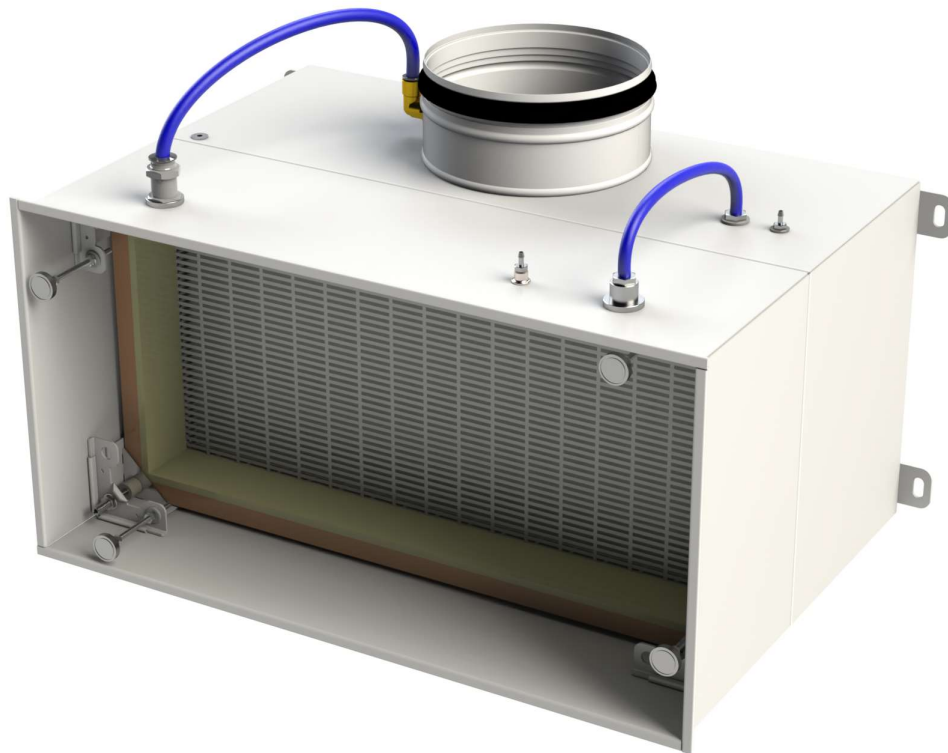




Particle filter box

FKW



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Particle filter box FKW

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Particle filter box FKW

Description

The particle filter unit, type FKW, has been particularly developed for use in cleanrooms required by the pharmaceutical, electrical, precision mechanical and optical industry in hospitals and laboratories. The integrated particle filter (to DIN EN 1822) removes particles, radioactive dust, mist, bacteria, viruses, etc., from the supply or return air. This ensures that the incoming and outgoing air flows are extremely clean and germ-free.

The filter box type FKW consists of electrolytically galvanised sheet steel painted to RAL 9010 (white). A filter pressure device in the filter box ensures a safe seal. As a standard feature, a differential pressure and aerosol monitoring device (-D1) is integrated into the particle filter box.

Optionally, the particle filter boxes (except type FKW-...-Q-...) are additionally equipped with a shut-off damper sealing airtight. With the types FKW-...-H-...-M001 and FKW-...-V-...-M001, this shut-off damper can be adjusted manually from below after the air diffuser is removed. The actuation of the FKW-...-H-...-Exxx-... with electrical actuator takes place via an actuator OPEN/CLOSED 24 V with or without spring return.

Leakage at closed damper blade according to DIN EN 1751, class 4, at a duct pressure of up to 1000 Pa.

Attention:

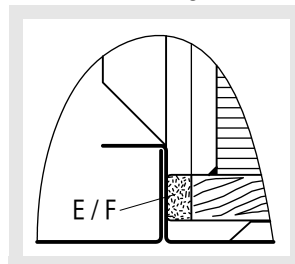
We would like to point out that we supply the filter boxes with integrated spacers for fitting the filter clamps and the diffuser assembly pole brace. This makes it possible to fit the diffuser without additional expense, even when the filter has not yet been inserted into the filter box.

The assembly of the air diffusers FDBB (FKW-...-74) is effected via magnetic fastening (-MB) as standard. This allows the diffusers to be easily taken off without tools for filter replacement and decontamination. There is also the option of concealed mounting (-VM). For air diffusers made of aluminium and stainless steel, only concealed mounting is possible (-VM), magnetic fastening (-MB) is not possible.

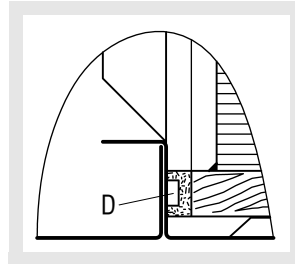
If required, the suitable particle filters can be included in the delivery.

Rubber seal on particle filter (for safe sealing)

without seal leakage monitoring system



with seal leakage monitoring system



E = Continuous seal (standard, PU-foamed)

D = U-profile seal

F = Flat seal (EPDM)

Tight seal test for terminal filters from H13 through leakage test according to DIN EN ISO 14644 and VDI 2083.

Particle filter box FKW

Construction

Filter box

- electrolytically galvanised sheet steel (-SB)
- painted inside and outside, RAL colour 9010 (white) (-9010)
- painted inside and outside, colour can be freely selected (- xxxx)
- Stainless steel V2A (-V2-0000, at an extra charge)

Shut-off damper

- Galvanised sheet steel (only available for -SB)
- Stainless steel V2A, 1.4301 (only available for -V2)

Differential pressure device/aerosol monitoring device (-D1)

- with measuring spigot inside the box, for hose connection with an outer diameter of 10 mm

Model

- FKW-1-... - for filter with frame depth = 90 mm (standard)
- FKW-2-... - for filter with frame depth = 150 mm
- FKW-...-H-...-M000-... - with vertical, round connection spigot, without shut-off damper.
- FKW-...-H-...-M001-... - with vertical, round connection spigot and manually adjustable shut-off damper.
Leakage at closed damper blade according to DIN EN 1751, class 4, at a duct pressure of up to 1000 Pa.
- FKW-...-H-...-Exxx-... - with vertical, round connection spigot and electrically (OPEN/CLOSED actuator) adjustable shut-off damper with/without spring return
Leakage at closed damper blade according to DIN EN 1751, class 4, at a duct pressure of up to 1000 Pa.
- FKW-...-V-...-M000-... - with horizontal, round connection spigot, with electrically adjustable shut-off damper.
- FKW-...-V-...-M001-... - with horizontal, round connection spigot and manually adjustable shut-off damper.
Leakage at closed damper blade according to DIN EN 1751, class 4, at a duct pressure of up to 1000 Pa.
- FKW-...-Q-... - with vertical, rectangular connection spigot, with connecting flange, without shut-off damper.
- FDBB-... - air diffuser FDBB (FKW-...-74) for filter boxes

For description of air diffusers, see pages 12 to 13.

Accessories

Seal leakage monitoring system (-P1)

- inside the box, for particle filters with U seal only.

Differential pressure device / aerosol monitoring device

- With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm (-D2).
- With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm and aerosol feeding device in the spigot of the box inside (-D3).
- With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with aerosol feeding device in the spigot of the box inside (-D4).
- With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with aerosol feeding device in the spigot on the outside (-D5).
- With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm and aerosol connection from the box inside to the on-site connection (-D6).

Differential pressure transducer (-U1)

- only available in connection with differential pressure / aerosol monitoring devices (-D2, -D3 and -D6).
- supplied loose or optionally mounted to box outside

Rubber lip seal (-GD1)

- Special rubber (not for FKW-Q-...)

Particle filter (FIL-...)

- Filter frame H = 90 mm (FKW-1 / FIL-FKW090-...) or 150 mm (FKW-2 / FIL-FKW150)
- UXS (FIL-...-2, standard) made of MDF wood. Without handle cover (-G0, standard) or with double-sided handle protection (-G1, at an extra charge).
- UXA (FIL-...-3), made of aluminium. With double-sided handle protection (-G1).
- Rubber seal on filter housing either with continuous seal (-E, standard), U-profile seal (-D) or flat seal (-F).
- Filter classes HEPA H13 (-H13, $\geq 99.95\%$) or HEPA H14 (-H14, $\geq 99.995\%$).
- Filter checked by means of oil thread test (-O, standard) or scan test (-S, at an extra charge) according to DIN EN 1822.
- Temperature-resistant up to 80°C. Filter wrapped in film

Antibacterial coating

- without coating (-AB0, standard)
- with coating (-AB1, at an extra charge)

Particle filter box FKW

Fastening

Magnetic fastening (-MB)

- only available as sheet steel model (-SB)
- standard for air diffuser FDBB-...-SB
- not available for air diffusers FDBB-...-AL and FDBB-...-V2

Concealed mounting (-VM)

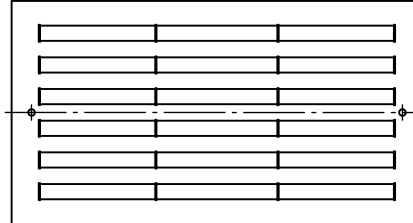
- pole brace fastening
- Standard for air diffusers FDBB-...-AL and FDBB-...-V2
- FDBB-...-SB at an extra charge.

