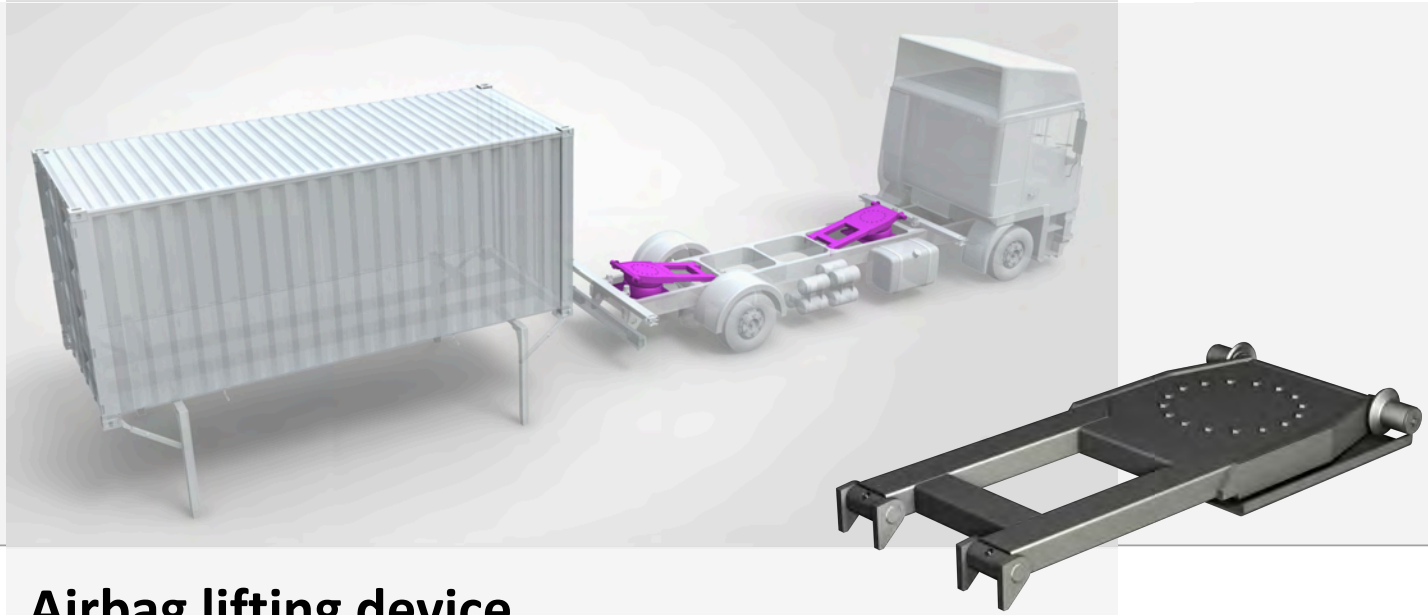


Airbag lifting device

EN **Installation and operating instructions**

Table of contents

EN

1 Explanation of symbols

WARNING!
Means that death, serious physical injury or significant material damage can occur if the relevant safety instructions are not followed.

ATTENTION!
Means that slight physical injury or material damage can occur if the relevant safety instructions are not followed.

IMPORTANT!
Note on the obligation to read the documentation! Failure to comply with these instructions can result in incorrect conduct by the personnel.

ADVICE!
Contains additional important information.

This lifting device is a product that is at the state of the art with regard to the safety afforded to operating personnel. Nevertheless, the lifting device can pose a danger if it is used by insufficiently trained personnel, used incorrectly or not in accordance with the intended use. Reference is made to potential dangers in chapter 4 "Safety" and by safety instructions throughout the documentation.

This documentation is intended to ensure safe and correct work on and with the lifting device. It contains safety instructions that must be complied with!

Everyone who works on and with the lifting device must have this documentation available during their work, and must comply with the information and instructions that are relevant to them.

The documentation must always be complete and fully legible.

JOST-Werke Deutschland GmbH is not liable for technical or printing errors in this documentation, and neither is it liable for damage attributable directly or indirectly to the delivery, performance or utilisation of this documentation.

ADVICE!

Make sure that anyone who works on the airbag lifting device for the first time has read and understood this documentation.

In particular, point out the requirement to observe the safety instructions in this documentation and on the airbag lifting device.

