



FARM PRODUCTS DIVISION

MEMBER OF AMCA
AMERICAN COOLAIR CORPORATION
P.O. BOX 2300
JACKSONVILLE, FLORIDA 32203
PHONE (904) 389-3646 FAX (904) 387-3449
E-MAIL - fans@coolair.com

MNEFDD52, MNBCDD52, and MNCFDD52 GALVANIZED WALL FANS

Installation, Operation, and Maintenance Instructions

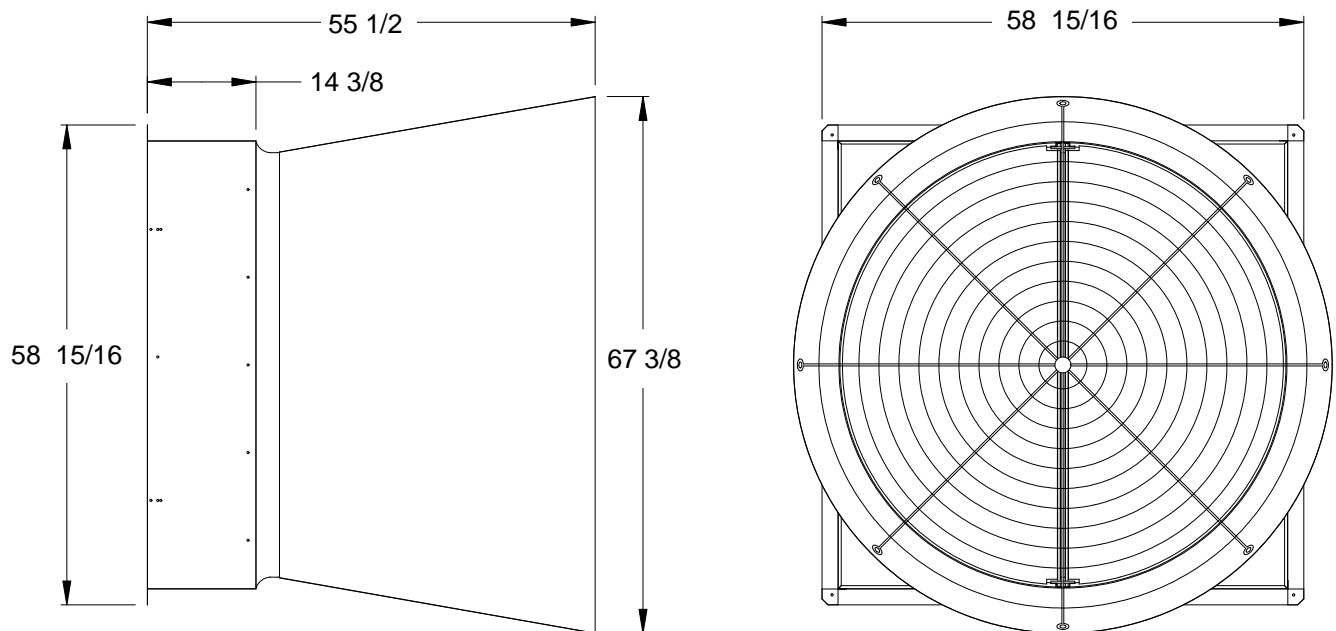


Figure 1

MNEFDD52LE * MNEFDD52L * MNEFDD52M
MNBCDD52LE * MNBCDD52L * MNBCDD52M
MNCFDD52LE * MNCFDD52L * MNCFDD52ME
MNCFDD52M

UNPACKING

Inspect the fan for signs of shipping damage. It is the responsibility of the customer to report any shipping damage to the freight carrier.

WHAT SHOULD YOU FIND?

Fan, (4) Housing Sheets, Damper Door Assembly, Cone (4 cone panels and 4 cone gussets), Rear Housing Guard, Front Cone Guard, and Hardware Package

FRAMING

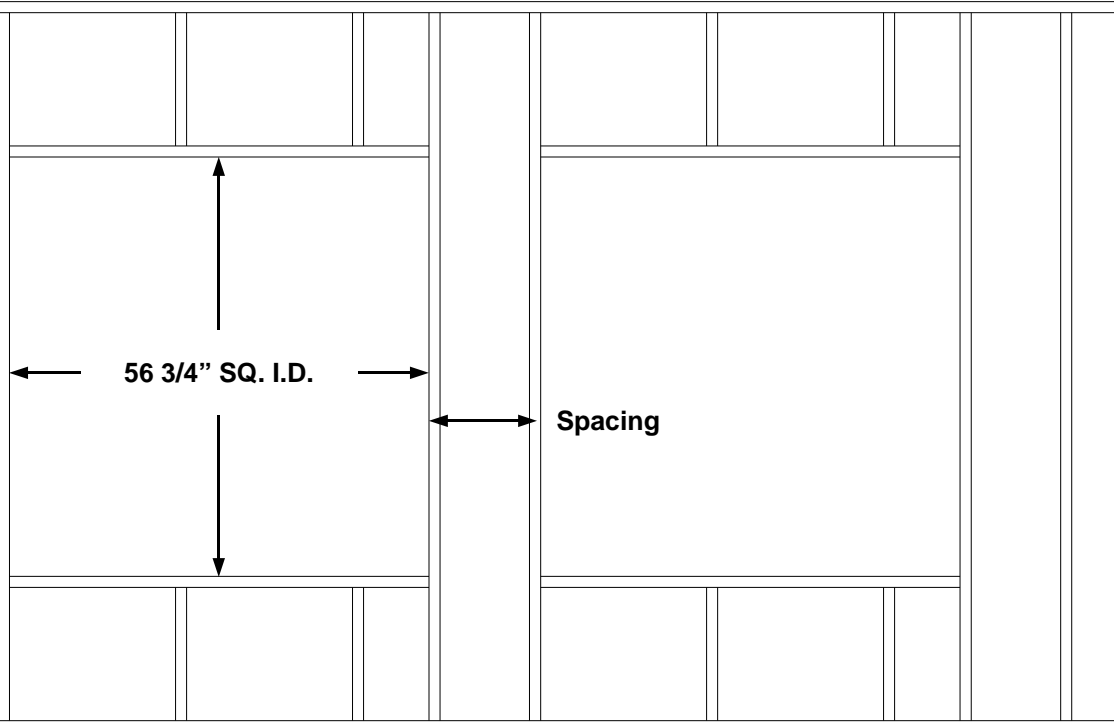


Figure 2

FRAME CONSTRUCTION

RECOMMENDED SPACING IS 12"

