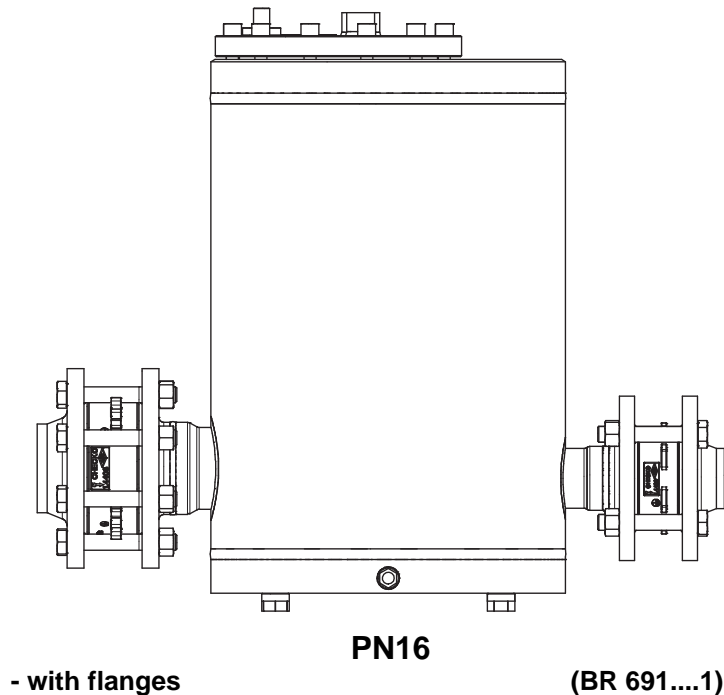


Operating and installation instructions

In accordance with EC Directive 2014/68/EU on Pressure Equipment

Condensate pump (mechanical)

CONLIFT® (PN16)



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1.0 General information on operating instructions

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

They are binding for transport, storage, installation, commissioning, operation, maintenance and repair. The condensate pump was designed in accordance with the generally accepted rules of sound engineering practice. It is the owner's responsibility to ensure that the system is operated in conformity with relevant local regulations.

Please read these operating instructions prior to installing and / or commissioning the condensate pump. The notices and warnings must be observed and adhered to at all times. All work must be carried out by expert personnel or all activities supervised and checked. For the purpose of these operating instructions, expert personnel are defined as persons who are:

- Familiar with the procedures for installing, commissioning, operating and maintaining the condensate pump as well as with the contents of these operating instructions
- Qualified to perform the functions and activities entrusted to them
- Familiar with all local or in-house regulations which are relevant for operation and safety.

The manufacturer reserves the right to introduce technical modifications or improvements at any time. Please make sure these operating instructions are up to date prior to carrying out any work on the condensate pump.

2.0 Notes on possible dangers

2.1 Significance of symbols



Warning of general danger.

2.2 Explanatory notes on safety information

In these operating and installation instructions dangers, risks and items of safety information are highlighted to attract special attention.

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

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

3.0 Storage and transport



Attention!

- Protect against external force (like impacts, vibrations, etc.)
- Condensate pump must not be used to take up external forces that they are not designed for, e.g. do not use them as climbing aids, or as connecting points for lifting gear.
- Suitable materials handling and lifting equipment must be used.
Observe the maximum load carrying capacity of the eye nut: 140 kg
(See catalogue sheet for weights.)
Remove any additional parts attached to the main connections such as stop valves, strainers, etc. prior to transporting the equipment.

- At -20°C to +65°C, dry, free of dirt.
- The paint is a base coat to protect against corrosion during transportation and storage. Do not damage paint protection.

4.0 Description

4.1 Area of application

The condensate pump is used to pump Group 2 fluids with a density of 850 kg/m³ to 1150 kg/m³, up to a total backpressure of 8.0 bar.



Attention!

- Refer to the data sheet and this operating instructions for applications, limits on use and possibilities.
- The condensate pump may only be pressurised up to the maximum allowable operating pressure indicated on the nameplate. If the system operates under vacuum, the maximum allowable differential pressure (DP) should also be observed.
- If necessary, the connecting pipes should be protected against excess pressure.
- If the equipment is used in hazardous areas, the expected surface temperatures, which are generally dependent on the fluid pumped and the motive medium, should be observed.

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

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

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

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

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

4.2 Operating principles

(refer to Fig. 1 Page 5)

CONLIFT is a mechanical condensate pump which is driven by steam, compressed air or inert gas. It works cyclically according to the positive displacement principle.

