THE MASTER TECHNICIAN'S

SERVICE REFERENCE BOOK

SESSION NO.

63-6

SERVO-CONTACT BRAKE SERVICE

MASTER TECHNICIANS SERVICE CONFERENCE
PREPARED BY CHRYSLER CORPORATION
PLYMOUTH · DODGE · CHRYSLER · IMPERIAL

Brake Power Pow-Wow

Ever think about brakes in terms of power? For example, brakes have two or three times more power potential than the engine has. Many of today's engines can take a car from zero to sixty in less than ten seconds. That's a lot of power! Yet the brakes can stop the same car twice as fast—less than five seconds from sixty miles an hour. You don't have to be an engineer to see that a car's brake-power is far greater than its engine-power.

It's agreed that brakes are very important. From the standpoint of safety, they're *most* important. Of course, it follows that brake service is equally important.

There's nothing too complicated about servicing Chrysler Corporation's Servo-Contact brakes. However, they do differ from our previous brakes in design and service procedures. This Reference Book will give you the latest word on 1963 brakes. So, even if you're an "old hand" at brake service, you're sure to find some tips that'll help you to maintain your customers' BRAKE POWER!

TABLE OF CONTENTS:

1963 SERVO-CONTACT BRAKES

Three sizes of Servo-Contact brakes are used on 1963 Chrysler Corporation cars: nine-inch diameter brakes, ten-inch diameter brakes and eleven-inch diameter brakes. Valiants and Darts have the nine-inch brakes. On Plymouth and Dodge, ten-inch brakes are standard while eleven-inch brakes are used for special applications. Eleven-inch brakes are also used on all Chrysler, Imperial and Dodge 880 models.

Brake sizes, however, don't tell the full story. There are also different sizes of wheels, tires, linings and wheel cylinders for these cars. Each combination has been engineered to work best for a given type of operation with a given car weight and weight distribution.

The SERVO-CONTACT BRAKE APPLICATION CHART gives you the information you'll need to be sure you have the correct combination for every 1963 car. It's very important that you don't deviate from the specifications. Following paragraphs discuss some of the factors that were considered in designing these combinations.

SERVO-CONTACT BRAKE APPLICATION CHART

VEHICLE	WHEEL SIZE	TIRE SIZE	CYL. BORE DIAMETERS			BRAKE SIZE		LINING SIZE				LINING COLOR CODE
			Front Wheels	Rear Wheels	Master	FRONT	REAR	FRONT		REAR		
								Primary	Secondary	Primary	Secondary	
Valiant and Dart	4½ J	6.50 x 13″	1″	13/16″	1″	9″ x 2½″	9″ x 2″	7⅝″	9⅝″	7⅝″	9⅝″	A
Plymouth & Dodge												
—standard	5 K*	7.00 x 14″*	1⅛″	15/16″	1″	10″ x 2½″	10″ x 2½″	8½″	11″	8½″	11″	A
—taxi	5½ K	7.50 x 14″	1⅛″	15/16″	1″	11″ x 3″	11″ x 2½″	9¼″	12⅛″	9¼″	12⅛″	B
—police special & H.D.	5½ K	7.50 x 14″	1⅛″	13/16″	1″	11″ x 3″	11″ x 2½″	9¼″	12⅛″	9¼″	12⅛″	C
Custom 880 & Newport												
—standard	5½ K†	8.00 x 14″†	1⅛″	15/16″	1″	11″ x 3″	11″ x 2½″†	12⅛″	12⅛″	12⅛″	12⅛″	D
—police spec.	6 K	8.50 x 14″	1⅛″	15/16″	1″	11″ x 3″	11″ x 3″	9¼″	12⅛″	9¼″	12⅛″	C
Chrysler 300 Series	6 K	8.00 x 14″	1⅛″	15/16″	1″	11″ x 3″	11″ x 3″	12⅛″	12⅛″	12⅛″	12⅛″	D
Chrysler 300-J	6 K	7.60 x 15″	1⅛″	15/16″	1″	11″ x 3″	11″ x 3″	12⅛″	12⅛″	12⅛″	12⅛″	C
New Yorker	6 K‡	8.50 x 14″‡	1⅛″	15/16″	1″	11″ x 3″	11″ x 3″	12⅛″	12⅛″	12⅛″	12⅛″	D
Imperial	6 K	8.20 x 15″	1⅛″	15/16″	1″	11″ x 3″	11″ x 3″	12⅛″	12⅛″	12⅛″	12⅛″	D

FOOTNOTES:

*—5½ K Wheels and 7.50 x 14″ Tires Optional on Dodge Wagons.

†—6 K Wheels, 8.50 x 14″ Tires and 11″ x 3″ rear brakes on Newport Wagon.

‡—6½ K Wheels and 9.00 x 14″ Tires on New Yorker Wagon.

COLOR CODE STRIPES ON EDGE OF LINING

CODE	PRIMARY SHOES	SECONDARY SHOES
A	1 Red; 1 Yellow	2 Red
B	1 Black; 2 White	1 White; 1 Green
C	3 Black	2 Black; 1 White
D	1 Black; 1 Orange	1 Black; 1 Blue

POLICE CAR BRAKING CONDITIONS

Designing brakes for the various applications listed in the chart poses many problems. Take police brakes for example. Police cars often have to make very fast stops from high speeds. Under these severe braking conditions, the forward weight shift places more weight on the front wheels. Adding to this weight shift effect is the fact that police cars usually carry no passengers and very little load in the rear. The forward weight shift increases the braking "traction" available at the front wheels, but it cuts down the braking "traction" at the rear.

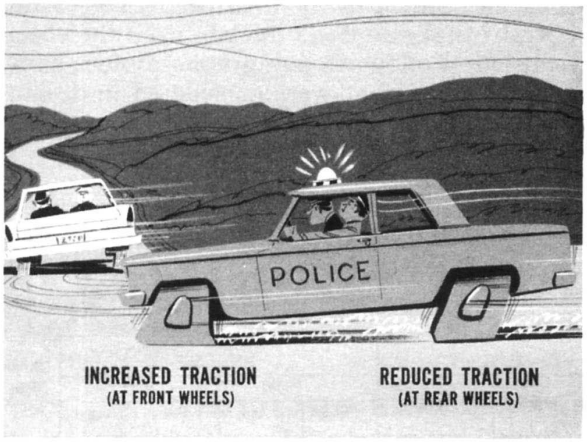


Fig. 1—Weight shifts on fast stops

Fishtailing: Because braking "traction" at the rear wheels is reduced during severe braking from very high speeds, the rear wheels have a tendency to skid. This type of skid, referred to as "fishtailing", is one of the problems which must be considered in designing police brakes.