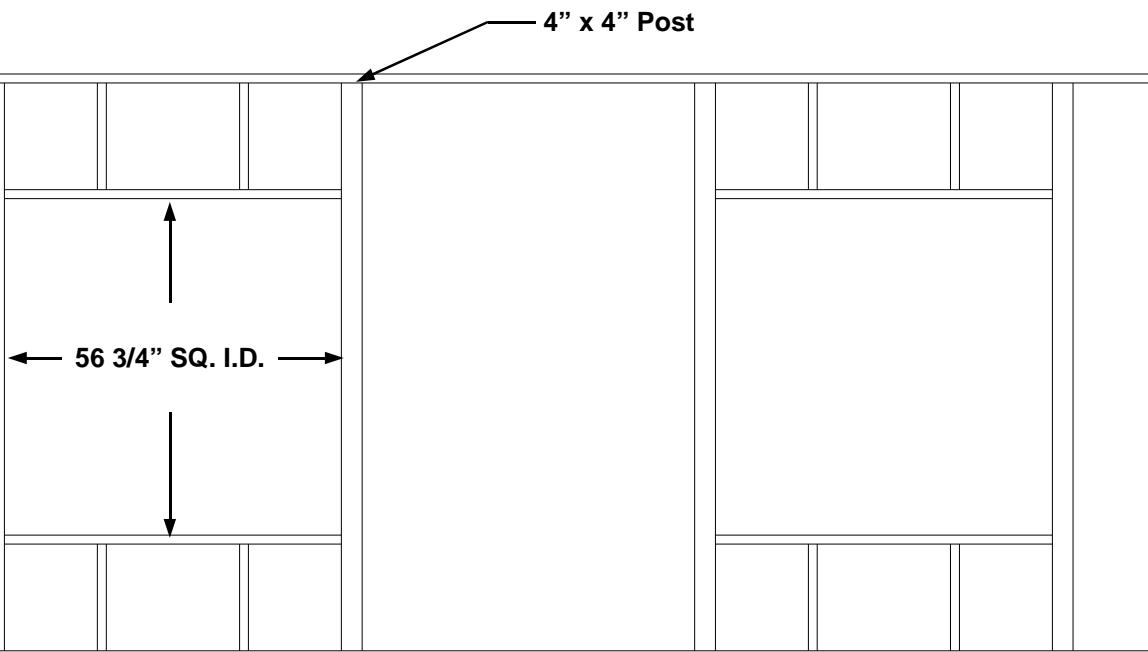


Figure 3

POST CONSTRUCTION

FAN HOUSING ASSEMBLY & INSTALLATION

The housing consists of 4 housing sheets that must be fastened together. The top and side sheets are identical. The bottom sheet has two 1-inch diameter drain holes. Assembly should be done inside the building in which it will be placed. To assemble the housing, place one sheet so that the flange on the long side of the sheet is down. Then take another sheet and place it at 90° to the first so that its flat short end is overlapped by the flanged short end of the first sheet. The three inside holes, as well as the hole in the corner at the intersection of the two flanges, should overlap. Using three 1/4" x 3/4" bolts and three 1/4" whiz-lock nuts, fasten the two sheets at the overlapping holes on the inside corner of the two sheets. Push the bolts from the outside in, and thread the nuts on the inside. This process should be repeated for the two remaining sheets. After the fourth sheet has been fastened to the third, it should also be fastened to the first, completing the housing.

Next, lift the housing into place in the wall opening. Using the 4 overlapping corner holes and the 3 individual holes in each sheet flange, fasten the housing to the building frame (hardware not provided).

After securing the housing to the frame, attach the 2 guard latches each to the side and bottom housing sheets as shown in Figure 4 using the #10 screws provided. The screws should go through the latch, through the housing, and into the building frame. In the same manner, attach the two guard clips to the top housing sheet using #10 wood screws as shown in Figure 4.

Install flashing around the housing and caulk to properly seal fan to wall.

