SB-LNG (CBC)

EN ISO 16924:2018

LNG SAFETY BREAK

INSTALLATION AND OPERATING MANUAL

english

page 11

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Please read this manual carefully before installation or operation of the safety break.

Be sure all instructions are understood. Correct installation, use and maintenance are essential. In case of doubt or question, please contact your service contractor or the manufacturer.

DESCRIPTION

The SB-LNG ('CBC' Cryogenic Breakaway Coupling) is a dispenser safety break designed for the refuelling of heavy vehicles with LNG (Liquefied Natural Gas). The SB-LNG can be operated for the fill line (FL) as well as for the vent line (VL). They differ only in the type of connection towards the LNG hose assemblies.

Protects LNG dispensers from drive-away incidents by separating and isolating dispenser from fill or vent hose assemblies. The safety break is designed for a working pressure of 34 bar.

Reusable after separation. Spare breaking bolts are available at Elaflex Hiby.

APPROVALS / OPERATING CONDITIONS

The SB-LNG is designed and tested to EN 12516-2:2014, EN 12266-1/-2:2012, EN ISO 16924:2018, EN ISO 80079-36/-37:2016. Suitable for a media temperature down to -196° C. The flow rate is up to 50 GPM (190 l / min). The maximum working pressure is max. 3.4 MPa (34 bar).

Each safety break is factory tested and labeled with the prescribed marking.

Media compatibility	LNG, LN2, Methan
Nominal flow	190 l/min (50 GPM)
Working pressure (max.)	3,4 MPa (34 bar)
Test pressure (max.)	5,1 MPa (5,1 bar)
Media temperature (min.)	-196° C
Ambient temperature	-40° C bis +85° C
Connetion to dispenser	Flange connection DN 25, PN 25/40 Type B 1" NPT male (FL) ¾" NPT male (VL)
Connection to fill line (FL)	1 5/16"-12 SAE J514 37° JIC male
Connection to vent line (VL)	7/8"-14 SAE J512 45° male
Weight	approx. 2,8 kg
Dimension (max.)	Width /Length Flange type: 115 / 175 mm
	Width /Length NPT type: 85 / 215 mm
Breaking bolt version	7 kN

GENERAL INFORMATION/WARNINGS

LNG is a cryogenic liquid fuel that is transported and stored under pressure at temperatures down to -164° C. When LNG is exposed to the atmosphere, its aggregate state changes to gaseous natural gas (visible white vapour). When decoupling the nozzle, minor residual quantities of the LNG, so-called gas release volume, are usually released into the atmosphere. It may also be visible as white vapour.

Cryogenic gases or the handling equipment can cause serious harm to both infrastructure and personnel if safety precautions are not followed.

A small gas release upon uncoupling is normal – but uncontrolled gas release to the atmosphere must be avoided. If you suspect a leakage: stop refuelling immediately, evacuate the area and inform station personnel.

- LNG is extremely flammable:

  ➔ **Open fires, smoking, sources of static electricity and the use of mobile phones or other electric devices is prohibited in the area of gas transfer. Turn off vehicle engine before refuelling / venting.**

- Failure or improper use of this product can cause death, personal injury and property damage.

  ➔ LNG is extremely cold, also when released to the atmosphere.

SAFETY

Caution: Please follow the safety instructions. Disregard can lead to serious injuries or death.

Personal protective equipment ('PPE') is required during the refuelling process.
The PPE consists of:


Cryogenic Smock


Full Face Shield


Solid Shoes Capable of withstanding Cryogenic Media


Cryogenic Thermal Gloves

- Do not operate safety breaks if there is any visible damage
- Stop refuelling process immediately if a permanent, uncontrolled release of LNG occurs (see also chapter 'Troubleshooting')
- Read the manual of the LNG vehicle and follow regulations from local authorities
- Keep area clear to avoid accidents

INSTALLATION

Ensure the system is clean of debris, **pressure-less** and **isolated** before any installation or servicing work is carried out.

The SB-LNG is delivered ready for use. This installation must only be done by an authorised service engineer who is trained to ensure compliance with all relevant national regulatory conditions.

It is intended for connections as described under 'Approval / Operating Conditions' and is designed to withstand reasonable axial loads associated with proper handling practices. However, is not designed to accept continuous excessive load values associated with maladjustment or poor installation. Continuous excessive strain will equate to increased component wear and possibly premature failure if not corrected.

Observe hose length to ensure proper handling. A sufficient hose length ensures a proper operation within the stipulated minimum bending radius of the hose up to the maximum operation range.

