

# PACKARD SERVICE MANUAL

## PART 1

STANDARD SPECIFICATIONS  
626-633-640-645



REVISED SEPTEMBER, 1928

PRICE \$1.00

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SERVICE DEPARTMENT  
PACKARD MOTOR CAR COMPANY  
DETROIT, MICHIGAN

packardinfo.com

**Brakes—Foot—Adjust**626 **A11****(Bendix Brakes)**

1. Raise the four wheels off the ground
2. Adjust eccentric screw on the brake support plate and turn brake shoe adjusting cam until brakes drag. Then back off just enough so that wheels can be turned without brake dragging. Hold the adjusting cam in this position while tightening.

Note: Make sure linkage and cross shaft are perfectly level.

3. Loosen check nuts on front brake cable and rear brake pull rods. Take up on self-locking adjusting nuts, until, with adjusting nuts in its proper position (resting firmly in the socket), the brake starts to drag—then back off the adjusting nuts until wheels turn freely.

Note: Check adjustment to see that there is approximate equalization, by checking up the four wheels. First the two front wheels and then later the two rear wheels, trying the wheels first on one side and then the other.

4. Adjust brake pedal connecting rod to a clearance of .010" between brake levers and brake lever stop.

Note: Be sure brakes do not drag before the car leaves service station.

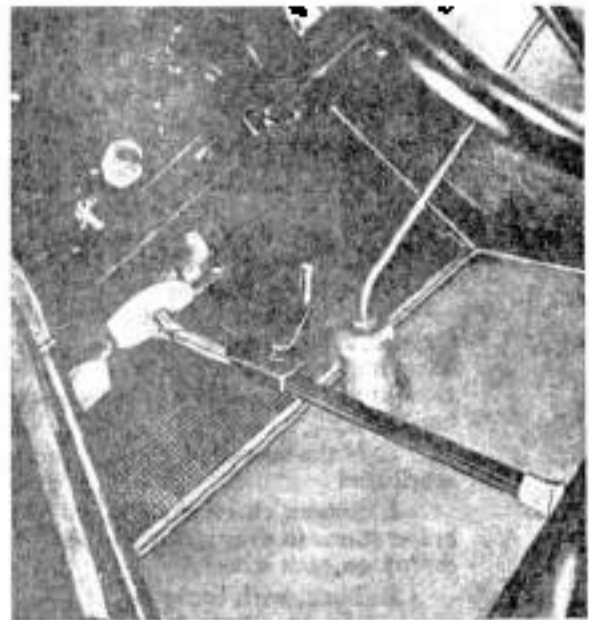
**Material**

Same as 626

640

**Material****Brake Adjusting Wrench**

Tool No. S. T. 116 All Bendix Brakes

**Pedal Depressor**

Tool No. S. T. 198 All Models

**A11**

Cont.

**HOW PACKARD BENDIX BRAKES OPERATE**

When you press your foot down on the brake pedal, the cam turns, forcing the primary shoe against the brake drum. The primary shoe is floating and is anchored only to the secondary shoe at "A" as shown on Fig. 2. It does not attach to the backing plate at all. The secondary shoe anchors to the backing plate at "B." The auxiliary shoe anchors to the backing plate at "C." The overlapping joints permit independent movement of the shoes. Friction of the primary shoe against the drum tends to carry the shoe with the drum, thus forcing the secondary shoe against the drum, the self-energizing action. The auxiliary shoe operates directly from the cam for reverse. It should be noticed that one end of the cam is

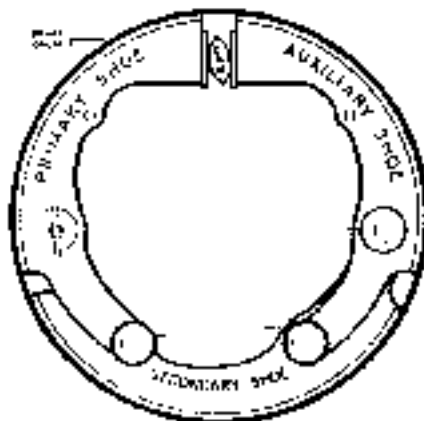


Figure 2

longer than the other as shown on Fig. 2. The long end of the cam operates the primary shoe, the short end operates the auxiliary shoe. Care should be taken that the cam is assembled properly.

**FOOT AND HAND BRAKES**

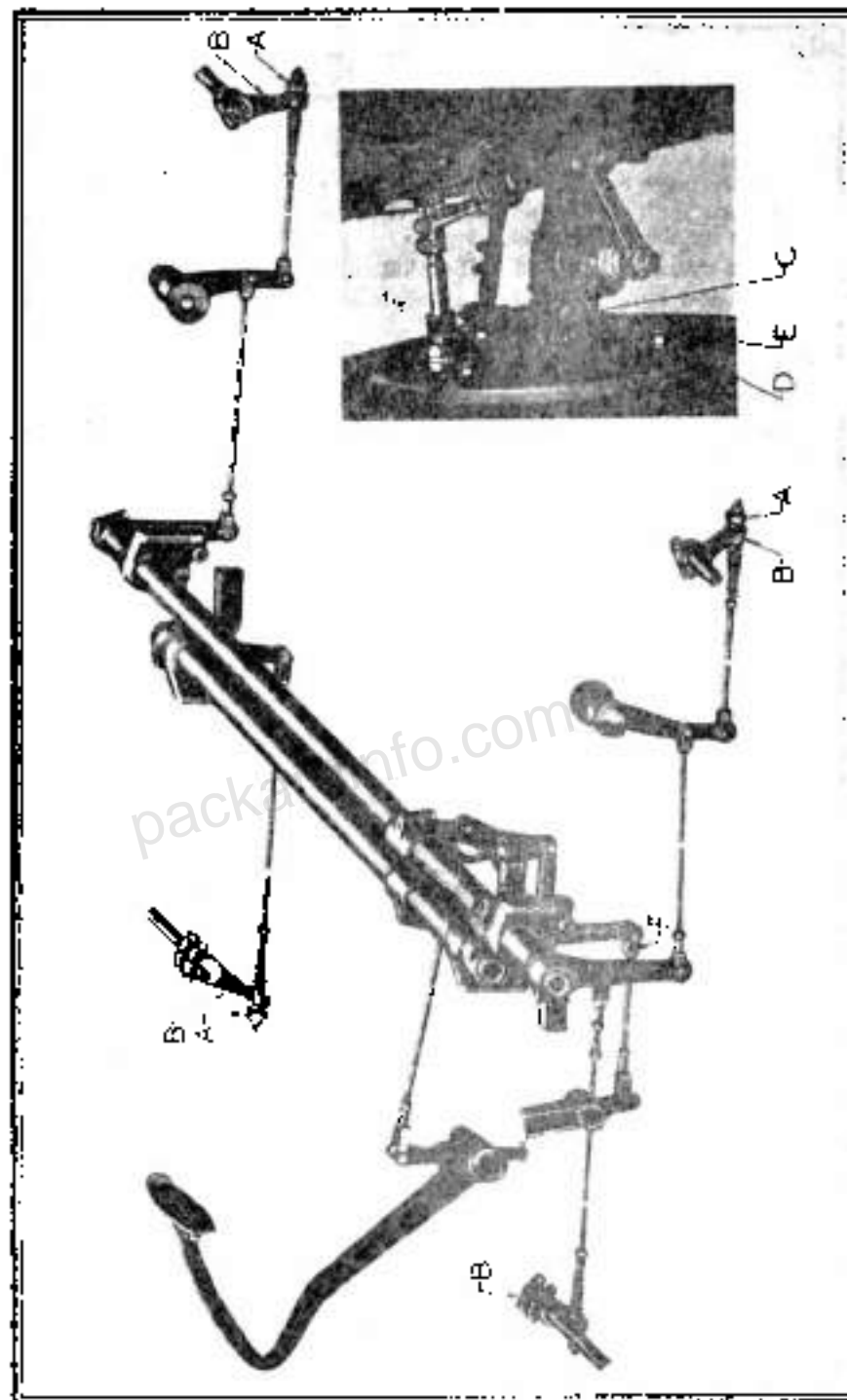
Brakes are provided on all four wheels and are of the self-energizing internal expanding type. Each brake consists of three shoes with wire woven asbestos linings which contact with the wheel drum. Four brakes are operated by the foot pedal. The two brakes on the rear wheels can be operated by the hand lever independently of the foot pedal so as to provide a standing or parking brake.

Adjustments for wear can be made by taking up on the ball socket nuts "A" at the ends of front brake cables and rear brake pull rods. Best results will be obtained when making this adjustment by raising the four wheels off the ground so that the brakes can be properly equalized.

When making the following adjustment, an equal braking effect should be secured between each right and left front wheel and then between each right and left rear wheel but no attempt should be made to equalize the braking effect between the front and rear wheels as this is automatically accomplished by equalizing linkage:

1. Make sure that linkage and cross shafts are perfectly free and yoke pins lubricated.
2. Loosen check nut on ball socket nut "A" and take up on this nut until brake starts to drag, then back off until wheel just turns free, following this procedure on each wheel.
3. Then, with brake pedal slightly depressed, check the equalizing effect on the two front wheels by turning the wheels forward against the brake action. If the effort required to turn each wheel is not approximately equal, loosen the ball socket nut on the tight wheel and take up slightly on the opposite one. When a satisfactory result has been obtained, tighten the check nuts.
4. Repeat this operation on the rear wheels, bearing in mind that rear wheels will not turn as freely as front wheels on account of the differential action.

When brakes have become worn to an extent where the foregoing adjustments have caused the brake operation levers "B" to assume a nearly vertical position



when brakes are released, it will then be necessary to make an adjustment of the shoes as follows:

1. Loosen the two brake shoe support bolt nuts "C" on each brake shield.
2. Apply brake pedal hard several times to seat shoes in drums, then, with a medium pressure on brake pedal so as to keep shoes in contact with drums, pull all nuts "C" down very tightly.
3. With brakes released, loosen jam nut "D" on brake shield and turn

**A11**  
Cont.

**A11** brake shoe adjusting cam "E" clockwise until the brake binds in the drum, then  
*Cont.* back off just enough so wheel can be turned without brake dragging. Hold the ad-  
 justing cam in this position while tightening the jamb nut. Again check to see  
 that wheel turns without dragging. Repeat this operation on each wheel.

4. Remove ball socket nuts "A" and clamp screws in front brake operating  
 levers "B"

5. Carefully mark each lever with reference to a certain shaft serration, re-  
 move lever from shaft and replace so that lever is moved forward just three  
 serrations from its original position.

6. Replace clamp screws and ball socket nuts.

7. Adjust and equalize brakes as explained in paragraphs covering first  
 adjustments.

8. Repeat this operation on rear brake operating levers, moving these levers  
 three serrations toward rear of car, after which adjust and equalize rear brakes.  
 Note: After above adjustments have been made, the center line of the brake  
 operating levers should form an angle of sixty to seventy degrees with the center  
 line of the brake pull rod with brakes in a released position.

## **A12** Brakes—Foot—Reline and Adjust (Bendix Brakes)

626

(Includes A310)

1. Remove front wheels, using puller.
2. Remove upper brake shoe guides.
3. Unhook brake shoe springs.  
 Note: If return springs are not in good condition, replace with new ones.
4. Remove anchor pin nuts.
5. Remove the three shoes, they can now be slipped off the anchor bolts in a  
 group.
6. Remove the old lining from shoes and reline brake shoes.  
 Note: Lining must be countersunk so that rivet heads are  $\frac{1}{8}$  of an inch  
 below face of lining.
7. Free up all brake connections and ball joints using an oil can or grease gun.
8. Replace all brake shoes and tighten with anchor pins and nuts.  
 Note: When replacing brake shoes with new lining, it is necessary to loosen  
 all adjustment. The long end of the foot brake operating lever cam operates  
 the primary shoe and the short end of the cam operates the auxiliary shoe.  
 Care should be taken that the cam is assembled properly.
9. Replace front wheels.
10. Replace hub cap, axle shaft nut and cotter pin.
11. Adjust front wheel bearing.
12. Adjust foot brakes.  
 Note: Adjust eccentric screw on the brake support plate until brakes drag.  
 Then turn eccentric screw again, try wheel and see that the wheel can just  
 be turned without dragging. Adjust front and rear camshaft operating lever  
 check nuts for equalization by checking up the four wheels. Check the two  
 front wheels, then the two rear wheels, having someone sit in the driver's  
 seat and hold the brake on tightly while trying the wheels for equalization.
13. Test.  
 Note: Be sure that brakes do not drag before the car leaves the service  
 station.

### **Material**

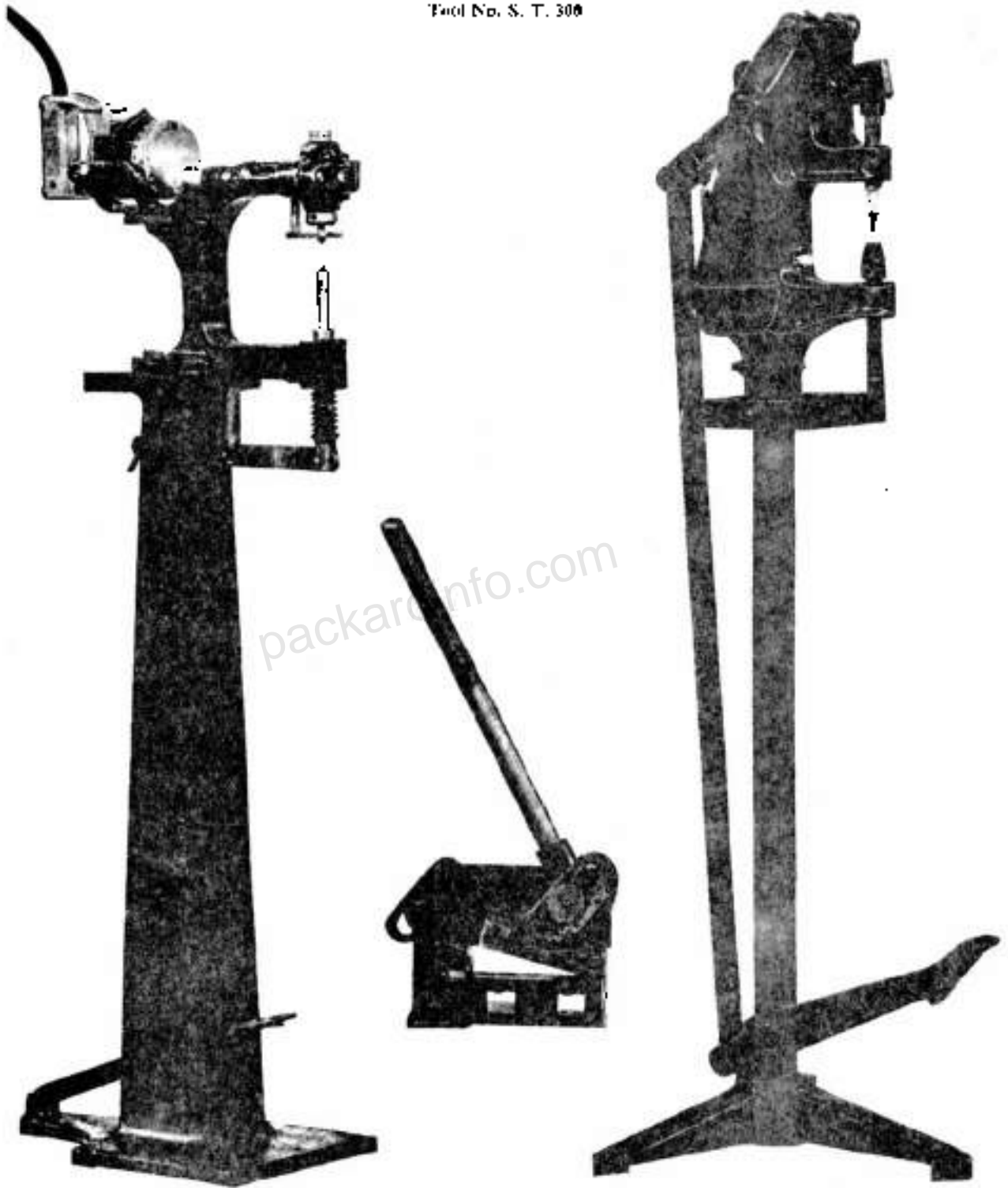
112 In. 106886 Lining

72 In. 156999 Lining

Miscellaneous

**Brake Relining Equipment Complete**

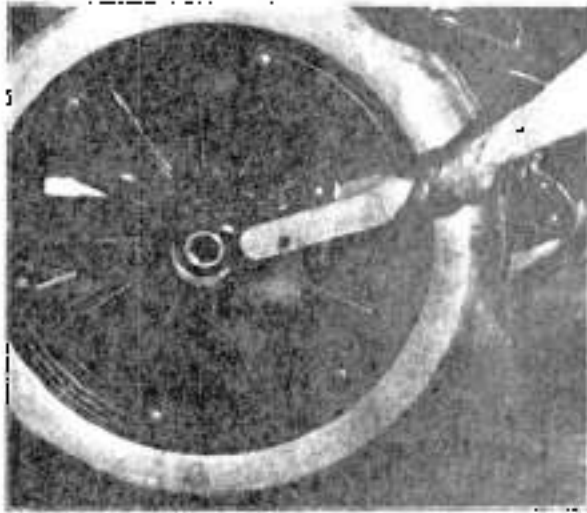
Tool No. S. T. 300



Tool No. S. T. 300

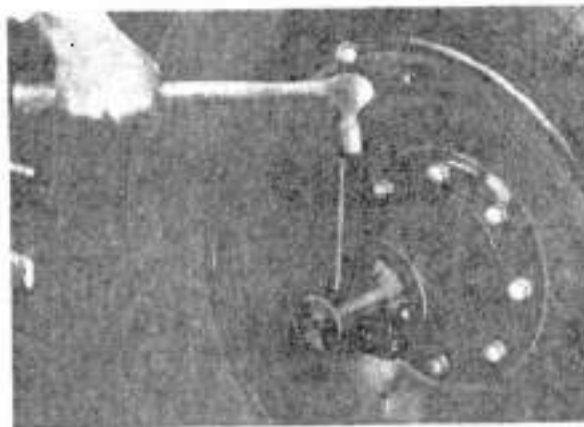
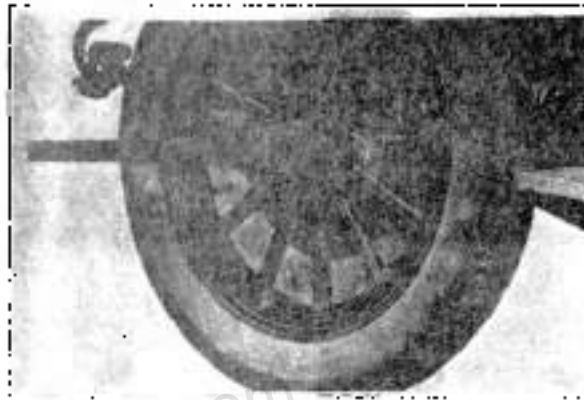
In selecting the best all-around brake relining equipment, practically all the well-known makes were tried. The units that we have to offer are, we believe, the best obtainable for their particular use. This has been proved by a long test in one of our large Service Stations.

**Hub Cap Wrench**



Tool No. S. T. 129 All Models

**Rear Axle Shaft Nut Wrench**



Tool No. S. T. 683

A real heavy three wheel puller that will pull the toughest wheel. All parts are forgings and extremely rugged. Pulling is done by the wedge principle which does not transmit shock to the wheel bearing when struck with a hammer.



Same as 626

**Material**

112 In. 106896 Lining

72 In. 156499 Lining

Miscellaneous

640 **A12**  
Cont.

Pedal Depression Gauge  
Tool No. S. T. 659 - All Models


**Brakes—Foot--Reline, Adjust  
and Adjust Hand Brakes**

(Bendix Brakes)  
(Includes A310)

626 **A14**

1. Jack up chassis, lower
2. Remove hub caps
3. Remove front wheels
4. Remove upper brake shoe guides
5. Unhook brake shoe springs  
Note: If return springs are not in good condition replace with new springs
6. Remove anchor bolts and nuts
7. Remove the three shoes, they can now be slipped off the anchor bolts in a group
8. Remove the old lining from shoes and reline brake shoes  
Note: Lining must be countersunk so that rivet heads are  $\frac{1}{8}$  of an inch below face of lining
9. Free up all brake connections and ball joints using oil can or grease gun
10. Replace all brake shoes and tighten with anchor bolts and nuts  
Note: When replacing brake shoes with new lining it is necessary to loosen all adjustment. The long end of the foot brake operating lever cam operates the primary shoe. The short end of the cam operates the auxiliary shoe. Care should be taken that the cam is assembled properly
11. Replace front wheels
12. Replace hub cap
13. Adjust front wheel bearings
14. Adjust foot brakes. (See operation A116)
15. Test  
Note: Be sure that brakes do not drag before the car leaves the service station

**Material**

112 In. 106886 Lining

72 In. 156499 Lining

Miscellaneous

Same as 626

640

**Material**

112 In. 106886 Lining

72 In. 156499 Lining

Miscellaneous

## A16 Brakes—Foot—Reline, Turn Down Drums and Adjust Both Sets of Brakes (Includes A310)

626

### (Bendix Brakes)

1. Remove all hub caps
2. Remove front wheels
3. Remove upper brake shoe guides
4. Unhook brake shoe springs  
Note: If return springs are not in good condition, replace with new springs
5. Remove anchor pins
6. Turn down brake drums
7. Remove the three shoes—they can now be slipped off the anchor pins in a group
8. Remove old lining from shoes and reline brake shoes  
Note: Lining must be countersunk so that rivet heads are  $\frac{1}{4}$  of an inch below face of lining
9. Free up all brake connections and ball joints using an oil can or grease gun
10. Replace all brake shoes and tighten with anchor pins and nut  
Note: When replacing brake shoes with new lining, it is necessary to loosen all adjustments
11. Replace front wheels
12. Adjust front wheel bearings
13. Replace axle shaft nuts, cotter pins and hub caps
14. Adjust foot brakes  
Note: Adjust eccentric screw on the brake support plate until brakes drag and then turn eccentric screw again and try wheel and see that it can just be turned without dragging—adjust front and rear camshaft operating lever. Check adjustment for equalization by checking up the four wheels. Check the two front wheels and then the rear wheels having someone sit in the driving seat and hold the brake on tightly while trying the wheels for equalization
15. Test  
Note: Be sure that brakes do not drag before the car leaves the service station

### Material

112 In. 106886 Lining.....	.....
72 In. 156499 Lining.....	.....
Miscellaneous.....	.....

## Brakes—Foot—Reline, Turn Down Drums and Adjust Both Sets of Brakes

640

Same as 626

### Material

112 In. 106886 Lining.....	.....
72 In. 156499 Lining.....	.....
Miscellaneous.....	.....

## A17 Brake Shoe and Facing Assemblies Front or Rear—Renew One Set

626

(Includes A348)  
(Bendix Brakes)

1. Remove brake anchor pins
2. Remove the three shoes—they can now be slipped off the anchor pins in a group  
Note: If return springs are not in good condition, replace with new springs
3. Supply and install new brake shoe  
Note: See that brake shoe releases properly

4. Replace front or rear wheel
5. Adjust foot brakes (See operation A11 on Bendix brakes)

**A17***Cont.***Material**

- 1-164636 Primary Shoe
- 1-164635 Auxiliary Shoe
- 1-164637 Secondary Shoe
- 1-164004 Spring

**Brake Shoe and Facing Assemblies -  
Front or Rear - Renew One Set**

640

**(Bendix Brakes)**

Same as 626

**Material**

- 1-164636 Primary Shoe
- 1-164635 Auxiliary Shoe
- 1-164637 Secondary Shoe
- 1-164004 Spring

**Brakes—Foot—Free Up and Adjust**

626

**A19**

1. Raise both rear wheels clear of floor and remove, using puller S. T. 123
  2. Free up and lubricate all foot brake connections
  3. Replace wheels and adjust brakes
- Note: Brakes - Foot—Adjust (See Operation A11)

**Material**

Same as 626

640

**Material**
**Brakes—Hand and Foot—Adjust  
(Bendix Brakes)**

626

**A116**

1. Raise the four wheels off the ground  
Adjust eccentric screw on the brake support plate and turn brake shoe adjusting cam until brakes drag, then back off just enough so that wheels can be turned without brake dragging. Hold the adjusting cam in this position while tightening  
Note: Make sure linkage and cross shaft are perfectly free
2. Loosen check nuts on front brake cable and rear brake pull rods
3. Take up on self locking adjusting nuts until with adjusting nut in its proper position (resting firmly in the socket), the brake starts to drag, then back off the adjusting nuts until wheel turns freely  
Note: Check adjustment to see that there is approximate equalization by checking up the four wheels. First the two front wheels and then the two rear wheels

**To Adjust Hand Brakes**

1. Adjust hand brake pull rods by means of the adjusting clevis at the front end so that there is at least  $\frac{1}{8}$  of an inch clearance between the bottom of the slot and the pin on the brake lever, with brakes in off position

**Material**

Same as 626

640

**Material**

**A119 Brakes—Hand and Foot—  
Free Up and Adjust**

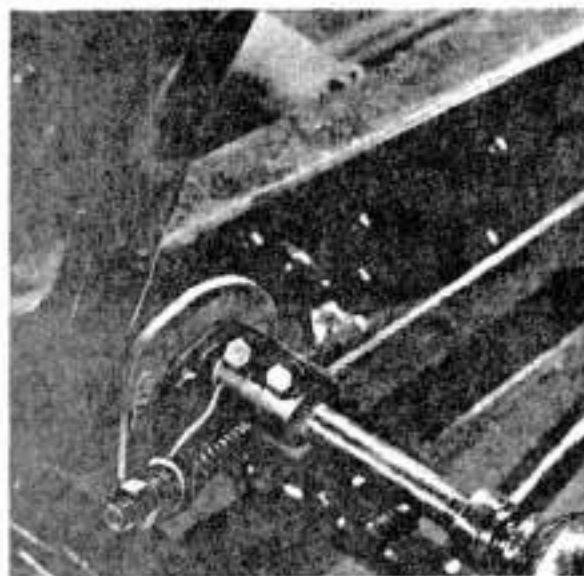
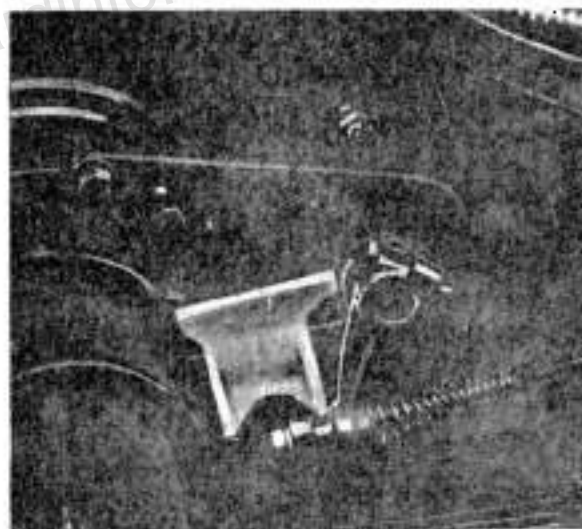
616

1. Remove hub caps, using special wrench S. T. 129
2. Remove both rear wheels, using a special wheel puller S. T. 183 (report condition of expanding rings)
3. Free up all brake connections
4. Adjust expanding rings, using a dummy drum
5. Replace wheels
6. Adjust foot brakes (See operation A11)
7. Adjust front camshaft, adjusting screws equally until the wheels are just free
8. Adjust hand brake pull rod and check equalization of rear wheels
9. Report to foreman on any additional work required

**Material**

Same as 626

640

**Material****Front Brake Lever Gauge****Rear Brake Lever Gauge**

<b>Rear Axle Shaft Nut—Tighten (One Side)</b>	<b>626</b>	<b>A30</b>
1. Jack up rear wheel		
2. Remove hub cap and cotter pin		
3. Tighten axle shaft nut, using special long handle wrench S. T. 133		
4. Fit new cotter pins and replace hub cap		
<b>Material</b>		
Same as 626	<b>640</b>	
<b>Material</b>		
<b>Wheels—Rear—Tighten on Axles</b>	<b>626</b>	<b>A31</b>
1. Jack up rear end of chassis		
2. Remove hub caps and cotter pins		
3. Tighten axle shaft nuts, using special long handle wrench S. T. 133		
4. Fit new cotter pins and replace hub caps		
<b>Material</b>		
Same as 626	<b>640</b>	
<b>Material</b>		
<b>Front Axle Brake Support Plate—Renew Both (Includes S25E)</b>	<b>626</b>	<b>A32</b>
1. Disconnect front brake cable		
2. Remove brake shoes		
3. Remove front brake camshaft leather boot and cam-bolt from support plate		
4. Remove front wheel brake support plate		
5. Assemble new plates, drawing nuts tight		
Note: Check for proper steering knuckle and foot brake adjustment. See Operation A11		
6. Replace camshaft and leather boot		
<b>Material</b>		
1-163202 Plate—Left		
1-163208 Plate—Right		
Miscellaneous		
Same as 626	<b>640</b>	
<b>Material</b>		
1-163202 Plate—Left		
1-163208 Plate—Right		
Miscellaneous		
<b>Axle Shaft Key—Renew One</b>	<b>626</b>	<b>A33</b>
1. Remove hub cap, cotter pin, nut, rear wheels, using cap wrench S. T. 129, nut wrench S. T. 133, and puller S. T. 681		
2. Fit new axle shaft key		
3. Replace wheel, drawing nut up tight		
4. Install cotter pin and hub cap		
<b>Material</b>		
1-120489 Key		
Same as 626	<b>640</b>	
<b>Material</b>		
1-140073 Key		

### **A34** Front Axle Brake Support Plate—Renew One 626 (Includes S220)

1. Remove brake shoes
2. Remove old brake support plate
3. Supply and install new plate  
Note: Check steering knuckle for proper adjustment
4. Adjust foot brakes (See Operation A11)

#### **Material**

1-163202 Plate—Left  
or  
1-163208 Plate—Right  
Miscellaneous . . . . .

Same as 626 640

#### **Material**

1-163202 Plate—Left  
1-163208 Plate—Right  
Miscellaneous . . . . .

### **A35** Front Axle Brake Cable—Renew Both 626

1. Remove the old cable
2. Supply and install new cable
3. Adjust front cables so that the camshaft lever is  $\frac{1}{2}$  inch ahead of camshaft center or use two gauges. See Operation A11 for foot brake adjustment

#### **Material**

2-157944 Cable . . . . .  
4- 7515 Yoke . . . . .  
4-126586 Studs . . . . .

Same as 626 640

#### **Material**

2-157945 Cable  
4- 7515 Yoke  
4-126586 Studs

### **A36** Front Axle Brake Cable—Renew One 626

1. Remove the old cable
2. Supply and install cable
3. Adjust front cable so that the camshaft lever is  $\frac{1}{2}$  inch ahead of camshaft center or use gauge. See Operation A11 for foot brake adjustment

#### **Material**

1-157945 Cable . . . . .  
2- 7515 Yoke . . . . .  
2-126586 Studs . . . . .

Same as 626 640

#### **Material**

1-157945 Cable . . . . .  
2- 7515 Yoke . . . . .  
2-126586 Studs . . . . .

**Front Axle—Renew**626 **A38**

1. Disconnect steering connecting rod and cross tube
2. Remove wheels and hubs, using special hub cap wrench S. T. 129
3. Disconnect hydraulic shock absorber
4. Remove front brake support plate with shoes
5. Remove steering knuckles
6. Remove axle from chassis
7. Supply and install new front axle
8. Reassemble

Note: See that steering knuckles have proper adjustment and trim wheels, using alignment jig No. S. T. 128

**Material**

1-157762 Front Axle . . . . .

1 Lb. Grease . . . . .

Same as 626

640

Note: See that the front spring center bolt enters hole in spring seat on axle and that springs are securely fastened

**Material**

1-157762 Front Axle . . . . .

1 Lb. Grease . . . . .

**Wheels—Front and Rear—Tighten Clamping Ring Bolts (Disteel Wheel)**626 **A39**

1. Draw up on clamping ring bolts

**Material**

Same as 626

640

**Material****Wheels—Rear—Remove and Replace**626 **A310**

1. Remove hub cap, cotter pin and axle shaft nut, using wrenches S. T. 129 and S. T. 133
  2. Remove both wheels with puller, using S. T. 083
  3. Replace on axle shafts and draw nuts tight
  4. Replace cotter pin and hub caps
- Note: Be sure that hand brake is in off position before pulling rear wheels  
Report condition of brake shoes

**Material**

Same as 626

640

**Material**

### **A311** Brake Drum Assy. Front Renew One (Disteel Wheel) (Wheels Off) 626

1. Assemble new drum in place
  2. Slack away brake bands to allow new drum ample room, draw up wheel tight on axle shaft and replace outer and hub cap
  3. Adjust brakes
- Note: Be sure to lubricate bearings with grease

#### Material

1-163029 Drum - Front  
1-lb. Grease

Same as 626

640

#### Material

1-163029 Drum - Front  
1-lb. Grease

### **A312** Rear Axle Shaft Bearing Dust Washer and Retainer—Renew Both (Includes A310) 626

1. Disconnect brake rod
2. Remove brake support plate and pull axle shaft retainer
3. Supply and install new leather washers. Felt washer into retainer
4. Pack axle shaft bearings with grease
6. Replace axle shaft and support plate and tighten
7. Replace brake rod

#### Material

2-138599 Leather Washers  
2-121110 Felt Washers  
2-121111 Retainer  
Grease

### Wheel Rear Dust Washer and Retainer --Renew Both (Includes A310)

640

Same as 626

#### Material

2-138524 Leather Washers  
2-121635 Felt Washers  
2-121715 Retainer  
Grease

### **A313** Rear Axle Shaft Bearing Retainer Dust Washer Renew (One Side) (Includes A348) 626

1. Remove bearing retainer and pull axle shaft
2. Remove retainer and dust washer
3. Pack axle shaft with grease
4. Supply and install new retainer and dust washer

#### Material

1-121110 Washer  
1-121111 Retainer  
1-138599 Leather Washer



Same as 626

640 **A313**  
Cont.**Material**

- 1-124635 Belt Washer
- 1-124715 Retainer
- 1-138524 Leather Washer

**Wheel—Rear—Hub Assembly—  
Renew One (Disteel Wheel) Wheels Off**626 **A322**

1. Replace hub assembly and wheel
  2. Adjust brakes (See operation A11)
- Note: For removing hub caps, use hub cap wrench S. T. 129. To remove axle shaft nut, use wrench S. T. 133. Use wheel puller S. T. 683 to remove wheels. Before pulling rear wheels be sure hand brake lever is in off position.

**Material**

- 1-163028 Hub Assembly
- 1-120489 Key

Same as 626

640

**Material**

- 1-163027 Hub Assembly
- 1-140073 Key

**Axle Shaft Bearing—Renew**626 **A324**

1. Jack up chassis and remove rear wheel using puller S. T. 123
2. Disconnect brake rod
3. Remove brake support plate from axle (do not remove brake shoes)
4. Remove axle shaft and sleeve
5. Remove axle shaft bearing, check nut lock and nut
6. Remove bearing and replace with new
7. Replace check nut and tighten
8. Replace lock and tighten set screw
9. Pack axle shaft with grease
10. Reassemble and tighten axle shaft and wheels

**Material**

- 1- 63165 Bearing

Same as 626

640

Note: Axle shaft bearing check nut is drilled in place and locked with lock wire

**Material**

- 1- 62580 Bearing

**Rear Axle Case Assembly--Renew**626 **A329**

Note: Protect trimming from oil and grease by using seat covers

1. Hoist rear of car, using chain falls and jack up rear of body
2. Remove hub caps and wheels and axle shaft
3. Drain oil and remove universal joint
4. Remove differential carrier, cap screws and carrier
5. Pull carrier from under chassis
6. Remove rear axle spring clips
7. Remove all brake connections and shoes
8. Reassemble all parts into the new rear axle case
9. Reface case and tighten clips
10. Replace carrier to housing and fill with oil
11. Replace axle shaft and wheels
12. Rebuild the entire job and set up foot brakes
13. Test for quiet axle

**A 329** Material

*Cont.* 3 Qrs. Oil  
1-140431 Gasket  
1-157763 Case

Same as 626

640

**Material**

1-157767 Case  
1-141445 Gasket  
3½ Qts. Oil

**A 330** Rear Axle Case Rear Cover- Renew

626

1. Drain oil
2. Remove cap screws
3. Report condition of differential gear to foreman
4. Install new cover and tighten
5. Fill with new oil

**Material**

3 Qts. Oil  
1-140431 Gasket  
1-140433 Cover

Same as 626

640

**Material**

1-141345 Gasket  
1-141344 Cover  
3½ Qts. Oil

**A 331** Rear Axle Case Rear Cover Gasket- Renew

626

1. Drain oil
2. Remove cap screws from rear cover
3. Report condition of differential gears to foreman
4. Install new gasket
5. Replace cover and tighten. Fill with oil

**Material**

3 Qts. Oil  
1-140431 Gasket

Same as 626

640

**Material**

3½ Qts. Oil  
1-141345 Gasket

**Rear Axle and Differential—Remove, Inspect for Necessary Repairs and Replace (Due to Accident)**626 **A 334**

Note: Protect trimming from oil and grease by using seat covers

1. Hoist rear of car, using chain falls and jack up rear of body
2. Remove hub caps and wheels and axle shaft and inspect for bent axle
3. Drain oil and remove universal joint
4. Remove differential carrier, cap screws and carrier
5. Pull carrier from under chassis
6. Dismantle differential for inspection for sprung parts
7. Wash and clean all parts thoroughly and blow off with air hose
8. Remove spring bolts and drop rear axle case assembly and hydraulic shock absorbers
9. Make thorough inspection on differential case. If sprung or broken report to foreman
10. Reassemble parts into differential carrier
11. Replace rear axle case and tighten spring bolts  
 Note: The front faces of the ring gear and pinion should be flush. For detail information on adjusting ring gear and pinion, see Technical Letter No. 1735
12. Replace carrier to housing and fill with oil
13. Replace axle shaft and wheels
14. Rebuild the entire job
15. Set up foot brakes

**Material**

3 Qts. Oil	.....	
2-140431 Rear Axle Case Gasket	.....	
Same as 626		640

**Material**

3½ Qts. Oil	.....
1-141345 Rear Axle Case Gasket	.....

**Rear Axle Shaft Key - Renew Both**626 **A 335**

1. Hoist rear of car, using chain falls
2. Pull both rear wheels
3. Replace with two new axle shaft keys
4. Replace wheel and tighten

Note: Be sure that hand brake is in off position before pulling rear wheels and report condition of hand brakes

**Material**

2-120489 Keys	.....	
Same as 626		640

**Material**

2-140073 Key	.....
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**Rear Axle Case and Differential - Overhaul Complete (Due to Accident) (Includes A-334) (Labor Only)**626 **A 336**

1. Use new parts necessary to put in first class condition
2. Test for quiet axle

Note: Add material to this operation only

**Material**

Same as 626		640
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**Material**

**A 337** Rear Axle Case--Rear Cover --Remove, Inspect Differential Gears and Replace 626

1. Remove differential cover and drain oil
2. Inspect differential gears thoroughly. Report to foreman; if necessary to put in first class condition
3. Replace cover and tighten, using new gasket
4. Refill with oil

**Material**

1-140151 Gasket .....  
 Same as 626 640

**Material**

1-141345 Gasket .....

**A 348** Wheel - Rear--Remove and Replace One 626

1. Remove hub cap, using wrench S. T. 129
2. Remove cutter pin and axle nut, using S. T. 133
3. Pull wheel, using puller S. T. 083
4. Reassemble and adjust brakes if necessary. See Operation A11  
 Note: Hand brake lever should be in off position before pulling rear wheel. Be sure and pack axle shaft bearing with grease

**Material**

Same as 626 640

**Material****A 350** Rear Axle Bearing Jam Nut --Tighten (Includes A348) 626

1. Remove axle shaft
2. Remove set screw in check nut
3. Tighten check nut
4. Drill new hole in axle shaft and tighten set screw
5. Pack axle shaft bearing with grease
6. Replace axle shaft and tighten

**Material**

Same as 626 640

**Material****A 352** Brake Drums--Turn Down (Includes A310) 626

1. Turn down drums to smooth up

**Material**

Miscellaneous.....

**Brake Drums--Turn Down (Includes A310) 640**

1. Turn down drums to smooth up  
 Note: Report condition of hand brake shoes

**Material**

Miscellaneous.....

**Rear Axle Shaft -- Remove and Straighten One  
(Includes A348)****626 A 361**

1. Remove bearing retainer and pull axle shaft
2. If it is sprung to any extent, place it between centers in a lathe, or axle shaft can be straightened in an arbor or straightening press by supporting the two ends with blocks and applying the pressure on the center where it is sprung
3. Pack axle shaft bearing with grease. Replace and tighten

**Material**

Same as 626

**640****Material****Front Axle—Remove, Straighten and Replace  
(Includes A40) (Labor Only)****626 A 380**

1. Remove and place axle into blacksmith shop and straighten

**Material**

Same as 626

**640****Material****Front Axle Rubber Bumper -- Renew One****626 A 381**

1. Remove the old rubber bumper bracket
2. Install new rubber bumper and tighten

**Material**

1-147298 Bumper

Same as 626

**640****Material**

1-147298 Bumper



**Front Axle Remove, Dismantle and Replace**

626 **A40**

1. Disconnect steering connecting rod front end and hydraulic shock absorbers
2. Remove wheels
3. Remove front brake support plates with shoes
4. Remove steering knuckles
5. Remove front spring clips
6. Raise weight of car and pull axle from under
7. Clean parts thoroughly and inspect for wear and bent axle
8. Replace front axle
9. Replace spring clips, reassemble connecting rod and hydraulic shock absorber
10. Replace steering knuckles and support plates  
Note: See that steering knuckles have proper adjustment. See S119 and tram wheels, using aligning jig S. T. 128
11. Replace wheels (See S221 for wheel adjustment)
12. Let weight of car down on axles

**Material**

1 Lb. Grease

**Front Axle—Remove, Dismantle and Replace**

640

1. Disconnect steering connecting rod and cross tube
2. Remove wheels and hub caps, using hub cap wrench S. T. 129
3. Disconnect hydraulic shock absorbers
4. Remove front brake support plate with shoes
5. Remove steering knuckles
6. Remove axle from chassis
7. Replace axle and reassemble
8. Replace spring clips, reassemble connecting rod and hydraulic shock absorber  
Note: See that steering knuckles have proper adjustment
9. Let weight of car down on axle
10. Tram front wheels, using S. T. 128

**Material**

1 Lb. Grease

**Rear Axle Shaft Renew One**

626 **A41**

(Includes A348)

1. Remove brake support plate from axle housing  
Note: Do not remove brake shoes
2. Remove axle shaft
3. Remove axle shaft bearing from retainer
4. Remove set screw and check nut
5. Remove axle shaft from bearing
6. Supply and install new axle shaft
7. Replace bearing, check nut and tighten
8. Drill new hole in axle shaft and tighten set screw
9. Pack axle shaft bearing with grease
10. Replace and tighten brake support plate

**Material**

1-120489 Key .....  
1-140390 Axle Shaft. ....

Same as 626

649

**Material**

1-140073 Key .....  
1-138163 Axle Shaft. ....

**A42 Rear Axle Brake Support Plate—Renew One**  
(Includes A348)

626

1. Remove brake shoes from support plate
2. Remove axle shaft and support plates
3. Remove brake camshaft and bearing
4. Install new brake support plate  
Note: Pack axle shaft bearings with grease
5. Replace brake camshaft and bearing
6. Replace brake support plate and axle shaft
7. Replace brake shoes and adjust brakes (See operation A11 for foot brake adjustment)

**Material**

1-163203 Support Plate - Left

or

1-163209 Support Plate - Right

Same as 626.

640

**Material**

1-163204 Support Plate - Left

or

1-163210 Support Plate - Right

**A43 Differential Ring Gear and Pinion—Renew**  
(Includes A410)

626

1. Install new ring gear and pinion
2. Adjust for standard clearance (.006" to .010" backlash)  
Note: Front faces of gear and pinion teeth should be flush. Detail information on assembling carrier in Technical Letter No. 1735

**Material**

1-141462 Gear and Pinion Assembly

or

1-141461 Gear and Pinion Assembly

or

1-141902 Gear and Pinion Assembly

Miscellaneous

Same as 626.

640

**Material**

1-141460 Gear and Pinion Assembly

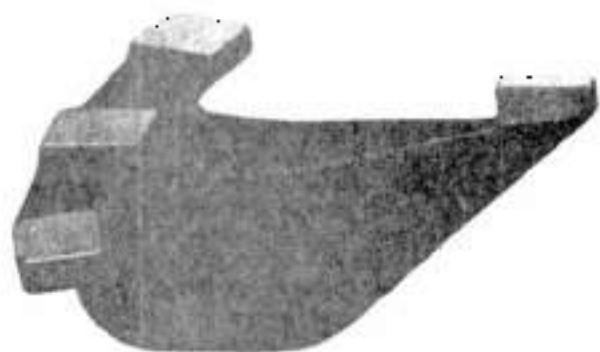
or

1-141903 Gear and Pinion Assembly

or

1-141459 Gear and Pinion Assembly

Miscellaneous



Tools Nos. S. T. 670-671

The hypoid gear teeth must do not run flush and it is necessary to set the depth of the pinion by measurement. The gauge shown here is an accurately ground gauge for this purpose.



**Differential Pinion Shaft Adjust  
To Eliminate End Play**626 **A45**

1. Loosen lock nut and snug up on the (inside sleeve) and lock adjustment
2. Test for quiet axle

Note: If further adjustment is necessary report to foreman

**Material**

Same as 626

640

**Material****Rear Axle Brake Support Plate Renew Both  
(Includes A310)**626 **A46**

1. Remove brake rod
2. Remove brake shoe assembly from support plates
3. Remove axle shaft and support plates
4. Remove brake camshaft and bearing from support plates  
Note: The long end of the foot brake operating lever cam operates the primary shoe, the short end of the cam operates the auxiliary shoe. Care should be taken that the cam is assembled properly
5. Install new brake support plates  
Note: Pack axle shaft bearing with grease
6. Replace brake camshaft and bearing
7. Replace brake support plate and axle shaft
8. Replace brake shoes and adjust brakes  
Note: See Operation A11 for foot brake adjustment

**Material**

1-163203 Support Plate

1-163209 Support Plate

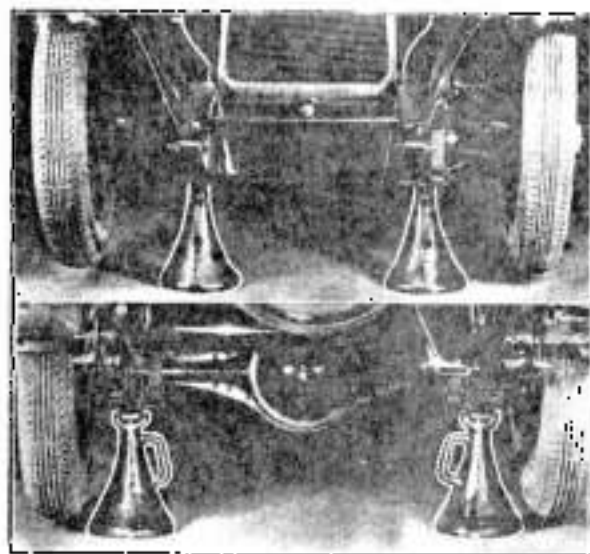
Same as 626

640

**Material**

1-163204 Support Plate

1-163210 Support Plate



**Combination Shop Jack**  
Tool No. S. T. 054 - All Models

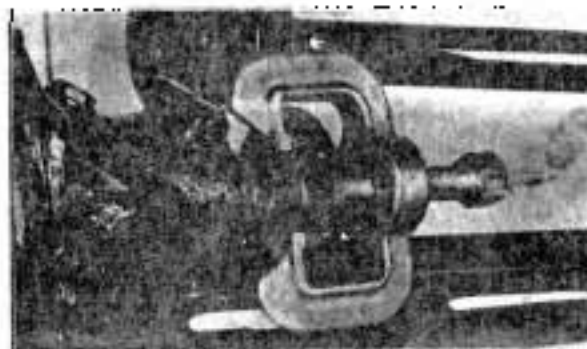
**A47** Differential Carrier and Caps Assembly Renew

626

Note: It is not necessary to pull hub caps, axle shaft nuts or wheels. To protect trimming from oil and grease, use seat covers S. T. 145 and double door covers S. T. 146.

1. Jack up rear end of chassis, using jacks S. T. 154 or 155
2. Disconnect rear brake rods
3. Remove one upper bolt from rear brake support plate assembly  
 Note: Use a  $\frac{3}{4}$  x 20 stud, with a slot cut in end of stud so that it can be turned with a screw driver and insert stud in hole from which bolt was removed. This stud acts as a guide when replating wheel and support plate assembly and must enter original hole in axle case from which it was taken. Mark rear axle case and support plate with a screw driver, so that support plate can be returned to its original position.
4. Drain oil
5. Remove remaining bolts holding brake support plate to rear axle  
 Note: Pull wheels, axle shafts and brake support plates in one unit just far enough to remove differential
6. Disconnect universal joint and move to one side
7. Remove differential carrier, cap screws and carrier
8. Pull carrier from under chassis
9. Remove two ring gear bearing adjusting nuts and ring gear
10. Remove pinion bearing sleeve lock
11. Remove inner and outer pinion bearing sleeves
12. Remove pinion
13. Wash and clean all parts thoroughly and inspect
14. Reassemble old parts into new carrier
15. Reassemble pinion inner and outer sleeve
16. Replace ring gear and bearing adjusting nuts and adjust to standard clearance, from .006" to .010" backlash  
 Note: Adjust so that the pinion teeth are flush with the ends of the ring gear teeth, with the teeth properly meshed. For further detail information on adjustment see Technical Letter 1079
17. Replace differential and fill with oil
18. Replace axle shaft, wheel and brake support plate units
19. Test for quiet axle

Universal Joint Flange Puller



**Material**

3-Qts. Oil  
 1-143318 Carrier  
 1-140431 Gasket

Same as 626

**A47**

Cont.

640

**Material**

1-143319 Carrier  
 1-141345 Gasket  
 3½-Qts. Oil

**Differential Remove and Dismantle, Report and Replace**626 **A410**

Note: It is not necessary to pull hub caps, axle shaft nuts or wheels. To protect trimming from oil and grease, use seat covers S. T. 145 and double floor covers S. T. 146.

1. Jack up rear end of chassis, using jacks S. T. 154 and S. T. 155
2. Disconnect rear brake rods
3. Remove one upper bolt from rear brake support plate assembly  
 Note: Use a 5/8 x 20 stud, with a slot cut in end of stud so that it can be turned with a screw driver and insert stud in hole from which bolt was removed. This stud acts as a guide when replacing wheel and support plate assembly and must enter original hole in axle case from which it was taken. Mark rear axle case and support plate with a screw driver, so that support plate can be returned to its original position.
4. Drain oil
5. Remove remaining bolts holding brake support plate to rear axle  
 Note: Pull wheels, axle shafts and brake support plates in one unit just far enough to remove differential.
6. Disconnect universal joint and move to one side
7. Remove differential carrier, cap screws and carrier
8. Pull carrier from under chassis
9. Remove two ring gear bearing adjusting nuts and ring gear
10. Remove pinion bearing sleeve lock
11. Remove inner and outer pinion bearing sleeves
12. Remove pinion
13. Wash and clean all parts thoroughly and inspect
14. Reassemble pinion inner and outer sleeve  
 Note: Reassemble old parts into new carrier
15. Replace ring gear and bearing adjusting nuts and adjust to standard clearance, from .000" to .010" backlash  
 Note: Adjust so that the pinion teeth are flush with the ends of the ring gear teeth, with the teeth properly meshed. For further detail information on adjustment, see Technical letter 1679
16. Replace differential and fill with oil
17. Replace axle shaft, wheel and brake support plate units
18. Test for quiet axle

**Material**

1-140431 Gasket

3 Qts. Oil

Same as 626

640

**Material**

141345 Gasket

3½ Qts. Oil

**A411 Differential—Recondition (Labor Only)**

626

Note: It is not necessary to pull hub caps, axle shaft nuts or wheels. To protect trimming from oil and grease, use seat covers S. T. 145 and double door covers S. T. 146.

1. Jack up rear end of chassis, using jacks S. T. 154 or 155
2. Disconnect rear brake rods
3. Remove one upper bolt from rear brake support plate assembly  
Note: Use a  $\frac{1}{4}$  x 20 stud, with a slot cut in end of stud so that it can be turned with a screw driver and insert stud in hole from which bolt was removed. This stud acts as a guide when replacing wheel and support plate assembly and must enter original hole in axle case from which it was taken. Mark rear axle case and support plate with a screw driver, so that support plate can be returned to its original position
4. Drain oil
5. Remove remaining bolts holding brake support plate to rear axle  
Note: Pull wheels, axle shafts and brake support plates in one unit just far enough to remove differential
6. Disconnect universal joint and move to one side
7. Remove differential carrier cap screws and carrier
8. Pull carrier from under chassis
9. Remove two ring gear bearing adjusting nuts and ring gear
10. Remove inner and outer pinion bearing sleeves
11. Remove pinion
12. Wash and clean all parts thoroughly and inspect
13. Use new parts necessary to put in first class condition
14. Reassemble pinion inner and outer sleeve
15. Replace ring gear and bearing adjusting nuts and adjust to standard clearance, from .006" to .010" backlash  
Note: Adjust so that the pinion teeth are flush with the ends of the ring gear teeth, with the teeth properly meshed. For further detail information on adjustment see Technical Letter 1679
16. Replace differential and fill with oil
17. Replace axle shaft, wheel and brake support plate units
18. Test for quiet axle  
Note: The estimated zone prices of parts required to recondition differential are: 1st zone, \$39.25; 2nd zone, \$41.15; 3rd zone, \$45.00. All parts listed should not be required

**Material**

1-14041	Rear Axle Case Gasket	
	or	
1-14142	Driving Gear and Pinion Assembly (4.08 to 1)	
	or	
1-14146	Driving Gear and Pinion Assembly (4.09 to 1)	
	or	
1-14192	Driving Gear and Pinion Assembly (4.38 to 1)	
2-139768	Differential Bearings	
2-124636	Differential Gears	
1-138820	Pinion Bearing	
1-138740	Pinion Bearing	
1-124618	Differential Spider	
1-136564	Dust Washer and Retainer Assembly	
4-124617	Pinions	
3 Qts. Oil		

**Differential Recondition**

640

Same as 626

Note: The estimated zone prices of parts required to recondition differential are: 1st zone, \$42.05; 2nd zone, \$44.10; 3rd zone, \$48.85. All parts listed should not be required



Rear Axle Drake Construction

**Material**

- 1-141315 Rear Axle Case Gasket  
1-141160 Driving Gear and Pinion Assembly (4.07 to 1) . . . . .  
or  
1-141459 Driving Gear and Pinion Assembly (4.07 to 1) . . . . .  
or  
1-141063 Driving Gear and Pinion Assembly (4.38 to 1) . . . . .  
2-139587 Differential Bearings . . . . .

**A411**  
Cont.

<b>A411</b> Cont.	2-124616 Differential Gears.....	.....
	1-138908 Pinion Bearing.....	.....
	1-138141 Pinion Bearing.....	.....
	1-138584 Dust Washer and Retainer.....	.....
	1-124618 Differential Spider.....	.....
	4-124617 Differential Pinions.....	.....

3 $\frac{1}{2}$  Qrs. (18)

## A416 Differential Carrier Assembly- Renew 626

Note: It is not necessary to pull hub caps axle shaft, nuts or wheels  
To protect trimming from oil and grease use seat covers S. T. 145 and double door covers S. T. 146

1. Jack up rear end of chassis using jacks S. T. 154 and S. T. 155
2. Disconnect rear brake rods
3. Remove one upper bolt from rear brake support plate assembly  
Note: Use a 4-20 stud, with a slot cut in end of stud so that it can be turned with a screw driver and insert stud in hole from which bolt was removed. This stud acts as a guide when replacing wheel and support plate assembly and must enter original hole in axle case from which it was taken. Mark rear axle case and support plate with a screw driver so that support plate can be returned to its original position.
4. Drain oil
5. Remove remaining bolts holding brake support plate to rear axle  
Note: Pull wheels, axle shaft and brake support plates in one unit just far enough to remove differential
6. Disconnect universal joints and move to one side
7. Remove differential carrier cap screws and carrier
8. Pull carrier from under chassis
9. Replace new differential and fill with oil
10. Replace axle shaft, wheel and brake support plate units
11. Test for quiet axle

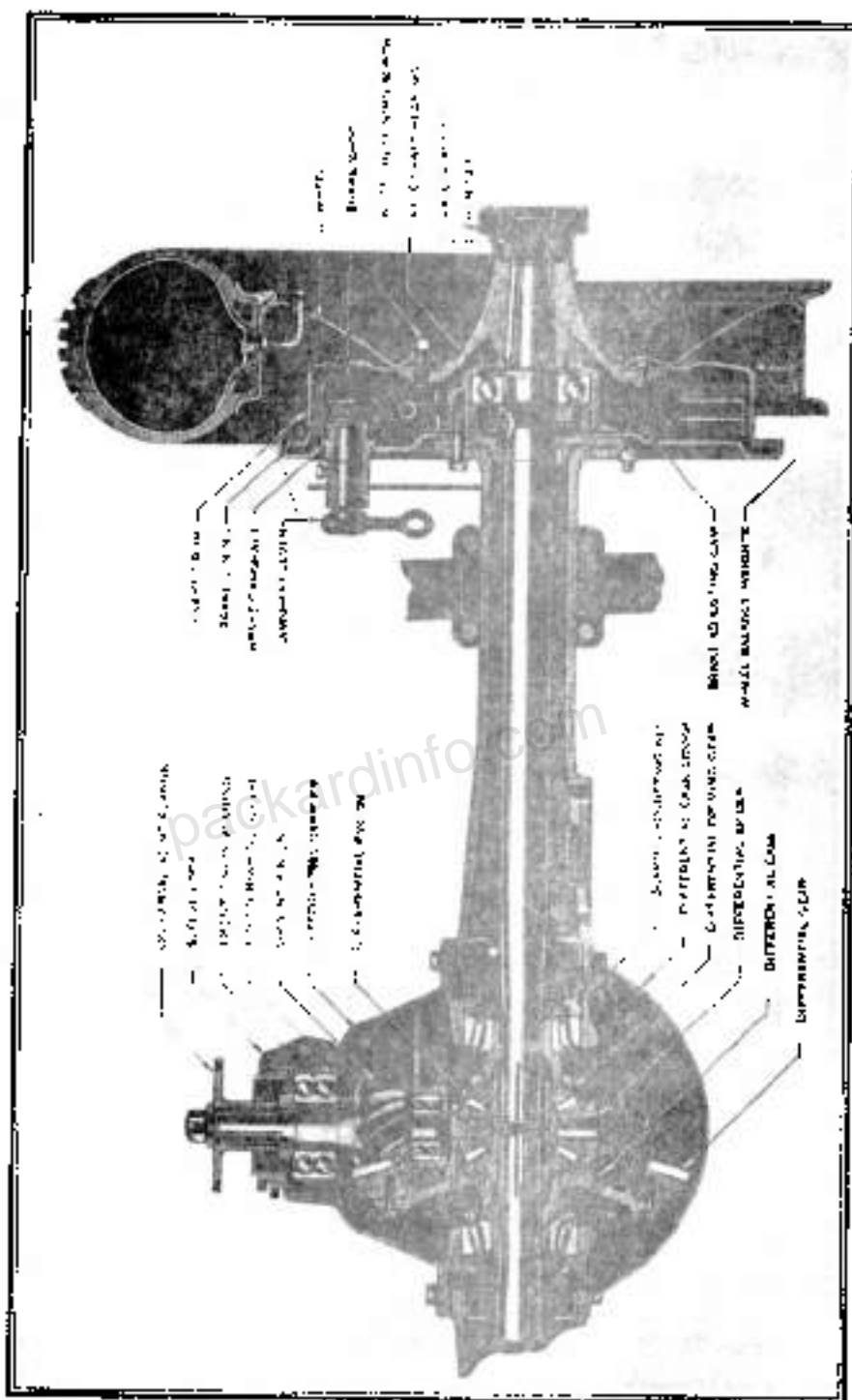
### Material

1-140431 Gasket.....	.....
1-138593 Carrier Assembly (5.08 in 1) (326-333).....	.....
OR	
1-141568 Carrier Assembly (4.38 in 1) (526).....	.....
OR	
1-144173 Carrier Assembly (4.69 in 1).....	.....
OR	
1-140435 Carrier Assembly (5.08 in 1).....	.....

Same as 626 640

### Material

1-141345 Gasket.....	.....
1-141567 Carrier Assembly (4.07 in 1) (336).....	.....
OR	
1-141376 Carrier Assembly (4.69 in 1).....	.....
OR	
1-144174 Carrier Assembly (4.38 in 1).....	.....
OR	
1-144174 Carrier Assembly (4.38 in 1) (443).....	.....



