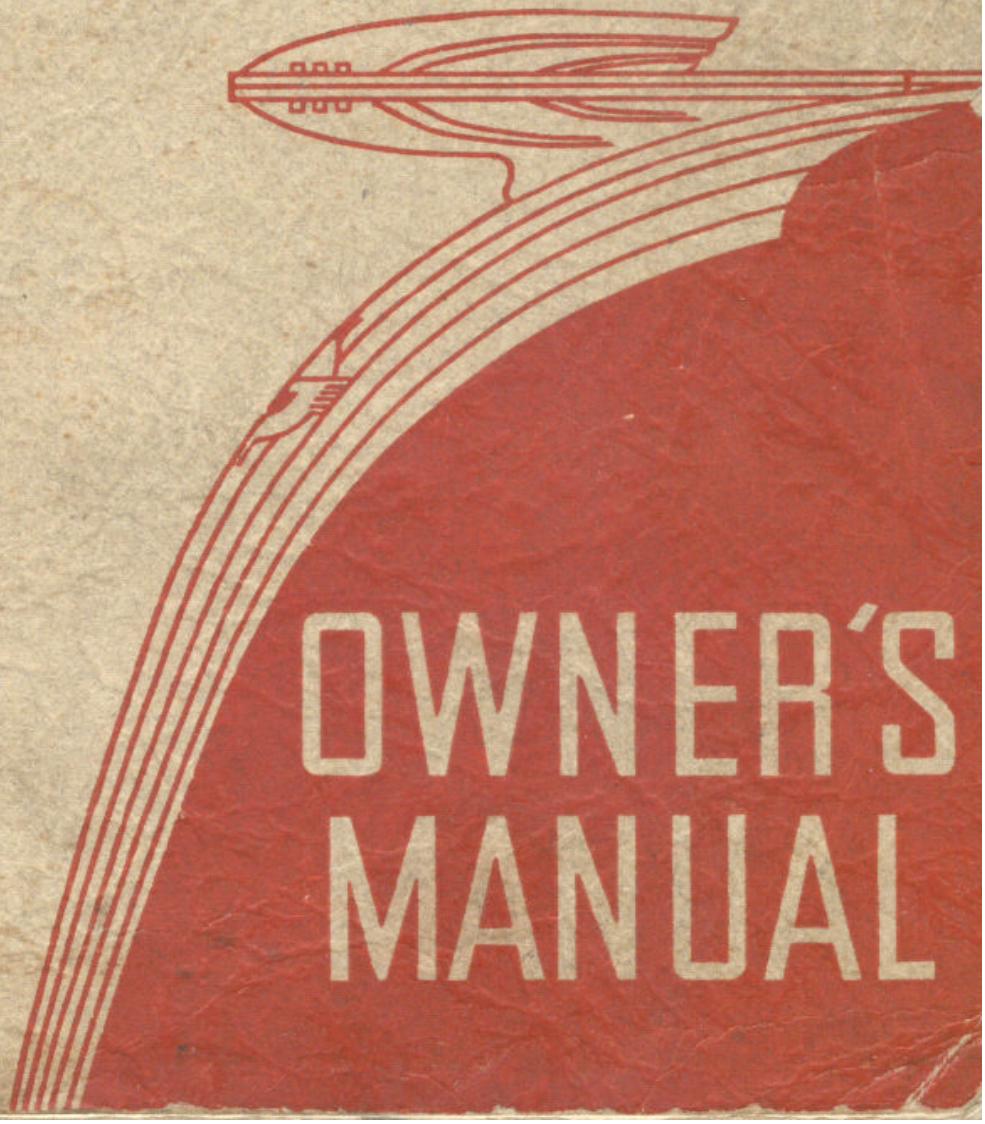
HUDSON
TERRAPLANE
1938



OWNER'S MANUAL

TO THE OWNER

of this

HUDSON *TERRAPLANE* Motor Car

We are indeed happy that your selection of a new motor car has been a Hudson product.

We share in your pride of ownership and sincerely trust that you may derive the many miles of enjoyable service to which you looked forward when purchasing it.

Considerable money and time have been spent in designing and manufacturing your new Hudson Terraplane car, and we believe it is your desire to protect the investment in your purchase to the utmost.

Therefore, we have prepared this manual which incorporates comprehensive information to enable you to render the attention that such a fine piece of mechanism as this motor car deserves. Complete satisfaction can be obtained by carefully following the lubrication and inspection instructions as well as other helpful information contained herein. We recommend that you read it carefully, then place it in the locker box compartment for ready reference should it be needed later.

Hudson dealers everywhere are fully equipped to render you uniform service at moderate prices. We earnestly recommend to you their expert and friendly attention to your car.

HUDSON MOTOR CAR COMPANY
Service Department
Detroit, Michigan

Authorized Hudson Service Station

Authorized Hudson dealers establish their identity by displaying the "Hudson Terraplane Authorized Service Sign" illustrated below.

This sign is your assurance that the dealer is prepared to service your car with only "Genuine Hudson and H U D S O N T E R R A P L A N E Service Parts." The mechanics employed by this establishment are trained to Hudson factory practices and procedures. The Hudson dealer displaying this sign is also your assurance that his shop is equipped with Hudson factory-tested and approved service tools to insure fast, efficient and dependable service operations at fair prices.

Wherever you may be traveling, the Hudson dealer displaying this sign is your assurance of friendly Hudson service.

WARRANTY

"We warrant each new passenger automobile manufactured by us to be free from defects in material and workmanship under normal use and service, our obligation under this warranty being limited to making good at our factory any part or parts thereof, including all equipment or trade accessories (except tires) supplied by the Car Manufacturer, which shall, within ninety (90) days after making delivery of such vehicle to the original purchaser, or before such vehicle has been driven 4,000 miles, whichever event shall first occur, be returned to us with transportation charges prepaid, and which our examination shall disclose to our satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied, and of all other obligations or liabilities on our part, and we neither assume nor authorize any other person to assume for us any other liability in connection with the sale of our vehicles.

"This warranty shall not apply to any vehicle which shall have been repaired or altered by other than an Authorized Hudson dealer in any way so as, in the judgment of the Manufacturer, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident."

HUDSON MOTOR CAR COMPANY
Detroit, Michigan, U S. A.

These Items Are Important

1. Upon delivery of your new Hudson Terraplane car the dealer will furnish you with an Owner's Service Policy and Ownership Card, which entitles you to replacement of any faulty parts in accordance with the Standard Warranty.

   Please see that these two forms (illustrated on next page) are properly filled in and signed. Also carefully read the provisions of the Owner's Service Policy and ask your dealer to explain any points that are not clear so that no misunderstandings will occur at a later date.

   For your protection these forms should be placed in the locker box compartment of your car so they will be handy should they ever be required.

2. Be sure your battery and tires are registered and that a clear understanding of the battery and tire warranties is obtained.

3. Read your Owner's Manual carefully to acquaint yourself with the various details of the car and assure yourself of complete satisfaction in its operation.

4. Be diligent in the "break-in" of your car. The amount of satisfaction, comfort and pride of ownership depends on the manner in which the car is operated during the first 1,000 miles of driving.

5. Have your dealer lubricate and thoroughly check your car periodically.

6. Duplicate keys are supplied with each car. Be sure key change numbers are noted in the spaces provided on the Ownership Card. This is important, as insurance regulations make it impossible to stamp the key change number on the lock cylinder. Lost keys may be replaced by ordering from your Hudson dealer by key change number.

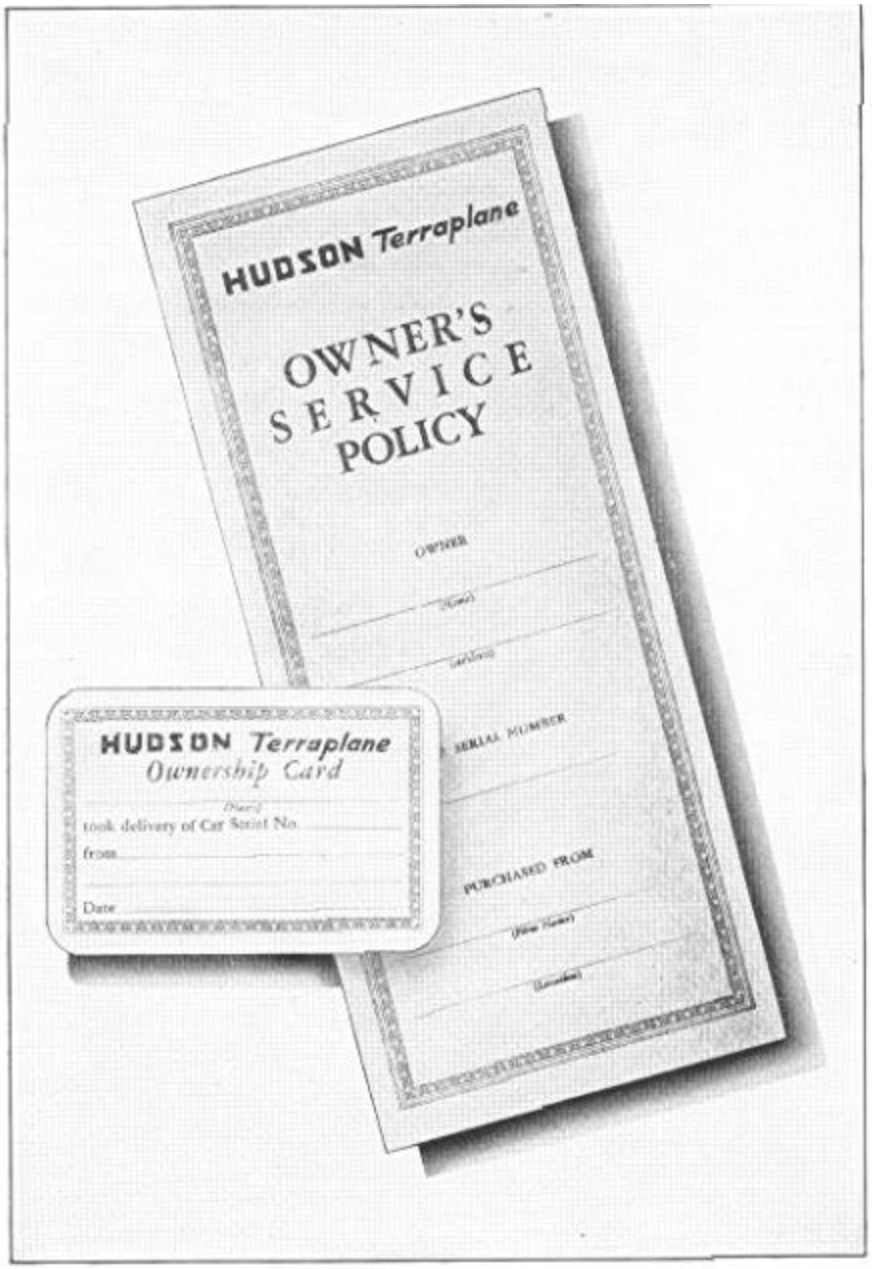
   The keys with the round handle are matched to the ignition and right-hand door safety lock. The keys with the octagonal shaped handle are matched to the instrument panel locker box lock (on Super Models only) and the rear compartment or trunk lid locks.

   Avoid loss of valuable time and money by locking the door safety lock as well as ignition lock when the car is unoccupied.

Carburetor Governor

To assure your car reaching you in good condition, and to protect the mechanism by restricting top speed, a governor has been installed on your carburetor by the factory. While the governor is in place it will restrict top speed and acceleration, and will also slightly increase the carburetor air intake noise.

When your car is returned to your dealer for the 500-mile inspection, the governor will be removed and the engine tuned up. Although the speed restriction has been removed, you should continue to be diligent in operating the car at moderate speeds until it has been properly run in.


HUDSON Terraplane
OWNER'S SERVICE POLICY
OWNER
SERIAL NUMBER
PURCHASED FROM
HUDSON Terraplane
Ownership Card
took delivery of Car Serial No.
from
Date

500-Mile Inspection Service

See provisions outlined in Owner's Service Policy.

The 500-mile inspection includes the following operations:

500-MILE NEW CAR INSPECTION
Lubrication and Inspection Procedure

1 Install Fender and Scat Covers
2 Check Window Regulator Operation
3 Check Operation of All Locks and Keys
4 Check Seat Adjustment Operation
5 Check Operation of Signals and Instruments
6 Check Cowl Ventilator Operation
7 Check Operation of All Lights
8 Check Radio Operation
9 Check Windshield Wiper Operation
10 Check Electric Hand Operation
11 Check Cigar Lighter Operation
12 Lubricate Door Locks and Hinges
13 Lubricate Door Strikers and Dovetails
14 Lubricate Water Pump
15 Oil Generator
16 Oil Starter
17 Oil Hood Locks and Hinges
18 Check for Water Leaks
19 Tighten Cylinder Head Stud Nuts
20 Lubricate Hood Lacing (L.H. side)
21 Check Radiator Water Level (anti-freeze in winter)
22 Check Fan Belt Adjustment
23 Check Battery and Connections
24 Check Generator Charging Rate
25 Check Fluid in Master Cylinder
26 Check Clutch Lubricant
27 Check Steering Gear Lubricant
28 Check Clutch Pedal Clearance
29 Oil Distributor (oiler and wick)
30 Oil Hood Locks and Hinges (R.H. side)
31 Oil Throttle Linkage
32 Check Air Cleaner for Oil
33 Lubricate Hood Lacing (R.H. side)
34 Remove Carburetor Governor
35 Adjust Tappets
36 Tune Up Engine
37 Check Tire Pressures
38 Check Wheel Alignment
39 Check Rear Wheel Hubs for Tightness
40 Check Pitman Arm for Tightness
41 Check Spring Clips
42 Check Front Wheel Bearing Adjustment
43 Check Wheel Huh Bolts
44 Change Engine Oil
45 Lubricate Clutch Throwout Bearing
46 Lubricate Pedals Shaft
47 Check Transmission Lubricant
48 Check Rear Axle Lubricant
49 Lubricate All Chassis Fittings

BREAKING-IN PERIOD

The pride of ownership, trouble-free performance and maximum life and enjoyment you receive from your Hudson Terraplane car depends largely on the manner in which your car is operated during the "breaking-in-period" or the first thousand miles of driving.

Your car has been designed by capable engineers, in accordance with the best practices determined by years of experience, built under the most rigid standards of precision, and rigidly inspected throughout its manufacture to insure proper clearances being maintained.

Before shipment from our factory the car was thoroughly lubricated to insure proper lubrication to the finely finished parts. The lubricants used are of the highest quality obtainable and have been selected only after being subjected to laboratory test.

Failure to follow accepted practice, as described in the following paragraphs, may result in damage to bearing surfaces, cylinder walls or pistons, or abnormal increases in clearances, which will shorten the life and impair the performance of the various units.

Be sure that the proper radiator water level is maintained at all times. Check engine oil level frequently to insure sufficient lubrication.

Accelerate gently, as fast acceleration places heavy loads on the working parts. Use second gear under adverse conditions. Never attempt to take a grade in high for the mere sake of demonstrating power.

Careful application of brakes during the break-in period is also essential, as brake linings and drums require proper run-in. Harsh braking in early life may cause scored linings and drums as well as placing heavy loads on the driving members.

Adhering to the following speed table will insure proper run-in of all units of the car:

0-250 MILES

Do not exceed 40 miles per hour in high gear or 20 miles per hour in second. Do not accelerate rapidly. Use second gear on steep grades.

250-500 MILES

Do not exceed 50 miles per hour in high gear or 25 miles per hour in second.

500-1000 MILES

During this period the speed should not exceed 60 miles per hour.

LICENSE DATA

Body Types

DE LUXE MODELS 117" Wheelbase	SUPER MODELS 117" Wheelbase
Starting Serial No. 81101	Starting Serial No. 82101
3-Passenger Coupe	3-Passenger Coupe
Victoria Coupe	Victoria Coupe
Convertible Coupe	Convertible Coupe
Brougham	Brougham
Touring Brougham	Touring Brougham
Convertible Brougham	Convertible Brougham
Sedan	Sedan
Touring Sedan	Touring Sedan

Car Serial Number—Located on plate on right front door hinge pillar above upper Hinge.

Engine Number—Stamped on boss near top and front at left side of cylinder block or on top of cylinder block between Nos. 1 and 2 exhaust manifold flanges.

Number of Cylinders.	6 A.M.A. Horsepower Rating	.21.6
Cylinder Bore	3" Piston Displacement	212 cu. in.
Stroke of Piston	5"	

TECHNICAL INFORMATION

Engine

Type	6 Cylinders en bloc
Compression Ratio—Standard	6.25 to 1
Optional	7 to 1
Actual Horsepower Developed— Series 81	
6.25 to 1 Compression—Standard Head	96 @3900
7 to 1 Compression—Super Power Dome Head	102 @ 3900
Series 82	
6.25 to 1 Compression—Standard Head	101 @ 4000
7 to 1 Compression—Super Power Dome Head	107 @ 4000
Number Main Bearings	3
Main Bearing Clearance	.001"
Main Bearing End Play	.006"-.012"
Valve Material	Silchrome Alloy Steel
Valve Head Diameter	Intake, 1-3/8"; Exhaust, 1-3/8"
Valve Tappet Clearance (Hot)	Intake, .006"; Exhaust, .008"
Camshaft Drive	Gear
Connecting Rod Lower Bearing Clearance	.001"; End Play, .006"-.010"
Piston Material	Lo Ex Aluminum Alloy
Piston Type	T Slot Cam Ground
Piston Weight, Ounces	10.75

Skirt Clearance	.002"
Number of Piston Rings	Compression, 2; Oil Control, 2
Width of Piston Rings	Compression, 3/32"; Oil Control, 3/16"
	Piston Ring Gap .009"-.011"
Lubricating System .	Hudson Duo-flo Automatic
Oil Pump Type	Oscillating Plunger
Oil Reservoir Capacity	5 Quarts
Capacity of Lubricating System	6 Quarts

Cooling System

Type	Pressure Pump Circulation
Radiator Type	Ribbon Cellular
Cooling System Capacity	12½ Quarts
Fan Belt	"V" Type

Fuel System

Carburetor—Series 81	Make, Carter; Type, Single Down-Draft; Size, 1¼"
Series 82	Make, Carter; Type, Duplex Down-Draft; Size, 1"
Choke Control—Series 81	Manual
Series 82	Automatic
	Heat Control—Series 81 Manual
	Series 82 Automatic
Fuel Delivery	Pump
Air Cleaner—Standard	Oil Wetted—Intake Silencer Type
Air Cleaner—Optional, Extra Cost	Oil Bath—Intake Silencer Type
Gasoline Tank Capacity	16½ Gallons

Starting, Lighting and Ignition

Make	Autolite
Spark Control	Automatic
Timing	Dead Center
Firing Order	1-5-3-6-2-4
Distributor Gap	.020"
Spark Plug Type—Standard Head.	Champion J-8—Metric
Spark Plug Type—Super Power Dome Head	Champion H-10—Metric
Spark Plug Size	14 Mm.
Spark Plug Gap	.032"
Generator Regulation—Series 81	Third Brush
Series 82	Third Brush and Voltage Regulator

Generator Charging Rate—

Series 81 (without radio)

Maximum Cold, 19 Amps.; Minimum Cold, 17 Amps.

Maximum Hot*, 18 Amps.; Minimum Hot*, 16 Amps.

Series 82** Maximum Cold, 32 Amps.; Minimum Cold, 29 Amps.

Maximum Hot*, 29 Amps.; Minimum Hot*, 26 Amps.

*After engine has run 15 to 20 minutes indoors.

**Use these settings for Series 81 with radio.

Battery Make	National
Number Plates	17
Capacity	105 Ampere Hours
Dimensions—Length	10 9/16"
Width	7 1/4"
Height (over all)	7 15/16"
Terminal Grounded	Positive

Lamp Bulb Specifications

	C.P.	Base	Voltage	Mazda No.
Head	32-32	D. C.	6-8	2331
Head—Export	21-50	D. C.	6-8	2520D
Parking	1½	S. C.	6-8	55
Fender Lamp	3	S. C.	6 8	63
Dash Signals	1	S. C.	6-8	51
Instrument	1½	S. C.	6-8	55
Service Light	1½	S. C.	6-8	55
Stop and Tail	3-21	D. C.	6-8	1158
License Lamp	3	S. C.	6-8	63
Dome	15	S. C.	6-8	87

Fuse—Headlamp Circuit, 20 Amps.
Accessory Circuit, 20 Amps.

Clutch

Type	Oil Cushioned, Single Plate
Clutch Pedal Clearance at Floor Boar	1½"

Transmission

Type	Selective
Gear Ratio	Low, 2.42: Second, 1.6; High, 1; Reverse, 2.99
Lubrication—	Summer, S.A.E. 90 E.P.; Winter, S.A.E. 80 E.P.; Capacity, 3 Pounds or Pints (1.36 Kgs.)

Rear Axle

Type	Semi-Floating
Bearing Type	Taper Roller Throughout
Gear Ratio—Standard	4 1/9:1
Gear Ratio—Optional	4 5/9:1
Gear Ratio—Optional, Extra Cost	3 5/9:1 and 3 8/9:1

Lubrication— Summer, S.A.E. 90 E.P.; Winter, S.A.E. 80 E.P.; Capacity, 2¾ Pounds or Pints (1.24 Kgs.)

Front Axle

Toe-in	0 to 1/4"
Caster	1° to 2"
Camber	1° to 1½°

Brakes

Type	4-Wheel Hydraulic
Size	10 1/16" x 1 3/4"
Clearance Between Lining and Drum	.010"
Clearance for Mechanical Follow-up	1 7/16"

Steering Gear

Type	Variable Pitch Worm and Roller Tooth
Gear Reduction	18.2 to 1
Lubricant	Summer and Winter, S.A.E. 90 E.P.

Tires

Size—Standard	16 x 6.00
Size—Optional	15 x 7.00
Air Pressure-16 x 6.00	Front, 24; Rear, 32
Air Pressure-15 x 7.00	Front, 22; Rear, 28
Wheel Jack	Bumper Type

Chassis Dimensions

Wheelbase	117"
Tread	Front, 56"; Rear, 591/2"
Road Clearance (Center) .	Front Axle, 8 9/16"; Rear Axle, 8 7/16"

Over-all Length, including Bumpers—	
Brougham	197¾"
Coupe	197¾"
Sedan	197¾"-204¾"
Over-all Width, including Fenders—	
Front	71"
Rear	72"

Capacities

	U. S.	Imperial	Metric
Gasoline Tank	16½ Gals.	1¾ Gals.	62½ Liters
Cooling System	12¼ Qts.	10¼ Qts.	11¾ Liters
Engine Crankcase	6 Qts.	5 Qts.	5¼ Liters
Engine Crankcase (refill)	5 Qts.	4¼ Qts.	4¼ Liters
Clutch	1/3 Pt.	1/3 Pt.	180 cc
Transmission	3 Lbs.	3 Lbs.	1.36 Kgs.
Rear Axle	2¾ Lbs.	2¾ Lbs.	1.24 Kgs.

