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Hudson Reference Sheets

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No. 2 - Radio Kit for 1935 Models

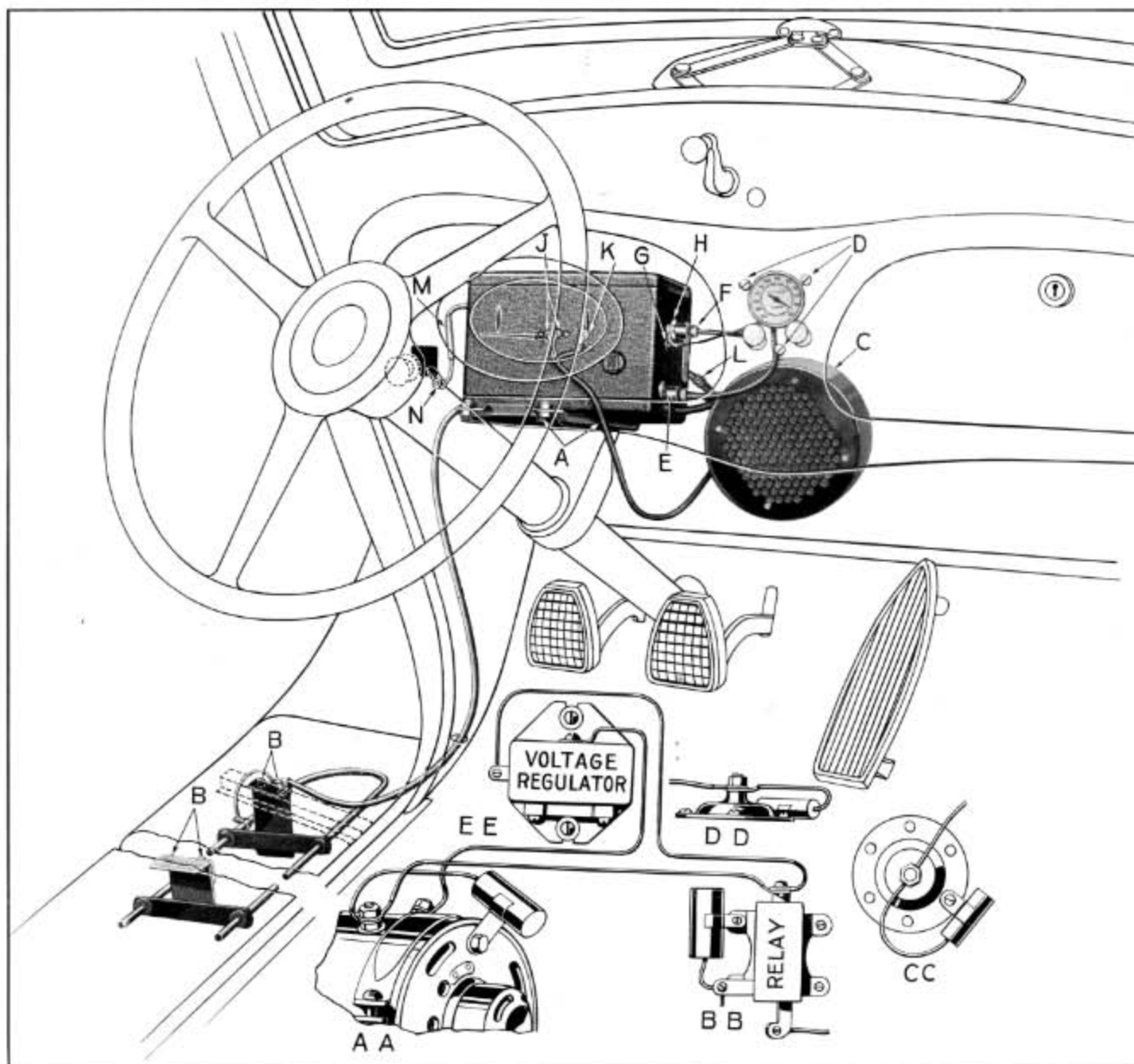
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## Radio Kit—1935—Hudson and Terraplane



The Radio Kit Part No. 47734 Includes:—

- 1—Receiver Complete
- 1—Speaker Complete
- 1—Control Head complete with cables
- 1—Pilot Light Bulb
- 1—Feed Cable Assembly and Fuse
- 1—Aerial Tube
- 2—Aerial Mounting Brackets
- 4—Aerial Insulation Grommets
- 1—Aerial Lead In with shield and clip
- 1—Distributor Suppressor
- 2—Small Condensers (one required on Terraplane Special Models)
- 2—Large Condensers
- 3—Ground Straps
- Bolts, Nuts, Screws and Lock Washers for mounting units

In order to complete the installation on Terraplane Special Models, a spark plug suppressor and charge control kit (Part No. 47975) is required in addition to the Radio Kit. This includes six spark plug suppressors and a generator charge control for use with the air cooled generator.

