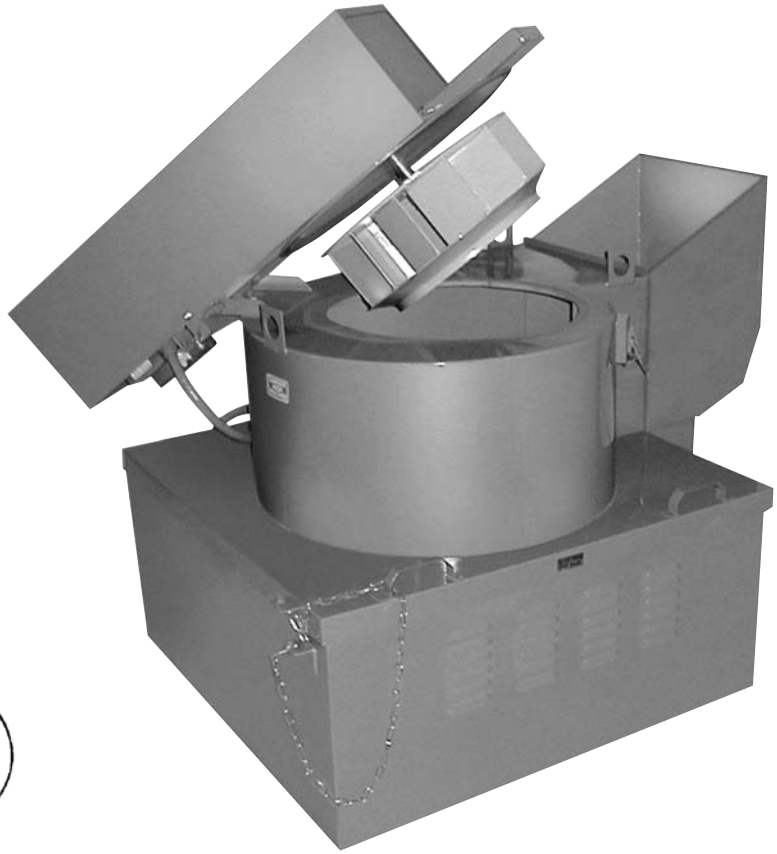
SupremeFan

GBD

EXHAUST BLOWER

Installation, Maintenance and Service Manual



Experience the Supreme Difference

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Kitchen Hood Exhauster - Installation Procedure

Duct Construction

1. Ducts should be sized for a minimum air velocity of 1500 FPM and a maximum of 2200 FPM (consult local codes).
2. Ducts shall be constructed of material not less than 16 gauge steel.
3. All joints and seams shall be made with a continuous grease tight weld on the external surface.
4. Ducts must have clean outs (consult local codes).
5. Ducts must be constructed to prevent accumulation of grease build-up.
6. No ducts shall be penetrated be screws, nails, etc.
7. Duct shaft should be built in accordance with local code and space requirements.

Curb

A minimum curb height of 8" is recommended (consult local codes). The curb must be level and square; refer to physical dimensions for maximum curb size.

Electrical

Necessary electrical service must be brought to the unit near the motor location (consult local codes prior to installation).

Clearance

Proper clearance must be provided on the hinge side of the fan from any parapet or wall to allow fan to swing open for duct cleaning. See dimension "E" in catalog dimensional data.

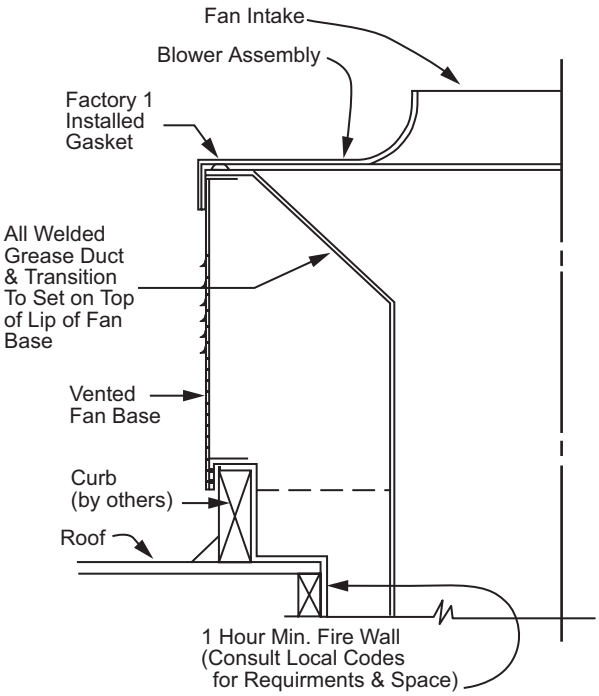


Figure 1

Step-1 Installation of Fan Base

Once the curb has been inspected for squareness and level, the fan base should be set. Loosen hinge bolts securing blower to base and lift blower off base. Set base on roof curb. Verify fan base is oriented with hinge bolts on correct side for desired direction of blower discharge.

