

SERVICE REFERENCE BOOK

The MASTER TECHNICIANS SERVICE CONFERENCE

session no.

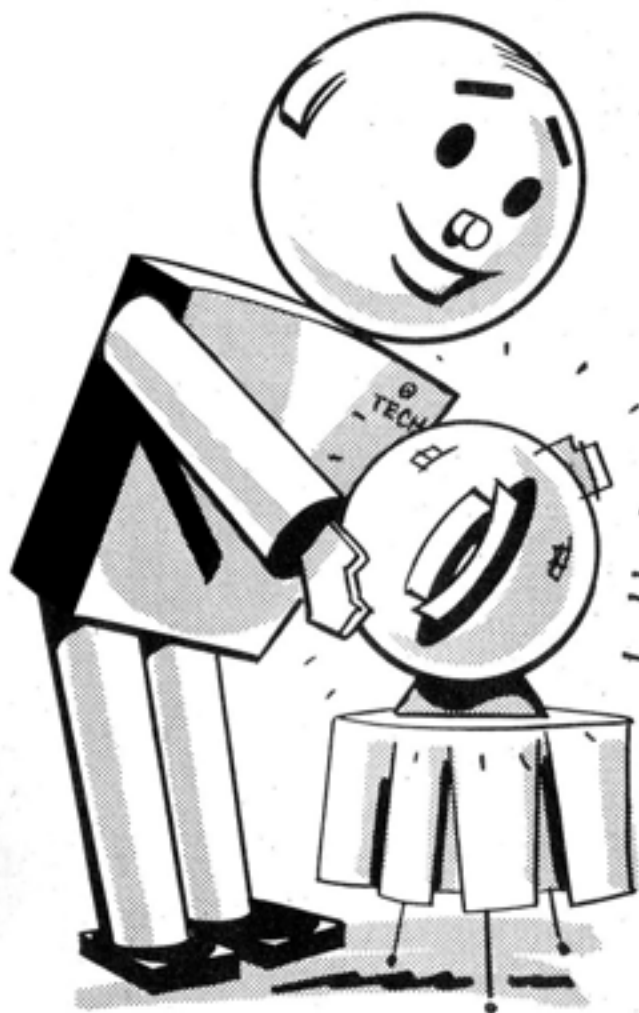
138

THE NEW 3-PLATFORM BRAKES



PREPARED BY CHRYSLER CORPORATION
Plymouth • Dodge • De Soto • Chrysler • Imperial

Tech sez: **"PRIME YOURSELF FOR 3-PLATFORM BRAKE SERVICE!"**



Make no mistake. The newest thing on our cars is the 3-platform brake. And you're going to see a lot of it from now on.

This reference book covers all the new features, and spells out what to do when adjustments may be needed. Besides that, you'll find useful tips on how to correct conditions similar to those you've discovered on brakes you have been servicing on past models.

Here's a handy guide to this important information:

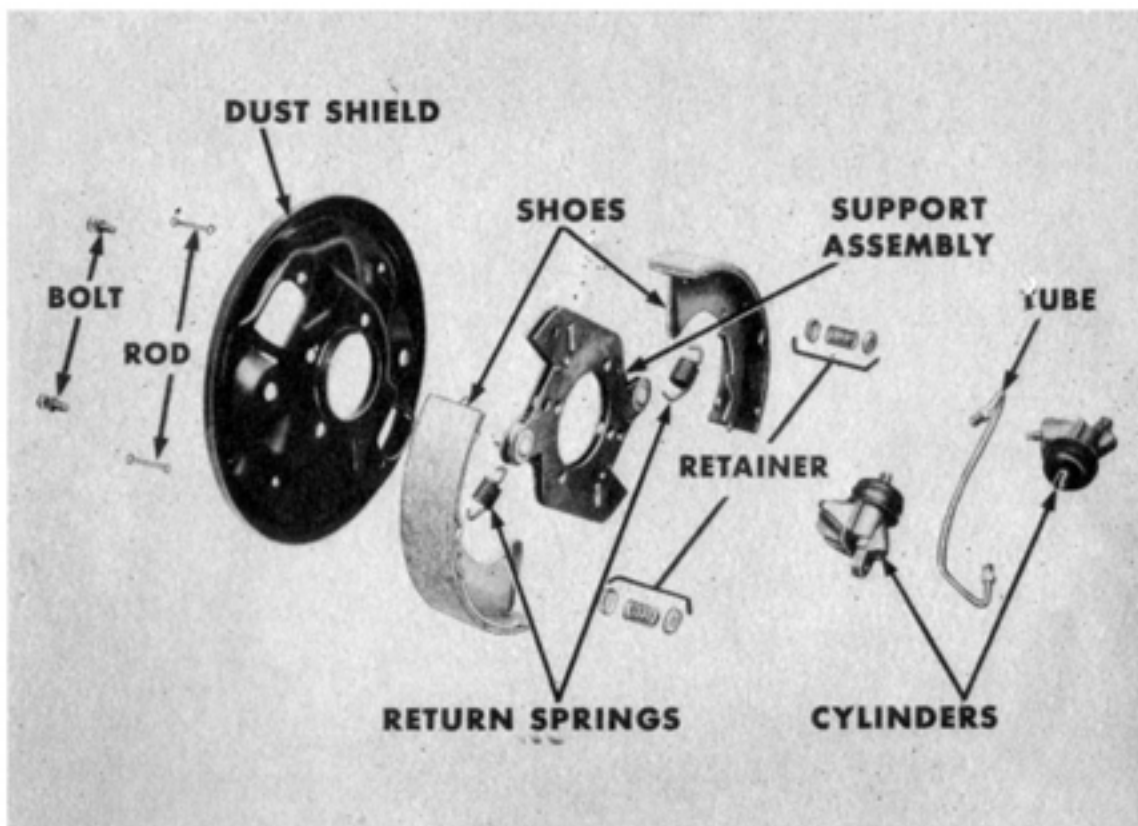
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3-PLATFORM BRAKES

