

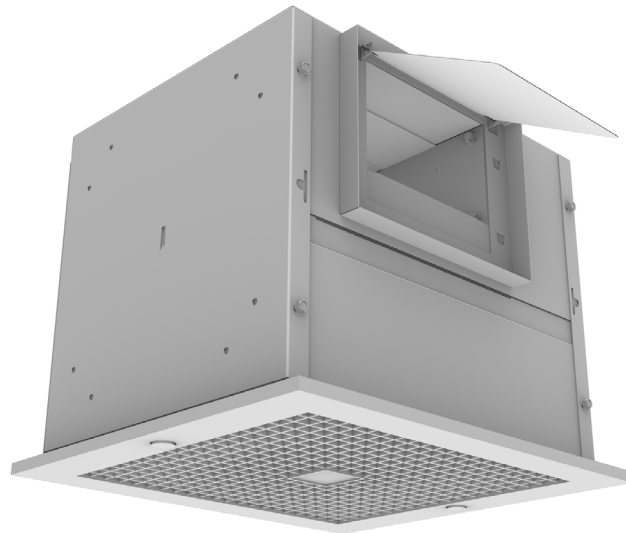
# Zephyr Ceiling & Inline Fans

(Models Z3H through Z12H)

OPERATION & MAINTENANCE MANUAL



PENNBARRY™



## IMPORTANT! Read before proceeding!

Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

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# INTRODUCTION & INSTALLATION

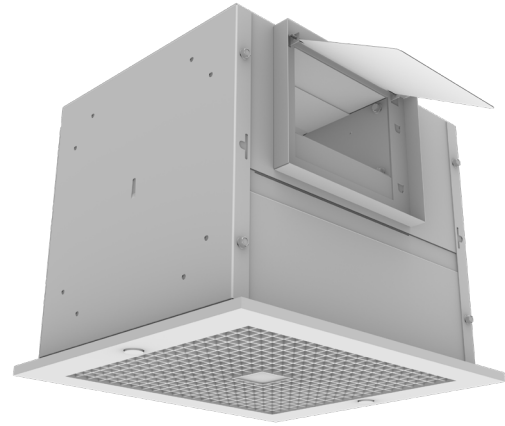
## Storage

Long-term storage requires special attention. Units should be stored on a level, solid surface, preferably indoors. If outside storage is necessary, protect the units against moisture and dirt by encasing the cartons in plastic or some similar weatherproof material.

## Unpacking

Place carton in an upright position and remove staples or use a sharp (knife edge) tool to CAREFULLY cut or scribe the sealing tape on both sides at the top of the carton. Open carton flaps. Remove any cardboard and wooden filler pieces, as well as loose components or accessories shipped with the unit.

Carefully remove the unit from the carton. Inspect the unit for any damage that may have occurred during transit and check for loose, missing or damaged parts.



## Installation



For general ventilating use only, do not use to exhaust hazardous or explosive materials and vapors.

Remove internal protective shipping trays and fillers. Check for and remove any loose hardware or particles from the inside of the fan housing. Disconnect motor cord and plug from internal terminal box and receptacle. On installations made before a final ceiling is installed, with access from below, the following procedure applies. Assemble adjustable flanges to fan housing with four self-tapping metal screws provided. The adjustable flanges should be located as illustrated in Figure 1.

PennBarry Ceiling Fans are quiet. They are designed for applications where a low noise, high reliability ceiling or cabinet fan is required. With air capacities from 30 to 1600 CFM, they're ideally suited for use in ventilating bathrooms or other low to medium CFM applications. Housings are fabricated of sturdy galvanized steel to ensure durability. Acoustic insulation, in combination with matched motor and wheel assemblies, lowers sound levels and improves air performance. Further, motors are mounted on vibration isolators to minimize noise levels. Together, these features ensure years of problem free, quiet operation.

## Receiving and Handling

PennBarry fans are carefully inspected before leaving the factory. When the unit is received, inspect the carton for any signs of tampering. Inspect the unit for any damage that may have occurred during transit and check for loose, missing or damaged parts. Mishandled units can void the warranty provisions. PennBarry is not responsible for damages incurred during shipment.

Avoid severe jarring and/or dropping. Handle units with care to prevent damage to components or special finishes.

*Note: Standard Zephyrs are set up for RA (right angle discharge). For TD (top discharge) or TDA (Inline) see conversion instructions*

*Note: On model Z6S / H, when using a variable speed controller, wire to high (h) setting only.*

Using appropriate hardware (i.e., wood screws or sheet metal screws, depending on joist construction), secure the adjustable flanges to each joist. Attach a properly sized duct to duct sleeve mounted on the fan housing. Run this duct system to an appropriate wall or roof cap. **Discharge side must be guarded, unless it is connected to duct.**

Figure 1

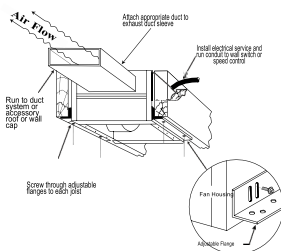


Figure 2a

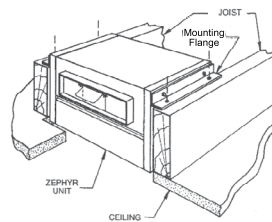
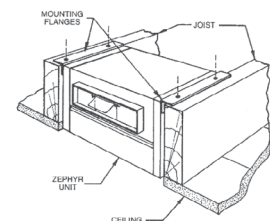


Figure 2b



Normally, power is brought up from within the building through conduit lines and located at the terminal box. Before wiring is attempted, always lock out primary and secondary power source. Utilizing the pre-punched hole found at the terminal box on the fan housing, insert a 3/8" electrical connector. All wiring furnished should be in strict accordance with the National Electrical Code and local, state and federal standards. Complete the installation by cutting a 9 1/2" by 12 1/2" ceiling opening for the Z3, Z5 and Z6; 11 7/8" by 13 3/4" for the Z8 and Z81; 14 1/2" by 18" for the Z10; and 14 1/2" by 23 3/4" for Z101, Z102, Z12 and Z121 ceiling fan.

Installation of ceiling fans in suspended ceiling systems require a minimum 10 gauge solid wire for hanging or suspending the ceiling fan. Four wires per unit should be connected to the pre-punched holes of the adjustable mounting flanges (after the flanges have been mounted to the fan housing as outlined above). Note: For the Z12 and Z121, 1/4" threaded rods or perforated steel strips should be used per fan as illustrated in Figure 4.

