



RHINO
TUFF

ROOF VENTILATION SYSTEMS

Breathe *fresh* everyday



Automatic Rotators 
Roof Extractors 
Hybrid Ventilators 

ABOUT **RHINO TUFF** **AUTOMATIC ROTATOR**

RHINO TUFF AUTOMATIC ROTATORS are renowned for their quality, performance and durability.

These Ventilation Systems offer unmatched value to their patrons by providing effective round the year natural ventilation and that too at no operating cost!

Developed after extensive research and true to their name, they are tough to the core and have a service life of more than 10 years in tough environments and in extreme weather conditions.

They boast of a robust and dynamic design. True to their name, they are tough to the core and boast of a rugged material of construction.

RHINO TUFF Automatic Rotator exhaust large volumes of hot air even at relatively low wind speeds and have the highest exhaust capacity in their class. They are capable of withstanding a high wind speed and are guaranteed against water ingress. In addition, they are strong, impact resistant, light weight, effective, weather and storm proof, noiseless, maintenance free, easy to install, adaptable to any roof, economical to use and environment friendly.

Large and reputed - engineering consultants, architectural companies, building and construction companies, OEMs and government companies trust only RHINO TUFF Automatic Rotators for executing world class industrial, commercial and infrastructure Projects.

HOW DO THEY WORK ?

RHINO TUFF Automatic Rotators are natural air ventilation systems. They are free spinning roof exhausts, which works by utilizing the Kinetic Energy of wind to induce air flow through Centrifugal Action.

They provide round the year natural ventilation at no running cost. They continuously exhaust smoke, gases, fumes, dust and hot air from the place of installation.

They revolve due to the force of the outside wind and the inside hot air. The Centrifugal Force (backward thrust) caused by the spinning fins creates a region of low pressure, which draws and throws out air from below and causes fresh cool air from the outside to come in.

The slightest breeze will cause the Automatic Rotator to spin. Even after the breeze has stopped, the fly wheel effect of their rotor cage will use their stored energy to continuously remove inside stale air and thereby giving rise to ventilation. Suction is maintained at very low wind speeds.

Convective thermal currents are given boost by Poly Soaker Plates to further enhance revolution of the Automatic Rotators.

Stale hot air is exhausted through the Automatic Rotators where as the cooler fresh air rushes into the negative space in the buildings through various openings such as doors, shutters, windows and louvers to maintain an equilibrium. The incoming air can be filtered by installing air filters over the air inlets in the building. This is necessary in case of pharmaceutical and food processing industries.

Why RHINO TUFF ?

1



Mechanically strong

2



Impact resistant

3



Light weight

4



Highly effective

5



No running cost

6



Significant power savings

7



Weather proof

8



Storm and hail resistant

9



Noise free

10



Leakage proof

11



Easy to install

12



Adaptable to any kind of roofing material

13



Maintenance free and easily repairable

14



Durable and long lasting

15

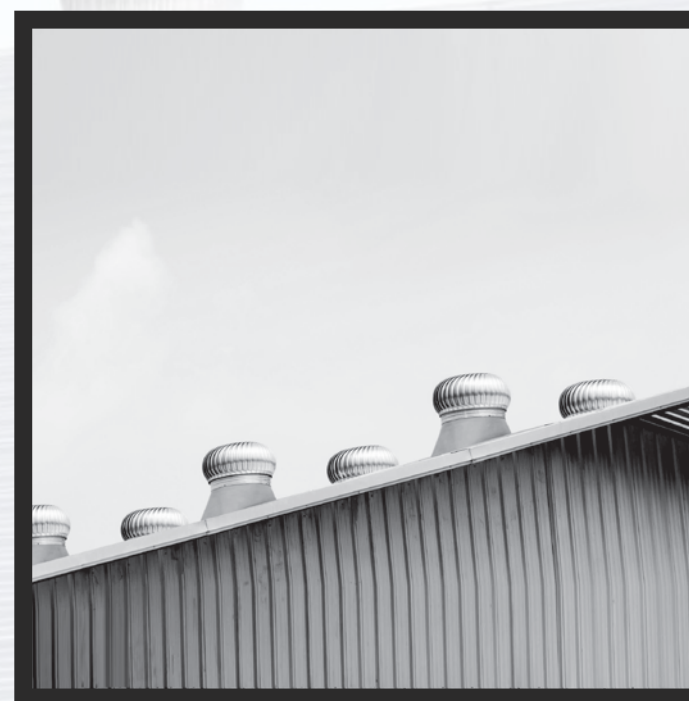


Environment friendly

16



Entitled to depreciation at an accelerated rate



WHERE
ARE THEY
USED?

