

*Quality People. Building Solutions.*

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**Project:** Farm Credit Office

**Supplier:** Powers of Arkansas

**Submittal:** Power Ventilators

**Submittal Number:** 23 34 23-01

**Drawing # and Installation:** Mechanical Drawings

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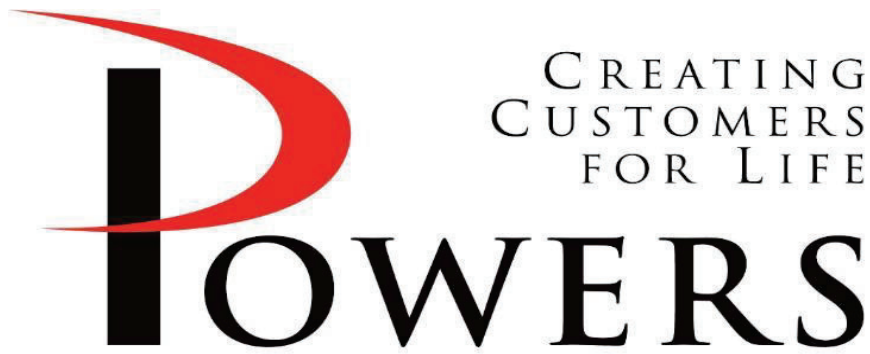
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Notes:

**CSUSA PROJECT NO.**

**23-1013**

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# IOM

<b>PRODUCT</b>	Exhaust Fan EF-1
<b>MANUFACTURER</b>	Loren Cook
<b>JOB NAME</b>	Farm Credit – Russellville, AR
<b>LOCATION</b>	Russellville, AR
<b>ENGINEER</b>	Nathan Wilson
<b>CONTRACTOR</b>	Comfort Systems
<b>DATE</b>	8/7/2024
<b>SUBMITTED BY</b>	Brady Smith

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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](http://lorencook.com)
- [info@lorencook.com](mailto:info@lorencook.com)
- 417-869-6474 ext. 166

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

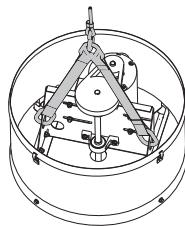
### Receiving and Inspection

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.

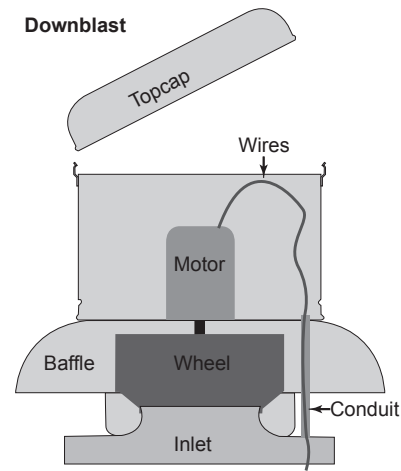
## Wiring

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

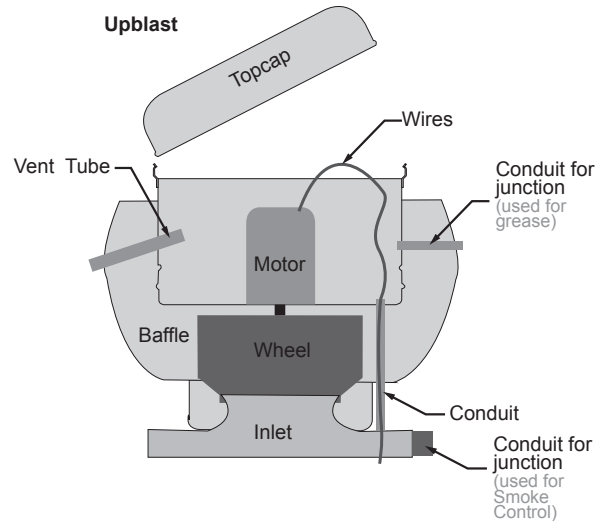
The motor's wiring box is the approved field wiring compartment of the unit for ACE, ACRU and ACW units. The motor's wiring box may be on the side of the motor, the shaft end of the motor or the opposite shaft end of the motor. If an additional field wiring compartment is added, then an approved metal 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.

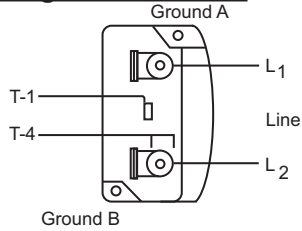
Use the following diagrams to wire the motor except for EC and EC/PM wiring diagrams; see additional supplement.

# Wiring Diagrams

## Vari-Flow

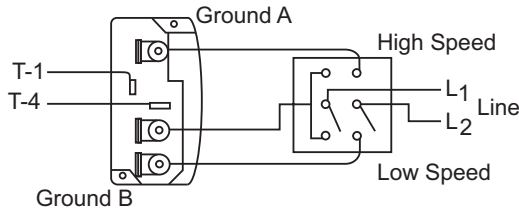
For EC or VF see EC Motor Wiring supplement. For VF2 see PM wiring supplement.

## Single Speed, Single Phase Motor



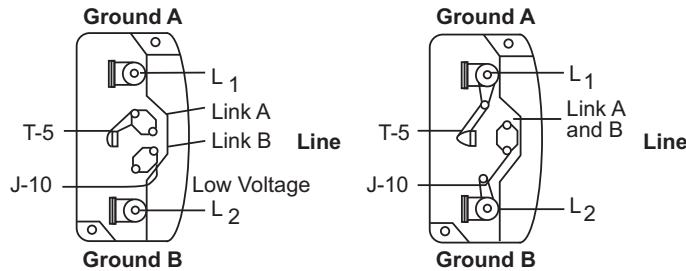
When ground is required, attach to ground A or B with No. 6 thread forming screw. To reverse, interchange T-1 and T-4.

## 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.

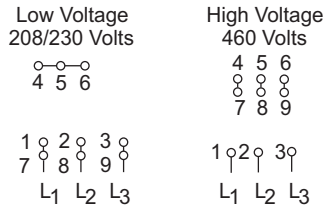
## Single Speed, Single Phase, Dual Voltage



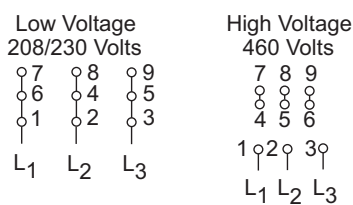
When ground is required, attach to ground A or B with No. 6 thread forming screw. To reverse, interchange T-5 and J-10 leads.

## 3-Phase, 9 Lead Motor

### Y-Connection

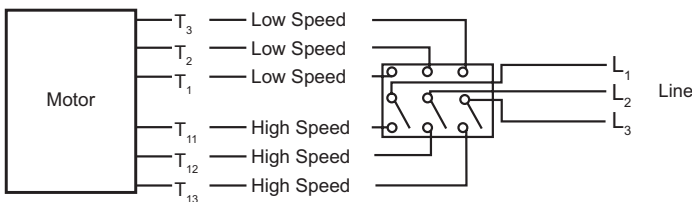


### Delta-Connection



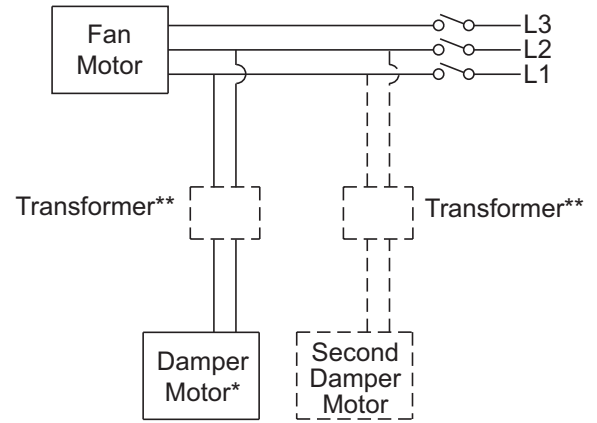
To reverse, interchange any two line leads.

## 2 Speed, 2 Winding, 3-Phase



To reverse: High Speed: interchange leads T<sub>11</sub> and T<sub>12</sub>; Low Speed: interchange leads T<sub>1</sub> and T<sub>2</sub>; Both Speeds: interchange any two line leads.

## Typical Damper Motor Schematic

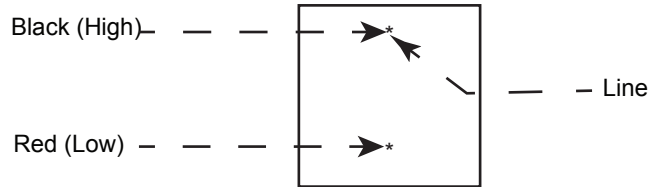


For 3-Phase, damper motor voltage should be the same between L<sub>1</sub> and L<sub>2</sub>. For single phase application, disregard L<sub>3</sub>.

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

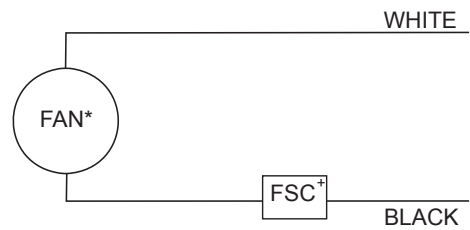
\*\*A transformer may be provided in some installations to correct the damper motor voltage to the specified voltage.

## 2-Speed PSC Motors

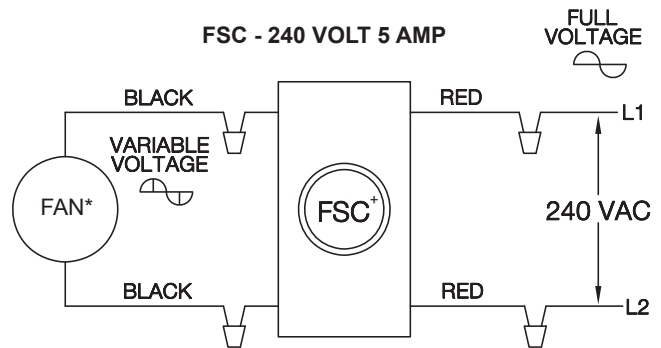


\*Cap or insulate unused lead

### FSC - 115 VOLT 10 AMP



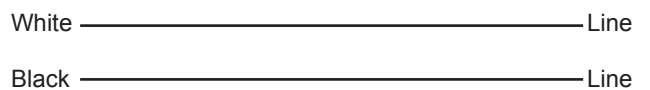
### FSC - 240 VOLT 5 AMP



\* See wiring diagram for motor wiring.

+ Locate away from heat.

## Shade Pole or PSC Motors



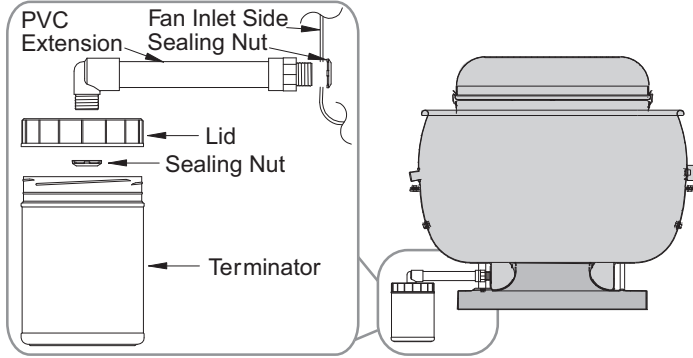
# ⚠ WARNING

## 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.

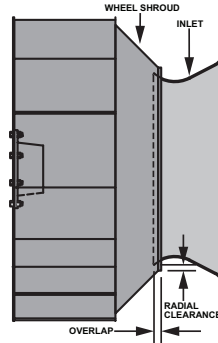
5. Inspect wheel-to-inlet clearance. Wheels may shift in shipment. To realign wheel-to-inlet, shift upper bearing so there is an equal radial clearance between the wheel and inlet.

### 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 Standard
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.

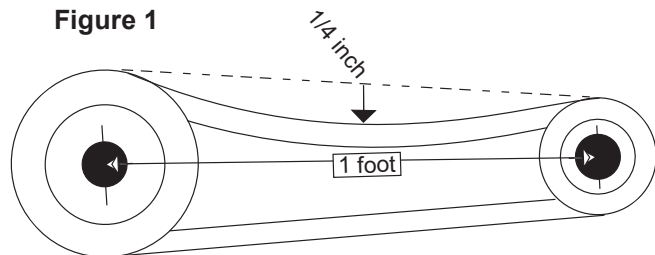
### Belt tension

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

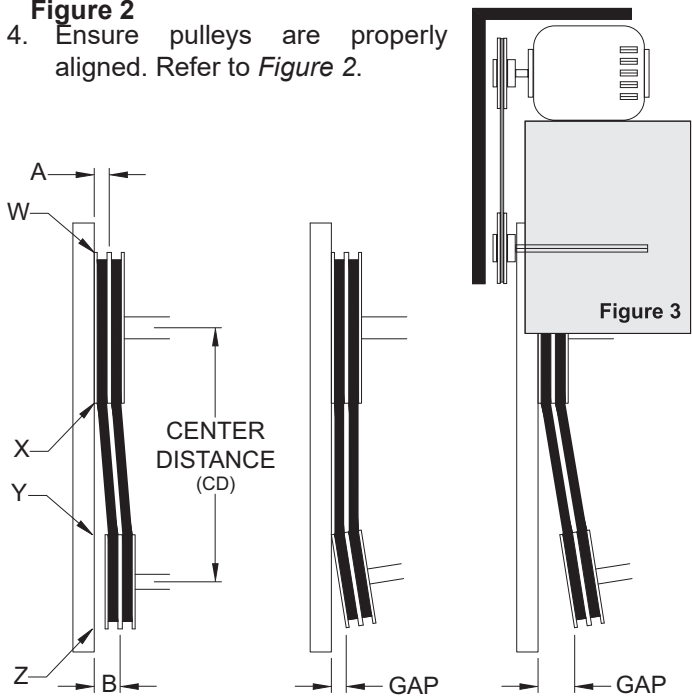


1. Loosen motor plate adjustment bolts and slide motor plate so that belts easily slip into the grooves on the pulleys. Never pry, roll, or force the belts over the rim of the pulley.
2. Slide motor plate until proper tension is reached. For proper tension, a deflection of approximately 1/4" per foot 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.**

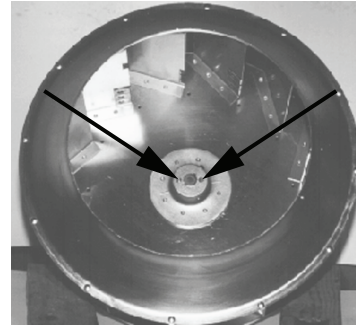
6. Inspect the wheel position again. If necessary, readjust by loosening the bearing bolts and setscrews and repeat from step 3.