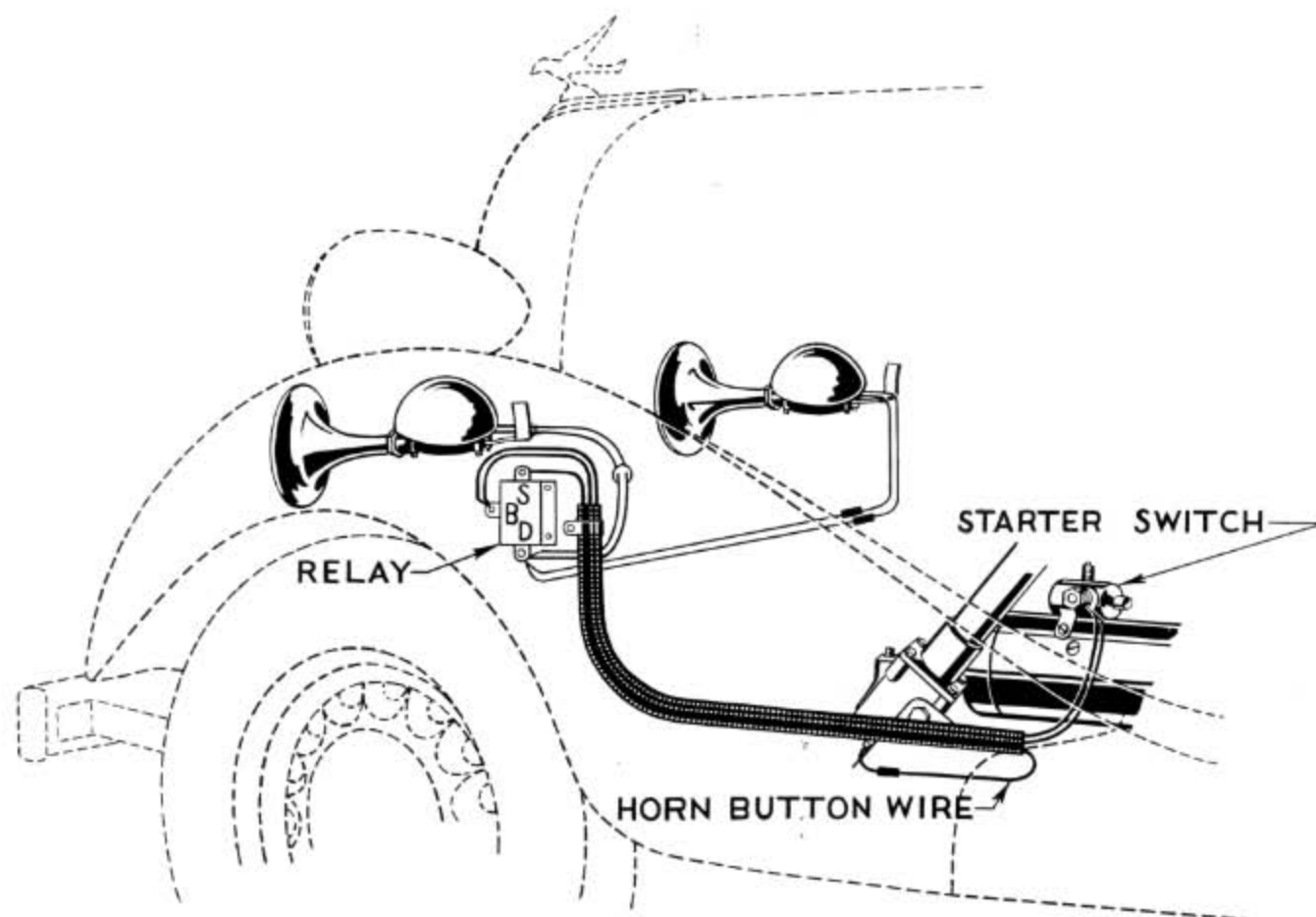
## Installation Operation

- 1—Remove finish plate on center of instrument panel—attached with four studs and nuts on back of instrument panel.
- 2—Terraplane Special models only—Remove ignition coil and reinstall after receiver, speaker and control head is in place.
- 3—Put Radio Receiver in place on top of the steering column support bracket with the knurled knobs F and E on the right and secure in place with two cap screws "A". (On right hand drive installations, remove the two corks from the cover of the receiver and place in threaded holes in bottom. Turn receiver over and mount with knurled knobs on left of case.)
- 4—Punch a hole through the front dash pad using the  $\frac{3}{8}$ " hole located to the left of the center of the dash reinforcement ribs as a guide. (Use the hole to right of center for right hand drive cars.)
- 5—Place wooden spacer on speaker mounting stud and insert stud through hole in dash and dash pad, securing with a washer and nut on engine side of dash.
- 6—Remove knobs from control head and put head in place from back of panel attaching with three screws "D". Put knobs in place.
- 7—Insert cable from right control knob into knurled collar "F" and tighten collar. The cable should be inserted far enough to insure engagement of the tongue in the tuning condenser drive member *but should not bottom*. Bottoming of the cable will prevent free floating of the condensers on their mounting and cause howling when the car is in motion.
- 8—Insert the cable from the left control knob with the knurled collar "E" and tighten collar.
- 9—Insert pilot light plug in pin jack "G" and secure spade of shielding under wing nut "H".
- 10—Insert speaker lead plugs in pin jacks "J" and secure shielding spade under wing nut "K".
- 11—Attach feed wire to Battery Terminal of lighting switch "N" and connect to socket "M", being sure fuse is in place in socket.
- 11—Push aerial lead in up through hole in body floor panel in line with bottom of left hand (right hand on right hand drive cars) front door front pillar post, leading up behind and over kick panel, behind radio receiver and connecting to socket "L".
- 12—Place the aerial tubing on the floor on the left side of the car (right side for right hand drive cars), with the open ends of the tube to the back and the aerial lead in clip on the tube away from the car.
- 13—Place the mounting bracket, which has holes to match the holes in the front running board bracket, on the tube with the bolt flange up and the lower hole on the side toward the car.
- 14—Place two rubber ferrules on each end of the tube moving them forward far enough to put the rear bracket in place. Do not put the ferrules in the holes in the bracket.
- 15—Attach the aerial brackets to the running board brackets with bolts "B", at the same time attaching the aerial lead in shield to the inner bolt holding the front bracket.
- 16—Force the rubber grommets into the holes in the brackets so that the extreme front end of the aerial tube is  $7\frac{3}{8}$  inches ahead of the front mounting bracket.
- 17—Attach aerial lead to clip on aerial tube.
- 18—Attach small condenser on gasoline tank gauge unit with unit mounting screw attaching condenser terminal to gauge unit terminal. (Insert "DD".) NOTE:—The gauge unit can be reached by removing the plate in the body floor panel over the middle of the gasoline tank. This plate can be reached by removing the sedan rear seat cushion or through the rear deck opening of coaches and coupes.
- 19—Attach small condenser on radiator tank gauge unit attaching to flange screw and connecting terminal to gauge post. (Insert "CC".) NOTE:—This condenser not required on Terraplane Special models.
- 20—Install large condenser on generator—mount on screw on rear face of generator attaching terminal to post marked "A" on generator.
- 21—Attach large condenser to upper right (of car) leg of generator relay attaching condenser terminal to lower right relay terminal to which wire to starting motor terminal is attached.