- Production sheds
- Warehouses
- Production utility areas such as compressor rooms, generator rooms, boiler rooms, paint shops etc.
- Packing halls
- Commercial buildings such as school, shopping malls, hotels, clubs, banquets etc.
- Infrastructure facilities such as ports, airports, railway stations etc.
- Defence establishments such as air force hangers, shipyards, naval bases, arms depots etc.
- Residences
- Any other place where ventilation is needed

How Do You BENIFIT ?

- Provides natural ventilation and illumination
 - Creates a congenial work environment
 - Reduces the cost of upkeep of buildings
 - Economical to use
 - Entitled to depreciation at an accelerated rate
- Reduces inside temperature
 - Improves labour productivity
 - Increases the building’s life span
 - Environment friendly
 - Short pay-back period

How Much Do They EXHAUST ?

Wind Velocity (mph)		3			8			10		
Temp. Diff. °C		3	5	10	3	5	10	3	5	10
Model No.	Stack (Height in Ft.)	* Exhaust Capacity in C.F.M.								
STV-L	10	939	1000	1102	1436	1498	1600	1792	1858	1958
	20	1005	1084	1216	1503	1582	1714	1859	1938	2070
	30	1058	1154	1314	1556	1652	1812	1915	2010	2478
	40	1107	1216	1394	1605	1714	1896	1961	2070	2731

The exhaust capacity of **RHINO TUFF AUTOMATIC ROTATORS** depends on

- The stack height (the height at which the Rotators are installed)
- The wind velocity i.e. the speed at which the wind blows
- The temperature difference inside and outside the shed. In other words, the higher the temperature difference, the greater would be the exhaust capacity

RANGE

01

RHINO TUFF
Stainless Steel
(S.S.) 430
Automatic Rotators

02

RHINO TUFF
Stainless Steel
(S.S.) 202
Automatic Rotators

03

RHINO TUFF
Stainless Steel
(S.S.) 304
Automatic Rotators

04

RHINO TUFF
Stainless Steel
(S.S.) 316
Automatic Rotators



RHINO TUFF Stainless Steel (S.S.) Automatic Rotators

RHINO TUFF Stainless Steel (S.S.) Automatic Rotators are manufactured using top quality Stainless Steel (S.S.) and are renowned for their mechanical strength, impact resistance and performance.

They are strong enough to withstand heavy loads of notorious monkeys and high impact of heavy hail Stones. They are weather and storm proof and can resist chemical corrosion due highly corrosive and obnoxious industrial gases, fumes and smoke, if manufactured using S.S. 304 or S.S. 316.

RHINO TUFF S.S. Automatic Rotators exhaust large volumes of hot air even at relatively low wind speeds and have the highest exhaust capacity in their class.

They are capable of withstanding a high wind speed and are guaranteed against water ingress. In addition, they are mechanically strong, impact resistant, light weight, effective, weather and storm proof, anti-corrosive, noiseless, maintenance free, easy to install, adaptable to any roof, economical to use and environment friendly.

RHINO TUFF S.S. Automatic Rotators perform satisfactorily in extreme weather conditions and tough industrial environments.

The Blades, Top Cover and the Bottom Ring are all in Stainless Steel (S.S.).



Series		MATERIAL OF CONSTRUCTION (M.O.C.)							RHINO	
SIZE (THROAT DIA)	MODEL	NO. OF FINS	FINS (BLADES)	TOP COVER	BOTTOM RING	RIVETS FASTENERS	INTERNAL FITTINGS	BEARINGS	NET WT. (APPX.)	
(24") 600 MM	STV-100-L	42	0.26 MM S.S.430	0.90 MM AL. or 0.50 MM S.S.430	0.90 MM AL. or 0.50 MM S.S.430	AL. G.I.	G.P.	HCH make or equivalent	4.40 Kilos	

