

# Sabre<sup>®</sup> Sickle Fan assisted Roof cowls (VSR)

## Features and Benefits

- Swept impeller with Aerofoil blades, winglets and serrated trailing edge for optimum performance
- Fully assembled cowl, separate plate axial fan
- Optional backdraught shutters and birdguard
- Moulded from recyclable polymeric material
- One shot die cast aluminium impeller dynamically balanced for smooth operation
- All sizes resistant to UV light
- All models speed controllable
- Thermal Overload Protection for motor protection
- Operating temperature up to 70°C
- 2 Year Guarantee
- Designed for Data centre and warehouse cooling applications

The latest generation of the Vent-Axia Sabre<sup>®</sup> Sickle Fan assisted roof cowls incorporate the very latest FE2 Owlitt plate axial fans supplied separate to the cowl offering improved performance over the previous ranges with up to 7dB(A) reduction in sound and up to 15% improvement in efficiency ensuring the best available fan performance in its class. The advanced blade design is matched to a purpose designed external rotor motor to ensure unrivalled reliability and controllability.

All cowl and roof mounting plates are moulded from specially formulated polymeric materials, which are high impact resistant and provide a rigid profile against strong winds and are resistant to UV light. Standard Colour BS00A05. Alternative colours are available on request.

Suitable for flat or inclined roofs (max. angle 30°). Sabre<sup>®</sup> Sickle Fan assisted roof cowls are designed for either kerb or purlin box mounting. All sizes are fitted with inlet wire guards, giving protection to BS 848 part 5. Bird guards are available as optional accessories.

## Design and Development

Using a combination of NASA research into wing performance and winglets, coupled with a study of bird flight has enabled the development of the best available Sickle blade profile. Matching this to a purpose designed close fitting casing ensures best use of this blade technology thereby reducing noise and improving the performance in cased axial fans.

## Impellers

The impellers incorporate the latest in Sickle blade aerofoil technology to ensure minimum sound and maximum performance. The motors and impellers are factory matched, statically and dynamically balanced to ISO 1940 part 1, Quality Class G.6.3.

## Motors

The external rotor motors are specifically designed and styled for this range of fan. Ball bearings are greased for life. Sizes 315 - 710 motors are protected to IP54 against dust and moisture complying with BS EN 60529.

They have ribbed aluminium body castings for efficient cooling with Motor insulation to Class 'F' (from -40°C to + 70°C). Speed controlled sizes 450 to 710, 6 & 8 pole motors are only suitable for operating temperatures of up to 40°C.

## Electrical

The Sabre<sup>®</sup> Sickle Fan assisted roof cowls range is available for either single phase 220-240V 50 Hz capacitor start and run or three phase 380-415V 50Hz. Motors are fitted with Thermal Overload Protection which should be wired into all controller circuits and into starter contacts to prevent motor damage due to overloading / overheating.

## Speed Control

Units are suitable for speed control by either electronic, voltage reduction or frequency inverters where permissible. For optimum efficiency and controllability Vent-Axia recommend the use of the eDemand Inverter controller to give close control via sensors or manual control.

## Terminal Box

An IP54 terminal box is supplied with all models with M20 x 1.5mm gland entry offering protection against dust and water.

## Performance

The fan performance is in accordance with tests to ISO 5801.

## Sound Levels

Fan sound levels are measured in a reverberant chamber in accordance with ISO 3744 Part 1. Published dB(A) figures are free field sound pressure levels at 3m with spherical propagation at a reference level of  $2 \times 10^{-5}$ Pa (20 micro-Pascal). The sound power level spectra figures are dB with a reference level of  $10^{-12}$  Watts (1 pico-watt).

To ensure minimum noise levels during speed control, either an auto transformer or eDemand inverter speed control is recommended.

## Packing

Sabre<sup>®</sup> Sickle Fan assisted roof cowls consist of two elements, a boxed cowl assembly and a plate mounted fan. Fan & cowl are supplied separately to assist with transportation and are quickly assembled on site.

