

# Roof Top Penthouse Turret Louvre

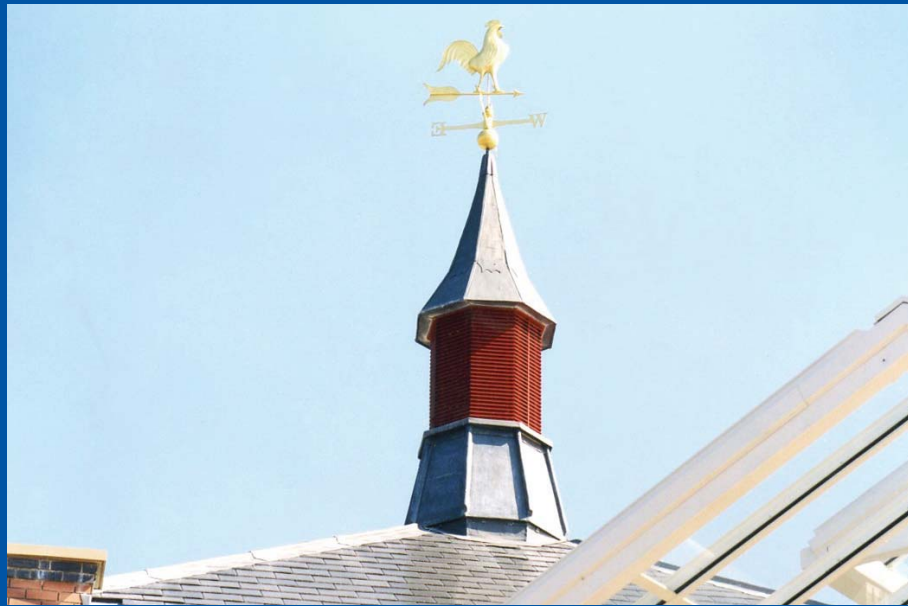


The Gilberts intake/exhaust penthouse turret can be specifically manufactured in a wide variety of configurations to suit the system design or aesthetic parameters. The turrets can be designed to suit wind driven systems or stack effect with internal partitions and dampers providing for full and accurate air movement control. All penthouse units are of our patented high weather efficiency design to eliminate weather ingress and can be fitted on to both flat and pitched roofs.

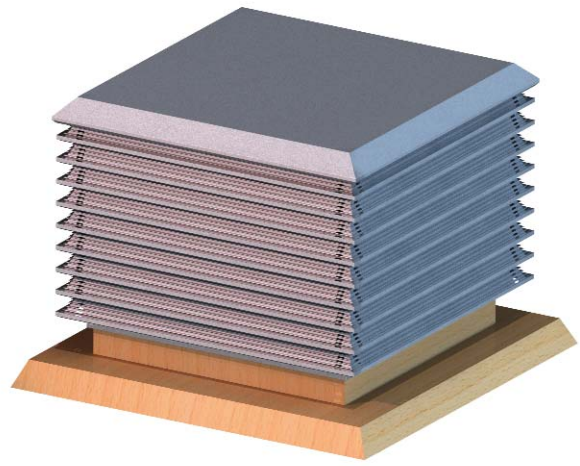
Design styles are flexible with traditional square design most popular with a variety of roof top options. Special or bespoke roof tops can also be included to complement your building design.

Circular units, although less effective in wind driven systems, can also be provided.

A durable polyester powder finish to any commercially available colour allows a free matching architectural choice. Bird guards screens are fitted to the rear as standard with insect screens also optionally available.



