	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description		
		TDS-BBCC06105-2	
		Sheet 1 of 25	Date 06.22

Applicable for roof-top air conditioner 680

Item no. BBCC06105




Dreiha GmbH

Grönlandstrasse 20
28719 Bremen

Tel.: +49/ (0)421/ 64929 – 0
Fax : +49/ (0)421/ 645210
E-mail : mail@dreiha.de
Internet : www.dreiha.de


Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	------------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description		
		TDS-BBCC06105-2	
		Sheet 2 of 25	Date 06.22

0. Content	Page 2
1. Purpose	Page 3
2. Design, equipment and function	Page 3
3. Installation and commissioning	Page 6
3.1 Safety instructions	Page 6
3.2 Mechanical connections	Page 8
3.3 Electrical connections	Page 9
3.4 Connecting to the water circuit	Page 9
3.5 Connecting to the refrigerant circuit	Page 9
4. Operation and operating information	Page 9
5. Maintenance and repairs	Page 10
5.1 Special tools	Page 11
5.2 Maintenance plan	Page 12
5.3 Cleaning	Page 13
5.4 Repairs	Page 16
6. Troubleshooting	Page 22
7. Technical data	Page 23

Supplementary documents:	Drawing no.	DRP-BBCC06105-1
	Circuit diagram no.	WDG-BBCC06105
	Spare parts list no.	SPL-BBCC06105
	Commissioning instructions	TDS-BBCC06105-1
	Technical description control element	TDS-KL0008203

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	------------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description	TDS-BBCC06105-2	
		Sheet 3 of 25	Date 06.22

1. Application

The roof-top air conditioner 680 is used for cooling, ventilation and demisting work cabins.

It is intended to be mounted on the roof of the work cabin.

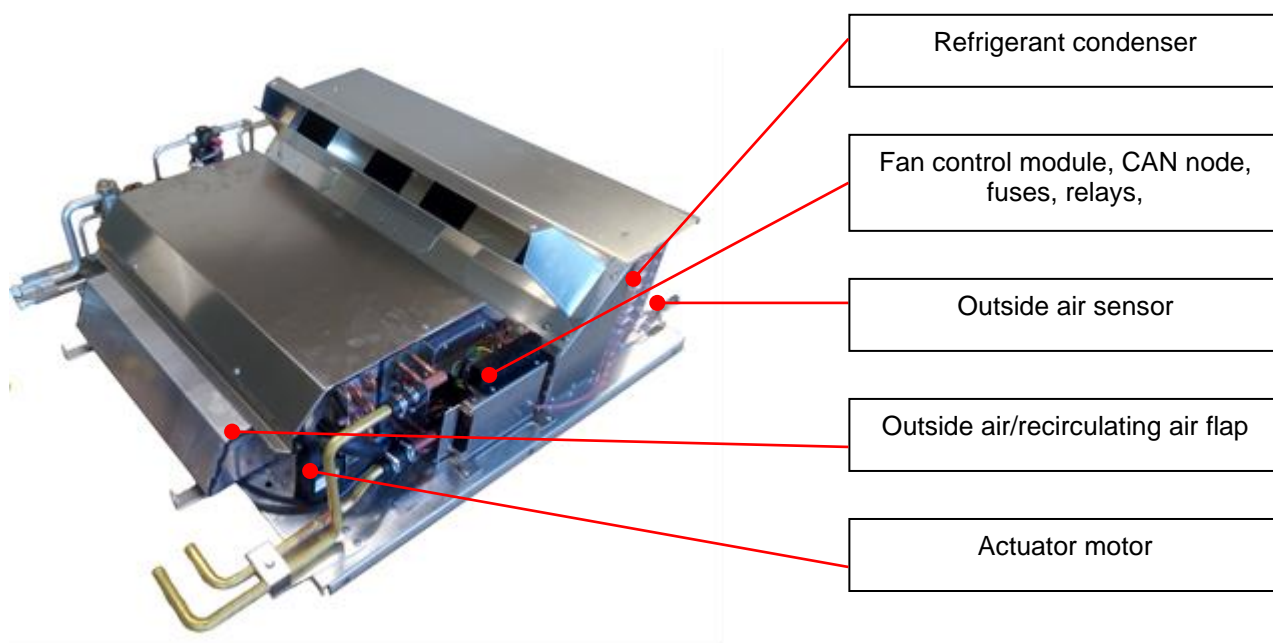
The refrigerant circuit of the roof-top air conditioner operates as a cold vapour refrigeration process. The unit must be operated using refrigerant R134a.

The control panel KL0008203 is required for the regulation and control of the roof-top air conditioner. The control panel is not included with the air conditioner.


