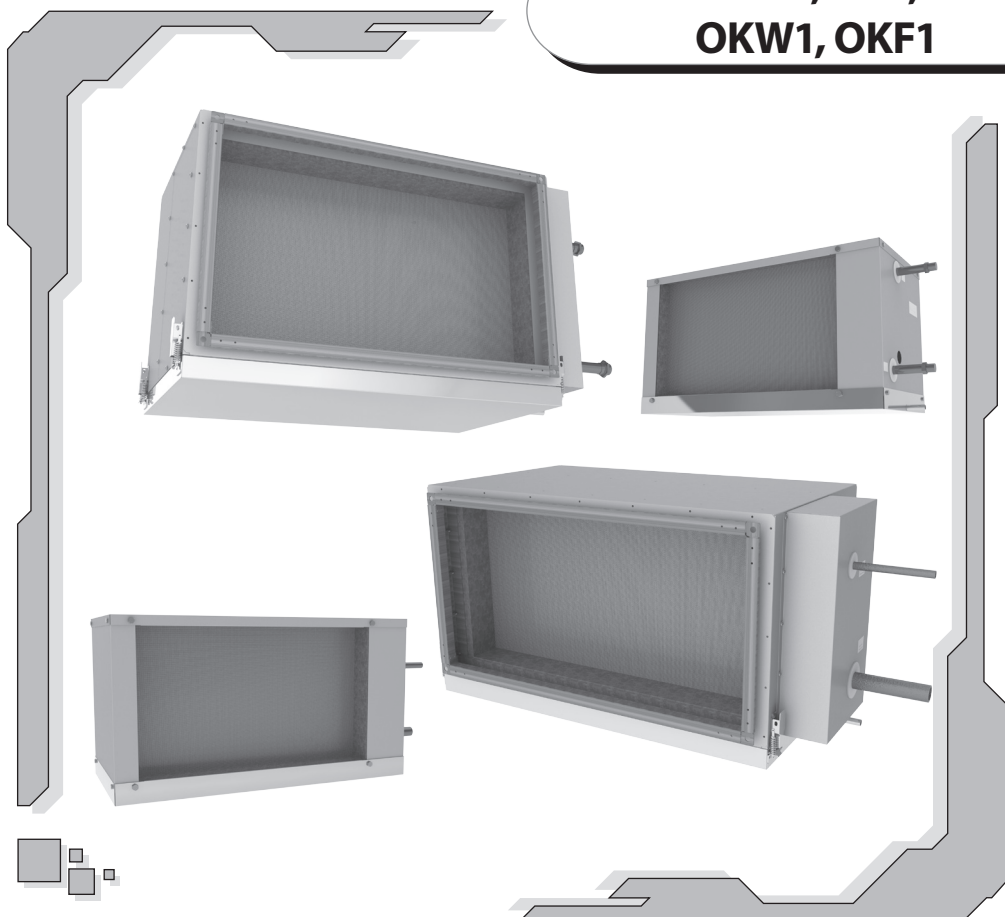


USER'S MANUAL

DUCT COOLERS

**OKW, OKF,
OKW1, OKF1**



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INTRODUCTION

The user's manual consisting of the technical details, operating instructions and technical specification applies to the installation and mounting of the duct cooler (hereinafter referred to as «the cooler»).

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).



THE COOLER MAY NOT BE OPERATED BY CHILDREN OR PERSONS WITH REDUCED PHYSICAL, MENTAL OR SENSORY CAPACITIES, OR LACKING THE APPROPRIATE TRAINING. THE COOLER MUST BE INSTALLED AND CONNECTED ONLY BY PROPERLY QUALIFIED PERSONNEL AFTER THE APPROPRIATE BRIEFING. THE CHOICE OF COOLER INSTALLATION LOCATION MUST PREVENT UNAUTHORIZED ACCESS BY UNATTENDED CHILDREN.

DELIVERY SET

- duct cooler - 1 item.
- user's manual - 1 item
- packing box - 1 item

DESIGNATION KEY

OKxx XXXxXXX - 3

Number of cooling coil rows

Flange dimensions [width x height], mm

Modification

_ – standard;
1 – simplified.

