

# OPL

Supply air ramp with Hepa-filter for operating theatres



## QUICK FACTS

- Air flow specially designed for operating theatres
- Suitable for general surgery
- Pressure outlet for filter guard
- Easy access to filters
- Cleanable
- Equipped with Hepa-filter H14
- Standard colour White RAL 9003
  - 5 alternative standard colours
  - Other colours upon request

AIR FLOW - PRESSURE - SOUND LEVEL - AIR VELOCITY			
OPL Size		Velocity through filter 0.45 m/s	
3500 (x2)	q (l/s)	650	
	q (m³/h)	2340	
	p (Pa)	110	
	L(dB(A))	35	

*This data is valid for a complete installation with two ramps.*

# Technical description

## Design

The supply air ramp consists of two filter boxes containing Hepa-filters with rubber seals. The connecting section to the duct system has a spigot sealed with a rubber ring. There are five perforated diffuser panels under the connecting section and the two filter boxes. Each of the panels is attached with hinges and can thus be opened easily. All five panels have a fixed spread pattern to obtain the cleanest possible zone of air around the operating table.

## Materials and surface treatment

The whole unit is manufactured in galvanized sheet steel, including the connecting section. The filter boxes and the diffuser panels are painted inside and outside.

- 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

### Filter:

Hepa-filter H14 with rubber seal.

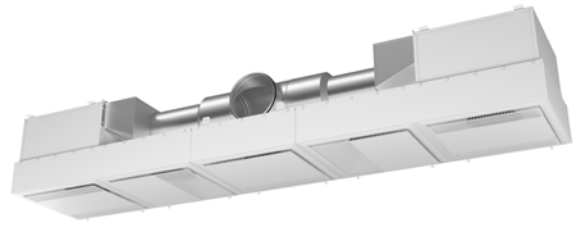
Separation efficiency: 99.995 % @ MMPS, EN 1822.  
Size 610 x 610 x 115.

## Planning

The supply air ramps are installed in pairs parallel to the operating table. The distance between the panels can vary between 2200 - 2600 mm. These stipulations are to ensure the optimum air distribution within the operating zone. The remaining parts of the ramps, i.e. the filter boxes and the connecting section, are installed above the suspended ceiling. The underside of the ramp must be at least 100 mm from the underside of the suspended ceiling. The filters are removed through the outer diffuser faces. Units for the evacuation of exhaust air should be placed at low level in the room but at least 150 mm from the floor. To control the flow of air in the room it is recommended that flow control products such as a DCV regulator or flow control are used in the duct system before the ramps. See Figures 1 and 2.

## Area of use

Usually used in so-called general surgery, which is simpler operations during daytime where CFU content may be at 50-100 particles / m<sup>3</sup>. (CFU = number of bacteria-carrying particles per cubic meter). The supply air ramp provides mixing. This technique has also been shown to provide significantly lower CFU levels if higher demands on staffing, clothing, air locks etc.



## Installation

The supply air ramp is fitted with reinforced eye bolts for attaching to the ceiling (see dimensions diagram). Angle brackets for attaching to the suspended ceiling are not supplied with the ramp. The ramps are installed centrally/symmetrically in the room on both sides of the operating table and parallel to it. To achieve the conditions described in the technical data, the underside of the ramps must be between 2400 - 2800 mm above the floor and the distance between the two ramps in the ceiling must be between 2200 - 2600 mm. See Figures 1 and 2.

## Commissioning

It is recommended that the air flow is adjusted with the aid of flow control products. These are placed in the duct system before the supply and exhaust air units in the operating theatre. There is a pressure outlet for the filter guard on the OPL.

## Maintenance

- The diffuser can be cleaned, if necessary, using lukewarm water with dishwashing detergent or with alcohol solution.
- The filter is replaced by unsnapping the springmounted diffuser face. Release the filter fasteners and remove the filter.
- Recommended final residual pressure: 2x initial pressure drop for the product with filter.
- The filter may be subjected to a maximum pressure drop of 500 Pa. NOTE! The degree of separation is impaired at a high flow/pressure, see the diagram for the recommended working range.

