

# BRAKE TROUBLESHOOTING TIPS

## **Problem:**

1. Brake assembly drags and does not allow the wheel to rotate freely after the installation of new linings.
2. Brake assembly does not stop effectively after the installation of new linings.
3. Uneven lining wear.

## **Cause:**

The problems listed above are often the result of brake assembly back plate tie bolts that have been over torqued. Aircraft brake cylinders are made from soft, light weight magnesium or aluminum. The tie bolts that mount the steel back plates against the cylinder have a very light torque spec to keep from damaging the cylinder casting. It is important to use a torque wrench along with the proper torque spec for each specific brake assembly. See maintenance manual for specifications. If the tie bolts have been over torqued at any point in their life they can draw the back plate into the soft cylinder material, and because there is less material toward the inner edge of the mounting surface than the outer edge, it tends to crush the inner surface at an angle leaving a depression that changes the angle of the mounting surface (Figure 1). When this occurs the back plate is no longer parallel to the pressure plate. The angle created along with the arm of the back plate can exceed the brake assembly's ability to accommodate the thickness of a new lining. This causes the inner edge of a new brake lining to force constant pressure against the brake disc, making it very difficult to rotate the wheel. At the same time, with reduced lining surface area actually contacting the brake disc (Figure 2), there is less ability to stop the aircraft, at least until the lining wears flat, meanwhile possibly warping the brake disc. Any of the problems mentioned can result in a hazardous situation and should be corrected immediately.

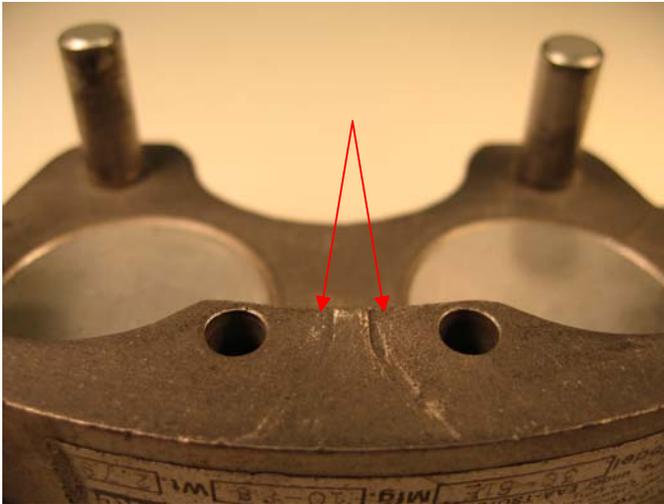


Figure 1.



Figure 2.

To check for this condition, clean and inspect the brake cylinder back plate mounting surface (Figure 1) for a depression not to exceed 0.005 inch (0.127mm) if this condition does exist replace the brake cylinder and tie bolts before further operation. See Cleveland Maintenance Manual appendix A3. Dragging or binding of brakes assemblies can in some cases be the result of worn or corroded anchor bolts and torque plate bushings. Debris between the piston and cylinder or o-ring can also cause brake drag.

**Problem:**

- 4. **Warped brake disc.**
- 5. **Pulsating brake pedal.**

**Cause:**

The above conditions are often the result of brake disc that have been over temped due to excessive braking from short stops, rejected take offs or prolonged use as in riding the brakes during taxiing. Also binding of the caliper from dirty cylinders, damaged anchor pins or the problem explained above in the first section.

This condition is most common when the disc has been worn to its minimum wear thickness, at which point it should be replaced. See Product Guide or Cross Reference for minimum wear specifications.

**Problem:**

- 6. **Brake lining cracks or makes squealing sound.**

**Cause:**

Cracked linings can result from the use of a hammer type rivet set. For proper installation a screw type rivet tool such as the RAPCO RA825 is recommended.

The other major cause of cracked linings comes from warped or damaged back plates and pressure plates. They do not fully contact the lining material to offer proper support or thermal conductivity. In addition a small mound of metal or a burr will develop around the rivet hole (Figure 3). It can cause the lining to crack when riveted or if it does wear into the lining, it will leave the lining loose which can set up a high frequency vibration resulting in a squeal sound.

When installing new linings always clean the back plates and pressure plates then use a straight edge to assure that the surfaces that mate with the linings are flat.

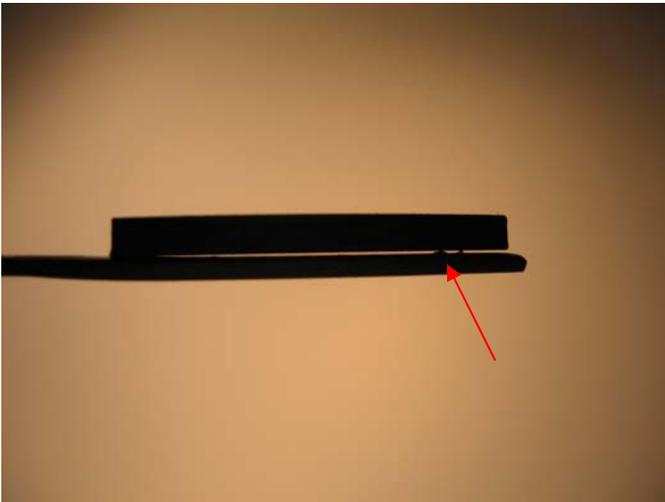


Figure 3.

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