



AXPR Wall Mounted Axial Panel Fans

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

This publication contains the installation, operation and maintenance instructions for the AXPR wall mounted axial panel fans.

M.K. Plastics catalogs and reference material on the above system, provides additional information describing the equipment, performance, available accessories, and specifications.

For additional safety information, refer to AMCA publication 410-96, *Safety Practices for Users and Installers of Industrial and Commercial Fans*.

For Information on special application requirements, contact *M.K. Plastic's* corporate office at (514) 871-9999.

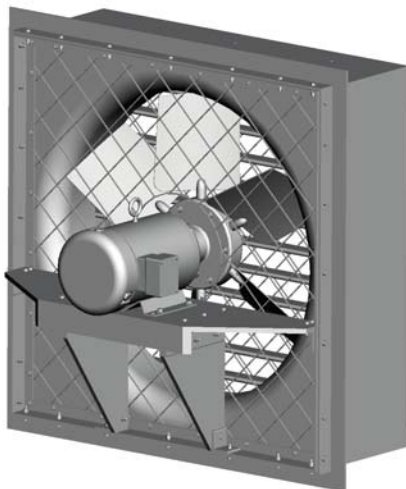


Fig. 1 – AXPR Propeller Fan

Receiving and Inspection

Carefully inspect the venturi/blower and accessories for any damage and shortage immediately upon receipt of the fan.

- Turn the propeller by hand to ensure it turns freely and does not bind.
- If shutters are provided, check for free operation of all moving parts.
- Record on the *Delivery Receipt* any visible sign of damage.

WARNING

The AXPR has rotating parts. Safety precautions should be exercised at all times during installation, operation, and maintenance.

ALWAYS disconnect power prior to working on fan.

Handling and Storage

Fans should be lifted by the panel mounting flanges. Never by the propeller, motor, motor bracket, fan inlet, shutter frame, or any other part not designed for lifting.

If the fan is stored for any length of time prior to installation, the fan and accessories should be stored in a dry, clean location. If outdoor storage is necessary, protection should be provided. The fan should be covered to prevent the accumulation of dirt and moisture. Cover motors with waterproof material.

Check shutters for free operation and lubricate moving parts prior to storage. Inspect the stored unit periodically. **Rotate the propeller by hand every two weeks.**

Personal Safety

Disconnect switches are recommended. Place the disconnect switch near the fan in order that the power can be swiftly cut off in case of an emergency, and in order that maintenance personnel are provided complete control of the power source.

Installation

Cut out wall opening of sufficient size so that, when framed in, the finished opening will accept the fan and wall box assembly, (refer to MK Plastics submittal for specific outside dimensions of the wall box). It is preferable to frame in the opening with 2 x 6 material, or other similar suitable material or metal channels adequate to support the fan as shown in Figure 2. Slide the fan and wall box assembly into the framed opening in the wall. Attach the fan by inserting a suitable fastener through each of the pre-punched mounting holes in the fan panel mounting flange. Care should be taken not to bend or distort the fan panel or other components during installation. A distance of at least one and one-half times the diameter of the fan should be allowed between the fan inlet or discharge opening and any adjacent wall or large obstruction.

If a weather cowl is supplied on a supply fan, position the cowl over the opening on the exterior side of the wall, and attach by inserting suitable fastener through each pre-punched mounting hole of the cowl mounting flange.