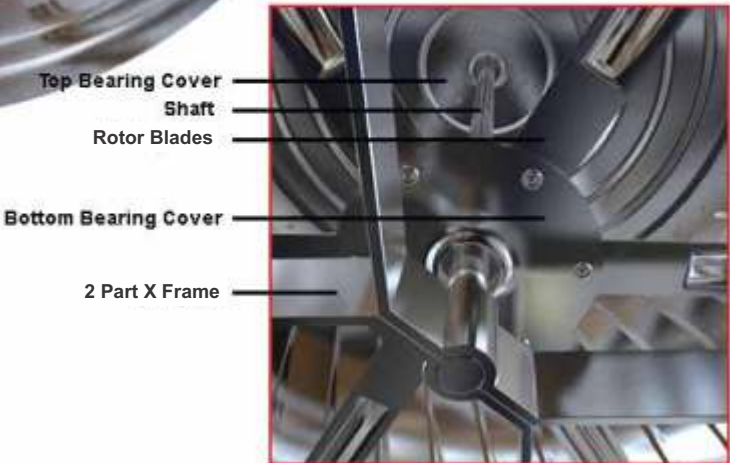
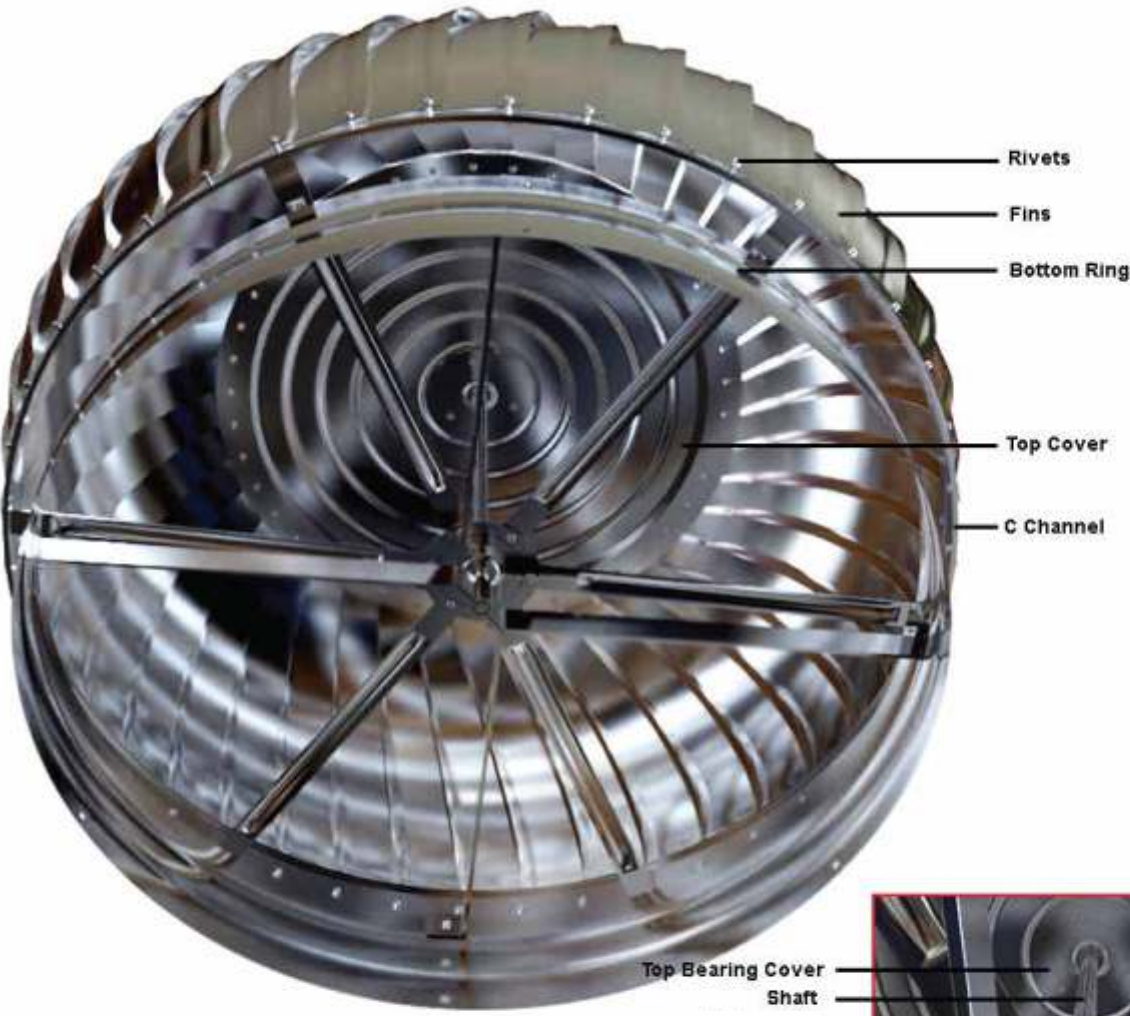
Series		MATERIAL OF CONSTRUCTION (M.O.C.)							RHINO STAR	
SIZE (THROAT DIA)	MODEL	NO. OF FINS	FINS (BLADES)	TOP COVER	BOTTOM RING	RIVETS FASTENERS	INTERNAL FITTINGS	BEARINGS	NET WT. (APPX.)	
(24") 600 MM	STV-200-L	42	0.3 MM S.S.430	0.90 MM AL. or 0.50 MM S.S.430	0.90 MM AL. or 0.50 MM S.S.430	AL. G.I.	G.P.	HCH make or equivalent		

