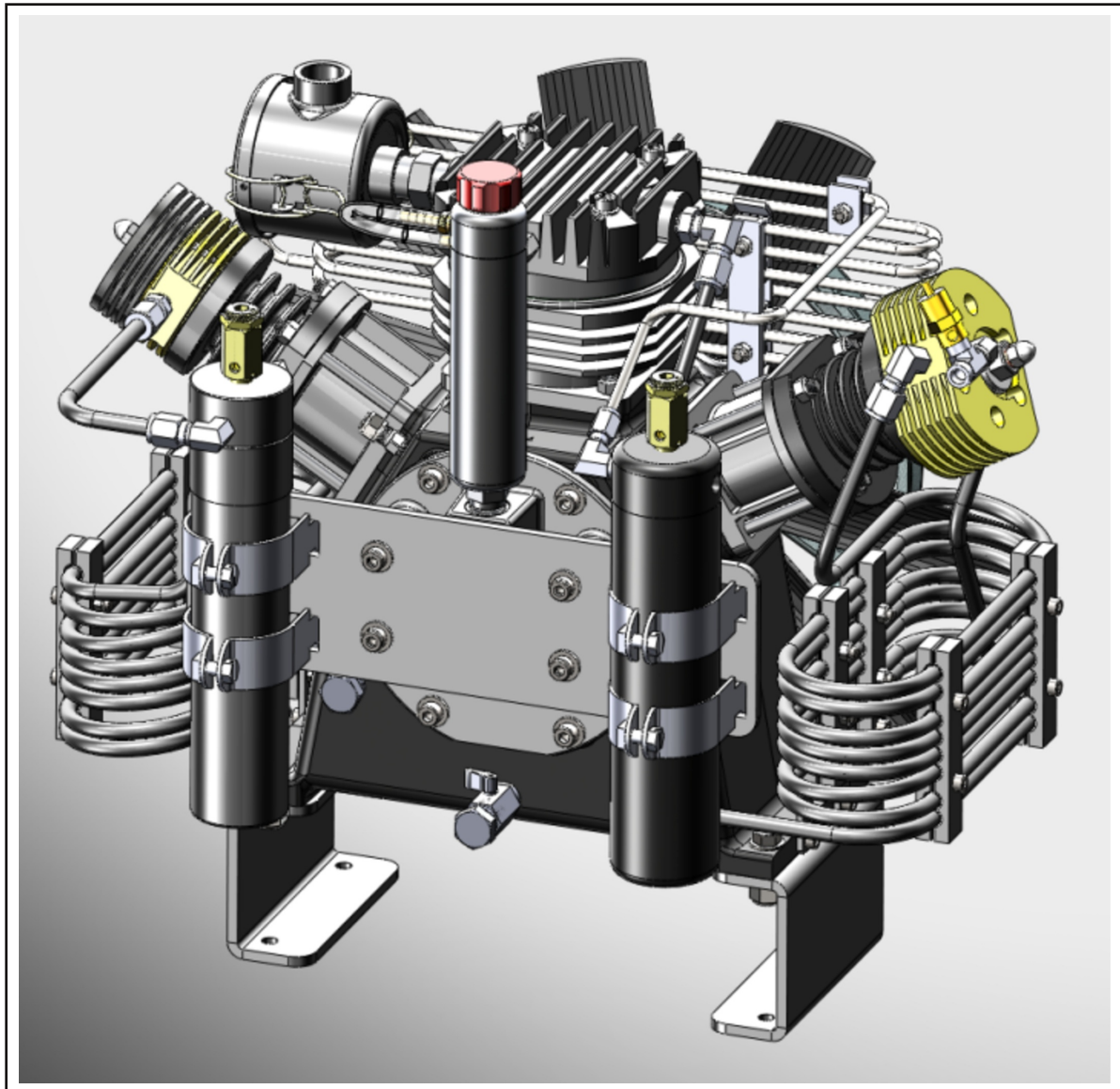




ARCTIC
COMPRESSOR

ARCTIC 1000/1060
COMPRESSOR
MANUAL



1 Safety Information

1.1 General safety warnings.

- **READ THE MANUAL BEFORE INSTALLING AND/OR OPERATING THE COMPRESSOR!**
- Be sure to read and follow all OSHA, NEMA, ASME and local regulations, laws and codes pertaining to the installation and operation of this compressor and accessories before operating this unit.
- Be sure to follow all recommended maintenance procedures outlined in this manual. Maintenance is simple, but must be executed regularly to achieve safe operation, maximum efficiency and long service life.
- The unit must be installed, operated, maintained and repaired only by authorized, trained and qualified personnel.
- Do not operate this unit in excess of its rated capacity, pressure, or temperature. Operation of this unit in excess of the conditions set forth in this manual will subject the unit to limits which it may not be designed to withstand.
- Do not play with compressed air. Pressurized air can cause serious injuries. Cylinders filled with high pressure air should not be dropped or allowed to bump into other solid objects.
- The operator is responsible for keeping the machine in safe operating condition. If parts and accessories are not considered to be reliable for safe operation, they must be replaced immediately.
- Periodically check all safety devices, temperature and pressure gauges to make sure the system is operating within the proper limits.
- Keep the operating manual available for the operators, and take care that operation and maintenance are performed according to the instructions. Enter all operating data, executed maintenance measures, etc. in a log. Observe all relevant safety provisions.
- Failure to follow any of these warnings may result in an accident causing personal injury or property damage.
- The use of repair parts other than those provided by Arctic Compressors and approved vendors may create hazardous conditions over which Arctic Compressors has no control. Such hazardous conditions can lead to accidents that may be life threatening, cause substantial bodily injury and/or result in damage to the equipment. Therefore, Arctic Compressors can bear no responsibility, for equipment in which non-approved repair parts are installed.
