

# **Hudson & Essex**

## **Standard Flat Rate Manual**

September 1925

The material in this document  
courtesy of the John Soneff estate

**A—FRONT AXLE AND STEERING  
ASSEMBLY**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>A- 1 Renew or Straighten Bent Axle Center.</b> Inspect, lubricate and replace all parts necessary. When axle is to be straightened use this operation for labor of removing and reinstalling only. Charge extra for straightening.	4¼	.....	4¼	.....	4¼	.....
<b>A- 2 Rebush. Front Axle.—</b> Install new bushings, pins and thrust washers where necessary. Inspect, clean and repack wheel bearings. Align wheels.	3½	....	3½	....	3½	.....
<b>A- 3 Adjust or Renew Front Wheel Bearings.—</b> Remove wheels, wash bearings in kerosene, install new felt washers, repack with clean grease and adjust. (Use this operation to eliminate grease leak at front wheels).	1¼	....	1¼	....	1¼	.....
<b>A- 4 Align Front Wheels.—</b> Adjust steering tie rod so that wheels range between 1/8" toe-in and straight ahead.	½	....	½	....	½	.....
<b>A- 5 Renew Front Wheel.—</b> Clean, inspect and lubricate bearings.	1¼	....	1¼	....	1¼	.....
<b>A- 5a Install Front or Rear Wheel Hub and Flange.</b>	2½	....	2½	....	5	.....
<b>A- 6 Overhaul Steering Assembly.—</b> Inspection adjustment or replacement of necessary parts from steering wheel to and including tie-rod.	5	....	5	....	3	.....
<b>A- 7 Overhaul Steering Gear Assembly.—</b> Replace all parts necessary. Fill housing with oil.	4	....	4	....	1	.....
<b>A- 8 Adjust Steering Worm Shaft and Drag Link.—</b> Eliminate excessive end play in worm shaft by means of adjustment provided. Inspect drag link springs and adjust tension. Align wheels.	1	....	1	....		
<b>A- 9 Renew Steering Spindle or Arm.—</b> Align wheels and lubricate.	1½	....	1½	....	1½	.....
<b>A-10 Renew Steering Gear Assembly.</b>	2	....	2	....	2	.....
<b>A-11 Renew Steering Wheel.</b>	1¼	....	1¼	....	¾	.....
<b>A-12 Renew Steering Post Jacket Tube Bushings.</b>	2	....	2	....	1¼	.....
<b>A-13 Rebush Steering Spindle Arms.—</b> Essex Four and Six cylinder models.	...	....	1½	....	1½	.....
<b>A-14 Rebush Tie Rod and Overhaul Drag Link.—</b> Thoroughly lubricate these parts. Align wheels.	1½	....	1½	.....	1½	.....

## Standard Flat Rates for Hudson and Essex Cars

<b>A—FRONT AXLE AND STEERING ASSEMBLY</b>	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>A-15 Renew One or Both Tie Rod End Clevises or Tie Rod Clevis Pins.—Align wheels.</b>	1	....	1	.....	1	.....
<b>A-15a Tighten Tie Rod Bolts or Clevises.</b>	½	....	½	.....	½	.....
<b>A-16 Overhaul Spark and Throttle Controls.—</b> Renew or repair rods, sectors, ball joints, levers and all parts of spark and throttle controls. Lubricate.	2	....	2	.....	2	.....
<b>A-17 Renew Tie Rod.—</b> Install new tie rod. Lubricate. Align wheels.	1½	....	1½	.....	1½	.....
<b>A-18 Rebush Tie Rod.—</b> Renew clevis pins only. Lubricate. Align wheels.	1½	....	1½	.....	...	.....
<b>A-19 Renew Steering Main Tube—Lower.—</b> Install throttle and sector tubes. (Use this operation when steering gear is not removed).	2½	....	2½	.....	2½	.....