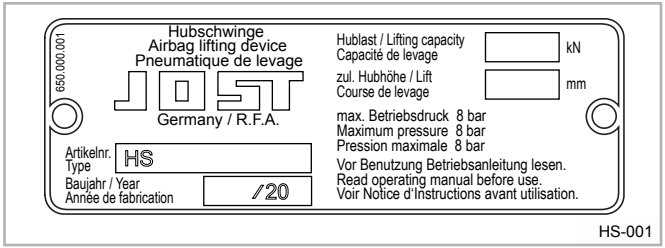
Keep the documentation in the area of the airbag lifting device and pass on the documentation to new personnel.

Make sure that no one without specialist knowledge works on the airbag lifting device.

2.1 Identification

The airbag lifting device is clearly identified by the content of its type plate.

ATTENTION!
Make sure that the type plate is not damaged, it must be renewed if necessary.



Manufacturer

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2.2 Liability

The information in this documentation describes the properties of the product without however guaranteeing these properties.

No liability will be accepted for damage attributable to:

- Use of the airbag lifting device not in accordance with the intended use.
- Failure to comply with the documentation.
- Operation of the airbag lifting device if safety devices are defective or if safety and protective devices are not attached correctly or are not functioning.
- Defective monitoring of airbag lifting device components subject to wear.
- Incorrectly performed repairs.
- Independent, incorrect modification of operating parameters.
- Catastrophes, effects of foreign bodies and force majeure.

JOST airbag lifting devices are mounted on a truck chassis, enabling the truck to transport (pick up or set down) swap containers. For the transportation (loading, unloading) of swap containers, a carrier vehicle (truck) may be equipped with either one or two airbag lifting devices. These are built into the carrier vehicle for the purpose of picking up and setting down swap containers.

An airbag lifting device must be mounted in accordance with the instructions of the manufacturer, JOST. Furthermore, the assembly instruction of the respective truck manufacturer must be taken into account.

The airbag lifting device is not an independently functional piece of equipment. It is intended to be attached to a tractor unit. Re-evaluation of the entire system with regard to safety is necessary following installation. It must not be used until it has been established that the truck on which the airbag lifting device has been mounted complies with the national regulations for road traffic. The airbag lifting device is only allowed to be put into operation in conjunction with the documentation of the tractor vehicle and trailer as well as of the airbag lifting device.

Furthermore, no liability and warranty claims will be accepted in the event of failure to comply with the intended use. The airbag lifting device is only allowed to be operated under the application conditions prescribed in this documentation.

3.1 Target group and preliminary knowledge

This documentation is intended for the installation, operating and maintenance personnel of the airbag lifting device.

The installation, operating and maintenance personnel must be appointed by the owner.

The following precondition apply:

- Basic technical knowledge
- At least 18 years of age
- Reading and understanding of this operation, installation and servicing manual
- To gain the knowledge required for operating this airbag lifting device, the operator must receive instruction on the product and its safe use.

WARNING!
Installation and repairs may only be carried out by technical specialists with product-specific knowledge.

3.2 Content and purpose of this documentation

This documentation contains the relevant information for installation, operation, maintenance and disposal of the airbag lifting device. It is intended to enable people to work on and with the airbag lifting device safely.

Complying with the instructions provided in this document will make it possible to avoid dangers and prevent damage to the airbag lifting device.

3.3 Application limits

The application limits for the airbag lifting device are as follows:

- Lifting load and operating pressure: see type plate
- Lifting height: see type plate
- Ambient temperature: - 20°C to + 80°C
- When operating the airbag lifting devices, the truck must be parked on firm horizontal ground, if necessary taking into account any national regulations concerning maximum floor loading.

3.4 Principle

The airbag lifting device is a state-of-the-art product in accordance with the applicable safety and occupational health regulations.

Nevertheless, if it is incorrectly operated or misused, a risk to life and limb of the user or third parties can arise.

Furthermore, it can result in material damage to the lifting device itself or to other objects.

This documentation is structured according to the valid EU regulations and contains safety instructions. The operator of the airbag lifting device is responsible for ensuring that operating personnel receive the necessary safety information and also read the documentation. Individuals are personally responsible for complying with the safety instructions.

This chapter contains a general introduction to the safety instructions that are used. Furthermore, it contains important information on preventing accidents.

4.1 Residual danger/general safety instructions

Even if maximum care is taken during construction and production of the airbag lifting devices, taking into account all safety-related matters, residual risks may still exists requiring evaluation by means of risk assessment.

WARNING!
Be aware of possible crush hazards or falling objects when transporting the airbag lifting device by fork lift truck or crane.

