



MEDICLEAN®

Optimized Operating Theatre Clean Air Canopies Type ULA.4 and Type FFA.4



Weiss Klimatechnik GmbH
Geräte- und Anlagenbau



Optimized OT Clean Air Canopies



Your Partner for Tomorrow's OT Air Supply Systems

For over four decades, the Weiss company has been setting research and development standards in air-conditioning systems for the most demanding applications. In the seventies and eighties, the Weiss supported air nozzle canopy became a synonym for OT canopies. In the eighties, Weiss implemented laminar flow solutions.

In 2007, Weiss is setting standards in the development of OT air-conditioning systems again, with the optimized ULA.4 and FFA.4 canopies. Weiss OT clean air systems are functioning safely and reliably in more than 6,000 operating theatres around the world. With their perfect design, in accordance with the latest scientific findings, these systems are among the most modern and reliable installations anywhere.

Deciding on Weiss – A Good Choice

If you make decisions about OT air-conditioning equipment, whether as a hospital operator, the head of technical services, the architect, or as a specialist planner, you should always consider a solution from Weiss Klimatechnik as one of the options.

The latest concepts in room air supply, to the national and international standards VDI 2167, DIN 1946 T4, HTM 03-01 and SNIP

Modern hospital hygiene focuses its interest in air-conditioning on a limited protection zone, in which air-borne germs must be excluded rigorously from operation wounds, and in which patients may continue to pose concrete dangers (as sources of the spread of infections to the surroundings). For this OT area, it is required that the entire aseptic environment of surgery in operating rooms, including the tables for materials and instruments, a free zone for clean room hand-overs of sterilized materials and of the OT team in sterilized garb be shielded securely from the surroundings by a sufficiently large low-turbulence displacement air flow.

Low-turbulence Displacement Flow

New guidelines emphasized the importance of low turbulence in this respect. In order to ensure the necessary air purity in operating theatres or other surgery rooms with strict hygienic requirements (air-borne particles and germs), very high volume flows of air with the necessary degree of purity are required. Energy-efficient low-turbulence displacement circulating air canopies can be employed for this purpose.



Weiss OT Clean Air Canopy. Photo courtesy of the pediatric cardiac center of the Justus Liebig University hospital, Gießen, Germany



OT Clean Air Canopy ULA.4

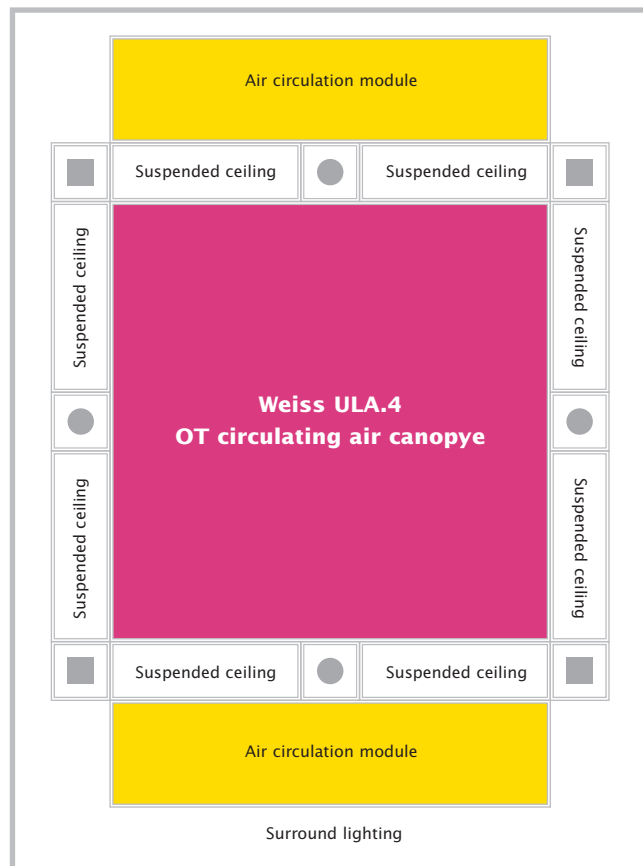


ULA.4 – The Optimized Low-turbulence Circulating Air Canopy

The ULA.4 belongs to the new generation of OT clean air canopies. It is installed as a unit inside the suspended ceiling of the OT, and consists of an air outlet element (single-layer, or double-layer or differential flow if required, polyester fabric), the H14 (or H13) HEPA filters to DIN EN 1822 at the ends, an anodized aluminum or stainless steel plenum with sound absorbers, and air circulation modules. The air circulation modules contain, in the direction of flow, a circulating air intake (stainless steel microfabric or polyester fabric), an F9 filter to DIN EN 779, a sound absorber, fans with non-return flap valves, and the air supply connection.

