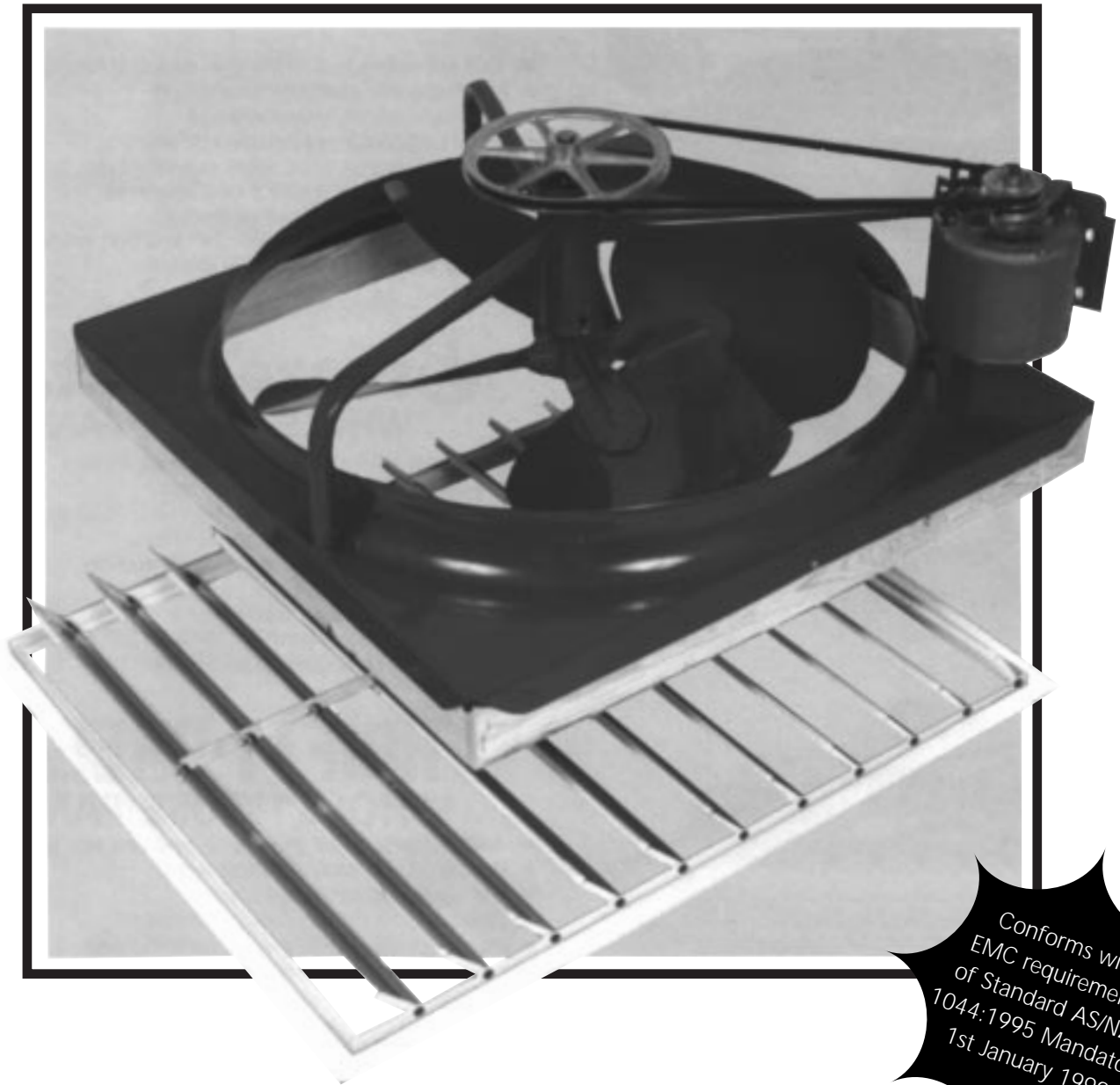


BREEZE POWER NATURAL COOLING

INSTALLATION & OPERATING INSTRUCTIONS

Please read carefully before commencing the installation



Conforms with
EMC requirements
of Standard AS/NZS
1044:1995 Mandatory
1st January 1999

BREEZE POWER NATURAL COOLING

Breeze Power Natural Cooling Pty. Ltd.
41 Frederick Street, Northgate Qld. 4013 ABN 62 003 649 509
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INTRODUCTION TO BREEZE POWER

Congratulations on choosing a Breeze Power Natural Cooling System, the environmentally friendly and money saving alternative to air conditioning.

The Breeze Power System is made up of the following components:-

- A quiet, belt driven six bladed fan available in five sizes
- Ceiling shutter to suit - three different types.
- Motor and control switch
- Roof space exhaust vents

The generic name for a Breeze Power system is a "Whole House Fan". Whole House Fans have been keeping people cool and comfortable since the 1940s.

SIZING THE SYSTEM TO SUIT THE HOME

The Breeze Power brochure lists the maximum output in cubic metres per hour (M³/H) for each Whole House Fan.

Calculate the cubic area of the house (length x width x ceiling height.). In a split level or two storey home, measure each level.

In temperate states an air change rate of 30 to 35 per hour through the home is the norm. In hotter areas, 35 to 40 air changes will give optimum results.

Example: Temperate Climate

Ground Floor Area	L 12M	x	W 10M	x	H 2.4M	=	288 M ³
First Floor Area	L 12M	x	W 08M	x	H 2.4M	=	230 M ³
Total Cubic Area							518 M³

Output required to provide 30-35 air changes per hour is $518 \times 30 = 15,540$.

Therefore the 915mm Breeze Power Fan with a maximum air flow rate of 17,500 is suitable.

