



Jet fan SCF

SCF

Fulfils the requirements of the standards:

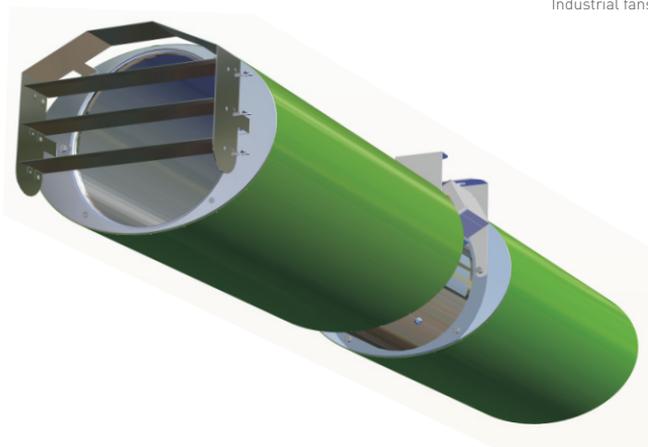
PN-EN 12101-3:2004

Smoke and heat control systems –
Part 3: Specification for powered smoke and heat exhaust ventilators

Performance parameters tested
in accordance with the standard:

PN-EN ISO 13350

Industrial fans – Performance testing of jet fans



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Intended use

The SCF type jet fans are intended to create a reliable and effective ventilation systems of large volume premises, while ensuring a high level of safety and smoke and hot gases removal in case of fire.

The systems using jet fans are most often installed in tunnels, indoor car parks and garages. These systems have two functions:

Ventilation function: this function is carried out during normal operation of the system. The purpose of the system is to remove the harmful contaminants (such as aldehydes, oxides, etc.) which can occur in a garage. Appropriate location of the jet fans ensures air flow throughout the whole space, which eliminates the forming of so called "blind spots", which could accumulate contamination.

Smoke control function: this function is carried out during the fire. In this situation, the purpose of the jet fans is to pump smoke and heat to the exhaust points, which allow their rapid removal from the protected space. The jet fan ventilation system while operating, restrains spreading of smoke and provides an access way for a fire brigade. After putting out the fire, the installation provides rapid purification of the space from smoke and fire gases. An additional advantage of this solution is reducing the temperature of smoke, which results in protecting the construction against the effects of excessive heat.

The best operational results of the SCF jet fans are achieved by automated systems, in which ventilation performance is adjusted on the basis of the instantaneous level of pollutants. Appropriately selected automation also allows to control the jet fans after occurrence of the fire alarm. The systems configured in this way allow to optimize energy consumption and reduce operating costs.

The correct operation of the jet fan ventilation system should be verified at the stage of design using CFD simulations.

Advantages

SCF type jet fans are basic component of the ductless ventilation systems. Use of them allows to achieve (depending on the degree of sophistication of automation) a number of significant advantages in comparison to conventional duct ventilation i.e.:

- effective ventilation (air exchange not only within the ventilation grilles but in the whole volume of the space)
- short response time to the fire alarm signal,
- high effectiveness of smoke exhaust in the whole volume of the space, achieved in a short time,
- easy installation,
- easy adjustment of the system,
- shortening the time of design and installation of the system,
- lowering the costs of system implementation (no ductwork and components of its equipment),
- lowering the operating costs (lowering the fans power consumption, adjusting the number of cycles to the actual demand),
- increasing the volume of the duct-free space (obtaining the free space under the ceiling, which is usually used to conduct the ductwork - the possibility of reducing the space height)
- improving the appearance of the space.

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Technical description

The SCF type jet fans are manufactured only in reversible variant in three sizes: 315, 355, 400. All fans are bifunctional (intended to operate as day-to-day function as well as smoke control function).

The fans are certified in accordance with PN-EN 12101-3: 2010 standard. On this basis it can be distinguished:

- fan intended for ventilating and smoke control. This fan has temperature class **F₃₀₀ 60**, which means it is capable to work at the temperature of 300°C for 60 minutes. Additionally the fan was successfully tested to work at the temperature of 300°C for 120 minutes.
- fan intended for ventilating and smoke control. This fan has temperature class **F₄₀₀ 120**, which means it is capable to work at the temperature of 400°C for 120 minutes

Functional parameters of the jet fans, such as the actual thrust, performance and noise were determined in accordance with PN-EN ISO 13350. Additionally the thrust was determined theoretically on basis of the formula $F = m \cdot a$ [N] (m - mass air jet transported by the fan [kg/s] w - velocity [m/s]). Both values of the thrust have been given in the table of technical parameters.