## Standard Flat Rates for Hudson and Essex Cars

**B—Brakes**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>B— 1 Reline Foot Brakes.</b> —Make necessary replacements, repairs or adjustments to place brakes in first class condition. Adjust end play in axle shafts, if necessary. This does not include any operation on the hand brakes.	4	....	4	....	4	....
<b>B— 2 Renew Foot Brake Bands.</b> —Renew any other necessary parts. Adjust end play in axle shafts, if necessary.	3½	....	3½	....	3½	....
<b>B— 3 Adjust Foot Brakes.</b> —(Wood Wheels) Foot brake operations only.	¾	....	¾	....	¾	....
<b>B— 3a Adjust Foot Brakes.</b> —(Disc. Wheels.)	1½	....	1½	....	1½	....
<b>B— 4 Reline Hand Brakes.</b> —This does not include any operation on foot brakes, except to take up on adjusting nuts, as needed. Adjust end play in axle shafts, if necessary.	5	....	5	....	5	....
<b>B— 5 Renew Hand Brake Bands.</b> —Replace springs and any necessary parts. Adjust end play in axle shafts, if necessary.	3¾	....	3¾	....	3¾	....
<b>B— 6 Adjust Hand Brakes.</b> —Replace springs and clevis pins. Adjust end play in axle shafts, if necessary.	2	....	2	....	2	....
<b>B— 7 Renew Hand Lever Latch and Ratchet.</b>	¾	....	¾	....	¾	....
<b>B— 8 Reline Foot and Hand Brakes.</b> —Reline both brake bands. Clean grease from drum and internal parts. Adjust both brakes. Adjust end play in axle shafts, if necessary.	7	....	7	....	7	....
<b>B— 9 Adjust Both Brakes.</b> —Adjust end play in axle shafts, if necessary.	2½	....	2½	....	2½	....
<b>B—10 Free up Brake and Clutch Pedal Assembly.</b> —Remove brake pedal assembly from transmission, disassemble, clean bearings and reassemble.	2	....	2	....	2	....
<b>B—11 Remove Anchor Clip Pins When Rusted or Frozen.</b>	1	....	1	....	1	....
<b>B—12 Install New Anchor Bracket.</b>	4	....	4	....	4	....
<b>B—13 Rusted or Frozen Brake Connections.</b> —Add letter "A" to above operation numbers, and add additional hours.	2	....	3	....	2	....

**C-CLUTCH AND TRANSMISSION**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Pri
<b>C- 1 Overhaul Clutch Assembly.</b> —Make necessary replacements, repairs or adjustments to place clutch in first class condition.	7	....	7	....	7	....
<b>C- 2 Renew Clutch Throw-Out Collar and Thrust Sleeve Washers (Old Style).</b> —Remove clutch. Renew throw-out collar, bearing, thrust sleeve washers and grease tube, if necessary. Lubricate thoroughly.	4	....	...	....	...	....
<b>C- 2a Renew Clutch Throw-Out Ball Bearing or Install Clutch Cover Gasket.</b>	4	....	4	....	4	....
<b>C- 3 Adjust Clutch Pedal.</b> —Pedal should clear toe board 1/8".	½	....	½	....	½	....
<b>C- 4 Renew Clutch Complete.</b> —Remove old and install new clutch. (Except pedal and fork). Refill clutch with clutch oil.	4	....	4	....	4	....
<b>C- 5 Overhaul Clutch When Down For Other Repairs.</b> — Renew all parts necessary. Refill clutch with clutch oil.	2	....	2	....	2	....
<b>C- 6 Install New Grease Tube to Clutch Collar (Old Style).</b>	1	....	...	....	...	....
<b>C- 7 Free Up Clutch and Brake Pedals.</b> —Remove assembly from transmission, disassemble, clean bearings and reassemble.	2	....	2½	....	2	....
<b>C- 8 General Overhaul of Transmission and Clutch.</b> —Make necessary replacements or adjustments to place both units in first class condition. Thoroughly lubricate.	11	....	11	....	9	....
<b>C- 8a Overhaul Transmission (Old Style).</b> — (Where clutch is not removed).	10	....	...	....	...	....
<b>C- 9 Remove End Play at Transmission Main Shaft.</b> —(Rear) Remove rear main bearing cap and necessary shims for proper adjustment. (Use this operation for oil leak at rear end of transmission).	¾	....	¾	....	...	....
<b>C-10 Remove End Play at Transmission Main Shaft.</b> —(Front) Adjust main shaft gears and bearings. Remove transmission and clutch. Renew thrust washers to obtain proper adjustment. Refill with oil.	6½	....	6½	....	5½	....
<b>C-10a Remove End Play at Main Shaft.</b> —(Front). Use this operation when transmission is down for other work.	1	....	1	....	1	....
<b>C-11 Renew Gear Shift Lever—New Style Transmission.</b>	1	....	1	....	1	....

## Standard Flat Rates for Hudson and Essex Cars

**C—CLUTCH AND TRANSMISSION****—Continued**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>C-12 Renew Idler Gear.</b> —Refill transmission with oil. (Old Style).	2¼	....	...	....	...	....
<b>C-13 Renew Countershaft Gear and Bearings.</b> —Renew any one or all countershaft gears, bearing and bearing cups if necessary. Remove and adjust main shaft, first and second speed gears, or reverse idler gear. Refill transmission with oil.	10	....	10	....	8	....
<b>C-14 Eliminate Rattle in Transmission Control Lever.</b> —Make adjustments necessary to eliminate rattle.	2	....	2	....	2	....
<b>C-15 Renew Transmission Assembly.</b> —Covers removal of old cover and control levers, also installation of these parts on new unit.	4	....	4	....	4	....
<b>C-16 Renew Transmission Lock.</b> —Remove lock and renew.—(Use this operation when key is broken in lock, if it cannot be removed without disassembling.)	3	....	3	....	3	....

