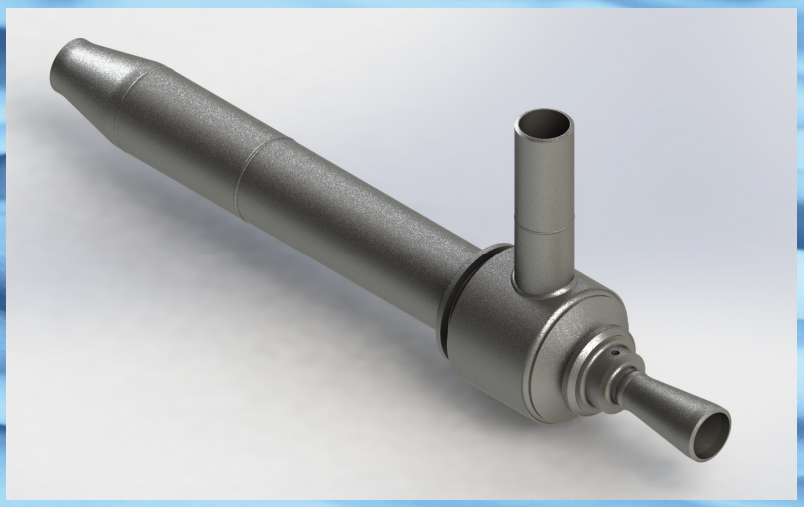

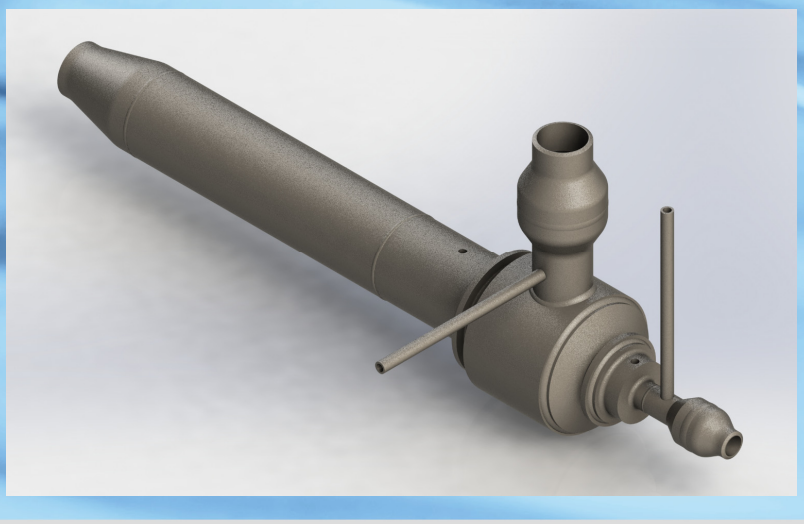

Cryogenic Components

Cryogenic Valves
Transfer Line Couplings
Flow Sensors
Current Leads

WEKA®

Installation, operation and maintenance manual

Ejectors DN8 - DN50

Member of the ARCA FLOW Group

Content

WEKA AG · Switzerland · Schürlistrasse 8 · CH-8344 Bäretswil · Phone +41 43 833 43 43 · info@weka-ag.ch · www.weka-ag.ch

1. General information

The present manual contains instructions for safe and correct installation, operation and maintenance of the product. It is exclusively intended for specifically trained and authorized experts. In case of problems that cannot be solved with the help of this manual, please contact the manufacturer.

1.1 Applicability

The present manual applies to ejectors with nominal widths from DN8 to DN50 and pressure levels up to PN40.

1.2 Contact data

For more information about the product, please contact

WEKA AG
Schürlistrasse 8
CH-8344 Baeretswil

T: +41 43 833 43 43

cryo@weka-ag.ch
www.weka-ag.ch

1.3 Further applicable documents

In addition to the present manual, the technical drawing of the ejector and the documentation of additional components must be considered.

1.4 Storage place of the manual

The operating manual and all other applicable documents are integral parts of the product and must always be kept in proximity of the product and be accessible to the staff.