PLYMOUTH-DODGE POLICE BRAKES

Larger brakes: Plymouth and Dodge police brakes are larger than standard passenger car brakes. Instead of the standard 10-inch brakes, these police cars have 11-inch brakes, front and rear.

Smaller rear brake cylinders: Although the police brakes are larger than the standard brakes, the bore diameter of the police rear wheel brake cylinders is smaller. This concentrates more of the hydraulic braking power at the front brake linings. The end result is reduced braking at the rear wheels to minimize rear wheel skidding and control fishtailing. Incidentally, you can identify rear wheel brake cylinders having reduced diameter bores by the letter "X" following the part number on the cylinder housing.

Special linings: Police front wheel brake linings are 3 inches wide. Rear wheel linings are 2½ inches wide. In addition, police brakes use special linings, front and rear. Larger front linings plus special lining material helps equalize front and rear lining life.

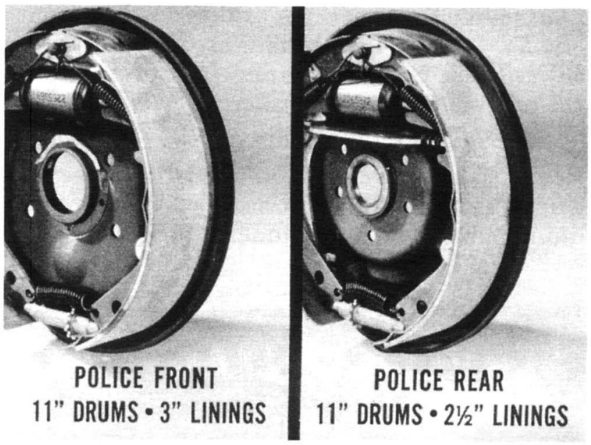


Fig. 2—Plymouth-Dodge police brakes

Automatic adjusters: Automatic brake adjusters are not used with current police brakes. Under the extreme braking conditions encountered in police work, automatic adjusters could over-adjust the service brakes. This would occur if brakes were applied with the car in reverse immediately after any hard braking that heated and momentarily expanded the drums. Obviously, over-adjustment would result in dragging brakes and rapid lining wear.

OTHER DESIGN CONSIDERATIONS

All together, the features of the Plymouth and Dodge police brakes add up to a braking system that's designed to give the best distribution of braking loads under the extreme conditions of police usage. However, these police brakes wouldn't be as satisfactory as standard brakes in normal passenger car use. Here's why.

One consideration in designing brakes for standard passenger cars is the need for relatively equal lining wear between front and rear brakes. This is a factor in prolonging lin-

ing life. In normal passenger car use, the front wheel linings of police brakes would wear down sooner than the rear wheel linings. This is because the front wheel brakes would be doing too much of the braking for normal city driving. From this, you can see why it's important to *use only the specified linings and other brake parts that have been designed for the particular brakes you're servicing!*

IMPERIAL REPLACEMENT LININGS

In the SERVO-CONTACT BRAKE APPLICATION CHART, lining specifications for Imperial brakes are identical with those for Chrysler 300 Series and New Yorker brakes. However, the brake shoes are different, both in material and in construction. Imperial shoes are identified by the number "950" stamped on the web of the shoe.

Shoes for the other models should never be used on Imperial brakes. It's strongly recommended that Imperial shoe and lining assemblies be replaced only with complete *new* MoPar or Chryco assemblies. That's the best way to avoid the inadvertent installation of improper shoes.

FLARED BRAKE DRUMS

All 1963 Imperial brake drums have heavy flared rims to reduce brake fade on severe braking. The additional metal in the flared rim acts as a heat sink—it absorbs more of the heat generated by braking. As a result, drum temperature builds up more slowly and brake fade is reduced.

The Chrysler 300-J and the Dodge Custom 880 Police Car have flared drums on the front wheels only. These 300-J and Custom 880 flared drums are not interchangeable with Imperial drums because they have a 4½-inch-diameter wheel stud circle—one inch smaller than the 5½-inch wheel stud circle of Imperial drums. Also, front wheel bearings are different.

SERVICING AUTOMATIC BRAKE ADJUSTERS

LOW PEDAL

Automatic brake adjusters maintain the correct shoe-to-drum clearance and proper pedal height. Of course, if a car equipped with automatic adjusters has a low pedal it *could* mean that at least one of the adjusters isn't keeping the clearance set correctly. If you suspect that one or more automatic adjusters aren't working, see if a few fairly hard brake applications in reverse will correct the problem. That may be all that's needed to loosen a tight adjusting screw. If this fails to help, you'll have to check the operation of each adjuster.

TO TEST AUTOMATIC ADJUSTERS

The easiest way to test adjuster operation is to back off the adjustment at all brakes to be sure they need adjustment, then spin each wheel backwards and see if the adjuster operates when the brakes are applied.

Test preparations: Raise the car on a hoist. Remove the cover from the rear adjustment slot in each brake support plate so you can see the adjuster star wheel. Then stick a thin screwdriver through the adjusting hole and push the adjuster lever out of engagement with the star wheel. Be sure to hold the lever there while you back off the star wheel about thirty notches. That way, you'll be sure the brake actually needs adjustment. If it's extremely difficult or impossible to turn the star wheel, the trouble may be corroded threads on the adjusting screw.

Observe adjuster operation: You'll need someone in the driver's seat to apply the brakes. Spin the wheel in the reverse direction and have your helper apply the brakes *hard*. This will move the secondary shoe, causing the adjuster cable to pull the adjuster lever up. Then, when the pedal is released, the lever should snap downward, turning the star wheel. So, if the adjuster mechanism is working, you should see a definite rotation of the star wheel.

Check all four adjusters—more than one may be causing the trouble. If you find an automatic adjuster that doesn't function as it should, you'll have to pull the brake drum to service the adjuster.

TEST ADJUSTER WITH DRUM REMOVED

Here's a simple way to test the adjuster after you've removed the drum. Pry the rear brake shoe away about an eighth-of-an-inch from the anchor pin at the top of the brake while watching the adjuster lever. This lever should engage the next tooth of the star wheel with an audible click. Then, when you let the shoe return, the lever should turn the star wheel slightly to lengthen the adjusting screw.