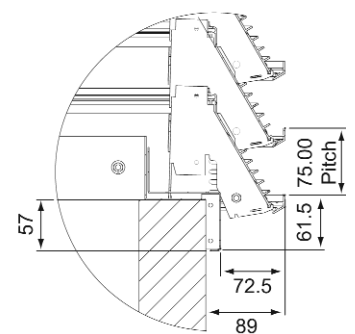
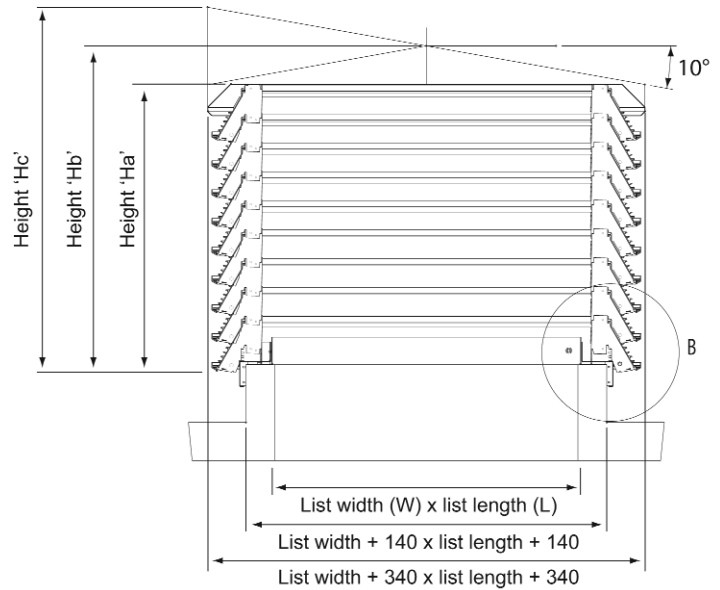
# Penthouse Turret Options



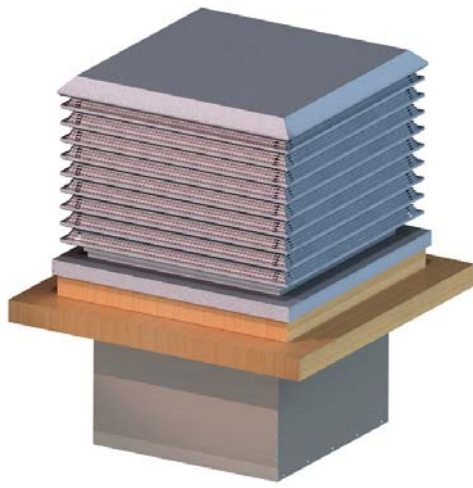
## Type 1 - Exhaust Turret Terminal

The Type 1 exhaust turret provides an attractive and efficient means for rooftop exhaust of natural ventilation air. Warm air rising up through the stack or building can be easily vented through standard rooftop exhaust terminals. Using high weather efficiency blade the units are designed to provide maximum weather protection to prevent problematic ingress of rain and water. Standard blade pitch is 75mm with a steep 60 degree Blade angle which provides a unit with 35% free area and maximum weather resistance rating. Alternative 45 degree blade angles are also available and whilst this increases free area to 50% it also reduces the weathering performance by a small amount.

Standard fixing is via a kerb mounting flange and bird guard screens are fitted as standard. Insect screens are also available on request.



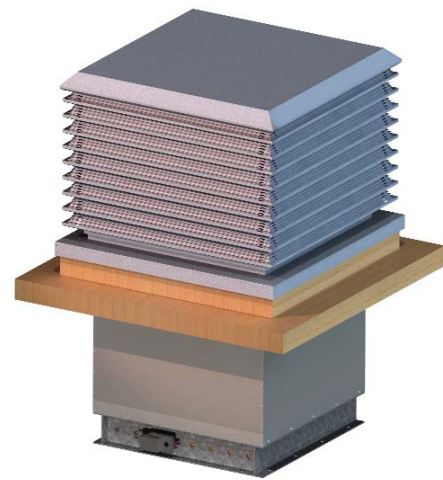
Unit	Blade angle	Nominal Width 'W' (internal duct width)	Nominal Length 'L' (internal duct width)	Number of blades	Roof option		
					Height 'Ha' (Standard)	Height 'Hb' (Pent)	Height 'Ha' (Monopitch)
VNT/1A	45	400	400	3	296	344	391
	45	600	600	5	446	517	589
	45	800	800	7	596	691	786
	45	1000	1000	8	671	790	909
	45	1200	1200	10	827	964	1106
VNT/2A	45	1400	1400	11	896	1062	1229
	60	400	400	5	446	494	541
	60	600	600	7	596	667	739
	60	800	800	9	746	841	936
	60	1000	1000	11	896	1015	1134
	60	1200	1200	14	1121	1264	1406
	60	1400	1400	16	1271	1437	1604