Cooler type

W - water cooler
F - direct expansion cooler

Designation key of the cooler

OK - duct cooler

TECHNICAL DATA

Maximum operating pressure: 1.5 MPa (15 bar).

The cooler is designed for operation in the cold and moderate climatic zones.

Maximum operating pressure: 2.8 MPa (28 bar).

The cooler design is constantly being improved, so some models can slightly differ from those ones described in this manual. Overall and connecting dimensions of the OKW cooler with a rectangular flange are shown in Fig. 1 and in Table 1.

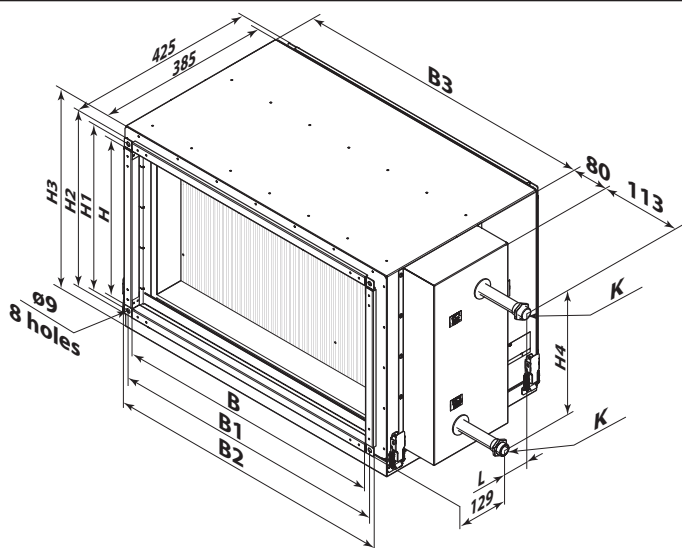


Fig. 1

Table 1

Model	Dimensions, mm											Weight [kg]
	B	B1	B2	B3	H	H1	H2	H3	H4	L	K	
OKW 400x200-3	400	420	440	470	200	220	240	295	124	56	G 3/4"	10.4
OKW 500x250-3	500	520	540	570	250	270	290	345	188	45	G 3/4"	12.8
OKW 500x300-3	500	520	540	570	300	320	340	395	252	56	G 3/4"	14.3
OKW 600x300-3	600	620	640	670	300	320	340	395	252	56	G 3/4"	16
OKW 600x350-3	600	620	640	670	350	370	390	445	268	56	G 3/4"	17.7
OKW 700x400-3	700	720	740	770	400	420	440	495	314	56	G 3/4"	21.9
OKW 800x500-3	800	820	840	870	500	520	540	595	442	56	G 3/4"	26.9
OKW 900x500-3	900	920	940	970	500	520	540	595	442	56	G 3/4"	31.5
OKW 1000x500-3	1000	1020	1040	1070	500	520	540	595	442	56	G 1"	32

Overall and connecting dimensions of the OKF cooler with a rectangular flange are shown in Fig. 2 and in Table 2.