CHOOSING THE BEST LOCATION

In a single storey home, the fan is best located over a common area such as a hallway.

In double storey or split level homes the fan is best located over the landing area where doors lead off near the top of the staircase.

In some instances the shutter for the ideal size fan will not fit in the hallway. It therefore may need to be installed in a high traffic area of the house such as over the kitchen/family room area rather than a less active and more isolated room such as a formal lounge room or bedroom.

If this is not acceptable a smaller, slightly less effective system may have to be selected.

ROOF SPACE REQUIREMENTS FOR A BREEZE POWER SYSTEM

ROOF SPACE WITH RAFTERS

Check that there is at least 800mm of height (760 fan) 900mm (915,1070mm Fan), 1000mm (1220 Fan) from the ceiling joists to the rafters. This is to ensure the fan can be passed up into the roof through the ceiling opening cut for the shutter.

It can also result in back pressure with hot air blowing back into the room reducing the efficiency of the system and causing the ceiling shutter to flutter.

If the hallway has wide cornices it may be necessary to cut the cornice to make the shutter fit. Alternatively the shutter may be “dropped” down to fit over the cornice with beading inserted behind the shutter to seal the gap between the shutter flange and the ceiling surface.

GANG NAIL TRUSSES

Check that there is at least 800mm of height (760 fan) 900mm (915,1070mm Fan), 1000mm (1220 Fan) from the cord to where the truss above meets the roof. If the home is under construction it may be possible to adjust truss spacings so a standard ceiling shutter can be used.

The Fan plenum sits over the bottom cord of the truss. Check that the fan will fit between the webs. The fan may be tilted slightly and the high side boxed down to the mounting platform to make it fit if necessary.

The Breeze Power “No Cut Joist” ceiling shutter should be used. This has a fixed central blade to cover the cord of the truss running across the ceiling opening.

The Breeze Power fan can be pushed up into the roof space through the space on either side of the cord if the metal fan frame is temporarily removed from its wooden plenum and the two pushed through separately.

INSTALLATION INTO A STANDARD RAFTER ROOF

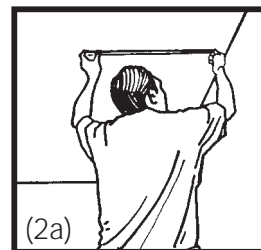
OVERVIEW OF INSTALLATION STAGES:

- Measure and cut out ceiling opening for the shutter. Build fan platform and install fan.
- Install exhaust vents in roof space (under-eave or gable end).
- Wire up motor and switch. Install ceiling shutter.
- Test system and ceiling shutter operation - Install safety cover over fan.

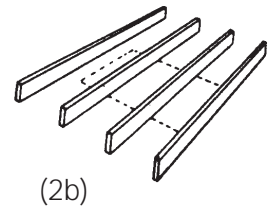
(Gang Nail truss roofs see page 6)

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- (1) After the installation site has been selected, remove the shutter from its carton and check measure its actual internal dimensions (These are the dimensions for the ceiling opening). The shutter's internal dimensions are generally 50mm smaller than the overall flange to flange measurements.

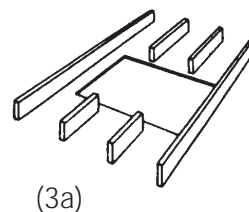
-
- (2a) Using a ruler and pencil, mark these measurements on the area of ceiling selected. Drill a small hole at each corner of the outline you have marked on the ceiling.



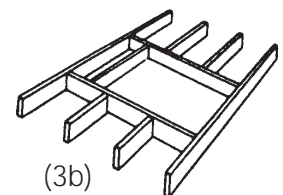
- (2b) Return to the roof space and inspect the area again before cutting the ceiling or sawing the joist. Check for electrical wiring, water pipes etc.



-
- (3a) Inside the roof space cut the ceiling joists 45mm from the shutter opening. This is to accommodate additional framing to support the joists once they have been cut.



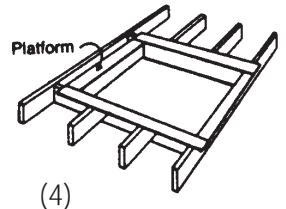
- (3b) Frame the ceiling opening using joist-sized timber equal to existing joists to a minimum height of 100mm above the ceiling material. (Note: Packing may be required if the ceiling joists are only 75mm high)



- (4) Using 100mm x 25mm timber for 750mm and 915mm dia fans or 200mm x 25mm timber for 1070mm or 1220mm fans build a platform to support the fan.

Hint: If there is plenty of height above the fan, build the platform higher for an even quieter installation.

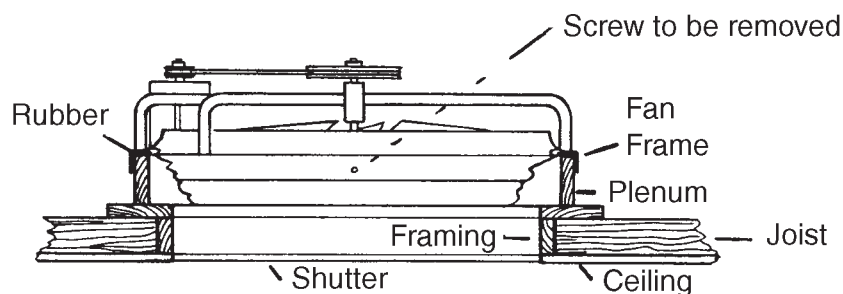
The outside dimensions of your platform should be a minimum of 50mm greater than the outside dimensions of the timber plenum of the fan (check measure the frame of your fan).



