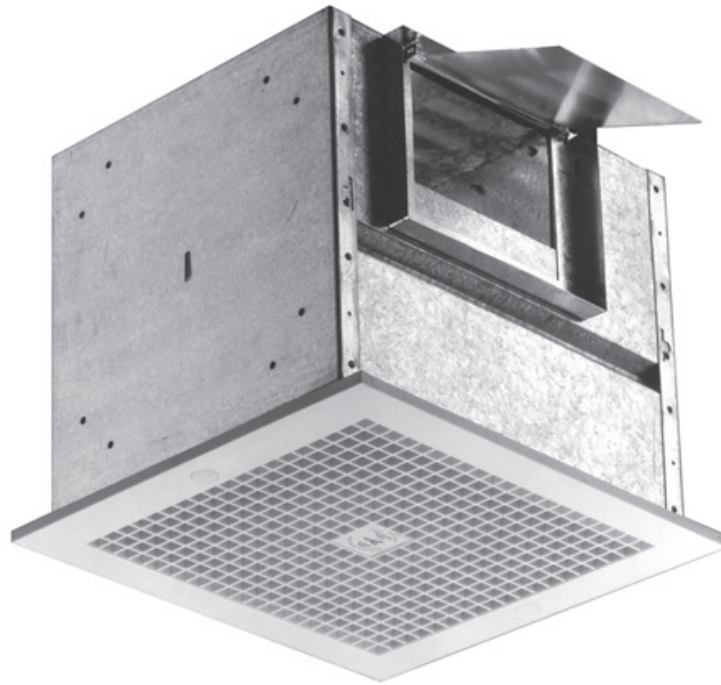




## CI3H - CI12H, CI81S Ceiling & Inline Fans

OPERATION & MAINTENANCE

Revised: 08/24/15



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# **IMPORTANT!**

## **READ BEFORE PROCEEDING!**

The information contained herein is, to the best of our knowledge, accurate and applicable for proper operation and installation of the specified equipment at the time this document entered service. Before proceeding, it is recommended that you check for a more current version of this Installation Operation Manual (IOM) on our website at [www.johnsoncontrols.com](http://www.johnsoncontrols.com).

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.

# INTRODUCTION & INSTALLATION

YORK® by Johnson Controls CI 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 toher low 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

YORK® by Johnson Controls 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. YORK® by Johnson Controls is not responsible for damages incurred during shipment.

**NOTE:** Standard units are set up for RA (right angle discharge). For TD (top discharge) or TDA (inline) see coversion instructions.

**NOTE:** On model CI6S/H, when using a variable speed controller, wire to high (H) setting only.

Use 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.**



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

## 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. Periodically inspect units and rotate wheel to spread bearing lubricant.

## 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.

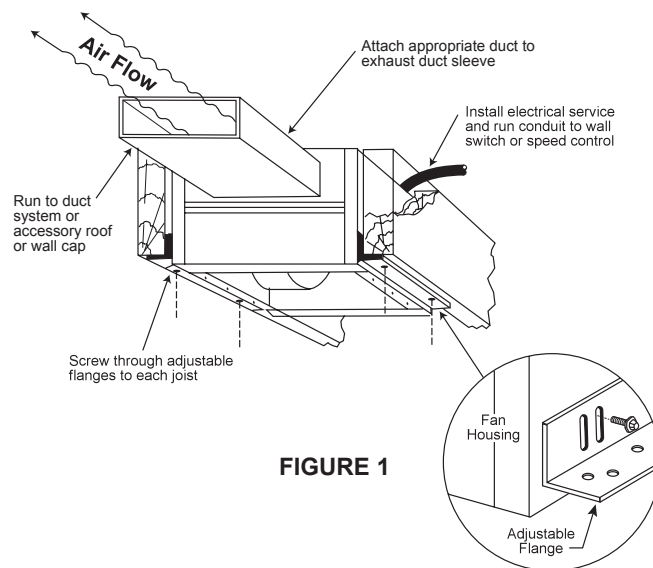
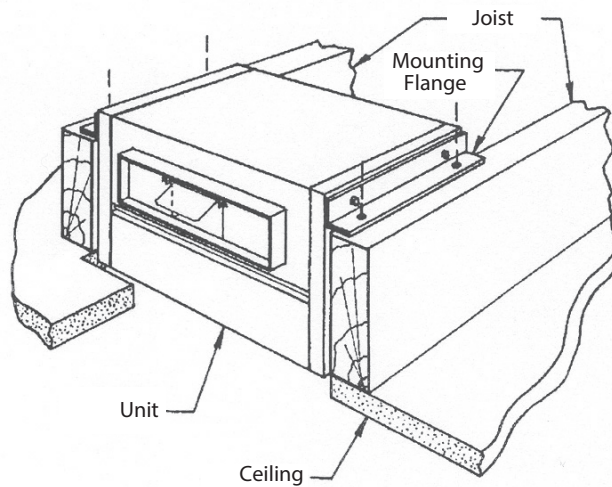
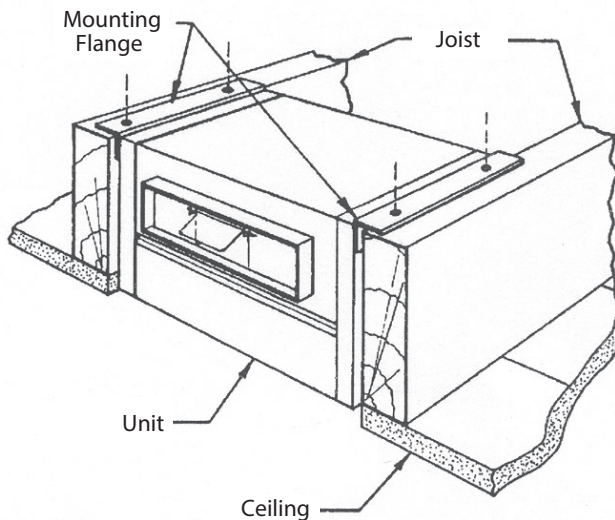


