

Safety Breakaway Coupling ABV

Operating Instruction



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1 General description

Function:

The safety breakaway coupling (ABV) consists of two case halves with a check valve in each. The cases are held together by breaking pins during normal operation. The two check valves support each other during normal operation and keep the conduit open.

In case the tank wagon rolls away or someone forgot to disconnect the supply line before the truck drives off, the ABV is activated as follows:

Before the supply line is stressed by undue external forces the two case halves of the safety breakaway coupling are separated from each other by the breaking of the three breaking pins that have predetermined breaking points. The force needed to separate the safety breakaway coupling is significantly less than is the force that would rip the hose or tear it off of its fittings.

The spring-loaded check valves instantaneously close both ends of the line in case of a separation. One half of the coupling remains firmly connected to the tank wagon while the other half of the coupling remains connected to the supply line. This prevents the outflow of liquids or gases from both product carrying ends of the line.

IMPORTANT: The tensile strength of the hose used must be at least 1.3 times greater than the coupling release force. Refer to Table 3.3 for the release forces.

For the operator:

The safety breakaway coupling ABV has to be checked once a month for proper condition. The results of the inspection have to be documented.

In so far as the safety breakaway coupling ABV is part of a mandatory inspected system, the safety breakaway coupling ABV has to be checked by a technical expert during the first as well as all repeating inspections.

Only qualified personnel may be assigned with assembling the safety breakaway coupling ABV.

(Qualifications: experts, technicians, vocational training, job experience)

We would like to point out the professional obligations according to German law §62 WHG.

2 Nominal widths and pressure level

Nominal width	Connection	Nominal Pressure	Wrench size
DN 25	BSP 1" female 1" NPT female Flange EN 1092-1 Flange ASA-150 psi Flange ASA-300 psi	PN 16/25 PN 16/25 PN 16/25 PN 16 PN 25	SW 41 SW 41
DN 50	BSP 2" female 2" NPT female Flange EN 1092-1 Flange ASA-150 psi Flange ASA-300 psi	PN 16/25 PN 16/25 PN 16/25 PN 16 PN 25	SW 70 SW 70
DN 65	BSP 1/2" female	PN 16/25	SW 85
DN 80	BSP 3" female 3" NPT female Flange EN 1092-1 Flange ASA-150 psi Flange ASA-300 psi	PN 16/25 PN 16/25 PN 16/25 PN 16 PN 25	SW 100 SW 100
DN 100	BSP 4" female 4" NPT female Flange EN 1092-1 Flange ASA-150 psi Flange ASA-300 psi	PN 16/25 PN 16/25 PN 16/25 PN 16 PN 25	SW 125 SW 125

3 Technical data

3.1 Materials

Component	Material no.	Material	Temp. range
Case Spider	1.4408	GX6CrNiMo18-10	-40 / +150°C
Case, Closing cone, Spider	1.4571	X6CrNiMoTi17122 (AISI 316 Ti)	-40 / +150°C
	2.4602	NiCr21Mo14W (Hastelloy C22)	-40 / +150°C
	2.4610	NiMo16Cr16Ti (Hastelloy C4)	-40 / +150°C
Case	3.3547	Aluminum	-40 / +60°C
Spring / ball	1.4401	X12CrNi177	

3.2 Seals

Component	Material	Designation	Temp. range
O-ring	NBR	Perbunan	-20 / +100°C
	Ethylene-Propylene-Diene-Monomer EPDM	Buna AP	-40 / +150°C
	Perfluoroelastomer FFKM	Kalrez™ Chemraz™	-40 / +150°C
	Fluoroelastomer FKM	Viton	-20 / +150°C
Thread seal	PUR	Vulkollan	-40 / +150°C
	PTFE	Teflon	-40 / +150°C

Kalrez, Viton, Teflon = registered Trademarks of DuPont

3.3 Release force

Nominal width	Nominal Pressure	Pressureless ¹ kN	break force kN	Hose break force kN	Residual amount cm ³
DN 25	PN 16	3,2	2,2	4,2	100
	PN 25	7	5,4	9,1	
DN 50	PN 16	10	7,8	13	160
	PN 25	15	11,5	19,5	
DN 65	PN 16	15	11	19,5	340
	PN 25	20	14	26	
DN 80	PN 16	20	14	26	630
	PN 25	28	18,4	36,4	
DN 100	PN 16	30	20	39	1090
	PN 25	44	28,5	57,2	

¹ Werte für die Auswahl der Bruchbolzen

The release force is determined by the choice of breaking pin.

➔ Choose breaking pins that comply with the release force in the unpressurised state

The breaking pins are marked with the release force value in KN. The respective marking applies to the total number of breaking pins used per coupling.

The release force may vary by a maximum of +/- 10%.

Breaking pins for different values than those in Table 6-4 are available on request.

4 Range of applications

4.1 Industrial

- Plant engineering and construction
- Power plant construction
- Chemical industry
- Food processing industry
- Process technology
- Tank cleaning
- Filling systems for:
 - airfields
 - railroad tank wagons
 - tanker trucks
 - ships
 - tank containers

4.2 Media

- Lyes and acids
- Fuels and oils
- Gases
- Materials hazardous to the environment and water

The coupling may not be used for:

- When exceeding or undercutting the temperature ranges specified in chapter 3 for the chosen material combination
- As safety device for pressure limitation

If it is required outside this range please ask the manufacturer!

5 Installation / assembly

The ABV may be installed by qualified personnel only.

(Qualifications: experts, technicians, vocational training, job experience)

We would like to point out the professional obligations in acc. to German law § 62 WHG.

The safety breakaway coupling is delivered ready for mounting and can be installed directly into a supply line.

The installation is as follows:

- a. Remove the packaging and the tread protection caps.
- b. Check the coupling for damages before mounting.
- c. To prevent damages during mounting a suitable tool should be used for the intended nut flats on the coupling.
- d. Screw the one end of the coupling to the tank wagon and connect the hose line end firmly to the other coupling end.
- e. The maximum release angle should not exceed 90°.
- f. Check the sealing of the connections.
- g. All excessive external forces, such as bearing or leaning on by persons or objects must be avoided, because this could trigger the coupling.

6 Start-ups

The following points should be checked before any start-up:

- Check the coupling for leaks.
- Check the connection of the system to the coupling for leaks.
- Check the breaking pins for damage; faulty breaking pins have to be replaced immediately.

7 Cleaning

Check the seal of the connections before every cleaning.

In case the coupling is used for materials that harden, stick, etc., the coupling has to be cleaned of residues after every use.

Before dismantling, the coupling always has to be cleaned with a suitable cleaning agent (regardless of the product carried).

8 Maintenance / repair


Maintenance should be done regularly; after one year at the latest. After release of the safety breakaway coupling, a maintenance also is necessary.

Maintenance and repair of the safety breakaway coupling may be carried out only by Stäubli Hamburg GmbH or by companies/technicians authorized by Stäubli Hamburg GmbH.

9 Identification

An identification is engraved in the case on each half of the coupling.

The following information always has to be given on the case:

- TÜ AGG 214-94
- CE 0575  II 2G TX
- Manufacturer ID: Stäubli Hamburg
- Article no.: 555.200200,121-xx
- Serial number / Year manufactured
- Consecutive no. / material name (housing)
- Ü-Sign ²
- DN PN

² Typ approval no. Z-38.4-99

10 Miscellaneous

Stäubli Hamburg GmbH accepts no responsibility for damages due to faulty installation, faulty handling, as well as negligent or incorrect maintenance.

The operator is solely responsible for the installation, operation, and maintenance of the coupling.



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