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REPAIR & MAINTENANCE PROCEDURE FOR THE FOLLOWING PNEUMATIC POWER PACKS

Models: SP-002, SP-003, SP-004, SP-006 Single Stage Units

Proper maintenance and repair is important to insure long service life for these pneumatic tools. This document will provide you with step-by-step procedures to provide preventative maintenance and repair on the power packs (pneumatic cylinders), as well as the jaws and jaw housings. It is VERY IMPORTANT that all of these tool be used in conjunction with in-line air lubricators and water filters to insure the internal O-rings and components remain well lubricated. They do NOT require much oil volume, so small micro-bursts of oil is all that's needed. If lubricated and maintained properly, internal O-rings and components should not require replacement for 300,000 – 500,000 cycles.

PREPARE TOOL FOR REPAIR

TOOLS REQUIRED



Bench Vise
Rubber and aluminum vise pads
Wire brushes
Vise Grip
Spanner wrench
Small picks
9/64" Allen Wrench
1/8" Allen Wrench
Clamp Blocks for securing shaft assembly in vise
Internal & External Snap Ring Pliers (small tips)
#2 Phillips Screwdriver
Propane Torch
Parts Cleaner
Loctite 290 (or equal)
Light machine oil
Light Grease

To begin the repair, you will need to separate the power pack from the jaw / jaw housing assembly

Connect the power pack to your air source and activate the tool to fully extend the piston. Do not release the activation lever... just disconnect the tool from the air source so the piston stays in the fully extended position.

Remove the jaw / jaw housing assembly from the power pack by turning counter-clockwise. Some jaw housings will have a locking set screw near the bottom of the housing. Loosen that set screw, then separate the jaw housing from the power pack.



Set the jaw / jaw housing assembly aside, as the following procedure only applies to the power pack.

POWER PACK REPAIR

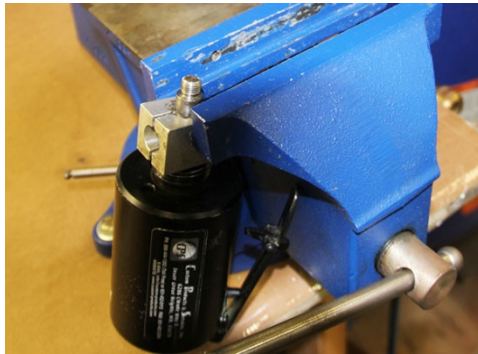
While maintaining the piston in the full extended position, disconnect the tool from the air source and the piston will remain fully extended.

To fully disassemble the power pack and have access to all of the internal O-rings, the piston cam must first be removed. This cam is assembled with thread sealant, so the cam must be heated (using a propane torch) to break it loose. Fabricate a small block fixture (as shown) so the piston shaft can be secured in a vise and tightened without damaging the shaft. **DO NOT CLAMP THE SHAFT** in a vise grip or similar tool, as you will score the shaft surface.

Heat the cam area (not the shaft) using a propane torch for about 30-45 seconds, as it must get quite hot to soften the thread sealant. Using a wrench or vise grip, turn the cam counter clockwise to separate it from the piston shaft. If the cam does not loosen, continue heating. The cam will be hot, so place it somewhere to safely cool.



Once the cam has been removed, clean the shaft threads using a soft wire brush to remove any residual thread sealant.



Remove the tool and shaft clamp block from the vise.

Carefully and securely clamp the power pack body in a vise using rubber or urethane vise jaw pads with the piston facing UP. It's best to clamp the power pack near the bottom 1/3 of the housing as shown. Using a spanner wrench, remove the end cap from the housing and slide it off the shaft. Set the cap aside for now.



Slowly, remove the shaft and piston plate assembly from the housing. If this assembly is difficult to remove, set your air pressure regulator down to 30-40 psi, and reconnect the air source to the tool and activate the lever valve. The compressed air will assist in removing the piston assembly. Once removed, disconnect your air source from the tool.



Clean the inside of the power pack housing to remove any residual debris and lubricate it with a small amount of light machine oil.

REPLACING INTERNAL O-RINGS

Complete O-Ring repair kits are available through CPS. A specific kit should be ordered for the specific power pack model being repaired.

The piston plate is a 2 piece assembly. Remove the 3 Allen head screws on the bottom of the plate. Separate the piston plate. There will be 2 small O-rings stacked in the center, and a larger O-ring on the inside perimeter. Lightly oil or grease the new O-rings before installing. There is also a flat washer that sits in the middle. Install these O-rings and reassemble the piston plate. Then, replace the large O-ring on the outside perimeter of the piston plate. This larger O-ring should also be oiled or greased.



Replace the internal and external O-ring on the housing end cap



Replacing the lever valve O-rings and spring: *(Note: F-style power packs will be footswitch controlled and will not have a manual lever valve. Skip this step if your power pack is footswitch controlled)*



Remove the lever handle from the housing by removing the 2 Phillips screws
 Tip the housing on its side and tap out the plastic valve spacer, exposing a small snap ring underneath.

Remove the internal snap ring

Remove the valve assembly (spool, spool spring and washer)

Replace the (2) small O-rings on the spool valve

Replace the spool spring, if necessary

Lubricate the O-rings with light grease or oil and reassemble the valve in reverse order. (make certain the washer is installed “below” the snap ring)

Before reinstalling the shaft and piston plate assemble, apply light machine oil to the inside face of the housing. Apply a light coating of oil to the piston plate O-ring and reinstall into the housing. Do not push the piston down more than 1” below the housing threads, as you will need the piston shaft to remain extended to reinstall the cam.

Before reinstalling the end cap, apply light grease or oil to the end cap O-rings as well as the threads on the inside of the power pack housing.. Install end cap and tighten. (Note: Do not overtighten, as this could make future disassembly much more difficult).

Before installing the cam, reconnect the air source to the tool and test for air leaks and overall performance of the power pack. If leaks are present, you may need to uninstall the tool and make certain all the O-rings are properly installed and did not dislodge during reassembly. 95% of all air leaks are due to a faulty O-ring or improper installation. If no leaks are detected, you now install the Cam.

Before permanently reinstalling the cam, reposition the housing in a horizontal position or slightly downward position. This will prevent the thread sealant from migrating away from the threads. Apply Loctite 290 (or equal) to both the shaft threads and the cam thread. If there is residual thread sealant on the internal threads of the cam after disassembly, clean out the residual material using a wire brush or micro-blaster to insure the thread are clean and dry. Reinstall the cam leaving the housing horizontal. Allow to cure for at least 1 hour before reinstalling the jaw / jaw housing assembly to insure the cam remains secure on the shaft. This completes the O-ring replacement procedure.