FIGURE 1

# INSTALLATION (CONTINUED)



**FIGURE 2**



**FIGURE 2A**

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 CI3, CI5 and CI6; 11 7/8" by 13 3/4" for the CI8 and CI81; 14 1/2" by 18" for the CI10; and 14 1/2" by 23 3/4" for CI101, CI102, CI12 and CI121 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 prepunched holes of the adjustable mounting flanges (after the flanges have been mounted to the fan housing as outlined above). Note: For the CI12 and CI121, 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 units. 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.

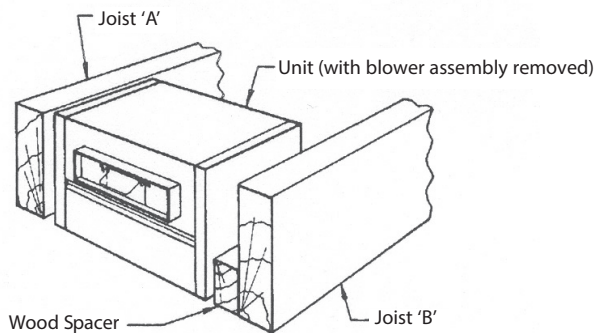
In installations where the ceiling is already installed and there is no access from above, the following procedure should be followed. Before cutting ceiling opening, determine the exact location of framing or support members. Cut hole in ceiling using care not to exceed the dimensions of the ceiling 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).

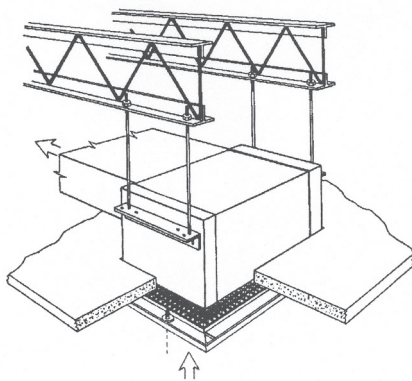
Electrical service should now be brought up to the fan location. This should be done in accordance with the instructions listed in the previous section.

# INSTALLATION (CONTINUED) AND ELECTRICAL CONNECTIONS

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 prepunched 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**

Before the nails are driven snug, care should be taken to assure that the housing is 1/4" above the ceiling level. Nails should now be secured. Care should be taken to assure that the nail head is large enough to prevent slipping through the prepunched holes. A washer can be used to increase the bearing surface. Reattach 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 grille should be installed as a final step. This is done by first assembling the two torsion springs to the grille. Use the torsion springs and grille buttons from the hardware kit provided. Insert the grille buttons into the ceiling grille as shown in Figure 5A through the slot in the grill buttons. The grille is now ready for assembly to the housing. Lift the grille 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 grille 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 C16S/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 grounding screw the junction box.*