Standard Flat Rates for Hudson and Essex Cars

**E—ELECTRICAL SYSTEM**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
E- 1 <b>Renew Starter of Generator.</b> —Connect up and test. Install Bendix pinion or spring.	2½	....	2½	....	2½	....
E- 2 <b>Rewire Chassis High and Low Tension Wires.</b>	4	....	4	....	4	....
E- 3 <b>Overhaul Horn Wiring. Adjust or Renew Horn.</b>	¾	....	¾	....	¾	....
E- 4 <b>Replace Distributor Drive Shaft or Make Necessary Repairs to Distributor Drive Unit.</b>	2½	....	2½	....	2½	....
E- 5 <b>Renew Distributor.</b> —Adjust ignition timing.	¾	....	¾	....	¾	....
E- 6 <b>Renew Ignition and Lighting Switch.</b>	1	....	1	....	1	....
E- 7 <b>Renew Ammeter.</b> —Renew ammeter wiring, and connections also if necessary.	½	....	½	....	½	....
E- 8 <b>Advance or Decrease Charging Rate.</b> —Set generator charging rate at 8 amperes when hot, 12 amperes when cold. Check by test ammeter.	½	....	½	....	½	....
E- 9 <b>Renew Generator Flexible Coupling.</b>	1	....	1	....	1	....
E-10 <b>Adjust and Focus Lights.</b>	½	....	½	....	½	....
E-11 <b>Renew Headlight and Bracket.</b> —Focus lights.	¾	....	¾	....	¾	....
E-12 <b>Renew Headlight Wire Terminal.</b>	½	....	½	....	½	....
E-13 <b>Overhaul Dash and Tail Light Circuits.</b> —Make necessary repairs to wires, bulbs and connections.	½	....	½	....	½	....
E-14 <b>Remove Headlight Lens.</b> —Replace lens. Clean reflector and replace bulb, if necessary.	½	....	½	....	½	....
E-15 <b>Adjust Automatic Spark Control.</b> — Remove distributor head, adjust bearings. (Delco)	1	....	1	....	...	....
E-16 <b>Install New Tail Light Wire.</b>	¾	....	¾	....	¾	....
E-17 <b>Clean Ignition Contact Points.</b> —Adjust ignition timing. Clean spark plugs and adjust to proper gap.	¾	....	¾	....	¾	....
E-18 <b>Adjust Starter Pedal Throw.</b> —Adjust by set screw in top of transmission. Shim up switch contact points by removing holder from starter unit. Replace same. (Bosch).	1	....	...	....	...	....
E-19 <b>Install New Battery Terminal.</b>	½	....	½	....	½	....



## Standard Flat Rates for Hudson and Essex Cars

**F—FENDERS AND FRAME**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>F- 1 Renew Front Fenders.</b> —Install new Fender. Replace spare tire or any other parts disturbed.	2	....	2	....	2	....
<b>F- 2 Renew Running Board.</b> —Bump out fenders and splash guard, if necessary.	1¼	....	1¼	....	1¼	....
<b>F- 3 Renew Running Board and Splash Guard.</b> —Bump out fender.	3¼	....	3¼	....	3¼	....
<b>F- 4 Renew Running Board and Bracket.</b> —Bump out splash guard and fenders, if necessary.	2¼	....	2¼	....	2¼	....
<b>F- 5 Recover Running Board.</b> —Renew linoleum on running board. Install new outer moulding.	1½	....	1½	....	1½	....
<b>F- 6 Renew Frame End.</b> —Front and Rear. Replace bumper or other parts removed.	4	....	4	....	3	....
<b>F- 7 Straighten Frame Horn—Front and Rear.</b> —Reset spring. Replace parts removed.	7	....	7	....	6	....
<b>F- 8 Tighten Body Bolts.</b> —Replace any necessary shims.	½	....	½	....	½	....
<b>F- 9 Renew Frame.</b> —Remove all parts necessary. Install new frame. In reassembling use all old parts except those that must be replaced.	40	....	35	....	35	....
<b>F-10 Renew Radiator Splash Guard.</b> —Replace bumper or other parts removed.	1	....	1	....	1	....
<b>F-11 Renew Running Board Step Irons.</b> —Replace step irons when running board has been removed.	½	....	½	....	½	....
<b>F-12 Renew Rear Fender.</b> (Clamp Type).	1	....	1	....	1	....
<b>F-13 Renew Front or Rear Fender.</b> (Bolt Type).	2	....	2	....	...	....
<b>F-14 Renew Rear Cross Tube.</b> —Remove gasoline tank. Rerivet new cross tube or channel parts removed.	4	....	4	....	...	....
<b>F-15 Remove and Replace Body.</b> —Disconnect all parts necessary, remove body and replace.	14	....	14	....	14	....
<b>F-16 Install Bonnet Lacing.</b> (Radiator or Cowl).	1	....	1	....	1	....

