



Installation, Start-Up and Service Instructions

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SAFETY CONSIDERATIONS

Air-handling equipment is designed to provide safe and reliable service when operated within design specifications. To avoid injury to personnel and damage to equipment or property when operating this equipment, use good judgment and follow safe practices as outlined below.

⚠ DANGER

NEVER enter an enclosed fan cabinet or reach into a unit while the fan is running.

LOCK OPEN AND TAG the fan motor power disconnect switch before working on a fan. Take fuses with you and note removal on tag. Electric shock can cause personal injury or death.

LOCK OPEN AND TAG the electric heat coil power disconnect switch before working on or near heaters.

Failure to follow these warnings could lead to personal injury or death.

⚠ WARNING

CHECK the assembly and component weights to be sure that the rigging equipment can handle them safely. Note also, the centers of gravity and any specific rigging instructions.

CHECK for adequate ventilation so that fumes will not migrate through ductwork to occupied spaces when welding or cutting inside air-handling unit cabinet or plenum.

WHEN STEAM CLEANING COILS be sure that the area is clear of personnel.

DO NOT attempt to handle access covers and removable panels on outdoor units when winds are strong or gusting until you have sufficient help to control them. Make sure panels are properly secured while repairs are being made to a unit.

DO NOT remove access panel fasteners until fan is completely stopped. Pressure developed by a moving fan can cause excessive force against the panel which can injure personnel.

DO NOT work on dampers until their operators are disconnected.

BE SURE that fans are properly grounded before working on them.

Failure to follow these warnings could result in personal injury or equipment damage.

⚠ CAUTION

SECURE drive sheaves with a rope or strap before working on a fan to ensure that rotor cannot free-wheel.

DO NOT restore power to unit until all temporary walkways inside components have been removed.

NEVER pressurize equipment in excess of specified test pressures.

PROTECT adjacent flammable material when welding or flame cutting. Use sheet metal or asbestos cloth to contain sparks. Have a fire extinguisher at hand and ready for immediate use.

Failure to follow these warnings could result in personal injury or equipment damage.

INTRODUCTION

The 39CC custom air-handling units are designed for indoor (39CCN) or outdoor (39CCW) installations. Modular design allows for heating sections such as hot water coils, steam coil, or electric heat. Cooling options include chilled water, DX (direct expansion), or glycol. Filter options include bag, rigid, HEPA, mini-pleat, vee, and others.

For further information on unit and component identification, contact your Carrier representative for the approved submittal.

PREINSTALLATION

Receiving and Inspection

1. Verify receipt of all parts by comparing items in the shipment with those listed on the bill of lading.

To facilitate inspection, a list of items shipped with the units is included and attached to the inside access door of the supply fan section. Among the items generally shipped loose are the following:

Fan section: Split unit reassembly hardware (nuts, bolts, caulking); replacement fan belts; lifting lugs.

Filter section: Filters; filter clips

2. Inspect the unit(s) for any damage that may have occurred during shipping.
3. Indicate any problems such as shortage, damage, or breakage on the carrier's freight bill and obtain the signature of the driver or carrier's representative as verification.
4. Immediately report any damage detected after delivery to the carrier and obtain a concealed damage inspection report upon their inspection of the shipment.
5. If considerable damage has been incurred and the situation is urgent, contact your sales representative for assistance. Please keep a written record of all communications.

Storage — If unit is to be stored for more than 2 weeks prior to installation, note that improper storage will result in seriously reduced equipment reliability. It is likely that an electric motor or fan that does not experience regular use while being exposed to normally humid atmospheric conditions will encounter bearing degradation. In addition, the motor's electrical insulation may absorb an excessive amount of moisture leading to the motor winding failing to ground. The following preparations should be followed:

- Minimize condensation in and around the fan and motor by humidity controls.
- Coat all external machined surfaces with a material to prevent corrosion.
- Measure and record the motor electrical resistance of insulation with a Megger meter or a resistance meter. The insulation resistance = kV rating + 1 Megohm.

Whenever possible, store equipment indoors in a dry area and protect the fan shaft, bearings and fan wheel from dust and corrosion.

If outdoor storage is necessary, be sure to close latches on all access doors to prevent potential water and air leakage. Unit should be placed on a level surface. Avoid setting the unit directly on water or wet ground. Supports should be placed at 6-ft intervals. Use a tarp or similar weatherproof cover to protect cabinet exterior against dust, dirt, moisture, and corrosion. Cover the unit from the roof down to the base on each side. Inspect and ventilate each section every 2 weeks to prevent mold/mildew growth, and to observe overall integrity of the unit.

To protect against excessive vibration and accidental impact, never store other equipment inside or on top of the unit. If

unit must be stored for an extended period, be sure to protect against bearing damage by manually rotating the fan wheels and lightly greasing the fan and motor bearings every month.

Rigging — The air-handling unit may be shipped in one of three ways:

- assembled
- subassemblies or groups of parts
- separate sections

To ensure safe lifting, estimate the unit's center of gravity, taking into account that the weight may be unevenly distributed due to the placement of internal components (for example, more weight in the coil and fan areas). In case where the unit's center of gravity is a concern, please contact your Carrier representative.

Prior to lifting, install the removable lugs shipped loose in the fan section. Tie downs must be used only to tie the unit to the truck during shipping. Never attempt to lift the unit using the tie downs. See Fig. 1.