Selection of air diffusers

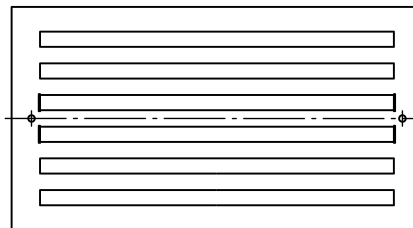
Air diffuser FDBB (FKW-...-74)

FDBB-A-Z1/Z2-... (Supply air)

FDBB-A-AB-... (Return air with blades)

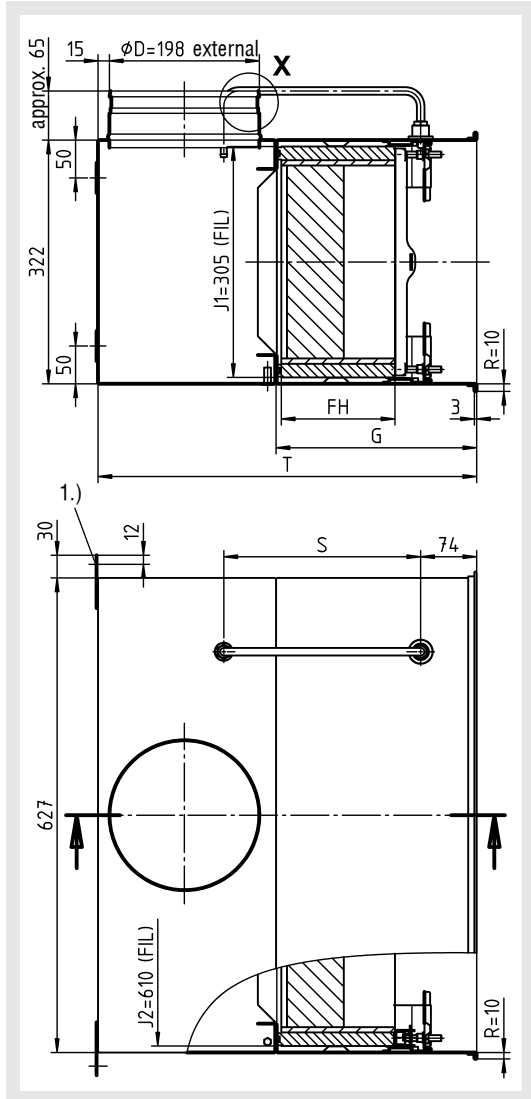


FDBB-A-AA-... (Return air, without blades)

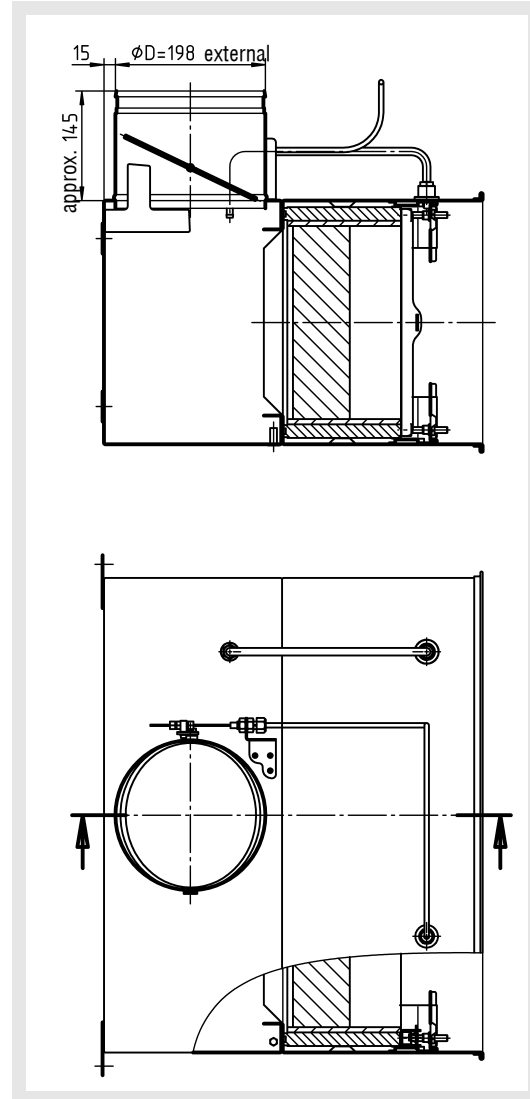


Particle filter box FKW Models and dimensions Dimensions

FKW-...-H-...-M000-D1-...-P0-...



FKW-...-H-...-M001-D1-...-P0-...



Available sizes

	Filter dimensions			T	S	G
	J1	J2	FH			
FKW-1-...-H-...	305	610	90	440	200	205
FKW-2-...-H-...			150	500	260	265

1.) = Mounting bracket with long hole $\varnothing 10 \times 20$

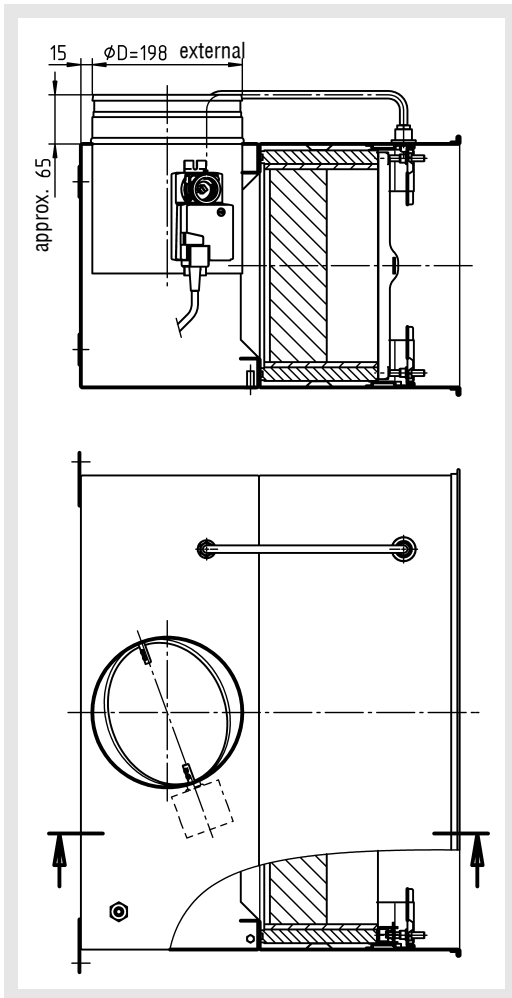
FIL = Particle filter

For seal leakage monitoring system/differential pressure device/
aerosol monitoring device, see pages 9 to 11.

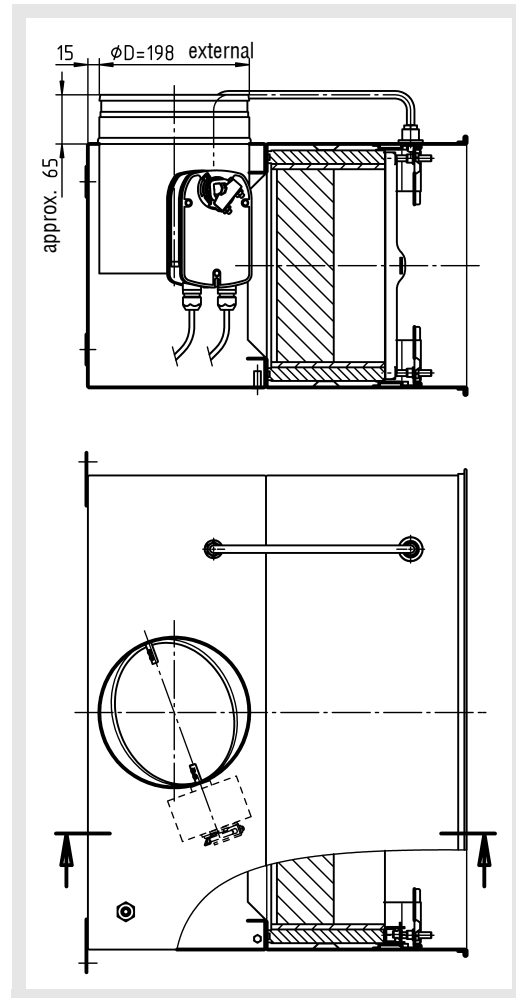
Particle filter box FKW

FKW-...-H-...-Exxx-D1-...-P0-...

Actuator without spring return



Actuator with spring return

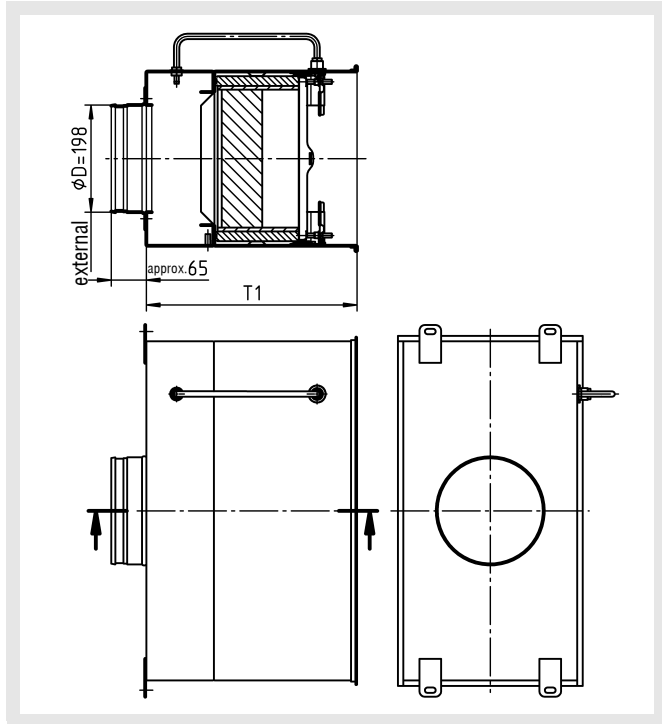


Attention!

