

DUCT COOLERS



KFK
KFK1
KWK
KWK1

EN

USER'S MANUAL

 **BLAUBERG**

CONTENTS

Safety requirements.....	3
Purpose.....	4
Delivery set.....	4
Designation key.....	4
Technical data.....	4
Design and operating principle	9
Mounting and set-up.....	10
Technical maintenance.....	11
Troubleshooting.....	12
Storage and transportation regulations.....	12
Manufacturer's warranty.....	13
Certificate of acceptance.....	15
Seller information.....	15
Installation certificate.....	15
Warranty card.....	15

This user's manual is a main operating document intended for technical, maintenance, and operating staff.

The manual contains information about purpose, technical details, operating principle, design, and installation of the KFK(1)/KWK(1) unit and all its modifications.

Technical and maintenance staff must have theoretical and practical training in the field of ventilation systems and should be able to work in accordance with workplace safety rules as well as construction norms and standards applicable in the territory of the country.

SAFETY REQUIREMENTS

All user's manual requirements as well as the provisions of all the applicable local and national construction, electrical, and technical norms and standards must be observed when installing and operating the unit.

Check the unit for any visible damages of the casing before starting installation. The casing internals must be free of any foreign objects.

While mounting the unit, avoid compression of the casing!

Misuse of the unit and any unauthorized modifications are not allowed.

Do not expose the unit to adverse atmospheric agents (rain, sun, etc.).

Transported air must not contain any dust or other solid impurities, sticky substances, or fibrous materials.

Do not use the unit in a hazardous or explosive environment containing spirits, gasoline, insecticides, etc.

Do not sit on the unit and do not put objects on it.

The information in this user's manual was correct at the time of the document's preparation. The Company reserves the right to modify the technical characteristics, design, or configuration of its products at any time in order to incorporate the latest technological developments.



**THE PRODUCT MUST BE DISPOSED SEPARATELY AT THE END OF ITS SERVICE LIFE.
DO NOT DISPOSE THE UNIT AS UNSORTED DOMESTIC WASTE.**

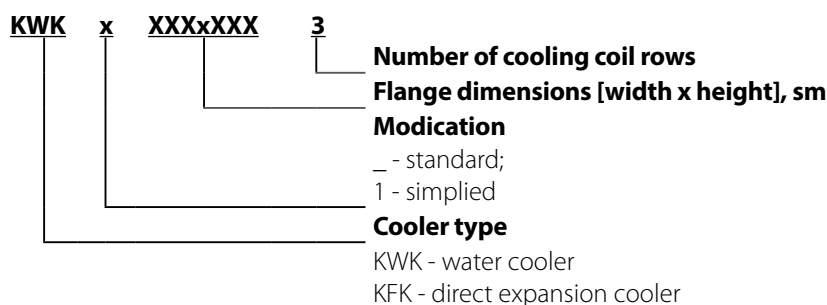
PURPOSE

The duct coolers are designed for supply air cooling in supply or air handling units integrated into rectangular ventilation systems. The cooler is a component part and is not designed for independent operation. Transported air must not contain any flammable or explosive mixtures, evaporation of chemicals, sticky substances, fibrous materials, coarse dust, soot and oil particles or environments favourable for the formation of hazardous substances (toxic substances, dust, pathogenic germs).