### Side Wheel Carrier Renew (Right or Left) (Labor Only)

1. Remove wheel lock and wheel
2. Remove four bolts from carrier bracket
3. Install new wheel carrier and tighten
4. Install wheel and lock

#### Material

Wheel Carrier Assembly

645 **A531**





**Windshield Glass - Reset  
(Closed Bodies) - (Labor Only)**626 **B47**

1. Loosen wing nuts and swing upper half of windshield upward as far as it will go
2. Remove screws holding hinge on upper half of windshield to body
3. Remove upper half of windshield
4. Remove four screws holding lower windshield frame in position
5. Shake windshield, so as to loosen windshield lower frame from fence, and remove lower frame
6. Remove screws and caps holding glass in top and bottom windshield frames
7. Remove glass and old felt filler  
Note: To remove glass, tap windshield frame lightly on bench or use soft hammer
8. Fit new felt to old glass and replace glass to frames
9. Replace upper and lower halves of windshield to body and tighten securely

**Material**

Filler.....

**Windshield Glass - Reset  
(Open Bodies) - (Labor Only)**

626

1. Remove all side curtains and unfasten both rear side quarters
2. Remove nuts at top of windshield stanchion
3. Lay top back far enough so that windshield can be removed
4. Remove nuts and lock washers at bottom of windshield stanchion
5. Remove windshield
6. Remove stanchion wing nuts, screws and both halves of windshield
7. Remove screws and caps holding windshield glass in frames and remove glass and felt fillers  
Note: To remove glass, tap windshield frame lightly on bench or use soft hammer
8. Fit new felt to old glass and replace glass to frames  
Note: Be sure that glass is matched properly so that glass retaining clips set in their proper place
9. Replace upper and lower halves of windshield to stanchions and tighten securely
10. Replace windshield assembly to body and tighten nuts at bottom of stanchion
11. Fasten top to windshield and replace any curtains that were removed

**Material**

Filler.....

**(Closed Bodies) - (Labor Only)**

640

Same as 626

**Material**

Filler.....

**(Open Bodies) - (Labor Only)**

640

Same as 626

**Material**

Filler.....

**B48 Windshield Glass - Renew (One Piece Windshield)**  
(Open Body) - Labor Only

626

1. Remove all side curtains and unfasten both rear side quarters.
2. Remove nuts at top of windshield stanchion, holding top to windshield.
3. Lay top back far enough so that windshield can be removed.
4. Remove nuts and lock washers at bottom of windshield stanchion.
5. Remove windshield and stanchion assembly.
6. Remove six screws holding windshield frame to stanchion.
7. Remove four screws holding upper section of windshield frame to lower section and remove upper section.
8. Remove glass and felt filler.  
Note: To remove glass, tap frame lightly on bench or use soft hammer.
9. Fit old felt to new glass and replace to windshield frame.
10. Reassemble in reverse order of removal.

**Material**

1-139019 Glass  
or  
1-139020 Glass

**(Labor Only)**

640

Same as 626

**Material**

1-139019 Glass  
or  
1-139020 Glass

**Windshield Glass - Renew (One-Piece Windshield)**  
(Closed Body) - Labor Only

626

1. Loosen clamp screws, swing windshield inward and tighten clamp screws so as to hold windshield open.
2. Remove six screws holding lower section of windshield frame to upper section and remove lower section and clamp screws.
3. Remove glass and old felt filler.  
Note: To remove glass, tap windshield frame lightly on bench or use soft hammer.
4. Fit old felt to new glass and replace glass to frame.
5. Replace and tighten lower section of windshield frame to upper section.
6. Replace windshield to body and tighten securely.
7. Replace and tighten clamp screws.

**Material**

1-139073 Glass

**(Labor Only)**

640

Same as 626

**Material**

1-139073 Glass

**Speedometer Driving Shaft—Renew****(Labor Only)****626 B51**

1. Remove old shaft.
2. Install new driving shaft of correct length properly lubricated. (See that head operates freely.)  
Note: Be sure ends of cable enter driving shaft and speedometer elbow properly.
3. Assemble to car with no sharp bends (limit 6" radius).  
Note: If the speedometer vibrates or jumps, look for loose coupling or connections, too sharp a bend in the flexible shaft, lack of lubrication, or gears that do not mesh properly.

**Material**

1-146618 Speedometer Driving Shaft

**(Labor Only)****640**

Same as 626

**Material**

1-146618 Speedometer Driving Shaft

**Speedometer Head—Renew****(Labor Only)****626 B54**

1. Disconnect cable and remove old head from instrument board.
2. Install new head and connect up.  
Note: If the speedometer vibrates or jumps, look for loose coupling or connections, too sharp a bend in the flexible shaft, lack of lubrication, or gears that do not mesh properly.

**Material**

1-158252 Head

or  
1-158251 Heador  
1-158250 Heador  
1-158249 Head

Same as 626

**640****Material**

1-158252 Head

or  
1-158251 Heador  
1-158250 Heador  
1-158249 Head



**Body Bolts—Tighten All**

626 **B61**

Note: To eliminate body squeaks, it is advisable to loosen body bolts, raise body, using a crow bar or chisel to pry up body, and apply cup grease to body liner, using a hack saw blade or some other suitable tool.

1. Tighten all body to frame bolts securely.

Note: If bolts turn in body sill and cannot be tightened cut them off and install new ones. A large machine hack saw blade with a wooden handle attached should be used. Drive a steel wedge in between body sill and frame close to the bolt to be removed. Insert saw blade between body sill and frame. Cut bolt in two. Remove the old bolt, install a new one and tighten nut securely.

**Material**

Same as 626

640

**Material**

**Door Lock Striker—Renew One  
(Open Body)**

626 **B62**

1. Remove screws holding old striker in place and remove old striker.
2. Supply and install one door lock striker.

Note: Door lock striker must be fitted so that the door can be easily slammed shut, with the bumpers holding a slight pressure against the door lock.

**Material**

1-131797 Striker

(Open Body)

640

Same as 626

**Material**

1-131797 Striker

**Door Glass—Front or Rear—Renew  
(Closed Body) (Labor Only)**

626 **B63**

Note: Remove glass without disturbing upholstery.

1. Run glass down to the bottom of the door.
2. Remove door lock lever handle nut and lever handle.  
Note: Do not mar nickel on handle.
3. Remove screws and mauling.

Note: It is not necessary to remove runway channels.

4. Turn window regulator, raise window within an inch or two of the top, tip the glass toward the inside of the door and remove glass from window regulator roller.
5. Replace glass.  
Note: When replacing glass be sure to engage arm roller in slot in glass channel.
6. Replace mauling and lever handle.  
Note: Window must operate freely. If broken glass is found lying at the bottom of the door, it is necessary to remove the upholstery at the bottom to remove broken glass. This will help to eliminate rattles.

**Material**

1 Glass

**Door Glass—Front or Rear—Renew  
(Closed Body) (Labor Only)**

640

Same as 626

**Material**

1 Glass

- B610** Body Change (Open to Closed or Vice Versa) 626
- Note: Use front seat covers S. T. 144 and S. T. 115 rear seat covers and cowl cover S. T. 148 to protect trimming and finish of body
1. Remove rear fenders
  2. Remove all body bolts  
Note: If bolts turn in body sill and cannot be removed, cut them off, using a hack saw blade. Drive a steel wedge in between the body sill and the frame, close on the bolt, insert hack saw blade between the body sill and frame and cut bolt in two
  3. Disconnect all electrical connections leading to dash and mirror
  4. Remove steering wheel
  5. Remove toe boards, floor boards and accelerator pedal
  6. Disconnect speedometer and gasoline gauge cables
  7. Disconnect and remove lubricating tank and oil gauge
  8. Remove ammeter, speedometer head and cigar lighter and cut
  9. Disconnect steering to dash bracket  
Note: If car is equipped with spot light, disconnect same
  10. Remove body  
Note: Hoist up body and remove chassis from under body
  11. Supply and install new body
  12. Tighten all body bolts and check entire body for rattles  
Note: Shim body to correct clearance around doors. Loosen body bolt just below the door that is to be shimmed. If the clearance between the top of the door and body is not enough, shims must be added between the body and frame. If there is too much clearance between the top of the door and body, shims must be removed. Shims can be made of brake lining or wood. A slot should be cut in each shim so that it can be slipped in place around body bolts
  13. Replace floor boards, toe boards, accelerator pedal, rear fenders and steering wheel  
Note: To eliminate rattles around doors, change the position of door bumpers

**Material**

Miscellaneous Bolts, etc.

(Open to Closed or Vice Versa) 640

Same as 626

**Material**

Miscellaneous Bolts, etc.

- B627** Monogram (Standard) Install 626
1. Select the desired monogram and place in position on body
  2. Use a chalk pouch to transfer design to body
  3. Select desired color paint and fill in monogram

**Material**

Same as 626

640

**Material**

**Wash and Polish - Open Car****Eight C1**

1. Place car on wash rack equipped with suitable light and water supply
2. Raise bonnet and cover motor with waterproof material to protect electrical and other parts
3. Soak mud or dust off with plenty of running water. Do not use excessive water pressure.  
Note: Use block of wood, hold radiator shutter open, clean radiator core with running water.
4. Use body sponge kept for that purpose to remove remainder of dirt, working in straight lines from top to bottom, **NEVER CIRCLES**. Rinse sponge often. If soap is necessary, use only the best commercial soft soap which is free from alkali or acids.
5. Dry each panel with clean chamois wrung out in clear water, working from top to bottom.
6. The chassis and under side of fenders should be flushed off with plenty of running water, using a sponge kept for the purpose. Oil and grease must be removed with a soap solution.
7. Polish nickel parts with a good nonabrasive silver polish. Frequent rubbing with an oily cloth will keep nickel surfaces bright. Interior fittings should never be polished.  
Note: Wire wheel equipment. \$1.50 extra

**Material****Closed Car****Eight**

Same as above

**Material****Wash Motor****Eight C3**

Note: Always have a fire extinguisher at hand and be sure of its operation or disconnect battery cable.

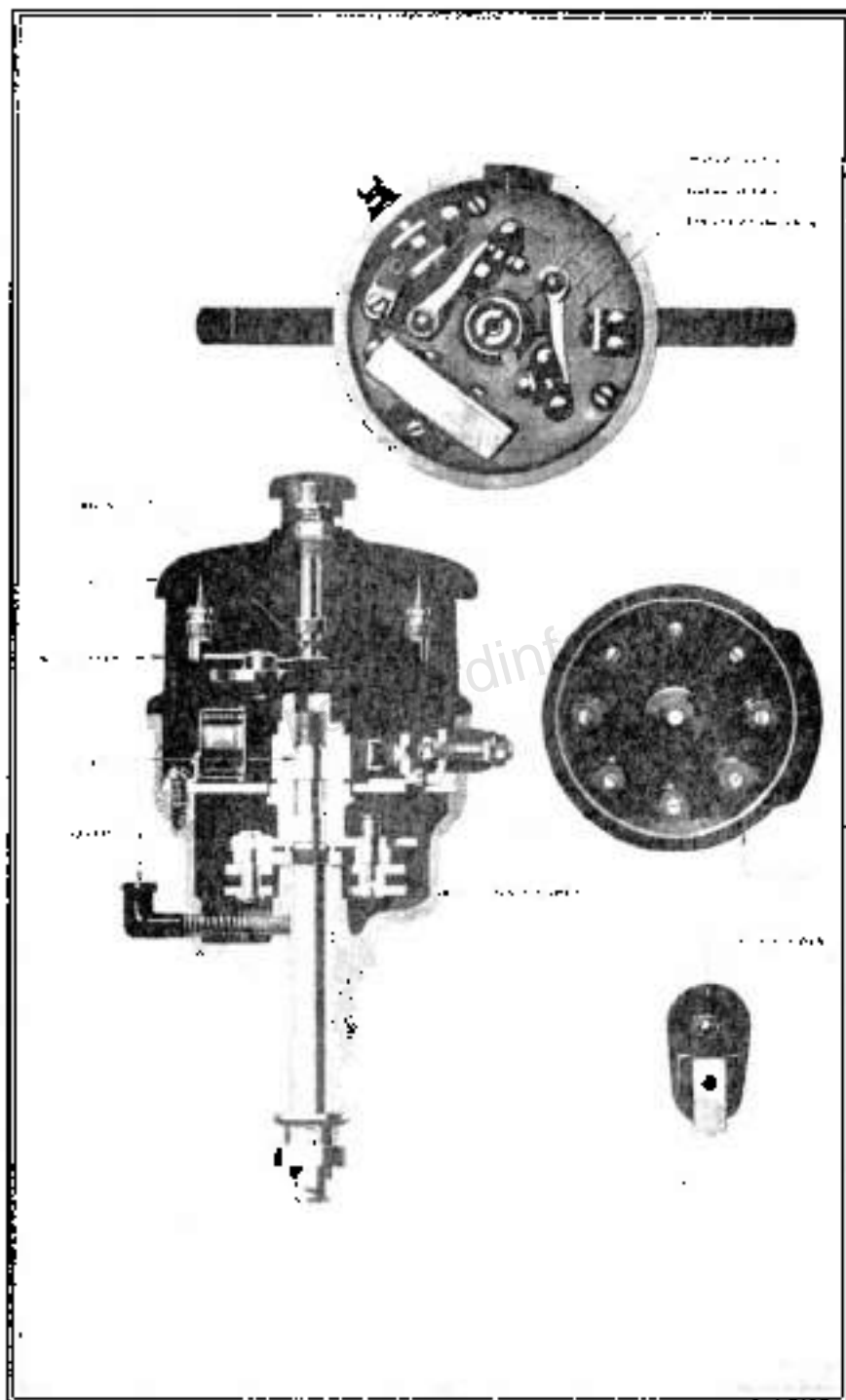
1. Remove hood
2. Cover fenders and cowl, using fender covers S. T. 140 and cowl cover S. T. 143
3. Use kerosene gun and clean thoroughly and wipe off surplus kerosene or use air hose.
4. Replace hood.  
Note: Do not use gun on newly painted jobs.

**Material****Kerosene****Wash Motor and Transmission****Eight C6**

Note: Have fire extinguisher at hand or disconnect battery cable.

1. Remove hood and front floor board
2. Cover fenders and cowl, using fender covers S. T. 140 and cowl cover S. T. 143, front seat cover S. T. 144 and double door covers S. T. 146
3. Use kerosene gun and clean motor and transmission thoroughly, then wipe dry.
4. Replace floor board and hood.  
Note: Do not use gun on newly painted jobs.

**Material****Kerosene**



Sectional View 6263 Distributor



**Contact Arm Assembly and Adjusting Screw  
Renew Both Sets**
626 **E10**

1. Remove distributor head and take out both contact arms and adjusting screws
2. Replace both contact sets and cutter
3. Adjust points .015" to .020"

Note: The contact points are made of thin discs of tungsten welded to alloy buttons, so care must be taken to remove only enough metal when truing points to get parallel surfaces. When the tungsten has been removed by reason of frequent rubbing a new adjustable screw and contact arm is the only remedy.

**Material**

2-19796 Breaker Arm  
2-15959 Contact Screw

Same as 626

640

**Material**

Order from nearest North East station

2-19796 Breaker Arm  
2-15959 Contact Screw

**Contact Arm Assembly and Adjusting Screw  
Renew One Set**
626 **E11**

1. Remove distributor block and take out contact arm and adjusting screw
2. Supply and install new contact arm assembly and adjusting screw
3. Adjust points .015" to .020"
4. Clean head with sandpaper and wipe out with oily rag

Note: The contact points are made of thin discs of tungsten welded to alloy buttons, so care must be taken to remove only enough metal when truing points to get parallel surfaces. When the tungsten has been removed by reason of frequent rubbing a new adjustable screw and contact arm is the only remedy.

**Material**

1-19796 Breaker Arm  
1-15959 Contact Screw

Order from nearest North East station

Same as 626

630

**Material**

1-19796 Breaker Arm  
1-15959 Contact Screw

Order from nearest North East station

**Ignition Coil — Renew One**626 **E13**

1. Supply and install one new ignition coil

Note: See that all terminals are tight. Frequently coils are replaced when it is unnecessary. Try adjusting the points before you replace a coil. Missing is often caused by the breaker and spark plug points not being properly adjusted. To test ignition coil remove distributor cover and high tension wire leading to center of distributor cover. Turn on ignition switch, place end of high tension wire about  $\frac{1}{8}$  of an inch of being grounded to any part of motor. Turn motor over until breaker points are both closed. Make and break contact points with finger or spread them apart. If the spark jumps from high tension wire to any part of the motor the coil is not defective.

**E13 Material**

1-21106 Ignition Coil-less Lock

**Cont.**

Same as 626

640

**Material**

1-21106 Ignition Coil-less Lock

**E14 Condenser - Renew One**

626

1. Remove old condenser and install new.

Note: Check defective condenser by substituting a known good condenser and noting the effect upon the ignition. Its purpose is to prevent arcing and burning of the contact points and to induct the high tension current.

**Material**

1-10870 Condenser

Same as 626

640

**Material**

1-10870 Condenser

**E16 Ignition High Tension Wires - Renew All - Labor Only**

626

1. Remove old high tension wiring and strip off terminals.
2. Use old wires for sample and cut new cable to length.
3. Solder on terminals and assemble on motor.
4. Test for correctness of assembly.

Note: When the ignition high tension wiring system gives trouble make sure that the wiring is in good condition, all terminals tight and connected up according to the wiring diagram, Part I. A short circuit occurs when two wires of opposite polarity come in contact. This will discharge the storage battery in a very short time, therefore the greatest care should be taken to see that all connections remain tight and insulation of wires is not broken or cut.

**Material**

18 Ft. 78396 High Tension Wire

9-23800 Terminal Tube

7-139599 Terminal

Same as 626

640

**Material**

22 Ft. 78396 High Tension Cable

11-23800 Terminal Tube

9-139500 Terminal

**E17 Distributor Head - Renew**

626

1. Remove and dismantle
2. Supply and install new distributor head

Note: Be sure to get wires in their relative positions. See wiring diagram in Part 2.

**POSSIBLE CAUSES OF MISSING**

- (a) If in any case no spark is observed, the cause of the trouble will be found in a grounded H. T. lead between distributor head and plug or—a burned distributor head. Remove ground or replace head.
- (b) If a good spark is observed in each case and miss is still present, the trouble will be found in a fouled or defective spark plug or in poor engine compression in one or more cylinders.

**Material**

1-20989 Head  
1-20153 Cap

**E17**  
Cont.

Same as 626

640

1-20989 Cover  
1-20154 Cap

**Delco Points—Adjust**

626 **E18**

**Note:** Protect enameled surfaces from oil and scratches by using fender covers S. T. 100.

1. Remove head and rotor
2. Remove points and clean

**Note:** The contact points will require a little attention or refiling. They may be very rough when they become so badly battered, so as to cause missing. They should be trued, so that their contact surfaces are exactly parallel. Adjust the contact points so that a gap of .015" to .020" is secured at their greatest separation.

3. Clean head with sand paper and wipe with oily rag
4. Replace head and rotor

**Note:** See that condenser cable terminal does not lie against distributor housing, otherwise this will cause a short circuit and lack of power.

**Material**

Same as 626

640

**Material****Spark Plugs—Clean and Adjust**

626 **E19**

**Note:** When cleaning spark plugs care should be taken so that nothing drops into the cylinder through the openings.

1. Remove spark plugs and clean

Thickness Gauge  
Tool No. S. T. 657—All Models



**E19****REGULAR MISS IN ONE OR MORE CYLINDERS—  
POSSIBLE CAUSES****Cont.**

1. Broken or defective spark plug
  2. Wire out of spark plug
  3. Wire out of distributor head terminal
  4. Broken wire to the spark plug
  5. Wire to spark plug grounded
  6. Bad distributor head
2. Test and set standard 1/2" gap
  3. Replace and test motor on floor  
Note: When replacing plugs, be sure that plug gaskets are in proper position

**Material**

Same as 626

**640****Material****E111****Steering Gear Case Lighting Switch—Renew****626**

1. Disconnect switch from steering
2. Remove all headlight wires from switch
3. Install new switch and connect all wires and see that all headlights and tail-light operate properly

**Material**

1-145657 Switch

Same as 626

**640****Material**

1-145657 Switch

**E114****Ignition Timing—Set Standard****626**

1. Remove starter motor
2. Turn motor in No. 1 cylinder firing center or on compressor and line up the mark "S1" on flywheel with crankcase timing indicator
3. Set spark advance lever in full advanced position on quadrant
4. Loosen clamp screw and rotate Delco
5. Breaker points should just be contacted as rotor comes into No. 1 contact
6. Place a six volt lamp in series with breaker points
7. Turn ignition switch on and move cam clockwise until light goes out  
Note: Be sure contact points are not pitted. This will affect timing of ignition
8. Tighten clamp screw and relock
9. Replace starter motor

**Material**

Same as 626

**640****Material**

**Ignition Check Automatic Advance**626 **E20**

1. Remove starter motor.
2. Take off No. 6 spark plug wire and connect it with a wire extension about six feet long. The wire is easier to operate if it has an insulated handle with a metal point, although any piece of insulated high tension wire may be used.
3. When the motor is started and wire pointer is held just over surface of flywheel, with side of crankcase timing indicator wheel, will be comparatively dark, will be illuminated by flash of spark, and since flash occurs at exactly the same point each time, flywheel will have appearance of remaining stationary and any marks on circumference of wheel will be very clearly shown. After noting manner in which flywheel is illuminated, the motor should be stopped and flywheel marked in the following manner:
  4. Put a short chalk mark ahead (to the left) of No. 6 top dead center to represent amount of fixed spark advance. This mark will be at point which is always used in checking fixed advance, or as follows:  
 Note: The advance setting is  $15^{\circ}$  on model 626 till on the flywheel.
  5. After amount of fixed advance has been established in this way, make another and longer chalk mark across flywheel  $1.8-2.0^{\circ}$  ahead (to the left) of short mark. This long mark will indicate the automatic advance in manner noted below. The same dimension is used for all three models. Next, mark center line of motor on crankcase just over flywheel.
  6. Start motor with throttle approximately closed, holding wire extension so that it flashes on flywheel. The flywheel will appear stationary and if spark is properly set, the short chalk mark which registers fixed advance will appear directly opposite crankcase dead center. If it appears on either side of crankcase center, the fixed spark is either too early or too late.
  7. Now check the automatic advance by holding pointer in its position over the flywheel and speeding up motor until chalk mark appears to move. This means that the automatic is contributing to advance.
  8. When motor is running slowly, the long chalk mark, which is to be used to check automatic advance, will be noted well to the left of crankcase dead center, but as motor speeds up, the mark will appear to move to the right. It should reach a position opposite crankcase dead center at a speed of approximately thirty miles per hour.

**Material**

Same as 626

640

**Material****Generator Renew**626 **E21**

1. Remove three generator to crankcase stud nuts.  
 Note: Do not remove bronze housing into which the generator fits (generator sprocket support) as such removal will release front end chain, affecting timing of ignition and necessitate the dismantling of front end to get chain back into place.
2. Slip generator back, being sure not to disturb generator sprocket support.
3. Install new unit and adjust front end chain.
4. Test for quietness.  
 Note: Before making the following test see that all brushes are properly fitted and that the adjustment of the third brush does not change the output to desired value. If the generator cuts in late and does not deliver over 7 amperes at its peak, look for a short in the armature or an open in the light shunt field. Raising the third brush does not cut out the field, but only removes the regulating action. When the third brush alone is raised, the machine becomes a compound generator, giving a very high charging rate at high speeds. Therefore, to stop the machine from generating, it is necessary to raise two brushes. Any two brushes will do. When only one brush is raised, it will still leave one of the shunt field coils in operation.

**E21** **Material**  
1-125875 Generator 640  
**Conf.** Same as 620

**Material**  
1-125875 Generator

**E22** **Ignition Switch Renew** 626  
(Labor Only)

1. Remove old switch
2. Replace new switch
3. Test

SWITCH TROUBLE—POSSIBLE CAUSES:

- 1—Loose connections or wire off switch
- 2—Burnt contacts
- 3—Shorted or grounded terminal
- 4—Loose internal switch connections
- 5—Circuit breaker contacts being held open

Switch circuits, combination switches Nos. 1277 and 1278. Both lighting and

ignition levers off, terminals 1 and 7—4 and 5 are connected

Ignition levers on terminals 1, 2, 3 and 7 connected

Light lever in 1st position terminals 1, 7 and 4 connected

Light lever in 2nd position terminals 1, 4, 7 and 8 connected

Light lever in 3rd position terminals 1, 4, 7 and 6 connected

Light lever in 4th position terminals 1, 7, 4 and 5 connected

In order to test ignition switch to see if the current flows through it, turn on ignition switch. The ammeter on dash should show a discharge. If not disconnect wire marked ignition from the ignition switch and touch on terminal marked battery. If the ammeter shows a discharge, there is an open circuit in switch. Be sure that all terminals are tight. Do not leave ignition switch on when the engine is idle, as this discharges the battery needlessly, if the contacts happen to be closed. The circuit breaker, mounted on the back of the switch, protects the wiring and indicates by a clicking sound a ground in any of the lighting circuits.

**Material**

Order from nearest North East station

Switch

Same as 620 640

**Material**

Switch

**E23** **Generator Adjust Charging Rate** 626

1. Remove generator brush cover
2. Adjust the main brush so that ammeter registers from 10 to 12 amperes  
Note: See that generator commutator is clean and that brushes are making good contact. If necessary to change the charging rate shift the third brush holder as follows: To increase the generator charging rate, move the third brush holder up slightly. To decrease the charging rate, move the brush downward. Use a voltmeter to test charging rate. Dash ammeter is not reliable enough for testing output of generator. Run motor at a speed of from 18 to 20 miles per hour
3. Replace generator brush cover

**Material**

Same as 620 640

**Material**

- Backing Light Switch Assembly—Renew** **626 E24**
1. Remove floor boards
  2. Disconnect the switch from cable
  3. Install new switch
  4. Test for proper functioning
- Material**  
1-111951 Switch
- Same as 626 640
- Material**  
1-141951 Switch
- Stop Light Switch—Adjust** **626 E25**
1. Remove floor boards
  2. Adjust set screw  
 Note: For adjusting set screw, stop light should light when the pedal is depressed 11 1/2 inches from floor boards. It is always advisable before making the adjustment on the stop light switch to see that the tail lamp bulb is in good condition.
- Material**  
Same as 626 640
- Material**
- Generator Cut-Out Assembly—Renew (Labor Only)** **626 E26**
1. Supply and install new generator cut-out assembly
  2. Test  
 Note: The generator cut-out requires very little attention. You will note in some cases when the ammeter shows a discharge with the ignition switch in off position. This is caused by the contact points being burned or pitted through constant use, causing points to stick. This can be remedied by removing the burrs or pits. Ammeter should register "0" when ignition switch is off. If the points burn off entirely or if the contact spring breaks, installing new parts is the only remedy.
- Material**  
1-22248 Cut Out Assembly
- Same as 626 640
- Material**  
1-22248 Cut Out
- Dash Ammeter—Renew** **626 E27**
1. Install new dash ammeter  
 Note: Examine generator brushes to see that they work freely, and are making good contact. See that commutator is perfectly clean. Examine circuit breaker and see that the points make contact. If not, clean them with your fingers. If the ammeter registers charge, with the engine running at a fair speed, ammeter is working properly. With the lights turned on and the engine idle, the ammeter should register discharge. If it stands at zero, remove the ammeter and replace with new. See that ammeter hand registers in the right direction, and if not, reverse wires on terminals.
- Material**  
1-158234 Ammeter
- Same as 626 640
- Material**  
1-158234 Ammeter

**E28 Stop Light Switch - Renew** **626**

1. Remove switch
2. Reassemble and adjust  
 Note: For adjusting set screw the stop light should light when the pedal is depressed  $2\frac{1}{2}$  inches from floor boards

**Material**

1-135909 Switch **640**  
 Same as 626

**Material**

1-135909 Switch

**E211 Generator Commutator - Face Off and Renew Brushes - (Includes E221)** **626**

1. Place armature in lathe and face off commutator
2. Undercut mica between the segments, using a broken hand saw blade
3. Fit new brushes  
 Note: It is not advisable to change the control brush when fitting a new set of brushes. If the output of the generator is not the same as with the old brushes, when the new brushes run in to perfect fit on the commutator, this output will automatically adjust itself. Brushes must move freely in brush guides
4. Place springs back in position.  
 Note: To test generator, connect one end of a six volt line to frame of generator. Connect the other wire to the generator terminal. Close cut-out points. If generator has been assembled correctly, the armature should revolve the same direction as when in operation on the motor

**Material**

1-22677 Fuse  
 1-22679 Insulator  
 1-22761 Brush  
 2-22762 Brush **640**  
 Same as 626

**Material**

1-22677 Fuse  
 1-22679 Insulator  
 1-22761 Brush  
 2-22762 Brush

**E220 Generator - Remove and Replace** **626**

1. Remove three (3) nut - holding generator in place and remove generator
2. Slip generator back, being sure not to disturb generator sprocket support  
 Note: Do not remove bronze housing into which generator fits, as such removal will release the front end chain, affecting timing of ignition and necessitate the dismantling of front end to get chain back into place
3. Replace and adjust chain

**Material**

Same as 626 **640**

**Material**



**Generator Inspect (Off Car)**626 **E221**

1. Remove band and brushes and brush head  
 Note: Do not pull the brush out by the head without lifting the spring as the spring may chip the brush when it snaps back
2. Remove commutator front end bearing and housing
3. Test armature and field for short circuits with test light. There are several methods for testing armatures. They can be tested with test lights and test points with a meter or with a growler  
 Note: (a) Test for grounds by fastening one end of the test line to armature shaft  
 (b) Touch the other end of the test line to each commutator segment. The bulbs should not burn. If a ground exists, the lamp will light  
 (c) To test for open circuit, touch one end of the test line to each commutator segment  
 (d) Beginning with the adjoining segment, touch each one with the other end of the test line  
 (e) The bulbs should burn on each segment  
 (f) To test frame field for grounds, fasten one end of test line to generator frame  
 (g) Touch the other end of the test line to each field connection. The bulb should not burn  
 (h) To test frame field for open circuits, touch end of test line across the two field leads. The bulbs should burn  
 (i) If any grounds or open circuits are found, call the foreman's attention to it
4. Undercut mica between the segments
5. Reassemble  
 Note: It is not advisable to change the control brush when fitting new set of brushes

**Material:**

Same as 626

640

**Material**



**Starter Motor—Renew**

626 **E32**

1. Disconnect cables
2. Remove cap screw in flywheel housing and slide motor forward and reposition
3. Replace nut, lining cap screw hole and draw up screws  
 Note: Do not drive motor into place

**Material**

1-138082 Dynamo .....  
 Same as 626 640

**Material**

1-138083 Dynamo .....

**Starter Switch—Renew**

626 **E34**

1. Remove accelerator pedal, pedal pads and floor boards
2. Disconnect starter switch from toe board
3. Remove toe board
4. Disconnect battery  
 Note: This will remove all possibility of fire arising from igniting of gasoline around motor
5. Remove cable from starter switch
6. Supply and install new starter switch
7. Replace toe board, floor board and pedal pads
8. Connect battery cable and test on floor

**Material**

1-137015 Switch .....  
 Same as 626 640

**Material**

1-137015 Switch .....

**Starter Motor Commutator—Face Off and Renew Brushes (Includes E331)**

626 **E311**

1. Place armature in lathe and face off
2. Undercut commutator between the segments, using a broken hack saw blade
3. Supply and fit new brushes  
 Note: Be sure that brushes bear on commutator and move freely in their guides

**Material**

2-13394 Brush .....  
 2-14481 Clip .....  
 Same as 626 640

**Material**

2-13383 Brush .....  
 2-14483 Clip .....

### E327 Starter Motor Drive Spring Screws—Renew (Includes E331) 626

1. Remove "Bendix" spring and shaft
2. Replace damaged screws  
 Note: Always use a new special lock washer when installing screws. Be sure that the bear tongue of each lock washer enters the spring eye
3. Replace "Bendix" shaft and drive end housing  
 Note: Be sure "Woodruff" key enters slot properly
4. Replace starter motor drive spring screw (front end)
5. Tighten both spring screws and bend the tongue of the lock washers tightly against the flat side of the screw head so it will not work out of position

#### Material

- 1-13093-6 Bendix Driving Screw
- 1-13093-5 Bendix Spring Cup
- 2-14483 Washers

Same as 626

640

#### Material

- 1-13093-5 Screw
- 1-13093-6 Screw
- 2-14483 Washers

### E330 Starter Motor —Remove and Replace 626

1. Disconnect cables
2. Remove cap screw in flywheel housing and slide motor forward
3. Replace and tighten starter motor

#### Material

Same as 626

640

### E331 Starter Motor Inspect (Off Car) 626

1. Remove brush head and Bendix screws, spring and shaft
2. Test for grounds and open circuits  
 Note: (a) To test for grounds, fasten one end of test line to armature shaft.  
 (b) Touch the other end of test line to armature segments. The bulb should not burn.  
 (c) To test for open circuits, touch one end of the test line to commutator segments.  
 (d) Beginning with the next segments, touch each one with the other end of the test line.  
 (e) The bulb should burn on each segment if the armature circuits are complete and free from grounds.  
 (f) To test the frame fields for grounds, fasten one end of the test line to the starter motor frame.  
 (g) Touch the other end of the test line to each field connection. The bulb should not burn.
3. Undercut mica between the segments  
 Note: Be sure that brushes bear on commutator and move freely in their guides

#### Reassemble

#### Material

Same as 626

640

#### Material

**Tail Lamp Renew**626 **E42**

1. Supply and install new tail lamp
- Note: Be sure that stop light operates properly

**Material**

1-141779 Lamp

Same as 626

640

**Material**

1-141779 Lamp

**Head Lamp Renew One**626 **E44**

1. Remove old head lamp and install new
  2. Focus head lamps
- Note: Focus and adjust head lamps to throw a light 25 feet or more ahead of car. Focus the electric bulb by moving it nearer or farther away from the parabolic reflector until a small light disc, less than twenty four (24) inches in diameter appears on the wall. Cover one lamp and observe the disc of light thrown on the wall or screen by the other headlight. Cover the other lamp and repeat the operation. Have both headlight lamps uncovered and observe that the centers of the light discs on the wall or screen are the same distance apart

**Material**

1-159716 Head Lamp

Same as 626

640

**Material**

1-159717 Head Lamp

**Head Lamp Door Glass—  
Renew One**626 **E413**

1. Remove head lamp door and take out old glass
2. Supply and fit new glass

Note: Be sure headlight lenses are fastened firmly so that they cannot turn in the mounts through rattling or vibration caused by rough roads

**Material**

1-166080 Glass

Same as 626

640

**Material**

1-166823 Glass

**E414** Headlight Reflectors—Resilver (Labor Only) 626

1. Remove outer glass
2. Remove head lamp reflector
3. Resilver and replace
4. Focus head lamps
5. Reassemble

Note: Lamps should be adjusted so as to throw a light 25 feet or more ahead of car. See Part 2 for further instructions on adjusting headlights.

**Material**

(Labor Only)

640

Same as 626

**Material**

**E450** Instrument Board Panel Assembly, Remove, Dismantle... Reassemble and Replace 626

1. Remove wires from ammeter and dash light and breaker
2. Remove oil pump tube
3. Disconnect speedometer and gasoline gauge
4. Remove instrument panel assembly and dismantle for inspection
5. Reassemble panel and replace to instrument board and tighten
6. Replace all wires, oil tube, speedometer cable and gasoline gauge
7. Test unit

**Material**

Same as 626

640

**Material**

**Battery Box Renew**626 **E52**

1. Remove battery box cover
2. Remove cables and battery
3. Disconnect rear end of tender from running board  
 Note: It is not necessary to remove tender
4. Remove battery box
5. Supply and install new battery box
6. Replace and tighten tender bolts  
 Note: Be sure that battery box liner is in proper position
7. Replace battery and cables  
 Note: See that water in battery is up to level

**Material**

- 1-162501 Battery Box Assembly 026  
 1-162512 Battery Box Assembly 033

Same as 626

640

**Material**

- 1-146919 Battery Box Assembly 010  
 1-163407 Battery Box Assembly 045

**Battery to Ground Cable - Renew  
(Labor Only)**626 **E53**

1. Remove old wire and install new  
 Note: Be sure both terminals are tight on new cable before installing and see that terminal posts are cleaned thoroughly. Use a sheet lead shim around terminal post to secure a tight connection, if necessary.

**Material**

Same as 626

640

**Material****Battery to Starter Switch Cable - Renew  
(Labor Only)**626 **E54**

1. Remove starter switch
2. Clean switch
3. Attach new cable
4. Assemble starter in place  
 Note: Be sure that both terminals are tight before installing. Use a sheet lead shim around terminal posts to secure a tight connection, if necessary.

**Material**

Same as 626

640

**Material**





**Horn Clean, Oil and Adjust**626 **E61**

**Note:** Horn should respond the minute the button is pressed.

1. Remove cover and clean commutator with sand paper.
2. Undercut commutator between segments, using a broken hack saw blade. Do not use emery cloth.
3. Insert 2 or 3 drops of oil at front and rear armature bearings and a drop on brushes.

**Note:** To adjust horn, loosen adjusting screw, turn with screw driver and adjust to get the best possible sound. Always have a properly charged extra battery ready to test the horns on a car, independent of the battery wiring of the car. A loose end plate screw will cause a binding of the bearing in the motor, which will slow up the speed, reducing the quality of the tone and eventually causing the motor to burn out. Clean commutator and brushes and oil and adjust properly.

**Material**

Same as 626

640

**Material**

packardinfo.com



**Battery Recharge**626 **E71**

1. Remove owner's battery, install service battery.
2. Recharge owner's battery.

Note: Test with hydrometer. When battery is fully charged reading should be between 1.200-1.210. A reading of 1.100 indicates a fully discharged battery. The average battery in good condition shows from 1.200 to 1.225. It is never advisable to allow a battery to continue in operation on a car when in a discharged condition. This caution is extremely important especially during the winter months, when a spell of zero weather will cause a low density electrolyte to freeze and ruin the battery. The level of the electrolyte should be maintained about 1/2 of an inch above the tops of the separators. A lowering of this level is due to evaporation of the water from the electrolyte and it should be replaced only with distilled water.

3. Remove service battery and install owner's battery.

Note: Be sure all connections are clean and tight and free from corrosion. Should terminal posts become corroded they should be scraped and cleaned with a knife and vaseline applied before replacing cables.

**Material**

Same as 625

640

**Material**

packardinfo.com



**Hydraulic Shock Absorber Connecting Link -  
Renew - Front or Rear**

626 **F12**

1. Remove connecting link and replace with new

**Material**

- 1-158057 Link - Front
- or
- 1-158058 Link - Rear

Same as 626

640

**Material**

- 1-158057 Link - Front
- or
- 1-158058 Link - Rear
- or
- 1-158059 Link - Rear

**Hydraulic Shock Absorber - Renew One  
Front or Rear**

626 **F13**

1. Remove nut from shock absorber connecting link
2. Remove bolts from axle and remove shock absorber
3. Replace new shock absorber and tighten axle connecting link

**Material**

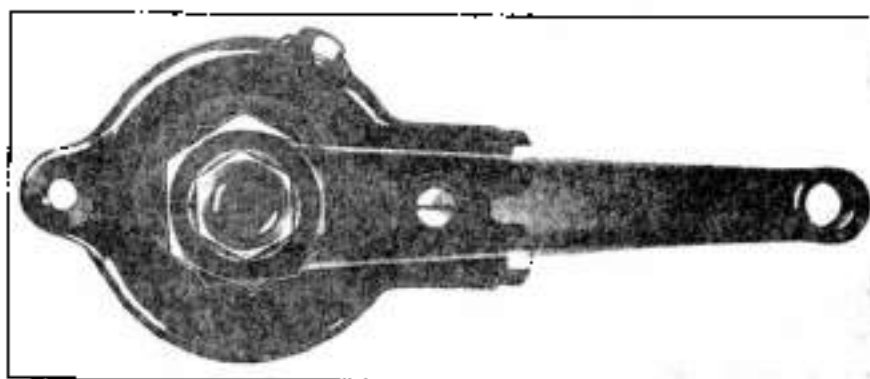
- 1-157928 Shock Absorber
- or
- 1-157929 Shock Absorber

Same as 626

640

**Material**

- 1-157928 Shock Absorber
- or
- 1-157929 Shock Absorber



No. 626 Shock Absorber

## F110 Fender--Rear--Remove and Replace One 626

1. Remove all body to fender bolts
2. Remove running board to fender bolts
3. Remove splasher to fender bolts
4. Remove fender
5. Replace fender  
 Note: Be sure that liners are in place. When replacing fender, start all fender bolts before drawing up any of the bolts
6. Touch up bolts and nuts with air dry enamel or paint

### Material

Miscellaneous Bolts, etc. . . . . 640  
 Same as 626

### Material

Miscellaneous Bolts, etc.

## F111 Fender--Rear--Renew One 626

1. Remove all body to fender bolts
2. Remove running board to fender bolts
3. Remove splasher to fender bolts
4. Remove fender
5. Replace fender  
 Note: Be sure that liners are in place. When replacing fender, start all fender bolts before drawing up any of the bolts
6. Touch up bolts and nuts with air dry enamel or paint

### Material

1-146816 Fender--Left (Touring) . . . . .  
 1-146812 Fender--Left (Phantom) . . . . .  
 1-145236 Fender--Left (Sedan) . . . . .  
 1-146840 Fender--Left (Sedan-Limousine) . . . . .  
 1-146844 Fender--Left (Club Sedan) . . . . .  
 1-146828 Fender--Left (Coupe) . . . . .  
 1-146815 Fender--Right (Touring) . . . . .  
 1-146811 Fender--Right (Phantom) . . . . .  
 1-145235 Fender--Right (Sedan) . . . . .  
 1-146839 Fender--Right (Sedan-Limousine) . . . . .  
 1-146843 Fender--Right (Club Sedan) . . . . .  
 1-146827 Fender--Right (Coupe) . . . . .  
 1-148326 Fender--Left (Coupe) . . . . .  
 1-148325 Fender--Right (Coupe) . . . . .  
 1-116817 Fender--Right (Roadster) . . . . .  
 1-116820 Fender--Left (Roadster) . . . . .  
 1-146824 Fender--Right (Roadster) . . . . .  
 1-146821 Fender--Left (Roadster) . . . . .  
 1-157077 Fender--Right (Club Sedan) . . . . .  
 1-157078 Fender--Left (Club Sedan) . . . . .  
 Same as 626

640

### Material

1-146816 Fender--Left (Touring) . . . . .  
 1-146812 Fender--Left (Phantom) . . . . .  
 1-146840 Fender--Left (Sedan) . . . . .  
 1-146844 Fender--Left (Club Sedan) . . . . .  
 1-146828 Fender--Left (Coupe) . . . . .  
 1-146815 Fender--Right (Touring) . . . . .  
 1-146811 Fender--Right (Phantom) . . . . .  
 1-146839 Fender--Right (Sedan) . . . . .  
 1-146843 Fender--Right (Club Sedan) . . . . .  
 1-146827 Fender--Right (Coupe) . . . . .  
 1-146825 Fender--Right (Roadster) . . . . .  
 1-146821 Fender--Left (Roadster) . . . . .

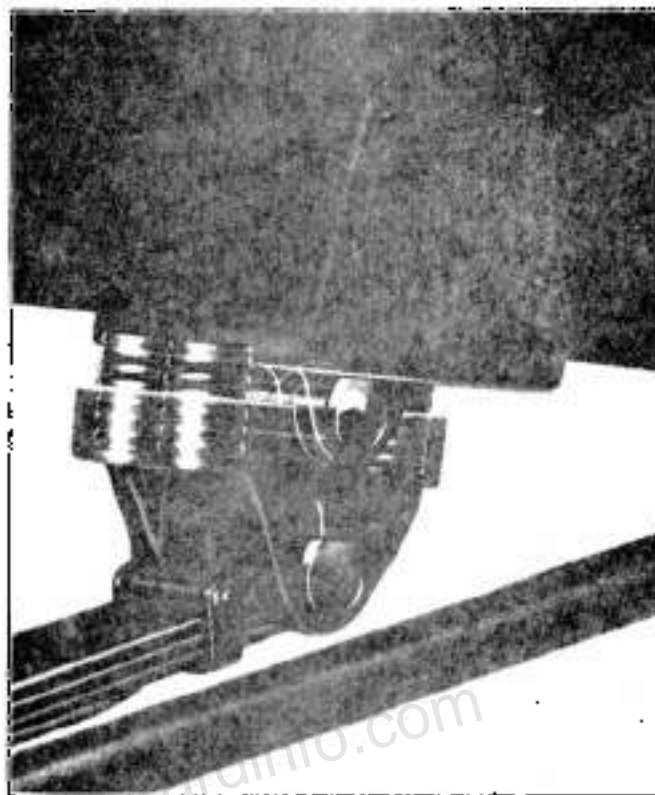
1-145177 Fender - Right (Packard)		
1-145176 Fender - Left (Packard)		
1-157077 Fender - Right (Chf. Sedan)		
1-157078 Fender - Left (Chf. Sedan)		
Miscellaneous Bolts, Nuts and Washers ..		
Sedan, Sedan Limousine		
1-141002 Fender - Right (Sedan, Sedan Limousine)	.....	.....
1-141003 Fender - Left (Sedan, Sedan Limousine)	.....	.....
1-146839 Fender - Right (Sedan Limousine)	.....	.....
Miscellaneous Bolts, Nut and Washers ..	.....	.....

**F111**  
Cont.

packardinfo.com







### Spring Front Renew One

626 **F21**

1. Remove spring clip.
2. Hoist up weight of car to relieve spring.
3. Remove spring bolts and clean oil passages.
4. Install new spring 1/4 or half to the front.

Note: Trunion bolt on rear of left front spring must be free. Bolt drawn too tight will not allow the trunion to operate properly.

5. Replace spring bolts (spring eyes must be free of hanger or shackles). Pull nut up tight, then back off  $\frac{1}{2}$  or  $\frac{1}{4}$  turn.
6. Replace spring clip and tighten.
7. Lubricate bolts with high pressure grease gun.
8. Let down hoist.

Note: When removing spring on 626-640, upper or lower shackle bolts must be loosened and removed with lack of shackles.

#### Material

1-162597 Spring  
or  
1-162598 Spring  
or  
1-163009 Spring  
Same as 626

640

#### Material

1-162597 Spring  
or  
1-162598 Spring  
or  
1-163009 Spring

**F22 Spring Rear Renew**

626

Note: Spring shackle bolts are passed into shackle.

1. Remove spring clips
2. Jack or hoist up weight of car to relieve spring
3. Remove spring bolts and clear oil passages
4. Install new rear spring (short half to the front)
5. Replace spring bolts (spring eyes must be free in hanger or shackle)
- Note: Be sure to lubricate spring bolts
6. Replace clips and tighten
7. Remove hoist

**Material**

1-163075 Spring

or

1-163077 Spring

or

1-163076 Spring

or

1-163022 Spring

or

1-163673 Spring

Same as 629

640

**Material**

1-163072 Spring

or

1-163076 Spring

or

1-163426 Spring

or

1-163074 Spring

or

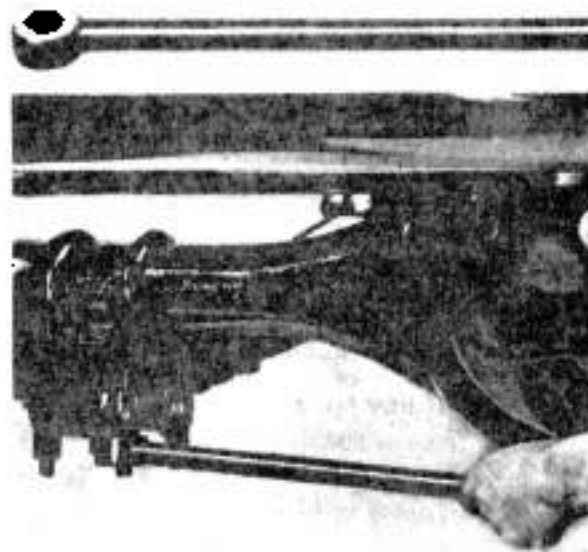
1-143077 Spring

**Front Axle Spring Clip Nut Wrench**

Tool No. S. C. 608—All Models

**Rear Axle Spring Clip Nut Wrench**

Tool No. S. C. 607—All Models



**Spring Clip—Front or Rear—  
Renew One**626 **F24**

1. Remove old clip.
2. Supply and install new spring clip.

**Material**

1-138551 Clip

1-139512 Clip

Same as 626

640

1-138551 Clip

1-139512 Clip

**Spring Clips, Bolts and Shackles—  
Tighten All**626 **F25**

1. Draw up tight all spring clip nuts.
2. Tighten and adjust all spring and shackle bolts.
3. Release all spring bolt nuts except at front end of rear spring, where the bracket allows for no adjustment.  
Note: Trunion bolt at rear of left front spring must be free. Bolt drawn too tight will not allow the trunion to operate properly.
4. Draw each spring bolt tight, then back off a half turn. Hold in this position and lock with spring bolt nut.  
Note: There should be no perceptible side play, but spring eye should be free in shackle or hanger. Bolts drawn too tight will cause hard riding and are liable to break spring or hanger.

**Material**

Same as 626

640

**Material****Spring Bolts—Tighten All**626 **F26**

1. Release all spring bolt nuts except at front end of rear spring, where the bracket allows for no adjustment.  
Note: Trunion bolt at rear of left front spring must be free. Bolt drawn too tight will not allow the trunion to operate properly.
2. Draw each spring bolt tight, then back off a half turn. Hold in this position and lock with spring bolt nut.  
Note: There should be no perceptible side play, but spring eye should be free in shackle or hanger. Bolts drawn too tight will cause hard riding and are liable to break spring or hanger.

**Material**

Same as 626

640

**Material**

**F27 Spring Bolts and Bushings—  
Renew All**

626

Note: Spring shackle bolts are pressed into spring shackle.

1. Jack up car.
2. Remove old bolts and bushings and install new ones.

Note: Trunion bolt at rear of left front spring must be free. Bolt drawn too tight will not allow the trunion to operate properly. Use monkey or some other suitable tool to pry spring down. It is necessary to remove shackles to renew spring bolts. Ream bushings to size, using a  $\frac{3}{16}$  inch expansion reamer.

3. Fill all spring bolt lubricator connectors.

Note: Spring eyes must be free in hangers and shackles.

There should be no perceptible side play, but spring eye should be free in shackle or hanger. Bolts drawn too tight will cause hard riding and are liable to break spring or hanger.

**Material**

4-132108 Bolts.....	
2-132017 Bolts.....	
2-145808 Bolts .....	
4-132011 Bolts .....	
4- 64353 Bushings.....	
4-116795 Bushings.....	
2-135949 Bushings.....	
2-135950 Bushings.....	
1-164719 Bushing.....	
1-132017 Bolt.....	

Same as 626

640

**Material**

4-132108 Bolts.....	
2-132017 Bolts.....	
2-145808 Bolts .....	
4-132011 Bolts .....	
4- 64353 Bushings .....	
4-116795 Bushings.....	
2-135949 Bushings.....	
2-135950 Bushings.....	
1-164719 Bushing.....	
1-132017 Bolt.....	

**F210 Spring Front—Remove and  
Replace One**

626

1. Remove spring clips and hoist up weight of car.
2. Remove front and rear spring bolts and remove spring.
3. Reassemble in place.

Note: Spring shackle bolts are pressed in spring shackle. Bolts drawn too tight will cause hard riding and are liable to break spring or hanger. When reassembling spring, see that the spring rear bolt enters hole in spring seat on axle and that springs are securely fastened.

**Material**

Same as 626

640

**Material**

**Spring—Front—Front Bolt—  
Renew One**626 **F211**

Note: Spring shackle bolts are pressed in spring shackle. Remove both spring bolts and shackle.

1. Jack up car and remove old bolt and install new.  
Note: Use crowbar or some other suitable tool and pry down spring when renewing spring bolt.
2. Fit lubricator connector.  
Note: Spring bolt should be drawn up tight and then not backed off  $\frac{1}{2}$  to  $\frac{3}{4}$  turn.

**Material**

1-132108 Bolt

Same as 626

640

**Material**

1-132108 Bolt

**Spring—Front—Rear Bolt—  
Renew One**626 **F212**

1. Raise weight on front spring.
2. Remove old bolt and take off lubricator connector.
3. Supply and install new bolt.  
Note: Use crowbar or some other suitable tool and pry down spring when renewing spring bolt.
4. Fit lubricator connector and fill with grease.

**Material**

1-112017 Bolt

Same as 626

640

**Material**

1-112017 Bolt

**Spring—Front—Front Bolt and  
Bushing—Renew One**626 **F213**

Note: Spring shackle bolts are pressed into spring shackle. Remove both spring bolts, upper and lower.

1. Raise weight of front spring.
2. Remove old bolt and drive out old bushing.  
Note: Ream bushings to size, using a  $\frac{1}{4}$ -inch expansion reamer.
3. Supply and fit new bushing and bolt.  
Note: It is not necessary to remove springs. Use bushing remover tool S. 11-135. Use crowbar or some other suitable tool to pry down spring.
4. Fit lubricator connector and fill with grease.

**Material**

1-132108 Bolt

1-216705 Bushing

Same as 626

640

**Material**

1-132108 Bolt

E-111705 Bushing

## F214 Spring—Front—Rear Bolt and Bushing - Renew One 626

1. Raise weight off front springs
2. Remove old bolt and drive out old bushing  
Note: Ream bushings to size, using a  $\frac{3}{4}$ -inch expansion reamer
3. Supply and install new bushing and bolt  
Note: It is not necessary to remove springs. Use bushing remover tool S. T. 125. Use crowbar or some other suitable tool to pry down spring.
4. Fit lubricator connector and fill with grease

### Material

1-132017 Bolt  
1-116795 Bushing

Same as 626 640

### Material

1-132017 Bolt  
1-116795 Bushing

## F215 Spring Shackle Link - Front or Rear - Renew One Pair 626

1. Remove spring bolt nuts
2. Jack up chassis to allow removal of spring bolts
3. Remove spring bolts  
Note: To remove rear spring on 626-640 both shackle bolts must be loosened and removed with shackle. Bolts are pressed into shackle
4. Supply and install new shackle links
5. Replace spring bolts
6. Replace and tighten spring bolt nuts
7. Remove jack  
Note: There should be no perceptible side play, but spring eye should be free in shackle or hanger

### Material

1-32109 Link  
1-32110 Link

Same as 626 640

### Material

1-32109 Link  
1-32110 Link

## F216 Spring--Front--Rebush One 626

- Includes F210
- Note: Spring shackle bolts are pressed into spring shackle
1. Press out old bushings
  2. Supply and press in new bushings  
Note: After spring bolts are drawn up tight, back off nuts  $\frac{1}{2}$  to  $\frac{3}{4}$  turn  
Rear bushings to size, using a  $\frac{3}{4}$  inch expansion reamer

### Material

2-116795 Bushings.....

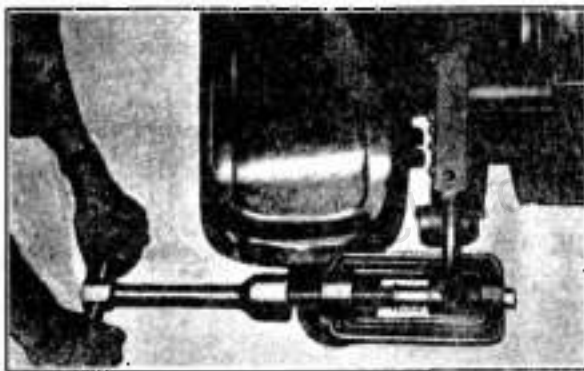
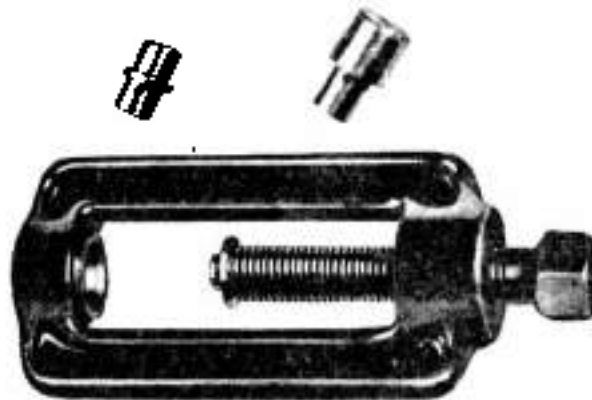
Same as 626 640

### Material

2-116795 Bushings

**Spring Bushing Replacer**

Tool No. S. T. 161



Tool No. S. T. 161

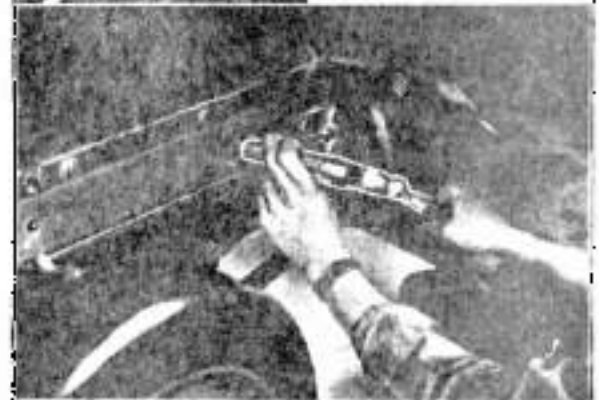
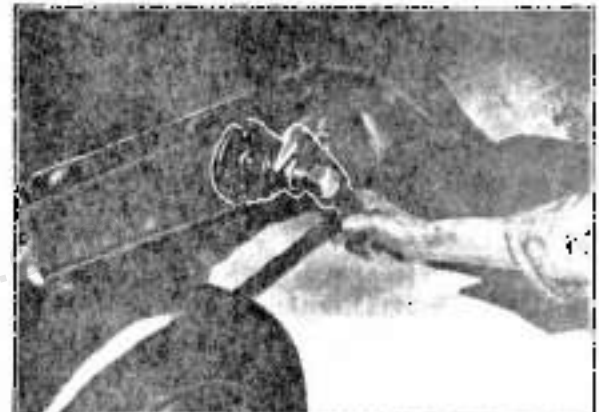
A spring bushing replacer tip, removes the old bushing and installs the new bushing in the same operation. The Tip handle shown in the illustration is part of the Pulley and Sprocket Puller equipment S. T. 111.

Tool No. S. T. 162

The blind bushing at the front spring rear hanger bracket is easily removed with this puller, as the end of the puller screw is in the correct angle that cuts threads in the old bushing. The other half bushing is quickly removed by use of the special punch included with the puller.

**Shackle Bracket Bushing Puller**

Tool No. S. T. 162



### F217 Spring—Rear Front Bolt Renew One 626

1. Raise weight off rear springs.
  2. Remove old bolt and take off lubricator connector.
  3. Supply and install new bolt.
  4. Fit lubricator connector and fill with grease.
- Note: After spring bolt is drawn up tight, back off nut  $\frac{1}{2}$  to  $\frac{3}{4}$  turn.

#### Material

1-115808 Bolt

Same as 126

1-145808 Bolt

640

### F218 Spring—Rear—Front Bolt and Bushing—Renew One 626

1. Raise weight off rear springs.
  2. Remove old bolt and drive out old bushing.
  3. Supply and install new bushing and bolt.
- Note: It is not necessary to remove springs. Use bushing remover tool S. T. 125. Use crowbar or some other suitable tool to pry down spring. Ream bushings to size, using a  $\frac{1}{4}$  inch expansion reamer.
4. Fit lubricator connector and fill with grease.
- Note: After spring bolt is drawn up tight, back off nut  $\frac{1}{2}$  to  $\frac{3}{4}$  turn.

#### Material

1-145808 Bolt

1- 64383 Bushing

Same as 626

#### Material

1-115808 Bolt

1- 64383 Bushing

640

### F219 Spring Rear Rear Bolt Renew One 626

- Note: Spring shackle bolts are pressed into shackle.
1. Raise weight off rear springs.
  2. Remove old bolt and take off lubricator connector.
  3. Supply and install new bolt.
  4. Fit lubricator connector and fill with grease.
- Note: After spring bolt is drawn tight, back off nut  $\frac{1}{2}$  to  $\frac{3}{4}$  turn.

#### Material

1-132011 Bolt

Same as 626

#### Material

1-132011 Bolt

640

### F220 Spring Rear—Remote and Replace One 626

- Note: Spring shackle bolts are pressed into shackle.
1. Remove clips and hoist up weight of car.
  2. Remove front and rear spring bolts and remove spring.



3. Reassemble in place.  
 Note: When replacing spring, be sure that short half is placed toward the front. See that the spring center bolt enters hole in spring seat on axle and that springs are securely fastened.

**F220****Cont.**

Same as 626

640

**Material****Spring - Rear-- Rear Bolt and Bushing--  
Renew One**626 **F221**

Note: Spring shackle bolts are pressed into shackle.