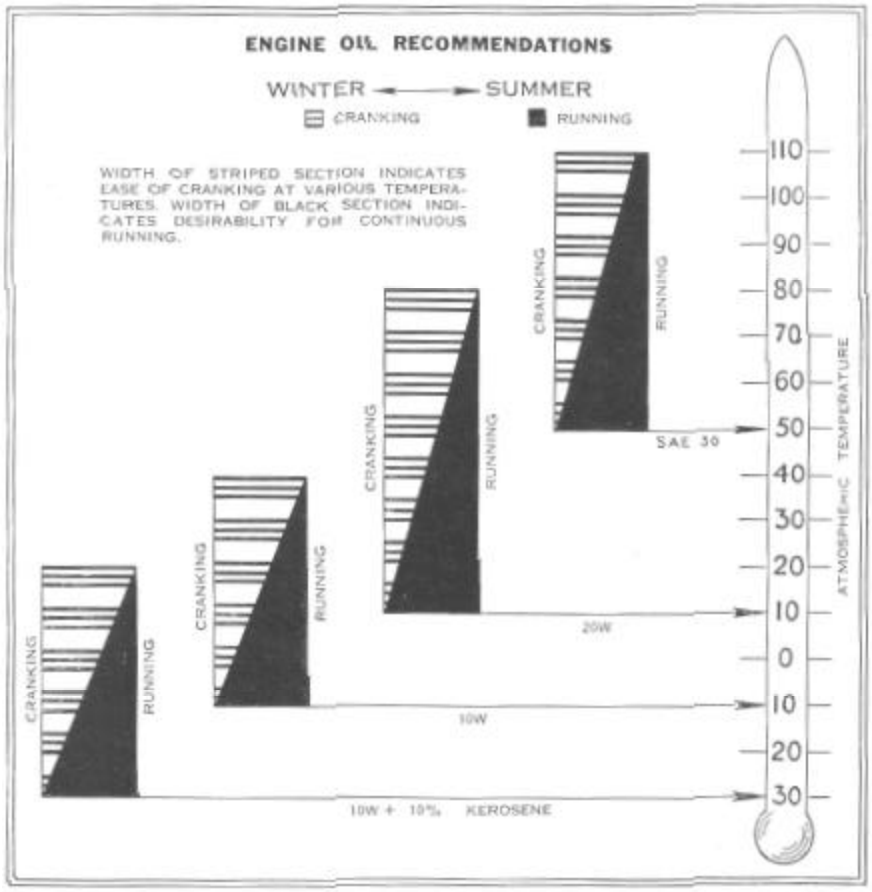
LUBRICATION

The subject of lubrication is one of the most important items we deal with in this manual. Upon the interest displayed by the car owner on this subject, in co-operation with his Hudson dealer, depends the amount of trouble-free service he will derive from his car.

Your Hudson dealer is supplied with factory-approved lubrication methods and specifications, and he only should be consulted on matters of lubrication.

The various units of the car require different types of lubricants and only those grades specified should be used. Heavier lubricants tend to cause friction by virtue of their inability to penetrate the close clearances between bearings. Lighter than specified lubricants tend to break down under loads applied to the closely fitted parts and will eventually result in premature replacement of parts.

For your guidance, a chassis lubrication chart is pasted to the front cover of this



manual, and another quick reference lubrication and tire pressure chart will be found on the left side of the dash in the engine compartment. Study these charts carefully and be diligent in following the instructions contained therein.

The lubricants placed in your car at the time of manufacture have been carefully tested and checked by our laboratory and NEED NOT be removed until the recommended change period has been reached.

Engine Oil Recommendations

The selection of an engine oil and change periods depend largely upon the car owner. IN THE SELECTION OF AN OIL, THE REPUTATION OF THE REFINER OR MARKETER SHOULD BE TAKEN INTO CONSIDERATION. HE IS RESPONSIBLE FOR THE QUALITY OF HIS PRODUCT AND HIS REPUTATION IS THE CAR OWNER'S BEST INDICATION OF QUALITY.

The viscosity of a lubricant is simply a measure of its body or fluidity. The S.A.E. viscosity numbers constitute a classification of lubricants in terms of viscosity, or fluidity, but without reference to any other characteristics or properties. The S.A.E. viscosity numbers have been adopted by practically all oil companies and no difficulty should be experienced in obtaining the proper grade of lubricant to meet seasonal requirements.

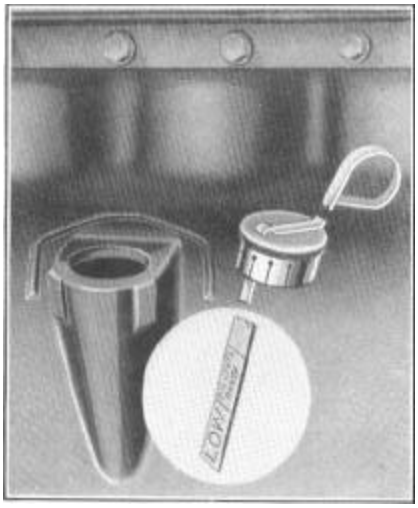


Figure 1

A quick reference table has been prepared and is shown on page 12. Reference to this table will indicate to the car owner the proper grade of lubricant to select for the lowest atmospheric temperature likely to be encountered before the next oil change.

The first oil change should be after the car has been driven 500 miles and every 2,000 miles thereafter, unless local conditions warrant more frequent changes.

When the car is operated in very dusty territories, it is to the owner's advantage to change oil more frequently to prevent the abrasives which have found their way into the engine from causing untold damage to bearings, pistons, rings, valves, etc.

Consistently hard driving has harmful effects on engine oil and necessitates more frequent changing.

On the other hand, operating a car for short distances at low speeds in winter weather does not afford an opportunity for the engine to throw off the diluents and condensation that accumulate in the crankcase; and, if the oil is not drained frequently, it will also have harmful effects on the engine.

Although we recommend changing engine oil at 2,000-mile intervals under normal operation, more frequent draining is often necessary, depending on the owner's driving habits and the conditions under which the car is operated.

Engine Oil Capacity

Under operating conditions, one quart of oil is retained in the crankcase, in addition to the five quarts in the reservoir. If the oil reservoir is removed, one quart of oil should be put into the upper crankcase tray and five quarts in the reservoir.

The quantity of oil in the reservoir can be determined by the bayonet gauge attached to the filler cap, Figure 1. When the oil level is down to the low mark, approximately three-quarters of an inch from the bottom of the gauge, three quarts of oil remain in the reservoir. Two additional quarts are required to bring the level up to the mark at the top of the "oil level range."

When the reservoir is drained by removal of the drain plug at the rear of the reservoir, five quarts of oil should be installed through the opening in the left side of the crankcase, Figure 1.

Always maintain the oil level within the "oil level range" on the bayonet gauge.

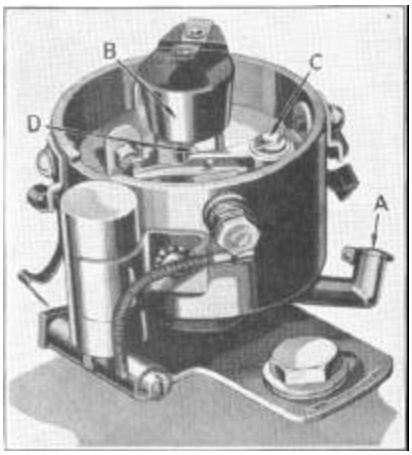


Figure 2

EVERY 1,000 MILES

All lubrication fittings and oilers should be wiped off with a cloth dipped in kerosene before applying grease gun.

Distributor

The oil cup (A), Figure 2, should be filled with engine oil every 1,000 miles. The distributor cap and rotor should be removed and a few drops of engine oil applied to wick (B) in the top of the shaft. Apply one drop of oil on the breaker arm pivot (C), and apply a light coating of vaseline on the cam block (D). Avoid over-oiling.

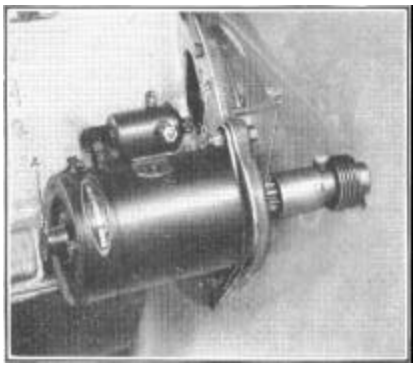


Figure 3

Starting Motor

The front and rear starting motor bearings are provided with oilers (A) and (B), Figure 3, and should be lubri¬cated with a few drops of engine oil every 1,000 miles. Avoid over-oiling.

The threads on the Bendix drive (C) should be cleaned occasionally with a brush and kerosene to remove gum and dirt. Do not oil, as the kerosene adhering to the threads will provide sufficient lubrication for this part.

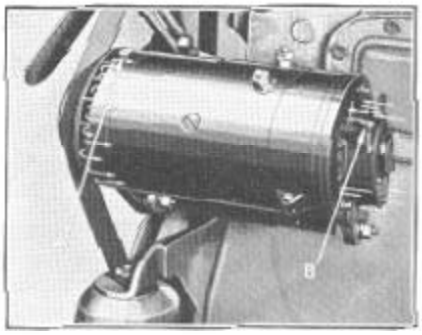


Figure 4

Generator

The front and rear bearings of the generator are also provided with oilers (A) and (B), Figure 4, and should be lubricated with engine oil every 1,000 miles. Do not overlubricate.

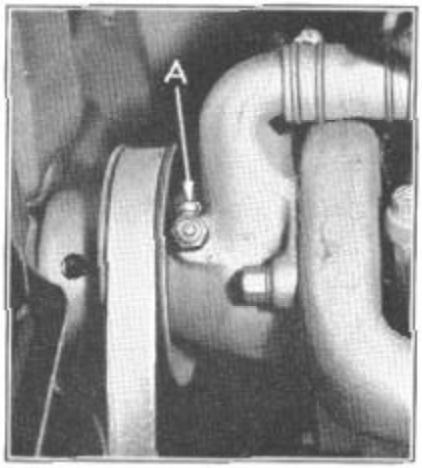


Figure 5

Water Pump

To prevent excessive gun pressures from damaging the self-adjusting oil seal, a metered lubrication fitting (A), Figure 5, is provided on the water pump.

Lubricate the water pump through this fitting every 1,000 miles with a high-grade aluminum soap base lubricant until excess lubricant flows out through opening at top of fitting.

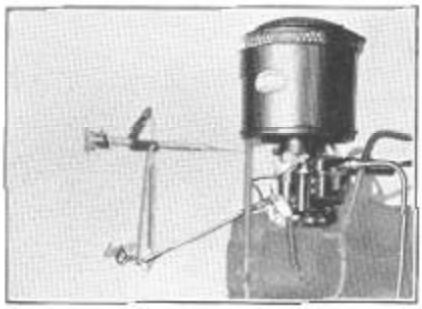


Figure 6

Throttle Linkage

Lubricate throttle linkage, Figure 6, every 1,000 miles with engine oil to insure freedom of movement.

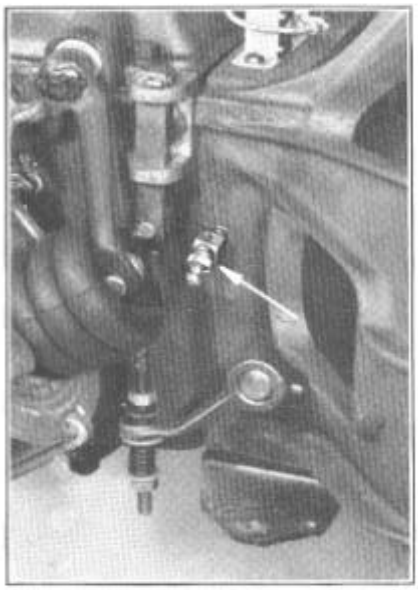


Figure 7

Clutch Throwout Bearing

The clutch throwout bearing is lubricated through a fitting located on the right side of the clutch hell housing, Figure 7. This should be lubricated with one ounce of viscous chassis lubricant every 1,000 miles.

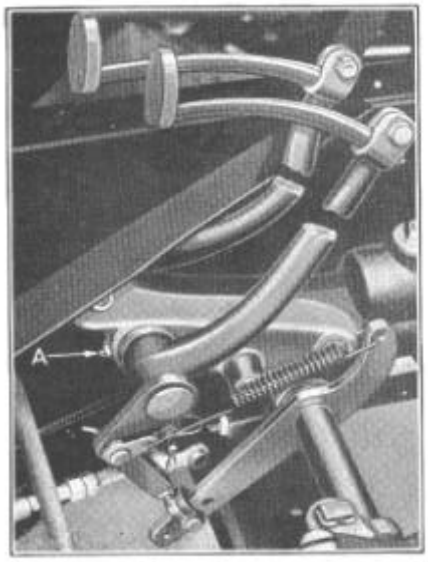


Figure 8

Clutch and Brake Pedals Shaft

A lubrication fitting (A), Figure 8, is provided on the clutch and brake pedals shaft and should be lubricated with viscous chassis lubricant every 1,000 miles.

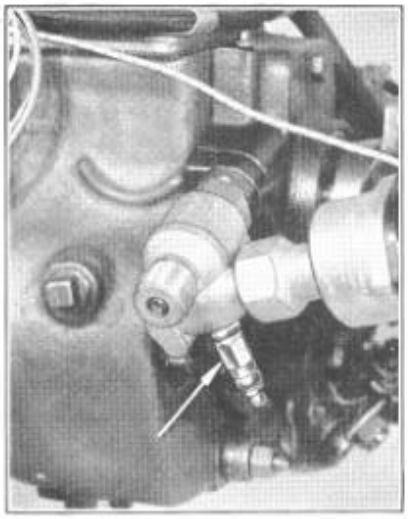


Figure 9

Automatic Clutch Control Governor

(Optional equipment)

The automatic clutch control governor adapter, Figure 9, located on the left side at the rear of the transmission, is fitted with a metered lubrication fitting. This fitting should be lubricated every 1,000 miles with viscous chassis lubricant.

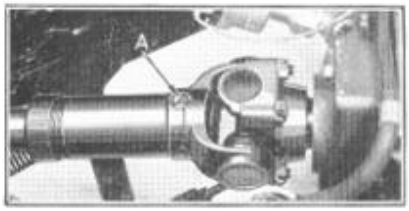


Figure 10

Propeller Shaft Front Joint

The front universal joint spline shaft should be lubricated every 1,000 miles with viscous chassis grease. To maintain proper balance, a plug is fitted into the universal joint (A), Figure 10, and this should be removed and a lubrication fitting installed to perform the operation. Be sure the fitting is removed and the regular plug reinstalled. Avoid over-lubricating to prevent damage to the oil seal.

Figure 11

Spring Shackles and Pivot Bolts

Fourteen lubrication fittings provide for lubrication of front and rear spring shackles and rear spring front pivot bolts. These fittings should be lubricated with viscous chassis lubricant every 1,000 miles. See lubrication chart for location of fittings. Also see Figure 11.

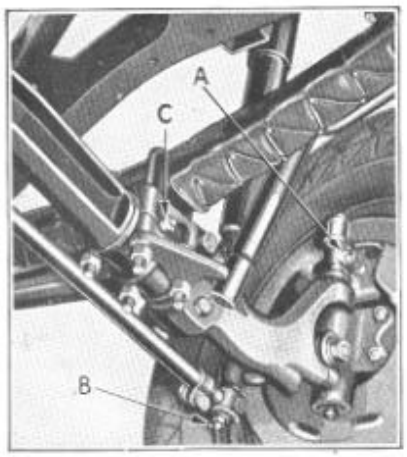


Figure 12

Front Axle

Spindle pivot lubrication fittings (A), Figure 12, tie rod end fittings (B) and front spring seat fittings (C) should be lubricated with viscous chassis lubricant every 1,000 miles.

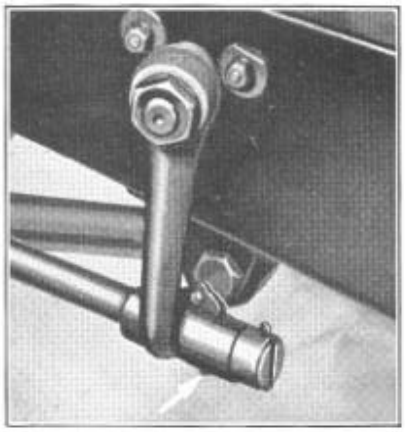


Figure 13

Drag Link

The drag link is provided with two lubrication fittings, one at the rear, Figure 13, and one at the front. These fittings should be lubricated with viscous chassis lubricant every 1,000 miles.

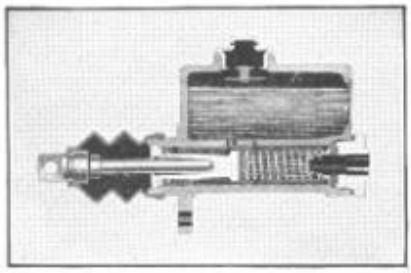


Figure 14

Brakes

Check fluid in brake master cylinder every 1,000 miles and add sufficient Genuine Hudson Hydraulic Brake Fluid to bring level up to within one-quarter inch of the top. See Figure 14.

Use Genuine Hudson Hydraulic Brake Fluid No. 5, except where continuous sub-zero temperatures are encountered, in which case No. 1 fluid should be used. Genuine Hudson Hydraulic Brake Fluid is available through Hudson dealers. Never use substitutes.

EVERY 2,000 MILES

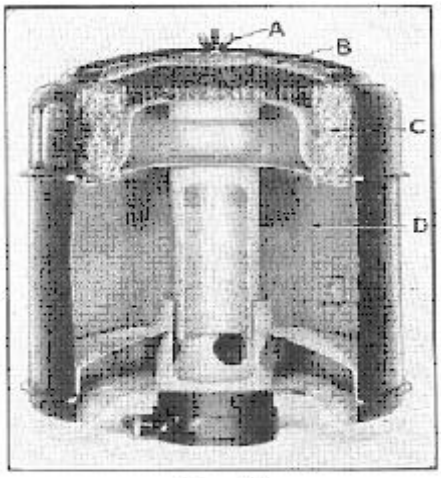


Figure 15

Air Cleaner—Carburetor

The standard carburetor air cleaner filter unit should be cleaned in gasoline and re-oiled with S.A.E. 50 engine oil every 2,000 miles. Following extensive service, it may be advisable to replace the filter unit which is available at low cost.

The oil bath carburetor air cleaner which is available as optional equipment or accessory should be cleaned and refilled with S.A.E. 50 engine oil in summer and 20 W engine oil in winter every 2,000 miles.

CLEANING AND RE-OILING INSTRUCTIONS
Standard Air Cleaner

1. Remove wing nut (A), Figure 15.
2. Remove cover and pad (B).
3. Remove filter unit (C).
4. Wash filter unit in gasoline to remove all traces of dirt and dust and drain or blow dry.
5. Dip filter unit in S.A.E. 50 engine oil and drain off excess.
6. Reinstall filter unit.
7. Reinstall cover and pad (B) with hard side of pad down.
8. Reinstall wing nut (A).

Oil Bath Air Cleaner

(Optional equipment or accessory)

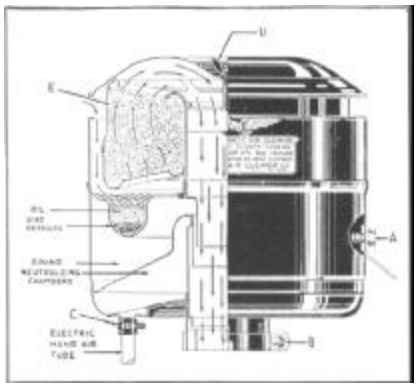


Figure 16

1. Remove air cleaner from carburetor by removing body brace bolt (A), Figure 16, and cleaner body clamp screw (B) at carburetor air horn. (On Electric Hand equipped cars also loosen Electric Hand air inlet pipe clamp screw (C).)
2. Remove wing nut (D).
3. Lift out filter unit (E) and, if necessary, wash in kerosene and blow dry.
4. Remove old oil from oil sump, scrape out dirt deposits and clean thoroughly with kerosene.

5. Refill sump with one measured pint of new S.A.E. 50 engine oil in summer and 20 W in winter.
6. Check filter unit gasket, reinstall filter unit (E) and install wing nut (D).
7. Reinstall air cleaner on carburetor, tighten carburetor air horn clamp screw (B) (also Electric Hand inlet pipe clamp screw (C) if necessary), and body brace bolt (A). More frequent cleaning depends upon local dust conditions.

EVERY 5,000 MILES

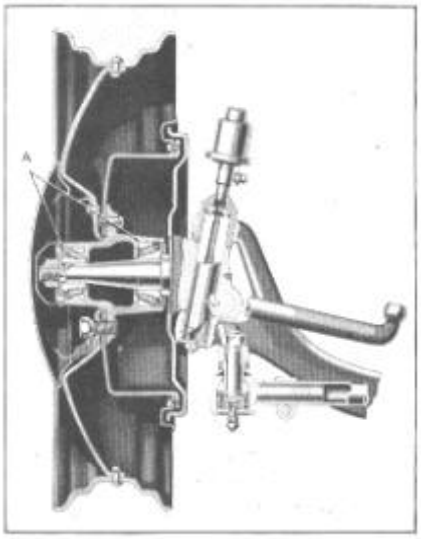


Figure 17

Front Wheel Bearings

Front wheel bearings (A), Figure 17, should be cleaned and repacked with three ounces of milled sodium soap base lubricant every 5,000 miles. See page 60 for adjusting procedure.

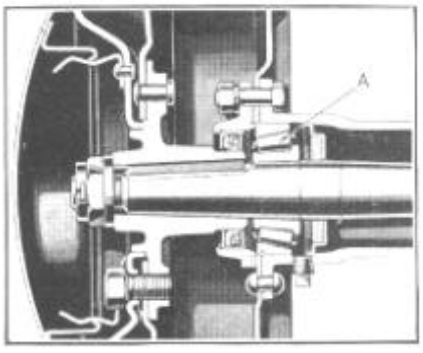


Figure 18

Rear Wheel Bearings

The rear wheel bearings (A), Figure 18, should be cleaned and repacked with one and one-half ounces of milled sodium soap base lubricant every 5,000 miles. See page 63 for adjusting procedure.