DELIVERY SET

Name	Number
Duct cooler	1 item
User's manual	1 item
Packing box	1 item

DESIGNATION KEY



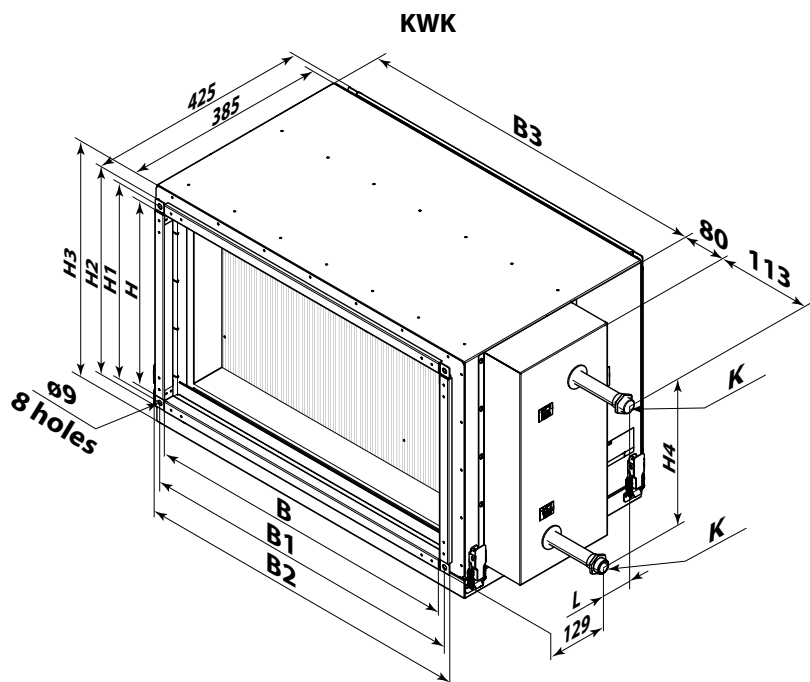
TECHNICAL DATA

Duct water cooler KWK (KWK1):
 Maximum operating pressure: 1.5 MPa (15 bar).

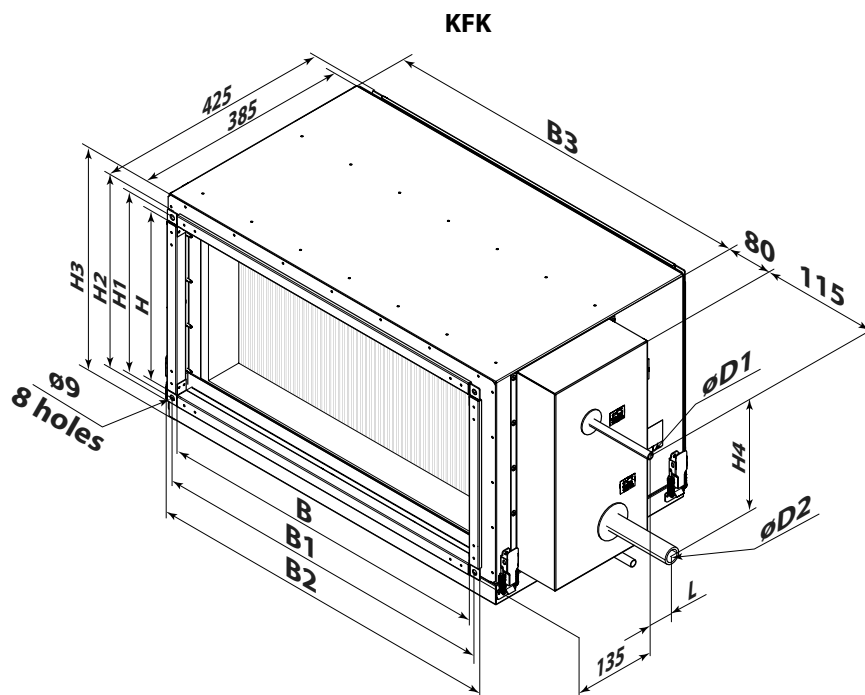
Direct expansion cooler KFK (KFK1):
 Maximum operating pressure: 2.8 MPa (28 bar).

Each cooler is subjected to a pressure and a tightness test.