Step-2 Installation of Duct and Transition

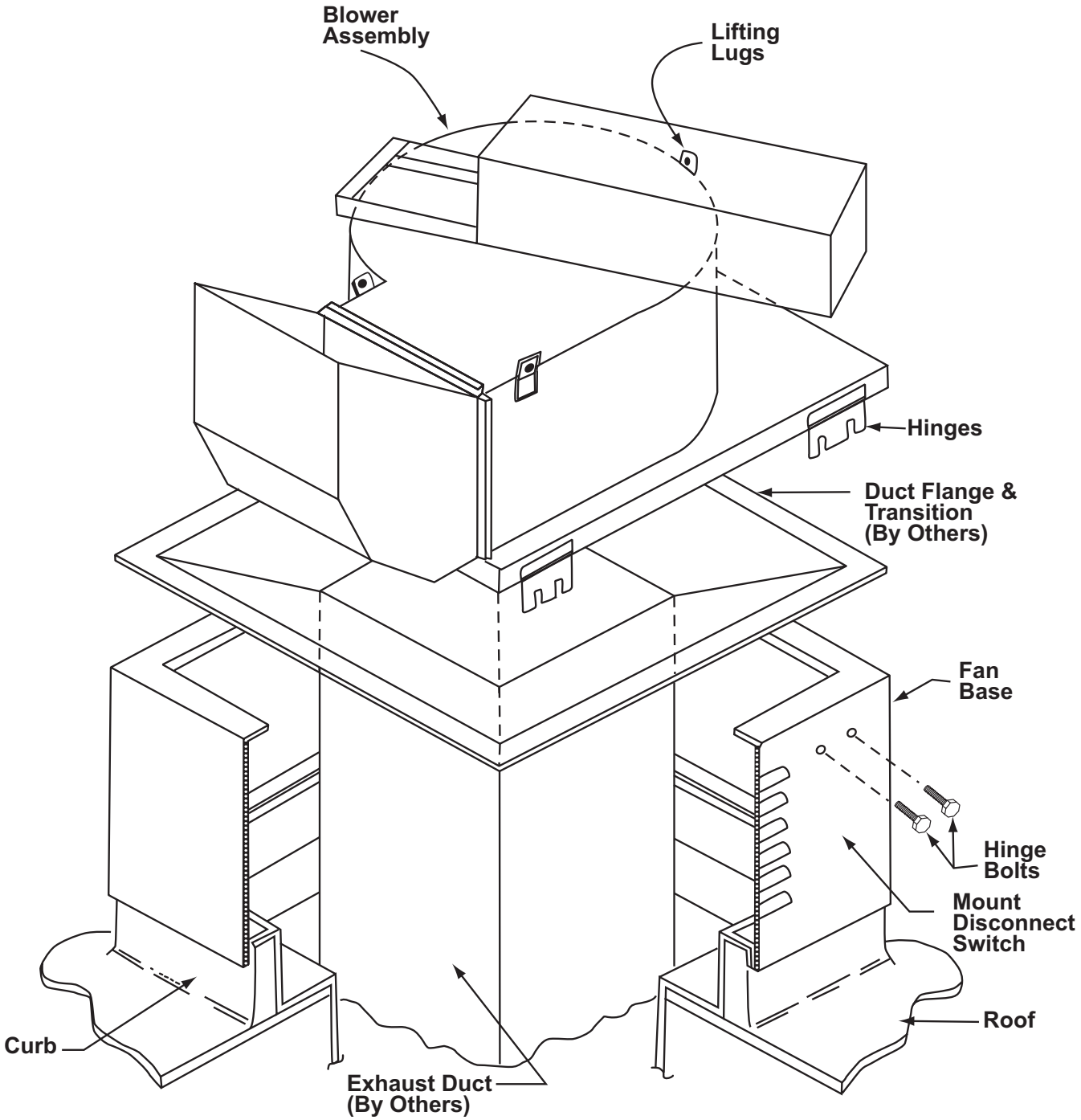
The all welded steel duct (by others) can now be set (see Fig. 1). Drop prefabricated grease duct through opening in base. Flanges on duct transition must set on lip of base to hold duct in place. Do not terminate grease duct below vented fan base.

NOTE: If the ductwork assembly is designed and installed as shown in Fig. 1, no fasteners will be required to secure the fan base into place.

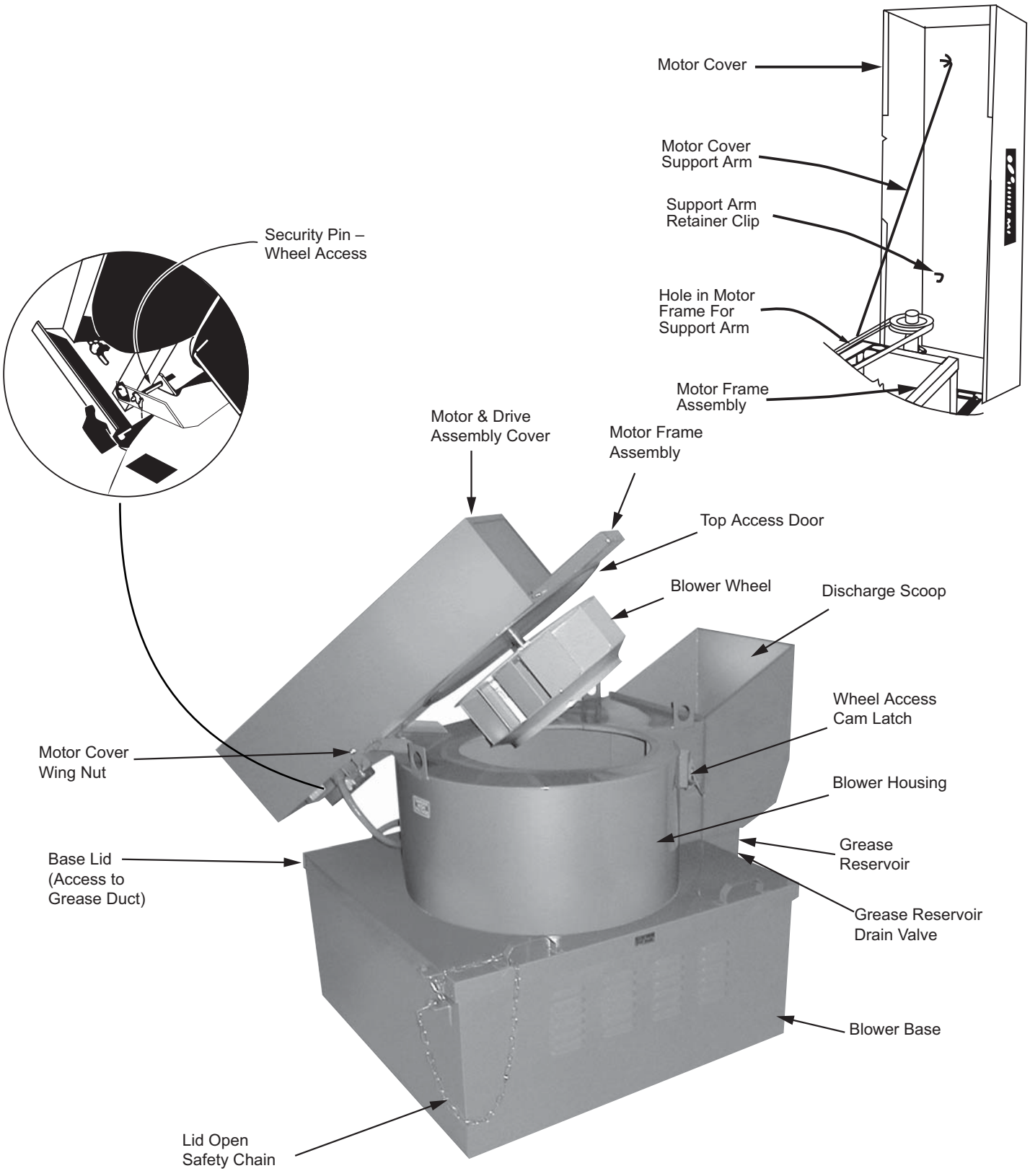
Kitchen Hood Exhauster - Installation Procedure