1. Raise weight off rear spring
2. Remove old bolt and drive out old bushing
3. Supply and install new bushing and bolt  
 Note: Ream bushings to size, using a  $\frac{1}{4}$  inch expansion reamer
4. Fit lubricator connector and fill with grease  
 Note: After spring bolt is drawn up tight, back off nut  $\frac{1}{2}$  to  $\frac{3}{4}$  turn

**Material**

- 1-132011 Bolt  
 1- 64383 Bushing

Same as 626

640

**Material**

- 1-132011 Bolt  
 1- 64383 Bushing

**Rear Axle Spring Front Bolts and Bushings  
(Renew Both Springs)**626 **F222**

1. Hoist up weight of car
2. Remove spring bolts and bushing  
 Note: Use crowbar or some other suitable tool and pry down spring when renewing bushing. Ream bushings to size using a  $\frac{1}{4}$  inch expansion reamer
3. Lubricate all spring bolts
4. Replace spring bolts  
 Note: Spring bolts should be drawn up tight and then nut backed off  $\frac{1}{4}$  to  $\frac{3}{4}$  turn

**Material**

- 2-145808 Bolts  
 2- 64384 Bushings

Same as 626

640

**Material**

- 2-145808 Bolts  
 2- 64383 Bushings

**Spring -Rear-- Rebusb One  
(Includes F220)**626 **F223**

1. Press out old bushing, using an arbor press
2. Supply and install new bushings  
 Note: Ream bushings to size, using a  $\frac{1}{4}$ -inch expansion reamer

**Material**

- 2- 64383 Bushings

Same as 626

640

**Material**

- 2-64383 Bushings

- F224 Spring—Front—Center Bolt—Renew One** (Includes F210) 626
1. Remove spring center bolt and disassemble spring
  2. Clean leaves and lubricate with graphite
  3. Supply and install new spring center bolt
  4. Assemble on bench and compass in view, using a test length of  $\frac{1}{4}$ " cold rolled steel rod for a pilot to keep center bolt holes lined up
  5. Remove pilot and install center bolt from lower side; tighten and peen  
Note: After tightening spring bolts, back off nuts  $\frac{1}{2}$  to  $\frac{3}{4}$  turn
- Material**  
1-116627 Spring Center Bolt and Nut
- Same as 626 640
- Material**  
1-116627 Spring Center Bolt and Nut
- F226 Spring Clips—Tighten All** 626
1. Tighten all spring clips
- Material**  
Same as 626 640
- Material**
- F227 Rear and Front Axle Spring Bolts—Remove, Clean Oil Grooves and Adjust** 626
1. Jack up chassis
  2. Remove front and rear spring bolts
  3. Clean oil grooves  
Note: Be sure that all Menite cups are working properly or check magazine oiling system, hand pump giving only one or two strokes. If not working properly report condition to Foreman  
Note: Trunion bolt on rear of left front spring must be free. Bolt drawn too tight will not allow the trunion to operate properly
  4. Replace spring bolts and adjust  
Note: Bolts drawn too tight will cause hard riding and are liable to break spring or hanger
- Material**  
Same as 626 640
- Material**
- F228 Front and Rear Axle Spring Bolts—Shim and Adjust** 626
1. Draw each spring bolt tight. Then back off a half turn. Hold in this position and lock with spring bolt nut  
Note: Trunion bolt on rear of left front spring must be free. Bolt drawn too tight will not allow the trunion to operate properly
  2. Except at front end of rear spring, where the bracket does not allow adjustment
  3. Remove spring bolt and shim if necessary for side play  
Note: There should be no perceptible side play. Spring eye should be free in shackles or hanger. Bolts drawn too tight will cause hard riding and are liable to break spring or hanger
- Material**  
1-120320 Shim
- Same as 626 640
- Material**  
1-120320 Shim

**Front Axle Spring Center Leaf Renew  
(Labor Only)****626 F241**

1. Hoist up weight of car
2. Remove front and rear spring bolts and clips
3. Remove spring center bolt and renew center leaf
4. Reassemble spring leaf and center bolt, replace to axle  
Note: Frame bolt at rear of left front spring must be free. Bolts drawn too tight will not allow the traction to operate properly
5. Take the broken spring leaf over to some blacksmith shop and have new leaf made  
Note: Bolts drawn too tight will cause hard riding and are liable to break spring or hanger  
When reassembling spring, see that the spring center bolt enters hole in spring seat on axle and that springs are securely fastened

**Material**

Same as 625

**640****Material****Spring—Front Remove and  
Replace Both****626 F251**

1. Remove front spring clips
2. Raise weight of car off front springs. Use jacks S. T. 155
3. Remove front and rear spring bolt
4. Remove springs

**Material**

Same as 626

**640****Material****Front Axle Springs Install All New  
Bolts and Bushings****626 F252**

1. Hoist up weight of car  
Note: Frame bolt at rear of left front spring must be free. Bolt drawn too tight will not allow the traction to operate properly
2. Remove old bolts and bushings and install new  
Note: It is not necessary to remove springs. Use bushing remover tool ST126. Use crowbar or some other suitable tool to pry spring down. Ream bushing to size using a 3/4" die expansion reamer
3. Fill all spring bolts lubricator connections  
Note: Spring eyes must be free in hangers and shackles. There should be no perceptible side play. Bolts drawn too tight will cause hard riding and are liable to break spring or hanger

**Material**

4-132108 Bolts  
2-132017 Bolts  
4-116795 Bushings  
2-135949 Bushings

Same as 626

**640****Material**

4-132108 Bolt  
2-132017 Bolt  
4-116795 Bushings  
or  
2-135949 Bushings

## **F261** Spring—Rear—Remove and Replace Both 626

Note: To remove rear springs on 626-640 both shackle bolts must be loosened and removed with shackle. Bolts are pressed into shackle.

1. Remove rear spring clips.
2. Raise weight of car off rear springs. Use jacks S. T. 155 and place under frame cross member.
3. Remove rear spring bolts and lift out both springs.
4. Reassemble in place.

### **Material**

## **Spring -Rear- Remove and Replace Both** 640

1. Disconnect stabilator straps and remove rear spring clips.
2. Raise weight of car off rear springs. Use jacks S. T. 155 and place under frame cross member.
3. Remove rear spring bolts and lift out both springs.
4. Reassemble spring and attach stabilator.

### **Material**

## **F262** Spring --Rear- Rebush Both 626 (Includes F261)

1. Press out old bushings using an arbor press.
2. Supply and install new bushings in both rear springs.  
Note: Ream bushings to size, using a  $\frac{1}{4}$  inch expansion reamer.

### **Material**

4-64353 Bushings

Same as 626

640

### **Material**

4-64353 Bushings

## **F263** Spring--Rear- Center Bolt—Renew One 626 (Includes F220)

1. Clean leaves and lubricate with graphite.
2. Assemble on bench and compress in vice, using a foot length of cold rolled steel as a pilot to keep center hole holes lined up.
3. Remove pilot and install center bolt from the upper side, tighten and peen.

### **Material**

1-23731 Spring Center Bolt..

Same as 626

640

### **Material**

1-23731 Spring Center Bolt

**Rear Axle Spring Bolts and Bushings --  
Renew Both Springs**626 **F264**

1. Hoist up weight of car.
2. Remove old bolts and bushings and install new.  
 Note: It is not necessary to remove springs. Use bushing remover tool ST135. Use crowbar or some other suitable tool to pry spring down. Ream bushing to size, using a  $\frac{1}{4}$  inch expansion reamer.
3. Lubricate all spring bolts.  
 Note: Spring eyes must be free in hanger and shackle. There should be no perceptible side play. Bolts drawn too tight will cause hard riding and are liable to break spring or hanger.

**Material**

2-145808 Bolts  
 4-132011 Bolts  
 2-135950 Bushings  
 4-64385 Bushings

Same as 626

640

**Material**

2-145808 Bolts  
 4-132011 Bolts  
 4-64385 Bushings  
 2-135950 Bushings

**Rear and Front Axle Rebound Clip Bolts - Tighten All**626 **F276**

1. Tighten all springs, using wrench tool No. ST607 for rear and Tool No. ST608 for rear.

**Material**

Same as 626

640

**Material**



**Spring Front Front Hanger  
Renew One**

626 **F31**

1. Remove front fender, radiator splasher and bumper frame ledge
2. Raise weight on front springs and remove front spring bolt
3. Cut up and drive out old rivets
4. Supply and fit new hanger into place, using an air hammer
5. Reassemble

**Material**

1-145702 Spring Bracket Right  
or

1-145703 Spring Bracket Left

Miscellaneous

Same as 626

640

**Material**

1-145702 Spring Bracket

or

1-145703 Spring Bracket

Miscellaneous

**Spring Front Rear Bracket  
Bushings Renew Both**

626 **F34**

Note: Shackle bracket is located at front of spring on 626-640

1. Disconnect stabilizer strap and raise weight of chassis off front spring
2. Disconnect spring shackle
3. Drive out old bushings
4. Supply and fit new bracket bushings
5. Reassemble springs in place

**Material**

2-135949 Bushings

Same as 626

640

**Material**

2-135949 Bushings

**Spring Rear--Shackle Bracket Assembly  
Renew One**

626 **F35**

Note: Spring bracket is located at front of rear spring

1. Raise weight of car off rear springs
2. Remove rear spring bolt
3. Cut rivets and remove old bracket
4. Press new bushing in new bracket and rivet bracket in place, using an air hammer
5. Reassemble

**Material**

1-135950 Bushing

1-145714 Bracket Right

or

1-145715 Bracket Left

Miscellaneous

Same as 626

640

**Material**

1-135950 Bushing

1-145714 Bracket Right

or

1-145715 Bracket Left

Miscellaneous

**F36** Frame Assembly Renew

626

1. Remove bonnet, radiator tie rod, headlights and radiator
2. Remove front and rear fenders
3. Remove toe board and floor board
4. Remove speedometer cable, electrical connections, and controls at dash
5. Remove starter motor
6. Remove steering gear case and post assembly
7. Remove three body bolts on each side of body
8. Raise rear of body far enough to allow a length of 2½" pipe to be worked under body for lifting purposes. Pipe should be about 9 ft. long
9. Using a punch bar under the dash, raise front of body and place a similar piece of 2½" pipe under front of body
10. Lift off body
11. Remove battery
12. Disconnect exhaust pipe at motor
13. Remove right and left running board and splasher
14. Remove muffler and brackets from frame
15. Using chain falls, remove motor from frame (See Operation MO for detailed specifications)
16. Remove snubbers front and rear, right or left
17. Disconnect snubber straps
18. Disconnect torque arm at front end by removal of hinge bolt
19. Remove gas tank
20. Remove right and left running board
21. Remove spring and shackle bolts
22. Remove front and rear axle assembly
23. Replace old frame assembly with new
24. Reassemble in reverse order of removal

**Material**

1-158683 Frame 626

or

1-159279 Frame 633

Same as 626

640

**Material**

1-158620 Frame 610

or

1-158286 Frame 615

**F37** Spring Front Rear Trunnion Bracket Left Renew

626

1. Remove front wheel
2. Remove spring bolts  
Note: Use crowbar or some other suitable tool to pry springs down
3. Raise weight of chassis off front springs
4. Loosen nut on one side
5. Remove spring trunnion bracket bolt
6. Cut and drive out old rivets
7. Supply and hot rivet new bracket in place, using an air hammer
8. Install bolt and four (4) four trunnion springs using band jack
9. Reassemble

**Material**

1-164714 Bracket Left

Miscellaneous

Same as 626

640

**Material**

1-164713 Bracket

Miscellaneous



**Rear Axle Spring Bracket Bushing - Renew One**626 **F38**

1. Jack up car and remove spring bolt
2. Remove old bushing and install new  
Note: Use crowbar or some other suitable tool and pry down spring when renewing bushing
3. Ream bushing to size, using a  $\frac{1}{4}$ " expansion reamer
4. Replace spring bolt  
Note: Spring bolts should be drawn up tight and then not backed off  $\frac{1}{2}$  to  $\frac{3}{4}$  turn

**Material**

1-135950 Bushing

Same as 626

640

**Material**

1-64383 Bushing

**Rear Axle Spring Front Bracket - Rivet**626 **F396**

1. Remove splash on one side
2. Jack up chassis one side
3. Remove spring bolt  
Note: Use crowbar or some other suitable tool and pry down spring
4. Cut off rivets from bracket
5. Install new hot rivets using air hammer
6. Replace spring bolt
7. Replace splash and tighten

**Material**

Miscellaneous

Same as 626

640

**Material**

Miscellaneous

**Rear Axle Spring Rear Hanger - Rivet**626 **F397**

1. Jack up rear of chassis
2. Remove rear spring bolt  
Note: Use crowbar or some other suitable tool to pry spring down
3. Cut off rivets from hanger
4. Supply and install hot rivets using an air hammer
5. Lubricate and adjust spring bolt

**Material**

Miscellaneous

Same as 626

640

**Material**

Miscellaneous

**F398** Front Axle Spring Hanger Front Rivet 626

1. Cut the old rivet
2. Supply hot rivets in place using an air hammer  
 Note: Do not cut all rivets. Cut one at a time, then supply hot rivets. It is not necessary to remove bracket from frame

**Material**

Miscellaneous

Same as 626

640

**Material**

Miscellaneous

**F399** Front Axle Spring Rear Bracket Left or Right Rivet 626

1. Cut old rivets
2. Supply hot rivets in place using an air hammer  
 Note: Do not cut all rivets. Cut one at a time. Then supply hot rivet. It is not necessary to remove bracket from frame

**Material**

Miscellaneous

Same as 626

640

**Material**

Miscellaneous

**Fender Front Left Renew One**626 **F41**

1. Remove head lamp assembly and shock absorber ball nut and lower shock absorber arm.
2. Disconnect fender from running board and splasher.
3. Remove radiator splasher one side.
4. Remove lubricator connection.
5. Remove fender lower bracket bolts.
6. Remove old fender.
7. Install new fender.  
Note: When attaching new fender, start all fender bolts before drawing up tight any bolts and see that fender is in proper position.
8. Replace shock absorber and head lamp assembly.  
Note: Connect head lamp cables and see that they operate properly.

**Material**

- 1-158632 Fender (633)  
or  
1-159833 Fender (626)  
or  
1-159832 Fender, with Well (626)  
or  
1-158629 Fender, with Well  
3 ft. 96983 Liner (Long)  
1 ft. 96984 Liner (Short)  
Miscellaneous Bolts, etc.

Same as 626

640

**Material**

- 1-158632 Fender  
or  
1-158629 Fender, with Well  
1 ft. 96984 Liner (Short)  
3 ft. 96983 Liner (Long)  
Miscellaneous Bolts, Nut, etc.

**Fender Front Right Renew**626 **F42**

1. Remove battery box cover and battery.
2. Remove battery box bolts, nut and disconnect fender.
3. Remove head lamp and bracket bolts at the lower end.
4. Remove radiator splasher one side.
5. Remove shock absorber ball nut and remove arm.
6. Remove lubricator connection.
7. Disconnect fender from running board and splasher.
8. Remove old fender.  
Note: When attaching new fender, start all fender bolts before drawing up tight any bolts.
9. Supply and install new right front fender.
10. Reassemble head lamp and battery in place.

**Material**

- 1-159831 Fender (626)  
or  
1-159835 Fender (633)  
or  
1-159830 Fender, with Well (626)  
or  
1-159837 Fender, with Well (633)  
1 ft. 96984 Liner  
3 ft. 96983 Liner  
Miscellaneous Bolts, etc.

**F42** Same as 626 640  
**Material**

- Cont.** 1-159880 Fender (640)  
 1-159883 Fender, with Well (640 645)  
 1-159884 Liner (Shims)  
 3-159885 Outer Clasp  
 Miscellaneous Bolts, Nuts, etc.

**F410** Fender - Front Left Remove and Replace One 626

1. Remove head lamp assembly and bracket bolts
2. Remove snubbers and disconnect splasher and running board  
 Note: If running board bolts are rusted, use cold chisel and cut off bolts
3. Remove left fender
4. Replace left fender  
 Note: When attaching new fender, start all fender bolts, before drawing any bolts tight
5. Replace head lamps and snubbers  
 Note: Connect head lamp cables and see that they operate properly
6. Tighten up all bolts and nuts

**Material**

Miscellaneous

Same as 626

640

**Material**

Miscellaneous

**F411** Bonnet Assembly Renew 626

Note: Protect fenders and body by using fender covers S. I, 130 and cow covers S. I, 148

1. Remove old Bonnet  
 Note: Carefully remove hood so as not to damage body
2. Lift up and fit new hood
3. Adjust radiator bezel until the hood and radiator line up at the top
4. If necessary file back for proper fit

**Material**

1-159839 Bonnet

or

1-159840 Bonnet

Same as 626

640

**Material**

1-159842 Bonnet

or

1-159844 Bonnet

or

1-162816 Bonnet

or

1-163043 Bonnet

**F413** Bonnet Clamp Assembly Renew One 626

1. Remove old clamp assembly
2. Supply and install new clamp assembly  
 Note: See that clamp assembly holds hood properly

**Material**

1-163487 Clamp Assembly

Same as 626

640

**Material**

1-163679 Clamp Assembly

**Fender Front Right Remove and Replace**626 **F415**

1. Remove battery box cover and battery
2. Remove battery box bolts and nuts and disconnect fender
3. Remove head lamp and bracket bolts
4. Disconnect fender from running board and splasher
5. Remove right front fender
6. Replace right front fender  
Note: When attaching fender, start all fender bolts, before drawing any bolts tight
7. Reassemble head lamps and battery in place  
Note: Touch up all bolts and nuts with proper color paint

**Material**

Miscellaneous

Same as 626

640

**Material**

Miscellaneous

**Running Board and Splasher—Remove and Replace One**626 **F420**

1. Disconnect front and rear fenders from splasher and running board
2. Disconnect splasher from frame
3. Disconnect running board from brackets  
Note: If bolts are rusted cut off with cold chisel
4. Replace running board and splasher  
Note: When attaching splasher and running board start all bolts and nuts before drawing any up tight
5. Tighten all bolts and nuts  
Note: Be sure all liners are in place

**Material**

Miscellaneous Bolts, Nuts and Washers

Same as 626

640

**Material**

Miscellaneous Bolts, etc.

**Running Board -Right or Left—Renew**626 **F422**

1. Remove front and rear fender from running board
2. Disconnect running board from splasher
3. Disconnect running board from brackets and remove board  
Note: If bolts are rusted use a cold chisel and cut off bolts
4. Install new running board
5. Fasten front or rear fender and splasher

**Material**

1-159804 Board Assy Left 626

" " " " " "

1-146021 Board Assy Left 633

" " " " " "

1-159805 Board Assy Right 626

" " " " " "

1-146022 Board Assy Right 633

Miscellaneous

<b>F422</b>	Same as 626	<b>640</b>
	<b>Material</b>	
<i>Cont.</i>	1-158910 Board Assy. Left (640) or 1-159809 Board Assy. Left (645) or 1-158813 Board Assy. Right (640) or 1-159809 Board Assy. Right (645) Miscellaneous	
<b>F423</b>	<b>Running Board (Right or Left Recover (Labor Only))</b>	<b>626</b>
	1. Remove front and rear tender from running board. 2. Disconnect running board from splashier. 3. Disconnect running board from brackets and remove board. Note: If bolts are rusted use a cold chisel and cut off bolts. 4. Remove moulding from one end of running board and take off matting. Note: It is not necessary to remove all moulding. 5. Cut matting to size it and glue down. 6. Slip new matting into slots under moulding. 7. Replace moulding and reassemble board on chassis.	
	<b>Material</b>	
	Same as 626	<b>640</b>
	<b>Material</b>	
<b>F424</b>	<b>Running Board to Frame Splashier (Right or Left - Renew One)</b>	<b>626</b>
	1. Disconnect front and rear tenders from splashier. 2. Disconnect and remove running board, splashier, and step brackets. 3. Remove bracket and frame bolts from splashier. 4. Remove splashier. 5. Reassemble using new splashier. Note: See that splashier and running board liners are in place. Start all bolts and nuts before drawing any tight.	
	<b>Material</b>	
	1-140028 Splashier Left (626) or 1-140029 Splashier Left (633) or 1-140030 Splashier Right (626) or 1-140031 Splashier Right (633) Miscellaneous	
	Same as 626	<b>640</b>
	<b>Material</b>	
	1-159813 Splashier Left (640) or 1-159816 Splashier Left (645) or 1-159815 Splashier Right (640) or 1-159817 Splashier Right (645) Miscellaneous	

**Oiling and Greasing Operation**  
**(Every 500 Miles)**
626 **L01**

1. Use "Magazine Oiling System" hand pump, giving only one stroke.
2. Use a high pressure grease gun, giving two or three turns into:
  - (a) Connector on each front steering knuckle
  - (b) Remove plug from water pump and fill with grease
  - (c) Remove 1/2" plug on each rear axle brake operating shaft bracket and fill with grease
3. Use hand oil can on:
  - (a) Starter motor oiler
  - (b) Generator oiler
  - (c) Distributor oiler
  - (d) Horn
  - (e) Brake rod clevis pin
  - (f) Door latches and hinges, spark and throttle control connections
4. Battery - add distilled water to cover plates 1/2"

**Material**

Grease

**Oiling and Greasing Operation**  
**(Every 500 Miles)**

640

Same as 626

Note: Care should be taken to use a cover block (3) connector on water pump on 640 and 645.

**Material**

Grease

**Oiling and Greasing Operation**  
**(Every 1000 Miles)**
626 **L02**

1. Crankcase oil - drain and renew
2. Use "Magazine Oiling System" hand pump, giving only one stroke. Fill and check.
3. Use high pressure grease gun, giving two or three turns into:
  - (a) Connector on each front steering knuckle
  - (b) Remove plug from water pump and fill with grease
  - (c) Remove 1/2" plug on each rear axle brake operating shaft bracket and fill with grease

Note: Check parking brake if operating.
4. Use hand oil can on:
  - (a) Starter motor oiler
  - (b) Generator oiler
  - (c) Distributor oiler
  - (d) Horn
  - (e) Brake rod clevis pin
  - (f) Door latches and hinges
  - (g) Spark and throttle control connections
5. Remove and clean oil pump screen
6. Battery - add distilled water to cover plates 1/2"
7. Universal joints - fill

**Material**

Grease

1-114689 (Class.)

8-298 (Cylinder Oil)

1-00 - Filtered Motor Oil

## L02 Oiling and Greasing Operation (Every 1000 Miles) 640

**Cont.** Same as 626

Note: Care should be taken not to overlook the connector on water pump on 610 and 615.

### Material

#### Grease:

- 10 Qts. Cylinder Oil
- 1 Qt. Filtered Medium Oil
- 1-114886 Gasket

## L03 Oiling and Greasing Operation (Every 5000 Miles) 626

1. Crankcase oil—drain and renew
  2. Use "Magazine Oiling System" hand pump, giving only one stroke. Fill and check.
  3. Use high pressure grease gun, giving two or three turns turn:
    - (a) 1 Connector on each front steering knuckle
    - (b) 1 Connector on water pump shaft
    - Remove 1/2" plug on each rear axle brake operating shaft bracket and fill with grease
    - (c) Remove plug from water pump and fill with grease
  4. Use hand oil can on:
    - (a) Starter motor oiler
    - (b) Generator oiler
    - (c) Distributor
    - (d) Horn
    - (e) Brake rod elev. pin
    - (f) Door latches and hinges
    - (g) Spark and throttle control connections
  5. Battery—add distilled water to cover plates 3/4"
  6. Remove and clean oil pump screen
  7. Transmission and differential—bring oil to level, using 600 W or Whitmores Compound
  8. Front wheels—pack with medium cup grease
  9. Steering gear—fill with gear oil, using 600 W or Whitmores Compound
  10. Distributor head—clean and oil
  11. Universal joints refill
- Note: Check procedure look it operating

### Material

- 1-114886 Gasket
- 1 Qt. Gear Oil or Whitmores Compound
- 8 Qts. Medium Cylinder Oil
- 1 Qt. Filtered Medium Oil

## Oiling and Greasing Operation (Every 5000 Miles) 640

Same as 626

### Material

Note: Care should be taken not to overlook the connector on water pump on Model 610 and 615

- 1 Qt. Gear Oil or Whitmores Compound
- 10 Qts. Cylinder Oil
- 1 Qt. Filtered Medium Oil
- 1-114886 Gasket



**Oiling and Greasing**  
**(Every 10,000 Miles)**
626 **L04**

1. Crankcase oil—drain and renew
2. Use "Magazine Oiling System" hand pump, giving only one stroke. Fill and check
3. Use high pressure grease gun, giving two or three turns into:
  - (a) 1 Connector on each front steering knuckle
  - (b) 1 Connector on water pump shaft
  - (c) Remove  $\frac{1}{8}$ " plug on each rear axle brake operating shaft bracket and fill with grease
  - (d) Remove plate from water pump and fill with grease
4. Use hand oil can on:
  - (a) Starter motor oiler
  - (b) Generator oiler
  - (c) Distributor
  - (d) Horn
  - (e) Brake rod clevis pin
  - (f) Spark and throttle control connection
  - (g) Door latches and hinges
5. Battery—add distilled water to cover plates  $\frac{1}{2}$ "
6. Remove and clean oil pump screen
7. Transmission and differential oil—drain and renew using 600 W or Whitmores Compound  
 Note: Check purulator tank to see if operating
8. Universal joints—fill
9. Front wheels—pack with medium cup grease
10. Steering gear—fill with gear oil or Whitmores Compound
11. Distributor lead column and oil  
 Note: Use front and rear seat cover to protect trimming from oil and grease
12. Remove rear wheels and repack rear axle shaft bearing

**Material**

- 5 $\frac{1}{2}$  Qts. Gear Oil or Whitmores Compound
- 1 Gal. Kerosene
- 8 Qts. Cylinder Oil
- $\frac{1}{2}$  Lb. Grease
- 1 Qt. Filtered Medium Oil
- 1-114886 Gasket

**Oiling and Greasing**  
**(Every 10,000 Miles)**

640

Same as 626

Note: Care should be taken not to overlook the connector on water pump on Models 610 and 615

**Material**

- 6 Qts. Gear Oil or Whitmores Compound
- 1 Gal. Kerosene
- 10 Qts. Cylinder Oil
- $\frac{1}{2}$  Lb. Grease
- 1 Qt. Filtered Medium Oil
- 1-114886 Gasket

## L05 Rear Axle Shaft Bearing Repack (Includes AM10) 626

1. Remove bearing retainer
2. Pack axle shaft bearing with grease
3. Replace bearing retainer

### Material

1 Lb. Grease

Same as 626

640

### Material

1 Lb. Grease

## L06 Mechanical Adjustment and Lubrication Schedule -1,000 Miles Lubrication 626

- (a) Chassis lubricator - fill tank and check
- (b) Battery - fill with distilled water, clean and tighten connections
- (c) Crankcase - strain and renew oil
- (d) Meniscus connection
- (e) Distributor head - oil and clean
- (f) Generator, horn, starter motor - oil
- (g) Brake rod connection - oil
- (h) Steering case - fill to oil level
- (i) Universal joints - oil
- (j) Clean oil screen
- (k) Check parallelism
- (l) Lubricate latches and hinges
- (m) Spark and throttle control

### Motor Adjustment

1. Valve points - adjust
2. Valve tappets - adjust
3. Front end chain - adjust
4. Water pump gland nut tighten - loose connection
5. Fan belt - adjust
6. Clean gasoline filter

### Chassis Adjustment

1. Foot brakes - adjust - not include free up
2. Clutch pedal - adjust
3. Axle spring clip - tighten all
4. Wheel bolts - tighten all

### Material

1 Lb. Grease

8 Qts. Cylinder Oil

1 Qt. Filtered Medium Oil

1-114886 Gasket

1 Pt. Whitmores Compound

Same as 626

640

### Material

1/2 Lb. Grease

10 Qts. Cylinder Oil

1 Qt. Filtered Oil

1-114886 Gasket

1 Pt. Whitmores Compound

**Mechanical Adjustment and Lubrication Schedule —2,500 Miles**626 **L07****Lubrication**

- (a) Chassis lubricate — fill tank and check
- (b) Battery — fill with distilled water — clean and tighten connections
- (c) Crankcase — drain and renew oil
- (d) Oil screen — clean
- (e) Aluminite connections
- (f) Generator, Ignition, starter motor — oil
- (g) Check paraffin
- (h) Brake pad connection — oil
- (i) Steering case — fill to oil level
- (j) Universal joints — oil
- (k) Door hinges and hinges
- (l) Spark and throttle connections
- (m) Distributor head — oil and clean

**Motor Adjustment**

1. Delco points — adjust
2. Spark plugs — clean and adjust
3. Carburetor — clean and adjust
4. Fan belt — adjust
5. Clean vacuum filter

**Chassis Adjustment**

1. Clutch pedal — adjust
2. Axle spring clips — tighten

**Material**

- 1-116397 Gasket
- 1-126956 Gasket
- 1-116281 Gasket
- 1-49533 Gasket
- $\frac{1}{2}$  lb. Grease
- 8 Qts. Cylinder Oil
- 1 Qt. Filtered Motor Oil
- 1-114886 Gasket
- 1 Pt. Wintemex Compound

Same as 625

640

**Material**

- 1-141410 Gasket
- 1-142717 Gasket
- 1-116281 Gasket
- 1-49533 Gasket
- $\frac{1}{2}$  lb. Grease
- 10 Qts. Cylinder Oil
- 1 Qt. Filtered Oil
- 1-114886 Gasket
- 1 Pt. Wintemex Compound

**Mechanical Adjustment and Lubrication Schedule —3,000 Miles**626 **L08****Lubrication**

- (a) Chassis lubricate — fill tank and check
- (b) Battery — fill with distilled water — clean and tighten connections
- (c) Crankcase — drain and renew
- (d) Aluminite connection

**L08**

Cont.

- (e) Distributor head - oil and clean
- (f) Generator, starter motor, horn - oil
- (g) Brake rod connection
- (h) Front wheels - grease and adjust
- (i) Transmission - fill to oil level
- (j) Differential - fill to oil level
- (k) Steering case - fill to oil level
- (l) Universal joints - fill
- (m) Check purulator
- (n) Door latches and hinges
- (o) Spark and throttle control

**Motor Adjustment**

1. Delco points - adjust
2. Valve tappets - adjust
3. Water pump gland nut - tighten - loose connection
4. Clean gasoline filter
5. Front end chain - adjust

**Chassis Adjustment**

1. Foot brakes - adjust (not include free up)
2. Clutch pedal - adjust
3. Axle spring clips - tighten
4. Tighten wheel bolts

**Material**

- 1-114886 Gasket
- 3 Pts. Whitmores Compound
- 8 Qts. Cylinder Oil
- 1 Qt. Medium Filtered Oil
- $\frac{1}{2}$  Lb. Grease

Same as 626

648

**Material**

- 1-114886 Gasket
- 3 Pts. Whitmores Compound
- 10 Qts. Cylinder Oil
- 1 Qt. Medium Filtered Oil
- $\frac{1}{2}$  Lb. Grease

**L09****Mechanical Adjustment and Lubrication Schedule - 7,500 Miles**

626

**Lubrication**

- (a) Chassis lubricator - fill tank and check
- (b) Battery - fill with distilled water (clean and tighten connection)
- (c) Crankcase - drain and renew
- (d) Alemite connection - fill six
- (e) Distributor head - oil and clean
- (f) Generator, horn, starter motor - oil
- (g) Brake rod connection
- (h) Steering case - fill to oil level
- (i) Universal joints - oil
- (j) Check purulator
- (k) Door latches and hinges - oil
- (l) Spark and throttle control - oil

**Motor Adjustment**

1. Delco points - adjust
2. Spark plugs - clean and adjust
3. Carburetor - clean and adjust
4. Fan belt - adjust
5. Clean gasoline filter

**Chassis Adjustment**

1. Clutch pedal—adjust
2. Axle spring clips—tighten

**L09**  
Cont.

**Material**

- 1-16395 Gasket
- 1-126456 Gasket
- 1-116281 Gasket
- 1-49553 Gasket
- $\frac{1}{2}$  Lb. Grease
- 8 Qts. Cylinder Oil
- 1 Qt. Filtered Medium Oil
- 1-114886 Gasket
- 1 Pt. Whitmore's Compound

Same as 620

640

**Material**

- 1-141440 Gasket
- 1-142717 Gasket
- 1-116281 Gasket
- 1-49553 Gasket
- $\frac{1}{2}$  Lb. Grease
- 10 Qts. Cylinder Oil
- 1 Qt. Filtered Oil
- 1-114886 Gasket
- 1 Pt. Whitmore's Compound

**Mechanical Adjustment and Lubrication Schedule 10,000 Miles**

626

**L010**

**Lubrication**

- (a) Chassis lubricator—fill tank and check
- (b) Battery—fill with distilled water (clean and tighten connection)
- (c) Crankcase—drain and renew oil
- (d) Alemite connection—fill six
- (e) Distributor head—oil and clean
- (f) Generator, horn, starter motor—oil
- (g) Brake rod connection
- (h) Front wheel—grease and adjust
- (i) Steering case—fill to oil level
- (j) Universal joints—fill
- (k) Transmission—drain—renew oil
- (l) Differential—drain—renew oil
- (m) Check parolator
- (n) Door latches—lubricate
- (o) Spark and throttle control—oil

**Motor Adjustment**

1. Delec points—adjust
2. Valve tappets—adjust
3. Front end chain—adjust
4. Water pump gland nut—tighten—hose connection
5. Clean gasoline filter

**Chassis Adjustment**

1. Foot brakes—adjust (and include free up)
2. Clutch pedal—adjust
3. Axle spring clip—tighten
4. Wheel bolts—tighten all

**L010 Material****Cont.**

5 1/2 Qts. Whitmore's Compound  
 8 Qts. Cylinder Oil  
 1/2 Lb. Grease  
 1 Qt. Filtered Oil  
 1-114886 Gasket

Same as 626

640

**Material**

6 Qts. Whitmore's Compound  
 10 Qts. Cylinder Oil  
 1/2 Lb. Grease  
 1 Qt. Filtered Oil  
 1-114886 Gasket

**L020 Mechanical Adjustment Schedule 1,000 Miles**

626

**Motor Adjustment**

1. Defeo points - adjust
2. Valve tappets - adjust standard
3. Front end chain - adjust
4. Water pump gland nut - tighten - hose connection
5. Fan belt - adjust
6. Clean gasoline filter

**Chassis Adjustment**

1. Foot brakes - adjust (not include free up)
2. Clutch pedal - adjust
3. Axle spring clips - tighten
4. Wheel bolts - tighten

**Material**

Same as 626

640

**L021 Mechanical Adjustment Schedule 2,500 Miles**

626

**Motor Adjustment**

1. Defeo points - adjust
2. Spark plugs - clean and adjust
3. Carburetor - clean and adjust
4. Fan belt - adjust
5. Clean gasoline filter

**Chassis Adjustment**

1. Clutch pedal - adjust
2. Axle spring clips - tighten
3. Adjust horn

**Material**

1-163498 Gasket  
 1-126456 Gasket  
 1-116281 Gasket  
 1- 45933 Gasket

Same as 626

640

**Material**

1-111440 Gasket  
 1-142717 Gasket  
 1-116281 Gasket  
 1- 49533 Gasket

**Mechanical Adjustment Schedule 5,000 Miles**626 **L022****Motor Adjustment**

1. Decho points—adjust
2. Valve tappets—adjust
3. Front end chain—adjust
4. Water pump gland nut—tighten—hose connection
5. Clean gasoline filter

**Chassis Adjustment**

1. Foot brakes—adjust (not include free up)
2. Clutch pedal—adjust
3. Axle spring clips—tighten
4. Wheel bolts—tighten

**Material**

Same as 626.

640

**Material****Mechanical Adjustment Schedule 7,500 Miles**626 **L023****Motor Adjustment**

1. Decho points—adjust
2. Spark plugs—clean and adjust
3. Carburetor—clean and adjust
4. Fan belt—adjust
5. Clean gasoline filter

**Chassis Adjustment**

1. Clutch pedal—adjust
2. Axle spring clips—tighten
3. Adjust horn

**Material**

- 1-16395 Gasket
- 1-120169 Gasket
- 1-116281 Gasket
- 1-35953 Gasket

Same as 626.

640

**Material**

- 1-111410 Gasket
- 1-112717 Gasket
- 1-116281 Gasket
- 1-19533 Gasket

**Mechanical Adjustment Schedule 10,000 Miles**626 **L024****Motor Adjustment**

1. Decho points—adjust
2. Valve tappets—adjust standard
3. Front end chain—adjust
4. Water pump gland nut—tighten—hose connection
5. Fan belt—adjust
6. Clean gasoline filter

## **L024** Chassis Adjustment

*Cont.*

1. Foot brakes adjust (not include free up)
2. Clutch pedal adjust
3. Axle spring clips tighten
4. Wheel bolts tighten

### **Material**

same as 62h

**640**

### **Material**

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**Crankcase Oil Drain and Renew****626 L1**

1. Remove crankcase oil drain plug and drain out old oil  
Note: Do not flush with kerosene
2. With ignition OFF turn motor over a few times by hand or with starter to clear oil lines of sediment, then drain, removing cover from under oil pump
3. Remove oil pump screen, clean and replace  
Note: If there is an indication of considerable sediment in crankcase, lower half, use operation L24
4. Replace drain plug and cover and refill crankcase to level with eight quarts fresh medium cylinder oil

**Material**

8 Qts. Medium Cylinder Oil  
1-114886 Oil Strainer Cover Plate Gasket.....

Same as 626

**640****Material**

10 Qts. Medium Cylinder Oil  
1-114886 Oil Strainer Cover Plate Gasket.....

**Transmission Oil Drain and Renew****626 L2**

Note: Use seat covers S. T. 141 and S. T. 145

1. Remove floor boards
2. Remove drain plug and drain out old oil
3. Jack up rear wheels
4. Replace drain plug and put in one (1) gallon of kerosene
5. Replace cover with two cup screws
6. Run motor in reverse and first speed for a few seconds, drain kerosene and replace drain plug
7. Refill to level with good transmission fluid oil, using 600 W or Whitmore's Compound and replace cover
8. Replace floor boards

Note: To prevent floor board rattles be sure floor boards are locked

**Material**

1 Gal. Kerosene  
2 Qts. Transmission Fluid Oil or Whitmore's Compound.....

Same as 626

**640**

Note: To prevent floor board rattles be sure floor boards are locked

**Material**

1 Gal. Kerosene  
2 Qts. Transmission Fluid Oil or Whitmore's Compound.....

**Differential Oil Drain and Renew****626 L3**

Note: Protect upholstery by using seat covers S. T. 44 and S. T. 145

1. Remove floor boards
2. Remove differential cover plate two lower bolts and drain oil

- L3** 3. Replace cover bolts temporarily and put in one (1) gallon of kerosene  
 4. Jack up rear wheels and run a few seconds to flush  
**Cont.** 5. Remove cover bolts and drain kerosene  
 6. Replace cover bolts and fill to level with good differential fluid oil, using 600  
 W. or Whitmores Compound  
 7. Remove jack and replace floor boards

Note: To prevent floor board rattles be sure floor boards are locked

**Material**

1 Gal. Kerosene . . . . .

3 Qts. Gear Oil or Whitmores Compound

Same as 626

640

**Material**

1 Gal. Kerosene . . . . .

3 1/2 Qts. Gear Oil or Whitmores Compound

- L6** Speedometer Shaft - Grease 626

1. Remove front floor board
2. Disconnect both ends of shaft
3. Pull cable and lubricate with graphite grease
4. Replace cable and connect both ends of shaft
5. Replace floor board

Note: Speedometer head and shaft should be tested, to make sure that they turn freely. A binding or sticking shaft will throw a very considerable load on the shaft. Jack up one rear wheel, start motor and see that speedometer shaft is functioning properly

**Material**

Same as 626

640

**Material**

- L8** Universal Joints - Refill 626

1. Remove floor board
2. Use standard Alemite lubricator and force both joints full of universal joint heavy oil
3. Replace floor board

**Material**

1 Qt. Universal Joint Oil

Same as 626

640

**Material**

1 Qt. Universal Joint Oil

**Delco Head Repack****626 L9**

1. Remove cover plate on distributor head and pack with vaseline

**Material**

Vaseline

Same as 626

640

**Material**

Vaseline

**Wheels - Front - Clean and Repack with Grease****626 L13**

1. Jack up front end of chassis
2. Remove hub caps
3. Remove adjusting nuts
4. Remove wheels
5. Clean bearings and wheels
6. Repack wheels and bearing with grease
7. Replace wheel and adjust bearings
8. Tighten adjusting nuts and hub caps

Note: Be sure bearings are not too tight. Wheels should turn freely under pressure of one finger.

**Material**

2 lbs. Grease

Same as 626

640

**Material**

2 lbs. Grease

**Hydraulic Shock Absorbers - Level Oil****626 L18**

1. Remove plug and two valve bolts to relieve air pressure
2. Level oil in shock absorbers
3. Replace plug and two valve bolts

**Material**

1 Qt. Oil

Same as 626

640

**Material**

1 Qt. Oil



**Transmission Oil  
Thin for Winter Use**
626 **L22**

Note: Use seal covers S. T. 144 and S. T. 145 to protect material from oil and grease.

1. Remove floor board and drain plug.
  2. Drain one quart of oil from transmission.
  3. Replace drain filter.
  4. Add one quart of cylinder oil.
  5. If oil is not up to proper level, add gear oil, using 600 W or Whirmores Compound.
  6. Replace floor board.
- Note: Necessity for Priming indicated by hard gear shifting.

**Material**

1 Qt. Oil

Same as 626

640

**Material**

1 Qt. Oil

**Differential and Transmission Oil—  
Drain and Renew**
626 **L23**

Note: Use seal covers S. T. 144 and S. T. 145 to protect trimmings from oil and grease.

1. Remove floor board.
2. Remove transmission case drain plug, differential housing cover and drain out old oil.
3. Replace plug and cover, pour a gallon of kerosene into each unit, through filler plug holes.
4. Raise one rear wheel clear of floor and run motor for a few seconds in each speed, then drain.
5. Replace rear axle cover and fill each unit to level with a good grade of gear oil, use 600 W or Whirmores Compound.
6. Lower rear wheel.
7. Replace floor board.

**Material**

2 Gals. Kerosene

50 Lbs. Gear Oil or Whirmores Compound

Same as 626

640

**Material**

2 Gals. Kerosene

50 Lbs. Gear Oil or Whirmores Compound

**Crankcase Lower Half  
Remove, Clean and Replace**
626 **L24**

1. Drain oil from crankcase and in a low half. Clean oil pump thoroughly.
2. Remove oil sump and clean lower half thoroughly.
3. Reassemble and replace lower half, using new gasket.
4. Fill to level with fresh medium cylinder oil.

**Material**

1-11886 Oil Sump Cover Plate Gasket

8 Qts. Cylinder Oil

1-158767 Crankcase Gasket—Left

or

1-158768 Crankcase Gasket—Right

Same as 626

640

**Material**

10 Qts. Cylinder Oil

1-11886 Oil Sump Cover Plate Gasket

1-158767 Crankcase Gasket—Left

1-158768 Crankcase Gasket—Right



**Transmission and Differential Oil—  
Thin for Winter Use**

626 **L32**

This operation is a combination of L22 and L33

**Material**

2 Qts. Oil

Same as 626

640

**Material**

2 Qts. Oil

**Differential Oil Thin for Winter Use**

626 **L33**

Note: To protect trimming from oil and grease use seat covers S. T. 144 and S. T. 145

1. Remove rear floor board and differential oil level plug
2. Remove two lower differential cover cap screws and drain off one pint of oil
3. Replace cap screws and add one pint cylinder oil
4. If oil is not up to level after addition of cylinder oil add gear oil or Whitmorea Compound
5. Replace level plug and floor board and see that floor boards are locked

**Material**

1 Qt. Oil

Same as 626

640

**Material**

1 Qt. Oil

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**Lubricator Connector--Replace One**

626 **L41**

1. Remove old or broken connector and tap out with  $\frac{1}{8}$ " pipe tap
2. Install new connector and fill with grease

**Material**

1-114955 Connector.....

Same as 626 640

**Material**

1-114955 Connector.....

**Lubricator Oil Tube - Renew One (Labor Only)**

626 **L42**

1. Disconnect feel pipe at each union, and remove clamps
  2. Replace oil tubes and tighten union nuts
- Note: Be sure oil tubes line up straight with both connections. Use "Magazine Oiling System" hand pump, giving one stroke and check for leaks

**Material**

Miscellaneous .....

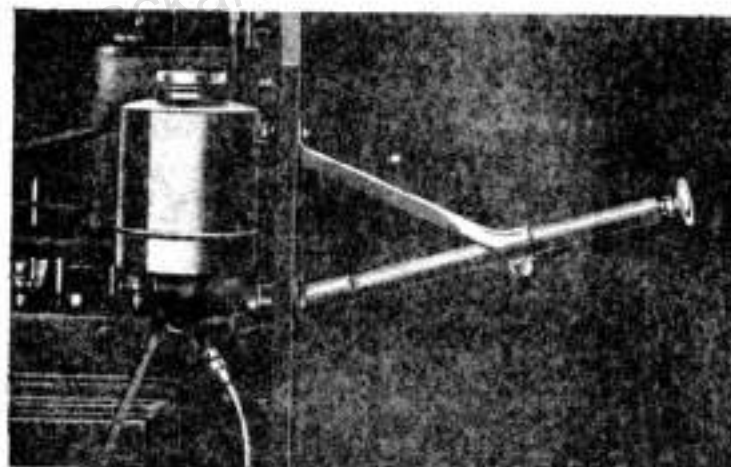
**Lubricator Oil Tube--Renew One (Labor Only)**

640

Same as 626

**Material**

Miscellaneous .....



**Oil Lubricating Tank--Renew One**

626 **L43**

1. Disconnect oil tube from tank
2. Remove two nuts holding tank to dash bracket
3. Remove button from pump handle and remove pump
4. Install new tank and connect oil tube to tank
5. Fill with filtered lubricating oil

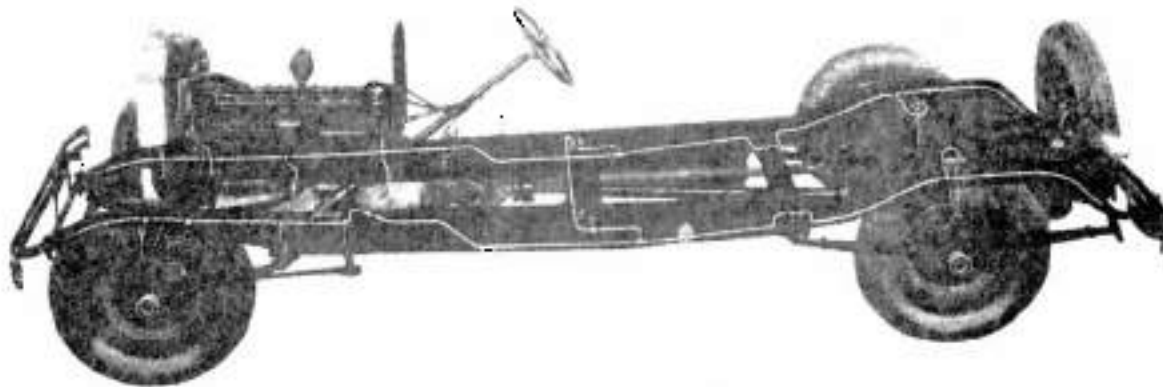
**Material**

1-146641 Tank .....

Same as 626 640

**Material**

1-146641 Tank .....



- L45 Lubricator System—Inspect all Connections** 626
1. Use "Magazine Oiling System" hand pump giving one stroke and check for leaks
  2. Be sure oil tube connections are tight and line up straight with both connections

**Material**

Same as 626

**Material**

640

- L46 Oil Filter Tank—Renew** 626
1. Disconnect oil tube from tank
  2. Remove nuts holding tank to motor
  3. Install new tank and connect oil tube to tank

**Material**

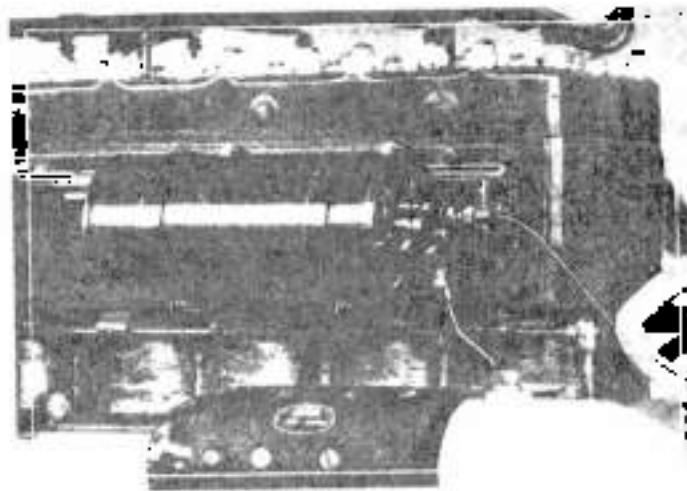
1-158412 Tank

Same as 626

**Material**

1-159712 Tank

640



**Spring Leaves Lubricate**626 **L71**

1. Apply penetrating lubricant to the edges of spring leaves  
 Note. This operation does not include spreading leaves

**Material**

Grease.....

Same as 626

640

**Material**

Grease.....

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**Front Hub Caps - Repack**

626 **L91**

1. Remove both front hub caps using hub cap wrench ST129, and pack with non-fluid oil such as Aferite grease  
 Note: Grease should just show through felt washer on inner side of wheel hub—then wipe off
2. Replace hub caps  
 Note: Wheels should be tested regularly for wear by shaking back and forth to note if they are loose and wobble. See operation S321 or S119 for proper adjustment

**Material**

1 Lb. Grease . . . . .  
 Same as 626 640

**Material**

1 Lb. Grease . . . . .

**Steering Gear Housing - Refill to Level**

626 **L92**

1. Remove steering gear housing plug and fill housing to level with 600 W or Whitmores Compound  
 Note: Oil steering pillar tube upper end bearing through steering wheel oiler
2. Replace housing plug and wipe off surplus oil

**Material**

1 Pt. Whitmores Compound . . . . .  
 Same as 626 640

**Material**

1 Pt. Whitmores Compound . . . . .

**Steering Gear Housing - Wash Out and Refill with Whitmores Oil No. 52**

626 **L93**

1. Wash out steering
2. Fill steering with heavy oil

**Material**

1 Pt. Whitmores Compound . . . . .  
 Same as 626 640

**Material**

1 Pt. Whitmores Compound . . . . .



**Level Oil in Motor, Transmission and Differential**

626 **L111**

Note: To prevent soiling of upholstery use front and rear seat covers, S. T. 144 and S. T. 145

1. Bring oil to proper level in motor, transmission and differential by adding to or drawing off as each case may require. Replace transmission and differential oil level plugs

**Material**

Oil

Same as 626

648

**Material**

Oil

**Crankcase, Differential and Transmission Oil—  
Drain and Renew**

626 **L123**

Note: Protect upholstery from oil and grease by using seat covers, S. T. 144 and S. T. 145

This operation is a combination of:

- (a) L.1 Crankcase oil—drain and renew
- (b) L.2 Transmission oil—drain and renew using 600W or Whitmores Compound
- (c) L.3 Differential oil—drain and renew using 600W or Whitmores Compound

**Material**

1 Gal. Kerosene .....

5 Qts. Gear Oil or Whitmores Compound .....

8 Qts. Medium Cylinder Oil .....

1-114886 Oil Strainer Cover Plate Gasket .....

**Crankcase, Differential and Transmission Oil—  
Drain and Renew**

640

This operation is a combination of:

- (a) L.1 Crankcase oil—drain and renew
- (b) L.2 Transmission oil—drain and renew using 600W or Whitmores Compound
- (c) L.3 Differential oil—drain and renew using 600W or Whitmores Compound

**Material**

1 Gal. Kerosene .....

5½ Qts. Gear Oil or Whitmores Compound .....

10 Qts. Medium Cylinder Oil .....

1-114886 Oil Strainer Cover Plate Gasket .....





**Level Oil in Transmission and Differential****626 L231**

Note: Be sure and protect trimming from oil and grease by using seat covers S. T. 144 and S. T. 145

1. Remove floor boards
2. Remove oil level plugs and allow oil to drain down to level, or raise to the proper level by adding oil through filler plug holes, as each case requires
3. Replace plugs and floor boards

Note: To prevent rattle be sure floor boards are properly locked

**Material**

Oil

Same as 626

**640****Material**

Oil

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**Motor—Remove from Chassis and Replace****626 MO**

Note: Use fender cover S. T. 130, front seat cover S. T. 144, double door cover S. T. 146 and cowl cover S. T. 148

Wash motor using a power washer and air dryer

1. Remove headlight assembly and hood
2. Drain all water or anti-freeze, preserving the solution if used, and remove radiator
3. Disconnect universal joint shaft, speedometer cable, foot brake and clutch pedal pads, both battery wires, accelerator connection, tire pump tube connection, foot brake connecting rod front connection, exhaust pipe, floor boards, mudguards and all electrical connections leading to dash
4. Remove front support and rear cross member to frame bolts and lift motor from frame
5. Take up weight of motor with chain falls, in order to clear steering case, and tilt motor upward at front end at the same time sliding motor forward, to clear support blocks—now pull front end of motor to left side and lifting right rear motor leg about 4 inches—back off on chain falls until the motor rests lightly on frame in tilted position, then bring motor forward, passing under steering gear case, or release hand brake and roll car from under motor
6. Reassemble and test

Note: Inspect thoroughly for water leaks and loose electrical connections. See that "stop light" switch operates properly

**Material**

Miscellaneous Bolts, etc. ....

Same as 626

640

**Material**

Miscellaneous Bolts, etc. ....

**Motor—Remove, Dismantle for Inspection and Reassemble****626 M051**

Note: Use fender, rowl seat and door covers to protect surfaces

1. Drain cooling system  
Wash motor using a power washer and air dryer  
Note: Preserve the anti-freeze solution, if used
2. Remove hood and head lamp assembly
3. Remove radiator
4. Remove fender board, toe boards and pedal pads
5. Disconnect front universal joint and exhaust pipe
6. Disconnect speedometer cable and all controls from dash to motor
7. Disconnect mudguards and all electrical connections leading to dash
8. Remove front support and rear cross member to frame bolts and lift motor from chassis, using heavy chain falls. See operation M0 for detail instructions for removing motor
9. Place motor on jack
10. Remove front end cover for inspection, using puller S. T. 113 to remove fan pulley
11. Remove distributor head wiring assembly and cylinder head, using speed wrench and No. S. T. 202 and lifter S. T. 121
12. Remove cylinder block for inspection and remove cylinder
13. Drain motor oil and remove crankcase lower half for inspection
14. Pull connecting rods and pistons for inspection  
Note: See operation M641 for specifications
15. Remove transmission and clutch assembly  
Note: Make a thorough inspection to determine work required. (See foreman)
16. Reassemble in reverse order of removal  
Note: Use the old cylinder oil and inspect thoroughly for water leaks and loose electrical connections. See that stop light switch operates properly

**M051 Material****Cont.**

1-132585 Gasket  
 1-158293 Gasket  
 1-158668 Gasket  
 1-158704 Gasket  
 1-158705 Gasket  
 9-114687 Gaskets  
 1-115274 Gasket  
 Miscellaneous

Same as 626

640

**Material**

1-141545 Gasket  
 1-159721 Gasket  
 1-158668 Gasket  
 1-158786 Gasket  
 1-158787 Gasket  
 9-114687 Gaskets  
 Miscellaneous

**M052 Motor Inspection**

626

- Note: Use fender, cowl, seat and door covers to protect surfaces.
1. Jack up chassis using jacks 7-1254
  2. Drain crankcase oil and remove lower half for inspection.  
 Note: Wash motor using a power washer and air dryer.
  3. Make oil test on bearings to locate the loose bearing. By putting pressure on the connecting rod and main bearing, the looseness can be detected. The flow of oil from the bearing should be in drops before reaching floor. (Equivalent to 70 to 60 drops per minute). Be sure to examine the bearings carefully as it may save you the trouble of again removing the crankcase lower half.
  4. Drain cooling system. Preserve the anti-freeze solution if used.
  5. Remove Delco head and wiring assembly.
  6. Remove cylinder head mounting speed wrench and cylinder head.
  7. Clean carbon from cylinder head and piston head using Electro Drill and Flared Type carbon Brush and No. ST204 and ST205. Use air hose to remove all loose carbon.
  8. Remove connecting rods and pistons for inspection, micrometer piston and cylinder bores. Report condition of cylinder, pistons, rings, pins, timing chain and bearing.
  9. Remove rocker levers, intake, check rocker levers, pins and rollers and check camshaft.  
 Note: Make a thorough inspection to determine work required. (See form 627)
  10. Replace connecting rods to motor and tighten.
  11. Replace cylinder head, Delco head and wiring assembly.
  12. Replace crankcase lower half using the old oil.
  13. Refill cooling system and check for leaks.

**Material**

1-158293 Head Gasket  
 1-158704 Crankcase Gasket  
 1-158705 Crankcase Gasket

Same as 626

640

**Material**

1-159721 Head Gasket  
 1-158786 Crankcase Gasket  
 1-158787 Crankcase Gasket

**Motor - Tune**626 **M11**

- Note: Use fender covers to protect enameled surfaces from oil and scratches
1. Clean and adjust breaker points, setting .015" to .020" when fully separated  
Note: Clean distributor head
  2. Clean spark plugs and adjust to  $\frac{1}{8}$ " gap
  3. Adjust fan belt. See Operation M 817  
Note: Remove gasoline filter from dash and clean
  4. Clean vacuum tank screen and carburetor suction tube elbow
  5. Adjust timing chain (report when limit of adjustment is reached)  
Note: Chain should, when adjusted, have  $\frac{1}{4}$ " to  $\frac{3}{8}$ " deflection up and down when checked through inspection hole
  6. Set tappets standard. Not less than .004" with motor warm and idling  
Be sure all tappet adjusting screws are properly locked
  7. Clean and adjust carburetor (in car). Note: Carburetor air valve adjusting nuts should have  $\frac{1}{8}$ " free drop for inside spring. Set outside spring so that with the throttle closed and spark retarded the motor idles smoothly. Be sure primary intake shutter is open when choke control rod is against instrument board  
Note: No material other than specified included in standard price
  8. Test

**Material**

1-163395 Gasket

Same as 626 except that air valve has a  $\frac{1}{8}$ " drop on the inside spring 640**Material**

1-141440 Carburetor Gasket

**Special Tune Up**626 **M12**

- Note: This operation should be used when an owner requires immediate service. Use fender covers to protect enameled surfaces
- These specifications meet a popular request for service that will produce a clean motor in addition to the average tune up and fill in the gap in prices between M11 and M14. Cylinder head and valves are not disturbed on this operation
1. Remove spark plugs and open petcocks
  2. Burn carbon through spark plug holes using sheet of asbestos to protect wires from flame  
Note: See that piston in each cylinder to be burned is on firing center
  3. Fill combustion chamber with oxygen, ignite with battery and feed oxygen until carbon is removed  
Note: Have fire extinguisher handy and be sure that it operates properly
  4. Clean and adjust Deleo points from .015" to .020" when fully separated  
Note: Remove gasoline filter from dash and clean
  5. Clean distributor head with sand paper and wipe with oily cloth
  6. Clean spark plugs and set gap  $\frac{1}{8}$ "
  7. Remove and clean carburetor
  8. Adjust carburetor  
Note: Set air valve adjusting nuts so that the inside spring allows air valve to drop  $\frac{1}{8}$  inch on all six models. Set the outside spring so that with the throttle closed and spark retarded, the motor operates smoothly. Be sure that primary intake shutter is open when choke control rod is against instrument board
  9. Adjust chain so that there is a deflection of from  $\frac{1}{4}$  to  $\frac{3}{8}$  inch when checked through inspection hole  
Note: Report when limit of chain adjustment is reached
  10. Adjust fan belt (See Operation M817 for adjustment)
  11. Adjust valve tappets to .004" clearance with the motor warm and idling
  12. Test

**M12** Material

1-163395 Gasket

**Cont.** Oxygen.....

Same as 626

640

**Material**

1-141440 Carburetor Gasket

Oxygen.....

**M13** Service Floor Tune Up

626

1. Clean and adjust spark plugs to  $\frac{3}{16}$ " gap
2. Clean and adjust breaker points, setting— $.015$ " to  $.020$ " when fully separated  
 Note: Remove points and clean if necessary. They will require a little attention or refiling. They may be very rough. When they become so badly burned as to raise missing, they should be trued so that their contact surfaces are exactly parallel.  
 Note: Cause of miss in one or more cylinders  
 Possible Causes:  
 (a) Broken or defective spark plug  
 (b) Wire off spark plug  
 (c) Wire out of distributor head terminal  
 (d) Broken wire to spark plug  
 (e) Wire to spark plug grounded  
 (f) Burnt distributor head  
 (g) Defective coil—check by substitution of a known good coil  
 (h) Defective condenser  
 (i) Improperly adjusted or pitted contact points  
 (j) Incorrect ignition timing  
 (k) Dead or low battery  
 (l) Poor carburetion or lack of gasoline
3. Adjust carburetor  
 Note: Carburetor air valve adjusting nuts should allow  $\frac{3}{16}$ " free drop on inside spring on all six models. Set outside spring so that with the throttle closed and spark retarded, the motor operates smoothly.
4. Remove gasoline filter from dash and clean
5. Test

**Material**

Same as 626

640

**Material****M15** Motor Throttle Stop Adjust so That Motor Will Idle Properly and Adjust Carburetor

626

1. Adjust—Set air valve adjusting nuts so that air valve has  $\frac{3}{16}$ " drop on inside spring. Set outside spring so that with throttle closed and spark fully retarded, the motor operates smoothly. Be sure that choke control rod is against instrument board.
2. Adjust throttle stop set screw so the motor will idle properly.

