Marwil

TECHNICAL BULLETINS

1940-1941 HUDSON

1940 Hudson

Marwil Technical Bulletin

OCTOBER, 1940

Marwil

TECHNICAL BULLETIN.

SERIES ELEVEN
1940

Subscription price
$3.50 Per Year

1940 HUDSON

Models 40, 41, 43, 44, 45, 47, 48

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SPECIFICATIONS

1940 Models

Model 40 (Hudson Six Traveler) — Wheelbase, 113"
Four Door Sedan, Two Door Sedan, Three Passenger Coupe, Victoria Coupe, Commercial—Cab Pick-Up, Panel Delivery.

Model 40 (Hudson Six De Luxe) — Wheelbase, 113"
Four Door Sedan, Two Door Sedan, Three Passenger Coupe, Victoria Coupe, Convertible Coupe, Convertible Sedan.

Model 41 (Hudson Super Six) — Wheelbase, 118"

Model 44 (Hudson Eight) — Wheelbase, 118"
Four Door Sedan, Two Door Sedan, Three Passenger Coupe, Victoria Coupe, Convertible Coupe, Convertible Sedan.

Model 43 (Hudson Country Club Six) — Wheelbase, 125"

Model 47 (Hudson Country Club Eight) — Wheelbase, 125"
Four Door Sedan, Seven Passenger Sedan, Four Door Touring Sedan.

Model 45 (Hudson De Luxe Eight) — Wheelbase, 125"
Four Door Touring Sedan, Two Door Touring Sedan.

Model 47 (Hudson Country Club Eight) — Wheelbase, 125"
Four Door Touring Sedan, Seven Passenger Sedan, Two Door Touring Sedan (Special)

Model 48 (Hudson Big Boy) — Wheelbase, 125"
Seven Passenger Sedan, Cab Pick-Up, Panel Delivery, Carry-All.

SERIAL NUMBER: Located on left front door post. (Same as Motor Number.)

MOTOR NUMBER: Located on left front side of engine block. (Same as Serial Number.)

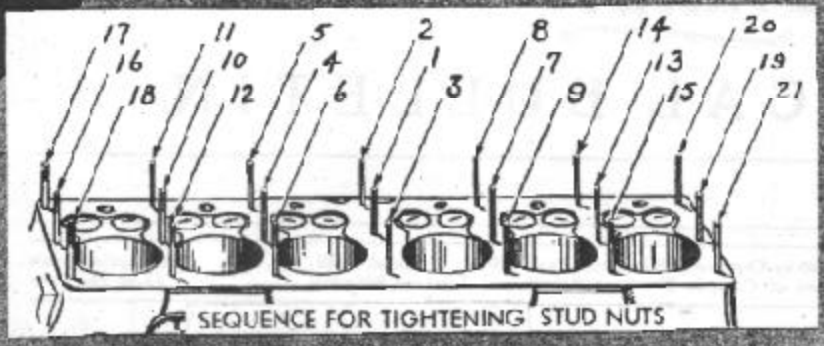
1940 Motors

MODEL 40: Six cyl. Bore, 3"; stroke, 4 1/8". Piston displacement, 175 cu. in. Compression ratio, 7:1. H.P., taxable, 21.6; brake, 92 at 4000 R.P.M.

MODEL 41, 43, 48: Six cyl. Bore, 3"; stroke, 5". Piston displacement, 212 cu. in. Compression ratio, 6.50:1. H.P., taxable, 21.6; brake, Model 41, 43, 102 at 4000 R.P.M.; Model 48, 96 at 4000 R.P.M.

MODEL 44, 45, 47: Eight cyl. Bore, 3"; stroke, 4 1/2". Piston displacement, 254 cu. in. Compression ratio, 6.50:1. H.P., taxable, 28.8; brake, 128 at 4200 R.P.M.

HUDSON, '40 — Motor



SEQUENCE FOR TIGHTENING STUD NUTS

VALVE SPRINGS — ALL MODELS: Spring pressure when compressed to 2" length, 40 lbs.; compressed to 1 21/32" length, 80 lbs. Springs that show pressure less than 34 lbs. at 2" compression should be replaced.

VALVE GUIDES — ALL MODELS: Removable type. Distance from top of guide to top of block on Six, 1-1/16"; Eight, 1-5/16". Valve stem to guide clearance — Intake, .0025"; exhaust, .004".

CYLINDER HEAD STUD NUT TENSION — ALL MODELS: With torque indicating wrench, tighten stud nuts in recommended sequence. On Six, 45 ft. lbs., Eight, 55 ft. lbs. Final tightening and check should be made after engine has been run and allowed to normalize.

VALVE SEATS — ALL MODELS: Seat angle—Intake and exhaust, 45°.

COOLING SYSTEM: Capacity—Six, 13 qts.; Eight, 18 qts.

VALVE TAPPETS — ALL MODELS: Running clearance with engine at normal operating temperature — Intake, .006"; exhaust, .008".

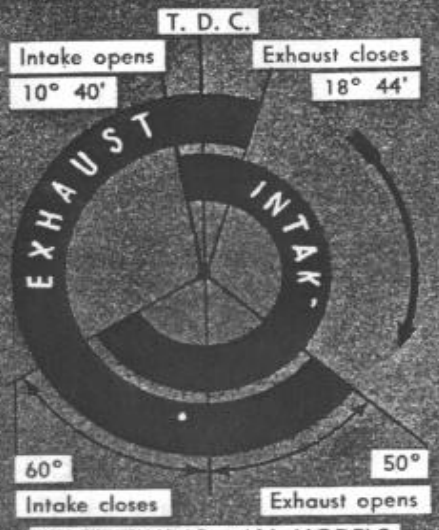
THERMOSTAT—ALL MODELS: Designed to start opening at 150° to 155°F., and fully open at 185°F. Unit not adjustable and should be replaced when at fault.

VALVE SEATS, ALL SERIES: Angle, 45°.

VALVE CLEARANCE, ALL SERIES: Running clearance, intake, .006"; exhaust, .008" (HOT).

MAIN BEARINGS — ALL SERIES: Bronze back, special bearing metal lined. Crankshaft must be removed to replace main bearings. Shims provided for bearing adjustment. Bearing clearance, .001". On Six, thrust taken on center bearing. On Eight, thrust taken at No. 3 bearing. Endplay, Six and Eight, .006" to .012". Tighten main bearing cap, stud nuts to 91.6 ft. lbs.

LUBRICATION—ALL MODELS: Capacity (Dry)—Six, 5½ qts.; Eight, 9 qts. Refill—Six, 4½ qts.; Eight, 7 qts. Temperature range of from 70° to 110°F., SAE 30. From 32° to 90°F., SAE 20. From 10° to 70°F., No. 20W. From —10° to 40°F., No. 10W.



VALVE TIMING—ALL MODELS

PISTONS — ALL MODELS: Low expansion silicon aluminum alloy, "T" slot type, cam ground. On Six, remove from top of block. On Eight, remove from top or bottom. Install with "T" slot facing away from camshaft side of engine. Piston weight 10.5 oz.

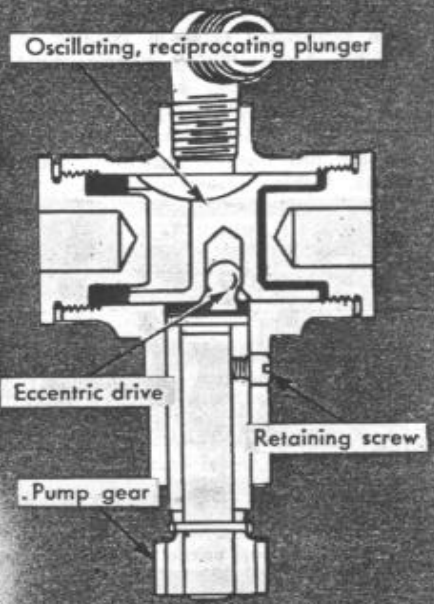
PISTON CLEARANCE — ALL MODELS: Skirt clearance, .001" to .002". Top ring land clearance, .016". When fitting, check clearance with .0015" feeler gauge inserted between thrust side of piston and cylinder bore. Clearance correct when 3 to 4 lbs., scale pull required to withdraw feeler.

PISTON ASSEMBLY

PISTON PINS — ALL MODELS: Full floating type secured by snap rings in piston bosses. Fit pin to piston at hand push fit, with piston heated to 200°F. Clearance in rod bushing .0003" or thumb push fit at normal room temperature.

PISTON RINGS — ALL MODELS: Two 3/32" compression rings, one 3/16" oil control ring located above piston pin, and one 5/32" oil control ring located on piston skirt. All rings are pin locked at gap ends. When fitting rings, pin lock notch clearance should equal ring gap. Gap clearance, compression and oil control .009" to .011".

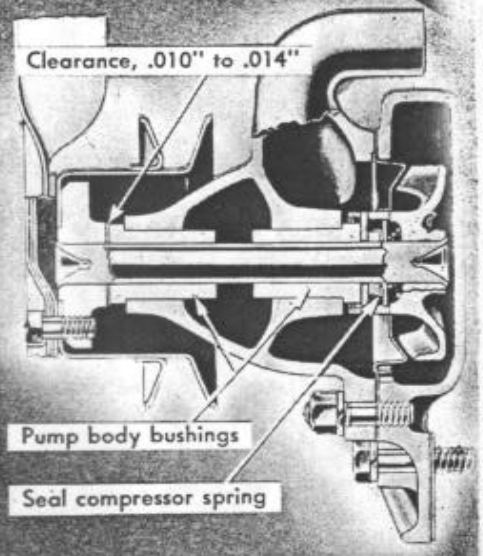
CONNECTING ROD BEARINGS — ALL MODELS: Lead alloy bearing metal lined, bonded directly to rod and cap. Bearing metal thickness, .015". Rod bearings not adjustable. Never file bearing cap to reduce clearance. Bearing radial clearance, .001". Endplay .006" to .010". Tighten cap bolt nut to 52.5 ft. lbs. Palnut, finger tight then 1/3 turn more to lock it.



OIL PUMP

CONNECTING RODS — ALL MODELS: Offset at lower bearing end. On Six, assemble rods Nos. 1, 2, and 4 with short side of offset toward front of engine. Nos. 3, 5 and 6, short side of offset toward rear of engine. On Eight, Nos. 1, 3, 5 and 7 short side of offset toward front of engine. Nos. 2, 4, 6 and 8, short side of offset to rear of engine.

CAMSHAFT BEARINGS — ALL MODELS: Replaceable type. Bearings available reamed sufficiently under size, so that when pressed into place will provide required .001" clearance. A spring loaded plunger bearing against a hardened plate on timing gear cover prevents endplay and holds shaft against a fibre thrust washer located between shaft flange and engine block.



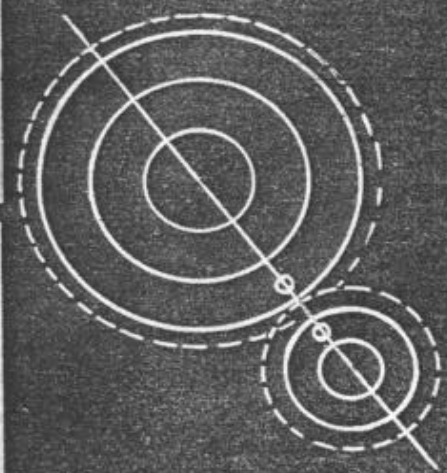
WATER PUMP

WATER PUMP—ALL MODELS: Spring loaded internal seal type requiring no adjustment. When assembling, provide from .010" to .014" shaft endplay measured between fan pulley hub and front face of bushing.

OIL PUMP — ALL MODELS: Oscillating, reciprocating plunger type, driven by camshaft.

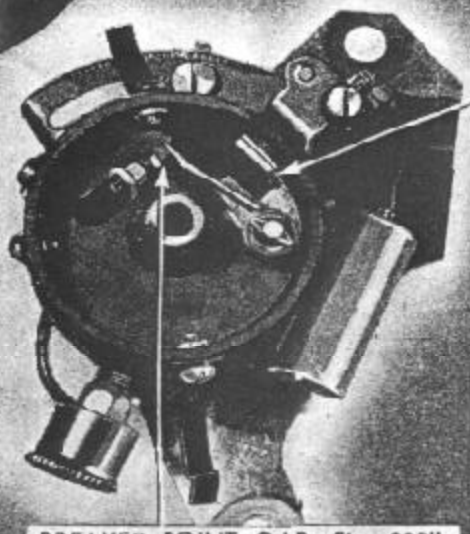
System provided with spring loaded check valve switch which operates tell-tale light on instrument panel to indicate oil pressure. With hot oil, pressure ranges from 4 to 12 lbs.

CAMSHAFT GEAR—ALL MODELS: Laminated fibre. Gear lash—On Six, .002" to .003": on Eight, .004" to .005". Install with two marks on camshaft gear in register with marked tooth on crankshaft gear.



