BKF

Installation and Operating Instructions for

CE

■ English Originalversion

systemair

Previous issues: IMO_BKF_en_10_10_2016

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1. General information

1.1. List of information

⚠ DANGER

Direct danger
Failure to comply with this warning leads directly to death or to serious bodily harm.

⚠ WARNING

Possible danger
Failure to comply with this warning potentially leads to death or to serious bodily harm.

⚠ CAUTION

Hazard with a low risk
Failure to comply with this warning potentially leads to moderate injuries.

ATTENTION

Hazard with risk of property damage
Failure to comply with this warning leads to property damage.

NOTE

Useful information and notes

1.1.1. Specific safety symbols

⚠ DANGER

Hazard from touching impeller, if not covered with protective grid!
This warning identifies situations with a danger for life from touching impeller. Failure to comply with this warning leads to the risk of death or serious injuries.

⚠ WARNING

Hazard from electrical current!
This warning identifies situations with a danger for life from electrical current. Failure to comply with this warning leads to the risk of death or serious injuries.

⚠ WARNING

Hazard from bursting parts!
This warning identifies situations with a danger from bursting parts. Failure to comply with this warning potentially leads to the risk of serious injuries.

⚠ WARNING

Hazard from hot surface!
This warning identifies situations with a danger from overheating. Failure to comply with this warning potentially leads to property damage.

1.1.2. List of instructions for action

Instruction for action

☞ Carry out this action.

☞ (if applicable, further action)

Instruction for action with fixed order

☞ Carry out this action.

☞ Carry out this action.

☞ (if applicable, further action)

1.2. Notes on the documentation

⚠ WARNING

Hazard as a result of improper dealing with the device

These operating instructions describe safe use of the device.

- Read the operating instructions carefully!
- Keep the operating instructions with the device. They must be permanently available at the place of use.

2. Important safety information

2.1 Safety notes

Designers, installers and operators are responsible for the **proper mounting and intended use**.

- Only use the device in a proper condition.
- Provide generally prescribed electrical and mechanical protective devices.
- During mounting, commissioning, maintenance and control, secure the place of mounting against unauthorised access.
- Observe rules for safe work.
- During operation, safety components must not be removed or put out of function.
- Keep all the warning signs on the device complete and readable.
- Regularly instruct the personnel about safety-conscious behaviour.

NOTE

We have carried out a risk assessment for the device. However, it can only apply to the device itself. After installation of the device, we recommend to carry out a risk assessment for the whole system. In this way, you have the guarantee that there is no risk potential from the system.

Compliance with EMC Directive 89/336/EEC only relates to these products when they have been connected directly to the customary energy supply mains.

2.2 Personnel

2.2.1 Mounting personnel

- Mounting may only be carried out by trained, qualified personnel.

2.2.2 Work on the electrical equipment

- Work on the electrical equipment of the fan may only be done by a qualified electrician or electrotechnically educated person. This person must know the relevant safety rules to recognise and avoid potentially risks.

2.2.3 Personnel for operation, use, maintenance and cleaning

- Operation, use, maintenance and cleaning may only be carried out by trained and authorized personnel. The operating personnel must have appropriate knowledge about handling with the device. In the case of a malfunction or an emergency they must react correctly and adequately.

2.3 Intended use

BKF box fan is intended for installation in ventilation systems. In case of fire it is used to extract smoke gases from the room. Ventilated areas and emergency exits contribute to easier evacuation of people and equipment in the event of fire, and to faster and more efficient fire extinguishing; they protect the building structure and equipment against excessive temperatures and decrease fire escalation to the surrounding areas. Installation is possible in all positions (see Appendix 2), flange connection 30 mm. Installation outside building or inside building, outside fire zone in well ventilated rooms.

- The fans are suitable for extraction of clean air, air with a low dust and grease content, media up to max. density of 1,3 kg/m³ and permissible moisture of max. 95 %.
- The maximum permissible operating data on the name plate apply for an air density ρ = 1,2 kg/m³ (sea level) and a maximum air moisture of 80 %.
- Daily ventilation of medium -20 up to 120°C, continuous operation.
- In case of fire all motor protective devices of the fan must be bridged to guarantee functional capability.

2.4 Improper use

Above all, the improper use means using the fan in a way other than that described. The following points are improper and hazardous:

- Use of a fan with improper identification (temperature/time class in case of smoke extraction);
- Installation inside fire zone to ventilate it;
- Not suitable to exhaust dust containing meduim or medium with such dust concentration, that could affect with dust deposits on operation and explosion protection (appropriate filtering necessary);
- Extraction of grease containing media;
- Exhaust from explosion hazardous zones;
- Exhaust aggressive atmosphere;
- Operation without duct system or protective guard (**intake protection**); the outlet protection is available as accessory (c**aution during maintenance and testing!)**
- Operation with the air connections closed or in instable area;
- Operation without effective thermal protection (PTC) (exception: fire mode).

3. Warranty

Warranty for our products shall be determined according to the contractual agreements, our quotations and also, as a supplement, our General terms and Conditions of Business. Warranty claims shall presuppose that the products are correctly connected, operated and used accordingly to data sheets, and also regularly maintained.

4. Delivery, transport, storage

4.1 Delivery

Each device leaves our plant in an electrically and mechanically proper condition. We recommend to transport them to the installation site in original packaging.

