

GÄVLE TRYCKKÄRL

Operating instructions for galvanized pressure devices in potable water installations

Type of pressure device	Hydrofor Tank	
Manufacturer number of the pressure device	290504-21	
Volume of pressure device	300	l.
Operating pressure min./max. allowed	0/6	bar
Testing pressure	8,58	bar
Operating temperature min./max. allowed	0 /+50	°C
Medium pressure device Specification	Water with air cushion PED 2014/64 EU and AD 2000	
Category	III	
Module	G	
Number of Notified Body	CE 0045	

The correct use of the pressure device is essential for safe operation. For this reason the following tips and information have to be observed by the operator.

The pressure device is built and tested in accordance with AD 2000 in order to enable 5 year testing intervals for inspection of the interior and recurring pressure checks every 10 years.

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1.0 Manufacturer information

1.1 Declaration of conformity

With the declaration of conformity the first construction and pressure checks made by the manufacturer are confirmed for the pressure device.

The conformity of the pressure device is documented by the **CE 0045** mark at the name plate. With the declaration of conformity there are operating instructions which are valid for all pressure devices and fulfil the requirements of PED 2014/68/EU.

1.2 Protection rights

The following technical instructions for the use of the pressure device are the intellectual property of HEIDER GmbH. The transfer of this documentation or the drawings to third parties requires written approval.

1.3 Complaints

The pressure device has been subjected to a final check. Any deviations in dimensions are within the permitted tolerances in adherence to DIN EN ISO 13920 class DH and for welding according to DIN EN 5817 class B (C). The pressure device should be checked for intactness immediately on delivery. Possible transport damage should be communicated immediately.

The adjustment of pipes to fit the pressure device, possible alignment and realignment of supports, pipes, screws and similar components or container legs to existing basics belongs to the equipment assembly. All muffs were recut with an "Rp" thread drill.

2.0 General information

2.1 Ambit

This technical documentation applies solely to the pressure device manufactured by us. A transfer of the technology to other or similar projects is not permitted. The operating safety is only guaranteed when used in accordance with its purpose with the intended operating medium and within the pressure and temperature limits. These operating instructions include important tips and information and following these is essential to guarantee the correct and seamless functioning of the pressure device. Prior to using the pressure device the complete operating instructions have to be carefully read and kept.

2.2 Conversion and/or modifications

Conversions or modifications to the pressure device are not permitted. Welding work may not be carried out on components holding pressure. For the guarantee of operating safety only original replacement parts from HEIDER GmbH may be used.

2.3 Safety tips

These operating instructions include basic tips which should be observed for the set up, operation and maintenance. Therefore it is essential to hand out the complete documentation to the operators' specialist staff or to make it available at the utilisation location prior to use. Not observing the safety tips can lead to endangerment of staff, the pressure device and the environment.

2.4 Maintenance, assembly and repairs

The operator has to ensure that all maintenance, assembly and repairs are carried out by authorised and qualified personnel, who have additionally studied the operating instructions in detail. The responsibility and liability for fitting and assembly is with the operator after the start of operation.

2.5 Transport

Pressure devices should only be transported empty. We recommend only using suitable means of transport and fixing. For pressure devices of up to 500 l. a handcart is recommended and for pressure devices of more than 750 l. suitable fork lift vehicles should be used. Corresponding lifting loops are fitted to the pressure devices.

TIP

**In the event of incorrect transportation the following damage can occur:
Dents, bent legs, oval muff connections or similar damage.**

2.6 Storage

When storing the pressure device it must be placed on a fixed level surface and be protected from falling over. The storage area has to be covered and should not be in the direct traffic area.

2.7 Liability exemption

If the following tips and information are not followed, there is no liability. Equally this exemption from liability leads to the loss of damage compensation claims.

This especially applies in the event of:

- unprofessional installation

- unprofessional deployment
- modification and/or conversion measures
- non-compliance with safety tips
- unprofessional maintenance work
- unprofessional transportation
- unprofessional storage
- corrosion as resulting damage

3.0 Product description

3.1 Preface

These operating instruction includes important and useful information for the proper, seamless and safe operation of pressure devices. Prior to use, the operating instruction should be read carefully. The information in these operating instruction is based on the latest experiences and can be subject to changes. We retain the right to further develop the construction and/or the version of the product at any time without obligation towards third parties. These operating instruction was created as exactly and as completely as possible. However, in the event that errors or gaps are ascertained during use, we would be grateful for the communication of such, so that corresponding corrections can be made.

3.2 Product description

The pressure device serves as a hydrophore tank or as a buffer tank with air cushion in potable water installations. It is suitable for potable water or industrial water with a pH-value of more than 7,0. The pressure device is manufactured from specially galvanizable materials. Special emphasis is placed during manufacture on the optimisation of operational and constructional influences, to avoid corrosion. The pressure device is exclusively designed for use in potable water installations with predominantly static load in accordance with AD 2000, sheet S1 for max. 1000 load changes at $p = 0-6 \text{ bar}$ and $N = \infty \Delta p \leq 20\% \text{ PS}$. The pressure device was subjected to a conformity evaluation in adherence with PED 2014//68/EU, category III, module G.

