Section III
BRAKES

CONTENTS

DATA AND SPECIFICATIONS
TOTAL CONTACT SERVICE BRAKES

MODELS	LC1	LC2, LC3, LY1
TYPE	Total Contact (Floating Shoe) Hydraulic	
DRUM DIAMETER	11 in.	12 in.
LINING		
Type	Moulded Asbestos	
Attachment	Cyclebond	
Width	2½ in.	
Thickness	13/64 in.	
BRAKE SHOE RETURN SPRING TENSION USING FISH SCALE HOOKED AT TOE OF SHOE	35 to 45 lbs. required to break contact between shoe and push rod	
BRAKE PEDAL FREE PLAY	1/32 in. to 1/8 in.	
WHEEL CYLINDER BORE		
Front—Upper and Lower	1⅛ in.	
Rear	1⅛ in.	
MASTER CYLINDER BORE	1⅛ in.	
PISTON CLEARANCE	.003 in. to .0065 in.	

DATA AND SPECIFICATIONS

HAND BRAKE

MODELS	LC1, LC2, LC3, LY1
TYPE	Internal Expanding (TorqueFlite Trans.)
LOCATION	Propeller Shaft at Rear of Transmission
DRUM DIAMETER	7 inch (TorqueFlite Trans.)
LINING TYPE	Moulded and Compressed Asbestos
Length	13.06 inch (TorqueFlite Trans.)
Width	2 in.
Thickness	5/32 in.
Clearance	.015 in. to .020 in.

SPECIAL TOOLS

Tool Number	Tool Name
C-3014	Installing Tool—Hand Brake Adjusting Nut Spanner
C-3015	Installing Tool—Hand Brake Adjusting Nut Cable
C-3080	Hone—Brake Cylinder Surfacing
C-3281	Wrench—Brake Drum Holding
C-3462	Wrench—Brake Shoe Return Spring Remover and Installer
C-3496	Tank—Master Cylinder Refiller Air Pressure
C-452	Puller—Parking Brake Drum
C-650	Hose—Brake Bleeder
C-757	Installing Sleeve—Rear Axle Shaft Oil Seal
C-845	Puller—Wheel

TIGHTENING REFERENCE

	Foot-pounds
Rear Brake Support Plate Screws	35
Front Brake Support Plate Bolt Nuts	35
Wheel Cylinder Screws	20

Section III
BRAKES

Total Contact brakes (Figs. 1 and 2) are continued on the 1958 models. The primary virtues of the Total Contact brakes are: (a) greater resistance to fade (b) instantaneous power response (c) less fatigue in heavy traffic when repeated acceleration and braking are necessary.

These brakes are of the drum type, with floating brake shoes mounted between plates located on center plane of lining (Figs. 3 and 4). With wheel cylinders mounted in same plane, braking forces are transmitted equally across width of lining. The web of shoe is contoured in depth, so when brakes are applied equal pressures are applied to brake drums along entire length of lining. The shoes are held in position by brake shoe return springs. One end of each spring is hooked in loop of return spring links. The other end engages the brake shoe.

An anchor pin in support plate assembly holds the spring link in a fixed position at one end. The other end of link is positioned by the brake shoe adjusting cam, providing a constant-

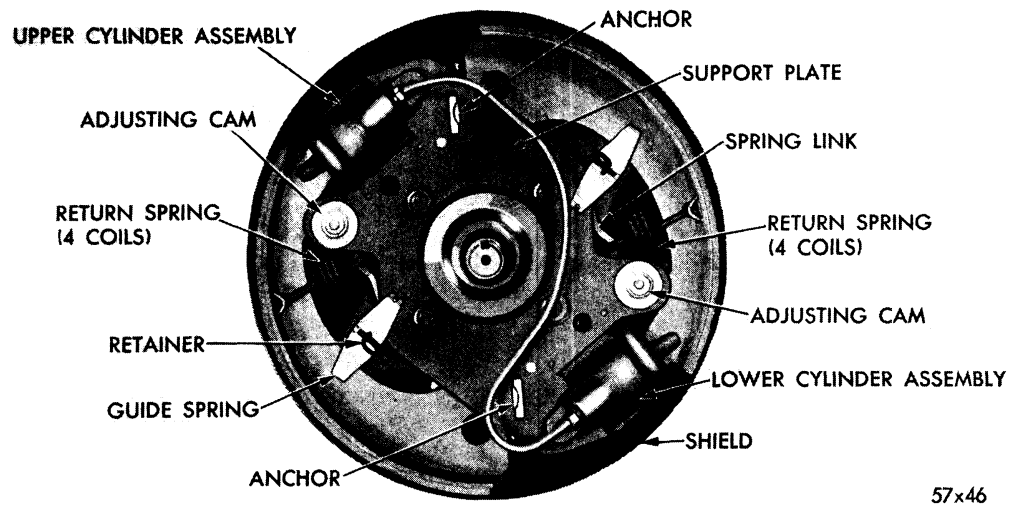

Fig. 1—Total Contact Brake Assembly (Front)

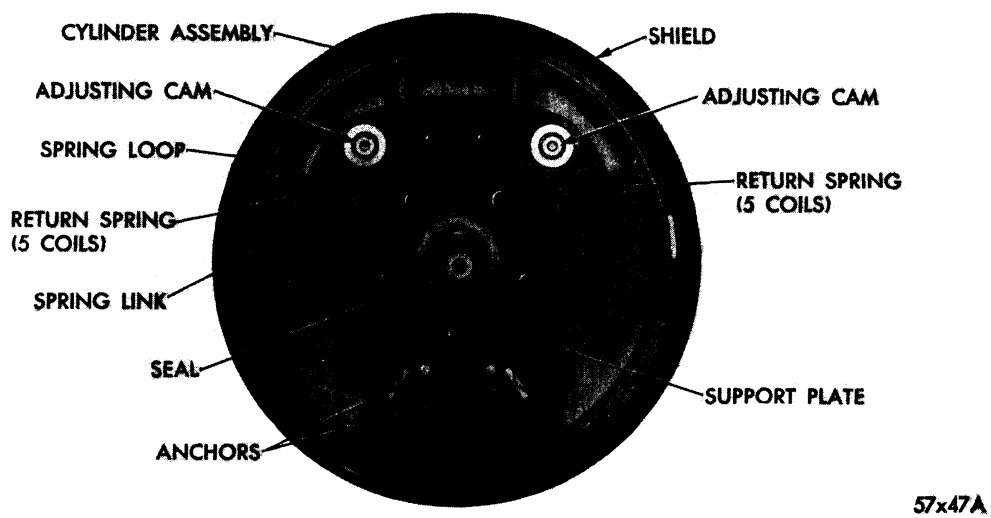

Fig. 2—Total Contact Brake Assembly (Rear) (Windsor Only)

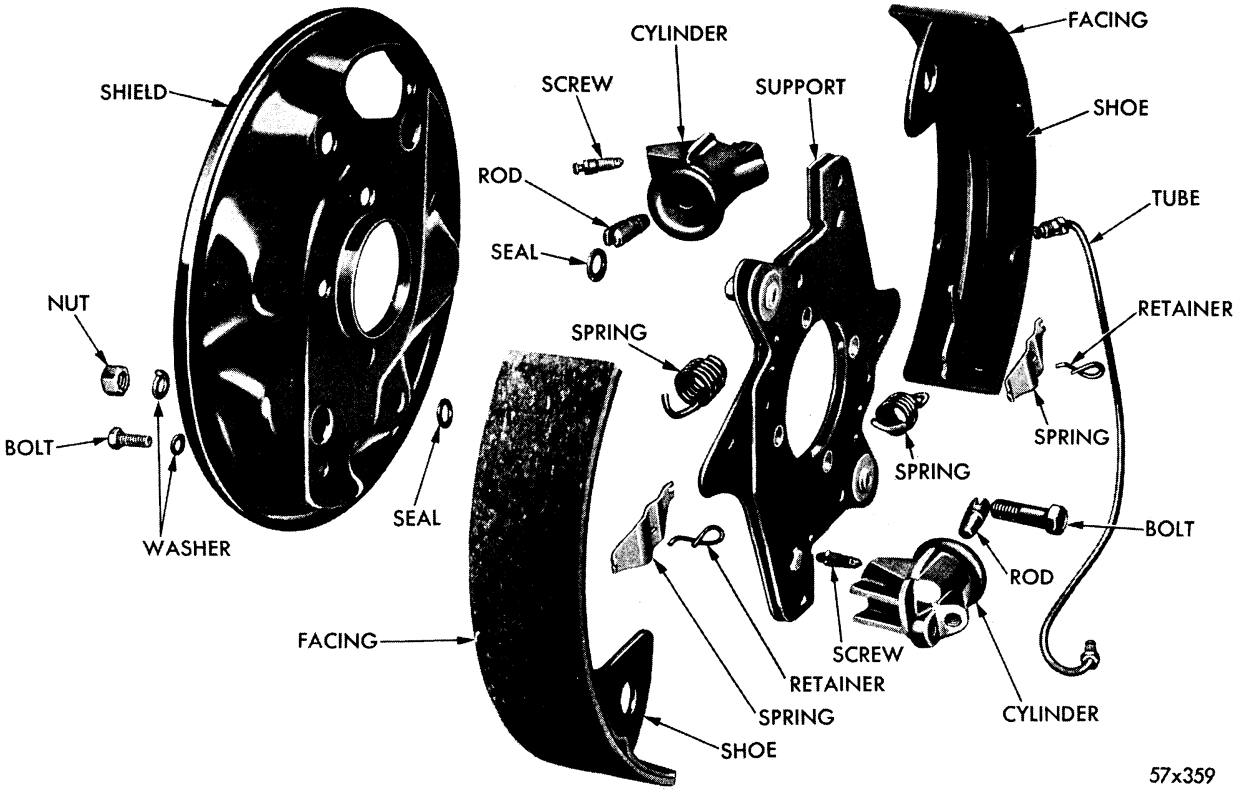

Fig. 3—Front Brake (Disassembled View)

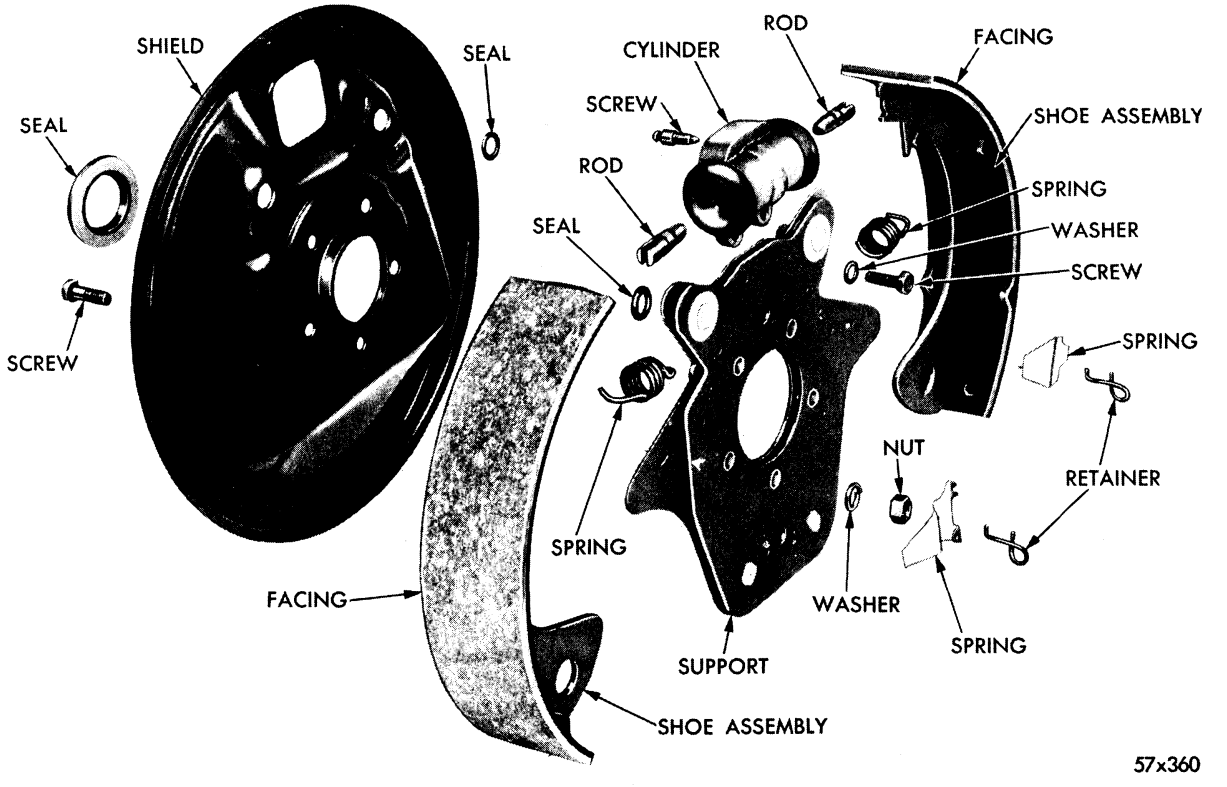

Fig. 4—Rear Brake (Disassembled View)