⚠ CAUTION

Danger from cutting edges!

- Wear protective gloves when unpacking.

Check delivery

☞ Check the fan for obvious defects, which can impair safe operation.

☞ First of all, pay attention for defects on the motor and impeller, cracks in the casing, missing rivets, screws or covering caps.

4.2 Transport

⚠ WARNING

Hazard of impact if the device falls down!

- Transport the fan carefully and with appropriate hoisting device!
- Wear a safety helmet and safety goggles!

⚠ WARNING

Electrical hazard from damaged motor

- Do not use the motor for transport or hoisting.

☞ Transport and unload the wooden crate carefully.

☞ Transport the fan either in the original packaging or on the provided transport devices (lifting eyes – see Appendix 1) with appropriate hoisting devices.

☞ At manual transport observe allowed human lifting rsp. carrying forces (see weight on the name plate).

☞ Avoid impacts and distortion of housing.

4.3 Storage

⚠ CAUTION

Hazard due to loss of function of the motor bearings!

- Avoid storing for too long time (recommendation: max. 1 year).
- Turn the impeller manually every three months, wear safety gloves.
- Before installation, check proper function of the motor bearings.

☞ Store the fan in the original packaging, dustproof, dry and protected against weather.

☞ Avoid effects of extreme heat or cold.

5. Description

The casing is made of magnelis steel. Impellers with backward-curved blades are welded and galvanized. They are fastened together with hub and secured screw directly on to the motor shaft. Dynamically balanced to ISO 1940 T1, class G6,3. Serially equipped with B5 electric motor 3x400V~, 50Hz, IP 55, insulation class F, with built-in PTC. On request, the fan can be equipped with electric motor intended for other voltage/frequency. Electric motor outside air stream is self cooled.

Electric motor	Connection	Efficiency class, serially:
Single speed (4 pole, 6 pole, 8 pole)	Y or D	IE2 or IE3 (exception: 8 pole, IE1)
Two speed (4-6, 6-8, 8-12)	Y/Y	IE1
Two speed (4-8, 6-12) Dahlander	YY/Y	IE1

5.1 Technical data

Size BKF	Max. synchron RPM at 50/60 Hz	Max. nominal power**	Impeller diameter	Max. weight**	Max. sound power level inlet**	Max. sound power level outlet**
	min-1	kW	mm	kg	dB(A)	dB(A)
315	1500	0,37	325	50	74	78
355	1500	0,37	365	52	73	76
400	1500	0,55	410	69	79	81
450	1500	0,75	454	71	79	83
500	1500	1,5	520	97	83	88
560	1500	2,2	570	102	87	89
630	1500	5,5	650	161	93	98
800	1000/1200	5,5	820	200	96	100
* Motor data (input power P1, current, RPM) and data of the fan are visible on the name plate and on the test protocol. ** at 50 Hz, single speed motor						

5.2 Dimensions

Please see Appendix 1.

6. Installation

6.1 Safety information

⚠ WARNING

Hazard from falling parts!

- Check the wall/roof before installation for load capacity/strength.
- When selecting the hoisting device and fitting material observe the weight, tendency to vibrations and shear forces (weight information on the name plate).

6.2 Preconditions for installation

- BKF must be installed outside fire zone.
- Observe load capacity and stiffness of the wall/roof.
- Installation positions see Appendix 2.
- Extremely wind or turbulence exposed places should be avoided, if roof mounted.
- During installation the site must be protected from dust, moisture and weather influences.

6.3 Installation

- Ensure secure access to the fan for maintenance and service.
- Installation up to Appendix 2.
- Fit the contact surface between BKF and flexible connections/duct with temperature resistant sealing tape (not provided with BKF).
- Before and after mounting check manually if the impeller rotates smoothly. Install the fan only, **if the minimum air gap between rotor and nozzle matches the value from the fan`s test protocol.**
- The fan shall be fixed with screws (hanging material not provided with BKF).

- Avoid distortions of the casing at installation. **Check the air gap impeller/housing after fixing the fan, the minimum air gap should remain over allowed minimum from the fan`s test protocol.**
- Ensure unobstructed and uniform intake into the fan as well as free outlet.
- Install connecting ducts and accessories.
- Provide for contact/suction protection and safety distances according to EN ISO 13857.

NOTE

In some cases it is better to mount accessories before placing the fan.

NOTE

It is recommended to install a flexible connection between the fan and duct to avoid eventual tensions or distortions of the casing (appropriate flexible connection should take eventual thermal extension of connecting parts). Flexible connection has to comply needed temperature/time; also as certified Systemair accessory available.

NOTE

Data of accessories are on-line available.

7. Electrical connection

The wiring diagram is placed inside the cover of motor connection box. The quality and installation of cables for electrical connection must ensure uninterrupted energy supply, even in case of fire. Inside fire zone use only certified cable. Connecting possibility see Appendix 3. Electrical data on the fan`s nameplate must comply with the provided mains connection. Voltage tolerance according to IEC 38: +6%, -10%. Equivalent motors from different suppliers may have slightly different nominal data than in catalogue.