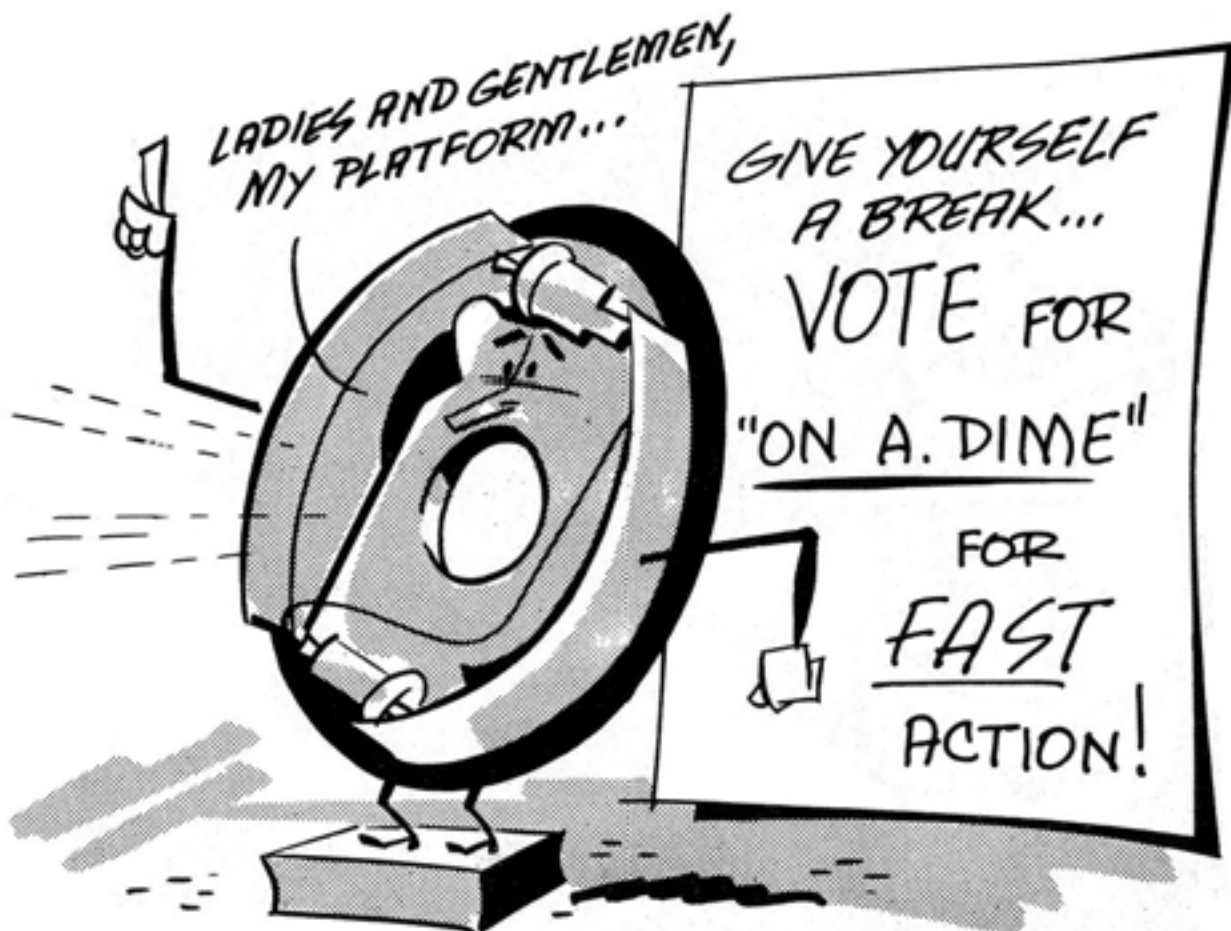
Description

At first glance, you'll see a lot of similarity between the parts of the new 3-platform brake and the brakes you've been servicing. Keep in mind, though, that while the parts may look the same, they are not interchangeable – and must be treated accordingly. For example, the dust shield, shoes, support assemblies, return springs, and wheel cylinders are different.



The big basic change involves the dust shield and brake shoes. Three platforms, pressed in the shields, and three loops formed on the sides of the shoes are key factors in operation. The loops guide the shoe on the platforms, and keep it in accurate alignment with the contact surface of the drum.

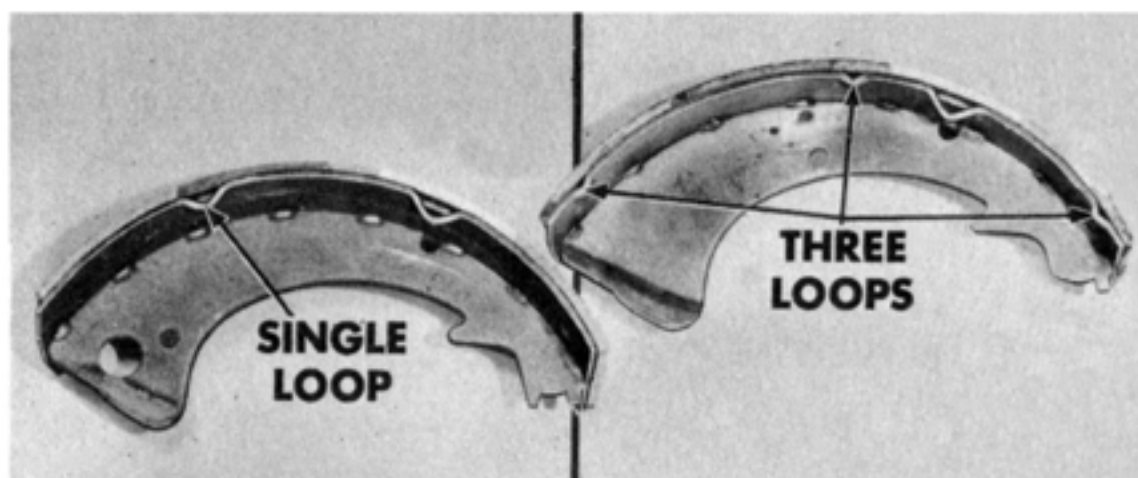
In addition to truer alignment, the contact of the shoe against the dust shield provides better shoe dampening. As a result, there is an over-all improvement in brake operation.



Dust Shield. You should find it easy to identify the platform brake without taking an assembly apart. Unless the back of the dust shield is too grimy, you'll notice six platform depressions—three for each shoe. Each platform has a waffle-like pattern.



Shoes. You will immediately notice points of difference between the brake shoe of the 3-platform brake and the shoe from the former-type brake. Holes for the two dampener coil spring rods are closer to the center of the web, for one point. Instead of the *single* contact loop at the edge, the new shoes have *three* contact loops . . . and each loop is much shallower in design.

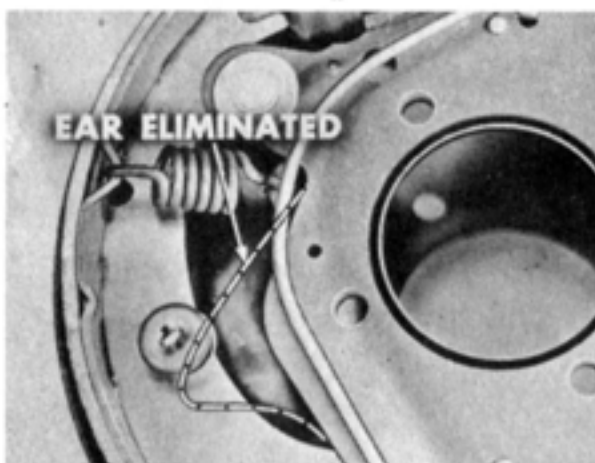


Another point . . . the new contact loops have outer edges that are *flush* with the edge of the shoe table. There is no lining overhang because the lining and table are ground at the time they're manufactured. Inner edges of the loops are formed to keep pressure from bending the loops inward.

Here's something else. The large hole that formerly was punched in the heel end of the web has been eliminated. This, naturally, beefs up the new shoes at that particular point.

