



KONVEKTA

Thermo Systems

Operating Instructions

For KONVEKTA

Air Conditioning units

UL500 / UL700 / UL800



With control KS45

R134a
24 Volt DC

ID#: BBA-KL6U022AC
Version: A00

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Introduction

These operating instructions have been written for drivers, operators and the maintenance staff of your air conditioning unit.

In this context, we refer implicitly to the compliance with our general installation guidelines. These can be obtained from the KONVEKTA technical after sales service: TKD@konvekta.com.

These operating instructions have to be read carefully and made use of before the first start-up and after that regularly by each person who is involved in handling the machine:

- Operation including troubleshooting and waste disposal of fuels and auxiliary agents.
- Servicing, inspection, repair
- Transport

This facilitates the handling and avoids trouble caused by improper operation. Working in compliance with these operating instructions increases operation reliability and service life of the air conditioning unit and reduces life cycle costs.

 **Please complete these instructions by adding the national provisions for prevention of accidents and environmental protection.**

 **These instructions are part of the air conditioning unit. Always have a copy at hand in the driver's cabin.**

You will certainly understand that we will not recognize any warranty claims due to improper handling, inadequate maintenance, applications that do not correspond with the determined use, utilization of non-admitted fuels or the non-observance of safety provisions. KONVEKTA will annul without notice all obligations concerning guarantee, service contracts etc. regardless if granted by KONVEKTA or its distributors in case other than original KONVEKTA spare parts or parts bought from KONVEKTA AG have been used for maintenance and repair. These operating instructions contain all necessary information to operate your air conditioning unit. In case you need more explanations please contact the next KONVEKTA service station.

Information on the operating instructions

These operating instructions are valid for the air conditioners type:

➤ UL500	➤ UL700
➤ UL800	

With control KS45.

☞ When taking the unit into operation we recommend adding the following data.

This will also be important for your orders of spare parts, and in case of warranty.

Serial number of the unit:

Order No.:

Year of construction: (MM/YY)

Date of first operation: (DD/MM/YY)

The machine corresponds to the security prescriptions of the EC # 89/392/EWG i.d.F. 91/368/EWG and 93/44/EWG.

Due to the fact that scope of supply depends on the order, equipment of your product may differ in some parts of description.

In case your product is equipped with details not shown or described in the operating instruction, your KONVEKTA -Service-Station will always be at disposal for informing you about correct operation.

In the course of further developments we reserve the right to technical modifications without notice. Guarantee and liability conditions of **KONVEKTA AG**'s general business conditions are not enlarged by the above notes.

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Manufacturer: KONVEKTA AG, P.O.Box 2280, D-34607 Schwalmstadt

I. Technical data

I.1. Air conditioner

Type		UL 500	UL 700	UL 800
Refrigerant		R 134a	R 134a	R 134a
Refrigerant quantity ca.	kg	8,5	9,5	10,5
Operating voltage	Volt DC	26	26	26
Power consumption	A	72	104	136
Cooling capacity	W	24.000	33.000	39.000
Evaporator – air volume	m ³ /h	4.320	6.480	8.640

I.2. Pressure Switches

Unterdruckschalter	BAR	0,3 bar (+/-0,1) off	2,1 bar (+/-0,2) on
Überdruckschalter	BAR	25 bar (+0,0/-0,5) off	18 bar (+0,5/-0,5) on

I.3. Compressors



Important:

To avoid leakage a the shaft seals of the compressor:

The compressor must be switched on every 4 weeks for about 15 minutes!

Even if the vehicles or the air conditioner has not been used for a longer period of time!

⇒ Compressor is dependent on delivery, see nameplate on the compressor.

2. Intended Use

The KONVEKTA air conditioning unit is an air conditioning system that works with the ozone friendly refrigerant R134a and which creates a pleasant and individually adjustable room temperature by means of forced convection. The determined use includes also the observance of the operating instructions as well as the proof of regular inspections.

2.1. Operating Conditions

NOTE:

KONVEKTA uses components made of copper and aluminium, which last a whole unit lifetime under normal environmental conditions. Should the units be operated under aggressive environmental conditions, i.e. air containing salt-, phosphate- or ammoniac extremely, a corrosion of the copper- and aluminium components cannot be ruled out. The copper- and aluminium components of the KONVEKTA systems are not suitable for such extreme application conditions. We indicate emphatically, that corrosion is not subject to warranties for defects. KONVEKTA does not take over any warranties for defect, neither for corrosion nor for consequential damage resulting there from, nor for damages caused by cleaning the systems with highly compressed or corrosion advancing substances.