2. Design, equipment and function

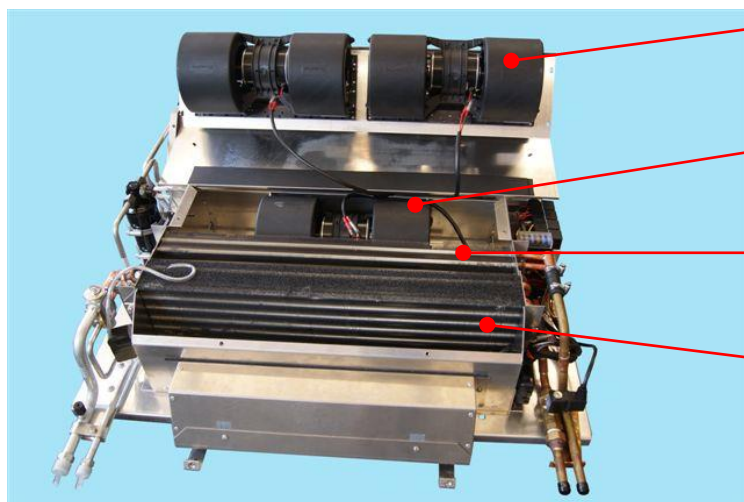
The base plate and all the interior housing parts of the roof-top air conditioner are made from sheet aluminium.

The main components comprise a refrigerant evaporator, a hot water heat exchanger, an intake air double radial-flow blower, a refrigerant condenser, two condenser double radial-flow blower fans, a refrigerant receiver-drier a motorised outside air/recirculating air flap, a water solenoid valve as well as various electrical components (CAN node, fuses, relays, outside air sensor).



Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description		
		TDS-BBCC06105-2	
		Sheet 4 of 25	Date 06.22

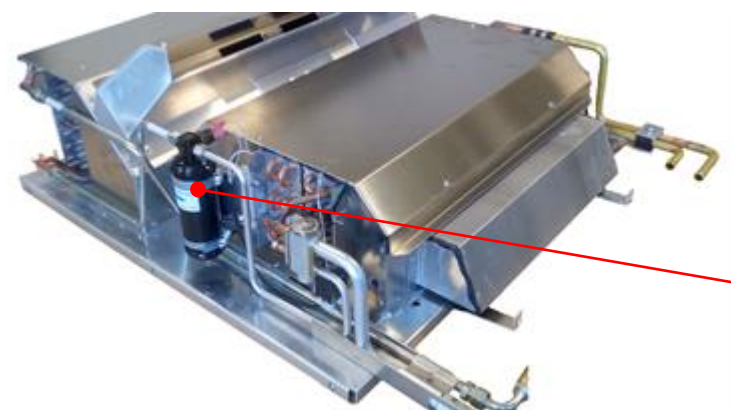


Double radial-flow blower fan condenser

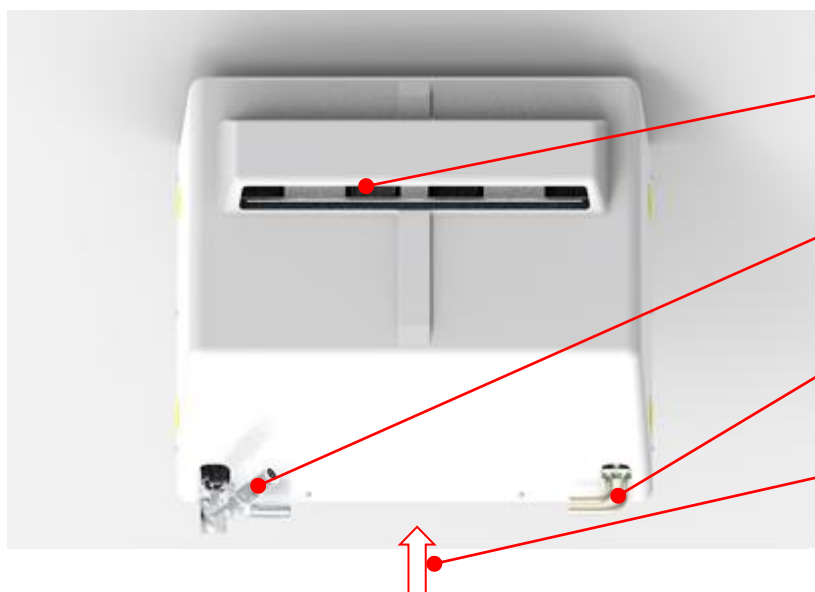
Double radial-flow blower fan evaporator

Hot water heat exchanger

Refrigerant evaporator



Refrigerant receiver-drier




Condenser air outlet

Refrigerant connections

Hot water connections

Fresh air intake

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description		
		TDS-BBCC06105-2	
		Sheet 5 of 25	Date 06.22

The roof-top air conditioner is designed for mounting on the roof of a vehicle (see drawing DRP-BBCC006105-1). The water connections of the heat exchanger are routed out of the unit on the right rear side. The refrigerant connections are located on the left side.