Each cycle is comprised of the following steps:

a) Filling:

Fluid flows through the check valve at the inlet into the body of the condensate pump. The gas inside the body escapes via the air vent valve. The ball float (24.16) in the condensate pump rises up according to the condensate level; at the high trip point it operates the control mechanism by means of a rod. The air vent valve closes as a result and the motive medium valve opens.

b) Pumping

The inflowing motive medium pressurises the fluid inside the body. The check valve at the inlet closes as a result and the check valve at the outlet opens. The ball float sinks back down in the body according to the condensate level; at the low trip point it resets the motive medium and air vent valves.

Venting

The pressurised motive medium inside the body is now able to escape via the air vent valve.

The pressure in the body drops as a result, so that fluid can flow into it again via the check valve at the inlet. The cycle starts anew.

If the pressure difference between the condensate inlet and the feed pipe is positive, the fluid to be pumped can flow through the condensate pump without operating the control mechanism.

4.3 Diagram

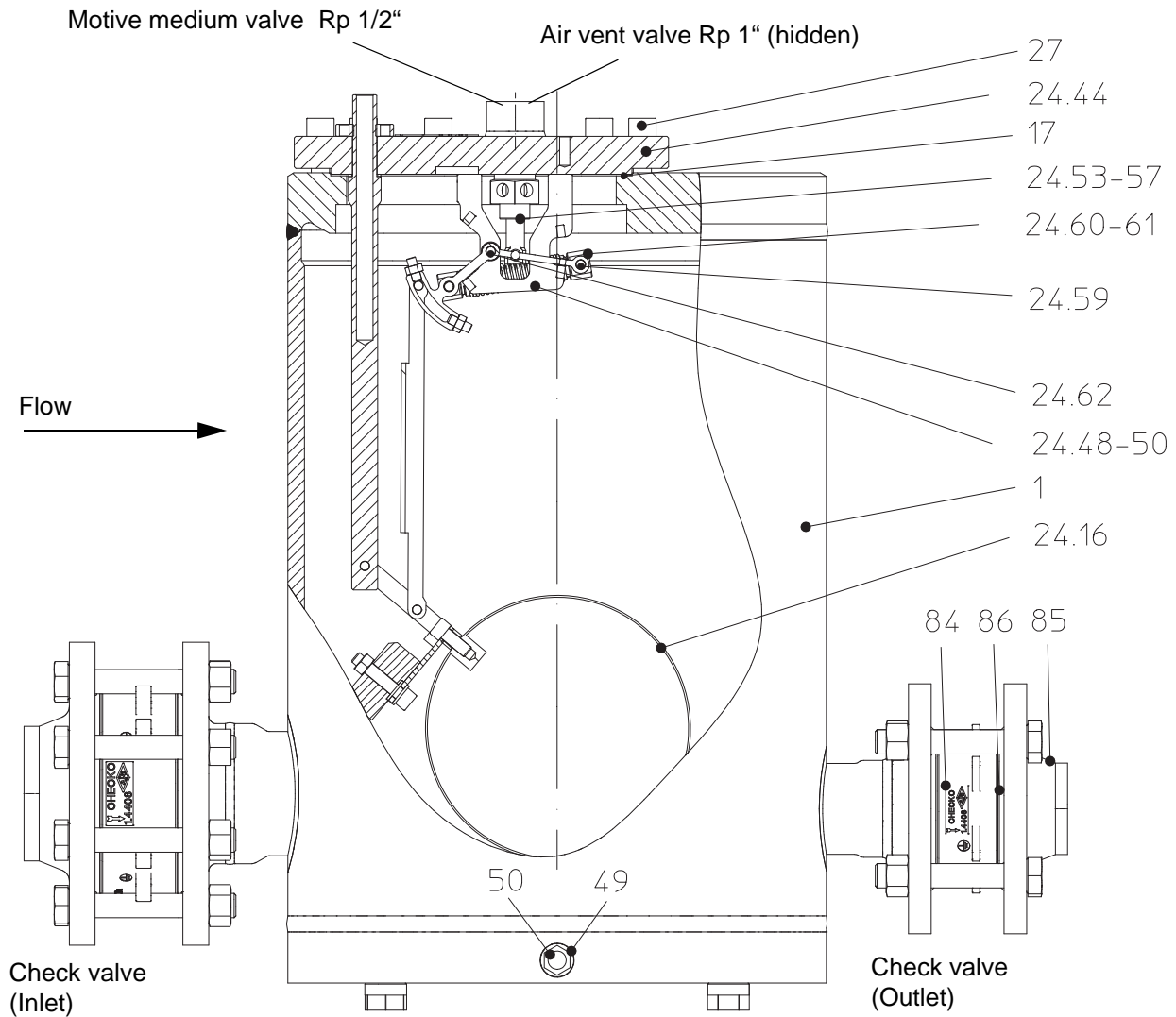


Fig. 1: CONLIFT® - BR691

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

4.4 Technical data – remarks

For example

- Principal dimensions, weights
- Pressure-temperature-ratings, etc.,
- Operating limits, flow rate, etc. refer to data sheet.

4.5 Marking

Details of the CE marking on the type plate:

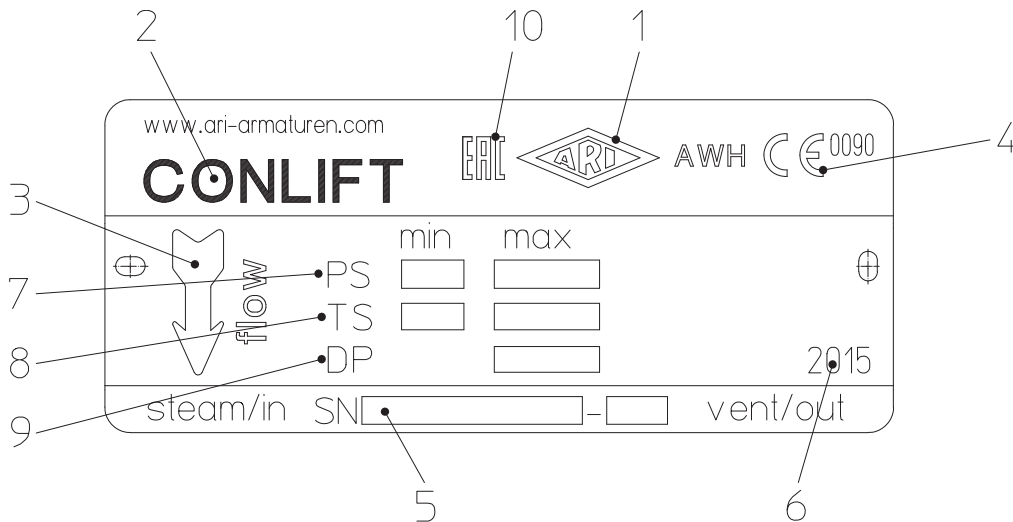


Fig. 2

- | | |
|--|--|
| <ul style="list-style-type: none"> 1 Manufacturer 2 Product description 3 Flow direction 4 CE marking, Notified body 5 Serial number 6 Year of manufacture 7 PS min. = min. permissible pressure
PS max. = max. permissible pressure 8 TS min. = min. permissible temperature
TS max. = max. permissible temperature 9 DP max. = max. permissible differential pressure 10 EAC marking | <p>For address of manufacturer,
refer to Point 11.0 Warranty /
Guarantee</p> |
