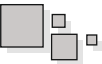
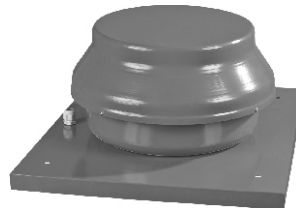
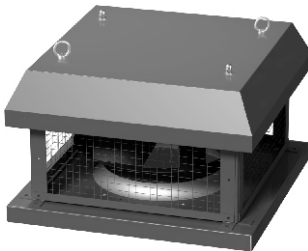
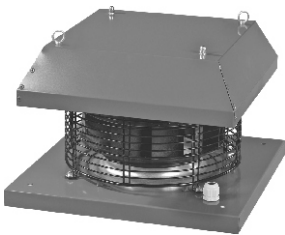
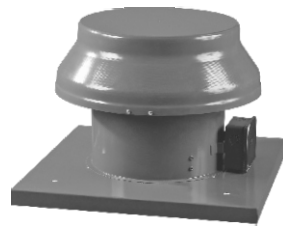
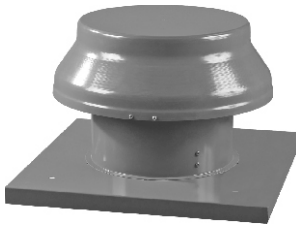


USER'S MANUAL

30637114-012.2 PS

ROOF FANS

VENTS VKV \ VKH \ VKV EC \ VKH EC \ VKMK \
VKMKp \ VOK \ VOK1 SERIES



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APPLICATION

The roof fans VENTS VKV, VKH, VKV EC, VKH EC, VKMK, VKMKp, VOK, VOK1 in metal casing with intake flange diameter from 220 to 500 mm for all models and from 250 mm to 560 mm for VKV EC and VKH EC models, hereinafter referred to as fans, are designed for ventilation of various industrial premises, high-rise building and premises, public places, offices, hospitals, restaurants, pools and other premises heated during winter time.

The fan is not designed for heavy-duty operation in the environment containing dust, solid particles, sticky and fibrous materials.

The ambient temperature must not exceed the values stated in the tables 5; 7; 9; 10.

The fan is suitable for vertical mounting on the exhaust ventilation shaft and is used for exhaust ventilation only.

The fan is rated for continuous operation always connected to power mains.

Ingress protection rating is IP X4.

DELIVERY SET

The delivery set comprises:

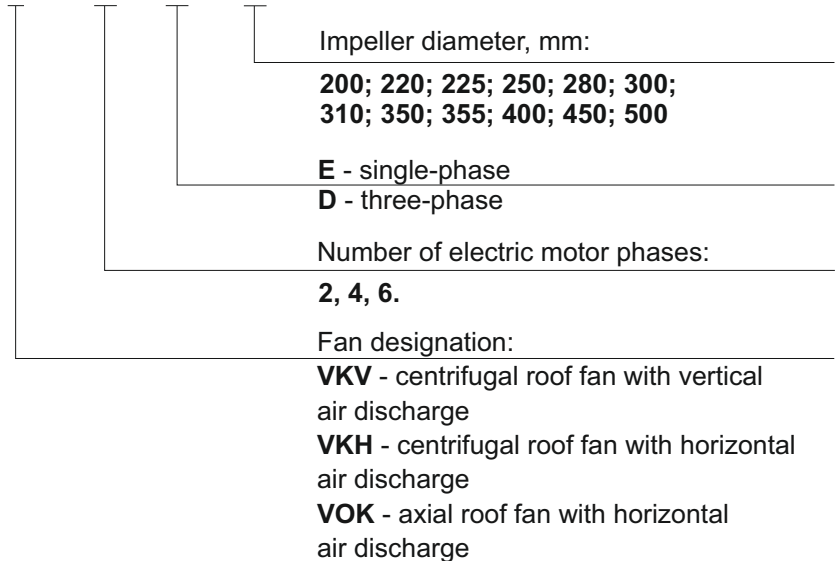
fan - 1 pce;
user's manual;
packaging.



DESIGNATION KEY

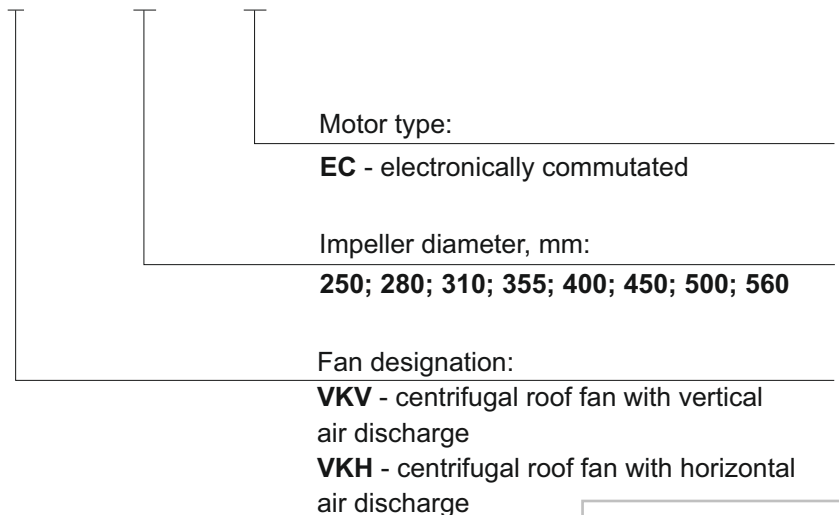
VKV, VKH, VOK fan structural designation key.

XXX X X XXX



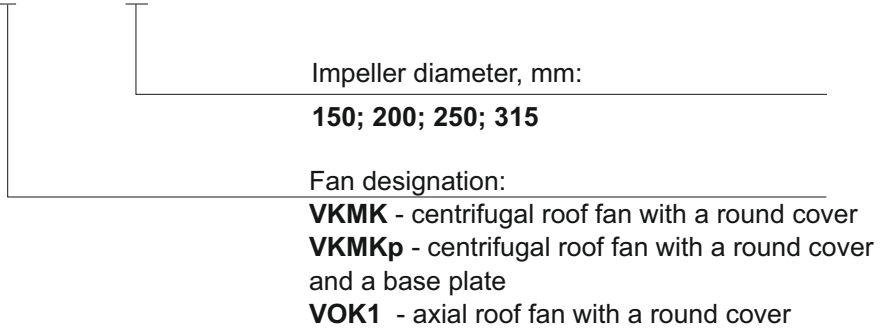
VKV EC, VKH EC fan structural designation key.

XXX XXX XX



VKMK, VKMKp, VOK1 fan designation key structure

XXX XXX



Designation key example:

VKV 2E 280 - centrifugal roof fan with vertical air discharge, two-pole single-phase electric motor and Ø 280 mm impeller.

VKV 280 EC - centrifugal roof fan with vertical air discharge, EC electric motor and Ø 280 mm impeller.

VKH 4E 310 - centrifugal roof fan with horizontal air discharge, 4-pole single-phase electric motor and Ø 310 mm impeller.

VKMK 200 - centrifugal roof fan with Ø 200 mm intake flange.

VKMKp 150 - centrifugal roof fan with a base plate and Ø 150 mm intake flange.

BASIC TECHNICAL DATA

Fan designation, their parameters and connecting dimensions are shown in tables 1; 2; 3; 4; 5; 6; 7; 8; 9; 10 and in figures 1; 2; 3; 4.

VKV, VKV EC

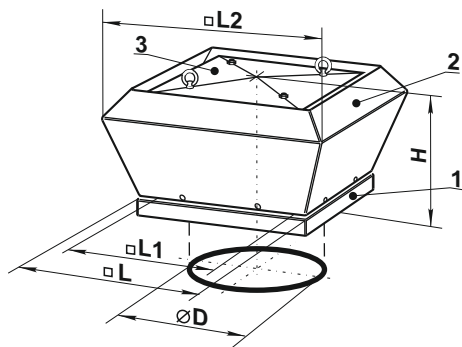


Figure 1

Fan type	Dimensions, mm					Weight, kg
	ØD	H	L1	L	L2	
VKV 2E 220	213	275	245	338	460	8,9
VKV 2E 225	213	275	245	338	460	9,6
VKV 2E 250	285	275	330	425	520	12,0
VKV 2E 280	285	275	330	425	520	12,7
VKV 4E 310	285	330	330	438	560	17,8
VKV 4D 310	286	330	330	438	560	17,8
VKV 4E 355	438	420	450	598	783	22,0
VKV 4D 355	438	420	450	598	783	22,0
VKV 4E 400	438	420	450	598	783	27,5
VKV 4D 400	438	420	450	598	783	27,5
VKV 4E 450	438	454	535	668	872	30,0
VKV 4D 450	438	454	535	668	872	30,0
VKV 6E 500	438	454	535	668	872	33,8

