

# REPAIR KIT INSTALLATION INSTRUCTIONS

## FOR AP-1 AND AP-2 MODELS

This is the hazard emblem: ✖ When you see this symbol, be aware that personal injury or property damage is possible. The hazard is explained in the text following the symbol. Read the information carefully before proceeding.

The following is an explanation of the three different types of hazards:

- ✖ **DANGER** Severe personal injury or death will occur if hazard is ignored.
- ✖ **WARNING** Severe personal injury or death can occur if hazard is ignored.
- ✖ **CAUTION** Minor injury or property damage can occur if hazard is ignored.

### GENERAL INFORMATION

**This pump is designed to be used for the purpose of pumping air. The pump should not be used for the pumping of fluids, particles, solids, or any substance mixed with air, particularly combustible substances likely to cause explosions.**

- ✖ **DANGER** Do not pump flammable or explosive gases or operate the unit in an atmosphere containing them.
- ✖ **WARNING** The exhaust air of this pump can become very hot. Do not direct exhaust air towards property that is temperature sensitive.
- ✖ **CAUTION** The pump is designed for pumping air. Do not allow corrosive gases or particulate material to enter the pump. Water, oil-based contaminants, or other liquids must be filtered out.
- ✖ **CAUTION** Normal ambient temperature should not exceed 40 degrees C (104 F).

Performance is reduced by low atmospheric pressure found at high altitudes.

**Never lubricate this oil-less pump.** Most components are made of aluminum and the valves are stainless steel.

### INSTALLATION

- ✖ **WARNING** To avoid risk of electrocution do not use this product in an area where it could come in contact with water or other liquids. If exposed to the elements it must be weather protected.
- ✖ **CAUTION** Do not block the flow of cooling air over the pump in any way.

### MOUNTING THE PUMP

The pump may be installed in any orientation as long as the flow of cool, ambient air over the pump is not blocked. To reduce noise and vibration, use shock mounts and affix to a stable, rigid operating surface.

- ✖ **CAUTION** Remove the plastic plugs in the intake and exhaust ports before operating unit.

### PLUMBING

To prevent air flow restriction, use pipe and fittings that are the same size or larger than the threaded ports of the pump. NOTE: Be sure to connect the intake and exhaust plumbing to the correct inlet and outlet ports.

### ACCESSORIES

Filters and mufflers are supplied on some models. Check periodically and replace when necessary. For best results, install relief valves and gauges at the inlet or outlet, or both, to monitor performance.

### WIRING

- ✖ **WARNING** Incorrect wiring can result in electric shock. Wiring must conform to all required safety codes and be installed by a qualified person. Grounding is required for all AC models. All power to the motor must be de-energized and disconnected before servicing.
- ✖ **CAUTION** Metal capacitor shell must contact a grounded surface. Electrical shock can result from touching ungrounded capacitor.

**Refer to the wiring tag supplied with the unit, for diagram and capacitor option.** For any DC unit - red lead goes positive side of power source.

### ELECTRIC MOTOR CONTROL

The motor must be protected against short circuit, overload and excessive temperature rise. Fuses, motor protective switches and thermal protective switches provide the necessary protection in these circumstances. Fuses only serve as a short circuit protection of the motor (wiring fault). Fuses in the incoming line should be chosen so as to be able to withstand the starting current of the motor, not as a protection against overload. Motor starters, incorporating thermal magnetic overload or circuit breakers protect the motor from overload or reduced voltage conditions. Selection of the correct overload setting is required to provide the best possible protection.

## OPERATION

- \*WARNING** Solid or liquid material exiting the unit can cause eye or skin damage. Keep away from air steam.
- \*WARNING** Always disconnect the power before servicing. The motor may be thermally protected and will restart automatically when it cools if the thermal protection switch is tripped.
- \*WARNING** Do not operate without the grille(s), if provided, in place. Failure to do so could result in severe personal injury.
- \*WARNING** The head surface(s) can be very hot depending on pump duty and speed. Do not touch these parts during operation.
- \*CAUTION** Do not operate units above recommended pressures or vacuum duties. To do so will damage the unit.

## STARTING

- \*CAUTION** Do not start against vacuum or pressure load.

If the pump is extremely cold, let it warm up to room temperature before starting. If the pump does not operate properly, see the troubleshooting guide below. **NOTE:** Some of these models may exceed 70dB(A). When in close proximity to these models hearing protection is required. Refer to Technical Data Sheet for specific model(s).

## MAINTENANCE AND INSPECTION

Intake filter and mufflers require periodic inspection and replacement. Initial inspection is suggested at 500 hours, then the user should determine the frequency thereafter. Most problems can be prevented by keeping filters and mufflers clean. Dirty filters and mufflers decrease pump performance and can decrease pump life.

## FILTER INSPECTION AND REPLACEMENT

The head surface(s) on some models can be very hot during operation. Do not touch these parts until the pump has been turned off and allowed to cool. Some filter element(s) are held together by a snap fit. Remove the cover to replace the felt, and reassemble.

## SHUTDOWN PROCEDURES

Proper shutdown procedures must be followed to prevent pump damage. Failure to do so may result in premature pump failure. Air Pump compressors are constructed of ferrous metals and aluminum which are subject to rust and corrosion when pumping condensable vapors such as water.

Follow the steps below to assure correct storage and shutdown between use:

1. NEVER oil this non-lubricated pump.
2. After using the pump, disconnect plumbing and allow the pump to run "open" for at least 5 minutes before shutdown. It is now ready for shutdown or storage.
3. Plug the open ports to prevent dirt or other contaminants from entering the pump.

## SERVICE KIT INSTALLATION

1. Disconnect the pump from the electrical power.

- \*WARNING** You must disconnect the pump from electrical power before servicing it. Failure to do so can result in severe personal injury or death.

2. Vent all air lines to the pump to remove pressure.

- \*WARNING** You must vent all air lines to the pump to remove pressure before servicing it. Failure to do so can result in severe personal injury.

3. Remove head bolts .
4. Remove gasket, head, and valve plate assembly. (Note orientation of head assembly for re-assembly).
5. Carefully remove cylinder and shims (Be sure to replace all shims, as they are matched to the cylinder and rod assembly height dimensions).
6. Remove two phillips screws on the retainer plate (may require heat to break adhesive on the retainer screws) and discard old cup.
7. Clean residue from cylinder walls with soft cloth using a non-petroleum, non-oil based solvent. DO NOT use kerosene, gasoline, or any flammable substance.
8. Reinstall cylinder and shims at this time. If replacing a damaged cylinder with a new cylinder, order Shim Replacement Kit incase cylinder height may need to be adjusted. (Shim Replacement Kit includes 4 various size shims).
9. Place retainer plate in new cup and push both down into the cylinder.
10. Install O-ring into groove of cylinder.
11. Install valve plate, head gasket (note gasket orientation), and head, on cylinder so ports are in their original orientation. Install and snug all head bolts and then torque to 80 in. lbs.

**NOTE:** Before putting the pump into service, ensure that any external accessories such as relief valves and gauges attached to the head have not been damaged.