ASDa

Active supply air diffusers for ceilings

FUNCTION

Active supply air diffuser for installation in modular suspended ceilings. Discharge air at constant velocity as variations in the supply airflow arise. Developed for ventilation systems with constant pressure in the air ducts and demand-controlled airflows. Manages temperatures substantially below room temperature and wide airflow ranges yet they generate low sound levels.

QUICK FACTS

- Active opening
- Constant discharge velocity
- Eliminate risk of draught
- Can handle wide airflow ranges
- Cleanable
- Aerodynamic design
- Must always be used with the ALE 1 commissioning box

QUICK GUIDE

AIR FLOW-SOUND LEVEL				
ASDa Size	ALEa 1 Size	Airflow range, l/s min.	max.	dB(A)
160-600	160-160	7	60	<30
200-600	200-200	10	80	<30

All the data is applicable to a 4-way pattern of diffusion and fully open gap, 40 Pa constant pressure or 30 dB(A).

Swegon

Registered design. The company reserves the right to make design changes without prior notice.

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DESIGN

The air diffuser consists of three parts. An aerodynamically designed backing box with a connection spigot fitted with rubber seal ring. A removable diffuser face, and a vertically movable intermediate plate. The aerodynamically designed intermediate plate can be raised or lowered by means of an electric motor in response to a 0-10V control voltage signal. The ASD is also available in an alternative version with a blanked off air discharge opening for a 3-way pattern of air diffusion.

MATERIALS AND SURFACE TREATMENT

The ASD is made of galvanized sheet steel and its interior and exterior surfaces have an interior white powder paint sprayed and baked finish.

ACCESSORIES

COMMISSIONING BOX:	ALE 1, with identical inlet and outlet spigot dimensions. Made of galvanized sheet steel. Contains fixed measurement tappings and sound absorbing material with reinforced surface layer.
ROOM CONTROLLER:	RTC, control accessories
ROOM CONTROLLER:	KCD, control accessories
TEMPERATURE SENSOR:	KST, control accessories for the KCD
CARBON DIOXIDE SENSOR:	KSC, control accessories
PRESENCE DETECTOR:	KSO, control accessories

PLANNING

A detailed guide for planning that describes the overall e.r.i.c. concept is provided in the technical information section.
Since the air diffuser is active and the pressure in the branch duct is kept constant, the air diffusers should be selected as follows:
Select a constant pressure. Follow the pressure line in the graph from left to right. The airflow range can now be read. Using the pressure range lines, determine the exact max. and min. permissible airflows. These flows must be specified in the specification for the air diffuser and for the KCD room controller. (See separate product datasheet.) Note that at the constant pressure selected, the sound level diminishes as the airflow is reduced.