- 22—When installing radio on Terraplane Special models with air cooled generator, mount generator charge regulator above relay with two screws to two threaded holes in dash provided for the purpose. Resistor bar should be on lower face. Remove ground cup from generator "F" terminal. See illustration inserts for wiring diagram. Connect "F" terminal on top of charge regulator to "F" terminal (engine side) of generator. Connect right terminal of regulator to top (generator) terminal of relay. Adjust generator output to 22 amps. cold—17 amps. warm. There are three ground straps in the kit:—

Part No.	Ground Strap Length Center to Center of Eyes
47961	8 $\frac{1}{4}$ "
47963	10 $\frac{1}{2}$ "
47965	18"

- 23—Install Part No. 47961 ground strap from front end gear cover cap screw to fender apron bolt on top of right hand frame side rail.
- 24—Install Part No. 47963 ground strap from left, mounting stud of radiator inlet neck to top water pump mounting cap screw on Terraplane DeLuxe and all Hudson 8 models.
- 25—Install Part No. 47965 ground strap from left mounting stud of radiator inlet neck on Hudson Six to top water pump mounting cap screw, using Part No. 62013 clip to hold strap to inlet hose front clamp and away from fan. No radiator ground strap necessary on Terraplane Special Models.
- 26—Install suppressor in center terminal of distributor.
- 27—Install suppressors (6) on spark plugs of Terraplane Special models *only*. NOTE:—The standard distributor rotor will function satisfactorily without interference with radio reception.
- 28—Turn the tuning control knob to the right (clockwise) as far as possible. Remove the dial bulb and insert a screw driver engaging the slot in the screw in the center of the back of the dial and turn until the dial hand reads 54 (540 K. C.).
- 29—Turn on volume and tune set to known local station. Readjust dial hand position accurately by method explained under paragraph 27. Reinsert dial lamp.

# Electric Vacuum Horn



## Installation Instruction

Horn Kit Number 47939

1—Remove horn or horns on car, together with all wiring, leaving only the horn button and wire extending from it to the bottom of the steering column.

NOTE—When removing horn wires from loom running along left front fender apron, attach a piece of soft wire, about four feet long, to the forward ends of these wires, and draw it into the loom as the wires are drawn out of the rear.

2—Attach soft wire drawn into loom to spade terminal of double wire assembly which has large terminal on other end and draw into loom from rear.

3—Remove left front wheel and use relay flange as a template to drill  $2\frac{1}{8}$ " holes in left fender apron, one inch in front of loom clip bolt.

4—Mount relay on inside of apron with two bolts with the mounting flange to the rear.

5—Mount horns on headlamp brackets, leading

wires attached to horns through lamp brackets, under fender and through grommets in fender.

6—Attach single wire in loom to terminal "S" on top of relay.

7—Attach double wire in loom to terminal "B" on front of relay.

8—Attach wires from left horn and common terminal of double wire assembly (two plug connection on other end) to terminal "D" on bottom of relay.

9—Attach double wire across bottom of radiator core and connect two plug ends to ends of wires from right horn with connectors removed from original horn installation.

10—Connect single wire in loom to horn button wire at bottom of steering column.

11—Connect large terminal on double wire in loom to "hot" terminal on starter motor switch.

# 1935 Brakes

## Bendix Equal Action Duo Servo Type Rotary Equalizer—Cable Control

The 1935 Terraplane and Hudson Brakes are of the Bendix Equal Action Duo Servo type and incorporate a number of new features which insure equal, softer action, increased power, longer life and make the need for adjustment less frequent.