Hint: Paint the platform and plenum timbers black so that light from the room will not show up the cut timbers when the shutter is open

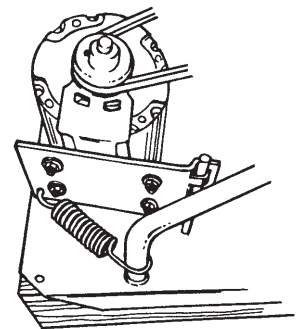
- (5) Push the fan into the roof space via the framed ceiling opening. Centre the fan's timber frame on to the platform and ensure it is level. Toe nail to the platform using 50mm nails.

Remove the single screw on either side of the metal fan frame which holds it on to its timber plenum. The fan will now “float” on its rubber packing to ensure no vibration. Check that the fan frame is itself level on its own plenum.



- (6) Fasten the motor to the mounting flap using the bolts provided. Ensure the pulley on the motor and the larger pulley on the fan hub are both level and tightly secured.

Place the belt around the two pulleys. Attach the automatic tensioning spring to the motor mount and fan frame. This will ensure the belt always remains at the correct tension.



- (7) Install roof space exhaust vents. The system is now ready for wiring.

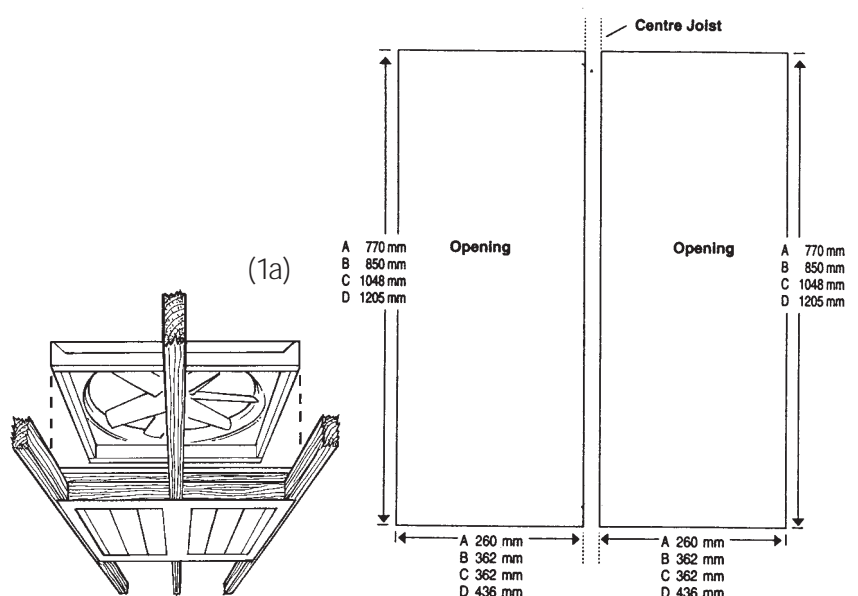
GANG NAIL TRUSS ROOFS USING "NO CUT JOIST" CEILING SHUTTER

OVERVIEW OF INSTALLATION STAGES:

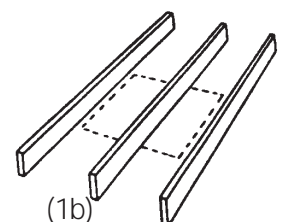
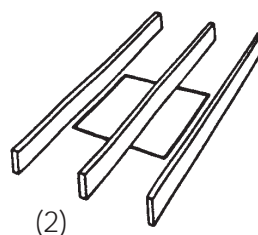
- Measure and cut out ceiling opening for the shutter. Build fan platform and install fan.
- Install exhaust vents in roof space (under-eave or gable end).
- Wire up motor and switch. Install ceiling shutter.
- Test system and ceiling shutter operation. Install mesh safety cover over Fan.

(1a) After the installation site has been selected. Get into the roof space and pierce the gyprock either side of the truss with a small, sharp screwdriver.

(1b) Go into the house, measure and mark the ceiling opening dimensions of your size shutter. Drill small holes at each corner of the area marked on the ceiling and double check the shutter position from the roof space before cutting the ceiling opening (1b).



(2) Cut shutter opening on either side of the cord.



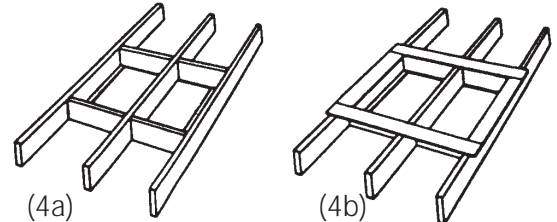
(3) This is the point at which the fan must be pushed up into the roof space.

Remove the two screws holding the metal fan frame to its wooden plenum. Lift the metal fan frame off its timber plenum and tilt it vertically to push it up through one of the shutter openings either side of the cord. Then push up the timber plenum.

(4a) Return to the roof space. Frame in the opening using joist size timber equal to the existing cord to suit the ceiling opening.

Using 100mm x 25mm timber for 750mm and 915mm diameter fans or 200mm x 25mm timber for 1070mm or 1220mm fans build a platform to support the fan.

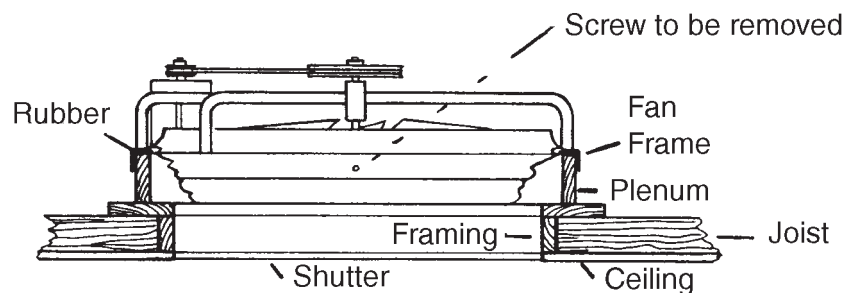
(4b) The outside dimensions of your platform should be a minimum of 50mm greater than the outside dimensions of the timber plenum of the fan (check measure the plenum of your fan).