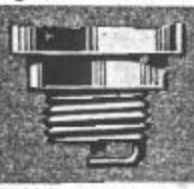
CAMSHAFT SETTING

HUDSON, '40 – Tune-up

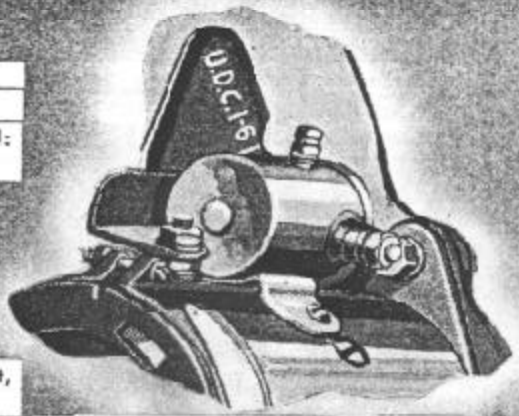


FIRING ORDER Six: 1-5-3-6-2-4.
Eight: 1-6-2-5-8-3-7-4.

BREAKER ARM SPRING TENSION: Six and Eight, 18 to 20 oz.



SPARK PLUG GAP: Six and Eight, .032".

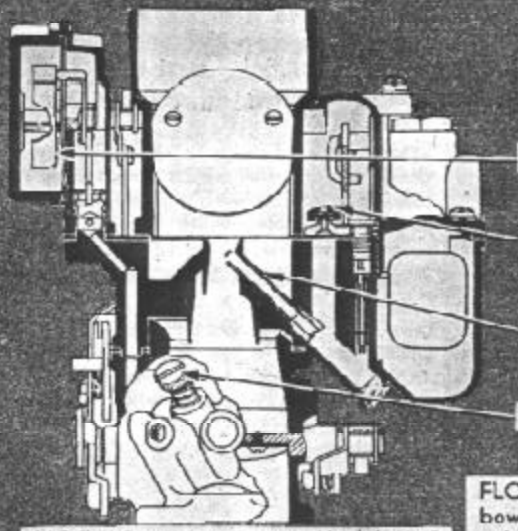


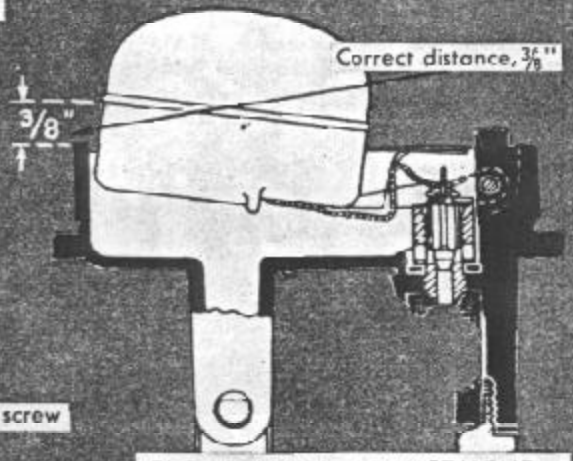
BREAKER POINT GAP: Six, .020"; Eight, .017".

IGNITION TIMING—ALL MODELS: Turn engine until No. 1 piston is approaching U. D. C. of compression stroke. Stop when U. D. C. 1-6 or U. D. C. 1-8 mark on face of flywheel is in register with pointer on rear engine support plate (left side). On Six, loosen diaphragm arm screw and turn distributor body counter clockwise (retard) to limit of quadrant slot. On Eight loosen distributor clamp plate screw and turn distributor body clockwise (retard) to limit of plate slot. Locate distributor rotor in position to fire No. 1 plug. Using a timing light (ignition switch on) advance distributor body slowly turning clockwise on Six and counter-clockwise on Eight until light just flashes, indicating point break. Tighten clamping screw.

To accurately check ignition timing a synchroscope is recommended. To check, connect synchroscope lead to No. 1 spark plug and remaining lead to engine (ground). Run engine at idle speed equivalent to 7 M.P.H. If ignition timing is correct, flash should occur when specified flywheel marks and pointer on engine support plate are in register. Mark on flywheel should move up as engine speed is increased and return to pointer when engine idles. Make minor changes by loosening clamping screw and rotate distributor slightly in required direction.

CARBURETOR





MODELS 40, 48: Carter, Model 454S (Single Throat).

IDLE ADJUSTMENT—40, 48: Initial setting for idle mixture adjusting screw, 3/4 to 1 1/2 turns open. With engine at normal operating temperature, set throttle lever stop screw so engine idles approximately 7 M.P.H. To richen mixture turn adjusting screw "out". Adjust so engine fires evenly without loping or stalling.

PUMP ADJUSTMENT—40, 48: With throttle valve seated and connector link in short stroke (hole nearest countershaft), pump plunger should travel 3/16" from closed to wide open position. Adjust by bending throttle connector link at lower angle.

FLOAT LEVEL—40, 48: With float bowl cover inverted, seating needle valve, measure distance from end of machined projection of bowl cover to soldered seam of free end of float. Correct distance 3/8". Adjust by bending lip on float arm.

METERING ROD ADJUSTMENT — 40, 48: Correct setting is very important and must be made after pump adjustment. To adjust, insert Carter Gauge No. T-109-102 in place of metering rod, seating tapered end in metering rod jet. With throttle valve seated, press down lightly on piston link directly over piston. There should be less than .005" clearance between metering rod pin and shoulder in notch of gauge. Gauge must not drag on pin. Adjust by bending lip on piston link so that it contacts pump arm.

FLOAT LEVEL ADJUSTMENT—MODEL 40, 48

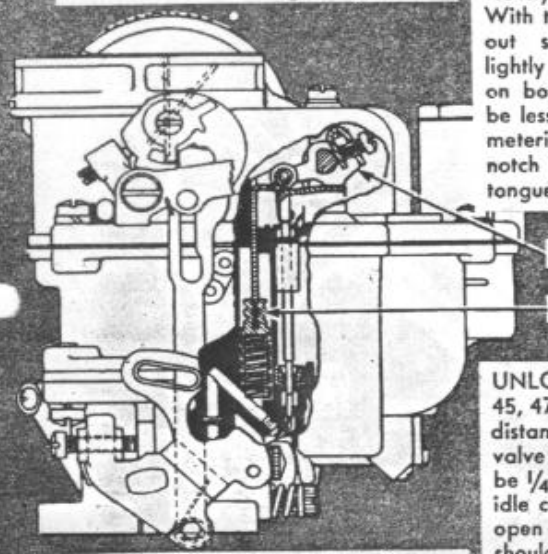
FAST IDLE ADJUSTMENT — 40, 48: With fast idle cam held in normal idle position, tighten throttle lever adjusting screw until it just seats against cam. Hold throttle lever closed and pull cam back until first step on cam is against (not on) set screw. There should be 5/8" clearance between inside wall of air horn and lower edge of choke valve. Adjust by bending offset portion of fast idle link.

LOCK-OUT ADJUSTMENT—40, 48: With throttle and choke valves wide open, choke should lock in wide open position. Adjust by bending lip at lower end of fast idle link to provide 1/32" clearance between lip and throttle lever lock, with throttle and choke valve held wide open.

Tune-up – HUDSON, '40

ANTI-PERCOLATOR ADJUSTMENT —40, 48: Insert a .030" diameter gauge between lower edge of throttle valve and bore of carburetor opposite port. Bend rocker arm until there is a clearance of .005" to .015" (.010" preferred) between rocker arm and pump arm.

UNLOADER ADJUSTMENT—40, 48: With throttle valve wide open there should be 7/16" clearance between lower edge of choke valve and inner wall of air horn. Adjust by bending cam on throttle lever.



MODELS 41, 43: Carter Model 461S (Dual Throat).

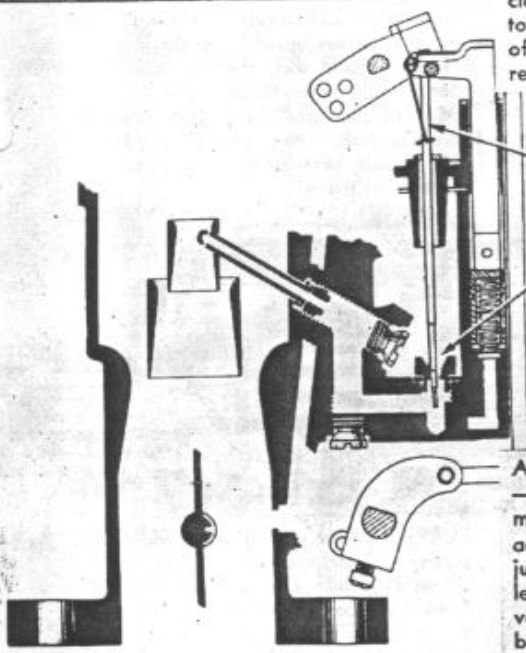
MODELS 44, 45, 47: Carter Model 455S (Dual Throat).

PUMP ADJUSTMENT — 41, 42, 45, 47: With pump connector link in long stroke (outer) hole in pump arm, and throttle valve seated, pump plunger should travel 9/32" from closed to full open position. Adjust by bending throttle connector link at lower angle.

METERING ROD ADJUSTMENT — 41, 42, 45, 47: Insert one metering rod gauge (Carter Gauge No. T109-113) in place of metering rod, seating tapered end in metering rod jet. Install metering rod and pin spring (previously removed) in metering rod arm. With throttle lever stop screw backed out seating throttle valve, press lightly on piston link until piston rests on bottom of cylinder. There should be less than .005" clearance between metering rod pin and shoulder of notch in gauge. Adjust by bending tongue on anti-percolator arm.

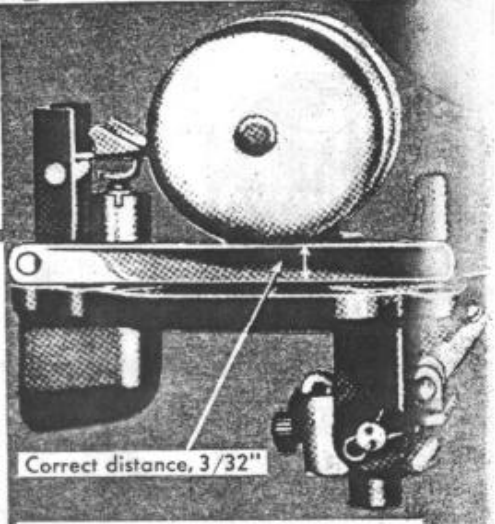
UNLOADER ADJUSTMENT—41, 42, 45, 47: With throttle valve wide open, distance between upper edge of choke valve and inner wall of air horn should be 1/4". Adjust by bending lip on fast idle connector link. With throttle wide open push choke valve open. Choke should lock in this position; if not locked, recheck adjustment. Closing throttle will release choke.

FAST IDLE ADJUSTMENT—41, 42, 45, 47: Hold choke valve tightly closed and adjust fast idle arm screw to give .018" opening between edge of throttle valve and bore of carburetor, side opposite port.



HIGH SPEED CIRCUIT—MODEL 40, 48

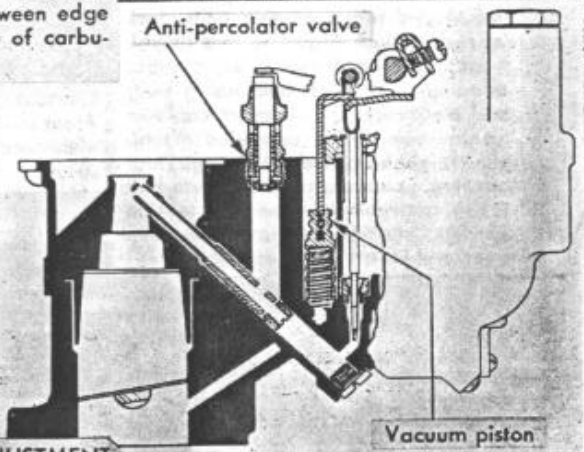
ANTI-PERCOLATOR ADJUSTMENT —41, 42, 45, 47: Adjustment must be made after pump and metering rod adjustment. Do not disturb these adjustments. To adjust, back out throttle lever stop screw, seating throttle valve. With throttle valve seated, bend lips of anti-percolator arm until center of indicator lines on both valves are just flush with top of plugs.



FLOAT LEVEL ADJUSTMENT—MODEL 41, 43, 44, 45, 47

FLOAT LEVEL ADJUSTMENT — 41, 43, 44, 45, 47: With float bowl cover inverted, seating needle valve, measure from surface of bowl cover (gasket removed) to bottom of float. Correct distance, 3/32". Check both ends of float. Adjust by bending lip on float arm.

IDLE ADJUSTMENT—41, 42, 45, 47: Initial setting for idle mixture adjusting screw, 1/2 to 1 1/2 turns open. With engine at normal operating temperature, set throttle lever stop screw so engine idles approximately 7 1/2 to 8 M.P.H. To richen mixture turn adjusting screws "out". Adjust one screw at a time until engine fires evenly without loping or stalling.