- The use of plastic pipe or rubber hose in place of stainless steel tube, or failure to insure system compatibility of flex joints and flexible hose may result in mechanical failure, property damage, and serious injury or death.

1.2 SPECIFIC WARNINGS – The following instructions must be followed to prevent serious injury or death.

- **DO NOT OPERATE THIS EQUIPMENT WITHOUT SAFETY GUARDS IN PLACE.**

- Make sure that maximum pressures are not exceeded.
- Fittings should never be adjusted while under pressure.
- Damaged fittings should never be used. Tubing with nicks or worn areas should never be used and should be replaced immediately.
- Damaged or bent tubing should not be repaired or straightened. It should be replaced immediately.
- Do not adjust the relief valves. The valves are specially set for the safety of the particular components.
- Before servicing or inspecting the compressor block, the electrical power supply must be disconnected.
- Suitable tubing, fittings, air receivers, storage tanks, and final stage relief valve must be utilized to accommodate the pressure produced by the compressor.
- Make sure that the air intake is receiving clean, dry air.

2 General Description

The Arctic Model 1000 series compressors are intended to supply air for any application requiring 2000 - 6000 psi. Air delivery rates range from 5 - 9 CFM.

The Model 1000 series compressors are a compact 3-stage air compressor, designed with high velocity composite fans and aluminum inter-coolers to provide a reliable source of high pressure air in most operating environments.

3 Setup

3.1 Unpacking

Upon receipt of the compressor, remove the packing material and inspect for damage. Contact the shipper immediately upon any sign of problems.

3.2 Site location

The compressor should be located in an area with adequate ventilation. The area should be fairly clean so dust and dirt will not gather on the cooling coils or in the air intake filter, impairing proper operation of the equipment. The air intake must be placed where no toxic or unpleasant fumes are present. The air must be free from exhaust fumes, noxious gases and cleaning fumes. We recommend an outside air intake wherever possible. Temperature range of the room must be above 45° F (7° C) and below 105° F (40° C).