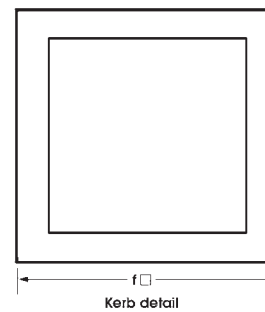
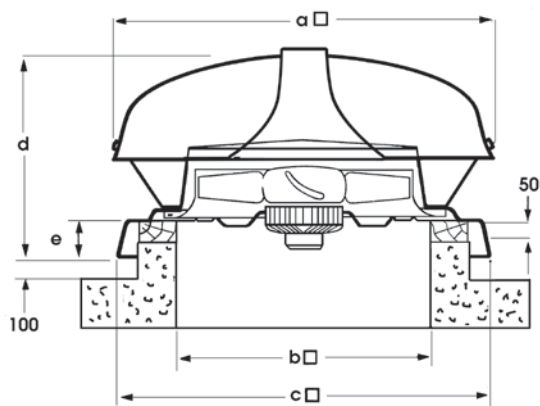
## Accessories

A full range of accessories is available for the Sabre<sup>®</sup> Sickle Fan assisted roof cowls:

- Electronic Speed Controllers
- Auto Transformer Speed Controllers
- eDemand Inverter Speed Control
- D.O.L. Starters
- Purlin Boxes
- Backdraught Shutters
- Bird Guards
- Roof Attenuators



### Fan Dimensions (mm)

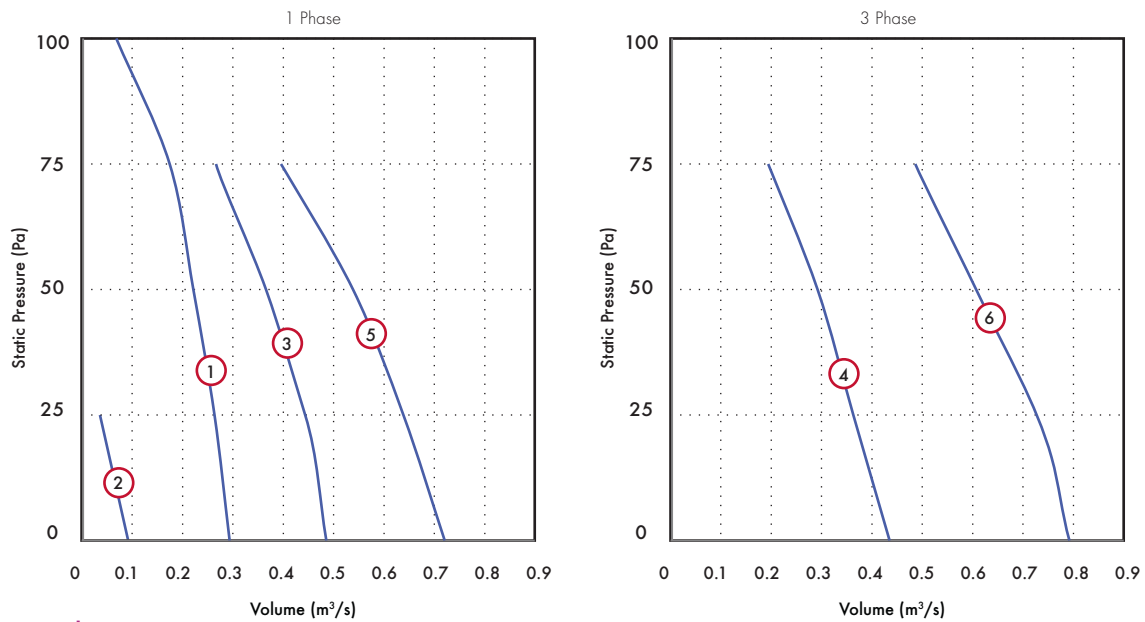


Dia	a □	b □	c □	d	e	f □	Kg max Kerb detail
250	700	475	737	411	97	675	11.7
315	700	475	737	411	97	675	12.8
355	700	475	737	411	97	675	13.8
400	800	575	830	466	97	775	19.2
450	800	575	830	466	97	775	24.8
500	950	715	1000	579	100	915	30.3
560	950	715	1000	579	100	915	37
630	1230	840	1100	731	105	1040	64
710	1230	840	1100	731	105	1040	50

