

Fresh air from

**ÖSTBERG**  
THE FAN COMPANY 

# CK, LPK

Duct fans with circular connection



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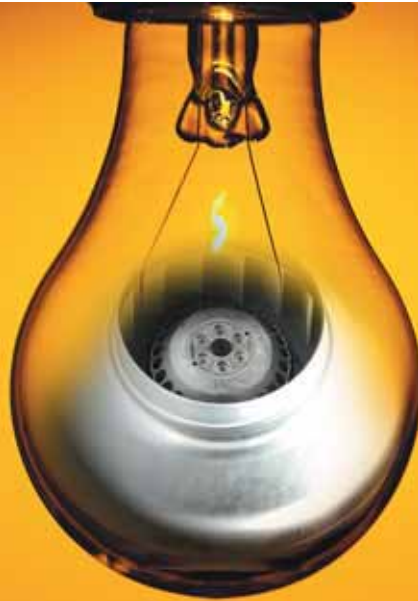
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# THE STRAIGHT WAY



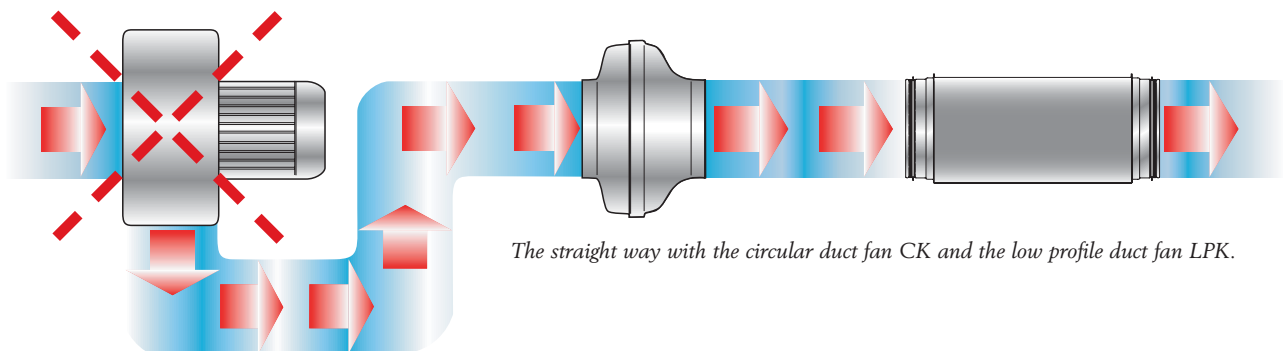
## One of the best inventions since the light bulb

The original idea for the in-line duct fans was to combine the benefits of the radial fan, high pressure and low sound level, with the straight-through airflow of the axial fan.

In 1973 the result was the in-line circular duct fan. This was the first in-line radial duct fan with an external rotor motor and straight-through airflow. Apart from high pressure and low sound level, the main benefit was the ease installation. Unlike the conventional radial fans the in-line circular duct fan is compact and does not require complicated duct arrangements to install it.

A further development of the in-line circular duct fan occurred when Hans Östberg invented, in the middle of the 70's, the rectangular in-line duct fan, which has a low installed height.

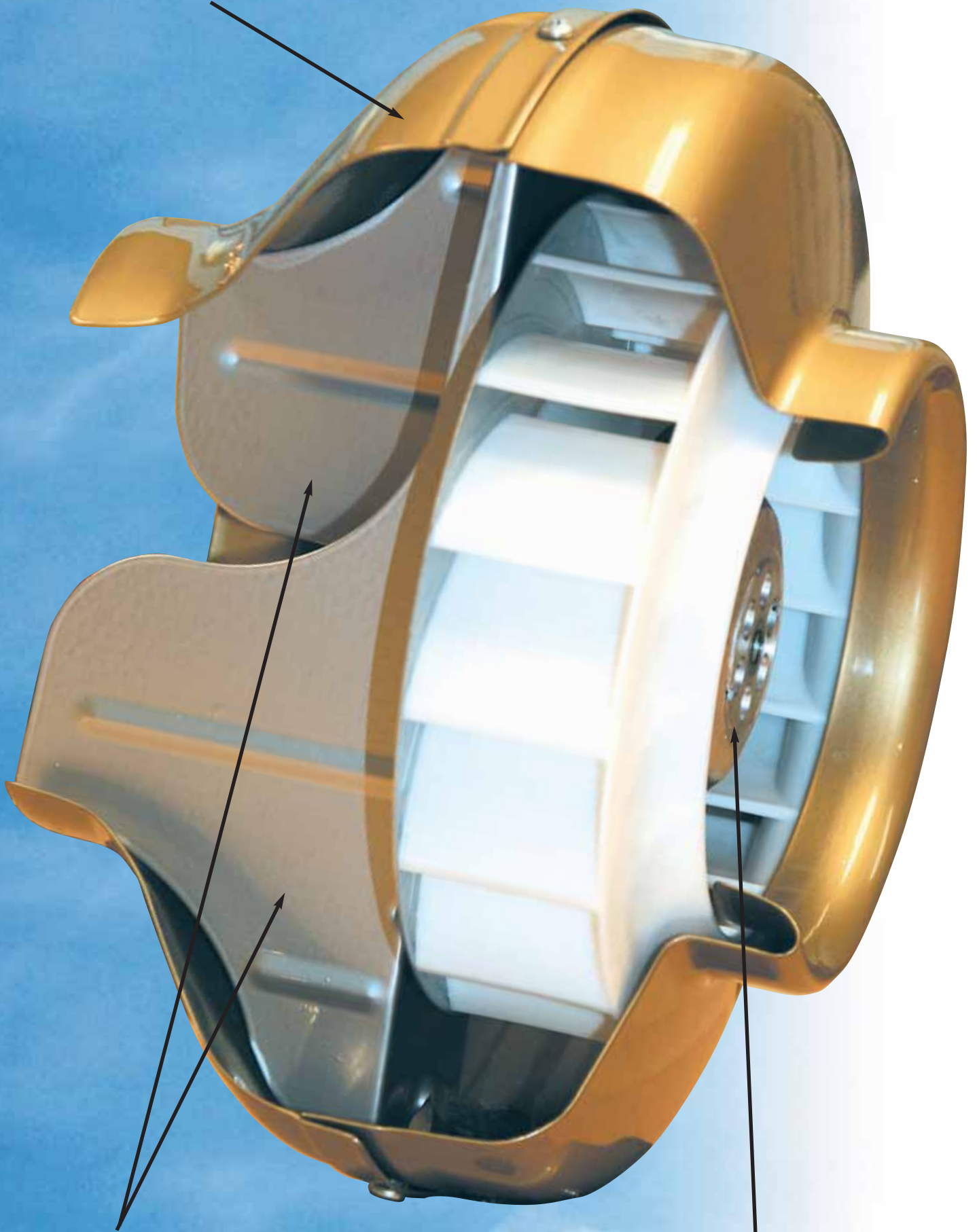
Following on from the rectangular in-line duct fan was the lower profile in-line duct fan LPK. It's installed height is only two centimetres more than the duct dimension. Another advantage is the swing-out design making the impeller very easy to clean.



