Cryogenic check valves

CCV

Installation, operation and maintenance manual

Document No. C-0057

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1 Introduction

This installation, operation and maintenance manual applies for WEKA check valves to be welded in the piping system inside a vacuum box.

Please consider the following points before starting work:

- All valves leave our factory in a flawless condition and successfully tested. To maintain this condition valves may only be installed and operated as described by the manufacturer.
- For safe operation of the valves a proper transport and storage as well as professional assembly and especially a high degree of cleanliness must be ensured.
- A modification of valves may only be done by trained and experienced people who are familiar with the product. “Trained and experienced people” refers to individuals who can judge the work they are assigned to and recognize possible dangers due to their special training, their knowledge and experience as well as their knowledge of the relevant standards.
- Unpacking and installing the valves has always to be done in a dirt- and dust-free room.
- As a general principle, all interactions may only be carried out on non-pressurised equipment and all electrical currents must be switched off.

Additional and required information can be found on the drawings of the corresponding products, provided within the documentation of the valves and submitted with valve delivery.

For technical inquiries or ordering of spare parts, please always indicate the drawing number of the corresponding valve.

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2 Cleanliness

All valves have been assembled and tested in dust-free environments and testing areas. Furthermore prior to delivery valves are properly cleaned and fulfil the standard according to *ISO 23208-2005 Cryogenic vessels – Cleanliness for cryogenic service*. All components in direct contact with the fluid are free of oil, grease as well as other impurities.

Each check valve is packed in a plastic bag. To preserve cleanliness of the components, leave them in the plastic bag as long as you do not use them and store the components carefully in a clean and dry environment.

3 Disposal of the packaging

Protect the environment and dispose of the packaging material properly or recycle it. Observe the applicable local disposal regulations.

4 Warning symbols

Safety advices and warnings are shown in this manual to prevent danger to life, health of users and maintenance staff and to prevent material damage. They are highlighted with warning symbols (pictograms). The used symbols have the following meanings:

Danger: Death, severe injury and/or significant material damage **will** be the consequence, if the appropriate precautions are not taken.

Warning: Death, severe injury and/or significant material damage **may** be the consequence, if the appropriate precautions are not taken.

Caution: Light injury and/or material damage **may** be the consequence, if the appropriate precautions are not taken.

Note: Important information about the product itself and the way how to handle it.

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5 Safety advices

The check valves have been exclusively designed for the use according to the specification in the datasheet. Any other than the specified use is not allowed. The customer is liable for all damages which are the result of an inappropriate use. Unauthorized changes as well as the use of non original WEKA spare parts exclude any responsibility of WEKA for the caused damages. Any change applied to the assembly is done at the user's own risk.
Installation or disassembly operations may only be done by qualified personnel and have to be done following strictly the safety instructions. Before disassembling a valve make sure the system is depressurized!

6 Qualified personnel

The steps described in this manual may only be carried out by persons familiar with the product. If you feel unsure, please contact the manufacturer for the corresponding instructions or training.

7 Application

The check valves are installed in the pipeline to prevent the fluid flowing back from the recovery system. They are passive elements and have no control mechanism to be opened or closed manually.

8 Marking

The check valves have the following marking (marked 3 times on the valve body).

The arrows show the flow direction

Ex

if the valve is used in a hazardous area, the Ex marking is attached to the housing.

The valve may only be used for the purposes recorded on the technical drawing and the marking on the product.

