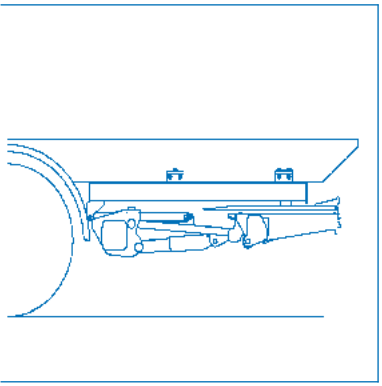
Operating Manual

Keep in:
Glove compartment
in truck

Bär Cargolift®
Retfalt®

BC 2000R41
BC 2500R41
BC 1500R4S
BC 2000R4S



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1. General Information

This manual should provide you with details of the handling and working method of the BÄR Cargolift.

Therefore, please read this manual carefully before taking the Cargolifts into operation.

The operation of the Cargolift by non-trained personnel can result in the operator and third parties being at great risk. The adherence to the pertinent safety regulations and safety-conscious work must also be a requirement for the operator.

The Cargolifts supplied by ourselves, especially the supporting framework and safety devices are not to be converted. Should amendments be required in exceptional cases, prior written approval is to be obtained from ourselves.

In addition, we refer to the extracts from the accident prevention regulation - platforms and the sections in the text marked with a ⚠ . (UVV VBG)

It is important for the operator that he knows how the Cargolift is to be correctly operated and treated. A fault occurrence can often be the result of insufficient care or incorrect operation.

For this reason, the manual is to be kept in the vehicle at all times.

The following information is required when ordering spare parts:

- Serial number (7 figures)
- BC Model (20 figures)
- Year of construction

The rating plate is mounted on the slider. The data can be discerned by referring to the master sheet in the inspection book. The serial number is located on the ratings plate, under-run bumper ratings plate, and in the support tube on the rear of the electrical control system mount.

Spare parts can also be ordered using the article number and order description stated in our spare parts catalogue. This can be ordered from our service department.

Repairs are only to be carried out using original spare parts!

We reserve the right to make amendments concerning the form, equipping and technology together with errors. No claims can be asserted as a result of the information, illustrations and descriptions in this manual.

The data stated in this manual refers to the series situation at the time of going to print.

Guarantee performances are provided within the scope of our General Terms of Payment and Delivery (GTC).

2. Description

Bär Cargolifts meet the requirements of the EC Machine Directive 98/37/EG or DIN EN 1756-1 assuming that the country in which the Cargolift is operated is a EU member state. In this case the scope of delivery also includes the declaration of conformity and the CE symbol which is mounted on the operating unit.

The lifting gear is manufactured using high-tensile steel and it is constructed in a robust form. It is supplied in a cathodic immersion painted (CIP) design.

The pivoting bearings comprise tenifer treated bolts or stainless steel bolts and maintenance – free or low - maintenance bearing shells. The bearing shells are lubricated with a specialgrease and sea led with sealing elements in our factory .
Low – maintenance bearings have to be greased after mounting. For maintenance and care see capture 4.

The entire hydraulic system and the associated electrical control system are located in the correspondingly designed support tube of the lifting unit for optimum protection.

The operating speed for „lower" is controlled by the lowering brake valve (SB 1). The speed is adjusted in accordance with the DIN EN 1756-1, i.e. constant lowering speed.

The lifting cylinders are single-acting. The piston rods of the lifting cylinder have a 2-coat hard-chrome plating for the highest level of corrosion resistance. In addition, the piston rods are protected by permanent rubber protection tubes. Both cylinders are fitted with double-acting shutoff valves. This prevents the Cargolift from lowering if there are leakages in the lines.

The tilting cylinders are double-acting and provided with a double-acting shutoff valve. This prevents the Cargolift from lowering if there are leakages in the lines.

The sliding cylinder of the guiding installation is also double-working but without a valve directly on the cylinder.

The Cargolift is controlled by means of a specially developed two-hand external control system (operating unit) with lever switches with handles which are advantageously positioned and which can be used in a manner which is easy to understand. The control system is situated in a sealed housing.

The functions „lower" and „lift" are pssible from the platform using the safety two-foot control system. It is so designed that it can travel in both directions with a load. Dirt and water are unable to impair the function.

Description

When lowering, an automatic tilting of the tip of the platform takes place after contact is made with the floor if you continue activating the „lower" function. When lifting off the road, the platform automatically tilts downwards before the lifting process starts.

When in the lorry driving position, the Cargolift is situated underneath the chassis frame. It is mounted on the chassis frame using screw-on consoles. Due to its aluminium guiding installation, the Cargolift can be moved parallel to the vehicle body. It has up to four positions, depending on its equipment: driving position, folding position, optional 2 operating positions.

In order to guarantee an easy operation the functions concerned each have an automatic stop.

The body must either be fitted with rear doors or roller shuttlers. The Cargolift can be used with both fixed and interchangeable bodies. The platform connection is so designed that a fixed cross-over bridge or a folding bridge can be used. The right choice enables an optimal cross-over to the loading space.

Fixed cross-over bridge
Due to it having rubber buffers inserted, quite connecton to the rear side is made.
Powerbrace locks are also possible with this bridge plate.
To this end, the aluminium profile of the fixed cross-over bridge is fitted to the platform at chassis mountig stage.

Folding bridge
The folding bridge is used for the various rear openig of fixed and interchangeable bodies with guard rubber, lock bars etc. It automatically lifts when lowering. The arm stops must be mounted when using the folding bridge. It is always to be ensured that full hydraulic pressure is used when driving against these stops. This mechanically and hydraulically pretensions the Cargolift lifting gear. This prevents the platform from „springing" when crossing-over from the body floor to the platform.

When driving, the Cargolift is automatically secured. Therefore no mechanical lock is provided which would need to be operated.

Together with the guide elements and the rubber buffer stops, the complete lifting gear is tensioned when in the driving position. This effectively prevents the platform from bouncing when in the driving operation. For this reason, the Cargolift can also be used in distribution traffic.
The Cargolift is equipped with a platform folding shock absorber . This provides it with a quiet function, - an additional requirement for distribution traffic.

Description

This series is suitable for all applications.

BC 2000R41
BC 2500R41

Platform sizes
PBret30V: 1815 x 2400
2040 x 2400

Platform sizes
PMKL: 1660 x 2400
1720 x 2400
1780 x 2400
1840 x 2400
1960 x 2400
2020 x 2400

Retfalt Cargolift with two tilting cylinders. The platform packet and the platform tip are folded in and out manually assisted with torsion springs.

BC 1500R4S
BC 2000R4S

Platform sizes 1640 x 2400

As above, but with lockable platform tip.

The main power fuse is situated in the battery box. The drive is electro-hydraulic with either 12 V or 24 V operating voltage depending on the vehicle and BC model.
The control circuit fuse is located on the central electric unit (relay control) or can be found on the power relay (electronics control) of the hydraulic unit.

2.1 Recommended Alternators

A alternator with a minimum of 600 Watts (14 V/45 A or 28 V / 35 A) is standard for the operation of Cargolifts. For exclusive local distribution traffic, a three-phase alternator with approx. 1000 Watts (14 V / 80 A or 28 V / 55-80 A) is recommended for use with all Cargolifts as from model BC 1000 S4-A1.

When using a lorry-trailer combination an additional battery system is required on the trailer/semi-trailer. The dimensions of the alternator and battery size depend on the use. However, we recommend that you use the next largest generator when using a trailer.

In all cases, on technical and economical grounds, we recommend that the same battery sizes and designs be used for both the lorry and the trailer.

If the Cargolift is subjected to intensive use, a min. capacity of 2 x 170 Ah per battery set and an alternator capacity of approx. 1500 Watts (28 V / 55-80 A) are required. This does not take additional units such as heating and refrigeration into account.

A suitable device is to be provided in order to ensure that the additional battery system is supplied with power, i.e. charged.

The complete additional battery system (a kit without batteries) which is available from ourselves meets these requirements in a secure manner.
The use of battery and alternator sizes which are much smaller can, especially in winter, result in operational disturbances and subsequent damage such as a defect power relay or electric motor.

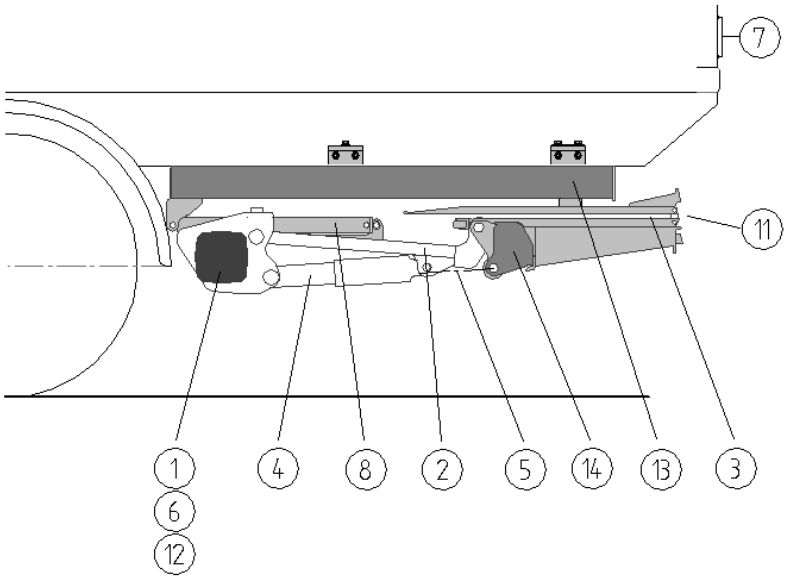
The Cargolift is connected to the existing vehicle battery. Normally, the following **battery sizes** should exist:

Load Capacity kg	Battery Size	Task
1000-1500	12 V : 1 x 143 Ah 24 V : 2 x 110 Ah	Standard
1500	12 V : 1 x 180 Ah 24 V : 2 x 143 Ah	Distribution Traffic
2000 / 2500	24 V : 2 x 170 Ah	Standard

Available optional equipment

- Platform with retainers against rolling away generally stipulated for railway freight in accordance with the DIN EN 1756-1
- Additional battery system
- Platform with non-slip corundum surface
- Folding bridge
- Fixed cross-over bridge

Description



1. Supporting beam
2. Lifting arm
3. Platform
4. Lifting cylinder
5. Tilting cylinder
6. Hydraulic power pack (in the supporting beam)
7. Possibility for holding on
8. Sliding cylinder
9. Rating plate mounted on 13 with BC R4S 1
10. Serial number mounted on 9 12 14
11. Platform forms under-run guard*
12. Main electrical system
13. Linear guiding rail
14. Connecting head

*not applicable for BC R4S

3. Operation

3.1 Accident Prevention Regulations

Lifting platforms are covered by the German BGR 500. These stipulate the technical design, inspection and the operation. We recommend that the lift operator obtains a copy of the accident prevention regulations from the responsible mutual indemnity association.
An UVV inspection is to be carried out on an annual basis, this being certified by a knowledgeable person or an expert (UVV plaque).

An extract from the regulations:

Operating Personnal Requirements
§ 43. Only people who are at least 18 years old, instructed in the operation of the lifting platform and who have proven to the company that they are qualified to do so are to use the platform independently. They must be properly trained in the operation. The training for the operation of the lifting platform must be issued in writing.

Supervisor
Should more than one person work on lifting platforms at the same time, a supervisor is to be nominated.

Operating Manual
The operating manual is to be adhered to when using lifting platforms.

Usage
(1) Travelling lifting platforms are to be rendered stable as stipulated in the operating manual and so erected that no pinching and shearing positions are formed between the lifting platform and parts of the environment, thereby ensuring that work which is to be carried out on the load suspension device or the load itself can be completed without impairment.

(2) The correct positioning of supports in suitable ground is to be checked prior to the operation of the lifting platform. Powered supports are to be observed during extension and retraction.

(3) Lifting platforms which protrude into space reserved for traffic are to be secured against traffic risks by suitable means.

(4) Before work is commenced on the lifting device, the devices provided to prevent people from falling and objects falling to the ground are to be placed in position.

Handling and Conduct During Operation
(1) Lifting platforms are not to be subjected to a load which exceeds the permissible load (adhere to the load clearance and load).

(2) Loads are to be placed on the lifting device in such a way that an accidental alteration of the position is avoided.

(3) Lifting platforms are only to be climbed onto or off via the means provided for this purpose.

(4) Lifting platforms are only to be controlled from the control positions provided for this purpose.

(5) Each time the lifting platform moves, the operating personnel is to ensure that this does not place themselves or other persons at a risk.

(6) Remaining under the lifting platform or within its moving area is prohibited.

The following are also prohibited:
1. remaining under the load suspension device and the load,
2. walking on the load suspension device,
3. travelling on the load suspension device,
4. the use of the lifting platform as a lifting working platform assuming that the lifting platform is not designed for this purpose.

(7) Travelling lifting platforms are only to move if the load suspension device is in the travel direction. This is not applicable if the required stability is given and is certified in the inspection book.

(8) Load suspension devices are not to be subjected to vibration on purpose. Objects are neither to be thrown onto the load suspension device nor thrown off it.

Taking out of Operation
After being taken out of operation, power operated and power-moved lifting platforms must be secured against unauthorised use.

Maintenance
(1) Raised lifting platform components are to be secured against accidental movements prior to any maintenance work underneath them.

(2) Should a supporting component break, the supporting constructions and driving gear including the safety devices are to be inspected in order to prevent a falling or lowering of the load suspension device if a cable, chain, drive or supporting nut break or if the hydraulic or pneumatic lines leak. Damaged parts are to be replaced!

(3) Pressure hoses are to be replaced after 6 years at the latest.

With spindle lifting gears which have a supporting nut which is secured by a no-load back-up nut, the back-up nut is always to be replaced together with the supporting nut. An entry is to be made in the inspection book that the pressure hoses and supporting and back-up nut have been replaced.

3.2 Area of use

The standard Cargolift is designed for the lifting and lowering of packaged goods and a single operating person, depending on the Cargolift model.

3.3 General Information

- Secure the vehicle against accidental movements (handbrake, putting into gear, wheel chock).
- When the Cargolift is in use, this must be easily discernible for the following traffic by means of warning marks and flashing hazard lamps (compare with §53b subpar. 5 StVZO (German Road Traffic Regulations)
- The Cargolift is to be continuously observed during opening, closing, lifting and lowering.
- The Cargolift moving area is to be kept free of people and objects.
- The pinching and shearing zones between the platform and vehicle body and the platform and road are especially to be taken into consideration.
- Secure any open body doors.
- Use the hold-on device provided. Keep the intended standing space clear.
- Only the operator may ride on the standing space which is to be kept clear.
- Do not exceed the permissible load capacity. Adhere to the load capacity diagram. Place the load centre as close to the vehicle as possible.
- One-sided loading with max. 50% of the corresponding load capacity.
- Loads are only to be lifted and lowered on a horizontal platform.
- When loading, platform is not to be lowered.
- On the ground use the automatic tilting system (use the lift or lower command).
- Secure loads against them sliding and rolling away!
- The Cargolift without the fitted retention device is not to be used for transporting roll containers without brakes.
- Climbing onto loads and the platform is prohibited.
- Crossover plates or swivel ramps are not to burden the platform excessively.
- The vehicle is not to be driven with an open platform.
- The Cargolift is not to be used as a lifting work platform.
- In the case of a fault occurring, the Cargolift is to be taken out of operation and secured against unauthorised use. The Service department is to be informed.
- When unloading on an incline do not forget that rolling cargo will gather inertia strongly.
- We recommend that the loading space be illuminated with a spotlight in such a way that on the one hand the working area of the Cargolift is sufficiently illuminated and on the other, the moving traffic can recognise the obstacle more readily.

3.4 Operation of the Retfalt Cargolift

Special designs can deviate from the operation described here!).
The main power fuse (fig. 3.4.1) is directly positioned on the plus terminal on the battery. It is also a battery isolating switch (loosen by turning it to the right). Refer to chapter 5 for information on replacing the fuse (Faults and Their Remedies).

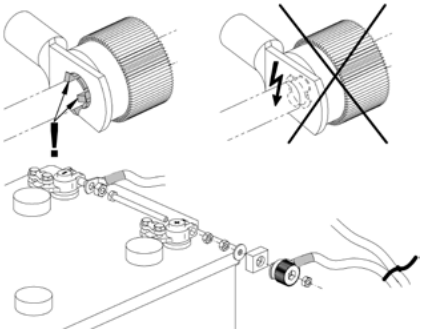


Fig. 3.4.1
Main power fuse– Battery box

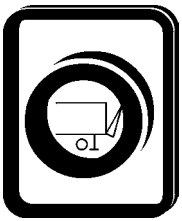
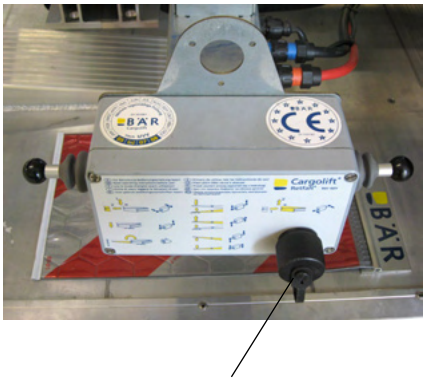


Fig. 3.4.2
Activation of the Cargolift lorry from the cabin



Electronic key-operated switch
Fig. 3.4.3

Taking into operation

- Press the button (fig. 3.4.2) in the cabin - a red control lamp indicates the activated position. The control lamp is also illuminated if the platform is not stowed correctly in the driving position.

- If the Cargolift is switched on, the starter power circuit is not broken! The lorry can be started up! If required, a starter interruption can be activated by means of an additional relay.

Semi-trailers or trailers with Cargolift

With a trailer or semi-trailer, no cabin safety switch will be fitted. The activation is carried out by means of a key-operated switch on the operating unit with a separate housing. The key-operated switch is activated by means of the electrical interfaces (VDHH).

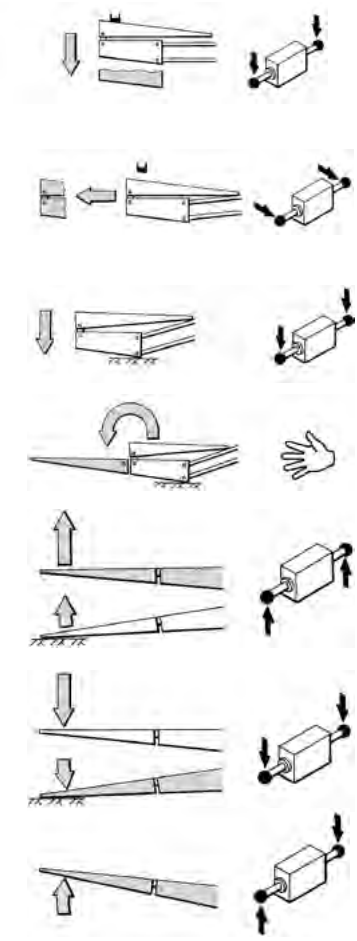
Fig. 3.4.4

When disconnecting the manifold it is to be ensured that the trailer connector is live. Contact with metal components can result in a destruction of the main fuse. The batteries will then be no longer charged. For this reason, the charging connector is to be stored in a metal holder with an opening at its bottom.

Should the semi-trailer or trailer respectively not have their own battery and the Cargolift is supplied via a main current line and earth line then these are also to be disconnected when disconnecting the trailer and the ends of the current line and earth line on the towing vehicle are each to be sealed off. Ensure that the points of separation are clean. If necessary, clean and spray with contract spray.

Under no circumstances are the ends of the main current line of the towing vehicle to be connected to each other (short circuit!).

3.4.1 Manual control of the main electrical system



Lower:	Cabin safety switch on. Move both lever switches in the corresponding direction of the arrows and extend until the prestress of the platform packet is relieved.
⇨	**Fold out position**
Extend:	Move both lever switches in the corresponding direction of the arrows and fully extend.
Lower:	Move both lever switches in the corresponding direction of the arrows until the platform packet makes contact with the ground.
⇨	**Fold out position**
Fold out:	Fold out the platform tip manually. .
Lift:	Move both lever switches upwards. If the platform is still tilted downwards on the ground, it initially returns to the horizontal position and then changes to the lifting function.
Lower:	Move both lever switches downwards. After the platform makes contact with the ground the tip of the platform automatically tilts downwards (also from the foot control).
Tilt upwards*:	Push the left lever switch up and push the right lever switch down in order to set the desired platform tilt. **Information**: When loading heavy objects (from the vehicle onto the platform), please ensure that the vehicle is retracted at the rear and that the platform is diagonally tilted towards the back (elastically relents). Therefore, an appropriate pre-tilting is to be set before the loading takes place.

Operation

Tilt downwards*: Push the left lever switch down and push the right lever switch up in order to set the desired platform tilt.

Information: When loading heavy objects (from the vehicle onto the platform), please ensure that the vehicle is retracted at the rear and that the platform is diagonally tilted towards the back (elastically relents). Therefore, an appropriate pre-tilting is to be set before the loading takes place.

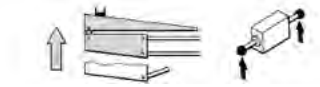
Fold in* Platform tip: Fold inthe platform tip manually.

Lift: Move both lever switches in the corresponding direction of the arrows until the platform packet is adjusted to the lifting rocker.

⇨ **Retract position**

Retract: drive position: Move both lever switches in the corresponding direction of the arrows until the final position is reached.

⇨ When the final position is reached, the BC automatically switches off. .

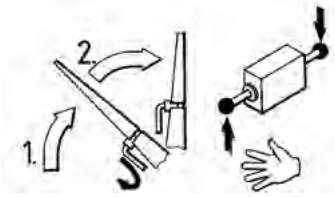


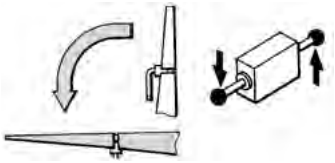
Lift: Lift until the prestressing level of the platform packet is reached. Deactivate the cabin safety switch.

* For BC R4S, please refer to special operating instructions on p. 20.

Information for Bär Retfalt® Cargolift BC R4S

Important Note:
Prior to tilting the platform upwards to 90° (vertical) first lock the platform tip.





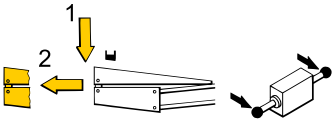
Tilt upwards:	1.) Move left-hand lever switch upwards, right-hand lever switch downwards until the platform incline is about 45°. 2.) Lock platform tip and move the lever switches until the platform is in vertical position.

Tilt downwards:	Move left-hand lever switch downwards, right-hand lever switch upwards

Fold in **Platform tip:**	If necessary, tilt the platform by about 45° and unlock platform tip. Tilt downwards, lower until platform is in horizontal position on the ground, and fold in platform tip manually.

