



The
New York Blower
Company®

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INSTALLATION
MAINTENANCE,
OPERATING
INSTRUCTIONS

IMGE-500
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Drawing #57-0043

Rev. C

7F TURBINE COOLING MODULES
7F TURBINE VENT FANS AND 7E EXHAUST FRAME BLOWERS



A WORD ABOUT SAFETY

The above **WARNING** decal appears on all nyb 7F Cooling Modules, Vent Fans, and 7E Exhaust Frame Blowers. Air moving equipment involves electrical wiring, moving parts, sound, and air velocity or pressure which can create safety hazards if the equipment is not properly installed, operated and maintained. To minimize this danger, follow these instructions as well as the additional instructions and warnings on the equipment itself.

All installers, operators and maintenance personnel should study AMCA Publication 410, "Recommended Safety Practices for Air Moving Devices", which is included as part of every shipment. Additional copies can be obtained by writing to New York Blower Company, 7660 Quincy St., Willowbrook, IL 60521.

ELECTRICAL DISCONNECTS

Each 7F Cooling Module, Vent Fan, and 7E Exhaust Frame Blower should have an independent disconnect switch to isolate the unit from the electrical supply. It should be near the unit and must be capable of being locked by maintenance personnel while servicing the unit, in accordance with OSHA procedures.

MOVING PARTS

All moving parts must be enclosed or have guards to protect personnel. Safety requirements vary, so the number and type of guards needed to meet company, local and OSHA standards must be determined and specified by the user. Never start a fan without having all duct work and safety guards installed. Check regularly for damaged or missing guards and do not operate any fan with guards removed. Fans can also become dangerous because of potential "windmilling", even though all electrical power is disconnected. Always block the rotating assembly before working on any moving parts.

SOUND

Some fans can generate sound that could be hazardous to exposed personnel. It is the responsibility of the system designer and user to determine sound levels of the system, the degree of personnel exposure, and to comply with applicable safety requirements to protect personnel from excessive noise. Consult **nyb** for fan sound power level ratings.

AIR PRESSURE AND SUCTION

In addition to the normal dangers of rotating machinery, fans present another hazard from the suction created at the fan inlet. This suction can draw materials into the fan where they become high velocity projectiles at the outlet. It can also be extremely dangerous to persons in close proximity to the inlet, as the forces involved can overcome the strength of most individuals. Inlets and outlets that are not ducted should be screened to prevent entry and discharge of solid objects.



ACCESS DOORS

The above **DANGER** decal is placed on all **nyb** cleanout doors. These doors, as well as access doors to the duct system, should never be opened while the fan is in operation. Serious injury could result from the effects of air pressure or suction.

Quick-opening doors must have the door handle bolts securely tightened to prevent accidental or unauthorized opening. Bolted doors must be tightened for the same reason.

RECEIVING AND INSPECTION

The equipment should be inspected on receipt for any shipping damage. Turn fan wheels by hand to see that they rotate freely and do not bind.

F.O.B. factory shipping terms require that the receiver be responsible for inspecting the equipment upon arrival. Note damage or shortages on the Bill of Lading and file any claims for damage or loss in transit. **nyb** will assist the customer as much as possible; however, claims must be originated at the point of delivery.

HANDLING AND STORAGE

7F Cooling Modules, Vent Fans, and 7E Exhaust Frame Blowers should be lifted by the base, mounting supports, or lifting eyes only. Never lift a unit by the wheel, ductwork, motor, motor bracket, or any part not designed for lifting. A spreader should be used to avoid damage to fan components, dampers and ductwork. Special care should be taken to not damage coatings.

Whenever possible, 7F Cooling Modules, Vent Fans, and 7E Exhaust Frame Blowers and accessories should be stored in a clean, dry location to prevent rust and corrosion of steel components. **If outdoor storage is necessary, protection should be provided. Motors are susceptible to damage and deterioration due to internal corrosion from atmospheric contaminants and condensation. Motor heaters must be energized to protect internal motor components. Rotate fan wheels by hand every two weeks to redistribute grease on internal motor bearings.** Cover motors, ductwork inlets and controls with waterproof material to prevent the accumulation of dirt and moisture. Check dampers for full operation and lubricate moving parts prior to storage. Inspect the stored unit periodically.