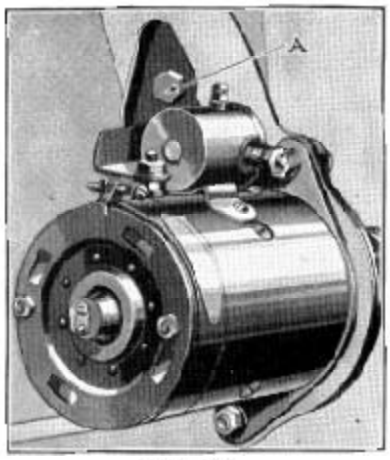


Figure 19

Clutch

Hudsonite Clutch Compound is permanently sealed into the clutch to prevent loss. However, it should be drained every 5,000 miles and refilled with Hudsonite Clutch Compound.

To insert Hudsonite, turn the engine until the drain plug (A), Figure 19, in the front face of the flywheel is visible through the timing inspection hole in the left side of the engine rear plate. Remove the plug and turn the engine slowly until the star stamped in the front face of the flywheel is visible through the inspection hole. Allow a minute in this position to drain, then turn the engine until the filler hole again appears in the timing hole and insert one-third pint of Hudsonite. Replace plug and tighten securely. Hudsonite is available through all Hudson dealers.

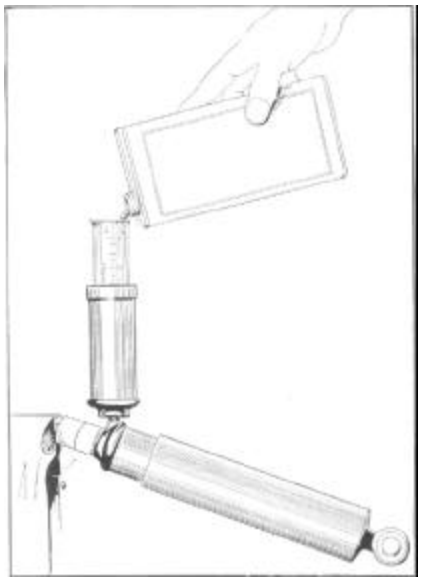


Figure 20

Shock Absorbers

Efficient operation of the direct-acting, self-compensating shock absorbers with which your car is equipped depends upon the quantity and quality of fluid installed in them.

Have your Hudson dealer drain and refill each unit with five ounces of Genuine Hudson Shock Absorber Fluid every 5,000 miles. See Figure 20.

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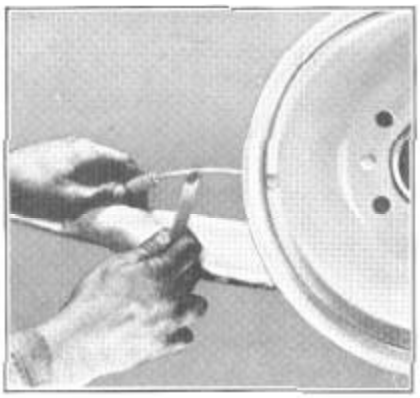

Figure 21

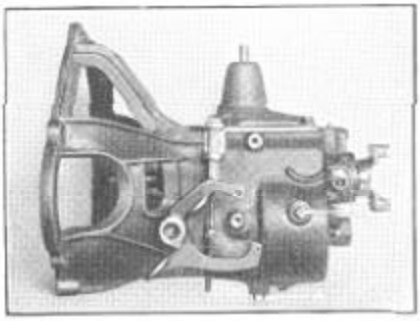

Figure 22

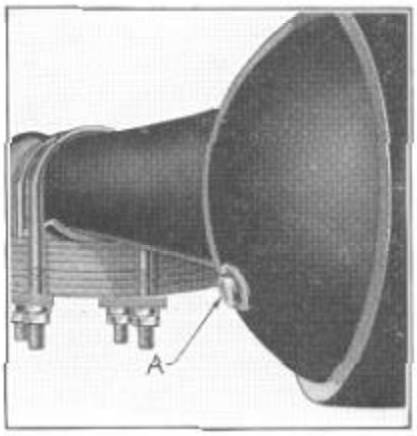

Figure 23

Brake Cables and Conduits

To assure freedom of operation the rear wheel parking brake cables and conduits should be cleaned and graphite grease applied every 5,000 miles.

Clean exposed portion of cables with kerosene. Remove cap screws at front conduit abutment cap, spring clip and rear cable abutment cap. Remove abutment caps. Slide conduit forward on cable to expose the entire covered portion of cable and apply graphite grease as shown in Figure 21.

Transmission

To provide proper transmission lubrication, the lubricant used must be able to withstand the pressures developed between the gear teeth and also flow freely into the small clearances of the bearings.

These qualities can be obtained in S.A.E. 90 E.P. (extreme pressure) gear oil for summer, and S.A.E. 80 E.P. gear oil in winter. Three ounces of kerosene may be added to the lubricant when hard shifting is encountered during extremely cold weather.

It is advisable to change transmission lubricant every 5,000 miles. To drain old lubricant, remove drain plug (A), Figure 22. After draining, replace plug securely. Remove filler plug (B) and refill with three pounds (or pints) of fresh oil of proper specifications. Replace filler plug securely.

Rear Axle

The lubricant selected for rear axle lubrication is likewise important, inasmuch as it must be capable of withstanding the pressures developed between the gear teeth, and also to flow freely to enter the small clearances and circulate through the

These qualities can be obtained in S.A.E. 90 E.P. (extreme pressure) gear oil for summer and winter.

It is advisable to change rear axle lubricant every 5,000 miles. Always keep oil to the level of oil filler plug (A), Figure 23. The old lubricant can be removed with a special suction gun available for this purpose. Refill with two and three-quarter pounds (or pints) of fresh oil of proper specifications. Replace filler plug securely.

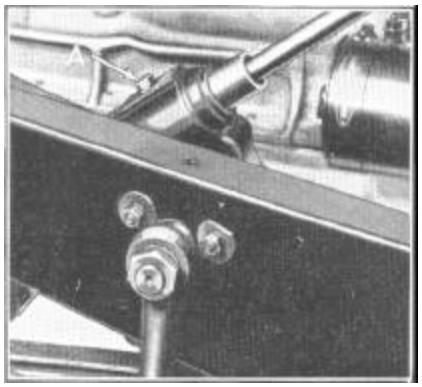

Figure 24

Steering Gear

The steering gear housing should be lubricated every 5,000 miles. Use a good grade of S.A.E. 90 E.P. (extreme pressure) gear oil in summer and winter.

Remove filler plug (A), Figure 24, and fill housing until lubricant reaches level of filler hole. Replace plug securely.

EVERY 10,000 MILES

Spring Covers

Spring covers on front and rear springs (on Super Models only) should be removed and repacked with viscous chassis lubricant every 10,000 miles.

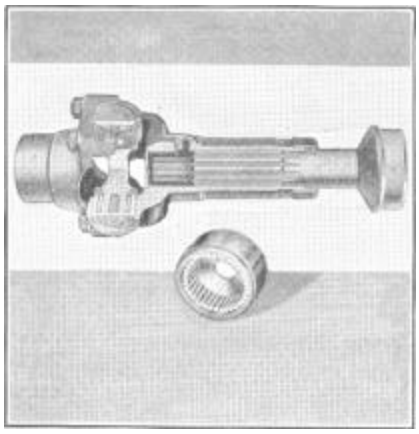

Figure 25

Universal joints

The front and rear universal joints are fitted with needle roller bearings and the lubricant is sealed in at the time of assembly. See Figure 25.

At 10,000-mile intervals the universal joints should be disassembled, cleaned and repacked with viscous chassis lubricant.

Your Hudson dealer is equipped to perform this service.

EVERY 15,000 MILES

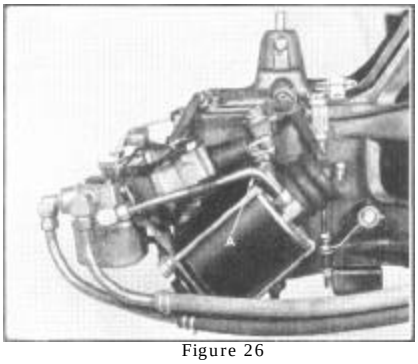

Figure 26

Automatic Clutch Control

(Optional equipment)

To keep the automatic clutch control power cylinder piston leathers pliable and prevent vacuum leaks, the power cylinder should be lubricated every 15,000 miles with Genuine Hudson Shock Absorber Fluid.

This can be accomplished by removing plug (A), Figure 27, and inserting one ounce of fluid into the power cylinder. Avoid over-oiling. It is advisable to have your Hudson dealer perform this service.

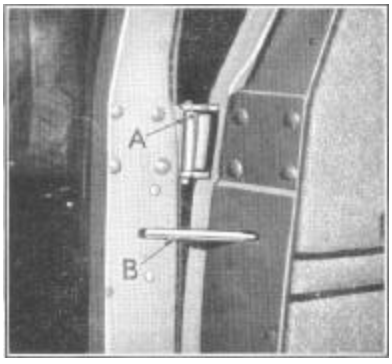

Figure 8

Electric Hand

(Optional equipment)

To prevent the Electric Hand power cylinder piston leathers from drying out, the power cylinder should be lubricated every 15,000 miles with Genuine Hudson Shock Absorber Fluid.

To lubricate, remove elbow (A), Figure 26, and inject one ounce of fluid. Avoid over-oiling. It is advisable to have your Hudson dealer perform this service.

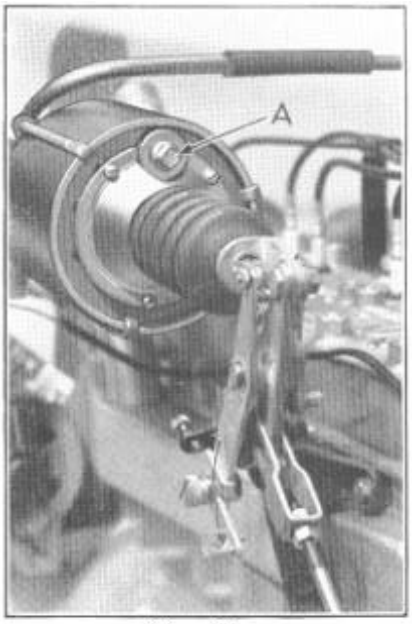

Figure 27

Door striker plates and dovetails (male) are provided with lubricating wicks and should be saturated periodically with light engine oil.

Light engine oil should be inserted periodically into door hinge oil holes (A), Figure 28, to prevent hinge squeaks.

Door check straps (B) and door latch tongues should be lubricated periodically with a stainless "Pencil Lubricant."

DUST STORM PRECAUTIONS

In view of the dust storms which have been prevalent during the past few years, we feel the necessity of acquainting car owners with certain procedures to follow in an endeavor to minimize the damage which these dust storms are apt to cause.

When dust mixes with engine oil or chassis lubricant, it becomes a highly abrasive substance which may cause untold damage to all working parts, such as pistons, piston rings, cylinder blocks, valves, valve guides, bearings, carburetors, spring shackles and bushings.

Under such conditions it is imperative that more frequent attention be given to chassis lubrication, engine oil change, air cleaner service and fuel system cleaning than the periods outlined in this instruction book and lubrication chart.

The use of a special Oil Bath Carburetor Air Cleaner, Figure 16, which is available as an option or may be purchased from Hudson dealers, will assist in large measure in protecting the carburetor and engine from premature wear.

Tourists contemplating a trip through dust areas should have an Oil Bath Carburetor Air Cleaner installed.

The frequency with which the air cleaner should be cleaned and re-oiled depends, of course, upon local dust conditions. The protection which this type of air cleaner affords will be appreciated by noting the accumulation of dust and dirt found in the air cleaner oil reservoir just below the filter unit.

Listed below are points which should be checked and handled in accordance with local conditions:

1. Fuel System:
   - (a) Clean and service air cleaner as outlined on page 19.
   - (a) Clean fuel lines.
   - (a) Clean carburetor.
   - (b) Clean fuel pump.
2. Crankcase:
   - (a) Clean ventilators and insert wads of fine metal gauze or fine mesh screen in lower end.
   - (a) Drain oil, remove oil pan, clean thoroughly, reinstall and refill with fresh new oil.
3. Chassis:
   - (a) Thoroughly lubricate all chassis fittings, being certain to force out old lubricant to which dust or abrasives may adhere.

CARE OF THE FINISH

The high lustre finish lacquer on your car can be preserved indefinitely if given proper attention.

Avoid wiping the finish when it is heavily coated with dust—it is better to wash it carefully to avoid scratching. Spilling anti-freeze solutions or alcohol on the finish is extremely dangerous and great care should be taken when adding or checking these solutions. These spots should be rinsed immediately with large quantities of water.

Washing

Washing the car is advisable whenever the finish is heavily caked with mud or so dusty that wiping would scratch the surface. Also due to the general use of salt and calcium chloride in some localities to melt snow and ice from the pavements, washing the car more frequently in the winter months may be advisable. These chemicals are highly corrosive and deteriorate the finish, both lacquer and chrome, if permitted to remain.

Avoid washing the car in the sun or if the body metal is hot due to standing in the sun. Permit the car to cool off naturally in a shady spot before washing. An ordinary garden hose may be used to good advantage to soak the dirt loose before wiping it with a sponge. The sponge should be rinsed frequently to remove abrasives that may cling to it. A clean chamois should be used to dry the finish after it has been thoroughly rinsed.

It may be noted when drying the finish that a slight amount of color may appear on the chamois—however, this should cause no alarm as it is a natural condition of lacquer due to exposure to the elements.

Oil or tar deposited on the finish may be removed by using a reliable tar remover recommended by your Hudson dealer.

Polishing

Due to a slight dulling of the finish after exposure to the weather, it is recommended that the finish be occasionally cleaned and polished with Hudson Cleaner and Wax Base Polish to restore the lustre. However, if a more lasting high lustre is desired, it may be obtained by applying a film of Hudson Wax Polish.

Hudson polishes are carefully compounded and are entirely free of destructive acids and abrasives and may be purchased only through Hudson dealers. Avoid the use of so-called "speed cleaners and polishes" as they do a quick job of cleaning but at the same time remove considerable of the lacquer. Avoid polishing the car if it has been standing in the sun. It is better to apply the polish when the body has cooled.

Chromium-Plated Finish

Chromium-plated parts other than bumper bars require little care other than an occasional cleaning with a damp cloth to remove dust and dirt. No polish is necessary.

Bumper bars, on the other hand, are usually subjected to considerable scuffing and scratching particularly due to parking and heavy traffic conditions and require considerably more care.

Unless deep scratches are looked after immediately, rust spots may appear. Therefore, as soon as possible after deep scratches are noticed, they should be cleaned and a coat of clear lacquer applied. In the event rust spots have already appeared, clean the rust off with a little mild kitchen cleanser before applying the lacquer.

During the winter season when salt and calcium chloride are used on pavements to melt ice and snow, the chromium-plated parts should be wiped or washed off more frequently. A film of Hudson Wax Polish will serve to provide added protection at this season of the year.

Care of the Car Interior

The care of the interior of your car determines to a large measure the resale value when you contemplate trading in or selling. It is not a difflcult job to perform and the small amount of time thus expended will be well repaid by the pride you will derive from its neat appearance.

All body joints are thoroughly sealed against the possibilities of dust entering while driving on dusty roads. However, a certain amount of dust and dirt will find its way into the car by various means and this, if allowed to remain, has an abrasive action on the cloth and will in time cause the upholstery cloth to show wear. It is, therefore, suggested that at least once each month, or oftener if conditions warrant, the neat cushions be removed and they and the seat backs and upholstered panels be thoroughly brushed with a whisk broom and then vacuum-cleaned.

The nap on mohair upholstery can be easily restored to its normal position if it should become matted down by covering the area with a damp cloth and then steaming it with a hot iron.

Most spots which are apt to soil the car upholstery can be quickly and neatly removed by the use of Hudson Upholstery Dry Cleaner or Hudson Foam Solution Cleaner which are available from your Hudson dealer.

It is advisable when cleaning soiled sections or spots to work in a circular manner outside the area, working gradually toward the center. By this method you will be certain not to leave an unsightly ring.

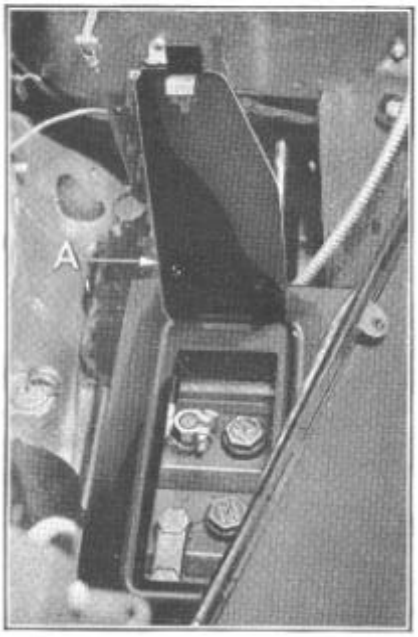

Figure 29

Care of the Convertible Coupe and Convertible Brougham Folding Top

Convertible Coupe and Convertible Brougham tops frequently become spotted through the lowering and raising operation. These spots or soiled areas are often permitted to remain for fear of discoloring the top material.

By the use of Hudson Dry Cleaner soiled areas can very easily be cleaned. The proper method is to select an area slightly larger than the area to be cleaned and rub lightly in a circular manner, gradually working toward the center.

BATTERY

Registration

A 17-plate, 105 ampere hour National battery is used. This battery is covered by a Guarantee and Adjustment Policy by its manufacturer. To

be entitled to the benefits of this Policy, the battery must be registered with a National dealer within thirty (30) days after delivery of the car. Do not neglect to make this registration.

Care

The battery requires little attention; however, this attention is absolutely essential. Negligence will shorten the battery life and cause premature failure.

Therefore, for convenience of inspection and servicing, the battery is located under the left front fender and is easily accessible through the left side of the engine compartment. The battery is set in a tray and is provided with a sheet metal cover to protect it from cold drafts during winter driving and the under-hood temperatures during summer months. As an added convenience, a hinged lid (A), Figure 29, is provided in the cover directly over the battery cell caps, so that it is merely necessary to lift the lid to take hydrometer readings and add distilled water. The cover may be removed by merely removing two bolts along the top flange and one bolt on the rear flange.

Owners will appreciate that with this arrangement it is not necessary to disturb the driver or other passengers to check the battery for water. All danger of soiling upholstery cloth is also eliminated by this feature.

It is not necessary to add acid to a battery except where leakage has occurred. This must be done in conjunction with charging and should not be attempted except by an experienced battery service man.

Distilled water should be added to the battery at such intervals as will insure the plates being covered at all times. Usually water should be added twice a month in warm weather and monthly in winter. During freezing weather, water should be added just before the car is to be used.

To prevent corrosion of battery terminals and connections, apply a coating of vaseline over the battery posts and strap terminals, making sure the terminals are properly tightened. If corrosion occurs, clean posts and terminals with a soda solution before applying the vaseline. When using the soda solution be sure the cell caps are in place and be careful to prevent the soda from entering the cells. Flush off well with water and dry top of battery.

Inspect the battery ground strap occasionally, as looseness at the battery or fender support bracket or breakage will reduce the output for starting and a complete break will cause failure of ignition system.

Have your Hudson dealer make periodic hydrometer readings to insure good battery condition at all times. An occasional check of the battery and generator charging rate should also be made with an accurate voltmeter and ammeter by your Hudson dealer.

TIRES AND WHEELS

All wheels are demountable at the hub by prying off the outside hub cap and removing the cap screws (A), Figure 29A, in the wheel mounting plate. When replacing the cap screws, the final tightening locks them to prevent loosening in operation. *Be sure the cap screws are drawn down tightly.*

Steel wheels are of the drop base type, permitting installation and removal of the tires without separate locking rings or the use of any special tools. Four-

ply 16 x 6.00 tires are used as standard equipment on all models with four-ply 15 x 7.00 tires as optional equipment.

Removal and Installation

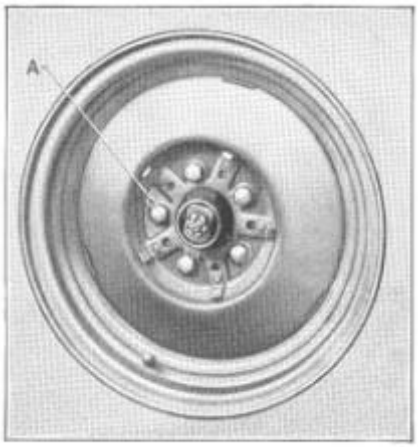

Figure 29A

To remove a tire, deflate the tube. Starting directly opposite the valve stem and working in both directions toward the valve, press both beads of the tire off the rim ledge down into the rim well. Start removal of one bead at the valve stem, working around the wheel in both directions from this point. Pull the valve back inside of the rim, remove inner tube and remove the second bead by the same procedure used to remove the first.

To install a tire, inflate the tube until just rounded out and insert into the casing, placing the valve directly opposite the double balancing mark (two dots) on the side wall of front tires and single balancing mark (one dot) on rear tires. Place one bead over the rim and into the rim well at one point, so that the remainder of the bead can be worked over the rim. Press this bead onto its rim seat and insert valve stem through the hole in the rim. After the valve is aligned in the hole, start application of the second bead directly opposite the valve, pressing it into the rim well and working in both directions so that the section of the bead at the valve is the last to be worked onto the rim.

Readjust, if necessary, so that the valve protrudes straight through the rim, and pull the valve through from outside until seated snugly against the inside of the rim.

Partially inflate and work both beads onto the rim seats, then complete inflation.

Inflation Pressures

In all modern cars, due to high speeds, four-wheel brakes, and the desire to obtain maximum riding comfort and tire life, it is essential that they be checked for pressure at least once each week and oftener when touring.

Lower pressures than recommended will result in excessive tread wear and make the tires more susceptible to bruises and breaks from impact with sharp irregularities in the road surface. Lower than recommended pressures will often affect the proper handling of the car.

Hard steering on turns is ordinarily due to low front tire pressure. Wandering on the road or weaving, tire screeching and the car leaning to one side or rolling on turns at high speed are traceable to low rear tire pressure.

However, on the other hand, higher than recommended pressures reduce the shock-absorbing qualities of the tires, but increase stability at high speeds.

For all-around average load and driving the following inflation pressures are recommended:

Size	Front	Rear
16 x 6.00	24 Lbs.	32 Lbs.
15 x 7.00	22 Lbs.	28 Lbs.

Tire Wear

Due to increased thickness in tire treads, together with higher driving speeds, faster acceleration and more effective braking, the tread will show uneven wear and a cupping effect and is particularly noticeable on the front tires which are subjected to braking action only, while in the case of the rear tires the tread Wear is equalized due to both driving and braking action.