If installation is to be made with ceiling in place, access must be from above. The following procedure should be used for installing the Zephyr Ceiling Fans. Assemble the adjustable flanges to the fan housing as illustrated in Figures 2 or 2A. Position adjustable flanges so the unit is flush with top side of ceiling surface. Tighten the adjustable flanges and secure them with the appropriate hardware (wood screws or sheet metal screws, depending on framing construction). Use the housing as a template, punch or drill a small hole through the ceiling at each corner of the housing and cut an opening in the ceiling, using these holes as a guide. Install the duct and electrical service in accordance with the instructions listed in the previous section.

In installations where the ceiling is already installed and there is no access from above, the following procedure should be followed. Before cutting ceiling opening, determine the exact location of framing or support members. Cut hole in ceiling using care not to exceed the dimensions of the ceiling grille. Note: The ceiling hole should be cut so that one edge of the hole is in line with the inside face of the joist. The hole must be large enough to permit passage of the fan housing into the ceiling space. Care should be taken not to exceed the ceiling grill dimensions when cutting.

Remove the blower assembly from the housing. For single blower units, remove two #10 sheet metal screws near the blower, slide power pack to the left to release it from the housing. (For double blower units, remove one 1/4" bolt).

Electrical service should now be brought up to the fan location. This should be done in accordance with the instructions listed in the previous section.

To secure housing in ceiling space, raise the housing into place with one edge of the housing against joist "A" (see Figure 3). Determine if it is necessary to build out from joist "B" so that the housing can be secured from both sides. If building out is necessary, an appropriate piece(s) of wood should be utilized. These wood spacers should be nailed to joist "B" to increase the thickness of the joist at the point where the fan will be installed. The fan housing should fit snugly between joist "A" and joist "B" (or the built-out-section of joist "B"). If spacers are required for joist "B", they should be sized according to the dimension of the fan housing. Using care to avoid damage to the housing, secure the housing to the joists by nailing through the pre-punched holes found at the top and bottom of housing sides.

These pre-punched holes would normally be utilized as a point of attachment for the adjustable flanges; however, these flanges will not be necessary with this type of installation.

Figure 3

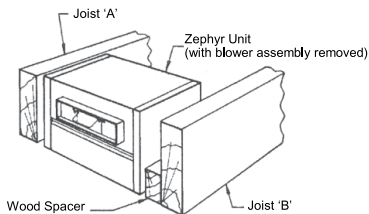


Figure 4

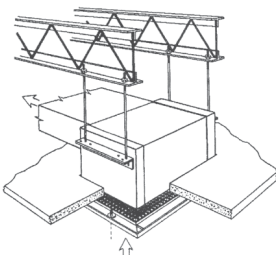
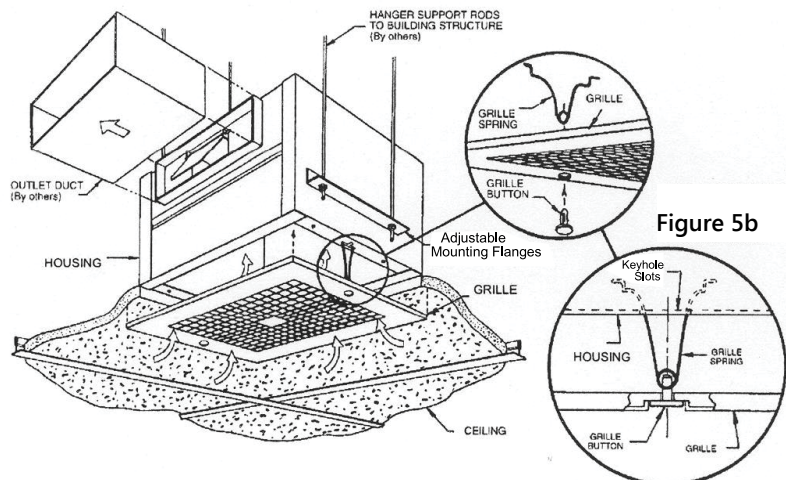


Figure 5a



Before the nails are driven snug, care should be taken to ensure that the housing is 1/4" above the ceiling level. Nails should now be secured. Care should be taken to ensure that the nail head is large enough to prevent slipping through the pre-punched holes. A washer can be used to increase the bearing surface. Re-attach blower assembly to housing. Lock out primary and secondary power source and secure electrical lines to the terminal box. This should be done in accordance with the procedure outlined

For all of the installation situations described above, the egg crate ceiling grill should be installed as a final step. This is done by first assembling the two torsion springs to the grill. Use the torsion springs and grill buttons from the hardware kit provided. Insert the grille buttons into the ceiling grill as shown in Figure 5a through the slot in the grill buttons. The grill is now ready for assembly to the housing. Lift the grill into position below the housing. Insert the two torsion springs into the keyhole slots located in the center of the housing as shown in Figure 5B. Push the grill towards the housing

## Electrical Connections



Before attempting any repair or installation work, be certain that all power to the motor and electrical accessories are turned off and locked in off position.

1. Connect Motor per nameplate to correct power supply.
2. Install all wiring, protection and grounding in accordance with national electrical code and local requirements.
3. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
4. In order to prevent motor failure when speed controller is used, unit must be started on high speed before turning to low speed.



\* For low speed insulate black lead as shown on Figure 7.



\*\* For high speed insulate red lead and connect black to black with wire nut.

*Note: On Model Z6S / H, when using a variable speed control, wire to the high (H) setting only. Make all of the necessary connections by using two wire nuts. A separate ground wire must be connected to the grounding screw. Reinstall the cover of the junction box.*

## Maintenance



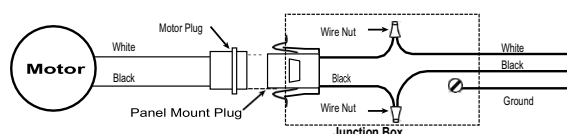
To reduce the risk of injury, disconnect from power supply before servicing.

The blower wheel, housing and grille should be cleaned of dust and grease if required. Power should be disconnected before cleaning the internal parts of the ceiling fan.

Remove the grill. Use a vacuum cleaner with the appropriate attachments and vacuum dust from the grill. Wash the grill with a warm, soapy solution of water. Allow grill to air dry thoroughly before reinstalling.

To clean blower wheel(s) and housing, unplug blower from integral terminal box. Remove the blower assembly from the housing. For single blower units, remove two #10 sheet metal screws near the blower discharge and slide to the left. For double blower units, remove one 1/4" bolt next to motor. Vacuum blower wheel, if necessary, the wheel can be washed. Use extreme caution – do not allow water to enter motor. Wipe blower wheel dry with an absorbent cloth. Before replacing blower / motor assembly, wipe out interior of housing. Replace blower/motor assembly and secure with self-tapping screws. Plug in blower motor to terminal box.

