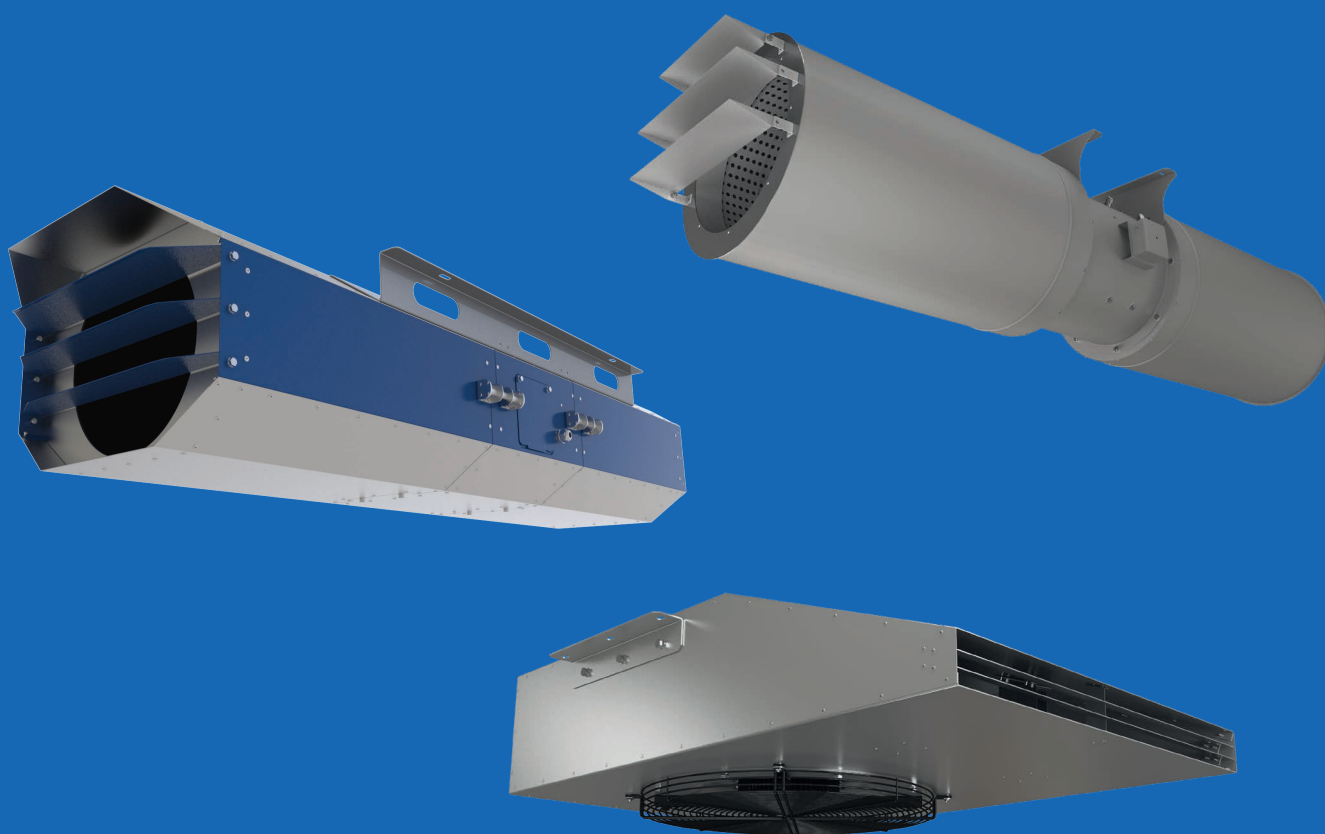


# SMOKE EXTRACTION VENTILATION FOR PARKING PREMISES

## 60 Hz



 **VENTS**

2021

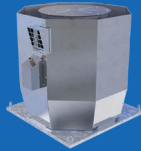
## SMOKE EXTRACTION PRODUCT CATALOGS

MEDIUM PRESSURE AXIAL FANS AND AXIAL SMOKE EXTRACTION FANS



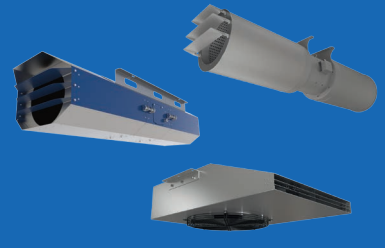
VENTS  
2020

CENTRIFUGAL SMOKE EXTRACTION FANS



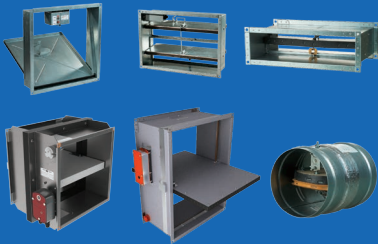
VENTS  
2020

SMOKE EXTRACTION VENTILATION FOR PARKING PREMISES



VENTS  
2020

FIRE SAFETY DAMPERS



VENTS  
2020

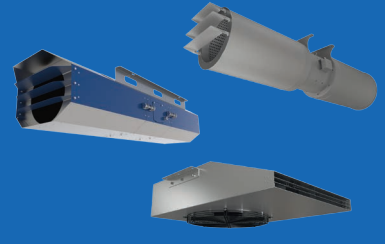
MEDIUM PRESSURE AXIAL FANS AND AXIAL SMOKE EXTRACTION FANS

60 Hz



VENTS  
2020

SMOKE EXTRACTION VENTILATION FOR PARKING PREMISES



VENTS  
2020

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Smoke control is a complex process involving smoke extraction and fresh air supply by the supply and extract ventilation system of buildings in order to ensure safe evacuation of people in case of a fire in any of the spaces.

Ventilation systems for underroof parking are designed to ensure the most important functions. Such systems are designed to protect people escaping fire through the evacuation routes against hazardous fire factors by extracting harmful combustion products and preventing their spreading in the air.

According to conclusive evidence the majority of mortalities in a fire are caused by poisoning from carbon monoxide and other combustion products. Carbon monoxide is one of the most toxic smoke components. It is carbon monoxide poisoning that accounts for 80 % the fire accident causes. Fires in closed spaces where oxygen supply is limited are especially prone to intensive carbon monoxide generation.

