

Installing New Brakes

As the saying goes, all good things must come to an end. In the case of brakes, the end applies to linings. When your mechanic has finished the job, the new brake linings must be conditioned before use. All too often pilots, and even mechanics, are unaware of the need for breaking them in. There are actually two conditioning procedures. The one you use will depend on the type of linings used on your airplane.

Asbestos-based organic composition brake linings must have the resins properly cured before the brakes are actually used. Failure to properly condition brakes may result in carburizing the linings with a single hard application, preventing a good braking coefficient and significantly shortening the life of the linings. The procedure is very simple. Taxi the airplane at a speed of 25–40 mph; then, using a light braking effort, gently bring the aircraft to a full stop. Wait at least two minutes for the brakes to cool down. Then repeat. This procedure should be done a total of six times, each time allowing at least two minutes for the brakes to cool. Keeping the taxi speed between 25 and 40 m.p.h. and using light braking generates sufficient heat to cure the resins, but not enough to carburize them. When strictly adhered to, this procedure virtually guarantees properly cured brake linings that should get about 100 hours of taxi time.

The iron-based metallic composition brake linings require a glazing process after installation. Here a simple procedure is used, with significantly different numbers from the organic method. Taxi speed should be 30–35 knots (excess speed may cause overheating and disc warping) with a hard, full-stop braking application. Then immediately go back to the 30–35-knot taxi speed and repeat the procedure once more, for a total of two times. Unlike the organic break-in procedure, you do not want the brakes to cool down between the two taxi runs. If the procedure is done correctly, the high spots will wear off the linings and the result will be a flat, smooth surface. It is a good idea to check the linings during preflight, and if they begin to appear rough or grooved, repeat the conditioning procedure. One potential problem requiring reconditioning is wearing the glaze off the linings. This is the result of frequent, light brake applications during taxi, or worse—riding the brakes.

Preventive Maintenance

Hydraulic fluid poses the greatest potential problem. But without it, there are no brakes at all. It is important to maintain the integrity of the lines by making sure they are not kinked or chafing against another part. Routinely check the hydraulic fluid level, and on every preflight look for puddles of fluid on the ground or streaks of reddish fluid on the airplane. Hydraulic leaks should be referred to a mechanic.

Dirt is the nemesis of brake systems. If allowed to get into hydraulic fluid, even grit can cause destruction of seals, erosion of moving parts, and total brake system failure. Allowed to collect around the brake housing and anchor bolts, dirt may cause the brake to “freeze up.” Keep the bolts clean and lubricated with Dri-Slide, graphite, or silicone spray—never oil! One word of caution: do not loosen or attempt to remove the anchor bolts. The procedure for cleaning them is similar to that required to reline the brakes, and while not difficult, it should not be undertaken without some instruction.