



KONVEKTA

The Innovation Company.

Service brochure Air conditioning units

**ID#: BTD-00752B
Version: A02**

Bus a/c unit / type:

Project:

Date:

Customer:

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1. General Information

1.1 Foreword

This service brochure was made for the drivers, the users and the maintenance personal of your Konvekta air conditioning unit.

Please keep this brochure ready to hand inside the driver´s compartment!

The service brochure is to be read by every person who works with this air conditioning unit or is engaged to it before the first start up and later in regular intervals.

It is pointed out to the maintenance personal that the reliability and the life span of the system is much higher in case this brochure will be stucked to. Therefore the costs incurred through problems will not be so high and the failure times will reduce.

The service brochure includes all the information about the service of your Konvekta air conditioning unit. You can also take from the service plan when to do what kind of service and which work has to be executed.

Important:

The carrying out of the maintenance is to be documented by stamp of the service partner´s office and date in the fields of proof. The certification of maintenance is the precondition for the preservation of possible claims from the liability of material defects.

In case of any further question or desired information, do not hesitate to contact our service team.

In case of selling the vehicle, please do not forget to hand out this maintenance plan to the next owner.

1.2 Responsibility

Konvekta air conditioning systems are developed with the highest level of care for quality, conservation, legal regulations as well as service- and user-friendliness. As client and user of this system you are liable to the legal requirements and regulation as well as to changes and supplements.

1.3 Service information and service intervals

The maintenance of the air conditioning system has to be provable executed by an **authorized Konvekta service partner**.

General, exceptions for material defects, are wear and tear materials such as V-belts, refrigerant (as far as pre-filled), fuses, small parts & fixing parts, dryers, all filters / filter types, mechanical seals and O-rings.

Guarantee limit: Konvekta guarantees a liability for material defects of 24 month, at the latest 30 month from delivery date or max. 200.000 km, depending on which situation occurs first, upon following all the conditions mentioned.

Bus air conditioning system:

Every 80.000 km, every 1.500 operating hours or once a year, depending on which situation occurs first.

Cabin/mini-/midibus air conditioning system:

Every 25.000 km, every 1.500 operating hours or once a year, depending on which situation occurs first. The registered system belongs to the category

(Please mark where appropriate)

Bus air conditioning system

Cabin/mini-/midibus air conditioning system

The client is advised particularly, that the following maintenance intervals for the air conditioning system are to be followed strictly; otherwise every claim to liability for material defects or obligingness will lapse!

2. Data of the air conditioning unit

2.1 Registration data

Air conditioning system / type:

Project:

Number of air conditioning system:

Order number:

Vehicle manufacturer:

Type of vehicle:

Installation date:

Installing company:

First approval:

Chassis number:

License number:

.....

Final client:

Company:

Name:

Address:

PLZ, Ort:

Stamp and sign of

Installing company or OEM

3. Liability for material defects

3.1 Liability for material defects in air conditioning systems

From the project:

The liability for material defects of Konvekta is only valid for complete systems. After one year the following parts are apart from the liability for material defects subject to wear and tear: fans / blowers with carbon brushes, servomotors.

The liability for material defects is not valid for: Installation and maintenance works of the performing companies, assembly of components, non-genuine parts, works which result from the normal signs of wear; maintenance work and the therefore needed parts and operating supplies. The customer will be advised particularly after handing-over of the vehicle that the prescribed maintenance intervals of the air conditioning systems have to be followed; otherwise every claim on liability for material defects will lapse. The maintenance of the air conditioning system has to be done by a service partner authorized by Konvekta.

The Konvekta-Service-Job-List is available on our website at:
<http://www.konvekta.de/busklima/service/servicepartner.html>

The customer can make his claim at the seller's office or at other service partners authorized by Konvekta. In the last case the customer has to inform the seller immediately in written form.

If the vehicle owner has to take liability for material defects services, he has to present the filled out maintenance brochure with the proof of the carried-out prescribed maintenance works by an authorized service partner. The customer needs the confirmation for the carried-out maintenance in regular intervals within his maintenance brochure. Maintenance works not proved cannot be taken into account in case of a claim on liability for material defects.

Furthermore the maintenance brochure has to be presented to the authorized service partner by the client before the start of work (which means at receipt of repair works) in case of any service or maintenance work or any case of liability for material defects.

Changes on the air conditioning system, especially repair works - no matter if executed by the owner, user or in the order of a third person - mean changes in the system, which releases Konvekta from any kind of claims for liability for material defects.

If parts are installed or modifications are made which are not approved in general or approved by Konvekta, Konvekta is also released from the liability for defects.