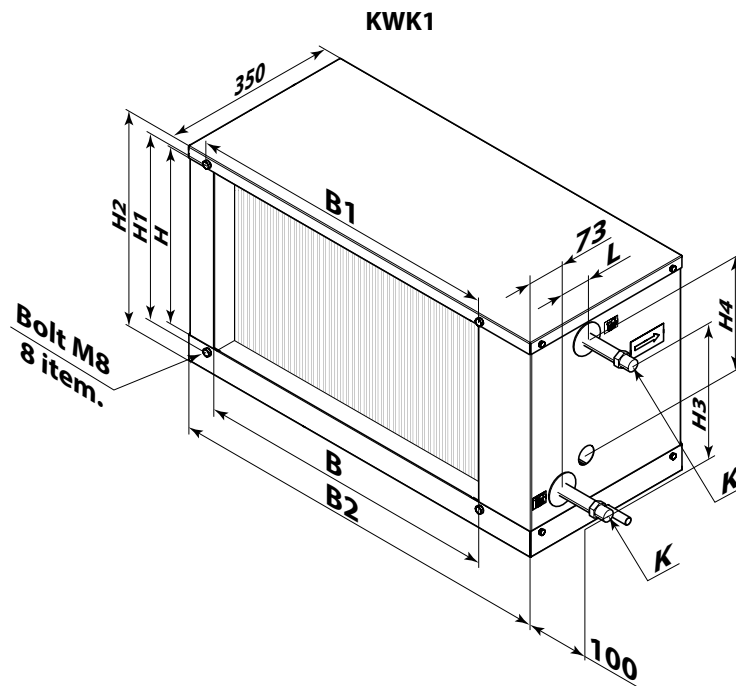
The cooler design is constantly being improved, so some models can slightly differ from those ones described in this manual.



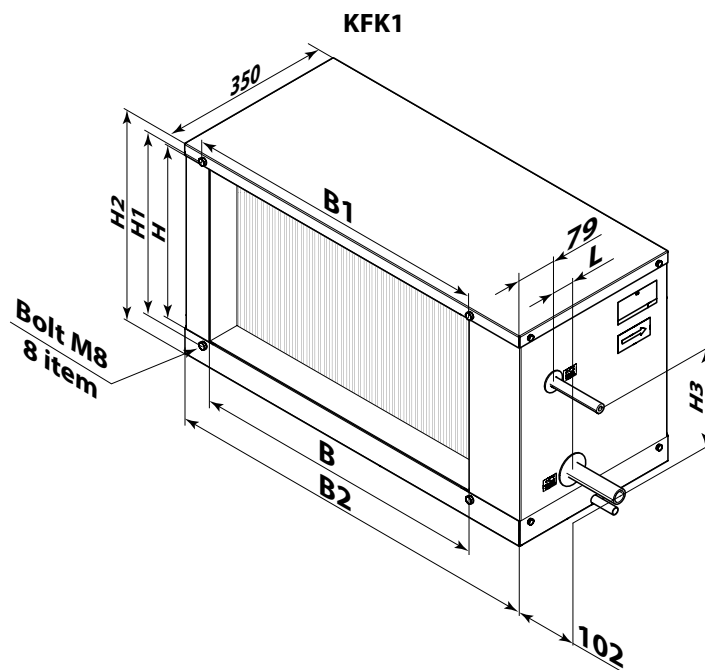
Model	Dimensions, mm											Weight [kg]
	B	B1	B2	B3	H	H1	H2	H3	H4	L	K	
KWK 40x20-3	400	420	440	470	200	220	240	295	124	56	G 3/4"	10,4
KWK 50x25-3	500	520	540	570	250	270	290	345	188	45	G 3/4"	12,8
KWK 50x30-3	500	520	540	570	300	320	340	395	252	56	G 3/4"	14,3
KWK 60x30-3	600	620	640	670	300	320	340	395	252	56	G 3/4"	16
KWK 60x35-3	600	620	640	670	350	370	390	445	268	56	G 3/4"	17,7
KWK 70x40-3	700	720	740	770	400	420	440	495	314	56	G 3/4"	21,9
KWK 80x50-3	800	820	840	870	500	520	540	595	442	56	G 3/4"	26,9
KWK 90x50-3	900	920	940	970	500	520	540	595	442	56	G 3/4"	31,5
KWK 100x50-3	1000	1020	1040	1070	500	520	540	595	442	56	G 1"	32