*The straight way with the circular duct fan CK and the low profile duct fan LPK.*

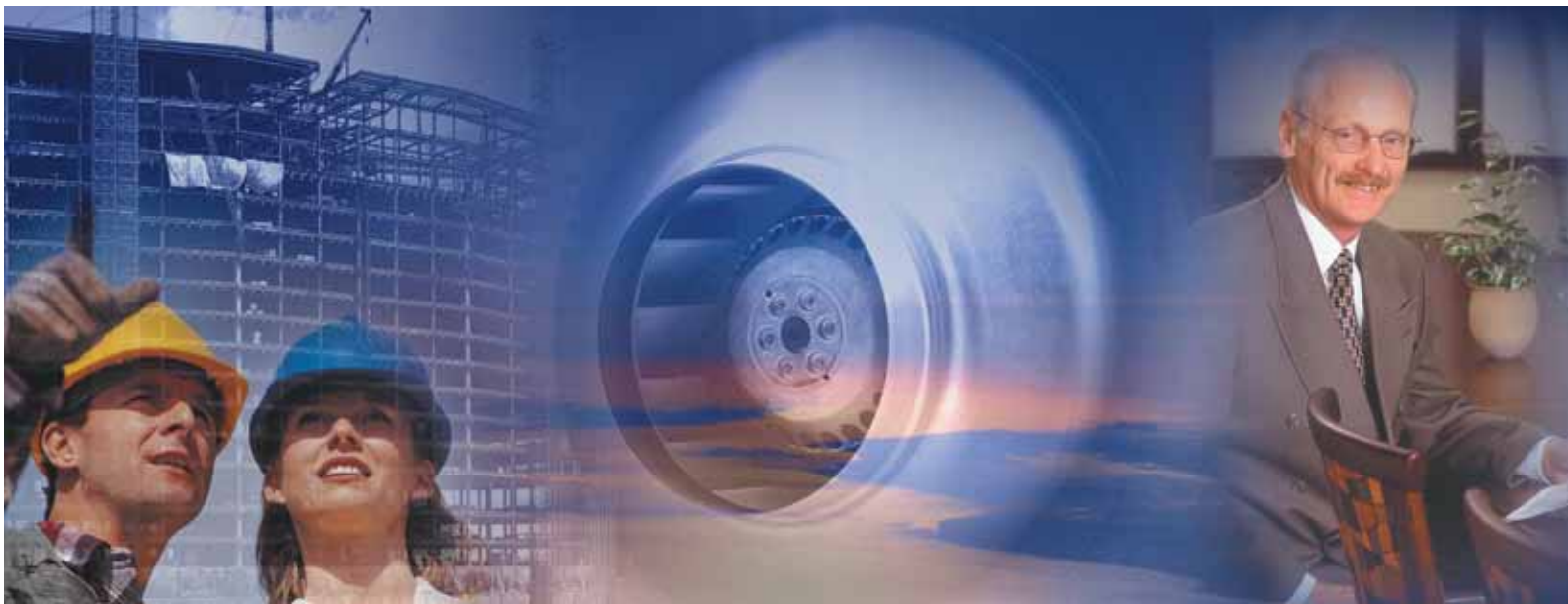
*The design of housing results in higher flow and with that an even higher efficiency.*

*European Patent 0625642.*



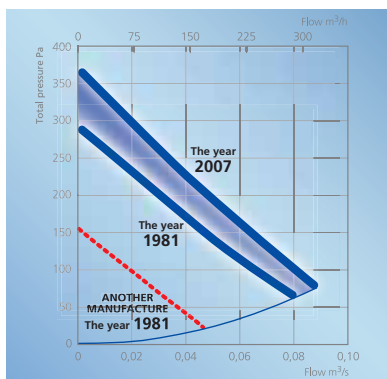
*The revolutionary motor bracket with integrated guide plates that improves the capacity.*

*The external rotor motor with backward curved impeller blades is provided with approved motor protection.*



## CK, circular duct fan

At the start of the 1980's another revolutionary development of the in-line circular duct fan occurred. AB C.A. Östberg launched a new generation fan which had a new casing design, an innovative motor support with integral guide vanes as well as an improved impeller design. After these changes the result was superior



*The development of the in-line circular duct fan CK with duct dimension 100 mm. Until the year 1981 the most common model on the market had both low pressure and airflow. In 1981 a superior model was introduced by AB C.A. Östberg which had a much higher pressure and airflow.*

technical data compared to their competitors (see diagram).

In 1993 Hans Östberg was granted the patent on further improvements (European Patent 0625642), which resulted in higher quality at the same time as reducing the manufacturing costs.

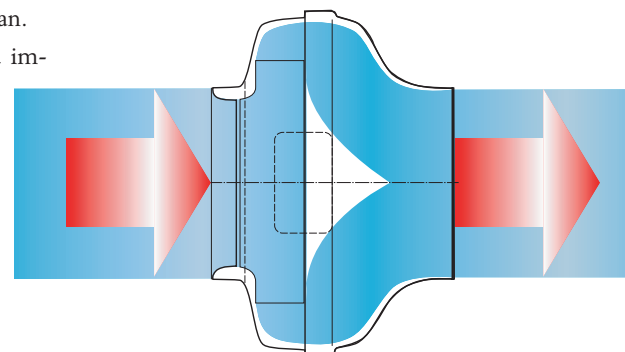
### HIGH CAPACITY AND OPERATIONAL SAFETY

High quality, low sound levels, easy installation and well designed useful accessories are some of the hallmarks of the CK in-line circular duct fan.

CK has a backward curved impeller, an external rotor motor and straight-through airflow. It's compact, requires little space for installation and has a high capacity.

The CK fan can cope with high pressure and long duct runs, whilst still operating with a low sound level. The fan speed can easily be controlled by voltage or variable frequency regulators.

The CK is moisture resistant and is approved for installation in humid or damp environments. The fan casing is manufactured from pre-galvanised steel and the motor has in-built protection. The CK can be installed in any position and is rate IP 44 when installed in a duct system.



