

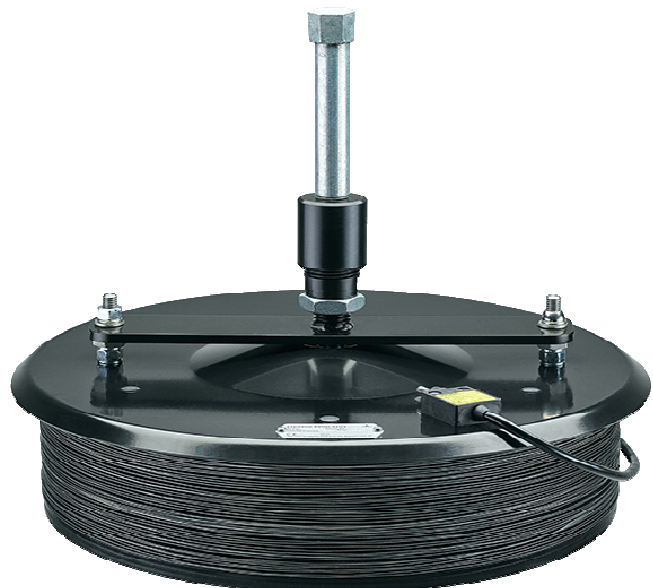
Operation manual for Explosion Relief Valves of type EVN 3.0H and EVN 3.0H NC

Application - hygiene: dust explosions
version 1.01

HOERBIGER Wien GmbH
Seestadtstraße 25
A-1220 Wien



EVN 3.0H



EVN 3.0H NC

Operation manual

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version 1.01



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1. Introduction

This Installation manual is valid for the following valves:

EVN 3.0H and EVN 3.0H NC series		
size	valve type	
266	EVN 3.0H	EVN 3.0H NC
320		
420		
480		
565		
645		
735		

EC type examination certificate: FTZU 11 ATEX 0234X

Issued by: Physikal Technical Testing Institute
FTZU 1026
Pikartaska 7
71607 Ostrava Radvanice
Czech Republic

Manufacturer: HOERBIGER Wien GmbH
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used symbols



Safety advice
risk of injury



Safety advice
Danger of crushing



Functional advice
Concerning correct function

Operation manual

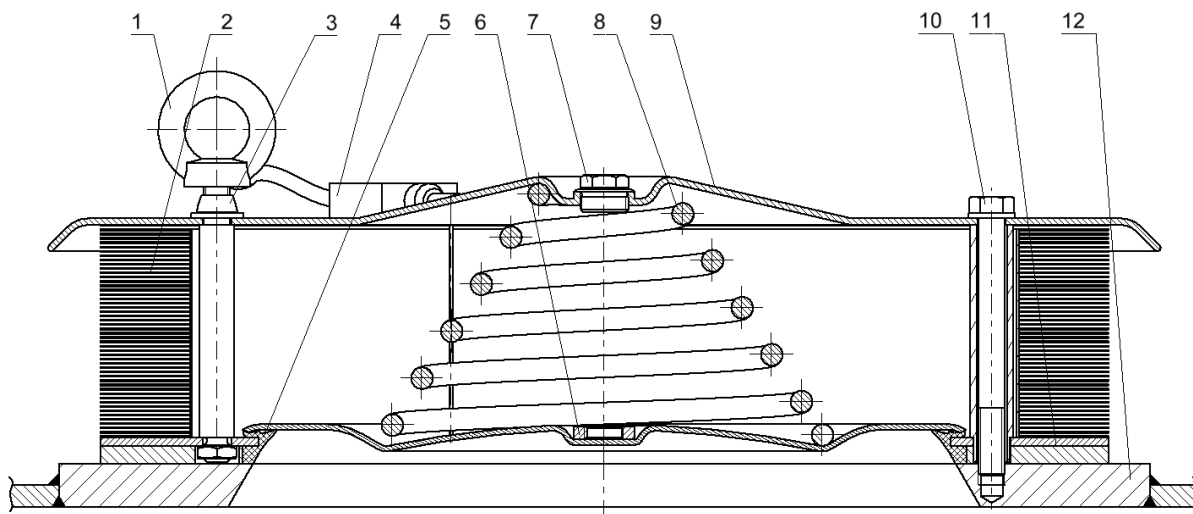
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2. Design of Explosion Relief valve

2.1 Type EVN 3.0H

The EVN 3.0H is an automatic re-closing venting device. In case of an overpressure event (i.e. explosion), the valve opens and as soon the pressure is falling below the opening pressure of the valve, the valve plate closes immediately. The chamfered shape and gap free construction of the valve inlet prevent sedimentary product deposition. This construction even though allows CIP cleaning inside the protected vessel.



Pos.	Description
1	Device for lifting the valve: ring screw
2	Flame arrester
3	Shear nut (do not remove)
4	Sensor
5	Sealing ring (internal and external)
6	Valve plate with center nut M16
7	Center plug
8	Closing spring
9	Cover
10	Mounting screw (not in scope of supply)
11	Valve seat assembly
12	Counter flange (not scope of supply)