Step-3 Installation of Top Blower Assembly

Once the duct and transition are in place, the blower assembly can be set. Lifting lugs are factory provided for rigging. Set blower assembly on fan base so hinges match hinge holes in fan base. Tighten hinge bolts and install electrical.



Basic Component Identification



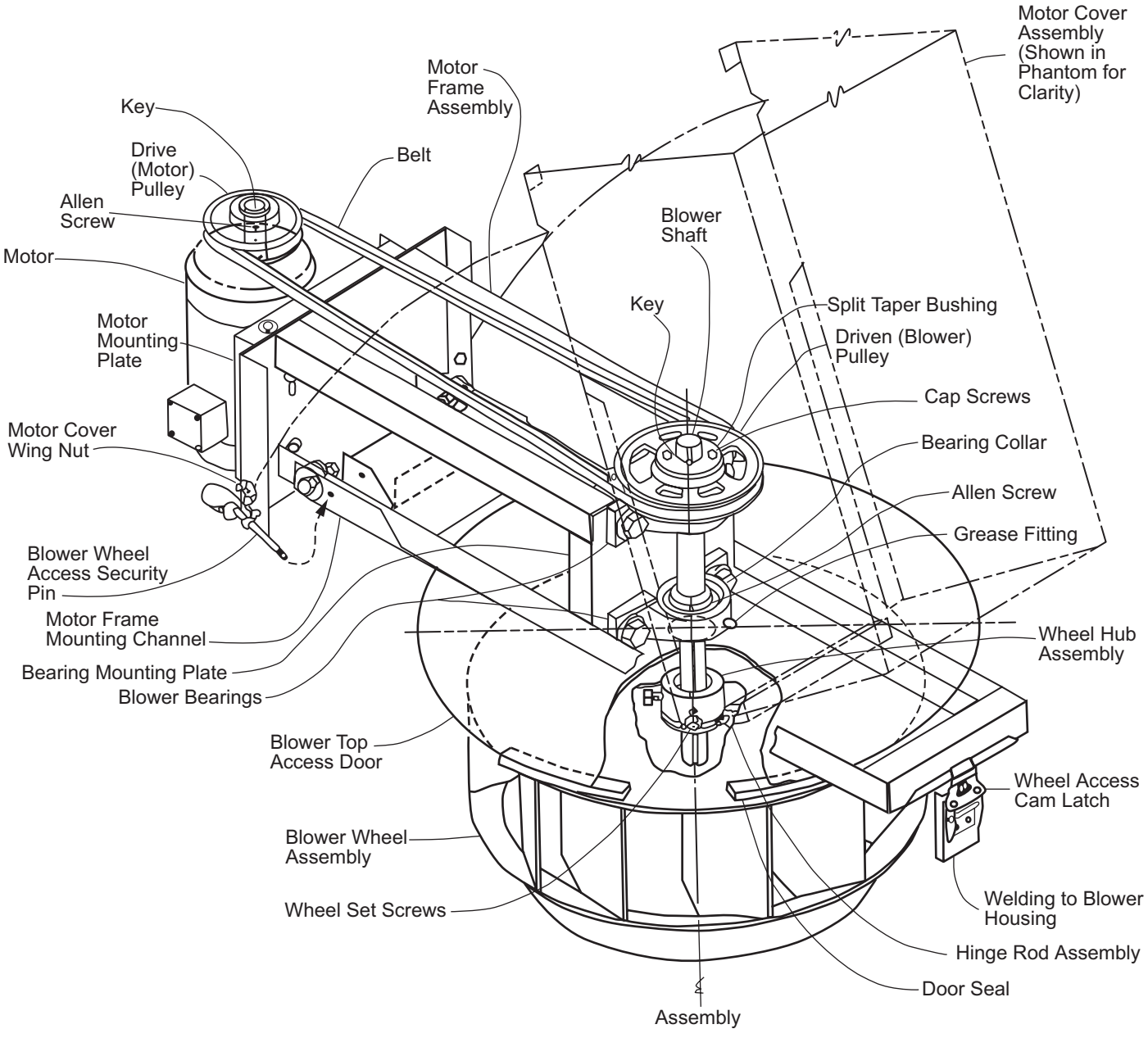
Supreme Exhaust Fan Maintenance

The exhaust fan should be inspected and serviced at least every two months as follows:

CAUTION: *MAKE SURE THE POWER TO THE EXHAUST FAN IS TURNED "OFF" AT THE DISCONNECT SWITCH BEFORE WORKING ON THE EXHAUST FAN. WHEN ELECTRICAL CIRCUIT TESTING IS REQUIRED, IT SHOULD BE PERFORMED ONLY BY QUALIFIED SERVICE PERSONNEL. EXTREME CARE MUST BE EXERCISED WHEN WORKING WITH LIVE ELECTRICAL CIRCUITS!*