**Material**

Same as 626

640

**Material**

**Motor Tune and Test Compression**626 **M16**

Note: Use fender covers to protect enameled surfaces from oil and grease

1. Clean and adjust breaker points setting .015" to .020" when fully separated  
Note: Clean distributor head
2. Clean spark plugs and adjust to  $\frac{3}{8}$ " gap
3. Adjust fan belt  
Note: Remove gasoline filter from dash and clean
4. Clean vacuum tank screen and carburetor suction tube elbow
5. Adjust timing chain
6. Set tappets standard not less than .004" with motor warm and idling
7. Clean and adjust carburetor
8. Test compression on all cylinders, using gauge tool No. S. T. 193. Turn the engine over with the starter motor (with switch off). Have all but one relief cock closed. The maximum compression is determined when the gas throttle is wide open. The compression on the light should show 85 lbs. If an engine lacks power, nine times out of ten it will be traced to poor compression. Frequent causes of leakage are pitted valves or valves riding which will by not closing tightly, permit the pressure to escape. Leaky valves should be ground. Therefore, the power of an engine depends on good compression and good compression must be maintained.

**Material**

1 16395 Gasket

Same as 626

640

**Material**

1 16340 Gasket

**Test Motor Compression**626 **M17**

1. Test compression on all cylinders using test gauge tool No. S. T. 193. Turn engine over with the starter motor (with switch off). Have all but one relief cock closed. The maximum compression is determined when the gas throttle is wide open, the compression on the light should show 85 lbs. If the resistance of the compression of one or more cylinders is less than in the other, then this particular cylinder is leaking compression. Grinding the valves will remedy this, if the leak is not due to leaky piston rings. If an engine lacks power, nine times out of ten it will be traced to poor compression. Frequent causes of leakage are pitted valves or by not closing tightly which will permit the pressure to escape. Therefore, the power of an engine depends on good compression and good compression must be maintained.

**Material**

Same as 626

640

**Motor Support and Motor to Frame Bolts Tighten**626 **M117**

1. Tighten all motor support and motor to frame bolts

**Material**

Same as 626

640

**Material**





**Clean Carbon—Grind Valves—Turn Motor Head Off:****626 M20**

Note: See M21 for specifications after the head is removed.

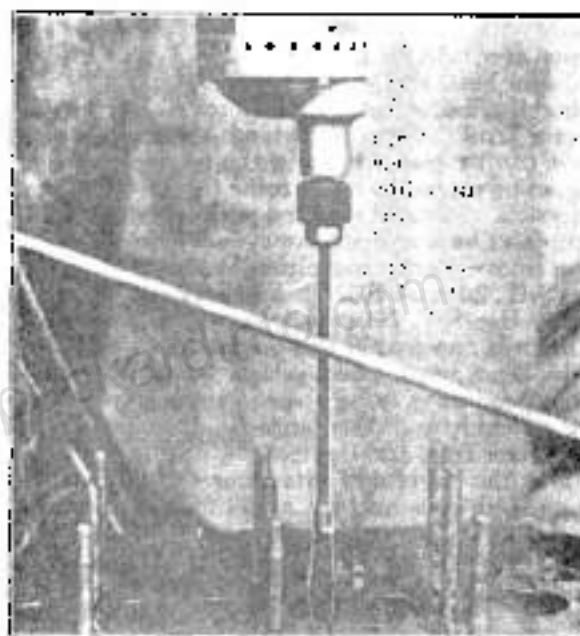
**Material**

1-163395 Gasket

Same as 626.

**640****Material**

1-141440 Carburetor Gasket

**Valve Guide Cleaner**

Tool No. S. T. 212

**Burn Carbon****626 M21**

Note: This operation to be used only when an owner requires immediate service. To protect enameled surfaces use tender covers S. T. 130.

1. Remove spark plugs and protect wires from damage with sheet asbestos.  
Note: Have fire extinguisher near at hand and be sure of its operation.
2. With No. 1 piston at top dead center and valves closed fill combustion chamber with oxygen—quite with ordinary coil lead with oxygen until combustion is completed.  
Note: Move oxygen tube around combustion chamber to assure removal of all carbon.
3. Blow out combustion chamber with air—repeat operations with other cylinders.  
Note: Introduce a little cylinder oil into each cylinder after burning carbon.
4. Clean and adjust spark plugs.
5. Replace plugs and start engine for test.

**M21 Material**

Oxygen  
 Cont. Miscellaneous

Same as 626

640

**Material**

Oxygen  
 Miscellaneous

**M23 Clean Carbon and Tune Motor**

626

Note: This operation is advisable when valves have been ground within a reasonable mileage and the general action of the car indicates the valves do not need re-grinding. Use tender covers S. T. 130.

1. Drain three gallons of water from cooling system and preserve the anti-freeze solution, if used.
2. Remove thermometer tube from head.
3. Remove distributor head and wiring assembly.  
 Before removing distributor head, turn motor to No. 1 cylinder firing center, lift off distributor head without disturbing position of drive shaft and mark drive shaft so it can be re-assembled in the original position. To re-assemble, motor must again be turned to No. 1 firing center, drive shaft replaced in accordance with mark, and head replaced with rotor on No. 1.
4. Loosen radiator inlet hose and remove cylinder head, using wrench S. T. 202.
5. Remove carbon from cylinder and piston heads by using an electric drill and carbon brushes S. T. 201 and 205. Clean relief cocks and remove all loose carbon with air hose. Use S. T. 211 cylinder jet cock cleaner to clean relief cocks. Note: Valves are not removed in this operation.
6. Replace cylinder head, using a new gasket.
7. Tighten cylinder head nuts, using a speed wrench.
8. Replace wiring assembly and distributor head.
9. Replace thermometer tube and tighten.

Note: To remove the burrs and pits from the contact points which have become burnt through constant use, a nail file may be used. This file, being perfectly flat, may, without any injurious effect, be placed between the contact points, and, with the movable points held lightly against the file, the file should be pulled out. It may be necessary to repeat this operation several times in order to secure a perfectly flat and clean contact surface. Do not move the file back and forth between the points as this motion has a tendency to round the edges, causing them to have a convex surface, rather than a flat surface. If the points burn off entirely or if the contact spring breaks, re-installing new parts is the only remedy.

10. Clean distributor points and adjust to from .015" to .020" when fully separated. Note: Remove gasoline filter from dash and clean.
11. Clean and adjust spark plugs to  $\frac{1}{16}$ " gap.
12. Remove, clean and adjust carburetor.  
 Note: Set air valve adjusting nuts so that air valve has a  $\frac{1}{16}$ " air drop on the inside spring. Set outside spring so that with the throttle closed and spark retarded, the motor operates smoothly.
13. Adjust tappets to .001" clearance, with motor warm and idling. Use feeler gauge holder S. T. 153.
14. Adjust fan belt, starting vacuum and test.

**Material**

1-158293 Cylinder Head Gasket  
 1-163395 Carburetor Gasket

Same as 626

640

**Material**

1-139721 Cylinder Head Gasket  
 1-141440 Carburetor Gasket

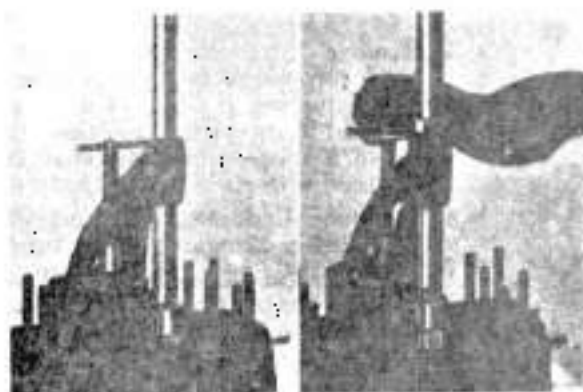


Tool No. S. T. 669

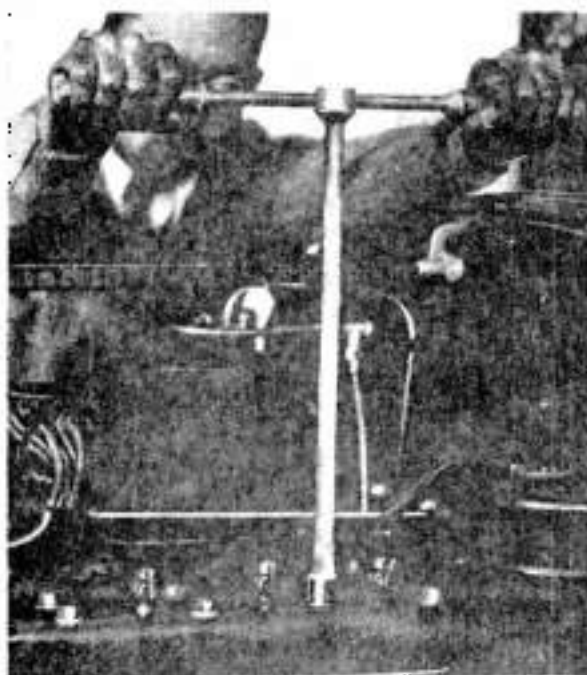
A precision tool for resurfacing valves accurately in line with the guide. Also counterboring and fitting replacement seats. You cannot properly service valves without this equipment. By fitting replacement seats many cylinder blocks that would have to be scrapped can be saved and put into service again.

### Valve Resurfacing Equipment

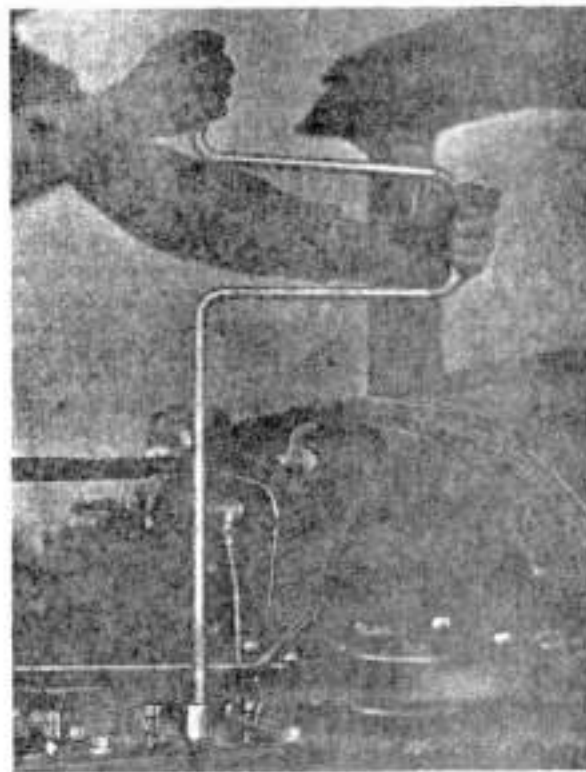
Tool No. S. T. 669



### T Handle Cylinder Head Nut Wrench



### Cylinder Head Nut Speed Wrench

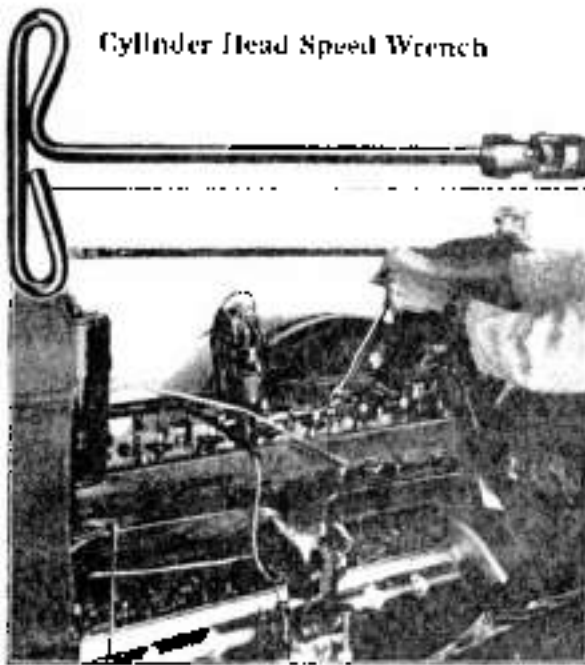


**M24** Clean Carbon, Grind Valves, Tune Motor

626

Note: Carefully remove hood so as not to damage body; also protect fenders and cowl, use tender covers S. T. 130 and rowl covers S. T. 148

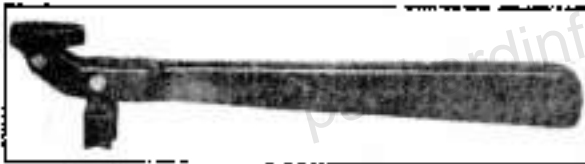
1. Drain water from cooling system and save anti-freeze solution if used
2. Remove thermometer tube
3. Remove distributor head and wiring assembly. Before removing distributor head, turn motor to No. 1 cylinder firing center, lift off distributor head without disturbing position of drive shaft, mark drive shaft so it can be reassembled in its original position. To reassemble, motor must again be turned to No. 1 firing center, drive shaft replaced in accordance with mark, and head replaced with rotor on No. 1
4. Remove cylinder head nuts and cylinder head, using cylinder head nut wrench S. T. 204 or 226 and cylinder head lifter S. T. 121
5. Clean carbon. Use electric drill and carbon brushes S. T. 204 and S. T. 205 to clean carbon from cylinder head and pistons. Use air hose to remove all loose carbon
6. Remove valve cover plate and valves, using special valve lifter S. T. 215 or S. T. 220. Remove springs and push rods and polish valves.  
Note: If faces of valve set screws are badly worn, operation M221 should be specified
7. Face off valves if pitted too deeply. Stems must be straight and true before facing (See foreman)
8. Reseat valve seats if pitted too deeply (See foreman)
9. Grind all valves to proper seats and tighten cylinder base nuts. Use S. T. 115, cylinder base nut wrench, to tighten cylinder base nuts.  
Important: Be sure to remove all valve grinding compound
10. Reassemble valves in cylinder and set tappets standard (not less than .004") with motor warm and idling and tighten all lock nuts. Use feeler gauge holder S. T. 133 and tappet adjusting wrenches S. T. 216 to adjust and lock tappet adjusting screws
11. Replace head, using new gasket  
Note: If distributor shaft cannot be easily pushed into place do not drive it, but turn motor slightly with starting crank
12. Reassemble wiring and distributor head
13. Replace thermometer tube and tighten
14. Remove, clean and adjust distributor points if necessary - set points .015" to .020" gap when fully separated  
Note: To remove the burrs and pits from the contact points which have become burnt through constant use, a nail file may be used. This file, being perfectly flat, may without an injurious effect, be placed between the contact points and with the movable points held lightly against the file, the file should be pulled out. It may be necessary to repeat this operation several times in order to secure a perfectly flat and clean contact surface. Do not move the file back and forth between the points as this motion has a tendency to round the edges, causing them to have a convex surface rather than a flat surface. Remove gasoline filter from dash and clean
15. Clean and adjust spark plugs - set plugs  $\frac{1}{8}$ " gap
16. Remove, clean and adjust carburetor  
Note: Set air valve adjusting nuts so that air valve has a  $\frac{1}{8}$  inch drop on the inside spring. Set outside spring so that with the throttle closed and spark retarded the motor operates smoothly
17. Adjust fan belt  
Note: The standard fan belt adjusting should be so that by grasping the rim of the fan it will be just possible to slide belt on pulley
18. Adjust timing chain  
Note: Proper tension can be determined by adjusting generator with the motor running until a slight humming noise develops, slack off until noise disappears



Cylinder Head Speed Wrench

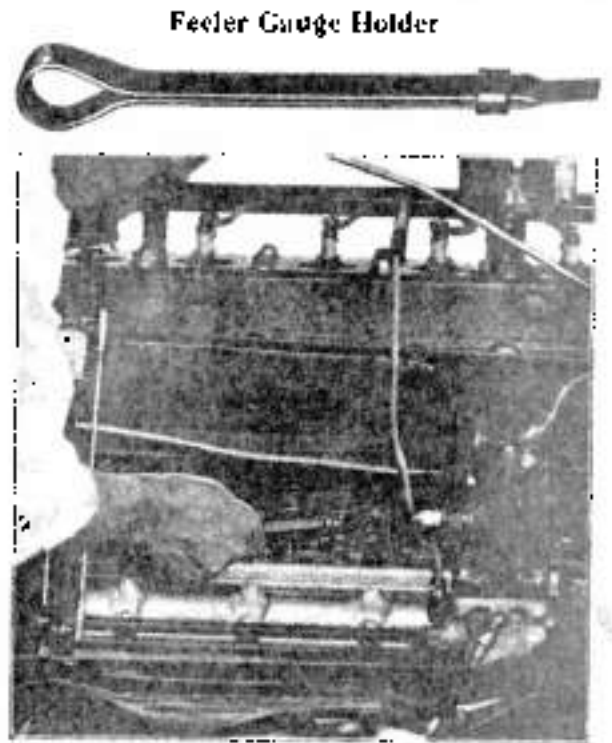
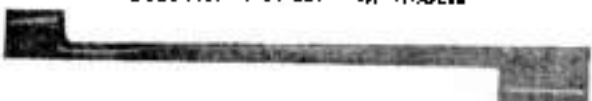
S. T. 102

Valve Lifter



Valve Holder

Test No. S. T. 221 All Models



Feeler Gauge Holder

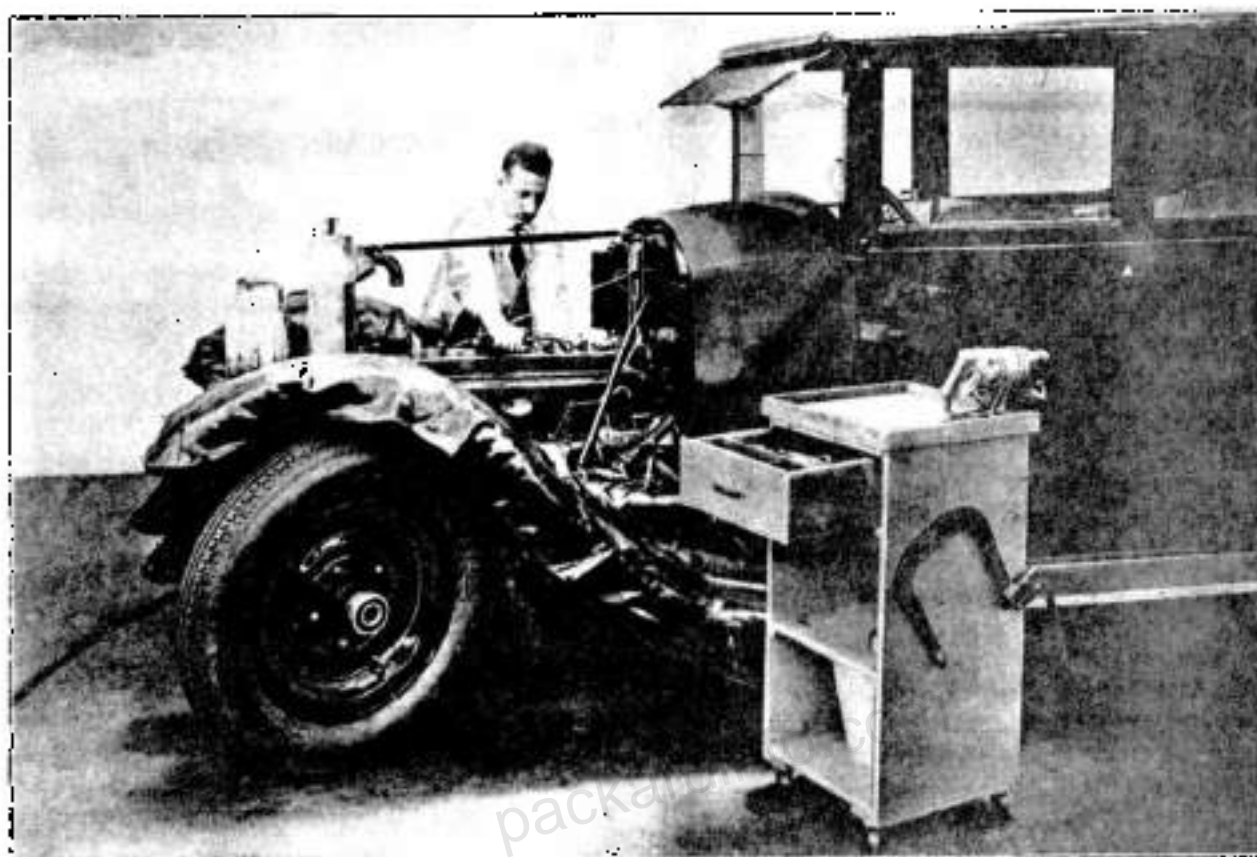
S. T. 151

Cylinder Head Lifter



S. T. 121

Carbon and Valve Equipment



S. T. 200

Carbon Brush



S. T. 204



Carbon Brush - Mixed Type  
Part No. S. T. 05 - All Models

Note: Be sure all cylinder head nuts are drawn down tight and cooling system is free from water leaks.

Test

**M24**  
Cont.

**Material**

- 1-158291 Cylinder Head Gasket
- 1-165395 Carburetor Gasket

Same as 626

640

**Material**

- 1-159721 Cylinder Head Gasket
- 1-141404 Carburetor Gasket

**Valves - Remove for Inspection and Replace  
(Includes M610)**

626 **M25**

1. Remove valve cover plates
2. Remove valve spring seat locks, springs and valves, using valve lifter
3. Replace valves and keys
4. Set tappets to .004" clearance with motor warm and idling and be sure lock nuts are properly locked

Note: When removing valve lifter be sure that keys are in proper position

Note: Use tappet adjusting wrenches S. T. 216 shown in Part II. These wrenches will allow one to make adjustments more easily.

Replace valve cover plates

Note: Before replacing valve cover plates be sure center stud is perfectly tight, otherwise it may be against distributor drive shaft and cause a rattle

**Material**

Same as 626

640

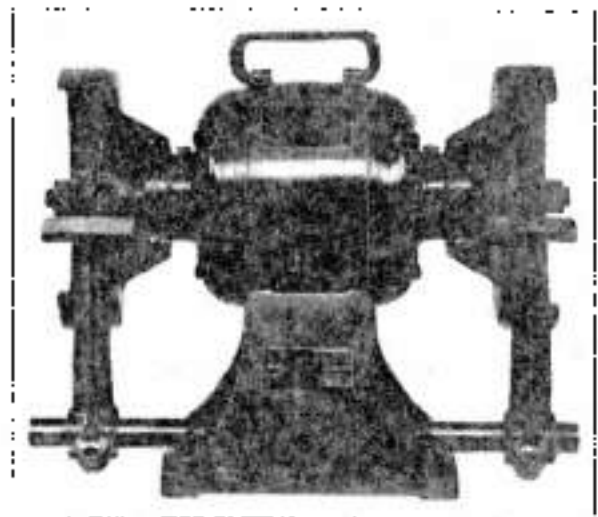
**Material**

**Valve Refacing Machine**



Tool No. S. T. 405

**6" Electric Bench Grinder**



Tool No. S. T. 404

<b>M26</b>	<b>Valves - Grind All (Includes M25)</b> <span style="float: right;"><b>626</b></span> 1. Clean valves and polish stems 2. Reface valves and re-cut cylinder valve seats if necessary. (See foreman) 3. Grind all valves Note: An electric drill is recommended for grinding valves. Be sure to remove all grinding compound. <b>Material</b> Same as 626 <span style="float: right;"><b>640</b></span> <b>Material</b>
<b>M27</b>	<b>Valves - Reface (Includes M26)</b> <span style="float: right;"><b>626</b></span> 1. See that valve stems are straight and true 2. Cut or grind off just enough stock to clean up pits in face of valve, using a valve refacing machine (see S. I. 416) Note: Be sure that all carbon is removed from valves and valve stems are well lubricated. <b>Material</b> Same as 626 <span style="float: right;"><b>640</b></span> <b>Material</b>
<b>M28</b>	<b>Valve Seats - Reseat (Includes M26)</b> <span style="float: right;"><b>626</b></span> 1. Use rescutting tool and take off just enough stock to clean up seats, using tool S. I. 699 Note: Use air to blow all cuttings out of valve seats and ports. <b>Material</b> Same as 626 <span style="float: right;"><b>640</b></span> <b>Material</b>
<b>M29</b>	<b>Valve Spring - Renew One (Head on)</b> <span style="float: right;"><b>626</b></span> Note: To test tension of action of new valve spring, insert a screw driver or some other suitable tool between the coil of the spring while the motor is running. A twist or turn of the screw driver increases the spring tension. Should the noise disappear, this indicates a weak spring, which should be replaced with a new one. 1. Remove valve cover plate and tappet adjusting screw 2. Remove spark plug and insert screw driver to hold valve closed 3. Compress valve spring using valve lifter, and remove valve spring cap lock 4. Remove old valve spring 5. Raise valve and place new spring into position 6. Insert screw driver through spark plug hole to hold valve closed 7. Compress valve spring. Use valve lifter and replace valve key 8. Adjust valve tappet to not less than .004" clearance with motor warm and idling, using tappet wrench (see S. I. 215) 9. Replace valve cover plate Note: Before replacing valve cover plate see that center stud is tight so as not to touch dist. drive shaft, causing a rattle. <b>Material</b> 1-147289 Valve Spring Same as 626 <span style="float: right;"><b>640</b></span> <b>Material</b> 1-147289 Spring



### Valve Tappet Adjusting Screws—Renew All 626 **M215**

(This operation should be used with operation M214 when the valves are out)

Note: Protect fenders from oil and scratches by using fender covers S. T. 130

1. Remove old screws and replace with new and be sure tappet adjusting screws are properly locked

#### Material

16-132179 Screws . . . . .  
8-132178 Lock Nut . . . . .

Same as 626 640

#### Material

16-132179 Screws . . . . .  
8-132178 Lock Nut . . . . .

### Valve Tappets—Adjust 626 **M216**

1. Remove valve cover plate and adjust tappets standard—not less than .004" clearance with motor warm and idling. Use tappet adjusting wrench S. T. 216  
Note: Be sure valve tappet adjusting screws are properly locked. See that valve cover plate center stud is tight so it will not lie against distributor drive shaft, causing rattle

2. Replace valve cover plate

#### Material

Same as 626 640

#### Material

### Valve Tappet Adjusting Screw—Renew One 626 **M217**

1. Remove valve cover plate
2. Raise valve with lifter, using special lifter
3. Remove old screw and replace with new screw
4. Adjust tappet disturbed to not less than .004" clearance with motor warm and idling  
Note: Be sure valve tappet adjusting screw is locked. Use tappet adjusting wrenches S. T. 216
5. Replace valve cover plate

#### Material

1-132179 Screw . . . . .  
1-132178 Lock Nut . . . . .

Same as 626 640

#### Material

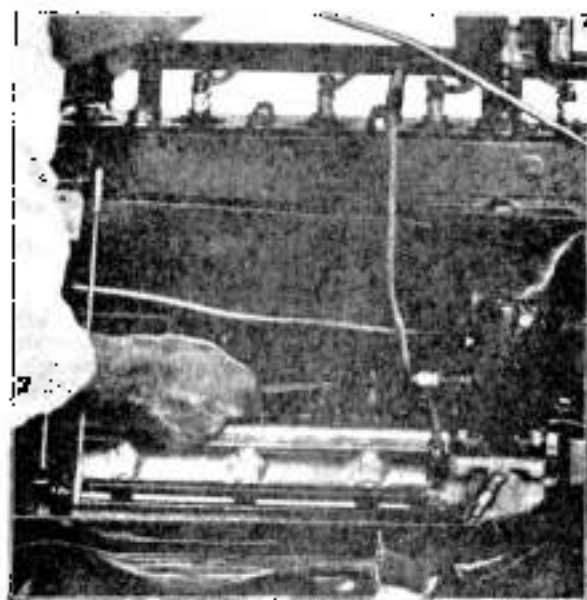
1-132179 Screw . . . . .  
1-132178 Lock Nut . . . . .

### Valve Push Rod and Guide—Renew One 626 **M218**

Note: Use fender covers to protect surfaces from oil and scratches

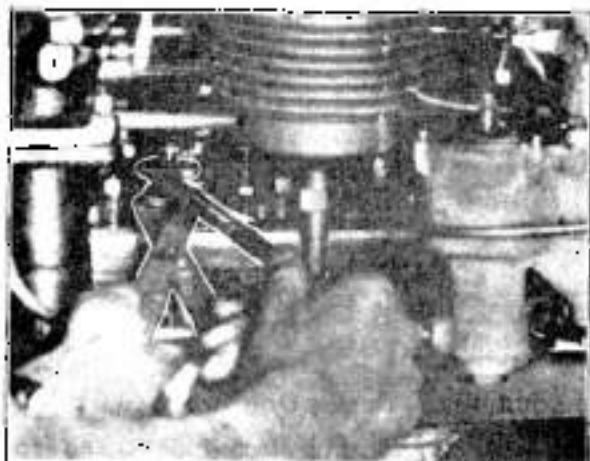
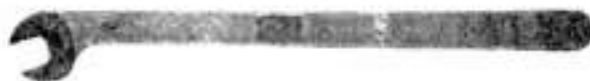
1. Remove valve cover plate  
Note: Use leather arm protectors to protect arms from burns when removing cover plate
2. Raise valve, using special lifter and remove valve push rod adjusting screw
3. Remove guide clamp, push rod and guide
4. Install new push rod and guide

Feeler Gauge Holder



S. T. 151

Tappet Wrench



Tool No. S. T. 216

5. Replace set screw and adjust tappet to .004" clearance, using adjusting wrenches S. T. 210

Note: Be sure set screw locking nut is properly locked

6. Replace valve cover plate

Note: Be sure that valve cover plate is drawn tight so as to prevent oil leaks

**M218**

Cont.

**Material**

1-132177 Push Rod .....  
1-147447 Push Rod Guide .....

Same as 626

640

**Material**

1-132177 Push Rod .....  
1-147447 Push Rod Guide .....

**Valve Push Rods and Guides Renew All**

626

**M219**

Note: Should be used in conjunction with operation M24 when valves are out

1. Remove valve push rod adjusting screws and guide clamps
2. Remove old assemblies and install new

**Material**

16-132177 Rods .....  
16-147447 Guides .....

Same as 626

640

**Material**

16-132177 Rods .....  
16-147447 Guides .....

**Valve Tappet Set Screws Remove, Reface and Replace**

626

**M221**

Note: This operation to be used when grinding valves or with valves out

1. Remove valve tappet set screws, place in lathe and reface  
Note: If faces of set screws are badly worn, the operation should be performed in conjunction with M24—Clean carbon, grind valves and tune motor

**Material**

Same as 626

640

**Material****Valve Cover Plate Renew**

626

**M250**

1. Remove old cover

Note: Check cylinder to see that it does not project over oil return grooves and cause an oil leak at valve cover plate

2. Replace and tighten valve cover

**Material**

1-158363 Valve Cover Plate Assembly .....

Same as 626

640

**Material**

1-143090 Valve Cover Plate Assembly .....

- M251** Valve Cover Plate Gasket—Renew (Labor Only) 626
1. Remove valve cover
  2. Remove the old gasket
  3. Install and glue on new gasket  
Note: Check cylinder to see that it does not project over oil return grooves and cause an oil leak at valve cover plate
  4. Replate and tighten valve cover
- Material**  
Same as 626 640
- Material**
- M252** Valve Exhaust—Renew One 626
- This operation should be used in conjunction with M24 when valves are out
1. Supply and grind in new valve  
Note: Be sure to remove all grinding compound
- Material**  
1-158059 Exhaust Valve  
Same as 626 640
- Material**  
1-146988 Exhaust Valve
- M253** Valve Inlet—Renew One 626
- This operation should be used in conjunction with M24 when valves are out
1. Supply and grind in new valve  
Note: Be sure and remove all grinding compound
- Material**  
1-158085 Valve Inlet  
Same as 626 640
- Material**  
1-146989 Valve Inlet
- M254** Valves Exhaust—Renew All 626
1. Supply and grind new valve  
Note: This operation should be used in conjunction with M24 operation when valves are out
  2. Be sure to remove all grinding compound
- Material**  
6-158039 Exhaust Valve  
Same as 626 640
- Material**  
6-146988 Exhaust Valve
- M255** Valves - Inlet—Renew All 626
1. Supply and grind new valves  
Note: This operation should be used in conjunction with M24 operation when valves are out
  2. Be sure to remove all grinding compound

<b>Material</b>			
8-158035 Inlet Valves			<b>M255</b>
Same as 626		640	<i>Cont.</i>
<b>Material</b>			
8-146989 Inlet Valves			
<b>Valve Springs- Renew All</b>		626	<b>M256</b>
(Should be used in conjunction with M24)			
1. Remove the old valve spring and replace with new spring			
<b>Material</b>			
16-147289 Valve Spring			
Same as 626		640	
<b>Material</b>			
16-147289 Valve Spring..			
<b>Valves--Renew All (Inlet and Exhaust)</b>		626	<b>M257</b>
1. Supply and grind new valves			
Note: This operation should be used in conjunction with M24 operation when valves are out			
2. Be sure to remove all grinding compound			
<b>Material</b>			
8-158039 Valves			
8-158035 Valves			
Same as 626		640	
<b>Material</b>			
8-146988 Valves			
8-146989 Valves			
<b>Valve Rocker Lever Housing Remove One for Inspection and Replace</b>		626	<b>M260</b>
1. Remove valve cover plate			
2. Remove exhaust bolts and move exhaust pipe to one side if necessary			
3. Remove nuts on housing to crankcase studs and lift housing assemblies			
4. Remove rocker lever housing plugs			
5. Remove pins and levers			
6. Inspect condition of rocker levers and pins and report			
7. Reassemble rocker pin and levers			
Note: To replace rocker levers housing, turn motor over by hand and push housing into position with all push rods up			
8. Adjust tappets affected to .004" clearance with motor warm and idling			
9. Replace valve cover			
<b>Material</b>			
1-158123 Gasket			
Miscellaneous			
Same as 626		640	
<b>Material</b>			
1-131887 Gasket			
Miscellaneous..			

## M261 Valve Rocker Lever Housing - Remove Both for Inspection and Replace 626

Note: Use tender covers S. T. 130 or S. T. 131

1. Remove valve cover plate
2. Remove exhaust bolts and move exhaust pipe to one side
3. Remove nuts on housing to crankcase studs and lift housing assemblies
4. Remove rocker lever housing plug
5. Remove rocker lever housing pins
6. Inspect condition of rocker levers and pins and repair
7. Reassemble rocker levers, pins and housing plug and use white lead at plug  
 Note: To replace rocker lever housing, turn motor over by hand and push housing into position with all push rods up
8. Adjust tappets adjusted to .021" clearance with motor warm and idling and be sure tappet adjusting screw is properly locked. Use adjusting wrenches S. T. 210  
 Note: To protect your arms from exhaust burns when adjusting tappets, use leather arm protectors
9. Replace and tighten valve cover plates to prevent oil leaks
10. Replace and tighten exhaust pipe

### Material

2-158123 Rocker Lever Housing Gasket

1-132585 Exhaust Pipe to Exhaust Manifold Gasket

Same as 626

640

### Material

2-131987 Rocker Lever Housing Gasket

1-141535 Gasket

## M262 Valve Rocker Levers - Renew All (Includes M261) 626

Supply and install new rocker levers

### Material

16-158723 Rocker Levers, Assembled

Same as 626

640

### Material

16-158723 Rocker Levers, Assembled

## M264 Valve Rocker Lever Pin - Renew One 626

1. Remove housing
2. Remove old pin
3. Supply and install new rocker pin
4. Replace housing
5. Adjust tappets after oil, using tappet adjusting wrenches S. T. 216  
 Note: To protect your arm from exhaust burns when adjusting tappets, use leather arm protectors

### Material

1-158050 Pin

Same as 626

640

### Material

1-131988 Pin

**Valve Rocker Lever Pins - Renew All  
(Includes M621)****6-26 M265**

See Operation M264 for detailed specifications

1. Supply and fit new rocker lever pins

**Material**

2-158050 Pins

Same as 6-26

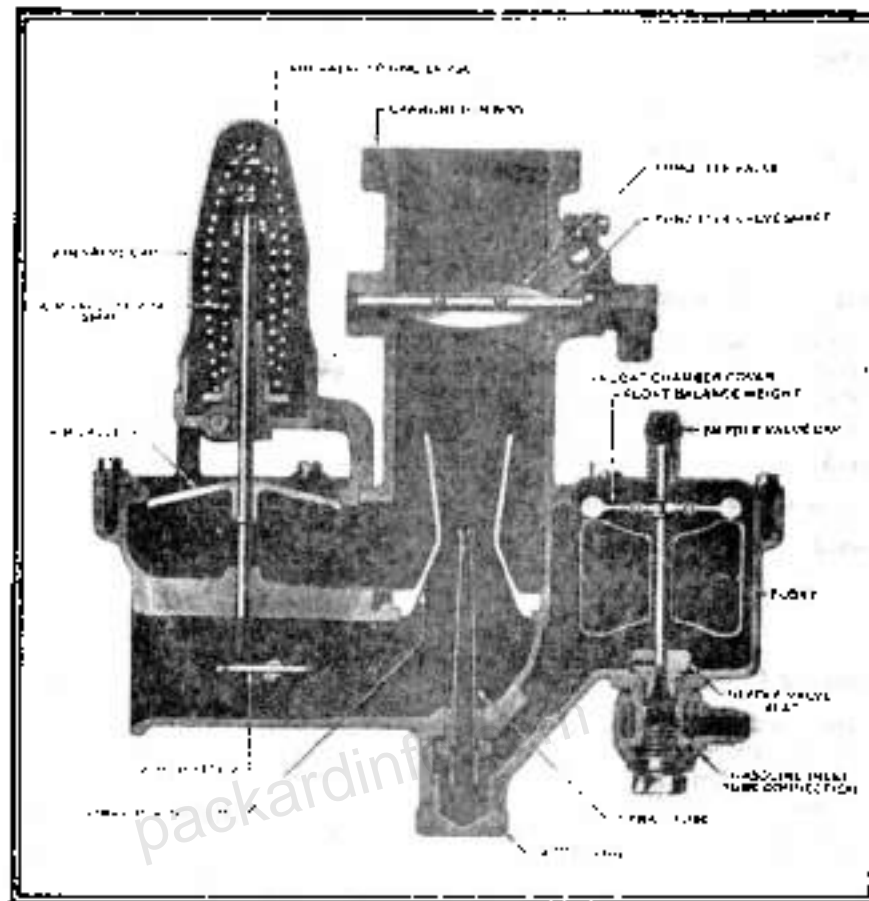
**6-40****Material**

2-131888 Pins

packardinfo.com







### Carburetor - Clean and Adjust

626 **M31**

- Note: Use leather covers to protect enamel surfaces from oil and scratches
1. Disconnect the key and clavis pin
  2. Disconnect gasoline feed pipe from carburetor
  3. Remove carburetor from manifold
  4. Remove following parts from carburetor
    - (a) Carburetor air valve
    - (b) Carburetor float chamber cover and float
    - (c) Remove float chamber and spray plug
  5. Clean and blow out all parts with air hose
 

Note: Be sure that carburetor is perfectly clean and all dust and dirt that may have accumulated is removed. This will insure the life of the carburetor and also relieve any possibility of carburetor giving trouble at a very important time.
  6. Reassemble all parts
 

Note: Remove gasoline filter from dash and clean
  7. Adjust carburetor and test: set air valve adjusting nuts so that air valve has  $\frac{1}{8}$ " drop on its side spring

### Material

- 1-164095 Carburetor Gasket  
 1-126156 Air Valve Gasket  
 1-116281 Float Chamber Cover Gasket  
 1- 45933 Spray Tube Base Gasket

### M31 Same as 626 except that air valve has $\frac{1}{2}$ drop on inside spring. 640

#### Material

- Cont.
- 1-14140 Carburetor Gasket .....
  - 1-142717 Air Valve Gasket .....
  - 1-116281 Float Chamber Cover Gasket .....
  - 1- 45933 Spray Tube Base Gasket .....

### M32 Gasoline Tank—Clean Out 626

1. Remove drain plug and drain gasoline
2. Replace drain plug and flush out tank with  $\frac{1}{2}$  gallon gas—running car
3. Remove drain plug and drain tank
4. Replace drain plug and replace gasoline, using chamois strainer

#### Material

Same as 626 640

#### Material

### M33 Carburetor Choke—Adjust 626

1. Adjust choke connecting rod clevis so that shutter closes completely when choke control is pulled all the way out
- Note: Check the choke valve or shutter in carburetor to see if it works properly. If it does not close full, the motor will start hard in cold weather and if it does not open full the gasoline mileage will be lowered.
- Note: Be sure to check the motor piston lubricator so it will open and close properly.

#### Material

Same as 626 640

#### Material

### M35 Gasoline Tank Gauge Unit—Renew 626

1. Loosen tie boards—do not remove
2. Disconnect gasoline tube from gauge
3. Loosen gasoline gauge tube from frame
4. Drain gasoline tank and remove fittings
5. Lower gas tank far enough to allow removal of gauge unit
6. Supply and install new unit
7. Replace gas tank, tighten and back gas tank support strap nuts with wire
8. Replace gasoline, using a chamois strainer
9. Tighten tube to frame
10. Tighten tie boards
11. Test for accuracy

#### Material

- 1-145260 Gauge Assembly .....

Same as 626 640

#### Material

- 1-162426 Gauge Assembly .....

**Gasoline Tank Assembly Renew**626 **M37**

1. Disconnect gas gauge tube
2. Remove gas tank drain plug—draw out gasoline
3. Disconnect fuel line at tank—loosen 3 support bolts and drop tank
4. Remove gas filter assembly
5. Assemble old float in new tank  
Note: Use 1/8 x 20 tap to clean threads in new tank
6. Install new tank and support bolts and seal bolts with wire
7. Connect fuel line at tank and tighten cable in frame
8. Replace drain plug and drained gasoline, using chamois strainer
9. Test for leak at drain plug
10. Test for accuracy

**Material**

1-146328 Gas Tank Assembly

Same as 626

640

**Material**

1-162500 Gas Tank Assembly

**Gasoline Gauge Renew**626 **M38**

1. Remove old gauge from instrument board and install new gauge and tighten tube.
2. Drain gasoline from tank and refill tank using chamois strainer so that the gasoline gauge will register correctly when the gasoline tank is refilled.  
Note: Check new gauge head and make gauge read exactly zero. Liquid can be added or removed at top of the brass tube. To fill or to remove liquid, use tooth pick or a match to absorb some from the brass tube.

**Material**

1-158242 Gauge

Same as 626

640

**Material**

1-158410 Gauge

**Gas Tank, Lines, Carburetor and Vacuum Tank, Clean Out**626 **M39**

Use fender covers S. E. 130 and cowl covers S. T. 148

1. Remove drain plug from gasoline tank and drain gas
2. Disconnect gas line at tank and vacuum tank and blow out gas tank  
Note: Be sure both ends of gasoline lines are always disconnected, otherwise sediment will be blown into tanks
3. Remove carburetor filter well spray plug cap and float chamber cover and clean out float chamber
4. Remove vacuum tank cover, wipe clean the interior of vacuum tank and clean inlet screen
5. Remove lines from vacuum tank to carburetor and blow out lines and carburetor. Note: Remove gasoline filter from dash and clean
6. Reassemble, being sure to prime vacuum tank by turning engine with starter with choke pulled out away from dash
7. Replace gasoline using a chamois strainer

**Material**

Miscellaneous

Same as 626

640

**Material**

Miscellaneous

### M310 Carburetor, Remove, Dismantle, Report and Reassemble 626

Note: Use fender covers S. T. 130

1. Disconnect gasoline feed pipe
2. Remove choke rod clevis pin
3. Remove carburetor from exhaust manifold
4. Remove following parts from carburetor:
  - (a) Carburetor air valve
  - (b) Float chamber cover and float
  - (c) Remove float chamber and spray plug.
5. Wash and clean all parts and blow out with air hose
6. Reassemble in the reverse order of removal
 

Note: Set air valve adjusting nuts so that valve has  $\frac{1}{8}$ " drop on the inside spring. Set outside spring so that with the throttle closed and spark retarded the motor operates smoothly.
7. Test

#### Material

- 1-163493 Carburetor Gasket
- 1-126456 Air Valve Seat Gasket
- 1-116281 Float Chamber Cover Gasket
- 1-45943

Same as 626 except that air valve has  $\frac{1}{8}$ " drop on inside spring 640

#### Material

- 1-141440 Carburetor Gasket
- 1-142717 Air Valve Seat Gasket
- 1-116281 Float Chamber Cover Gasket
- 1-45933

### M311 Carburetor—Adjust Only 626

1. Remove two cap screws and cap from carburetor
 

Note: Check the choke valve or shutter in carburetor to see that it works properly. If it does not close fully the motor will start hard in cold weather and if it does not open fully the gasoline mileage will be lowered.
2. Remove suction tube elbow and clean
 

Note: Gasoline mileage depends largely upon proper carburetor adjustment. See that the carburetor is properly adjusted. It is also well to check over connections between the carburetor and the intake manifold and the cylinder block, to see if there are any leaks. A small gasoline leak around the carburetor or somewhere along the line, which carries the fuel from the main supply tank to the carburetor, may cause trouble.
3. Adjust carburetor
 

Note: Set air valve adjusting nuts so that air valve has  $\frac{1}{8}$ " drop on the inside spring. Set outside spring so that, with the throttle closed and the spark retarded, the motor operates smoothly.
4. Replace carburetor cap and tighten two set screws holding cap in place
 

Note: Remove gasoline filter from dash and clean.
5. Test on flow

#### Material

Same as 626 except that air valve has  $\frac{1}{8}$ " drop on the inside spring 640

#### Material

**Carburetor Float Level--Adjust**626 **M313**

1. Remove carburetor
2. Adjust float chamber needle valve collar so that float level is  $\frac{1}{16}$ " below primary jet. This adjustment is made on the bench, using a test tank having a gravity feed and connected to carburetor  
Carburetor should be absolutely level during the test. When proper adjustment has been made, remove needle valve and solder collar in place
3. Replace carburetor

**Material**

Same as 626

640

**Material****Carburetor Float Renew (On Car)**626 **M315**

1. Disconnect vacuum tank tube
2. Remove float cover and float
3. Install new float and replace cover. Tighten tube
4. Start motor and test on floor

**Material**

1-114751 Float Assembly

1-116281 Float Chamber Cover Gasket

Same as 626

640

**Material**

1-114751 Float Assembly

1-116281 Float Chamber Cover Gasket

**Vacuum Tank Remove, Dismantle, Report and Reassemble**626 **M320**

Note: Use fender covers S. T. 130 and cowl cover S. T. 148

1. Remove gasoline intake tube
  2. Disconnect gasoline line to carburetor
  3. Disconnect vacuum suction tube at tank
  4. Remove four screws holding vacuum tank straps and remove tank
  5. Remove vacuum tank cover, float, and inner shell
  6. Clean all parts thoroughly
  7. Inspect float valve and see if valve opens and closes properly
  8. Reassemble
  9. Replace tank
  10. Connect gasoline intake tube and vacuum suction tube
- Note: Prime vacuum tank by turning engine with starter and holding choke closed—run engine and check connections for leaks

**Material**

Same as 626

640

**Material****Carburetor Assembly Renew**626 **M340**

Note: Use fender covers

1. Disconnect gasoline feed pipe and choke rod
2. Remove carburetor from exhaust manifold
3. Install new carburetor
4. Connect gas line and choke rod
5. Adjust carburetor and test on floor
6. Remove gasoline filter from dash and clean

<b>M340</b>	<b>Material</b>		
	1-163391 Carburetor		
	<i>Cont.</i> Same as 626		<b>640</b>
	1-145999 Carburetor		

<b>M352</b>	<b>Carburetor Float—Renew and Adjust Gas Level (Includes M310)</b>	<b>626</b>
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1. Supply and install new float
2. Reassemble carburetor and adjust float level of gasoline in float chamber  
*Note:* Adjust float chamber needle valve collar so that float level is  $\frac{1}{8}$ " below primary jet. This adjustment is made on the bench, using a test tank having a gravity feed and connected to carburetor. Carburetor should be absolutely level during the test. When proper adjustment has been made, remove needle valve and solder collar in place.

**Material**

1-114751 Float Assembly		
Same as 626		<b>640</b>

**Material**

1-114751 Float Assembly	
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<b>M353</b>	<b>Carburetor Needle Valve and Seat—Renew (Includes M310)</b>	<b>626</b>
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1. Remove float chamber needle valve and seat
2. Supply and install new needle valve and seat
3. Tap needle valve into seat and grind carefully, using powdered glass  
*Note:* Be sure to wash with gas and blow out thoroughly so as to remove all grinding compound. Adjust float chamber needle valve collar so that float level is  $\frac{1}{2}$  inch below primary jet. This adjustment is made on bench using a test tank having a gravity feed and connecting it with carburetor. Carburetor should be perfectly straight during this test. When proper adjustment has been made, remove needle valve and solder collar in place.

**Material**

1-114760 Needle Valve		
1-116650 Seat		
Same as 626		<b>640</b>

**Material**

1-114760 Needle Valve	
1-116650 Seat	

<b>M354</b>	<b>Carburetor Spray Tube—Renew (Includes A310)</b>	<b>626</b>
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1. Remove spray tube (wrench furnished in tool kit)
2. Install new spray tube

**Material**

1-163479 Spray Tube Assembly		
Same as 626		<b>640</b>

**Material**

1-141964 Spray Tube Assembly	
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**Carburetor Body—Renew  
(Includes M310)**626 **M357**

1. Supply and assemble new fuelizer body, using new gaskets and parts taken from old body.

**Material**

1-163393 Body

Same as 626

640

**Material**

1-142948 Body

**Vacuum Tank Remove, Clean  
and Replace**626 **M361**

Note: Use fender covers S. T. 130 and cowl covers S. T. 148

1. Remove all gasoline line tubes
2. Remove four screws holding vacuum tank strap and remove tank
3. Clean all parts thoroughly
4. Replace tank and tighten all gasoline line tubes

Note: Prime vacuum tank by turning engine with starter and holding choke closed. Run engine and check connections for leaks

**Material**

Same as 626

**Material**

640

**Vacuum Tank Float—Renew**626 **M362**

1. Supply and install new float
2. Replace cover, using new gasket

**Material**

1-3830 Gasket

1-17730 Float Assembly

Order from nearest Stewart-Warner Corp.

See List Page

Same as 626

640

**Material**

1-17730 Float Assembly

1- 3830 Gasket

**Vacuum Tank—Renew**626 **M363**

Note: Use fender covers and cowl covers

1. Remove all gasoline line tubes
2. Remove four screws holding vacuum tank strap and remove tank
3. Install new tank and tighten all gasoline line tubes

Note: Prime vacuum tank by turning engine with starter and holding choke closed. Run engine and check connections for leaks

**Material**

1-148461 Tank

Same as 626

640

**Material**

1-148029 Tank (645)

1-148461 Tank (640)

**M368 Vacuum Tank Cover Gasket Renew**

626

Note: Use fender covers and fowl covers.

1. Disconnect upper gasoline line tubes.
2. Remove screws holding vacuum tank cover and remove old gasket.
3. Install new gasket and tighten covers.

Note: Be sure that vacuum tank float meters seat properly.

**Material**

1-3830 Gasket

Same as 626

640

**Material**

1-3830 Gasket

packardinfo.com



**Timing Chain Adjust**626 **M40**

1. Loosen two nuts on generator flange
2. Move top of generator away from motor until chain is properly adjusted  
 Note: Do not remove bronze housing into which generator fits, as such removal will release the front end chain, affecting timing of ignition and necessitate the disassembling of front end to get chain back into place
3. Report when limit of adjustment has been reached
4. Secure generator in new position by tightening nuts and replace plug  
 Note: The proper adjustment of timing chain may be made as follows: With the motor running, loosen two upper nuts on generator and shift the position of the generator away from motor to a point where the timing chain will give a slight hum, indicating that the chain is too tight. Shift the position of generator toward the motor to a point where the timing chain hum disappears, then tighten both nuts.

**Material**

Same as 620

640

**Material****Motor Front Cover Renew  
(Includes M410)**626 **M42**

1. Remove parts of old cover and assemble on new cover

**Material**

1-158492 Gear Cover

**(Includes M410)**

640

Same as 620

1-158492 Gear Cover

**Motor Front Cover Remove for  
Inspection and Replace**626 **M410**

- Note: Use care in removal of bonnet so as not to scratch cowl. Use fender covers S. T. 170 and fender cover S. T. 148
1. Drain cooling system and remove radiator  
 Note: Pre-emptive antifreeze solution
  2. Remove fan belt and vibration damper
  3. Remove front cover bolts and nuts, using a speed wrench
  4. Jack up weight on engine front end to allow removal of engine front support and front cover as one piece
  5. Inspect and report
  6. Reverse order of disassembling, using new front cover gasket
  7. Remove jack and secure motor in place
  8. Replace radiator  
 Note: Be sure radiator pads are in place
  9. Adjust fan belt  
 Note: Standard fan belt adjustment should be determined by grasping rim of fan. It will be just possible to slide belt on pulley
  10. Refill cooling system

**Material**

1-158668 Gear Cover Gasket

Same as 620

640

**Material**

1-158668 Gear Cover Gasket

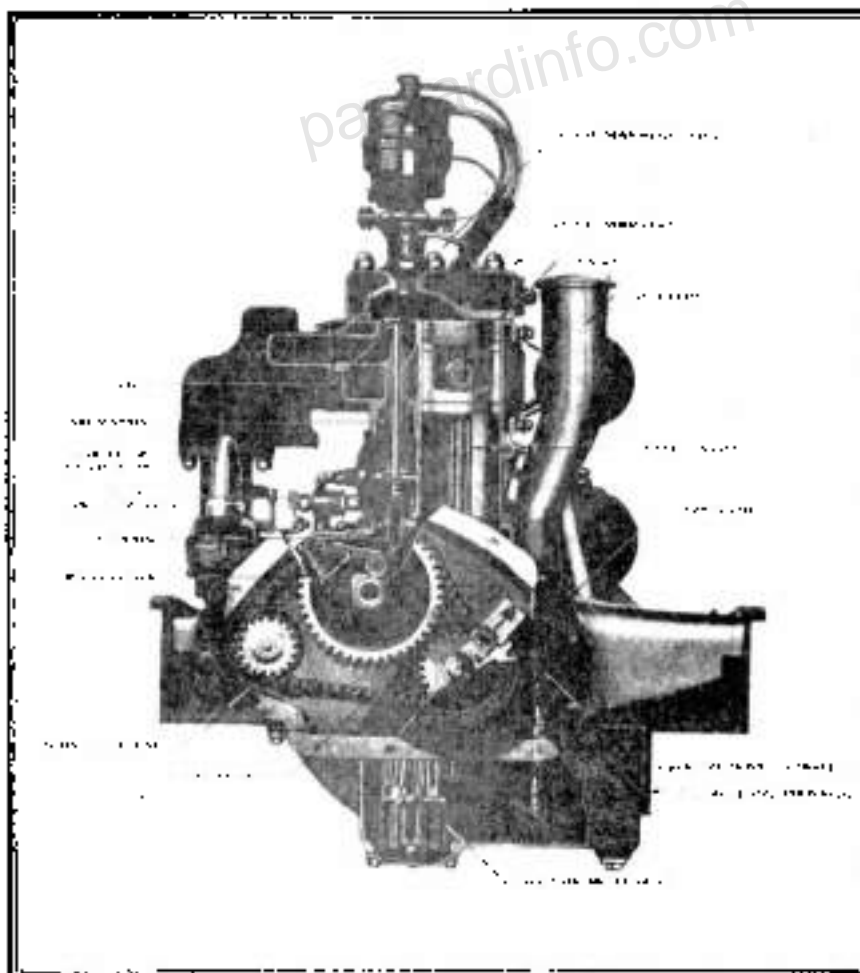
## M411 Timing Chain—Take Out Link (Includes M410)

626

1. Remove generator and sprocket support.
2. Remove chain and take out "Master Link" (this link composed of thin sections)  
 Note: When reassembling chain see that rocker is not assembled backward, that is, with the flat side against the seat pin. This will result in noise and possible destruction of chain. See Technical Letter No. 1598. See Mouse chain in Part II.
3. Reassemble chain in place, care being taken not to disturb relative positions of sprockets on camshaft and crankshaft.  
 Note: Arrows on chain should be outside and travel with chain.
4. Replace generator, adjust chain and tighten adjustment.  
 Note: Adjust chain tension so that when all the slack of chain is between the camshaft and generator sprockets, the middle of this section of chain can be moved up and down a total of  $\frac{3}{8}$  to 1 inch.
5. Check ignition and valve timing before replacing front cover.  
 Note: Set crankshaft and camshaft sprockets, so that four teeth marked O O are the nearest together and line up.

### Material

- 1-114683 Generator Support to Crankcase Gasket . . . . .
- 1- 76056 Driving Chain Rocker Pin . . . . .
- 2- 76057 Driving Chain Pin Washers . . . . .
- 1- 76058 Driving Chain Seat Pin . . . . .
- 1-115274 Generator Gasket . . . . .



Same as 626

**640 M411**  
Cont.**Material**

- 1- 76056 Driving Chain Rocker Pin . . . . .
- 2- 76057 Driving Chain Pin Washers . . . . .
- 1- 76058 Driving Chain Seat Pin . . . . .
- 1-114883 Generator Support to Crankcase Gasket . . . . .
- 1-115274 Generator Gasket . . . . .

**Timing Chain—Renew  
(Includes M410)****626 M412**

1. Remove generator and sprocket support
2. Remove old chain by taking out generator sprocket
3. Install new chain holding sprocket in position while generator support is slipped into place, using new gasket  
Note: Arrows on chain should be outside and travel with chain
4. Replace generator, adjust chain and tighten adjustment  
Note: Adjust chain tension so that when all the slack of chain is between the camshaft and generator sprockets the middle of this section of chain can be moved up and down a total of  $\frac{1}{2}$  to 1 inch
5. Check ignition and valve timing before replacing front cover  
Note: Set crankshaft and camshaft sprockets so that four teeth marked O O are the nearest together and line up

**Material**

- 1-147446 Driving Chain . . . . .
- 1-114883 Generator Gasket . . . . .
- 1-115274 Generator Gasket . . . . .

Same as 626

**640****Material**

- 1-147446 Driving Chain . . . . .
- 1-114883 Generator Gasket . . . . .
- 1-115274 Generator Gasket . . . . .

**Camshaft Sprocket—Renew  
(Includes M410)****626 M413**

1. Loosen stud nuts on generator and release timing chain to "Loose" position and pull generator
2. Remove chain roller pin and sprocket nut  
Note: Do not tighten camshaft sprocket nut too tight, this will eliminate camshaft end-play
3. Remove old sprocket, using puller 7-1, 113, and install new sprocket  
Note: Adjust chain tension so that when all the slack of the chain is between the camshaft and generator sprockets, the middle of this section of chain can be moved up and down a total distance of  $\frac{1}{2}$  to 1 inch  
Set crankshaft and camshaft sprockets so that the four teeth marked O are the nearest together and line up
4. Replace chain and generator
5. Check valve and ignition timing  
Note: Camshaft sprocket must be up snug against shoulder on camshaft. If not, timing chain will run out of true and set up front end noise

**Material**

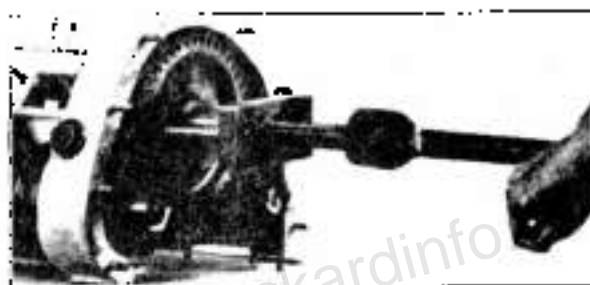
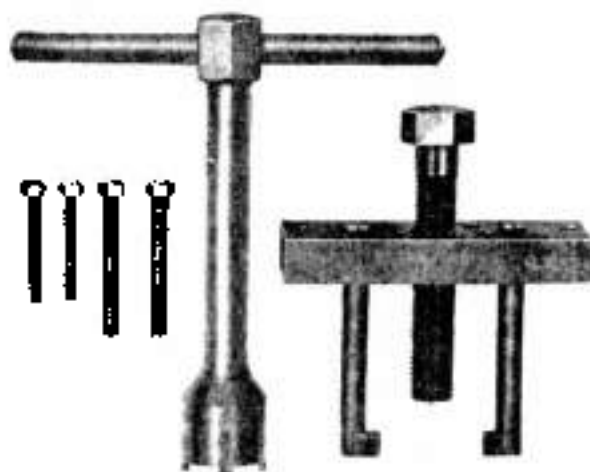
- 1-148050 Camshaft Sprocket . . . . .

Same as 626

**640****Material**

- 1-148050 Camshaft Sprocket . . . . .

## Pulley and Sprocket Puller

**M414** Vibration Damper - Front End Sprockets and Chain - Renew (Includes M410)

626

1. Remove fan pulley and fan and clapper.  
Note: Be sure to have two clamps for removing damper from crankshaft and place in vise. Remove springs.
2. Remove generator and front end chain and pull all sprockets, using special puller S. I. 113.
3. Supply and install new sprocket, vibration damper, chain and generator.  
Note: Adjust chain tension so that when all the slack of the chain is between the camshaft and generator sprockets, the middle of this section of chain can be moved up and down a total distance of  $\frac{1}{2}$ " to 1".
4. Check valve and ignition timing.