# Sabre Sickle Fan assisted roof cowls (VSR)

## Performance Curve

250 - 355 dia. - 2 & 4 Pole



## Performance Guide

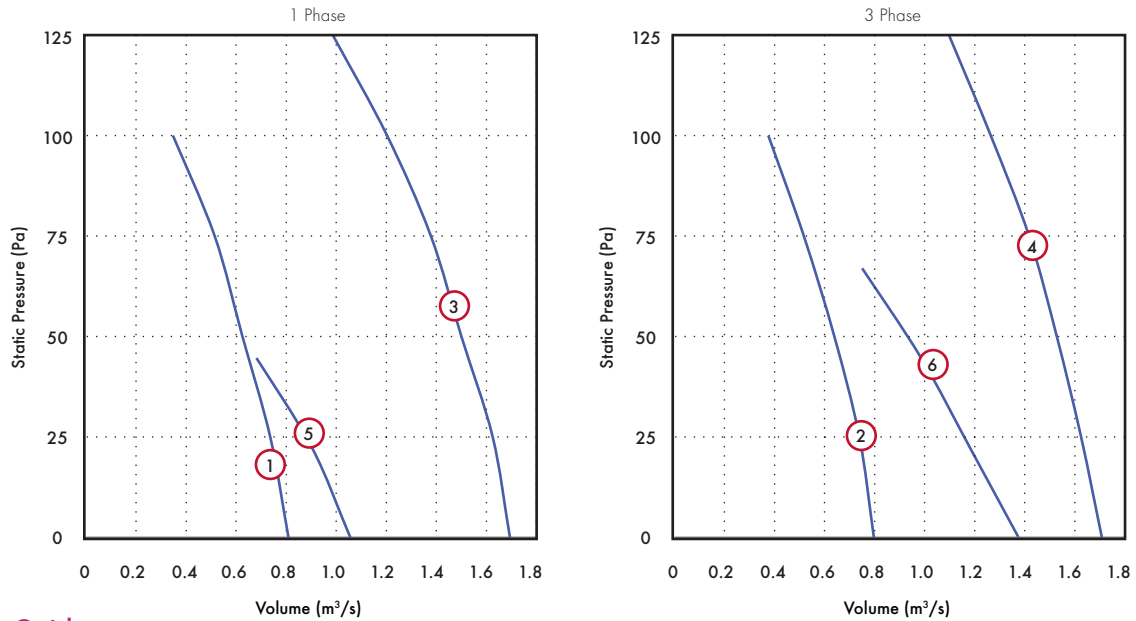
Stock Ref	Supply	IP Rating	Motor kW	F.L.C Amps	S.C. Amps	Poles	rpm	Curve	Volume m³/s @ Pa					dB(A) @ 3.0m	
									0	25	50	75	100		
VSR25012	230/1/50	IP54	0.12	0.54	2.16	2	2160	1	Volume m³/s	0.29	0.26	0.22	0.18	0.07	50
								Power Watts	110	115	118	121	125		
VSR25014	230/1/50	IP54	0.05	0.24	0.96	4	1370	2	Volume m³/s	0.09	0.04				37
								Power Watts	46	48					
VSR31514	230/1/50	IP54	0.14	0.62	2.48	4	1360	3	Volume m³/s	0.49	0.44	0.37	0.27		45
								Power Watts	111	118	124	130			
VSR31534	400/3/50	IP54	0.12	0.68	2.72	4	1450	4	Volume m³/s	0.44	0.36	0.29	0.19		47
								Power Watts	105	115	117	120			
VSR35514	230/1/50	IP54	0.18	0.75	3	4	1260	5	Volume m³/s	0.72	0.64	0.54	0.40		46
								Power Watts	132	141	151	162			
VSR35534	400/3/50	IP54	0.14	0.4	1.6	4	1390	6	Volume m³/s	0.79	0.72	0.61	0.49		48
								Power Watts	152	168	176	178			

## Sound Power Level Spectra dB (ref 10<sup>-12</sup> Watts)

Stock Ref	63Hz	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	8KHz	dB(A) @ 3.0m
VSR25012	65	70	68	66	64	66	62	55	50
VSR25014	56	63	56	54	53	53	49	41	37
VSR31514	71	70	65	60	58	59	55	47	45
VSR31534	75	71	62	60	61	62	59	51	47
VSR35514	67	70	67	64	58	60	53	45	46
VSR35534	74	66	61	63	64	63	59	53	48