The electrical adapter connectors are routed downwards through the recirculating-air opening and out of the unit. The power supply to the unit is combined in a 6-pin AMP housing, the data line is in a 4-pin AMP housing (see circuit diagram no. WDG-BBCC06105).

Depending on the operating mode, the air is sucked in by the intake air radial fan via the outside or recirculating air intake openings. This mixed air is heated via the hot water heat exchanger or cooled via the refrigerant evaporator, depending on the operating mode. The intake air is blown into the cabin via the upstream roof air diffuser.

The water flow through the hot water heat exchanger is regulated by cycling the water solenoid valve.

The intake air double radial-flow blower fan is steplessly regulated via the climate control unit integrated in control panel KL0008203. The different operating modes (heating, cooling, ventilation, demisting) are also regulated via the climate control integrated in control panel KL0008203 (Technical description no. TDS-KL0008203).

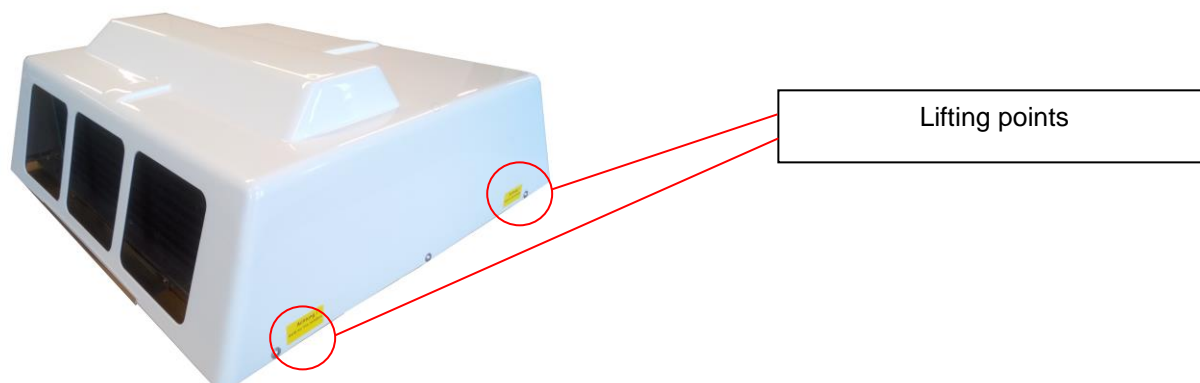
Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	------------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description	TDS-BBCC06105-2	
		Sheet 6 of 25	Date 06.22

3. Installation and commissioning

3.1 Safety instructions

When transporting the roof-top air conditioner, take care that it is only lifted by the base plate at the points marked.



Before commissioning the hot water heater, check that the water and refrigerant hoses are properly connected on the vehicle.

Handling refrigerant R134a

Inspection and maintenance work on the refrigerant circuit must only be carried out by suitably qualified persons who have the equipment required for this purpose (see section 5.1).

Legal requirements for persons working on mobile refrigeration units and air conditioners are contained, for example, in the EU Regulation 307/2008.


Refrigerant R134 a is colourless and has a slight ether-like odour. Hazardous reactions occur with alkaline and alkaline earth metals. In powdered form, Al and Zn catalyses the dissolution.



R134a does not burn and is not explosive with any mixture in the atmosphere. Escaping vapours may, however, lead to the hazardous decomposition product hydrogen fluoride and, in traces, carbonyl fluoride if they come into contact with fire or glowing objects (e.g. cigarettes). These substances have a high irritating and warning effect. Breathing in the decomposition products can lead to pulmonary oedema.

As from approx. 20% by vol. in the air, there is a risk of suffocation from lack of oxygen.

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	------------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description		
		TDS-BBCC06105-2	
		Sheet 7 of 25	Date 06.22

Therefore, the following safety measures must be observed during all work on the refrigerant parts of the air conditioner:



Avoid any contact with liquid refrigerant! In the event of skin contact, rinse with plenty of water! Clothing wetted with refrigerant must be removed!

In the event of eye contact, rinse with lukewarm water immediately and then seek medical attention.



When working on refrigerant parts of the air conditioner, always wear protective gloves and protective glasses!

If liquid refrigerant is swallowed, seek medical attention immediately. If the person affected is conscious, induce vomiting. If the person affected is unconscious, do not induce vomiting.


Information for medical staff: Do not administer drugs from the adrenalin-ephedrine group!

