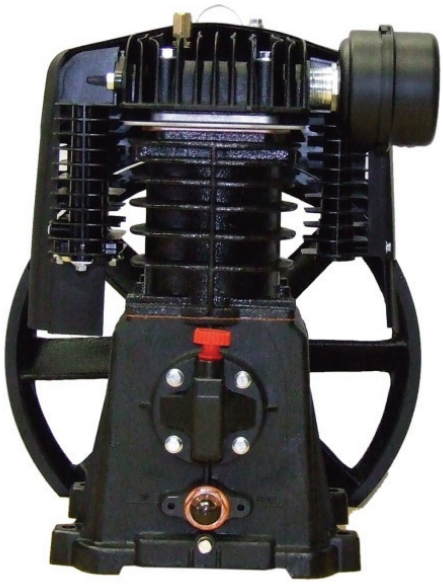
Pump Owner's Manual

PLEASE! Read All Instructions Carefully
Before Installing Pump



ROLAIR
SYSTEMS

Guarantee

Associate Engineering Corporation warrants that pumps purchased from them will be free of defects in material and workmanship for a period of twelve months from date of purchase. Misuse or improper maintenance will unconditionally void any warranty or claims compensation. Defective pumps must be returned to the factory for proper evaluation. Unauthorized repairs or claims without prior factory approval may be denied.

Associate Engineering Corporation shall in no event be liable neither for any consequential, incidental or special damages nor for the improper selection of any pump for a particular application.

WARNING

COMPRESSOR DISCHARGE AIR MAY CONTAIN HYDROCARBONS AND OTHER CONTAMINANTS! DO NOT USE DISCHARGE AIR FOR BREATHING!

Definitions – Safety Warnings

Safety symbols are used throughout this manual to alert you to potentially hazardous situations. The following definitions describe the level of severity for each signal word.

DANGER:	Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.
WARNING:	Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.
CAUTION:	Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury or damage to the air compressor.

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606 South Lake Street > P.O. Box 346 > Hustisford WI 53034-0346 > **920.349.3281** > Service Fax 920.349.8861

⚠ WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

SAFETY WARNINGS

READ AND UNDERSTAND ALL SAFETY WARNINGS BEFORE USING AIR COMPRESSOR

Hazard Level	Potential Hazard	How to Avoid Hazard
 **Risk of Asphyxiation**	Serious injury or death may occur from inhaling compressed air. The air stream may contain carbon monoxide, toxic vapors or solid particles.	Never inhale compressed air directly from the pump, receiver, or from a breathing device connected to the air compressor.
	Sprayed materials such as paint, stucco, insecticides, solvents, etc., contain harmful vapors and poisons that may cause serious injury or death if inhaled.	Operate compressor only in a well-ventilated area. Use a respirator device and follow the manufacturer's recommendations for their spray equipment. Keep compressor at least 25 feet away from spray equipment.
	Serious injury or death may occur if the exhaust from gas-powered small engines is inhaled. Engine exhaust fumes contain poisonous, carbon monoxide which is odorless and colorless.	Operate gas-powered compressors only in a well-ventilated area. Avoid inhaling engine exhaust fumes, and never run a small gas-powered engine in a closed building or confined area without adequate ventilation.
 **Risk of Bursting**	Serious injury or death may occur from an air tank explosion if the air tanks are not properly maintained or if modifications, alterations or repairs are attempted to the air receivers.	Drain air tanks daily or after each use. Never drill into, weld, patch or modify the air tanks. If a leak develops, replace the tank immediately or replace the entire compressor.
	Serious injury or death may occur if modifications are made to the pilot unloader valve, pressure switch, safety relief valve or other components that control the tank pressure.	Never make adjustments to the components that control tank pressure. Do not make alterations to the factory operating pressure settings. Check operation of the safety valve on a regular basis and never operate without a factory approved safety valve.
	Serious injury may occur if accessories or attachments are operated above the manufacturer's recommended pressure ratings, causing them to explode or fly apart.	Do not use air tools or attachments before reading the owner's manual to determine the maximum pressure recommendations. Never exceed the manufacturer's maximum allowable pressure ratings. Do not use compressor to inflate small low pressure objects such as toys.
  **Risk of Electrocution or Electrical Shock**	Serious injury or death could occur if the air compressor is not properly grounded.	Always plug compressor into a properly grounded outlet which provides correct voltage, proper grounding and adequate fuse protection.
	Electrical shock may occur if compressor is not properly operated.	Never operate air compressor in wet conditions or outdoors when it's raining. Do not allow electric cords to lay in water. Do not operate with damaged power cord or with protective electrical covers removed. Do not touch plug with wet hands. Do not pull on electric cord to disconnect from the outlet.
	Serious injury or death may occur if electrical repairs are attempted by unqualified personnel.	Any electrical repairs or wiring performed on this compressor should only be performed by authorized service personnel in accordance with the National and Local Electric Codes.
Risk of Explosion or Fire  	Serious injury or death may result from normal electrical sparks that occur within the motor and/or pressure switch.	Always operate compressor in a well-ventilated area free of combustible materials, gasoline, flammable solvents or vapors. Always locate compressor at least 20 feet away from work area if spraying flammable materials.
	Serious injury may occur if a fire is caused by overheating due to inadequate ventilation or restrictions to any of the compressors ventilation openings.	Never place objects against or on top of an air compressor. Always operate air compressor at least 18" away from any wall or obstruction. Always operate in a clean, dry and well-ventilated area.
	Serious injury or death may occur from a fire or explosion if spilled gas or vapors come in contact with hot engine parts and ignite.	Never attempt to fill the gas tank while the engine is hot or running. Add fuel outdoors in a well-ventilated area. Do not fill gas tank near lit cigarettes or near other sources of ignition.

