

January 1, 1932

# HUDSON-ESSEX DUO SERVO BRAKES

## BENDIX SINGLE ANCHOR TYPE

### GENERAL ADJUSTMENT INSTRUCTIONS

**THE BRAKE CONTROL SYSTEM** :—Important, first of all, is the proper functioning of the brake control system. Its free operation should permit the rod or cable connections to return to their respective released positions whether they be the toe board, a set screw stop on the foot pedal or a lever return rest at some point on the chassis. With the brake control system returning to the maximum released position, a longer period of operation will be obtained before a readjustment is necessary. No backlash should be present at the brake pedal or at the control levers of the brake itself. When shortening linkage to remove backlash do not expand shoes away from anchor pins. The cam should only come into slight contact with the ends of the brake shoes.

**LUBRICATION**: To accomplish free operation of the brake control system, it is recommended to lubricate the cross shaft bearings, roller cross shaft supports, clevis connections at the levers and the cable and conduit controls or any other moving parts, each 3000 miles the car is in service. The cable and conduit type brake controls can be lubricated by unfastening the conduit at the support brackets on the frame and backing plate. Clean the exposed part of the cable nearest the cross shaft lever and slip the conduit toward the cross shaft until that part of the cable ordinarily covered by the conduit is exposed. Apply Gredag Graphite Grease No. 2131/, liberally to the cable and then slip conduit back into place and fasten at the support brackets.

**RETURN SPRINGS**: To help the free returning action of the brake control system of a unit that has been in service, the uninformed mechanic will sometimes install additional return springs at some point in the brake control system. This is detrimental to satisfactory brake performance in that it adds to the pedal pressure. It will usually be found, by the aid of lubrication, that satisfactory freeness of the brake control system in operation will result. Check all return springs. Replace, if found weak or broken.

**POINTS TO BE INSPECTED**: It is desired that a new car go into service with the brake control system bearings well lubricated, the four wheels free of brake drag and the brakes balanced. The spring clips holding the chassis springs to the axle should be tight. The wheel bearings should be accurately adjusted to prevent brake drag due to loose bearings. It should be borne in mind that satisfactory braking performance can only result when all four brakes are functioning together. If it is found that the front brakes are not carrying their part of the braking load, an adjustment should be made. When only one-fourth of the total pedal travel remains at the end of a heavy brake application an adjustment for wear should be made. It is particularly important that the parking brake be effective at all times.

**ILL EFFECT OF OIL OR GREASE ON BRAKE LINING**: Much trouble may be eliminated if excessive lubricating of the front wheel bearings and differential is avoided. Where it is found that the brake lining has become over-saturated with oil or grease the only positive cure against heavy pedal pressure or possibly sensitive brake action, will be the replacement of the brake lining. If molded lining is being used, it may be possible to clean the lining with high test gasoline. This will be found to be reasonably satisfactory providing the grease has not had too long a contact with the lining and allowed to get between the lining and shoe rim. In the latter case the lining should be removed from the shoe and cleaned and re-riveted or new lining installed.

# SHOE ADJUSTMENT INSTRUCTIONS

There are only two adjustments in a braking system of this type to compensate for brake lining wear. These points at the brakes proper are as follows:

The Eccentric Adjustment (Fig. 1). (This adjustment centralizes brake shoes in the brake drum.)

The Adjusting Screw (Fig. 2) (This adjustment regulates the clearance between the brake lining surface and brake drum to compensate for lining wear).

Before proceeding with these adjustments note carefully the instructions on Front Page.

*Do not make any changes at points of adjustment of the brake control system to compensate for brake lining wear. Remember the only adjustments are at the brake shoes proper.*

## ADJUSTMENT FOR WEAR ONLY

1. Jack up all four wheels. Inspect position of cross shaft to be certain that same is in a fully released position.

2. Inspect the brake cables. If loose or unequal make adjustments of all four cables as outlined in operations 8 and 9 under complete brake adjustment.

3. Remove inspection hole cover from brake drum. Loosen eccentric lock nut on eccentric adjustment and insert .014 inch feeler gauge between the lining and brake drum as indicated in Fig. 3 at about 1-1/2 inches from the adjusting screw end of the top shoe lining. Turn the eccentric adjustment in the direction the wheel revolves when the car is moving forward until .014 inch feeler is snug.

Tighten the lock nut.

4. Try an .008 inch feeler at a point 1-1/2 inches from the anchor pin end of the top shoe lining or in position indicated. (Fig. 3 .008 inch feeler gauge.)

The clearance at this point should not vary more than .003 of an inch. Should the variation be greater than .003

of an inch it will be necessary to relocate anchor pin as outlined in operations 5 and 6 of Complete Brake Adjustment. DO NOT READJUST THE ANCHOR PIN, HOWEVER, UNLESS THIS INSPECTION SHOWS IT NECESSARY.