Mode of operation: The room air is taken in at the air circulation module, mixed in the module with the fresh air-conditioned by the air conditioner, and discharged into the plenum chamber located above the filter canopy. The clean air, after filtering, then flows into the OT, and forms the protection zone. The ideal clean air outlet of the low-turbulence ULA.4 canopy possesses a uniform outflow area without dead zones, and peripheral skirting of laminated or safety glass or plexiglass that runs down to the height of the door lintels.

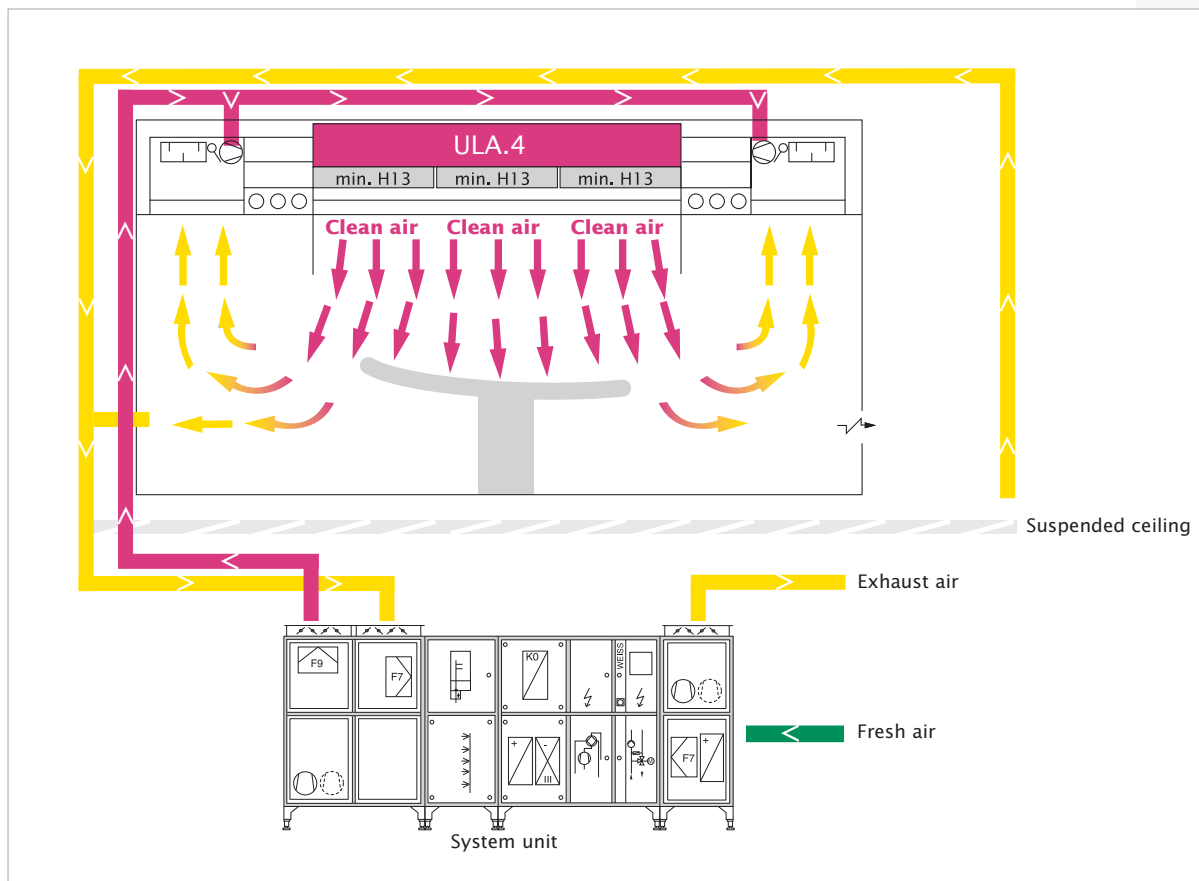
ULA.4 – The “Wall to Wall” Solution



Top view: Weiss ULA.4 canopy installation
 “Wall to Wall” solution completed with other products

■ Media bridge
 ● Canopy supply unit

The ULA.4 System



Schematic diagram of the mode of operation of an ULA.4 clean air canopy in an OT . The protection zone (the entire aseptic surroundings of a surgical operation, including the materials and instruments tables, a free zone for clean room hand-over of sterilized material and the OT team in sterile garb) is shielded by a sufficiently large low-turbulence displacement air flow.