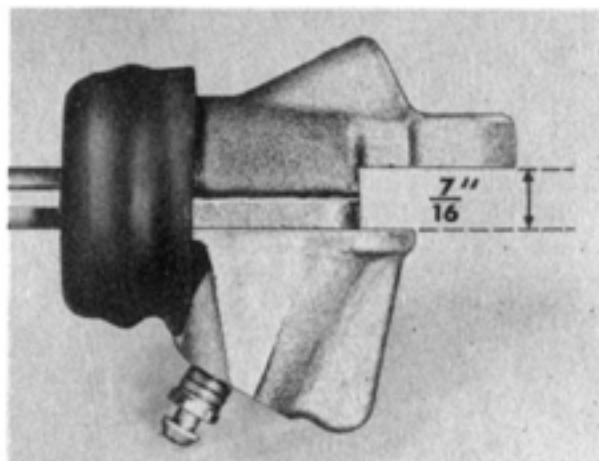
Support Plate Assembly. There's more space between the plates of the support plate assembly used in platform brakes. This increase, actually, is $\frac{1}{16}$ " and is designed to eliminate any plate-to-web interference.

Inner and outer plates are now identical. The large ears on the

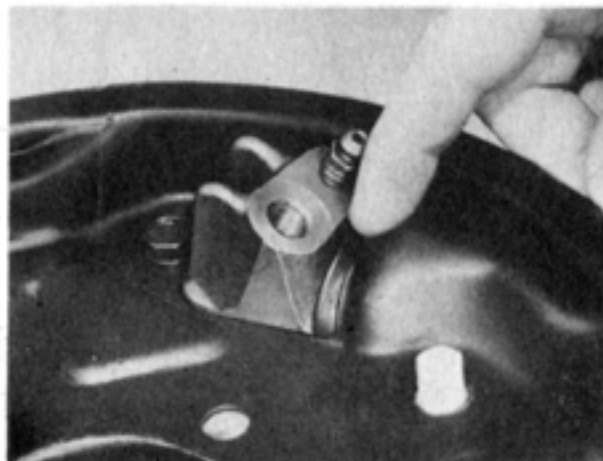


inner plate once used have been eliminated. That's where the flat guide retainer springs were formerly assembled. The support plate assembly on a platform brake now serves more as a carrier than a guide. The contact loops and platforms guide the brake shoes.

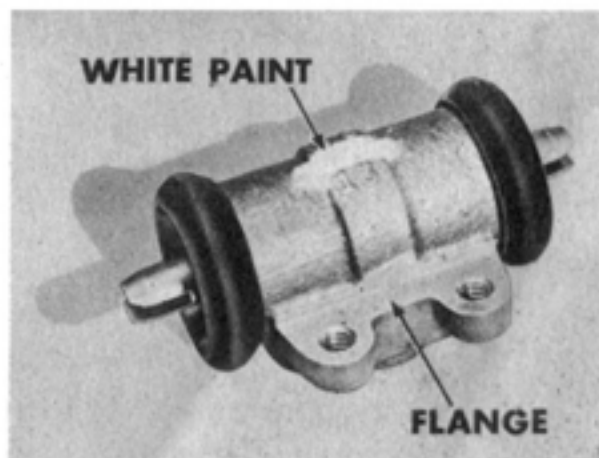
Front Brake Cylinder. Increasing the space between support plates, of course, called for a wider slot in the front wheel cylinder. This slot now measures $\frac{7}{16}$ " $\frac{1}{16}$ " wider than the $\frac{3}{8}$ " slot machined in cylinders used on former-type brakes.



There's also a new rubber boot. On the outer edge of the boot is a wider collar to help provide better sealing against road splashes between the cylinder and its opening in the dust shield. If you have to remove the cylinder from the dust shield, though, remember to seal around the opening after you reinstall the cylinder.

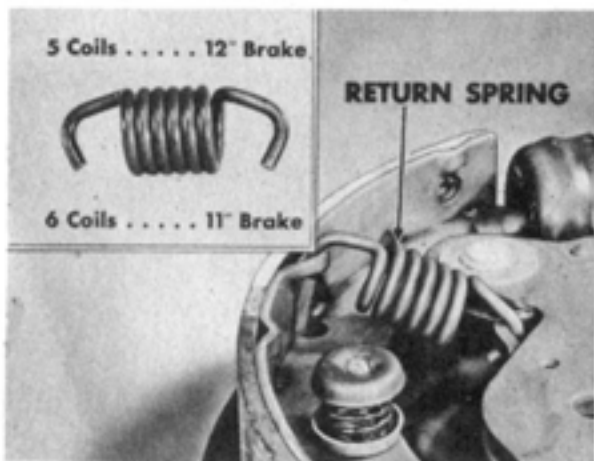


Rear Brake Cylinder. Rear brake cylinder have a more deeply machined surface at the bolting flange. In addition, there's a spot of white paint near the casting number to help you identify the new rear cylinder.





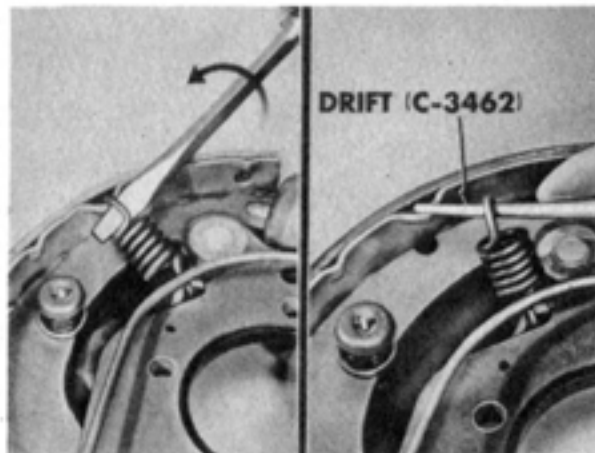
Return Spring. Return springs are assembled at an *angle* between the



wide loop in the shoe and the spring link. The new springs have a load capacity that's 25% greater than the springs formerly used, to provide more positive shoe return. *Five-coil* springs are used on all 12" brakes. *Six-coil* springs are used on 11" brakes.

NOTE: Five- and six-coil springs have been used before, but were lighter-scale springs. It is imperative that you refer to the part number to be sure you are using the proper springs.

Spring Removal and Installation. To remove the new return spring when necessary, put a flat screwdriver between the loop and spring at the shoe web and lift up. To install the spring, link properly in the support plate assembly. Hook the spring into the link. Then, with a pointed drift (C-3462), snap the spring into the shoe.

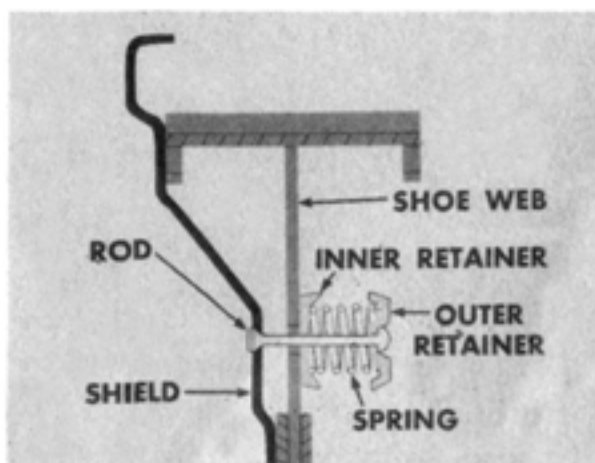


Remember that the spring link hooks around a post in the support plate assembly and is held there by a dimple in the outer plate. If the link moves out of position, use a screwdriver against the link to bump it back into place.