This is natural wear but can be controlled by reversing the direction of rotation of the tires. It is recommended that the right and left wheel and tire assemblies be interchanged when this wear becomes noticeable. Since the height of the tread has been reduced by wear, the flexing will be lessened and this change of position of tires will not only even up the wear but will in most cases prevent reappearance.

Wheel and tire balance is carefully checked during the process of assembling; however, this balance may he changed by removal and reinstallation of tires or by tire tread wear. In order to maintain original stability at high driving speeds, have wheels and tires rebalanced whenever it is necessary to remove and reinstall a tire on a wheel; or, if tire changes are not necessary, balance at intervals of 5,000 miles. This operation can be readily and accurately done by attaching sliding type balancing weights to the inside rim flange. The proper position of these weights can, however, be determined only by the use of a wheel balancing machine.

Spare Tires

The spare tire on Brougham, Convertible Brougham and Sedan models is located on the floor of the rear compartment. In the 3-Passenger, 4-Passenger and Convertible Coupe models the spare tire is located on the floor of the rear deck.

Removal of Spare Tire from Vestibule

To remove the spare tire and wheel from the rear compartment of the body, open the door and remove the mounting screw from the wheel clamp. The wheel and tire can then be pulled out of its compartment.

TOOLS

The tool kit supplied with your car is placed in a separate compartment located to the right of the spare tire compartment. This kit contains several wrenches, hammer, screwdriver, spark plug wrench, jack base and starting crank handle which also serves as a wheel bolt wrench and jack handle.

The starting crank extension is held in place at the top of the compartment opening by means of two spring clips. By stowing the tool kit in its proper location, rattles and annoying noises in the rear compartment can be avoided.

Car Jack

The car jack supplied in the tool kit is of the high lift type, designed to lift both the front and rear ends of the car by placing it under the bumper frame brackets.

Before raising the car, apply hand brakes to prevent car from rolling off the jack while the wheel is being removed. Remove jack, jack base and jack crank from tool kit. Set square end of jack securely in base, insert jack crank in jack and place jack under the bumper frame brackets so that they will engage in the groove in the jack arm.

DRIVING HINTS FOR GASOLINE, OIL AND TIRE ECONOMY

Gasoline Mileage

Your Hudson Terraplane is capable of very good gasoline mileage under normal driving conditions. The mileage you obtain depends largely upon your driving characteristics. Sudden acceleration, long periods of idling the engine, accelerating the engine while the car is standing still, and high-speed driving all tend to reduce gasoline economy.

We quote figures indicating how the normal economy of a car operating at 20 miles per hour will vary under various driving conditions. At 40 miles per hour 29% more gasoline is required than at 20 miles per hour, while 39% more gasoline is required at 50 miles per hour than at 20 miles per hour, 54% more is required at 60 miles per hour than at 20 miles per hour, and 82% more gasoline is required at 70 miles per hour than at 20 miles per hour.

The above figures are representative of actual tests made with a number of makes of cars. (For further information see "Fuel Compensation" on page 44.)

Oil Economy

Oil economy likewise is dependent on the speeds at which the car is driven. At consistently high speeds due to higher operating engine temperature, engine oil is naturally thinned down and usage becomes greater. Statistics based on actual tests of a number of makes of cars indicate oil consumption at 50 miles per hour to be nearly seven times greater than at 30 miles per hour.

Tire Wear

Fast acceleration, sudden braking from high speeds, under-inflation, and continued fast driving all tend to decrease tire mileage. Tire wear at 50 miles per hour is said to be twice as great as at 40 miles per hour.

Generally speaking, normal driving and handling of your car will result in increased gasoline, oil and tire mileage. While on the other hand, high-speed driving is costlier, as it increases gasoline and oil consumption, reduces tire mileage and places greater strain on the entire car.

In cases where high-speed driving is necessary, owners can minimize gasoline consumption by avoiding sudden bursts of speed and depressing the accelerator pedal evenly. Tire wear can be minimized by using good judgment in handling the brakes when approaching curves or turns. Even pressure on the brake pedal will be as effective (if not more so) as jamming on the brakes.

OPERATION

Through a thorough knowledge of the various features of your Hudson Terraplane car you can derive a great deal of pleasure and comfort in motoring. We, therefore, urge you to take a few minutes to read the following instructions before driving your car:

Figure 30

Seat Adjustment

Your car was built for comfort, one of the prime factors in present-day motoring. Provision has been made in the front seat construction to provide for an adjusting mechanism to arrange the seat in any desired position to suit the individual driver's requirements.

By raising the lever shown in Figure 30 , the front seat may be moved forward or backward.

When driving for long periods, which is not unusual these days, it is often desirable to change the seat position, which tends to change the body posture and maintain a relaxed position.

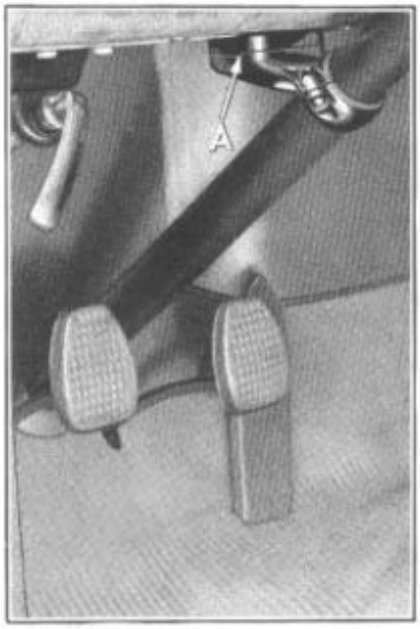

Figure 31

Steering Wheel

The steering wheel has been designed to afford a maximum of vision to the instrument panel, particularly the speedometer located in the left-hand compartment door. The rim provides a natural grip to prevent cramping of the hands.

To insure the best steering wheel position, a shim adjustment is provided in the steering gear column bracket. By removing the shim (A), Figure 31, the height of the steering wheel may be raised approximately $^{5}/_{8}$ inch. An additional shim may be installed to lower the wheel position. Your Hudson dealer will be glad to make this adjustment should it be required.

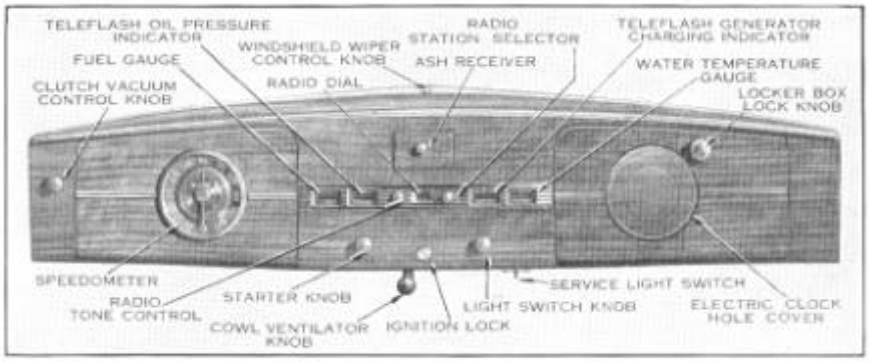

Figure 32

Instruments

The instruments on your 1938 Hudson Terraplane car have been arranged to provide greater convenience and to place those instruments which are of greatest importance as near to the driver's line of vision as possible. See Figure 32.

Speedometer

The speedometer, as you will note, has been placed directly ahead of the driver in the left-hand locker box door, and, by arrangement of the steering wheel spokes, it is clearly visible. In this location it is unnecessary for the driver to take his eyes off the road ahead to read the dial.

Water Temperature Gauge

The water temperature gauge is located at the extreme right of the instrument cluster and registers the temperature of the cooling fluid in the engine block.

Teleflash Generator Charging Indicator

The teleflash generator charging indicator, located to the left of the water temperature gauge, at a glance indicates the condition of the generator charging circuit. A small dial is provided in the indicator with the word "Not" located in the center. As the ignition key is turned on, or when the engine is operating at idle speed, the word "Not" will be illuminated by a small bulb located behind the lens.

Should the light turn on behind the small lens when the engine is operating above idle speed, it indicates difficulty in the generator charging circuit and the matter should immediately be checked by your Hudson dealer.

This type of indicator is used in preference to the conventional ammeter, inasmuch as the generator charging rate is controlled by the voltage regulator and ampere readings on the ammeter are misleading.

Teleflash Oil Pressure Indicator

The teleflash oil pressure indicator is located to the left of the teleflash generator charging indicator, and indicates at a glance the condition of the lubrication system.

A small lens with the word "No" is located in center of the indicator with a small light bulb placed behind it. As the ignition key is turned on, the word "No" is illuminated, indicating that the oiling system is not functioning. Immediately after the engine is started the small light should turn out, indicating that the oil pump is operating satisfactorily. A slight flickering of the light at idle speed should cause no concern; however, should the light flicker or turn on while the engine is running above idle speed, the engine should be turned off and the source of the difficulty ascertained.

Fuel Gauge

The fuel gauge is located at the extreme left of the instrument cluster and indicates the fuel level in the gasoline tank.

Ignition Switch

The ignition switch is located in the center of the group just above the lower flange of the instrument panel, Figure 32. Turning the key to the right or clockwise direction turns on the ignition.

Starter Button

The starter button is placed to the left of the ignition lock, Figure 32, within easy reach of the driver. The engine can be cranked only by pressing the button after the ignition key has been turned on.

(Note: The engine may be cranked with the starter from the engine compartment by removing the small cap at the back of the solenoid switch located on top of the starter and depressing the plunger.)

Light Switches

The main light switch, which controls the head, tail, instrument lamps and side lamps when car is so equipped, is located to the right of the ignition switch, Figure 32.

The switch has three positions: The "off" position is to the extreme left. Clockwise rotation to the next position turns on parking, instrument and tail lamps, and extreme right position turns on bright, instrument and tail lamps.

When the headlamps are in bright position, the beam is controlled by the foot switch located on the toe board left of the clutch pedal. By depressing the switch with the left foot and releasing it, the headlight beam may be deflected down and to the right curb line for safe passing, giving the oncoming driver maximum relief from glare, or to the country driving position which projects the light beam a sufficient distance in front of the car to provide maximum illumination.

The front compartment light switch on Super models is of the sliding type and is located on the right side of the lower flange of the instrument panel.

The dome lamp switch on Sedans, Broughams and Coupes is located on the right-hand door lock pillar and is of the sliding type.

Fuses

To provide for greater accessibility the fuse block, Figure 33, is separate from the main light switch and is located on the lower flange of the instrument panel. It has two fuses, one for the lighting switch and the other for accessories which may be added. The accessory fuse is provided with two terminals to make available sufficient capacity for connecting accessories.

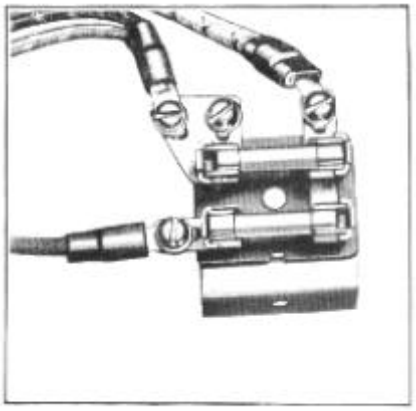

Figure 33

Ash Receiver

An ash receiver of the drawer type is conveniently located near the top in the center of the instrument panel, and may be removed to empty by pressing down the lip inside the receiver.

Windshield Wiper Control

The windshield wipers are controlled by a knob located in the center of the top surface of the instrument panel. Turning the knob to the left when the engine is running places the wipers in motion. The off position is to the right or clockwise.

Automatic Clutch Control

On cars equipped with automatic clutch control, which is optional equipment on all models, a switch is provided on the left-hand side of the instrument panel, Figure 32. When the knob is pushed in, the clutch is operated automatically. The clutch is then disengaged merely by raising the foot off the accelerator pedal and re-engaged by depressing the accelerator pedal.

Locker Box Lock—Super Models Only

The locker box is fitted with a locking cylinder. The lock is unlocked by inserting the key, turning it to the right and pressing the center of the lock. See Figure 32.

Cowl Ventilator

The cowl ventilator operating rod is located under the center of the instrument panel and is adjustable to vary the degree of opening. See Figure 32.

Clutch Pedal

The clutch pedal is located to the left cf the steering gear column and is used to disengage the clutch in the conventional manner by depressing it fully to the floorboard.

Should the car be equipped with the Electric Hand, the clutch pedal must be depressed fully to the floorboard when starting the engine.

Figure 33

"Riding" or resting the left foot on the clutch pedal while the car is in motion should be avoided, as this produces a partially disengaged clutch condition and will result in loss of power and eventually damage to the clutch driving disc.

It is good practice to depress the clutch pedal to the floorboard each time the engine is started, as this releases the engine drive from the transmission and permits the battery to crank the engine more rapidly and facilitate starting, particularly in cold weather.

Brake Pedal

The brakes are operated on all four wheels by hydraulic pressure exerted by foot pressure applied to the brake pedal located to the right of the steering gear column.

An exclusive safety feature in the braking system of your Hudson Terraplane car provides for mechanical operation of the rear brakes automatically in event of derangement of the hydraulic system. By this means the brakes are automatically applied by additional travel of the foot pedal.

Parking Brake

The hand or parking brake system utilizes the rear wheel brake shoes operated by means of heavy non-stretching steel cables through an equalizer.

Hand brakes are applied by pulling upward on the lever grip located under the instrument panel to the left of the steering gear column.

The brakes may be released by turning the handle slightly to the right and allowing it to return automatically to released position. See Brake Control Layout, page 64.

Accelerator Pedal

The foot accelerator, which controls the engine speed, is of the rubber covered treadle type, conveniently located to the right of the brake pedal. The accelerator pedal should never be "pumped," as this will cause excessive raw gasoline to be injected into the engine through the carburetor accelerating pump feature and prevent proper starting.

Transmission Control

The transmission operation conforms to the standard shift. The clutch must be disengaged (either by depressing the clutch pedal or by removing the foot from the accelerator pedal on cars fitted with Automatic Clutch Control) before shifting gears.

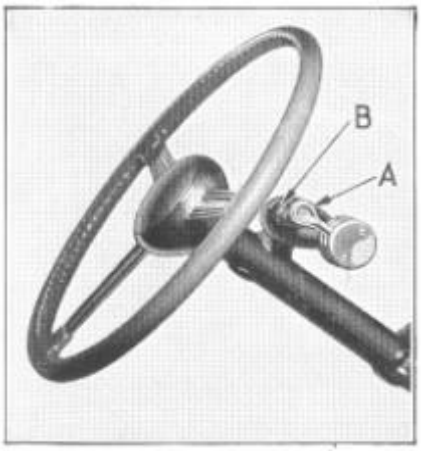

Figure 34

ELECTRIC HAND

The Electric Hand Transmission Control, which is a factory option, is a means of simplifying the method of shifting gears. An abutment indicator feature is incorporated whereby the driver's attention is called to the fact that a gear abutment has taken place in shifting into low or reverse gear from neutral.

The operation of the Electric Hand is controlled by a small lever attached to a mounting on the steering column, just below the steering wheel. The gear is selected merely by moving the small lever (A), Figure 34, with a finger of the right hand. Then, by depressing the clutch pedal fully to the floorboard, the actual shifting of gears is accomplished.

The method of selecting gears, that is, the positions to which the selector lever is moved, is in the same rotation as that used in the conventional manual shift. The neutral position of the selector lever is to the extreme right in line with the central opening of the "H" plate.

A small "off and on" switch (B) is provided on the selector switch to prevent tampering with the shifting mechanism, and is also used to make the "Electric Hand" inoperative when the car is being serviced.

We suggest the following procedure in operating the "Electric Hand" equipped car:

(a) Be certain the "off and on" switch is in "on" position.

(b) Depress clutch pedal fully to the floorboard.

(c) Turn ignition switch "on."

(d) Press starter button.

Now with the engine running and the clutch disengaged (if automatic clutch control is being used, it is not necessary to hold the clutch disengaged with the foot after the engine is started; simply take the foot off the accelerator pedal), move the selector lever to the low or reverse gear position, whichever is desired, and the shift should be accomplished immediately. Allow the clutch to engage while depressing the accelerator pedal and the car will move normally in the gear selected.

If for any reason the low and reverse gears should fail to mesh properly as the desired position is selected from neutral, a tension is automatically applied to the selector lever which is evident to the driver if the finger is resting on the lever; or, in the event that the finger is removed after the selector lever is placed in position, it will automatically return to neutral.

The action just described is termed as "tooth abutment indication" and, in order to complete the shift, it is necessary to raise the foot slightly from the clutch

pedal (or, if the car is equipped with Automatic Clutch Control, depress accelerator lightly) to obtain proper gear mesh. Then repeat the gear selection procedure.

When it is desired to make another shift, simply depress the clutch pedal, move the lever into the gear position desired, and allow the clutch to re-engage.

It should be remembered that, when changing from one gear to another, it is always necessary to depress the clutch pedal fully to the floorboard when the actual shift of gears is desired (not necessary to depress clutch pedal, but merely raise the foot from the accelerator pedal when Automatic Clutch Control is used).

The need of a *gear shift lever* is eliminated on cars equipped with "Electric Hand"; however, a lever is provided in a pocket mounted on the inside of the right-hand front door hinge pillar should it be necessary to shift the gears when the engine is not running. Inasmuch as the operating force of the "Electric Hand" is vacuum, and this is not available unless the engine is running, it is impossible to shift gears unless the hand gear shifting lever which is provided is used. This lever may be used by removing the cap in the floor mat, which exposes the top of the transmission control. Any desired shift can be made with this lever by simply depressing the clutch pedal to disengage the clutch. The "off and on" switch on the selector mounting should be turned "off" while shifting lever is in place.

Selective Automatic Shift

When the Automatic Clutch Control is combined with the Electric Hand it provides a Selective Automatic Shift by means of which the clutch is operated and gears are shifted without physical effort other than that required to flick the finger tip control lever into the desired gear position.

Hudson Hydraulic Hill-Hold

When the car is equipped with Hydraulic Hill-Hold, in addition to the Automatic Clutch Control, the clutch pedal must be depressed manually in order for the Hydraulic Hill-Hold to function with the car at rest on a grade. This is necessary in view of the fact that the Hydraulic Hill-Hold is actuated by movement of the clutch pedal which remains in the engaged position when the Automatic Clutch Control is in operation.

STARTING THE ENGINE

Series 81 (Manual Choke)

Pull the choke out, turn the ignition switch on, and push starter button. Return the choke control gradually as the engine warms up. Do not keep the choke out any farther than necessary for smooth running of the engine.

Should a flooded condition of the carburetor develop through operation of the accelerator pedal or excessive use of the choke, push the choke control in and depress the accelerator pedal fully for further cranking of the engine.

Series 82 (Automatic Choke)

The carburetor is equipped with an automatic choke control which provides the correct mixture of gasoline and air for starting without resort to manual choking.

The use of proper grades of lubricants, particularly in cold weather, is helpful in starting operations.

Start engine as follows:

1. Depress accelerator pedal slowly one-quarter to one-half way and release. This places the high idle stop in position to prevent stalling during the starting and warm-up period.
2. Depress clutch pedal fully to floorboard to disengage the clutch to permit the battery to crank engine at greater speed.
3. Insert key in ignition lock and turn to right.
4. Press starter button.

If the engine does not start after 15 or 20 seconds of cranking, release the starter button and after a few seconds repeat the starting operation.

Never pump the accelerator pedal before or after starting operations, as this will result in flooding the engine with raw gasoline. Should this condition he experienced, the engine can be cleared of the raw gasoline by cranking the engine with the accelerator depressed fully to the floorboard.

Failure of the engine to start when the above procedure is followed can usually be traced to improper engine tune-up or, in cold weather, a combination of this and improper lubricants. The car should then be thoroughly checked by your Hudson dealer for the source of the difficulty.

Carbon Monoxide Gas

Carbon monoxide, a poisonous gas, is ever present in the exhaust of an internal combustion engine. Avoid starting or running the engine in a closed garage—always have the doors wide open.

ENGINE

The Hudson Terraplane Deluxe "L" head-type engine, developing 96 horsepower with standard cylinder head, and 102 horsepower with super power dome head, and the Super "L" type engine, developing 101 horsepower with standard cylinder head, and 107 horsepower with super power dome head, have been designed to provide the demands of the most critical car buyer from the standpoint of unusual power, efficiency and economy.

These features are obtained through the use of a chromium alloy cylinder block giving great strength and wear-resisting qualities, and the use of silicon aluminum alloy cam ground pistons fitted to .002" clearance. Silchrome steel valves, seating in efficiently cooled valve seats machined in the cylinder block, provide freedom from frequent valve grinding and loss of power.

The use of single down-draft carburetor on Series 81, and down-draft duplex carburetor on Series 82, with patented radial flow intake manifold, provides unusual economy and performance on hills as well as the straightaway.

Hudson Duo-flo Automatic Lubricating System, insuring proper lubrication from the first turn of the engine, combined with a fully compensated crankshaft, provides unusually long life and smoothness of operation.

The engine mounting is of three-point type with rubber grommets at both front corners and a live rubber block at the rear end.

Crankshaft, Connecting Rods and Pistons

The crankshaft is a heavy forging with integral compensating weights. Full compensation, together with five main bearings and a torsional dampener mounted on the front, insures free running of the crankshaft under all operating conditions. The main bearings are removable bronze-backed, virgin babbitt, and are fitted to .001" clearance and provided with shims for adjustment. The working member of the dampener is rubber, fully enclosed, requiring no adjustment.

The connecting rods are steel forgings with a heavy lower section to provide rigid support for bearings, which are of spun virgin babbitt fitted with a clearance of .001".

The close fitting, hardened steel connecting rod bolts are securely locked in place through the use of special "Palnut" locking nuts, having spring tension against the regular hex connecting rod bolt nut.

The positive spring tension, applied to the regular hex nut in place of the former practice of using cotter keys, positively assures the connecting rod bolt nut from loosening.

The upper end of the connecting rod is fitted with a bronze bushing to which the piston pin is fitted with .0003" clearance.

The pistons are of silicon aluminum alloy of new design. This alloy is hard, lighter than aluminum, and dissipates heat rapidly. The piston is "T" slotted to compensate for expansion; cam ground to give full bearing on the cylinder wall; and is fitted with two compression rings and one oil control ring above the piston pin and one oil control ring below. With this arrangement all of the rings are located somewhat lower down on the piston, with the result that cooler operating conditions and better oil control are obtained. The piston is attached to the connecting rod by a full floating pin which is honed to give a perfect bearing in the diamond-bored piston bosses. The piston pin is a snug fit in the piston bosses when the piston is heated to 200° F.