Advantages of the New ULA.4

- Circulating and fresh air is mixed in the air circulation module before entering the canopy plenum
- Completely uniform outflow characteristics
- Sound pressure level meets guidelines
- No fire load
- Flexible mounting (no fixed points)
- Gauging heads for emitting and measuring test aerosol positioned in clear view and centrally
- Variable frame system with maximum dimensional stability
- Can be integrated into clean room type, flush “wall to wall” system



ULA.4 – Dimensions and Design

Size of Discharge Area of ULA.4 Canopy Unit

The size of the ULA.4 canopy's discharge area depends on the functional requirements of the operating theatres. The operating table, the instrument tables, and the OT personnel in sterile garb form the sterile zone, which must be covered by the discharge area. This sterile zone varies in size according to the responsibilities of the clinic or hospital. Since most OTs are multifunctional, a discharge area of at least 3.0 m by 3.0 m is advisable.

The necessary size of discharge area is best determined jointly by the users and hygiene specialists. The necessary volume of supply air depends on the heat loads in the OT.

ULA.4 Size	Length A (mm)	Width B (mm)	Clean air volume flow (m ³ /h) acc. to DIN 1946 T4/VDI 2167 ¹⁾	Circulating air portion (m ³ /h)	Clean air volume flow (m ³ /h) acc. to HTM 03-01 ²⁾	Circulating air portion (m ³ /h)	Weight (kg) ³⁾	Weight (kg) ⁴⁾	Qty partitions
26/26	2,575	2,575	5,800	3,800	9,000	6,000	700	740	1
26/29	2,575	2,879	6,500	4,300	10,600	6,500	720	760	1
29/29	2,879	2,879	7,200	4,700	11,900	8,000	770	810	1
32/26	3,185	2,575	7,100	4,600	11,800	6,800	770	810	1
32/29	3,185	2,879	8,000	5,200	13,200	8,000	790	830	1
32/32	3,185	3,185	8,800	5,700	14,400	8,400	830	870	2
35/26	3,489	2,575	7,800	5,000	12,900	7,500	810	850	1
35/29	3,489	2,879	8,800	5,700	14,400	8,400	840	880	1
35/32	3,489	3,185	9,700	6,300	16,000	9,300	850	890	2

¹⁾ At outflow speed of 0.24 m/s

²⁾ At outflow speed of 0.38 m/s

³⁾ At overall height 450 mm, module height 550 mm

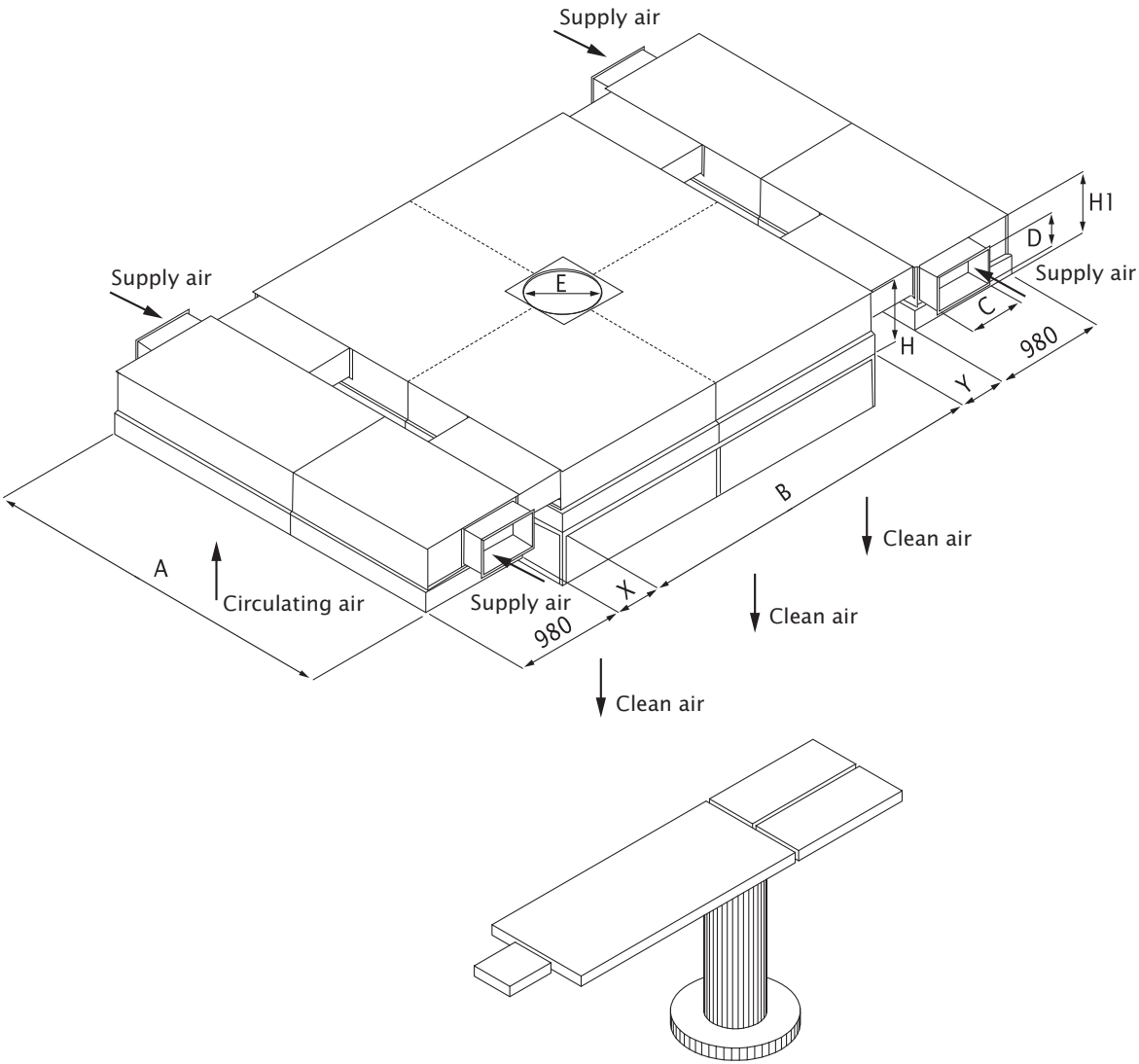
⁴⁾ At overall height 550 mm, module height 690 mm