### Type 2 - Exhaust Turret Terminal with Mounting Sleeve

The Type 2 exhaust turret provides a means for rooftop exhaust of natural ventilation air and includes a purpose factory built mounting sleeve. The louvre enjoys the exact same specification as the Type 1 detailed on page 20. For type 2 however the additional duct sleeve provides a safe effective means to fit the louvre to the roof structure and also allows for convenient ducting off below the roof level. The sleeve is available in both insulated and non insulated format. The insulated version would be the standard with the sleeve design incorporating a phenolic thermal foam barrier which prevents transfer of heat/cool energy from inside to outside. This thermal barrier has a **U value of xxx**

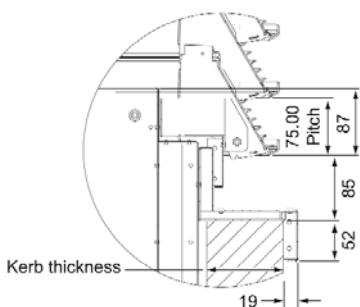
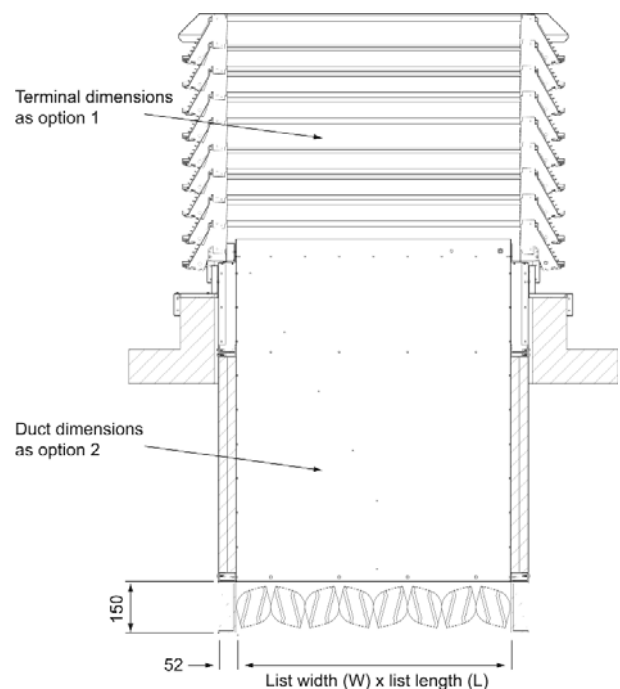
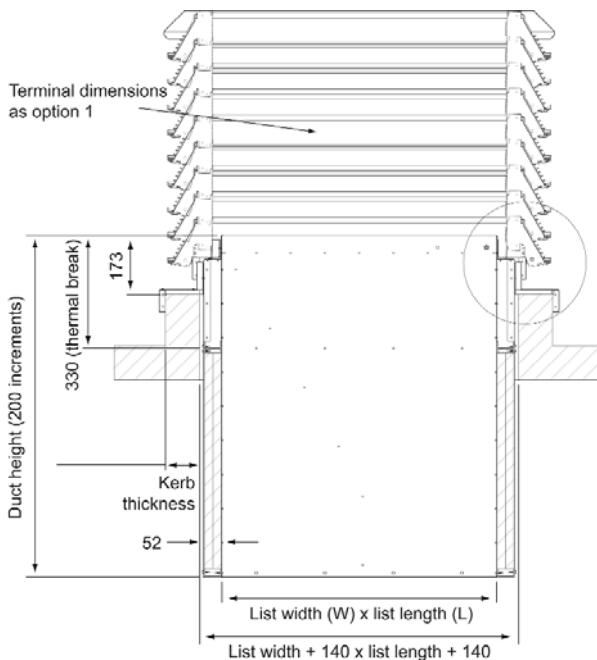
Standard fixing is via a kerb mounting flange and bird guard screens are also fitted as standard to the rear. Insect screens are also available on request