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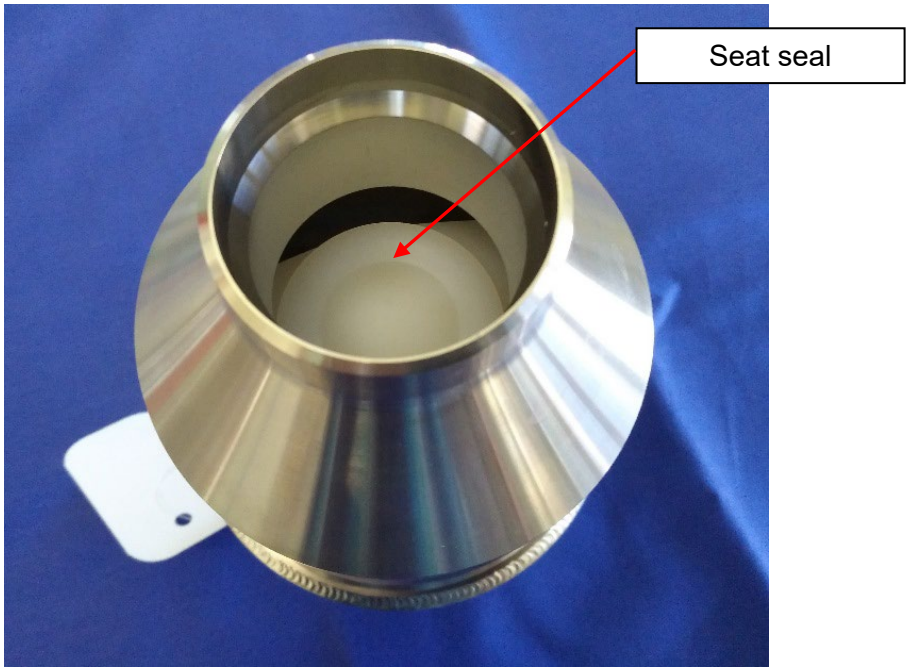
9 Parts overview

The following picture gives an overview of the Check Valve parts.



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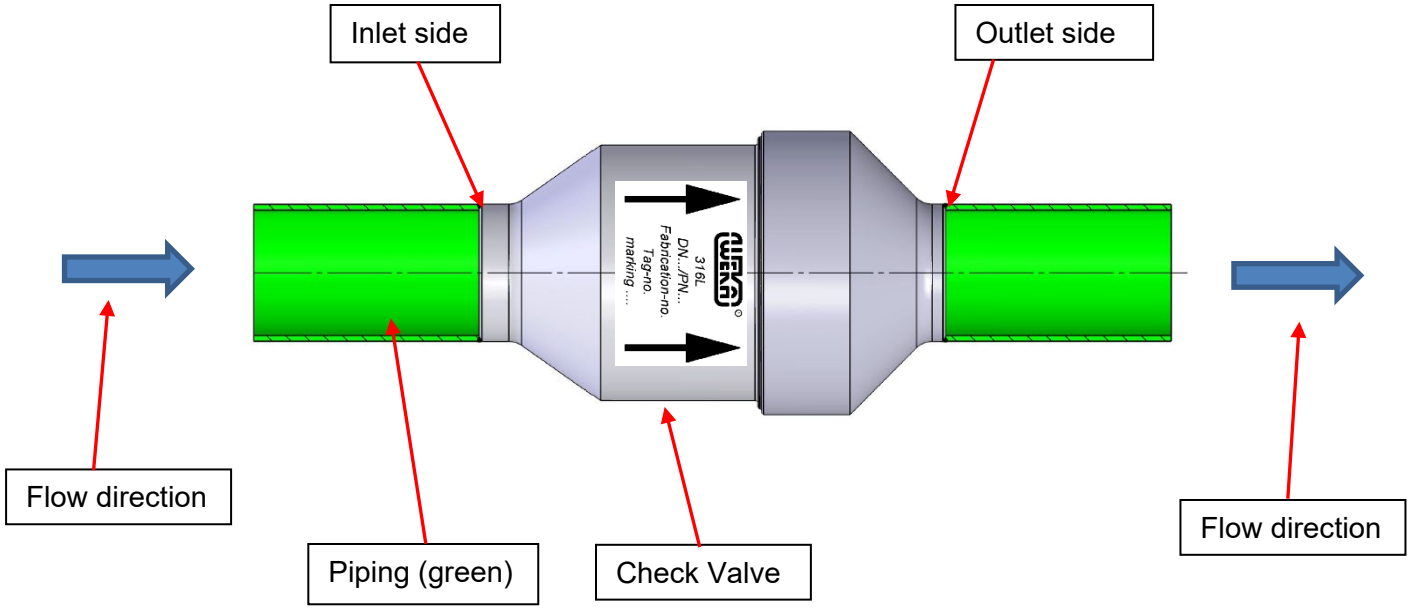
10 Installation

10.1 General

Never weld the check valve in the piping system without the special welding tool! Each check valve is delivered with this special welding tool.
WEKA recommends the following procedure to install the check valve body.

