



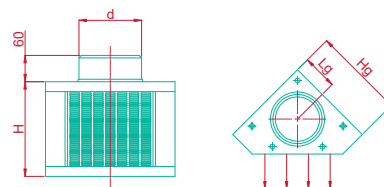
Displacement Units

KF

in libraries of



open in
PartShelf24



ADVANTAGES:

- Ergonomics and comfortable air supply
- Low sound power level
- High efficiency in air pollution reduction

FUNCTION

KF displacement units are designed for air-conditioning systems in the places such as theatres, meeting halls, entrance halls, gymnasiums, offices and industrial premises.

APPLICATION

KF diffusers are used for fresh air supply into the bottom parts of the rooms. The air is supplied directly into the occupied zone and then, reaching the source of heat, it is naturally displaced along the ceiling and then it is removed with the use of exhaust ventilation system.

DESCRIPTION

Displacement units are made of perforated sheet steel. Inside the unit there is a perforated aluminium sheet and a conical stream distributor, which ensure the air to be evenly distributed on the whole surface of the unit. The unit is coated with standard paint RAL 9010. At request the diffuser is also available in other RAL colours.

Displacement diffusers KF are available in the following versions:

KFD cylindrical

KFR half-cylindrical

KFN quarter-cylindrical

KFH triangular

KFL rectangular



ACCESSORIES

- mounting plinth for installation of the diffuser on the floor
- masking cover made of perforated sheet metal, used for aesthetic enclosure of the ventilation duct's connection
- masking cover made of smooth sheet metal, used for aesthetic enclosure of the ventilation duct's connection

INSTALLATION

Displacement units are installed directly on the floor and connected to the ventilation systems with the use of the circular ducts with standardized diameters.

SELECTION

RANGE OF APPLICATION

Heat load to remove

30 ÷ 50 W/m² max.

Vertical temperature gradient

comfort premises: 1,5 ÷ 2°C/m
industrial premises: 3°C/m

Temperature of supply air

Temperature difference: ambient air - supplied air 5°C max.

Effective airflow velocity

comfort premises: 0,25 m/s
industrial premises: 0,5 m/s

CALCULATIONS OF THE VENTILATION SYSTEM

Calculation of heat load

A kind of source	Total thermal power	Percentage of heat load in occupied zone	
Users			
sitting people	100 W	100 %	
standing people	120 W	100 %	
moving people	150 W	100 %	
Lighting		H < 3 m	H > 3 m
incandescent light	lighting power	100 %	50 %
fluorescent light	lighting power	100 %	50 %
Devices			
PC computer computer	120 W	100 %	
printer photocopying	50 W	100 %	
machine	450 W	100 %	
television	120 W	100 %	
projector	200 W	100 %	
Heat gains passing through the barriers		H < 3 m	H > 3 m
external walls	calculated power	100 %	(2,5/H) x 100
roofs	calculated power	100 %	40 %
glazed surfaces	calculated power	40 %	40 %

Calculation of the air capacity

$$Q = 3,6 * (P / \Delta T_c)$$

where: P: heat load in occupied zone [W]

Q: airflow that is necessary to remove calculated heat load [m³/h]

ΔTc: temperature difference assumed according to the table below

A kind of room	Level of activity	Airflow velocity*	Ts recommended	Recommended gradient	Ta - Ts	Tr - Ts	Tc
office	low, sitting position	0,15 to 0,20 m/s	> 18°	1,5°C/m	1÷2°C	5÷8°C	9
auditorium	low, sitting position	0,15 to 0,20 m/s	> 16°	1,5°C/m	2÷3°C	5÷8°C	10
industry	normal, standing position	0,25 to 0,35 m/s	> 15°	2,5°C/m	4÷5°C	9÷14°C	12
laboratory	normal, standing position	0,20 to 0,25 m/s	> 15°	2,0°C/m	3÷4°C	7÷11°C	11