## Standard Flat Rates for Hudson and Essex Cars

G—GASOLINE SYSTEM	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
G- 1 <b>Renew Carburetor.</b> —Change carburetor. Renew gaskets. Check over springs and controls, and renew, if necessary.	1	....	1	....	1	....
G- 2 <b>Overhaul Carburetor.</b> —Make necessary replacements, repairs or adjustments to place carburetor in first class condition.	1½	....	1½	....	1½	....
G- 3 <b>Clean Carburetor, Gasoline Lines and Check Control.</b> —Disassemble carburetor, clean all parts.	1½	....	1½	....	1½	....
G- 4 <b>Clean Carburetor.</b> —(Hudson Carburetor). Drain carburetor, clean strainer, polish bell and tighten gland nut. Replace metering pin if necessary. (Carburetor is not removed from lock for this work).	½	....	½	....	...	....
G- 4a <b>Clean Carburetor.</b> —(Stewart Carburetor). Follow instructions outlined on page 14 of "Carburetor Instructions" book.	1	....	1	....	1	....
G- 5 <b>Repair Float, Replace Float Needle and Seat Valve.</b> Adjust regulating sleeve if necessary. (On Hudson carburetor also repair or repack gland). Use this operation for carburetors that flood.	1	....	1	....	1	....
G- 6 <b>Clean Gasoline Lines and Tank.</b> —Remove gasoline tank. Repair or replace gasoline gauge. Blow out all gasoline lines with air hose. Clean vacuum tank, carburetor screens and connections, if necessary.	1½	....	1½	....	1½	....
G- 7 <b>Renew Gasoline Line.</b> —Renew one or all gasoline lines necessary.	2	....	2	....	2	....
G- 8 <b>Overhaul Vacuum System.</b> —Check float and valves and all connections. Replace all parts necessary.	1	....	1	....	1	....
G- 9 <b>Renew Vacuum Tank Complete.</b> —Check gasoline lines and suction lines for leakage.	¾	....	¾	....	¾	....
G-10 <b>Repair or Replace Gasoline Gauge.</b>	½	....	½	....	½	....
G-11 <b>Repair or Renew Gasoline Tank Strap.</b>	1	....	1	....	1	....
G-12 <b>Renew Gasoline Tank.</b> —Remove Gasoline tank straps, gasoline, and replace.	2	....	2	....	2	....
G-13 <b>Renew Mixture or Throttle Control Wire.</b>	½	....	...	....	½	....

## Standard Flat Rates for Hudson and Essex Cars

**H—MUFFLER**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
H- 1 Renew Muffler.	1½	....	1½	....	1½	....
H- 2 Repack Exhaust Packing Gland or Renew Gasket.	½	....	½	....	½	....
H- 3 Tighten Muffler and Tail Pipe.—Tighten brackets and clamps on muffler and tail pipe. Install new brackets, if necessary.	½	....	½	....	½	....
H- 4 Change From Old to New Style Muffler.—Change from old to new style muffler and brackets.	2½	....	2½	....	...	....
H- 5 Renew Exhaust Pipe From Manifold to Muffler.	2	....	2	....	2	....