WARNING!
Be aware of the risk of crushing between the components of the airbag lifting device and the truck when installing the airbag lifting device on the truck.

WARNING!
While the airbag lifting device is in motion, there is increased danger of crushing between airbag lifting device, truck and swap container. Reaching into this area is therefore strictly prohibited.

WARNING!
Check the fixing elements/bolts regularly to ensure that they are secure. Tighten any loose bolts with the required torque setting.

WARNING!
During loading (truck reverses under swap container) or unloading it is imperative that no unauthorised person is present in the area of the truck or container. Risk of crushing in the area between truck and swap container.

ATTENTION!
A JOST airbag lifting device may only be operated using a controller suitable for the purpose and within the specified limits of use. This controller is not included within the scope of delivery of the airbag lifting device.

The use of the JOST airbag lifting device controllers SSTN 1 HS (for operating one lifting device) or SSTN 2 HS (for operating two lifting devices) is recommended.

ATTENTION!
Climbing on the truck chassis is strictly forbidden. If it is necessary to climb onto the truck chassis for service/maintenance purposes, then this may only be done by authorised and experienced specialist personnel using the necessary safety and protective equipment.

4.2 Safety instructions for the owner

WARNING!
Installation and repairs may only be carried out by trained specialists.

ATTENTION!
Make sure that the instructions attached to the airbag lifting device on delivery remain clearly legible.

ATTENTION!
Use only genuine spare parts, otherwise warranty regulations might be violated and product liability risks incurred.

ATTENTION!
The modification or subsequent attachment of components to the airbag lifting device is the responsibility of the vehicle manufacturer or operator.

4.3 Safety instructions for the operating personnel

WARNING!
The airbag lifting device may only be operated by appropriately qualified personnel. These personnel must be familiar with all safety instructions and the corresponding measures contained in this documentation.

WARNING!
The airbag lifting device must be checked before every use (at least once a day) (see Section 7.2 Maintenance)

4.4 Personal protective equipment

The airbag lifting device is configured so that people who work with the airbag lifting device will not require any protective equipment beyond the necessary standard equipment.

Wear safety shoes and protective gloves during installation and maintenance work.

ADVICE!

It is essential to wear safety shoes and protective gloves when carrying out any installation or maintenance work.

ADVICE!

People who carry out cleaning and maintenance work must observe the prescribed measures for the corresponding cleaning agents (e.g. gloves for use with cleaning agents, protection against spray, etc.)

4.5 Safety instructions on the airbag lifting device

Safety instructions are to be affixed to airbag lifting device which draw attention to the possible dangers/residual hazards.

The instructions on the safety signs attached to the airbag lifting device must be obeyed in all circumstances. If the safety signs become faded or damaged during the service life of the airbag lifting device, they must be placed by new signs without delay. The legibility and completeness of the instructions must be checked at regular intervals.

From the moment at which the signs are no longer immediately readable, the airbag lifting device must be taken out of service until the new signs are fitted.

The pictograms for warnings, prohibitions and requirements on the lifting frame with their meaning:

Pictograms	Description
	Marking of a hazardous area
	Warning of crush risk

4.6 General safety regulations and obligations

In general, the following safety regulations and obligations apply when working with the airbag lifting device:

- The airbag lifting device is only allowed to be operated if in fault-free and clean condition.
- It is prohibited for any protective and safety devices to be removed, modified, defeated or bypassed.
- It is prohibited for the airbag lifting device to be converted or modified without written approval by the supplier.
- Malfunctions or damage must be reported to the owner immediately. This must be corrected immediately.
- Only original spare parts are allowed to be used during repairs.
- The safety instructions and operating instructions in the documentation for the components used must be taken into account in any event.
- All protective and safety devices must be checked regularly by the owner and maintained.
- Only instructed, trained or qualified people are allowed to work with and on the airbag lifting device.
- Operation of the airbag lifting device is subject to national employee protection regulations as well as national health and safety and accident prevention regulations.

WARNING!
Installation shall be performed exclusively by qualified persons, observing the specifications (e.g. assembly guidelines) of the truck manufacturer and the installation instructions.

ADVICE!
Note that a free space of at least 15 mm must be maintained around all moving parts.

ADVICE!
Before using for the first time, the bearings of the airbag lifting device must be greased. See Section 7.2 Maintenance.

ADVICE!
If the airbag lifting device is not installed properly, no liability claims shall be accepted by the manufacturer or supplier of the device.