|--|--|
- (The maximum allowable differential pressure refers to the pressure difference between the point with the highest pressure (generally the motive medium connection) and the point with the lowest pressure (generally the vent connection))

5.0 Installation

5.1 General remarks on installation

The following points should be taken into account in addition to the general principles governing installation work:



ATTENTION!

- *Do not remove flange covers and nozzle caps until immediately prior to installing the equipment, in order to prevent the ingress of dirt or foreign particles.*
- *The interior of the condensate pump and the pipeline must be free of foreign particles.*
- *Note the flow direction of the condensate pump.*
- *The disc check valves supplied with the unit should be installed upstream and downstream of the condensate pump. Note the flow direction.*
- *The condensate pump must stand securely on a level surface.*
- *If it is operated with steam as the motive medium, the steam inlet pipe must be drained upstream of the condensate pump.*
- *The flow rate is largely determined by filling head of the condensate pump. For the minimum filling head, refer to the data sheet.*
- *The pressure of the motive medium should not exceed the total backpressure by more than 2 bar. A pressure reducing device should be provided if necessary.*
- *All installation work must be carried out by specialist personnel.*
- *Lay pipelines such that damaging transverse, bending and torsional forces are avoided.*
- *Protect condensate pump from dirt during construction work.*
- *Connection flanges must mate exactly.*
- *Condensate pump must not be used to take up external forces that they are not designed for, e.g. do not use them as climbing aids, or as connecting points for lifting gear, etc.*
- *Suitable materials handling and lifting equipment should be used for assembly work. See catalogue sheet for weights.*
- *Centre the gaskets between the flanges.*
- *Prinzipiell sind bei allen frostgefährdeten Anlagen Vorkehrungen gegen Einfrieren zu treffen.*

