

FALCON High Flow

Circular ceiling air diffuser for supply air



QUICK FACTS

- Ceiling air diffuser for supply air in rooms with high ceiling
- Manual operated change of spread direction as standard
- Motor operated change of spread direction as accessory
- Same total pressure drop for horizontal and vertical spread
- Suitable for heating and cooling of rooms
- Standard colour White RAL 9003
 - 5 alternative standard colours
 - Other colours upon request

AIR FLOW - SOUND PRESSURE ROOM (L_{p10A} *)						
FALCON High Flow Size	25 dB(A)		30 dB(A)		35 dB(A)	
	l/s	m ³ /h	l/s	m ³ /h	l/s	m ³ /h
315	348	1253	402	1447	464	1670
400	534	1922	618	2225	716	2578
500	923	3323	1080	3888	1261	4540

Horizontal spread, cooling.

**) L_{p10A} = Sound pressure incl. A-filter with 4 dB room attenuation and 10 m² room absorption area.*

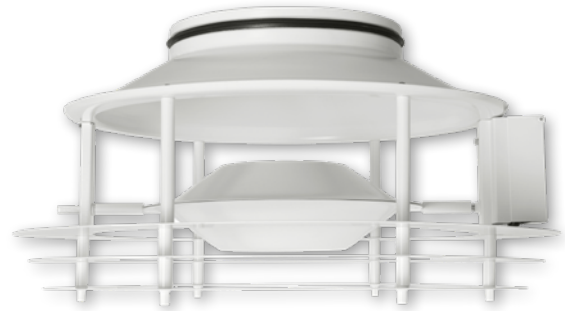
Technical description

Design

- The FALCON HF consists of two parts: an outer cone with rubber ring sealed-fitted spigot and an aerodynamically designed outlet cone. NOTE! Size 500 is delivered without a rubber seal ring.
- As standard the outlet cone is manually operated when changing the spread direction.

Materials and finish

- The entire air diffuser is made of sheet steel and its interior and exterior surfaces are painted.
- Standard colour:
 - White semi-gloss, lustre 40, RAL 9003/NCS S 0500-N
- Alternative standard colours:
 - Silver gloss, lustre 80, RAL 9006
 - Grey aluminium gloss, lustre 80, RAL 9007
 - White semi-gloss, lustre 40, RAL 9010
 - Black semi-gloss, lustre 35, RAL 9005
 - Grey semi-gloss, lustre 30, RAL 7037
- Non-painted finish and other colours available on request.



Accessories

Electrical motor

- 2 point regulation to change the spread to horizontal/vertical direction.

Control unit for switching from cooling/heating

- VHC control unit switches the mode of motor controlled air diffusers, intended for both under-tempered and over-tempered supply air. The controlling parameter is the temperature difference between supply air and extract air.

Wiring Diagram

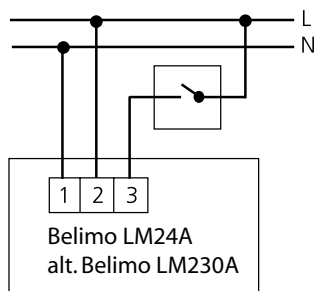


Figure 1. Wiring diagram for FALCON HF, motor control with 2 point regulation. Switch is not included.

Motor features

Motor	Supply voltage	Power consumption	Running time / Torque
LM24A ^{*)}	24 V AC 50/60 Hz 24 V DC	2 VA	150 s / 5 Nm
LM230A ^{**)}	AC 100..240V 50/60 Hz	4 VA	150 s / 5 Nm

^{*)} Standard, stocked motor, can be connected to VHC controller.

^{**)} Non-stocked motor.

Installation

- Secure the inlet spigot to the connecting duct using blind rivets.

Maintenance

- The air diffuser can be cleaned, if necessary, using lukewarm water with dishwashing detergent added.
- Alternatively by vacuum cleaning using a brush nozzle.

Sizing

- The diagrams provide data for a FALCON HF placed in a ceiling.
- Sound attenuation (ΔL) below is shown in the octave band. Orifice attenuation is included in the values.
- The sound pressure level is given in dB(A) for products in rooms and applies to rooms with 10 m² equivalent sound absorption area (normal acoustic absorption of 4 dB).
- Throw length $l_{0,2}$ is measured at isothermal air supply.
- Recommended max. permissible temperature below room temperature is 10K.
- The dB(C) value is normally 6-9 dB higher than the dB(A) value.

Sound data - explanation

The sound level is given in dB(A) for products in rooms and applies to rooms with 10 m² equivalent sound absorption area. Any exceptions are given in the product description.

Measurement of air diffusers according to ISO 5135 and ISO 3471, which is intended for broad-band sound of a stable nature is performed according to the so-called "Comparison method", which means that the measured effective sound power level is compared with the sound pressure level for a calibrated sound source with a known sound power (method II and ASHRAE 36-72).