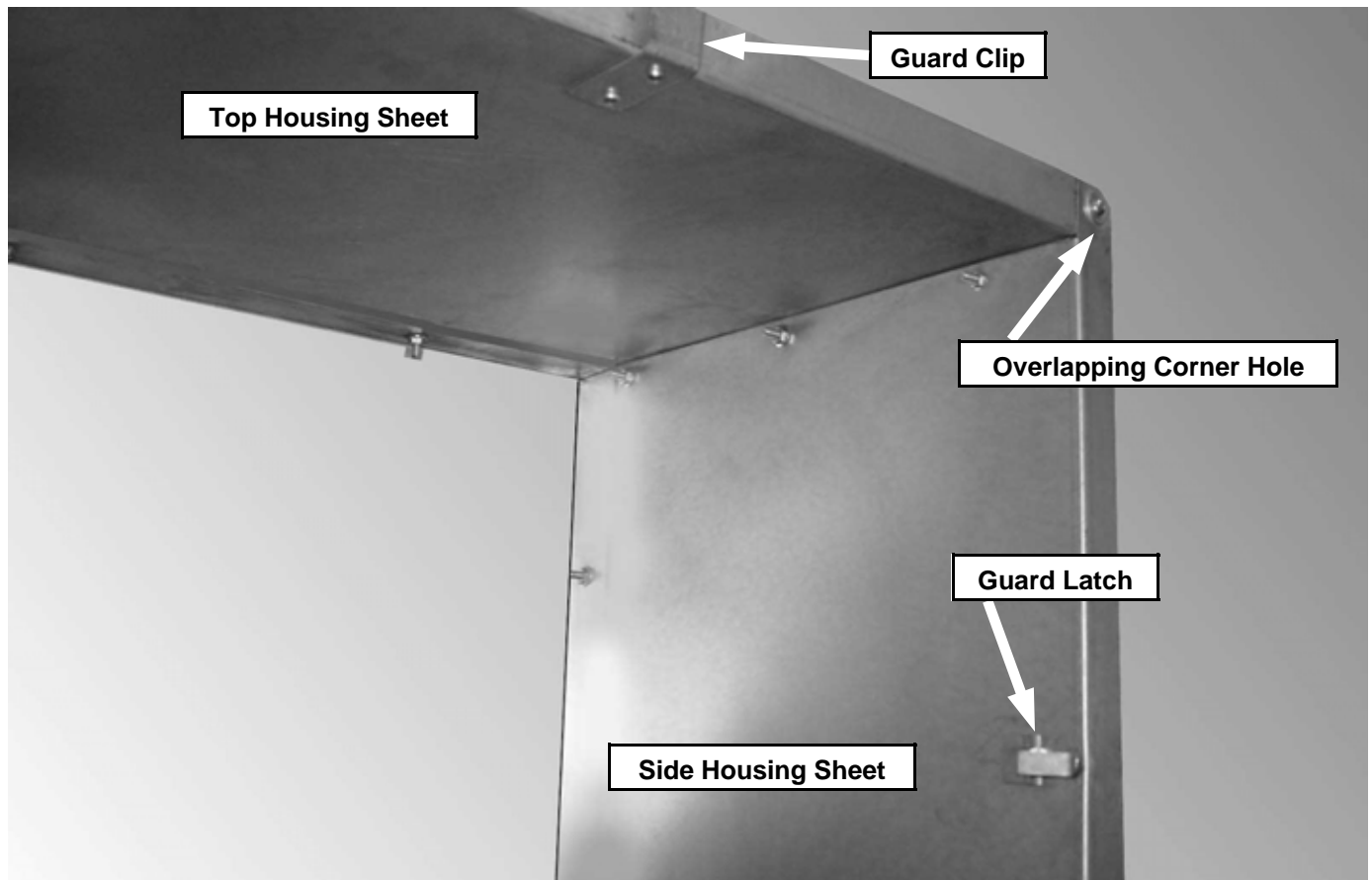


Figure 4

FAN ASSEMBLY AND MOUNTING

Before installation of fan, check carefully for shipping damage which may result in blade misalignment, deformed parts or other damage. After motor has been mounted, check pulley alignment and belt tension. (For details on pulley alignment, refer to *Page 8* in this booklet.). Before connecting the power source, check motor nameplate to be sure the correct phase and voltage will be applied. Single phase motors are shipped from factory wired for 230 volt operation. For low voltage operation see motor manufacturer's instructions on nameplate. Make sure propeller turns freely without striking fan frame or any foreign object which may interfere with its operation. Note direction arrow on orifice to make sure propeller is rotating in the correct direction when power is applied.

Motor Mounting

If the fan and housing are factory assembled, then the motor bracket is already mounted in the correct holes. If the fan is not factory mounted to the housing, the motor bracket will need to be moved from it's shipping position.

1. A) For Models MNBRDD52 and MNBCDD52:

If needed, remove the motor bracket from its shipping position and bolt it to the uprights using the 3rd and 4th holes from the bottom of the uprights. Note: It may be necessary to slightly adjust the motor bracket in it's slots to achieve proper belt tension.

B) For Model MNCFDD52:

Refer to Form #220-41 (and #401-168 if an Auto Belt Tensioner is being used) for motor mounting instructions.

2. Place the motor on the motor bracket and bolt it down using the hardware provided. Make sure the motor base remains level.
3. The motor pulley should be placed on the motor shaft with the "set screw" side of the pulley toward the motor. Using a long straight bar, check the alignment of the motor pulley and the fan hub pulley. If necessary, loosen the motor pulley set-screw and/or the motor mounting bolts and adjust as necessary. Re-tighten pulley set screw and motor mounting bolts. **IMPORTANT:** Motor bracket bolts must be secured to maintain proper belt alignment and tension.

Once the motor has been properly mounted and the pulleys have been aligned, complete the assembly of the fan by threading the belt over the fan hub pulley groove, motor pulley, and belt tensioner (if included) as shown in Figure 5. For Models MNBRDD52 and MNBCDD52, the tensioner is assembled and should be set for proper belt tension. If a tension adjustment becomes necessary, refer to *Page 9* in this booklet. Again, check for belt alignment using a straight bar as described above. Next, turn the blade assembly by hand to insure free rotation. The fan is now ready to be mounted into the wall housing, if not already factory assembled.



Figure 5

Fan Mounting

Once the fan has been assembled, lift the fan (from the outside of the building) and place it inside the assembled wall housing so that the fan panel is flush with the end of the wall housing. Using twenty 5/16" X 3/4" bolts and twenty 5/16" whiz-lock nuts, fasten the fan into place in the housing. Caulk around the perimeter of the fan panel to seal the housing.

Weatherproofing

IMPORTANT: To prevent rainwater intrusion, caulk the outside top seam between the top of the fan and the housing.

CONE ASSEMBLY

The discharge cone consists of four cone quarter panels. Begin construction by placing two cone quarter panels such that the edges overlap and the four holes on the overlapping edges are aligned, with the larger cone diameter down. Using top and middle overlapping holes in the panels, fasten the cone panels together using two 1/4" X 1-1/4" bolts pushed **from the inside out**, and two 1/4" whiz-lock nuts. Tighten the fasteners in the top holes securely, but only finger-tighten the hardware in the middle set of holes at this time. Repeat this process for the third and fourth panels until the cone is completed. Note that for the **60" Max Cone**, the perforated cone panels must be opposite each other. See Figure 6 for details.

