SECTION 5

BRAKES

CONTENTS OF THIS SECTION

CORVAIR 500, 600, 700 AND 900 SERIES

INDEX

GENERAL DESCRIPTION

Various design changes have been incorporated in the 1964 brakes, however service procedures are basically the same as outlined in the 1961 Corvair Shop Manual except as described below or outlined in "Maintenance and Adjustments" and Service Operations" in following pages.

The 1964 Corvair brakes incorporate a self-adjusting feature which adjusts the brakes to compensate for lining wear (fig. 5-1).

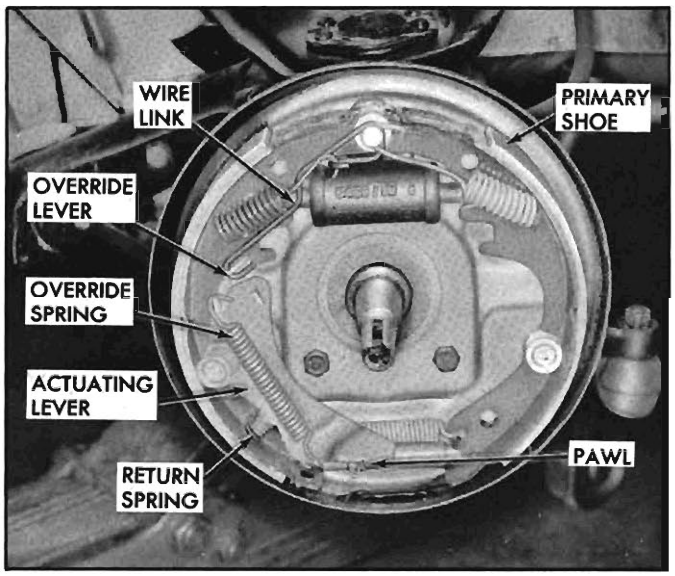

Fig. 5-1—Self-Adjusting Brakes

Fig. 5-2—Brake Drum Access Hole

Self-Adjusting Features

Brake shoe adjustment takes place when brakes are applied with a firm pedal effort while vehicle is backing up. Applying the brakes moves an actuator which turns the star wheel and lengthens the adjusting screw assembly. This action adjusts the shoes until clearance between the lining and drum is within proper limits.

Should low pedal heights be encountered, it is recommended that numerous forward and reverse stops be performed with a firm pedal effort until a satisfactory brake pedal height results.

NOTE: Frequent usage of an automatic transmission forward range to halt reverse vehicle motion may prevent the automatic adjusters from functioning, thereby inducing low pedal heights.

Brake Drum

A lanced "knock out" area (fig. 5-2) is provided in the web of the brake drum for servicing purposes in the event retracting of the brake shoes is required in order to remove the drum.

MAINTENANCE AND ADJUSTMENTS

PRESSURE BLEEDING

NOTE: Place a suitable protective cover in the luggage compartment and over exterior portion of front fender panel to prevent possible damage by brake fluid and bleeder equipment.

1. Clean all dirt from top of main cylinder, and remove main cylinder cover.
2. Install Tool J-21479 (fig. 5-4), connect bleeder equipment to Tool J-21479, and open release valve on bleeder equipment.

NOTE: Make sure brake fluid in bleeder equipment is at operating level and that the equipment is capable of exerting 30 to 50 lbs. hydraulic pressure on the brake system.

3. Position one end of bleeder hose on left rear wheel bleeder valve, and install Tool J-7647 on bleeder valve and hose.
4. Place loose end of bleeder hose in a transparent container. Pour a sufficient volume of brake fluid into container to ensure that end of bleeder hose will remain submerged.
5. Open wheel cylinder bleeder valve by turning Tool J-7647 counterclockwise approximately ¾ of a turn, and observe flow of fluid at end of bleeder hose.
6. Close bleeder valve tightly as soon as bubbles stop and brake fluid flows in a solid stream from the bleeder hose. Bleed off enough fluid to ensure that all fluid is replaced.
7. Remove Tool J-7647 and bleeder hose from wheel cylinder bleeder valve.
8. Repeat Steps 3 through 7 at the remaining wheel cylinders in the proper bleeding sequence. (See Figure 5-3.)
9. Disconnect bleeder equipment, remove Tool J-9477, replace main cylinder cover, and remove protective cover from vehicle.

NOTE: The main cylinder bleeder adapter (Tool J-21419) is designed to allow filling of the reservoir to the proper level (¼" from the reservoir rim) during the bleeding operation—do not over-fill the reservoir.