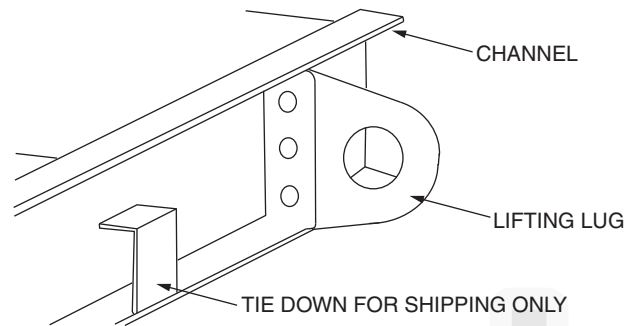


Fig. 1 — Lifting Lug

During a lift, all lugs must be used. Spreader bars are required to prevent damage to the cabinet and protruding components. To distribute the load properly, the tension in each line must also be adjusted. See Fig. 2.

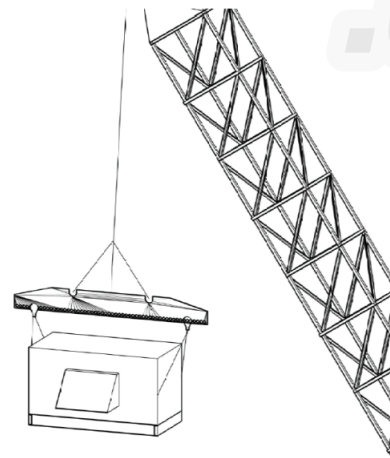


Fig. 2 — Lifting with Spreader Bars

For smaller units when no lifting lugs are provided, use a belt-type sling to raise the unit from the base, carefully avoiding door handles, electrical boxes, coil connections, and other protrusions.

Never lift units or subassemblies without a base by attaching bolts, clevises, pins, hooks, etc. to casing, casing hardware, flanges, angles, or tabs. Only rig as shown here.

It is mandatory to use spreader bars for larger units with lifting lugs or slings for smaller units to prevent damage to the casing of the units by rigging equipment. Only qualified rigging personnel should operate lift equipment.

Units can be lifted with forklifts as long as the forks are 40 inches and the end tips contact the bottom of the intermediate supports of the base rail. Additionally, a fork lift may be used to lift small subassemblies or individual sections, but the forks must reach the other side of the base rail. See Fig. 3.

To avoid damaging the air-handling unit, always lift in an upright position, and never move or lift unit from a sideways or upside-down position. *Use extreme caution when moving an air-handling unit with a forklift.*

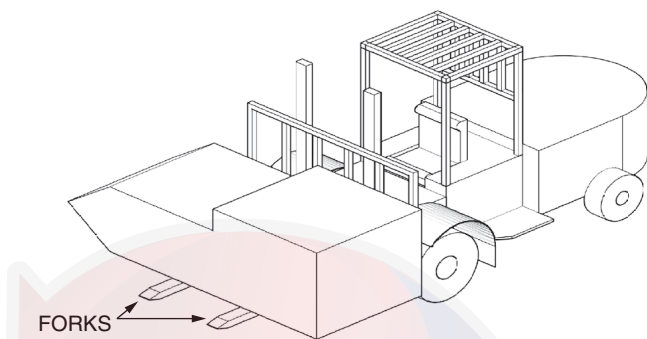


Fig. 3 — Forklift

SPLIT UNITS — Split units less than 102 in. may be shipped loosely assembled. Disassembly is required, with each section being lifted individually. The “loosely assembled” split sections are affixed using a minimum number of bolts for transit and cannot be lifted while fastened together. Use all lifting lugs to avoid unit damage and/or personal injury.

Clearance Requirements — As required by the state, city or the national electrical code (NEC or CEC), the service space between the face of any electrical enclosure and wall or obstruction must be 42 inches minimum.

Sufficient clearances are also needed to open doors and install piping and ductwork. Airflow through the louvers of hoods cannot be obstructed in any way. The distance between the louver and any facing wall must be equal to the horizontal width of the louver.

Space around the unit must allow easy removal of the access panels and parts such as the fan wheels, motors and belt guards. To facilitate removal of coils, fan shaft, and fan wheel, allow a minimum clearance equal to the width of the unit on one side.

INSTALLATION

- The services of qualified field services personnel are required for safe and proper installation of this equipment.
- Do not operate this unit outside the listed nameplate ratings for flow or static pressure.
- This unit is designed for installation on a level surface or suspended on a level plane.
- Follow SMACNA (Sheet Metal and Air Conditioning Contractors’ National Association) guidelines for supply/return/exhaust duct connections and minimal duct obstruction clearances.

Air Handler Unit Pad — The foundation and floor should be level (shim when necessary), rigid, and strong enough to support the weight of the entire unit. It is the

installer’s responsibility to secure the unit to the unit pad in accordance with all applicable building and earthquake codes.

After the unit has been installed, the base rail should be inspected for paint damage from chains in the tie down brackets, use of the lifting lugs and fastening the unit down. This damage must be repaired by cleaning down to bare metal and applying two heavy coats of matching paint to stop corrosion and rust.

Ceiling Suspended Units — Ceiling suspended units must be supported from the base. To fully support the unit, four or more suspension points are required. The casing is not a support component. The exact number of support points is function of the unit length and weight. Please refer to submittal drawings for lift locations. The installer is responsible for installing in accordance with applicable building and earthquake codes. See Fig. 4.

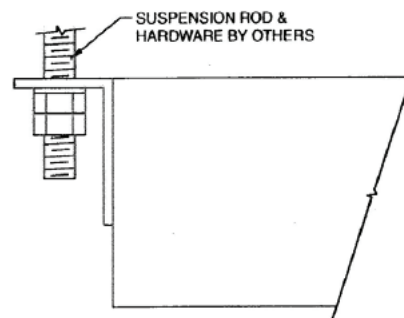


Fig. 4 — Suspension Mounting

Roof Curb — Roof curbs are shipped either fully welded or in split sections. Bolt together if roof curb is bolted construction. Follow this procedure to assemble roof curb, if required:

1. Arrange the 4 perimeter sidewalls so that pre-drilled holes are aligned. Drive bolt each corner securely (bolts provided).
2. Drive bolt the remaining support members using the pre-drilled holes and provided drive bolts. Turn out the flanges before fastening. See Fig. 5.