The brake drums are heavier than those formerly used and are machined and polished on the wearing surface. The maximum tolerance for eccentricity has been reduced to .005".

The brake shoes have been redesigned so that they more readily conform to the contour of the drum, thereby giving more equal pressure over the entire contact surface. This results in less lining wear and reduced tendency to score or distort the brake drums.

The brake control layout, Fig. 1, has been completely redesigned to insure equal movement transmitted to each brake shoe regardless of the force applied to the pedal. The pedal push rod acts directly against the left end of a rugged drop forged Rotary Equalizer which is pivoted under the center of the frame "X" member. The four cables connecting to the wheel brakes are attached to the Rotary Equalizer, each located  $1\frac{7}{8}$  inches from the pivot pin, and all at the same angle to their leverage arms represented by a line drawn through the attaching clevis pin and the equalizer pivot. (Fig. 1—upper insert). This insures equal movement of all cables throughout their entire range of movement. Since the connections are close to the pivot and the section of the drop forged Rotary Equalizer is large, any possibility of distortion even under loads of several times that which it is possible to apply to the pedal, is eliminated.

The hand brake has been located to the left of the driver with the mounting on the body dash panel. The lever extends downward from the pivot on the dash bracket so that the hand grip is conveniently located just below the instrument panel. The hand brake lever is connected to the right side of the Rotary Equalizer by a cable and actuates all four wheel brakes.

### General Adjustment Instructions

**The Brake Control System:** The proper functioning of the brake control system is of vital importance. A freely operating brake control system permits its return to the stop provided which is a return rest at the rotary equalizer on the chassis. With the brake control system returning to the maximum released position, a longer period of operation can be expected before readjustment is necessary. No backlash should be present at the brake pedal or at the operating lever of each brake. See Paragraph 4 for adjustment of

pedal rod. Do not adjust cable length except with shoes expanded as outlined in Paragraph 8.

**Lubrication:** The brake pedal and rotary equalizer bearings, clevis connections and other frictional parts of the braking system should be lubricated every 1000 miles of car service to insure their free return to the stops provided. Lubrication of the cable and conduit control is described in Paragraphs 14 and 15.

**Return Springs:** To hasten the release action of a brake control system that has been in service some time, the uniformed mechanic will some times install additional return springs at various points in the brake control system. This is detrimental to satisfactory brake performance, will increase the pedal pressure and is entirely unnecessary. It will be found that correct lubrication and proper adjustment will produce satisfactory operation of the brake control system. Check all return springs. Replace, if found weak or broken.

**General Points of Importance:** Satisfactory braking performance can be obtained only when all four brakes are functioning alike. The brake control system should be well lubricated, the spring clips holding the chassis springs to the front and rear axles tight, wheel bearings properly adjusted, and the four brakes balanced. The braking system should be broken-in carefully just the same as other mechanical units of the car. Hard application of the brakes before the linings have become polished may gall the linings or score the drums. It is very essential that the parking brake system be effective at all times. Adjustment for lining wear should be made when the brake pedal can be depressed within  $1\frac{1}{2}$ " of the toe board at the end of a heavy brake application.

**Oily or Greasy Brake Lining:** Much braking trouble will be avoided if the lubrication of the rear axle and front wheel bearings is held to the correct amount and not over-done. Where it is found that the brake lining has become excessively saturated with oil or grease, heavy pedal pressure or possibly sensitive brake action will result and the only cure is replacing the brake lining. If molded lining becomes not overly saturated with the lubricant it may be possible to remove the lubricant from the lining with the use of high test gasoline.

**Lining Renewal:** When lining renewal is required, use only genuine Hudson-Terraplane lining which is available from the factory parts department, boxed in complete sets (lining and rivets for one car).

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:

*Continued on page 3*

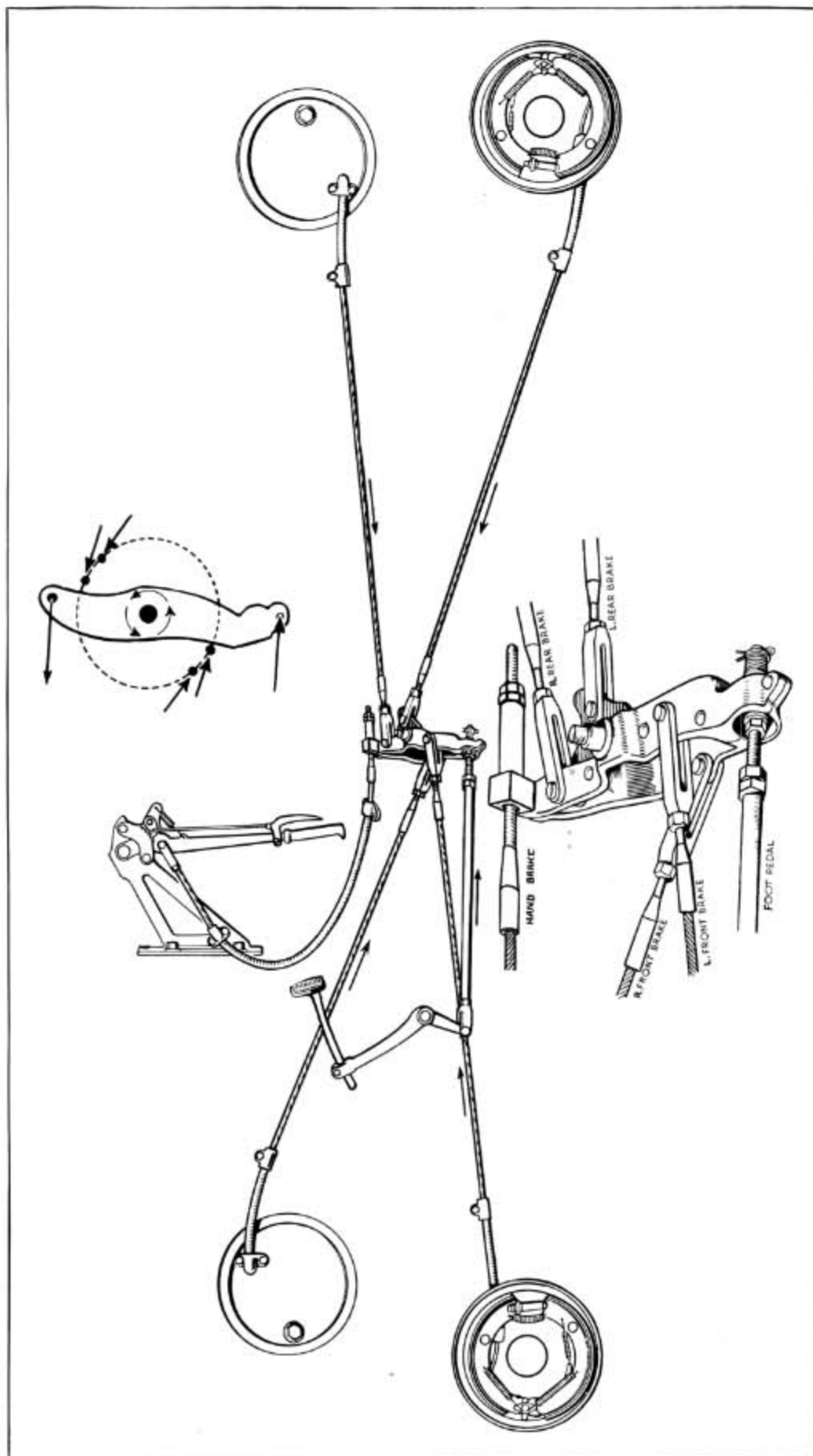


Figure 1



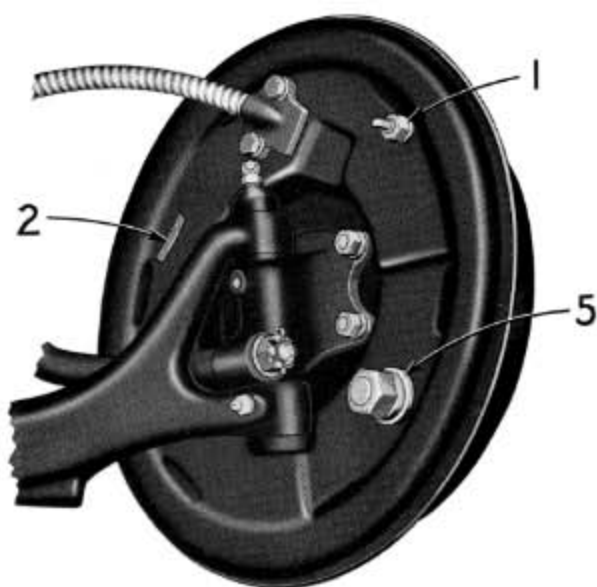


Figure 2—Left Front Brake

*The Eccentric Adjustment*—1-Fig. 2. This adjustment centralizes the brake shoe in the brake drum.

*The Adjusting Screw*—Fig. 3. This adjustment compensates for lining wear.

Do not make any adjustments in the brake control system to compensate for brake lining wear. Remember the only adjustments for lining wear are at the brake shoes, and not in the control system.



Figure 3

### Adjustment For Wear Only

1. Jack up all four wheels in a safe manner.
2. Disconnect all four cables leading to front and rear brakes at the rotary equalizer, by removing safety plugs and clevis pins.

3. Lubricate brake pedal, hand brake lever, rotary equalizer bearings, over-running linkage and all clevises. See that pedal, hand lever, rotary equalizer operate freely and that linkage returns sharply to release stop when pedal and hand lever are released.

4. With the rotary equalizer against the frame bracket stop and the hand lever in the full "off" position, adjust the lock nuts on the lower end of the pedal push rod so that they are against the pedal push tube when the pedal shank is against the rubber bumper on the underside of the toe board bracket. Adjust the sleeve on the end of the hand brake cable so that it is just against the rear face of the rotary equalizer. Be sure the Rotary Equalizer is still against the frame bracket stop after the above adjustments are made.