Series		MATERIAL OF CONSTRUCTION (M.O.C.)							RHINO SUPER STAR	
SIZE (THROAT DIA)	MODEL	NO. OF FINS	FINS (BLADES)	TOP COVER	BOTTOM RING	RIVETS FASTENERS	INTERNAL FITTINGS	BEARINGS	NET WT. (APPX.)	
(24") 600 MM	STV-300-L	42	0.3 MM S.S.304	1.20 MM AL. or 0.50 MM S.S.304	1.20 MM AL. or 0.50 MM S.S.304	AL. S.S.	S.S.	SKF make or equivalent	5.00 Kilos	

Series		MATERIAL OF CONSTRUCTION (M.O.C.)							RHINO SHINING STAR	
SIZE (THROAT DIA)	MODEL	NO. OF FINS	FINS (BLADES)	TOP COVER	BOTTOM RING	RIVETS FASTENERS	INTERNAL FITTINGS	BEARINGS	NET WT. (APPX.)	
(24") 600 MM	STV-400-L	42	0.40 MM S.S.304	1.20 MM AL. or 0.50 MM S.S.304	1.20 MM AL. or 0.50 MM S.S.304	AL. G.I.	S.S.304	SKF make or equivalent	6.80 Kilos	

Please Note

- Exhaust Capacity (in CFM) : 2700
- Throat (Neck) Dia | Belly (Center) Dia – 24" (600 MM) | 28" (710 MM)
- Height: 15" (380 MM) (across all Series)
- Shaft Dia: 11.80 MM (across all Series)
- Bearing Type: Double Jet Sealed Ball Bearings (6001-2RS)
- Internal Fittings (Bearing Covers, X Frame, Rotary Blades): G.P. or S.S. (depending on the series)
- Shaft: Bright Bar
- Stainless Steel Make: Jindal or equivalent
- Packing: 5 Ply Corrugated Boxes
- The Auto Rotators can also be painted or powder coated for extra weather protection
- The weight of the Rotators is approximate and is subject to marginal variation



How many Do you NEED ?