## Standard Flat Rates for Hudson and Essex Cars

<b>J—SPRINGS</b>	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>J— 1 Renew Front Spring.</b> —Install new shackles and spring bolts, if necessary. Lubricate parts.	1½	....	1½	....	1½	....
<b>J— 2 Renew Rear Spring.</b> —Install new shackles and spring bolts, if necessary. Lubricate parts.	2¼	....	2¼	....	2¼	....
<b>J— 3 Renew Right Rear Spring.</b> —(Essex 4-cylinder only). Install new shackles and spring bolts, if necessary. Lubricate parts.	...	....	3	....	...	....
<b>J— 4 Install New or Extra Leaf on One Front or Rear Spring.</b> —Rebush and install new shackle bolts, if necessary.	2½	....	2½	....	2½	....
<b>J— 5 Overhaul and Rebush Springs and Replace All Parts Necessary.</b> —Oil all spring leaves, replace center bolts, clips, shackles and shackle bolts where necessary. Lubricate parts.	7	....	7	....	7	....
<b>J— 6 Adjust All Shackles to Eliminate Side Play and Lock in Place.</b>	¾	....	¾	....	¾	....
<b>J— 7 Replace or Tighten Spring "U" Bolts.</b>	½	....	½	....	½	....
<b>J— 8 Install One Shackle Bolt.</b> —Remove broken or frozen shackle bolt and install one new bolt. When new bushing is installed add	1	....	1	....	1	....
<b>J— 9 Tighten all Front or Rear Axle Spring Clips.</b>	½	....	½	....	½	....
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**L—LUBRICATION**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>L- 1 Thorough Lubrication.</b> —(Models equipped with current type oil cups). Lubricate each part of motor and chassis that requires lubrication. Change oil in motor and clutch. Lubricate transmission and rear axle by adding sufficient oil to bring to proper level. Fill universal joints. Fill all oil cups. Remove front wheels. Clean bearings and repack with grease. (Use this operation when car is equipped with pressure oil or grease system.)	2¼	....	2¼	....	2¼	....
<b>L- 1a Lubricate Front Wheel Bearings.</b> —Clean bearings with kerosene. Repack with grease. (This operation is not to be used when operations L-1 or L-2 appear on shop order.)	1¼	....	1¼	....	1¼	....
<b>L- 1b Lubricate Rear Wheels and Axle Shaft Bearings.</b> —Rear wheels must be removed when this operation is performed.	1¼	....	1¼	....	1¼	....
<b>L- 2 Thorough Lubrication.</b> —(Models equipped with Grease Cups). Turn down grease cups until grease is forced out between moving parts. (This operation includes all motor and chassis instructions contained in operation L-1.)	3	....	3	....	...	....
<b>L- 3 Fill All Grease Cups.</b> —Turn down once and refill.	1¼	....	1¼	....	...	....
<b>L- 4 Fill All Oil Cups.</b>	½	....	½	....	½	....
<b>L- 5 Oil Springs Complete.</b> —Fill oilers or grease cups on springs. Saturate springs with motor oil.	½	....	½	....	½	....
<b>L- 6 Change Clutch Oil.</b> —Drain clutch oil. Wash clutch with gasoline. Refill with ½ pt. equal mixture of kerosene and motor oil.	¼	....	¼	....	¼	....
<b>L- 7 Change Motor Oil.</b> —Drain crankcase. Refill with fresh motor oil. (When oil pan is removed and cleaned, use operation L-18.)	¼	....	¼	....	¼	....
<b>L- 8 Change Motor Oil, Lubricate Universals, Check Oil in Rear Axle and Transmission.</b>	¾	....	¾	....	¾	....
<b>L- 9 Lubricate Rear Axle and Transmission.</b> —Drain rear axle and transmission and refill.	½	....	½	....	½	....
<b>L-10 Lubricate Universal Joints.</b> —Front and Rear.	½	....	½	....	½	....
<b>L-11 Overhaul Oil Pump.</b> —Make necessary replacements, repairs or adjustments to place oil pump in first class condition.	1¼	....	1¼	....	1¼	....

## Standard Flat Rates for Hudson and Essex Cars

**L—LUBRICATION****—Continued**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>L-12 Adjust Oil Pump Stroke.</b> —Renew plunger and springs if necessary. Adjust spring in top of oil pump so that dash gauge registers between three and four.	½	....	½	....	½	....
<b>L-13 Renew Oil Pump.</b> —Adjust new pump to develop a reading of from three to four on dash gauge.	1	....	1	....	1	....
<b>L-14 Renew Oil Pump Eccentric.</b>	3	....	3	....	3	....
<b>L-15 Renew Suction Pipe to Pump Complete.</b> —Includes Operation L-12.	1½	....	1½	....	1½	....
<b>L-16 Clean Oil Pipe Lines.</b> —Disconnect all oil lines, blow out with air hose. Clean oil strainer in reservoir. Renew all parts necessary.	1¼	....	1¼	....	1¼	....
<b>L-17 Renew Oil Pressure Gauge or Gauge Pipe Lines.</b> —Inspect pressure gauge lines. Renew one or both if necessary.	½	....	½	....	½	....
<b>L-18 Clean or Renew Oil Strainer.</b> —Remove oil pan. Clean or renew strainer if necessary. If motor oil needs changing do so on this operation.	1	....	1	....	1	....
<b>L-19 Renew Oil Gauge Glass.</b> —Remove Gauge glass retainer ring and install new glass.	½	....	½	....	½	....
<b>L-20 Lubricate Speedometer Chain or Cable.</b> —Remove speedometer chain or cable. Cover with grease, replace and connect.	½	....	½	....	½	....