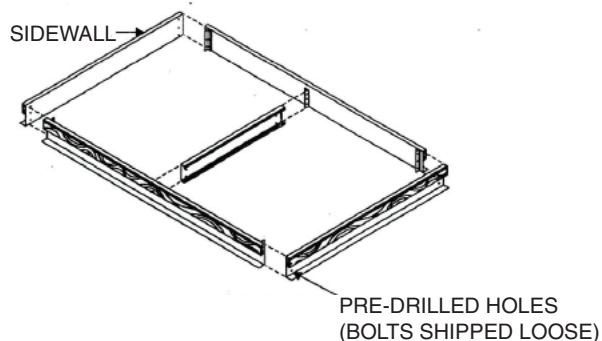


Fig. 5 — Roof Curb Assembly

3. Line up the assembled curb with the roof openings. Square up the curb by measuring the diagonal distance between opposite corners and adjust until the distances are equal. Level the curb.
4. Install the foam rubber seal strip atop the installed curb. This provides an airtight seal and isolates the roof from vibration.

5. Roof the curb prior to setting the unit. Use standard 2 in. x 4 in. wood nailers (provided), insulate and flash (by others) as required.
6. Check to ensure that curb is level and securely attached to structure.
7. Check for sufficient height between the unit base and the roof to allow for drain trapping.
8. Use polyurethane caulking on top of the curb to seal between the unit base and the roof curb.
9. Safely lift the unit into place.

The installer is responsible for installing roof curb in accordance with local building and earthquake codes.

Duct/Weather Hood Installation — Follow SMACNA and industry guidelines for duct gages, sizing, materials, insulation and supports. Transition to and from units as required for proper airflow. When installing ductwork or weather hoods to unit exterior, use gaskets or caulking around entire perimeter of flange. Align the duct or hood over the opening. Check for adequate clearance to doors and other openings. Install the duct of hood using sheet metal screws through the unit casing. Carefully remove excess caulking, if required, from around the flange.

Electrical Connections — Follow the latest NEC (National Electrical Code) and/or other applicable codes for all electrical wiring and connections, including grounding.

Nameplate data contains line voltage and minimum ampacity for this unit. Separate line voltage power supply should be run directly from the building distribution panel to the electrical connection on the unit. Consult wiring diagrams provided with the unit. Follow NEC and applicable codes for conduit and wire ratings.

Coils

HEATING COILS (HOT WATER, STEAM) — Heating coils are constructed of copper tube with corrugated fins. Maximum operating pressure is 150 psig. Coils are provided with drain and vent connections. Do not block the air vent; this may result in poor coil performance. Inlet line strainers are recommended to prevent debris from blocking coil tubes or valves.

Common causes of heating coil damage are:

- improper piping installation
- water hammer
- freezing
- control valve chattering
- internal corrosion from chemicals in fluid
- external corrosion from chemicals in the airstream

COOLING COILS (CHILLED WATER, DIRECT EXPANSION, GLYCOL) — Cooling coils are constructed of copper tube with corrugated fins. Maximum operating pressure is 150 psig. An IAQ 304SS (indoor air quality 304 stainless steel) condensate drain pan is located under the coil with drain and vent connections. Do not block the air vent; this may result in poor coil performance. Inlet line strainers are recommended to prevent debris from blocking coil tubes or valves.

Common causes of water cooling coil damage are:

- improper piping installation
- water hammer
- freezing

- control valve chattering
- internal corrosion from chemicals in fluid
- external corrosion from chemicals in the air stream

Direct expansion (DX) cooling coils are thermal counter-flow construction with same end liquid and suction connections.

Common causes of DX cooling coil damage are:

- improper piping installation
- freezing (due to excessively low pressure)
- internal corrosion
- external corrosion from chemicals in the air stream

Refrigerant distributors are brass, pressure type with copper distributor tubes factory installed.

Reassembly of Split Units — To prevent air and water leaks, all units shipped in sections must be carefully assembled and installed on a proper foundation. Split air units are assembled in one piece in the factory to make sure that all pieces match and the bolt holes line up, and are then split prior to shipping.

- For proper reassembly, housekeeping pad or roof curb must be level.
- All nuts, bolts, washers, and caulking required for assembly of the unit are shipped in the supply fan section.
- Place all sections on level surface.
- Caulk where indicated on both sides of split panel and roof flanges, and bolt the base together. See Fig. 6.

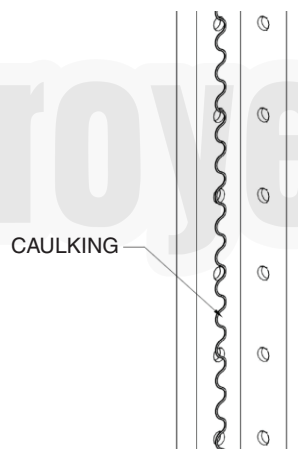


Fig. 6 — Caulking Split Panel Flanges

- A come-along or hand-operated winch can be used to tighten the space between unit section.
- Bolt holes may not align as a result of racking during transit to the job site. In such instances, lift one side with jack to align holes on wall of the opposite side. After bolting this wall, remove jack. Then proceed with bolting the other side, base, floor, and roof. Any racking that is out of square should realign as the unit settles.
- Check to make sure that all bolts are properly secured.
- Caulk exterior roof seams. See Fig. 7.

