



**PLD**  
**Supply Propeller Fans & Flow Exhausters**

OPERATION & MAINTENANCE

Revised: 08/24/15



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## **IMPORTANT!**

### **READ BEFORE PROCEEDING!**

The information contained herein is, to the best of our knowledge, accurate and applicable for proper operation and installation of the specified equipment at the time this document entered service. Before proceeding, it is recommended that you check for a more current version of this Installation Operation Manual (IOM) on our website at [www.johnsoncontrols.com](http://www.johnsoncontrols.com).

Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

# INTRODUCTION & INSTALLATION

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## RECEIVING AND HANDLING

YORK® by Johnson Controls fans are carefully inspected before leaving the factory. The unit is factory balanced and all components (wheels, shaft, bearings, etc.) are tested prior to shipment. Upon receipt, carefully inspect for any signs of tampering. Inspect the unit for any damage that may have occurred during transit and check for loose, missing or damaged parts. Mishandled units can void the warranty provisions. If units are damaged in transit, it is the responsibility of the receiver to make all claims against the carrier. YORK® by Johnson Controls is not responsible for damage incurred during shipment.

Handle units with care to avoid damage. Units are generally shipped completely assembled. Avoid severe jarring or dropping. Carefully handle units which have a special painted or coated finish to protect the surfaces. The YORK® by Johnson Controls warranty on any protective coating may be voided if the continuity of the coating is scratched and damaged due to mishandling.

## STORAGE

Long-term storage requires special attention. Store all units on a level, solid surface, preferably indoors. If outside storage is necessary, provide protection against moisture and dirt by encasing the entire unit in plastic or some weatherproof material.

## UNPACKING

Place carton in an upright position and remove staples or use a sharp (knife edge) tool to CAREFULLY cut or scribe the sealing tape on both sides at the top of the carton. Open carton flaps. Remove any cardboard and wooden filler pieces, as well as loose components or accessories shipped with the unit.

Carefully remove the unit from the carton. Inspect the unit for any damage that may have occurred during transit and check for loose, missing or damaged parts.

## INSTALLATION

### Dampers

When required, install dampers prior to mounting the unit on the curb or frame. Secure dampers to the inside of the curb without undue twisting, which may distort the damper frame. Damper frame must be reasonably level on all sides. Check for free operation. If dampers are motor operated type, ascertain that proper voltage is impressed on motor terminals.

### Positioning and Running Power Lines

Power is normally brought from within the building and placed inside one corner of the curb. Feed power line through the clearance hole provided in the damper and in turn through the ventilator to the (disconnect switch if furnished and) motor.

Motor must be securely and adequately grounded. Protect power lines from sharp objects. Do not kink power line or permit it to contact hot surfaces, chemicals, grease or oil.

### Anchoring or Securing the Unit

Whenever possible, anchor the fan by fastening through the vertical portion of the mounting flange. The type, size and number of fasteners depends upon the unit size and curb construction. If code or specification prescribes fastening through the top (horizontal portion) of the mounting flange, use neoprene or lead washers under the head of each fastener to prevent water leaks.



*Guy down large units installed in areas subject to high winds or unusual field conditions.*

If the contractor removes ventilator parts to facilitate installation and electrical connections, all parts should be reassembled by replacing all spacers, washers, nuts, bolts, fasteners and components exactly as they were found prior to removal. All fasteners are to be drawn tight and secure. The ventilator is now ready for service.

# START-UP & OPERATION

## START-UP & OPERATION

Carefully inspect the unit before start-up. All motor bearings should be properly lubricated and all fasteners should be securely tightened. Rotate impeller by hand to insure free movement.



**Before placing hand on impeller or belts, lock out primary and secondary power source.**

The inlets and approaches to the exhauster should be free from obstructions. To assure maximum air movement, adequate supply air must be available.

Before putting fan into operation, complete the following check list:

1. Turn off and LOCK OUT power source.
2. Make sure installation is in accordance with manufacturer's instructions.
3. Check and tighten all fasteners.
4. Spin centrifugal wheel to see if rotation is free.
5. Check all set-screws and keys: tighten if necessary.
6. Check belt for alignment (use recommended belt tension gauges).
7. Check belt for proper sheave selection.
8. Make sure there is no foreign loose material in ductwork leading to and from fan or in the fan itself.
9. Properly secure all safety guards.
10. Secure all access doors to fan and ductwork.
11. Check line voltage with motor nameplate.
12. Check wiring.