Model	Dimensions, mm												Weight [kg]
	B	B1	B2	B3	H	H1	H2	H3	H4	L	D1	D2	
KFK 40x20-3	400	420	440	470	200	220	240	295	103	44	12	22	10,4
KFK 50x25-3	500	520	540	570	250	270	290	345	155	44	12	22	12,8
KFK 50x30-3	500	520	540	570	300	320	340	395	210	33	12	22	14,3
KFK 60x30-3	600	620	640	670	300	320	340	395	199	44	18	28	16
KFK 60x35-3	600	620	640	670	350	370	390	445	199	44	18	28	17,7
KFK 70x40-3	700	720	740	770	400	420	440	495	224	44	22	28	21,9
KFK 80x50-3	800	820	840	870	500	520	540	595	340	44	22	28	26,9
KFK 90x50-3	900	920	940	970	500	520	540	595	340	44	22	28	31,5
KFK 100x50-3	1000	1020	1040	1070	500	520	540	595	325	44	22	28	32



Model	Dimensions, mm										
	B	B1	B2	H	H1	H2	H3	H4	L	K	Weight [kg]
KWK1 40x20-3	400	420	580	200	220	270	124	70	56	G 3/4"	13,5
KWK1 50x25-3	500	520	680	250	270	320	188	102	45	G 3/4"	14
KWK1 50x30-3	500	520	680	300	320	370	252	70	56	G 3/4"	15
KWK1 60x30-3	600	620	780	300	320	370	252	134	56	G 3/4"	16
KWK1 60x35-3	600	620	780	350	370	420	268	229	56	G 3/4"	17
KWK1 70x40-3	700	720	880	400	420	470	314	196	56	G 3/4"	19
KWK1 80x50-3	800	820	980	500	520	570	442	324	56	G 3/4"	22
KWK1 90x50-3	900	920	1080	500	520	570	442	324	56	G 3/4"	23
KWK1 100x50-3	1000	1020	1180	500	520	570	442	324	56	G 1"	24



Model	Dimensions, mm										Weight [kg]
	B	B1	B2	H	H1	H2	H3	L	D1	D2	
KFK1 40x20-3	400	420	580	200	220	270	103	44	12	22	13,5
KFK1 50x25-3	500	520	680	250	270	320	155	44	12	22	14
KFK1 50x30-3	500	520	680	300	320	370	210	33	12	22	15
KFK1 60x30-3	600	620	780	300	320	370	199	44	18	28	16
KFK1 60x35-3	600	620	780	350	370	420	199	44	18	28	17
KFK1 70x40-3	700	720	880	400	420	470	224	44	22	28	19
KFK1 80x50-3	800	820	980	500	520	570	340	44	22	28	22
KFK1 90x50-3	900	920	1080	500	520	570	340	44	22	28	23
KFK1 100x50-3	1000	1020	1180	500	520	570	325	44	22	28	24

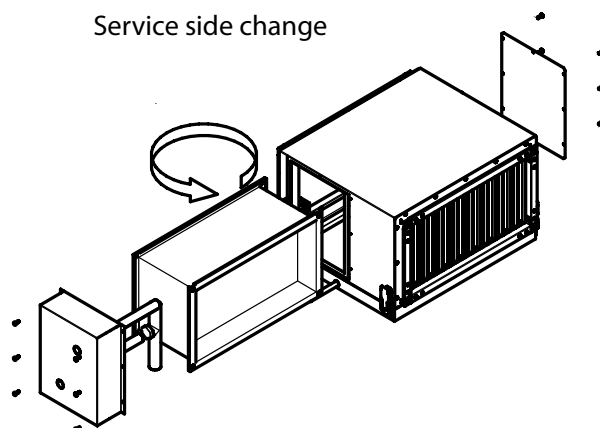
DESIGN AND OPERATING PRINCIPLE

The cooler casing is made of polymer coated steel, the tube collectors are made of copper and the heat exchanger surface is made of aluminium plates. The cooler casing has a dismantable design that provides easy access to the heat exchanger and the droplet separator. The cooling coils are available in 3 rows modification.