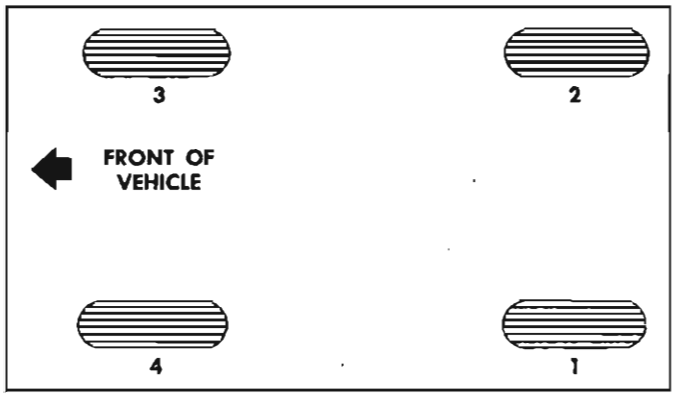

Fig. 5-3—Proper Bleeding Sequence

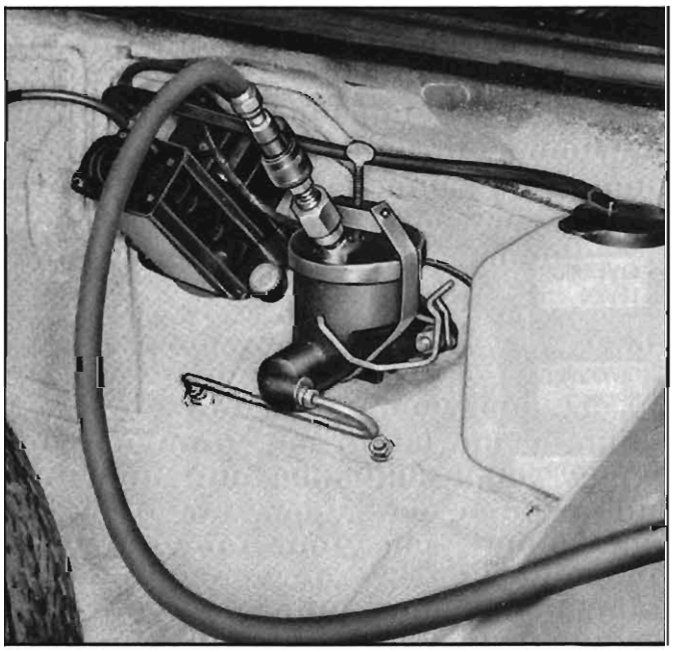

Fig. 5-4—Pressure Bleeding

BRAKE PEDAL FREE MOVEMENT ADJUSTMENT

Brake pedal free movement is the upward movement of the brake pedal pad, with pedal in return position, before the pedal arm contacts the pedal stop. Since the pedal stop is permanently mounted and non-adjustable, it is essential that free movement be present—too much free movement results in pedal rattle while insufficient movement will tend to force undue pressure on main cylinder piston, which would possibly close compensating port.

1. Loosen check nut on push rod sufficiently to allow adjustment.
2. Turn push rod in proper direction to obtain correct adjustment. Upward movement of the pedal pad before the pedal arm contacts the pedal stop must be 1/16 to 1/4 inch (fig. 5-5).
3. Tighten check nut against clevis, and recheck free movement.

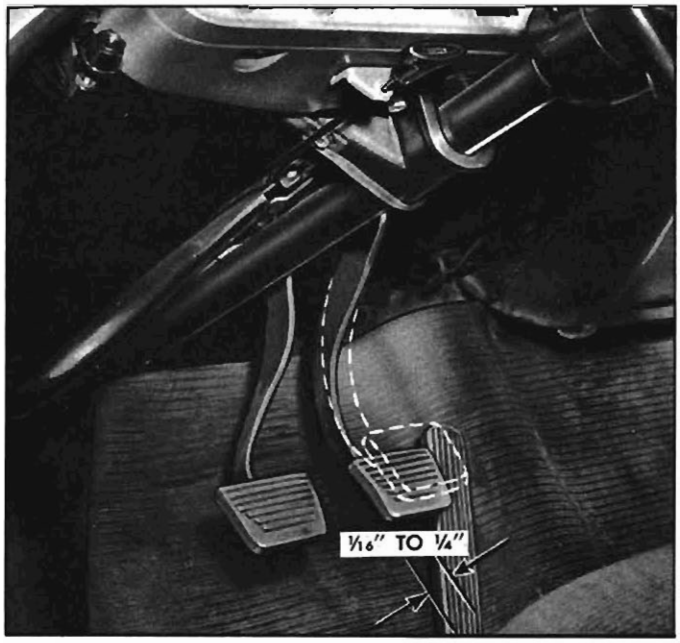

Fig. 5-5—Brake Pedal Free Movement

SERVICE OPERATIONS

MAIN CYLINDER

The brake main cylinder (fig. 5-6) is functionally the same as past models, but due to new design and location, accessibility for service and maintenance has been greatly improved.