3.3 Outside air intake

An outside air intake can be installed as follows (see diagram)

1. Choose a location that is reasonably near the compressor and that is always low in possible contaminants.
2. Plan the pipe routing

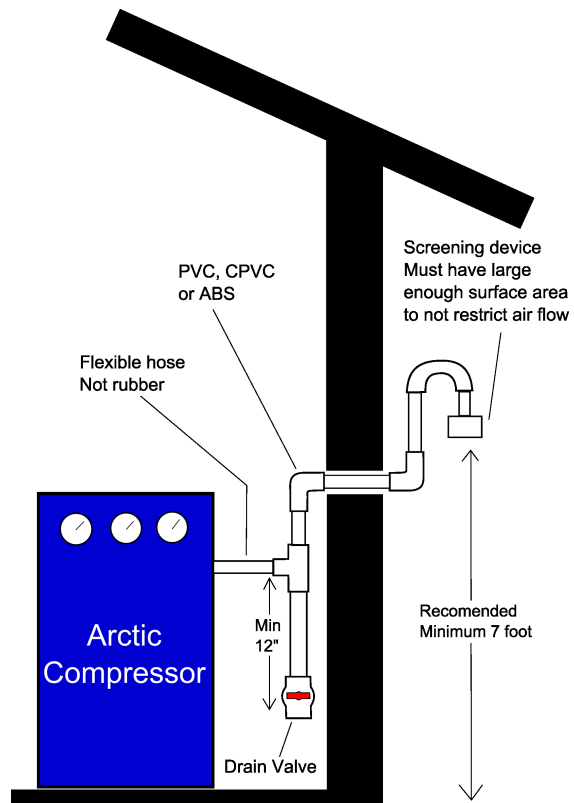


Figure 3.1: Outside Air Intake

3. Choose pipe size: For runs of 10 feet or less use 1 1/2" PVC pipe. For runs over 10 feet, add 1/4" diameter for each additional 10 feet or portion thereof or for each 90 degree elbow.

NOTE: The entire length of pipe should be the same diameter. It is essential that measures be taken to preclude any water ingestion.

3.4 Electrical requirements

Horse Power	Phase	Voltage	Service Amperage
5	1	220V	30 AMP
5	3	220V	20 AMP
5	3	480V	10 AMP
7.5	1	220V	40 AMP
7.5	3	220V	30 AMP
7.5	3	480V	15 AMP

Table 3.1: Power Requirements

3.5 Start up procedure

3.5.1 Before starting the compressor

- Check that there are no obstructions to the fan blades, drive belt, or air intake
- Check the oil level and add if necessary. (6.1)
- Check the CO/moisture indicator if present.
- Check the level of water in the auto drain discharge container if present.

3.5.2 Press the start button

- Check the direction of rotation (CCW from flywheel side)
- Stop the compressor immediately if it is going the wrong way.
- If compressor is equipped with inner-stage pressure gauges, check that gauges indicate normal operating ranges. See table in technical specifications.

3.5.3 Initial break-in running

- When running for the first time, run the compressor for ONE hour and then turn it off.
- Let the unit rest for 1/2 hour before starting again.
- Repeat this for the first 5 hours of operation.