NOTE:
Make sure to mount the valve in the correct direction. The flow direction is indicated by an arrow on the valve body.
During the welding, the weld ends should be kept as cold as possible (by means of cooling water, wet cloth or cooling paste). If too much heat is brought in the valve, this could deform the check valve body.
After welding and cooling down, the valve body and the piping should be cleaned, rinsed and dried.



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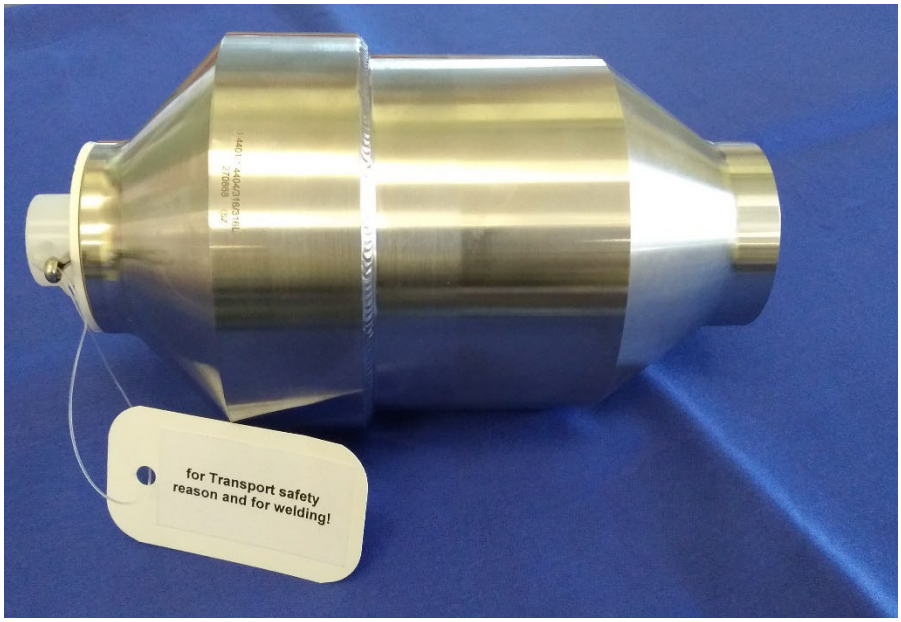
10.2 Welding procedure

1. The individual check valves are packaged in a plastic bag. Each valve has a tag number. Only the required check valves should be unpacked!

2. Remove the protective cap at the inlet side.



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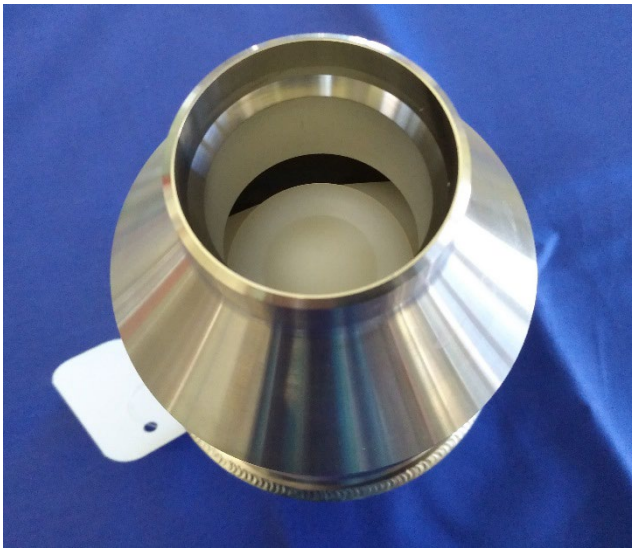
3. Check transport system / welding device system. The seat seal must be lifted from the seat as shown in the figure below to prevent any damage of seat seal by welding heat.



Note:
If the seat seal or splint pin of the transport system / welding device system are not positioned as shown in the images, then mount the devices as shown in the images.