**Impurity content in the air [mg/m<sup>3</sup>] and health effect**

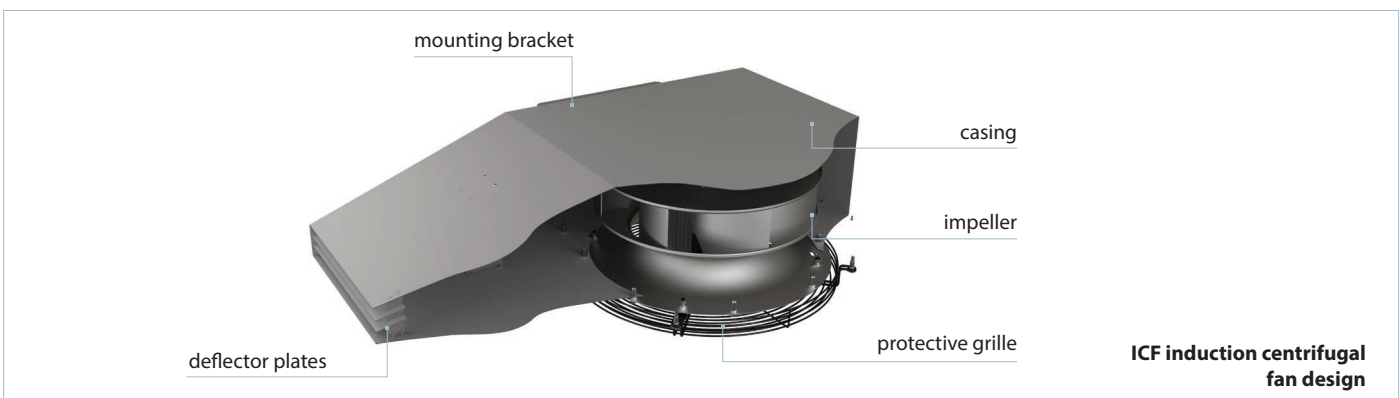
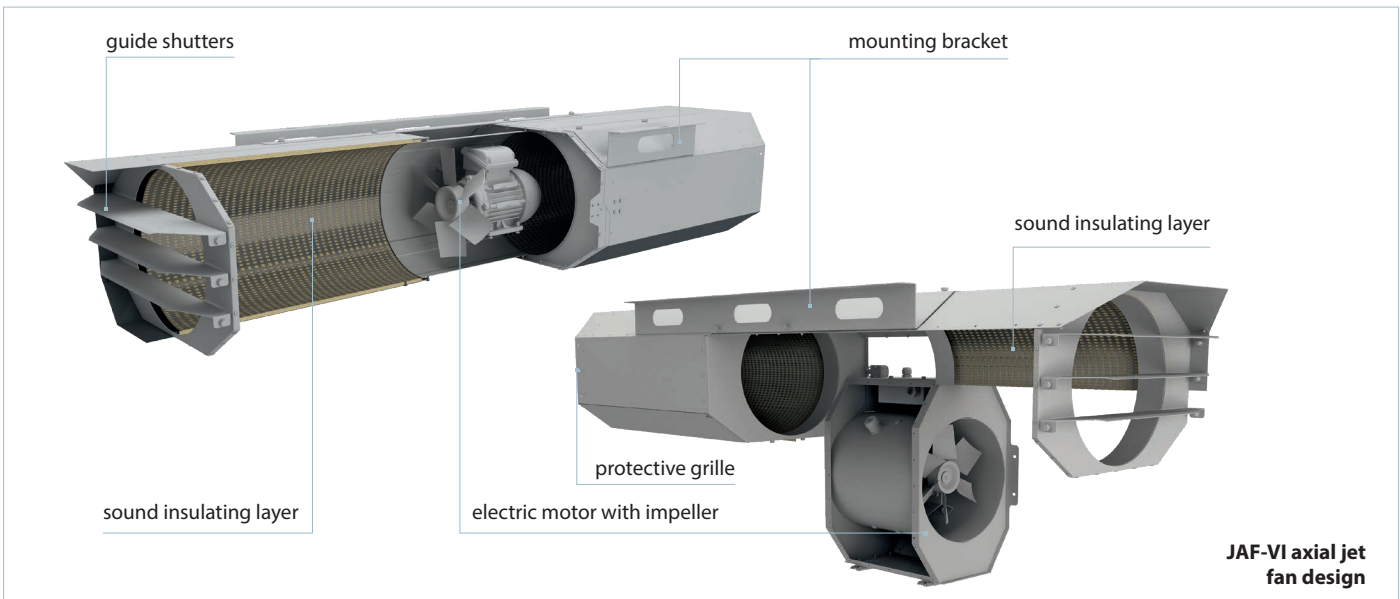
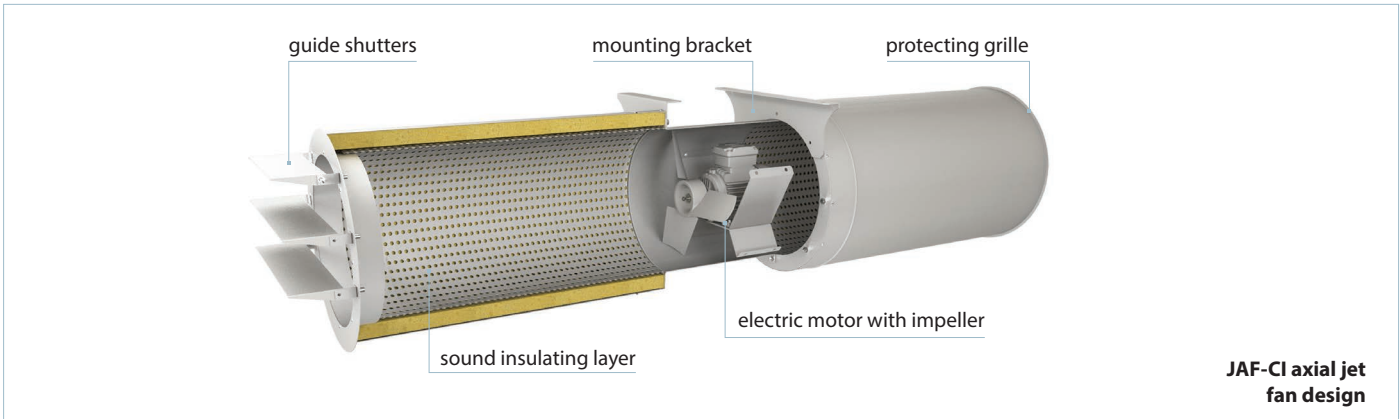
Influence	CO	SO <sub>2</sub>	NO <sub>x</sub>
No marked effect in case of exposure for several hours	115	6	15
Symptoms of light poisoning or mucous membrane irritation in 2-3 hours	115...575	130	20
Poisoning in 30 minutes	2300...3500	210...400	100
Life hazard even if short-term exposure	5700	1600	150

Smoke is able to cause loss of consciousness and cardiac standstill before a person may leave a house on fire. Jet ventilation system is the most suitable and safe ventilation solution for modern underground parkings. Arrangement of such ventilation requires no ductwork layout, thus the involved mounting expenses are reduced by 45 %. The energy losses caused by aerodynamic resistance in the air ducts are also reduced. The jet ventilation system design requires no complicated annual cleaning of the ductworks, thus reducing the maintenance costs by 35-40 %.

Axial fans are used for general ventilation purposes of underground and semi-opened parkings, covered shelters, ventilation of tunnels, air recirculation in atriums and air supply to panoramic glass constructions. Such ventilation system does not require installation of ductworks and the air stream flows directly from air supply vent to air exhaust vent.



**60 Hz**



**Composition of vehicle emissions**

Content, volume in %	Petrol type	Diesel type
N <sub>2</sub>	74-77	76-78
O <sub>2</sub>	0.3-0.8	2.0-18.0
H <sub>2</sub> O (vapours)	3.0-5.5	0.5-4.0
CO <sub>2</sub>	0.0-16.0	1.0-10.0
CO*	0.1-5.0	0.01-0.5
Nitrogen oxide*	0.0-0.8	0.0002-0.5000
Hydr°Carbons*	0.2-3.0	0.09-0.500
Aldehydes*	0.0-0.2	0.001-0.009
Soot** [g/m <sup>3</sup> ]	0.0-0.04	0.01-1.10
Benzpyrene3.4** [g/m <sup>3</sup> ]	10-20 x 10 <sup>-6</sup>	10 x 10 <sup>-6</sup>

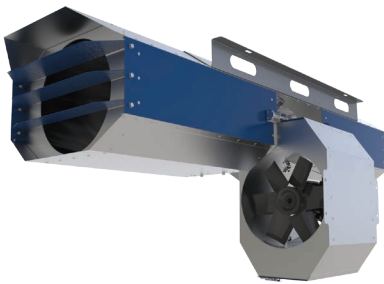
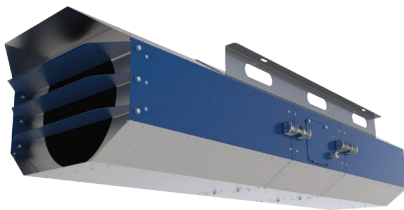
\* Toxic components  
 \*\* Carcinogens

## JAF series

Unidirectional single- and double-speed reversible fans



### Model JAF - CI



### Model JAF - VI

Axial jet fans for ventilation of parkings.  
Transported air temperature in continuous mode up to +55°C, in smoke extraction mode: 300 °C/2 h, 400 °C/2 h  
Functionality. Power. Efficiency.

#### ■ Application

JAF jet axial fans are designed for general purpose ventilation of underground and semiopened parkings, ventilation of tunnels, smoke extraction in case of fire as a part of smoke extract system. The fans generate a high-speed and high-pressure directed air jet.

#### ■ Modifications

Unidirectional single-speed type (U)  
Unidirectional double-speed type (U)  
Reversible single-speed (R)  
Reversible double-speed (R)

#### ■ Design

JAF casing has a tubular shape and is made of polymer coated steel. There are two models available for order - with cylindrical or octagonal casing. The fan with octagonal casing has lower dimensions in height, a hinged hatch for electrical installation with captive bolts, and a removable middle part for technical service. The fan has a sound insulation of mineral wool. The casing includes inner brackets for motor fixation. These brackets act as directing vanes and distribute air flow uniformly, thus increasing aerodynamic performances of the fan.

#### ■ Motor

A three-phase asynchronous motor with a short-circuit rotor is installed in the fan casing. The motor ingress protection rating is IP55. The motor design ensures operation of the fan in the smoke extract systems or/and in the general ventilation systems on unidirectional and reverse modes. The motors are rated for 400 V power mains voltage and 60 Hz frequency.

#### ■ Impeller

Dynamically balanced impeller made of cast aluminium alloy for smoke extraction fans and of reinforced fiberglass polyamide for general ventilation fans. The reversible fans are equipped with 100 % reversible two-directional impeller.

#### ■ Mounting

JAF fans are designed for horizontal ceiling mounting and fixation by means of the supplied fixing brackets attached to the fan casing.

#### ■ Reference

The fans with octagonal casing can be ordered only in 315, 355, and 400 diameters.

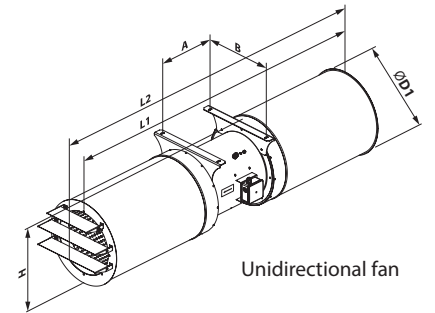
Model	Casing type	Casing insulation	Diameter [mm]	High-powered motor	Pole number	Air flow	Fire resistance limit/hrs	Frequency
JAF (jet axial fan)	- C: round V: octagonal	no symbol means no sound insulation I: sound-insulated casing	- 315 355 400 450 500 560 630	no symbol means the only available standard size M, S: model with a high-power motor	- 2 2/4 (applicable for double-speed motors)	- U: unidirectional R: reversible	- no number: max. +55 °C 300/2: 300 °C/2 hrs. 400/2: 400 °C/2 hrs.	- undefined: 50 Hz 60 Hz: 60 Hz

**60 Hz**

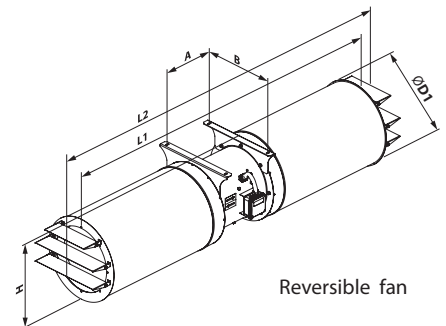
**Model JAF – CI**

The fans with the fire resistance limit 200 °C/2 h can be manufactured on special request.