Hint: Paint the platform and plenum timbers black so that light from the room will not show up the cut timbers when the shutter is open

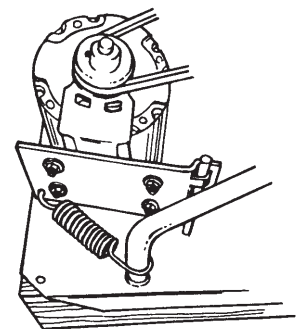
(5) Centre the timber plenum which you removed from the fan frame on the platform and ensure it is level. Toe nail to the platform using 50mm nails.

Place the fan metal frame on its plenum **but do not replace the two screws** you removed to push it into the roof space. The fan will now “float” on its rubber packing. Check that the metal fan frame is itself level on its own plenum.



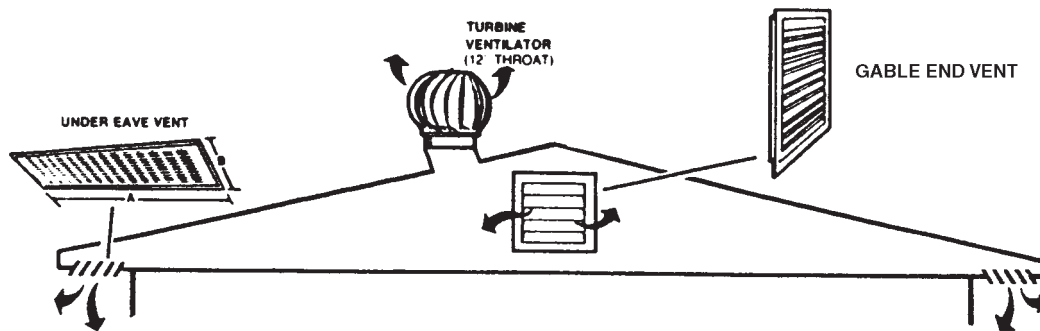
(6) Fasten the motor to the mounting flap using the bolts provided. Ensure the pulley on the motor and the larger pulley on the fan hub are both level and tightly secured.

Place the belt around the two pulleys. Attach the automatic tensioning spring to the motor mount and fan frame. This will ensure the belt always remains at the correct tension.



(7) Install roof space exhaust vents. The system is now ready for wiring.

MINIMUM VENT AREAS FOR THE ROOF SPACE



FAN SIZE	MINIMUM VENT AREA		UNDER EAVE VENTS 1200 X 250MM
	M2	Sq.Ft.	
760mm 30"	.92M	10 Sq.Ft.	3
915mm 36"	1.10M	12 Sq.Ft.	4
1070mm 42"	1.50M	16 Sq.Ft.	5
1220mm 48"	1.90M	20 Sq.Ft.	6

The standard Breeze Power under eave vent is made from maintenance free powder-coated steel and is 1200mm long by 250mm wide. Ensure you have the correct number of eave vents for your particular Breeze Power Fan.

Because the Natural Cooling System rapidly expels air from the roof space by air pressure not convection eave vents are preferred. Eave vents offer more protection against strong wind pressure entering the roof space compared with gable vents.

Avoid fine insect mesh on eave vents in case of clogging with dust from the roof space which could reduce air flow and cause problems.

If your Natural Cooling System is installed in a central location, position the eave vents evenly around the home. If the system is installed towards one end of the roof space then install more eave vents towards the other end of the roof to ensure good air flow through the roof space.

GABLE END VENTS

If using gable end vents take into account that only **60% of the area of a gable end vent represents free air**, the rest is structure. Ensure your gable end vent(s) have deep, weatherproof louvres and come with birdwire on the back.

WIND TURBINES

Most wind turbines move too little air to be really useful. As a rule of thumb, one wind turbine with a 300mm diameter neck equals half an Eave Vent. A standard Breeze Power Under Eave Vent offers 0.3 square metres or 3.2 Sq.Ft of free air.

CIRCUIT AND CONNECTION DIAGRAM FOR 250W MOTOR AND MSC 1200B-WP SPEED CONTROLLER 760MM, 915MM AND 1070MM BREEZE POWER FANS

READ THESE INSTRUCTIONS BEFORE COMMENCING ANY WIRING.

The electrical connection of your Breeze Power Fan can only be carried out by a licensed electrical contractor and must conform to State Codes. The motor should be wired to a 240V 50 Hz single phase AC power circuit, not a lighting circuit.

The MSC 1200B - WP Fan Speed Controller complies with the EMC requirements of Standard AS/NZS 1044:1995 mandatory from 1st January 1999, when installed in the manner specified