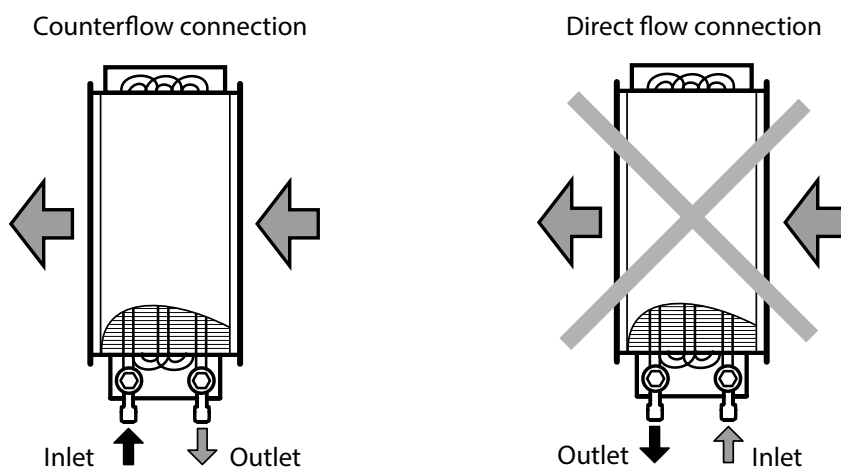
The internal operating medium of the KFK (KFK1) duct cooler is an evaporating refrigerant, i.e. R123, R134a, R152a, R404a, R407c, R410a, R507, R12, R22.

The internal operating medium of the KWK (KWK1) duct cooler is water or antifreeze.

If necessary change the service side by turning the cooling coil through 180°. **The KFK1 and KWK1 do not have this option.** By default the service side is on the right in the direction of the air flow.



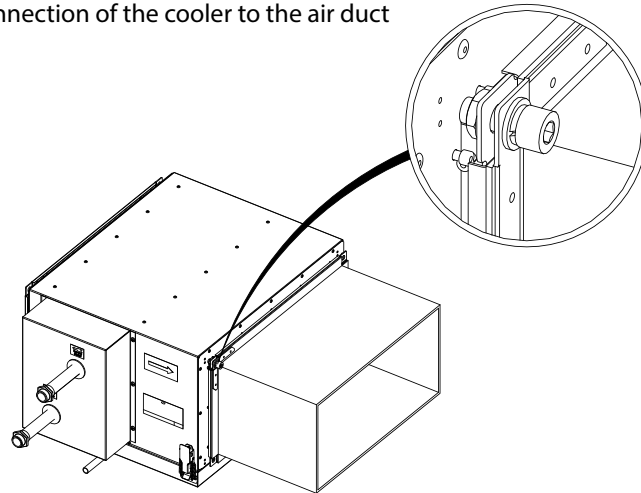
To attain the maximum cooling capacity the cooler must be connected on counter-flow basis



MOUNTING AND SET-UP

The cooler is connected to the air duct with a flange connection

Connection of the cooler to the air duct



Outdoor installation of the cooler is allowed only if the refrigerant is an antifreeze (ethylene glycol solution). During mounting consider the operating characteristics of the mixing unit actuator.

While mounting the cooler provide quick and easy dismantling of the heat exchanger, the drain pan and the drain pipe.

- The cooler can be installed only horizontally to enable condensate drainage.
- While mounting the cooler provide enough access for servicing and repair operations.
- The duct cooler may be installed upstream and downstream of the ventilation unit. If the cooler is installed downstream of the fan, provide at least 1-1.5 m air duct between the cooler and the fan for air flow stabilization.

Prior to starting mounting check the tube, plates and the tube collector condition. Flanges of the system components are mounted with galvanized bolts and M8 nuts.

For KWK1 and KFK1 the flanges of the system components are mounted with galvanized bolts and M8 nuts, pre-installed in the cooler. Prior to mounting remove the bolts and after the mounting screw them back.

Prior to starting operation and after a long downtime fill the U-trap with water. Negative pressure coolers can be equipped with a U-trap and a ball valve. Such U-trap must not be filled with water.