* average airflow velocity in occupied zone

Ta – ambient air temperature

Ts – supplied airflow temperature

Tr – exhausted airflow temperature

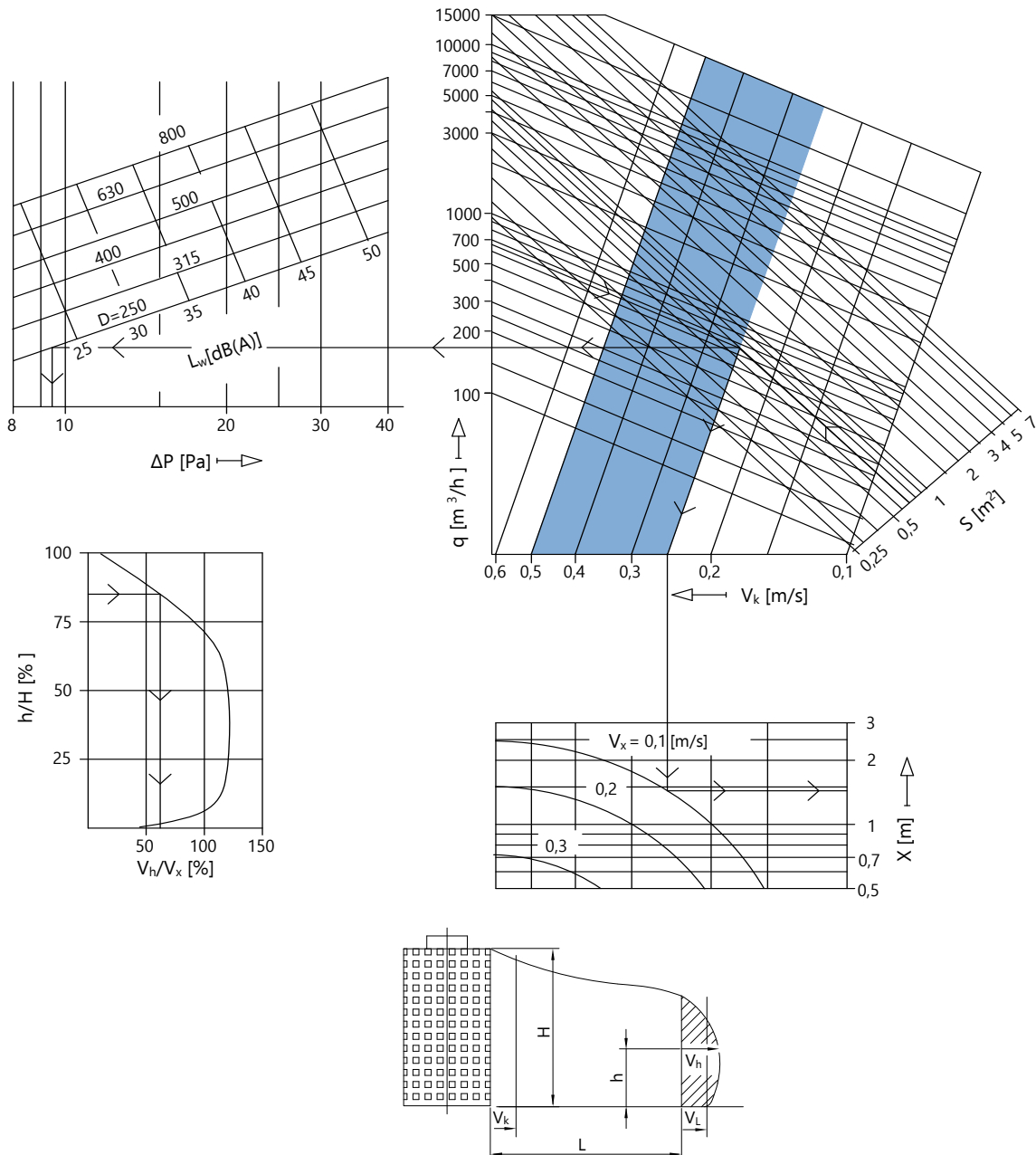
SELECTION

SELECTION AND ARRANGEMENT OF THE DIFFUSERS

The airflow and number of the diffusers should be selected in such a way that they could provide the optimal covering the whole required air supply zone. In order to ensure the air to be better distributed it is advisable to use a large number of small diffusers than a small number of large diffusers.