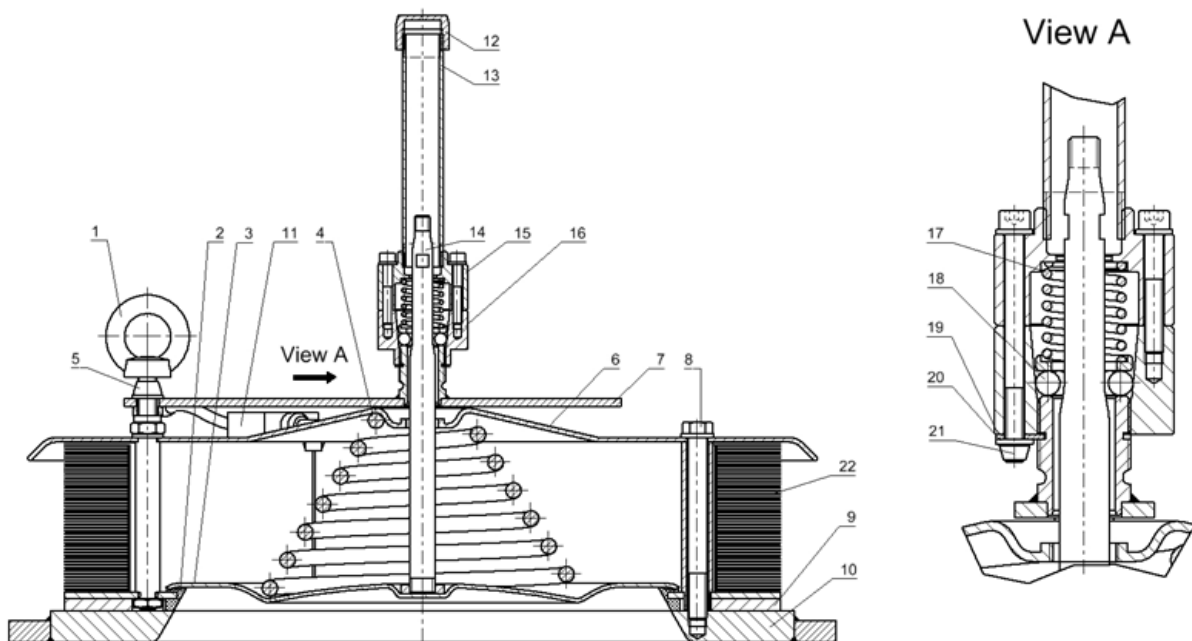
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2.2 Type EVN 3.0H NC

The EVN 3.0H NC is a manual re-closing venting device. In case of an overpressure event (i.e. explosion), the valve opens and remains open until the valve plate is released by hand manually. This type of valve can be used in combination with flap valves as explosion isolation barrier, which has been tested acc. to EN16447-“Alternative testing procedure”. The chamfered shape and gap free construction of the valve inlet prevent sedimentary product deposition. This construction even though allows CIP cleaning inside the protected vessel.



Pos.	Description
1	Device for lifting the valve: ring screw
2	Sealing ring (internal and external)
3	Valve plate with centre nut M16
4	Closing spring
5	Shear nut (do not remove)
6	Cover
7	Position unit
8	Mounting screw (not scope of supply)
9	Valve seat
10	Counter flange (not scope of supply)
11	Sensor
12	End cap
13	Locking rod guide
14	Locking rod
15	Upper housing non closing device
16	Lower housing non closing device

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Please note that if the surrounding temperature is below 0°C (which most likely occurs when the valves are placed outside) it has to be observed that no ice or snow accumulates which possibly could influence the venting process in case of an explosion.

If this could be the case appropriate measures have to be taken to avoid this. It has to be observed that these protection measures itself do not influence the proper function of the Relief Valve. If in doubt contact the manufacturer.

3.3 Maximum protected Volume

The maximum net vessel volume that can be protected using Explosion Relief Valves of type EVN3.0H and EVN 3.0H NC is 24m³.

For correct application please note the following maximum volumes that can be protected by ONE SINGLE Relief Valve of the different size:

Valve size	maximum Vessel volume per valve [m ³]	max. Vessel volume using 4 Valves [m ³]
266	1,60	6,40
320	1,48	5,92
420	2,43	9,72
480	3,09	12,36
565	4,22	16,88
645	5,32	21,28
735	6,00	24,00

The second column shows the maximum vessel sizes that can be protected with the according valve types.

If a higher number of valves is necessary to reach the projected predmax value this is allowed as long as the maximum protected volume per valve does not exceed the above values.

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3.4 Efficiency

During the certification tests the Efficiency values of the HOERBIGER Relief Valves were determined.

It is defined as:

$$EF [\%] = Ae/Ag$$

where

EF... Efficiency value

Ae... effective Relief area

Ag... geometric Relief area

The efficiency values [%] have to be used to calculate the necessary geometric relief area based on the necessary effective Relief area according EN 14491.

For the HOERBIGER Relief Valves the specific efficiency value is depending on the predmax of the application.

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The efficiency value is equal for all dust groups according 3.1

Pred,max (barg)	Ef (%)
0,20	54
0,25	55
0,30	56
0,35	57
0,40	58
0,45	59
0,50	59
0,55	60
0,60	60
0,65	61
0,70	62
0,75	63
0,80	64
0,85	65
0,90	65
0,95	66
1,00	67
1,05	68
1,10	68
1,15	69
1,20	69
1,25	70
1,30	70
1,35	71
1,40	72
1,45	73
1,50	73
1,55	74
1,60	74
1,65	75
1,70	75
1,75	76
1,80	77
1,85	78
1,90	78
1,95	79
2,00	79

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4. Operation

4.1 Type EVN 3.0H

Explosion Relief Valve type EVN 3.0H is an automatic re-closing and reusable flameless venting device, which is made for the protection of personnel and equipment in case of dust explosions. During an explosion the valve plate lifts up and relieves the overpressure through the integrated flame arrester. Therefore no flame transmission to the outside of the valve must be considered.

Immediately after the pressure vent, the valve plate closes again.

4.2 Type EVN 3.0H NC

Explosion Relief Valve type EVN 3.0H NC is a manual re-closing and reusable flameless venting device, which is made for the protection of personnel and equipment in case of dust explosions. During an explosion the valve plate lifts up and relieves the overpressure through the integrated flame arrester. Therefore no flame transmission to the outside of the valve must be considered.

The valve plate remains open until the non closing device is released by hand manually. This type of valve can be used in combination with flap valves as explosion isolation barriers, which have been tested acc. to EN16447-“Alternative testing procedure”.

The following additional instructions have to be obeyed



For reasons of the remaining heat, the Explosion Relief Valve must not be touched after an explosion - Danger of severe injury!



Contact the manufacturer HOERBIGER Wien GmbH in case of any damages or malfunctions of the valve, e.g. leakage.