5. Remove all wheels.

6. Remove adjustment hole covers from brake backing plates (2-Fig. 2) and inspection hole covers from brake drums.

7. *At All Wheels:* Loosen eccentric lock nut (1-Fig. 2) on eccentric adjustment and insert .010" feeler gauge between the lining of top shoe and brake drum (Fig. 4). Turn the eccentric adjustment in the direction of forward wheel revolution until .010" feeler is just snug at anchor and adjusting ends of top shoe. Tighten eccentric lock nut. The clearance at both ends of top shoe should not vary more than .003". Should the variation between the two ends be greater than .003", it will be necessary to relocate anchor pin as outlined in Paragraph 17. (In case of clearance variation, it is desirable that clearance at anchor end of shoe be less than at adjusting end.) (See Note on Page 5.) *Do not adjust anchor pin unless this inspection shows it necessary.*

8. *At All Wheels:* Expand the brake shoes by turning notched adjusting screw toward rim of backing plate, using Bendix adjusting tool or screw driver (inserted through backing plate), moving outer end of tool toward center of wheel (Fig. 3). Continue until brake drum can just be turned by hand.

9. Pull cables by hand toward rotary equalizer to remove all cable slack and lost motion at cam levers. Adjust clevises so that pin will just enter clevis and rotary equalizer freely. Lock clevis jam nuts and insert clevis pin cotters. Insert safety plugs.



1. Primary Shoe
2. Adjusting Screw
3. Adjusting End of Shoe
4. Secondary Brake Shoe
5. Anchor Pin
6. Primary Shoe Return Spring
7. Cable Return Spring
8. Backing Plate
9. Adjusting Screw Spring
10. Secondary Shoe Return Spring
11. Operating Lever Anti-Rattle Spring
12. Operating Lever
13. Brake Shoe Hold Down Spring
14. Eccentric

Primary and secondary brake shoes are marked with a "P" and "S" respectively. Irrespective of the position in which the brake assembly is mounted on the axle, the primary shoe is always the one "ahead" of the anchor in the direction of the forward rotation of the drum, and transmits servo action to the secondary shoe during a forward braking application. In reverse braking the opposite brake action takes place. The heavier shoe return spring must always be attached to the shoe which "hides" the brake operating lever.

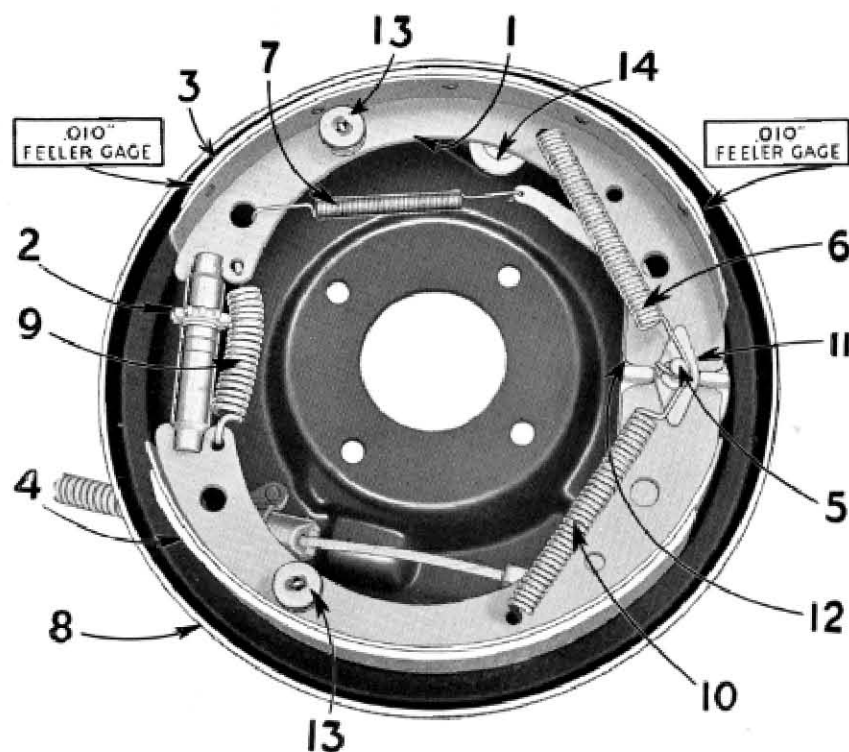


Figure 4—Left Rear Brake  
Brake Control System

10. Release adjusting screw the same number of notches at each wheel until brake drums are completely free of brake drag. Twelve to fourteen notches usually are sufficient.
11. Depress brake pedal with pedal jack or set hand lever 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 on all four wheels. Pedal reserve should not be less than one-half of total pedal stroke. Recheck adjustments if pedal reserve is less than this.
12. Reassemble the covers at each drum inspection and adjustment hole.
13. Lower car and test 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 one or more brakes too tight.

## Complete Brake Adjustment

**NOTE:** These complete brake adjustment instructions are to be followed in cases where an inspection, as in paragraph 7, shows that an adjustment for lining wear only will be inadequate or where new shoes have been installed.

When a complete brake adjustment is required it is recommended that all brake drums be removed and cleaned and brakes cleaned and inspected as to lining condition. After cleaning with a stiff brush and air hose, Bendix Lubriplate grease should be lightly applied to cable ramp, shoe support ledges on backing plate, eccentric, shoe ends and all moving parts at frictional contact points.

After the car has been jacked up, with cables disconnected at rotary equalizer, and the drums and shoe removed continue as follows:

14. Lubricate cable and conduit assemblies by disconnecting cable at brake operating lever, cleaning exposed portion of cable and then pulling cables thru conduits from the brake end to expose that portion of cable which is sheathed by conduit. Clean this portion of cable, lubricate freely with Bendix cable lubricant.
15. Return cable into conduit and connect to brake operating lever, leaving rotary equalizer clevises disconnected. Conduit ends *must always be firmly bottomed in abutment brackets.*
16. Reinstall shoes and shoe parts and drums. Remove adjusting hole covers from backing plate and covers from drum feeler gauge holes if this has not been done.