Table 1

Fan type	Dimensions, mm					Weight, kg
	ØD	H	L1	L	L2	
VKV 250 EC	285	320	330	435	528	16
VKV 280 EC	285	327	330	435	557	18
VKV 310 EC	285	327	330	435	557	21
VKV 355 EC	438	387	450	595	708	38
VKV 400 EC	438	387	450	595	708	82
VKV 450 EC	438	464	535	665	898	84
VKV 500 EC	438	464	535	665	898	88
VKV 560 EC	605	560	750	940	1150	98

Table 2

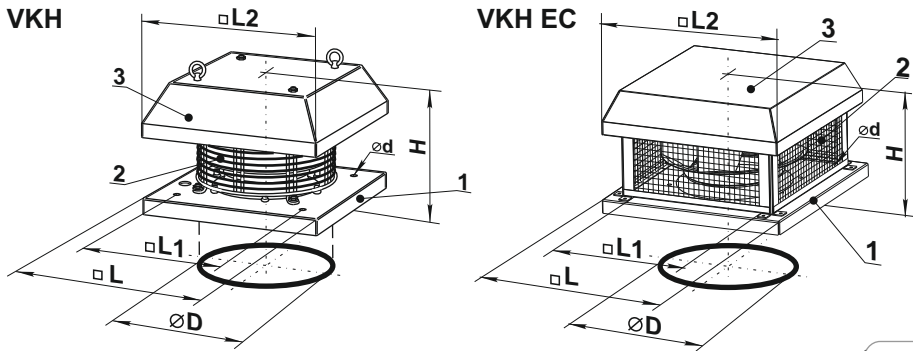


Figure 2

Fan type	Dimensions, mm						Weight, kg
	ØD	ød	H	L1	L	L2	
VKH 2E 220	213	10	228	245	338	338	6,9
VKH 2E 225	213	10	228	245	338	338	7,1
VKH 2E 250	285	10	265	330	425	365	10,1
VKH 2E 280	285	10	265	330	425	365	10,2
VKH 4E 310	285	10	300	330	438	400	10,2
VKH 4D 310	285	10	300	330	438	400	10,2
VKH 4E 355	438	12	348	450	598	550	15,6
VKH 4D 355	438	12	325	450	598	550	15,6
VKH 4E 400	438	12	348	450	598	550	21,0
VKH 4D 400	438	12	348	450	598	550	22,0
VKH 4E 450	438	12	400	535	668	640	22,7
VKH 4D 450	438	12	400	535	668	640	22,7
VKH 6E 500	438	12	465	535	668	640	26,6

Table 3

Fan type	Dimensions, mm						Weight, kg
	ØD	ød	H	L1	L	L2	
VKH 250 EC	285	11	289	330	435	411	16
VKH 280 EC	285	11	264	330	435	431	17
VKH 310 EC	285	11	272	330	435	431	19
VKH 355 EC	438	11	326	450	595	558	32
VKH 400 EC	438	11	357	450	595	558	75
VKH 450 EC	438	11	407	535	665	637	80
VKH 500 EC	438	11	437	535	665	637	84
VKH 560 EC	605	14	487	750	940	912	95

Table 4

Fan type	Current, A	Power, W	Voltage, V at 50 Hz	Maximum operating temperature, °C
VKV/VKH 2E 220	0,38	85	230	-25 +55
VKV/VKH 2E 225	0,6	135	230	-25 +55
VKV/VKH 2E 250	0,7	155	230	-25 +50
VKV/VKH 2E 280	1,0	225	230	-25 +50
VKV/VKH 4E 310	0,54	120	230	-25 +85
VKV/VKH 4D 310	0,32	110	400	-25 +65
VKV/VKH 4E 355	1,12	245	230	-25 +50
VKV/VKH 4D 355	0,52	170	400	-25 +70
VKV/VKH 4E 400	2,4	480	230	-25 +80
VKV/VKH 4D 400	0,7	385	400Y	-25 +60
VKV/VKH 4E 450	3,1	640	230	-25 +50
VKV/VKH 4D 450	0,82	470	400Y	-25 +50
VKV/VKH 4D 500	1,82	385	230	-25 +50

Table 5

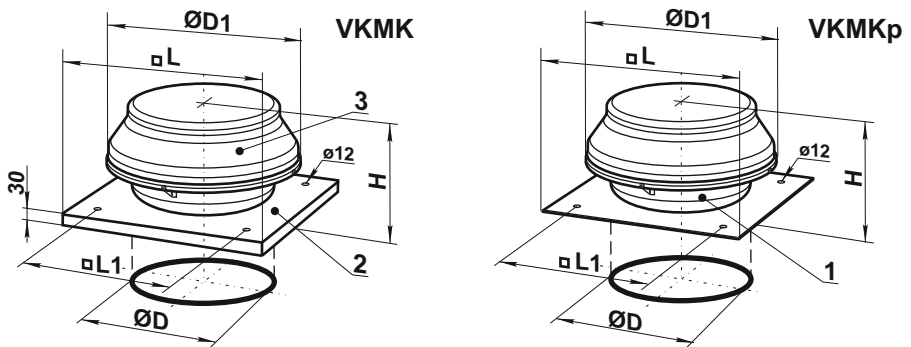
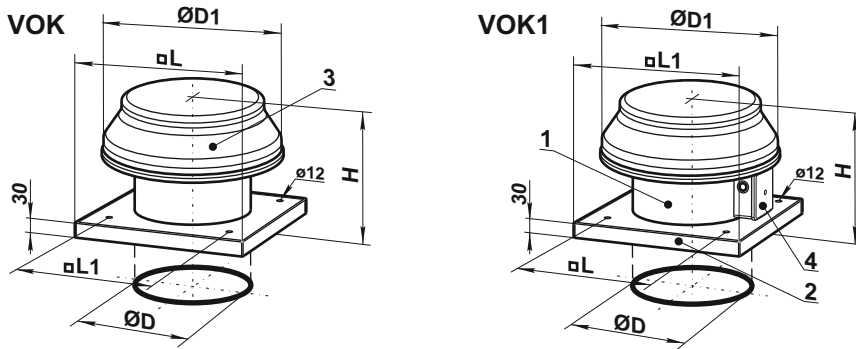


Figure 3

Fan type	Dimensions, mm					Weight, kg
	ØD	ØD1	H	L1	L	
VKMK 150	149	400	230	330	440	7,2
VKMK 200	198	400	250	330	440	8,1
VKMK 250	248	400	249	450	590	10,1
VKMK 315	315	500	269	450	590	10,1
VKMKp 150	149	400	230	330	440	8,2
VKMKp 200	198	400	250	330	440	9,3
VKMKp 250	248	400	249	450	590	12,3
VKMKp 315	315	500	269	450	590	12,2

Table 6

Fan type	Current, A	Power, W	Voltage, V at 50/60 Hz	Maximum operating temperature, °C
VKV/VKH 250 EC	3	485	1~ 220-277	-25 +60
VKV/VKH 280 EC	2,8	455	1~ 220-277	-25 +40
VKV/VKH 310 EC	3,1	480	1~ 220-277	-25 +60
VKV/VKH 355 EC	1,5	940	3~ 380-480	-25 +60
VKV/VKH 400 EC	1,3	770	3~ 380-480	-25 +60
VKV/VKH 450 EC	1,6	1010	3~ 380-480	-25 +60
VKV/VKH 500 EC	4,3	2700	3~ 380-480	-25 +60
VKV/VKH 560 EC	3,6	2300	3~ 380-480	-25 +60

Table 7

Figure 4

Fan type	Dimensions, mm					Weight, kg
	ØD	ØD1	H	L	L1	
VOK 2E 200	207	341	220	425	330	4,3
VOK 2E 250	262	401	250	425	330	6,5
VOK 4E 250	262	401	250	425	330	6,5
VOK 2E 300	312	401	260	585	450	8,7
VOK 4E 300	312	401	260	585	450	8,7
VOK 4E 350	362	500	260	655	535	10,9
VOK1 200	207	341	220	425	330	4,9
VOK1 250	262	401	250	425	330	6,8
VOK1 315	312	500	260	585	450	9,2

Table 8

Fan type	Current, A	Power, W	Voltage, V at 50/60 Hz	Maximum operating temperature, °C
VKMK/VKMKp 150	0,43	98	230	-25 +55
VKMK/VKMKp 200	0,67	154	230	-25 +55
VKMK/VKMKp 250	0,85	194	230	-25 +50
VKMK/VKMKp 315	1,34	296	230	-25 +45

Table 9

Fan type	Current, A	Power, W	Voltage, V at 50 Hz	Maximum operating temperature, °C
VOK 2E 200	0,26	55	230	-30 +60
VOK 2E 250	0,4	80	230	-30 +60
VOK 4E 250	0,22	50	230	-30 +60
VOK 2E 300	0,66	145	230	-30 +60
VOK 4E 300	0,35	75	230	-30 +60
VOK 4E 350	0,65	140	230	-30 +60
VOK1 200	0,28	43	230	-25 +50
VOK1 250	0,48	68	230	-25 +50
VOK1 315	0,75	110	230	-25 +50

Table 10

FAN STRUCTURE

The centrifugal fan VKV/VKV EC (fig. 1) consists of the pan 1 connected through a net to the base with the fixed electric motor and impeller on it.