3.4.2 Manual control of the electronic control system

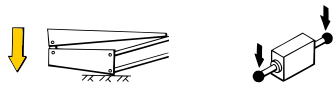
Note: When operating for the first time or after having disconnected the power supply, the Cargolift must be moved to the driving position (reference point of the controller), and then the controller must be calibrated by activating the "Retract" function.



Move the Cargolift to the operating position

Extending into the unfolded position:	
	Switch the Cargolift on. Press the "extend" button (direction of arrows) until all functions have been completed:
⇒	The platform will be lowered and will move into the folding position

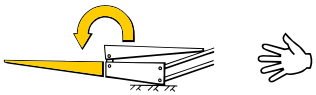
Operation



Unfolding of the platform end:

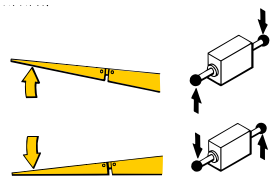
Press the "lower" button (direction of arrows):

⇒ The platform unit will be lowered and, in doing so, will position the platform end in a vertical position over the guide idler.



Unfolding of the platform end:

⇒ Manually unfold the platform end.

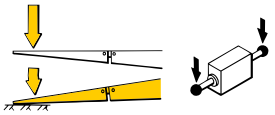


Tilting:

Press the "open" or "close" button (direction of arrows) and set the desired tilt of the platform:

⇒ The platform end will either tilt upwards or downwards.

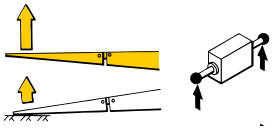
Information: When loading heavy objects (from the vehicle onto the platform), please ensure that the vehicle is retracted at the rear and that the platform is diagonally tilted towards the back (elastically relents). Therefore, an appropriate pre-tilting is to be set before the loading takes place.



Lower:

Press the "lower" button (direction of arrows):

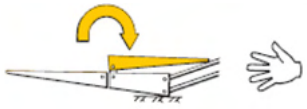
⇒ The platform will be lowered. When the platform makes contact with the floor, the tilting of the platform end takes place automatically (can also be carried out via the foot control).

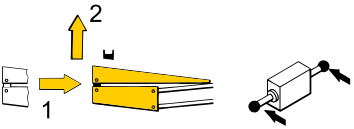


Raise:

Press the "raise" button (direction of arrows):

⇒ The platform will be raised. When the platform is tilted away from the floor, it will initially position itself in a horizontal position and will then move into the lift position.





Moving the Cargolift into the driving position

Folding in of the platform end:

⇒ Manually fold in the platform end.

Retracting into the driving position:

Press the "retract" button (direction of arrows):

⇒ The lifting unit will move into the driving position, will briefly raise and, in doing so, presses onto the track unit. (Minimum height of the platform is required)

Information: The functions and processes are programmed with a so called "dead man's switch". This means that any movement in progress or a procedure that has already been started will be interrupted immediately in the event that the operating unit is no longer pressed. The movement / process can be continued by pressing the function button on the operating unit.

In the event that sensors break down or become damaged, all locking can be bridged by "plugging" an "emergency operation" bridge. In doing so, all operating unit functions are allowed in manual mode. All other operating units are switched off.
Should the operating unit be faulty, the required functions can be directly switched on at the terminal by using a wire bridge. In doing so, extra care is needed due to short circuit and mistakes. (Please consult the "Emergency Measures" Chapter).

Whilst the cabin safety switch is switched on, an audible warning signal of the control will beep at a slow rate. The emergency operation may only be used in order to complete the loading process.

After the loading process, the unit must be immediately taken to a repair shop in order to exchange the faulty parts and enable normal operation to be continued.

Technical Data:

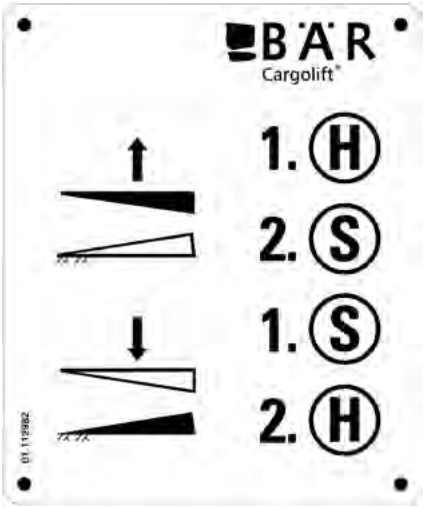
Control current fuse max.	15 A
Current consumption (off)	50 mA
Current consumption (on, not operating)	300 mA
Current consumption (maximum)	12 A
Operating range	–40 to +80 ° C

In the event that the vehicle is not used for a period of longer than 3 weeks, it is recommended to disconnect the batteries and periodically recharge them in order to prevent total discharge.

When charging, the batteries are to be connected with external quick charging devices due to the fact that electrical components are at risk of voltage peaks. Breakdowns due to excess voltage are not covered by the guarantee.

3.4.3 Foot control – Triangle foot switch

When loading heavy loads always drive against the body or if using an interchangeable body drive against the stops. This pre-tensions the mechanical and hydraulic systems and prevents the platform from springing away.



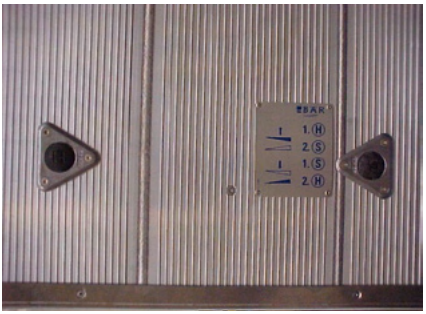


Fig. 3.4.3.1

Lift:
Press 1st button "H" then confirm with 2nd button "S".
The platform is lifted.

Lower:
Press 1st button "S" then confirm with 2nd button "H".
The platform is lowered.

The required function (1st arrow) must always be pre-selected, i.e. press the 1st button "H" or "S" continuously then press the second button ("S" or "H"). Generally, the function is activated which corresponds to the first button pushed. Here, it is expedient to operate the button "H" and "S" with the heel of the shoes.
The time which is to expire between the first and second pushing must be between 0.5 and 3 seconds.

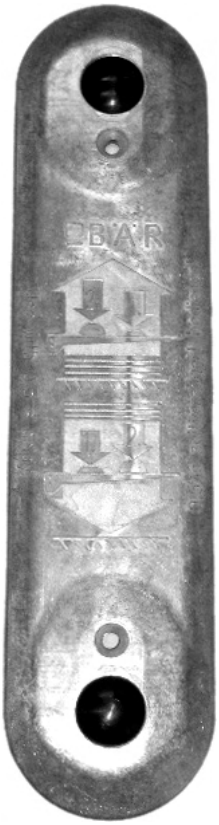
Automatic tilt downwards/upwards.
After the platform is positioned on the ground, this is automatically lowered if the "lowering" [S] function is not interrupted but pressed for an additional period.
The upwards tilt is inevitably automatically carried out when activating the function "lift" [H].

Information: sensor-controlled foot switch electronic system
When equipped with a sensor-controlled foot switch electronic system, the blinkers can be deactivated with the cabin activation or the foot switches. In this case, both of the foot switches must be simultaneously pressed for 5...10s.
The blinkers are activated automatically of the platform inclination is changed by more than 10° or a foot switch is activated.

3.4.4 Foot control – Bär foot switch unit

When loading heavy loads always drive against the body or if using an interchangeable body drive against the stops. This pre-tensions the mechanical and hydraulic systems and prevents the platform from springing away.

Lower (S)



Lift (H)

Fig. 3.4.4.1

Lift:
Press 1st button "H" then confirm with 2nd button "S".
The platform is lifted.

Lower:
Press 1st button "S" then confirm with 2nd button "H".
The platform is lowered.

The required function (1st arrow) must always be pre-selected, i.e. press the 1st button continuously then press the second button. Generally, the function is activated which corresponds to the first button to be pushed. Here, it is best to operate the buttons with the heel of the shoes.
The time which is to expire between the first and second pushing must be between 0.5 and 3 seconds.

Automatic tilt downwards/upwards.

After the platform is positioned on the ground, this is automatically lowered if the "lowering" function is not interrupted but pressed for an additional period.

The upwards tilt is automatically carried out when activating the function "lift".

3.4.5 Load capacity

The load capacity of a Cargolift depends on the following factors:

- Cargolift series
- Load clearance = b

The actual acceptable load is always assigned to a certain load clearance (clearance between the rear edge of the body and the centre of gravity of the applied load).

The load comprises the weight of the cargo, the operator, the industrial trucks and all other loads which have been applied to the platform.

An exceeding of the permissible load and/or the corresponding load clearance (refer to the load capacity diagram) can result in a risk of falling and expensive damage! In this case no warranty claims will be accepted!

The values shown in the diagram are valid for loads which are applied to the centre of the platform width.

Should the load be applied one-sided, the corresponding load G which is entered is reduced by half.

The maximum load for the maximum load clearance is permanently shown by markings on the surface of the platform.

Example: the maximum load for a BC 1500R4... amounts to 1500Kg in a load clearance range of 0/800 mm. In accordance with the diagram, with a load clearance of 1000mm only approx. 1200 Kg may be applied to the platform!

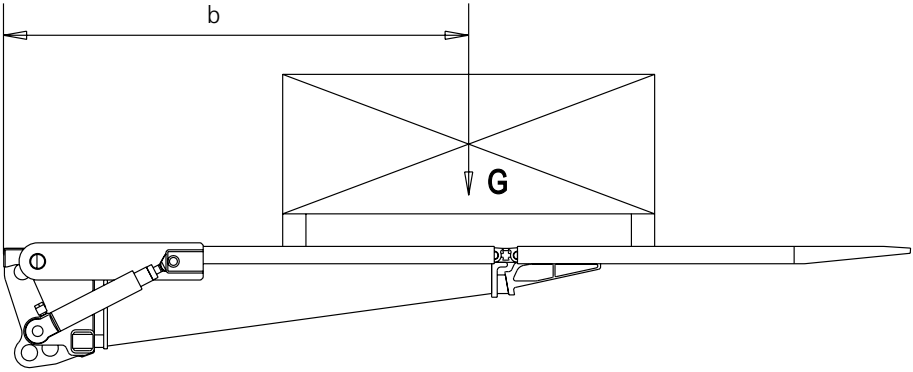


Fig. 3.4.4.1
Clearance from the load centre of gravity

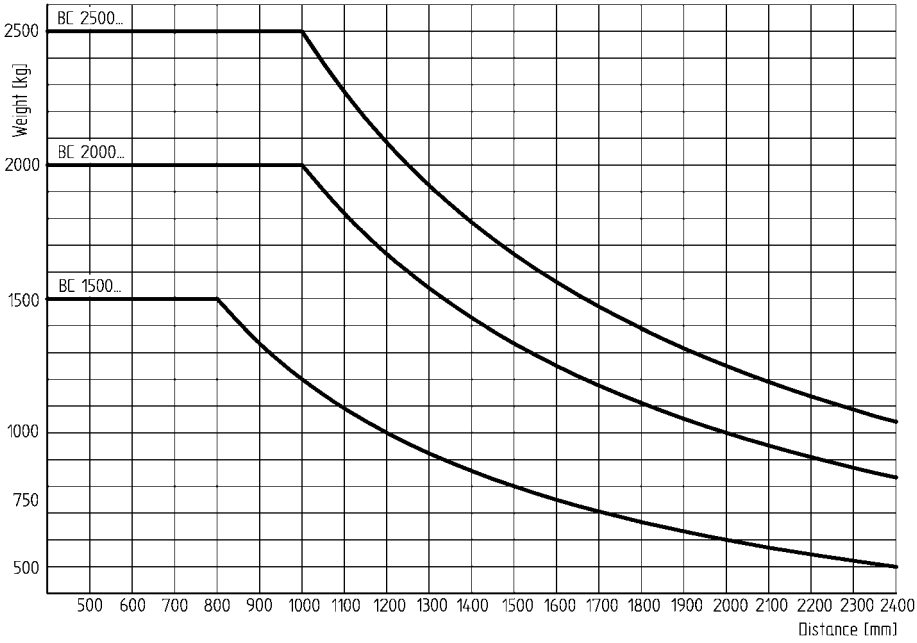
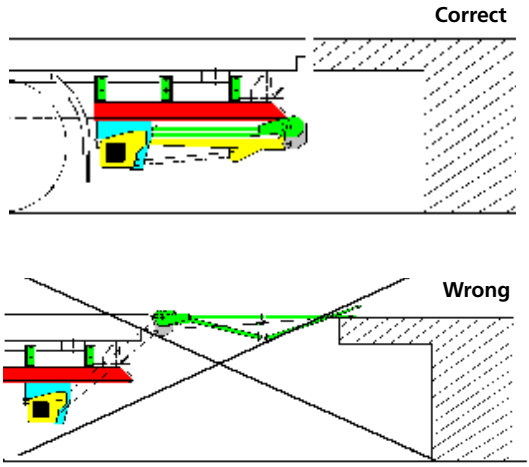


Fig. 3.4.4.2 – Load Capacity Table

3.4.6 Loading and Unloading at the Ramp

The platform must always be folded in when loading and unloading at the ramp!

If the standard Cargolift is used as a cross-over bridge, the platform will collapse.



3.4.7 Motor overload protection

The drive motor is fitted with a thermal switch which deactivates the motor-supported functions if the motor overheats due to continuous operation or a weak battery (empty or defect). The „Lower" function remains operative. After cooling off (approx. 5 minutes) the thermal switch is automatically reactivated.

As a short-term emergency measure, the lorry engine can continue to run. It is imperative that the battery be charged or replaced

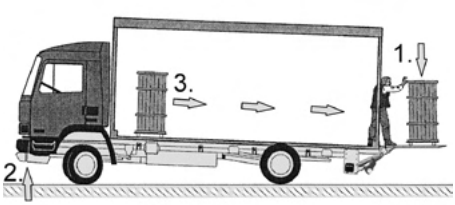
When equipped with an electronic controller, the battery voltage is monitored! When the batteries are weak, a buzzer on the electronic controller generates a distinct audible warning signal.
If the Cargolift is operated further in spite of this and the voltage drops below a critical value, then the controller shuts itself down. The error is reset by switching off the Cargolift.

Caution, charge batteries immediately! If necessary, use an external charging device! Charge only after disconnecting the battery connections!

3.5 Working with additional devices

Load fixing

Without appropriate support of the vehicle an upward deflection of the front axle of part-loaded vehicles can take place for example with loading of roll containers. In extreme cases this can lead to slipping of the load and thus to an endangerment of persons.



Caution: Secure load on loading area versus sliding!

For warning against such dangers, which may appear with loading and unloading over the Cargolift, the danger sign "load fixing" (art.-no. 01.129472) has to be attached on a free surface over the control box well visible. If this is not possible, the danger sign has to be attached inside the vehicle body in driving direction right near the control box.

3.5.1 Support devices

Both hydraulic and mechanical supports are used. Should it really be necessary to use supports (excessive protrusion, heavy loads on a comparatively light vehicle) then hydraulic jack legs are to be used.

Mechanical supports

Apply the handbrake in order to ensure that the vehicle is unable to roll away. Take hold of the support footplate and loosen the cotter pin. Lock the support into position shortly before it reaches the road. Hereby, ensure that the cotter pin is secured against falling out by twisting it just behind the securing angle.

After loading, the vehicle must be moved a short distance forwards before the cotter pin is loosened so that the supports are freely folded. Push the supports in and secure them in the same manner described above using the cotter pin.

Hydraulic jack legs

The supports are retracted and extended using the crosshead lever switch in the hand control system. Note the following:

1. With air-suspended vehicles, place the air suspension control lever in the blocking position (not the driving position!) otherwise due to an automatic control of the air-suspension there is the risk of the complete axle relief and weight displacement thereby applying the weight to the hydraulic jack legs.

   1.1 If the supports are retracted in this situation and the vehicle is fully loaded, there is a risk of collapse.

   1.2 The inevitable relative movement of the support disk on the ground (the centre of motion of the lorry tilt is the front axle) results in extreme lateral powers which overload the support cylinder.

1.3 Should there be a complete axle relief due to inattentiveness the lorry must be lifted using the air suspension before the supports are retracted so that the supports are completed relieved.

Then retract the supports.

2. Should the supports not be fully retracted, the red control lamp for the Cargolift activation is illuminated in the cab.

3. The hydraulic jack legs are so adjusted that they extend pressure controlled. However, in relation to the vehicle the supporting effect is infinitely high.

4. Therefore, if the supports are not subsequently adjusted the chassis frame can be overloaded.

5. Never lift the vehicle with hydraulic jack legs!

6. The ground must have a satisfactory bearing capacity.

7. When loading leaf-suspended place the supports approx. 50 mm above the ground and when unloading, place them firmly on the ground.

8. Both of the support cylinder adapt themselves to the ground.

Before driving off ensure that the two support cylinders have been fully retracted.

3.5.2 Retention devices

In accordance with DIN EN 1756-1, retention devices are to be used for the transportation of roll containers.

The standard design is suitable for roller diameters of max. approx. 125 mm.

The retention devices are not suitable for use with pallet stackers. Here, the load is to be fixed in position by it being lowered. The non-loaded pallet stacker can be blocked using the retention device.

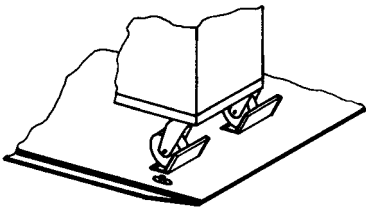
Types of retention devices other than those described here will only be delivered subject to an explicit customer request, the customer also assuming all responsibility for their use.

3.5.2.1 Model "A"

The retention device comprises either a single continuous wings or two wings which are joined by means of a shaft. They are opened by activating the lever with the tip of the foot.

In the direction of the platform tip, the retention device provides a perfect retention for larger roller diameters. The roll container is only secured against it rolling backwards or to the side to a certain extent. The securing in these directions is provided by the wheels sinking into the indentations and is independent of the corresponding tilting position of the platform.

For this reason, when loading and unloading the vehicle should be parked in as level a position as possible.



4. Maintenance and Care

4.1 Cleaning

All Cargolift components can be cleaned using a high-pressure cleaner.
When cleaning using a high-pressure cleaner it is possible that dirt and sand particles can be flushed into the bearing shells. Therefore, when cleaning here, this should be carried out with care under observance of a suitable nozzle distance (min. 30 cm) and the direction!

Maintenance-free bearings
All of the bearing shells are maintenance-free and do not therefore need to be re-lubricated. These bearings have been filled with a permanent lubricant filling which only need to be refilled when overhauling. When doing so only use the lubricant which is to be obtained from our service department

Low- maintenance bearings
All bearings have to be relubricatet by use of the grease nipples following the lubrication plan. Lubrication interval is once a year with one shift use and twice a year with more shift use.

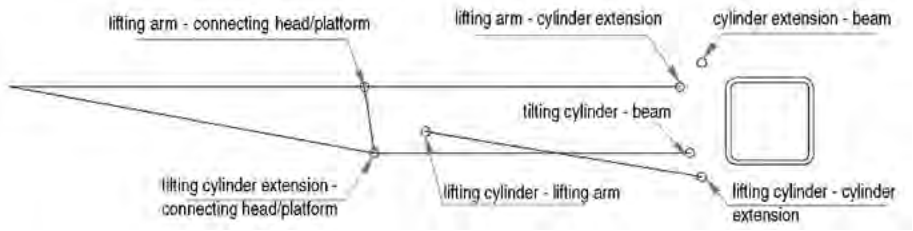
Battery
The batteries should be checked at regular intervals depending on the use.

Hydraulics

The power pack is situated in the supporting tube on the left-hand side in the direction of travel. After the fastening screw on the supporting tube has been loosened the power pack can be pulled out as far as the filler neck.

Checking the oil level: the platform must be completely lowered (for the oil level refer to the tank mark). The oil is to be changed at least once per year, preferably together with the accident prevention regulations inspection.

Fig. 4.1.1



Pic 4.1.2 – lubricaton plan (bearings with grease nipples) Recommended grease: Avilup special grease LDW or equivalent in accordance to K – PF 2 G DIN 51 502. The compatibility with other greases must be tested by own responsibility.

Cylinder venting

Due to the electrically controlled check valves the lifting and tilting cylinder are always to be vented simultaneously in pairs!

The tightening torque of the vent screws: 7 ± 1 Nm.

Lifting cylinder Ø 60, 70
Lift the lifting arm as far as possible, close the platform. The vent screws are situated at the end of the piston rod.

Tilting cylinders Ø 70
These cylinders are not fitted with a vent screw.

Position the lifting arms so that the piston rods are slightly inclined in a downwards direction. By repeatedly adjusting the platform from the max. negative inclination to + 3° the cylinders are automatically vented.

This work is only to be carried out by a knowledgeable person or authorised Bär specialist.

Max. operating speed

Lift	12 cm/s
Lower	11 cm/s

The checking and adjustment is only to be carried out by qualified personnel.

Electromotor

The carbon brushes are to be inspected for wear and smooth running as worn carbon brushes result in a heating of the motor. If necessary, the carbon brushes are to be replaced. In order to do so, the armature must also be re-wound and the insulation routed.

Regular inspections

In accordance with the German accident prevention regulations the Cargolift is to be inspected on an annual basis (UVV inspection). All hydraulic hoses are to be replaced every 6 years at the latest (UVV BGR 500).

The inspection is to be entered in the inspection book.
Repair work carried out on bearing components are to be entered in the inspection book.

4.2 Oil recommendation

In order to change the oil lower the platform onto the ground, Drain the oil out of the tank. Clean the suction filter on each oil change, if necessary it should be replaced. It can be accessed by screwing the tank off. Fill with new oil. When carrying out a normal oil change, the residual oil need not be drained from the cylinders. For this reason it is not necessary to vent the cylinder. The same oil can be used for both the summer and winter operation of the Bär Cargolift. Suitable oils are listed below.

Mineral oil:
AVIA – AVILUB Fluid BC 15

Synthetic oil:
(biodegradable)
BÄR – Syntofluid 10 Tieftemperatur

Caution!

The determination of the useability and miscibility with other oils is your own responsibility

When mixing with mineral oils the biodegradability is no longer given.
Different types of oil should not be mixed.
Please consult us before using other oils.

The approx. filling quantity for the

BC 2000 R41	5.6 l
BC 2500 R41	5.6 l
BC 1500 R4S	5.6 l
BC 2000 R4S	7.0 l

Caution!

Should it be necessary for cylinder oil to be drained (e.g. when repairing the cylinders) the platform must be closed.

When doing so the platform is to be secured. The oil can then be drained as long as the cylinders have an oil drain/ vent screw.

As far as the other cylinders are concerned the electrically pilot- controlled check valve must be removed.