If vapours are inhaled, the person affected must be taken out into the fresh air. If the person is not breathing, perform artificial respiration immediately and call an emergency doctor in all cases.

Great care must be taken if system components containing refrigerant are exposed to high temperatures, e.g., during steam-cleaning, welding work or in paint-drying systems.

If necessary, the refrigerant must be extracted beforehand.

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description		
		TDS-BBCC06105-2	
		Sheet 8 of 25	Date 06.22



During maintenance and repair work on the unit (see section 5), there is a risk of injury from cuts caused by the sharp edges of the hot water heat exchanger fins.



Protective gloves must therefore be worn during maintenance and repair work on the open unit!



When working on hot water circuit, there is a risk of scalding from escaping cooling water!



Before opening the hot water circuit, it must be allowed to cool sufficiently!

Protective gloves and protective glasses must therefore be worn during maintenance and repair work on the cooling circuit!




3.2 Mechanical connections

The roof-top air conditioner must be bolted to the vehicle roof. For this purpose, there are six holes for M8 bolts in the base plate of the roof-top air conditioner (DRP-BBCC06105-1).

A suitable collar must be provided on the cabin roof for fixing the unit. Suitable openings must be made in the cabin roof for the recirculating air and intake air (DRP-BBCC06105-1).

The openings in the roof for the recirculating air and intake air must be sealed in order to prevent rain or condensation from entering the cabin interior!

Checked by: TBM-Bautz	Approved by: GF-Brautz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description	TDS-BBCC06105-2	
		Sheet 9 of 25	Date 06.22

3.3 Electrical connections

The electrical adapter connectors are routed downwards through the recirculating-air opening and out of the unit. The power supply to the unit is combined in a 6-pin AMP housing, the data line is in a 4-pin AMP housing (see circuit diagram no. WDG-BBCC06105).

3.4 Connecting to the water circuit

The water connections of the heat exchanger are routed out of the unit on the right rear side. A suitable cooling water hose for an outside tube diameter of 15 mm must be used. The cooling water hoses must be fixed to the tube using a hose clamp.

When connecting to the water circuit, observe the connections for the supply and return lines.

3.5 Connecting to the refrigerant circuit

The line from the suction connection of the roof-top air conditioner to the refrigerant compressor must be connected using a 7/8"-14UNF refrigerant screw connection (O-ring screw connection "Long-Pilot").

The line from the pressure connection of the roof-top air conditioner to the refrigerant compressor must be connected using a 3/4"-16UNF refrigerant screw connection (O-ring screw connection "Long-Pilot").

When assembling, take care that all refrigerant connections and seals are in perfect condition. We recommend that new seals are always used. All sealing surfaces and seals of the refrigerant connections must be lubricated with refrigerant oil (ester oil) before installation.


Inspection and maintenance work on the refrigerant circuit must only be carried out by suitably qualified persons who have the equipment required for this purpose (see section 5.1).

4. Operation and operating information

Electrical operation must be carried out using an upstream on/off switch for the power supply as well as a suitable climate control unit for actuating the internal components of the roof-top air conditioner.

The Dreiha control panel KL0008203 with integrated climate control unit (not included with the roof-top air conditioner) is particularly suitable for fully automated regulation and control of the roof-top air conditioner.

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description	TDS-BBCC06105-2	
		Sheet 10 of 25	Date 06.22

5. Maintenance and repair

This section "Maintenance and repair" has been prepared based on normal operation of the unit and components. Special operating conditions require prior inspection and possibly supplementary written agreement.

The maintenance intervals specified are recommendations. Heavy soiling due to operating conditions may result in the need for shorter intervals.

The safety instructions (see section 3.1) must be observed for maintenance and repair work in all cases!



Maintenance

Maintenance must be carried out at regular intervals, as shown in section 5.2, to ensure high availability and service life, and to check the full functionality.

The cleaning tasks and functional checks described in the following sections must be carried out. If there is a malfunction, the repair/replacement described in section 5.4 must be carried out.


Repairs/replacement

The description of the repairs is limited to the replacement of components because repairing individual components is either not possible or too costly.

If a defect should occur in the interval between scheduled maintenance, the following sections serve as repair instructions.

The spare parts are designated in the spare parts list SPL-BBCC06105.