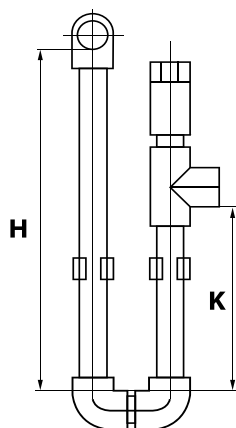
CONDENSATE DRAINAGE

A drain pan with a drain pipe connected to a sewage system is designed for condensate drainage. While selecting the U-trap dimension type consider the total fan pressure. The U-trap must ensure correct operation of the ventilation system.

Connect the drain pipe, the U-trap (not included in the standard delivery set) and the sewage system with metal, plastic or rubber pipes. The pipe slope downwards must be at least 3°. Before starting the cooler fill the system with water and check that the U-trap is always filled with water. Make sure that the water drainage is correct. Wrong connection to sewage system may result in condensate accumulation inside the cooler.

The condensate drainage system is designed for operation at the ambient temperature above 0 °C!

If the ambient temperature is below 0 °C, the condensate drainage system must be heat insulated and pre-heated.



H, mm	K, mm	P, Pa
100	55	600
200	105	1100
260	140	1400

H - U-trap height

K - drain height

P - total pressure in the fan

TECHNICAL MAINTENANCE

Maintenance means regular preventive measures during operation. The aluminium ribs and the droplet separator must be cleaned at least once per year by vacuum cleaner or pressure water flushing. The cleaning periodicity depends on air pollution degree and maintenance quality of the filters and equipment.

If the internal environment is clean enough, the cleaning may be performed more seldom, as required.

The U-trap maintenance includes regular control of water level and sufficient U-trap and drain pipes clearance.



**WARNING! WHILE CLEANING THE RIBBED BATTERY BE CAREFUL
NOT TO DAMAGE THE RIBBED SURFACE.**

TROUBLESHOOTING

FAULTS AND FAULT HANDLING

Problem	Possible reasons	Fault handling
Refrigerant leakage	The tube collectors are damaged. Pipe connection is loose.	Contact the Seller.
Low air flow	The heat exchanger and/or the droplet separator are soiled.	Clean the heat exchanger and the droplet separator.
Water leakage	The drainage system is soiled, damaged or arranged not correctly.	Clean the drain line. Check the drain line slope angle. Make sure that the U-trap is filled with water and the drain pipes are frost protected.

If troubleshooting steps have failed, contact the Seller of the product.

In case of faults not described in the table, contact the Seller for further information.

STORAGE AND TRANSPORTATION REGULATIONS

- Store the unit in the manufacturer's original packaging box in a dry closed ventilated premise with temperature range from +5 °C to +40 °C and relative humidity up to 70 %.
- Storage environment must not contain aggressive vapors and chemical mixtures provoking corrosion, insulation, and sealing deformation.
- Use suitable hoist machinery for handling and storage operations to prevent possible damage to the unit.
- Follow the handling requirements applicable for the particular type of cargo.
- The unit can be carried in the original packaging by any mode of transport provided proper protection against precipitation and mechanical damage. The unit must be transported only in the working position.
- Avoid sharp blows, scratches, or rough handling during loading and unloading.
- Prior to the initial power-up after transportation at low temperatures, allow the unit to warm up at operating temperature for at least 3-4 hours.

MANUFACTURER'S WARRANTY

The product is in compliance with EU norms and standards on low voltage guidelines and electromagnetic compatibility. We hereby declare that the product complies with the provisions of Electromagnetic Compatibility (EMC) Directive 2014/30/EU of the European Parliament and of the Council, Low Voltage Directive (LVD) 2014/35/EU of the European Parliament and of the Council and CE-marking Council Directive 93/68/EEC. This certificate is issued following test carried out on samples of the product referred to above.

The manufacturer hereby warrants normal operation of the unit for 24 months after the retail sale date provided the user's observance of the transportation, storage, installation, and operation regulations. Should any malfunctions occur in the course of the unit operation through the Manufacturer's fault during the guaranteed period of operation, the user is entitled to get all the faults eliminated by the manufacturer by means of warranty repair at the factory free of charge. The warranty repair includes work specific to elimination of faults in the unit operation to ensure its intended use by the user within the guaranteed period of operation. The faults are eliminated by means of replacement or repair of the unit components or a specific part of such unit component.