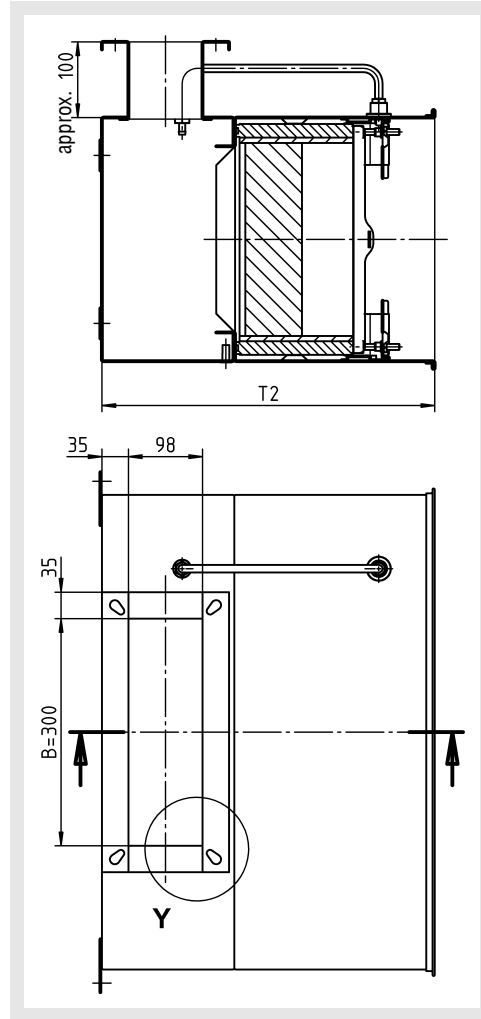
With the FKW-...-V model, the actuator cannot be mounted to the shut-off damper!

Particle filter box FKW

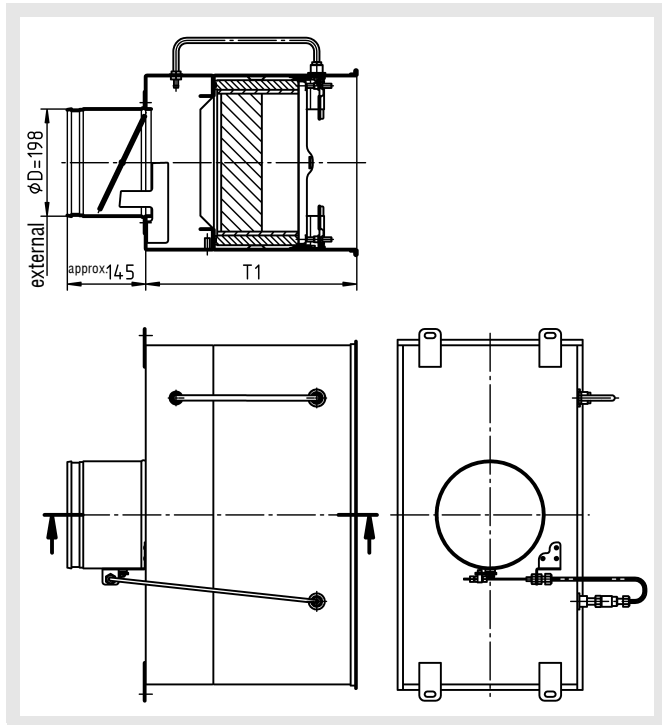
FKW-...-V-...-M000-D1-...-P0-...



FKW-...-Q-...-M000-D1-...-P0-...

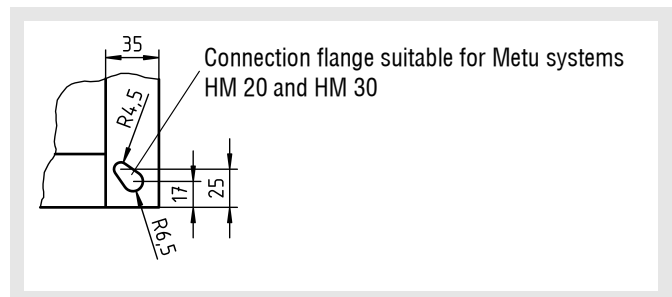


FKW-...-V-...-M001-D1-...-P0-...



Manually adjustable shut-off damper with cable (-M001) (not available for FKW-...-Q !)

Detail Y



Available sizes

	T1
FKW-1-...-V-...	330
FKW-2-...-V-...	390

Available sizes

	T2
FKW-1-...-Q-...	380
FKW-2-...-Q-...	440

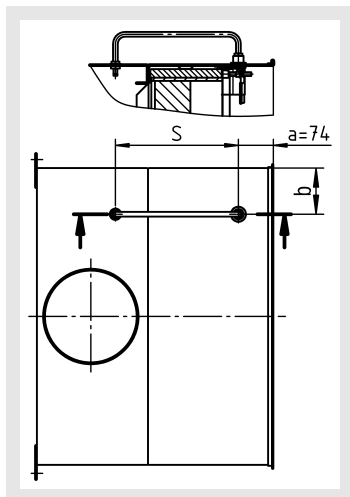
Particle filter box FKW

Differential pressure device / aerosol monitoring device

applies to models -H and -V

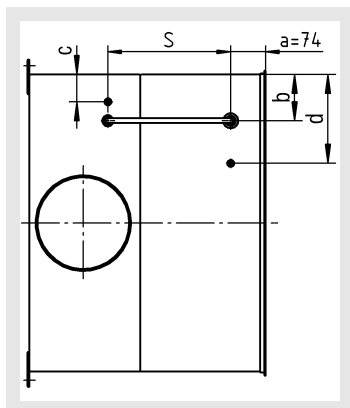
FKW-...-D1 (standard)

With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm.



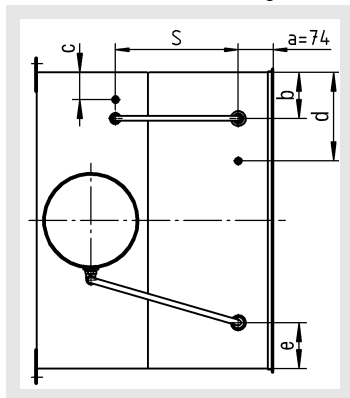
FKW-...-D2 (at an extra charge)

With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm.



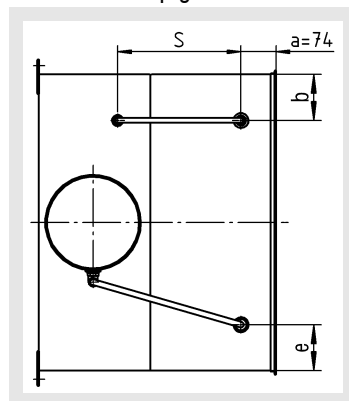
FKW-...-D3 (at an extra charge)

With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm and aerosol feeding device in the spigot of the box inside.



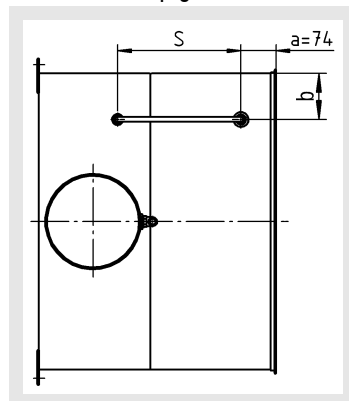
FKW-...-D4 (at an extra charge)

With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with aerosol feeding device in the spigot of the box inside.



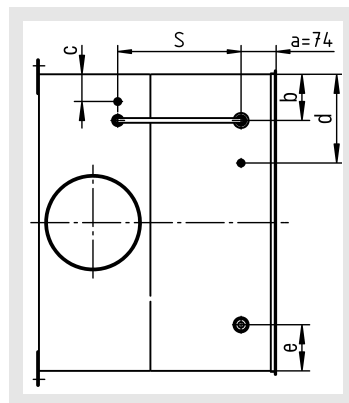
FKW-...-D5 (at an extra charge)

With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with aerosol feeding device in the spigot on the outside.



FKW-...-D6 (at an extra charge)

With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm and aerosol connection from the box inside to the on-site connection.



Available sizes

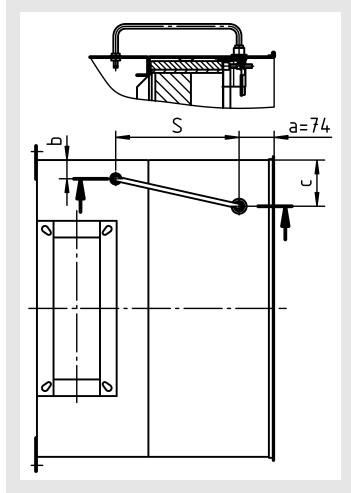
	S	b	c	d	e
FKW-1-...	200	97,5	57,5	187,5	97,5
FKW-2-...	280				

Particle filter box FKW

applies to model -Q

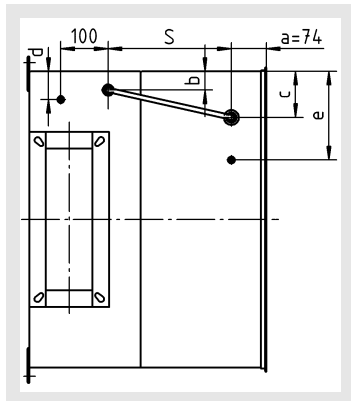
FKW-...-D1 (standard)

With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm.



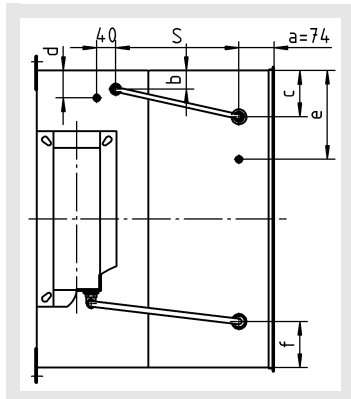
FKW-...-D2 (at an extra charge)

With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm.