17. *Anchor Pin Adjustment:* At all four wheels loosen the anchor pin nut (Fig. 5) one turn and tap anchor pin slightly in necessary direction with a soft hammer, and turn the eccentric in the direction of forward wheel rotation to give the specified clearances of .010" at the adjusting screw end and .010" at the anchor end of the shoe against which the eccentric operates.



*Figure 5*  
*Sliding Adjustment Type Anchor*

TIGHTEN THE ANCHOR PIN NUT AS TIGHT AS POSSIBLE WITH A SIXTEEN INCH WRENCH. Tighten eccentric lock nut. Recheck clearances to insure tightening anchor nut has not disturbed lining to drum clearance.

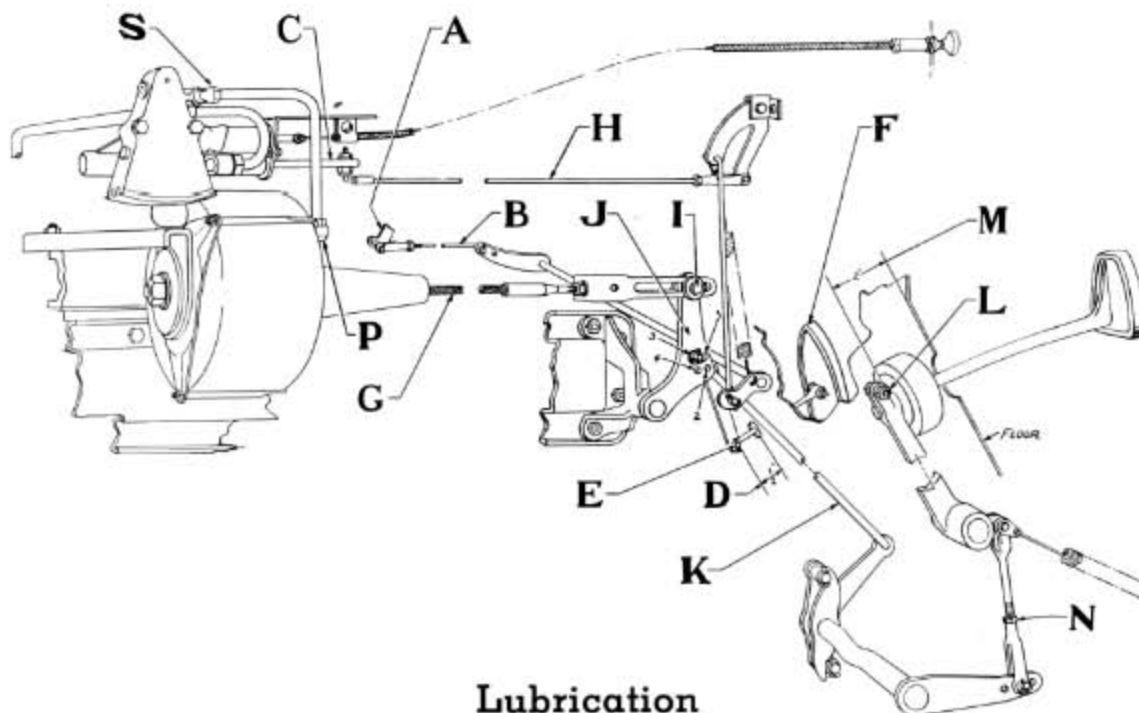
18. Continue adjustments as outlined in Paragraphs 8, 9, 10, 11, 12 and 13.

*NOTE:* Normal Servo Action is obtained when equal lining to drum clearance is maintained at both ends of the shoes. More clearance at the adjusting end than at the anchor end of the secondary shoe will reduce the effectiveness of the Servo Action. This will "harden" the brake action, and extreme adjustment of this kind will materially increase the pedal pressure required. Although .003" variation in lining to drum clearance is permissible per shoe, a combination of adjustments that will increase the Servo Action on some shoes and decrease it on others will produce unequal braking effect.

There are no short cuts to satisfactory brake performance. Follow the recommended procedure step by step. Be accurate in your measurements. This is the only way to reduce the average time per brake adjustment in the shop and also increase owner satisfaction.

# Adjustment of Vacuum Clutch Control

All Models—1935 Terraplanes and Hudsons\*



## Lubrication

All clevis pins and accelerator control valve plungers should be kept clean and lubricated with light oil periodically.

The cylinder should be lubricated with approximately one ounce Bendix Vacuum Cylinder Oil every 5,000 miles, introduced by removing the bleed tube connection (P) in the cylinder head.

The cushion control valve should be lubricated at 5,000-mile intervals with light oil, introduced by removing the adjusting screw and spring (S).

## General Adjustments

1. Connect rod (K) to hole (No. 3) in lever (J). Use hole (No. 4) only when proper adjustment is not possible due to extreme clutch wear. Holes (Nos. 1 and 2) are available for similar adjustment when this installation is made on a 1933 Terraplane six- or eight-cylinder car.