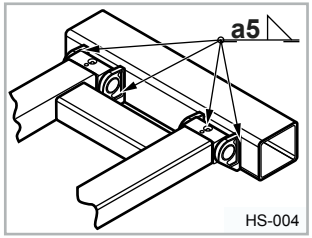
ADVICE!
If the airbag lifting device is subsequently modified by the vehicle manufacturer, then the latter shall bear responsibility for the product.

- Installation and connection measurements, weight, permissible lifting height and other features where necessary (e.g. scope of supply and delivery condition) can be obtained from the type-related drawing applicable in each case.
- It is imperative that the specifications in the drawing are observed during installation. In particular, the specified minimum installation height (e.g. 128 mm for HS 8000 ESN) must be observed under all circumstances, as otherwise damage to the airbag may result.

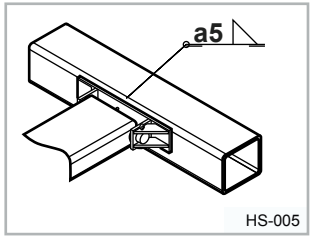
5.1 Welding the bearings into place

To install the frame bearing, proceed as shown in the diagram below:

HS 5000/8000/10000



HS8300



ATTENTION!
All welding servicing work should be performed only by qualified personnel.

The quality of the welding must meet the requirements of assessment group B according to EN ISO 5817.
The weld filler must be selected according to the rigidity of the base metal used.

Welding method according to ISO 4063	111	135	135
Weld filler metal (approved by one of the following organisations: BV, DB, DNV, GL, LR, TÜV)	Rod electrode	Welding wire	Inert gas
Standard name Weld filler metal/consumables	ISO 2560-A- E 35 3 B ISO 2560-A- E 38 3 B ISO 2560-A- E 42 3 B	ISO 14341-A-G 38 3 C1 2Si ISO 14341-A-G 42 3 M21 2Si ISO 14341-A-G 42 3 C1 3Si1 ISO 14341-A-G 42 4 M21 3Si1 ISO 14341-A-G 46 3 C1 4Si1 ISO 14341-A-G 46 4 M21 4Si1	ISO 14175 - C1 ISO 14175 - M21

5.2 Installation of the base plate

- The base plate of the airbag lifting device is assembled in advance. Before welding in place, it must be released from the lower bead ring. This is necessary for reasons of accessibility during welding and to avoid thermal damage to the airbag.
- As the base plates of all standard types are not self-supporting, they must be correspondingly supported (see drawing as an example).
- Connect the support in a suitable manner with the longitudinal member of the vehicle chassis or with the swap frame. In doing so, observe the assembly guidelines of the respective vehicle manufacturer.
- After welding, inspecting and cleaning the contact surface, screw the bead ring of the airbag back onto the base plate.

ATTENTION!
Before installation, check that the screw holes of the bead ring are in the correct position. If not, turn the bead ring as necessary. The airbag must not be screwed on under torsional stress.

All bolted connections must be checked after installation!

- Tighten the first eight bolts in an alternating criss-cross sequence and the remainder in any order.
- On completion of installation, check the leak tightness of the airbag using appropriate equipment.

Torque settings

M16 bolts (HS 8000/10000)	100 Nm
M8 bolts (HS 5000)	12 Nm

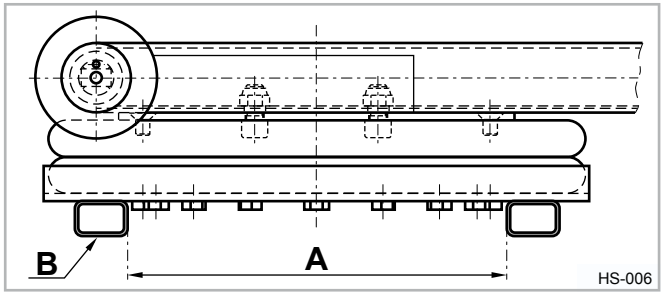
Load capacity

A = approx. 280 mm	5 tons
A = approx. 430 mm	8 and 10 tons

Support B

E.g. 60 x 40 x 4 (sideways)
50 X 30 X 5 (upright)

Section modulus $W_{Xmin.}$ = 8 cm^3
Minimum yield strength R_{eH} = 355 N/mm^2



5.3 Actuating System (optional)

We recommend the use of the following actuating Systems:

- SSTN 1 HS for one airbag lifting device
- SSTN 2 HS for two airbag lifting devices

ADVICE!

The design of these actuating Systems complies with the safety requirements currently applicable in Germany. Any national requirements that deviate from these require prior inspection on the part of the vehicle manufacturer or operator.