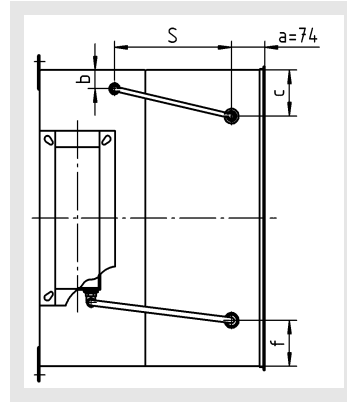
FKW-...-D3 (at an extra charge)

With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm and aerosol feeding device in the spigot of the box inside.



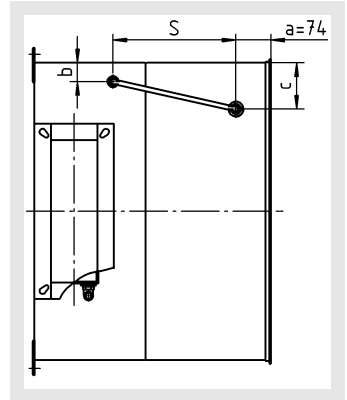
FKW-...-D4 (at an extra charge)

With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with aerosol feeding device in the spigot of the box inside.



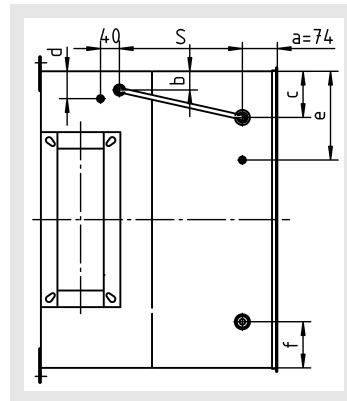
FKW-...-D5 (at an extra charge)

With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with aerosol feeding device in the spigot on the outside.



FKW-...-D6 (at an extra charge)

With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm and aerosol connection from the box inside to the on-site connection.



Available sizes

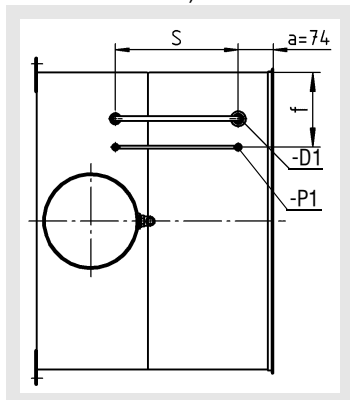
	S	b	c	d	e
FKW-1-...	200	39,5	97,5	59,5	187,5
FKW-2-...	280				

Particle filter box FKW

Tight seal test

FKW-...-P1 for model -H and -V (at an extra charge)

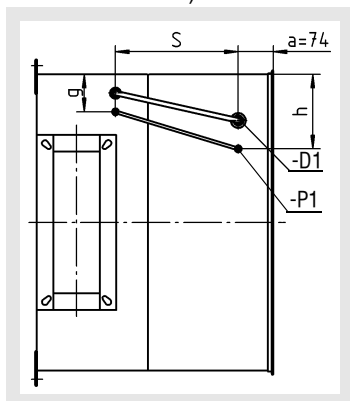
Seal leakage monitoring system inside the box (only for particle filters with U seal).



NW	f
625	157,5

FKW-...-P1 for model -Q (at an extra charge)

Seal leakage monitoring system inside the box (only for particle filters with U seal).



NW	g	h
625	79,5	157,5

Available sizes

	S
FKW-1-...	200
FKW-2-...	260

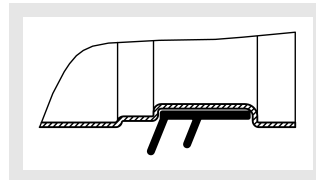
Accessories - dimensions

(at an extra charge)

Rubber lip seal (-GD1)

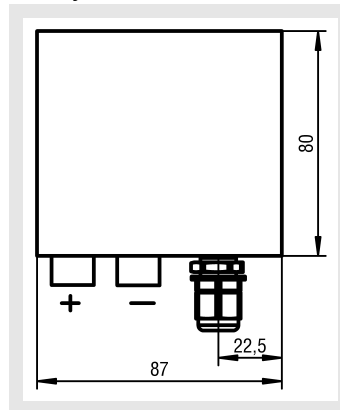
Detail X

not for model FKW-...-Q-...!



Differential pressure transducer (-U1)

Only available in connection with differential pressure / aerosol monitoring devices (-D2, -D3 and -D6). Supplied loose or optionally mounted to box outside.



- Output: 0 - 20 mA
- 24 V AC/DC
- 1 relays

Particle filter box FKW

Air diffuser

The air diffuser FDBB (FKW-...-74) is a model specifically designed for the filter box FKW. This air diffuser can only be used in connection with the filter box FKW. The ventilation features are identical to those of the standard air diffuser DBB-...

Air diffuser FDBB (FKW-...-74)

Construction

Faceplate

- Sheet steel (-SB)
 - only available with paint
 - Painted to the RAL colour 9010 (white) (-9010)
 - painted, RAL colour can be freely selected (-xxxx)
- Natural colour anodised aluminium (-AL-ELOX) (only possible with concealed mounting)
- Stainless steel -V2A, 1.4301 (-V2-0000)

Blade colour

- without blades (standard for return air) (-0000)
- Blades made of plastic, similar to RAL colour 9005 (black, standard) (-L9005)
- Blades made of plastic, similar to RAL colour 9010 (white) (-L9010)
- Blades made of aluminium painted to the RAL colour of the faceplate (always with 5 digits), subsequent adjustment not possible (-Axxxx)
- Blades made of natural colour anodised aluminium (-AELOX)
- Blade fixing
 - Painted sheet steel (with -SB/-AL model)
- Blade holder
 - aluminium ducts / plastic for stainless steel (-V2)
- Pole brace fastening (only with concealed mounting)
 - plastic / stainless steel for stainless steel (-V2)
- Pole brace holder (only with concealed mounting)
 - galvanised sheet steel / stainless steel for stainless steel (-V2)
- concealed mounting pole brace (only with concealed mounting)
 - aluminium / stainless steel for stainless steel (-V2)
- Antibacterial coating
 - Without antibacterial coating (-AB0, standard)
 - with antibacterial coating (-AB1)

Model

- FDBB-A-... - Front plate with longitudinal slots
- FDBB-...-Z1-... - Supply air with blades, one-way throw
- FDBB-...-Z2-... - Supply air with blades, two-way throw
- FDBB-...-AA-... - Return air, without blades
- FDBB-...-AB-... - Return air, with blades
- Size - 625 x 315 (length x height)

Fastening

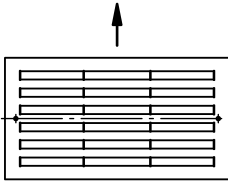
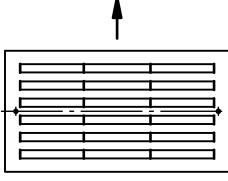
Magnetic fastening (-MB), with safety cable

- Standard for sheet steel model (-SB). Not possible for aluminium (-AL) and stainless steel (-V2) models. Installation only possible in front of the wall.
- Only possible for installation in front of the wall

Concealed mounting (-VM)

- Pole brace fastening, by means of a M6 cylinder screw (according to DIN EN ISO 4762) at the particle filter box
- Standard for model made of aluminium (-AL) and stainless steel (-V2)

Air throw pattern

FDBB-A-Z1-... (one-way throw)	
FDBB-A-Z2-... (two-way throw)	

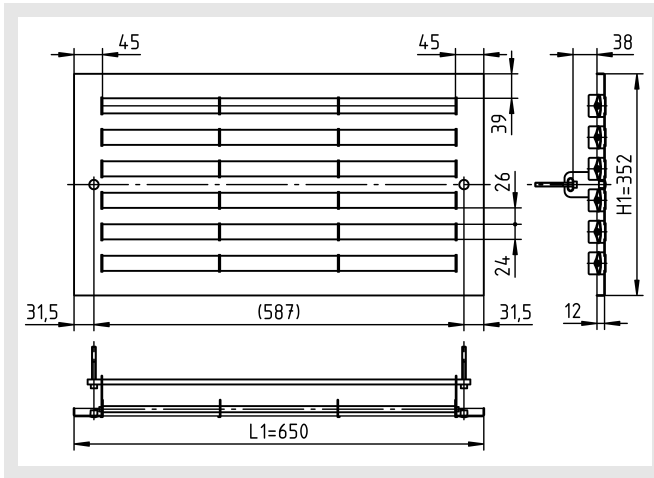
Particle filter box FKW

Dimensions

FDBB-A-Z1-625-315-...-VM-...

FDBB-A-Z2-625-315-...-VM-...

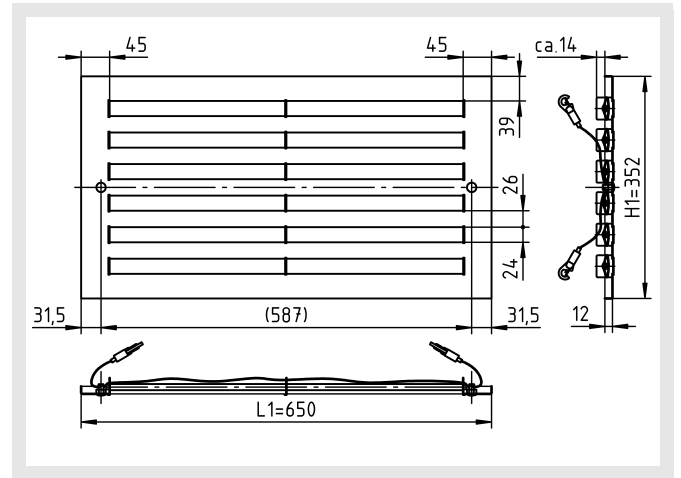
FDBB-A-AB-625-315-...-VM-...