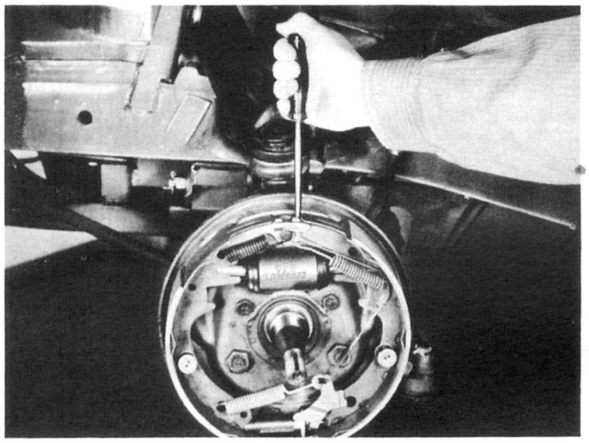


Fig. 3—Test adjuster with drum removed

CABLE BINDING AT GUIDE

If the cable guide isn't flush against the shoe web, the adjuster cable could shift and be pinched between the guide and the web. The cable may bind at that point and fail to operate the adjuster lever. To correct this condition, just position the cable in the guide groove and make sure there's no gap between the guide and the shoe web. It's okay to lubricate the cable guide *sparingly* with Silglyde so the cable will operate easier, but be very careful to avoid getting even the slightest trace of lubricant on the brake linings or drums.

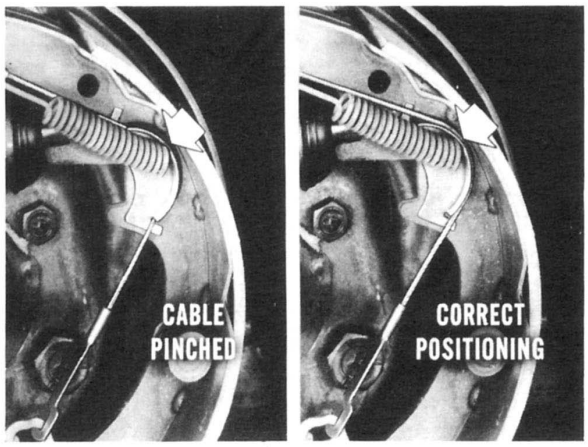


Fig. 4—Cable routing at guide

CABLE EYE IMPROPERLY INSTALLED

To guarantee free operation of the adjuster cable, it must be properly installed. The cable eye should be positioned on the anchor pin with the crimped-down tabs that hold the cable to the eye facing outward. On all cars except Valiant and Dart, the cable eye must be assembled underneath *both* brake shoe return springs. On Valiant and Dart brakes only, the adjuster cable eye should be installed so that it is *between* the two shoe return springs —primary spring first, then cable eye and finally the secondary spring.

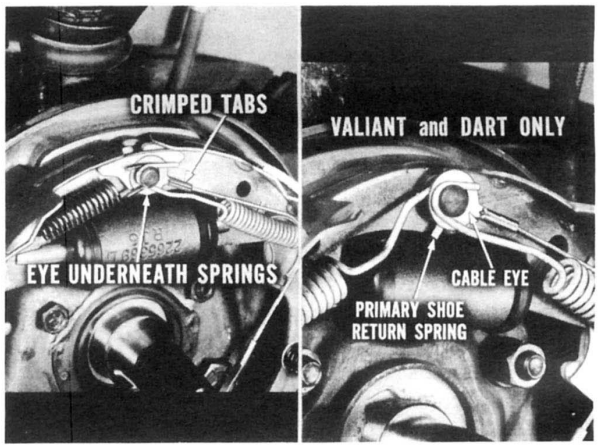


Fig. 5—Cable eye installation

Assembly tip: Whenever you're installing an adjuster cable, remember to do this. Before you hook the shoe return spring to the anchor pin over the eye, pull firmly down on the adjuster cable in the direction of the cable guide. This will insure that the effective length of the cable is correct.

BINDING STAR WHEEL ADJUSTING SCREW

If the star wheel won't turn even though the adjuster cable and lever appear to be in good

shape, the threads on the star wheel adjusting screw might be corroded and binding. In this case, try to free up the threads before you consider replacing the adjusting screw. Sometimes, a few drops of Manifold Heat Control Solvent will help to loosen up the adjusting screw—but be sure to apply it carefully to the threads. Avoid getting solvent on the linings.

BRAKE ADJUSTMENT

After making the automatic adjuster tests, it's advisable to adjust the brakes manually before turning the car back to its owner. When adjusting these brakes, here's a point to bear in mind. Servo-Contact shoe-to-drum clearance is considerably greater than the clearance required on the previous brake design. Accordingly, it's essential, after tightening the adjuster until you feel a slight drag, to disengage the adjuster lever and back off the star wheel a *full 12 notches*. There should be no trace of brake shoe drag.

CORRECTING SERVICE BRAKE PROBLEMS

BRAKE PULL

First, bear in mind that brake pull can be caused by many components other than the brakes themselves. Improper front-end alignment, and especially unequal caster, is a possible cause. A loose lower control arm strut or a sagging front or rear spring can also affect wheel alignment and cause brake pull. A loose wheel bearing or an under-inflated tire could result in pulling brakes. So don't forget to check out these possibilities before condemning the brakes.

LINING CONTAMINATION CAUSES PULL

If you've decided the trouble is in the brake system itself, the most likely cause is lining contamination. Lining glaze is another possibility—it should be removed with emery cloth. Since contamination changes the friction characteristics of the lining, it results in unequal braking and brake pull. And remember to check the brakes on *both* sides of the car, not just the side that's pulling. Lack of braking on one side will cause the car to pull to the other side.

TEST FOR FLUID LEAK

Here's a quick test to determine if there's a fluid leak. Hold a firm, steady pressure on the brake pedal for about half a minute. If the pedal sinks slowly under this constant pressure, there's a fluid leak in the system.

Check wheel cylinders: To determine if a wheel cylinder is leaking, you'll have to pull the brake drum. Pull back the rubber boots on the ends of the wheel cylinder and see if there's an accumulation of brake fluid in the boot. In fact, it's a good idea to take a moment to do this whenever the drums are removed. You might catch a leak before it has a chance to contaminate the linings.

USE APPROVED BRAKE FLUID

When it's necessary to add brake fluid, be sure to use only heavy-duty fluid that conforms to the specifications of SAE 70 R 1 and SAE 70 R 3. MoPar and Chryco brake fluid meets or exceeds these specifications. This type of fluid has the high boiling point required for safe brake operation. Don't take a chance on unknown brake fluids—it's not worth the risk!