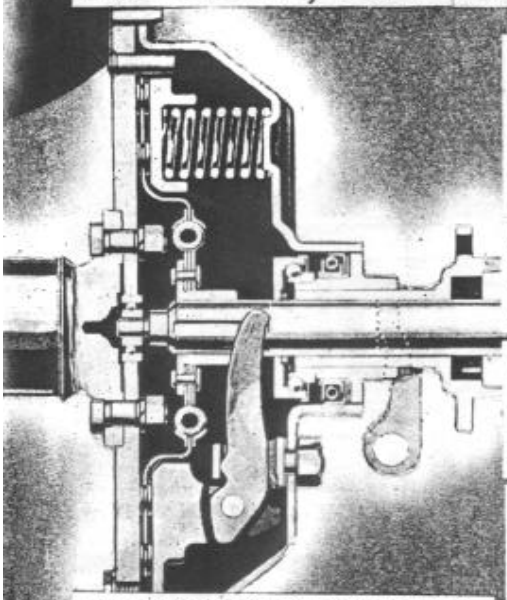


HIGH SPEED CIRCUIT—MODEL 41, 43, 44, 45, 47

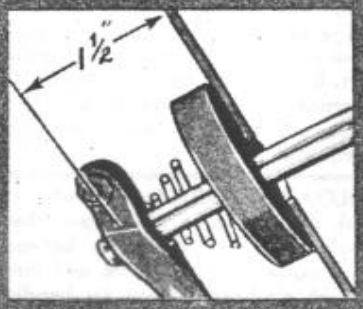
FUEL PUMP PRESSURE—MODEL 40: From 2 to 3 1/2 lbs.

FUEL PUMP PRESSURE—MODEL 41, 43, 44, 45, 48: From 3 to 4 1/2 lbs.

HUDSON, '40 — Clutch, Transmission



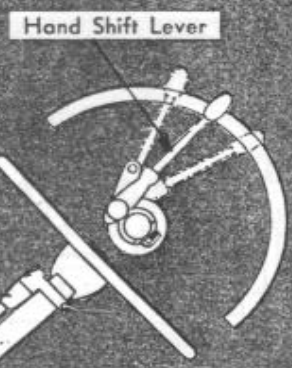
CLUTCH PEDAL ADJUSTMENT — ALL MODELS: Required lash obtained by removing pedal linkage clevis pin, loosening yoke nut and turning yoke so that center of pedal shank clamp bolt is 1½" from toe board when clutch is fully engaged.

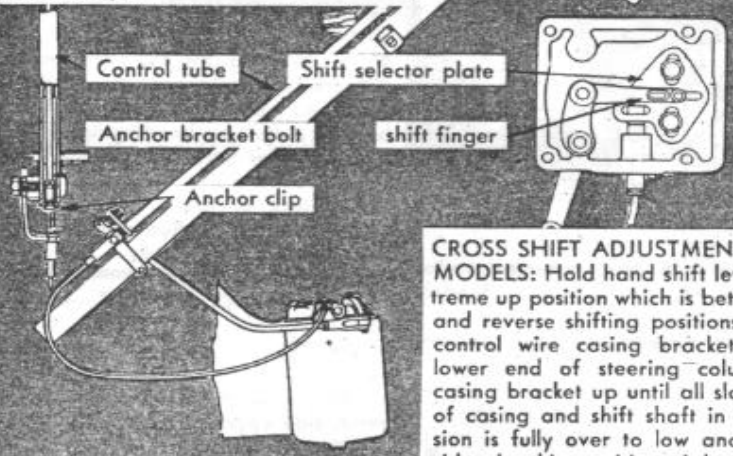


CLUTCH — ALL MODELS: Oil cushioned, single plate type. Drain and refill every 5,000 miles with special clutch lubricant. Capacity, ⅓ pt.

CLUTCH RELEASE BEARING — ALL MODELS: Lubricate with viscous chassis lubricant every 1,000 miles. Fitting located on right rear edge of bellhousing.

HANDY SHIFT OPERATING ROD ADJUSTMENT—ALL MODELS: Neutral position for hand shift lever should be at right angle to center line of car. With transmission cover lever and hand shift lever in neutral positions, turn yoke at transmission end of shift operating rod, until clevis pin will drop into lever without moving position of either lever.

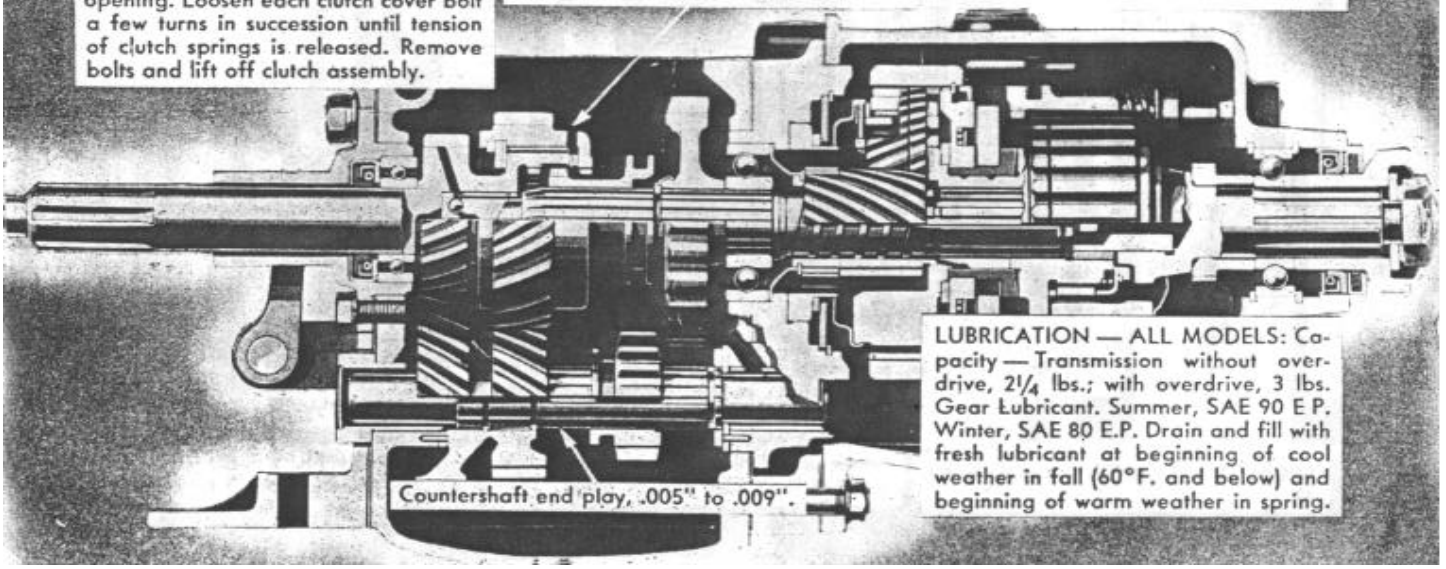




TRANSMISSION AND CLUTCH REMOVAL—ALL MODELS: Move front seat back as far as it will go and remove front seat cushion. Remove accelerator pedal and four screws holding kick pad to dash. Remove six floor mat trim clips and remove floor mat. Remove floor plate bolts and cotter pins holding pedal link to cross shaft rod. Remove floor plate. Disconnect front universal joint. Unhook clutch pedal lever return spring and remove two cross shaft bracket bolts. Remove clutch control link clevis pin. Release clutch pedal assisting spring. Loosen inside nuts on transmission side bumper rods and remove rubber bumpers. Push bumper rod out of way. Disconnect shift control tube. Remove transmission cover. Raise up front end of car and remove flywheel guard and two engine rear mounting bolts. Jack up rear end of engine so that engine mounting clears frame cross member about ½". Remove bellhousing bolts and disconnect speedometer cable at transmission. Pull transmission assembly straight back and out through floor opening. Loosen each clutch cover bolt a few turns in succession until tension of clutch springs is released. Remove bolts and lift off clutch assembly.

CROSS SHIFT ADJUSTMENT — ALL MODELS: Hold hand shift lever in extreme up position which is between low and reverse shifting positions. Loosen control wire casing bracket bolt at lower end of steering column. Pull casing bracket up until all slack is out of casing and shift shaft in transmission is fully over to low and reverse side. In this position tighten casing bracket bolt. Anchor clip in control wire should have clearance at top and bottom of travel.

Main shaft intermediate gear bearing clearance, .0005"; end play, .003" to .011".



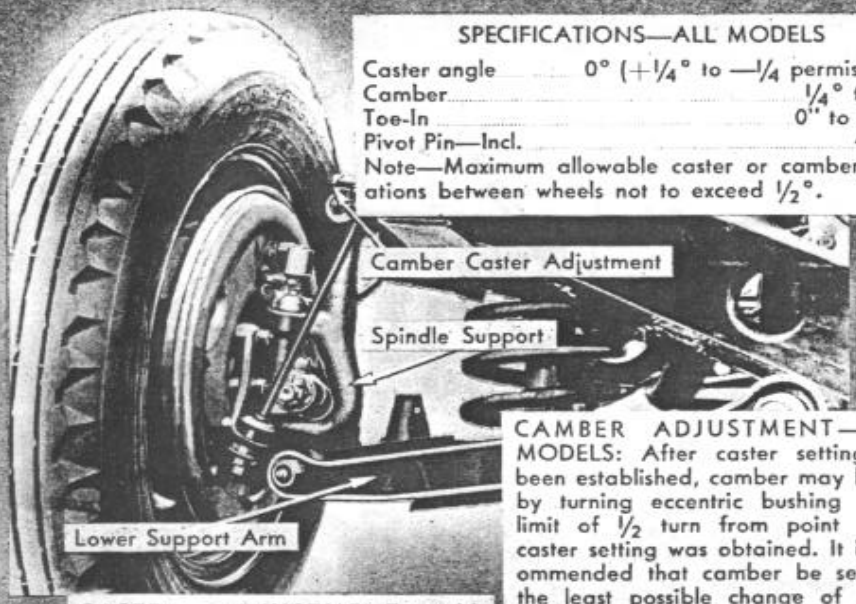
LUBRICATION — ALL MODELS: Capacity — Transmission without overdrive, 2¼ lbs.; with overdrive, 3 lbs. Gear Lubricant. Summer, SAE 90 E P. Winter, SAE 80 E.P. Drain and fill with fresh lubricant at beginning of cool weather in fall (60°F. and below) and beginning of warm weather in spring.

Steering, Axles — HUDSON, '40

SPECIFICATIONS—ALL MODELS

Caster angle	0° (+1/4° to —1/4 permissable)
Camber	1/4° to 3/4°
Toe-In	0" to 1/16"
Pivot Pin—Incl.	4° 36'

Note—Maximum allowable caster or camber variations between wheels not to exceed 1/2°.



CASTER ADJUSTMENT—ALL MODELS: Loosen upper support arm eccentric bushing lock screw. Turn eccentric bushing in multiples of one complete turn until specified caster setting is obtained. Turning eccentric bushing in clockwise direction increases caster. One complete turn of bushing changes caster 1/2°.

Note — Correct position of steering spindle support in relation to upper support arm should be approximately 7/8" measured from upper support arm boss to rear shoulder of spindle support. This position should establish 0° caster and 0° camber. When installing eccentric bushing screw bushing onto threaded end of upper support arm with spindle support held 9/32" from upper support arm boss. Continue turning eccentric bushing until it enters thread of spindle support and continued turning of bushing draws spindle support to a distance of 7/8" from support arm boss.

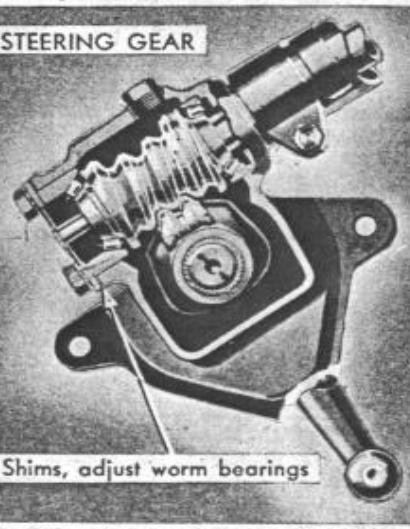
CAMBER ADJUSTMENT—ALL MODELS: After caster setting has been established, camber may be set by turning eccentric bushing within limit of 1/2 turn from point where caster setting was obtained. It is recommended that camber be set with the least possible change of caster setting.

TOE-IN ADJUSTMENT—ALL MODELS: When checking, weight of car must be on wheels, front wheels straight ahead, maximum amount of tire run-out at top or bottom, center steering arm in exact center of car, and steering gear in mid-position. Rock car back and forth sideways several times to normalize any tension in front system. To adjust, turn each tie rod an equal amount in required direction until specified toe-in is obtained. Turning tie rods in direction of forward wheel rotation increases toe-in.