They contain all necessary functional components. They do not include any accessories or fixing material that is necessary.

5.3.1 Installation of the actuating System

- The base plates of the airbag lifting devices are equipped with two connecting threads (R3/8" and M22 x 1.5). These are sealed with screw plugs. For connecting the **SSTN 1 HS** and **SSTN 2 HS** actuating Systems, you require the R3/8" thread.
- The actuating System is connected to a fused auxiliary consumer. The permissible operating pressure of the airbag lifting devices is 8 bar. If the vehicle pressure p > = 8.5 bar, the use of a pressure reduction valve is essential.

ADVICE!

Depending on the basic vehicle equipment, the installation of additional air reservoirs may be recommended or necessary. A minimum of 60 litres per airbag are to be assumed as an additional air requirement.

Make sure that these additional reservoirs can be adequately drained!

- Ensure that sufficient compressor volume performance is available on the vehicle, particularly if additional consumers of air are installed.
- Install the actuating device for the actuating System in such a way that its operation presents absolutely no risk of injury to to the operator. The operator must have a clear view of the hazardous area during operation. The operating device for raising/lowering the airbag lifting device must be constructed in such a way that it returns automatically to the starting position when released. The directions of movement must be logically assigned. The direction of control is to be indicated. The operator controls must not be positioned near exhaust systems.

ADVICE!

The installation of the valves in the immediate areas of spray from the tyres, for example, is to be avoided. If necessary, provide spray guards.

It is recommended that the actuating valves are accommodated in a lockable housing protected from spray.

ADVICE!

The control elements of the actuating System are to be secured by suitable means against unauthorised use!

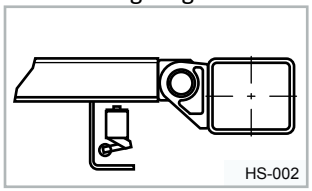
Installation position of the actuating valves: vertical; actuating lever at top.

- The vent openings of the valves are protected by "mufflers" against the penetration of dirt and moisture. These mufflers are wearing parts and, depending on operating conditions, must be checked at regular intervals for contamination and leak tightness, and cleaned or replaced where necessary.
- Alternatively, a stub of at least 0.5 m in length can be fitted. The end of this stub must be in a location protected from spray (e.g. inboard side of longitudinal member) ending with a downward vertical section of at least 0.2 m.

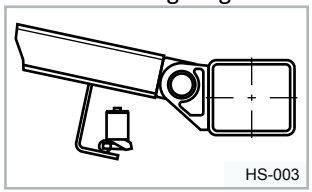
5.3.2 Positioning and installation of the 3/2-way roller valve (lift limiting valve, 650.160.044)

- Roller valves must be installed in such a way that the maximum permissible lifting height of the airbag lifting device, according to the respective applicable drawing, cannot be exceeded under any circumstances. The shape and design of the operating lever of the roller valve is dependent on the respective installation conditions. This lever therefore is not included in the scope of supply of the airbag lifting device or of the control system. See drawing below for schematic representation.

Lifting height 0



max. lifting height

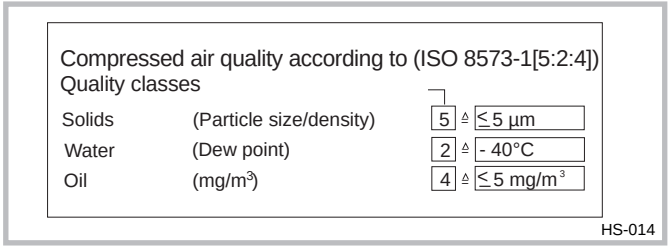


5.3.3 Installation of two airbag lifting devices

ADVICE!
The SSTN 2 HS actuating system is designed in such a way that the two airbag lifting devices can only be operated from alternate sides. This guarantees the stability under load of the swap container without restriction during lifting and lowering.

WARNING!
If another type of actuating system should be selected by the vehicle constructor, appropriate measures must be taken to prevent the container tipping or rolling away during the swapping process.

5.4 Compressed air quality



To avoid functional problems, the quality of the compressed air supply must at least match the specifications given.

6.1 Checks during initial start-up

Carry out the following activities before putting the airbag lifting device into service:

- Check the attachment and correct tightening torque of the bolts for the airbag lifting device.
- Check the attachment and the correct connection of the controller air lines, ensuring they are routed to avoid kinks and abrasion.
- Check that the air lines of the controller are an adequate distance away from hot or moving components.