BRAKE ASSEMBLY LUBRICATION

Lining contamination and brake pull can also result from applying the wrong lubricant or too much lubricant to the dust shield platforms and other brake parts. A *thin* film of Silglyde lubricant is recommended for this purpose because it has all the required properties, including a high melting point—above 400° F. Consequently, it won't melt and run onto the linings when the brakes heat up during a stop.

UNMATCHED BRAKING SURFACES CAUSE PULL

If the braking surfaces of drums on opposite sides of the car have obviously different finishes—one dull, the other highly polished, for example—their different friction characteristics could result in brake pull. Use 60-grit or 80-grit emery cloth to produce comparable, slightly roughened surfaces on both drums.

Brake pull could also result if someone has installed unmatched linings. And of course, don't overlook the possibility of distorted drums or shoes, a pinched brake line or a restricted hose.

PROTECT EXPOSED LININGS

Whenever the linings are exposed during brake service, take care to prevent contaminating them with oil or grease. Place a covering over the linings. Don't even get dirty fingerprints on them! Solvents should not be used on the linings. Some solvents leave an oily residue, and there's always the chance that the solvent will soften the binder in the lining material.

BRAKE CHATTER

Brake chatter is the result of a vibration induced within the brake that can be transmitted to other parts of the car. You might hear it, or just feel it, when the brakes are applied. The key to diagnosis of brake chatter is this —determine the *lowest* speed at which the chatter occurs during braking.

HIGH-SPEED CHATTER—DRUM IRREGULARITIES

If brake chatter shows up only at speeds *above 40 m.p.h.*, it's probably caused by minute irregularities in the drum braking surface. This is not an out-of-round condition. We are speaking of irregularities which you can't measure with an ordinary drum gauge or dial indicator. From the accompanying illustration you can see that we are talking about production specifications and tolerances which can only be measured with special gauges and equipment calibrated to register tenths-of-a-thousandth of an inch.

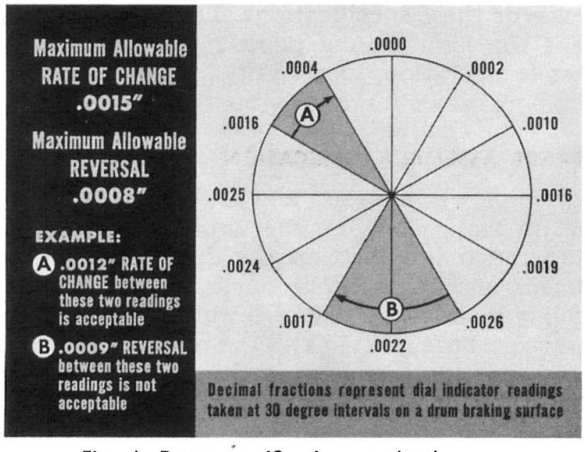


Fig. 6—Drum specifications and tolerances

MACHINE THE DRUMS TO CORRECT CHATTER

Except in a few isolated cases, high-speed chatter can be eliminated by resurfacing the front drums. High-speed chatter is very seldom a problem at the rear wheel drums, so the chances are you'll save your time and your customer's money by turning or grinding only the front drums. Of course, drums should always be refaced in pairs to avoid unmatched braking surfaces. This is another reason why it wouldn't pay to try to determine which front drum had the irregularities, even if you had the highly precise measuring equipment to do the job.

DON'T DISTORT DRUMS

Wrong wheels: Make sure the correct wheels are installed on the car. Sometimes drums are distorted because the wrong wheels were used. Braking surface irregularities and chatter may result from distorted drums.

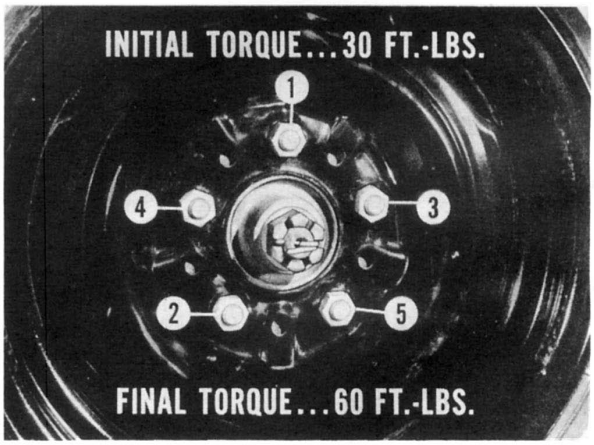


Fig. 7—Stud nut tightening guide

Improperly torqued stud nuts: A drum can also be distorted if the stud nuts aren't tight-

ened correctly. Tighten them to the proper torque and in the proper sequence. First, tighten the nuts to about 30 foot-pounds all around, then repeat the sequence, tightening them to 60 foot-pounds.

DRUM HANDLING PRECAUTIONS

It pays to "baby" brake drums when you're working on them. Don't drop them . . . even a few inches. In fact, don't bump them against anything! It doesn't take much of a shock to distort them and create braking surface irregularities. You don't want to "build in" a brake chatter condition!

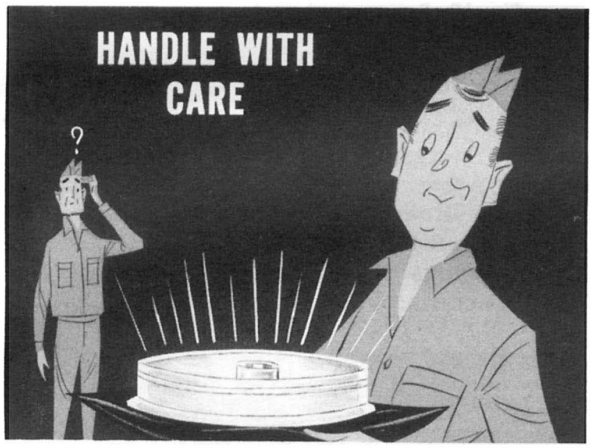


Fig. 8—Handle brake drums carefully

To get an idea of how important this is, notice the way MoPar and Chryco Servo-Contact replacement drums are protected against shocks when you receive them. They're now individually packaged and protected by a cushioning material.

LOW-SPEED CHATTER—HEAT SPOTS

A harsh chatter during braking at speeds as low as 20 m.p.h. indicates a heat-spotted drum. Heat spots are extremely hard areas in the drum. They develop only when the heat capacity of the drum has been exceeded. However, this condition is quite uncommon in '63 models. Chrysler Corporation brakes can take a lot of punishment—it takes extremely severe braking to heat-spot them.

