# Parking Cooler System
# NiteCool TCC-100
## Installation and Service Instructions

EN

## 1. INTRODUCTION

### 1.1 Safety Information and Requirements

The system is safe for operation when installed and used correctly according to the installation and service instructions.

The general national accident prevention regulations and applicable operating safety instructions are to be adhered to. In the Federal Republic of Germany, these include:

- Safety regulations from the civil engineers professional association for the construction and operation of earth work machines.
- DIN ISO 3471 roll protection attachments
- DIN ISO 3449 protective attachments for falling objects
- DIN ISO 3411 machine operator, height and size, minimum free area
- Guidelines, safety regulations, basic requirements and information sheets from the specialist committee at the center for safety and health in the umbrella association of the professional associations.
- Not following the installation instructions and the information contained therein release Webasto from liability. This also applies for non-specialist repairs or when original spare parts are not used.

Electrical lines and operating elements on the NiteCool TCC-100 must be arranged so that the function of this is not adversely affected under normal operating conditions.

***CAUTION***

***Assembly, maintenance and repair work must be performed by trained personnel.***

***CAUTION***

*Electrical work is to be performed by an authorized person.*

*Disconnect the battery before opening the NiteCool TCC-100, removing the evaporation unit and working on the electric wiring.*

### 1.2 Relevance of Emphasized Text

Special safety requirements have special emphasis in the text:

*"CAUTION": Not following instructions or procedures correctly or at all can result in injuries or death.*

*"WARNING": Not following instructions or procedures correctly or at all can result in damages to components.*

*"NOTE": Special technical situation.*

## 2. CERTIFICATION / APPROVAL

NiteCool TCC-100 was constructed and produced according to EU regulations.

If the installation of the NiteCool TCC-100 results in the height indicated in the vehicle papers being exceeded, then this must be legally approved according to § 19 of the traffic ordinance (StVZO).

The electromagnetic compatibility has been tested.

Standard EN 45014 has been met.

The CE mark has been added to NiteCool TCC-100.

## 3. GENERAL DESCRIPTION

### 3.1 Use

NiteCool TCC-100 is designed for cooling semi-truck driver cabins as well as the driver cabins of agricultural machines, earth movers, airport vehicles and communal vehicles.

### 3.2 Documentation

NiteCool TCC-100 contains alls documents necessary for operation. In addition to the installation instructions, an operating manual is also provided.

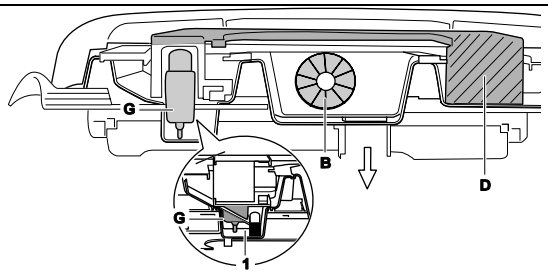
### 3.3 Function

The blower **B** is started by pressing the on/off switch. This pulls in fresh air from outside through the evaporation unit **D** over the air distribution plate **Q** into the interior.

The flow of fresh air can be increased or reduced with the blower level switch.

When the cooling function is switched on, the water pump **X** in the water tank **T** will pump fresh water into the pre-cooling chamber (1) as needed.

The water pump **G** in the pre-cooling chamber (1) distributes the fresh water to the evaporation unit **D**. The fresh air pulled in from outside is lead through the evaporation unit **D** and cooled.

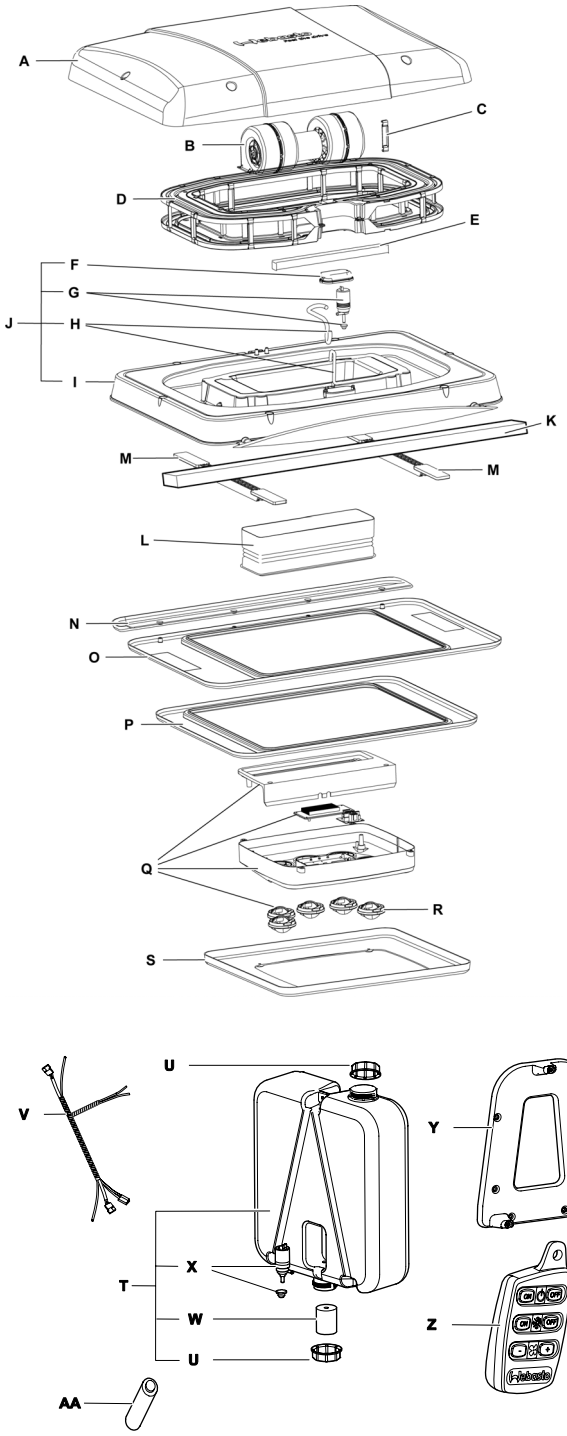



The cooled fresh air is lead into the interior by the air flow unit **R**.

