



KONVEKTA

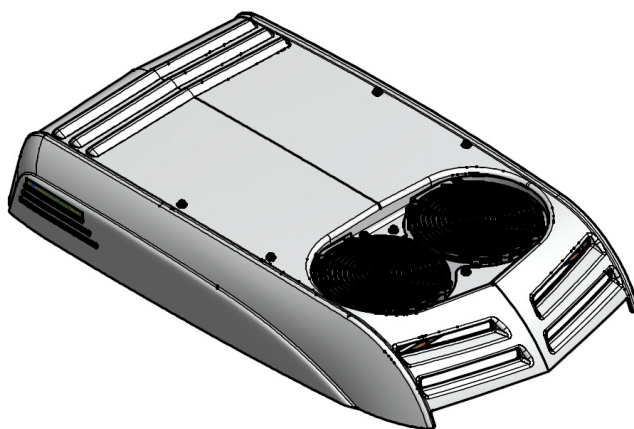
Technical leadership starts with ideas.

Operating instructions

for KONVEKTA

air conditioning unit

KL20E facelift



With climate control KS52

R134a
24 Volt

ID#: BBA-KL2E2502A
Version: A02

Konvekta AG

Am Nordbahnhof 5
34613 Schwalmstadt
Germany



+49 (0) 66 91 / 76 – 0



+49 (0) 66 91 / 76 - 200



Info@konvekta.com

www.konvekta.com

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- Maintenance Schedule Bus: [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 de-tails of all our service partners close to your location.

Information on the operating instructions

These instructions are valid for the air conditioning unit's type:

➤ **KL20E**

☞ 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, Postfach 2280, D-34607 Schwalmstadt

1. Directives for Installation, Connection and Use

Please read carefully the following instructions before installing, connecting and operating the device. We assume no liability for incorrect handling and usage.



WARNING

MAKE THE CORRECT CONNECTIONS.

Failure to make the proper connections may result in fire or product damage.

USE ONLY SUITABLE VOLTAGE.

The usage with a not suitable voltage may result in fire. Furthermore a not suitable voltage may result in failure or product damage.

TAKE CARE THAT WIRES NOT CARRY CURRENT WHILE CONNECTING.

Connecting wires which carry current may result in electrical shorts or product damage.

ONLY USE WIRES WITH SUFFICIENT LARGE CROSS SECTIONS.

Using wires with not sufficient large cross sections will exceed the current carrying capacity of the wires and result in fire or electric shock.

DO NOT DISASSEMBLE OR ALTER.

Doing so may result in an accident, fire or electric shock.

DO NOT INSTALL IN LOCATIONS WHICH MIGHT HINDER VEHICLE OPERATIONS.

Doing so may obstruct forward vision or hamper movement and result in serious accident.

DO NOT BLOCK VENTS OR RADIATOR PANELS.

Doing so may cause heat to build up inside and may result fire.

USE THE CORRECT AMPERE RATING WHEN REPLACING FUSES.

Failure to do so may result in fire or electric shock.

DO NOT PLACE HANDS, FINGERS OR FOREIGN OBJECTS IN INSERTION SLOTS OR GAPS.

Doing so may result in personal injury or damage to the product.

AVOID HIGH FORCE EFFECTS.

Do not expose the device high force effects or strokes. Doing so may result in product damage.

RANGE OF THESE DIRECTIVES.

These directives apply for all devices, on which this directives-sheet is added. One directives-sheet is sufficient per box.



CAUTION

HAVE THE WIRING AND INSTALLATION DONE BY EXPERTS.

The wiring and installation of this device requires special technical skill and experience and have to be done by experts.

ARRANGE THE WIRING SO IT IS NOT CRIMPED OR PINCHED BY A SHARP METAL EDGE.

Arrange the wiring so it will not be damaged.

DO NOT INSTALL IN LOCATIONS WITH HIGH MOISTURE OR DUST.