Removal

1. Provide suitable protective cover for luggage compartment and exterior portion of front fender panel.
2. Disconnect hydraulic line from outlet end of cylinder and tee.
3. Remove the two retaining nuts and lockwashers from the cylinder mounting studs, and remove the cylinder, gasket, and rubber boot from the vehicle.

NOTE: Push rod may be removed at this time if replacement is necessary. However, if it is necessary to remove push rod clevis, the complete pedal assembly must be removed from the support bracket. (See "Brake Pedal Removal.")

Disassembly, Inspection and Assembly

Disassembly, inspection and assembly of the main cylinder is basically the same as outlined in the 1961 Shop Manual except for brake pedal free movement adjustment, which should be 1/16 to 1/4 inch. This adjustment is no longer obtainable under assembly procedure and must be accomplished after master cylinder is secured to dash wall.

Installation

1. Position mounting gasket on attaching studs and assemble rubber boot to main cylinder.
2. Apply rubber lubricant to push rod and place main cylinder on mounting studs so that push rod

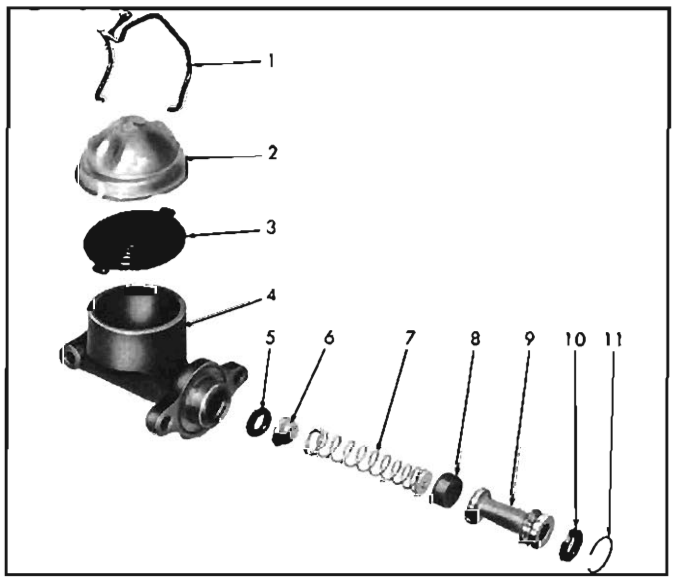

Fig. 5-6—Brake Main Cylinder

1. Bail Wire
2. Reservoir Cover
3. Seal
4. Body
5. Valve Seat
6. Valve Assembly
7. Spring
8. Primary Cup
9. Piston
10. Secondary Cup
11. Lock Ring

goes through rubber boot and into piston. Secure retaining nuts.

3. Connect and secure hydraulic line to main cylinder outlet and tee.
4. Adjust brake pedal free play. See "Brake Pedal Free Movement Adjustment."
5. Fill main cylinder, and bleed brakes as outlined in this section.
6. Remove protective cover from vehicle.