NOTE

- Fan motors have serial built-in PTC. More than two PTC chains may not be switched in series, as this can lead to undefined cut-outs.
- Maximum check voltage of PTC is 2,5 V.
- The wiring diagram see Appendix 3.
- Motor protection must be provided by the installer.

⚠ WARNING

Hazard from electrical voltage!

- Electrical connection only by a trained electrician rsp. trained and instructed qualified personnel!
- Electrical connection in accordance with the valid regulations.
- Prevent the ingress of water into the connection box.
- Observe 5 safety rules for the electrical expert!
  - disconnect from the power supply (all-pole),
  - prevent switching on again,
  - test absence of voltage,
  - earthing and short-circuiting,
  - protect adjacent live parts by covers and barriers and fit a suitable warning notice.

☞ Connect the cable according to wiring diagram.

☞ Tighten the nuts of cable glands well to achieve IP68 protection.

☞ Place the supply cable.

7.1 Protect the motor

☞ Avoid two-phase running:
at 3-phase motors, use an all-pole C-safety cut-out (current consumption, see name plate).

7.2 Connection of thermal protection

⚠ CAUTION

Property damage as a result of motor overheating

- The motor can overheat and be destroyed if the PTC not been connected.
- PTC always connect to a motor protective device!

8. Commissioning

8.1 Preconditions

- Mounting and electrical connection have been correctly performed.
- Installation residuals and foreign objects have been removed from the fan and ducts.
- Inlet and outlet are free.
- The safety devices have been fitted (protection against contact).
- The protective conductor and external earth conductor have been connected.
- The thermal protection is properly connected to the motor protective device:
  - the motor protective device is functional;
  - the thermal protection is functional.
- The cable glands are tight.
- Provided mains connection complies with the data on the name plate.
- The current (from the name plate) does not exceed the mains data.
- The device is electrically connected to power supply.
- **The attached instructions of the fan have been understood.**

8.2 Commissioning

⚠ WARNING

Hazard from electrical voltage!

- Commissioning by trained and instructed qualified personnel only!

⚠ WARNING

Hazard from bursting parts!

- When checking the direction of rotation, wear safety goggles.

☞ Check if the power supply is provided.

☞ Switch the fan on for 2-3s and immediately off. Check direction of rotation if complies with the arrow on the motor **(all speed!)**. It is visible on the motor`s impeller (or exceptionally at the revision opening). If not, two phases need to be swaped – either in the motor connection box or in electrical cabinet/service switch.

⚠ DANGER

Hazard from touching impeller, if not covered with protective grid!
The protective grid is provided, if explicitely ordered.

⚠ WARNING

Hazard from electrical voltage and flying parts!
Errors occurring can lead to personal and/or property damage!

- Observe 5 safety rules for the electrical expert!
  - disconnect from the power supply (all-pole),
  - prevent switching on again,
  - test absence of voltage,
  - earthing and short-circuiting,
- protect adjacent live parts by covers and barriers and fit a suitable warning notice.

☞ After swaping check:

- the direction of rotation. Switch the fan for a short period on and then off to check the direction of rotation of impeller, if complies with the arrow on the motor.
- leave the fan running, check, if running smoothly (eventual vibrations and noise);
- measure current with appropriate instrument (it may exceed nominal current by a max. 5%);
- tightness of all joints.

☞ Fill in the attached test protocol of the fan and submit it in case of warranty claim.

9. Operation

9.1 Operation/use generally

☞ Only use the fan in accordance with this operating instruction and the operating instructions of motor.

☞ Control the fan during operation for correct function.

☞ Switch the fan off as planned.

⚠ WARNING

Hazard from electrical voltage and flying parts!
Errors occurring can lead to personal and/or property damage!

Switch the fan off as planned:

- In cases of a non-typical noise from bearings, vibrations, pressure pulsation.
- In case of overcurrent, overvoltage or temperature (nameplate).

NOTE

At single speed motors with nominal power from incl. 4 kW (D400V) we recommend “star – delta” starting or soft start.

9.2 Emergency use (use in case of fire)

BKF is delivered without protective grid on the outlet side. Access to hazardous zone is allowed and possible with observing safety measures for maintenance and service only. Appropriate protective grid is available as accessory.

⚠ DANGER

Hazard from touching impeller, if not covered with protective grid!
The protective grid is provided, if explicitely ordered.

Observing safety measures, it is to assure:

- During operation, touching the impeller must not be possible.
- Safety components must not be bypassed or put out of function.

- Prevent sucking of foreign particles, this can destroy the fan.
- **The fan may operate only within the limits declared on the nameplate.**
- **In case of fire bridging of motor protective devices is necessary to assure operation. Switch on max. speed even after eventual short supply cut off must be assured.**

9.3 Dual use (daily ventilation + emergency use)

Once safety assured with above measures (9.2), it is to observe:

- Switching frequency:
  - the fan is intended for S1 continuous operation!
  - the control equipment must not allow any extreme switching!
- **The fan may operate only within the limits declared on the nameplate.**
- **In case of fire bridging of motor protective devices is necessary to assure operation. Switch on max. speed even after eventual short supply cut off must be assured.**
- The fans were hot tested with frequency converter and without filter. However, it is recommended to bridge eventual converter in case of fire (to prevent any error at motor protection setting or operation). **If frequency converter is used in case of fire, PTC and any motor protection must be bridged and switch on max. speed even after eventual short supply cut off assured.**
- In case of speed control via frequency converter - **min. 20 Hz ÷ max. 50 Hz (rsp. 60 Hz, if declared for 60 Hz**), make sure that the voltage peaks on the connection terminals of the fan are lower than allowed in the fan`s instruction.

