Equipment Description
The Equipment furnished by The Airolite Company, LLC Company consists of moveable blade adjustable louvers, operators, and related components as required by the customer's architectural specifications. All louvers, operators, and components are supplied in strict accordance with the final approved drawings, and meet or exceed industry standards. Louver operator and component materials, finishes, etc., are of the highest quality available. When installed and maintained properly, in accordance with this manual, they will provide superior performance and longevity.

Storage Instructions
The louvers, operators, and components are shipped in semi-solid wooden crates, and should be left in the crate until ready for installation. Inside storage is preferable. If outside storage is required, the crates should be blocked up or otherwise elevated from the ground or pavement, and covered securely with waterproof coverings of plastic film. Wraps "Coverall" or “Visqueen” film sheeting is recommended as adequate protection, however, any plastic film waterproof sheeting of equal quality is acceptable. Louvers, operators, and components are not wrapped or protected from moisture or dirt within the wooden crates. If prolonged storage is anticipated, either inside or out in the weather, adequate steps should be taken to protect the units and their finishes. Handling to and from storage should be accomplished with the wooden crates intact. Physical damages, marred finishes, loss of loose parts and fasteners, and separation of specific components may occur if crates are dismantled and louver components removed to facilitate storage.

Installation Instructions *General Recommendations:*
1. Louvers and components should be left within their shipping crates until actual installation is imminent.
2. Use caution in handling crates, individual louver sections, components to avoid damage or loss of parts.
3. If cranes, hoists, or similar methods must be used to handle louvers into their designated wall openings, the use of nylon slings, or equal non-marring materials help guard against physical damage or finish marring.
4. ***Do Not Force the Louver into the Wall Opening.*** Adequate clearance has been allowed around all louver sides if wall opening dimensions are in accordance with the job use drawings provided. Forcing louvers into too small or out of square openings will result in physical damage
5. Louver frames shall be set plumb, square, level, in true alignment and securely anchored in accordance with the approved shop and contract drawings.
6. Refer to the proper job use drawing for each louver opening. Installation techniques and fasteners, set-back dimensions, and internal building conditions often vary from one louver opening to another, and the specific louver schedules reflect these differences.
7. Shimming louvers into the openings in the wall is highly recommended. Proper spacing of the louver in the wall assures a finished pleasing appearance, and allows for proper caulking or sealing around the louver perimeter. Shims may be removed after louver is secured into place or left within the openings if they are not detrimental to caulking, operation, or appearance.
8. Do not use fasteners in installations that are subject to electrolysis between louver and building materials.
9. After satisfactory installation is accomplished, care should be taken to prevent further materials such as mortar, tar products, etc., from coming in contact with louvers, components.

Installation Instructions *Adjustable Louver Operators:*
1. Follow the **General Recommendations** as given.
2. Check blade to blade linkage and connectors for smooth and unrestricted operation before installing final fasteners that secure louvers into opening. Obstructed operating mechanisms prevent proper louver operation, and shorten component life.
3. Use caution when installing fasteners into louver frames. Improper positions or wrong size fasteners can obstruct operator components.
4. For proper methods and recommendations relating to louver operator installation, refer to the approved drawings. Follow operator instructions enclosed with, or attached to, each individual operating mechanism. Louver frames shall be set plumb, square, level, in true alignment and securely anchored in accordance with the approved shop and contract drawings.
5. In the use of electrical motor operated louvers, do not turn motor shafts manually or with a wrench as damage to enclosed gear trains will result.
6. Do not exceed the specified power supply ratings on any type of louver operator. Excessive currents or over-pressured air supplies will result in operator damage. Follow manufacturer's directions for wiring and adjusting motor operators.
7. All wiring and piping must comply with applicable codes and ordinances.
8. Attach hand operator components in accordance with the approved drawings. Follow specified dimension and locations closely to insure proper operation.

Operating Instructions
Adjustable, or moveable blade louvers, are operationally controlled by the field installed controlling devices. Proper compliance with louver and operator specifications, and installation instructions, will result in satisfactory service. Care should be used in attempting to modify the louver operator mechanism, motor and linkage, or in any way altering the basic louvers as fabricated. The factory must be consulted for engineering details and information should any modification be contemplated. The placement of non-related equipment, on either the internal or external face of the louver, may hinder or obstruct the air flow patterns necessary for proper operation. Air volumes are directly related, and in proportion to, the unobstructed free face areas on both sides of the louver.