SUSPENSION: PIN AND BUSHING CLEARANCE—ALL MODELS: Clearance of .012" to .026" is provided between threaded pins and their bushings. This permits space for lubrication and also allow free action for oscillation. Under no circumstances should these clearances be reduced below above tolerance.

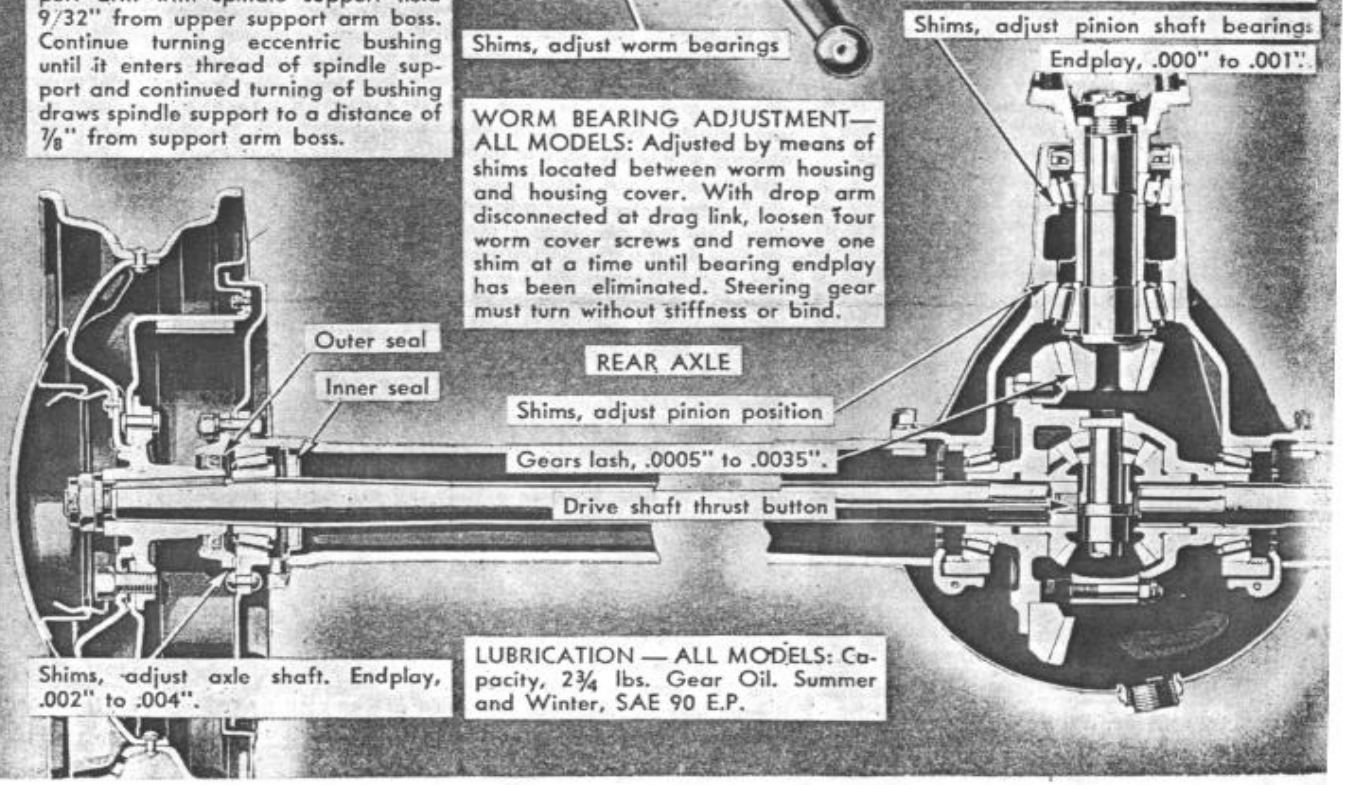
ROLLER TOOTH AND WORM LASH ADJUSTMENT — ALL MODELS: Adjusted by means of slotted screw extending through housing cover on left hand side, and accessible through opening in frame. To adjust, remove adjusting screw lock nut and slide off lock plate far enough to clear lock boss on roller shaft cover. With drag link disconnected at drop arm and steering gear in mid-position, turn adjusting screw in clockwise direction until lash is eliminated. Check endplay at steering gear drop arm. It is preferable to have a slight amount of endplay at this point rather than a bind.

STEERING GEAR



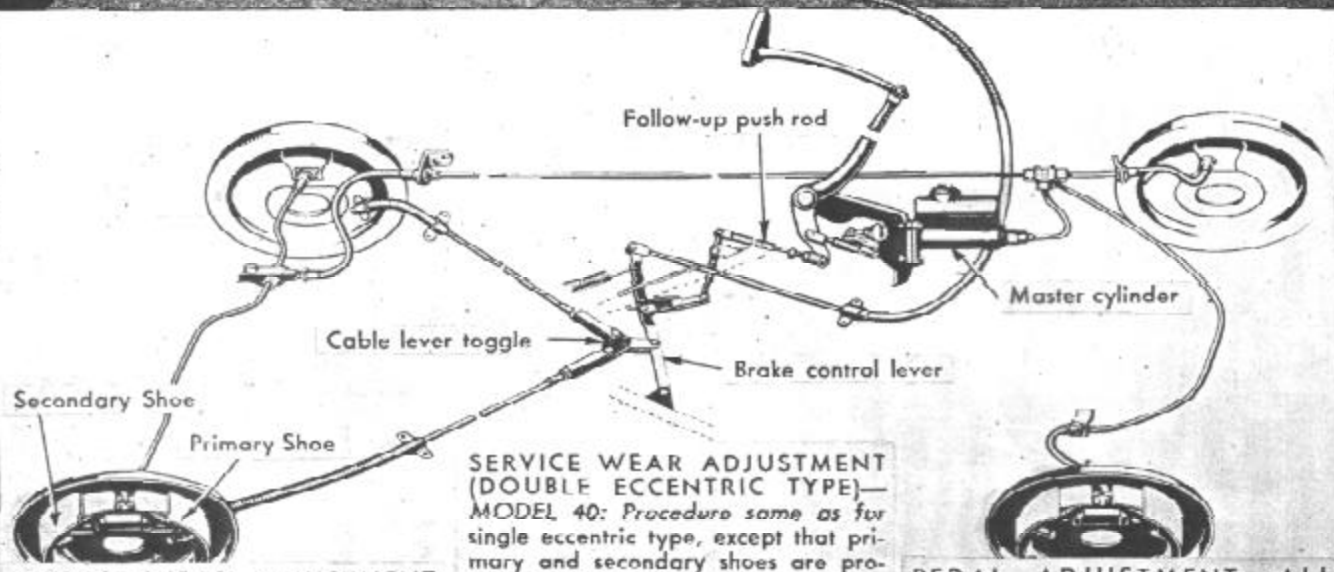
WORM BEARING ADJUSTMENT—ALL MODELS: Adjusted by means of shims located between worm housing and housing cover. With drop arm disconnected at drag link, loosen four worm cover screws and remove one shim at a time until bearing endplay has been eliminated. Steering gear must turn without stiffness or bind.

REAR AXLE

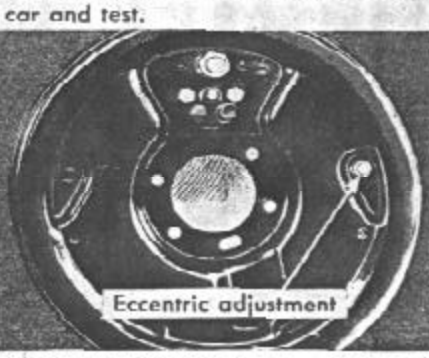


LUBRICATION — ALL MODELS: Capacity, 2 3/4 lbs. Gear Oil. Summer and Winter, SAE 90 E.P.

HUDSON, '40 — Brakes

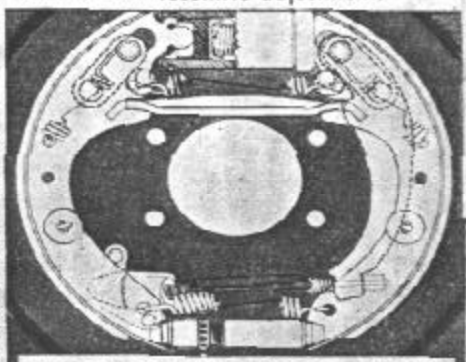


SERVICE WEAR ADJUSTMENT (SINGLE ECCENTRIC TYPE)—MODEL 41, 43, 44, 45, 47, 48: Raise car clear of floor and dismount wheels. Disconnect hand brake cables at cable lever toggle. Remove inspection hole cover at edge of drums and brake backing plate. *Insert .010" feeler blade* between drum and lining of secondary shoe (rear shoe). Loosen eccentric adjustment lock nut and turn eccentric in direction of forward wheel rotation until .010" feeler blade is just snug at anchor (top) and at shoe adjusting (lower) ends of secondary shoe. Hold eccentric position and tighten lock nut. Repeat this operation at other three drums. Expand brake shoe by inserting tool through inspection hole at backing plate, moving end of tool toward center of backing plate until drums can just be turned by hand. Pull hand brake lever two notches from full release position, or until 1/8" clearance is obtained between brake control lever and end of slot in lever guide plate. *Pull cables tight and adjust length so* that clevis pin just enters hole in toggle. Release hand brake. Back off shoe adjusting screw equal number of notches until all drums are just free of lining drag. Replace all inspection hole covers and reinstall wheels. Lower car and test.



BRAKE BACKING PLATE — MODEL 41, 43, 44, 45, 47

SERVICE WEAR ADJUSTMENT (DOUBLE ECCENTRIC TYPE)—MODEL 40: *Procedure same as for* single eccentric type, except that primary and secondary shoes are provided with eccentric adjustment.



FLOATING TYPE SHOES — MODEL 40

PEDAL PUSH ROD ADJUSTMENT—ALL MODELS: Mechanical follow-up feature of Hudson braking system and its value as a safety factor is dependent upon proper adjustment. Adjustment should be carefully checked whenever any brake work or inspection is made.

With brake control lever against stop, loosen lock nut and adjust push rod until rear face is 1 1/4" from front end of push rod. Tighten lock nut.

ANCHOR PIN ADJUSTMENT (SINGLE ECCENTRIC TYPE)—MODEL 41, 43, 44, 45, 47, 48: Necessary when shoes are relined, or when satisfactory wear adjustment cannot be obtained with lining in serviceable condition. To adjust—Loosen anchor pin lock nut one turn. Tap pin in required direction with soft hammer, while turning eccentric (direction of forward wheel rotation to decrease clearance) until .010" clearance is obtained at adjusting screw end and anchor end of shoe against which eccentric operates. Tighten anchor pin nut securely with 16" wrench. Hold eccentric and tighten lock nut. Recheck clearance at both ends.

PEDAL ADJUSTMENT—ALL MODELS: Loosen pedal pull rod adjustable end nut. Remove clevis pin from bottom of master cylinder operating lever. Turn pull rod to increase or decrease rod length until clevis pin just enters rod with pedal shank 1/4" *from under side of toe board and* bell crank against its stop. Install clevis pin and tighten rod nut.

BLEEDING BRAKE SYSTEM — ALL MODELS: Brake system requires bleeding when lines are disconnected, or whenever air enters system. If main line is disconnected, system must be bled at all four wheels. When disconnected at one wheel, that wheel only must be bled. Be sure to fill master cylinder and keep it at least half full during bleeding operation.

To bleed, remove screw from end of bleeder valve and attach bleeder tube. Bleeder tube should hang in clean glass jar with free end submerged in brake fluid. Open bleeder valve 3/4 turn. Depress brake pedal slowly and allow to return slowly. Continue this operation until fluid entering jar is solid stream free of air bubbles. Close bleeder valve and repeat same procedure at other three wheels. After completing bleeding operation, fill master cylinder reservoir. Use new fluid only.

BRAKE BACKING PLATE — MODEL 40

1941 Hudson

Marwil Technical Bulletin

JULY 1941.

Marwil

TECHNICAL BULLETIN.