The power runs over the cable set from the vehicle power supply and the water tank. The system is designed for 12 Volt or 24 Volt supplies, depending on the design. The electrical connection of the system is shown in the circuit diagram.

NiteCool TCC-100 is equipped with a battery discharge protection switch. If the power drops below 10.5 V or 20 V for more than 10 seconds, the system will automatically switch off. Switch on the system again to re-start it.

EN







## 3.4 Scope of delivery

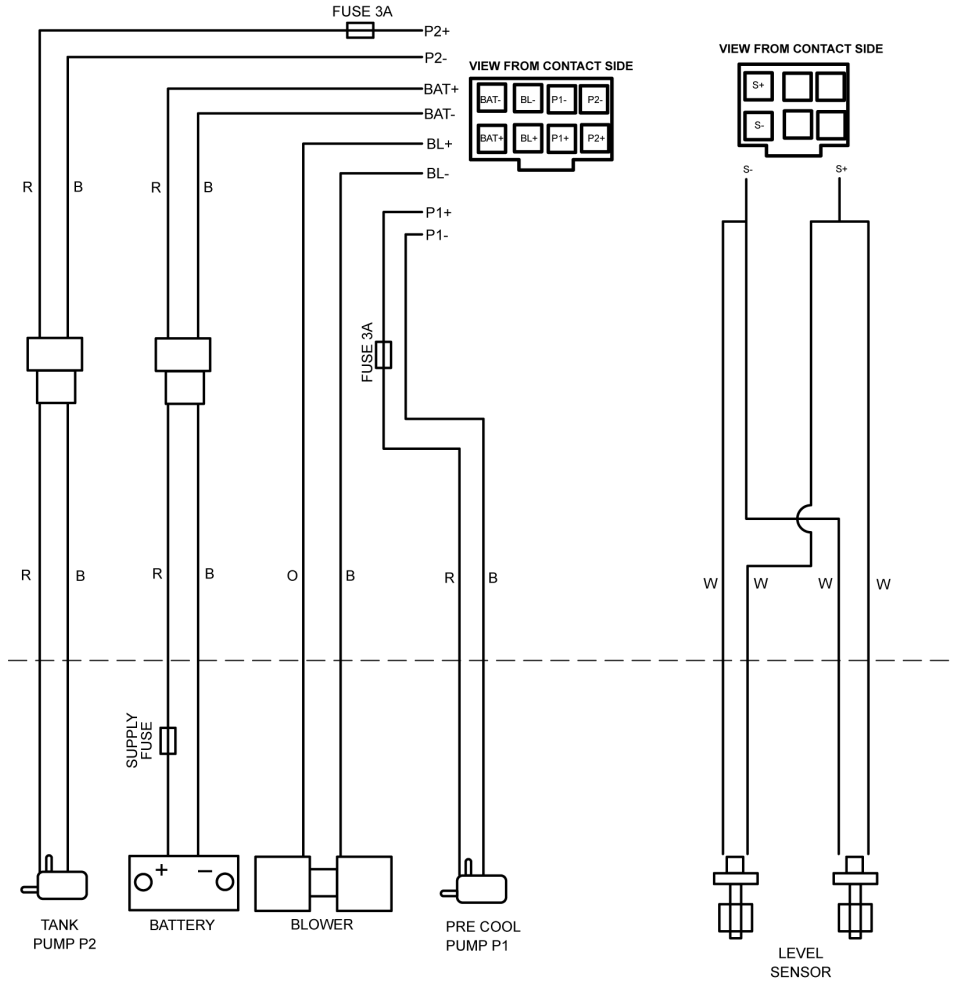
| | Component Description | Qty |
|---|---|---|
| A | Cover | 1 |
| B | Blower,12V or 24V | 1 |
| C | Retaining bracket | 24 |
| D | Evaporation unit | 1 |
| E | Preliminary cooling chamber filter unit | 1 |
| F | Pump house cover | 1 |
| G | Water pump with seal | 1 |
| H | Water hose | 2 |
| I | Base plate | 1 |
| J | Base plate with accessories (F, G, H, I) | 1 |
| K | Gasket | 1 |
| L | Air channel extension | 1 |
| M | Fastening struts | 2 |
| N | Expansion for cover frame | 1 |
| O | Large cover frame | 1 |
| P | Average cover frame | 1 |
| Q | Air distribution plate with 12V or 24V controller | 1 |
| R | Air blower | 5 |
| S | Small cover frame | 1 |
| T | Water tank with accessories (U, W, X) | 1 |
| FIT | Cap | 2 |
| R | Set of cables | 1 |
| W | Filter insert | 1 |
| X | Water pump with seal | 1 |
| Y | Water tank bracket | 1 |
| Z | Remote control, battery not included | 1 |
| AA | Battery | 1 |

# 4. TECHNICAL DATA

## 4.1 Data table

| Description | NiteCool TCC-100 | Water tank |
|---|---|---|
| Dimensions (length x width x height) | 728mm x 895mm x 125mm | 435mm x 160mm x 550mm |
| Weight | 19 kg (without tank, water and cable harness) | 2 ... 27.5 kg |
| Roof outlet | 338 … 480 mm (length)<br>395 … 600 mm (width) | |
| Operating voltage (corresponds to vehicle supply) | 12 V or 24 V DC | |
| Rated capacity use | 15 – 150 W | |
| Cooler performance | 600 – 1600 W | |
| Flow volume for the evaporation blower (free blowing) | 850 m³/h | |