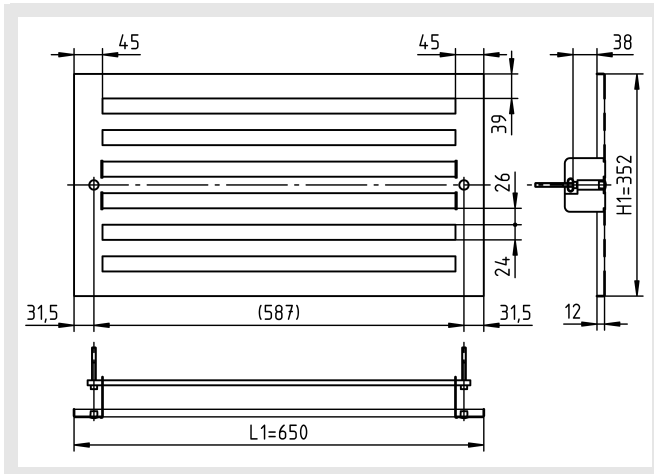
FDBB-A-Z1-625-315-...-MB-...

FDBB-A-Z2-625-315-...-MB-...

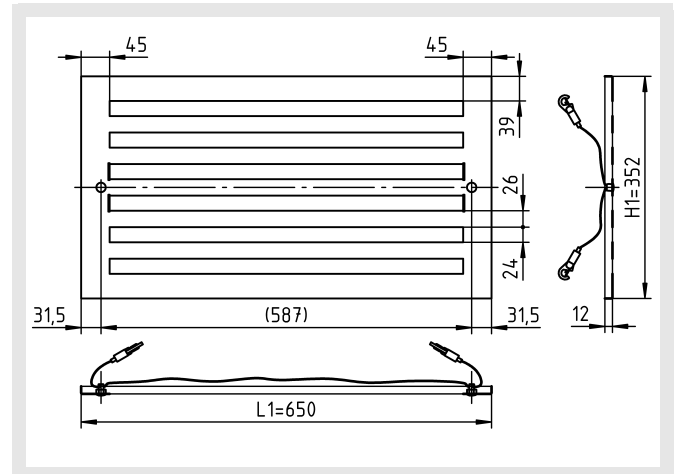
FDBB-A-AB-625-315-...-MB-...



FDBB-A-AA-625-315-...-VM-...



FDBB-A-AA-625-315-...-MB-...



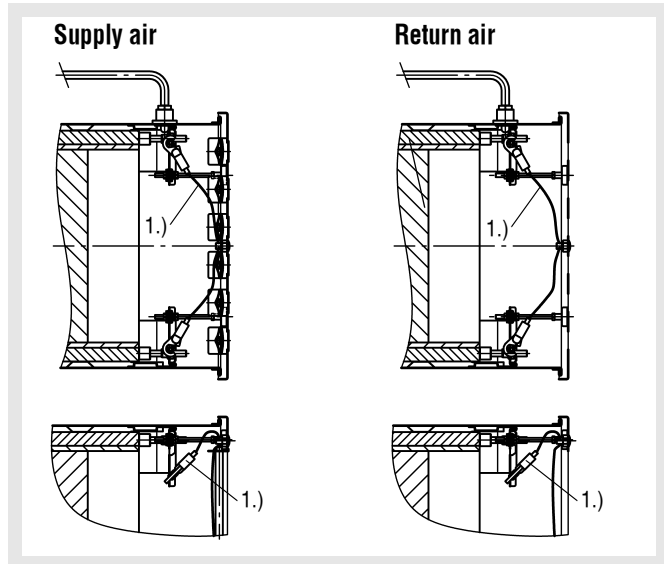
Particle filter box FKW

Fastening methods

Magnetic fastening (-MB)

With safety cable, only available for FDBB-...-SB, only possible for installation in front of the wall.

Air diffuser FDBB-A-...-MB



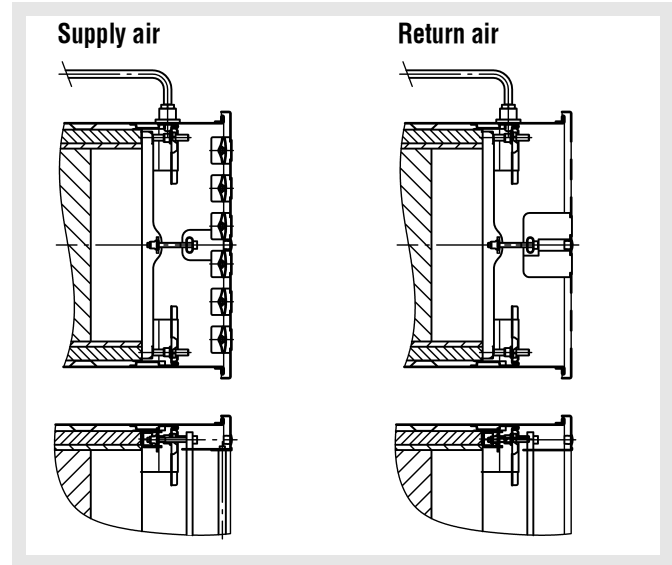
1.) Safety cable

Concealed mounting (-VM)

In concealed mounting, the air diffuser is fixed to the particle filter box by means of a pole brace and an M6x60 cylinder head screw (according to DIN EN ISO 4762).

Attention: The max. torque of the fastening screw is 0.4 Nm

Air diffuser FDBB-A-...-VM



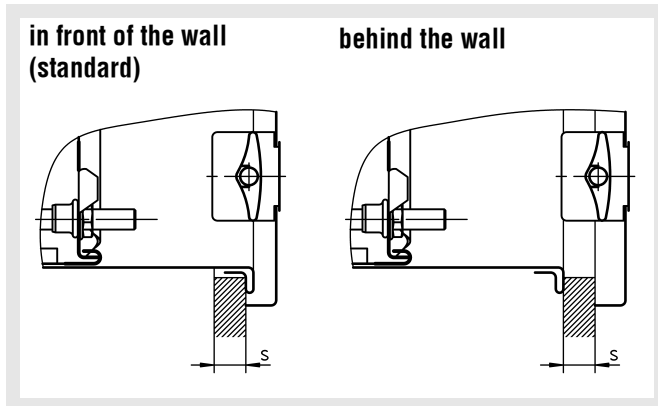
Particle filter box FKW

Installation and maintenance

Attention:

Please note that the O-rings (seals) of the bulkhead stuffing box may dry out over the months. Once the O-rings have dried out, the hoses can only be inserted, applying higher force. A common method of reoiling these bulkhead stuffing boxes is to impregnate a cloth with a universal oil, for example from Ballistol, and wipe it across the hose, before inserting it. This small amount is sufficient to make the bulkhead stuffing boxes running smoothly again.

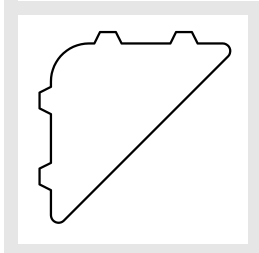
Installation situation



Attention:

In case of installation behind the wall, you have to specify the thickness of the ceiling "s"!

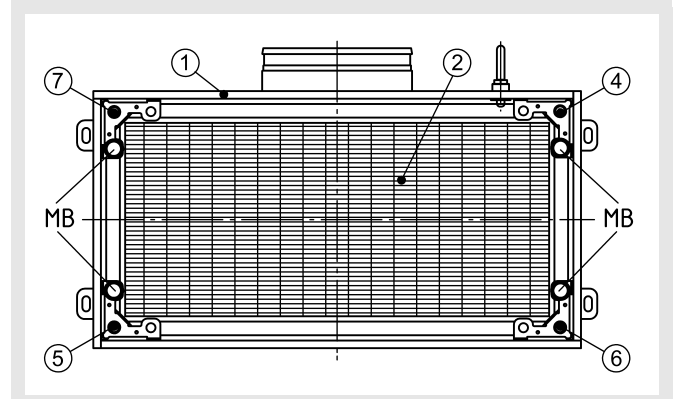
Shipping brace



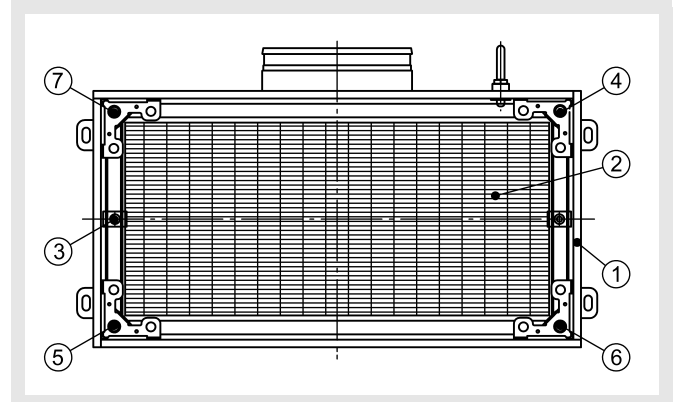
Attention! Before the particle filter unit can be inserted, the shipping brace clamped by means of the filter clamps must be removed!

Installation (filter installation Instructions)

Diffusers with magnetic fastening (-MB)



Diffusers with pole brace fastening (-VM)



With built-in spacers for fixing the filter clamps.

Installation description

Loosen filter clamps (pos. 4) and remove them along with shipping brace. Press the particle filter unit (pos. 6) with the sealing rubber (see page 3) pointing upwards into the filter housing (pos. 7). Take care that the filter material is not irreparably damaged. The filter unit can be easily locked using two diagonal filter clamps (pos. 1 and 3). Next, the VM pole brace (pos. 5, for -VM only) must be inserted and fastened using the other two filter clamps (pos. 2 and 4). Care must be taken that the filter clamps are at first tightened only slightly cross-wise (e.g. in the sequence filter clamps 1, 3, 2, 4). After tightening the filter clamps slightly, they can be tightened properly, again cross-wise and evenly until the filter unit has a tight fit. Make sure that the filter clamps are tightened to 4 Nm maximum.