### Wheel Replacement

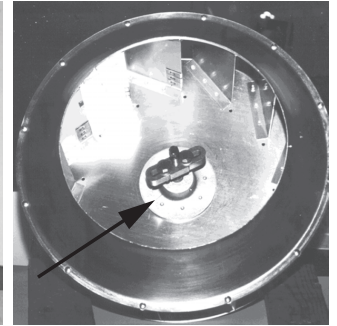
1. Drill two holes approximately centered between the shaft and the edge of the hub outer dimension with the

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

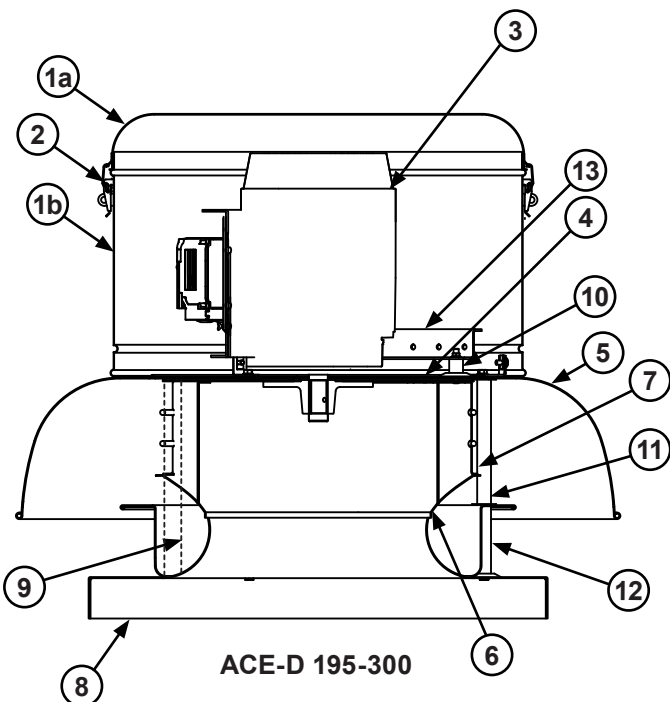
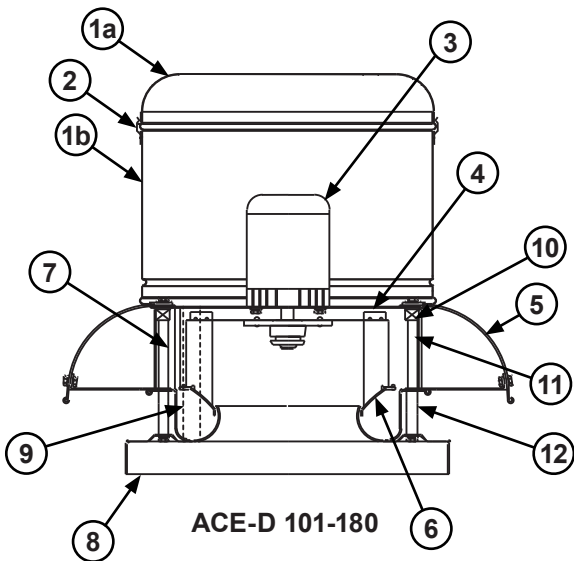
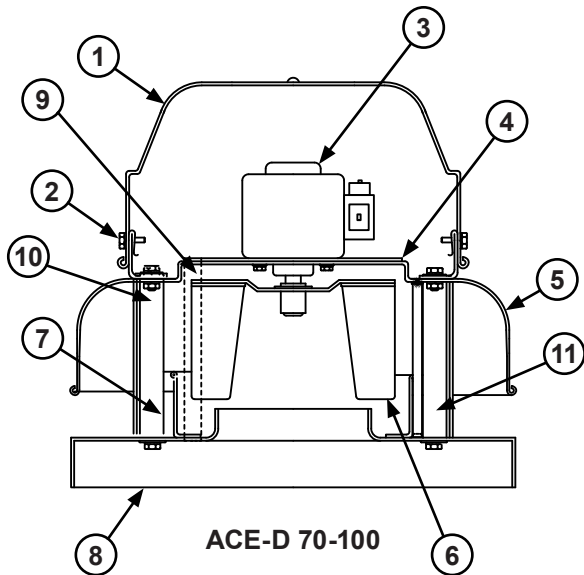
### Recommended Puller:

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

### Troubleshooting

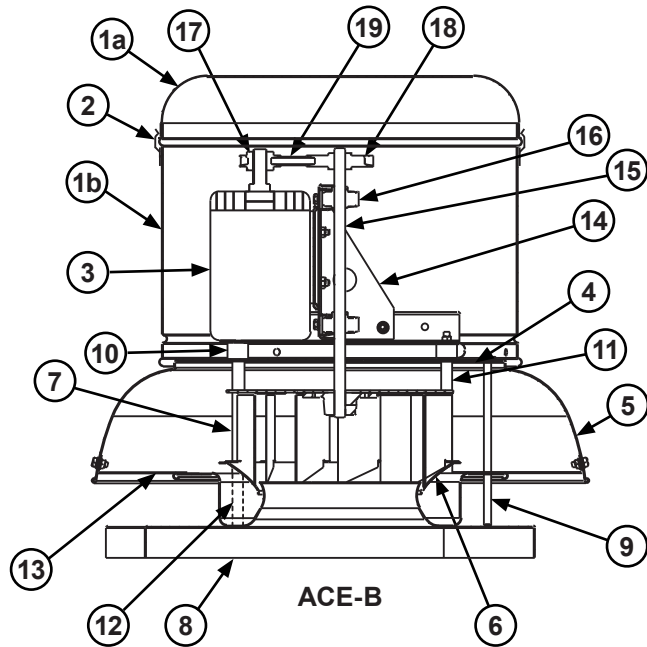
Problem and Potential Cause
<p><b>Low Capacity or Pressure:</b></p> <ul style="list-style-type: none"> <li>• Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor or belt drive assembly.</li> <li>• Poor fan inlet conditions. There should be a straight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

## ACE-D Parts



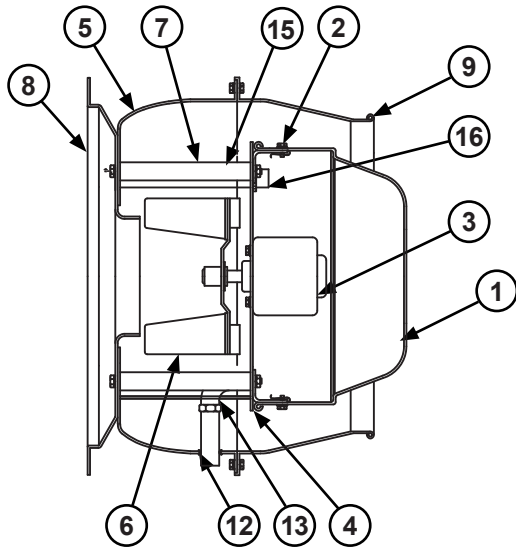
Item #	ACE-D Description			
	70-100	101-180	150-245	270-300
1a	Top Cap	Top Cap Lid	Top Cap Lid	Top Cap Lid
1b		Top Cap Cylinder	Top Cap Cylinder	Top Cap Cylinder
2	Bolts (4)	Top Cap Clip (4)	Top Cap Clip (4)	Top Cap Clip (4)
3	Motor	Motor	Motor	Motor
4	Motor Plate	Motor Plate	Motor Plate	Motor Plate
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

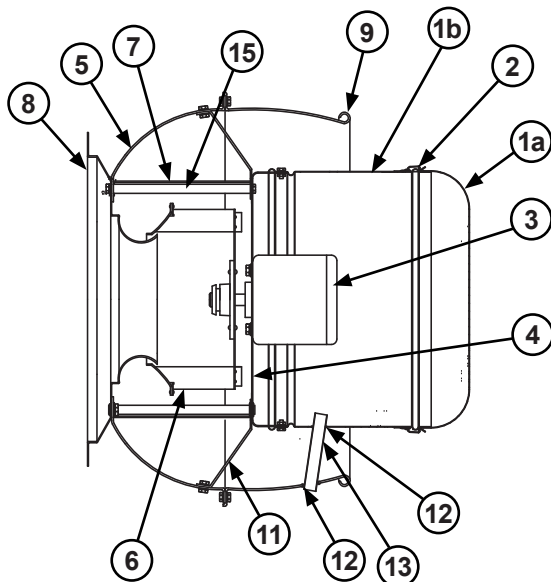
## ACW-D Parts



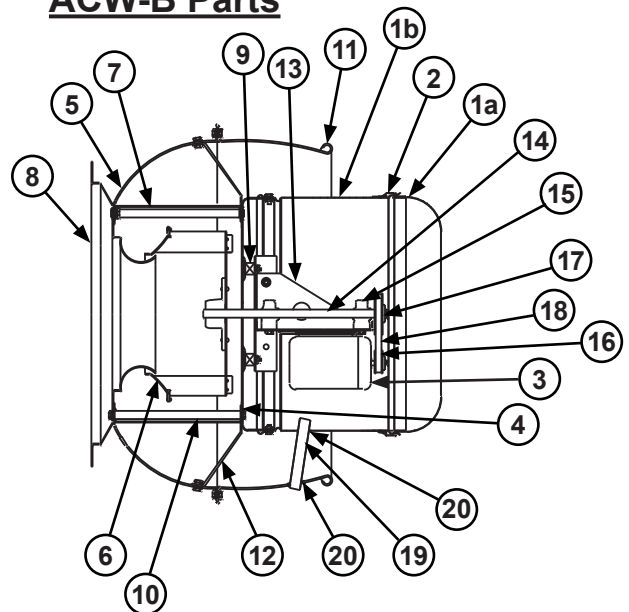
ACW-D 70-100

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

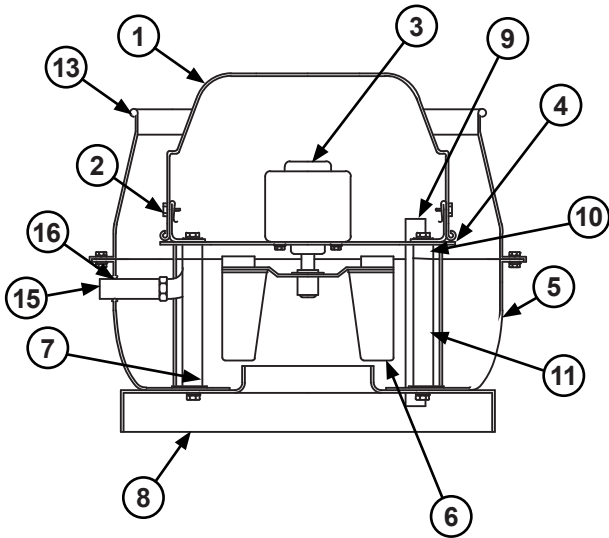


ACW-D 101-195  
C-Face Mount



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)