BRAKE PEDAL

Removal

1. Remove pedal stop and stop light switch from pedal support bracket.

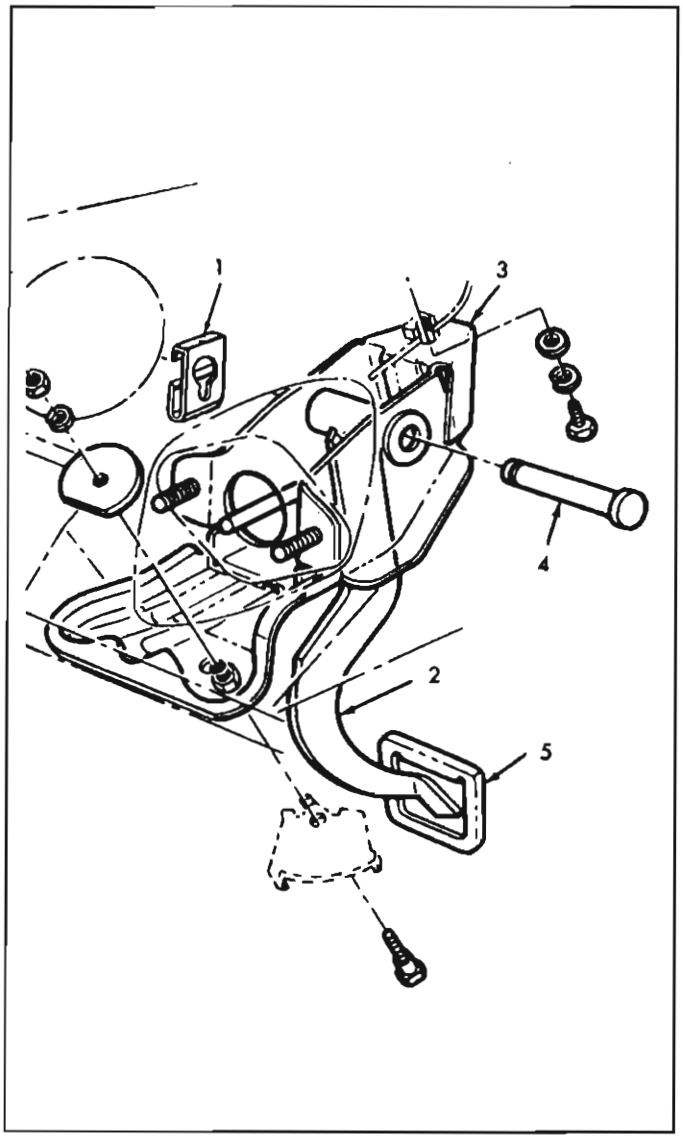

Fig. 5-7—Brake Pedal and Attaching Parts

1. Clip Retainer
2. Pedal
3. Support Bracket
4. Pedal Pivot Shaft
5. Pad

2. Loosen check nut on main cylinder push rod, and adjust push rod so that maximum clearance is obtained between push rod and piston.
3. Remove outer hair pin clip from pedal pivot shaft. Using a chisel, cut the push-on type thrust retainer and remove from pedal pivot shaft. Discard the retainer.
4. Remove pedal pivot shaft, and withdraw pedal, push rod and clevis from support and rubber boot.
5. Remove clevis, push rod, pedal pad and shaft bushings from pedal assembly.

Inspection

1. Clean all metal parts with a nontoxic cleaning solvent.
2. Wipe the nylon bushings clean with a clean cloth.

   CAUTION: Nylon bushings should not be treated with cleansing agent of any nature.

3. Inspect pivot pin and nylon bushings for wear and damage—replace parts as required.

Installation

1. Apply a light coating of Lubriplate to inside diameter of nylon bushings and install bushings to pedal bore.
2. Position push rod and clevis to pedal arm, and install clevis pin and cotter pin.

   CAUTION: Install clevis pin from right side of pedal arm, for proper operating clearances and retention.

3. Apply rubber lube to push rod surface. Position complete pedal assembly to support and insert push rod through rubber boot. Install pedal pivot pin from left side so that pin goes through support assembly and pedal bushings.
4. Hold head of pivot pin securely against support, and install a **new** push-on type retainer. There should be no end play in pin after retainer is installed. (Install retainer so that flush side is snug against support.) Install hair pin clip to pivot pin.
5. Install pedal stop and stop light switch, and adjust brake pedal free play (See "Brake Pedal Free Movement Adjustment").

BRAKE DRUMS, SHOES AND LININGS

The service operations which are affected due to the self-adjusting feature of the 1964 brakes are described below.

NOTE: If brake drums are worn severely, it may be necessary to retract the adjusting screw. To gain access to the adjusting screw star wheel, knock out the lanced area in the web of the brake drum using a chisel or similar tool. Release the actuator from the star wheel by lifting with a small screwdriver and back off the star wheel with a second screwdriver (press down on handle to retract shoes).

CAUTION: After knocking out the metal, be sure to remove it from the inside of the drum and clean all metal from the brake compartment. A new hole cover must be installed when drum is reinstalled.

Removal

1. Raise the vehicle and place on stand jacks.
2. Loosen check nuts at forward end of parking brake cable sufficiently to remove all tension from brake cable.
3. Remove brake drum.

NOTE: Since boots are recessed in grooves on wheel cylinders to prevent pistons from leaving cylinders, it is not necessary to install wheel cylinder clamps when brake shoes are removed; however, brake pedal must not be depressed while drums are removed.