ATTENTION

Hazard with risk of additional costs

- For speed control is recommended a combination of frequency converter and appropriate all-pole sinus filter (or minimum dU/dt filter). It is particularly important, if the supply cable is long, but also to reduce the motor noise. It may only be abandoned, if proven, that the voltage peaks on the connection terminals of the fan are lower than 1000 V and the voltage rise velocity is lower than 500 V/µs. Not observing this, the motor life time could be shorter. See also Appendix 2, Motor range.
- The motors cannot be voltage-controlled! The motor can overheat due to increased current at lower voltage.

10. Maintenance/troubleshootting

DANGER

Hazard from touching impeller, if not covered with protective grid!
The protective grid is provided, if explicitely ordered.

WARNING

Hazard from electrical voltage!

- Trouble setting and service only by a trained electrician or trained and instructed qualified personnel!
- Observe rules for safe work while troubleshooting!
- Observe 5 safety rules for the electrical expert!
  - disconnect from the power supply (all-pole),
  - prevent switching on again,
  - test absence of voltage,
  - earthing and short-circuiting,
  - protect adjacent live parts by covers and barriers and fit a suitable warning notice.

⚠ WARNING

Hazard from electrical voltage!

At maintenance and service observe:

- Impeller must stand still.
- Electrical circuit must be interrupted and secured against restarting.
- Observe the rules for safe work.

⚠ CAUTION

Danger from hot surfaces!

- During maintenance and cleaning wear protective gloves!

10.1 Malfunctions and troubleshooting (generally)

	Possible reasons	Action
The ventilator does not run	Connection to the mains fault. Thermal protection triggers. Motor fault.	Check connection to the mains and thermal protection. If ok. check electric motor (winding resistance, resistance to ground). If necessary get the electric motor repaired.
Air volume is too low	Wrong direction of rotation. Too high pressure drop in system. Obstacles in duct.	Check the direction of rotation. If wrong, swap the supply connection of any 2 phases. Check if current is similar all phases. If ok. check operating point and system design.
Thermal protection of the fan switches off	Short-circuit. Damage to the bearings. Impeller blocked or grinding.	Compare connection with wiring diagram. Compare the data of electric motor with setting of thermal protection. If ok. check power supply and electric motor. Get the electric motor or if necessary the complete fan repaired.
	Overcurrent	Check the direction of rotation. If wrong, swap any 2 phases. Check if current is similar all phases.
Noise	Damage to the bearings. Impeller blocked or grinding.	Get the electric motor or if necessary the complete fan repaired.
	Loose fit on the base plate or motor support.	Tighten the bolts, look for the cause of vibrations.
Vibrations	The actual pressure drop of the system is higher than supposed, the fan could operate in an unstable area of the fan curve.	Check operating point and system design. Consult customer service of the manufacturer.
	Damage or dust layer on impeller.	Clean the impeller, if necessary balance it or replace it.

If the reason for malfunction cannot be clearly determined, consult the customer service of manufacturer.

10.2 Cleaning

Regular cleaning prevents unbalance.

☞ Keep casing and accessories clean and clean them if necessary with a brush (do not use a steel brush or high-pressure cleaner). Do not use any detergents for interior cleaning.

10.3 Maintenance, service

Basically the fan may be repaired at the manufacturer only! Exceptions are non-relevant components. For further instructions consult the manufacturer.

The fan is by built-in for-life lubricated ball bearings as far as possible low-maintenance product. After their life time (app. 20.000 h up to manufacturer, but expected 30.000 – 40.000 h due to low load), a replacement of the bearings is necessary. Observe attached instructions of motor manufacturer.

☞ Pay attention to a non-typical noise from bearings.

☞ For damages (e.g. damage to winding) please contact our Service Department. You will find the address on the back of these operating instructions.

Maintenance and check points of fans similarly to VDMA 24186-1 (type, scope and maintenance intervals to be specified in dependence of use and operating conditions).

VDMA 24186-1	Description	Maintenance interval		
		Monthly	**Every 3 months**	**Once a year**
	Fan and electric motor of the fan			
1.1.11	Check the drainage for function			×
6.1.1	Check to dirt, damage, corrosion and fastening		×	
6.1.2	Functional cleaning			×
10.1.6	Check the terminals for tightness			×
10.1.9	Test the fan for function und operational readiness (test run app. 15 min.)		×	
6.1.4	Check the bearings for noise			×
10.1.3	Check impeller for direction of rotation (all speed)			×
6.1.3	Check impeller if damaged or unbalanced (if necessary provide vibration measurement)			×
10.1	Functional test of automatically bridging of all thermal and overcurrent protective devices		×	
10.1.7	Measure the current			×
10.1.12	Test function of protective device		×	
	Triggering device			
	Check it for function	×		
	Test of functions			
	Test all functions of system from control panel as well as signal lights	×		
	Accessories (air ducts, air louvers, flaps, sound attenuators)			
5.5.1	Check accessible ducts inclusive fire protective insulation and fastening for outside damages and corrosion (visually)			×
5.5.4	Check accessible flexible connections for tightness (visually)			×
5.2.1 5.2.3	Flaps and sound attenuators check for dirt, damage and corrosion Check mechanical functionality of the flaps			×
5.1.1	Check air louvres for dirt and damage (visually)			×

10.4 Spare parts

In case of order of spare parts please specify the serial number of the BKF. You can find it on the name plate or in the test protocol.