4 General Information

4.1 Airflow Diagram

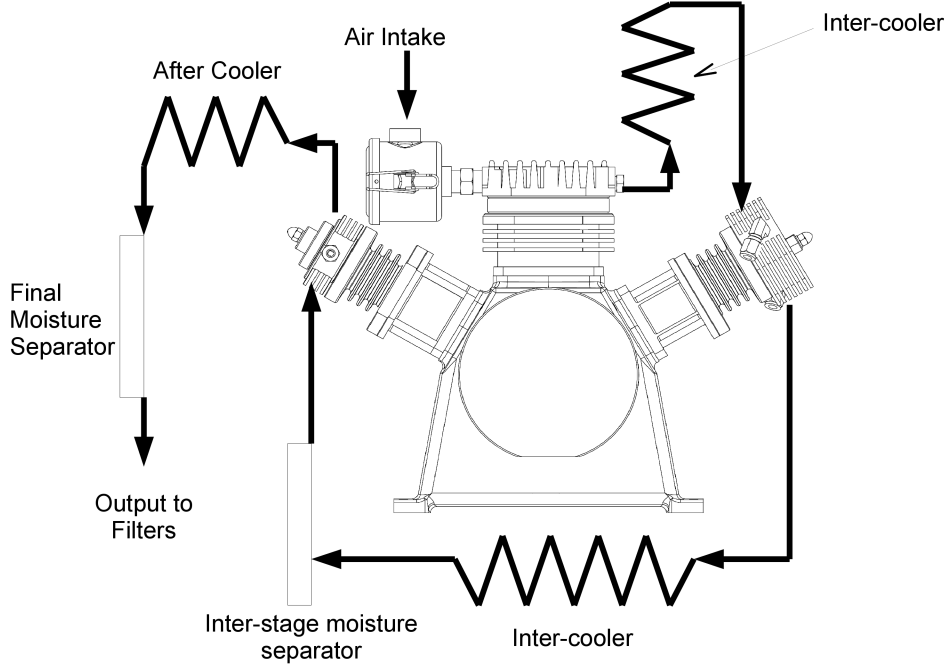
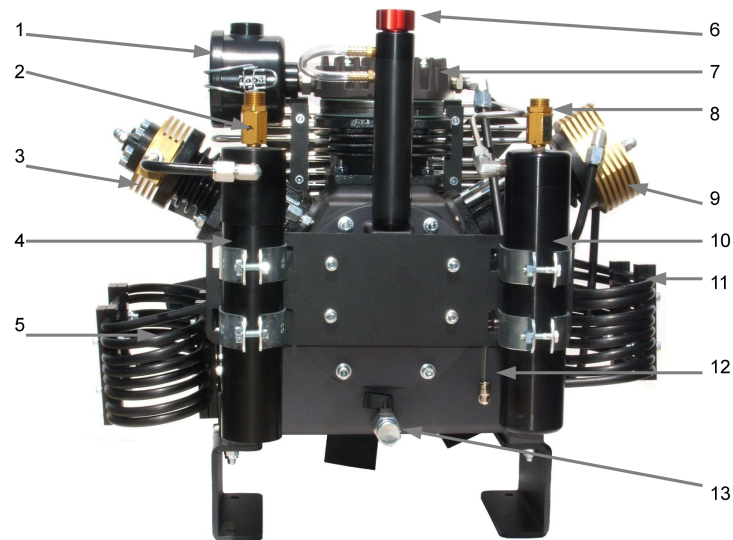


Figure 4.1: Air Flow Diagram

4.2 Block Layout



Item Number	Description
1	Air Intake Filter Housing
2	Second Stage Relief Valve
3	Third Stage
4	Inner-stage Moisture Separator
5	Second Stage Inner-cooler
6	Oil Cap
7	First Stage
8	Final Relief Valve
9	Second Stage
10	Final Moisture Separator
11	First Stage Inner-cooler
12	Oil Level Sight Tube
13	Oil Drain Valve

Figure 4.2: Component Identification

5 Operation

5.1 Filling a cylinder

1. Connect fill hose to cylinder to be filled.
2. Open the line valve on the fill hose
3. Assure that the bleed valve is closed

4. Open the valve on the cylinder to be filled
5. Turn on compressor
6. When cylinder is full, compressor equipped with pressure switch will shut off automatically. If compressor is not equipped with pressure switch, turn compressor off.
7. Close cylinder valve
8. Close the line valve on the fill hose
9. Open the bleed valve to allow line pressure to escape.
10. Disconnect cylinder.

5.2 Operation of drain system

If compressor is equipped with a manual drain system each drain tap should be opened approximately every 20 minutes of run time to drain moisture build up. If compressor is equipped with an automatic drain system, a timer will activate a drain cycle ever 15-20 minutes. It is common for the condensate to have a milky color and contain a small amount of oil. If a large amount of oil is present compressor should be serviced by a trained technician.