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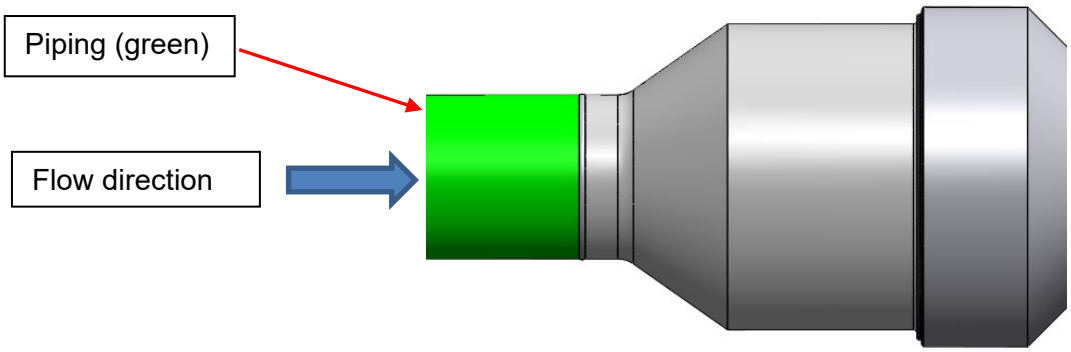
4. Weld the inlet side of the check valve to the piping system



Prevent any bending and shearing stresses during and after welding. Weld very carefully to prevent any deformation of the valve. Weld heat input should be as little as possible.
Absolute cleanliness is essential. No dirt must penetrate the check valve.

Precautions to minimize the welding heat on the check valve body

For welding processes 141, TIG-welding:

- Pay attention to low heat input.
- For a 2mm wall thickness approx. 48-52 amperes.
- The diameter of the welding filler should be 1.0 - 1.2 mm

The values are only indicative. The values can be adjusted according to the level of the welder or the welding process.

Gas backing:

Flow direction from the gas backing should go through the check valve into the pipeline.

- Weld the Inlet side: The gas backing inlet will be on the outlet side of the check valve
- Weld the outlet side: The gas backing inlet will be on the inlet side of the check valve

Welding process :

- 2 quarters opposite welding. Then cool off with compressed air from the outside
- Weld the remaining 2 quarters and cool again with compressed air.

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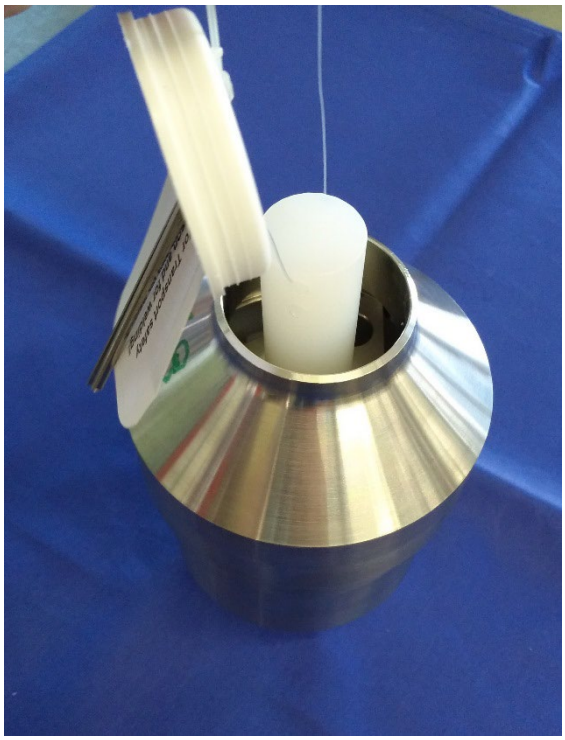
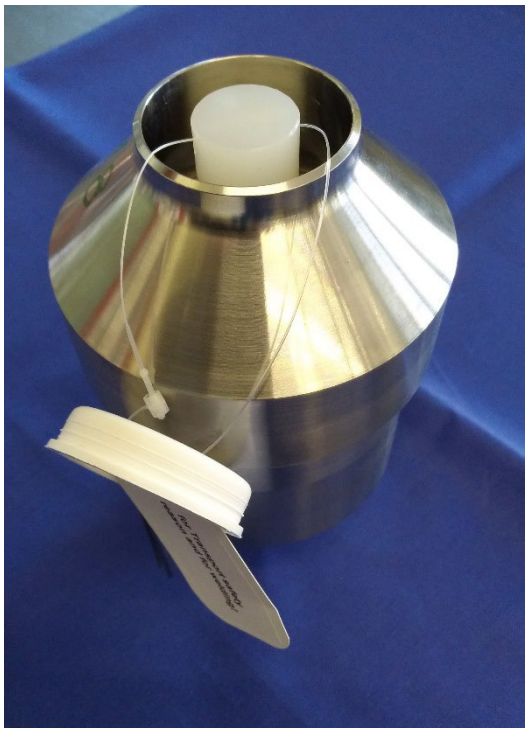
5. The transport system / welding device system must be installed until the weld seam has cooled down completely.