## 4.2 Circuit Diagram

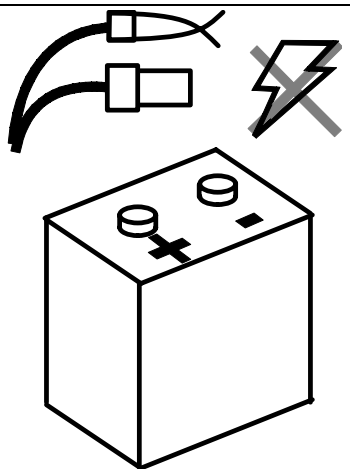



**Legend**

| | |
|---|---|
| BL | Blower |
| P1 | Water pump (in the base plate J) |
| P2 | Water pump (in the water tank T) |
| BAT | Battery |
| S | Water level sensor in pre-cooling chamber |

Cable Colors

| | |
|---|---|
| W | White |
| O | Orange |
| R | Red |
| B | Black |



# 5. INSTALLATION

## 5.1 Preparation

Read the safety information before starting work and follow the safety instructions.
For immediate full cooling capacity, it is recommended to soak the evaporator unit in water for 10 minutes.

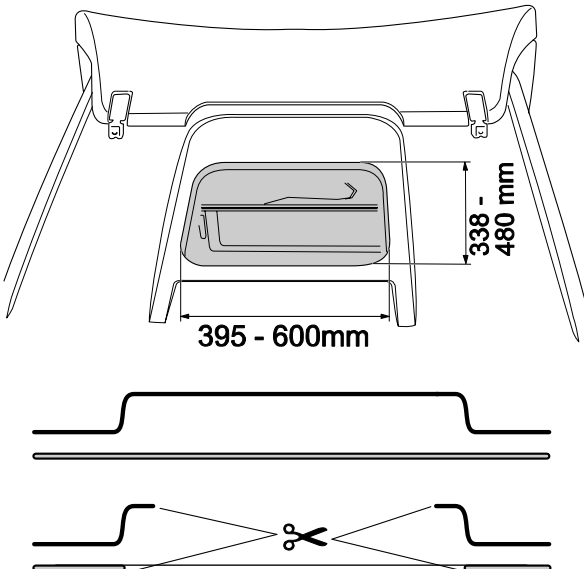
**Vehicle/cabin roof:**

The installation depends on the vehicle type, therefore follow the guidelines of the vehicle manufacturer.

**Required operating material, special tools and accessories:**

- A metal cutter may be needed for the vehicle/cabin roof.
- Mechanics tools (threaded rivet tool to fasten the water tank bracket).

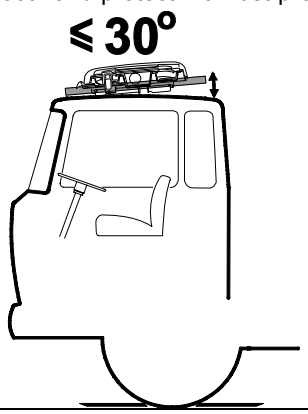
Disconnect the vehicle battery!

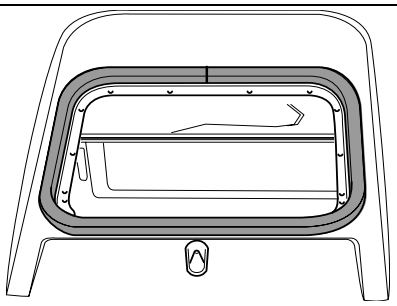



***CAUTION***

*Do not damage any load bearing parts (such as bows, braces) or installations (such as interior lights). If a roof cutout becomes necessary, plan this so that NiteCool TCC-100 will be flush on the roof.*

On roofs without a roof cutout, transfer the indicated dimension, smooth and protect with rust-protector.

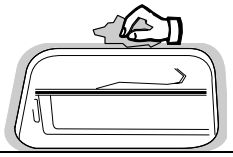


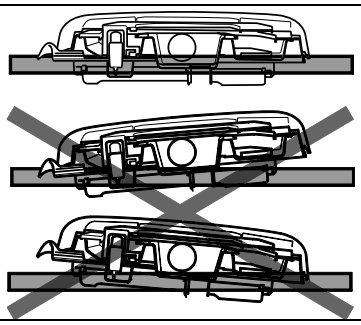



## 5.2 Glue on the Gasket

Clean the area around the cutout and remove all traces of grease.

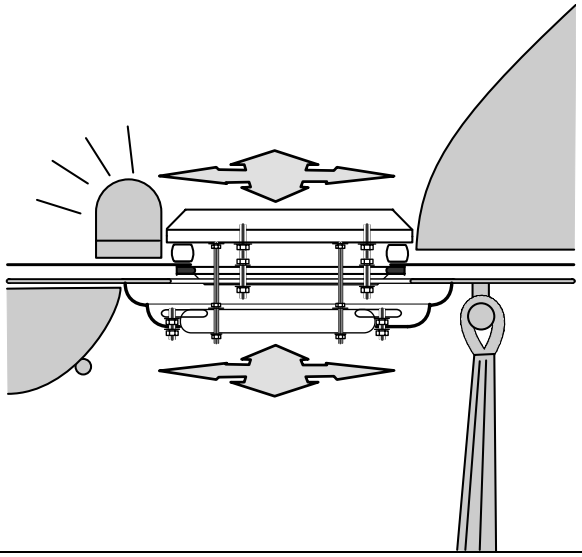
Glue the gasket around the roof cutout.