The VKV EC fan is equipped with EC motor.

The protecting housing 2 is also fixed to the pan.

The cover 3 that protects the electric motor against weather factors is fixed to the base.

The terminal box is fixed to the upper casing part for connection of the fan to single- or three-phase power mains and placement of the operating capacitor.

The centrifugal fan VKH/VKH EC (fig. 2) consists of the pan 1 connected through a net 2 to the base with the fixed electric motor and impeller on it. The VKH EC fan is equipped with a EC motor.

The cover 3 that protects the electric motor against weather factors is fixed to the base. The terminal box for connection of the fan to single- or three-phase power mains and placement of the operating capacitor is fixed to the upper casing part.

The centrifugal roof fan VKMK/VKMKp (fig. 3) consists of the casing 3 and the flange 2. The impeller and the electric motor are placed inside the fan casing. The cover 3 is attached to the casing with self-tapping screws. The terminal box 4 for connection of the fan to single- or three-phase power mains and placement of the operating capacitor is fixed to the upper casing part.

The axial fan VOK/VOK1 (fig. 4) consists of the casing 1 with a square flange 2 (VKMK modification) or a plate (VKMKp modification). The impeller and the electric motor are placed inside the axial fan casing. The cover 3 is attached to the casing with self-tapping screws. The terminal box 4 for connection of the fan to single- or three-phase power mains and placement of the operating capacitor is fixed to the upper casing part.

SAFETY REQUIREMENTS

All electric connection, adjustment, servicing and repair operations must be done with the fan disconnected from power supply.

Electric connection works must be done by a duly qualified electrician with a valid electrical work permit for operation up to 1000 V units. Read this manual before starting any electrical works.

Make sure of no visible damages of impeller, casing, grille and no foreign objects inside the casing that can damage the impeller blades.

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

The unit is not to be used by children and persons with reduced physical, mental or sensory capacities, without proper practical experience or expertise, unless they are controlled or instructed on the unit operation by the person(s) responsible for their safety.

The fans are not designed for operation in the environment containing flammable substances or vapours like alcohol, gasoline, etc.

The fans are powered by single-phase 230 V/ 50 Hz (VKMK and VKMKp 230 V/ 50 Hz, 60 Hz) alternating current or by three-phase 400 V/ 50 Hz alternating current.

INSTALLATION AND OPERATION GUIDELINES

The fan is designed for mounting on a roof directly above a ventilation shaft or air duct.

Installation procedure and mounting sequence are shown in fig. 5, 6, 7, 8, 9, 10.

To prevent water and snow ingress inside a ventilation shaft the fan can be mounted on a roof curb.

A roof fan can be connected to a ventilation shaft with an intake flange that is fixed directly to the fan base.

The fan base has holes for fastening bolts for connection of the fan to the level surface or to the roof curb.

The roof curb, intake flange and fastening bolts are not included into delivery set and are available upon separate order.

Power supply to the fan is effected with an external terminal box or a terminal block integrated into the motor casing.



The fan must be grounded.

The terminal must be connected to the ground loop.

Due to the constant improvements the design of some models may slightly differ from those described in this manual.