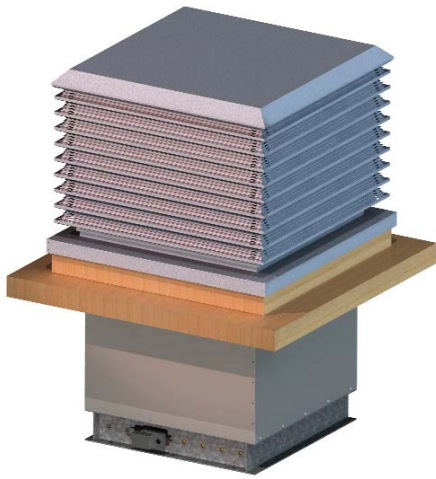


### Type 3 - Exhaust Terminal with Mounting Sleeve and Damper

The Type 3 exhaust turret provides a means for rooftop exhaust of natural ventilation air and includes a purpose factory built mounting sleeve and volume control damper. The louvre enjoys the exact same specification as the Type 2 detailed alongside.

Type 3 however is a fully self contained terminal that does not rely on further ducting or separate volume control. Type 3 includes a motorised volume control damper at the base which allows the unit to fully open, close or modulate as demand requires. The damper is mounted on the sleeve outlet and can be linked in to the natural ventilation management system. The damper (see full details on page xx) is our patented fully insulated design which again provides a full thermal barrier with a **U value of x**. Standard kerb mounting flange and bird guards. Insect screens are also available

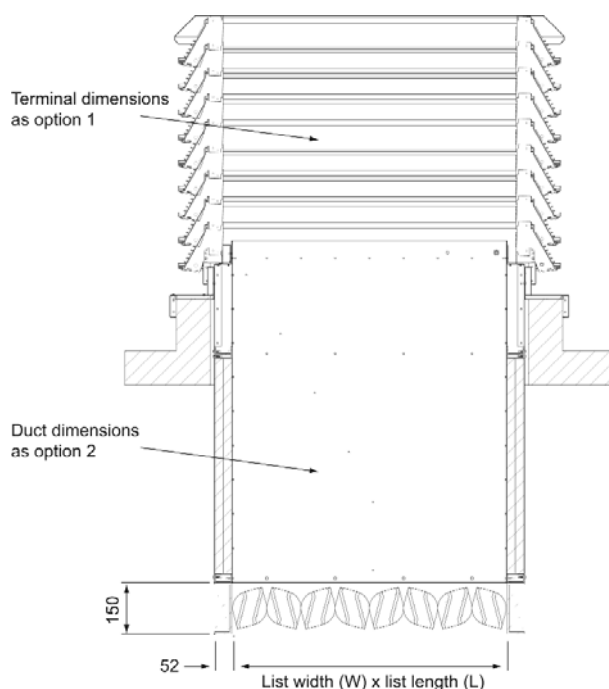




### Type 4 – WindNet Wind Driven Terminal

As well as Natural Ventilation Exhaust turrets we are able to offer a complete range of wind powered terminals. Wind power systems are somewhat different than the stack effect system and as explained on page rely on the wind driving cool fresh air down into the building with the warmer air exhausting both through buoyancy and incoming air pressure displacement. In order to create this feature the turret is fitted with specialised splitters that provide four separate air paths. Air is driven down into the occupied zone through two of the airways and exhausted through the remaining two. The wind direction will determine which airways are used at any particular time.