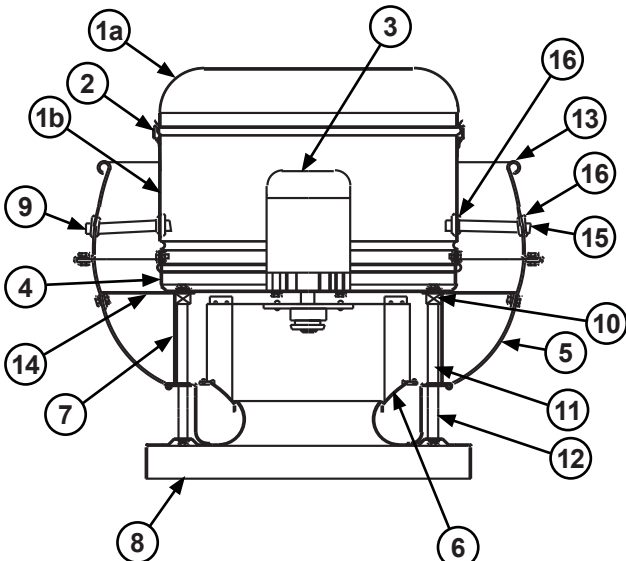
## ACRU-D Parts



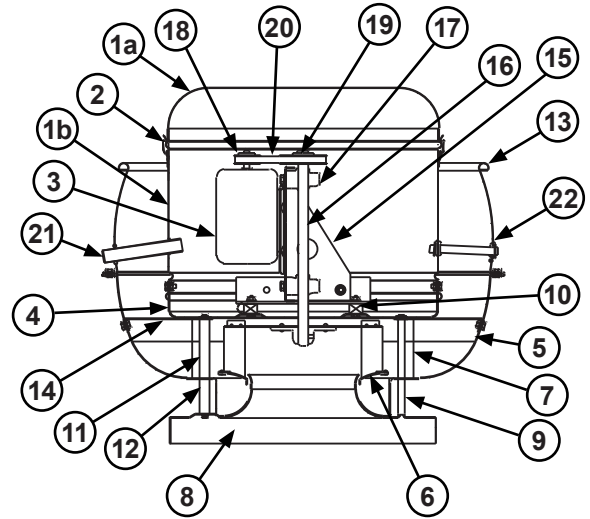
ACRU-D Sizes 70-100

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

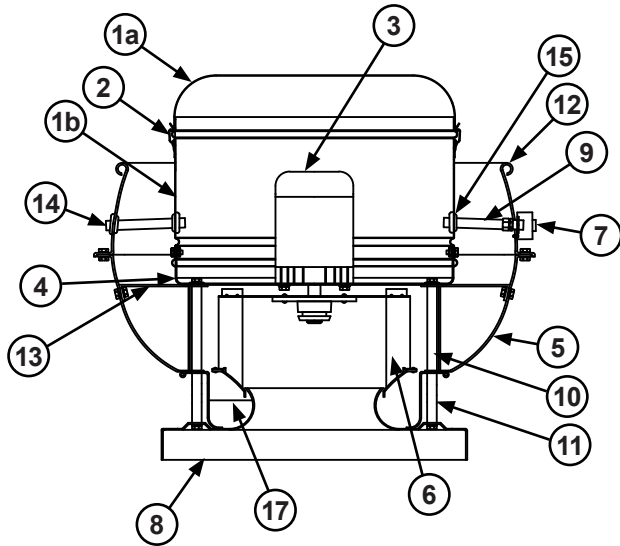


ACRU-D Sizes 101-195 C-Face

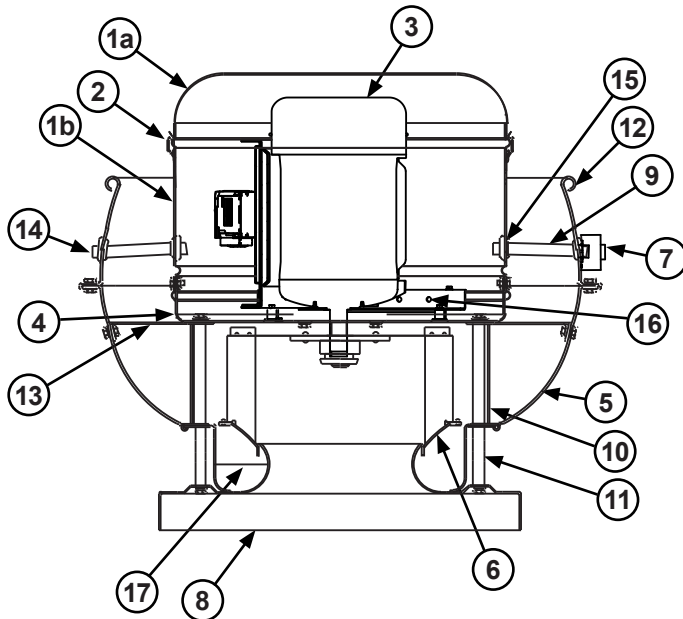


Item #	ACRU-B Parts Description		
	100	120-245	270-490
1a	Top Cap Lid	Top Cap Lid	Top Cap Lid
1b	Top Cap Cylinder	Top Cap Cylinder	Top Cap Cylinder
2	Top Cap Clip (4)	Top Cap Clip (4)	Top Cap Clip (8)
3	Motor	Motor	Motor
4	Motor Plate	Motor Plate	Motor Plate
5	Baffle	Baffle	Baffle
6	Wheel Assembly	Wheel 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



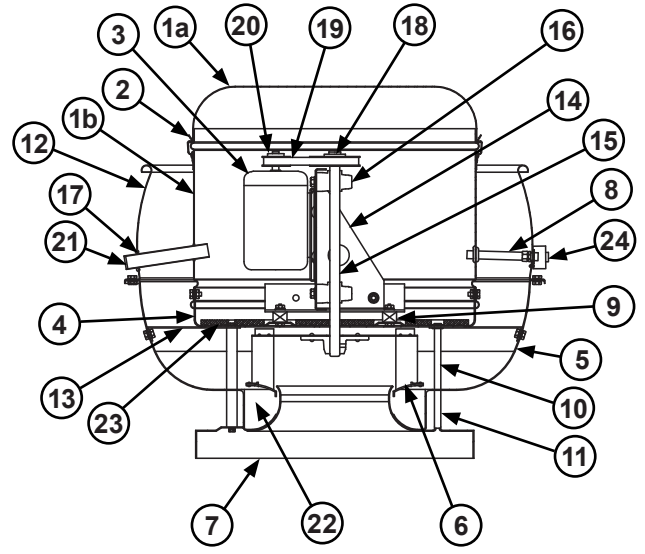
VCR-D Sizes 70-195



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

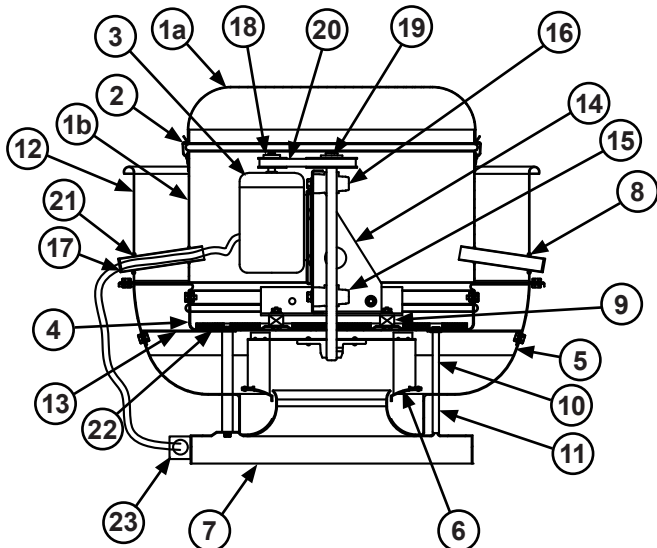


VCR-B Sizes 100-490

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

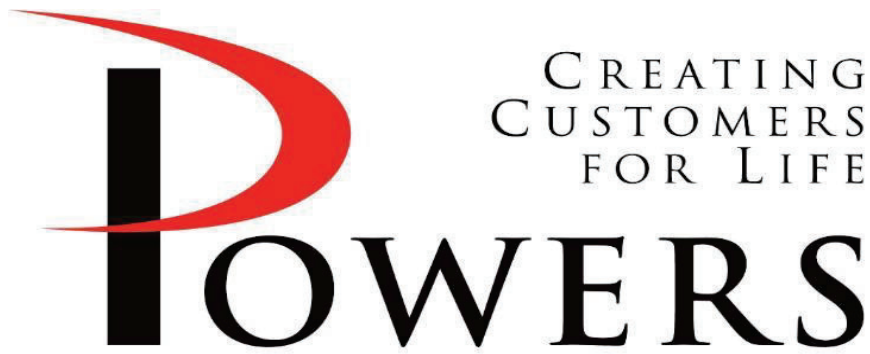
## Limited Warranty

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](http://lorencook.com)



# IOM

<b>PRODUCT</b>	Exhaust Fans EF-2,3,4,5,7
<b>MANUFACTURER</b>	Loren Cook
<b>JOB NAME</b>	Farm Credit – Russellville, AR
<b>LOCATION</b>	Russellville, AR
<b>ENGINEER</b>	Nathan Wilson
<b>CONTRACTOR</b>	Comfort Systems
<b>DATE</b>	8/7/2024
<b>SUBMITTED BY</b>	Brady Smith

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.**

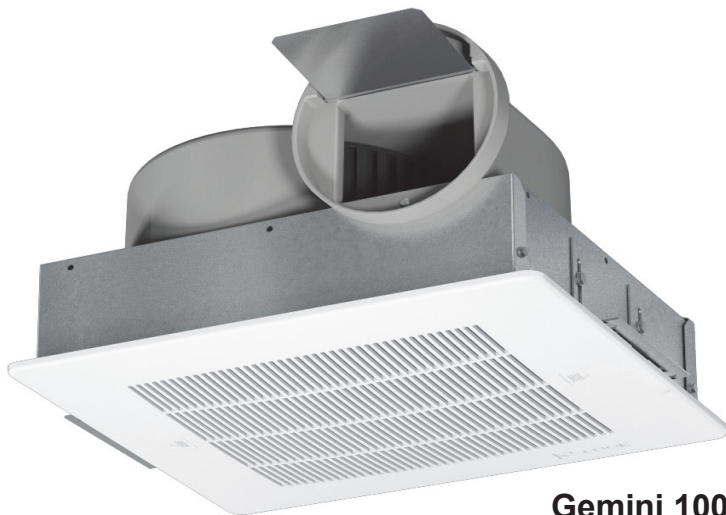
Loren Cook catalog, *Gemini*, provides additional information describing the equipment, fan performance, available accessories and specification data.

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](http://lorencook.com)
- [info@lorencook.com](mailto: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.

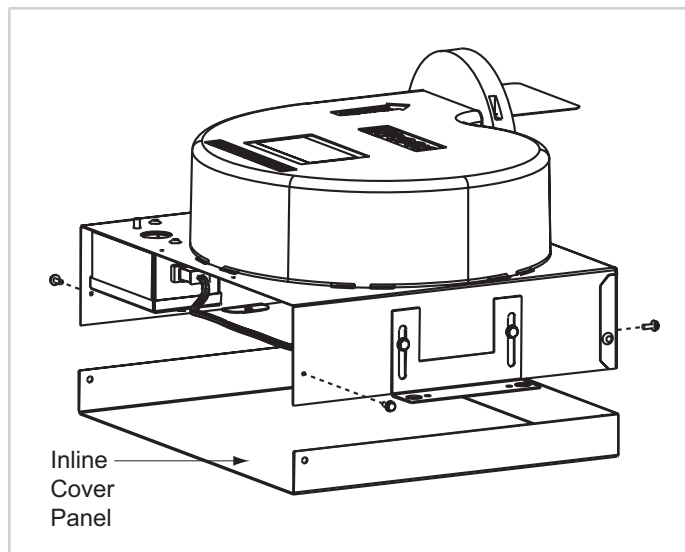
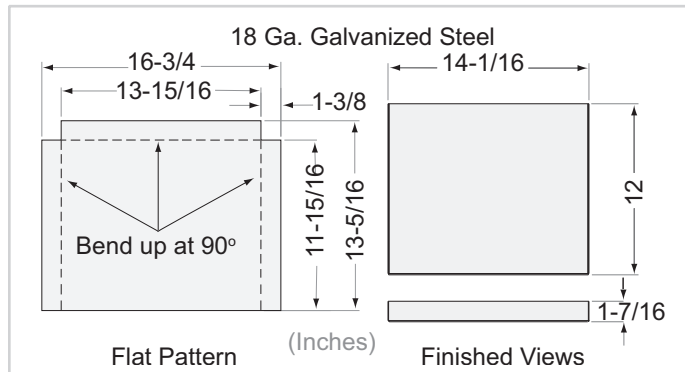
### Gemini 100 Inline to Ceiling Conversion

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:

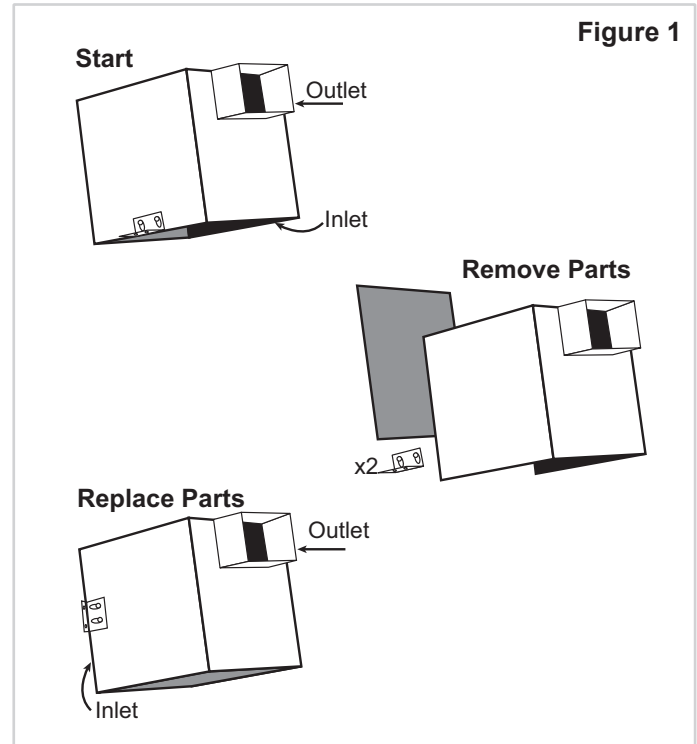
1. Remove and discard the inlet box end plate.
2. Install the inline cover panel with sheet metal screws as shown on the following page. Ceiling to Inline Conversion Kit can be ordered from Loren Cook Company (Part Number 797181), or fabricate the required part using the following two sketches.