Expand brake shoes one notch at a time with the adjusting tool (Fig. 2) until lining comes in contact with the brake drum. Release the adjusting screw at each of the four wheels from 8 to 12 notches, using care to see that the same number of notches is released at each of the four wheels. Repeat preceding operations uniformly at all four wheels.

5. Depress the pedal with pedal jack until wheel with the least brake drag can just be turned over by hand. Then back off the adjusting screw on the tight brakes until the brake drag is alike at all four wheels.

6. Remove pedal jack, check all wheels for freeness, lower car and make final check on brake testing machine or road.

**ALWAYS LOOSEN ADJUSTING SCREW ON TIGHT BRAKES**

RATHER THAN TIGHTEN ADJUSTING SCREW ON LOOSE BRAKES. This is a safeguard against a car going into service with some one brake too tight.

7. Replace drum inspection hole covers and adjusting screw hole covers.

## COMPLETE BRAKE ADJUSTMENT

(Sliding Adjustment Type Anchor)

Note: This complete brake adjustment is to be followed in cases where an inspection as in paragraph 4 shows that a shoe adjustment only will be inadequate or where new shoes have been installed.

1. Jack up all four wheels.
2. Disconnect all four cables at their respective cross shaft levers by removing clevis pins from devices.
3. Inspect the position of the brake pedal and cross shaft to see that these parts of the control system are returning freely to a fully released position. If necessary



(Fig. 2)

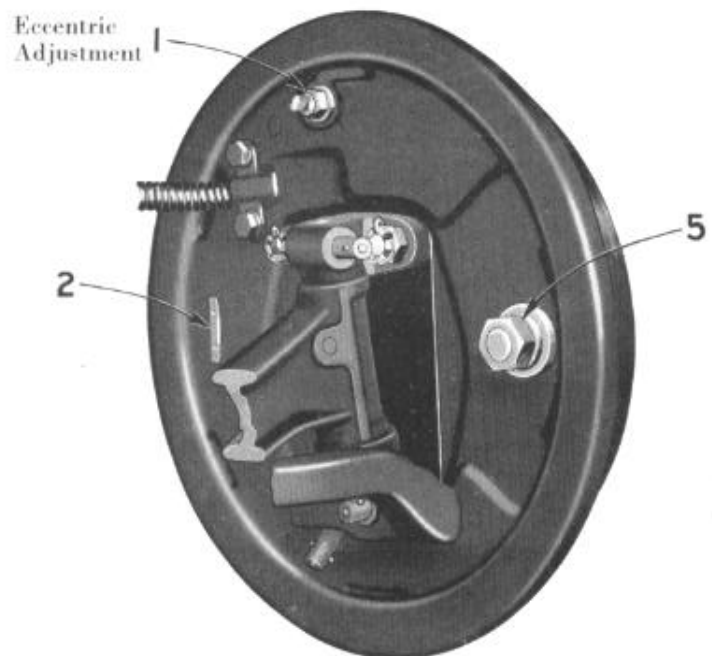


Fig. 1 Left Front Brake

make adjustments at either the pedal adjusting screw stop or pedal linkage depending on the construction of the control system.

An inspection of the parking brake lever and its linkage with the cross shaft should be made to see that there is a slight amount of back lash present when the hand end of the lever is in its fully released position.

4. Remove adjusting hole covers (2) (Fig. 1) and inspection hole covers on the brake drums. Loosen eccentric lock nut on the eccentric adjustment and insert .014 inch feeler gauge between the lining and brake drum as indicated in (Fig. 3) at about 1-1/2 inches from the adjusting screw end of the top shoe lining. Turn the eccentric in the direction the wheel revolves when the car is moving forward until the feeler is snug.

5. Loosen the anchor pin nut (5) (Fig. 1) one turn and tap anchor pin slightly in necessary direction with a soft hammer, and adjust the eccentric to give the specified clearances of .014 of an inch at the adjusting screw end and .008 of an inch at the anchor end of the shoe.

6. TIGHTEN THE ANCHOR PIN NUT AS TIGHT AS POSSIBLE WITH A SIXTEEN -INCH WRENCH.

7. Perform the above operations on all four brakes.

8. Using adjusting tool expand brake shoes at the adjusting screw (Fig. 2) until each wheel can just be turned by hand.

9. If necessary readjust all four brake cable lengths as follows:—

(a) Back off each clevis lock nut and remove clevis pins.

(b) Lubricate clevis pins with graphite grease.

(c) Adjust clevis until pin can be easily entered through clevis and cross shaft lever holes, meanwhile on pulling the cable to remove slack and back lash at the shoe actuating lever (12) (Fig. 3).

(d) Install clevis pin and lock with cotter key.

