



**SERVICING INSTRUCTIONS
FOR SC AIR OPERATED HYDRAULIC PUMP
NON-LUBRICATED 10-5 SERIES**

1. TO DISASSEMBLE THE AIR MOTOR -- Refer to Parts List for Part Numbers and cross section of the Pump.

- (a) Remove the eight 5/16" bolts, Item #20, that clamp the Air Cylinder, Item #3, between the Head, Item #14, and the Air Cylinder End, Item #2. Remove the Head by tapping on a fitting screwed into either the "AIR IN" or "AIR OUT" ports with a soft hammer.

NOTE: When removing Retaining Rings care must be taken not to damage the groove in which it seats. Damage to the groove can decrease the holding effectiveness and may allow the Retaining Ring to become disengaged during operation. Careless removal of the Retaining Rings can damage the groove creating "BURRS". These "BURRS" can migrate throughout the Air Motor Assembly causing major damage to all internal components.

- (b) Remove the Retaining Ring, Item #21, from the bottom of the Air Piston, Item #4, and remove the Hydraulic Piston. The Pilot Valve Assembly, Item #13, may then be pushed out through the bottom of the Air Piston.
- (c) Remove the Retaining Ring, Item #18, from the Head Assembly. Remove the Bearing Assembly, Item #7, by lifting or prying it out with a hammer handle or similar tool. The APA Piston, Item #10B.5, may also be removed at this time. The Bearing Assembly has a molded rubber seat and should be replaced if worn or damaged. The "O" Ring, Item #19, in the Bearing Assembly, the "O" Ring, Item #10B.1, in the upper part of the Air Piston Actuating Valve, and the "O" Ring* on the Pilot Valve Assembly head should be replaced as a routine matter while the Pump is disassembled as they are especially important for maximum performance.
*(This "O" Ring is Part #P11000-216 (12-6227N021), see Pilot Valve Assembly #11-5060A000)
- (d) The Head Assembly has a Rubber Bumper, Item #11, inserted in the upper portion of the body. This acts as an air seal and also a cushion for the Air Piston Actuating Valve. If worn or damaged it should be replaced.
- (e) When the Dry Seal, Item #10B.3, and the "O" Rings, Item #10B.6, are worn or damaged they need to be replaced. Remove the Retaining Ring, Item #10B.2, by using a small screwdriver. Slide the Dry Seal off the APA Piston, Item #10B.5. The "O" Ring, Item #10B.4, inside the Dry Seal should also be replaced. When installing the Dry Seal, Item #10B.3, and the "O" Rings, Items #10B.4 & 10B.6, a small amount of silicone grease or other suitable lubricant should be applied.

****CAUTION: DO NOT** remove the APA Sleeve, Item #10B.7, from the Head Casting unless replacement is to be made.

- 2. REPAIRING THE PILOT VALVE ASSEMBLY --** The Pilot Valve Assembly, Item #13, has an Air Check Assembly, Part #11-5032X403, located in the lower end. Remove the Retaining Ring, Part #12-R093S000, which locks the Valve Seat, Part #11-5024A403, in place and remove the Valve Seat with a spanner wrench. The Air Check Assembly, and the Spring, part #11-5016M000, will then drop out and may be inspected for wear or damage. Replace the springs and worn parts as required. When installing the Spring, part #11-5015M000, in the Air Check Assembly, the assembly should be screwed together until the component parts are drawn up just snugly with no travel in the bolt assembly and then the nut should be backed off **ONE COMPLETE TURN** for proper adjustment. When the assembly adjustment has been done correctly, the valve will open approximately 1/32 inch when the bolt assembly is depressed to open the valve.

- 3. TO REPLACE THE PACKING IN THE HYDRAULIC CYLINDER –** It is not necessary to dismantle the Air Motor. Proceed as follows: Disconnect the air supply line, remove the muffler if necessary and loosen the Set Screw Item #24 in the Air Cylinder End, Item #2. Unscrew the Air Motor from the Hydraulic Cylinder. The Hydraulic Piston will be removed with the Air Motor, permitting convenient replacement of the packing in the Hydraulic Cylinder. Replace the Backup Rings and the "O" Rings. The Parts List for the Hydraulic Assembly will give the size and kind of packing required, and when installing new packing, be sure that the Backup Rings are properly in place. If they are damaged or not installed correctly, the "O" Ring will malfunction, with resultant loss of pressure and packing failure. A long-life lubricant is applied to seals in the hydraulic section when new at the factory. Re-lubricate when replacing packing. When replacing the Air Motor, install a new Gasket, part #11-5028N000 and see that the Hydraulic Piston is in proper alignment before screwing the Air Motor down into position. Tighten the Air Motor securely and also the Set Screw, Item #24, in the Air Cylinder End.