### 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

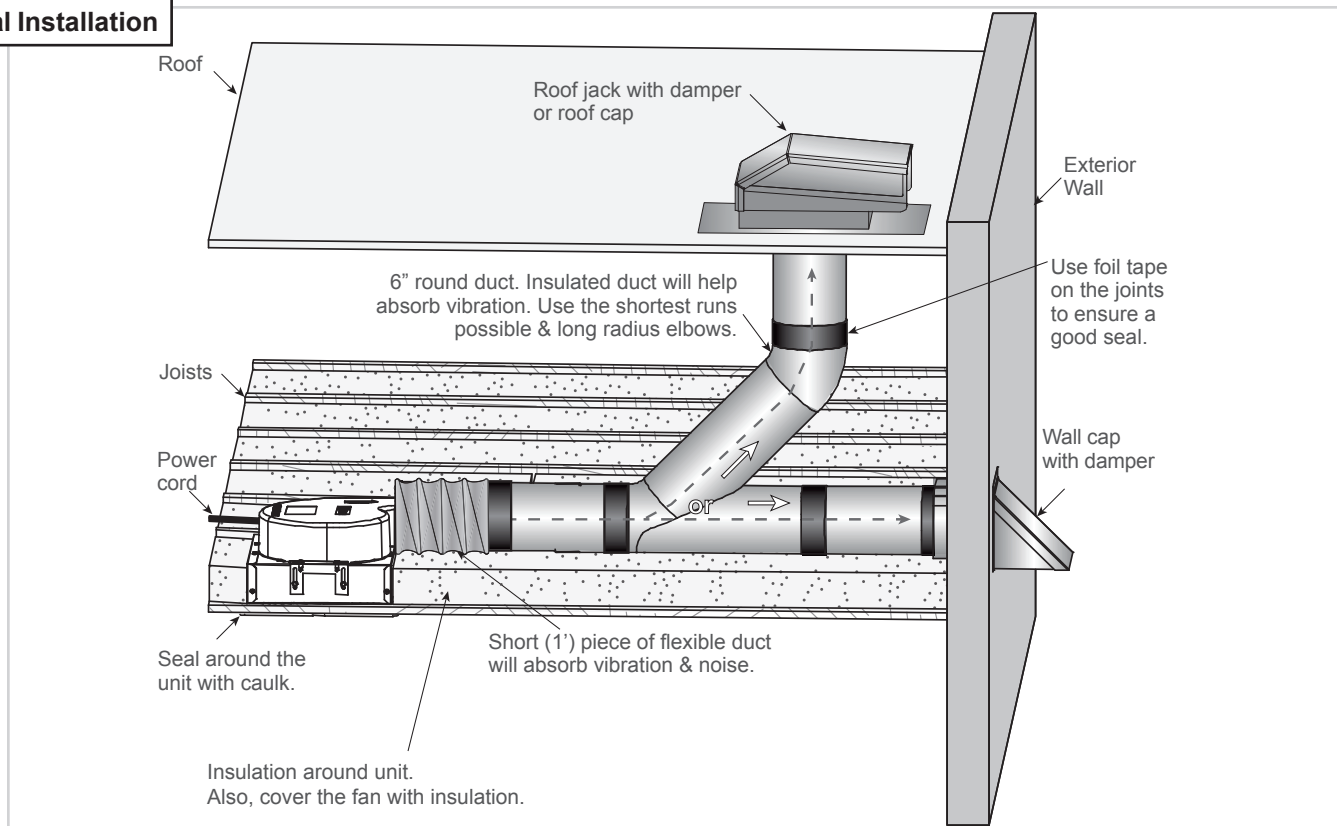
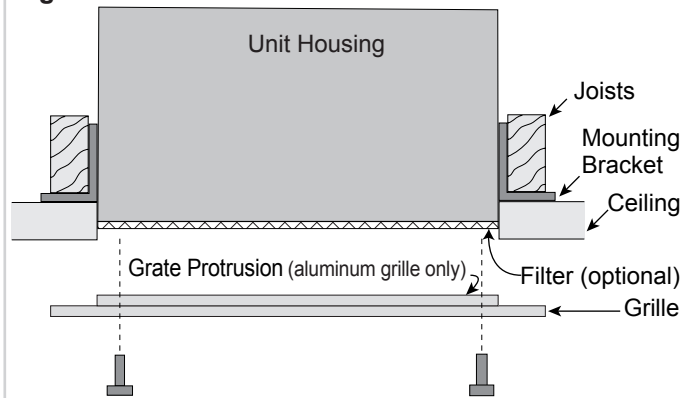
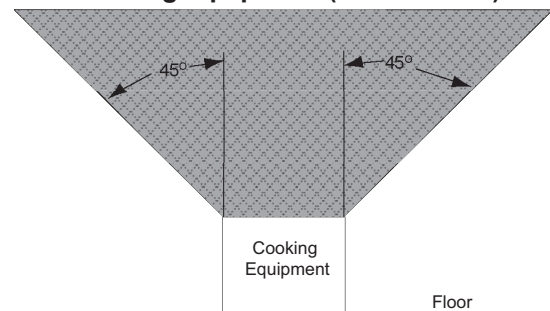


Figure 2



**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.

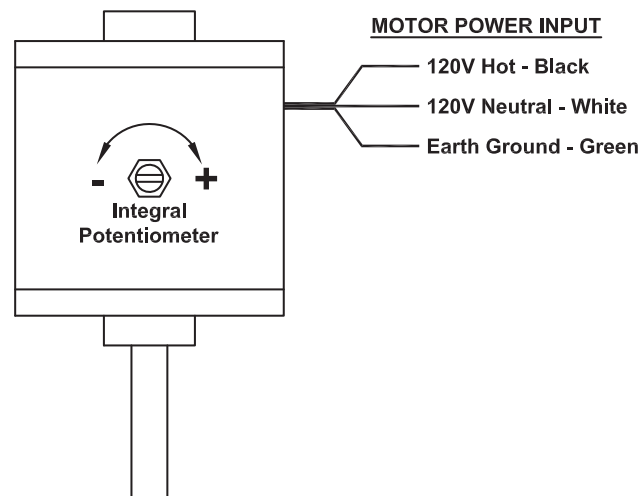
## Wiring Diagrams

### ⚠ WARNING

#### Electrical Shock & Fire Hazard:

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

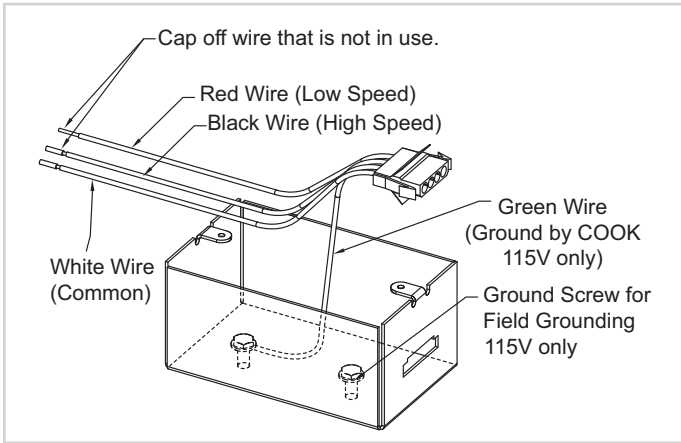
#### Gemini 100 with Vari-Flow® EC Motor:



**Gemini 300 - 900 with Vari-Flow® EC Motor**

See EC motor wiring supplement.

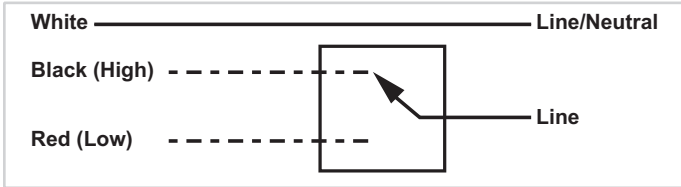
**Gemini 100 Series:**



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.

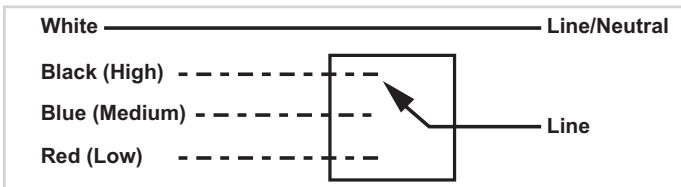
**Gemini 200, 300, 500, 600 and 700 Series:**



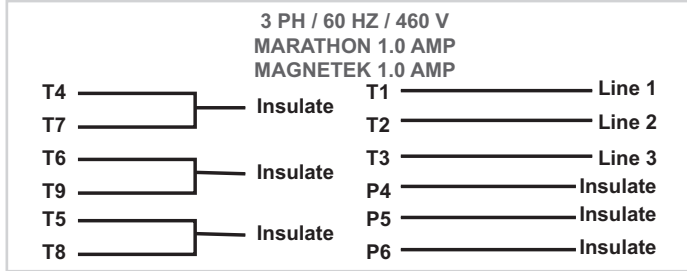
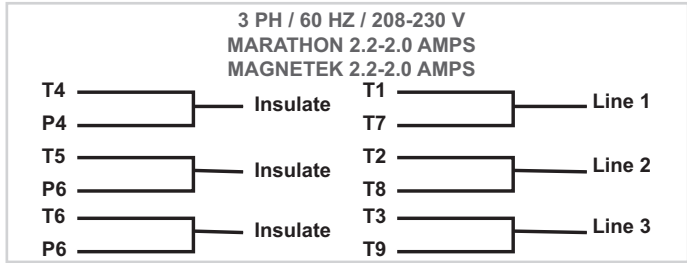
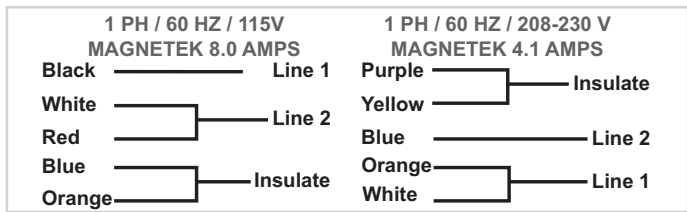
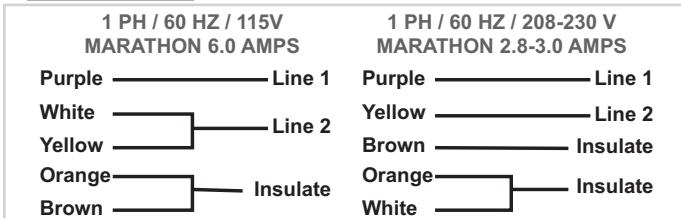
**Gemini 400 Series:**



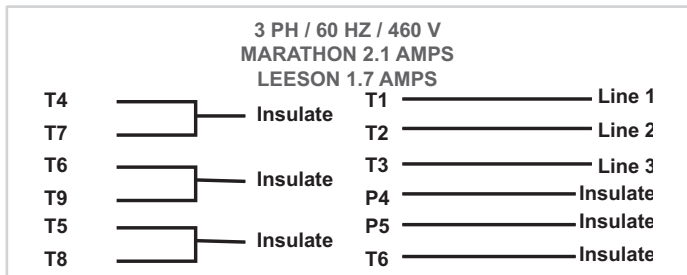
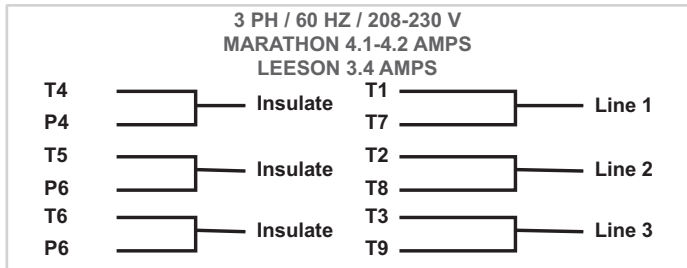
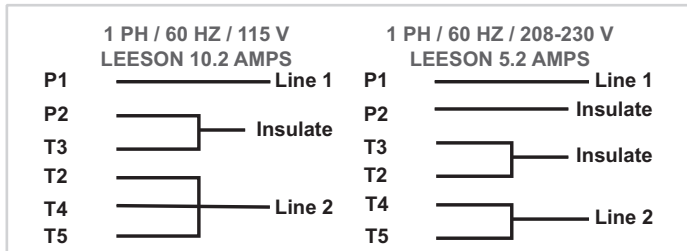
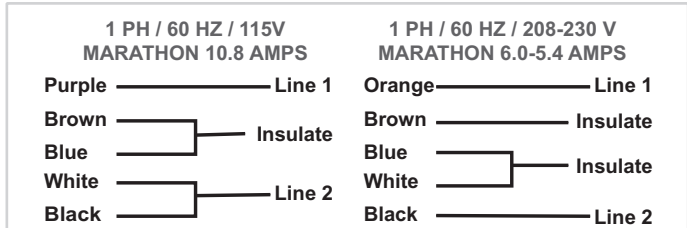
**Gemini 800 - 900 Series:**



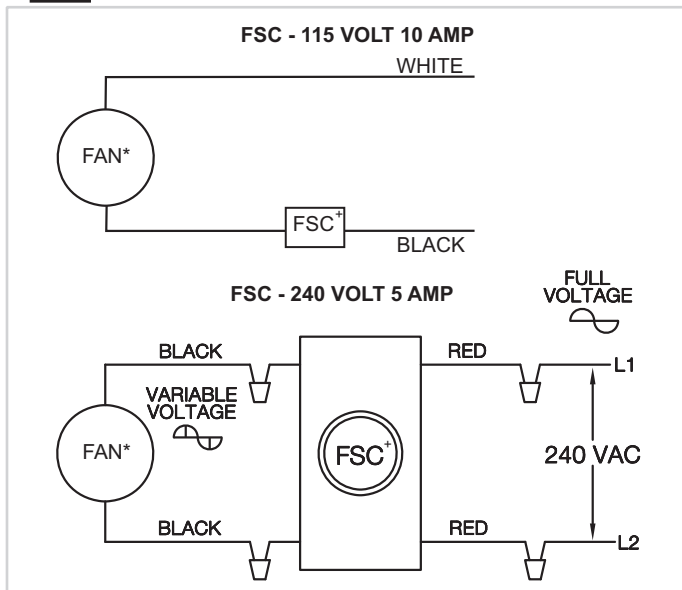
**Gemini 1000:**



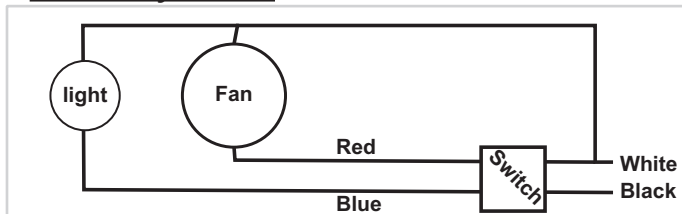
**Gemini 2000:**



## 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:**

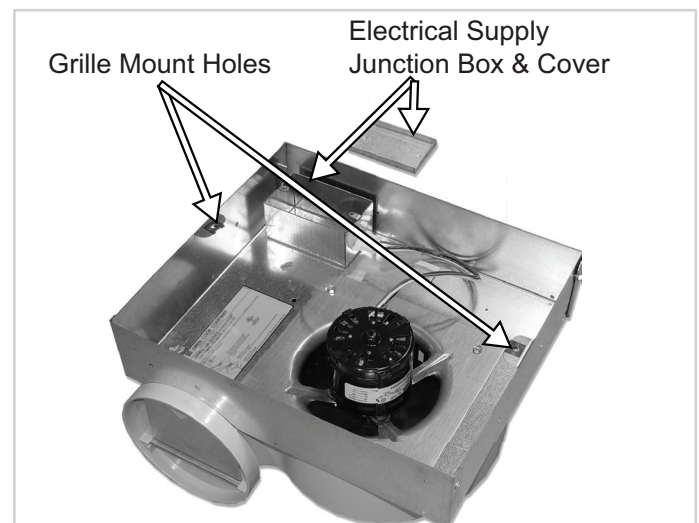
- Inspect bolts and setscrews for tightness. Tighten as necessary.
- Inspect for cleanliness. Clean exterior surfaces only. Removing dust and grease on motor housing assures proper motor cooling.