VKV, VKV EC

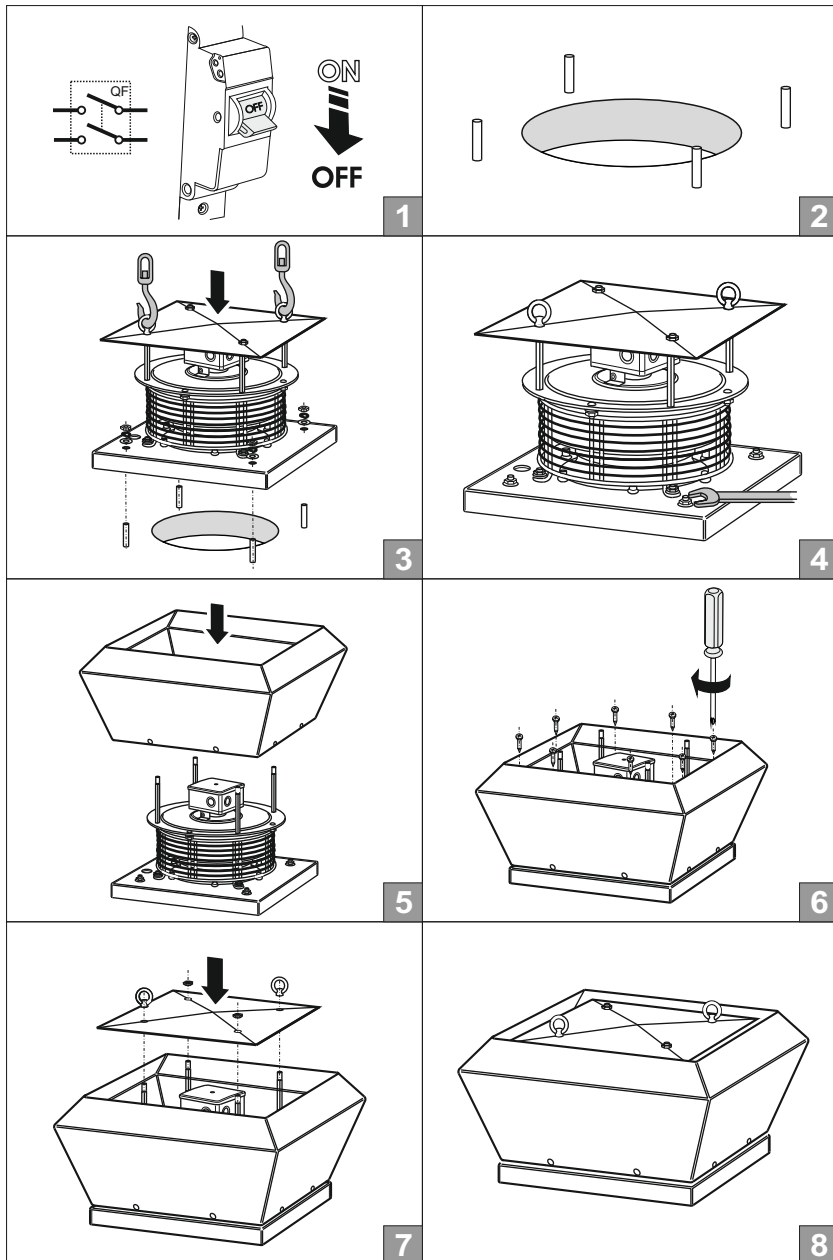


Figure 5

VKH

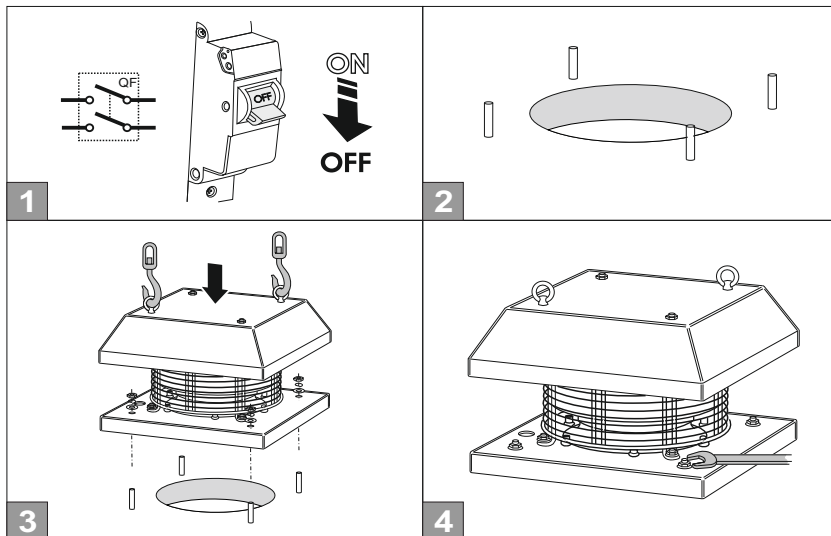


Figure 6

VKH EC

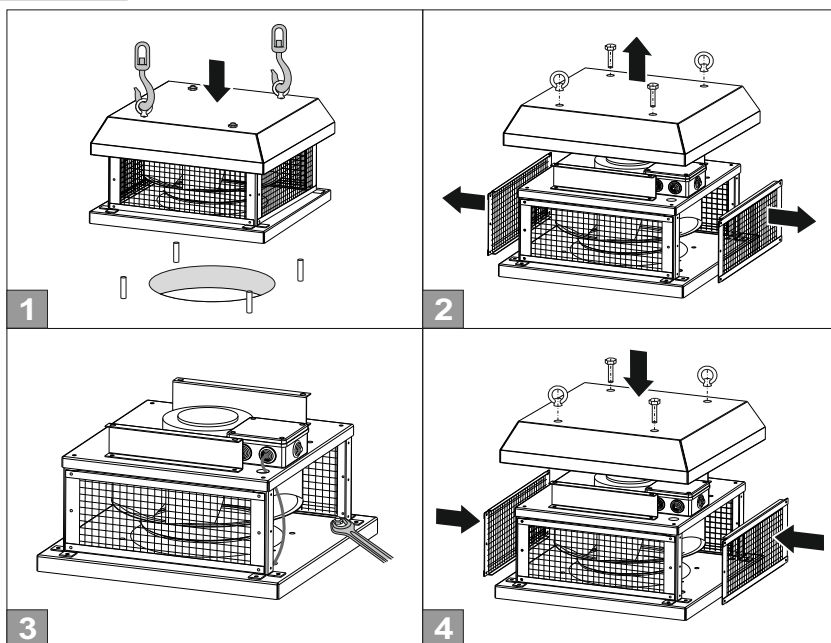


Figure 7

VKMK

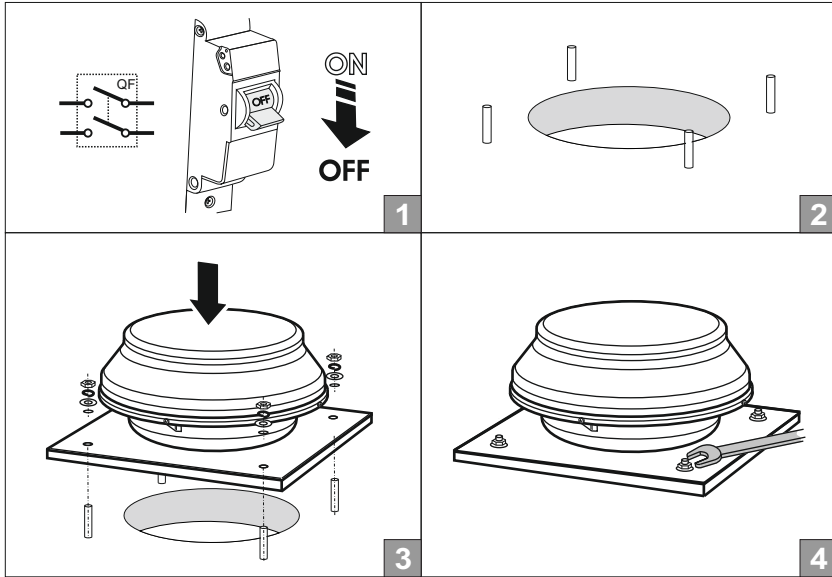


Figure 8

VKMKp

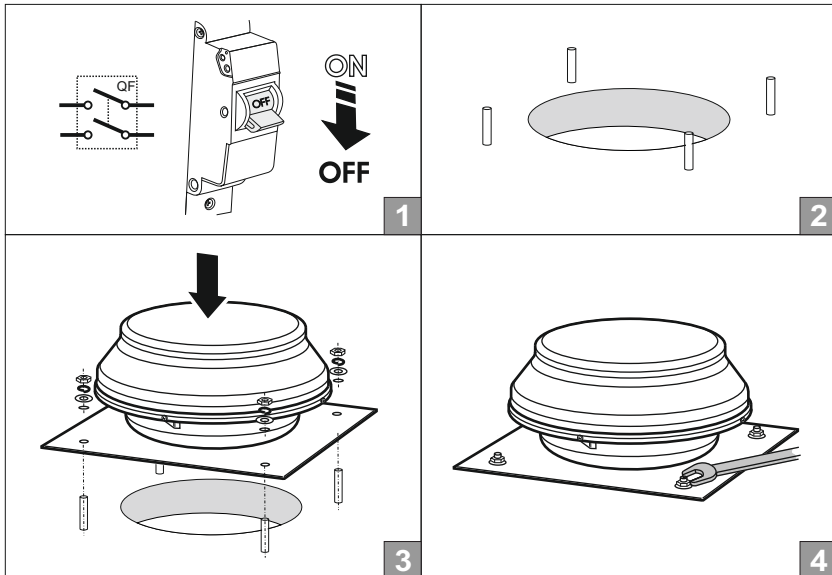


Figure 9

VOK, VOK1

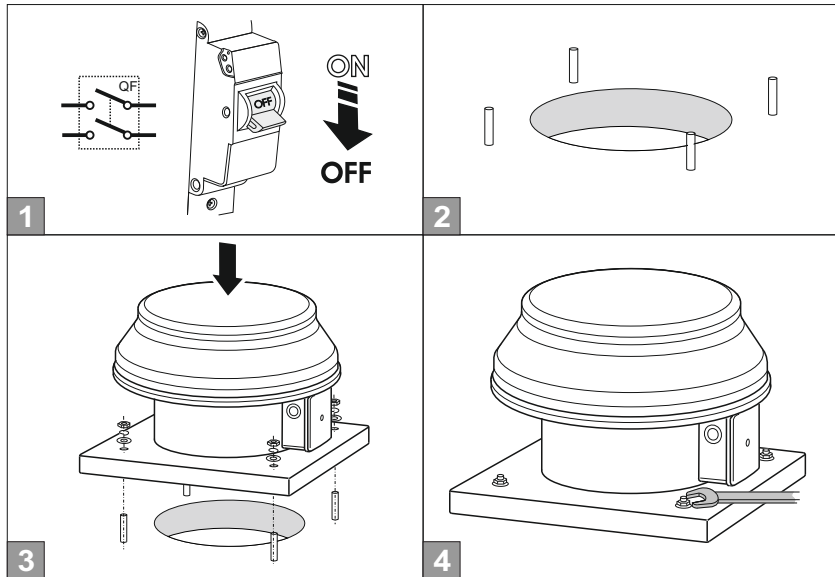


Figure10

CONNECTION TO POWER MAINS

Switch power supply off before starting any operations with the fan.
Connection to power supply must be done by a duly qualified electrician.

The rated electrical parameters are shown on the rating plate.

Any tampering with the internal connection is prohibited and will void warranty.

Depending on the modification the fans are powered by single-phase 230 V / 50 Hz or 60 Hz or 400 V / 50 Hz alternating current.

The fan must be connected through insulated durable and thermal-resistant wires (cables).

The automatic circuit breaker incorporated into the fixed power network that breaks all the phases must be installed at the external electric input 230 V / 50 Hz or 60 Hz or 400 V / 50 Hz.

The external circuit breaker QF location must provide free and unhampered access to the fan for quick switching off in case of need.

The overcurrent protection must match the rated current consumption Of the fan.

The recommended automatic circuit breaker rated current and the cable cross sections for various fan types are stated in the table 11.

The above cross sections are for reference only.

The actual cross section depends on the cable type, maximum heating value. The fans with EC-motors are connected to power mains through the terminal block located inside the external or integrated terminal block in compliance with the wiring diagram and the terminal designation, see fig. 17 for VKV/VKH 250...310 EC; fig. 18 for VKV/VKH 355...560 EC.

The terminal designations are shown on the sticker inside the terminal box. The recommended wiring diagram with motor overheating protection for single-phase motor is shown in fig. 11 and for three-phase motor is shown in fig. 12. TW1 and TW2 terminals are the electrical leads of the normally closed contact of the motor overheating protection.

This contact must be connected in series to the power circuit of the coil of the magnetic starter KM1 that starts the motor after pressing the button S1.

The contact is broken in case of motor overheating and it switches the starter coil off to cut power supply to the motor off.

The automatic circuit breaker QF, magnetic starter KM1, control buttons S1 and S2 are not included into the delivery set and are designed to be installed by the user.