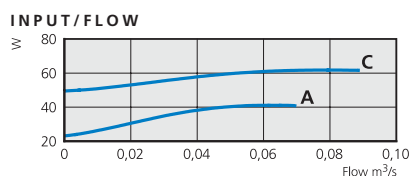
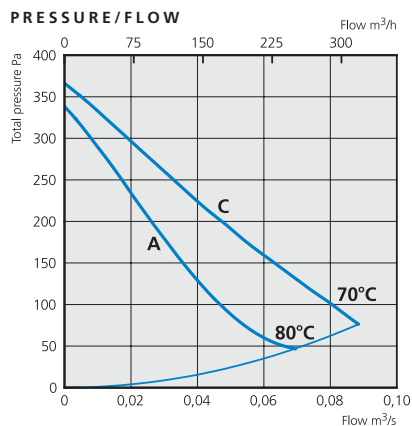
# CK 100 A/C

# CK 125 A/C

Circular duct fan with backward curved impeller



## CK 100 A/C



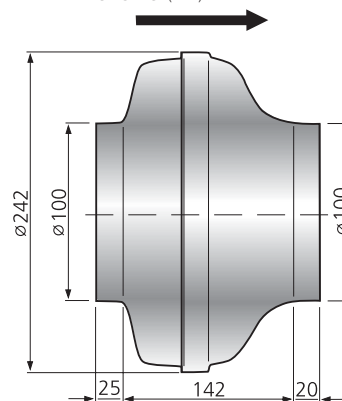
### TECHNICAL DATA

CK	100 A	100 C
Voltage, V/Hz	230/50	230/50
Current, A	0,18	0,27
Input, W	41	62
Speed, rpm	1730	2530
Weight, kg	2,9	2,9
Wiring diagram	4040002	4040001
Capacitor, $\mu$ F	3	2
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### DIMENSIONS (mm)



### SOUND DATA

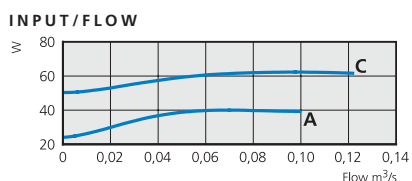
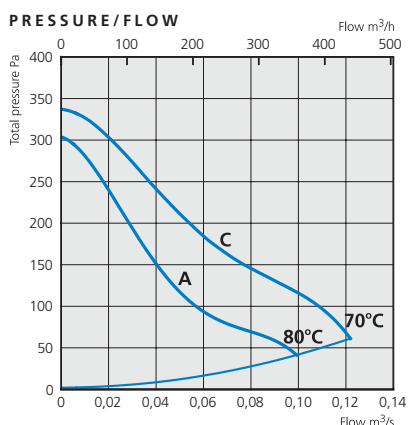
CK 100 A, 40 l/s 125 Pa	$L_{pA}$	$L_{WA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	36	43	35	21	33	35	39	37	37	31
Inlet		66	45	56	64	60	58	52	45	38

CK 100 C, 60 l/s 170 Pa	$L_{pA}$	$L_{WA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	42	49	34	23	40	40	44	42	44	38
Inlet		70	50	61	66	65	65	59	52	46

General fan facts, page 18-19.

## CK 125 A/C



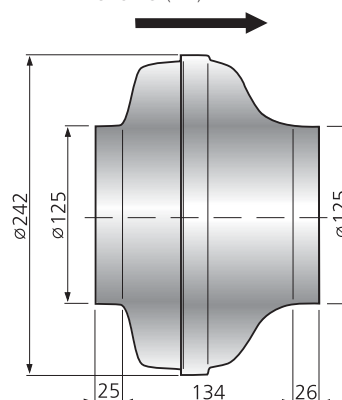
### TECHNICAL DATA

CK	125 A	125 C
Voltage, V/Hz	230/50	230/50
Current, A	0,18	0,27
Input, W	40	62
Speed, rpm	1640	2480
Weight, kg	2,9	2,9
Wiring diagram	4040002	4040001
Capacitor, $\mu$ F	3	2
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### DIMENSIONS (mm)



### SOUND DATA

CK 125 A, 40 l/s 130 Pa	$L_{pA}$	$L_{WA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	36	43	35	20	35	34	38	38	36	30
Inlet		67	44	51	66	60	56	52	47	39

CK 125 C, 80 l/s 145 Pa	$L_{pA}$	$L_{WA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	42	49	36	25	39	39	44	43	45	36
Inlet		70	49	55	64	67	64	60	55	48

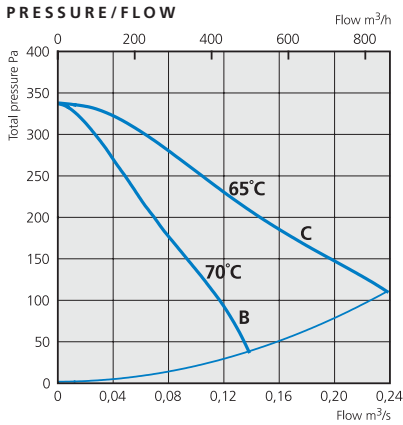
General fan facts, page 18-19.



# CK 150 B/C CK 160 B/C

Circular duct fan with backward curved impeller

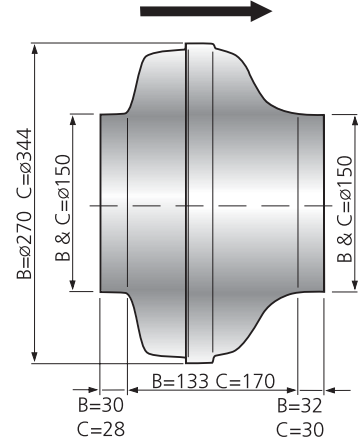
## CK 150 B/C



### TECHNICAL DATA

CK	150 B	150 C
Voltage, V/Hz	230/50	230/50
Current, A	0,27	0,44
Input, W	62	101
Speed, rpm	2540	2480
Weight, kg	3,2	4,3
Wiring diagram	4040001	4040001
Capacitor, $\mu F$	2	3
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

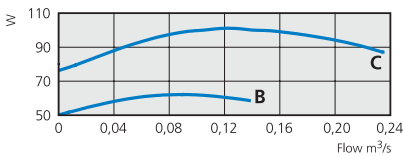
### DIMENSIONS (mm)



### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### INPUT/FLOW



### SOUND DATA

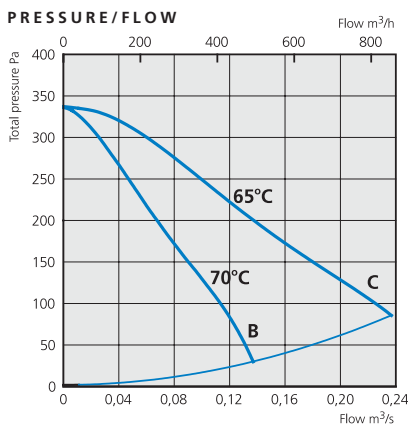
CK 150 B, 70 l/s 195 Pa	$L_{pA}$	$L_{wA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	42	49	35	24	39	40	45	44	44	32
Inlet		69	48	54	64	65	63	58	53	48

CK 150 C, 160 l/s 190 Pa	$L_{pA}$	$L_{wA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	49	56	35	34	42	49	54	47	48	35
Inlet		73	52	60	64	68	69	64	64	54

General fan facts, page 18-19.