REMOVE HEAT SPOTS BY GRINDING

Heat spots are so hard that the only way to get rid of them is to *grind* the drums. If you try to *turn* a heat-spotted drum, the lathe tool will bounce when it hits a heat spot.

Fig. 9—Heat spots cause harsh chatter

MACHINING TIPS

Equipment: Be sure your drum lathe or grinder is in good condition—capable of giving the precision required for resurfacing drums. If you're using a drum lathe, be sure the cutting tool is properly sharpened and set square to give a smooth cut without pronounced machining marks. If you grind the drums, use the correct grinding wheel and keep it dressed properly. Follow the equipment manufacturer's operating recommendations, particularly regarding speed and feed settings.

Refacing drums: Reface the drum with the correct wheel mounted to it to prevent any

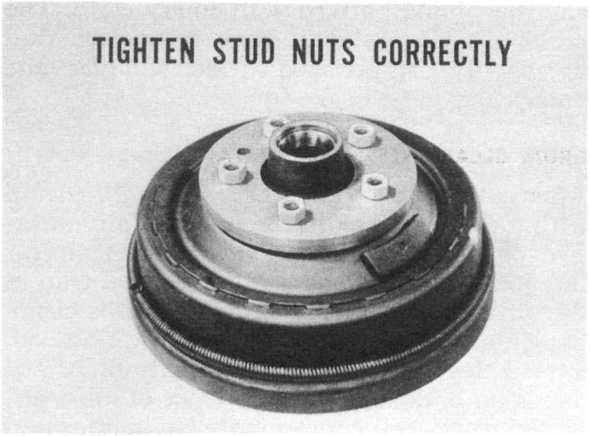


Fig. 10—Plate supports drum

chance of distortion during the operation. If your drum lathe won't accommodate a wheel, use a ½″-thick plate, flat within .005″, bolted to the drum. In either case, tighten the stud nuts in the right sequence and to the specified torque to be sure you don't distort the drum.

When turning or grinding a drum, remove only enough metal to insure that the drum is truly round and free of surface irregularities. In any case, never enlarge the drum diameter over .060″ above standard. In other words, don't remove more than .030″ from the braking surface of the drum. To assure equalized braking action, it's essential to turn or grind an equal amount from the corresponding drum on the opposite side of the car.

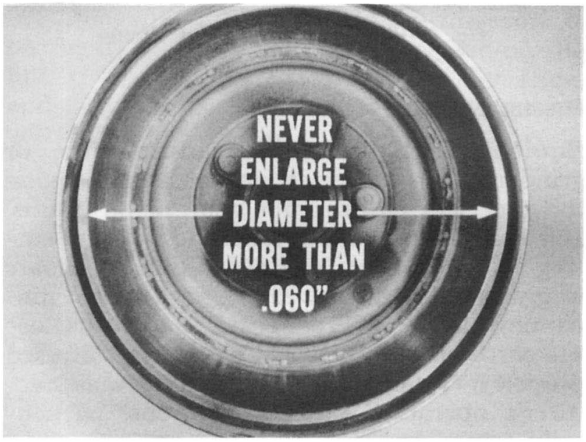


Fig. 11—Maximum oversize drum diameter

After refacing the drum, always break up any machining pattern with emery cloth. The braking surface should have a uniform dull finish. A bright, polished surface will glaze the linings and cause brake squeal.

DRUM CLEANLINESS IS IMPORTANT

After cutting or grinding, wipe the *entire* drum with a clean, dry cloth to get rid of any abrasive particles. Don't use compressed air for this job, unless there's a water and oil trap in the air lines and you're sure the trap is clean. Solvents, particularly oily ones, are no good, either. Never use dirty rags or oily or greasy hands on brake drums. Any trace of lubricant on the drum will contaminate the linings and cause braking problems.

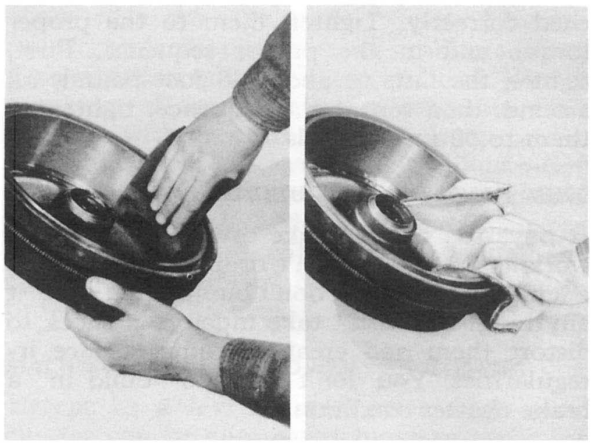


Fig. 12—Remove tool marks and clean drum

SHOE "KNOCK" OR "SLAP"

A knocking noise during braking, with a frequency related to wheel speed, is caused by spiral cutting tool marks on the drum face. When the brakes are applied, these marks pull the shoes out to the point where the shoe hold-down springs snap them back against the brake backing plate.

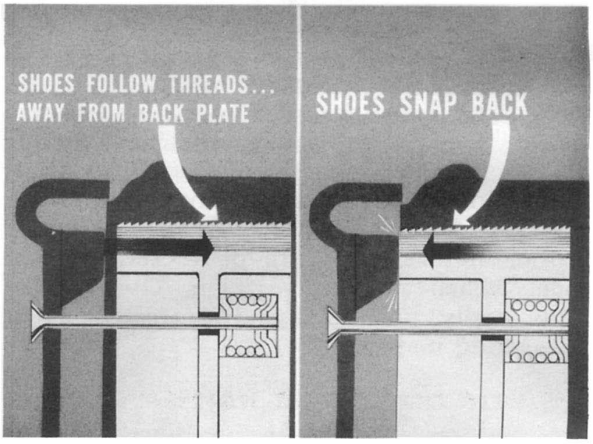


Fig. 13—Machining marks cause shoe knock

Although the noise can come from the brakes at either side of the car, it is more apt to occur at the left side. This is because the machining marks normally resemble a right-hand thread pattern. When the car is going forward, this "right-hand thread" effect tends to pull the brake shoes *out* at the left side, causing the noise. The shoes tend to follow the threads like a bolt being screwed into a nut. The same

effect forces the brake shoes *in* toward the backing plate on the right side, and there's no noise from the wheels.

REMOVE TOOL MARKS TO CORRECT SHOE NOISE

It's not necessary to turn or grind the drums to cure this noise. Just pull the drum and break up the machining pattern with 60-grit or 80-grit emery cloth. Be sure to clean the drum thoroughly before you install it.