# ELECTRICAL CONNECTIONS (CONTINUED)

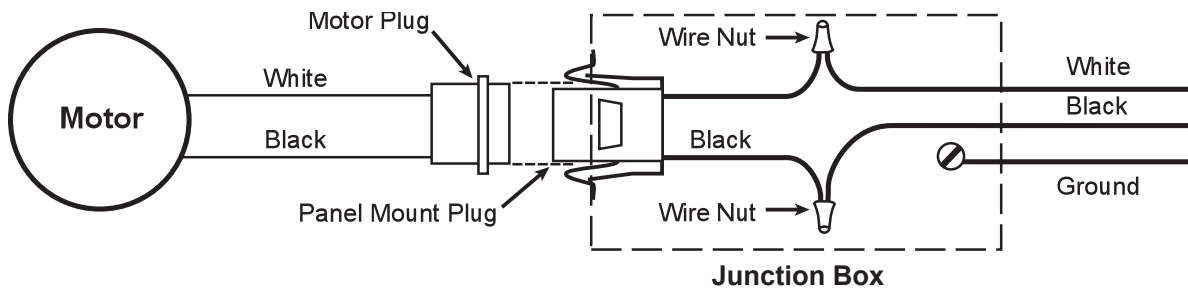


FIGURE 6: INTERNAL ELECTRICAL CONNECTIONS, SINGLE SPEED MOTORS

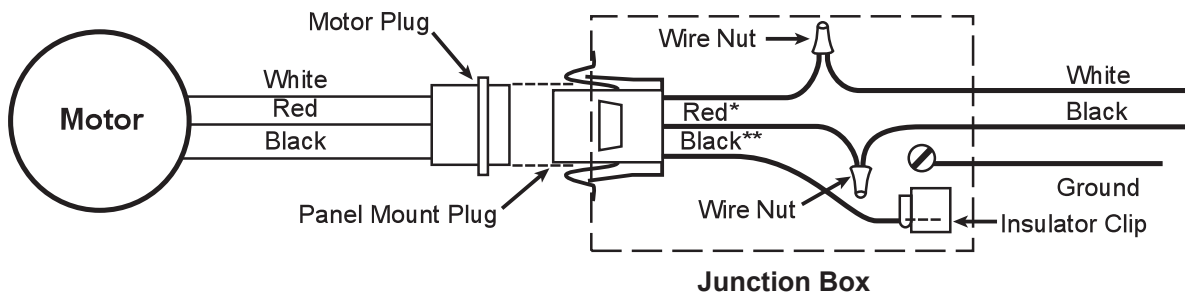


FIGURE 7: INTERNAL ELECTRICAL CONNECTIONS, TWO SPEED MOTORS

# MAINTENANCE, HIDDEN DANGER, AND FAN GUARDS



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

## MAINTENANCE

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 grille. Use a vacuum cleaner with the appropriate attachments and vacuum dust from the grille. Wash the grille with a warm, soapy solution of water. Allow grille 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.

*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 with- in the warranty period. The YORK® by Johnson Controls representative in your area will provide a name and address of an authorized service station if requested. Do not return defective motors to YORK® by Johnson Controls. WARNING: Motor guarantee is void unless overload protection is provided in motor wiring circuit.*

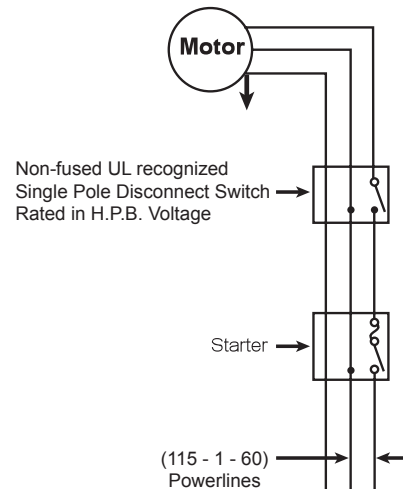
## HIDDEN DANGER

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.

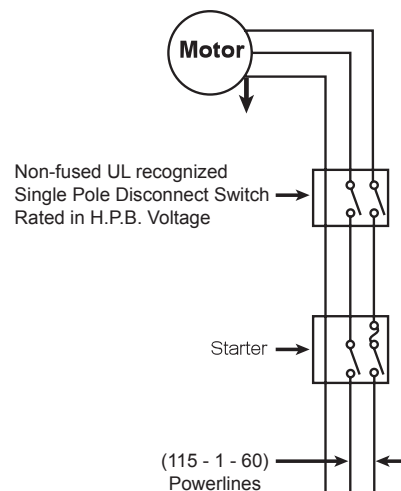
Intake to duct work should, whenever possible, be screened to prevent the accidental entrance of solid objects. Access doors or grille to a duct system should never be opened with the fan running.

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.

## (115 Volts)



## (230 Volts)



**FIGURE 8: EXTERNAL ELECTRICAL CONNECTIONS**

## 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.

# FAN GUARDS (CONTINUED)



*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 (see Figure 23).



*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:*

1. Use this unit only in the manner intended by the manufacturer, if you have questions, contact the manufacturer.
2. 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.

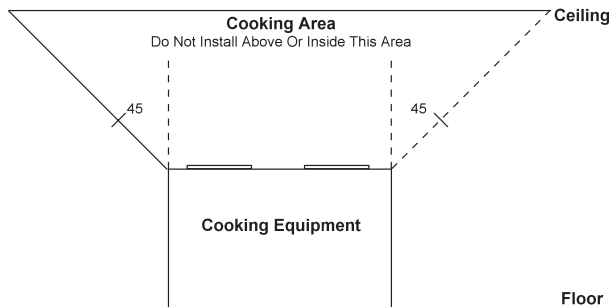


*To reduce the risk of fire, electric shock, or injury to persons, observe the following:*

1. Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
2. 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.
3. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
4. Ducted fans must always be vented to the outdoors.
5. If this unit is to be installed over a tub or shower, it must be marked as appropriate for the application.
6. 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.*



**FIGURE 23**

# ACCESSORIES

**TABLE 1: ACCESSORIES MATRIX**

Model	Roof Caps			Wall Cap	Brick Vent	Switches		Radiation Damper	Metal Face Grille
	Flat	Curb Mnt.	Slope			Speed Ctrl.	Time Delay		
CI3H	SVF06	SVC06	SL20+	WC10	B68	LT30	AM12	DDA3	MFG6
CI5H	SVF06	SVC06	SL20+	WC10	B68	LT30	AM12	DDA3	MFG6
CI6S/H	SVF06	SVC06	SL20+	WC10	B68	LT30**	AM12	DDA3	MFG6
CI8S/H	SVF08	SVC08	SL20+	WC10	B68	LT30	AM12	DDA8	MFG8
CI81S	SVF08	SVC08	SL20+	WC10	B68	LT30	AM12	DDA8	MFG10
CI10S/H	SVF08	SVC08	SL20+	SL20+	B100	LT50	AM12	DDA10	MFG12
CI101S	SVC10	SVC10	SVF10 †	***	B120	LT30	AM12	DDA12	MFG12
CI102S	SVC10	SVC10	SVF10 †	***	B120	LT50	AM12	DDA12	MFG12
CI12S	SVC12	SVC12	SVF12 †	***	B120	LT50	AM12	DDA12	MFG12
CI121S	SVC12	SVC12	SVF12 †	***	B120	LT50	AM12	DDA12	MFG12
CI102H	SVF14	SVC14	SVF14 †	***	B120	LT40	AM12	DDA12	MFG12
CI12H	SVF14	SVC14	SVF14 †	***	B120	LT40	AM12	DDA12	MFG12
CI14	SVF20	SVC20	CF	***	B120	LT40	AM12	---	MFG14
CI15	SVF20	SVC20	CF	***	B150	LT35	---	---	MFG15

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

‡ Kit is field installed, shipped separate from fan.