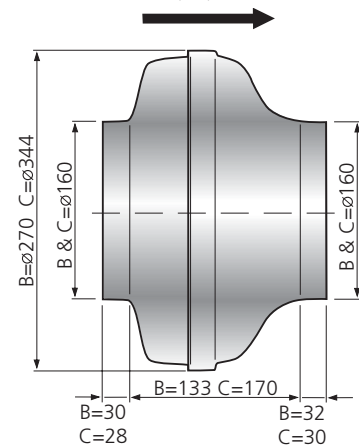
## CK 160 B/C



### TECHNICAL DATA

CK	160 B	160 C
Voltage, V/Hz	230/50	230/50
Current, A	0,27	0,44
Input, W	62	101
Speed, rpm	2540	2480
Weight, kg	3,2	4,3
Wiring diagram	4040001	4040001
Capacitor, $\mu F$	2	3
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

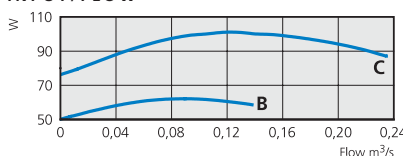
### DIMENSIONS (mm)



### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### INPUT/FLOW



### SOUND DATA

CK 160 B, 70 l/s 195 Pa	$L_{pA}$	$L_{wA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	42	49	35	24	39	40	45	44	44	32
Inlet		69	48	54	64	65	63	58	53	48

CK 160 C, 160 l/s 190 Pa	$L_{pA}$	$L_{wA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	49	56	35	34	42	49	54	47	48	35
Inlet		73	52	60	64	68	69	64	64	54

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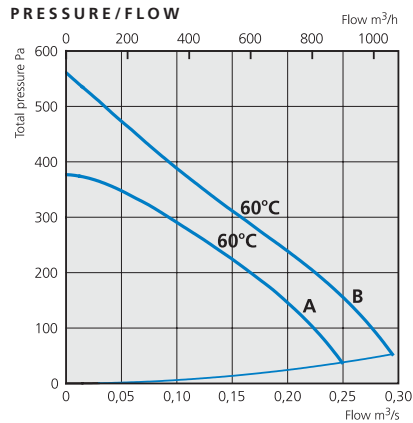
# CK 200 A/B

# CK 250 A/C

Circular duct fan with backward curved impeller



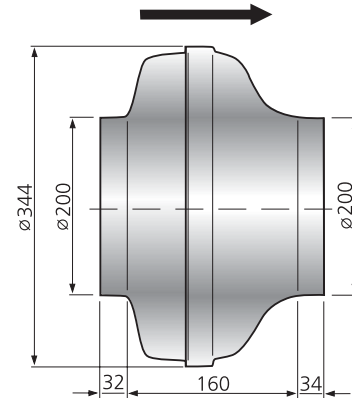
## CK 200 A/B



### TECHNICAL DATA

CK	200 A	200 B
Voltage, V/Hz	230/50	230/50
Current, A	0,51	0,71
Input, W	115	165
Speed, rpm	2580	2500
Weight, kg	4,6	5,1
Wiring diagram	4040001	4040001
Capacitor, $\mu F$	4	4
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

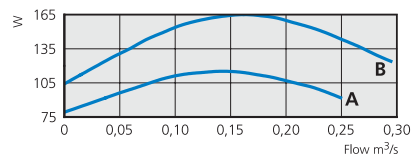
### DIMENSIONS (mm)



### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### INPUT/FLOW



### SOUND DATA

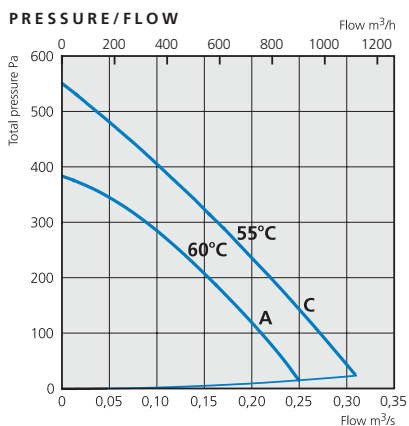
CK 200 A, 190 l/s 190 Pa	L <sub>pA</sub>	L <sub>wA</sub>	tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	47	54	34	31	42	46	50	47	48	34	
Inlet		72	52	60	64	67	66	64	65	55	

CK 200 B, 160 l/s 300 Pa	L <sub>pA</sub>	L <sub>wA</sub>	tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	48	55	35	30	40	48	52	48	49	41	
Inlet		73	52	62	66	67	66	65	64	58	

General fan facts, page 18-19.

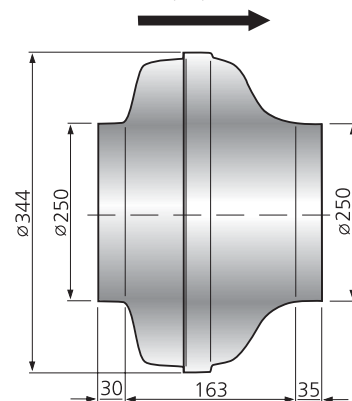
## CK 250 A/C



### TECHNICAL DATA

CK	250 A	250 C
Voltage, V/Hz	230/50	230/50
Current, A	0,50	0,81
Input, W	115	185
Speed, rpm	2580	2420
Weight, kg	4,6	5,3
Wiring diagram	4040001	4040001
Capacitor, $\mu F$	4	5
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

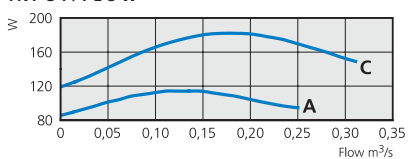
### DIMENSIONS (mm)



### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### INPUT/FLOW



### SOUND DATA

CK 250 A, 135 l/s 250 Pa	L <sub>pA</sub>	L <sub>wA</sub>	tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	47	54	26	30	34	47	52	47	44	38	
Inlet		74	51	60	67	67	69	68	64	55	

CK 250 C, 160 l/s 320 Pa	L <sub>pA</sub>	L <sub>wA</sub>	tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	49	56	26	38	40	50	53	49	46	40	
Inlet		74	52	59	66	67	69	69	66	60	

General fan facts, page 18-19.