FAN INSTALLATION

Fan wheels are dynamically balanced when fabricated. Fully assembled units are test run at operating speeds to check the entire assembly for conformance to GE vibration limits. Nevertheless, all units must be adequately supported for smooth operation. **Ductwork should be independently supported as excess weight may distort housings.**

7F Cooling Modules, Vent Fans, and 7E Exhaust Frame Blowers are designed for smooth operation. Vibration levels are dependent upon the rigidity of the support structure on which the units are mounted. The optimum installation is one in which the units are bolted directly to the main supporting structurals of the turbine. By doing so, the entire machine provides the mass and rigidity necessary to insure smooth operation.

The base is provided with predrilled holes. These holes are large enough to allow alignment at the time of installation yet still accept a large enough mounting bolt to ensure ample security. All of the mounting holes should be used.

START-UP

Safe operation and maintenance includes the use of appropriate safety accessories for the specific installation. This is the responsibility of the system designer and requires consideration of equipment location and accessibility as well as adjacent components. All safety accessories must be installed properly prior to start-up.

Safe operating speed is a function of system temperature and wheel design. Do not under any circumstances exceed the maximum safe wheel speed.

Procedure

1. Inspect the installation prior to starting the unit. Check for any loose items or debris that could be drawn into the fan(s) or dislodged by the fan discharge(s). Check the interior of the unit as well. Turn fan wheels by hand to check for binding.
2. Check the tightness of all setscrews, nuts and bolts.
3. Install all ductwork, inlet boxes, filters, and any safety devices and guards. Verify that the supply voltage is correct and wire the motor. "Bump" the starter to check for proper wheel rotation.
4. Make sure that all grounding connectors are tight and secure.

5. Use extreme caution when testing the unit with ducting disconnected. Apply power and check for unusual sounds or excessive vibration. If either exists, see the section on Common Problems. To avoid motor overload, do not run the fan for more than a few seconds if ductwork is not fully installed. Without ductwork, normal operating speed may not be obtained without motor overload. Ductwork and guards must be fully installed for safety.
6. Bushing bolts should be rechecked after a few minutes, eight hours and two weeks of operation (see Table 1) for correct torque values.

NOTE: Shut the unit down immediately if there is any sudden increase in vibration.



Table 1 - BUSHING BOLT TORQUES

| Fan Description | Fan Size | Bushing Type | Bore Size | Torque lb.-ft. | Torque lb.-in. |
|------------------|-----------|--------------|-----------|----------------|----------------|
| Cooling EFB | 27"/26.5" | Q1 | 1 7/8 | 29 | 348 |
| Cooling BAB | 24" | Q1 | 1 3/8 | 29 | 348 |
| Turbine Comp. | 36" | Q1 | 1 7/8 | 29 | 348 |
| Exhaust Enc. | 33" | Q1 | 1 7/8 | 29 | 348 |
| Load Compt. | 22" | P2 | 1 1/8 | 16 | 192 |
| Lube Oil Mod. | 22" | P2 | 1 1/8 | 16 | 192 |
| Liquid Fuel Mod. | 22" | P2 | 1 1/8 | 16 | 192 |
| 7E EFB | 26" | SD | 1 7/8 | 9 | 108 |

MAINTENANCE

7F Cooling Modules, Vent Fans, and 7E Exhaust Frame Blowers are manufactured to high standards with quality materials and components. Proper maintenance will ensure a long and trouble-free service life.

Do not attempt any maintenance unless the electrical supply has been completely disconnected and locked. In many cases, a fan wheel can windmill despite removal of all electrical power. The rotating assembly should be blocked securely before attempting maintenance of any kind.

The key to good maintenance is regular and systematic inspection of all parts. Inspection frequency is determined by the severity of the application and local conditions. Strict adherence to an inspection schedule is essential.

Regular maintenance should include the following:

1. Check the fan wheel(s) for any wear or corrosion, as either can cause catastrophic failures. Check also for the build-up of material which can cause unbalance resulting in vibration, motor bearing wear and serious safety hazards. Clean or replace the wheel(s) as required.
2. During any routine maintenance, all setscrews and bolts should be checked for tightness. See Table 1 for torques.
3. When installing a new wheel or cone, the proper wheel-to-inlet cone clearance must be maintained (see Figures 1 and 2).