\*\* CI6H unit only.

\*\*\* Use brick vent. 4", 12 max. pitch.

**TABLE 2: ROOF CAPS**

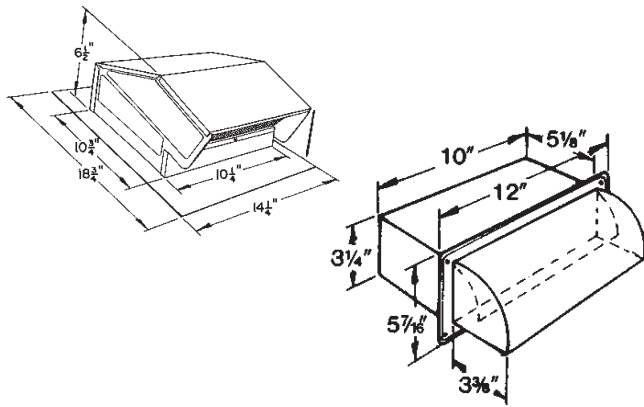
Model	A (Throat Dia)	B	C	E Sq	F	H	L Dia	* Damper Sq
SVF06	7	N/A	3 1/2	16 7/8	8	11 1/2	12	NA
SVF08	9	N/A	5 1/2	21 1/4	8	13 1/2	18 1/2	NA
SVF10	11	N/A	5 1/2	21 1/4	10	15 1/2	21	NA
SVF12	13	N/A	7	24	10	17	25	NA
SVF14	15	N/A	7	28	10	17	28	NA
SVF20	21	N/A	10 1/2	32	12	22 1/2	37	NA
SVC06	7	1	3 1/2	15	4	8 1/2	12	8 3/4
SVC08	9	1 1/2	5 1/2	18 1/2	4	11	18 1/2	11 1/4
SVC10	11	1 1/2	5 1/2	18 1/2	4	11	21	15 3/4
SVC12	13	2	7	20 1/2	4	13	25	15 3/4
SVC14	15	2	7	24 3/4	4	13	28	15 3/4
SVC20	21	2	10 1/2	28 1/2	5 1/2	18	37	19 3/4

All dimensions in inches.

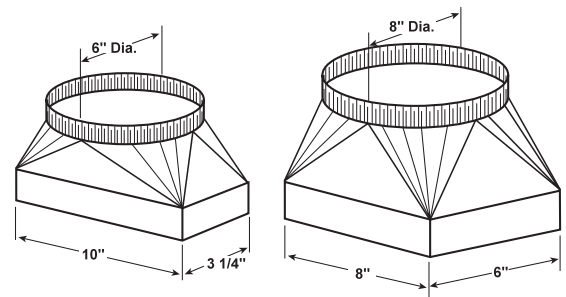
\* See Figure 11 on next page.



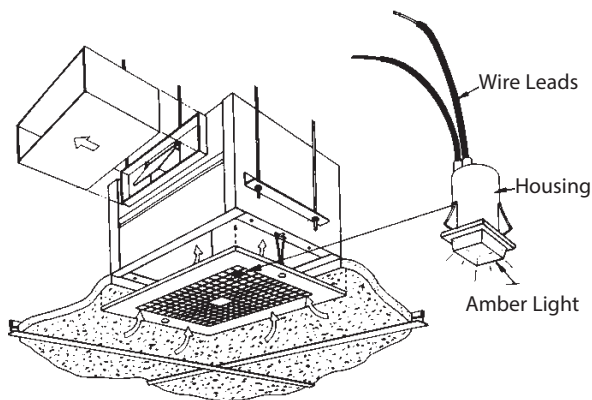
# ACCESSORIES (CONTINUED)



**FIGURE 9: ROOF CAPS (MODELS SL20 AND WC10)**

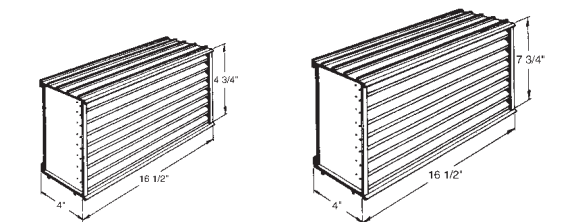


**FIGURE 10: DUCT TRANSITIONS**



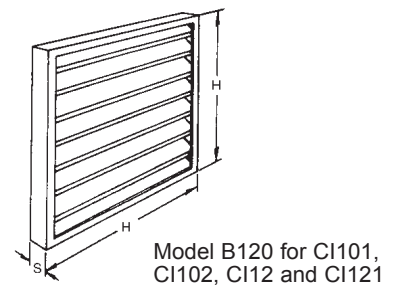
**FIGURE 11: PILOT LIGHT MOUNTS IN GRILLE GRID**

\* See instructions included with pilot light kit for proper wiring and installation.