BEWARE

Pulsing and/or alternating stress which are out of range of the above mentioned product description are not permitted. Non-adherence leads to the premature failure of the pressure device.

3.3 Hot galvanizing

The hot galvanizing according DIN 50976 serves as surface protection for metal items made from unalloyed steels. This metal coat occurs by immersion of the item in a molten zinc bath at a temperature of 450 °C at least and a zinc mass part of 98,5 %. For pressure devices in potable water or water treatment installations acc. to DIN 1988 the special requirements for the chemical composition of the zinc coating for potable water-swept parts acc. to DIN EN ISO 10240 had been observed. For the use in potable water or water treatment installations it has to be observed, that the pH-value of the water is higher than 7,0 to ensure the creation of the rust protection layer. The operating temperature should not pass over 60 °C because this occurs a reversal of the corrosion potential which leads to corrosion.

For a metallic lustered and flowery look of the zinc surface, usually a special material has been chosen. Another look of the zinc surface does not reduce the quality of the hot galvanizing.

To avoid corrosion with chloride ionic waters the influence groups

- | | | |
|---|-----------------------|--------------------------|
| - | Material parameter | S235 JRG2 (galvanizable) |
| - | Water parameter | pH-value higher than 7,0 |
| - | Temperature parameter | 0 bis max. 50°C |

are to be checked and observed.

The hot galvanizing is to the greatest possible extent resistant for potable water with a pH-value higher than 7.0 and for similar industrial waters with a low chloride ionic content. Acc. to the national Drinking Water Ordinance DIN 1988 and the DVGW work sheets W534 and W541 as well as DIN 50930 part 1 and 4 the following limits are specified:

Chloride ions until 250 mg/l max.

Sulfate ions until 240 mg/l max.

Nitrate ions until 50 mg/l max.

TIP

To avoid corrosion the above mentioned values have to go below 80 %. It is necessary to prevent higher concentrations. Non-adherence may lead to corrosion even in case of temporary exceeding of the limits.

A higher chloride ion content may lead to corrosion. It is recommended to the operator to observe the obvia-
tion of chloride ion in the medium. If it is not possible to avoid higher chloride ion concentrations, we suggest
to use another material.

4.0 Fitting instructions

4.1 Positioning

For positioning and operation the general national technical regulations should be observed. In Germany
these include TRB 600 and TRB 700. Pressure devices should only be placed in frost free rooms. Pressure
devices may only be deployed in accordance with the pressure level and operating temperature. In the case
of longer operating intervals or danger of frost the system or the pressure device has to be emptied.

4.2 Installation

The installation has to be carried out by a nationally recognised and authorised installation company. It is im-
portant to observe the seamless function of the pressure device with the safety fittings. In the event of break-
downs a recognised and authorised installation company should be consulted. In the interests of safety the
functionality and safety equipment should be checked at least every two years by an authorised fitter. See al-
so point 6.0!

BEWARE

**Pipes have to be connected to the pressure device without stresses. All screw connections have to
be tightened professionally at the latest prior to use.**

TIP

**We would like to draw your attention to the fact that a pressure device is delivered without extension
parts (safety valve, pressure reducing valve, pressure gauge etc.). The pressure device becomes a
component group in accordance with DGRL 97/23/EU, Article 1, pt. 2.1.5. by adding the above men-
tioned components. For this group a suitable declaration of conformity with operating instructions is
required. Our guarantee is limited to the product we deliver.**

4.3 Mixed-Metal installation

In potable water installations stainless steel press fittings 1.4404 or 1.4571 have proven to be suitable espe-
cially from hygienic reasons. When using fittings from red brass or copper substances in the direction of flow
in front of galvanized parts, there is a local risk of corrosion. But if there are copper substances behind the
galvanized parts in the direction of flow they can also be used without issue. Other pipe substances (such as
zinc alloy for example) are also permitted if the deployment levels are observed.

4.4 Disinfection

After completing the installing we recommend a disinfection of the pressure device. Therefor the pressure
device has to filled with a chlorine-water-mixture with a concentration of max. 25 mg/liter and to be left with-
out pressure for about 12 hours. Then drain the water and rinse with fresh water.

4.5 Pressure build-up

The pressure device is filled up to 50 – 80 mm below the upper water level indicator. The air cushion has to
be applied by a compressor using the connection in the upper end. At the installation an adequate air valve
shall be provided.

the pressure of the air cushion and the filling pressure of the pump shall be equal or lower than the pressure
device's nominal pressure. If the pump pressure is higher a pressure reducer between the pump and the
pressure device has to be provided.

4.6 Pump controls

The pump control occurs by a pressure switch. The switching points have to be set by the air cushion. It has
to be observed that the remaining water at the lower area of the water level indicator is about 50 to 80 mm. At
this point the pump should start working. In an analogous manner the pump should stop when the upper area
of the water level indicator shows about 50 to 80 mm without water. If the pressure device is designed cor-
rectly regarding the volume and the water consumption, pump switch-on intervals are between 10 and 15 per
hour. The intervals shouldn't increase 20 per hour.