**COOLING MODULE PARTICULATE FILTER
Part Number 98-5399**

Each filter element has a nominal rated capacity of 2500 SCFM and a minimum dirt holding capacity of 190 grams at 4.0" wg, with an efficiency of 98% at 10 microns and an average atmospheric dust spot efficiency of 30%. Filter performance is rated in accordance with ASHRAE test 52-76.

Once the filter system is in operation, required maintenance consists of replacement/cleaning of elements. Filter life varies from installation to installation depending upon the amount and type of contamination in the atmosphere. Changing/cleaning of filter elements is recommended at 4 - 6" wg and filters should be replaced every six (6) months to insure proper particulate removal efficiency. Elements can be cleaned by using compressed air or washing with a mild detergent solution.

**WHEEL-INLET CLEARANCE
COOLING MODULE AND
7E EXHAUST FRAME BLOWERS**

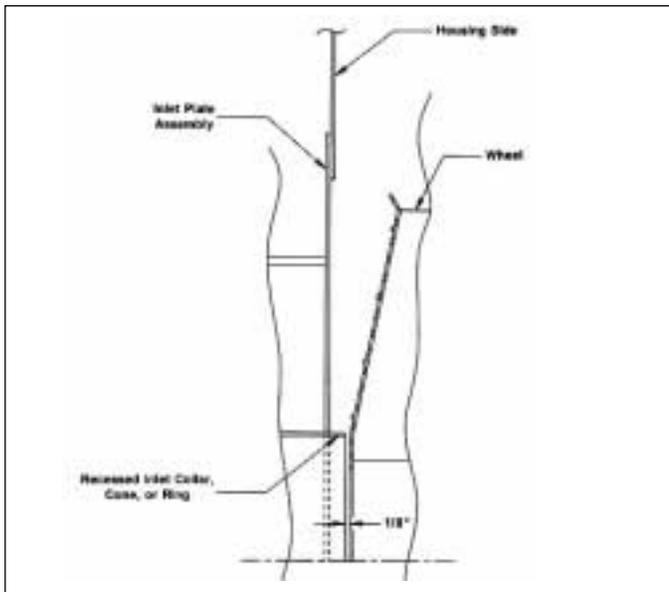


Figure 1

**WHEEL-CONE CLEARANCES
COOLING MODULE BEARING AREA BLOWERS
AND 7F VENT FANS**

| Fan Description | Fan Size | "A" Dimension |
|------------------------------|----------|---------------|
| Cooling BAB | 24" | 7 3/16" |
| Turbine Comp. | 36" | 12 3/16" |
| Exhaust Enc. | 33" | 11 3/16" |
| Load Compt. | 22" | 6 3/8" |
| Lube Oil Mod. | 22" | 6 3/8" |
| Liquid Fuel Mod. | 22" | 6 3/8" |
| Turbine Comp. (Fogger Unit) | 40" | 11 7/16" |
| Turbine Comp. (Chiller Unit) | 40" | 12 7/16" |

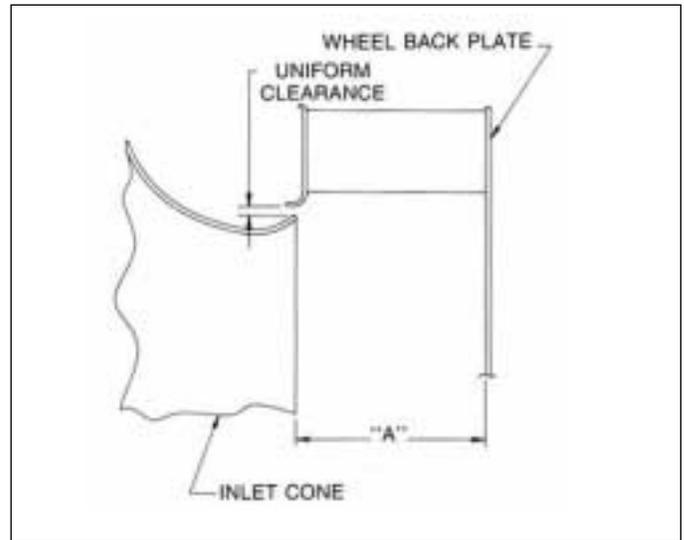


Figure 2

WHEEL BALANCE

Airstreams containing particulate or chemicals can cause abrasion or corrosion of the fan parts. This wear is often uneven and can lead to significant wheel imbalance over time. When such wear is discovered, a decision must be made as to whether to rebalance or replace the wheel.