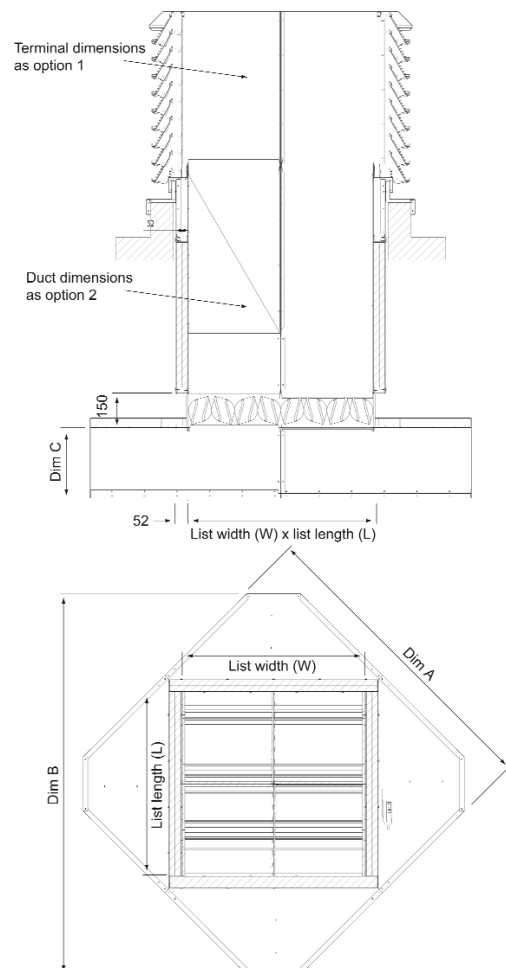
The turret is fitted to the roof using our standard installation sleeve with built in thermal barrier. This sleeve terminates with a motorised volume control damper which allows the unit to fully open, close or modulate as demand requires. The damper is mounted on the sleeve outlet and can be linked in to the natural ventilation management system. The damper (see full details on page xx) is our patented fully insulated design which again provides a full thermal barrier with a U value of.

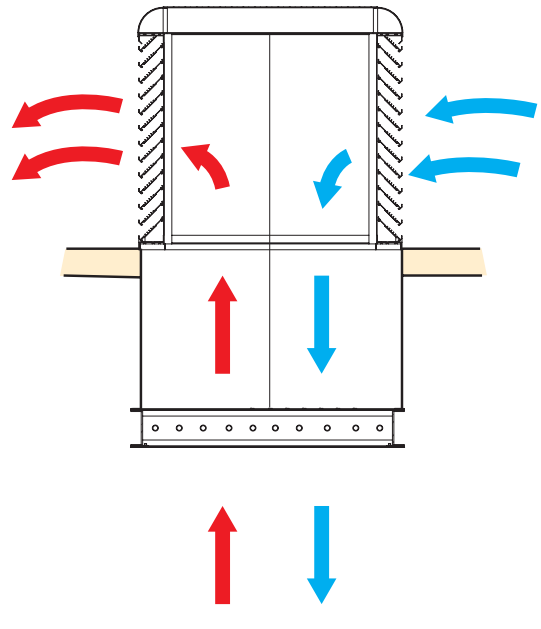
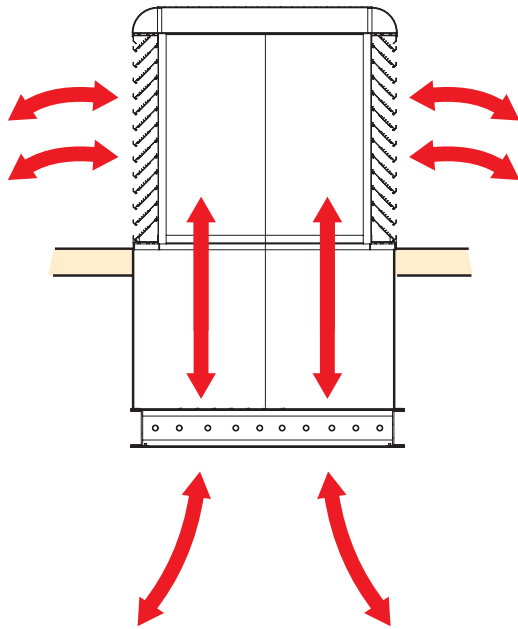


### Type 5 – WindNet Wind Driven Terminal with Air Distribution Plenum

The Type 5 exhaust turret provides a means for rooftop exhaust of natural ventilation air which incorporates a purpose factory built mounting sleeve and volume control damper. The louvre enjoys the exact same specification as the Type 4 detailed above.