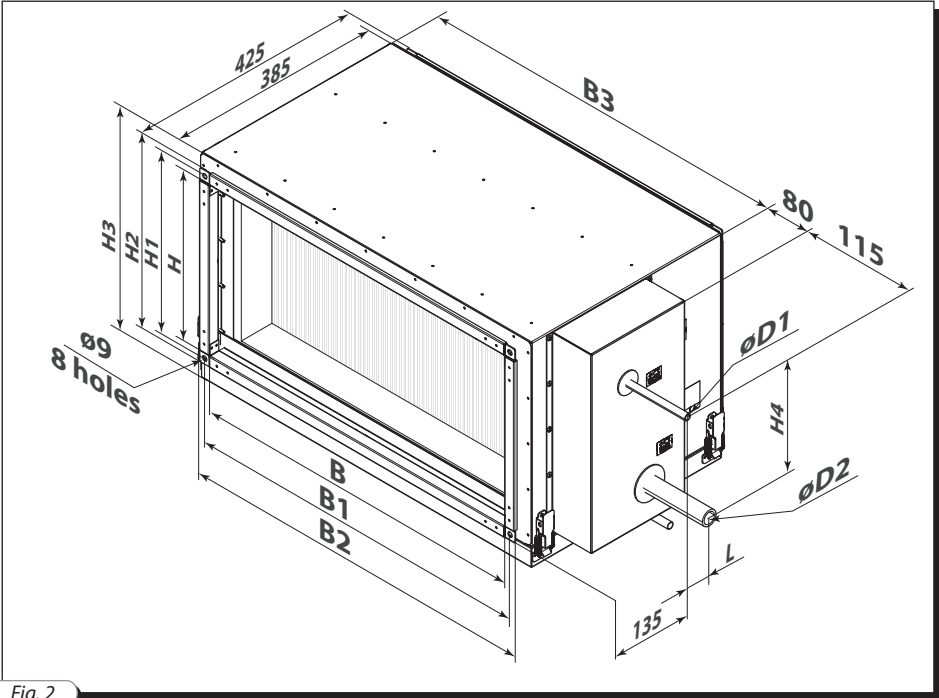


Fig. 2

Table 2

Model	Dimensions, mm												Weight [kg]
	B	B1	B2	B3	H	H1	H2	H3	H4	L	D1	D2	
OKF 400x200-3	400	420	440	470	200	220	240	295	103	44	12	22	10.4
OKF 500x250-3	500	520	540	570	250	270	290	345	155	44	12	22	12.8
OKF 500x300-3	500	520	540	570	300	320	340	395	210	33	12	22	14.3
OKF 600x300-3	600	620	640	670	300	320	340	395	199	44	18	28	16
OKF 600x350-3	600	620	640	670	350	370	390	445	199	44	18	28	17.7
OKF 700x400-3	700	720	740	770	400	420	440	495	224	44	22	28	21.9
OKF 800x500-3	800	820	840	870	500	520	540	595	340	44	22	28	26.9
OKF 900x500-3	900	920	940	970	500	520	540	595	340	44	22	28	31.5
OKF 1000x500-3	1000	1020	1040	1070	500	520	540	595	325	44	22	28	32

Bolt M8
8 item.

Dimensions shown:

- Top width: 350
- Front depth: 73
- Bottom depth: 100
- Internal height segments: H2, H1, H
- External height segments: H3, H4
- Width labels: B, B2
- Height label: K
- Panel label: B1

Table 3

Model	Dimensions, mm										Weight [kg]
	B	B1	B2	H	H1	H2	H3	H4	L	K	
OKW1 400x200-3	400	420	580	200	220	270	124	70	56	G 3/4"	13.5
OKW1 500x250-3	500	520	680	250	270	320	188	102	45	G 3/4"	14
OKW1 500x300-3	500	520	680	300	320	370	252	70	56	G 3/4"	15
OKW1 600x300-3	600	620	780	300	320	370	252	134	56	G 3/4"	16
OKW1 600x350-3	600	620	780	350	370	420	268	229	56	G 3/4"	17
OKW1 700x400-3	700	720	880	400	420	470	314	196	56	G 3/4"	19
OKW1 800x500-3	800	820	980	500	520	570	442	324	56	G 3/4"	22
OKW1 900x500-3	900	920	1080	500	520	570	442	324	56	G 3/4"	23
OKW1 1000x500-3	1000	1020	1180	500	520	570	442	324	56	G 1"	24

Overall and connecting dimensions of the OKF1 cooler with a rectangular flange are shown in Fig. 4 and in Table 4.