1. Rotate and open the wheel access cam latch and lift the blower wheel out of the blower housing. Install the blower wheel access security pin. Visually inspect the wheel for debris (such as paper towels, cook's hats, etc.) and remove if found. If grease build-up has occurred, scrape and clean the wheel and housing thoroughly to ensure quiet and efficient operation. Remove the access security pin, lower the blower wheel and engage the cam latch.
2. Loosen the (2) wing nuts on the sides of the motor cover and lift the motor cover to gain access to the motor, pulleys, belt and fan bearings. Install the motor cover support arm for safety to ensure the motor cover will not drop while working on the motor and drive assembly.
3. Check the belt tension and wear. Adjust the belt, if required, or replace the belt if excessive wear or cracking is apparent.
4. The motor has pre-lubricated bearings that require no additional lubrication for normal operation.
5. The blower wheel bearings are equipped with grease fittings. Grease should be added per chart in GBD catalog. Add grease SLOWLY with shaft rotating until a slight bead forms at the seals, DO NOT OVER-FILL! ...over filling will rupture the seals, eventually causing damage to the bearings. Use only grease rated for 1000 degrees F. Use a good lubricant such as a premium lithium complex NLGI #2 bearing grease, lithium base and mineral base oil. Always use grease from the same chemical group. Mixing different types of grease can greatly lower its chemical and mechanical stability.
6. Replace the motor cover support arm in its clip and lower the motor cover. Tighten the motor cover wing nuts. Turn "ON" the electrical disconnect switch.
7. Inspect the fan discharge grease reservoir for any grease residue. If grease has accumulated, place a large container under the valve outlet and open the valve to drain. Close the valve. **NOTE**: THIS RESERVOIR IS MANUFACTURED IN A WAY TO ALLOW RAIN WATER TO RUN OUT ONTO THE ROOF BUT WILL RETAIN THE GREASE WITHIN THE RESERVOIR.

Motor Frame and Blower Wheel Assembly



Troubleshooting Guide

WARNING! *INSPECTION, TESTING, SERVICING AND REPAIR OF THE EXHAUST BLOWER SHOULD BE PERFORMED ONLY BY QUALIFIED SERVICE PERSONNEL. THE UNIT SHOULD BE TURNED OFF AT THE DISCONNECT SWITCH WHEN SERVICING TO AVOID THE DANGER OF SOMEONE INADVERTENTLY TURNING THE UNIT ON WHILE IT IS BEING SERVICED. IF ELECTRICAL TESTING IS REQUIRED, EXTREME CARE MUST BE EXERCISED DUE TO EXPOSED LIVE CIRCUITS!*

PROBLEM	PROBLEM CAUSE	CORRECTIVE ACTION
Motor does not run	a. Main circuit breaker off b. Circuit breaker tripped c. Disconnect switch off d. Motor starter overloads tripped e. Fan switch in kitchen turned off f. Off from interlocking equipment being off g. Defective motor	a. Turn on main circuit breaker b. Reset tripped circuit breaker c. Turn on disconnect switch d. Reset starter overloads e. Turn on exhaust fan switch f. Turn on interlock equipment g. Replace motor
Fan does not operate (motor runs)	a. Broken belt b. Seized fan bearings c. Wheel slipped on shaft and wedged against intake cone	a. Replace belt b. Replace bearings c. Re-position wheel and secure on shaft
Fan noisy	a. Loose parts b. Bearings need lubrication c. Cracked belt d. Defective bearings e. Locking collar loose on shaft f. Debris on fan wheel (throwing it out of balance) g. Wheel slipped down on shaft, ticking on intake cone h. Unbalanced wheel	a. Locate and tighten b. Lubricate bearings c. Replace belt d. Replace bearings e. Tighten locking collar f. Remove debris (crew hats, paper towels, grille slips, grease build-up, etc.) g. Re-position wheel and secure on shaft h. Replace wheel
Fan cycles on and off	a. Motor overloading b. Defective motor	a. Check F.L.A.-replace with larger motor if over amps b. Replace motor

Troubleshooting Guide (cont.)

PROBLEM	PROBLEM CAUSE	CORRECTIVE ACTION
Grease leakage at fan	a. Grease reservoir filled to overflow b. Damaged lid to base gasket c. Damaged wheel access gasket d. Damaged grease reservoir gasket	a. Empty grease reservoir b. Replace gasket c. Replace gasket d. Replace gasket
Frequent motor failures	a. Low on high voltage to motor b. Fan running backwards c. Motor overloaded d. Motor single phasing	a. Check line voltage, call utility company b. Change rotation c. Check F.L.A. draw (must fall within nameplate rating), slow down, or change to larger motor if overloaded d. Correct cause for loss of one leg
Frequent belt failures	a. Pulleys misaligned b. Belt not tensioned properly c. Cracked pulley	a. Re-align pulley b. Adjust to proper tension c. Replace pulley
Frequent bearing failures	a. Improper lubrication b. Belt too tight c. Loose locking collars	a. See instructions, lubricate properly b. Retention belt c. Tighten locking collars
Low CFM (exhaust air)	a. Fan running backwards b. Loose belt c. Debris on wheel d. Grease filters in hood/kitchen extremely dirty e. Fan RPM too low	a. Change motor rotation b. Tighten belt c. Clean wheel d. Clean filters e. Speed up fan (WARNING – verify motor not overloaded check motor full load amps)

Supreme Exhaust Fan Service

DRIVE MOTOR AND DRIVEN BLOWER WHEEL PULLEY VARIATIONS:

Drive Pulley

This pulley is a variable pitch pulley. The pitch diameter of the pulley is adjustable to allow speeding up or slowing down of the blower wheel a small amount within the adjustment range of the pulley. For small single groove pulleys, an allen head set screw is provided in the shoulder on the bottom side of the pulley, to tighten the pulley to a flat spot on the shaft of the motor. On the top side of the pulley, an allen head set screw is provided in the shoulder to tighten the threaded adjustable portion of the pulley to a flat spot on the threaded hub of the pulley.

On pulleys of a larger size, the flat spots on both the motor shaft and the threaded hub of the pulley, are replaced with keyways and square or rectangular keys. The key slides into the keyway of the motor shaft and pulley keyway and the shoulder set screw locks the pulley into place. After the threaded adjustable portion of the pulley has been adjusted to the proper setting, align the keyway and slide the second key into the keyway. Tighten the set screw to lock the pulley at this setting.