NOTE: If the return spring is hooked to the spring link when the link is out of position, there won't be sufficient return spring pressure. Shoe return will be affected, the shoe may drag on the drum and braking efficiency will be reduced. So make sure the link is positioned properly before you install the brake shoes.

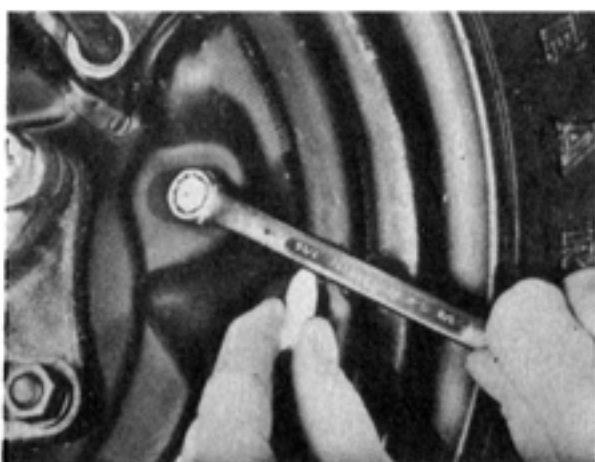
Shoe Retainer. The shoe retainer assembly used with the 3-platform brake consists of an inner and an outer spring retainer, a coil spring, and a rod to hold the assembly in place. They replace the flat spring-type retainers used previously.

The head of the rod rests against the back of the dust shield. The rod extends through the shield and shoe web. Two retainers and a spring are assembled on the rod and against the web to hold the shoe in place. It not only holds the shoe in place; it provides a lot of dampening to help eliminate vibration.



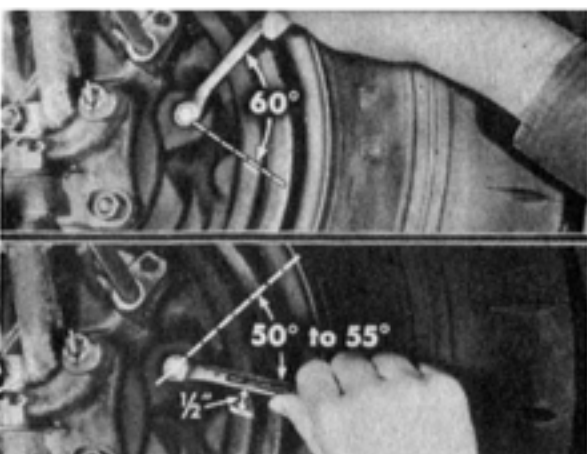
Maintenance

Adjustment. Adjusting procedure for the 3-platform brakes is similar to that for adjusting earlier type brakes. The two shoes of the front wheel brake, and the *forward* shoe of the rear brake become energized when the car goes forward. So you adjust both front shoes and the forward shoe of the rear brake in the same way. The rear shoe of the rear brake is self-energized when the car is moving in reverse, so you adjust it the opposite way.



On front wheel brakes, turn the adjusting cams in direction of forward wheel rotation as you turn the wheel forward. You turn the cams to move the shoes against the drum until the wheel locks in place. Then scribe a mark in the dust shield at the leading edge of the wrench.

Next, turn the cam back one hex, or 60° , to free the shoe from the drum. Finish the adjustment by turning the cam 50° to 55° in the



direction of forward wheel rotation as you turn the wheel forward. This will bring the leading edge of the wrench about $\frac{1}{2}$ " from the mark you made on the dust shield and it keeps the spring link from loading the cam and resulting in a false adjustment.

NOTE: Don't forget to spin the wheels to be sure the drums run free and the shoes don't drag.

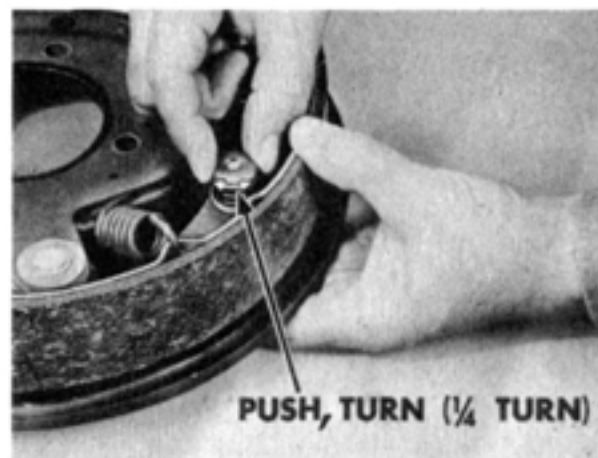


You adjust the forward shoe cam of the rear brake the same way as both shoes on the front brake. But when you adjust the *rear* shoe cam on the rear brake, you turn it in the direction of *reverse* wheel rotation as you turn the wheel rearward. When you finish adjusting the rear brakes, remember to turn the rear wheels in both directions to be sure the drums run free and shoes don't drag.



Disassembly and Assembly. Disassembling and assembling the platform brake are done the same way you've been handling former-type brakes. One exception, though, is removal and installation of the new shoe retainer.

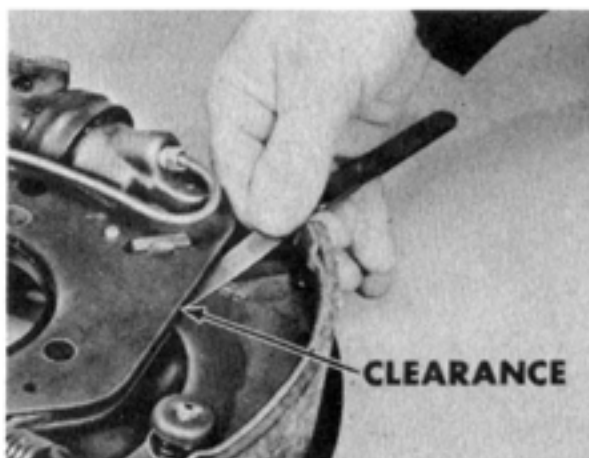
To remove the retainer, apply finger pressure against the stud head on the back of the dust shield. Push the spring outer retainer toward the shoe web, turn it $\frac{1}{4}$ -turn to unlock it from the flat rod twist and release it. Then, remove the outer retainer, the spring, the inner retainer, and the stud.



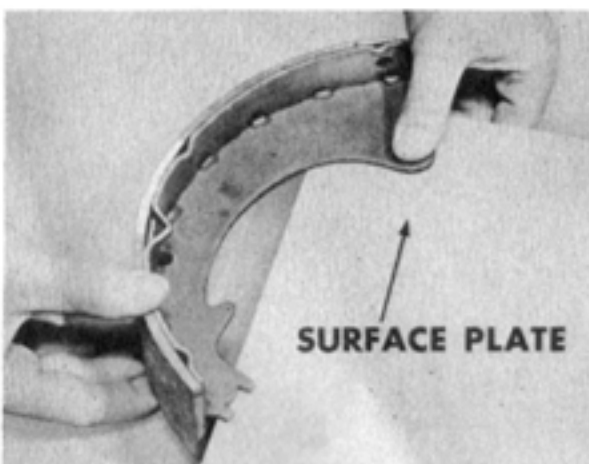
Installation is easy. Just insert the rod through the dust shield and web of the shoe. Place the inner retainer, spring and outer retainer over the rod. Apply finger pressure against the rod head. Press the outer retainer down over the rod, turn it $\frac{1}{4}$ -turn, and release.