**(On single phase motors, the terminal block must be set up in accordance with the nameplate instructions and/or wiring diagram. This set up must match the line voltage. If the motor is multi-speed or multi-voltage, the winding leads must be grouped and connected as shown on the motor wiring diagram. The line voltage must correspond with proper grouping of motor leads. The wiring diagram must be followed explicitly or serious motor or starter damage will occur.) Don't operate at RPM higher than catalog.**

Switch on electrical supply and allow fan to reach full speed. Check carefully for:

1. Correct rotation of the propeller.



**Incorrect rotation overloads motor severely and results in serious motor damage. To change rotation of three phase units, interchange any 2 of the 3 line leads. On single phase units, change the terminal block set-up following the wiring diagram on the motor.**

2. Check motor temperature for excessive heat.



**Use care when touching the exterior of an operating motor. Modern motors normally run hot. They are designed to operate at higher temperatures. This is a normal condition but they may be hot enough to be painful or injurious to the touch.**

If any problem is indicated, TURN OFF POWER TO UNIT IMMEDIATELY. Lock out the electrical supply, check carefully for the cause of the trouble and correct as needed. Even if the fan appears to be operating satisfactorily, shut down after a brief period and check all fasteners, setscrews and keys for tightness.

During the first eight (8) hours of operation, check the fan periodically for excessive vibration or noise. At this time, also check motor input current and motor bearing temperatures to insure that they do not exceed manufacturer's recommendations. After eight hours of satisfactory operation, shut down the fan and lock out the electrical power to check the following items and adjust if necessary:

1. All set-screws, keys and fasteners.
2. Drive coupling alignment.

NOTE: Take care to follow all local electrical, safety and building codes. Follow provisions of the National Electrical Code as well as the Occupational Safety and Health Act.

Always disconnect power source before working on the unit. Guard and protect all moving parts.

All motors are checked prior to shipment. However, if motor defects should develop, prompt service can be obtained from the nearest authorized service station of the motor manufacturer under the warranty. Exchange, repair or replacement will be provided on a no charge basis if the motor is defective within the warranty period. Do not return defective motors to YORK® by Johnson Controls.



**Motor guarantee is void unless overload protection is provided in motor wiring circuit.**

# MAINTENANCE, PARTS REPLACEMENT, SPECIAL PURPOSE SYSTEMS, HIDDEN DANGERS & GUARDS

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## MAINTENANCE

### Motor Lubrication

Standard motors are furnished with prelubricated, sealed-for-life ball bearings which require no lubrication for 7 to 10 years of normal service. Where motors have been ordered with greasable bearings, these are factory lubricated and require no attention for one year under normal conditions. If grease relief fittings are provided, remove them when performing maintenance to allow grease to flow out. Whenever possible, apply grease while the motor is running. DO NOT OVERGREASE, as most lubricants deteriorate motor windings and reduce motor life.

## REPLACEMENT PARTS

Replace parts with components which duplicate original parts correctly. Incorrectly sized shafts, belts, pulleys, etc. can damage the fan.

Spare or replacement parts and prices are available upon request. Please supply the following information: Factory Order Number, Customer's Name and Order Number and Date. If this information is not available, furnish a complete description of the part required. Names of parts are shown on the following drawing. To order motors provide the HP, RPM, voltage, phase, hertz and type of enclosure.

## SPECIAL PURPOSE SYSTEMS

Explosive, corrosive, high temperatures, etc. may require special construction, inspection and maintenance. It is necessary to observe the fan manufacturer's recommendations and limitations concerning the type of material to be handled by the fan and its application to special conditions.

## HIDDEN DANGER

In addition to the normal dangers of rotating machinery, fans present an additional hazard in their ability to suck in not only air, but loose material as well. Solid objects can pass through the fan and be discharged by the impeller as potentially dangerous projectiles. Therefore, screen intake to ductwork, whenever possible, to prevent the accidental entrance of solid objects. Never open access doors to a duct system with the fan running.