During operation of process equipment, no work at the valve is allowed.



The shear nut (position 3 and 21) must not be removed. All work to disassemble the valve is forbidden. HOERBIGER's warranty and liability becomes invalid immediately in case of an opened seal.

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5. Mounting instructions

5.1 Explosion Relief Valve

The Hoerbiger Explosion Relief Valve should be attached to the process equipment by means of an appropriate connection piece using suitable mounting screws. The counter flange gasket is already integrated in the Explosion Relief Valve.



As the counter flange gasket protrudes from the valve seat, please do not set down the valve without using appropriate distance pieces in order to protect the gasket properly.



After installation the bottom side (valve plate and gasket) needs to be cleaned by i.e. CIP cleaning from dirt, which might have been accumulated during transport or valve installation.



The connection piece should be designed in a way which minimises the accumulation of dust in front of the relief opening.



All work done on the valve like mounting or dismounting has to be carried out by skilled personnel wearing suitable protective clothes and using appropriate tools.



Sharp edges and the weight of the valve may lead to injuries of personnel. Due to improper handling the valve might drop and hurt personnel.



The lamellas of the flame arrester must not be painted, coated or manipulated in any other way. All components of the flame arrester must not be damaged during work.



During fitting the valve to the process equipment the information stated in the assembly drawing must be observed. The required number of bolts has to be used, the assembly torque is specified in the assembly drawing.



It has to be observed that there is enough space for accessing the valves, to enable a visual check of the condition at any time.



The Explosion Relief Valve can be fitted vertically or horizontally onto the machine.



The venting area of the valve must not be influenced by external equipment like valve covers, thermal insulation etc.

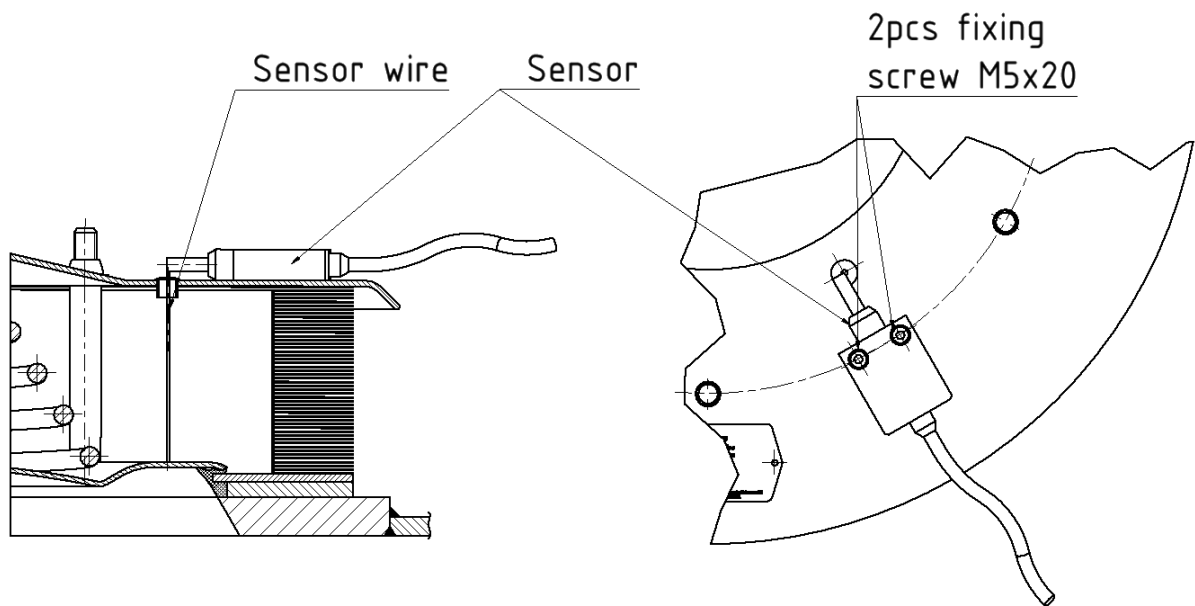
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5.2 Sensor

The HOERBIGER Relief Valve type EVN3.0H and EVN 3.0H NC is equipped with an electric detection switch. This switch gives a signal when the valve plate is moving.



Via the sensor wire that is touching the surface of the valve plate the switch is activated. The switch features a NO and NC contact.

We recommend to connect the switch to the central control system in order to have an alarm signal in case of an activation of the valve.

The best way to have a reliable detection of any event is to use the normally closed contact in a closed loop circuit.

See data sheet and EC type examination certificate in the attachment.

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6. Influence on the surrounding

6.1 Safety distance

An explosion is an exceptional failure event that can occur during the operation of process equipment.

The HOERBIGER Relief Valves type EVN3.0H and EVN 3.0H NC are a flameless venting device according EN 16009 and reduce the overpressure in case of an explosion to a predefined level. In conjunction with this the integrated flame arrester cools down the gases to a temperature below the flame temperature and thus provides flameless venting.

Nevertheless a certain safety distance for personnel should be maintained. In order to determine this distance the following values are given:

6.1.1 Maximum surface temperature

After an explosion test the maximum surface temperature on the flame arresters of the Explosion Relief Valves were observed:

Maximum surface temperature **T_{max} = 270°C**

6.1.2 Maximum outside temperature

During explosion tests the temperature of the outside dust cloud was measured. It was observed that at a distance of 2,0m in radial direction to the flame arrester the peak temperature of the dust cloud did not exceed 200°C.

It has to be emphasised that the duration of the event is very short (milliseconds).

6.1.3 Outside pressure

During the different explosion tests the dynamic pressure on the outside of the flame arrester was measured.

The measurement was taken at a distance of 0,8m in direction of the flow. The maximum dynamic pressure that was recorded:

Maximum dynamic pressure **p_{dyn} = 430Pa**

Additional to the pressure the sound level was measured. Please note that this value is only a guidance due to the fact that the emitted noise is highly depending on the shape and design of the explosion endangered equipment.