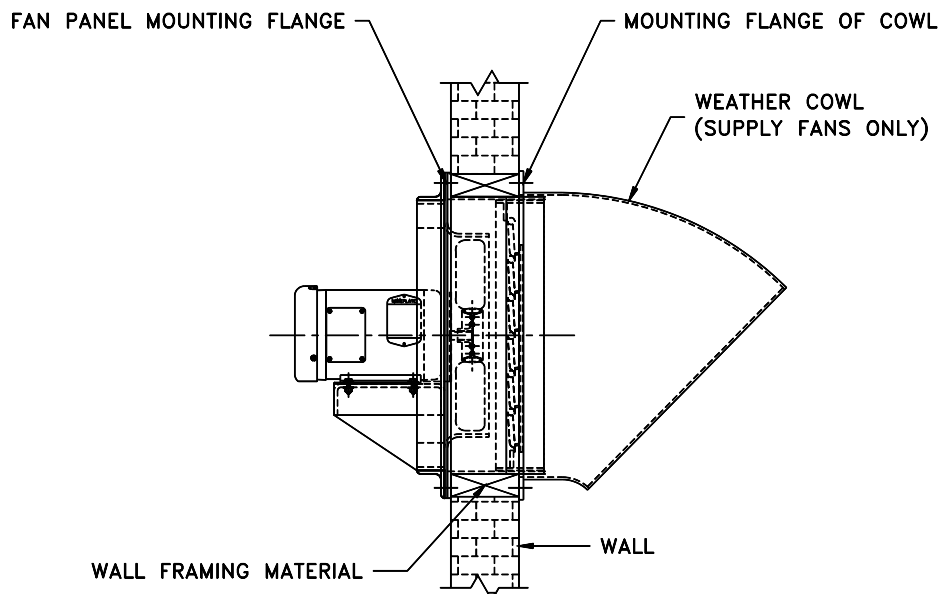


Fig. 2 – Wall Installation

Wiring Installation

All wiring should be in accordance with local ordinances and the National Electrical Code, NFPA 70. Ensure the power supply (voltage, frequency, and current carrying capacity of wires) are in accordance with the motor nameplate.

Lock off all power sources before unit is wired to power source.

Due to the mounting location of AXPR fans, it is sometimes difficult to reach disconnect switches if mounted to the unit. It is therefore recommended to remotely mount the switch for easier access.

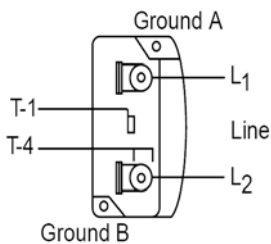
Personal Safety

Disconnect switches are recommended. Place the disconnect switch near the fan in order that the power can be swiftly cut off in case of an emergency, and in order that maintenance personnel are provided complete control of the power source.

Follow the wiring diagram in the disconnect switch and the wiring diagram provided with the motor. Correctly label the circuit on the main power box and always identify a closed switch to promote safety (i.e. red tape over a closed switch).

Wiring Diagrams

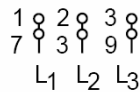
Single Speed, Single Phase Motor



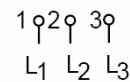
When ground is required, attach to ground A or B with No. 6 thread forming screw. To reverse, interchange T-1 and T-4 leads.

3 Phase, 9 Lead Motor

Low Voltage
208/230 Volts

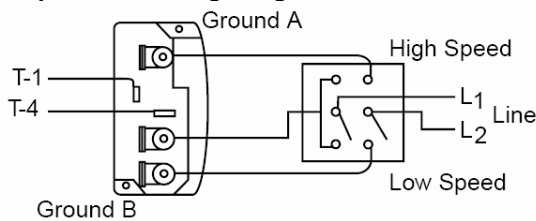


High Voltage
460 Volts



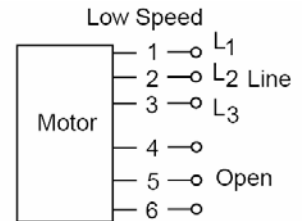
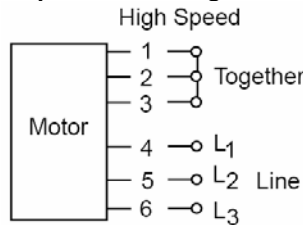
To reverse, interchange any 2 line leads.

2 Speed, 2 Winding, Single Phase Motor



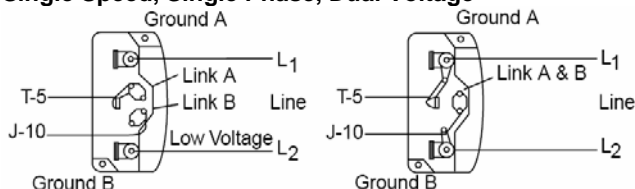
When ground is required, attach to ground A or B with No. 6 thread forming screw. To reverse, interchange T-1 and T-4 leads.

2 Speed, 1 Winding, 3 Phase Motor



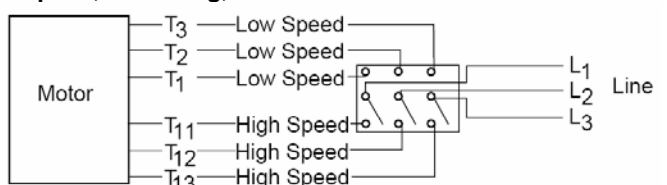
To reverse, interchange any 2 line leads. Motors require magnetic control.

Single Speed, Single Phase, Dual Voltage



When ground is required, attach to ground A or B with No. 6 thread forming screw. To reverse, interchange T-5 and J-10 leads.

2 Speed, 2 Winding, 3 Phase



To reverse: High speed-interchange leads T11 & T12. Low speed-interchange leads T1 & T2. Both speeds-interchange any 2 line leads.