Model	Dimensions [mm]						Weight [kg]
	ØD1	A	B	H	L1	L2	
<b>Unidirectional</b>							
JAF-CI-315-U	414	302	355	425	1654	1763	40
JAF-CI-355-U	467	302	420	482	1954	2079	50
JAF-CI-400-U	515	351	460	525	2004	2129	65
JAF-CI-450-U	565	351	500	575	2004	2129	85
JAF-CI-500-U	603	371	580	620	2004	2145	110
JAF-CI-560-U	663	446	620	678	2093	2247	155
JAF-CI-630-U	733	550	710	748	2193	2357	245
<b>Reversible</b>							
JAF-CI-315-R	414	302	355	425	1654	1872	40
JAF-CI-355-R	467	302	420	482	1954	2202	50
JAF-CI-400-R	515	351	460	525	2004	2253	65
JAF-CI-450-R	565	351	500	575	2004	2253	85
JAF-CI-500-R	603	371	580	620	2004	2290	110
JAF-CI-560-R	663	446	620	678	2093	2400	155
JAF-CI-630-R	733	550	710	748	2193	2520	245



Unidirectional fan

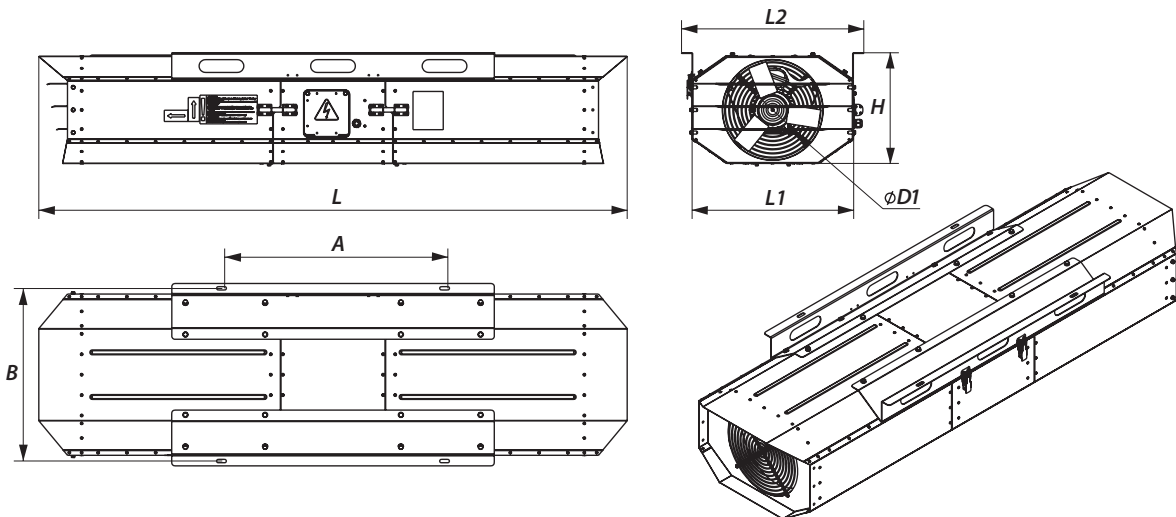


Reversible fan

**Model JAF – VI**

The fans with the fire resistance limit 200 °C/2 h can be manufactured on special request.

Model	Dimensions [mm]							Weight [kg]
	ØD1	A	B	L1	L2	L	H	
<b>Unidirectional</b>								
JAF-VI-315-U	315	700	542	507	572	1846	347	58
JAF-VI-355-U	355	700	583	546	613	2046	388	75
JAF-VI-400-U	400	750	632	590	667	2296	434	95
<b>Reversible</b>								
JAF-VI-315-R	315	700	542	507	572	1846	347	58
JAF-VI-355-R	355	700	583	546	613	2046	388	75
JAF-VI-400-R	400	750	632	590	667	2296	434	95



# 60 Hz

## Technical data for JAF-VI

Ø, mm	Air flow direction	Number of speeds	Model	Power, kW	Max. air capacity, m <sup>3</sup> /h	Fan pull, N	Air speed, m/s	RPM	Operating temperature, °C	Sound pressure LpA, dB in 3 m	
315	Unidirectional	1	JAF-VI-315-2-U-60 Hz	0,55	4110	22	15,6	3460	55 °C	70,3	
			JAF-VI-315-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-VI-315-2-U-400/2-60 Hz						400 °C/2 h*		
			JAF-VI-315M-2-U-60 Hz	0,75	4770	29	18,1		55 °C	66,1	
			JAF-VI-315M-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-VI-315M-2-U-400/2-60 Hz						400 °C/2 h*		
		2	JAF-VI-315-2/4-U-60 Hz	0,55/0,11	4110/2055	22/6	15,6/7,8	3460/1730	55 °C	70,3/55,2	
			JAF-VI-315-2/4-U-300/2-60 Hz						300 °C/2 h*		
			JAF-VI-315-2/4-U-400/2-60 Hz						400 °C/2 h*		
			JAF-VI-315M-2/4-U-60 Hz	0,8/0,2	4770/2385	29/8	18,1/9	3460/1730	55 °C	66,1/51	
	JAF-VI-315M-2/4-U-300/2-60 Hz		300 °C/2 h*								
	JAF-VI-315M-2/4-U-400/2-60 Hz		400 °C/2 h*								
	Reversible		1	JAF-VI-315-2-R-60 Hz	0,55	4010	21	15,2	3460	55 °C	69,1
				JAF-VI-315-2-R-300/2-60 Hz						300 °C/2 h*	
		JAF-VI-315-2-R-400/2-60 Hz		400 °C/2 h*							
		2	JAF-VI-315-2/4-R-60 Hz	0,55/0,11	4010/2005	21/6	15,2/7,6	3460/1730	55 °C	69,1/54	
			JAF-VI-315-2/4-R-300/2-60 Hz						300 °C/2 h*		
			JAF-VI-315-2/4-R-400/2-60 Hz						400 °C/2 h*		
355	Unidirectional	1	JAF-VI-355-2-U-60 Hz	0,75	5930	35	17,6	3460	55 °C	65,3	
			JAF-VI-355-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-VI-355-2-U-400/2-60 Hz						400 °C/2 h*		
			JAF-VI-355M-2-U-60 Hz	1,1	6560	43	19,5		55 °C	67,1	
			JAF-VI-355M-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-VI-355M-2-U-400/2-60 Hz						400 °C/2 h*		
		2	JAF-VI-355-2/4-U-60 Hz	0,8/0,2	5930/2965	35/9	17,6/8,8	3460/1730	55 °C	65,3/50,2	
			JAF-VI-355-2/4-U-300/2-60 Hz						300 °C/2 h*		
			JAF-VI-355-2/4-U-400/2-60 Hz						400 °C/2 h*		
			JAF-VI-355M-2/4-U-60 Hz	1,1/0,25	6560/3280	43/11	19,5/9,75	3460/1730	55 °C	67,1/52,1	
	JAF-VI-355M-2/4-U-300/2-60 Hz		300 °C/2 h*								
	JAF-VI-355M-2/4-U-400/2-60 Hz		400 °C/2 h*								
	Reversible		1	JAF-VI-355-2-R-60 Hz	1,1	5550	31	16,5	3460	55 °C	71,5
				JAF-VI-355-2-R-300/2-60 Hz						300 °C/2 h*	
		JAF-VI-355-2-R-400/2-60 Hz		400 °C/2 h*							
		2	JAF-VI-355-2/4-R-60 Hz	1,1/0,25	5550/2775	31/8	16,5/8,25	3460/1730	55 °C	71,5/56,5	
			JAF-VI-355-2/4-R-300/2-60 Hz						300 °C/2 h*		
			JAF-VI-355-2/4-R-400/2-60 Hz						400 °C/2 h*		
400	Unidirectional	1	JAF-VI-400-2-U-60 Hz	1,1	7810	48	18,3	3460	55 °C	70,8	
			JAF-VI-400-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-VI-400-2-U-400/2-60 Hz						400 °C/2 h*		
			JAF-VI-400M-2-U-60 Hz	2,2	9570	72	22,5		55 °C	70,9	
			JAF-VI-400M-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-VI-400M-2-U-400/2-60 Hz						400 °C/2 h*		
		2	JAF-VI-400-2/4-U-60 Hz	1,1/0,25	7810/3905	48/12	18,3/9,15	3460/1730	55 °C	70,8/55,7	
			JAF-VI-400-2/4-U-300/2-60 Hz						300 °C/2 h*		
			JAF-VI-400-2/4-U-400/2-60 Hz						400 °C/2 h*		
			JAF-VI-400M-2/4-U-60 Hz	2,2/0,5	9570/4785	72/18	22,5/11,25	3460/1730	55 °C	70,9/55,9	
	JAF-VI-400M-2/4-U-300/2-60 Hz		300 °C/2 h*								
	JAF-VI-400M-2/4-U-400/2-60 Hz		400 °C/2 h*								
	Reversible		1	JAF-VI-400-2-R-60 Hz	1,5	8040	51	18,9	3460	55 °C	73,9
				JAF-VI-400-2-R-300/2-60 Hz						300 °C/2 h*	
		JAF-VI-400-2-R-400/2-60 Hz		400 °C/2 h*							
		2	JAF-VI-400-2/4-R-60 Hz	1,5/0,37	8040/4020	51/13	18,9/9,45	3460/1730	55 °C	73,9/58,9	
			JAF-VI-400-2/4-R-300/2-60 Hz						300 °C/2 h*		
			JAF-VI-400-2/4-R-400/2-60 Hz						400 °C/2 h*		

