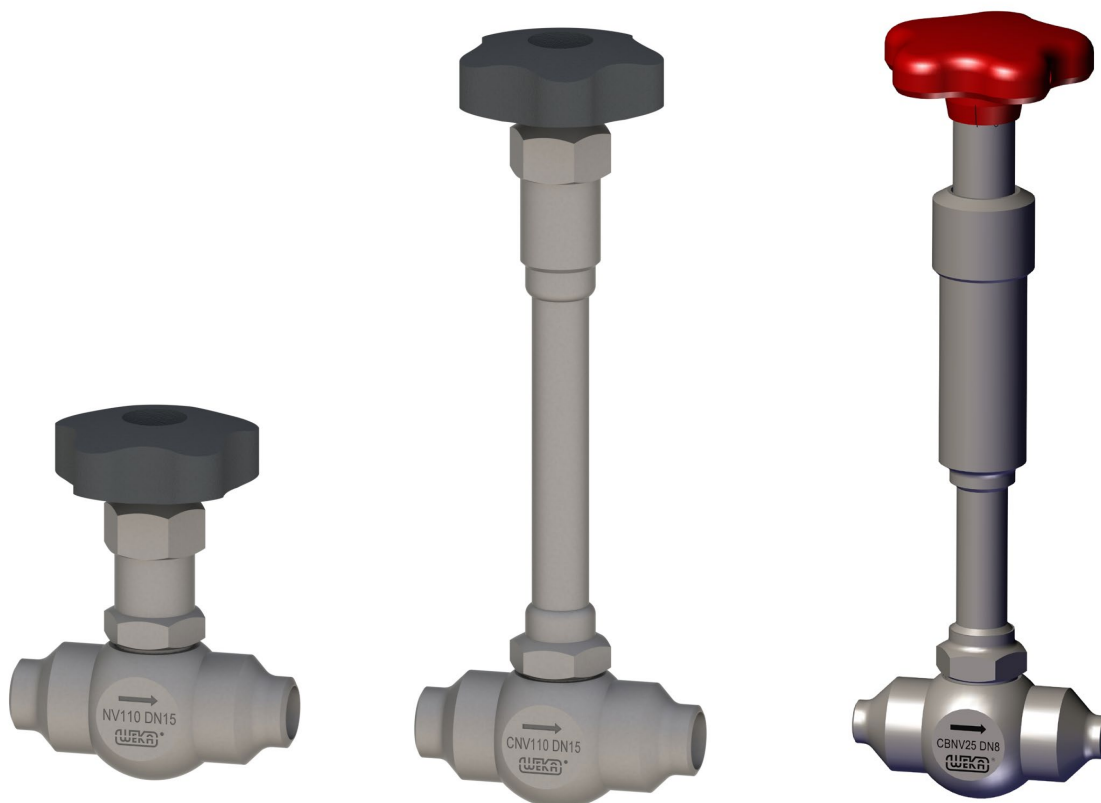




**Stainless Steel
Needle Valves**

**Nominal
diameter**
DN4 – DN15

**Nominal
pressure**
PN25 – PN420

**Installation, operation
and maintenance manual**

**Needle valves
NV, CNV, CBNV**

Document No. C-0124 / 2019-08-22

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The purpose of this manual is to get familiar with design, function and maintenance of WEKA stainless steel needle valves. Please read the instructions carefully for a secure and long service life of the valves.

Read these instructions carefully before installing the valves and discuss any uncertainties with the manufacturer prior to performing your action.

1. General instructions

1.1 Validity

This manual contains important instructions on how to install, commission and maintain the products to guarantee a long and secure service life. The manual is applicable for needle valves type NV, cryogenic needle valves type CNV and cryogenic bellow needle valves type CBNV.

1.2 Transportation, packing, storage and lifetime

Each valve is packed in a separate plastic bag. For shipment, the valves are packed into solid boxes. The products and the corresponding spare parts must remain in their original packing until they are used for installation or repair. Storage of the products must be done in the original packing in a dust free and dry room. Stored properly, typical lifetime of the valves are 40 years. In operation, the typical product lifetime is 40 years as well, if maintenance is performed according to the recommendations given further down in this manual.