This work is not necessary if the seal is to be changed on the lifting cylinder. After the pressure has been relieved/lowering one removes the bolts from the piston rod and swivels the lifting cylinder on to a secure support. The piston rod can then be pulled out. Collect the drained oil in an oil pan.

When restarting the equipment special care is to be taken to ensure that the lift and tilting cylinders have been filled with oil and that they are pressurized (the triggering of the pressure control valve when lifting and closing/is audible).

If necessary, the tank must be topped up with oil.

5. Faults and their Remedies

5.1 General Information

Fault: the Cargolift neither reacts to hand control nor to foot control.

5.1.1 Inspection by the driver

If no operation is possible in spite of activating the driver's cab switch or the electronic key-operated switch, then a burnt fuse has probably broken the control circuit.

1. Main electrical system (Fig. 5.1.2.1)
A red LED lights up on the main electrical system. Reset by eliminating the short circuit and disconnecting the supply voltage.

2. Electronic controller (Fig. 5.1.2.2)
If no LED lights up, check the control current fuse on the unit and replace if necessary.

Is the connection of the electrical interface of the Cargolift in perfect condition?

The connectors should be firmly seated and the nuts tightened until engaging into the catch. Also refer to p. 14 figure 3.4.4.

Is the battery sufficiently charged?

Check each of the cells with an acid tester.

Density 1.23 = empty
Density 1.28 = full

Is the main current fuse defect or the main current deactivated due to an open (red) knurled nut?

Before a defect fuse is replaced the causing fault must be remedied.

Motor	Main Current Fuse	
2 kW 1,7 kW	24 V 12V	150 A 200 A

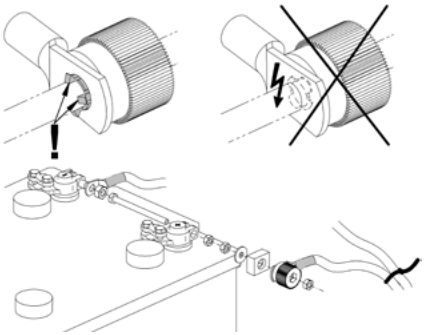


Fig. 5.1.1.1
Main current fuse

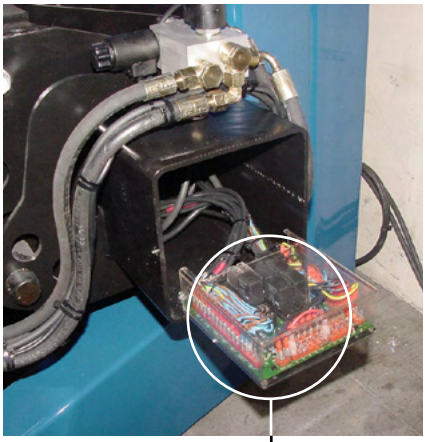
5.1.2 Main electrical system

The controller is installed in the support tube in the direction of forward motion right behind the rubber cover used for protection against water.

1. Main electrical system (Fig. 5.1.2.1)
The main electrical system contains, among other things, an electronic control current fuse.

2. Electronic controller (Fig. 5.1.2.2)
The electronic controller contains, among other things, LED's to display the status of the power supply, diagnostics, and switching functions.

All cable connections (platform, manual operation, foot pedal, power supply, etc.) are fed to the controller.



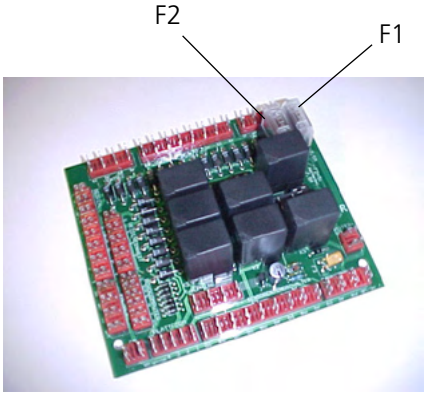


Fig. 5.1.2.1 – Main electrical system
Fuses for control current F1
and body lighting F2 = 7.5 A.

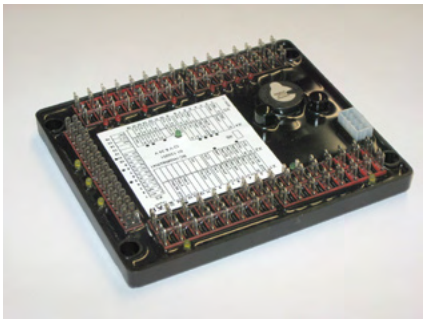


Fig. 5.1.2.2 – Electronic controller

The main electrical System contains not only the connectivity for a second operation unit, but also the interface for reporting all Cargolift movements and operating statuses to the lorry's onboard computer.

The interface comprises six flatpin contacts which are either isolated or live with 24 V (12V) „+" or „-" voltage, depending on the Cargolift status each. All outputs can be applied with abt. 300 mA so the onboard computer can be operated directly, or if required, by means of commercial automobile relays.

All outputs are secured by the control power fuse located on the main electrical system, which means that all attempts to deactivate the outputs by unauthorized manipulations render the further operation of the Cargolift impossible. If the outputs are placed on a signal/time grid, it is possible in a nearly unlimited way to trace all Cargolift operating commands.

5.1.3 Emergency measures for the main electrical system

Should the hand or foot control be subjected to an electrical defect the following emergency action can be taken:

Remove the rubber cover from the right-hand supporting beam.

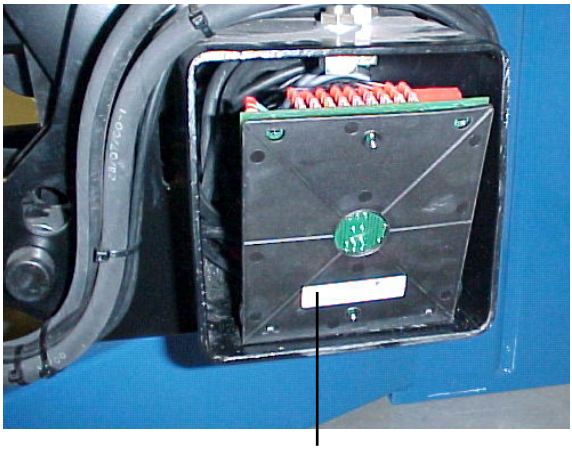
Defect of hand control:

Trigger the required function by using the cable bridge to bypass the terminals concerned.

The requirement is that voltage has been applied to terminal "+". So that this is possible the cabin safety switch must be switched on.

The terminals have the following functions:

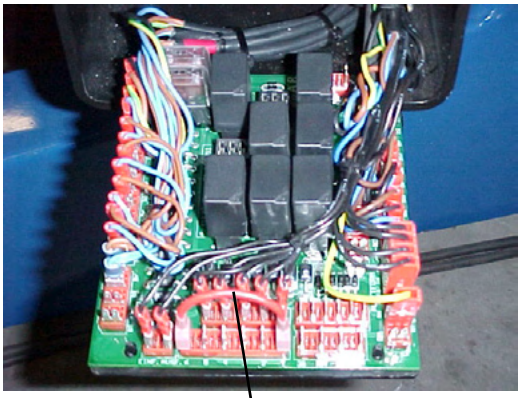
Terminal +:	control current (from control current fuse)
Terminal H:	lift
Terminal S:	lower
Terminal SCH:	close (platform "tilt upwards")
Terminal Ö:	open (platform "tilt downwards")
Terminal A:	extend
Terminal E:	retract



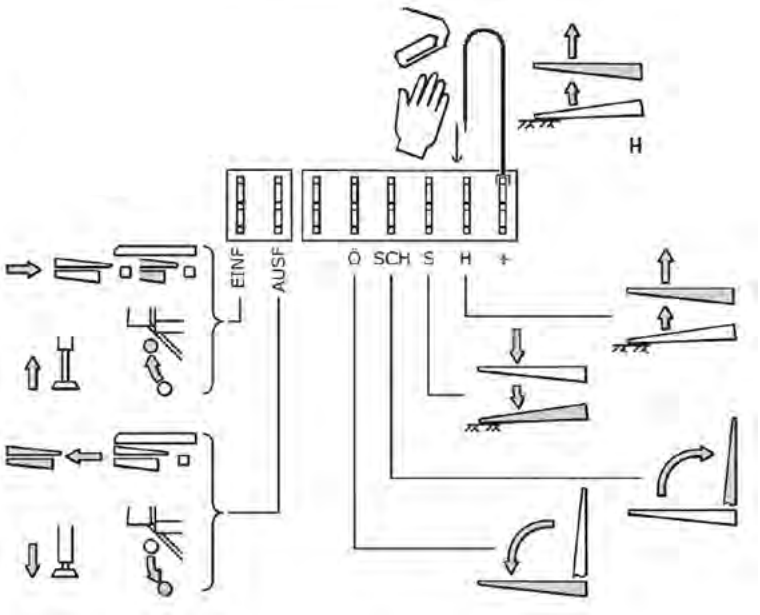
Series number plate on the reverse of the board mounting (hinge)

Fig. 5.1.2.1

1. Emergency operation for the main electrical system



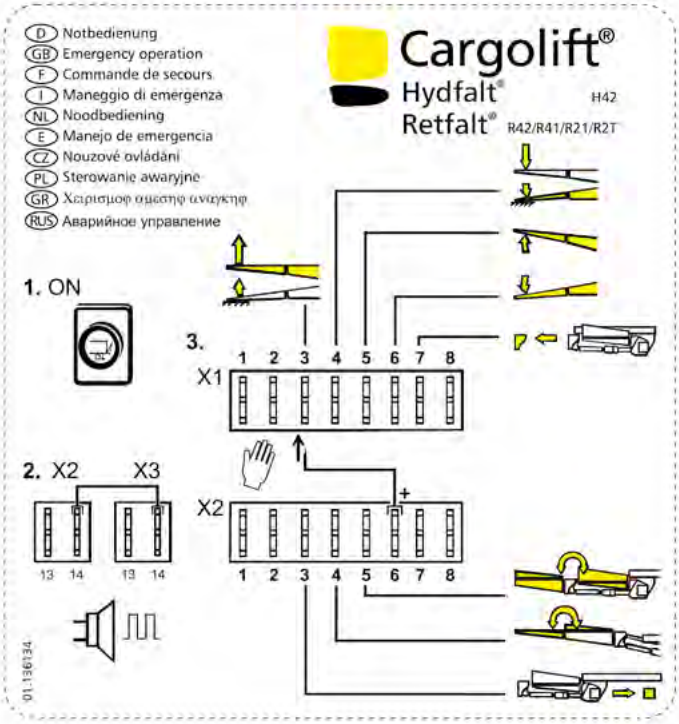
Cable bridge for emergency operation



2. Emergency operation for the electronic controller

1. Insert the bridge for emergency operation
2. Activation of the emergency operating mode is indicated by an audible signal
3. Emergency operation is performed using the operating unit
4. If emergency operation does not work using the operating unit, then the desired function must be triggered by bypassing the corresponding terminals using another cable bridge (see the diagram on the Emergency Operation label).

Cable bridge for emergency operation



5.2 Trouble shooting and repair in the service workshop

Repairs are only to be carried out using original Bär spare parts!

In most cases, Cargolift faults are normally of an electrical nature. A standard test lamp (with bulb) can be used for electrical inspections. A magnet anomaly detector for the testing of the solenoid valves/power relays/ relays provides a good service.
For the electronic controller, the switching states of the outputs are indicated by red LED's.

Hand control

The hand control works fully independent of the foot control.

If the manual controller does not work properly even though the functions are enabled by bypassing the terminals, then one of the cables fed to the controller is probably broken.

Should the continuity be free from faults the control housing is to be checked. Open the housing. No water is to be in the housing. If this should be the case look for and remedy the cause.

Foot control

The encased foot switch electronics is located in the platform and works in connection with the central electrical system. Should faults occur take the following action:

1. Is voltage present on the foot pedal cable (wire 1)?

   1.1. First of all, inspect this cable for signs of external damage or squeezing. If no damage is visible it is possible that there is an internal single conductor break. In this case the foot control unit should be completely replaced.

   Such a fault can especially occur if the foot control fails at a certain area on the platform movement. If the cable has been correctly laid in accordance with our assembly instructions this is very improbable. Therefore, the cause is to be determined.

No guarantee claims will be accepted if the cables are incorrectly laid or pinched. .

2. Check the main electrical system to see if the foot control signals are being applied and/or check the electronic controller to see if the red LED's are lit.

3. If the foot control signals are being applied, then check the function of the relay and/or check the electronic controller to see if the red LED's are lit.

4. If no signals are present, then continuity of the wires in the foot switch must be tested. To do this, disconnect the connector of the foot switch cable.
   Caution: Max. current load 0.1A!

5.2.1 Terminal connections for the Standard main electrical system

Operating unit I:

1	„+" control current
2	Function „lift"
3	Function „lower"
4	Function „close"
5	Function „open"

Operating unit II:

1	„+" control current
2	Function „lift"
3	Function „lower"
4	Function „close"
5	Function „open"
6	bridge to operating unit I

Body lighting:

+	„+" if platform is open (20-30°) and cabin safety switch switched on
-	earth

Cabin:

gn/ge	„-" feedback cabin
sw	„+" control current to cabin
brown	earth to cabin safety switch
blue	„+" control current from cabin

Onboard computer:

RM	„-" if platform is open
+	„+" if cabin safety switch is switched ON
H	„+" for lifting
S	„+" for lowering
Sch	„+" for closing
Ö	„+" for opening

Valves:

31	earth
VH	„+" solenoid valves lifting cylinder
VN	„+" solenoid valves tilting cylinder
V2	„+" solenoid valves additional block
V1	„+" solenoid valves additional block

Platform:

gn/ge	„-" feedback from platform
1	„+" control current
2	Function „lift"
3	Function „lower"
4	earth indicators/flasher units

Power unit:

+	„+" vehicle battery
-	earth
M	„+" Motor (and/or magnetic switch)
VS_1	„+" solenoid valves control valve

Supports:

31	earth
RM	feedback from support cylinder
Einf.	Function retract supports
Ausf.	Function withdraw supports

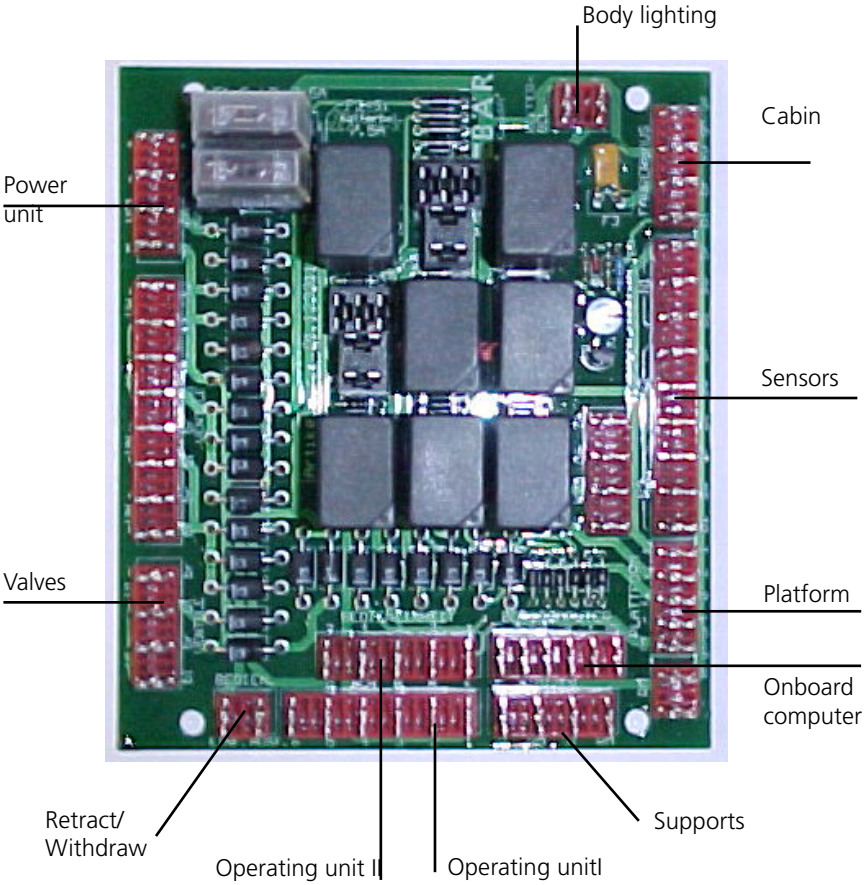


Fig. 5.2.1.1
Central electrical system

5.2.2 Terminal connections for the electronic control

LED displays

The **green LEDs** display the power supply for the driver's cab switch and the operating unit.
The **yellow LEDs** display the input signals of the platform acknowledge and of proximity switches N1 through N3.
The **red LEDs** display the switching state of the motor relay outputs, VS1 valve, platform power supply, tilting cylinder valve, lifting cylinder valve, and valves V1, V2 and V3.

The **green LED inside the sticker** is a status display. It lights up as soon as voltage is being supplied and the driver's cab switch is switched on.
If an error is detected, it blinks in the corresponding rhythm as long as the driver's cab switch is switched on.

The connections of the power relay of the VS1 valve are monitored for wire breaks and in-coil short-circuits in addition to short-circuit and overvoltage protection. For this reason, error code 3 will always be output immediately after switching on if these two outputs are not connected correctly!

Only the **Bär Original** components listed above are permitted to be connected to the controller. Bär will reject any warranty, personal injury, or component damage claims arising due to the use of unapproved components or incorrect connection.

When using a 12 Volt system, a bridge must be inserted between X3.13 and X3.15 because otherwise error 7 "Undervoltage" will be detected.

At this point, an X3.13 function bridge must also be plugged into the X3.16 (R41) in order to inform the control unit that the feedback is to be retrieved from N1 (lifting arm) and N3 (command unit).

Connection X6 is reserved for the programming interface or the manual operating unit (HandHeld).

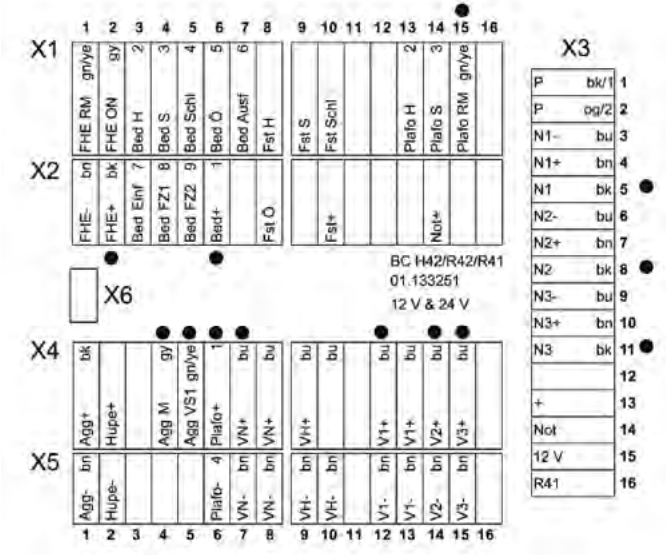


Fig. 5.2.2.1
Connection diagram

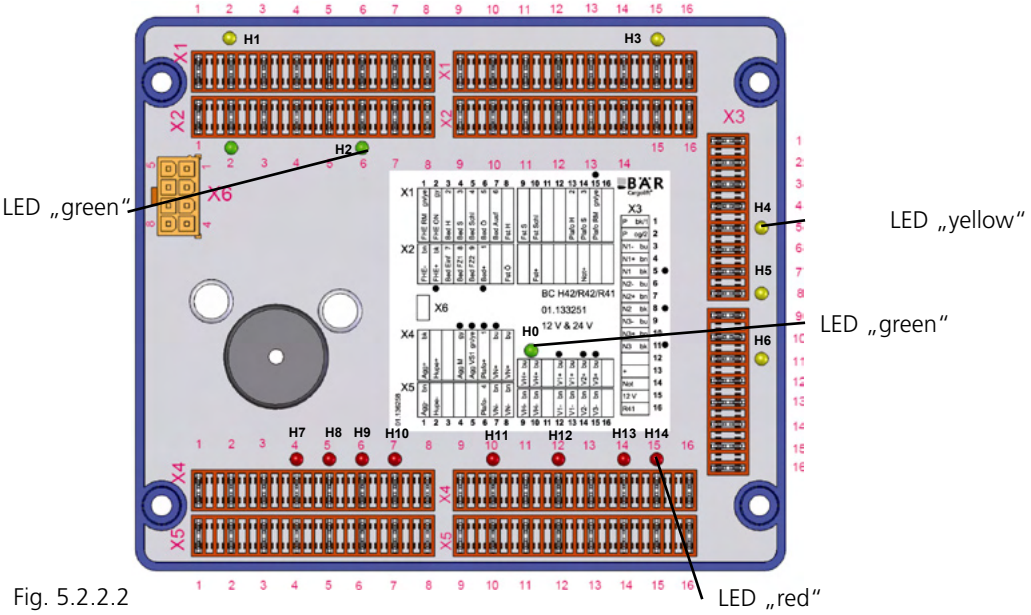


Fig. 5.2.2.2
Overview of the LED Displays

5.2.3 Overview of the LED displays for various Cargolift positions

BC Type	Operating state	H0 Diagnostic LED	H1 Driver's cab ON	H2 Plus control unit	H3 Platform Acknowledge	H4 Initiator N1 Folding Height	H5 Initiator N2 Working Position	H6 Initiator N3 Acknowledge	H7 Output Power Relay	H8 Output Valve VS1	H9 Platform Plus	H10 Output Valve VN	H11 Output Valve VH	H12 Output Valve V1	H13 Output Valve V2	H14 Output Valve V3
H42 / R42 / R41	Positions															
	Controller Off	⊗	⊗	⊗	○						⊗					
	Controller On	●	○	●							●					
	Operating position (starting position)				○		○	⊗								
	Folding position					⊗	⊗	⊗								
	Working position						⊗	○								
	Intermediate position without activation N1/N2/N3					○	○	○								
	Platform package folded in				○											
	Platform package folded out				⊗											
	Raise								●				●			
	Lower									●			●			
	Close								●			●				
	Open								●	●		●				
	Extend								●					●		
	Retract								●	●				●		
	Fold Package								●	●					●	
	Fold Edge								●	●						●
R2T / R21	Controller Off	⊗	⊗	⊗							⊗					
	Controller On	●	○	●							●					
	Operating position (starting position)							⊗								
	Not an operating position							○								
	Raise								●				●			
	Lower									●			●			
	Close								●			●				
	Open								●	●		●				
	Extend								●					●		
	Retract								●	●				●		

● Red LED ON ⊗ Red LED Off ○ Yellow LED ON ⊗ Yellow LED Off ● Green LED ON ⊗ Green LED Off

Any LEDs not shown can be on or off in the corresponding operating states.

Errors are indicated by an acoustic signal (beeping sound).