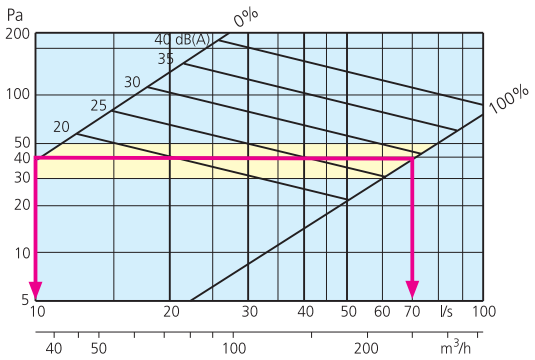

***Figure 1**. Graph example.*

Principle – Constant air discharge velocity

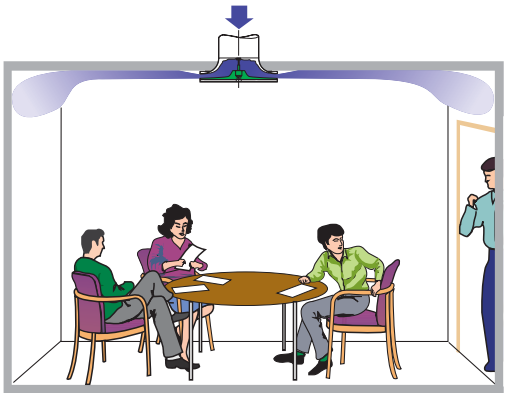

***Figure 2.** ASD max. airflow.*

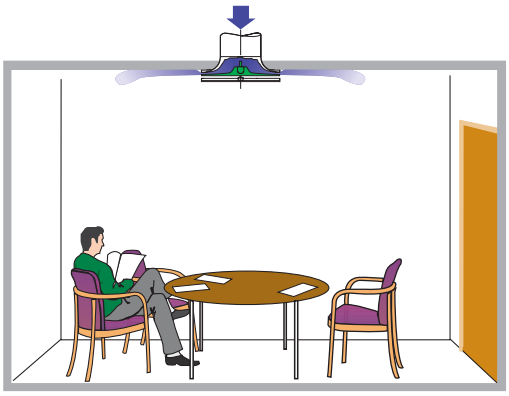

***Figure 3.** ASD min. airflow.*

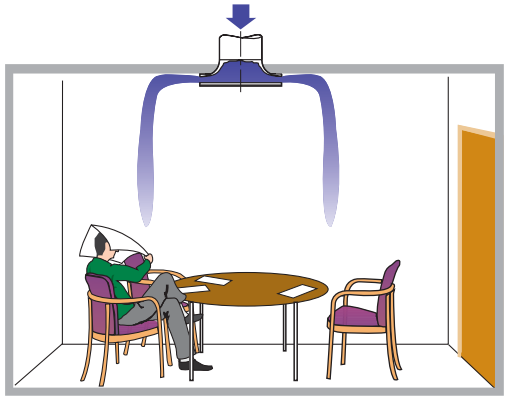

***Figure 4.** Traditional air diffuser, min. airflow.*

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INSTALLATION (See Figure 4)

1. The ASD is designed for installation in the framework of a modular suspended ceiling or the like. It is advisable to install the air diffuser after the framework has been installed. Preferably install the air diffuser directly in the framework.
2. Secure the ALE 1 commissioning box by means of hangers to the overhead slab and connect it to the duct system. Connection to ducting can be carried out by means of flexible hoses to facilitate exact positioning of the air diffuser. It is important to stretch the hose to prevent unnecessary folds and bends from forming.
3. Lower the commissioning box against the inlet of the air diffuser enabling the seal of the diffuser to penetrate the outlet of the commissioning box. Secure the hangers of the boxes to permanently lock them in position.
4. Mount the measurement hose of the commissioning box against the nipple on the top section of the air diffuser.
5. Wire the electric cable to the room controller. See the wiring diagram.
6. The ASD bottom plate can be dismantled by turning the spring of the corner pins to the side. After that, the bottom plate can be pulled down. Disconnect the electric cable to the motor. The bottom plate is secured in the upper section by means of a safety cord.
7. When refitting, make sure that you mount the bottom plate in its upper position.

COMMISSIONING

For particulars of commissioning products in the e.r.i.c. System, see separate instructions on commissioning.
The ASD + ALE 1 are normally preset via the KCD room controller at the factory. While inspecting the equipment, the traditional coefficient of performance method can be used for measuring the performance via measurement tappings on the ALE and the ASD respectively.

MAINTENANCE

The air diffuser can be cleaned, if necessary, using lukewarm water with dishwashing detergent added. The duct system can be accessed without having to use tools. (See Installation.)

ENVIRONMENT

The declaration of construction materials and CE Declaration are available at our website.