3. Control unit KS45

The A/C control KS45 is a control unit for air conditioning units. Due to its compact design (96 x 48 mm) the unit can be integrated easily into the dashboard. The control unit is simple in handling and the driver can rely on an optimal climate control of the passenger compartment. All functions of the A/C system are set by keys.

Note:

Basically we recommend operating the A/C unit in automatic mode. Additionally to automatic mode

- a) the **recirculation** air flap can be closed manually to avoid intrusion of exhaust gases (e.g. in tunnels) ⇒ after 10 minutes it opens again automatically.
- b) the **REHEAT** function can be activated to dehumidify a steamy screen ⇒ this function is limited to 20 minutes.

Self test

After applying/activating Kl.15 the unit will carry out a self test. During this self test all in- and output ports are checked (approx. 45 sec.).

The self test procedure is shown in the display:

- | | |
|--|-------|
| 1. Lighting up of all LEDs in the display | 8888 |
| 2. Display: software version, e.g. | 0102 |
| 3. Display: coding at the connecting plug | 01 |
| 4. Display: parameter version | 0001 |
| 5. Display: software version of the KN300 | CAN1 |
| | 0106 |
| 6. Display: software version of the KN300 (articulated vehicles) | CAN 3 |
| | 0106 |
| 7. Display: | test |

“

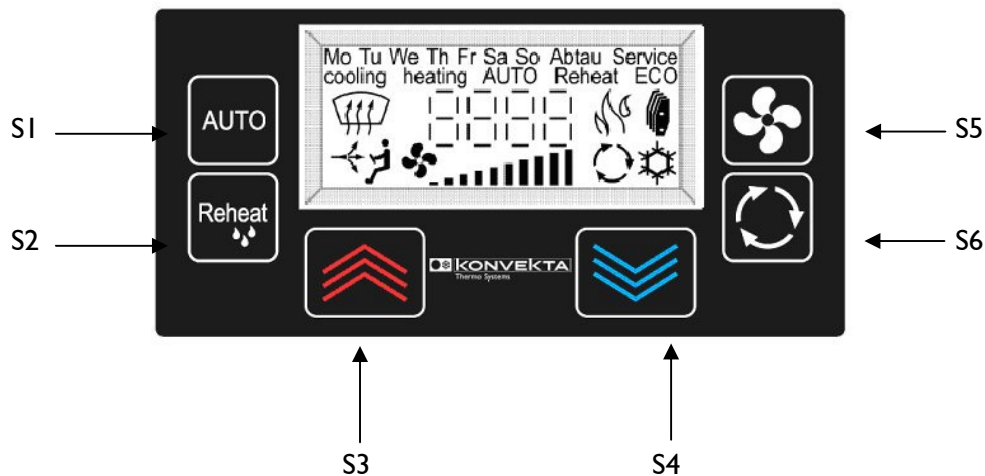
4. Operation



Danger of accident!

- Focussing your attention on the road traffic is of top priority
- Only operate your air conditioning unit when the traffic situation allows it
- Make sure you can clearly recognize and read all operation- and display-elements at any time
- Protect all displays against irritating sunglare and any other optical disturbances
- Please note that the control panel keys have not been designed for heavy stressing
- Excessive or fast pressing of the keys for adjusting the set temperature does not accelerate the cooling down process. It possibly damages the control panel and so affects the general performance of the air-conditioning unit

4.1. Control / key assignment



Key S1	„AUTO“:	Starts automatic mode heating / cooling / ventilation
Key S2	„REHEAT“:	Reheat activated for 20 minutes
Key S3	„Increase“:	Increases the desired temperature Increases the blower capacity
Key S4	„Decrease“:	Decreases the desired temperature Decreases the blower capacity
Key S5	„Evaporator blower“:	Activates the manual blower adjustment
Key S6	„recirculation air“:	Activates the recirculation air flap

4.2. Description of the key assignment

Key S1 AUTO:



- Resets and starts the automatic operation in the passenger compartment.
- In automatic operation mode heating, cooling and ventilation is controlled. Dependent on the set temperature and the actual temperature.
- The default set temperature in AUTO mode is 23°C.