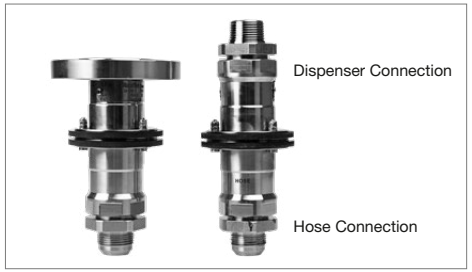
Installation must comply with the requirements of the relevant authorities and applicable country-specific regulations.

Needed Tools:

1 x Wrench EW M 36/41 (for Elaflex LNG hose assembly)
1 x Wrench (50 mm – for Elaflex Safety Break)
1 x Wrench (8 mm – for breaking bolt nut)
1 x Wrench (4 mm – for breaking bolts)
1 x Screwdriver
1 x O-Ring removal tool (EW 'ELAPICK')

ASSEMBLING AT DISPENSER

NOTE: **Ensure that the dispenser allows the max. pull force in all approach directions without damage.**

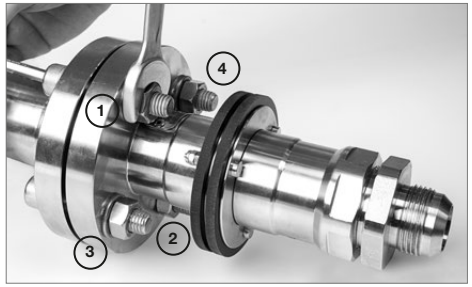


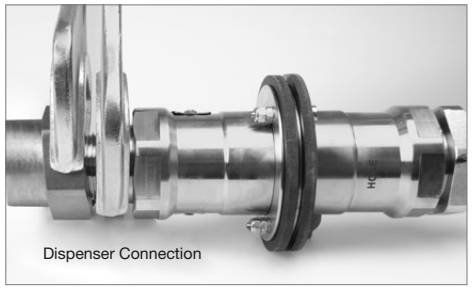
Ensure correct installation direction.

Flange Connections

Before mounting the flanges, a seal that is approved for LNG and corresponding flange shape and size must be used, e.g. flat seals made of graphite or grooved seals with a suitable PTFE sealing surface.

Use suitable low-temperature screws e.g. M12x55, A2-70. Observe the tightening torques from the screw manufacturer. Do not tighten the screws going round, but in diagonal order (1-4).





Threaded Connections

Screw the safety break into the dispenser outlet. Adhere to the torque recommended by the dispenser's manufacturer.

NOTE: It is **essential** to counter the opposite side to the safety break. Under no circumstances may the assembly torque be transferred to the fuel dispenser connection.

Do not use pliers or pipe wrenches.

Use wrenches in the sizes specified.

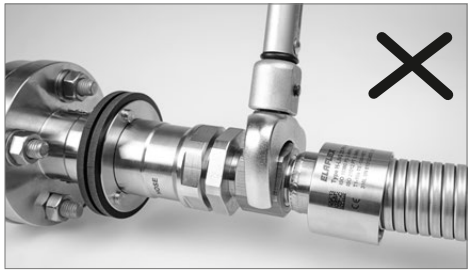
ASSEMBLING OF HOSE CONNECTION

Check sealing surfaces of connections.

Check if connections correspond in type and size: e.g. 1 5/16"-12 SAE J514 37° JIC.

Connect the hose to the safety break.

Torque to the hose coupling suppliers recommended tightening torque. For Elaflex hose assemblies LNG 13: 60 Nm, LNG 25: 150 Nm. Do not use pliers.



NOTE: It is **essential** to counter the opposite side to the safety break. Under no circumstances may the assembly torque be transferred to the safety break.

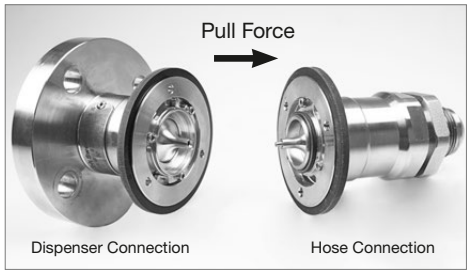
Do not use pliers or pipe wrenches.

Use wrenches in the sizes specified.

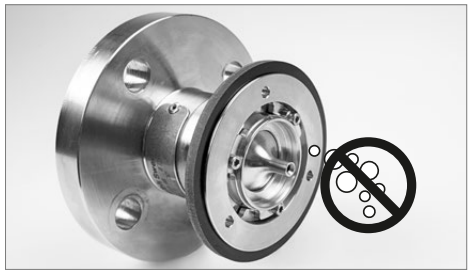
After connecting to the hose assembly, a tightening test shall be performed. It is essential to examine that the safety break and hose connections are tight under pressure and do not leak.