Maximum noise level (distance 15m) **115 dB(A)**

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6.1.4 Dust cloud

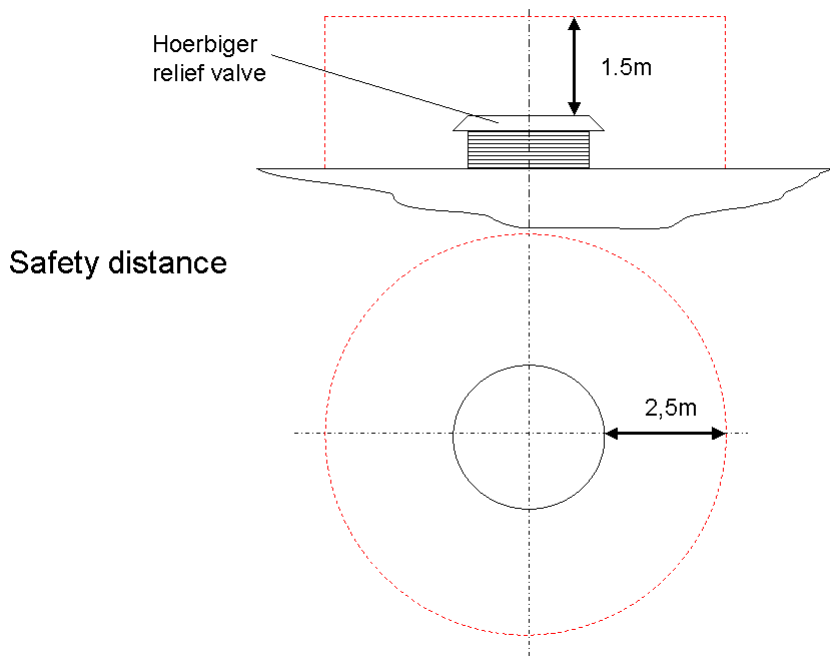
The outside volume that can be filled with a dust cloud can be estimated with a **radius of maximum 2,5m** in radial direction to the flame arrester and **1,5m in axial direction** to the valve. Within this area there must not be any effective sources of ignition and access during operation of the equipment has to be prohibited

6.1.5 Additional remarks

During different explosion tests it was tried to determine especially the thermal influence on the surrounding by fixing human hair at a distance of 0,5 m in radial direction to the flame arrester. It was observed that the hair stayed uninfluenced at this distance during explosion tests with a dust of the highest KSt value.

6.1.6 Recommended Safety distance

Summarizing to the above we recommend to maintain the following maximum safety distance:



These values are based on the maximum protected volumes at the maximum predmax values.

It is possible to reduce the safety distance in certain directions. For details contact the manufacturer.

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6.2 Volume of room

In case of an explosion a certain amount of combustion products is exhausted to the surrounding.

It has to be determined if the room can withstand the according pressure rise.

If the Volume of the surrounding room is smaller than 300 times the vented volume, the pressure rise in the room through the venting process can be calculated according the following formula:

$$\Delta p = 1,74 \cdot p_0 \cdot \frac{V_{vented}}{V_{building}}$$

Δp	pressure rise [mbar]
P_0	ambient pressure (1013mbar)
V_{vented}	vented Vessel Volume [m ³]
$V_{building}$	Volume of the Building [m ³]

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7. Regular inspection

For a safe operation of the Explosion Relief Valve a regular inspection is mandatory, depending on the operating condition, but at least 1 time a year.

During the inspection the following points should be checked and recorded:

- Visual inspection of the overall condition of the valve (no damage or corrosion)
- Inspection of the flame arrester according to chapter 7.1.
- Inspection of the valve sealing according to chapter 7.2.
- Inspection of the installed sensor according to chapter 7.3.
- Inspection of the non-closing device according to chapter 7.4 (only for NC versions).

If no deviations are detected, the Explosion Relief Valve can continue the operation.

7.1 Inspection of the flame arrester

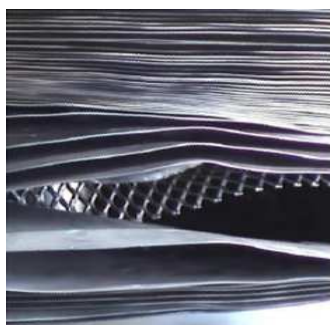
The flame arrester has to be inspected in terms of possible damages (abnormal gaps of the flame arrester layers).

The following pictures demonstrate a flame arrester in proper condition and in bad condition as well:

In this case the flame arrester is in good condition:



In this case the valve has to be replaced:



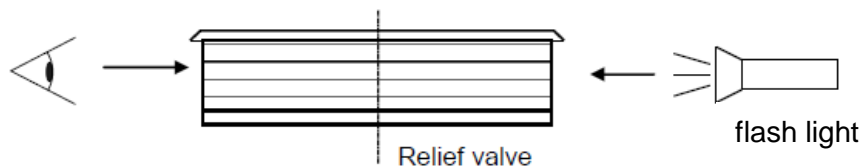
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Additionally the flame arrester has to be checked against extensive contamination and deposits, which might influence the pressure relief function.

When a flash light is placed on one side of the flame arrester, the light shine must be visible at the opposite side, to make sure that the flame arrester is not clogged by dirt accumulations.



In case of extensive dirt accumulations between the flame arrester layers, the flame arrester has to be cleaned by suitable cleaning devices (e.g. vacuum cleaner) or with other adequate methods (e.g. compressed air, non-corrosive and inflammable substance), at standstill of the process equipment.



If abnormal gaps on the flame arrester can be observed, the valve has to be replaced.

7.2 Inspection of the valve sealing



If there is any dust or material leaking through the valve it has to be revised (possible intensive cleaning and/or exchange of the sealing ring)



If there is any doubt on the correct function contact the manufacturer.

7.3 Inspection of the sensor



The sensor can be checked by manual activation. The status of the NO or NC shall change immediately once the spring taster of the sensor is lifted by two fingers manually. The maximum displacement of the spring taster during manual check is 15°.