With the retainer assembly removed and the return spring hooked, remove the shoe.

Inspection. Whenever the shoes are removed, inspect the heel of



of the web for signs of interference with the support plate. Any web that's flatter than specifications should align itself between the support plates. Even a web slot center will be okay because there is clearance between the web and the support plate.



No clearance between the web and support plates can mean the shoe is bent so check web on a surface plate. Just hold the heel end of the plate, and swing the web across. Remember that the shoe cannot be straightened and will have to be replaced.

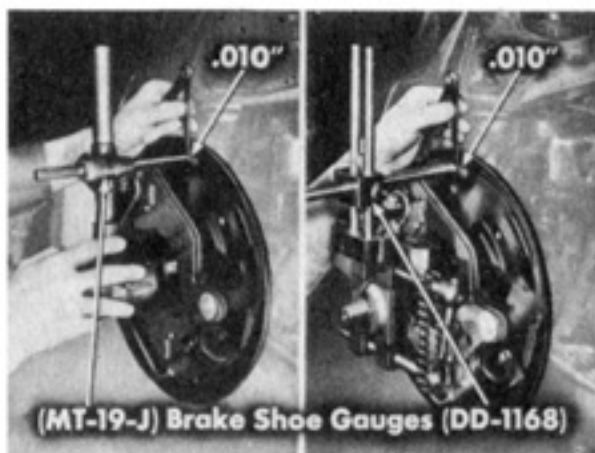
Another thing . . . the web should be centered on the shoe with no more than a $\frac{1}{32}$ " clearance on either side.



Look for the letters "D-P-C-D" stamped on the web. They're found on only *approved* shoes. Any time you find off-brand shoes on a car, remove them. Using anything but approved shoes could be extremely dangerous because of the possibility of distortion.



Ensure platform flatness and height. Unless they're within specifications, brake noise will result and brake shoes might hang up or grab. If you suspect that the car has been in an accident, or that the dust shield has been bent, use the brake shoe gauge (MT-19-J or



DD-1168) and a set of feelers to measure the platform height. With the dust shield installed, all platforms for one shoe should be in the same plane within .010". There should not be more than .020" width between the platform slots for one shoe and those of the opposite shoe.

Be especially sure that the linings are ground flush with the edge of the shoes. There should be no lining overhang, or the shoes will not guide accurately on their platforms.

Lubrication. Platform brakes ordinarily won't require lubrication. But if you find it necessary, you can put a small amount of Door-Fast

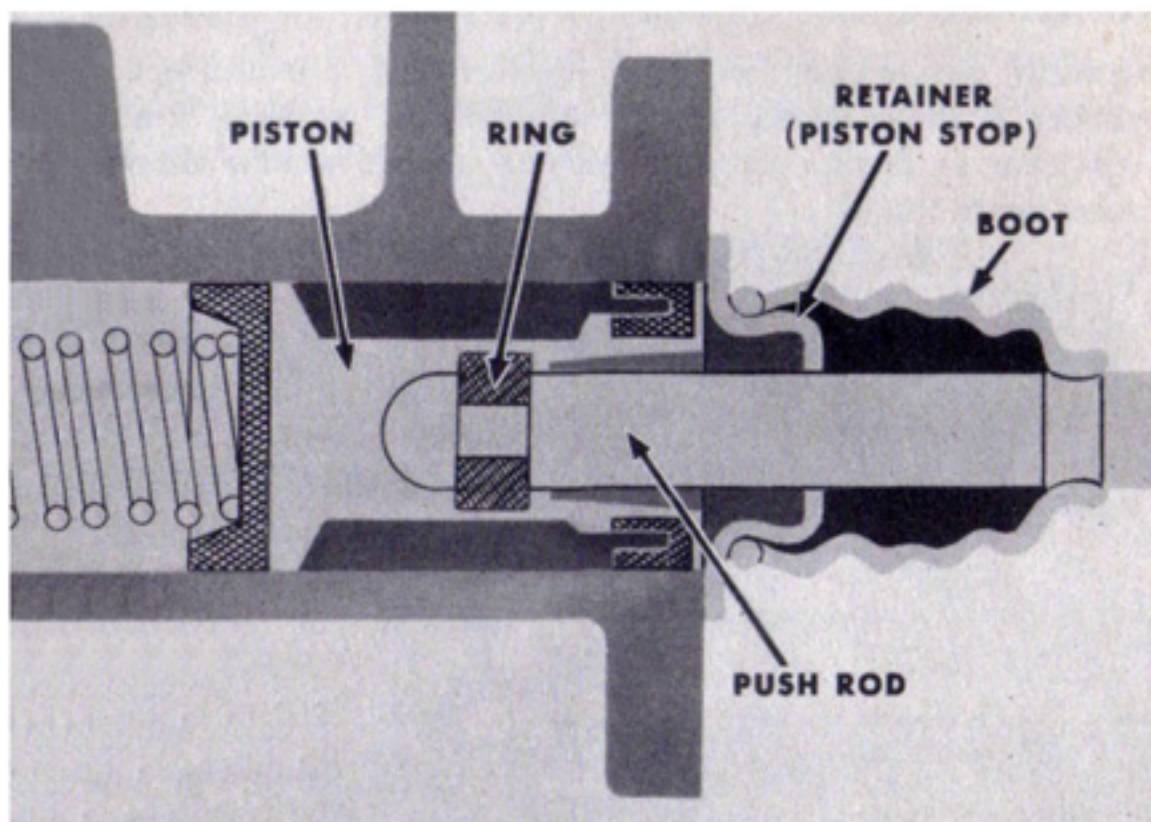


stick lubricant on the platforms, and at the heel at the ends of the shoe. It's far better to use too little lubricant than too much. At extremely high brake temperatures, losing any lubricant is apt to turn into liquid that could contaminate the linings.

BRAKE MASTER CYLINDER

Description

The master cylinder that is used on all cars without factory-installed power brakes features a non-adjustable push rod. It has a new piston and rubber ring. The ring fits a groove in the forward end of the push rod and secures the rod in the piston.



There's also a new rubber boot and boot retainer which serves as a piston stop. These new features help the master cylinder automatically maintain the proper push rod free-play. The piston stop does away with the need for any adjustment.