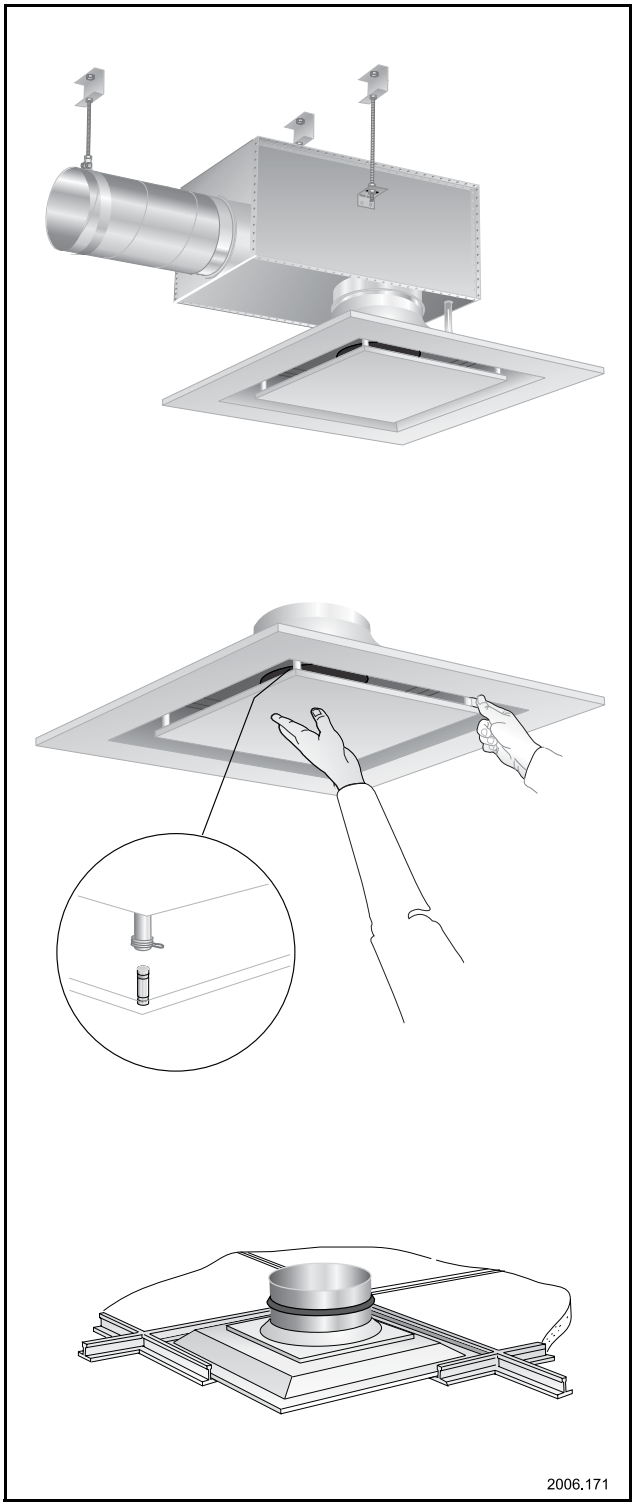

Figure 5. *ASD.*

Wiring

Power is supplied to the ASD via the RTC or KCD room controller. See the Wiring diagram. (See also the technical information section.)