The soundness of all parts should be considered if the original thickness of any component is reduced. Be sure there is no hidden structural damage. The airstream components should also be cleaned to remove any build-up of foreign material. Specialized equipment can be used to rebalance a cleaned wheel that is considered structurally sound.

Balance weights should be rigidly attached at a point that will not interfere with the housing nor disrupt airflow. Remember that centrifugal forces can be extremely high at the outer radius of a fan wheel. Welding is the preferred method of balance weight attachment. Be sure to ground the welder directly to the fan wheel. Otherwise, the welding current could pass through the motor bearings and damage them.

MOTORS

Motors should be lubricated and maintained in accordance with the motor manufacturer's standard recommendations for the appropriate installation location and operating conditions.

If you have received a Baldor motor on your equipment, it utilizes Dow Corning DC44 grease. This is the grease that should be used when regreasing your motor. It is a lithium base grease with a synthetic silicone lubricant. The lithium soap/base **SHOULD NOT** react adversely to other lithium soaps/bases. Synthetic greases should not be mixed with petroleum or hydrocarbon greases. If you do mix greases, you do so at your own

risk. We recommend strongly that you use the Dow Corning DC44 grease at all times. Please note Dow Corning DC44 grease is the proper grease for re-lubrication and is called out on your Baldor motor nameplate.

If you've received a motor other than Baldor, you should follow the re-lubrication instructions closely and use the particular motor vendor's recommended grease.

COMMON PROBLEMS

Excessive Vibration

A potential complaint regarding industrial fans is "excessive vibration". While each unit is precisely balanced prior to shipment, there are many other causes of vibration including:

1. Loose mounting bolts, setscrews, and bushing bolts.
2. Misaligned motor.
3. Bent shaft due to mishandling or material impact.
4. Accumulation of foreign material on the wheel.
5. Excessive wear or erosion of the wheel.
6. Excessive system pressure or restriction of airflow due to closed dampers.
7. Inadequate structural support, mounting procedures or materials.
8. Externally transmitted vibration.

Inadequate Performance

1. Fan wheel rotating in wrong direction.
2. Wheel not properly centered relative to inlet cone.
3. Closed dampers, air leaks, or clogged filters.
4. Obstructions near inlets.

Excessive Noise

1. Fan operating near "stall" due to incorrect installation.
2. Vibration originating elsewhere in the system.
3. System resonance or pulsation.
4. Nearby sound reflecting surfaces.
5. Loose accessories or components.
6. Motor bearing issues.

Premature Component Failure

1. Prolonged or major vibration.
2. Inadequate or improper maintenance.
3. Abrasive or corrosive elements in the airstream or surrounding environment.
4. Misalignment or physical damage to rotating components.
5. Excessive fan speed.
6. Extreme ambient or airstream temperatures.
7. Improper tightening of bushing bolts.
8. Improper motor grease usage.
9. Failure to energize space heaters during storage.

REPLACEMENT PARTS

It is recommended that only factory-supplied replacement parts be used. 7F Cooling Modules, Vent Fans, and 7E Exhaust Frame Blower replacement parts are built to be fully compatible with the original equipment, using specific alloys and tolerances. These parts carry a standard warranty.

When ordering replacement parts, specify the part description, shop control number, fan type, rotation (viewed from drive end), part number and quantity. Some of this information is on the metal nameplate attached to the unit.

