

Quality People. Building Solutions.

Comfort Systems USA (Arkansas), Inc.
P.O. Box 16620
Little Rock, AR 72231
Phone 501-834-3320
Fax 501-834-5416

Date: 12/1/2022
Return Request: 12/11/2022
Project: New Dormitories – Bldg. 6
Supplier: Powers of Arkansas
Manufacturer: Loren Cook
Submittal: Exhaust Fans
Submittal Number: 23 34 23-01
Drawing # and Installation: Mechanical Drawings

ARCHITECT

Stocks Mann Architects
401 W. Capitol, Suite 402
Little Rock, AR 72201
501-370-9207

ENGINEER

Bernhard TME
1 Allied Drive #2600, Building 2
Little Rock, AR 72202
501-666-6776

GENERAL CONTRACTOR

Alessi Keyes Construction
10623 Maumelle Blvd.
N. Little Rock, AR 72113
501-225-6699

MECHANICAL SUBCONTRACTOR

Comfort Systems USA (Arkansas), Inc.
9924 Landers Rd.
N. Little Rock, AR 72117
501-834-3320

Notes:

CSUSA PROJECT NO.

22-102

jon@comfortar.com

ALESSI KEYES CONSTRUCTION
REVIEWED FOR GENERAL COMPLIANCE
WITH CONTRACT DOCUMENTS
Charley Dawson 12/27/2022



IOM

PRODUCT	Exhaust Fans EF-601,602
MANUFACTURER	Loren Cook
JOB NAME	Booneville HDC Building #6
LOCATION	Booneville, AR
ENGINEER	Bernhard TME, LLC
CONTRACTOR	Comfort Systems
DATE	8/2/2023
SUBMITTED BY	Courtney Michael

5440 Northshore Drive - North Little Rock, Arkansas 72118 - Tel: 501.374.5420 Fax: 501.370.9298

This publication contains the installation, operation and maintenance instructions for standard units of the AC & VCR: *Centrifugal Roof and Wall Exhausters*.



Carefully read this publication and any supplemental documents prior to any installation or maintenance procedure.

Loren Cook catalogs, AC and VCR, provide additional information describing the equipment, fan performance, available accessories and specification data.

For additional safety information, refer to AMCA Publication 410-96, *Safety Practices for Users and Installers of Industrial and Commercial Fans*.

All of the publications listed above can be obtained from:

- lorencook.com
- info@lorencook.com
- 417-869-6474 ext. 166

For information and instructions on special equipment, contact Loren Cook Company at 417-869-6474.

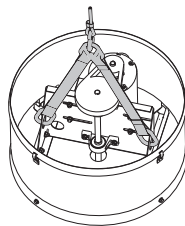
Receiving and Inspection

Carefully inspect the fan and accessories for any damage and shortage immediately upon receipt of fan.

- Turn the wheel by hand to ensure it turns freely and does not bind
- Inspect dampers (if included) for free operation of all moving parts
- Record on the Delivery Receipt any visible sign of damage

Handling

Lift the fan by the lifting lugs provided under top cap. **NOTICE! Never lift by the shaft, motor or housing.**



Lifting Lugs

Storage

If the fan is stored for any length of time prior to installation, store it in its original shipping crate and protect it from dust, debris and the weather.

Installation

If the fan was delivered with the motor unmounted, see the maintenance sections for belt and pulley installation.



ACE



ACRU



ACW

!WARNING

Rotating Parts & Electrical Shock Hazard:

Fans should be installed and serviced by qualified personnel only.

Disconnect electric power before working on unit (prior to removal of guards or entry into access doors).

Follow proper lockout/tagout procedures to ensure the unit cannot be energized while being installed or serviced.

A disconnect switch should be placed near the fan in order that the power can be swiftly cut off, in case of an emergency and in order that maintenance personnel are provided complete control of the power source.

Grounding is required. All field-installed wiring must be completed by qualified personnel. All field installed wiring must comply with National Electric Code (NFPA 70) and all applicable local codes.

Fans and blowers create pressure at the discharge and vacuum at the inlet. This may cause objects to get pulled into the unit and objects to be propelled rapidly from the discharge. The discharge should always be directed in a safe direction and inlets should not be left unguarded. Any object pulled into the inlet will become a projectile capable of causing serious injury or death.

When air is allowed to move through a non-powered fan, the impeller can rotate, which is referred to as windmilling. Windmilling will cause hazardous conditions due to unexpected rotation of components. Impellers should be blocked in position or air passages blocked to prevent draft when working on fans.

Friction and power loss inside rotating components will cause them to be a potential burn hazard. All components should be approached with caution and/or allowed to cool before contacting them for maintenance.

Under certain lighting conditions, rotating components may appear stationary. Components should be verified to be stationary in a safe manner, before they come into contact with personnel, tools or clothing.

Failure to follow these instructions could result in death or serious injury.

The attachment of roof mounted fans to the roof curb as well as the attachment of roof curbs to the building structure must exceed the structural requirements based on the environmental loading derived from the applicable building code for the site. The local code official may require variations from the recognized code based on local data. The licensed engineer of record will be responsible for prescribing the correct attachment based on construction materials, code requirements and environmental effects specific to the installation.

Wall Exhausters

If the fan is a wall mount unit and a grease terminator or grease trough was not purchased, a 1-1/16 inch diameter drain hole should be inserted on the bottom side of the unit for drainage.

If your fan is a wall exhauster with a round base, a mounting template is shipped with the fan. Use the template to locate the necessary lag screws or anchor bolts on the wall. The fan can then be lifted and attached easily. Secure with lag screws, anchor bolts, or other suitable fasteners.

VCR Installation

1. Ensure the fan discharge is a minimum 40 inches above the roof the roof surface and a minimum of 10 foot from any building air intake in order to comply with NFPA 96.
2. Minimum exhaust velocity in the duct should be 1500 FPM in accordance with NFPA 96.
3. If the fan is installed on a surface that is not level, install the fan in a position that places the drain tube at the lowest position.
4. Secure the fan to the roof curb at all four corners using a minimum of four anchor bolts, lag screws or other suitable fastener.

Damper Installation

If your fan is supplied with dampers, follow the directions below.

1. Place the damper inside the curb or inside the duct work. Ensure the damper will open freely for the correct direction of the airflow.
2. Secure to curb at the damper shelf.
3. Drill hole in the curb shelf for conduit needed for motor wiring.
4. Operate the dampers manually to ensure the blades move freely.
5. Install fan over curb while aligning the conduit location with the conduit hole in the curb.

⚠ WARNING

Smoke Control:

Use of any backdraft dampers is not permitted. Fire dampers and/or smoke dampers may be required in a smoke control system. These dampers must meet the requirements determined by the local code authority.

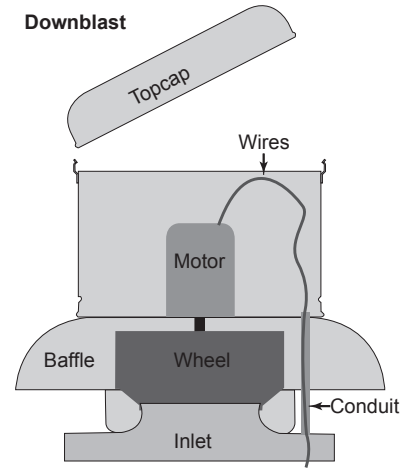
Wiring

ACRU Upblast units have two wiring conduits. The horizontal conduit is directly above the vertical conduit. ACE downblast units have a single vertical conduit.

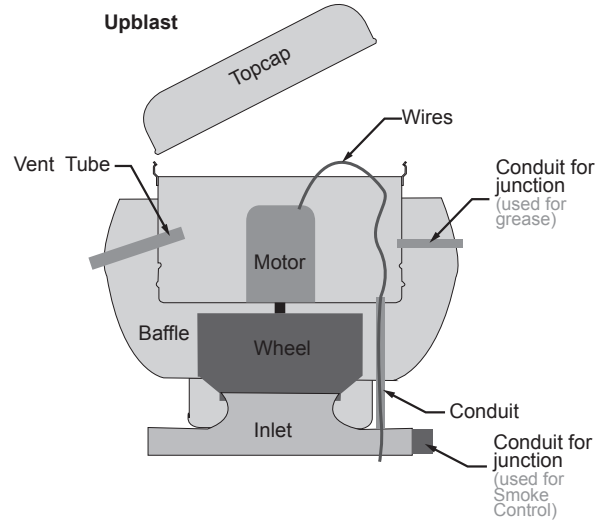
The motor's wiring box is the approved field wiring compartment of the unit for ACE, ACRU and ACW units. The motor's wiring box may be on the side of the motor, the shaft end of the motor or the opposite shaft end of the motor. If an additional field wiring compartment is added, then an approved metal box with cover must be secured to the unit with two screws in order that the box does not rotate. All wiring must be protected from abrasion where they enter and exit. The ground wire must be secured under the green ground screw within the field wiring compartment. See motor wiring diagram, NEC and local code for additional details.

For VCR and ACSC units a separate NEMA 3 field

Downblast



Upblast



For further information refer to the National Electrical Code and the wiring diagram provided on the motor.

Leave enough slack in the wiring to allow for motor movement when adjusting belt tension. Some fractional motors have to be removed in order to make the connection with the terminal box at the end of the motor.

NOTICE! Follow the wiring diagram in the disconnect switch and the wiring diagram provided with the motor. Correctly label the circuit on the main power box and always identify a closed switch to promote safety (i.e., red tape over a closed switch).

1. Remove the top cap which covers the motor assembly by unlatching the snap clips.
2. For internal wiring, run the electrical wire and conduit through the opening drilled in the damper shelf (refer to Damper Installation), then through the wiring conduit in the ventilator base to the motor compartment. For external wiring, run the wires through the horizontal conduit on upblast units, or under top cap in downblast units.
3. Pull the wires through and complete the wiring.

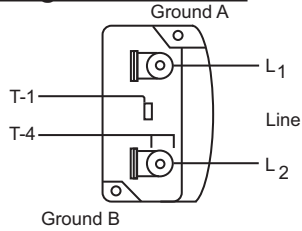
Use the following diagrams to wire the motor except for EC and EC/PM wiring diagrams; see additional supplement.

Wiring Diagrams

Vari-Flow

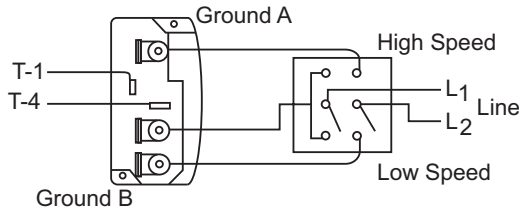
For EC or VF see EC Motor Wiring supplement. For VF2 see PM wiring supplement.

Single Speed, Single Phase Motor



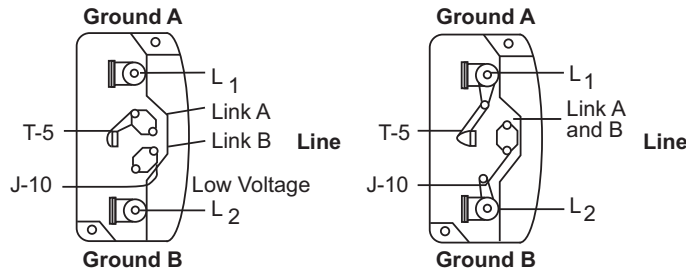
When ground is required, attach to ground A or B with No. 6 thread forming screw. To reverse, interchange T-1 and T-4.

2 Speed, 2 Winding, Single Phase Motor



When ground is required, attach to ground A or B with No. 6 thread forming screw. To reverse, interchange T-1 and T-4 leads.

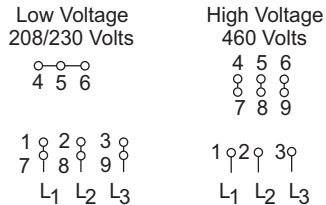
Single Speed, Single Phase, Dual Voltage



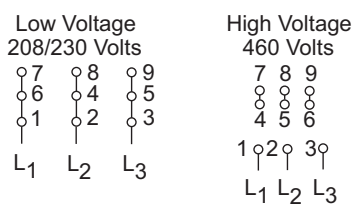
When ground is required, attach to ground A or B with No. 6 thread forming screw. To reverse, interchange T-5 and J-10 leads.

3-Phase, 9 Lead Motor

Y-Connection

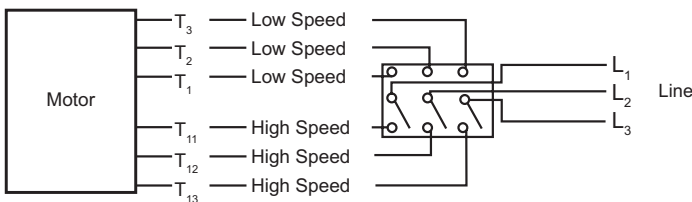


Delta-Connection



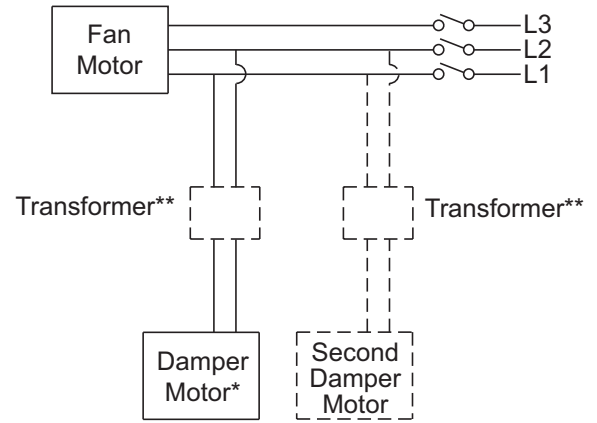
To reverse, interchange any two line leads.

2 Speed, 2 Winding, 3-Phase



To reverse: High Speed: interchange leads T₁₁ and T₁₂; Low Speed: interchange leads T₁ and T₂; Both Speeds: interchange any two line leads.

Typical Damper Motor Schematic

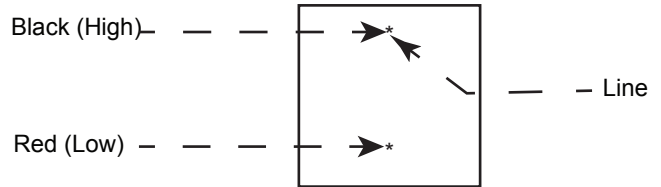


For 3-Phase, damper motor voltage should be the same between L₁ and L₂. For single phase application, disregard L₃.

*Damper motors may be available in 115, 230 and 460 volt models. The damper motor nameplate voltage should be verified prior to connection.

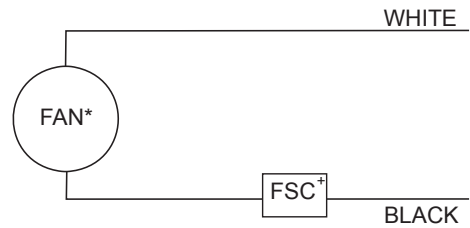
**A transformer may be provided in some installations to correct the damper motor voltage to the specified voltage.

2-Speed PSC Motors

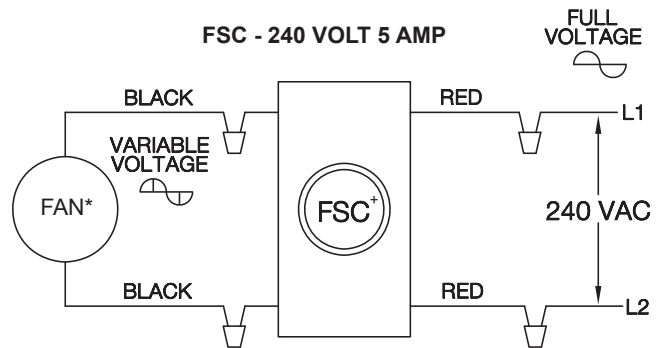


*Cap or insulate unused lead

FSC - 115 VOLT 10 AMP



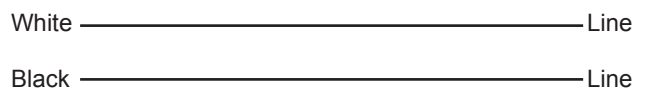
FSC - 240 VOLT 5 AMP



* See wiring diagram for motor wiring.

+ Locate away from heat.

Shade Pole or PSC Motors



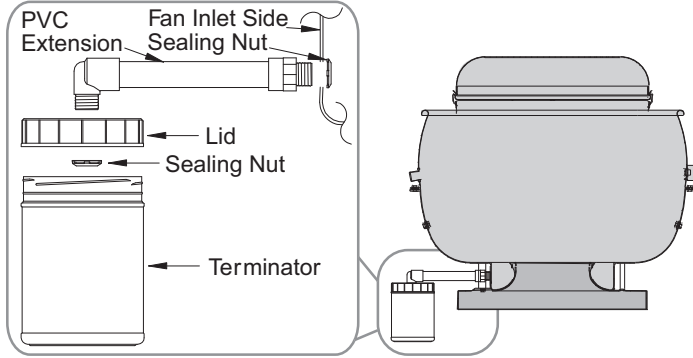
⚠ WARNING

Electrical Shock & Fire Hazard:

Insulate Unused Leads Separately.

Failure to follow these instructions could result in death or serious injury.

Grease Terminator



Final Installation Steps

1. Ensure fasteners and set screws, particularly fan mounting and bearing fasteners are tightened according to the recommended torque table, shown below.

Recommended Torque for Setscrews/Bolts (IN-LB)

Setscrews				Hold Down Bolts	
Size	Key Hex Across Flats	Recommended Torque		Size	Recommended Torque
		Min.	Max.		
#8	5/64"	15	21	3/8"-16	324
#10	3/32"	27	33	1/2"-13	780
1/4	1/8"	70	80	5/8"-11	1440
5/16	5/32"	140	160	3/4"-10	2400
3/8	3/16"	250	290	7/8"-9	1920
7/16	7/32"	355	405	1"-8	2700
1/2	1/4"	560	640	1-1/8"-7	4200
5/8	5/16"	1120	1280	1-1/4"-7	6000
3/4	3/8"	1680	1920	-	-
7/8	1/2"	4200	4800	-	-
1	9/16"	5600	6400	-	-

2. Inspect for correct amperage with an ammeter and correct voltage with a voltmeter.
3. Ensure that all accessories are installed.
4. Test the fan to be sure the rotation is the same as indicated by the arrow marked 'Rotation'.

NOTICE! Do not allow the fan to run in the wrong direction. This will overheat the motor and cause serious damage. For 3-phase motors, if the fan is running in the wrong direction, check the control switch. It is possible to interchange two leads at this location so that the fan is operating in the correct direction.

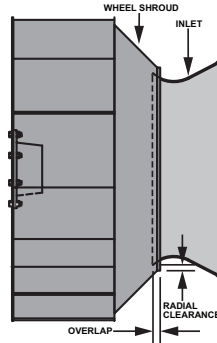
5. Inspect wheel-to-inlet clearance. Wheels may shift in shipment. To realign wheel-to-inlet, shift upper bearing so there is an equal radial clearance between the wheel and inlet.

Wheel-to-Inlet Clearance

The correct wheel-to-inlet clearance is critical to proper fan performance. This clearance should be verified before initial start-up since rough handling during shipment could cause a shift in fan components. Refer to wheel/inlet drawing for correct overlap.

Adjust the overlap by loosening the wheel hub and moving the wheel along the shaft to obtain the correct value.

A uniform radial gap (space between the edge of the cone and the edge of the inlet) is obtained by loosening the upper or lower bearing.



Size	Overlap
60 - 165	3/16"
180 - 245	1/4"
270 - 300	5/16"
330 - 365	3/8"
402	7/16"
445 - 490	1/2"
540	13/16"

Operation

Pre-Start Checks

1. Lock out all the primary and secondary power sources.
2. Inspect and tighten fasteners and setscrews, particularly fan mounting and bearing fasteners Refer to *Torque* chart.
3. Inspect belt tension and pulley alignment. Refer to *Belt and Pulley Installation*.
4. Inspect motor wiring. Refer to *Wiring Installation*.
5. Ensure belt touches only the pulleys.
6. Rotate the wheel to ensure it rotates freely.
7. Ensure fan and ductwork are clean and free of debris.
8. Close and secure all access doors.
9. Restore power to fan.

Start Up

Turn on the fan. (In variable speed units, set the fan to its lowest speed.) Inspect for the following:

- Direction of rotation
- Excessive vibration
- Unusual noise
- Bearing noise
- Improper belt alignment or tension (listen for squealing)
- Improper motor amperage or voltage

⚠ If a problem is discovered, immediately shut the fan off. Lock out all electrical power and check for the cause of the trouble. Refer to the Trouble-shooting section.

Use of Variable Frequency Drives

Motors

Motors that are to be operated using a Variable Frequency Drive (VFD) must be VFD compatible. Motors that are not supplied by Loren Cook Company should have the recommendation of the motor manufacturer for use with a VFD.

Grounding

The fan frame, motor and VFD must be connected to a common earth ground to prevent transient voltages from damaging rotating elements.

Wiring

Line reactors may be required to reduce over-voltage spikes in the motors. The motor manufacturer should be consulted for recommended line impedance and usage of line reactors or filters if the lead length between the VFD and the motor exceeds 10 ft (3m).

Fan

It is the responsibility of the installing body to perform coast-down tests and identify any resonant frequencies after the equipment is fully installed. These resonant frequencies are to be removed from the operating range of the fan by using the “skip frequency” function in the VFD programming. Failure to remove resonant frequencies from the operating range will decrease the operating life of the fan and void the warranty.

Inspection

Inspection of the fan should be conducted at the first 30 minute, 8 hour and 24 hour intervals of satisfactory operation. During the inspections, stop the fan and inspect as instructed.

30 Minute Interval

Inspect bolts, setscrews, and motor mounting bolts. Adjust and tighten as necessary.

8 Hour Interval

Inspect belt alignment and tension. Adjust and tighten as necessary.

24 Hour Interval

Inspect belt tension. Adjust and tighten as necessary

Year-round Inspection

Establish a schedule for inspecting all parts of the fan. The frequency of inspection depends on the operating conditions and location of the fan. Regular inspections may be required per local codes. Contact the local code authority for inspection requirements.

All Units

It is recommended the following inspections be conducted twice per year

- Inspect bolts and setscrews for tightness. Tighten as necessary. Refer to *Recommended Torque* chart
- Inspect belt wear and alignment. Replace worn belts with new belts and adjust alignment as needed. Refer to *Belt and Pulley Installation*, page 3
- Bearings should be inspected as recommended in the *Conditions Chart*
- Inspect for cleanliness. Clean exterior surfaces only. Removing dust and grease on motor housing assures proper motor cooling

Units exhausting corrosive or contaminated air

Inspect fans exhausting corrosive or contaminated air within the first month of operation. Fans exhausting contaminated air should be inspected every three months.



NOTICE! ACSC fan is intended for general ventilation, and is UL Listed for Smoke Control Systems. The fan should not be used to exhaust corrosive or contaminated air

VCR & ACRU

Regular inspections of the Grease Terminator 2 are recommended. Depending on the amount of grease discharged through the fan, the Grease Terminator 2 should be changed every 30 to 45 days to ensure proper operation. Any buildup of grease is easily seen during a visual inspection of the clear canister. However, if the Grease Terminator 2 becomes saturated, grease will no longer be absorbed.

Maintenance

Fan Bearings



NOTICE! The fan bearings are provided prelubricated. Any specialized lubrication instructions on fan labels supersedes information provided herein. Bearing grease is a petroleum lubricant in a lithium base conforming to an NLGI #2 consistency. If user desires to utilize another type of lubricant, they take responsibility for flushing bearings and lines, and maintaining a lubricant that is compatible with the installation.

An NLGI #2 grease is a light viscosity, low-torque, rust-inhibiting lubricant that is water resistant. Its temperature range is from -30°F to 200°F and capable of intermittent highs of 250°F.

Relubrication Intervals

RPM	Temp °F	Greasing Interval
Up to 1000	-30 to 120	6 months
	120 to 200	2 months
1000 to 3000	-30 to 120	3 months
	120 to 200	1 month
Over 3000	-30 to 120	1 month
	120 to 200	2 weeks
Any Speed	< -30	Consult Factory
Any Speed	> 200	1 week

For moist or otherwise contaminated installations; divide the interval by a factor of three. For vertical shaft installations divide the interval by a factor of two.

For best results, lubricate the bearing while the fan is in operation. Pump grease in slowly until a slight bead forms around the bearing seals. Excessive grease can damage seal and reduce life through excess contamination and/or loss of lubricant.

In the event that the bearing cannot be seen, use no more than three injections with a hand operated grease gun.

Motor Bearings

Motors are provided with prelubricated bearings. Any lubrication instructions shown on the motor nameplate supersede instructions below.

Motor bearings without provisions for relubrication should operate up to 10 years under normal conditions with no maintenance. In severe applications, high temperatures or excessive contaminants, it is advisable to have the maintenance department disassemble and lubricate the bearings after three years of operation to prevent interruption of service. For motors with provisions for relubrication, follow intervals of the table.