\*Smoke extraction mode: once for two hours



■ Technical data for JAF-CI

Ø, mm	Air flow direction	Number of speeds	Model	Power, kW	Max. air capacity, m <sup>3</sup> /h	Fan pull, N	Air speed, m/s	RPM	Operating temperature, °C	Sound pressure LpA, dB in 3 m	
315	Unidirectional	1	JAF-CI-315-2-U-60 Hz	0,55	4110	22	15,6	3460	55 °C	70,3	
			JAF-CI-315-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-315-2-U-400/2-60 Hz						400 °C/2 h*		
			JAF-CI-315M-2-U-60 Hz	0,75	4770	29	18,1		55 °C	66,1	
			JAF-CI-315M-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-315M-2-U-400/2-60 Hz						400 °C/2 h*		
		2	JAF-CI-315-2/4-U-60 Hz	0,55/0,11	4110/2055	22/6	15,6/7,8	3460/1730	55 °C	70,3/55,2	
			JAF-CI-315-2/4-U-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-315-2/4-U-400/2-60 Hz						400 °C/2 h*		
			JAF-CI-315M-2/4-U-60 Hz	0,8/0,2	4770/2385	29/8	18,1/9	3460/1730	55 °C	66,1/51	
	JAF-CI-315M-2/4-U-300/2-60 Hz		300 °C/2 h*								
	JAF-CI-315M-2/4-U-400/2-60 Hz		400 °C/2 h*								
	Reversible		1	JAF-CI-315-2-R-60 Hz	0,55	4010	21	15,2	3460	55 °C	69,1
				JAF-CI-315-2-R-300/2-60 Hz						300 °C/2 h*	
		JAF-CI-315-2-R-400/2-60 Hz		400 °C/2 h*							
		2	JAF-CI-315-2/4-R-60 Hz	0,55/0,11	4010/2005	21/6	15,2/7,6	3460/1730	55 °C	69,1/54	
			JAF-CI-315-2/4-R-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-315-2/4-R-400/2-60 Hz						400 °C/2 h*		
355	Unidirectional	1	JAF-CI-355-2-U-60 Hz	0,75	5930	35	17,6	3460	55 °C	65,3	
			JAF-CI-355-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-355-2-U-400/2-60 Hz						400 °C/2 h*		
			JAF-CI-355M-2-U-60 Hz	1,1	6560	43	19,5		55 °C	67,1	
			JAF-CI-355M-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-355M-2-U-400/2-60 Hz						400 °C/2 h*		
		2	JAF-CI-355-2/4-U-60 Hz	0,8/0,2	5930/2965	35/9	17,6/8,8	3460/1730	55 °C	65,3/50,2	
			JAF-CI-355-2/4-U-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-355-2/4-U-400/2-60 Hz						400 °C/2 h*		
			JAF-CI-355M-2/4-U-60 Hz	1,1/0,25	6560/3280	43/11	19,5/9,75	3460/1730	55 °C	67,1/52,1	
	JAF-CI-355M-2/4-U-300/2-60 Hz		300 °C/2 h*								
	JAF-CI-355M-2/4-U-400/2-60 Hz		400 °C/2 h*								
	Reversible		1	JAF-CI-355-2-R-60 Hz	1,1	5550	31	16,5	3460	55 °C	71,5
				JAF-CI-355-2-R-300/2-60 Hz						300 °C/2 h*	
		JAF-CI-355-2-R-400/2-60 Hz		400 °C/2 h*							
		2	JAF-CI-355-2/4-R-60 Hz	1,1/0,25	5550/2775	31/8	16,5/8,25	3460/1730	55 °C	71,5/56,5	
			JAF-CI-355-2/4-R-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-355-2/4-R-400/2-60 Hz						400 °C/2 h*		
400	Unidirectional	1	JAF-CI-400-2-U-60 Hz	1,1	7810	48	18,3	3460	55 °C	70,8	
			JAF-CI-400-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-400-2-U-400/2-60 Hz						400 °C/2 h*		
			JAF-CI-400M-2-U-60 Hz	2,2	9570	72	22,5		55 °C	70,9	
			JAF-CI-400M-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-400M-2-U-400/2-60 Hz						400 °C/2 h*		
		2	JAF-CI-400-2/4-U-60 Hz	1,1/0,25	7810/3905	48/12	18,3/9,15	3460/1730	55 °C	70,8/55,7	
			JAF-CI-400-2/4-U-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-400-2/4-U-400/2-60 Hz						400 °C/2 h*		
			JAF-CI-400M-2/4-U-60 Hz	2,2/0,5	9570/4785	72/18	22,5/11,25	3460/1730	55 °C	70,9/55,9	
	JAF-CI-400M-2/4-U-300/2-60 Hz		300 °C/2 h*								
	JAF-CI-400M-2/4-U-400/2-60 Hz		400 °C/2 h*								
	Reversible		1	JAF-CI-400-2-R-60 Hz	1,5	8040	51	18,9	3460	55 °C	73,9
				JAF-CI-400-2-R-300/2-60 Hz						300 °C/2 h*	
		JAF-CI-400-2-R-400/2-60 Hz		400 °C/2 h*							
		2	JAF-CI-400-2/4-R-60 Hz	1,5/0,37	8040/4020	51/13	18,9/9,45	3460/1730	55 °C	73,9/58,9	
			JAF-CI-400-2/4-R-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-400-2/4-R-400/2-60 Hz						400 °C/2 h*		