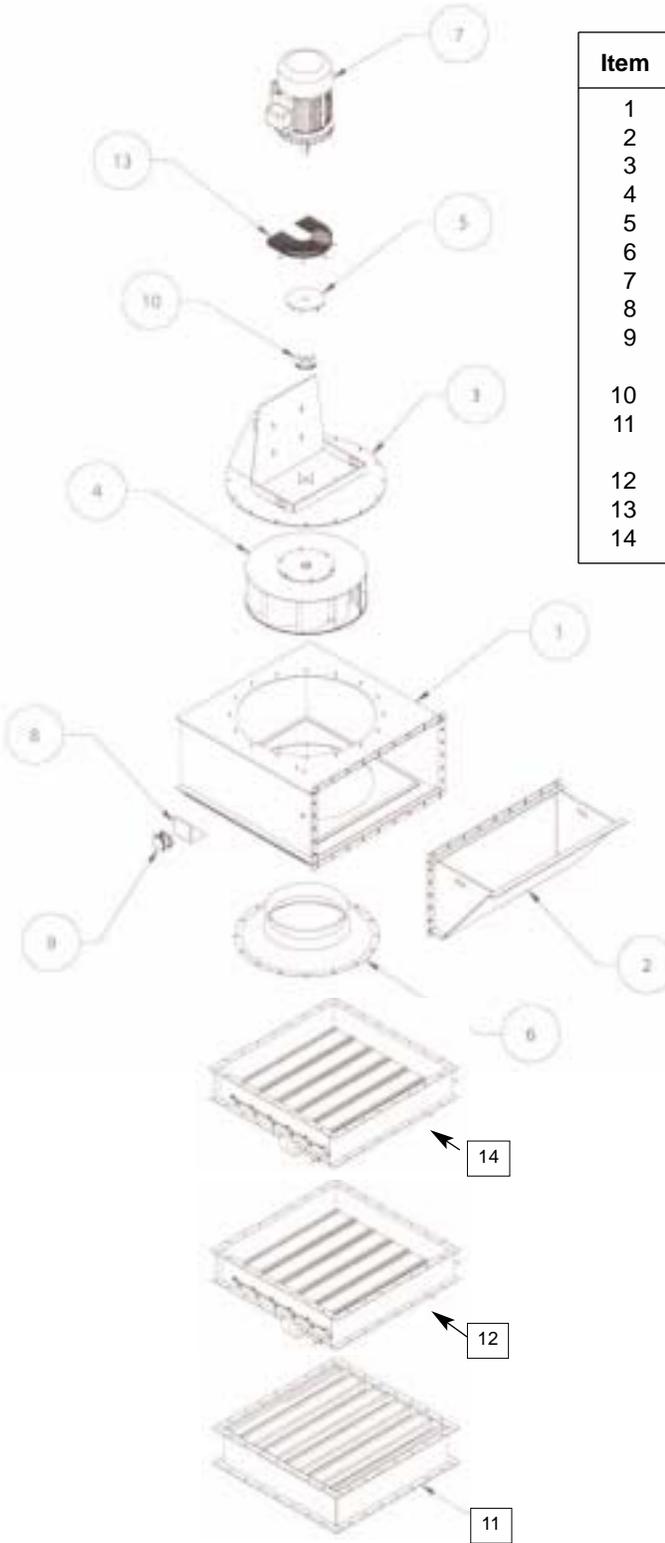
Example: Part description: EFB Complete CW
 Shop/control number: U-10106-100
 Fan description: 7F Cooling Module
 Rotation: CW
 Part #: 57-0001
 Quantity: 1