Spare parts: electric motor (there is a restriction to use only from the test lab allowed motors), impeller. How to replace electric motor or impeller - please contact manufacturer for instructions.

11. Uninstalling/dismounting

⚠ WARNING

Hazard from electrical voltage!

- Disconnection and uninstalling only by a trained electrician or trained and instructed qualified personnel!
- Observe 5 safety rules for the electrical expert!
  - disconnect from the power supply (all-pole),
  - prevent switching on again,
  - test absence of voltage,
  - earthing and short-circuiting,
  - protect adjacent live parts by covers and barriers and fit a suitable warning notice.

⚠ CAUTION

Danger from cutting edges and impact!

- Wear protective gloves when dismounting!
- Dismount carefully.

⚠ WARNING

Hazard from falling parts!

- When selecting the hoisting device observe the weight (weight information on the name plate).

☞ Carefully disconnect all wires.

☞ Remove the fan from duct. Carefully remove the fastening material.

☞ Lift the fan with an appropriate hoisting device on the provided lifting eyes. Place the fan on appropriate pallet.

12.Disposal

12.1 Disposal of the fan

Should the fan be disposed, proceed as follows:

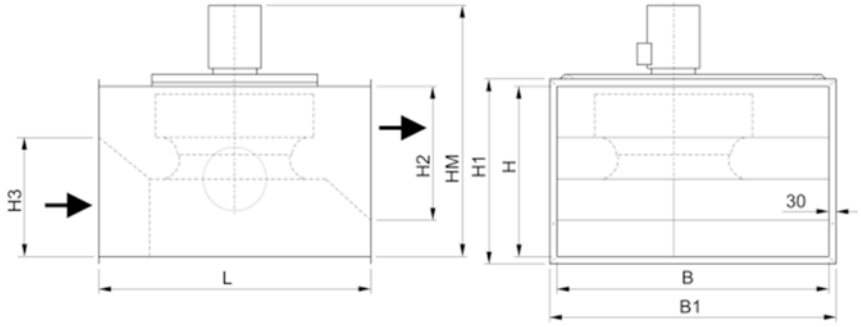
☞ Disassemble the fan into its components.

☞ Separate the parts according to
- reusable material;
- material groups to be disposed (metal, plastics, electrical parts, etc.).

☞ Provide for the recycling of material. Consider the national regulation.

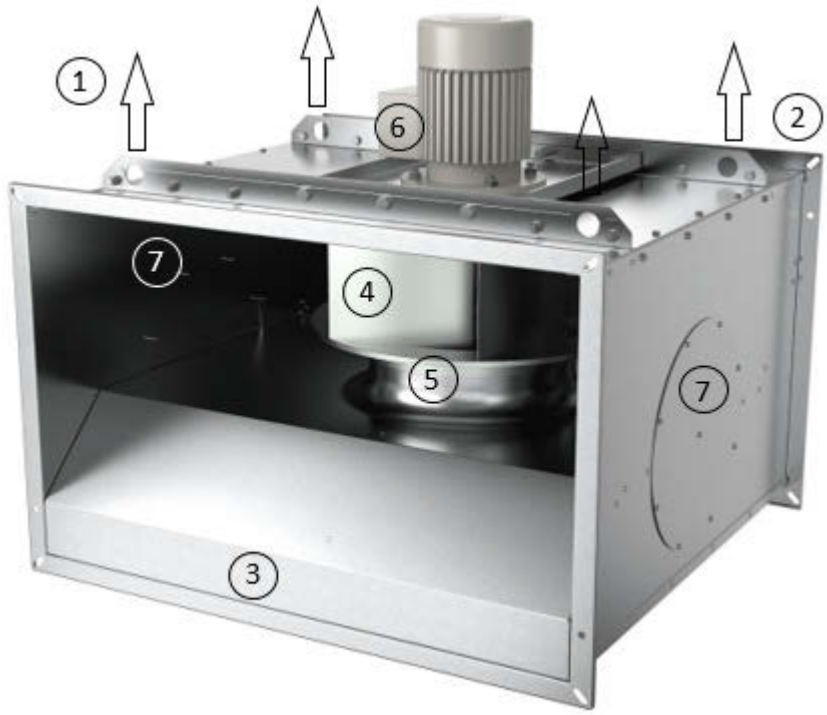
12.2 Disposal of the packaging

☞ Provide for the recycling of material. Consider the national regulation.



	B	H	L	B1	H1	H2	H3	~HM
BKF 315D4-XL	630	400	710	690	460	-	-	641
BKF 355D4	630	400	710	690	460	-	-	641
BKF 400D4-XS	800	500	780	860	560	420	420	741
BKF 400D4-XL	800	500	780	860	560	420	420	741
BKF 450D4	800	500	780	860	560	420	420	741
BKF 500D4-XS	900	630	900	960	690	520	520	905
BKF 500D4-XL	900	630	900	960	690	520	520	920
BKF 560D4	900	630	900	960	690	520	520	947
BKF 630D4-XS	1120	700	1120	1180	760	570	570	1037
BKF 630D4-XL	1120	700	1120	1180	760	570	570	1109

In the table there are listed only some of the types.