## 5.3 Align the Base Plate

Place the base plate on the gasket and check that it is flat across the entire contact surface.

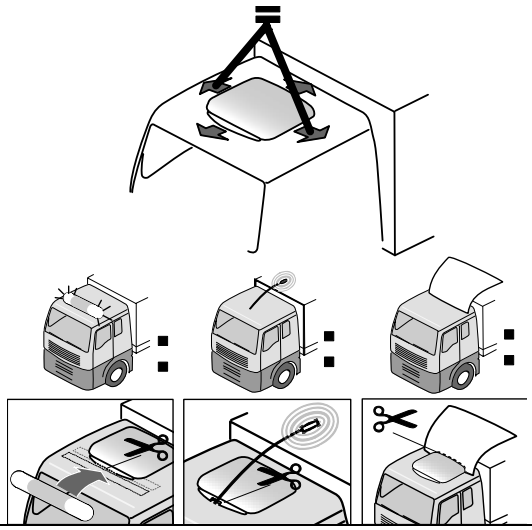


Select the best installation location based on the conditions within and on the driver's cabin with the air distribution plate installed.

If necessary, place markings on the device and the cabin ceiling.

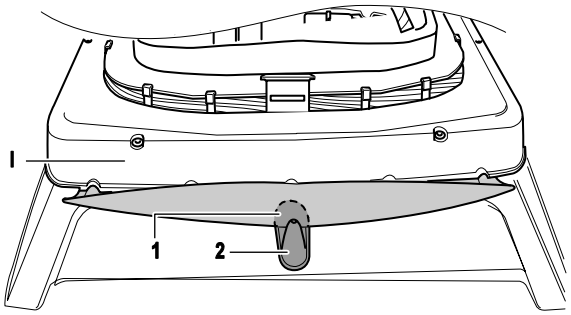
To determine the upper and lower fit, it may be necessary to mark drill spots in the vehicle roof.

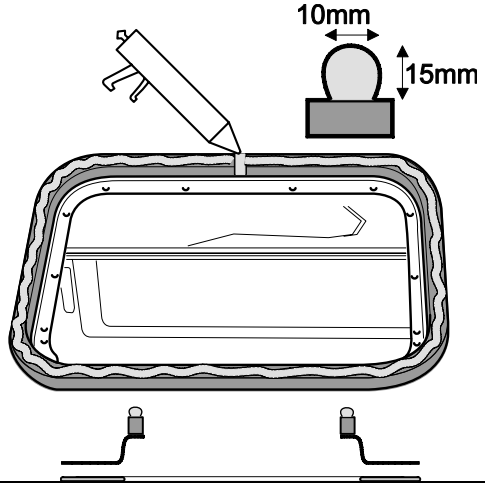




If the base plate will lie on an installed antenna (2) after alignment, cut out the base plate near the front spoiler (1).

Take appropriate measures if other objects that may be a hindrance are mounted on the roof.

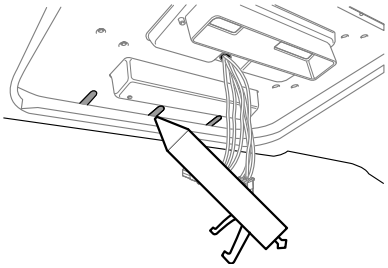


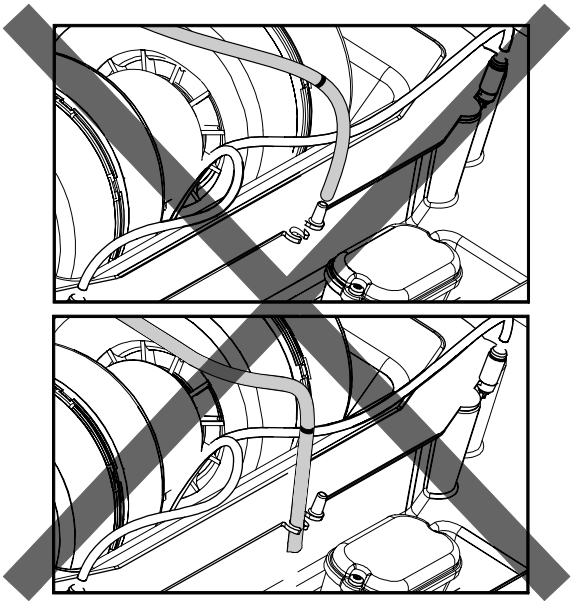



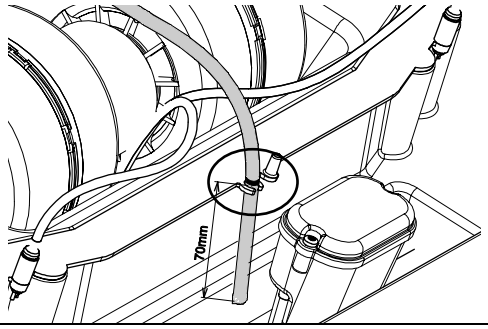

Remove the base plate and put down a sealing strip on the surface of the gasket as well as at the location where the two gasket ends meet.

Then replace the base plate flush on the gasket.

Depending on the size of the roof cutout, opening in the base plate may also have to be sealed.