TYPICAL 7F TURBINE COMPARTMENT (T.C.), EXHAUST ENCLOSURE (E.E.) LIQUID FUEL MODULE (L.F.M.) VENT FANS

CORRECT ROTATION AS VIEWED FROM MOTOR SIDE

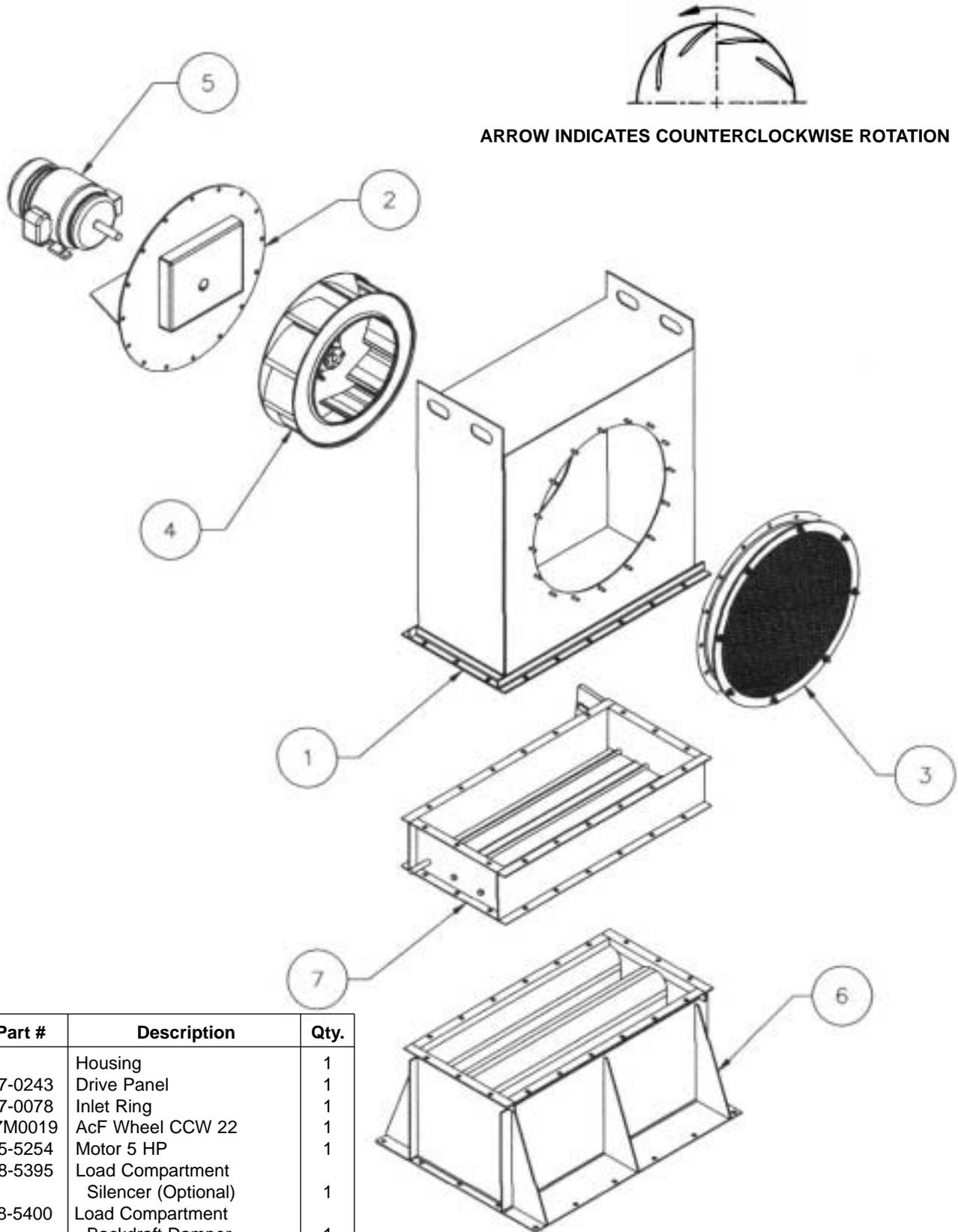


ARROW INDICATES COUNTERCLOCKWISE ROTATION



| Item | Part Number | | | Description | Qty. |
|------|-------------|---------|---------|--|------|
| | E.E. | T.C. | L.F.M. | | |
| 1 | 57-0057 | 57-0061 | 57-0090 | Housing | 1 |
| 2 | 57-0056 | 57-0056 | 57-0093 | Air Diverter | 1 |
| 3 | 57-0055 | 57-0055 | 57-0050 | Drive Side Plate | 1 |
| 4 | 57-0053 | 57-0051 | 57-0019 | AcF Wheel CCW | 1 |
| 5 | 52-0022 | 52-0022 | 52-0162 | Machined Shaft Cooler | 1 |
| 6 | 93-0011 | 93-0012 | 93-0007 | Inlet Cone | 1 |
| 7 | 95-5259 | 95-5260 | 95-5261 | Motor | 1 |
| 8 | 52-0099 | 52-0099 | 52-0099 | Pressure Switch Bracket | 1 |
| 9 | 98-5411 | 98-5411 | 98-5411 | Pressure Switch 1/8 NPT (Optional) | 1 |
| 10 | 57-0059 | 57-0059 | 57-0088 | Shaft Seal | 1 |
| 11 | N/A | 98-5396 | N/A | Turbine Compartment Silencer (Optional) | 1 |
| 12 | 98-5397 | 98-5397 | 98-5428 | Backdraft Damper | 1 |
| 13 | 94-0084 | 94-0084 | 94-0057 | Shaft Cooler Guard | 1 |
| 14 | 57-0058 | 57-0058 | 57-0128 | CO2 Damper (Optional) | 1 |