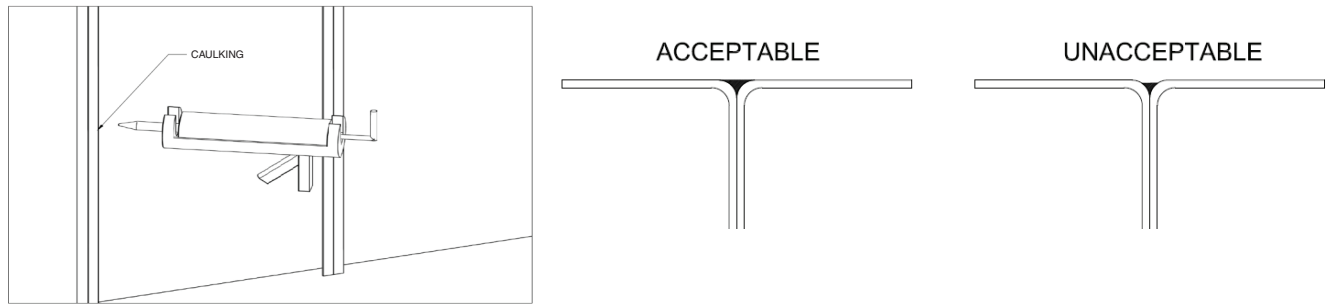


Fig. 7 — Caulking Roof Exterior Seams

- Caulk and bolt standing seam and install the roof cleat. See Fig. 8.

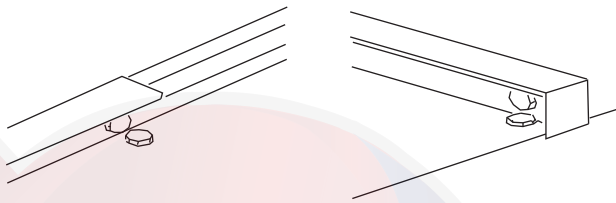


Fig. 8 — Bolt Standing Seam, Install Roof Cleat

- Check all splits to ensure proper bolting and caulking.
- Check all splits to ensure that all electrical and piping connections are correct and complete.

Reassembly of Stacked Unit Horizontal Splits — For a unit is split both vertically and horizontally, complete the assembly of the lower section first. Next join the upper sections to the lower sections.

- Caulk underneath clips, behind lifting lugs, and behind upper base channel.
- Wherever possible, secure base anchor clips in bolt holes.
- Check all splits to ensure proper bolting and caulking.
- Check all splits to ensure that all electrical and piping connections are correct and complete.
- If equipment is not properly installed, the cabinet will leak air under pressure or water may leak into the cabinet from the split joint.

For units wider than any split section's airway length, removable lifting lugs are provided along the width of unit. After closely positioning the split, remove the inner lifting lugs. During final bolting, a come-along or hand-operated winch can be used to tighten the space between unit sections.

Trapping Drains — All condensate drain connections and floor drains must be trapped on the job site by others. Improper drain trapping can cause the drain pan to flood and potentially damage the air-handling unit and surrounding facilities. Improperly trapping a drain can result in a flooded drain pan and potential water damage to the unit and other building facilities.

See Fig. 9 for condensate drain trap sizing.

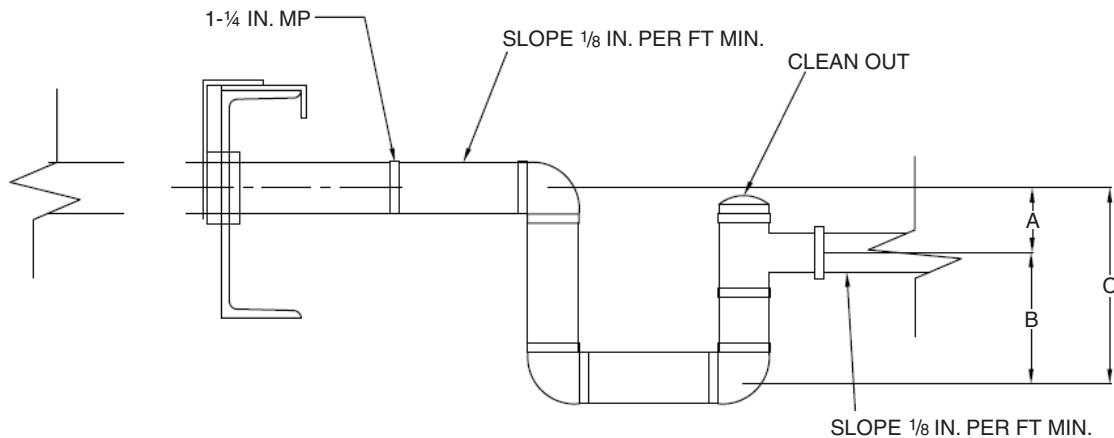
Connecting Ducts — When connecting flanged ducts directly to the casing, use self-tapping sheet metal screws. For duct connections to collar-type openings, use s-cleats or overlapping joints. To prevent air leakage and eliminate system performance problems, caulk around all duct connections to form tight seals.

Connecting Rain Hoods — Be sure to allow adequate clearance to doors and other openings on the unit. Use sheet metal screws to fasten the hood or hoods to the casing of the air handling units. Caulk around the hood flange, then carefully remove any excess caulking.

Electrical Installation — All wiring shall be installed in accordance with the requirements of the authorities having jurisdiction. Do not cut holes in the bottom of outdoor units, as the bottom of the unit has been made waterproof. Both field wiring and internal wiring diagrams are included in the control cabinet of the unit. The power requirements are indicated on the unit nameplate. Where field wiring of the control circuit is required, take care to size the field wiring for a maximum 10% voltage drop. The VA rating of the transformer can be assumed to be the maximum load. The disconnect must be mounted properly and adequately grounded. All field wiring outside the electrical enclosure must be rigid or flexible conduit. Reconnect all disconnected wiring on the units that were split in 2 or more sections for shipment.