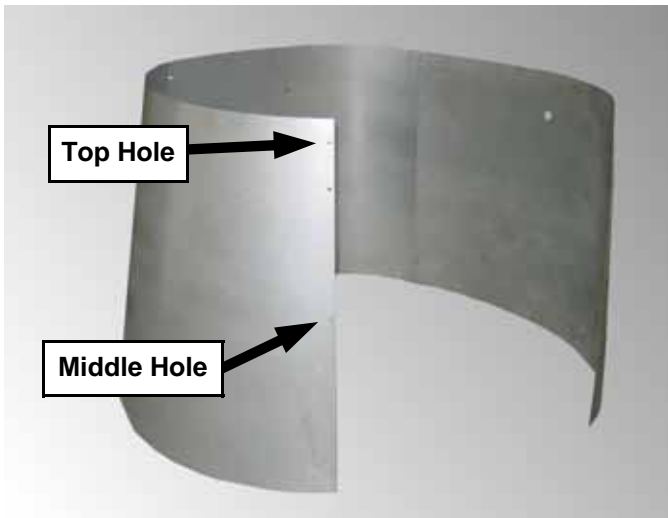


Figure 6A — Standard Cone Assembly

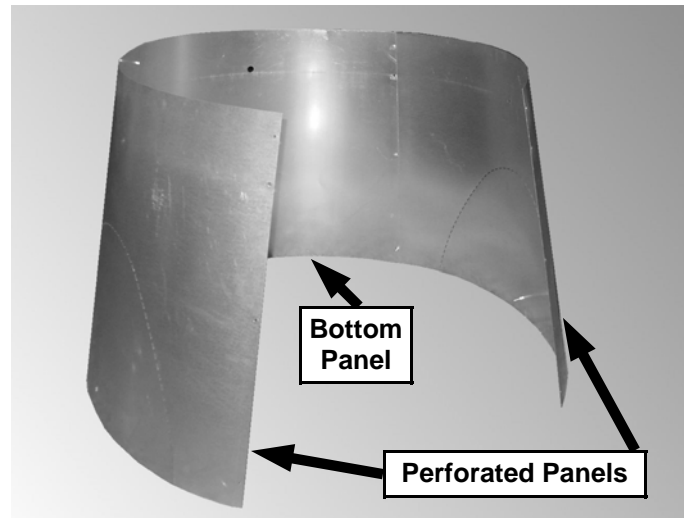


Figure 6B — 60" Max Cone Assembly

Next, invert the cone so that the larger diameter is up. Insert the four 1/4" X 1-1/4" bolts into the overlapping holes on the edge of the cone **from the outside in**, and place a 1/4" whiz-lock nut on each, creating the guard studs. Also, insert one 1/4" X 1-1/4" bolt into the hole at the top-middle of each cone panel **from the outside in** and thread a 1/4" whiz-lock nut onto each, as shown in Figure 7. Then, tighten all of the 1/4" cone hardware securely. The guard is now ready to be mounted.

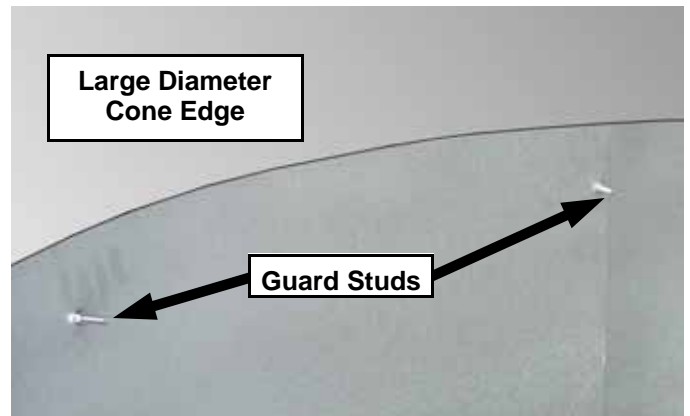


Figure 7



Figure 8

Take the guard, and with the eyelets at the ends of the guard ribs pointing out of the cone, slide the guard inside the cone. The eyelets at the end of the guard ribs should be placed over the guard studs (in 8 places for the standard cone and 6 places for the **60" Max Cone**). With the guard in place, a 1/4" whiz-lock nut may be placed on the guard studs to secure the guard in place.

Once the guard is in place, the damper door ring assembly should be fastened to the cone. First, invert the cone again so that the guard end is on the ground. Take the damper door assembly, making sure the doors opening downward, and insert it at an angle into the cone as shown in Figure 9. The end with the door restraining cable should be opposite the drain hole in the cone. Once the entire ring assembly has been placed inside the cone, level the ring and align the pre-drilled ring holes with the corresponding overlapping holes in the cone. From the inside of the assembly, place a 1/4" X 1-1/4" bolt through the holes in the 3-o'clock and 9-o'clock positions (locating the drain hole at the 6-o'clock position) and fasten with two 1/4" whiz-lock nuts.

Next, the cone gussets will be placed on the cone. NOTE: there are two sets of two gussets. The longer set will have a notch on the end with two holes. The longer set should be placed on either side of the cone drain hole (cone bottom). The shorter set of gussets should be placed opposite the drain hole (cone top). To attach a gusset, align the hole in the long flange with the hole in the assembly ring and in the cone at the 45° angles. Push a 1/4" X 1-1/4" bolt through the assembly ring, through the cone, and through the gusset. Fasten the bolt with a 1/4" whiz-lock nut. Repeat this process for the three other gussets. Refer to Figures 10 and 11 for details.