If required, a seal leakage test can be carried out before mounting the air diffusers.

Dismounting

In case of concealed mounting (-VM), unscrew the air diffuser or, in case of magnetic fastening (-MB), insert your hands into the air diffuser slots and remove the unit. Loosen the filter clamp and remove the VM pole brace (only for -VM). Take out the particle filter units downwards.

Particle filter box FKW

Attention:

The particle filter cell may fall out of the filter housing when the filter clamps are removed!

Maintenance

In addition to keeping machines and equipment clean, the maintenance of the filters is especially important. A constant control of the filters is as essential as changing them when the maximum allowed particle absorption has been reached. The inspection must take place at short enough intervals to allow faults that have occurred or become apparent to be eliminated in time. The necessary intervals are set depending on the local conditions. The measured variable for the particle intake of the filter is the pressure difference. This is why a differential pressure measuring device must be attached to each filter stage to monitor its operating condition. Periodical repetitions of the seal leakage test should be ordered at regular intervals (at least once a year) by the operator/owner.

The filter is changed upon reaching the final resistance, which is set in advance when designing the ventilator capacity of the ventilation system. The final resistance is normally twice the starting resistance.

Particle filter box FKW

Technical data

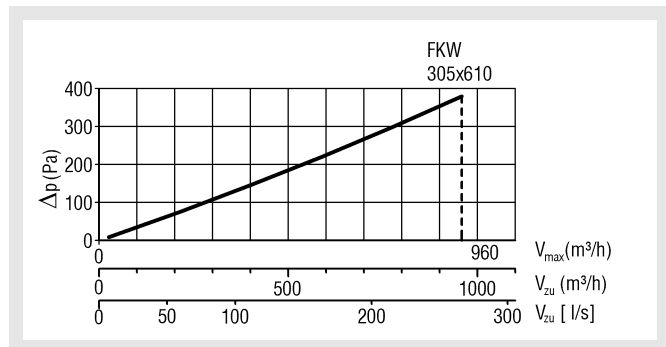
Pressure loss UXS filter

Type	FH	V _{neff} / pressure difference [m ³ /h / Pa]	
		H13	H14
FIL-FKW090-2-...	90	255 / 85	255 / 85
FIL-FKW150-2-...	150	255 / 85	255 / 85

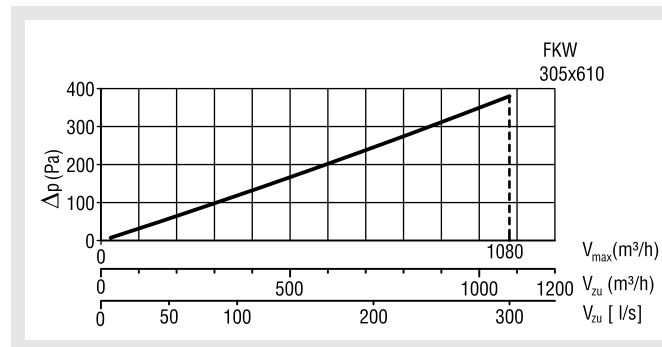
Pressure loss UXA filter

Type	FH	V _{neff} / pressure difference [m ³ /h / Pa]	
		H13	H14
FIL-FKW090-2-...	90	255 / 85	255 / 85
FIL-FKW150-2-...	150	255 / 85	255 / 85

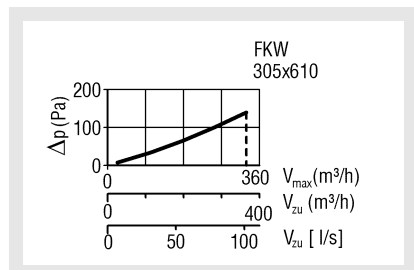
FIL-FKW...-2-H13-...



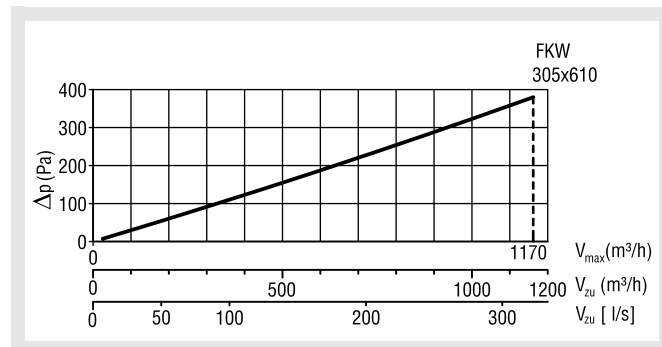
FIL-FKW090-3-H13-...



FIL-FKW...-2-H14-...



FIL-FKW150-3-H13-...



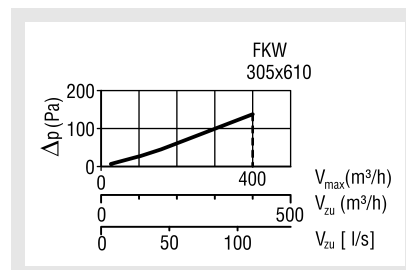
An H13 filter unit cannot be used as H14 filter!

If the particle filters are designed according to filter class H14, make sure that the air volume at the front plates is checked. Thus, it may happen that the air volume is too low for the selected faceplate, resulting in an uncontrolled jet drop. In this case, we recommend using a faceplate with a smaller perforation.

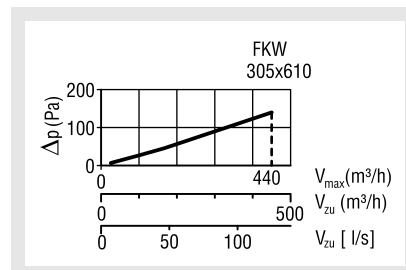
Filter class according to DIN EN 1822

- Allowed final pressure: max. 500 Pa
- Filtration efficiency in MPPS: H13 = ≥ 99,95 %
H14 = ≥ 99,995 %

FIL-FKW090-3-H14-...



FIL-FKW150-3-H14-...

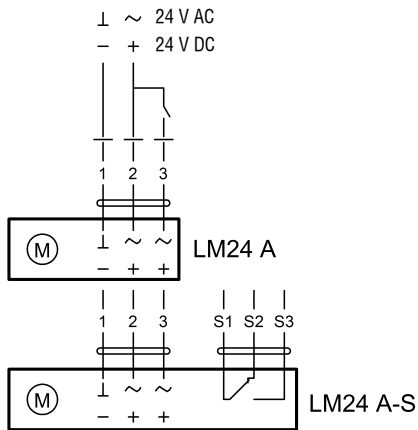


Particle filter box FKW

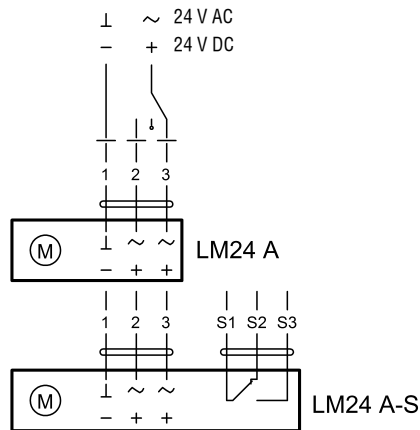
Circuit diagram

Connection diagram LM24A (-E001)/LM24A-S (-E030)

OPEN/CLOSED control



3-point control

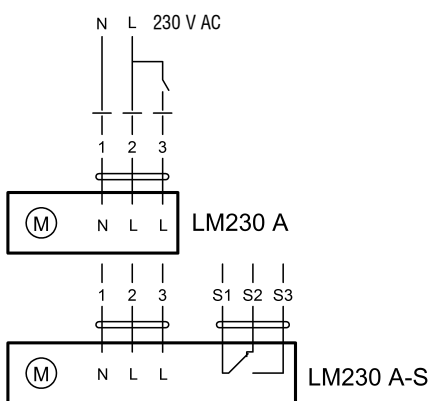


Attention!

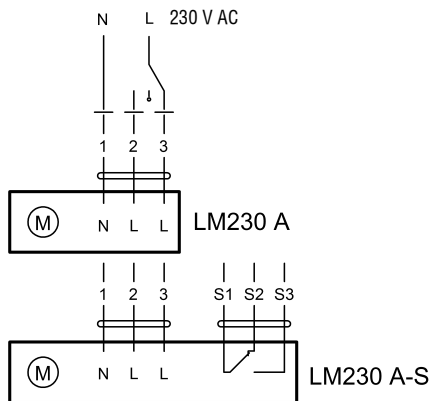
- Connection via safety transformer.
- Parallel connection of further drives is possible. Observe specifications.

Connection diagram LM230A (-E002) / LM230A-S (-E031)

OPEN/CLOSED control



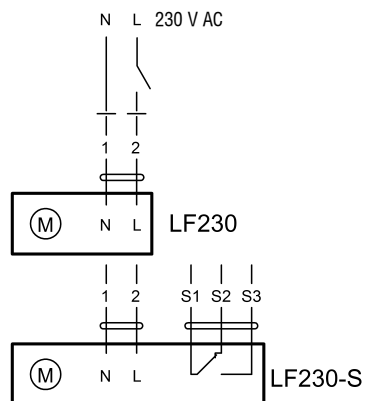
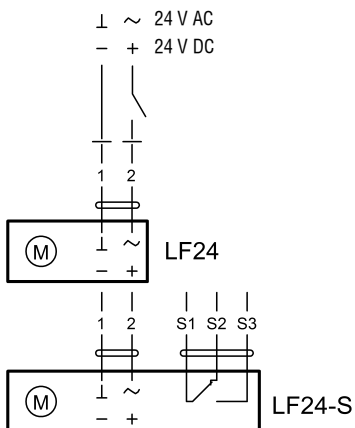
3-point control



Attention!

