or warm up.

11 Removal

The work described in this chapter may only be performed by specialist personnel qualified to perform the corresponding task.

WARNING

Danger of burning due to hot or cold components and pipe!

Ball valve components and pipes can become very hot or very cold during operation and cause burns upon contact.

- ⇒ Let the components and pipes cool down or warm up.
- ⇒ Wear protective garments and protective gloves.

Danger of crushing due to moving actuator- and control shaft!

- ⇒ Do not reach into the bracket as long as the pneumatic power is connected to the actuator.
- ⇒ Before working on the head station, interrupt and lock pneumatic energy and the control signal.
- ⇒ Vent the actuator.
- ⇒ Do not allow the jamming of objects in the bracket to hinder the operation of the actuator- and control shaft.
- ⇒ If the actuator- and controlshaft are blocked (e.g. due to "seizure" if not actuated for a long period of time"), release the residual energy of the actuator (spring tension) before releasing the blockage, see the corresponding actuator documentation.

Danger of injury due to residual medium in the head station!

When working on the head station, residual medium can escape and, depending on the medium properties, cause injuries (e.g. scalding, chemical burns).

- ⇒ Wear protective garments, protective gloves and eye protection.
- ⇒ Do not loosen the screw of the optional test connection while the head station is pressurised.
- ⇒ Remove the head station into the open position so the pressure is released from the ball.

Danger of injury due to preloaded springs!

Actuators with preloaded actuator springs are pressurised.

- ⇒ Before working on the actuator, release the compression from the preloaded springs.

Prior to disassembly, make sure that the following conditions are met:

- The head station is decommissioned, see chapter "10 Decommissioning".

11.1 Removing the head station from the pipe

- ⇒ Loosen the flange connection.
- ⇒ Remove the head station from the pipe, see Chapter "4.3 Transporting and lifting the head station".

WARNING

If a used valve is sent to PFEIFFER for service:

- ⇒ Decontaminate the valves properly in advance.

- ⇒ When returning a used valve, include the safety data sheet for the medium as well as confirmation of decontamination of the valve. Otherwise the valve will not be accepted.

Tip

- PFEIFFER recommends documenting the following contamination data in the form ► FM 8.7-6 "Declaration regarding the contamination of PFEIFFER valves and components".
- This form is available at ► www.pfeiffer-armaturen.com.

11.2 Disassemble actuator and/or manual gear

See the accompanying documentation.

12 Repairs

If the operation of the head station is not as intended or if it does not work at all, it is defective and must be repaired or replaced.

NOTE

Damage to the head station due to improper maintenance and repair!

- ⇒ Do not perform maintenance and repair work on your own.
- ⇒ Contact the After Sales Service at PFEIFFER for maintenance and repair work.

In special cases, certain maintenance and repair work may be performed.

The work described in this chapter may only be performed by specialist personnel qualified to perform the corresponding task.

The following instructions apply additionally for head stations. For decommissioning and disassembly, observe chapter "10 Decommissioning" and chapter "11 Removal".

12.1 Replacing the V-ring packing

If a leak is found in the stuffing box flange or the optional test connection, the rings of the V-ring packing can be defective.

- ⇒ Check the condition of the packing.

Disassemble the head station to remove the packing. For this purpose, observe Chapter "1 Safety instructions and safety measures".

- ⇒ Remove the packing of the component in question (A and/or B), see Chapter "12.1 Replacing the V-ring packing" in the respective ► EB 28e and/or ► EB 28y installation and operating manual
- ⇒ Check the rings of the packing as well as all plastic and graphite parts for damage and, in the case of doubt, replace them.
- ⇒ Assemble the ball valve as described in Chapter "3.5 Assembling ..." in the respective ► EB 28e and/or ► EB 28y installation and operating manual.

12.2 Replacing the seat ring and the ball

If there is a leak in the passage, the seat rings and the ball can be defective.

- ⇒ Check the condition of the seat rings and the ball.

Disassemble the head station to remove the seat rings and ball. For this purpose, observe Chapter "1 Safety instructions and safety measures".