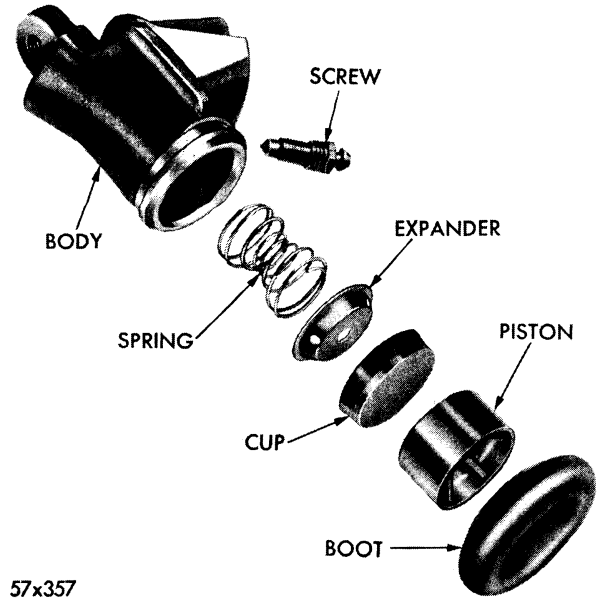

Fig. 5—Front Wheel Cylinder (Exploded View)

loaded spring length. Side rattle and twisting of shoe is controlled by guide springs, which maintains a constant spring pressure against side of web of shoe holding shoe against support plate. The guide spring also helps to eliminate brake noise.

In front brakes two cylinders of single piston type (Fig. 5) are attached to the support plate assembly. The location of cylinders is such that when brakes are applied, self-energizing action affects both front and rear shoes of front brake when vehicle is traveling forward.

The front shoe pivots at the bottom of support plate and rear shoe pivots at top. Each shoe is actuated by its own wheel cylinder.

Each rear brake assembly uses one wheel cylinder of double-acting type (Fig. 6). Both shoes pivot at the bottom of support plate and are actuated by wheel cylinder causing shoes to operate in opposition to each other. Self-energizing action is effective on rear brake front shoe when vehicle is traveling forward and effective on rear shoe when traveling in reverse.

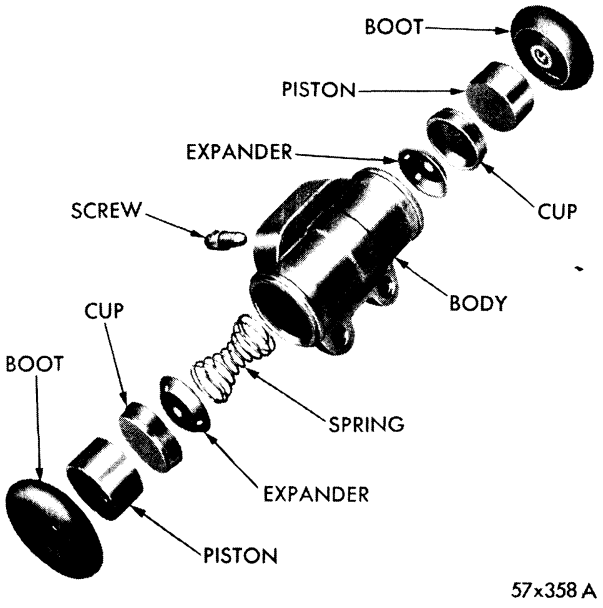

Fig. 6—Rear Wheel Cylinder (Exploded View)

SERVICE PROCEDURES

1. DISASSEMBLY OF FRONT BRAKE

Block brake pedal to prevent downward movement of pedal. Back off adjusting cams. Remove wheel, and hub and drum assembly. Using Tool C-3462, remove shoe return springs (Fig. 7). The end of tool should be inserted between spring link and support plate assembly. With tool cam slot engaging spring hook, turn handle of tool to disengage spring.

NOTE: Do not use brake spring pliers or damage to lining will result.

Turn brake shoe guide retainer ¼ turn, then remove retainer and guide (Fig. 8). **The lip on end of guide is used for positioning guide on outer support plate.** Slide shoes from between

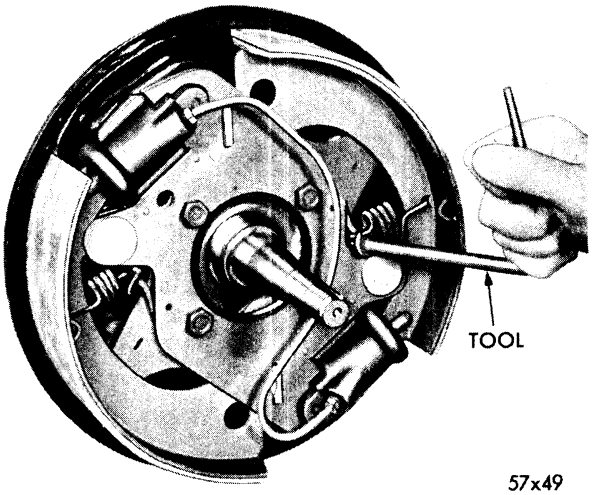

Fig. 7—Removing Front Brake Shoe Return Spring

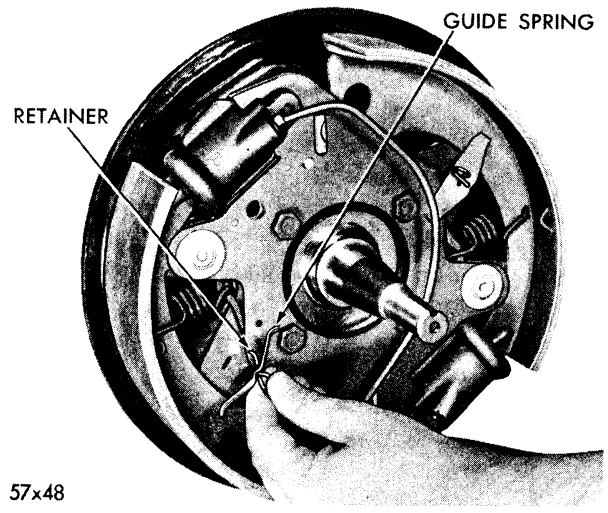

Fig. 8—Front Brake Mounting Bolts

support plates (Fig. 9). Disconnect flexible brake hose at upper wheel cylinder, and remove wheel cylinder mounting screws and lockwashers at rear of brake shield.

Remove four support plate mounting bolts, nuts and lockwashers, and remove support plate with wheel cylinders and cylinder connector tube attached (Fig. 10). With assembly on bench, remove cylinder connector tube and wheel cylinders.

NOTE: Perform operations outlined in "Servicing the Wheel Cylinders."

2. ASSEMBLY OF FRONT BRAKE

Place wheel cylinders into position in support

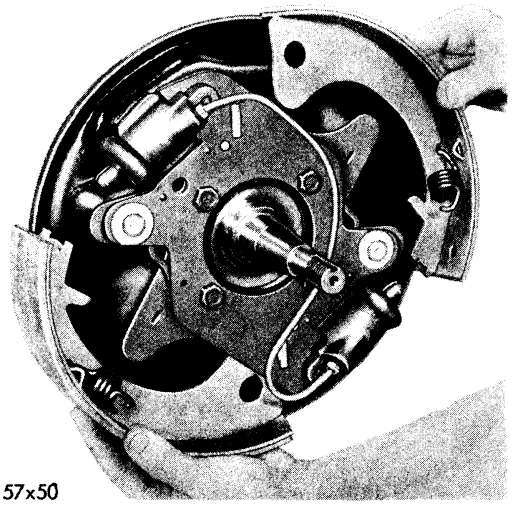

Fig. 9—Removing Front Brake Shoe From Support Plate

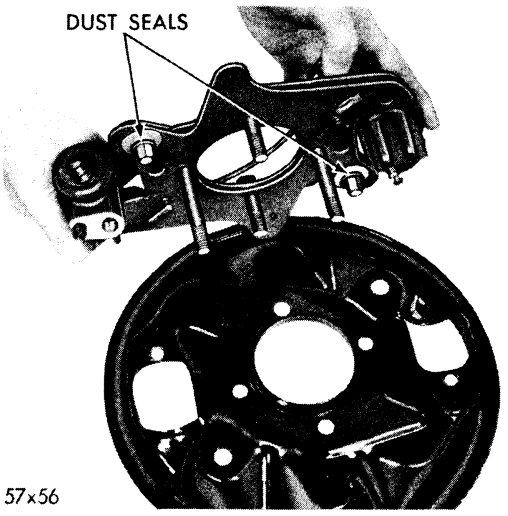

Fig. 10—Removing or Installing Support Plate

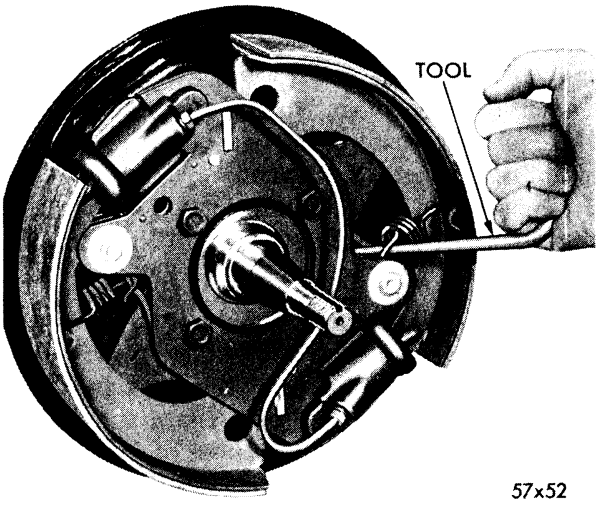

Fig. 11—Installing Front Brake Shoe Return Spring

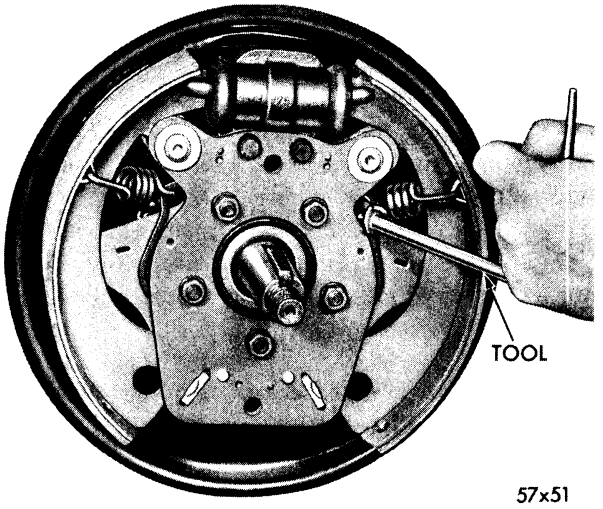

Fig. 12—Removing Rear Brake Shoe Return Spring with Tool C-3462

Fig. 13—Removing or Installing Rear Brake Shoe

plate assembly and install connector tube. Position support plate on brake shield and install cylinder mounting screw and lockwasher, but do not tighten.