The two groove variable pitch pulleys are similar to above, except that the set screw that locks the pulley to the motor shaft, is located inside between the grooves. The threaded groove adjustment must be opened to allow access to this set screw. There are two set screws, one on each outside hub, that locks the outside of each groove to the key at the proper adjustment setting. Caution must be exercised to make sure that each of the two grooves are adjusted to the same setting to maintain equal tension on both belts.

Driven Pulley

The driven pulley is a fixed size (not adjustable). It is secured to the blower shaft with a split tapered bushing and cap screws. To install the pulley and bushing to the blower shaft, slip the pulley and bushing onto the shaft. Align the clearance holes in the bushing flange with the threaded holes in the pulley hub. Insert the cap screws through the clearance holes of the bushing flange and screw the cap screws loosely into the threaded holes of the pulley hub. Position the assembly on the shaft (see “Pulley Alignment”) and tighten the cap screws progressively and uniformly until tight. To remove the pulley, remove the cap screws. Screw the cap screws into the threaded holes in the bushing flange. Progressively tighten the cap screws against the pulley hub until the bushing breaks free from the pulley. Remove the bushing and pulley from the shaft. Remove the cap screws form the threaded holes in the bushing flange.

The two groove driven pulleys are identical to the single groove pulleys for installation and removal.

Pulley Alignment

For access to the motor, pulleys, belts and fan bearings, loosen the wing nuts on the sides of the drive assembly cover and hinge cover up. Install the motor cover support arm for safety to ensure that the motor cover will not drop while working on the drive assembly.

The pulley alignment should be accomplished by laying a level or straight edge across the pulleys. Both pulleys should be level and aligned. If not perfectly level, remove the belt (see “How To Replace Belt”), loosen the driven pulley (See “Driven Pulley”), and adjust up or down to obtain level. Firmly re-tighten the pulley and reinstall and re-adjust the belt. If the pulleys are not properly aligned, excessive belt wear will occur. It may cause fan vibration and could cause the belt to “jump” off the pulleys.

To Adjust Belt Tension

The bottom tension bolt is welded to the motor frame plate, the top tension bolt is loose. To increase the belt tension, turn the lock nuts counter-clockwise at the motor mounting plate on the side towards the motor until substantially loose. Gradually tighten both lock nuts clockwise at the motor mounting plate on side away from motor until the belt is properly tensioned. Proper belt tension is when the belt deflects about one inch at the center when squeezed firmly from both sides. Firmly re-tighten the lock nuts on the motor side of the motor mounting plate. To decrease the belt tension, reverse the above procedure.

To Replace Belt

Turn lock nuts on belt tension bolts clockwise at motor mounting plate on side away from motor way down to allow the motor mounting plate to swing in and allow slack on the belt. Remove the old belt and install the new belt. See “How To Adjust Belt Tension” to tighten new belt.

Supreme Exhaust Fan Service (cont.)

To Replace Motor

CAUTION! *MAKE SURE POWER IS TURNED OFF AT THE DISCONNECT SWITCH PRIOR TO CHANGING MOTOR.*

Open the motor cover and install the cover support arm. Loosen the belt tension lock nuts and remove the belt. Remove the motor J-box cover. Disconnect the motor wiring in the motor J-box. Disconnect the conduit connector from the motor J-box. Loosen the pulley set screw and remove the pulley key. Pry the pulley off the motor shaft. Remove the four bolts, nuts and washers securing the motor to the motor mounting plate. Remove the motor. Install the new motor using the four bolts, nuts and washers. Install the pulley key in the motor shaft and re-install and align the pulley (see "Pulley Alignment"). Tighten the pulley key set screw. Insert the motor wiring and the conduit connector into the motor J-box and fasten the conduit connector. Reconnect the motor wiring, making sure the connections are made in compliance with the wiring diagram on the motor. Leave J-box cover off at this time. Re-install the belt and adjust the belt tension. Turn the disconnect switch "ON" and momentarily energize the exhaust fan motor to verify correct rotation. If rotation is incorrect, turn the disconnect switch "OFF" and reverse motor rotation. Turn "ON" disconnect switch. Verify the motor rotation is now correct by, again, momentarily energizing the fan motor. Using the motor leads in the motor J-box, take a correct reading with an appropriate instrument to verify that the motor is running within the nameplate amperage range and is not overloaded. Re-install the motor J-box cover. With the fan "ON", visually inspect that all is in proper working order. Turn "OFF" the disconnect switch. Replace the motor cover support arm in its retainer clip, close the cover and tighten the cover wing nuts. Turn the disconnect switch "ON".

To Increase Exhaust Air Delivery

By increasing the blower wheel speed. Prior to accomplishing this procedure, it is important to check these items:

1. With the exhaust fan running, remove the motor J-box cover and take current readings on each leg of the motor supplying conductors to verify that there is additional motor amperage available to increase the motor load. Inspect the motor nameplate to ascertain the maximum motor full load amps. DO NOT exceed this value. If additional amperage is available, leave the motor J-box cover off to take additional readings.
2. Turn "OFF" the motor. Visually inspect the adjustable motor drive pulley to verify that there is additional adjustment available to close the pulley groove to speed up the blower wheel. If the "V" belt is riding at the top of the pulley, there is no adjustment available. The pulley must be changed to the next larger size pulley.
3. Check the position of the belt tensioning bolts at the motor mounting plate to verify that additional adjustment is available for the increased belt length created by the pulley adjustment. If the belt will be out of range for the adjustment, the next longer size belt must be installed.

To Adjust the Pulley

Remove the fan "V" belt (see "How To Replace Belt"). Loosen the allen screw at the hub of the pulley and remove the key. Rotate the top of the pulley clockwise to close the belt groove 1/2 turn, 1 turn, 1-1/2 turns or 2 turns as required to obtain the required adjustment. Re-install the key and tighten the key set screw. Re-install the "V" belt and adjust the belt tension. Turn the fan "ON" and check the motor full load amps to verify that the motor is not overloaded. Re-install the motor J-box cover.

To Decrease Exhaust Air Delivery

By decreasing the blower wheel speed. Follow the above procedure except…rotate the top of the pulley counter-clockwise to open the belt groove as required to obtain the required adjustment.