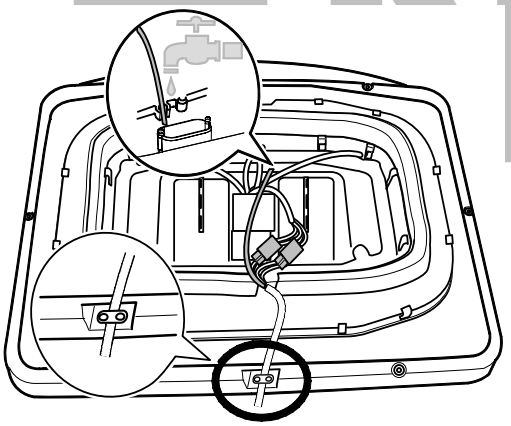


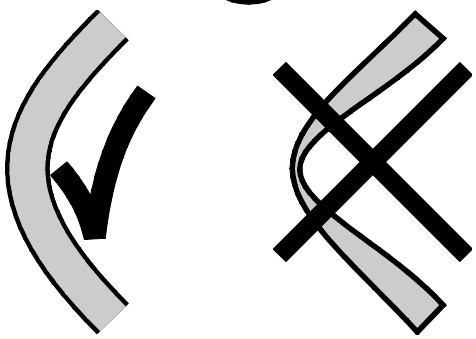


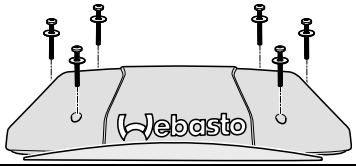

Connect the plug to the base plate. Guide the water hose to the preliminary cooling chamber and insert on the connecting piece.

***CAUTION***

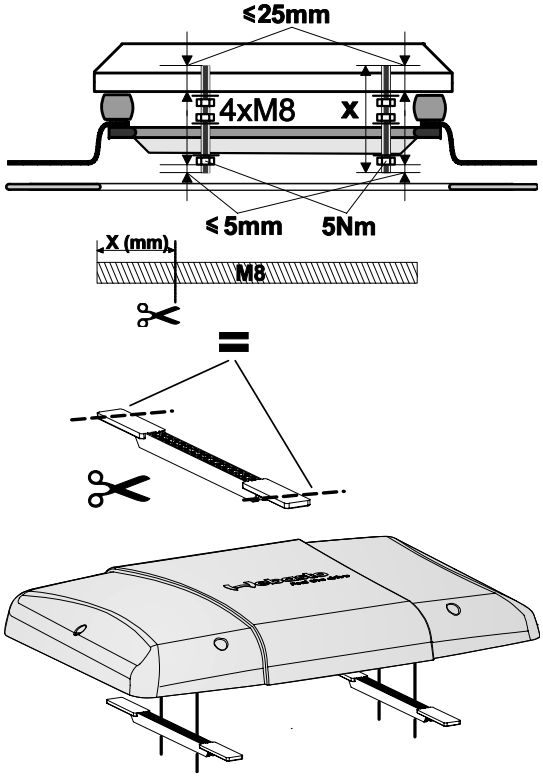
*Do not bend or crush the water hose.*








Place the cover on the base plate and tighten with Allen screws and washers.




## 5.4 Tighten the Base Plate

Select the installation location and position of the fastening struts with the M8 threaded bushing in the base plate.

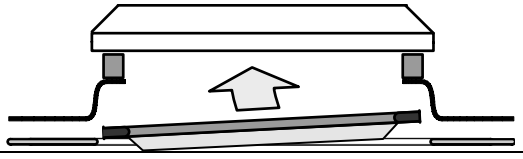
***NOTE***

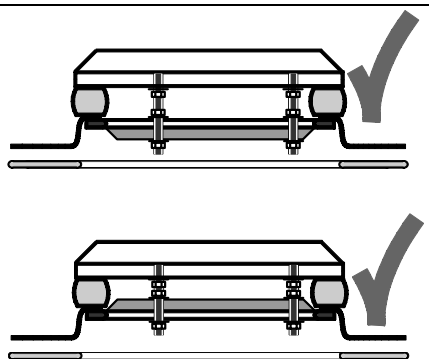
*Place the fastening struts directly on the inside of the roof as much as possible. If necessary, cut out the interior paneling or shorten the fastening struts on both sides to the same length.*

- Cut the threaded bolt M8 to size according to the figure (length “x”).

Fasten the base plate to the vehicle roof with fastening struts.

- Screw the M8 threaded bolts 25 mm into the selected threaded bushing and lock each into place with a hex nut and washer.
- Screw on one hex nut and washer each on the M8 threaded bolt. Adjust the M8 hex nut so that the seal is pressed together evenly by about 5 mm after the fastening struts are put on the hex nuts and washer.



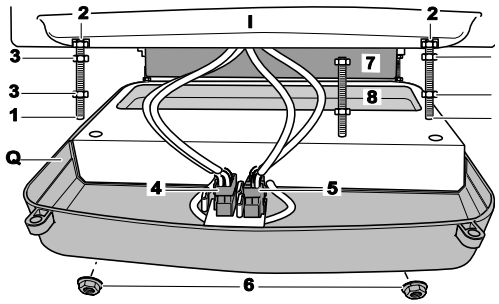


The fastening struts can be facing any direction (see figure).

- Screw the fastening struts with a self-locking hex nut and washer on the M8 threaded bolt.

***NOTE***

*Once the base plate has been fastened, check that the sealant is distributed evenly to ensure perfect sealing. The M8 threaded bolts may extend a maximum of 5 mm over the hex nut (in order to fit the air distribution plate).*



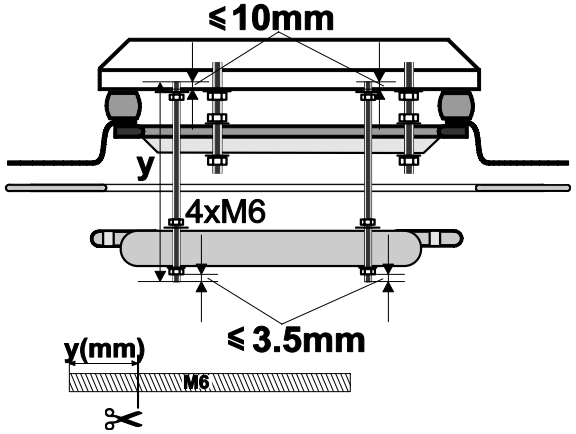

## 5.5 Install the Air Distribution Plate

- Prepare four threaded bolts (1, length of 150 mm each) from the M6 threaded rod.
- Screw the M6 threaded bolts 8 to max. 10 mm into the front and rear M6 threaded bushing (2) on the base plate and lock each with a hex nut.