Other unit sizes available on request. We reserve the right to make technical improvements.

Type code (example)

ULA.4 32 / 32 / 5

- 5** = Height of clean air canopy (550 mm)
- 32** = Length of clean air canopy bay (3,185 mm)
- 32** = Width of clean air canopy bay at circulating air module side (3,185 mm)
- 4** = Version number
- ULA** = Model designation for circulating air outlet canopy



Ceiling height H (mm)	Height circulating air module H1 (mm)	No. of nozzles	Width of nozzles C (mm)	Height of nozzles D (mm)	Luminaire penetration E (mm)
450	550	4	350	150	578
550	550	4	350	150	578
550	690	4	350	270	578

X/Y = 300 mm (for two-lamp Trilux luminaire) or 416 mm (for three-lamp Trilux luminaire)

OT Clean Air Canopy FFA.4



FFA.4 – The New Optimized Filter Area Canopies

The new FFA.4 is one of the optimized OT clean air canopies. It is employed mainly where there is no room available for air circulation modules, due to the size of the OT.

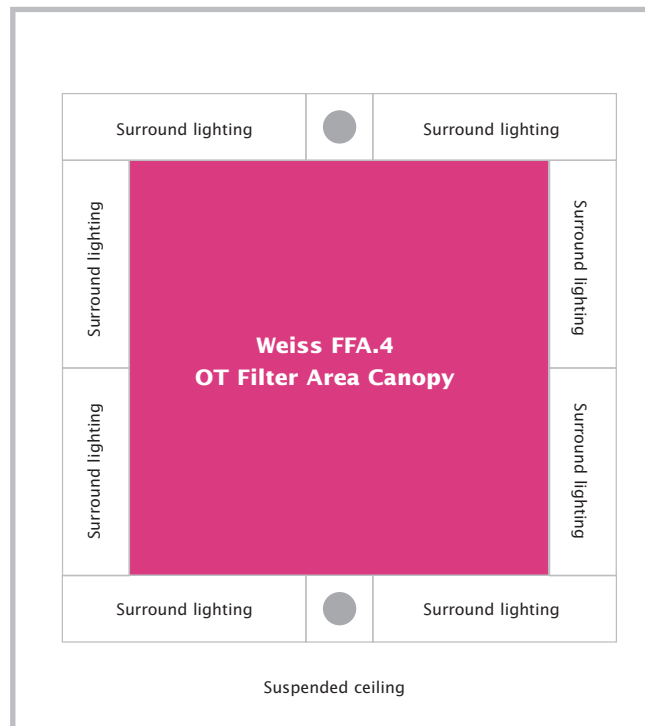
As in the ULA.4 circulating air canopy, in the FFA.4 the clean, filtered air also flows from above into the OT, forming a protection zone (operating and instrument table and working area for the surgical team in sterile clothing).

The FFA.4 is installed according to the tried-and-proven “wall to wall” system.

FFA.4 canopies feature full-surface HEPA filters installed horizontally at the ends, which are located directly ahead of the fabric diffusers (single-layer or differential flow). The horizontal HEPA filter area and the fabric provide a uniform diffusion of the air.

The resistance of the HEPA filters in the filter area canopies is considerably less than that of end-mounted channel filters, and averages 60 Pa at an outflow speed of 0.24 m/s.