## Performance Curve

400 - 450 dia. - 4 & 6 Pole



## Performance Guide

Stock Ref	Supply	IP Rating	Motor kW	F.L.C Amps	S.C. Amps	Poles	rpm	Curve	Volume m³/s @ Pa						dB(A) @ 3.0m	
									0	25	50	75	100	125		
VSR40014	230/1/50	IP54	0.24	1.05	4.2	4	1340	1	Volume m³/s	0.81	0.74	0.63	0.51	0.35	46	
									Power Watts	166	195	200	210	240		
VSR40034	400/3/50	IP54	0.17	0.46	1.84	4	1360	2	Volume m³/s	0.80	0.74	0.64	0.52	0.38	47	
									Power Watts	160	170	190	205	220		
VSR45014	230/1/50	IP54	0.56	2.5	10	4	1320	3	Volume m³/s	1.69	1.63	1.50	1.38	1.20	0.99	49
									Power Watts	480	500	520	530	540	550	
VSR45034	400/3/50	IP54	0.54	1.1	4.4	4	1350	4	Volume m³/s	1.71	1.63	1.53	1.42	1.26	1.10	49
									Power Watts	440	460	480	505	520	530	
VSR45016	230/1/50	IP54	0.19	0.9	3.6	6	910	5	Volume m³/s	1.06	0.90	0.68			41	
									Power Watts	165	175	180				
VSR45036	400/3/50	IP54	0.36	0.66	2.64	6	1020	6	Volume m³/s	1.38	1.18	0.99	0.75		44	
									Power Watts	325	350	360	380			

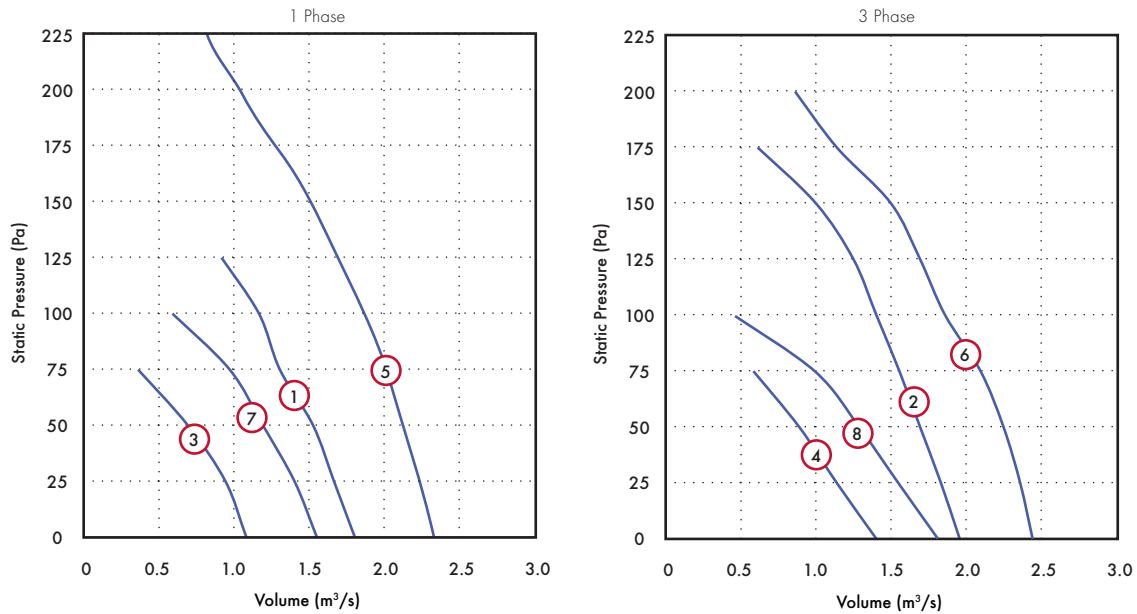
## Sound Power Level Spectra dB (ref 10<sup>-12</sup> Watts)

Stock Ref	63Hz	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	8KHz	dB(A) @ 3.0m
VSR40014	72	73	66	62	60	59	54	48	46
VSR40034	67	67	61	60	60	59	54	48	47
VSR45014	67	69	71	63	63	63	59	53	49
VSR45034	72	70	65	65	64	64	59	53	49
VSR45016	57	62	59	56	56	56	50	41	41
VSR45036	71	66	60	60	60	58	51	43	44