4. Unhook brake shoe pull back springs from anchor pin and link end, using Tool J-8049 (fig. 5-8).
5. Remove the actuator return spring.
6. Disengage the link end from the anchor pin and then from the secondary shoe.
7. Remove hold-down pins and springs using a pair of needle nose pliers (fig. 5-9).
8. Remove the actuator assembly.

NOTE: The actuator, pivot and override spring are an assembly. It is not recommended that they be disassembled for service purpose, unless they are broken. It is much easier to assemble and disassemble the brakes by leaving them intact.

9. Separate the brake shoes by removing adjusting screw and spring.
10. Remove parking brake lever from secondary brake shoe (rear only).
11. Clean dirt out of brake drum using care to avoid getting dirt into front wheel bearings. Inspect drums for roughness, scoring or out-of-round. Replace or recondition drums as necessary.
12. Inspect wheel bearings and oil seal and replace any necessary parts.
13. Carefully pull lower edges of wheel cylinder boots away from cylinders and note whether interior is wet with brake fluid. Excessive fluid at this point indicates leakage past piston cups requiring overhaul of wheel cylinder.

NOTE: A slight amount of fluid is nearly always present and acts as lubricant for the piston.

14. If working at rear wheels, inspect backing plate for oil leakage past axle shaft oil seals. Install new seals if necessary.
15. Check all brake flange plate attaching bolts to make sure they are tight. Clean all rust and dirt from shoe contact faces on flange plate, using fine emery cloth.

Installation

CAUTION: Make certain to install recommended shoe and lining assemblies, otherwise serious fade or permanent failure may occur.

1. Inspect new linings and make certain there are no nicks or burrs on bonding material on shoe edge

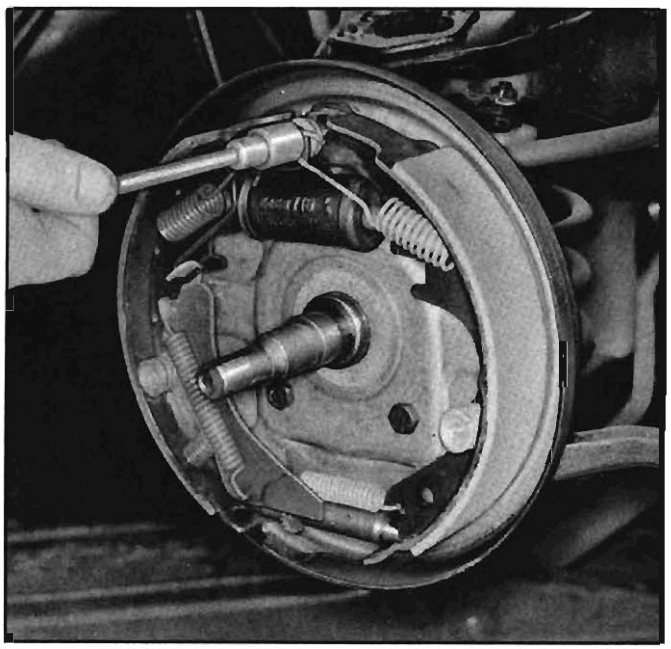

Fig. 5-8—Unhooking Pull Back Springs

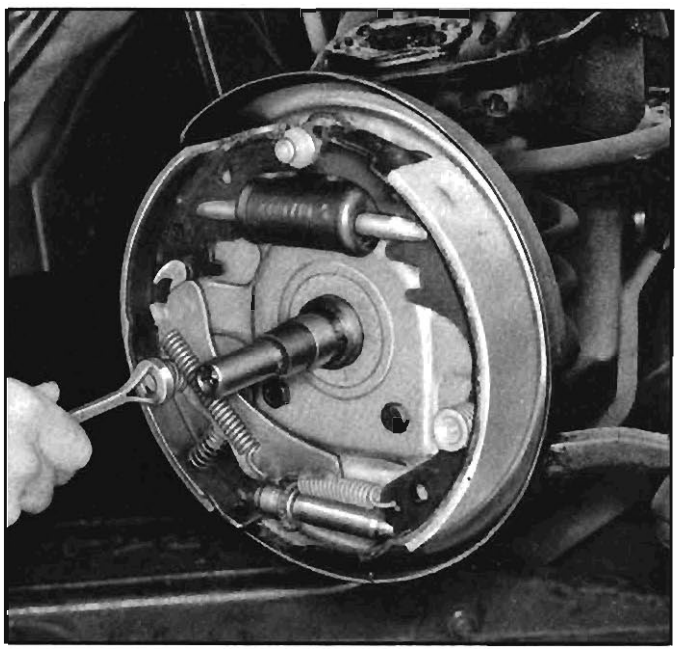

Fig. 5-9—Removing Hold Down Springs and Pins

where contact is made with brake flange plate or on any of the contact surfaces.