L_w = Sound power level in the octave band in dB over 1 pW. (10^{-12} W)

L_{p10A} = Sound level in dB(A) according to normalised frequency weighting A. All sound levels are related to an equivalent absorption area of 10 m² (acoustic absorption of 4 dB)

ΔL = Sound attenuation in the octave band (dB)

K_{OK} = Correction for calculation of L_w value from the L_A or L_{Wtot} values

Sound level L_A dB(A) or L_{Wtot} dB can be divided into octave bands using the correction factor K_{OK} . This is given in table form for each product.

Formula: $L_w = L_{p10A} + K_{OK}$

The sound data divided into octave bands is also given in table form. For products with a sound level reported in dB(A) the opening attenuation is included in the sound attenuation data.

Calculation software

Refer to Swegon's calculation software ProSelect for data regarding sound in the octave band and sound attenuation in the octave band.

Airflow

The airflow is given in l/s and m³/h, and is listed in the engineering diagram for each product.

Throw length

Testing method according to EN 12238.

The throw ($l_{0,2}$) is the longest distance from the centre of

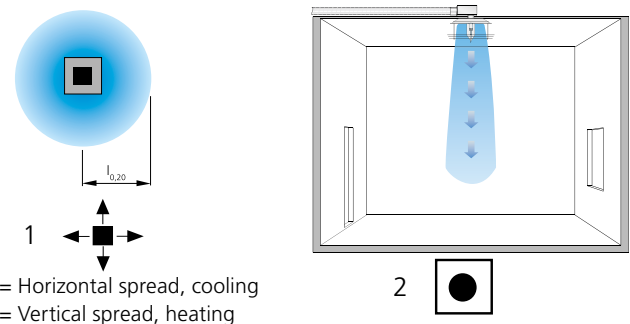
a supply air diffuser to the isovel 0,2 m/s at isothermal air supply. A throw of $l_{0,2}$ is provided for all Swegon's air diffusers.

The values given in the engineering graph apply to isothermal supply air.

For air diffusers, the throw is given for mounting facing the ceiling. Some supply air diffusers can be mounted free hanging or suspended from the ceiling, in which case the throw is reduced by approximately 20%. "Free-hanging" means that the diffuser outlet is at least 400 mm from the ceiling.

For calculating the width of the air stream, air velocities in the occupied zone or sound levels in rooms with other dimensions, please refer to our ProAir web calculation software available for download at www.swegon.com.

Illustration of the spread direction:



Engineering graphs - explanation

General

Unless stated otherwise, the engineering graph for each product provides the following information:

- Data for isothermal conditions
- Throw with an end velocity of 0,2 m/s
- Sound pressure level L_{p10A} dB(A) 10 m² equivalent sound absorption
- Pressure drop p_t , Pa
- Air flow q l/s and m³/h

Pressure drop

In the engineering graph for air terminals the pressure drop is given as the total pressure drop (p_t). The total pressure drop (p_t) is the sum of the static pressure drop (p_s) and the dynamic pressure (p_d) over the air terminal.

Supply air: $p_t = p_s + p_d$

For a supply air terminal the total pressure drop is the sum of two positive pressures and therefore has a larger numerical value than the static pressure drop. For extract air terminals the static pressure drop is negative and the total pressure drop is therefore a numerically smaller value than the static pressure drop.

Extract air: $p_t = (-p_s) + p_d$

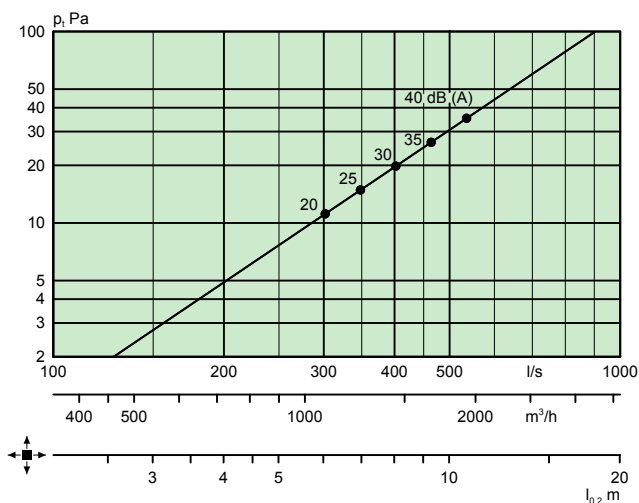
The dynamic pressure is calculated as follows:

$$P_d = \frac{v^2}{2} \rho \quad \text{Pa}$$

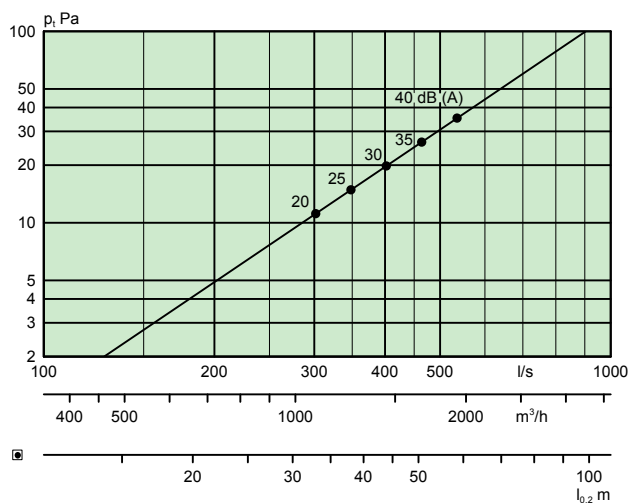
where v is the inlet velocity in m/s
 ρ is the air density in kg/m³

Airflow – Pressure drop – Sound level – Throw length

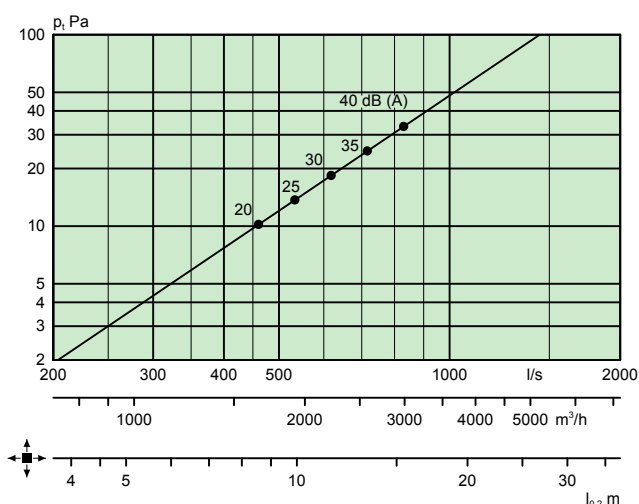
FALCON HF 315 – Horizontal spread



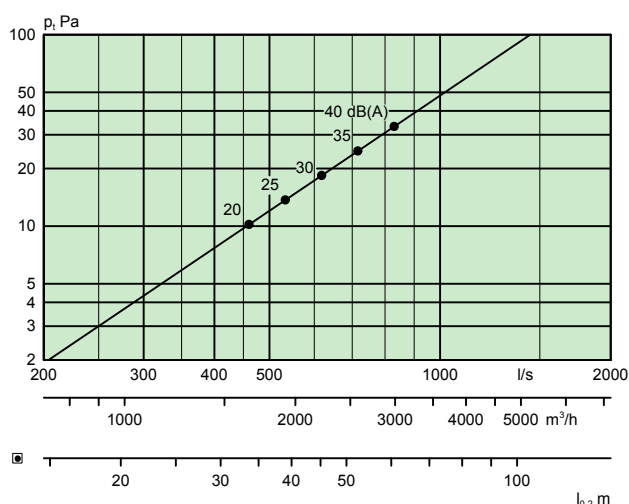
FALCON HF 315 – Vertical spread



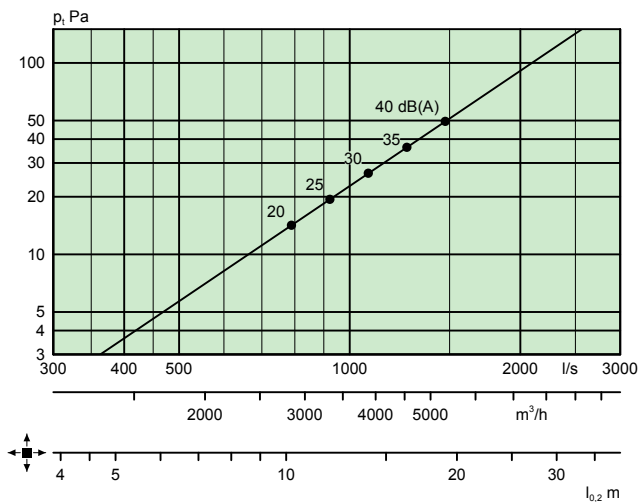
FALCON HF 400 – Horizontal spread



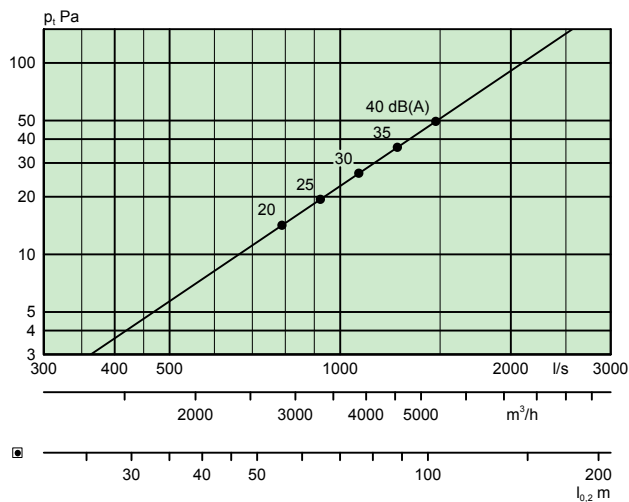
FALCON HF 400 – Vertical spread



FALCON HF 500 – Horizontal spread



FALCON HF 500 – Vertical spread



Dimensions and weights

FALCON HF Ø

Size	ØA	ØB	C	D	E	ØF	ØG	ØH	ØI	ØJ	Weight (kg)
315	591	314	44	110	340	514	631	671	711	561	10,5
400	703	399	44	122	350	616	743	783	823	673	13
500 ^{*)}	853	499	40	135	460	765	893	933	973	823	18