1…Lifting eyes

2…Intake side

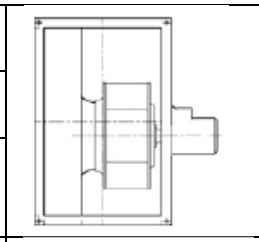
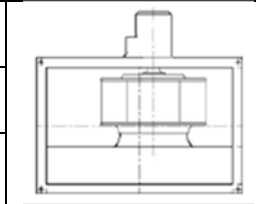
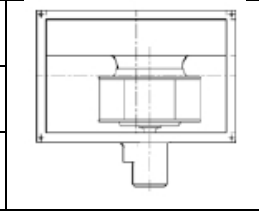
3…Outlet side

4…Impeller

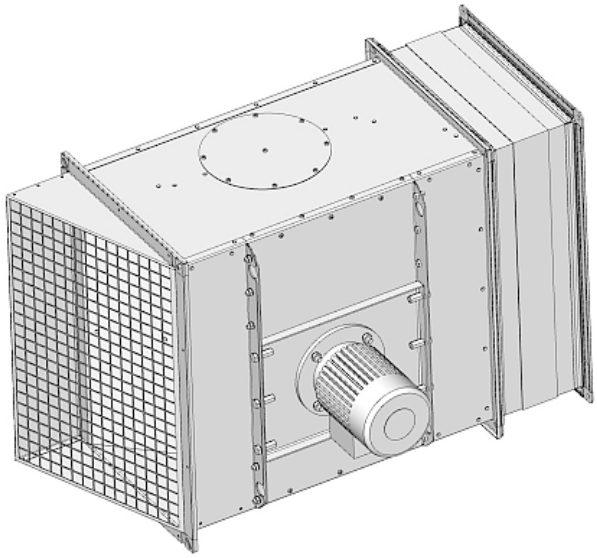
5…Gap impeller-nozzle

6…Connection box

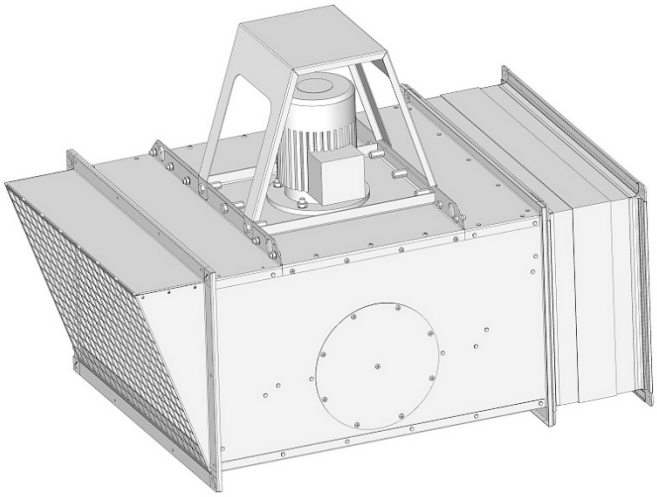
7…Revision opening

Mechanically driven exhaust appliances for smoke and heat control ventilators up to EN 12101-3:2015, Annex F, F.8		
Classification F400 (400°C, 120 min) – also meets F200, F300		
Fan range		
1) Location of the fan and insulation:		
Yes	outside the building without thermal insulation	
Yes	outside the building including thermal insulation	
Yes	inside the building but outside of the smoke reservoir without thermal insulation***	
Yes	inside the building but outside of the smoke reservoir including thermal insulation***	
No	~~inside the smoke reservoir~~ (i.e., it is not allowed to install the fan inside smoke reservoir)	
2) Installation (motor ouside air stream)		
Yes	horizontal motor shaft, floor standing	
Yes	horizontal motor shaft , wall mounted	
Yes	horizontal motor shaft , suspended from ceiling	
Yes	vertical motor shaft, impeller below the motor	
No	~~vertical motor shaft, impeller below the motor, suspended from ceiling~~ (i.e., this combination is not allowed – heat transfer to motor)	
Yes	vertical motor shaft, mounted onto the face of wall	
Yes	vertical motor shaft, impeller above the motor	
Yes	vertical motor shaft, mounted onto the face of wall	
Yes	vertical motor shaft, impeller above the motor , suspended from ceiling	
3) Flexible connectors tested with the fan		
Yes	flexible connector inlet and outlet side	
4) Cooling air		
Yes	self cooled motors used, max. ambient air temperature 55°C***	
5) Snow load		
----	not applicable	
6) Wind load		
----	not applicable	
Motor range		
7) Application		
No	~~D.O.L only~~ (i.e., it is allowed direct on-line connection or with frequency converter)	
Yes	with frequency converter under following conditions (see also 9.3): - peak to peak max. 1000 V (tested: 1060 V) - rise velocity max. 500 V/µs (tested: 2540 V/µs) - switching frequency max. 8 kHz - sine filter or du/dt filter (filtering is recommended, allthough tested and allowed without filter)	
Yes	dual purpose	
No	~~emergency only~~ (i.e., it is allowed emergency use and dual use)	
Yes	thermally uninsulated (i.e., it is not allowed to insulate motor)	
*** max. ambient air temperature 55°C, well ventilated large room		