TYPICAL 7F LOAD COMPARTMENT VENT FAN AND LUBE OIL MODULE VENT FAN
CORRECT ROTATION AS VIEWED FROM MOTOR SIDE



| Item | Part # | Description | Qty. |
|------|---------|---|------|
| 1 | | Housing | 1 |
| 2 | 57-0243 | Drive Panel | 1 |
| 3 | 57-0078 | Inlet Ring | 1 |
| 4 | 57M0019 | AcF Wheel CCW 22 | 1 |
| 5 | 95-5254 | Motor 5 HP | 1 |
| 6 | 98-5395 | Load Compartment Silencer (Optional) | 1 |
| 7 | 98-5400 | Load Compartment Backdraft Damper | 1 |
| 7 | 98-5398 | Lube Oil Module Backdraft Damper | 1 |
| 8 | 93-0007 | Inlet Cone (not pictured) | 1 |

**TYPICAL 7F COOLING MODULE
CORRECT ROTATION AS VIEWED FROM MOTOR SIDE**

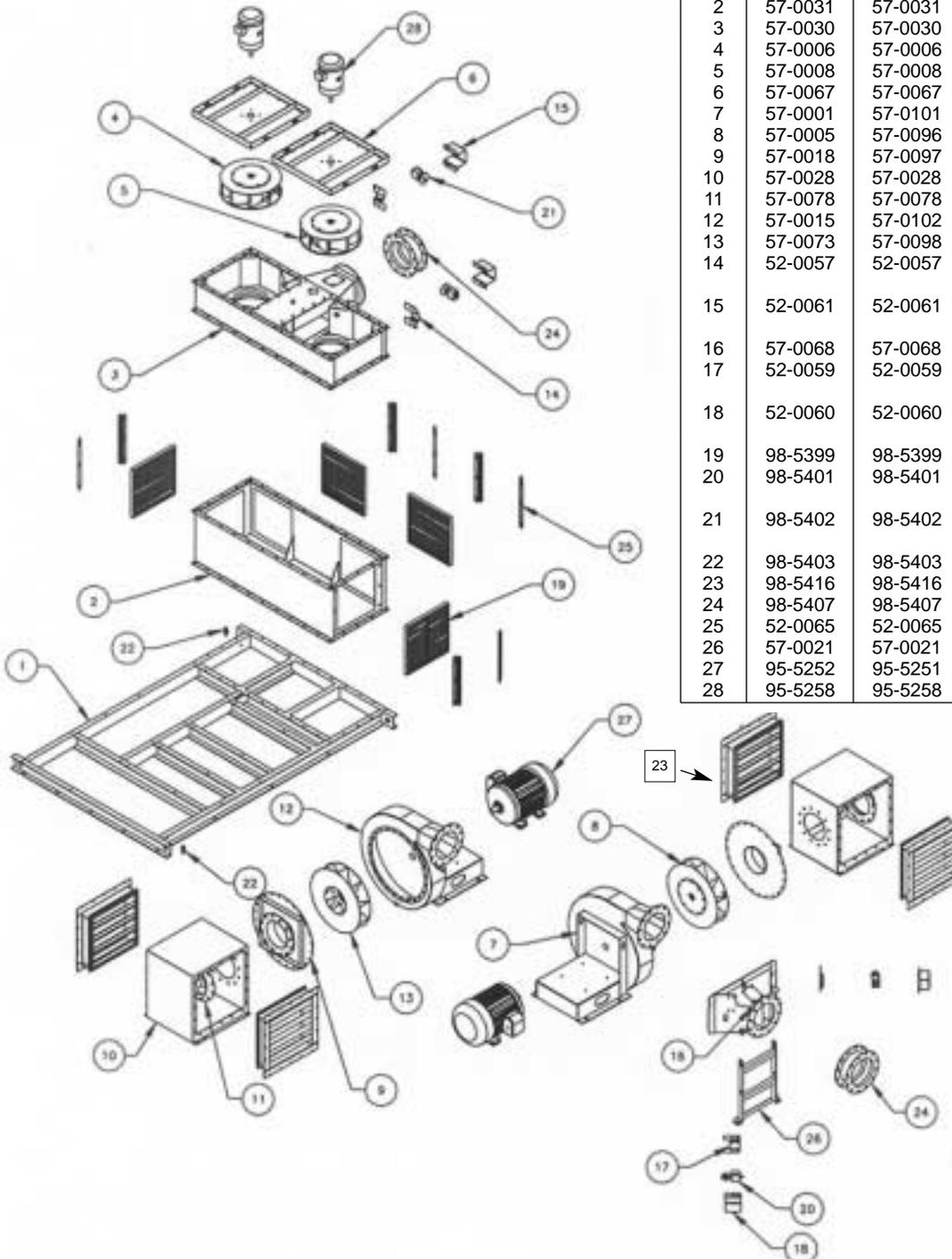


BEARING AREA BLOWER



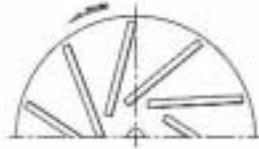
EXHAUST FRAME BLOWER

ARROW INDICATES COUNTERCLOCKWISE ROTATION



| Item | Part Number | | Description | Qty. |
|------|-------------|---------|---|------|
| | 50" SP | 39" SP | | |
| 1 | 57-0010 | 57-0010 | Unitary Base | 1 |
| 2 | 57-0031 | 57-0031 | Lower Air Box | 1 |
| 3 | 57-0030 | 57-0030 | Upper Air Box | 1 |
| 4 | 57-0006 | 57-0006 | BAB CCW Wheel | 1 |
| 5 | 57-0008 | 57-0008 | BAB CW Wheel | 1 |
| 6 | 57-0067 | 57-0067 | BAB Drive Side | 2 |
| 7 | 57-0001 | 57-0101 | EFB Complete CW | 1 |
| 8 | 57-0005 | 57-0096 | EFB CW Wheel | 1 |
| 9 | 57-0018 | 57-0097 | EFB Flanged Inlet | 2 |
| 10 | 57-0028 | 57-0028 | EFB Air Box | 2 |
| 11 | 57-0078 | 57-0078 | EFB Inlet cone | 2 |
| 12 | 57-0015 | 57-0102 | EFB Complete CCW | 1 |