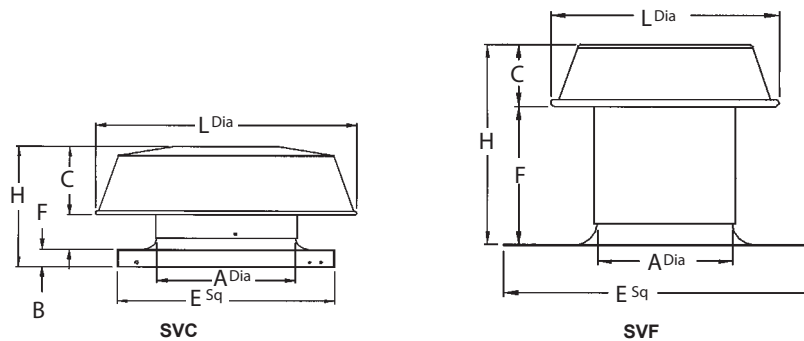
Model B68 for CI3, CI5, CI6, CI8 and CI81

Model B100 for CI10



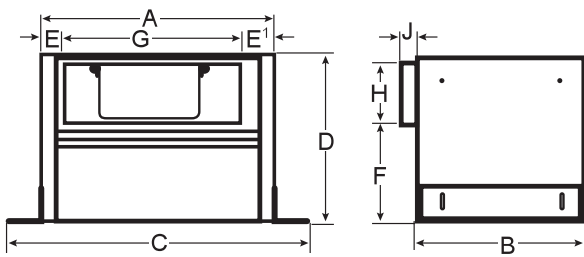
Model B120 for CI101, CI102, CI12 and CI121

**FIGURE 12: BRICK VENTS**

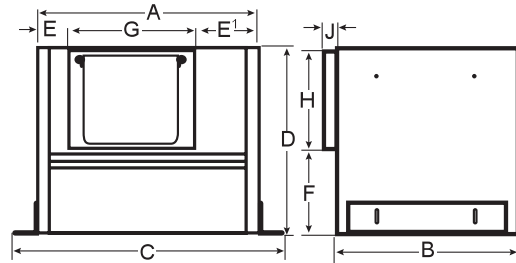


**FIGURE 13: WEATHER CAPS**

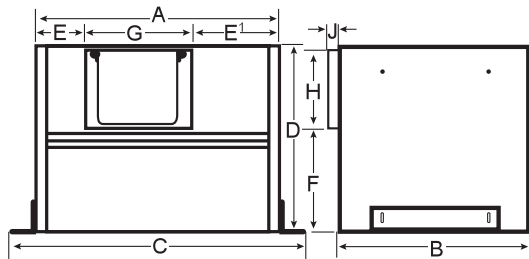
# DIMENSIONS



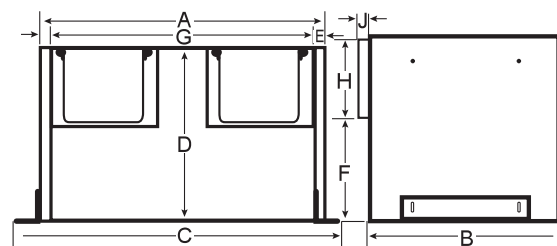
**FIGURE 15**  
MODELS CI3H, CI5H, AND CI6S/H