2. Safety

2.1 General safety information

The manual contains detailed descriptions for safe and correct installation, operation and maintenance of the product.

Read the manual carefully and thoroughly to become familiar with the product.

The manufacturer accepts no liability for damage caused as a result of failure to comply with the safety information and warnings.

2.2 Explanations of symbols and notes

Safety information and warnings are intended to prevent hazards for the life and health of users or maintenance staff and to avoid property damage. They are highlighted by the signal words defined below. In addition, they are marked by warning symbols (pictograms) at the place they appear.
Safety information and warnings indicate important information. The following symbols are used to point out specific properties or hazards:

Danger
Severe physical injuries and/or major property damage may occur in case that the appropriate precautionary measures are not taken or not complied with.

Warning
Physical injuries and/or major property damage may occur in case that the appropriate precautionary measures are not taken or not complied with.

Caution
Minor physical injuries and/or property damage may occur in case that the appropriate precautionary measures are not taken or not complied with.

Please note
Marks important information on the product and/or handling of the product that requires specific attention.

Ex
For equipment intended for use in potentially explosive atmospheres in accordance with the European directive 2014/34/EU (ATEX).
This information is applicable in addition to all other information.

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2.3 Intended use

At the time of delivery, the product complies with all applicable laws, regulations, and standards.
If the product is used as intended and the warnings in this manual and those at the product are complied with, the product does not pose any hazards or risks for persons, property, and the environment. This applies to the entire service life of the product, from delivery and installation to operation, disassembly and disposal.
The following is considered intended use:

- Only operate the product according to this manual, the specifications from our order confirmation and the technical drawing.
- Only use original WEKA spare parts for maintenance and repair of the product.

The following must be ensured prior to installation and any maintenance work:

- Depressurise the pipe.
- The pipe must be completely drained and, in case of hazardous media, purged with suitable cleaning fluids.
- Obtain information about potential hazards that may occur due to residues of the operating fluid and take appropriate measures (wearing personal protection equipment, etc.).
- If required, the product must be cooled down or heated up to ambient temperature.
- Prevent potential re-start of the system by third parties.

Ex

- The ejector may only be used for the purposes recorded on the technical drawing and the marking on the product.
- The ejector may only be installed, commissioned and maintained by a trained professional with expertise in explosion prevention.
- The ejector may only be repaired and modified by the manufacturer (or, if appropriate, in consultation with the notified body).

2.4 Incorrect use

Any use of the product other than or not within the specifications as described in chapter 2.3 is considered incorrect. The following additionally applies:

- Any unauthorised modifications of the product may result in personal injuries, property damage and/or functional defects. The risk for any such situation is solely borne by the user. Any warranty or liability claims are excluded.

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2.5 Residual risks

Residual risks may still be present even when the product is used as intended.

In case of negligent or incorrect use of personal protection equipment:

- Hazard due to noise resulting in loss of hearing
- Thermal hazard (burns, scalding, etc.)
- Hazard due to escape of operating fluid

Despite all precautions taken, there may be residual risks that are not obvious. Residual risks can be minimized if the safety information and information on commissioning and start-up, as well as the entire operating manual is observed.

2.6 Qualification of personnel

The product is exclusively intended for application within systems and facilities where the required work is performed by trained and qualified experts. Experts are persons who are familiar with installation, commissioning and operation of this product and who have the appropriate qualifications for their tasks, e.g.

- Vocational training or instructions about use and care of appropriate safety equipment based on the current state of safety engineering
- First-aid training
- For systems with explosion protection equipment: vocational training or instructions and/or authorisation to perform work at potentially explosive systems

Maintenance and repair work must only be performed by trained and qualified professionals.

Ex
The ejector may only be installed, commissioned and maintained by a trained professional with expertise in explosion prevention.