**Figure 6: Internal Electrical Connections, PSC Single Speed**



**Figure 7: Internal Electrical Connections, PSC Two Speed Motors**

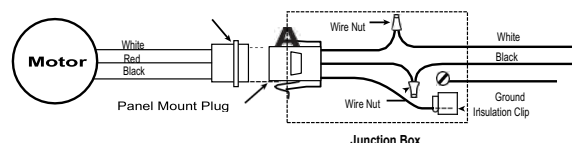


Figure 8: Internal Electrical Connections, Z8-GP/GPE, 115 V motor.

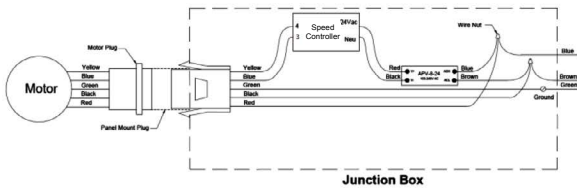


Figure 9: Internal Electrical Connections, Z8-GP/GPE, 208 -230 V motor

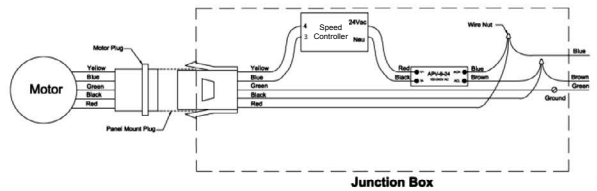


Figure 10: Internal Electrical Connections, Z10-GP/GPE, 115 V motor.

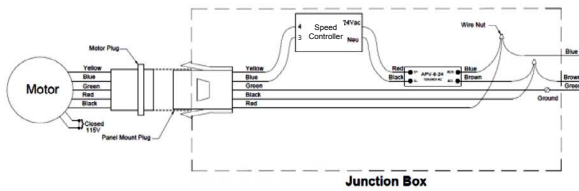


Figure 11: Internal Electrical Connections, Z10-GP/GPE, 230 V motor

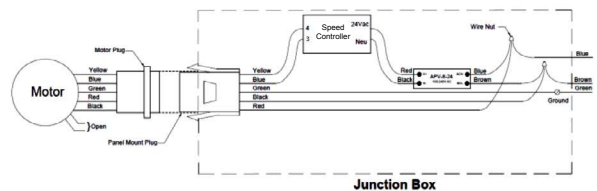
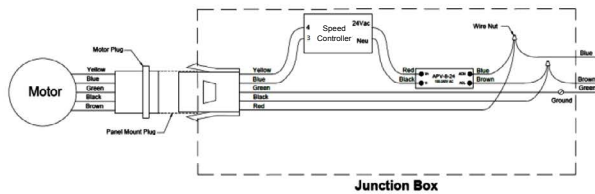


Figure 12: Internal Electrical Connections, Z12-GP/GPE, 120 V motor



*Note: All motors are checked prior to shipment; however, if motor defects should develop, prompt service can be obtained from the nearest authorized service station of the motor manufacturer while under warranty. Exchange, repair or replacement will be provided on a no charge basis if the motor is defective within the warranty period. The PennBarry representative in your area will provide a name and address of an authorized service station if requested. Do not return defective motors to Pennbarry. WARNING: Motor guarantee is void unless overload protection is provided in motor wiring circuit.*

## Hidden Danger

In addition to the normal dangers of rotating machinery, fans present an additional hazard in their ability to suck in not only air, but loose materials as well. Solid objects can pass through the fan and be discharged by the impeller as potentially dangerous projectiles.

Intake to duct work should, whenever possible, be screened to prevent the accidental entrance of solid objects. Access doors or grill to a duct system should never be opened with the fan running.

When a fan is being started for the first time, a complete inspection of the duct work and interior of the fan should be made (with the power locked off) to make certain there is no foreign material which can be sucked into or blown through the duct work.

## Fan Guards

All fans have moving parts which require guarding in the same way as other moving machinery. In areas which are accessible only to experienced personnel, a standard industrial type guard may be adequate. This type of guard will prevent the entry of thrown or dropped objects with a minimum restriction of air flow.

Where the fan is accessible to untrained personnel or the general public, maximum safety guards should be used, even at the cost of some loss of performance.



To reduce the risk of injury of a person, install the fan at least 7 feet above the floor if no guard is installed.

Roof-mounted equipment will require guards when access is possible, for example, by climbing children.

Centrifugal fans may be connected directly to duct work which will prevent contact with the internal moving parts, but when the inlet or outlet is exposed, a suitable guard should be installed.

Do not install in cooking or shower stall area.



Units are designed to handle clean air only. Avoid installation in corrosive and dusty environments.



To reduce the risk of fire, electric shock or injury to persons, observe the following:

- A. Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
- B. Before servicing or cleaning unit, switch power OFF at service panel and lock the service panel to prevent power from being switched ON accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.



To reduce the risk of fire, electric shock or injury to persons, observe the following:

- A. Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
- B. Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent back drafting. Follow the heating equipment manufacturer's guideline and safety standards such as those published by the National Fire Protection Association (NFPA), The American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) and local code authorities.
- C. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
- D. Ducted fans must always be vented to the outdoors.
- E. If this unit is to be installed over a tub or shower, it must be marked as appropriate for the application.
- F. NEVER place a switch where it can be reached from a tub or shower.



For general ventilating use only. Do not use to exhaust hazardous or explosive materials and vapors.

Use caution when handling sheet metal products. Protection should be used to avoid contact with sharp edges or injury may occur.

# IMPORTANT SAFETY INSTRUCTIONS

## READ AND SAVE THESE INSTRUCTIONS

### WARNINGS AND CAUTIONS



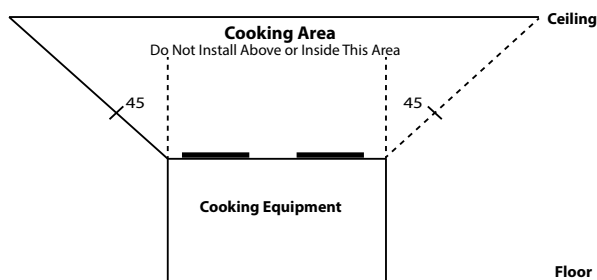
To reduce the risk of fire, electric shock, or injury to persons, observe the following:

1. Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.