NOTE: Be sure brake adjusting cam rubber dust washers are in place and in good condition before installing support plate assembly.

Install four support plate bolts, lockwashers, and nuts. Tighten 35 foot-pounds and wheel cylinder mounting screw 20 foot-pounds torque.

Install wheel cylinder flexible brake hose, and tighten all connections securely. Install brake shoes, and brake shoe return springs. (Fig. 11)

3. DISASSEMBLY OF REAR BRAKE

Block brake pedal in "UP" (released) position.

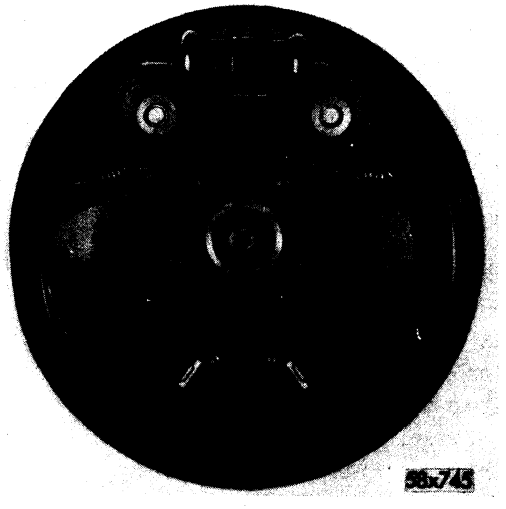

Fig. 14—Removing Rear Brake Shoe Support Plate

Fig. 15—Removing or Installing Rear Brake Support Shield with (Tool C-745)

Raise car and remove wheels. **Back off all adjusting cams.** Remove hub and drum assembly, using puller Tool C-845. Insert wrench, Tool C-3462, in inner support plate hole, with tool cam slot engaging spring hook (Fig. 12). Turn tool handle to disengage spring from return spring link, and turn handle in opposite direction to release spring. Remove both springs in this manner. **Do not use brake spring pliers or damage to lining will result.**

After removing brake shoe return spring, dislocate shoe from adjusting cam and wheel cylinder and remove brake shoes (Fig. 13). To avoid warping of shoe force should not be used to remove shoe from support plate.

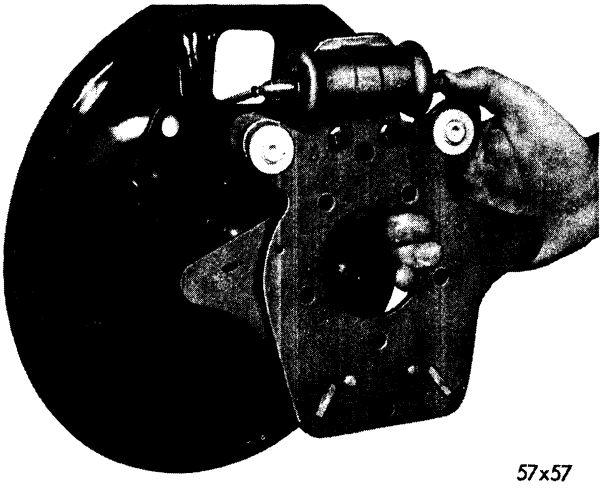

Fig. 16—Installing Rear Brake Support Plate

(Fig. 14). Disconnect brake line at wheel cylinder. Install Tool C-745 to protect axle shaft outer seal. (Fig. 15). Remove five nuts and lockwashers that retain brake support plate and brake shield to axle housing and remove support plate (Fig. 16) wheel cylinder and dust shield as a unit. Remove wheel cylinder.

4. ASSEMBLY OF REAR BRAKE

Assemble wheel cylinder on brake shoe support plate. Install screws and lockwashers finger tight. Assemble brake shoe support plate assembly to brake shield.

NOTE: Be sure brake adjusting cam rubber dust washers are in place and in good condition before installing brake support plate assembly. These washers are located between support plate and brake shield.

Position Tool C-745 (Fig. 15) and install brake shield, support plate and wheel cylinder. Tighten support plate screws 35 foot-pounds and wheel cylinder screws 20 foot-pounds torque. Connect brake fluid line to wheel cylinder.

Position brake shoes in support plate. **Make sure wheel cylinder push rods properly engage toe end of shoes and shoes are in alignment. Refer to "Brake Shoe Alignment." Paragraph 5.** If shoes must be relined, refer to "Brake Lining Replacement," Paragraph 6. Install brakes shoe return springs, using Tool C-3462 (Fig. 17). Check tension of springs, by hooking fish scale at toe of shoe and pulling shoe away from wheel cylinder. Scale should read 35 to 45 pounds before contact is broken between web of shoe and wheel cylinder push rod.

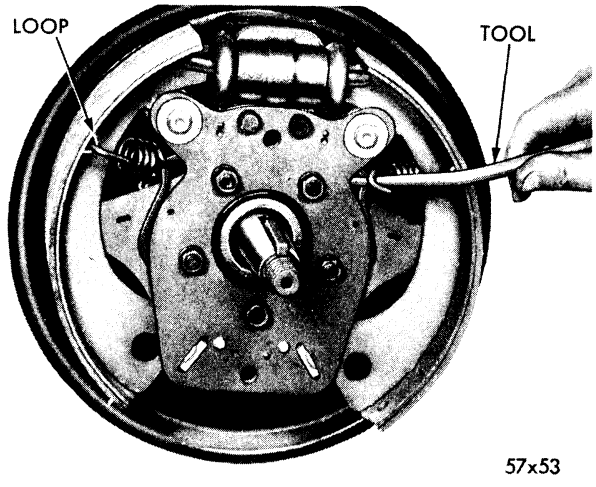

Fig. 17—Removing Rear Brake Shoe Return Spring With Tool C-3462

NOTE: Long end of brake return springs must be hooked in shoes. Otherwise, brake noise will be encountered due to coil springs contacting shoes.

Install brake shoe guide springs, making sure positioning lip of spring engages hole in support plate (Fig. 13). Loosen adjusting cams and install hub, drum and wheel assembly. Bleed brake system, refill master cylinder to proper level, and adjust brakes, as outlined in "Brake Adjustment," Paragraph 8.

5. BRAKE SHOE ALIGNMENT

To insure maximum stopping ability, the entire length and width of lining must contact drum upon brake application. Examination of used lining will disclose if shoe is out of alignment. Misaligned shoes cannot be corrected by grinding and should be discarded. The brake shoe support plate assembly should also be checked. If it is sprung or damaged ,replace with new support assembly.

NOTE: Brake shoe clearance should be checked with a feeler gauge. The minimum clearance should be .003 inch.

6. BRAKE LINING REPLACEMENT

Pre-cemented Cyclebond brake lining can be successfully bonded to either new or used brake shoes.

NOTE: It is very important that equipment manufacturer's instructions be carefully observed for curing time, temperature, and clamping pressure (100 psi.), depending on type of equipment used.

7. GRINDING THE BRAKE LINING

NOTE: Brake shoes grinding must be done with brake shoes removed from vehicle.

Check drum out-of-round with an accurate indicator. Drum must not exceed .004 inch. Measure the drum diameter with an accurate micrometer, and transfer drum diameter to grinding machine and grind linings to specified clearance of .010 to .024 inch below drum diameter.

8. BRAKE ADJUSTMENT

NOTE: Whenever brakes have been relined or new shoe assemblies installed, always apply brake pedal prior to adjusting brakes. This action causes brake shoes to center themselves in brake drum and to assist in adjustment.

a. Front Brake Adjustment

Turn each adjusting cam (Fig. 18) on both front brakes in direction of forward wheel rotation (Fig. 19) until shoe lining is solid against drum and wheel is locked. Turn adjusting cams slowly in opposite direction(each cam a little at a time) until no drag is felt.

b. Rear Brake Adjustment

The forward rear wheel brake shoe adjusting cams are rotated in direction of forward wheel rotation. The rear wheel shoe adjusting cams are rotated in direction of reverse wheel rotation (Fig. 19).

9. SERVICING THE WHEEL CYLINDER

Wheel cylinder pistons that are badly scored or corroded should be replaced. Use new piston cups when reconditioning cylinders. Cylinder walls that have light scratches, or show signs of corrosion, can usually be cleaned up with crocus cloth. Cylinders that have deep scratches or scoring, may be honed, however, using Tool C-3080, providing diameter of cylinder bore is not increased more than .002 inch. A cylinder that does not clean up at .002 inch should be discarded and new cylinder used. (Black stains

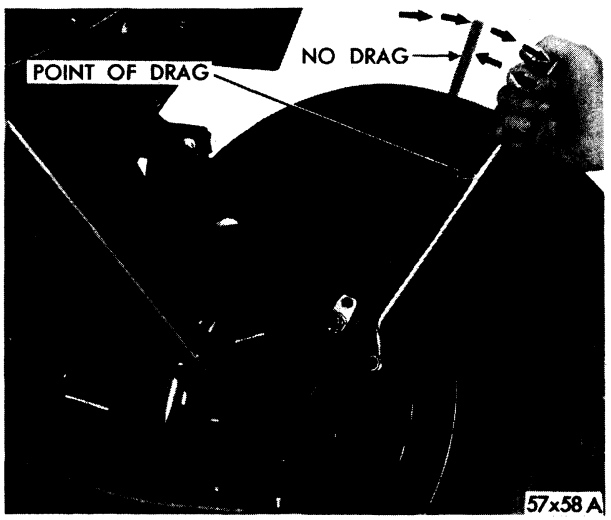

Fig. 18—Adjusting Brake Shoe at Cam

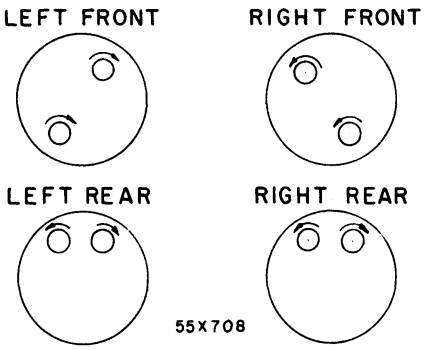

Fig. 19—Adjusting Front and Rear Brake Shoe (Orientation Diagram) (As Viewed Beneath Vehicle)

on cylinder walls are caused by piston cups and will do no harm).