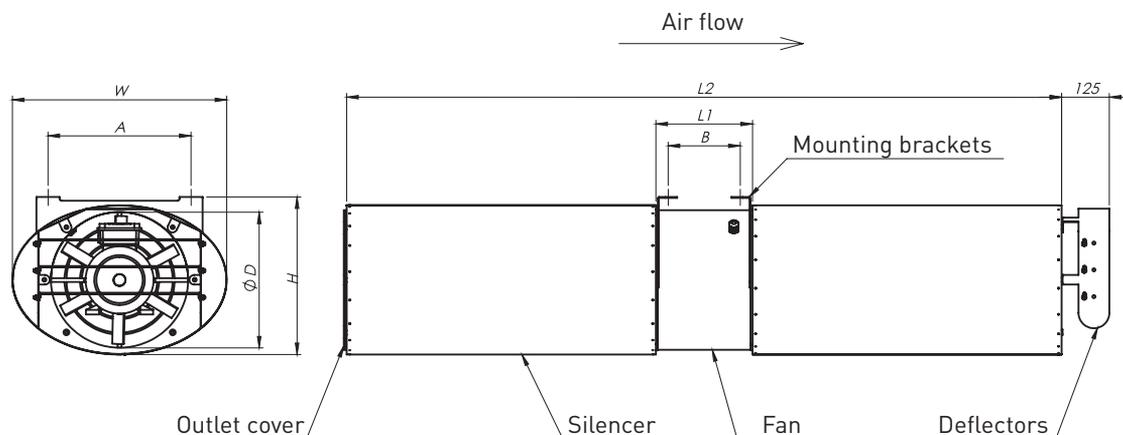
Construction of the device

The casing of SCF type jet fan is made of galvanized steel, with two mounting brackets screwed to it. The impeller is welded from alloy steel. Installation box is mounted on the fan casing. Two-speed, three-phase 400V/50Hz motor, with protection class IP55 and insulation class H, is applied in the fan.

In the standard application, the 800 mm long, T type silencers are installed at the inlet and outlet of all SCF type jet fans. The casing of the silencers has elliptical shape in order to minimize the distance between the fan and the ceiling.

Normally, there are S type safety nets mounted at the ends of the silencers. The D type deflectors can be provided as the additional equipment. Deflector is used to direct the air jet in order to avoid the obstacles e.g. ceiling joists. Additionally deflectors can be used to prevent the Coandă effect (the tendency of a air jet to be attracted to a nearby surface) by appropriate directing the air jet.

Dimensions



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Dimensions

Fan type	ØD [mm]	A [mm]	B [mm]	W [mm]	H [mm]	L ₁ [mm]	L ₂ [mm]	Weight [kg]
SCF ₃₀₀ SCF ₄₀₀	315	280	200	490	365	250	1850	78
SCF ₃₀₀ SCF ₄₀₀	355	320	200	555	405	250	1850	86
SCF ₃₀₀ SCF ₄₀₀	400	375	200	625	446	250	1850	101

Technical data

fan type	diameter	thrust		performance	motor power	nom. current	velocity	rot/min (3m/45°)	weight	operating temperature
	[mm]	[1*]	[2*]	[m³/h]	[kW]	[A]	[obr./min]	[dB(A)]	[kg]	[°C]
SCF 300	315	5/21	4/17	2140/4240	0,25/1,1	0,776/2,49	1390/2810	45/61	78	F300 300°C/120 min
	355	10/38	7/27	3200/6300	0,37/1,5	1,19/3,45	1430/2875	55/74	86	F300 300°C/120 min
	400	16/58	14/44	4600/8900	0,5/2,2	1,54/4,63	1420/2845	52/69	101	F300 300°C/120 min
SCF 400	315	5/21	4/17	2140/4240	0,25/1,1	0,776/2,49	1390/2810	45/61	78	F400
	355	10/38	7/27	3200/6300	0,37/1,5	1,19/3,45	1430/2875	55/74	86	F400
	400	16/58	14/44	4600/8900	0,5/2,2	1,66/5,82	1450/2900	52/69	101	F400

[1*] – Theoretical thrust determined on the basis of formula $F=m \cdot w$ [N]

[m- mass air jet transported by the fan [kg/s], w – velocity [m/s]]

[2*] – Actual thrust measured in accordance with the testing procedure described in PN-EN ISO 13350 standard

Accessories and product designation principles

SCF <T> - <D> - <M> - <P> <RAL>

Where:

<T> - temperature resistance:

300 – temperature class F_{300} 60 and non classified 300°/120min

400 – temperature class F_{400} 120

<D> - nominal diameter, mm

<M> - ending elements

SS – jet fan with two safety nets on the silencers

DD – jet fan with two deflectors on the silencers

SD – jet fan with safety net and one deflector on the silencers

<P> - finishing

SO - galvanized steel

SL - painted steel

<RAL> - according to the RAL color standard (for SL finishing)

Order example:

SCF300 - 355 - DD - SL9010