#### FOR INDOOR USE ONLY.

2. Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
3. Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
4. Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent back drafting. Follow the heating equipment manufacturer's guideline and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and the local code authorities.
5. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
6. Ducted fans must always be vented to the outdoors.
7. If this unit is to be installed over a tub or shower, it must be marked as appropriate for the application and be connected to a GFCI (Ground Fault Circuit Interrupter) - protected branch circuit.
8. Wall unit must be installed with a minimum five feet (1.5m) mounting height from the floor.
9. Ceiling units must be installed with a minimum 8.2 feet (2.5m) mounting height from the floor.
10. To avoid the risk of personal injury or property damage from fire, avoid skin or flammable material contact with LED heat sink and LED lens.
11. To reduce the risk of fire or electric shock, do not use this fan with any solid-state speed control device.
12. For wall insert mounting, the fan must be installed above a counter or large appliance that serves as a barrier.
13. Never place a switch where it can be reached from a tub or shower.
14. Do not install in cooking area. The diagram below, Figure 1, shows the minimum distance these fans should be placed in relation to cooking equipment.

**FIGURE 13 MINIMUM INSTALLATION DISTANCE FROM COOKING AREA**



#### ATTENTION!

For indoor use only.

Do not use with heated air in excess of 55°C (131 °F)  
Not suitable for use with ridge conduit.

Cord-connected models shall be marked with: "Do Not Use an Extension Cord with This Fan."

This fan shall not be installed behind a suspended floor/ceiling or a structural wall, ceiling or floor.





## CAUTION

1. Avoid severe jarring and/or dropping of the unit. Handle unit with care to prevent damage to components. This duct fan shall be installed a minimum of 1 m (3 ft) from any accessible opening of the duct.
2. For general ventilation use only. Do not use to exhaust hazardous or explosive materials and vapors.
3. Units are designed to handle clean air only. Avoid installation in corrosive and dusty environments.
4. To reduce the risk of injury, unit should only be operated when fully assembled.
5. Equipment will require guards if it is accessible.
6. Centrifugal fans may be connected directly to duct work which will prevent contact with the internal moving parts, but when the inlet or outlet is exposed, a suitable guard should be installed.
7. Where the fan is accessible to untrained personnel or the general public, maximum safety guards should be used.

# AVERTISSEMENT! INSTRUCTIONS DE SÉCURITÉ IMPORTANTES LIRE ET CONSERVER CES INSTRUCTIONS AVERTISSEMENTS ET MISES EN GARDE



Veillez suivre les consignes suivantes afin de réduire le risque d'incendie, de décharge électrique ou de blessures corporelles :

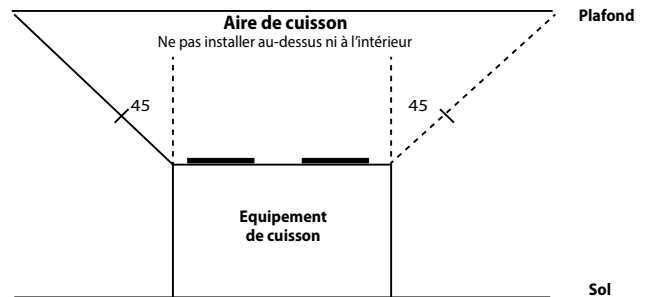
1. Utilisez cette unité uniquement de la façon prévue par le fabricant. Si vous avez des questions, veuillez contacter le fabricant.
2. Avant d'effectuer l'entretien ou le nettoyage de l'unité, veuillez éteindre celle-ci sur le panneau de service et verrouiller les dispositifs de sectionnement afin d'empêcher l'alimentation d'être remise en fonction accidentellement. Lorsqu'il est impossible de verrouiller les dispositifs de sectionnement, fixez un dispositif d'avertissement bien visible comme une étiquette au panneau de service.
3. Les travaux d'installation et de câblage électrique doivent être effectués par une personne qualifiée selon les codes et les normes applicables, incluant les travaux de construction classés résistants au feu.
4. Un apport d'air suffisant est nécessaire pour assurer une bonne combustion ainsi qu'une bonne évacuation des gaz émanant de tout appareil de combustion par le conduit (cheminée) afin d'éviter le refoulement de l'air. Suivez les directives de sécurité du fabricant de l'équipement de chauffage et les normes de sécurité comme celles publiées par la National Fire Protection Association (NFPA) et l'American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) ainsi que celles des autorités locales.
5. Lorsque vous coupez ou percez un trou dans un mur ou au plafond, faites attention de ne pas endommager les câbles électriques ainsi que les autres dispositifs des services publics.
6. Les systèmes de ventilation à conduits d'air doivent toujours être ventilés vers l'extérieur.
7. Si l'unité doit être installée au-dessus d'une baignoire ou d'une douche, elle doit être marquée comme appropriée pour cette utilisation et doit être connectée à un disjoncteur différentiel de fuite à la terre (GFCI) protégé par un circuit de dérivation.
8. L'unité murale peut être installée à un minimum de 1,5 m (5 pi) du plancher.
9. L'unité murale peut être installée à un minimum de 2,5m (8,2 pi) du plancher.
10. Afin d'éviter le risque de blessures corporelles et de dommages à la propriété provoqués par les risques d'incendie, évitez les contacts de la peau ou des matériaux inflammables avec le dissipateur thermique DEL et les lentilles DEL.
11. Afin de réduire le risque d'incendie ou de décharge électrique, n'utilisez pas ce ventilateur avec une commande de vitesse à semi-conducteur.
12. Pour les installations murales encastrées, le ventilateur doit être installé au-dessus d'un comptoir ou d'un appareil qui sert de barrière.
13. Ne placez jamais un commutateur à un endroit où il peut être atteint à partir d'une baignoire ou d'une douche.
14. N'installez pas cet appareil dans une aire de cuisson. Le diagramme ci-dessous (Figure 1) illustre la distance minimale à laquelle ces ventilateurs doivent être placés par rapport à l'équipement de cuisson.

## FIGURE 13 DISTANCE MINIMALE D'INSTALLATION POUR LES AIRES DE CUISSON



MISE EN GARDE

1. Évitez de cogner ou d'échapper l'unité. Manipulez l'unité avec précaution pour empêcher les dommages aux composants.
2. À des fins générales de ventilation uniquement. N'utilisez pas cet appareil pour évacuer des matières ou des vapeurs dangereuses ou explosives.
3. Les unités sont conçues pour être utilisées dans des environnements où l'air est pur uniquement. Évitez l'installation dans des environnements corrosifs et poussiéreux.
4. Afin de réduire le risque de blessures, l'unité doit uniquement être opérée lorsqu'elle est entièrement assemblée.
5. L'équipement devra être protégé par une grille de protection s'il est accessible.
6. Les ventilateurs centrifuges peuvent être reliés directement aux conduites de ventilation ce qui permettra d'éviter le contact avec les pièces internes en mouvement, mais une protection appropriée doit être installée lorsque l'entrée et la sortie sont exposées.
7. Des dispositifs de protection maximale doivent être utilisés lorsque le ventilateur est accessible par du personnel non formé ou par n'importe qui d'autre.