Faults and their Remedies

Connection	Cable colour	Cable type	Connection Pin	LED	Function
Cabin Safety Switch	sw	Ölflex 4x1mm²	**X2.2**		**Duration +**
	bn		**X2.1**		**0 V**
	gr(bl)		**X1.2**	X	**On**
	gnge		**X1.1**		**RM (NPN)**
Unit	sw	Ölflex 4x1.5mm²	**X4.1**		**+ U Batt**
	bn		**X5.1**		**- U Batt**
	bl(gr)		**X4.4**	X	**Motor**
	gnge		**X4.5**	X	**VS1**
Platform	1	Ölflex 400P 7x1mm²	**X4.6**	X	**+**
	2		**X1.13**		**H**
	3		**X1.14**		**S**
	4		**X5.6**		**0 V**
	5		**X1.16**		
Flashing Lights	6		**X4.11**		
	7(gnge)		**X1.15**	X	**RM (NPN)**
Operating Unit	1	Ölflex 12x1mm²	**X2.6**	X	**+**
	2		**X1.3**		**H**
	3		**X1.4**		**S**
	4		**X1.5**		**Close**
	5		**X1.6**		**Ö**
	6		**X1.7**		**Out**
	7		**X2.3**		**In**
Only H42	8		**X2.4**		**FZ 1**
Only H42	9		**X2.5**		**FZ 2**
Optional Remote Control	1	Ölflex 400P 7x1mm²	**X2.10**		**+**
	2		**X1.8**		**H**
	3		**X1.9**		**S**
	4		**X1.10**		**Close.**
	5		**X2.8**		**Ö**
	6		**X5.3**		**-**

Connection	Cable colour	Cable type	Connection Pin	LED	Function
FZ with H42 Push Button	sw	Ölflex 2x0.75mm²	**X3.1**		**+**
	or		**X3.2**		**In**
Pos. Switch N1	bn	Ölflex 3x0.5mm²	**X3.4**		**+**
Folding Height	bl		**X3.3**		**-**
	sw		**X3.5**	X	**Height**
Pos. Switch N2	bn	Ölflex 3x0.5mm²	**X3.7**		**+**
Working pos.	bl		**X3.6**		**-**
optional	sw		**X3.8**	X	**Working pos.**
Pos. Switch N3	bn	Ölflex 3x0.5mm²	**X3.10**		**Duration+**
RM-Drive Pos.	bl		**X3.9**		**-**
	sw		**X3.11**	X	**Drive pos.**
Valves	bl	Ölflex 2x0.75mm²	**X4.9**		**VH +**
	bn		**X5.9**		**VH -**
	bl	Ölflex 2x0.75mm²	**X4.10**	X	**VH +**
	bn		**X5.10**		**VH -**
	bl	Ölflex 2x0.75mm²	**X4.7**	X	**VN +**
	bn		**X5.7**		**VN -**
	bl	Ölflex 2x0.75mm²	**X4.8**		**VN +**
	bn		**X5.8**		**VN -**
	bl	Ölflex 2x0.75mm²	**X4.12**	X	**V1 +**
	bn		**X5.12**		**V1 -**
	bl	Ölflex 2x0.75mm²	**X4.13**		**V1 +**
	bn		**X5.13**		**V1 -**
Signal Device			**X4.2**		**Piezo**
			X5.2		**Piezo**
Em. operation			**X2.14**		**+**
On			**X3.14**		**Emer.**
12 V System			**X3.13**		**+**
			X3.15		**12V System**
Bridge - R41			**X3.16**		**R41**

Fig. 5.2.3.1
Connection Table

5.2.4 Error diagnosis with the audio-visual warning signals of the electronic controller

Error	LED Blink Code/ Horn	Error Display Interval
Emergency operation	1 Blinks/Peep_Pause_ 1 Blink/Peep	
Short-circuit / Defect Q1 - Q2 (Power Relay Valve)	2 Blinks/Peep_Pause_ 2 Blink/Peep	
Short-circuit / Defect Q3 - Q6 (Platform, VN)	3 Blinks/Peep_Pause_ 3 Blink/Peep	
Short-circuit / Defect Q7 - Q10 (VN, VH)	4 Blinks/Peep_Pause_ 4 Blink/Peep	
Short-circuit / Defect Q11 - Q14 (V1, V2, V3)	5 Blinks/Peep_Pause_ 5 Blink/Peep	
Battery Overvoltage	7 Blinks/Peep_Pause_ 7 Blink/Peep	
Battery Overvoltage	8 Blinks/Peep_Pause_ 8 Blink/Peep	
Output Overload	9 Blinks/Peep_Pause_ 9 Blink/Peep	
Total Overload Current	10 Blinks/Peep_Pause_ 10 Blink/Peep	
Simultaneous Activation	13 Blinks/Peep_Pause_ 13 Blink/Peep	

Caution!
Voltage limits for undervoltage:
12 Volt system – Warning starting at 10 Volts, shutdown below 8.5 Volts after 3 seconds
24 Volt system – Warning starting at 20 Volt, shutdown below 18 Volt after 3 seconds

Errors are reset by switching off the driver's cab switch!

Malfunction
solenoid valves/power relays

Different valves and the drive motor must work together so that the various functions such as lifting, lowering, closing and opening work.

The designations in the wiring diagrams and action charts are as follows:

M = motor switched via the power relay (magnetic switch)

VS1= Control valve on the unit

V1 = Control/shut-off valve for sliding cylinder

VH = Solenoid valve RV (electrically pilot controlled return valve) on the lifting cylinder)

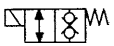
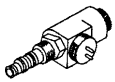
VN = Solenoid valve RV (electrically pilot controlled return valve) on the tilting cylinders)

A defect coil can be determined with an ohmmeter. The following values have validity:

24 V coil = 23 Ohms +/- 10% at 20°C
12 V coil = 6 Ohms +/- 10 % at 20°C

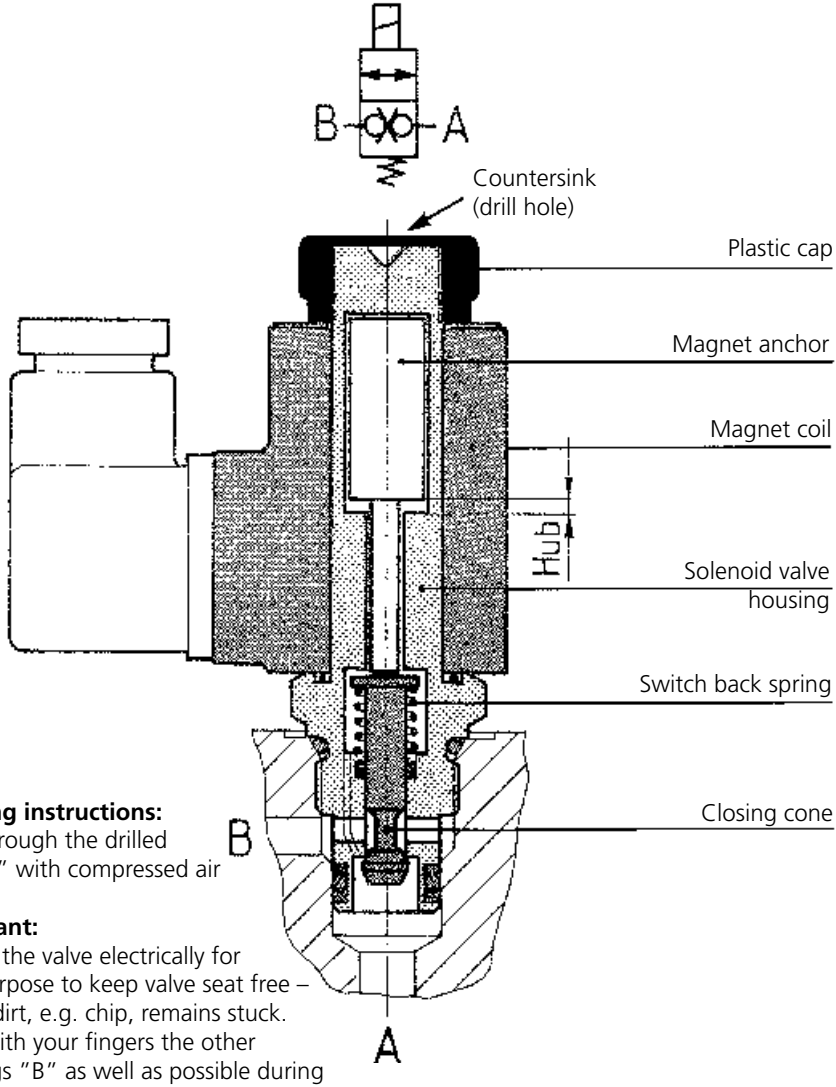
The coils from the valve make Flutec can be interchanged so coils can be changed for emergency operation. When changing it is imperative that the coils be sealed at both ends using O-ring seals.
Before repairing the electrical system it is imperative that the main current be switched off.

The solenoid valves have the following characteristics:

Valve Designation	Symbol	Function	External distinguishing mark under plastic cap
V1 VH VN		double-controlled valve	with drill hole or yellow sticker 
VS1		4/2-port directional control valve	

Faults and their Remedies

Principle of the Function
of the solenoid valves dsp VH + VN + V1
both ends sealed



Cleaning instructions:
Blow through the drilled hole "B" with compressed air

Important:
Control the valve electrically for such purpose to keep valve seat free – or else dirt, e.g. chip, remains stuck. Close with your fingers the other openings "B" as well as possible during blowing.

The valve switching values are stipulated in all of the wiring diagrams.

It makes sense to initially check the main electrical system in order to determine whether current is applied to the terminal for the required function.
For the electronic controller, the operation of the valve is indicated by a red LED on the corresponding connection.

Should the corresponding voltage be applied and the required function still not work, check individual solenoid valve (coil) or power relay in order to check whether a current is applied in addition to checking the earth (possibly broken line).

Note:

The power relay is supplied with the earth via the thermal switch located in the motor.

Faults and their Remedies

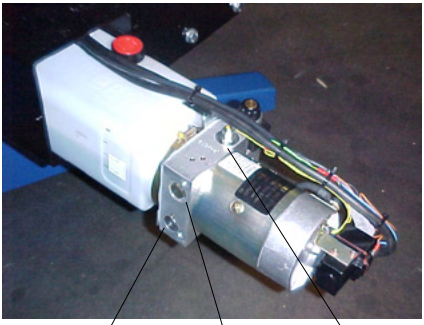
In order to test the pressure a manometer is to be connected to the test connection.

In order to test the pressure the lift function can be used by moving against the body or the close function can be used when the platform is already completely closed. The pressure is progressively adjustable.

Never screw in the adjustment screw completely. This results in the valve being blocked and the pump can be destroyed.

After carrying out repairs on the hydraulic system (cylinder change, valve change, hose change) we recommend that the oil also be changed.

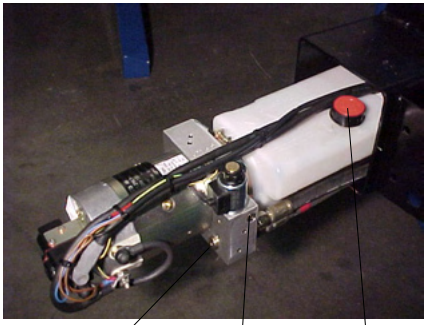
Flutec „FL“:



Countertorque brake valve SB1

Check valve RV

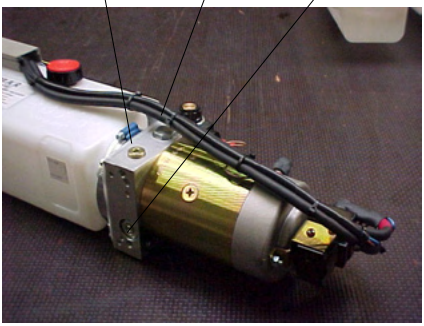
Pressure control valve DBV

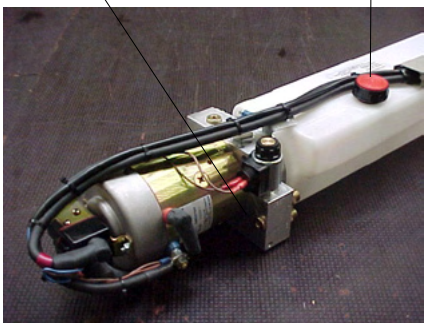


Test Connection G 1/4

Orifice DB1

Oil filler neck

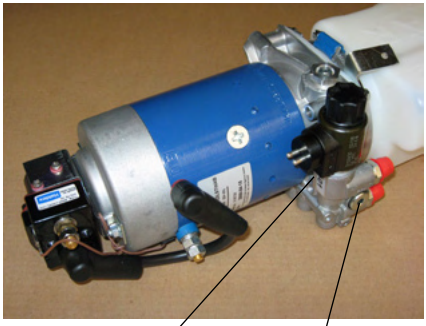




Haldex „HA“:

Haldex „HX“:

Pressure control valve DBV



4/2 way valve VS1

Test Connection G 1/4 (Check valve RV)

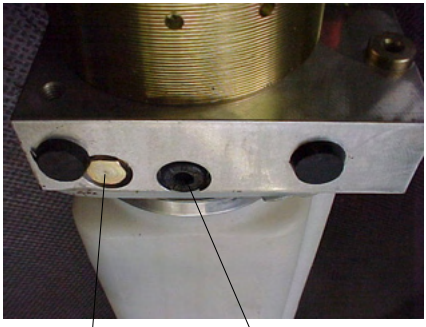
POWER PACK UNDERSIDE

Check valve RV1

Flutec „FL“:

Oil drain

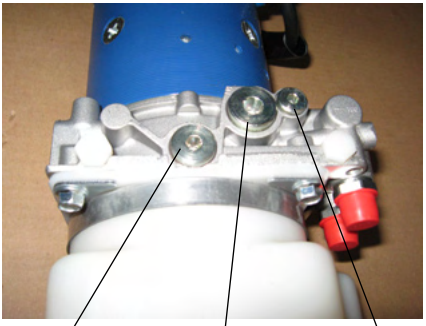
Haldex „HA“:



Orifice DB1

Oil drain

Haldex „HX“:



After repair work to the hydraulics complete with folded platform status, the cylinders are to be re-filled with oil via service.

5.3 Possible faults and their remedies

Fault	Cause	Remedy
The Cargolift reacts neither to hand nor to foot control	The safety switch in the cabin is not switched on or defect	
	Control current fuse triggered	Press in
	Control current line interrupted	Inspect, repair
„Lift" function does not work or only slow. Pump motor runs normally	Not enough oil in the tank Pump sucks air	Top up with oil
	Pump defect	Replace pump
	Pressure control valve set too low	Check pressure
„Lift" function not working or only works slow Pump motor runs audibly lower For the electronic controller: see the Error Table Code 7	Battery too low = Undervoltage	Recharge battery, inspect individual cells for usability, if necessary, replace battery. Inspect charging cable fuses in lorry and trailer. Inspect charging cable and their push-in connections. A larger cable cross-section may be required for trailer.
	Battery discharged	Makeshift: Keep vehicle engine running
	Alternator too weak	Fit alternator with a higher performance

Faults and their Remedies

Fault	Cause	Remedy
„Lift“ function not working or only works slow	Main power cable corroded at contact surfaces	Bright clean endplates (battery poles/cable lugs)
	Main current connection on the power pack defect due to incorrect assembly	Replace main current connection Adhere to assembly instructions!
	Motor carbon brushes worn	Repair motor; do not use the power pack as this can damage the electric motor
„Lift“ and „Close“ work simultaneously when „Lift“ pressed	Solenoid valve VN defect or soiled	Replace or clean
Pump motor not running	Cabin safety switch or key-operated switch not activated or defect	Activate or replace
	Control current safety cut-out triggered	Eliminate cause
	Main current fuse defect	Replace (observe rating!)
	Joystick or foot switch defect	Replace
	Control cable interrupted, worsened contact	Mount
	Earth cable or main current cable interrupted, battery terminal loose	Mount

Faults and their Remedies

Fault	Cause	Remedy
Pump motor not running	Carbon brushes worn. Thermal switch deactivated after overloading or undervoltage	Replace The motor can restart after a cool-off period of abt. 5 min.
	Connecting line terminal M - power relay interrupted	Reconnect
	Battery voltage too low	Recharge with alternator
	Power relay (magnetic switch) defect	Replace
„Tilt upwards"function not working	Too little oil in tank Pump sucks air	Top up with oil
	Solenoid valve VH does not switch	Check the valve
Pump motor does not deactivate	Joystick or foot switch defect	Replace
	Power relay catches	replace power relay
„Tilt downwards" function not working	Cable to solenoid VN on tilting cylinder damaged	Replace cable
	Solenoid valve VN or VS1 or coil defect	Replace valve or coil

Faults and their Remedies

Fault	Cause	Remedy
The Cargolift lowers too fast or too slow, permissible: 15 cm/sec., (load-independent)	Countertorque brake valveSB1 in unit incorrectly adjusted, soiled	Adjust according to hydraulic wiring diagram. Clean
The Cargolift stops when lowered from the foot control	Conductor interruption at cable platform/supporting arm	Replace cable or use free conductor. Check cable laying in accordance with assembly instructions
The Cargolift clearly lowers horizontally of its own accord (e.g. 20-30 mm in 5 min.)	Solenoid valves on lifting cylinder leaking	Clean, replace Before removing the valves it is imperative that the lowering path be determined for 5 min. If necessary, repeat in different positions. If a lowering is determined, clean/replace the valves.
The Cargolift does not lower from above	Cable to solenoid check valve on lifting cylinder defect	Replace
	Solenoid valve on lifting cylinder defect	Replace or clean the valve
	Shuttle valve VS1 jams	Free or replace

Faults and their Remedies

Fault	Cause	Remedy
Cargolift clearly tilts the tip downwards of its own accord (e.g. 30-50 mm in 5 min.)	Solenoid valve on tilting cylinder defect	Check the valves Before removing the valves it is imperative that the lowering path be determined for 5 min. If necessary, repeat in different positions. If a lowering is determined, clean/replace the valves.
Cargolift springs when lifting Lifting cylinder springs	Air in tilting cylinder. Pump sucks air and creates an air-oil mixture	Check oil level. Vent both lifting cylinders at top of piston rod simultaneously.
Tip of the platform springs under load. Tilting cylinder springs	Air in tilting cylinder Pump sucks air and creates an air-oil mixture	Vent both lifting cylinders simultaneously.

Faults and their Remedies

Fault	Cause	Remedy
Cargolift does not lift the full load	Load too heavy or too far from the side of the vehicle	Check load, adhere to load capacity diagram
	Pressure control valve ajdusted too low	Check pressure (test connection)
Cargolift does not extend	Pump defect	Replace
	Activate cabin safety switch or key-operated switch	
Cargolift does not retract	Solenoid valve V1 or coil defect	Replace valve or coil
	Solenoid valve VS1 or V1 or coil defect	Replace valve or coil
Red control lamp is not extinguished when platform folded in/closed	Electronic system for foot switch unit defect.	Replace
	Proximity switch „driving position“ defect.	Replace
	Cargolift not completely in driving position	Allow Cargolift to retract fully.
	Note: In the platform driving position the minus current circuit should be interrupted.	

6. Electrical charging system

6.1 Operating instruction of electrical charging system

6.1.1 Area of use:

The electronic charging system was especially developed in order to charge an additional battery pack mounted on a trailer or semi-trailer by a towing vehicle by intelligent means.

The charging system is suitable for both 12 V and 24 V systems.
An integrated voltage monitoring system protects the vehicles battery from being dis-charged too deep during the charging process of the additional battery pack. Errors are simultanieously indicated in the drivers cabin by a flashlight signal. That´s the reason, why it is important to connect the 2 pin-connector! The cable length may not be shorter than 10 metres. An ground-free electrical system is required. If a system should be grounded, suit-able protective measures (e.g. fuses) must be used for all vehicle-connecting cables (including ground cables).

If there is additional material needed, it has to be delivered by the body-builder.
Attention: the truck / body mounting directives must be kept!

When using the electronic charging system in special applications, no guarantee can be given for correct function or damages.

It is absolutely forbidden, to connect the charging electronic´s plus and minus in the wrong way, because by connecting with a additional battery pack it causes shot circuit and seri-ous damages.
It is absolutely necessary to mount the cube-fuse with the knurled nut correctly. If there are damaged pins or noses, the knurled nut must be replaced.

6.1.2 Function:

The cable in front of the truck socket contains a compound-filled electronics system in a cylinder-shaped housing which connects or disconnects the two battery packs, depending on the situation. The electronics system hereby initially diagnoses the systems voltage of each of the battery packs which are to be connected during the connection process.
In case of different system voltages (12V/24V), no coupling of the battery packs takes place. Instead of this, a fault message is outputted and only the feedback light of the tail-gate lift of the trailer works. Different system voltages are detected at a mimimum voltage of at least 8,5 Volts.
No charging takes place in hybrid operation with different system voltages!

If the charging system plug has been inserted and the vehicle engine started up, the on-board voltage increases above the switch on threshold value and the battery packs are connected to each other. The diagnosis-LED hereby illuminates green.

Electrical charging system

In order to avoid a permanent switching on and switching off in case of voltage fluctua-tions, the electronic only disconnects the battery packs after a duration of 10 sec (even if voltage is lower than switch off voltage).

If the engine of the towing vehicle is switched off and the on-board voltage falls below the switch off threshold value, the battery packs are disconnected. The electronic switches the diagnosis-LED off. If the battery packs are extremely fully charged, there can be a delay in disconnection of the battery packs as the voltage drops much more slowly.
Two control pins are provided in order to signalise the electronics system whether a trailer cable is connected or not: The blue wire of the charging system plug at the trailer with 1mm² on pin 5 and the brown wire at pin 6. For the charging function, one of these wires (e.g. in the battery box on the trailer) must be connected to minus. This coding connection not only results in a turn-on signal for charging of the additional battery pack, the feedback system for the platform on the trailer is furthermore determined (blue [5] = quiescent cur-rent principle with minus signal, brown [6] operating current principle with minus signal).

If plug is removed, the electronics system does not connect the battery packs even if the switch on voltage is reached. If a test plug with a coding bridge but without a voltage con-nection is inserted, the electronics system also does not connect the battery packs as the system voltages are checked first for safety reasons.

If there is a voltage at the socket without a plug inserted, the electronic may be dam-aged and must be replaced.

If the engine of the towing vehicle is running while the plug is pushed into the socket, the electronics system only connects the battery packs after a delay of 2 sec., in order to pre-vent sparks forming at the contacts.

When the 7-pin plug is removed, the shorter pins in the plug initially disconnect the ground signal, thereby switching the electronic off before the contacts of the charging current pins are disconnected.
To avoid dirty and corroted contacts it´s necessary to use a parking socket for all plugs!