SAFETY WARNINGS (con't)

 **Risk from Moving Parts**	Serious injury may occur from moving parts such as belts, pulleys, flywheels or fans if they came in contact with you or your clothing.	Never operate the air compressor without protective belt guards installed. Replace damaged protective covers or guards immediately.
	An electric air compressor with automatic controls can restart at any time and cause bodily injury when least expected.	Always unplug air compressor and drain air tanks completely before attempting any repairs or performing maintenance. Never allow children or adolescents to operate air compressor.
	Serious injury may occur if repairs are attempted with damaged, missing or removed protective guards, shrouds or missing covers.	All repairs to the air compressor should be made only by authorized or trained service personnel.
 **Risk of Burn**	Serious burn injuries could occur from touching exposed metal parts such as the compressor head, copper/braided discharge lines and engine exhaust muffler during operation, and even after compressor is shut down for sometime.	Never touch any of the exposed metal parts during operation and for an extended period of time after the air compressor has shut down. Do not attempt maintenance on the unit until it has been allowed to completely cool.
 **Risk of Injury from Lifting**	Serious injury can result from attempting to lift an object that is too heavy.	Always obtain assistance from others before attempting to lift any object that is too heavy for one person.
 **Flying Objects**	Serious injury may occur from loose debris being propelled at high speeds from the compressed air stream.	Always wear OSHA required "287" safety glasses to protect the eyes during operation of the air compressor. Never point the air stream or tools at any point of your body, other people or animals. Always turn off the air compressor and drain tank pressure completely before attempting maintenance or attaching air tools.
 **Warning** **Risk of Unsafe Operation**	Serious injury or death may occur to you or others if air compressor is used in an unsafe manner.	Review and understand all instructions and warnings in your owner's manual. Know how to stop the air compressor. Do not operate until you are thoroughly familiar with all of the controls. Do not operate the compressor if fatigued or under the influence of alcohol or drugs. Stay alert while operating the compressor and pay close attention to the task at hand.
 **Caution** **Risk of Damage to Air Compressor or Property**	Failure to transport or operate the air compressor properly may result in major repair expenses. Oil leaks will damage carpets, painted surfaces, flooring and other items.	Check oil levels daily and maintain proper oil levels. Always run compressor in a level, secure position that keeps it from tipping or falling during use. Do not operate without an air filter or in a corrosive environment. Always transport in a level position and use protective mats to keep truck beds clean, etc. Check drain bolts regularly and do not overfill machinery with oil.