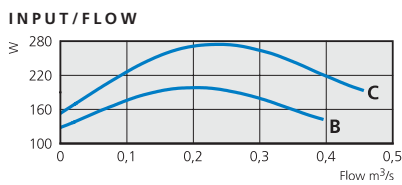
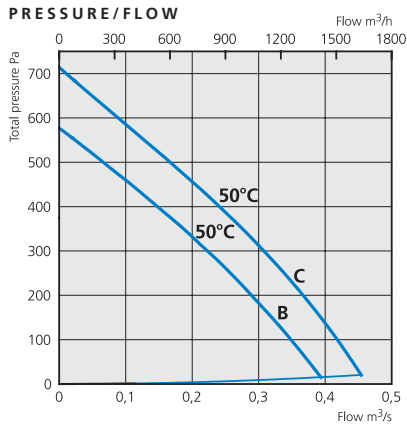




# CK 315 B/C

Circular duct fan with backward curved impeller

## CK 315 B/C



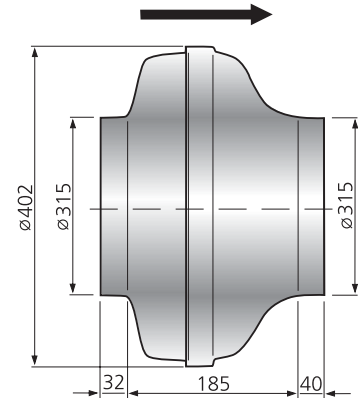
### TECHNICAL DATA

CK	315 B	315 C
Voltage, V/Hz	230/50	230/50
Current, A	0,84	1,19
Input, W	190	274
Speed, rpm	2465	2500
Weight, kg	6,1	6,5
Wiring diagram	4040001	4040001
Capacitor, µF	5	8
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### DIMENSIONS (mm)



### SOUND DATA

CK 315 B, 220 l/s 300 Pa	L <sub>pA</sub>	L <sub>wA</sub> tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	47	54	28	35	43	48	49	50	45	41
Inlet		74	54	56	61	65	65	70	67	65

CK 315 C, 180 l/s 425 Pa	L <sub>pA</sub>	L <sub>wA</sub> tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	50	57	30	35	44	51	51	53	50	43
Inlet		75	58	60	67	66	66	72	68	66

General fan facts, page 18-19.

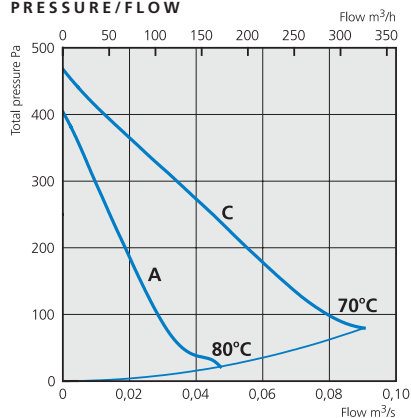
# CK 100 A/C 220/60 HZ CK 125 A/C 220/60 HZ

Circular duct fan with backward curved impeller

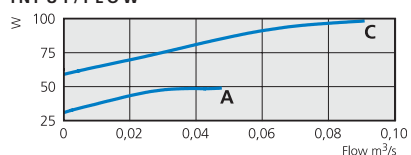


## CK 100 A/C 60 HZ

### PRESSURE/FLOW



### INPUT/FLOW



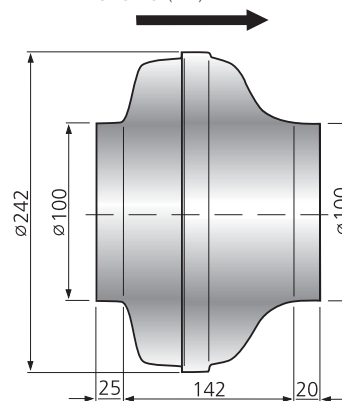
### TECHNICAL DATA

CK	100 A	100 C
Voltage, V/Hz	220/60	220/60
Current, A	0,21	0,42
Input, W	45	91
Speed, rpm	1530	2700
Weight, kg	2,9	2,9
Wiring diagram	4040002	4040001
Capacitor, $\mu$ F	3	2
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### DIMENSIONS (mm)



### SOUND DATA

CK 100 A, 42 l/s 36 Pa	$L_{pA}$	$L_{wA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	33	40	23	28	29	31	37	33	27	25
Inlet		58	35	51	52	51	50	45	43	23

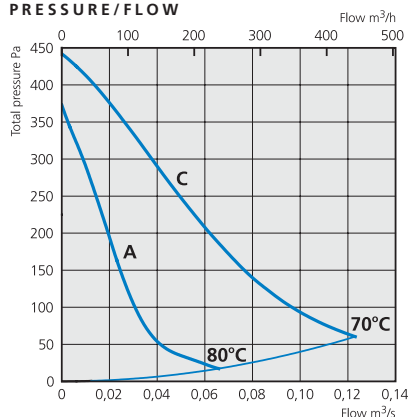
  

CK 100 C, 72 l/s 125 Pa	$L_{pA}$	$L_{wA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	45	52	25	31	40	40	48	46	41	40
Inlet		72	47	64	65	66	65	63	57	48

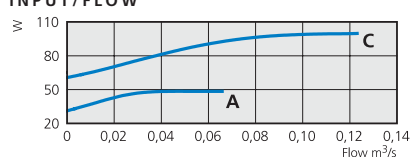
General fan facts, page 18-19.

## CK 125 A/C 60 HZ

### PRESSURE/FLOW



### INPUT/FLOW



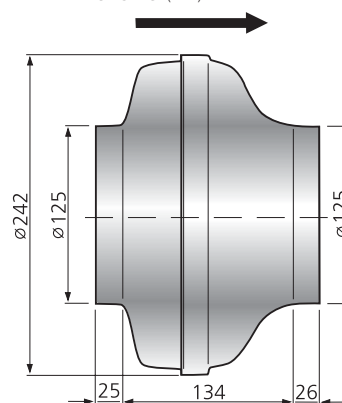
### TECHNICAL DATA

CK	125 A	125 C
Voltage, V/Hz	220/60	220/60
Current, A	0,21	0,44
Input, W	45	95
Speed, rpm	1435	2510
Weight, kg	2,9	2,9
Wiring diagram	4040002	4040001
Capacitor, $\mu$ F	3	2
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### DIMENSIONS (mm)



### SOUND DATA

CK 125 A, 44 l/s 43 Pa	$L_{pA}$	$L_{wA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	31	38	22	28	30	30	32	30	26	24
Inlet		56	39	46	50	52	48	44	39	23

CK 125 C, 84 l/s 128 Pa	$L_{pA}$	$L_{wA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	45	52	25	34	40	40	47	43	47	37
Inlet		71	50	60	63	67	64	63	58	51

General fan facts, page 18-19.

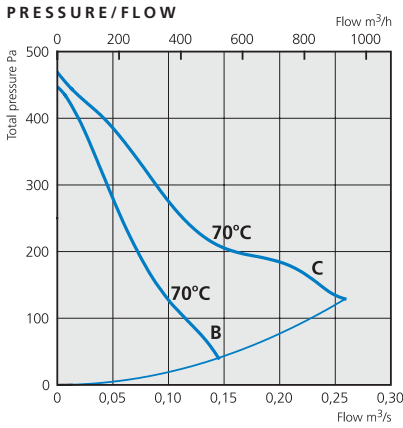


# CK 150 B/C 220/60 HZ

# CK 160 B/C 220/60 HZ

Circular duct fan with backward curved impeller

## CK 150 B/C 60 HZ



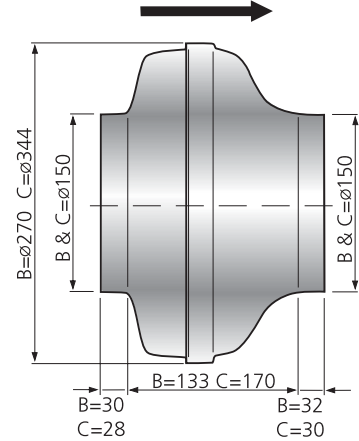
### TECHNICAL DATA

CK	150 B	150 C
Voltage, V/Hz	220/60	220/60
Current, A	0,43	0,60
Input, W	93	131
Speed, rpm	2585	2555
Weight, kg	3,2	4,3
Wiring diagram	4040001	4040001
Capacitor, $\mu F$	2	3
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