2. Adjust clutch throwout clevis rod end to give 2" dimension, as shown when clutch is engaged. Measure this as in (M) from center of clamp bolt (L) to underside of floor board. Lower end of clevis rod end is connected to middle hole in lever.

3. Pull clutch control cable (G) against stop toward rear of car. Control plunger (C) must be pushed forward (in) to allow cable (G) to travel back fully.

4. Adjust length of cable (G) to give  $\frac{3}{4}$ " play between center of clevis pin (I) and rear of slot.

5. Pull control plunger (C) out against stop. Adjust length of rod (H) so there will be a positive pull on plunger (C) against its stop with  $\frac{1}{4}$ " clearance between bottom of floor board and center of throttle lever pin (E) as shown in (D).

6. Adjust length of throttle rod (B) so that clevis pin is  $\frac{3}{8}$ " from back edge of slot in lever (A).

### CHECK ADJUSTMENT—CABLE LENGTH

1. With engine running at normal idling speed and clutch control button pushed in, shift the transmission into low or reverse gear. Pull the clutch control button out. The car should move away smoothly after only a few seconds hesitation.

If the clutch engages too rapidly, jerking the car, shorten the cable (G) one-half turn at a time until smooth operation is obtained.

If the clutch engagement is delayed more than a few seconds after the control button is pulled out, lengthen the cable (G) one-half turn at a time until only a slight delay occurs.

2. Depress the accelerator pedal slowly until the cable (G) begins to move backward slowly. The engine speed should be slightly above the normal idling speed.

If the engine speed is not slightly increased above normal idle when the clutch begins to engage, shorten carburetor throttle rod (B).

If the engine runs too fast before the clutch begins to engage, lengthen throttle rod (B).

## Cushion Control Valve Adjustment

The effect of the cushion control valve is most noticeable on fast starts, and it should be adjusted last after normal adjustments have been made. With car in first gear, make a wide open start. If too much slippage is noted, tighten adjusting screw (S) located midway between the two pipes, which increases spring pressure against closure of pendulum valve. If start is rough and jerky, loosen adjusting screw (S). Tighten locknut after adjustment.

\*These instructions also apply to 1934 Terraplane and Hudson Vacuum Clutch installations and installations of the 1934 or 1935 units on 1933 Terraplane Six and Eight.

## How to Correct Irregular Front Tire Wear

Irregular front tire wear is due to an outside action which causes certain places on a tire to wear more rapidly than other places, the same as one edge of a

heel wears more rapidly depending upon how a person walks. Tire rotation is the remedy for the two types of irregular front tire wear described below.

### HEEL AND TOE WEAR

Heel and toe wear is a saw tooth effect with one end of the tread button worn more than the other. The end that wears is the one that first grips the road when the brakes are applied. High speed driving and excessive use of brakes will cause this type of irregular front tire wear. It occurs on any type of tread design.

Heel and toe wear is not so prevalent on rear tires because there is a counteracting force, the propelling action, to wear the opposite end of the tread button. These two stresses on the rear tires wear the diamonds in opposite direction, and make for more even wear, while on the front tires there is only one stress, the braking stress, working in one direction. Below are illustrations of mild and severe cases of heel and toe wear, and the methods of correction.



Mild Case of Heel and Toe Wear. To correct use Method A as described below for all types of tread design.

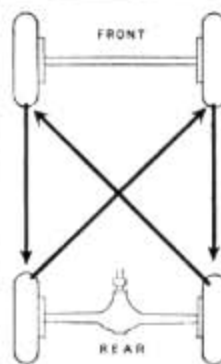


Severe Case of Heel and Toe Wear. To correct—  
Use Method A if car is equipped with Rib tires front and All-Weather rear.  
Use Method B if car is equipped with All-Weather tires front and rear.  
Use Method B if car is equipped with Rib tires front and rear.

### METHOD A



Do not dismount tires. Interchange front wheel assemblies including tires, tubes and wheels. This changes the direction of rotation.



### METHOD B

Change wheels without dismounting tires. Right front to right rear, right rear to left rear, left rear to left front, left front to right front. (Direction of rotation of front tires is not changed but that of rear tires is.)

### ONE SIDED OR CAMBER WEAR

Automobiles are designed so that the front wheels run at a slight angle from the perpendicular. This is known as camber, and it causes tires to wear one sided, depending upon the camber angle. Tires will naturally wear at the point of greatest pressure on the road.

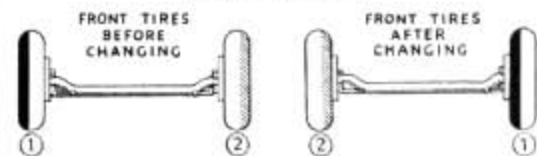
Below are illustrations of camber wear and the method for its correction.



Camber wear on All-Weather and rib design tires.

To correct use Method C.

### METHOD C



Dismount tires from wheels. Do not turn tires around but remount on opposite front wheels without changing their direction of rotation.

By making this change the outside shoulder of the right front tire becomes the inside shoulder when mounted on the left front wheel. The inside shoulder of the left front tire becomes the outside shoulder when mounted on the right front wheel.

When Interchanging Tires or Wheels Be Sure the Front Wheel Assemblies Including Tires, Tubes, Wheels and Hubs Are In Balance

**GOOD YEAR**