10. SERVICING THE MASTER CYLINDER

When servicing the hydraulic brake system, these important rules must be observed: All vital parts of system must be kept **CLEAN,** free from dirt, grease and oil. The system must be free from air and all connections must be tightly sealed upon completion of job. Only high boiling point brake fluid, such as MOPAR Super Brake Fluid should be used. To remove

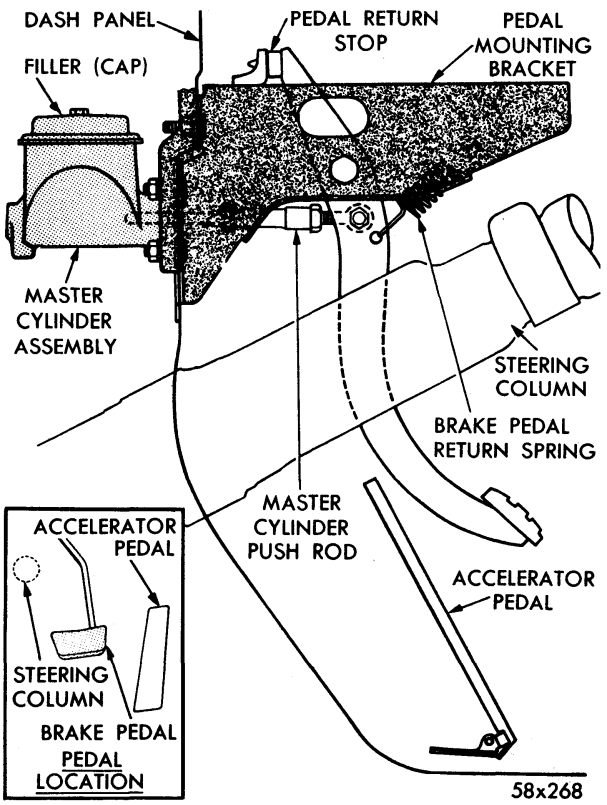

Fig. 20—Master Cylinder Location and Linkage

master cylinder, refer to Fig. 20, and proceed as follows:

Remove pedal return spring, disconnect push rod, and brake line tube at master cylinder. Disconnect stop light switch leads and remove master cylinder. Clean outside of master cylinder thoroughly, remove reservoir filler cap, and drain all brake fluid. Refer to Figure 21 and disassemble master cylinder for inspection. If master cylinder piston is badly scored or corroded, replace with new one. Piston cups and valve assembly should be replaced when reconditioning master cylinder.

Master cylinder walls that have light scratches or show signs of corrosion, can usually be cleaned with crocus cloth. Cylinders that have deep scratches or scoring may be honed, providing diameter of cylinder bore is not increased more than .002 inch. A master cylinder bore that does not clean up at .002 inch should be discarded and new cylinder used. (Black stains on the cylinder bore are caused by piston cups and will do no harm).

CAUTION

Use extreme care cleaning master cylinder after reconditioning. Remove all dust or grit by flushing cylinder with alcohol. Wipe dry with clean lintless cloth and clean second time with alcohol. Dry master cylinder with air pressure, and flush with clean brake fluid. (Be sure relief port in master cylinder is open.)

Before assembling, piston, cups and valve assembly should be dipped in new MOPAR Super Brake Fluid.

11. BLEEDING THE BRAKE SYSTEM

Remove any dirt around master cylinder reservoir filler cap so that dirt and grit will not drop into reservoir. Compressed air refiller, Tool C-3496, filled with MOPAR Super Brake Fluid or high boiling point fluid, provides a convenient way for keeping master cylinder filled while bleeding brake system. Back brake adjusting cams all the way off. This allows pistons in wheel cylinders to move back and permits greater movement of piston to expel air faster.

Starting with right rear wheel cylinder, wipe dirt off bleeder valve, and attach bleeder hose, Tool C-650, to valve. Place other end of hose in jar half full of brake fluid. Bleed intermit-

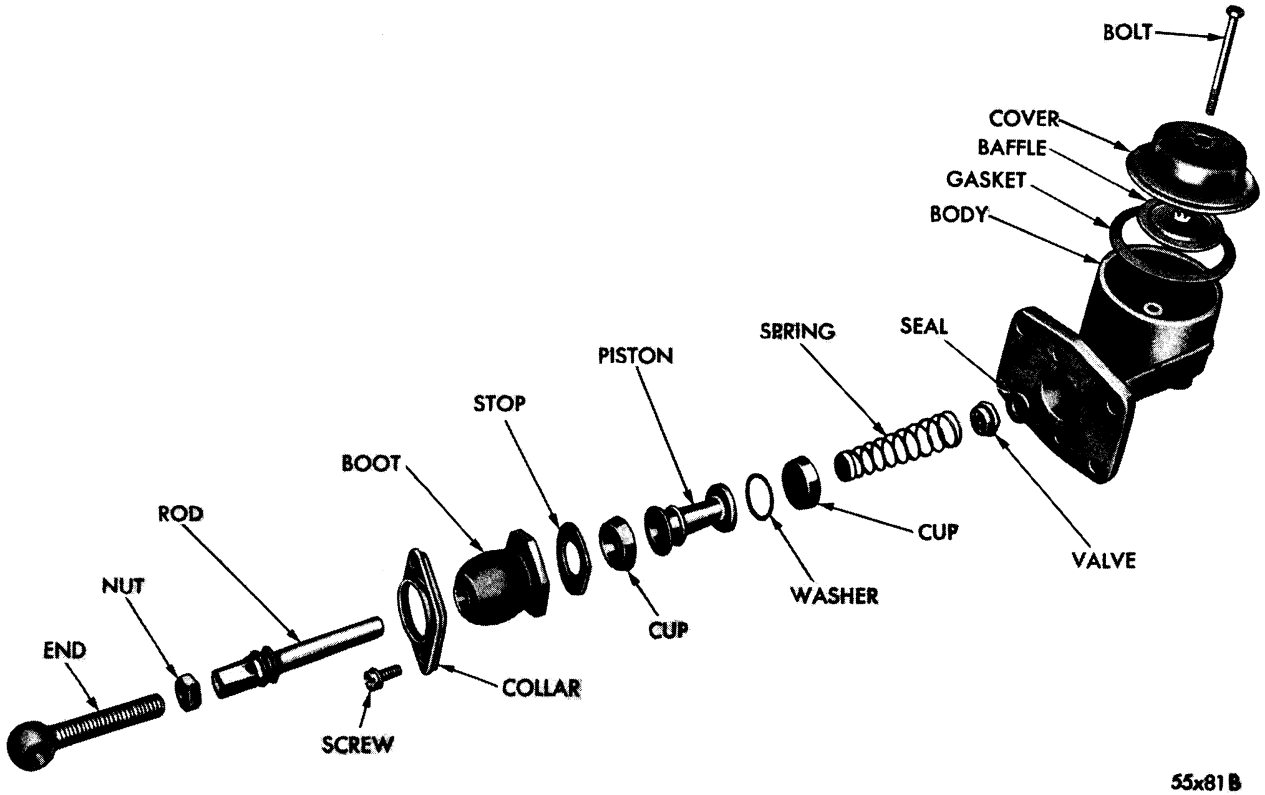

Fig. 21—Master Cylinder (Disassembled View)

tently, opening and closing valve (at wheel cylinder) about every four seconds. This causes a whirling action in cylinder to help expel air. Continue this process until fluid runs out of bleeder hose in a solid stream without air bubbles. Continue bleeding by repeating this operation on left rear wheel, right front wheel, and left front wheel. At front wheels, bleed lower cylinder first to force all air out of connecting line.

If necessary, repeat bleeding operation when there is an indication of air remaining in system. **Be sure to adjust cams after completion of bleeding operation.**

12. TEST FOR FLUID CONTAMINATION

To determine if contamination exists in brake fluid (indicated by swollen or deteriorated rubber cups), make following test: Place small amount of drained brake fluid in small glass bottle. Separation of fluid into two distinct layers will indicate mineral oil content. Add ⅓ water to contents and shake. If fluid becomes milky, oil is present. If fluid remains clear, it is not contaminated with mineral oil. **Be safe and discard old brake fluid that has been bled from system. Fluid drained from bleeding operation may contain dirt particles or other contamination and should not be used.**

13. SERVICING THE HAND BRAKE (INTERNAL EXPANDING TYPE)

The hand brake (Fig. 22) is internal expanding type and is used only on cars equipped with TorqueFlite Transmission. The brake is fully enclosed to keep out dirt and oil and requires very little servicing. Longer lining life is assured by protection against dirt and by use of Cyclebond linings. Adjustment, when needed, are very simple for both steel control cable and shoes.

a. Disassembly

To service the internal expanding hand brake, refer to Fig. 23, and proceed as follows: Disconnect propeller shaft at transmission. Engage holding Tool, C-3281, with companion flange. Loosen and remove companion flange nut, lockwasher and flatwasher. Install puller, Tool C-452, on companion flange and remove flange and brake drum. Remove brake adjusting screw cover and disengage ball end of cable from operating lever. Separate shoes at bottom, allowing brake shoe adjusting nut, screw and sleeve to drop out, and release shoes. Remove brake shoe return spring.

Pry out brake shoe anchor washer and remove outer shoe guide. Slide each shoe out from under brake support grease shield spring. (As shoes are removed, operating strut lever will drop out of plate.) Separate operating lever from right-hand brake shoe by removing nut, lockwasher and bolt. The brake is now disassembled as necessary for replacement of worn or damaged parts.

b. Assembly

Assemble operating lever to right-hand brake shoe. Slide right and left-hand brake shoes under brake support grease shield spring and up against inner anchor shoe guide. Spread shoes and insert operating lever strut, with wide slot toward operating lever and word "top" facing up.

Replace outer brake anchor shoe guide and washer. Replace brake shoe return spring. Spread both shoes apart at bottom and install brake shoe adjusting nut, screw and sleeve. **Be sure to install adjusting nut, screw and sleeve in proper position.** Turn brake shoe adjusting nut until shoes are in released position, and install brake drum. Be sure brake shoes are centered on backing plate and are free to move. Connect brake control cable and adjust brakes and control cable. See "Adjustment" "C". Replace the adjusting screw cover plate.

c. Adjustment

Push in Neutral (N) push button. Be sure hand brake is released. Disconnect front end of propeller shaft to permit turning of brake drum by hand (if not previously disconnected). Remove adjusting screw cover plate. Turn brake shoe adjusting nut to decrease shoe-to-drum clearance until slight drag is felt on drum. Back off adjusting nut at least one full notch (using spanner wrench, Tool C-3014) to give approximately .010 inch clearance. **Be sure two raised shoulders on adjusting nut are seated in grooves on adjusting sleeve.**

Test hand brake lever for travel. When it is properly adjusted, there should be from 3 to 5 notches on lever rod visible beyond face plate. **Never substitute for a brake shoe adjustment**