$$N = 60 Q \times Y / \text{Vol.}$$

Where,

N = Number of air changes reqd. per hour

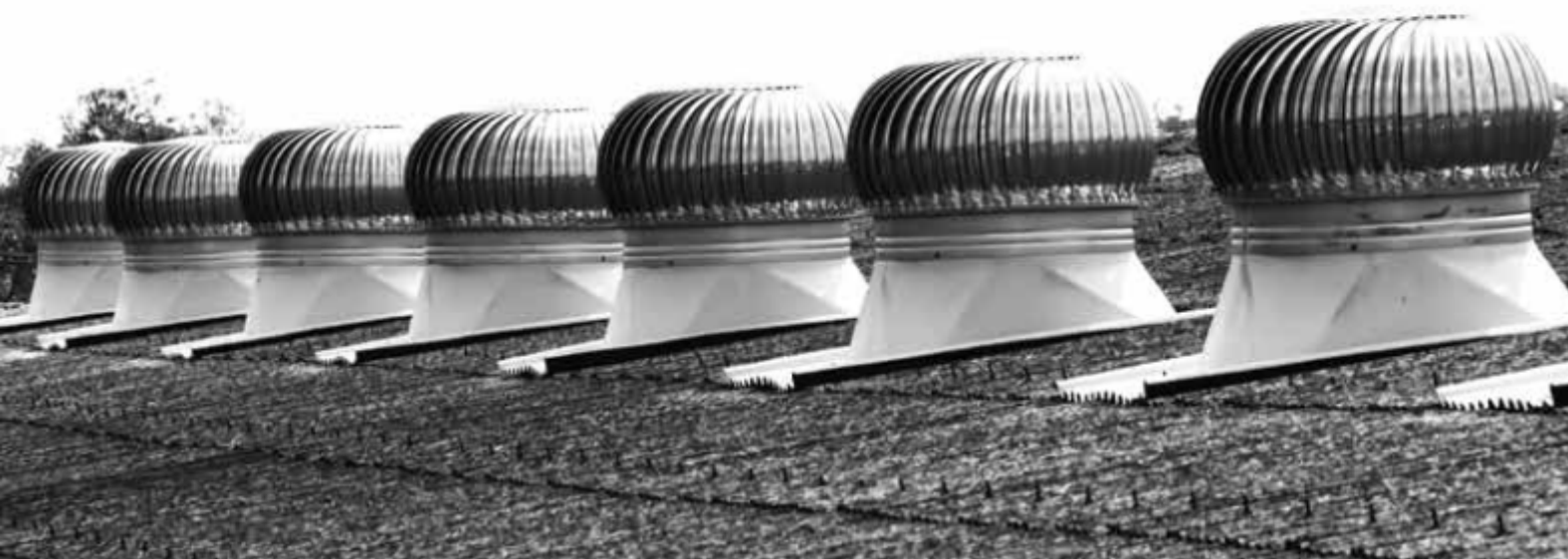
Q = Volumetric flow rate of air in Cubic Feet Per Minute (C.F.M.) / Ventilator

Y = Total No. of Turbo Ventilators required.

Vol. = Volume of space (air) to be ventilated $L \times W \times H$, in Cubic Feet

Recommended Air Change Rates:

TYPE OF BUILDING	AIR CHANGES REQD.	TYPE OF BUILDING	AIR CHANGES REQD.
Boiler Room	15-20	Welding Workshops	15-30
Engine Rooms	4-6	Foundries	15-20
Compressor Rooms	10-20	Stores & Warehouses	3-6
Factory Buildings (ordinary conditions)	2-4	Canteens	8-12
Factory Buildings (extreme conditions)	10-15	Commercial Kitchens	30+
Galvanizing Plant	20-30	Dye Works	20-30
Electroplating Plants	10-12	Paint Shops	10-20



How to INSTALL RHINO TUFF AUTOMATIC ROTATORS ?

- Step -1** Identify the ideal location for installing the RHINO TUFF Automatic Rotators on the roof. This is done by our team of experts in consultation with the customer while considering their ventilation requirements and the various operating parameters involved
- Step -2** Lift the Automatic carefully over the roof manually or using mechanized equipment while ensuring that there is no damage to the equipment.
- Step -3** Slide apart two overlapped roof sheets by opening the joint to create an opening which is slightly bigger than the exhaust opening of the Poly Soaker Plates
- Step -4** One end of the Poly Soaker Plate is manually pushed underneath the roof sheet or the ridge flashing above it and is made to rest over the purlin whereas the other end of the Poly Soaker Plate is made to rest over the roof sheet below it. The side crests of the Soaker Plate & the adjoining roof sheets are also overlapped. The length of the Poly Soaker Plate is at least 250 MM that is more than the c/c distance of the farthest purlins falling under the Poly Soaker Plate. This is necessary for adequate overlap towards the front and the rear. Self-tapping screws of an appropriate size are then applied to fasten the Poly Soaker Plate on to the Purlins at the front, rear and both the sides. Purlins support is necessary to hold the Poly Soaker Plate and to prevent it from getting dislodged and blowing off in case of a storm or wind gusts
- Step -5** The Automatic Rotator is then carefully mounted on to the neck of the Poly Soaker Plate and is fastened using self-tapping screws of an appropriate size
- Step -6** The Automatic Rotator is then inspected and rigorously tested by our team for satisfactory performance
- Step -7** Scrap is removed from the place of installation and the site is handed over back to the customer

About

RHINO TUFF Roof Extractors

RHINO TUFF - Roof Extractors are Axial Fans that are fixed over industrial as well as commercial roofs and are used for forced ventilation in the place of their installation.