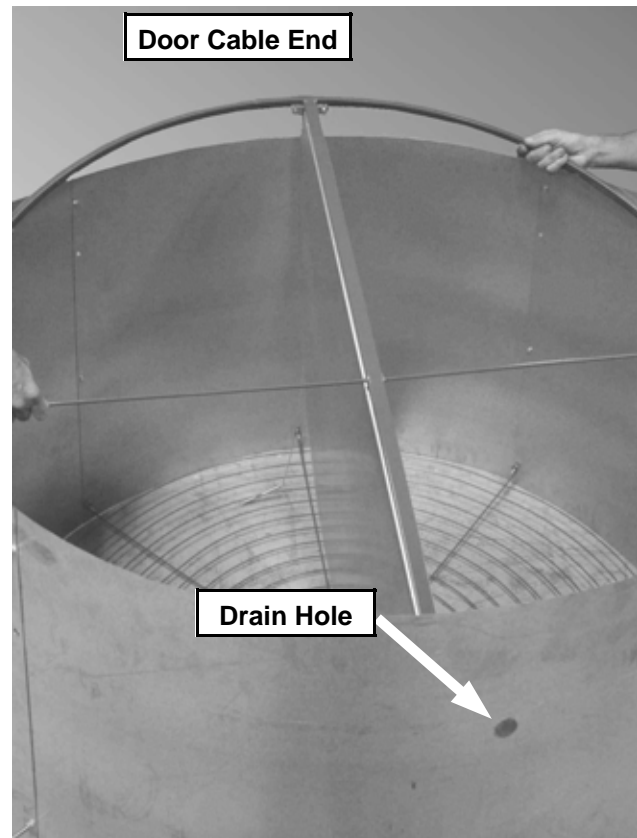


Figure 9

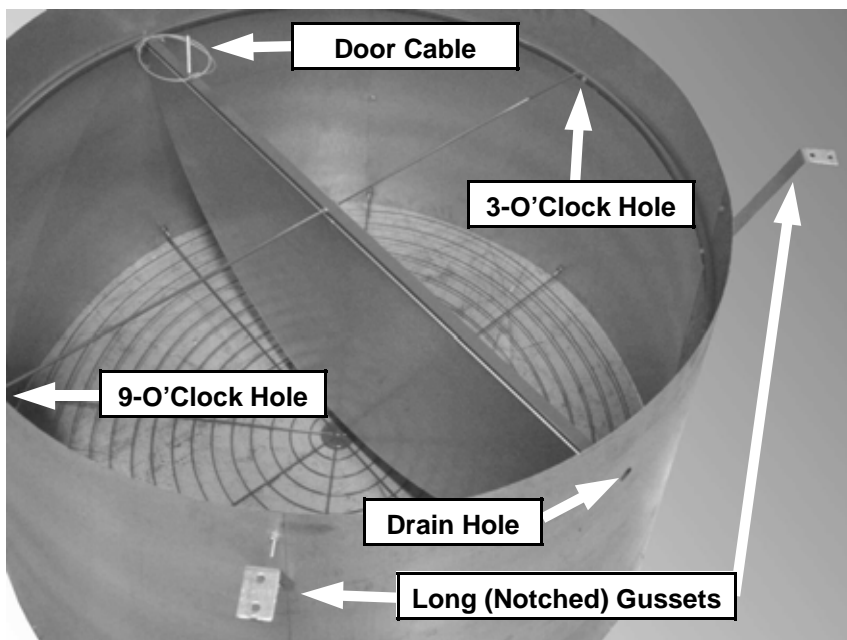


Figure 10

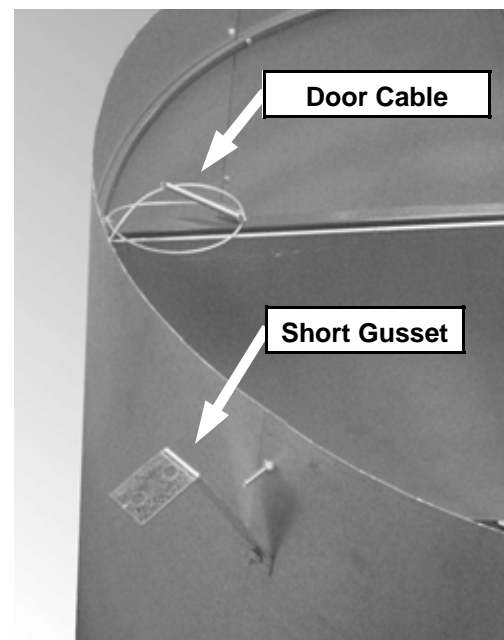


Figure 11

CONE AND GUARD MOUNTING

To mount the cone assembly, pick the assembly up and slide the smaller end over the fan panel orifice. Make sure that the drain hole in the cone is at the bottom. Fasten the gussets to the fan panel using 1/4" X 1-1/4" bolts and 1/4" whiz-lock nuts. Once the cone assembly is secured in place, take the spring at the end on the door restraining cable, and attach it to vertical guard rib below the 3rd ring (from the center) of the guard. See Figure 12.

For the **60" Max Cone**, press the perforated sides of the cone inward so that the guard studs protrude through the guard eyelets and place a whiz-lock nut on the stud and tighten securely. Figure 13 shows the installed guard for the **60" Max Cone**.

Next, mount the spring bracket at the center of the door ring assembly where the struts intersect. Use two cable ties to secure spring bracket as shown in Figure 14. Attach one end of each spring to the spring bracket. The other end of each spring should be attached to the inside door hole in the damper door.

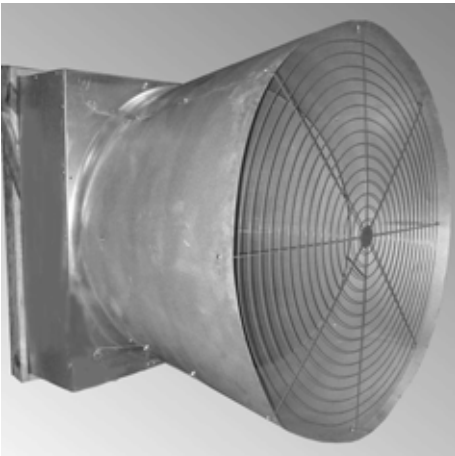


Figure 15 — Assembled Std. Unit

To check for proper damper operation, open the doors fully, and allow them to close. If either door fails to close properly, rotate the assembly slightly on the fan orifice until both doors will close properly.

