



## Service brochure for transport refrigeration units

Your partner for excellent service



Technical leadership starts with ideas.

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# 1. General Information

## 1.1 Foreword

This service booklet has been prepared for the driver, operator and maintenance staff of your Konvekta cooling system.

### **Always keep the service booklet on hand in the driver's cabin**

The service booklet must be read before initial operation and later at regular intervals by all those who work or are commissioned to work on the cooling system.

We point out that observing the information in this booklet will increase the reliability and service life of the system, thus incurring less repair costs and reducing downtimes. The main contains all the information you need for servicing your Konvekta cooling system. The service plan informs you of when which service is to be carried out and which jobs have to be done.

### **Important!**

The servicing must be documented by the date and stamp of the servicing company in the respective fields. This is a pre-condition for any liability claims for material defects.

Please remember to pass on this service plan to the new owner if you sell the vehicle.

### **By the way!**

A vehicle that has been looked after and serviced regularly will fetch a better sales price.

## 1.2 Areas of responsibility

Konvekta cooling systems are developed with the greatest care paid to quality, environmental protection, legal requirements, ease of service and use. As a customer and operator of this system you are also subject to the legal conditions and requirements as well as their modifications and supplements.

### 1.3 Service information and service intervals

The cooling system must be serviced by an **authorised Konvekta service point** and this servicing must be documented. The customer must have the service confirmed and signed in the service booklet. If the vehicle owner wants to make a claim against warranties for defects, he must present the completed service booklet with the proof of execution of the prescribed maintenance measures.

**The customer is explicitly informed  
that the following service intervals must be  
kept, otherwise the warranty is void.**

**Every 50.000 km  
or every  
2.000 operating hours  
or  
1 x year  
(depending on what occurs first)**

## 2. Cooling data

### 2.1 Registration data

System number: .....	Serial label sticker system
Order number: .....	
Vehicle manufacturer: .....	
Vehicle type: .....	Serial label sticker evaporator
Installation date: .....	
First registered: .....	
System type: .....	Serial label sticker condenser
Serial number evaporator:.....	
Serial number condenser: .....	
Compressor bracket:.....	
Compressor:.....	
V-belt dimensions:.....	
Km status:.....	
VIN:.....	
Vehicle registration number:.....	
End customer:.....	
Company:.....	
Name: .....	
Street: .....	
Postcode, town:.....	
Stamp and signature:	
Installation company or initial equipment manufacturer: .....	

## 3. Liability for material defects

### 3.1 Liability for material defects for cooling & refrigeration systems

Liability for material defects for Konvekta cooling & refrigeration systems -exclusively for complete units, is as follows:

24 months after installation, 30 months after delivery date at the latest or max. 100.000 km or max. 4.000 operating hours (depending on what occurs first)

After one year, the following wearing parts / operating equipment are excepted from this:

- Fans/blowers
- Dryer
- Filter and filter material
- Servo motors

General exceptions to liability for material defects are:

- V-belts
- Fuses
- Bulbs etc.
- as well as all parts with a gross price less than 15 euros.

Liability for material defects does not cover:

- Installation, assembly and service work by the executing companies
- Component assembly
- External & foreign parts
- Work due to normal wear and tear of the cooling system
- Maintenance work and the parts and operating equipment required for this

The liability for material defects and its benefits do not refer to natural wear and damage after the transfer of perils caused by faulty or careless treatment, excessive load, unsuitable operating equipment, sub-standard installation work or faulty use.

In addition, liability for material defects is excluded for chemical, electrochemical, mechanical or electrical influences which occur without fault on the part of Konvekta.

Modifications to the cooling body and the cooling system, particularly repairs, no matter whether performed by the owner, user or on behalf of third parties, are interventions in the system which release Konvekta from its liability for material defects.

If parts are installed or modifications performed which are not approved or released by Konvekta, Konvekta shall also be released from its liability for material defects.

Work on the body and cooling may only be performed by authorised Konvekta customer service points and their specialist staff.

The fulfilment of work due to liability for material defects does not extend liability. We also refer to our General Terms and Conditions (AGB), and to our general warranty conditions.