**Material**

- 1-137145 Generator Sprocket
- 1-149050 Crankshaft Sprocket
- 1-147446 Crankshaft Driving Chain
- 2-158750 Vibration Damper Lining
- 2-158783 Vibration Damper Flywheel
- 1-158112 Vibration Damper Hub
- 1-132402 Crankshaft Sprocket
- 1-158781 Friction Ring

Same as 626

640

**Material**

- 1-147446 Chain
- 1-149050 Crankshaft Sprocket
- 1-137145 Generator Sprocket
- 2-158730 Damper Lining
- 2-158783 Damper Flywheel
- 1-158729 Damper Hub
- 1-158781 Friction Ring
- 1-132402 Crankshaft Sprocket

**Vibration Damper Renew**626 **M415**

1. Remove radiator
2. Remove fan belt
3. Remove fan pulley and nut  
 Note: Be sure to have two clamps for removing damper from crankshaft and place in vise and remove springs
4. Replace damper to crankshaft and lubricate for satisfactory adjustment
5. Tighten damper  
 Note: Be sure that damper does not run out of time and act up from end noise

**Material**

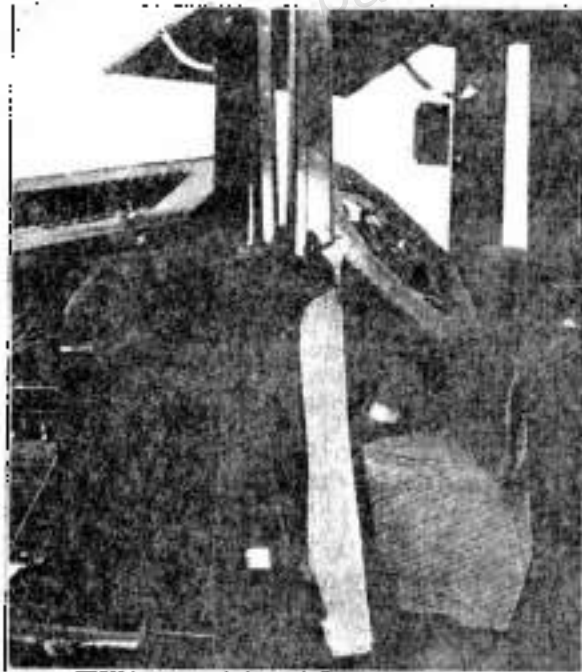
- 6-158784 Damper Springs
- 2-158730 Damper Fasting
- 2-158786 Damper Flywheel
- 1-158112 Damper Hub
- 1-158781 Friction Ring

Same as 626

646

**Material**

- 2-158730 Damper Fasting
- 2-158786 Damper Flywheel
- 1-158729 Damper Hub
- 1-158781 Friction Ring
- 6-158784 Springs



- Tool No. S. T. 144 Front seat cover
- Tool No. S. T. 145 Rear seat cover
- Tool No. S. T. 146 Double door cover
- Tool No. S. T. 147 Single door cover
- Tool No. S. T. 148 Low door cover



- Tool No. S. T. 130—Fender Cover
- Tool No. S. T. 131—Fender Cover

<b>M416</b>	<b>Vibration Damper—Free Up and Adjust</b>	<b>626</b>
	<ol style="list-style-type: none"> <li>1. Remove radiator</li> <li>2. Remove fan belt</li> <li>3. Remove fan pulley and nut            Note: Be sure to have two clamps for removing damper from crankshaft and place in vise and remove springs</li> <li>4. Replace damper to crankshaft and lubricate for satisfactory adjustment</li> <li>5. Tighten damper</li> </ol>	
	<b>Material</b>	
	Same as 626	<b>640</b>
	<b>Material</b>	
<b>M482</b>	<b>Front End Sprockets—Renew All (Includes M410)</b>	<b>626</b>
	<ol style="list-style-type: none"> <li>1. Remove generator and sprocket support</li> <li>2. Remove front end chain and pull all sprockets, using special puller tool No. S. T. 113</li> <li>3. Supply and install new sprockets</li> <li>4. Replace chain and generator and adjust chain            Note: Adjust chain tension so that when all the slack of the chain is between the camshaft and generator sprockets, the middle of this section of the chain can be moved up and down a total distance of from <math>\frac{1}{2}</math> to 1 inch.</li> <li>5. Check valve and ignition timing            Note: Set crankshaft and camshaft sprockets so that the four teeth marked O are the nearest together and line up</li> </ol>	
	<b>Material</b>	
	1-132402 Crankshaft Sprocket Assembly	
	1-148050 Camshaft Sprocket	
	1-137145 Generator Sprocket	
	(Includes M410)	
	Same as 626	<b>640</b>
	<b>Material</b>	
	1-132402 Crankshaft Sprocket	
	1-148050 Camshaft Sprocket	
	1-137145 Generator Sprocket	
<b>M483</b>	<b>Front End Sprockets and Chain—Renew (Includes M410)</b>	<b>626</b>
	<ol style="list-style-type: none"> <li>1. Remove generator and sprocket support</li> <li>2. Remove front end chain and pull all sprockets, using puller tool No. S. T. 113</li> <li>3. Supply and install all new sprockets and chain            Note: Adjust chain tension so that when all the slack of the chain is between the camshaft and generator sprocket, the middle of this section of the chain can be moved up and down a total distance of from <math>\frac{1}{2}</math> to 1 inch</li> <li>4. Check valve and ignition timing</li> <li>5. Reverse this order for re-assembly            Note: Set camshaft and crankshaft sprockets so that the four teeth marked O are the nearest together and line up</li> </ol>	
	<b>Material</b>	
	1-132402 Crankshaft Sprocket	
	1-148050 Camshaft Sprocket	
	1-137145 Generator Sprocket	
	1-147446 Chain	
	Same as 626	<b>640</b>
	<b>Material</b>	
	1-132402 Crankshaft Sprocket	
	1-148050 Camshaft Sprocket	
	1-137145 Generator Sprocket	
	1-147446 Chain	

**Front End Sprocket—Retime (Removing front cover when chain has jumped)**626 **M484**

Note: Use care in removal of bonnet so as not to scratch cowl. Use fender covers ST 130.

1. Drain cooling system and remove radiator
2. Remove fan belt and pulley
3. Remove damper
4. Remove motor front cover, nuts, using speed wrench
5. Jack up weight of engine (front end) to allow removal of motor front cover
6. Remove generator and sprocket
7. Set crankshaft and camshaft sprocket so that four teeth marked (90) are the nearest together and line up
8. Replace generator and sprocket support
9. Adjust chain tension
10. Reverse order of disassembling to reassemble
11. Retime ignition

**Material**

1-158668 Gear Cover Gasket

Same as 626

640

**Material**

1-158668 Gear Cover Gasket

**Generator Sprocket (Renew Cover Off)**626 **M485**

1. Remove generator and sprocket support
- Note: If a new sprocket support is used, charge material only to this operation
2. Install new sprocket
3. Replace generator and tighten using new gasket

**Material**

1-115274 Gasket

1-114883 Gasket

1-137145 Sprocket

Same as 626

640

**Material**

1-115274 Gasket

1-114883 Gasket

1-137145 Sprocket

**Generator Sprocket Support (Renew Cover Off)**626 **M486**

1. Remove generator and sprocket support
- Note: If a new generator sprocket is used, charge material only to this operation
2. Install new sprocket support using a new gasket
3. Replace generator and tighten

**Material**

1-142694 Support

1-115274 Gasket

1-114883 Gasket

Same as 626

640

**Material**

1-142694 Support

1-115274 Gasket

1-114883 Gasket

**M493 Motor Front Cover Felt Washer Renew** 626

Note: Use care in removal of fanbelt so as not to scratch cowling

1. Drain cooling system and remove head lamps and radiator
  2. Remove fan belt and damper
  3. Remove front cover bolts and nuts, using a speed wrench
  4. Jack up weight of engine (front end)
  5. Remove front cover
  6. Dismantle cover and install felt washer
  7. Rebuild the entire job
- Note: Be sure radiator pipes are in place
8. Adjust fan belt standard
  9. Adjust front end chain, report condition of front end chain

**Material**

- 1-147120 Washer
- 1-146997 Retainer

Same as 626

640

**Material**

- 1-147120 Washer
- 1-146997 Retainer

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**Crankcase Lower Half Renew**626 **M51**

1. Jack up front wheels, using jacks No. S. T. 155
  2. Drain crankcase lower half
  3. Disconnect crankcase oil level gauge
  4. Remove lower half and dismantle
  5. Assemble oil parts on new crankcase lower half
  6. Install new lower half and fill to level with fresh medium cylinder oil
- Note: Be sure all front cover bolts are tight so as to prevent oil leaks.

**Material**

- 1-158646 Lower Half  
 1-158701 Crankcase Gasket Left  
 1-158705 Crankcase Gasket Right  
 1-158266 Oil Gauge Gasket  
 1-158280 Oil Gauge Gasket  
 9 Qts. Oil

Same as 626

640

**Material**

- 1-158630 Lower Half  
 1-158756 Crankcase Gasket Left  
 1-158757 Crankcase Gasket Right  
 1-158266 Oil Gauge Gasket  
 1-158280 Oil Gauge Gasket  
 10 Qts. Oil

**Crankcase Lower Half Gaskets Renew**626 **M52**

1. Jack up front wheels, using jacks No. S. T. 155
  2. Drain oil from motor crankcase and drop lower half
  3. Remove old gaskets
  4. Supply and install new gaskets, using cup grease on one side
  5. Reassemble, reuse old oil
- Note: Be sure all front end cover bolts are tight so as to prevent oil leaks. If necessary to rework oil, add prime oil to operation.

**Material**

- 1-158704 Crankcase Gasket Left  
 1-158705 Crankcase Gasket Right

Same as 626

640

**Material**

- 1-158756 Crankcase Gasket Left  
 1-158757 Crankcase Gasket Right

**Crankcase Mud Guard Right or Left Renew**626 **M53**

Use fender cover S. T. 130

1. Remove old mud guard and salvage as many screws, nuts and washers as possible
2. Supply and install one new right or left crankcase mud guard

**Material**

- 1-158725 C. C. Mud Guard Right  
 or  
 1-158717 C. C. Mud Guard Left  
 Miscellaneous Screws, Nuts and Washers

Use fender cover S. T. 130

Same as 626

640

**Material**

- 1-158618 C. C. Mud Guard Left  
 or  
 1-158613 C. C. Mud Guard Right  
 Miscellaneous Screws, Nuts and Washers

## M55 Crankcase Mud Guards - Tighten Both 626

- Note: To protect enameled surfaces, use tender covers S. E. 130
1. Supply and install missing screws and tighten crankcase mud guards
  - Note: To hold crankcase mud guard to frame use  $\frac{1}{4}$  x 28 screws and use  $\frac{1}{4}$  x 20 screws to hold mud guard to crankcase

### Material

Miscellaneous

Same as 626

648

### Material

Miscellaneous

## M57 Crankcase Oil Gauge and Floor Assembly -Renew 626

1. Drain Oil from Crankcase
2. Remove Oil Level Gauge
3. Install New Gauge

### Material

1-158230 Floor  
1-158267 Gasket  
1-158277 Gasket

Same as 626

640

### Material

1-158230 Floor  
1-158267 Gasket  
1-158277 Gasket

## M59 Connecting Rod Bearings Take Up (Includes M510) 626

This specification applies to bearing work known as "strutting up," the need of which has already been determined by earlier examination.

1. Remove spark plugs to relieve all compression
  2. Remove cap screws or nuts and lock washers or coner pins from connecting rod
  3. Remove one cap at a time and dress down its surface plate. Replace connecting rod cap to crankshaft using blue or lampblack to locate high spots and draw up tight. Turn flywheel over by hand several times or use starter motor. Remove bearing, examine for high spots and scrape down. Continue this process until bearing is properly set to .001" clearance. Bearing should not have any up or down play. Motor should be free enough to turn over easily with flywheel by hand. If bearings are set up too snug there is a danger of scoring or burning them. Make an oil test to see that bearings have been properly fitted. See operation M76 for oil test. Back off cap screws or nuts to leave bearing free for fitting and trying each of the others in this operation. Pistons are not removed
  4. Draw up cap screws or nuts solid and fit lock washers or coner pins
- Note: Motor should be allowed to run under its own power for some time which will have a tendency to work in bearings properly.
5. Replace spark plugs and crankcase lower ball and fill to level with ten and one-half quarts of exclusive oil

### Material

16-5506 Lock Washers

Same as 626

640

### Material

**Crankcase Lower Half--Remove for Inspection and Replace**626 **M510**

1. Jack up front wheels, using jacks No. S. T. 155
2. Drain oil from motor crankcase and drop lower half
3. Remove oil screen and clean lower half thoroughly
4. Reassemble and replace lower half, using new gasket
5. Fill to level with fresh medium cylinder oil

Note: Be sure all front end cover bolts are tight so as to prevent oil leaks

**Material**

- 1-158705 Crankcase Gasket - Right  
 1-158704 Crankcase Gasket - Left  
 8 Qts. Medium Cylinder Oil

Same as 629

640

- 1-158786 Crankcase Gasket - Left  
 1-158787 Crankcase Gasket - Right  
 10 Qts. Medium Cylinder Oil

**Connecting Rod Bearings--Refit--Removing Connecting Rods (Includes M641)**626 **M511**

1. Remove one connecting rod cap at a time and rub down on surface plate. Use blue or lampblack to locate high spots and scrape down. Continue this process until bearings are properly fitted to .001" clearance. Bearings should not have any up and down play. If bearings are set up too snug, there is a danger of scoring or burning them. Make an oil test to see that bearings are properly fitted. For oil test see operation M76. Remove piston from cylinder to this operation.
2. After proper clearance is secured, back out cap screws or nuts on each to allow for testing to one side of the others.
3. Draw up all rod cap screws or nuts solid and in stone lock washers or cotter pins are in place. Motor should be free enough to turn over easily with starting crank when assembled.  
 Note: Motor should be allowed to run under its own power for some time, which will have a tendency to work in the bearings properly.
4. Test

**Material**

Same as 626

640

**Material****Main Bearings--Take Up (Includes M510)**626 **M512**

This specification applies only to such bearing work known as "strugging up" and only one cap can be removed and worked on at a time, the upper half remaining intact. Rear main bearing cap should not be filed. Bearing must be shrouned instead.

When there is evidence of having been run hot, or with improper lubrication, a scraping in and refitting operation which entails the removal and possibly the regrounding of the crankshaft is usually necessary. In such cases the entire motor should be taken out of chassis. An oil test and lifting and lowering the crankshaft in its bearings will indicate looseness at this point. This test is usually the result of the inspector's road report, when loose main bearings are suspected.

1. Remove oil manifold and remove cotter pins, nuts or cap screws holding on main bearing cap

**M512**

Cont.

2. Take off one cap at a time and rub down on surface plate. Use blue or lamp-black to locate high spots and scrape down. Repeat the operation until the bearing surface is smooth and touches the crankshaft at all points. Face true the cap is fitted, by a .001" thickness gauge lengthwise of cap as a guide for proper clearance. When a slight drag is felt remove gauge and replace cap, leaving nuts within a turn of being tight.

Note: Numbers on main bearing caps should be on left side of motor.

3. Treat each cap in the same manner.
4. Tighten all nuts on cap screws and fit new cotter pins on lock washers.
5. Replace oil manifold.

Note: Motor should be free enough to turn easily with start of crank.

**Material****(Includes M510)**

640

Same as 626, except that one (1) coat more oil is required.

**Material****M514**

**Connecting Rod Bearing—Renew One  
On Exchange Basis (Includes M510-M610)**

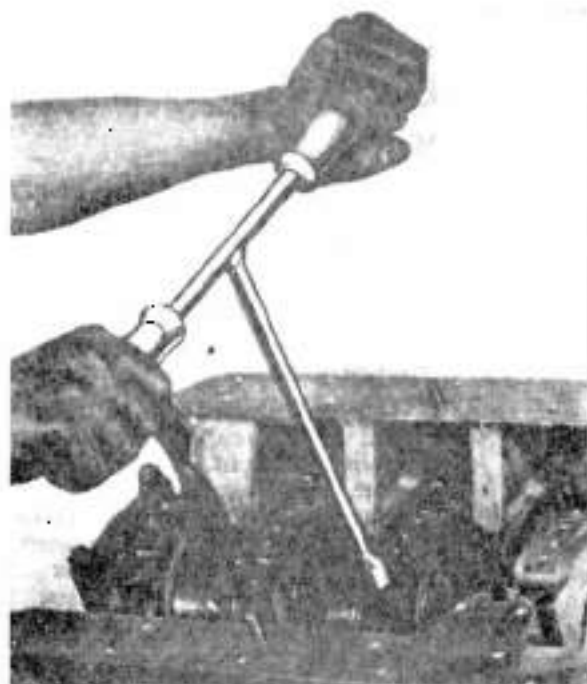
626

Note: When a bearing is burnt either from lack of lubrication or from having been set up too tight and not properly worked in, refitting new bearing (on exchange basis) is the only remedy. A second bearing that has been slightly roughened, but where ballite metal has not been burnt or run, can be refitted.

1. Remove connecting rod cap screws or bolts and nuts.  
Note: Slide connecting rod and piston assembly upward through cylinder bore, or remove wrist pin from connecting rod at the top of bore and make thorough inspection.  
Reassemble in the reverse order of removal.

**Connecting Rod Nut Wrench****Main Bearing Nut Wrench**

Tool No. S. T. 191—All Models  
Used on 640-645



Tool No. S. T. 192—All Models

## 2. Fit new rod to crankshaft

Note: Dress end of cap by rubbing on emery cloth laid on a surface plate. Adjust bearing, using blue or lampblack to locate high spots and scrape down.

3. Fit piston to new rod and rear bushing to size using a  $\frac{1}{16}$  inch expansion reamer. Piston pin should be fitted so that it can easily be pressed through bushing by hand without any side play. Space ring gaps evenly around piston

## 4. Assemble piston on new rod.

Note: Do not attempt to rebalabit old rods

**Material**

1-158648 Connecting Rod Assembly - Left (Exchange)

1-158647 Connecting Rod Assembly - Right (Exchange)

Same as 636

640

1-158388 Connecting Rod Assembly (Exchange)

**Main and Connecting Rod Bearings—  
Take Up (Includes M510-M610)**

626

**M515**

This operation is a combination of--connecting rod bearings take up and main bearings take up.

Note: Rear main bearing cap should not be filed. Bearing must be shimmed instead.

Note: Nutrients on main bearing cap should be on left side and rod bearing caps must be on right side. Place caps on surface plate and dress down. Replate connecting rod to crankshaft and dress up tight. Turn flywheel over by hand several times or use starter motor. Remove bearing, examine for high spots and scrape down. Continue this process until bearing is properly fitted to .001" clearance. Bearing should not have any up or down play. Motor should be free enough to rotate over easily with flywheel. If bearings are set up too snug there is a danger of scoring or burning turn. Make an oil test to see that bearings have been properly fitted. See operation M76 for oil test. Main bearings are fitted in same manner as connecting rod bearings.

**Material**

Same as 626

640

**Material****Connecting Rod Bearings -Renew All (On Exchange Basis)  
(Includes M611)**

626

**M516**

Note: When a bearing is burnt either from lack of lubrication or from having been set up too tight and not properly worked in, retitting new bearing on exchange basis, is the only remedy. A scored bearing that has been slightly roughened, but whereabbitt metal has not been striat or run, can be retitted.

## 1. Fit new rods to crankshaft

Note: Dress end of cap and rod by rubbing on emery cloth laid on a surface plate.

Adjust bearing, using blue or lampblack to locate high spots and scrape down.

Repeat the operation until the bearing surface is smooth and touches the crankshaft at all points until bearings are properly fitted to .001" clearance

## 2. Piston pin should be fitted so that it can easily be pressed through bushing by hand without any side play.

**Material**

4-158648 Connecting Rod Assemblies - Left (Exchange)

4-158647 Connecting Rod Assemblies -Right (Exchange)

Same as 626

640

**Material**

8-158388 Connecting Rod Assemblies

**M520** Connecting Rod Bearing Refit One (Includes M510) 626

1. Open all petcocks to relieve all compression
2. Pull connecting cap screws or bolts and nuts
3. Remove one cap and dress down on surface plate. Replace connecting rod cap to crankshaft, using blue or lampblack to locate high spots and draw up tight. Turn flywheel over by hand several times or use starter motor. Remove bearing, examine for high spots and scrape down. Continue this process until bearing is properly fitted to .001" clearance. Bearing should not have any up or down play.
4. Piston is not removed in this operation
5. Cotter connecting rod

**Material**

Same as 626

640

**Material****M521** Connecting Rod Align One (Rod Out) 626

1. Align one connecting rod and piston. This is one of the most important repair operations that can be performed on a motor.
2. See specification operation M641.  
The connecting rod with the piston must be tested for alignment by using aligning jig.  
Note: Mis-alignment produces knocks and causes vibration.

**Material**

Same as 626

640

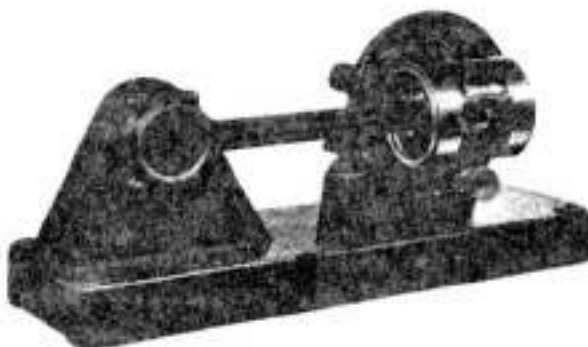
**Material****M522** Connecting Rods Align All (Rods Out) 626

1. Align all connecting rods and pistons. This is one of the most important repair operations that can be performed on a motor.  
The connecting rods with the piston must be tested for alignment by using aligning jig tool S. T. 87.  
Note: Mis-alignment produces knocks and causes vibration.

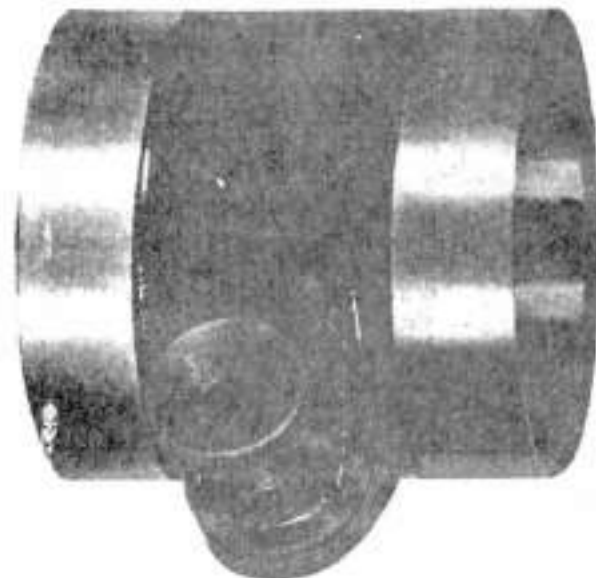
**Material**

Same as 626

640

**Material****Connecting Rod Aligning Jig Piston Sleeve**

Used on 640-645



**Rear Camshaft Bearing Leak Repair or Flywheel—Remove and Replace**626 **M540**

Note: Use seat covers S. T. 114 and leader covers S. T. 130

1. Remove toe pulls, toe board and floor board
2. Drop front end universal joint shaft and brake rods
3. Remove clutch housing screws and clutch housing bolts
4. Remove clutch and transmission unit and flywheel
5. Drain crankcase oil
6. Remove crankcase lower half
7. Drop rear main bearing cap and slip out clamp bolts at bottom one at a time and remove flywheel. If test is deemed necessary when inspecting for camshaft rear bearing leak, see operation M76
8. Install old flywheel in place and reassemble
9. Replace oil

Note: Be sure all new cotters are in place

**Material**

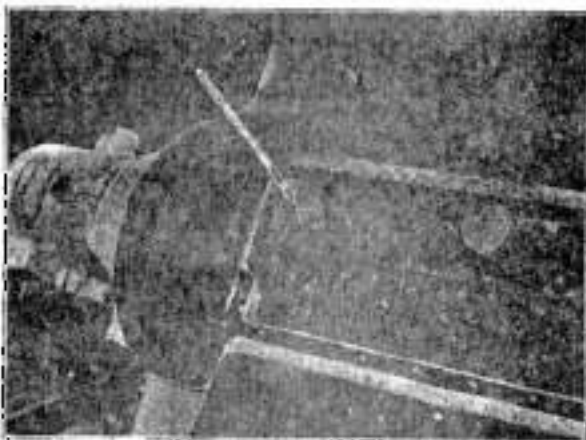
- 1-158704 Crankcase Gasket -Left  
1-158705 Crankcase Gasket -Right

Same as 626

640

**Material**

- 1-158786 Crankcase Gasket -Left  
1-158787 Crankcase Gasket -Right

**Camshaft Rear Bearing Cover Plate Wrench**

Tool No. S. T. 639

**Camshaft—Remove for Inspection and Replace (Includes M410)**626 **M541**

1. Remove generator and sparkler
2. Remove chain and camshaft gear (use puller S. T. 113)
3. Remove cylinder base nuts
4. Remove rocker lever housings

**M541**

Cont.

5. Remove dowel pins holding camshaft bearings in place, insert  $\frac{1}{4}$  x 28 bolt and tap lightly.
6. Remove front camshaft bearing and pull camshaft with bearings.
7. Remove set screws and bearing from camshaft.  
Note: Raise cylinder block to clear studs enough to allow removal of motor of pump shaft driving gear.
8. Replace camshaft and front bearing.  
Note: When installing new camshaft or bearings be sure to check end play, should not exceed .0017". Use thickness gauge behind camshaft front bearing adjusting plate.  
Care should be taken so that each bearing is returned to its original position. When reinserting dowel pins be sure that dowel pin holes in camshaft bearing line up with pin holes in crankcase and insert dowel pins.
9. Replace rocker lever bearings.
10. Replace camshaft gear.  
Note: Do not tighten camshaft sprocket nut too tight, this will eliminate camshaft end play.
11. Check valve timing by verifying marks "O" on crankshaft gear and camshaft gear. Marks should be directly opposite at nearest points on gears.
12. Replace timing chain and generator and adjust chain.  
Note: Adjust chain tension so that when all the slack of the chain is between the camshaft and generator sprockets, the middle of this section of the chain can be moved up and down a total distance of from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch.
13. Adjust tappets to .001" clearance with motor warm and E.T.C.

**Material**

1-158123 Rocker Lever Housing Gasket

Same as 626

640

**Material**

1-141687 Rocker Lever Housing Gasket

**M542 Camshaft Bearing—Front—Renew**

(Includes M410)

626

1. Remove generator and sprocket support.
2. Remove chain and camshaft sprocket, using puller S. T. 114.
3. Remove old bearing and install new.  
Note: If puller not removed in this operation. When installing new camshaft or bearings be sure to check end play, should not exceed .0017". Use thickness gauge behind camshaft front bearing adjusting plate.
4. Replace camshaft sprocket.
5. Replace timing chain and generator.
6. Adjust chain.  
Note: Adjust chain tension so that when all the slack of the chain is between the camshaft and generator sprockets, the middle of this section of the chain can be moved up and down a total distance of from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch.
7. Check valve and ignition timing.  
Note: Set camshaft and crankshaft sprockets so that the four teeth marked "O" are the nearest together or directly opposite one another.

**Material**

1-158032 Front Bearing

1-158140 End Plate

**Camshaft Bearing—Front—Renew**

(Includes M410)

640

Same as 626

**Material**

1-137029 Front Bearing



**Camshaft Rear Bearing—Renew  
(Includes M540)**626 **M543**

1. Remove rear camshaft bearing.
2. Install new camshaft rear bearing.

Note: Resize bearing to size, using an expansion reamer if necessary. Be sure to assemble bearing with the word "TOP" in upright position so as not to block the oil passage.

**Material**

1-158556 Rear Bearing .....

1-147237 Gasket .....

Same as 626

640

**Material**

1-158556 Re. Bearing .....

1-147237 Gasket .....

**Camshaft Intermediate Bearing—Front or Rear—Renew One  
(Includes M541)**626 **M544**

1. Supply and fit new intermediate bearing to camshaft on bench before installing to crankcase.

Note: Bearing should fit to camshaft so that shaft will turn free and with a clearance not to exceed .001". After bearings have been properly fitted the motor should be allowed to run idle under its own power for some time, which will have a tendency to work in the bearing properly. Use plenty of lubrication during this process, as the bearings which are set up too snug will heat up readily at first, therefore there is considerable danger of scoring or burning them.

**Material**

1-132735 No. 2 Bearing .....

or

1-158306 No. 3 Bearing .....

or

1-132737 No. 4 Bearing .....

or

1-132738 No. 5 Bearing .....

or

1-158307 No. 6 bearing .....

or

1-132740 No. 7 Bearing .....

Same as 626

648

**Material**

1-132738 No. 3 Bearing .....

or

1-132736 No. 4 Bearing .....

or

1-132737 No. 4 Bearing .....

or

1-132738 No. 5 Bearing .....

or

1-132739 No. 6 bearing .....

or

1-132740 No. 7 Bearing .....

## M546 Camshaft Bearings Renew All. (Includes M540-M551) 626

1. Place camshaft on bench and remove two set screws holding camshaft bearings together.
2. Supply and fit all new camshaft bearings.  
 Note: Fit bearings to camshaft before installing to crankcase. Do not get bearings too tight, as the danger of scoring or burning them is very great, until bearings are properly worked in. Bearing clearance should not exceed .001".  
 Note: When replacing dowel pins be sure that dowel pin hole in camshaft bearings line up with pin hole in crankcase and insert dowel pin.

### Material

1-158140 End Adjusting Plate  
 1-158932 Front Bearing  
 1-132735 No. 2 Bearing  
 1-158366 No. 3 Bearing  
 1-132737 No. 4 Bearing  
 1-132738 No. 5 Bearing  
 1-158307 No. 6 Bearing  
 1-132739 No. 7 Bearing  
 1-158654 Rear Bearing  
 1-147237 Bearing Gasket  
 1-131880 Bearing Cover Plate Gasket.

Same as 626

640

### (Includes M540-M551)

### Material

1-137029 Bearing Front  
 1-132735 No. 2 Bearing  
 1-132736 No. 3 Bearing  
 1-132737 No. 4 Bearing  
 1-132738 No. 5 Bearing  
 1-132739 No. 6 Bearing  
 1-132740 No. 7 Bearing  
 1-158656 Rear Bearing  
 1-147237 Gasket  
 1-131880 Gasket

## M547 Flywheel Renew On Exchange Basis. 626

Note: To protect exposed surfaces use seat covers S. T. 244 and fender covers S. T. 430.

1. Remove pedal pads, floor board and toe board.
2. Drop front end universal joint shaft.
3. Remove clutch casting screws and clutch forcing units and U-bolts.
4. Remove clutch and transmiss. or main and fly wheel bottom cover.
5. Drain oil.
6. Take off crankcase lower half.
7. Drop rear main bearing cap and slip out flange bolts at bottom one at a time and remove flywheel.
8. Install new flywheel in place, reassemble and replace oil.  
 Note: Pack clutch shaft front bushing with grease, and be sure all new cotter pins are in place.

### Material

1-158332 Flywheel Assembly  
 1-158781 Crankcase Gasket  
 1-158785 Crankcase Gasket

Same as 626

640

### Material

1-158336 Flywheel Assembly  
 1-158786 Crankcase Gasket  
 1-158787 Crankcase Gasket

**Camshaft Renew (Includes M549)**626 **M549**

1. Supply and install new camshaft

**Material**

1-157984 Camshaft

Same as 626

640

**Material**

1-147256 Camshaft

**Cylinder Head and Crankcase Lower Half--  
Remove, Inspect, Report and Reassemble**626 **M553**

Note: Use fender covers S. T. 130. Use care when removing head so as not to damage cowl paint.

1. Drain three gallons from cooling system
2. Remove Delco head and wiring assembly
3. Remove upper hose and cylinder head nuts
4. Remove cylinder head, clean carbon from head and piston
5. Drain oil lower half
6. Jack up front end of chassis
7. Remove lower half and inspect and report
8. Reverse order of disassemble to reassemble
9. Refill with new oil

**Material**

1-158293 Cylinder Head Gasket

1-158701 Crankcase Gasket

1-158705 Crankcase Gasket

8 Qts. Oil

Same as 626

640

**Material**

1-159721 Cylinder Head Gasket

1-158786 Crankcase Gasket

1-158787 Crankcase Gasket

10 Qts. Oil

**Main Bearings - Refit (Motor Out)**626 **M583**

1. Remove oil manifold and pull cutter pin on main bearing
2. Take up one bearing and cap at a time
3. Remove crankshaft if necessary
4. When there is evidence of having been run hot, or with improper lubrication, scraping in and refitting operation which entails the removal and regrinding of the crankshaft is usually necessary. Refit the bearings and caps one at a time and rub down on surface plate. Use file or lampblack to locate high spots and scrape down. Repeat the operation until the bearing surface is smooth and touches the crankshaft at all points. Each time the cap is fitted lay a .001" thickness gauge lengthwise in it as a guide for proper clearance. When a slight drag is felt, remove gauge and replace cap. Treat each cap in the same manner.

Note: Number on main bearing caps should be on left side of motor. Check rear main bearing for proper end play .002" clearance

**Material**

9-114681 Gasket

Same as 626

640

**Material**

9-114684 Gasket

### **M584 Main Bearing Front—Renew** **626** (Includes M051)

1. Remove generator and front end chain.
2. Remove oil manifold and all main bearing caps.
3. Lift out crankshaft.
4. Supply and fit new front main bearing assembly and adjust all main bearings.  
Note: Place bearing on surface plate and dress down. Re-plate to crankshaft, turn flywheel over by hand several times or use starter motor. Remove bearing, examine for high spots and scrape down. Continue this process until bearing is properly fitted to .001" clearance. Check rear main bearing for proper end play .002" clearance.  
The number on main bearing caps should be toward left side of motor.
5. Tighten bearing caps and center pins.
6. Replace oil manifold, generator and front end chain.

1-164819 Front Main Bearing

(Includes M051)

**640**

Same as 426

#### **Material**

1-164820 Front Main Bearing

### **M585 Main Bearing Rear—Renew** **626** (Includes M051)

1. Remove generator and front end chain.
2. Remove oil manifold and all main bearing caps.
3. Lift out crankshaft.
4. Supply and fit new rear main bearing assembly.  
Note: Place bearing on surface plate and dress down. Re-plate to crankshaft, turn flywheel over by hand several times or use starter motor. Remove bearing, examine for high spots and scrape down. Continue this process until bearing is properly fitted to .001" clearance. Check rear main bearing for proper end play .002" clearance.
5. Adjust all main bearings.
6. Tighten all bearing caps and center pin.  
Note: The number on main bearing caps should be to the left side of motor.
7. Replace oil manifold, then blowing out with air.
8. Replace generator and chain.  
Note: Rear main bearing cap should not be shimmed. Bearing should be shimmed instead.

#### **Material**

1-164822 Rear Main Bearing  
2-158670 Bearing Cap Hole Plugs

Same as 426

**640**

#### **Material**

1-164822 Rear Main Bearing  
2-158670 Bearing Cap Hole Plugs

### **M586 Main Bearing Center—Renew** **626** (Includes M051)

1. Remove generator and front end chain.
2. Remove oil manifold and all main bearing caps.
3. Lift out crankshaft.
4. Supply and fit new center main bearing assembly.

Note: Place bearing on surface plate and dress down. Replace to crankshaft, turn flywheel over by hand several times or use starter motor. Remove bearing, examine for high spots and scrape down. Continue this process until bearing is properly fitted to .001" clearance. Check rear main bearing for proper end play, .002" clearance.

5. Adjust all main bearings.
6. Tighten all bearing caps and cotter pin.  
Note: The numbers on main bearing caps should be to left side of motor.
7. Replace oil manifold after blowing out with air.
8. Replace generator and chain.

**Material**

1-164816 Center Main Bearing

Same as 626

640

**Material**

1-164816 Center Main Bearing

**Main Bearing Intermediate—Renew One (Includes M051)**626 **M587**

1. Remove generator and front end chain.
2. Remove oil manifold and all main bearing caps.
3. Lift out crankshaft.
4. Supply and fit new intermediate bearing.  
Note: Place bearing on surface plate and dress down. Replace to crankshaft, turn flywheel over by hand several times or use starter motor. Remove bearing, examine for high spots and scrape down. Continue this process until bearing is properly fitted to .001" clearance.
5. Adjust all main bearings.
6. Tighten all bearing caps and cotter pin.  
Note: The number on main bearing caps should be to the left side of motor.
7. Replace oil manifold after blowing out with air.
8. Replace generator and chain.

**Material**

1-164817 Intermediate Main Bearing

Same as 626

648

**Material**

1-164818 Intermediate Main Bearing

**Main Bearings—Renew All (Motor Out)**626 **M588**

1. Remove oil manifold and pull cotter pin.
2. Remove all main bearings.
3. Remove crankshaft from motor.
4. Install all new main bearings. The upper and lower halves of the bearings are tightened in place with the crankshaft removed and aligned reamed. The reaming cutters are adjusted to ream the bearings to size. If the crankshaft diameter is 2.375" plus .0005" to .0005", then care should be taken to adjust the reamers to 2.376" plus .0005" to .0005" so it will give .001" clearance. The crankshaft should then be returned to the crankcase and the bearing caps returned to their original position and tightened securely. The crankshaft should turn over very easily by hand and must not bind in any way. If the crankshaft turns too hard, do not loosen up the nut on the bearing caps to remedy this. Remove the crankshaft and scrape the upper and lower half of the bearing for high spots. Continue this process until bearings are properly fitted to .001" clearance. Before scraping bearings, remove all

**M588**

Cont.

metal chips and see that the oil grooves are not clogged and are deep enough. Numbers on main bearing caps should be on left side of motor. Check rear main bearing for proper end play .002" clearance

**Material**

1-164820 Bearing Assembly	Front
1-164816 Bearing Assembly	Center
1-164822 Bearing Assembly	Rear
4-164821 Bearing Assembly	Intermediate
2-164817 Bearing Assembly	Intermediate

Same as 626

640

**Material**

1-164820 Bearing Assembly	Front
4-164821 Bearing Assembly	Intermediate
2-164818 Bearing Assembly	Intermediate
1-164816 Bearing Assembly	Center
1-164822 Bearing Assembly	Rear

**M589 Main and Connecting Rod Bearings—Renew All (Includes M051) (On Exchange Basis)**

626

1. Remove generator and front end chain
2. Remove oil manifold and all main bearing caps
3. Lift out crankshaft and place in vise
4. Supply and fit all new rod bearing assemblies  
Note: Rear main bearing cap should not be filed. Bearing must be shimmed instead
5. Supply and fit all new main bearing assemblies, using blue or lampblack to locate high spots and then scrape down. Each time a cap is fitted lay a .001" thickness gauge in the cap as a guide for proper clearance and when a slight drag is felt remove gauge and replace cap  
Note: Number on main bearing caps should be on left side and numbers on connecting rod bearing should be on right side of motor
6. Tighten main bearing caps and cotter pin  
Note: Bearings should be free enough to turn easily by hand. Motor should be allowed to run under its own power for some time, which will have a tendency to work in bearings properly
7. Reassemble rods and align, using jig S. T. 108 and cotter pin
8. Replace oil manifold
9. Replace generator and chain  
Note: Front end chain should be adjusted so that when all the slack of the chain is between the generator and crankshaft sprockets, this section of the chain can be moved up and down a total distance of from  $\frac{1}{2}$  to 1 inch  
Note: Ream connecting rod piston pin bushings to size, using a  $\frac{3}{4}$  or  $\frac{1}{8}$  inch expansion reamer. Piston pin should be fitted so that it can easily be pressed through bushing by hand without any side play

**Material**

1-164822 Rear Main Bearing
1-164819 Front Main Bearing
1-164816 Center Main Bearing
4-164821 Intermediate Main Bearings
2-164817 Intermediate - Long
4-158648 Connecting Rod (Exchange Basis)
4-158647 Connecting Rod (Exchange Basis)

Same as 626

640 **M589**  
Cont.**Material**

8-158388 Connecting Rod Bearing .  
 4-164821 Intermediate Main Bearing - Short  
 2-164818 Intermediate Main Bearings- Long  
 1-164820 Main Bearing - Front .  
 1-164816 Main Bearing - Center  
 1-164822 Main Bearing - Rear

**Main Bearings - Take Up Lower Half  
(Motor Out)**626 **M591**

This specification applies only to such bearing work known as "stugging up" and only one cap can be removed and worked on at a time, the upper half remaining intact.

When there is evidence of having been run hot, or with improper lubrication, a scraping in and refitting operation which entails the removal and possibly the regrinding of the crankshaft is usually necessary.

1. Remove all manifold and pull cotter pins on main bearing
2. Take off one cap at a time and rub down on surface plate. Use blue or lampblack to locate high spots and scrape down. Repeat the operation until the bearing surface is smooth and touches the crankshaft at all points. Each time the cap is fitted, lay a .001" thickness gauge lengthwise in it as a guide for proper clearance. When a slight drag is felt, remove gauge and replace cap. Treat each cap in the same manner.

Note: Numbers on main bearing caps should be on left side of motor

**Material**

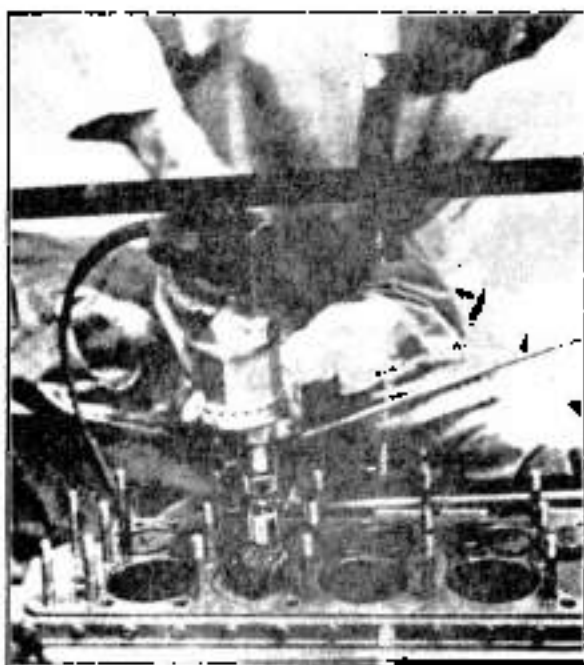
9-114684 Gaskets

Same as 626

640

**Material**

9-114684 Gaskets



Carbon Brush  
Tool No. S. T. 204



Carbon Brush - Flared Type  
Tool No. S. T. 205



**Cylinder Head Renew****626 M61**

Note: Use fender covers S. T. 130 to protect enamel surface from oil and scratches. Be careful when removing head so as not to damage body.

1. Remove head and drain three gallons from cooling system.  
Note: Preserve anti-freeze solution if used.
2. Remove thermostat tube.
3. Disconnect radiator to flush the rod at front end and remove radiator inlet hose.
4. Remove wiring assemblies and Delco head.  
Note: Before removing Delco head turn motor to No. 1 cylinder firing center. Lift off head without disturbing position of drive shaft. Mark drive shaft so it can be reassembled in its original position. To reassemble, motor must again be turned to No. 1 firing center, drive shaft replaced in accordance with mark and head replaced with rotor on No. 1 contact.
5. Take off cylinder head nuts and lift off head, using tool S. T. 121.
6. Transfer thermostat assembly, petcocks, etc., to new head and reassemble on motor.
7. Rebuild motor.
8. Refill cooling system with clean water or anti-freeze solution.
9. Test for leaks.  
Note: Tighten cylinder head nuts before car leaves station.

**Material**

- 1-158269 Cylinder Head  
1-158293 Head Gasket  
1-17855 Thermostat Valve Seat Gasket

Same as 625

**640****Material**

- 1-158261 Cylinder Head  
1-159721 Head Gasket  
1-117855 Thermostat Valve Seat Gasket

**Cylinder Head Gasket Renew****626 M62**

Note: Use fender covers S. T. 130. Use care when removing head so as not to damage condenser.

1. Drain three gallons from cooling system. If anti-freeze solution is used preserve the gain.
2. Remove thermostat tube.
3. Remove Delco head and wiring assembly. Before removing Delco head, turn motor to No. 1 cylinder firing center. Lift off head without disturbing position of drive shaft, marking drive shaft so it can be reassembled in its original position. To reassemble, motor must again be turned to No. 1 firing center, drive shaft replaced in accordance with mark and head replaced with rotor on No. 1 contact.
4. Loosen radiator and remove radiator fan and cylinder head, using cylinder head lifter tool No. S. T. 121.
5. Clean carbon and relief cracks.  
Note: Use electric drill and carbon brushes S. T. 204 and S. T. 205 to clean carbon from cylinder head and pistons. Use tool S. T. 211 to clean relief cocks. Use air hose to remove all loose carbon.
6. Reverse order of disassembling to reassemble. Use new gaskets, refill cooling system with clean water or use anti-freeze solution.  
Note: Be sure cylinder head nuts are drawn tight before car leaves station.

**Material**

- 1-158293 Head Gasket

Same as 625

**640****Material**

- 1-159721 Head Gasket

## M66 Cylinder Base Gasket Renew 626

Note: Use fender covers S. T. 130 to protect enameled surfaces from oil and scratches. Be careful when removing hood so as not to damage body

1. Remove hood and drain cooling system  
Note: Preserve the anti-freeze solution
2. Loosen lower water hose and remove upper hose
3. Disconnect exhaust pipe and remove fan belt
4. Remove cylinder to crankcase stud nuts, using special wrench
5. Hoist cylinder block, using block lifter S. T. 107 to clear studs enough to allow removal of old gasket and fitting of new. Mortised joints can be cut in gasket to permit passage around connecting rods
6. Reassemble  
Note: Check cylinder to see that it does not project over oil return groove and cause oil leak at valve cover plate
7. Adjust tappets not less than .004" with motor warm and idling

### Material

1-158088 Base Gasket

Same as 626

640

### Material

1-132702 Base Gasket

## M67 Cylinder Head Nuts Tighten 626

1. Use socket wrench S. T. 201 and draw down all cylinder head nuts  
Note: Care should be taken so as not to strip stud or nut

### Material

Same as 626

640

### Material

## M68 Cylinder Base Nuts Tighten 626

Note: Use fender covers to protect surfaces

1. Remove valve cover plates
2. Tighten all cylinder base nuts (use special socket wrench)  
Note: See that cylinder block does not project over valve tappet oil return groove and cause oil leak at valve cover plate
3. Adjust valve tappets not less than .004" clearance with motor warm and idling.  
Note: See that adjusting screws are properly locked. Before replacing valve cover plate be sure center stud is tight so it will not lie against distributor drive shaft and cause a rattle
4. Replace valve cover plates

### Material

Same as 626

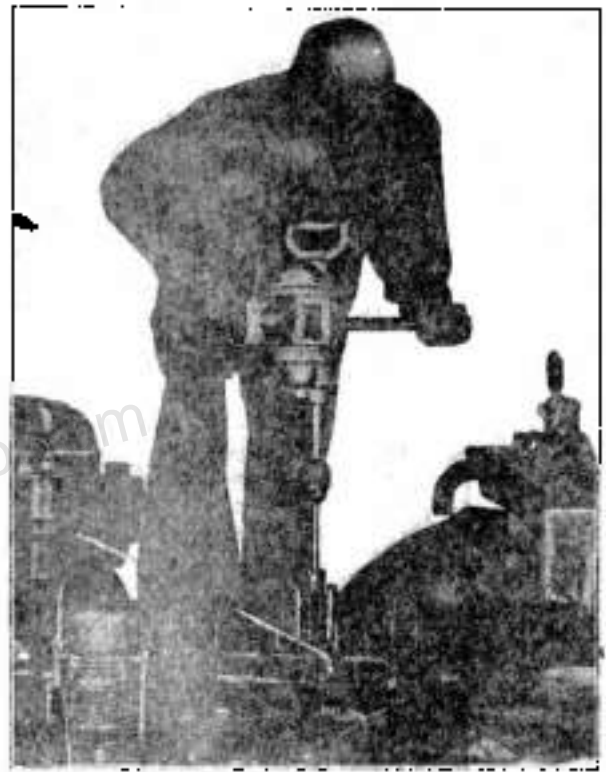
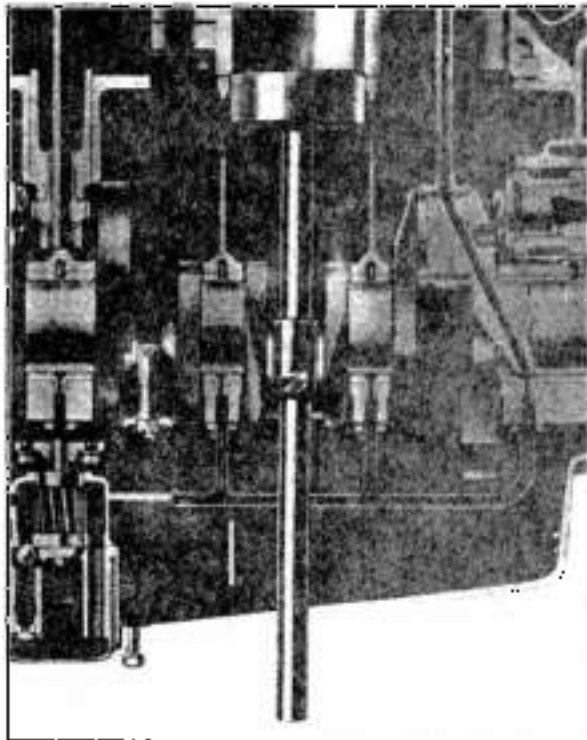
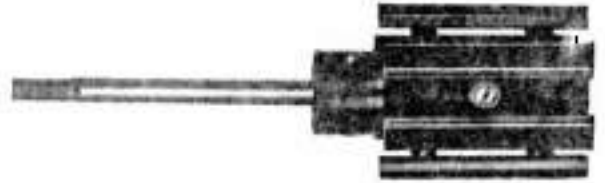
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### Material

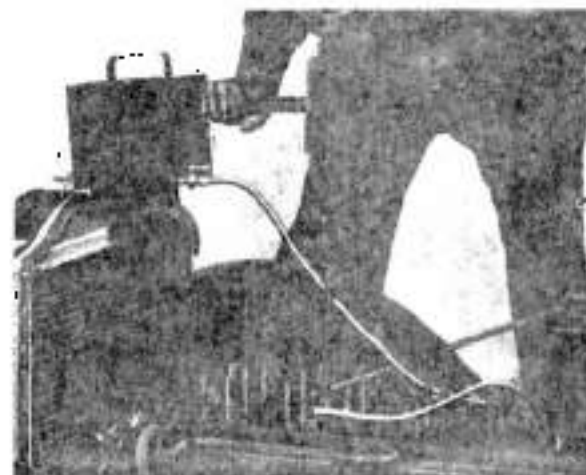
Kerosene Drain Cup and Tube Assembly for  
Cylinder Grinder



Cylinder Grinder (Hurto)



Kerosene Feed Can for Cylinder Grinder



Tool No. S. T. 455

## M602 Cylinder—Hone One and Install Piston Assembly (Includes M510-M610)

626

Note: See operation M601 for specifications.

1. Remove piston and connecting rod
2. Hone cylinder using Hutto grinder
 

Note: Caution should be taken to prevent grindings from getting into bearings. Always remember to start the Hutto grinder at the bottom of the bore which is larger, due to taper condition of cylinder caused by piston ring travel, then grinding it larger using the bottom as guide, working the grinder upward then remove the ridge left by ring travel.

Always grind one bore a few strokes to discover the real condition of the cylinder bore. Then get a piston to fit cylinder out of stock. Use a dial gauge or mikes. Some mechanics use a piston as a gauge. How to determine proper fit of piston; place piston into cylinder placing .0015" feeler alongside of piston. Under this condition, the piston must move its entire travel without sticking. The pistons are fitted to .0015" clearance. It should be possible to pull out the feeler from between piston and cylinder wall with grip of finger and thumb only. Do not let the grinder run free in the bore. Make it go on by turning up on the adjusting screw at top of grinder, use sufficient kerosene, as constant flow must be had at all times while grinding.
3. After completing the grinding operation, see that the cylinder and piston are washed with kerosene and then blown off thoroughly with air hose
4. Ream piston pin bushing to size using reamer, tool No. S. T. 614 or S. T. 616 and align connecting rod

### Material

1-163182	Piston Assembly	.0001" Oversize	$\frac{3}{8}$ " Pin	.....
1-163183	Piston Assembly	.0005" Oversize	$\frac{3}{8}$ " Pin	.....
1-163184	Piston Assembly	.0010" Oversize	$\frac{3}{8}$ " Pin	.....
1-163185	Piston Assembly	.0015" Oversize	$\frac{3}{8}$ " Pin	.....
1-163186	Piston Assembly	.0020" Oversize	$\frac{3}{8}$ " Pin	.....
1-163187	Piston Assembly	.0030" Oversize	$\frac{3}{8}$ " Pin	.....
1-163188	Piston Assembly	.0045" Oversize	$\frac{3}{8}$ " Pin	.....

Same as 626

640

### Material

1-148786	Piston Assembly	.0001" Oversize	$\frac{3}{8}$ " Pin	.....
1-148785	Piston Assembly	.0005" Oversize	$\frac{3}{8}$ " Pin	.....
1-148784	Piston Assembly	.0010" Oversize	$\frac{3}{8}$ " Pin	.....
1-148783	Piston Assembly	.0015" Oversize	$\frac{3}{8}$ " Pin	.....
1-148782	Piston Assembly	.0020" Oversize	$\frac{3}{8}$ " Pin	.....
1-148781	Piston Assembly	.0030" Oversize	$\frac{3}{8}$ " Pin	.....
1-148780	Piston Assembly	.0045" Oversize	$\frac{3}{8}$ " Pin	.....

**Cylinder - Hone All - Install Piston Assemblies -  
Grind Valves and Tune Motor (Includes M641)**
626 **M603**
**1. Hone cylinder using Hutto grinder**

Note: Caution should be taken to prevent grinding from getting into bearings. Always remember to start the Hutto grinder at the bottom of the bore which is larger, due to taper condition of cylinder caused by piston ring travel, then grinding it larger using the bottom as guide, working the grinder upward then removing the ridge left by ring travel.

Always grind one turn a few strokes to discover the real condition of the cylinder bore, then get a piston to fit cylinder out of stock, use a dial gauge or mikes. Some mechanics use a piston as a gauge.

How to determine proper fit of piston: Place piston into cylinder placing .0015" feeler alongside of piston. Under this condition the piston must move its entire travel without sticking. Pistons are fitted to .0015" clearance. It should be possible to pull out the feeler from between piston and cylinder wall with grip of finger and thumb only.

Do not let the grinder run free in the bore, make it green by turning up on the adjusting screw at the top of grinder. Use sufficient kerosene as a constant flow must be had at all times while grinding.

2. After completing the grinding operation, see that the cylinder and piston are washed with kerosene and then blown off thoroughly with an air hose.
3. Ream piston pin bushing to size using reamers, tool No. S. T. 614 or S. T. 616
4. Clean carbon, grind valves and tune motor. (See operation M24 for specification)

**Material**

1-163193	Carburetor Gasket
8-163182	Piston Assembly (.003" Oversize $\frac{7}{8}$ " Pin)
	or
8-163183	Piston Assembly (.005" Oversize $\frac{7}{8}$ " Pin)
	or
8-163184	Piston Assembly (.010" Oversize $\frac{7}{8}$ " Pin)
	or
8-163185	Piston Assembly (.015" Oversize $\frac{7}{8}$ " Pin)
	or
8-163186	Piston Assembly (.020" Oversize $\frac{7}{8}$ " Pin)
	or
8-163187	Piston Assembly (.030" Oversize $\frac{7}{8}$ " Pin)
	or
8-163188	Piston Assembly (.045" Oversize $\frac{7}{8}$ " Pin)

Same as 626

640

**Material**

1-144450	Carburetor Gasket
8-148786	Piston Assembly (.003" Oversize $\frac{7}{8}$ " Pin)
	or
8-148785	Piston Assembly (.005" Oversize $\frac{7}{8}$ " Pin)
	or
8-148784	Piston Assembly (.010" Oversize $\frac{7}{8}$ " Pin)
	or
8-148783	Piston Assembly (.015" Oversize $\frac{7}{8}$ " Pin)
	or
8-148782	Piston Assembly (.020" Oversize $\frac{7}{8}$ " Pin)
	or
8-148781	Piston Assembly (.030" Oversize $\frac{7}{8}$ " Pin)
	or
8-148780	Piston Assembly (.045" Oversize $\frac{7}{8}$ " Pin)

**M604** Cylinder—Hone One and Renew Piston  
(Piston Out)

626

1. Hone cylinder, using Hartig grinder.

Note: Caution should be taken to prevent grinding from getting into bearings. Always remember to start the Hartig grinder at the bottom of the bore which is larger, due to taper condition of cylinder caused by piston ring travel; then grinding it larger using the bottom as guide working the grinder upward, then removing the ridge left by ring travel.

Always grind one-hone a few strokes to discover true condition of the cylinder bore. Then get a piston out of stock. Use a dial gauge or mike. Some mechanics use a new piston as a gauge.

How to determine proper fit of piston: Place piston into cylinder placing .0015" feeler alongside of piston. Under this condition the piston must move its entire travel without sticking. The piston is fitted to .0015" clearance. It should be possible to pull out the feeler from between piston and cylinder walls with grip of finger and thumb only.

Do not let the grinder run free in the bore. Make it green by turning up on the adjusting screw at top of grinder. Use sufficient kerosene as constant flow should be had at all times while grinding.

2. After completing the grinding operation see that the cylinder and piston are washed with kerosene and then blown off thoroughly with air hose.
3. Ream piston pin bushing to size, using reamers tool No. S. T. 614 or S. T. 616.

**Material**

1-163182 Piston Assembly +.003" Oversize  $\frac{1}{2}$ " Pin

or  
1-163183 Piston Assembly +.005" Oversize  $\frac{1}{2}$ " Pin

or  
1-163184 Piston Assembly +.010" Oversize  $\frac{1}{2}$ " Pin

or  
1-163185 Piston Assembly +.015" Oversize  $\frac{1}{2}$ " Pin

or  
1-163186 Piston Assembly +.020" Oversize  $\frac{1}{2}$ " Pin

or  
1-163187 Piston Assembly +.030" Oversize  $\frac{1}{2}$ " Pin

or  
1-163188 Piston Assembly +.045" Oversize  $\frac{1}{2}$ " Pin

7-0000 or 626

6-10

**Material**

1-148786 Piston Assembly +.005" Oversize  $\frac{1}{2}$ " Pin

or  
1-148785 Piston Assembly +.008" Oversize  $\frac{1}{2}$ " Pin

or  
1-148784 Piston Assembly +.010" Oversize  $\frac{1}{2}$ " Pin

or  
1-148783 Piston Assembly +.015" Oversize  $\frac{1}{2}$ " Pin

or  
1-148782 Piston Assembly +.020" Oversize  $\frac{1}{2}$ " Pin

or  
1-148781 Piston Assembly +.030" Oversize  $\frac{1}{2}$ " Pin

or  
1-148780 Piston Assembly +.045" Oversize  $\frac{1}{2}$ " Pin

**M605** Cylinder—Hone Two and Renew Pistons  
(Pistons Out)

626

1. Hone cylinder using Hartig grinder and
2. (See operation M604 for specifications)

**Material**

- 2-163182 Piston Assembly +.003" Oversize  $\frac{7}{8}$ " Pin  
 or  
 2-163183 Piston Assembly +.005" Oversize  $\frac{7}{8}$ " Pin  
 or  
 2-163184 Piston Assembly +.010" Oversize  $\frac{7}{8}$ " Pin  
 or  
 2-163185 Piston Assembly +.015" Oversize  $\frac{7}{8}$ " Pin  
 or  
 2-163186 Piston Assembly +.020" Oversize  $\frac{7}{8}$ " Pin  
 or  
 2-163187 Piston Assembly +.030" Oversize  $\frac{7}{8}$ " Pin  
 or  
 2-163188 Piston Assembly +.045" Oversize  $\frac{7}{8}$ " Pin

Same as 626

640

**Material**

- 2-148786 Piston Assembly +.003" Oversize  $\frac{7}{8}$ " Pin  
 or  
 2-148785 Piston Assembly +.005" Oversize  $\frac{7}{8}$ " Pin  
 or  
 2-148784 Piston Assembly +.010" Oversize  $\frac{7}{8}$ " Pin  
 or  
 2-148783 Piston Assembly +.015" Oversize  $\frac{7}{8}$ " Pin  
 or  
 2-148782 Piston Assembly +.020" Oversize  $\frac{7}{8}$ " Pin  
 or  
 2-148781 Piston Assembly +.030" Oversize  $\frac{7}{8}$ " Pin  
 or  
 2-148780 Piston Assembly +.045" Oversize  $\frac{7}{8}$ " Pin

**Cylinders—Hone All and Renew Pistons  
(Block Off)**

1. Hone cylinder using Harto grinder tool.
2. See operation M601 for specification.

**Material**

- 8-163182 Piston Assembly +.003" Oversize  $\frac{7}{8}$ " Pin  
 or  
 8-163183 Piston Assembly +.005" Oversize  $\frac{7}{8}$ " Pin  
 or  
 8-163184 Piston Assembly +.010" Oversize  $\frac{7}{8}$ " Pin  
 or  
 8-163185 Piston Assembly +.015" Oversize  $\frac{7}{8}$ " Pin  
 or  
 8-163186 Piston Assembly +.020" Oversize  $\frac{7}{8}$ " Pin  
 or  
 8-163187 Piston Assembly +.030" Oversize  $\frac{7}{8}$ " Pin  
 or  
 8-163188 Piston Assembly +.045" Oversize  $\frac{7}{8}$ " Pin

Same as 626

640

**Material**

- 8-148786 Piston Assembly +.003" Oversize  $\frac{7}{8}$ " Pin  
 or  
 8-148785 Piston Assembly +.005" Oversize  $\frac{7}{8}$ " Pin  
 or  
 8-148784 Piston Assembly +.010" Oversize  $\frac{7}{8}$ " Pin  
 or  
 8-148783 Piston Assembly +.015" Oversize  $\frac{7}{8}$ " Pin  
 or  
 8-148782 Piston Assembly +.020" Oversize  $\frac{7}{8}$ " Pin  
 or  
 8-148781 Piston Assembly +.030" Oversize  $\frac{7}{8}$ " Pin  
 or  
 8-148780 Piston Assembly +.045" Oversize  $\frac{7}{8}$ " Pin

**M605**

Cont.