Avoid installing the device in locations with high incidence of moisture or dust. Moisture or dust that penetrates into this device may result in product failure or damage.

USE SPECIFIED ACCESSORY PARTS AND INSTALL THEM SECURELY.

Be sure to use the specified accessory parts. Use of other than designated parts may damage this device internally or may not securely install the device in place.

HALT USE IMMEDIATELY IF A PROBLEM APPEARS.

Failure to do so may cause personal injury or damage to the product. Return it to your authorized customer service.

TEMPERATURE.

Be sure the environment-temperature is in the allowed range before turning the device on.

USE DEVICE ONLY FOR SPECIFIED APPLICATION AREA.

Using the device for another purpose or in another application area than the intended one, may result failure, product damage or injury.

PRODUCT CLEANING.

Use a soft dry cloth for cleaning the device. For more severe dirt, please dampen the cloth with water only. Anything else has the chance of damage the product.

TRANSPORT TERMS

Handle the unit with care at any time. During transport make sure that the unit is stored safely and cannot be damaged. If more than one unit are transported, every unit has to be packed singly to avoid that the units damage one another.

The forwarder is liable for all damages during transport.

2. Technical data

Type		KL20E
Refrigerant		R 134a
GWP		1.430
Refrigerant quantity approx.	kg ca.	0,7
CO2 equivalent	to	10.01
Operating voltage	Volt DC	24
Cooling capacity	Watt	4.300
Air volume	m ³ /h	700
Current consumption	V / A	24V/69
Measurements:		
- length	mm	1300
- width	mm	791
- height	mm	225,5
- weight	kg	53

2.1. Compressor

Konvekta code: H13-002-209

Type	SD5H09 / HB / ø 125 mm / 5PV
Oil brand / quantity	PAG / Menge je nach Ausführung, Aufstellung liegt Kompressor bei! (siehe Anleitung: TD00031A)
Connection pressure side standard	3/4" O-Ring
Connection suction side standard	7/8" O-Ring
Capacity intake	ca. 50 Watt
Number of revolutions	400 bis max. 6.000 U/min.
Installation location	von der Senkrechten max. 90° nach beiden Seiten schwenkbar
Weight	7,5 kg



Important:

To avoid leakages at the shaft seal of the compressor:

The compressor should be started every 4 weeks for rescri. 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 R 134a 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. Generally information for a/c unit

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

 The air conditioning unit is operational with running engine only.

- At cooling operation the humidity inside the vehicle is decreased, which avoids steamed-up windows.
- The air conditioning unit works most effectively with windows and doors shut. If, however, the interior of the standing vehicle has been heated up severely by exposure to sunlight, short-time opening of windows/doors may accelerate the cooling down process.
- At high outside temperature and humidity, condensate might drip off the evaporator and make a puddle under the vehicle. This is quite normal and no sign for a leakage.
- If you think that the air conditioning unit has been damaged switch it off immediately in order to avoid further damage. The air conditioning unit may be taken into operation again only after it has been checked at a 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

3.2. Operating Conditions

NOTE: KONVEKTA uses components made of copper and aluminium, which last a whole unit life-time 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

4. Operation

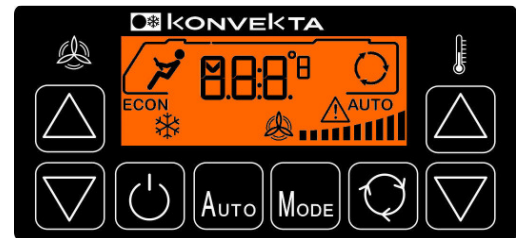


Danger of accidents!

- Focussing your attention on the road traffic is of top priority.
- Only operate your air conditioning unit when the traffic situation allows it!
- Make sure you can clearly recognize and read all operation- and display-elements at any time.
- Protect all displays against irritating sun glare 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. Climate controller KS52

The **KS52** is a climate controller for air conditioning systems in modern vehicles. Due to its compact design the controller can be mounted easily in the dash board of the vehicle. The clear arrangement of the symbols and the easy handling relieve the driver and meet all demands of optimal air conditioning control.