## Standard Flat Rates for Hudson and Essex Cars

**M—MOTOR**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>M- 1 Overhaul Motor.</b> —Remove motor from frame. Make necessary replacements, repairs or adjustments to place motor in first class condition. Clean and paint motor.	65	....	55	....	40	....
<b>M- 2 Tune Motor.</b> —Clean ignition points. Renew if necessary. Adjust ignition timing. Clean spark plugs and set gaps (.025). Tighten timing chain if necessary. Adjust valve tappets to proper clearance. Clean carburetor and screen. Motor must hit properly and start easily.	1¾	....	1¾	....	1½	....
<b>M- 3 Adjust Ignition Timing.</b> —Adjust ignition points (.018). Clean or renew if necessary. Clean spark plugs and set gaps (.025).	½	....	½	....	½	....
<b>M- 4 Renew Valve Springs.</b> —Remove all valve springs. Install new springs, washers and retainers where necessary.	2	....	2	....	2	....
<b>M- 5 Scrape Carbon.</b> —Remove cylinder head. Scrape carbon. Includes operation M-2.	3	....	3¾	....	3	....
<b>M- 6 Grind Valves, Clean Carbon, Adjust Tappets, Clean Carburetor.</b> —Includes operation M-2. If any valve tappet screws should be replaced do so on this operation. Take play out of rocker arms, on Essex "4". Worn valve stem guides can also be changed on this operation. For each new valve guide installed add	7	....	6	....	6	....
	¼	....	¼	....	¼	....
<b>M-6b Reface or Reseat Valves by Machine.</b> —To be used only when separate workman refaces or reseats valves by machine. Time given to be deducted from operation M-6 when separate workman does this operation.	1	....	1	....	1	....
<b>M- 7 Renew Complete Set of Valves, Valve Stem Guides and Grind Valves.</b> —For renewing individual valve stem guides use operations M-6 and M-6a.	9	....	8	....	8	....
<b>M-7a Grind Valves When Cylinder Head has Been Removed for Other Operations.</b> —Includes operation M-2.	5	....	3½	....	4¼	....
<b>M- 8 Adjust Tappets.</b> —Adjust tappets to proper clearance. Remove play from rocker arms on Essex 4.	¾	....	1	....	¾	....
<b>M- 9 Overhaul Tappets.</b> —Make necessary replacements, repairs or adjustments to eliminate noise and place tappets in first class condition. Replace rocker arms on Essex 4 if necessary. When used in conjunction with operation M-6 add to time given in M-6.	6	....	6	....	6	....
	3	....	3	....	3	....
<b>M-10 Adjust Valve Timing Chain.</b> —Readjust eccentric to take up slack in timing chain. Adjust ignition timing.	¾	....	¾	....	¾	....

**M—MOTOR—Continued**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
M-11 Reset Valve Timing Chain.—Remove chain. Set crank cam and distributor position. Install new chain, if necessary. Adjust ignition timing. For removing Master Link add	4	....	4	....	4	....
<b>Note:</b> —Do not use this operation when operation M-18 appears on shop order.	½	....	½	....	½	....
<b>M-11a Renew Valve Timing Chain or Chain Sprockets.</b> —For use when main bearings are being adjusted. Adjust ignition timing.	1	....	1	....	1	....
<b>Note:</b> —Use this operation when timing chain cover has been removed for other operations.						
<b>M-11b Renew Valve Timing Chain Adjusting Eccentric.</b> —Remove and reinstall generator. Replace eccentric. Includes operation M-11.	7	....	6	....	6	....
<b>M-12 Renew Timing Gears.</b> —Remove old gears and install new.	8	....	8	....	...	....
<b>M-12a Renew Timing Gears When Timing Gear Cover has been Removed for Other operations.</b>	4½	....	4½	....	...	....
<b>M-13 Adjust all Connecting Rod Bearings.</b> —Remove oil pan. Remove shims necessary to fit bearing properly on crankshaft. Bearings to be tested for fit if necessary. Reinstall pan and fill with motor oil. Includes operation M-2.	4½	....	3½	....	3½	....
<b>M-13a Adjust all Connecting Rod Bearings When Oil Pan is Removed for Other Operations.</b>	3½	....	2½	....	3½	....
<b>M-14 Renew One Connecting Rod Bearing and Adjust all Others.</b> —Drain motor oil. Remove oil pan and clean thoroughly. Renew one bearing, adjust all others. Reinstall and fill oil pan with motor oil. Includes operation M-2. For renewing each additional connecting rod bearing add	6½	....	5½	....	5½	....
	2	....	2	....	3	....
<b>M-15 Renew All Piston Pins and Piston Rings.</b> —Renew all piston pins, piston rings and piston pin bushings. Includes operations M-13a and M-2.	11	....	8	....	7½	....
<b>Note:</b> —Cylinder block is not removed for this operation. When cylinder block is removed for this work on Hudson and Essex "4" Models add	3	....	2½	....	...	....
<b>M-15a Renew One Piston Pin.</b> —Adjust bearing on connecting rod in which pin is installed. For installing each additional piston pin and adjusting connecting rod bearing add	8½	....	8½	....	5	....
	½	....	½	....	½	....
<b>Note:</b> —Cylinder block is not removed for this operation. When cylinder block is removed for this work on Hudson and Essex "4" models add	3	....	2½	....	...	....