626 **M606**

**M606**8-148784 Piston Assembly (.001" Oversize  $\frac{1}{8}$ " Pin)

or

**Conf.**8-148783 Piston Assembly (.005" Oversize  $\frac{1}{8}$ " Pin)

or

8-148782 Piston Assembly (.020" Oversize  $\frac{1}{8}$ " Pin)

or

8-148781 Piston Assembly (.030" Oversize  $\frac{1}{8}$ " Pin)

or

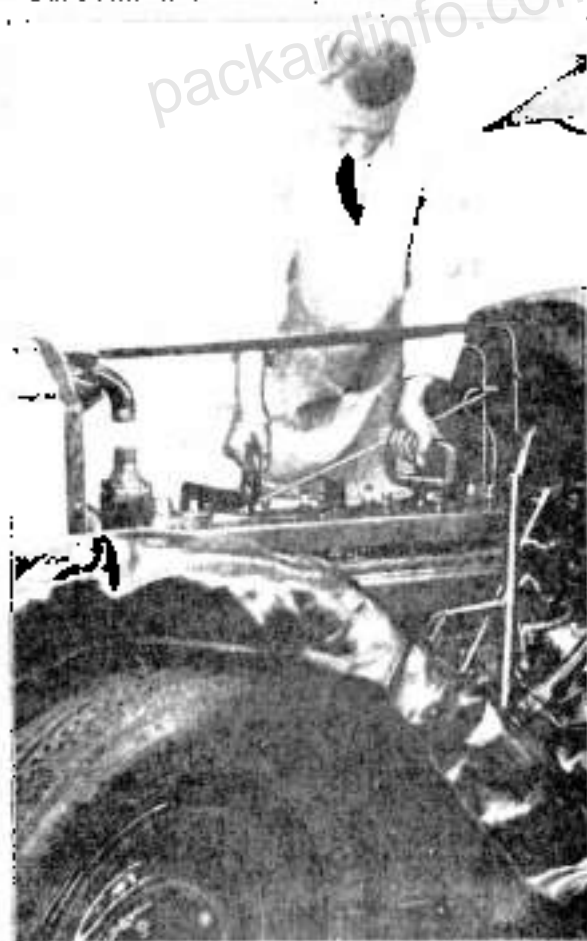
8-148780 Piston Assembly (.015" Oversize  $\frac{1}{8}$ " Pin)**M610****Cylinder Head — Remove for Inspection,  
Clean Carbon and Replace Head**

626

Note: Use tender covers S. T. 130. Use care when removing head, so as not to damage cold pipe.

1. Drain three gallons from cooling system. If anti-freeze solution is used, preserve the same.
2. Remove thermometer tube.
3. Remove Delco fuel and wiring assembly. Before removing Delco head, turn motor to No. 1 firing center. Lift off head without disturbing position of drive shaft; mark drive-leaf so it can be reassembled in its original position. To reassemble motor must again be turned to No. 1 firing center, drive shaft replaced in accordance with mark and head replaced with rotor on No. 1 contact.
4. Loosen and remove upper case.
5. Remove nuts, holding cylinder head in place.

Tool No. S. T. 121 — Cylinder Head Lifter





6. Remove cylinder head, using cylinder head lifter tool S. T. 121
7. Clean carbon and relief cocks
8. Inspect cylinder  
 Note: Use electric drill and carbon brushes S. T. 204 and S. T. 205 to clean carbon from cylinder head and pistons.  
 Use air hose to remove all loose carbon
9. Reverse order of disassembling to reassemble—use new gaskets, refill cooling system with clean water or use anti-freeze solution  
 Note: Be sure cylinder head nuts are drawn tight before car leaves station

**M610**

Cont.

**Material**

1-158293 Cylinder Head Gasket

Same as 626

640

1-159721 Cylinder Head Gasket

**Cylinder Head Remove, Inspect  
Cylinder Bore and Replace**

626

**M611**

Note: Use fender covers S. T. 130 to protect unpainted surfaces from oil and scratches. Be careful when removing head so as not to damage body

1. Drain three gallons from cooling system  
 Note: Preserve the anti-freeze solution if used
2. Remove Delco head and wiring assembly
3. Remove thermometer tube  
 Note: Before removing Delco head turn motor to No. 1 cylinder firing center and lift off head without disturbing position of drive shaft. Mark drive shaft so that it can be assembled in its original position. To reassemble, the motor must again be turned to No. 1 firing center, drive shaft replaced in accordance with mark and head replaced with motor on No. 1 contact
4. Loosen hose clamps and remove cylinder head  
 Note: Use speed wrench to loosen cylinder head nuts
5. Clean carbon and relief cocks  
 Note: Use electric drill and carbon brushes S. T. 204 and S. T. 205 to clean carbon from cylinder head and piston. Use air hose to remove all loose carbon
6. Inspect cylinder bore with inside micrometers
7. Reverse order of disassembling to reassemble
8. Refill cooling system  
 Note: Be sure that cylinder head nuts are drawn tight before car leaves service station

**Material**

1-158293 Cylinder Head Gasket

Same as 626

640

**Material**

1-159721 Cylinder Head Gasket

**Cylinder Head Stud- Renew One  
(Includes M610)**

626

**M615**

1. Remove old stud
2. Supply and install new stud  
 Note: When threads in cylinder, holding cylinder head stud, are stripped, drill cylinder to  $\frac{3}{8}$  and tap out  $\frac{3}{8}$  x 18. Care should be taken so as not to drill through boss, causing water leak. Install plug No. 67541, tighten securely and cut flush with cylinder, using a hacksaw blade. Dress down the remaining surface of plug with a flat file or hone. Drill  $\frac{3}{8}$  hole in plug, tap  $\frac{3}{8}$  x 20 and install standard stud

**Material**

1-125485 Stud

Same as 626

640

**Material**

1-125485 Stud

## M630 Cylinder Block—Remove for Inspection and Replace (Includes M610) 626

1. Drain cooling system and remove radiator
2. Remove vacuum tank and disconnect gas lines and control rods
3. Disconnect exhaust pipe  
Note: Loosen and tilt radiator forward as far as possible and remove fan
4. Remove fan belt
5. Remove valve cover plate
6. Remove cylinder to crankcase stud nuts, using S. T. 105  
Note: If the connecting rods are out and block is off, replace piston and connecting rod assemblies into cylinder block before replacing block on crankcase as this is the proper way to replace rods with block off.
7. Remove cylinder block, using block lifter S. T. 107  
Note: Pistons are not removed in this operation
8. Inspect block and report condition  
Note: Check cylinder to see that it does not project over oil return grooves and cause an oil leak at valve cover plate
9. Reassemble block in place, using new base gasket. Care should be taken in lowering block over pistons

### Material

1-158088 Cylinder Base Gasket

Same as 626

640

1-132702 Cylinder Base Gasket

## M631 Piston Rings—Renew on One Piston (Includes M510 and M610) 626

1. Remove connecting rod and piston assembly
2. Remove old rings from one piston and clean grooves  
Note: To remove piston rings, place a feeler gauge back of the rings and, guiding the feeler around the piston, with one hand, force the rings out of the groove with the other hand. Remove the piston rings over the top of the piston. It will be found easier to remove the top ring first, then the center and lastly the bottom. Be careful when handling a piston—its walls are light and may be easily sprung, causing the piston to be out of round.
3. Select oversize rings to fit cylinder  
Note: In checking ring gap, place ring in cylinder and push it down, using the old piston until it rests snugly against piston at all points. It may be necessary to file ring gaps to .006" clearance when new or oversize. Do not remove more metal than necessary.
4. Fit rings to piston grooves  
Note: See that ring rolls evenly around the piston groove. If the ring is properly fitted, a slight drag should be felt. If it is too loose try another ring. If too thick, lay a sheet of very fine emery cloth on a surface plate and slide ring back and forth until proper fit has been secured. Fit each ring separately.
5. Install rings on piston  
Note: Rings must not stick in any position or have any up and down play.
6. Square ring gaps evenly around the piston  
Note: Align corners top rods, using aligning jig. A straight edge should be laid along the lip of piston to make sure that it does not project. If it sticks out it can be tapped in with a soft hammer or block of wood.
7. Replace connecting rod and piston assembly, using piston ring compressing sleeve  
Note: The number on connecting rod and cap must be to right side of motor (See operation M611 for specifications.)

### Material

1-164609 Ring Slotted .003

3-163881 Ring Oversize .003"

3-163882 Ring Oversize .005"  
 3-164630 Ring Oversize .010"  
 3-164631 Ring Oversize .015"

Same as #26

(Includes M510-M610)

Using one Tectur ring in lower ring groove

#### Material

1-166700 Ring Steel  
 3-166699 Ring Oversize .005"  
 3-143415 Ring Oversize .010"  
 3-144595 Ring Oversize .010"  
 3-143314 Ring Oversize .015"

# M631

Cont.

640

#### Piston Ring Expander



**Motor Overhaul Complete - Starter Motor, Generator, Hone and Install Piston - Renew Main and Crankshaft Bearings (Includes M641 - Labor Only)**

# M633

626

1. Specifications are the same as M605 operation except hone cylinder to proper size. (See operation M604) Fit and install set of alloy piston assemblies.
2. Overhaul starter motor and generator. (See operation E221 and E331)
3. Remove the old main bearing and install new main bearing and align rear.
4. Renew crankshaft bearings.

Note: Be sure to make thorough check on crankshaft and crankshaft. If it is sprung to any extent, place it between centers of lathe. By using dial indicator, the exact amount of spring to be removed can be determined and if it is sprung to any extent, renew the crankshaft.

The remaining centers are adjusted to rear of bearing to size. If the crankshaft diameter is 2.375" plus .0005" to .0005", then care should be taken to adjust the bearings to 2.376" plus .0005" to .0005" so it will give .001" clearance. The crankshaft should then be returned to the lathe so that the bearings caps returned to their original position and tightened securely.

The crankshaft should turn over very easily by hand and must not bind in any way. If the crankshaft turns too hard, do not loosen up the nut on the bearing caps to remedy this. Remove the crankshaft and scrape the

**M633**

Cont.

upper and lower half of the bearing for high spots. Continue this process until bearings are properly fitted to .001" clearance. Check the rear main bearing for proper end play .002" clearance. The same as above applies to camshaft bearing.

All parts listed should not be required.

Note: The connecting and wrist pin bushing projects out on one side. Connecting rod number 111 one is called right. Wrist pin bushing should be toward the front of motor. Connecting rod number 112 two is called left. Wrist pin bushing should be toward rear of motor. The other end of connecting rod wrist pin bushing must be flush with rod, etc.

**Material**

- 1-164819 Main Bearing Assembly - Front
- 4-164821 Main Bearing Assembly - Intermediate - Short
- 2-164817 Main Bearing Assembly - Long
- 1-164816 Main Bearing Assembly - Center
- 1-164822 Main Bearing Assembly - Rear
- 1-159032 Camshaft Bearing - Front
- 1-132735 No. 2 Bearing
- 1-159306 No. 3 Bearing
- 1-132737 No. 4 Bearing
- 1-132738 No. 5 Bearing
- 1-158307 No. 6 Bearing
- 1-132740 No. 7 Bearing
- 1-158656 Rear Bearing
- 2-158214 Exhaust Manifold Gasket - Small
- 2-158034 Exhaust Manifold Gasket - Intermediate
- 2-158033 Exhaust Manifold Gasket - Large
- 1-129045 Water Pump Body Gasket
- 1-177116 Camshaft Driving Chain
- 1-114883 Generator support Gasket
- 16-158723 Rocker Levers
- 2-138423 Rocker Levers Housing Gaskets
- 1-158088 Cylinder to Crankcase Gasket
- 1-158668 Cover Cover Gasket
- 1-115274 Generator Gasket
- 1-163395 Carburetor Gasket
- 1-15733 Carburetor Body Plug Gasket
- 1-116626 Carburetor Support Plug Gasket
- 9-114681 Oil Manifold Gasket
- 16-117289 Valve Springs
- 2-163181 Alloy Piston Assembly
- 1-158293 Cylinder Head Gasket
- 1-167608 Water Pump Pack
- 8-158222 Piston Pin Bushing
- 1-158704 Crankcase Gasket
- 1-158705 Crankcase Gasket
- 4-158648 Connecting Rod Lockwashers
- 4-158647 Connecting Rod Lockwashers
- 4-158035 Inlet Valve
- 4-158039 Exhaust Valve
- 8 Qts. Cylinder Oil

Miscellaneous

Same as 626

640

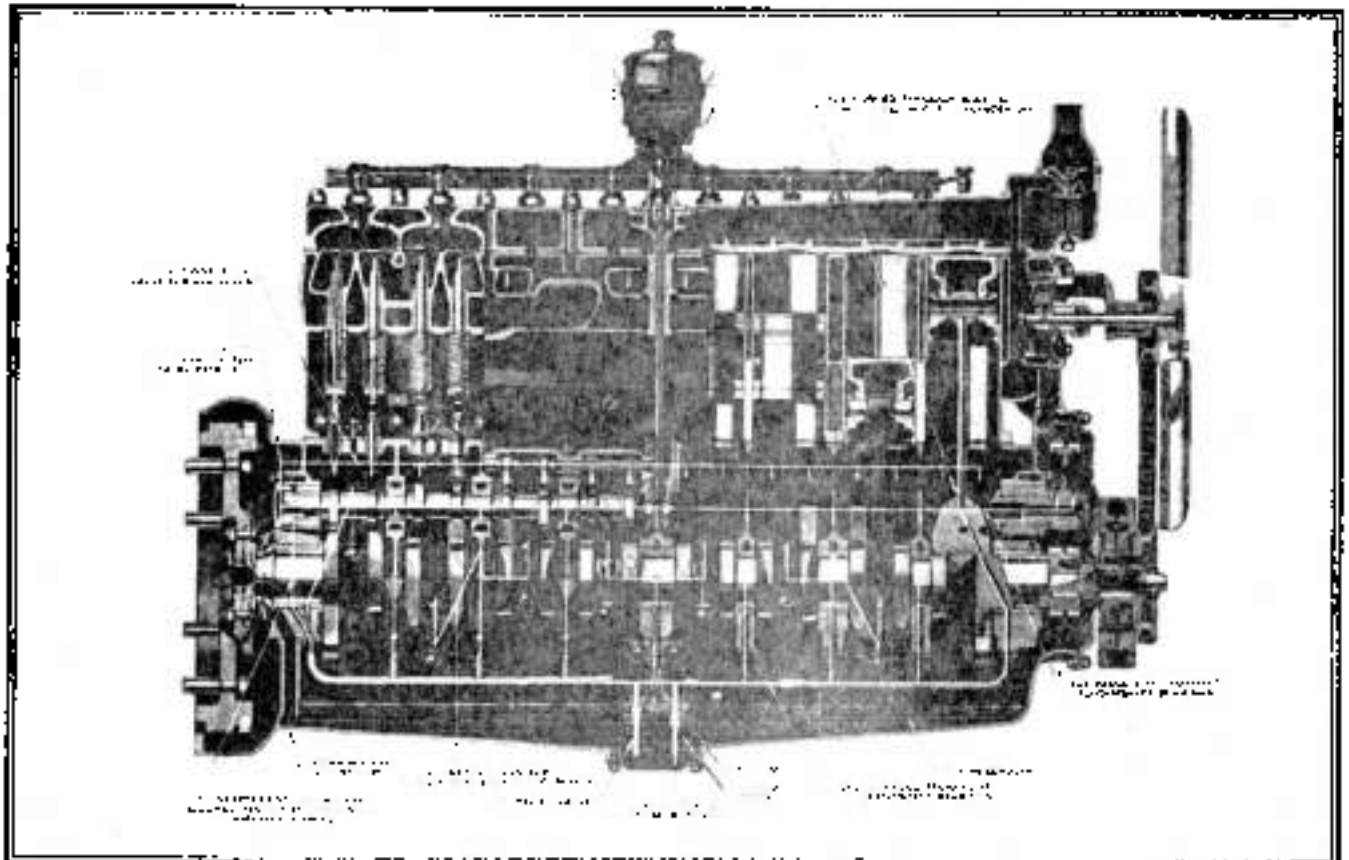
All parts listed should not be required.

**Material**

- 1-164820 Main Bearing Assembly - Front
- 4-164821 Main Bearing Assembly - Intermediate - Short
- 2-164818 Main Bearing Assembly - Long
- 1-164816 Main Bearing Assembly - Center
- 1-164822 Main Bearing Assembly - Rear

- 1-137029 Camshaft Bearing—Front
- 1-132735 No. 2 Bearing
- 1-132736 No. 3 Bearing
- 1-132737 No. 4 Bearing
- 1-132738 No. 5 Bearing
- 1-132739 No. 6 Bearing
- 1-132740 No. 7 Bearing
- 1-158656 Rear Bearing
- 2-141478 Exhaust Manifold Gasket—Small

**M633**  
Cont.



- 2-141436 Exhaust Manifold Gasket—Intermediate
- 1-141437 Exhaust Manifold Gasket—Large
- 1-129047 Water Pump Body Gasket
- 1-142446 Camshaft Driving Chain
- 1-114883 Generator Support Gasket
- 16-158724 Rocker Levers
- 2-141887 Rocker Lever Housing Gaskets
- 1-132762 Cylinder to Crankcase Gasket
- 1-158669 Cover Cover Gasket
- 1-131711 Cylinder Water Inlet Flange Gasket
- 1-115273 Generator Gasket
- 1-141446 Carburetor Gasket
- 1-43934 Carburetor Lock Plug Gasket
- 1-141636 Carburetor Strainer Plug Gasket
- 9-114684 Oil Manifold Gasket
- 16-147286 Valve Springs
- 8-148778 Alloy Piston Assemblies
- 1-159721 Cylinder Head Gasket

**M633**

Cont.

- 1- 67618 Water Pump Packing
- 8-156648 Piston Pin Bushings
- 1-158786 Crankcase Gasket
- 1-158787 Crankcase Gasket
- 8-158388 Connecting Rod Exchange
- 4-146989 Inlet Valve
- 4-146988 Exhaust Valve
- 10 Qts. Cylinder Oil
- Miscellaneous

**M635**

Cylinder and Piston Assembly, Standard Pins and Bushings, Supply and Install (Includes M641) (Labor Only)

626

The price of overhauling starter motor and generator is not included in the price of this operation.

Note: Protect surfaces from oil, grease and scratches by using covers for fenders, seats, doors, wheel and steering wheel. Be careful when removing hood, so as not to damage body.

1. Check oil at gauge
2. Drain cooling system, preserve anti-freeze solution and remove head lamp assembly, radiator tie rod, wiring assembly, spark plugs, fan belt, water pump, distributor head and cylinder head, using cylinder head lifter S. T. 121
3. Take off carburetor assembly and clean and adjust.  
Note: Carburetor adjustment. Set air valve adjusting nuts so that the valve has  $\frac{3}{8}$  of an inch drop on the inside spring on 626 models. On the 640 model the valve has a  $\frac{1}{2}$  inch drop on the inside spring. Set outside spring so that with the throttle closed and spark retarded, the motor operates smoothly.
4. Remove exhaust manifold, using wrench S. T. 101.  
Note: If car is equipped with heater add operation M955
5. Remove cylinder base nuts, using cylinder base nut wrench
6. Remove cylinder block, using block lifter S. T. 107 and take out valves, springs, push rods and set screws, using valve lifter S. T. 220
7. Clean carbon, using an electric drill and carbon brushes S. T. 504 and S. T. 205 to clean carbon from cylinder head. Use tool No. S. T. 211 to clean relief cocks. Use air hose to remove all loose carbon
8. Drop lower half of crankcase and remove connecting rods
9. Blow out oil lines, clean oil pump and adjust oil pressure.  
Note: The pressure of the oil pump works directly against the spring and ball check. To increase the pressure on gauge it is necessary to increase the spring tension, and to decrease the pressure, to have the tension of spring. Gauge should register from 20 to 50 pounds
10. Clean lower half of crankcase and wash in oil thoroughly using power washer and air dryer
11. Grind valves in standard block and assemble.  
Note: Be sure that grinding compound is removed from cylinder and valve ports
12. Replace valves and pins
13. Take up main and connecting rod bearings.  
Note: Remove one cap at a time and dress down on surface plate. Replace connecting rod cap to crankshaft, using blue or tan dye to locate high spots and draw up tight. Turn fly wheel over by hand several times or use starter motor. Remove bearing, examine for high spots and scrape down. Continue this process until bearing is properly fitted to .001" clearance. Bearing should not have any up or down play. Motor should be free enough to turn over easily with fly wheel by hand. If bearings are set up too snug, there is a danger of scoring or burning them. Make an oil test to see that bearings have been properly fitted. See operation M70 for oil test. Back off nuts to leave bearing free for fitting and trying each of the others on this operation. Numbers on connecting rods and caps should be on right side of motor
14. Reassemble rods with pistons, rings, pins and bushings.  
Note: After fitting the pistons to the connecting rods a further check should be made to see that rods are lined up properly. Use aligning jig S. T. 87.

Pistons should be fitted so that they will rock back and forth on the pins. Piston pins fitted too tightly are likely to freeze and score the piston and cylinder.

**M635**  
Cont.

Note: The connecting rod wrist pin bushing prevents oil on one side. Connecting rod number (1) one is called right. Wrist pin bushing should be toward the front of motor. Connecting rod number (2) two is called left. Wrist pin bushing should be toward rear of motor. The other end of connecting rod wrist pin bushing must be flush with rod, etc.

15. Ream bushings to size, using a  $\frac{3}{4}$  or  $\frac{7}{8}$ " expansion reamer. Piston pins should be fitted so that they can just be pressed through bushings by hand and without any up-and-down play.

Note: When reaming piston pin bushings care should be taken not to allow the reamer to chatter, as the bushing should be perfectly smooth.

16. Replace connecting rods to motor, using a piston ring compressing sleeve. Note: See that the ring rolls entirely around the piston groove. If the rings are properly fitted a slight drag should be felt.

17. Remove camshaft rocker lever housings, replace worn levers and pins and replace assembly.

18. Remove front gear cover and renew chain and overhaul vibration damper. Note: Adjust chain tension so that when all the slack of the chain is between the camshaft and generator sprockets, the middle of this section of the chain can be moved up and down a total distance of from  $\frac{1}{2}$  to 1 inch.

19. Install cylinder block and adjust tappets standard to not less than .004" clearance with motor warm and idling.

20. Paint cylinder head.

21. Replace cylinder head, using a new gasket.

Note: Slaters should never be placed on a gasket when installing a cylinder head. Cup grease should be applied on both sides to seal gasket.

22. Replace distributor head and adjust points. (Renew points if necessary.)

Note: The contact points will require both attention or refiling. They may be very rough when they become badly burnt so as to cause missing. They should be trued so that the contact surfaces are exactly parallel. Adjust contact points so that the gap of .015" to .020" is secured at their greatest separation.

23. Renew ignition. See operation E114.

24. Replace and adjust spark plugs to  $\frac{1}{8}$ " gap (Renew plugs if necessary.)

Note: When replacing spark plugs be sure that gaskets are in position.

25. Replace water pump and fan belt. (See operation M847 for belt adjustment.)

Note: Before replacing water pump, take end play out of water pump shaft by shimming thrust button. End play should not exceed .010".

26. Refill cooling system with water or anti-freeze solution.

27. Fill motor crankcase to level with fresh oil and test.

Note: Under no circumstances should a motor after an overhaul be run at high speed. Racing the motor is entirely injurious and may cause serious trouble.

28. Adjust tappets to .004" clearance with the motor warm and idling.

Note: Be sure cylinder head nuts are down tight and water pump and base connections do not leak before car leaves service station.

Be sure that valve tappet adjusting screw lock nut is properly locked.

29. Replace valve cover plate.

Note: \$172.15, \$181.15, \$198.65 are the estimated zero prices of parts required to reconstruct the motor. All parts listed should not be required.

#### Material

1-164501 Cylinder and Piston Assembly (Standard $\frac{3}{8}$ " Pin)	.....
1-158703 Crankcase Gasket - Right	.....
1-158705 Crankcase Gasket - Left	.....
1-147446 Camshaft Driving Chain	.....
1-115274 Generator Support Gasket	.....
1-163199 Radiator Outlet Hose (Use $\frac{3}{4}$ " of 195739)	.....
8-159721 Camshaft Rocker Lever	.....
2-158650 Rocker Lever Pin	.....
12-132179 Valve Push Rod Set Screw	.....

**M635**

Cont.

8-147447	Push Rod Guide	
1-158088	Cylinder to Crankcase Gasket	
1-158668	Gear Cover Gasket	
1-162201	Radiator Inlet Hose (Use 3/8" of 96739)	
1-137145	Generator Sprocket (Open Flywheel)	
1-132402	Crankshaft Sprocket	
1-148650	Camshaft Sprocket	
2-147269	Valve Spring	
2-158039	Exhaust Valve	
2-158035	Inlet Valves	
8-132177	Valve Push Rod	
2-158648	Connecting Rods (Exchange)	
2-158647	Connecting Rods (Exchange)	
1-129047	Water Pump Body Gasket	
1-114883	Generator Sprocket Support to Crankcase Gasket	
8-158222	Piston Pin Bushings	
2- 19796	Contact Arm Assembly, North East	
2- 19959	Contact Screw Assembly, North East	
2-142711	Spark Plugs	
2-158214	Exhaust Manifold Gasket	
2-158034	Exhaust Manifold Gasket	
1-158033	Manifold Gasket	
1-132585	Exhaust Pipe to Manifold Gasket	
1-121711	Cylinder Water Inlet Flange Gasket	
1- 50669	Oil Pump Relief Valve Ball	
2-158123	Rocker Lever Housing Gasket	
1 Gal.	Kerosene	
8 Qts.	Cylinder Oil	
	Miscellaneous	

**Cylinder and Piston Assembly, Standard Pins and Bushings, Supply and Install (Includes M641) (Labor Only)**

648

Note: The price of overhauling the starter motor and generator is not included in the price of this operation.

Specifications same as 626.

Note: \$182.15, \$191.15, \$211.05 are the estimated zone prices of parts required to recondition the motor. All parts listed should not be required.

**Material**

1-164805	Cylinder and Piston Assembly (Standard)	
2-141478	Exhaust Manifold to Cylinder Gasket	
2-141436	Exhaust and Intake Manifold to Cylinder Gasket	
1-141437	Exhaust Manifold to Cylinder Gaskets	
1-141535	Exhaust Pipe Gasket	
1-147446	Camshaft Driving Chain	
1-163199	Radiator Outlet Hose (Use 6/4" of 96739)	
1-121711	Cylinder Water Inlet Flange Gasket	
2-131888	Rocker Lever Pins	
16-132179	Valve Push Rod Set Screws	
8-147447	Valve Push Rod Guides	
8-158723	Rocker Levers	
1-132702	Cylinder to Crankcase Gasket	
1-158786	Crankcase Gasket (Left)	
1-158787	Crankcase Gasket (Right)	
1-158668	Gear Cover Gasket	
1-162201	Radiator Inlet Hose (Use 3/8" of 96739)	
1-146988	Exhaust Valve	
1-146989	Inlet Valves	
1-114883	Generator Sprocket Support to Crankcase Gasket	
1-129047	Water Pump Body Gasket	
8-158648	Piston Pin Bushings	



1-137145 Generator Sprocket (Owen-Dynere) .....	
1-115274 Generator Gasket.....	
or	
1-132402 Crankshaft Sprocket .....	
1-148060 Camshaft Sprocket .....	
2-147289 Valve Springs .....	
8-132177 Valve Push Rods.....	
or	
2-158368 Connecting Rod (Exchange).....	
2- 19796 Contact Arm Assembly (North East)	
2- 19959 Contact Screw Assembly (North East)	
2-142711 Spark Plugs.....	
1- 5069 Oil Pump Relief Valve Ball.....	
2-131887 Rocker Lever Housing Gaskets.....	
1 Gal. Kerosene.....	
10 Qrs. Medium Cylinder Oil .....	
Miscellaneous.....	

**M635**

Cont.

**Cylinder and Piston Assembly—Supply  
On Exchange Basis and Install (Includes M641) (Labor Only)**

626

**M636**

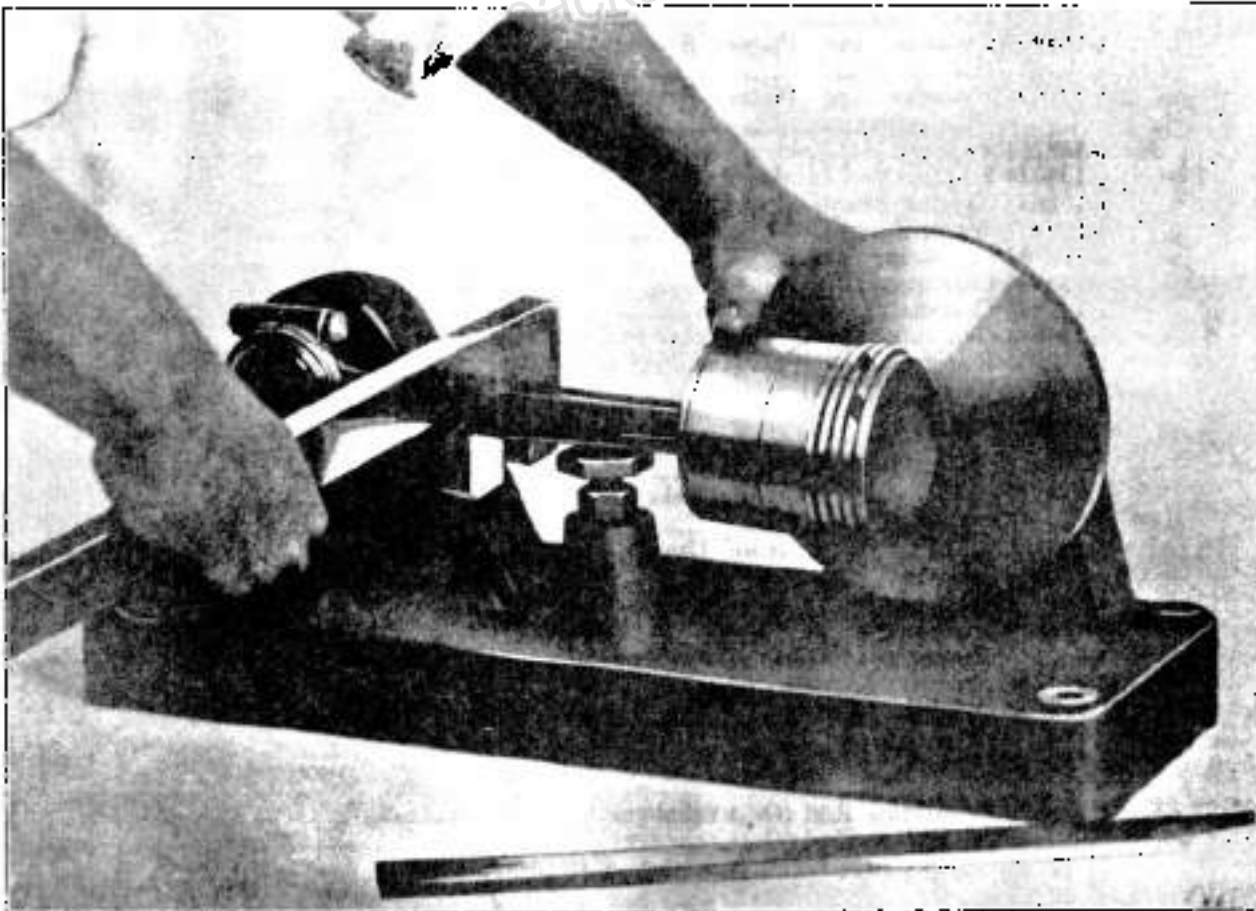
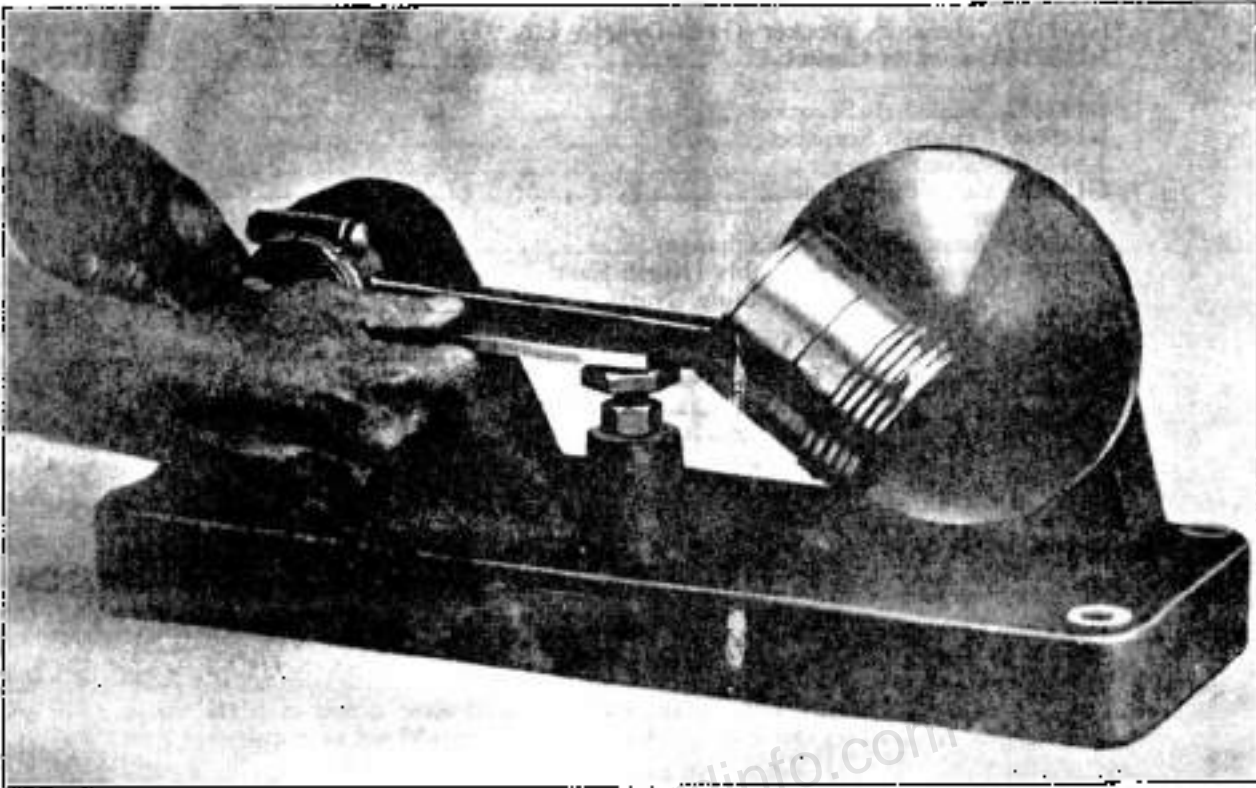
Note: The price of overhauling starter motor or generator is not included in the price of this operation.

See operation M635 for specifications.

Note: \$111.05, \$117.05, \$120.05 are the estimated zone prices of parts required to recondition the motor. All parts listed should not be required.

**Material**

1-164802 Cylinder and Piston Assembly .015" Oversize (Exchange).....	
1-164803 Cylinder and Piston Assembly .050" Oversize (Exchange) .....	
1-164804 Cylinder and Piston Assembly .045" Oversize (Exchange) .....	
2-158214 Exhaust Manifold to Cylinder Gaskets.....	
2-159034 Exhaust and Intake Manifold to Cylinder Gasket .....	
1-158013 Exhaust Manifold to Cylinder Gaskets .....	
1-129047 Water Pump Body Gasket .....	
1-158704 Crankcase Gasket .....	
1-154705 Crankcase Gasket .....	
1-147446 Camshaft Driving Chain .....	
1-114884 Generator Sprocket Support to Crankcase Gasket .....	
1-162201 Radiator Inlet Hose (Use 3 $\frac{3}{4}$ " of 96739) .....	
16-132179 Valve Push Rod Screws .....	
8-158723 Rocker Levers .....	
2-158050 Rocker Lever Pins.....	
8-147447 Valve Push Rod Guides.....	
1-158058 Cylinder to Crankcase Gasket .....	
1-158668 Gear Cover Gasket.....	
1-163199 Radiator Outlet Hose (Use 6 $\frac{3}{4}$ " of 96739) .....	
2-158039 Exhaust Valves .....	
2-158035 Inlet Valves.....	
1-171711 Cylinder Water Inlet Flange Gasket .....	
1-137145 Generator Sprocket (Owen-Dynere) .....	
1-115274 Generator Gasket .....	
1-132402 Crankshaft Sprocket .....	
1-148050 Camshaft Sprocket .....	
2-147289 Valve Springs .....	
8-132177 Valve Push Rods .....	
2-158648 Connecting Rod (On Exchange).....	
1-158647 Connecting Rod (On Exchange).....	
1- 19796 Contact Arm Assembly (North East) .....	



S. T. 87 Count. Aligning Rig. Used Only with S. T. 87.

1- 19959 Control Screw Assembly (North East)	.....	.....
2-142711 Spark Plugs	.....	.....
1- 5069 Oil Pump Relief Valve Ball	.....	.....
1-163395 Carburetor to Manifold Gasket	.....	.....
1-132585 Exhaust Pipe Flange Front Gasket	.....	.....
2-152184 Rocker Lever Housing Gaskets	.....	.....
1 Gal. Kerosene	.....	.....
8 Qts. Cylinder Oil	.....	.....
Miscellaneous	.....	.....

**M636**  
Cont.

**Cylinder and Piston Assembly - Supply on Exchange Basis and Install - Includes M641 (Labor Only)**

640

Note: The price of overhauling starter motor and generator is not included in the price of this operation.

See operation M635 for specifications.

Note: \$117.95, \$123.65, \$146.35 are the estimated prices of parts required to recondition the motor. All parts listed should not be required.

**Material**

1-164806 Cylinder and Piston Assembly .015" Oversize (Exchange)	.....	.....
1-164807 Cylinder and Piston Assembly .030" Oversize (Exchange)	.....	.....
1-164808 Cylinder and Piston Assembly .045" Oversize (Exchange)	.....	.....
2-142479 Exhaust Manifold to Cylinder Gaskets	.....	.....
2-142439 Exhaust and Intake Manifold to Cylinder Gasket	.....	.....
1-142437 Exhaust Manifold to Cylinder Gaskets	.....	.....
1-129047 Water Pump Body Gasket	.....	.....
1-158787 Crankcase Gasket - Right	.....	.....
1-158786 Crankcase Gasket - Left	.....	.....
1-147446 Crankshaft Driving Chain	.....	.....
1-114855 Generator Sprocket Support to Crankcase Gasket	.....	.....
1-162201 Radiator Inlet Hose - Use 3/4" of 96736	.....	.....
16-142179 Valve Push Rod Screws	.....	.....
8-158723 Rocker Levers	.....	.....
2-131888 Rocker Lever Pins	.....	.....
8-157417 Valve Push Rod Guides	.....	.....
1-153792 Cylinder to Crankcase Gasket	.....	.....
1-158668 Cam Cover Gasket	.....	.....
1-164199 Radiator Outlet Hose - Use 3/4" of 96739	.....	.....
2-146988 Exhaust Valves	.....	.....
2-146989 Inlet Valves	.....	.....
1-131711 Cylinder Water Inlet Flange Gasket	.....	.....
1-137145 Generator Sprocket Cover Gasket	.....	.....
1-115271 Generator Gasket	.....	.....
1-148150 Camshaft Sprocket	.....	.....
1-132402 Crankshaft Sprocket	.....	.....
2-147269 Valve Springs (North East)	.....	.....
2-147269 Valve Springs (North East)	.....	.....
8-152177 Valve Push Rods	.....	.....
2-158388 Connecting Rods (on Exchange)	.....	.....
2- 19796 Control Arm Assembly	.....	.....
2- 19959 Control Screw Assembly	.....	.....
2-142711 Spark Plugs	.....	.....
1- 5069 Oil Pump Relief Valve Ball	.....	.....
1-141440 Carburetor to Manifold Gasket	.....	.....
1-141535 Exhaust Pipe Flange Front Gasket	.....	.....
2-151887 Rocker Lever Housing Gaskets	.....	.....
1 Gal. Kerosene	.....	.....
10 Qts. Cylinder Oil	.....	.....
Miscellaneous	.....	.....

## M638 Cylinder and Piston Assembly (Standard or Oversize) Install (Includes M641) and Overhauling Starter Motor, Generator and Removing and Replacing Heater (Labor Only)

626

Note: \$172.15, \$181.15 and \$198.65 are the estimated zone prices of parts required to recondition the motor. All parts listed should not be required.

1. Specifications are the same as Operation M635;
2. Overhaul starter and generator and test armature and field for short circuits see (Operation E221 and E331);
3. Remove and replace heater from manifold.

### Material

- 1-164801 Cylinder and Piston Assembly (Standard)
- 1-164802 Cylinder and Piston Assembly (.015")  
or
- 1-164803 Cylinder and Piston Assembly (.030")  
or
- 1-164804 Cylinder and Piston Assembly (.045")
- 1-158704 Crankcase Gasket (Right)
- 1-158705 Crankcase Gasket (Left)
- 1-147446 Camshaft Driving Chain
- 1-115274 Generator Support Gasket
- 1-163199 Radiator Outlet Hose (Use 6 $\frac{3}{4}$ " of 96739)
- 8-158723 Camshaft Rocker Levers
- 2-158050 Rocker Lever Pin
- 12-132179 Valve Push Rod Set Screw
- 8-147447 Push Rod Guide
- 1-158098 Cylinder to Crankcase Gasket
- 1-158668 Gen. Cover Gasket
- 1-162201 Radiator Inlet Hose (Use 3 $\frac{1}{2}$ " of 96739)
- 1-129047 Water Pump Body Gasket
- 1-114883 Generator Support Gasket
- 8-158222 Piston Pin Bushing
- 6-132177 Valve Push Rod...
- 1-148030 Camshaft Sprocket
- 2-147289 Valve Spring...
- 2-158039 Exhaust Valve
- 2-158035 Inlet Valve
- 1-158648 Connecting Rod (Exchanger)
- 1-158647 Connecting Rod (Exchanger)
- 2- 19796 Contact Arm Assembly (North East)
- 2- 19959 Contact Screw Assembly (North East)
- 2-142711 Spark Plugs...
- 1- 5069 Oil Pump Relief Ball
- 2-158214 Exhaust Manifold Gasket
- 2-158034 Exhaust Manifold Gasket
- 1-132585 Exhaust Pipe Gasket
- 1-158033 Exhaust Gasket
- 2-152183 Rocker Lever Housing Gasket
- 1 Gal. Kerosene
- 8 Qts. Oil.

### Miscellaneous

## Cylinder and Piston Assembly (Standard or Oversize) Install (Includes M641) and Overhauling Starter Motor, Generator, Removing and Replacing Heater (Labor Only)

640

Specifications same as 626

Note: \$182.15, \$191.15 and \$211.05 are the estimated zone prices of parts required to recondition the motor. All parts listed should not be required.

**Material**

- 1-164805 Cylinder and Piston Assembly
- 1-164806 Cylinder and Piston Assembly (0115")  
or
- 1-164807 Cylinder and Piston Assembly (0130")  
or
- 1-164808 Cylinder and Piston Assembly (015")
- 2-131178 Exhaust Manifold to Cylinder Gasket
- 2-141436 Exhaust Manifold to Cylinder Gasket
- 1-141337 Exhaust Manifold to Cylinder Gasket
- 1-745346 Camshaft Driving Chain
- 1-163199 Radiator Outlet Hose (Use 0.75" of 96739)
- 1-121711 Cylinder Water Inlet Flange Gasket
- 2-131888 Rocker Lever Pin
- 16-132179 Valve Push Rod Set Screw
- 8-117147 Push Rod Guides
- 8-158723 Rocker Levers
- 1-132702 Cylinder to Crankcase Gasket
- 1-158787 Crankcase Gasket
- 1-158786 Crankcase Gasket
- 1-158748 Case Cover Gasket
- 1-163301 Radiator Inlet Hose (Use 37 1/2" of 96739)
- 2-146988 Exhaust Valve
- 2-146989 Inlet Valve
- 1-129047 Water Pump Gasket
- 8-156618 Piston Pin Bushing
- 1-116050 Camshaft Sprocket
- 2-147289 Valve Spring
- 8-132177 Valve Push Rod
- 2-158388 Connecting Rod Exchange
- 2-187966 Conrod Arm Assembly (North East)
- 2-196899 Conrod Screw Assembly (North East)
- 2-142712 Spark Plugs
- 1-15069 Oil Pump Ball
- 2-131887 Rocker Lever Crank
- 1 Gal. Kerosene
- 10 Gal. Oil

**Miscellaneous****Cylinder Boreground with Piston, Install, Clean Carbon, Grind Valves and Tune Motor**

1. Disconnect system and remove radiator
2. Disconnect exhaust pipe, valve cover plate and exhaust manifold
3. Remove fan belt and water pump  
Note: See operation M641 for specification
4. Remove timing belt and clean carbon
5. Drain oil and remove crankcase lower half
6. Remove cylinder block and replace with new block and tighten to crankcase
7. Remove valves from old block, clean carbon and grind valves into new block. See operation M243
8. Remove connecting rod and piston. Reft pistons and pins and align rods in #2 fit
9. Replace connecting rod and piston and tighten to crankshaft
10. Replace exhaust manifold and new gasket
11. Replace crankcase and refill with new oil
12. Tune motor and adjust tappets standard

**Material**

- 1-158293 Cylinder Head Gasket
- 1-163395 Crankcase Gasket

**M638***Cont.*626 **M639**

**M639**

Cont.

- 1-158088 Cylinder Base Gasket
- 1-158704 Crankcase Gasket - Left
- 1-158705 Crankcase Gasket - Right
- 1-164802 Cylinder and Piston Assembly (.015" Oversize)
- or
- 1-164803 Cylinder and Piston Assembly (.030" Oversize)
- or
- 1-164804 Cylinder and Piston Assembly (.045" Oversize)
- 8 Qts. Oil

Same as M26

640

**Material**

- 1-159721 Cylinder Head Gasket
- 1-141440 Carburetor Gasket
- 1-132702 Cylinder Base Gasket
- 1-158786 Crankcase Gasket
- 1-158787 Crankcase Gasket
- 1-164816 Cylinder and Piston Assembly (.015" Oversize)
- or
- 1-164807 Cylinder and Piston Assembly (.030" Oversize)
- or
- 1-164808 Cylinder and Piston Assembly (.045" Oversize)
- 10 Qts. Oil

**M641****Connecting Rods and Piston Assemblies****Remove for Inspection and Replace**

(Includes M510 and M610.)

626

Note: Wash motor using power washer and air dryer before an inspection is made.

1. Remove connecting cap screws.

Note: There is just one way to remove and replace connecting rods and pistons, which is as follows: Slide connecting rod and piston assembly upward through cylinder bore. Remove wrist pin lock and pin at top of bore. While one mechanic is removing wrist pin the other mechanic is holding the connecting rod under the motor.

2. Make a thorough inspection and align rods using special aligning jig.
- Note: Numbers on connecting rods and caps must be on right side of motor.
3. To reassemble, place connecting rod into cylinder bore from the bottom. Place piston into cylinder bore. While one mechanic is holding rod, the other mechanic is reassemble and bring up the piston and wrist pin at the top of cylinder bore, using wrist pin aligning tool.

Note: The connecting rod wrist pin bushing projects out on one side. Connecting rod number one (1) is called right. Wrist pin bushing should be toward front of motor. Connecting rod number two (2) is called left. Wrist pin bushing should be toward rear of motor. The other end of connecting rod wrist pin bushing must be flush with rod, etc.

4. Oil piston pin thoroughly and space piston rings gap evenly around piston. Replace and tighten connecting rods, using new lock washers, also using piston ring compressing sleeve.

**Material**

- 16-5506 Lock Washers

**Connecting Rod and Piston Assemblies - Remove for Inspection and Replace**

(Includes M510 and M610.)

640

Note: Wash motor, using power washer and air dryer before an inspection is made.

1. Pull rod bearing bolt cotter pins and remove all connecting rod assemblies.
2. Remove piston from connecting rod.  
 Note: Remove rod and piston assembly from motor by pushing upward through cylinder bore and make a thorough inspection. To replace assembly, use piston ring compressing sleeve S. T. 106. Align rods, using aligning jig S. T. 87 and space ring gaps evenly around piston.
3. Assemble rod to crankshaft and see that cotter pins are in place.  
 Note: Numbers on connecting rods and caps must be on right side of motor.

**M641**

Cont.

**Material****Piston Pin Bushing—Renew One**

(Includes M510-M610)

**626 M642**

1. Remove rod from crankshaft and push piston upward through cylinder bore. Remove wrist pin lock and pin at the top of bore. While one mechanic is removing wrist pin the other mechanic is holding the connecting rod under the motor.  
 Note: The connecting rod wrist pin bushing projects out on one side. Connecting rod number one (1) is called right. Wrist pin bushing should be toward the front of motor. Connecting rod number two (2) is called left. Wrist pin bushing should be toward rear of motor. The other end of connecting rod wrist pin bushing must be flush with rod, etc.
2. Press out old bushings and replace with new bushings, using arbor press.
3. Ream bushings to size, using a  $\frac{7}{8}$ " expansion reamer.  
 Note: Piston pin should be fitted so that it can be pressed through bushing by hand without any up or down play. Be careful when reaming bushings so that the reamer does not chatter. The bushings should be perfectly smooth.
4. Replace piston pin and set screw or lock.
5. Oil piston pin thoroughly and space piston ring gaps evenly around piston.  
 See operation M641 for specification.
6. Replace rod, using piston ring compressing sleeve.  
 Note: Add M642 for each additional wrist or pin bushing.

**Material**

1-158222 Piston Pin Bushing

Same as 626

640

**Material**

1-156648 Bushing

**Piston Pins and Bushings—Renew All**

(Includes M641)

**626 M643**

1. Press out old bushings and install new bushings, using an arbor press.  
 Note: The connecting rod wrist pin bushing projects out on one side. Connecting rod number one (1) is called right. Wrist pin bushing should be toward the front of motor. Connecting rod number two (2) is called left. Wrist pin bushing should be toward rear of motor. The other end of connecting rod wrist pin bushing must be flush with rod, etc.
2. Ream piston pin bushings to size, using a  $\frac{7}{8}$ " expansion reamer.  
 Note: Piston pin should be fitted so that it can just be pressed through bushing by hand without any up or down play. Be careful when reaming piston pin bushings so that the reamer does not chatter. The bushings should be perfectly smooth.
3. Replace pistons and pins.
4. Oil piston pins and space ring gaps evenly around pistons.
5. Replace rod, using piston ring compressing sleeve.

**Material**

1-158222 Bushing

8-163879 Pin

Same as 626

640

**Material**

8-156648 Bushing

8-134305 Pin

## M644 Piston and Connecting Rod Assembly--Remove One for Inspection and Replace (Includes M510-M610) 626

See operation M641 for specification.

### Material

Same as 626

640

### Material

## M645 Piston and Connecting Rod Assembly--Remove two for Inspection and Replace (Includes M510-M610) 626

See operation M641 for specification.

Note: This operation should be used in conjunction with hone and renew piston.

### Material

Same as 626

640

### Material

## M661 Piston Rings Renew All (Includes M641) 626

### 1. Remove old rings and clean grooves

Note: To remove piston rings, place a feeler gauge back of the rings and guiding the feeler around the nos. on each end, force the rings out of the grooves with the other hand. Remove the piston rings over the top of the piston. It will be found easier to remove the top ring first, then the center and lastly the bottom. Be careful when handling a piston--its walls are light and may be easily sprung, causing the piston to be out of round.

### 2. Select oversize rings to fit cylinder

Note: When checking ring gap, place ring in cylinder and push ring down, using the old piston, until it seats snugly against piston at all points. It may be necessary to file ring gaps to .006" clearance when new or oversize. Do not remove more metal than necessary.

### 3. Fit ring to piston grooves

Note: See that the ring fits evenly around the piston grooves. If the ring is properly fitted a slight drag should be felt. If it is loose try another ring. If too thick, lay a sheet of very fine emery cloth on a surface plate, slide it back and forth until a proper fit has been secured. Fit each ring separately.

### 4. Install rings on pistons

Note: Ring must not stick in any position and should not have any up or down play.

### 5. Space ring gaps evenly around piston

### 6. Replace connecting rod and piston assembly using a piston ring compressing sleeve

Note: Number on rod and cap should be on right side of motor.

### Material

- 8-164809 Rings--Slotted (.005")
- 24-163881 Rings (.003")
- 24-163882 Rings (.005" Oversize)
- 24-164630 Rings (.010" Oversize)
- 8-164810 Rings--Slotted (.005" Oversize)
- 8-164811 Rings (.010" Oversize)



Same as 626

**Material**

- 8-146700 Rings—Slotted .003"
- 24-144469 Rings .000" Oversize
- 24-144415 Rings .005" Oversize
- 24-144595 Rings .010" Oversize
- 8-146708 Rings—Slotted .005" Oversize
- 8-144597 Rings—Slotted .010" Oversize

640 **M661**  
Cont.**Piston Pins—Renew All (Includes M641)**626 **M662**

1. Select an O. S. Piston Pin
2. Ream piston pin bushing to size using a  $\frac{1}{8}$ " expansion reamer until a complete bearing surface is obtained.  
Note: Piston pin should be fitted so it can be pushed through bushing with hand without any up or down play. When reaming piston pin bushing care should be taken not to allow the reamer to chatter as bushing should be perfectly smooth.

**Material**

- 8-163879 Pin .003" Oversize  $\frac{7}{8}$ " Pin
- or
- 8-163880 Pin .006" Oversize  $\frac{7}{8}$ " Pin

Same as 826

640

**Material**

- 8-144305 Pin .003" Oversize  $\frac{7}{8}$ " Pin
- or
- 8-144306 Pin .006" Oversize  $\frac{7}{8}$ " Pin

Piston Reamer



Bushing Reamer



**M663** Piston Assembly—Renew One  
(Includes M510-M610)

626

Note: Micrometers should be used to determine the condition of a cylinder bore. If it is necessary to replace pistons on account of piston slaps or oil pumping, due to the excess clearance, it is found that by fitting to a proper clearance, the upper part of the cylinder, where the piston rings bear on the wall, will wear the most. If the piston binds or does not have sufficient clearance at the lower part of the cylinder, the cylinder should be reground. To determine proper fit of piston, place piston in cylinder, placing a .0015" feeler alongside of piston. Under this condition the piston must move its entire travel without sticking and it should be possible to pull out the feeler from between piston and cylinder wall with grip of finger and thumb only. This indicates proper clearance. There should not be less than  $\frac{1}{16}$ " clearance between piston pin boss and connecting rod after rod has been replaced to crankshaft.

1. Remove connecting rod screw.  
Note: Push rod and piston upward through cylinder bore. Remove pin at top of bore (See M641 for explanation).
2. Ream bushings to size, using a  $\frac{3}{16}$ " expansion reamer.  
Note: Piston pin should be fitted so that it can just be pressed through bushing by hand without any up or down play. When reaming piston pin bushings care should be taken not to allow the reamer to chatter as the bushings should be perfectly smooth.
3. Reassemble piston to connecting rod, using a new piston pin.
4. Round up piston and align rod, using aligning tool.  
Note: Numbers on connecting rod caps to right side of motor.
5. Space ring gap evenly, replace rod, using piston ring compressing sleeve tool No. S. T. 106.

**Material**

1-163182 Piston Assembly (.005" Oversize) (1 $\frac{1}{2}$ " Pin)  
 1-163183 Piston Assembly (.005" Oversize) (1 $\frac{3}{4}$ " Pin)  
 1-163184 Piston Assembly (.010" Oversize) (1 $\frac{1}{2}$ " Pin)  
 1-163185 Piston Assembly (.015" Oversize) (1 $\frac{1}{2}$ " Pin)  
 1-163186 Piston Assembly (.020" Oversize) (1 $\frac{3}{4}$ " Pin)  
 1-163187 Piston Assembly (.030" Oversize) (1 $\frac{1}{2}$ " Pin)  
 1-163188 Piston Assembly (.015" Oversize) (1 $\frac{3}{4}$ " Pin)

Same as 626

648

**Material**

1-148786 Piston Assembly (.003" Oversize) (1 $\frac{1}{2}$ " Pin)  
 1-148785 Piston Assembly (.005" Oversize) (1 $\frac{3}{4}$ " Pin)  
 1-148784 Piston Assembly (.010" Oversize) (1 $\frac{1}{2}$ " Pin)  
 1-148783 Piston Assembly (.015" Oversize) (1 $\frac{3}{4}$ " Pin)  
 1-148782 Piston Assembly (.020" Oversize) (1 $\frac{1}{2}$ " Pin)  
 1-148781 Piston Assembly (.030" Oversize) (1 $\frac{3}{4}$ " Pin)  
 1-148780 Piston Assembly (.045" Oversize) (1 $\frac{1}{2}$ " Pin)

**M664** Piston Assembly -Renew All  
(Includes M641)

626

Note: Micrometers should be used to determine the condition of a cylinder bore. If it is necessary to replace pistons on account of piston slaps or oil pumping, due to the excess clearance, it is found that by fitting to a proper clearance, the upper part of the cylinder, where the piston rings bear on the wall, will show the greatest wear. If the piston binds or does not have sufficient clearance at the lower part of the cylinder, the cylinder should be reground. To determine the proper fit of piston, place piston in cylinder with a .003" feeler between the cylinder wall and piston. Under this condition the piston must move its entire travel without sticking. The feeler must pull out from between piston and cylinder wall by grip of a finger and thumb only. This will indicate proper clearance.

## 1. Remove pistons from connecting rods

Note: Ream bushing to size, using a  $\frac{1}{8}$ " expansion reamer. Piston pin should be fitted so that it can just be pressed through bushing by hand, without any up or down play. See that reamer does not chatter when reaming bushings and cause an uneven surface.

## 2. Reassemble pistons on connecting rods and round up pistons. Align rods, using a special jig

Note: Space ring gaps evenly around pistons. Rings must not stick in any position.

**M664**  
Cont.

**Material**

8-163182 Piston Assembly (.003" Oversize) ( $\frac{3}{8}$ " Pin)

or

8-163183 Piston Assembly (.005" Oversize) ( $\frac{3}{8}$ " Pin)

or

8-163184 Piston Assembly (.010" Oversize) ( $\frac{3}{8}$ " Pin)

or

8-163185 Piston Assembly (.015" Oversize) ( $\frac{3}{8}$ " Pin)

or

8-163186 Piston Assembly (.020" Oversize) ( $\frac{3}{8}$ " Pin)

or

8-163187 Piston Assembly (.030" Oversize) ( $\frac{3}{8}$ " Pin)

or

8-163188 Piston Assembly (.045" Oversize) ( $\frac{3}{8}$ " Pin)

Same as 626

640

**Material**

8-148785 Piston Assembly (.005" Oversize) ( $\frac{7}{8}$ " Pin)

or

8-148784 Piston Assembly (.010" Oversize) ( $\frac{7}{8}$ " Pin)

or

8-148783 Piston Assembly (.015" Oversize) ( $\frac{7}{8}$ " Pin)

or

8-148782 Piston Assembly (.020" Oversize) ( $\frac{7}{8}$ " Pin)

or

8-148781 Piston Assembly (.030" Oversize) ( $\frac{7}{8}$ " Pin)

or

8-148780 Piston Assembly (.045" Oversize) ( $\frac{7}{8}$ " Pin)

**Piston Pin--Renew One**  
(Includes M510-M610)

626 **M665**

Note: See operation M442 for specification

## 1. Remove connecting cap screws

Note: To allow removal of connecting rod, push piston upward through cylinder bore and remove wrist pin at the top of bore. While one mechanic is removing wrist pin the other mechanic is holding the connecting rod under the piston.