Observe the following precautions:

- When connecting a power supply to a three-phase motor, take care that the three-phase wiring provides the correct motor and blower rotation.
- Replacement wiring must be equivalent to original wire size.
- It is recommended that, when interior lighting and convenience outlets are provided, they should be wired to a separate power supply.
- In all cases the unit must be properly grounded and all electrical connections should be checked and tightened if required before starting up the equipment.
- See field-wiring diagram for requirements for shielded or twisted wire for solid-state devices.
- When cutting holes in the control panel or unit for conduit penetration, make sure conduit penetrations are sealed to be air and water tight.
- Lock all latches on the electrical and control panels.



| | | | |
|---|---------------|---|---------------------|
| (+) STATIC PRESSURE (BLOW THROUGH COIL) | | (-) STATIC PRESSURE (DRAW THROUGH COIL) | |
| A | — 1 in. | A | — TSP + 1 in. |
| B | — TSP + 1 in. | B | — 1/2 TSP + 1 in. |
| C | — TSP + 2 in. | C | — 1-1/2 TSP + 2 in. |

LEGEND

| | |
|-----|---|
| MP | — Male Pipe |
| TSP | — Total Static Pressure (inside drain plenum, in inches of water) |

Fig. 9 — Condensate Drain Trap Sizing

START-UP

Preliminary Inspection

1. Disconnect power to unit. Use safety lockouts and label all disconnects to prevent unintentional powering.
2. Verify all field connections and wiring meet applicable codes. Verify that power supply connection voltage matches nameplate rating. Verify all wiring terminals are tight.
3. Inspect all piping for leak and verify conformance to piping codes.
4. Remove all fan shipping tie-downs and bracing. See the section Fan Start-Up below.
5. Verify required filters are securely in place before starting unit.
6. Verify supply duct(s) are free from obstructions.
7. Verify all supply dampers/diffusers area open.

Fan Start-Up

1. Inspect fan and drive assembly (see Fig. 10). Adjust belt (if applicable) to appropriate tension and alignment.
2. Check fan rotation. Correct by changing wiring if required.
3. Power the fan, measure airflow per AMCA (Air Movement and Control Association) suggested methods, and compare to nameplate data. Adjust either the VFD (variable frequency drive) or belt-drive sheave to alter the fan speed to achieve required flow.
4. After proper flow is achieved, verify that the motor amp draw agrees with the motor nameplate full load amp rating.

SERVICE

Monthly

1. Check supply air filters and clean or replace as required.
2. Check the cooling coil condensate drain pan for proper draining and clean if necessary.
3. Fan bearings with grease fittings need to be lubricated. Bearings that do not have grease fittings are permanently sealed and do not require lubrication. Check submittal data for types of bearings used.
 - a. Fans ship from the factory with fan bearings factory-lubricated. The fan should be turned off and locked out to prevent accidental start-up during lubrication.
 - b. Verify that the sheaves are secured before servicing the fan.
 - c. Generally, lubricate fan bearings every 1000 hours.
 - d. Add grease with manual grease gun until a light bead of grease appears at the bearing grease seal. Alternatively, the grease capacity recommendations in Tables 1 and 2 can help for proper grease charge.

IMPORTANT: Use only lithium-based grease. See the section Recommended Grease on page 7.

- e. Always lubricate bearings prior to extended shut-down or storage and rotate shaft monthly.

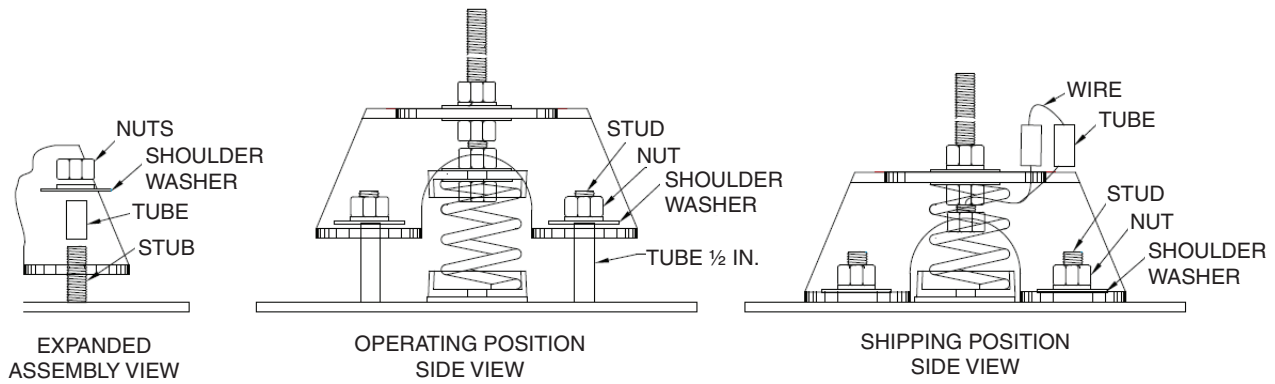


Fig. 10 — Fan Assembly

Table 1 — Ball Bearing Lubrication Schedule

| SHAFT DIAMETER (INCHES) | APPROX. GREASE CAPACITY (OUNCES) | FAN SPEED (RPM) | | | | | | |
|-------------------------|----------------------------------|-----------------|--------|--------|--------|--------|--------|--------|
| | | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 |
| 0.50 to 1.69 | 1/2 | 6 mos. | 6 mos. | 5 mos. | 3 mos. | 3 mos. | 2 mos. | 2 mos. |
| 1.94 to 2.44 | 3/4 | 6 mos. | 5 mos. | 4 mos. | 2 mos. | 2 mos. | 1 mo. | 1 mo. |
| 2.56 to 2.94 | 1 1/2 | 5 mos. | 4 mos. | 3 mos. | 2 mos. | 1 mo. | 1 mo. | 1 mo. |
| 3.44 to 3.94 | 3 | 4 mos. | 3 mos. | 2 mos. | 1 mo. | 1 mo. | 1 mo. | — |