- Planners / construction companies or the owner are responsible for positioning and installing products.
- The valves are designed for deployment in systems that are not affected by the weather.
- For applications out of doors or in adverse environments like corrosion-promoting conditions (sea water, chemical vapours, etc.), special designs or protective measures are recommended.

5.2 Place of installation

The place of installation should be easily accessible and provide ample space for maintenance and removing the cover / controller of the condensate pump. For the servicing dimensions, refer to the data sheet.

6.0 Commissioning



ATTENTION!

- *Before commissioning the condensate pump, check the material, pressure, temperature and direction of flow.*
- *Regional safety instructions must be adhered to.*
- *Residues in piping and condensate pump (dirt, weld beads, etc.) inevitably lead to leakage. Flush the pipes and clean the strainer if necessary.*
- *Check that all connections are tight.*
- *The temperature of the surfaces can reach 200°C during operation (depending on the fluid pumped and the motive medium). Insulation and notes on possible dangers should be provided where necessary.*
- *If cold fluids are pumped using compressed air, icing may occur in the vented pipe. Heat the vented pipe if necessary.*
- *Open any stop valves in the feed pipe downstream of the condensate pump.*
- *Slowly open the stop valve in the motive medium pipe.*
- *Open the stop valve at the inlet. The condensate pump starts up automatically as soon as there is enough fluid inside it.*

Before commissioning a new plant or restarting it after repairs or modification, always ensure that:

- *All work has been completed correctly!*
- *The valve is in the correct position for its function.*
- *Safety devices have been attached.*
- *Check all bolting.*
- *Carry out a visual inspection for leaks.*
- *Possibly check the strainer.*

7.0 Care and maintenance

The operator must define maintenance and maintenance-intervals to meet requirements.



ATTENTION!

- **read points 10.0 and 11.0 before carrying out installation and repair work!**
- **read point 6.0 before recommissioning!**

Clean all threads and sealing faces with temperature stable lubricant (e.g. OKS Anti-Seize Paste, white / metal-free) prior to installing the equipment.

- *Shut off all pipes to and from the condensate pump.*
- *Stop valves should be marked and if possible secured to prevent inadvertent opening.*
- *Allow the system to cool down.*
- *Make sure it has no pressure.*
- *Wear protective clothing and equipment and use suitable tools.*

7.1 Removing the control mechanism

- Depressurise the condensate pump.
- Remove the motive medium and vented pipes.
- Drain the condensate pump if necessary by unscrewing the drain plug (50).
- Remove the cheese head screws (27).
- Lift the cover of the condensate pump (24) vertically so that the complete control mechanism is visible.
- Swivel the cover sideways and remove it.

7.2 Installing the control mechanism

- Check the sealing faces on the body and the cover, and remove any dirt or gasket residues adhering to them.
- Place a new gasket (17) in position on the body.
- Insert the control mechanism into the body.
- Align the support rod of the float (24.16) with the body parallel to the fluid inlet. The positioning pin on the body and the positioning hole in the cover can be used to position the control mechanism precisely.
- Tighten all cover screws (27) crosswise hand-tight (no tools needed). Next, tighten the screws crosswise in three steps: first to 10 Nm, then to 20 Nm and finally to 35 Nm.
- Connect the motive medium and vented pipes.
- For recommissioning, refer to section "6.0 Commissioning".

7.3 Replacing the spring assemblies



ATTENTION!

- The spring assemblies are under high tension. Danger of crushing!

- For removal, refer to section "7.1 Removing the control mechanism".
- Remove the retaining rings (24.32) and the washers (24.69) from the spring shafts.
- Remove the spring assembly (24.60 / 24.61) from the spring shaft.
Be careful not to lose the distance bushes (24.24).
- Assemble in reverse order.
- The washers (24.69) must always be inserted between the spring support (24.60) and the retaining ring (24.32).
- Always use suitable pliers to install the retaining rings (24.32).