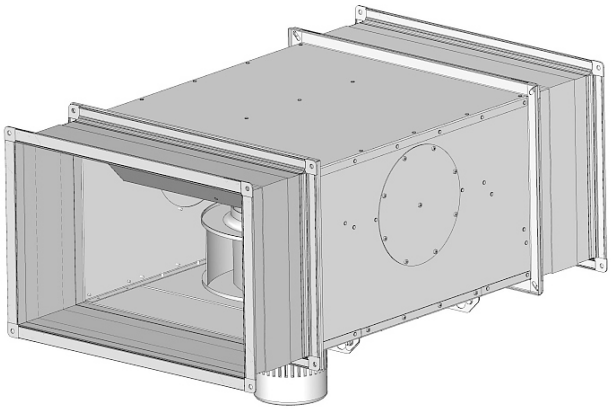
Installation examples with accessories



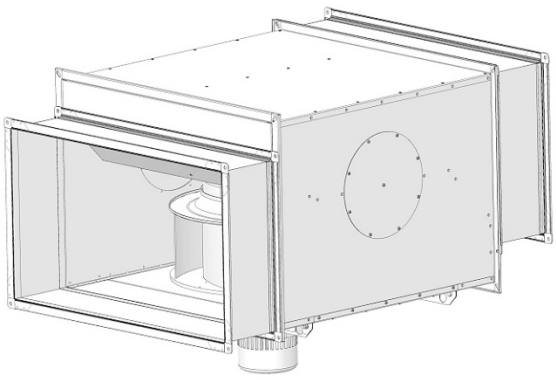
Horizontal motor shaft, with outlet protective grid PG BKF and flexible connection FLC BKF



Vertical motor shaft, with outlet protective grid PG BKF, flexible connection FLC BKF and weather protection WPR BKF



Vertical motor shaft, with flexible connections FLC BKF



Vertical motor shaft, with duct or flexible connection on the height H2/H3 (see dimensions). Non-standard flexible connections are available on request.

Sizes of motors built-in BKF fans

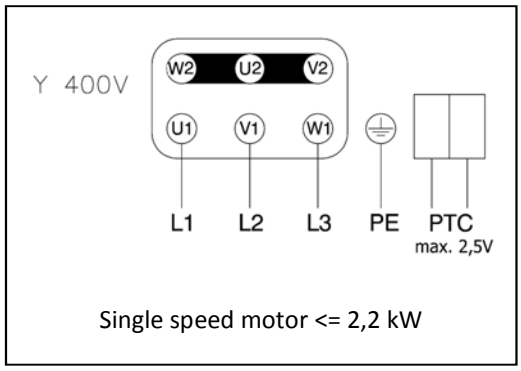
BKF size	4 pole	4/6 pole	4/8 pole	6 pole	6/8 pole	6/12 pole
315-400	80	80	80			
450	90	90	90	80		
500-XS	90	90	90	90		
500-XL	90	100	90	90		
560	100	100	100	90		
630-XS	100	112	112	100	112	
630-XM	112	132	132	100	112	
630-XL	132	132		112	132	
800-XS				132	132	132
800-XM, XL				132	132	

Cable glands of motors built-in BKF fans (M16 is usually intended for PTC)

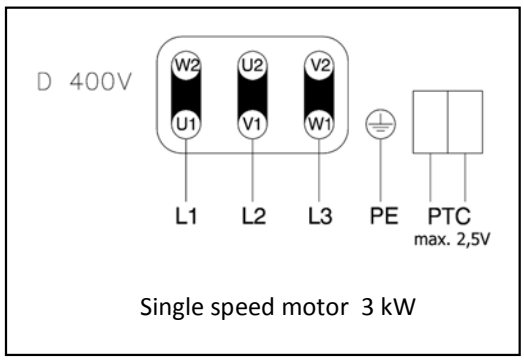
Supplier 1	M16	M20	M25	M32
80	1	1		
90	1	1		
100	1	1		
112	1	1		
132	1			1

Supplier 2	M16	M20	M25	M32
80	1	1		
90	1		1	
100	1		1	
112	1			1
132	1			1

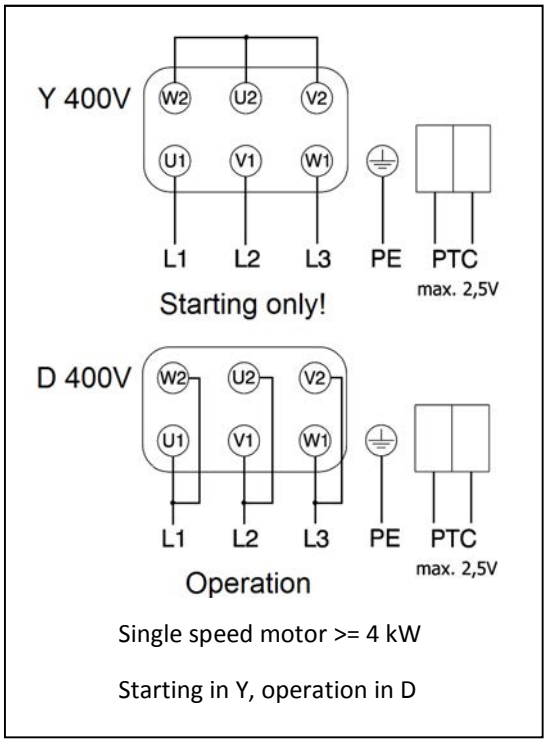
Connection of single speed fans



Single speed motor <= 2,2 kW



Single speed motor 3 kW



Single speed motor >= 4 kW

Starting in Y, operation in D

When choosing AES exhaust air and smoke extraction control accessory, please observe serial connecting capability of the fan.

