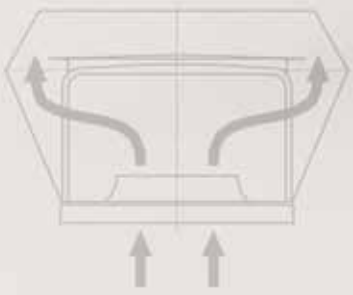
Technical documentation

Roof Extract Fans DV • Ventilation Hoods DLH • Smoke Extract Fans ER



Roof Extract Fans DV
Ventilation Hoods DLH
Smoke Extract Fans ER

Fan range DV 30

The fans of the range DV 30, for **horizontal discharge**, are suitable for discharging dust free and not aggressive air or vapours from - 20°C to + 45°C (see summary data sheet). The rectangular casing, made of galvanised sheet steel, has two opposite mounted discharge outlets protected from the weather with an aerodynamically shaped grille, which provide for horizontally directed, swirl-free air discharge.
All roof fans are equipped with an isolator switch ready for connection.

Fan range DV 40-125

The fans of the range DV 30, for **vertical discharge**, are suitable for discharging dust free and not aggressive air or vapours from - 20°C to + 45°C (see summary data sheet). The stylish casing and the base plate are made of galvanised sheet steel. The centrifugal impeller with backward curved blades is made of highly resistant aluminium. The exhaust air, due to the V-casing design, is rejected vertically far from the roof.
All roof fans are equipped with an isolator switch ready for connection.

Motors

Well tried and tested integral drive motors are used. Noise-tested, maintenance-free deep-groove ball bearings give the motor long life. To avoid overheating, every motor is equipped with thermal contacts. This thermal protection has to be effective in operation in order to enable the user to claim for warranty in the case of break down. Please follow the instructions of the wiring diagram for connecting the thermal contacts correctly.

Roof Extract Fans DV

Summary data sheet

A full fan line: 36 standardised sizes

Performance range: 445 up to 34 550m³/h

Roof fan	Voltage	Flow rate $\dot{V}_{ma}$	Speed	Max. absorbed power	Full load current	Control units*				Sound power L_{WA} $\dot{V}_{max}$	Wiring diagram	Weight	Gas medium temperatures
type DV	V	m³/h	min^{-1}	kW	A	1-step	2-step	5-step	stepless	dB	No.	kg	°C
30-22-2E	230	805	2120	0,10	0,44	E1-16	-	E5-1	ES-3	71	507	5,5	55
30-22-4E	230	480	1405	0,054	0,24	E1-16	-	E5-1	ES-3	62	507	5,0	45
30-25-2E	230	1200	2230	0,173	0,76	E1-16	-	E5-1	ES-3	75	507	6,5	60
30-25-4E	230	705	1390	0,055	0,24	E1-16	-	E5-1	ES-3	63	507	6,0	60
40-28-4/4	3x400ΔY	1730/1570	1420/1260	0,13/0,09	0,40/0,16	D1	DS	D5-1	-	71/68	515	23	60
40-28-4E	230	1690	1380	0,16	0,76	E1-16	-	E5-1	ES-3	70	508	22	55
40-28-6E	230	1120	910	0,08	0,34	E1-16	E2-6	E5-1	ES-3	59	508	22	60
40-31-4/4	3x400ΔY	2440/2010	1340/1070	0,19/0,13	0,43/0,22	D1	DS	D5-1	-	71/66	515	23	60
40-31-4E	230	2550	1420	0,23	1,2	E1-16	-	E5-1	ES-3	72	508	23	60
40-31-6E	230	1670	920	0,12	0,54	E1-16	E2-6	E5-1	ES-3	61	508	23	60
56-35-4/4	3x400ΔY	3470/2910	1340/1080	0,35/0,22	0,75/0,39	D1	DS	D5-1	-	77/72	515	35	60
56-35-4E	230	3470	1340	0,40	1,9	E1-16	-	E5-3	ES-3	77	508	35	60
56-35-6E	230	2380	930	0,15	0,72	E1-16	-	E5-1	ES-3	67	508	35	60
56-40-4/4	3x400ΔY	4830/4250	1400/1190	0,58/0,44	1,35/0,74	D1	DS	D5-3	-	80/77	515	40	60
56-40-6/6	3x400ΔY	3100/2520	890/690	0,22/0,13	0,55/0,23	D1	DS	D5-1	-	69/63	515	37	60
56-40-4E	230	4340	1220	0,52	2,3	-	-	E5-3	-	77	509	40	55
56-40-6E	230	3100	890	0,20	0,91	E1-16	-	E5-1	ES-3	69	508	37	60
56-45-4/4	3x400ΔY	6800/6130	1420/1250	0,95/0,76	2,30/1,30	D1	DS	D5-7	-	83/80	515	44	60
56-45-6/6	3x400ΔY	4190/3060	860/600	0,30/0,17	0,67/0,32	D1	DS	D5-1	-	70/62	515	44	60
56-45-4E	230	6450	1330	0,95	4,4	-	-	E5-7	-	82	509	44	55
56-45-6E	230	4150	850	0,31	1,4	E1-16	-	E5-1	ES-3	70	508	44	60
71-50-4/4	3x400ΔY	9150/7740	1350/1100	1,60/1,05	3,20/1,80	D1	DS	D5-7	-	85/80	515	73	60
71-50-6/6	3x400ΔY	6250/5430	930/780	0,52/0,38	1,30/0,69	D1	DS	D5-3	-	75/71	515	64	60
71-50-4E	230	8660	1260	1,45	6,3	-	-	E5-7	-	84	509	72	60
71-50-6E	230	6100	900	0,54	2,6	-	-	E5-3	-	75	509	64	45
71-56-4/4	3x400ΔY	12580/9950	1270/960	2,40/1,46	4,30/2,4	D1	DS	D5-12	-	86/80	516	82	45
71-56-6/6	3x400ΔY	8990/7790	920/770	0,90/0,59	2,10/1,1	D1	DS	D5-7	-	78/74	515	71	60
90-63-6/6	3x400ΔY	12500/10300	900/700	1,30/0,88	2,9/1,7	D1	DS	D5-7	-	81/76	515	119	60
90-71-6/6	3x400ΔY	16850/13640	880/680	2,50/1,50	5,0/2,8	D1	DS	D5-12	-	85/79	516	139	45
90-75-6 *	3x400Δ	20000	870	3,4	6,5	-	-	-	-	86	502	140	50
90-75-8	3x400Y	15000	650	1,6	3,3	D1	-	D5-7	-	78	534	135	40
90-75-6/12	3x400YY/Y	20000/10000	950/480	4,4/0,7	8,7/2,6	-	-	-	-	88/70	551	166	45
125-80-6 *	3x400Δ	24800	945	5,2	10,2	-	-	-	-	90	549	215	55
125-80-8	3x400Δ	17600	660	2,0	4,4	D1	-	D5-12	-	81	537	206	40
125-80-6/12	3x400YY/Y	24800/12470	960/480	5,5/0,85	11,0/3,3	-	-	-	-	90/72	551	215	55
125-90-6 *	3x400Y	34550	940	8,8	16,4	-	-	-	-	94	549	238	40

* Fan not speed controlled

Safety Guards

All roof extract fans are supplied with a discharge-side mesh safety guard in accordance with DIN EN ISO 13857. The inlet side is not fitted with a standard guard, because it is normal practice to attach other system parts to the side.
However, if the unit is installed in such a way that accidental contact with the impeller is possible, an additional inlet guard has to be fitted acc. to DIN EN ISO 13857!
The fans may only be put into operation if all necessary protection devices are fitted and made effective (see maintenance instructions)!
The safety guards are to be executed acc. to DIN EN ISO 12100 „Safety of machinery - Basic concepts, general principles for design".

Safety instructions

Transport, fitting, electrical connection, start up, and maintenance are to be executed following to the instructions given with the manual and by respecting the actual standards, guide lines, and safety rules.

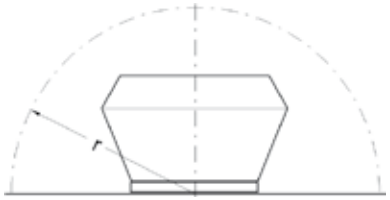
Performance data

The performance curves are obtained using an inlet side test chamber in accordance with ISO 5801.
The performance grids show the effective pressure increase Δp_{fa} (or $p_{sF)}$ (Pressure increase obtained from the fan in free-field conditions) as a function of the flow volume V (or q_V). Reference media density: ρ_1 = 1.15 kg/m³.. The roof fans comply with the tolerances of Class 2 of DIN 24 166 „Fans; technical delivery conditions".

Sound Data

Measurement and evaluation of noise levels are in accordance with DIN 45 635 - 38 "Sound measurements on machines; fans". In the technical data the A-weighted sound power level at maximum flow rate is given.

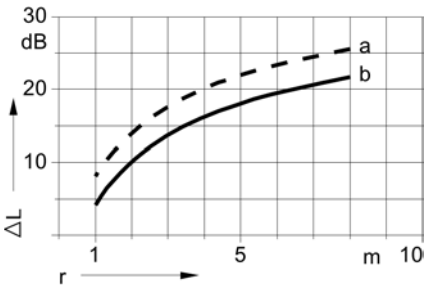
The computer aided data collection and evaluation enables to obtain highly reliable data precision. In the curves the emission value of the A-sound-power level L_{WA} is given, having the same value for intake (L_{WA3}) as for the discharge (L_{WA8}).
For more exact calculations when determining the required attenuation, the sound power level in the octave bands is important.



$L_{Wokt\ 3/8}$ (bzw. $L_{Wfc\ 3/8}$) = L_{WA} + $L_{Wrel\ 3/8}$

The relative sound power levels for inlet and discharge sides, at various duty points, can be read from the corresponding tables.

Because conditions in the operating environment are usually far from ideal for measurement and can vary greatly, a determination of the A-sound-pressure level at any distance is only possible with great uncertainty.



$L_{PA} \approx L_{WA} - \Delta L$

The diagram on the left side supplies the correction value "Δ_L" in function of the distance "r" from the fan centre. Under ideal conditions curve "a" is valid. However, curve "b" is recommended for practical estimates. The calculation of the intake sound-power level is only possible if the exact noise parameters of the connected room are known (see VDI 2081!).

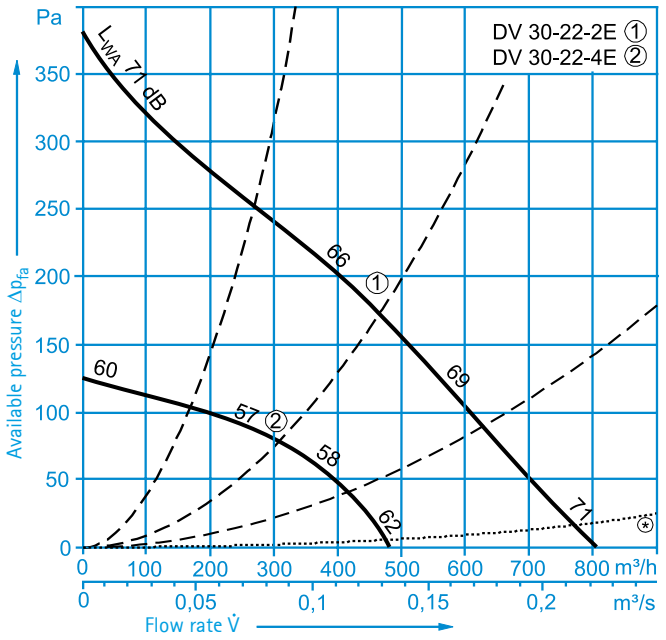
Influence of the back draught damper

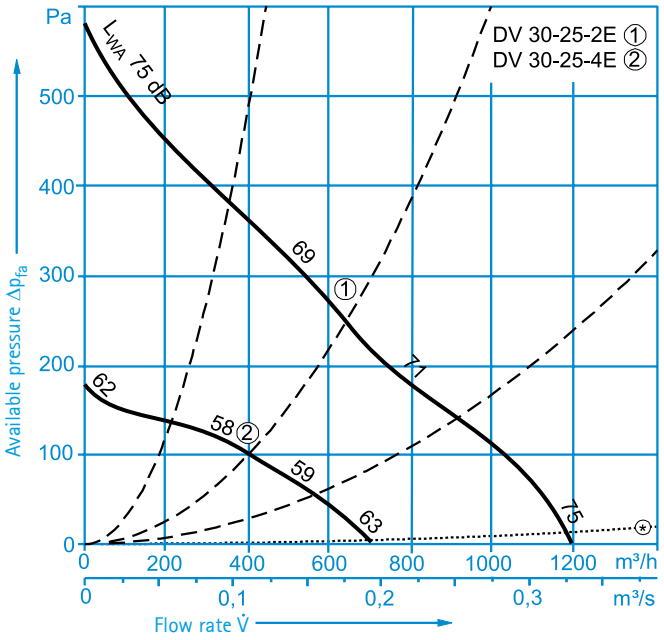
Due to turbulences generated by the back draught damper the sound data for intake and discharge may increase by app. 3 dB at discharge when a damper is fitted.
It is recommended to provide a duct section between fan and damper because under this configuration the indicated pressure drops are applicable.
If the damper is directly fitted to the fan higher pressure losses have to be expected.

Roof Extract Fans DV

Performance Data DV 30

Roof fan	Voltage	Flow rate $\dot{V}_{max}$	Speed	Absorbed power max.	Full load current	Control units				Sound power L_{WA} $\dot{V}_{max}$	Wiring diagram	Weight	Gas medium tempe-ratures
Type DV	V	m³/h	min^{-1}	kW	A	1-step	2-step	5-step	step-less	dB	Nr.	kg	°C
30-22-2E	230	805	2120	0,10	0,44	E1-16	-	E5-1	ES-3	71	507	5,5	55
30-22-4E	230	480	1405	0,054	0,24	E1-16	-	E5-1	ES-3	62	507	5,0	45
30-25-2E	230	1200	2230	0,173	0,76	E1-16	-	E5-1	ES-3	75	507	6,5	60
30-25-4E	230	705	1390	0,055	0,24	E1-16	-	E5-1	ES-3	63	507	6,0	60





⊛ Pressure drop in the back draught damper
- Frequency 50 Hz
- Media density1,15 kg/m³

Attenuation values

Average Values	values in dB at mid frequencies 63	125	250	500	1000	2000	4000	8000	Hz
Silencer upstand ZDS..-0028 16 dB	2	5	8	12	18	22	20	15	dB

Pressure loss				
Pressure loss p_A through silencer upstand, at flow rates of	750	900	1000	m³/h
Silencer upstand ZDS..-0028	22	30	40	Pa

Intake ($L_{Wrel3} = L_{Wokt3} - L_{WA3}$)

Relative sound power level L_{Wrel3} at octave mid frequencies f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
DV 30-22									
0,3 $\dot{V}_{max}$	9	9	5	-2	-11	-18	-22	-31	dB
0,6 $\dot{V}_{max}$	9	7	4	-2	-10	-16	-20	-28	dB
$\dot{V}_{max}$	7	4	2	-1	-9	-12	-16	-22	dB
DV 30-25									
0,3 $\dot{V}_{max}$	9	9	5	-2	-11	-18	-22	-31	dB
0,6 $\dot{V}_{max}$	9	7	4	-2	-10	-16	-20	-28	dB
$\dot{V}_{max}$	7	4	2	-1	-9	-12	-16	-22	dB

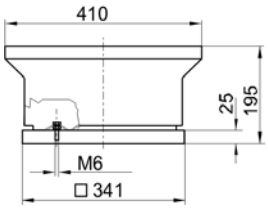
Discharge ($L_{Wrel8} = L_{Wokt8} - L_{WA8}$)

Relative sound power level L_{Wrel8} at octave mid frequencies f_m

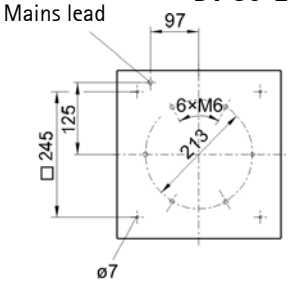
Duty point	63	125	250	500	1000	2000	4000	8000	Hz
0,3 $\dot{V}_{max}$	-7	-3	0	-3	-6	-7	-14	-24	dB
0,6 $\dot{V}_{max}$	-7	-4	-2	-3	-6	-7	-13	-23	dB
$\dot{V}_{max}$	-11	-5	-4	-4	-5	-7	-12	-21	dB
0,3 $\dot{V}_{max}$	-7	-3	0	-3	-6	-7	-14	-24	dB
0,6 $\dot{V}_{max}$	-7	-4	-2	-3	-6	-7	-13	-23	dB
$\dot{V}_{max}$	-11	-5	-4	-4	-5	-7	-12	-21	dB

Roof Extract Fans DV

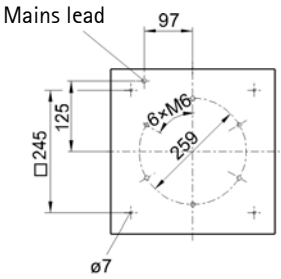
Dimensions DV 30



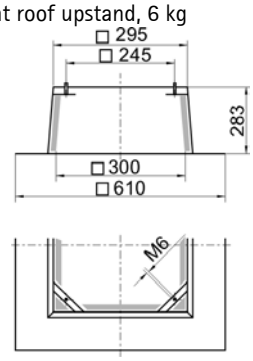
DV 30-22



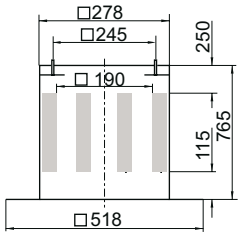
DV 30-25



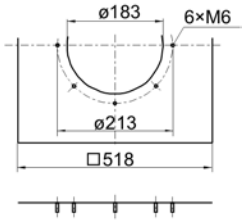
ZBS 20-0031
Flat roof upstand, 6 kg



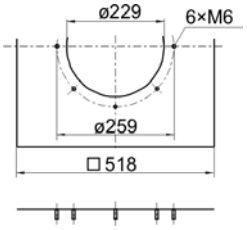
ZDS 20-0028
Silencer upstand, 15 kg



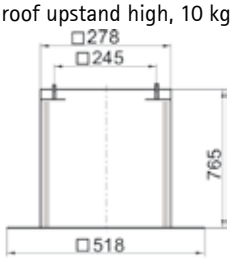
ZBU 01-0028-18
Connecting plate, 2 kg



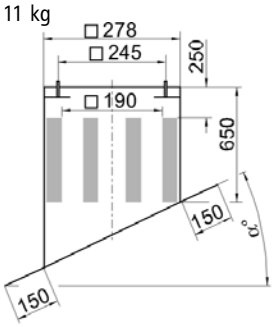
ZBU 01-0028-22
Connecting plate, 2 kg



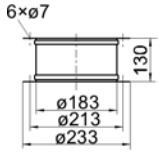
ZBS 23-0031
Flat roof upstand high, 10 kg



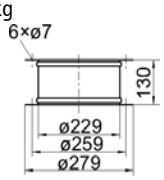
ZDS 09-0028-#
Silencer upstand for inclined roof, 11 kg



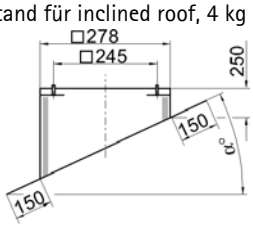
ZKE 11-0180
Intake flexible connection, 0,7 kg

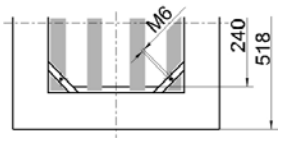


ZKE 13-0225
Intake flexible connection, 1,2 kg

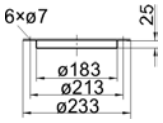


ZBS 09-0031-#
Upstand für inclined roof, 4 kg

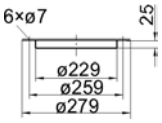


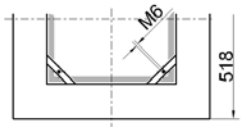


ZKF 01-0180
Mating flange, 0,3 kg



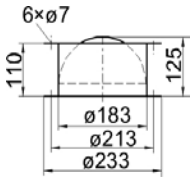
ZKF 13-0225
Mating flange, 0,5 kg



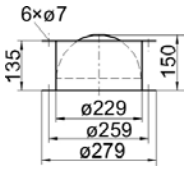


\# = inclination up to 45° possible within 5° steps. Indicate inclination with type when ordering
ZBS 09-0031-05 (od. 10, 15, 20, 25, 30, 35, 40, 45)

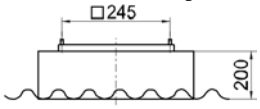
ZLK 01-0180
Automatic back draught damper, 4 kg

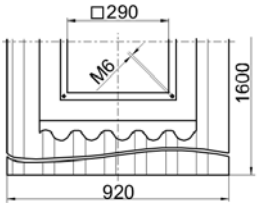


ZLK 03-0225
Automatic back draught damper, 5 kg



ZBS 11-0031
Soaker sheet (for corrugated roof), 11 kg

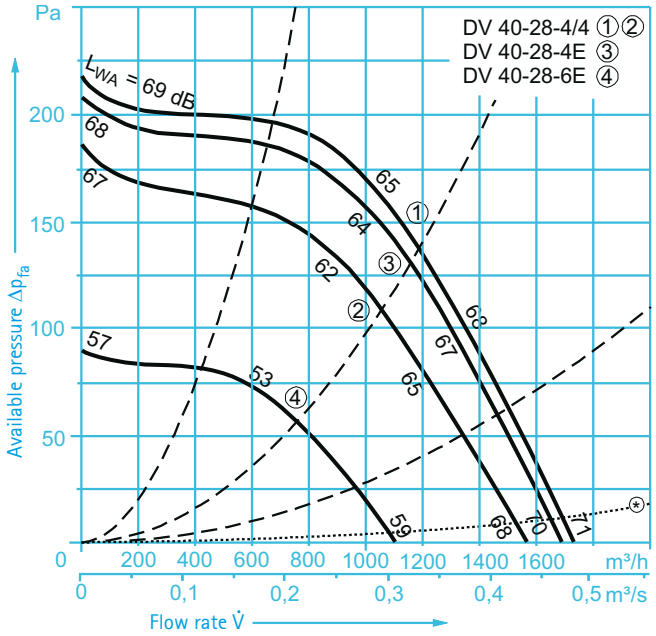


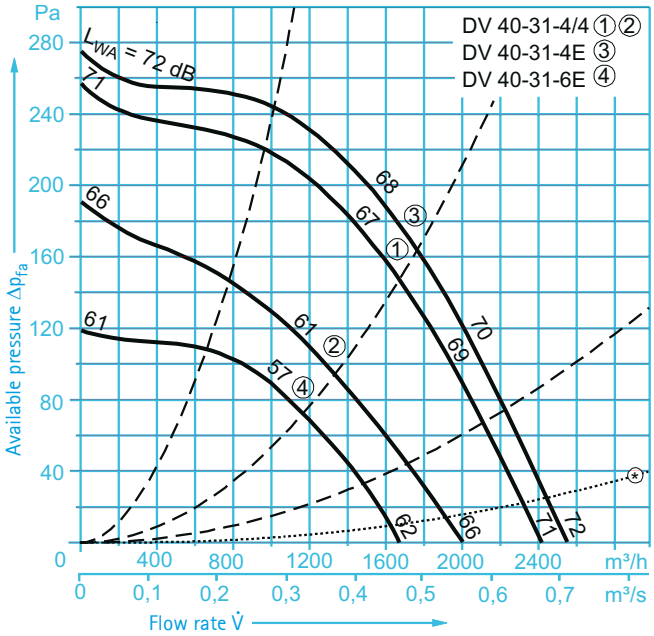


Roof Extract Fans DV

Performance Data DV 40

Roof fan	Voltage	Flow rate $\dot{V}_{max}$	Speed	Absorbed power max.	Full load current	Control units				Sound power L_{WA} $\dot{V}_{max}$	Wiring diagram	Weight	Gas medium tempe-ratures
Type DV	V	m³/h	min^{-1}	kW	A	1-step	2-step	5-step	step-less	dB	Nr.	kg	°C
40-28-4/4	3x400ΔY	1730/1570	1420/1260	0,13/0,09	0,40/0,16	D1	DS	D5-1	-	71/68	515	23	60
40-28-4E	230	1690	1380	0,16	0,76	E1-16	-	E5-1	ES-3	70	508	22	55
40-28-6E	230	1120	910	0,08	0,34	E1-16	E2-6	E5-1	ES-3	59	508	22	60
40-31-4/4	3x400ΔY	2440/2010	1340/1070	0,19/0,13	0,43/0,22	D1	DS	D5-1	-	71/66	515	23	60
40-31-4E	230	2550	1420	0,23	1,2	E1-16	-	E5-1	ES-3	72	508	23	60
40-31-6E	230	1670	920	0,12	0,54	E1-16	E2-6	E5-1	ES-3	61	508	23	60