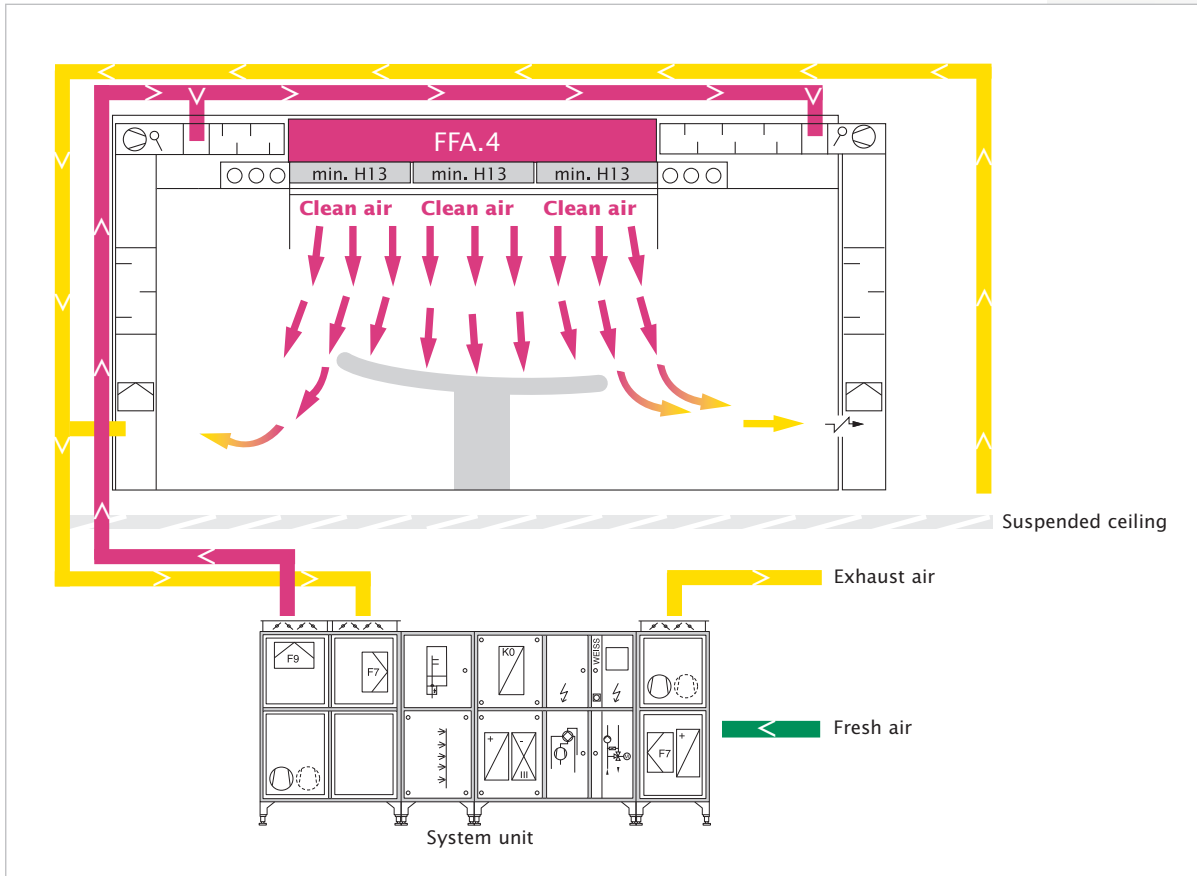
The FFA.4 “Wall to Wall” Solution



Top view: Weiss FFA.4 canopy installation
“Wall to Wall” solution completed with other products

● Canopy supply unit

The FFA.4 System



Schematic diagram of the mode of operation of an FFA.4 clean-air canopy in an OT . The protection zone (the entire aseptic surroundings of a surgical operation, including the materials and instruments tables, a free zone for clean room hand-over of sterilized material and the surgical team in sterile garb) is shielded by a sufficiently large low-turbulence displacement air flow.

Advantages of the New FFA.4

- Gauging heads for measuring test aerosol in unconditioned air positioned in clear view and centrally
- Variable frame system with maximum dimensional stability
- Can be integrated into clean room type, flush “wall to wall” system