ATTENTION!

- If retaining rings (24.32) are removed, they should always be replaced with new rings.

- Be careful not to overstretch the retaining rings when they are installed, or they will no longer sit securely on the spring shafts.

- Assemble as described in section "7.2 Installing the control mechanism".

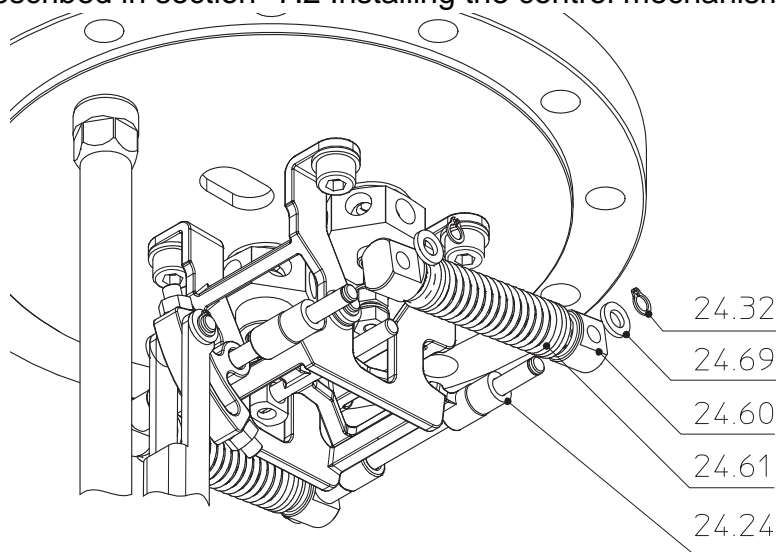


Fig. 3

7.4 Maintenance and repair work on the control mechanism



ATTENTION!

- The spring assemblies are under high tension. Danger of crushing!

- For removal, refer to section "7.1 Removing the control mechanism".
- Clean if necessary.

- To remove the control mechanism, remove one retaining ring (24.32) from the fixing pin (24.58) between the bridge (24.66) and the release lever (24.49).

- Remove the fixing pin (24.58).

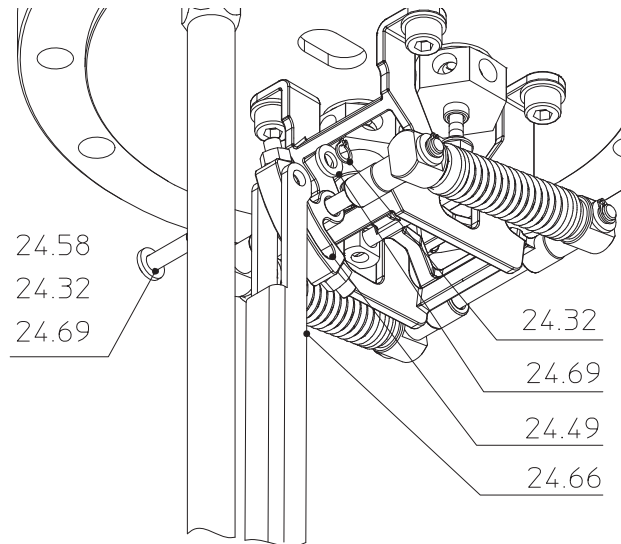


Fig. 4

- Loosen the cheese head screws (24.33) and remove the control mechanism, including the stem of the air vent valve (24.56), from the cover.

- Check the spring assemblies (24.60, 24.61) on the control mechanism for damage and replace them if necessary. Refer to section "7.3 Replacing the spring assemblies".