## TABLE 1: ACCESSORIES MATRIX

Model	Roof Caps			Wall Cap	Brick Vent	Switches		Radiation <sup>‡</sup> Damper	Metal Face Grill
	Flat	Curb Mnt.	Slope			Speed Ctrl.	Time Delay		
Z3H	WCF06	WCC06	SL20+	WC10	B68	LT30	AM12	DDA3	MFG6
Z5H	WCF06	WCC06	SL20+	WC10	B68	LT30	AM12	DDA3	MFG6
Z6S/H	WCF06	WCC06	SL20+	WC10	B68	LT30**	AM12	DDA3	MFG6
Z8S/H	WCF08	WCC08	SL20+	WC10	B68	LT30	AM12	DDA8	MFG8
Z81S	WCF08	WCC08	SL20+	WC10	B68	LT30	AM12	DDA8	MFG8
Z8GP/GPE	WCF08	WCC08	SL20+	WC10	B68	PWM****	-	DDA8	MFG8
Z10S/H	WCF08	WCC08	SL20+	SL20+	B100	LT50	AM12	DDA10	MFG10
Z10GP/GPE	WCF08	WCC08	SL20+	SL20+	B100	PWM****	-	DDA10	MFG10
Z101S	WCF10	WCC10	WCF10+	***	B120	LT30	AM12	DDA12	MFG12
Z102S	WCF10	WCC10	WCF10+	***	B120	LT50	AM12	DDA12	MFG12
Z12S	WCF12	WCC12	WCF12+	***	B120	LT50	AM12	DDA12	MFG12
Z12GP/GPE	WCF12	WCC12	WCF12+	***	B120	PWM****	-	DDA12	MFG12
Z121S	WCF12	WCC12	WCF12+	***	B120	LT50	AM12	DDA12	MFG12
Z102H	WCF14	WCC14	WCF14+	***	B120	LT40	AM12	DDA12	MFG12
Z12H	WCF14	WCC14	WCF14+	***	B120	LT40	AM12	DDA12	MFG12
Z14	WCF20	WCC20	CF	***	B120	LT40	AM12	-	MFG14
Z15	WCF20	WCC20	CF	***	B150	LT35	-	-	MFG15

+ Manufactured of galvanized steel. All other accessories manufactured of aluminum.

‡ Kit is field installed, shipped separate from fan.

\*\* Z6H unit only. \*\*\*Use brick vent. †4 in 12 max. pitch.

\*\*\*\* Standard Assembly includes PWM control box

# TABLE 2: ROOF CAPS

Model	A (Throat) Dia	B	C	E Sq	F	H	L Dia	* Damper Sq
WCF06	7	N/A	3 1/2	16 7/8	8	11 1/2	12	NA
WCF08	9	N/A	5 1/2	21 1/4	8	13 1/2	18 1/2	NA
WCF10	11	N/A	5 1/2	21 1/4	10	15 1/2	21	NA
WCF12	13	N/A	7	24	10	17	25	NA
WCF14	15	N/A	7	28	10	17	28	NA
WCF20	21	N/A	10 1/2	32	12	22 1/2	37	NA
WCC06	7	1	3 1/2	15	4	8 1/2	12	8 3/4
WCC08	9	1 1/2	5 1/2	18 1/2	4	11	18 1/2	11 1/4
WCC10	11	1 1/2	5 1/2	18 1/2	4	11	21	11 1/4
WCC12	13	2	7	20 1/2	4	13	25	15 3/4
WCC14	15	2	7	24 3/4	4	13	28	15 3/4
WCC20	21	2	10 1/2	28 1/2	5 1/2	18	37	19 3/4

Figure 14: Roof Caps (Models SL20 and WC10)

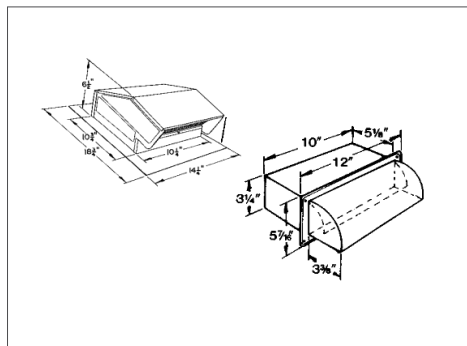


Figure 15: Duct transitions

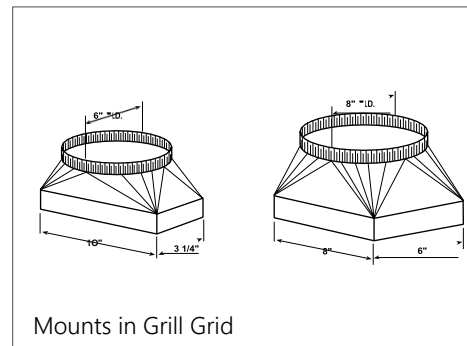


Figure 16: Pilot Light

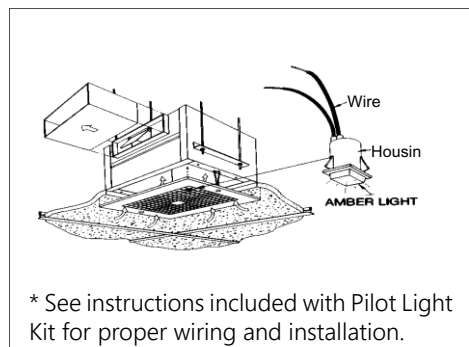


Figure 17: Brick Vents

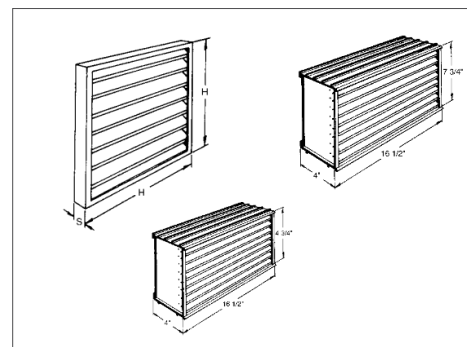
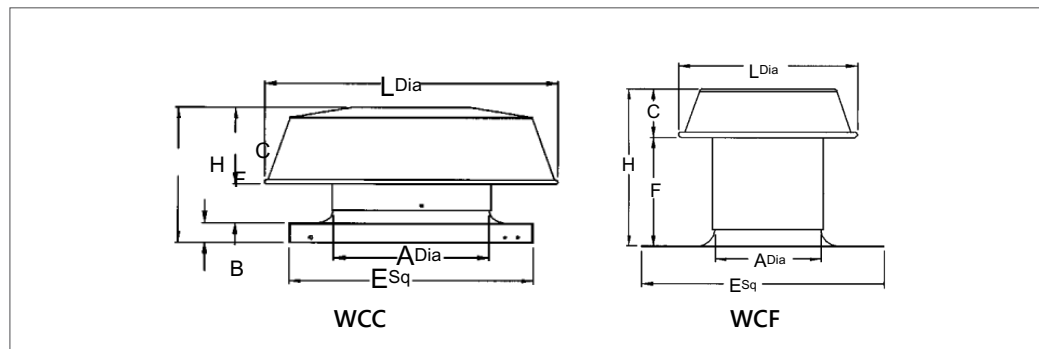