**M—MOTOR—Continued**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>M-16 Renew Piston Pins When Pistons are Out of Motor.</b>	2	....	2	....	2	....
<b>M-17 Renew Piston Rings on One Piston.—</b> Remove and reinstall cylinder head and oil pan. Adjust connecting rod bearing. For installing rings on each additional piston and adjusting connecting rod bearing add	3½	....	3½	....	3½	....
<b>Note:</b> —Cylinder block is not removed for this operation. When cylinder block is removed for this work on Hudson and Essex "4" Models add	½	....	½	....	½	....
	3	....	2½	....	...	....
<b>M-17a Renew All Pistons, Piston Pins and Piston Rings.—</b> Remove and reinstall cylinder head and oil pan. Adjust all connecting rod bearings. Charge extra for cylinder grinding or honing. <b>Note:</b> —Cylinder block is not removed for this operation. When cylinder block is removed for this work on Hudson and Essex "4" Models add	12	....	8½	....	8	....
	3	....	2½	....	...	....
<b>M--17b Renew One Piston and Piston Pin.—</b> Fit new rings to the piston if necessary. Remove and reinstall cylinder head and oil pan. Adjust connecting rod bearing. For renewing each additional piston, piston pin and adjusting connecting rod bearing add	8½	....	8	....	5	....
Charge extra for cylinder grinding or honing. <b>Note:</b> —Cylinder block is not removed for this operation. When cylinder block is removed for this work on Hudson and Essex "4" Models add	½	....	½	....	½	....
	3	....	2½	....	...	....
<b>M-17c Regrind or Hone Cylinder Block.—</b> Remove cylinder block on Hudson and Essex 4 and regrind. Fit pistons, pins and rings. Charge extra for honing or grinding. (Cylinders are honed on Essex 6 without removing motor from frame).	15	....	11	....	12	....
<b>M-18 Adjust All Main Bearings.—</b> (Motor with chain front end.) Remove necessary shims to fit bearings properly to crankshaft. Bearings should not be tightened so that starter will not turn motor. This operation is done without removing motor from frame. Includes operation M-2.	10	....	9½	....	9	....
<b>M-18a Same as M-18.—</b> (For gear front end motor).	7	....	6½	....	...	....
<b>M-18b Adjust Main Bearings and Connecting Rod Bearings.—</b> (Motor with chain front end.) Remove necessary shims to fit bearings properly to crankshaft. Bearings should not be tightened so that starter will not turn motor. This operation is done without removing motor from frame. Includes operation M- 2.	14	....	13	....	12	....

**M—MOTOR—Continued**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>M-18c Same as M-18b.</b> —(For gear front end motor)	11	....	10	....	... ..	....
<b>M-19 Renew Crankshaft.</b> —Remove motor from frame. Remove crankcase. Renew one or all main bearings. Install new crankshaft. Refit or adjust all connecting rod bearings. Reassemble motor and place in frame. Clean and paint motor. Includes operation M-2. <b>Note:</b> —Use this operation when original crankshaft is to be re-ground. Charge extra for grinding.	40	....	35	....	35	....
<b>M-20 Renew Crankcase Assembly.</b> —Use original main bearings, crankshaft, and camshaft. Includes operations M--13a and M- 2.	50	....	45	....	... ..	....
<b>M-20a Renew Crankcase Assembly with New Crankshaft and Camshaft Fitted.</b> —Includes Operations M-13a and M-2.	30	....	25	....	... ..	....
<b>M-21 Renew Camshaft, Changing Front Camshaft Bearing.</b> —Includes operations M-6 and M-11.	13	....	12	....	12	....
<b>M-21a Renew All Camshaft Bearings.</b> —Remove motor from frame. Remove oil pan, and original bearings. Fit new bearings to camshaft. Reassemble motor and replace in frame. Includes operation M-2.	19	....	16	....	16	....
<b>M-21b Repair Floating Camshaft.</b> —Remove timing gear or chain cover. Install new camshaft fibre thrust washer. Shim thrust button to eliminate end play.	4	....	4	....	4	....
<b>M-22 Renew Motor.</b> —Exchange motors, electrical apparatus, carburetors and controls. Clean and paint motor.	12	....	12	....	12	....
<b>M -23 Renew Flywheel and Starter Gear.</b> —Remove starter. Disassemble. Replace starter gear. Renew flywheel. Lubricate clutch.	5	....	5	....	5	....
<b>M-24 Install New Water Pump Shaft Bushing.</b>	8	....	... ..	....	... ..	....
<b>M-25 Install New Generator Drive Shaft Bushing.</b>	... ..	....	8	....	6	....
<b>M-26 Renew Generator Flexible Coupling.</b> —Align generator. See electrical operation E -9.	1	....	1	....	1	....
<b>M-27 Renew Generator Drive Shaft.</b>	... ..	....	5	....	... ..	....
<b>M-28 Renew Exhaust Manifold.</b>	1½	....	1½	....	1½	....
<b>M-29 Renew Exhaust Manifold Gaskets.</b> —Renew one or all gaskets.	1	....	1	....	1	....