They consist of an Impeller- an Aerofoil Designed Aluminium Casted Fan, which is powered by an electric motor. The aero foil design of the Aluminium Fan Blades helps improve their operational efficiency and performance. The Impeller which is balanced- both statically and dynamically, is fitted within a painted or powder coated cylindrical shaped M.S. Casing of an appropriate diameter size and is connected to an electric motor. Each Aluminium Blade can be adjusted to control and regulate the air flow.

The impeller is covered at the top using a – metallic / G.R.P. cowl to prevent rain water from coming in. A steel mesh, which is fixed on the inside of the cowl helps keep birds and insects away. RHINO TUFF Roof Extractors are generally fastened over a Plastic Base Plates (also called as the Roof Adapters), which can be manufactured in a profile / corrugation matching with that of the roof sheets. The Plastic Base Plates ensure leakage proof and hassle free installation at sites, while allowing the freedom of mounting the Roof Extractor anywhere on the roof and not just at the ridge top.

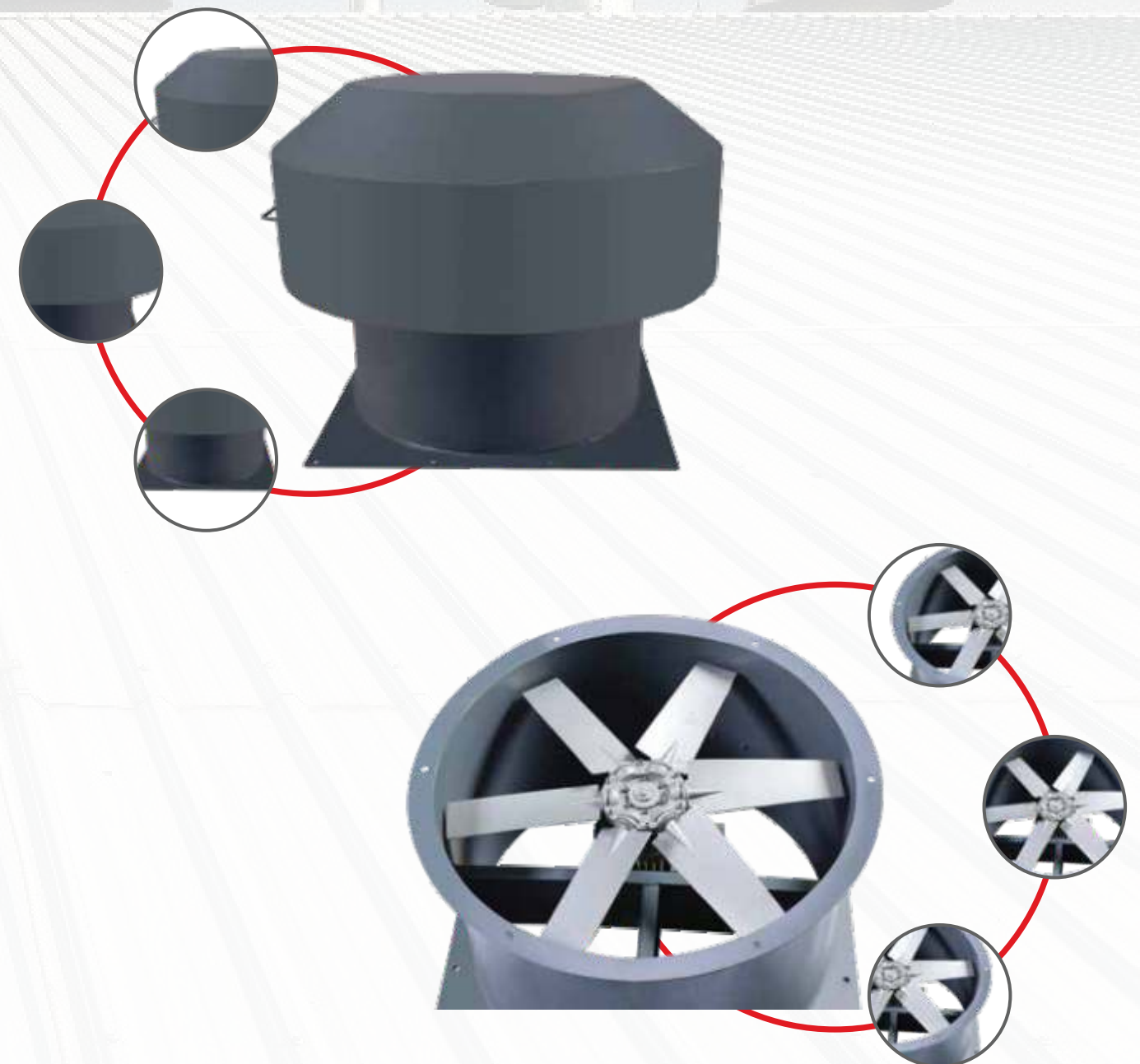
RHINO TUFF Roof Extractors can easily be fixed over flat or sloped roofs. They continuously exhaust hot air, gases, fumes, smoke and dust at a constant rate and have a maximum exhaust capacity of 10000 C.F.M.

