



KONVEKTA

The Innovation Company.

Operating Instructions

for KONVEKTA

air conditioning units

**UL500EM / UL700EM 1. /2. and
3. Gen.**

UL500 EM



UL700EM



with control Wabco ATC-CAN

**R134a
24 Volt DC**

**ID#: BBA-KL5U042AB
Version: A08**

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- Maintenance Schedule [WP07050618](#)

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.

Please observe our valid safety instructions, available under www.konvekta.de/asv.html. In case of order placement or any other conclusion of contract the safety instructions get integral part of the contract.

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.

^① 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.

Information on the operating instructions

These operating instructions are valid for the air conditioners type:

➤ UL500EM	➤ UL700EM	1. / 2. Und 3. Generation
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with control Wabco ATC-CAN

☞ 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/JJ)
Date of first operation:	 / / (TT/MM/JJ)

The machine is in accordance with the EC machinery directive 2006/42/EC.

The unit contains or needs fluorinated greenhouse gas for operation and is subject to identification requirements in accordance with F-Gas Regulation 517/2014.

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.

Indications and photos should neither be copied and circulated nor used for competitor's purposes. All rights according to the copyright remain expressly reserved.

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

1. Technical data air conditioner

			1. / 2. Gen.		3. Gen.	
Type			UL 500 EM	UL 700 EM	UL 500 EM	UL 700 EM
Refrigerant			R 134a			
GWP			1.430			
Refrigerant quantity without front box ca.	kg		7,0	8,0	2,8	3,5
-optional with front box approx.	kg		7,5	8,5	3,3	4,0
CO2 equivalent	to		10,01	11,44	4,00	5,01
CO2 equivalent with Frontbox	to		10,73	12,16	4,72	5,72
Operating voltage	Volt DC		26			
26 V DC	Max. current draw	A	63	90	60	90
	Current draw at regular mode	A	14	20	14	20
400 V AC	Max. operating current	A	15	24	15	24
	Starting current compressor	A	100	120	100	120
Cooling capacity	W		24.000	33.000	24.000	33.000
Heating capacity	W		30.000	38.000	30.000	38.000
Evaporator – air volume	m ³ /h		4.720	7.080	4.720	7.080
Weight	kg		171	196	162	192

2. Compressor



Important to avoid leakages at the shaft seal of the compressor:

The compressor should be started every 4 weeks for approx. 15 minutes! This also applies when the vehicle is not into operation for a longer period or when the air conditioning unit is not used!

3. 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.

3.1. Operating Conditions

NOTE: KONVEKTA uses components made of copper and aluminum, 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 aluminum components cannot be ruled out. The copper- and aluminum 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.

4. Operation

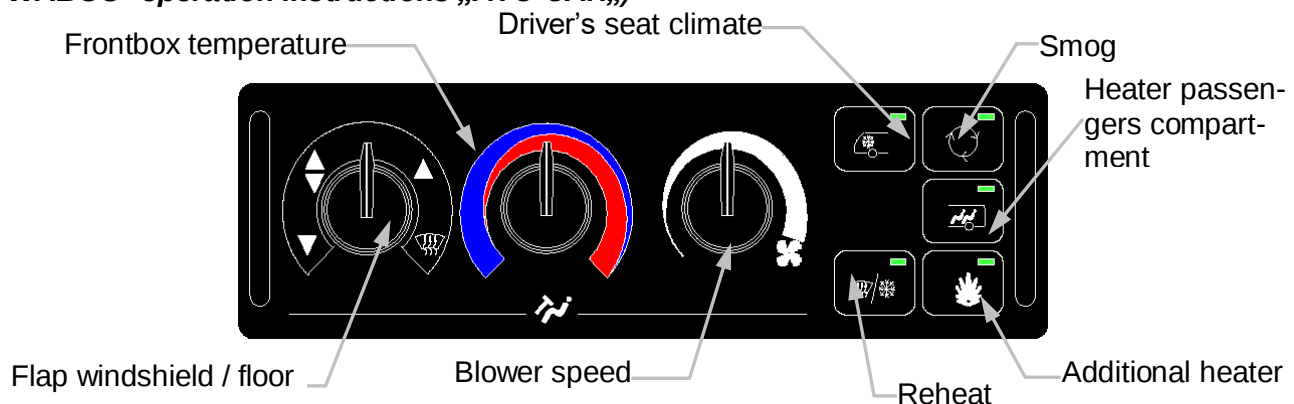


Attention in case of roof top a/c units: Never switch on the a/c unit during car-wash! Danger of accidents!