6.2 Operation of the airbag lifting device

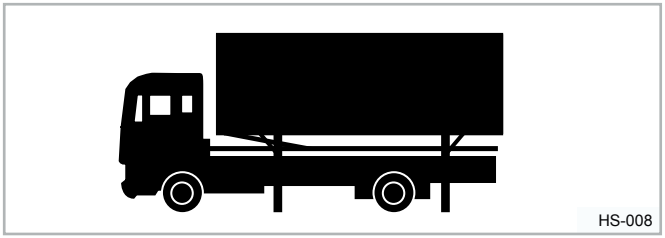
This section explains operation of the airbag lifting device in more detail.

WARNING!
Apply the vehicle brakes and ensure that no other persons are situated in the hazardous area.

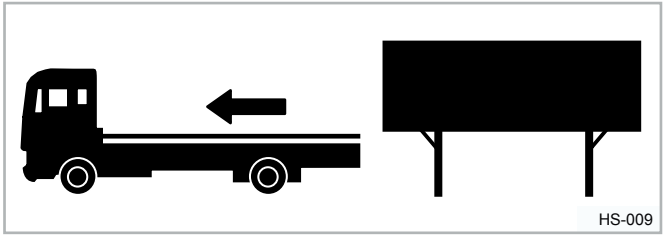
ATTENTION!
Ensure that the vehicle is parked properly in the space designated for this purpose.

Swap process – one airbag lifting device, setting down container

- Open all twist locks between swap container and carrier vehicle.
- Fill the vehicle's own air suspension bags and the airbag of the lifting device with air.
- The superstructure rises at front and rear.



- Fold out the front and rear support legs and lock them in place.
- Vent all airbags.



- Drive the vehicle carefully out from under the swap container.

Swap process – one airbag lifting device, picking up container

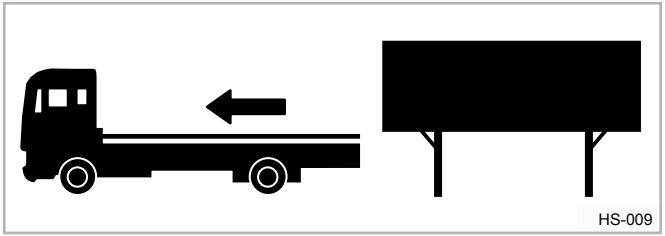
- Vent the vehicle's air suspension bags and the airbag of the lifting device to the approximate drive-under height
- Reverse under the swap container until the four locking points engage, or until the vehicle end-stop is reached.
- Fill the vehicle's air suspension bags and the airbag of the lifting device with air until the support legs are free to move.
- Fold all four support legs away and secure them.
- Vent the airbag lifting device.
- Close and brace the locking devices.
- Vent the vehicle's own air suspension bags to normal ride height.

Swap process – two airbag lifting devices, setting down container

- Open all twist locks between swap container and carrier vehicle.
- Feed air into the air suspension bags and first to the rear airbag lifting device.
- Fold out the rear support legs and lock them in place.

ATTENTION!
Ensure there is sufficient space between the swap container and the driver's cab of the truck.

- Vent the rear airbag lifting device.
- Feed air into the front airbag lifting device.
- Fold out the front support legs and lock them in place.



- Vent the front airbag lifting device.
- Drive the vehicle carefully out from under the swap container.

Swap process – two airbag lifting devices, picking up container

- Vent the vehicle's air suspension bags and both airbag lifting devices to the approximate drive-under height
- Reverse under the swap container until the four locking points engage, or until the vehicle end-stop is reached.
- Vent air to the rear airbag lifting device until the relevant support legs are free to move.
- Fold away the support legs and lock them in place.
- Vent the rear airbag lifting device.
- Feed air to the front airbag lifting device until the relevant support legs are free to move.
- Fold away the support legs and lock them in place.
- Vent the front airbag lifting device.
- Close and brace the locking devices.

ADVICE!

When using the optional SSTN 2 HS actuating system for two airbag lifting devices, only one airbag lifting device at a time can be fed with air, as the forced control automatically vents the other airbag lifting device when switching over (front/rear).

Various cleaning and maintenance activities are essential for ensuring that the airbag lifting device will operate correctly over a long period.

ATTENTION!
Neglecting maintenance work has a significant effect on the correct function and safety. It is possible that liability and warrant claims might be invalidated.

ADVICE!
A function guarantee can only be provided if genuine parts are used.