Diffusers with the largest air supply should be situated as close as possible to the largest heat sources. On account of the users' comfort one should avoid to place the diffusers too close to the workstations.

Air exhausted points should be placed in upper part of the room. The capacity of the air ventilation system increases when it is situated closer to the heat sources or pollution sources.



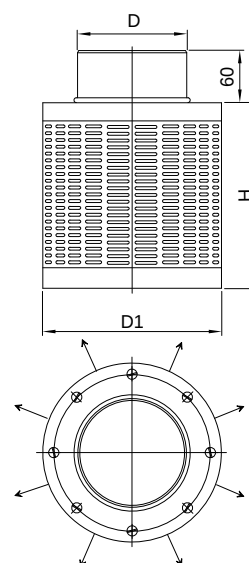
Q: supplied airflow
 V_k : effective airflow velocity
 L_w : sound power level
 H : diffuser height
 V_L : airflow velocity on the floor level in the distance L from the diffuser

A_{kf} : effective surface of the diffuser
 ΔP : pressure drop
 L : distance from the front surface of the diffuser
 h : diffuser height from the floor
 V_h : airflow velocity at a distance L from the diffuser and at a height h from the floor

DIMENSIONS AND INSTALLATION METHOD

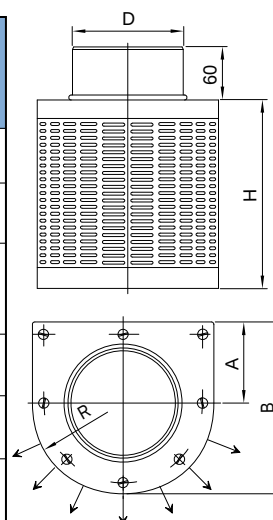
KFD CYLINDRICAL DIFFUSER

d [mm]	D [mm]	H [mm]	A _{kf} [m ²]	Airflow in Comfort-Industrial Premises [m ³ /h]	Area of the diffuser's work [m ²]	Weight [kg]
250	400	600	0,704	630 - 1260	20 - 70	10,8
		1200	1,433	1290 - 2580	30 - 120	18,7
315	500	600	0,880	790 - 1580	20 - 80	14,4
		1200	1,791	1610 - 3220	40 - 140	23,9
400	630	600	1,108	1000 - 2000	30 - 100	18,8
		1200	2,256	2030 - 4060	45 - 170	30,4
500	800	1200	3,404	3060 - 6120	60 - 250	41,9
		1800	2,865	2580 - 5160	55 - 210	56,2
630	1000	1200	4,323	3890 - 7780	80 - 310	57,6
		1800	3,581	3220 - 6440	70 - 260	56,7
800	1250	1200	5,403	4860 - 9720	90 - 370	73,9
		1800	4,477	4030 - 8060	80 - 320	76,7
		1800	6,754	6080 - 12160	120 - 460	99,9



KFR HALF-CYLINDRICAL DIFFUSER

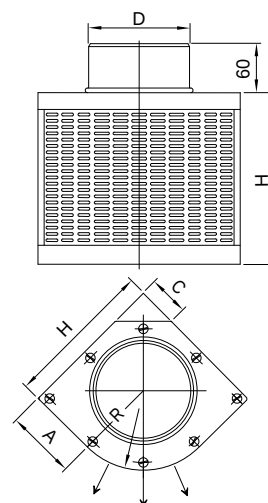
d [mm]	R [mm]	H [mm]	A [mm]	B [mm]	A _{kf} [m ²]	Airflow in Comfort-Industrial Premises [m ³ /h]	Area of the diffuser's work [m ²]	Weight [kg]
250	200	600	160	360	0,333	300 - 600	15 - 50	10,4
		1200	160	360	0,677	610 - 1220	20 - 70	17,7
315	250	600	200	450	0,422	380 - 760	15 - 50	13,2
		1200	200	450	0,858	770 - 1540	25 - 80	22,0
400	315	600	250	565	0,535	480 - 960	20 - 60	24,9
		1200	250	565	1,088	980 - 1960	25 - 100	30,3
500	400	1200	300	700	1,642	1480 - 2960	35 - 130	41,6
		1800	300	700	1,355	1220 - 2440	30 - 110	46,2
630	500	1200	370	870	2,044	1840 - 3680	40 - 160	65,2
		1800	370	870	1,693	1520 - 3040	40 - 130	64,8
800	625	1200	500	1125	2,555	2300 - 4600	50 - 190	90,4
		1800	500	1125	2,214	1990 - 3980	45 - 170	87,3
		1800	500	1125	3,340	3000 - 6000	65 - 240	113,1