FFA.4 – Dimensions and Design

FFA.4 Size	Length A (mm)	Width B (mm)	Clean air volume flow (m ³ /h) acc. to DIN 1946 T4/VDI 2167 ¹⁾	Width of nozzles C ³⁾ (mm) (450 mm)	Width of nozzles C ³⁾ (mm) (300 mm)	Clean air volume flow (m ³ /h) acc. to HTM 03-01 ²⁾	Width of nozzles C ³⁾ (mm) (450 mm)	Width of nozzles C ³⁾ (mm) (550 mm)	Weight (kg) (450 mm)	Weight (kg) (550 mm)
14/14	1,355	1,355	1,600	800	2 x 800	2,600	2 x 700	2 x 500	150	170
14/18	1,355	1,659	2,000	1,000	2 x 1,000	3,200	2 x 800	2 x 600	170	190
14/20	1,355	1,965	2,300	1,100	2 x 1,100	3,800	2 x 1,000	2 x 700	190	210
14/24	1,355	2,269	2,700	1,300	2 x 1,300	4,400	2 x 1,100	2 x 800	210	230
14/26	1,355	2,575	3,100	1,500	2 x 1,500	5,000	2 x 1,200	2 x 900	230	250
18/18	1,659	1,659	2,400	1,200	2 x 1,200	3,900	2 x 1,000	2 x 700	190	210
18/20	1,659	1,965	2,900	1,400	2 x 1,400	4,600	2 x 1,200	2 x 800	210	230
18/24	1,659	2,269	3,300	1,600	2 x 1,600	5,400	2 x 1,300	2 x 900	230	250
18/26	1,659	2,575	3,700	1,800	2 x 1,800	6,100	2 x 1,500	2 x 1,100	250	270
18/29	1,659	2,879	4,200	2,000	2 x 2,000	6,800	2 x 1,700	2 x 1,200	260	280
20/20	1,965	1,965	3,400	1,600	2 x 1,600	5,500	2 x 1,400	2 x 900	230	250
20/24	1,965	2,269	3,900	1,900	2 x 1,900	6,400	2 x 1,600	2 x 1,100	250	270
20/26	1,965	2,575	4,400	2,100	2 x 2,100	7,200	2 x 1,800	2 x 1,200	260	280
20/29	1,965	2,879	4,900	2,400	2 x 2,400	8,100	2 x 2,000	2 x 1,400	290	310
20/32	1,965	3,185	5,500	2,700	2 x 2,700	9,000	2 x 2,200	2 x 1,500	300	320
24/24	2,269	2,269	4,500	2,100	2 x 2,100	7,400	2 x 1,800	2 x 1,300	260	280
24/26	2,269	2,575	5,100	2,400	2 x 2,400	8,400	2 x 2,100	2 x 1,500	290	310
24/29	2,269	2,879	5,700	2,700	2 x 2,700	9,400	2 x 2,300	2 x 1,600	300	320
24/32	2,269	3,185	6,300	2,900	2 x 2,900	10,400	2 x 2,500	2 x 1,800	320	340
24/35	2,269	3,489	6,900	2 x 1,600	3 x 2,100	11,300	3 x 1,900	3 x 1,300	340	360
26/26	2,575	2,575	5,800	2 x 1,400	3 x 1,900	9,900	3 x 1,700	3 x 1,100	300	320
26/29	2,575	2,879	6,500	2 x 1,600	3 x 2,100	10,600	3 x 1,800	3 x 1,200	320	340
26/32	2,575	3,185	7,100	2 x 1,800	3 x 2,300	11,800	3 x 2,000	3 x 1,300	340	360
26/35	2,575	3,489	7,800	2 x 1,900	3 x 2,400	12,900	3 x 2,100	3 x 1,400	360	380
29/29	2,879	2,879	7,200	2 x 1,800	3 x 2,300	11,900	3 x 2,000	3 x 1,300	340	360
29/32	2,879	3,185	8,000	2 x 1,900	3 x 2,600	13,200	3 x 2,200	3 x 1,500	360	380
29/35	2,879	3,489	8,700	2 x 2,100	4 x 2,100	14,400	4 x 1,800	4 x 1,200	380	400
32/32	3,185	3,185	8,800	2 x 2,100	4 x 2,200	14,400	4 x 1,800	4 x 1,200	380	400
32/35	3,185	3,489	9,700	2 x 2,400	4 x 2,400	16,000	4 x 2,000	4 x 1,400	400	420
35/35	3,489	3,559	10,800	2 x 2,700	4 x 2,700	17,800	4 x 2,200	4 x 1,600	420	440

¹⁾ At 0.24 m/s outflow speed

²⁾ At 0.38 m/s outflow speed

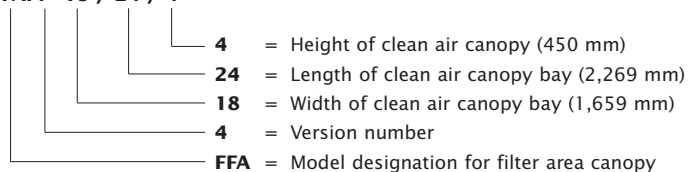
³⁾ Without slatted flap; with slatted flap, nozzle width on request