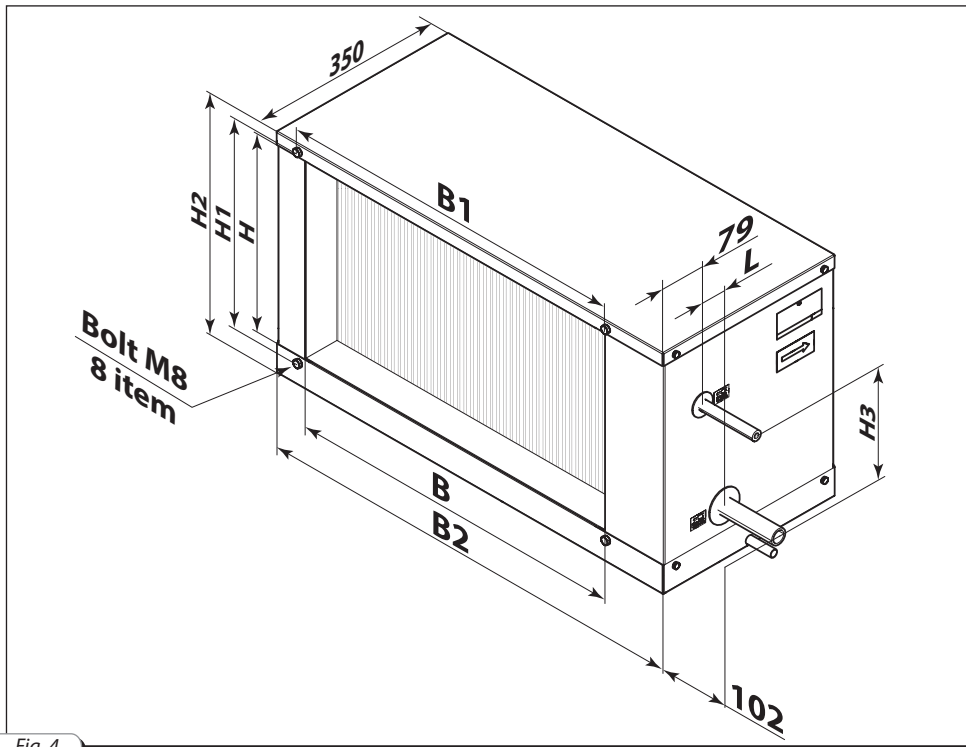


Fig. 4

Table 4

Table 4

Model	Dimensions, mm										
	B	B1	B2	H	H1	H2	H3	L	D1	D2	Weight [kg]
OKF1 400x200-3	400	420	580	200	220	270	103	44	12	22	13.5
OKF1 500x250-3	500	520	680	250	270	320	155	44	12	22	14
OKF1 500x300-3	500	520	680	300	320	370	210	33	12	22	15
OKF1 600x300-3	600	620	780	300	320	370	199	44	18	28	16
OKF1 600x350-3	600	620	780	350	370	420	199	44	18	28	17
OKF1 700x400-3	700	720	880	400	420	470	224	44	22	28	19
OKF1 800x500-3	800	820	980	500	520	570	340	44	22	28	22
OKF1 900x500-3	900	920	1080	500	520	570	340	44	22	28	23
OKF1 1000x500-3	1000	1020	1180	500	520	570	325	44	22	28	24

SAFETY REQUIREMENTS

While mounting and operating the cooler fulfil the user's manual requirements as well as the provisions of all the applicable local and national construction, electrical and technical norms and standards.

Prior to turning the cooler on make sure that it is not damaged and does not contain any foreign objects inside. Make sure of no leakages in the connection points.

MOUNTING AND CONNECTING OF THE COOLER IS ALLOWED BY A QUALIFIED ELECTRICIAN WITH A WORK PERMIT FOR THIS TYPE OF OPERATIONS.

The cooled air must not contain solid, fibrous, sticky, aggressive substances that may provoke aluminium, cooper and zinc corrosion.

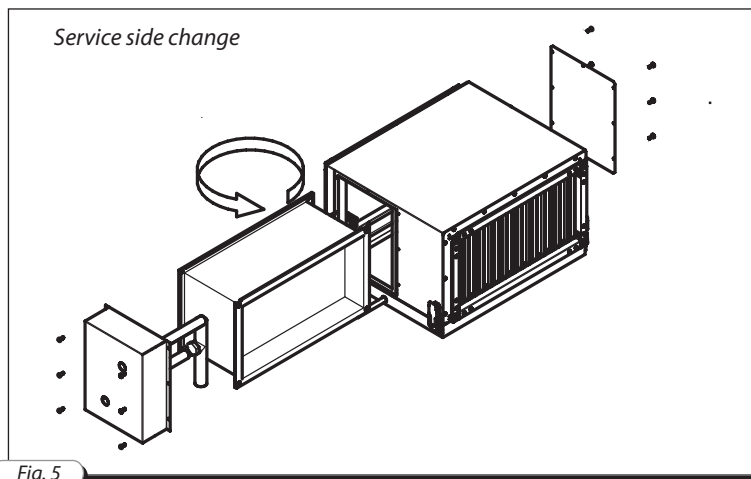
UNIT DESIGN AND OPERATING LOGIC

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 dismountable design that provides easy access to the heat exchanger and the droplet separator.