Figure 18: Weather Caps



# TABLE 3: DIMENSIONAL DATA

Model	Housing							Outlet Duct			Grill		TDA Intake Duct		
	A	B	C	D	E	E1	F	G	H	J	K	L	X	Y	Z
Z3H,Z5H,Z6S/H	12 1/2	9 1/8	16	9 1/8	1 1/4	1 1/4	5 3/8	10	3 1/4	3/4	11	13 3/4	10	6	15/8
Z8S/H,Z81S, Z8 GP/GPE	13 7/8	11 3/8	17 3/8	11 3/8	1 7/8	4	5 1/4	8	6	3/4	13 1/4	14 7/8	10	8	19/16
Z10S/H, Z10 GP/GPE	18	14 1/8	21 1/2	14 1/8	3 5/8	6 3/8	8	8	6	3/4	15 1/2	19 3/8	14	10	2
Z101S,Z102S/H, Z12S/H,Z121S, Z12 GP/GPE	24	14 1/8	27 1/2	14 1/8	1	1	8	22	6	3/4	15 1/2	25	20	10	2

Figure 19: Models Z3H, Z5H and Z6S/H

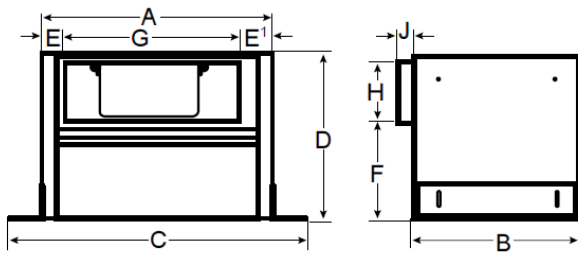


Figure 20: Models Z8S/H, Z8GP/GPE AND Z81S

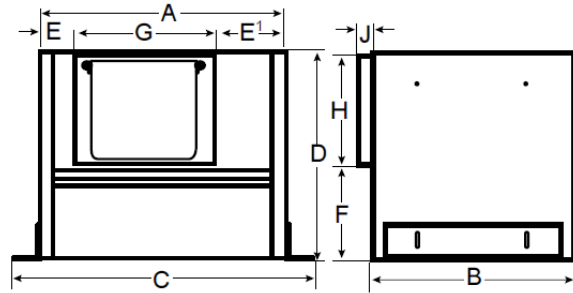


Figure 21: Model Z10S/H and Z10GP/GPE

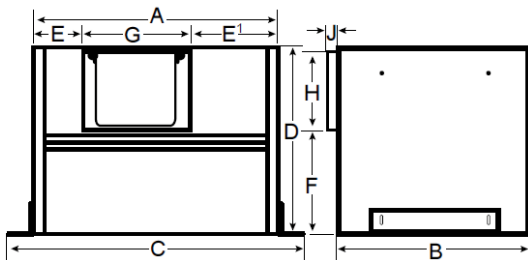


Figure 22: Models Z101S, Z102S/H, Z12S/H, Z12GP/GPE, Z121S

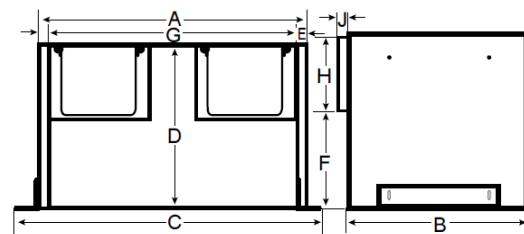


Figure 23

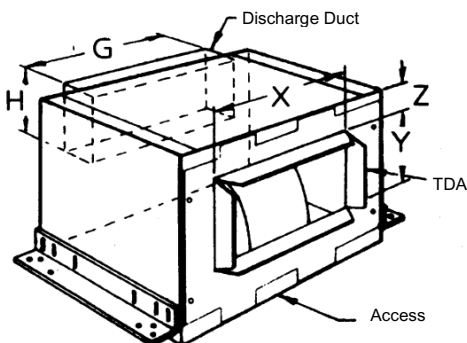
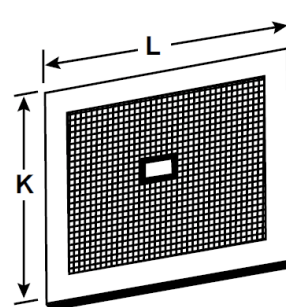


Figure 24



# TYPICAL EXPLODED VIEWS

Figure 25: Models Z3H, 5H, 6S/H, 8S/H, 8GP/GPE 81S, 10S/H & 10GP/GPE

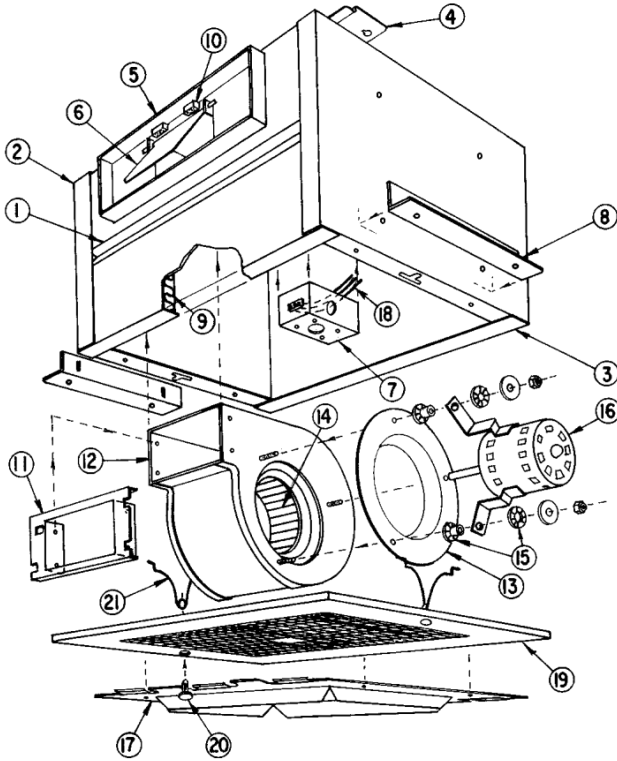
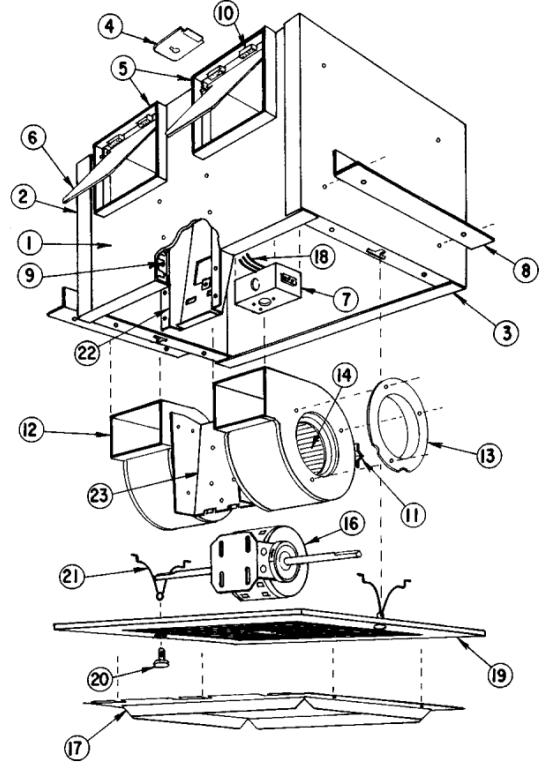