## Access

### Gemini 100:

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

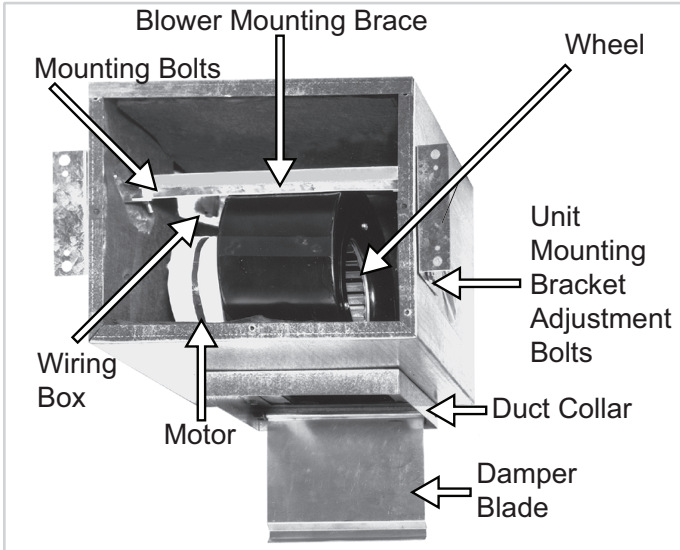
1. Remove grille.
2. Remove blower assembly from housing:
  1. Disconnect the motor from electrical supply
  2. Remove the mounting bolts on the inlet plate assembly and remove the motor/wheel assembly
3. Remove the blower wheel with an allen wrench



## Gemini 200 - 700 series

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

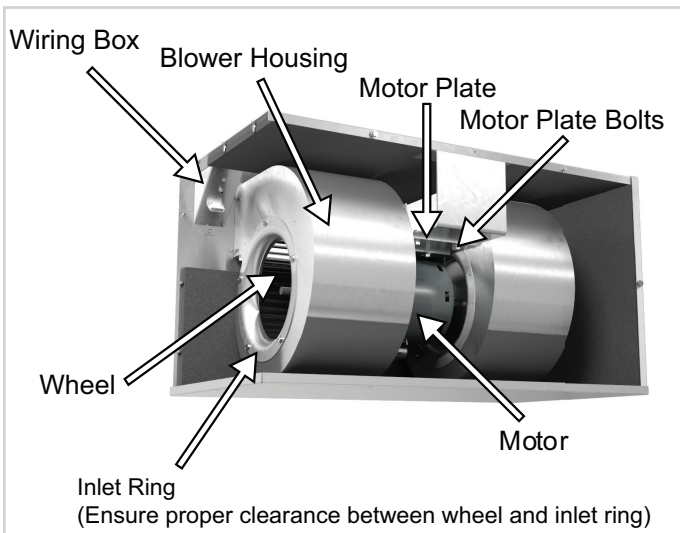
1. Remove grille.
2. Remove blower assembly from housing:
  - a. Disconnect the motor from electrical supply.
  - b. Remove mounting bolts.
  - c. Slide discharge flange out of spring clip and move motor/blower assembly from box.
3. Remove inlet ring from blower housing.
4. Remove blower wheel with an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

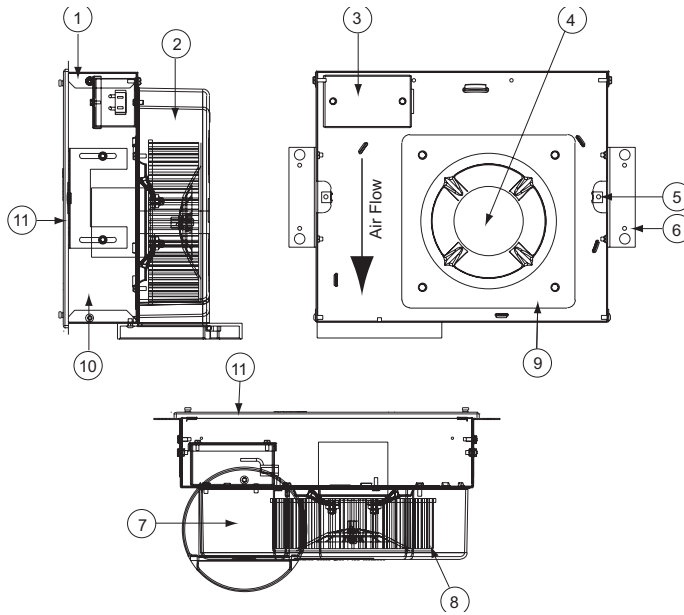
- Damaged or unbalanced wheel.
- Belts too loose; worn or oily belts.
- Speed too high.
- Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor or belt drive assembly.
- Bearings need lubrication or replacement.
- Fan surge.

#### **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.

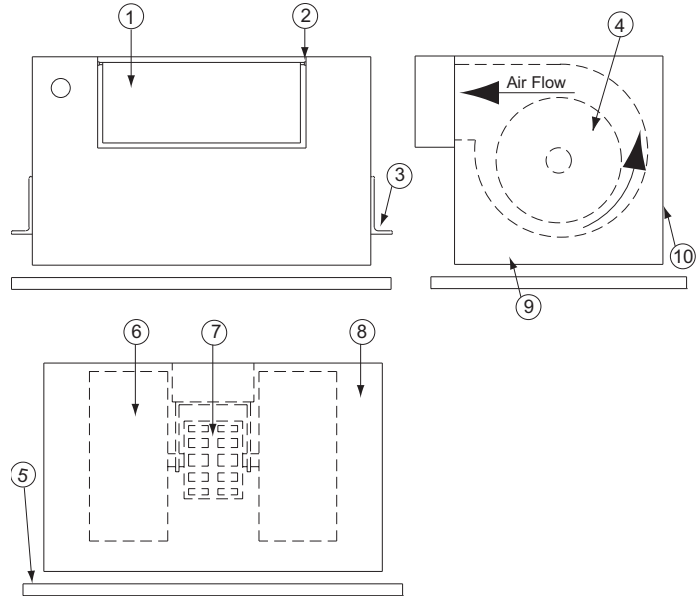
## Gemini 100 Parts List

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



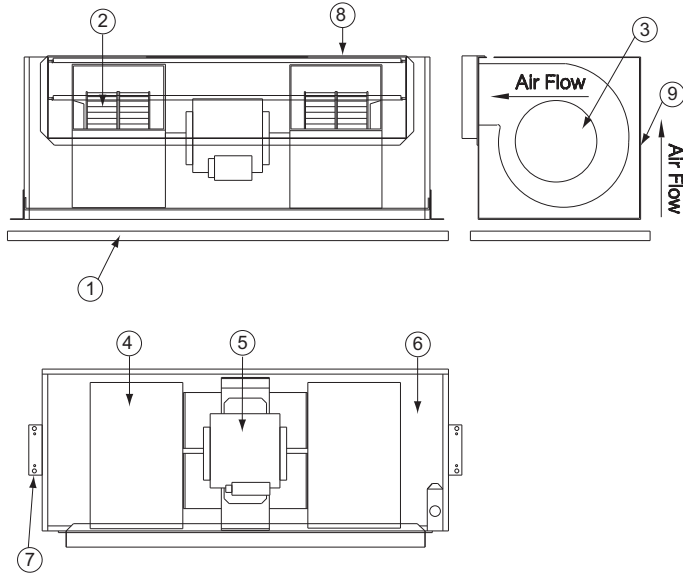
## Gemini 200-900 Parts List

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](http://lorencook.com)



TO: Hight Jackson Associates  
jandrade@hjarch.com

ATTN: Jorge Andrade

RE: Farm Credit - Russellville, AR  
HVAC

DATE: 06/22/2023 JOB NO. 22-166

**ELECTRONIC SUBMITTAL WAS REVIEWED AS FOLLOWS:**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> CUT SHEETS | <input type="checkbox"/> NO EXCEPTIONS TAKEN      | <input checked="" type="checkbox"/> APPROVED        |
| <input type="checkbox"/> DRAWINGS              | <input checked="" type="checkbox"/> NOTE MARKINGS | <input type="checkbox"/> REJECTED                   |
| <input type="checkbox"/> OTHER                 | <input type="checkbox"/> COMMENTS ATTACHED        | <input type="checkbox"/> RESUBMIT                   |
|  |   | <input type="checkbox"/> RESUBMIT only items marked |

REMARKS:

Submittal - 23 34 23 Power Ventilators Submittal

1. Provide submittal for EF-6 for review with guardian fire suppression system.

ENGINEER'S REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENT. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS, NOR DEPARTURE THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND ACCURACY, FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES, FOR TECHNIQUES OF ASSEMBLY AND PERFORMING HIS WORK IN A SAFE MANNER.

Copies To:

<u>  X  </u>	File
<u>      </u>	Owner
<u>  X  </u>	Architect
<u>      </u>	Other

BY: Nathan Wilson, PE

**SUBMITTAL**

**HSA Engineering Consulting Services, Inc.**

7405 Ellis Street  
Fort Smith, AR 72916

479.452.8922  
www.hsaconsultants.com





**Project Name:** Farm Credit, Russellville, AR  
**Project Number:** 02-23-2720  
**Transmitted To:** Hight Jackson Associates  
**Specification:** 23 34 23 -01 Power Ventilators Product Data

---

**Construction Manager:**

<b>NABHOLZ CONSTRUCTION SERVICES</b>	
<input type="checkbox"/>	Revise & Resubmit
<input type="checkbox"/>	Reviewed & Amend As Noted
<input checked="" type="checkbox"/>	Reviewed
By: <u>Ann Miller</u>	Date: <u>06.05.2023</u>

- |  |   |
|--|---|
| <input type="checkbox"/> APPROVED                          | <input type="checkbox"/> REVISE AND RESUBMIT      |
| <input type="checkbox"/> APPROVED AS CORRECTED             | <input type="checkbox"/> NOT APPROVED             |
| <input checked="" type="checkbox"/> REVIEWED BY CONSULTANT | <input type="checkbox"/> SUPPLEMENTAL HJ COMMENTS |

Checking is only for conformance with the design concept of the Project and compliance with the information given in the Contract Documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to the fabrication process or to the techniques of construction; and for coordination of the work of all trades.

BY: Emerson Cochran  
DATE: 06.22.23



**Design Review Comments:**

Provide submittal for EF-6 and associated guardian fire suppression system.
---



# SUBMITTAL

<b>PRODUCT</b>	Exhaust Fans
<b>MANUFACTURER</b>	Loren Cook
<b>JOB NAME</b>	Farm Credit – Russellville, AR
<b>LOCATION</b>	Russellville, AR
<b>ENGINEER</b>	Nathan Wilson
<b>CONTRACTOR</b>	Comfort Systems
<b>DATE</b>	5/8/2023
<b>SUBMITTED BY</b>	Brady Smith



# COOK



MARK: EF-1

PROJECT: FARM CREDIT – RUSSELLVILLE, AR

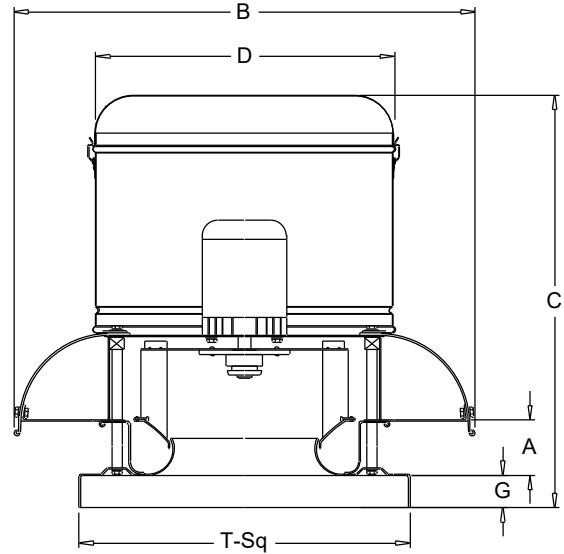
DATE: 5/8/2023

## ACE-D

### Downblast Centrifugal Exhaust Ventilator Roof Mounted/Direct Drive

#### STANDARD CONSTRUCTION FEATURES:

All aluminum housing - Backward inclined all aluminum wheel - Two piece top cap with stainless steel quick release latches (sizes 120 - 300) - Welded curb cap corners - Birdscreen - Permanently lubricated ball bearing motors - Corrosion resistant fasteners - Transit tested packaging.