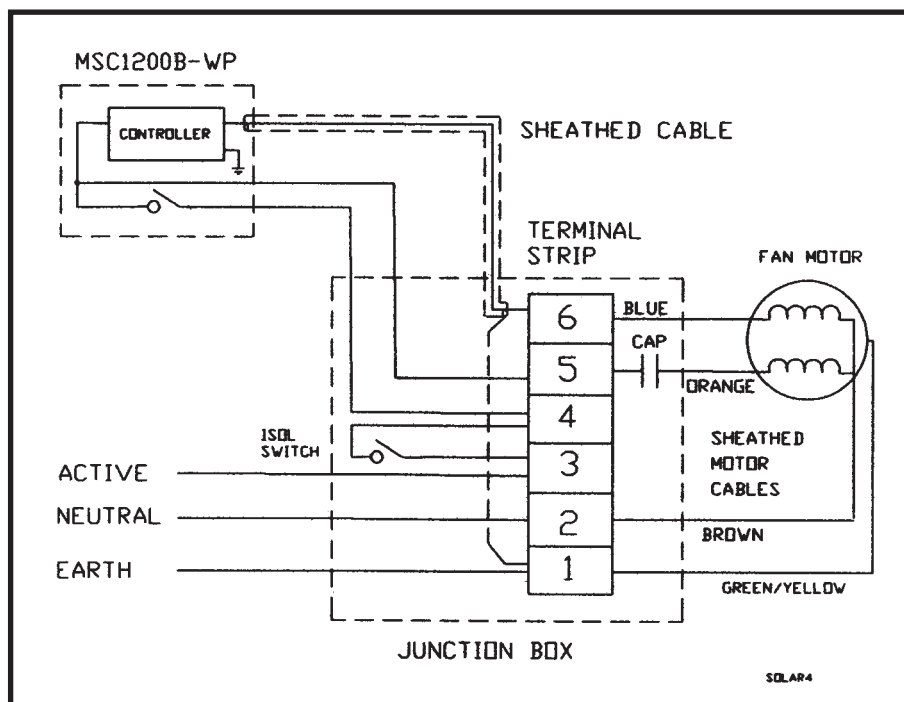
To comply with the EMC requirements, shielded cable (supplied) **MUST BE USED** for the conductor connecting the controller to the main winding (blue cable) of the motor, as marked on the diagram below.

One end of the braided wire shielding must be connected to an earth of the supply, the other end of the shielding should remain unconnected. As the motor frame must be connected to earth, the cable shielding may be conveniently earthed in the junction box where an earth terminal is provided.

Earthing should be in accordance with AS3000. If the controller casing is accessible to personal contact, then it must be earthed. If the controller casing is not accessible to personal contact, then it need not be earthed.

NOTE The cross sectional area of the braiding of the shielded cable provided is too small to be a suitable earth conductor.

The isolating switch box should be mounted in the roof space near the fan motor. It should be located on the side of an adjacent roof timber.



CIRCUIT AND CONNECTION DIAGRAM FOR 370W THREE SPEED MOTOR 1220 MM BREEZE POWER FAN

WARNING

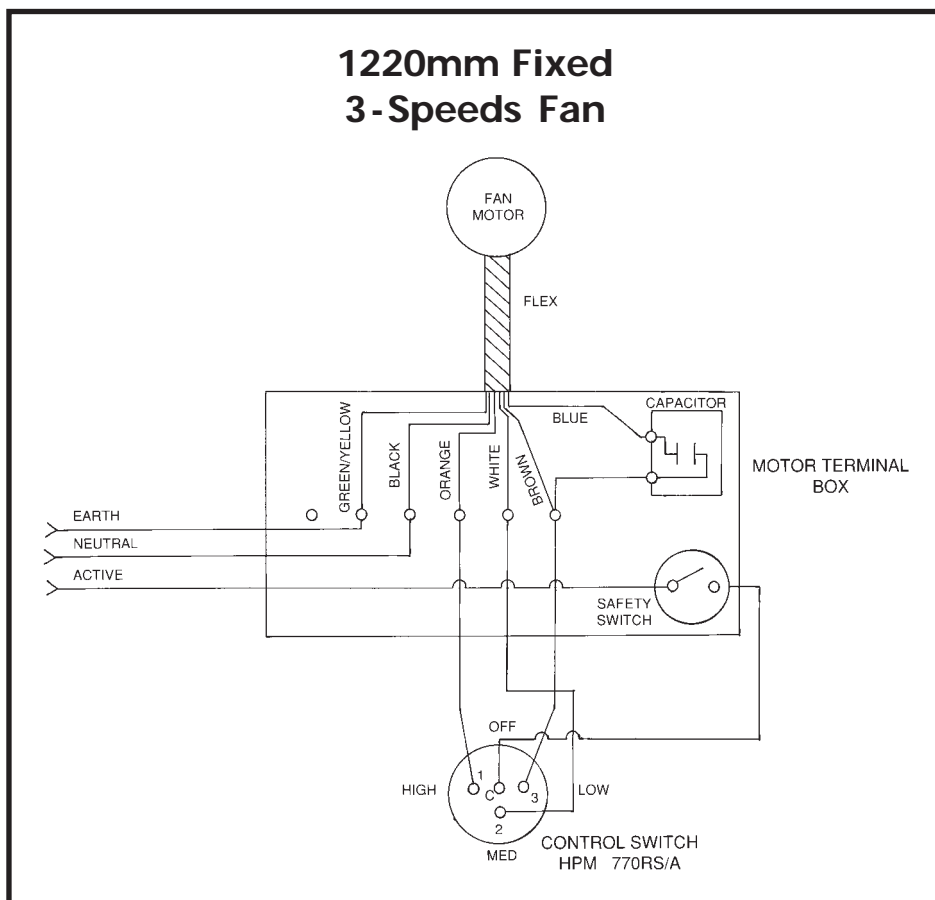
THIS MOTOR IS DESIGNED TO BE CONTROLLED ONLY WITH THE THREE FIXED SPEED WALL MOUNTED CONTROL SWITCH PROVIDED.

DO NOT CONNECT THIS MOTOR TO ANY SOLID STATE SPEED CONTROL DEVICE. TO DO SO RISKS FIRE OR ELECTRICAL SHOCK.

This motor should be wired to a 240V 50 Hz single phase power circuit, not a lighting circuit.

The isolating switch box supplied should be mounted in the roof space near the fan motor. It is usually located on the side of an adjacent roof timber.

Installation should be carried out by a licensed electrical contractor and should conform to State Codes.