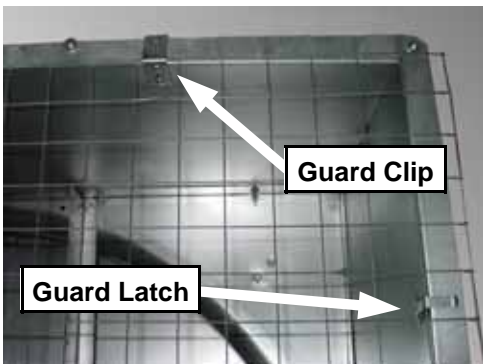


Figure 16



Figure 12 — Door Restraining Cable



Figure 13 — 60" Max Cone & Guard

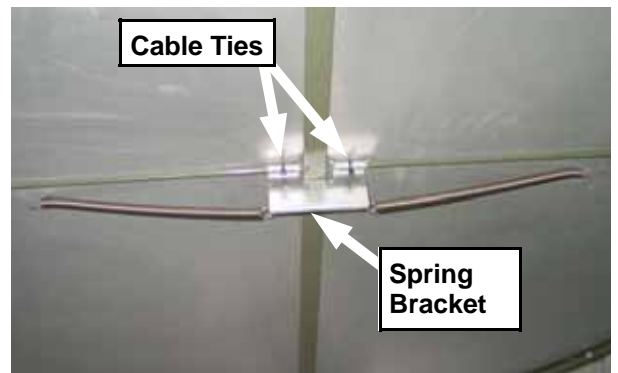


Figure 14 — Spring and Bracket Assembly

Once the unit is assembled, the inlet guard must be in place before operation. To mount the guard, center it over the fan housing. Then, slip the guard over the two guard clips on the top housing flange. To secure the guard, close the 6 guard latches over the guard wire. The unit is now ready for operation. See Figure 16 for details.

BLADE AND BELT ALIGNMENT INSTRUCTIONS

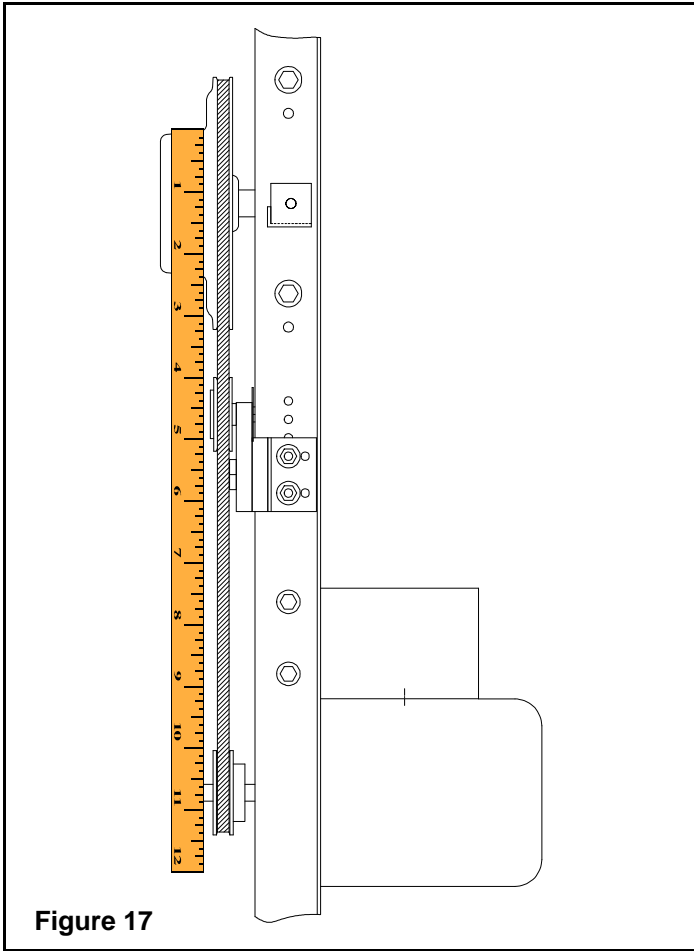


Figure 17

Detailed View of Properly Aligned Fan Sheaves

Spin the blade assembly by hand. Make sure that the blade assembly rotates freely and did not shift during shipment. If the blades rub in either side of the fan orifice, it will be necessary to loosen the two (2) 3/8" bolts that secure the blade assembly's hexagonal shaft to the fan x-braces, center the blade assembly, and tighten the bolts to 25-30 ft-lbs torque. If the blades rub in the fan orifice at the top or bottom, it will be necessary to loosen the four (4) 3/8" bolts that secure the fan x-braces to the fan uprights, center the blade assembly, and tighten the bolts to 25-30 ft-lbs torque. Next, the fan drive assembly should be checked for alignment. The fan drive assembly must be aligned for proper fan performance and to minimize pulley and belt wear. Before wiring and operating the fan, check that the drive pulley, driven disc and auto belt tensioner are aligned by using a straight edge such as a scale or yard stick. If an adjustment is necessary, loosen the set screw on the motor pulley and adjust to proper alignment. Make sure to retighten the motor pulley set screw before the fan is operated. See Figure 17.

ELECTRICAL WIRING

All wiring must comply with national, state and local electrical codes. If fans are to be used for livestock ventilation to support life where failure could result in loss or injury, and continuous ventilation is essential, it is recommended that the fans be wired to individual electrical circuits, or at least two circuits per room. Any minimum ventilation fans should be on individual circuits.

WARNING

If the fans are going to be used for livestock building ventilation to support life where failure could result in loss or injury, the user must provide an adequate backup ventilation system and a failure alarm system. The user must accept the risk of such loss or injury from failure of the ventilation system.

AUTO BELT TENSIONER BELT TENSION INSTRUCTIONS

NOTE: The Auto Belt Tightener comes standard with Models MNRDD52, MNBCDD52, and is an optional accessory for Model MNCFDD52.