Figure 26: Models Z101S, 102S/H, 12S/H, 12GP/GPE & 121S



## Legend

- |                           |   |  |
|---------------------------|---|--|
| 1. Housing                | 9. Insulation; Parts A, B, & C                                  | 17. TDA Panel (Blank Off Plate) (not shown)            |
| 2. End                    | 10. Damper Stop   | 18. Wiring Assembly (2 & 3 Lead Versions) 3M Connector |
| 3. Access Panel           | 11. Blower Bracket  | 19. Grill  |
| 4. Wiring Box Cover Plate | 12. Blower Housing Assembly                                     | 20. Grill Button                                       |
| 5. Duct Flange            | 13. Inlet   | 21. Grill Spring                                       |
| 6. Damper Blade           | 14. Wheel   | 22. Box Brace (Double blower units only)               |
| 7. Junction Box           | 15. Grommets, 2 Part : Male & Female (single blower units only) | 23. Motor Plate (Double blower units only)             |
| 8. Housing Bracket        | 16. Motor   |  |

## Parts Replacement

If replacing parts, do so with properly selected components which duplicate the original parts correctly. Incorrectly sized parts can damage the fan.

# CONVERSION INSTRUCTIONS

MODELS: Z3H, Z5H, Z5S/H, Z8S/H, Z8 GP/GPE, Z81S, Z10S/H & Z10 GP/GPE

## RA / TD Ceiling Fan Conversions

RIGHT ANGLE (RA) TO TOP DISCHARGE (TD) CONVERSION

*Note: As a standard, Zephyr RA / TD's are furnished with a Right Angle (RA) discharge as shown in figure 27.*

1. Disassemble the access panel from the housing by removing the two #10 sheet metal screws and then removing the panel by pulling it towards the housing opening as shown in figure 27.
2. Reassemble the access panel by rotating the access panel 90° and remount it to the housing. Slide in the 3 locking tabs to the housing flange and reinstall the two #10 sheet metal screws. See figure 28.

Figure 27: "RA" (Right Angle)

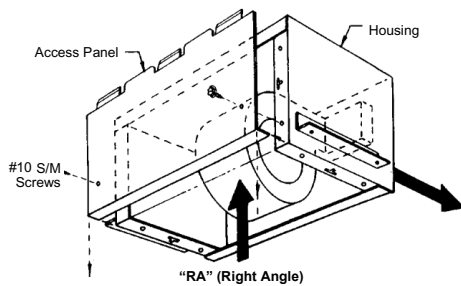
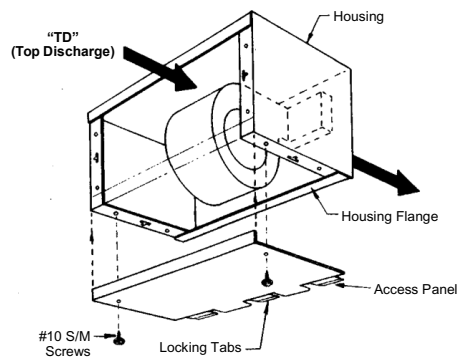


Figure 28: "TD" (Top Discharge)



## TDA In-line Fan Conversions

TDA IN-LINE TO RIGHT ANGLE DISCHARGE CONVERSION

*Note: As a standard, Zephyr TDA's are furnished with an In-line discharge as shown in figure 29.*

1. Disassemble the TDA panel from the housing by removing the four #10 sheet metal screws. Remove both panels as shown in figure 29.
2. Reassemble both the TDA and access panels after exchanging locations. First, slide the 3 locking tabs of the TDA panel into the housing flange. Second, slide the 3 tabs of the access panel into the housing. Third, engage the access panel return flange into the 3 locking tabs on the TDA panel. Finally, reinstall the six #10 sheet metal screws. See figure 30.

Figure 29: "TDA" (In-Line)

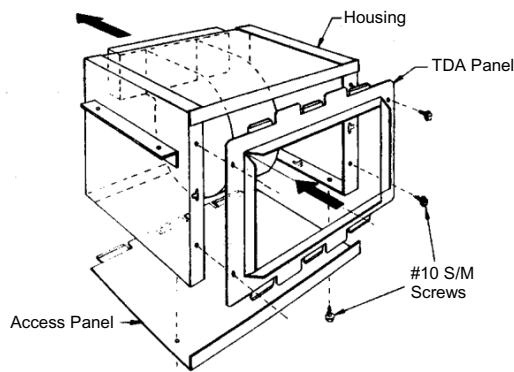
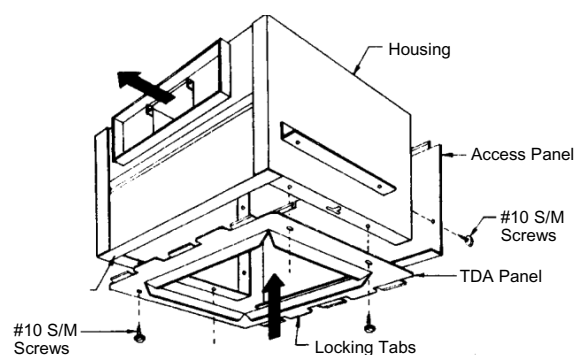


Figure 30: "TDA" (Right Angle)



# CONVERSION INSTRUCTIONS

MODELS: Z101S, Z102S, Z12S, Z102H, Z12H & Z12 GP/GPE

## RA / TD Ceiling Fan Conversions

RIGHT ANGLE (RA) TO TOP DISCHARGE (TD) CONVERSION

*Note: As a standard, Zephyr RA / TD's are furnished with a Right Angle (RA) discharge as shown in Figure 31.*

1. Disassemble the access panel from the housing by first removing the four #10 sheet metal screws and then removing the panel as shown in figure 31.
2. Reassemble the access panel by rotating the access panel 90° and remount it to the housing. Finally, reinstall the four #10 sheet metal screws. See figure 32.