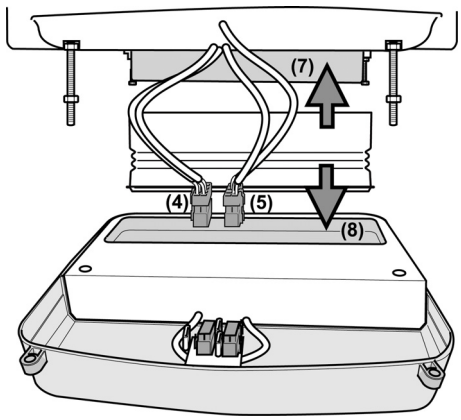
***CAUTION***

*Screwing in the threaded bolts deeper may damage the base plate and lead to leaks.*

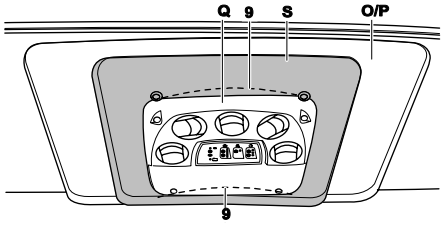
- Screw on one M6 hex nut and spacer holder each for the air distribution plate and cover frame.




- Use the cover frame (see 5.6) to position the air distribution plate on the M6 threaded bolts until the cover frame is flat on the top of the vehicle. Readjust the hex nuts if necessary. Make sure that the air channel (7) is lead into the air shaft (8).
- Screw on the air distribution plate with self-securing M6 hex nuts (6).
- Measure the extra length of the threaded bolts (1) and remove the air distribution plate and cover frame.
- Unscrew the 150 mm long threaded bolts and shorten them accordingly, then screw them back into the threaded bushing (8 ~ 10 mm) and secure with hex nuts.



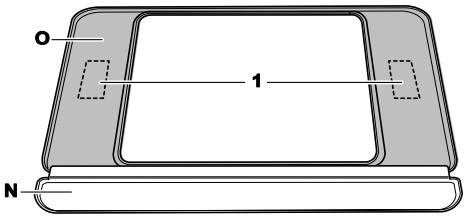

- Mount air channel extension onto air channel (7) and into air shaft (8).
- Insert plugs (4) and (5) onto the air distribution plate. Place the air distribution plate on the M6 threaded bolts and fasten with self-securing M6 hex nuts.




## 5.6 Prepare the Cover Frame

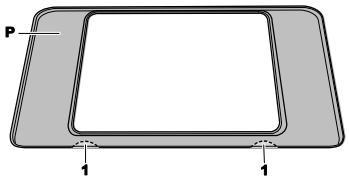
***NOTE***

If the cover frame needs to be turned by 180° for a better fit, the cover frame will have to be reworked on the inside along the marking (9).



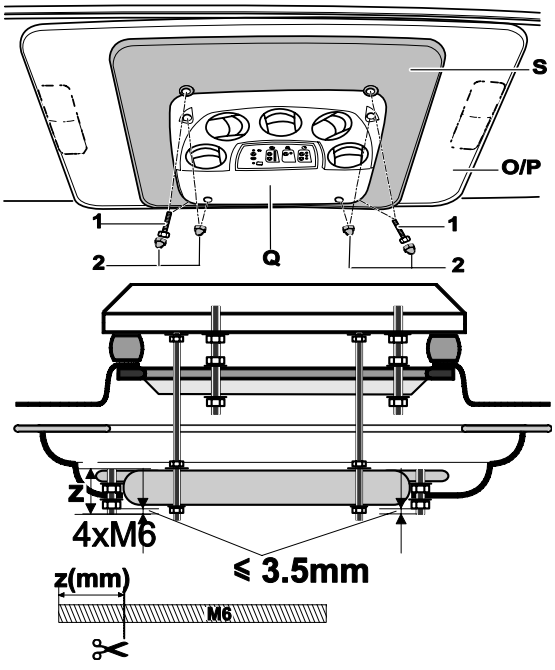

**Example, MAN TGA:**

Compare the marked section (1) on the inside of the cover frame **O** with the interior lights. Record any different measurements. Cut out segment (1) and insert the interior lights. Remove the extension.




**Example, Iveco Stralis:**

Check the perforation (1) dimensions on the inside of the cover frame **P** before cutting it out and adjust as necessary. Cut out the perforation (1).




## 5.7 Install the Cover Frames

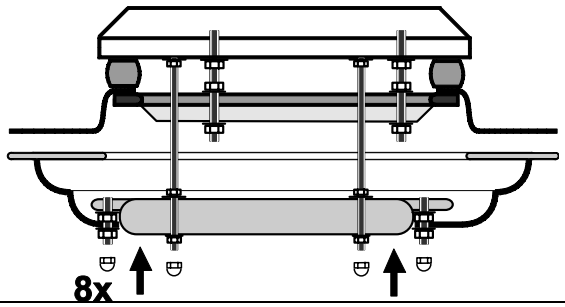
- Select the cover frame.