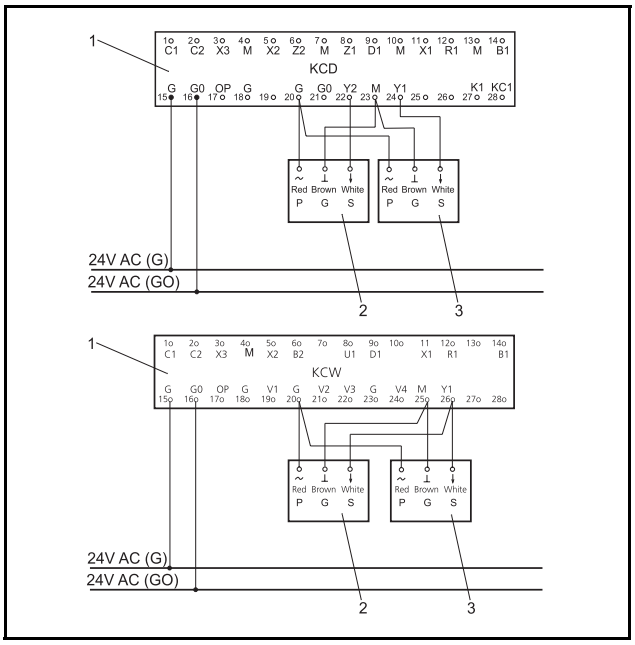

Figure 6. *Wiring diagram 1. For the KCD/KCW room controller.*

1. KCD/KCW room controller
2. Supply air diffuser
3. Exhaust air diffuser

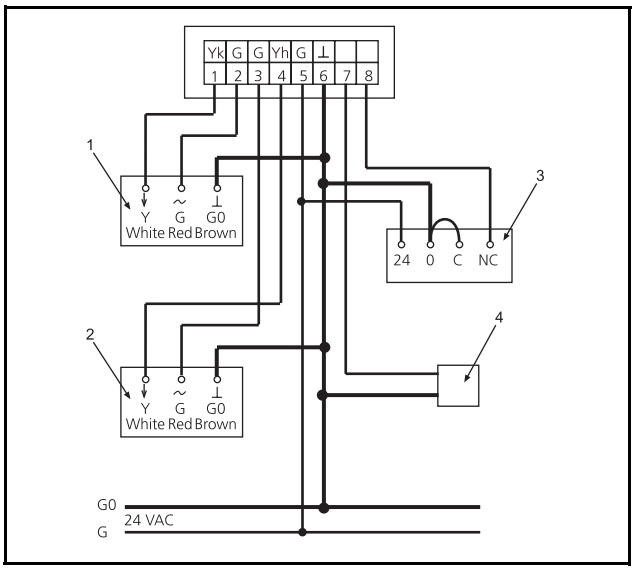

Figure 7. *Wiring diagram 2. For the RTC room controller.*

1. Supply air diffuser
2. Exhaust air diffuser
3. Presence detector (extra)
4. Duct temperature sensor (extra)

TECHNICAL DATA

- The specified sound levels dB(A) are applicable to rooms with an equivalent sound absorption area of 10 m^2.
- The throw $l_{0.2}$ is measured under isothermal discharge conditions.
- Recommended max. permissible temperature below room temperature is 12 °C.
- 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 calculation software. ProAir is available for downloading from our website.

Sound data - ASD + ALE 1 - Supply Air

Sound power level L_W(dB)
Table K_{OK}

Size	Mid-frequency (Octave band) Hz							
ASDa + ALEa 1	63	125	250	500	1000	2000	4000	8000
160-600	-1	-2	-3	0	-2	-4	-13	-20
200-600	2	4	-1	2	-1	-8	-15	-15
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL (dB)
Table ΔL

Size	Mid-frequency (Octave band) Hz							
ASDa + ALEa 1	63	125	250	500	1000	2000	4000	8000
160-600	24	17	17	20	25	20	17	15
200-600	20	12	15	20	25	19	18	16
Tol. ±	2	2	2	2	2	2	2	2

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Engineering graphs - ASD with ALE 1 - Supply Air

Air flow - Pressure drop - Sound level - Throw

- The graphs are not to be used for commissioning.
- The dB(A) values are applicable to rooms with normal acoustic absorption (4 dB room attenuation).
- The dB(C) value is normally 6-9 dB higher than the dB(A) value. For more accurate calculations, see the calculation template in the chapter on Acoustics in the Technical Information section of this catalogue.
- The throw $l_{0.2}$ is specified for a 100% open gap. To obtain $l_{0.2}$ for other damper positions under identical pressure conditions, use the formula:

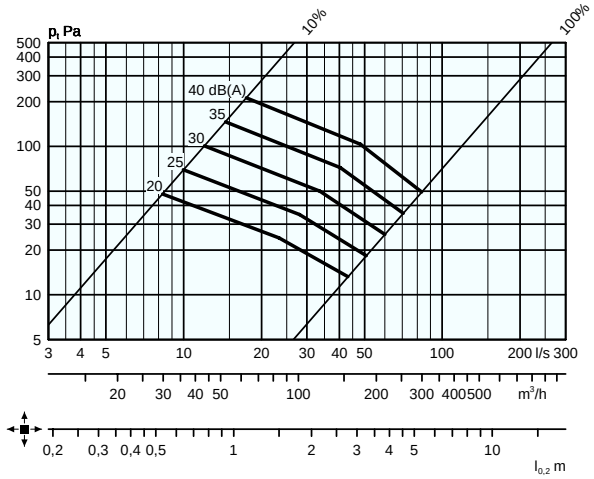
$$l_{0,2} = l_{0,2(100)} \sqrt{\frac{q_x}{q_{100}}} \text{ m}$$

Ex. ASD 160
What will the throw $l_{0.2}$ be for 20 l/s and 40 Pa constant pressure?
$l_{0.2}$ for 100% airflow (80 l/s) and 40 Pa constant pressure = 5.2 m.