NOTE: The "V" belt must not ride on the bottom or flat of the pulley. If this condition occurs during the adjustment, change the pulley to the next smaller size. This may also require changing the "V" belt to the next shorter size.

Re-assemble all parts as noted above and turn "ON" the exhaust fan.

Supreme Exhaust Fan Service (cont.)

To Replace Fan Wheel Bearings

CAUTION! *MAKE SURE THE FAN IS TURNED "OFF" AT THE DISCONNECT SWITCH.*

Loosen the wing nuts, open the motor cover and install the cover support arm. Remove the "V" belt (see "How To Replace Belt"). Remove the driven pulley (See "Driven Pulley"). Loosen the set screws in both bearing collars. Using fine emery cloth, sand the upper part of the blower shaft to remove any oxidation, rust or burrs. Lift the top locking collar off the shaft. Make sure to remove the burr that may have been caused by the locking collar set screw. Loosen and remove the two bolts, nuts and washers that secure the top bearing to the motor frame bearing plate. Slide the bearing up off the blower shaft. Repeat the complete process to remove the bottom bearing. When the bottom bearing is released, the blower wheel will drop slightly and rest on top of the intake cone. To install new bearings, slip the bottom bearing down over the shaft. Raise the blower wheel and shaft and temporarily lay a board across the intake cone to rest the blower wheel on, using the discharge opening of the fan for access. Install the two bearing bolts, washers and nuts through the bearing and mounting plate and loosely tighten. Slip the locking collar down over the shaft, leaving loose at this time. Slip the top bearing down over the shaft. Install the two bearing bolts, washer and nuts through to the bearing and mounting plate, leaving loose at this time. Slip the top bearing locking collar down over the shaft, leaving loose. Remove the board supporting the blower wheel. Lower the wheel and shaft until the lower edge of the wheel intake is just above the intake cone (1/16" to 1/8" clearance). Tighten both sets of bearing bolts securely and recheck the wheel to intake clearances. If clearance is correct, firmly tighten both bearing locking collar set screws. Manually spin the wheel (through the discharge opening) to verify proper clearance.

Re-install the blower pulley (see "Driven Pulley), making sure that the pulleys are properly aligned (see "Pulley Alignment"). Re-install and re-adjust the "V" belt (see "How To Replace Belt" and "How To Adjust Belt Tension"). Turn fan "ON" to confirm that all is in proper working order. Turn fan "OFF", replace the motor cover support arm, lower and secure the motor cover and turn the fan "ON".

To Replace the Blower Wheel

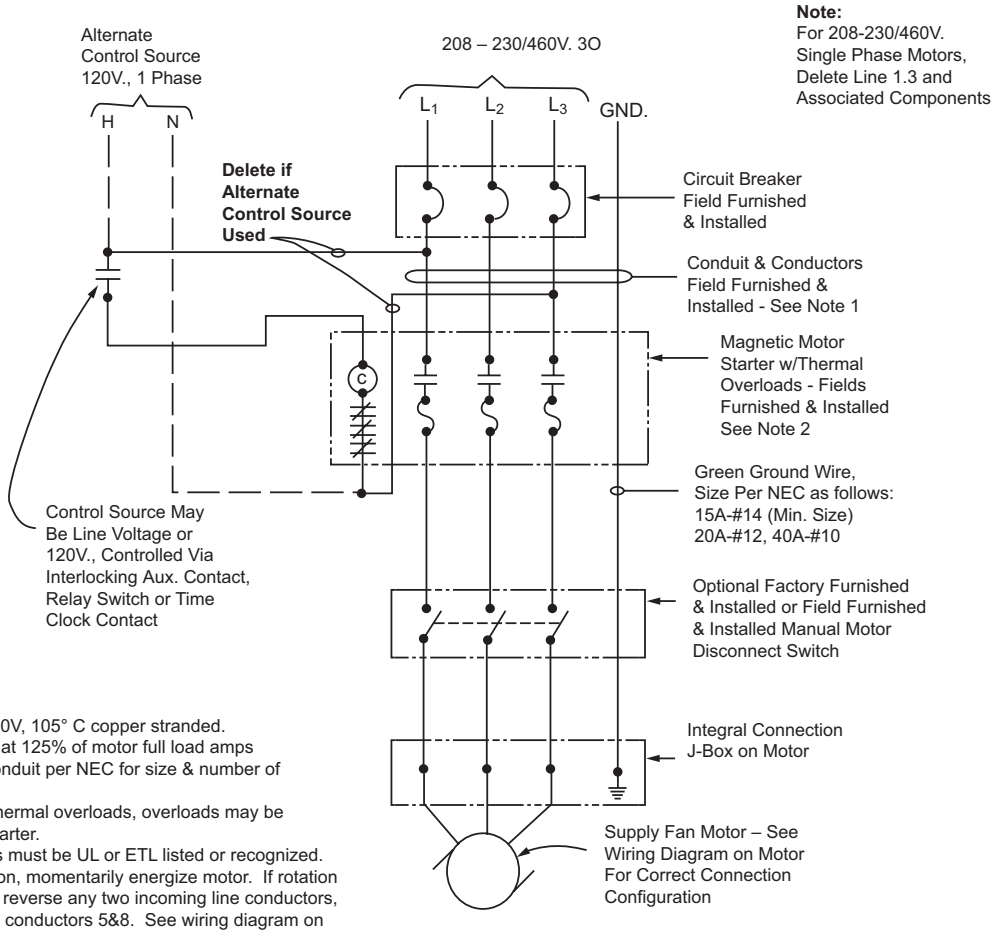
CAUTION! *TURN FAN "OFF" AT THE DISCONNECT SWITCH.*