NOTICE! Motors are provided with a polyurea mineral oil NGLI #2 grease. All additions to the motor bearings are to be with a compatible grease such as Exxon Mobil Polyrex EM and Chevron SRI. To inspect, clean or repair, refer to the diagram below and follow these steps:

Service Conditions	NEMA Frame Size					
	Up to & Including 184T		213T - 365T		404T and Larger	
	1800 RPM and less	Over 1800 RPM	1800 RPM and less	Over 1800 RPM	1800 RPM and less	Over 1800 RPM
Standard	3 yrs	6 months	2 yrs	6 months	1 yr	3 months
Severe	1 yr	3 months	1 yr	3 months	6 months	1 month

The above intervals should be reduced to half for vertical shaft installations.

Motor Services

Should the motor prove defective within a one-year period, contact your local Loren Cook representative or your nearest authorized electric motor service representative.

Changing Shaft Speed

Belt driven ventilators (5HP or less) are equipped with variable pitch pulleys. To change fan speed, perform the following

1. Remove belt (see pulleys/belts for details).
2. Loosen setscrew on driver (motor) pulley and remove key, if equipped.
3. Turn the pulley rim to open or close the groove facing. If the pulley has multiple grooves, all must be adjusted to the same width.
4. After adjustment, reinstall belt and inspect for proper belt tension.

Maximum RPM

Size	ACE		ACRU, ACSC, ACW & VCR				
	Standard	Reinforced	Standard	Reinforced	Standard	HP Reinforced	XP
60	1981	-	-	-	-	-	-
70	1941	-	-	-	-	-	-
80	1806	-	-	-	-	-	-
100	2013	-	2002	-	-	-	-
120	1669	-	1671	-	-	-	-
135	1574	-	1574	-	-	-	-
150	1519	-	1520	-	1952	-	-
165	1296	-	1295	-	1728	-	2508
180	1513	-	1546	-	1829	-	2396
195	1348	-	1353	-	1570	-	2100
210	1190	-	1205	-	1626	-	2126
225	1043	-	1086	-	1435	-	1879
245	885	-	901	-	1185	1234	1616
270	752	-	766	-	1025	1049	1656
300	837	861	837	877	980	1046	1391
330	716	734	716	748	830	912	1182
365	624	648	624	659	735	872	1132
402	539	550	539	560	-	-	-
445	463	465	463	473	-	-	-
490	360	396	360	403	-	-	-
540	347	401	-	-	-	-	-

Speed Reduction:

Open the pulley in order that the belt rides deeper in the groove (smaller pitch diameter).

Speed Increase:

Close the pulley in order that the belt rides higher in the groove (larger pitch diameter). Ensure that the RPM limits of the fan and the horsepower limits of the motor are maintained.

Replace Pulleys / Belts

1. Clean the motor and fan shafts.
2. Loosen the motor plate mounting bolts to relieve the belt tension. Remove the belt.
3. Loosen the pulley setscrews and remove the pulleys from the shaft. If excessive force is required to remove the pulleys, a three-jaw puller can be used. This tool, however, can easily warp a pulley. If the puller is used, inspect the trueness of the pulley after it is removed from the shaft. The pulley will need replacement if it is more than 0.020 inch out of true.
4. Clean the bores of the pulleys and place a light coat of oil on the bores.
5. Remove any grease, rust or burrs from pulleys.
6. Place the fan pulley on the fan shaft and the motor pulley on the motor shaft. Damage to the pulleys can occur when excessive force is used in placing the pulleys on their respective shafts.
7. After the pulleys have been correctly placed back onto their shafts, tighten the pulley setscrews.

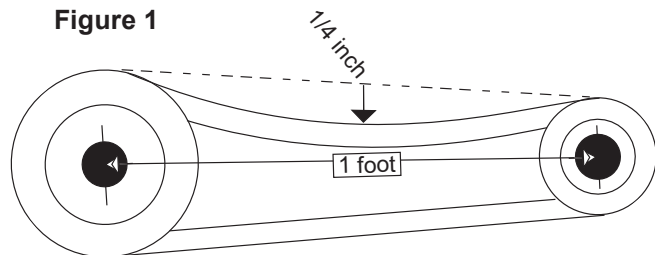
Belt tension

Belt tension is determined by the sound of the belts when the fan is first started. The belts will produce a loud squeal, which dissipates after the fan is operating at full capacity. If belt tension is too tight or too loose, lost efficiency and damage may occur.

Do not change the pulley pitch diameter to change tension. The change will result in a different fan speed.

For units shipped with automatic belt tensioners please refer to the *Automatic Belt Tensioner Supplement I*.

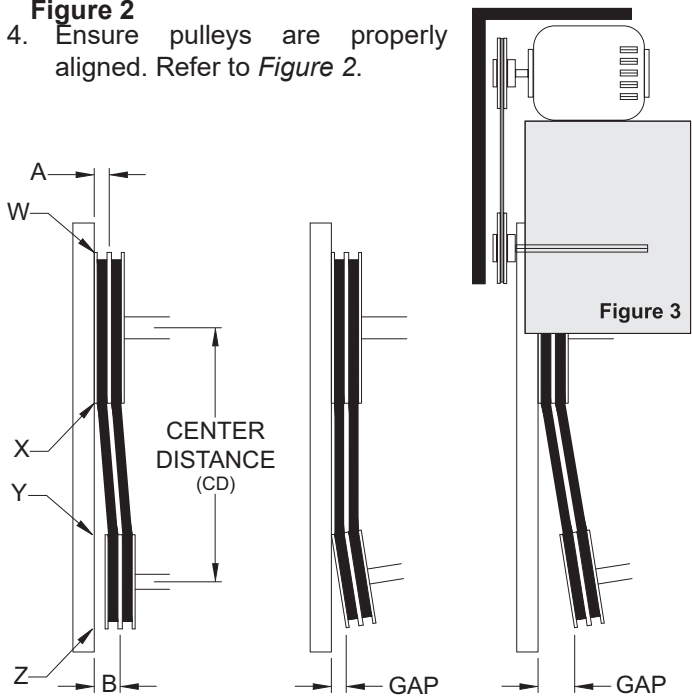
Figure 1



1. Loosen motor plate adjustment bolts and slide motor plate so that belts easily slip into the grooves on the pulleys. Never pry, roll, or force the belts over the rim of the pulley.
2. Slide motor plate until proper tension is reached. For proper tension, a deflection of approximately 1/4" per foot of center distance should be obtained by firmly pressing the belt. Refer to *Figure 1*.
3. Lock the motor plate adjustment bolts in place.

Figure 2

4. Ensure pulleys are properly aligned. Refer to *Figure 2*.



Center Distance	Maximum Gap
Up through 12"	1/16"
12 through 48"	1/8"
Over 48"	1/4"

Belt Alignment

Pulley alignment is adjusted by loosening the motor pulley setscrew and by moving the motor pulley on the motor shaft. *Figure 2* indicates where to measure the allowable gap for the drive alignment tolerance. All contact points (indicated by WXYZ) are to have a gap less than the tolerance shown in the table. When the pulleys are not the same width, the allowable gap must be adjusted by half of the difference in width. *Figure 3* illustrates using a carpenter's square to adjust the position of the motor pulley until the belt is parallel to the longer leg of the square.

Bearing Replacement

The fan bearings are pillow block type ball bearings.

1. Remove the old bearing.
2. Remove any burrs from the shaft by sanding.
3. Slide new bearings onto the shaft to the desired location and loosely mount bearings onto the bearing support. Bearing bolts and setscrews should be loose enough to allow shaft positioning.
4. Correctly position the wheel and tighten the bearing bolts securely to the bearing support.
5. Align setscrews bearing to bearing and secure tightly to the shaft.



NOTICE! Never tighten both pairs of setscrews before securing bearing mounting bolts. This may damage the shaft.

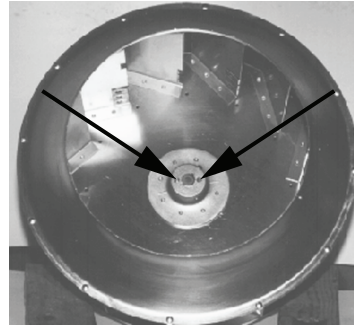
6. Inspect the wheel position again. If necessary, readjust by loosening the bearing bolts and setscrews and repeat from step 3.

Wheel Replacement

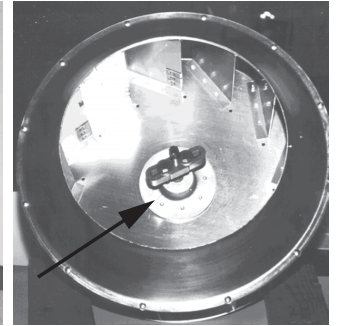
1. Drill two holes approximately centered between the shaft and the edge of the hub outer dimension with the

following dimensions:

- 1/4" diameter
 - 3/8" to 1/2" deep
 - 180° apart in face of hub
2. Tap 1/4" holes to 5/16" thread with the 5/16" hole tap. Do not drill or tap any larger than recommended.
 3. Screw the puller arms into the tapped holes full depth of threads (3/8" to 1/2" approximately). Align center of puller with center of shaft. Make certain all setscrews in hub (normally a quantity of two) are fully removed. Work puller slowly to back wheel off the shaft.



Drilled Hole Location



Wheel Puller

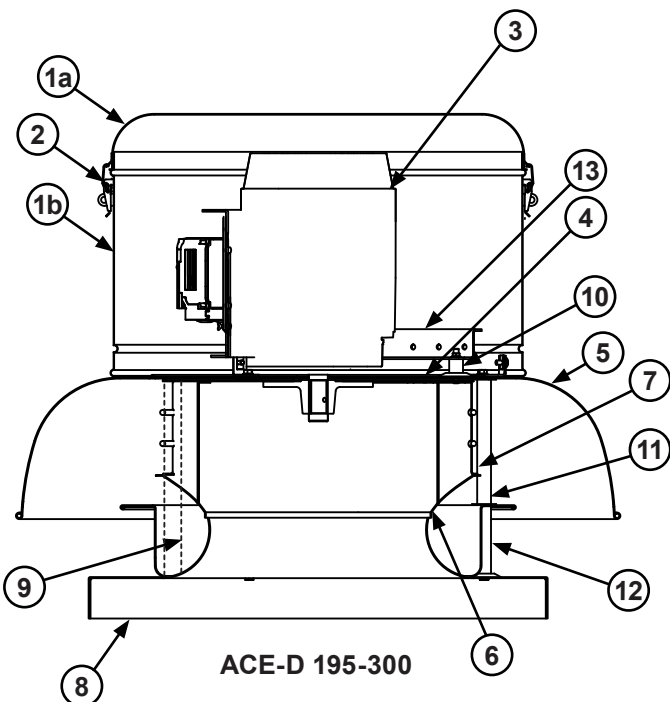
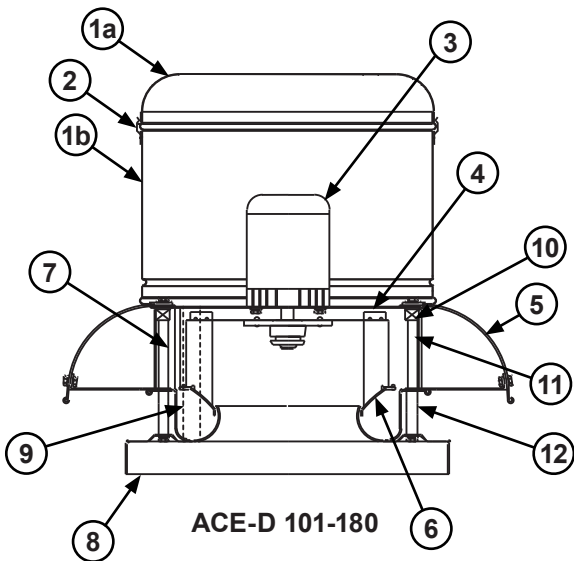
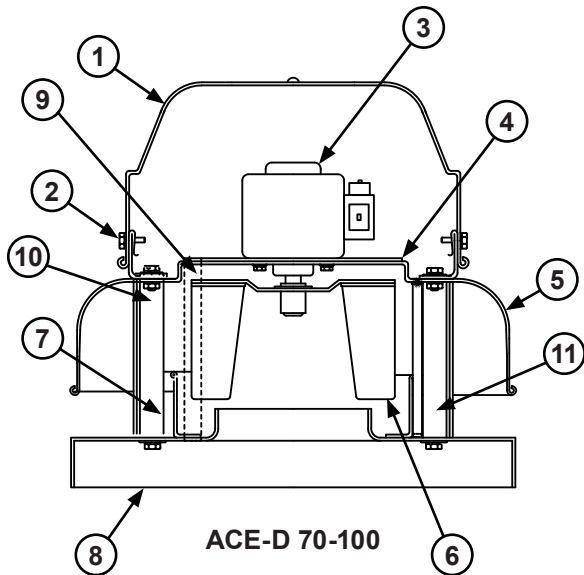
Recommended Puller:

Lisle No. 45000 Steering Wheel Puller. This puller is available at most automotive parts retail outlets.

Troubleshooting

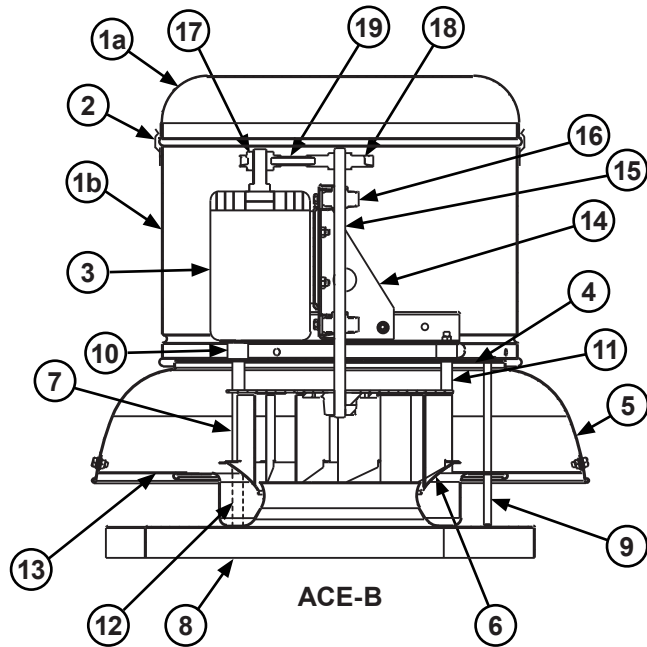
Problem and Potential Cause
<p>Low Capacity or Pressure:</p> <ul style="list-style-type: none"> • Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor or belt drive assembly. • Poor fan inlet conditions. There should be a straight clear duct at the inlet. • Improper wheel alignment.
<p>Excessive Vibration and Noise:</p> <ul style="list-style-type: none"> • Damaged or unbalanced wheel. • Belts too loose; worn or oily belts. • Speed too high. • Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor or belt drive assembly. • Bearings need lubrication or replacement. • Fan surge.
<p>Overheated Motor:</p> <ul style="list-style-type: none"> • Motor improperly wired. • Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor or belt drive assembly. • Cooling air diverted or blocked. • Improper inlet clearance. • Incorrect fan RPMs. • Incorrect voltage.
<p>Overheated Bearings:</p> <ul style="list-style-type: none"> • Improper bearing lubrication • Excessive belt tension

ACE-D Parts



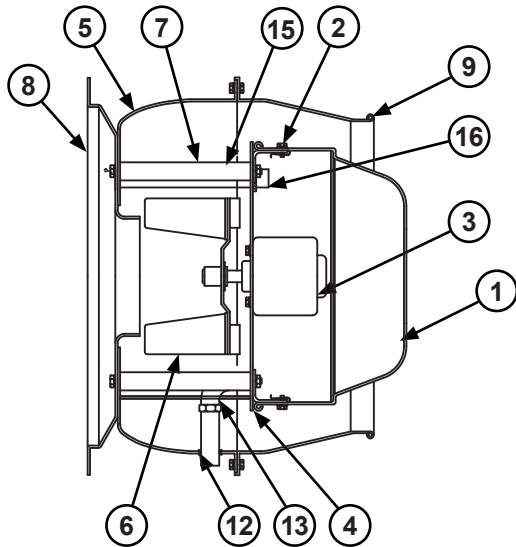
Item #	ACE-D Description			
	70-100	101-180	150-245	270-300
1a	Top Cap	Top Cap Lid	Top Cap Lid	Top Cap Lid
1b		Top Cap Cylinder	Top Cap Cylinder	Top Cap Cylinder
2	Bolts (4)	Top Cap Clip (4)	Top Cap Clip (4)	Top Cap Clip (4)
3	Motor	Motor	Motor	Motor
4	Motor Plate	Motor Plate	Motor Plate	Motor Plate
5	Baffle	Baffle	Baffle	Baffle
6	Wheel Assembly	Wheel Assembly	Wheel Assembly	Wheel Assembly
7	Bird Screen	Bird Screen	Bird Screen	Bird Screen
8	Base	Base	Base	Base
9	Conduit	Conduit	Conduit	Conduit
10	Spacer (4)	Spacer (4)	Spacer (4)	Spacer (4)
11	Post (4)	Upper Post (4)	Upper Post (4)	Upper Post (8)
12	-	Lower Post (4)	Lower Post (4)	Lower Post (8)
13	-	-	Power Assembly	Power Assembly

ACE-B Parts



Item #	ACE-B Parts Description			
	60-100	120-245	270-300	330-540
1a	Top Cap Lid	Top Cap Lid	Top Cap Lid	Top Cap Lid
1b	Top Cap Cylinder	Top Cap Cylinder	Top Cap Cylinder	Top Cap Cylinder
2	Top Cap Clip (4)	Top Cap Clip (4)	Top Cap Clip (8)	Top Cap Clip (8)
3	Motor	Motor	Motor	Motor
4	-	Motor Plate	Motor Plate	Motor Plate
5	Baffle	Baffle	Baffle	Baffle
6	Wheel Assembly	Wheel Assembly	Wheel Assembly	Wheel Assembly
7	Bird Screen	Bird Screen	Bird Screen	Bird Screen
8	Base	Base	Base	Base
9	Conduit	Conduit	Conduit	Conduit
10	Spacer (4)	Spacer (4)	Spacer (4)	Spacer (4)
11	Upper Post (4)	Upper Post (4)	Upper Post (8)	Upper Post (8)
12	Lower Post (4)	Lower Post (4)	Lower Post (8)	Lower Post (8)
13	-	-	-	Brace (8)
14	Power Assembly	Power Assembly	Power Assembly	Power Assembly
15	Shaft	Shaft	Shaft	Shaft
16	Bearing	Bearing	Bearing	Bearing
17	Drive Sheave	Drive Sheave	Drive Sheave	Drive Sheave
18	Driven Sheave	Driven Sheave	Driven Sheave	Driven Sheave
19	Belt Set	Belt Set	Belt Set	Belt Set

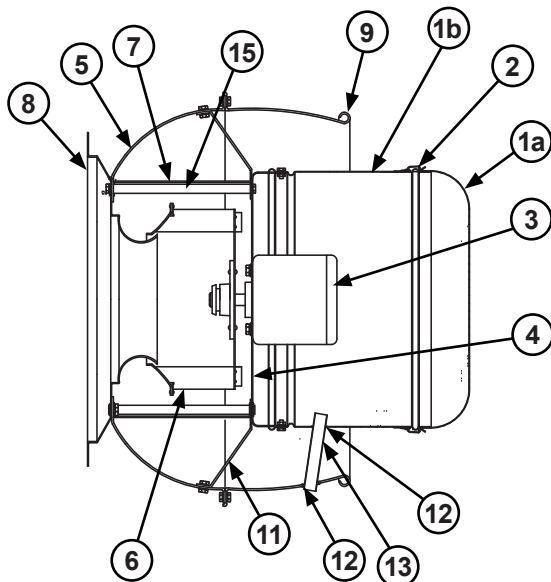
ACW-D Parts



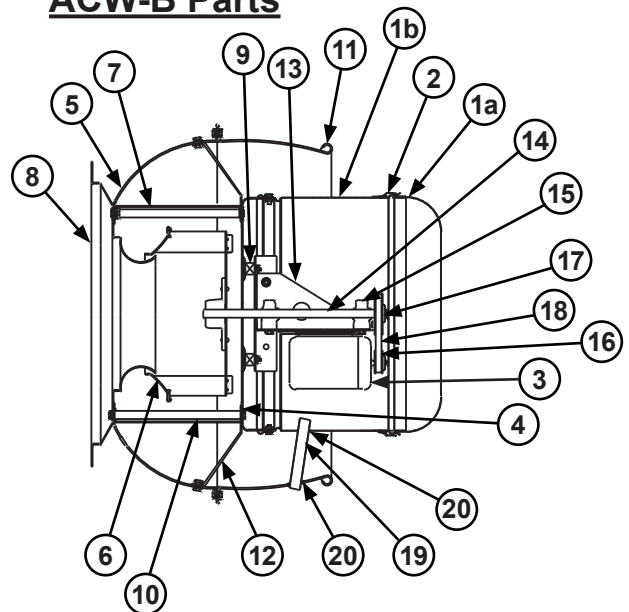
ACW-D 70-100

Item #	ACW-D Description		
	70-100	101-195	150-245
1a	Top Cap	Top Cap Lid	Top Cap Lid
1b		Top Cap Cylinder	Top Cap Cylinder
2	Bolts (4)	Top Cap Clip (4)	Top Cap Clip (4)
3	Motor	Motor	Motor
4	Motor Plate	Motor Plate	Motor Plate
5	Baffle	Baffle	Baffle
6	Wheel Assembly	Wheel Assembly	Wheel Assembly
7	Bird Screen	Bird Screen	Bird Screen
8	Wall Flange	Wall Flange	Wall Flange
9	Windband	Windband	Windband
10	-	Spacer (4)	Spacer (8)
11	-	Brace (4)	Brace (4)(150-195) Brace (8)(210-245)
12	Grommet (2)	Grommet (2)	Grommet (2)
13	Cooling Tube-Angled	Cooling Tube	Cooling Tube
14	-	-	Power Assembly
15	Post (4)	Post (4)	Post (4) 150-195 Post (8) 210-245
16	Conduit	-	-

ACW-B Parts

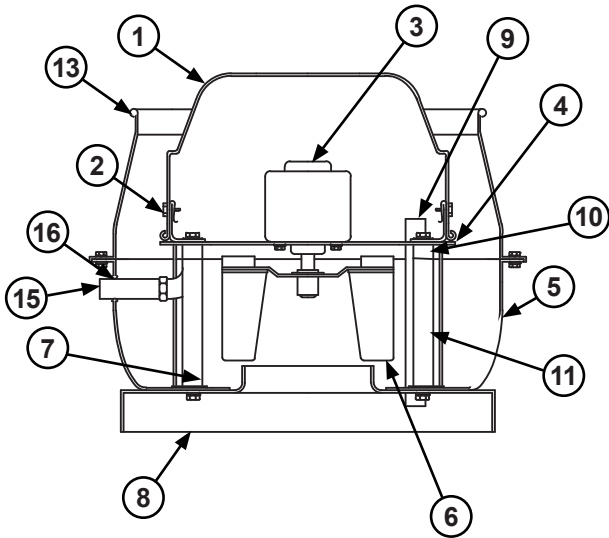


ACW-D 101-195
C-Face Mount



Item #	ACW-B Parts Description		
	100	120-165	180-245
1a	Top Cap Lid	Top Cap Lid	Top Cap Lid
1b	Top Cap Cylinder	Top Cap Cylinder	Top Cap Cylinder
2	Top Cap Clip (4)	Top Cap Clip (4)	Top Cap Clip (8)
3	Motor	Motor	Motor
4	Motor Plate	Motor Plate	Motor Plate
5	Baffle	Baffle	Baffle
6	Wheel Assembly	Wheel Assembly	Wheel Assembly
7	Bird Screen	Bird Screen	Bird Screen
8	Wall Flange	Wall Flange	Wall Flange
9	Spacer (4)	Spacer (4)	Spacer (4)
10	Post (4)	Post (4)	Post (8)
11	Wind Band	Wind Band	Wind Band
12	-	Brace (4)	Brace (8)
13	Power Assembly	Power Assembly	Power Assembly
14	Shaft	Shaft	Shaft
15	Bearing (2)	Bearing (2)	Bearing (2)
16	Drive Sheave	Drive Sheave	Drive Sheave
17	Driven Sheave	Driven Sheave	Driven Sheave
18	Belt Set	Belt Set	Belt Set
19	Vent Tube	Vent Tube	Vent Tube
20	Grommet (2)	Grommet (2)	Grommet (2)