1.3 Decommissioning and disposal

Valves or spare parts that can no longer be used must be properly disposed of. For environmental reasons, a return shipment for disposal does not always make sense. WEKA therefore recommends inspecting a possible transport from the point of view of environmental protection. If possible, deliver the products locally to a reusable materials cycle facility according to country-specific laws. If you consider a return transport of goods for disposal as reasonable, you should first contact the local representative or else the manufacturer directly.

1.4 Contact data

Manufacturer:

WEKA AG
Schürlistrasse 8
CH-8344 Bäretswil

T: +41 44 833 43 43
F: +41 43 833 43 49

info@weka-ag.ch
www.weka-ag.ch

Manufacturer's authorized person:

Eurosnabtrans
в лице Директора Вуколова
Максима Витальевича
ОГРН: 1137746858468

T: +74955071787

info@eurosnabtrans.ru

2. Cleanliness

All valves have been assembled and tested in dust-free environment and testing areas. Furthermore prior to delivery valves are properly cleaned and fulfil the standards according to ISO 23208-2005 standards for vessels in cryogenic operation. All components in direct contact with the media are free of oil, grease as well as other impurities.

Valves for use in gaseous or liquid oxygen service are cleaned according to ISO 23208-O2 or additional, customer specific specification.
The valves are labelled with *Free of oil and grease for oxygen service ISO 23208-O2*.



For maintenance and repair work on valves be sure to seal the threaded part of the valve body with a plastic cap or leak-proof plastic bag and adhesive tape after disassembly of the valve inserts. This will protect the valve body from contaminating.

Equally the connectors of the seat body should remain covered with yellow caps as long as possible preventing any contamination from entering the valve body.

The disassembled complete upper part must also be protected from dust and damage by repacking it into the original plastic tubes and placing it in the original transport packaging. If not available, store it carefully in some other protected area. Slightest impurities can cause leakage or even malfunction of the valve!

We highly recommend inspecting the valve seat and trim for contaminations and possible damage on every time the inserts are removed. In case of doubt exchange these components.

Be sure to protect the valve bodies from swarf, small chippings or other contaminations during welding actions. A work canvas should be built around the welding facility or the welding should take place in a separate area.

Particle inclusions during welding can lead to premature corrosion of the welded seam or even faulty bonding of welded parts. This can impair the functional capability of the entire facility.

3. Warning symbols

Safety advices and warnings are made to prevent danger against life and health of users and maintenance personnel or prevent material damage. They are being stressed by the presently described signal terms and in addition marked with warning symbols (pictograms). The applied symbols have the following meanings:

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



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



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



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



4. Safety advices

The stainless steel valves have been exclusively designed for the use according to the specifications in our order confirmation and on the technical drawing or data sheet. Any other use is not appropriate to the directives. For resulting damages, the user alone is liable. Unauthorized changes, as well as the use of non-original WEKA spare parts exclude any responsibility for damages caused. Any change brought to the assembly is done at the users own risk.

Installation, maintenance and repair operation may only be done by qualified personnel observing the relevant directives. Inside any valve there could be very high pressure. Disassembly and maintenance are to be done under strict observation of the safety instructions. It is expressly pointed out to follow the instructions for explosive devices where appropriate.

The following instructions are to be observed before any maintenance operations are affected:

- Depressurize the valve body
- Exclude initiation by third party

Valves for oxygen application

Valves for oxygen application must be given special attention for assembly and disassembly. Dirt or inappropriate material selection lead to dangerous situations or a total damage of the valve in service. Only BAM (or equivalent) approved (approved for the field of application) seals or equipment are permitted.