Key S2 REHEAT:



- Starting the REHEAT function in the passenger compartment.
- In REHEAT mode the compressor is activated to dehumidify the air. After 20 minutes REHEAT it is switched over to AUTO mode automatically.
- The air flap closes automatically.

Key S3 increase:



- Adjusting of the set temperature from 12°C to 30°C
- Adjusting of the air capacity of the evaporator blowers
- Maximum heating (press key 10 sec. when AUTO mode is active)

Key S4 decrease:



- Adjusting of the set temperature from 12°C to 30°C
- Adjusting of the air capacity of the evaporator blowers
- Maximum cooling (press key 10 sec. when AUTO mode is active)

Key S5 evaporator blower:



- Manual adjustment of the air capacity in the passenger compartment
- The blower level is automatically controlled in AUTO mode, dependent on the set and actual temperature
- By manual adjustment the blower level can be set permanently
- 7 levels are available for manual adjustment

Stepless:

If stepless evaporator blowers are installed the software automatically divides the capacity into 7 levels.

Double click on blower key:

Outside temperature is displayed [A...25] – back again with double click.

Key S6 recirculation flap:



- Switches the air flap to recirculation air
- The manual recirculation mode is deactivated after approx. 10 minutes
- In recirculation mode (key S6 pressed, LED flashes) the external air supply is locked and the air in the passenger compartment circulates. This avoids that polluted air enters the passenger compartment (e.g. in a tunnel). You should not stay in this mode for a longer time.

Note: Calling up error messages is only possible with a qualified computer diagnosis system of Konvekta! (H99-200-290)

5. Maintenance / Service

Please arrange regular dates for maintenance works and services with a KONVEKTA service station, as indicated in maintenance schedule bus no. [VVP07050618](#).

On our website www.konvekta.com in category >service< you will find a survey of contact details of all our service partners close to your location.

- Only qualified staff is allowed to carry out these works! -

For general instructions on repair – and maintenance works please contact via email:

TKD@konvekta.com



Danger of accidents!

Qualified staff in charge of installation and maintenance have to be trained in accordance with EN 378-Part 4 and must strictly follow the legal provisions.

Any works or modifications at the air conditioner which are carried out improperly can lead to malfunction and so endanger operational reliability. We recommend having all works and modifications carried out at an authorized KONVEKTA Service Station.

Before carrying out any maintenance works at your air conditioning unit, carefully read the KONVEKTA safety provisions (TD00052A[®]) in order to avoid any dangers and accidents!

5.1. Troubleshooting



Only qualified staff is allowed to carry out these works!

Trouble	Cause	Repair by authorized Service Station only
a/c is not running	thermostat open	check inside temperature ^① re-adjust thermostat ^①
	electric connections disconnected	check electric connections at switchboard
	relay defective	check relay, replace if necessary
	defrost thermostat has switched off	check evaporator blower, replace if necessary
	outside temperature too low (possible icing of evaporator)	switch on "ventilation" only
	evaporator coil dirty	clean evaporator coil with compressed air
	magnetic clutch	check connections at magnetic clutch
	compressor does not compress	check high and low pressure, replace compressor if necessary
	excess pressure (pressure too high)	check axial fans check fuses at switchboard clean condenser coil with compressed air
	excess pressure caused by high outside temperature	run unit until pressure has stabilized ^①
	leakage in a/c unit, lack of refrigerant	check a/c unit for leakages, refill refrigerant
	low pressure, dryer clogged	replace dryer
Loud noise at compressor	defective bearing at compressor	replace either bearing or entire compressor
	slack V-belt	check V-belt at compressor drive

^① By operator

6. Warranty Conditions

The current „General Warranty Conditions KONVEKTA AG“ will apply. A copy will be furnished by the warranty department. Please contact gwl@konvekta.com

7. Waste disposal in accordance with legal provisions

After the phase of use the last proprietor is responsible for the adequate waste management. The environmental regulations in the exporting country must be observed.

The following list contains the most important regulating literature, valid for the *Federal Rep. of Germany*.

Resolution for dangerous substances	Resolution for used oil
Law for waste circulation (KRW/AfgG))	Law of water balance
Resolution for the proofs of utilization and removal	Resolution for the waste management of old cars and the adaptation of road prescriptions
Criminal Code (StGB) 28th section „criminal acts against the environment“ §326 - Environment jeopardizing waste management	Resolution (EWC) No.3093/94 for materials that affect the ozone layer
Law of chemicals § 27 - penal prescriptions	Resolution to prohibit certain ozone destroying halogen hydrocarbons.