NOTE: Keep hands clean while handling brake shoes. Do not permit oil or grease to come in contact with linings.

2. If working on rear brakes, lubricate parking brake cable.
3. On rear brakes only, lubricate fulcrum end of parking brake lever and the bolt with brake lube, then attach lever to secondary shoe with bolt, spring washer, lockwasher and nut. Make sure that lever moves freely.
4. Before installation, make certain the adjusting screw is clean and lubricated properly.

NOTE: Loose adjustment may occur from an adjusting screw that is not properly operating. If the lubrication in the adjusting screw assembly is contaminated or destroyed, the adjusting screw should be thoroughly cleaned and lubricated.

5. Connect brake shoes together with adjusting screw spring, then place adjusting screw, socket and nut in position.

CAUTION: Make sure the proper adjusting screw is used (screw stamped "L" for left side of vehicle and "R" for right side of vehicle). The star wheel should only be installed with the star wheel nearest to the secondary shoe and the adjusting screw spring inserted properly to prevent interference with the star wheel.

6. Secure the primary brake shoe (short lining—faces forward) first with the hold-down pin and spring using a pair of needle nose pliers. Engage shoes with the wheel cylinder connecting links.
7. Secure the actuator assembly, override spring and return spring on the secondary shoe.
8. Install and secure the actuator assembly and secondary brake shoe with the hold-down pin and spring using a pair of needle nose pliers.
9. Install guide plate over anchor pin.
10. Install the wire link.

NOTE: Do not hook the wire link over the anchor pin stud with the regular spring hook tool. This may damage the cylinder boot seals. Place the wire link over the anchor pin stud first, and then fasten to the actuator assembly by holding the adjuster assembly in the full down position.

11. On rear brakes connect to parking brake lever and install strut between lever and primary shoe as installation is made.
12. If old brake pull back (return) springs are nicked, distorted, or if strength is doubtful, install new springs.

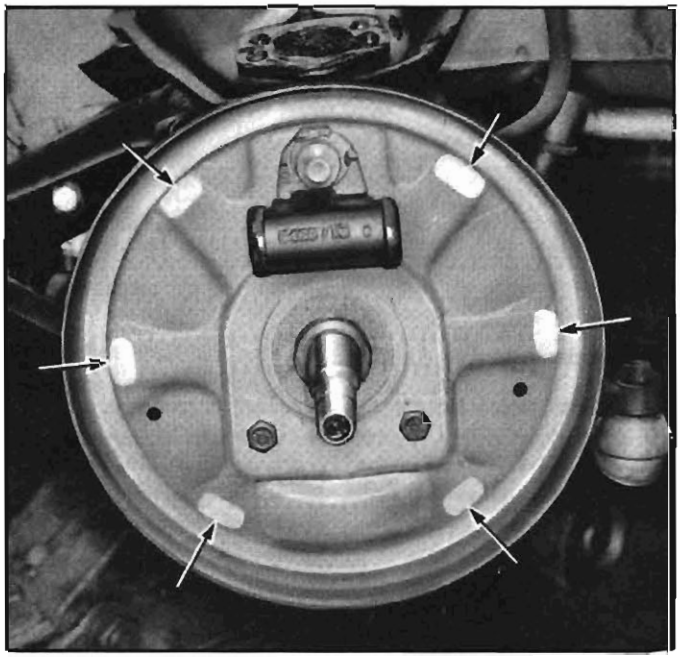

Fig. 5-10—Backing Plate Contact Faces

13. Hook springs in shoes using Tool J-8049 by installing the primary spring from the shoe over the anchor pin and then spring from secondary shoe over the wire link end.
14. Pry shoes away from backing plate and lubricate shoe contact surfaces with a thin coating of brake lubs (fig. 5-10).

CAUTION: Be careful to keep lubricant off facings.