➔ **NOTE: Pressurise system gradually while checking for leaks.**

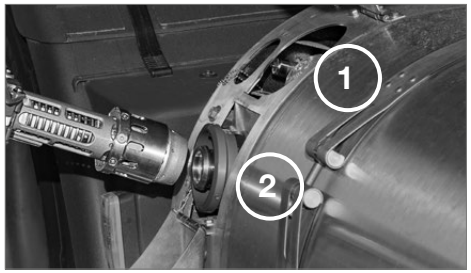
PREPARATION FOR REASSEMBLY AFTER SEPARATION



Safety breaks separate the hose assemblies from the dispenser when hose assemblies are loaded with an axial tensile force or a tensile force with an angle up to 90 ° to the direction of flow.

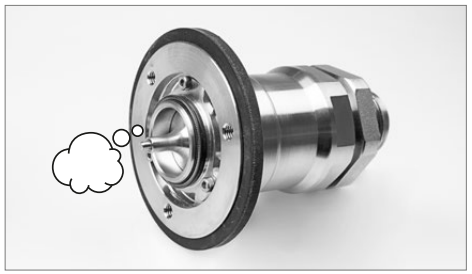


Fuel flow stop automatically on both sides when safety break separates.



1) Close the supply line from the filling point to the truck's LNG tank.

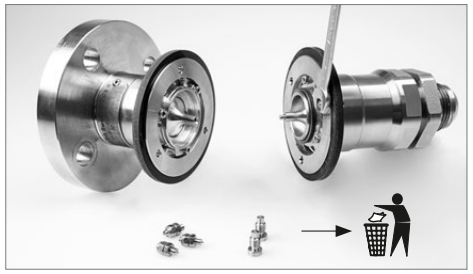
2) Remove nozzle from the vehicle filling point, provided that the filling point is not deformed or leaks. Do not remove nozzle if it is damaged.



The hose assembly is vented by a pressure relief bore within the nozzle-sided safety break part.

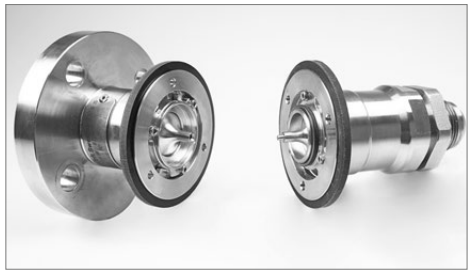
Only dismantle nozzle or vent coupling and hose-sided safety break from the hose assembly, when the hose assembly is depressurised.

➔ **NOTE: To dispmantle the safety break part on the dispenser, also vent and depressurise the pipe line.**
Follow the operating instructions of the system manufacturer.



When the dispenser-sided connection line is depressurised, disassemble the safety break part on the dispenser side.

Remove and dispose severed breaking bolts in both parts of the safety break.



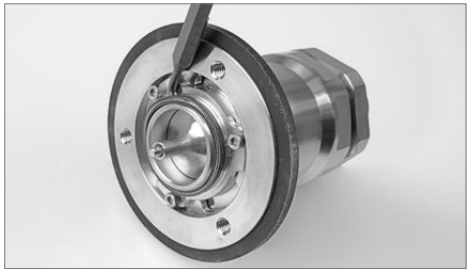
Before reassembling and reusing the safety break, check it for any damage (scratches/deformations).

Reuse is excluded in case of damaged functional or sealing surfaces as well as deformation of the body.

Ensure that the safety break parts are free of any debris.

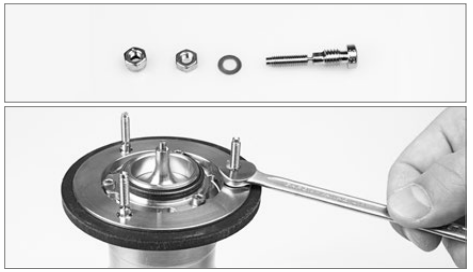
➔ **NOTE: Before using the nozzle again, it is essential to test its functionality. To do this, observe the respective manufacturer's instructions for the nozzle.**

REASSEMBLY AFTER SEPERATION



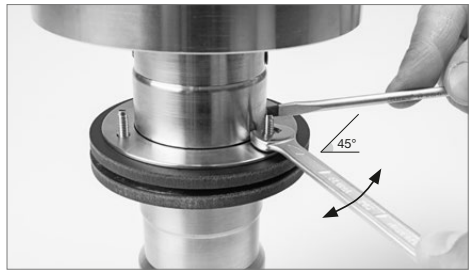
Replace valve seal. Make sure the seal is not damaged by sharp objects or overstretching.