They are capable of withstanding a high wind speed and are guaranteed against leakage of rain water. In addition, these are highly effective, mechanically strong, impact resistant, relatively light weight, weather and storm proof, maintenance free, easily repairable, easy to install, adaptable to any roof and are economical to use.

RHINO TUFF Roof Extractors commonly find use in process based industries, where there is a requirement for enhanced ventilation and that too at a constant rate.

MODELS / SIZES

Model	Impeller Diameter	AIR VOLUME	STATIC PRESSURE	TYPE OF IMPELLER	IMPELLER R.P.M.	MOTOR H.P. / K.W.	VOLTS/ HZ/ PHASE	INSULATION CLASS / PROTECTION CLASS	TYPE OF DRIVE	M.O.C. OF CASING
700 MM DIA	690 MM	10,000 C.F.M.	15 MM W.C.	AL. Casted Aerofoil Design	1440	2.0 H.P. / 1.1K.W./ 4 Pole	415 Volts (+/- 10.00%)/ 50 Hz / 3 Phase Motor	Class F / IP-55	Direct Driven	Painted / Powder Coated M.S. 2062
600 MM DIA	590 MM	6,500 C.F.M.	10 MM W.C.	AL. Casted Aerofoil Design	1440	1.0 H.P./ 0.75K.W./ 4 Pole (IE 2)	415 Volts (+/- 10.00%)/ 50 Hz / 3 Phase Motor	Class F / IP-55	Direct Driven	Painted / Powder Coated M.S. 2062



About RHINO TUFF Hybrid Ventilators

RHINO TUFF Hybrid Ventilators are unique and offer dual options of natural as well as forced ventilation in industrial and commercial buildings.

Hybrid Ventilator consist of a roof extractor (motor driven axial fans), which is housed within a painted or epoxy coated mild steel (M.S.) casing and is covered at the top by a RHINO TUFF Automatic Rotator.

They offer the flexibility of natural as well as forced ventilation. The motor driven Roof Extractor can be switched on as and when there is a need for enhanced ventilation at a constant rate. After the Roof Extractor is switched off, the Automatic Rotator mounted on top continues to provide natural ventilation.

RHINO TUFF Hybrid Ventilators can reach a R.P.M. of 1440 and an exhaust capacity of 10000 C.F.M. when the electric motor is on. After the Roof Extractor is turned off the Automatic Rotator continues to revolve and provide natural ventilation at variable rates (depending on natural factors such as temperature and pressure differential, stack height and the wind velocity). The Automatic Rotators can exhaust up to 2700 C.F.M. of inside stale air in peak working conditions (when all the performance determining factors noted above are at their maximum).

RHINO TUFF Hybrid Ventilators are capable of withstanding a high wind speed and are guaranteed against leakage of rain water. In addition, they are highly effective, mechanically strong, impact resistant, light weight, weather and storm proof, maintenance free, easily repairable, easy to install, adaptable to any roof and are economical to use.