SERIES EIGHT
1941

Subscription Price
$3.50 Per Year

1941 HUDSON

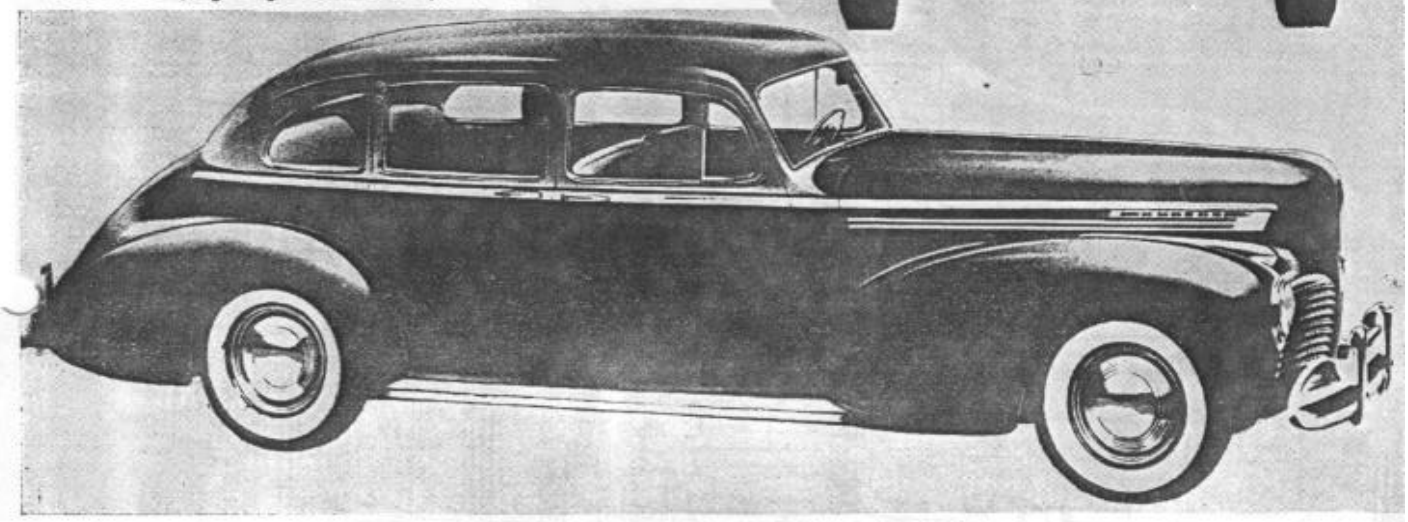
Model 10 (Traveler, Utility and De Luxe Six) . . . . . Wheelbase 116"

Models 11, 12 (Super Six and Commodore Six) . . . . . Wheelbase 121"

Models 14, 15 (Commodore Eight and Commodore Custom Eight . . . . Wheelbase 121"

Model 17 (Commodore Custom Eight) . . Wheelbase 128"

Model 18 (Big Boy Commercial) . . . . Wheelbase 128"



SPECIFICATIONS

MODEL 10: Six cyl. Bore, 3"; stroke, 4⅛". Piston displacement, 175 cu. in. Compression ratio, 7.25:1. H.P., taxable, 21.6; brake, 92 at 4000 R.P.M.

MODELS 11, 12, 18: Six cyl. Bore, 3"; stroke, 5". Piston displacement, 212 cu. in. Compression ratio, 6.50:1. H.P., taxable, 21.6. Brake H.P.—Models 11, 12, 102 at 4000 R.P.M. Model 18, 98 at 4000 R.P.M.

MODELS 14, 15, 17: Eight cyl. Bore, 3"; stroke 4½". Piston displacement, 254 cu. in. Compression ratio, 6.50:1. H.P., taxable, 28.8; brake 128 at 4200 R.P.M.

SERIAL NUMBER: Stamped on plate attached to right front door hinge pillar post.

MOTOR NUMBER: Motor number, which is same as serial number, is stamped on top of cylinder block between Nos. 1 and 2 exhaust manifold flanges.

Photographs—Courtesy Hudson Motor Car Co.

Printed in U. S. A.

HUDSON, '41—Motor

When gap is closed clearance should be zero.

PISTONS — ALL MODELS: Low expansion silicon aluminum alloy, "T" slot type, cam ground. On Six, remove from top of block. On Eight, remove from top or bottom. Install with "T" slot facing away from camshaft side of engine. Piston weight 10.5 oz.

PISTON CLEARANCE — ALL MODELS: Skirt clearance, .001" to .002". Top ring land clearance, .016". When fitting, check clearance with .0015" feeler gauge inserted between thrust side of piston and cylinder bore. Clearance correct when 3 to 4 lbs., scale pull required to withdraw feeler.

PISTON PINS — ALL MODELS: Full floating type secured by snap rings in piston bosses. Fit pin to piston at hand push fit, with piston heated to 200° F. Clearance in rod bushing .0003" or thumb push fit at normal room temperature.

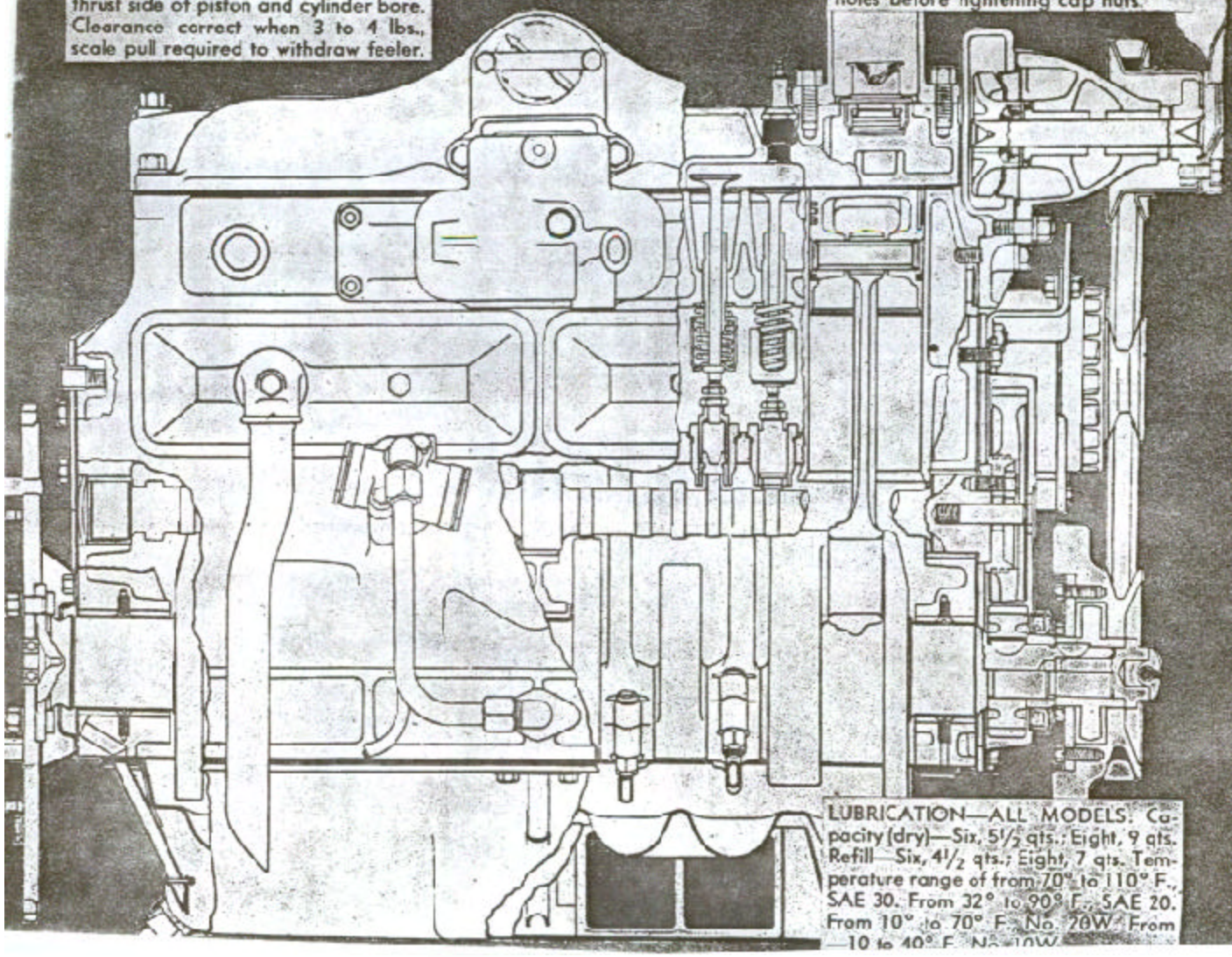
PISTON RINGS — ALL MODELS: Two 3/32" compression rings, one 3/16" oil control ring located above piston pin, and one 3/16" oil control ring located on piston skirt. All rings are pin located at gap ends. When fitting rings, pin lock notch clearance should equal ring gap. Gap clearance, compression and oil control, .009" to .011".

CONNECTING ROD BEARINGS — ALL MODELS: Lead alloy bearing metal lined, bonded directly to rod and cap. Bearing metal thickness, .015". Rod bearings not adjustable. Never file bearing cap to reduce clearance. Bearing radial clearance, .001". Endplay, .006" to .010". Tighten cap bolt nut to 630 in. lbs. or 52.5 ft. lbs. Palnut, finger tight then 1/3 turn more to lock it.

CONNECTING RODS — ALL MODELS: Offset at lower bearing end. Six—Assemble rods Nos. 1, 2, and 4 with short side of offset toward front of engine. Nos. 3, 5 and 6, short side of offset toward rear of engine. Eight—Nos. 1, 3, 5 and 7, short side of offset toward front of engine. Nos. 2, 4, 6 and 8, short side of offset to rear of engine.

MAIN BEARINGS — ALL SERIES: Bronze back, special bearing metal lined. Crankshaft must be removed to replace main bearings. Bearings available in sets finished to size, or semi-finished to permit line reaming. Not adjustable. Never file bearing caps to reduce clearance. Bearing radial clearance, .001". On Six, thrust taken on center bearing. On Eight, thrust taken at No. 3 bearing. End play, Six and Eight, .006" to .012". Tighten main bearing cap stud nuts to 900 in. lbs., or 75 ft. lbs. Palnut, finger tight, and 1/3 turn more to lock it.

Note—When replacing front and rear bearing caps, centralize cap by inserting 1/4" drill rod in vertical packing holes before tightening cap nuts.



LUBRICATION — ALL MODELS: Capacity (dry)—Six, 5 1/2 qts.; Eight, 9 qts. Refill—Six, 4 1/2 qts.; Eight, 7 qts. Temperature range of from 70° to 110° F., SAE 30. From 32° to 90° F., SAE 20. From 10° to 70° F. No. 20W. From —10 to 40° F. No. 10W.

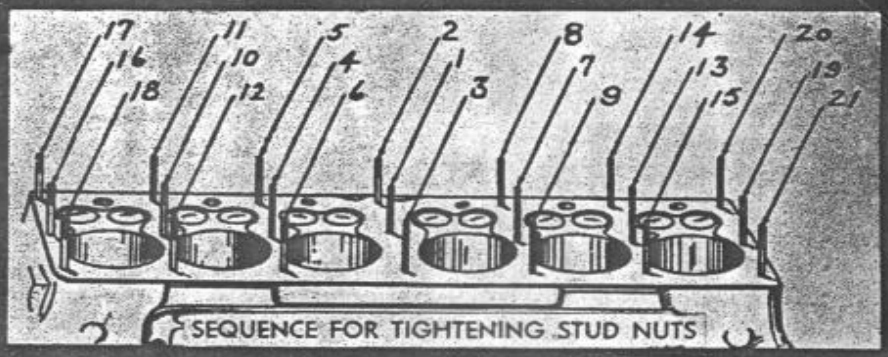
CYLINDER HEAD STUD NUT TENSION—ALL MODELS: With torque indicating wrench, tighten stud nuts in recommended sequence. On Six, 40 ft. lbs., Eight, 50 ft. lbs. Final tightening and check should be made after engine has been run and allowed to normalize.

CRANKSHAFT JOURNAL AND CRANK PIN SIZE—ALL MODELS: Some engines are built with .010" undersize crankshaft bearing journals, crank pins, or both. To identify these three conditions, marks are stamped on bottom face of crankcase at left front corner. Marks can be seen without removing oil pan and are as follows:

Letters "MU," indicates .010" undersize crankshaft bearing journals.

Letters "PU," indicates .010" undersize crank pins.

Letters "PMU," indicates both crank pins and crankshaft bearing journals are .010" undersize.



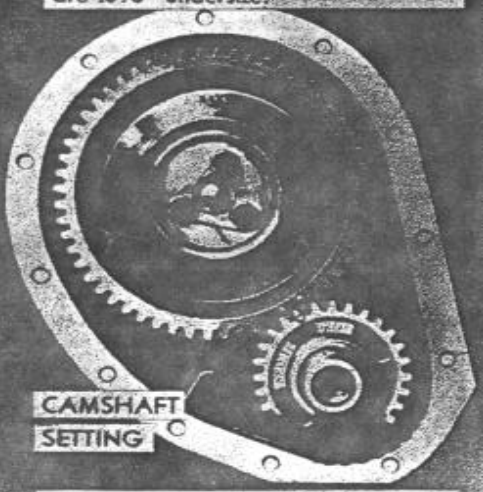
SEQUENCE FOR TIGHTENING STUD NUTS

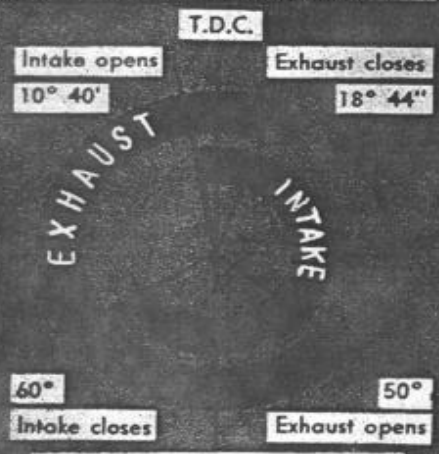
VALVE SEATS—ALL MODELS: Seat angle—Intake and exhaust, 45°.