- Mains voltage connected!
- Parallel connection of further drives is possible. Observe specifications.

Connection diagram LF24 (-E021)/LF24-S (-E037) / LF230 (-E020) / LF230-S (-E036)



Attention!

- Connection via safety transformer.
- Parallel connection of further drives is possible. Observe specifications.

Particle filter box FKW

Technical data of actuators

LM24A (-E001) / LM24A-S (-E030) (make Belimo)

Rated voltage:	AC/DC 24 V, 50/60 Hz
Functional range:	AC19.2...28.8 V / DC19.2...28.8 V
Power consumption:	- Operation: 1 W - Idle position: 0.2 W
Dimensioning:	1.5 VA
Torque:	min. 5 Nm
Running time:	150 s
Sound power level:	35 dB (A)
Protection class:	III Safety extra low voltage / II protective insulation
Degree of protection:	IP54 in all mounting positions
EMC:	CE according to 2004/108/EC

LM230A (-E002) / LM230A-S (-E031) (make Belimo)

Rated voltage:	AC 230 V, 50/60 Hz
Functional range:	AC 85...264 V
Power consumption:	- Operation: 1.5 W - Idle position: 0.5 W
Dimensioning:	3.5 VA
Torque:	min. 5 Nm
Running time:	150 s
Sound power level:	35 dB (A)
Protection class:	II protective insulation
Degree of protection:	IP54 in all mounting positions
EMC:	CE according to 2004/108/EC
Low voltage directive:	CE according to 2006/95/EC

LF24 (-E021) / LF24-S (-E037) (make Belimo)

Rated voltage:	AC/DC 24 V, 50/60 Hz
Functional range:	AC 19.2...28.8 V / DC 21.6...28.8 V
Power consumption:	- running: 5 W - holding: 2.5 W
Dimensioning:	7 VA
Torque:	-Motor: min. 4 Nm -Spring return: min. 4 Nm
Running time:	-Motor: 40...75 s (0...4 Nm) -Spring return: 20 s (60 s at -30°C)
Sound power level:	-Motor: 50 dB (A) -Spring return: 62 dB (A)
Protection class:	III Safety extra low voltage
Degree of protection:	IP54
EMC:	CE according to 2004/108/EC
Low voltage directive:	CE according to 2006/95/EC

LF230 (-E020) / LF230-S (-E036) (make Belimo)

Rated voltage:	AC 230 V, 50/60 Hz
Functional range:	AC 198...264 V
Power consumption:	- running: 5 W - holding: 3 W
Dimensioning:	7 VA
Torque:	-Motor: min. 4 Nm -Spring return: min. 4 Nm
Running time:	-Motor: 40...75 s (0...4 Nm) -Spring return: 20 s (-20...50°C)
Sound power level:	-Motor: 50 dB (A) -Spring return: 62 dB (A)
Protection class:	II protective insulation
Degree of protection:	IP54
EMC:	CE according to 2004/108/EC
Low voltage directive:	CE according to 2006/95/EC

Auxiliary switch for LM24A-S / LM230A-S / LF24-S / LF230-S

- 1 EPU, 1 mA...3 (0.5) A, AC 250 V adjustable 0...100%

Legend

V_{ZU}	(m ³ /h) [l/s]	= Supply air volume
V_{Nenn}	(m ³ /h)	= Nominal volumetric flow
V_{max}	(m ³ /h) [l/s]	= Maximum volume
Δp	(Pa)	= Pressure difference
H13	(-)	= Filter class H13
H14	(-)	= Filter class H14

Particle filter box FKW

Order code FKW

01	02	03	04	05	06	07	08
Type	Filter height	Connection	Air diffuser	Mounting	Material	Paint	Antibacterial coating
Example							
FKW	-1	-H	-74	-MB	-SB	-9010	-AB0

09	10	11	12	13	14	15
Shut-off damper	Differential pressure / Aerosol monitoring device	Differential pressure transducer	Tight seal test	Rubber lip seal	Depth of the plenum box	Spigot diameter
-M000	-D1	-U0	-P1	-GD1	-KHS	-SDS

Sample

FKW-1-H-74-MB-SB-9010-AB0-M000-D1-U0-P1-GD1-KHS-SDS

Particle filter box type FKW | filter height 90 mm | connection from above with round spigot | air diffuser FDBB | magnetic fastening | sheet steel painted to RAL9010 | without antibacterial coating | without shut-off damper | with differential pressure / aerosol monitoring device inside | without differential pressure transducer | with tight seal test | with rubber lip seal | standard height of box | standard spigot diameter

Order details

01 - Type

FKW = Particle filter box type FKW (with rubber seal)

02 - Filter height

1 = 90 mm
2 = 150 mm

03 - Connection

H = vertical with round spigot (standard)
Q = vertical with rectangular spigot and connection flange
V = horizontal with round spigot

04 - Air diffuser (must be ordered separately)

74 = Air diffuser type FDBB

05 - Mounting

MB = Magnetic fastening (only available as -SB model, only available for air diffuser FDBB-...-SB [standard])
VM = Concealed mounting (standard for FDBB-...-V2 and FDBB-...-AL)

06 - Material

SB = electrolytically galvanised sheet steel (standard)
V2 = Stainless steel V2A, 1.4301

07 - Paint

0000 = without paint (standard for -V2, not possible for -SB)
9010 = painted inside and outside, RAL colour white (only available for -SB model, standard for -SB)
xxxx = painted inside and outside, RAL colour can be freely selected (only available for -SB model)

08 - Antibacterial coating

AB0 = Without antibacterial coating (standard)
AB1 = with antibacterial coating

09 - Shut-off damper

M000 = without shut-off damper (standard)
M001 = with manually adjustable shut-off damper with cable (only available for FKW-H /-V)
E001 = with electrically adjustable shut-off damper, 24V, 3-point activation
E030 = with electrically adjustable shut-off damper, 24V, 3-point activation, with limit switch
E002 = with electrically adjustable shut-off damper, 230V, 3-point activation
E031 = with electrically adjustable shut-off damper, 230V, 3-point activation, with limit switch
E021 = with electrically adjustable shut-off damper, 24V, 3-point, spring return actuator
E037 = with electrically adjustable shut-off damper, 24 V, 3-point, spring return actuator, with one limit switch
E020 = with electrically adjustable shut-off damper, 230 V, 3-point, spring return actuator.
E036 = with electrically adjustable shut-off damper, 230V, 3-point, spring return actuator, with one limit switch
Exxx model only available for FKW-...-H.

Particle filter box FKW

10 - Differential pressure / aerosol monitoring device

- D1 = Differential pressure/aerosol test device with measuring spigot inside the box, for hose connection with an outer diameter of 10 mm (standard).
- D2 = Differential pressure/aerosol monitoring device with measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm.
- D3 = Differential pressure/aerosol monitoring device with measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm and aerosol feeding device in the spigot of the box inside.
- D4 = Differential pressure/aerosol monitoring device with measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with aerosol feeding device in the spigot of the box inside.
- D5 = Differential pressure/aerosol monitoring device with measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with aerosol feeding device in the spigot on the outside (only connection at the spigot).
- D6 = With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm and aerosol connection from the box inside to the on-site connection.

11 - Differential pressure transducer

- U0 = without differential pressure transducer (standard)
- U1 = with differential pressure transducer (only available in connection with differential pressure / aerosol monitoring devices (-D2, -D3 and -D6))

12 - Tight seal test

- P0 = without tight seal test (standard)
- P1 = with seal leakage test (only possible for particle filter with U-profile seal -D)

13 - Rubber lip seal

- GD0 = without rubber lip seal at the connection spigot (standard)
- GD1 = with rubber lip seal at the connection spigot (only available for FKW-...-H / -V)

14 - Depth of the plenum box

- KHS = Standard depth of the plenum box (for dimensions T / T1 / T2)
- xxx = Depth of plenum box in mm (minimum depth = for FKW-1-.. spigot diameter + 222 mm, for FKW-2-... spigot diameter + 282 mm)

15 - Spigot diameter

- SDS = spigot diameter (standard)
- xxx = spigot diameter in mm (for spigot diameter > than standard only possible with greater depth of box, maximum depth of box = 580mm)

Particle filter box FKW

Order code FDBB

01	02	03	04	05	06
Type	Model	Air throw	Length	Height	Single / band design
Example					
FDBB	-A	-Z1	-625	-315	-N

07	08	09	10	11
Material	Paint	Blade colour	Mounting	Antibacterial coating
-SB	-9010	-L9005	-MB	-AB0

All fields must be filled when ordering

Sample

FDBB-A-Z1-625-315-N-SB-9010-L9005-MB-AB0

Air diffuser type FDBB for filter box FKW | one- or two-way throw | 1-way supply air | length 625 mm | height 315 mm | single length | sheet steel | painted to RAL colour 9010 | blades made of plastic, painted to colour similar to RAL 9005 (black) | with magnetic fastening | without antibacterial coating

Order details

01 - Type

FDBB = Air diffuser type FDBB for filter box FKW

02 - Model

A = one- or two-way throw

03 - Air throw

Z1 = Supply air 1-way
 Z2 = Supply air 2-way
 AA = Return air without blades
 AB = Return air with blades

04 - Length

625 = Length 625 mm

05 - Height

315 = Height 315 mm

06 - Single / band design

N = single length

07 - Material

SB = Sheet steel (only available with paint)
 AL = Aluminium (only possible with concealed mounting)
 V2 = Stainless steel V2A (1.4301, only possible with concealed mounting)