LENGTHWISE LINING CRACKS

When inspecting brakes, you may notice fine cracks running lengthwise near the center of some brake linings, even with low mileage.

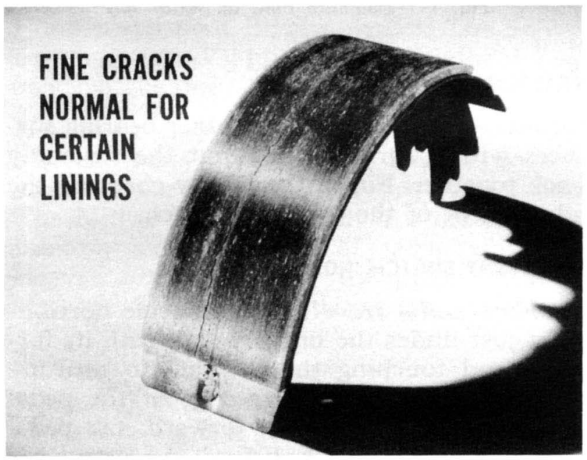


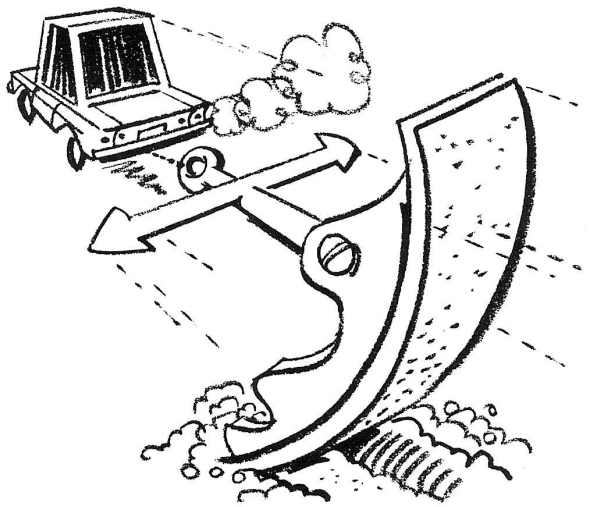
Fig. 14—Cracks don't affect brake efficiency

These cracks are no cause for concern, however—they're typical of certain types of lining material and won't affect lining life or braking efficiency. So don't replace the linings because of these cracks, as long as the lining is securely bonded to the shoe.

DRAGGING BRAKES

Compensating port: The brake master cylinder compensating port permits brake fluid to return to the reservoir when the brakes are released. This releases the pressure on the four wheel cylinders, allowing the brake shoe return springs to retract the shoes. The compensating port is located just ahead of the master cylinder piston when the piston is completely released.

Pedal buildup: If the master cylinder push rod doesn't return fully to its released position, the piston won't uncover the compensating port. Fluid will be trapped in the lines. Then any appreciable heating will expand the fluid and cause the brakes to drag. This is called pedal buildup, and it can occur with either manual or power brakes. Specific power brake problems, however, are covered in another section of this Reference Book.



BINDING BRAKE PEDAL CAUSES BUILDUP

If the brake pedal doesn't return fully to its released position, the master cylinder piston won't uncover the compensating port and pedal buildup will result. A pedal that doesn't return all the way or is slow in returning indicates a bind in the pedal and bracket assembly. Don't try to relieve the bind by loosening the nut on the cross bolt. Do check the following items.

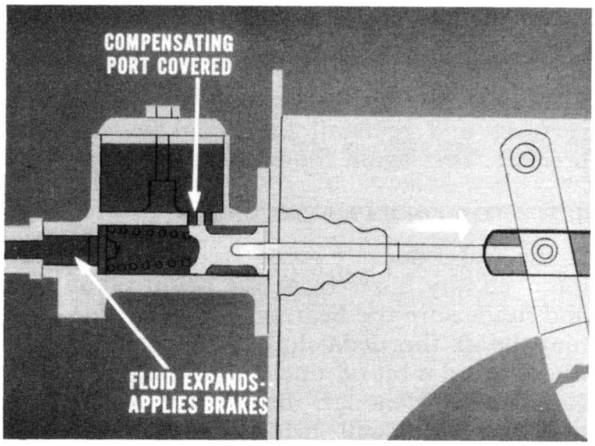


Fig. 15—Pedal bind causes brake drag

CHECK FOR BINDING CROSS BOLT

Try to wiggle the end of the push rod at the brake pedal lever. It should be slightly loose and have some side play so it won't bind in operation. If the push rod is binding at the cross bolt, remove all burrs from the face of the push-rod eye. If the cross bolt is tight in the push-rod eye, polish down the cross bolt.

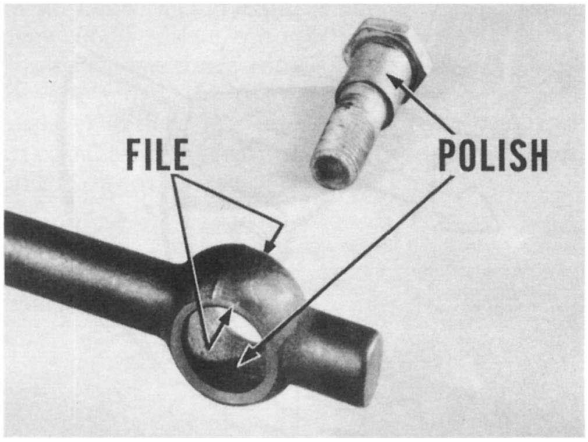


Fig. 16—Eliminate bind at cross bolt

CHECK BUSHINGS AND BRACKET

While the push-rod cross bolt is removed, swing the brake pedal back and forth. A rough, grating feeling indicates broken nylon bushings in the pedal hub. An extremely loose pedal also indicates damaged bushings. Other binding may be an indication of burrs on the bracket round the pedal pivot hole.

If there's binding or other trouble, remove the pedal from the bracket. Then remove all burrs from around the pedal pivot holes in the bracket and replace damaged pivot bushings.

Lubricate the bushings and other bearing surfaces and reinstall the pedal lever in the bracket. Test again for binding.

CHECK FOR BINDING PEDAL HUB

If the pedal doesn't swing freely after you've removed any burrs from the pedal pivot area and made sure the bearings are okay, the bind may be at the pedal hub. You may have to file or grind a bit off one end of the pedal hub. Remove only enough metal from the hub so that the pedal will swing freely. If you cut away too much, you'll have a rattling pedal.