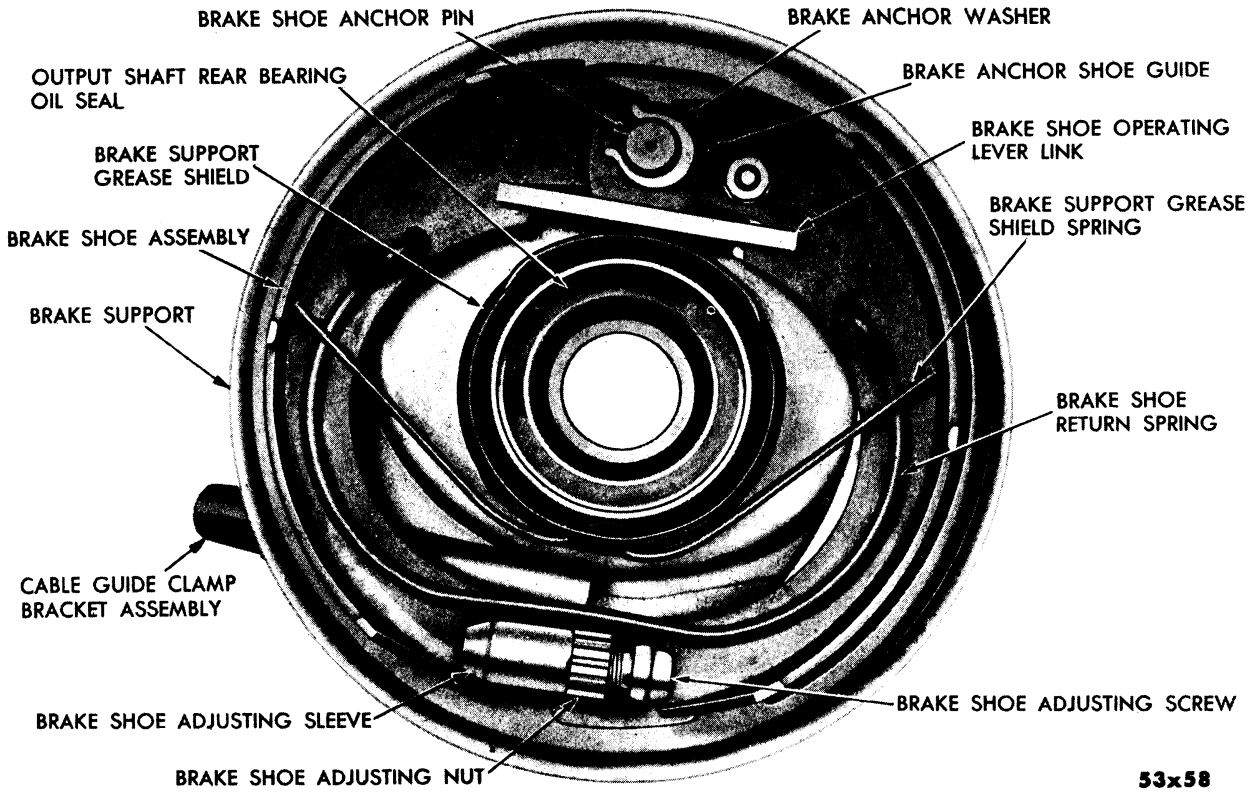

Fig. 22—Internal Expanding Type Hand Brake

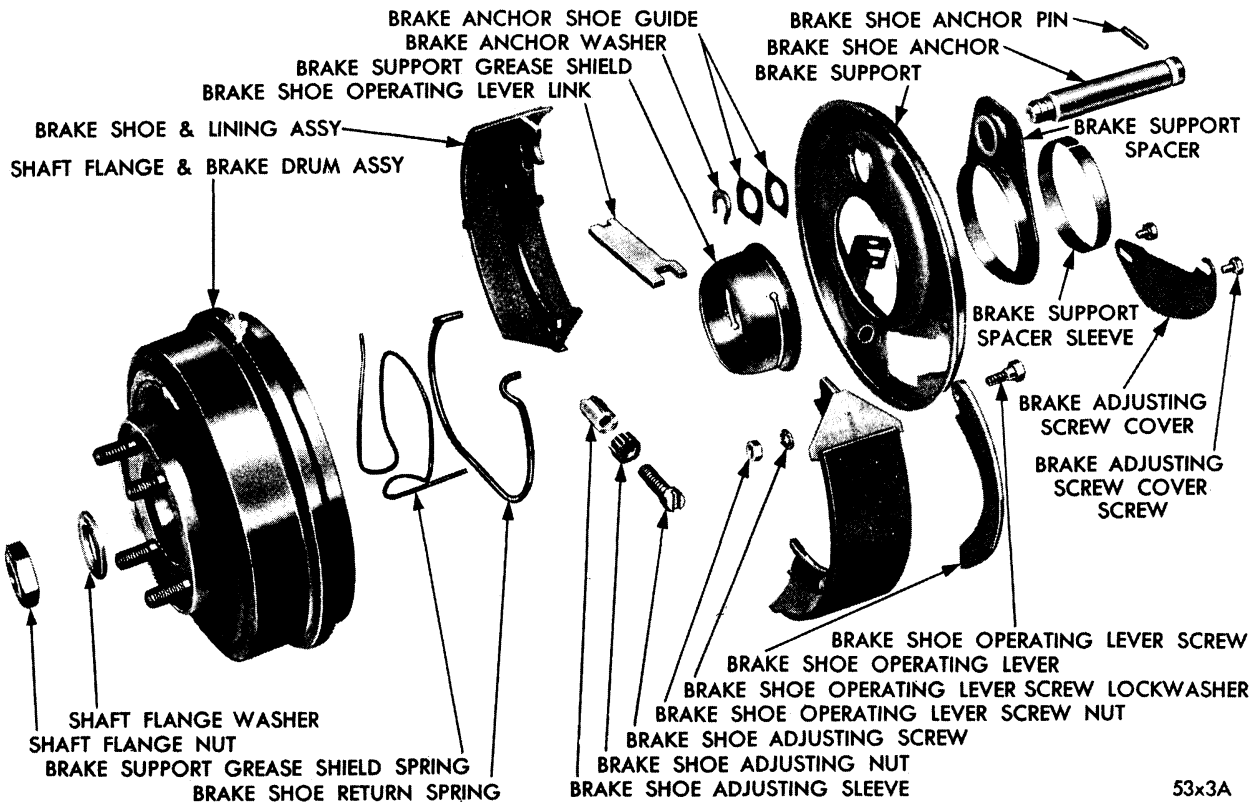

Fig. 23—Hand Brake (Disassembled View)
Internal Expanding Type

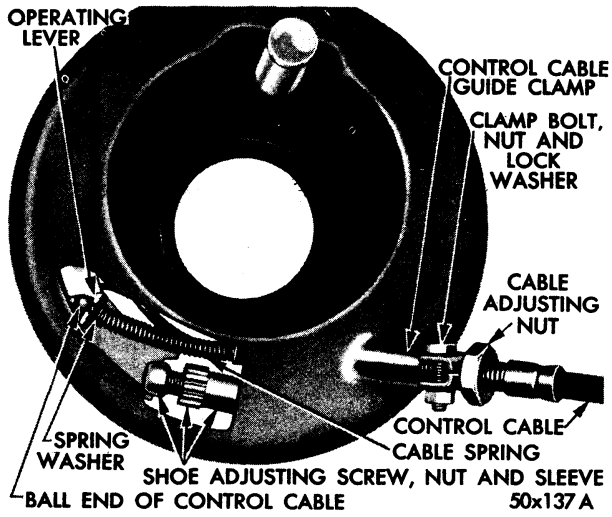

Fig. 24—Rear View of Brake (Typical)

by adjusting cable. Install adjusting screw cover plate and connect propeller shaft.

14. SERVICING HAND BRAKE CABLE (INTERNAL EXPANDING TYPE)

a. Removal (At Transmission End)

If removal of control cable is required for replacement or repair, refer to Fig. 24, and proceed as follows. Loosen guide clamping bolt and remove adjusting screw cover plate. Pry ball end of cable up and out of operating level slot with a screwdriver. Remove control cable from guide.

b. Installation

Slide cable into guide. Insert installer, Tool C-3015, between spring retainer washer and ball on end of cable. Hook cable into slot in operating lever, with lever between ball and washer.

c. Adjustment

After installation has been completed, adjust cable as follows: The cable length adjusting nut should be positioned against cable housing so there is at least .005 inch, but not more than .010 inch, clearance between operating lever brake shoe cable.

To lock adjustment, tighten cable housing clamp securely and tighten cable adjusting nut against housing. Never substitute cable adjustment for brake shoe adjustment.

15. CYCLEBOND BRAKE LINING

Pre-cemented Cyclebond brake lining can be applied to either new or used shoes. See instructions in MOPAR Shop Replacement Packages.

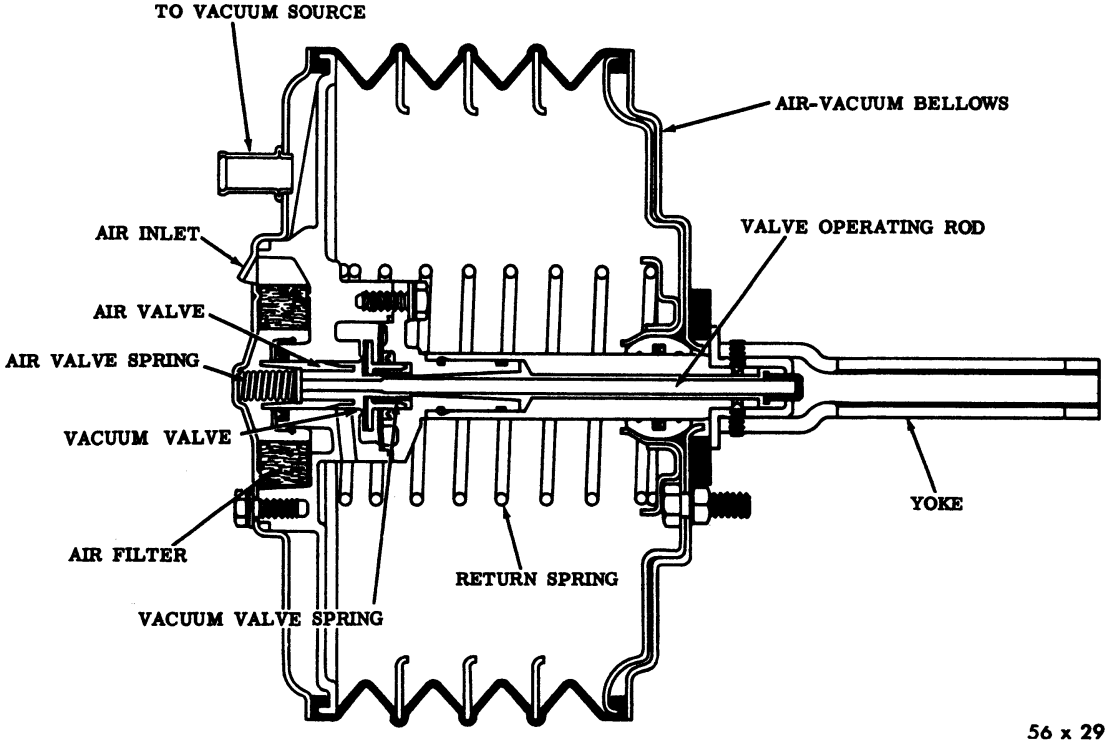

Fig. 25—Bellows Type Power Brake (Sectional View)

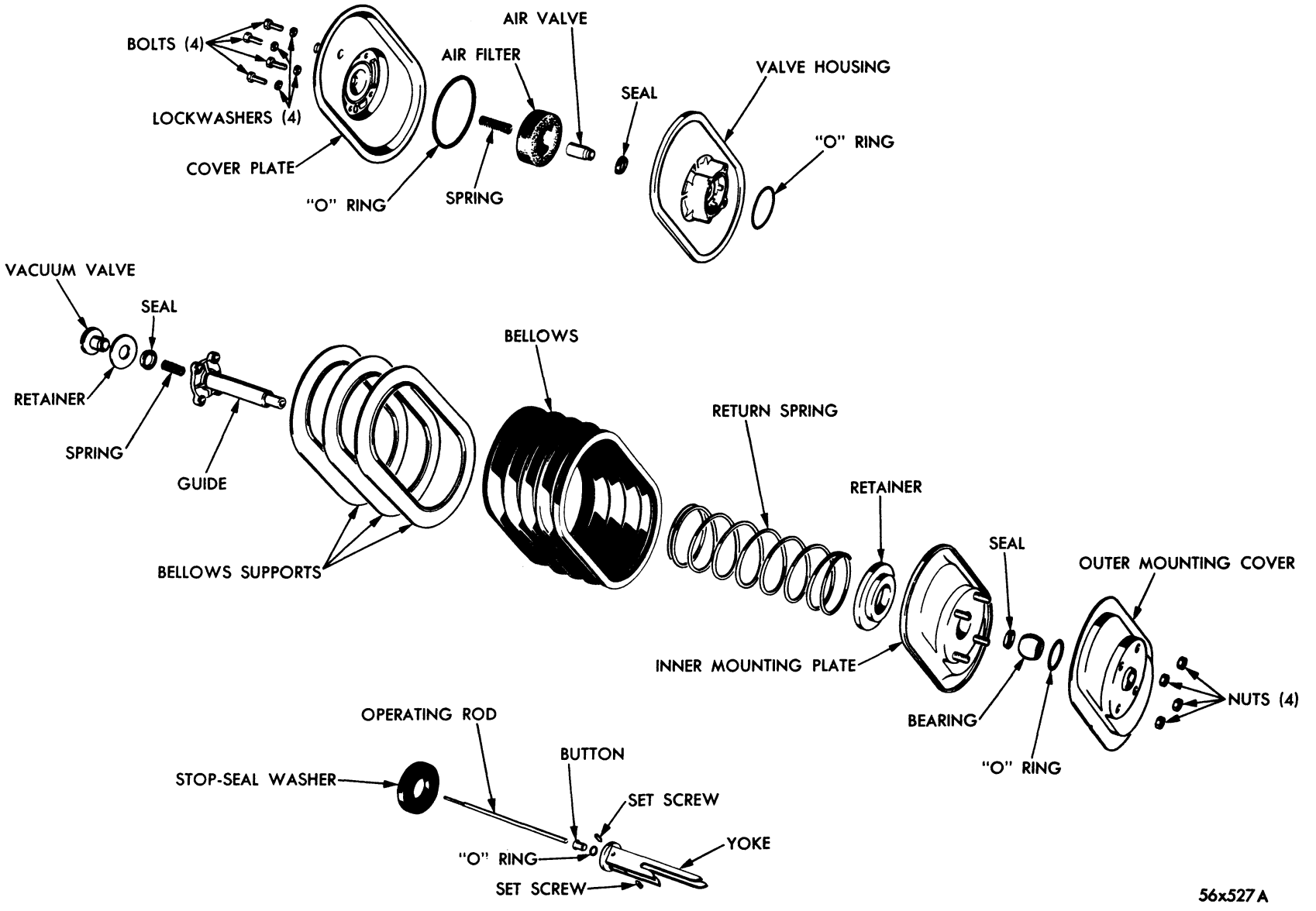

Fig. 26—Bellows Type Power Brake (Disassembled View)