This piston design permits fitting to the cylinder with a clearance of .002". The pistons are removable either from the top or bottom of the cylinder bore.

Camshaft, Tappets and Valves

The camshaft is Electric Furnace alloy with hardened bearing and cam surfaces.

The tappets are of the roller cam type which closely follow the cam, thus providing for quiet, long-lived operation. The tappets are adjustable to provide proper clearance for the silchrome steel valves.

Valve springs are of high-grade steel and are encased in steel cups to maintain alignment and prevent spring flutter at high speed.

Lubrication System

The Hudson Duo-flo Automatic Lubrication System gives positive flow of oil to every working part of the engine from the moment of starting throughout the period of operation. It also, through in-built features, conditions the oil so that all oil supplied by the oscillating plunger pump is cooled and freed of solid matter and diluents.

There are only two moving parts in the entire system—the oscillating plunger and the drive shaft of the pump, which is driven by gears directly from the camshaft. There are no small drilled passages to clog or restrict free flow of oil when cold. The oil pipes (3 in number) are all located outside the engine and can readily be removed should there be any necessity to do so.

Crankcase Ventilation and Oil Conditioning

Proper crankcase ventilation is essential to provide for removal of diluents, consisting mainly of unburnt gasoline and condensation, which have harmful effects on engine oil. Two large crankcase ventilators are provided on the right side of the engine for this purpose. The temperature in the crankcase is near the boiling point of these diluents and, with the agitation of the moving parts of the engine, they are readily vaporized and removed by the slight suction maintained on the ventilators.

The flow of oil after returning to the crankcase is controlled so that it circulates around passages adjacent to the cool outside walls of the reservoir and is cooled before passing through the filter, which removes all solid matter before the oil is recirculated by the pump.

The filter surfaces are so placed that they are flushed each time the crankcase is drained and, therefore, require no special cleaning nor do they have to be replaced.

Valve Tappet Adjustment

To assure proper valve clearance under all operating conditions, it is essential that tappets be adjusted while the engine is at normal operating temperature.

To check or adjust tappets, remove the engine side plates (right side of engine below intake manifold) and insert a .006" feeler gauge between the top of the tappet screw and bottom of valve stem of intake valves while engine is running. Intake valves are numbers 2-4-5-8-9-11, counting from the front of the engine. An .008" feeler gauge should be inserted between the top of the tappet screw and bottom of valve stem of exhaust valves while engine is running. Exhaust valves are numbers 1-3-6-7-10-12, counting from front of engine.

Proper clearance is obtained by turning the tappet adjusting screw to the right or clockwise direction to increase clearance, and to the left or counter-clockwise direction to decrease clearance. The tappet adjusting screw lock nut should be securely tightened after adjustment.

Proper engine performance and valve life depend on adjustments being made accurately and according to specifications.

Valve tappet adjustment can be facilitated by removing the right front wheel and fender dust shield.

Valve Timing

The valve timing is determined by the meshing of the crankshaft and camshaft gears. The tooth of the crankshaft gear with the punch-mark on the front face should mesh between the two punch-marked teeth of the camshaft gear.

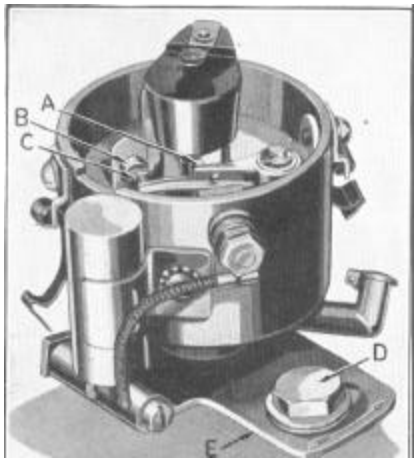

Figure 35

Distributor

The distributor, Figure 35, mounted on the right side of the engine, is of the full automatic advance type, employing a single six-lobe cam and single breaker arm. A graduated advance plate (E), Figure 35, is provided to permit manual adjustment of distributor to provide for variation in octane rating of fuels to prevent detonation. (See "Fuel Compensation," page 44.)

Breaker Points

The breaker points should be adjusted to a .020" maximum opening. The points should be clean and set squarely on each other. Should the points become pitted, it is necessary to remove them and grind smooth or replace with new ones. The grinding should be done in a special machine to insure proper seating. This operation can be performed by an Authorized Hudson Service Station.

Filing or honing of the points will remove oxidization from the points but, due to the hardness of the tungsten alloy used, this method is not practical for removing deep pits.

Breaker Point Adjustment

Crank engine by hand until the fibre block (A), Figure 35, of the breaker arm is on the highest point of the cam. The gap between the breaker points should be exactly .020", measured with a feeler gauge.

If adjustment of the gap is required, loosen lock nut (B) and turn adjusting screw (C) until the proper gap is obtained. Tighten lock nut (B) and recheck the gap.

Ignition Timing

The ignition timing is determined by the position of the piston when the distributor breaker points begin to open. In general, the points should begin to open when the piston reaches its highest position in the cylinder. This position of the piston is referred to as upper dead center and is indicated by U. D. C. Marks are placed on the flywheel to indicate when this position of the piston has been reached.

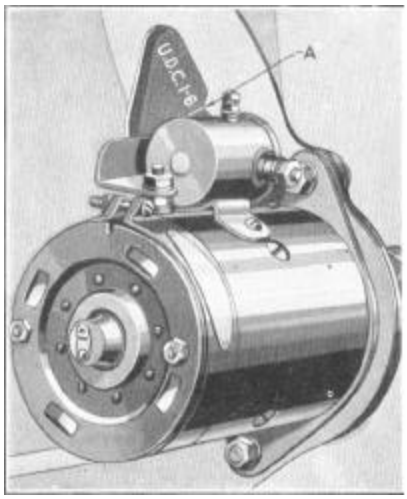

Figure 36

Since the piston in a four-stroke cycle engine may be completing the exhaust stroke, or completing the compression stroke and ready for the power stroke when it reaches U. D. C., it is necessary to determine the stroke as well as the piston position.

To determine this, remove the spark plug from number one (front) cylinder. Place the finger over the spark plug hole and crank the engine slowly, using the hand crank. Air pressure against the finger indicates that the piston is coming up on the compression stroke. After this is felt, continue cranking the engine slowly until the mark "U. D. C. 1 and 6" is directly in line with the pointer on timing inspection hole in the rear support plate of the motor, as indicated at (A), Figure 36. The piston is then at U. D. C. and ready to move downward on the power stroke.

Setting Ignition Timing

Loosen distributor clamp screw (D), Figure 35, and turn the distributor housing clockwise to the limit of the slot in the clamping plate (E). Remove the central cable from the distributor cap and place the bare end about 1/8" from the intake manifold. With the ignition turned on and the U. D. C. 1-6 mark on the flywheel in line with the pointer on the inspection hole, Figure 36, turn the distributor body counter-clockwise slowly just until a spark jumps from the high tension wire to the intake manifold. Tighten clamp screw (D), Figure 35, replace central cable in distributor cap, and clamp cap on distributor.

When the distributor cap is put in place, the metal strip on the rotor arm should he directly under the terminal to which number one spark plug wire is attached. The other cables should be in the cap terminals in the order 5-3-6-2-4, following in a clockwise direction. The cable in the center terminal of the distributor cap should go to the central (high tension) terminal of the ignition coil.

Fuel Compensation

The foregoing operations give dead center timing. This, however, due to variations in fuel characteristics (octane rating), is only approximately correct. To get the correct setting the car should be driven until the engine has reached its normal operating temperature. Allow the car to slow down to 7 miles per hour in high gear on a level, hard-surfaced road, then depress the accelerator rapidly to its limit of travel. As the car accelerates from 10 to 15 miles per hour, a slight spark knock should develop. If a knock is not heard, loosen distributor clamp screw (D), Figure 35, and turn the distributor counter-clockwise one graduation of the clamping plate (E), and repeat the acceleration test. Repeat this operation until the knock is heard. The higher the octane rating of the gasoline being used, the greater the advance required to get maximum performance and fuel economy. However, the timing should not be set more than 3/4" ahead of the upper dead center mark on the flywheel.

Starting Motor

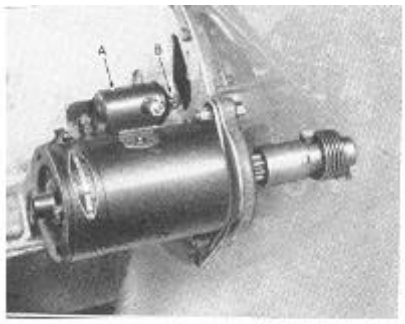

Figure 37

The starting motor, Figure 37, located at the left rear corner of the engine, is operated by a solenoid switch (A) mounted on the top of the starting motor. Control of the starter is through a remote control switch located on the instrument panel, Figure 32.

The drive to the engine is through the Bendix drive located at the rear of the starter which is brought into engagement by the rotation of the starting motor.

It is necessary to turn on the ignition switch to engage the starter, and, in addition, on cars equipped with Electric Hand it is necessary to depress the clutch pedal.

The starter may be engaged manually by unscrewing the cap (B) on the solenoid switch and depressing the plunger.

Generator

The generator, Figure 38, mounted at the left front corner of the engine, is of the fully ventilated type which permits high output. It will be noted from the illustration that the cool air is drawn through the generator from the rear end by means of a suction fan located at the front of the generator.

The maximum generator output is reached at approximately thirty-five miles per hour, and virtually constant high output is maintained at high car speeds.

The maximum output on Series 81 models equipped with radio and all Series 82 models is controlled by the third brush and an external Voltage Regulator, which is mounted on the left side of the dash, under the hood. The maximum generator charging rate with hot generator, that is, after the engine has been

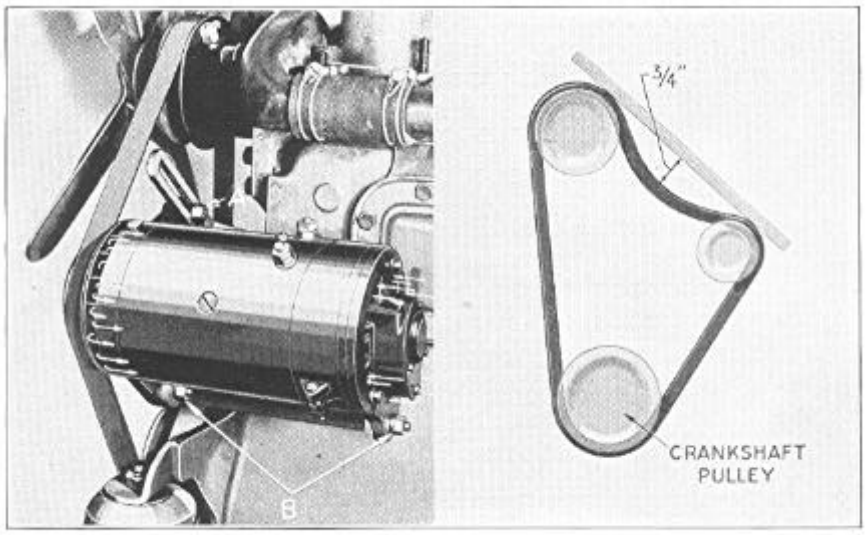

Figure 38

run for 15 to 20 minutes indoors, should be 29 amperes, while the minimum should not be lower than 26 amperes. This high charging rate can be used safely, as the Voltage Regulator automatically reduces the charging rate when battery is fully charged. When the battery voltage is low, the maximum possible generator output is available to charge the battery. As the battery voltage increases, the charging current gradually tapers off and only a small amount flows when the battery is fully charged. In this manner it is possible to recharge the battery to its charged state in the shortest possible time without the dangers of overheating which would be present without a controlled high output generator.

The maximum output on Series 81 models not equipped with radio is controlled by the third brush. On these models the maximum charging rate with hot generator, that is, after the engine has been run for 15 or 20 minutes indoors, should be 18 amperes, while the minimum should not be lower than 16 amperes. Higher charging rates should be avoided to prevent damage to the electrical system.

Fan Belt

The generator is driven by the "V" type belt, which also drives the fan and water pump. This belt must be kept sufficiently tight to prevent slippage on the pulleys. When properly adjusted, it should be possible to depress the belt 3/4", as illustrated in Figure 38, at a point midway between the fan pulley and generator pulley. This adjustment provides sufficient tightness to prevent slippage without causing undue wear of the fan and generator bearings.

To tighten belt tension, loosen nut (A) and swing generator away from the engine until correct position is obtained. Tighten nut (A), also the two lower mounting cap screw nuts **(B).**

CARBURETOR AND FUEL SYSTEM

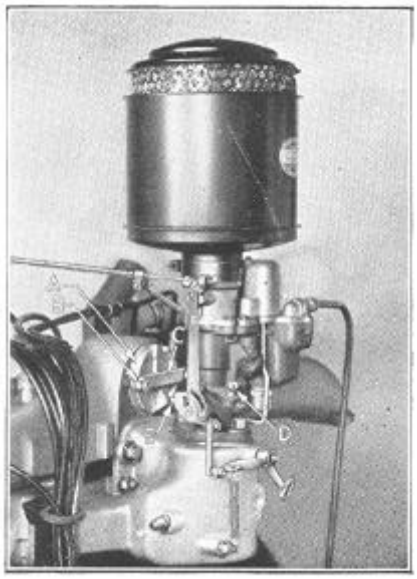

Figure 40

Carburetor—De luxe Models

The carburetor on De luxe models is of the single manual choke type, employing a vacuum-controlled metering pin feature which provides high efficiency and economy of operation.

The position of the metering pin, being controlled by engine vacuum, provides a rich mixture at cranking speed when vacuum is low, obviating the necessity of excessive choking. This feature likewise prevents the use of more than the required amount of fuel when the operator presses the accelerator to open the throttle.

Manifold Heat Control

The manifold heat control valve (A), Figure 39, is adjustable for winter and summer driving. The winter setting is indicated by the letter "W" on the exhaust manifold above the valve. For summer driving, except in areas where extreme heat conditions are experienced, the pointer on the valve should be directed straight upward. For extremely hot areas the pointer should be set to letter "S" or to the front of the engine.

The control valve is adjusted by loosening nuts (B) sufficiently to relieve pressure of bar (C). Be sure to tighten nuts securely after valve is moved to prevent exhaust leaks developing.

Carburetor—Super Models

The carburetor, Figure 40, on your Hudson Terraplane Super car is of the down-draft Duplex type, incorporating Climatic Control (self-controlled choke), accelerating pump and automatic heat control.

Two metering pins are provided, each of which proportions the fuel mixture for its respective carburetor barrel. One barrel supplies the four center cylinders and the other barrel supplies the two cylinders at each end of the motor. By this feature improved fuel distribution is obtained, resulting in increased efficiency.

Carburetor Choke

The automatic choke mechanism provides a cam (D), which, when the accelerator is depressed before starting the engine, swings into place and holds the throttle open the correct amount for starting. As soon as the accelerator is again depressed after starting the engine, this cam is pulled out of place and the throttle drops down to the "fast idle" position, which gives enough motor speed to prevent stalling during the warm-up period.

The automatic choke valve is operated by a thermostatic coil spring contained in an insulated housing (A), Figure **40,** which is controlled by hot air drawn off the exhaust manifold through stove (B) and tube (C) which lead to the insulated housing.

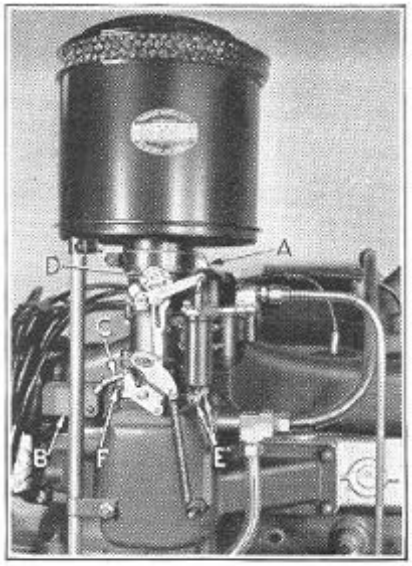

Figure 40

The automatic choke feature provides accurate positioning of the choke valve for all starting and operating conditions. At 75° Fahrenheit the thermostatic spring will just close the choke valve. At lower temperatures the additional tension necessary for cold starting is automatically provided. As the engine warms up, the heat drawn into the insulated housing (A) gradually releases the spring tension on the choke valve, providing automatically the proper valve position for the warm-up period.

Manifold Heat Control

The heat control valve is controlled by a thermostatic spring and is automatic in operation, supplying the correct amount of heat to the intake manifold under all operating conditions.

CARBURETOR AIR CLEANERS

Standard Type

To provide for long engine life and prevent dust and abrasives from entering the carburetor and engine, an air cleaner has been provided on the carburetor.

The standard type contains a fine copper wool filter unit which is saturated with engine oil to which the particles of dust and foreign matter adhere as the air is drawn into the air cleaner through the opening to the rear of the unit.

Oil Bath Type

(Optional equipment or accessory)

A new type carburetor air cleaner termed the Oil Bath type has been developed for cars operated continuously on gravel or dirt roads or in districts where dust storms are prevalent. This air cleaner is available as optional equipment or accessory.

The air cleaning process of this type air cleaner is somewhat different from the conventional air cleaner.

As the air enters the cleaner body through the opening at the top, it is directed to the oil located in the reservoir at the bottom of the cleaner body. The air velocity and agitation of the oil due to movement of the car tends to keep the filter unit bathed in oil at all times.

As the surplus oil drains from the filter unit, it tends to carry with it the particles of dirt clinging to the filter unit, which accumulate at the bottom of the reservoir, thereby permitting only clean air to enter the carburetor.

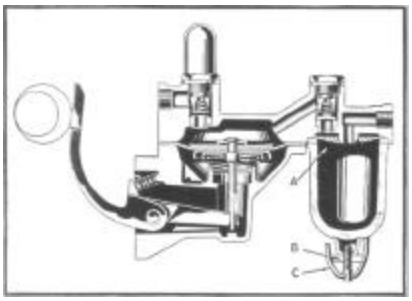

Figure 41

This type of air cleaner is highly efficient and can be obtained from your Hudson dealer. See page 19 for Cleaning and Oiling Instructions.

Fuel Pump (Standard)

Delivery of gasoline to the carburetor is by means of a diaphragm type fuel pump, Figure 41, operated from an eccentric on the camshaft.

A filter screen and sediment bowl (A) are provided to prevent foreign matter in the gasoline from reaching the carburetor. This bowl and screen should be removed and cleaned every 2,000 miles or oftener if the accumulation in the bowl necessitates it.

To remove the bowl and screen, loosen nut (B) and swing strap (C) to one side. Before replacing parts, carefully examine the screen and bowl gasket and replace if damaged.

Combination Fuel and Vacuum Pump

(Optional or accessory)

The combination fuel and vacuum pump, Figure 42, which is available as optional equipment or an accessory, incorporates a vacuum pump (D) to provide greater vacuum to improve operation of the windshield wipers on acceleration, and particularly in negotiating upgrades when engine vacuum is generally low.

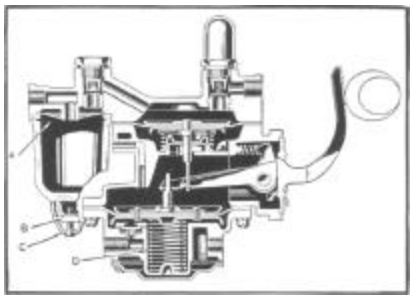

Figure 42

The operation of the combination pump is similar to that of the standard fuel pump.

The same cleaning instructions applying to the standard fuel pump likewise apply to the combination fuel and vacuum pump.

GASOLINE TANK

The gasoline tank is located at the rear of the car and has a capacity of 16½ gallons (13¼ Imperial gallons, or 62½ liters).

A filter screen is provided at the bottom of the tank, surrounding the outlet pipe, to prevent foreign particles from reaching the fuel system.

An electric gauge located at the front of the tank indicates the fuel level on the gasoline level gauge located on the instrument panel.

A drain plug is provided at the rear left corner of the gasoline tank to permit draining the tank periodically to remove condensation and foreign particles that may accumulate in the tank.

ENGINE TUNING

Do not attempt to adjust the carburetor alone. Perform all the following operations in the order given:

1. Clean spark plugs and adjust gaps to .032".
1. Clean distributor breaker points and adjust to .020" maximum opening, as described under "Breaker Points" (page 42).
1. Check battery and ignition wiring, being sure wires are pressed down in their sockets and insulation is in good condition and battery terminals clean.
1. Set ignition timing as described on page 43.
1. On Series 81, turn carburetor idling screw (D), Figure 39, into its seat and back out exactly one turn.

   On Series 82, turn the two idling screws (E), Figure 40, into their seats and back out exactly three-quarters of a turn.
2. Start engine.
2. When engine has reached normal operating temperature, adjust intake valve tappet clearance to .006" and exhaust valve tappet clearance to .008".
2. On Series 81, set carburetor throttle stop screw (E), Figure 39 (on Series 82 (F), Figure 40), so that engine idles at a speed equal to a car speed of seven miles per hour in high gear.
3. On Series 81, adjust carburetor idling screw (D), Figure 39, for smooth idling. The final adjustment should be from one-quarter to one turn of the screw from its full in position.

   On Series 82, adjust carburetor idling screws (E), Figure 40, for smooth idling. The final adjustment should be from one-quarter to three-quarters turn out from its full in position.
4. Road test for final ignition timing as described under "Fuel Compensation," page 44.

If the above operations, properly performed, do not give normal engine performance, the car should be taken to your Hudson dealer for mechanical inspection.

COOLING SYSTEM

Operation

The cooling system has been designed to provide proper cooling under all operating conditions. It is of the pressure pump circulation type. Super models are provided with a thermostat and by-pass for temperature control. This provides positive circulation, combined with a short warm-up period.

When the water in the cooling system is cold, the thermostat located in the cylinder head outlet causes the water to flow through the by-pass directly to the pump inlet and back through the cylinder block. Therefore, during the warm-up period, water does not circulate through the radiator.

However, as the water temperature increases and has reached 150° Fahrenheit, the thermostat begins to open and gradually blocks oft the by-pass. The thermostat is fully opened at 185° and the circulation is then through the radiator.

A special thermostat is available and may be installed in the water outlet of De luxe models should temperature control be desired.

Water Pump

The water pump is of the vane type, located on the front of the cylinder block and driven by the "V" belt, which also drives the generator.

An improved type packing gland of the permanent type is incorporated in the pump and requires no adjustment.

It is essential that the fan belt be adjusted only to the specified tension as outlined under "Generator" on page 45.

Draining the Cooling System

To drain the cooling system completely, open the draincock at the bottom of the radiator (left side under hood), and also remove the pipe plug from the cylinder block (left side to rear of side cover plate).