The 50 A-fuses attached to the battery poles purely act as cable fuses. The electronic dis-connects the charging system at all times if the charging current exceeds (overload) 50 A for a duration of 0.1 seconds and carries out cyclic checks by switching on in order to de-termine whether this overload has still been applied. The battery packs are also disconnected after a longer high peak current phase (>30 A and >4 min). This necessitates an inspection of the battery pack!
If a short-circuit should occur, the electronic also disconnects the charging system if the current exceeds 100 A for a duration of 0.05 s.

Electrical charging system

Should one of the following errors occur in the charging system, a uniform flashing light signal with a frequency of approx. 0.5 Hz is displayed via the feedback unit in the driver's cabin:

1. *Non-reaching of the charging current:*
   During the first 2 sec. of the charging process:
   This fault is displayed for a duration of 10 min. If the charging current exceeds 1 A, the fault is automatically reset. If the voltages are approximately identical (above the switch on voltage), a current is unable to flow when inserting the plug. In this special case, the error signal is therefore suppressed.
   No voltage from the towing vehicle:
   This fault is monitored every 5 min. after insertion of the charging plug into the socket. This fault is displayed until it has been remedied.

2. *No voltage from the trailer:*
   The correct charging operation is monitored every 5 min. by the trailer voltage being monitored for a period of 0.1 sec. as a result of a brief disconnection and checking of the trailer voltage. This fault is displayed until it has been remediated or until the next correct measurement.

3. *Exceeding the charging current*
   In case of an exceeding of the charging current above 30 A or 50 A, the power switch is disconnected and reconnected after a short break.
   The error message (charging current) is outputted and after the fault has been reme-died, it is reset with a short time delay. If this fault occurs several times, the connection will be blocked until the error is repaired. The error message (short circuit) is dis-played. For an error-reset, the connection has to be unplugged.

4. *Short-circuit:*
   In case of a short-circuit, the electronics system disconnects immediately if the current should exceed 100 Ampere. In this case, the charging system remains permanently dis-connected. The warning signal (short circuit) is also permanently outputted. Before the charging operation can be recommenced after a repair has been successfully carried out. For an error-reset, the connection has to be unplugged.

5. *Different system voltages:*
   This fault is displayed at a minimum voltage of 8,5 Volts. Before charging operation can be recommenced after the system has been changed, the electronic must be reset by removing and replacing the plug-type connector at the charging socket.

In addition to the uniform flashing light signal in the driver's cabin, each of the faults are also directly displayed at the electronic in form of a coded flashing light signal on the in-ternal LED.
The following charts provide an overview of the various fault codes.

6.1.3 Fault messages overview table

Operating state	Monitoring duration	Display Type	Display duration
charging operation, battery pack connected	permanently as soon as switch-on conditions are met	LED illuminates green	permanently as long as the battery packs are connected
charging operation interrupted, no fault	permanently as soon as switch-on conditions are not met	LED does not illuminate	always when there is no fault or no charging operation
charging current less than 2A	in the first 2 seconds of the charging process	 LED flashes red	10 minutes
no voltage from towing vehicle	permanently, if the plug is inserted	 LED flashes red	permanently or as long as there is a fault
no voltage from trailer	with charging operation all 5 min. for 0.1 sec.	 LED flashes red	as long as there is a fault or until next measurement
charging current > 50A	permanently	 LED flashes red	permanently or as long as there is a fault
short-circuit	permanently	 LED flashes red	permanently until reset
different system voltages / voltages outside the working range	after connection when minimum Voltage is reached	 LED flashes red	permanently until reset

6.1.4 Pin occupancy for the socket

Pin no.	Occupancy	Wire colour
1	positive charging current	red 6 mm²
2	positive charging current	white / red 6 mm²
3	minus charging current	brown 6 mm²
4	minus charging current	white / brown 6 mm²
5	bridge at minus = trailer feedback according to quiescent current principle	blue 1 mm²
6	bridge at minus = trailer feedback according to operating current principle	brown 1 mm²
7	feedback signal trailer	yellow 1 mm²

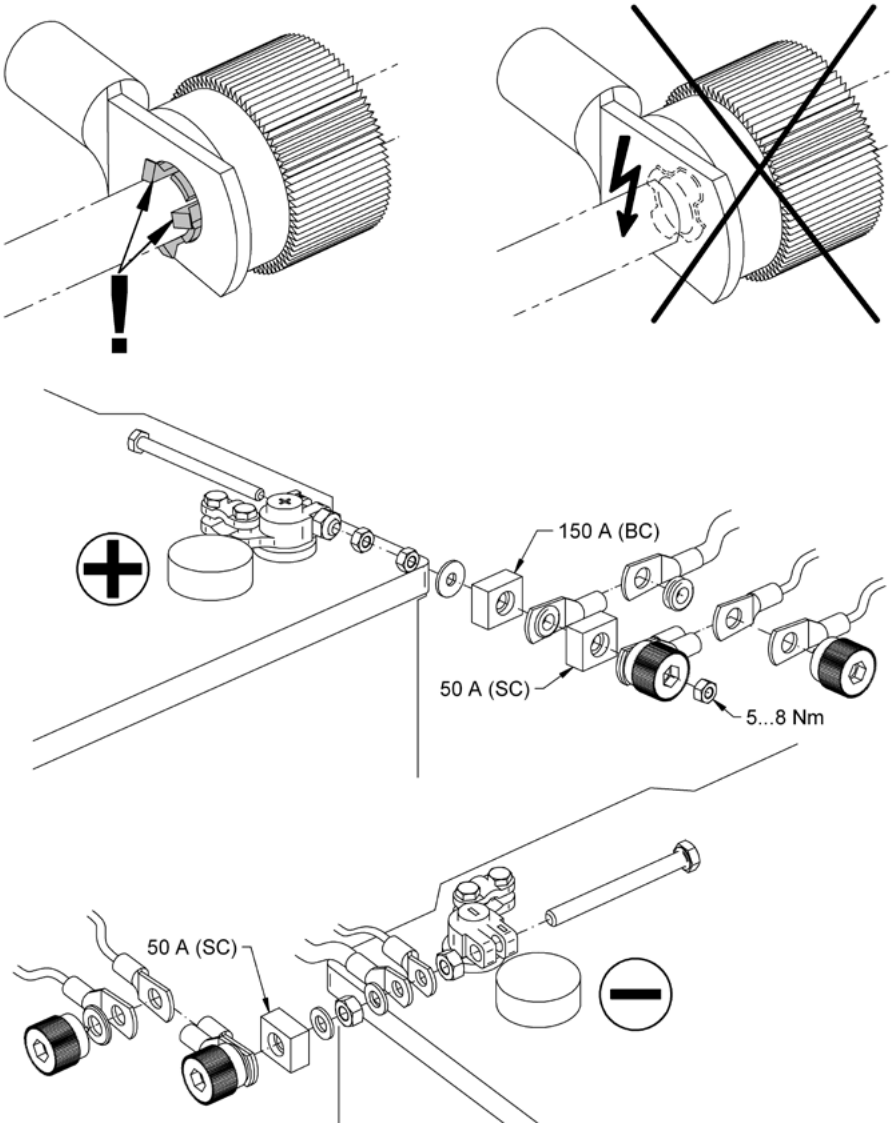
With a hybrid operation (i.e. the towing vehicle and trailer have platforms from different manufacturers), the correct coding of Pin 5 or 6 will result in the switching principle of the feedback to the trailer being automatically detected by the electronic on the towing vehicle.
This means that trailers with minus feedbacks from all manufacturers can be combined with each other as required.
At the towing vehicle minus operating current principle is always output as a feedback.

At the 2-pin plug of the electronic, a permanent voltage supply is applied to Pin 2 as minus is switched for the feedback. This enables a control/feedback lamp to be operated without any additional access having to be made. Without using this feedback signal there is no guarantee available!

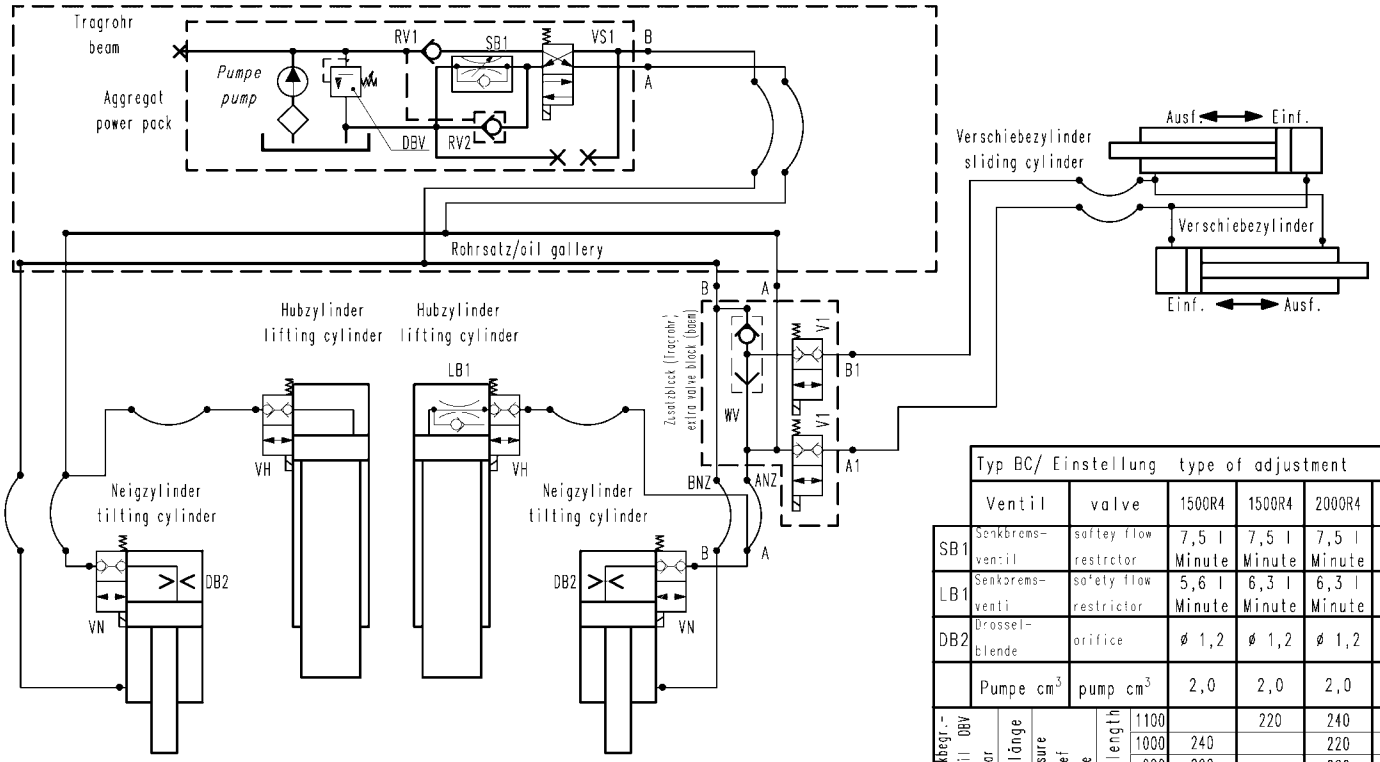
Caution:
Before welding at the chassis or charging the batteries with an external charging system, all Wires have to be disconnected! (possible by releasing the knurled nut at the plus and minus battery poles).

The correct wiring diagram is able to be downloaded at: www.baer-cargolift.de.

6.2 Mounting instruction fuse unit charging system



7. Table of Contents for Wiring Diagrams



Typ BC/ Einstellung type of adjustment						
	Ventil	valve	1500R4	1500R4	2000R4	2500R4
SB1	Senkbrems-ventil	safety flow restrictor	7,5 l Minute	7,5 l Minute	7,5 l Minute	7,5 l Minute
LB1	Senkbrems-ventil	safety flow restrictor	5,6 l Minute	6,3 l Minute	6,3 l Minute	6,3 l Minute
DB2	Drossel-blende	orifice	ø 1,2	ø 1,2	ø 1,2	ø 1,2
	Pumpe cm^3	pump cm^3	2,0	2,0	2,0	2,0
Druckbegr.-ventil DBV in bar, Ausführung pressure relief valve, Armlänge arm length	1100			220	240	
	1000	240			220	
	900	220			220	240
	800					240

Heben/up H = M + VH
Senken/down S = VH + VS1
Schließen/close Sch = M + VN
Öffnen/open Ö = M + VS1 + VN
Ausfahren/drive out Ausf = M + V1
Einfahren/pull in Einf = M + VS1 + V1

Zugehöriger Elektroschaltplan
18384.000-3

Hydraulikschaltplan Bär Cargolift
Retfalt BC...R41/R45

Änderungsmitteilung : 04/059 Index : 02

BÄR Cargolift®
D-74078 Heilbronn

01.123313
18385.000-4-02

30.09.2004
Lohmann

Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden

Hauptstromsicherung main fuse		F1
BC	12V	24V
2000R41	200A	150A
2500R41	200A	150A

bei abweichender Einschaltung siehe Übersicht Fahrerhauseinschaltung
with deviating safety switch see drawing cabin saftey switch

induktive Näherungsschalter
inductive proximity switch

Fußschaltereinheit
foot control unit

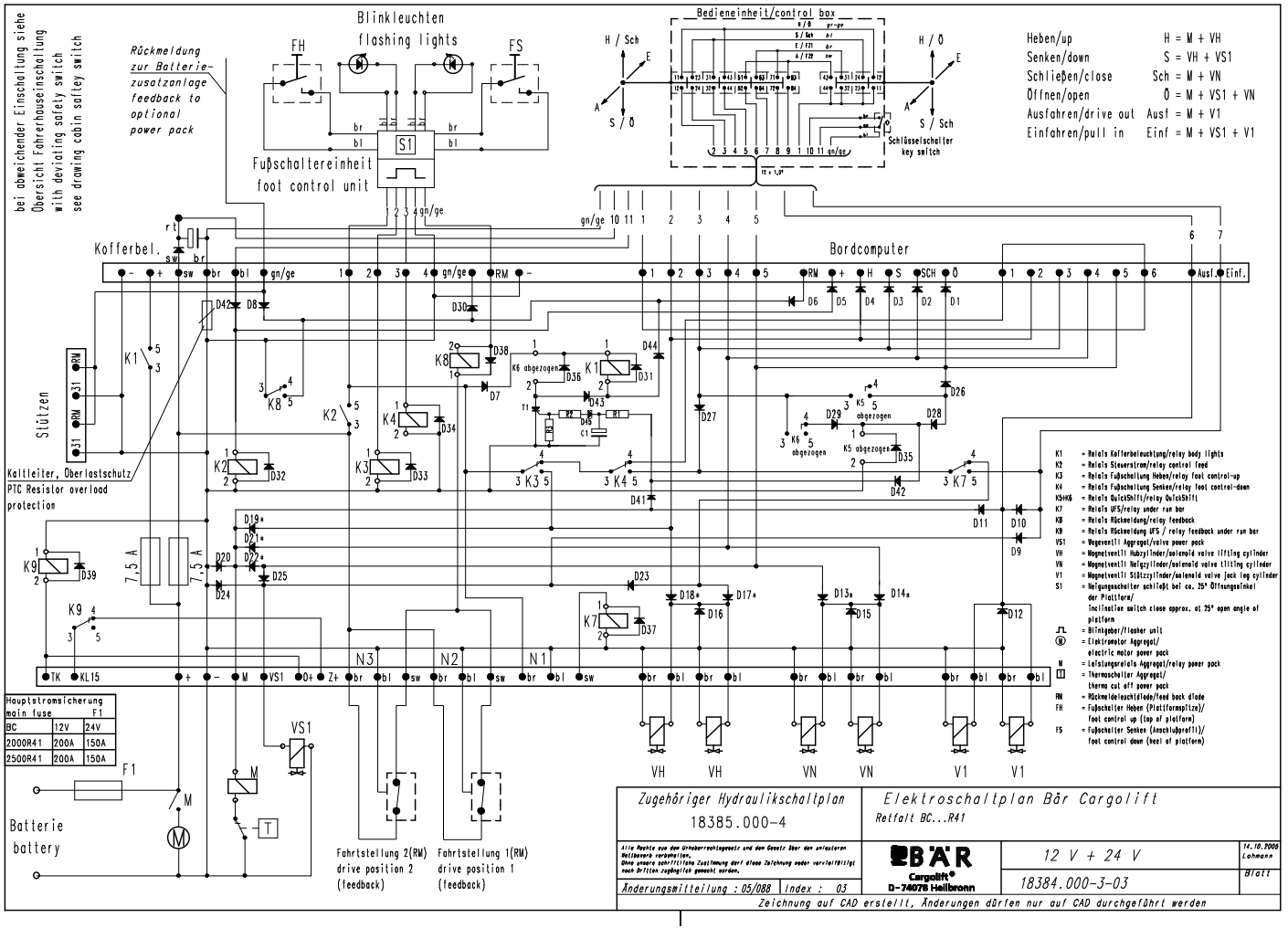
Bedieneinheit/control box

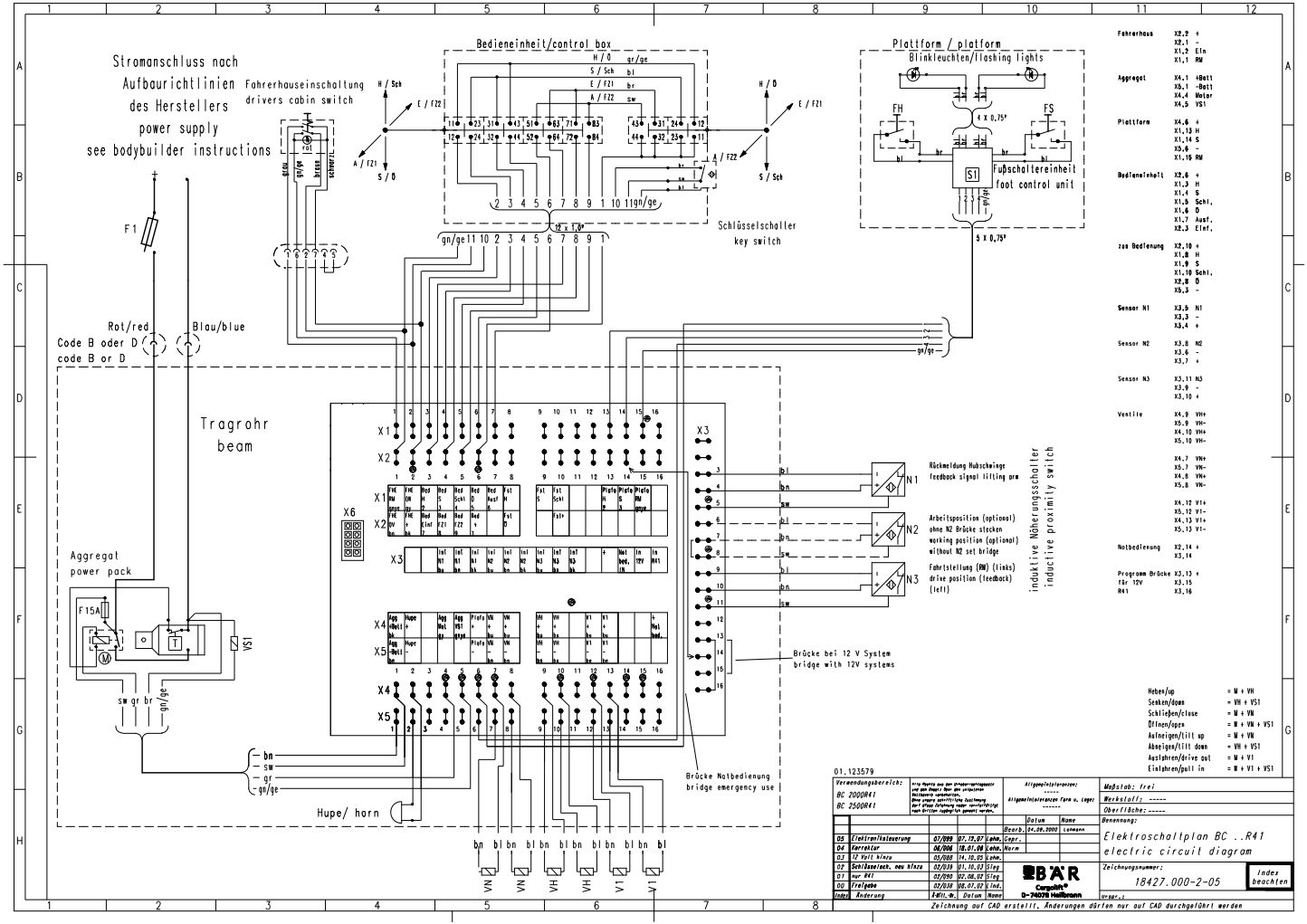
Batterie
F1
Rot/red
Code B oder D / code B or D
Blau/blue
Rückmeldung zur Batterie-zusatzanlage feedback to optional power pack
Steckverbindung 7-polig connector 7-poles Code A/code A
links/left
Fahrleitung 2 (RM) drive position 2 (feedback)
Fahrleitung 1 (RM) drive position 1 (feedback)
Blinkleuchten/flashing lights
FH
FS
4 X 0,75²
S1
Fußschaltereinheit foot control unit
H / Sch
S / Ö
Schlüsselschalter key switch
12 x 1,0²
B1
Fahrerhaus
N1
N2
N3
Sensoren
Plattform
Kofferbel.
Z+ Ö+ KL15 TK
T-Kupplung
Bordcomputer
Bedieneinheit
Stützen
Kabelbrücke jumper
K1
K2
K9
K6 nicht gesteckt/ unplug
K8
K3
K7
K5 nicht gesteckt/ unplug
K4
Steuerstrom 7,5A
Kofferbeleuchtung 7,5A
Aggregat power pack
VS1
Aggregat
Ventile
Ventile
Ausf
Einf
VH
VH
VN
VN
V1
V1

K1 = Relais Kofferbeleuchtung/relay body lights
K2 = Relais Steuerstrom/relay control feed
K3 = Relais Fußschaltung Heben/relay foot control-up
K4 = Relais Fußschaltung Senken/relay foot control-down
K5+K6 = Relais QuickShift/relay QuickShift
K7 = Relais UFS/relay under run bar
K8 = Relais Rückmeldung/relay feedback
K9 = Relais Rückmeldund UFS / relay feedback under run bar
VS1 = Wegeventil Aggregat/valve power pack
VH = Magnetventil Hubzylinder/solenoid valve lifting cylinder
VN = Magnetventil Neigzylinder/solenoid valve lifting cylinder
V1 = Magnetventil Stützzylinder/solenoid valve jack leg cylinder
S1 = Neigungssensor, schließt bei ca. 15° Öffnungswinkel der Plattform/ inclination sensor close approx. at 15° open angle of platform
= Blinkgeber/flasher unit
Ⓜ = Elektromotor Aggregat/ electric motor power pack
M = Leistungsrelais Aggregat/relay power pack
T = Thermoschalter Aggregat/ thermo cut off power pack
RM = Rückmeldeleuchtdiode/feed back diode
FH = Fußschalter Heben (Plattformspitze)/ foot control up (top of platform)
FS = Fußschalter Senken (Anschlußprofil)/ foot control down (heel of platform)
B1 = Spannungspuffer voltage buffer