# Sabre Sickle Fan assisted roof cowls (VSR)

## Performance Curve

500 - 560 dia. - 4 & 6 Pole



## Performance Guide

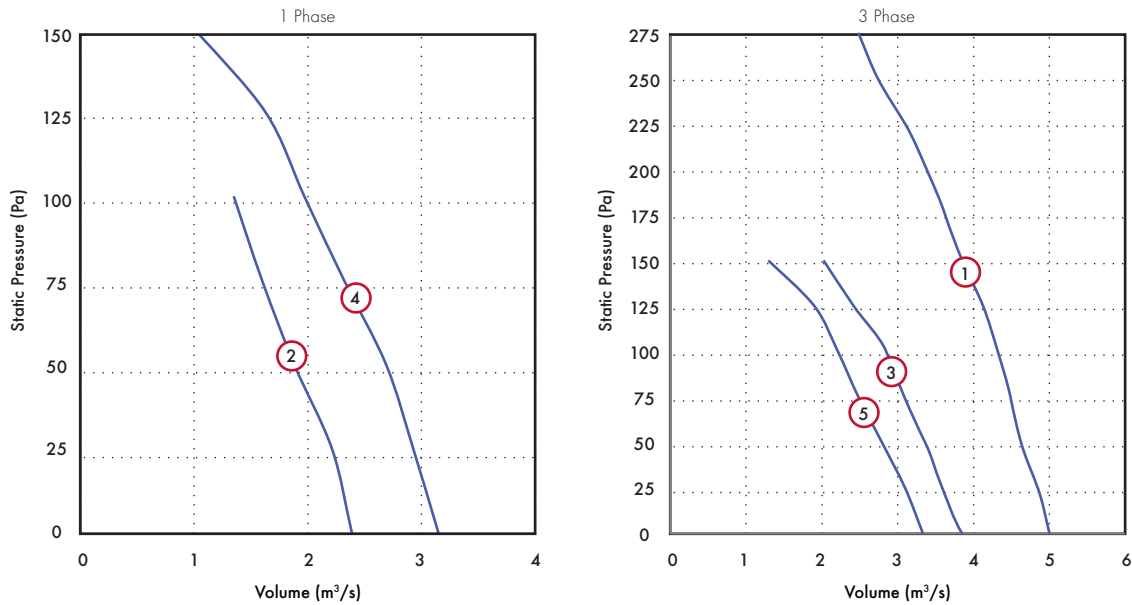
Stock Ref	Supply	IP Rating	Motor kW	F.L.C Amps	S.C. Amps	Poles	rpm	Curve	Volume m³/s @ Pa										dB(A) @ 3.0m			
									0	25	50	75	100	125	150	175	200	225				
VSR50014	230/1/50	IP54	0.76	3.3	13.2	4	1230	①	Volume m³/s	1.81	1.67	1.53	1.31	1.17	0.92						51	
									Power Watts	630	660	670	690	720	740							
VSR50034	400/3/50	IP54	0.84	1.45	5.8	4	1340	②	Volume m³/s	1.96	1.83	1.70	1.56	1.40	1.25	1.00	0.61			52		
									Power Watts	620	650	680	720	740	750	800	825					
VSR50016	230/1/50	IP54	0.3	1.3	5.2	6	910	③	Volume m³/s	1.08	0.94	0.69	0.36								44	
									Power Watts	250	265	280	295									
VSR50036	400/3/50	IP54	0.54	0.96	3.84	6	940	④	Volume m³/s	1.40	1.14	0.89	0.58								47	
									Power Watts	470	500	520	540									
VSR56014	230/1/50	IP54	1.15	5	20	4	1330	⑤	Volume m³/s	2.33	2.25	2.11	2.03	1.87	1.67	1.56	1.28	1.04	0.80	62		
									Power Watts	810	830	870	890	900	980	1000	1050	1100	1110			
VSR56034	400/3/50	IP54	1.05	2.2	8.8	4	1280	⑥	Volume m³/s	2.44	2.36	2.25	2.10	1.86	1.69	1.50	1.14	0.86			57	
									Power Watts	742	800	840	860	910	920	940	1014	1044				
VSR56016	230/1/50	IP54	0.46	2.2	8.8	6	930	⑦	Volume m³/s	1.55	1.40	1.19	0.97	0.59								50
									Power Watts	369	394	415	438	458								
VSR56036	400/3/50	IP54	0.58	1.1	4.4	6	910	⑧	Volume m³/s	1.81	1.55	1.29	1.00	0.47								51
									Power Watts	489	518	542	556	576								