After an explosion the sensor needs to be replaced according to chapter 9.3.

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7.4 Inspection of the none closing device (only for NC versions)

The functionality of the NC- device can be tested by lifting the valve plate according to chapter 9.7. Afterwards the service tool nut must be turned counter clockwise. By doing so, the service tool nut must be unloaded immediately and the locking rod is fully blocked against the valve reclosing by the non- closing device. In case the service tool nut is not unloaded even though the nut has been turned counter clockwise please contact the manufacturer.



If there is any doubt on the correct function contact the manufacturer.

To close the valve again please follow the instructions of chapter 9.8

8. Inspection and maintenance after an explosion

After an explosion the valve needs to be maintained as following:

- In case a non re- closing system is installed, the valve needs to be closed according to chapter 9.8.
- The sensor needs to be replaced according to chapter 9.3.

During the inspection the following points should be checked and recorded:

- Visual inspection of the overall condition of the valve (no damage or corrosion)
- Inspection of the flame arrester according to chapter 7.1.
- Inspection of the valve sealing according to chapter 7.2.

If no deviations are detected, the Explosion Relief Valve can continue the operation.

9. Maintenance

9.1 Sensor disassembly

Disconnect the cable connections from the control system. Afterwards detach the sensor from the valve by loosening the 2 mounting screws M5 x 20 and removing the sensor.

9.2 Sensor assembly

Assemble the sensor on the valve by using the 2 mounting screws M5 x 20. Afterwards connect the cable connections with the control system.

After the assembly the sensor should be tested acc. to 7.3.

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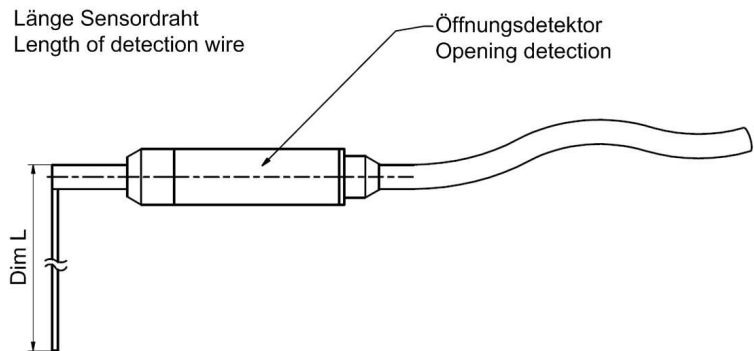
9.3 Sensor replacement

All required parts for the sensor replacement can be ordered via the sensor replacement kit P/N: 1817293.

To replace the switch the following steps are necessary:

- Detach the old sensor acc. to chapter 9.1.
- The new switch comes with a standard length of the sensor wire. This has to be cut to the appropriate length according the table below.
- Reassembly of the switch onto the valve according chapter 9.2

Valve type	Length of sensor wire [Dim L] according sketch
266	96 mm
320	103 mm
420	132 mm
480	149 mm
565	176 mm
645	181 mm
735	200 mm



9.4 Cleaning the valve form inside

In case of debris or unallowed extensive accumulation of material inside the valve the valve plate has to be lifted and the inside of the valve has to be checked and cleaned.

The cleaning should be done according to the following procedure:

- If there is no access to the inside of the process equipment (in order to inspect and clean the inside of the valve) the relief valve has to be dismantled from the process equipment.
- Remove the sensor according chapter 9.1.
- Lifting the valve plate according to chapter 9.5 respectively 9.7.



Before you reach into the valve with your hand it is mandatory to add protection against sudden reclosing in case of breakage of the rod or thread (appropriate piece of wood or similar)

- After lifting the valve plate the inside of the valve (flame arrester, the internal seal and the contact surface on the valve plate) should be carefully cleaned using compressed air and a vacuum cleaner.

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If there are extensive material accumulations that cannot be removed by using compressed air the valve has to be exchanged. This may happen when the valve is especially used for the group of melting dusts (sugar, toner,...).

- Reclose the valve according to chapter 9.6 respectively 9.8.

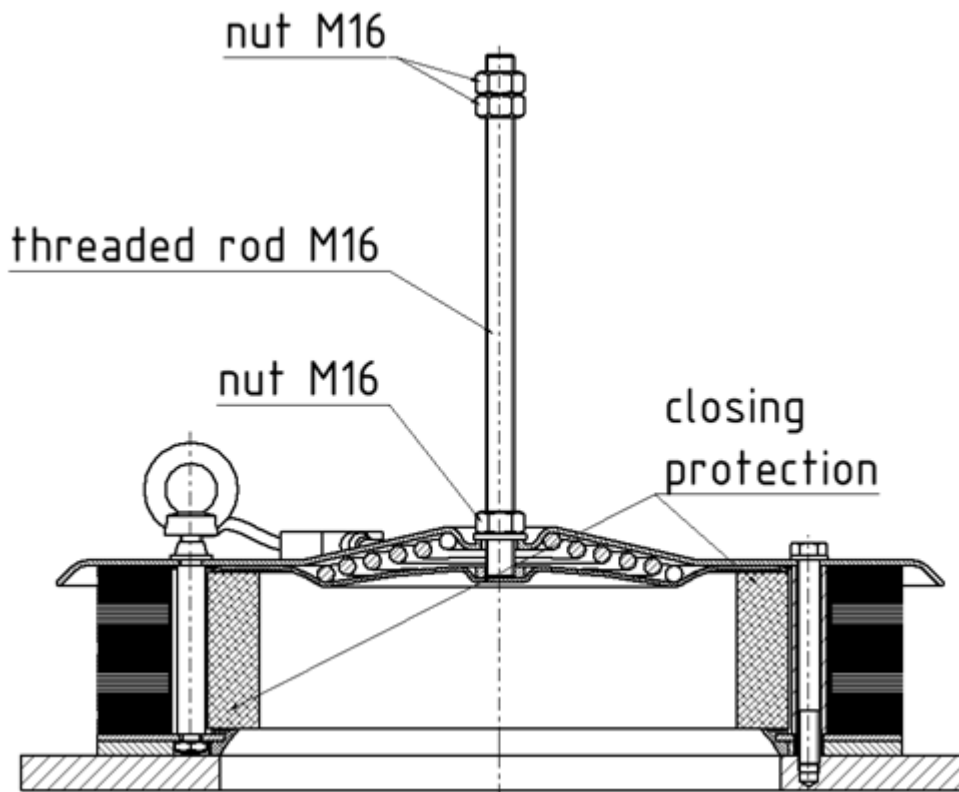
9.5 Lifting the valve plate of EVN 3.0H

The lifting should be done according the following procedure:

- Remove the sensor according chapter 9.1.
- Remove center plug
- Attach a M16 threaded rod to the nut on the valve plate. The minimum length should be the maximum height of the valve + 50mm. (see below sketch)
- Add a large washer and screw a standard nut on the threaded rod.
- By turning the nut on the threaded rod the valve plate can be lifted



Before you reach into the valve with your hand it is mandatory to add protection against sudden reclosing in case of breakage of the rod or thread (appropriate piece of wood or similar)



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9.6 Closing the valve plate of EVN 3.0H

The closing of the valve plate should be done according the following procedure:

- Remove the closing protection
- Turn the M16 hexagon nut which is in touch with the valve cover counter clockwise until the valve is fully closed.



When reclosing the valve take care that the M16 rod is not turning! To prevent it from getting loose from the nut on the valve plate

- Remove M16 rod
- Assembly of center plug
- Finally reassemble the sensor according chapter 9.2.

9.7 Lifting the valve plate of EVN 3.0H NC

The lifting should be done according the following procedure:

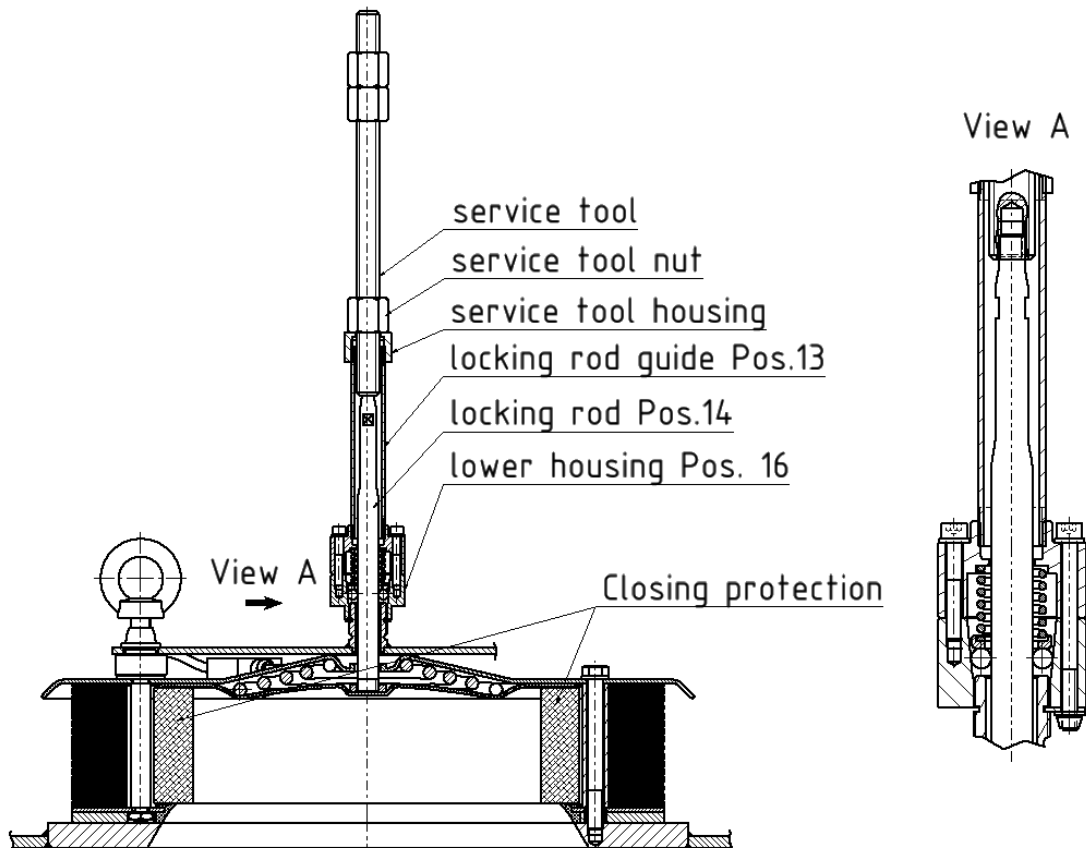
- Remove the sensor according chapter 9.1.
- Remove the end cap (Pos. 12)
- Connect the service tool (available at HOERBIGER) with the locking rod (Pos. 14)
- Mount the housing of the service tool on to the locking rod guide (Pos. 13)
- Lift the valve plate by applying a torque load (clockwise) on the service tool nut.



Before you reach into the valve with your hand it is mandatory to add protection against sudden reclosing in case of breakage of the rod or thread (appropriate piece of wood or similar)

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9.8 Closing the valve plate of EVN 3.0H NC

The closing of the valve plate should be done according the following procedure:

- Remove the closing protection
- Unload the non- reclosing device by applying a torque load (clockwise) on the service tool nut.
- Remove shear nut (Pos. 21), the circlip (Pos. 20) and the position plate (Pos. 19)
- Screw the lower housing (Pos. 16) towards the valve cover until the locking rod is released
- Turn the nut of the service tool counter clockwise until the valve is fully closed.