Table 2 — Spherical Roller Bearing Lubrication Schedule

| SHAFT DIAMETER (INCHES) | APPROX. GREASE CAPACITY (OUNCES) | FAN SPEED (RPM) | | | | | |
|-------------------------|----------------------------------|-----------------|----------|----------|----------|----------|----------|
| | | 500 | 750 | 1000 | 1500 | 2000 | 2500 |
| 1.44 to 1.94 | 1/2 | 6 mos. | 4.5 mos. | 4 mos. | 4 mos. | 3.5 mos. | 2.5 mos. |
| 2.19 to 2.69 | 3/4 | 5 mos. | 4.5 mos. | 4 mos. | 2.5 mos. | 2.5 mos. | 1.5 mos. |
| 2.94 to 3.94 | 2 | 4.5 mos. | 4 mos. | 3.5 mos. | 2.5 mos. | 1.5 mos. | — |
| 4.44 to 4.94 | 4 | 4 mos. | 4 mos. | 2.5 mos. | 1 mo. | — | — |
| 5.44 to 5.94 | 7 | 4 mos. | 2.5 mos. | 1.5 mos. | — | — | — |

RECOMMENDED GREASE

- NGLI (National Lubricating Grease Institute) no. 2, lithium-based
- Water resistant -20 F to 200 F

Examples are listed below.

| BRAND | TYPE |
|----------|--------------|
| Shell | Alvania #2 |
| Mobile | Mobilux #2 |
| Gulf | GulfCrown #2 |
| Keystone | 81-EP-2 |
| Texaco | Premium RB2 |
| Exxon | Unirex #2 |

Every Six Months

1. Check fans for condition and tension of belts. Replace cracked, frayed or glazed belt. Re-verify tension after 48 hours and re-tension if required. See the section Belt Tensioning Method below. Do not over-tighten belts or bearing damage can occur. Belt should depress its width when pressed firmly inward at midpoint between pulleys and should tighten enough to prevent slipping. If motor pulley shoulder is worn, replace that as well.
2. Check fan and motor bearings for binding, noise, or excessive heat.

3. Check fan wheels for dirt, debris, or grease accumulation. Clean if required. Do not use caustic or abrasive cleaners on fan shaft.

BELT TENSIONING METHOD — *When installing or replacing belts, always use a complete set of new belts.* Mixing old and new belts will result in the premature wear or breakage of the newer belts.

Refer to label on inside of fan access door for information on factory-supplied drive.

1. Always adjust the motor position so that V-belts can be installed without stretching over grooves. Forcing belts can result in uneven stretching and a mismatched set of belts.
2. **Do not allow belt to bottom out in sheave.**
3. Tighten belts by turning motor-adjusting jackscrews. Turn each jackscrew an equal number of turns.
4. Equalize belt slack so that it is on the same side of belt for all belts. Failure to do so may result in uneven belt stretching.
5. Tension new drives at the maximum deflection force recommended (Table 3).

On current production, the correct tension information is listed on the fan drive label. For older equipment or units

with field-modified drives, use the deflection formula in the following example and the tension data from Table 3.

EXAMPLE:

Given

- Belt Span 16 in.
- Belt Cross-Section A, Super Belt
- Small Sheave PD 5 in.

$$\text{Deflection} = \frac{(\text{Belt Span})}{64}$$

Solution

- a. From Table 3 find that deflection force for a new type A, super belt with 5-in. small sheave PD is 8 lb.
- b.

$$\text{Deflection} = \frac{16}{64} = 1/4 \text{ in.}$$

Tension Measurement Procedure

1. Measure the belt span (see Fig. 11).
2. Position bottom of the large O-ring on the span scale at the measured belt span.
3. Set the small O-ring on the deflection force scale to zero.
4. Place the tension checker squarely on one belt at the center of the belt span. Apply a force on the plunger and perpendicular to the belt span until the bottom of the large O-ring is even with the top of the adjacent (next) belt or with the bottom of a straight edge laid across the outside diameters of the v-belt sheaves.
5. Remove the tension checker and read the force applied from the bottom of the small O-ring on the deflection force scale.

6. Compare the force you have applied with the values given in Table 3. The force should be between the “Used Belt” and “New Belt” values shown. The maximum value is shown for “New Belt” and new belts should be tensioned at this value to allow for expected tension loss. “New Belt” tensions should be used at initial installation and after job start or 1 to 3 minutes of operation. Used belts should be maintained at the value as indicated in the chart. “Used Belt” tensions should be used for the 8-hour and subsequent checks. If the belt span was measured in centimeters, then use the kilograms of force values for comparison.

NOTE: The ratio of deflection to belt span is 1:64 in either unit of measurement.

Whenever possible, jog start for a few revolutions or preferably run drive for approximately 1 to 3 minutes and then re-tension in accordance with Steps 1-6. Running the drive for a few revolutions or minutes will help seat the belt(s) in the groove(s). This relatively early re-tensioning may reduce or minimize the amount of re-tensioning required in the first 24 hours of drive service. Record information on the label (Fig. 12) found on the door of the fan section.