Type 5 however is a fully self contained terminal that does not rely on further ducting or separate volume control. Type 5 includes a motorised volume control damper at the base which allows the unit to fully open, close or modulate as demand requires. The damper is mounted on the sleeve outlet and can be linked in to the natural ventilation management system. The damper (see full details on page xx) is our patented fully insulated design which again provides as full thermal barrier with a U value of Standard kerb mounting flange and bird guards. Insect screens are also available.





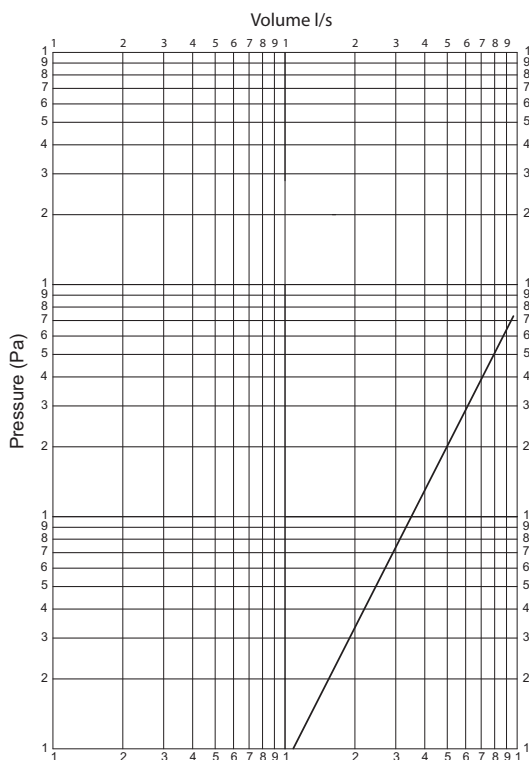
## Sizing And Selection Charts

The following data has been obtained from actual tests of penthouse turret assemblies. Graphs A & B represent pressure drops associated with various volume flow rates as taken from a 1 cubic metre area penthouse. With four sides this equates to an active louvre face area of 4 sq metres. In order to establish the air flow rate that would give the same pressure drop through a 1 sq metre face area louvre therefore the volumes given would be divided by a factor of 4.

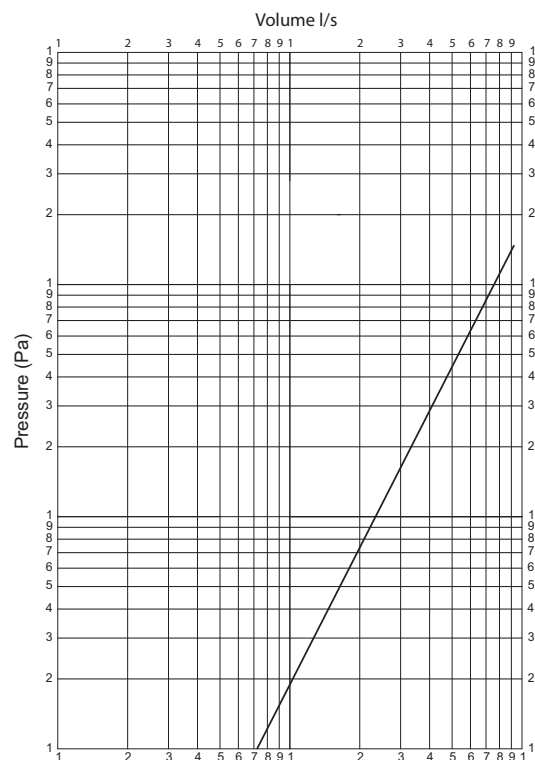
Two different blade angles have also been given based on 45 and 60 degrees. The 45 degree is the standard blade angle and corresponds with the data in the louvre section on [page x](#). The 60 degree blade angle, with performance graphs shown below, offer even better weathering performance and both blade angles are available in a variety of free area formats.