The warranty repair does not include:

- routine technical maintenance
- unit installation/dismantling
- unit setup

To benefit from warranty repair, the user must provide the unit, the user's manual with the purchase date stamp, and the payment paperwork certifying the purchase. The unit model must comply with the one stated in the user's manual. Contact the Seller for warranty service.

The manufacturer's warranty does not apply to the following cases:

- User's failure to submit the unit with the entire delivery package as stated in the user's manual including submission with missing component parts previously dismantled by the user.
- Mismatch of the unit model and the brand name with the information stated on the unit packaging and in the user's manual.
- User's failure to ensure timely technical maintenance of the unit.
- External damage to the unit casing (excluding external modifications as required for installation) and internal components caused by the user.
- Redesign or engineering changes to the unit.
- Replacement and use of any assemblies, parts and components not approved by the manufacturer.
- Unit misuse.
- Violation of the unit installation regulations by the user.
- Violation of the unit control regulations by the user.
- Unit connection to power mains with a voltage different from the one stated in the user's manual.
- Unit breakdown due to voltage surges in power mains.
- Discretionary repair of the unit by the user.
- Unit repair by any persons without the manufacturer's authorization.
- Expiration of the unit warranty period.
- Violation of the unit transportation regulations by the user.
- Violation of the unit storage regulations by the user.
- Wrongful actions against the unit committed by third parties.
- Unit breakdown due to circumstances of insuperable force (fire, flood, earthquake, war, hostilities of any kind, blockades).
- Missing seals if provided by the user's manual.
- Failure to submit the user's manual with the unit purchase date stamp.
- Missing payment paperwork certifying the unit purchase.



FOLLOWING THE REGULATIONS STIPULATED HEREIN WILL ENSURE A LONG AND TROUBLE-FREE OPERATION OF THE UNIT



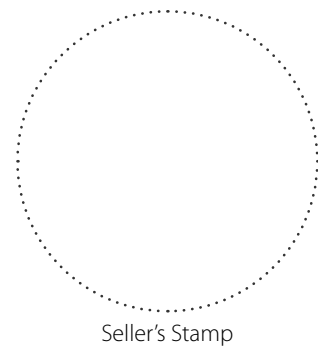
USER'S WARRANTY CLAIMS SHALL BE SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE PURCHASE DATE STAMP

CERTIFICATE OF ACCEPTANCE

Unit Type	Duct coolers
Model	
Serial Number	
Manufacture Date	
Quality Inspector's Stamp	

SELLER INFORMATION

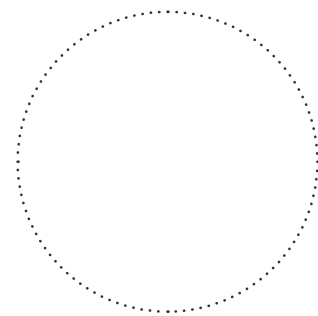
Seller	
Address	
Phone Number	
E-mail	
Purchase Date	
This is to certify acceptance of the complete unit delivery with the user's manual. The warranty terms are acknowledged and accepted.	
Customer's Signature	



Seller's Stamp

INSTALLATION CERTIFICATE

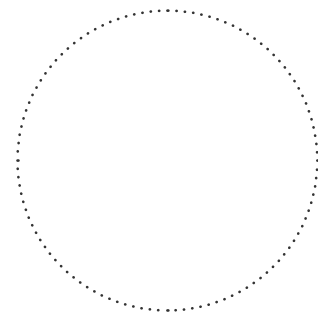
The _____ unit is installed pursuant to the requirements stated in the present user's manual.	
Company name	
Address	
Phone Number	
Installation Technician's Full Name	
Installation Date:	Signature:
The unit has been installed in accordance with the provisions of all the applicable local and national construction, electrical and technical codes and standards. The unit operates normally as intended by the manufacturer.	
Signature:	



Installation Stamp

WARRANTY CARD

Unit Type	Duct coolers
Model	
Serial Number	
Manufacture Date	
Purchase Date	
Warranty Period	
Seller	



Seller's Stamp