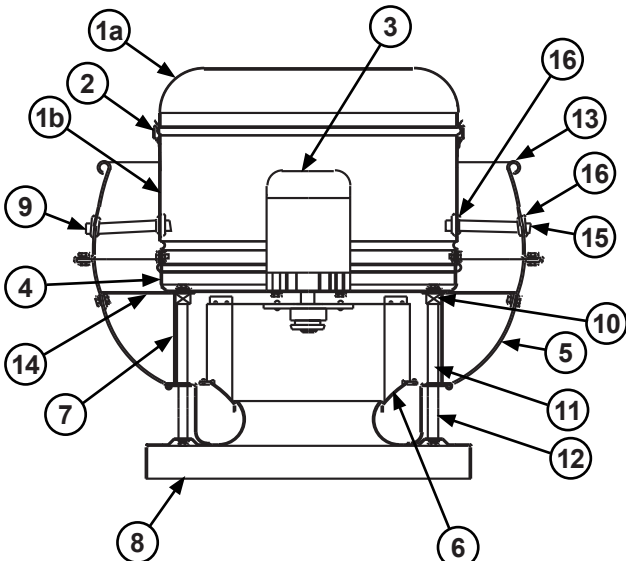
ACRU-D Parts



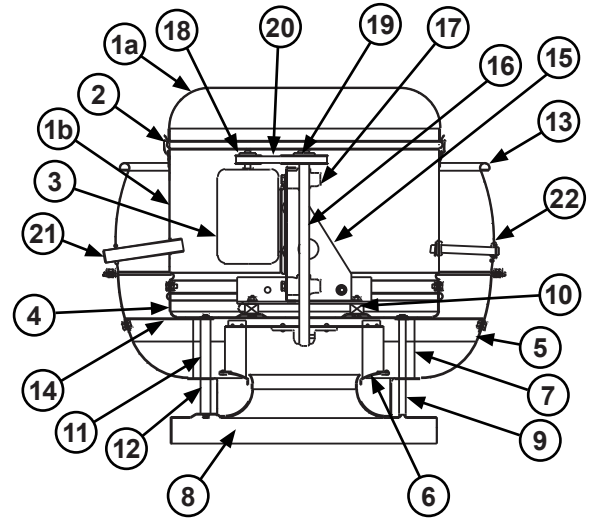
ACRU-D Sizes 70-100

Item #	ACRU-D Parts Description		
	70-100	101-195	150-300
1a	Top Cap	Top Cap Lid	Top Cap Lid
1b	-	Top Cap Cylinder	Top Cap Cylinder
2	Bolts (4)	Top Cap Clip (4)	Top Cap Clip (8)
3	Motor	Motor	Motor
4	Motor Plate	Motor Plate	Motor Plate
5	Baffle	Baffle	Baffle
6	Wheel Assembly	Wheel Assembly	Wheel Assembly
7	Bird Screen	Bird Screen	Bird Screen
8	Base	Base	Base
9	Conduit	Conduit	Conduit
10	Spacer (4)	Spacer (4)	Spacer (8)
11	Post (4)	Upper Post (4)	Upper Post (8)
12	-	Lower Post (4)	Lower Post (8)
13	Wind Band	Wind Band	Wind Band
14	-	Brace (4)	Brace (8)
15	Vent Tube-Angled	Vent Tube-Angled	Vent Tube-Angled
16	Grommet (2)	Grommet (2)	Grommet (2)

ACRU-B Parts

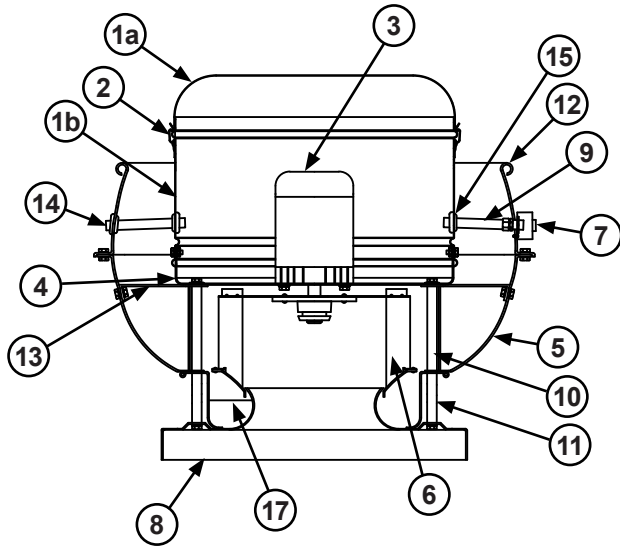


ACRU-D Sizes 101-195 C-Face

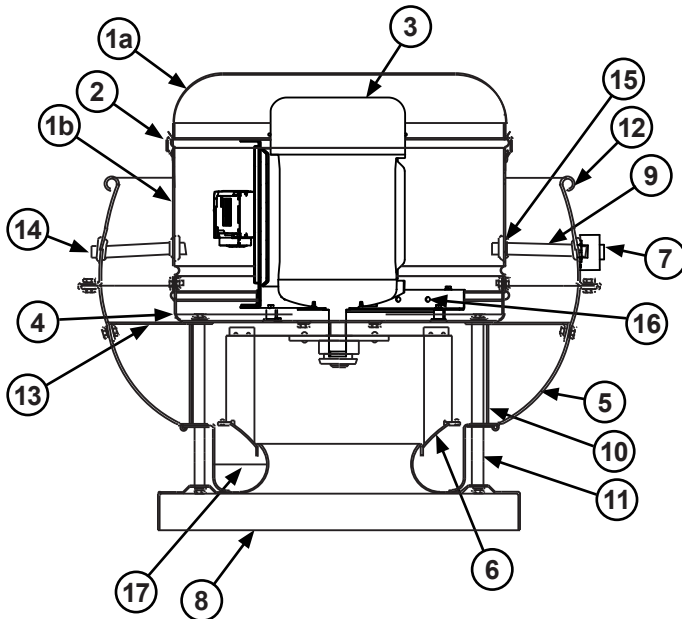


Item #	ACRU-B Parts Description		
	100	120-245	270-490
1a	Top Cap Lid	Top Cap Lid	Top Cap Lid
1b	Top Cap Cylinder	Top Cap Cylinder	Top Cap Cylinder
2	Top Cap Clip (4)	Top Cap Clip (4)	Top Cap Clip (8)
3	Motor	Motor	Motor
4	Motor Plate	Motor Plate	Motor Plate
5	Baffle	Baffle	Baffle
6	Wheel Assembly	Wheel Assembly	Wheel Assembly
7	Bird Screen	Bird Screen	Bird Screen
8	Base	Base	Base
9	Conduit	Conduit	Conduit
10	Spacer (4)	Spacer (4)	Spacer (8)
11	Upper Post (4)	Upper Post (4)	Upper Post (8)
12	Lower Post (4)	Lower Post (4)	Lower Post (8)
13	Wind Band	Wind Band	Wind Band
14	-	Brace (4)	Brace (8)
15	Power Assembly	Power Assembly	Power Assembly
16	Shaft	Shaft	Shaft
17	Bearing (2)	Bearing (2)	Bearing (2)
18	Drive Sheave	Drive Sheave	Drive Sheave
19	Driven Sheave	Driven Sheave	Driven Sheave
20	Belt Set	Belt Set	Belt Set
21	Vent Tube	Vent Tube	Vent Tube
22	Grommet (2)	Grommet (2)	Grommet (2)

VCR-D Parts



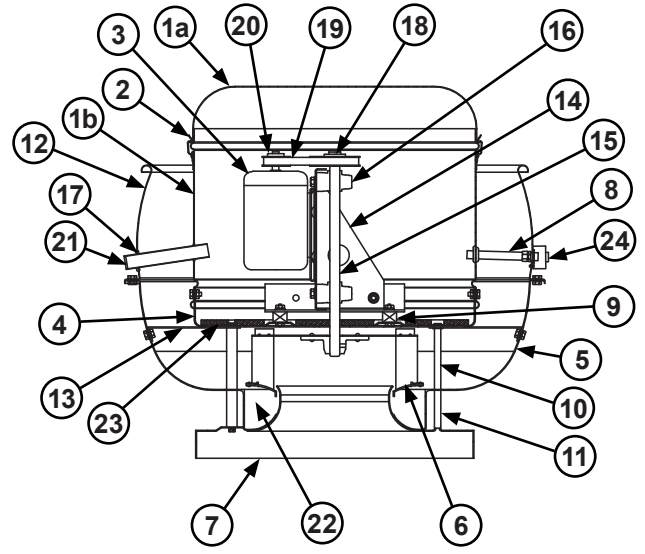
VCR-D Sizes 70-195



VCR-D Sizes 210-300

Item #	VCR-D Parts Description	
	101-195	210-300
1a	Top Cap Lid	Top Cap Lid
1b	Top Cap Cylinder	Top Cap Cylinder
2	Top Cap Clip (4)	Top Cap Clip (4) (210-245) Top Cap Clip (8) (270-300)
3	Motor	Motor
4	Motor Plate	Motor Plate
5	Baffle	Baffle
6	Wheel Assembly	Wheel Assembly
7	NEMA 3 Junction Box	NEMA 3 Junction Box
8	Base	Base
9	Conduit	Conduit
10	Upper Post (4)	Upper Post (4) (210-245) Upper Post (8) (270-300)
11	Lower Post (4)	Lower Post (8)
12	Wind Band	Wind Band
13	Brace (4)	Brace (8)
14	Vent Tube	Vent Tube
15	Grommet (2)	Grommet (2)
16	-	Power Assembly
17	Cut Off*	Cut Off*

VCR-B Parts

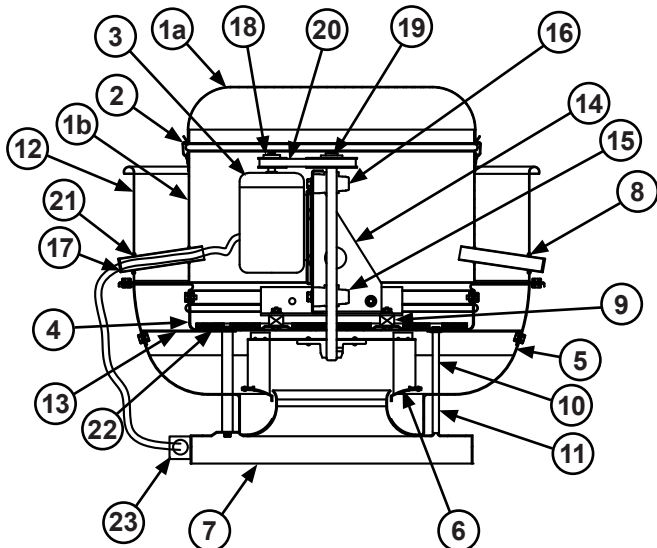


VCR-B Sizes 100-490

Item #	VCR-B Parts Description		
	100-225	245	270-490
1a	Top Cap Lid	Top Cap Lid	Top Cap Lid
1b	Top Cap Cylinder	Top Cap Cylinder	Top Cap Cylinder
2	Top Cap Clip (4)	Top Cap Clip (4)	Top Cap Clip (8)
3	Motor	Motor	Motor
4	Motor Plate	Motor Plate	Motor Plate
5	Baffle	Baffle	Baffle
6	Wheel Assembly	Wheel Assembly	Wheel Assembly
7	Base	Base	Base
8	Conduit	Conduit	Conduit
9	Spacer (4)	Spacer (4)	Spacer (4)
10	Upper Post (4)	Upper Post (4)	Upper Post (8)
11	Lower Post (4)	Lower Post (4)	Lower Post (8)
12	Wind Band	Wind Band	Wind Band
13	Brace (4)	Brace (4)	Brace (8)
14	Power Assembly	Power Assembly	Power Assembly
15	Shaft	Shaft	Shaft
16	Bearing (2)	Bearing (2)	Bearing (2)
17	Vent Tube	Vent Tube	Vent Tube
18	Driven Sheave	Driven Sheave	Driven Sheave
19	Belt Set	Belt Set	Belt Set
20	Drive Sheave	Drive Sheave	Drive Sheave
21	Grommet (2)	Grommet (2)	Grommet (2)
22	Cut Off*	Cut Off*	Cut Off*
23	Insulation	Insulation	Insulation
24	NEMA 3 Junction Box	NEMA 3 Junction Box	NEMA 3 Junction Box

*Cut off Plate is only on the VCR-HP and VCR-XP.

ACSC Parts



ACSC-D Sizes 100-490

Item #	ACSC-B Parts Description		
	100-225	245	270-490
1a	Top Cap Lid	Top Cap Lid	Top Cap Lid
1b	Top Cap Cylinder	Top Cap Cylinder	Top Cap Cylinder
2	Top Cap Clip (4)	Top Cap Clip (4)	Top Cap Clip (8)
3	Motor	Motor	Motor
4	Motor Plate	Motor Plate	Motor Plate
5	Baffle	Baffle	Baffle
6	Wheel Assembly	Wheel Assembly	Wheel Assembly
7	Base	Base	Base
8	Conduit	Conduit	Conduit
9	Isolator (4)	Isolator (4)	Isolator (8)
10	Upper Post (4)	Upper Post (4)	Upper Post (8)
11	Lower Post (4)	Lower Post (4)	Lower Post (8)
12	Wind Band	Wind Band	Wind Band
13	Brace (4)	Brace (4)	Brace (8)
14	Power Assembly	Power Assembly	Power Assembly
15	Shaft	Shaft	Shaft
16	Bearing (2)	Bearing (2)	Bearing (2)
17	Liquid Tite Conduit	Liquid Tite Conduit	Liquid Tite Conduit
18	Driven Sheave	Driven Sheave	Driven Sheave
19	Belt Set	Belt Set	Belt Set
20	Vent Tube	Vent Tube	Vent Tube
21	Grommet (2)	Grommet (2)	Grommet (2)
22	Insulation	Insulation	Insulation
23	NEMA 3 Junction Box	NEMA 3 Junction Box	NEMA 3 Junction Box

Limited Warranty

Loren Cook Company warrants that your Loren Cook fan was manufactured free of defects in materials and workmanship, to the extent stated herein. For a period of one (1) year after date of shipment, we will replace any parts found to be defective without charge, except for shipping costs which will be paid by you. This warranty is granted only to the original purchaser placing the fan in service. This warranty is void if the fan or any part thereof has been altered or modified from its original design or has been abused, misused, damaged or is in worn condition or if the fan has been used other than for the uses described in the company manual. This warranty does not cover defects resulting from normal wear and tear. To make a warranty claim, notify Loren Cook Company, General Offices, 2015 East Dale Street, Springfield, Missouri 65803-4637, explaining in writing, in detail, your complaint and referring to the specific model and serial numbers of your fan. Upon receipt by Loren Cook Company of your written complaint, you will be notified, within thirty (30) days of our receipt of your complaint, in writing, as to the manner in which your claim will be handled. If you are entitled to warranty relief, a warranty adjustment will be completed within sixty (60) business days of the receipt of your written complaint by Loren Cook Company. This warranty gives only the original purchaser placing the fan in service specifically the right. You may have other legal rights which vary from state to state. For fans provided with motors, the motor manufacturer warrants motors for a designated period stated in the manufacturer's warranty. Warranty periods vary from manufacturer to manufacturer. Should motors furnished by Loren Cook Company prove defective during the designated period, they should be returned to the nearest authorized motor service station. Loren Cook Company will not be responsible for any removal or installation costs.



LOREN COOK COMPANY

Corporate Offices: 2015 E. Dale St. Springfield, MO 65803
 Phone 417-869-6474 | Fax 417-862-3820 | lorencook.com



IOM

PRODUCT	Exhaust Fan EF-603
MANUFACTURER	Loren Cook
JOB NAME	Booneville HDC Building #6
LOCATION	Booneville, AR
ENGINEER	Bernhard TME, LLC
CONTRACTOR	Comfort Systems
DATE	8/2/2023
SUBMITTED BY	Courtney Michael

5440 Northshore Drive - North Little Rock, Arkansas 72118 - Tel: 501.374.5420 Fax: 501.370.9298

This publication contains the installation, operation and maintenance instructions for standard units of the *Gemini: Ceiling and Cabinet Fans*.



Carefully read this publication and any supplemental documents prior to any installation or maintenance procedure.

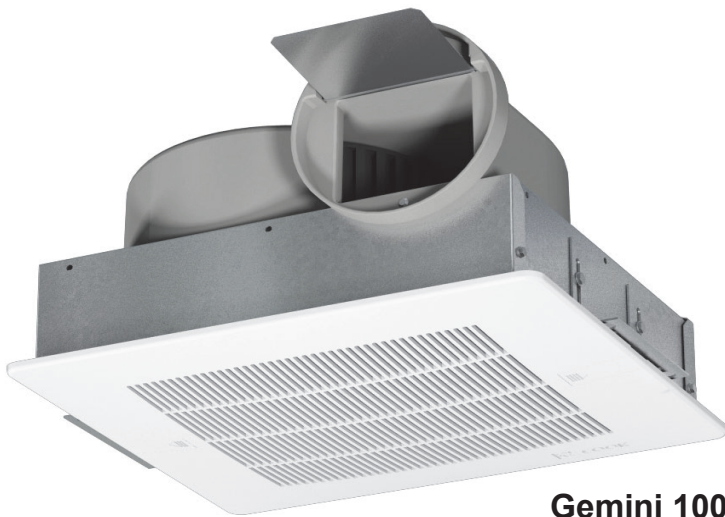
Loren Cook catalog, *Gemini*, provides additional information describing the equipment, fan performance, available accessories and specification data.

For additional safety information, refer to AMCA Publication 410-96, *Safety Practices for Users and Installers of Industrial and Commercial Fans*.

All of the publications listed above can be obtained from:

- lorencook.com
- info@lorencook.com
- 417-869-6474 ext. 166

For information and instructions on special equipment, contact Loren Cook Company at 417-869-6474.



Gemini 100

Receiving and Inspection

Carefully inspect the fan and accessories for any damage and shortage immediately upon receipt of fan.

- Turn the wheel by hand to ensure it turns freely and does not bind.
- Inspect dampers (if included) for free operation of all moving parts.
- Remove mounting brackets from packing insert & install mounting brackets (Gemini 100 only).
- Remove shipping tape.
- Record on the Delivery Receipt any visible sign of damage.

Handling

Lift fan by grasping the outside housing (cabinet) or by the blower mounting brace. Never lift by the shaft or motor.

!WARNING

Rotating Parts & Electrical Shock Hazard:

Fans should be installed and serviced by qualified personnel only.

Disconnect electric power before working on unit (prior to removal of guards or entry into access doors).

Follow proper lockout/tagout procedures to ensure the unit cannot be energized while being installed or serviced.

A disconnect switch should be placed near the fan, so power can be swiftly turned off in case of an emergency. This will also allow maintenance personnel to have complete control of the power source.

Grounding is required. All field-installed wiring must be completed by qualified personnel. All field installed wiring must comply with National Electric Code (NFPA 70) and all applicable local codes.

Fans and blowers create pressure at the discharge and vacuum at the inlet. This may cause objects to get pulled into the unit and objects to be propelled rapidly from the discharge. The discharge should always be directed in a safe direction and inlets should not be left unguarded. Any object pulled into the inlet will become a projectile capable of causing serious injury or death.

When air is allowed to move through a non-powered fan, the impeller can rotate. This is referred to as windmilling. This unexpected rotation of components can cause a hazardous condition. Impellers should be blocked in position or air passages blocked to prevent draft prior to working on fans.

Friction and power loss inside rotating components can cause them to be a potential burn hazard. All components should be approached with caution and/or allowed to cool before contacting them for maintenance.

Under certain lighting conditions, rotating components may appear stationary. Components should be verified to be stationary in a safe manner, before they come into contact with personnel, tools or clothing.

Failure to follow these instructions could result in death or serious injury.

Storage

If the fan is stored for any length of time prior to installation, store it in its original shipping crate and protect it from dust, debris and the weather.

Installation

Motor Installation

All Gemini units are shipped with motors mounted at the factory.

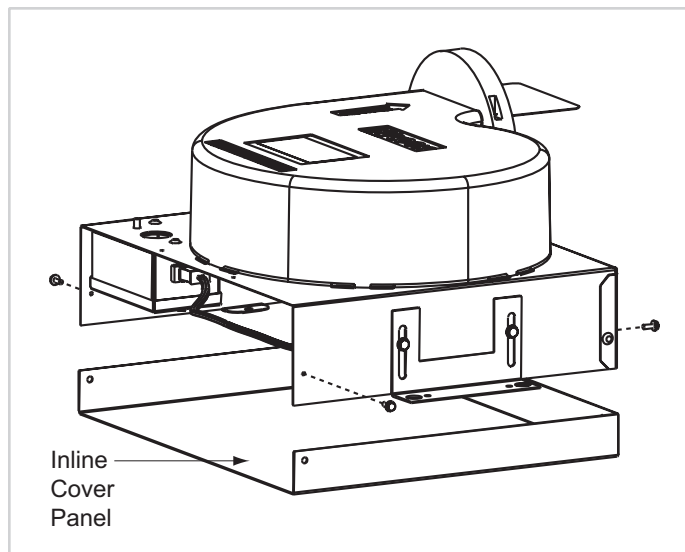
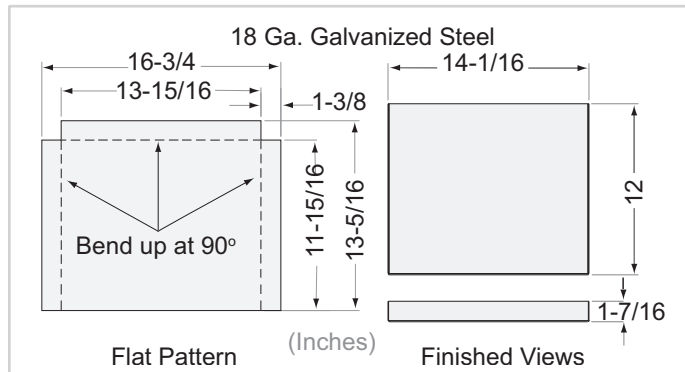
Gemini 100 Inline to Ceiling Conversion

The Gemini 100 series can be converted from inline to ceiling by ordering the Inline to Ceiling Conversion Kit from Loren Cook Company (Part Number 797180). The kit includes all parts required, plus detail instructions on how to convert the Gemini 100.

Gemini 100 Ceiling to Inline Conversion

The Gemini 100 series can be field converted from ceiling to inline by following these steps:

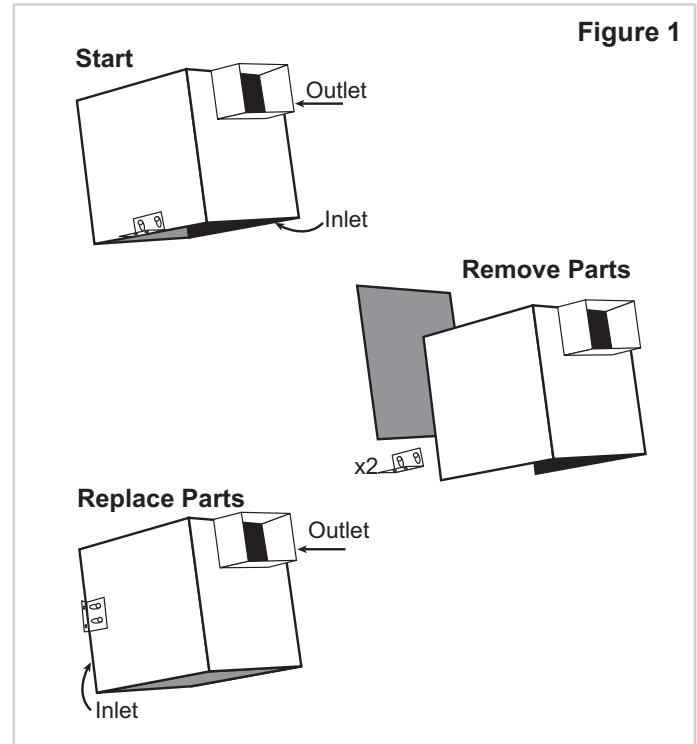
1. Remove and discard the inlet box end plate.
2. Install the inline cover panel with sheet metal screws as shown on the following page. Ceiling to Inline Conversion Kit can be ordered from Loren Cook Company (Part Number 797181), or fabricate the required part using the following two sketches.



Direction of Discharge (200–900 Series)

Discharge direction can be converted from right angle to straight line, without a kit, by swapping outer panel and the inlet/grille: See *Figure 1*.

1. Remove the side panel, mounting brackets (2) and grille (if present).
2. Place the side panel where the inlet/grille had been. Place the mounting brackets on the edge where the side panel had been. Holes are pre-punched for this procedure.
3. Rotate unit so that the outlet is on top.