5. Qualified personnel

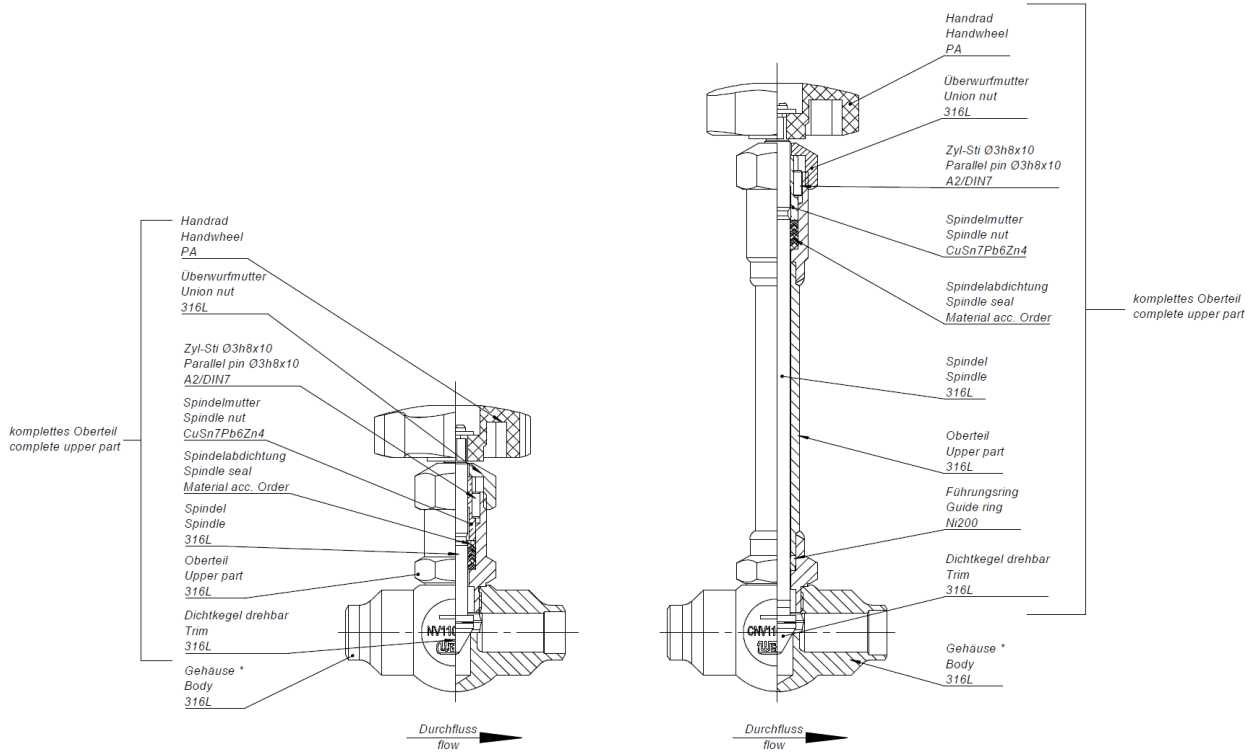
According to the directives of this manual, only persons who are familiar with assembly, initiation and operation of this product are qualified to execute functions such as:

- Training and instruction according to the actual standards in safety features maintaining and using appropriate safety equipments
- Training in first aid
- Training respectively permission to perform tasks with explosive devices
- Training at WEKA AG, CH-8344 Bäretswil, Switzerland

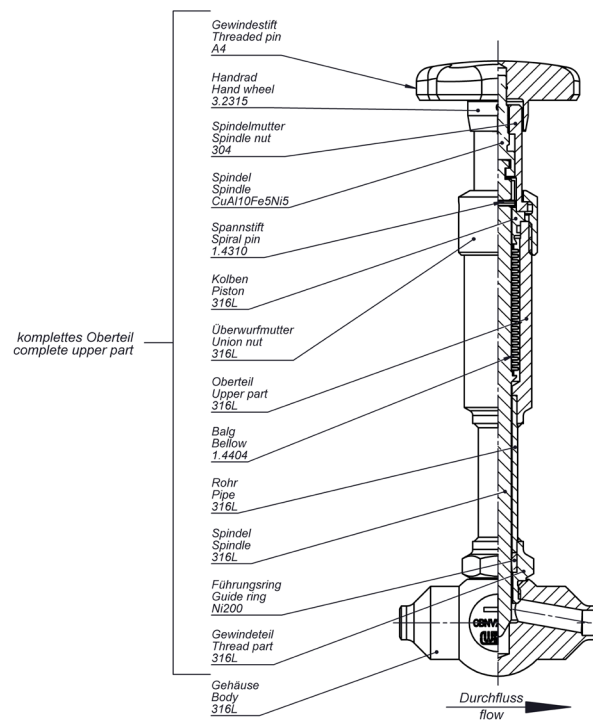


6. Valve parts

6.1 NV and CNV



6.2 CBNV



All non metallic parts of valves for use in gaseous or liquid oxygen service that get in contact with oxygen have a BAM test report. This is the case for the spindle seal (refer to the corresponding valve drawing) and for the used lubricant. WEKA recommends using Gleitmo® 599 as lubricant for all their stainless steel needle valves, but in particular for those used in oxygen service!