Final Installation Steps

1. Inspect fasteners and setscrews, particularly fan mounting fasteners, and tighten according to the recommended torque shown in the table Recommended Torque for Setscrews/Bolts.
2. Inspect for correct voltage with voltmeter. Make sure the supply voltage is correct.
3. Ensure all accessories are installed.
4. The propeller should rotate freely and not rub on the inside of the fan inlet cone. Turn the propeller by hand to check for binding.
5. Test the fan by 'bumping' the starter to be sure the propeller rotation is the same as indicated by the arrow affixed to the unit, marked **Rotation**.

Do not allow the fan to run in the wrong direction. This will overheat the motor and cause serious damage. For 3-phase motors, if the fan is running in the wrong direction, check the control switch. It is possible to interchange two leads at this location so that the fan is operating in the correct direction.

Operation

Pre-Start Checks

1. Lock out all the primary and secondary power sources.
2. Ensure fasteners and setscrews, particularly those used for mounting the fan, are tightened.
3. Inspect motor wiring.
4. Ensure fan, screens and shutter are clean and free of debris. Any loose items or debris could be drawn into the fan, or be dislodged by the fan discharge.
5. Inspect propeller-to-inlet clearance.
6. Restore power to the fan.

Start Up

Turn the fan on. In variable speed units, set the fan to its lowest speed and inspect for the following:

1. Direction of rotation.
2. Excessive vibration.
3. Unusual fan noise.
4. Excessive and unusual motor noise.
5. Improper motor amperage or voltage.

If a problem is discovered, immediately shut the fan off. Lock out all electrical power and check for the cause of the trouble. See Troubleshooting.

Setscrews should be rechecked after a few minutes, eight hours and two weeks of operation (see the following table for correct tightening torques).

Recommended Torque for Setscrews/Bolts (IN/LB.)

Setscrews				Hold Down Bolts	
Size	Key Hex Across Flats	Recommended Torque Inch-Lbs		Size	Wrench Torque (inch-Lbs)
		Min.	Max.		
No. 10	3/32"	28	33	3/8"-16	240
1/4"	1/8"	66	80	1/2"-13	600
5/16"	5/32"	126	156	5/8"-11	1200
3/8"	3/16"	228	275	3/4"-10	2100
7/16"	7/32"	348	384	7/8"-9	2040
1/2"	1/4"	504	600	1"-8	3000
5/8"	5/16"	1104	1200	1-1/8"-7	4200
3/4"	3/8"	1440	1800	1-1/4"-7	6000

Inspection

Inspection of the fan should be conducted in the first **30 minutes, 8 hour and 24 hour** intervals of satisfactory operation. Inspect bolts, setscrews, and motor mounting bolts. Adjust and tighten as necessary. Also check for unusual or excessive noise and vibration.

Maintenance

M.K. Plastics AXPR fans 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 on a fan unless the electrical supply has been completely disconnected and locked. In many cases, a fan 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 fan maintenance is regular and systematic inspection of all fan parts. Inspection frequency is determined by the severity of the application and local conditions. Strict adherence to an inspection schedule is essential.

Establish a schedule for inspecting all parts of the fan. Inspect fans exhausting corrosive or contaminated air within the first month of operation. Fans exhausting contaminated air (airborne particles) should be inspected every three months, or sooner. Regular inspections are recommended for fans exhausting non-contaminated air.

It is recommended the following inspection be conducted twice per year.

- Inspect bolts and setscrews for tightness. Tighten as necessary. Worn setscrews should be replaced immediately.
- Inspect for cleanliness. Clean exterior surfaces only. Removing dust and grease on motor housing assures proper motor cooling. Removing dirt from the propeller and housing prevents imbalance and damage.

Propeller Balance

Airstreams containing particulate or chemicals can cause abrasion or corrosion of fan parts. This wear is often uneven and can lead to significant propeller imbalance over time. When such wear is discovered, a decision must be made to rebalance or replace the propeller. Specialized equipment can be used to rebalance a cleaned propeller that is considered structurally sound. Balance weights should be rigidly attached at a point that will not interfere with other fan components nor disrupt airflow.

Motor Bearings

Fractional horsepower motors installed on the smaller fans are generally lubricated for life and require no further attention. Motors equipped with oil holes should be oiled in accordance with the manufacturer's instructions printed on the motor. Use a high grade SAE 20 machine oil and use caution not to over lubricate. Motors supplied with grease fittings should be greased according to directions printed on the motor. It is advisable to have your maintenance department remove and disassemble the motor, and lubricate the bearings after 3 years of operation in excessive heat and or in a contaminated air stream consisting of airborne particles.

Motor Service

Should the motor prove defective within one-year period, contact *M.K. Plastics* directly, or your nearest motor service representative.