Fan type	Automatic circuit breaker rated current, A	Recommended cable, n x S, where n - number of the cable conductors S - the cable cross section, mm ²
VKV/VKH 2E 220...250 VKV/VKH 4E 310	1	3x0,5
VKV/VKH 2E 280 VKV/VKH 4E 355	1,6	3x0,5
VKV/VKH 4E 400...450	4	3x1,0
VKV/VKH 6E 500	2,5	3x1,0
VKV/VKH 4D 310...450	1	5x0,5
VKV/VKH 250...310 EC	4	3x1,0
VKV/VKH 355...450 EC	2	5x0,75
VKV/VKH 500...560 EC	10	5x1,5
VKMK/VKMKp 150...250	1	3x0,5
VKMK/VKMKp 315	2	3x0,5
VOK 2E, 4E 200...350	1	3x0,5
VOK1 200...315	1	3x0,5

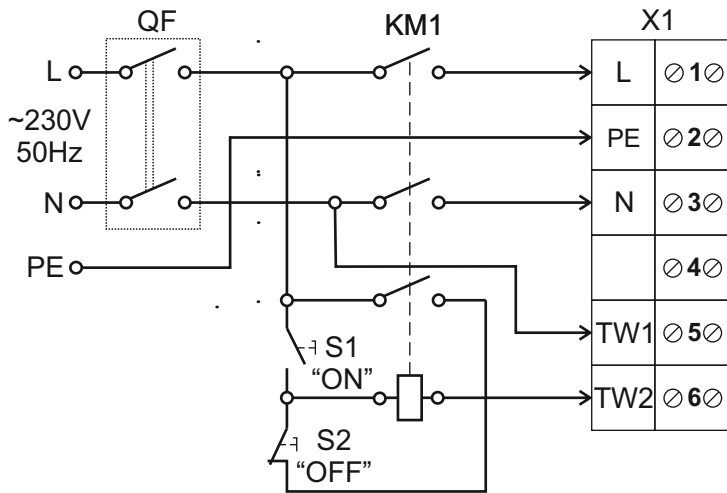


Figure 11

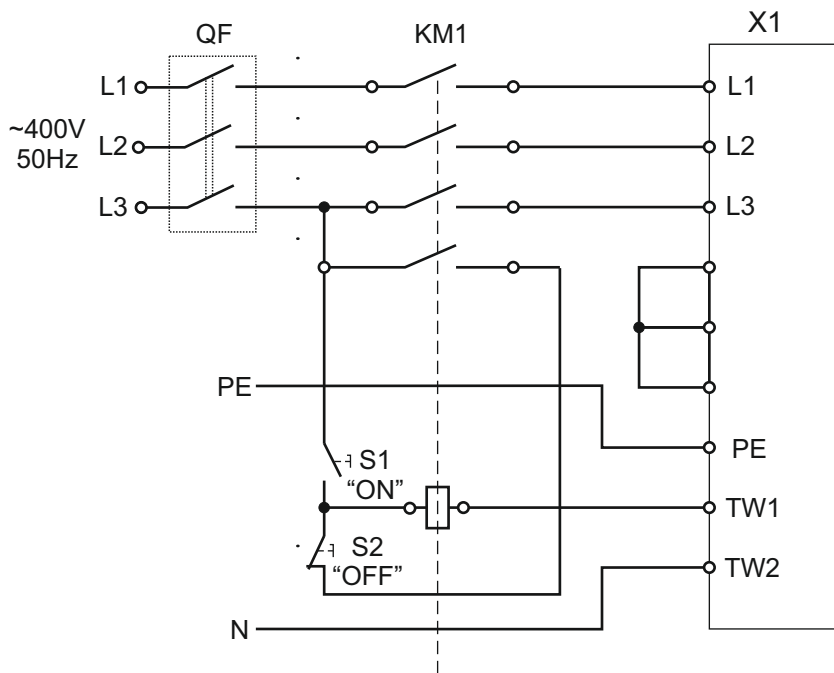
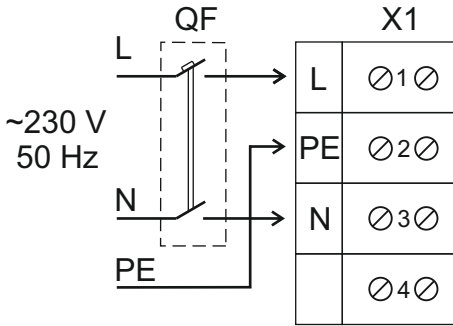


Figure 12

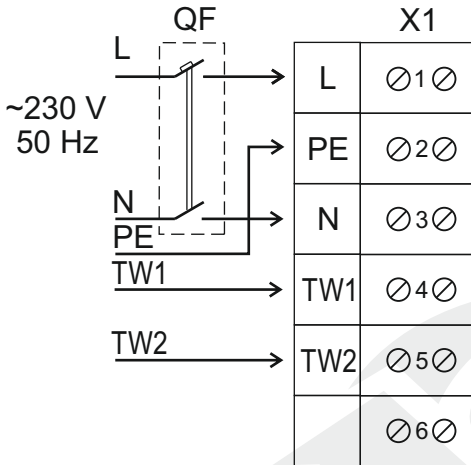
Wiring diagram for VKV/VKH 2E 220; VKV/VKH 2E 225; VKV/VKH 2E 250; VKV/VKH 2E 280, VKV/VKH 4E 310, VKV/VKH 4E 355 fans.



where **QF** is the automatic circuit breaker (not included into the delivery set);
X1 is the terminal block.

Figure 13

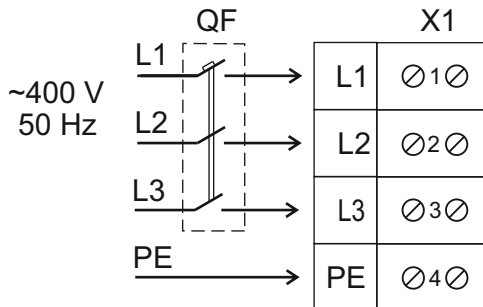
Wiring diagram for VKV/VKH 4E 400; VKV/VKH 4E 450; VKV/VKH 6E 500 fans.



where **QF** is the automatic circuit breaker (not included into the delivery set);
X1 is the terminal block.

Figure 14

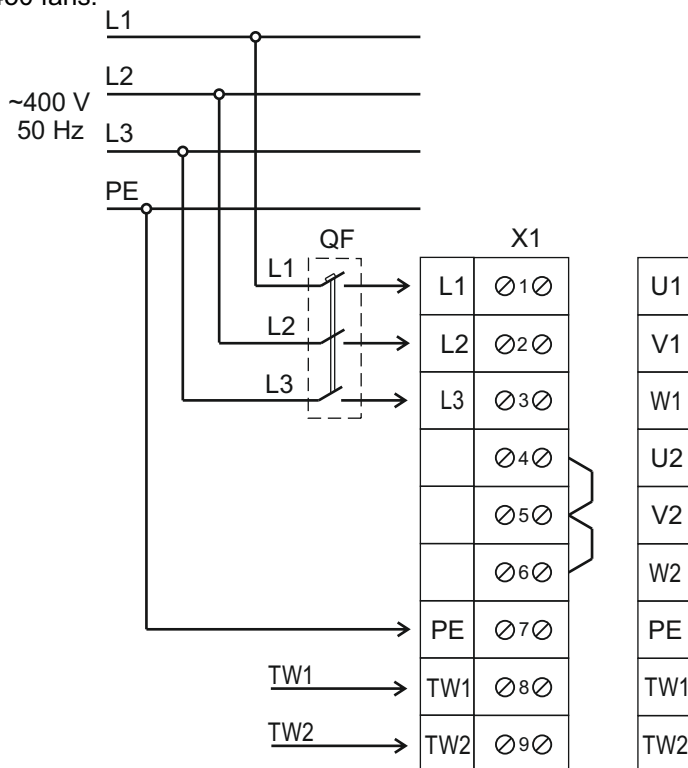
Wiring diagram for VKV/VKH 4D 310 fan.



where **QF** is the automatic circuit breaker (not included into the delivery set);
X1 is the terminal block.

Figure 15

Wiring diagram for VKV/VKH 4E 355 fan; VKV/VKH 4D 400;
 VKV/VKH 4D 450 fans.



where **QF** is the automatic circuit breaker (not included into the delivery set);
X1 is the terminal block.

Figure 16

Wiring diagram for VKV/VKH 250 EC; VKV/VKH 280 EC; VKV/VKH 310 EC fans.

		Cable 1					Cable 2		
		L	N	PE	NC	COM	+10V	0-10V PWM	GND
Contact 1	L	Black	Network 50/60 Hz, phase						
	N	Blue	Network 50/60 Hz, zero wire						
	PE	Green/Yellow	protective ground conductor						
	NC	White 1	failure relay, normally closed contact						
	COM	White 2	failure relay, COMMON						
2	+ 10 V	Red	Voltage output +10 V (no more 1.1 mA)						
	0-10 V/PWM	Yellow	Control input 0-10 V / PWM (full resistance 100 kOhm)						
	GND	Blue	Ground						

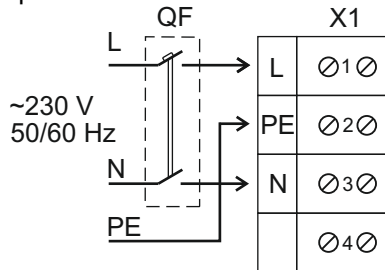
Figure 17

Wiring diagram for VKV/VKH 355 EC, VKV/VKH 400 EC, VKV/VKH 450 EC, VKV/VKH 500 EC, VKV/VKH 560 EC fans.