## Sound Power Level Spectra dB (ref 10<sup>-12</sup> Watts)

Stock Ref	63Hz	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	8KHz	dB(A) @ 3.0m
VSR50014	71	75	67	63	67	68	60	52	51
VSR50034	74	72	66	66	68	68	62	56	52
VSR50016	66	72	70	55	59	58	51	43	44
VSR50036	77	77	72	66	64	61	54	47	47
VSR56014	79	78	74	74	77	77	73	66	62
VSR56034	84	78	76	74	75	74	70	63	57
VSR56016	75	73	66	65	67	66	60	54	50
VSR56036	77	77	67	66	67	66	60	54	51

## Performance Curve

630 - 710 dia. - 4 & 6 & 8 Pole



## Performance Guide

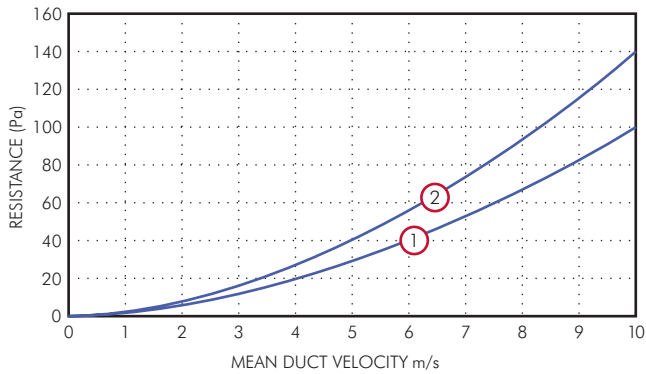
Stock Ref	Supply	IP Rating	Motor kW	F.L.C Amps	S.C. Amps	Poles	rpm	Curve	Volume m³/s @ Pa										dB(A) @ 3.0m				
									0	25	50	75	100	125	150	175	200	225		250	275		
VSR63034	400/3/50	IP54	2.4	4.6	18.4	4	1320	1	Volume m³/s	5.00	4.85	4.62	4.49	4.32	4.13	3.85	3.63	3.40	3.10	2.74	2.48	62	
									Power Watts	2305	2350	2400	2450	2500	2540	2587	2600	2628	2630	2639	2659		
VSR63016	230/1/50	IP54	0.74	3.4	13.6	6	910	2	Volume m³/s	2.39	2.21	1.88	1.60	1.35								52	
									Power Watts	568	603	650	679	710									
VSR63036	400/3/50	IP54	1.5	2.6	10.4	6	1040	3	Volume m³/s	3.85	3.55	3.36	3.10	2.85	2.42	2.02						57	
									Power Watts	1538	1550	1593	1610	1645	1661	1666							
VSR71016	230/1/50	IP54	0.95	4.4	17.6	6	850	4	Volume m³/s	3.15	2.93	2.69	2.32	1.97	1.63	0.99						52	
									Power Watts	607	666	700	760	808	850	950							
VSR71036	400/3/50	IP54	0.94	1.7	6.8	6	900	5	Volume m³/s	3.33	3.10	2.79	2.48	2.21	1.90	1.29						49	
									Power Watts	560	620	700	768	813	861	920							

## Sound Power Level Spectra dB (ref 10<sup>-12</sup> Watts)

Stock Ref	63Hz	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	8KHz	dB(A) @ 3.0m
VSR63034	85	80	77	75	78	77	71	66	62
VSR63016	74	71	73	68	68	66	60	54	52
VSR63036	84	75	71	71	74	71	65	59	57
VSR71016	81	81	72	69	70	67	61	57	52
VSR71036	69	69	68	67	68	65	59	52	49

# Sabre Sickle Fan assisted roof cowls (VSR)

## Pressure Drop for Roof Cowl only



Stock Ref	Free area m <sup>2</sup>	Resistance curve	Cowl only weight kg
RCZ300	0.099	1	7.5
RCZ400	0.159	2	9
RCZ500	0.246	2	13
RCZ630	0.396	3	19