Care of the Cooling System

To maintain proper cooling efficiency, it is essential that the radiator be kept clean of scale and corrosion, due to electrolytic action of water-containing minerals and also deposits of minerals when the water is heated.

Unless special steps are taken to prevent these deposits, the cooling system should be cleaned twice a year. This cleaning is most effective when the reverse flushing method is used to remove deposits after they have been loosened by the use of Hudson Radiator Cleaner. Reverse flushing requires the use of special equipment operated by compressed air, and you should have this done by your Hudson dealer.

To clean the radiator, run the engine a few minutes to circulate the water and stir up loose sediment. Stop the engine and drain all water from the system.

Dissolve the contents of a container of Hudson Radiator Cleaner in a bucket of hot water (be sure the material is completely dissolved). Pour the solution into the radiator, then fill the radiator almost full of water.

Install filler cap tightly, cover the radiator and run engine for about twenty minutes, but avoid boiling. Stop the engine and completely drain the system. Reverse flushing will remove all the sediment the solution has loosened.

It is important that all traces of the cleaning solution be removed, as they will have a detrimental effect if left in the system.

After thoroughly flushing the cooling system, the addition of Hudson Rust and Corrosion Inhibitor to the water will neutralize the action of any cleaning compound which may not have drained out. It will also prevent corrosion of the cast iron and other metals in the cooling system.

Hudson Radiator Cleaner and Inhibitor can be obtained from any Authorized Hudson dealer.

ANTI-FREEZE

Before putting any anti-freeze in the cooling system, it should be thoroughly cleaned and all hose connections and gaskets checked for leaks.

The types of anti-freeze recommended are: Alcohol, Glycerine, and solutions of Ethylene Glycol marketed under various trade names.

Solutions containing calcium salts or other ingredients which promote electrolytic action should be avoided. They will cause serious corrosion of the solder joints of the radiator. Also avoid the use of solutions containing glucose or honey, as they will tend to clog the system; and of kerosene or fuel oil which, when hot, liberate inflammable vapors.

The following table gives the quantities of the recommended solutions required for protection against freezing at various temperatures:

Temperature Fahreheit	Alcohol U. S. Quarts	Radiator Glycerine (G.P.A. or Equivalent) U. S. Quarts	Ethylene Glycol (Prestone or Equivalent) U. S. Quarts
+20°	2½ (2 I.Q.—9½ L)	5¾ (4¾ I.Q.—21¾ L)	2½ (2 I.Q.—9½ L)
+10°	3¾ (3 I.Q.—14 L)	7¼ (6 I.Q.—27½ L)	3½ (3 I.Q.-13¼ L)
0	5 (4 I.Q.—19 L)	9 (7½ I.Q.—34 L)	4½ (3¾ I.Q.-17 L)
—10	5¾ (4¾ I.Q.—21¾ L)	10½ (8¾ I.Q.—39¾ L)	5 (4 I.Q.-19 L)
—20	6½ (5½ I.Q.—24½ L)	12 (10 I.Q.—45½ L)	5¾ (4¾ I.Q.-21¾ L)
—30°	8 (6¾ I.Q.—30¼ L)	13 (10¾ I.Q.—49¼ L)	6½ (5½ I.Q.-24½ L)

CLUTCH

The clutch, Figure 43, is of the oil cushioned type with large, single cork insert plate, and is driven by friction from the rear face of the steel flywheel and the forward face of the drop-forged steel pressure plate.

Large coil engaging springs, some with inner springs (except Super Models), exert pressure between the steel clutch cover and pressure plate to provide adequate frictional pressure for driving purposes. These springs exert sufficient pressure to prevent slippage under all driving conditions.

The large cork insert drive plate is fitted with a number of torsional coil springs to prevent vibration at any speed. A large, heavy-duty throwout bearing is also provided.

Due to the film of lubricant on the frictional surfaces, burning is prevented and wear is negligible. A bath of Hudsonite Clutch Compound provides constant lubrication for the frictional surfaces, so that after thousands of miles of driving there will be no material change in the engaging characteristics. The clutch fluid is triple sealed against leakage.

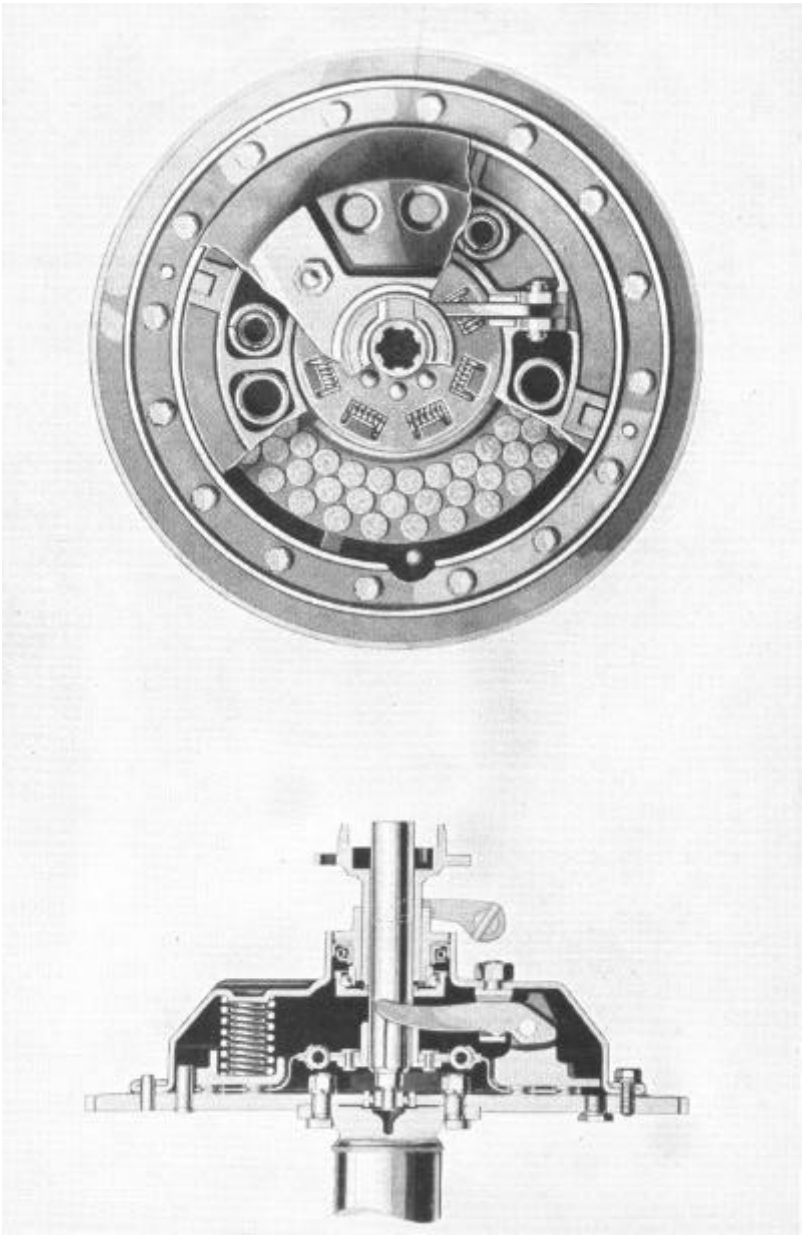

Figure 43

CLUTCH CONTROL

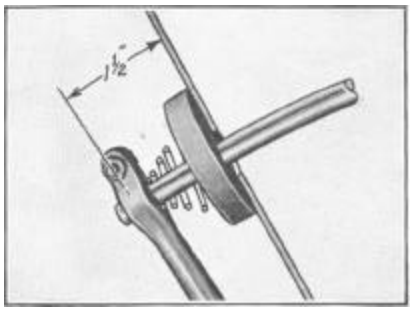

Figure 44

The clutch is self-adjusting and requires no attention other than lubrication, as outlined on page 21, and occasionally checking the clutch pedal to floorboard clearance to prevent the clutch pedal from "riding" the floorboard. Figure 44

Clutch Pedal Adjustment

It is essential that one and one-half inches clearance be maintained between the pedal shank and floorboard when the clutch is engaged, as shown in Figure 44.

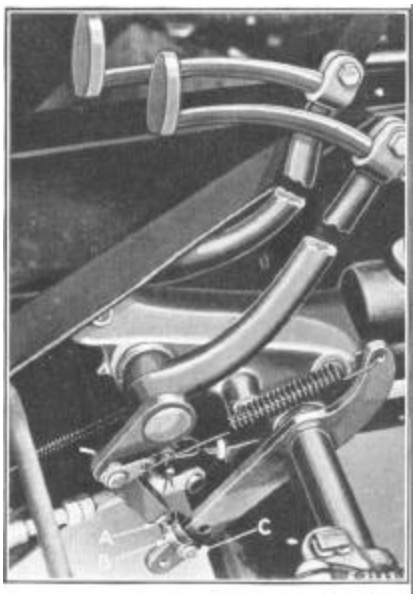

Figure 45

To adjust for proper clearance, loosen lock nut (A), Figure 45, remove clevis pin (C) and turn yoke (B) to shorten or lengthen the rod, as necessary.

Replace clevis pin (C) and cotter pin. Tighten lock nut (A) securely.

TRANSMISSION

A quick synchronizing transmission, Figure 46, incorporating helical gears to give a silent second gear and involute spline mainshaft and countershaft to provide easy shifting, is used in the 1938 Hudson Terraplane.

All gears are made of nickel chrome molybdenum alloy steel, carefully heat-treated for strength and case-hardened to resist wear and provide long life. Through the use of this special alloy steel the use of heavy parts is unnecessary, contributing greatly to ease and rapidity of shifting.

The mainshaft drive gear is supported by two annular ball bearings, as is the rear end of the mainshaft. The front of the mainshaft is mounted in needle roller bearings instead of in a bronze bushing, which is conventional practice. Steel ball bearings at this point absorb the mainshaft thrust load.

The countershaft is carried in generous sized steel backed babbitt bearings.

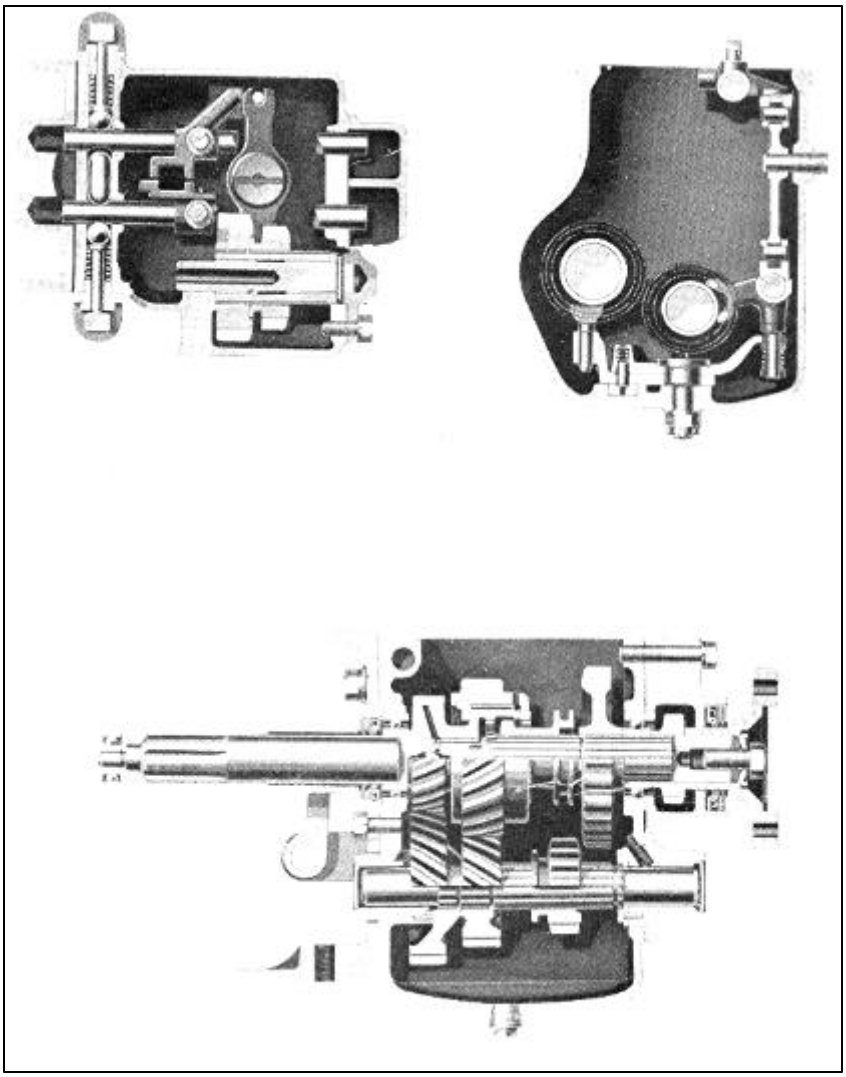

Figure 45

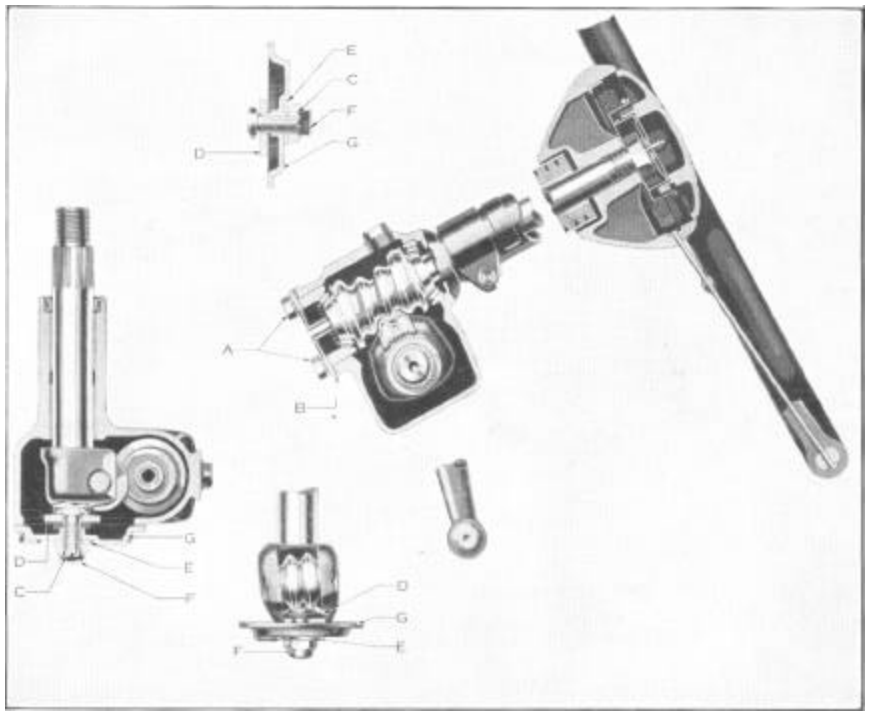

Figure 47

The steering gear, Figure 47, is of the hour-glass worm and roller tooth type, with a maximum ratio of 18.2 to 1 in the straight ahead position to provide ease of handling.

The worm is cut in a manner which gives a minimum clearance with the roller tooth in the straight ahead position and increased clearance on turns. This gives maximum control and assures freedom from binding even after extensive use which, on conventional gears, makes it impossible to get proper clearance without binding on extreme turns due to maximum wear coming in the straight ahead position.

It is important that the drag link be removed from the steering gear ball arm in order to effect satisfactory inspection or adjustments and alignment of gear in car.

Gear Alignment

Loosen the three gear housing bolt nuts (A) (one not shown), Figure 48, just enough to allow gear to shift in frame to line up at angle determined by height setting of instrument panel gear bracket and retighten gear housing bolt nuts

Now loosen instrument panel gear bracket and allow it to shift to match gear column position and retighten. This will correct any misalignment of gear column.

Worm Shaft and Worm

The main or worm shaft is carried on two taper roller bearings which are maintained in proper adjustment by a shim pack (B) which is properly selected when the gear is built. See Figure 47.

Adjustment—Worm Bearings

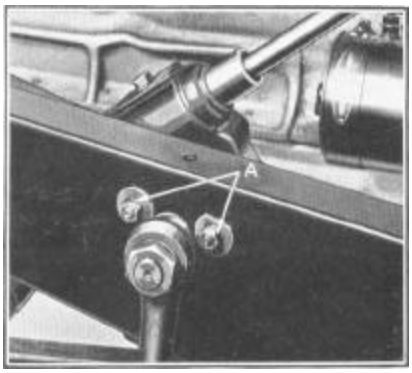

Figure 48

Worm bearing adjustment should be correct before other adjustments are made. To adjust, loosen four worm cover screws (A) (two not shown), Figure 47, Vs". Use a knife to separate the top shim (B), passing blade all the way around between shims, care being taken not to mutilate the remaining shims. Remove only one shim at a time between inspections to remove end play. Care should be taken not to set up stiffness in worm bearings.

Now revolve hand wheel to determine if any stiffness exists. If so, too many shims have been removed or gear is misaligned in car.

Cross Shaft and Roller Tooth

The mesh between the worm and roller tooth is adjusted by a screw (C), Figure 47, extending through right side of the gear housing. A flat washer (D), assembled to the inner end of screw (C), fits into a slot in the roller tooth shaft to control the movement of the roller tooth. A lock plate (E) is used to secure the adjustment and this, in turn, is held in place by a cap (F) which screws onto the adjusting screw (C),
.

Adjustment—Cross Shaft and Roller Tooth

To adjust for closer mesh of the roller tooth and worm, remove cap (F), Figure 47, slide off lock plate (E) far enough to clear lock boss on roller shaft cover (G). Place steering wheel in mid-position or straight ahead driving position. The adjusting screw (C) is then tightened into the housing, then backed off just enough to prevent binding. Check the amount of play at the end of the ball arm. It is advisable to leave a slight amount of play at this point rather than to tighten too much.

The lock plate (E) is set in position against the roller shaft cover (G) and locked in position. Replace adjusting screw cap (F) and tighten in place.

Wheel Position

To raise or lower steering wheel to suit the requirements of the driver, loosen three gear housing bolt nuts (A) (one not shown), Figure 48, as well as steering column bracket nuts under the instrument panel. Set wheel in desired position, insert or remove shims and tighten column bracket nuts. Turn steering wheel to right and left to align gear on frame and tighten frame bracket nuts.

After this operation has been completed, the drag link should be readjusted to obtain proper steering gear high point setting.

When the steering gear is adjusted to the high point, the flat spot on the serrated end of the main column tube should be pointing straight down. The position of the flat spot may be determined by removing the horn button and observing the groove machined in the top of the column tube, directly in line with the flat spot.

SPRINGS AND SHOCK ABSORBERS

Long, semi-elliptic type springs, controlled through the use of four direct-acting, self-compensating shock absorbers, assure easy riding qualities under all driving conditions.

Springs

The spring leaves are lubricated with a viscous chassis lubricant and are protected against road dirt and water by spring covers.

Spring shackles and pivot bolts are provided with lubrication fittings which should be lubricated every 1,000 miles. See Lubrication Chart attached to front cover for fitting positions.

Front and rear spring "U" bolt nuts should be checked periodically and tightened, if necessary, to maintain proper alignment of springs in relation to their position on the axles.

Shock Absorbers

The two front shock absorbers are mounted at the top on two large taper rubber grommets, assembled over a stud projecting from the front fender support bracket.

The stud at the lower end of the shock absorber passes through an *eye* in the front axle center. The shock absorber is mounted at this location on two large rubber cushions.

The rear shock absorbers are attached at the top to a bracket riveted to the rear axle cross member by means of a bolt which passes through two large taper rubber grommets. The lower ends of the shock absorbers are mounted on drop- forged studs, supported by the rear spring clips, and are mounted on two large taper rubber grommets.

The use of rubber grommets and cushions at the upper and lower ends of the shock absorbers serves to eliminate a metal-to-metal contact, and also to cushion or absorb road shocks.

The large reservoir of fluid, the low operating pressure and the double seal practically eliminate the loss of fluid. The fluid, however, should be maintained at the proper level to obtain satisfactory control, and it is, therefore, recommended that this be checked by an Authorized Hudson dealer at least twice a year or every 5,000 miles.

DRAG LINK

The drag link is of the adjustable type, with shim packs located at the front and the rear of the pitman arm ball. This type of drag link arrangement makes it unnecessary to bend the pitman arm in order to obtain proper relationship of the front wheel position to the steering gear high point.

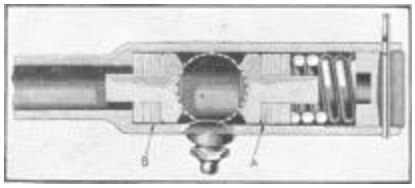

Figure 49

Assuming that the front wheels point to the right instead of to the straight ahead position when steering gear is in center position, it will be necessary to remove shims from the rear pack (A), Figure 49, and add to the front pack (B). In the event that the front wheels point to the left, reverse the operation, that is, remove shims from the front pack **(B)** and add to the rear pack (A). Reconnect the drag link to the pitman arm and lubricate thoroughly.

FRONT STABILIZER

To assist in overcoming a tendency for the car to lean to one side in driving around curves and in passing other cars on the highway, a stabilizer is attached to the front end of the frame side rails. See Figure 50.

The stabilizer bar (A) is attached to the frame by large rubber grommets **(B)** which act as bearings and are supported by brackets (C and D). The ball ends of the stabilizer bar are imbedded in rubber bushings assembled in connecting links (E) which are supported at the bottom by mounting brackets (F) with a ball end which is also assembled between two rubber bushings at the bottom of the link.

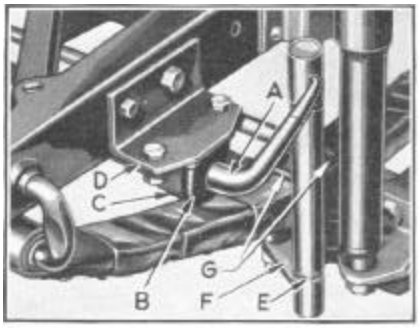

Figure 50

The lower mounting brackets are attached to the front axle bearing caps by spring clips (G).

These parts require no lubrication or attention other than occasionally checking the upper and lower support brackets for tightness.