6 Maintenance

6.1 Maintenance Schedule

Maintenance	Each Fill	Daily	Every Year	25 hr	125 hr	250 hr	500 hr	1000 hr	3000 hr
Check Oil Level		X							
Check condensate container		X							
Check auto drain system		X							
Check CO/Moisture Indicator		X							
First Oil Change				X					
Change Oil			X			X			
Air intake filter					Rotate		X		
Check Fittings & Hoses for leaks			X			X			
Check V-belt tension			X			X			
3rd stage valve replacement							X		
1st and 2nd stage valve replacement								X	
Moisture separator replacement									X
Filter housing replacement									X

Table 6.1: Maintenance Schedule

6.2 Checking The Oil Level

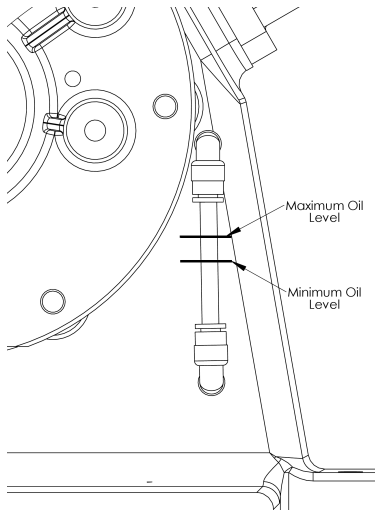


Figure 6.1: Oil Fill Level

The compressor oil level must be checked daily. The oil level must be between the minimum and the maximum shown on the oil level indicator (6.1).

If the oil level is below the minimum level: - open the oil fill cap (4.2); - add oil until the level returns the maximum limit; - Pour slowly and check level frequently while filling. Oil levels can register slowly when filling. Be careful not to overfill. - close the top-up plug (ref).

If the oil level is above the maximum level: - position a pan under the oil drain (4.2); - remove the plug and open the $\frac{1}{4}$ turn drain valve. Let the oil flow out until the oil level returns within the max. and min. limits; - close the drain valve and replace the plug.

This compressor produces a considerable amount of heat. Make sure the compressor has cooled before attempting to carrying out maintenance. Oil should be disposed of in compliance with local laws. All maintenance work must take place with the compressor OFF and the power supply disconnected.

6.3 Changing the oil

Use only high grade synthetic compressor oil.

1. Make sure the power is disconnected and the compressor is cool.
2. Place drain pan under "C" (ref).
3. Open the oil fill cap "B" (ref)
4. Remove plug "C" and open the 1/4 turn drain valve.
5. Allow all oil to flow from the reservoir

6. Close drain valve and replace plug
7. Refill the oil reservoir through the oil fill cap. Fill slowly and allow oil to settle before checking oil level sightglass.
8. Once sightglass is at maximum level, replace oil fill cap.

6.4 Changing the purification filter

1. Make sure the power is disconnected and the compressor is cool
2. Release pressure from the filter chamber by opening the bleed valve near the chamber
3. Open the top of the filter chamber using a filter wrench or by spanning the two bolts with a large screwdriver or wrench handle. The entire cap will unscrew from the body of the chamber. Do not remove the two bolts and the dust cap.
4. Remove the expired filter cartridge
5. Insert a new filter cartridge. Make sure any protective caps or barriers are removed to allow proper air flow through the filter media. Press down on the filter cartridge to assure it is properly seated in the filter housing.
6. Replace filter cap.
7. Close bleed screw.

6.5 Changing the intake air filter

The filter should be rotated every 125 hours and replaced every 500 hours. (This is a 20 micron filter)

1. Locate the intake filter housing
2. Remove the cover by releasing the two retaining levers.
3. Replace pleated paper filter and reinstall cover.
4. Every 125 working hours rotate the filtration cartridge 90°

6.6 Checking the belt tension

To check for proper transmission belt tension exert a pressure of approximately 22lbs. (10 Kg) on the belts; check that the belts do not flex by more than 3/8 in (1 cm) with respect to their original position.