- ⇒ Remove the seat rings of the component in question (A and/or B), see Chapter "12.1 Replacing the seat rings and the ball" in the respective ► EB 28e and/or ► EB 28y installation and operating manual

- ⇒ Check the seat rings and all plastic and graphite parts for damage and if in doubt, replace them.
- ⇒ Also remove the ball. Check the ball as well as all plastic parts for damage and if in doubt replace them.
- ⇒ Assemble the ball valve as described in Chapter "3.5 Assembling ..." in the respective ► EB 28e and/or ► EB 28y installation and operating manual.

12.3 Additional repairs

- ⇒ In the case of additional major damage, it is recommended to have repairs performed by PFEIFFER.

12.4 Sending devices to PFEIFFER

Defective head stations can be sent to PFEIFFER for repair. Proceed as follows to send devices:

WARNING

Danger due to a contaminated valve!

- ⇒ When returning a used valve to PFEIFFER for service, decontaminate the valve properly in advance.
- ⇒ When returning a used valve, include the safety data sheet for the medium as well as confirmation of decontamination of the valve. Otherwise the valve will not be accepted.

Tip

- PFEIFFER recommends documenting the following contamination data in the form ► FM 8.7-6 "Declaration regarding the contamination of PFEIFFER valves and components".
- This form is available at ► www.pfeiffer-armaturen.com.

- ⇒ Include the following information for returns:

- Manufacturer number
- Head station type
- Article number
- Nominal size and version of the head station
- Medium (designation and consistency)
- Medium pressure and temperature
- Number of actuations (year, month, week or day)
- Installation drawing if available
- Completed declaration regarding contamination.

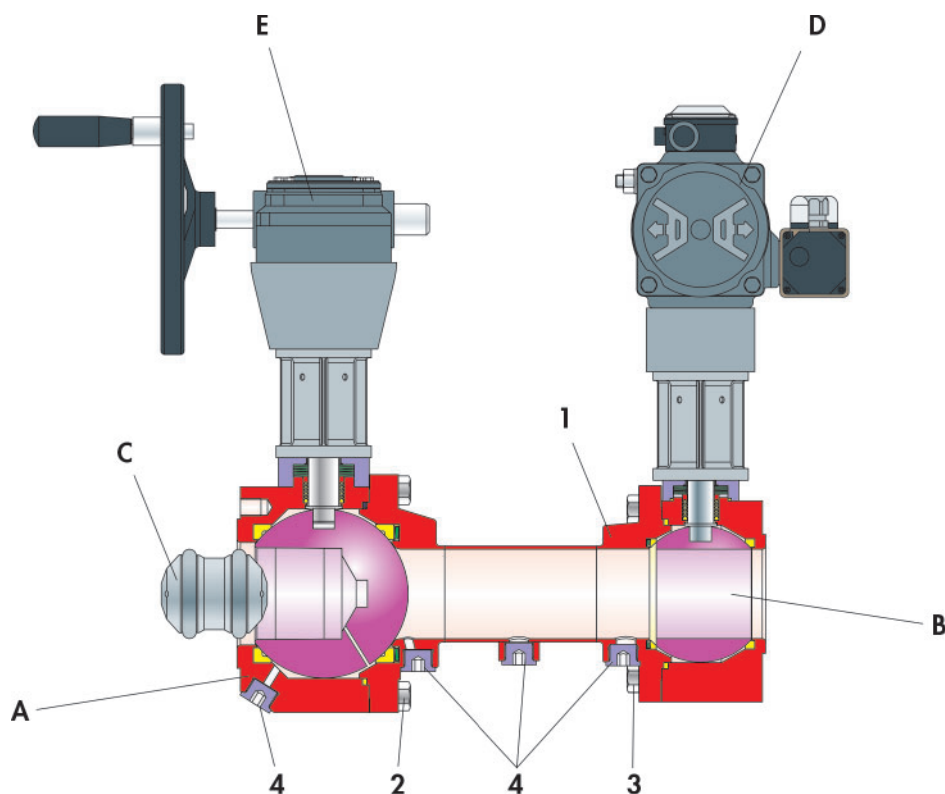


Figure 12-1: Sectional drawing of the BR 28k head station

Table 12-1: Parts list

Item	Name ¹⁾	Accompanying documentation
1	Main body	-
2	Screw	-
3	Screw	-
4	Screw plug	-
A	BR 28e pig loading ball valve	Mounting and operating manual for ► EB 28e
B	BR 28y piggable ball valve	Mounting and operating manual for ► EB 28y
C	BR 28m pig (accessories)	Mounting and operating manual for ► EB 28m
D	BR 31a Quarter-turn actuator	Mounting and operating manual for ► EB 31a
E	Hand lever or manual gear, 180°	Respective manufacturer documentation
Not marked	Control Unit BR 28s (required for head station control) and is connected at the respective connections (4).	Mounting and operating manual for ► EB 28s

¹⁾ Further versions are possible on request

13 Disposal

- ⇒ For disposal, observe the local, national and international regulations.
- ⇒ Do not dispose of old components, lubricant and hazardous materials with domestic waste.