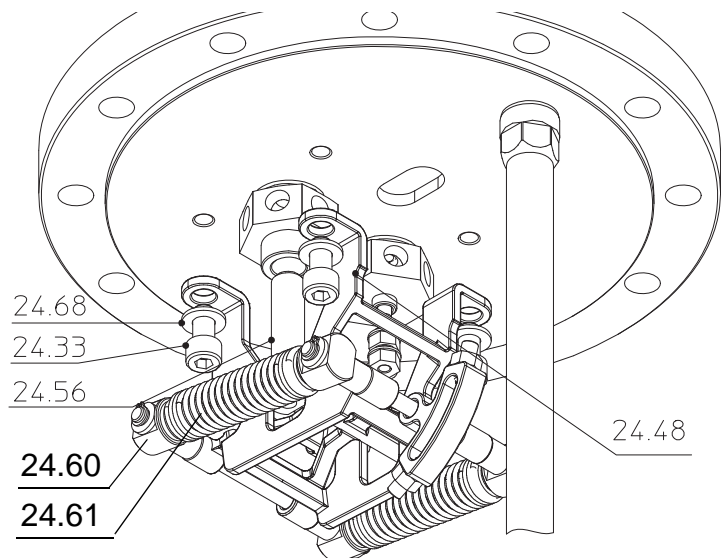


Fig. 5

- Remove the adjusting nuts (24.57) from the stem (24.55) of the motive medium valve (1/2").
- Remove the stem guides (24.51 / 24.52) from the cover.
- Remove the seats (24.53 / 24.54) and the stem (24.55), then check for damage and replace them if necessary.
- Replace the sealing rings (24.67).

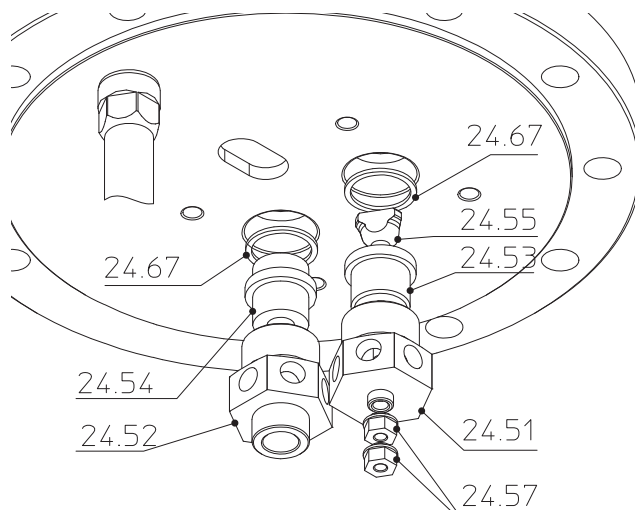


Fig. 6



ATTENTION!

- If retaining rings (24.32) are removed, they should always be replaced with new rings.
- Be careful not to overstretch the retaining rings when they are installed, or they will no longer sit securely on the shafts.

- Assemble in reverse order.
(For tightening torques refer to section "7.5 Tightening torques".)

- When installing the stem of the air vent valve (24.56), make sure the parallel pin (24.2) and the compression spring (24.5) are inserted into it correctly.
- To install the parallel pin (24.2), press it into the stem with a small screwdriver, then push the stem onto the tappet of the shift lever (24.50).

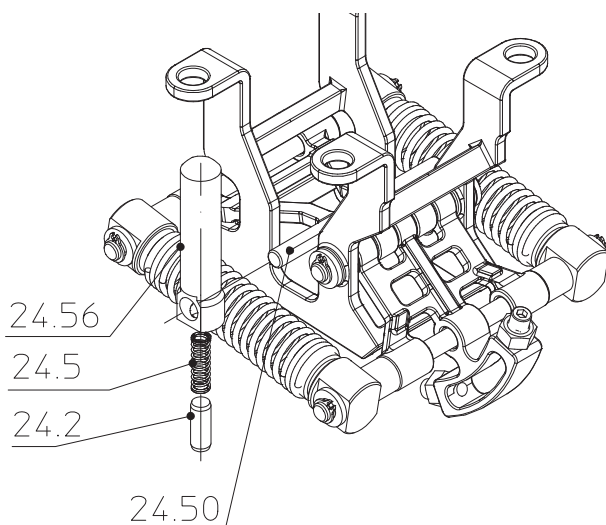


Fig. 7

- Position the adjusting nuts (24.57) so that when the levers (24.49 / 24.50) are down, the clearance between the tappets and the nuts (24.57) measures between 0.5 and 1.0 mm.



ATTENTION!

- Failure to comply with this clearance can result in increased wear, leakage or malfunctions.