6. Remove the splint.

7. Remove the protective cap





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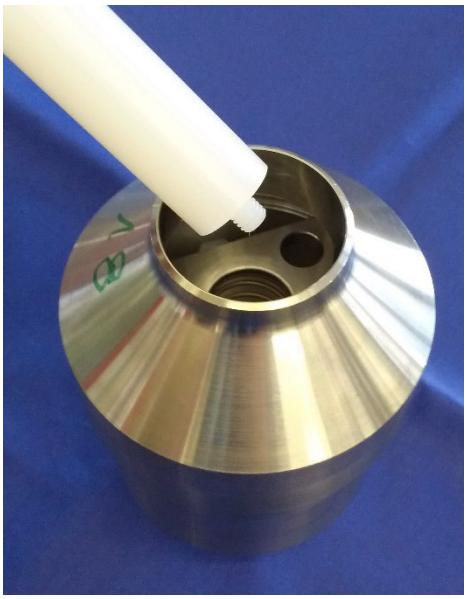
8. Remove the protecting stick by unscrewing



9. Weld the outlet on the piping system

10. Clean all welding parts to prevent damage

10.3 Ex

Missing potential equalization can cause static charge, which may result in sparking and lead to explosions.

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11 Operation

The check vales are passive elements and have no control mechanism to be opened or closed manually.

12 Maintenance

The check valves are completely mounted inside a vacuum box and are therefore not accessible any more after the valve box is closed. The valves are therefore designed in a way that no maintenance is required.

13 Spare parts

For spare parts please refer to the datasheet or to the customer specific drawing which was delivered with the order documentation.

In case you need an offer or you order spare parts, please make sure to provide the drawing number and the correct part number to the following address:

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Phone: +41 (0)43 833 43 43
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Web: www.weka-ag.ch

14 Disassembly and disposal

Disassembly

Before starting disassembly, make sure that the fittings are depressurized, drained and de-energized. Dismantling may only be carried out by qualified personnel.

Disposal

The device is predominantly made of steel (apart from the sealing components and any equipment parts) and must be disposed of in accordance with the locally applicable disposal regulations. It must be ensured that the parts are neither contaminated by the medium nor contaminated in any other way.

15 Declarations of conformity

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EU-KONFORMITÄTSERKLÄRUNG
EU DECLARATION OF CONFORMITY

Wir / We **WEKA AG**

(Name des Herstellers) (Manufacturers name)

erklären in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that the product

Rückschlagventil / Check valve

Typen / Types: **CCV, CCV-v, ClpdV**

(Bezeichnung Typ oder Modell, Los-, Chargen- oder Seriennummer, möglichst Herkunft und Stückzahl)
(Name, type or model, lot, batch or serial number, possibly sources and numbers of items)

auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt
to which this declaration relates is in conformity with the following standards or other normative documents

DIN EN 12516-2:2015-01

(Titel und/oder Nummer sowie Ausgabedatum der Normen oder der anderen normativen Dokumente)
(Title and/or number and date of issue of the standards or other normative documents)

Gemäss den Bestimmungen der Richtlinie(n)
Following the provisions of directive(s)
(falls zutreffend) (if applicable)

2014/68/EU (PED)	Art 4.3	WEKA AG (Art. 4.3)	
Qualitätssicherung /	Kat. I	WEKA AG (CE) Modul / module A	
quality assurance	Kat. ≥ II	DNV (CE 0575) Modul / module H	PEDH000000R
		DNV (CE 0575) Modul / module H1	PEDH10000017
		DNV AS, Veritasveien 1, 1363 Høvik, Norway	

(Richtlinie, Geltungsbereich / Kategorie, ggf. Name, Nummer und Anschrift der notifizierten Stelle)
(Directive, scope / category, if necessary name, number and address of notified body)

(Ort und Datum der Ausstellung)
(Place and date of issue)

Bäretswil, 19.04.2022

(Name und Unterschrift des Befugten)
(Name and signature of authorized person)

Marc Hofmann
(Quality Manager)

Pascal Erni
(Product Manager)

WEKA_DoC_EU CCV, ClpdV not Ex_DE_EN / 2022-04-19 1 / 1

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