POWER BRAKE UNIT (BELLOWS TYPE)

The Bellows Type Booster unit is an oval-shaped, air-vacuum bellows mounted on engine side of dash panel, and is connected mechanically to brake pedal linkage through power unit push rod (Figs. 25 and 26). The unit is an air suspended unit and therefore, requires a vacuum reserve tank, which is mounted on the engine side of the front fender splash shield. Brake linkage exists only when the unit is assisting in a brake application. With a loss of engine vacuum, the brake pedal is free to move completely, independent of the Power Unit to apply the brakes in the conventional manner. (Fig. 25).

SERVICE PROCEDURES

16. REMOVAL OF POWER BRAKE UNIT

Use pedal depressor, depress pedal to prevent trigger arm from extending beyond extremities of bracket.

NOTE: If pedal linkage is allowed to extend through hole in dash panel, trigger arm may be damaged.

Disconnect vacuum hose at power vent. Remove master cylinder power unit and bracket assembly hex nuts and lockwashers. Carefully withdraw unit from dash panel (Fig. 27).

NOTE: Use care to prevent loss of nylon bushing on pedal linkage cross pin.

17. DISASSEMBLING POWER BRAKE

Should it be necessary to disassemble bellows type power brake unit for overhaul or repair, refer to Figs. 28 and 29, and proceed as follows: Remove nuts that attach mounting plate to unit. Slide plate off and away from unit.

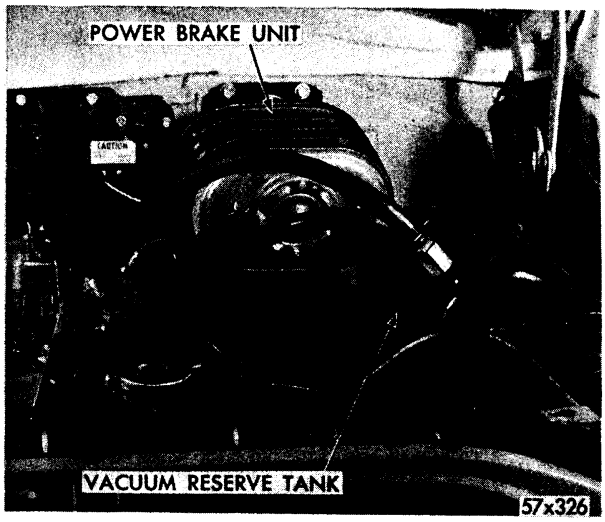

Fig. 27—Power Brake (Installed)

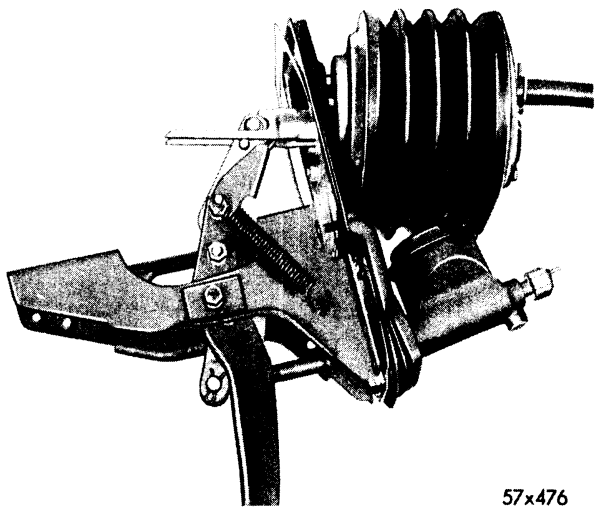

Fig. 28—Bellows Type Power Brake Unit and Linkage Installation

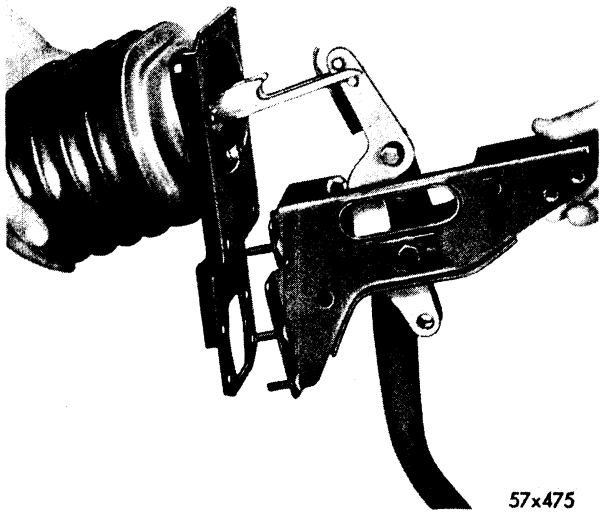

Fig. 29—Removing or Installing Power Brake Unit (Bellows Type Shown)

Remove and discard mounting plate "O" ring.

Using an Allen wrench, back out two set screws sufficiently to allow removal of yoke (Fig. 30). Slide yoke off end of guide and away from unit. (Slightly compress bellows by hand for clearance when loosening set screw). Remove rubber stop seal washer. Lift valve operating rod out of unit, remove, and discard valve operating rod button seal (Fig. 31).

Remove nuts that attach outer mounting plate. Using screwdriver, pry up gently on plate to loosen. Lift plate straight up and away from unit. Discard "O" ring. Compress bellows by hand sufficiently to expose guide bearing. Slide bearing off end of guide (Fig. 32). Remove and discard bearing seal from inside bearing. Peel back outer lip of bellows completely around inner mounting plate. (Keep one hand on inner mounting plate to prevent it from snapping up). Remove plate and lift out return spring and return spring retainer. Place unit on its side and remove bolts and lockwashers that attach valve cover to valve. Lift off cover (Fig. 33). (If it is necessary, use a flat blade to separate cover plate from bellows flange.) Extreme care should be taken to avoid marking or scratching inner face of plate where it clamps to bellows flange. A scratch on this surface could cause a leak.

Remove "O" ring from valve cover and discard. Remove air valve spring from center of valve. Remove air filter and slide air valve out of housing (Fig. 34). To remove valve, it may be necessary to use a hook formed from paper clip. Place valve housing end down on bench. Remove bellows from valve by peeling back outer lip of bellows (Fig. 35). Lift bellows up