Fan Installation

1. Use the mounting bracket slots to lower the unit housing by a distance equal to the ceiling thickness. Refer to *Figure 2*.
2. Raise the unit, as needed to accommodate accessories and options: With optional filter, raise unit 3/8". For both filter and deluxe aluminum grille options, raise unit 7/8" to compensate for 1/2" grate protrusion of grille. If filter is not present: the grate on the aluminum grille will fit inside of the unit (except sizes 160 & 180). Other grilles have no protrusion and fit flush with the fan.
3. Fasten duct work to the outside of the duct collar (damper frame) using sheet metal screws and foil tape. Make sure sheet metal screws are placed where they do not interfere with damper operation.
4. Fasten the housing to the bottom of the joists through the holes provided in the mounting bracket.



For Ceiling Radiation Damper Installation see separate document, "Gemini/CRD Installation Supplement."

Typical Installation

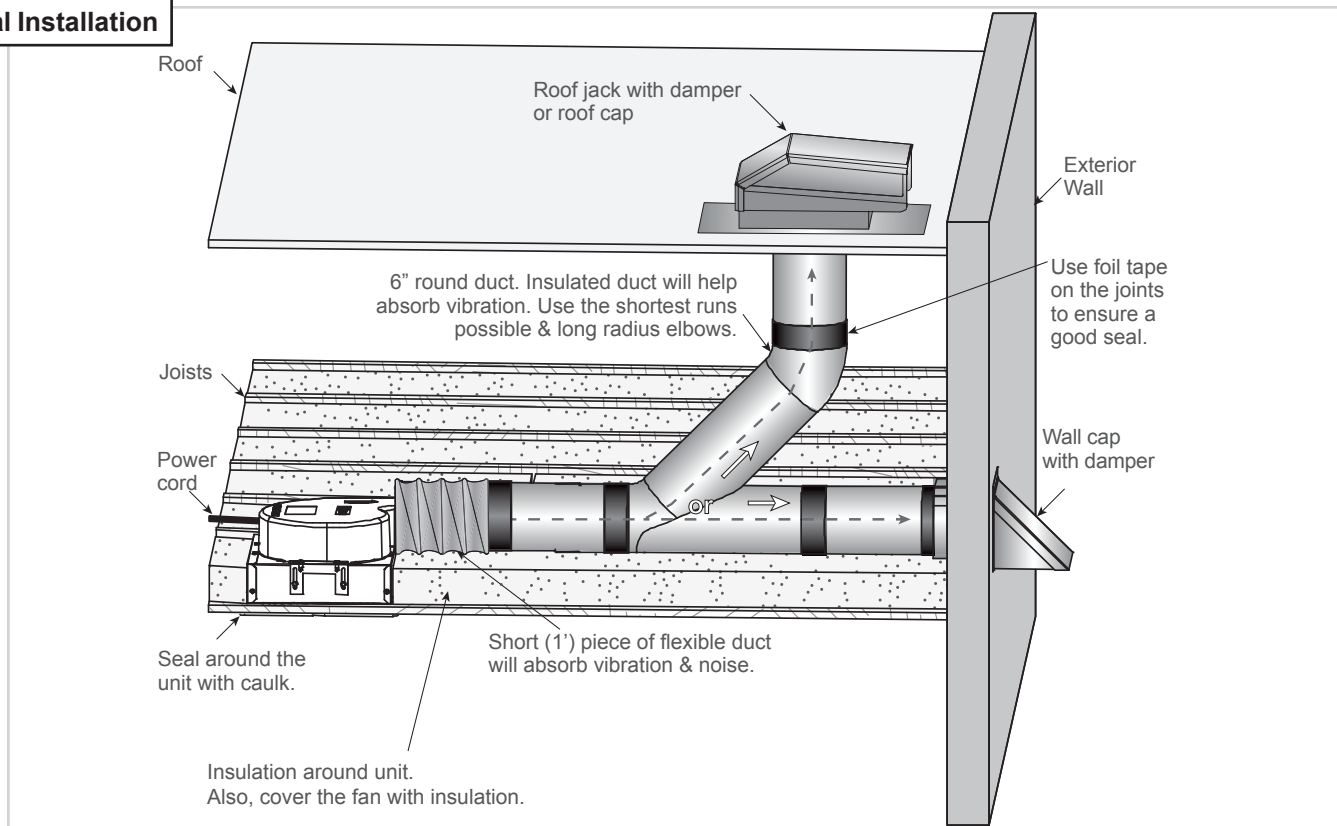
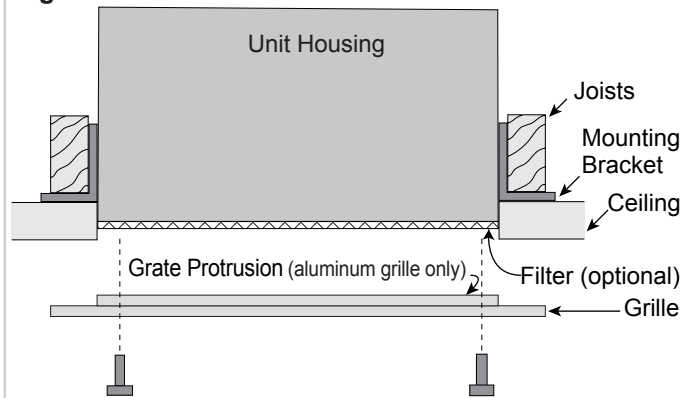
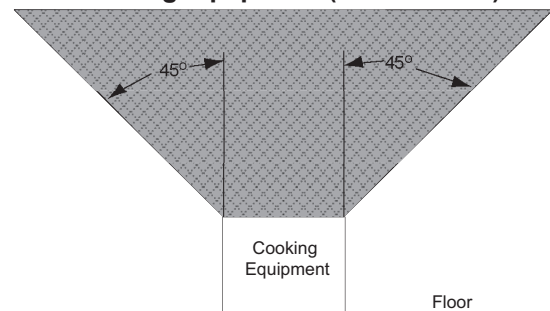


Figure 2



Notice! Do not install above or around cooking equipment (shaded area)



Wiring Installation

All wiring should be in accordance with local ordinances and the National Electrical Code, NFPA 70.

Ensure the power supply (voltage, frequency and current carrying capacity of wires) is in accordance with the motor nameplate. Refer to *Wiring Diagrams*.

Lock out all power sources before unit is wired to power

Follow the wiring diagram in the disconnect switch and the wiring diagram provided with the motor. Correctly label the circuit on the main power box and always identify a closed switch to promote safety (i.e., red tape over a closed switch).

Note: Insulate Unused Leads. Fan plug box is designed for single speed operation, using an FSC to vary speed if required. Do not wire to more than two leads.

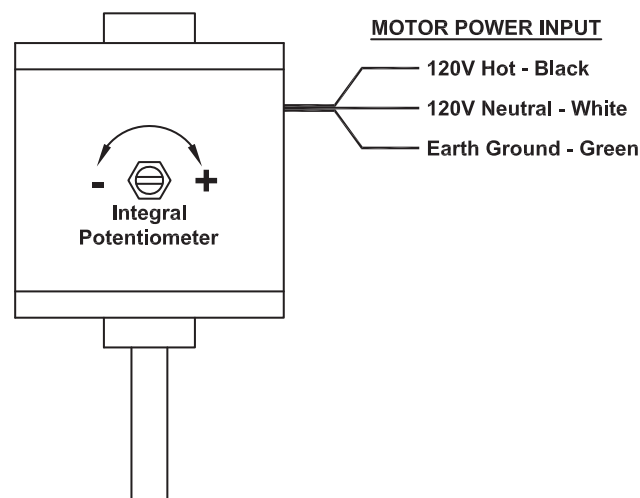
Wiring Diagrams

⚠ WARNING

Electrical Shock & Fire Hazard:

- Insulate Unused Leads Separately
- Failure to follow these instructions could result in death or serious injury.

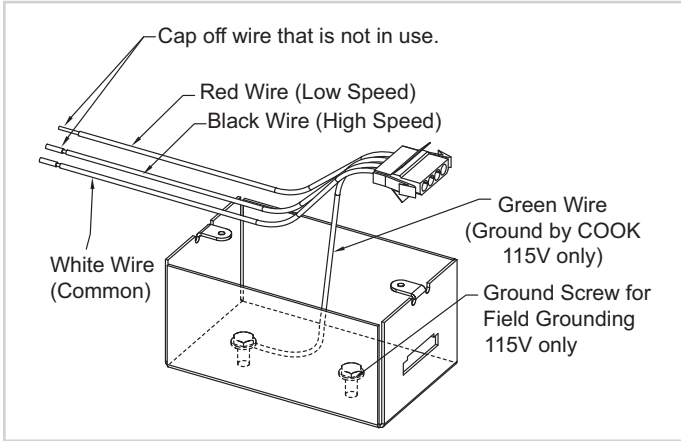
Gemini 100 with Vari-Flow® EC Motor:



Gemini 300 - 900 with Vari-Flow® EC Motor

See EC motor wiring supplement.

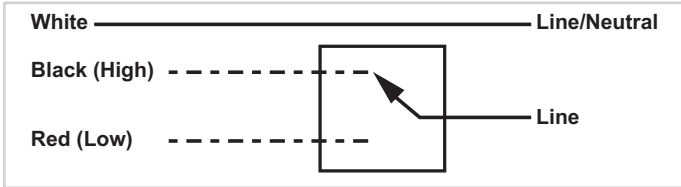
Gemini 100 Series:



For fan power supply connection use 4-wire(115V) or 3 wire(220V) cable provided in field wiring box shown on above diagram.

For 115V connect field ground wire to green ground screw located inside fan electrical box. Connect one supply line to white wire. Depending on fan speed requirements connect other supply line to Red wire for Low Speed or Black wire for High Speed. Insulate unused Red or Black wire. Replace electrical box cover. Model 126, 146, 166, 186 are Low Speed. Models 128, 148, 168, 188 are High Speed.

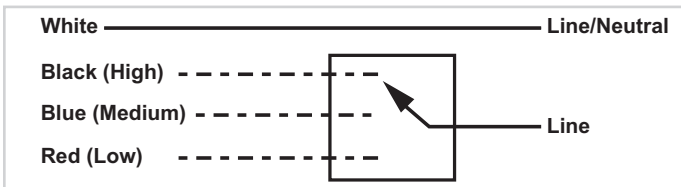
Gemini 200, 300, 500, 600 and 700 Series:



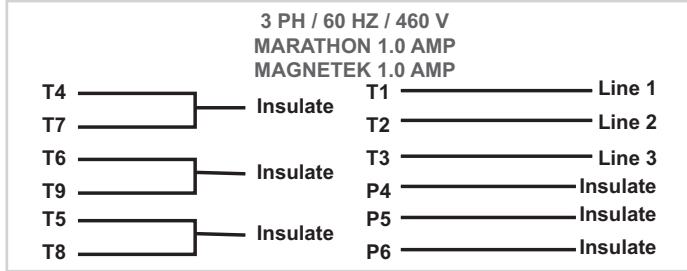
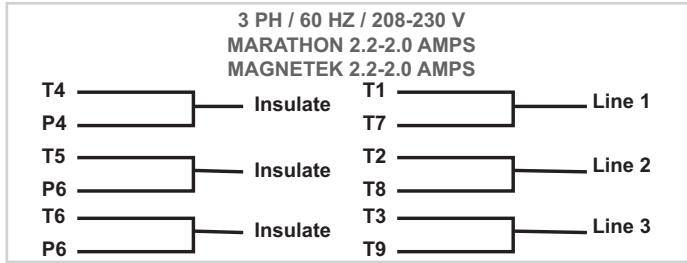
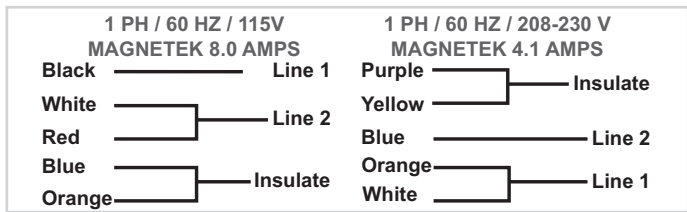
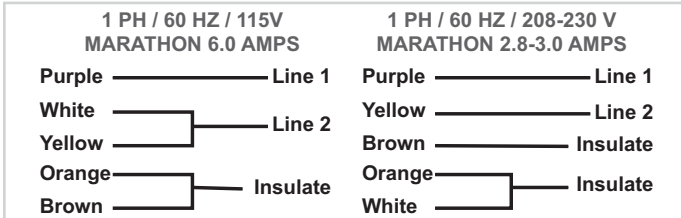
Gemini 400 Series:



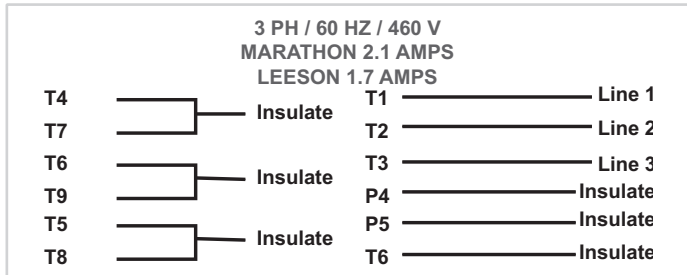
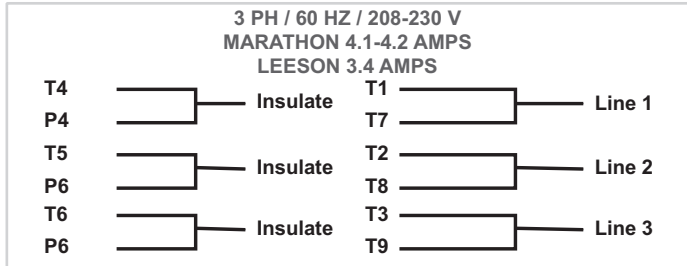
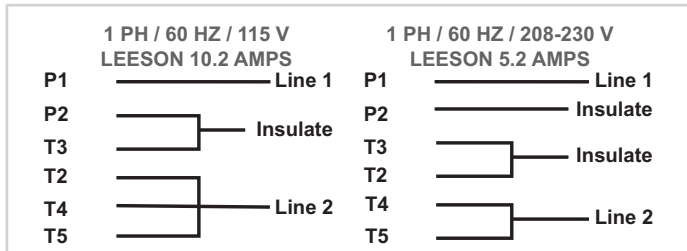
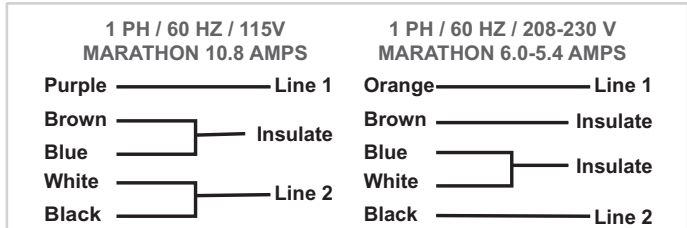
Gemini 800 - 900 Series:



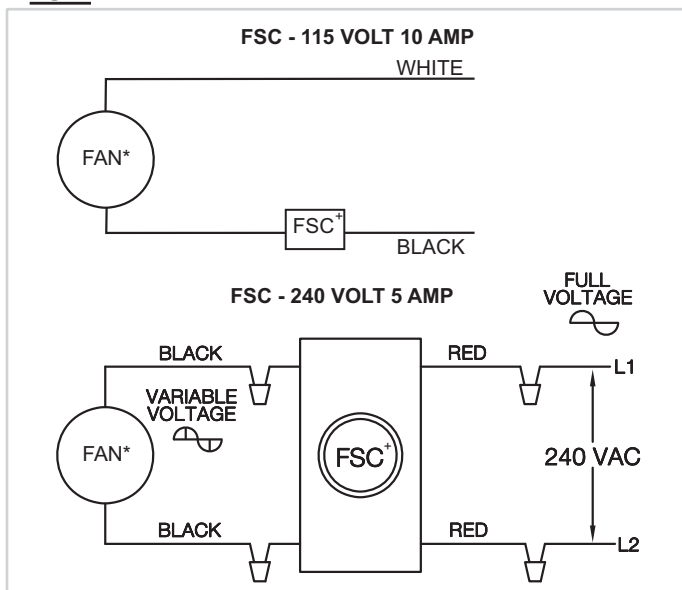
Gemini 1000:



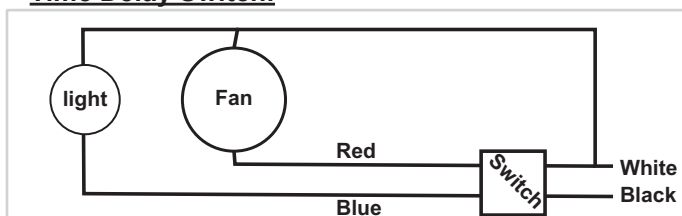
Gemini 2000:



FSC:



Time Delay Switch:



Final Installation Steps

1. Inspect fasteners and setscrews (particularly fan mounting fasteners) and tighten as required.
2. Inspect for correct amperage and voltage with an ammeter and voltmeter.
3. Ensure blower is secured to duct work.
4. Ensure all accessories are installed.
5. Inspect wheel-to-inlet clearance. Make sure wheel does not rub against the inlet.
6. Test the fan to be sure the rotation is the same as indicated by the arrow marked *Rotation*.

Grille installation is described after the operation and inspection sections.

Operation

Pre-Start Checks

1. Lock out all the primary and secondary power sources.
2. Inspect fasteners and setscrews (particularly those used for mounting the fan) and tighten if necessary.
3. Inspect motor wiring.
4. Ensure fan and ductwork are clean and free of debris.
5. Test the fan to ensure the rotation of the wheel is the same as indicated by the rotation label.
6. Restore power to unit.

Start Up

Before attaching the grille, turn the fan on and inspect for the following:

- Direction of rotation.
- Excessive vibration.
- Unusual noise.
- Motor noise.
- Improper motor amperage or voltage.

Lock out all electrical power and check for the cause of the trouble—refer to the *Troubleshooting* section.

Inspection

Inspection of the fan should be conducted at the first 30 minute interval of satisfactory operation. During the inspection, stop the fan and inspect as per directions below.

- Inspect bolts, setscrews and motor mounting bolts.
- Adjust and tighten as necessary.

Grille Installation

Attach the grille by hand-tightening the grille screws. When the unit is furnished with a filter, place the screws through the hole in the grille. Install the filter through the holes provided in the filter frame. See *Figure 2*.

Maintenance

Establish a schedule for inspecting all parts of the fan. The frequency of inspection depends on the operating conditions and location of the fan.

Fans exhausting contaminated air (airborne abrasives) should be inspected every three months.

Regular inspections are recommended for fans exhausting non-contaminated air. **It is recommended the following inspections be conducted twice per year:**

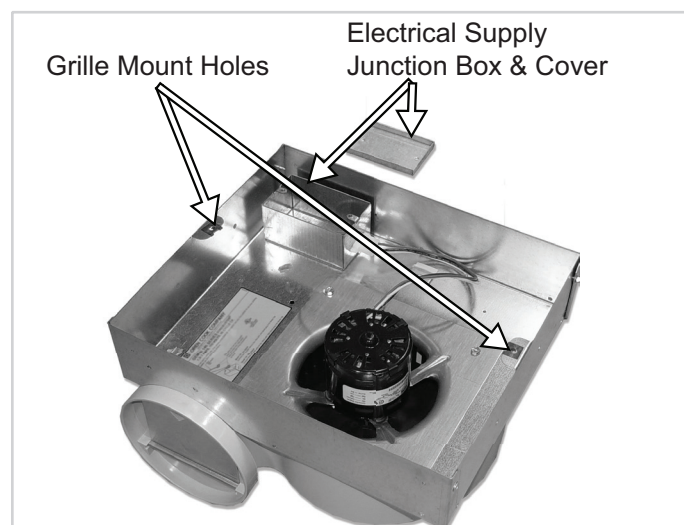
- Inspect bolts and setscrews for tightness. Tighten as necessary.
- Inspect for cleanliness. Clean exterior surfaces only. Removing dust and grease on motor housing assures proper motor cooling.

Access

Gemini 100:

To inspect, clean or repair, refer to the following diagram and follow these steps:

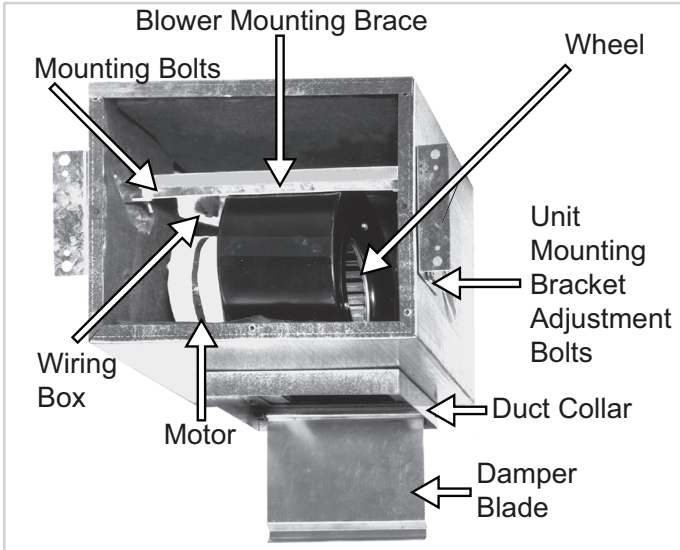
1. Remove grille.
2. Remove blower assembly from housing:
 1. Disconnect the motor from electrical supply
 2. Remove the mounting bolts on the inlet plate assembly and remove the motor/wheel assembly
3. Remove the blower wheel with an allen wrench



Gemini 200 - 700 series

To inspect, clean, or repair, refer to the follow diagram and follow these steps:

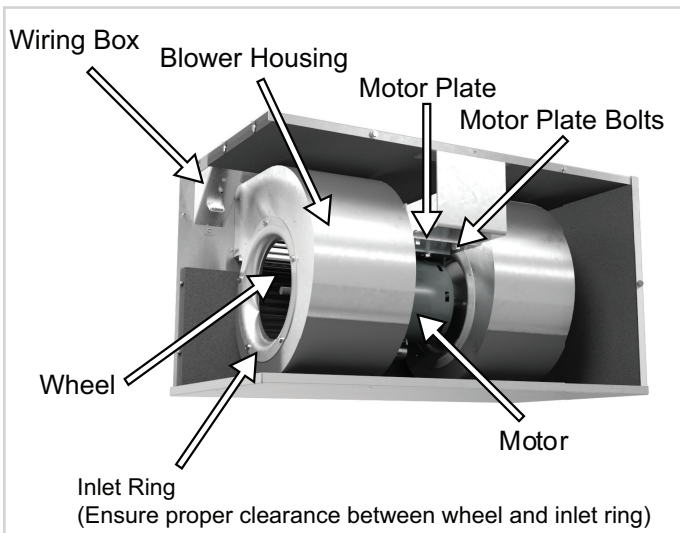
1. Remove grille.
2. Remove blower assembly from housing:
 - a. Disconnect the motor from electrical supply.
 - b. Remove mounting bolts.
 - c. Slide discharge flange out of spring clip and move motor/blower assembly from box.
3. Remove inlet ring from blower housing.
4. Remove blower wheel with an allen wrench.



Gemini 800 - 2000 series:

To inspect, clean, or repair, refer to the diagram below and follow these steps:

1. Remove grille.
2. Remove blower assembly from housing:
 - a. Disconnect the motor from the electrical supply.
 - b. Remove motor plate bolts.
 - c. Slide motor plate and remove motor/blower assembly from box.
3. Remove inlet rings from blower housing (both sides).
4. Mark the wheel and housing to ensure correct replacement of blower wheels (one is clockwise and the other is counter-clockwise), then remove the blower wheels with an allen wrench.



Reassembly

Simply reverse the disassembly instructions. Make sure the wheel rotates in the same direction as the arrow on the blower housing. Make sure the wheels do not rub on the inlet rings. When replacing the motor, make sure the motor and wheels are properly aligned with the blower housing.

Notice! Ensure that the blower discharge flange is secured in slot of the cabinet on Gemini 200 - 700 series.

Motor Bearings

Motor bearings are pre-lubricated and sealed. Under normal conditions they will not require further maintenance for a period of ten years.

Motor Services

Should the motor prove defective within a one-year period, contact your local Loren Cook representative or your nearest authorized electric motor service representative

Troubleshooting

Problem and Potential Cause

Low Capacity or Pressure:

- Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor or belt drive assembly.
- Poor fan inlet conditions. There should be a straight clear duct at the inlet.
- Improper wheel alignment.
- Damper held shut by tape.
- Screw attaching duct work to collar interfering with damper operation.