⊛ Pressure drop in the back draught damper
- Frequency 50 Hz
- Media density1,15 kg/m³

Attenuation values

Average Values	values in dB at mid frequencies 63	125	250	500	1000	2000	4000	8000	Hz
Discharge silencer ZDH 20-0250 11 dB	0	3	5	15	22	20	13	14	dB
Silencer upstand ZDS..-0040 16 dB	3	5	8	13	19	23	21	15	dB

Pressure loss

Pressure loss p_A through silencer upstand, at flow rates of	1500	2000	3000	4000	m³/h
Silencer upstand ZDS..-0040	25	40	100	170	Pa

Intake ($L_{Wrel3} = L_{Wokt3} - L_{WA3}$)

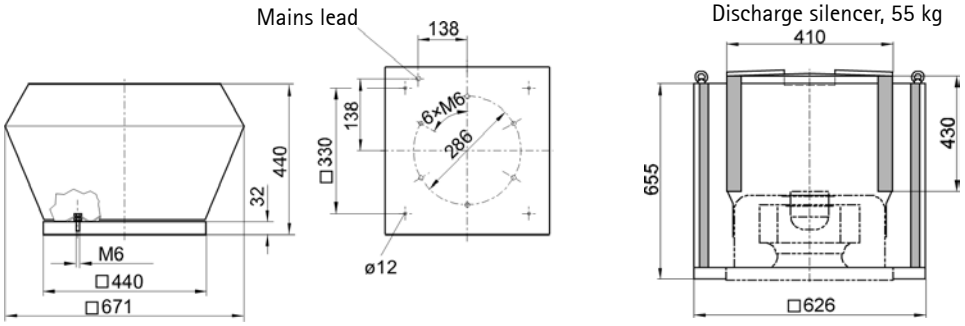
Relative sound power level L_{Wrel3} at octave mid frequencies f_m									
Duty point	63	125	250	500	1000	2000	4000	8000	Hz
DV 40-28									
0,3 $\dot{V}_{max}$	12	13	0	-6	-10	-11	-18	-32	dB
0,6 $\dot{V}_{max}$	11	10	-1	-5	-7	-9	-15	-29	dB
$\dot{V}_{max}$	4	11	-1	-5	-7	-10	-17	-30	dB
DV 40-31									
0,3 $\dot{V}_{max}$	13	14	-2	-6	-11	-12	-16	-29	dB
0,6 $\dot{V}_{max}$	8	13	-3	-6	-10	-11	-16	-28	dB
$\dot{V}_{max}$	2	12	-3	-5	-8	-11	-16	-28	dB

Discharge ($L_{Wrel8} = L_{Wokt8} - L_{WA8}$)

Relative sound power level L_{Wrel3} at octave mid frequencies f_m									
Duty point	63	125	250	500	1000	2000	4000	8000	Hz
0,3 $\dot{V}_{max}$	5	0	-1	-5	-5	-6	-13	-22	dB
0,6 $\dot{V}_{max}$	-4	-3	-3	-4	-5	-7	-13	-22	dB
$\dot{V}_{max}$	-9	-2	-2	-4	-5	-7	-13	-25	dB
0,3 $\dot{V}_{max}$	3	2	0	-5	-6	-7	-13	-20	dB
0,6 $\dot{V}_{max}$	-5	1	-1	-5	-6	-7	-12	-21	dB
$\dot{V}_{max}$	-10	1	-1	-4	-5	-7	-12	-22	dB

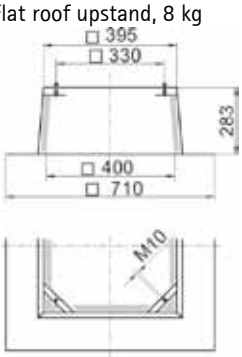
Dimensions DV 40

DV 40

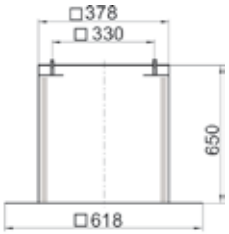


ZDH 20-0250
Discharge silencer, 55 kg

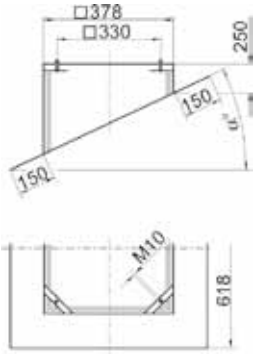
ZBS 20-0040
Flat roof upstand, 8 kg



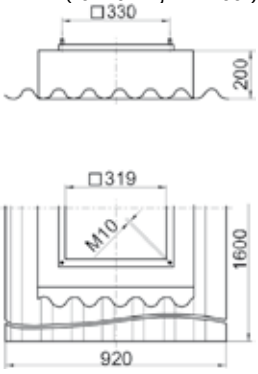
ZBS 23-0040
Flat roof upstand high, 10 kg



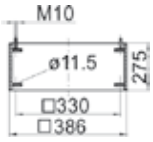
ZBS 09-0040-#
Upstand for inclined roof, 5 kg



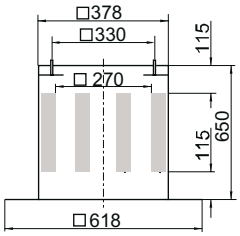
ZBS 11-0040
Soaker sheet (for corrugated roof), 11 kg



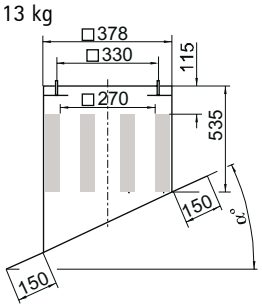
ZKK 20-0040
Intermediate piece, 11 kg

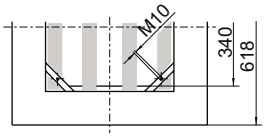


ZDS 20-0040
Silencer upstand, 18 kg



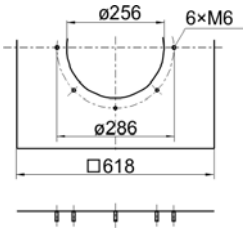
ZDS 09-0040-#
Silencer upstand for inclined roof, 13 kg



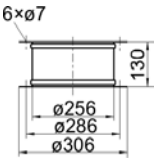


= inclination up to 45° possible within 5° steps. Indicate inclination with type when ordering ZBS 09-0040-05 (od. 10, 15, 20, 25, 30, 35, 40, 45)
When using damper ZLK and upstand silencer ZDS the damper has to be fitted by using a plate ZBU below silencer upstand.
When fitting damper to fan an intermediate piece ZKK must be added.

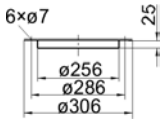
ZBU 01-0040-25
Connecting plate, 4 kg



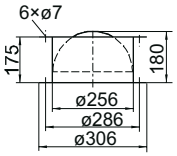
ZKE 11-0250
Intake flexible connection, 1,4 kg



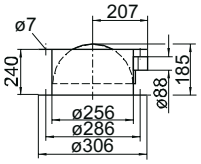
ZKF 11-0250
Mating flange, 0,6 kg



ZLK 01-0250
Automatic back draught damper, 6 kg



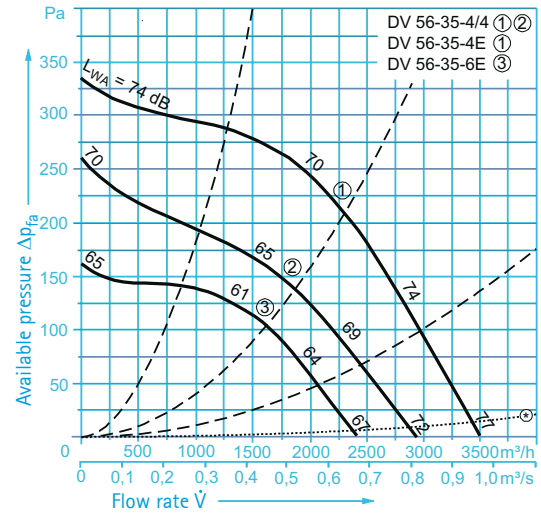
ZLK 21-0250
Damper with actuator, 9 kg

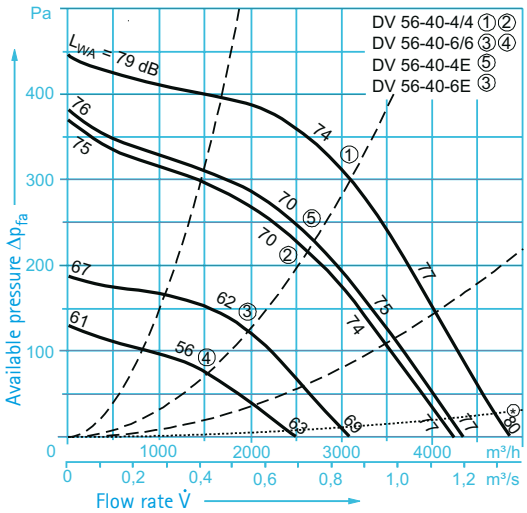


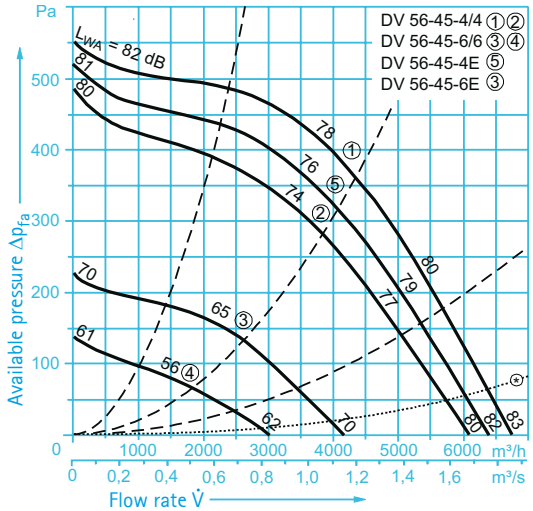
Roof Extract Fans DV

Performance Data DV 56

Roof fan	Voltage	Flow rate $\dot{V}_{max}$	Speed	Absorbed power max.	Full load current	Control units				Sound power L_{WA} $\dot{V}_{max}$	Wiring dia-gram	Weight	Gas medium tempe-ratures
Type DV	V	m³/h	min^{-1}	kW	A	1-step	2-step	5-step	stepless	dB	Nr.	kg	°C
56-35-4/4	3x400ΔY	3470/2910	1340/1080	0,35/0,22	0,75/0,39	D1	DS	D5-1	-	77/72	515	35	60
56-35-4E	230	3470	1340	0,40	1,9	E1-16	-	E5-3	ES-3	77	508	35	60
56-35-6E	230	2380	930	0,15	0,72	E1-16	-	E5-1	ES-3	67	508	35	60
56-40-4/4	3x400ΔY	4830/4250	1400/1190	0,58/0,44	1,35/0,74	D1	DS	D5-3	-	80/77	515	40	60
56-40-6/6	3x400ΔY	3100/2520	890/690	0,22/0,13	0,55/0,23	D1	DS	D5-1	-	69/63	515	37	60
56-40-4E	230	4340	1220	0,52	2,3	-	-	E5-3	-	77	509	40	55
56-40-6E	230	3100	890	0,20	0,91	E1-16	-	E5-1	ES-3	69	508	37	60
56-45-4/4	3x400ΔY	6800/6130	1420/1250	0,95/0,76	2,30/1,30	D1	DS	D5-7	-	83/80	515	44	60
56-45-6/6	3x400ΔY	4190/3060	860/600	0,30/0,17	0,67/0,32	D1	DS	D5-1	-	70/62	515	44	60
56-45-4E	230	6450	1330	0,95	4,4	-	-	E5-7	-	82	509	44	55
56-45-6E	230	4150	850	0,31	1,4	E1-16	-	E5-1	ES-3	70	508	44	60







Pressure drop in the back draught damper
- Frequency 50 Hz
- Media density1,15 kg/m³

Attenuation values

Average Values	values in dB at mid frequencies 63	125	250	500	1000	2000	4000	8000	Hz
Discharge silencer ZDH 20-0355 11 dB	0	3	5	15	22	20	13	14	dB
Silencer upstand ZDS..-0056 16 dB	3	5	8	12	18	21	20	15	dB

Pressure loss

Pressure loss p_A through silencer upstand, at flow rates of	3000	4000	6000	8000	m³/h
Silencer upstand ZDS..-0056	25	42	80	160	Pa

Intake ($L_{Wrel3} = L_{Wokt3} - L_{WA3}$)

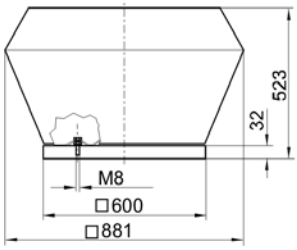
Relative sound power level L_{Wrel3} at octave mid frequencies f_m									
Duty point	63	125	250	500	1000	2000	4000	8000	Hz
DV 56-35									
0,3 $\dot{V}_{max}$	16	12	1	-3	-11	-15	-19	-28	dB
0,6 $\dot{V}_{max}$	11	11	1	-3	-10	-11	-16	-26	dB
$\dot{V}_{max}$	8	11	1	-2	-10	-11	-19	-25	dB
DV 56-40									
0,3 $\dot{V}_{max}$	12	12	1	-3	-10	-15	-18	-28	dB
0,6 $\dot{V}_{max}$	11	11	0	-4	-8	-12	-16	-24	dB
$\dot{V}_{max}$	7	10	1	-3	-8	-12	-19	-20	dB
DV 56-45									
0,3 $\dot{V}_{max}$	12	13	-1	-6	-11	-15	-19	-27	dB
0,6 $\dot{V}_{max}$	5	13	0	-6	-11	-14	-16	-25	dB
$\dot{V}_{max}$	1	13	0	-5	-11	-14	-19	-20	dB

Discharge ($L_{Wrel8} = L_{Wokt8} - L_{WA8}$)

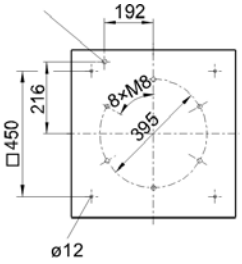
Relative sound power level L_{Wrel8} at octave mid frequencies f_m									
Duty point	63	125	250	500	1000	2000	4000	8000	Hz
0,3 $\dot{V}_{max}$	4	1	-1	-4	-4	-8	-12	-21	dB
0,6 $\dot{V}_{max}$	-3	-1	-3	-4	-5	-6	-12	-20	dB
$\dot{V}_{max}$	-6	0	-3	-4	-5	-6	-15	-21	dB
0,3 $\dot{V}_{max}$	5	2	0	-4	-4	-9	-13	-19	dB
0,6 $\dot{V}_{max}$	0	1	-1	-5	-5	-7	-11	-18	dB
$\dot{V}_{max}$	-4	1	0	-4	-5	-8	-12	-15	dB
0,3 $\dot{V}_{max}$	5	3	-1	-4	-5	-9	-12	-17	dB
0,6 $\dot{V}_{max}$	-2	2	0	-5	-6	-8	-10	-17	dB
$\dot{V}_{max}$	-6	2	0	-4	-5	-8	-13	-15	dB

Dimensions DV 56

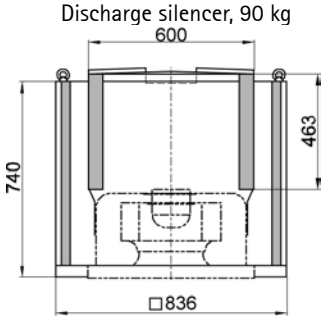
DV 56



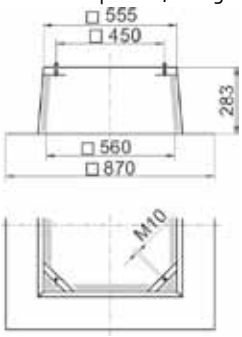
Mains lead



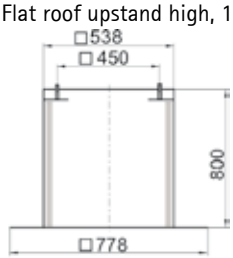
ZDH 20-0355
Discharge silencer, 90 kg



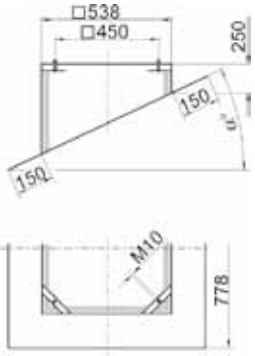
ZBS 20-0056
Flat roof upstand, 10 kg



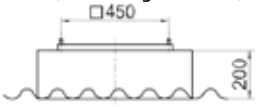
ZBS 23-0056
Flat roof upstand high, 14 kg

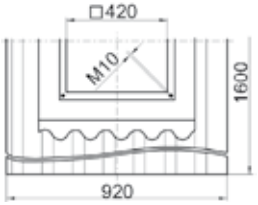


ZBS 09-0056-#
Upstand for inclined roof, 6 kg

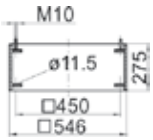


ZBS 11-0056
Soaker sheet (for corrugated roof), 12 kg

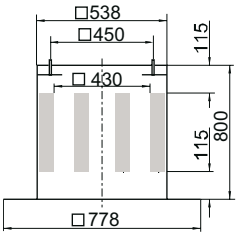




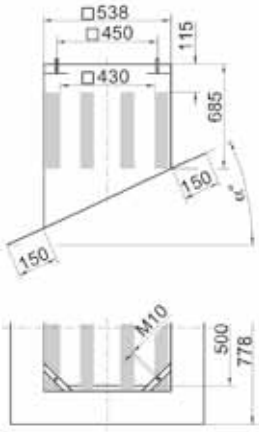
ZKK 20-056
Intermediate piece, 14 kg



ZDS 20-0056
Silencer upstand, 40 kg

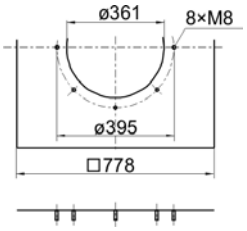


ZDS 09-0056-#
Silencer upstand for inclined roof, 29 kg

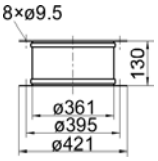


= inclination up to 45° possible within 5° steps. Indicate inclination with type when ordering ZBS 09-0056-05 (od. 10, 15, 20, 25, 30, 35, 40, 45)
When using damper ZLK and upstand silencer ZDS the damper has to be fitted by using a plate ZBU below silencer upstand.
When fitting damper to fan an intermediate piece ZKK must be added.

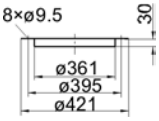
ZBU 01-0056-35
Connecting plate, 6 kg



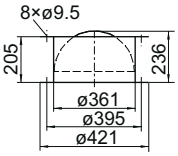
ZKE 11-0355
Intake flexible connection, 2,3 kg



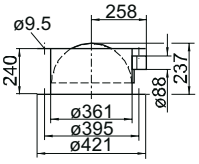
ZKF 11-0355
Mating flange, 0,9 kg



ZLK 01-0355
Automatic back draught damper, 7 kg



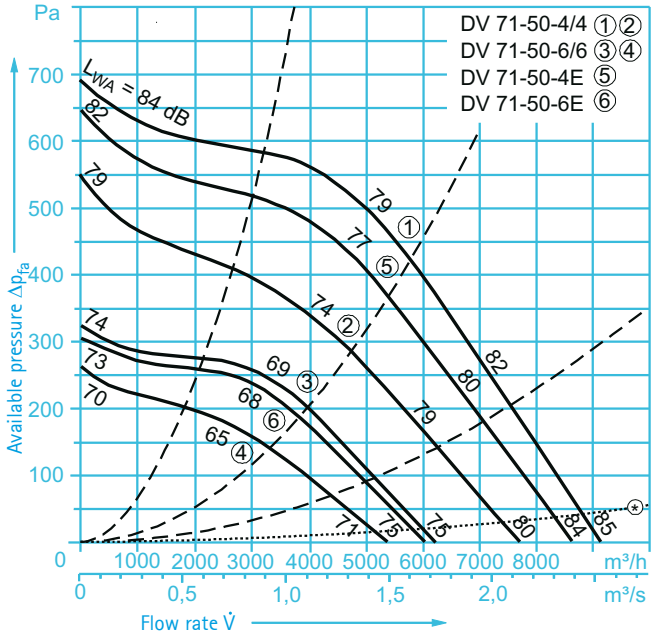
ZLK 21-0355
Motorized back draught damper, 11 kg

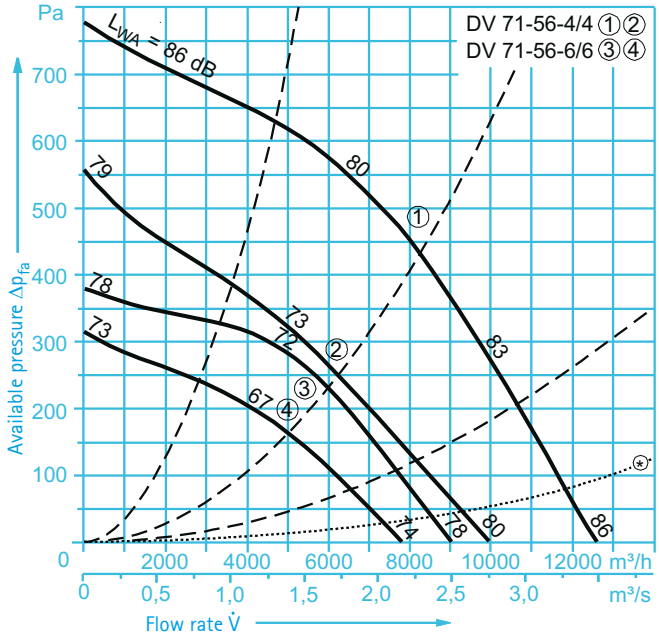


Roof Extract Fans DV

Performance Data DV 71

Roof fan	Voltage	Flow rate $\dot{V}_{max}$	Speed	Absorbed power max.	Full load current	Control units				Sound power L_{WA} $\dot{V}_{max}$	Wiring diagram	Weight	Gas medium temperatures
Type DV	V	m³/h	min^{-1}	kW	A	1-step	2-step	5-step	step-less	dB	Nr.	kg	°C
71-50-4/4	3x400ΔY	9150/7740	1350/1100	1,60/1,05	3,20/1,80	D1	DS	D5-7	-	85/80	515	73	60
71-50-6/6	3x400ΔY	6250/5430	930/780	0,52/0,38	1,30/0,69	D1	DS	D5-3	-	75/71	515	64	60
71-50-4E	230	8660	1260	1,45	6,3	-	-	E5-7	-	84	509	72	60
71-50-6E	230	6100	900	0,54	2,6	-	-	E5-3	-	75	509	64	45
71-56-4/4	3x400ΔY	12580/9950	1270/960	2,40/1,46	4,30/2,4	D1	DS	D5-12	-	86/80	516	82	45
71-56-6/6	3x400ΔY	8990/7790	920/770	0,90/0,59	2,10/1,1	D1	DS	D5-7	-	78/74	515	71	60