#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Fan RPM	Power (HP)	FEG	Speed Control
1	120C13D	600	.600	1205	.099	n/a(<1HP)	FSC

Altitude (ft): 1270 Temperature (F): 70

#### Motor Information

HP	RPM	Volts/Ph/Hz	Enclosure	TOL
1/4	1300	115/1/60	ODP -SE	Yes

#### Sound Data Inlet Sound Power by Octave Band

1	2	3	4	5	6	7	8	LwA	dBA	Sones
66	68	71	62	58	56	50	46	66	54	7.3

- Distance from Sound source 5 ft

#### Accessories:

- DISCONNECT NEMA 1
- BD-14 DAMPER
- ROOF CURB RCG 18 13.5H -C+T+N
- FAN SPEED CONTROLLER 5 AMP 120 VOLT

#### Dimensions (inches)

A	1-7/16
B O.D.	28-7/16
C	27-1/16
D O.D.	20-3/8
G	2
T Sq.	20
Roof Open. Sq.*	15-1/2

NOTE: Accessories may affect dimensions shown.

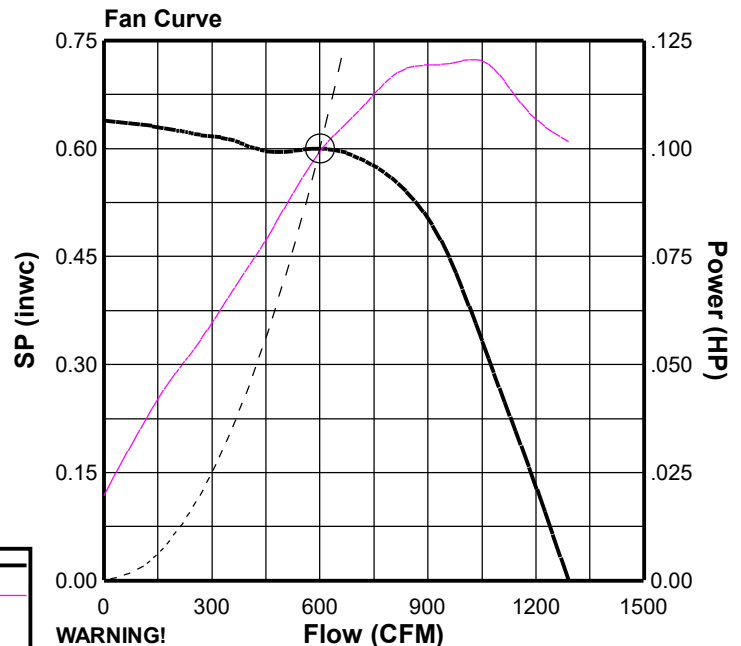
Weight(lbs)***	Shipping	79	Unit	63
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\* Roof opening size for curbs supplied by Cook only.

\*\*\*Includes fan, motor & accessories.

#### Fan Curve Legend

CFM vs SP	—
CFM vs HP	—
Point of Operation	○
System Curve	---



#### WARNING!

Fan is operating outside the normal selection range.

This selection point may result in unstable operation. A lower pressure and/or higher flow rate is required for proper operation of this fan.



## BD

### Gravity Backdraft Damper

#### STANDARD CONSTRUCTION FEATURES:

- .020 Aluminum blades - .060 aluminum frame -
- Aluminum hinge pins - Nylon bushings.

#### Notes:

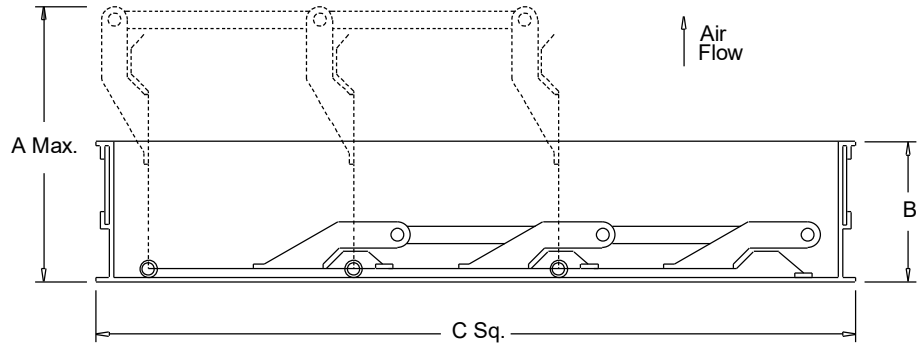
Max. operating temperature 200 Deg F (95 Deg C).

Max. discharge velocity 2000 fpm.

Sizes 36 thru 60 are shipped as 2 panels.

Sizes 66 and 78 are shipped as 6 panels.

These may require assembly.



#### Dimensions (inches)

Mark	Qty	Description	A Max.	B	C Sq.	# Panels
EF-1	1	BD-14 DAMPER	5-3/16	1-7/8	13-3/4	1



## RCG

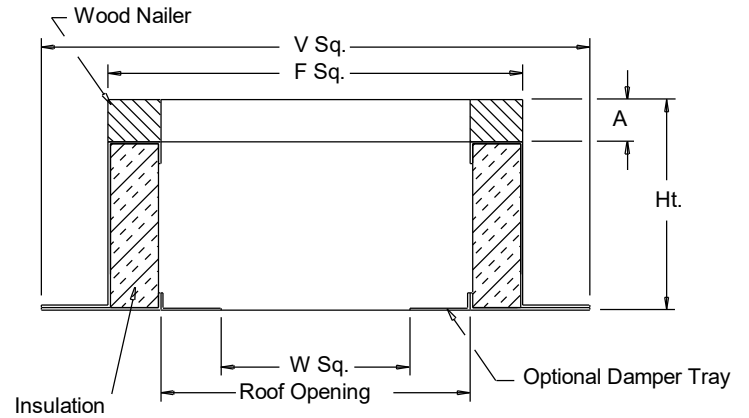
### Galvanized Steel Roof Curb

#### 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-1	1	RCG 18	13.5	2;	1-1/2	18-1/2	22-1/2	11-3/4	15-1/2



## FSC

### Fan Speed Controls

#### STANDARD CONSTRUCTION FEATURES:

**PRODUCT DESCRIPTION** - Through the "Quadrac" integrated semi-conductor device it is now possible to offer this system with many advantages. Fewer semi-conductor parts mean greater reliability and the passivation process used in the manufacture of the semi-conductor insures long life.

Printed circuit construction eliminates wiring difficulties and guarantees workmanship.

All of these factors serve to offer the most important of all features - quality.

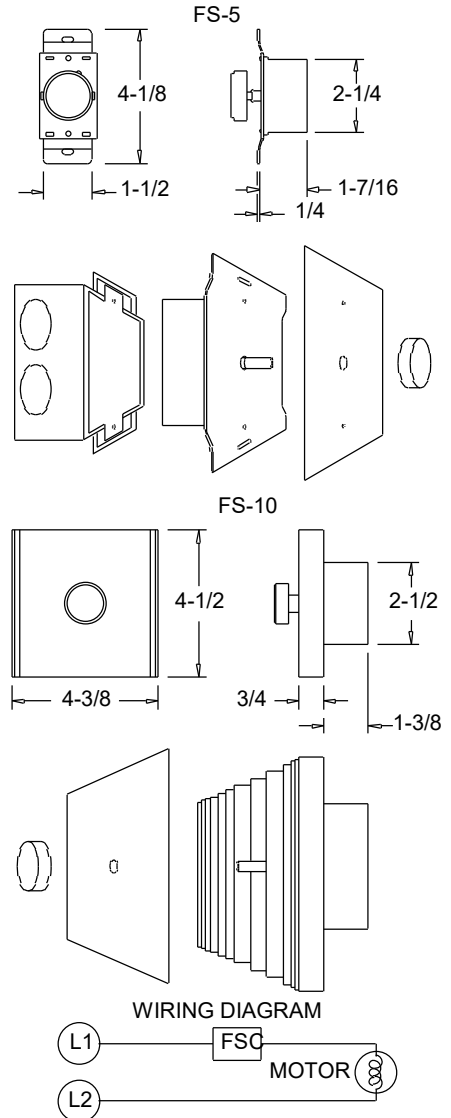
**SPEED CONTROL** - Positive Off/On action in the control dial. Speed range set to the customer's requirements. **CONTROL RATING** - 120 volts, 60 cycles, 1 phase. Maximum ambient temperature - 120 degree F (5 AMP, 10 AMP, 15 AMP). 220/240 volt, 50/60 cycles, 1 phase. Maximum ambient temperature - 120 degree F (5 AMP, 10 AMP). 220/240 volt model not UL listed. Fan cannot have UL listing if furnished with prewired 220/240 volt FSC. 277 volt, 60 cycles, 1 phase.

Maximum ambient temperature - 120 degree F (5 AMP). **WARNING** - Power must be turned off before installing this unit. **STANDARD INSTALLATION** - Fits any standard single gang box.

Turn off power and connect the two wires on the control to the two switch wires in the usual manner. The connection box is not supplied. **SPECIAL FEATURES** - Complete range control, solid state "Quadrac" integrated circuitry, solid state construction for long reliable operating life, saves on electric bills.

#### Dimensions (inches)

Mark	Qty	Description
EF-1	1	FSC 5 AMP 120 VOLT





# COOK



MARK: EF-2,3

PROJECT: FARM CREDIT - RUSSELLVILLE, AR

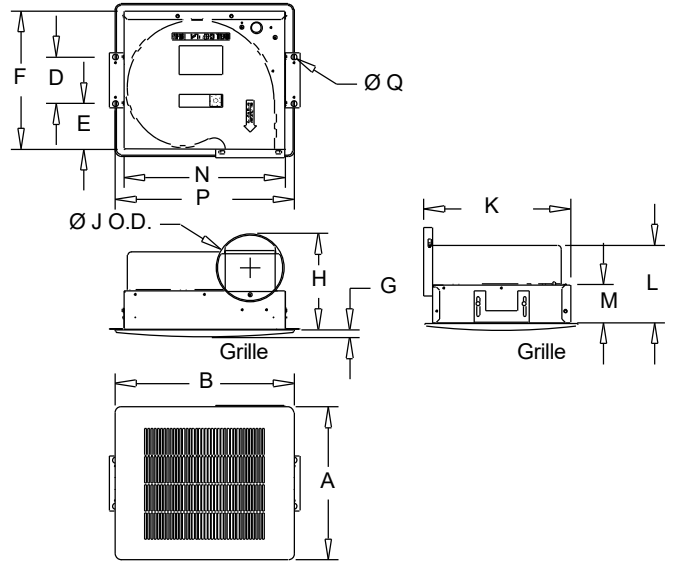
DATE: 5/8/2023

## GEMINI

### Ceiling 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 - Isolation mounted motor, mounted to one piece galvanized stamped steel integral motor mount/inlet - Permanently lubricated 2-speed motor with built-in thermal overload protection and disconnect plug - Field wiring compartment with receptacle - Adjustable prepunched mounting bracket - White, high impact styrene injection molded grille - Shipped in ISTA certified transit tested packaging.



#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Nominal RPM	Input Watts	Speed Control
2	GC-186	150	.500	944	70	FSC

Altitude (ft): 1270 Temperature (F): 70

#### Motor Information

Volts/Ph/Hz	Nameplate Amps
115/1/60	.817

#### Sound Data Inlet Sound Power by Octave Band

1	2	3	4	5	6	7	8	LwA	dBA	Sones
56	58	62	57	53	48	46	41	59	48	3.5

- Distance from Sound source 5 ft

#### Accessories:

- WHITE PLASTIC GRILLE
- FAN SPEED CONTROLLER 5 AMP 120 VOLT
- INTEGRAL BD DAMPER
- GEMINI ISOLATOR KIT - ISOLATORS

#### Dimensions (inches)

A Plastic	13-1/4	M	3-1/4
B Plastic	15-1/2	N	14
D	4	P	15-1/2
E	4	Q	1/2
F	12		
G	5/8		
H	8-3/8		
J O.D.	5-15/16		
K	12-3/4		
L	6-11/16		

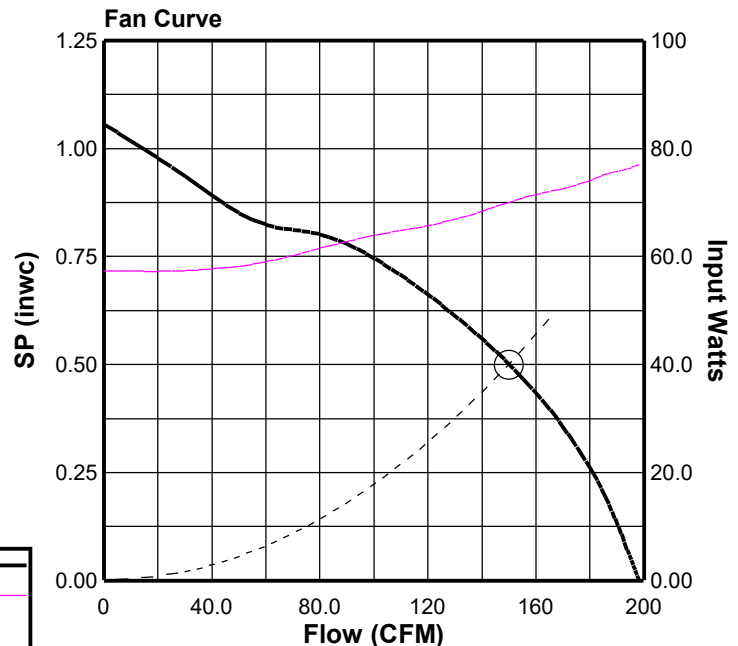
NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	19	Unit	16

\*\*\*Includes fan, motor & accessories.