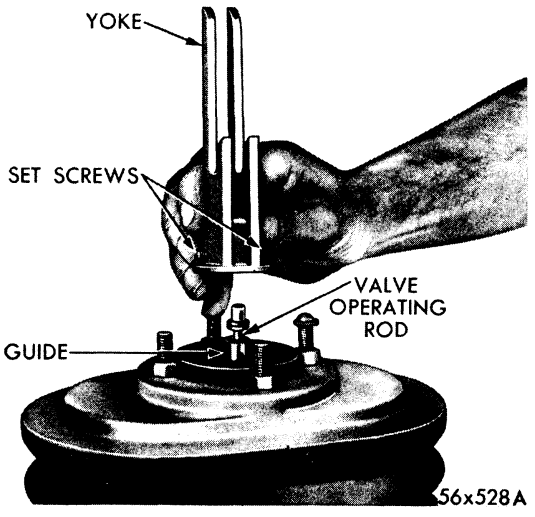

Fig. 30—Removing or Installing Yoke

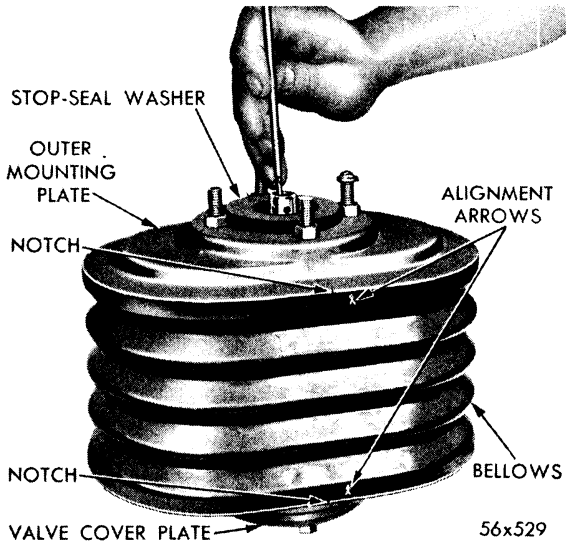

Fig. 31—Removing or Installing Operating Rod

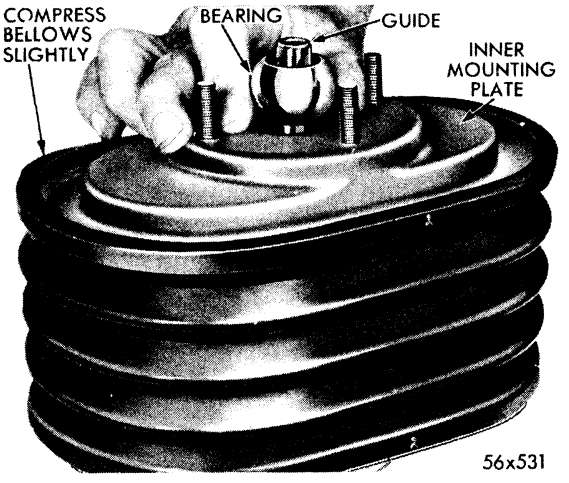

Fig. 32—Removing Guide Bearing

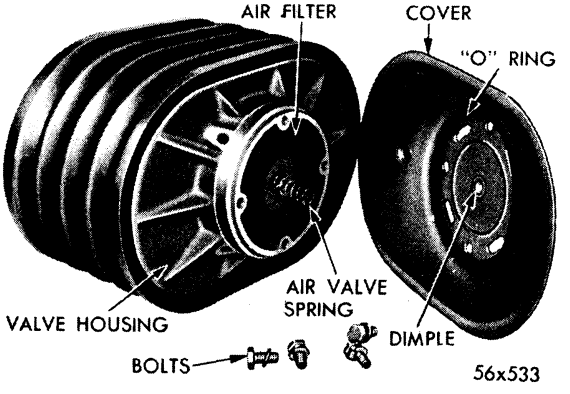

Fig. 33—Removing Valve Housing Cover

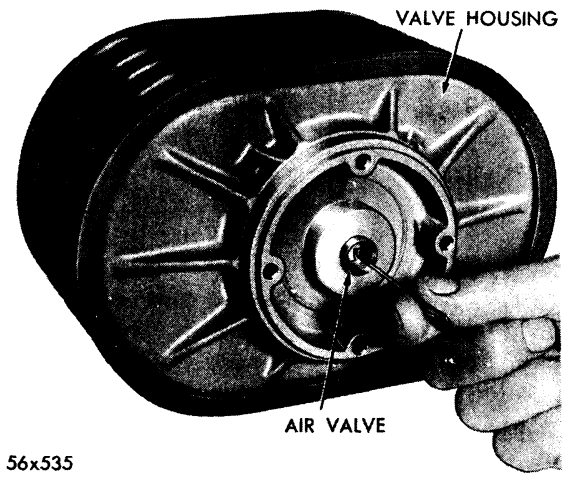

Fig. 34—Removing Air Valve

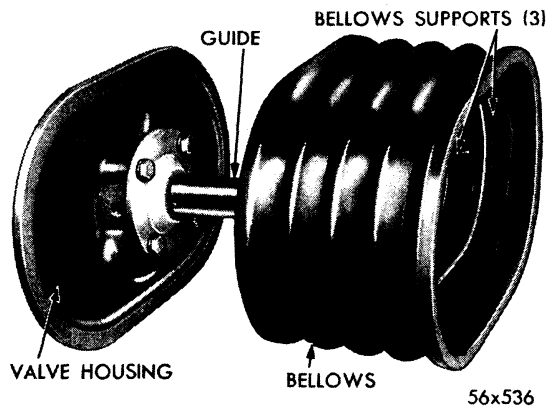

Fig. 35—Removing Bellows

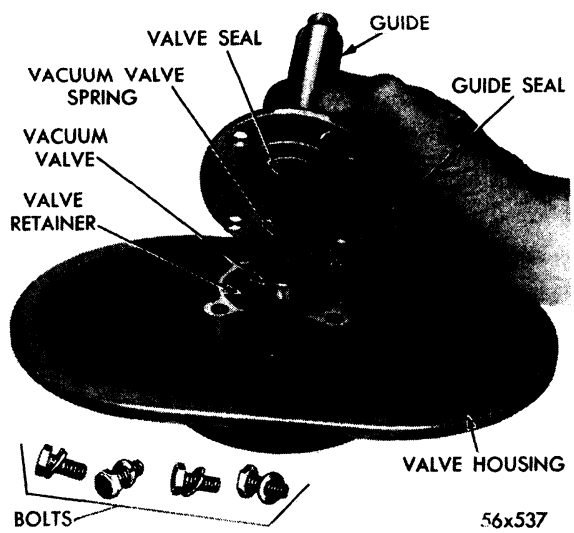

Fig. 36—Removing or Installing Guide

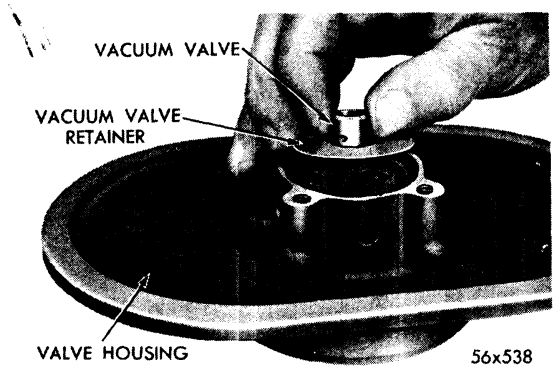

Fig. 37—Removing the Vacuum and Retainer

and away from valve. If new bellows is to be installed, remove 3 bellows support.

Remove bolts and lockwashers that attach guide to valve body. Lift off guide to expose vacuum valve, valve spring and seals (Fig. 36). Remove seals and discard them. Lift out vacuum valve and retainer (Fig. 37). Remove and discard valve housing to guide seal. Invert valve housing and remove air valve seal from its groove in valve body (Fig. 38).

CAUTION

Work carefully to avoid marking or scratching inside diameter bore of valve housing.

The bellows type power brake now has been disassembled as much as necessary for cleaning and inspection. Clean all parts (except bellows, bearing and air filter) in solvent and blow dry with compressed air. Place cleaned parts on clean paper for reassembly. If necessary, bellows may be washed with water and mild soap. Inspect all parts for wear or damage and check air valve for signs of scoring or wear. If valve body or valve is scored or worn, install new

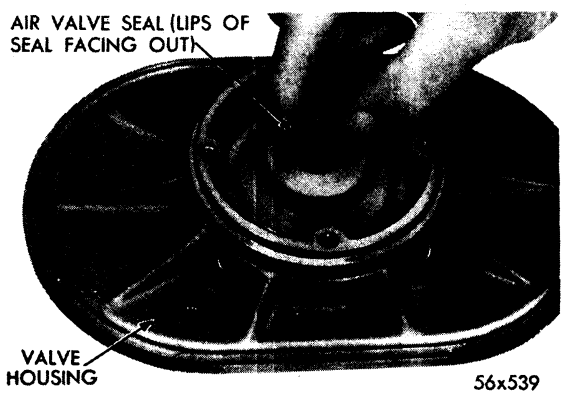

Fig. 38—Removing or Installing the Air Valve Seal

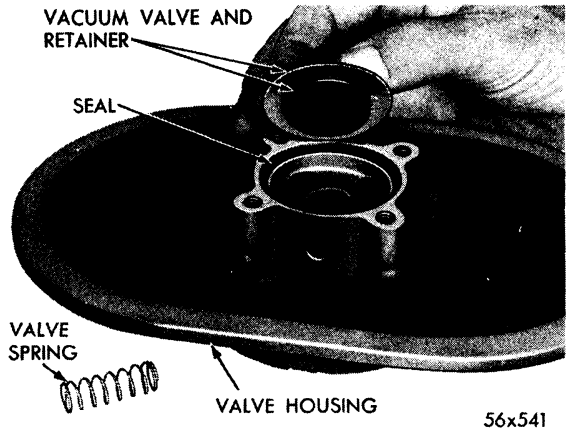

Fig. 39—Installing the Vacuum Valve and Retainers

parts as required. **Always use new "O" and seal rings.**

18. ASSEMBLING THE POWER BRAKE

Be sure all seals and "O" rings are suitably coated with silicone grease (rings and seals precoated in Parts Kits). Assemble as follows: Insert new air valve seal into bore of valve housing (lips of seal facing out when installed). (Refer to Fig. 38). Carefully position new vacuum valve in retainer. Invert valve housing and install vacuum valve and retainer in housing. Press down firmly on retainer to snap it in place. (Fig. 39)

Position new valve housing to guide seal in groove provided. Install new vacuum valve seal in bore guide, with lip of seal toward bottom of bore (Fig. 40). Install vacuum valve spring in center of valve. Position guide over vacuum

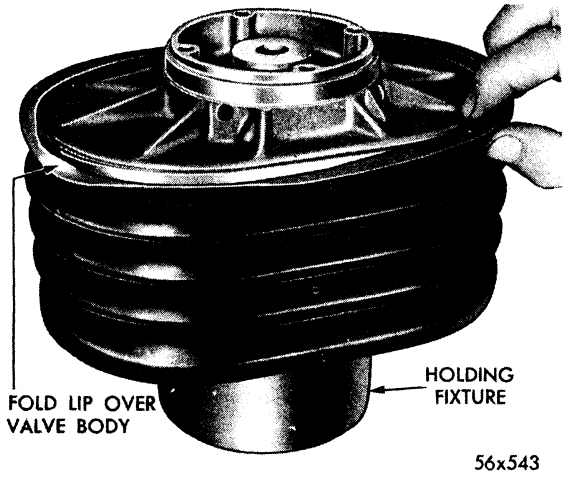

Fig. 40— Installing the Bellows

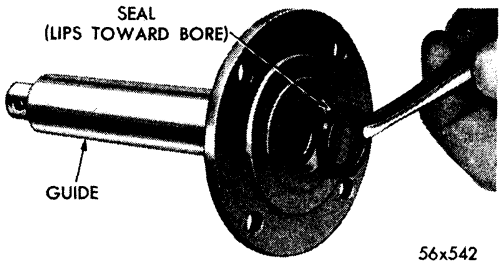

Fig. 41— Installing the Vacuum Seal

valve, lining up bolt in guide with bolt holes in valve body. Carefully lower guide down against valve body, making certain tapered portion of vacuum valve enters seal evenly. Press down on guide to seat and install bolts and lockwashers. Tighten bolts evenly and securely.

CAUTION

Be sure countersunk holes at end of guide, line up with long centerline of valve housing.

If new bellows are being installed, position supports in bellows. (The supports must be centered in three center accordion folds, and aligned with bellows and each other.) Using holding fixtures (made from piece of 4-inch pipe) to support guide and valve assembly, install bellows (Fig. 41). **Be sure arrows on edge of bellows and housing are aligned.** With assembly in holding fixture, lightly coat outer surface of air valve with silicone grease (do not use any other kind of grease), and insert (small end first) into bore of housing (Fig.

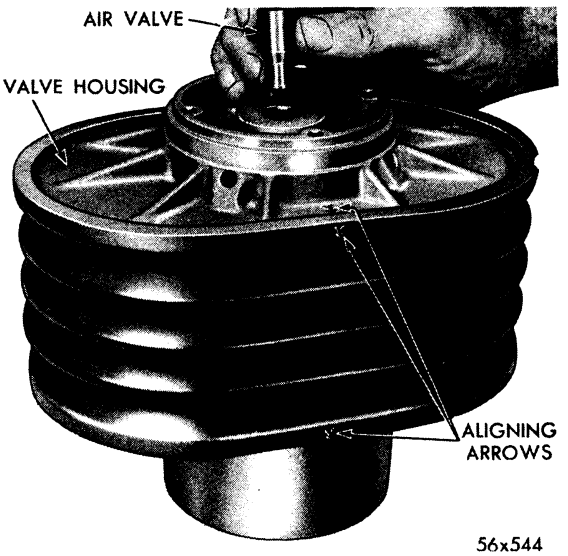

Fig. 42—Installing the Air Valve

42). Use finger pressure to test for free movement of valve against vacuum valve spring.

Install air valve spring in recess in air valve and air filter. Install new valve housing cover "O" ring on shoulder provided on valve body hub. Position valve body cover over valve housing, with notch in edge of cover matching arrow on bellows (Fig. 43). Be sure air valve spring nestles on dimple in center of cover. Press cover down evenly over valve housing to seat cover "O" ring, install bolts, and tighten securely.

Remove assembly from holding fixture and invert unit. Coat guide lightly with silicone grease and install return spring. Position spring evenly around hub of valve housing and guide (Fig. 44). Place spring retainer and inner mounting plate over spring, being sure arrow stamped on plate is in line with arrow on edge of bellows. Compress return spring and fold bellows lip over edge of plate. Be sure bellows fit evenly all around plate. Install new guide bearing seal in groove inside bearing bore. The seal must nest snugly in bearing. Using silicone grease, lubricate inside of bearing and slide it over guide, while compressing bellows (Fig. 45). **Bearing must be installed with lip of seal facing out.** Push bearing down over guide and into pocket of plate. Release bellows and bearing will ride up guide with plate into position.

Install bearing to mounting plate "O" ring and lower outer mounting plate down on assembly. **The notch on edge of plate must be in line with arrow on bellows.** Install nuts and draw down finger tight. Slide new valve operating rod seal ring over nylon bumper on end of rod and into groove. Install rod in center of guide. Press on end of rod to test for free operation or movement of air and vacuum valves. A "two step" movement should be felt when rod is depressed and released fully. Place new stop-seal washer in position and install yoke on end of guide. Compress bellows slightly and alternately tighten set screws. **The hub of yoke must be down snug against shoulder of guide, with set screws aligned with tapered holes in guide.** Tighten mounting plate nuts securely.