# 60 Hz

Ø, mm	Air flow direction	Number of speeds	Model	Power, kW	Max. air capacity, m <sup>3</sup> /h	Fan pull, N	Air speed, m/s	RPM	Operating temperature, °C	Sound pressure LpA, dB in 3 m	
450	Unidirectional	1	JAF-CI-450-2-U-60 Hz	1,5	10500	69	19,5	3460	55 °C	72,1	
			JAF-CI-450-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-450-2-U-450/2-60 Hz						400 °C/2 h*		
			JAF-CI-450M-2-U-60 Hz	2,2	12500	97	23,2		55 °C	71,2	
			JAF-CI-450M-2-U-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-450M-2-U-400/2-60 Hz						400 °C/2 h*		
		JAF-CI-450S-2-U-60 Hz	3	13300	110	24,6	55 °C	74,3			
		JAF-CI-450S-2-U-300/2-60 Hz					300 °C/2 h*				
		JAF-CI-450S-2-U-400/2-60 Hz					400 °C/2 h*				
		2	JAF-CI-450-2/4-U-60 Hz	1,5/0,37	10500/5250	69/18	19,5/9,75	3460/1730	55 °C	72,1/57	
			JAF-CI-450-2/4-U-300/2-60 Hz						300 °C/2 h*		
			JAF-CI-450-2/4-U-400/2-60 Hz						400 °C/2 h*		
	JAF-CI-450M-2/4-U-60 Hz		2,2/0,5	12500/6250	97/25	23,2/11,6	55 °C		71,2/56,2		
	JAF-CI-450M-2/4-U-300/2-60 Hz						300 °C/2 h*				
	JAF-CI-450M-2/4-U-400/2-60 Hz						400 °C/2 h*				
	JAF-CI-450S-2/4-U-60 Hz		3,1/0,8	13300/6650	110/28	24,6/12,3	55 °C	74,3/59,2			
	JAF-CI-450S-2/4-U-300/2-60 Hz						300 °C/2 h*				
	JAF-CI-450S-2/4-U-400/2-60 Hz						400 °C/2 h*				
	Reversible		1	JAF-CI-450-2-R-60 Hz	1,5	9110	52	16,9	3460	55 °C	79,8
				JAF-CI-450-2-R-300/2-60 Hz						300 °C/2 h*	
				JAF-CI-450-2-R-450/2-60 Hz						400 °C/2 h*	
		JAF-CI-450M-2-R-60 Hz		2,2	11100	77	20,6	55 °C		77,3	
		JAF-CI-450M-2-R-300/2-60 Hz						300 °C/2 h*			
		JAF-CI-450M-2-R-400/2-60 Hz						400 °C/2 h*			
JAF-CI-450S-2-R-60 Hz		3	12500	97	23,1	55 °C	75,9				
JAF-CI-450S-2-R-300/2-60 Hz						300 °C/2 h*					
JAF-CI-450S-2-R-400/2-60 Hz						400 °C/2 h*					
2		JAF-CI-450-2/4-R-60 Hz	1,5/0,37	9110/4555	52/13	16,9/8,45	3460/1730	55 °C	79,8/64,7		
		JAF-CI-450-2/4-R-300/2-60 Hz						300 °C/2 h*			
		JAF-CI-450-2/4-R-400/2-60 Hz						400 °C/2 h*			
	JAF-CI-450M-2/4-R-60 Hz	2,2/0,5	11100/5550	77/20	20,6/10,3	55 °C		77,3/62,3			
	JAF-CI-450M-2/4-R-300/2-60 Hz					300 °C/2 h*					
	JAF-CI-450M-2/4-R-400/2-60 Hz					400 °C/2 h*					
JAF-CI-450S-2/4-R-60 Hz	3,1/0,8	12500/6250	97/25	23,1/11,55	55 °C	75,9/60,9					
JAF-CI-450S-2/4-R-300/2-60 Hz					300 °C/2 h*						
JAF-CI-450S-2/4-R-400/2-60 Hz					400 °C/2 h*						
500	Unidirectional	JAF-CI-500-2/4-U-60 Hz	3,1/0,8	14100/7030	100/25	21,1/10,5	3460/1730	55 °C	78,2/63,1		
		JAF-CI-500-2/4-U-300/2-60 Hz						300 °C/2 h*			
		JAF-CI-500-2/4-U-400/2-60 Hz						400 °C/2 h*			
		JAF-CI-500M-2/4-U-60 Hz	4,4/1,1	17300/8630	149/38	25,8/12,9		55 °C	76,8/61,8		
		JAF-CI-500M-2/4-U-300/2-60 Hz						300 °C/2 h*			
		JAF-CI-500M-2/4-U-400/2-60 Hz						400 °C/2 h*			
	JAF-CI-500-2/4-R-60 Hz	3,1/0,8	14900/7460	111/28	22,3/11,2	55 °C	77/61,9				
	JAF-CI-500-2/4-R-300/2-60 Hz					300 °C/2 h*					
	JAF-CI-500-2/4-R-400/2-60 Hz					400 °C/2 h*					
	Reversible	JAF-CI-500M-2/4-R-60 Hz	4,4/1,1	16400/8160	134/34	24,5/12,3	3460/1730	55 °C	78,6/63,5		
		JAF-CI-500M-2/4-R-300/2-60 Hz						300 °C/2 h*			
		JAF-CI-500M-2/4-R-400/2-60 Hz						400 °C/2 h*			
JAF-CI-500M-2/4-R-60 Hz		4,4/1,1	15000/7500	113/28	22,5/11,2	55 °C		76,9/61,8			
JAF-CI-500M-2/4-R-300/2-60 Hz						300 °C/2 h*					
JAF-CI-500M-2/4-R-400/2-60 Hz						400 °C/2 h*					
560	Unidirectional	JAF-CI-560-2/4-U-60 Hz	4,4/1,1	19600/9790	157/40	23,9/12	3460/1730	55 °C	76,8/61,8		
		JAF-CI-560-2/4-U-300/2-60 Hz						300 °C/2 h*			
		JAF-CI-560-2/4-U-400/2-60 Hz						400 °C/2 h*			
		JAF-CI-560M-2/4-U-60 Hz	8/2	24500/12300	245/62	30/15		55 °C	78,4/63,4		
		JAF-CI-560M-2/4-U-300/2-60 Hz						300 °C/2 h*			
		JAF-CI-560M-2/4-U-400/2-60 Hz						400 °C/2 h*			
	JAF-CI-560-2/4-R-60 Hz	4,4/1,1	18100/9030	134/34	22,1/11	55 °C	82,4/67,3				
	JAF-CI-560-2/4-R-300/2-60 Hz					300 °C/2 h*					
	JAF-CI-560-2/4-R-400/2-60 Hz					400 °C/2 h*					
	Reversible	JAF-CI-560M-2/4-R-60 Hz	6/1,5	20600/10300	174/44	25,2/12,6	3530/1765	55 °C	81,4/66,4		
		JAF-CI-560M-2/4-R-300/2-60 Hz						300 °C/2 h*			
		JAF-CI-560M-2/4-R-400/2-60 Hz						400 °C/2 h*			
JAF-CI-560M-2/4-R-60 Hz		6/1,5	18500/9250	140/35	22,7/11,3	55 °C		81,1/66,1			
JAF-CI-560M-2/4-R-300/2-60 Hz						300 °C/2 h*					
JAF-CI-560M-2/4-R-400/2-60 Hz						400 °C/2 h*					

# 60 Hz

Ø, mm	Air flow direction	Number of speeds	Model	Power, kW	Max. air capacity, m <sup>3</sup> /h	Fan pull, N	Air speed, m/s	RPM	Operating temperature, °C	Sound pressure LpA, dB in 3 m
630	Unidirectional	2	JAF-CI-630-2/4-U-60 Hz	12/3	31700/15800	324/81	30,6/15,3	3530/1765	55 °C	83,2/68,2
			JAF-CI-630-2/4-U-300/2-60 Hz		30600/15300	301/75	29,5/14,7		300 °C/2 h*	81,6/66,6
			JAF-CI-630-2/4-U-400/2-60 Hz				400 °C/2 h*			
			JAF-CI-630M-2/4-U-60 Hz	16/4	36500/18200	429/107	35,2/17,6		55 °C	82,7/67,6
			JAF-CI-630M-2/4-U-300/2-60 Hz		35000/17500	395/99	33,8/16,9		300 °C/2 h*	81,1/66
			JAF-CI-630M-2/4-U-400/2-60 Hz				400 °C/2 h*			
	Reversible	2	JAF-CI-630-2/4-R-60 Hz	12/3	30600/15300	302/76	29,6/14,8		55 °C	85,7/70,6
			JAF-CI-630-2/4-R-300/2-60 Hz		29400/14700	279/70	28,4/14,2		300 °C/2 h*	84,1/69
			JAF-CI-630-2/4-R-400/2-60 Hz				400 °C/2 h*			
			JAF-CI-630M-2/4-R-60 Hz	16/4	32400/16200	339/85	31,3/15,7		55 °C	86,4/71,4
			JAF-CI-630M-2/4-R-300/2-60 Hz		30800/15400	305/76	29,7/14,8		300 °C/2 h*	85,7/70,6
			JAF-CI-630M-2/4-R-400/2-60 Hz				400 °C/2 h*			

\*Smoke extraction mode: once for two hours

# 60 Hz

## ICF SERIES



Induction centrifugal fans for ventilation of parkings. Transported air temperature in continuous mode up to +55°C, in smoke extraction mode: 300 °C/2 h, 400 °C/2 h Compactness. Power. Efficiency.

### Application

Induction centrifugal fans ICF are designed for general purpose ventilation of underground and semiopened parkings, smoke extraction in case of fire as a part of smoke extract system.

The fans generate a high-speed and high-pressure directed air jet.

### Modifications

Single-speed  
Double-speed

### Design

ICF casing is made of polymer coated steel.

Due to low height of the casing the fan is recommended for use in low-ceilinged room.

The protecting grille on the intake side prevents ingress of foreign objects into the fan.

Deflector plates on the exhaust side of the fan ensure correct air flow distribution.

### Motor

Single- or double-speed 4-, 6- or 8-pole asynchronous motors are used. The motor ingress protection rating is IP55. The motors are rated for 400 V power mains voltage and 50 Hz frequency.

### Impeller

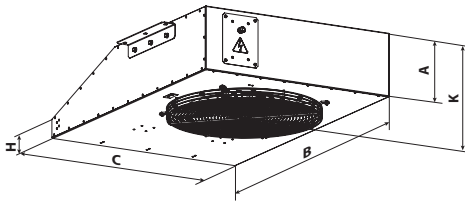
The impeller with backward curved steel blades.

### Mounting

ICF fans are designed for ceiling mounting and fixation by means of the supplied fixing brackets.

Power is supplied through the internal terminal box.

The fan wiring and mounting must be made according to the instructions and the wiring diagram shown in the terminal box.



The fans with the fire resistance limit 200 °C/2 h can be manufactured on special request.

Model	Dimensions [mm]					Weight [kg]
	A	B	C	H	K	
ICF-50N	265	1355	935	90	325	92

Model	Fan pull [N]	Pole number	Fire resistance limit/h	Frequency
ICF (Impulsion Centrifugal Fan)	50 N	4 4/6 (applicable for double-speed models) 4/8 (applicable for double-speed models)	no number: max. +55 °C 300/2: 300 °C/2 h 400/2: 400 °C/2 h	undefined: 50 Hz 60 Hz: 60 Hz