Works on the system are only to be made at a service partner authorized by Konvekta and their specialist staff. The completion of liability for material defect works does not extend the period of liability for material defects!

Incidentally we refer to our general terms and conditions.

4. Service

Note:

The following service works are a general listing of every work relevant for maintenance. Please ask for the valid maintenance instructions for your corresponding type of bus or your bus air conditioning system

4.1. Scope of maintenance

Inspection and maintenance work on KONVEKTA air conditioning system.

- Sight control on the whole system for damages.
- Check secure seat and possible damage of compressor brackets.
- Check secure seat of compressor.
- Check condition, alignment and tension of drive-belt.
- Laying of refrigerant tubes and wires in the vehicle motor area and gear unit, as well as check of chafe marks on the chassis and the elimination of the cause of the appeared fault.
- Check tube and cable laying inside the box or inside the driver´s cab.
- Check tube fittings and screw coupling on leakage.
- Check condenser unit for secure seat.
- Clean the condenser ribs, in case of destroyed ribs renewal of the condenser battery is necessary.
- Check evaporator unit for secure seat.
- Check function of the blower for the evaporator and condenser.
- Check wiring diagram.
- Put cooling system into operation and check level of refrigerant.
- When filter/drier/accumulator combination is installed, the control pellet should swim in the upper third, conventional sight glasses should be bubble-free (see filling capacity table).
- Filter/drier and filter/drier/accumulator combinations have to be restored on every opening of the refrigeration cycle. If they are in use for more than one year, the danger of choking by extreme moisture absorption grows.

- Renewal of filters and driers once a year.
- Check pressures at compressor using pressure gauge.
- In case of roof compact units check air circulation.
- Direct suction of exhaust air has to be avoided (compartmentalization for suction air and exhaust air has to be available).
- The outlets for suction air and exhaust air have to be kept clear.
- Temperature measurements on evaporator: Measurement of suction air and exhaust air.
- Check pressure switch.
- Check condensed-water discharge.

4.2. Notes on dealing with the F-Gas Regulation

Since 1 January 2017 F-Gas-containing devices are subject to a labeling requirement under F-Gas Regulation 517/2014.

The labeling requirement is independent of the filling quantity and can be provided by a service sticker (Konvekta Order No.:H25-003-028).

Notes on dealing with the F-Gas Regulation 517/2014

The revised F-Gas Regulation 517/2014 has been in force since 01.01.2015. This regulation covers the handling of partially fluorinated hydrocarbons in refrigeration and air conditioning systems.

In future, the plants of this application will no longer be classified by refrigerant charge, but by CO2 equivalent according to their greenhouse potential.

How is this CO2 equivalent determined?

Each fluorinated greenhouse gas (refrigerant) has a so-called GWP value (Global Warming Potential). This GWP indicates the ratio of the refrigerant to CO2 emission.

Type R134a refrigerant has a GWP of 1.430. This means that 1 kg of R134a emission equals 1,430 kg of CO2 emission.

The following GWP values apply to the refrigerant we use:

R134a = GWP 1.430

R404A = GWP 3.922

In order to determine the so-called CO2 equivalent of a system, the GWP value of the refrigerant is multiplied by system capacity (refrigerant charge).

Example:

An air conditioning unit has a charge of 1,5kg R134a. The CO2 equivalent of this system is therefore calculated as follows:

$$1,5\text{kg} \times 1.430 = 2.145 \text{ kg (2,145 t) CO}_2\text{-equivalent}$$

4.3 Labeling requirement according to F-Gas Regulation 517/2014

There is a requirement for labeling when commissioning mobile air-conditioning systems.

The installer has to determine the quantity charge after commissioning and to indicate the corresponding CO2 equivalent permanently visible and readable. This enables the operator to quickly establish whether his system has been tested.


The system must be labeled in the area of the access point to the refrigeration circuit.

If the filling quantity is not previously validated by Konvekta (complete system), the sole responsibility for determination and documentation of the refrigerant filling quantity is with the respective installer of the system.

Konvekta offers the sticker H25-003-028 for conformal labeling.

The sticker is on stock and can be ordered with costs. Furthermore the service manuals and operating instructions have been adapted to the requirements of the F-Gas Regulation.

Please note that the use of the label does not constitute a guarantee of the liability for the refrigeration / air-conditioning system, in particular as far as components of other manufacturers are installed and / or no explicit acceptance by Konvekta has been given.

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Kältemittel / refrigerant:	R _____
Füllmenge / charge:	_____ kg
GWP Wert / GWP value:	_____
CO ₂ Äquivalent / CO ₂ Equivalent:	_____ to



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www.konvekta.com