On the downstream (or pressure) side of the system, releasing the door with the system in operation may result in an explosive opening. On the upstream (or suction) side, the inflow may be sufficient to suck tools and clothing, etc., and may even cause a man to lose his balance.

When a fan is being started for the first time, a complete inspection of the duct work and interior of the fan should be made (with the power locked off), to make certain there is no foreign material which can be sucked into or blown through the duct work.

## GUARDS

All fans have moving parts which require guarding in the same way as other moving machinery. In areas which are accessible only to experienced personnel, a standard industrial type guard may be adequate. This type of guard will prevent the entry of thrown or dropped objects with a minimum restriction of air flow.

Where the fan is accessible to untrained personnel or the general public, use maximum safety guards, even at the cost of some performance loss. Unprotected fans located less than 7' above the floor also require guarding as specified in the Occupational Safety and Health Act (OSHA). Roof mounted equipment will require guards when access is possible.

Axial fans may be connected directly to ductwork which will prevent contact with the internal moving parts, but when the inlet or outlet is exposed, install a suitable guard. Accordingly, roof openings for YORK® by Johnson Controls Axial units can be easily and neatly fitted with framed safety guards. YORK® by Johnson Controls recommends the use of guards on all exposed non-ducted fans, ceiling and wall mounted.

# TROUBLESHOOTING CHECKLIST

Symptom	Possible Cause(s)	Corrective Action
Excessive Noise	<ol style="list-style-type: none"> <li>1. Defective or loose motor bearings.</li> <li>2. Ventilator base not securely anchored.</li> <li>3. Loose or unbalanced wheel/propeller.</li> <li>4. Misaligned pulleys or shaft.</li> <li>5. Loose or damaged wheel/propeller.</li> <li>6. Wheel running in wrong direction.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace motor with same frame size, RPM, HP.</li> <li>2. Reset properly.</li> <li>3. Tighten screws, remove build-up, balance wheel/propeller.</li> <li>4. Correct alignment.</li> <li>5. Replace wheel/propeller.</li> <li>6. Reverse direction.</li> </ol>
Fan Inoperative	<ol style="list-style-type: none"> <li>1. Blown fuse or open circuit breaker.</li> <li>2. Loose or disconnected wiring.</li> <li>3. Defective motor.</li> <li>4. Broken belts.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace fuses or circuit breaker.</li> <li>2. Shut off power and check wiring for proper connections.</li> <li>3. Repair or replace motor.</li> <li>4. Replace belts.</li> </ol>
Insufficient Airflow	<ol style="list-style-type: none"> <li>1. Open access doors or loose sections of ducts.</li> <li>2. Clogged filters.</li> <li>3. Operation in wrong direction.</li> <li>4. Insufficient make-up air direction.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for leakage.</li> <li>2. Clean filters.</li> <li>3. Correct rotation of wheel.</li> <li>4. Add make-up fan or louver opening.</li> </ol>
Motor Overheating	<ol style="list-style-type: none"> <li>1. Overvoltage or under voltage.</li> <li>2. Operation in wrong direction.</li> <li>3. Fan speed too high.</li> <li>4. Incorrect motor. (service factor 1.0, low ambient temp.)</li> <li>5. Blocked cooling tube or leaky gasket.</li> <li>6. Undersized motor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Contact power supply company.</li> <li>2. Reverse direction of motor.</li> <li>3. Slow down fan by opening variable pitch pulley on motor shaft.</li> <li>4. Replace motor with correct open, NEMA service factors (1.15 or higher) with 40 degrees ambient.</li> <li>5. Remove blockage and seal cooling tube in place.</li> <li>6. Check motor ratings with catalog speed and air capacity chart.</li> </ol>

*Note: Care should be taken to follow all local electrical, safety and building codes. Provisions of the National Electric Code (NEC), as well as the Occupational Safety and Health Act (OSHA) should be followed.*

All motors are checked prior to shipment. If motor defects should develop, prompt service can be obtained from the nearest authorized service station of the motor manufacturer while under warranty. Exchange, repair or replacement will be provided on a no charge basis if the motor is defective within the warranty period. The YORK® by Johnson Controls representative in your area will provide a name and address of an authorized service station if requested.

***WARNING: Motor guarantee is void unless overload protection is provided in motor wiring circuit.***



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