Excessive Vibration and Noise:

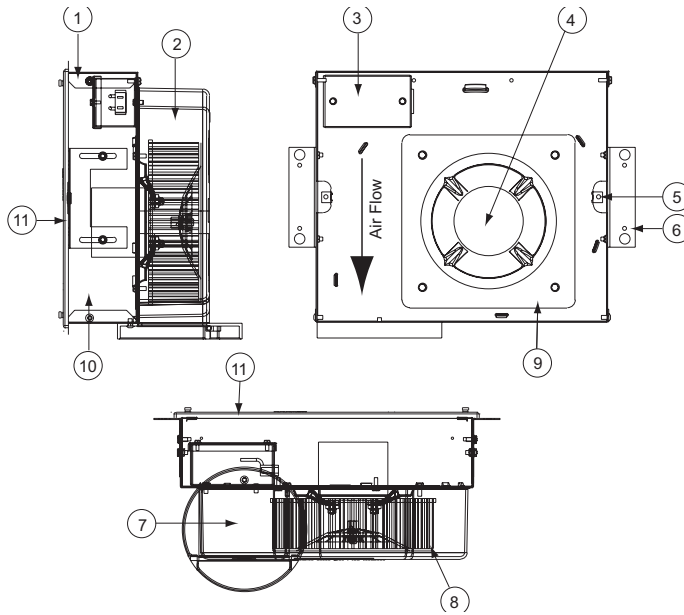
- Damaged or unbalanced wheel.
- Belts too loose; worn or oily belts.
- Speed too high.
- Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor or belt drive assembly.
- Bearings need lubrication or replacement.
- Fan surge.

Overheated Motor:

- Motor improperly wired.
- Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor or belt drive assembly.
- Cooling air diverted or blocked.
- Improper inlet clearance.
- Incorrect fan RPMs.
- Incorrect voltage.

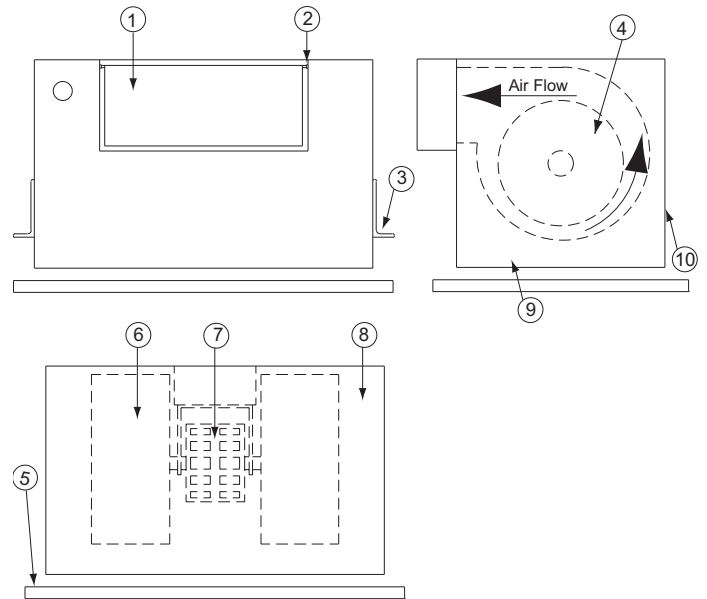
Gemini 100 Parts List

Part No.	Part Description
1	Inlet Box End Plate (Ceiling only)
2	Housing/Scroll
3	Field Wiring Compartment
4	Motor
5	Tinnerman Clip (Grill) X2
6	Mounting Bracket
7	Backdraft Damper
8	Wheel
9	Motor Mount/Inlet
10	Inlet Box
11	Grille



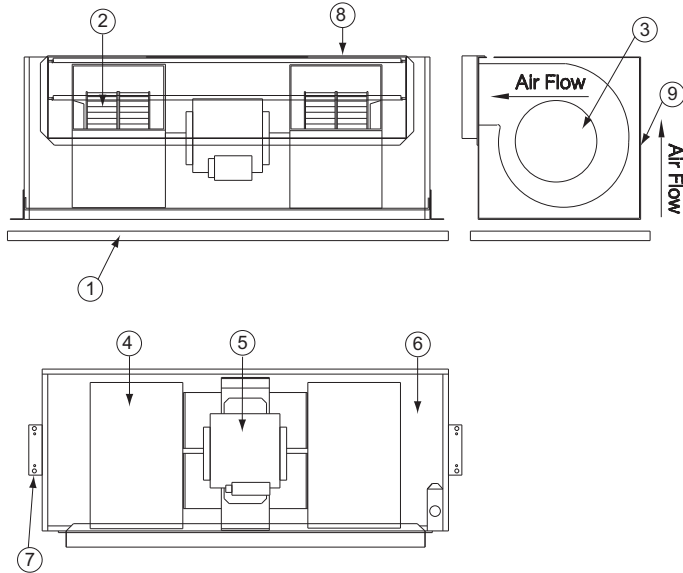
Gemini 200–900 Parts List

Part No.	Size 200–700	Size 800–900
1	Backdraft Damper	Backdraft Dampers (2)
2	Damper Frame	Damper Frame (2)
3	Mounting Bracket (2)	Mounting Bracket (2)
4	Wheel	Wheel (2)
5	Grille (Ceiling and Wall)	Grille (Ceiling and Wall)
6	Blower Housing	Blower Housing (2)
7	Motor	Motor
8	Insulation	Insulation
9	Cabinet housing	Cabinet housing
10	Housing Side Cover	Housing Side Cover



Gemini 1000–2000 Parts List

Part No.	Part Description
1	Grille (ceiling and wall)
2	Backdraft Damper (2)
3	Wheel (2)
4	Blower Housing (2)
5	Motor
6	Insulation
7	Mount Brackets (2)
8	Cabinet housing
9	Housing Side Cover



Limited Warranty

Loren Cook Company warrants that your Loren Cook fan was manufactured free of defects in materials and workmanship, to the extent stated herein. For a period of one (1) year after date of shipment, we will replace any parts found to be defective without charge, except for shipping costs which will be paid by you. This warranty is granted only to the original purchaser placing the fan in service. This warranty is void if the fan or any part thereof has been altered or modified from its original design or has been abused, misused, damaged or is in worn condition or if the fan has been used other than for the uses described in the company manual. This warranty does not cover defects resulting from normal wear and tear. To make a warranty claim, notify Loren Cook Company, General Offices, 2015 East Dale Street, Springfield, Missouri 65803-4637, explaining in writing, in detail, your complaint and referring to the specific model and serial numbers of your fan. Upon receipt by Loren Cook Company of your written complaint, you will be notified, within thirty (30) days of our receipt of your complaint, in writing, as to the manner in which your claim will be handled. If you are entitled to warranty relief, a warranty adjustment will be completed within sixty (60) business days of the receipt of your written complaint by Loren Cook Company. This warranty gives only the original purchaser placing the fan in service specifically the right. You may have other legal rights which vary from state to state.



LOREN COOK COMPANY

Corporate Offices: 2015 E. Dale St. Springfield, MO 65803
 Phone 417-869-6474 | Fax 417-862-3820 | lorencook.com



IOM

PRODUCT	Exhaust Fans VF-1
MANUFACTURER	Loren Cook
JOB NAME	Booneville HDC Building #6
LOCATION	Booneville, AR
ENGINEER	Bernhard TME, LLC
CONTRACTOR	Comfort Systems
DATE	8/2/2023
SUBMITTED BY	Courtney Michael

5440 Northshore Drive - North Little Rock, Arkansas 72118 - Tel: 501.374.5420 Fax: 501.370.9298

This publication contains the installation, operation and maintenance instructions for standard units of the SQN: *Centrifugal Square Inline Fans*.



Carefully read this publication and any supplemental documents prior to any installation or maintenance procedure.

Loren Cook catalog, SQN, provides additional information describing the equipment, fan performance, available accessories and specification data.

For additional safety information, refer to AMCA Publication 410-96, *Safety Practices for Users and Installers of Industrial and Commercial Fans*.

All of the publications listed above can be obtained from:

- lorencook.com
- info@lorencook.com
- 417-869-6474 ext. 166

For information and instructions on special equipment, contact Loren Cook Company at 417-869-6474.

Receiving

Inspection

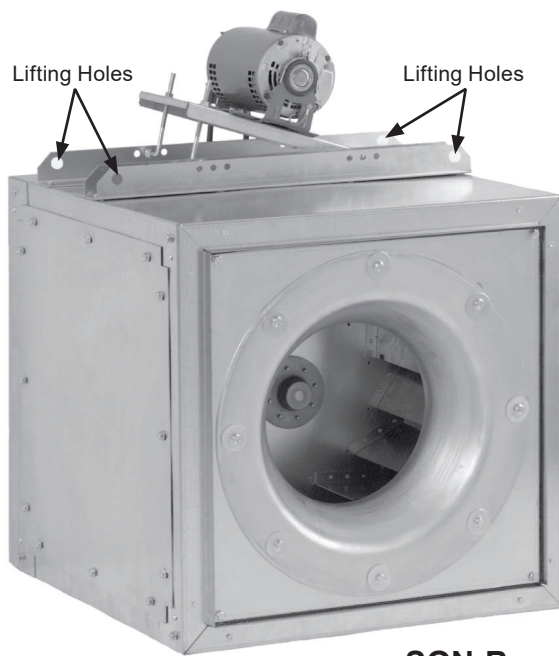
Immediately, upon receipt of an SQN fan, carefully inspect the fan and accessories for damage and shortage.

- Turn the wheel by hand to ensure it turns freely and does not bind.
- Inspect dampers for free operation of all moving parts
- Record on the Delivery Receipt any visible sign of damage.

Handling

Lift the fan by the lifting holes.

NOTICE! Never lift by the shaft, motor or housing.



SQN-R

!WARNING

Rotating Parts & Electrical Shock Hazard:

Fans should be installed and serviced by qualified personnel only.

Disconnect electric power before working on unit (prior to removal of guards or entry into access doors).

Follow proper lockout/tagout procedures to ensure the unit cannot be energized while being installed or serviced.

A disconnect switch should be placed near the fan in order that the power can be swiftly cut off, in case of an emergency and in order that maintenance personnel are provided complete control of the power source.

Grounding is required. All field-installed wiring must be completed by qualified personnel. All field installed wiring must comply with National Electric Code (NFPA 70) and all applicable local codes.

Fans and blowers create pressure at the discharge and vacuum at the inlet. This may cause objects to get pulled into the unit and objects to be propelled rapidly from the discharge. The discharge should always be directed in a safe direction and inlets should not be left unguarded. Any object pulled into the inlet will become a projectile capable of causing serious injury or death.

When air is allowed to move through a non-powered fan, the impeller can rotate, which is referred to as windmilling. Windmilling will cause hazardous conditions due to unexpected rotation of components. Impellers should be blocked in position or air passages blocked to prevent draft when working on fans.

Friction and power loss inside rotating components will cause them to be a potential burn hazard. All components should be approached with caution and/or allowed to cool before contacting them for maintenance.

Under certain lighting conditions, rotating components may appear stationary. Components should be verified to be stationary in a safe manner, before they come into contact with personnel, tools or clothing.

Failure to follow these instructions could result in death or serious injury.

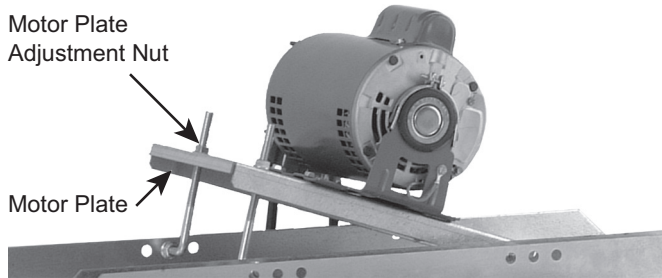
The attachment of roof mounted fans to the roof curb as well as the attachment of roof curbs to the building structure must exceed the structural requirements based on the environmental loading derived from the applicable building code for the site. The local code official may require variations from the recognized code based on local data. The licensed engineer of record will be responsible for prescribing the correct attachment based on construction materials, code requirements and environmental effects specific to the installation.

Storage

If the fan is stored for any length of time prior to installation, completely fill the bearings with grease or moisture-inhibiting oil. Refer to *Lubricants* on page 5. Also, store the fan in its original crate and protect it from dust, debris and the weather.

To maintain good working condition of an SQN when it is stored outdoors, or on a construction site, follow the additional steps below:

- Cover the inlet and outlet, and belt tunnel opening to prevent the accumulation of dirt and moisture in the housing.
- Periodically rotate the wheel and operate dampers (if supplied) to keep a coating of grease on all internal bearing parts.
- Periodically inspect the unit to prevent damaging conditions.



Motor Plate Adjustment

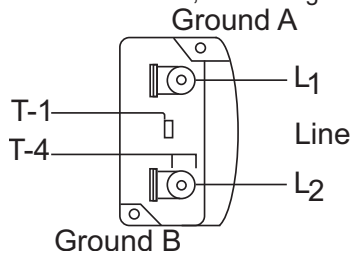
Wiring Diagrams

Vari-Flow

For EC or VF see EC Motor Wiring supplement. For VF2 see PM wiring supplement.

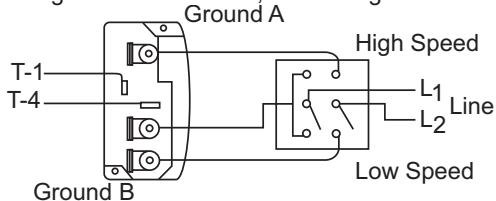
Single Speed, Single Phase Motor

When ground is required, attach to ground A or B with no. 6 thread forming screw. To reverse, interchange T-1 and T-4.



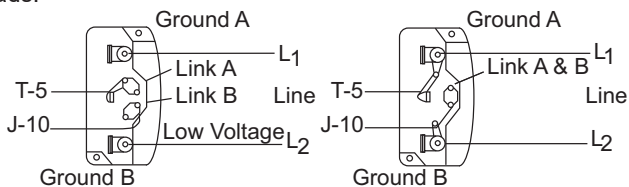
2 Speed, 2 Winding, Single Phase Motor

When ground required, attach to ground A or B with No. 6 thread forming screw. To reverse, interchange T-1 and T-4 leads.



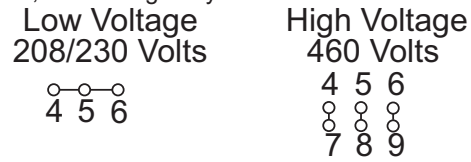
Single Speed, Single Phase, Dual Voltage

When ground required, attach to ground A or B with No. 6 thread forming screw. To reverse, interchange T-5 and J-10 leads.



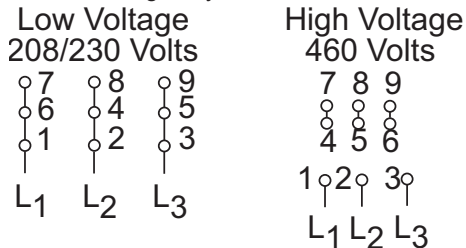
3 Phase, 9 Lead Motor Y-Connection

To reverse, interchange any 2 line leads.



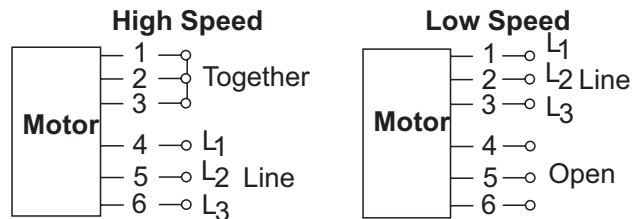
3 Phase, 9 Lead Motor Delta-Connection

To reverse, interchange any 2 line leads.



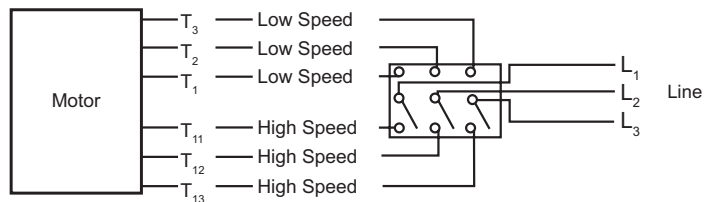
2 Speed, 1 Winding, 3 Phase Motor

To reverse, interchange any 2 line leads. Motors require magnetic control.



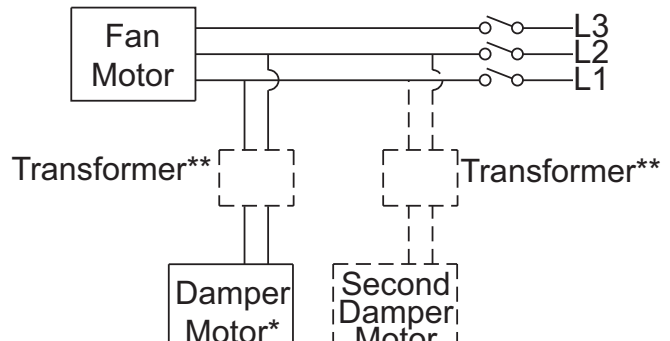
2 Speed, 2 Winding, 3 Phase

To reverse: High Speed-interchange leads T11 and T12. Low Speed-interchange leads T1 and T2. Both Speeds-interchange any 2 line leads.

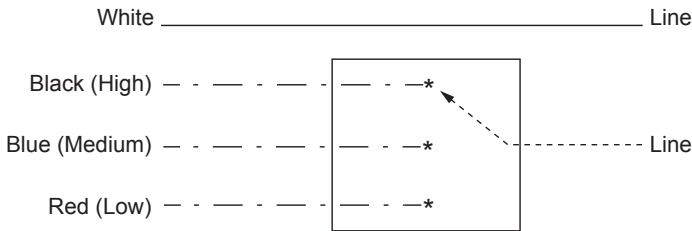


Typical Damper Motor Schematic

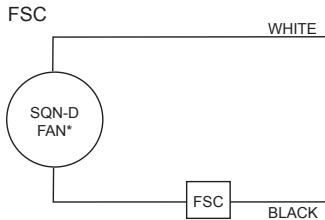
For 3 phase, damper motor voltage should be the same between L₁ and L₂. For single phase application, disregard L₃. *Damper motors may be available in 115, 230 and 460 volt models. The damper motor nameplate voltage should be verified prior to connection. **A transformer may be provided in some installations to correct the damper motor voltage to the specified voltage.



SQI-D 70-90



NOTE: Insulate unused leads separately; leads are located at the motor inside the unit.



*See SQN Wiring Diagram for correct lead.

Installation

Motor Installation

To prevent damage to the fan during shipping, motors 3 HP and larger, and extremely heavy motors (cast iron or severe duty) are shipped loose and must be field mounted.

Wiring Installation

All wiring should be in accordance with local ordinances and the National Electrical Code, NFPA 70. Ensure the power supply (voltage, frequency, and current carrying capacity of wires) is in accordance with the motor nameplate. Refer to the *Wiring Diagrams* section.

Follow the wiring diagram in the disconnect switch and the wiring diagram provided with the motor. Correctly label the circuit on the main power box and always identify a closed switch to promote safety (i.e., red tape over a closed switch).

Direct Drive

Wire the electrical box on the blower housing.

Belt Drive

The motor can be wired directly since the motor is external to the fan.

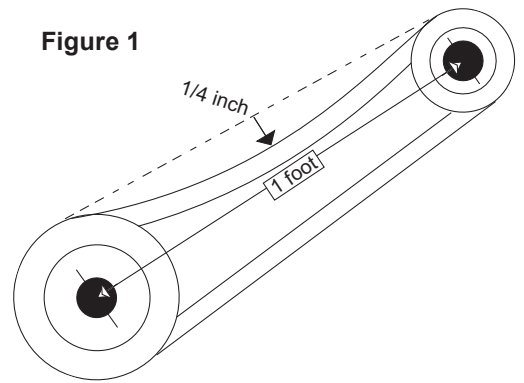
Leave enough slack in the wiring to allow for motor movement when adjusting belt tension. Some fractional motors have to be removed in order to make the connection with the terminal box at the end of the motor. To remove motor, remove bolts securing motor base to power assembly. Do not remove motor mounting bolts.

Belt and Pulley Installation

If your fan is a direct drive, proceed to *Blower Installation*.

Belt tension is determined by the sound the belts make when the fan is first started. Belts will produce a loud squeal which dissipates after the fan is operating at full capacity. If the belt tension is too tight or too loose, lost efficiency and possible damage can occur.

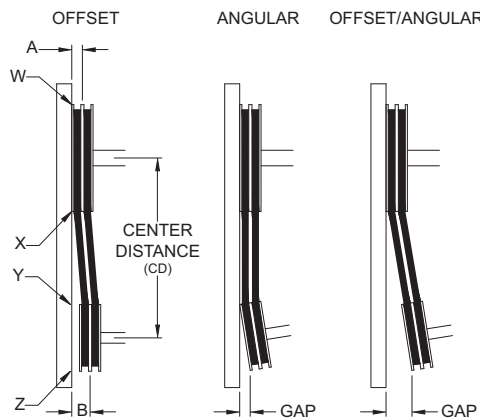
Figure 1



Do not change the pulley pitch diameter to change tension. This will result in a different fan speed.

1. Loosen motor plate adjustment nuts on L-bolts and move motor plate in order that the belts can easily slip into the grooves on the pulleys. Never pry, roll, or force the belts over the rim of the pulley.
2. Adjust the motor plate until proper tension is reached. For proper tension, a deflection of approximately 1/4" per foot of center distance should be obtained by firmly pressing the belt. Refer to *Figure 1*.
3. Lock the motor plate adjustment nuts in place.
4. Ensure pulleys are properly aligned.

Figure 2



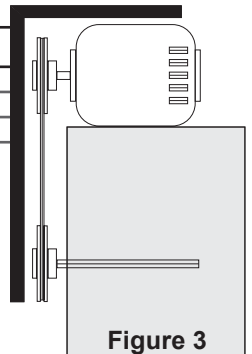
Tolerance

Center Distance	Maximum Gap
Up thru 12"	1/16"
12" up through 48"	1/8"
Over 48"	1/4"

Pulley Alignment

Pulley alignment is adjusted by loosening the motor pulley set-screw and by moving the motor pulley on the motor shaft.

Figure 2 indicates where to measure the allowable gap for the drive alignment tolerance. All contact points (indicated by WXYZ) are to have a gap less than the tolerance shown in the table. When the pulleys are not the same width, the allowable gap must be adjusted by half of the difference in width. *Figure 3* illustrates using a carpenter's square to adjust the position of the motor pulley until the belt is parallel to the longer leg of the square.

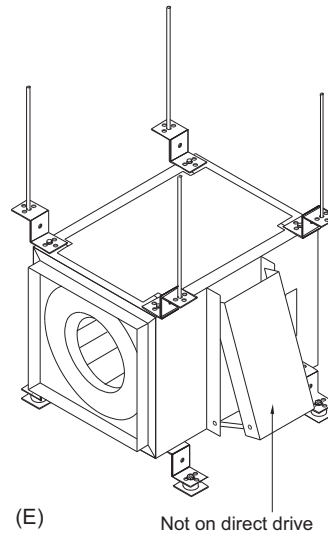
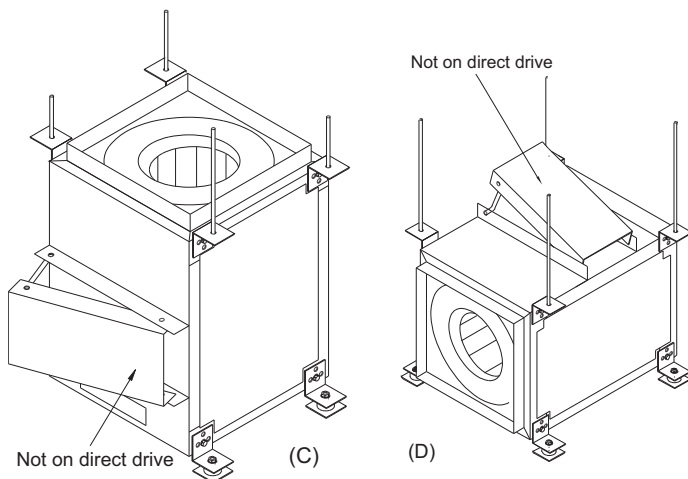
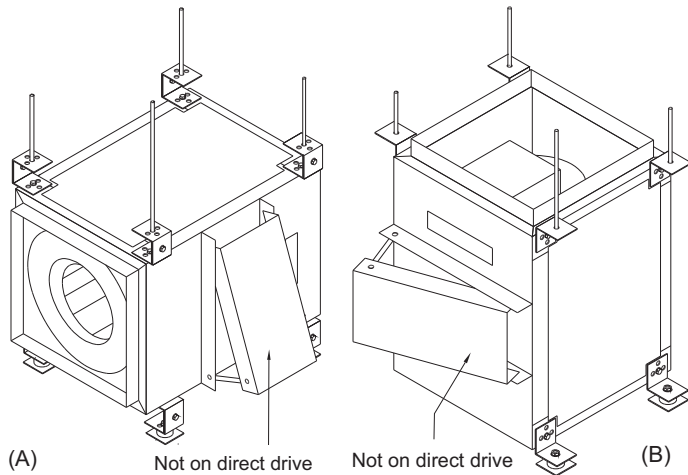
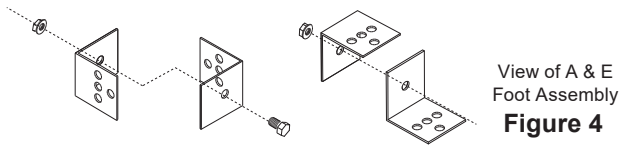
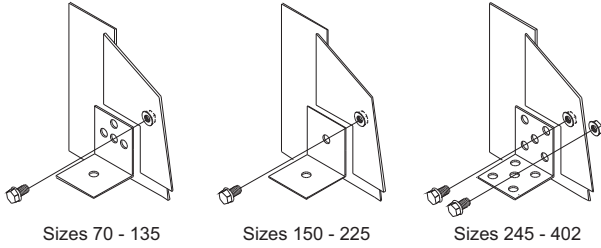


Blower Installation

The fan is shipped with the motor in the 12 o'clock position and the feet are shipped loose. (Feet may be under weather cover)

1. Upon receipt of the fan, remove the eight (8) feet shipped with the fan and ensure the feet are the correct type. Refer to *Figure 4*.
2. Determine how the fan is to be mounted. Refer to *Foot Mounting Illustrations*.
3. Remove the 5/16" bolt(s) from the corner of the housing in which the foot is to be attached.
4. Place the foot over the open bolt hole(s) and bolt the foot to the unit. Refer to *Figure 4*.