DIMENSIONS AND INSTALLATION METHOD

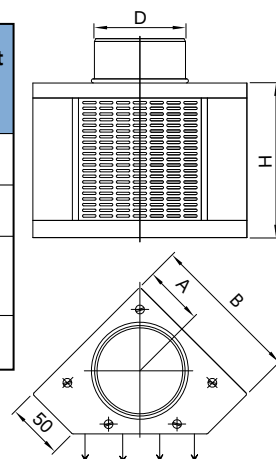
KFN QUARTER-CYLINDRICAL DIFFUSER

d [mm]	R [mm]	H [mm]	A [mm]	B [mm]	C [mm]	A _{kf} [m ²]	Airflow in Comfort-Industrial Premises [m ³ /h]	Area of the diffuser's work [m ²]	Weight [kg]
250	250	600 1200	160	410	90	0,267 0,543	240 - 480 490 - 980	15 - 40 20 - 60	13,8 23,9
315	315	600 1200	210	525	140	0,351 0,715	310 - 630 640 - 1280	15 - 50 20 - 70	17,7 29,5
400	400	600 1200 1800	250	650	145	0,434 0,883 1,332	390 - 780 790 - 1590 1200 - 2400	15 - 50 25 - 80 30 - 110	24,0 40,0 57,9
500	500	1200 1800	330	830	190	1,154 1,742	1040 - 2080 1570 - 3140	30 - 100 40 - 140	66,2 94,5
630	625	1200 1800	420	1045	263	1,472 2,220	1320 - 2650 2000 - 4000	35 - 120 45 - 170	99,3 128,5



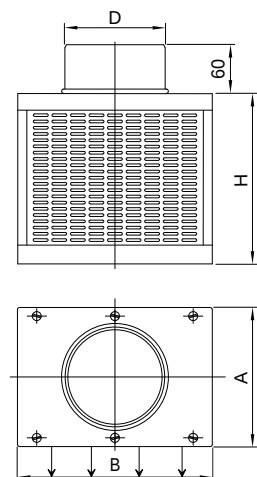
KFH TRIANGULAR DIFFUSER

d [mm]	H [mm]	A [mm]	B [mm]	A _{kf} [m ²]	Airflow in Comfort-Industrial Premises [m ³ /h]	Area of the diffuser's work [m ²]	Weight [kg]
250	600 1200	250	500	0,330 0,673	300 - 600 600 - 1200	15 - 50 20 - 70	12,4 23,0
315	600 1200	200	630	0,432 0,880	390 - 780 790 - 1580	15 - 50 25 - 80	15,8 27,5
400	600 1200 1800	250	800	0,567 1,154 1,741	510 - 1020 1040 - 2080 1560 - 3130	20 - 60 30 - 100 40 - 140	21,3 32,5 51,9
500	1200 1800	310	1000	1,476 2,227	1330 - 2660 2000 - 4000	35 - 120 45 - 170	62,7 88,6



KFL RECTANGULAR UNIT

d [mm]	H [mm]	A [mm]	B [mm]	A _{kf} [m ²]	Airflow in Comfort-Industrial Premises [m ³ /h]	Area of the diffuser's work [m ²]	Weight [kg]
250	600 1200	315	630	0,330 0,672	300 - 600 600 - 1200	15 - 50 20 - 70	15,0 26,2
315	600 1200	400	800	0,425 0,866	380 - 760 780 - 1560	15 - 50 25 - 80	19,5 33,0
400	600 1200 1800	500	1000	0,537 1,094 1,651	480 - 970 980 - 1970 1480 - 2790	20 - 60 30 - 100 35 - 130	26,0 43,3 60,0
500	1200 1800	630	1250	1,379 2,081	1240 - 2480 1870 - 3740	30 - 110 45 - 160	68,9 95,5