Plastic Soaker Plates (also called as the Roof Adapters), which are manufactured in a profile or corrugation matching with that of the roof sheets are used for fixing the Hybrid Ventilators. They allow the freedom and flexibility of installing the Hybrid Ventilators anywhere on the roof, while ensuring hassle free and leakage proof installation.

RHINO TUFF Hybrid Ventilators are commonly used in a wide spectrum of process based industries where there is a requirement for both natural as well as forced ventilation.

MODELS / SIZES

Model	IMPELLER/ TURBO FAN DIAMETER	MAX. EXHAUST CAPACITY (FORCED / NATURAL)	STATIC PRESSURE	TYPE OF IMPELLER	IMPELLER R.P.M.	MOTOR H.P. / K.W.	VOLTS/ HZ/ PHASE	INSULATION CLASS / PROTECTION CLASS	TYPE OF DRIVE	M.O.C. OF CASING
600 MM DIA	590 MM / 610 MM	6500 C.F.M. / 2700 C.F.M.	10 MM W.C.	AL. Casted Aerofoil Design	1440 R.P.M.	1.0 H.P./ 0.75K.W./ 4 Pole (IE2)	415 Volts (+/- 10.00%) / 50 Hz/ 3 Phase Motor	Class F / IP-55	Direct Driven	Painted / Powder Coated M.S. 2062



How to **INSTALL** RHINO TUFF ROOF EXTRACTORS & RHINO TUFF HYBRID VENTILATORS ?

Step -1

Identify the ideal location for installing the RHINO TUFF Roof Extractor or Hybrid Ventilator on the roof. This is done by our team of experts in consultation with the customer while considering their ventilation requirement and the operating parameters involved

Step -2

Lift the Roof Extractors and Hybrid Ventilators carefully over the roof manually or using mechanized equipment while ensuring that there is no damage to the equipment

Step -3

Slide apart two overlapped roof sheets by opening the joint to create an opening which is slightly bigger than the exhaust opening of the GRP Soaker Plates

Step -4

One end of the GRP Soaker Plate is manually pushed underneath the roof sheet or flashing above it and is made to rest over the purlin whereas the other end of the GRP Soaker Plate is made to rest over the roof sheet below it. The side crest of the GRP Soaker Plate and that of the adjoining roof sheets are also overlapped. The length of the GRP Soaker Plate is at least 250 MM more than the c/c distance of the farthest purlins falling under the GRP Soaker Plate. This is necessary for adequate overlap towards the front and the rear. Self-tapping screws of an appropriate size are then applied to fasten the GRP Soaker Plate on to the Purlins at the front, rear and both the sides. Purlins support is necessary to hold the GRP Soaker Plate and to prevent it from getting dislodged and blowing off in case of a storm or wind gusts

Step -5

Roof Extractor or the Hybrid Ventilator is then mounted on to the neck of the GRP Soaker Plate and is fastened using self-tapping screws of an appropriate size

Step -6

The Extractor or Hybrid Ventilator is then inspected and rigorously tested by our team for satisfactory performance

Step -7

Scrap is removed from the place of installation and the site is handed over back to the customer

OTHER RHINO TUFF PRODUCTS



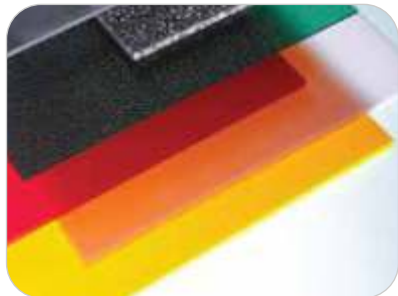
RHINO TUFF
Skylight Tubes



RHINO TUFF
Skylight Domes



RHINO TUFF
Barrel Vault Skylight



RHINO TUFF
PC Solid Flat Sheets & Rolls



RHINO TUFF
Polycarbonate Single Skin
Trapezoidal Skylight Panels



RHINO TUFF
Double Skin Thermal Insulated
Trapezoidal Skylight Panels



RHINO TUFF
Polycarbonate Single Skin
Corrugated Skylight Panels



RHINO TUFF
PC Louvers



RHINO TUFF
GRP Gutters along with FRP
Down Pipes



CUSTOMERS



Corporate Office

Plot No. 84, Sector- 46, (near Kapil Vihar), Faridabad, Haryana- 121001

Plant Address

Plot No. 732, Sector- 69, I.M.T., Faridabad, Haryana- 121004

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