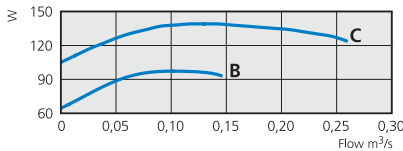
### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### DIMENSIONS (mm)



### INPUT/FLOW



### SOUND DATA

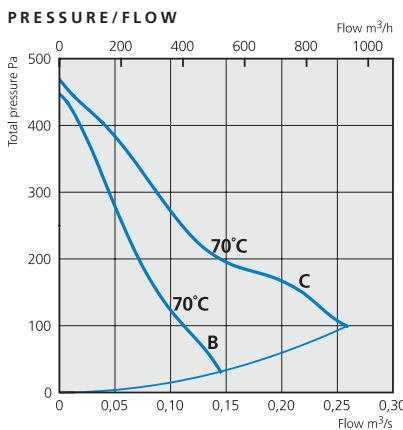
CK 150 B, 96 l/s 135 Pa	$L_{pA}$	$L_{wA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	46	53	23	36	38	42	49	48	39	29
Inlet		70	44	56	63	66	63	60	53	47

CK 150 C, 105 l/s 266 Pa	$L_{pA}$	$L_{wA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	49	56	24	41	43	48	53	46	47	32
Inlet		75	51	68	70	69	67	64	61	50

General fan facts, page 18-19.

## CK 160 B/C 60 HZ



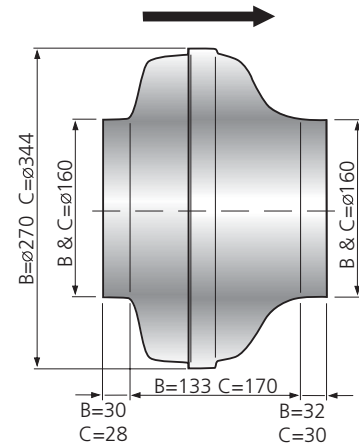
### TECHNICAL DATA

CK	160 B	160 C
Voltage, V/Hz	220/60	220/60
Current, A	0,43	0,60
Input, W	93	131
Speed, rpm	2585	2555
Weight, kg	3,2	4,3
Wiring diagram	4040001	4040001
Capacitor, $\mu F$	2	3
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

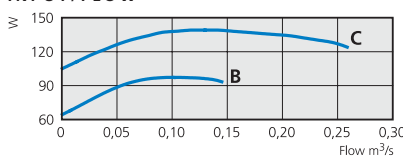
### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### DIMENSIONS (mm)



### INPUT/FLOW



### SOUND DATA

CK 160 B, 96 l/s 131 Pa	$L_{pA}$	$L_{wA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	46	53	23	36	38	42	49	48	39	29
Inlet		70	44	56	63	66	63	60	53	47

CK 160 C, 105 l/s 260 Pa	$L_{pA}$	$L_{wA}$ tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	49	56	24	41	43	48	53	46	47	32
Inlet		75	51	68	70	69	67	64	61	50

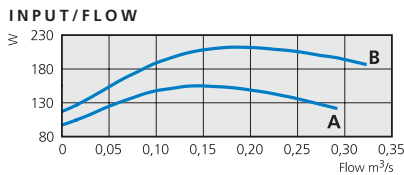
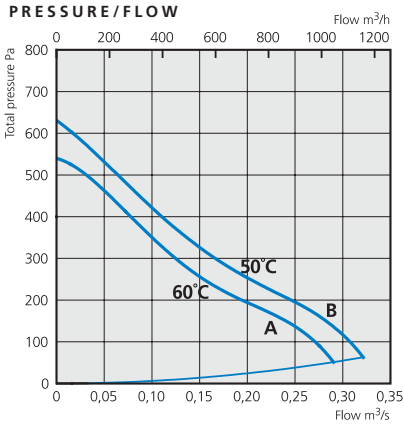
General fan facts, page 18-19.

# CK 200 A/B 220/60 HZ CK 250 A/C 220/60 HZ

Circular duct fan with backward curved impeller



## CK 200 A/B 60 HZ



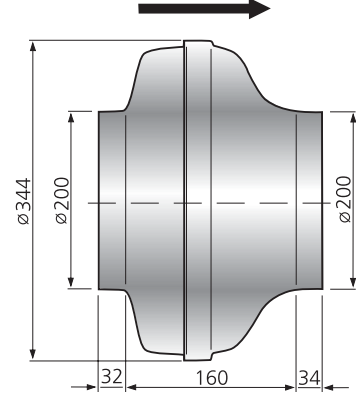
### TECHNICAL DATA

CK	200 A	200 B
Voltage, V/Hz	220/60	220/60
Current, A	0,71	0,97
Input, W	154	211
Speed, rpm	2750	2730
Weight, kg	4,6	5,1
Wiring diagram	4040001	4040001
Capacitor, $\mu$ F	4	5
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### DIMENSIONS (mm)



### SOUND DATA

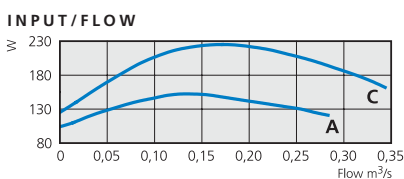
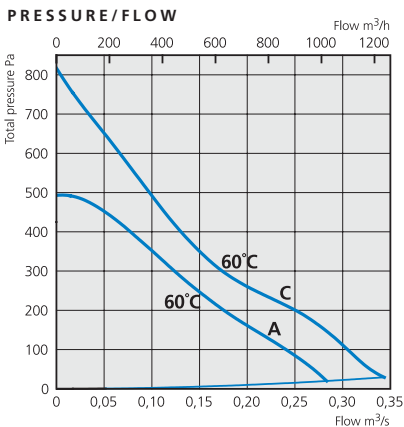
CK 200 A, 188 l/s 206 Pa	L <sub>pA</sub>	L <sub>wA</sub> tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	48	55	22	32	37	47	51	47	48	33
Inlet		76	54	62	70	72	69	65	63	56

CK 200 B, 155 l/s 253 Pa	L <sub>pA</sub>	L <sub>wA</sub> tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	50	57	26	39	44	51	53	48	44	38
Inlet		78	56	67	73	71	69	66	70	61

General fan facts, page 18-19.