#### Fan Curve Legend

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



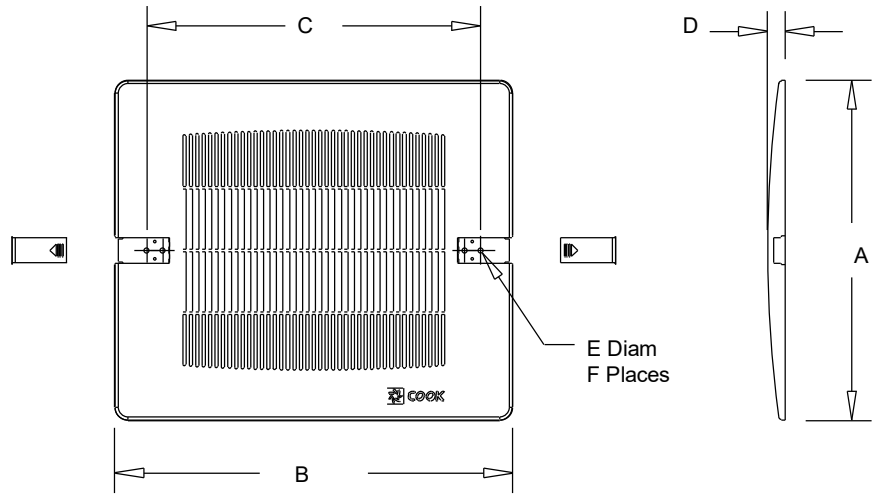


# COOK

PROJECT: FARM CREDIT – RUSSELLVILLE, AR
DATE: 5/8/2023

## GEMINI

### PLASTIC GRILLE



#### Dimensions (inches)

Mark	Qty	Description	A	B	C	D	E Diam	F Places
EF-2,3	2	WHITE PLASTIC GRILLE	13-1/4	15-1/2	13	1/4	1/4	4





## FSC

### Fan Speed Controls

#### STANDARD CONSTRUCTION FEATURES:

**PRODUCT DESCRIPTION** - Through the "Quadrac" integrated semi-conductor device it is now possible to offer this system with many advantages. Fewer semi-conductor parts mean greater reliability and the passivation process used in the manufacture of the semi-conductor insures long life.

Printed circuit construction eliminates wiring difficulties and guarantees workmanship.

All of these factors serve to offer the most important of all features - quality.

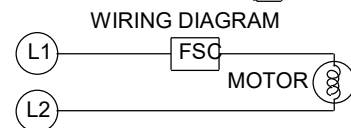
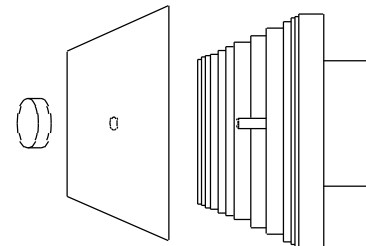
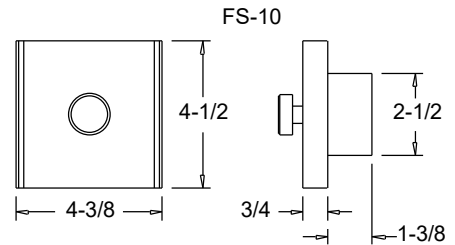
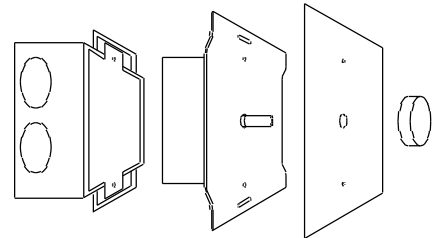
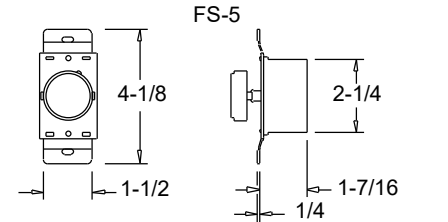
**SPEED CONTROL** - Positive Off/On action in the control dial. Speed range set to the customer's requirements. **CONTROL RATING** - 120 volts, 60 cycles, 1 phase. Maximum ambient temperature - 120 degree F (5 AMP, 10 AMP, 15 AMP). 220/240 volt, 50/60 cycles, 1 phase. Maximum ambient temperature - 120 degree F (5 AMP, 10 AMP). 220/240 volt model not UL listed. Fan cannot have UL listing if furnished with prewired 220/240 volt FSC. 277 volt, 60 cycles, 1 phase.

Maximum ambient temperature - 120 degree F (5 AMP). **WARNING** - Power must be turned off before installing this unit. **STANDARD INSTALLATION** - Fits any standard single gang box.

Turn off power and connect the two wires on the control to the two switch wires in the usual manner. The connection box is not supplied. **SPECIAL FEATURES** - Complete range control, solid state "Quadrac" integrated circuitry, solid state construction for long reliable operating life, saves on electric bills.

#### Dimensions (inches)

Mark	Qty	Description
EF-2,3	2	FSC 5 AMP 120 VOLT





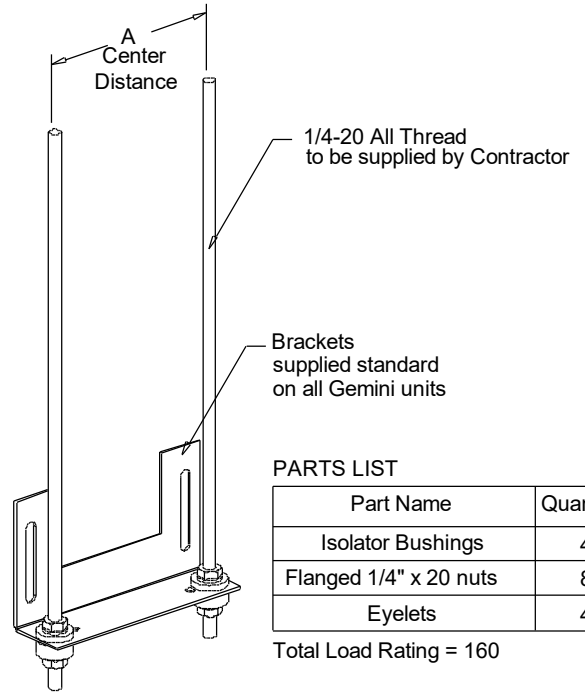
# COOK

PROJECT: FARM CREDIT – RUSSELLVILLE, AR

DATE: 5/8/2023

## GEMINI

Gemini Isolator Kit  
GIK  
Rubber In Shear



### Dimensions (inches)

Mark	Qty	Description	Part #	A
EF-2,3	2	GEMINI ISOLATO	GIK	4



# COOK



MARK: EF-4,5

PROJECT: FARM CREDIT - RUSSELLVILLE, AR

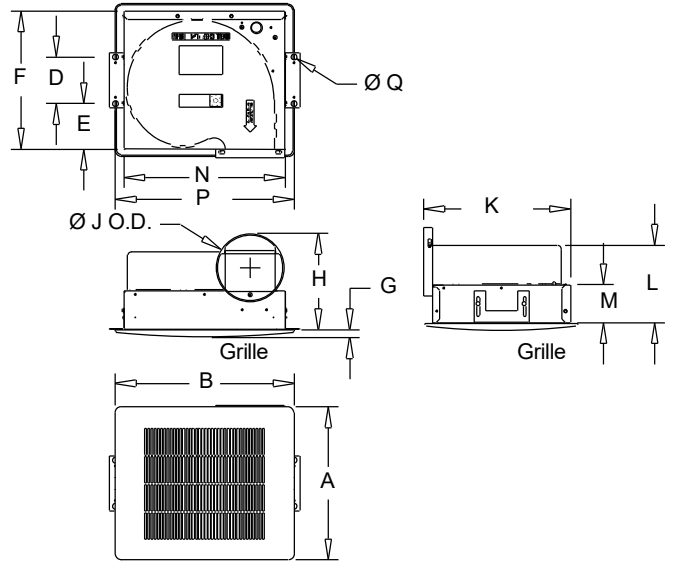
DATE: 5/8/2023

## GEMINI

### Ceiling 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 - Isolation mounted motor, mounted to one piece galvanized stamped steel integral motor mount/inlet - Permanently lubricated 2-speed motor with built-in thermal overload protection and disconnect plug - Field wiring compartment with receptacle - Adjustable prepunched mounting bracket - White, high impact styrene injection molded grille - Shipped in ISTA certified transit tested packaging.



#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Nominal RPM	Input Watts	Speed Control
2	GC-148	75	.500	937	36	FSC

Altitude (ft): 1270 Temperature (F): 70

#### Motor Information

Volts/Ph/Hz	Nameplate Amps
115/1/60	.417

#### Sound Data Inlet Sound Power by Octave Band

1	2	3	4	5	6	7	8	LwA	dBA	Sones
53	54	56	52	48	42	38	33	54	42	2.0

- Distance from Sound source 5 ft

#### Accessories:

- FAN SPEED CONTROLLER 5 AMP 120 VOLT
- WHITE PLASTIC GRILLE
- INTEGRAL BD DAMPER
- GEMINI ISOLATOR KIT - ISOLATORS

#### Dimensions (inches)

A Plastic	13-1/4	M	3-1/4
B Plastic	15-1/2	N	14
D	4	P	15-1/2
E	4	Q	1/2
F	12		
G	5/8		
H	8-3/8		
J O.D.	5-15/16		
K	12-3/4		
L	6-11/16		

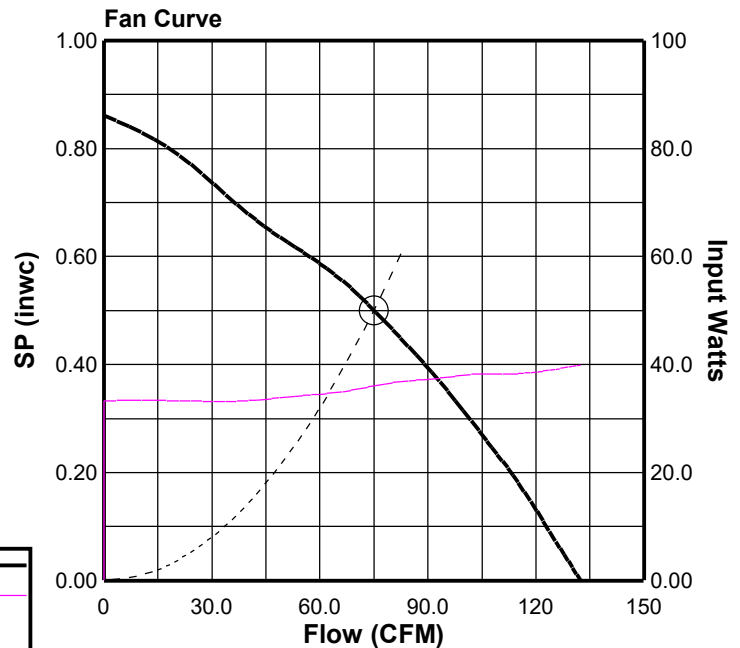
NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	18	Unit	15
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\*\*\*Includes fan, motor & accessories.

#### Fan Curve Legend

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





## FSC

### Fan Speed Controls

#### STANDARD CONSTRUCTION FEATURES:

**PRODUCT DESCRIPTION** - Through the "Quadrac" integrated semi-conductor device it is now possible to offer this system with many advantages. Fewer semi-conductor parts mean greater reliability and the passivation process used in the manufacture of the semi-conductor insures long life.

Printed circuit construction eliminates wiring difficulties and guarantees workmanship.

All of these factors serve to offer the most important of all features - quality.

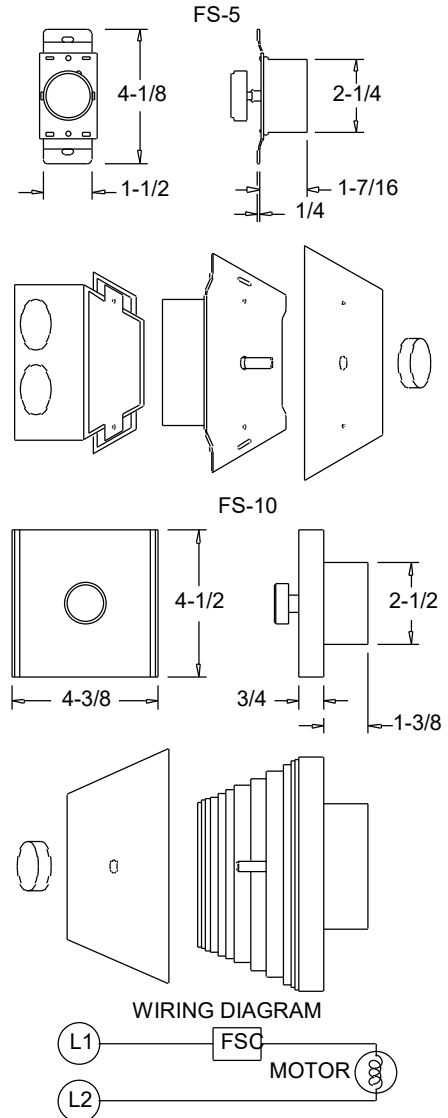
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Maximum ambient temperature - 120 degree F (5 AMP). **WARNING** - Power must be turned off before installing this unit. **STANDARD INSTALLATION** - Fits any standard single gang box.

Turn off power and connect the two wires on the control to the two switch wires in the usual manner. The connection box is not supplied. **SPECIAL FEATURES** - Complete range control, solid state "Quadrac" integrated circuitry, solid state construction for long reliable operating life, saves on electric bills.