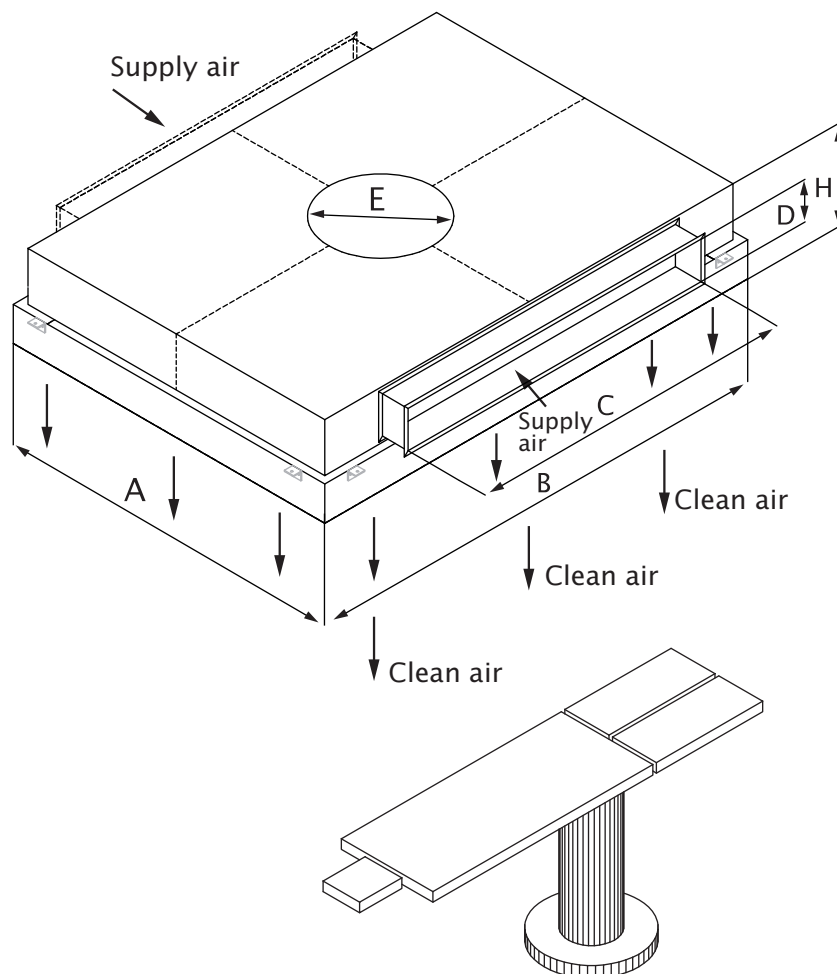
Size 20/20 and up two-part, size 32/32 and up four-part

Other unit sizes available on request. We reserve the right to make technical improvements.

Type code (example)

FFA.4 18 / 24 / 4





Canopy height H (mm)	Nozzle height D (mm)	Luminaire penetration E (mm)
300	80	578
450	200	578
550	300	578

Weiss: OT Clean Air Canopies and Air Conditioners from a single source

Weiss is the only supplier in the world which offers innovative OT clean air canopies, high-quality air conditioners and air-conditioning systems of its own manufacture as system solutions.

Your advantage: at Weiss, you get everything from a single source.

Choose an ULA.4 or FFA.4 canopy unit, and combine it with one of our reliable Weiss air conditioners.

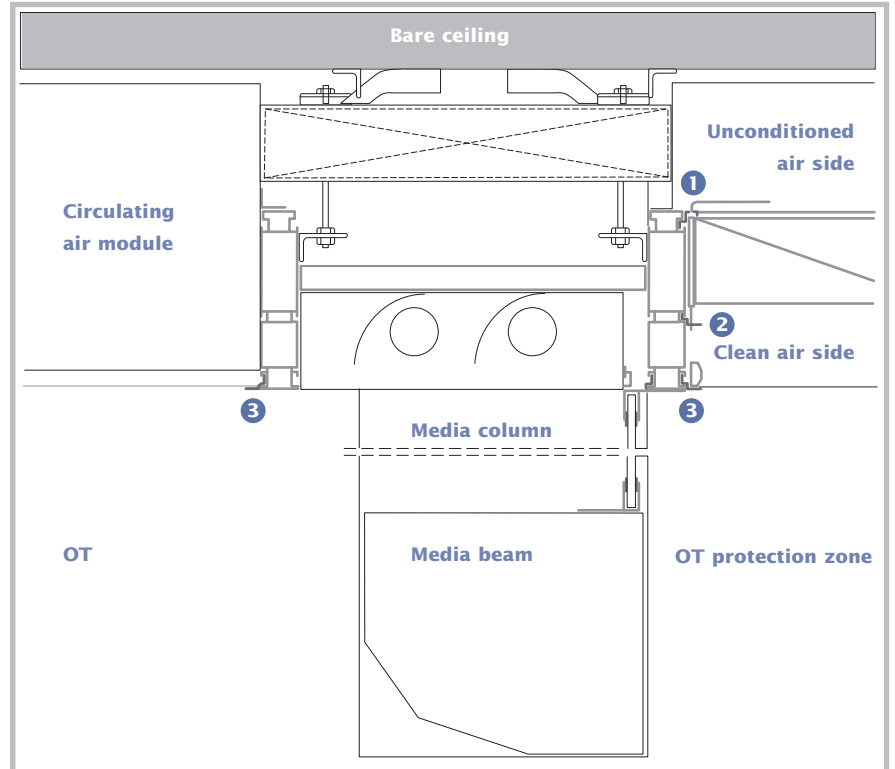
Experienced engineers and plant specialists advise you from the start, ensuring customized, well thought-out concepts and their implementation.