VALVE GUIDES—ALL MODELS: Removable type. Distance from top of guide to top of block on Six, 1 1/16"; Eight, 15/16". Valve stem to guide clearance—Intake, .0025"; exhaust, .004".

VALVE TAPPETS—ALL MODELS: Running clearance with engine at normal operating temperature—Intake, .006"; exhaust, .008".

VALVE SPRINGS—ALL MODELS: Spring pressure when compressed to 2" length, 40 lbs.; compressed to 1 21/32" length, 80 lbs. Springs that show pressure less than 34 lbs. at 2" compression should be replaced.


CAMSHAFT SETTING



VALVE TIMING—ALL MODELS

COOLING SYSTEM: Capacity—Six, 13 qts.; Eight, 18 qts.

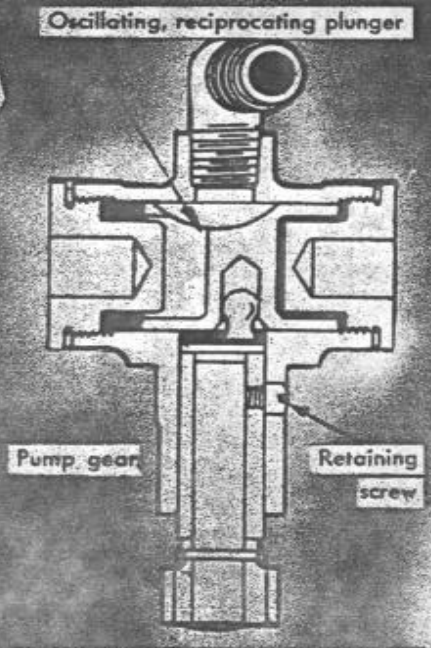
THERMOSTAT—ALL MODELS: Designed to start opening at 150° to 155° F., and fully open at 185° F. Unit not adjustable and should be replaced when at fault.

WATER PUMP—ALL MODELS: Spring loaded internal seal type requiring no adjustment. Shaft to bushing clearance, .0015" to .0025". When assembling provide from .010" to .014", shaft endplay measured between fan pulley hub and front face of bushing.

CAMSHAFT BEARINGS—ALL MODELS: Replaceable type. Bearings available reamed sufficiently under size, so that when pressed into place will provide required .001" clearance. A spring loaded plunger bearing against a hardened plate on timing gear cover prevents end play and holds shaft against a fibre thrust washer located between camshaft flange and engine block.

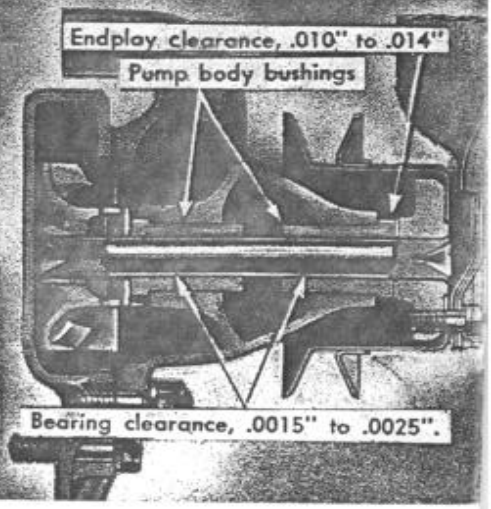
CAMSHAFT GEAR—ALL MODELS: Laminated fiber, 20° pressure tooth angle. Gear Lash—On Six, .002" to .003"; on Eight, .004" to .005". Install with two marks on camshaft gear in register with marked tooth on crankshaft gear. Before installing new gear cover oil seal, apply a coating of white lead in seal recess and make certain oil seal is pressed tightly in place.

Note—New 20° tooth angle gear must never be used with a gear of old tooth pressure type. Both gears must be changed and may be identified by "20" stamped on face of gear.

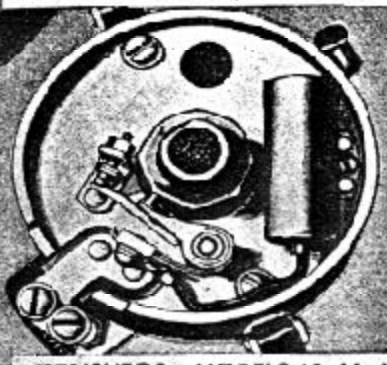


OIL PUMP—ALL MODELS: Oscillating, reciprocating plunger type, driven by camshaft.

System provided with spring loaded check valve switch which operates telltale light on instrument panel to indicate oil pressure. With hot oil, pressure ranges from 4 to 12 lbs.



HUDSON, '41—Tune-Up

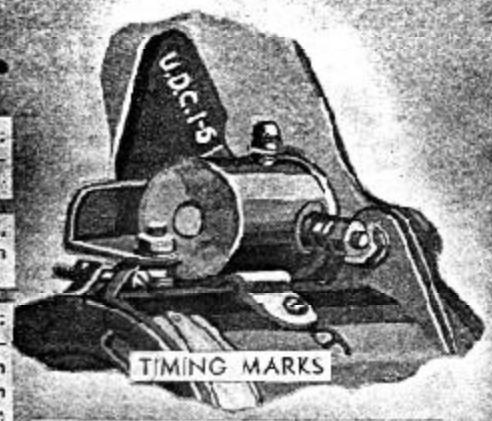


FIRING ORDER Six, 1-5-3-6-2-4.
Eight, 1-6-2-5-8-3-7-4.

SPARK PLUG GAP—ALL MODELS: Check with wire loop feeler and adjust to .032".

INITIAL IGNITION SETTING: On Six, 1/2" before "U.D.C. 1-6" mark. On Eight, "U.D.C. 1-8" mark.

IGNITION TIMING—ALL MODELS: Turn engine until No. 1 piston is approaching U.D.C. of compression stroke. Stop when specified mark on face of flywheel is in register with pointer on rear engine support plate (left side). On Six, loosen diaphragm arm screw and turn distributor body counter clockwise (retard) to limit of quadrant slot. On Eight, loosen distributor clamp plate screw and turn distributor body clockwise (retard) to limit of plate slot. Using a timing light (ignition switch on) advance distributor body slowly, turning clockwise on Six and counter-clockwise on Eight, until light just flashes, indicating point break, distributor rotor in position to fire No. 1 plug. Tighten clamping screw.



TIMING MARKS

To accurately check ignition timing a synchroscope is recommended. To check, connect synchroscope lead to No. 1 spark plug and remaining lead to engine (ground). Run engine at idle speed equivalent to 7 M.P.H. If ignition timing is correct, flash should occur when specified flywheel marks and pointer on engine support plate are in register. Mark on flywheel should move up as engine speed is increased and return to pointer when engine idles. Make minor changes by loosening clamping screw and rotate distributor slightly in required direction.

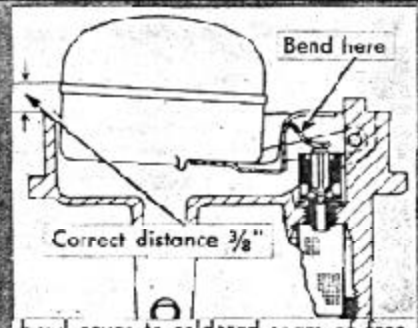
DISTRIBUTOR—MODELS 10, 11, 12, 18: Point gap, .020", or 33° cam angle. Breaker arm spring tension, 17 to 20 oz. Automatic advance starts at 400 D.R.P.M.; maximum advance, 11.75° at 1570 D.R.P.M. Vacuum advance starts at 6.75" Hg.; maximum advance, 7.5° (distributor) at 10" Hg. Direction of rotation, counter-clockwise.

DISTRIBUTOR—MODELS 14, 15, 17: Point gap, .017", or 27.5° cam angle. Breaker arm spring tension, 17 to 20 oz. Automatic advance starts at 300 D.R.P.M. Maximum advance, 17.5° at 1700 D.R.P.M. Direction of rotation, clockwise.

CARBURETOR

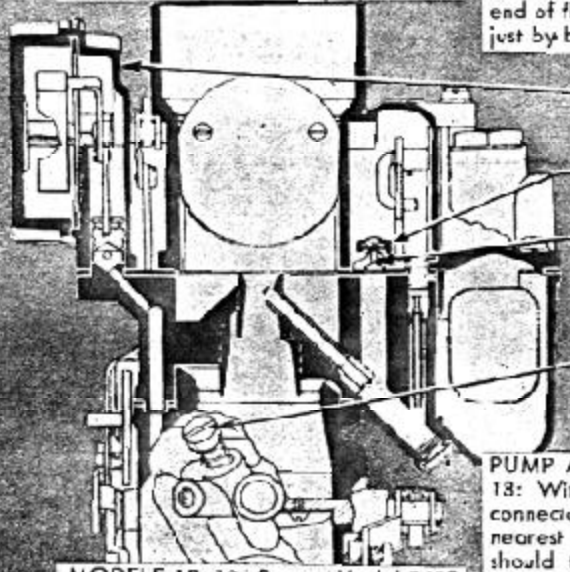
IDLE ADJUSTMENT — MODELS 10, 18: Initial setting for idle mixture adjusting screw, 3/4 to 1 1/2 turns open. With engine at normal operating temperature, set throttle lever stop screw so engine idles approximately 7 M.P.H. To richen mixture turn adjusting screw "OUT". Adjust so engine fires evenly without loping, or stalling.

FLOAT LEVEL — MODELS 10, 18: With float bowl cover inverted, seating needle valve, measure distance from end of machined projection of



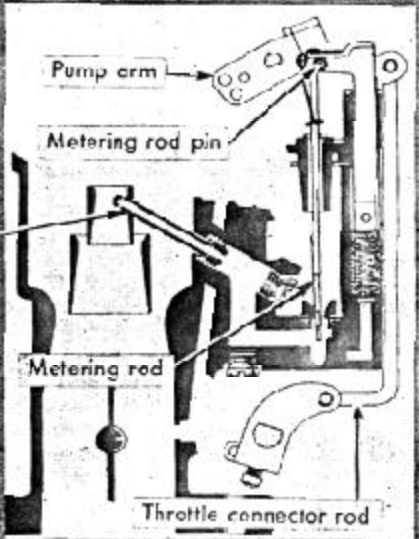
bowl cover to soldered seam of free end of float. Correct distance 3/8". Adjust by bending lip on float arm.

METERING ROD ADJUSTMENT — MODELS 10, 18: Correct setting is very important and must be made after pump adjustment. To adjust, insert Carter Gauge No. T-109-102, in place of metering rod, seating tapered end in metering rod jet. With throttle valve seated, press down lightly on piston link directly over piston. There should be less than .005" clearance between metering rod pin and shoulder in notch of gauge. Gauge must not drag on pin. Adjust by bending lip on piston link so that it contacts pump arm.



MODELS 10, 18: Carter, Model 545S (Single Throat).

PUMP ADJUSTMENT—MODELS 10, 18: With throttle valve seated and connector link in short stroke (hole nearest countershaft), pump plunger should travel 3/16" from closed to wide open position. Adjust by bending throttle connector link at lower angle.



HIGH SPEED CIRCUIT—MODELS 10, 18.

Tune-Up—HUDSON, '41

ANTI-PERCOLATOR ADJUSTMENT—MODELS 10, 18: Insert a .030" diameter gauge between lower edge of throttle valve and bore of carburetor opposite port. Bend rocker arm until there is a clearance of .005" to .015" (.010" preferred) between rocker arm and pump arm.

FAST IDLE ADJUSTMENT—MODELS 10, 18: With fast idle cam held in normal idle position, tighten throttle lever adjusting screw until it just seats against cam. Hold throttle lever closed and pull cam back until first step on cam is against (not on) set screw. There should be 5/8" clearance between inside wall of air horn and lower edge of choke valve. Adjust by bending offset portion of fast idle link.

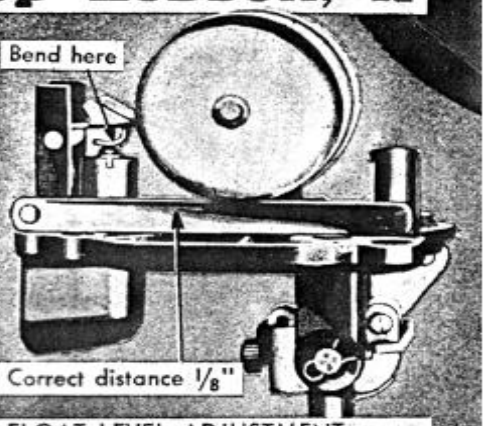
UNLOADER ADJUSTMENT—MODELS 10, 18: With throttle valve wide open, there should be 7/16" clearance between lower edge of choke valve and inner wall of air horn. Adjust by bending cam on throttle lever.