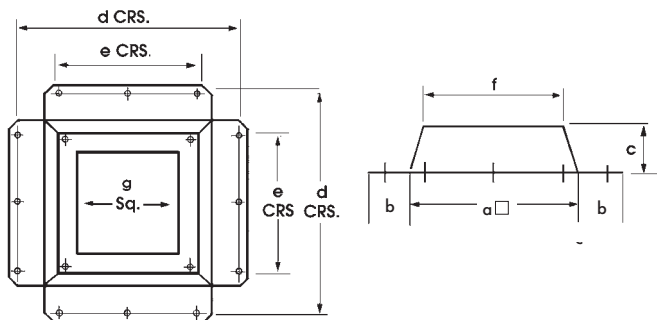
## Vertical Backdraught Shutters

Size	Percentage reduction in performance at 4 pole speeds
315	7%
355	12%
400	10%
450	*3%
500	*4%
560	*6%
630	*3%
710	*7%

\* For 6 and 8 pole fans, reduce percentages by ratio of fan speeds.

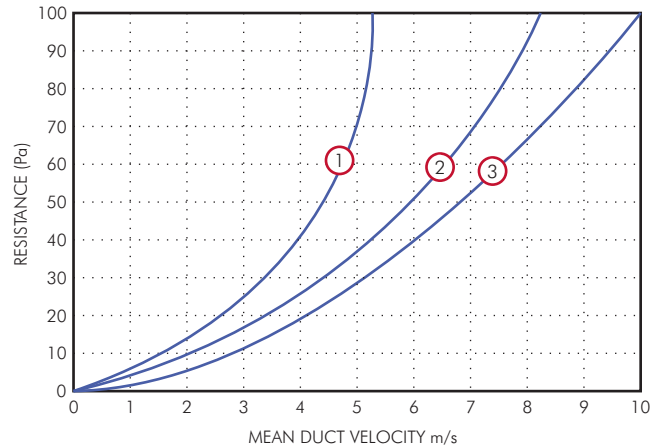
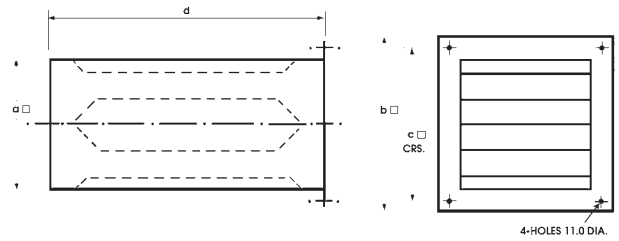
## Purlin Box

(Manufactured from 1.5mm pre-galv. mild steel)



Size	a □	b	c	d	e	f	g
250/315/355	625	90	240	765	400	590	460
400/450	725	90	240	865	500	705	565
500	890	70	250	990	650	864	640
560	890	70	250	990	650	864	700
630	1030	75	250	1140	760	985	775
710	1030	75	250	1140	760	985	840

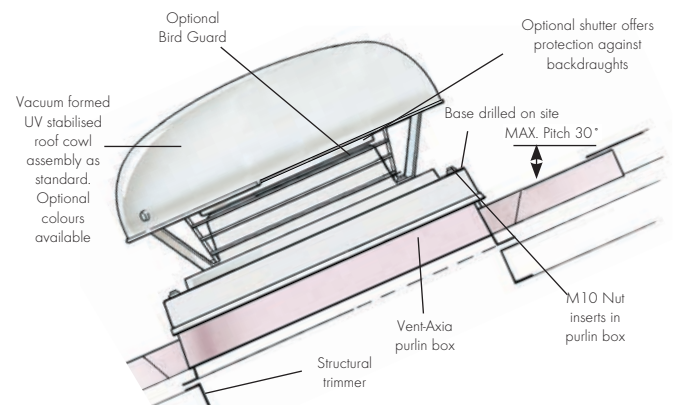
## Roof Attenuators



Stock Ref	a	b	c	d	Kg approx	Free area m <sup>2</sup>	Resistance curve
RAZ300600	455	535	505	600	18	0.156	1
RAZ400600	555	635	605	600	22	0.245	2
RAZ500600	635	790	745	600	31	0.416	2
RAZ600600	770	935	890	600	44	0.616	3
RAZ300900	455	535	505	900	21	0.156	1
RAZ400900	555	635	605	900	28	0.245	2
RAZ500900	635	790	745	900	39	0.416	2
RAZ600900	770	935	890	900	52	0.616	3
RAZ3001200	455	535	505	1200	25	0.156	1
RAZ4001200	555	635	605	1200	35	0.245	2
RAZ5001200	635	790	745	1200	48	0.416	2
RAZ6001200	770	935	890	1200	61	0.616	2