## Standard Flat Rates for Hudson and Essex Cars

**M—MOTOR—Continued**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>M-30 Remove Cylinder Heat Gasket.</b> —Remove cylinder head. Scrape carbon and adjust ignition timing.	2	....	2½	....	1¾	....
<b>M-31 Renew Oil Pan Gaskets.</b> —Renew gaskets, clean oil pan. Change motor oil	1¾	....	1¾	....	1¾	....
<b>M-32 Tighten Motor Bolts.</b>	1	....	1	....	1	....
<b>M-33 Clean and Paint Motor.</b> —Wash all parts of motor and cowl with kerosene. Paint with black motor paint.	2	....	2	....	2	....

## Standard Flat Rates for Hudson and Essex Cars

**O—UNIVERSAL JOINTS AND  
DRIVE SHAFT**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
<b>O-1 Overhaul Universal and Drive Shaft Assembly.</b> —Renew all parts necessary and lubricate both universal joints. Line up universal joint with propeller shaft arrows.	3½	....	3½	....	3½	....
<b>O-2 Renew Universal Yoke, Dust Cover and Felt Washer.</b> —Remove drive shaft, renew yoke, dust washer, and replace outer shield. Line up universal joint with propeller shaft arrows. Lubricate thoroughly.	2½	....	2½	....	2½	....
<b>O-3 Renew Front or Rear Universal Joint Complete.</b> —Lubricate both joints. Line up universal joint with propeller shaft arrows.	2	....	2	....	2	....
<b>O-4 Renew Drive Shaft Assembly.</b> —Disconnect rear universal flange and install new drive shaft assembly. Lubricate both universal joints. Line up universal joints with propeller shaft arrows.	2	....	2	....	2	....
<b>O-5 Renew Universal Joint and Drive Shaft Assembly.</b> —Lubricate both universal joints. Line up universal joints with propeller shaft arrows.	2	....	2	....	2	....

Standard Flat Rates for Hudson and Essex Cars

**R—RADIATOR AND COOLING SYSTEM**

	HUDSON		ESSEX 4		ESSEX 6	
	Hrs.	Price	Hrs.	Price	Hrs.	Price
R- 1 Renew Radiator Core.—Remove shell and assemble new core. Change hose connections if necessary.	2¼	....	2¼	....	2¼	....
R- 2 Renew Radiator Cap and Motometer.	½	....	½	....	½	....
R- 3 Renew Top Radiator Hose.	½	....	½	....	½	....
R- 4 Renew Bottom Radiator Hose.	½	....	½	....	½	....
R- 4a Renew Bottom Radiator Hose. (Old type.)	1	....	1	....	1	....
R- 5 Flush out Radiator and Water Jackets.	1½	....	1½	....	1½	....
R- 6 Adjust or Renew Shutter Control Rods.	2	....	2	....	2	....
R- 7 Renew Radiator Bolts.	½	....	½	....	½	....
R- 8 Overhaul, Renew or Adjust Fan Assembly.—Replace fan. Repair or replace necessary parts. Adjust to remove rattle and play.	1	....	1	....	1	....
R- 9 Renew Fan Belt.	¼	....	¼	....	¼	....
R-10 Overhaul Water Pump.—Repair or replace necessary parts.	3½	....	...	....	...	....
R-11 Repack Water Pump.—One or more glands.	½	....	...	....	...	....
R-12 Solder Radiator.—Flat surfaces only. (This does not include any radiator core sections.)	2¼	....	2¼	....	2¼	....
R-13 Remove and Replace Shutters.	1½	....	1½	....	1½	....

Standard Flat Rates for Hudson and Essex Cars

	HUDSON Hrs. Price	ESSEX 4 Hrs. Price	ESSEX 6 Hrs. Price
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