NOTE: Models with Isolator Attachment or "V" Ring packing in the Hydraulic Cylinder will require removal of the Isolator or the Adapter on "V" Ring packed Cylinders to replace the packing.

4. **THE HYDRAULIC PISTON** has a Rubber Bumper, Part #11-5051P000, in the head. If replacement is required remove the Cap Screw, part #12-25F37SBC45Z, and install new Rubber Bumper and Washer, part #12-5001C407. Apply “LOCTITE” sealant to the Cap Screw threads when replacing and tighten securely, but not to exceed four foot pounds of torque.

NOTE: The Piston stem is chrome plated and honed and lapped to a very close tolerance with the Hydraulic Cylinder. Should it show indications of wear or being scored (usually due to foreign matter being present in the hydraulic fluid), the entire Hydraulic Piston and Cylinder Assembly, Part #11-5027XXXX, should be returned to the factory for repair or replacement as required.

5. **REPAIRING OR REPLACING THE HYDRAULIC CHECK VALVES** – These Valves should not give any trouble unless foreign matter such as dirt or grit are present in the fluid supply. If a leak develops remove the Check Valves from the Hydraulic Cylinder. Remove the “O” Ring and replace with a new one. Inspect the ball seat in the Valve while the “O” Ring is removed. If it shows any indication of wear or damage, the entire Valve Assembly should be replaced. Refer to Parts List for Part Numbers and cross sections of the Valves.

NOTE: There are several different model pumps. When ordering parts, give the Part Number the Pump Model Number and Serial Number.

6. When Operations described in Paragraphs 1 to 5 inclusive have been completed, the entire unit will have been dismantled and all parts inspected for wear and damage. It is especially important that all parts that operate in “O” Rings or Packing be free from pits, scoring or any other defects that may cause excessively rapid wear of “O” Rings and Packing, since leaks will develop almost immediately under these conditions and satisfactory performance will not result.

7. **REASSEMBLING THE PUMP** – Reverse the procedure used for dismantling, making sure that all Retaining Rings are properly in place and that no “O” Rings have been damaged in reassembly. Before installing the Retaining Rings, inspect the groove for damage and the presence of foreign matter. Damage to the groove can decrease the holding effectiveness of the Ring, while foreign matter can cause contamination of the pump leading to failure.

IMPORTANT: *When reassembling the Air Motor be sure that the Air Cylinder, Part #11-5181P000, is in proper position against the flanges on the Pump Head and the Air Cylinder End before tightening the bolts that clamp the Air Motor together. Use a soft hammer to position the flanges tightly against the Air Cylinder Ends BEFORE tightening the bolts. Failure to do this can result in over-tightening the bolts initially and when the bolts on the opposite side are drawn up this may result in the bolt lugs being broken or twisted off when the assembly is drawn down into position. Bolts should be secured lightly at first then drawn up in sequence until uniform torque has been applied to all of the bolts around the perimeter of the Pump (15-17 ft-lb.).*

8. **PUMP NOT RUNNING PROPERLY** – If for any reason the Pump does not run properly, look for one of the following causes:

- (a) If the Pump appears to be short stroking and running too fast without pumping properly, it usually indicates that the Air Check Assembly is not working as it should be. (See paragraph #2 for correction procedure).
- (b) Loss of pressure may be caused by one of two reasons, the Hydraulic Check Valves have developed a leaky condition or the hydraulic fluid is bleeding past the Packing in the Hydraulic Cylinder. (See paragraphs 3, 4 and 5 for repair instructions).
- (c) Should the Pump commence to run erratically and in a jerky manner after a period of time, it is usually an indication that a seizing action is taking place in the Hydraulic Piston & Cylinder Assembly. (See paragraphs 1 and 3 for disassembly instructions). Foreign matter such as alkali, dirt, grit or chemicals that do not have sufficient lubrication qualities being present in the fluid supply usually causes this. If the Hydraulic Piston and Cylinder have not been damaged, a thorough cleaning will normally place the Pump in operation again.
- (d) For maximum volume of flow, make sure that a sufficient flow of air is supplied to the Pump. Hooking the Pump up to a smaller pipe size than the “AIR IN” port on the Pump will not allow it to run at its full rated capacity. Long runs of relatively small pipe supplying air to the Pump will have the same effect.
- (e) If an excessive amount of oil or water is coming through the Pump air exhaust, check the following:
 1. Lubricating unit in the air supply is delivering too much oil. Adjust to about one drop of oil for every 20 strokes of the Pump.
 2. The filtering unit in the air supply is not functioning properly. The bowl should be cleaned periodically to assure delivery of clean air to the Pump.
 3. The hydraulic fluid being pumped (oil or water) may be leaking past the packing in the Hydraulic Cylinder into the Air Motor. (See paragraph #3 for correction procedure).