Heben/up	H = M + VH
Senken/down	S = VH + VS1
Schließen/close	Sch = M + VN
Öffnen/open	Ö = M + VS1 + VN
Ausfahren/drive out	Ausf = M + V1
Einfahren/pull in	Einf = M + VS1 + V1

Zugehöriger Hydraulikschaltplan
Elektroschaltplan Bär Cargolift
Refolift BC ...R41
BÄR Cargolift® D-74078 Heilbronn
12V + 24V
18427.000-2-04
Änderungsmitteilung : 06/006 | Index : 04
10.01.2008 Lehmann
Draft
Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden


bei abweichender Einschaltung siehe Übersicht Fahrerhauseinschaltung
with deviating safety switch see drawing cabin safety switch
Rückmeldung zur Batterie-zusatzanlage
feedback to optional power pack
Blinkleuchten
flashing lights
FH
FS
S1
Fußschaltereinheit
foot control unit
Bedieneinheit/control box
H / Sch
S / Ö
H / Ö
S / Sch
Schlüsselschalter
key switch
Heben/up H = M + VH
Senken/down S = VH + VS1
Schließen/close Sch = M + VN
Öffnen/open Ö = M + VS1 + VN
Ausfahren/drive out Ausf = M + V1
Einfahren/pull in Einf = M + VS1 + V1
Kofferbel.
Bordcomputer
Stützen
Kaltleiter, Überlastschutz
PTC Resistor overload protection
K1 = Relais Kofferbeleuchtung/relay body lights
K2 = Relais Steuerstrom/relay control feed
K3 = Relais Fußschaltung Heben/relay foot control-up
K4 = Relais Fußschaltung Senken/relay foot control-down
K5H6 = Relais QuickShift/relay QuickShift
K7 = Relais UFS/relay under run bar
K8 = Relais Rückmeldung/relay feedback
K9 = Relais Rückmeldung UFS / relay feedback under run bar
VS1 = Magnetventil Aggregat/valve power pack
VH = Magnetventil Hubzylinder/solenoid valve lifting cylinder
VN = Magnetventil Neigzylinder/solenoid valve tilting cylinder
V1 = Magnetventil Stützzylinder/solenoid valve jack leg cylinder
S1 = Neigungsschalter schließt bei ca. 25° Öffnungswinkel der Plattform/
Inclination switch close approx. at 25° open angle of platform
= Blinkgeber/flasher unit
= Elektromotor Aggregat/
electric motor power pack
= Leistungsrelais Aggregat/relay power pack
= Thermoschalter Aggregat/
therm cut off power pack
FH = Rückmeldeleuchtdiode/feed back diode
FH = Fußschalter Heben (Plattformspitze)/
foot control up (top of platform)
FS = Fußschalter Senken (Anschlagprofil)/
foot control down (heel of platform)
Hauptstromsicherung
main fuse F1
BC 12V 24V
2000R41 200A 150A
2500R41 200A 150A
Batterie
battery
Fahrtstellung 2(RM) drive position 2 (feedback)
Fahrtstellung 1(RM) drive position 1 (feedback)
VH VH VN VN V1 V1
Zugehöriger Hydraulikschaltplan
18385.000-4
Elektroschaltplan Bär Cargolift
Retfalt BC...R41
Alle Rechte aus dem Urheberrechtsgesetz und dem Gesetz über den unlauteren Wettbewerb vorbehalten.
Ohne unsere schriftliche Zustimmung darf diese Zeichnung weder vervielfältigt noch Dritten zugänglich gemacht werden.
BÄR Cargolift D-74078 Heilbronn
12 V + 24 V
18384.000-3-03
14.10.2005 Lohmann
Blatt
Änderungsmitteilung : 05/088 Index : 03
Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden



Fahrerhaus	X2,2 + X2,1 - X1,3 Ein X1,1 RM
Aggregat	X4,1 +Batt X5,1 -Batt X4,4 Motor X4,5 VS1
Plattform	X4,6 + X1,13 H X1,14 S X5,6 - X1,15 RM
Bedienerinheit	X2,6 + X1,3 H X1,4 S X1,5 Schl. X1,6 D X1,7 Ausf. X2,3 Einf.
zus Bedienung	X2,10 + X1,8 H X1,9 S X1,10 Schl. X2,8 D X5,3 -
Sensor N1	X3,5 N1 X3,3 - X3,4 +
Sensor N2	X3,8 N2 X3,6 - X3,7 +
Sensor N3	X3,11 N3 X3,9 - X3,10 +
Ventile	X4,9 VH+ X5,9 VH- X4,10 VN+ X5,10 VN- X4,7 VN+ X5,7 VN- X4,8 VN+ X5,8 VN- X4,12 V1+ X5,12 V1- X4,13 V1+ X5,13 V1-
Notbedienung	X2,14 + X3,14
Programm Brücke für 12V	X3,15 R41 X3,16

01.123579						
Verwendungsbereich: BC 2000R41 BC 2500R41				Allgemeintoleranzen:		Maßstab: frei
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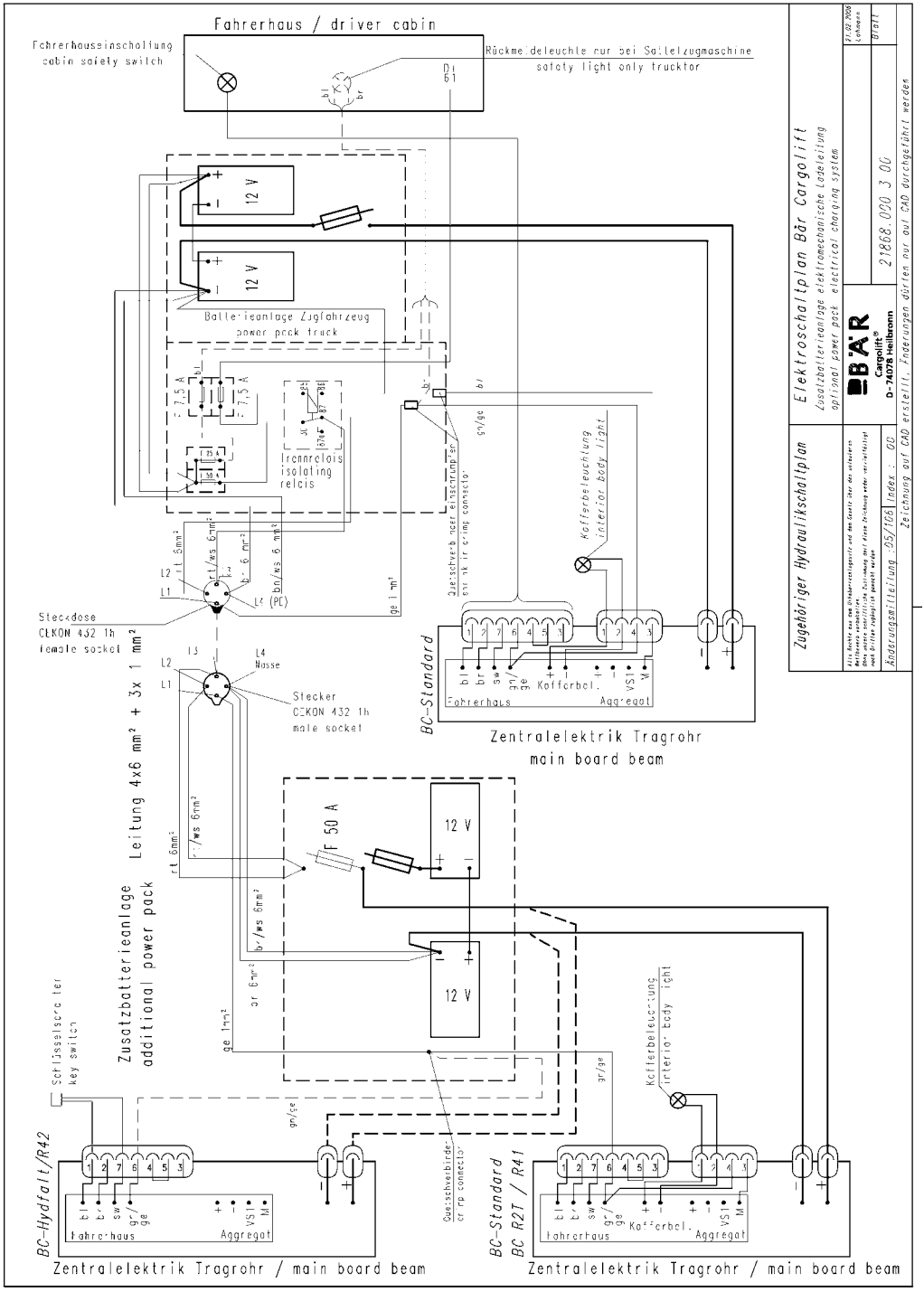
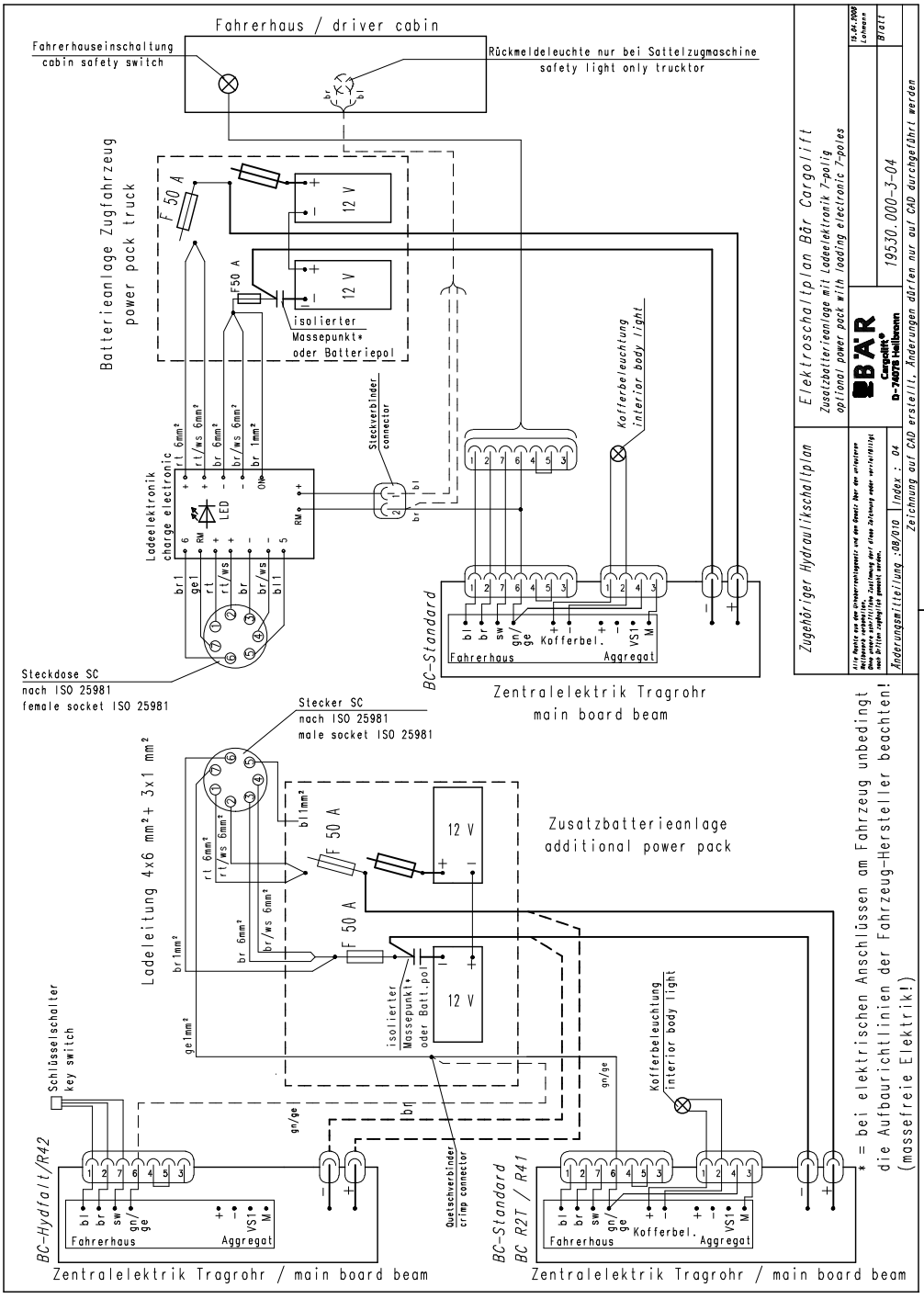
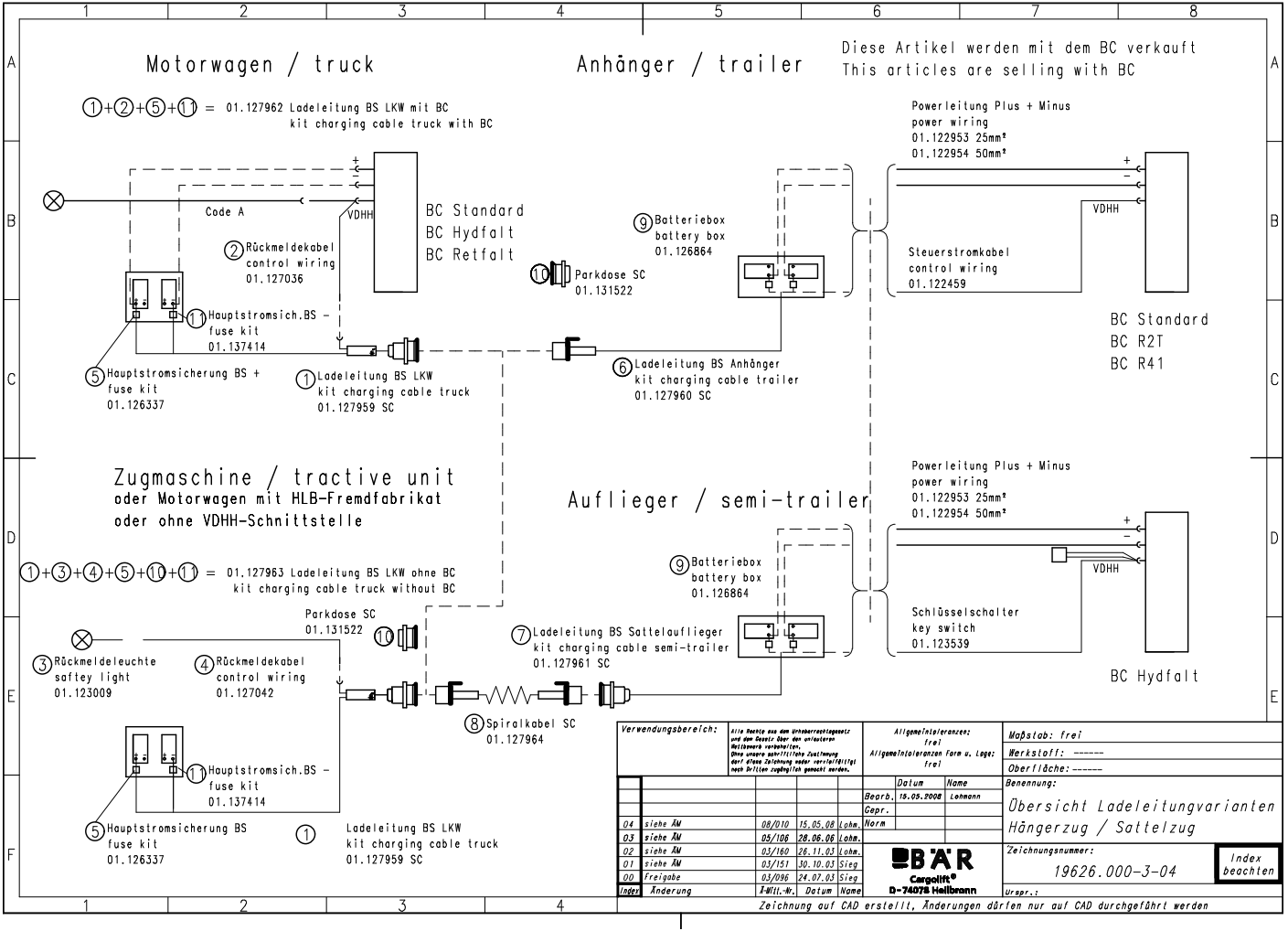
05	Elektroinstallierung	07/099	07.12.07	Lehn.	Gepr.		electric circuit diagram
04	Korrektur	06/098	18.01.06	Lehn.	Norm		
03	12 Volt hinzu	05/085	14.10.03	Lehn.			Zeichnungsnummer: 18427.000-2-05
02	Schl.baueinh. neu hinzu	02/039	01.10.02	Stieg			Index beachten
01	nur R41	02/090	02.08.02	Stieg			
00	Freigabe	02/036	08.07.02	Stieg			
Index	Änderung	Änd.-Nr.	Datum	Name			Urspr.:

Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden


Fahrerhaus / driver cabin
Fahrerhaussinschaltung
cabin safety switch
Rückmeldeleuchte nur bei Sattelzugmaschine
safety light only trucktor
D1
61
12 V
Batterieanlage Zugfahrzeug
power pack truck
7,5 A
Trennrelais
isolating relais
Steckdose
CEKON 432 1h
female socket
Leitung 4x6 mm² + 3x 1 mm²
Stecker
CEKON 432 1h
male socket
Masse
Zusatzbatterieanlage
additional power pack
F 50 A
Schlüsselschalter
key switch
Kofferbeleuchtung
interior body light
Fahrerhaus
Aggregat
Kofferbel.
BC-Standard
BC R21 / R41
BC-Hydfalt/R42
Zentralelektrik Tragrohr
main board beam
Zentralelektrik Tragrohr / main board beam
Zugehöriger Hydraulikschaltplan
Elektroschaltplan Bär Cargolift
Zusatzbatterieanlage elektromechanische Ladeleitung
optional power pack electrical charging system
BÄR
Cargolift®
D-74078 Heilbronn
21868.020 3 00
Blatt
Änderungsmitteilung 05/108 Index : 00
Zeichnung auf CAD erstellt. Änderungen dürfen nur auf CAD durchgeführt werden


Fahrerhaus / driver cabin
Fahrerhauseinschaltung
cabin safety switch
Rückmeldeleuchte nur bei Sattelzugmaschine
safety light only trucktor
Batterieanlage Zugfahrzeug
power pack truck
F 50 A
12 V
isolierter
Massepunkt*
oder Batteriepol
Steckverbinder
connector
Kofferbeleuchtung
interior body light
Ladeelektronik
charge electronic
LED
Steckdose SC
nach ISO 25981
female socket ISO 25981
BC-Standard
Fahrerhaus
Kofferbel.
Aggregat
Zentralelektrik Tragrohr
main board beam
Elektroschaltplan Bär Cargolift
Zusatzbatterieanlage mit Ladeelektronik 7-polig
optional power pack with loading electronic 7-poles
BÄR
Cargolift
D-74078 Heilbronn
19530.000-3-04
Zugehöriger Hydraulikschaltplan
Änderungsmitteilung -08/010 Index : 04
Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden
Stecker SC
nach ISO 25981
male socket ISO 25981
Ladeleitung 4x6 mm²+ 3x1 mm²
Zusatzbatterieanlage
additional power pack
isolierter
Massepunkt*
oder Batt.pol
Schlüsselschalter
key switch
Quetschverbinder
crimp connector
BC-Hydafalt/R42
BC-Standard
BC R2T / R41
* = bei elektrischen Anschlüssen am Fahrzeug unbedingt
die Aufbaurichtlinien der Fahrzeug-Hersteller beachten!
(massefreie Elektrik!)