### Pressure drop volume graphs

Blades at 45°



Blades at 60°



# Penthouse Louvre Performance Data

The following tabulated table provides comprehensive sizing data for all of our standard size penthouse turret louvre range.

Figures in the table are based upon air volume and duct velocity variables and these can easily be changed within a selection program to give new data on alternative sizes where required.

Unit	blade angle	nominal size (internal duct size)	nominal height (blades x 75+320)	Theoretical blade requirement	Standard blade quantities	Modified blade qty	Over blade size	Structural opening (on plan)	Free area of duct	Geometric Free area through louvre
VNT/1A	45	400	488	3	3	3	718	532	0.16	0.21
	45	600	638	4	5	5	918	732	0.36	0.40
	45	800	788	5	7	7	1118	932	0.64	0.65
	45	1000	863	7	8	8	1318	1132	1.00	1.11
	45	1200	1013	8	10	10	1518	1332	1.44	1.52
	45	1400	1088	9	11	11	1718	1532	1.96	1.98
VNT/2A	60	400	638	3	5	5	718	532	0.16	0.27
	60	600	788	5	7	7	918	732	0.36	0.39
	60	800	938	7	9	9	1118	932	0.64	0.68
	60	1000	1088	9	11	11	1318	1132	1.00	1.05
	60	1200	1313	11	14	14	1518	1332	1.44	1.50
	60	1400	1463	13	16	16	1718	1532	1.96	2.03

Unit	blade angle	Volume at 1m/s through duct (l/s)	Active face area of louvre (m <sup>2</sup> )	l/s/m <sub>2</sub> of louvre	Pressure drop@ 1m/s	Pressure drop@ 'above'm/s	Pressure drop@ 'above'l/s	Terminal Coefficient of discharge	Louvre Coefficient of discharge	weight	Nominal Duct length
VNT/1A	45	160	0.50	317	1.29	1.29	50.39	0.682	0.217	TBC	1400
	45	360	1.12	323	1.33	1.33	10.28	0.671	0.217	TBC	1600
	45	640	1.97	325	1.35	1.35	3.30	0.666	0.217	TBC	1800
	45	1000	2.75	363	1.69	1.69	1.69	0.596	0.217	100KG	2000
	45	1440	4.03	358	1.64	1.64	0.79	0.605	0.217	TBC	2200
	45	1960	5.11	383	1.88	1.88	0.49	0.565	0.217	TBC	2400
VNT/2A	60	160	0.82	194	1.08	1.08	42.38	0.744	0.144	TBC	1400
	60	360	1.58	228	1.50	1.50	11.55	0.633	0.144	TBC	1600
	60	640	2.57	249	1.78	1.78	4.35	0.581	0.144	TBC	1800
	60	1000	3.81	263	1.99	1.99	1.99	0.550	0.144	100KG	2000
	60	1440	5.66	254	1.86	1.86	0.90	0.567	0.144	TBC	2200
	60	1960	7.44	264	2.00	2.00	0.52	0.548	0.144	TBC	2400

Unit	blade angle	Nominal Width 'W' (internal duct width)	Nominal Length 'L' (internal duct length)	Number of blades (standard)	Nominal Height 'H' (blades x 75+228)
VNT/1A	45	400	400	3	463
	45	600	600	5	613
	45	800	800	7	763
	45	1000	1000	8	838
	45	1200	1200	10	988
	45	1400	1400	11	1063
VNT/2A	60	400	400	5	613
	60	600	600	7	763
	60	800	800	9	913
	60	1000	1000	11	1063
	60	1200	1200	14	1288
	60	1400	1400	16	1438