## 2. Select an O. S. piston pin

3. Ream piston and bushing to size, using a  $\frac{1}{8}$ " expansion reamer until a complete bearing surface is obtained

Note: Piston pin should be fitted so it can be pressed through bushing with hand, without any up or down play. When reaming piston pin bushings, care should be taken not to allow the reamer to chatter, as bushings should be perfectly smooth.

## 4. Assemble piston, piston pin and connecting rod

## 5. Align rod and round up piston

## 6. Oil piston pin thoroughly and space ring gaps evenly around piston

Note: Add M510's for each additional piston pin

## 7. Replace rod to crankshaft

**M665****Material****Cont.**

1-163879 Pin (.003" Oversize)

or

1-163880 Pin (.006" Oversize)

Same as 626

640

**Material**

1-134305 Pin (.003" Oversize)

or

1-134306 Pin (.006" Oversize)

**M667****Piston Pin Bushing—Renew All (Includes M641)**

626

1. Press out old bushing and install new bushing using arbor press.
2. Ream piston pin bushing to size using a  $\frac{7}{8}$ " expansion reamer until a complete bearing surface is obtained. If the piston pin bushing has become too loose in the upper end of the connecting rod, use an oversize bushing—piece No. 145326.

Piston pin should be fitted so it can be pressed through bushing with hand without any up or down play.

Note: The connecting rod wrist pin bushing projects out on one side. Connecting rod number one (1) is called right. Wrist pin bushing should be toward the front of motor. Connecting rod number two (2) is called left. Wrist pin bushing should be toward rear of motor. The other end of connecting rod wrist pin bushing must be flush with rod, etc.

**Material**

8-158222 Bushing

Same as 626

640

**Material**

8-156648 Bushing

**Motor Oil Pressure Gauge—Renew**626 **M72**

1. Supply and install new oil pressure gauge

**Material**

1-158243 Oil Gauge

Same as 626

640

**Material**

1-158243 Oil Gauge

**Motor Oil Pressure—Adjust  
(Supply Fresh Oil)**626 **M74**

1. Drain crankcase oil
  2. Remove oil pump cover and take out screen
  3. Remove lock wire and take out adjusting screw
  4. See that face of oil check is smooth
  5. Adjust oil pressure 20 to 50 pounds by regulating adjusting screw, turning it clockwise to raise pressure and anticlockwise to lower. One turn produces a difference of from 3 to 5 pounds in pressure
  6. Replace bottom of oil pump and fill to level with fresh medium cylinder oil
- Note: Oil pressure reading should be taken with motor at running temperature

**Material**

8 Qts. Medium Cylinder Oil

1-114886 Oil Strainer Cover Plate Gasket

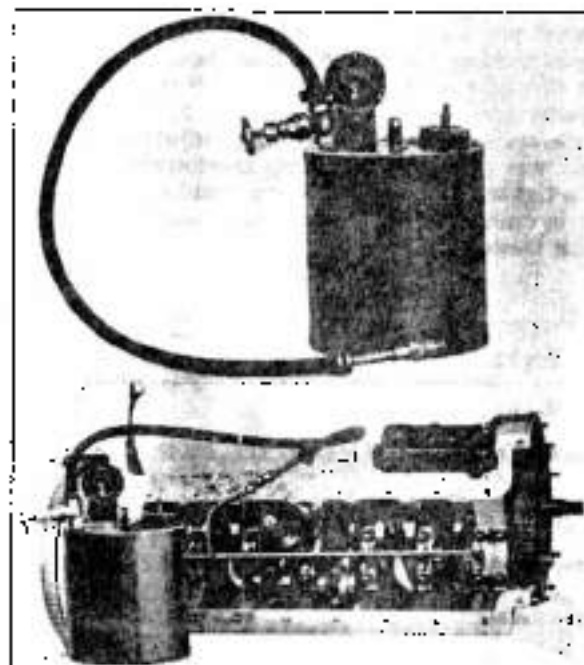
Same as 626

640

**Material**

10 Qts. Medium Cylinder Oil

1-114886 Oil Strainer Cover Plate Gasket

**Test Tank for Lubricating System**

Tool No. S. T. 109

## M76 Make Oil Test on Bearings (Includes M510) 626

1. Disconnect oil manifold from oil pump
2. Fill special tank, S. T. 106, two thirds full of oil out of motor, if not too thin for testing purposes
3. Connect test tank hose to motor oil manifold and pump up and maintain 30 pounds air pressure on tank during test
4. Gauge on instrument board should check very close to gauge on tank, except when number one and six pistons are on upper dead center. See Technical Letter No. 1746
5. Crank motor over by hand
6. Flow of oil from connecting rod and main bearings should be in DROPS before reaching floor. (Equivalent to 20 to 60 drops per minute.)  
Note: This test is used in making a motor inspection indicating loose bearings and in retightening main and connecting rod bearings. It should also be used for checking bearing work after an overhaul.

### Material

2 Qts. Cylinder Oil

(Includes M510)

640

Same as 626

### Material

2 Qts. Cylinder Oil

## M710 Motor Oil Pump-- Remove, Clean and Replace 626

1. Start motor and note amount of oil pressure
2. Drain oil and remove lower half of crankcase and clean oil pump screen
3. Remove oil pump assembly  
Note: Care must be taken that oil pump driving shaft and gear does not drop down and allow the distributor driving shaft to pull out of head and throw motor ignition out of time.
4. Remove oil pressure adjusting screw, spring valve and shaft collar. Note location of adjusting screw by measuring or counting number of turns
5. Take off pump cover by removing four screws
6. Clean housing and gear thoroughly, reassemble and adjust. It may be desirable to adjust oil pressure before replacing bottom half of crankcase. This can be done by attaching one end of a short hose to pump, the other end dipping into fresh oil and running the motor until proper pressure is determined.  
Note: The standard oil pressure reading is 20 to 50 pounds. To raise oil pressure, increase the spring tension by turning adjusting screw clockwise with a screwdriver; to lower pressure, the spring tension should be decreased. Be sure the check out is tightened before replacing crankcase lower half
7. Remove screen in crankcase lower half, clean, re-assemble and replace
8. Fill to level with fresh oil

### Material

8 Qts. Cylinder Oil

1-158704 Gasket--Right

or

1-158705 Gasket-- Right

1-114886 Oil Strainer Cover Plate Gasket

Same as 626

640

### Material

1-158786 Crankcase Gasket

or

1-158787 Crankcase Gasket

1-114886 Gasket. . . . .

10 Qts. Cylinder Oil

**Motor Piston Lubricator Control Valve Assembly—Renew**626 **M711**

1. Disconnect oil tube from lubricator
2. Remove choke rods
3. Remove nuts holding lubricator to crankcase
4. Install new lubricator

Note: Check the choke rod so it will close the lubricator valve when the choke rod is closed, that is, up against the dash. If it does not close properly, remove, loosen nut holding control lever and turn shaft with screw driver until the valve closes. The valve should have  $\frac{1}{8}$ " play before the choke rod starts to open the valve. If the lubricator is not fully closed it will pump oil at all times.

**Material**

- 1-157452 Valve Assembly
- 1-157438 Gasket

Same as 626

640

**Material**

- 1-157452 Valve Assembly
- 1-157438 Gasket

**Motor Piston Lubricator Valve—Renew**626 **M712**

1. Disconnect oil tube from lubricator
2. Remove choke rods
3. Remove nuts holding lubricator to crankcase and dismantle
4. Replace with new valve and reassemble to motor

Note: Be sure to check the choke rod so it will close the lubricator valve when the choke rod is closed that is, up against the dash. If it does not close properly, remove, loosen nut holding control lever and turn shaft with screw driver until the valve closes. The valve should have  $\frac{1}{8}$ " play before the choke rod starts to open the valve. If the lubricator is not fully closed it will pump oil at all times.

**Material**

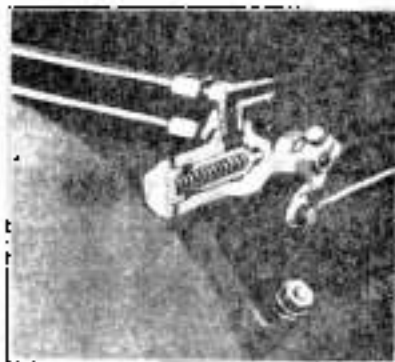
- 1-147392 Valve
- 1-157438 Gasket

Same as 626

640

**Material**

- 1-147392 Valve
- 1-157438 Gasket



**M752 Motor Oil Pump Shaft Bushing—Renew** (Includes M510-M630) **626**

1. Remove drive shaft bushing  
 Note: Take a piece of cold rolled steel or some other suitable tool and drive out bushing from below.
2. Supply and install one new drive shaft bushing
3. Reassemble oil pump and replace
4. Adjust oil pressure (See M710 for method of adjusting)

**Material**

- 1-114886 Oil Strainer Cover Plate Gasket
- 1-132173 Oil Pump Shaft Bushing

Same as 626 **640**

**Material**

- 1-114886 Oil Strainer Cover Plate Gasket
- 1-132173 Oil Pump Shaft Bushing

**M753 Motor Oil Pump Shaft and Driven Impeller Assembly—Renew** (Includes M710) **626**

1. Supply and install new pump shaft and driven impeller assembly
2. Reassemble and replace
3. Adjust oil pressure (See M710 for method of adjusting)

**Material**

- 1-156609 Oil Pump Shaft Assembly

(Includes M710) **640**

Same as 626

**Material**

- 1-156609 Oil Pump Shaft Assembly

**M754 Motor Oil Pump Assembly—Renew** (Includes M510) **626**

1. Disconnect oil manifold from pump
2. Remove two nuts holding oil pump and drop pump
3. Supply and install new oil pump
4. Replace and tighten oil manifold
5. Adjust oil pressure  
 Note: The standard oil pressure reading is from 20 to 50 pounds. To raise the oil pressure, increase the spring tension by turning adjusting screw clockwise with a screw driver. To lower the pressure, the spring tension should be decreased.

**Material**

- 1-157451 Oil Pump Assembly . . . . .

**Motor Oil Pump Assembly—Renew** (Includes M510) **640**

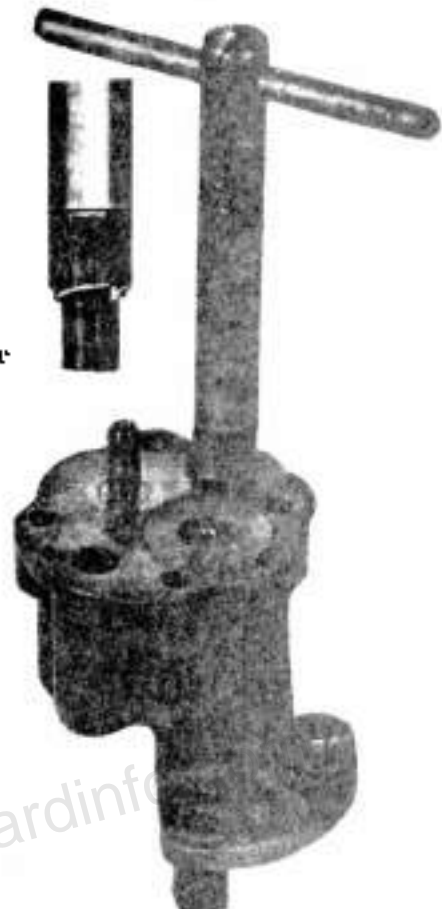
Same as 626

**Material**

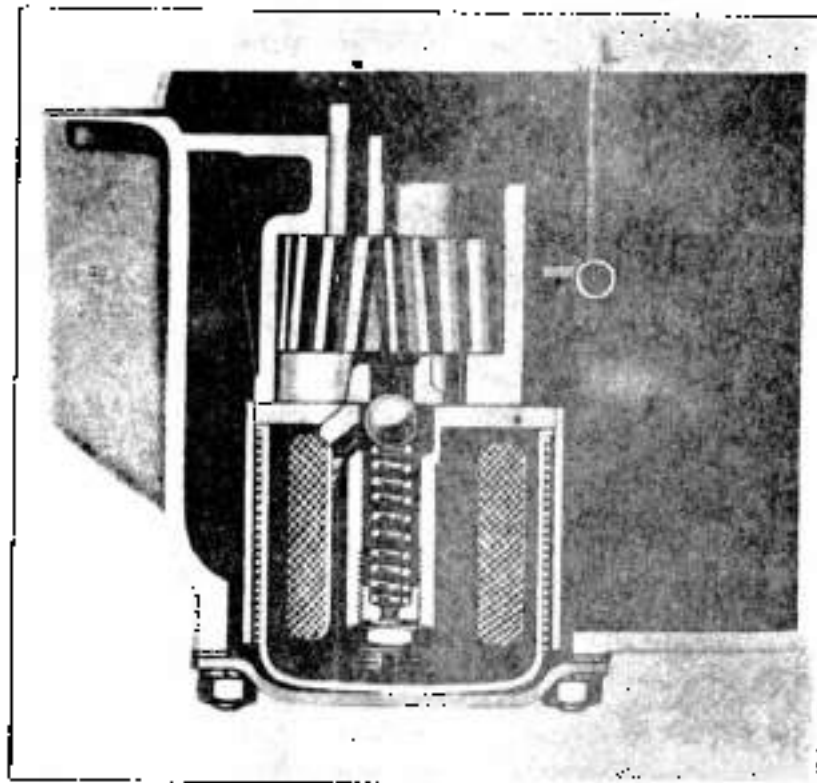
- 1-157451 Oil Pump Assembly..



Oil Pump Relief Valve  
Resetter  
Tool No. S. 1. 67B



packardinfo



Sectional View of Motor Oil Pump



**Radiator Core and Shell and Shutter  
Renew**626 **M80**

Note: To protect surfaces from oil and scratches, use fender covers S. T. 130 and cowl cover S. T. 148.

1. Drain cooling system, preserve anti-freeze solution and remove bracket and tie rod.
2. Remove upper and lower hose.
3. Remove radiator to frame bolts.
4. Supply and assemble new core and shell and shutter.  
Note: Be sure to lubricate radiator shutter when reassembling.
5. Replace radiator, being sure that leather pads are in place between radiator and frame.
6. Replace upper and lower hose.
7. Replace and adjust tie rod.
8. Refill cooling system.
9. Check for leaks.

**Material**

- 1-158854 Core Assembly
- 1-158798 Shell Assembly
- 1-159725 Shutter Assembly
- 1- 21662 Gasket
- 1-159710 Felt

Specifications same as 626

640

**Material**

- 1-159711 Core Assembly...
- or
- 1-159309 Core Assembly (645)
- 1-159726 Shutter Assembly...
- 1-159296 Shell Assembly (640)
- or
- 1-159847 Shell Assembly (645)
- 1- 21662 Flange Gasket
- 1-159709 Felt

**Radiator Flush Out**626 **M81**

Note: This operation should be performed on a wash rack.

1. Drain cooling system.
2. Remove bottom hose and force water upward through radiator and motor cooling system.  
Note: If engine overheats, possible causes: incorrect ignition timing, defective cooling system, incorrect fan belt adjustment, defective radiator shutter, defective thermostat.
3. Replenish hose and refill cooling system.
4. Test for leaks.

**Material**

Same as 626

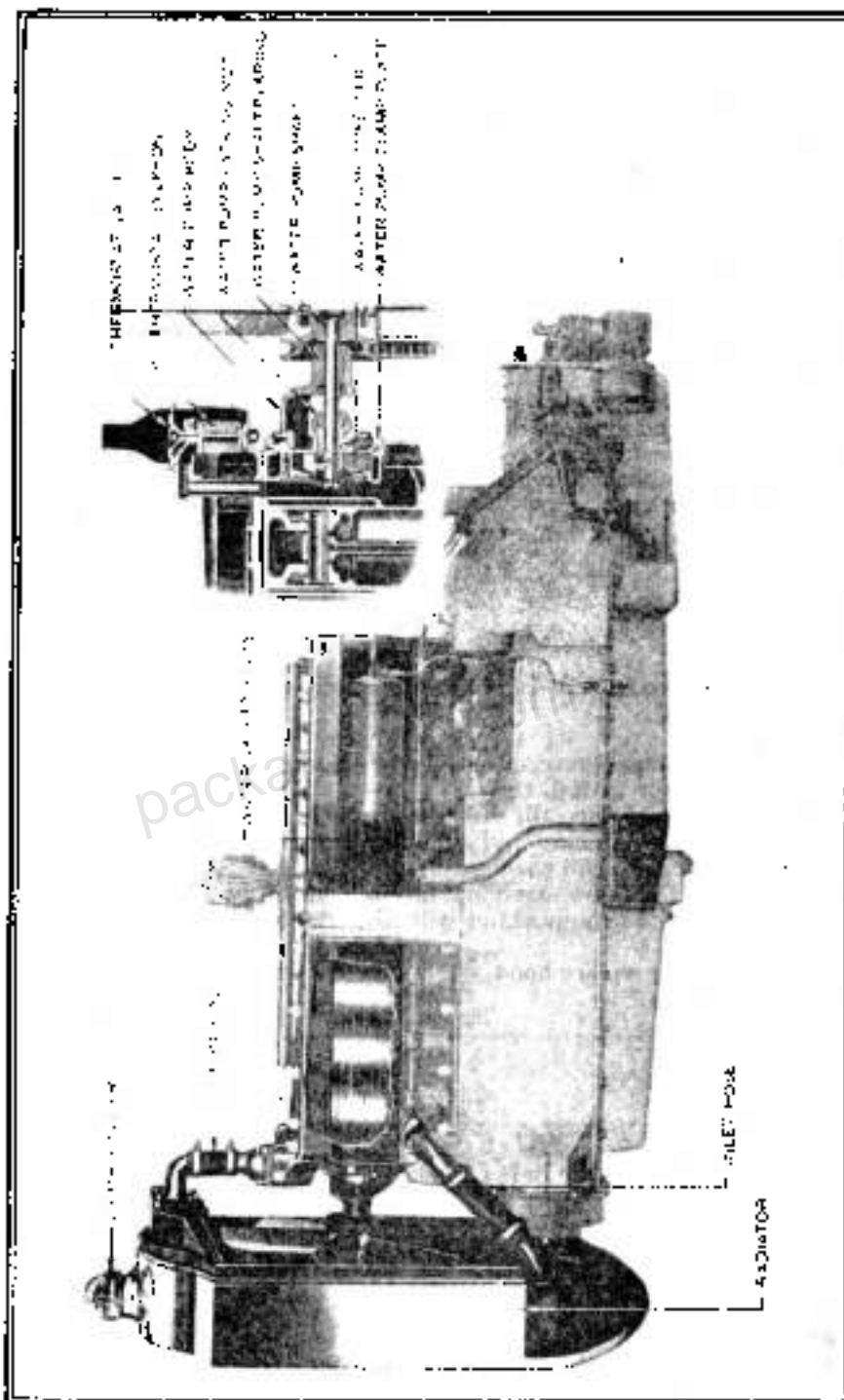
640

**Material****Radiator Core Renew**626 **M83**

Note: Protect fenders and cowl from oil and scratches by using fender covers S. T. 130 and cowl cover S. T. 148.

1. Drain cooling system, preserve the anti-freeze.
2. Remove bracket and tie rod.
3. Remove radiator and take off shell.
4. Remove radiator shutter and thermostat.  
Note: Be sure to lubricate radiator shutter when reassembling.
5. Supply and install new radiator core, using original shell and shutter.

<b>M83</b>	6. Replace tie rod and refill cooling system	
	7. Replace bonnet	
<b>Cont.</b>	8. Check for leaks	
	<b>Material</b>	
	1-158854 Core Assembly	
	1-159295 Gasket	
	Same as 626	<b>640</b>
	<b>Material</b>	
	1-159711 Core Assembly	
	OR	
	1-159309 Core assembly (645)	
	1-159295 Gasket	
<b>M85</b>	<b>Radiator Shell - Renew (Chromium Plated)</b>	<b>626</b>
	Note: Protect exposed surfaces from oil and scratches by using fender covers S. T. 130 and cowl cover S. T. 118	
	1. Remove bonnet and radiator tie rod	
	2. Remove radiator from frame	
	3. Remove shell from radiator	
	4. Disconnect radiator shutter	
	5. Remove thimble cover with thimble cover lock from old shell	
	6. Supply and install new nickel radiator shell	
	7. Reassemble radiator shutter	
	8. Attach thimble cover lock to new shell	
	9. Replace tie rod and bonnet and adjust for proper bonnet fit	
	1-158798 Shell	
	Same as 626	<b>640</b>
	<b>Material</b>	
	1-159296 Radiator Shell (640)	
	OR	
	1-158845 Radiator Shell (645)	
<b>M86</b>	<b>Radiator Thimble Cover Gasket — Renew</b>	<b>626</b>
	1. Remove old thimble cover gasket	
	2. Supply and install new thimble cover gasket	
	<b>Material</b>	
	1-158831 Gasket	
	1-158833 Retainer	
	Same as 626	<b>640</b>
	<b>Material</b>	
	1-158837 Gasket	
	1-158850 Retainer	
<b>M88</b>	<b>Radiator Shell Replate (Chromium) (Labor Only)</b>	<b>626</b>
	Note: Protect exposed surfaces from oil and scratches by using fender covers S. T. 130 and cowl cover S. T. 118	
	1. Remove hood, remove thimble cover and tie rod	
	2. Remove radiator from frame	
	3. Remove shell from radiator, disconnect shutter	
	4. Renickel shell	
	5. Replace shell, shutter, radiator and tie rod	
	6. Replace hood and cap	
	<b>Material</b>	
	Same as 626	<b>640</b>
	<b>Material</b>	

**Radiator Drain Cock Renew**

1. Drain radiator and preserve anti-freeze solution if used
2. Remove old drain cock and clean threads with  $\frac{1}{4}$ " standard pipe tap
3. Supply and install new drain cock, using white lead to prevent rust and to secure tight joint
4. Refill cooling system with water or anti-freeze solution

626 **M89**

<b>M89</b>	<b>Material</b>		
	1-111752 Drain Cock	.....	
<b>Cont.</b>	Same as 626		<b>640</b>
	<b>Material</b>		
	1-111752 Drain Cock	.....	
<b>M810</b>	<b>Radiator—Remove and Replace</b>		<b>626</b>
	Note: Protect exposed surfaces with fender covers S. T. 130 and cowl cover S. T. 148		
	1. Drain cooling system and remove hood (Preserve anti-freeze solution)		
	2. Disconnect radiator to dash tie rod		
	3. Loosen clamps on upper and lower hose connections		
	4. Remove radiator stud nuts		
	5. Lift off radiator assembly		
	6. Replace radiator		
	Note: See that leather washers are between radiator and frame		
	7. Replace upper and lower hose		
	8. Replace and adjust tie rod		
	9. Refill cooling system and replace hood		
	10. Check for water leaks		
	<b>Material</b>		
	Same as 626		<b>640</b>
	<b>Material</b>		
<b>M811</b>	<b>Fan—Renew</b>		<b>626</b>
	Note: Use fender covers S. T. 130 to protect enameled surfaces from oil and scratches		
	1. Remove hood		
	2. Drain cooling system (Preserve anti-freeze solution)		
	3. Disconnect radiator to dash tie rod		
	4. Loosen radiator stud nuts; tilt radiator forward		
	5. Remove old fan, install new, and adjust fan belt		
	6. Tighten radiator and refill cooling system		
	Note: A fan belt will give maximum service if it is kept pliable—dressing once a month with oil. This application will allow the belt to drive the fan without slipping		
	8. Adjust tie rod and replace hood		
	<b>Material</b>		
	1-158190 Motor Fan		
	Same as 626		<b>640</b>
	<b>Material</b>		
	1-125821 Motor Fan		
<b>M812</b>	<b>Fan Belt—Renew (Rubber Belt Only)</b>		<b>626</b>
	1. Remove bonnet and tie rod		
	2. Release water pump clamp plate nuts and rotate water pump shaft and cover to lowest position		
	3. Remove radiator and vibration damper		
	4. Remove fan belt		
	5. Replace radiator and vibration damper		
	6. Rotate pump cover to secure proper belt tension (See note)		
	7. Tighten clamp plate nuts		
	Note: Standard fan belt adjustment should be so that by grasping the rim of the fan it will be just possible to slide belt on pulley		
	8. Replace tie rod and hood		
	<b>Material</b>		
	1-163405 Fan Belt		
	Same as 626		<b>640</b>
	<b>Material</b>		
	1-163405 Fan Belt		

**Fan Belt-- Adjust by Removing Link  
(Leather Link Belt Only)**626 **M813**

1. Drain three gallons from cooling system
2. Release water pump clamp plate nuts
3. Rotate water pump shaft and cover to lowest position
4. Remove fan belt and take out link
5. Replace rotating pump cover to secure proper belt tension (See note)
6. Tighten clamp plate nuts
7. Refill cooling system and test for leaks

Note: Standard fan belt adjustment should be so that by grasping the rim of the fan it will be just possible to slide belt on pulley

**Material**

Same as 626

640

**Material****Thermostat Sylphon- Renew (Cylinder Head)**626 **M814**

1. Drain three gallons of water from cooling system
  2. Remove thermostat outlet flange
  3. Remove thermostat sylphon
- Note: To test old sylphon—submerge in hot water about 160° temperature
4. Reassemble, using new sylphon
  5. Replace outlet flange

Note: Be sure that intake port side of flange is toward cylinder head. Thermostat valve should open between 135°-150° Fahrenheit

**Material**

- 1-117776 Sylphon.....  
 1- 78945 Thermostat Sylphon Gasket ..  
 2-117855 Thermostat Valve Seat Gaskets.....

Same as 626

640

**Material**

- 1-117776 Sylphon.....  
 1- 78945 Thermostat Sylphon Gasket ..  
 2-117855 Thermostat Valve Seat Gaskets.....

**Radiator Splasher-- Renew Right or Left**626 **M815**

1. Remove bolts and nuts from bonnet frame ledge
2. Remove nuts from spring bolts
3. Remove cable from headlight and pull through bonnet frame ledge
4. Remove splasher
5. Reassemble new splasher in place

Note: Be sure cable conduit bushing is in place in bonnet frame ledge

**Material**

- 1-159304 Splasher (left) ..  
 1-162064 Splasher (right) ..

Same as 626

640

**Material**

- 1-159304 Splasher (left) ..  
 1-162064 Splasher (right) ..

<b>M817</b>	<b>Fan Belt—Tighten</b>	<b>626</b>
	This operation does not include removing link	
	1. Drain cooling system to a level below water pump	
	2. Loosen clamp plate and rotate water pump to increase belt tension. Note: Fan belt will render service if kept pliable with Neats Foot Oil once a month. (Leather Belt Only)	
	3. Tighten clamp plate nuts and refill cooling system Note: Standard fan belt adjustment should be determined by grasping rim of fan; it will be just possible to slide belt on pulley	
	<b>Material</b>	
	Same as 626	<b>640</b>
	<b>Material</b>	
<b>M820</b>	<b>Water Pump Assembly—Renew Radiator Off</b>	<b>626</b>
	Note: Use fender covers	
	1. Remove old water pump and install new pump	
	2. Replace water pump and adjust fan belt Note: Tighten water pump gland nut	
	<b>Material</b>	
	1-129047 Gasket	
	1-156310 Water Pump Assembly	
	Same as 626	<b>640</b>
	<b>Material</b>	
	1-129047 Gasket	
	1-156311 Water Pump Assembly	
<b>M823</b>	<b>Water Pump Body Gasket—Renew Radiator Off</b>	<b>626</b>
	Note: Use fender covers	
	1. Remove water pump and install new gasket	
	2. Rebuild the entire job and adjust fan belt Note: Tighten water pump gland nut	
	<b>Material</b>	
	1-129047 Gasket	
	Same as 626	<b>640</b>
	<b>Material</b>	
	1-129047 Gasket	
<b>M824</b>	<b>Water Pump Body Clamp Plate—Renew Radiator Off</b>	<b>626</b>
	Note: Use fender covers	
	1. Remove water pump clamp plate and install new clamp plate	
	2. Rebuild the entire job and adjust fan belt	
	<b>Material</b>	
	1-156982 Plate	
	1-129047 Gasket	
	Same as 626	<b>640</b>
	<b>Material</b>	
	1-156983 Clamp Plate	
	1-129047 Gasket	



**Water Pump—Remove, Dismantle for Inspection and Replace**626 **M830**

Note: To protect exposed surfaces from oil and scratches, use fender covers S. T. 130 and cowl cover S. T. 148

1. Remove bonnet
2. Drain cooling system, preserve anti-freeze and remove radiator
3. Remove four (4) water pump clamp plate nuts, loosen fan belt and remove pump
4. Dismantle pump, inspect and report
5. Reassemble and replace water pump, adjust fan belt

Note: Standard fan belt adjustment should be so that grasping rim of fan it is just possible to slide belt on pulley

6. Replace radiator

Note: Be sure that radiator pads are in place

7. Refill cooling system and check for leaks
8. Replace bezel

**Material**

1-129047 Water Pump Body Gasket ...

Same as 626

640

**Material**

1-129047 Water Pump Body Gasket . . . . .

**Water Pump—Recondition (Includes M810)**626 **M831**

Note: Use fender covers S. T. 130 and cowl cover S. T. 148 to protect exposed surfaces from oil and scratches

1. Remove four (4) water pump clamp plate nuts, loosen fan belt and remove pump
2. Disassemble pump and reassemble, using new parts to put in first class condition
3. Replace water pump, adjust fan belt

Note: Standard fan belt adjustment should be so that grasping rim of fan it is just possible to slide belt on pulley

**Material**

1-117960 Pump Impeller . . . . .  
 1-158262 Pump Shaft Bushing . . . . .  
 1-129047 Pump Body Gasket . . . . .  
 1-114822 Pump Shaft Thrust Button . . . . .  
 15-96840 Pump Shaft Packing . . . . .  
 1-158074 Pump Shaft Bearing . . . . .

Same as 626

640

**Material**

1-117960 Pump Impeller . . . . .  
 1-117968 Pump Shaft Bushing . . . . .  
 1-129047 Pump Body Gasket . . . . .  
 1-114822 Pump Shaft Thrust Button . . . . .  
 15-96840 Pump Shaft Packing . . . . .  
 1-117963 Pump Shaft Bearing . . . . .

- M832 Water Pump—Repack (Includes M830) 626**
1. Supply and install new packing and tighten nut  
Note: Tighten nut solid to seat packing. Use Alemite gun and grease water pump shaft
- Material**  
15"-96840 Packing  
1-129047 Gasket
- Water Pump--Repack 640**
1. Drain three gallons of water or anti-freeze and preserve the solution
  2. Back off packing nut and remove old packing with the use of pointed tool bent "L" shaped
  3. Supply and install new packing and tighten nut  
Note: Tighten nut solid to seat packing, then back off 1 to 2 turns. Use Alemite gun and grease water pump shaft
  4. Refill cooling system
- Material**  
19"-67618 Packing
- M833 Hose, Thermostat to Radiator—Renew 626**
1. Drain three gallons from cooling system and preserve anti-freeze solution
  2. Remove old radiator hose
  3. Clean surface and instal. new hose
  4. Refill cooling system and test for leaks  
Note: New hose clamps not included
- Material**  
1-162201 Hose
- Same as 626 640
- Material**  
1-162201 Hose
- M835 Hose, Radiator Lower—Renew 626**
1. Completely drain cooling system and preserve anti-freeze
  2. Remove old hose and clean surfaces
  3. Install new hose, refill and check for leaks  
Note: New hose clamps not included
- Material**  
1-163199 Hose
- Same as 626 640
- Material**  
1-163199 Hose
- M836 Hose and Clamps, Radiator Lower—Renew 626**
1. Drain cooling system  
Note: Preserve the anti-freeze solution
  2. Remove old clamps and hose
  3. Clean surfaces and install new hose and clamps
  4. Refill cooling system and test for leaks
- Material**  
1-163199 Hose  
2-163196 Clamps
- Same as 626 640
- Material**  
1-163199 Hose  
2-163196 Clamps

**Hose and Clamps, Thermostat to Radiator—Renew**626 **M838**

1. Drain cooling system, preserve anti-freeze solution
2. Remove old hose, clean surfaces and install new hose and clamps
3. Refill cooling system and check for leaks

**Material**

1-162201 Hose  
 2-163196 Clamps

Same as 626

640

**Material**

1-162201 Hose  
 2-163196 Clamps

**Water Pump Shaft Impeller and Bearing—Renew Radiator Off**626 **M839**

1. Remove water pump and dismantle. Install new impeller and bearing
  2. Shim water pump thrust button if necessary
  3. Rebuild the entire job and adjust fan belt
- Note: Tighten water pump gland nut

**Material**

1-158974 Bearing  
 1-117960 Impeller

Same as 626

640

**Material**

1-117963 Bearing  
 1-117960 Impeller

**Hose —Renew All**626 **M841**

1. Drain cooling system, preserve anti-freeze
2. Remove old hose, clean surfaces and install new hose
3. Refill cooling system and check for leaks

**Material**

1-162201 Hose  
 1-163199 Hose

Same as 626

640

**Material**

1-162201 Hose  
 1-163199 Hose

**M842** Hose and Clamps-- Renew All 626

1. Drain cooling system, preserve anti-freeze
2. Remove old hose, clean hose surfaces and install new hose and clamps
3. Refill cooling system and check for leaks

**Material**

- 1-162201 Hose
- 1-163199 Hose
- 4-163196 Clamps

Same as 626

640

**Material**

- 1-162201 Hose
- 1-163199 Hose
- 4-163196 Clamps

**M843** Hose Clamp (Large) - Renew One 626

1. Drain the cooling system  
Note: Preserve the anti-freeze solution if used
2. Remove old hose clamp and install new
3. Refill cooling system and check for leaks

**Material**

- 1-163196 Clamp Assembly

Same as 626

640

**Material**

- 1-163196 Clamp Assembly

**M850** Water Pump Eliminate End Play (Radiator Off) 626

1. Remove water pump and water pump cover
2. Shim water pump thrust button to eliminate end play using flat washer
3. Rebuild the entire job and adjust fan belt  
Note: Tighten water pump gland nut

**Material**

Same as 626

640

**Material**

**Radiator Shutter - Renew****626 M865**

Note: To protect surfaces from oil and scratches, use fender covers, S. T. 130 and cowl covers S. T. 148.

1. Drain cooling system, preserve anti-freeze solution, remove bonnet and tie rod
2. Remove upper and lower hose
3. Remove radiator from frame
4. Remove radiator shell
5. Remove radiator shutter and disconnect thermostat using new shutter
6. Rebuild radiator and replace, being sure that leather pads are in place
7. Replace upper and lower hose and refill cooling system

**Material**

- 1-159725 Radiator Shutter
- 1-159710 Felt
- 1- 21662 Gasket

Same as 626

**640****Material**

- 1-159726 Radiator Shutter
- 1-159704 Felt
- 1- 21662 Gasket

**Radiator Shutter Thermostat - Renew****626 M866**

Note: To protect surfaces from oil and scratches, use fender covers S. T. 130 and cowl covers S. T. 148.

1. Drain cooling system, preserve anti-freeze solution, remove bonnet and tie rod
2. Remove upper and lower hose
3. Remove radiator from frame
4. Remove radiator shell
5. Remove thermostat from core and install new thermostat
6. Rebuild radiator, being sure that leather pads are in place
7. Replace upper and lower hose and refill cooling system

**Material**

- 1-158855 Radiator Shutter Thermostat
- 1- 21662 Gasket

Same as 626

**640****Material**

- 1-158855 Radiator Shutter Thermostat
- 1- 21662 Gasket



**Exhaust Manifold Gasket Renew All****626 M91**

Note: To protect exposed surfaces from oil and scratches, use fender covers S. T. 130 and cowl covers S. T. 148

1. Shut off gasoline at vacuum tank and remove carburetor
2. Remove exhaust manifold, using a special wrench to fit exhaust manifold nuts S. T. 101
3. Supply and install new exhaust manifold gaskets
4. Replace carburetor using new gaskets

**Material**

1-158033 Manifold Gasket  
 2-158034 Manifold Gaskets  
 2-158214 Manifold Gaskets  
 2-164395 Carburetor Gasket  
 1-132585 Pipe Gasket

Same as 626

**640****Material**

1-141437 Exhaust Manifold to Cylinder Gasket - Large  
 2-141436 Exhaust Manifold to Cylinder Gaskets - Intermediate  
 2-141478 Exhaust Manifold to Cylinder Gaskets - Small  
 1-141535 Exhaust Pipe Flange Front Gasket  
 1-141540 Carburetor Gasket

**Exhaust Manifold Weld Broken Boss****626 M93**

Note: Use fender covers S. T. 130 and cowl covers S. T. 148 to protect exposed surfaces

1. Shut off gasoline at vacuum tank and remove carburetor
2. Disconnect exhaust pipe and remove manifold, using a special wrench to fit exhaust manifold nuts S. T. 101
3. Weld broken part and dress down
4. Replace manifold and assemble carburetor in place

**Material**

2-158034 Exhaust Manifold to Cylinder Gaskets - Small  
 1-158033 Exhaust Manifold to Cylinder Gasket - Large  
 1-132585 Exhaust Pipe to Manifold Gasket  
 2-158214 Exhaust Manifold Gasket  
 1-164395 Carburetor Gasket

Same as 626

**640****Material**

2-141436 Manifold Gaskets  
 2-141478 Manifold Gaskets  
 1-141440 Carburetor Gasket  
 1-141535 Pipe Gasket  
 1-141437 Gasket

**Exhaust Pipe to Manifold Gasket Renew****626 M94**

Note: Protect fenders from oil and scratches by using fender covers S. T. 130

1. Remove exhaust pipe flange bolts and nuts
2. Push exhaust pipe in to muffler to allow removal of old gasket
3. Install new gasket
4. Replace and tighten exhaust pipe

**Material**

1-132585 Gasket

Same as 626

**640****Material**

1-141535 Gasket 1340

**M98 Exhaust Manifold--Renew** **626**

Note: Use fender covers S. T. 131 and cowl cover S. T. 148 to protect surfaces from oil and scratches.

1. Remove hood and carburetor assembly.
2. Disconnect exhaust to muffler pipe and remove exhaust manifold, using S. T. 101 to remove stud nuts.
3. Strip and assemble studs on new manifold.
4. Reassemble, using all new gaskets.

Note: Be sure all exhaust nuts are pulled up tight to prevent air leaks.

**Material**

- 1-132585 Pipe Gasket
- 1-158033 Exhaust Gasket
- 1-163395 Carburetor Gasket
- 2-158034 Exhaust Manifold to Cylinder Gaskets
- 2-158214 Exhaust Manifold to Cylinder Gaskets
- 1-158330 Manifold

Same as 626

**640**

**Material**

- 1-141437 Manifold Gasket
- 2-141436 Manifold Gaskets
- 2-141478 Manifold Gasket
- 1-141440 Carburetor Gasket
- 1-141535 Pipe Gasket
- 1-158361 Manifold

**M951 Exhaust Manifold Remove and Replace** **626**

Note: Use fender covers S. T. 130 to protect enameled surfaces from oil and scratches.

1. Shut off gasoline at vacuum tank and remove carburetor.
2. Disconnect exhaust pipe and remove manifold, using S. T. for manifold nuts.
3. Replace manifold and tighten.

Note: Be sure all exhaust nuts are pulled up tight to prevent air leaks.

4. Replace carburetor.

**Material**

- 2-158214 Exhaust Manifold Gaskets
- 2-158034 Exhaust Manifold to Cylinder Gaskets
- 1-158033 Exhaust Manifold to Cylinder Gasket
- 1-132585 Exhaust Pipe to Manifold Gasket
- 1-163395 Carburetor Gasket

Same as 626

**640**

**Material**

- 2-141436 Manifold Gaskets
- 2-141478 Manifold Gaskets
- 1-141437 Manifold Gasket
- 1-141440 Carburetor Gasket
- 1-141535 Pipe Gasket

**M955 Francisco Heater Remove and Replace** **626**

1. Remove carburetor from manifold.
2. Remove carburetor control.
3. Remove Francisco heater.
4. Reverse order for reassembling.

**Material**

Same as 626

**640**

**Material**



**Steering Connections - Tighten All**626 **S11**

1. Remove boots and tighten steering connections at:
    - (a) Steering lever on yoke shaft
    - (b) Both ends of connecting rod
    - (c) Both ends of steering cross rod
    - (d) Steering knuckle levers in knuckles
- Note: Use new cutter keys and see that steering is free after all adjustments are made.

**Material**

Same as 626 640

**Material****Steering Connections - Free Up and Grease**626 **S12**

1. Remove boot and disconnect front end of steering connecting rod to determine location of tight joints.
  2. Disconnect one end of steering cross tube to find out which steering knuckle, if either, is tight.
  3. Disconnect remaining joints, clean oil passages, grease thoroughly and re-assemble.
- Note: Do not disturb steering knuckles if found by the foregoing inspection to be perfectly free.

**Material**

1 lb. Grease

Same as 626 640

**Material**

1 lb. Grease

**Steering Connecting Rod - Renew**626 **S13**

1. Remove old steering connecting rod
2. Supply and install new steering connecting rod
3. Tighten connections and trim front wheels  
See Operation S222

**Material**

1-163475 Connecting Rod

Same as 626 640

**Material**

1-138427 Connecting Rod

**Steering Cross Tube Ball Socket Spring—Renew One**626 **S16**

1. Disconnect one end of cross tube and remove old spring
2. Supply and install one new ball socket spring
3. Trim front wheels (See operation S222) and tighten lock nuts

**Material**

1-116313 Spring

Same as 626 640

**Material**

1-116313 Spring

## Steering Cross Tube Ball Joint Puller



Tool No. S. T. 653

### S17 Steering Cross Tube Ball Joints—Renew Both 626

1. Disconnect both ends of cross tube.
2. Remove old ball joints.
3. Supply and install two ball joints.
4. Trim front wheels, using tool S. T. 128 (See operation S222).

**Material**

2-126145 Ball Joints

Same as 626

640

**Material**

2-126145 Ball Joints

### S112 Steering Knuckle Pin Bearing—Upper—Renew One 626

1. Remove hub cap, wheel and brake drum.
2. Remove brake shoe.
3. Remove brake support plate.
4. Remove steering knuckle pin.
5. Remove bearing.
6. Install new bearing and reassemble.

Note: Use proper shims for adjustment of steering knuckle, so as to fit free without any play and grease thoroughly. For removing and replacing hub cap, use wrench S. T. 129.

**Material**

1-126369 Bearing

2-126433 Shims (.025")

2-126255 Shims (.010")

Same as 626

640

**Material**

1-126369 Bearing

2-126433 Shims (.025")

2-126455 Shims (.010")

**Steering Knuckle Lever - Left - Renew**626 **S113**

1. Disconnect left end of steering cross tube and connecting rod
2. Remove old steering lever
3. Supply and install new steering lever - left
4. Reassemble cross tube and connecting rod and trim front wheels. See Operation S222

**Material**

1-163480 Lever - Left  
 1-132142 Ball Joint.....

Same as 626

640

**Material**

1-163480 Lever - Left  
 1-132142 Ball Joint

**Steering Knuckle Lever--Right - Renew**626 **S114**

1. Disconnect right end of cross tube
2. Remove old steering lever
3. Supply and install new steering lever - right
4. Reassemble cross tube and trim front wheels. See Operation S222

**Material**

1-146088 Lever--Right  
 1-132142 Ball Joint

Same as 626

640

**Material**

1-146088 Lever - Right  
 1-132142 Ball Joint

**Steering Knuckle Pin Bearing Lower - Renew**626 **S115**

1. Remove hub cap, using S. T. 129
2. Remove wheel and brake drum
3. Remove brake shoes
  1. Remove brake support plate
  5. Remove steering knuckle plug
  6. Remove bearing
7. Install new bearing and reassemble
 

Note: Use proper shims for adjustment of steering. Knuckle should be free without any play. Grease thoroughly

**Material**

9- 7035 Bearing Ball  
 2-120133 Shims - 0.05"  
 2-120255 Shims - 0.10"

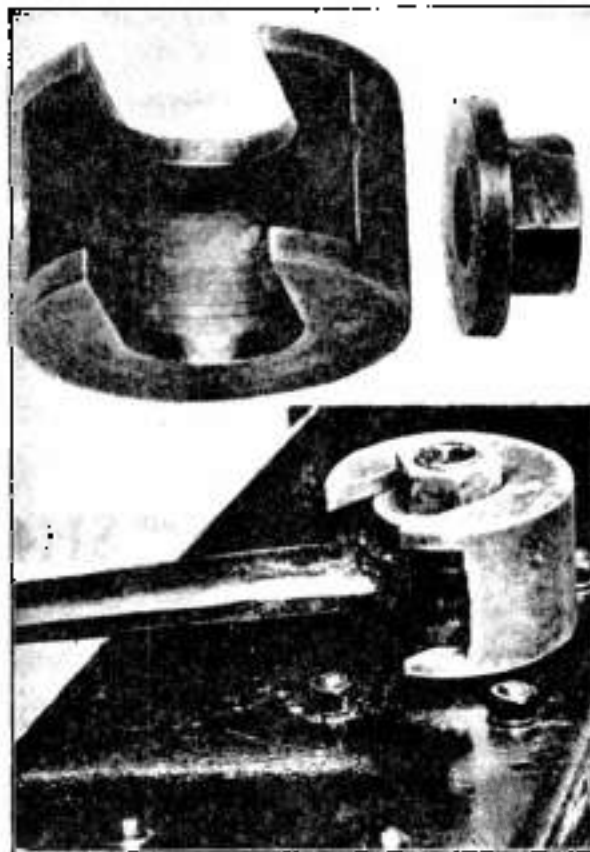
Same as 626

640

**Material**

9- 7035 Bearing Ball  
 2-120133 Shims - 0.05"  
 2-120255 Shims - 0.10"

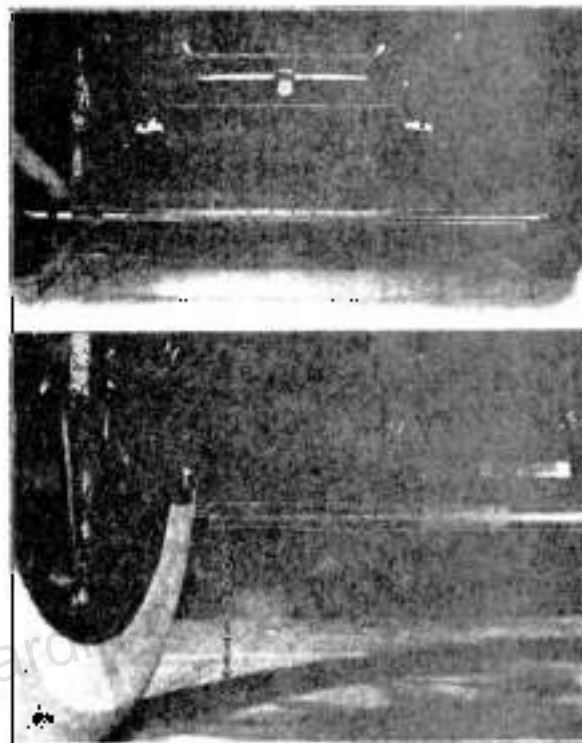
## Steering Lever Puller



Tool No. S. T. 135

Will pull any steering lever quickly and without damage to parts in steering gear. See Mechanical Letter No. 1574 for complete instructions.

## Ideal Wheel Gauge



Tool No. S. T. 128

The best measuring device we have discovered. It positively eliminates guesswork in lining up front wheels, irrespective of condition in which you find tires.

## S116 Steering Knuckle - Renew One

1. Remove hub cap, using S. T. 726
2. Remove front wheel
3. Remove brake shoes
4. Remove front axle brake support plate
5. Remove steering knuckle
6. Install new knuckle and reassemble

Note: Use proper shims for adjustment of steering knuckle and grease thoroughly.

- 1-138893 Steering Knuckle
- 1-125433 Knuckle Bearing Dust Washer
- 1-137153 Retainer
- 2-126433 Shims (.025")

or  
2-126255 Shims (.010")

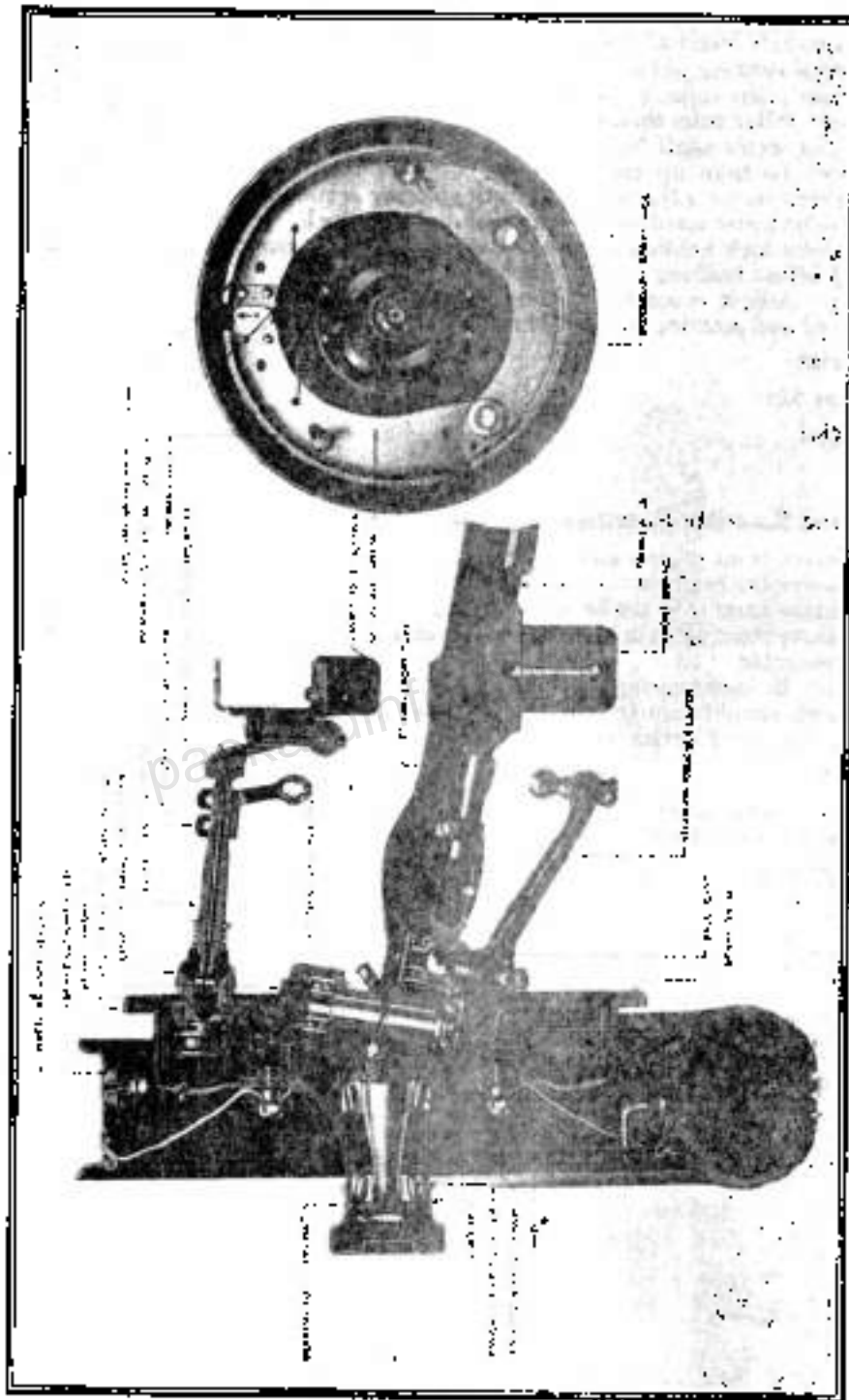
Same as 626

### Material

- 1-138893 Steering Knuckle
- 1-125433 Washer
- 1-137153 Retainer
- 2-125432 Shims (.010")
- or
- 2-126253 Shims (.015")

626

649



## S118 Steering Adjustment Worm and Sector Type 626

1. Jack up front of chassis
2. Disconnect steering drag link
3. Loosen steering pillar tube lock bolt and nut
4. Adjust pillar tube for proper end play  
 Note: Pillar tube should be adjusted so that worm is just free
5. Adjust sector shaft for end play  
 Note: To take up end play remove lock and turn sector plug clockwise. Tighten sector adjusting plug until steering is rough and stiff, then turn plug anti-clockwise until sector is free and replace lock
6. Remove lock holding eccentric bushing at spline end of steering sector shaft and adjust bushing  
 Note: Adjust eccentric bushing by turning clockwise until all play is eliminated and steering is free, then lock adjustment

### Material

Same as 626 640

### Material

## S119 Steering Knuckle Bearings Adjust 626

1. Remove front wheels and hub caps, using wrench S. T. 129
2. Remove brake shoes
3. Remove front axle brake support plates
4. Remove steering knuckle thrust plugs and adjust bearings with necessary shims
5. Reassemble  
 Note: Be sure bearings are not too tight and hub caps are packed with grease. Wheels should turn freely under pressure of one finger  
 See Technical Letter 1840

### Material

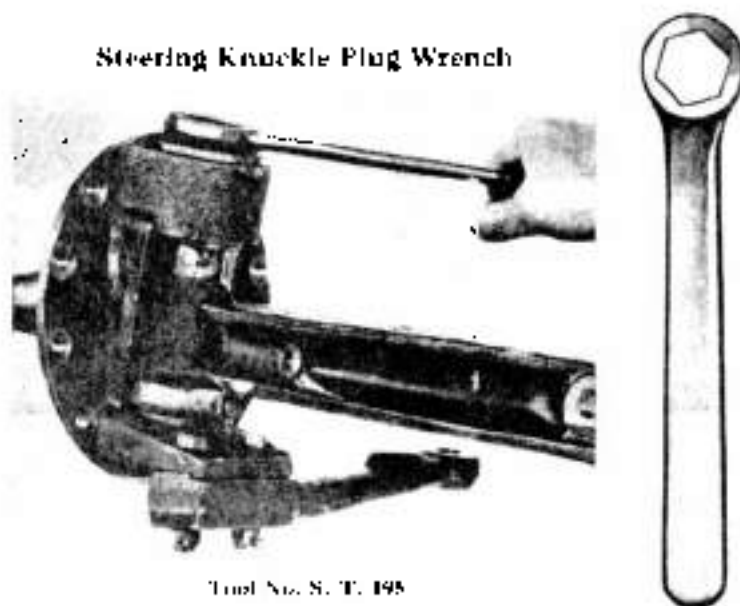
2-120255 Shims (.0015")  
 2-120433 Shims (.025")

Same as 626 640

### Material

2-120255 Shims (.0015")  
 2-120433 Shims (.025")

Steering Knuckle Plug Wrench



Tool No. S. T. 195

**Wheel—Front—Remove One for Inspection and Replace**626 **S220**

1. Raise one front wheel clear of floor.
2. Remove front wheel and report.
3. Repack bearings, replace and adjust. See operation S221 for wheel adjustment.  
Note: Be sure bearings are not too tight. Wheel should turn freely under the pressure of one finger.

**Material**

1 lb. Grease

Same as 626

640

**Material**

1 lb. Grease

**Wheel - Front - Adjust Bearings**626 **S221**

Note: Wheels should be tested regularly against wear of the bearings. The axle should be jacked up and the wheels shaken back and forth in an effort to see whether they are loose or worn.

1. Remove hub cap, using hub cap wrench S. T. 120, and roller pin.
2. Tighten adjusting nut (nearest bearing) as tight as possible with one hand, using a 12" monkey wrench.
3. Back off one-half turn, locking in position with the pin that goes through the locking washer and adjusting nut.
4. Tighten outside nut and insert roller pin.
5. Pack hub cap with grease and replace.

Note: Be sure bearings are not too tight. Wheels should turn freely under pressure of one finger.

**Material**

Same as 626

640

**Material****Wheels- Front - True**626 **S222**

1. Check toe in.
2. Place the wheel gauge between the wheels at the front, with the end of the gauge bearing against tire, both chains barely touching the floor. Set the scale so the pointer registers at zero. Then move the car forward, this will allow the gauge to go to the rear, until the gauge is brought to a position back of the axle, with the chains barely touching the floor. Adjust tie rod if necessary.
3. Adjust steering cross rod so that the front wheels toe in  $\frac{1}{8}$ "

**Material**

Same as 626

640

**Material****Wheel - Front or Rear - Distel Renew One**626 **S223**

1. Jack up wheel and remove tire and wheel.
2. Install new wheel and apply tire.
3. Inflate toe with air.
4. Adjust wheel bearings.

Note: Wheel must balance when dropping.

5. Pack hub cap with grease and replace.

Note: Proper front wheel bearing adjustment is secured by drawing up adjusting nut tight with 12" wrench, then backing off one-half turn. Fit lock in place and lock with lock nut. Be sure roller pin is in place. On rear wheel brake band must not drag and the wheel tire must run true when the operation is completed. If wheel change is due to damaged wheel, check toe in. See Operation S222.

**S223****Material**

1-157504 Wheel

**Cont.**

Same as 626

640

**Material**

1-157504 Wheel

**S225****Wheel Hub Cap Renew One**

626

1. Remove the old or damaged hub cap
2. Supply and install front or rear hub cap, using S. T. 129. Be sure and pack new hub cap with grease

Note: This specification limits repairs on wheel hub to "chasing" damaged threads

**Material**

1-114388 Hub Cap . . . . .

Grease . . . . .

Same as 626

640

**Material**

1-114388 Hub Cap . . . . .

Grease . . . . .

**S226****Wheel Front—Hub Assembly—Renew One (Disteel Wheel)**

626

1. Jack front wheel clear of floor
2. Remove hub cap, using wrench S. T. 129
3. Remove cotter key and bearing adjusting nuts
4. Remove front wheel and bearings
5. Remove hub assembly and replace with new assembly
6. Replace wheel and bearings
7. Tighten adjusting nut (nearest to bearing), with one hand, using a 12-*inch* monkey wrench. Back off one-half turn, locking in position with a pin that goes through the locking washer and adjusting nut. Tighten outside nut and insert cotter pin  
Note: Be sure that bearing is not too tight. Wheel should turn freely under pressure of one finger
8. Replace hub cap and pack with grease
9. Remove jack  
Note: Use hub cap wrench S. T. 129 to prevent marring of hub cap

**Material**

1-163029 Hub Assembly . . . . .

1 lb. Grease . . . . .

Same as 626

640

**Material**

1-163029 Hub Assembly . . . . .

1 lb. Grease . . . . .



**Wheel—Front—Dust Washer and Retainer Renew (Includes S226)**

626 **S227**

1. Remove retainer and dust washer.  
Note: Use a screw driver or a cold rolled bar to drive nut retainer.
2. Supply and install new retainer and dust washer.

**Material**

1-125144 Washer

1-137153 Retainer

Same as 626

640

**Material**

1-125133 Washer

1-137153 Retainer

**Front or Rear Wheels—Balance Two**

626 **S232**

1. Remove front or rear wheels or balance them on front wheels.
2. Use an old steering knuckle with brake drum assembly.  
Note: Be sure bearings are not too tight. Wheels should turn freely under pressure of one finger.
3. Balance wheels.
4. Remove lug nut and remove washers wherever the wheel is heavy and place it where the wheel is light. Then check for proper balance of wheels.
5. Replace wheels and tighten.

**Material**

1/2 lb. Grease

Same as 626

640

**Material**

1/2 lb. Grease

**Front and Rear Wheels—Balance All**

626 **S233**

1. Remove front and rear wheels or balance them on front wheels.
2. Use an old steering knuckle with brake drum assembly.  
Note: Be sure bearings are not too tight. Wheels should turn freely under pressure of one finger.
3. Balance wheels.
4. Remove lug nut and remove washers wherever the wheel is heavy and place it where the wheel is light. Then check for proper balance of wheels.
5. Replace wheels and tighten.

**Material**

1/2 lb. Grease

Same as 626

640

**Material**

1/2 lb. Grease

## S245 Steering Knuckle Inboard Bearing Cone, Rollers and Cup Renew 626

Note: Wheels should be tested regularly against wear of the bearings. The axle should be jacked up and the wheels shaken back and forth in an effort to see whether they are loose or worn.

1. Jack up car and remove front hub cap and wheel, using tool S. T. 129.
2. Drive out old inboard bearing cup and replace with new.
3. Reassemble, using new inboard cone and rollers and pack bearing with grease.
4. Adjust wheel bearing. See Operation S227.

### Material

1-139769 Bearing Assembly  
 1-125433 Dust Washer  
 1-137153 Dust Washer Retainer  
 1 lb. Grease

Same as 636

640

### Material

1-137153 Dust Washer Retainer  
 1-125433 Dust Washer  
 1-139769 Bearing Assembly  
 1 lb. Grease

## S246 Steering Knuckle Outboard Bearing Cone, Rollers and Cup Renew 626

Note: Wheels should be tested regularly against wear of the bearings. The axle should be jacked up and the wheels shaken back and forth in an effort to see whether they are loose or worn.

1. Jack up car and remove front hub cap and wheel, using S. T. 129.
2. Drive out old outboard bearing cup and replace with new.
3. Reassemble, using new outboard cone and rollers, packing with grease.
- Note: Reassemble new rollers in place.
4. Adjust wheel bearings. See Operation S227.