The used refrigerant endangers the environment. When dealing with refrigerants the existing prescriptions and regulations are to be followed. **Only skilled personnel are allowed to carry out these works!**

Water endangering substances - acc. to §§19g-19l - are solid, liquid, and gaseous substances. e.g.: mineral and tar oils (cooling oils), halogen containing organic combinations (refrigerants).

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- ③ Source of supply:
- Bundesanzeiger
 - Beuth Verlag
 - dtv (Deutscher Taschenbuch Verlag)

8. History of modification

version	date	name	remark	file
a00	31.05.2010	B. Keßler	Source file	BAKL6U021AC.doc

Maintenance Schedule

WP 07 05 06 18

Page 1 of 2

Title:

Maintenance Schedule Bus – HLK- total system

Date: 11.11.2009

Valid for:

Maintenance staff

file: WP07050618-R02 Wartung Bus englisch

Item:	Maintenance- / Repair Features	Test parameter / settings	Comments	Maintenance Intervals				
WK				A	B	C	D	E
1.	Check refrigerant status of the conditioning system (at sight glass)				X	X	X	X
2.	Check oil filling of compressor (at sight glass)		After 10 min. running time the oil level should be visible in the sight glass		X	X	X	X
3.	Check function of high pressure switch (HP)	OFF: 25.0 bar (+/-0,5) / ON: 18.0 bar (+0,5/-0,5) OFF: 25,0 bar (+0/-1,2) / ON: 20,0 bar (+0,6/-0,6)	Only for EvoBus with Wabco-control				X	X
4.	Check function of low pressure switch (LP)	OFF: 0,3 bar (+/-0,1) / ON: 2,1 bar (+/-0,2) OFF: 0,2 bar (+0,1/-0,2) / ON: 0,4 bar	Only for EvoBus with Wabco-control				X	X
5.	Exchange filter drier		And after every intervention in the refrigeration circuit				X	X
6.	Check if condenser and evaporator battery are dirty, if necessary clean them	With compressed air only, not with high-pressure cleaner!				X	X	X
7.	Check refrigerant receiver	Visual inspection	Exchange in case of corrosion and mechanical damage				X	X
8.	Check all air filters for fouling, if necessary renew them			X	X	X	X	X
9.	Check function of air flaps						X	X
10.	Check function of all condenser fans				X	X	X	X
11.	Check function of all evaporator blowers				X	X	X	X
12.	Check all condensate drains		Lip valves should be in stock				X	X
13.	Check all air-conditioning conduits for fit and impermeability	system pressure of 15 bar	Do not use any contrast medium				X	X
14.	Check all heating conduits for fit and impermeability						X	X
15.	Check all water valves for function and impermeability						X	X

Item:	Maintenance- / Repair Features	Test parameter / settings	Comments	Maintenance Intervals				
WK				A	B	C	D	E
16.	Exchange oil filling of compressor	Oil type: Triton SE 55	Amount: KV4-KV6: 2,5 liters KVX40. 2.0 l / KVX50: 2,6 liters					X
17.	Check screwed connections at compressor and bracket on tight fit				X	X	X	X
18.	Check condition of v-belt at compressor				X	X	X	X
19.	Check tension of v-belt at compressor				X	X	X	X
20.	Check all temperature sensors for function and fit						X	X
21.	Check electrical connections and the fuses				X	X	X	X
22.	Check Heating capacity	max. heat					X	X
23.	Check Cooling capacity	max. cooling					X	X
	Maintenance Intervals for countries with a moderate climate	Maintenance Intervals for countries with a hot climate (countries with temperatures predominantly >40°C)	Maintenance Intervals for tropical countries with predominantly high humidity					
A	Monthly maintenance works	maintenance works every two weeks	Monthly maintenance works					
B	-----	maintenance works every three months	maintenance works every three months					
C	Half-yearly maintenance works	Half-yearly maintenance works	Half-yearly maintenance works					
D	Yearly maintenance works	Yearly maintenance works	Yearly maintenance works					
E	maintenance works every 3 years	every 3 years or every 5000 hours of operation	every 3 years or every 5000 hours of operation					

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Date, Signature	Date, Signature	Date, Signature	Replaces Version: R01 of: 01.06.2006