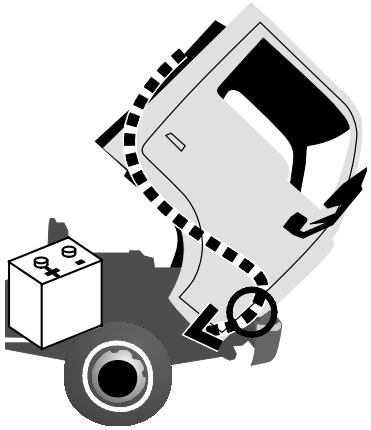
***NOTE***

*Select the cover frame according to the size of the roof cutout. If the cover frame **O** or **P** is required, this must be placed on the cover frame **S**. Any gaps between the interior paneling on the roof and the cover frame can be readjusted with the M6 hex nuts.*

- Screw the cover frame onto the air distribution plate with the hex screws (1).

Place the caps (2) on the M6 hex screws (1) and the M6 hex nuts.



## 5.8 Lay cable set

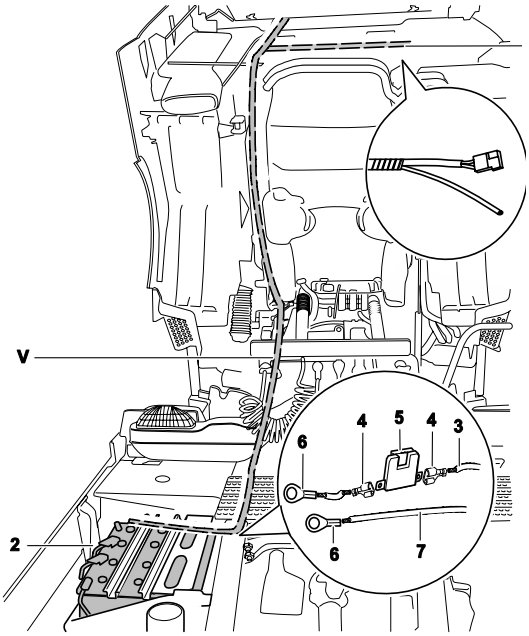
- Properly fasten the cables with cable ties and self-adhesive sockets.
- Attach tension reliefs.

***CAUTION!***

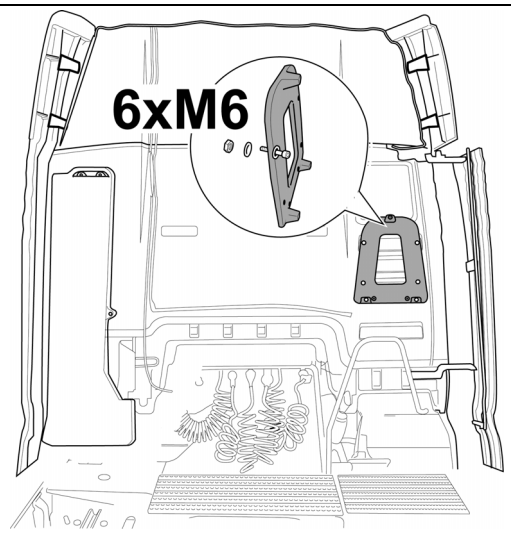
*Check for the correct polarity before connecting. Switching the polarity will destroy the electronic controls.*

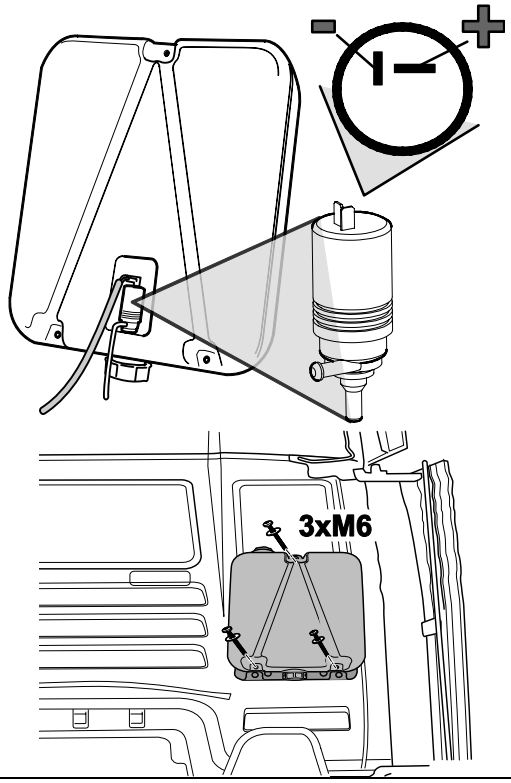
***NOTE***

*On vehicles with a tilting driver's cabin, the cable set leading to the battery must be run over the tilting point. If necessary, extend the lines. Make the electrical connections according to the circuit diagram. The power supply can be on the inside of the driver's cabin, depending on the vehicle type or manufacturer.*




- Run the cable set along the driver's cabin to the installation location for the water tank (1) and to the vehicle battery (2) and connect as shown:
- Separate the R (red) cable line (3) near the battery, insulate both ends and crimp on the plug contacts (4).
- Insert both plug contacts on the fuse holder with fuse insert (5) and fasten this to a location safe from splashing near the vehicle battery (2).
- Crimp ring loops (6) to the R and B (red and black) open cable ends and connect to the battery.




## 5.9 Installing the Water Tank

- Installation location for the water tank: Select this so that it has sufficient room for the rotation radius of the semi-trailer. Install the water tank holder on the driver's cabin struts if possible.