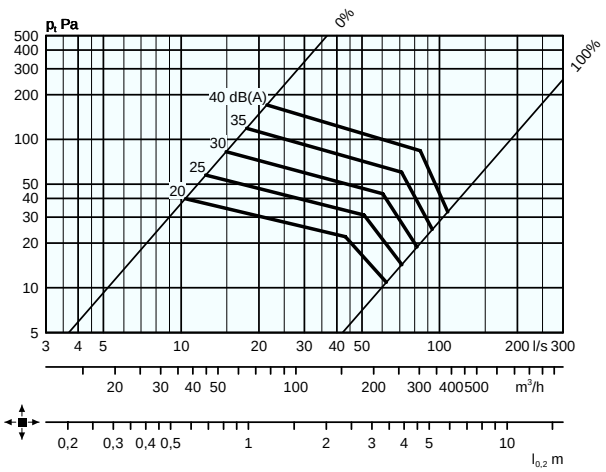
Answer :

$$l_{0,2} = 5,7 \sqrt{\frac{20}{90}} = 2,7$$

ASDa 160-600 + ALEa 1 160-160



ASDa 200-600 + ALEa 1 200-200



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DIMENSIONS AND WEIGHTS

ASDa

Size	A	ØD	B	C	E	Weight,kg
160	595	159	72	40	30	5.0
200	595	199	83	40	35	5.4

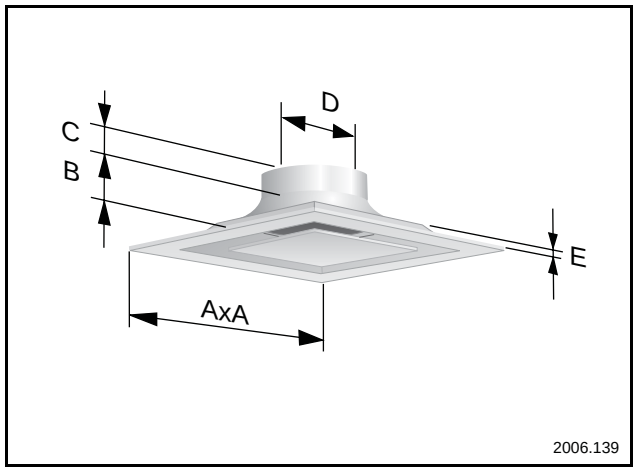

Figure 8. *ASD + ALE 1.*

ASDa + ALEa 1

Size	B	C	ØD	F	G	H	K	Weight,kg
160	404	288	159	283	195	380	100	7.8
200	504	332	199	329	235	475	115	10,3

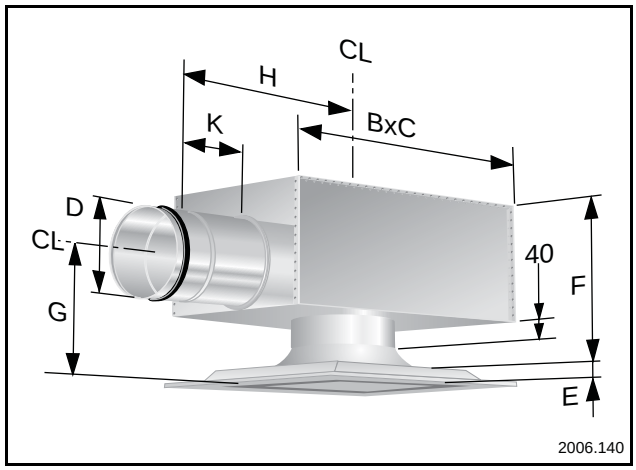

Figure 9. *ASD + ALE 1.*

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ORDERING KEY

Product designation

Square active air diffuser for ceilings	ASDa	-bbb	-600	-d
Size: Nom. connection dimension, mm:				
Nom. square dimension				
4-way pattern of diffusion 3-way pattern of diffusion				

Important! The max. and min. airflows must also be specified in the specification for the KCD room controller.

Accessories

Commissioning box		ALEa 1	-aaa - bbb
For ASDa	ALEa		
160	160-160		
200	200-200		

Control accessories:

RTC	Room controller
KCD	Room controller
KST	Temperature sensor
KSC	Carbon dioxide sensor
KSO	Presence detector

To be specified under each product datasheet.

SPECIFICATION EXAMPLE

Swegon's type ASDa square active ceiling terminal with ALEa commissioning box with the following functions:

- Constant discharge velocity
- Active opening
- Aerodynamic design
- Cleanable, can be opened
- Can be recessed in a modular suspended ceiling "flush" installation
- Powder paint sprayed and baked white finish
- Guaranteed airflow rates with small tolerances

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