4.2. Description of the keys

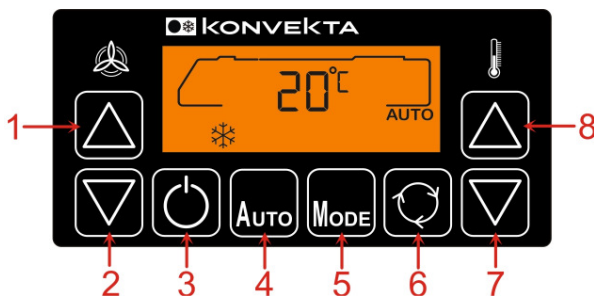


Figure 1: Front view of the control device (keys)

Taste	Function of the key (short press)
1	Activates manual blower operation and increases the blower speed.
2	Activates manual blower operation and decreases the blower speed.
3	Switches the air conditioner on and off.
4	Activates the automatic blower control.
5	-No function-
6	Switches display between target temperature, outside temperature and inside temperature (this function depends on the operating mode of the device).
7	Decreases set temperature by 1K (this function depends on the operating mode of the device).
8	Increases set temperature by 1K (this function depends on the operating mode of the device).

4.3. Display features

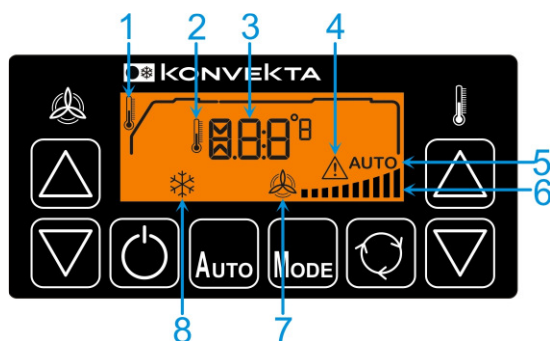


Figure 2: Front view of the control unit (display)

Symbol	Function of the LCD-display
1	The outside temperature is displayed in symbol 3 (seven segment).
2	The inside temperature is displayed in symbol 3 (seven segment).
3	4-digit seven-segment display for different values.
4	An error was detected and confirmed by the user.
5	Automatic blower control is activated.
6	Bar display for blower speed in manual blower control.
7	Manual blower control is activated.
8	The cooling output (air conditioning 1) is turned on.

4.4. Switch on air conditioning unit

With key <i>ON-OFF</i> (3) the controller is switched on.	 Press
After switching on the controller carries out a self-test. The software version (here: 1.0), the controller version (large letter, here: A) as well as the operating mode (small letter, here: A) are indicated for approx. 5 sec.	
After this the operating hours of the climate controller are displayed for approx. 5 sec.  The operating hours are indicated as figure until the thousands digit. For every ten thousand digit a bar is displayed additionally (for 20000 e.g. two bars, here: 20286 hours).	
Now the air conditioner is ready for operation. The last stored setting is displayed.	

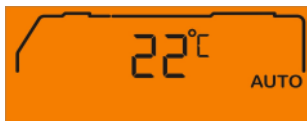
4.5. Switch off the air conditioning unit

To switch off the air conditioner, press the on-off button (3).	 Press
The air conditioning is now turned off.	