7.1 Cleaning

The airbag lifting device is cleaned along with the vehicle. No special cleaning is required.

ATTENTION!
When using a high-pressure jet washer, avoid spraying directly at the airbag lifting device and all control valves.

ADVICE!
After cleaning the vehicle, all the bearing points of the airbag lifting device must be greased again, as described in Section 7.2 Maintenance.

7.2 Maintenance

ATTENTION!
Maintenance work may only be carried out by authorised, trained personnel. These persons must also have read and understood this documentation.

Servicing	Servicing interval	Activity
Visual inspection of airbag lifting device	Daily / before starting (before each use)	Check the airbag lifting device for cracks, deformation and loose bolted connections and the airbag itself for cuts or pinching. Damaged airbag lifting devices must immediately be taken out of operation and repaired or replaced.
Lubrication of bearings	Monthly	Each month, lubricate the bearings on the frame using the grease nipples (unless connected via a central lubrication system) and also grease the bearing points of the guide roller. Normal, commercially available and water-repellent grease can be used for lubrication.
Wear inspections of airbag, bearing	During vehicle inspection	At regular intervals, check the wearing parts, in particular the airbag and bearing. To do this, raise the airbag lifting device to its maximum height without any loading. If there are any visible signs of cuts, pinching or abrasion that could have damaged the fabric of the airbag, the bag must immediately be replaced.

WARNING!
Continually check the airbags for damage, as otherwise there is a risk of accidents.

WARNING!
If bellows have to be removed (only possible when airbag lifting device is raised), then the airbag lifting device must be braced mechanically to prevent it from lowering.

ADVICE!
These specifications apply to normal transport conditions. Where operating conditions are less favourable, the maintenance and inspection intervals must be adapted accordingly.

ADVICE!
Normal, commercially available and water-repellent greases are suitable for lubricating the bearing points.

This section describes in greater detail how to respond to malfunctions.

- If the airbag lifting device fails, if one or more support legs buckles, if the load slides, or if the vehicle or container starts to tip over, leave the hazardous area immediately.
- Seal off the hazardous area so that no persons in the vicinity are endangered.

WARNING!
Operation of the airbag lifting device is prohibited if it is not functioning correctly.

WARNING!
Repair activities may only be carried out by qualified personnel using suitable tools. Do not work in any way which impairs safety when handling the airbag lifting device.

ATTENTION!
Malfunctions and unanticipated changes in the airbag lifting device must be rectified without delay.

9.1 Principle

ADVICE!
When the airbag lifting device has reached the end of its useful life, sort the components and dispose of them in an environmentally responsible manner, e.g. metal to scrap metal, plastic to plastic recycling, used oil and fluids in accordance with the statutory regulations of the respective country.

Consider carefully the raw materials that are integrated within this airbag lifting device. Prior to disposal, check if the materials and airbag lifting device parts can be recycled. Send as many of them as possible for recycling.

Dispose of the materials and parts in a verifiably responsible way to protect people, nature and the environment.

When doing so, comply with the information from the manufacturer and the respective regulations and legislation of your country.