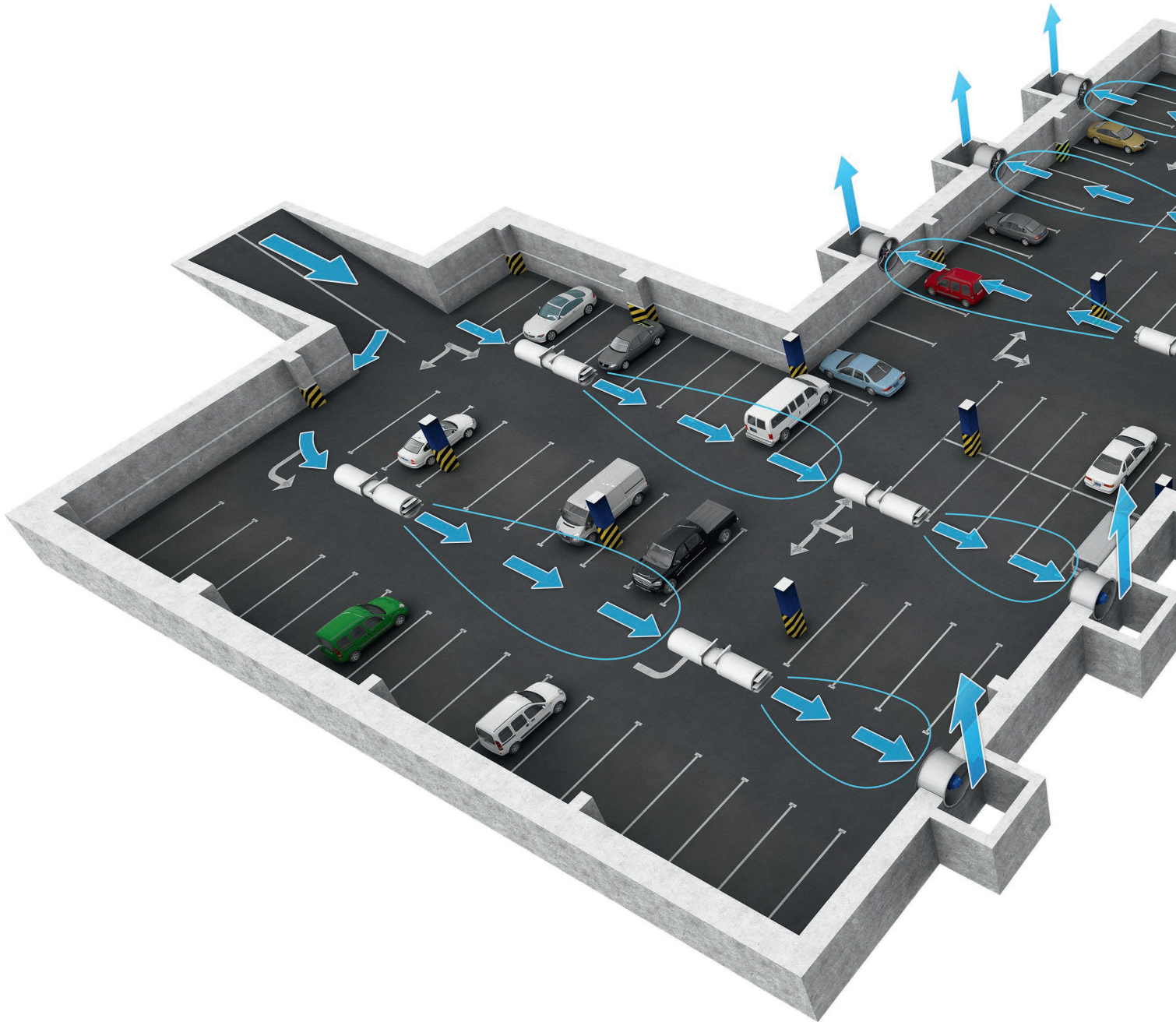
### Technical data

Model	Number of speeds	Max. air capacity [m³/h]	Power [kW]	Fan pull [N]	Air speed [m/s]	RPM	Operating temperature [°C]	Sound pressure LpA, dB in 3 m
ICF-50N-4-60Hz	1	6400	1,5	50	22,3	1800	-25...+55 °C	72
ICF-50N-4-300/2-60Hz							300 °C/2 h*	
ICF-50N-4-400/2-60Hz							400 °C/2 h*	
ICF-50N-4/6-60Hz	2	6400/4250	1,5/0,37	50/20	22,3/14,2	1800/1200	-25...+55 °C	72/59
ICF-50N-4/6-300/2-60Hz							300 °C/2 h*	
ICF-50N-4/6-400/2-60Hz							400 °C/2 h*	
ICF-50N-4/8-60Hz							-25...+55 °C	
ICF-50N-4/8-300/2-60Hz	2	6400/3200	1,6/0,4	50/13	22,3/11,1	1800/900	300 °C/2 h*	72/57
ICF-50N-4/8-400/2-60Hz							400 °C/2 h*	

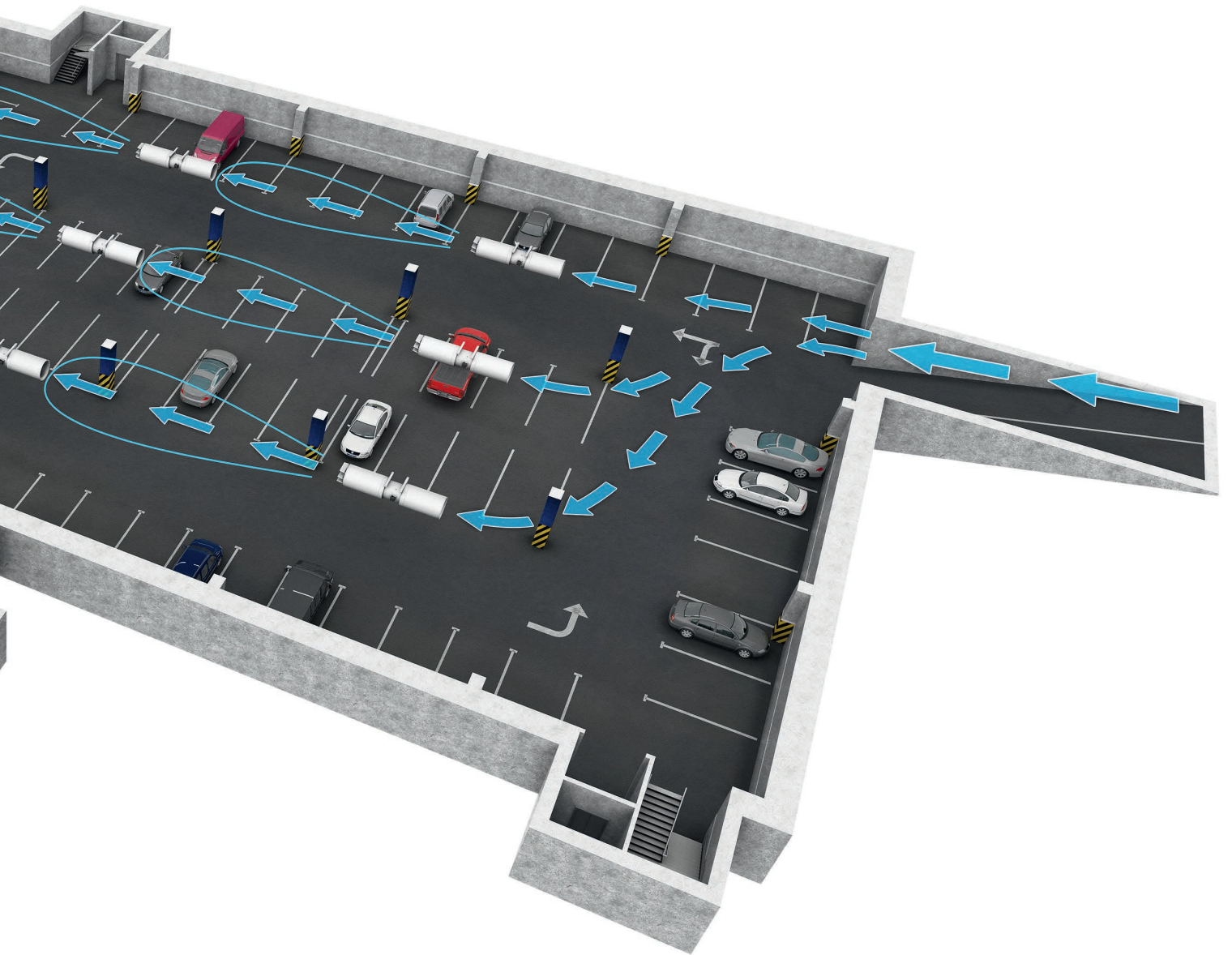
\* Smoke extraction mode: once for two hours