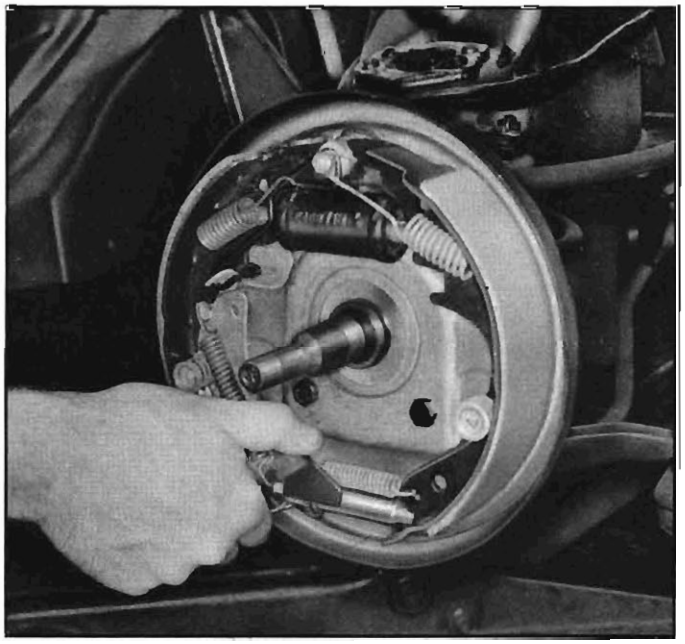

Fig. 5-11—Checking Operation of the Actuating Lever

15. After completing installation, make certain the actuator lever functions easily by hand operating the self-adjusting feature (fig. 5-11).
16. Follow the above procedure for all brakes.
17. Adjust the service brakes as outlined below, then adjust the parking brake.

Adjustment

Although the brakes are self-adjusting, a preliminary or initial adjustment may be necessary after the brakes have been relined or replaced, or whenever the length of the adjusting screw has been changed. The final adjustment is made by using the self-adjusting feature.

1. With brake drum off, disengage the actuator from the star wheel and rotate the star wheel by spinning or turning with a small screwdriver.

2. **Recommended:**
   a. Use special Tool J-21177, Drum-to-Brake Shoe Clearance Gauge, to check the diameter of the drum inner surface (fig. 5-12).
   b. Turn the tool to the opposite side and fit over the brake shoes by turning the star wheel until the gauge just slides over the linings (fig. 5-13).
   c. Rotate the gauge around the brake shoe lining surface to assure proper clearance.

   Alternate:
   a. Using the brake drum as an adjustment fixture, turn the star wheel until the drum slides over the brake shoes with a slight drag.
   b. Turn the star wheel 1¼ turns to retract the shoes. This will allow sufficient lining-to-drum clearance so final adjustment may be made as described in Step 4.
3. Install the drum and wheel.

NOTE 1: If lanced area in brake drum was knocked out, be sure all metal has been removed from brake compartment. Install new hole cover in drum to prevent contamination of the brakes.

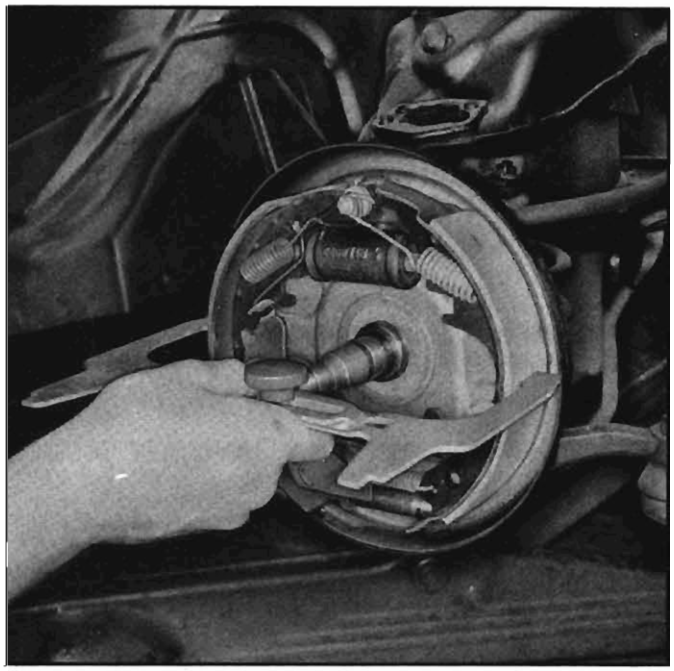

Fig. 5-13—Checking Brake Shoe Lining Clearance

Fig. 5-12—Using Drum-to-Brake Shoe Clearance Gauge

Fig. 5-14—Aligning Drum Tang with Axle Shaft

NOTE 2: Make certain when installing drums that drums are installed in the same position as when removed with the drum locating tang in line with the locating hole in the axle shaft (fig. 5-14).