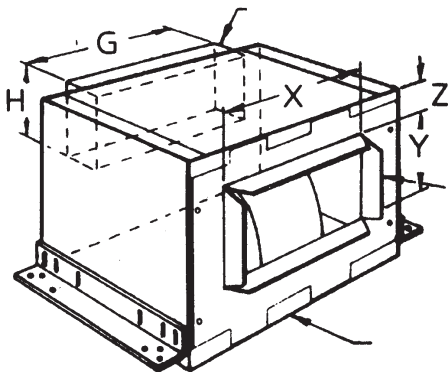
**FIGURE 16**  
MODELS CI8S/H AND CI81S



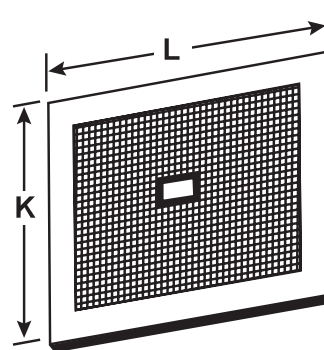
**FIGURE 17**  
MODEL CI10S/H



**FIGURE 18**  
MODELS CI101S, CI102S/H, CI12S/H AND CI121S



**FIGURE 19**

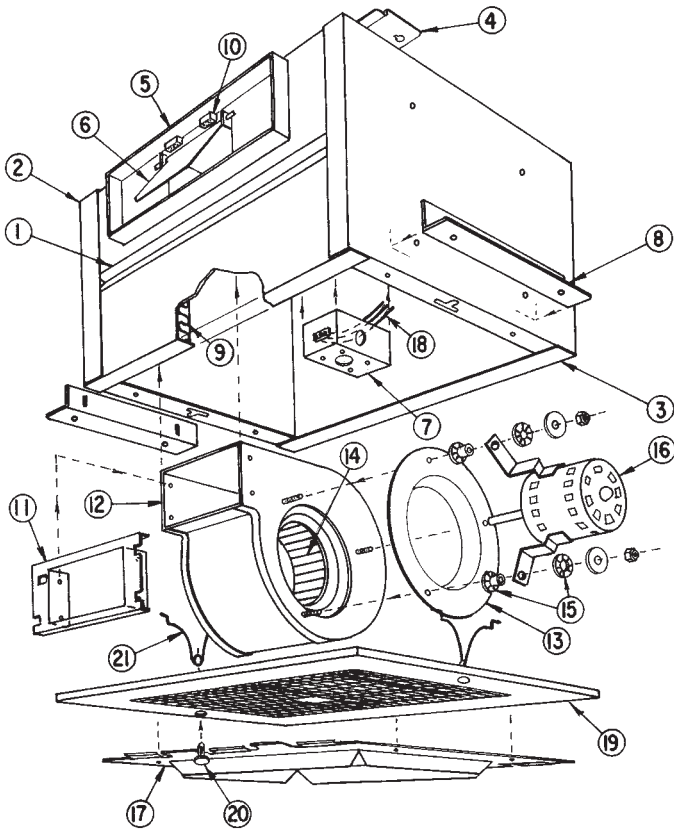


**FIGURE 20**

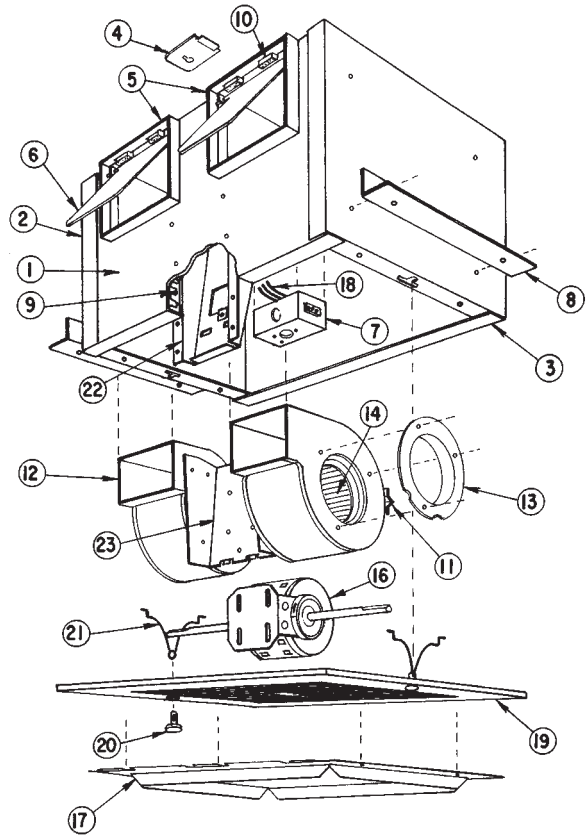
Model	Housing							Outlet Duct			Grille		TDA Intake Duct		
	A	B	C	D	E	E1	F	G	H	J	K	L	X	Y	Z
CI3H, CI5H, CI6S/H	12 1/2	9 1/8	16	9 1/8	1 1/4	1 1/4	5 3/8	10	3 1/4	3/4	11	13 3/4	10	6	1 5/8
CI8S/H, CI81S	13 7/8	11 3/8	17 3/8	11 3/8	1 7/8	4	5 1/4	8	6	3/4	13 1/4	14 7/8	10	8	1 9/16
CI10S/H	18	14 1/8	21 1/2	14 1/8	3 5/8	6 3/8	8	8	6	3/4	15 1/2	19 3/8	14	10	2
CI101S, CI102S/H, CI12S/H, CI121S	24	14 1/8	27 1/2	14 1/8	1	1	8	22	6	3/4	15 1/2	25	20	10	2

All dimensions in inches.

# TYPICAL EXPLODED VIEWS



**FIGURE 21**  
**MODELS C13H, C15H, C16S/H,**  
**C18S/H, C181S, AND C110S/H**



**FIGURE 22**  
**MODELS C1101S, C1102S/H,**  
**C112S/H, AND C1121S**

Item	Description	Item	Description
1	Housing	13	Inlet
2	End	14	Wheel
3	Access Panel	15	Grommets, 2 Part: Male & Female (Single Blower Units only)
4	Wiring Box Cover Plate	16	Motor (115/1/60)
5	Duct Flange	17	TDA Panel (Blank off Plate)(Not shown)
6	Damper Blade	18	Wiring Assembly (2 & 3 Lead Versions) 3M Connector
7	Junction Box	19	Grille
8	Housing Bracket	20	Grille Button
9	Insulation; Parts A, B, & C	21	Grille Spring
10	Damper Stop	22	Box Brace (Double Blower Units only)
11	Blower Bracket	23	Motor Plate (Double Blower Units only)
12	Blower Housing Assembly		

# CONVERSION INSTRUCTIONS

## MODELS: CI3H, CI5S/H, CI8S/H, CI81S, & CI10S/H

### RA / TD CEILING FAN CONVERSIONS

#### Right Angle (RA) to Top Discharge (TD) Conversion

Note: As a standard, RA / TD units are furnished with a Right Angle (RA) discharge as shown in Figure 24.

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 24.