7. Valve installation

Unpacking: Unpack the valve only before installing it in the system under clean conditions to avoid dirt entering the valve body and seat.

Actuating the valve: Turn the hand wheel counter-clockwise to open the valve fully.

Welding the valve into a piping system: Remove the plastic caps covering valve inlet and outlet. Do not use too much energy for welding. Any welding colours on the valve body should be avoided. Too much heat could damage the valve seat; in this case the valve will start to leak.

Pay attention on the correct flow direction when installing the valve. Flow direction is indicated on the front and back of the valve body with an arrow:



After installation make sure to clean the piping system and valve body carefully to remove any foreign particles and substances from the surfaces!

8. Valve operation

Actuating the valve: To open the valve, turn the hand wheel counter clockwise. Turning the hand wheel in clockwise direction will close the valve.

These products are designed to be operated manually only. Do not use any tool for actuating the valve.

Particles or dirt in the fluid or in the gas could damage the valve seat.

Valves for oxygen application

The maximum O₂ pressure is always marked on the body. This value must never be exceeded.



9. Valve maintenance

WEKA recommends checking the correct function and tightness of the valve at least every three years, better every year and during every system shut down.

The following points should be verified:

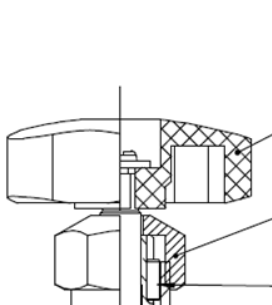
- Handwheel not damaged and properly fixed with screw
- Proper function of hand wheel while opening and closing the valve
- Seat tightness of valve in close position
- Tightness of valve to the outside (spindle seal)



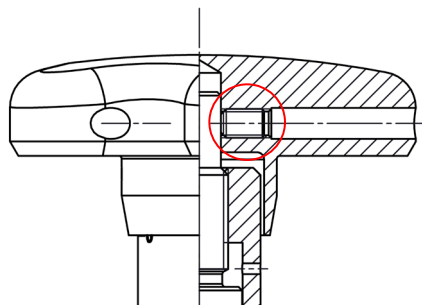
9.1 Change of hand wheel

If the hand wheel is damaged, replace it with a new one according to the spare part list on the valve drawing or according the data sheet. Follow the steps below:

1. Depressurize the valve body
2. Open the valve (Turn the hand wheel counter-clockwise)
3. Loosen the screw by using a suitable screw driver
4. Remove the hand wheel and replace it with a new one.
5. Tighten the screw by using a suitable screw driver.



Type NV/CNV

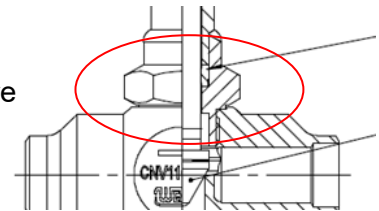


Type CBNV (three screws)

9.2 Change of upper part

If the valves seat tightness or tightness to the outside is not guaranteed any more, WEKA recommends changing the complete upper part of the valve! For the correct part number of the upper part refer to the valve drawing or to the data sheet. Make sure to avoid any particles entering the valve body while changing the upper part! Follow the steps below:

1. Depressurize the valve body
2. Open the valve (Turn the hand wheel counter-clockwise)
3. Loosen the upper part by using a suitable allen key
4. Remove the upper part and replace it with a new one. Make sure to apply a little lubricant Gleitmo® 599 to the thread!
5. Tighten the hex nut with a suitable allen key. Apply the torque indicated on the valve drawing or data sheet!
6. Make sure to clean the piping system and valve body carefully to remove any foreign particles and substances from the surfaces!



Valves for oxygen application

Only BAM (or equivalent) approved (approved for the field of application) seals or equipment are permitted.
Valves for use in gaseous or liquid oxygen service are cleaned according to ISO 23208-O2 or additional, customer specific specification.