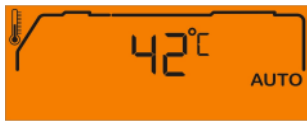
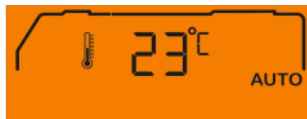
4.6. Setting of the desired temperature

The set temperature is displayed (here: „22 °C“). Digits 1 to 3 show the set temperature, the last digit the unit °Celsius („C“) or °Fahrenheit („F“).	
Adjustment of the set temperature with key <i>Plus</i> (8).	 Press twice
The new set temperature is indicated, here 24 °C.  By pressing the key <i>set temperature minus</i> (7) the temperature can be decreased.	
 Depending on the operating mode of the climate controller, the function to set the desired temperature can be disabled. This is not a malfunction.	
 The climate controller automatically switches the air conditioner on or off depending on the difference between the set target temperature and the measured room temperature. When the air conditioner is turned on, the <i>climate control icon</i> (8) appears.	

4.7. Manual adjustment of the blowers

The climate controller is in automatic blower operation mode. The AUTO-Symbol (5) is indicated.	
To decrease the blower speed, press the key blower minus (2).	 Press
The AUTO icon (5) goes out, but the blower icon (7) and the current speed are shown as a bar display (6) (here level 1).  In manual blower operation mode the blower speed can be adjusted with the keys blower plus (1) and blower minus (2) in three stages. At level 1 four bars, at level 2 seven bars and at level 3 ten bars are displayed	
The automatic blower operation mode can be activated again by pressing key (4).	 Press
The controller is in automatic blower mode. The AUTO-symbol (5) is indicated.	

4.8. Switching of temperature display mode

In normal operation, the set target temperature is displayed (in this case 22°C).	
By pressing the <i>switch key</i> (6), the display can be switched to outside temperature.	 Press
The current outside temperature (here 42 °C) is displayed. The <i>outside temperature icon</i> (1) is displayed.	
By pressing the <i>switch key</i> (6) again, the display can be switched to inside temperature.	 Press
The current inside temperature (here 23 °C) is displayed. The <i>inside temperature icon</i> (2) is displayed.	
By pressing the <i>switch key</i> (6) again, the display can again be switched to target temperature.	 Press
The target temperature is displayed again.	



If the target temperature is adjusted in the display of the outside or inside temperature, the display will for a few seconds change to target temperature.



Depending on the controller configuration, the display after a few seconds changes automatically from the outside or inside temperature to displaying the target temperature.

4.9. Switch the temperature indication to °Fahrenheit

The adjusted set temperature is indicated in °Celsius: e.g. 22 °C.	
To change the display to °Fahrenheit press and hold key blower <i>Plus</i> (1).	 Press and hold
Then press key <i>MODE</i> (5) and release all keys.	 Press and release all keys
The display changes over to °Fahrenheit.	
 When this key combination is pressed again, the display changes back to °Celsius.	



The setting of the temperature unit is retained also after turning off the climate controller.

4.10. Error indication

4.10.1. Error code „F0“ - malfunction room temperature sensor

Malfunction of room temperature sensor is indicated by flashing „F0“.	
 The climate controller has detected a malfunction of the room temperature sensor, the control function is no longer operational. Reasons for malfunction of sensor might be: short circuit or disconnection of sensor cable, connector at sensor or controller, temperature sensor defective.	
 Only after elimination of sensor malfunction the controller will be ready for operation, and the sensor malfunction is no more indicated!	

4.10.2. Error code „F1“ – outside-temperature sensor

Malfunction of the outside - –emperature sensor is indicated by flashing error code „F1“.	
 The climate controller has detected a fault in the outside temperature sensor; the control is no longer ready for operation. Cause of the sensor malfunction: Short circuit or interruption of the sensor line, plug connection on the sensor or control unit, temperature sensor defective	
 The controller is ready for operation again only after the fault has been eliminated; the sensor error is no longer displayed!!	
 An error can be confirmed with the <i>MODE</i> key (5). The climate controller can then be operated normally again, although the climate controller operates in emergency mode. The confirmed error is indicated by the <i>warning icon</i> (4).	

5. Maintenance and Service

Please arrange regular dates for maintenance works and services with a KONVEKTA service station, as indicated in maintenance schedule bus no. [WP07050618](#).

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

–or 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 (EG) 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[®]) in order to avoid any dangers and accidents!