08 - Paint

0000 = without paint (standard for -V2)
 9010 = painted to RAL colour 9010 (white, standard for -SB)
 xxxx = painted to a RAL colour which can be freely selected (always with 4 digits, only possible for -SB)
 ELOX = natural colour anodised (E6/EV1, only available for -AL model)

09 - Blade colour

00000 = without blades (standard for return air)
 L9005 = Blades made of plastic, similar to RAL colour 9005 (black, standard)
 L9010 = Blades made of plastic, similar to RAL colour 9010 (white)
 Axxxx = Blades made of aluminium painted to the RAL colour of the faceplate (always with 5 digits), subsequent adjustment not possible
 AELOX = Blades made of natural colour anodised aluminium

10 - Mounting

MB = Magnetic fastening, with safety cable, only available as sheet steel model, only possible for installation in front of the wall.
 VM = Concealed mounting (standard for models made of aluminium and stainless steel)

11 - Antibacterial coating

AB0 = Without antibacterial coating (standard)
 AB1 = with antibacterial coating

Particle filter box FKW

Order code particle filter for FKW

01	02	03	04	05	06	07
Type	Nominal size	Filter frame	Filter class	Filter seal	Handle cover	Filter test
Example						
FIL	-FKW090	-2	-H13	-E	-G0	-0

Sample

FIL-FKW090-2-H13-E-G0-0

Filter type FIL | size 610x305x90 for FKW-1 | UXS with wooden frame | filter class H13 | continuous seal | without handle cover | oil thread test according to DIN EN 1822

Order details

01 - Type

FIL = Particle filter for filter box

02 - Filter size

FKW090 = size 610 x 305 x 90 - filter for filter box FKW-1

FKW150 = size 610 x 305 x 150 - filter for filter box FKW-2

03 - Filter frame

2 = UXS with MDF wooden frame (standard)

3 = UXA with aluminium frame

04 - Filter class

H13 = filter class H13 (HEPA)

H14 = filter class H14 (HEPA)

05 - Filter seal

E = Continuous seal (standard, PU-foamed) (seal leakage test P1 **not** possible)

D = U-profile seal (seal leakage test P1 possible)

F = Flat seal (EPDM) (seal leakage test P1 **not** possible)

06 - Handle cover

G0 = without handle cover

G1 = with handle cover (standard for UXA)

07 - Filter test

0 = checked oil thread test (standard), according to DIN EN 1822

S = checked scan test, according to DIN EN 1822

Particle filter box FKW

Specification texts

Particle filter box with safely sealing pressure device and sealing device for installation of filter cells with rubber seal. With vertical, round connection spigot. With integrated differential pressure/aerosol test device with measuring spigot inside the box, for hose connection with an outer diameter of 10 mm (-D1).

Without shut-off damper and without seal leakage test.

Make: SCHAKO **type FKW-H-...-M000-D1-...-P0-...**

- with vertical, round connection spigot and manually adjustable sealing shut-off damper. Leakage at closed damper blade according to DIN EN 1751, class 4, at a duct pressure of up to 1000 Pa. Without seal leakage test.

With integrated differential pressure/aerosol test device with measuring spigot inside the box, for hose connection with an outer diameter of 10 mm (-D1). Without seal leakage test.

Make: SCHAKO **type FKW-H-...-M001-D1-...-P0-...**

- with vertical, round connection spigot and electrically (OPEN/CLOSED actuator) adjustable locking shut-off damper (with/without spring return).

Leakage at closed damper blade according to DIN EN 1751, class 4, at a duct pressure of up to 1000 Pa.

With integrated differential pressure/aerosol test device with measuring spigot inside the box, for hose connection with an outer diameter of 10 mm (-D1). Without seal leakage test.

Make: SCHAKO **type FKW-H-...-Exxx-D1-...-P0-...**

- with horizontal, round connection spigot. With integrated differential pressure/aerosol test device with measuring spigot inside the box, for hose connection with an outer diameter of 10 mm (-D1). Without shut-off damper and without seal leakage test.

Make: SCHAKO **type FKW-V-...-M000-D1-...-P0-...**

- with horizontal, round connection spigot and manually adjustable sealing shut-off damper. Leakage at closed damper blade according to DIN EN 1751, class 4, at a duct pressure of up to 1000 Pa.

With integrated differential pressure/aerosol test device with measuring spigot inside the box, for hose connection with an outer diameter of 10 mm (-D1). Without seal leakage test.

Make: SCHAKO **type FKW-V-...-M001-D1-...-P0-...**

- with vertical, rectangular connection spigot, with connection flange. With integrated differential pressure/aerosol test device with measuring spigot inside the box, for hose connection with an outer diameter of 10 mm (-D1). Without shut-off damper and without seal leakage test.

Make: SCHAKO **type FKW-Q-...-M000-D1-...-P0-...**

Filter height:

- 90 mm (FKW-1)
- 150 mm (FKW-2)

Material:

- Filter box made of electrolytically galvanised sheet steel (-SB) (standard)
 - painted inside and outside, RAL colour white (-9010) (standard)
 - painted inside and outside, RAL colour can be freely selected (-xxxx)
- Filter box made of stainless steel V2A (-V2-0000)

Antibacterial coating:

- Without antibacterial coating (-AB0, standard)
- with antibacterial coating (-AB1)

Mounting:

- with magnetic fastening (-MB) (only available as -SB model, only available for air diffuser FDBB-...-SB [standard])
- Concealed mounting (-VM) (standard for FDBB-...-V2 and FDBB-...-AL).

Box dimensions:

- Standard depth of the plenum box (-KHS [for dimensions T / T1 / T2])
- Depth of plenum box in mm (-xxx, always with 3 digits) (minimum depth = for FKW-1-... spigot diameter + 222 mm, for FKW-2-... spigot diameter + 282 mm)

Spigot diameter:

- Standard spigot diameter (-SDS)
- Spigot diameter mm (-xxx, always with 3 digits) (for spigot diameter > than standard only possible with box of a larger depth, maximum depth of box = 580 mm)

Diffusers (for supply air and return air):

- Air diffuser FDBB-... (FKW-...-74)

Particle filter box FKW

Accessories (at an extra charge):

- Tight seal test device (FKW-...-P1)
 - inside the box, only possible for particle filter with U-profile seal (FIL-...-D).
- Differential pressure / aerosol monitoring device
 - With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm (-D2).
 - With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm and aerosol feeding device in the spigot of the box inside (-D3).
 - With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with aerosol feeding device in the spigot of the box inside (-D4).
 - With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with aerosol feeding device in the spigot on the outside (-D5).
 - With measuring spigot inside the box, for hose connection with an outer diameter of 10 mm. Additionally with 2 measuring spigots on the box outside, for a hose with an inner diameter of 4 mm and aerosol connection from the box inside to the on-site connection (-D6).
- Differential pressure transducer (-U1)
 - only available in connection with differential pressure / aerosol monitoring devices (-D2, -D3 and -D6).
 - supplied loose or optionally mounted to box outside
- Rubber lip seal (-GD1),
 - made of special rubber (only available for FKW-...-H / -V)
- Particle filter (FIL-...)
 - Filter frame H = 90 mm (FKW-1 / FIL-FKW090-...) or 150 mm (FKW-2 / FIL-FKW150)
 - UXS (FIL-...-2) made of MDF wood. Without handle cover (-G0, standard) or with double-sided handle protection (-G1, at an extra charge).
 - UXA (FIL-...-3), made of aluminium. With double-sided handle protection (-G1).
 - Rubber seal on filter housing either with continuous seal (-E, standard), U-profile seal (-D) or flat seal (-F).
 - Filter classes HEPA H13 (-H13, $\geq 99.95\%$) / HEPA H14 (-H14, $\geq 99.995\%$).
 - Filter checked by means of oil thread test (-O, standard) or scan test (-S, at an extra charge) according to DIN EN 1822.
 - Temperature-resistant up to 80°C. Filter wrapped in film

Specification texts for air diffusers

(for supply air and return air)

Air diffuser FDBB

Air diffuser FDBB-... for supply and return air, rectangular design, free cross-section, resistance and noise level remain constant in all blade positions. Consisting of faceplate in model A (one- or two-way throw), with pivoting air deflection blades individually adjustable. Model in single length.

Dimension: 625 x 315 (length x height)

Product: SCHAKO **type FDBB-A-...-625-315-N-...**

- Air throw:
 - Supply air: one-way throw (-Z1)
 - Supply air: two-way throw (-Z2)
 - Return air, without blades (-AA)
 - Return air, with blades (-AB)
- Faceplate made of:
 - Sheet steel (-SB)
 - only available with paint
 - Painted to the RAL colour 9010 (white) (-9010)
 - painted, RAL colour can be freely selected (-xxxx)
 - Natural colour anodised aluminium (-AL-ELOX) (only possible with concealed mounting)
 - Stainless steel V2A, 1.4301 (-V2-0000)
 - Blade colour
 - without blades (standard for return air) (-00000)
 - Blades made of plastic, similar to RAL colour 9005 (black, standard) (-L9005)
 - Blades made of plastic, similar to RAL colour 9010 (white, standard) (-L9010)
 - Blades made of aluminium painted to the RAL colour of the faceplate (always with 5 digits), subsequent adjustment not possible (-Axxxx)
 - Blades made of natural colour anodised aluminium (-AELOX)
 - Mounting:
 - Magnetic fastening (-MB), with safety cable.
 - Standard for sheet steel model (-SB). Not possible for aluminium (-AL) and stainless steel (-V2) models. Installation only possible in front of the wall.
 - Concealed mounting (-VM)
 - Standard for model made of aluminium (-AL) and stainless steel (-V2)
 - Pole brace fastening, by means of two M6 cylinder screws (according to DIN EN ISO 4762) to the particle filter box.
 - Antibacterial coating:
 - Without antibacterial coating (-AB0, standard)
 - with antibacterial coating (-AB1)