2.7 Operator's obligation to exercise due diligence

To prevent accidents, faults and damage to the environment, the person respectively responsible for transport, installation, commissioning, operation, maintenance, and disposal of the product must ensure the following:

- All warnings and information on hazards must be observed.
- The personnel must be instructed about occupational health and safety, the operating manual and particularly the contained safety information on a regular basis.
- Regulations and operating instructions for workplace safety and the relevant information about personnel conduct in case of accidents or fires must be kept in an easily accessible place or hung up within the premises in an easily visible manner.
- The product must only be operated in perfect and functional condition.
- Only use spare parts as well as lubricants and operating media that are approved by the manufacturer.
- Observe the specified operating conditions and requirements for the place of installation.
- Provide all necessary devices and the personal protection equipment required for the respective work tasks.
- The specified maintenance intervals (see chapter 8) and the corresponding regulations must be observed.
- Have installation, commissioning/start-up and maintenance of the product performed only by trained and qualified personnel according to this operating manual.
- The operator must ensure use of the product as intended.

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- Prior to commissioning of the product, the operator shall carry out a risk assessment and define appropriate inspection and maintenance intervals according to the operating conditions.

2.8 Personal protection equipment

Wearing of personal protection equipment is required during work to minimize potential health hazards.

- The protective equipment required for the respective kinds of work must always be worn.
- The information and instructions on personal protection equipment displayed in the work area must be observed.

3. Transport, storage and packaging

3.1 Transport

The ejectors are transported either in wooden boxes or in conventional packaging and must be kept in the original WEKA packaging throughout the transport. Transport below -40 °C and/or above +80 °C is not permitted.

3.2 Storage

The ejectors must be stored in a dry and dust-free environment. Storage below -40 °C and/or above +80 °C is not permitted.

3.3 Packaging

Every ejector is separately packed in one or more PE bags in a unit not. The ejector inlets and outlet are covered by protective caps. To avoid unnecessary pollution, the packaging should only be removed shortly before the product is needed for installation.

4. Cleanliness

Prior to being packed, the ejectors are cleaned according to ISO 23208-2005, to be free of oil and grease. Particularly during installation, cleanliness must be ensured. Even the smallest pollution may impair the function of the ejectors.
The following rules must be observed during installation and maintenance.

- The ejector inlets and outlet must be covered by protective caps.

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5. Installation, assembly and disassembly of ejectors

5.1 General information

Ejectors are static mechanical equipment. They are pump-like devices without moving parts.
A drive stream with higher pressure injects into the fluid volume of the suction stream which operates at a lower pressure. Afterwards, the mixture flows through a special converging and diverging diffuser and exhausts through the exhaust pipe.

There are different pressure ratings up to PN40 possible.
Ejectors are available with and without a pressure reading tube for the suction and for the drive stream (see Figure 2).
Ejectors are available with and without a fluid filter for the suction and for the drive stream (see Figure 2).
The fluid filter is sized to 100 µm micron rate.

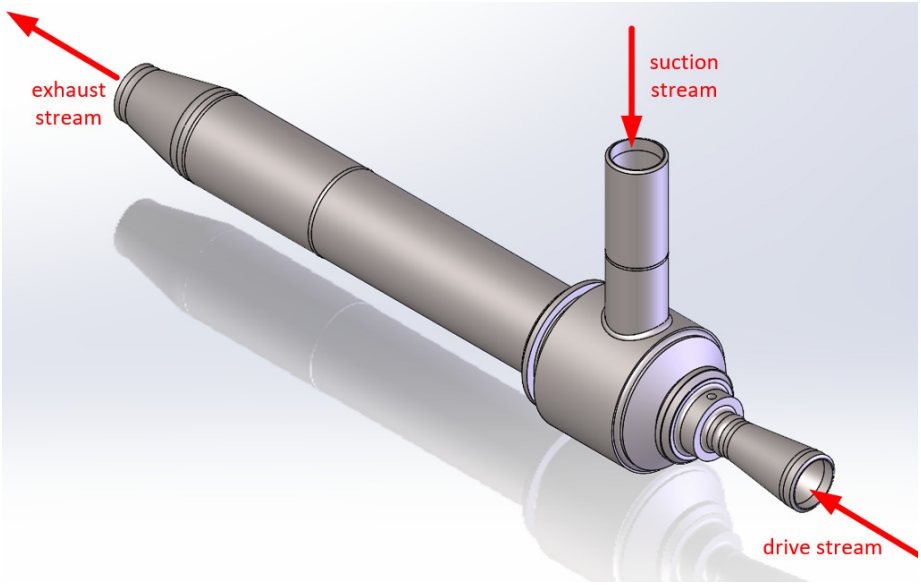

Figure 1: Ejector without optional fluid filters and without optional pressure reading tubes