Yearly

1. Lightly lubricate dampers and linkages.
2. Inspect both sides of coils for cleanliness. After cleaning, check again by flashlight from one side to the other by observing amount of light emission through the coil. Dirt and debris can collect deep within a multi-row coil. Use low pressure compressed air to blow through fins or detergent water from clean side to dirty side to clear.
3. Lubricate control valve linkages.

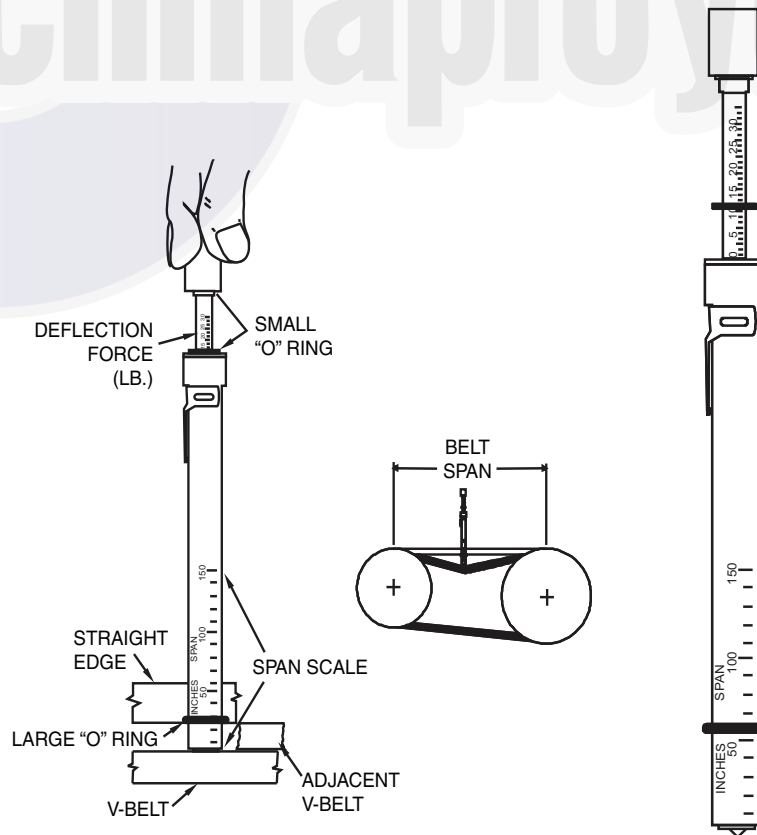


Fig. 11 — Belt Tensioning

Table 3 — Fan Belt Tension Data

| BELT STYLE | SMALLEST SHEAVE DIAMETER RANGE (in.) | RPM RANGE | BELT DEFLECTION FORCE (lb) | | | |
|------------|--------------------------------------|-----------|---|----------|---------------------------------------|----------|
| | | | SUPER GRIPBELTS AND UNNOTCHED GRIPBANDS | | GRIPNOTCH BELTS AND NOTCHED GRIPBANDS | |
| | | | USED BELT | NEW BELT | USED BELT | NEW BELT |
| A, AX | 3.0 - 3.6 | 1000-2500 | 3.7 | 5.5 | 4.1 | 6.1 |
| | | 2501-4000 | 2.8 | 4.2 | 3.4 | 5.0 |
| | 3.8 - 4.8 | 1000-2500 | 4.5 | 6.8 | 5.0 | 7.4 |
| | | 2501-4000 | 3.8 | 5.7 | 4.3 | 6.4 |
| | 5.0 - 7.0 | 1000-2500 | 5.4 | 8.0 | 5.7 | 8.4 |
| | | 2501-4000 | 4.7 | 7.0 | 5.1 | 7.6 |
| B, BX | 3.4 - 4.2 | 860-2500 | — | — | 4.9 | 7.2 |
| | | 2501-4000 | — | — | 4.2 | 6.2 |
| | 4.4 - 5.6 | 860-2500 | 5.3 | 7.9 | 7.1 | 10.5 |
| | | 2501-4000 | 4.5 | 6.7 | 6.1 | 9.1 |
| | 5.8 - 8.6 | 860-2500 | 6.3 | 9.4 | 8.5 | 12.6 |
| | | 2501-4000 | 6.0 | 8.9 | 7.3 | 10.9 |
| C, CX | 7.0 - 9.0 | 500-1740 | 11.5 | 17.0 | 14.7 | 21.8 |
| | | 1741-3000 | 9.4 | 13.8 | 11.9 | 17.5 |
| | 9.5 - 16.0 | 500-1740 | 14.1 | 21.0 | 15.9 | 23.5 |
| | | 1741-3000 | 12.5 | 18.5 | 14.6 | 21.6 |
| D | 12.0 - 16.0 | 200-850 | 24.9 | 37.0 | — | — |
| | | 851-1500 | 21.2 | 31.3 | — | — |
| | 18.0 - 20.0 | 200-850 | 30.4 | 45.2 | — | — |
| | | 851-1500 | 25.6 | 38.0 | — | — |
| 3V, 3VX | 2.2 - 2.4 | 1000-2500 | — | — | 3.3 | 4.9 |
| | | 2501-4000 | — | — | 2.9 | 4.3 |
| | 2.65 - 3.65 | 1000-2500 | 3.6 | 5.1 | 4.2 | 6.2 |
| | | 2501-4000 | 3.0 | 4.4 | 3.8 | 5.6 |
| | 4.12 - 6.90 | 1000-2500 | 4.9 | 7.3 | 5.3 | 7.9 |
| | | 2501-4000 | 4.4 | 6.6 | 4.9 | 7.3 |
| 5V, 5VX | 4.4 - 6.7 | 500-1749 | — | — | 10.2 | 15.2 |
| | | 1750-3000 | — | — | 8.8 | 13.2 |
| | | 3001-4000 | — | — | 5.6 | 8.5 |
| | 7.1 - 10.9 | 500-1749 | 12.7 | 18.9 | 14.8 | 22.1 |
| | | 1750-3000 | 11.2 | 16.7 | 13.7 | 20.1 |
| | 11.8 - 16.0 | 500-1749 | 15.5 | 23.4 | 17.1 | 25.5 |
| | | 1750-3000 | 14.6 | 21.8 | 16.8 | 25.0 |
| 8V | 12.5 - 17.0 | 200-850 | 33.0 | 49.3 | — | — |
| | | 851-1500 | 26.8 | 39.9 | — | — |
| | 18.0 - 22.4 | 200-850 | 39.6 | 59.2 | — | — |
| | | 851-1500 | 35.3 | 52.7 | — | — |