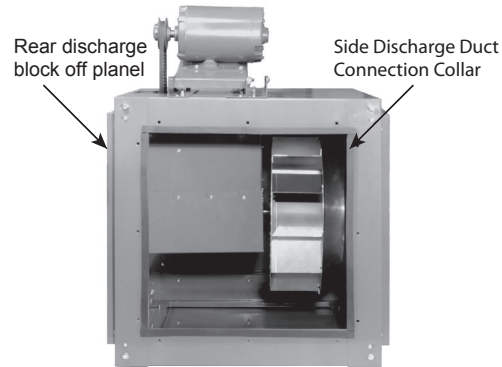
Foot Mounting Illustrations



SQN Optional Side Discharge Installation

Upon receiving an SQN for a side discharge installation, please note that the rear discharge block-off panel is installed on the unit and that the correct number of side discharge duct connection collars are provided (4 steel flanges for a single side discharge and 8 for dual).

To install the side discharge duct connection collar, remove the appropriate access door. Install the side discharge duct connection collar using the bolts that were removed with the access door. Then connect the duct work. See page 6 for examples.

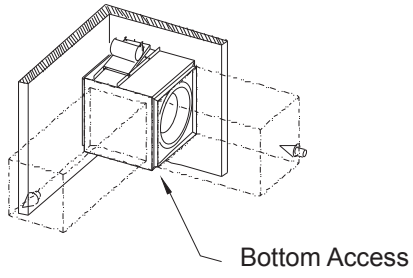


NOTICE! Original Loren Cook Company labels must remain with the unit. This may require swapping access doors from one side to the other.

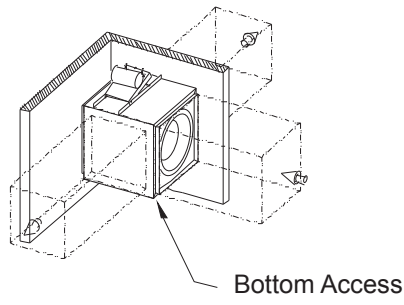
Final Installation Steps

1. Ensure that all accessories are installed.
2. Ensure that the blower is secured to ductwork.
3. Inspect wheel-to-inlet clearance. Ensure wheel does not rub against the inlet.
4. Test the fan to ensure the rotation of the wheel is the same as indicated by the rotation label.
5. Inspect for correct amperage with an ammeter and correct voltage with a voltmeter.

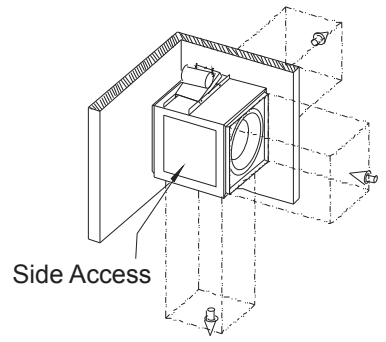
Typical Side Discharge Applications



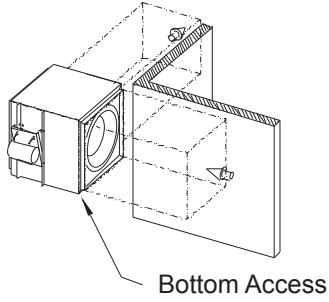
Example 1



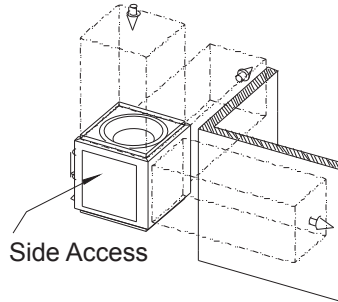
Example 2



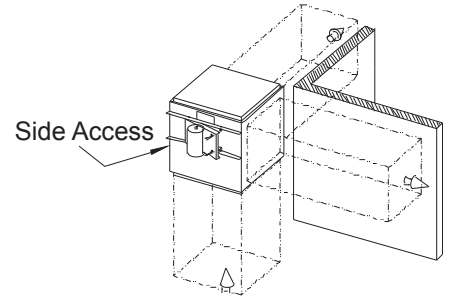
Example 3



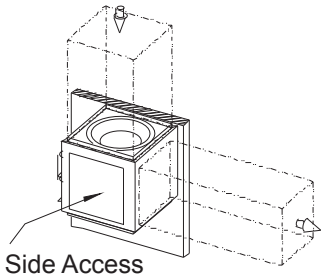
Example 4



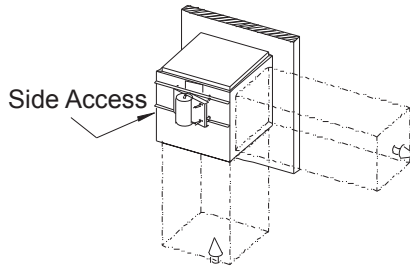
Example 5



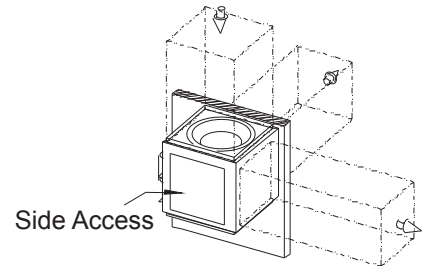
Example 6



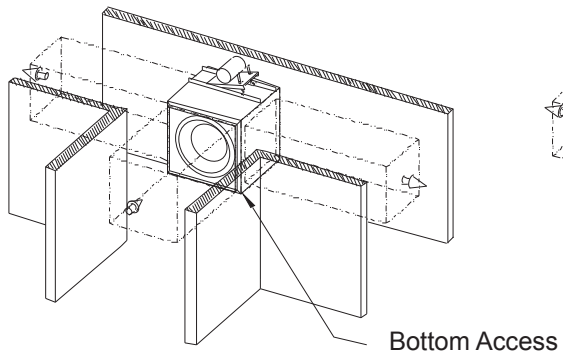
Example 7



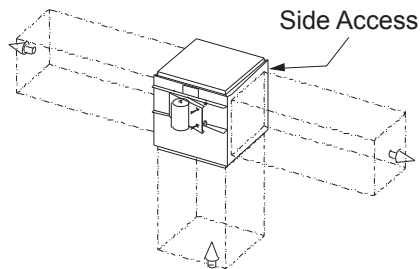
Example 8



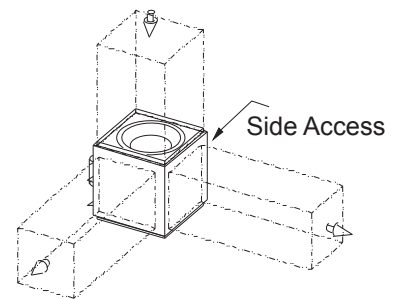
Example 9



Example 10



Example 11



Example 12

Operation

Pre-Start Checks

1. Lock out all the primary and secondary power sources.
2. Inspect and tighten fasteners and setscrews, particularly fan mounting and bearing fasteners. Refer to *Recommended Torque* chart.
3. Inspect belt tension and pulley alignment.
4. Inspect motor wiring.
5. Ensure fan and ductwork are clean and free of debris.
6. Close and secure all access doors.
7. Restore power to the fan.

Recommended Torque for Setscrews/Bolts (IN-LB)

Setscrews				Hold Down Bolts	
Size	Key Hex Across Flats	Recommended Torque		Size	Recommended Torque
		Min.	Max.		
#8	5/64"	15	21	3/8"-16	324
#10	3/32"	27	33	1/2"-13	780
1/4	1/8"	70	80	5/8"-11	1440
5/16	5/32"	140	160	3/4"-10	2400
3/8	3/16"	250	290	7/8"-9	1920
7/16	7/32"	355	405	1"-8	2700
1/2	1/4"	560	640	1-1/8"-7	4200
5/8	5/16"	1120	1280	1-1/4"-7	6000
3/4	3/8"	1680	1920	-	-
7/8	1/2"	4200	4800	-	-
1	9/16"	5600	6400	-	-

Start Up

Turn the fan on. In variable speed units, set the fan to its lowest speed and inspect for the following:

- Direction of rotation.
- Excessive vibration.
- Unusual noise.
- Bearing noise.
- Improper belt alignment or tension (listen for squealing).
- Improper motor amperage or voltage.

If a problem is discovered, immediately shut the fan off. Lock out all electrical power and check for the cause of the trouble. See Troubleshooting section.

Inspection

Inspection of the fan should be conducted at the first 30 minute, 8 hour and 24 hour intervals of satisfactory operation. During the inspections, stop the fan and inspect as per the chart below.

30 Minute Interval

Inspect bolts, setscrews, and motor mounting bolts. Adjust and tighten as necessary.

8 Hour Interval

Inspect belt alignment and tension. Adjust and tighten as necessary.

24 Hour Interval

Inspect belt tension. Adjust and tighten as necessary.

Maintenance

Establish a schedule for inspecting all parts of the fan. The frequency of inspection depends on the operating conditions and location of the fan.

Inspect fans exhausting corrosive or contaminated air within the first month of operation. Fans exhausting contaminated air (airborne abrasives) should be inspected ev-

Yearly inspections are recommended for fans exhausting non-contaminated air.

It is recommended the following inspections be conducted twice per year

1. Inspect bolts and setscrews for tightness. Tighten as necessary. Refer to *Recommended Torque* chart.
2. Inspect belt wear and alignment. Replace worn belts with new belts and adjust alignment as needed. Refer to *Belt and Pulley Installation*
3. Bearings should be inspected as recommended in the *Conditions* chart
4. Inspect for cleanliness. Clean exterior surfaces only. Removing dust and grease on motor housing assures proper motor cooling.

Fan Bearings

The fan bearings are provided prelubricated. Any specialized lubrication instructions on fan labels supersedes information provided herein. Bearing grease is a petroleum lubricant in a lithium base conforming to a NLGI #2 consistency. If user desires to utilize another type of lubricant, they take responsibility for flushing bearings and lines, and maintaining a lubricant that is compatible with the installation.

NOTICE! Loren Cook Company uses petroleum lubricant in a lithium base. Other types of grease should not be used unless the bearings and lines have been flushed clean. If another type of grease is used, it should be a lithium-based grease conforming to NLGI grade 2 consistency.

A NLGI #2 grease is a light viscosity, low-torque, rust-inhibiting lubricant that is water resistant. Its temperature range is from -30°F to 200°F and capable of intermittent highs of 250°F.

Bearings should be relubricated in accordance with the condition chart below.

For best results, lubricate the bearing while the fan is in operation. Pump grease in slowly until a slight bead forms around the bearing seals. Excessive grease can damage seal and reduce life through excess contamination and/or loss of lubricant.

In the event that the bearing cannot be seen, use no more than three injections with a hand operated grease gun.

Conditions Chart

RPM	Temp °F	Greasing Interval
Up to 1000	-30 to 120	6 months
	120 to 200	2 months
1000 to 3000	-30 to 120	3 months
	120 to 200	1 month
Over 3000	-30 to 120	1 month
	120 to 200	2 weeks
Any Speed	< -30	Consult Factory
Any Speed	> 200	1 week

For moist or otherwise contaminated installations; divide the interval by a factor of 3. For vertical shaft installations divide the interval by a factor of 2.

Motor Bearings

Motors are provided with prelubricated bearings. Any lubrication instructions shown on the motor nameplate supersede instructions below.

Direct Drive 1050/1075,1200,1300 &1500 rpm units use a prelubricated sleeve bearing that has a oil saturated wicking material surrounding it. The initial factory lubrication is adequate for up to 10 years of operation under normal conditions. However, it is advisable to add lubricant after 3 years. Use only LIGHT grade mineral oil or SAE 10W oil up to 30 drops. If the unit has been stored for a year or more it is advisable to lubricate as directed above. For units in severe conditions, lubrication intervals should be reduced to half.

Motors without sleeve bearings (as described above) will have grease lubricated ball or roller bearings. Motor bearings without provisions for relubrication will operate up to 10 years under normal conditions with no maintenance. In severe applications, high temperatures or excessive contaminants, it is advisable to have the maintenance department disassemble and lubricate the bearings after 3 years of operation to prevent interruption of service.

For motors with provisions for relubrication, follow intervals of the following table.

Relubrication Intervals

Service Conditions	NEMA Frame Size					
	Up to & including 184T		213T-365T		404T & larger	
	1800 RPM and less	Over 1800 RPM	1800 RPM and less	Over 1800 RPM	1800 RPM and less	Over 1800 RPM
Standard	3 years	6 months	2 years	6 months	1 year	3 months
Severe	1 year	3 months	1 year	3 months	6 months	1 months

The above intervals should be reduced to half for vertical shaft installations.

Motors are provided with a polyurea mineral oil NGLI #2 grease. All additions to the motor bearings are to be with a compatible grease such as Exxon Mobil Polyrex EM and Chevron SRI.

Motor Services

Should the motor prove defective within a one-year period, contact your local Loren Cook representative or your nearest authorized electric motor service representative.

Changing Fan Speed

All belt driven fans with motors up to and including 5 HP are equipped with variable pitch pulleys.

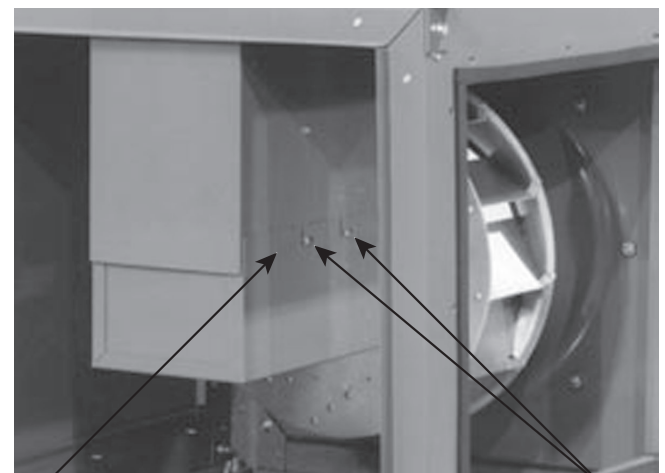
- Loosen setscrew on motor pulley
- Open or close the groove facing to change the pitch diameter.
 - Speed Reduction:** Open the pulley in order that the belt rests deeper in the groove.
 - Speed Increase:** Close the pulley in order that the belt rests higher in the groove. Ensure RPM limits of the fan and the horsepower limits of the motor are maintained.
- Retighten pulley setscrew on one of the flat areas of the motor shaft.
- After the adjustment is made, check for proper belt tension. See *Belt and Pulley Installation*.

Maximum RPM

SQN-B Size	Maximum RPM	
	Non-Reinforced Wheel	Reinforced Wheel
60	3795	-
70	4006	-
80	3409	-
100	3243	-
120	2867	-
135	2332	-
150	2099	-
165	1833	2107
180	1610	1786
195	1429	1593
210	1277	1399
225	1152	1459
245	1015	1434
270	876	1226
300	837	1024
330	716	962
365	624	786
402	539	683

SQN-HP Size	Maximum RPM	
	Non Reinforced Wheel	Reinforced Wheel
135	2622	-
150	2929	-
165	2635	-
180	2169	-
195	1955	-
210	1781	-
225	1500	1861
245	1185	1773
270	1025	1563
300	980	1204
330	830	1178
365	735	1038
402	630	970

SQND-XP Size	Maximum RPM
180	2300
195	2100
210	2122
225	1879
245	1520
270	1520
300	1391
330	1182
365	1132



Bearing Cover

Bearing Cover Screws
(Several screws on opposite side not shown in photograph.)

Pulley and Belt Replacement

- Remove pulleys from their respective shafts.
- Clean the motor and fan shafts.
- Clean bores of pulleys and coat the bores with heavy oil.
- Remove grease, rust, or burrs from the pulleys and shafts.
- Remove burrs from shaft by sanding.

- Place fan pulley on fan shaft and motor pulley on its shaft.
NOTICE! Do not hammer the pulleys onto the shafts because this may damage the bearings.
- Tighten in place.
- Install belts on pulleys and align as described in *Belt and Pulley Installation*.

Bearing Replacement

The fan bearings are pillow block ball bearings.

- Loosen screws on bearing cover.
- Push bearing cover toward the wheel. As the bearing cover moves toward the wheel it will slide down to reveal the bearings and shaft.
- Remove the old bearing.
- Remove any burrs from the shaft by sanding.
- Slide new bearings onto the shaft to the desired location and loosely mount bearings onto the bearing support. Bearing bolts and setscrews should be loose enough to allow shaft positioning.
- Correctly position the wheel and tighten the bearing bolts securely to the bearing support.
- Align setscrews bearing to bearing and secure tightly to the shaft.

NOTICE! Never tighten both pairs of setscrews before securing bearing mounting bolts. This may damage the shaft.

- Inspect the wheel position again. If necessary, readjust by loosening the bearing bolts and setscrews and repeat from step 5.

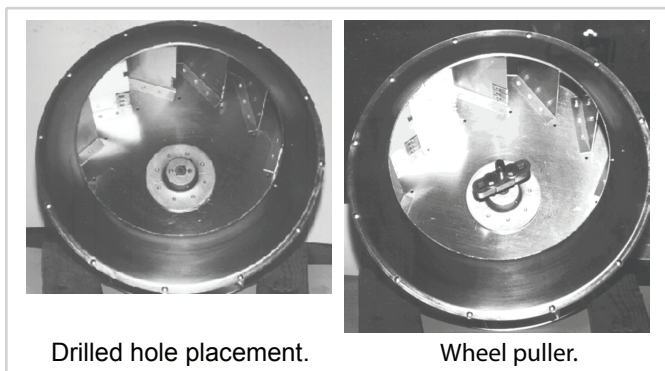
Wheel Replacement

- Drill two 1/4" diameter holes, 180° apart centered approximately between the shaft and the outside diameter of the hub, 3/8" to 1/2" in depth.
- Tap 1/4" holes to 5/16" thread with a 5/16" hole tap. Do not drill or tap greater than recommended.
- Screw the puller arms to the full depth of the threads into the tapped holes. Align center of the puller with the center of the shaft. Ensure all setscrews in the hub, normally two, are fully removed.
- Slowly remove wheel from the shaft.

Recommended Puller

Lisle No. 45000 Sterling Wheel Puller. This puller is available at most automotive parts retail outlets.

Wheel Replacement Components



Wheel-to-Inlet Clearance

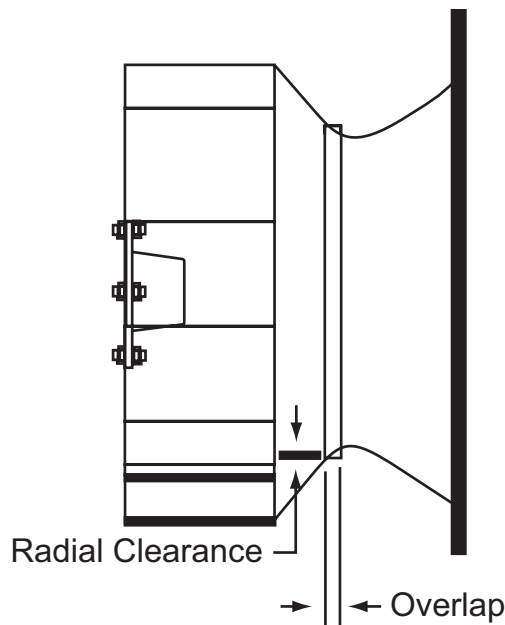
The correct wheel-to-inlet clearance is critical to proper fan performance. This clearance should be verified before initial start-up since rough handling during shipment could cause a shift in fan components. Refer to *Wheel/Inlet* drawing for correct overlap.

Adjust the overlap by loosening the wheel hub and moving the wheel along the shaft to obtain the correct value.

A uniform radial gap (space between the edge of the cone and the edge of the inlet) is obtained by loosening the inlet cone bolts and repositioning the inlet cone.

Wheel/Inlet Overlap

Size	Maximum Overlap
100- 195	5/8"
210-270	3/4"
300-402	1"



Troubleshooting

Problem and Potential Cause

Low Capacity or Pressure:

- Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor or belt drive assembly.
- Poor fan inlet conditions. There should be a straight clear duct at the inlet.
- Improper wheel alignment.

Excessive Vibration and Noise:

- Damaged or unbalanced wheel.
- Belts too loose; worn or oily belts.
- Speed too high.
- Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor or belt drive assembly.
- Bearings need lubrication or replacement.
- Fan surge.

Overheated Motor:

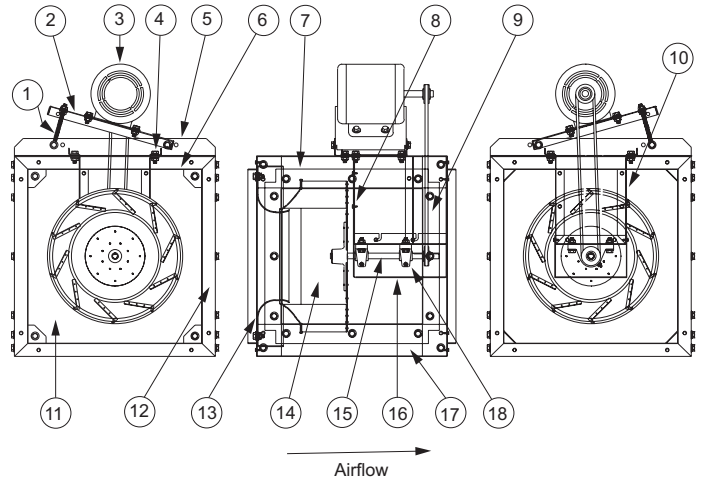
- Motor improperly wired.
- Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor or belt drive assembly.
- Cooling air diverted or blocked.
- Improper inlet clearance.
- Incorrect fan RPMs.
- Incorrect voltage.

Overheated Bearings:

- Improper bearing lubrication
- Excessive belt tension.