Figure 31: "RA" (Right Angle)

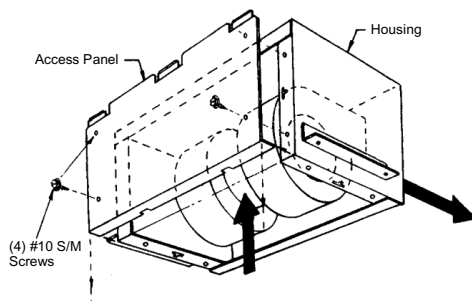
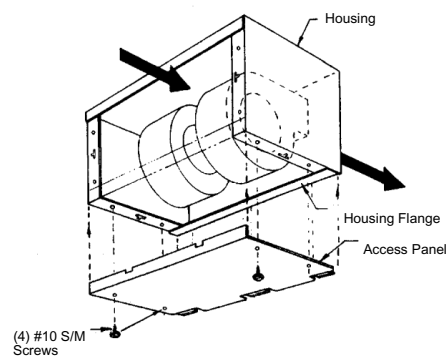


Figure 32: "TD" (Top Discharge)



## TDA In-line Fan Conversions

TDA IN-LINE TO RIGHT ANGLE DISCHARGE CONVERSION

*Note: As a standard, Zephyr TDA's are furnished with an In-line discharge as shown in Figure 33.*

1. Disassemble the TDA panel from the housing by removing the four #10 sheet metal screws securing the TDA panel to the housing and then remove the access panel by removing the four #10 sheet metal screws. Remove both panels as shown in figure 33.
2. Reassemble both the TDA and access panels after exchanging locations. First, slide the 3 locking tabs of the TDA panel into the housing flange. Second, engage the access panel return flange into the 3 locking tabs on the TDA panel. Finally, reinstall the eight #10 sheet metal screws. See figure 34.

Figure 33: "TDA" (In-Line)

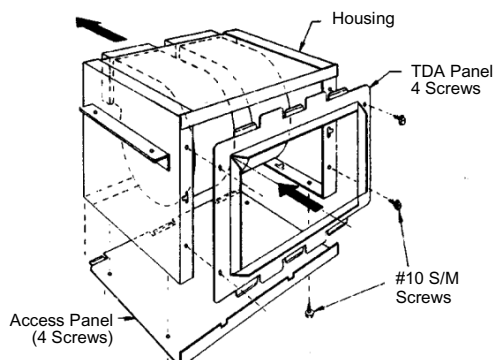
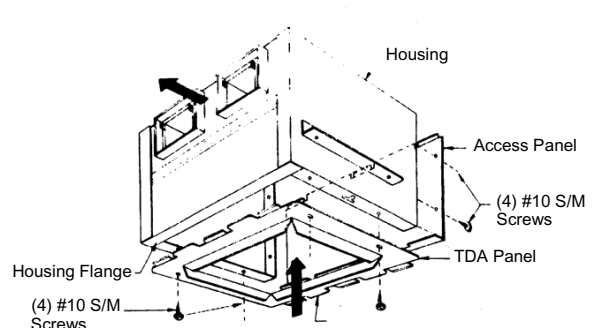


Figure 34: "TDA" (Right Angle)



# TROUBLESHOOTING CHECKLIST

Symptom	Possible Cause(s)	Corrective Action
Excessive noise	1. Defective or loose motor bearings	1. Replace motor with same frame size, RPM, HP
	2. Ventilator base not securely anchored	2. Reset properly
	3. Loose or unbalanced wheel/propeller	3. Tighten screws, remove build-up, balance wheel/propeller
	4. Misaligned pulleys or shaft	4. correct alignment
	5. Loose or damaged wheel/propeller	5. Replace wheel/propeller
	6. Wheel running in wrong direction	6. Reverse direction
Fan inoperative	1. Blown fuse or open circuit breaker	1. Replace fuses or circuit breaker
	2. Loose or disconnected wiring	2. Shut off power and check wiring for proper connections
	3. Defective motor	3. Repair or replace motor
	4. Broken belts	4. Replace belts
Insufficient airflow	1. Open access doors or loose sections of ducts	1. Check for leakage
	2. Clogged filters	2. Clean filters
	3. Operation in wrong direction	3. Correct rotation of wheel/propeller
	4. Insufficient make-up air direction	4. Add make-up fan or louver opening
Water leaking into ductwork or collection of grease under fan	1. Fan installed with slope in the wrong direction	1. Slope should be fitted in the direction of the drainage opening or grease collection box and drain spout
	2. Clogged drain spout	2. Clean drain spout
	3. Cooling tube or motor dome top removed	3. Install new cooling tube with gasket and dome top
	4. Grease container full	4. Empty grease box
Motor overheating	1. Belt slippage	1. Adjust tension or replace bad belts
	2. Overvoltage or under voltage	2. Contact power supply company
	3. Operation in wrong direction	3. Reverse direction of motor
	4. Fan speed too high	4. Slow down fan by opening variable pitch pulley on motor shaft
	5. Incorrect motor (service factor 1.0, low ambient temperature)	5. Replace motor with correct open, NEMA service factors (1.15 or higher) with 40 degrees ambient
	6. Blocked cooling tube or leaky gasket	6. Remove blockage and seal cooling tube in place
	7. Insufficient airflow to kitchen hood fan operating on low speed with kitchen in full operation	7. Check airflow under hood and adjust kitchen equipment output
	8. Undersized motor	8. Check motor ratings with catalog speed and air capacity chart

*Note: Care should be taken to follow all local electrical, safety and building codes. Provisions of the National Electric Code (NEC), as well as the Occupational Safety and Health Act (OSHA) should be followed.*

All motors are checked prior to shipment. If motor defects should develop, prompt service can be obtained from the nearest authorized service station of the motor manufacturer while under warranty. Exchange, repair or replacement will be provided on a no charge basis if the motor is defective within the warranty period. The PennBarry representative in your area will provide a name and address of an authorized service station if requested. **WARNING:** Motor guarantee is void unless overload protection is provided in motor wiring circuit.





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