60 Hz

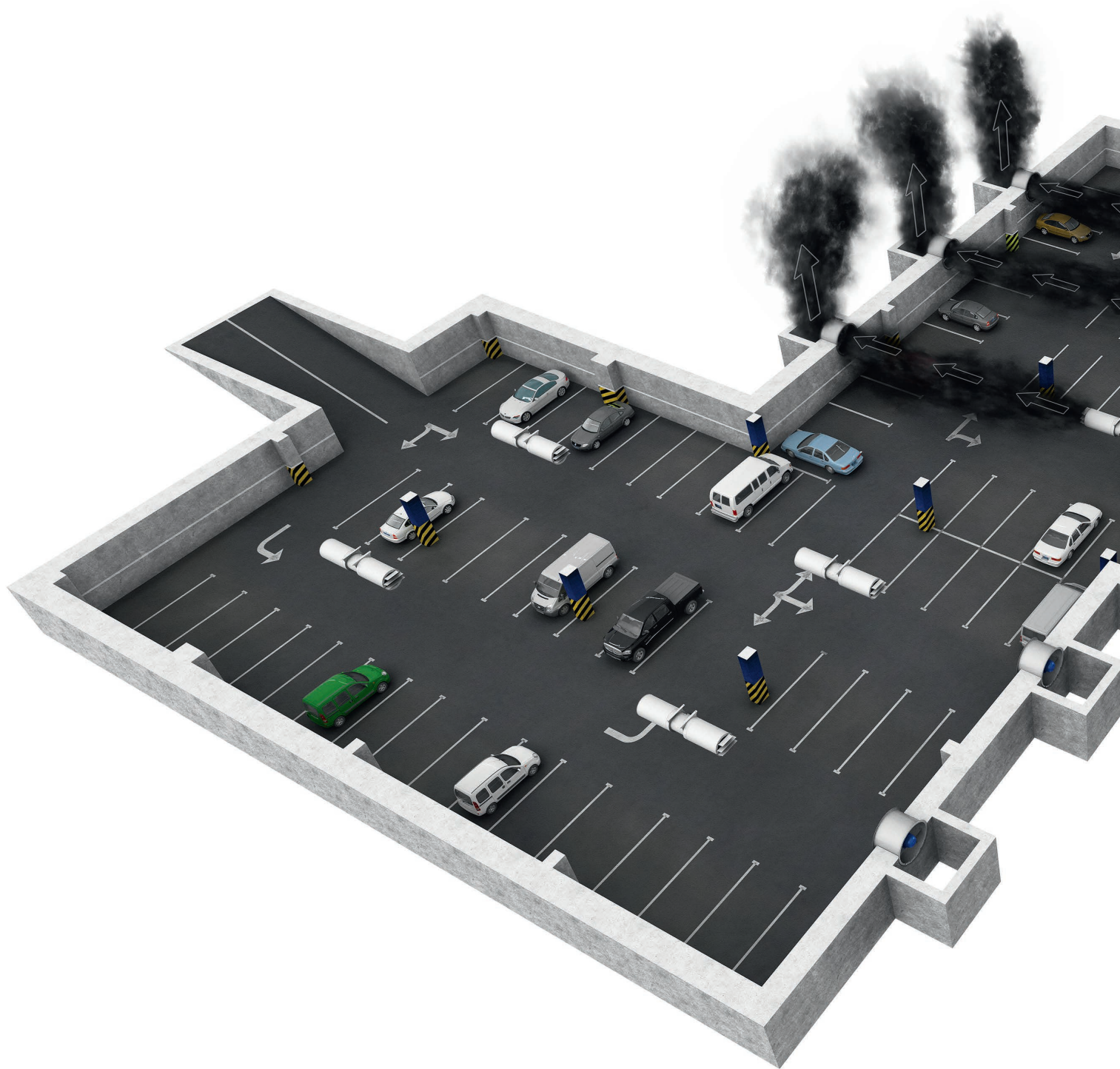




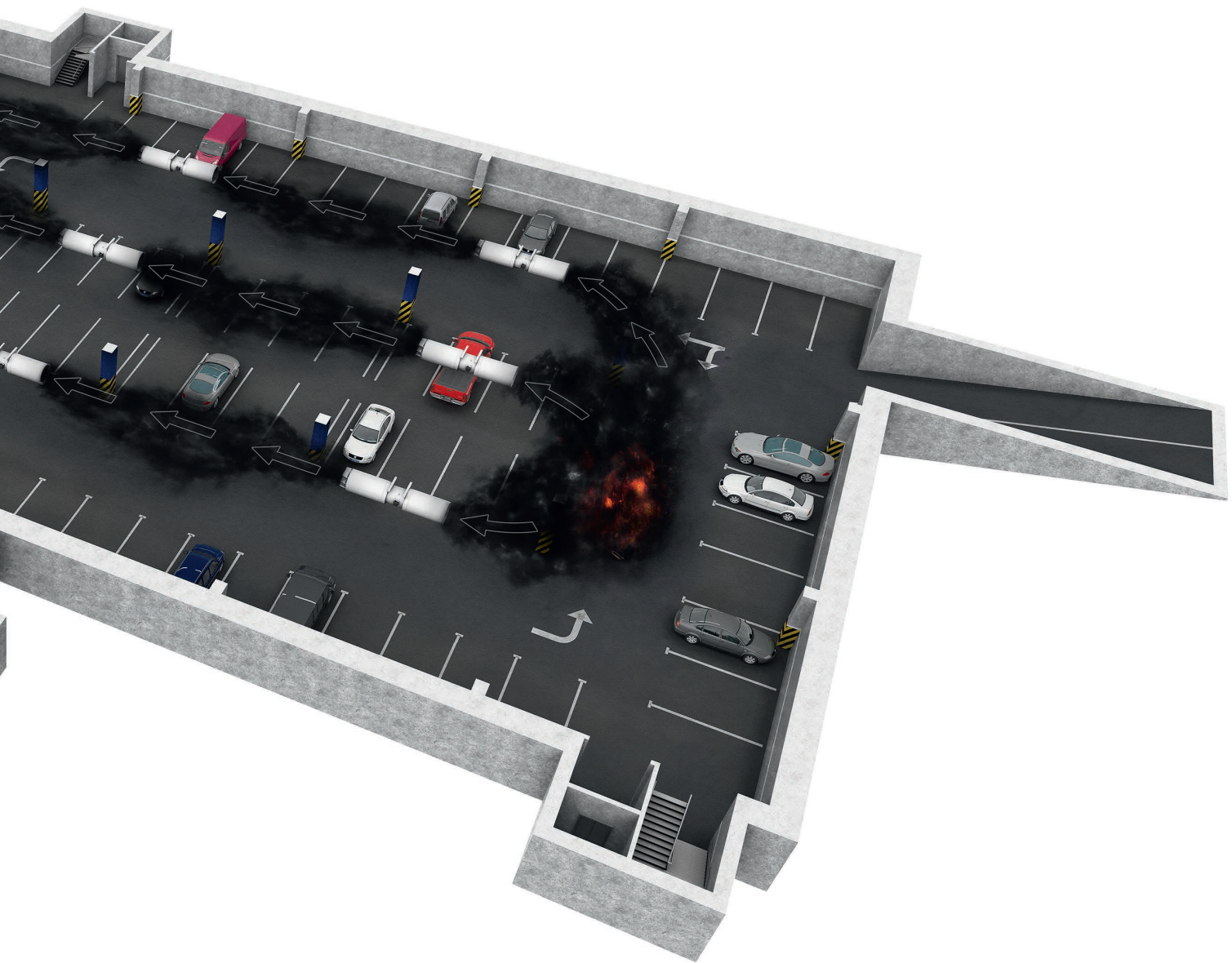
**60 Hz**







**60 Hz**

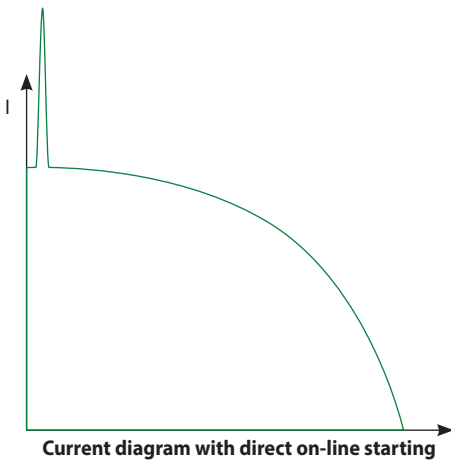




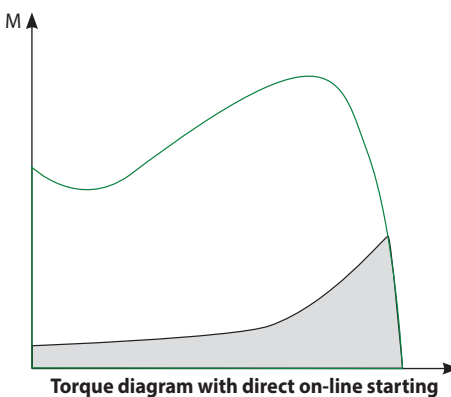
Ventilation systems produce a heavy load on the electrical systems of a building. Therefore, reducing the power consumption is among the top priorities for construction project designers.

### Direct on-line starting (DOL)

As a rule, smoke extraction systems utilize large high-performance fans. During starting the high inertia of the shaft causes a substantial increase in the start-up time - i.e. the time from the application of power to reaching the rated speed. As a result the motor is subjected to high starting current for a prolonged period of time.

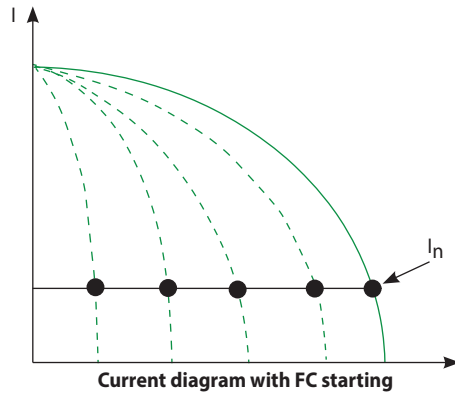


Standard switchgear (automatic circuit breakers, contactors and motor starters) is not designed to withstand prolonged overloads causing the fan to shut down automatically during starting. Using switchgear with a higher maximum current rating renders the electric motor protection system less sensitive. As a result the switchgear will not be able to detect motor overload in time due to a higher current sensing threshold. Such challenges can only be addressed by utilizing a soft starter or a frequency converter to start the fan without causing a prolonged overload.

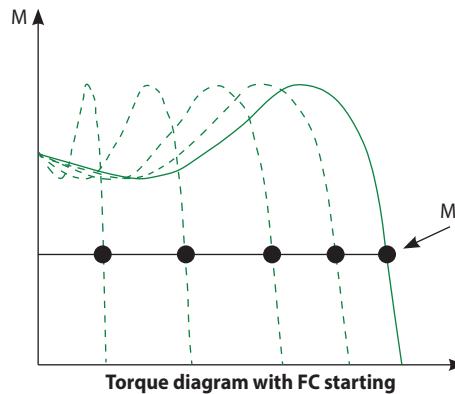


### Frequency converter

A frequency converter (FC) consists of two main component bl<sup>o</sup>cks. One converts alternating current (50 or 60 Hz) into direct current. The other converts direct current into alternating current of variable frequency ranging from 0 to 250 Hz. By controlling the frequency output the FC offers a broad range of motor speed regulation.