14 Certificates

The **BR 28k** head station consists of various main components, whereby in addition to the actuators, the **BR 28e** pig launcher ball valve and the **BR 28y** pig-enabled ball valve are the essential valves.

– **BR 28e** pig launcher ball valve

The BR 28e pig launcher ball valve is manually operated and the declaration of conformity is available on the following pages:

- Declaration of conformity according to Pressure Equipment Directive 2014/68/EU for manually operated valves, see page 14-2.

– **BR 28y** pig-enabled ball valve

The BR 28y pig-enabled ball valve is manually operated or in combination with an actuator and the declaration of conformity is available on the following pages:

- Declaration of conformity according to Pressure Equipment Directive 2014/68/EU for automated valves, see page 14-3.
- Declaration of conformity according to Pressure Equipment Directive 2014/68/EU for manually operated valves, see page 14-4.
- Declaration of conformity for completed machinery according to Machinery Directive 2006/42/EC for the BR 28y pig-enabled ball valve, see page 14-5.
- Declaration of conformity for partly completed machinery according to Machinery Directive 2006/42/EC for the BR 28y pig-enabled ball valve, see page 14-6.

The printed certificates correspond to the status at the time of printing. Further optional certificates are available upon request.

DECLARATION OF CONFORMITY

As per Pressure Equipment Directive 2014/68/EU
TRANSLATION



e

The manufacturer	PFEIFFER Chemie-Armaturenbau GmbH, D47906 Kempen, Germany
declares that:	Type 28e Dockin pig ball valve (BR 28a), with packing • with lever
<p>1. The valves are pressure accessories within the meaning of the Pressure Equipment Directive 2014/68/EU and conform with the requirements of this Directive.</p> <p>2. They may only be operated observing the Mounting and operating instructions ► EB 28e.</p>	

Applied standards

AD 2000 Regulations	Regulations for pressurized valve body parts
----------------------------	--

Type designation and technical features:

<p>PFEIFFER data sheet ► TB 28e</p> <p><i>NOTE: This Manufacturer's Declaration applies to all valve types listed in this catalog.</i></p>
--

Applied conformity assessment procedure:

Conforming to Annex III of the Pressure Equipment Directive 2014/68/EU, Module H

Name of notified body:

Identification number of the notified body:

<p>TÜV Anlagentechnik GmbH Am Grauen Stein 51101 Köln Germany</p>	0035
--	------

These Declarations become invalid when modifications are made to the dockin pig ball valves and/or assemblies that affect the technical data of the ball valve or the <Intended use> described in ► EB 28e, section 1 of the Mounting and operating instructions and considerably change the valve or an assembly delivered with it.

Kempen, 22. April 2023



 Stefan Czayka
 Head of Quality Management/IMS Representative

DECLARATION OF CONFORMITY

As per Pressure Equipment Directive 2014/68/EU
TRANSLATION



The manufacturer	PFEIFFER Chemie-Armaturenbau GmbH , D47906 Kempen, Germany
declares that:	Type 28y Piggable ball valve (BR 28y), with packing <ul style="list-style-type: none"> • with pneumatic/electric/hydraulic actuator • with free shaft end for subsequent mounting of an actuator
<p>1. The valves are pressure accessories within the meaning of the Pressure Equipment Directive 2014/68/EU and conform with the requirements of this Directive.</p> <p>2. They may only be operated observing the Mounting and operating instructions ► EB 28y.</p> <p>The commissioning of these valves is only permitted after the valve has been installed from both sides in the pipeline and a risk of injury can be ruled out. (See ► EB 28y, Chapter 1 for piggable ball valves intended for dead-end service)</p>	

Applied standards

AD 2000 Regulations	Regulations for pressurized valve body parts
----------------------------	--