		KL3										KL2			KL1					
		RS A	RS B	RS A	RS B	GND	0-10 V PWM	4-20 mA	+20 V	+10 V	0-10 V PWM	GND	OUT	NO	COM	NC	L1	L2	L3	PE
Terminal	Connection	Function																		
PE	PE	protective ground conductor																		
KL1	L3																			
	L2																			
	L1																			
KL2	NC	alarm relay, normally closed contact																		
	COM	alarm relay, COMMON (2A, 250 V, AC1)																		
	NO	alarm relay, normally open contact																		
Terminal	Connection	Function																		
KL3	OUT	control signal output 0-10 V max. 3 mA																		
	GND	GROUND (GND)																		
	0-10 V / PWM	control input (full resistance 100 kOhm)																		
	+10 V	External potentiometer power supply, 10 V (+10%) max. 10 mA																		
	+20 V	External sensor power supply 20 V (+20%) max. 50 mA																		
	4-20 mA	control input																		
	0-10 V / PWM	control input																		
	GND	GROUND (GND)																		
	RSB	interface RS485 for ebmBUS; RS B																		
	RSA	interface RS485 for ebmBUS; RS A																		
	RSB	interface RS485 for ebmBUS; RS B																		
	RSA	interface RS485 for ebmBUS; RS A																		

Figure 18

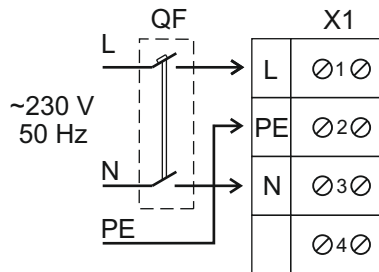
Wiring diagram for VKMK/VKMKp 150; VKMK/VKMKp 200;
VKMK/VKMKp 250; VKMK/VKMKp 315 fans.



where **QF** is the automatic circuit breaker (not included into the delivery set);
X1 is the terminal block.

Figure 19

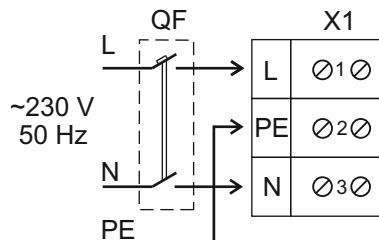
Wiring diagram for VOK 2E 200; VOK 2E 250; VOK 4E 250; VOK 2E 300;
VOK 4E 300; VOK 4E 350 fans.



where **QF** is the automatic circuit breaker (not included into the delivery set);
X1 is the terminal block.

Figure 20

Wiring diagram for VOK1 200; VOK1 250; VOK1 315 fans.



where **QF** is the automatic circuit breaker (not included into the delivery set);
X1 is the terminal block.