When reclosing the valve take care that the service tool rod is not turning! To prevent it from getting loose from the nut on the valve plate

- Remove the service tool
- Screw the lower housing (Pos. 16) counter clockwise until the groove of position plate (Pos. 19) is fully visible.
- Assembly of the position plate (Pos. 19), the circlip (Pos. 20) and the shear nut (Pos. 21)

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- Mount end cap (Pos.12)
- Finally reassemble the sensor according chapter 9.2.

9.9 Housekeeping

It is mandatory to have housekeeping and constant cleaning at any works where combustible dusts are handled. Together with this also the outside surface of the HOERBIGER Relief Valves should be kept free of extensive dust accumulations.

9.10 Untight internal sealing

If there is process material observed being exhausted through the flame arrester during normal operation it is possible that there was an unintended opening of the valve due to too high overpressure in the equipment.

If this is the case we recommend to revise the valve according chapter 9.4

If it is necessary to exchange the sealing ring please contact the manufacturer.

10. Marking

The marking of the type plate is as following:



Marking Explosion Relief Valve EVN 3.0H and EVN 3.0H NC

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11. Table of changes

version	date	author	comment
1.00	28.08.2017	EH	basic version
1.01	01.08.2018	EH	Change company name
1.01	01.08.2018	EH	Examples for the counter flange

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12. Attachment

Ex Position switch Ex 13 TL 1Ö/1S spec. .steute

Dimensional drawing

Switching path

ON OFF
■ □

Circuit diagram

Technical Data:

Standards:	IEC/EN 60947-5-1;
Enclosure	ATEX: EN 60079-0, EN 60079-1, EN 60079-31 glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch insert:	-
Protection	IP 65 according to EN 60529
Contact material	silver
Switching system	Slow action, positive break NC contact
Switching elements	change-over contact with double break Zb, galvanically separated contact bridges
Termination	cable H05VV-F, 6m long
Cable section	4 x 0.75 mm ²
Actuation	special long spring rod TL
Uimp	4 kV
UI	250 V
Ithe	6 A
Ie/UE	6 A/250 VAC; 0.25 A/230 VDC
Utilisation category	AC-15, DC-13
Max.fuse rating	6 A gL/gG D-fuse
Ambient temperature	-20°C ... +65°C, T5: +75°C
Mechanical life	>1 million operations
Switching frequency	1800/h
B10d (10% load):	2 million
TM	max 20 years
Repeat accuracy	± 0.1 mm
Contact gap	max. 2 x 4.5 mm
Ex certification:	II 2G Ex d IIC T6/T5 Gb II 2D Ex tb IIIC T80°C/T95°C Db IP65
Approvals	PTB 03 ATEX 1068 X

Specification:

- special long spring rod TL

Author: 2012-01-23 sh

Checked: Hilmert

Modification:

Checked:

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steute Schaltgeräte GmbH & Co. KG

Postfach 3343
32567 Löhne

Brückenstraße 91
32584 Löhne

Telefon 05731 / 745-0
Telefax 05731 / 745200

Amtsgericht
Bad Oeynhausen HRA 2125

Operation manual

for Explosion Relief Valves of type EVN 3.0H and EVN 3.0H NC
version 1.01



Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin



(1) EC-TYPE-EXAMINATION CERTIFICATE (Translation)

- (2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - Directive 94/9/EC
- (3) EC-type-examination Certificate Number:



PTB 03 ATEX 1068 X

- (4) Equipment: Position switch, type EEx 13...
- (5) Manufacturer: steute Schaltgeräte GmbH Co. KG
- (6) Address: 32584 Löhne, Germany
- (7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 03-12274.

- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 50014:1997 + A1 + A2 EN 50018:2000 EN 50281-1-1:1998
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:

II 2 G/D EEx d IIC T6/T5 IP65 T 80 °C/95 °C

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, August 04, 2003

Dr.-Ing. M. Thedens

sheet 1/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin



(13) SCHEDULE

(14) EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 1068 X

(15) Description of equipment

The position switch, type EEx 13... , is used for switching signal and control circuits. Actuator elements will be used as required.

Connection is made by means of the integrated connecting cable (open-ended line).

Technical data

Rated insulation voltage	up to	250 V	250 V	
Rated operating voltage	up to	250 V	230 V	
Rated current I _e	max.	6 A	0.25 A	
Utilization category		AC-15	DC-13	

Provided the making and breaking capacities are met, rated values other than those specified above are acceptable and will be defined by the manufacturer on the basis of the operating mode, utilisation category, etc.

Contacts		1 NOC and 1 NCC, or 2 NCCs		
Rated conductor cross section	up to	4 x 0.5 mm ² or 0.75 mm ²		
Temperature class		T6	T5	T5
Ambient temperature		65 °C	75 °C	90 °C
Thermal limiting current 3 A at ambient temperatures > 75 °C				

The position switch is designed for up to 100 °C temperature resistance.

(16) Test report PTB Ex 03-12274

(17) Special conditions for safe use

The connecting cable (open-ended line) of the position switch shall be installed to provide for permanent wiring and adequate protection against mechanical damage.

This EC type-examination certificate as well as any future supplements thereto shall at the same time be regarded as supplements to Component Certificate PTB No. Ex- 89.C.1051.

sheet 2/3

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Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 1068 X



(18) Essential health and safety requirements

met by compliance with the standards mentioned above.

