- CHAPTER 9 -

BRAKE SYSTEM

9.1 Description (Plate 3.3)

Hydraulic brakes are fitted to the main undercarriage wheels of the Chipmunk. These are Goodyear "Single disc" type and are operated simultaneously for parking by means of a brake lever in each cockpit, or differentially for ground manoeuvring by the rudder bar. The hand brake lever is set "half on" for differential action and "full on" for parking.

The hydraulic brake system consists of a master cylinder and reservoir for each wheel, a single hydraulic line from each master cylinder and the brake unit itself mounted on each wheel hub. When the brakes are applied, hydraulic pressure forces a friction pad against the face of a floating annular disc keyed to, and revolving with, the wheel. This annular disc is backed up by a second fixed friction pad. The clamping action provides the necessary wheel braking.

A cable linkage is used between the rudder pedals and the master cylinders and is arranged to transmit differential or simultaneous action referred to above.

While the brakes can be applied simultaneously for parking, it is not desirable to leave the brakes so applied for long periods because of the pressure established in the hydraulic brake system.

9.2 Servicing

9.2.1 No adjustments to the brake disc are necessary during the life of the lining. Access to the hydraulic brake master cylinders and reservoirs is gained by removing the forward top panel from the front cockpit control box. These reservoirs should be kept filled with hydraulic fluid. An approved mineral base hydraulic fluid, to Specification AN-VVO-366B, DTD-585 or 3-GP-26-1947, is to be used.

9.2.2. Bleeding the Brakes

Air in the hydraulic system results in ineffective brake action. This requires bleeding of the hydraulic system.

Each hydraulic brake line can be bled by means of a bleeder plug located within the wing fillet, immediately behind the spar and also by a bleeder screw on the inboard face of the brake housing. In order to bleed the brake chamber effectively, the cylinder head into which this bleeder screw is tapped must be located so that the bleeder screw is in the highest position.

9.2.2.1 Pressure Bleeding - Pressure Tank or Hydraulic Pump

a) Connect tank or pump to the bleeder connection of the brake.

9.2.2.1 (cont'd)

b) Connect a hose to the master cylinder reservoir filler plug and insert free end into a glass jar.
c) Apply pressure and run fluid through the system until the fluid is completely void of air bubbles.
d) Remove bleeder hose and replace filler plug in reservoir.
e) Remove tank or pump connection, replace bleeder screw and tighten.

9.2.2.2 Gravity Bleeding - Without Air Pressure

a) Remove the top bleeder screw from the brake and insert in its place a standard bleeder hose. Place the free end of the hose in a clean glass receptacle.
b) Permit system to fill by gravity from the supply tank. This will require a few minutes.
c) When the fluid starts to flow from the bleeder hose, apply the brake pedal rapidly and force fluid through the hose into the receptacle. The bleeder hole in the brake must be closed during the return of the brake pedal fo "OFF" position. Pinching the bleeder hose with the fingers will accomplish such closing. Then allow pedal to return slowly to full "OFF" position. This draws new fluid into the system from the supply tank.
d) Release finger pressure on bleeder hose and push brake pedal on rapidly again. While fluid is flowing restrict bleeder hose as described above before allowing brake pedal to return slowly to brake "OFF" position.
e) Repeat this operation until no more air bubbles come from bleeder hose. System is then properly bled and hose should be removed.