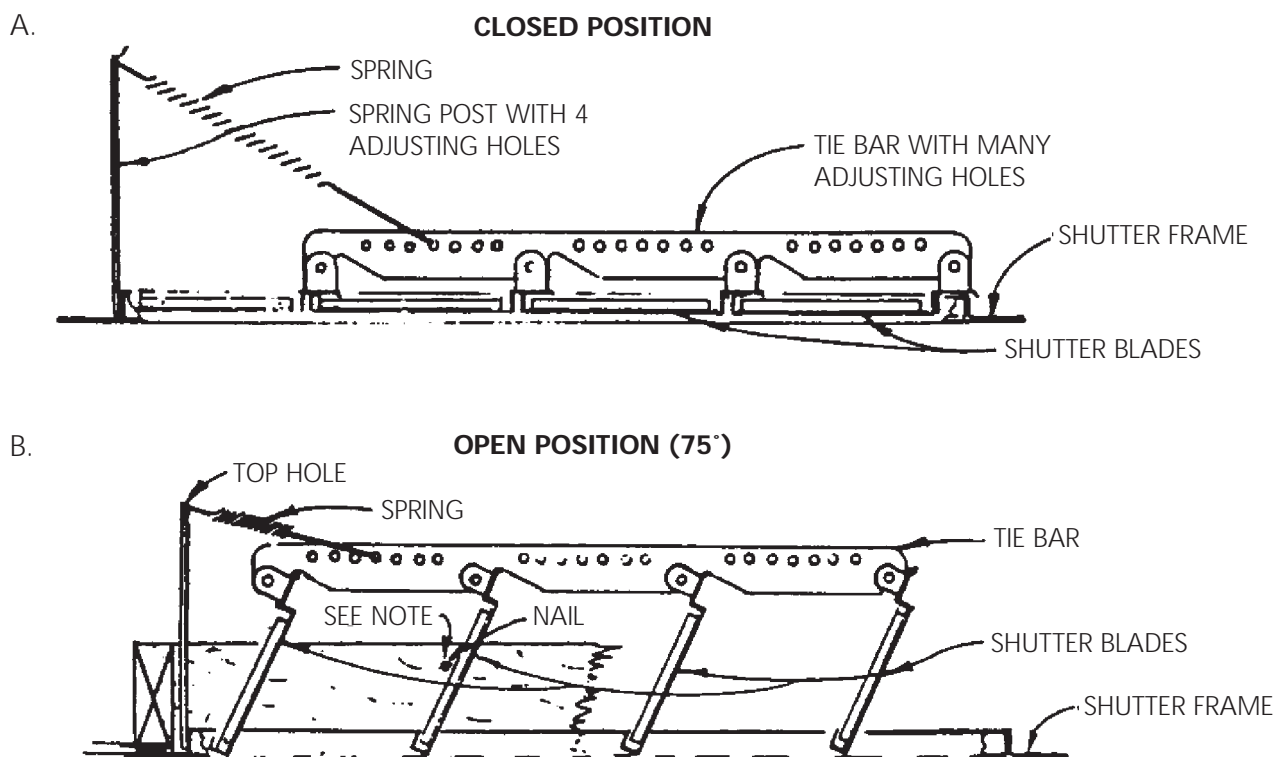
INSTALLATION AND ADJUSTMENT OF AUTOMATIC CEILING SHUTTERS

RAFTERS AND GANG NAIL TRUSS ROOF TYPES

- A. Once the wiring of the motor and speed control switch is completed and the motor switched off you are ready to install the shutter.
- B. Place the shutter face down on a flat surface or on the floor (preferably on to carpet to avoid scratching). Stand the shutter post upright (2 x posts in Gang Nail Truss Shutter) and hook in on end of the spring(s).
- C. Hook the opposite end of the spring into a hole in the tie bar, often the third or fourth one. You are aiming to achieve maximum tension on the spring without the shutter blades opening. Manually open and close the blades to ensure the blades pivot smoothly.

You may need to make additional adjustments to the spring position once the shutter is installed into the ceiling. This can be done from below by gently lifting the blades with your fingers to reach the tie bar.

- D. With the motor turned off install the shutter into the ceiling opening and secure with the screws provided.



Make fine shutter adjustments by using various holes in spring post.

NOTE: For positive stop, drive a nail at desired position ~ if required.

Continued...

TEST THAT THE SHUTTER IS OPERATING CORRECTLY

1. Open some windows and internal doors and start the fan motor on the highest speed. Run for a few seconds to check that the shutter blades are fully open.

The shutter blades should not open beyond approximately 75° to ensure they will close by gravity when the motor is off. If this occurs, use a nail behind the second blade, as shown in the diagram B on page 11.

NB. The motor should always be started on high.

2. If the blades only open slightly the spring tension is too loose or the blades could be impeded by a roof timber as they pivot upwards. Switch off the motor and adjust the spring tension by gently lifting the blades with your fingers to reach the tie bar.
3. As the motor speed is decreased the angle of the shutter blades may decrease. The blades should remain open when the motor is running at the lowest speed. If they close, switch off the motor, adjust the spring tension and retest as above.

NEVER ADJUST THE SHUTTER SPRING OR REMOVE THE CEILING SHUTTER WITHOUT FIRST SWITCHING OFF THE MOTOR. TO DO SO RISKS SEVERE INJURY FROM THE FAN BLADES.

