Seabee Service News

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# FILLING, BLEEDING AND ADJUSTING SEABEE HYDRAULIC BRAKES

Filling, bleeding and adjusting the hydraulic brake system may be accomplished by two alternate methods:

(1) PRESSURE, Wheel to Master Cylinder,

(2) GRAVITY, Master Cylinder to Wheel.

The first pressure method has been found to be the fastest, surest, and most satisfactory way of producing a good brake and a system free from air. The second method should be used under field conditions only: it may be possible to produce a brake which is good enough to negotiate careful landings, but it takes excessive time to bleed the brake and final results are questionable.

## PRESSURE BLEEDING TANK:

It will be necessary to have a pressure tank made from a hydraulic can or any can of one or two gallons capacity having a screw cap and which is clean and free from residue of previously contained fluids. Attach an air valve to the filter neck cap by welding, solder or nut. Install a steel threaded fitting for a ¼" tube or weld a short length of beaded steel tubing to the side of the can approximately an inch above the bottom. Attach a 12" length of synthetic rubber tubing to the fitting. Cut the head off and drill a hole through the center axis of a 10-32NF3 screw approximately ¾" to 1" long. Weld or solder the screw to the end of a short length of beaded steel tubing and attach to the other end of this rubber tube. A hook or piece of wire may be used to keep the tube high and prevent loss of fluid. Make an

additional screw and tube assembly and attach to the end of another piece of rubber tubing approximately 12” long.

PRESSURE BLEEDING PROCEDURE:

1. Remove the cover from the brake compensator valve of the brake being bled and back off all the way, counterclockwise, on the compensator knurled adjusting screw.

2. Remove the vent plug in the top plate of the master cylinder and install the screw attached to the short length of rubber tubing in its place. Hang the end of this tubing in an open container, this will catch the oil which is bled up through from the wheel.

3. Remove the #10-32 screw from the wheel bleeder fitting and attach the tank hose. (Tank should be ¾ full of hydraulic oil; Spec. #3580). If an AN type bleeder fitting is installed, (Ship #126 and up), open the fitting by backing off (counterclockwise) one-half to one full turn. If the plain screw bleeder id used, you are all ready to bleed as soon as the dust screw is removed and the tank screw is installed.

4. Apply air pressure to the bleeding tank with an automobile tire pump. Apply only enough pressure to force the oil up the brake line, out of the master cylinder into the container in the cockpit. Allow oil to flow from the master cylinder tube until a clear flow, without evidence of air bubbles is observed.

5. Close wheel bleeder, remove bleeding tank and install dust screw. Remove bleeding tube from the master cylinder.

BRAKE ADJUSTMENT:

After the brake has been bled it will be necessary to adjust the brake compensator valves in the cockpit so that after application and release of the pedal, the wheel can be turned with a slight drag in the brake lining. This valve is a form of pressure relief which traps pressure

(approximately 10 psi) in the brake system after the brake has been applied and pedal released. This trapped pressure holds the expander tube in the wheel full of oil, compensates for brake wear and results in immediate brake reaction upon actuation of the pedal. The amount of pressure trapped is controlled by the knurled compensator adjustment screw. Turning it clockwise raised the relief pressure and backing off, counterclockwise, lowers the pressure.

To adjust the compensator, jack up the wheel, screw in the compensator for that brake and apply full brake with the pedal. Release the pedal and try turning the wheel by hand. If the brake is locked, the adjustment screw has been turned in too far. Back out the screw until the wheel will turn with a slightly noticeable drag. Reapply the brake, release the pedal and recheck the wheel for drag. It may be necessary to readjust the compensator a second time to obtain the brake desired.

After adjusting the brakes, refill the system as follows: With the master cylinder in a vertical position, remove the high level screw on the side of the cylinder and add oil through the vent plug hole on the top until it flows from this high level screw hole. When this level is obtained, reinstall high level screw and vent plug. If at any time during service the brakes appear to be dragging excessively, the wheels should be jacked up and compensator adjustment checked.

GRAVITY BLEEDING PRESSURE:

Field bleeding may be accomplished by removing the master brake cylinder vent screw and adding fluid by the use of an oil can with a flexible snout and at the same time opening the bleeder screw on the wheel fitting allowing fluid to flow out. It will be necessary to back all the way out on the compensator adjustment screw. The expansion tube may be bled by closing the bleeder at the wheel, applying brake and cracking the bleeder open allowing air and oil to escape. Compensator adjustment is made in the same manner as described above. Make sure the master brake cylinder reservoir is full to the bottom of the filler level screw. Fluid should be added to the master cylinder reservoir periodically in order to maintain proper fluid level.