9.3 Disassembly of valve (for experts only)

1. Depressurize the valve body
2. Open the valve (Turn the hand wheel counter-clockwise)
3. Remove the hand wheel by using a suitable screw driver
4. Loosen the whole upper part by using a screw-wrench
5. Loosen the union nut by using a screw-wrench
6. Remove the parallel pin
7. Unscrew the spindle nut and pull out the spindle
(Caution: Handle the spindle very carefully. Dropping it could cause damage to the spindle head)
8. Remove the spindle seal from the upper part



9.4 Assembly of valve (for experts only)

1. Mount the spindle seal carefully into the upper part
2. Push the spindle carefully inside the upper part (from the bottom side) and mount the spindle nut
(Caution: Handle the spindle very carefully. Dropping it could cause damage to the spindle head).
3. Mount the parallel pin
4. Tighten the union nut by using a screw-wrench
5. Tighten the whole upper part by using a screw-wrench. The torque to be applied is mentioned on the assembly drawing
6. Mount the hand wheel by using a screw driver
7. Perform a pressure test with a control fluid (e.g. helium gas) and check the seat tightness of the assembled valve. Check the correct function: Open and close the valve at least twice



Valves for oxygen application

Only BAM (or equivalent) approved (approved for the field of application) seals or equipment are permitted.
Valves for use in gaseous or liquid oxygen service are cleaned according to ISO 23208-O2 or additional, customer specific specification.



10. Limit states and possible failures

The valves are designed and tested according to the parameters in the datasheet. The indicated limit states *ambient temperature*, *service temperature* and *service pressures* must not be exceeded to guarantee proper operation of the valves.



For additional information see also chapter 4.

The following table lists possible failures and the recommended actions in case they occur.

Possible failure	Impact	Recommended action
Ambient temperature too low	Cold or frozen handwheel and valve body	Regulate ambient temperature to allowed values. Do not operate the valve. Perform maintenance on the valve.
Ambient temperature too high	Hot handwheel and valve body	Regulate ambient temperature to allowed values. Do not operate the valve. Perform maintenance on the valve.
Service temperature too low	Valve might freeze and cannot be operated any more	Regulate service temperature of fluid to allowed range. Do not operate the valve. Perform maintenance on the valve.
Service temperature too high	Valve might get hot	Regulate service temperature of fluid to allowed range. Do not operate the valve. Perform maintenance on the valve.
Service pressure too high	The valves have been tested with 1.5*PN. Up to this value no severe impact must be expected. Pressures above 1.5*PN can possibly damage the valve.	Regulate service pressure to the allowed range. Do not operate the valve. Perform maintenance on the valve or, in case service pressure was above 1.5*PN, change the valve.
Wrong direction of operating the valve	Unexpected blocking of fluid or unexpected flow of fluid.	Move valve to the required position.

11. Spare parts

Part numbers can be found on the drawing of the corresponding manufacturing order or on the data sheet. For identification of the spare parts, always use the drawing in the first step!

Typical spare parts are as follows:

Valve		Oberteil komplett / complete upper part			Handrad / Hand wheel		
Nominal diameter of valve	Nominal pressure	Description	Part. No	Quantity	Description	Part. No	Quantity
DN4	PN110	Upper part cpl. NV	37169		Hand wheel Ø50	81822	
					Hand wheel Ø60 (Al)	44832	
		Upper part cpl. CNV	43224		Hand wheel Ø50	81822	
	PN260/420	Upper part cpl. NV	tba		Hand wheel Ø63	80825	
		Upper part cpl. CNV	tba				
DN6 DN8	PN25	Upper part cpl. CBNV	43268		Hand wheel Ø60	31430	
	PN110	Upper part cpl. NV	27251		Hand wheel Ø50	81822	
		Upper part cpl. CNV	27616				
	PN260/420	Upper part cpl. NV	27679		Hand wheel Ø63	80825	
		Upper part cpl. CNV	31289				
DN10 DN15	PN110	Upper part cpl. NV	27252		Hand wheel Ø63	80825	
		Upper part cpl. CNV	27617				
	PN260/420	Upper part cpl. NV	27680		Hand wheel Ø74	85278	
		Upper part cpl. CNV	34833				

For the correct complete upper part, we need the following information:

- Material and type of spindle seal
- Material and type of trim
- If the valve is "CNV" or "CBNV" material of guide ring
- Material of upper part and spindle

In case you need an offer, or you order spare parts, please indicate the correct part number, all additional information for the complete upper part and send this page to the following address:

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 Schürlistrasse 8
 CH-8344 Bäretswil
 Switzerland

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 Email: info@weka-ag.ch
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