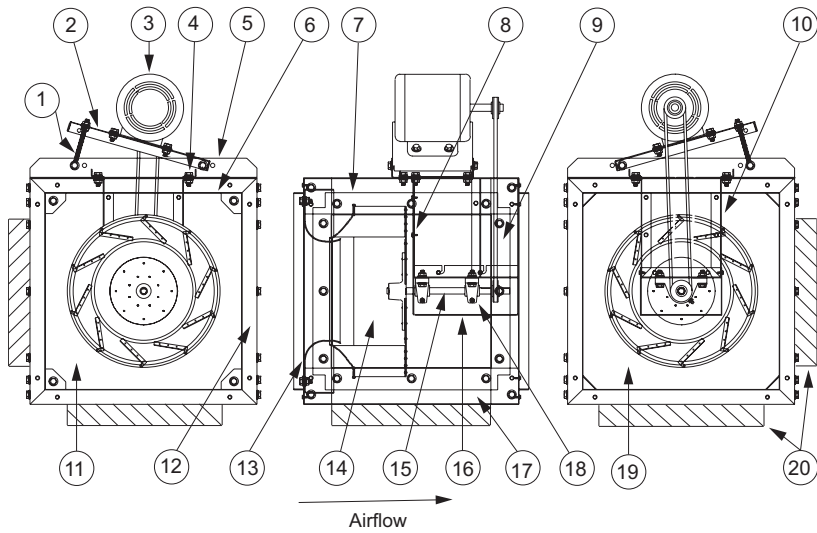
Parts Lists

SQN-B/SQN-HP



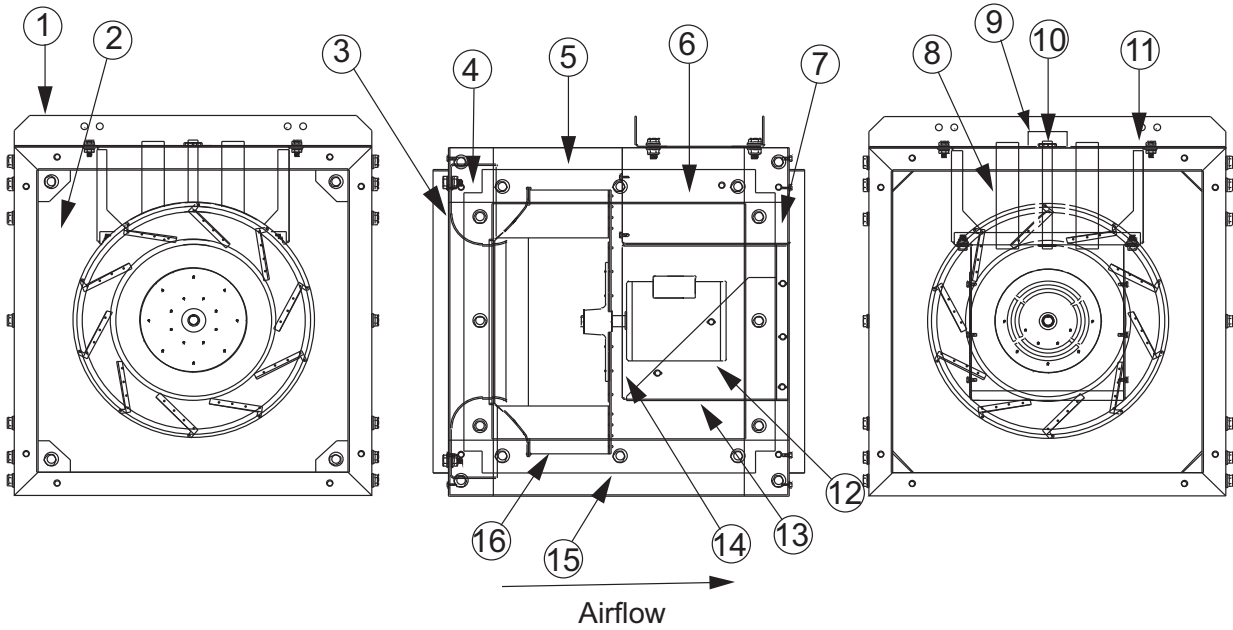
Part No.	Description		
	Sizes 60 - 165	Sizes 180 - 210	Sizes 225 - 402
1	L-Bolt (2)	L-Bolt (2)	L-Bolt (2)
2	Motor Plate (1)	Motor Plate (1)	Motor Plate (1)
3	Motor (1)	Motor (1)	Motor (1)
4	Motor Support Bracket (2)	Motor Support Bracket (2)	Motor Support Bracket (2)
5	Motor Support Rail (2)	Motor Support Rail (3)	Motor Support Rail (2)
6	Housing Panel Motor Side (1)	Housing Panel Motor Side (1)	Housing Panel Motor Side (1)
7	Access Panel (3)	Access Panel (3)	Access Panel (3)
8	Bearing Support Reinforcement Plate (1)	Bearing Support Reinforcement Plate (1)	Bearing Support Reinforcement Plate (2)
9	Belt Cover (1)	Belt Cover (1)	Belt Cover (1)
10	Bearing Support & Bearing Support Leg	Bearing Support & Bearing Support Leg	Bearing Support & Bearing Support Leg
11	Inlet Panel (1)	Inlet Panel (1)	Inlet Panel (1)
12	Housing Frame Support (6)	Housing Frame Support (6)	Housing Frame Support (6)
13	Inlet Cone, Sizes 135-402 (1)	Inlet Cone, Sizes 135-402 (1)	Inlet Cone, Sizes 135-402 (1)
14	Wheel (1)	Wheel (1)	Wheel (1)
15	Shaft (1)	Shaft (1)	Shaft (1)
16	Bearing Cover (1)	Bearing Cover (1)	Bearing Cover (1)
17	Housing Frame Rail (2)	Housing Frame Rail (2)	Housing Frame Rail (2)
18	Bearing (2)	Bearing (2)	Bearing (2)

SQN-B/SQN-HP Side Discharge



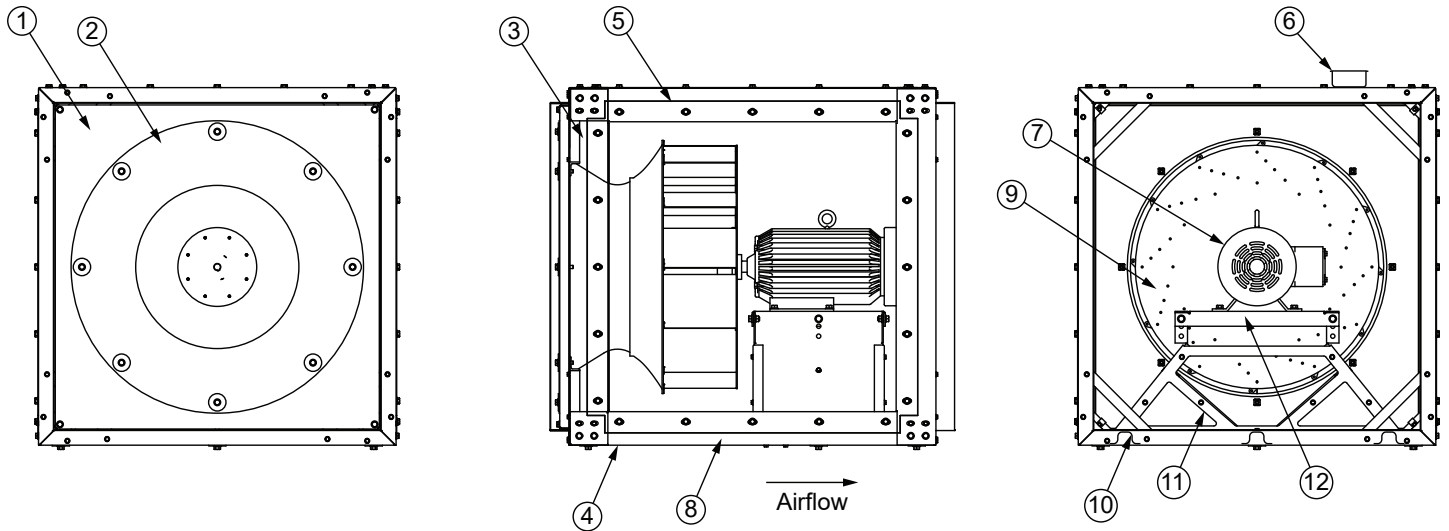
Part No.	Description		
	Sizes 60 - 165	Sizes 180 - 210	Sizes 225 - 402
1	L-Bolt (2)	L-Bolt (2)	L-Bolt (2)
2	Motor Plate (1)	Motor Plate (1)	Motor Plate (1)
3	Motor (1)	Motor (1)	Motor (1)
4	Motor Support Bracket (2)	Motor Support Bracket (2)	Motor Support Bracket (2)
5	Motor Support Rail (2)	Motor Support Rail (3)	Motor Support Rail (2)
6	Housing Panel Motor Side (1)	Housing Panel Motor Side (1)	Housing Panel Motor Side (1)
7	Access Panel (3)	Access Panel (3)	Access Panel (3)
8	Bearing Support Reinforcement Plate (1)	Bearing Support Reinforcement Plate (1)	Bearing Support Reinforcement Plate (2)
9	Belt Cover (1)	Belt Cover (1)	Belt Cover (1)
10	Bearing Support Assembly (1)	Bearing Support Assembly (1)	Bearing Support Assembly (1)
11	Inlet Panel (1)	Inlet Panel (1)	Inlet Panel (1)
12	Housing Frame Support (6)	Housing Frame Support (6)	Housing Frame Support (6)
13	Inlet Cone, Sizes 135 - 402 (1)	Inlet Cone, Sizes 135 - 402 (1)	Inlet Cone, Sizes 135 - 402 (1)
14	Wheel (1)	Wheel (1)	Wheel (1)
15	Shaft (1)	Shaft (1)	Shaft (1)
16	Bearing Cover (1)	Bearing Cover (1)	Bearing Cover (1)
17	Housing Frame Rail (2)	Housing Frame Rail (2)	Housing Frame Rail (2)
18	Bearing (2)	Bearing (2)	Bearing (2)
19	Discharge Cover (1)	Discharge Cover (1)	Discharge Cover (1)
20	Single Side Discharge Flange (4)	Single Side Discharge Flange (4)	Single Side Discharge Flange (4)
	Dual Side Discharge Flange (8)	Dual Side Discharge Flange (8)	Dual Side Discharge Flange (8)

SQN-D Sizes 70 - 165



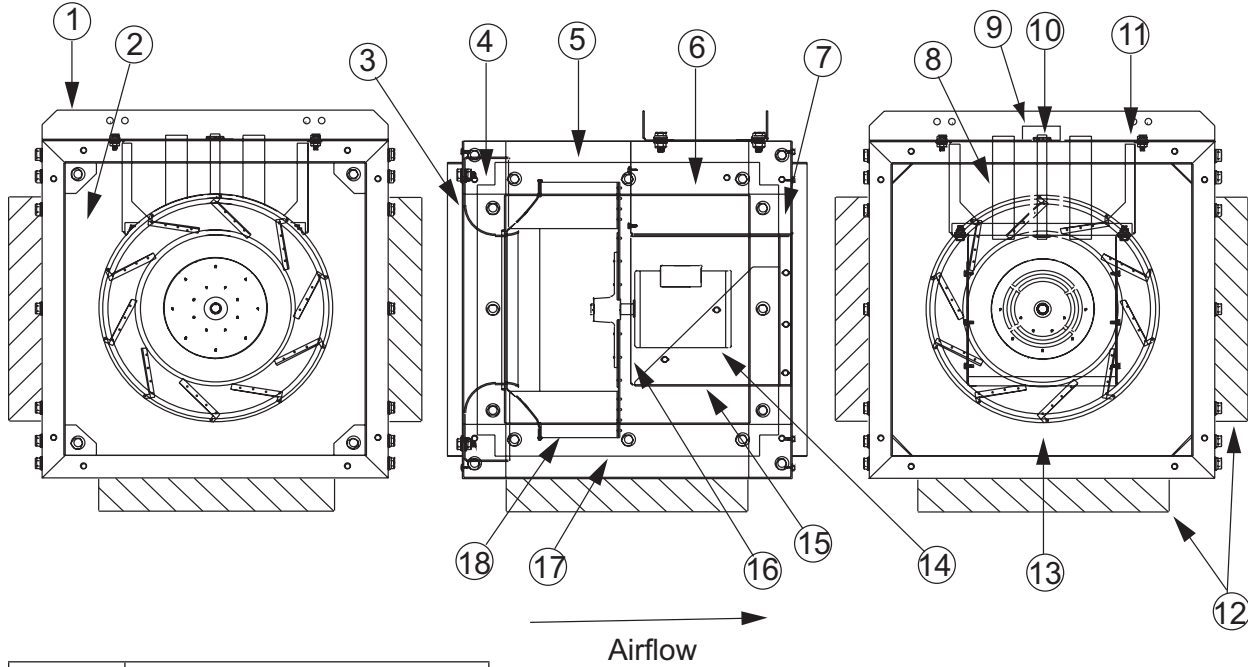
Part No.	Description	Part No.	Description
1	Motor Support Rail (2)	9	Electrical Box
2	Inlet Panel (1)	10	Electrical Conduit (1)
3	Inlet Cone, Sizes 135 - 165 (1)	11	Motor Plate Platform (1)
4	Housing Frame Support (6)	12	Motor (1)
5	Housing Panel Motor Side (1)	13	Motor Cover (1)
6	Access Panel (3)	14	Motor Plate (1)
7	Motor Cover Back Plate (1)	15	Housing Frame Rail (2)
8	Cooling Tube (2)	16	Wheel

SQN-D Sizes 180 - 365



Part No.	Description	Part No.	Description
1	Inlet Panel (1)	9	Wheel
2	Inlet Cone, Sizes 135 - 165 (1)	10	Power Assembly Mounting Rail (3)
3	Housing Frame Support (6)	11	Power Assembly
4	Housing Panel Motor Side (1)	12	Motor Plate
5	Access Panel (3)	13	
6	Electrical Box	14	
7	Motor (1)	15	

SQN-D Side Discharge



Part No.	Description
1	Motor Support Rail (2)
2	Inlet Panel (1)
3	Inlet Cone, Sizes 135 - 165 (1)
4	Housing Frame Support (6)
5	Housing Panel Motor Side (1)
6	Access Panel (3)
7	Motor Cover Back Plate (1)
8	Cooling Tube (2)
9	Electrical Box
10	Electrical Conduit (1)
11	Motor Plate Platform (1)
12	Single Side Discharge Flange (4) Dual Side Discharge Flange (8)
13	Discharge Cover (1)
14	Motor (1)
15	Motor Cover (1)
16	Motor Plate (1)
17	Housing Frame Rail (2)
18	Wheel (1)

Limited Warranty

Loren Cook Company warrants that your Loren Cook fan was manufactured free of defects in materials and workmanship, to the extent stated herein. For a period of one (1) year after date of shipment, we will replace any parts found to be defective without charge, except for shipping costs which will be paid by you. This warranty is granted only to the original purchaser placing the fan in service. This warranty is void if the fan or any part thereof has been altered or modified from its original design or has been abused, misused, damaged or is in worn condition or if the fan has been used other than for the uses described in the company manual. This warranty does not cover defects resulting from normal wear and tear. To make a warranty claim, notify Loren Cook Company, General Offices, 2015 East Dale Street, Springfield, Missouri 65803-4637, explaining in writing, in detail, your complaint and referring to the specific model and serial numbers of your fan. Upon receipt by Loren Cook Company of your written complaint, you will be notified, within thirty (30) days of our receipt of your complaint, in writing, as to the manner in which your claim will be handled. If you are entitled to warranty relief, a warranty adjustment will be completed within sixty (60) business days of the receipt of your written complaint by Loren Cook Company. This warranty gives only the original purchaser placing the fan in service specifically the right. You may have other legal rights which vary from state to state. For fans provided with motors, the motor manufacturer warrants motors for a designated period stated in the manufacturer's warranty. Warranty periods vary from manufacturer to manufacturer. Should motors furnished by Loren Cook Company prove defective during the designated period, they should be returned to the nearest authorized motor service station. Loren Cook Company will not be responsible for any removal or installation costs.



LOREN COOK COMPANY

Corporate Offices: 2015 E. Dale St. Springfield, MO 65803
 Phone 417-869-6474 | Fax 417-862-3820 | lorencook.com

Transmittal

PROJECT: New Dormitories - Phase 2, Bldg. 6
Booneville Human Development Center
Booneville, Arkansas

SMA PROJECT NO: 2002B

DATE: January 20, 2023

TO: Alessi Keyes Construction
10623 Maumelle Blvd.
North Little Rock, AR 72113

If enclosures are not as noted, please
inform us immediately.

If checked below, please:

ATTN: Charley Dawson

Acknowledge receipt of enclosures.

Return enclosures to us.

WE TRANSMIT:

Herewith

Under separate cover

VIA:

Courier

Mail

E-mail

Overnight delivery

Fax

Other

FOR YOUR:

Approval/Action

Information

Use as requested

Review & comment

Use

Other

THE FOLLOWING:

Drawings

Specifications

Digital Files - PDF

Submittals

Proposal Request

Digital Files - Other

Change Order

Samples

Other

COPIES	DATE	REV. NO.	DESCRIPTION	ACTION CODE
1	1/20/2023		HVAC power ventilators	A

ACTION A. No action required

C. For signature and return to this office

E. See REMARKS below

CODE B. Action indicated on item transmitted

D. For signature and forwarding as noted below under REMARKS

REMARKS

COPIES TO:

(with enclosures)

Rex Morris, Morris AE

By: Randy Stocks

Submittal Comment Sheet

To: Randy Stocks, Stocks-Mann Architects
From: Matthew Wendel, BTME
Date: January 20, 2023
Project: Booneville HDC Building #6
Project #: 01-20-0003
Ref: 23-34-23 – HVAC Power Ventilators
Submitted By: Alessi Keyes Construction

APPROVED	<input type="checkbox"/>
REJECTED	<input type="checkbox"/>
REVISE AND RESUBMIT	<input type="checkbox"/>
REFER TO SUBMITTAL COMMENT SHEET	<input checked="" type="checkbox"/>

This review performed by Bernhard TME, LLC, is only for general conformance with the design concept of the project and general compliance with the information provided in the Contract Documents. Corrections or comments made on the submittal and/or shop drawings during this review do not relieve the Contractor from compliance with the requirements of the plans, specifications, and other contract documents. Approval of a specific item shall not indicate an approval of an assembly of which the item is a component. Contractor is responsible for the following: all quantities; configuration of components; dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences, and procedures of construction; coordination of the work with that of all other trades; and, for performing all work in a safe and satisfactory manner.

Bernhard TME
Engineering

DATE: 01/20/23 BY: M. Wendel

Below find our response for the submittal received on Tuesday, December 27, 2022.

- | | | |
|----|----------------|-----------------|
| 1. | EF-601, EF-602 | APPROVED |
| 2. | EF-603 | APPROVED |
| 3. | VF-1 | APPROVED |

\- End of Submittal Comments -

THIS REVIEW PERFORMED BY BERNHARD TME, LLC, IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS. CORRECTIONS OR COMMENTS MADE ON THE SUBMITTAL AND/OR SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THE PLANS, SPECIFICATIONS, AND OTHER CONTRACT DOCUMENTS. APPROVAL OF A SPECIFIC ITEM SHALL NOT INDICATE AN APPROVAL OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING: ALL QUANTITIES; CONFIGURATION OF COMPONENTS; DIMENSIONS TO BE CONFIRMED AND CORRELATED AT THE JOBSITE; INFORMATION THAT PERTAINS SOLELY TO THE FABRICATION PROCESS OR TO THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES OF CONSTRUCTION; COORDINATION OF THE WORK WITH THAT OF ALL OTHER TRADES; AND, FOR PERFORMING ALL WORK IN A SAFE AND SATISFACTORY MANNER.



SUBMITTAL SHEET

Alessi Keyes Construction Co.
AKC-505 - Booneville HDC New Dorm

Project: AKC-505
Booneville HDC New Dorm

Spec Section Num: 23 34 23
Submittal: 23.10
Revision: 0
Package: HVAC
Date: 1/3/2023 UTC

Submittal Title: HVAC Power Ventilators
Submittal Detail:
Response Due By: 1/18/2023 UTC

Contractor:
Charley Dawson
Alessi-Keyes Construction Co.

Contractor's Stamp

Architect:
Trey Tassin
Stocks-Mann Architects

Architect's Stamp

Response:
Comment:



SUBMITTAL

PRODUCT	Exhaust Fans
MANUFACTURER	Loren Cook
JOB NAME	Booneville HDC Building #6
LOCATION	Booneville, AR
ENGINEER	Bernhard TME, LLC
CONTRACTOR	Comfort Systems
DATE	11/21/2022
SUBMITTED BY	Courtney Michael

5440 Northshore Drive - North Little Rock, Arkansas 72118 - Tel: 501.374.5420 Fax: 501.370.9298



COOK

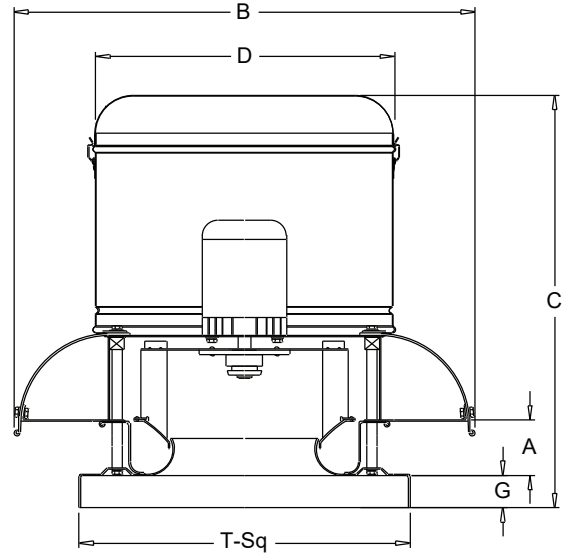


MARK: EF-601, EF-602
PROJECT: BOONEVILLE HDC BLDG 6
DATE: 11/19/2022

ACED-EC

**Downblast Centrifugal
Exhaust Ventilator
Roof Mounted/Direct Drive
Electronically Commutated Vari-Flow® Motor**

STANDARD CONSTRUCTION FEATURES:
All aluminum housing - Backward inclined all aluminum wheel - Two piece top cap with stainless steel quick release latches (sizes 101 - 135) - Welded curb cap corners - Birdscreen - Permanently lubricated ball bearing electronically commutated motor - Power rated in Input Watts - Corrosion resistant fasteners - Transit tested packaging.



Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Fan RPM	Input Watts	FEG	FEI	Speed Control
2	150C16DEC	2400	1.25	1559	797	n/a(<1HP)	1.39	EC

Altitude (ft): 463 Temperature (F): 70

Motor Information

HP	RPM	Volts/Ph/Hz	Enclosure
1	1650	115/1/60	OPEN -EC



Motor is electronically/thermally protected.

Sound Data Inlet Sound Power by Octave Band

1	2	3	4	5	6	7	8	LwA	dBA	Sones
81	83	85	77	72	71	65	60	80	69	17.8

- Distance from Sound source 5 ft

Accessories:

- EXTERNAL SIGNAL SPEED CONTROL
- CTL & XFMR BY OTHERS
- DISCONNECT NEMA 3 PRE-WIRED L-T
- BDM-18 MTR DPR 115V
- ROOF CURB RCG 22 13.5H -C-T+N

Dimensions (inches)

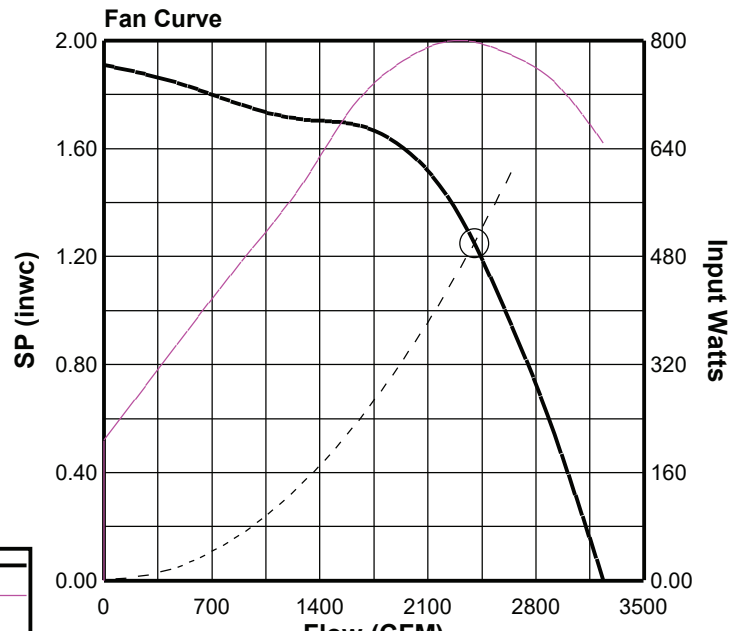
A	2-13/16
B O.D.	32-7/8
C	29-3/16
D O.D.	23-13/16
G	2
T Sq.	24
Roof Open. Sq.*	19-1/2

NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	118	Unit	92
----------------	----------	-----	------	----

* Roof opening size for curbs supplied by Cook only.

***Includes fan, motor & accessories.



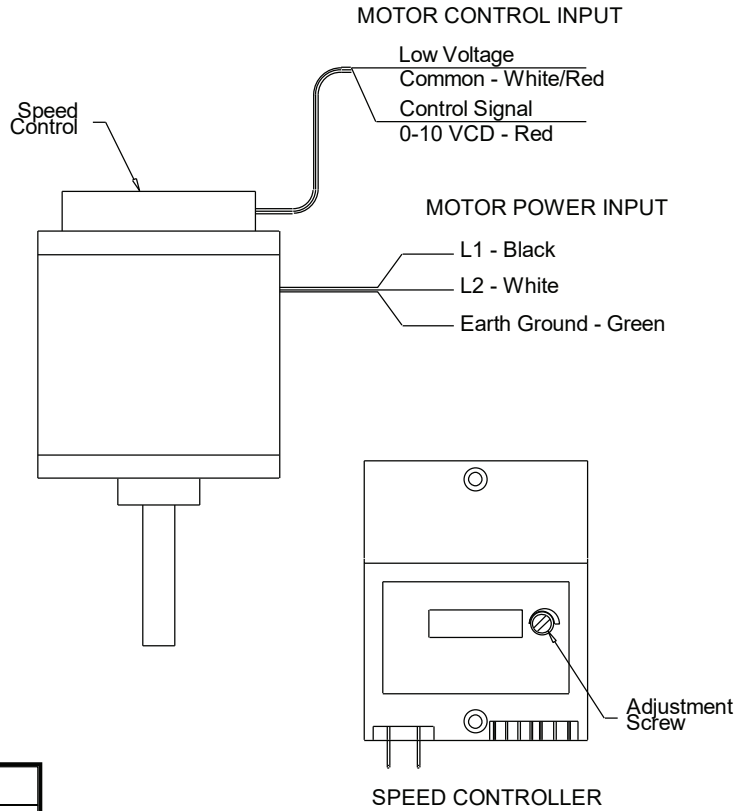


Speed Control

External Speed Control Electronically Commutated (EC) Motor Type N

STANDARD CONSTRUCTION FEATURES:

Vari-Flow EC Motors are available in 1/8 to 1 HP for 120V or 208-230V -Single phase applications have a adjustable speed range of 500 to 1725 or 500 to 2800 - Some motors come with a factory programmed maximum RPM for specific applications - External signal speed control requires a 0-10 VDC control signal to adjust speed of the motor - The motor will operate from 2-10 VDC and turns off when the control signal is below 1.9 VDC - Dial on speed control must be set to 0 for proper external speed control operation.