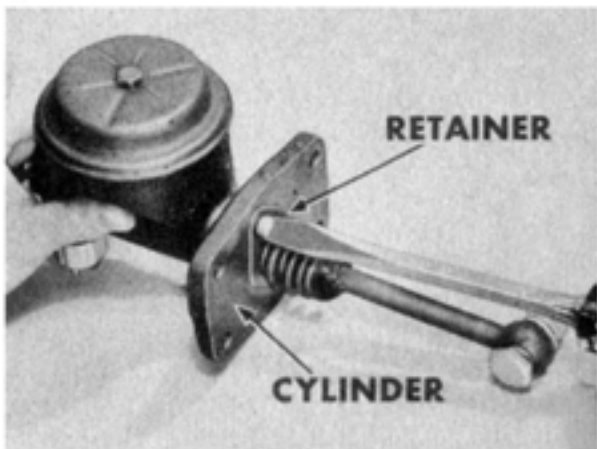
In addition to these features, the brake pedal return spring has been eliminated. No pedal stop, therefore, is needed. Pedal return travel is controlled by the boot retainer acting as the piston stop.

As you can see, the pedal is returned by combined action of the piston return spring and the hydraulic pressure in the cylinder. Some technicians might feel that the pedal returns too slowly, but actually the master cylinder piston returns as quickly and completely as it ever has with previous designs using a pedal return spring.

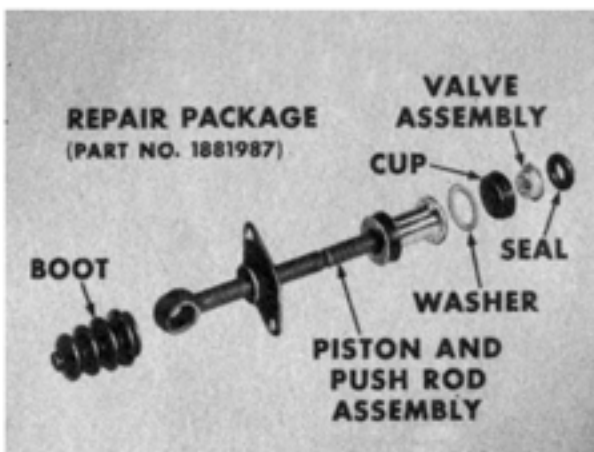
CAUTION: Never pull the brake pedal back beyond the limit controlled by the piston stop. The push rod may be separated from the piston if a pull of 50 pounds or more is exerted after the piston has reached its stop.

Maintenance

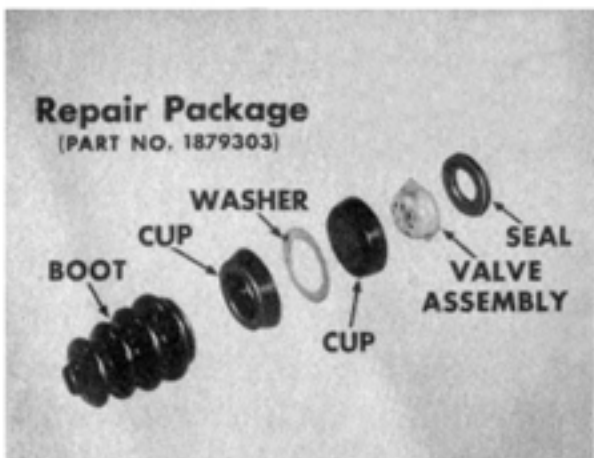
Normally, seeing that the proper level of fluid is maintained in the cylinder is about all the regular maintenance required. But if you ever have to recondition the cylinder, there's a new disassembly procedure to follow.



The piston, push rod, push rod ring, and boot retainer are furnished as an assembly. So they're not to be taken apart. If you have to remove this assembly, just take out the screws that hold the retainer to the master cylinder.



If the piston has to be replaced, install the complete Master Cylinder Reconditioning Kit (Part No. 1881987). It contains all internal parts including the piston and push rod assembly, needed for reconditioning the cylinder.



In most cases, of course, piston replacement is unnecessary. So, the Partial Repair Package (Part 1879303) should be used. This partial package contains a boot, piston cups, a washer, valve assembly, and a seal.

NOTE: Always inspect the master cylinder for a burr on the edge of the return port. A burr at this point will gouge the rubber cups of the piston and cause early failure of the part. Use a hone to remove any burrs you find.

FRONT WHEEL BEARINGS

Properly adjusted and lubricated front wheel bearings are mighty important to bearing life, steering control, and effective braking. Loose bearings can cause brake noise as well as brake pull. Improper lubrication practices can cause damage to bearings and brake lining.



Lubrication

Many wheel bearing lubricants cannot be mixed. If they are mixed, they cause a chemical action that can turn the lubricant into a sticky, gooey substance that doesn't lubricate and can even damage the bearings through acid etching.

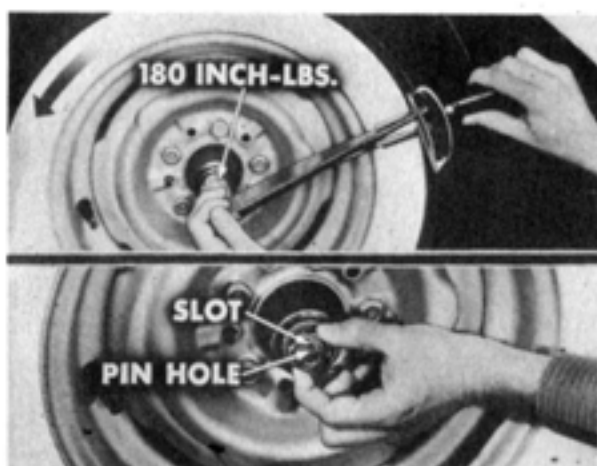
Whenever front wheel bearings need lubrication, never add new to



the old lubricant. Always remove the cone and roller assemblies and seals, and wash the old lubricant out of the hub. Wash the bearing, and then repack them with new lubricant. Add 1¾ oz. of lubricant to the inside of the hub. Install the bearings and the new inner seal.

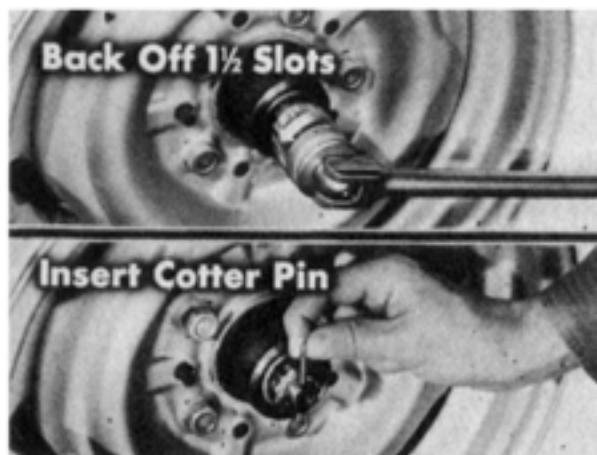
Adjustment

Adjusting specifications for front wheel bearings have been changed. Previously, tightening the bearings to 90 inch-pounds was recommended. But it was found that when bearings are repacked, the new lubricant in some cases kept the bearings from seating properly during the tightening. As a result, some bearings loosened up more than the specified zero to .003" clearance after the car traveled a few hundred miles.