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	------------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description		
		TDS-BBCC06105-2	
		Sheet 11 of 25	Date 06.22

5.1 Special tools


The following special tools are required for the maintenance of the roof-top air conditioner 680:

- compressed air connection, blowing-out gun
- open-ended spanner, width across flats 13
- open-ended spanner width across flats 14
- open-ended spanner, width across flats 19
- open-ended spanner, width across flats 27
- open-ended spanner, width across flats 29
- Phillips screwdriver
- hexagon key, size 2.5
- hexagon key, size 3.0
- hexagon key, size 4.0
- hexagon key, size 5.0
- screwdriver Torx TX15
- multimeter

For working on the refrigerant circuit, the following special tools are required:

- pressure reducer for nitrogen bottle to reduce the bottle pressure
- assembly tester with test pressure gauge (with 3 or 4 hose connections depending on the version)
- 3 or 4 refrigerant hoses (with pressure nozzle for operating Schrader valves, depending on the assembly tester type)
- vacuum pump, final vacuum approx. 2 Torr
- refrigerant bottle with R134a refrigerant (recycling bottle with type plate stamping *R134a*)
- leak detection device
- weigher for refrigerant quantity measurement (recommended display range according to the refrigerant bottle size)
- service coupling for the suction side
- service coupling for the pressure side


Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	------------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description		
		TDS-BBCC06105-2	
		Sheet 12 of 25	Date 06.22

5.2 Maintenance plan

On commissioning	Every 1,000 operating hours	Every 2,000 operating hours	Every 8,000 operating hours	Maintenance task
	X	X	X	Check the fins of the evaporator for cleanliness. Clean if necessary
	X	X	X	Check the condensate drain lines for blockages Clean if necessary
	X	X	X	Check the fins of the condenser for cleanliness. Clean if necessary
X	X	X	X	Check all refrigerant lines for damage and check their routing for possible chafing.
X	X	X	X	Check all hose connections of the refrigerant circuit for tight fit.
X	X	X	X	Check the function of the evaporator fan and condenser fan.
X	X	X	X	Check the refrigerant level of the air conditioner at the inspection glass while the unit is running.
X		X	X	Check the electric lines and connections as well as the function of the thermostatic and pressure switches.
X		X	X	Functional check of the entire unit.
		X	X	Check the receiver-drier for corrosion and mechanical damage.
			X	Replace the receiver-drier.
			X	Clean or replace the refrigerant.

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------

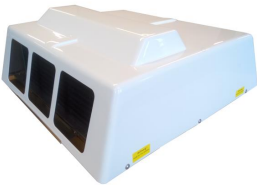


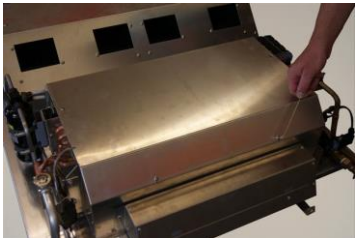
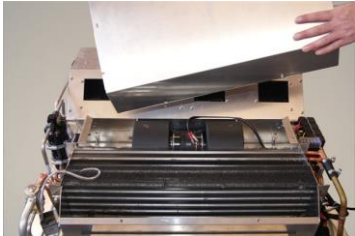
	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description	TDS-BBCC06105-2	
		Sheet 13 of 25	Date 06.22


5.3 Cleaning and functional checks

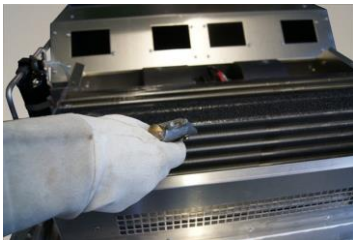

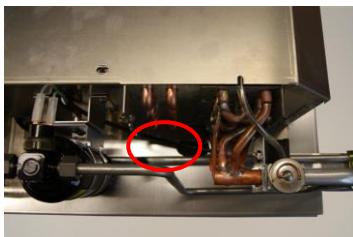
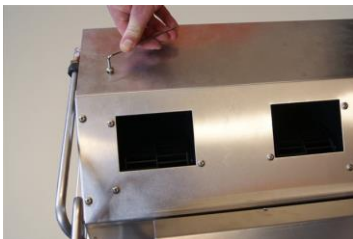


For working on the refrigerant circuit, Commissioning instructions TDS-BBCC00525-1 and must be observed!

Inspection and maintenance work on the refrigerant circuit must only be carried out by suitably qualified persons who have the equipment required for this purpose (see section 5.1).