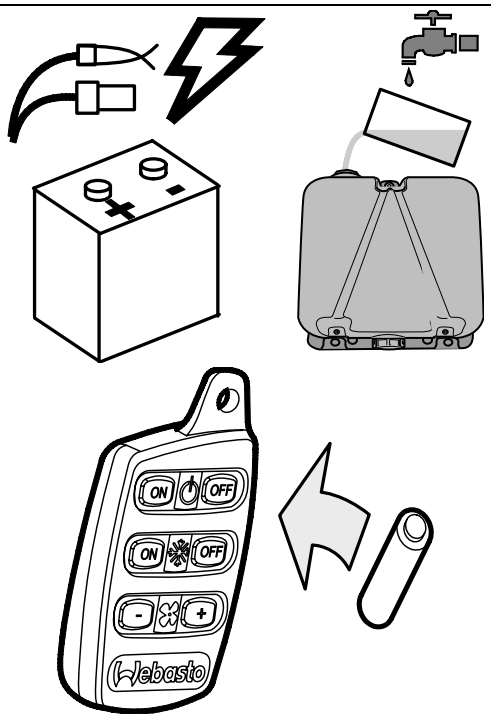
***CAUTION***

*When drilling through the driver's cabin, make sure not to damage any load-bearing parts, lines and interior paneling.*

***NOTE***

*For optimal tightness, it is best to place the bottom rivets in a double-paneled area.*

- Position the water tank bracket at a suitable location and drill holes. Use an Ø 8.5 mm spiral drill. If the interior panels are glued, cut out the area needed for the M6 threaded rivets to ensure perfect placement on the vehicle body.
- Install threaded rivets and coat with rust protection.
- Screw the water tank bracket to the rear wall of the driver's cabin with M6 x 50 mm Allen screws and washers.
- Put the plug and water hose on the water pump. Avoid kinking the water hose.
- Screw the water tank to the water tank bracket with Allen screws and washers.



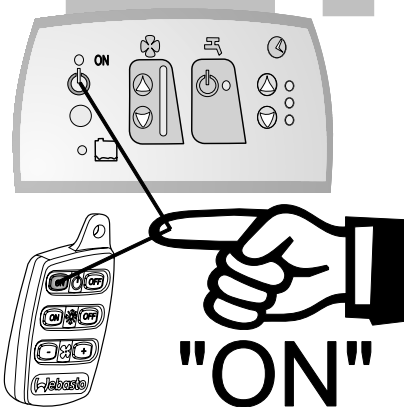

### 5.10 Final Tasks

- Disconnect the battery.
- Check the vehicle-side systems.
- Fill the water tank with tap water.

***CAUTION!***

*The water in the tank is not potable!*

- Check the function according to the operating instructions.




# 6. MAINTENANCE

Only trained personnel in authorized repair depots may work on the NiteCool TCC-100.

As with all parts of a vehicle, NiteCool TCC-100 is subjected to constant stress. To ensure perfect operation of the system and to prevent damages to the parts, the prescribed maintenance work must be performed regularly.

The proper treatment of the system and a record of all maintenance work are necessary for the acceptance of any warranty claims involving damage to parts that require regular maintenance.

### 6.1 Maintenance Schedule

Independent of the following time plan, within the first 4 weeks of installation, check all mountings for tightness.

Even when NiteCool TCC-100 is not in operation, wear to individual components may occur from normal aging or from driving. Therefore, the checks listed in the maintenance and care plan are to be performed independent of the system operating time.

### 6.2 Procedure

- Empty the complete system by removing the tank outlet cover on the water tank.
- Screw the tank outlet cover back on and fill the water tank halfway to capacity with a solution of tap water and a standard cleaning/disinfection product containing natrium hypochloride (mix according to manufacturer's instructions). Run the NiteCool TCC-100 for two hours at blower level 1 and with the cooling functions switched on.
- After cleaning the system, completely empty it and wash the water tank carefully with water to remove loosened bits.
- Alternatively, the water system can be cleaned with recommended Katadyn® Care products (please follow the manufacturer's instructions).
- If the NiteCool TCC-100 is to be operated again immediately, fill the system with tap water.

***CAUTION!***

*Follow the safety information and requirements (see chapter 1)!*

### 6.3 Checklist for care and maintenance

**Every 2 months:**

- Clean the hose lines for the cooling system.
- Clean the water tank, water tank filter and unit on the roof.
- Clean/replace the pre-cooling chamber filter.

**Every 6 months:**

- Coolant system hose lines: Check for wear and condition, check that connections are tight.
- Replace the evaporation unit.
- Roof unit: Check the overall condition and the connection points for tightness.
- Electrical connections, connection wires: Check for perfect condition.
- Plug connections: Check for perfect condition and tightness.
- Fuses: Check for perfect condition.

**Every 12 months:**

- Check device brackets.

# 7. CORRECTIVE MAINTENANCE

To prevent unnecessary disassembly or redundant work, check the condition of the NiteCool TCC-100 before starting maintenance work.

## 7.1 Visual Check

External condition of the roof unit:

- No tears on the cover
- Air inlets clean and not damaged
- Hose and cable connections in perfect condition

Condition of the air distribution plate:

- Mounting points/screws are tight
- All switches in perfect condition
- Air blowers not damaged, clean

## 7.2 Trouble-Shooting and Correction Measures

Proceed systematically for trouble-shooting and correction. Measurements for general malfunctions or deviations from expected conditions are to be performed as described below.

***CAUTION***

*Certain problems can only be detected and corrected by trained personnel with special tools.*

**Malfunctions in the Electrical System**

Systematically check individual circuits using the circuit diagram and localize any errors. Place special emphasis on the function of plug connections, switches, fuses, etc.

Generally check the following malfunction causes or rule out a malfunction for the following reasons:

- Defective fuses
- Corrosion at the plug contacts
- Loose contact on the plugs
- Crimping problem on the plugs
- Corrosion on the lines and fuses
- Corrosion at the battery plugs

If the system continues to switch off, have it checked by an authorized repair center.

For maintenance purposes, generally only use original spare parts or standard parts.

When work is performed, the system must be returned to its original condition.

When the maintenance is complete, check again visually.

EN

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