Rotate and open the wheel access cam latch. Lift up the motor frame assembly and install the security pin to hold the assembly open. Measure and note the distance of the bottom of the wheel hub to the bottom of the shaft for repositioning the new wheel on the shaft. Loosen the set screws in the hub of the wheel securing the wheel to the shaft. Using fine emery cloth, sand the lower part of the shaft to remove any accumulation of debris, rust, oxidation or burrs. Using an appropriate puller, attach the puller jaws to the groove in the blower wheel hub and slowly tighten the forcing screw, drawing the blower wheel from the shaft. Use caution not to lose the shaft key. Before installing the new wheel, use fine emery cloth to clean the shaft. Remove any burrs that might be present from the previous set screws. To facilitate installation, lubricate the shaft with WD-40. Slip the new blower wheel onto the shaft and align the keyway, making sure that the wheel is at the same location as the old wheel (from the measurement previously taken). Slip the key into keyway and lightly tighten the set screw. Remove the security pin, lower the motor frame assembly and fasten the access cam latch. Double check the wheel clearance from the intake cone-1/16" to 1/8" clearance, using the fan discharge opening for access. Manually spin the wheel to verify clearance all around the wheel. Open the cam latch, lift the motor frame assembly and install the security pin. Make any further adjustments if required. Firmly tighten the set screws in the wheel collar. Remove the security pin, lower the motor frame assembly and fasten the cam latch. Manually spin the wheel again to verify clearance. Turn the disconnect switch "ON" to verify correct fan operation.

To Replace the Blower Wheel Shaft

See "How To Replace Fan Wheel Bearings" and "How To Replace Blower Wheel".

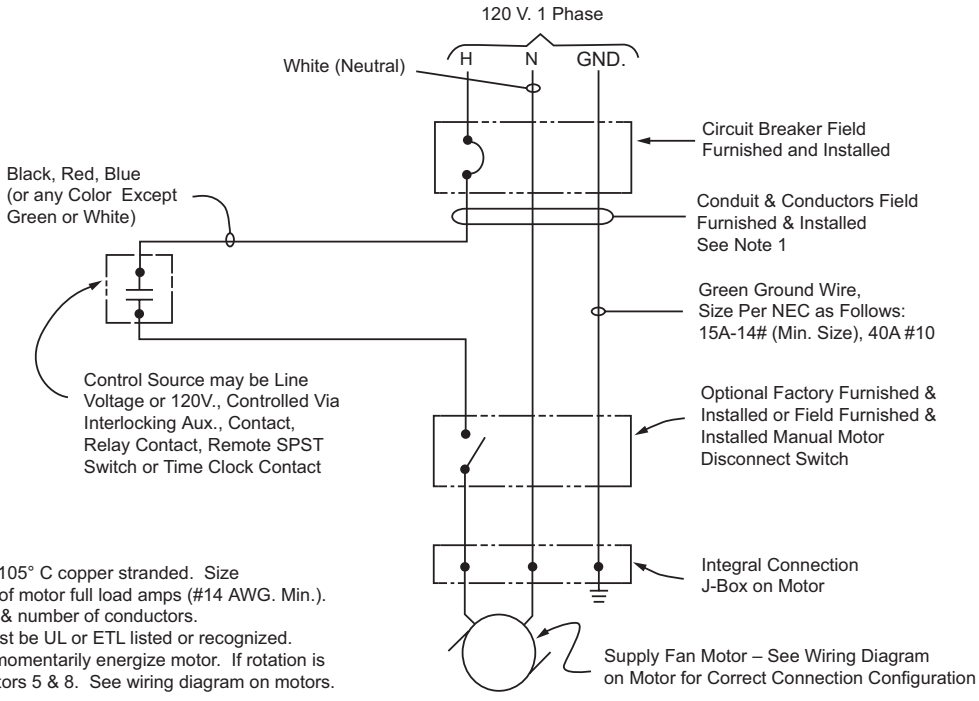
Installation Wiring Diagram



Note:
For 208-230/460V. Single Phase Motors, Delete Line 1.3 and Associated Components

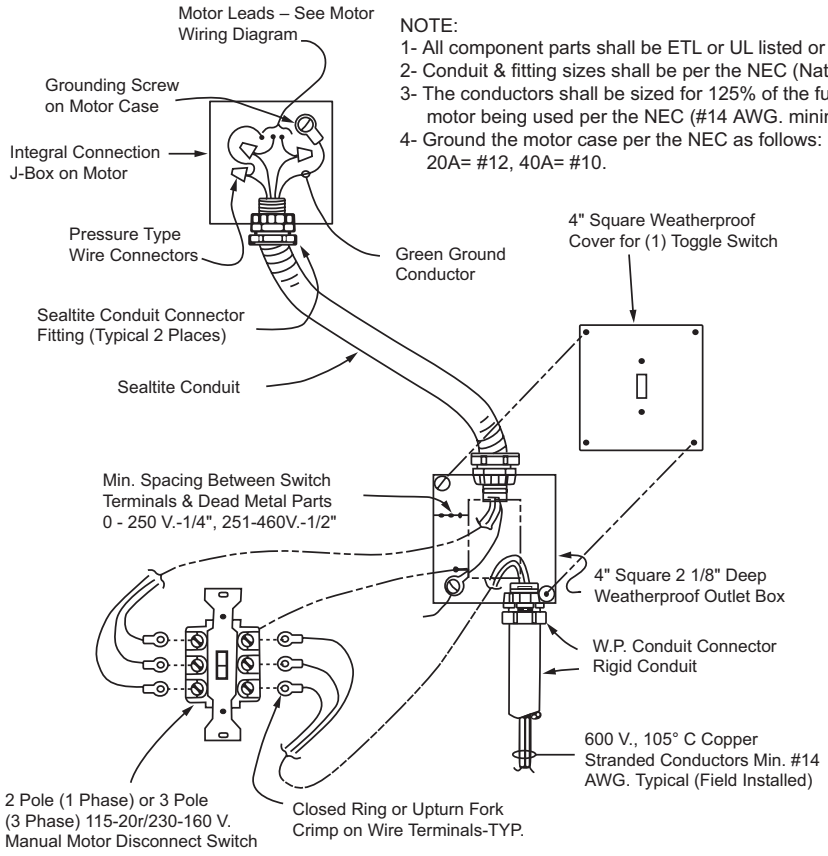
Note:
1. Conductors – UL listed 600V, 105° C copper stranded. Size conductors per NEC at 125% of motor full load amps (#14 AWG. Min.). Size conduit per NEC for size & number of conductors.
2. If motor is provided with thermal overloads, overloads may be omitted in the magnetic starter.
3. All material & components must be UL or ETL listed or recognized.
4. To verify correct fan rotation, momentarily energize motor. If rotation is incorrect, (for 3 phase), reverse any two incoming line conductors, (for 1 phase), interchange conductors 5&8. See wiring diagram on motor.