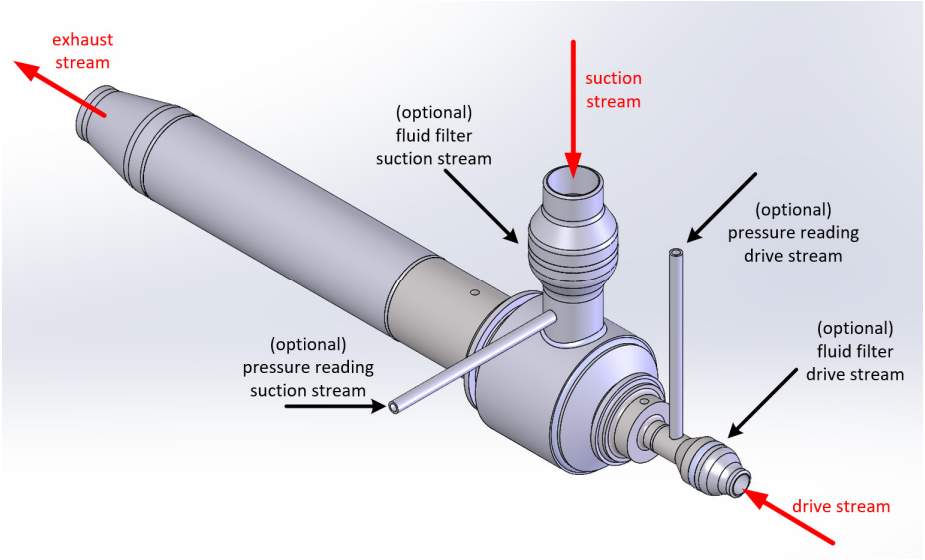

Figure 2: Ejector with optional fluid filters and with optional pressure reading tubes, illustration of the optional acuraLine® Topmesh 3 layered filter with 100 µm micron rate

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Ex

- The ejector may only be used for the purposes recorded on the technical drawing and the marking on the product.
- The ejector may only be installed, commissioned and maintained by a trained professional with expertise in explosion prevention.
- The ejector may only be repaired and modified by the manufacturer (or, if appropriate, in consultation with the notified body).
- Falling parts may create impact sparks and lead to an explosion in potentially explosive atmospheres. Make sure that there isn't a potentially explosive atmosphere and that no parts are falling when working on the ejector.

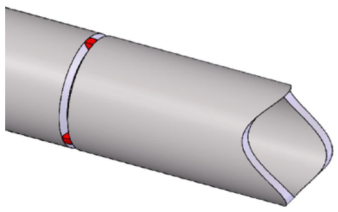
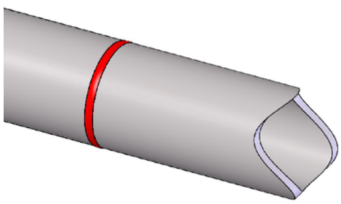
5.2 Installation welding of the housing

Ejectors must be carefully welded in by spot welding and minimum energy input to avoid deformation due to thermal distortion. The ejector housing may be cooled with a damp cloth during welding.

Ensure cleanliness during work. Pollution in the ejector may be the reason for malfunction or functional failure.

For installation of the ejector to the piping system following connections need to be welded:

- Drive stream
- Suction stream
- Exhaust stream
- If present: Pressure reading tube for the drive stream
- If present: Pressure reading tube for the suction stream

Step	Picture	Description
1		For the drive stream, suction stream and exhaust stream: Spot-welding of pipes with 3 spots around the circumference.
2		Weld the pipes with as low heat input as possible. If required, cool with a damp cloth.