⊛ Pressure drop in the back draught damper
- Frequency 50 Hz
- Media density1,15 kg/m³

Attenuation values

Average Values	values in dB at mid frequencies 63	125	250	500	1000	2000	4000	8000	Hz
Discharge silencer ZDH 20-0450 11 dB	0	5	7	15	21	20	16	17	dB
Silencer upstand ZDS..-0071 17 dB	3	5	9	13	20	25	22	17	dB

Pressure loss

Pressure loss p_A through silencer upstand, at flow rates of	5000	8000	10000	12000	m³/h
Silencer upstand ZDS..-0071	25	60	95	110	Pa

Intake ($L_{Wrel3} = L_{Wokt3} - L_{WA3}$)

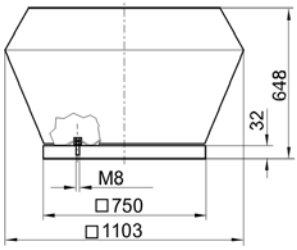
Relative sound power level L_{Wrel3} at octave mid frequencies f_m									
Duty point	63	125	250	500	1000	2000	4000	8000	Hz
DV 71-50									
0,3 $\dot{V}_{max}$	15	9	2	-3	-9	-13	-14	-19	dB
0,6 $\dot{V}_{max}$	11	7	1	-3	-8	-11	-12	-15	dB
$\dot{V}_{max}$	7	6	1	-3	-8	-11	-12	-12	dB
DV 71-56									
0,3 $\dot{V}_{max}$	13	9	4	-3	-9	-14	-15	-22	dB
0,6 $\dot{V}_{max}$	7	9	4	-4	-8	-12	-14	-18	dB
$\dot{V}_{max}$	4	9	3	-3	-8	-12	-14	-15	dB

Discharge ($L_{Wrel8} = L_{Wokt8} - L_{WA8}$)

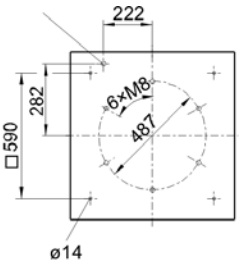
Relative sound power level L_{Wrel8} at octave mid frequencies f_m									
Duty point	63	125	250	500	1000	2000	4000	8000	Hz
0,3 $\dot{V}_{max}$	6	5	1	-4	-5	-9	-12	-18	dB
0,6 $\dot{V}_{max}$	1	5	0	-5	-6	-8	-10	-16	dB
$\dot{V}_{max}$	-2	4	1	-3	-6	-10	-12	-14	dB
0,3 $\dot{V}_{max}$	8	5	0	-4	-5	-9	-13	-19	dB
0,6 $\dot{V}_{max}$	-1	7	-1	-4	-5	-8	-11	-18	dB
$\dot{V}_{max}$	-4	6	-1	-3	-5	-9	-14	-16	dB

Dimensions DV 71

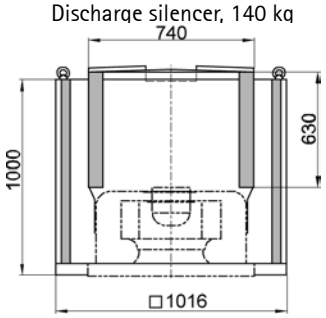
DV 71



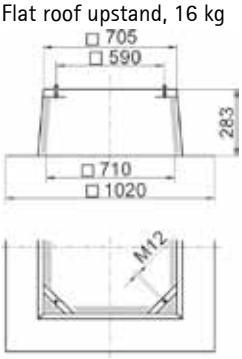
Mains lead



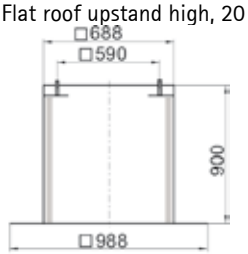
ZDH 20-0450
Discharge silencer, 140 kg



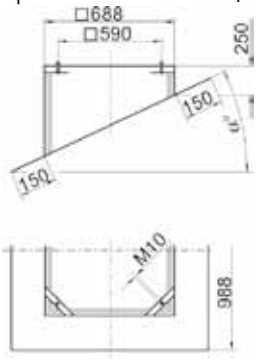
ZBS 20-0071
Flat roof upstand, 16 kg



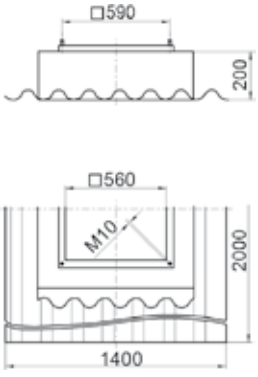
ZBS 23-0071
Flat roof upstand high, 20 kg



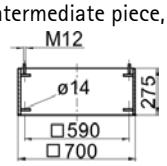
ZBS 09-0071-#
Upstand for inclined roof, 9 kg



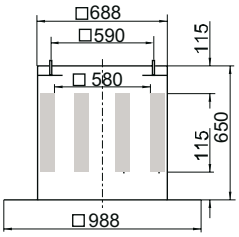
ZBS 11-0071
Soaker sheet (for corrugated roof), 29 kg



ZKK 20-0071
Intermediate piece, 16 kg



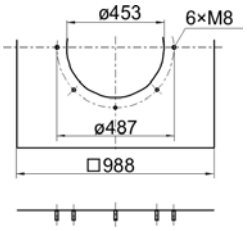
ZDS 20-0071
Silencer upstand, 79 kg



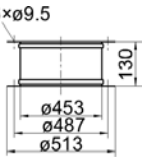
ZDS 09-0071-#
Silencer upstand for inclined roof, 57 kg

= inclination up to 45° possible within 5° steps. Indicate inclination with type when ordering ZBS 09-0071-05 (od. 10, 15, 20, 25, 30, 35, 40, 45)
When using damper ZLK and upstand silencer ZDS the damper has to be fitted by using a plate ZBU below silencer upstand.
When fitting damper to fan an intermediate piece ZKK must be added.

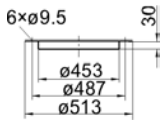
ZBU 01-0071-45
Connecting plate, 10 kg



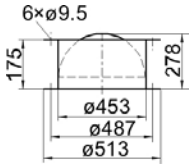
ZKE 11-0450
Intake flexible connection, 2,9 kg



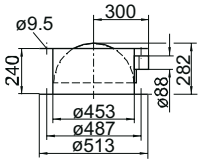
ZKF 11-0450
Mating flange, 1,2 kg



ZLK 01-0450
Automatic back draught damper, 10 kg



ZLK 21-0450
motorized back draught damper, 14 kg

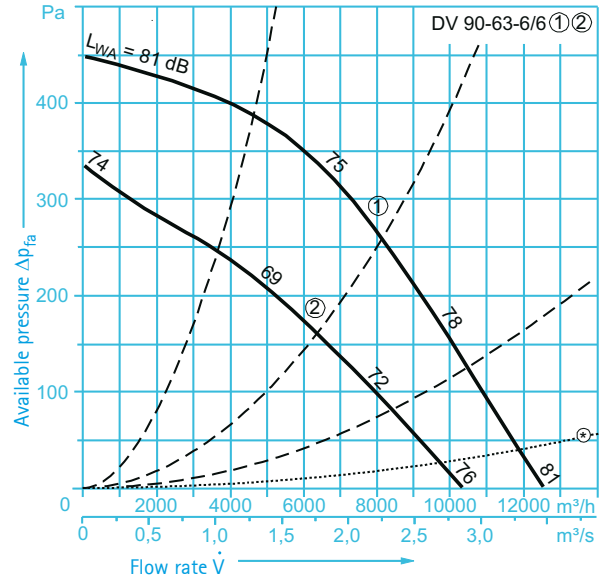


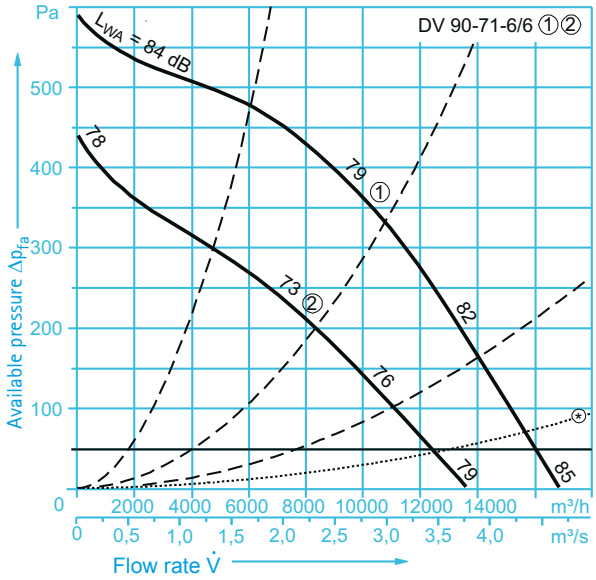
Roof Extract Fans DV

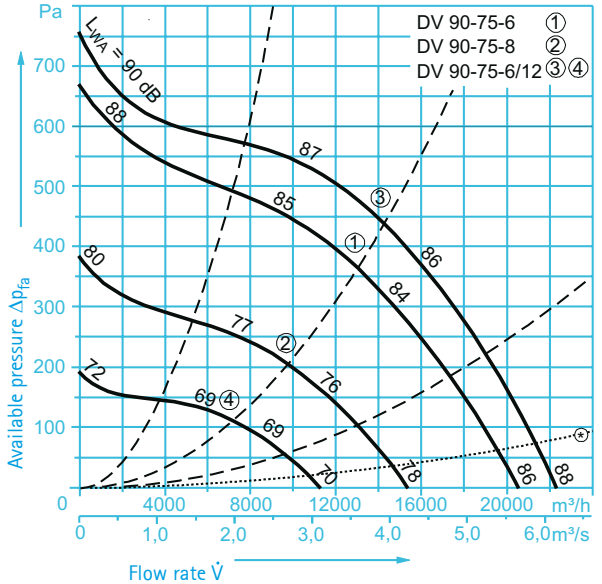
Performance Data DV 90

Roof fan	Voltage	Flow rate $\dot{V}_{max}$	Speed	Absorbed power max.	Full load current	Control units				Sound power L_{WA} $\dot{V}_{max}$	Wiring dia-gram	Weight	Gas medium temperatures
Type DV	V	m³/h	min^{-1}	kW	A	1-step	2-step	5-step	step-less	dB	Nr.	kg	°C
90-63-6/6	3x400ΔY	12500/10300	900/700	1,30/0,88	2,9/1,7	D1	DS	D5-7	-	81/76	515	119	60
90-71-6/6	3x400ΔY	16850/13640	880/680	2,50/1,50	5,0/2,8	D1	DS	D5-12	-	85/79	516	139	45
90-75-6 *	3x400Δ	20000	870	3,4	6,5	-	-	-	-	86	502	140	50
90-75-8	3x400Y	15000	650	1,6	3,3	D1	-	D5-7	-	78	534	135	40
90-75-6/12	3x400YY/Y	22000/11000	950/480	4,4/0,7	8,7/2,6	-	-	-	-	88/70	551	166	45

* No stepless control possible







⊛ Pressure drop in the back draught damper
- Frequency 50 Hz
- Media density1,15 kg/m³

Attenuation values

Average Values	values in dB at mid frequencies 63	125	250	500	1000	2000	4000	8000	Hz
Discharge silencer ZDH 20-0560 11 dB	4	8	5	13	17	18	18	17	dB
Discharge silencer ZDS..-0090 15 dB	2	5	8	11	17	21	19	13	dB

Pressure loss

Pressure loss p_A through silencer upstand, at flow rates of	10000	15000	20000	30000	m³/h
Silencer upstand ZDS..-0090	20	40	80	180	Pa

Intake ($L_{Wrel3} = L_{Wokt3} - L_{WA3}$)

Relative sound power level L_{Wrel3} at octave mid frequencies f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
DV 90-63									
0,3 $\dot{V}_{max}$	17	7	3	-4	-8	-12	-14	-21	dB
0,6 $\dot{V}_{max}$	15	8	3	-4	-8	-11	-14	-20	dB
$\dot{V}_{max}$	13	8	4	-3	-8	-12	-15	-23	dB
DV 90-71									
0,3 $\dot{V}_{max}$	15	7	3	-4	-6	-11	-13	-20	dB
0,6 $\dot{V}_{max}$	13	7	3	-4	-7	-11	-12	-19	dB
$\dot{V}_{max}$	10	7	4	-4	-8	-11	-12	-19	dB
DV 90-75									
0,3 $\dot{V}_{max}$	15	7	3	-4	-6	-11	-13	-20	dB
0,6 $\dot{V}_{max}$	13	7	3	-4	-7	-11	-12	-19	dB
$\dot{V}_{max}$	10	7	4	-4	-8	-11	-12	-19	dB

Discharge ($L_{Wrel8} = L_{Wokt8} - L_{WA8}$)

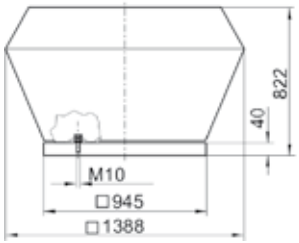
Relative sound power level L_{Wrel8} at octave mid frequencies f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
0,3 $\dot{V}_{max}$	9	7	-2	-1	-6	-10	-14	-21	dB
0,6 $\dot{V}_{max}$	9	8	-1	-3	-6	-8	-12	-21	dB
$\dot{V}_{max}$	6	7	-1	-1	-7	-9	-13	-24	dB
0,3 $\dot{V}_{max}$	8	9	-3	-2	-7	-9	-13	-18	dB
0,6 $\dot{V}_{max}$	10	9	-3	-3	-6	-9	-12	-18	dB
$\dot{V}_{max}$	7	9	-2	-2	-7	-9	-13	-19	dB
0,3 $\dot{V}_{max}$	8	4	-1	-5	-8	-8	-8	-12	dB
0,6 $\dot{V}_{max}$	9	2	-3	-5	-7	-7	-8	-14	dB
$\dot{V}_{max}$	12	6	0	-4	-7	-8	-12	-17	dB

Roof Extract Fans DV

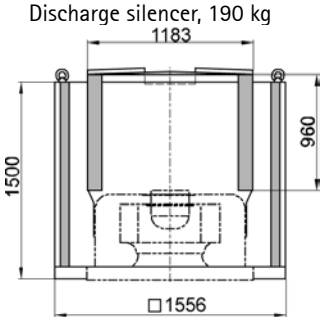
Dimensions DV 90

DV 90



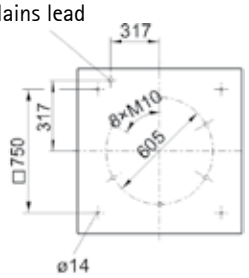
ZDH 20-0560

Discharge silencer, 190 kg



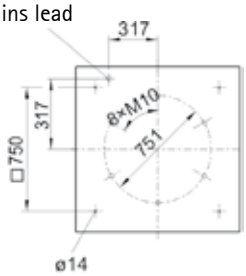
DV 90-63 / DV 90-71

Mains lead



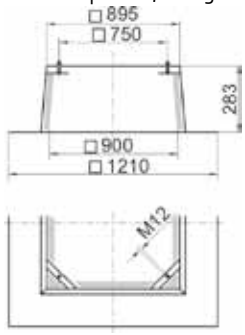
DV 90-75

Mains lead



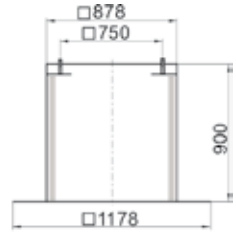
ZBS 20-0090

Flat roof upstand, 25 kg



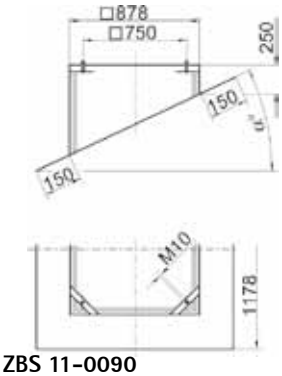
ZBS 23-0090

Flat roof upstand high, 32 kg



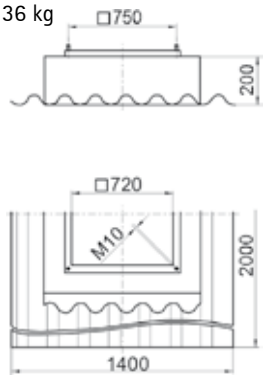
ZBS 09-0090-#

Upstand for inclined roof, 13 kg



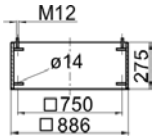
ZBS 11-0090

Soaker sheet (for corrugated roof), 36 kg



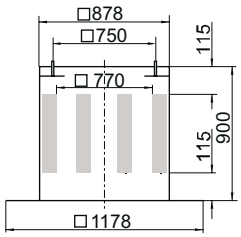
ZKK 20-0090

Intermediate piece, 19 kg



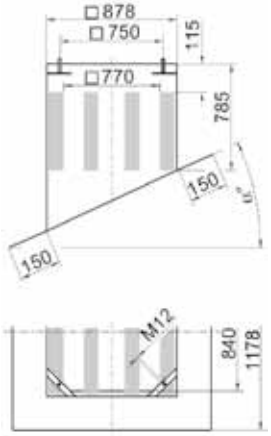
ZDS 20-0090

Silencer upstand, 105 kg



ZDS 09-0090-#

Silencer upstand for inclined roof, 76 kg



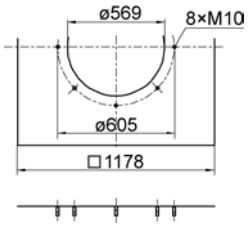
= inclination up to 45° possible within 5° steps. Indicate inclination with type when ordering ZBS 09-0090-05 (od. 10, 15, 20, 25, 30, 35, 40, 45)

When using damper ZLK and upstand silencer ZDS the damper has to be fitted by using a plate ZBU below silencer upstand.

When fitting damper to fan an intermediate piece ZKK must be added.

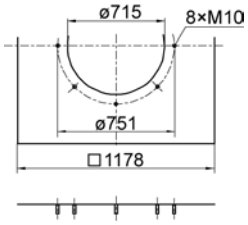
ZBU 01-0090-56

Connecting plate, 17 kg



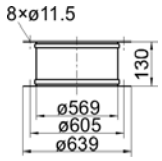
ZBU 01-0090-71

Connecting plate, 16 kg



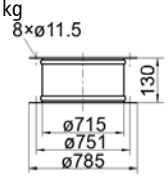
ZKE 11-0560

Intake flexible connection, 4,2 kg



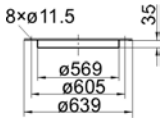
ZKE 11-0710

Intake flexible connection, 6,1 kg



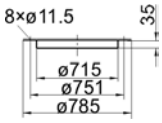
ZKF 11-0560

Mating flange, 1,8 kg



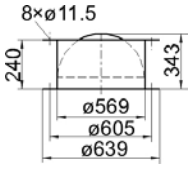
ZKF 11-0710

Mating flange, 2,8 kg



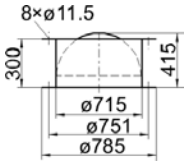
ZLK 01-0560

Automatic back draught damper, 13 kg



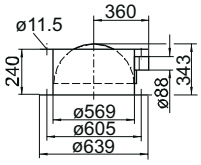
ZLK 01-0710

Automatic back draught damper, 19 kg



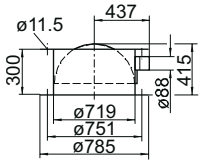
ZLK 21-0560

Motorized back draught damper, 16 kg



ZLK 21-0710

Motorized back draught damper, 20 kg

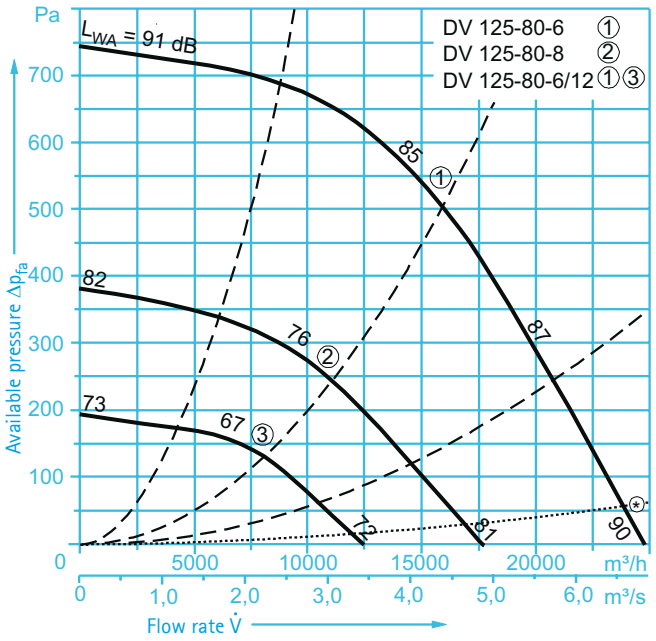


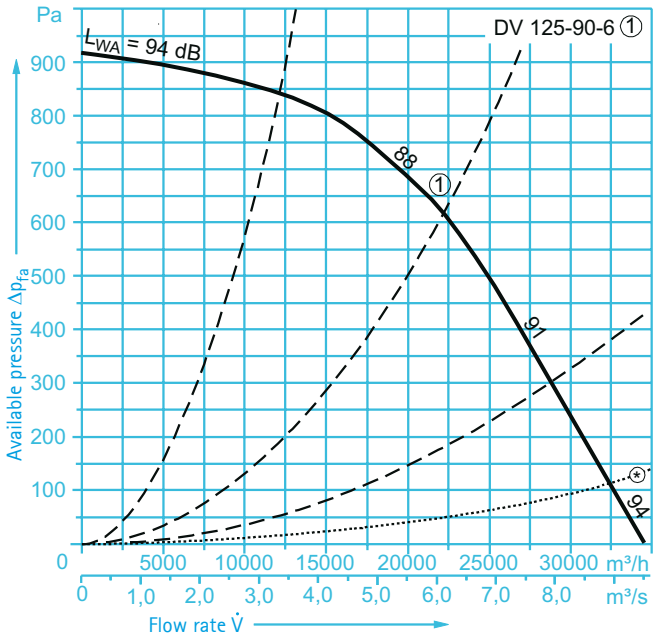
Roof Extract Fans DV

Performance Data DV 125

Roof fan	Voltage	Flow rate $\dot{V}_{max}$	Speed	Absorbed power max.	Full load current	Control units				Sound power L_{WA} $\dot{V}_{max}$	Wiring dia-gram	Weight	Gas medium temperatures
Type DV	V	m³/h	min^{-1}	kW	A	1-step	2-step	5-step	step-less	dB	Nr.	kg	°C
125-80-6 *	3x400Δ	24800	945	5,2	10,2	-	-	-	-	90	549	215	55
125-80-8	3x400Δ	17600	660	2,0	4,4	D1	-	D5-12	-	81	537	206	40
125-80-6/12	3x400YY/Y	24800/12470	960/480	5,5/0,85	11,0/3,3	-	-	-	-	90/72	551	215	55
125-90-6 *	3x400Y	34550	940	8,8	16,4	-	-	-	-	94	549	238	40

* No stepless control possible





⊛ Pressure drop in the back draught damper
- Frequency 50 Hz
- Media density1,15 kg/m³

Attenuation values

Average Values	values in dB at mid frequencies 63	125	250	500	1000	2000	4000	8000	Hz
Discharge silencer ZDH 20-0710 11 dB	4	8	5	13	17	18	18	17	dB
Silencer upstand ZDS..-0125 16 dB	3	6	8	14	20	25	23	11	dB

Pressure loss

Pressure loss p_A through silencer upstand, at flow rates of	17000	20000	25000	30000	40000	m³/h
Silencer upstand ZDS..-0125	20	30	40	65	110	Pa

Intake (L_{Wrel3} = L_{Wokt3} - L_{WA3})