BEWARE

**Only pressure switches can be used with a maximum pressure switch difference of 20 % of the oper-
ating pressure. The electrical installation may only be carried out by specialist staff.**

4.7 Fittings

It is necessary to ensure that the pressure device is equipped by customer with appropriate safety- and test-fittings to avoid an exceeding of the max. permitted operating conditions. It is important to adhere to the proper arrangement and choice of safety equipment. All safety equipment has to be checked, marked with DIN test and monitoring signs and the rated pressure level of the pressure device has to be adjusted.

TIP

All pressure device connections have to be checked for sealing after the fittings are attached.

5.0 Start of operation

5.1 Preparations

We would like to bring your attention to the national regulation TRB 403 for the pressure limit. The pressure may only build up to a maximum of 10% above the rated pressure of the pressure device.

5.2 Filling of the pressure device

Open the water inlet valve slowly. Now fill up the pressure device with water until there are 50 mm of air at the upper water level indicator. Close the water inlet valve.

5.3 Air cushion build-up

An air cushion was already created by filling the tank. The pressure difference of the air cushion has to be applied by using a compressor or an air bottle. Open the water inlet valve slowly. The air cushion pressure may not rise anymore. Now open the water outlet.

5.4 Set pressure switch

The pressure switch has to be mounted at the upper muff Rp ½". The adjustment occurs optical by the water level indicator. In case of water withdrawal the pressure switch has to start the pump when the water level indicator shows about 50 mm of water at the lower area and it has to stop the pump when the indicator shows about 50 mm of water in the upper area.

BEWARE

The pressure switch may only be set by suitable specialist staff. All settings have to be carried out with caution and checked in order to guarantee seamless operation.

5.5 Readiness for use

If all the above points are carried out properly the pressure device is now ready for use.

6.0 Checks

6.1 Equipment check

Pressure devices are divided into categories according to the operating pressure (rated pressure) and volumes in adherence with DGRL. The pressure device is to be assigned in category IV. The equipment for the pressure device was not delivered by us. The equipment has to be checked before the device is used.

BEWARE

If the safety settings are not adhered to it can result in damage to persons and property.

6.2 Recurring checks

Every 5 years an internal and external inspection should be carried out. Primarily corrosion and changes to the shape of the pressure device should be checked. If corrosion can be identified a further test (with an ultrasound scan) of the wall thickness in this area should be performed. It may not be below the minimum wall thickness according to the declaration of conformity. If it is at or below the minimal wall thickness, the pressure device should be **immediately** taken out of service. Otherwise the corrosion level should be ascertained and the test schedule redefined according to the corresponding national norms. Every 10 years a test of water pressure is carried out. The pressure has to be kept constant for at least 20 minutes. If there are leaks during the test in the welding seams or the basic material of the pressure device, these should be **immediately** communicated to the manufacturer.

7.0 Maintenance

7.1 Six monthly maintenance

This maintenance work can be carried out by the operator.

1. Check for seamless functionality of the pump. The switch intervals should not exceed max. 20 per hour. In the event of increased switch intervals it can normally be assumed that the pressure of the air cushion has changed, the water consumption was increased or that there is a leak. In principle, all of the three above mentioned influencing variables have to be checked.
2. Check of the air cushion pressure (e.g. via an usual operating automobile tire test unit). The air cushion pressure should be the same as the rated pressure of the pressure device. See point 4.5.
3. Check for sealing of pressure device connections. In the area of the air cushion use normal leak search spray. Check the outer surface for damage, soiling or other influences. Clean if required.
4. On checking the sealed areas it is important that the sealing areas are cleaned, checked for damage and new seals (original parts) are used if necessary.
5. For screw connections the screws have to be professionally tightened crosswise and damaged screws should be replaced with new screws of the same type and fixture class.

TIP

In the case of more than 20 switch intervals per hour there is increased wear for the pump. By non-compliance this can lead to premature failure of the pump.

Defects which are possibly found have to be remedied immediately by an authorised installation company or a qualified member of the operators' staff.

7.2 Maintenance every two years

In addition to the six monthly maintenance more extensive maintenance has to be carried out at least every two years by an authorised installation company. Here they should pay especial attention to:

- set pressure and operation of the safety valve
- set pressure and operation of the pressure reducing valve
- set pressure and operation of the pressure switch
- check for leak tightness of the air space incl. fittings

Possible deposits in the lower dished end have to be drained.

BEWARE

Prior to the maintenance and prior to opening the pressure device it must be ensured that there is no pressure a load in the pressure device, that it is completely empty and that it cannot be started up by a third party during the maintenance and/or inspection work.

7.3 Cleaning

Dependent on the level of soiling cleaning of the pressure device has to be carried out with reasonable frequency but at least all 24 months to retain its functionality and corrosive protection.

For the interior cleaning of the pressure device use water, normal washing up liquid, scrubbing brushes and brushes (mix of water / washing up liquid = 30:1). After cleaning rinse with large amounts of water. If needed wash with a pressure jet. Use only potable water for the pressure jet.

TIP

In the event of a high soiling level, deposits or other pollution a filter should be fitted if required.