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Additional hints for reducing welding heat:

For welding procedure 141, TIG welding:

- Ensure low heat input
- For sockets with 2mm wall thickness, use approx. 48-52 amps.
- The diameter of the filler wire should be 1-2mm

These values are only intended as guidelines. Depending on the welder and the welding process, the values need to / may be adjusted.

Shielding gas:
The flow direction of the shielding gas should always be from the ejector into the pipe.

Welding sequence:
First, weld 2 quarters of the circumference on opposite sides. Leave to cool. Then, weld the rest.

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6. Marking

The ejector is marked with following information:

Manufacturer
Order number
Tag number
Year of manufacture
Material
DN XX / PN XX
PED marking
Ex-marking

Ex-Marking

II 2 G Ex h IIC T6 Gb

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

7. Commissioning and operation

7.1 General information

Prior to commissioning of a new system and particularly after repair work, the entire piping system must be purged. In this process, all hazardous particles, such as chips and welding beads are removed.

7.2 Electrical components

- If applicable, electrical signal values are defined in the technical drawings.

Ex
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7.3 Operating Conditions

Maximal allowed pressure

For the maximum allowed pressure please refer to the technical drawing of the ejector.

8. Maintenance

8.1 General information

The ejector components are designed to be maintenance-free.

Selection of optimum material combination limits wear to an absolute minimum. Make sure to keep the system clean during operation.

Ex
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9. EU declaration of conformity, not Ex

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

Ejektor / Ejector

Typen / Types: **DN6 ... DN50 / PN25 ... PN40**

(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 16668:2018-05

(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)

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10. EU declaration of conformity, Ex

EU-KONFORMITÄTSERKLÄRUNG
EU DECLARATION OF CONFORMITY

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(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 16668:2018-05
EN ISO 80079-36:2016
EN ISO 80079-37:2016

(Titel und/oder Nummer sowie Ausgabedatum der Normen oder der anderen normativen Dokumente)
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		DNV (CE 0575) Modul / module H1	PEDH10000017
		DNV AS, Veritasveien 1, 1363 Høvik, Norway	
2014/34/EU (ATEX)		Herstellererklärung zur ATEX Richtlinie 2014/34/EU	
		Manufacturer declaration acc. ATEX directive 2014/34/EU	

(Richtlinie, Geltungsbereich / Kategorie, ggf. Name, Nummer und Anschrift der notifizierten Stelle)
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(Ort und Datum der Ausstellung)
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Bäretswil, 19.04.2022

(Name und Unterschrift des Befugten)
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Marc Hofmann
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Herstellererklärung zur ATEX-Richtlinie 2014/34/EU

Auf Grund unserer Risikoanalyse und langjähriger Erfahrung bestätigen wir, dass die unten genannten Produkte durch ihren konstruktiven Aufbau den Anforderungen der Richtlinie genügen.

Die Produkte haben folgende Merkmale, die über die Qualitätssicherungsmassnahmen überwacht werden:

- technisch dicht.
- keine Energiespeicher.
- keine Zündquellen.
- keine Bereiche mit möglicher statischer Aufladung.
- keine bewegten, funkenerzeugenden Teile.

Die Produkte sind für den Einsatz in Zone 1 und Zone 2 (Kategorie II 2G) geeignet.

Produkt:

Ejektor

Bäretswil, 04.09.2020

Pascal Erni
Product Manager Valves and Cryogenics

Manufacturer declaration acc. ATEX Directive 2014/34/EU

Based on the risk management analysis and the long term experience we declare herewith that the below mentioned products comply with the requirements of the directive.

The following characteristics are the same for all products and are continuously controlled by the quality assurance system:

- technical tightness.
- no energy saving devices.
- no ignition source.
- no area of possible static charge.
- no moving parts with possibility of sparking.

These products can be used in zone 1 and zone 2 (category II 2G).

Product:

Ejector

Bäretswil, 04.09.2020

Stefan Otto
Ex-Authorized Representative

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