^{*)}Size 500 is delivered without a rubber seal ring

Size of the opening = ØJ

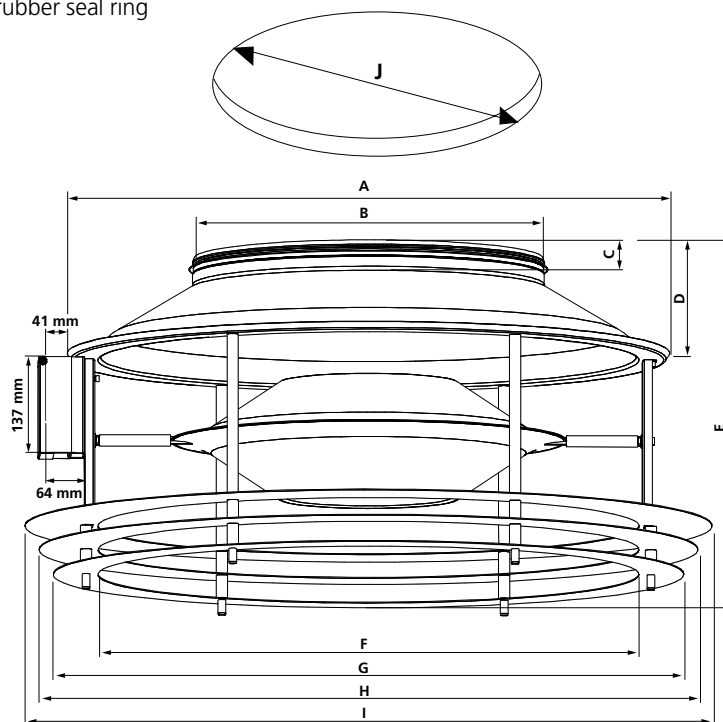


Figure 2. FALCON HF, dimensions.

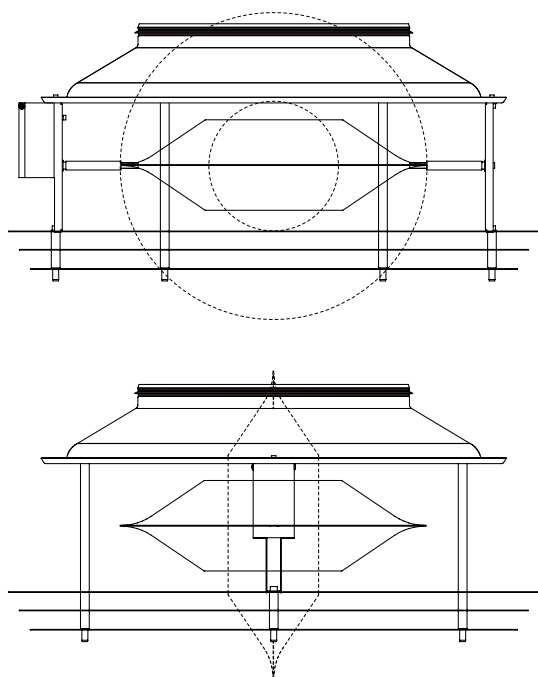


Figure 3. FALCON HF, spread modes.
 Solid outlet cone = horizontal spread mode.
 Dashed outlet cone = vertical spread mode.

Order key

Product

Circular ceiling air diffuser for supply air FALCON HF a -b -ccc

Version:

Manual operated: 1

Motor operated: 2^{*)}

Size: 315, 400, 500

^{*)} Standard, stocked motor LM24A

Specification text

Swegon's circular air diffuser type FALCON HF for ceiling mounting with the following functions:

- Adjustable horizontal / vertical spread pattern
- White powder paint sprayed and baked finish, RAL 9003/NCS S 0500-N
- Factory mounted motor for 2 point regulation

Size: FALCON HFa-2-ccc xx items