Type designation and technical features:

PFEIFFER data sheet ► TB 28y NOTE: This Manufacturer's Declaration applies to all valve types listed in this catalog.
--

Applied conformity assessment procedure:

Conforming to Annex III of the Pressure Equipment Directive 2014/68/EU, Module H

Name of notified body:

Identification number of the notified body:

TÜV Anlagentechnik GmbH Am Grauen Stein 51101 Köln Germany	0035
--	------

These Declarations become invalid when modifications are made to the piggable ball valves and/or assemblies that affect the technical data of the ball valve or the <Intended use> described in ► EB 28y, section 1 of the Mounting and operating instructions and considerably change the valve or an assembly delivered with it.

Kempen, 22. April 2023


 Stefan Czayka
 Head of Quality Management/IMS Representative

DECLARATION OF CONFORMITY

As per Pressure Equipment Directive 2014/68/EU
TRANSLATION



e

The manufacturer	PFEIFFER Chemie-Armaturenbau GmbH , D47906 Kempen, Germany
declares that:	Type 28y Piggable ball valve (BR 28y), with packing <ul style="list-style-type: none"> • with lever for 90° operation • with worm gear and handwheel
<p>1. The valves are pressure accessories within the meaning of the Pressure Equipment Directive 2014/68/EU and conform with the requirements of this Directive.</p> <p>2. They may only be operated observing the Mounting and operating instructions ► EB 28y. (See ► EB 28y, Chapter 1 for piggable ball valves intended for dead-end service)</p>	

Applied standards

AD 2000 Regulations	Regulations for pressurized valve body parts
----------------------------	--

Type designation and technical features:

PFEIFFER data sheet ► TB 28y NOTE: This Manufacturer's Declaration applies to all valve types listed in this catalog.
--

Applied conformity assessment procedure:

Conforming to Annex III of the Pressure Equipment Directive 2014/68/EU, Module H

Name of notified body:

Identification number of the notified body:

TÜV Anlagentechnik GmbH Am Grauen Stein 51101 Köln Germany	0035
--	------

These Declarations become invalid when modifications are made to the piggable ball valves and/or assemblies that affect the technical data of the ball valve or the <Intended use> described in ► EB 28y, section 1 of the Mounting and operating instructions and considerably change the valve or an assembly delivered with it.

Kempen, 22. April 2023



 Stefan Czayka
 Head of Quality Management/IMS Representative

EU DECLARATION OF CONFORMITY

TRANSLATION



The manufacturer	PFEIFFER Chemie-Armaturenbau GmbH , 47906 Kempen, Germany
declares for the listed products that:	<p>Type 28y Piggable ball valve (BR 28y)</p> <ul style="list-style-type: none"> • with a Type 31a Quarter-turn Actuator (BR 31a) • with a rotary actuator of a different make <p>Prerequisite: the unit was sized and assembled by PFEIFFER Chemie-Armaturenbau GmbH. The serial number on the valve refers to the entire unit.</p>
	<ol style="list-style-type: none"> 1. It complies with all applicable requirements stipulated in Machinery Directive 2006/42/EC. 2. In the delivered state, the valve with actuator is considered to be final machinery as defined in the above-mentioned directive. <p>The start-up of these units is only permitted after the piggable ball valve has been installed from both sides in the pipeline and a risk of injury can be ruled out as a result.</p>

Referenced standards:

- a) VCI, VDMA, VGB: "Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen, Mai 2018" [German only]
- b) VCI, VDMA, VGB: "Zusatzdokument zum Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen vom Mai 2018" [German only], based on DIN EN ISO 12100:2011-03

Product description and technical features:

Stainless steel - ball valve functioning as shut-off - and stopper ball valve in piggable systems or as virtually cavity-free shut off valve mounted on piggable T-Pieces and end line stations, automated with a single or double-acting piston actuator for butterfly valves, ball valves and other valves with rotating throttle bodies.


For product descriptions refer to:
PFEIFFER data sheet for Type 28y Piggable ball valve ▶ TB 28y
PFEIFFER data sheet for Type 31a Actuator ▶ TB 31a
PFEIFFER mounting and operating instructions for Type 28y Piggable ball valve ▶ EB 28y
PFEIFFER mounting and operating instructions for Type 31a Actuator ▶ EB 31a

Valve accessories (e.g. positioners, limit switches, solenoid valves, lock-up valves, supply pressure regulators, volume boosters and quick exhaust valves) are classified as machinery components and do not fall within the scope of the Machinery Directive as specified in § 35 and § 46 of the Guide to Application of the Machinery Directive 2006/42/EC issued by the European Commission.

