

About a week and a half ago I noticed some brake fluid around the inside rim of the right main wheel. After removing the wheel, I found a small amount of brake fluid on and around the brake cylinder. Apparently, one or both of the brake cylinder pistons was leaking. I removed the brake shoe assemblies and brake cylinder pistons, cleaned everything up, put new O-rings on the brake cylinder pistons, reinstalled them and the brake shoes, then proceeded to bleed the brakes. Well, that is what I THOUGHT I was going to do anyway. By the way, I also have Steve's Booster Brake assembly installed, which has the remote brake fluid reservoir as shown in the photo. <http://www.stevesaircraft.com/vbrake.php>. BTW, a VERY worthwhile investment.



As anyone who has ever attempted to bleed the drum brakes on a PA22 knows, it can be a real challenge bleeding the brakes. I spent several hours trying to get the air out of the lines (this is not the first time I have done this either. I have owned two PA22's). I decided there had to be a better way of doing this other than the bleeder screw on the bleeder block. Thus I began my search for a brake bleeder.

In my search for a more up-to-date solution, I came across two items. One was a replacement brake bleeder assembly from eTrailer.com.

http://www.etrailer.com/Accessories_and_Parts/Kodiak/KBPBB.html

Replacement Bleed Port for Kodiak Disc Brake Calipers - Brass



Price each - \$4.09

It has a 1/8 NPT tapered pipe thread on the base part and a 1/4 x 28 bleeder screw threads.

This sounded perfect and I felt confident I could drill and tap the hole in the bleeder block at the bleeder screw hole. I removed the bleeder block assembly, removed the bleeder screw and rubber washer and proceeded to drill and tap the block with a 1/8 NPT tapered tap.

The threaded end of the brake cylinder where the bleeder block threads onto has a small O-ring on the tip which seals inside the bleeder block on the smooth surface after the threads inside the bleeder block. However, after drilling and tapping the bleeder block, the tip of the brake cylinder now obstructed the newly drilled and tapped hole by a small fraction of an inch. This prevented the replacement bleeder port from seating in the newly tapped threads. In order to move the tip of the brake cylinder further back in the bleeder block after installation, I had to prevent the bleeder block from threading as far down on the shaft of the brake cylinder. I did this by removing the brake cylinder nut and the star washer behind it, installing a new star washer then added two AN8 (1/2" ID) cad-plated washers, then reinstalled the nut. When I screwed the bleeder block on the brake cylinder, the tip of the brake cylinder inside the bleeder block no longer protruded into the new, threaded hole. Next I installed the replacement bleed port which seated snugly. I now felt I had the best possible solution for bleeding the brakes.

The second thing I found during my search was an ingenious idea for a brake bleeder valve ... a bleeder valve with a built-in check valve! Wow! Someone really had a great idea. Here's the web site for what is called the Speed Bleeder".

<http://www.speedbleeder.com/>

Be sure to order the correct size bleeder screw. As mentioned previously, the size of the replacement bleeder screws I ordered (as above) is 1/4 x 28 threads. Only \$7.00 each. You may find them less expensive on other web sites.



What the speed bleeder does for you is it allows you to simply open the speed bleeder, pump the brake handle (be sure to keep the brake master cylinder filled with brake fluid during this procedure) and each time you pump the brake handle, the speed bleeder ball check valve opens to let air and brake fluid out and shuts off immediately when you stop pumping. This prevents air from re-entering the brake line. Now bleeding the brakes easily becomes a one-person job. As I said before, be sure to keep the master cylinder filled or if you have Steve's Booster Brake, keep the remote brake fluid reservoir filled with brake fluid. If you don't keep them filled, you will pump air back in the brake lines.

Here are two photos of the new brake bleeders installed. In the photos you can see the two additional AN8 washers behind the nut.