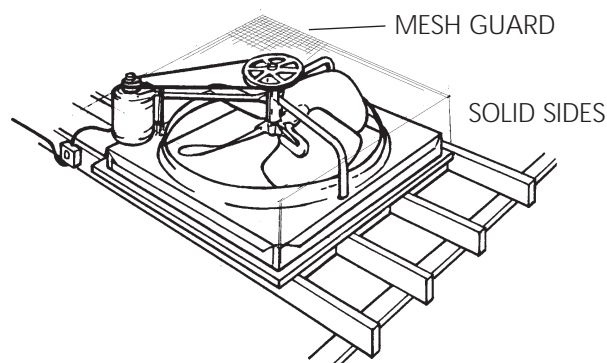
4. If the shutter rattles, increase the air flow from windows and internal doors. Also check that the roof exhaust areas meet or exceed the minimum free air area recommended for the fan size and have not been accidentally closed off.
5. When the motor is switched off and fan blades cease to rotate, the shutter blades should drop and close. If they remain slightly open, the spring is too tight or there something catching.

IF INSULATION IS INSTALLED AFTER THE BREEZE POWER SYSTEM, ENSURE THE BATTS DO NOT COVER OR BLOCK THE FLOW OF ROOF SPACE AIR TO THE EAVE VENTS .

6. Continue to check the shutter operation by opening up some rooms and closing off others, fine tuning until you are satisfied the shutter opens and closes properly which ever windows and doors are open to the air flow.

CONSTRUCT A MESH SAFETY GUARD OVER THE FAN IN THE ROOF SPACE

Now that all aspects of your Breeze Power installation have been successfully completed, build a mesh security guard over the in-roof fan to prevent accidental contact with the rotating fan blades by anyone or anything in the roof space.



OWNER OPERATING INSTRUCTIONS

- (1) Always start your Whole House Fan on high speed for a few seconds to ensure the shutter blades are fully open before switching down to the speed preferred.

NEVER SWITCH ON THE FAN IF THE CEILING SHUTTER BEEN REMOVED FOR MAINTENANCE OR CLEANING.

- (2) Always ensure you have sufficient windows and internal doors open so as not to starve the fan of air, causing the shutter to flutter and close on low speed.

INSUFFICIENT AIR CAN ALSO RESULT IN THE MOTOR OVER HEATING TRIPPING THE THERMAL CUT-OUT AND POSSIBLY DAMAGING THE MOTOR.

NEVER RUN YOUR BREEZE POWER SYSTEM WITH WINDOWS & DOORS CLOSED.

- (3) You can direct the flow of fresh air through your home to suit your needs simply by opening windows only in the rooms you are using at the time to concentrate maximum air flow where you need it most.
- (4) You do not have to run your Natural Cooling System while you are away from home. When you arrive home and the house is full of hot air, open up plenty of windows and switch the Whole House Fan on high. Instantly the breezes of fresh air will move through the whole house to carry away unwanted heat.

In just a few minutes your home is cooler and more comfortable.

- (5) If the temperature is close to 40°C outside you need to conserve the cool air in your home. Close up windows and most internal doors during the hottest hours. Put the Whole House Fan onto low speed and open a window or two close to the ceiling shutter so that air can be drawn directly up into the roof space to minimise heat build up.

Once the outside temperatures have fallen, open up more windows and doors, switch up the fan and bring the cool evening and night air all through your home.

- (6) Keep your ceiling shutter clean by simply wiping occasionally with a soft dry cloth and a petroleum based solvent such as WD40.

NO ROOF SPACE INSTALLATIONS WITH A CANOPY

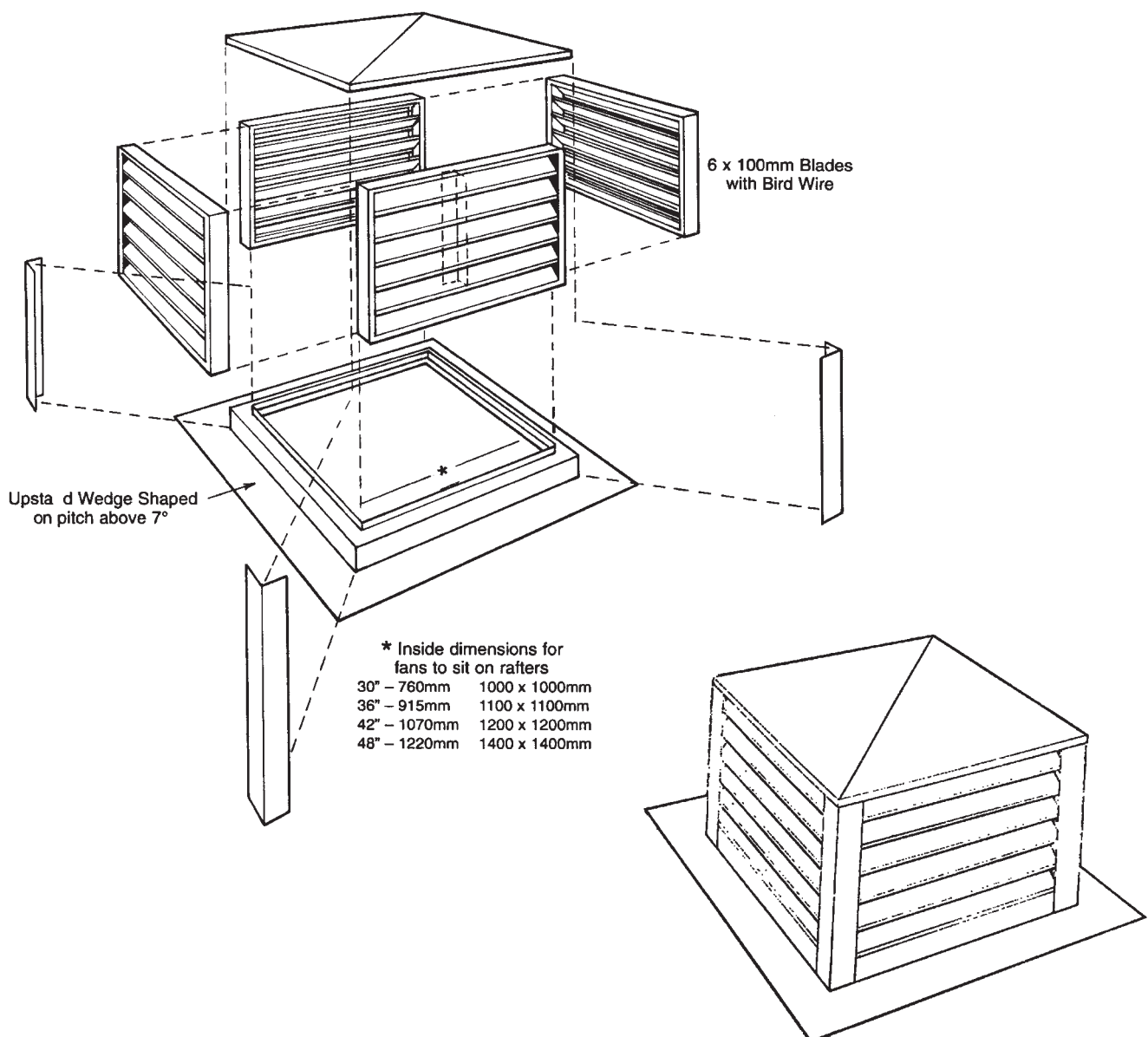
Canopies are only used where there is no adequate roof space. They are most commonly used on flat roofs or on homes with cathedral ceilings that follow the sloping roofline.