This declaration becomes invalid when modifications are made to the piggable ball valves and/or assemblies that affect the technical data of the ball valve or the intended use (▶ EB 28y, section 1) and considerably change the valve or an assembly delivered with it.

Persons authorized to compile the technical file:

Kempen, 23 April 2023



Stefan Czayka
Head of Quality Management/IMS Representative

DECLARATION OF CONFORMITY

TRANSLATION



The manufacturer	PFEIFFER Chemie-Armaturenbau GmbH , 47906 Kempen, Germany
declares for the listed products that:	Type 28y Piggable ball valve (BR 28y) <ul style="list-style-type: none"> • with free shaft end
<p>1. In the delivered state, the valve prepared for mounting on a rotary actuator (not a clearly defined actuator system) is considered to be partly completed machinery as defined in the Machinery Directive 2006/42/EC. Machinery is considered to be partly completed machinery when the machinery manufacturer has not determined all required specifications such as model type, thrusts, torques etc.</p> <p>The start-up of these units is only permitted after the valve has been installed from both sides in the pipeline and a risk of injury can be ruled out as a result.</p>	

Referenced standards:

- a) VCI, VDMA, VGB: "Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen, Mai 2018" [German only]
- b) VCI, VDMA, VGB: "Zusatzdokument zum Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen vom Mai 2018" [German only], based on DIN EN ISO 12100:2011-03

Product description and technical features:

Stainless steel - ball valve functioning as shut-off - and stopper ball valve in piggable systems or as virtually cavity-free shut off valve mounted on piggable T-Pieces and end line stations.
 For product descriptions refer to:
 PFEIFFER data sheet for Type 28y Piggable ball valve ▶ TB 28y
 PFEIFFER mounting and operating instructions for Type 28y Piggable ball valve ▶ EB 28y

Valve accessories (e.g. positioners, limit switches, solenoid valves, lock-up valves, supply pressure regulators, volume boosters and quick exhaust valves) are classified as machinery components and do not fall within the scope of the Machinery Directive as specified in § 35 and § 46 of the Guide to Application of the Machinery Directive 2006/42/EC issued by the European Commission.

This declaration becomes invalid when modifications are made to the piggable ball valves and/or assemblies that affect the technical data of the ball valve or the intended use (▶ EB 28y, section 1) and considerably change the valve or an assembly delivered with it.

Persons authorized to compile the technical file:

Kempen, 23 April 2023



Stefan Czayka
 Head of Quality Management/IMS Representative

15 Annex

15.1 Tightening torques, lubricant and tools

15.1.1 Tightening torques

i Info

¹⁾ The tightening torques named in the tables should only be understood as very rough and non-binding guide values and refer to a coefficient of friction of 0.2 μ . Lubricating the threads results in indeterminate tightening conditions.

15.1.1.1 Main components

When connecting the BR 28e pig loading ball valve and the BR 28y piggable ball valve to the pipe, the screw connections are tightened alternately and evenly according to the following torques.

Table 15-1: Tightening torques of the main components

BR 28e pig loading ball valve with pipe				
Nominal size		Quantity	Thread (l)	Tightening torque ¹⁾
DN	NPS			
50	2	8	M12	74 Nm
80	3	8	M16	183 Nm
100	4	8	M20	370 Nm
125	5	8	M20	370 Nm
150	6	12	M20	370 Nm
200	8	12	M30	380 Nm

BR 28y piggable ball valve with pipe				
Nominal size		Quantity	Thread (l)	Tightening torque ¹⁾
DN	NPS			
50	2	8	M10	44 Nm
80	3	8	M16	183 Nm
100	4	8	M20	370 Nm
125	5	8	M20	370 Nm
150	6	12	M20	370 Nm
200	8	12	M30	380 Nm

15.1.1.2 Body sections, stuffing box flange etc.

The body sections and stuffing box flange as well as possibly installed packing bearings and bearing journals are screwed in accordance with the details in chapter "15.1.1 Tightening torques" of the respective mounting and operating instructions, see ► EB 28e and ► EB 28y.