(e) Tighten clevis lock nuts.

10. Release the adjusting screw at each of the four wheels from 8 to 12 notches, using care to see that the same number of notches is released at each of the four wheels.

11. Follow operations 5, 6 and 7 under Adjustment for Wear Only.

### FIGURE THREE

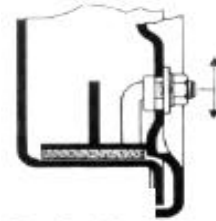
Indicated at 6 and 10 are the brake shoe to anchor pin return springs. On all cable controlled braking systems of the single anchor pin type the heavier spring should always be connected with the top shoe. This is necessary to provide satisfactory braking action in a forward

as well as a reverse direction.

In re-assembling adjusting screw 2 it is necessary that pivot nut 14 which does not have a groove around the outside be assembled to the right of the adjusting screw notched wheel and must engage with the shoe to the mechanic's right as he faces the brake from the adjusting screw side.

### BRAKE SHOE STOP (HUDSON)

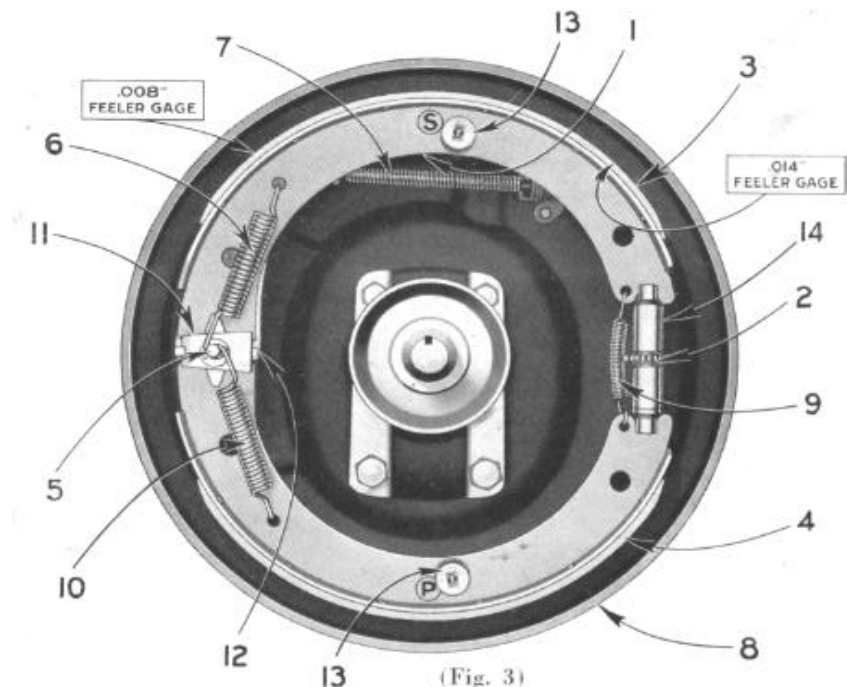
In some cases there is incorporated a brake shoe stop at the bottom of all the four brake assemblies of the car. In adjusting this stop at the beginning brake adjustment, loosen the lock nut and shift



(Fig. 5) Brake Shoe Stop

the stop upward in its elongated hole in the backing plate and tighten the lock nut until after the brake adjustments are completed. As a last adjustment loosen lock nut and allow stop to move down in contact with the band of the brake shoe and tighten the lock nut.

1. Eccentric Adjustment.
2. Adjusting Screw.
3. Secondary Brake Shoe.
4. Primary Brake Shoe.
5. Anchor Pin.
6. Top Shoe Return Spring (red).
7. Cable Return Spring.
8. Backing Plate.
9. Adjusting Screw Spring.
10. Bottom Shoe Return Spring.
11. Operating Lever Anti-Rattle Spring.
12. Operating Lever.
13. Brake Shoe Hold Down Spring.
14. Adjusting Screw Pivot Nut.



(Fig. 3)

*Points the Car Owner Should Understand and Keep in Mind About His Automobile's Braking System*

1. For first one hundred miles avoid severe brake applications or emergency stops. This allows new lining to become seated to brake drum.

2. Periodic brake inspection for taking up adjustments provides an added factor of safety. This is preferable to a yearly overhaul.

3. In running condition the four wheels should be free of brake drag. The four brakes should be balanced and the bearings of the system well lubricated.

4. Be sure the parking brake is effective at all times.

5. Oil is extremely detrimental to brakes when allowed to come in contact with the brake lining. Avoid over filling the wheel bearings and differential.

6. Before having the brakes relined, consult the factory's authorized service manager in your city for the correct factory specified lining.

7. The life of brake lining when brakes are properly adjusted depends on the work or stoppage imposed on the brakes and is not governed by milage.