

AXIAL SMOKE EXHAUST FAN SEF(V)



Characteristics:

Temperature class F200, F300 or F400 axial smoke exhaust reversible fan for smoke and heat extraction, smoke exhaust compensation and domestic ventilation systems.

version: 17/04/25

Intended Use

SEF(V) smoke exhaust fans are intended for creating reliable and efficient ventilation systems for large-volume rooms, at the same time thereby ensuring a high level of safety, as well as the extraction of smoke and hot gases in the event of a fire. They greatly facilitate the evacuation from the zones engulfed in fire as well as firefighting action. Systems using smoke exhaust fans are mostly installed in closed car parks and garages, as well as in buildings where a smoke extraction system has been provided. They have three functions:

- **Smoke and heat extraction** – this is accomplished during a fire. In this case, the smoke exhaust fans should remove smoke and heat from the protected space. The operation of smoke exhaust fans limits the spread of smoke, thus ensuring an access path for firefighters.
- **Compensation** – this is accomplished during a fire. In this case, the fans work in the reverse direction, pumping the air into the zone occupied by people in order to purge and displace smoke to the so-called collection points.
- **Domestic ventilation (optional)** – this is accomplished during the normal operation of the system in continuous mode and it ensures the removal of pollutants. The domestic function is mostly accomplished at considerably lower efficiency. Therefore, the fans are adjusted for operation with an inverter and they can be optionally equipped with PTC sensors.

Dimensions

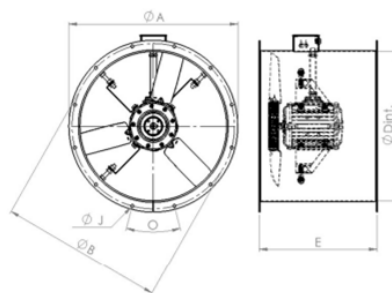


Figure 1. SEF(V) fan dimensions

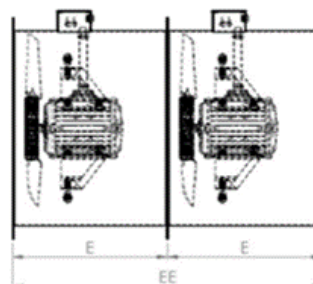


Figure 2. SEF(V)CR fan dimensions

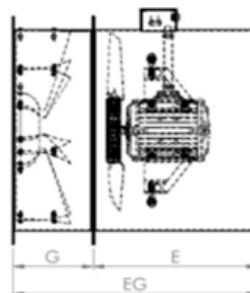


Figure 3. SEF(V)GV fan dimensions

Classification

SEF(V) fan fire resistance class:

- **F400** – fire resistance rating up to 400 °C for 120 minutes
- **F300** – fire resistance rating up to 300 °C for 60 minutes
- **F200** – fire resistance rating up to 200 °C for 120 minutes

The SEF(V) fan meets the requirements of:

- **PN-EN 12101-3: 2015** Smoke and heat control systems. Part 3: Specification for powered smoke and heat control ventilators (fans).

Performance characteristics have been tested in accordance with:

- **PN-EN ISO 5801-2017** Fans. Performance testing using standardised airways.
- **PN-EN ISO 13350:2015** Fans. Performance testing of jet fans.



Reversibility, i.e. efficiency for the second direction of rotation for SEF(V), SEF(VS) and SEF(V)CR types is 70% and 50% for SEF(V)GV type.

Table 1. SEF(V) fan dimensions

Model	øD [mm]	øA [mm]	øB [mm]	øJ [mm]	O [°]	SEF(V) E [mm]	SEF(V)CR EE [mm]	SEF(V)GV EG [mm]
315-080	315	375	355	10	45	300	600	E + G
315-080/090	315	425	395	10	45	400	800	E + G
400-080/090	400	475	450	12	45	400	800	E + G
450-080/090	450	530	500	12	45	400	800	E + G
450-100/112	450	530	500	12	45	450	900	E + G
500-100/112	500	585	560	12	30	400	800	E + G
500-100/112	500	585	560	12	30	450	900	E + G
560-080/090	560	645	620	12	30	400	800	E + G
560-100/112	560	645	620	12	30	450	900	E + G
560-132	560	645	620	12	30	570	1140	E + G
630-080/090	630	715	690	12	30	400	800	E + G
630-100/112	630	715	690	12	30	450	900	E + G
630-132	630	715	690	12	30	570	1140	E + G
630-160	630	715	690	12	30	710	1420	E + G
710-080/090/100/112	710	795	770	12	22.5	450	900	E + G
710-132	710	795	770	12	22.5	570	1140	E + G
710-160	710	795	770	12	22.5	710	1420	E + G
710-180	710	795	770	12	22.5	790	1580	E + G
710-200	710	795	770	12	22.5	840	1680	E + G
800-080/090/100/112	800	885	860	12	22.5	450	900	E + G
800-132	800	885	860	12	22.5	570	1140	E + G
800-160	800	885	860	12	22.5	710	1420	E + G
800-180	800	885	860	12	22.5	790	1580	E + G
800-200	800	885	860	12	22.5	840	1680	E + G
900-090/100/112	900	1000	970	15	22.5	450	900	E + G
900-132	900	1000	970	15	22.5	570	1140	E + G
900-160	900	1000	970	15	22.5	710	1420	E + G
1000-090/100	1000	1110	1070	15	22.5	420	840	E + G
1000-112/132	1000	1110	1070	15	22.5	590	1180	E + G
1000-160/180	1000	1110	1070	15	22.5	790	1580	E + G
1000-200	1000	1110	1070	15	22.5	840	1680	E + G
1120-112	1120	1240	1190	15	18	420	840	E + G
1120-132	1120	1240	1190	15	18	550	1100	E + G
1120-160/180	1120	1240	1190	15	18	790	1580	E + G
1120-200	1120	1240	1190	15	18	840	1680	E + G
1250-112	1250	1380	1320	15	18	450	900	E + G
1250-132	1250	1380	1320	15	18	590	1180	E + G
1250-160/180	1250	1380	1320	15	18	790	1580	E + G
1250-200	1250	1380	1320	15	18	840	1680	E + G
1250-225/250	1250	1380	1320	15	18	1000	2000	E + G