The internal operating medium of the OKF (OKF1) duct cooler is an evaporating refrigerant, i.e. R123, R134a, R152a, R404a, R407c, R410a, R507, R12, R22.

The internal operating medium of the OKW (OKW1) duct cooler is water or antifreeze.

If necessary change the service side by turning the cooling coil through 180° (Fig. 5). The OKF1 and OKW1 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 (Fig. 6).

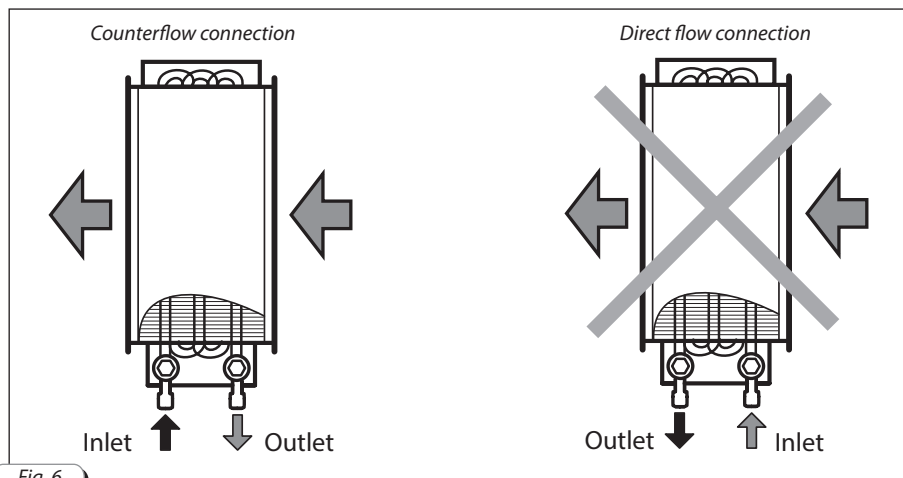


Fig. 6

MOUNTING AND SET-UP

The cooler is connected to the air duct with a flange connection (Fig. 7).

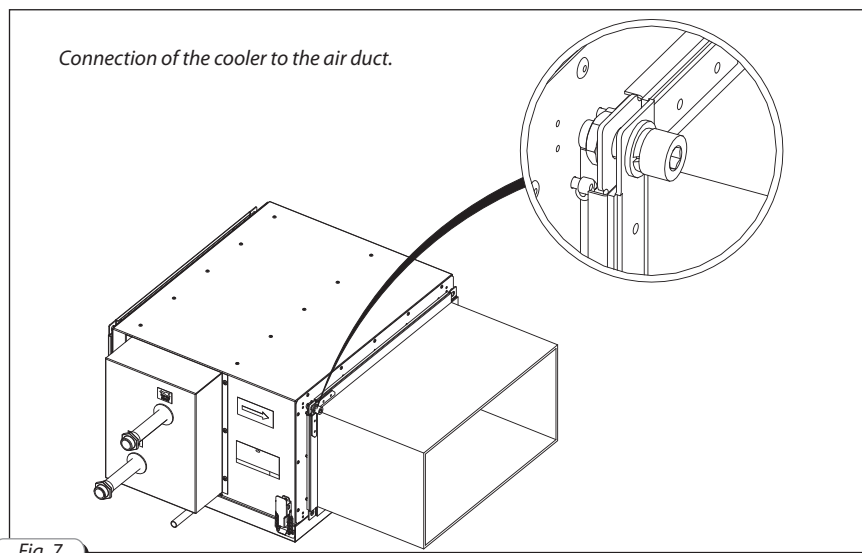


Fig. 7

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 OKW1 and OKF1 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.