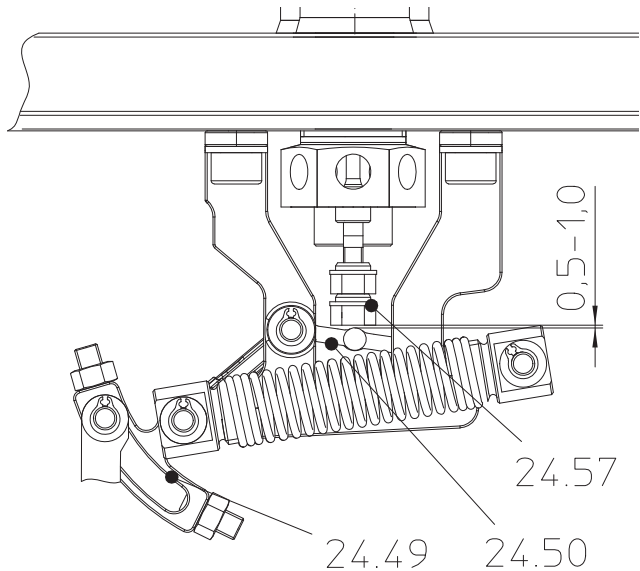


Fig. 8

7.5 Tightening torques

(refer to Fig. 1 Page 5- Fig. 8 Page 13)

Pos.	CONLIFT PN16	Torque (Nm) DN25/25 - 80/50
27	Cheese head screw M12	35
24.33	Cheese head screw M8	20
24.51	Stem guide M27 x 1,5	140
24.52	Stem guide M27 x 1,5	140
24.57	Stem nut / adjusting nut M6	10

8.0 Troubleshooting

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



ATTENTION !

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

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

9.0 Fehlersuchplan



ATTENTION!
 - read points 10.0 and 11.0 before carrying out installation and repair work!
 - read point 6.0 before recommissioning!

Fault	Possible causes	Remedy
Low, insufficient flow rate; condensate pump works fast.	Check valve at inlet leaking or blocked in open position. Condensate flows back into manifold or heat exchanger during pumping.	Check and clean the check valve at the inlet and if necessary replace. If required, install a strainer in the condensate inlet pipe.
	Check valve at outlet leaking or blocked in open position. Condensate flows back from feed pipe into body of condensate pump.	Check and clean the check valve at the outlet and if necessary replace. If required, install a strainer in the condensate inlet pipe. Be careful not to drop small parts into the body of the condensate pump while carrying out maintenance work.
Low, insufficient flow rate; condensate pump works slowly.	Condensate only fed slowly to condensate pump. Flow resistance in inlet pipe too high.	Open the stop valves fully, check and clean the strainer.
	Filling head of condensate pump too low.	Raise the filling head. If necessary, install a larger condensate pump or several condensate pumps in parallel.
	Motive medium pressure too low.	Increase the motive medium pressure (see data sheet), open the stop valves fully.
	Flow resistance in feed pipe too high.	Use a shorter feed pipe or select a larger nominal diameter. Open the stop valves fully.
	Icing in vented pipe during operation with compressed air.	Reduce the air pressure as far as possible. If necessary, heat the vented pipe or use steam as the motive medium.
Low, insufficient flow rate; condensate pump works normally.	Condensate level too high.	Check the design data and the actual condensate level. If necessary, install a larger condensate pump or several condensate pumps in parallel.
	Condensate only occurs irregularly or intermittently.	Connect a buffer vessel upstream (select a larger manifold, etc.)

Fault	Possible causes	Remedy
Condensate pump does not work correctly or does not work at all.	Motive medium connection shut off.	Open the stop valve upstream of the motive medium connection.
	Venting connection shut off or vented pipe laid incorrectly.	Open the stop valve in the vented pipe. The vented pipe must be laid so that it is self-draining. The return section of the vented pipe must be laid back into the system higher than the water level in the manifold or the heat exchanger.
	Condensate inlet shut off.	Open the stop valve in the condensate inlet pipe.
	Feed pipe shut off.	Open the stop valve in the feed pipe.
	Motive medium pressure too low.	Increase the motive medium pressure. Attention! The maximum allowable (differential) pressure must not be exceeded.
	Motive medium pressure too high.	Reduce the motive medium pressure so that it is less than the maximum allowable pressure.
	Control mechanism blocked, spring (24.61) broken or ball float (24.16) leaking	Refer to section "7.4 Maintenance and repair work on the control mechanism".
	Severe steam leakage from vented pipe.	The motive medium or air vent valve is faulty or leaking, refer to section "7.0 Care and maintenance".

10.0 Dismantling



ATTENTION!

The following points must be observed:

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

11.0 Warranty / Guarantee

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

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

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

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

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

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

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

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



Technology for the Future.
GERMAN QUALITY VALVES

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