systemair

EC-DECLARATION OF CONFORMITY / EG-KONFORMITÄTSERKLÄRUNG / EG-INTYG OM ÖVERENSSTÄMMELSE

The Manufacturer:	**Systemair d.o.o.**
Der Hersteller:	Špelina 2, SI-2000 Maribor
Tillverkaren:	Tel.: +386 2 4601 801

certified herewith that the following products:	***BKF Smoke and heat extract fan***
erklärt hiermit, dass folgende Produkte:	**BKF Brandgasventilator**
förklarar härmed att följande produkter:	**BKF Brandgasfläkt**

ensure all relevant regulations of following directives:
allen einschlägigen Bestimmungen folgender Richtlinien entsprechen:
stämmer överens med alla tillämpliga bestämmelser i följande direktiv:

EC Machinery Directive (2006/42/EC)	EG-Maschinenrichtlinie (2006/42/EG)
EG-maskindirektiv (2006/42/EG)	*Electromagnetic compatibility directive (2004/108/EC)*
Elektromagnetische Verträglichkeit EMV (2004/108/EG)	Elektromagnetisk tolerans EMC (2004/108/EG)
Low Voltage Directive (2006/95/EC)	Elektrische Betriebsmittel (2006/95/EG)
Elektrisk utrustning (2006/95/EG)	*Regulation (EU) No 305/2011 (CPR)*
Verordnung (EU) Nr. 305/2011 (CPR)	Förordning (EU) nr 305/2011 (CPR)
Commission Regulation (EC) No 640/2009 (Ecodesign)	Verordnung (EG) Nr. 640/2009 (Ökodesign)
Förordning (EG) nr 640/2009 (ekodesign)	*Commission Regulation (EU) No 327/2011 (Fans)*
Verordnung (EU) Nr. 327/2011 (Ventilatoren)	Förordning (EU) nr 327/2011(Ventilatorer)
Commission Regulation (EU) No 1253/2014 (Art. 1/2/f/i)	Verordnung (EU) No 1253/2014 (Art. 1/2/f/i)
Förordning (EU) No 1253/2014 (Art. 1/2/f/i)	

Applied harmonized standards, in particular:
Angewandte harmonisierte Normen, insbesondere:
Tillämpade harmoniserade standarder, i synnerhet:

EN ISO 12100	*Safety of machinery - General principles for design - Risk assessment and risk reduction*
	Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze - Risikobeurteilung und Risikominderung
	Maskinsäkerhet – Allmänna konstruktionsprinciper – Riskanalys och riskminimering
EN ISO 13857	*Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs*
	Sicherheit von Maschinen - Sicherheitsabstände gegen das Erreichen von Gefahrstellen mit den oberen und unteren Gliedmaßen
	Maskinsäkerhet – Skyddsavstånd för att hindra att armar och ben når in i riskområden
EN 60204-1	*Safety of machinery - Electrical equipment of machines - Part 1: General requirements*
	Sicherheit von Maschinen - Elektrische Ausrüstungen von Maschinen, Teil 1: Allgemeine Anforderungen
	Maskinsäkerhet – Maskiners elutrustning, del 1: Allmänna fordringar
EN 12101-3	*Smoke and heat control systems – part 3: Specification for powered smoke and heat exhaust ventilators*
	Rauch- und Wärmefreihaltung - Teil 3: Bestimmungen für maschinelle Rauch- und Wärmeabzugsgeräte
	System och komponenter för rök- och brandgaser - del 3: Specifikation för drivna rök- och värmeventilatorer

***Note**: The compliance with EC Machinery Directive and EN ISO 13857 refers to the mounted protective guards on the inlet and outlet of the fan, as far they are in the extent of delivery. For the fully accordance with mentioned requirements (protective guards or safety assurance in other way) the performer is responsible.*

Hinweis: Die Einhaltung der EG-Maschinenrichtlinie und EN ISO 13857 bezieht sich auf die montierten Schutzgitter saugseitig und druckseitig, sofern diese zum Lieferumfang gehören. Für die vollständige Erfüllung der genannten Anforderungen ist der Installateur verantwortlich.

Observera: Överensstämmelsen med EG-maskindirektivet och EN ISO 13857 gäller för de monterade skyddsgallren på fläktens inlopps- och utloppssida såvida de ingår i leveransen. Installatören ansvarar för att alla nämnda krav uppfylls.

Maribor,
10.10.2016
Date/ Datum

Franc Kirbiš, Director of production
Franc Kirbiš, Direktor der Produktion
Franc Kirbiš, produktionschef