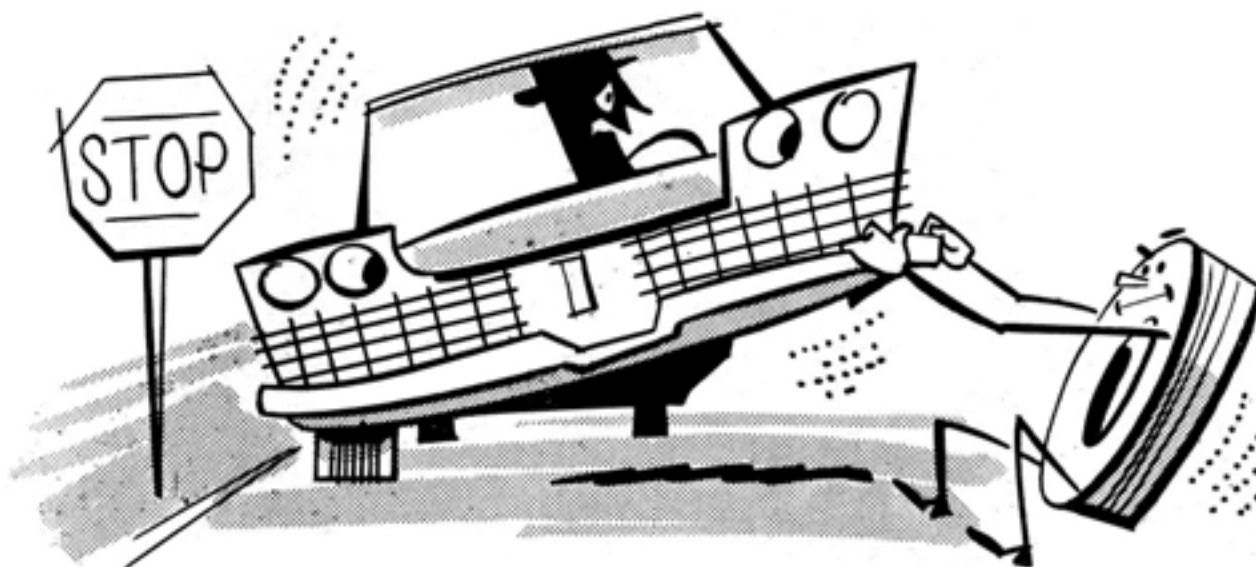
Under the new procedure, you should tighten the adjusting nut to 180 inch-pounds as you rotate the wheel. Put the nut lock over the adjusting nut so the cotter pin hole lines up with one set of slots.

Without removing the lock, back the nut off 1½ slots. This will position the nut lock so oil tang blocks the cotter pin hole. Remove the lock and reposition it so you can insert the cotter pin so you can insert the cotter pin and secure the bearing adjustment.



MISCELLANEOUS BRAKING CONDITIONS

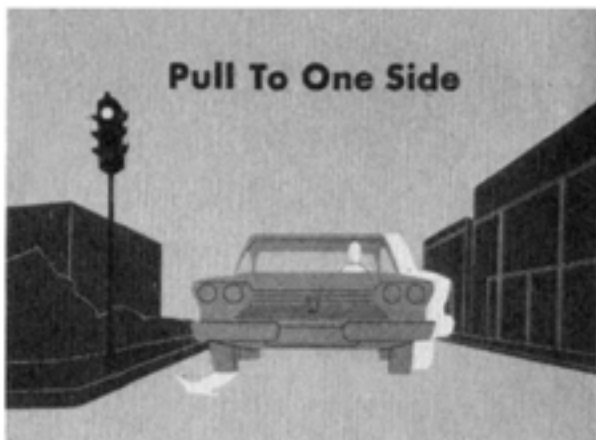
Usually, when all specifications are maintained, brakes do their job surprisingly well. It's only when some one specification hasn't been met, or when something is out of adjustment that brakes act up. They might pull, dive, fade excessively, or cause noise.



Brake Pull

Brake pull is a name applied to the condition causing a car to shoot off to one side on brake application. It's generally due to a difference

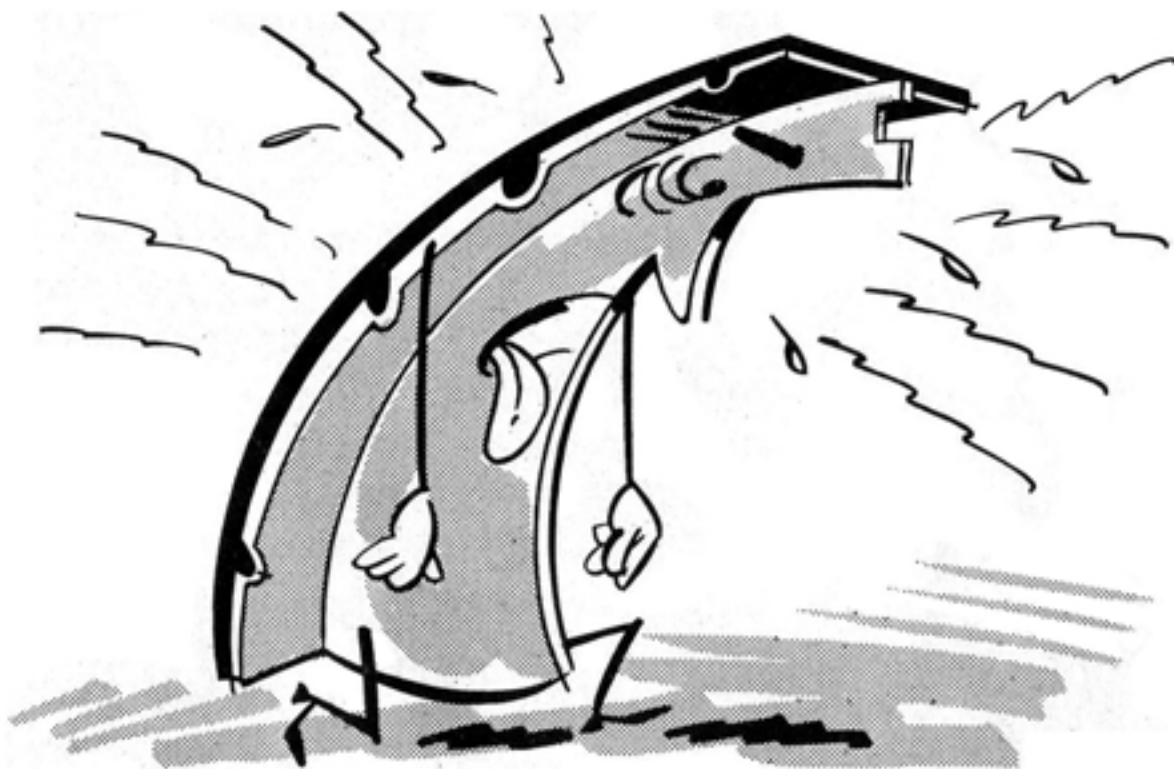
in braking effort between the linings on the opposite wheels. A pull to the left, for example, may be a sign that something is wrong on the right—the opposite side. Poor adjustment, or a lining condition such as contamination by oil, grease, or other foreign matter can cause



brake pull. In addition, low or uneven tire pressure can lead to brake pull. So can improper front suspension alignment, or improper front wheel bearing adjustment. All of these possible conditions can cause uneven braking and lead to pull.