## 4. Service

### 4.1. Scope of service

Inspection and maintenance work on KONVEKTA cooling systems:

- Visible inspection of the overall system for damage
- Check on compressor bracket on the vehicle engine for firm fit and damage
- Check compressor attachment
- Check V-belts for condition, alignment and tension
- Check the routing of the coolant hoses and cables near the vehicle engine and gearbox and on the chassis for chafing and eliminate any faulty spots found
- Check hose and cable routing on the cooling system body or in the driver cabin.
- Check all hose fittings and screw connections for leaks
- Check attachment of the condenser unit
- Clean condenser and evaporator with the Konvekta cleaner Evacon Magic (art. no.: G99-000-006), replace the condenser/evaporator block if any lamellae are faulty
- Check attachment of the evaporator unit
- Check blower for evaporator and condenser for function and direction of rotation
- Check electric control panel. If changes in colour are noticed on the conductors, they may have to be replaced, and the relays together with them.
- Connect manometer to the compressor and check pressures.
- Switch cooling system on and check coolant level.
- If filter/dryer/collector combination is installed, the control ball should float in the middle, conventional viewing glasses should be without bubbles.
- Replace the filter/dryer/collector combinations 1 x year



- Filter/dryer and filter/dryer/collector combinations must be replaced every time the coolant circuit is opened. If they are in operation for longer than 1 year, they might block up due to excessive humidity absorption.
  - Check pressure switch for function and switching value
  - Check condensation draining
  - Check air circulation for roof-mounted compact systems
  - Air circulation within the air distribution panel must be prevented (separation of air intake and air blow-out must be available)
  - Air intake and air blow-out openings must not be blocked.
1. Measure air intake
  2. Measure air blow-out
    - If units with mains operation are installed, the electrics for mains operation must also be checked.
    - Test run, check electrical and cooling-related switching functions, check parameter settings on the control unit
    - Check mains compressor for attachment and function (allow mains compressor to cool first)
    - Check V-belts from E-motor to mains compressor
    - In systems with hot gas defrosting, check solenoid valves for function
    - In systems with start-up controllers etc. these must be checked for function and setting values

We also refer to our system-specific maintenance instructions.

## 4.2 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 and is also aimed at operators of refrigerated trucks and refrigerated trailers.

In future, the plants of this application will no longer be classified by refrigerant charge, but by CO<sub>2</sub> equivalent. Depending on the amount of that CO<sub>2</sub> equivalent, an annual leakage check is required, of which proof must be provided.

### **How is this CO<sub>2</sub> 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 CO<sub>2</sub> emission.

Type R134a refrigerant has a GWP of 1.430. This means that 1 kg of R134a emission equals 1,430 kg of CO<sub>2</sub> 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 CO<sub>2</sub> equivalent of a plant, the GWP of the refrigerant is multiplied by the plant capacity (refrigerant charge).

Example:

A deep-freezing plant has a charge of 1.6 kg R404a. The CO<sub>2</sub> equivalent of this plant is therefore calculated as follows:  
1.6 kg x 3,922 = 6,275 kg (6.275 tons) of CO<sub>2</sub> equivalent


**As of 01.01.2017, the plant operator with a CO<sub>2</sub> equivalent of >5.0 has also to do an annual leakage check and provide appropriate proof. Such documentary proof can be recorded in the service record of the plant.**

**This applies to plants with a charge of >3.5 kg R134a and >1.3 kg R404A.**

### 4.3 Labelling requirement according to F-gas Regulation 517/2014

The installer has to determine the charge after the commissioning of the plant and specify the corresponding CO<sub>2</sub> equivalent on the supplied label. This enables the operator to quickly establish whether his plant has been tested. The plant must be labelled in the area of the access point to the refrigeration cycle.

#### Identification label H25-003-028

 <b>KONVEKTA</b> Thermosysteme
Kältemittel/Refrigerant: _R_____
Füllmenge / Charge: _____ kg
GWP Wert / GWP value: _____
CO <sub>2</sub> Äquivalent/ CO <sub>2</sub> Equal: _____ to

## 4.4. Proofs of maintenance

Maintenance: yes no  
 Date: .....  
 km status: .....  
 Operating hours: .....  
 Belt tension: .....  
 Leakage test as per 517/2014  
 Carried out  
yes no  
 Next leakage test on:  
 .....  
 Return R134a/R404a: ..... kg  
 Re-filling R134a/R404a: .... kg  
 Expert: .....  
 Remarks/  
 description of the:  
 .....  
 Dryer replace? yes no  
 .....  
 Signature and stamp of the  
 Konvekta service point  
 .....  
 Customer's signature  
 .....  
 Next Service:  
 Date: .....  
 km status: .....  
 Operating hours: .....

Depending on  
 what occurs first!

Maintenance: yes no  
 Date: .....  
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 Operating hours: .....  
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