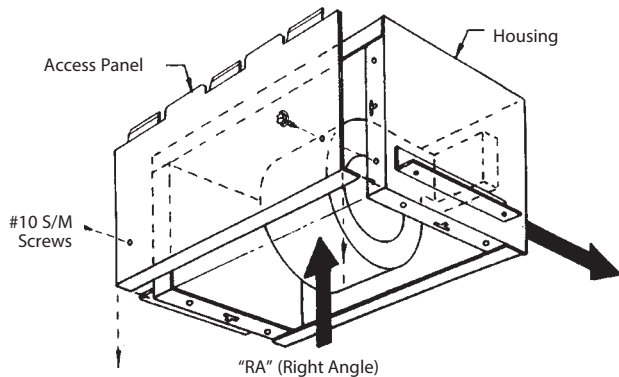


FIGURE 24: "RA" (RIGHT ANGLE)

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 25.

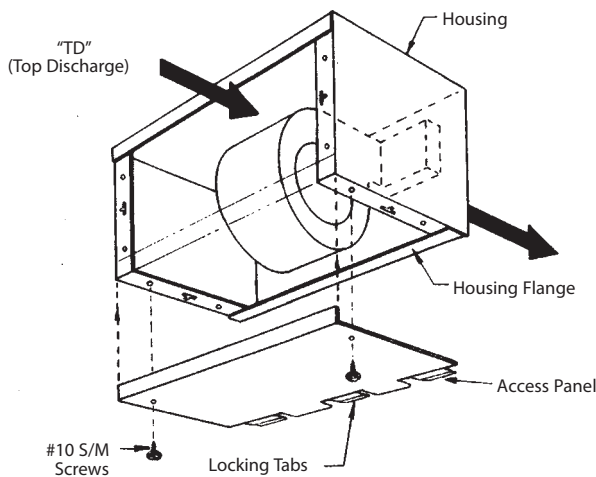


FIGURE 25: "TD" (TOP DISCHARGE)

### TDA IN-LINE FAN CONVERSIONS

#### TDA In-Line to Right Angle Discharge Conversion

Note: As a standard, TDA units are furnished with an In-line discharge as shown in Figure 26.

1. Disassemble the TDA panel from the housing by removing the four #10 sheet metal screws. Remove both panels as shown in figure 26.

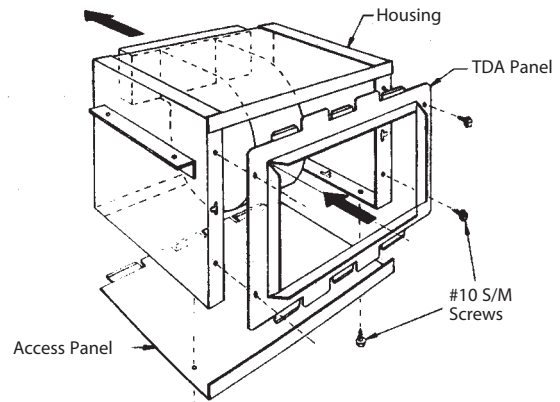


FIGURE 26: "TDA" (IN-LINE)

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 27.

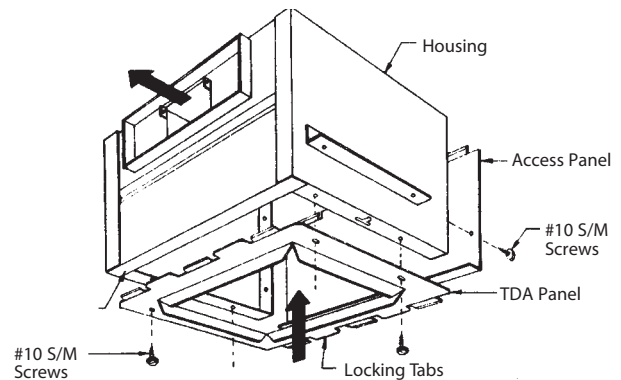


FIGURE 27: "TDA" (RIGHT ANGLE)

# CONVERSION INSTRUCTIONS

## MODELS: CI101S, CI102S, CI102H, & CI12H

### RA/TD CEILING FAN CONVERSIONS

#### Right Angle (RA) to Top Discharge (TD) Conversion

Note: As a standard, RA / TD units are furnished with a Right Angle (RA) discharge as shown in Figure 28.

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 28. Disassemble the access pan panel as shown in figure 28.

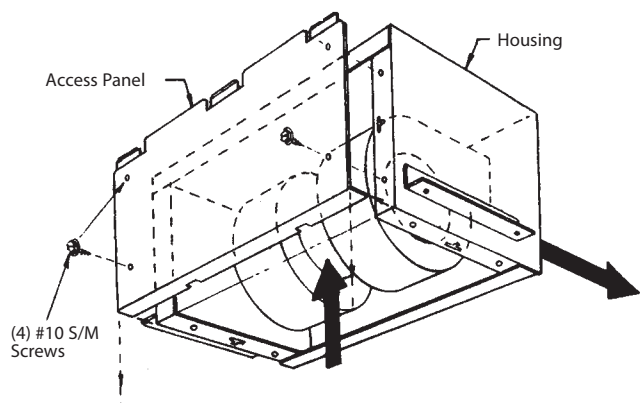


FIGURE 28: "RA" (RIGHT ANGLE)

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 29.