LOCK-OUT ADJUSTMENT—MODELS 10, 18: With throttle and choke valves wide open, choke should lock in wide open position. Adjust by bending lip at lower end of fast idle link to provide 1/32" clearance between lip and throttle lever lock, with throttle and choke valve held wide open.

FLOAT LEVEL ADJUSTMENT—MODELS 11, 12, 14, 15, 17: With float bowl cover inverted, seating needle valve, measure from surface of bowl cover (gasket removed) to bottom of float. Correct distance, 1/8". Check both ends of float. Adjust by bending lip on float arm.

PUMP ADJUSTMENT—MODELS 11, 12, 14, 15, 17: With pump connector link in long stroke (outer hole in pump arm) and throttle valve seated, pump plunger should travel 9/32" from closed to full open position. Adjust by bending throttle connector link at lower angle.

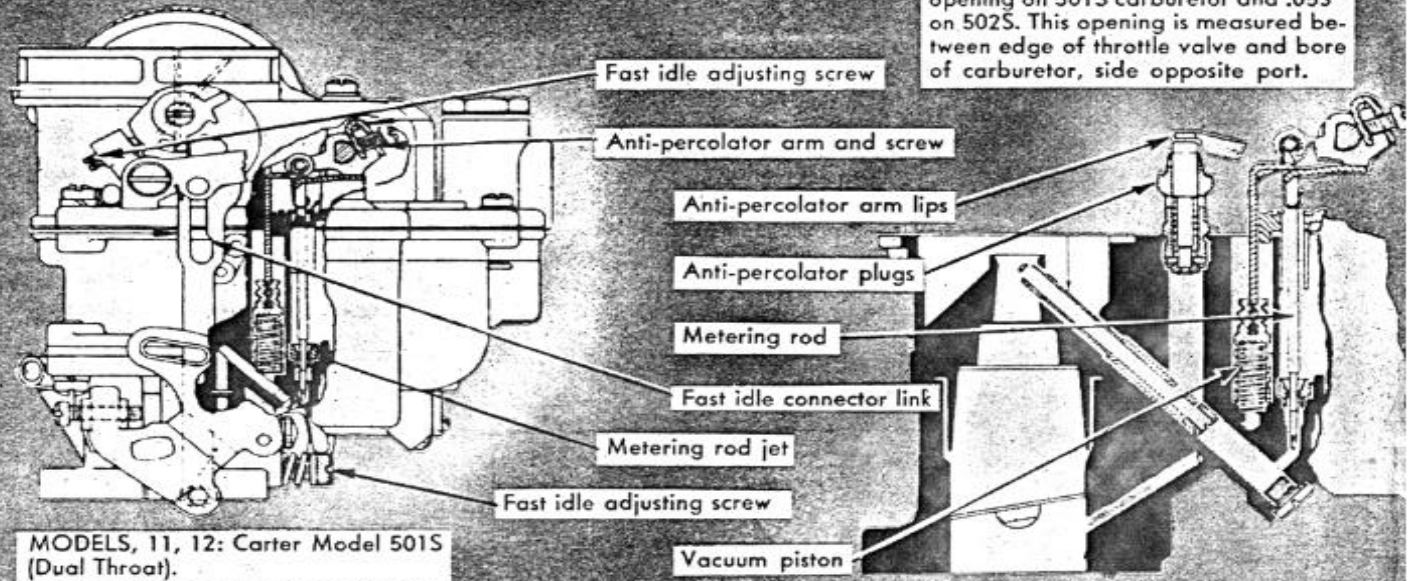
METERING ROD ADJUSTMENT—MODELS 11, 12, 14, 15, 17: Insert one metering rod gauge (Carter Gauge No. T109-113) in place of metering rod, seating tapered end in metering rod jet. Install metering rod pin and pin spring (previously removed) in metering rod arm. With throttle lever stop screw backed out, seating throttle valve, press down lightly on vacuum piston link until piston rests on bottom of cylinder. There should be less than .005" clearance between metering rod pin and shoulder of notch in gauge. With throttle valve seated, adjust by bending lip on anti-percolator arm.



FLOAT LEVEL ADJUSTMENT—MODELS 11, 12, 14, 15, 17

UNLOADER ADJUSTMENT—MODELS 11, 12, 14, 15, 17: With throttle valve wide open, distance between upper edge of choke valve and inner wall of air horn should be 1/4". Adjust by bending lip on fast idle connector link. With throttle wide open, push choke valve open. Choke should lock in this position; if not locked, recheck adjustment. Closing throttle will release choke.

FAST IDLE ADJUSTMENT—MODELS 11, 12, 14, 15, 17: With choke valve tightly closed and fast idle screw on upper stop of fast idle cam, adjust fast idle screw to provide .045" throttle opening on 501S carburetor and .053" on 502S. This opening is measured between edge of throttle valve and bore of carburetor, side opposite port.



MODELS, 11, 12: Carter Model 501S (Dual Throat).

MODELS 14, 15, 17: Carter Model 502S (Dual Throat).

IDLE ADJUSTMENT—MODELS 11, 12, 14, 15, 17: Initial setting for idle mixture adjusting screw, 1/2 to 1 1/2 turns open. With engine at normal operating temperature, set throttle lever stop screw so engine idles approximately 7 1/2 to 8 M.P.H. To richen mixture turn adjusting screws "out". Adjust one screw at a time until engine fires evenly without loping or stalling.

ANTI-PERCOLATOR ADJUSTMENT—MODELS 11, 12, 14, 15, 17: Adjustment must be made after pump and metering rod adjustment. Do not disturb these adjustments. To adjust, back out throttle lever stop screw, seating throttle valve. With throttle valve seated, bend lips of anti-percolator arm until center of indicator lines on both valves are just flush with top of plugs.

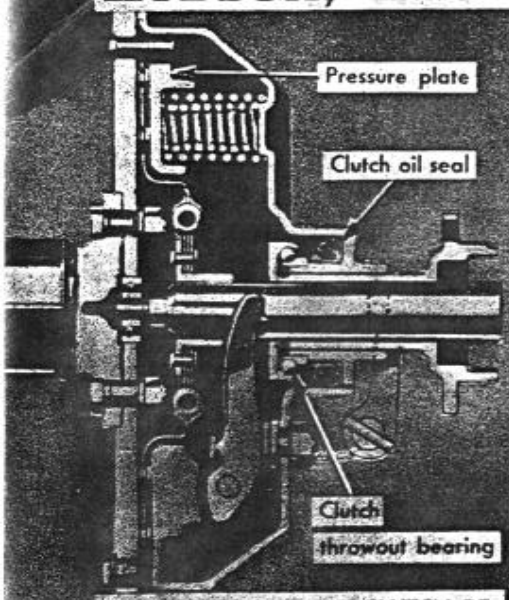
HIGH SPEED CIRCUIT—MODELS 11, 12, 14, 15, 17.

FUEL PUMP PRESSURE—MODELS 10, 18: Inverted bowl A.C. Model "AF", 2 to 3 1/2 lbs.

FUEL PUMP PRESSURE—MODELS 11, 12, 14, 15, 17, 18: Appended bowl A.C. Model "AP", 3 to 4 1/2 lbs.

FUEL PUMP PRESSURE—ALL MODELS: Combination fuel and vacuum A.C. Model "AJ", 3 to 4 lbs.

HUDSON, '41—Clutch, Transmission



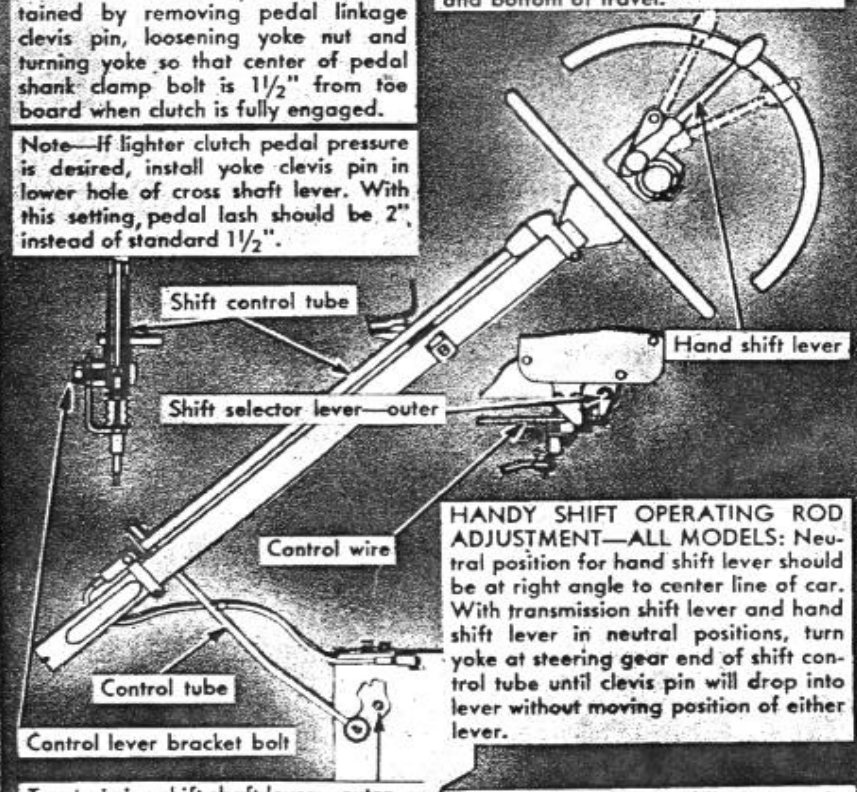
CLUTCH—ALL MODELS: Oil cushioned, single plate type. Drain and refill every 5,000 miles with special clutch lubricant. Capacity, 1/3 pts.

CLUTCH RELEASE BEARING—ALL MODELS: Lubricate with viscous chassis lubricant every 1,000 miles. Fitting located on right rear edge of bellhousing.

CLUTCH PEDAL ADJUSTMENT—ALL MODELS: Required lash obtained by removing pedal linkage clevis pin, loosening yoke nut and turning yoke so that center of pedal shank clamp bolt is 1 1/2" from toe board when clutch is fully engaged.

Note—If lighter clutch pedal pressure is desired, install yoke clevis pin in lower hole of cross shaft lever. With this setting, pedal lash should be 2", instead of standard 1 1/2".

CROSS SHIFT ADJUSTMENT—ALL MODELS: Hold hand shift lever in extreme "up" position, which is between low and reverse shifting positions. Loosen control casing bracket bolt at lower end of steering column. Pull casing bracket up until all slack is removed from casing, and shift lever at transmission is fully over to low and reverse side. In this position tighten casing bracket bolt. Anchor clip in control wire should have clearance at top and bottom of travel.



HANDY SHIFT OPERATING ROD ADJUSTMENT—ALL MODELS: Neutral position for hand shift lever should be at right angle to center line of car. With transmission shift lever and hand shift lever in neutral positions, turn yoke at steering gear end of shift control tube until clevis pin will drop into lever without moving position of either lever.

Note—When disassembling transmission, shift shaft inner lever and shaft must be prick punch marked, so that they may be reinstalled in original position.

TRANSMISSION AND CLUTCH REMOVAL—ALL MODELS: Move front seat back as far as it will go and remove front seat cushion. Remove accelerator pedal and four screws holding kick pad to dash. Slide steering column hole cover up out of way. Remove six floor mat trim clips and remove floor mat. Remove floor opening cover bolts and remove floor plate. Disconnect front universal joint. Unhook clutch pedal lever return spring. Remove two cross shaft bracket bolts. Remove clutch control link clevis pin. Release clutch pedal assisting spring. Disconnect shift control tube and remove shift shaft outer lever. Remove selector casing bracket and selector wire. Raise up front end of car and remove flywheel guard and two engine rear mounting bolts. Jack up rear end of engine so that engine mounting clears frame cross member about 1/2". Remove bellhousing bolts and disconnect speedometer cable at transmission. Pull transmission assembly straight back and out through floor opening. Loosen each clutch cover bolt a few turns in succession until tension of clutch springs is released. Remove bolts and lift off clutch assembly.

Main drive gear lock ring must fit tight in groove; available in .090", .093" and .096" thicknesses.