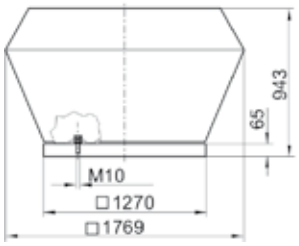
Relative sound power level L_{Wrel3} at octave mid frequencies f_m									
Duty point	63	125	250	500	1000	2000	4000	8000	Hz
DV 125-80									
0,3 $\dot{V}_{max}$	15	7	3	-4	-6	-11	-13	-20	dB
0,6 $\dot{V}_{max}$	13	7	3	-4	-7	-11	-12	-19	dB
$\dot{V}_{max}$	10	7	4	-4	-8	-11	-12	-19	dB
DV 125-90									
0,3 $\dot{V}_{max}$	15	7	3	-4	-6	-11	-13	-20	dB
0,6 $\dot{V}_{max}$	13	7	3	-4	-7	-11	-12	-19	dB
$\dot{V}_{max}$	10	7	4	-4	-8	-11	-12	-19	dB

Discharge (L_{Wrel8} = L_{Wokt8} - L_{WA8})

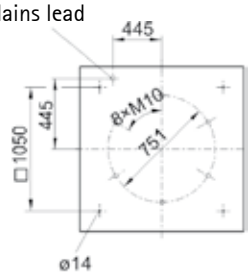
Relative sound power level L_{Wrel3} at octave mid frequencies f_m									
Duty point	63	125	250	500	1000	2000	4000	8000	Hz
0,3 $\dot{V}_{max}$	8	9	-3	-2	-7	-9	-13	-18	dB
0,6 $\dot{V}_{max}$	10	9	-3	-3	-6	-9	-12	-18	dB
$\dot{V}_{max}$	7	9	-2	-2	-7	-9	-13	-19	dB
0,3 $\dot{V}_{max}$	8	9	-3	-2	-7	-9	-13	-18	dB
0,6 $\dot{V}_{max}$	10	9	-3	-3	-6	-9	-12	-18	dB
$\dot{V}_{max}$	7	9	-2	-2	-7	-9	-13	-19	dB

Dimensions DV 125

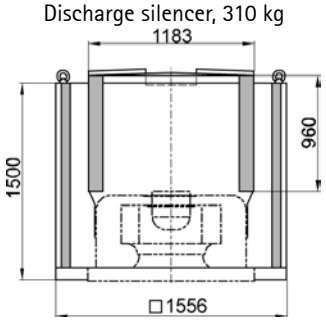
DV 125



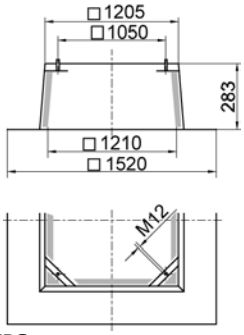
Mains lead



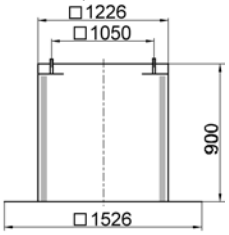
ZDH 20-0710
Discharge silencer, 310 kg



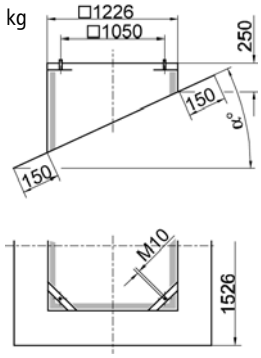
ZBS 20-0125
Flat roof upstand, 34 kg



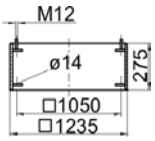
ZBS 23-0125
Flat roof upstand high, 40 kg



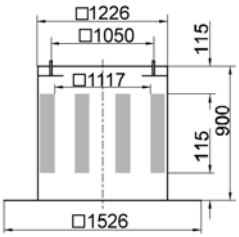
ZBS 09-0125-#
Upstand for inclined roof, 18 kg



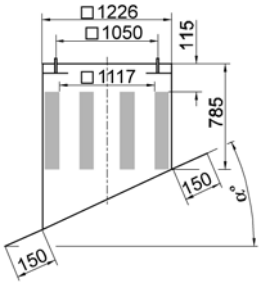
ZKK 20-0125
Intermediate piece, 32 kg



ZDS 20-0125
Silencer upstand, 180 kg

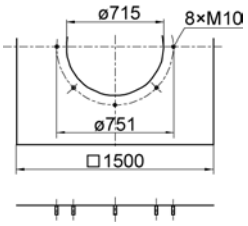


ZDS 09-0125-#
Silencer upstand for inclined roof, 130 kg

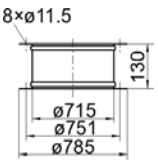


= inclination up to 45° possible within 5° steps. Indicate inclination with type when ordering ZBS 09-0071-05 (od. 10, 15, 20, 25, 30, 35, 40, 45)
When using damper ZLK and upstand silencer ZDS the damper has to be fitted by using a plate ZBU below silencer upstand.
When fitting damper to fan an intermediate piece ZKK must be added.

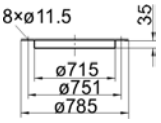
ZBU 01-0125-71
Connecting plate , 36 kg



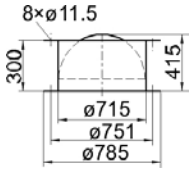
ZKE 11-0710
Intake flexible connection, 6,1 kg



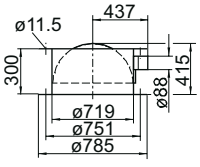
ZKF 11-0710
Mating flange, 2,8 kg



ZLK 01-0710
Automatic back draught damper, 19 kg



ZLK 21-0710
Motorized back draught damper, 20 kg



Roof Extract Fans DV

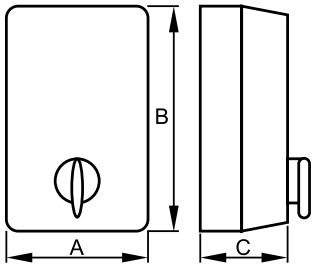
Motor Protection Units

Technical Data:

Type	Main Voltage	Control voltage	Max rating	Max Current	Weight	Protection
D1	400 V	230 V	3 kW	-	0,9 kg	IP 54
DS	400 V	230 V	4 kW	-	0,9 kg	IP 54
D5-1	400 V	230 V	-	1 A	4,5 kg	IP 40
D5-3	400 V	230 V	-	2 A	7,0 kg	IP 20
D5-7	400 V	230 V	-	4 A	9,0 kg	IP 20
D5-12	400 V	230 V	-	7 A	19,0 kg	IP 20
E5-1	230 V	-	-	1,5 A	1,0 kg	IP 40
E5-3	230 V	-	-	3 A	4,0 kg	IP 40

Dimensions:

Type	A	B	C
D1	105	170	135
DS	105	170	135
D5-1	150	200	175
D5-3	230	310	185
D5-7	230	310	185
D5-12	230	310	185
E5-1	105	170	135
E5-3	150	200	175

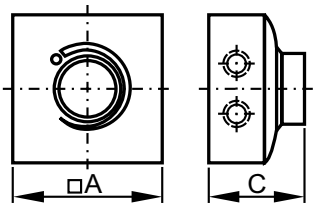


Technical Data:

Type	Voltage	max. Current	Weight	Protection
ES-3	230 V	2,5 A	0,6 kg	IP 44

Dimensions:

Type	A	B
ES-3	80	65

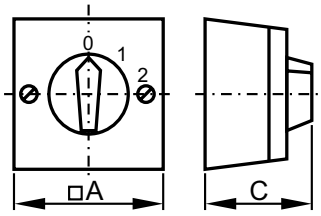


Technical Data:

Type	Voltage	max. Current	Weight	Protection
E2-6	230 V	6 A	0,15 kg	IP 54

Dimensions:

Type	A	B
ES-3	80	77

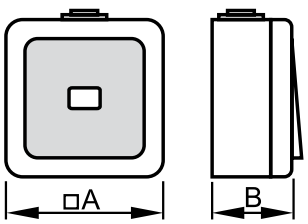


Technical Data:

Type	Voltage	max. Current	Weight	Protection
E1-16	230 V	10 A	0,12 kg	IP 44

Dimensions:

Type	A	B
E1-16	63	31

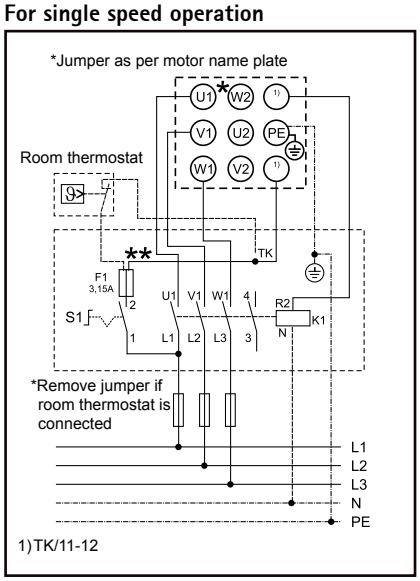


Roof Extract Fans DV

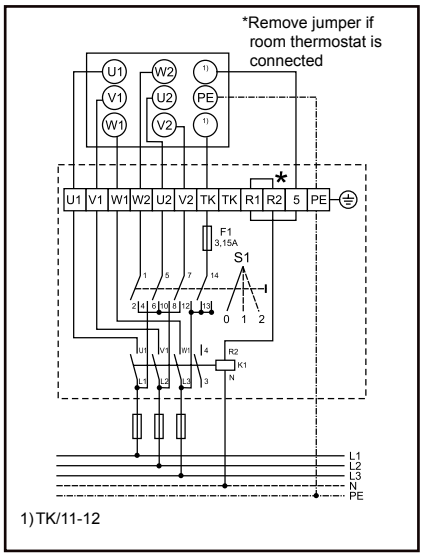
Diagrams for Control Switches
Diagrams for Isolator Switches

Terminals for thermo-contacts T or 11/12 respectively

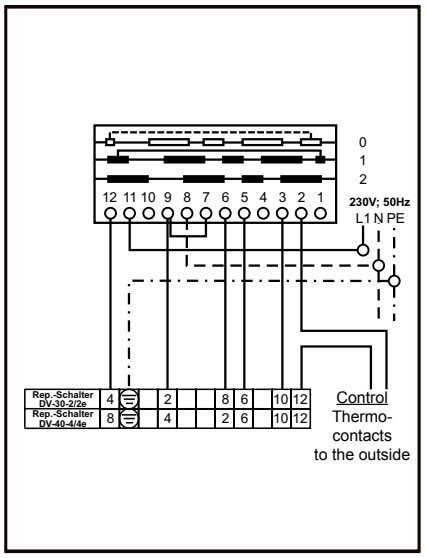
On/Off – Switch D1
For single speed operation



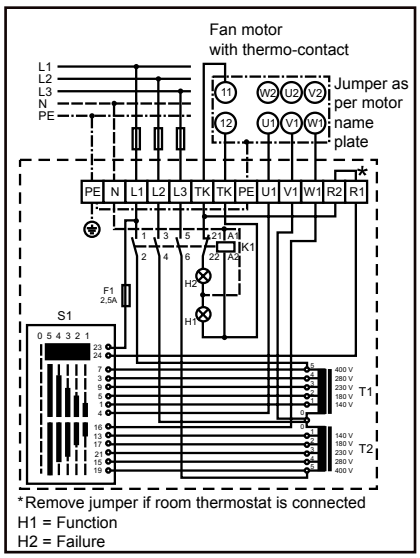
2-step-switch DS
For star/delta winding



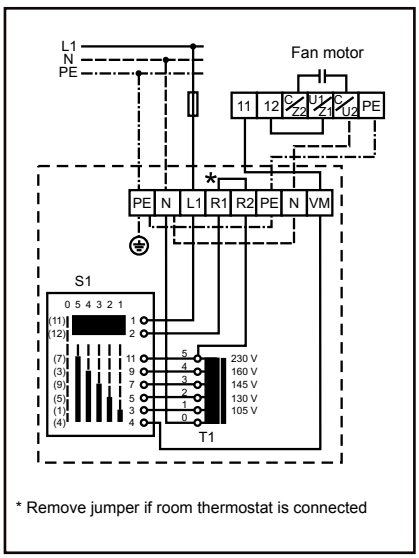
2-step-switch E2-6



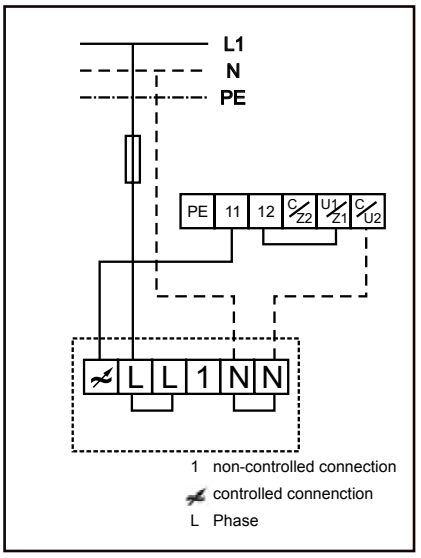
5-step-switch
D5-1, D5-3, D5-7, D5-12



5-step-switch
E5-1, E5-3

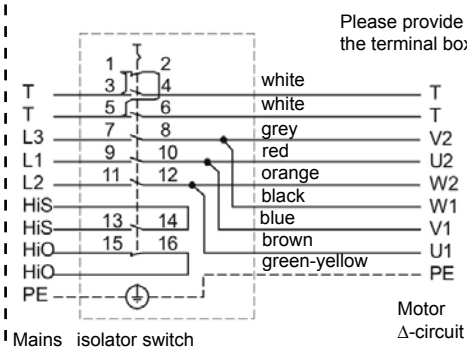


Step-less controller
ES-3 (phase cutting)



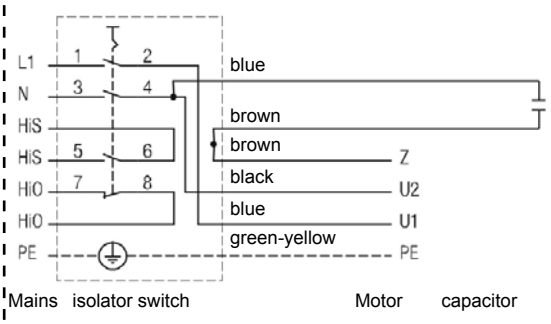
Diagrams for isolator switches

Isolator switch ESH 21-0030-35 / ESH 21-0075-35
for 3-phase motors, 1 speed, with thermo-contact, Δ-connection



04-12-03 502

Isolator switch ESH 21-0030-22
for single-phase AC-motors, with capacitor, thermo-contacts integrated in the motor winding

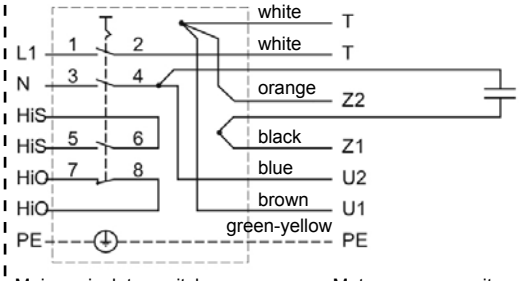


11-12-01 507

Roof Extract Fans DV **Diagrams for Isolator Switches**

Terminals for thermo-contacts T or 11/12 respectively

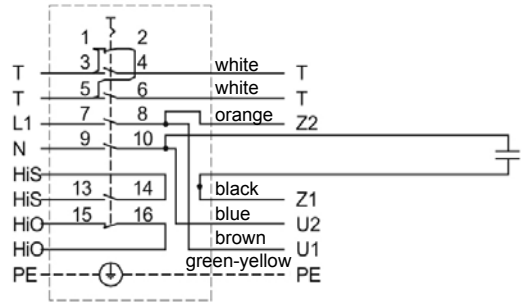
Isolator switch ESH 21-0030-22
for single-phase AC-motors, with capacitor, thermo-contacts and motor winding in serial circuit



Mains isolator switch Motor cpacitor

05-07-02 508

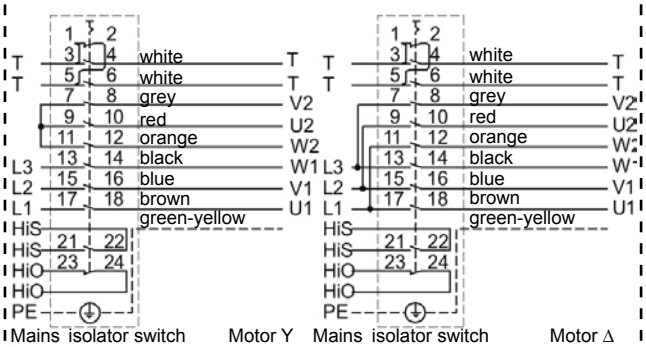
Isolator switch ESH ESH 21-0030-25
for single-phase AC-motors, with capacitor and thermo-contacts



Mains isolator switch Motor capacitor

01-11-01 509

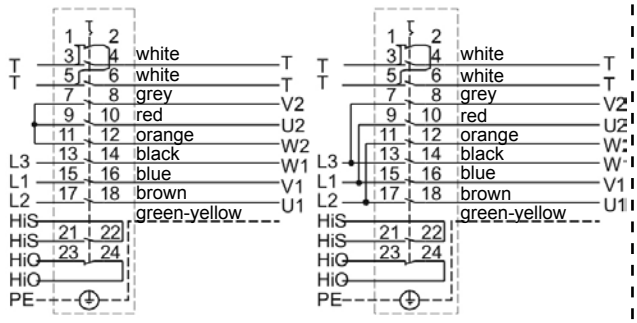
Isolator switch ESH ESH 21-0030-65 / ESH 21-0075-65
for 3-phase motors, 2-speed, Y/Δ-connection, with thermo-contacts



Mains isolator switch lower speed Motor Y Mains isolator switch higher speed Motor Δ

02-09-02 515

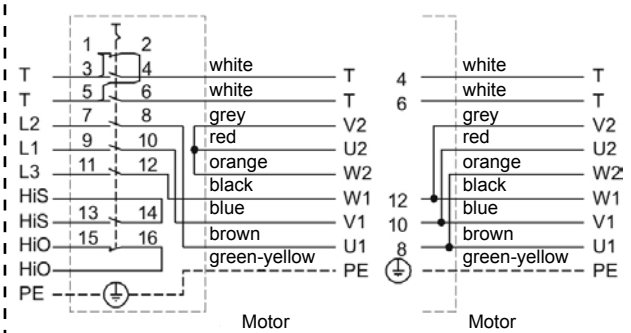
Isolator switch ESH ESH 21-0030-65 / ESH 21-0075-65
for 3-phase motors, 2-speed, Y/Δ-connection, with thermo-contacts



Mains isolator switch lower speed Motor Y Mains isolator switch higher speed Motor Δ

02-09-02 516

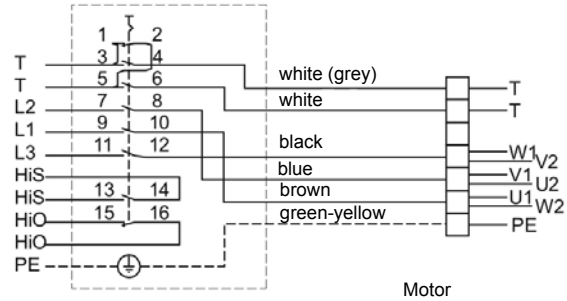
Isolator switch ESH 21-0030-35
for 3-phase motors, 1 speed, with thermo-contacts, Y/Δ-connection



Mains isolator switch Motor Y-connection 400V Motor Δ-connection 230V

05-08-02 527

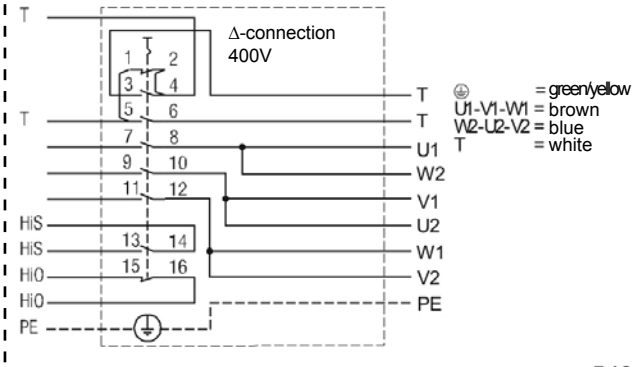
Isolator switch ESH 21-0030-35
for 3-phase motors, 2 speed, Δ-connection, with thermo-contacts



Mains isolator switch Motor Δ-connection 400V

02-04-04 537

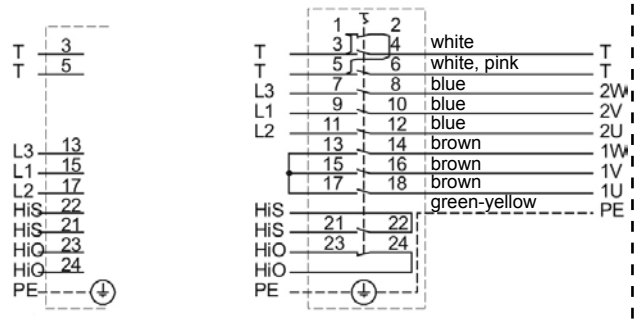
Revisionsschalter ESH 21-0030-35 / ESH21-0075-35
für Drehstrommotoren, 1 Drehzahl, Δ-Schaltung mit Thermokontakten



Mains isolator switch Motor

31-08-2010 549

Isolator switch ESH 21-0030-65 / ESH 21-0075-65
for 3-phase motors, 2 speed, Dahlander circuit Y/YY,
with thermo-contacts



Mains lower speed Mains isolator switch higher speed Motor

19-12-03 551

Control systems WRS

Bedienmodul Lüftun BML ventilation programming module g BML

- Room compensated temperature control
- LCD with background illumination
- Easy plain text guide through the menus
- Control by rotary selector with key function
- Four function keys for frequently used functions (Info, Temperature- , speed adjustment, fresh air proportion)
- Installation either inside the ventilation control unit or, as remote control, in a wall mounting base
- Only one BML ventilation programming modul required to control up to 7 zones
- Demand-optimised boiler water temperature demand via eBUS
- eBus interface

Wall mounting base

- Wall mounting base for use with the BML ventilation programming module as remote control.