15.1.1.3 Flange connection

i Info

Required tightening torques for assembly for flanges according to DIN EN 1092-1 type 11 and connecting elements (e.g. screws, threaded pins) made of 25CrMo4 / A4-70 or a comparable strength.

The values are taken from the "Guidelines for assembly of flange connections in processing plants" of the VCI (Verband der Chemischen Industrie e.V.).

Table 15-2: Required tightening torques

DN [mm]	PN [bar]	Thread	Tightening torques [Nm] for sealing units ³⁾		Tightening method ⁶⁾
			A	B	
50	10 ... 40	M16	125 ⁴⁾	80	I
80	10 ... 40	M16			
100	10 ... 16	M16	240 ⁵⁾	150	
	25 ... 40	M20			
125	10 ... 16	M16	125 ⁴⁾	80	II
	25 ... 40	M24	340	200	
150	10 ... 16	M20	240 ⁴⁾	150	I
	25 ... 40	M24	340	200	II
200	10 ... 16	M20	240 ⁵⁾	150	I
	25	M24	340	200	II
	40	M27	500	250	

³⁾ These tightening torques were calculated by the company BASF SE and confirmed by partner companies.
⁴⁾ Recommended lever length 300 mm.
⁵⁾ Recommended lever length 550 mm.
⁶⁾ I) With manually-operated spanner with a suitable extension if necessary.
 II) With a torque wrench or other torque-controlled procedure

Table 15-3: *Sealing unit A*

Seal	Nominal pressure	Description
Flat seal	PN 10 to PN 25	Without inner eyelet
	PN 40	With inner eyelet

Shaft ring seals up to PN 40 are covered by this.
Flat seals with inner eyelet for PN 10 - 25 are already covered, providing that the required characteristic values are complied with.

Table 15-4: *Sealing unit B*

Seal	Nominal pressure	Description
Seal for tongue and groove flanges	PN 10 to PN 40	<ul style="list-style-type: none"> - With fibre gaskets and metal-reinforced graphite gaskets - O-rings of different materials
Grooved gasket		-
Spiral gasket with graphite		-

15.1.2 Lubricant

Table 15-5: *Recommended lubricant*

Use	Temperature range	Lubricant
Screws and nuts	-10 ... +200°C	Heavy-duty grease paste (e.g. Gleitmo 805, manufacturer Fuchs) Not suitable for grease-free ball valves or for use with oxygen
Screws and nuts	High temperature	Heavy-duty grease paste Molykote 1000

15.1.3 Tools

Suitable tools are required to work on the pig loading ball valve.
Unsuitable tools can damage the ball valve.

15.2 Spare parts

PFEIFFER recommends spare part sets for "Commissioning" and for "2-year operation".