## Environment

The Declaration of construction materials is available at [www.swegon.com](http://www.swegon.com).

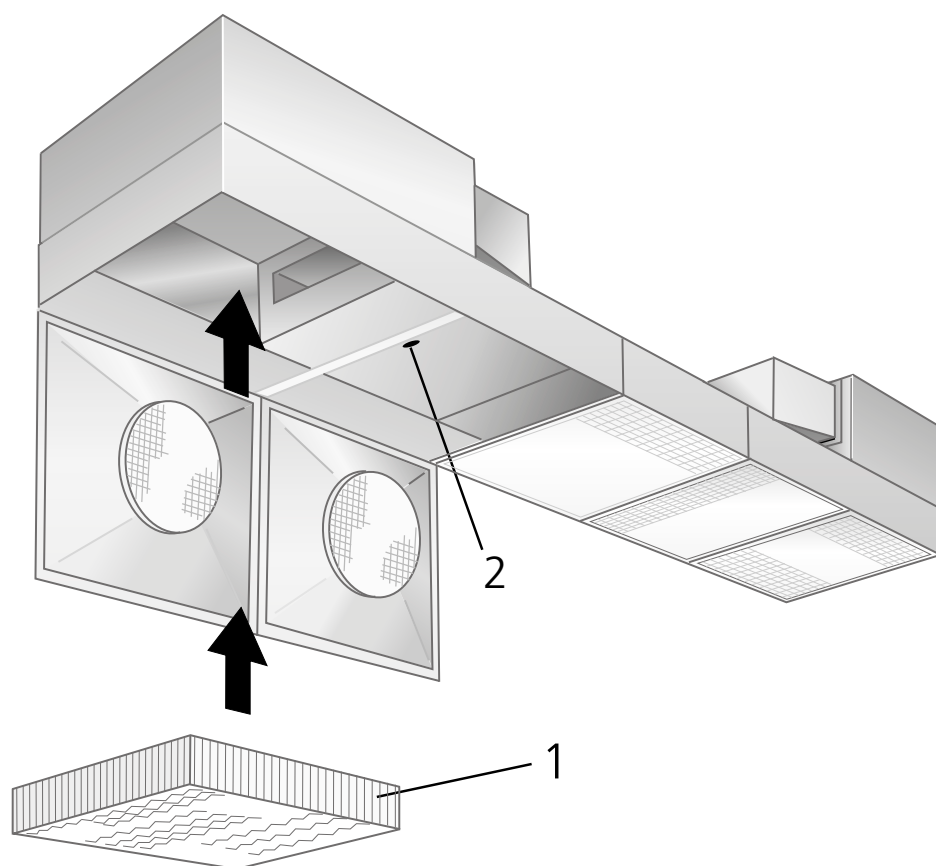


Figure 1. Installation OPL.

1. Filter

2. Measurement tapping for DOP test<sup>\*)</sup> and pressure measurement across the filter.

<sup>\*)</sup>Test of leakage on the product and check of the filter's particle separation efficiency with DOP testing.