LM2 ventilation control unit

- Ventilation module LM2 to control the room temperature via speed or mixer
- 5-stage motor control with electronic 5-stage switch
- Easy controller configuration by selecting one of the preset system versions
- Control of one heat source
- Demand-optimised boiler water temperature demand via eBUS
- eBus interface with automatic energy management
- BML ventilation programming module to clip into LM2 ventilation control unit
- Control of mixed air damper
- Induction louvre control

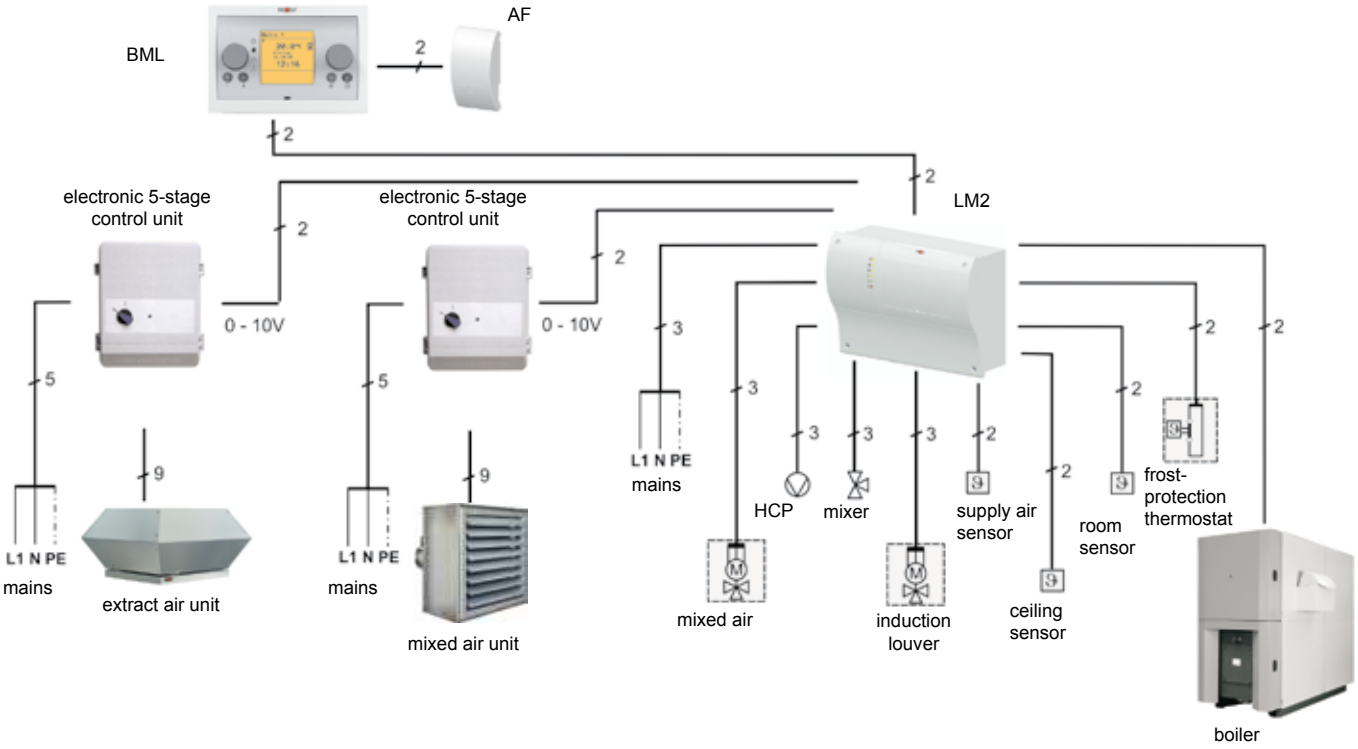
Control systems WRS

LM2 ventilation control unit with BML

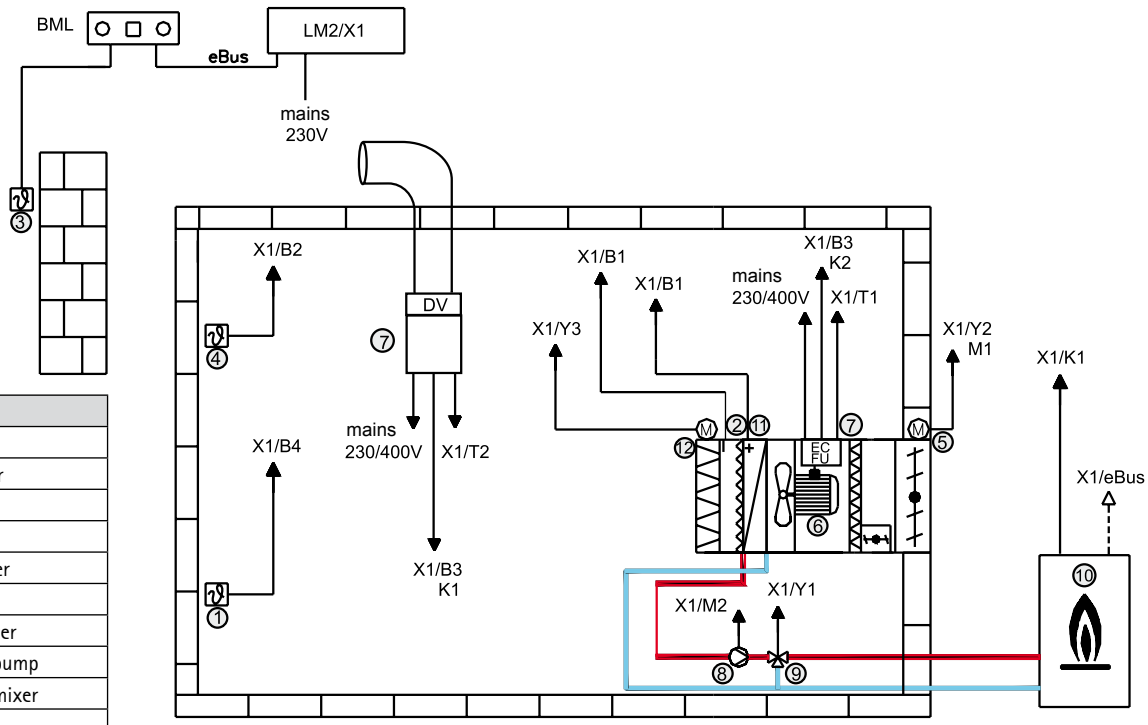
Description:

This configuration is used for heating buildings in conjunction with air heaters. The room temperature is captured by a sensor, and the fans, heating circuit pump, heating circuit mixer and heat source are switched on or off subject to demand. The extract air fan is enabled subject to the fresh air proportion.

Example:
Unit Heater, heating with room temperature control,
mixer control, motor control with electronic 5-stage speed regulator



Installation diagram:



No.	Description
1	room sensor
2	supply air sensor
3	outside sensor
4	ceiling sensor
5	mixed air damper
6	fan
7	frequency inverter
8	heating circuit pump
9	heating circuit mixer
10	Heat source
11	Frost-protection thermostat
12	induction louver

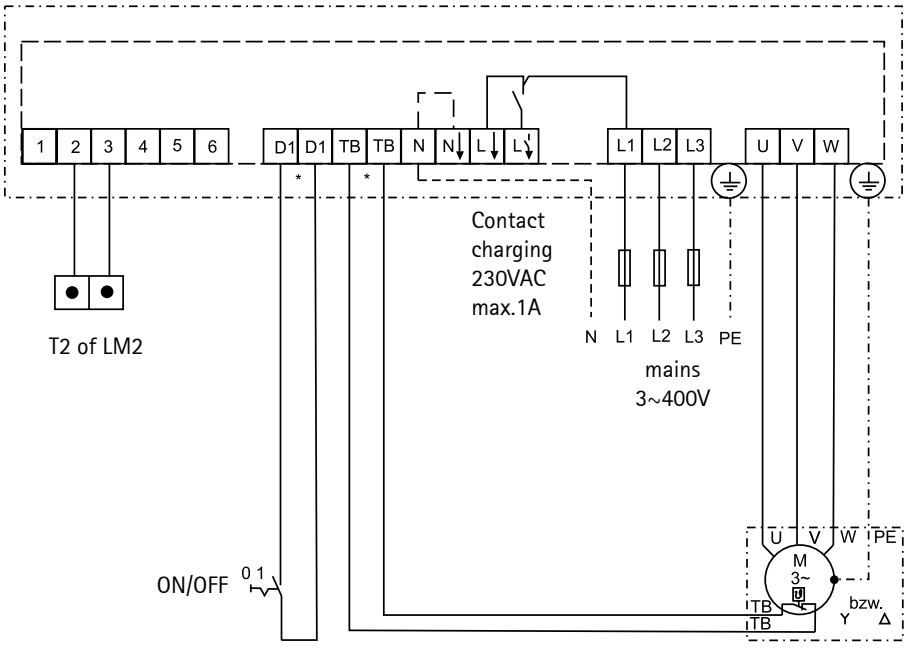
5-stage electronic switch for signal 0 - 10V

5-stage switch 0-10 V:

L=323 B=270 H=163

Switch type	D5-2F	D5-4F	E5-6F
Part No.	2744840	2744841	2745066
Spannung	400 V	400 V	230 V
Capacity, max.	2 A	4 A	6 A
Weight	7,4 kg	11,0 kg	5,2 kg
Degree of protection	IP 21	IP 21	IP 20

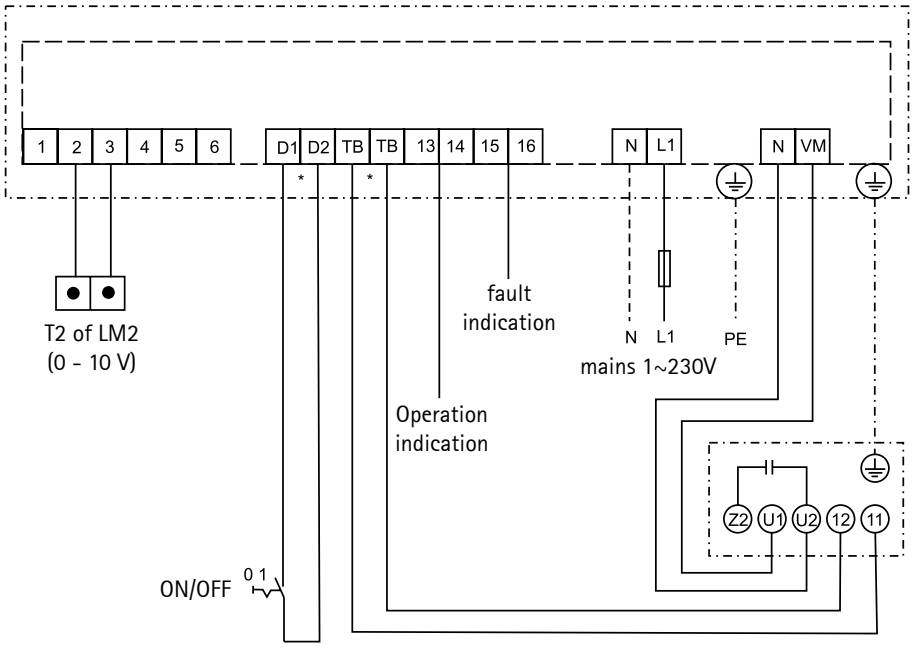
Wiring diagram D5-.....



* If the function is not required, bridge the terminals

3~ motor with integral thermostat switches

Wiring diagram E5-6F



* If the function is not required, bridge the terminals

Roof Extract Fans DV

Sample Specification

Roof Extract Fan DV 30

with swirl free horizontally directed discharge, for minimum gas medium temperatures from -20°C up to at least +40°C (see summary data sheet).
Stylish casing and base frame with inlet cone, manufactured from galvanised sheet steel.
Connection possibility for inlet flanges in accordance with DIN 24 155- 2.
Discharge outlets protected from the weather with an aerodynamically shaped grille.
Centrifugal impeller with backward curved blades, mounted on the rotor of a variable speed integral external rotor motor, protected to IP 44.
Motor protection is through direct switching of thermo-contacts in the motor winding.
Dynamically balanced, installed vibration free, totally maintenance free..

Roof Extract Fan DV 40 - 125

with vertical directed discharge, for minimum gas medium temperatures from -20°C up to at least +40°C (see summary data sheet).
Stylish V-shape casing made of galvanized sheet steel.
Base frame made of galvanized sheet steel for being fitted to upstand, large overhung for implementing roof insulation material.
Connection possibility for inlet flanges in accordance with DIN 24 155- 2.Mesh safety guard in discharge section. High performance centrifugal impeller with backward curved blades fitted on the rotor of an integrated motor.
Motor fully maintenance free, vibration free mounted, thermo-contacts for complete motor protection.
The roof fan is ready for fitting, isolator switch easily accessible under weather cowl.

Fan type	DV	=	
Flow rate	$\dot{V}$	=	m³/h
Pressure increase	Δp_{fa}	=	Pa
Temp. of gas medium	t	=	°C
Speed	n	=	1/min
Shaft power	max. P_1	=	kW
Max. absorbed current	max. I	=	A
voltage/ frequency	U / f	=	V / Hz
A-Sound power level	L_{WA}	=	dB
Weight	G	=	kg
Dimensions		=	mm

Accessories (at extra cost)

Flat roof upstand – made of galvanized sheet steel (ZBS 20)
Flat roof upstand high – made of galvanized sheet steel (ZBS 23)
Upstand for inclined roof– made of aluminium (ZBS 09)
Silencer upstand – made of galvanized sheet steel (ZDS 20)
Silencer upstand for inclined roof– made of aluminium (ZDS 09)
Discharge silencer ZDH 20 (for DV 40 – 125)
Soaker sheet for corrugated roof ZBS 11 – made of GRP (up tp size 90)
Base plate for tube connection (ZBU 01)
Flexible connection ZKE 11
Mating flange ZKF 11
Back draught damper ZLK
motorized back draught back draught damper ZLK 21 (sizes DV 40 to 125)
Intermediate piece ZKK 20 (sizes DV 40 to 125)
Inlet guard ZSG 04
Switches and controllers

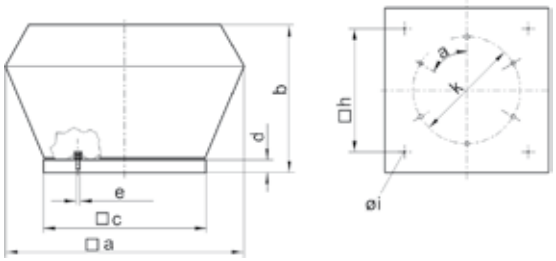
Summary.....Page

Roof Ventilation Hoods DLH

Description

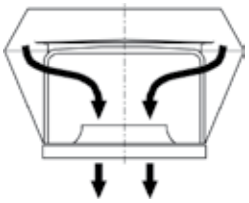
Rain protection cowl made of galvanized sheet steel. Base frame with aerodynamic inlet cone made of galvanized sheet steel.
Weather protection devices close ventilations openigs in a in a roof mechanical ventilation systems. They are suitable for both supply and exhaust air.
The resulting pressure losses are to be found in the corresponding diagramms.

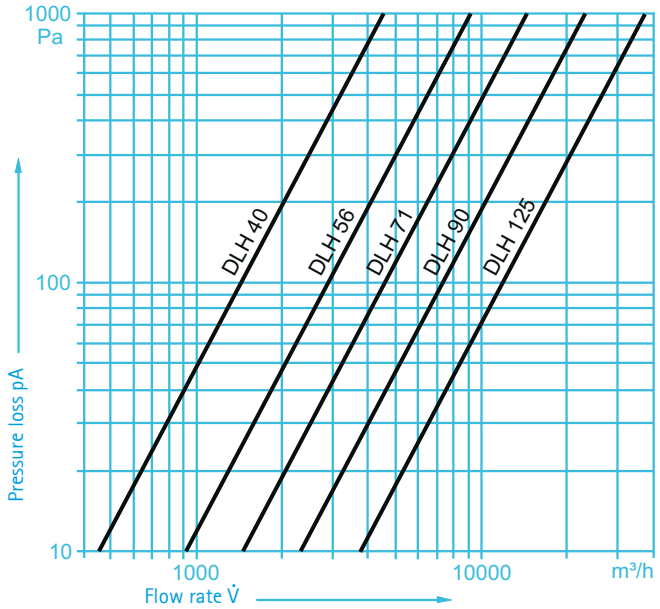
Dimensions



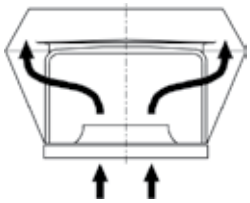
	a mm	b mm	c mm	d mm	e mm	h mm	i mm	k mm	Gewicht kg
DLH 40	671	440	440	32	6×M6	330	12	286	7
DLH 56	881	523	600	32	8×M8	450	12	395	10
DLH 71	1103	648	750	32	6×M8	590	14	487	20
DLH 90	1388	822	940	40	8×M10	750	14	605	35
DLH 125	1769	933	1270	65	8×M10	1050	14	751	60

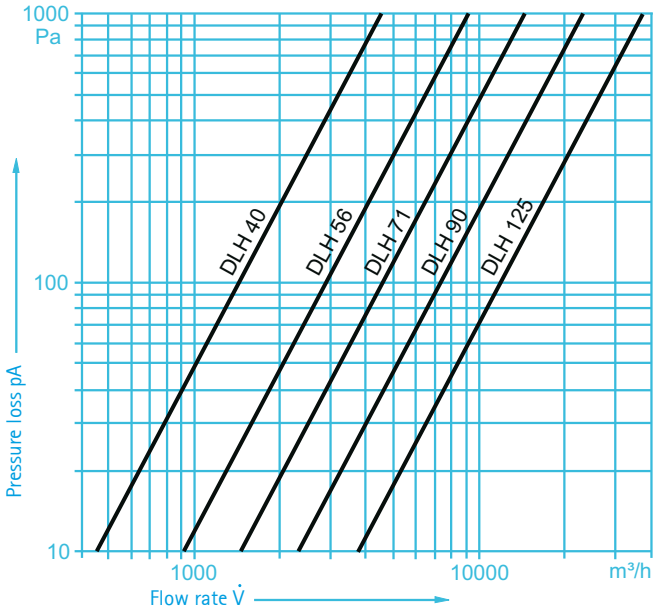
Pressure loss air intake



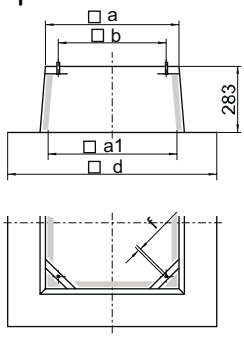


Pressure loss air discharge





Dimensions accessories Flat roof upstandkel

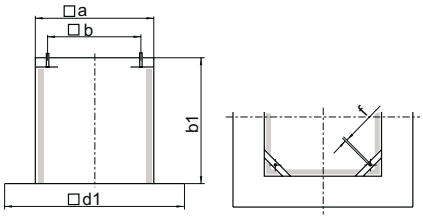


	a mm	a1 mm	b mm	d mm	f mm	weight kg
ZBS 20-0040	395	400	330	710	M10	8
ZBS 20-0056	**555**	**560**	**450**	**870**	**M10**	**10**
ZBS 20-0071	705	710	590	1020	M12	16
ZBS 20-0090	895	900	750	1210	M12	25
ZBS 20-0125	1205	1210	1050	1520	M12	34

Roof Ventilation Hoods DLH

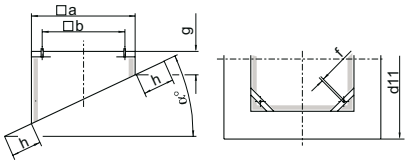
Dimensions

Flat roof upstand high



	a mm	b mm	b1 mm	d1 mm	f mm	Weight kg
ZBS 23-0040	378	330	650	618	M10	12
ZBS 23-0056	538	450	800	778	M10	14
ZBS 23-0071	688	590	900	988	M12	20
ZBS 23-0090	878	750	900	1178	M12	32
ZBS 23-0125	1226	1050	900	1526	M12	40

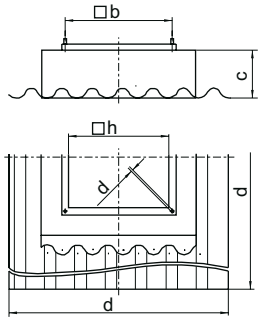
Upstand für inclined roof



	a mm	b mm	d11 mm	f mm	g mm	h mm	Weight kg
ZBS 09- 040-#	378	330	618	M10	250	150	5
ZBS 09-0056-#	538	450	778	M10	250	150	6
ZBS 09-0071-#	688	590	988	M12	250	150	9
ZBS 09-0090-#	878	750	1178	M12	250	150	13
ZBS 09-0125-#	1226	1050	1526	M12	250	150	18

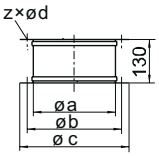
= inclination up to 45° possible within 5° steps. Indicate inclination with type when ordering, z.B. ZBS 09-0090-05 (od. 10, 15, 20, 25, 30, 35, 40, 45)

Soaker sheet for corrugated roof



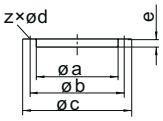
	□ b mm	c mm	d mm	f mm	g mm	□ h mm	Weight kg
ZBS 11-0040	330	200	920	M10	1600	322	11
ZBS 11-0056	450	200	920	M10	1600	400	12
ZBS 11- 0071	450	200	1400	M12	2000	560	29
ZBS 11-0090	750	200	1400	M12	2000	715	36

Flexible connection



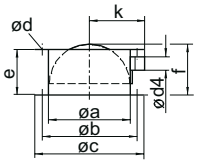
		a mm	b mm	c mm	z x Ød mm	Weight kg
DLH 40	ZKE 11-0250	256	286	306	6 x Ø7	1,4
DLH 56	ZKE 11-0355	361	395	421	8 x Ø9,5	2,3
DLH 71	ZKE 11-0450	453	487	513	6 x Ø9,5	2,9
DLH 90	ZKE 11-0560	569	605	639	8 x Ø11,5	4,2
DLH 125	ZKE 11-0710	715	751	785	8 x Ø11,5	6,1

Mating flange



		a mm	b mm	c mm	e mm	z x Ød mm	Weight kg
DLH 40	ZKF 11-0250	256	286	306	25	6 x Ø7	0,6
DLH 56	ZKF 11-0355	361	395	421	30	8 x Ø9,5	0,9
DLH 71	ZKF 11-0450	453	487	513	30	6 x Ø9,5	1,2
DLH 90	ZKF 11-0560	569	605	639	35	8 x Ø11,5	1,8
DLH 125	ZKF 11-0710	715	751	785	35	8 x Ø11,5	2,8

Automatic back draught damper



		a mm	b mm	c mm	Ø d4 mm	e mm	f mm	k mm	z x Ød mm	Weight kg
DLH 40	ZLK 21-0250	256	286	306	88	240	185	207	6 x Ø7	9
DLH 56	ZLK 21-0355	361	395	421	88	240	237	258	8 x Ø9,5	11
DLH 71	ZLK 21-0450	453	487	513	88	240	282	300	6 x Ø9,5	14
DLH 90	ZLK 21-0560	569	605	639	88	240	343	360	8 x Ø11,5	16
DLH 125	ZLK 21-0710	715	751	785	88	300	415	437	8 x Ø11,5	20

Smoke Extract Fans ER

Description

Air discharge vertical and swirl free.
Casing made of aluminium.
Base frame and mechanically stressed parts made of galvanized sheet steel.
Impeller made of steel, welded and coated.
Motor separated from air stream.
Casing side parts removable, centre parts to be swivelled (up to size 7190).
Ready for connection; free cable lead, protected by a steel tube.
Installation plate for isolator switch or connection box as a standard.
Isolator switch as an option (loose for fitting on site)a

Smoke-extract roof fans of the lines RDM 56 and RDM 57 are provided for to deflecting heat and smoke in case of fire especially in the first phase with usually high smoke content. They have to keep the escape ways smoke free, reduce damages, and ease fire fighting actions.

They fulfil the actual requirements for "Mechanical Extract Devices (MA)"

RDM 56-, +400°C - 120 min
The fans of the range RDM 56 do respond to the requirements of the category 1,2, and 3 according to EN 12101-3. EC-certificate of conformity: 0036 CPD RG01 01.
They have been certified by the DIBt with certificate N° Z-78.1-26

RDM 57-, +600°C - 120 min
The fans of the range RDM 57 correspond to the requirements of the category 1,2, 3, and 4 according to EN 12101-3. EC-certificate of conformity: 0036 CPD RG01 02.
They have been certified by the DIBt with certificate N° Z-78.1-27

The fans have been tested by the research and test laboratory of the chair for home improvement and construction techniques at the University of Munich and have subsequently been certified by the DIBt, Berlin.
Certificates can be provided on request.

The roof fans comply with the tolerances of Class 2 of DIN 24 166 „Fans; technical delivery conditions".

The smoke extract roof fans are equipped with IEC standard motors B5, protection class IP 55 and heat class F.

Attention!
In case of fire the motor must not be electrically "protected". All high temperature and high current securities have to be bridged, i.e. to be put out of order.