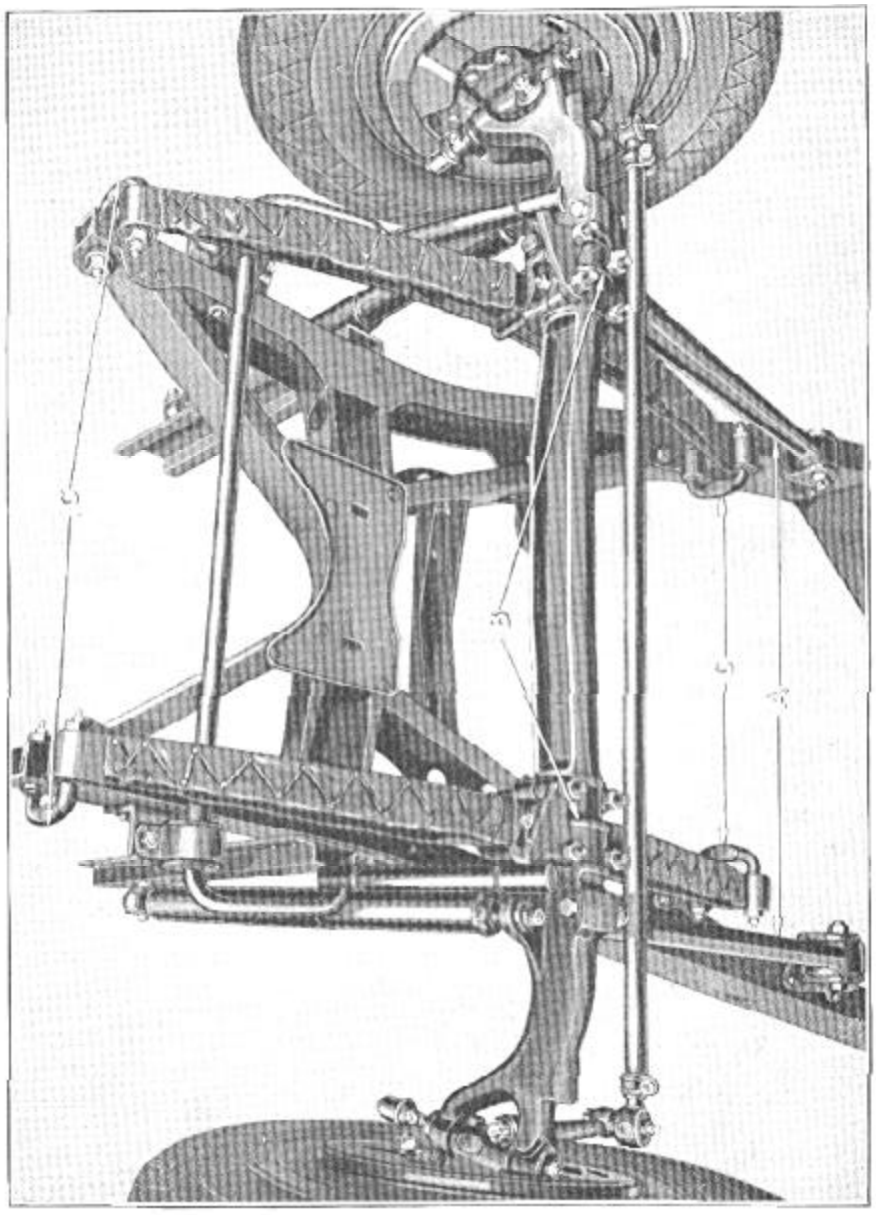

Figure 51

FRONT AXLE AND SPRING SUSPENSION

The front axle design used on the Hudson Terraplane car is of the Radial Safety Control type, whereby the axle is attached to the chassis frame by two large drop-forged steel torque arms (A), Figure 51, which insure accurate positioning of the axle and relieve the front springs of all loads other than that of supporting the weight of the car.

The front ends of the two torque arms are attached rigidly to the front axle by means of two large bolts which pass through the ends of the torque arms and axle center. The rear ends of the torque arms are attached to the chassis frame with large pivot bolts which pass through rubber grommets to absorb road shock.

The axle center is of the Elliott type, made of a heavy drop-forging of high quality carbon steel. The steering spindles, which are drop-forged molybdenum alloy steel, are attached to the axle center with alloy steel pivot pins mounted in hardened steel bushings with ball bearings to carry the thrust on the end of the pins.

The spindle pivot pins are drilled centrally, full length and are equipped with a single 90° metered pressure type reservoir grease fitting located above each pivot pin.

The reservoir fittings are of special design and provide sufficient lubricant under pressure for 1,000 miles of driving. Pivot pin bushings are sealed to retain lubricant and exclude dirt and water. Two pressure relief valves are fitted in the expansion plugs below the pivot pins to prevent leakage around the expansion plugs.

Each wheel is mounted on two taper roller bearings.

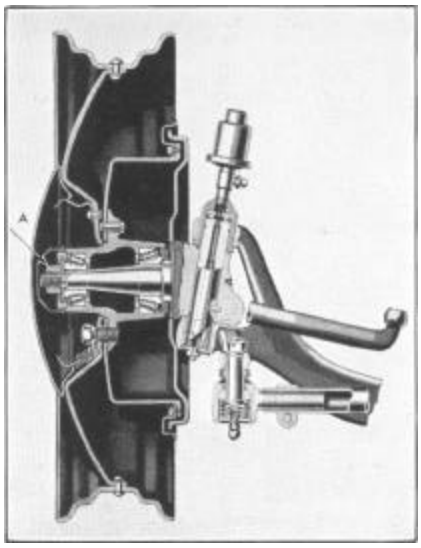

Figure 52

The tie rod ends are of the plain bearing type, fully sealed against dirt and water, and are provided with lubrication fittings.

The front springs are mounted on bearings **(B)** which permit free turning on the axle center. Self-adjusting shackles (C) attach both ends of the springs to the chassis frame and permit unrestricted spring action for a smooth ride over all types of roads.

Front Wheel Bearing Adjustment

After jacking up the front axle and removing the hub cap, withdraw cotter key holding nut (A), Figure 52. Turn nut to the right until a slight drag is felt when turning the wheel slightly by hand. Then loosen the nut just sufficiently to permit the wheel to turn freely. Insert cotter key.

Front Wheel Alignment

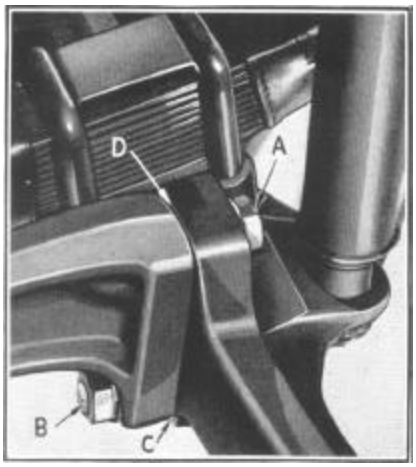

Figure 52

The front wheels should be adjusted with zero to 1/8" toe-in measured 10" from the ground. This adjustment is made by loosening the clamp bolts on the tie rod ends and turning the tie rod in a clockwise direction, as viewed from the right, to increase toe-in, and in the reverse direction to reduce toe-in.

A special tool is required to make this measurement accurately. This adjustment is important for correct steering to prevent excessive tire wear. Have your Authorized Hudson dealer check this alignment frequently.

Caster

The caster (backward tilt of the axle) should be from 1° to 2° and should be equal within 1/2° at both front wheels.

To increase caster proceed as follows:

1. Loosen upper bolt (A), Figure 53.
2. Remove lower bolt nut and lock washer (B) and withdraw bolt.
3. Install shim at location (C). (Shims are .020" thick and equal to 1/2°.)

To decrease caster proceed as follows:

1. Loosen upper bolt (A).
2. Remove bolt nut and lock washer (B), and withdraw bolt.
3. Remove shim at location (C).

Note: Whenever caster setting is changed it is necessary to readjust the steering gear to the high point setting. See page 58.

Camber

The camber (outward tilt of front wheels) should be from 1° to 1½°.

Should any front axle parts become bent, through accident, to such extent that they cannot be straightened without heating, they should be replaced with new ones. Heating will destroy the original heat treatment of the parts and may result in sagging or even breakage.

REAR AXLE

The rear axle, Figure 54, is of the semi-floating type carried in a one-piece, welded, banjo-type housing. This gives a rugged assembly, with all parts readily accessible, as the axle shafts and wheel bearings can be removed without disturbing the differential assembly; also the differential and gear set assembly can be removed as a unit, after the axle shafts have been removed, by simply disconnecting the rear universal joint flange and removing the eight carrier bolt nuts.

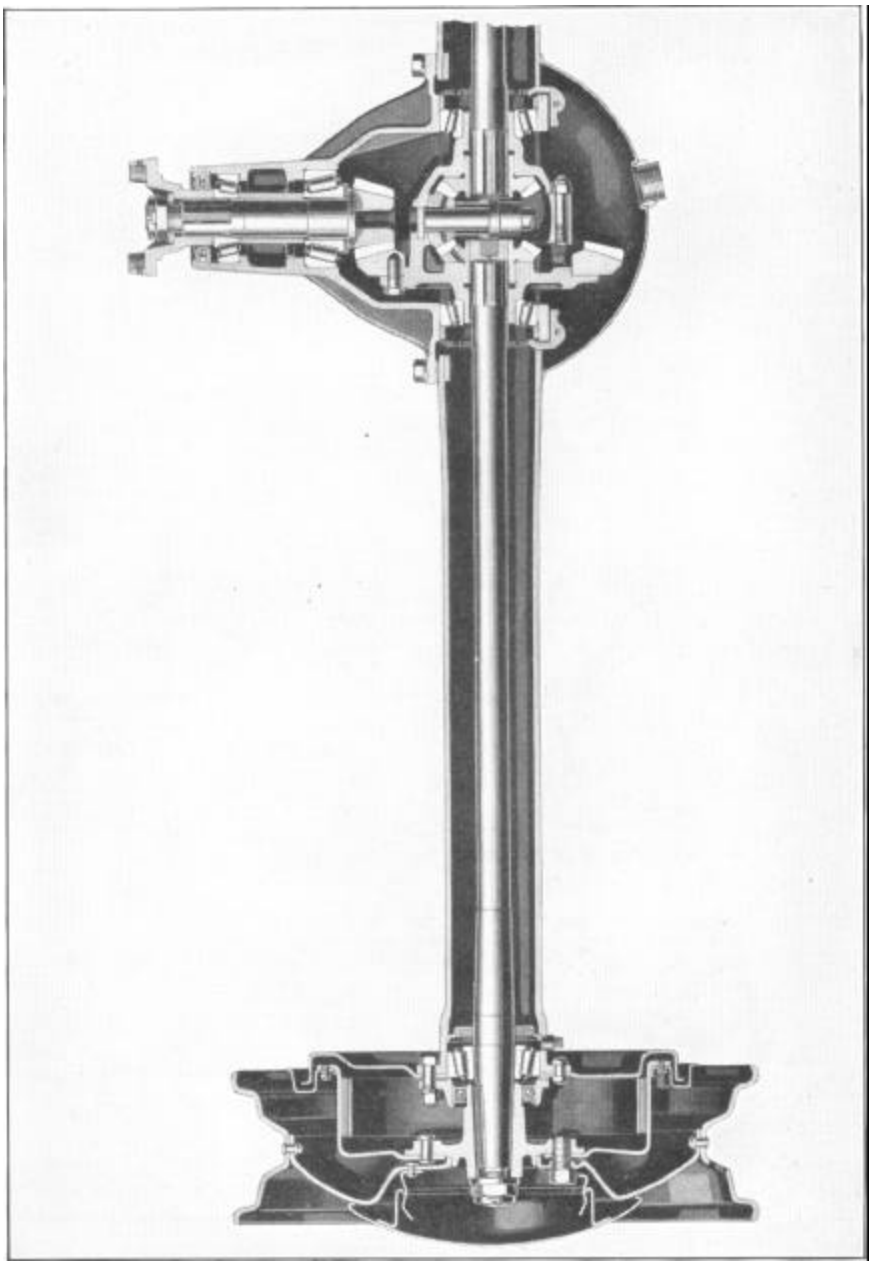

Figure 54

The helical bevel drive gear and pinion are made of nickel molybdenum Electric Furnace steel, heat-treated for strength and case-hardened to resist wear. The drive pinion, differential and axle shafts are carried by six heavy-duty, taper roller bearings.

Exceptional lubrication has been provided to the drive pinion bearings by arranging a large passage to carry oil thrown from the ring gear to a point in the housing between the front and rear pinion bearings. This oil flows through the bearings and returns to the axle housing. Oil leakage at the front of the pinion is guarded :against by the use of a hydraulic leather oil seal. Similar seals are located in the wheel bearing caps.

Rear Wheel Bearing Adjustment

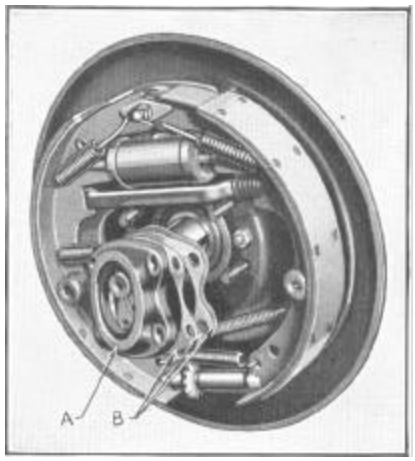

Figure 52

To adjust rear wheel bearings, jack up rear axle and remove both rear wheels and hubs. Remove the four nuts from bearing cap (A), Figure 55, and push the bolts out of the backing plate to permit removal of the bearing cap without disturbing the hand brake operating link. By removing shims **(B)** under the cap, the end play of the axle shaft is decreased. Total play between axle shafts should be from .005" to .010", which is perceptible by pulling shaft in and out with the hand. It is necessary that the thickness of shims at each rear wheel be approximately the same, so, when adjusting, remove a thin shim from each side and repeat, Figure 55 if necessary, until only a slight amount of play is evident. Be sure the axle shafts turn freely before building up.

CAUTION

Under no condition should a knock-out type puller be used to remove a wheel hub or the end of the axle shaft struck a heavy blow.

BRAKES

The brakes on the Hudson Terraplane car are hydraulically operated, with supplementary actuation of the rear brake shoes from both the foot pedal and hand brake control. See Figure 56.

A master cylinder, Figure 57, incorporating compensating features, is mounted on the pedal mounting bracket and is accessible by lifting the left side of the hood. The master cylinder has an integral reservoir from which additional fluid is supplied to the system as necessary.

It is essential that the reservoir be kept at least half full at all times to prevent the possibility of air entering the system. Genuine Hudson Hydraulic Brake

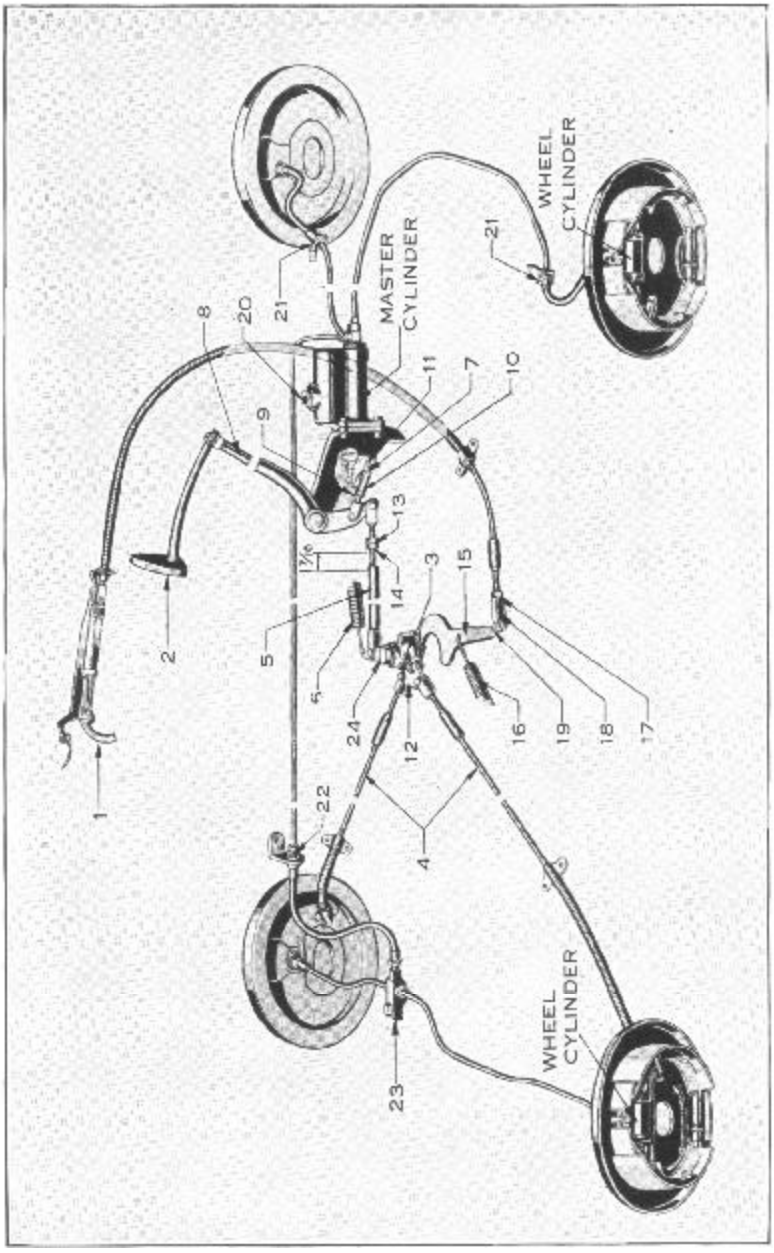
WHEEL CYLINDER
MASTER CYLINDER
WHEEL CYLINDER
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Figure 56

Fluid should be used at all times to insure against the use of brake fluid containing mineral oil or other fluids detrimental to the rubber parts which are apt to swell and become inoperative.

Dirt is injurious to the system and extreme care should be taken to wipe off cap (2), Figure 57, before removing the cap for inspection and filling.

As pressure is exerted on the master cylinder piston (6), Figure 57, through the brake pedal, the force built up in the hydraulic brake tubes tends to force outward wheel piston cups and pistons, expanding the brake shoes at the top.

Brake Pedal Adjustment

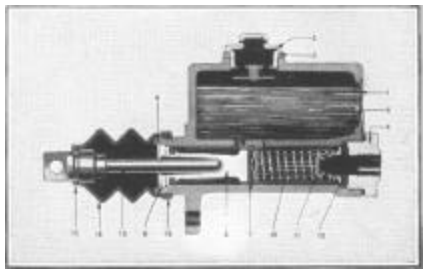

Figure 57

To insure full return of the master cylinder piston (6), Figure 57, when the brake is released, there must be 1/4" clearance between pedal shank (8), Figure 57, and the floorboard.

This clearance is obtained by loosening lock nut (9), removing clevis pin (11) and turning connecting link (10) to increase length until clevis pin (11) just enters the rod with the pedal shank (8) 1/4" from the toeboard and the bell crank against its stop. Reinsert clevis pin (11) in bottom of ball crank, insert cotter key and tighten lock nut (9). This adjustment is important, as failure of the piston to return to the end of the cylinder will cause the brakes to drag.

An occasional filling of the master cylinder reservoir should be the only attention required to the hydraulic system unless the reservoir is permitted to run dry, a main line is disconnected or a wheel cylinder is disconnected for service operations. If the cylinder runs dry or a main pipe is disconnected, it is necessary to bleed the air out of the lines at all wheel cylinders. If a wheel cylinder is disconnected, it is necessary to bleed only at that particular cylinder.

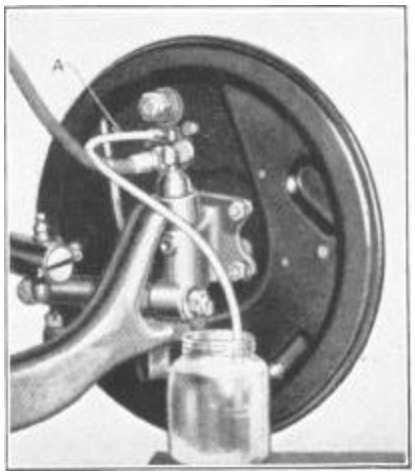

Figure 57

Bleeding the System

1. Remove screw (D), Figure 59, and screw the end of the bleeder tube (A), Figure 58, in its place and allow end of tube to hang in a jar partially filled with liquid.

2. Unscrew bleeder valve (E), Figure 59, three-quarters of a turn.

3. Depress foot pedal by hand, allowing pedal to return to released position slowly. Continue this operation until air bubbles

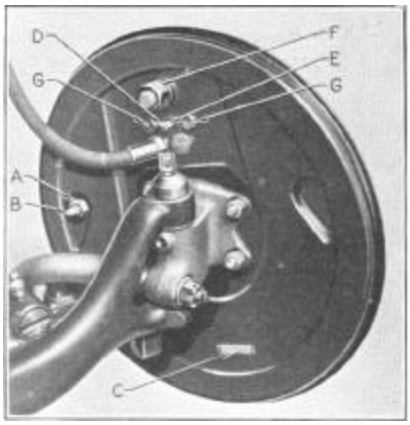

Figure 59

cease to be emitted from the bleeder tube.

4. Close bleeder valve (E), remove bleeder hose, and replace screw (D), Figure 59.

5. Refill master cylinder reservoir.

CAUTION: Do not use a substitute for Genuine Hudson Hydraulic Brake Fluid. Substitutes are not suitable for this system.

Do not use fluid that has been drained out of the system. Always replace with new fluid.

Use Genuine Hudson Hydraulic Brake Fluid Number 5, except where continuous sub-zero temperatures are encountered. Hudson Fluid Number 1 is recommended for use at extremely low temperatures.

Adjustment of Pedal Push Rod

It is essential that the following adjustment be made accurately to obtain proper mechanical follow-up to the hydraulic operation of the rear brakes:

With equalizer bar cable plate against stop, loosen brake pedal push rod lock nut (13), Figure 56, and turn adjusting nut (14) until rear face is 1 7/16" from front end of push rod (5). Tighten lock nut (13) securely.

Brake Shoe Adjustment

There are only two points of adjustment in the braking system to compensate for brake lining wear. The eccentric adjustment (B), Figure 55, centralizes the brake shoes in the drum. The adjusting screw, accessible by removing cover (C), takes up the clearances between the lining surfaces and the brake drums.

Adjustment for Wear Only

(1) Jack up all wheels clear of the floor.

(2) Disconnect rear wheel cables from equalizer bar cable plate.

(3) After removing adjusting hole cover (C), Figure 59, and gauge hole covers in brake drums, AT EACH WHEEL, loosen eccentric lock nut (A), and insert .010" feeler gauge between the lining of secondary (eccentrically controlled) shoe and brake drum. Turn the eccentric adjustment in the direction of forward wheel revolution until .010" feeler is just snug at anchor and adjusting ends of secondary shoe. Tighten eccentric lock nut.