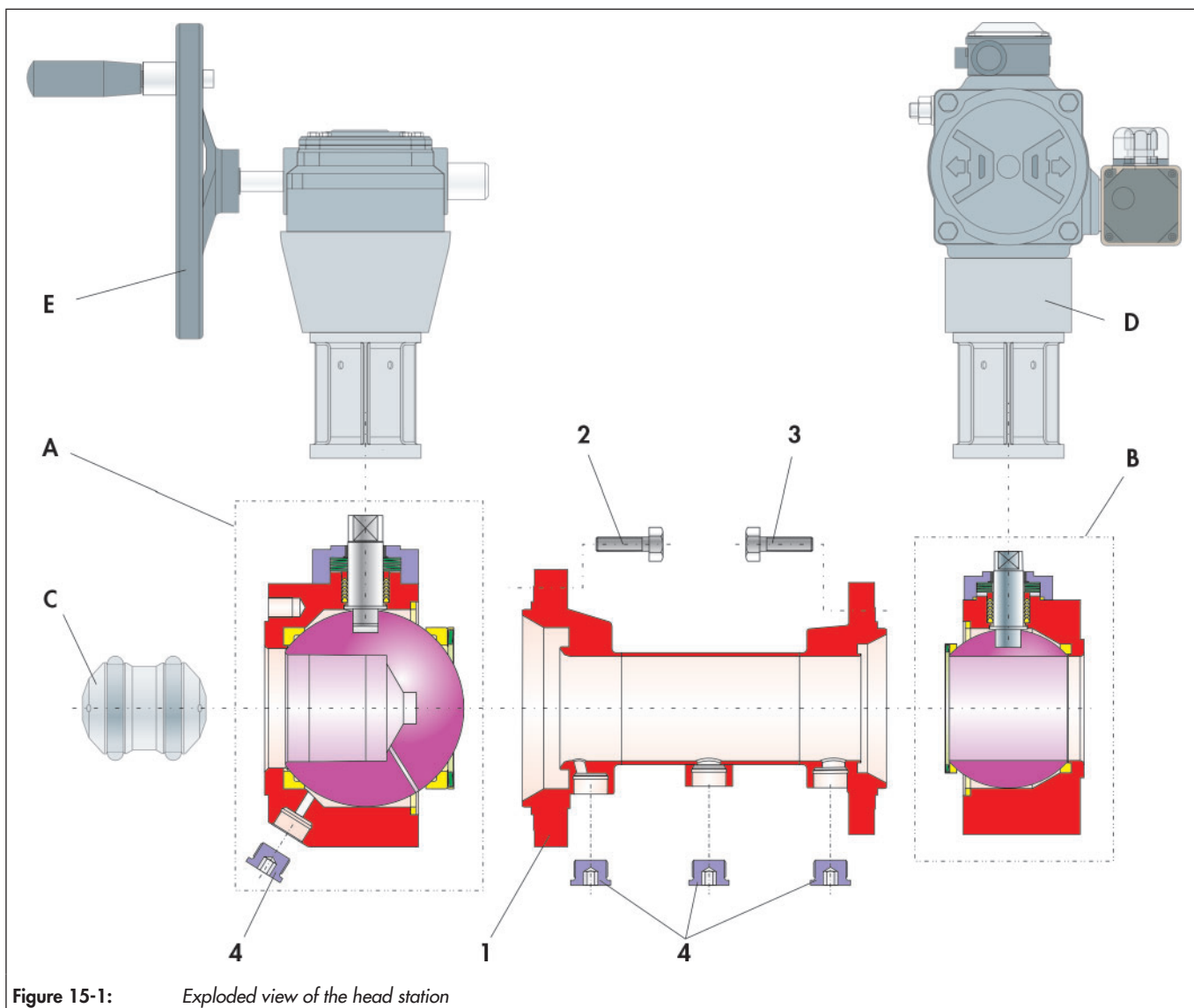


Figure 15-1: Exploded view of the head station

Table 15-6: Recommended spare parts of the head station

Item	Designation	Material	Remark	Spare parts set	
				Commissioning	2-year operation
1	Main body	1.4571			
2	Screw	A4-70			
3	Screw	A4-70			
4	Screw plug	1.4571			
A	BR 28e pig loading ball valve	Variable	Spare parts, see ► EB 28e, Chapter 15.2	•	•
B	BR 28y piggable ball valve	Variable	Spare parts, see ► EB 28y, Chapter 15.2	•	•
C	BR 28m pig (accessories)	Variable	Spare parts, see ► EB 28m, Chapter 11.2	As required	
D	BR 31a quarter-turn actuator	Variable	Spare parts, see ► EB 31a, Chapter 15.2	As required	
E	Hand lever or manual gear, 180°	Variable		As required	
Not marked	Control Unit BR 28s	Variable		As required	

15.3 Service

For maintenance and repair work as well as malfunctions or defects, contact the After Sales Service at PFEIFFER for support.

E-mail

The After Sales Service can be reached at the e-mail address:
sales-pfeiffer-de@samsongroup.com.

Necessary data

Provide the following information in the case of questions and for troubleshooting:

- Manufacturer number
- Head station type
- Article number
- Nominal size and version of the head station
- Medium (designation and consistency)
- Medium pressure and temperature
- Number of actuations (year, month, week or day)
- Installation drawing if available
- Completed declaration regarding contamination. This form is available at ► www.pfeiffer-armaturen.com.

Further information

The indicated data sheets and further information is available, also in English, at the following address:

PFEIFFER Chemie-Armaturenbau GmbH

Hooghe Weg 41 • 47906 Kempen

Phone: 02152 / 2005-0 • Fax: 02152 / 1580

E-mail: sales-pfeiffer-de@samsongroup.com

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EB 28k_EN

July 2024 edition
Subject to technical changes