Smoke Extract Fans ER

Summary Data Sheet

A full fan line: 23 standard sizes

Performance range: 3300 up to 57200 m³/h

Smoke Extract Fans ER	Flow rate $\dot{V}_{ma}$	Available pressure	Voltage	Speed	Motor rating	Rated current	Weight	Isolatior switch
RDM 56/57	m³/h	Pa	V	1/min	kW	A	kg	ESH 21
2528-2W-11	3300	950	230/400 Δ/Y	2830	1,1	4,16/2,4	39	0055-32
2531-4D-10	2200	270	230/400 Δ/Y	1395	0,55	2,51/1,45	35	0055-32
3535-4D-10	3370	320	230/400 Δ/Y	1395	0,55	2,51/1,45	44	0055-32
3540-4D-10	4700	440	230/400 Δ/Y	1395	0,55	2,51/1,45	50	0055-32
3545-4W-13	5750	570	230/400 Δ/Y	1425	1,1	4,3/2,5	55	0055-32
3545-HD-10	3700/1900	215/50	400 Y/YY	935/425	0,3/0,075	1,0/0,44	55	0075-62
4550-4W-16	9450	650	230/400 Δ/Y	1455	2,2	8,05/4,65	87	0055-32
4550-HD-14	6200/3000	280/70	400 Y/YY	965/460	0,55/0,12	2,0/0,88	82	0075-62
4556-4W-17	11400	800	230/400 Δ/Y	1455	3	10,7/6,2	100	0055-32
4556-6W-13	7300	320	230/400 Δ/Y	925	0,75	3,4/1,98	94	0055-32
4556-HD-16	7300/3750	320/100	400 Y/YY	940/460	1,1/0,18	2,85/1,09	103	0075-62
5663-6W-16	11900	470	230/400 Δ/Y	970	1,5	6,4/3,7	181	0055-32
5663-HD-19	11900/5900	470/130	400 Y/YY	955/450	1,8/0,45	5,1/2,0	199	0075-62
5671-6W-21	14500	620	230/400 Δ/Y	970	3	12,1/7,0	190	0055-32
5671-HD-24	14500/7400	620/160	400 Y/YY	965/480	3,3/0,7	6,8/2,5	216	0075-62
7180-6W-24	25000	780	400/690 Δ/Y	970	5,5	12,8/7,4	288	0075-62
7180-8D-21	18800	440	230/400 Δ/Y	700	2,2	9,9/5,7	300	0055-32
7180-HD-28	25000/12000	780/180	400 Y/YY	975/485	6,2/1,3	12,5/4,1	348	0075-62
7190-6W-28	33500	980	400 Δ	975	9	22,5/13,0	297	0110-62
7190-HD-26	33500/15800	980/240	400 Y/YY	975/485	9,0/2,0	18,5/6,2	390	0110-62
9090-4W-31	51900	2000	400/690 Δ/Y	1465	22	41,5/24,1	590	0220-62
9090-ID-34	57200/38200	2200/1000	400 Y/Y	1470/980	26/9,5	49,0/20,0	640	0300-62
9090-GD-34	57200/28800	2200/590	400 Y/YY	1470/732	28/7,5	52,0/20,5	640	0300-62

Important Remarks

Safety Guards

All roof extract fans are supplied with a discharge-side mesh safety guard in accordance with DIN EN 294.
The inlet side is not fitted with a standard guard, because it is normal practice to connect other system parts to this end.

However, if the unit is installed in such a way that accidental contact with the impeller is possible, an additional inlet guard has to be fitted acc. to DIN EN ISO 13857!

The fans may only be put into operation if all necessary protection devices are fitted and made effective (see maintenance instructions)!

The safety guards are to be executed acc. to DIN EN ISO 12100 „Safety of machinery - Basic concepts, general principles for design".

Safety instructions

Transport, fitting, electrical connection, start up, and maintenance are to be executed following the instructions given in the manual and by respecting the actual standards, guide lines, and safety rules.

Please take care of the special cable lead when installing smoke extract fans.

Performance data

The performance curves are obtained using an inlet side test chamber in accordance with ISO 5801.
The performance grids show the effective pressure increase Δp_{fa} (or $p_{sF)}$ (Pressure increase obtained from the fan in free-field conditions) as a function of the flow volume V (or q_V). Reference media density: ρ_1 = 1.15 kg/m³. The roof fans comply with the tolerances of Class 2 of DIN EN ISO 5801 "Industrial fans - Performance testing using standardized airways"

Sound Data

Measurement and evaluation of noise levels are in accordance with DIN 45 635 - 38 "Sound measurements on machines; fans". In the technical data the A-weighted sound power level at maximum flow rate is given.

The computer aided data collection and evaluation enables to obtain highly reliable data precision. In the curves the emission value of the A-sound-power level L_{WA} is given, having the same value for intake (L_{WA3}) as for the discharge (L_{WA8}).
For more exact calculations when determining the required attenuation, the sound power level in the octave bands is important.

$L_{Wokt\ 3/8}$ (bzw. $L_{Wfc\ 3/8}$) = L_{WA} + $L_{Wrel\ 3/8}$

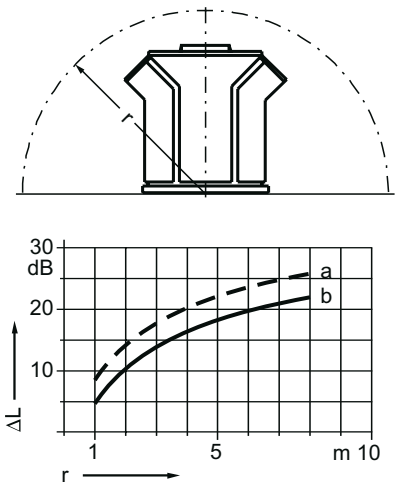
The relative sound power levels for inlet and discharge sides, at various duty points, can be read from the corresponding tables.

Calculation of the sound pressure level

Because conditions in the operating environment are usually far from ideal for measurement and can vary greatly, a determination of the A-sound-pressure level at any distance is only possible with great uncertainty.

$L_{pA} \approx L_{WA} - \Delta_L$

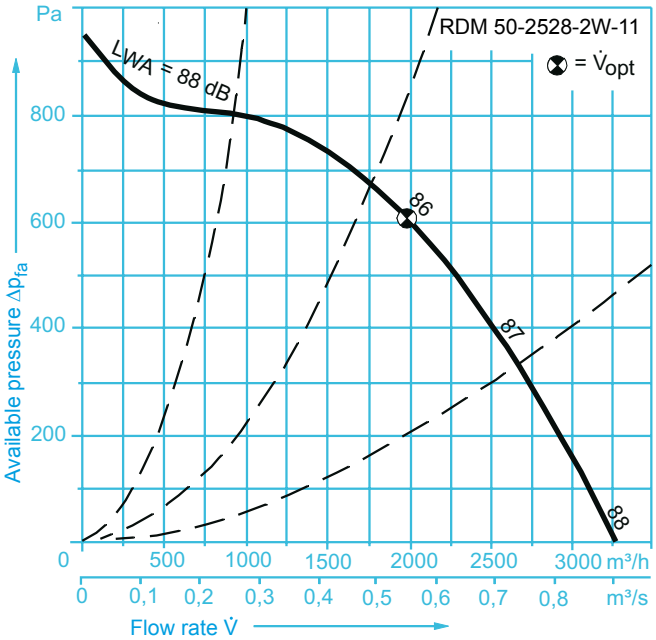
The diagram below supplies the correction value "Δ L" in function of the distance "r" from the fan centre. Under ideal conditions, with a clear hemisphere of sound propagation, curve "a" is valid. However, curve "b" is recommended for practical estimates. The calculation of the intake sound-power level is only possible if the exact noise parameters of the connected room are known (see VDI 2081!).

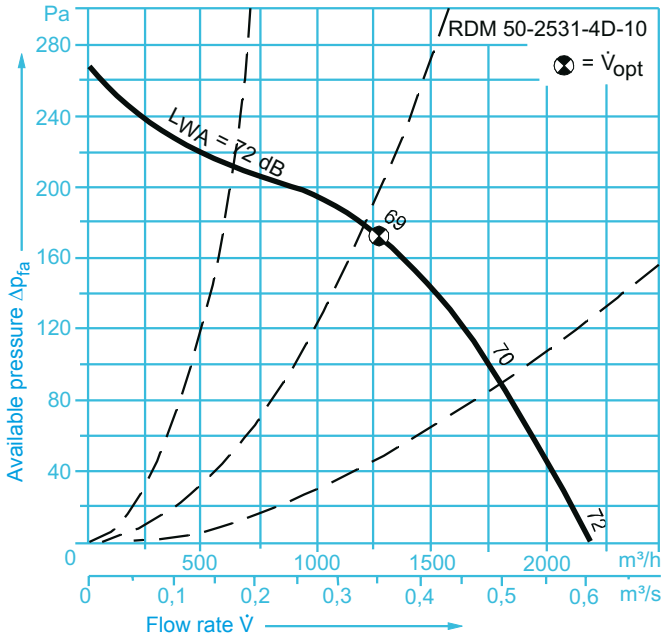


Smoke Extract Fans ER

Technical Data

Smoke extract fan ER	Flow rate	Available pressure	Voltage	Speed	Motor rating	Rated current	Weights	Isolator switch
RDM 56/57-	m³/h	Pa	V	1/min	kW	A	kg	ESH 21
2528-2W-11	3300	950	230/400 Δ/Y	2830	1,1	4,16/2,4	39	0055-32
2531-4D-10	2200	270	230/400 Δ/Y	1395	0,55	2,51/1,45	35	0055-32



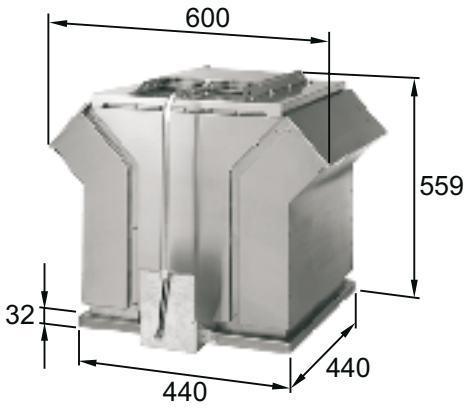


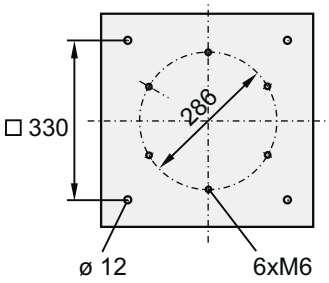
In the curves the A-weighted sound power level is L_{WA} (=L_{WA3} =L_{WA8}) acc. to DIN 45635-38.
Reference media density: ρ_1 = 1.15 kg/m³.

Intake										Discharge									
Relative sound power level L_{Wrel3} at octave mid frequencies f_m										Relative sound power level L_{Wrel3} at octave mid frequencies f_m									
RDM 56/57-2528; -2531																			
2-poles																			
Duty point	63	125	250	500	1000	2000	4000	8000	Hz	**Duty point**	63	125	250	500	1000	2000	4000	8000	Hz
0,5 $\dot{V}_{opt}$	16	12	3	-4	-13	-17	-20	-27	dB	**0,5 $\dot{V}_{opt}$**	-5	0	0	-2	-5	-8	-12	-19	dB
$\dot{V}_{opt}$	1	1	6	-3	-12	-14	-15	-24	dB	**$\dot{V}_{opt}$**	-8	-6	-1	-3	-6	-8	-9	-17	dB
$\dot{V}_{max}$	-2	-4	-5	-3	-12	-16	-15	-19	dB	**$\dot{V}_{max}$**	-9	-8	-3	-2	-6	-8	-8	-15	dB
4-poles																			
Duty Point	63	125	250	500	1000	2000	4000	8000	Hz	**Duty Point**	63	125	250	500	1000	2000	4000	8000	Hz
0,5 $\dot{V}_{opt}$	13	12	2	-3	-10	-14	-19	-27	dB	**0,5 $\dot{V}_{opt}$**	-2	0	-2	-3	-5	-8	-13	-21	dB
$\dot{V}_{opt}$	9	12	1	-3	-10	-13	-18	-27	dB	**$\dot{V}_{opt}$**	-5	0	-2	-3	-5	-7	-13	-21	dB
$\dot{V}_{max}$	4	10	1	-2	-10	-13	-15	-23	dB	**$\dot{V}_{max}$**	-10	-1	-4	-3	-5	-6	-12	-19	dB

Dimensions

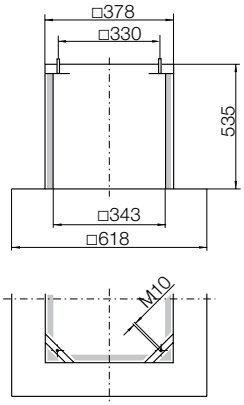
RDM 56/57 2528-2W-11
RDM 56/57 2531-4D-10



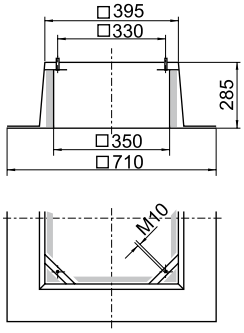


Flat roof upstand

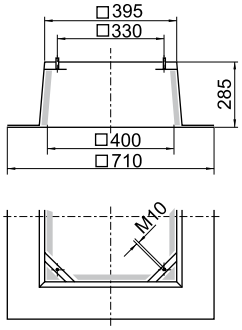
ZBS 10-0040
(600°C), 14 kg



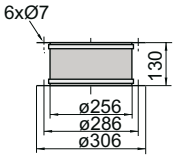
ZBS 03-0040
(600°C), 8 kg



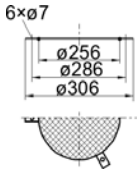
ZBS 20-0040
For RDM56 only, when connected to duct, 8 kg



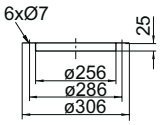
Flexible connection at intake
ZKE 30-0250 (600°C), 1,7 kg



mesh safety guard
ZSG 04-0250, 0,4 kg

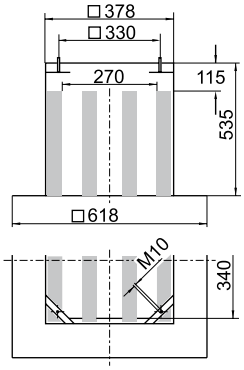


Mating flange
ZKF 11-0250 (600°C), 0,6 kg



Silencer upstand ZDS 32-0040
(600°C), 18 kg

Robust casing of coated sheet steel. ZDS 32-0400 with removable baffles.



Average attenuation L_{WA} 16 dB

Attenuation in dB at mid frequencies in Hz

63 Hz	**3 dB**	1000 Hz	**19 dB**
125 Hz	**5 dB**	2000 Hz	**23 dB**
250 Hz	**8 dB**	4000 Hz	**21 dB**
500 Hz	**13dB**	8000 Hz	**15 dB**

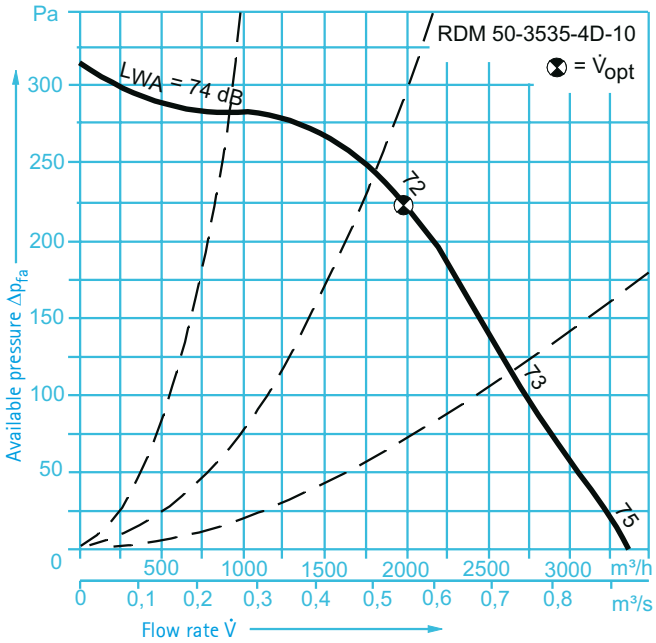
Pressure loss p_A through silencer upstand
In Pa, at flow rates in m³/h

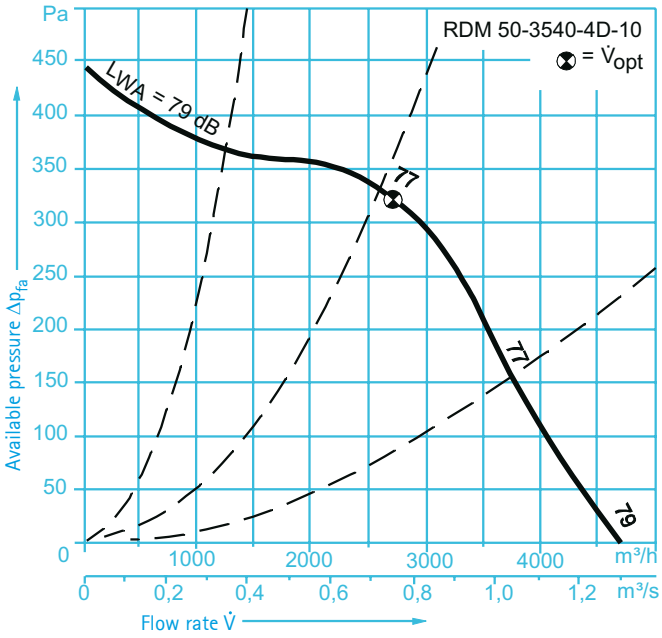
m³/h	**Pa**
1500	25
2000	40
3000	100
4000	170

Smoke Extract Fans ER

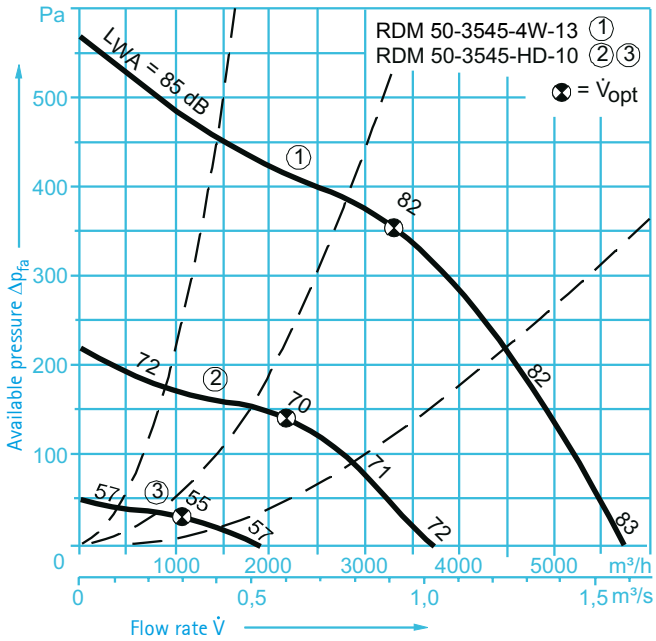
Technical Data

Smoke extract fan ER	Flow rate	Available pressure	Voltage	Speed	Motor rating	Rated current	Weights	Isolator switch
RDM 56/57-	m³/h	Pa	V	1/min	kW	A	kg	ESH 21
3535-4D-10	3370	320	230/400 Δ/Y	1395	0,55	2,51/1,45	44	0055-32
3540-4D-10	4700	440	230/400 Δ/Y	1395	0,55	2,51/1,45	50	0055-32
3545-4W-13	5750	570	230/400 Δ/Y	1425	1,1	4,3/2,5	55	0055-32
3545-HD-10	3700 /1900	215/50	400 Y/YY	935/425	0,3/0,075	1,0/0,44	55	0075-62





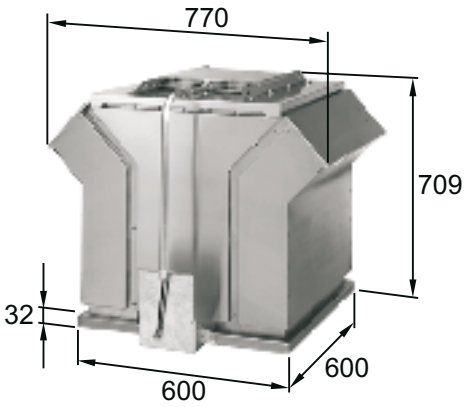
In the curves the A-weighted sound power level is L_{WA} (=L_{WA3} =L_{WA8}) acc. to DIN 45635-38. Reference media density: ρ_1 = 1.15 kg/m³.

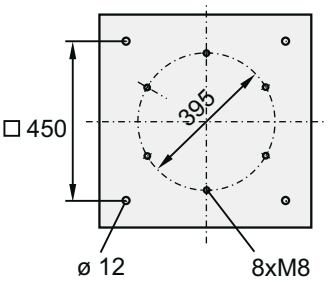


Intake										Discharge									
Relative sound power level L_{Wrel3} at octave mid frequencies f_m										Relative sound power level L_{Wrel3} at octave mid frequencies f_m									
RDM 56/57-3535; -3540; - 3545																			
4-poles																			
Duty Point	63	125	250	500	1000	2000	4000	8000	Hz	**Duty Point**	63	125	250	500	1000	2000	4000	8000	Hz
0,5 V̇opt	13	11	2	-2	-11	-16	-21	-27	dB	**0,5 V̇opt**	-3	4	-1	-4	-6	-7	-12	-20	dB
V̇opt	9	11	2	-2	-11	-16	-20	-24	dB	**V̇opt**	-6	4	-1	-4	-6	-7	-12	-19	dB
V̇max	6	9	2	-1	-12	-17	-19	-21	dB	**V̇max**	10	4	-1	-3	-6	-7	-13	-17	dB
6-poles																			
Duty Point	63	125	250	500	1000	2000	4000	8000	Hz	**Duty Point**	63	125	250	500	1000	2000	4000	8000	Hz
0,5 V̇opt	16	10	1	-1	-10	-16	-22	-27	dB	**0,5 V̇opt**	1	6	0	-3	-6	-9	-16	-25	dB
V̇opt	14	11	2	-2	11	-17	-22	-29	dB	**V̇opt**	-1	6	0	-4	-6	-9	-15	-25	dB
V̇max	11	13	3	-1	-12	-17	-21	-29	dB	**V̇max**	-1	6	1	-3	-6	-8	-13	-25	dB

Dimensions

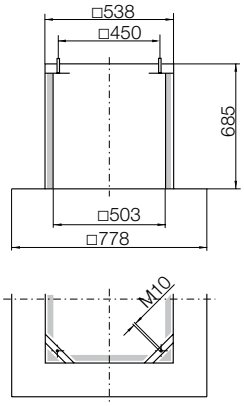
RDM 56/57 3535-4D-10
RDM 56/57 3540-4D-10
RDM 56/57 3545-4W-13
RDM 56/57 3540-HD-10



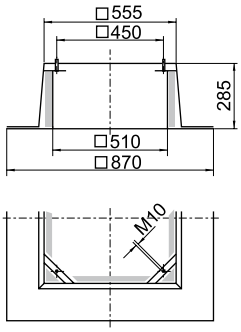


Flat roof upstand

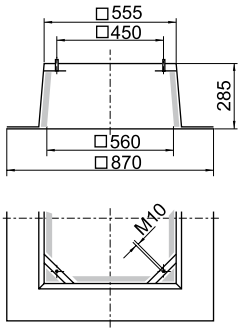
ZBS 10-0056
(600°C), 30 kg



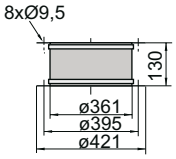
ZBS 03-0056
(600°C), 10 kg



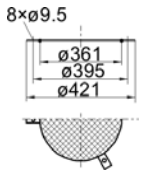
ZBS 20-0056
For RDM56 only, when connected to duct, 10 kg



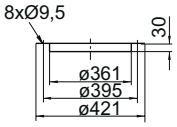
Flexible connection at intake
ZKE 30-0355 (600°C), 2,7 kg