The following steps (see maintenance plan in section 5.2) must be carried out:






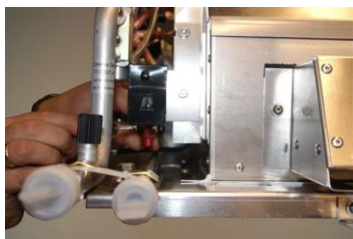
Step	Illustration	Description
1		Important: First disconnect the roof-top air conditioner from the vehicle's power supply and secure against being switched back on! Disconnect the electrical adapter connector from the unit.
2		Undo the hexagon socket fastening screws (size 5.0) on the hood cover. Remove the hood cover.
3		Undo the hexagon socket fastening screws (size 3.0) of air duct for condenser air, remove air duct
4		Undo the hexagon socket fastening screws (size 3) on the evaporator cover.
5		Remove the evaporator cover.
Checked by: TBM-Bautz Approved by: GF-Brahtz		Dreiha GmbH, Bremen Issue 01 Date: 08/20 Edited by: TBE-Schuldt

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description	TDS-BBCC06105-2	
		Sheet 14 of 25	Date 06.22


Step	Illustration	Description
6		Blow out the fins of the evaporator hot water heat exchanger carefully using compressed air.
7		Blow out the vanes of the air intake fan carefully using compressed air.
8		Check the condensate drain lines for blockages and contamination.
9		Undo the hexagon socket fastening screws (size 3) on the condenser cover.
10		Remove the condenser cover.
11		Blow out the fins of the condenser carefully using compressed air.

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description	TDS-BBCC06105-2	
		Sheet 15 of 25	Date 06.22

Step	Illustration	Description
12		Blow out the impellers of the condenser fan carefully using compressed air.
13		Check the receiver-drier for corrosion.
14		Check the refrigerant level at the inspection glass while the unit is running. If necessary, check the circuit for leaks and top up the refrigerant (see Commissioning instructions TDS-BBCC00525-1).
15		Check the electrical lines and connections.
16		<p>Continuity test on the high-pressure switch of the receiver-drier (remove the connection cable before testing),</p> <p>When the air conditioner is off and the refrigerant level is correct, the switch must have electrical continuity.</p>
17		<p>Continuity test on the thermostatic switch of the receiver-drier (remove the connection cable before testing),</p> <p>When the air conditioner is off and the refrigerant level is correct, the switch must have electrical continuity.</p>

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------


	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description		
		TDS-BBCC06105-2	
		Sheet 16 of 25	Date 06.22

Soiling on the impeller can lead to imbalance and thus to vibrations and noises. This could lead to damage to the electric motor bearings.

If heavily soiled components cannot be cleaned, they must be replaced (see section 5.4).

Reassemble the unit in the reverse order of the description above.

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	------------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description	TDS-BBCC06105-2	
		Sheet 17 of 25	Date 06.22

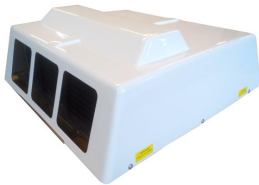


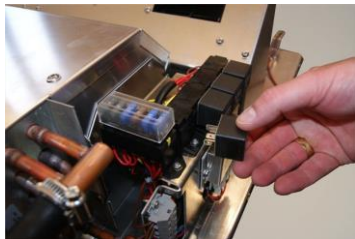
5.4 Repair

The extent to which the components on the installed unit can be replaced is specified in the installation instructions.


For working on the refrigerant circuit, Commissioning instructions 003.680.00-261 must be observed!

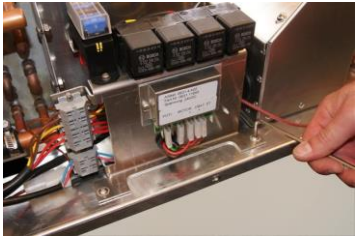
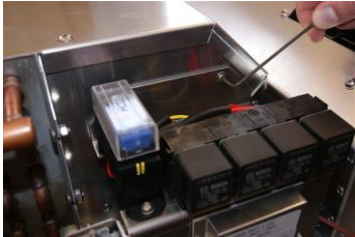
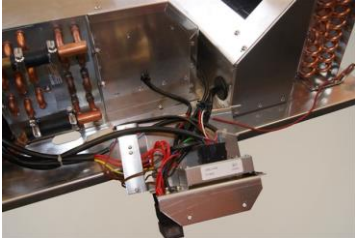
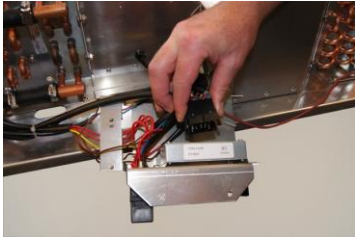
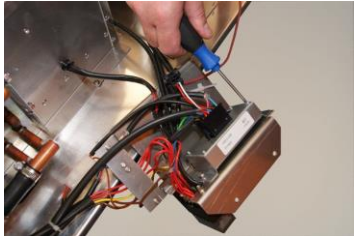
Inspection and maintenance work on the refrigerant circuit must only be carried out by suitably qualified persons who have the equipment required for this purpose (see section 5.1).

The following steps must be carried:


Step	Illustration	Description
1		Important: First disconnect the roof-top air conditioner from the vehicle's power supply and secure against being switched back on! Disconnect the electrical adapter connector from the unit.
2		Undo the hexagon socket fastening screws (size 5.0) on the hood cover. Remove the hood cover.
3 Electric fuses		Replace defective line fuses. Determine the cause of the fuse tripping and rectify!
4 Relays		Replace defective relay.