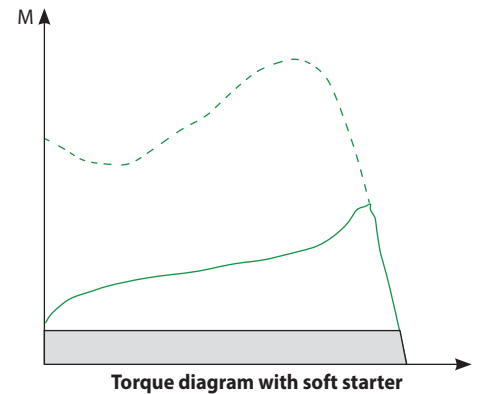
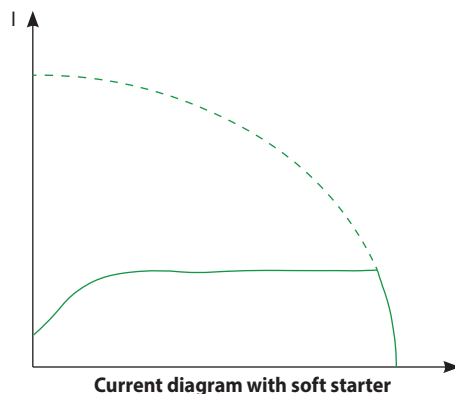


During the starting the FC raises the frequency from 0 Hz to the electrical mains frequency (50 or 60 Hz). As the frequency is increased gradually, the motor can be assumed to operate at its nominal speed for a given frequency value. Furthermore, on the assumption that the motor runs at its nominal speed the nominal torque should be immediately available whereas the current will be approximately equal to the nominal value.



### Soft starter

Unlike an FC, a soft starter does not change the frequency of speed. Instead it gradually increases the voltage supplied to the motor - from the initial level to the nominal level.



The very low voltage initially supplied to the motor during starting helps avoid sudden jolts. Both voltage and torque increase gradually.

### Applications in ventilation systems

Using an FC or a soft starter allows to reduce the starting current thereby avoiding a loss of voltage in the electrical mains. In addition to that the starting torque and mechanical strain on equipment are also reduced which translates into extended maintenance and repair intervals. General exhaust ventilation (GV) systems and emergency smoke extraction (SE) systems of car parks, warehouses, utility and industrial spaces can be integrated into a single system at the design level. As the air flow rate a GV system is considerably lower than that in an SE system a high-capacity fan rated for smoke extraction duty runs in partial load mode. Frequency converters can be programmed for several fixed-speed settings to enable operation in GV and SE modes. The fan operating modes can be switched upon receiving an external signal from the control system. Such integration of ventilation systems allows overall cost savings.

### FC-51 and FC-101: when to use?

This catalogue features two series of frequency converters: FC-51 and FC-101. The FC-51 series is only suitable for general ventilation systems. If intended for a smoke extraction system, the fans should be fitted with the FC-101 series units as they feature an integrated fire mode. When activated the integrated protection equipment of the frequency converter is overridden enabling the unit to continue operation despite the possibility of sustaining irreparable damage due to overheating or overloading. In case of a fire, the FC-101 series frequency converters are capable of maintaining a higher air pressure level at landings compared to other areas of the building in order to keep the landings smoke-free.



# 60 Hz

## Micro Drive FC-51 frequency converter



### ■ Purpose

This general-purpose variable frequency drive is designed for regulating the rotation speed of an AC electric motor with a maximum power output of 22 kW.

This unit is only suitable for general ventilation systems.

### ■ Features

The drive construction prevents forced air flow passage through its internal electronic components. The internal circuit boards are well-protected.

### ■ Filter

The unit features an integrated HF filter which blocks RF interference from the motor and enables the use of a shielded cable up to 15 m long or unshielded cable up to 50 m long as per the applicable EU regulations.

### ■ Inputs and outputs

- 5 programmable digital inputs
- PNP/NPN logic
- 20-5000 Hz pulse input
- One 0-10 V or 0-20 mA analogue input
- One 0-20 mA analogue input
- Thermistor input (analogue or digital)
- 1 analogue output
- 1 relay, 240 V, 2 A
- RS 485
- MODBUS RTU

### ■ Installation

Back-to-back installation for space savings. Thanks to a compact design the drives can be mounted immediately next to one another without any performance penalties.



### Control panels

Designation	Code
VLT control panel LCP 11 (without potentiometer)	132B0100
VLT Control Panel LCP 12 (with potentiometer)	132B0101



Designation	Code
Remote panel mounting kit	132B0102

### Frequency converter type and order code

Three-phase, 380-480 V			
Power [kW]	Rated current [A]	Order code	Bl°Ck type
0.37	1.2	132F0017	M1
0.75	2.2	132F0018	M1
1.5	3.7	132F0020	M2
2.2	5.3	132F0022	M2
3.0	7.2	132F0024	M3
4.0	9.0	132F0026	M3
5.5	12.0	132F0028	M3
7.5	15.5	132F0030	M3
11.0	23.0	132F0058	M4
15.0	31.0	132F0059	M4
18.0	37.0	132F0060	M5
22.0	43.0	132F0061	M5

### Outside dimensions (including mounting ledge)

mm	M1	M2	M3	M4	M5
Height	150	176	239	292	335
Width	70	75	90	125	165
Depth	148	168	194	241	248

+ 6 mm with potentiometer

## Basic Drive FC-101 frequency converters



### ■ Purpose

This general-purpose variable frequency drive is designed for regulating the rotation speed of an AC electric motor with a maximum power output of 90 kW.

This drive is suitable for both general ventilation and smoke extraction ventilation systems.

### ■ Certified fire mode

The fire mode prevents the drive from a self-protecting shut-down. While in this mode the drive continues to perform speed regulation duty for mission-critical fans irrespective of control signals, warnings and alarms which may otherwise force it shut down.

### ■ Filter

A built-in throttle on the DC link ensures a low harmonic load on the power mains as per the EN 61000-3-12 standard requirements.

### ■ Inputs and outputs

- Four PNP or NPN programmable digital inputs, 0-24 V DC
- 2 analogue inputs (0-10 V or 0/4-20 mA)
- 2 analogue outputs (0/4-20 mA)
- 2 relay outputs
- MODBUS RTU (RS 485)
- BACnet MSTP
- FC Prot<sup>o</sup>Col
- N2 Metasys
- FLN Apogee

### ■ Installation

Thanks to an ultra-compact design the drive can be easily fitted into a larger unit or panel of an air ventilation system. The casings are rated IP20/Type 1/IP21 (optional) and IP54.

### Frequency converter type and SKU code

Power [kW]	Current [A]	VLT® FC 101 HVAC Basic Drive 0.37-90 kW (3 x 380 – 480 V~, without a braking transistor)			
0.37	1.2		131L9861	-	-
0.75	2.2		131L9862	131N0177	131N0178
1.5	3.7		131L9863	131N0179	131N0180
2.2	5.3		131L9864	131N0181	131N0182
3	7.2		131L9865	131N0183	131N0184
4	9.1		131L9866	131N0185	131N0186
5.5	12		131L9867	131N0187	131N0188
7.5	15.5		131L9868	131N0189	131N0190
11	23		131L9869	131N0191	131N0192
15	31		131L9870	131N0193	131N0194
18	37		131L9871	131N0195	131N0196
22	42.5		131L9872	131N0197	131N0198
30	61	131L9873	131L9875	131N0201	131N0202
37	73	131L9881	131L9883	131N0205	131N0206
45	90	131L9889	131L9891	131N0209	131N0210
55	106	131L9897	131L9899	131N0213	131N0214
75	147	131L9905	131L9907	131N0217	131N0218
90	177	131L9913	131L9915	131N0221	131N0222
Casing		(E20) IP20/Chassis	(E20) IP20/Chassis	IP54	IP54
EMC filter		(H2) RFI class A2 (for industrial areas)	(H3/H4) RFI class A1/B (for residential areas)	(H2) RFI class A2 (for industrial areas)	(H3) RFI class A1/B (for residential areas)
Control panel		(X) without panel	(X) without panel	Integral	Integral

VLT® HVAC Basic frequency converters rated up to 22 kW are fitted with circuit boards with a special class 3C3 protective coating. For frequency converters rated higher than 22 kW this protective coating is optional while, the 3C2 coating is standard.

### VLT® FC 101 HVAC Basic Drive frequency converter options

Order code	Description	Order code	Description
132B0200	Operator's digital panel	132B0243	Decoupling plate for H7 standard size (extra large)
132B0201	Kit for remote mounting of the operator panel to an IP55 cabinet, including 3 m cable	132B0209	Decoupling plate for H8 standard size
132B0202	Decoupling plate for H1 and H2 standard sizes	132B0244	External EMC filter class A1/B1 for power output from 0.37 to 2.2 kW
132B0204	Decoupling plate for H3 standard size	132B0245	External EMC filter class A1/B1 for power output from 3 to 7.5 kW
132B0205	Decoupling plate for H4 and H5 standard sizes	132B0246	External EMC filter class A1/B1 for power output from 11 to 15 kW
132B0207	Decoupling plate for H6 standard size	132B0247	External EMC filter class A1/B1 for power output from 18.5 to 22 kW
132B0242	Decoupling plate for H6 standard size (extra large)		
132B0208	Decoupling plate for H7 standard size		









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2021-05