\* Recommended maximum duty velocity 10m/s

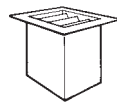
## Typical Installation



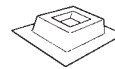
### Accessories



Stock Ref	Supply	Electronic Controller	5 Step Auto Transformer	D.O.L Starter	Overload	eDemand** Voltage	eDemand** 3ph
						Control*	Inverter
VSR25012	230/1/50	W10303102M	10314102	444744	444698	444164	-
VSR25014	230/1/50	W10303102M	10314102	444744	444697	444164	-
VSR31514	230/1/50	W10303102M	10314102	444744	444699	444164	-
VSR31534	400/3/50	-	10314301	444747	444699	444166	444172
VSR35514	230/1/50	W10303102M	10314102	444744	444699	444164	-
VSR35534	400/3/50	-	10314301	444747	444698	444166	444172
VSR40014	230/1/50	W10303102M	10314102	444744	444700	444164	-
VSR40034	400/3/50	-	10314301	444747	444698	444166	444172
VSR45014	230/1/50	10303103	10314103	444744	444702	444164	-
VSR45034*	400/3/50	-	10314302	444747	444700	444166	444172
VSR45016	230/1/50	W10303102M	10314102	444744	444699	444164	-
VSR45036*	400/3/50	-	10314301	444747	444699	444166	444172
VSR50014	230/1/50	10303106	10314105	444744	444702	444164	-
VSR50034*	400/3/50	-	10314302	444747	444700	444166	444172
VSR50016	230/1/50	W10303102M	10314102	444744	444700	444164	-
VSR50036*	400/3/50	-	10314302	444747	444700	444166	444172
VSR56014	230/1/50	10303106	10314105	444744	444703	444164	-
VSR56034*	400/3/50	-	10314304	444747	444702	444166	444172
VSR56016	230/1/50	10314103	10314103	444744	444702	444164	-
VSR56036*	400/3/50	-	10314302	444747	444700	444166	444172
VSR63034	400/3/50	-	10314307	444747	444703	444166	444173
VSR63016	230/1/50	10303106	10314105	444744	444702	444164	-
VSR63036*	400/3/50	-	10314304	444747	444702	444166	444173
VSR71016	230/1/50	10303106	10314105	444744	444703	444164	-
VSR71036*	400/3/50	-	10314302	444747	444701	444166	444172



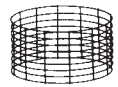
Roof Attenuator



Purlin



Shutter



Bird

Model Ref	Roof Attenuator			Purlin Boxes	Shutter	Bird Guard
	600mm	900mm	1200mm	Boxes	Shutter	Bird Guard
	Stock Ref	Stock Ref	Stock Ref	Stock Ref	Stock Ref	Stock Ref
VSR250	RAZ300600	RAZ300900	RAZ3001200	PBZ300	RSZ300	BGZ300
VSR315	RAZ300600	RAZ300900	RAZ3001200	PBZ300	RSZ300	BGZ300
VSR355	RAZ300600	RAZ300900	RAZ3001200	PBZ300	RSZ300	BGZ300
VSR400	RAZ400600	RAZ400900	RAZ4001200	PBZ400	RSZ400	BGZ400
VSR450	RAZ400600	RAZ400900	RAZ4001200	PBZ400	RSZ400	BGZ400
VSR500	RAZ500600	RAZ500900	RAZ5001200	PBZ500	RSZ500	BGZ500
VSR560	RAZ500600	RAZ500900	RAZ5001200	PBZ560	RSZ500	BGZ500
VSR630	RAZ600600	RAZ600900	RAZ6001200	PBZ630	RSZ630	BGZ630
VSR710	RAZ600600	RAZ600900	RAZ6001200	PBZ710	RSZ630	BGZ630

\*\* For full range of speed controller options, see Accessories & Controllers Section.

\*Three phase models are supplied with 2 speed delta/star connection motors, as standard. (Sizes 450 to 630 are 4/6 Pole, 710 are 6/8 pole).

When low noise levels are required on all other models a 5 step auto transformer speed controller is recommended.

Optional coloured Cowls and Bases available on request.