NOTICE

TENSION BELTS TO SPECIFICATION SHOWN ON DRIVE LABEL. OVER TENSIONING BELTS WILL SEVERELY REDUCE BELT AND BEARING LIFE.

REPLACEMENT PARTS

BEARINGS

DRIVE _____

FREE _____

SHAFT _____

WHEEL _____

INLET CONE _____

TO ORDER REPLACEMENT PARTS,
CONTACT: RCD
(REPLACEMENT COMPONENTS DIVISION)
1-800-443-4410

Fig. 12 — Fan Section Label

INSTALLATION AND STORAGE CHECKLIST

SAFETY

- Lockout power supplies before opening access doors.
- Prevent wheel rotation during fan servicing.
- Replace belt guards or fan safety screen after installation/maintenance is completed.
- Replace bolt or lock on "moving" access door.

RECEIVING AND INSPECTION

- Inspect for shipping damage.
- Compare items on bill of lading with items received.

STORAGE

- Store indoors.
- Tarp if stored outdoors.
- Close all doors if stored outdoors.
- Grease fan and rotate shaft monthly while in storage.

CLEARANCE REQUIREMENTS

- Follow NEC requirements for clearance and electrical controls.
- Allow clearance for fan, coil, filter, etc. removal and replacement.

LIFTING AND HANDLING

- Lifting facilities are adequate for size and weight of equipment.
- Split sections should be individually handled.
- Air handler should only be lifted from removable lifting lugs on the base channel. (Removable lifting lugs are stored in the fan section for shipment.)

LOCATION CONSIDERATIONS

- Support structure is adequately sized for air handler.
- Gasketing is placed on roof curbs prior to air handler installation.
- Air handler is secured in accordance with local building and earthquake codes.

SPLIT UNIT ASSEMBLY

- All bolts are in place and tightened.
- All exterior seams are caulked.

CONNECTION HOOK-UPS, INCLUDING:

- Duct connections
- Power
- Water supply
- Coil connection
- Coil leak tests
- Weather hood connection
- Humidifiers
- Wiring
- Actuators
- Sensors
- Drain pans
- Sumps
- Other

UNIT FAN

- Visually inspect wheel and fan rotation.
- Inertia base is fitted.
- Shipping tie downs are removed.
- Seismic restraints are set up.
- There are no impairments to "free" isolation.
- The flex power line to fan motor does not interfere with isolation.
- Check belt tension.
- Check flex connection on fan.
- Check VAV (variable air volume) devices and VAV actuators.
- Bearings on fan are free of noise and operate freely; locking collars are set.
- Verify that lubrication lines are attached and that bearings have been factory-lubricated.
- Check motor for nameplate vs. actual amps/voltage

FILTERS

- Verify that filters are installed properly.
- Verify that all seals are in place.
- Verify that doors close properly.
- Check air filter gages for operation.
- Verify that all pressure tips are in place and not blocked.

COILS

- Check coils for visible damage and repair.
- Verify that coil blank-offs are in place and sealed.
- Verify that piping penetrations through cabinet wall are sealed properly.
- Verify that piping to coils is completed.
- Confirm that piping has been tested.
- Clean drain pans.
- Check that drain connection is clear.
- Verify that drain traps are installed.
- Prime traps.

EVAPORATIVE COOLING PACKAGES

- Connections to unit are completed.
- Float system is checked for operation.
- Sump pump is hooked to power.
- EVAP media is checked for damage.
- All blank-offs are in place.
- Water treatment devices are installed (if applicable).
- The system has been filled with water and test-run for leakage and high/low water shutoff.
- The system has been run for 24 hours and the water changed.
- All controls as specified in submittals are in place and tested.

ELIMINATORS AND DAMPERS

- _____ Equipment has been visually inspected for damage; damaged blades/linkage repaired.
- _____ Check that low-leak damper edge and blade seals are in place and not loose.
- _____ Manually operate each damper through cycle to verify operation and complete closure.
- _____ Actuators are installed.
- _____ Actuators have been hand-operated through cycle to ensure there is no over-torquing.
- _____ Actuators have been power-operated through cycle to verify operation.

GENERAL

- _____ Entire cabinet has been visually checked and repairs made if necessary.
- _____ Access doors have been checked for free movement and complete closure.
- _____ All seams are sealed.
- _____ Verify that there are no air leaks with running fan.
- _____ Check interior of unit for loose or damaged insulation and make repairs if necessary.

AFTER FAN START-UP: After 8 hours and 48 hours of fan operation, shut down fan, lockout power, and check the following:

- _____ Thrust restraints
- _____ Set screws and hold downs
- _____ Drive coupling alignments
- _____ Belt drive
- _____ Bearing housing temperature

SIGNATURE: _____

DATE: _____