Installation Wiring Diagram 120V, 1 Phase



Note-1:
1. Conductors – UL listed 600V, 105° C copper stranded. Size conductors per NEC at 125% of motor full load amps (#14 AWG. Min.). Size conduit per NEC for size & number of conductors.
2. All material & components must be UL or ETL listed or recognized. To verify correct fan rotation, momentarily energize motor. If rotation is incorrect, interchange conductors 5 & 8. See wiring diagram on motors.

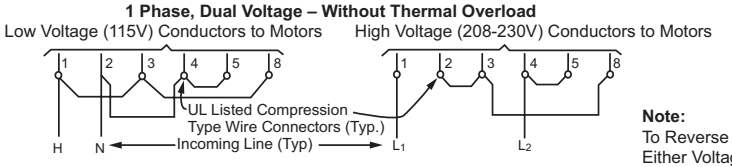
Optional Disconnect Switch, Conduit & Wiring Installation (3 Phase Shown, 1 Phase Similar)



NOTE:
1- All component parts shall be ETL or UL listed or classified.
2- Conduit & fitting sizes shall be per the NEC (Nat'l, Elec. Code)
3- The conductors shall be sized for 125% of the full load amps the motor being used per the NEC (#14 AWG. minimum)
4- Ground the motor case per the NEC as follows: 15A= #14, 20A= #12, 40A= #10.

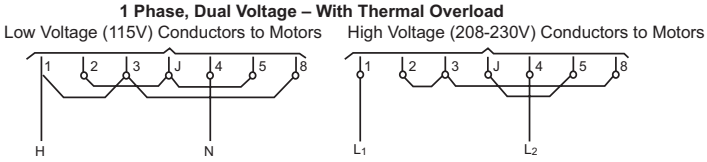
Wiring Diagrams / Baldor Motors Conductor Connections at Motor Integral Junction Box

1 Phase, Dual Voltage – Without Thermal Overload

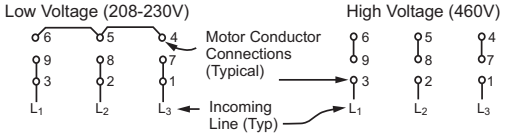


Note:
To Reverse 1 Phase Rotation, Either Voltage, Interchange Conductors 5 & 8

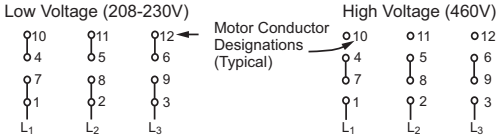
1 Phase, Dual Voltage – With Thermal Overload



3 Phase, Dual Voltage – Without Thermal Overloads



3 Phase, Dual Voltage – With Thermal Overloads



Note:
To Reverse 3 Phase Rotation, Either Voltage, Reverse any Two Incoming Line Conductor Connections

Warning:
Verify Wiring Diagram on Motor (For Variations) Prior to Connecting or Energizing Motor.

SupremeFan

Warranty

What Products Are Covered
Supreme Fan products (each, a "Supreme Fan Product")

One Year Limited Warranty For Supreme Fan Products
Supreme Fan warrants to the original commercial purchaser that the Supreme Fan Products will be free from defects in material and workmanship for a period of one (1) year from the date of shipment.

Exclusive Remedy
Supreme Fan will, at its option, repair or replace (without removal or installation) the affected components of any defective Supreme Fan Product; repair or replace (without removal or installation) the entire defective Supreme Fan Product; or refund the invoice price of the Supreme Fan Product. In all cases, a reasonable time period must be allowed for warranty repairs to be completed.

What You Must Do
In order to make a claim under these warranties:

1. You must be the original commercial purchaser of the Supreme Fan Product.
2. You must promptly notify us, within the warranty period, of any defect and provide us with any substantiation that we may reasonably request.
3. The Supreme Fan Product must have been installed and maintained in accordance with good industry practice and any specific Supreme Fan recommendations.

Exclusions
These warranties do not cover defects caused by:

1. Improper design or operation of the system into which the Supreme Fan Product is incorporated.
2. Improper installation.
3. Accident, abuse or misuse.
4. Unreasonable use (including any use for non-commercial purposes, failure to provide reasonable and necessary maintenance as specified by Supreme Fan, misapplication and operation in excess of stated performance characteristics).
5. Components not manufactured by Supreme Fan.

Limitations
1. In all cases, Supreme Fan reserves the right to fully satisfy its obligations under the Limited Warranties by refunding the invoice price of the defective Supreme Fan Product (or, if the Supreme Fan Product has been discontinued, of the most nearly comparable current product).
2. Supreme Fan reserves the right to furnish a substitute or replacement component or product in the event a Supreme Fan Product or any component of the product is discontinued or otherwise unavailable.
3. Supreme Fan's only obligation with respect to components not manufactured by Supreme Fan shall be to pass through the warranty made by the manufacturer of the defective component.

General
The foregoing warranties are exclusive and in lieu of all other warranties except that of title, whether written, oral or implied, in fact or in law (including any warranty of merchantability or fitness for a particular purpose).

Supreme Fan hereby disclaims any liability for special, punitive, indirect, incidental or consequential damages, including without limitation lost profits or revenues, loss of use of equipment, cost of capital, cost of substitute products, facilities or services, downtime, shutdown or slowdown costs.

The remedies of the original commercial purchaser set forth herein are exclusive and the liability of Supreme Fan with respect to the Supreme Fan Products, whether in contract, tort, warranty, strict liability or other legal theory shall not exceed the invoice price charged by Supreme Fan to its customer for the affected Supreme Fan Product at the time the claim is made.

Inquiries regarding these warranties should be sent to: Supreme Fan, 843 Indianapolis Avenue, Lebanon, IN 46052

SupremeFan

Experience the Supreme Difference

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