The canopy will have been custom designed and made for your installation in terms of size, flashings and colour by your Breeze Power distributor.

Roof Canopies should only be installed by a licensed roof plumber.

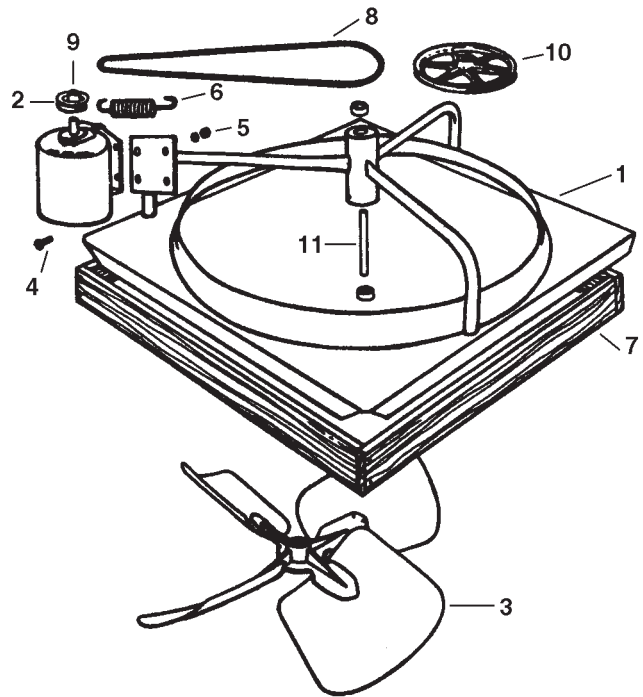
The installation of the fan on the roof timbers is carried out as per the Standard Roof Instructions".

Check all details of the electrical connection with your Licensed Electrical Contractor to ensure strict compliance with State Codes.



PARTS AND WARRANTY

	DESCRIPTION	SIZE
1	Fan Frame	760mm
	Fan Frame	915mm
	Fan Frame	1070mm
	Fan Frame	1220mm
2.	Motor 250 Watt Variable	760mm, 915mm, 1070mm
	Motor 1/2 HP 3 Speed	1220mm
3.	Blade Assembly	760mm, 915mm, 1070mm, 1220mm
4.	Carriage Bolt (4 required)	
5.	Nut	
6.	Fan Spring	
7.	Wood Frame	760mm
	Wood Frame	915mm
	Wood Frame	1070mm
	Wood Frame	1228mm
8.	V Belt	760mm
	V Belt	915mm
	V Belt	1070mm
	V Belt	1228mm
9.	Motor Pulley	760mm 2.75" 1/2" Bore
	Motor Pulley	915mm 2.75" 1/2" Bore
	Motor Pulley	1070mm 2.25" 1/2" Bore
	Motor Pulley	1228mm 2.75" 1/2" Bore
10	Fan Pulley	760mm 9" 5/8" Bore
	Fan Pulley	915mm 9" 5/8" Bore
	Fan Pulley	1070mm 9" 5/8" Bore
	Fan Pulley	1220mm 12" 5/8" Bore
11	Fan Shaft	
12	Bearing (2 required)	



WARRANTY

- (1) Breeze Power Natural Cooling Pty. Ltd. hereafter called "The Company" warrants the fan blades, metal mounting frame, timber plenum and ceiling shutter to be free of any defects in materials or workmanship for a period of three years from date of purchase from a Breeze Power distributor.
- (2) The Company warrants the motor, belt and switch to be free of defects in materials or workmanship for a period of one year from date of purchase.
- (3) The Company at its option shall repair or replace the unit or any defective components during the period of this warranty. Parts for repair must be returned to The Company or authorised dealer at the purchaser's cost.

4) CONDITIONS

This Warranty shall only apply :-

- a) to the original purchaser.
 - b) where the unit has been used under normal conditions where the unit has been installed and operated in accordance with the manufacturer's instructions and directions.
 - c) where the unit has not been modified in any way
 - d) where any claim under this warranty is made in accordance with the conditions set out in item (5) below.
- (5) The Company shall not be liable for any damage caused to the fan unit, shutter, motor or switch in transit or for any claim by any person for incidental or consequential damages.

BREEZE POWER NATURAL COOLING

Breeze Power Natural Cooling Pty. Ltd. ABN 62 003 649 509
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