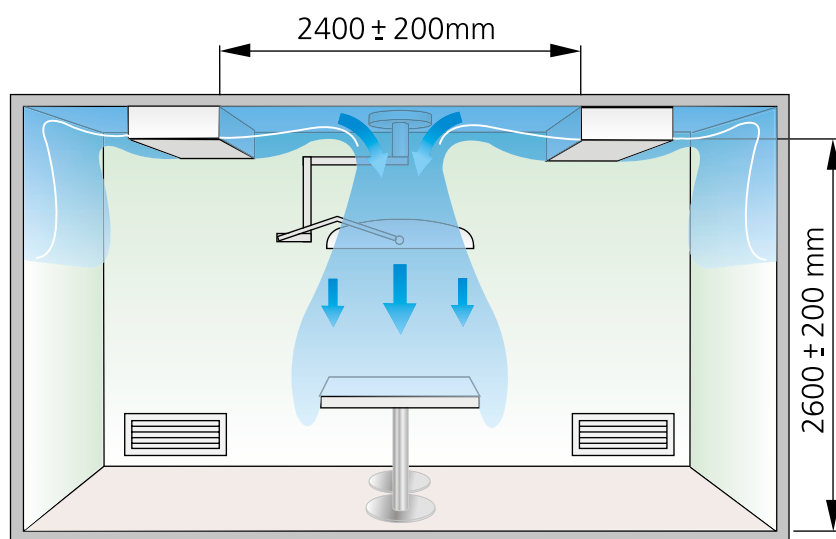


Figure 2. Example of installation for optimum performance.

The figures show the flow principle and the isovel limit for 0.2 m/s and  $\Delta t -3$  K.

## Sizing

- Sound pressure level dB(A) applies to rooms with 10 m<sup>2</sup> equivalent sound absorption area.
- Sound attenuation ( $\Delta L$ ) below is shown in the octave band. Orifice attenuation is included in the values.

$L_W$  = Sound power level

$L_{p10A}$  = Sound pressure level dB (A)

$K_{OK}$  = Correction for producing the  $L_W$  value in the octave band

$L_W = L_{p10A} + K_{OK}$  gives the frequency divided octave band

## Sound data

### Supply air

#### Sound power level $L_W$ (dB)

Table  $K_{OK}$

Size	Mid-frequency (octave band) Hz							
OPL	63	125	250	500	1000	2000	4000	8000
3500	6	3	0	2	1	-9	-17	-18
Tol. $\pm$	2	2	2	2	2	2	2	2

#### Sound attenuation $\Delta L$ (dB)

Table  $\Delta L$

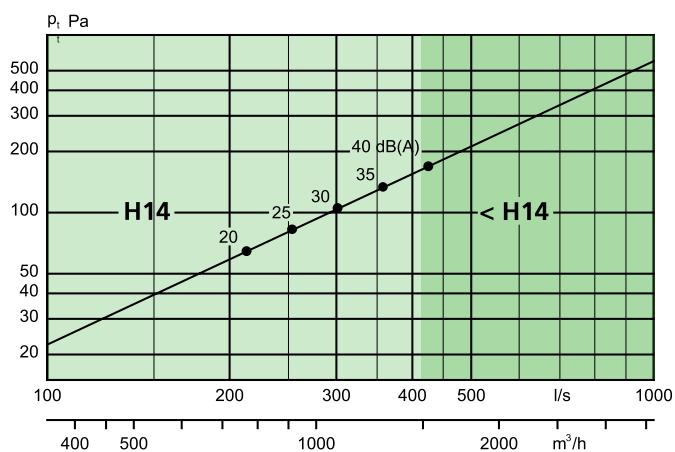
Size	Mid-frequency (octave band) Hz							
OPL	63	125	250	500	1000	2000	4000	8000
3500	15	9	2	4	4	6	7	11
Tol. $\pm$	2	2	2	2	2	2	2	2

## Engineering graphs

### Supply air - Air flow - Pressure drop - Sound level

- The graph illustrates data for a single OPL with a Hepa-filter. Two OPL units are normally installed in a room, in which case the sound level increases by 3 dB.
- The dB(A) values are for rooms with normal acoustic absorption (4 dB).
- The dB(C) value is normally 6-9 dB higher than the dB(A) value.
- The light area shows recommended working area to ensure filter efficiency (class H14)