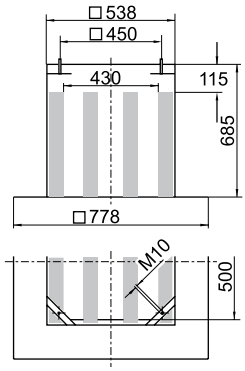
Mesh safety guard
ZSG 04-0355, 0,6 kg



Mating flange
ZKF 11-0355 (600°C), 0,9 kg



Silencer upstand ZDS 32-0056
(600°C), 40 kg
with removable baffles



Average attenuation L_{WA} 16 dB

Attenuation in dB at mid frequencies in Hz

63 Hz	3 dB	1000 Hz	18 dB
125 Hz	5 dB	2000 Hz	21 dB
250 Hz	8 dB	4000 Hz	20 dB
500 Hz	12dB	8000 Hz	15 dB

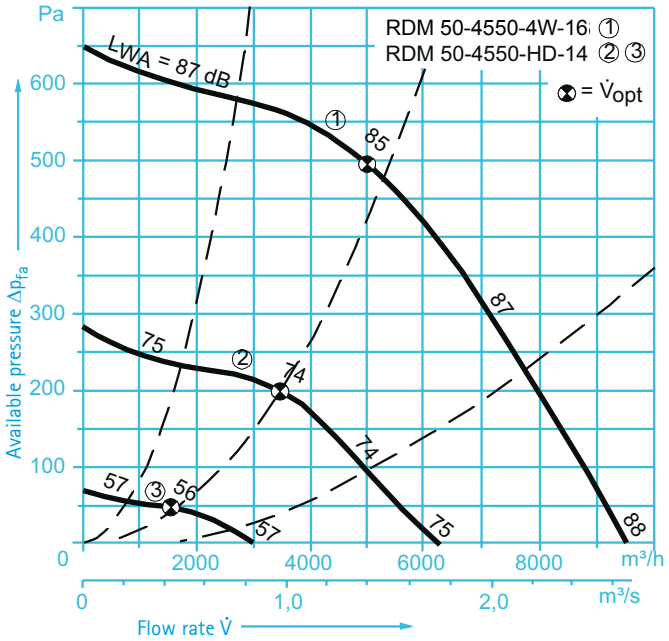
Pressure loss p_A through silencer upstand
In Pa, at flow rates in m³/h

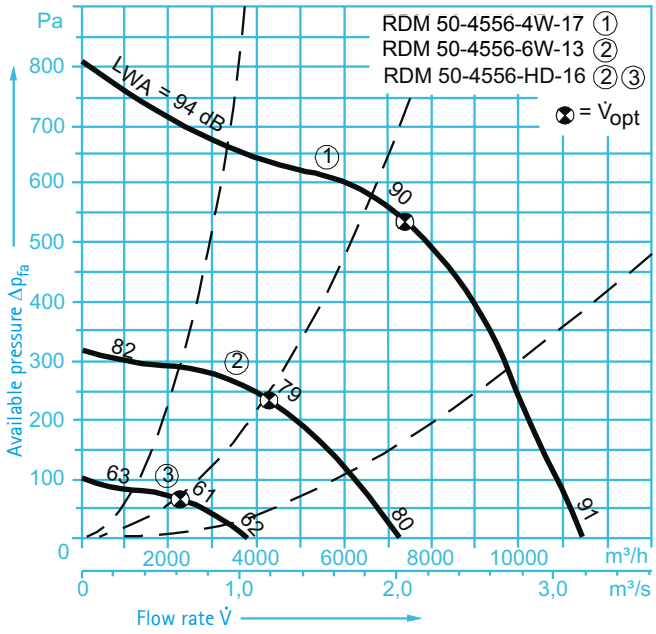
m³/h	Pa
3000	25
4000	42
6000	80
8000	160

Smoke Extract Fans ER

Technical Data

Smoke extract fan ER	Flow rate	Available pressure	Voltage	Speed	Motor rating	Rated current	Weights	Isolator switch
RDM 56/57-	m³/h	Pa	V	1/min	kW	A	kg	ESH 21
4550-4W-16	9450	650	230/400 Δ/Y	1455	2,2	8,05/4,65	87	0055-32
4550-HD-14	6200/3000	280/70	400 Y/YY	965/460	0,55/0,12	2,0/0,88	82	0075-62
4556-4W-17	11400	800	230/400 Δ/Y	1455	3	10,7/6,2	100	0055-32
4556-6W-13	7300	320	230/400 Δ/Y	925	0,75	3,4/1,98	94	0055-32
4556-HD-16	7300/3750	320/100	400 Y/YY	940/460	1,1/0,18	2,85/1,09	103	0075-62



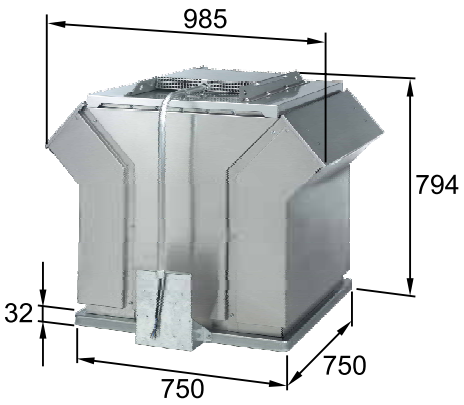


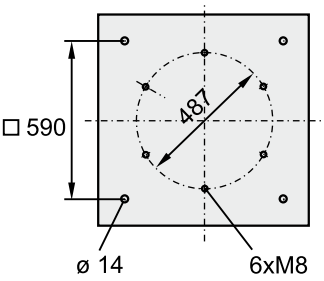
In the curves the A-weighted sound power level is L_{WA} ($=L_{WA3}$ $=L_{WA8}$) acc. to DIN 45635-38. Reference media density: ρ_1 = 1.15 kg/m³.

Intake										Discharge									
Relative sound power level L_{Wrel3} at octave mid frequencies f_m										Relative sound power level L_{Wrel3} at octave mid frequencies f_m									
RDM 56/57-4550; - 4556																			
4-poles																			
Duty point	63	125	250	500	1000	2000	4000	8000	Hz	**Duty point**	63	125	250	500	1000	2000	4000	8000	Hz
0,5 $\dot{V}_{opt}$	14	10	1	-2	-11	-14	-15	22	dB	**0,5 $\dot{V}_{opt}$**	1	5	0	-4	-5	-9	-13	-20	dB
$\dot{V}_{opt}$	9	12	0	-3	-11	-15	-15	-21	dB	**$\dot{V}_{opt}$**	-4	8	-1	-5	-6	-9	-12	-19	dB
$\dot{V}_{max}$	3	9	1	-2	-12	-16	-16	-12	dB	**$\dot{V}_{max}$**	-8	8	-2	-4	-6	-9	-15	-12	dB
6-poles																			
Duty point	63	125	250	500	1000	2000	4000	8000	Hz	**Duty point**	63	125	250	500	1000	2000	4000	8000	Hz
0,5 $\dot{V}_{opt}$	15	11	1	-2	-11	-15	-16	-23	dB	**0,5 $\dot{V}_{opt}$**	2	4	1	-4	-5	-7	-13	-22	dB
$\dot{V}_{opt}$	11	13	-1	-4	-12	-16	-17	-25	dB	**$\dot{V}_{opt}$**	0	4	0	-4	-6	-8	-13	-22	dB
$\dot{V}_{max}$	7	15	3	-1	10	-14	-12	-21	dB	**$\dot{V}_{max}$**	-4	6	1	-3	-6	-8	-12	-22	dB

Dimensions

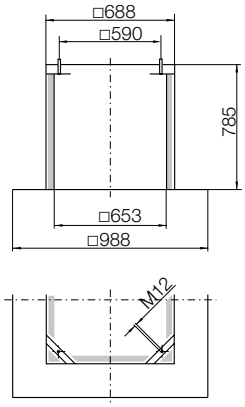
RDM 56/57 4550-4W-16
RDM 56/57 4550-HD-14
RDM 56/57 4556-4W-17
RDM 56/57 4556-6W-13
RDM 56/57 4556-HD-16



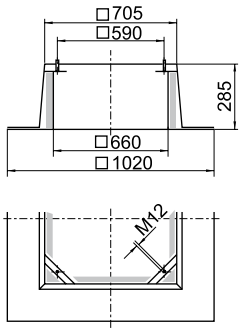


Flat roof upstand

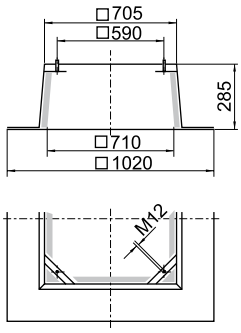
ZBS 10-0071
(600°C), 60 kg



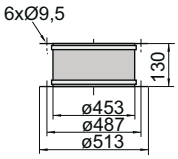
ZBS 03-0071
(600°C), 16 kg



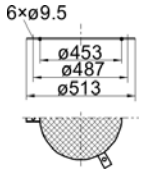
ZBS 20-0071
For RDM56 only , when connected to duct s, 16 kg



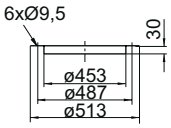
Flexible connection at intake
ZKE 30-0450 (600°C), 3,5 kg



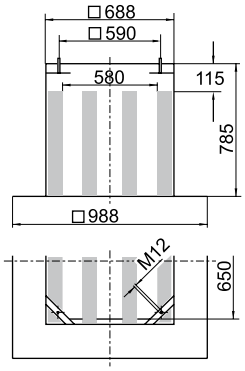
Mesh safety guard
ZSG 04-0450, 0,7 kg



Mating flange
ZKF 11-0450 (600°C), 1,2 kg



Silencer upstand ZDS 32-0071
(600°C), 79 kg



Average attenuation L_{WA} 17 dB

Attenuation in dB at mid frequencies in Hz

63 Hz	3 dB	1000 Hz	20 dB
125 Hz	5 dB	2000 Hz	25 dB
250 Hz	9 dB	4000 Hz	22 dB
500 Hz	13dB	8000 Hz	17 dB

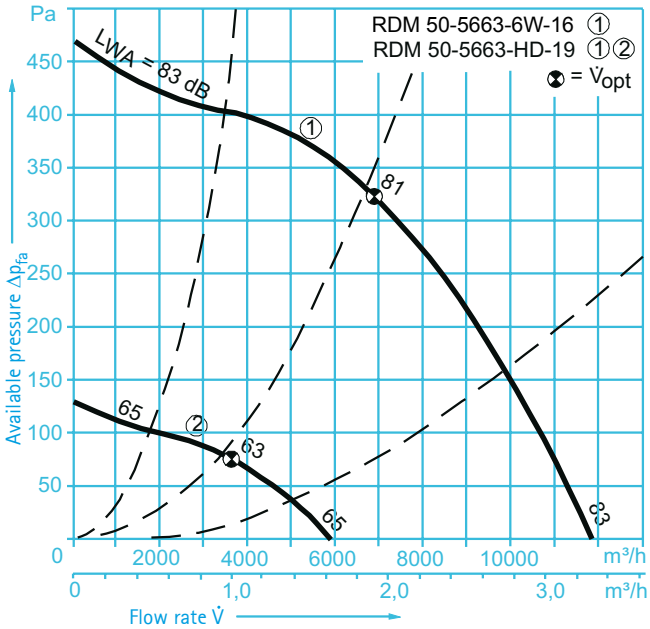
Pressure loss p_A through silencer upstand
In Pa, at flow rates in m³/h

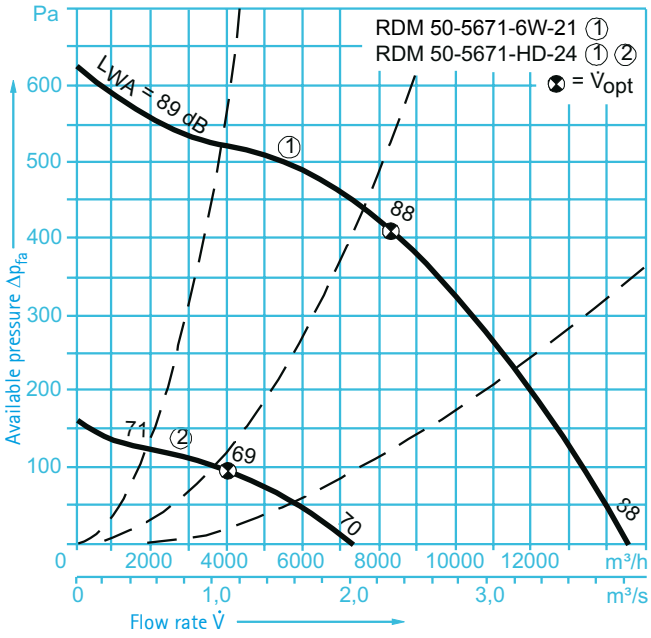
m³/h	Pa
5000	25
8000	60
10000	95
12000	110

Smoke Extract Fans ER

Technical Data

Smoke extract fan ER	Flow rate	Available pressure	Voltage	Speed	Motor rating	Rated current	Weights	Isolator switch
RDM 56/57-	m³/h	Pa	V	1/min	kW	A	kg	ESH 21
4550-4W-16	9450	650	230/400 Δ/Y	1455	2,2	8,05/4,65	87	0055-32
4550-HD-14	6200/3000	280/70	400 Y/YY	965/460	0,55/0,12	2,0/0,88	82	0075-62
4556-4W-17	11400	800	230/400 Δ/Y	1455	3	10,7/6,2	100	0055-32
4556-6W-13	7300	320	230/400 Δ/Y	925	0,75	3,4/1,98	94	0055-32
4556-HD-16	7300/3750	320/100	400 Y/YY	940/460	1,1/0,18	2,85/1,09	103	0075-62





In the curves the A-weighted sound power level is L_{WA} (=L_{WA3} =L_{WA8}) acc. to DIN 45635-38. Reference media density: ρ_1 = 1.15 kg/m³.

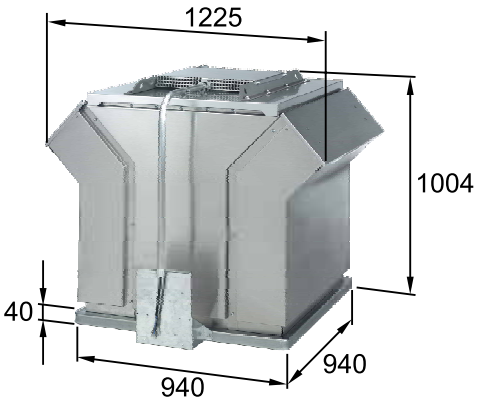
Intake										Discharge									
Relative sound power level L_{Wrel3} at octave mid frequencies f_m										Relative sound power level L_{Wrel3} at octave mid frequencies f_m									
RDM 56/57-5663; - 5671																			
6-poles																			
Duty point	63	125	250	500	1000	2000	4000	8000	Hz	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
0,5 $\dot{V}_{opt}$	14	11	1	-2	-9	-14	-16	-23	dB	0,5 $\dot{V}_{opt}$	2	3	0	-3	-5	-8	-13	-21	dB
$\dot{V}_{opt}$	11	12	-1	-4	-10	-15	-16	-22	dB	$\dot{V}_{opt}$	1	3	-1	-4	-5	-8	-12	-19	dB
$\dot{V}_{max}$	7	13	1	-2	-9	-13	-10	-15	dB	$\dot{V}_{max}$	-3	4	-1	-4	-6	-8	-11	-16	dB

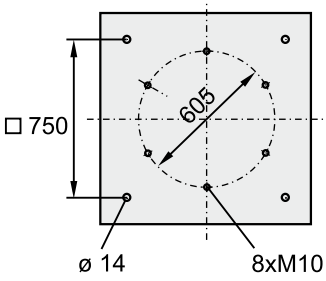
Smoke Extract Fans ER

Dimensions

Dimensions

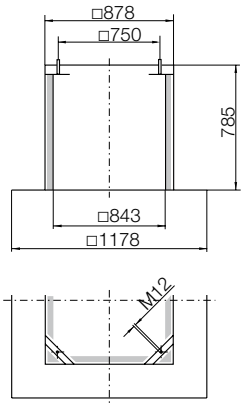
RDM 56/57 5663-6W-16
RDM 56/57 5663-HD-19
RDM 56/57 5671-6W-21
RDM 56/57 5671-HD-24



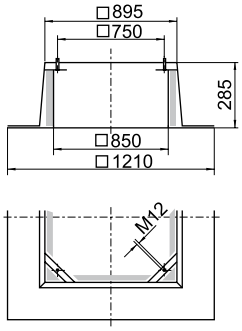


Flat roof upstand

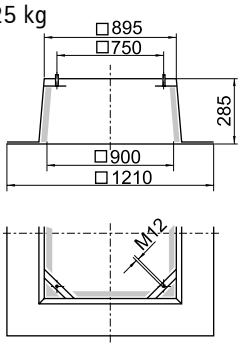
ZBS 10-0090
(600°C), 80 kg



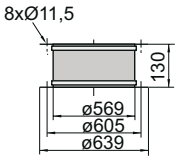
ZBS 03-0090
(600°C), 25 kg



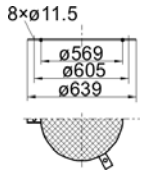
ZBS 20-0090
For RDM56 only , when connected to duct, 25 kg



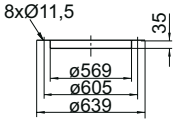
Flexible connection at intake
ZKE 30-0560 (600°C), 5,0 kg



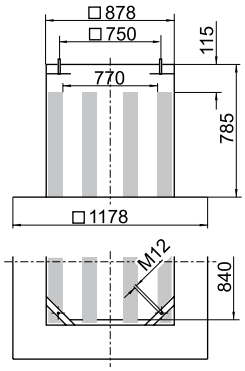
Mesh safety guard
ZSG 04-0560, 0,8 kg



Mating flange
ZKF 11-0560 (600°C), 1,8 kg



Silencer upstand ZDS 32-0090
(600°C), 105 kg



Average attenuation L_{WA} 15 dB

Attenuation in dB at mid frequencies in Hz

63 Hz	**2 dB**	1000 Hz	**17 dB**
125 Hz	**5 dB**	2000 Hz	**21 dB**
250 Hz	**8 dB**	4000 Hz	**19 dB**
500 Hz	**11dB**	8000 Hz	**13 dB**

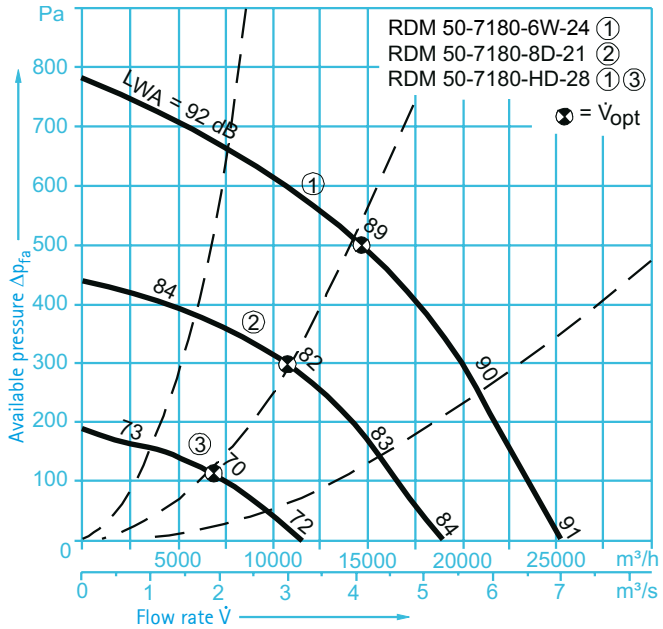
Pressure loss p_A through silencer upstand
In Pa, at flow rates in m³/h

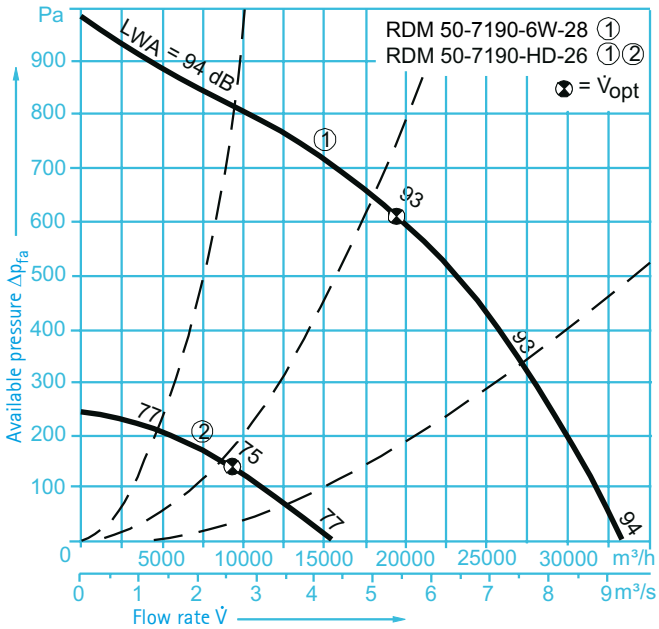
m³/h	**Pa**
10000	20
15000	40
20000	80
30000	180

Smoke Extract Fans ER

Technical Data

Smoke extract fan ER	Flow rate	Available pressure	Voltage	Speed	Motor rating	Rated current	Weights	Isolator switch
RDM 56/57-	m³/h	Pa	V	1/min	kW	A	kg	ESH 21
7180-6W-24	25000	780	400/690 Δ/Y	970	5,5	12,8/7,4	288	0075-62
7180-8D-21	18800	440	230/400 Δ/Y	700	2,2	9,9/5,7	300	0055-32
7180-HD-28	25000/12000	780/180	400 Y/YY	975/485	6,2/1,3	12,5/4,1	348	0075-62
7190-6W-28	33500	980	400 Δ	975	9	22,5/13,0	297	0110-62
7190-HD-26	33500/15800	980/240	400 Y/YY	975/485	9,0/2,0	18,5/6,2	390	0110-62





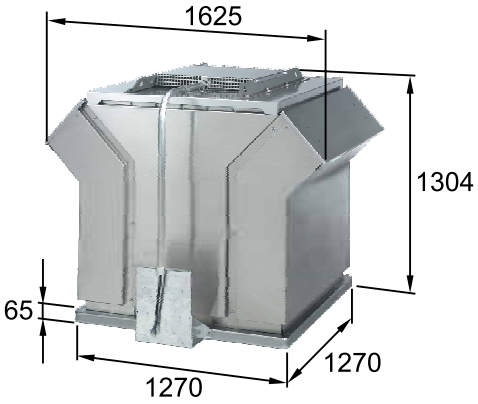
In the curves the A-weighted sound power level is L_{WA} (=L_{WA3} =L_{WA8}) acc. to DIN 45635-38. Reference media density: ρ_1 = 1.15 kg/m³.