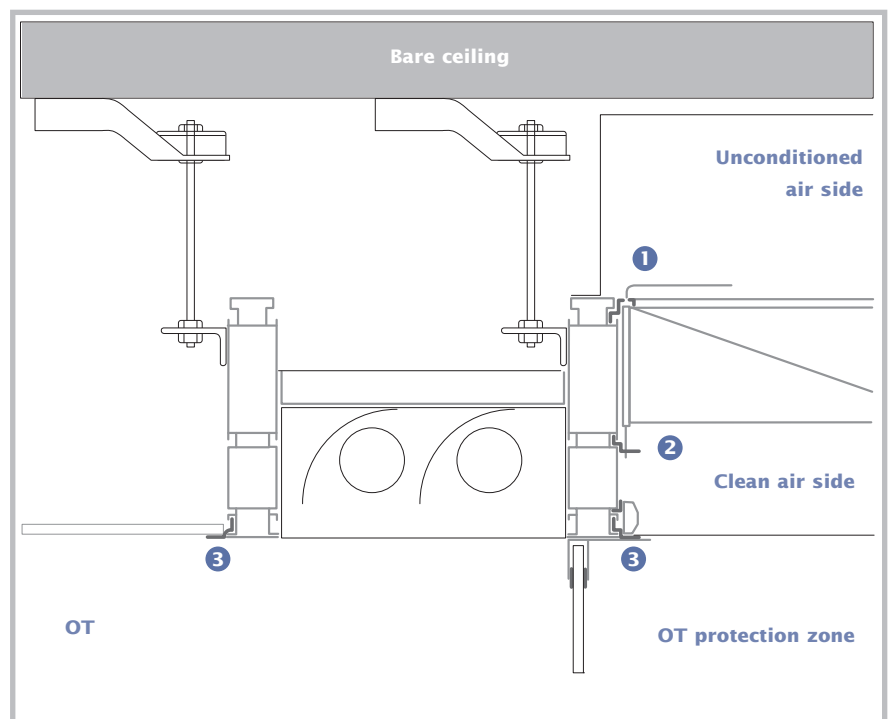
Connection Details



**Canopy Connection Variant:
OT canopy, media bridge, lighting, circulating air module**



**Canopy Connection Variant:
OT canopy, skirting, lighting, suspended ceiling**





An alternative to the circulating air canopy with circulating air modules suspended from ceiling

Circulating air wall modules can be mounted in front of the wall, as an integral component of a lightweight partition wall, or in the adjoining room.

Advantages of installation outside the OT:

- Reduction of sound pressure level, since fans are outside the OT.
- Servicing and maintenance work can be done from outside the OT.
- Optional use of a dry cooler is possible.



Perfectly Matched Components

Complete Solution with all Components

With its OT clean air canopies, Weiss offers the complete system from wall to wall, with all the associated components.

- Medical supply system as an ultra-modern media bridge
- Air-guide skirting of laminated or safety glass or plexiglass
- Hygienic recessed luminaires, connected directly to the OT canopy bay
- Optimized flow OT luminaires

- Suspended ceilings of painted steel sheeting or other materials that meet the hygiene requirements
- Exhaust air extraction via our OT exhaust air cabinets, type OPAS, including our fluff separators, for installation in corners or as an integral component of a lightweight partition wall

Good Reasons for a Weiss OT Clean Air Canopy as the Solution

The optimized Weiss OT clean air canopies ULA.4 and FFA.4 meet the criteria of the latest guidelines.



OT-clean air canopy with air-guide skirting of laminated safety glass or plexiglass. Hygienic recessed luminaires (protection class IP 65), circulating air suction of painted perforated sheet metal.



Media bridge: System "Modultechnik", with customized equipment and fittings



Detail view of pivoting mount with equipment support



Competent Immediate information

We will be pleased to advise you about:

- The new generation of Weiss clean air canopies ULA.4 and FFA.4
- Air conditioners
- System conceptual designs
- Media bridges
- Data remote control
- Installation, service and maintenance

Hygiene Technology Centre

Visit us at our Hygiene Technology Centre (HTZ Hygiene-Technologie-Zentrum) in Reiskirchen-Lindenstruth.

Here, we will present on site the new generation of our clean air canopies, installed in our specimen operating theatre.

Weiss Klimatechnik GmbH
Geräte- und Anlagenbau
Greizer Straße 41–49
D-35447 Reiskirchen-Lindenstruth

Telefon: +49 (6408) 84 71
Telefax: +49 (6408) 84 87 20

info@wkt.com
www.wkt.com