#### OPL 3500 - One panel



# Dimensions and weights

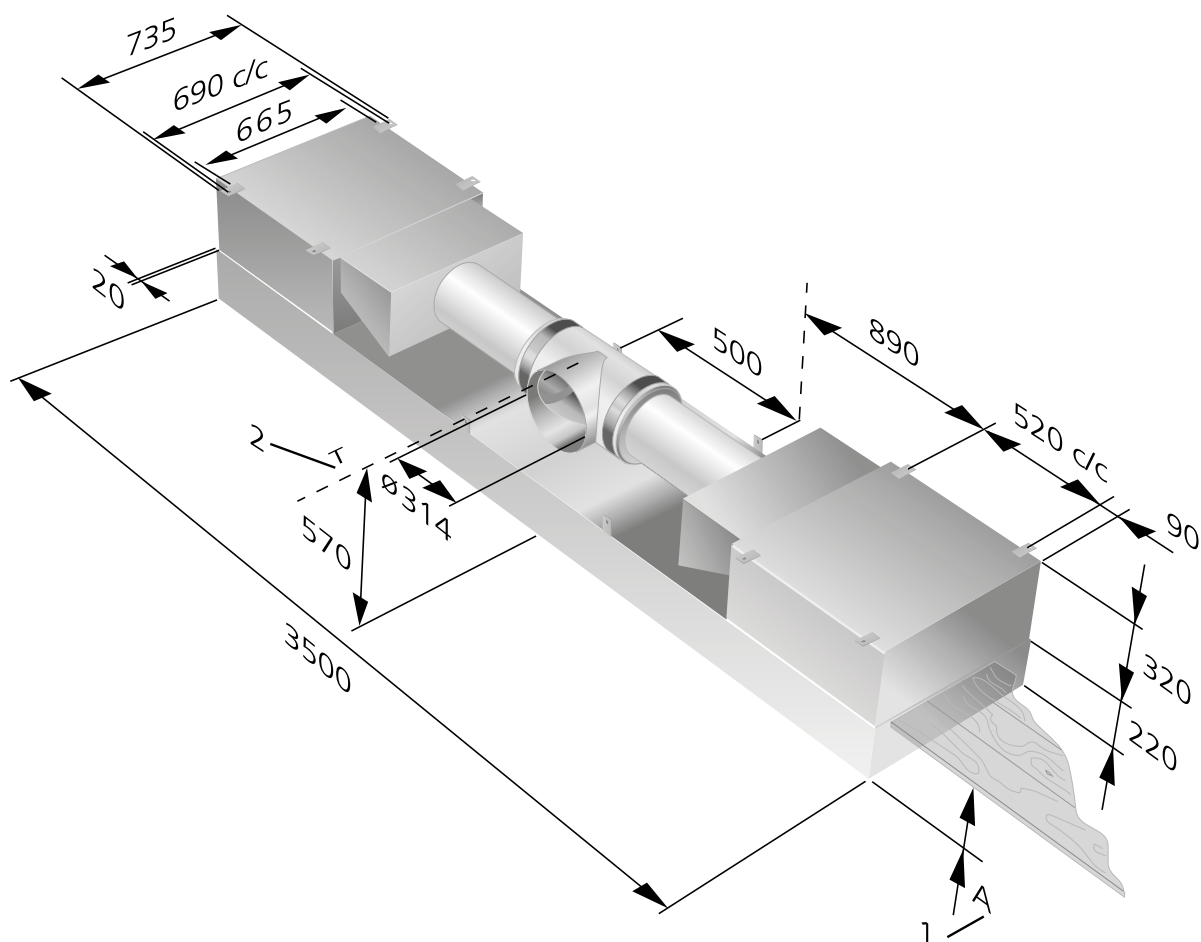


Figure 3. Dimensions.

1. The distance A to the suspended ceiling can vary between 100 - 200 mm. Angle profiles for attaching to the OPL are not supplied with the unit.
2. T = Top edge of duct.

Weights: 165 kg including the filter.

## Order key

### Product

Supply air ramp

OPL

b

aaaa

Version

Size: 3500

## Specification example

Swegons supply air ramp for operating theatres, of type OPL, having the following functions:

- Specially designed spread pattern.
- Hepa-filter.
- Pressure outlet for filter guard.
- Painted interior.
- Can be opened completely for cleaning.
- Powder coated in white, RAL 9003/NCS S 0500-N.

Size:

OPLb aaaa

xx items