4. Make final adjustment by driving and stopping vehicle until satisfactory brake pedal height is obtained as described under "Self-Adjusting Features" earlier in this section.

CORVAIR 95 AND GREENBRIER—1200 SERIES

All service operations for the Corvair 95 and Greenbrier remain the same as described in the 1961 Corvair Shop Manual—Section 5, with the exception of the following.

The 1964 brakes incorporate the self-adjusting feature and the new type master cylinder. Removal, installation, adjustment, and bleeding procedures are the same as outlined for the Corvair 500, 600, 700, and 900 Series in the preceding pages of this manual.

SPECIAL TOOLS

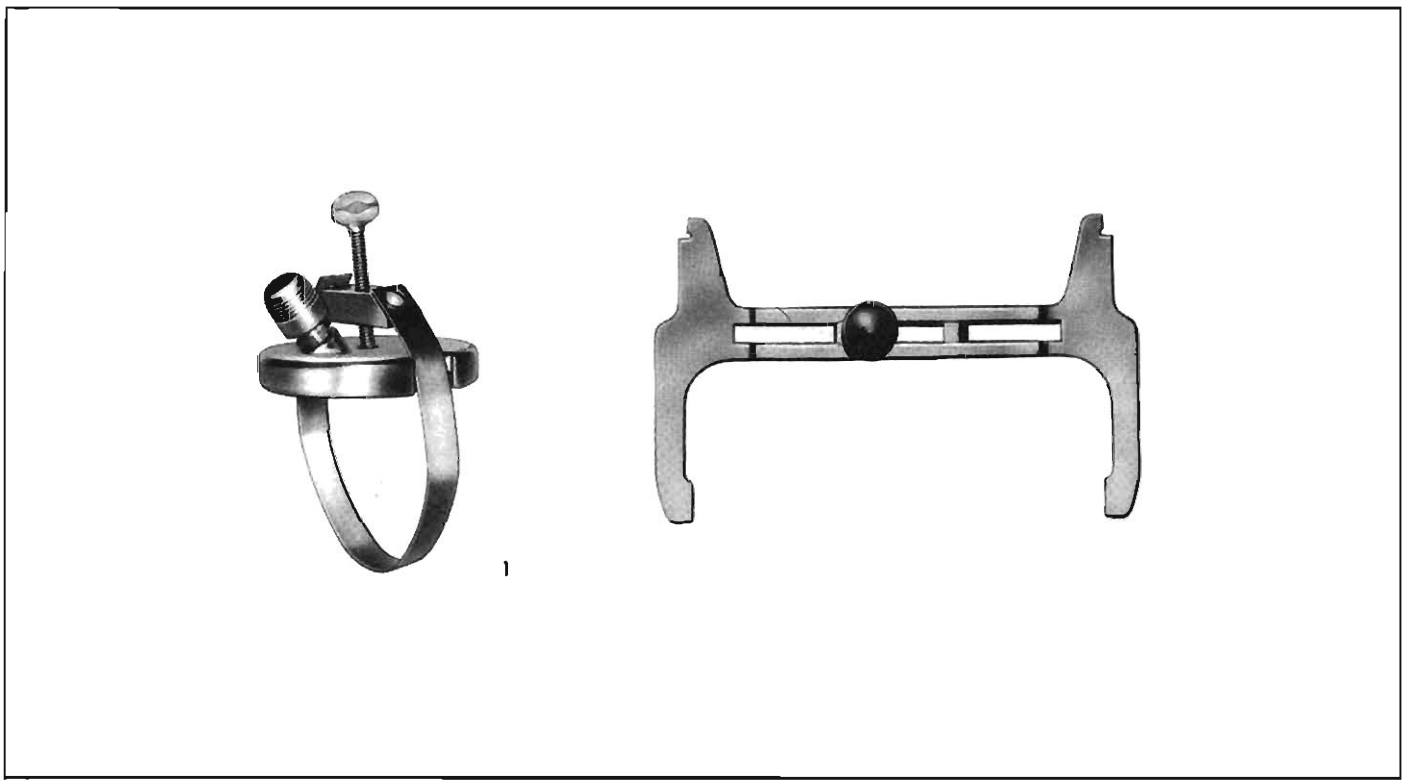

Fig. 5-15—Brake Special Tools

1. J-21479 Pressure Bleeder Adapter
2. J-21177 Drum-to-Brake Shoe Clearance Gauge