| 13 | 57-0073 | 57-0098 | EFB CCW Wheel | 1 |
| 14 | 52-0057 | 52-0057 | BAB Pressure Switch Mounting Bracket | 2 |
| 15 | 52-0061 | 52-0061 | BAB Pressure Switch Guard | 2 |
| 16 | 57-0068 | 57-0068 | EFB By-Pass Valve | 1 |
| 17 | 52-0059 | 52-0059 | EFB Pressure Switch Mounting Bracket | 2 |
| 18 | 52-0060 | 52-0060 | EFB Pressure Switch Guard | 2 |
| 19 | 98-5399 | 98-5399 | Filter† | 4 |
| 20 | 98-5401 | 98-5401 | EFB Pressure Switch 1/4 NPT | 2 |
| 21 | 98-5402 | 98-5402 | BAB Pressure Switch 1/2 NPT | 2 |
| 22 | 98-5403 | 98-5403 | Grounding Lug | 2 |
| 23 | 98-5416 | 98-5416 | Louver | 4 |
| 24 | 98-5407 | 98-5407 | Expansion Joint | 2 |
| 25 | 52-0065 | 52-0065 | Filter Frame | 8 |
| 26 | 57-0021 | 57-0021 | By-Pass Valve Support | 1 |
| 27 | 95-5252 | 95-5251 | Motor 75 HP/60 HP | 2 |
| 28 | 95-5258 | 95-5258 | Motor 7.5 HP | 2 |

7E EXHAUST FRAME BLOWER



ARROW INDICATES COUNTERCLOCKWISE ROTATION

| Item | Part Number | | Description | Qty. |
|------|-------------|---------|------------------|------|
| | CW | CCW | | |
| 1 | | | Housing/Pedestal | 1 |
| 2 | 57-0113 | 57-0114 | Aluminum Wheel | 1 |
| 3 | 57-0063 | 57-0063 | Inlet Flange | 1 |
| 4 | 57-0112 | 57-0112 | Silencer | 1 |
| 5 | 78-5429 | 78-5429 | Backdraft Damper | 1 |
| 6 | 98-5414 | 98-5414 | Expansion Joint | 1 |
| 7 | 95-5251 | 95-5251 | Motor | 1 |
| 8 | 98-5419 | 98-5419 | Pressure Switch | 1 |
| 9 | 98-5403 | 98-5403 | Grounding Lug | 1 |
| 10 | 52-0169 | 52-0169 | Support Brace | 2 |