## CK 250 A/C 60 HZ



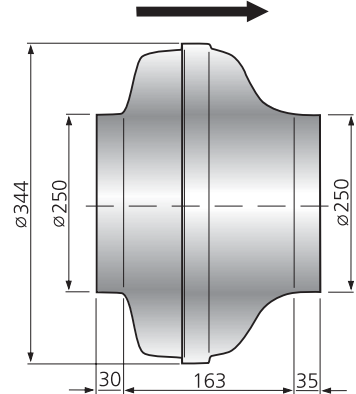
### TECHNICAL DATA

CK	250 A	250 C
Voltage, V/Hz	220/60	220/60
Current, A	0,71	1,00
Input, W	154	217
Speed, rpm	2760	2645
Weight, kg	4,6	5,3
Wiring diagram	4040001	4040001
Capacitor, $\mu$ F	4	4
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### DIMENSIONS (mm)



### SOUND DATA

CK 250 A, 196 l/s 168 Pa	L <sub>pA</sub>	L <sub>wA</sub> tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	50	57	22	30	40	51	51	53	49	34
Inlet		77	53	59	67	69	73	68	67	59

CK 250 C, 194 l/s 269 Pa	L <sub>pA</sub>	L <sub>wA</sub> tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	49	56	32	36	37	49	53	47	44	35
Inlet		75	54	56	63	67	69	69	67	65

General fan facts, page 18-19.

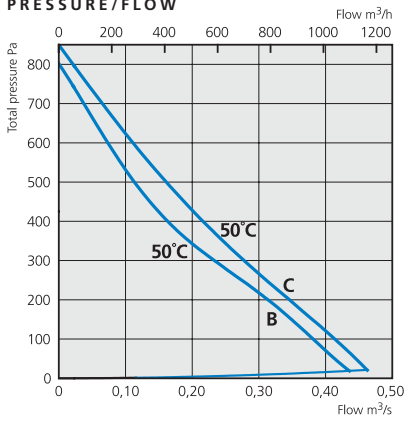


# CK 315 B/C 220/60 HZ

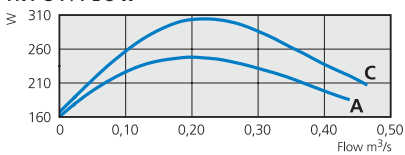
Circular duct fan with backward curved impeller

## CK 315 B/C 60 HZ

### PRESSURE/FLOW



### INPUT/FLOW



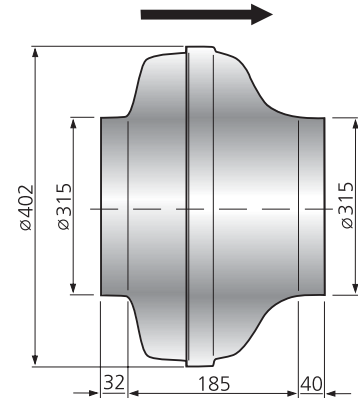
### TECHNICAL DATA

CK	315 B	315 C
Voltage, V/Hz	220/60	220/60
Current, A	1,13	1,40
Input, W	247	304
Speed, rpm	2500	2655
Weight, kg	6,1	6,5
Wiring diagram	4040001	4040001
Capacitor, $\mu$ F	5	8
Insulation class, motor	F	F
Motor protection	IP 44	IP 44

### ACCESSORIES

Duct clamp, mounting bracket, safety grille, thermostat, louvre & back draught shutter, transformer controllers

### DIMENSIONS (mm)



### SOUND DATA

CK 315 B, 225 l/s 310 Pa	$L_{pA}$	$L_{wA}$	tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	49	56	26	47	42	47	50	52	44	32	
Inlet		73	55	59	61	64	66	68	67	61	

CK 315 C, 242 l/s 357 Pa	$L_{pA}$	$L_{wA}$	tot dB (A)	63	125	250	500	1K	2K	4K	8K
Environment	50	57	28	37	40	50	52	53	45	34	
Inlet		73	56	61	63	64	65	67	66	60	

General fan facts, page 18-19.

# GENERAL FAN FACTS

## DESCRIPTION

- The fan is used for transportation of “clean” air, meaning not intended for fire-dangerous substances, explosives, grinding dust, soot, etc.
- The fan is equipped with an asynchronous external rotor induction motor with maintenance-free sealed ball-bearings.
- The capacitor has finite lifetime and should be exchanged after 45.000 hours of operation (about 5 years) to secure maximum function. Defective capacitor can cause damage.
- To achieve maximum life time for installations in damp or cold environments, the fan should be operating continuously.
- The fan can be installed outside or in other damp environments. Make sure that the fan-house is equipped with drainage.
- All fans are as standard, single phase 230V, 50 Hz and 220V, 60 Hz. Other voltages/frequencies on request.
- The fan can be installed in any position.

## INSTALLATION

- The fan must be installed according to the air direction label on the fan.
- The fan must be connected to duct or equipped with a safety grille.
- The fan should be installed in a safe way and make sure that no foreign objects are left behind.
- The fan should be installed in a way that makes service and maintenance easy.
- The fan should be installed in a way that vibrations can not be transfused to duct or building. To provide this, use for example a duct clamp.

- To regulate the speed, a transformer, a triac or a frequency converter can be connected.
- A wiring diagram is applied on the inside of the junction box or separately enclosed.
- The fan must be installed and connected electrically in the correct way grounded.
- Electrical installations must be made by an authorized electrician.
- Electrical installations must be connected to a locally situated tension free switcher or by a lockable head switcher.

## OPERATION

When starting, make sure that:

- the connecting voltage is in between +6% to -10% of the rated voltage.
- no noise appears when starting the fan.

## HOW TO HANDLE

- The fan must be transported in its packing until installation. This prevents transport damages, scratches and the fan from getting dirty.

## MAINTENANCE

- Before service, maintenance or repair begins, the fan must be tension free and the impeller must have stopped.
- The fan must be cleaned when needed, at least once per year to maintain the capacity and to avoid unbalance which may cause unnecessary damages on the bearings.
- The fan bearings are maintenance-free and should be renewed only when necessary.

- When cleaning the fan, high-pressure cleaning or strong dissolvent must not be used.
- Cleaning should be done without dislodging or damaging the impeller.
- Make sure that there is no noise from the fan.

## FAULT DETECTION

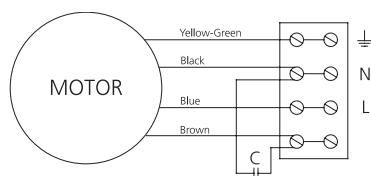
1. Make sure that there is tension to the fan.
2. Cut the tension and verify that the impeller is not blocked.
3. Check the thermo-contact/motor protector. If it is disconnected the cause of overheating must be taken care of, not to be repeated. To restore the manual thermo-protector the tension will be cut for a couple of minutes. Larger motors than 1,6 A may have manual resetting on the motor. If it has automatic thermo-protector the resetting will be done automatically when the motor is cold.
4. Make sure that the capacitor is connected, (single phase only) according to the wiring diagram.
5. If the fan still does not work, the first thing to do is to renew the capacitor.
6. If nothing of this works, contact your fan supplier.
7. If the fan is returned to the supplier, it must be cleaned, the motor cable undamaged and a detailed nonconformity report enclosed.