Place mounting bracket in position, with long

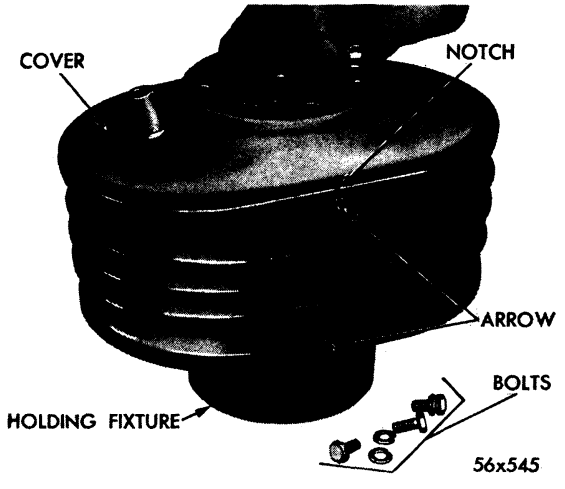

Fig. 43—Installing Valve Housing Cover

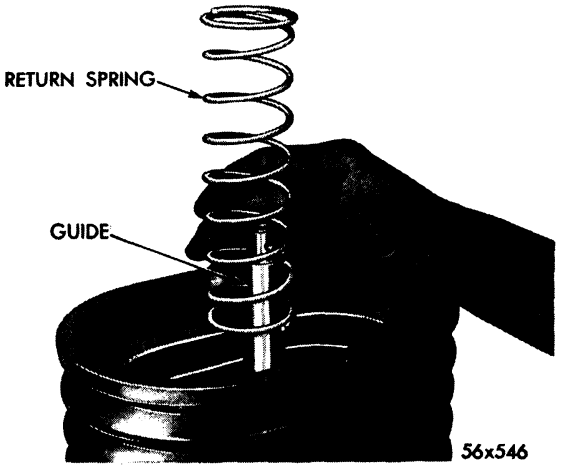

Fig. 44—Installing Return Spring

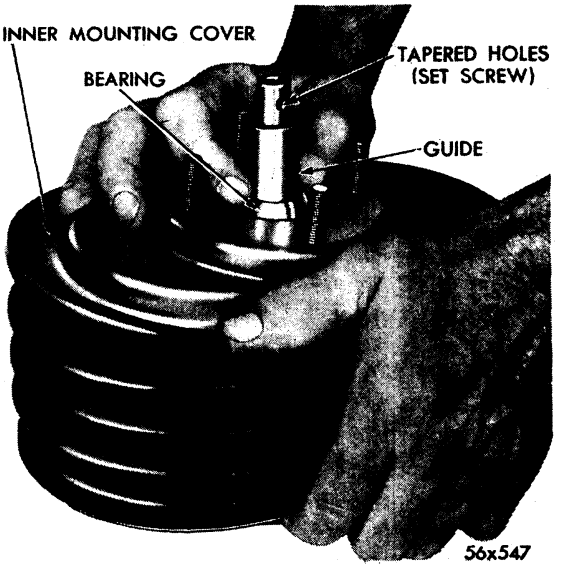

Fig. 45—Installing Guide Bearing

centerline of bracket at right angle to long centerline of unit section. Install nuts and lockwashers and tighten securely.

19. INSTALLATION OF POWER BRAKE UNIT

Position power brake unit on dash panel of vehicle so that its axis inclines down toward front of car.

NOTE: As yoke passes through dash panel, be sure that it engages pedal linkage correctly by sliding over nylon bushings on power brake lever cross pin. Install and connect master cylinder.

Replace four hex nuts and lockwashers, tighten nuts securely, and release pedal.

PEDAL LINKAGE ADJUSTMENTS

20. PEDAL LINKAGE ADJUSTMENTS (ON CAR) (FIG. 46)

It should seldom be necessary to adjust brake pedal trigger arm. Adjustment, however, may be necessary, occasionally, to eliminate the following conditions: If pedal pressure releases slowly, adjust by rotating adjustment screw in **counter-clockwise direction.** A time delay (noted during a fast brake application), can be corrected by making a **clockwise** adjustment on adjusting screw. Should pedal vibrate (booster chatter), turn adjusting screw in counter-clockwise direction (Fig. 46). More likely cause of chatter is empty master cylinder, or improperly bled brake system. Refill or bleed.

NOTE: Rotation of adjustment screw should be limited to plus or minus 90 degrees about original setting.

21. ASSEMBLY OF PEDAL LINKAGE IN PEDAL BRACKET

CAUTION

Use extreme care during assembly or handling of linkage as power brake pedal trigger arm is easily damaged.

22. LUBRICATION

Except for an occasional few drops of SAE 10-W Engine Oil on power brake lever pin bushings, brake pedal linkage requires no further lubrication. The power unit will require no lubrication under normal usage.

23. PEDAL FREE PLAY ADJUSTMENT

After master cylinder, booster, and pedal linkages are completely installed, a free play adjustment check should be made at **no vacuum** as follows:

NOTE: Removing vacuum hose and pressing brake pedal several times will aid in obtaining a no vacuum condition.

Insert blade of screw driver between rubber collar of power brake trigger pivot and rear side of elongated hole in power brake lever, forcing them apart.

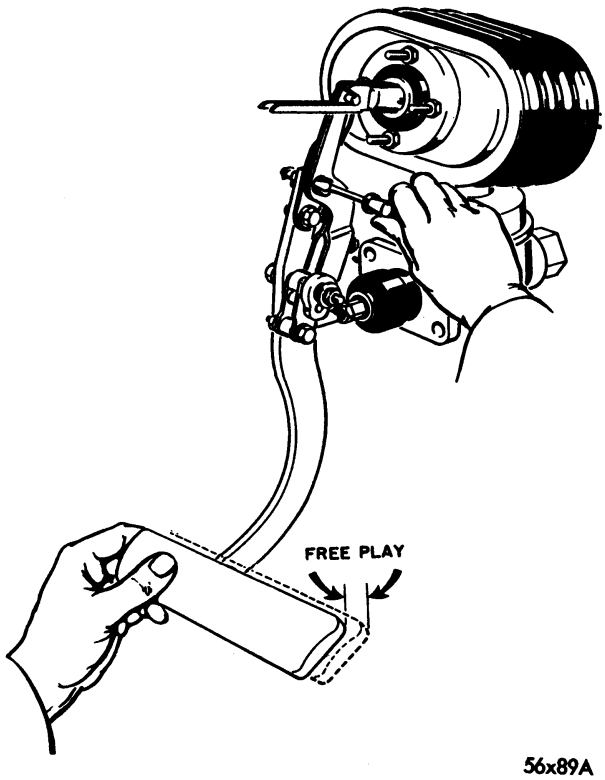

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Fig. 46—Checking Pedal Free Play (Bellows Type)

NOTE: If brake pedal and power brake lever are not wedged apart, a false free play setting (which includes booster valve travel) will be measured at pad end of pedal.

Check free play with linkage in this position by pushing lightly at pad end of brake pedal (Fig. 46). Pedal free play travel should be between 1/32 and 1/8 inch. If pedal free play movement does not come within required limits, adjustment is made by lengthening or shortening push rod as required.

24. ALTERNATE METHOD OF MEASURING PEDAL FREE PLAY

Remove master cylinder push rod end pin. Using **light** finger pressure, move push rod forward until contact is made with master cylinder piston. Attempt to insert push rod end pin through power lever and push rod end hole. If push rod must be pulled back to allow passage of push rod end pin, free play is present. If push rod must be pushed further into master cylinder to allow passage of push rod end pin, no free play is present and an adjustment must be made at push rod.

25. SERVICING THE MASTER CYLINDER

The master cylinder can be bled and push rod end assembled at proper length, as described in this section. The length from push rod end hole to master cylinder mounting face has changed however, because of difference in brake pedal linkage. The distance from push rod end hole to master cylinder face is 4.7 inches. The service procedures covering master cylinder are the same as on standard master cylinder.

26. TESTING BRAKE SYSTEM

With unit completely assembled and installed on vehicle, make following vacuum and hydraulic leakage test. Operational test should also be made to determine that brake power unit and hydraulic brake system is operating up to standard.

Road test car and make brake applications at about 20 m.p.h. If brake pedal has a spongy feel when brakes are applied, air is present in hydraulic systems and lines must be bled. Bleed brake system at each wheel cylinder.

With engine not running, apply brakes several times to exhaust all vacuum in system. Depress brake pedal, hold foot pressure on pedal and start engine. As soon as engine begins to operate, brake pedal will tend to fall away under foot pressure, and less pressure will be required to hold pedal in applied position.

If there is **NO** noticeable difference in pedal effect with or without engine running, vacuum system is not functioning. Check for restriction in vacuum supply line, restriction on air cleaner, faulty pedal adjustments, or faulty power unit operation. Stop engine and again exhaust all vacuum in system. Depress brake pedal and hold foot pressure on pedal. If pedal gradually falls away under foot pressure, hydraulic system is leaking. If brake pedal travels to within one inch of toe board, brake shoes require readjustment or relining.

SERVICE DIAGNOSIS

27. PEDAL GOES TO FLOOR

a. Check fluid in master cylinder, refill with MOPAR Super brake fluid.

b. Check wear on brake lining, adjust or replace as necessary.

c. Check master cylinder for corrosion, repair or replace as necessary.

d. Check wheel cylinders, replace swollen or otherwise damaged cups.

e. Check loose connections or broken lines, repair or replace as necessary.

f. Air in brake system, bleed brakes using air-less bleeder tank unit, Tool C-837.

28. SPONGY PEDAL

a. Check brake fluid contamination, replace with MOPAR Super brake fluid.

b. Check brake drums, replace excessively refaced or broken drums.

29. BRAKES PULLING TO ONE SIDE

a. Check tires, inflate to proper pressure.

b. Check brakes, adjust for proper clearance.

c. Check drums for out-of-round, machine drums and replace with brake shoes to fit drum.

d. Check brake shoes for twist, straighten, reline, or grind to fit drum. (See paragraph on shoe bind.)

e. Oil, grease or brake fluid on shoes, clean with alcohol. Badly saturated linings may require replacement.

f. Check brake lining, replace with matched lining.

30. SQUEALING BRAKES

a. Check lining, replace with proper lining.

b. Check brake drum, clean or reface as necessary.

c. Check brake shoes, straighten or replace as necessary.

d. Check brake support plate, straighten or replace.

e. Check brake shoe return spring, replace as necessary.

31. DRAGGING BRAKE

a. Excessive brake adjustment, adjust to proper clearance.

b. Check hand brake, that it is fully released.

c. Check wheel cylinders, repair or replace as necessary.

d. Check brake shoe return spring, replace worn or broken springs.

e. Brake pedal binding, loosen pedal across shaft.

f. Check master cylinder, repair or replace. Check for swollen cup.

g. Check for lack of pedal free play—adjust.

h. Check brake shoe squareness (See Paragraph on shoe bind).

i. Check compensating port in master cylinder, repair or replace as necessary.

32. HARD PEDAL

a. Check brake shoe lining, replace with proper lining.

b. Check brake shoe push rods, make proper adjustments.

33. WHEEL LOCKS

a. Check brake lining, replace torn or loose lining.

b. Check wheel bearings, adjust to proper clearance.

c. Check wheel cylinders, repair or replace as necessary.

d. Check grease seal leaks, replace if necessary.

34. BRAKE PEDAL FAILS TO RETURN

a. Check pedal return spring, adjust or replace as necessary.

b. Check master cylinder, tighten loose mounting bolts.

c. Check brake pedal mounting bracket, adjust bracket and tighten bolts.