Brake Dive, Fade

Brake dive is just a heavy pull. Dive takes place shortly after brakes get hot, as they often will following several hard brake applications. Dive is an early sign of lining fade.



Correcting a fade condition, then, will often eliminate brake dive. Fade, after all, is strictly a loss of friction due to heat.

As you probably know, there's always some fade present. It's a natural characteristic of the mineral-type lining material that has to be used. You've noticed, naturally, that after a lot of sudden stops made on a turnpike, or going down a steep hill, it takes longer and longer to stop. That's why motorists are told to go slower. It compels them to do their braking more gradually, and gives the linings a chance to cool. That's also why it's wise to use a lower gear when descending steep grades. This takes advantage of the braking effect of the engine, and relieves the load on the brake lining.

The type of brake lining used on our cars is designed to provide the best braking effort for average driving conditions. Bad fading shows up when non-approved lining gets on car brakes.

Approved lining is a "must"! Always be sure that the correct shoe and lining combinations are used. Intermixing shoes or lining materials almost always invites trouble. On Imperials use only *new* Chrysler Corporation manufactured shoe and lining assemblies.

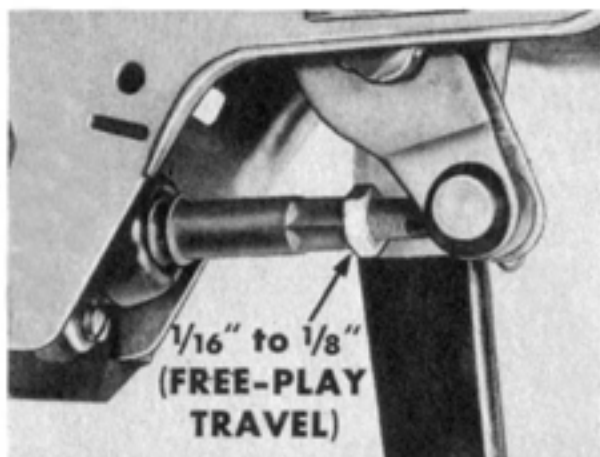
New shoes needn't be cam ground before installation because they're already ground. But it will pay to hold the new shoes against the drum to make sure they're ground properly. There should be .004" clearance between the drum and the heel and toe ends of the shoe.



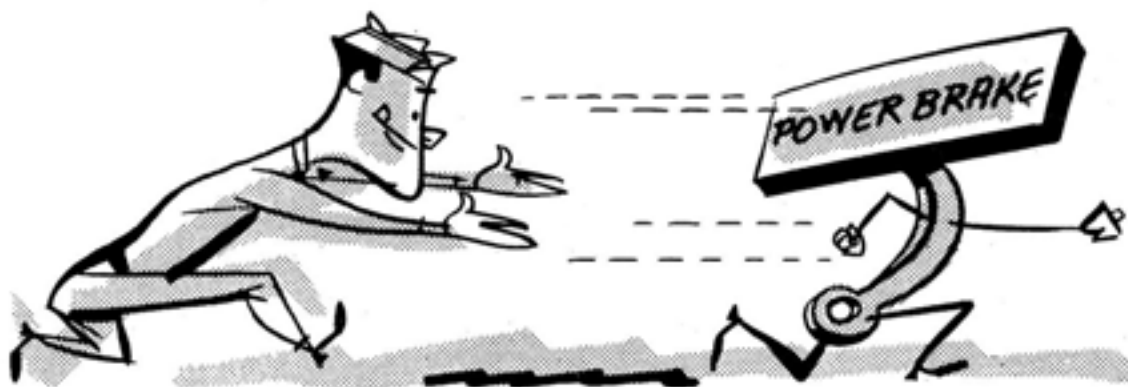
POWER BRAKE SERVICE TIPS

Pedal Free-Play

On cars equipped with power brakes, the master cylinder uses an adjustable piston push rod. After adjusting power brakes, an effective solid pedal of $\frac{1}{2}$ to $\frac{3}{4}$ of the total pedal travel is considered satisfactory. But the brake *pedal free-play* travel should be $\frac{1}{16}$ " to $\frac{1}{8}$ ". You can get this by lengthening or shortening the master cylinder push rod. This will provide the correct clearance of .015" to .030" between the push rod and piston.



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Master Cylinder

If you have occasion to recondition the master cylinder, follow the same procedures as for any other master cylinder. Pay particular attention to cleaning the bore of the cylinder, and be sure the small diameter section of the outlet port is clear.

Hard Pedal

If the pedal is hard, and it feels as though power brakes are being applied manually, look first at the host lines. They must be properly connect and must not be kinked. Also, check the air cleaner on the front of the unit to be sure it has no obstructions.

CONCLUSION

Brakes are one of the most important car controls. They've got to work properly every time. Your customers are aware of this, of course, and depend on your help to keep their brakes performing safely, and surely during each application.

Information in this reference book will go far toward helping you provide the brake service that car owners expect. And remember to use only approved brake parts as well as approved brake fluid. Using materials designed for our brakes is your best guarantee of a satisfactory job that will please your customers.



RECORD YOUR ANSWERS TO THESE QUESTIONS ON QUESTIONNAIRE NO. 138

- | | | | |
|--|-----------------------|----|-----------------------|
| Brake shoe return springs used with the new 3-platform brakes are interchangeable with those used on former brakes. | <input type="radio"/> | 1 | <input type="radio"/> |
| | RIGHT | | WRONG |
| Always make sure the spring link is properly positioned before installing a return spring. | <input type="radio"/> | 2 | <input type="radio"/> |
| | RIGHT | | WRONG |
| All the adjusting cams on front and rear platform brakes are turned forward while the wheel is being turned forward. | <input type="radio"/> | 3 | <input type="radio"/> |
| | RIGHT | | WRONG |
| A bent brake shoe can't be straightened and must be replaced. | <input type="radio"/> | 4 | <input type="radio"/> |
| | RIGHT | | WRONG |
| The web should be centered on the shoe table with no more than 1/32" variation on either side. | <input type="radio"/> | 5 | <input type="radio"/> |
| | RIGHT | | WRONG |
| With the shield installed, platforms for one shoe should be in the same plane within 0.10", and there should be no more than .020" variation between platforms for one shoe and those for the opposite shoe. | <input type="radio"/> | 6 | <input type="radio"/> |
| | RIGHT | | WRONG |
| The master cylinder used on all cars without factory-installed power brakes features a non-adjustable push rod. | <input type="radio"/> | 7 | <input type="radio"/> |
| | RIGHT | | WRONG |
| Loose front wheel bearings can cause brake noise as well as pull. | <input type="radio"/> | 8 | <input type="radio"/> |
| | RIGHT | | WRONG |
| When front wheel bearings need lubrication, always wash out the old lubricant before adding new lubricant, and replace the dust seals. | <input type="radio"/> | 9 | <input type="radio"/> |
| | RIGHT | | WRONG |
| New shoes are already ground but should be checked against the drum to see that there is .004" clearance between heel and toe ends. | <input type="radio"/> | 10 | <input type="radio"/> |
| | RIGHT | | WRONG |