# REVISION LIST

## CHAPTER 18: BRAKE SYSTEMS

The following list of revisions will allow you to update the Legacy construction manual chapter listed above.

Under the “Action” column, “R&R” directs you to remove and replace the pages affected by the revision. “Add” directs you to insert the pages shown and “R” to remove the pages.

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<td>18-1 through 18-6</td>
<td>0/02-15-02</td>
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<td>18-1</td>
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Chapter 18: Brake System

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1. INTRODUCTION

The brakes perform two very critical functions in the Legacy. Number one (of course) they serve as brakes. Secondly, the brakes are used for ground steering at lower speeds. Obviously the brakes are very important! With this in mind, take your time and assemble carefully.

In assembling the brake system we will start at the brakes and work our way to the reservoir. At the end of this chapter, you will have functioning brakes.

Note:
Optional Parts available through:
(*) Lancair Avionics
(**) Kit Components, Inc.

2. PARTS LIST

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<th>#</th>
<th>PART NO. (P/N)</th>
<th>QTY</th>
<th>DESCRIPTION</th>
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BRAKE SYSTEM
1) 4662 2 Brake Cylinder Clevis
2) 9-42016 1 Brake Fluid Reservoir
3) AN316-5 2 Check Nut
4) 10-88 2 Cleveland Master Cylinder
5) 272P-03x02 1 Poly-Flo Fitting, T
6) 269P-03x02 4 Poly-Flo Fitting, Elbow
7) 71-T-187 30 Poly-Flo Tubing
8) B44-3 30 Tygon Tubing

INSTALLING BRAKE ASSEMBLIES
1) AN823-4 2 Fitting, Elbow

BRAKE LINES MAIN GEAR LEGS
1) 4740 2 Premade Hose
2) AN3-4A 2 Bolts
3) MS21919-DG10 2 Clamps
4) MS21919-DG6 8 Clamps
5) 268 - 03 x 02 2 Fitting
6) C5275 x 4 2 Fitting
7) MS35489-11 2 Grommet
8) AN365-1032A 4 Locknuts
9) AN924-4 2 Nut
10) CS125-103212GCR 2 Studs
11) AN906-10L 4 Washers
12) AN906-10 2 Washers

MOUNTING BRAKE RESERVOIR
1) 5052- 250 x .035 4 Aluminum Tubing
2) AN3-7A 2 Bolts
3) MS21919-DG4 2 Clamps
4) AN822-4D 1 Fitting, Elbow
5) AN363-1032 2 Locknut
6) AN818-4D 1 Nut, Coupling
7) AN819-4D 1 Sleeve, Coupling
8) AN970-5 2 Washers
9) AN906-10L 2 Washers
3. CONSTRUCTION PROCEDURES

A. Brake System

NOTE: THIS IS A SCHEMATIC ONLY. IT IS NOT TO SCALE. REFER TO THE FOLLOWING PAGES FOR PROPER INSTALLATION.
B. Installing the Brake Assemblies

The brake cylinder assembly must slide freely on the anchor bolt. Inspect for clearance between the fork and the brake cylinder assembly. We have noticed that the casting of the cylinder assembly may vary some. A cause for the cylinder assembly to not function properly may be a slight interference between the fork and the cylinder assembly. If you determine that there is a clearance problem, carefully file the casting as required.

Install an AN823-4 fitting here (2 pcs).

Torque the bolts supplied with brakes to 75 to 80 inch lbs.

Anchor Bolt

Install an AN823-4 fitting here (2 pcs).

Bleeder seat supplied with brakes. Also install the cap.

Slide forward to align with the bolts of the brake.

The brake pad installs on the inboard side of brake disk.

Brake Disk

Bleeder screw supplied with brakes. Also install the cap.
When the installation is complete, manually retract the gear and make sure the brake lines do not pinch or interfere.

To master cylinder

Secure brake lines using:
- Studs, CS125-10321032GCR (2 pcs.)
- Clamps, MS21919-DG6 (8 pcs.)
- Locknuts, AN385-1032A (4 pcs.)
- Washer, AN960-10 (2 pcs.)

We suggest using a MS35489-11 grommet to route the brake line through the inboard rib.

Install an MS21919-DG6 clamp on the inboard upper bolt to secure the line.

Allow sufficient hose to retract the gear.

We suggest installing a 1" O.D. piece of a conduit through the rib to route the brake line

- Secure brake lines using:
  - Clamps, MS21919-DG6 (8 pcs.)
  - Clamps, MS21919-DG10 (2 pcs.)
  - Locknuts, AN385-1032A (4 pcs.)
  - Bolts, AN3-4A (2 pcs.)
  - Washers, AN960-10L (4 pcs.)

- Premade Hose, 4740 (2 pcs.)
Mounting Brake Reservoir
Fig. 18:B:3

Secure the 1/4" 5052-250 x .035 tubing with MS21919-DG4 (2 pcs.) clamps and route overboard.

Secure the Brake Reservoir with:
- AN960-10L Washer (2 pcs.)
- AN3-7A bolts (2 pcs.)
- AN970-3 washer (2 pcs.)
- and AN363-1032 locknut (2 pcs.)

Form an epoxy/flox hardpoint in the firewall.

In Chapter 20, Section C, read about the optional avionics mounting shelf. If you decide to install this, you should do this before routing the brake lines. When installing the brake lines make sure that you allow for sufficient length to adjust the rudder pedals. Also make sure that the brake lines are free and will not sink.

Refer to blueprint 4862 for the brake reservoir location.
C. Filling and Bleeding the Brakes

To finish the brake system, you’ll have to fill the system with brake fluid and bleed the brakes. The standard fluid for both hydraulic and brake systems is MIL-H-5606 type and is available from Aircraft Spruce and Specialty, or your local FBO. Fill the reservoir with fluid and loosen the bleeder valves on the bottom of the brake assemblies. Pump the PILOT’S brakes until the system begins to fill, then close the bleeder valves. To get all the air out of the brake system, you’ll have to have a friend pump up and hold the brakes until the lines are pressurized, then you will crack open the bleeder valve for a moment to release the air. Reclose the valve quickly though, to avoid allowing air back into the system. Repeat the “PUMP-HOLD-VALVE OPEN-VALVE CLOSE” until there is no air visible in the Nylaflow lines and the brakes feel normal. Remember to refill the reservoir as the fluid fills the lines and master cylinders. It’s hard to get every little air bubble out of the lines, but this is normal and should not affect brake performance if kept to a minimum.