9.2 Procedure

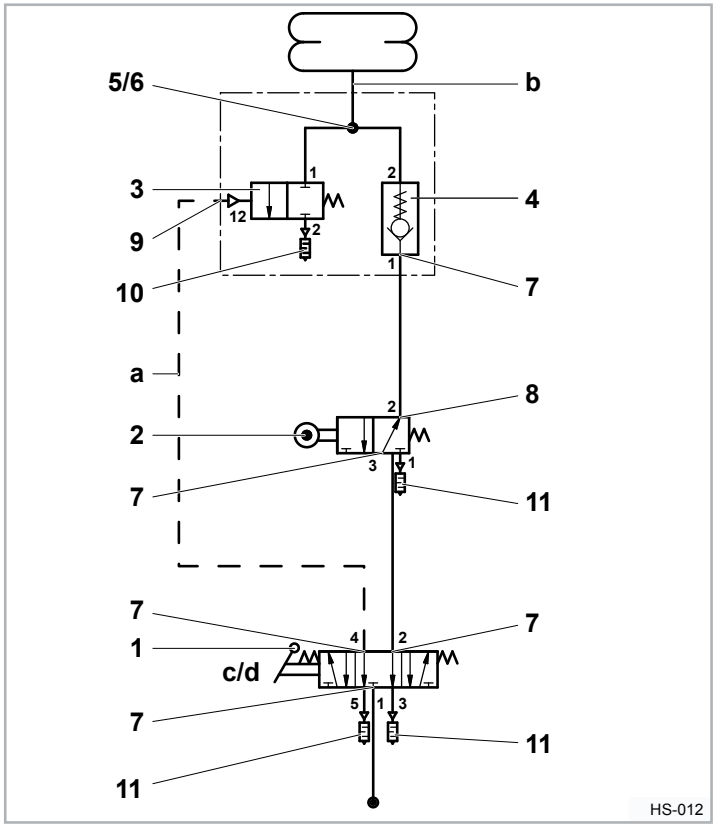
Airbag lifting device

The installed components comprise valuable raw materials that can be recycled. They can be split into plastics, rubber and metallic materials. Before disposal, parts may need to be cleaned of any residual oil or grease.

Lubricant

The particular manufacturer of the lubricant will supply the disposal instructions for the lubricants used.

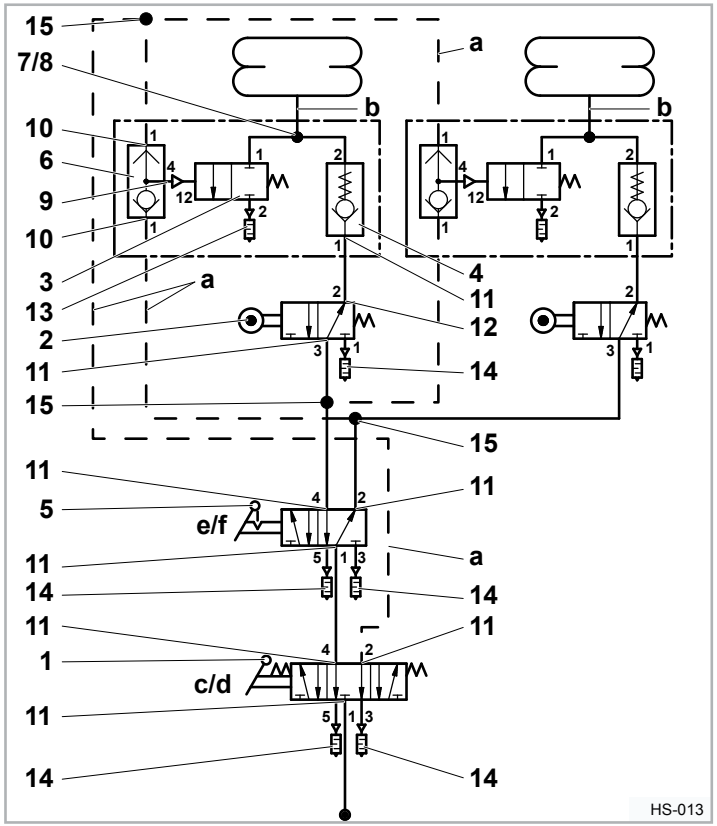
10.1 Circuit dia. Airbag lifting device contr. SSTN 1HS



1	5/3-way valve (R 1/4")
2	3/2-way valve (R 1/4")
3	2/2-way valve (R 3/8")
4	Check valve (R 1/4")
5	T-piece AG/AG/IG (R 3/8")
6	Double nipple (R 1/4" - R 3/8")
7	Straight screw-in connection (R 1/4" - 8)
8	Angled screw-in connection (R 1/4" - 8)
9	Straight screw-in connection (R 1/8" - 8)
10	Muffler (R 3/8")
11	Muffler (R 1/4")

a	Control cable — — —
b	Pre-assembled without screw-in connections
c	Lower (4)
d	Raise (2)

10.2 Circuit dia. Airbag lifting device contr. SSTN 2HS



1	5/3-way valve (R 1/4")
2	3/2-way valve (R 1/4")
3	2/2-way valve (R 3/8")
4	Check valve (R 1/4")
5	5/2-way valve (R 1/4")
6	OR-valve (R 1/8")
7	T-piece AG/AG/IG (R 3/8")
8	Double nipple (R 1/4" - R 3/8")
9	Double nipple (R 1/8")
10	Straight screw-in connection (R 1/8" - 8)
11	Straight screw-in connection (R 1/4" - 8)
12	Angled screw-in connection (R 1/4" - 8)
13	Muffler (R 3/8")
14	Muffler (R 1/4")
15	T-piece (8 - 8 - 8)

a	Control cable — — —
b	Preassembled without screw-in connections
c	Lower (4)
d	Raise (2)
e	Front (4)
f	Rear (2)

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