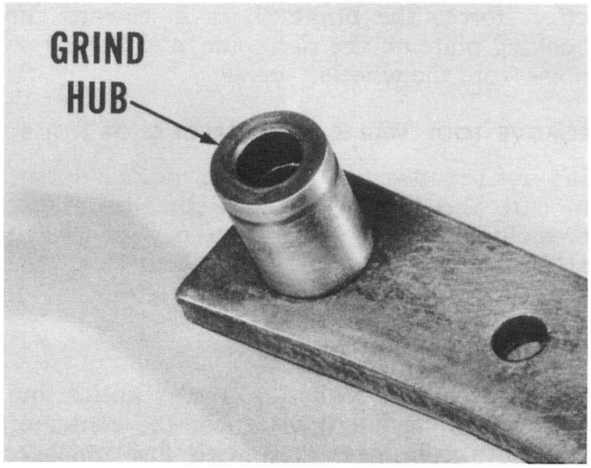


Fig. 17—Eliminate bind at pedal hub

REASSEMBLY TIPS

Lubricate the bushings and other bearing surfaces with Lubriplate and put the assembly back together. Finish the job by checking the adjustment of the stoplight switch.

STOPLIGHT SWITCH ADJUSTMENT

Measure pedal travel: Place a scale horizontally just under the brake pedal, with its forward end touching the firewall, to measure pedal travel at the lower edge of the pedal pad. Press the brake pedal forward. The pedal should travel ½-inch before the stoplights come on, if the car has power brakes. With standard brakes, pedal travel before the stoplights come on should be ⅞-inch.

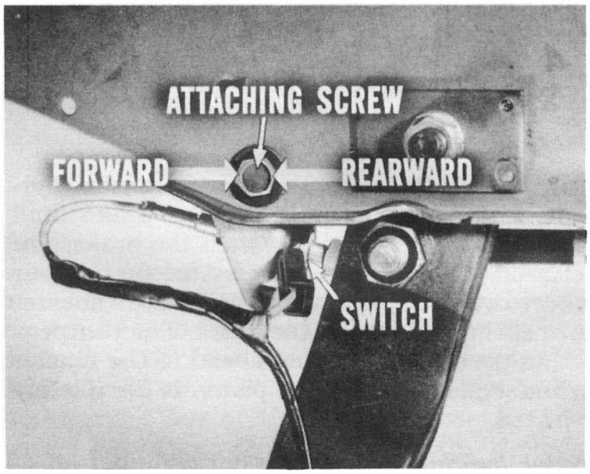
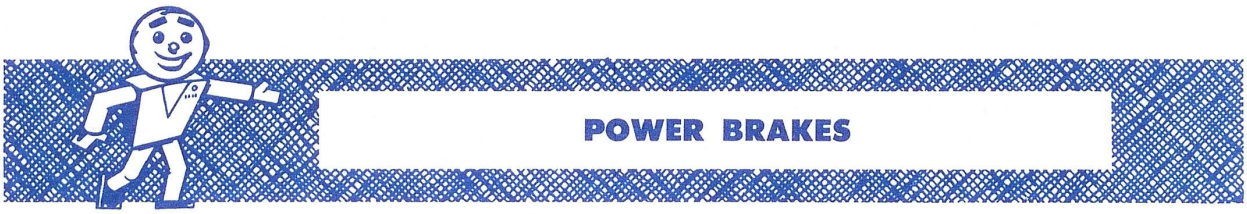


Fig. 18—Adjust stoplight switch

Adjustment: If pedal travel differs appreciably from the specified dimension, loosen the switch bracket attaching screws and move the switch forward or backward to adjust its position. Recheck pedal travel after you tighten the screws.

CHECK STOPLIGHT OPERATION

Take a moment to see if all stoplights are working as they should whenever you do any brake work. This is an easily performed safety check that will help build customer goodwill.



POWER BRAKES

IDENTIFICATION

Plymouth, Dodge and Chrysler power brake units may be either of two makes—a Midland-Ross model or a Bendix model. The service tips that follow apply to the Midland-Ross power brake unit.

Here's an easy way to tell if you have a Midland-Ross booster or a Bendix booster. Examine the front shell of the booster unit. The Midland-Ross front shell is die-cast aluminum, with six pairs of radial ribs. The Bendix front shell, on the other hand, is stamped sheet metal, having no radial ribs.

DRAGGING BRAKES

If the adjustable master cylinder push rod in the booster unit is too long, the piston won't uncover the compensating port in the master cylinder. This condition results in pedal build-up and dragging brakes, as explained in an earlier section of this Reference Book. The effective length of the push rod is governed by the adjustment of the nut at the outer end of the rod.

Diagnosis: Simply remove the master cylinder cover and have a helper apply and release the brakes. If you can see turbulence in the fluid in the reservoir as the brakes are released, the compensating port is open. If not, an adjustment of the push rod nut is needed.

LOW PEDAL

If the push rod adjustment is too short, the result will be excessive pedal travel even if the brakes are properly adjusted.

PUSH-ROD ADJUSTMENT GAUGE

When properly adjusted, the head of the push-rod nut on the Midland-Ross booster will be .910″ to .920″ forward of the face of the master cylinder mounting pad when the push rod is in the normal released position—fully retracted toward the rear of the booster unit.

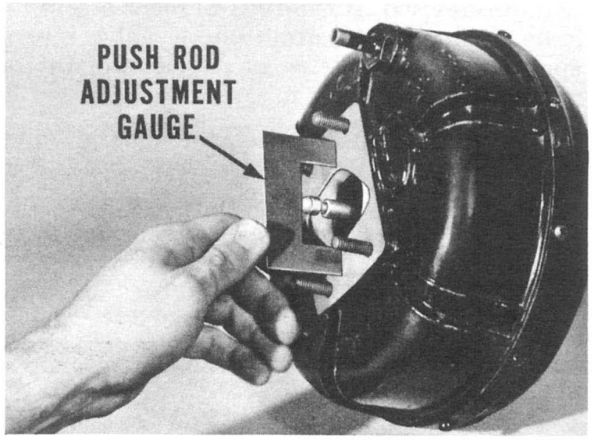


Fig. 19—Measure adjustment with gauge

Although you can measure this adjustment dimension with a scale, you'll find it helpful to make a simple gauge out of 16-gauge stock, about $1\frac{3}{4}$″ high by $3\frac{1}{4}$″ wide. Cut out a rectangle, $\frac{59}{64}$″ high by 2″ wide from the center of the lower edge of the stock. Separate the master cylinder from the booster unit. Place this U-shaped gauge so its legs are resting on the master cylinder mounting pad with the push rod extending into the cutout rectangle. The push-rod nut should just touch the gauge.