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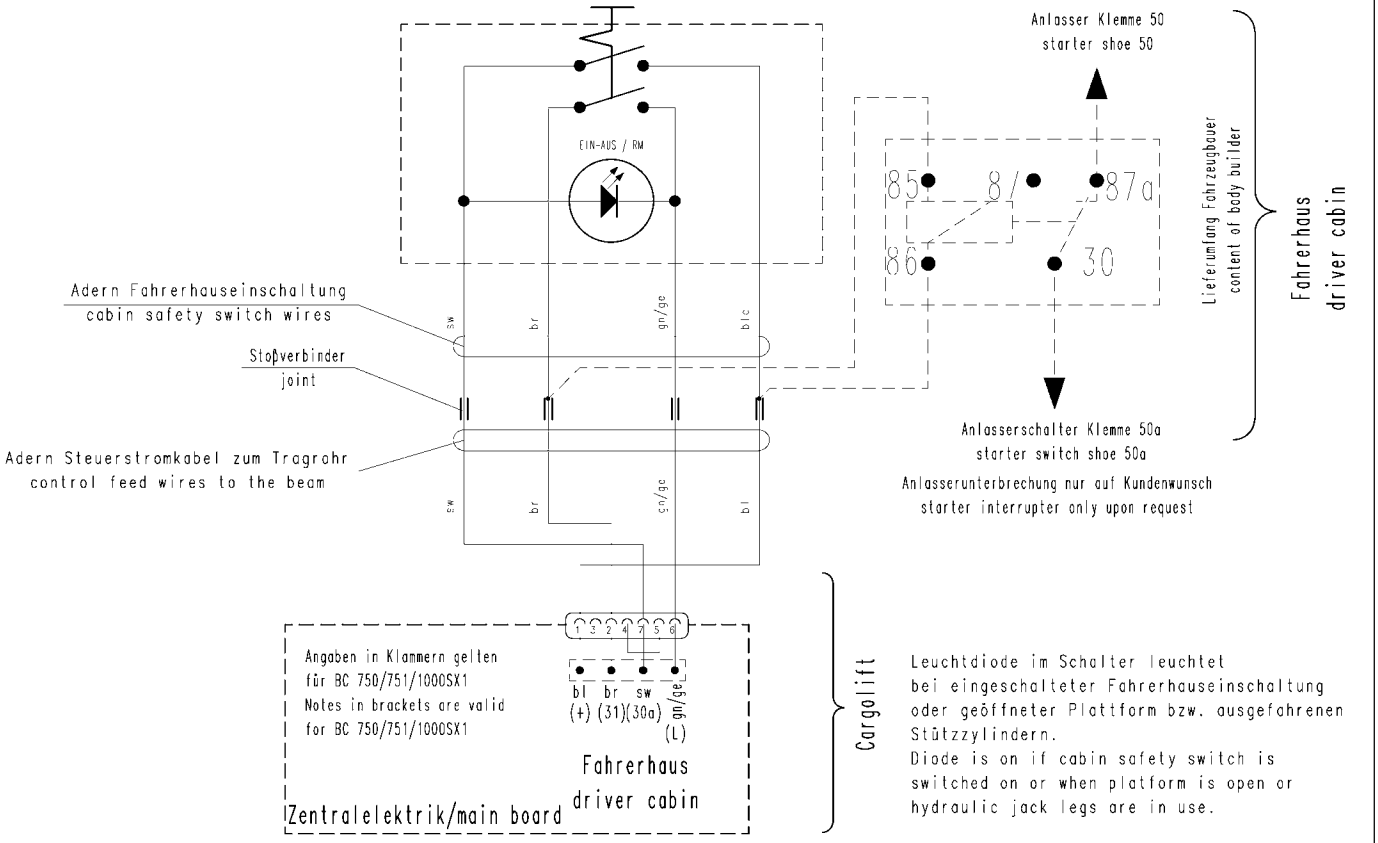
						Datum / Name	Benennung:
					Bearb.	15.05.2008 Lohmann	Übersicht Ladeleitungvarianten
					Gepr.		Hängerzug / Sattelzug
04	siehe ÄM	08/010	15.05.08	Lohm.	Norm		
03	siehe ÄM	05/106	28.06.06	Lohm.			
02	siehe ÄM	03/160	26.11.03	Lohm.			Zeichnungsnummer: 19626.000-3-04
01	siehe ÄM	03/151	30.10.03	Sieg			Index beachten
00	Freigabe	03/096	24.07.03	Sieg	BÄR Cargolift® D-74078 Heilbronn		
Index	Änderung	T-Mit.-Nr.	Datum	Name			Ursprz.:
					Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden		



bl = blue
br = brown
sw = block
gn/ge = green/yellow

Zugehöriger Hydraulikschaltplan	Elektroschaltplan Bär Cargolift THE Druckknopf Alpha/Beta mit elektr. Schnittstelle elektric diagram cabin safety switch	D
	BÄR Cargolift® D-74078 Heilbronn 12 V oder 24 V	10.11.2001 Siegel
Änderungsmitteilung : 0'/118 Index : 01	18397.000-3-01 01.123391	Blatt
Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden		

Pos. 1 , 2 und 3 Lieferumfang Fa. MB
Pos. 1 , 2 und 3 supplied by MB

MB Actros

① = Sicherung (Zündung)
fuse (ignition)
F12 13A

② = Relais K6

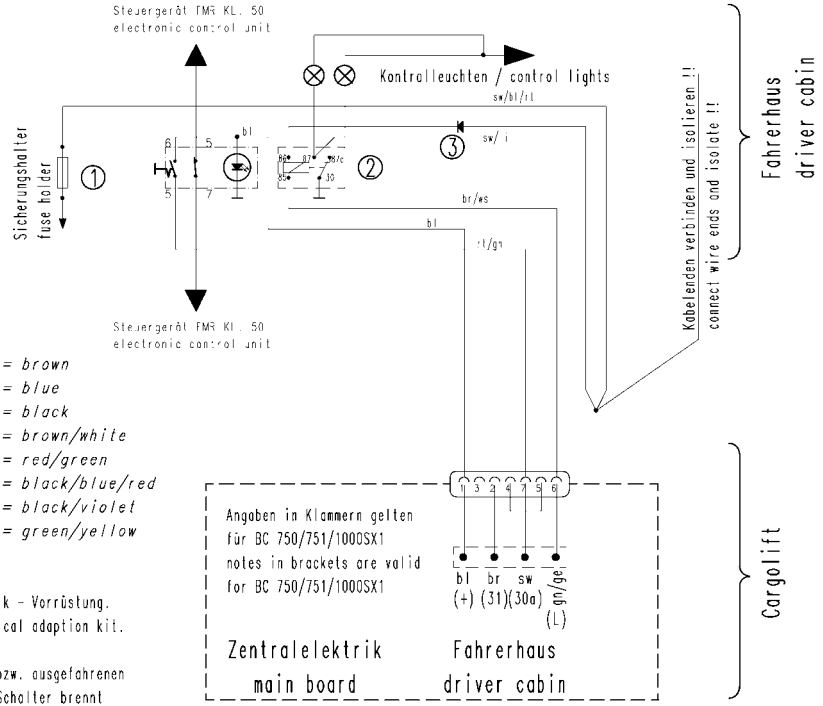
③ = Diode D7

MB Atego

① = Sicherung (Zündung)
fuse (ignition)
F30 15A

② = Relais A3

③ = Diode V7



br = brown
bl = blue
sw = black
br/ws = brown/white
rt/gn = red/green
sw/bl/rt = black/blue/red
sw/li = black/violet
gn/ge = green/yellow

Keine Gewähr für die Aktualität der fahrzeugseitigen Elektrik - Vorrüstung.
No warranty for the actuality of the vehicle-lateral electrical adaption kit.

Die Rückmeldeleuchten brennen nur bei geöffneter Plattform bzw. ausgefahrenen Stützzylindern und eingeschalteter Zündung. Die Leuchte im Schalter brennt bei eingeschalteter Fahrerhauseinschaltung.
Feedback indicator is on if platform is open or jack legs are in use and ignition is on. Light in switch is on if cabin switch is switched on.

Das Kabel der Fahrerhauseinschaltung ist seitens MB bis ans Rahmenende verlegt
Wire of cabin safety switch is mounted by MB to end of chassis.

Zugehöriger Hydraulikschaltplan	Elektroschaltplan Bär Cargolift Fahrerhauseinschaltung MB Actros / Atego mit Code E33 Alpha / Beta mit elektrischer Schnittstelle	D
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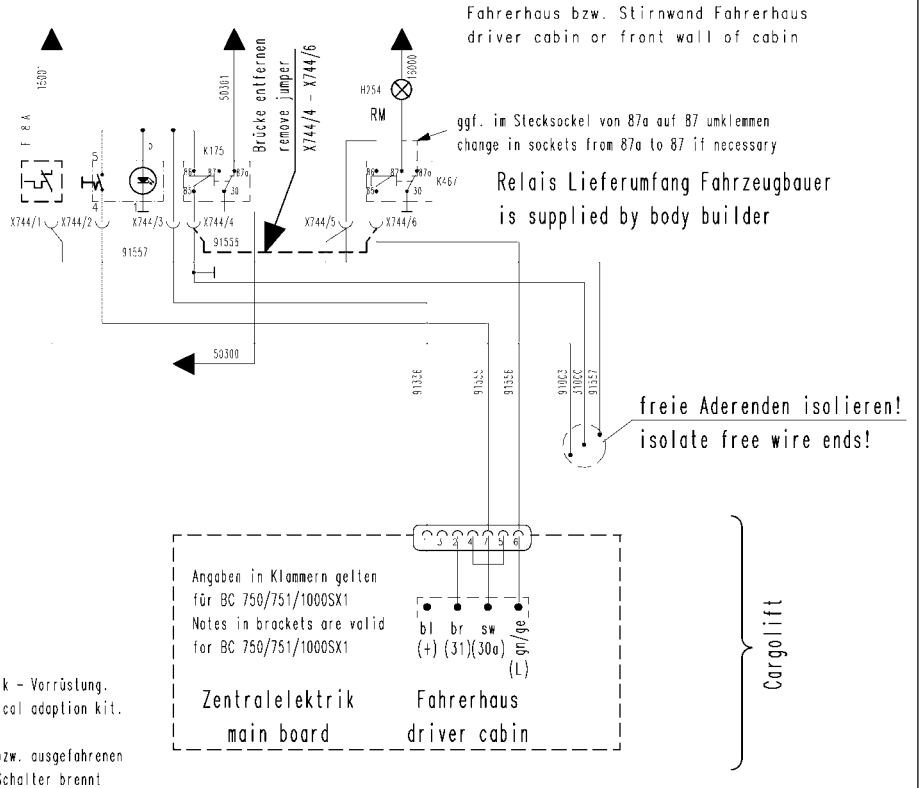
Änderungsmitteilung : 01/18 Index : 0		10.11.2009 Klingler Blatt
Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden		

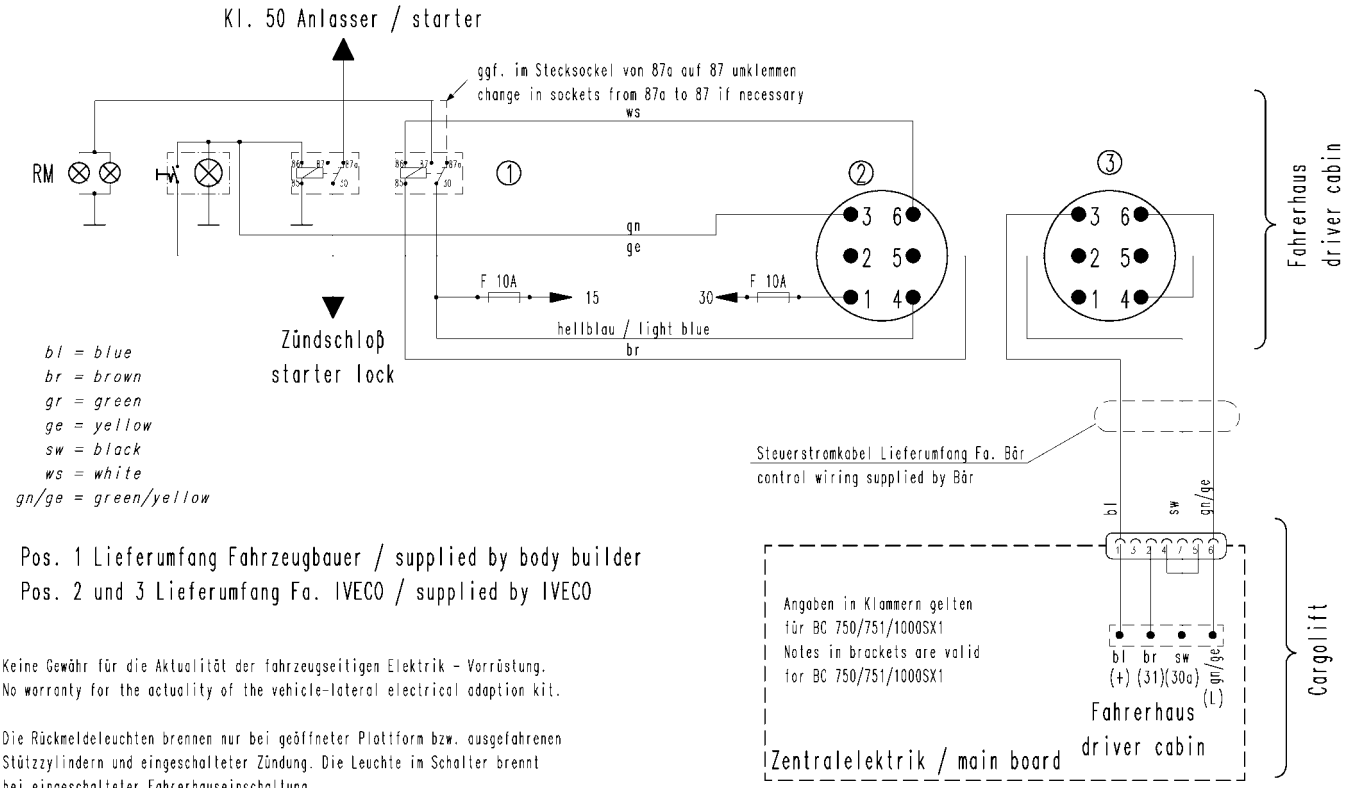


Keine Gewähr für die Aktualität der fahrzeugseitigen Elektrik - Vorrüstung.
No warranty for the actuality of the vehicle-lateral electrical adaption kit.

Die Rückmeldeleuchten brennen nur bei geöffneter Plattform bzw. ausgefahrenen Stützzylindern und eingeschalteter Zündung. Die Leuchte im Schalter brennt bei eingeschalteter Fahrerhauseinschaltung.
Feedback indicator is on if platform is open or jack legs are in use and ignition is on. Light in switch is on if cabin switch is switched on.

Das Kabel der Fahrerhauseinschaltung ist seitens MAN bis ans Rahmenende verlegt
Wire of cabin safety switch is mounted by MAN to end of chassis.

Zugehöriger Hydraulikschaltplan	*Elektroschaltplan Bär Cargolift* *Fahrerhausein. MAN mit Ladebordwandvorbereitung* *Alpha / Beta mit elektrischer Schnittstelle*		**D**
	BÄR Cargolift® D-74078 Heilbronn	24 V	30.11.2021 Siegel
Änderungsmitteilung : 01/'18 Index : 0'		18395.000-3-01 01.123389	Blatt
Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden			

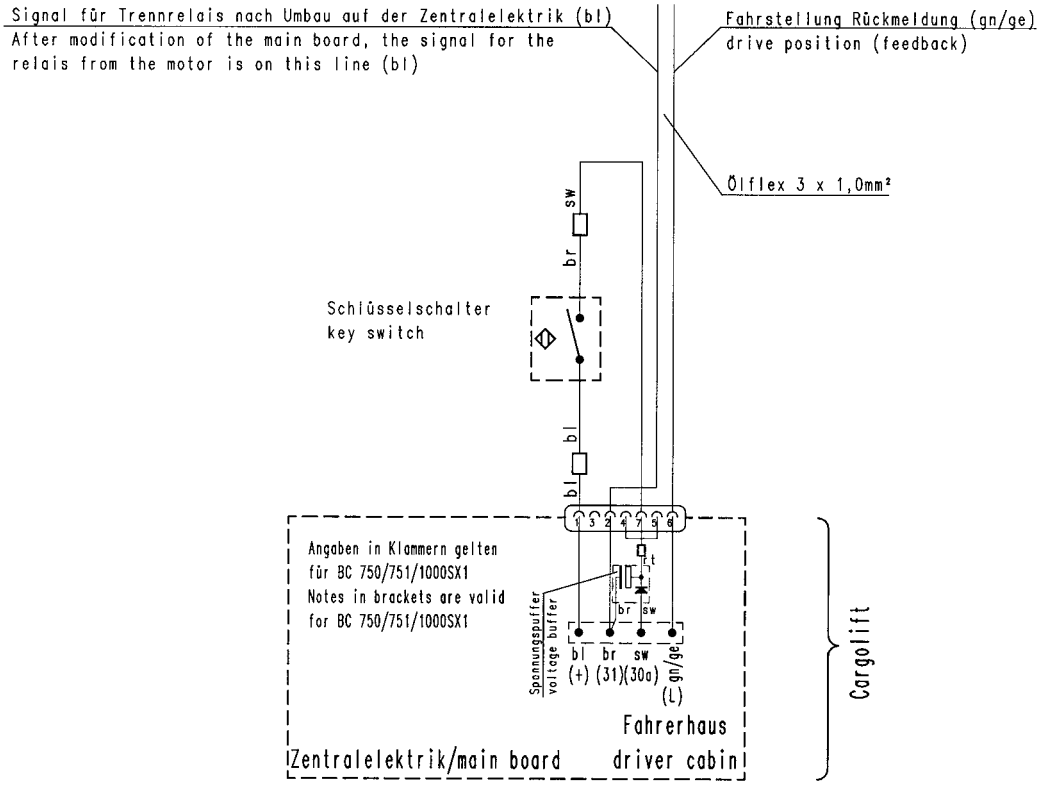


Pos. 1 Lieferumfang Fahrzeugbauer / supplied by body builder
Pos. 2 und 3 Lieferumfang Fa. IVECO / supplied by IVECO

Keine Gewähr für die Aktualität der fahrzeugseitigen Elektrik - Vorrüstung.
No warranty for the actuality of the vehicle-lateral electrical adaption kit.

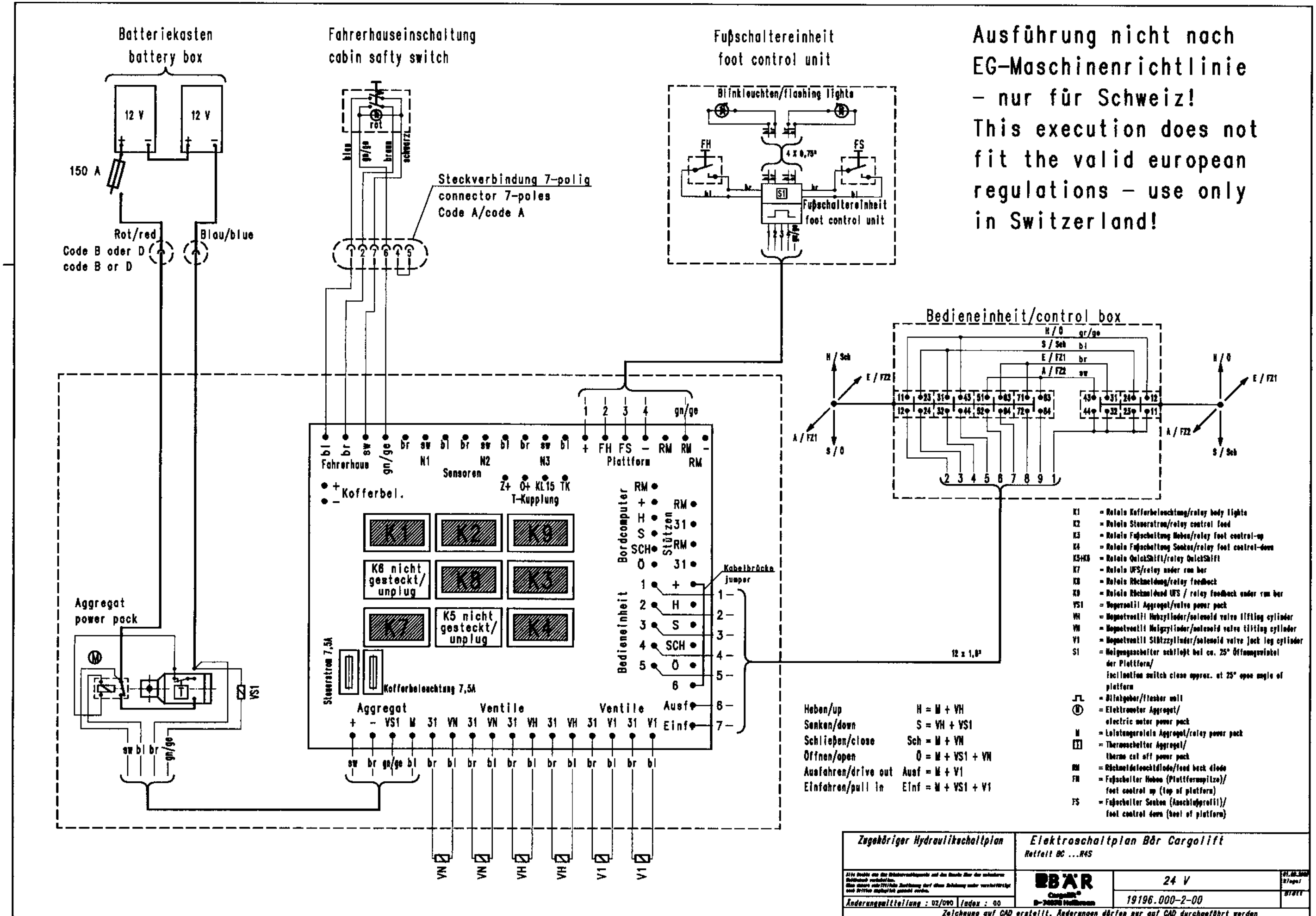
Die Rückmeldeleuchten brennen nur bei geöffneter Plattform bzw. ausgefahrenen Stützzylindern und eingeschalteter Zündung. Die Leuchte im Schalter brennt bei eingeschalteter Fahrerhauseinschaltung.
Feedback indicator is on if platform is open or jack legs are in use and ignition is on. Light in switch is on if cabin switch is switched on.