- Focussing your attention on the road traffic is of top priority.
- Only operate your air conditioning unit when the traffic situation allows it!
- 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 function

You operate the air conditioning unit via the original WABCO – control unit (see *original WABCO- operation instructions „ATC-CAN,,*)



For operation the driver can use 3 rotary potentiometer and maximal 5 keys. Depending on the serial-model modification of the bus different control desks are used.

In order to release the driver from extensive adjustments for the passengers' compartment he is able to switch off the complete control for this area. All other functions on the control desk serve for the individual adjustments of the driver's cabin.

3.1.1. Flap for windshield / floor

The flaps for windshield respectively floor are controlled according to the symbolism.

Arrow down:	flap for floor	The whole air is lead to the floor
Arrow down/up:	mid-position	Air circulation is split up between floor and windshield.
Arrow up	flap for windshield	The whole air is lead to the windshield.
Symbol windshield	defrost	Water valve completely opened; air to windshield; maximal blower speed.

The conversion is realized via characteristic curves which also facilitate intermediate positions.

3.1.2. Desired value of front box temperature

The blowout temperature of the front box can be set between 14 and 60° C.

3.1.3. Blower speed

The potentiometer serves for setting speed of the front box. The air velocity is increased by turning the potentiometer clockwise.

3.1.4. Smog

With the smog key you can stop supply of fresh air for the whole bus. If smog function is activated the key is illuminated. If this function is activated, the openings in the roof as well as the fresh air flaps are closed for a certain time prescribed by the manufacturer.

3.1.5. Heater passenger's compartment

The driver doesn't have the possibility to intervene in the fully automatic control of the passenger's compartment. This control is merely turned off during routes without passengers (e.g. transportation of bus). If automatic function is activated the key is illuminated.

3.1.6. Additional heater

Normally the additional heater is turned on manually. If additional heater is activated, the key is illuminated.

3.1.7. Reheat

With the key Dry / Reheat the air conditioning unit is put into operation. The air is dried by cooling down and re-heating.

3.1.8. Driver's seat air conditioning

This function activates the refrigerant magnetic valve respectively the compressor magnetic clutch. Key is illuminated if a/c system is activated.

3.1.9. General

Roof ventilator: Roof ventilators are activated from a certain minimum speed of the roof evaporator blowers. In circulated air operation the roof ventilators are switched off.

5. Maintenance / Service

For maintenance works we refer to our maintenance instructions: *BWA-KL5U042AB* for generation 1 and *BWA-KL5N0802A* for generation 2 and 3, which have been written exclusively for maintenance personal. Please arrange regular dates for maintenance works and services with a KONVEKTA service station, as indicated in maintenance schedule bus no. [WP07050618](#). 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 (EC) No.307/2008 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^①) in order to avoid any dangers and accidents!

^① Source of supply: **KONVEKTA AG**, P.O. Box 2280, D-34607 Schwalmstadt

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
	low pressure, screen of expansion valve clogged	clean screen; replace dryer

^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
- Law for waste circulation (KRW/AfgG))
- Resolution for the proofs of utilization and removal
- Criminal Code (StGB) 28th section „criminal acts against the environment“ §326 – Environment jeopardizing waste management
- Resolution for used oil
- Law of water balance
- Resolution for the waste management of old cars and the adaptation of road prescriptions
- Resolution (EC) No. 2037/2000 of the European Parliament and of the Council for materials that affect the ozone layer
- Resolution to prohibit certain ozone destroying halogen hydrocarbons.
- Law of chemicals § 27 – penal prescriptions

The used refrigerant endangers the environment. When dealing with refrigerants the existing prescriptions and regulations are to be followed. **Only qualified staff is 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).

Source of supply:

- Bundesanzeiger
- Beuth Verlag
- dtv (Deutscher Taschenbuch Verlag)

8. History of modification

Version	Date	Name	Remark	File
A00	09.04.2013	B. Keßler	Source file	BAKL5U042AB
A01	25.04.2013	B. Keßler	Deleted point 1.3 compressor	BAKL5U042AB
A02	08.08.2013	B. Keßler	Technical data 1.1 – corrected current draw; added operating / starting current; changed evaporator – air volume	BAKL5U042AB
A03	01.04.2015	B. Keßler	Deleted item 1.2 “pressure switches”	BAKL5U042AB
A04	22.03.2016	B. Keßler	Deleted item 4.1 and 6.	BAKL5U042AB
A05	21.02.2017	B. Keßler	Information on the operating instructions and technical data expanded with F-gas-regulation.	BAKL5U042AB
A06	17.03.2020	B. Keßler	Added second generation, 400 V AC max. operating current at UL500EM was 20A; point 4 updated	BAKL5U042AB
A07	19.10.2021	B. Keßler	Point 2 compressor added	BAKL5U042AB
A08	09.02.2022	B. Keßler	Added 3 rd gen. and updated file	BAKL5U042AB