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, August 04, 2003


Dr.-Ing. M. Thedens

The official seal of the Physikalisch-Technische Bundesanstalt (PTB). It is a circular seal featuring a central eagle with spread wings, surrounded by the text 'PHYSIKALISCH-TECHNISCHE BUNDESANSTALT' and the year '1974'.

sheet 3/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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Operation manual

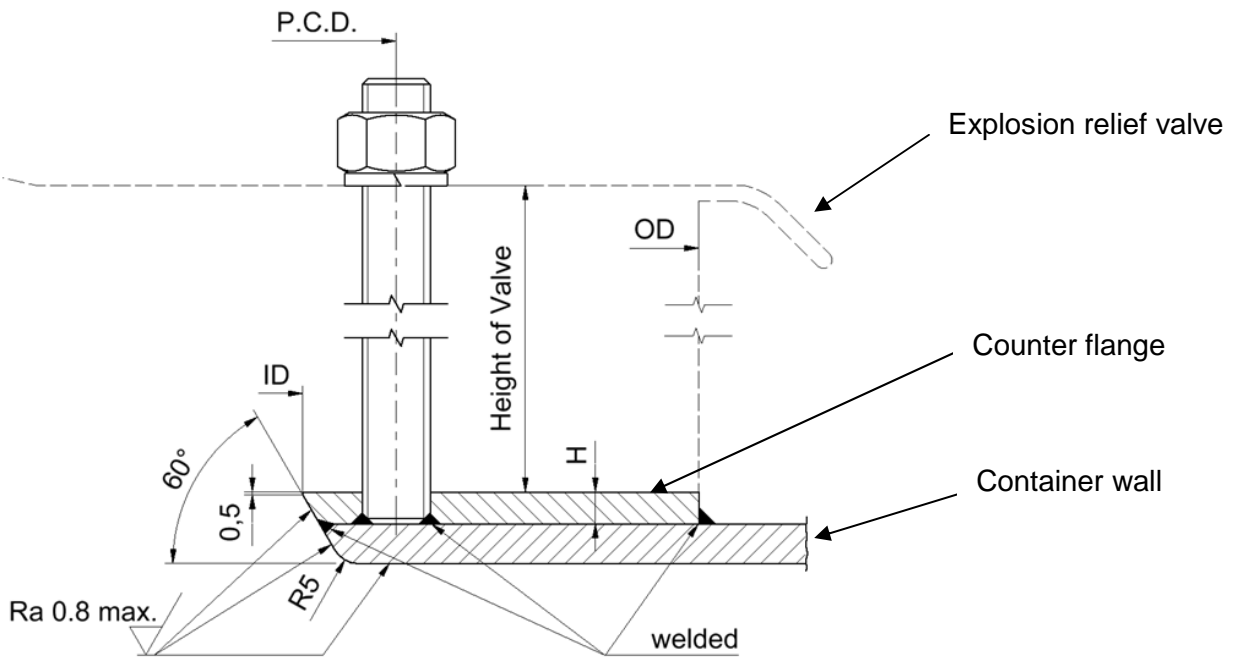
for Explosion Relief Valves of type EVN 3.0H and EVN 3.0H NC
version 1.01



13. Examples for the counter flange

Type	Dimensions				Flange connection		
	ID [mm]	OD [mm]	H [mm]	Height of Valve [mm]	No. of bolts	Thread	P.C.D. [mm]
266EVN 3.0H	268,6	409	> 6	106	6	M12	302
320EVN 3.0H	321,5	462		112	6	M12	355
420EVN 3.0H	416,6	579	> 8	141,2	8	M16	465
480EVN 3.0H	476,6	644		159,5	8	M16	530
565EVN 3.0H	562,2	735		188	12	M16	615
645EVN 3.0H	637,7	899		193	12	M16	700
735EVN 3.0H	727,7	910		213	12	M16	795

Version 1

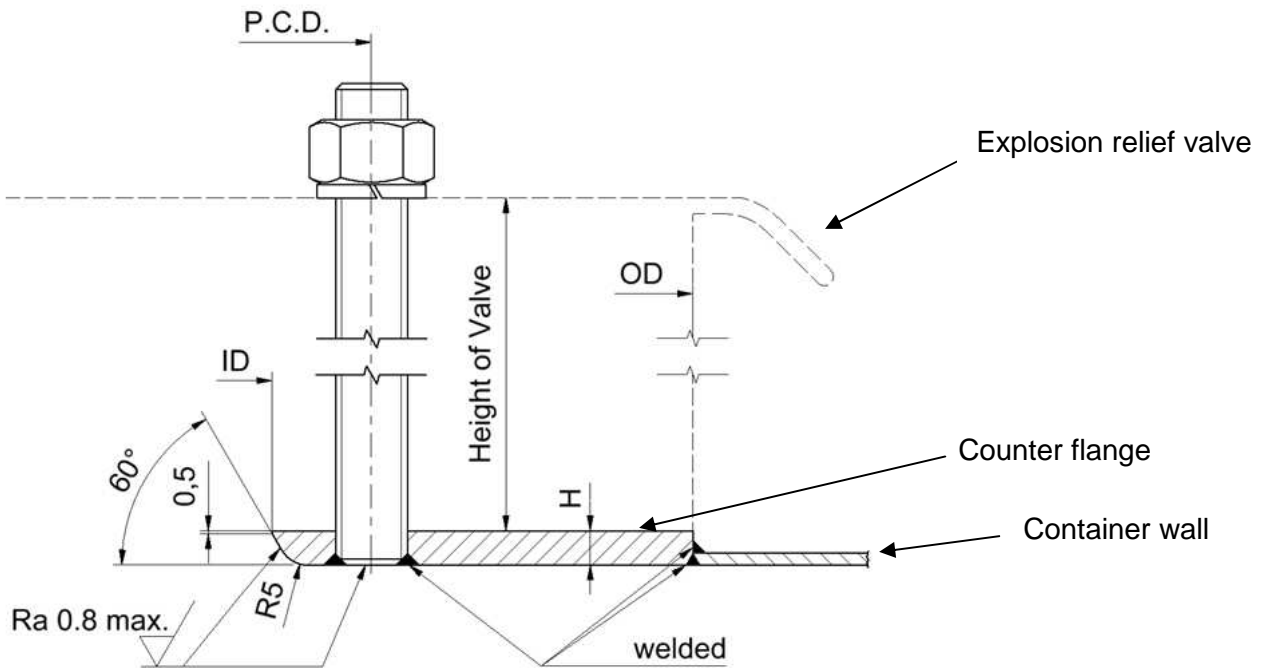


Operation manual

for Explosion Relief Valves of type EVN 3.0H and EVN 3.0H NC
version 1.01



Version 2



Version 3