#### Dimensions (inches)

Mark	Qty	Description
EF-4,5	2	FSC 5 AMP 120 VOLT



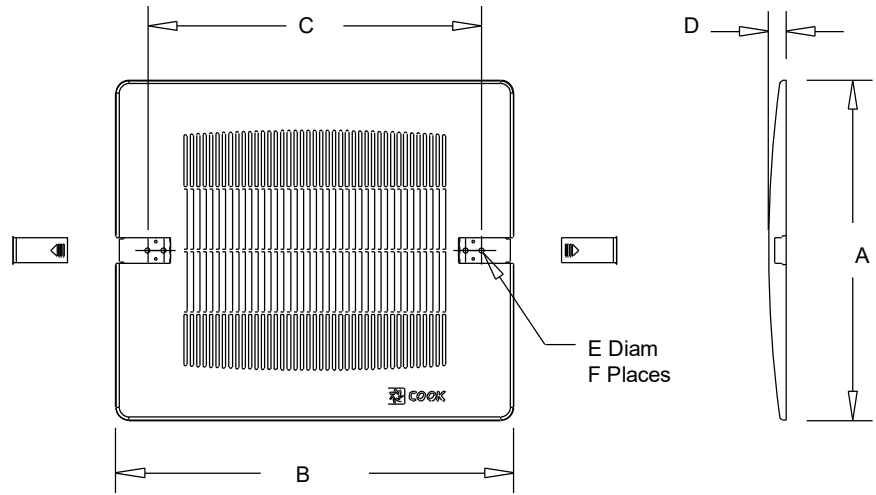


# COOK

PROJECT: FARM CREDIT – RUSSELLVILLE, AR

DATE: 5/8/2023

## GEMINI PLASTIC GRILLE



### Dimensions (inches)

Mark	Qty	Description	A	B	C	D	E Diam	F Places
EF-4,5	2	WHITE PLASTIC GRILLE	13-1/4	15-1/2	13	1/4	1/4	4



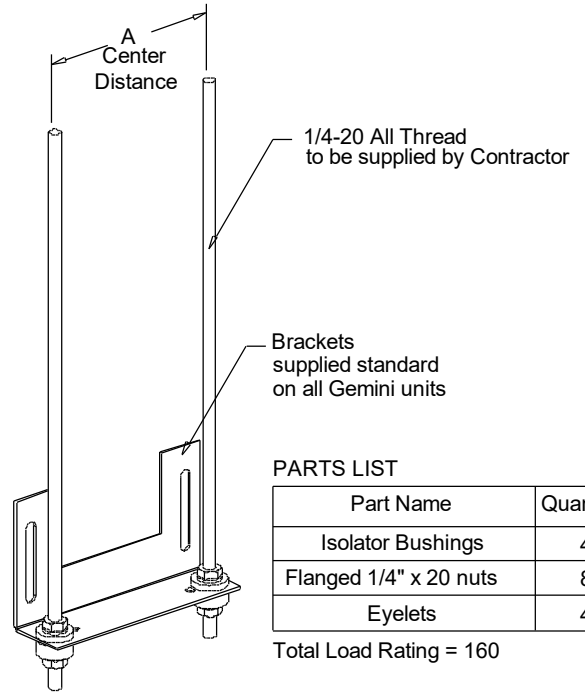
# COOK

PROJECT: FARM CREDIT – RUSSELLVILLE, AR

DATE: 5/8/2023

## GEMINI

Gemini Isolator Kit  
GIK  
Rubber In Shear



### Dimensions (inches)

Mark	Qty	Description	Part #	A
EF-4,5	2	GEMINI ISOLATO	GIK	4



# COOK



MARK: EF-7

PROJECT: FARM CREDIT – RUSSELLVILLE, AR

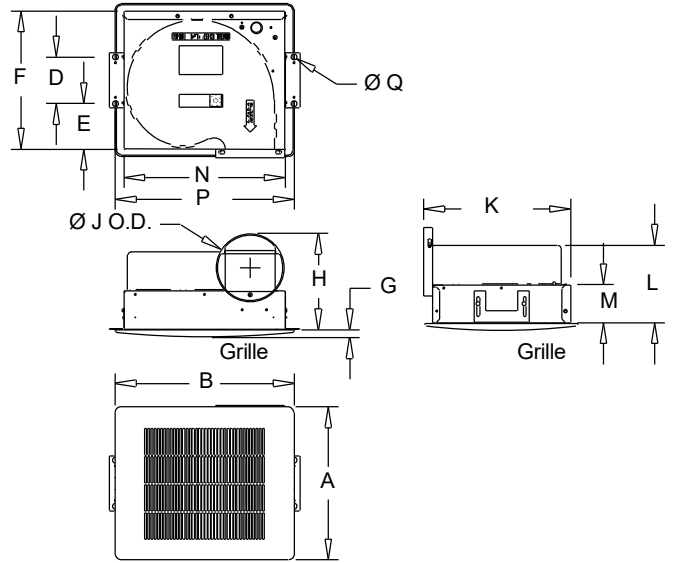
DATE: 5/8/2023

## GEMINI

### Ceiling 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 - Isolation mounted motor, mounted to one piece galvanized stamped steel integral motor mount/inlet - Permanently lubricated 2-speed motor with built-in thermal overload protection and disconnect plug - Field wiring compartment with receptacle - Adjustable prepunched mounting bracket - White, high impact styrene injection molded grille - Shipped in ISTA certified transit tested packaging.



#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Nominal RPM	Input Watts	Speed Control
1	GC-148	75	.500	937	36	FSC

Altitude (ft): 1270 Temperature (F): 70

#### Motor Information

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#### Sound Data Inlet Sound Power by Octave Band

1	2	3	4	5	6	7	8	LwA	dBA	Sones
53	54	56	52	48	42	38	33	54	42	2.0

- Distance from Sound source 5 ft

#### Accessories:

- FAN SPEED CONTROLLER 5 AMP 120 VOLT
- WHITE PLASTIC GRILLE
- INTEGRAL BD DAMPER
- GEMINI ISOLATOR KIT - ISOLATORS

#### Dimensions (inches)

A Plastic	13-1/4	M	3-1/4
B Plastic	15-1/2	N	14
D	4	P	15-1/2
E	4	Q	1/2
F	12		
G	5/8		
H	8-3/8		
J O.D.	5-15/16		
K	12-3/4		
L	6-11/16		

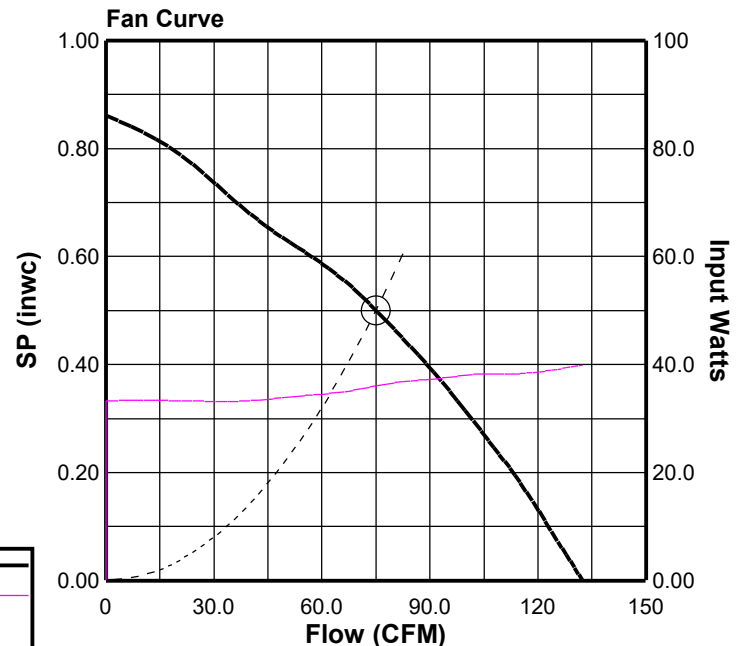
NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	18	Unit	15
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\*\*\*Includes fan, motor & accessories.

#### Fan Curve Legend

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





## FSC

### Fan Speed Controls

#### STANDARD CONSTRUCTION FEATURES:

**PRODUCT DESCRIPTION** - Through the "Quadrac" integrated semi-conductor device it is now possible to offer this system with many advantages. Fewer semi-conductor parts mean greater reliability and the passivation process used in the manufacture of the semi-conductor insures long life.

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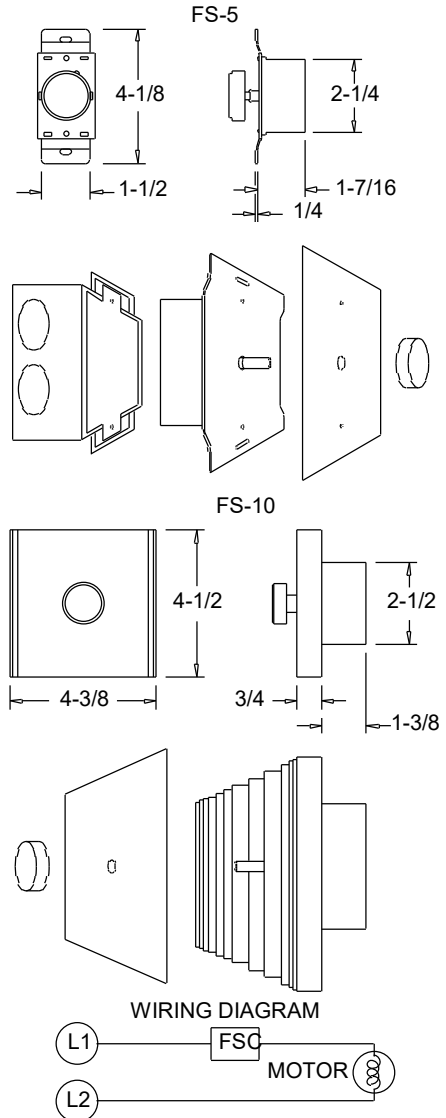
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Turn off power and connect the two wires on the control to the two switch wires in the usual manner. The connection box is not supplied. **SPECIAL FEATURES** - Complete range control, solid state "Quadrac" integrated circuitry, solid state construction for long reliable operating life, saves on electric bills.

#### Dimensions (inches)

Mark	Qty	Description
EF-7	1	FSC 5 AMP 120 VOLT





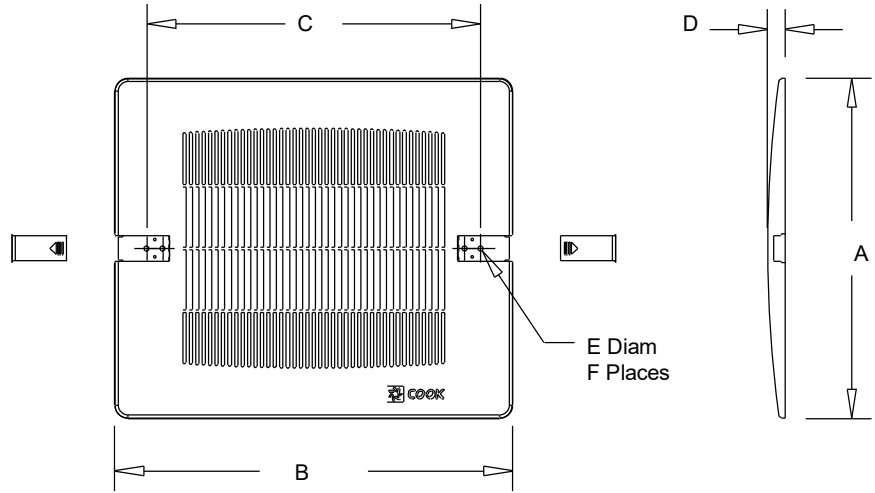


# COOK

PROJECT: FARM CREDIT – RUSSELLVILLE, AR
DATE: 5/8/2023

## GEMINI

### PLASTIC GRILLE



#### Dimensions (inches)

Mark	Qty	Description	A	B	C	D	E Diam	F Places
EF-7	1	WHITE PLASTIC GRILLE	13-1/4	15-1/2	13	1/4	1/4	4

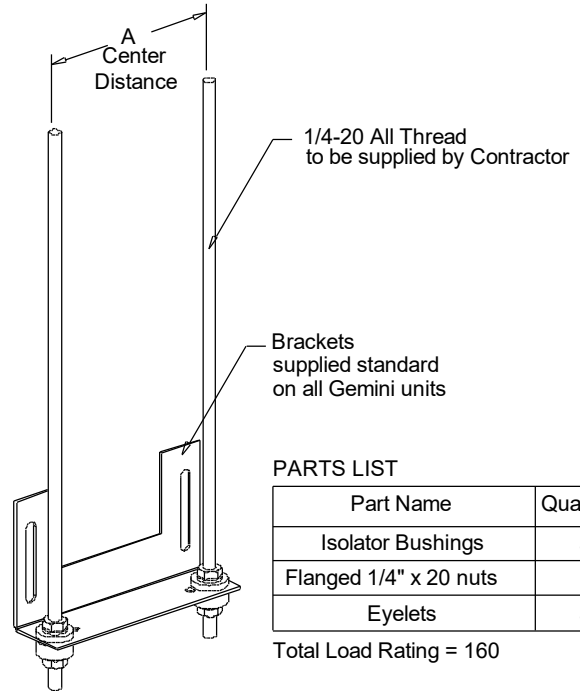


# COOK

<b>PROJECT: FARM CREDIT – RUSSELLVILLE, AR</b>
<b>DATE: 5/8/2023</b>

## GEMINI

**Gemini Isolator Kit  
GIK  
Rubber In Shear**



### PARTS LIST

Part Name	Quantity
Isolator Bushings	4
Flanged 1/4" x 20 nuts	8
Eyelets	4

Total Load Rating = 160

### Dimensions (inches)

Mark	Qty	Description	Part #	A
EF-7	1	GEMINI ISOLATO	GIK	4