CARELESS HANDLING MAY DAMAGE PLUNGER

Whenever you separate the master cylinder from the booster unit, be very careful not to force the master cylinder push rod sideways

at any time. Keep this precaution in mind when adjusting push-rod length. With the leverage afforded by the push rod, any side movement could easily break the guide off the front of the plunger inside the booster.

This can happen only when the units are separated; it isn't possible for the guide to break when the push rod is properly supported by the assembled units. If the guide is broken, the push rod will hang down loosely when the units are separated, instead of extending straight out as it should. In this case, you'll have to replace the plunger assembly in the booster before installing the power brake unit.

ATMOSPHERIC VALVE RETURN SPRING ADDED

For 1963, a return spring was added between the atmospheric valve and the load ring of the plunger assembly. The plunger return spring was also revised. If the 1963 plunger assembly is used without the atmospheric valve return spring, you're liable to have a complaint of not enough power assist.

On the other hand, if the atmospheric valve return spring is used on the 1962 plunger assembly, pedal effort will be on the light side—the brakes will be "touchy". Either way, the condition will be "borderline" — pedal effort will be neither drastically high nor low.

The 1962 Midland-Ross plunger assembly *without the atmospheric valve return spring* is Part No. 2421082. The 1963 plunger assembly *with the atmospheric valve return spring and recalibrated plunger return spring* is Part No. 2448745. This 1963 assembly can be used to service '62 Midland-Ross single-diaphragm power brakes, but be sure to install the new atmospheric valve return spring as well as the 1963 plunger assembly.

TWO-STAGE REACTION RING

For 1963, a small rubber ring has been added between the reaction levers and the valve body. This ring is known as the two-stage reaction ring. It gives the driver a very light initial braking effort without penalizing braking "feel" during heavier brake applications. If desired, this part can be added to 1962 units. No special tools are required.

PARKING BRAKES

Through a series of cables and levers, parking brake controls are linked to the rear wheel service brakes. Operating controls and cable routing differ somewhat between car models.

VALIANT AND DART

These cars have a T-handle parking brake control. Brakes are applied by pulling the handle, and released by turning it. Cable routing is similar to 1962 models.

PLYMOUTH AND DODGE

Foot-applied parking brakes with pull-out release knobs are used on these cars. Cable routing is similar to '63 models.

CHRYSLER AND DODGE CUSTOM 880

The parking brake control mechanism for these cars is very similar to the Plymouth and Dodge design. The cable system, however, is new. It features a new type of equalizer.

IMPERIAL

The Imperial parking brake is a foot-applied automatic release design. Engine vacuum is used to release the parking brake automatically when any drive button is engaged with the engine running. A manual release is also provided. Cable routing is similar to Plymouth and Dodge.

CHRYSLER NEW YORKER "SALON"

This luxury model incorporates a modified Imperial-type vacuum-operated release with the standard Chrysler cable routing.

ADJUSTMENT PROCEDURE REVISION

As mentioned earlier, Servo-Contact brakes require greater shoe-to-drum clearances than the previous design. Because of this feature, an additional step is now incorporated in the parking brake adjustment procedure. Don't neglect it. The complete procedure is as follows:

1. With the parking brake lever released, loosen the cable adjusting nut to be sure the cable is slack.
2. Make sure that both rear wheel brakes are adjusted correctly. In fact, if the car has manual adjusters, it's a good idea to adjust all four brakes at this time.
3. Tighten the cable adjusting nut until you can feel a slight drag when you turn the rear wheels.
4. Loosen the nut just enough that *both* rear wheels turn freely.
5. IMPORTANT! *This is the added step.* Back off the adjusting nut *another two full turns.* This insures the necessary clearance required for these brakes.
6. Test the parking brake by applying it several times, then releasing it and making sure no drag is felt at either rear wheel.

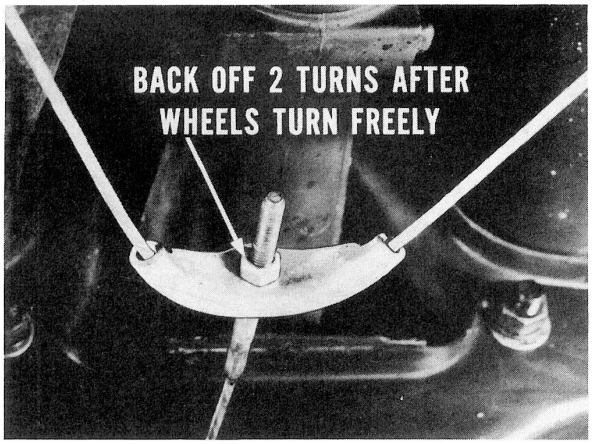


Fig. 20—Added step for proper adjustment

VACUUM-OPERATED AUTOMATIC RELEASE

All Imperials and the Chrysler New Yorker "Salon" have a vacuum-operated release mechanism for the parking brake. It operates only when the engine is running and any button other than "Neutral" is pushed in.

There are differences between the designs for the Imperial and the "Salon". The vacuum servo, similar to the ones used on heaters, is permanently attached to the Imperial mechanism. On the "Salon", it's bolted in place and can be serviced separately. The manual release lever is on the left side of the foot pedal and is hand-operated on the Imperial. On the "Salon", it is to the right of the pedal and is foot-operated.

Vacuum control valve: To make the servo operate only when some button other than "Neutral" is pushed in, a vacuum control valve is used. It's mounted on the front of the transmission push-button box. When the "Neutral" button is in, the neutral slide presses in on the valve plunger. This closes off the vacuum from the intake manifold and vents the servo to atmospheric pressure. Then the servo can't release the parking brake.

TESTING THE VACUUM CONTROL VALVE

To test the vacuum control valve and vacuum hose, apply the parking brake and start the engine. Disconnect the vacuum hose at the servo and place your thumb over the end of the hose. Push in the "Drive" button. Immediately, you should feel suction in the hose. Then push in the "Neutral" button. The suction should disappear immediately.

If there's no suction, disconnect the intake manifold to control valve hose at the control valve, and feel for suction at the end of that hose. It should be present whenever the engine is running. If vacuum is reaching the valve but is not getting to the servo, or if the vacuum doesn't disappear when the "Neutral" button is in, remove the push-button box and install a new vacuum control valve.

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