Should they flex more than this the belt tension should be adjusted or the belt replaced if necessary.

7 Technical Data

Compressor Block	Arctic 1000	Arctic 1060
Operating Pressure	5000 PSI Max	6000 PSI Max
Delivery with 5HP motor	5 CFM FAD (6.5 CFM Charge Rate)	4.75 CFM FAD (6 CFM Charge Rate)
Delivery with 7.5HP motor	7.5 CFM FAD (9 CFM Charge Rate)	6.5 CFM FAD (8 CFM Charge Rate)
Number of stages	3	3
Number of cylinders	3	3
First Stage Bore	3.543 in (90mm)	3.543 in (90mm)
Second Stage Bore	1.417 in (36mm)	1.417 in (36mm)
Third Stage Bore	0.551 in (14mm)	0.472 (12mm)
Piston Stroke	1.575 in (40mm)	1.575 in (40mm)
First Stage Pressure	60 - 80 PSI	85-95 PSI
Second Stage Pressure	550 - 675 PSI	700-850 PSI
Third Stage Pressure	Max 5000 PSI	Max 6000 PSI
First Stage Relief Valve	125 PSI	150 PSI
Second Stage Relief Valve	850 PSI	1000 PSI
Third Stage Relief Valve	10% above operating pressure (Max 5500 PSI)	10% above operating pressure (Max 6600 PSI)
Oil Capacity	3 qt	3 qt
Oil Type	Chemlube 501, Mobil Rarus 827, or equivalent.	Chemlube 501, Mobil Rarus 827, or equivalent
Lubrication	Splash Lubrication	Splash Lubrication
Maximum inclination	5°	5°
Ambient Temperature	45 °F Min - 105 °F Max	45 °F Min - 105 °F Max
Rotation speed with 5HP motor	1000 RPM	1000 RPM
Rotation speed with 7.5HP motor	1500 RPM	1500 RPM
Rotation Direction	CCW from flywheel side	CCW from flywheel side

Table 7.1: Technical Data

Warranty

North Shore Compressor and Machine, Inc. warrants that new equipment manufactured and delivered by itself will be free from defects in material and workmanship for a period on twelve months from the date of delivery. **This warranty is limited to equipment that is not operated in excess of 500 hours annually.** Unattended operation (i.e. turning on compressor and leaving the building) voids this warranty. Failure to follow the maintenance schedule in this manual voids this warranty. Expendable materials, such as filter cartridges, oil, oil filter, etc. are excluded from this warranty. The purchaser shall be obligated to promptly notify North Shore Compressor & Machine, Inc. in the event that a warranty claim is necessary. North Shore Compressor & Machine, Inc. shall at its option provide suitable repair or replacement of equipment, provided the purchaser has stored, installed and operated such equipment in accordance with good industry practices and has complied with specific recommendations of North Shore Compressor & Machine, Inc. North Shore Compressor & Machine, Inc. shall not be liable for repairs, replacements or adjustments to the equipment or any costs of labor performed by the purchaser or others without prior written approval.

Product taken from the United States of America shall be NOT be covered for labor on necessary repairs. We will be happy to provide parts and verbal support.

The effects of corrosion, erosion and normal wear and tear are specifically excluded from this warranty.

The purchaser shall not operate equipment which is considered to be defective without first notifying North Shore Compressor & Machine, Inc. in writing of its intention to do so. Any such use of the equipment will be at the purchaser's sole risk and liability and will void the said warranty.

Correction of any nonconformity, in the manner and for the time period stated above, shall constitute fulfillment of all liabilities of North Shore Compressor & Machine, Inc.

North Shore Compressor & Machine, Inc.
83 Outer Drive
Silver Bay, MN 55614
(218) 226-4695