The clearance at both ends of secondary shoe should not vary more than .003". Should the variation be greater than this it will be necessary to relocate the anchor pin. This work should be done by an Authorized Hudson Service

Station. (In case of clearance variation it is desirable that clearance at the anchor end be less than at the adjusting end.)

(4) Spread the brake shoes by means of a screwdriver inserted through the hole (C) engaging the notched adjusting screw until the shoes are expanded against the brake drum so drum can just be turned by hand.

(5) Pull hand brake lever until equalizer bar cable plate is 1/8" from stop. (Figure 56.)

(6) Pull rear brake cables tight and adjust ends so clevis pins just enter holes in cross shaft levers or equalizer bar (12), Figure 56. The rear face of the equalizer plate must be parallel to the face of the stop after this adjustment is made.

(7) Release hand brake.

(8) Release adjusting screw at each wheel until the brakes are just free of drag and replace feeler gauge hole covers and wheels.

(9) Lower car and test for balance on a level road—avoid testing on side of crowned road.

In the event the above instructions do not provide satisfactory braking, consult further with your Hudson dealer.

HEADLAMPS

The headlamps are designed to give maximum safe illumination under all driving conditions. The lamps are fitted with 1½ candlepower bulbs for the parking position, and prefocused bulbs, having a flanged mounting to insure correct installation, employing a 32-candlepower filament, for city driving and passing, and a 32-candlepower filament for country driving. When the main lighting switch is in the driving (right) position, the light beams can be changed to the high or' country driving position or downward and to the right for city driving position by depressing and releasing the light control foot switch.

Adjustment

Two adjusting screws have been provided at the bottom of the headlamp, Figure 60, to obtain proper lighting effect.

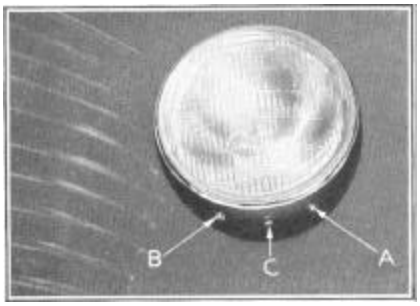

Figure 60

Place the car on a level floor or driveway squarely in front of a white wall or screen at a distance of twenty-five feet. Draw a horizontal line (AA), Figure 61, on a wall six feet long and at a height of thirty-five and one-quarter inches above the floor (E). This line represents the top of the beam. Next draw two vertical lines (C and D) twenty-six and thirteen thirty-seconds inches apart. Measure one-half the distance between (C and D) and draw line (B) ten inches long. These vertical lines represent the distance between lamp centers.

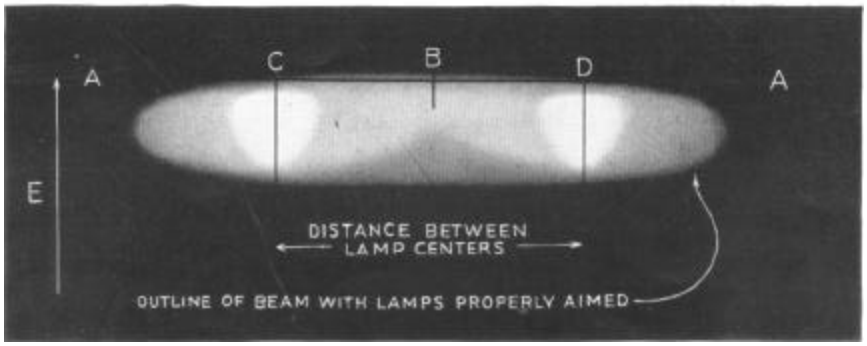

Figure 61

Without passengers in the car, cover one headlamp to obscure its beam and place lighting switch in the high or country driving position.

To Adjust the Beam Vertically:

Turn both adjusting screws (A and B), Figure 60, with a narrow screwdriver the same number of turns clockwise to raise the beam, counter-clockwise to lower the beam.

To Adjust the Beam Horizontally:

To move the beam toward right: Turn the right adjusting screw (B), Figure 60, counter-clockwise until beam has moved approximately half the desired distance to the right. Turn left adjusting screw (A) clockwise until beam has reached the proper position on the horizontal axis. It may then be necessary to readjust the beam on the vertical axis by turning both adjusting screws the same amount clockwise to raise the beam, counter-clockwise to lower the beam.

To move the beam toward left: Turn the right adjusting screw (B) clockwise and the left adjusting screw (A) counter-clockwise, proceeding as outlined above.

LAMP LENS AND BULB REPLACEMENTS

To replace headlamp lens and bulb, loosen screw (C), Figure 60, at bottom of lamp body. Push bottom of lens backward and downward until the top of the lens is clear of the top of the lamp body and lift out. Remove bulb by turning counter-clockwise. Replace bulb, turning same in clockwise rotation to lock in reflector. Replace lens.

To replace headlamp parking bulb, remove lens as outlined above. Press parking bulb inward and turn to release it from socket. Replace with new bulb.

Do not touch the reflector, as any marks will reduce the illumination. Should it be necessary to clean the reflector, use ordinary lampblack on a soft cloth and wipe gently in a circular motion.

If the reflectors require frequent cleaning, it is an indication that the gaskets are not giving a proper seal and should be replaced.

To replace rear license lamp bulb, turn the lamp body and lens assembly counter-clockwise and remove. Remove bulb and replace. Replace lamp body and lens assembly and turn in clockwise rotation to lock in place.

To replace tail lamp bulb, remove lamp body retaining strip and remove body. Replace bulb, place body in position and reinstall retaining strip, securing same between lamp body and base.

To replace dome lamp bulb, grasp lens and retainer assembly and unsnap from base. Replace bulb and snap lens and retainer assembly in place.

To replace fender lamp bulb, remove screw on top of lamp body and lift off body. Replace bulb, replace body and reinstall body screw.

The teleflash oil pressure indicator, teleflash generator charging indicator and instrument lamp bulbs are held in sockets assembled in the rear face of the instrument cluster base by spring tension behind the instrument panel. To replace bulb, pull socket out of cluster base and remove bulb. Replace bulb and press socket into socket hole.

BODIES

Hudson-built bodies are of all-steel construction with side panels welded and riveted to the floor section. The body is attached to the chassis frame at thirty-eight points to insure rigidity. Through Hudson unit-construction principle of building the body and chassis as a unit, your car is assured of freedom from squeaks and rattles throughout its life.

Hudson bodies are carefully insulated with soundproofing materials to dampen out all possibility of drumming.

Heavy gauge steel is used in all pillars, side panels, door and all-steel top construction to insure Hudson Terraplane owners of the utmost in safety.

Doors

Large, wide doors of heavy box-construction afford ample room to enter and leave the car. Strong, oversize hinges are used to hold the doors in perfect alignment and prevent rattles and sagging.

Windows are large and afford clear vision from all angles.

Luggage Space

Ample room is provided in the rear compartment for several large and small pieces of luggage.

In the Coupe models, luggage and sample cases can be easily placed into or removed from the rear deck compartment due to the extra large deck lid which reaches down to the compartment floor.

Ventilation

Your car is equipped with Year 'Round Ventilation System which includes the Automatic Draft Eliminator and fully sealed doors.

The front door windows are divided into two sections which are controlled individually. The front section or ventilating wing is of the friction type and is operated by handle (A), Figure 62. This handle also acts as a locking device when the wing is

closed. To open the wing, press button **(B)** on the locking handle and turn the handle in clockwise rotation. The handle will lock automatically when returned to its normal position.

Figure 62

Door windows can he lowered by turning the regulator handles in clockwise rotation. See Figure 62.

The doors may be locked from the inside by turning the handles to the right as illustrated in Figure 62. Turning the handles in the opposite direction opens the door.

The rear door and quarter windows on the Sedan models and rear quarter windows on Brougham models are controlled by regulators, the handles of which are located directly below the windows.

The rear quarter windows on the Sedan models slide backward and forward. By moving the glass backward to give an opening of approximately 1/2", a vacuum is created which draws air out of the body, while further opening permits air to enter.

Inasmuch as the Automatic Draft Eliminator, which is located under the rear seat cushion in Sedan and Brougham models, and just behind the rear seat in the rear compartment of Coupe models, is made of cloth and acts as a screen to prevent dirt and dust from entering the body, it should be inspected periodically and cleaned when necessary. To clean, it is not necessary to remove the bag from the car, but merely raise it with the fingers and tap the accumulation loose and permit it to drop to the road surface.

The cowl ventilator will permit the entrance of large quantities of air into the car. Its operation and extent of opening are controlled by a lever, the knob of which is located directly under the center of the instrument panel.

Floor mats and carpets are all secured under the scuff plates so that dirt can readily be swept off. The front mats can be withdrawn; however, it is necessary to loosen the scuff plate screws to remove the carpets.

Upholstered Trim Panels

All door and rear quarter upholstered panels are held in place with clips attached to the doors and pillar posts with screws.

The inside door handle and window regulator handles on door panels and window regulator handle on rear quarter panels must also be removed to complete removal of the panel.

To remove handles, gently depress handle finish plates and remove retaining pins.

Seats

Seat cushions and cushion backs in Hudson-built bodies have been designed to afford the maximum of driving comfort to both driver and passenger. Cushions arc deep, have an unusually comfortable coil spring arrangement and padding effect to hold the cushion form in pleasing appearance after long service.

The front scats in all models are adjustable to suit the individual driver's needs and comfort. While on long drives it is often desirable to move the seat location slightly to change the body position for a short time to relieve driving strains. This arrangement is also designed to accommodate the driver's leg length.

The Brougham and Convertible Brougham front seat cushions are the same full-length type used in Sedan models; however, the cushion back is built in two sections, each section of which may be tilted forward independently of the other. The entire scat is pivoted at the left front corner and can be moved on an arc, forward and to the left side to provide ample room for entrance and exit to and from the rear compartment.

In the 4-Passenger Coupe model, in which a scat has been provided directly behind the driver's position for the extra passenger, the front seat is also of the full-length Sedan type with the cushion hack built in two sections, each section of which may he tilted forward independently, and is pivoted at the left front corner to afford ample room for entrance and exit to and from the rear compartment.

In the 3-Passenger Coupe and Convertible Coupe. the seat is of the full bench type and adjustable forward and backward.

Seat Adjustments—Forward and Backward

In all models the entire front seat may be moved forward or backward by means of an adjustment operated with a rubber tipped lever (A), Figure 30, located near the bottom on the left side of the seat frame. To adjust the seat merely raise the lever by the pressure of a linger of the left hand, as illustrated, and release it as the desired position is obtained.

Seat Adjustment on Arc

The front seats in the Brougham, Convertible Brougham and 4-Passenger Coupe models can be moved on an arc by merely tilting the passenger section of the seat back slightly forward to unlock the mechanism and pulling the seat forward by gripping the instrument panel. By moving the seat back to its normal position the seat is again locked.

Inasmuch as the two seat adjustments mentioned above operate independently of each other, it is possible to move the seat forward by lifting the locking handle (A), Figure 30, at the left front corner and also move the seat on an arc at the same time.

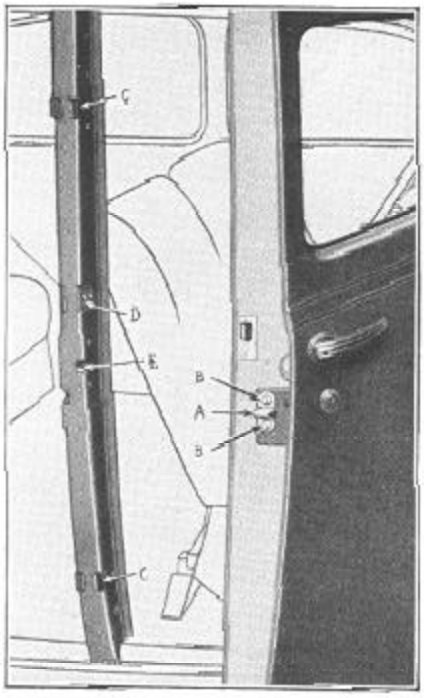

Figure 61

Door Adjustments

Door dovetail (male) (A), Figure 63, is adjustable to center the door properly at the top and bottom.

To adjust, loosen male dovetail screws (B) and move up or down as necessary so that dovetail lifts the door 1/16" as it enters the female member of the dovetail (E) set in the lock pillar post as the door is closed. Tighten screws securely.

The front edge of the rear door should he set slightly inside of the rear edge of the front door to prevent wind noise at high speed.

If adjustment is necessary, loosen the bumper fastening screw (C), Figure 6.i, set in the lock pillar post and move the bumper in or out as necessary to permit the door to close to the proper position. Tighten screws securely.

Door striker plates (D), Figure 63, arc adjustable to secure proper in and out regulation of the door position.

Should it be necessary to close the door violently to latch it, or the latch does not hold the door snugly against the bumpers and weatherseal, loosen the striker plate screws in the pillar post, being careful not to remove them, as the tapping plates inside the pillar post will fall out of position, and move the striker plate in or out, as necessary, and tighten the screws securely.

All doors are provided with strong steel check rods, imbedded in rubber at the ends, to control the swing of the doors.

EQUIPMENT

With the exception of the Electric Hand and Selective Automatic Shift, which are available only as factory-installed options, all of the following items of equipment can be installed on any models. This equipment is expressly designed for Hudson Terraplane cars and can be easily installed by an Authorized Hudson dealer.

Electric Hand

The Electric Hand may be had on all models as a factory-installed option. This device simplifies gear shifting by selecting the desired gear with a small lever located immediately under the steering wheel. By this means the conventional gear shift lever becomes unnecessary, providing more room in the driving compartment.

The actual changing of gears is accomplished by the engine intake manifold vacuum which is electrically controlled when the clutch is disengaged.

Selective Automatic Shift

When Electric Hand is combined with Automatic Clutch Control, it produces a Selective Automatic Shift of an exceptionally appealing nature. With this combination it is merely necessary to select the desired gear with the linger tip lever mounted on the steering column, and by releasing the accelerator pedal the actual movement of gears is accomplished. With Selective Automatic Shift gear changing is accomplished faster, with less effort on the part of the driver and the elimination of clashing by synchronizing the actual movement of gears with the clutch fully disengaged.

Automatic Clutch Control

Automatic Clutch Control is available as an option or can be installed by your Authorized Hudson dealer. The clutch mechanism has been designed so that Automatic Clutch Control can be installed without any replacement of standard parts or any drilling. The automatic control is designed especially for Hudson Terraplane cars and is of the latest design, incorporating a solenoid valve to control vacuum, which is the operating force, and a lockout device to prevent it from becoming operative in "high" gear at speeds above 15 miles per hour. This, together with the naturally smooth action of the Hudson Terraplane lubricated clutch and the controlled throttle return, gives a smoothness of operation both on engagement and disengagement that has never before been attained.

Inasmuch as the lockout is effective only when the car is being operated in "high" gear, it will in no manner affect the operation of the Automatic Clutch Control when changing through the gears to reach high gear.

This arrangement is a safety device which eliminates the coasting effect at high speeds and makes Automatic Clutch Control safe to use on wet or slippery :streets and when the car is operated in mountainous country.

Hydraulic Hill-Hold

The Hydraulic Hill-Hold is a device mounted on the brake master cylinder, the function of which is to hold the brakes in the applied position to prevent the car from backing when stopped on a grade. Actuation of the Hill-Hold is accomplished by holding the clutch pedal in a fully depressed position after the brakes have been applied. The clutch pedal being connected to Hill-Hold serves to lock the brake fluid in the brake tubes under pressure.

This action permits freedom of the right foot to operate the accelerator pedal without speeding up the motor excessively when ready to drive ahead. By re-engaging the clutch pedal when starting, the action of the Hydraulic Hill-Hold is released. Your Authorized Hudson dealer only should be permitted to make adjustments on this unit.

HUDSON APPROVED ACCESSORIES

Your Hudson dealer oilers you a complete line of Hudson Approved Accessories designed to harmonize with interior and exterior appointments of Hudson Terraplane cars. They tend to enhance appearance, increase comfort and add to satisfaction of ownership.

Each accessory has been chosen for its superiority over competitive items and carries the approval of Hudson engineers.

Some of the items available are as follows:

Two HUDSON RADIOS are available, which utilize to the fullest extent the many advances which have been made in radio engineering. They are real musical instruments of exceptional tone quality, designed expressly for Hudson-built cars.

The CUSTOM RADIO has seven tubes, including two beam power output tubes. The unit incorporates an Automatic Selectivity Control to produce exceptional reception and tone qualities on both local and distant stations. This model has a separate eight-inch speaker to reproduce faithfully the exceptional qualities of this set. The dial mounted in the center of the instrument panel harmonizes beautifully with the other instruments.

The DE LUXE. RADIO has six tubes, including one beam power output tube, and a six-inch built-in speaker. The dial is also mounted in the center of the instrument panel and harmonizes beautifully with the other instruments. Unusual tone and reception qualities are available in this set.

Either the under-running hoard or telescoping type antenna is available.

HUDSON HOT WATER HEATERS are available in three models. All models are finished to harmonize with the interior body scheme. The motor switch is of the three-speed type.

The STANDARD HEATER delivers an ample supply of healthful warmth for normal winter weather.

The DE LUXE HEATER provides and delivers an adequate supply of heat for the majority of cars. It is equipped with a deep core and has an exceptionally quick heat-up period and delivers a steady stream of uniform heat. It is also

equipped with added features in heater design—provision for supplying warns air to the windshield for defrosting and a side opening port for furnishing a flow of warns air to the driver's feet as well as for floor warming. These features are controlled by a knob on the left side of the heater.

The CUSTOM HEATER, with a large core and attractive fittings, is truly a remarkable development in heater performance. It is also equipped with the defrosting, driver's foot and floor warming features. An illuminated tenite knob which harmonizes with the instrument control knobs is used to control the motor speed.

HUDSON SEAT COVERS are most comfortable—they fit the seats snugly and do not wrinkle up under the passengers. Their smooth, non-clinging surface makes it easier to enter and leave the car. The basket weave construction of the fabric matting permits circulation of air through the material, giving greater coolness during the hot weather. They are easily cleaned by sponging with soap and water. They protect the entire seat and blend harmoniously with Hudson Terraplane interiors.

Owners who live in areas where fog, heavy snows and rainstorms occur frequently will appreciate the installation of a HUDSON FOG LIGHT. The combination of the amber lens and low installed position prevents glare and reflection into the driver's eyes. The low, broad amber beam projected by this light greatly increases road visibility. The Fog Light is designed to harmonize with the car headlamps and is finished in a durable chromium finish.

HUDSON FENDER LAMPS, beautifully designed in the streamline motif, afford real protection while parking at night. These lights use a minimum of battery power. They may he seen from the side as well as the front. These lamps are available lacquered to match the fenders.

The COMBINATION FUEL PUMP AND VACUUM PUMP is particularly adapted to mountainous territories where heavy rain or snow is experienced and which taxes to the limit the operation of the windshield wipers. The combination fuel pump and vacuum pump provides extra vacuum power for the windshield wipers, making it possible to operate very favorably under the most adverse conditions. Its installation also eliminates the slight lag in windshield wiper operation during acceleration.

An ELECTRIC CLOCK, with dial face similar in design and same size as the speedometer, may he installed in the right-hand locker box door. The dial is indirectly illuminated and harmonizes with the balance of the instruments. To install, it is merely necessary to remove the door hole cover by removing the three sheet metal screws in the locker box door.

A VISOR identical with the left-hand visor can be readily installed, as proper mountings have been provided in the right side of the windshield header.

TWO TYPES OF INSTRUMENT PANEL CIGAR LIGHTERS are available. One is the conventional type where it is necessary to hold the heat element until it glows. The second is the new Automatic Cigar Lighter which eliminates fumbling—pushing—dangerous one-hand driving and permits the motorists to keep their eyes on the road. It clicks a warning when ready for use.

TWIN OUTSIDE AIR ELECTRIC HORNS of high quality tone, heavily chromium plated, add to the pleasing front end appointments of Hudson Terraplane cars.

REAR WHEEL SHIELDS, finished in the same color as the rear fenders, accentuate the sweeping lines of the rear fenders and contribute to the impression of speed and grace.

A VANITY MIRROR mounted on the sun visor has a decided appeal to feminine motorists. No need of moving the rear view mirror out of driving position when this beauty aid is installed.

The stylish OVAL REAR VIEW MIRROR is not only attractive in design, but its special shape enables the driver to command a full view of the road behind.

LICENSE PLATE FRAMES transform the ordinary appearing license plates into a really attractive accessory. Protect the license plates from bending and prevent rattles.

FENDER GUIDES are helpful in driving through narrow traffic lanes and in parking. They save your fenders and, being of attractive design, add an extra touch of distinction.

The aforementioned items are only a partial list of Hudson-Approved Accessories obtainable. Upholstery Cleaner, Car Polish and Wax are also available.

Make your accessory selection from an Authorized Hudson dealer, with full assurance that such accessories will harmonize with the car design and provide, to the fullest extent, the service for which they are intended.

YOUR HUDSON DEALER WILL GLADLY SHOW YOU THE FULL LINE OF HUDSON-APPROVED ACCESSORIES

PREPARING CAR FOR STORAGE

If the car is to be laid up for any length of time, and especially in the winter, the following suggestions should be observed: Drain the water from the cooling system, then run the motor not over one minute to dry out the cylinder water jackets.

Drain the crankcase. Flush out the old oil, then refill with fresh oil. It is also well to pour a little oil into each cylinder through the spark plug holes to prevent the interior from rusting. Clean the spark plugs and dip the ends into oil to prevent rusting, and replace them.

Crank the engine for about twenty seconds with the ignition switch off and the throttle closed. This insures a distribution of the oil over cylinder walls and valve mechanism.

Disconnect the wires from the storage battery and remove battery to some dry place. It is best to take the battery to a battery service station, where it may receive a freshening charge at least once a month. It is well worth while to take care of the battery.

Go over the chrome or nickel-plated parts with a light coating of vaseline jelly or grease to prevent tarnishing. This should be removed with gasoline before putting the car hack into service.

Jack up the car and remove the tires.

If the tires are to he out of service for any length of time, they should he removed from the wheels. The inner tubes should be put in the casing with a small amount of air pressure and the tires stored in some cool, dark place, preferably where there is a slight amount of moisture, since, if they become too dry, the rubber will harden and lose its elasticity. It is a good idea to wrap tires with cloth to protect them from heat.

Remove all dust from upholstery, wash body clean, put the windows or the top up and cover the car with heavy sheetings or a paper cover especially made for the purpose.

When putting the engine back into service again, remove the spark plugs, inject a small quantity of oil into each cylinder, crank the engine by hand for a few seconds, replace the plugs, turn the ignition "on" and, after the engine has been started on its own power, run slowly for a few minutes.

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