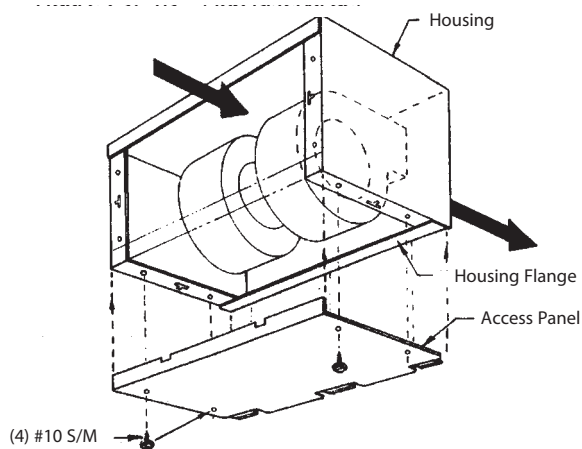


FIGURE 29: "TD" (TOP DISCHARGE)

### TDA IN-LINE FAN CONVERSIONS

#### TDA In-Line to Right Angle Discharge Conversion

Note: As a standard, TDA units are furnished with an In-line discharge as shown in Figure 30.

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 30.

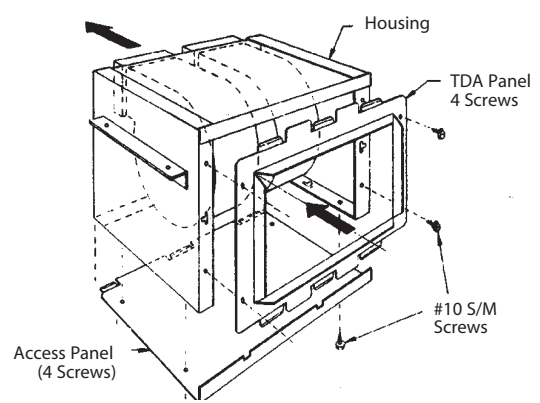


FIGURE 30: "TDA" (IN-LINE)

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 31.

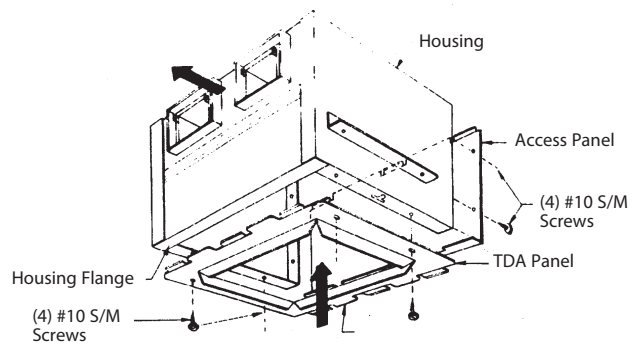


FIGURE 31: "TDA" (RIGHT ANGLE)

# TROUBLESHOOTING CHECKLIST

Symptom	Possible Cause(s)	Corrective Action
Excessive Noise	<ol style="list-style-type: none"> <li>1. Defective or loose motor bearings.</li> <li>2. Ventilator base not securely anchored.</li> <li>3. Loose or unbalanced wheel/propeller.</li> <li>4. Misaligned pulleys or shaft.</li> <li>5. Loose or damaged wheel/propeller.</li> <li>6. Wheel running in wrong direction.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace motor with same frame size, RPM, HP.</li> <li>2. Reset properly.</li> <li>3. Tighten screws, remove build-up, balance wheel/propeller.</li> <li>4. Correct alignment.</li> <li>5. Replace wheel/propeller.</li> <li>6. Reverse direction.</li> </ol>
Fan Inoperative	<ol style="list-style-type: none"> <li>1. Blown fuse or open circuit breaker.</li> <li>2. Loose or disconnected wiring.</li> <li>3. Defective motor.</li> <li>4. Broken belts.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace fuses or circuit breaker.</li> <li>2. Shut off power and check wiring for proper connections.</li> <li>3. Repair or replace motor.</li> <li>4. Replace belts.</li> </ol>
Insufficient Airflow	<ol style="list-style-type: none"> <li>1. Open access doors or loose sections of ducts.</li> <li>2. Clogged filters.</li> <li>3. Operation in wrong direction.</li> <li>4. Insufficient make-up air direction.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for leakage.</li> <li>2. Clean filters.</li> <li>3. Correct rotation of wheel/propeller.</li> <li>4. Add make-up fan or louver opening.</li> </ol>
Motor Overheating	<ol style="list-style-type: none"> <li>1. Belt slippage.</li> <li>2. Over voltage or under voltage.</li> <li>3. Operation in wrong direction.</li> <li>4. Fan speed too high.</li> <li>5. Incorrect motor (service factor 1.0, low ambient temperature)</li> <li>6. Blocked cooling tube or leaky gasket.</li> <li>7. Undersized motor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust tension or replace bad belts.</li> <li>2. Contact power supply company.</li> <li>3. Reverse direction of motor.</li> <li>4. Slow down fan by opening variable pitch pulley on motor shaft.</li> <li>5. Replace motor with correct open, NEMA service factors (1.15 or higher) with 40 degrees ambient.</li> <li>6. Remove blockage and seal cooling tube in place.</li> <li>7. Check motor ratings with catalog speed and air capacity chart.</li> </ol>

*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 YORK® by Johnson Controls 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.**

# NOTES

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