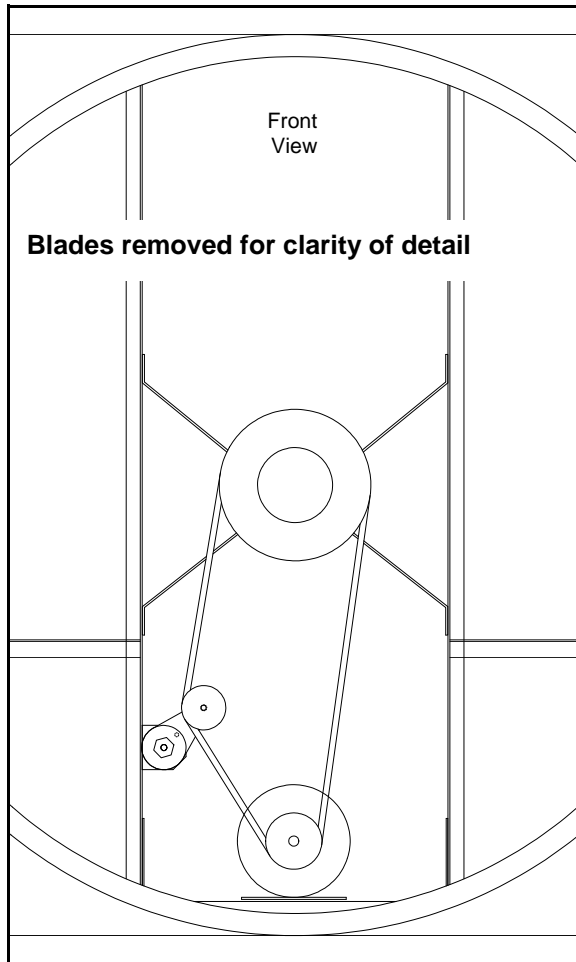


Figure 18 — Motor/Pulley, Tensioner, Disc and Belt

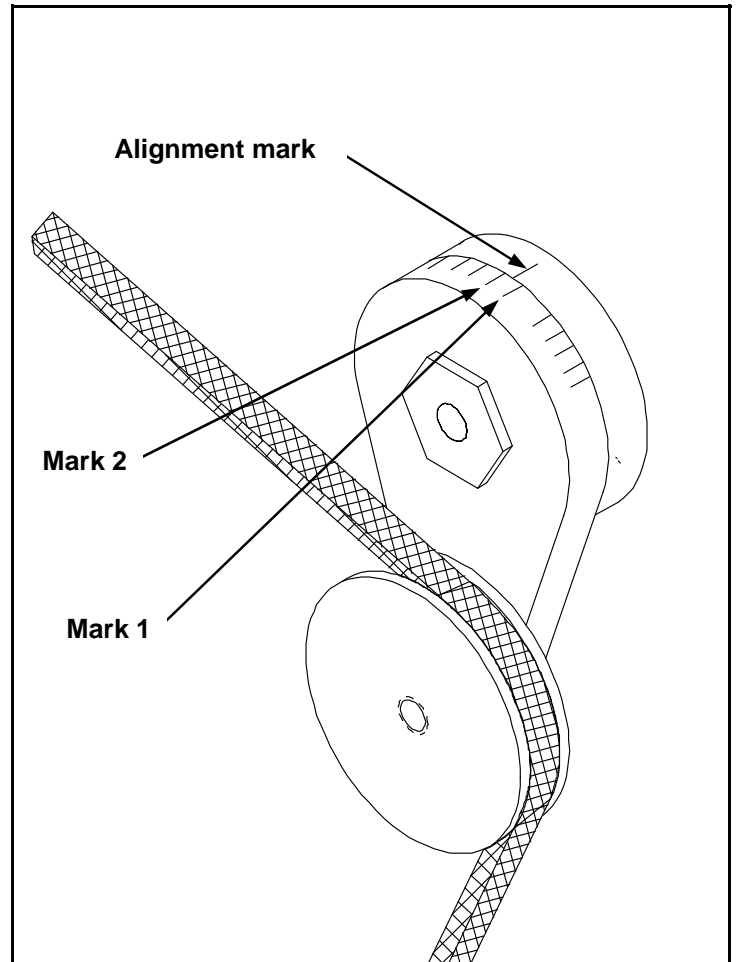
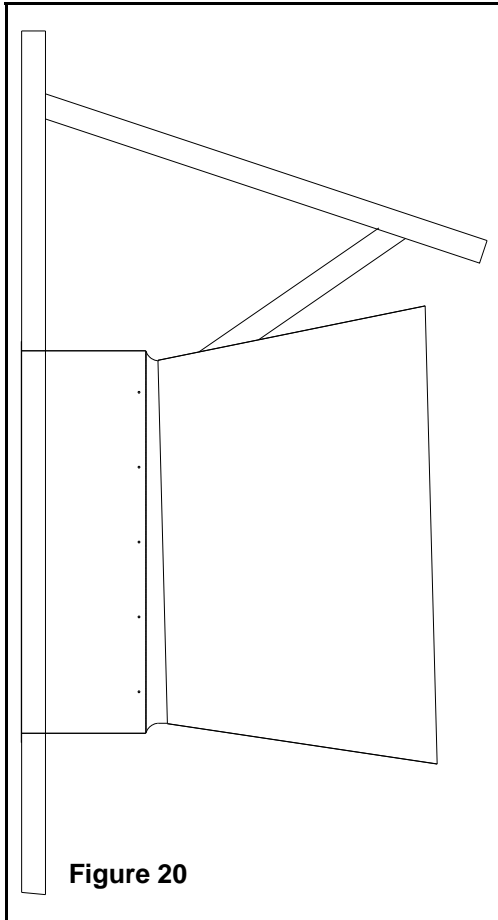


Figure 19 — Tensioner and Belt Showing Tension Alignment Marks

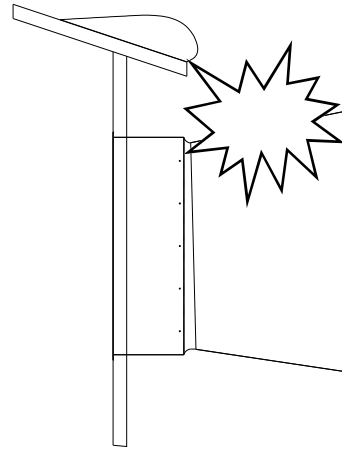
For models MNRDD52 and MNBCDD52, the Auto Belt Tensioner comes from the factory mounted and preset for adequate belt tension. If further tensioning is required, loosen the 3/8" bolt holding the tensioner to the tensioner bracket. Then, using a 15/16" wrench, rotate the tensioner assembly such that the alignment mark is between mark 1 and 2 on the idler arm (see Figure 19). Re-tighten the 3/8" bolt. Turn the blade assembly by hand to insure free rotation. **Do Not Over Tension The Belt.** This will cause premature belt and bearing failure. To check that the belt tension is not too high, place a finger midway between the fan pulley and motor pulley and push inward about 1/2". The force required to do this **is not** to exceed 5 pounds.