Troubleshooting

Problem and Potential Cause
Low Capacity or Pressure <ul style="list-style-type: none">• Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor or drive belt assembly.• Poor fan inlet conditions. There should be no obstructions at the inlet.• Improper wheel alignment.
Excessive Vibration and Noise <ul style="list-style-type: none">• Damaged or unbalanced propeller.• Speed too high.• Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor.• Motor bearings need lubrication or motor may need replacement.• Fan surge.
Overheated Motor <ul style="list-style-type: none">• Motor improperly wired.• Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the motor.• Cooling air diverted or blocked.• Improper inlet clearance.• Incorrect fan RPM.• Incorrect voltage.

Replacement Parts List

It is recommended that only factory-supplied parts be used. M.K. Plastics parts are built to be fully compatible with the original fan, using specific materials and tolerances. These parts carry a standard M.K. Plastics warranty.

A spare parts list can be obtained directly from your technical sales representative, or M.K. Plastics directly. When ordering replacement parts, specify the AXPR fan size, part name, M.K. Plastics part number, and bore size if related to the propeller. Some of this information is on a nameplate attached to the fan.

For assistance in selecting replacement parts, please contact your local M.K. Plastics representative.

Suggested replacement parts –

- Propeller
- Shutter
- Motor
- Wall box
- Safety screens
- Motor support

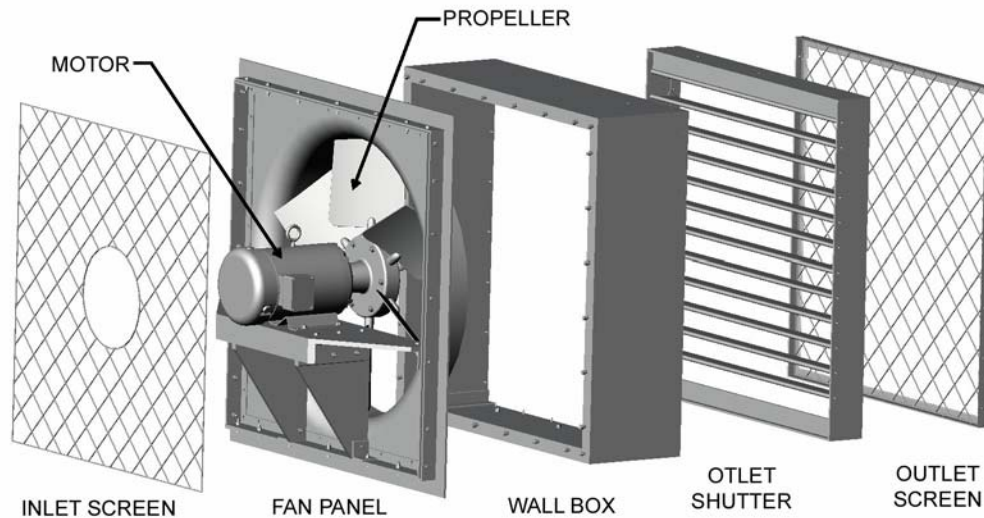


Fig. 3 – Exhaust Fan

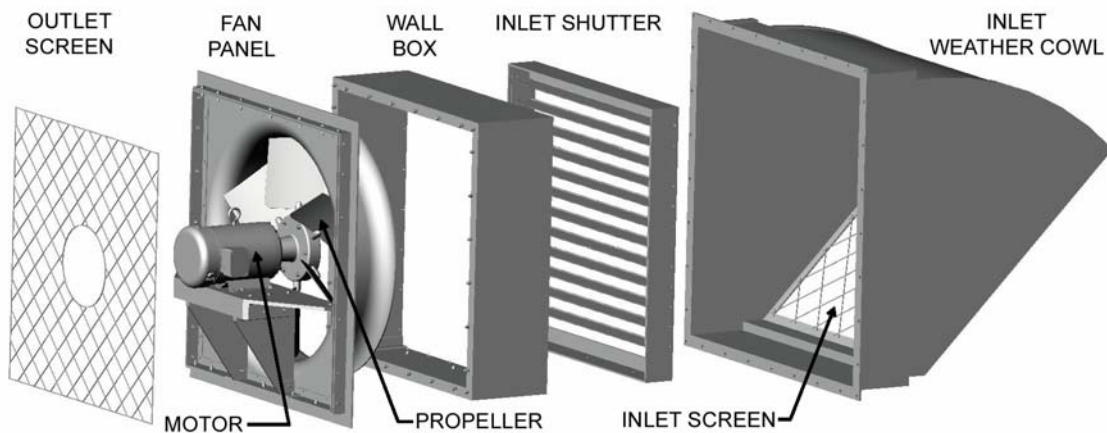


Fig. 4 – Supply Fan



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