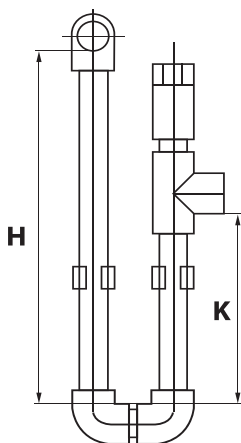
CONDENSATE DRAINAGE

A drain pan with a drain pipe connected to a sewage system is designed for condensate drainage (Fig. 8). 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

Fig. 8

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.

FAULT HANDLING

Table 5

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.

STORAGE AND TRANSPORTATION RULES

Store the cooler in the manufacturer's original packing box in a dry closed ventilated premise with temperature range from +10 °C to + 40°C.

Vapours or particles which can cause corrosion or damage the insulation or connection tightness are not allowed in the storage environment.

Use hoist machinery for handling and transportation to prevent possible mechanical damages of the cooler. Fulfil the requirements for transportation of the specified cargo type during cargo-handling operations.

Use any vehicle types for the unit transportation provided that it is protected against mechanical or weather damage. Avoid any mechanical shocks during handling operations.

MANUFACTURER'S WARRANTY

The coolers are manufactured at Ventilation Systems PrJSC.

While buying the present product the Customer agrees to accept the following warranty conditions.

The manufacturer hereby warrants normal operation of the product over the period of 24 months from the retail sale date provided the user's observance of the transportation, storage, installation and operation regulations. In case of no confirmation of the purchase date the guarantee period is calculated from the manufacturing date.

All the units and components belonging to the faulty product and replaced within the warranty period shall be covered by the previous warranty period and general warranty conditions. Thus the warranty period is neither extended nor renewed for the replaced components or the product.

Should any malfunctions occur during the unit operation due to manufacturer's fault during the warranty period the user is entitled to elimination of faults by means of warranty repair performed by the manufacturer.

The warranty does not apply to accessories used with this product, both included and not included in the delivery set as well as other equipment operating in conjunction with this product.

The Company is not responsible for the compatibility of their products with the products of other manufacturers.

The warranty covers the manufacturing defects only. Defects and faults, including mechanical damage resulting from mechanical impact during the operation or the result of normal wear and tear on the guarantee will not be reimbursed.

The faults caused by violence of operation, servicing and maintenance guidelines either by Customer or third parties or caused by unauthorized design modifications shall not be covered by warranty.

NO LIABILITY FOR THE RELATED DAMAGES:

The manufacturer is not responsible for any mechanical or physical damages resulting from the manual requirements violence, the product misuse or gross mechanical effect.

Indirect damages such as re-installation or re-connection of the product, direct or indirect losses related to the product replacement shall not be indemnified.

Mounting/dismantling, connection/disconnection and adjustment of the product shall not be covered by the warranty.

The contractor for mounting, electric mounting and adjustment works shall be responsible for quality and warranty of these works. In any case the indemnity amount shall not exceed the actually paid value for the defective unit price.



CLAIMS WITHOUT THE USER'S MANUAL AND THE COMPLETED CONNECTION CERTIFICATE ARE NOT ACCEPTED.

THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY MECHANICAL OR PHYSICAL DAMAGES RESULTING FROM THE MANUAL REQUIREMENTS VIOLENCE, THE UNIT MISUSE OR GROSS MECHANICAL INTERFERENCE.

FOLLOW THE USER'S MANUAL REQUIREMENTS TO ENSURE NON-STOP AND TROUBLE-FREE OPERATION OF THE UNIT.



ACCEPTANCE CERTIFICATE

Duct cooler « _____ »

We hereby declare that the product complies with the essential protection requirements of Electromagnetic Council Directive 2004/108/EC, 89/336/EEC and Low Voltage Directive 2006/95/EC, 73/23/EEC and CE-marking Directive 93/68/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. This certificate is issued following test carried out on samples of the product referred to above.

Quality Inspector's Stamp

Manufacturing Date _____

Sold by

Name of Retail Company, Stamp of the Shop

Purchase Date _____

WARRANTY CARD