Please note that this product may not be equipped with a spark arresting muffler. If the compressor is operated around flammable materials or agricultural crops, brush, forests, and grasslands an approved spark arrestor must be installed, maintained and in good working order. An approved spark arrestor is legally required in the State of California under sections 4442 and 4443 of the California Public Resources Code Statute section 130050.

This product contains chemicals, including lead, known to the state of California to cause cancer, birth defects, and other reproductive harm. Always wash hands after handling this product.

PUMP SPECIFICATIONS

	MK103	MK113	BK119	PT03A
Horsepower Rating (Electric)	1.5 - 3.0	2.0 - 4.0	5.0 – 7.5	3.0 – 5.0
Weight (lb.)	18.1	31.1	58.8	59.6
(kg.)	8.3	14.1	26.5	27.0
Flywheel O.D. (in.)	9.9	12.0	14.9	10.7
(mm.)	251.4	305.0	398.0	271.8
RPM (min.)	900	900	900	900
(max.)	1400	1400	1400	1400
Max Pressure (PSI)	145	145	175	145
Bore & Stroke (in.)	2.56 x 1.57	2.56 x 2.28	4.13/2.05 x 3.10	2.50 x 1.875
(mm.)	65.0 x 40.0	65.0 x 58.0	105.0/52.0 x 78.0	63.5 x 47.6
CFM Free Air (1200 RPM)	8.0	12.0	23.0	18.0
dB-A	79	78	80	79
Oil Capacity (ounces)	17	30	45	24
(liters)	.50	.90	1.33	.70

Unpacking Instructions: Check for damaged parts. DO NOT install pump if any parts are damaged or missing. Parts included with pump: Flywheel, Filter, Dipstick / Breather, Oil Sight Gauge. This pump is not shipped with oil! ***YOU MUST ADD OIL*** to the pump before operating.

Belts: Install belts on compressor and motor pulleys. Belt tension should be adjusted to allow 3/8" to 1/2" deflection with normal thumb pressure.

Drive Pulleys: Drive pulleys must be properly aligned and belt drive tension set to specifications. Improper pulley alignment and belt tension may cause motor overloading, excessive vibration and premature belt and/or bearing failure. As the compressor starts, check the rotation of the flywheel. The direction of the rotation must be counter-clockwise when facing the flywheel. Should the rotation be incorrect, disengage the power supply and check the motor wiring.

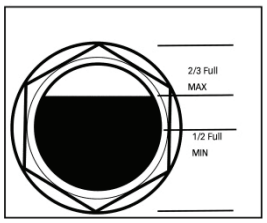
SPECIAL NOTE: Pump flywheel bolt has left-handed thread and tapered shaft. Remove nut by turning clockwise.

To determine the correct motor pulley, use the following formula:

$$\text{Motor Pulley} = \frac{\text{Flywheel O.D.} \times \text{Compressor RPM}}{\text{Motor RPM}}$$

Belt Guards: Belt guards should be designed to achieve the required degree of protections and still allow full air flow from the compressor sheave across the unit. When the compressor is installed, make sure the guard side is at least 18" away from a wall to provide adequate cooling of the motor and pump. IMPORTANT: DO NOT RUN COMPRESSOR WITHOUT BELT GUARD INSTALLED.

Lubrication: Prior to daily operation, make a habit of checking the oil level in your compressor pump. A sight gauge on the outside of the pump's crankcase is provided to make the job easier. ALWAYS maintain the oil level to read 2/3 full on the sight gauge. Oil levels over this amount will result in oil blowing past the rings or through the crankcase breather. Lower amounts of oil will result in insufficient lubrication of moving parts.



Reciprocating air compressor pumps will consume a certain amount of oil under normal operation. If you are concerned about your oil consumption, monitor and record oil consumption daily and consult you local dealer. When filling your crankcase with oil, be sure to use a single viscosity, non-detergent oil blended specifically for air compressor use (consult chart below). ***DO NOT USE A DETERGENT OIL!!*** **IMPORTANT: All models are splash lubricated by means of dippers on the connecting rods. The pump MUST be operated in a level position for proper lubrication.**

TEMPERATURE				
Fahrenheit Celsius	0°-32°F -17°-0°C	32°-55°F 0°-13°C	56°-100°F 14°-38°C	-10°-115°F -23°-47°C
Non-Detergent Air Compressor Oil *	10 WT	20 WT	30 WT	Synthetic Oil

*A suitable air compressor oil has additives to reduce wear, eliminate foaming and prevent carboning.