Dimensions (inches)

Mark	Qty	Description
EF-601, EF-602	2	OPEN -1HP - 115V/1 PH/ 60 1725/0000 -EC



BDM

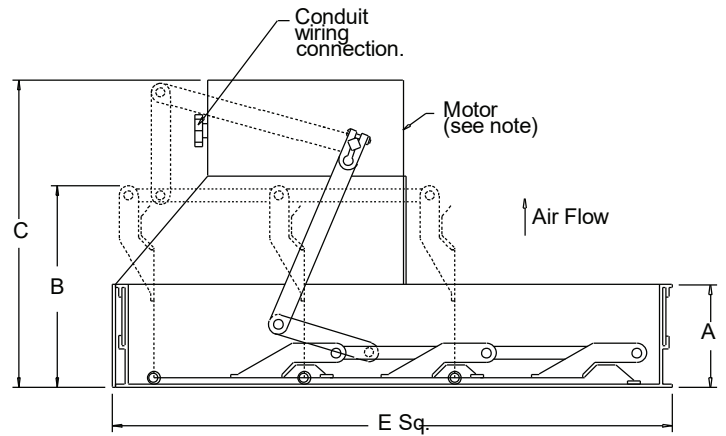
Motorized Backdraft Damper

STANDARD CONSTRUCTION FEATURES:

- .020 aluminum blades - .060
- aluminum frame - Aluminum hinge pins - Brass bushings -
- Non-overloading motor.

Notes:

Max operating temperature 130 Deg F (50 Deg C)



Dimensions (inches)

Mark	Qty	Description	A	B Max	C	E Sq.	# Motors
EF-601, EF-602	2	BDM-18 MTR DPR 115V	1-7/8	5-3/16	8	17-3/4	1



RCG

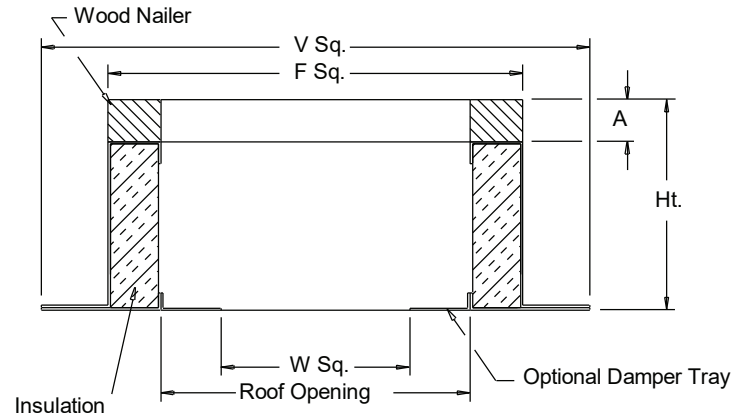
Galvanized Steel Roof Curb

STANDARD CONSTRUCTION FEATURES:

18 gauge galvanized steel - 1-1/2",
 3 lbs. density thermal and acoustical insulation - Continuously welded corners - Wood nailer.

Options:(As noted below*)

- 1) No wood nailer (deduct 1-1/2" for actual height).
- 2) Damper tray.
- 3) Liner.
- 4) Gasket on wood nailer.
- 5) Lorenized coating.
- 6) Enamel coating.
- 7) Burglar bars.



Dimensions (inches)

Mark	Qty	Description	Ht	Options*	A	F Sq.	V Sq.	W Sq.	Roof Opening
EF-601, EF-602	2	RCG 22	13.5	-	1-1/2	22-1/2	26-1/2	15-3/4	19-1/2



COOK



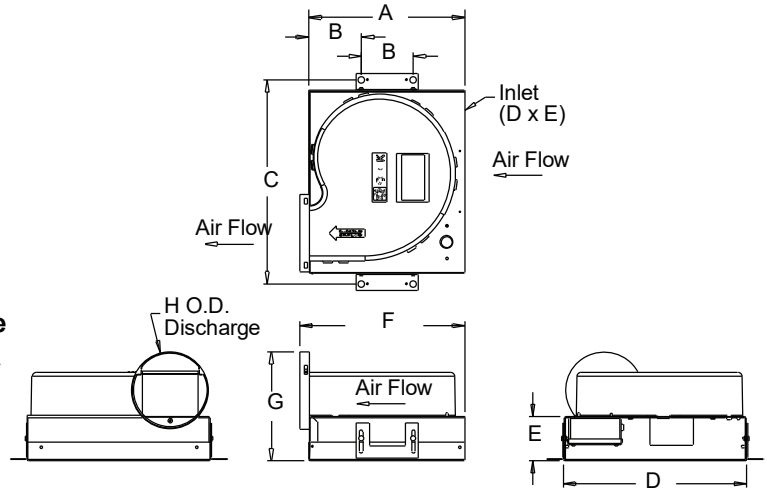
MARK: EF-603
PROJECT: BOONEVILLE HDC BLDG 6
DATE: 11/19/2022

GEMINI

Inline Fans 100 Series

STANDARD CONSTRUCTION FEATURES:

Forward curved injection molded polypropylene fan wheel - Injection molded flame resistant fan housing with round outlet duct - 22 ga. galvanized steel inlet box - Permanently lubricated 2-speed motor with built-in thermal overload protection and disconnect plug - Isolation mounted motor, mounted to one piece galvanized stamped steel integral motor mount/inlet - Field wiring compartment with receptacle - Adjustable prepunched mounting bracket - Shipped in ISTA certified transit tested packaging.



Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Nominal RPM	Input Watts	Speed Control
1	GN-188	200	.500	1355	97	FSC

Altitude (ft): 463 Temperature (F): 70

Motor Information

Volts/Ph/Hz	Nameplate Amps
115/1/60	1

Sound Data Inlet Sound Power by Octave Band

1	2	3	4	5	6	7	8	LwA	dBA	Sones
58	62	67	63	59	54	51	47	65	53	5.0

- Distance from Sound source 5 ft

Accessories:

- WALL CAP(RND) WCR-6
- FAN SPEED CONTROLLER 5A 120V PREWIRED
- INTEGRAL BD DAMPER

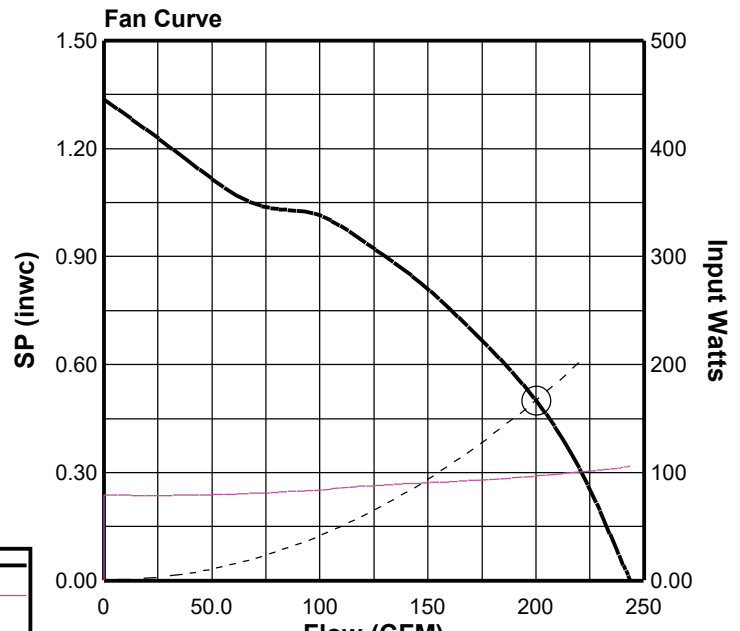
Dimensions (inches)

A	12
B	4
C	15-5/8
D	14
E	3-3/8
F	12-3/4
G	8-3/8
H.O.D.	5-15/16

NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	18	Unit	15

***Includes fan, motor & accessories.



Fan Curve Legend

CFM vs SP	—
CFM vs Watts	- - -
Point of Operation	○

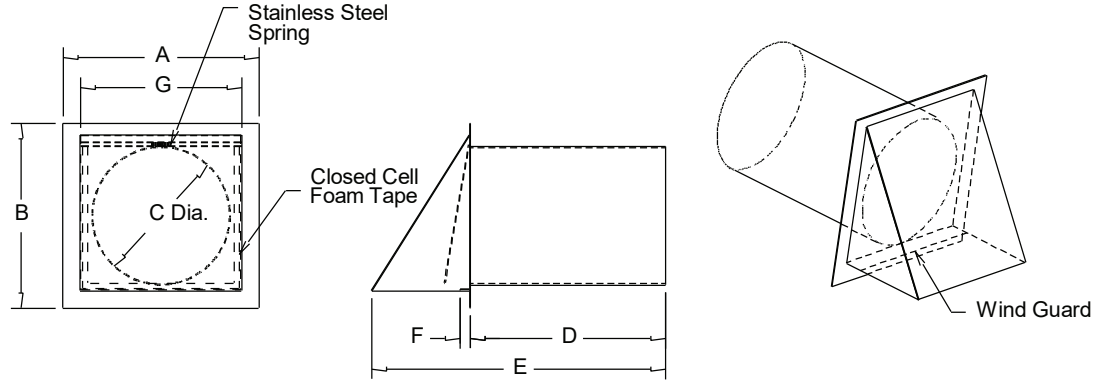


GEMINI

Wall Cap with Damper Round Duct

STANDARD CONSTRUCTION FEATURES:

Minimum .020 aluminum construction - Closed cell foam tape and stainless steel spring on damper door for quiet operation - Stainless steel pivot rod - Wind guard to prevent updraft from opening door.



Dimensions (inches)

Mark	Qty	Description	A	B	C Dia.	D	E	F	G
EF-603	1	WALL CAP(RND) WCR-6	8	8-1/4	6	8-1/2	12-3/4	3/4	7



COOK

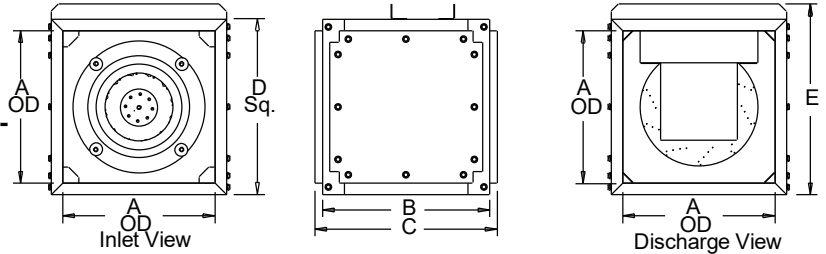


MARK: VF-1
PROJECT: BOONEVILLE HDC BLDG 6
DATE: 11/19/2022

SQN-D VF

**Centrifugal Square Inline
Direct Drive
Preprogrammed EC
Electronically Commutated Vari-Flow® Motor**

STANDARD CONSTRUCTION FEATURES:
 All aluminum wheel - Galvanized 18 gauge steel housing - Three removable access doors - Closed cell neoprene gasketing - Inlet and discharge duct collars - Universal mounting feet - Preprogrammed EC electronically commutated Vari-Flow® motor/drive package - Transit tested packaging.



Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Fan RPM	Power (HP)	FEG	Speed Control
1	135SQN17DO81VF	560	1.00	1698	.332	n/a(<1HP)	EC

Altitude (ft): 463 Temperature (F): 70

Motor Information

HP	RPM*	Volts/Ph/Hz	Enclosure	RLA
1/2	1725	115/1/60	OPEN -EC	6.4



*Motor programmed to max speed of 1725 RPM.
 RLA based on motor manufacturer's data at programmed HP and max RPM.
 Motor is electronically/thermally protected.

Sound Data Sound Power by Octave Band

	1	2	3	4	5	6	7	8	LwA	dBA	Sones
Inlet	81	78	74	75	69	63	59	53	75	64	12
Outlet	86	83	84	83	80	78	72	63	86	74	23

- Distance from Sound source 5 ft

Accessories:

- EXTERNAL SIGNAL SPEED CONTROL
- ORIFICE PLATE 81
- CTL & XFMR BY OTHERS
- DISCONNECT NEMA 1 PRE-WIRED
- FLANGED INLET
- FLANGED OUTLET
- INLET COMP FLANGE
- OUTLET COMP FLANGE

Dimensions (inches)

A	18
B	20-1/4
C	22-1/4
D Sq.	20-3/4
E	22-5/16
Housing Gauge	18

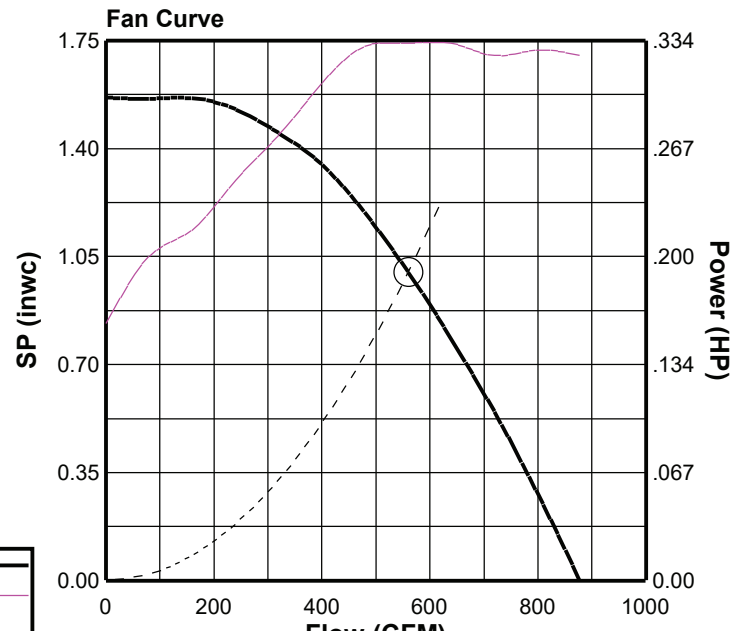
NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	185	Unit	113
----------------	----------	-----	------	-----

***Includes fan, motor & accessories.

Fan Curve Legend

CFM vs SP	—
CFM vs HP	—
Point of Operation	○



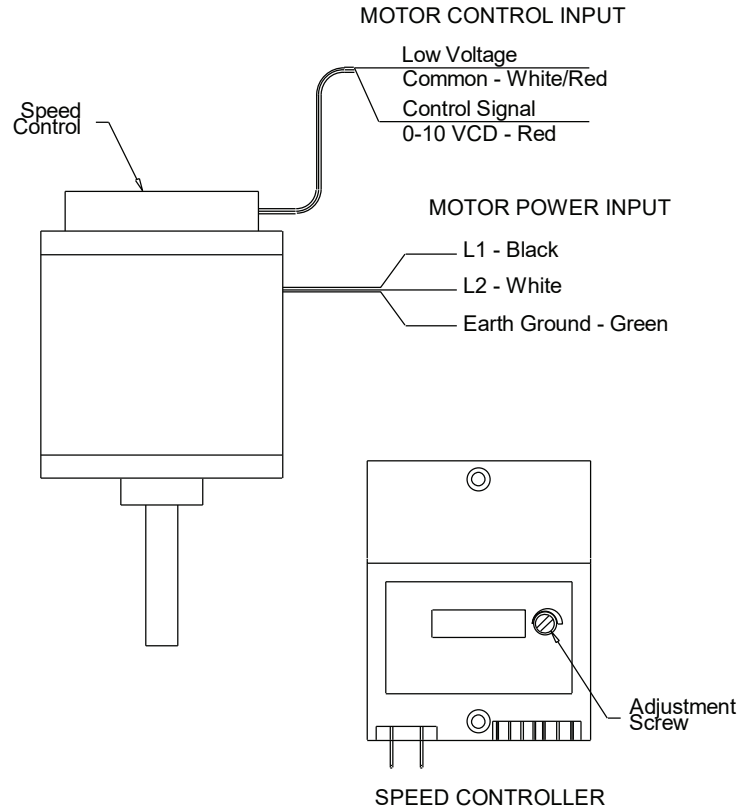


Speed Control

External Speed Control Electronically Commutated (EC) Motor Type N

STANDARD CONSTRUCTION FEATURES:

Vari-Flow EC Motors are available in 1/8 to 1 HP for 120V or 208-230V -Single phase applications have a adjustable speed range of 500 to 1725 or 500 to 2800 - Some motors come with a factory programmed maximum RPM for specific applications - External signal speed control requires a 0-10 VDC control signal to adjust speed of the motor - The motor will operate from 2-10 VDC and turns off when the control signal is below 1.9 VDC - Dial on speed control must be set to 0 for proper external speed control operation.



Dimensions (inches)

Mark	Qty	Description
VF-1	1	OPEN -1/2HP - 115V/1 PH/ 60 1725/0000 -EC

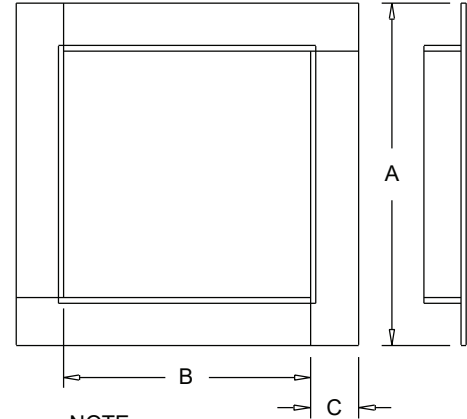


COOK

PROJECT: BOONEVILLE HDC BLDG 6
DATE: 11/19/2022

Companion Flange

Inlet/Discharge



NOTE:
Mat'l: C" X C" X 1/8
6063-T5 aluminum or 1020 steel.

Dimensions (inches)

Mark	Qty	Description	A	B	C
VF-1	1	FLANGED INLET	21-1/4	18-1/4	1-1/2

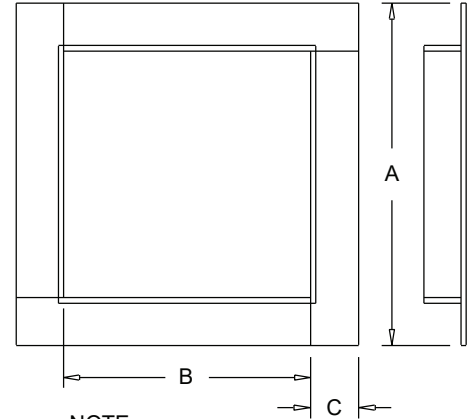


COOK

PROJECT: BOONEVILLE HDC BLDG 6
DATE: 11/19/2022

Companion Flange

Inlet/Discharge



NOTE:
 Mat'l: C" X C" X 1/8
 6063-T5 aluminum or 1020 steel.

Dimensions (inches)

Mark	Qty	Description	A	B	C
VF-1	1	FLANGED OUTLET	21-1/4	18-1/4	1-1/2

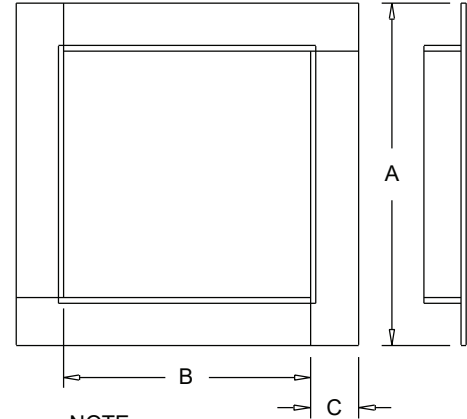


COOK

PROJECT: BOONEVILLE HDC BLDG 6
DATE: 11/19/2022

Companion Flange

Inlet/Discharge



NOTE:
Mat'l: C" X C" X 1/8
6063-T5 aluminum or 1020 steel.

Dimensions (inches)

Mark	Qty	Description	A	B	C
VF-1	1	INLET COMP FLANGE	21-1/4	18-1/4	1-1/2

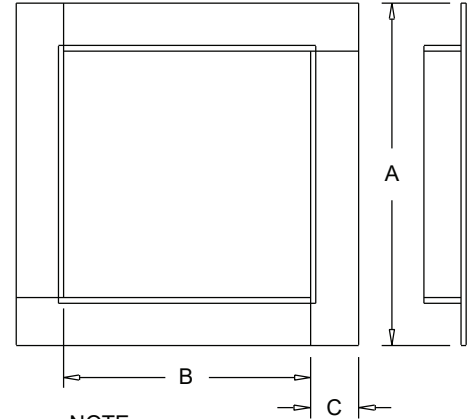


COOK

PROJECT: BOONEVILLE HDC BLDG 6
DATE: 11/19/2022

Companion Flange

Inlet/Discharge



NOTE:
Mat'l: C" X C" X 1/8
6063-T5 aluminum or 1020 steel.

Dimensions (inches)

Mark	Qty	Description	A	B	C
VF-1	1	OUTLET COMP FLANGE	21-1/4	18-1/4	1-1/2

HVAC Power Ventilators

Alessi Keyes Construction Co.

AKC-505 - Booneville HDC New Dorm



Comments

HVAC Power Ventilators

Alessi Keyes Construction Co.

AKC-505 - Booneville HDC New Dorm



History

**JANUARY 3,
2023 UTC**

Trey Tassin (Stocks-Mann Architects) - VIEWED
3:13 PM UTC

**DECEMBER 27,
2022 UTC**

Charley Dawson (Alessi-Keyes Construction Co.) - IN REVIEW
5:54 PM UTC

Charley Dawson (Alessi-Keyes Construction Co.) - MODIFIED
5:54 PM UTC

Due from Approver:

Old:

New: 1/18/23 UTC

Due Date:

Old:

New: 1/18/23 UTC

In Review Date:

Old:

New: 12/27/22 UTC

Updated On:

Old: 12/27/22 at 5:53:23 PM UTC

New: 12/27/22 at 5:54:46 PM UTC

CC Participants:

Old:

New: Bernhard TME Project, Randy Stocks

Additional Approvers:

Old:

New: Garrett Thompson

Assigned From:

Old: Matthew Aldridge

New: Charley Dawson

Assigned To:

Old: Charley Dawson

New: Trey Tassin

Approver:

Old:

New: Trey Tassin

Charley Dawson (Alessi-Keyes Construction Co.) - UPLOADED
FileName: 23 34 23 - HVAC Power Ventilators.pdf

5:53 PM UTC

Charley Dawson (Alessi-Keyes Construction Co.) - SUBMITTED
5:53 PM UTC

Charley Dawson (Alessi-Keyes Construction Co.) - MODIFIED
5:53 PM UTC

Submitted Date:

Old:

New: 12/27/22 UTC

Updated On:

HVAC Power Ventilators

Alessi Keyes Construction Co.

AKC-505 - Booneville HDC New Dorm



Old: 12/27/22 at 5:53:17 PM UTC

New: 12/27/22 at 5:53:23 PM UTC

Assigned From:

Old: Charley Dawson

New: Matthew Aldridge

Assigned To:

Old: Matthew Aldridge

New: Charley Dawson

Charley Dawson (Alessi-Keyes Construction Co.) - MODIFIED
5:53 PM UTC

Updated On:

Old: 12/27/22 at 5:53:12 PM UTC

New: 12/27/22 at 5:53:17 PM UTC

Charley Dawson (Alessi-Keyes Construction Co.) - MODIFIED
5:53 PM UTC

Public Visibility:

Old: False

New: True

Updated On:

Old: 12/27/22 at 5:53:12 PM UTC

New: 12/27/22 at 5:53:17 PM UTC

Charley Dawson (Alessi-Keyes Construction Co.) - ISSUED
5:53 PM UTC

Charley Dawson (Alessi-Keyes Construction Co.) - MODIFIED
5:53 PM UTC

Issued Date:

Old:

New: 12/27/22 UTC

Updated By:

Old:

New: Charley Dawson (Alessi-Keyes Construction Co.)

Updated On:

Old:

New: 12/27/22 at 5:53:12 PM UTC

Assigned From:

Old:

New: Charley Dawson

Assigned To:

Old:

New: Matthew Aldridge

Charley Dawson (Alessi-Keyes Construction Co.) - VIEWED
5:53 PM UTC

Charley Dawson (Alessi-Keyes Construction Co.) - CREATED
5:27 PM UTC

HVAC Power Ventilators

Alessi Keyes Construction Co.

AKC-505 - Booneville HDC New Dorm