If an Auto Belt Tensioner is ordered for use with an Model MNCFDD52 fan, use the instructions included in the ABT packaging for proper installation and use.

CONSTRUCTION FOR WINTER WEATHER PROTECTION



WARNING



**Protect
Fan and Cone from Snow
and Ice Buildup**

If your area is subject to snow, consideration must be taken to protect from the possibility of snow and ice building up on the roof and sliding down onto the fan and cone. One option is to build a small section of roof over the fan and cone. See Figure 20.

WARNING

Fan and/or cone damage caused by this type of external source WILL NOT be covered by AMERICAN COOLAIR warranties.

During winter months, you may not need to operate all of your fans. It is advisable to seal up those fans which will not be used during the colder months to minimize heat loss as well as condensation. To do this, turn the fan control off, and insulate the fan intake.

INITIAL STARTUP

1. With inlet guard not installed, spin the blade assembly by hand and make sure that the blade assembly rotates freely and did not shift during shipment. If the blades rub in the fan housing, refer to page 8 for instructions on centering the blade assembly.
2. Check belt for proper tension.
3. Check motor pulley, driven disc and idler pulley (if present) for proper alignment.
4. Check circuit phase, voltage and wiring connection against that shown on motor nameplate.
5. Check for correct fan rotation.
6. Replace the inlet guard. The fan is now ready for proper operation.

MAINTENANCE

CLEANING

- The fan should be cleaned regularly. Always turn the fan off before cleaning.
- The motor should be wiped with a cloth or a brush. This will keep the motor running cool. **DO NOT** pressure wash the motor.
- The blades should be wiped clean to maintain maximum air performance and minimize fan imbalance. **DO NOT** pressure wash the center of the disc assembly, or premature bearing failure may be induced.
- The damper door assembly should be wiped clean so that the doors will pivot freely, open completely, and close securely.

CHECK FASTENERS

Inspect all fasteners on the fan. This is a very important safety issue. If any loose hardware is found, tighten it immediately.

CHECK BELT TENSION

The belt must have proper tension to insure proper fan speed and maximum air performance.

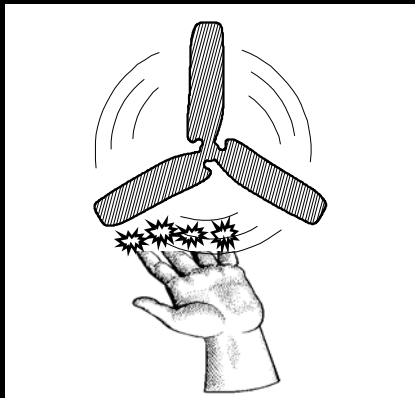
CHECK DRIVE ALIGNMENT

The belt must be properly aligned in the pulleys to minimize pulley and belt wear. Refer to page 8 for instructions.

CHECK DOOR-RING GASKET

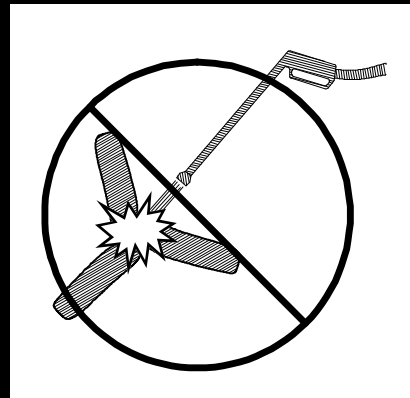
The door-ring is lined with a foam rubber gasket material. This gasket provides a seal between the door-ring and the doors, insuring proper door function and minimizing air leakage. This gasket should be checked periodically to make sure it is intact and properly sealed to the door-ring. If the material should come loose from the door-ring, it must be re-sealed to the door-ring with appropriate adhesive.

WARNING



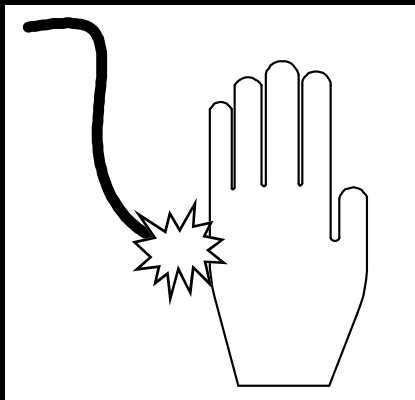
— Moving Parts —
**Disconnect power
before servicing the
fan**

WARNING



**Precision Bearings
Do Not
Pressure Wash at
blade assembly center**

WARNING



— High Voltage —
**Disconnect power
before servicing the
fan**

WARNING

CAUTION



DO NOT INSTALL FAN WITH MOVING PARTS WITHIN 8 FEET OF FLOOR OR GRADE LEVEL WITHOUT A GUARD THAT COMPLIES WITH OSHA REGULATIONS. **DO NOT** USE UNLESS ELECTRICAL WIRING COMPLIES WITH ALL APPLICABLE CODES. **DO NOT** WIRE WITHOUT PROVIDING FOR A POWER SOURCE DISCONNECT AT THE FAN ITSELF. **DO NOT** SERVICE EXCEPT BY A QUALIFIED MAINTENANCE TECHNICIAN AND ONLY AFTER DISCONNECTING THE POWER SOURCE. FAILURE TO OBSERVE THESE PRECAUTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.



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MEMBER OF AMCA
AMERICAN COOLAIR CORPORATION
P.O. BOX 2300
JACKSONVILLE, FLORIDA 32203
PHONE (904) 389-3646 FAX (904) 387-3449
E-MAIL - fans@coolair.com