Maintenance: Regular maintenance insures trouble-free operation. Your new pump represents the finest engineering and construction available. However, even the finest machinery requires periodic maintenance. A good maintenance program will add years of service to your air compressor. The following is recommended as a minimum maintenance program. For your protection, disconnect power supply after each day's operation **and drain air from system before performing any maintenance.**

Break-In Period: Your new pump does not come filled with oil. By using the chart below, select the type of oil that best fits your application:

Important: Replace the oil after the first 50 hours (2 weeks) of operation. Re-torque the head bolts after the first 200 hours (4 weeks) of operation.

MAINTENANCE SCHEDULE	
DAILY	1. Check oil level and fill as needed.
EVERY 2 WEEKS OR 100 HOURS	1. Repeat daily procedure. 2. Replace oil after first 50 hours of operation. 3. Check drive belt and adjust if necessary. 4. Retorque pump head bolts (see chart below)
MONTHLY OR 200 HOURS	1. Repeat above procedures. 2. Change compressor oil. 3. Check for air and oil leaks and correct. 4. Tighten all hardware.
ANNUALLY OR 2000 HOURS	1. Repeat above procedures. 2. Check the valves in compressor and replace if damaged or worn.

TORQUE CHART				
PUMP NUMBER	MK103	MK113	BK119	PT03A
HEAD BOLTS	26 NM (19 ft/lb)	27 NM (20 ft/lb)	45 NM (33 ft/lb)	23 NM (17 ft/lb)
CYLINDER BOLTS	24 NM (18 ft/lb)	24 NM (18 ft/lb)	24 NM (18 ft/lb)	15 NM (11 ft/lb)
BEARING CARRIER BOLTS	8 NM (6 ft/lb)	8 NM (6 ft/lb)	25 NM (19 ft/lb)	15 NM (11 ft/lb)
CONNECTING ROD BOLTS	N/A	N/A	N/A	23 NM (17 ft/lb)
FLYWHEEL BOLT	28 NM (21 ft/lb)	28 NM (21 ft/lb)	28 NM (21 ft/lb)	23 NM (17 ft/lb)

TROUBLESHOOTING & SOLUTIONS

Problem	Possible cause	Corrective Action
Knocking	1. Lack of oil in crankcase 2. Worn piston pin 3. Worn main bearings 4. Worn connecting rod 5. Excessive crankshaft end play 6. Piston hitting head due to foreign matter/carbon deposits.	1. Add oil 2. Replace pin 3. Replace bearings 4. Replace inserts or rod assembly 5. Consult dealer 6. Inspect, repair or replace valves & pistons
Low Discharge Pressure/ Pumps Slowly	1. Air leaks 2. Broken or dirty valves 3. Restricted air intake 4. Blown gaskets 5. Defective gauges 6. Pump too small for application	1. Check system for air leaks 2. Replace or clean valves and valve plates 3. Replace filter element 4. Replace gaskets 5. Replace gauges 6. Consult dealer
Excessive Oil Consumption	1. Restricted or dirty air filter 2. Crankcase is over-filled with oil 3. Worn piston rings	1. Clean or replace air filter 2. Drain oil and refill to proper lever 3. Consult dealer
Overheating Pump	1. Poor ventilation 2. Dirty cooling surface 3. Restricted air intake 4. Low oil lever 5. Dirty or defective reed valve	1. Move pump to allow for better ventilation 2. Clean pump 3. Replace filter 4. Add non-detergent, single viscosity oil 5. Clean valve plate and replace valves
Oil in the Discharge Air	1. Worn piston rings 2. Pump air intake restricted 3. Restricted crankcase breather 4. Excessive oil in pump 5. Wrong oil viscosity	1. Replace piston rings 2. Replace filter 3. Clean crankcase breather 4. Check gauge and adjust to proper oil level 5. Drain and replace with non-detergent, single viscosity oil
Water in Crankcase	1. Pump does not run long 2. Pump too large for application	1. Consult dealer 2. Consult dealer