

Additional Comments on (Electrol) Hydraulic Pump Problems

(The following is reprinted from a newsletter by either George Pomeroy or Don Booth...I think)

Common problems that cause poor functioning of the pump are simply things like sludge that causes the pistons to stick, thereby not permitting the check balls to seat firmly, and deposits of rust on the check balls.

One of the uncommon things that I found one time was the breaking in half of one of the pistons at the "O" ring groove.

I think that most of these failures would be eliminated by the regular changing of the hydraulic fluid every two or three years. The fluid seems to absorb water after a long period. Water plus oil makes sludge and forms rust. You can notice the fluid losing its red color. That's the time to flush out the system and clean things up.

Those fine mesh screens that were originally installed all over the system are another major source of trouble. Get rid of them. They can plug solid and shut off a line. Anything that can get to flow through the system, being fine enough, ought not to be interfered with its passage. I do make one exception to this though; at the suction passage, into the pump plunger chamber, from the reservoir, I like to install a piece of rolled, fine mesh screen (like a tea bag strainer). This screen is shaped like a cigarette, open ended, about 1-3/8" long. One end is set in the suction drain check valve, on top of the circlip, and the other end is kept in place by pressure from the false bottom of the reservoir, when the reservoir is in place on the pump body. This filter provides a lot of surface area and no place for the debris to stack up on top of the suction hole. (Like happened to me once, in the air.)

The chrome steel balls in the lower passages probably ought to be replaced any time the pump is opened. They do corrode and rust over the years, and are only about four cents apiece presently...

A properly adjusted pump will pop-off its relief valve at 800 psi (usually set at 1000 psi now). That is plenty of pressure to operate gear and flaps, also plenty to pop the little passage plugs right out of the pump body, even when the circlips are installed with the greatest caution. Most people who have flown a Seabee very long have lost one of those plugs while pumping, unless some safety device, such as plates or screws were installed over the plug ends, after they were installed. In later model pumps, the factory recognized the problem and installed safety plates there.

These pumps don't seem to hold residual pressure very long. In other words, they bleed pressure off pretty fast. This would not appear to matter much, since the pump pressure is part of a dynamic system, rather than a static system.

A few notes about the Electrol 430 powerpac from the editor, 2015:

- *A single round screen has generally replaced the "cigarette" screen above. Installed over the suction check ball on the top of the pump body inside the reservoir. Secured with a plate with a hole in the center to allow fluid passage. See <http://republicseabee.com/Tips-tricks.html> for details.*
- *Believe it or not, check balls are still about 4 cents apiece at McMaster-Carr. You have to buy 100!*
- *Most pumps have the relief valve set to 1000 psi as opposed to 800 psi.*
- *I have found that changing the hydraulic fluid in the reservoir every annual is normally adequate to keep the system running well.*
- *Most pumps I know of don't have the screens in the system as indicated above.*
- *Plates should ALWAYS be installed over the eight plunger caps. See the Seabee website for details at <http://republicseabee.com/Images/Hydraulic%20Plug%20Cover.jpg>.*
- *With a well-maintained system, these pumps last a long time. I had mine in the Seabee for 15 years before it started giving me trouble. Once rebuilt it works fine.*

Steve Mestler for the IRSOC (Seabee Club)