Figure 21

VKH

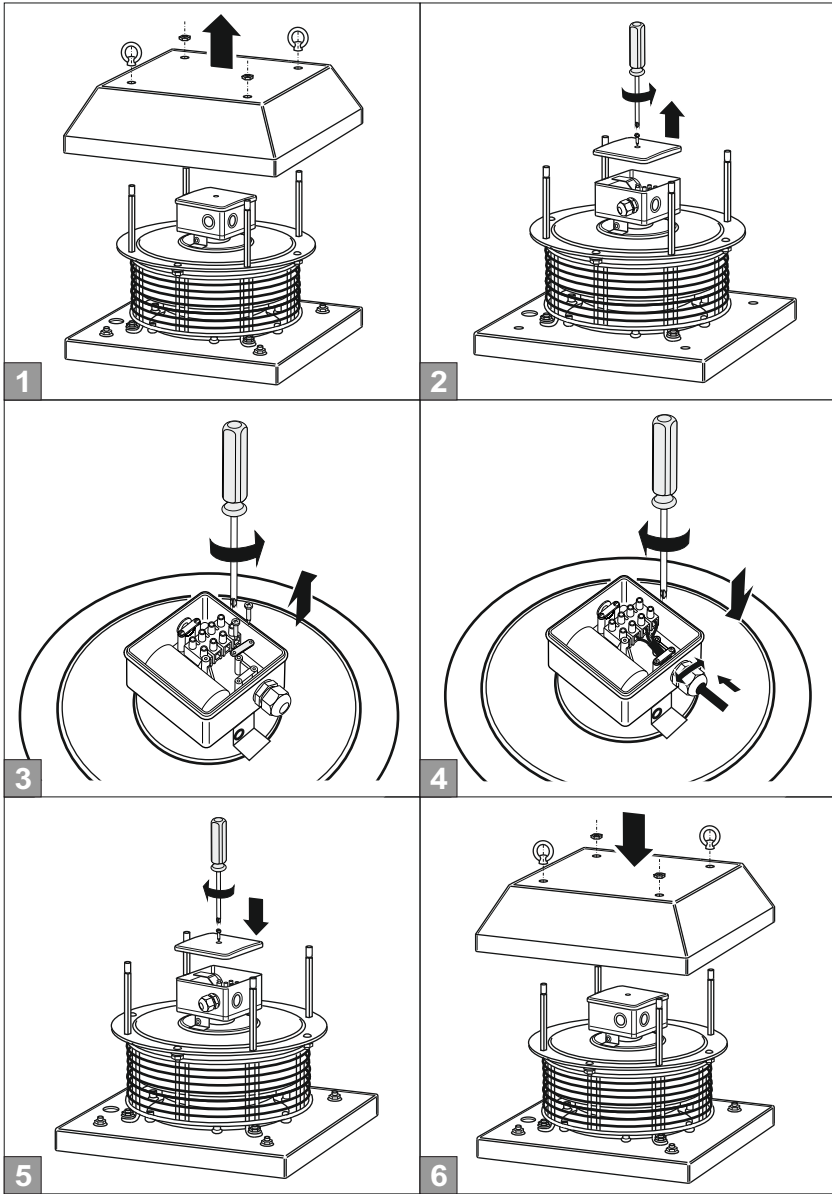


Figure 22

VKH EC

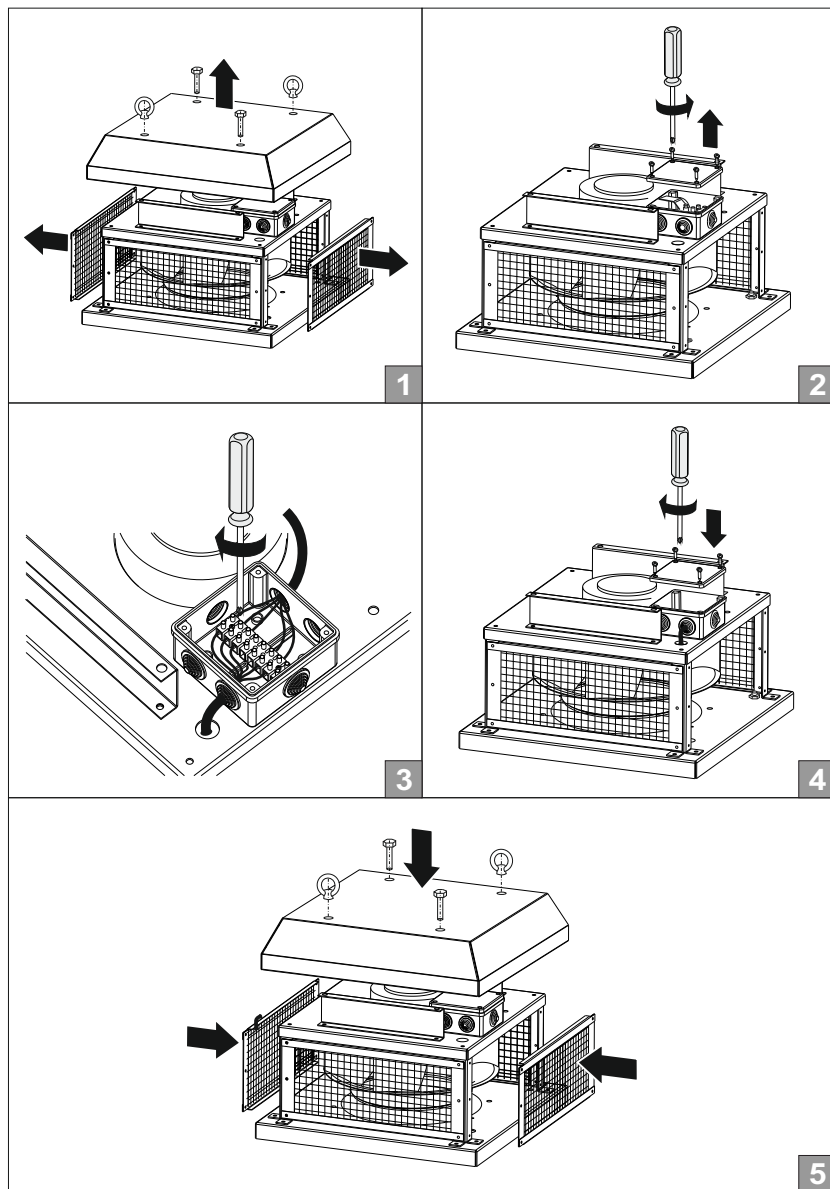


Figure 23

VKV, VKV EC

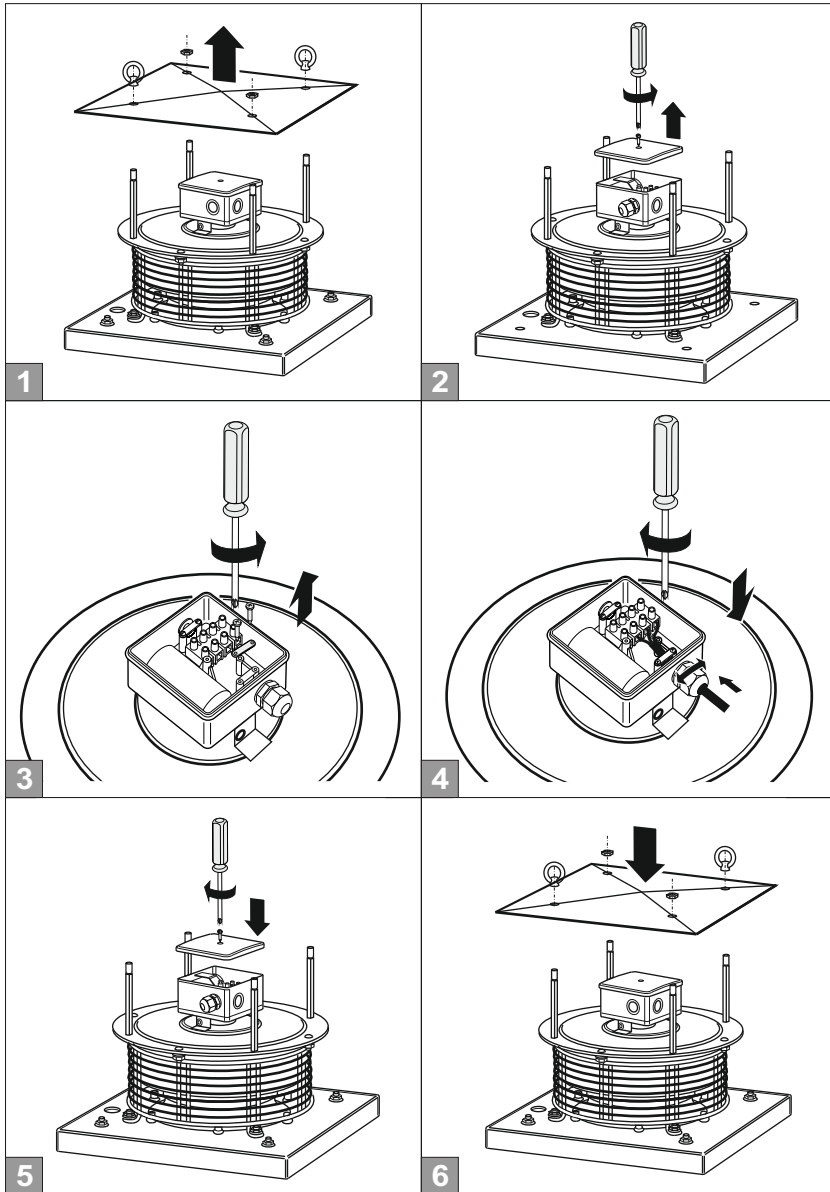


Figure 24

VKMK, VKMKp

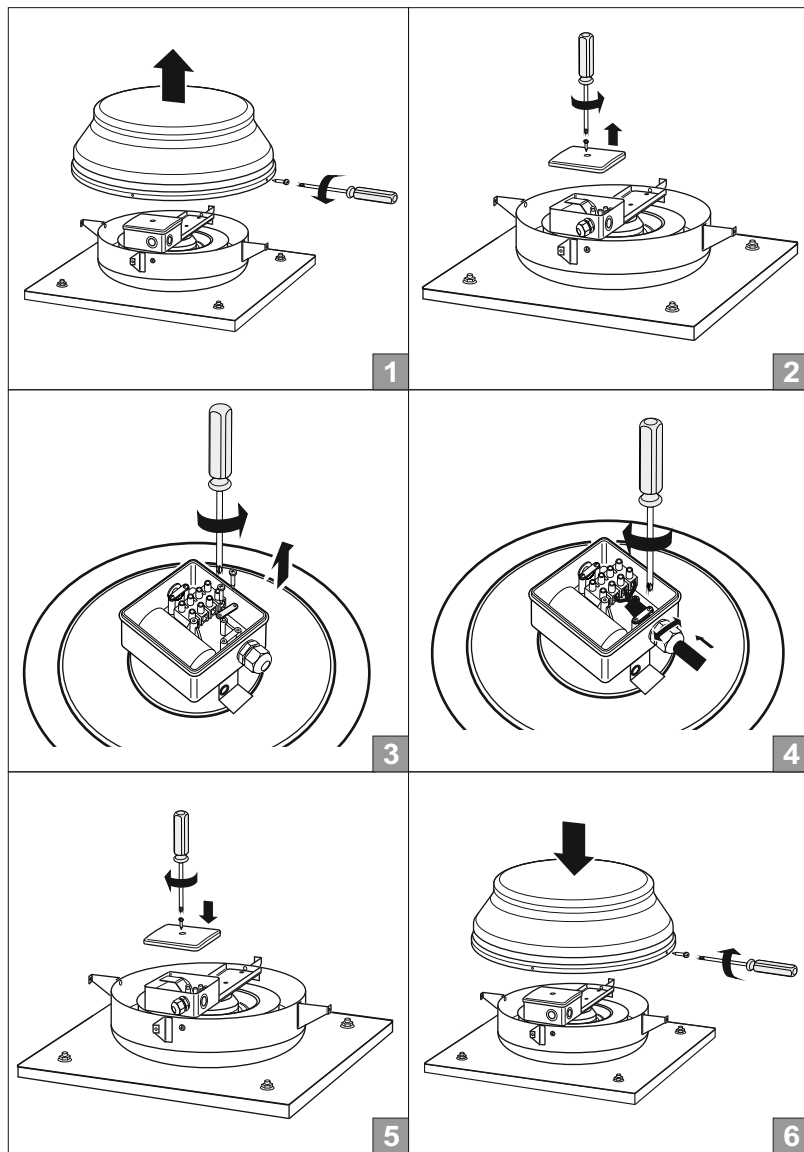


Figure 25

VOK, VOK1

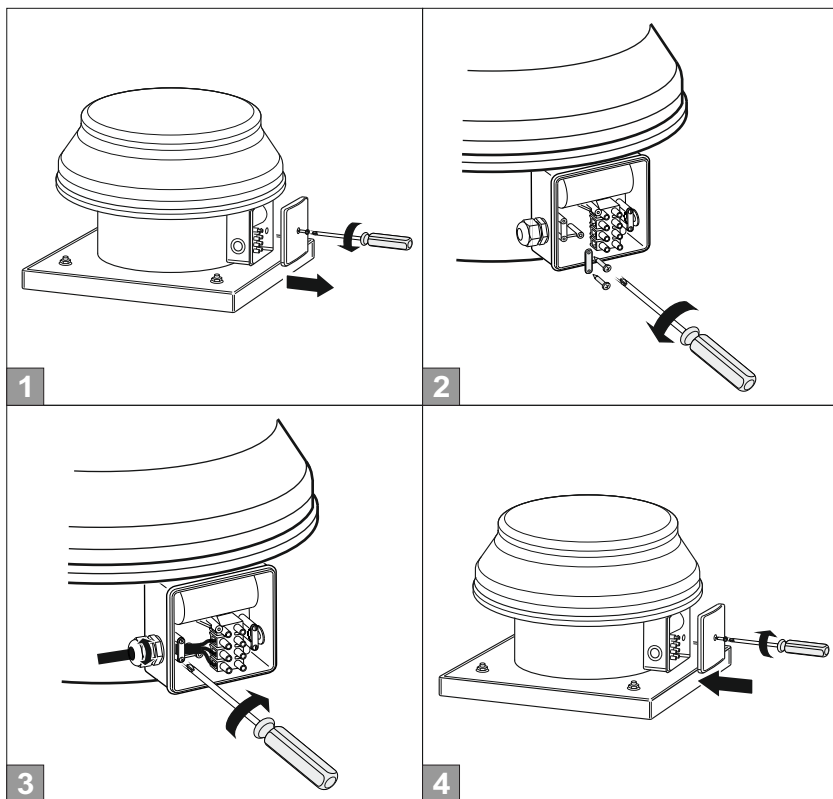


Figure 26

STORAGE RULES

Store the fan in manufacturer's packaging in a ventilated room at temperatures between +5°C and +40°C and relative humidity not more than 80% (at +20°C)

MAINTENANCE AND SERVICING

Fan maintenance means periodic cleaning of the surfaces from dust and dirt.

Switch the fan off while doing any maintenance operations!

Use a dry soft brush or compressed air to remove dust.

The impeller blades require thorough cleaning at least once in 6 months.

To clean the soiled fan internal parts perform a partial fan dismantling.

Wash the fan blades carefully with mild detergent and water solution avoiding liquid penetration on the electric motor.