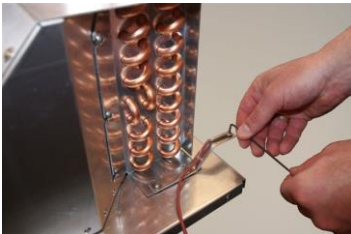



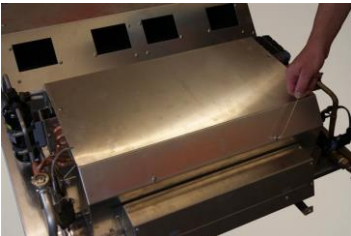
Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680			
	Item No. BBCC06105 (24V)		TDS-BBCC06105-2	
	Technical Description		Sheet 18 of 25	Date 06.22


Step	Illustration	Description
5 CAN nodes		Undo the hexagon socket screws (size 3.0) of the CAN node fastening plate.
6		Undo the hexagon socket screws (size 2.5) of the CAN node fastening plate.
7		Remove the fastening plate.
8		Remove the electrical adapter connector from the CAN node.
9		Undo the hexagon socket fastening screws (size 2.5) on the CAN node. Replace the CAN node.

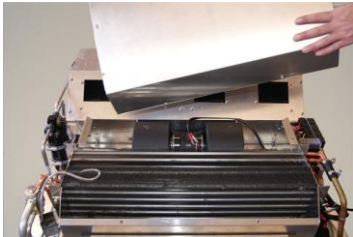

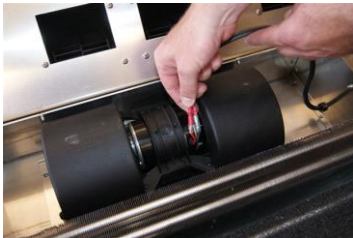

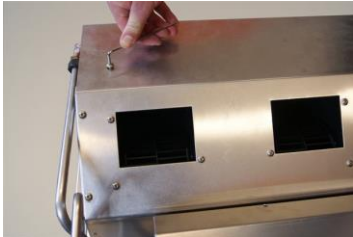

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	------------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680			
	Item No. BBCC06105 (24V)		TDS-BBCC06105-2	
	Technical Description		Sheet 19 of 25	Date 06.22


Step	Illustration	Description
10 Outside temperature sensor		Remove the electrical adapter connector from the outside temperature sensor.
11		Undo the hexagon socket fastening screws (size 2.5) on the outside temperature sensor. Replace the outside temperature sensor.
12 Actuator motor		Remove the electrical adapter connector on the actuator motor.
13		Undo the hexagon socket fastening screws (size 2.5) on the actuator motor.
14		Undo the hexagon socket fastening screws (size 3.0) of air duct for condenser air, remove air duct
15		Undo the hexagon socket fastening screws (size 3) on the evaporator cover.


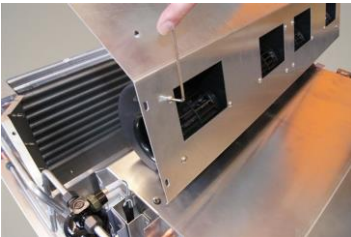




Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680			
	Item No. BBCC06105 (24V)		TDS-BBCC06105-2	
	Technical Description		Sheet 20 of 25	Date 06.22


Step	Illustration	Description
16		Remove the evaporator cover.
17		Pull the actuator motor with fixing plate out of the flap fixing. Replace the actuator motor.
18 Evaporator fan		Remove the adapter connector from the evaporator fan.
19		Undo the hexagon socket fastening screws (size 3) on the evaporator fan.
20 Condenser fan		Undo the hexagon socket fastening screws (size 3) on the condenser cover.
21		Remove the condenser cover.



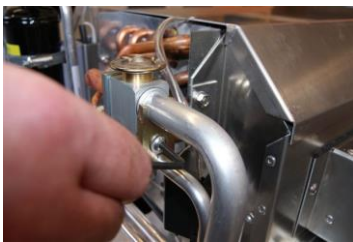
Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680			
	Item No. BBCC06105 (24V)		TDS-BBCC06105-2	
	Technical Description		Sheet 21 of 25	Date 06.22

Step	Illustration	Description
22		Remove the electrical adapter connector from the condenser fan.
23		Undo the hexagon socket fastening screws (size 3) on the condenser fan.
24 Freezing protection thermostat		Pull the temperature sensor of the thermostat out of the evaporator fins. Important: remember or mark the position!
25		Undo the fastening nut of the thermostat using a 14 mm open-ended spanner. Replace the thermostat. Reinsert the temperature sensor in the evaporator in the identical position!
26 High-pressure switch		Remove the electrical adapter connectors from the high-pressure switch.
27		Important: Extract the refrigerant before opening the refrigerant circuit! Observe the safety instructions and Commissioning instructions TDS-BBCC06105-1! Undo the high-pressure switch using a 27 mm open-ended spanner. Replace the high-pressure switch.


Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description	TDS-BBCC06105-2	
		Sheet 22 of 25	Date 06.22

Step	Illustration	Description
28 Receiver-drier		Important: Extract the refrigerant before opening the refrigerant circuit! Observe the safety instructions and Commissioning instructions TDS-BBCC06105-1! Undo the union nut of the refrigerant line using a 19 mm open-ended spanner.
29		Undo the securing clamps on the receiver-drier using a Phillips screwdriver. Remove and replace the receiver drier.
30 Expansion valve		Important: Extract the refrigerant before opening the refrigerant circuit! Observe the safety instructions and Commissioning instructions TDS-BBCC061051-1! Undo the fastening screws on the adapter plate using hexagon key, size 4. Remove and replace the expansion valve.

Reassemble the unit in the reverse order of the description above (see also drawing no. DRP-BBCC0605-1).

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------


	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description	TDS-BBCC06105-2	
		Sheet 23 of 25	Date 06.22

6. Troubleshooting

The table below lists the causes of possible malfunctions. They can be rectified using the corrective measures described.

Fault	Cause		Remedy
The air conditioning does not cool	Triggering of the thermostatic or low-pressure switch	Ambient temperature is too low	
		Low refrigerant level	Detect and rectify the leak
		Soiled drier cartridge	Change the receiver-drier
		Fins of the evaporator are soiled	Clean the fins
		Intake air fan defective	Replace the intake air fan
	Triggering of the high-pressure switch	Refrigerant circuit overfilled	Extract the refrigerant to defined filling level
		Fins of the condenser are soiled	Clean the fins
		Defective condenser fan	Replace the condenser fan
The air conditioning cools insufficiently		Low refrigerant level	Detect and rectify the leak
		Soiled drier cartridge	Change the receiver-drier
		Fins of the evaporator are soiled	Clean the fins
		Intake air fan defective	Replace the intake air fan
		Air conditioner compressor overfilled with refrigerant oil	Extract the refrigerant oil to defined filling level

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	---------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description		
		TDS-BBCC06105-2	
		Sheet 24 of 25	Date 06.22

7. Technical Data

Blower stage			maximum
Air flow volume V_L	m^3/h		900
Refrigerating capacity Q_0	W		11,000
Refrigerant			1,1,1,2 tetrafluoroethane (R134a)
Refrigerant charging quantity m_{R134a}	g		1,900
High-pressure switch High pressure Off $p_{HP/OFF}$	bar		32±2
High-pressure switch High pressure On $p_{HP/ON}$	bar		26±2
High-pressure switch Low pressure Off $p_{LP/OFF}$	bar		2.0±0.2
High-pressure switch Low pressure On $p_{LP/ON}$	bar		2.1±0.2
Freezing protection thermostat Off $t_{0/OFF}$	°C		1.0±1.0
Freezing protection thermostat On $t_{0/ON}$	°C		4.0±1.0
Heating capacity (Reheat) Q_{80}	W		10,000
Water mass flow m_{W80}	kg/h		1,450
Rated voltage U_{rated}	V DC		24
Electric power consumption I_1	A		approx. max. 45
Empty weight G	kg		

Reference values of technical data


Test arrangement: free blowing, without additional air ducting

Test voltage: 28VDC

Heating capacity Q_{80} :
Water supply temperature 80°C
Air intake temperature 0°C

Refrigerating capacity Q_0 :
Evaporating temperature 0°C
Air intake temperature: 40°C/40% rel. humidity

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	------------------------------	---------------------	----------------------	---------------------------

	Roof-top air conditioner 680 Item No. BBCC06105 (24V) Technical Description		
		TDS-BBCC06105-2	
		Sheet 25 of 25	Date 06.22

Pressure values - hot water heat exchanger

Permissible operating pressure: 3.5 bar (dynamic)

Test pressure: 5.0 bar (static; test with compressed air under water)

Pressure values refrigerant circuit

Permissible operating pressure: 25.0 bar

Test pressure: 22.0 bar (static; test with nitrogen)

Checked by: TBM-Bautz	Approved by: GF-Brahtz	Dreiha GmbH, Bremen	Issue 01 Date: 08/20	Edited by: TBE-Schuldt
--------------------------	------------------------------	---------------------	----------------------	---------------------------