Ensure correct alignment of the seal. The open side of the seal should face away from the coupling surface.



Screw in new breaking bolts into the safety break part with replaced valve seal. Use wrench (4 mm).

Push the second safety break part onto the other so that the breaking bolts fit perfectly into the holes provided.



Carefully and loosely fit a washer and nut per breaking bolt by hand. Then carefully tighten by a maximum of 45°/⅛ turn with a wrench (8 mm). Use a screwdriver to lock the breaking bolt.

Then carefully mount the second nut.

Before tightening the upper nut securely counter the lower nut so as **not** to exert any force on the breaking bolts.

After the breaking bolts have been installed, the safety break is ready for a pressure and tightness test.

➔ **NOTE:** A **pressure and tightness test** with nitrogen in a suitable environment must be carried out.

A check with water instead requires a complete and thorough drying afterwards.

The following pressure levels must be approached >1 min. each and checked for leaks:

- 1,5 x working pressure (51 bar)
- 0,1 x working pressure (3,4 bar)

After a successful test connect the safety break to the dispenser and hose assembly as shown in chapter 'Installation'.

After the safe installation to the dispenser and of hose assembly, a pressure and tightness test must be performed. It is essential to check that the safety break and hose assembly connections are tight under pressure and do not leak.

➔ **NOTE: Pressurise system gradually while checking for leaks.**

TROUBLESHOOTING

- **Leackage**

  ➔ If uncontrolled and / or permanent gas release to the atmosphere occurs, immediately stop fuelling. Push emergency button of dispenser immediately, leave area and inform station personnel. If area is safe, check tight connections to the safety break.

If self-service is not possible, please contact a service company specialised and certified in LNG Service Station installations.

MAINTENANCE

The SB-LNG is a mechanical device that may become inoperative due to wear, corrosion and ageing of components. Regular inspections and maintenance are essential for a safe operation.

Daily visual inspections of the safety break by trained personnel should be carried out to ensure proper function.

The safety break shall be clean and not show any signs of damage (e.g. dents or sharp edges).

The safety break condition shall be thoroughly checked during the annual pump maintenance by competent personnel. Applicable laws, regulations and Codes of Practice have to be followed.

Safety breaks in unfit condition for use must be immediately replaced.

CONDITIONS OF USE

Failure to comply with any warnings, instructions, procedures or any other common sense procedures may result in injury, equipment damage, property damage or poor performance of the equipment.

Elaflex Hiby accepts no liability for direct, indirect, incidental, special, or consequential damages resulting from failure to follow any warnings, instructions and procedures in this manual, or any other common sense procedures generally applicable to equipment of this type. The foregoing limitation extends to damages to person or property caused by the unit or damages resulting from the inability to use the unit including loss of profits, loss of products, loss of power supply, the cost of arranging an alternative power supply, and loss of time, whether incurred by the user or their employees, the installer, the commissioner, a service technician, or any third party.

The manufacturer reserves the right to change the specifications of its products or the information in this manual without necessarily notifying its users.

Variations in installation and operating conditions may affect the unit‘s performance. Elaflex Hiby has no control over each installation‘s unique operating environment. Hence, no representations or warranties concerning the performance of the unit under the actual operating conditions prevailing at the installation are made. A technical expert of your choosing should validate all operating parameters for each application.

Elaflex Hiby has made every effort to explain all servicing procedures, warnings, and safety precautions as clearly and completely as possible. However, due to the range of operating environments, it is not possible to anticipate every issue that may arise. This manual is intended to provide general guidance. For specific guidance and technical support, contact your authorized supplier or specialist service contractor.

Only approved original parts shall be used and no unauthorized modifications to the hardware shall be made. The use of non-approved parts or modifications will void all warranties and approvals. The use of non-approved parts or modifications may also constitute a safety hazard.

Information in this manual shall not be deemed a warranty, representation, or guarantee. For warranty provisions applicable to this unit, please refer to the warranty provided by the supplier.

Every effort has been made to ensure the accuracy of this document. However, it may contain technical inaccuracies or typographical errors. Elaflex Hiby assumes no responsibility for and disclaims all liability of such inaccuracies, errors or emissions in this.

WARRANTY

Elaflex Hiby guarantees against defective materials and manufacturing for 18 months from date of supply. If the delivery date cannot be established, the production date applies. The production date is marked on the safety break body.

Excluded are safety breaks and parts subjected to wear and tear and damages caused by improper use, for example the use with unsuitable media. Furthermore excluded are indirect damages and costs, such as travelling related to exchange and repair work. We refuse any liability for consequential loss or damage resulting from the use of our safety breaks.