## WARRANTY

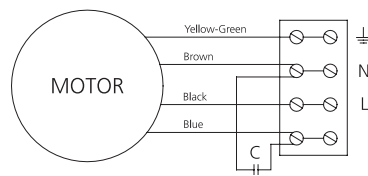
The warranty is only valid under condition that the fan is used according to this “Directions for use”.

## Wiring diagrams

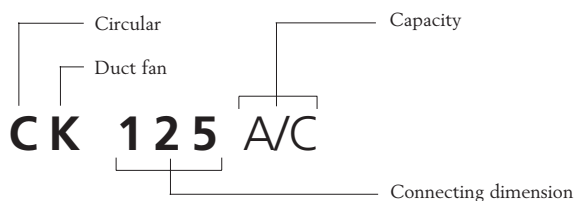
4040001  
Single phase



4040002  
Single phase



## Key to model types



## Pressure/flow-curves explanation

**FIG. 1:**

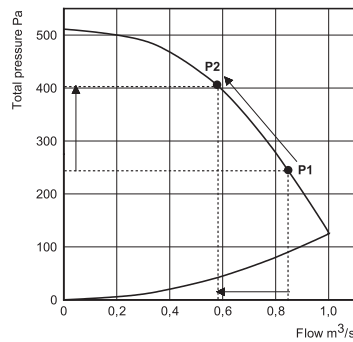
The fan curve describes the capacity of the fan, i.e. the flow of the fan at different pressures at a certain input voltage.

The fan diagram has the pressure in Pascal, Pa, on the vertical axis and the flow in cubic metres per second, m<sup>3</sup>/s, on the horizontal axis.

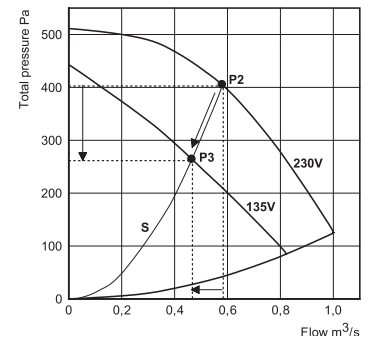
The point on the fan curve showing the current pressure and flow is called the fans working point. In our example it is marked with P.

If the pressure increases in the ducts, the working point moves along the fan curve and hence a lower flow is obtained. In the example the working point would move from P1 to P2.

**FIG. 1:**



**FIG. 2:**



**FIG. 2:**

The system line describes the total behaviour of a ventilation system (ducts, silencers and valves etc.).

Along this system line, S, the working point is moved from P2 to P3 as the rotational speed is changed.

Distinct voltage steps with eg. a transformer produces different fan curves, 135 V and 230 V, indicated in the example.

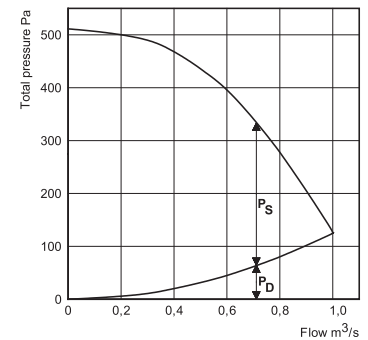
**FIG. 3:**

Our fan curves present the total pressure in Pascal. Total pressure = Static + Dynamic pressure.

The static pressure is the pressure of the fan compared to the atmospheric pressure. It is this pressure that shall overcome the pressure losses of the ventilation system.

The dynamic pressure is a calculated pressure that arises at the outlet of the fan, and is mostly due to air velocity. The dynamic pressure thus describes how the fan is working. The dynamic pressure is presented with a curve, starting at origo, that increases with increased flow. A high dynamic pressure can with wrong duct connection produce a high pressure loss. If the pressure loss in the system is known, a fan whose difference between the total and the dynamic pressure corresponds to the pressure loss in the system must be found.

**FIG. 3:**



## Sound data explanation

### SOUND DATA IN THIS BROCHURE IS BASED ON FOLLOWING DEFINITIONS:

The points for which the sound data is presented are along the system line defined by the pressure and flow stated in the sound data table for each fan. There are three types of sound in these tables; inlet- and outlet sound are measured in duct, while the surrounding sound is measured outside the fan and duct system. For all these types of sound, the sound power levels are presented in octave bands. For the surrounding sound, also the sound pressure level has been calculated.

### THE SOUND POWER LEVEL

The sound power level, L<sub>w</sub>(A) is used to calculate the sound from the whole ventilation system. This system can be a composition of grilles, dampers and diffusers for example.

The sound power level is a measured value according to standards, and it does not tell how the sound appears as the sound power is independent of the characteristics of the placement of the fan. In order to resemble the human ear, the A-filter is used indicated with L<sub>w</sub>(A) measured in dB(A).

### THE SOUND PRESSURE LEVEL

The sound pressure level, L<sub>p</sub> or L<sub>p</sub>(A), tells how the human ear registers the sound. It is dependent on the sound power level, distance from the source, restrictions of the propagation and the acoustic characteristics of the room.

The sound pressure level is presented for a room with an equivalent absorption area of 20 m<sup>2</sup> at a distance of 3 m, where the sound is emitted in a semi spherical propagation.

The sound pressure level can be calculated as:

$$L_p = L_w + 10 \log(Q/4\pi r^2 + 4/A)$$

where A is the room's equivalent absorption area and Q is the propagation type:

Q=1 is spherical propagation

Q=2 is semi spherical propagation

Q=4 is quarter spherical propagation.

Thus, for the above specified properties of the placement of the fan, the difference between sound pressure and sound power is:

$$L_p - L_w = 10 \log(2/4\pi 3^2 + 4/20) \approx -7 \text{ dB}$$

which is the difference that can be seen in the tables of sound data for each fan. For the free field case, i.e. from a roof fan, the sound pressure level is calculated as:

$$L_p = L_w + 10 \log(2/4\pi r^2)$$

## Temperature of transported air

In pressure/flow diagrams or in the table of technical data there are facts about highest temperature of transported air.

All motors have insulation class F which means that the thermal contact disconnects the power when the winding temperature is maxi-

mum 155°C. At this winding temperature the life time of the ball bearings is not optimal. This is why the ambient temperature is shown at a lower winding temperature so the life time of ball bearings becomes optimal.

The winding temperature varies in the diagrams and depending on differences in power/current consumption. The temperatures in our diagrams are given at the highest winding temperature.



## ÖSTBERG - THE FAN COMPANY

Östberg – The Fan Company is one of the leading producers of centrifugal in-line duct fans in the world.

30 years ago the founder and owner was one of them who invented the first centrifugal in-line duct fan in the history.

We have continued to develop new products and today we offer a wide product range of centrifugal in-line duct fans.

Our goal has always been to offer quality products at competitive prices.

*Fresh air from*

**ÖSTBERG**  
THE FAN COMPANY 

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