ACCESSORIES

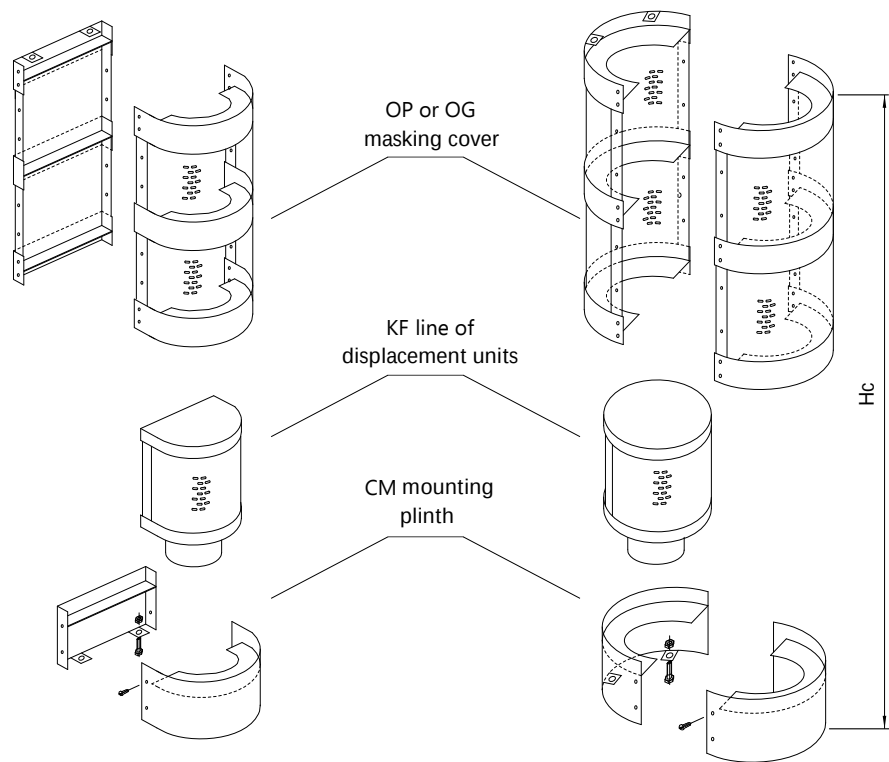
MOUNTING PLINTH FOR DISPLACEMENT UNIT

KFD, KFR, KFN, KFH and KFL diffusers can be fitted with a mounting plinth (CM signed) which ensures the unit to be installed properly on the floor and, additionally, gives a place for connecting a ventilation duct from the room's floor side. Examples of CM mounting plinth installation are shown in the figure below.

MASKING COVER FOR DISPLACEMENT UNIT

KFD, KFR, KFN, KFH and KFL diffusers can be fitted with a masking cover for aesthetic enclosure, made of perforated sheet metal which is identical to diffuser's perforation (OP signed) or made of smooth sheet metal (OG signed). The masking cover allows the unit to be aesthetically integrated into the room's decoration. It also gives the proper place for connecting a ventilation duct from a ceiling or a wall side. The masking cover can be any height. Examples of the masking cover installation are shown in the figure below.

NOTE: Ordering the unit „diffuser + masking cover“ or „diffuser + mounting plinth + masking cover“ it is necessary to give the total required Hc height of the unit, which should be measured from the base of the mounting plinth to the top of the masking cover.



ORDER KEY

KFD	d.315	H=600	+	CM	+	OP	/	RAL 9010	/	Hc=2500
Diffuser type	Diameter of the diffuser	Diffuser height		Mounting plinth		OP - Masking cover made of perforated sheet metal OG - Masking cover made of smooth sheet metal		Colour of the unit		Total unit height: diffuser + mounting plinth + masking cover (given only in case of ordering a diffuser and masking cover)