VKH

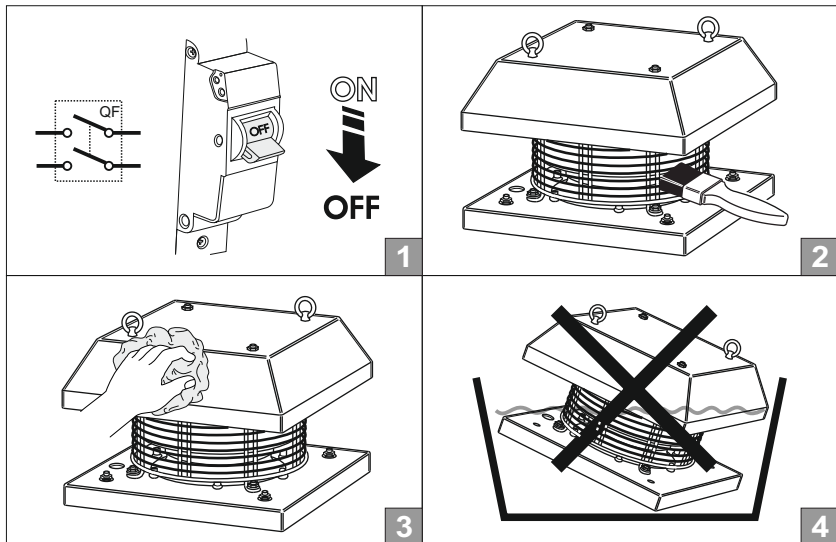


Figure 27

VKH EC

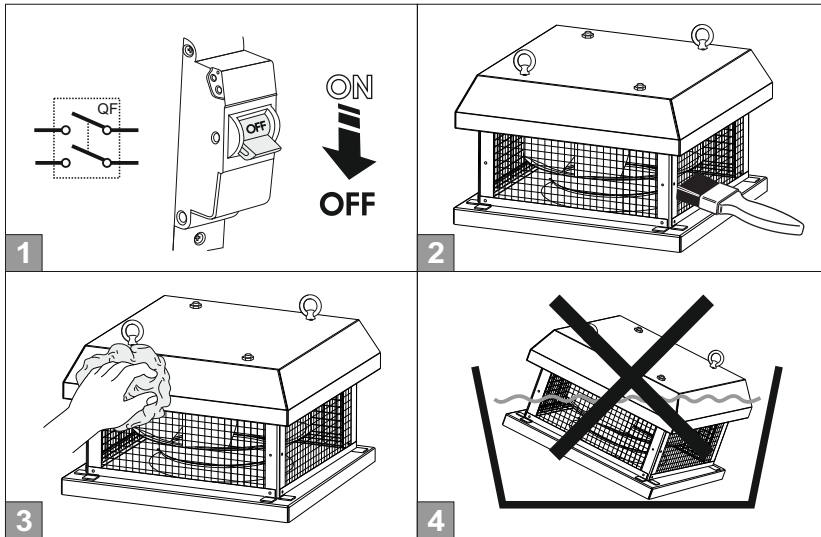


Figure 28

VKV, VKV EC

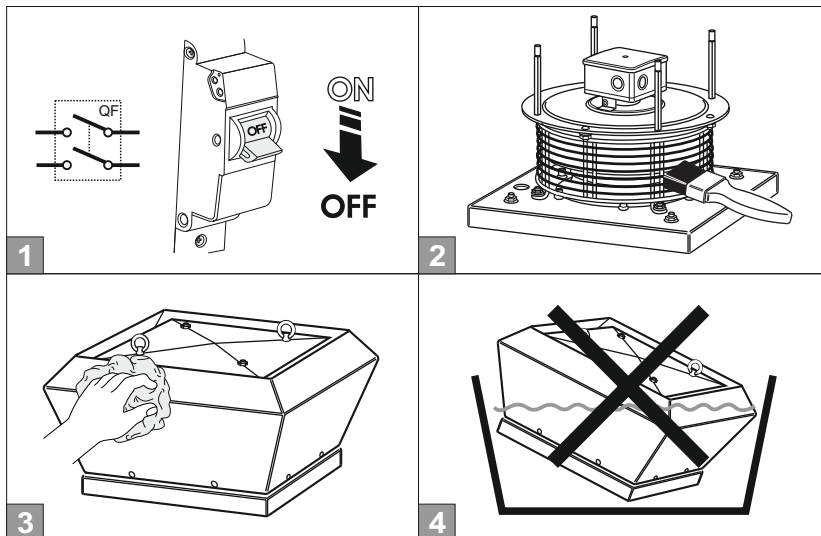


Figure 29

VKMK, VKMKp

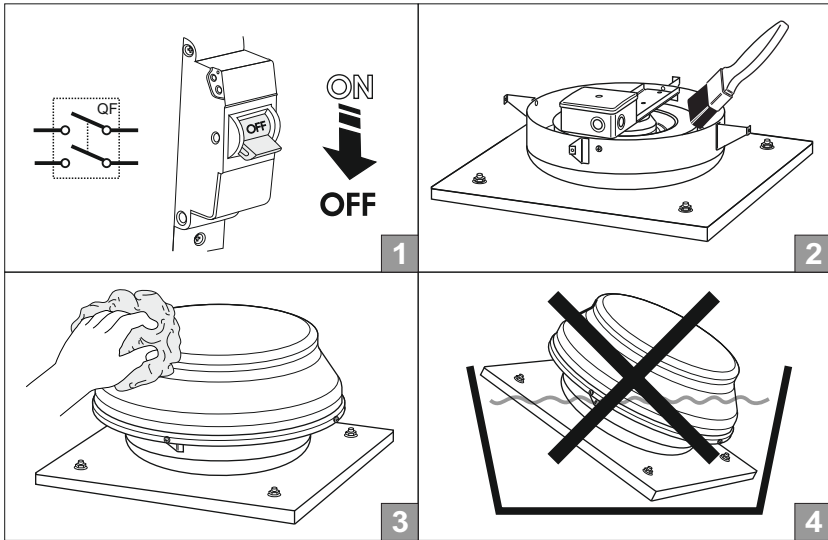


Figure 30

VOK, VOK1

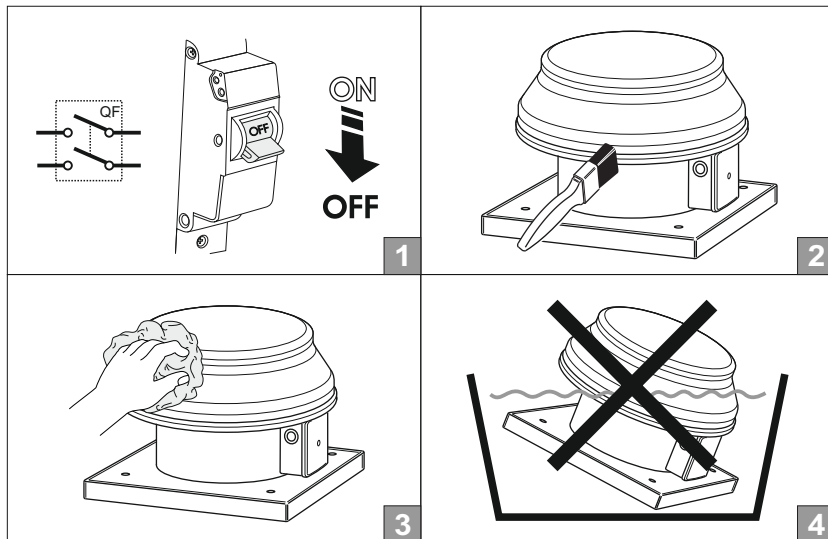


Figure 31

MANUFACTURING WARRANTY

While buying the present product the Customer agrees to accept the following warranty conditions: The manufacturer guarantees normal performance of the ventilation unit for 24 months from the date of resale, subject to the compliance with transport, storage, mounting and operation rules.

In case of no confirmation of the sales date the guarantee period is calculated from the manufacturing date.

All the units and components belonging to the faulty unit 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 unit.

In case of failure due to faulty equipment during the warranty period the consumer has the right to get it exchanged at the manufacturing facility.

The accessories operated together with the unit, both included and not included into the delivery list as well as other equipment operating jointly with the unit are not covered by the warranty.

The company is not responsible for compatibility of their goods with other producers' goods.

The warranty covers the manufacturing defects only.

All the defects and faults resulting from gross mechanical effect during operation process or natural wear-and-tear are not covered by the warranty conditions.

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 unit misuse or gross mechanical effect.

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

Mounting/dismantling, connection/disconnection and adjustment of the unit 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.

ACCEPTANCE CERTIFICATE

We hereby declare that the following 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.

The fan has been duly certified as serviceable

Model	
“VENTS“	
VKV _____	“
VKH _____	“
VKV EC _____	“
VKH EC _____	“
VKMK _____	“
VKMKp _____	“
VOK _____	“
VOK1 _____	“
<i>(tick the proper model only)</i>	

Manufacturing date

Approval mark

Sold by
(name of trading enterprise, stamp of the shop)

Date of sale

WARRANTY CARD