Zugehöriger Hydraulikschaltplan	Elektroschaltplan Bär Cargolift Fahrerhauseinschaltung IVECO SW 10677 Alpha / Beta mit elektrischer Schnittstelle	D
Alle Rechte aus dem Urheberrechtsgesetz und dem Gesetz über den unlauteren Wettbewerb vorbehalten. Ohne unsere schriftliche Zustimmung darf diese Zeichnung weder vervielfältigt noch Dritten zugänglich gemacht werden.	BÄR Cargolift® D-74078 Heilbronn	24 V 18394.000-3-01 01.123388
Änderungsmitteilung : 01/118 Index : 01		10.11.2006 Siegel Blatt
Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden		

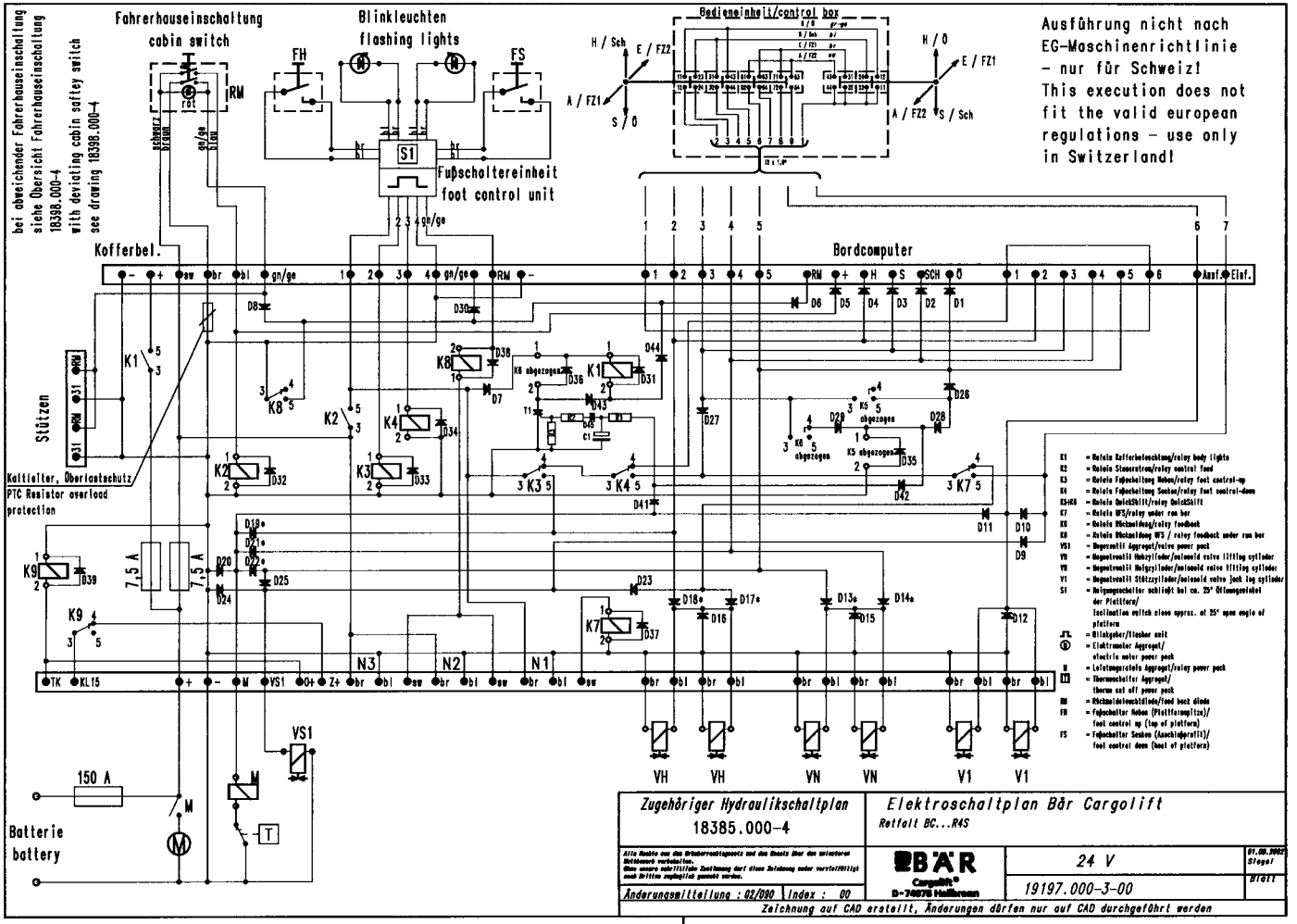


bl = blue
br = brown
sw = black
gn/ge = green/yellow

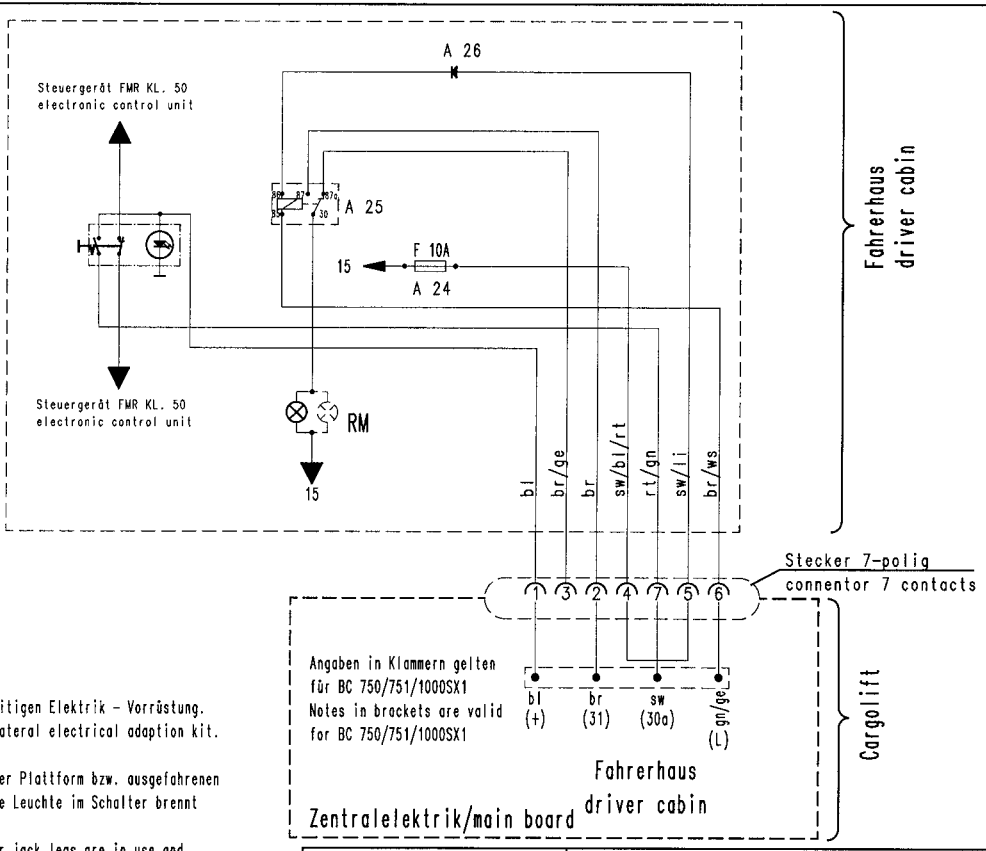
Zugehöriger Hydraulikschaltplan	Elektroschaltplan Bär Cargolift Schlüsselschalter / Rückmeldung key switch / feedback	
	BÄR Cargolift® D-74078 Heilbronn	24V 18417.000-3-03
Änderungsmitteilung : 03/005 Index : 03		17.01.2003 Siegel Blatt
Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden		



Batteriekasten
battery box
12 V
12 V
150 A
Rot/red
Code B oder D
code B or D
Blau/blue
Fahrerhauseinschaltung
cabin safty switch
blau
gn/ge
braun
schwarz
rot
Steckverbindung 7-polig
connector 7-poles
Code A/code A
Fußschaltereinheit
foot control unit
Blinkleuchten/flashing lights
FH
FS
4 x 0,75²
S1
Fußschaltereinheit
foot control unit
Ausführung nicht nach
EG-Maschinenrichtlinie
– nur für Schweiz!
This execution does not
fit the valid european
regulations – use only
in Switzerland!
Bedieneinheit/control box
H / O gr/ge
S / Sch bl
E / FZ1 br
A / FZ2 sw
12 x 1,0²
Fahrerhaus
Kofferbel.
N1
N2
N3
Sensoren
Z+ O+ KL15 TK
T-Kupplung
Plattform
Bordcomputer
Stützen
Bedieneinheit
Kabelbrücke
jumper
K1
K2
K9
K6 nicht gesteckt/ unplug
K8
K3
K7
K5 nicht gesteckt/ unplug
K4
Steuerstrom 7,5A
Kofferbeleuchtung 7,5A
Aggregat
Ventile
Ventile
Ausf
Einf
Aggregat
power pack
VS1
VN
VN
VH
VH
V1
V1
Heben/up H = M + VH
Senken/down S = VH + VS1
Schließen/close Sch = M + VN
Öffnen/open Ö = M + VS1 + VN
Ausfahren/drive out Ausf = M + V1
Einfahren/pull in Einf = M + VS1 + V1
K1 = Relais Kofferbeleuchtung/relay body lights
K2 = Relais Steuerstrom/relay control feed
K3 = Relais Fußschaltung Heben/relay foot control-up
K4 = Relais Fußschaltung Senken/relay foot control-down
K5+K6 = Relais QuickShift/relay QuickShift
K7 = Relais UFS/relay under run bar
K8 = Relais Rückmeldung/relay feedback
K9 = Relais Rückmeldung UFS / relay feedback under run bar
VS1 = Wegeventil Aggregat/valve power pack
VH = Magnetventil Hubzylinder/solenoid valve lifting cylinder
VN = Magnetventil Neigzylinder/solenoid valve tilting cylinder
V1 = Magnetventil Stützzylinder/solenoid valve jack leg cylinder
S1 = Neigungsschalter schließt bei ca. 25° Öffnungswinkel der Plattform/ inclination switch close approx. at 25° open angle of platform
= Blinkgeber/flasher unit
= Elektromotor Aggregat/ electric motor power pack
M = Leistungsrelais Aggregat/relay power pack
= Thermoschalter Aggregat/ thermo cut off power pack
RM = Rückmeldeleuchtdiode/feed back diode
FH = Fußschalter Heben (Plattformspitze)/ foot control up (top of platform)
FS = Fußschalter Senken (Anschlußprofil)/ foot control down (heel of platform)
Zugehöriger Hydraulikschaltplan
Elektroschaltplan Bär Cargolift
Retfeit BC ...R4S
BÄR Cargolift
24 V
19196.000-2-00
Änderungsmitteilung : 02/090 Index : 00
Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden


Fahrerhauseinschaltung
cabin switch
Blinkleuchten
flashing lights
Bedieneinheit/control box
Ausführung nicht nach EG-Maschinenrichtlinie – nur für Schweiz!
This execution does not fit the valid european regulations – use only in Switzerland!
bei abweichender Fahrerhauseinschaltung siehe Übersicht Fahrerhauseinschaltung 18398.000-4
with deviating cabin saftey switch see drawing 18398.000-4
Fußschaltereinheit
foot control unit
Kofferbel.
Bordcomputer
Stützen
Kaltleiter, Überlastschutz
PTC Resistor overload protection
Batterie
battery
150 A
7,5 A
VS1
VH
VN
V1
K1 = Relais Kofferbeleuchtung/relay body lights
K2 = Relais Steuerstrom/relay control feed
K3 = Relais Fußschaltung Heben/relay foot control-up
K4 = Relais Fußschaltung Senken/relay foot control-down
K5-K6 = Relais QuickShift/relay QuickShift
K7 = Relais WFS/relay under ram bar
K8 = Relais Rückmeldung/relay feedback
K9 = Relais Rückmeldung WFS / relay feedback under ram bar
VS1 = Magnetventil Aggregat/valve power pack
V4 = Magnetventil Hubzylinder/solenoid valve lifting cylinder
V4 = Magnetventil Hubzylinder/solenoid valve lifting cylinder
V1 = Magnetventil Stützzylinder/solenoid valve jack leg cylinder
S1 = Neigungsschalter schließt bei ca. 25° Öffnungswinkel der Plattform/
Inclination switch close approx. at 25° open angle of platform
= Hilfsgeber/flasher unit
= Elektromotor Aggregat/
electric motor power pack
= Lufttemperatur Aggregat/relay power pack
= Thermoschalter Aggregat/
therm cut off power pack
= Rückmeldeleuchtfolie/feed back diode
= Fußschalter Heben (Plattformseite)/
foot control up (top of platform)
= Fußschalter Senken (Anschlagprofil)/
foot control down (foot of platform)
Zugehöriger Hydraulikschaltplan
18385.000-4
Elektroschaltplan Bär Cargolift
Retrofit BC...R4S
24 V
19197.000-3-00
Änderungsmitteilung : 02/098
Index : 00
Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden

br = brown
bl = blue
sw = black
br/ws = brown/white
rt/gn = red/green
sw/bl/rt = black/blue/red
sw/li = black/violet
gn/ge = green/yellow
br/ge = brown/yellow



Keine Gewähr für die Aktualität der fahrzeugseitigen Elektrik - Vorrüstung.
No warranty for the actuality of the vehicle-lateral electrical adaption kit.

Die Rückmeldeleuchten brennen nur bei geöffneter Plattform bzw. ausgefahrenen Stützzylindern und eingeschalteter Zündung. Die Leuchte im Schalter brennt bei eingeschalteter Fahrerhauseinschaltung.
Feedback indicator is on if platform is open or jack legs are in use and ignition is on. Light in switch is on if cabin switch is switched on.

Das Kabel der Fahrerhauseinschaltung ist seitens DC bis ans Rahmenende verlegt
Wire of cabin safety switch is mounted by DC to end of chassis.

Zugehöriger Hydraulikschaltplan	Elektroschaltplan Bär Cargolift Fahrerhauseinschaltung von Daimler Chrysler Code E 33 cabin safety switch from Daimler Chrysler Code E 33	
	BÄR Cargolift D-74078 Heilbronn	24 V 19606.000-3-00
Änderungsmitteilung : 03/087 Index : 00		Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden

br = brown
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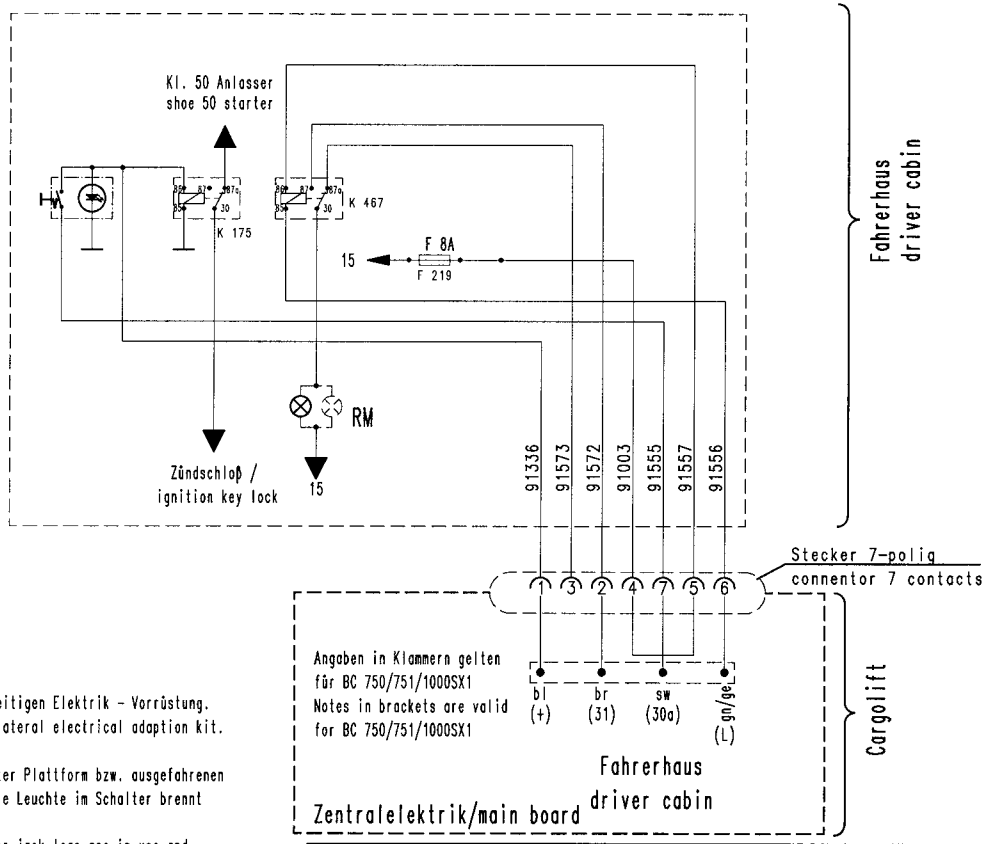
sw = black
br/ws = brown/white
rt/gn = red/green
sw/bl/rt = black/blue/red
sw/li = black/violet
gn/ge = green/yellow
br/ge = brown/yellow



Keine Gewähr für die Aktualität der fahrzeugseitigen Elektrik - Vorrüstung.
No warranty for the actuality of the vehicle-lateral electrical adaption kit.

Die Rückmeldeleuchten brennen nur bei geöffneter Plattform bzw. ausgefahrenen Stützzylindern und eingeschalteter Zündung. Die Leuchte im Schalter brennt bei eingeschalteter Fahrerhauseinschaltung.
Feedback indicator is on if platform is open or jack legs are in use and ignition is on. Light in switch is on if cabin switch is switched on.

Das Kabel der Fahrerhauseinschaltung ist seitens MAN bis ans Rahmenende verlegt.
Wire of cabin safety switch is mounted by MAN to end of chassis.

Zugehöriger Hydraulikschaltplan

Elektroschaltplan Bär Cargolift
Fahrerhauseinschaltung von MAN Code 320 EC
cabin safety switch from MAN Code 320 EC

BÄR Cargolift D-74078 Heilbronn

24 V

10.04.2003 Siegel

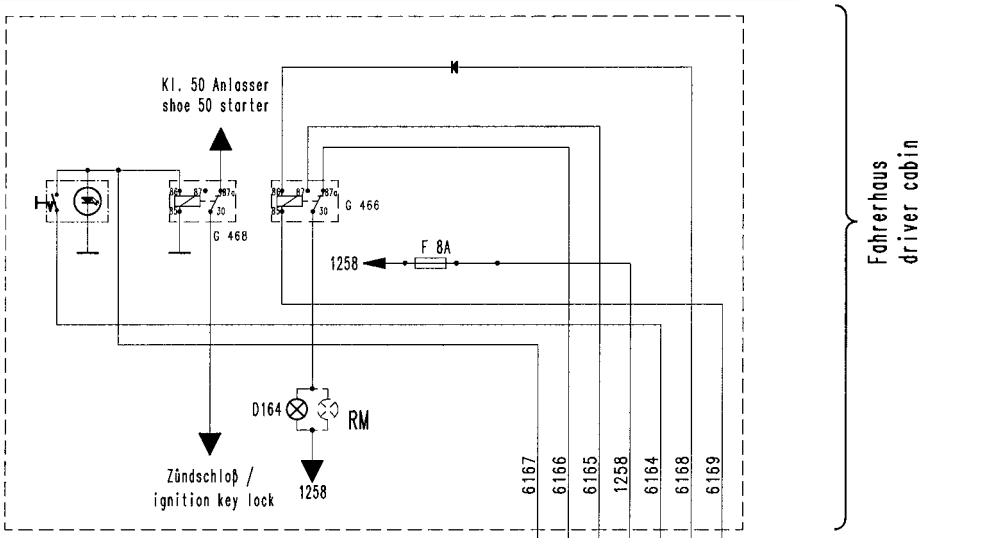
19607.000-3-00

Blatt

Änderungsmitteilung : 03/087 Index : 00

Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden

br = brown
bl = blue
sw = black
br/ws = brown/white
rt/gn = red/green
sw/bl/rt = black/blue/red
sw/li = black/violet
gn/ge = green/yellow
br/ge = brown/yellow



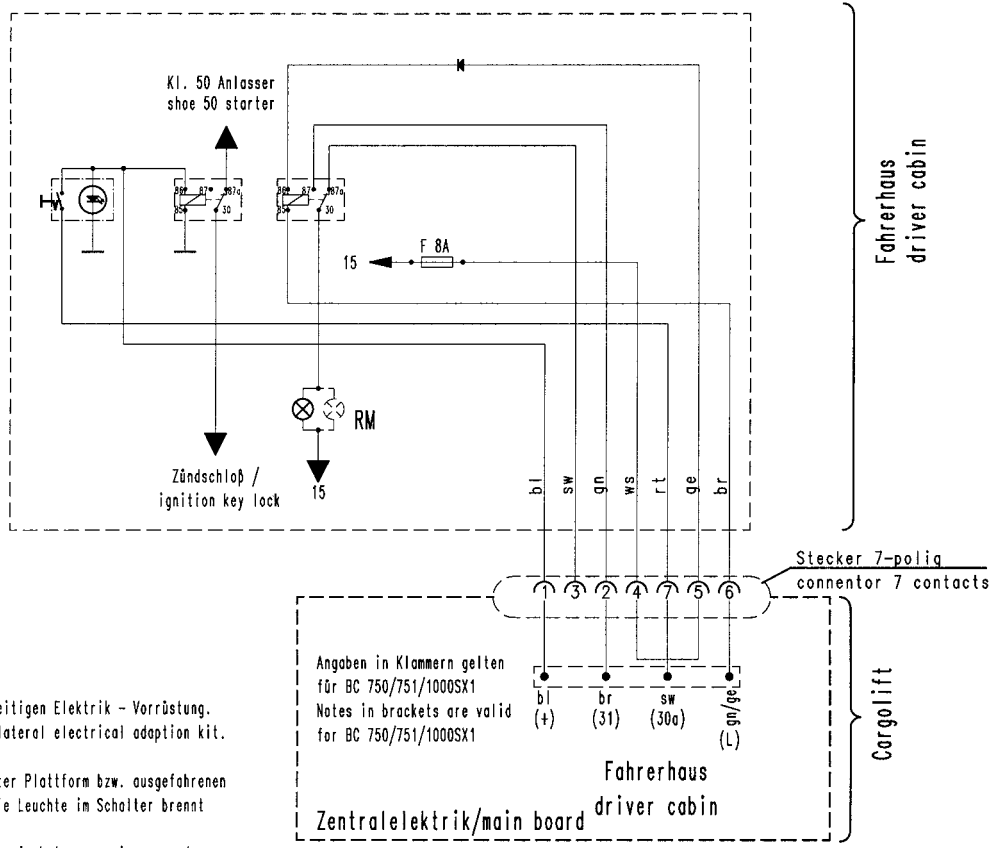
Keine Gewähr für die Aktualität der fahrzeugseitigen Elektrik - Vorrüstung.
No warranty for the actuality of the vehicle-lateral electrical adaption kit.

Die Rückmeldeleuchten brennen nur bei geöffneter Plattform bzw. ausgefahrenen Stützzylindern und eingeschalteter Zündung. Die Leuchte im Schalter brennt bei eingeschalteter Fahrerhauseinschaltung.
Feedback indicator is on if platform is open or jack legs are in use and ignition is on. Light in switch is on if cabin switch is switched on.

Das Kabel der Fahrerhauseinschaltung ist seitens DAF bis ans Rahmenende verlegt.
Wire of cabin safety switch is mounted by DAF to end of chassis.

Zugehöriger Hydraulikschaltplan	Elektroschaltplan Bär Cargolift Fahrerhauseinschaltung von DAF Code SELCO 2597 cabin safety switch from DAF Code SELCO 2597	
Alle Rechte aus der Urheberrechtsgesetz und dem Gesetz über den unlauteren Wettbewerb vorbehalten. Ohne unsere ausdrückliche Zustimmung darf diese Zeichnung weder vervielfältigt noch Dritten zugänglich gemacht werden.	BÄR Cargolift® D-74078 Heilbronn	24 V 19608.000-3-00
Änderungsmitteilung : 03/087 Index : 00		10.04.2003 Stiegel Blatt
Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden		

br = brown
bl = blue
sw = black
ws = white
gn = green
rt = red
ge = yellow
gn/ge = gren/yellow



Keine Gewähr für die Aktualität der fahrzeugseitigen Elektrik - Vorrüstung.
No warranty for the actuality of the vehicle-lateral electrical adoption kit.

Die Rückmeldeleuchten brennen nur bei geöffneter Plattform bzw. ausgefahrenen Stützzylindern und eingeschalteter Zündung. Die Leuchte im Schalter brennt bei eingeschalteter Fahrerhauseinschaltung.
Feedback indicator is on if platform is open or jack legs are in use and ignition is on. Light in switch is on if cabin switch is switched on.

Das Kabel der Fahrerhauseinschaltung ist seitens Scania bis ans Rahmenende verlegt. Wire of cabin safety switch is mounted by Scania to end of chassis.

Zugehöriger Hydraulikschaltplan	*Elektroschaltplan Bär Cargolift* *Fahrerhauseinschaltung von Scania Code FFU Nr. 272172* *cabin safety switch from Scania Code FFU Nr. 272172*	
Alle Rechte aus dem Urheberrechtsgesetz und dem Gesetz über den unlauteren Wettbewerb vorbehalten. Ohne unsere schriftliche Zustimmung darf diese Zeichnung weder vervielfältigt noch Dritten zugänglich gemacht werden.	BÄR Cargolift® D-74078 Heilbronn	24 V 19609.000-3-00
Änderungsmitteilung : 03/087 | Index : 00		10.04.2003 2 Lagen 1 Blatt
Zeichnung auf CAD erstellt, Änderungen dürfen nur auf CAD durchgeführt werden		