Maintenance Instructions
Adjustable or moveable blade louvers require very little maintenance to remain functional. The louver finish may be subject to deterioration dependant solely upon the environment in which louvers are installed. Appearance and longevity of the finish may be greatly extended by an occasional cleaning, the frequency of which, is again solely dependant upon the environment. Proper cleaning may be accomplished with the use of a light scrubbing action, used in conjunction with a good grade of common household mild detergent. Harsh acidic or caustic cleaners are not recommended. Under no condition should the louver or component finish be scrubbed with an abrasive cleaner or apparatus. Care should be used when cleaning adjustable louvers, to avoid the introduction of liquids on or into the electrical components and connections of the louver operator. Always disconnect the motor and control circuit before cleaning adjustable louvers. Operating louver components, accessible from outside the louver frame, should be periodically inspected and serviced as follows. Operating components built within the louver frame are designed and installed to function without further attention.

Bearing Pivots
Blade pivot bearings should be examined, cleaned, and lubricated when necessary. Frequency is solely governed by their working environment. An inspection once every six months, or more often as conditions warrant, will result in prolonged life for bearing components. Lubrication may be accomplished with conventional hand oil applicators, using a good common grade of SAE-10W-30, inserted directly into the bearings. Do not over oil as excess may overflow down the side frames of the louvers, causing unsightly dust collecting stains.

Vinyl Blade/Jamb Seals
Replacement conditions are the same as pertains to the bearing and pivot pins.

Blade Edge Gaskets
Blade edge gaskets or seals rarely require replacement if not physically damaged. Gaskets and seals are field replaceable. Should gasket or seal damage occur, contact the factory for proper replacement procedures. Be sure to refer to the specific order number and drawing involved.

Motor Connecting Rods and Swivels
Motor connecting rods require no maintenance if properly installed. Ball swivel joints should be examined from time to time to insure that they are tight enough to maintain their proper position on the motor connecting rods. Loose swivel joints will result in louver blades failing to open and close properly, and may wear into the motor connecting rod if allowed to slide on the rod. Ball swivel joints require no lubrication.

Motor Operator and Connections
The motor operator requires little, if any maintenance, once properly installed. Drive train and gear components are factory lubricated and sealed for life. Mounting fasteners and housing bolts should be checked for proper tightness, subject only to the amount of vibration within the building that they are subject to. Maintaining secure housings on motors prevent airborne dirt and dust from penetrating into the inner workings. Electrical connections should be checked periodically. Re-tighten any loose terminals, and examine wire insulation for bare or knicked spots. **Note: Always disconnect the operator and control wiring before attempting any maintenance to the electrical circuitry.** Air supply components, utilized in pneumatic louver operators, should be checked for proper pressure settings. Maintain air line filters and lubricators, where applicable, in accordance with the instructions enclosed with each operator. Pneumatic cylinder operators should be operated occasionally to maintain proper lubrication of cylinders and valves. **Note: Always disconnect electrical operators and close air supply valves before attempting any maintenance to pneumatic operator components.**

Hand Operator Components
Hand operators require little, if any maintenance, once properly installed. Gear and drive components are factory lubricated and sealed for life.

Inactivation Procedures
Adjustable, or moveable blade louvers, require minimal preparation for inactivation. It would be advisable to deactivate adjustable louvers in their closed position to deter building heat loss, airborne dirt penetration, etc., however, louvers may be left in the open position if conditions warrant. If inactivation periods cover extended periods of time, it would be advisable to examine bearing pivot lubrication prior to reactivating, and if louver blades are positioned closed, to disconnect or deactivate motor operator controls to prevent unwanted louver opening. No special steps are required for operators, motors, linkages, etc. Adjustable louvers are not adversely affected by periods of inactivity.

Troubleshooting Procedures
Adjustable, or moveable blade louvers, require no special troubleshooting procedures if properly installed and maintained. Complete checkout steps for operators and related mechanical linkage assemblies are enclosed with, or attached to, each operator.

Parts List
Adjustable, or moveable blade louvers have very few, if any field replaceable parts, depending upon the design model specified. Should louver damage occur, contact the factory for specific recommendations.

Operators and Parts
Louver operators and related parts are generally field replaceable if necessary. Refer to the specific type operator involved when ordering replacements

Component Parts
Component parts included with the louvers such as screens, mullions, and fasteners, are field replaceable if damaged or lost. Refer to the specific louver drawings when ordering component parts, for exact size and quantity required. **Note: All field replaceable parts are standard items available from The Airolite Company, LLC. Substitution of parts is not considered good practice, and may result in damage or failure to louvers and operators.**

Recommended Spare Parts
Customer maintained spare parts must be determined by the nature of how critical the louver function is to the continued operation of related equipment or processes. Lead times involved for certain operator components may necessitate longer than desirable down-times of user processes, which can be prevented by maintaining a spare operator(s) in-house for immediate installation. Airolite's engineering staff can readily advise you on the appropriate types and quantities of spare parts recommended for your particular facility and application. Always refer to the specific order an drawing number involved when inquiring about spare parts.

Special Tools and Instruments
No special tools or instruments are required to install or maintain the louvers furnished and covered by this manual. Specific parts or components, shipped unattached from the louvers for field installation, are shown on individual louver drawings for field installers usage.