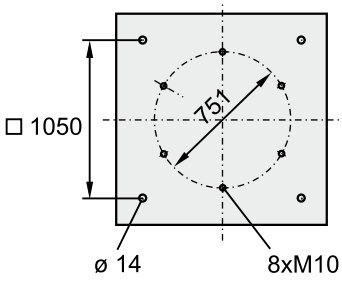
Intake										Discharge									
Relative sound power level L_{WRel3} at octave mid frequencies f_m										Relative sound power level L_{WRel3} at octave mid frequencies f_m									
RDM 56/57-7180; - 7190																			
6-poles																			
Duty point	63	125	250	500	1000	2000	4000	8000	Hz	**Duty point**	63	125	250	500	1000	2000	4000	8000	Hz
0,5 $\dot{V}_{opt}$	15	11	1	-2	-10	-14	-16	-23	dB	**0,5 $\dot{V}_{opt}$**	2	4	1	-4	-5	-8	-13	-21	dB
$\dot{V}_{opt}$	11	13	-1	-4	-11	-15	-17	-23	dB	**$\dot{V}_{opt}$**	1	4	0	-4	-6	-8	-13	-21	dB
$\dot{V}_{max}$	7	14	3	-1	-10	-13	-12	-19	dB	**$\dot{V}_{max}$**	-3	4	0	-3	-6	-8	-12	-20	dB
8-poles																			
Duty point	63	125	250	500	1000	2000	4000	8000	Hz	**Duty point**	63	125	250	500	1000	2000	4000	8000	Hz
0,5 $\dot{V}_{opt}$	15	5	1	-2	-8	-14	-17	-24	dB	**0,5 $\dot{V}_{opt}$**	3	1	-1	-3	-6	-8	-15	-23	dB
$\dot{V}_{opt}$	15	4	0	-3	-7	-13	-15	-24	dB	**$\dot{V}_{opt}$**	3	0	-2	-3	-5	-8	-14	-23	dB
$\dot{V}_{max}$	15	3	1	-3	-9	-14	-13	-25	dB	**$\dot{V}_{max}$**	3	2	0	-3	-6	-9	-10	-23	dB

Smoke Extract Fans ER

Dimensions

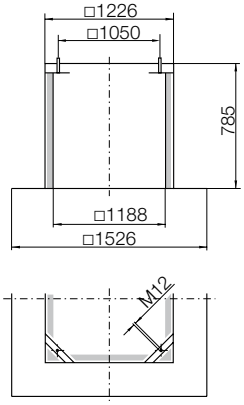
RDM 56/57 7180-6W-24
RDM 56/57 7180-8D-21
RDM 56/57 7180-HD-28
RDM 56/57 7190-6W-28
RDM 56/57 7190-HD-26



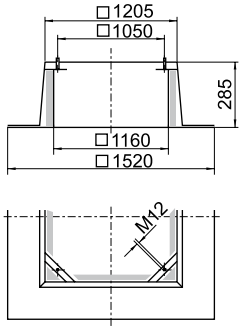


Flat roof upstand

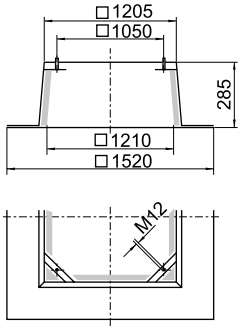
ZBS 10-0125
(600°C), 103 kg



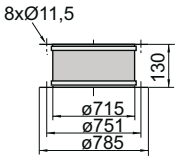
ZBS 03-0125
(600°C), 34 kg



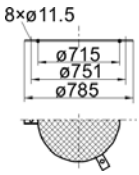
ZBS 20-0125
For RDM56 only , when connected to duct, 34 kg



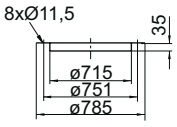
Flexible connection at intake
ZKE 30-0710 (600°C), 7,3 kg



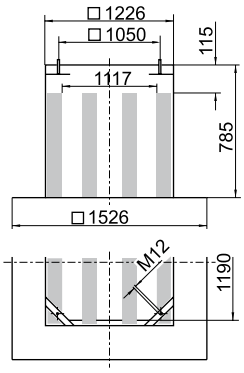
Mesh safety guard
ZSG 04-0710, 1,1 kg



Mating flange
ZKF 11-0710 (600°C), 2,8 kg



Silencer upstand ZDS 32-0125
(600°C), 180 kg



Average attenuation L_{WA} 16 dB

Attenuation in dB at mid frequencies in Hz

63 Hz	3 dB	1000 Hz	20 dB
125 Hz	6 dB	2000 Hz	25 dB
250 Hz	8 dB	4000 Hz	23 dB
500 Hz	14dB	8000 Hz	11 dB

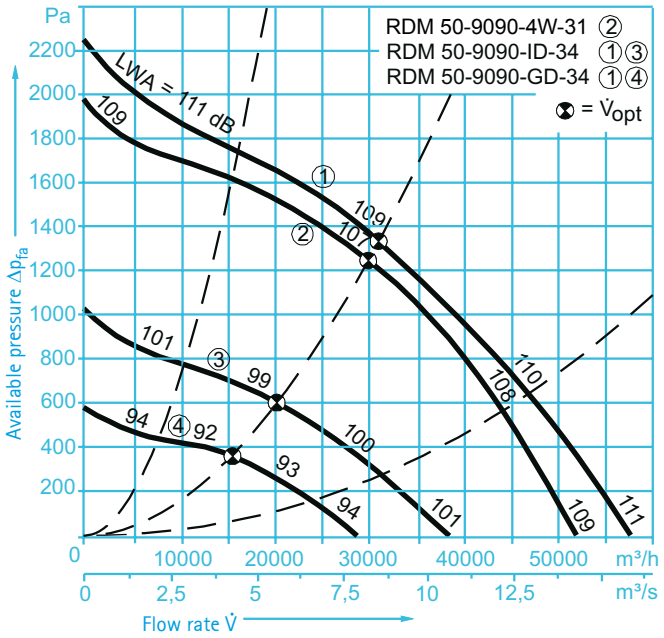
Pressure loss p_A through silencer upstand
In Pa, at flow rates in m³/h

m³/h	Pa
17000	20
20000	30
25000	40
30000	65
40000	110

Smoke Extract Fans ER

Technical Data

Smoke extract fan ER	Flow rate	Available pressure	Voltage	Speed	Motor rating	Rated current	Weights	Isolator switch
RDM 56/57-	m³/h	Pa	V	1/min	kW	A	kg	ESH 21
9090-4W-31	51900	2000	400/690 Δ/Y	1465	22	41,5/24,1	590	0220-62
9090-ID-34	57200/38200	2200/1000	400 Y/Y	1470/980	26/9,5	49,0/20,0	640	0300-62
9090-GD-34	57200/28800	2200/590	400 Y/YY	1470/732	28/7,5	52,0/20,5	640	0300-62



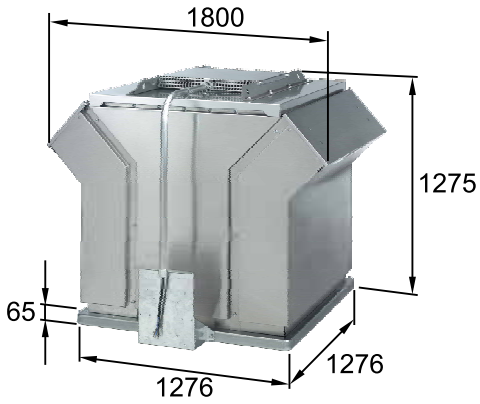
In the curves the A-weighted sound power level is L_{WA} (=L_{WA3} =L_{WA8}) acc. to DIN 45635-38. Reference media density: ρ_1 = 1.15 kg/m³.

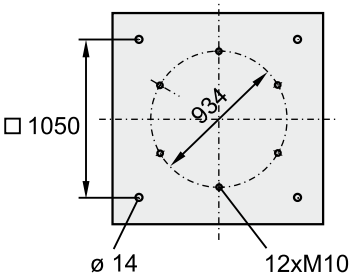
Intake										Discharge									
Relative sound power level L_{WRel3} at octave mid frequencies f_m										Relative sound power level L_{WRel3} at octave mid frequencies f_m									
RDM 56/57-9090																			
4-poles																			
Duty point	63	125	250	500	1000	2000	4000	8000	Hz	**Duty point**	63	125	250	500	1000	2000	4000	8000	Hz
0,5 $\dot{V}_{opt}$	15	11	1	-2	-10	-14	-16	-23	dB	**0,5 $\dot{V}_{opt}$**	2	4	1	-4	-5	-8	-13	-21	dB
$\dot{V}_{opt}$	11	13	-1	-4	-11	-15	-17	-23	dB	**$\dot{V}_{opt}$**	1	4	0	-4	-6	-8	-13	-21	dB
$\dot{V}_{max}$	7	14	3	-1	-10	-13	-12	-19	dB	**$\dot{V}_{max}$**	-3	4	0	-3	-6	-8	-12	-20	dB
6-poles																			
Duty point	63	125	250	500	1000	2000	4000	8000	Hz	**Duty point**	63	125	250	500	1000	2000	4000	8000	Hz
0,5 $\dot{V}_{opt}$	15	11	1	-2	-10	-14	-16	-23	dB	**0,5 $\dot{V}_{opt}$**	2	4	1	-4	-5	-8	-13	-21	dB
$\dot{V}_{opt}$	11	13	-1	-4	-11	-15	-17	-23	dB	**$\dot{V}_{opt}$**	1	4	0	-4	-6	-8	-13	-21	dB
$\dot{V}_{max}$	7	14	3	-1	-10	-13	-12	-19	dB	**$\dot{V}_{max}$**	-3	4	0	-3	-6	-8	-12	-20	dB

Smoke Extract Fans ER

Dimensions

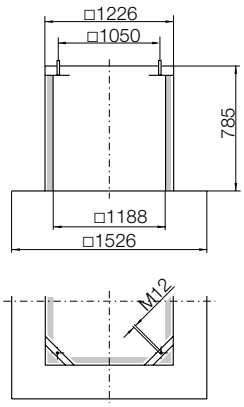
RDM 56/57 9090-4W-31
RDM 56/57 9090-ID-34
RDM 56/57 9090-GD-34



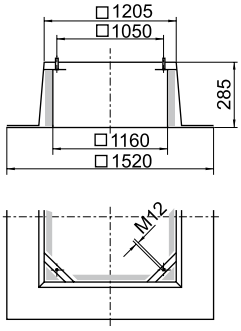


Flat roof upstand

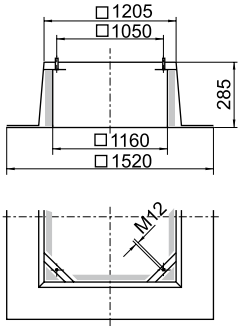
ZBS 10-0125



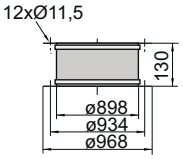
ZBS 33-0125 (600°C)
für RDM 57, 66 kg



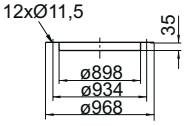
ZBS 31-0125 (400°C)
für RDM 56, 66 kg



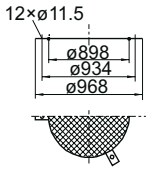
Flexible connection at intake
ZKE 33-0900 (600°C), 9,6 kg



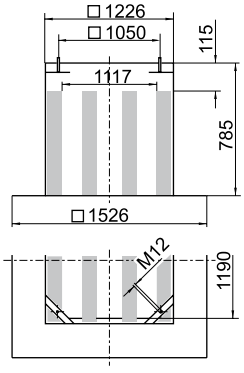
Mating flange
ZKF 11-0900 (600°C), 3,4 kg



Mesh safety guard
ZSG 04-0900, 1,6 kg



Silencer upstand ZDS 32-0125
(600°C), 180 kg



Average attenuation L_{WA} 16 dB

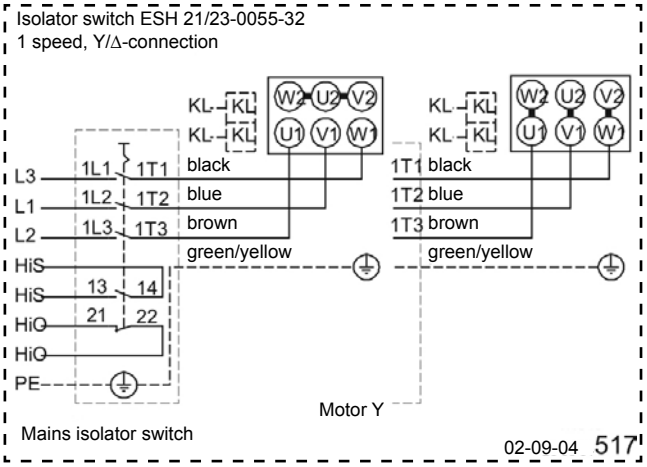
Attenuation in dB at mid frequencies in Hz

63 Hz	**3 dB**	1000 Hz	**20 dB**
125 Hz	**6 dB**	2000 Hz	**25 dB**
250 Hz	**8 dB**	4000 Hz	**23 dB**
500 Hz	**14dB**	8000 Hz	**11 dB**

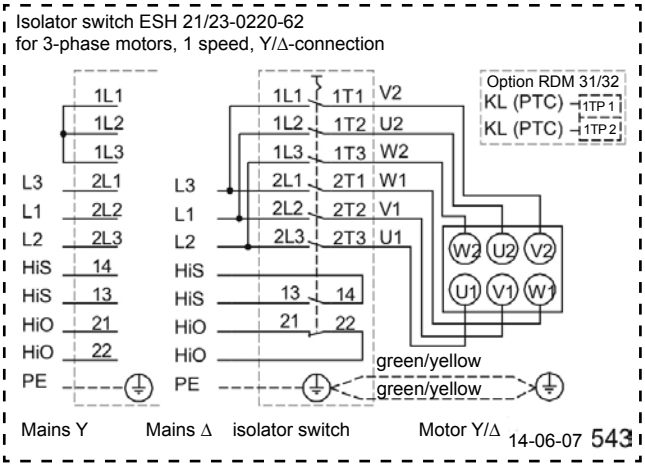
Pressure loss p_A through silencer upstand
In Pa, at flow rates in m³/h

m³/h	**Pa**
17000	20
20000	30
25000	40
30000	65
40000	110

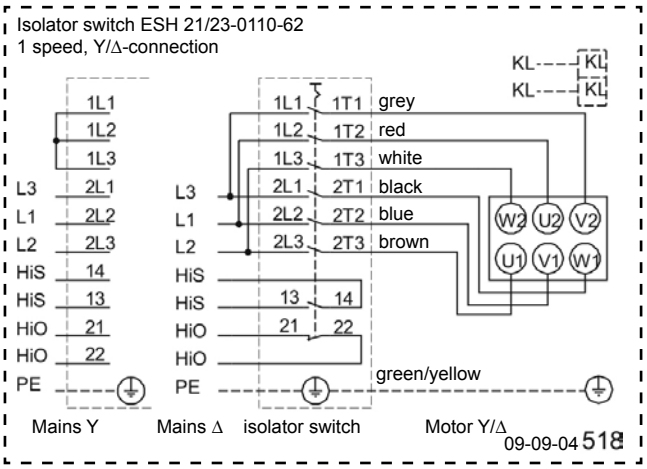
Isolator switch ESH 21-0055-32 for
ER 2528-2W-11, ER 2531-4D-10
ER 3535-4D-10, ER 3540-4D-10, ER 3545-4W-13
ER 4550-4DW-16, ER 4556-4W-17, ER 4556-6W-13
ER 5663-6W-16, ER 5671-6W-21
ER 7180-8D-21



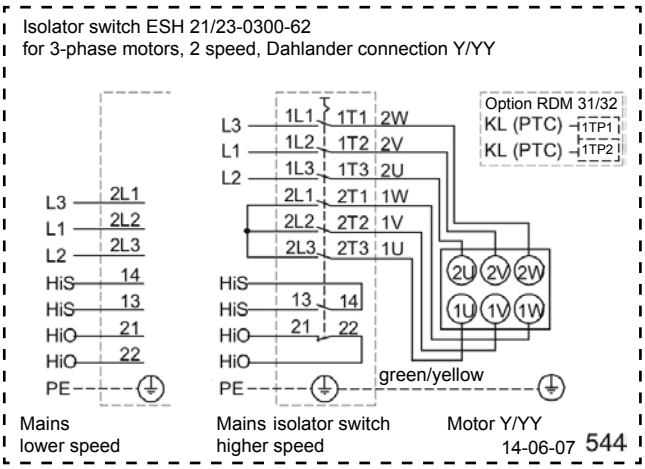
Isolator switch ESH 21-0220-62 for
ER 9090-4W-31



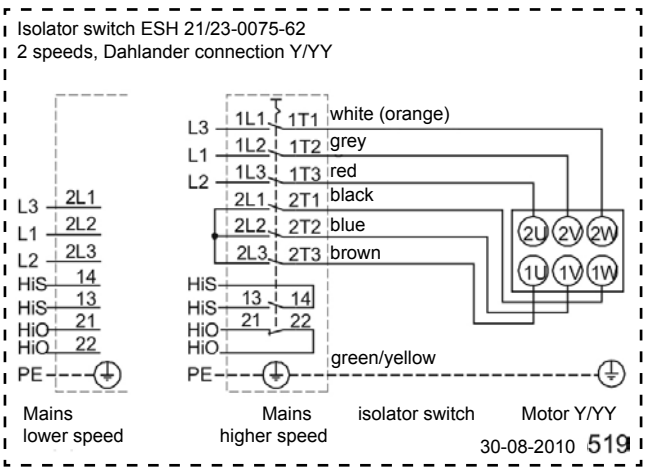
Isolator switch ESH 21-0110-62 for
ER 7190-HD-26, ER 7190-6W-28



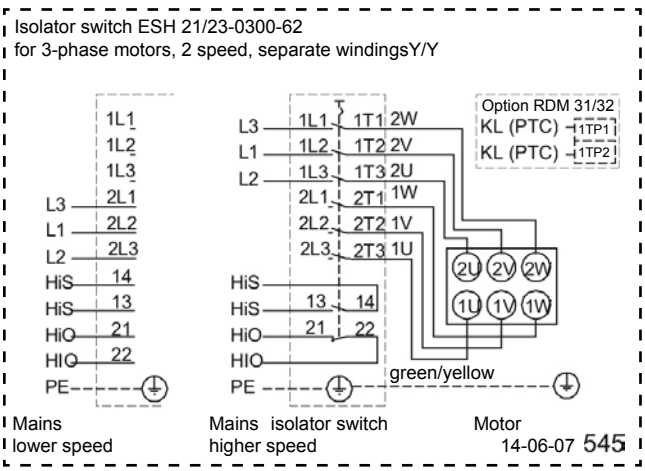
Isolator switch ESH 21-0300-62 for
ER 9090-GD-34



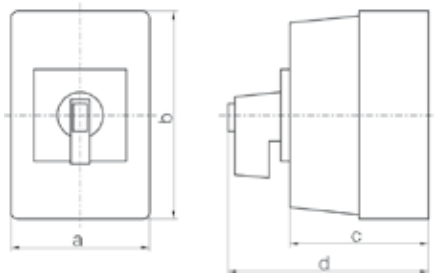
Isolator switch ESH 21-0075-62 for
ER 3545-HD-10,
ER 4550-HD-14, ER 4556-HD-16
ER 5663-HD-19, ER 5671-HD-24
ER 7180-6W-24, ER 7180-HD-28



Isolator switch ESH 21-0300-62 for
ER 9090-ID-34



Isolator switch ESH 21



Execution
Clear grey plastic casing for on surface fitting. Protection IP 65. Black handle for positions "0" and "I". Cover coupling with integrated locking device.
Clear terminal arrangement. Every switch is equipped with a wiring diagram.

Function
The isolator switch is installed for isolating the smoke extract fan from the mains safely on site in case of checking, cleaning, or maintenance works. So accidents by uncontrolled switching on can be avoided and service operations will be eased.
Every isolator switch is provided with potential free contacts (1 open, 1 closed)

ESH 21	A	B	C	D
0055-32	85	120	80	138
0075-62	100	190	91	149
0110-62	100	190	91	149
0220-62	145	250	100	158
0300-62	200	300	172	245

Smoke detector switch panel EBG (on request)

Execution
Robust coated sheet steel casing, protection IP 54, are integrated. Permitted surrounding temperature up to +40°C.
Signals and buttons arranged on the front door.

Function
If there is a fire, the smoke detector switch automatically switches on a smoke extract fan. Any motor overload relays or inverters are bypassed and two-stage fans are switched to their higher speed.

The switch reacts as required to fire alarm sensors, manual activation buttons or direct activation by a fire alarm control panel (FACP). For this, use only allocated activation accessories. Manual activation via the function keys in the front panel is possible.

Scattered light smoke detector MSD 523

Function
The scattered light smoke detector (Tyndall effect) MSD 523 detects smouldering fires and open fires that are producing smoke.
Light transmitters and receivers are arranged in the measuring chamber in such a way that the beam of light from the transmitter cannot directly reach the receiver. Only scattered light on floating particles reaches the receiver and is converted into an electrical signal.
If the specified signal values in the detector are exceeded, a corresponding message is sent to the control panel.

Messages
- Fire alarm, smoke
- Fire alarm, smoke in inspection mode
- Fault messages in inspection mode (LED flashes with 1 Hz)
  (contamination, optical error, fault in voltage supply, EEPROM memory error)
- Signalling maintenance demand in inspection mode (LED flashes with ¼ Hz)

Project planning
For project planning, the country-specific guidelines for designing and installing automatic fire alarm systems apply.
The MSD 523 can be switched to any current increasing circuit that meets the requirements of the specification given in the datasheet.

Installation
The MSD 523 is installed using the mounting base USB 501-1, or other mounting bases compliant with the datasheet.

Connection
The electrical connection is made to cable plug-in terminals in the USB 501 mounting base. The electrical connection between the detector and mounting base is ensured via a 5-pole pin strip.
Wire the detectors in such a way that the installation is disconnected when a detector is removed (see datasheet).

Inspection/repairs
Carry out inspection and repair work in accordance with the datasheet and the relevant regulations of the country in which the system is operated.

Mounting base USB 501-1 for scattered light smoke detector

Mounting base for simple installation of the scattered light smoke detector MSD 523 on finished walls. Designed for installation in dry rooms and a maximum cable cross-section of 9 mm. Mounting base weight approx. 45 g.

Manual activation button HE 075 / HE 076

The electrical manual control facility is installed as a main control section (type HE 075) or an auxiliary control section (type HE 076) in smoke and heat extraction systems, according to VdS Directive 2592. If there is a fire, they are used to manually trigger the relevant electrical control device, which activates the smoke extraction system. The main control section, type HE 075, is fitted as a manual control facility for circuit-monitored electrical control devices in building entrance halls or on the ground floor of stairwells. The LED indicators "RWA AUF" (smoke and heat extraction system open), "Störung" (fault) and "Betriebsbereit" (operational) immediately show the current operating state. The auxiliary control section, type HE 076, is an additional manual control facility. In conjunction with the main control section, it controls circuit-monitored electrical control devices.

Design
Electrical manual control facility, type HE 075, as a main control section for electrical smoke and heat extraction systems, with removable PCB incl. "OPEN" button (changeover contact), "CLOSED" button (N/O) 24 V, 0.01 A, 3 LED indicators, fitted in a plastic enclosure for installation on finished walls, complete with thin glass window and key as unit. Electrical manual control facility, type HE 076, as an auxiliary control section for electrical smoke and heat extraction systems, with removable PCB incl. "OPEN" button (changeover contact), 24 V, 0.01 A, fitted in a plastic enclosure, complete with thin glass window and key as unit; "CLOSED" button (N/O).

Please note
Remove the 270 kq terminal resistor from the terminals in the control panel (EBG panel) and connect to the last manual activation button HE 076 or HE 075, as shown in the diagram.

Specification

Voltage	24 V
Max. breaking capacity	0.01 A

Sample specification Smoke Extract fans ER

Item.	Pcs.		Single price	Total price

RDM 56-2528 ./. 9090, suitable for maximum temperatures up to 400 °C – 120 minutes.
RDM 57-2528 ./. 9090, suitable for maximum temperatures up to 600 °C – 120 minutes.

Smoke extract fan
Air discharge vertical and swirl free. Tested and certified acc. to EN 12101-3 and certified by DIBt under the codes Z-78.1-26/Z-78.1-27.

Stylish and fully closed casing made of stainless aluminium.
Feed cable from the front and protected by a tube.
Installation plate for isolator switch or connection box to be fixed at the base frame.
Base frame for upstand fitting with wide overhung for implementing roof insulation material.
Discharge to be protected against weather by integrated back draught dampers closing at standstill of the fan.
Centrifugal impeller with backward curved blades made of steel, welded and coated.
All mechanically stressed parts made of galvanized sheet steel, motor separated from air stream and cooled by outside air. Motor cabinet additionally thermally isolated.
The roof fans comply with the tolerances of Class 2 of DIN 24 166 „Fans; technical delivery conditions".

Fan type	.....
Flow rate	..... m3/h
Pressure increase	..... Pa
Temp. of gas medium	..... °C
Speed	..... 1/min
Motor rating	..... kW
Voltage/frequency	..... V/Hz
A-Sound power level	..... dB
Weight	..... kg
Dimensions	..... mm

Accessories (at extra cost)

Flat roof upstand ZBS

Flat roof upstand ZBS 20 (only RDM 56, for duct connection, up to size 7190)

Silencer upstand ZDS 32 (up to size 7190)

Flexible Connection ZKE

Mating flange ZKF

Isolator switch

Smoke detector switch panel (on request)

Optical smoke detector

Mounting plate for smoke detector

Manual switch

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