- ⇒ **When the air conditioning system is being opened during maintenance resp. reparation works, the dryer-collector-sight glass has to be exchanged!**

⇒ **The connexions have to be wetted with PAG oil before the installation of the wires.**

5.1. Condenser coil

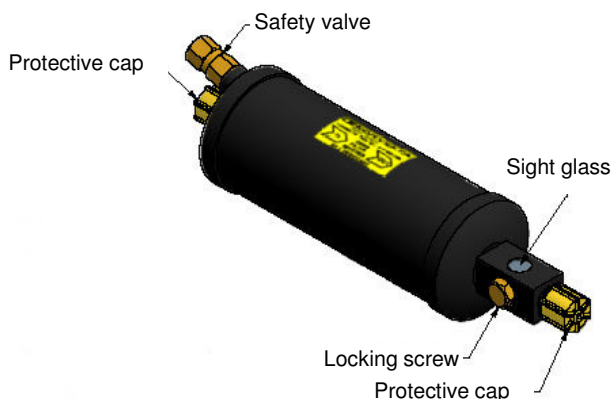
After taking into operation the condenser, a regular cleaning is necessary. Always keep condenser coil fins clean. Severe soiling cause's excess pressure within the a/c-unit system and it automatically stops working.

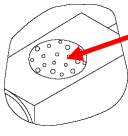
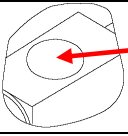
The condenser coil fins have to be cleaned with compressed air at least twice a year, in case of severe soiling more often.

5.2. Check refrigerant level

Check the refrigerant level at the sight glass of the dryer-collector unit:

1. Switch a/c unit on.
2. The set temperature must be **lower** than the actual inside temperature, so that compressor is engaged.



Sight glass:	Cause	Remedy
	Forming of bubbles in the sight glass. ☛ Lack of refrigerant!!	Attention! In case there is too little refrigerant in the system, an increase in bubble formation can be observed in the sight glass. In this case it is necessary to switch off the system immediately in order to avoid damages at the compressor. Contact KONVEKTA Service Station®! - refill refrigerant - check a/c unit for leakages
	Free of bubbles	Amount of refrigerant is o.k.

5.3. Troubleshooting



Only qualified staff is allowed to carry out these works!

Trouble	Cause	Repair <i>By authorized Service Station only</i> ①
a/c is not running	electric connections disconnected	check electric connections
	defective fuse	check fuse, replace if necessary
	Blower switch defective	check blower switch, V-belt if necessary
	excess pressure	clean condenser coil
	low pressure, dryer clogged	replace dryer ①
	low pressure, screen of expansion valve clogged	clean screen; replace dryer ①
	leakage in a/c unit, lack of refrigerant	- check a/c unit for leakages - refill refrigerant and replace dryer! ①
a/c runs, switches off	excess pressure caused by high outside temperature	- run unit, until pressure has stabilized ①
Loud noise at compressor	defective bearing at compressor	- replace either bearing or entire compressor
	magnetic clutch defective	check connections at magnetic clutch ①
Loud noise at V-belt	worn V-belt slack V-belt	- replace V-belt ① - retighten V-belt ①

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.

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 - –nvironment jeopardizing waste management
- Law of chemicals § 27 - –enal pr rescriptions
- 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.

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 - –cc. to §§19g-19l - –re solid, liquid, and gaseous substances. e.G.: mineral and tar oils (cooling oils), halogen containing organic combinations (refrigerants).

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

8. History of modification

Version	Date	Name	Remark	File
A00	25.11.2015	B. Keßler	Source file.	BAKL2E2502A
A01	17.03.2016	B. Keßler	Resolution (EC)No. 2037/2000 was (EWC) No. 3093/94	BAKL2E2502A
A02	22.02.2017	B. Keßler	Information on the operating instructions and technical data expanded with F-gas-regulation.	BAKL2E2502A