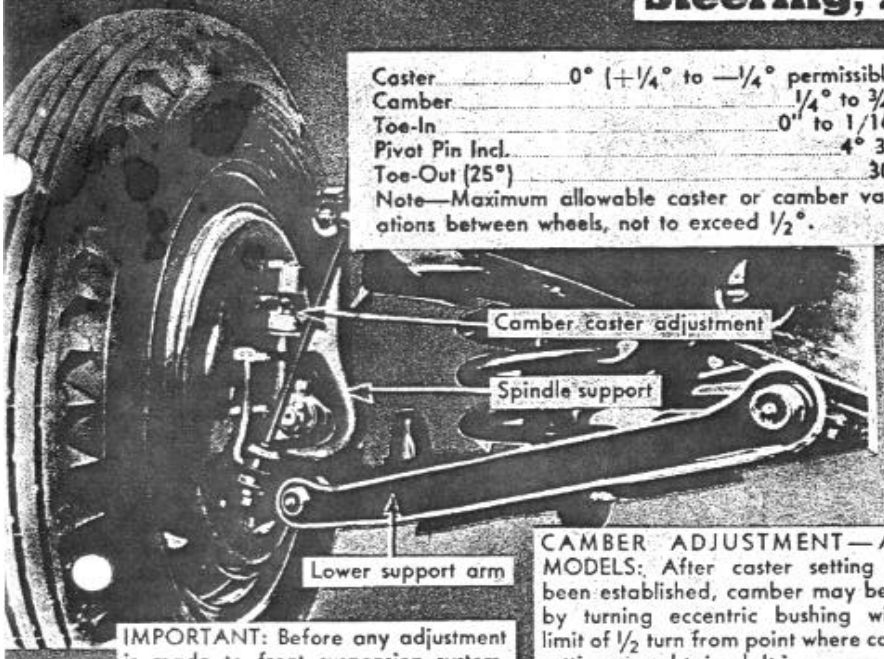
Synchronizer shift sleeve lock ring must fit tight in groove. Available in four thicknesses, .087", .090", .093" and .096".

LUBRICATION—ALL MODELS: Capacity—Transmission without overdrive, 2 lbs.; with overdrive, 3 1/4 lbs., Gear Lubricant. Summer, SAE 90, E.P. Winter, SAE 80 E.P. Drain and fill with fresh lubricant at beginning of cool weather in fall (60° F. and below), and beginning of warm weather in spring.

Steering, Axles—HUDSON, '41

Caster	0° (+1/4° to —1/4° permissible)
Camber	1/4° to 3/4°
Toe-In	0" to 1/16"
Pivot Pin Incl.	4° 36'
Toe-Out (25°)	30°

Note—Maximum allowable caster or camber variations between wheels, not to exceed 1/2°.



WORM BEARING ADJUSTMENT—ALL MODELS: Adjusted by means of shims located between worm housing and housing cover. With drop arm disconnected at drag link, loosen four worm cover screws and remove one shim at a time until bearing end play has been eliminated. Steering gear must turn without stiffness or bind.

IMPORTANT: Before any adjustment is made to front suspension system, check the following and make necessary corrections: Check front tires for recommended pressure. Check front wheel bearing adjustments. Make necessary correction for excessive lost motion in steering spindle pivot pins. Check drag link and adjust. Replace connecting rod ends if excessively loose. Check front wheels and tires for run out, must not exceed 3/32". Check front wheels for balance. Check shock absorbers for proper action. Normalize front springs, by rocking car (not at bumper). Front of car must be level and steering gear in mid-position.

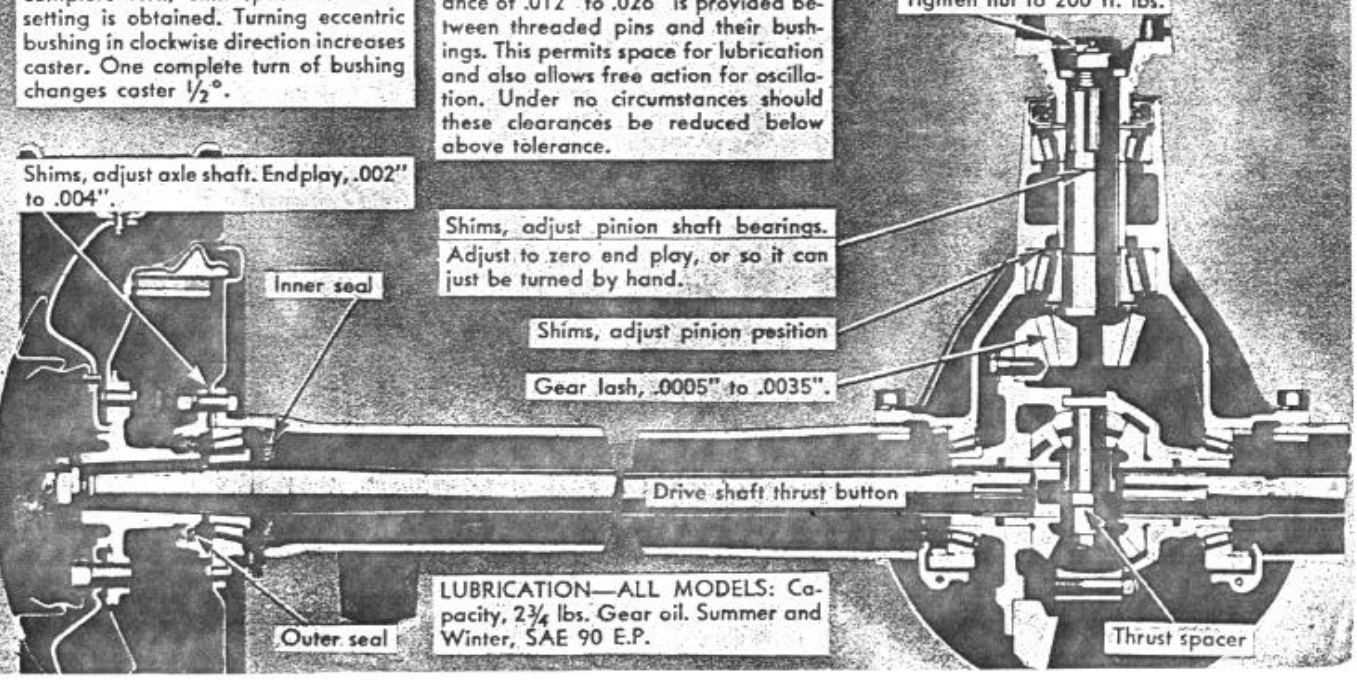
CAMBER ADJUSTMENT—ALL MODELS: After caster setting has been established, camber may be set by turning eccentric bushing within limit of 1/2 turn from point where caster setting was obtained. It is recommended that camber be set with the least possible change of caster setting.

CASTER ADJUSTMENT — ALL MODELS: Loosen upper support arm eccentric bushing lock screw. Turn eccentric bushing in multiples of one complete turn, until specified caster setting is obtained. Turning eccentric bushing in clockwise direction increases caster. One complete turn of bushing changes caster 1/2°.

TOE-IN ADJUSTMENT — ALL MODELS: When checking, weight of car must be on wheels, front wheels straight ahead, maximum amount of tire run-out at top or bottom, center steering arm in exact center of car, and steering gear in mid-position. Rock car back and forth sideways several times to normalize any tension in front system. To adjust, turn each tie rod an equal amount in required direction until specified toe-in is obtained. Turning tie rods in direction of forward wheel rotation increases toe-in.

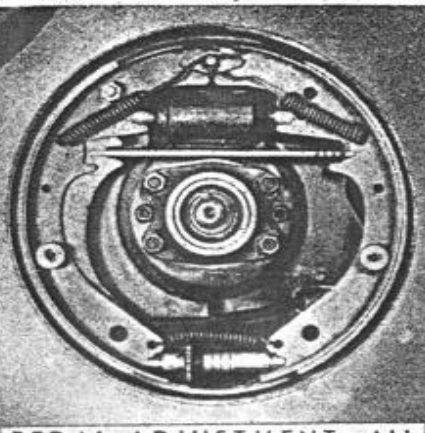
ROLLER TOOTH AND WORM, LASH ADJUSTMENT—ALL MODELS: Adjusted by means of slotted screw extending through housing cover on left hand side, and accessible through opening in frame. To adjust, remove adjusting screw lock nut and slide off lock plate far enough to clear lock boss on roller shaft cover. With drag link disconnected at drop arm and steering gear in mid-position, turn adjusting screw in clockwise direction until lash is eliminated. Check endplay at steering gear drop arm. It is preferable to have a slight amount of end play at this point rather than a bind.

SUSPENSION, PIN AND BUSHING CLEARANCE—ALL MODELS: Clearance of .012" to .026" is provided between threaded pins and their bushings. This permits space for lubrication and also allows free action for oscillation. Under no circumstances should these clearances be reduced below above tolerance.



LUBRICATION—ALL MODELS: Capacity, 2 3/4 lbs. Gear oil. Summer and Winter, SAE 90 E.P.

HUDSON, '41—Brakes



PEDAL ADJUSTMENT—ALL MODELS: Loosen pedal pull rod adjustable end nut. Remove clevis pin from bottom of master cylinder operating lever. Turn pull rod to increase or decrease rod length, until clevis pin just enters rod with pedal shank 1/4" from under side of toe board and bell crank against its stop. Install clevis pin and tighten rod nut.

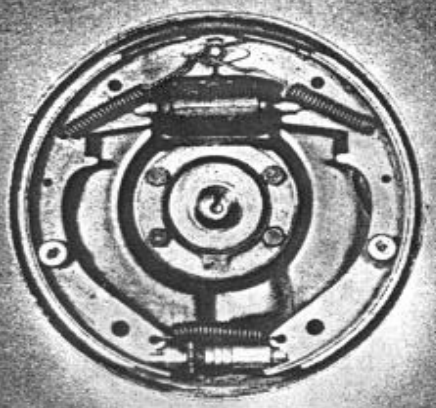
PEDAL PUSH ROD ADJUSTMENT—ALL MODELS: Mechanical follow-up feature of Hudson braking system and its value as a safety factor is dependent upon proper adjustment. Adjustment should be carefully checked whenever any brake work or inspection is made.

With brake control lever against stop, loosen front push rod lock nut and adjust rod length until rear face of adjustable end is 1 1/4" from front end of rear push rod. Tighten lock nut.

SERVICE WEAR ADJUSTMENT — ALL MODELS: Raise wheels clear of floor. Check and adjust wheel bearings if necessary. With parking brake lever in fully released position, check cables to make sure they have not been adjusted too tightly, partially applying brakes. Brake pedal shank should not have more than 1/4" clearance when in fully released position. Push rod should have required 1 1/4" between rear face of adjustable end and front end of rear push rod. Check anchor pin nut and tighten to 85 ft. lbs. if necessary. Brake drums should be at approximately normal room temperature before attempting adjustment.

To adjust, remove adjusting hole covers from brake backing plate. Expand brake shoes at all four drums by turning notched adjusting screw (moving outer end of tool toward drum center), until an equal heavy drag is felt on drums. Then turn notched adjusting screw at all four drums in opposite direction an equal number of notches (approximately 14 notches), until drums are free of drag. Pull parking brake lever two notches from released position, or until 1/8" clearance is secured between brake control lever and end of slot in lever guide. Pull cables tight and adjust ends so that clevis pins just enter holes in cable toggle. Release parking brake and install adjusting hole covers. Lower car and test.

ANCHOR PIN ADJUSTMENT—ALL MODELS: Necessary when shoes are relined, or when satisfactory wear adjustment cannot be obtained with lining in serviceable condition. To adjust, remove drum feeler gauge hole covers on edge of drums. Loosen anchor pin nut just enough to permit moving pin by tapping nut with soft hammer. Insert a screwdriver through drum feeler gauge hole and pry secondary shoe away sufficiently to seat primary shoe against opposite side of drum. Insert a .015" feeler blade between lining of secondary shoe and drum at anchor end. Move anchor in required direction by tapping nut with soft hammer until .015" clearance is secured. Moving anchor pin toward drum center reduces clearance at adjusting screw end, and increases at anchor end. Insert feeler blade between lining and drum at adjusting screw end of shoe and turn notched adjusting screw in required direction until .015" clearance is obtained. Recheck clearance at both ends of secondary shoe. Tighten anchor pin nut to 63-75 ft. lbs. Make sure anchor pin does not move during tightening operation by rechecking secondary shoe clearance. Adjust parking brake cables as outlined in "Service Wear Adjustment." Replace adjustment hole covers, remount wheels, lower car and test.



BLEEDING BRAKE SYSTEM — ALL MODELS: Brake system requires bleeding when lines are disconnected, or whenever air enters system. If main line is disconnected, or supply reservoir becomes empty, system must be bled at all four wheels. When disconnected at one wheel, that wheel only must be bled. Be sure to fill master cylinder reservoir and keep it at least half full during bleeding operation.

To bleed, remove screw from end of bleeder valve and attach bleeder tube. Bleeder tube should hang in clean glass jar with free end submerged in brake fluid. Open bleeder valve 3/4 turn. Depress brake pedal slowly and allow to return slowly. Continue this operation until fluid entering jar is solid stream free of air bubbles. Close bleeder valve and repeat same procedure at other three wheels. After completing bleeding operation, fill master cylinder reservoir. Use new fluid only.