Table 2. SEF(V)GV vane section dimensions

øD [mm]	Hub code			
	D J K L	E M N P	F	T X
	G [mm]			
315	180	-	-	-
355	180	-	-	-
400	220	-	-	-
450	220	-	-	-
500	220	-	-	-
560	220	250	300	-
630	250	250	300	-
710	250	300	300	350
800	250	300	300	350
900	-	300	300	400
1000	-	300	420	420
1120	-	420	420	450
1250	-	420	420	450
1400	-	-	420	500

Manufacturing Versions

SEF(V) fan series consists of the following versions:

- SEF(V) – a fan in a long housing
- SEF(V)GV – a fan with a rectifying vane
- SEF(V)CR – two fans connected in series
- SEF(VS) – a fan in a short housing (custom version – before using please contact Smay Technical Department)

Description

The SEF(V) is manufactured with the diameter series $d = 315$ mm – 1400 mm and operates with motors up to 54 kW. They can act as dual-function devices (intended both for domestic and firefighting applications). The fan is designed and adjusted for continuous operation under conditions at the place of installation and is characterised by a high resistance to mechanical, corrosive, thermal and humidity impacts to which it will be exposed to during operation. The SEF(V) series is certified for use during fire in classes F200, F300 and F400. All the materials, parts and associated components are consistent with standards and directives.

Design

SEF(V) fans have housings made of galvanised steel with two screwed mounting feet. The housing is designed in such a way as to ensure the high rigidity of the system. The rotor and the blades are made of high-strength aluminium alloy. The angles of the blades can be altered when the fan is off with the consent of the manufacturer. A connection box is mounted to the fan housing, which enables fast and problem-free on-site installation. Heavy-duty three-phase 400 V /50 Hz motors matching classes F200, F300 and F400 are used in the fans. The motors are made in accordance with IP55 ingress protection rating, hold H insulation class and use the IC418 cooling method. The fan can operate with standard accessories (fully certified and attached), such as mounting feet, anti-vibration mounts, elastic connection pipes, intake nozzles, protection mesh,

attenuators and non-return flap valves. Any pressure drop in the accessories is automatically calculated for a specific model in the selection software.

Advantages

- Certified accessories
- Horizontal and vertical installation
- The possibility of working in domestic applications (PTC sensors are available as an option)
- Certified series within the diameter range $d = 315$ mm – 1400 mm for 54 kW motors
- The possibility of mounting a jet rectifying vane at the outlet of the fan SEF(V) -> SEF(V)GV
- The possibility of mounting two fans in series SEF(V) -> SEF(V)CR
- The SEF(V)GV fan straightens the jet due to the vane, which greatly increases the parameters such as efficiency, pressure increase and capacity. It gives the stream a uniform shape and prevents possible additional swirls directly behind the fan, which can happen in the case of fans without vanes. Therefore, SEF(V)GV fans do not cause additional, unpredictable losses inside ducts
- The SEF(V)CR can create twice as large a static pressure increase, maintaining the same diameter, which makes it the excellent choice for the systems with small cross-section and high-pressure loss
- Short reaction time to a fire alarm signal
- High efficiency of smoke extraction within a short time
- Easy installation of the system due to the appropriate construction of the fan and the connection box mounted on the housing
- Easy system adjustment due to the possibility of using an inverter
- Operation at 50 Hz or 60 Hz
- Effective smoke extraction and ventilation (normally SEF(V) reversibility = 70%), low operating costs due to the high efficiency within the full application range (~85% at the optimum energy efficiency point for SEF(V)GV fans)
- Very high resistance to corrosion due to the fact that the static parts of the fan are galvanised and the rotor is made of aluminium

Technical Data

The selection software with all technical parameters is available from the Smay Technical Department.