### Material

1- 97056 Bearing Assembly  
 1-125433 Dust Washer  
 1-137153 Dust Washer Retainer  
 1 lb. Grease

Same as 626

640

### Material

1-137153 Dust Washer Retainer  
 1-125433 Dust Washer  
 1- 97056 Bearing Assembly  
 1 lb. Grease

## S251 Wheels - Front Remove Both and Replace 626

Note: Wheels should be tested regularly against wear of the bearings. The axle should be jacked up and the wheels shaken back and forth in an effort to see whether they are loose or worn.

1. Raise front wheels clear of floor.
2. Remove hub caps, using tool S. T. 129 and take off both front wheels.
3. Inspect bearings and cones and report condition to fireman.

4. Replace and adjust wheel bearings
5. Tighten adjusting nut (nearest bearing) with one hand using a 12" monkey wrench
6. Back off one-half a turn, locking in position with a pin that goes through locking washer and adjusting nut
7. Tighten outside nut and insert cotter pin
8. Replace hub caps and pack with grease.  
Note: Be sure that bearings are not too tight. Wheels should turn freely under the pressure of one finger.
9. Remove jack from under car

**S251****Cont.****Material**

Grease

Same as 626

**640****Material**

Grease

packardinfo.com



- Steering Gear—Tighten to Frame** 626 **S31**
1. Tighten all steering gear case to frame bolts
- Material**
- Same as 626 640
- Material**
- 
- Steering Lever—Tighten on Yoke Shaft** 626 **S32**
1. Tighten nut on yoke shaft using good size wrench
- Material**
- Same as 626 640
- Material**
- 
- Steering Wheel—Renew** 626 **S33**
1. Remove eight screws from hub flange
  2. Remove upper hub
  3. Remove old steering wheel
  4. Supply and install new steering wheel
- Note: Be sure that spark and throttle levers work freely and steering wheel is perfectly tight
- Material**
- 1-17071 Steering Wheel 640
- Same as 626
- Material**
- 1-17071 Steering Wheel
- 
- Steering Worm and Sector—Renew (Includes S310)** 626 **S35**
1. Fit new sector and worm
- Note: Steering should be free after all adjustments are made
- Material**
- 1-13049 Worm
- 1-130865 Sector
- Same as 626 640
- Material**
- 1-13049 Worm
- 1-130865 Sector
- 
- Steering Gear Case—Renew (Includes S310)** 626 **S36**
1. Supply and install new steering gear housing
- Note: Be sure and check spark and throttle adjustment before car leaves service station

**S36 Material**

**Cont.** 1-128541 Packing  
1-159862 Case  
1-132143 Gasket

Same as 626

640

**Material**

1-159863 Case  
1-128541 Packing  
1-132143 Gasket  
1-132143 Gasket

**S310 Steering Remove for Inspection, Disassemble and Report, Reassemble and Replace**

626

Note: Protect trimmings on finish from oil and scratches by using leather covers S. T. 127, front seat covers S. T. 111, and double door covers S. T. 146.

1. Remove floor board, pedal ends and toe board.
2. Remove steering wheel.
3. Remove starter motor.
4. Remove spark and throttle control rods and horn wire.
5. Remove nut on steering spindle and remove steering arm.
6. Loosen steering from frame and remove from chassis.
7. Remove headlight switch from steering gear case.
8. Dismantle and report.
9. Reassemble steering.
10. Replace worm and tighten set screw holding bearing retainer from turning.
11. Replace pillar tube and adjust tube for end play.  
Note: Pillar tube should be adjusted so that worm is just free.
12. Repair sector.  
Note: When meshing sector and worm, be sure that the key way in worm shaft is at top center and the sector is as far to the right as it will go or up against the stop in case.
13. Replace steering gear cover and tighten.  
Note: Be sure case is filled with heavy oil.
14. Repair sector adjusting plug and adjust for proper end play.
15. Replace adjusting plug lock and tighten.
16. Remove lock holding eccentric bushing at spine end of steering sector shaft and adjust bushing.  
Note: Adjust eccentric bushing by turning clockwise until all play is eliminated and steering is free and lock adjusted.
17. Replace in chassis and reassemble.
18. Replace steering arm and tighten.  
Note: The zero mark on spindle end of steering sector shaft must line up with zero mark on steering arm.

**Material**

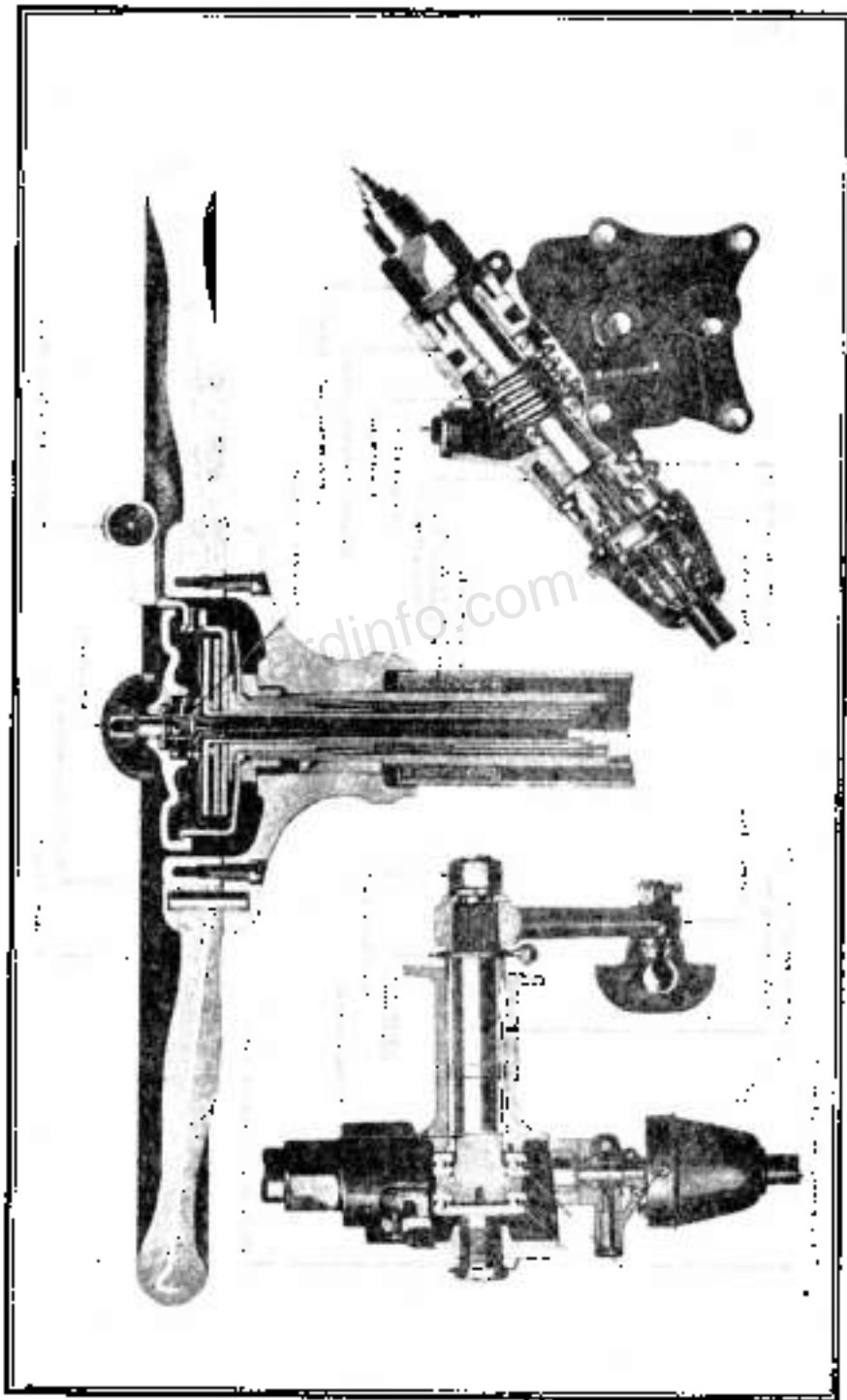
Oil

Same as 626

640

**Material**

Oil



### S351 Steering Gear Remove and Replace 626

Note: Protect trimmings and finish from oil and scratches by using tender covers S. T. 130, seat covers S. T. 111, double door covers S. T. 146

1. Remove front compartment floor boards
2. Disconnect steering lever, using lever puller S. T. 135, control rods and horn cable
3. Remove steering column to instrument board and bearing
4. Take out steering gear to main bolts and lift out assembly
5. Replace steering assembly and reassemble

Note: Before replacing steering lever, be sure and locate center of steering wheel travel with front wheels perfectly straight

#### Material

Same as 626 640

#### Material

### S352 Steering Gear Adjust and Fill with Whitmores NO-52 626

1. Adjust pillar tube, so that worm is just free
2. Adjust sector shaft for end play. Turn sector plug clockwise until steering is rough and stiff. Then turn plug anti clockwise until sector is free and then replace lock
3. Adjust eccentric bushing by turning clockwise until all play is eliminated and steering is free
4. Fill steering with heavy oil, Whitmores NO-52

#### Material

1 Pt. Whitmores Compound

Same as 626

640

#### Material

1 Pt. Whitmores Compound



**Clutch Pedal - Adjust**626 **T11**

1. Adjust clutch shifter lever connecting rod nut to permit one inch free travel of clutch pedal arm between the floor board and the point where the shifter lever begins to function.

**Material**

Same as 626

640

**Material****Clutch Driven Plate - Renew (One Plate Clutch)  
(Includes T110)**626 **T15**

1. Install New Clutch Plates

**Material**

1-148016 Driven Plate Assembly

**Clutch Driven Plates—Renew  
(Includes T110)**

640

Same as 626

**Material**

2-143407 Driven Plate Assembly

**Clutch and Transmission Assembly  
Remove and Replace**626 **T109**

Note: To protect exposed surfaces in seat covers S. T. 144 double door covers S. T. 146 and steering wheel covers S. T. 149

1. Remove floor boards and pedal pads and toe boards
2. Disconnect brake rod and speedometer cable
3. Remove front universal joint and swing joint to one side  
Note: Remove frame front intermediate channel reinforcement
4. Remove 6, 7 bolts from clutch case or spring cover assembly bolt or two plate clutch and lower the assembly to be removed from under car  
Note: Do not dismantle clutch or transmission on this operation
5. Replace clutch and transmission in reverse order of removal

**Material**

Same as 626

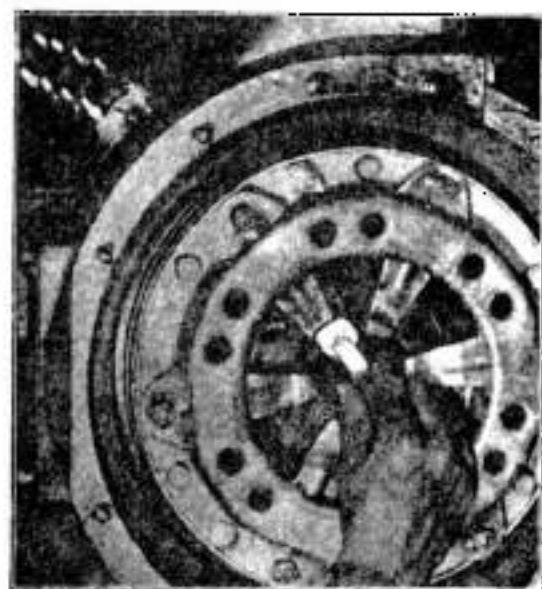
640

**Material****Clutch—Remove for Inspection, Dismantle  
Reassemble and Replace (One and Two Plate Clutch)**626 **T110**

Note: To protect exposed surfaces, use seat covers S. T. 144 double door covers S. T. 146 and steering wheel cover S. T. 149

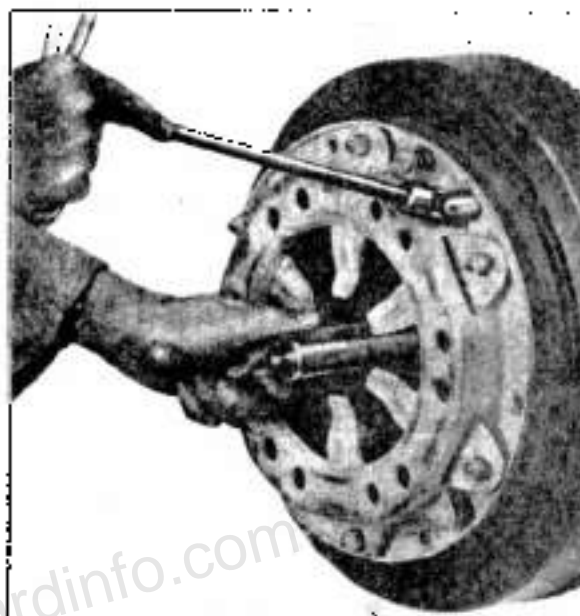
1. Remove floor boards and pedal pads
2. Remove toe boards and remove shifter lever screws
3. Disconnect brake rod at foot brake pedal
4. Disconnect rear stop light cable and speedometer cable
5. Remove front universal joint, Swing joint to one side
6. Remove frame front intermediate channel reinforcement
7. Remove 8, 7 nuts and bolts from clutch case and lower clutch and transmission to floor. Jack up left front wheel or as to allow assembly to be removed from under car
8. Disconnect and remove cover plate and spring assembly from flywheel

## Clutch Release Lever Gauge



Tool No. 645

## Clutch Plate Aligning Bar



Tool No. 8, T. 638

**T110**  
Cont.

9. Remove driven plate unit from flywheel and dismantle plates and clutch shaft.  
Note: The lining of clutch plates must be free from oil and in good condition, and have good bearing surfaces. Place the clutch plates on a surface plate to locate the spring or warped plates.

10. Eliminate end play in clutch shaft.  
11. Reassemble in reverse order of removal.

Note: When reassembling plates see that the center driving plates and clutch plates have  $\frac{1}{8}$ " clearance. It is also necessary to have an old clutch shaft handy to line up the clutch plates when rightening the cover and spring assembly to the flywheel. This is important. There are three adjusting screws on the spring and cover assembly which should be adjusted  $\frac{1}{8}$ " after the cover and spring assembly have been replaced and rightened to the flywheel or screw down until pin seats on driving plate, then back on three notches.

**Material**

2 Qts. Oil

Same as #26

610

**Material**

2 Qts. Oil

**T111** Clutch Driven Plate and Pressure Plate—Renew  
(One Plate Clutch) (Includes T110)

626

1. Install new clutch plate.
2. Remove and dismantle clutch pressure plate and install

**Material**

1-148016 Driven Plate Assembly  
 1-148017 Pressure Plate  
 6-143476 Bolt  
 6-143478 Nut  
 6-148024 Washer

**T111**  
 Cont.

**Clutch Center Plate Driven Plates and Pressure Plate--Renew  
 (Includes T110) (Two Plate Clutch)**

640

1. Install new plates.

**Material**

2-143467 Driven Plate Assembly  
 1-143471 Pressure Plate Assembly  
 1-143484 Center Driving Plate  
 6-143476 Bolt  
 6-143478 Nut  
 6-143477 Washer

**Clutch Pressure Plate--Renew  
 (Includes T110)**

626 **T112**

1. Remove and dismantle clutch pressure plate and install

**Material**

1-148017 Pressure Plate  
 6-143476 Bolt  
 6-143478 Nut  
 6-148024 Washer

Same as 626

640

**Material**

1-143471 Pressure Plate  
 6-143476 Bolt  
 6-143478 Nut  
 6-143477 Washer

**Clutch Shaft Front Bearing--Renew  
 (Includes T109)**

626 **T113**

1. Remove old bearing from flywheel.
2. Supply and install new bearing.
3. Be sure to lubricate bearing with grease.

**Material**

1-107389 Bearing  
 1-156461 Retainer

**Clutch Shaft Front Bearing--Renew  
 (Includes T109)**

640

Same as 626

1-107389 Bearing  
 1-156461 Retainer

## T114 Clutch Shaft Rear Bearing- Renew 626

(Includes T110)

1. Remove clutch shaft rear bearing retainer
2. Press out old bearing sleeve
3. Supply and install new sleeve and roller assembly
4. Lubricate bearing and replace retainer

### Material

- 1-116601 Roller Assembly
- 3-116600 Sleeve
- 2-117814 Thrust Washer
- 1-117985 Rear Bearing Housing Gasket

(Includes T110) 640

Same as 626

### Material

- 1-116601 Roller Assembly
- 1-116600 Sleeve
- 1-117814 Thrust Washer
- 1-117985 Rear Bearing Housing Gasket

## T116 Clutch Shaft- Renew 626

(Includes T110)

1. Remove clutch shaft rear bearing retainer from transmission
2. Supply and reassemble new clutch shaft  
 Note: Shim transmission driving shaft thrust button. Should have not more than .006" end play

### Material

- 1-135103 Shaft
- 1-117985 Rear Bearing Housing Gasket

(Includes T110) 640

Same as 626

### Material

- 1-135103 Shaft
- 1-117985 Rear Bearing Housing Gasket

## T117 Clutch Shifter Thrust Bearing- Renew 626

(Includes T110)

1. Remove clutch shifter bearing and install new

### Material

- 1-135119 Bearing

(Includes T110) 640

Same as 626

### Material

- 1-135119 Bearing

## T120 Clutch- Recondition (Labor Only) 626

Note: The estimated zone prices of parts required to re-condition clutch are: 1st zone, \$21.15; 2nd zone, \$22.75; 3rd zone, \$25.00. All parts listed will not be required.

Note: To protect exposed surfaces, use seat covers S. T. 144, double door covers S. T. 146 and steering wheel cover S. T. 149.

# T120

Cont.

1. Remove floor boards and pedal parts.
2. Remove toe boards.
3. Disconnect brake rod at foot brake pedal.
4. Disconnect rear stop light cable and speed-meter cable.
5. Remove frame from intermediate channel reinforcement.
6. Remove shifter lever gears.
7. Remove front universal joint, swing joint to one side.
8. Remove  $\frac{1}{2}$ " nuts and bolts from case and lower the clutch and transmission to floor. Jack up left front wheel so as to allow assembly to be removed from under car.
9. Disconnect and remove cover plate and spring assembly from flywheel.
10. Remove clutch and clutch plates from flywheel and dismantle plates and clutch shaft.
 

Note: The lining of clutch plates must be free from oil and in good condition and have good bearing surfaces. Place the clutch plates on a surface plate to locate the spring or warped plates.
11. Eliminate end play in clutch shaft.
12. Rebuild clutch using new parts to put in first class condition.
 

Note: When reassembling plates see that the con or driving plates and clutch plates have 2° of contact. It is also necessary to have an old clutch shaft handy to line up the clutch plates, when tightening the cover and spring assembly to the flywheel.

(This is important. There are three adjusting screws on the spring and cover assembly which should be adjusted to 2° clearance after the cover and spring assembly have been placed and tightened to the flywheel or screw down until joint seats on driving plate, then back out three notches.)

### Material

- 7-11326 Clutch Drive Plate Assembly
- 1-148160 Clutch Release Thrust Bearing
- 1-138104 Clutch Rod
- 1-14347 Clutch Release Plate Assembly
- 7-11312 Clutch Release Hub
- 6-14319 Clutch Release Belt Springs
- 3-113180 Clutch Release Spring
- 1-14318 Clutch Cover or Drive Plate
- 1-143186 Clutch Spring
- 7-143185 Clutch Release Lever
- 1-143178 Clutch Release Mat Assembly
- 3-113187 Clutch Release Screw Spring
- 1-143121 Frame Nut
- 6-143176 Bolt
- 6-143178 Nut

Standard 10-1-57

1-48

### Material

- 7-11346 Clutch Drive Plate Assembly
- 1-138119 Clutch Release Thrust Bearing
- 1-138104 Clutch Rod
- 7-11371 Clutch Release Plate Assembly
- 7-11312 Clutch Release Hub
- 6-14319 Clutch Release Belt Springs
- 3-113180 Clutch Release Spring
- 1-143181 Clutch Cover or Drive Plate
- 12-113186 Clutch Spring
- 6-143188 Clutch Release Lever
- 1-143178 Clutch Release Mat Assembly
- 3-113187 Clutch Release Screw Spring
- 6-143176 Bolt
- 6-143178 Nut

## T121 Clutch Shifter Fork Shaft- Renew 626

Note: Protect exposed surfaces, use seat covers

1. Remove floor boards and pedal pads
2. Remove toe boards, brake rod at foot pedal
3. Remove clutch case inspection plate
4. Use  $\frac{3}{8}$ " long shank socket wrench and remove clutch casing cap screws
5. Remove universal joint at transmission and swing joint and shaft to one side
6. Remove  $\frac{3}{8}$ " nuts and bolts from clutch case and lower clutch and transmission to floor
7. Remove clutch shifter fork and install new shifter fork
8. Reassemble in the reverse order of removal

### Material

1-142000 Fork

Same as 626

640

### Material

1-142000 Fork.

## T130 Clutch and Transmission Recondition (Labor Only) 626

Note: The estimated zone prices of parts required to recondition clutch and transmission are: 1st zone, \$67.85, 2nd zone, \$71.10, 3rd zone, \$78.70. All parts listed will not be required.

1. Remove floor boards and pedal pads
2. Remove toe boards
3. Disconnect brake rod at foot brake pedal
4. Disconnect rear cup light cable and speedometer cable
5. Remove front universal joint. Swing joint to one side
6. Remove frame front inspection channel reinforcement
7. Remove shifter lever screw
8. Remove  $\frac{3}{8}$ " nuts and bolts from case and lower the clutch and transmission to floor. Jack up left wheel so as to allow assembly to be removed from under car
9. Disconnect and remove cover plates and spring assembly from flywheel
10. Remove driver and clutch plates from flywheel and disc drive plates
11. Rebuild clutch using new parts to put in first class condition.  
Note: When reassembling plates see that the cover driving plates and clutch plates have  $\frac{1}{2}$ " clearance. It is also necessary to have an old clutch shaft handy to line up the clutch plates. When tightening the cover and spring assembly to the flywheel there are three adjusting screws on the spring and cover assembly. This is important, which should be adjusted to  $\frac{1}{2}$ " clearance after the cover and spring assembly have been replaced and tightened to the flywheel.
12. Remove clutch shaft and bearing and eliminate end play in clutch shaft
13. Drain oil from transmission
14. Remove transmission case cover
15. Remove shifter shaft interlocking plunger. This will permit the removal of shifter shaft after the interlocking screws have been removed from shifter
16. Remove speedometer drive at rear bearing housing
17. Pull out direct drive shaft
18. Lift out first and second speed gear
19. Remove countershaft nut. Also remove small locking screws at rear of countershaft
20. Use brass drift punch. Drive on countershaft toward the rear of case and lift out countershaft
21. Rebuild transmission, using new parts necessary to put in first class condition
22. After thorough inspection has been made, reverse this order for reassembling

Note: Transmission driving shaft thrust button located within the direct driving gear should not have more than .006" end play. Shim if necessary

**Material**

## Transmission

1-11112	Driving Shaft Bearing—Rear	.....
1-126822	Countershaft First Speed and Reverse Gear	.....
1-126824	Countershaft Second Speed Gear	.....
1-126823	Countershaft Constant Mesh Gear	.....
1-126173	Direct Drive and Second Speed Gear	.....
1-126141	First Speed and Reverse Gear	.....
1-124353	Driving Shaft	.....
1-124354	Driving Shaft Bearing—Front	.....
2-124347	Countershaft Bearings	.....
2 Qrs. Oil		.....

**T130**  
Cont.**(One Plate Clutch)**

1-148016	Driven Plate Assembly	.....
1-143471	Pressure Plate	.....
6-143476	Bolt	.....
6-143478	Nut	.....
1-142000	Clutch Shaft	.....

same as h26

640

Note: The estimated zone prices of parts required to recondition clutch and transmission are: 1st zone, \$57.85; 2nd zone, \$71.10; 3rd zone, \$78.50. All parts listed will not be required.

**Material**

## Clutch

2-143467	Clutch Driven Plate Assembly	.....
1-138119	Clutch Shifter Thrust Bearing	.....
1-138103	Clutch Shaft	.....
1-143473	Clutch Pressure Plate Assembly	.....
1-143472	Clutch Splined Hub	.....
6-143479	Clutch Release Bolt Springs	.....
4-143480	Clutch Separator Springs	.....
1-143484	Clutch Center Driving Plate	.....
12-143486	Clutch Springs	.....
6-143485	Clutch Release Levers	.....
1-143468	Clutch Insulator Mat Assembly	.....
1-141188	Cover Plate	.....
3-143488	Adjusting Screw Springs	.....

## Transmission

1-11112	Driving Shaft Bearing—Rear	.....
1-126822	Countershaft First Speed and Reverse Gear	.....
1-126824	Countershaft Second Speed Gear	.....
1-126823	Countershaft Constant Mesh Gear	.....
1-126173	Direct Drive and Second Speed Gear	.....
1-126141	First Speed and Reverse Gear	.....
1-124353	Driving Shaft	.....
1-124354	Shaft Bearing Front	.....
2-124347	Countershaft Bearings	.....
2 Qrs. Oil		.....

**Clutch and Transmission—Remove for Inspection, Dismantle, Report and Reassemble**h26 **T140**

Note: Protect exposed surfaces use seat covers S. T. 144, double door covers S. T. 146 and steering wheel cover S. T. 149

1. Remove floor board and pedal pads
2. Remove toe boards
3. Disconnect brake cable at foot brake pedal
4. Disconnect rear stop light cable and speedometer cable
5. Remove front universal joint. Swing joint to one side

**T140**

Cont.

6. Remove  $\frac{3}{8}$ " nuts and flats from case and lower the clutch and transmission to floor. Jack up left front wheel so as to allow assembly to be removed from under car.
7. Disconnect and remove cover plates and spring assembly from flywheel.
8. Remove driven and clutch plates from flywheel and dismantle plates.  
Note: When reassembling plates see that the center driving plates and clutch plates have  $\frac{1}{8}$ " clearance. It is also necessary to have an old clutch shaft handy to line up the clutch plates. When tightening the cover and spring assembly to the flywheel there are three adjusting screws on the spring and cover assembly (this is important), which should be adjusted to  $\frac{1}{8}$ " after the cover and spring assembly have been replaced and tightened to the flywheel.
9. Remove clutch shaft and bearing.
10. Drain oil from transmission.
11. Remove transmission case cover.
12. Remove shifter shaft interlocking plunger. This will permit the removal of shifter shaft after the interlocking screws have been removed from shifter.
13. Remove speedometer drive at rear bearing housing.
14. Pull out direct drive shaft.
15. Lift out first and second speed gear.
16. Remove countershaft nut; also remove small locking screw at rear of countershaft.
17. Use brass drift punch. Drive out countershaft toward the rear of case and lift out countershaft.
18. After a thorough inspection has been made, reverse this order for reassembly.  
Note: Transmission driving shaft thrust bearing located within the direct driving gear should not have more than .005" end play. Shim if necessary.

**Material**

2 (1) - 60

Same as 60

**Material**

2 (1) - 60

640

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**Transmission Gear Shifter Fork—Renew One**626 **T20**

Note: Use seat covers

1. Remove floor boards and shifter lever cover
2. Remove transmission shifter shaft interlocking plunger. This will permit the removal of shifter shaft after the interlocking screws have been removed from shifter fork
3. Remove the old shifter fork and install new
4. Rebuild the entire job

**Material**

1-158111 Fork

Same as 626

640

**Material**

1-158144 Fork

**Change Speed Lever - Renew**626 **T21**

Note: Use seat covers S. T. 144 to protect surfaces from oil and grease

1. Remove floor board and toe boards
  2. Remove change speed lever nut and dust cover
  3. Supply and install new change speed lever
- Note: Be sure both shifter forks are in neutral position

**Material**

1-158028 Lever

Same as 626

640

**Material**

1-158028 Lever

**Transmission Cover Gasket—Renew**626 **T25**

Note: To prevent trimming from oil and grease, use seat covers S. T. 144

1. Remove floor board and toe boards
2. Remove cover and install new gasket
3. Reassemble cover in place
4. Replace floor boards and tighten screws in toe board

**Material**

1-124393 Gasket

Same as 626

640

**Material**

1-124393 Gasket

**Transmission Case - Supply and Install**626 **T26**

Note: Use seat covers S. T. 144 to protect exposed surfaces from oil and grease

1. Remove toe pads, floor boards and toe boards
2. Remove universal joint, clutch cover and clutch raising screws
3. Remove transmission and clutch assembly. (See operation T140)
4. Drain oil
5. Remove transmission case cover
6. Remove transmission shifter shaft interlocking plunger. This will permit the removal of shifter shafts after the locking screws have been removed from shifter fork

**T26**

Cont.

7. Remove speedometer drive at rear bearing housing
8. Remove nuts from driving shaft rear bearing housing
9. Pull out direct drive shaft
10. Lift out 1st and 2nd speed gears
11. Remove drive shaft from bearing
12. Remove clutch shaft
13. Remove countershaft nut; also small locking screws at rear of countershaft
14. Use brass drift punch, drive out countershaft toward the rear of case and lift out countershaft gears
15. Supply and install new case, using original parts  
Note: Transmission driving shaft thrust button, located within the direct driving gear should not have more than .006" end play—shim if necessary

**Material**

- 1-159271 Case  
2 Qts. Gear Oil

Same as 626

640

**Material**

- 1-159271 Case  
2 Qts. Gear Oil

**T27****Transmission Gear Shifter Lock Plunger and Spring—Renew**

626

Note: Use seat covers to protect exposed surfaces from oil and grease

1. Remove floor boards
2. Remove transmission shifter shaft interlocking plunger
3. Renew shifter lock plunger and spring
4. Rebuild the entire job and test on floor

**Material**

- 1-118283 Spring  
1-158128 Plunger

Same as 626

640

**Material**

- 1-118283 Spring  
1-158128 Plunger

**T28****Transmission Direct Drive and Second Speed Gear—Renew**

626

Note: To protect trimming from oil and grease, use seat covers S. T. 144

1. Remove floor board
2. Disconnect speedometer cable at transmission
3. Loosen screws in floor board
4. Remove transmission cover and shifter lever
5. Loosen lock screws on shifter forks and gear shifter shaft interlocking plungers, then remove shifter shaft cover and pull out shifter shafts
6. Remove front universal joint
7. Remove rear bearing housing of direct drive shaft
8. Pull direct drive shaft far enough to release direct drive and 2nd speed gear
9. Lift out old direct drive and 2nd speed gear
10. Install new gear and reassemble in reverse order of disassembly  
Note: Drive shaft end play should not exceed .006". Shim if necessary
11. Reassemble and adjust to level with fresh gear oil

**Material**

1-126173 Gear  
2 Qts. Gear Oil

Same as 626

**T28**  
Cont.

640

**Material**

1-126173 Gear  
2 Qts. Gear Oil

**Transmission Drive Shaft--Renew**

626 **T29**

Note: Use seat covers S. T. 144 to protect exposed surfaces

1. Remove floor board
2. Disconnect speedometer cable at transmission
3. Loosen screws in toe board  
Note: Shift gears to register in third speed
4. Remove transmission cover and shifter lever
5. Remove front universal joint
6. Remove rear bearing housing of direct drive shaft
7. Pull direct drive shaft
8. Press off universal joint flange speedometer driving gear and rear bearing
9. Assemble bearing, speedometer driving gear and universal flange to new shaft  
Note: Be sure that rear bearing oil thrower is assembled after pressing on speedometer drive gear with outer edge toward the rear of shaft. Also see that shaft nut is pulled up tight
10. Install new shaft and reassemble in reverse order of disassembly. End play of shaft should not exceed .008". Shim if necessary

**Material**

1-117984 Rear Bearing Housing Gasket  
1-146597 Shaft  
2 Qts. Oil

Same as 626

640

**Material**

1-117984 Rear Bearing Housing Gasket  
1-146597 Shaft  
2 Qts. Oil

**Transmission—Remove, Dismantle, Report and Reassemble**

626 **T210**

Note: Use seat covers S. T. 144 to protect exposed surfaces from oil and grease

1. Remove floor and toe boards
2. Disconnect universal joint and remove transmission and clutch assembly from chassis
3. Jack up chassis to permit removal of transmission and clutch assembly
4. Remove clutch assembly from transmission. (See operation T140)
5. Drain oil from transmission case
6. Remove transmission case cover
7. Remove transmission shifter shaft interlocking plunger. This will permit the removal of shifter shafts after the locking screws have been removed from shifter fork
8. Remove speedometer drive at rear bearing housing
9. Remove nuts from driving shaft rear bearing housing
10. Pull out direct drive shaft
11. Lift out 1st and 2nd speed gears
12. Remove drive shaft front bearing
13. Remove clutch shaft

**T210**

Cont.

14. Remove countershaft nut; also remove small locking screw at rear of countershaft
  15. Use brass drift punch, drive out countershaft toward the rear of case and lift out countershaft gears
  16. Report on condition of transmission parts
  17. Reassemble in reverse order of removal
- Note: Transmission driving shaft thrust button located within the direct driving gear should not have more than .006" end play—if necessary shim

**Material**

2 Qts. Gear Oil

Same as 626

640

**Material**

2 Qts. Gear Oil

**T211****Transmission Case Cover—Renew**

626

Note: Use seat covers S. T. 144

1. Remove floor board and shifter lever cover
2. Remove shifter lever from cover and install new cover and gasket
3. Rebuild the entire job

**Material**

1-124393 Gasket  
1-159271 Cover

Same as 626

640

**Material**

1-124393 Gasket  
1-159271 Cover

**T213****Transmission Speedometer Gear—Tighten on Shaft**

626

Note: Use seat covers

1. Remove floor boards and clutch shifter lever and cover
2. Remove speedometer shaft and bushing
3. Remove shifter fork
4. Remove nuts from driving shaft rear bearing housing
5. Pull out direct drive shaft and lift out first and second speed gears
6. Tighten speedometer gear and rebuild the entire job

**Material**

Same as 626

640

**Material**

**Transmission Gear Shifter Fork Shaft - Renew  
(Transmission Off Car)****626 T216**

1. Remove transmission shifter shaft interlocking plunger. This will permit the removal of shifter shaft after the interlocking screws have been removed from shifter fork.
2. Remove the old shaft and install new.

**Material**

1-158095 Shaft

1-158091<sup>01</sup> Shaft

Same as 626

**640****Material**

1-158095 Shaft

1-158091<sup>02</sup> Shaft**Transmission Direct Drive Shaft and Shifter  
Fork - Remove and Replace****626 T217**

1. Remove floor boards and shifter.
2. Remove shifter fork.
3. Remove universal joint.
4. Disconnect speedometer cable.
5. Remove rear bearing housing and pull direct drive shaft and second speed gear.
6. Inspect transmission for broken fork parts that dropped into transmission oil.
7. Reassemble.

Note: This operation should be used in conjunction with T 20 Transmission Shifter Fork - Renew.

**Material**

Same as 626

**640****Material**



**Universal Joint Flange Bolts—Front and Rear—Tighten**

626 **T34**

1. Tighten bolts front and rear
- Note: Be sure all lock washers are in place

**Material**

Same as 626 640

**Material**

**Universal Joint Drive Shaft—Renew**

626 **T36**

1. Remove rear universal joint flange bolts and pull assembly clear of spline joint in front
  2. Disassemble rear joint and mount on new shaft
  3. Assemble in place with joint yokes in same place and pack with universal joint grease or fill with oil
- Note: Be sure that each bolt has at least one lock washer

**Material**

1-158447 Shaft 1620  
 or  
 1-158448 Shaft 1630  
 1 Qt. Oil

Same as 626 640

**Material**

1-158448 Shaft 1630  
 1-158449 Shaft 1645  
 1 Qt. Oil

**Universal Joint Front or Rear Recondition—Labor Only**

626 **T37**

Note: This specification does not include universal joint shaft

1. Remove universal joint front or rear
  2. Remove joint lock plate
  3. Remove eight (8) nuts holding the two oil retaining housing halves together
- Note: A slight tapping on the ends of the protruding studs will cause the housing to separate. Care should be taken not to damage the ground surfaces where the two half housings join together
4. Recondition and replace with new parts necessary to put in first class condition
  5. In reassembling care should be taken to see that four cork packing washers are in place

Note: It is advisable to paint the ground surfaces of the housing where they join together with a thin shellac

**Material**

4-134317 Lock Plate  
 4-134327 Cork Washers  
 1-134322 Joint Flanged Yoke  
 1-134315 Yoke Pin  
 1-134313 Joint Housing Plain  
 1-134314 Joint Housing with Oil Holes  
 4-134316 Transition Bearings

**T37** Same as 626 640

**Material**

- Cont.*
- 4-134317 Lock Plates . . . . .
  - 4-134327 Cork Washers . . . . .
  - 1-134322 Joint Flanged Yoke . . . . .
  - 1-134315 Yoke Pin . . . . .
  - 1-134313 Joint Housing Plain . . . . .
  - 1-134314 Joint Housing with Oil Holes . . . . .
  - 4-134316 Transmission Bearings . . . . .

**T316** Universal Joint, Bolts and Nuts - Renew One End 626

1. Remove old bolts and install new bolts and nuts.  
Note: Be sure lock washers are in place.
2. Refill universal joint with oil.

**Material**

- 6- 7005 Nuts
- 6-140065 Bolts
- 1 Qt. Oil

Same as 626

640

**Material**

- 6- 7005 Nuts
- 6-140065 Bolts
- 1 Qt. Oil

**T317** Universal Joint, Bolts and Nuts - Renew All 626

1. Remove old bolts and install all new bolts and nuts at the front and rear joint.  
Note: Be sure that all lock washers are in place.
2. Refill universal joint with grease.

**Material**

- 12- 7005 Nuts
- 12-140065 Bolts
- 1 Qt. Oil

Same as 626

640

**Material**

- 12- 7005 Nuts
- 12-140065 Bolts
- 1 Qt. Oil

**T320** Transmission - Recondition (Labor Only) 626

1. Remove foot board pedal pads and the board.
2. Disconnect universal joint and remove transmission and clutch assembly from chassis.
3. Remove clutch from transmission.
4. Drain oil from transmission case.
5. Remove transmission case cover.
6. Remove transmission shaft interlocking plunger. This will permit the removal of shifter shafts if the locking screws have been removed from shifter fork.
7. Remove speedometer drive at rear bearing housing.
8. Remove nuts from driving shaft rear bearing housing.
9. Pull out direct drive shaft.
10. Lift out 1st and 2nd speed gears.



**T320**  
Cont.

11. Remove drive shaft front bearings
12. Remove clutch shaft
13. Remove countershaft nut; also remove small locking screw at rear of countershaft
14. Use brass drift punch, drive out countershaft toward the rear of case and lift out countershaft gears
15. Rebuild transmission, using new parts necessary to put in first class condition  
 Note: Transmission driving shaft thrust portion, located within the direct cutting gear should not have more than .000" end play if necessary shim  
 Note: The estimated zone prices of parts required to overhauled transmission are: 1st zone, \$40.15; 2nd zone, \$42.10; 3rd zone, \$46.50. All parts listed will not be required.

**Material**

1-11112 Driving Shaft Ball Bearing—Rear	.....	.....
1-126822 First Speed and Reverse Gear	.....	.....
1-126824 Second Speed Gear	.....	.....
1-126823 Constant Mesh Gear	.....	.....
1-126173 Direct Drive and Second Speed Gear	.....	.....
1-126141 First Speed and Reverse Gear	.....	.....
1-121353 Driving Shaft	.....	.....
1-121354 Driving Shaft Bearing—Front	.....	.....
2-121347 Countershaft Bearings	.....	.....
2 Qts. Oil	.....	.....

Same as 626

640

**Material**

1-11112 Driving Shaft Ball Bearing—Rear	.....	.....
1-126822 First Speed and Reverse Gear	.....	.....
1-126824 Second Speed Gear	.....	.....
1-126823 Constant Mesh Gear	.....	.....
1-126173 Direct Drive and Second Gear	.....	.....
1-126141 First Speed and Reverse Gear	.....	.....
1-124354 Driving Shaft	.....	.....
1-124354 Shaft Bearing—Front	.....	.....
2-124347 Countershaft Bearings	.....	.....
2 Qts. Oil	.....	.....

**Universal Joint Flange Bolts—Tighten One End**62h **T321**

1. Tighten flange bolts front or rear  
 Note: Be sure that lock washers are in place

**Material**

Same as 626

640

**Material****Universal Joints—Remove, Inspect, Report and Replace**626 **T322**

1. Remove universal joint, front and rear
2. Remove joint lock plate
3. Remove universal joints fastening the two universal housing halves together  
 Note: A slight tapping on the ends of the protruding studs will cause the housing to separate. Care should be taken not to damage the ground surfaces where the two half housings join together
3. Report to mechanic and for repair
5. Reassemble universal joint. Care should be taken to see that four cork packing washers are in place  
 Note: It is advisable to paint the ground surfaces of the housing where they join together with thin shellac

**T322** Material

Conf.

1 Qt. Oil

Same as 626

640

Material

1 Qt. Oil

**T323** Universal Joint—Front or Rear Remove, Inspect,  
Report and Replace

626

1. Remove universal joint front or rear
2. Remove joint lock plates
3. Remove eight (8) nuts holding the two oil retaining housing halves together  
Note: A slight tapping on the ends of the protruding studs will cause the housing to separate. Care should be taken not to damage the ground surfaces where the two half housings join together
4. Report to foreman the condition found
5. Reassemble universal joint. Care should be taken to see that four cork packing washers are in place  
Note: It is advisable to joint the ground surfaces of the housing where they join together with thin shellac

Material

1 Qt. Oil

Same as 626

640

Material

1 Qt. Oil

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L47	47			M270	56	M522	18	M906	55	P180	50
				M270	56	M522	18	M907	55	P181	50
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				M270	56	M522	18	M909	55	P183	50
				M270	56	M522	18	M910	55	P184	50
				M270	56	M522	18	M911	55	P185	50
				M270	56	M522	18	M912	55	P186	50
				M270	56	M522	18	M913	55	P187	50
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				M270	56	M522	18	M915	55	P189	50
				M270	56	M522	18	M916	55	P190	50
				M270	56	M522	18	M917	55	P191	50
				M270	56	M522	18	M918	55	P192	50
				M270	56	M522	18	M919	55	P193	50
				M270	56	M522	18	M920	55	P194	50
				M270	56	M522	18	M921	55	P195	50
				M270	56	M522	18	M922	55	P196	50
				M270	56	M522	18	M923	55	P197	50
				M270	56	M522	18	M924	55	P198	50
				M270	56	M522	18	M925	55	P199	50
				M270	56	M522	18	M926	55	P200	50
				M270	56	M522	18	M927	55	P201	50
				M270	56	M522	18	M928	55	P202	50
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				M270	56	M522	18	M930	55	P204	50
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				M270	56	M522	18	M939	55	P213	50
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				M270	56	M522	18	M948	55	P222	50
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				M270	56	M522	18	M959	55	P233	50
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## STANDARD SERVICE

## Operations Index

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## Packard Standard Service and Index

After several years' experience with Packard Standard Prices and Operations we are fully convinced that this system of selling repair work is the only satisfactory method, both from the viewpoint of the owner and the Service Department.

We recognize the fact that these Standard Specifications cannot always be performed in the same time. Sometimes it will take more than the specified time, again it will take less, depending on varying conditions. Obstacles are encountered in some jobs which are absent in others. No two mechanics are equal in efficiency. The times and prices given are fair, being determined only after a number of Distributors and the Factory had proved definitely that the allotted times represented a fair average which can be met by the mechanic.

After all is said, the fairness of these Suggested Prices can be judged best by a comparison with those of our competitors.

### Courtesy Operations

A few operations in this book are listed with the word "Gratis." A charge should not be made for any work which is ordinarily performed gratis by a local garage. Even though a price may be shown for such work in this book, service managers and service salesmen should exercise care in making a charge for minor work, especially when an owner waits for the work to be completed.

### Packard Standard Operations

Packard Standard Operations are grouped for reference purposes in eleven major divisions, each heading up under its initial letter, as "A" for Axle.

Each division is subdivided into mechanical groups with an affixed numeral, as "A-1" for Axle Brakes. Individual repair operations are identified by adding one or more digits to the basic symbol, as "A-11" for "Brakes, Foot-Adjust," and indicates a complete repair operation. Certain conditions will require a preliminary internal inspection before the exact nature of the repair can be determined. Detail repair operations, such as ordinarily follow an internal inspection, are clearly indicated by double letters.

An alphabetical index is provided, listing the name of the Operation, Models covered, Mechanical Time, Standard Price, Symbol, and the Page on which the Standard Specifications may be found.

There are two sets of sheets, the index giving "Mechanical Times and Prices," and "Standard Specifications." The Times and Prices will be kept in line with material price changes and other factors that affect shop operating costs. All Standard Prices should be net to the customer in his respective zone.

Where the model is not shown, prices are for all cars, beginning with the 6th series. Specifications for the 6th series apply in 7th, 8th and 9th series also.

Detail repair operations as designated by double letters are embodied in the complete repair specifications under the single letter of the same number instead of being listed separately.

For Example: On the Packard Eight Model, if it is desired to remove the front gear case cover, the proper operation for this is.....M410 - \$ 5.60

Now let us assume that while doing this work a new front chain is necessary. To cover this additional work, we should sell double letter operation.....MM412 - 10.65

This being a double letter operation, the price is quoted after the front cover has been removed and the total charge to the owner is the same as M412 or..... \$16.65

This principle of non-overlapping operations is used throughout the Manual.

On Time and Material Operations, 25% should be added to the actual time it takes to perform the operations and this multiplied by the hourly rate should be what the customer pays for this kind of work. This, then, would be on about the same basis as our Mechanical Times as shown in the Manual.

This 25% is to cover Service Salesman's time, paper work in writing and costing the order, placing the car in the shop and final test.

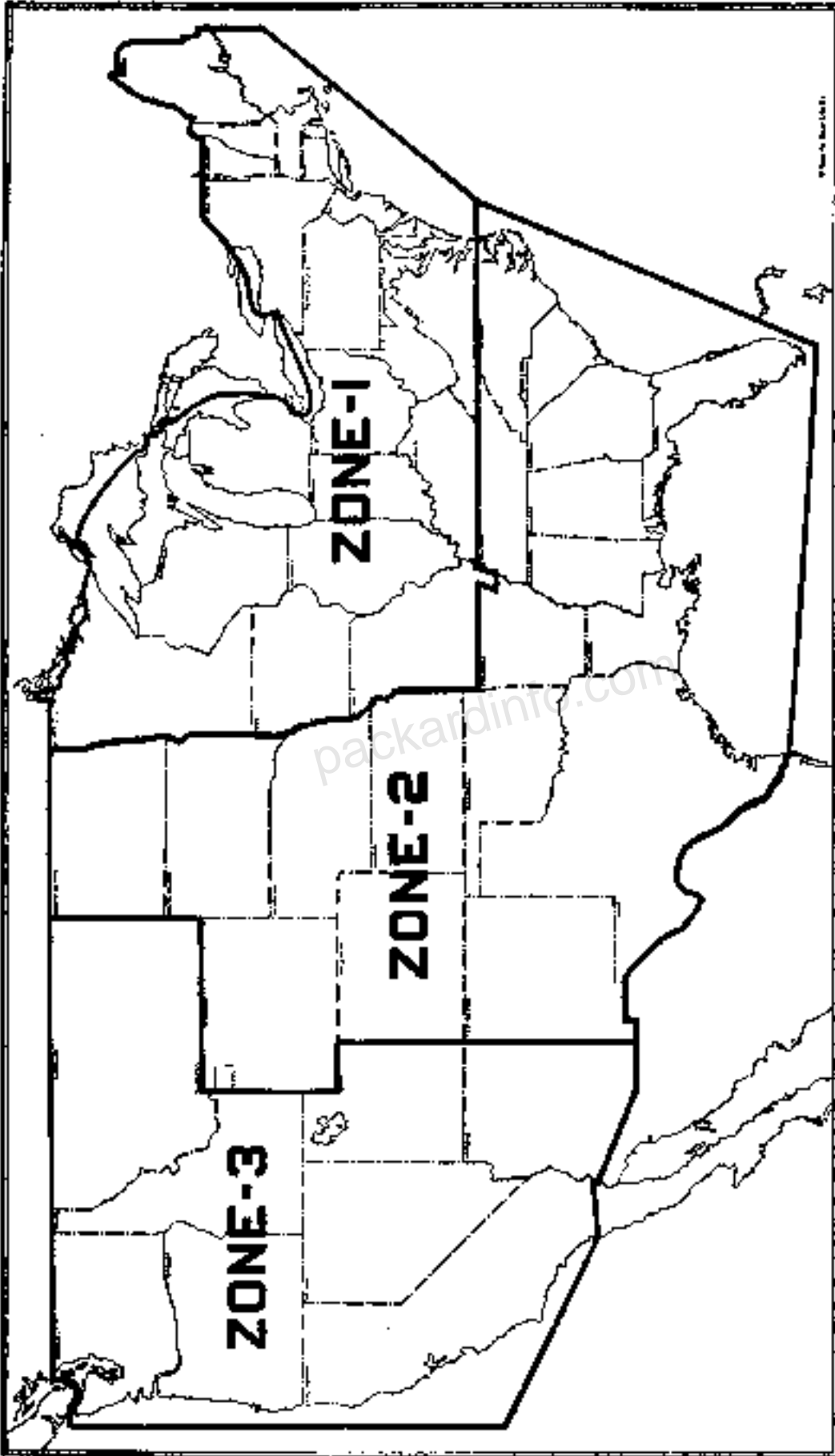
We recommend that Accessories be installed at Manual Labor Rate since the Accessory profit is in the sale price of the article itself.

### Special Repair Operations

There will always be a number of repair operations performed which, due to their uncommon occurrence, cannot be covered by a Standard Specification. In each case of this kind we recommend the quotation of a flat or contract price based on your past experience. There are a number of operations listed in index which are not covered by specifications but upon which a time is quoted. These times are to be used merely as a guide in estimating the cost of servicing these operations and may vary either one way or the other. It is our intention to eliminate all time and material operations. The effect of this policy on your customers will be far-reaching, in that it will demonstrate to them that you are making an honest effort to service Packard Vehicles efficiently and economically.

Packard Motor Car Company

Service Department











	Symbol	Page	Zone
<b>TONNEAU MATS</b>			
Tonneau Rubber Mats—Plain—Install (Labor Only).....	G115	...	.....
<b>TRANSMISSION LOCK AND GEARSHIFT</b>			
Transmission Gearshift Onyx Ball—Install (Labor Only).....	G204	...	.....
Transmission Lock—Install (Labor Only).....	G15b	...	.....
<b>TRUNKS AND SUITCASES</b>			
Fender Trunk—Install (Labor Only).....	G171	...	.....
Rear Platform and Trunk Equipment—Install (Labor Only).....	G146	...	.....
Rear Rack Trunk—Install (Labor Only).....	G145	...	.....
Running Board Trunk—Install (Labor Only).....	G232	...	.....
<b>WINDSHIELD SUPPLIES</b>			
Electric Double Windshield Cleaner—Install (Labor Only).....	G149	...	.....
Tonneau Windshield—Install Touring (Labor Only).....	G165	...	.....
Tonneau Windshield—Rumble Seat—Install— Coupe or Roadster (Labor Only).....	G165	...	.....
Windshield Cleaner—Trico or Folberth— Right Side of Windshield—Open Cars—Install (Labor Only).....	626-640-726-740	G136	...
Windshield Cleaner—Trico or Folberth— Right Side of Windshield—Closed Cars—Install (Labor Only).....	626-640-726-740	G136	...
Windshield Cleaner—Visional—Install (Labor Only).....	626-640-726-740	G144	...
Windshield Cleaner—Visional—Install (Labor Only).....	626-640-726-740	G144	...
Windshield Cleaner Tandem Blade—Install (Labor Only).....	626-640-726-740	G135	...
Windshield Sun Visor (Hark) (Hurbank Material) Open Cars—Install (Labor Only).....		G164	...
Windshield Wings—Install (Labor Only).....		G161	...







BEARINGS—Cont'd	Symbol	Page	Zone 1
Connecting Rod Bearings—Take Up—Lower Caps—Rods Are Not Removed—Crankcase Lower Half Off.....	M59	6.4	154 813 10. . . .
Connecting Rod Bearing—Renew One On Exchange Basis (Rods Out) (For Each Additional Bearing Renewed Add Price of M515).....	M514	6.9	156 5 10. . . .
Connecting Rod Bearing—Take Up One Lower Cap—Crankcase Lower Half Off (Add M520 for Each Cap Taken Up).....	M520	0.8	158 1.75.....
Connecting Rod Bearings—Renew All On Exchange Basis (Rods Out).....	M516	6.0	157 18.50.....
Differential Sleeve Bearing—Adjust.....	A414	1.2	2.65.....
Front Wheel Bearings—Adjust Both.....	S231	0.5	223 1.40.....
Generator Bearing—Renew (Includes E271) (Labor Only).....	E235	0.8	1.75.....
Generator Bearing—Renew (After E221) (Labor Only).....	EE-235	0.4	.90.....
Main Bearing Lower Caps—Remove for Inspection and Replace (Rods Out).....	M593	1.2	7.00.....
Main Bearings—Renew All (Motor (Fit).....	M588	21.5	165 81 35.....
Main Bearings—Take Up—Crankcase Lower Half Off.....	M512	9.6	155 21.00.....
Main and Connecting Rod Bearings—Take Up (Rods Out). If New Connecting Rods Are Required, Add Price of Rods Only.....	M515	17.2	157 37.65.....
Main Bearing—Center—Renew (After M051).....	MM586	14.5	30 10.....
Main Bearing—Front—Renew (After M051).....	MM584	14.5	30.85.....
Main Bearing—Intermediate—Renew One (After M051).....	MM587	14.5	30.10.....
Main Bearing—Rear—Renew (After M051).....	MM587	14.5	33.05.....
Main Bearing—Rear—Renew (After M051) (After Motor Nos. 258523 and 174811).....	MM585	14.5	33.60.....
Main Bearing—Rear—Renew (After M051) (After Motor Nos. 258523 and 174811).....	MM585	14.5	30.10.....
Oil Test On Bearings—Lower Half Off.....	M76	0.5	198 1.75.....
Rear Axle Shaft Bearing—Renew One Side.....	A324	2.0	17 10.45.....
Rear Axle Shaft Bearing—Renew One Side.....	A324	2.0	17 11.65.....
Rear Axle Shaft Bearing—Renew One Side.....	A324	2.0	17 15.60.....
Rear Axle Shaft Bearings—Repack Both (After A700).....	L105	1.0	7.25.....
Speedometer Driven Pinion and Shaft and Bearing—Renew.....	B57	1.2	8.05.....
Starter Motor Center Bearing—Free Up—On Car (Includes E351).....	E314	0.7	1.75.....
Starter Motor Center Bearing—Free Up—Off Car (After E331).....	EE314	0.3	.90.....
Steering Knuckle Bearings—Adjust Both.....	S119	2.6	223 6.30.....
Steering Knuckle Inboard Bearing Cup, Cone and Rollers—Renew.....	S245	1.2	226 5.60.....
Steering Knuckle Outboard Bearing Cup, Cone and Rollers—Renew.....	S246	0.8	226 7.00.....
Steering Knuckle Pin Bearing—Lower—Renew.....	S115	2.3	215 5.75.....
Steering Knuckle Pin Bearing—Upper—Renew One.....	S112	2.3	218 9.15.....
Steering Knuckle Pin Bearing—Upper—Renew One.....	S112	2.5	218 8.05.....
Water Pump Bearing, Impeller and Shaft—Renew—Radiator Off.....	MN61	0.6	14.85.....
Water Pump Bearing, Impeller and Shaft—Renew—Radiator Off.....	MN65	0.6	8.20.....
Water Pump Bearing, Impeller and Shaft—Renew—Radiator Off.....	MN63	0.6	14.40.....
Water Pump Impeller and Bearing—Renew—Radiator Off.....	M639	0.8	211 7.40.....
Water Pump Impeller and Bearing—Renew—Radiator Off.....	M639*	0.6	211 6.15.....





	Symbol	Page	Zone I
<b>BOX</b> --See Battery			
<b>BRACKETS</b> --See Body, Bonnet, Brakes, Fender, Gasoline, Motor, Muffler, Running Board, Springs or Tail Lamp			
<b>BRAKES</b>			
Brake Drum--Turn Down One Wheel Oil (Car Lock Additional Brake Drum Tensioned Down Add Operator A353)	A355	0.9	8 1.95
Brake Drum Assembly--Front--Renew One Wheel Off (Dished Wheels) (See Each Additional Front Brake Drum Renewed Add Operator A311)	A311	0.4	10 15.15
Brake Drum Assembly--Rear--Renew One Wheel Off (Dished Wheels) (See Each Additional Rear Brake Drum Renewed Add Operator A322)	A322	0.4	13 15
Brake Shoe--Reline--Off Car (Bendix Brakes)--Using Molded Lining	A151	2.2	11 20
Brake Shoe and Facing Assemblies--Front or Rear--Renew One (See Includes A110)	A17	3.2	10 20.00
Brake Shoe and Facing Assemblies--Front or Rear--On One Wheel (After A348)	AA17	2.4	18 25
Foot Brakes--Adjust (Includes Setting Cam Lever)	A11	1.5	3 3.50
Foot Brakes--Adjust--Quick Service Adjustment	A10	0.8	1.75
Foot Brakes--Free Up--Wheels Off	A103	1.9	3.85
Foot Brakes--Free Up and Adjust (Includes Removing and Replacing Wheels)	A19	3.2	11 7.00
Foot Brakes--Reline Front and Adjust Rear--Using Molded Lining (Includes S251)	A122	8.0	14.60
Foot Brakes--Reline Front and Adjust Rear--Using Molded Lining (After S251)	AA122	4.1	10.55
Foot Brakes--Reline Rear and Adjust Front--Using Molded Lining (Includes A410)	A128	6.0	14.60
Foot Brakes--Reline Rear and Adjust Front--Using Molded Lining (After A410)	AA128	4.3	11.19
Foot Brakes--Reline and Adjust--Using Molded Lining (Includes A110)	A12	8.6	14.50
Foot Brakes--Reline and Adjust--Using Molded Lining (After A310)	AA12	7.0	21.00
Foot Brake Front Camshaft and Bracket--Right or Left--Renew One Side--Bendix Brakes (Includes S220) (Prior to Frames Nos. 20921 and 172443)	A127	2.0	12.90
Foot Brake Front Camshaft and Bracket--Right or Left--Renew One Side--Bendix Brakes (Includes S220) (After Frames Nos. 20921 and 172443)	A127	2.0	9.50
Foot Brake Front Camshaft and Bracket--Right or Left--Renew One Side--Bendix Brakes (After S220) (Prior to Frames Nos. 20921 and 172443)	AA127	1.2	11.00
Foot Brake Pedal Retracting Spring--Renew	A448	0.2	7.60
Front Axle Brake Cable--Renew One--Add Operator Air When Renewing Two Cables	A36	0.8	14 1.50
Front Axle Brake Operating Shaft Support Arm Bracket--Renew One Side--Kardian and Wheels Off	A117	3.6	4.95
Front Axle Brake Support Plate--Renew One (Includes S210)--Add Operator A31 When Renewing Two Plates	A34	2.0	10.30
Front Axle Brake Support Plate--Renew One (After S210)	AA34	1.2	8.40
Rear Axle Brake Support Plate--Renew One (After A348)--Add A342 For Each Plate Renewed	AA44	2.0	10.15







	Symbol	Page	Zone 1
<b>CARBURETOR</b>			
Carburetor—Adjust	M311	0 2	140 8 55
Carburetor—Clean and Adjust	M31	0 2	137 2 45
Carburetor—Remove, Dismantle, Repair and Reassemble	M310	1 3	140 3 65
Carburetor Accelerator Pedal Shaft—Free Up	M331	0 4	190
Carburetor Accelerator Pump Plunger Assembly—Renew—On Car (After Motor No. 250817)	M346	0 4	1 45
(After Motor No. 173112)	M346	0 4	2 20
Carburetor Accelerator Pump Assembly—Renew (Includes M310)	M346	1 7	7 25
726-826-901	M346	1 7	8 20
740-840-903			
Carburetor Accelerator Pump Assembly—Renew (After M310)	MM346	0 4	4 10
726-826-901	MM346	0 4	4 55
740-840-903			
Carburetor Accelerator Pump Body—Renew—On Car (After Motor No. 250837)	M350	0 4	5 30
(After Motor No. 173112)	M350	0 4	5 30
Carburetor Air Cleaner—Renew—Clean and Replace	M395	0 2	6 0
620-901	M395	0 2	6 25
701-801			
Carburetor Air Cleaner—Renew			
Carburetor Air Horn—Renew—On Car (After Motor No. 250837)	M314	0 2	3 40
(After Motor No. 173112)	M314	0 2	3 40
620	M314	0 2	3 40
640	M314	0 2	3 40
726-826-901	M314	0 2	1 65
740-840-903			
Carburetor Air Valve and Choke—Adjust for Flood Starting	M333	0 6	1 25
626-640			
Carburetor Air Valve Piston—Renew (Includes M310)	M365	1 7	5 01
726-826-901	M365	1 7	5 45
740-840-903			
Carburetor Air Valve Piston—Renew (After M310)	MM365	0 4	1 45
726-826-901	MM365	0 4	1 40
740-840-903			
Carburetor Air Valve Spring—Renew (Includes M310) (After Motor No. 250837)	M344	1 7	4 50
(After Motor No. 173112)	M344	1 7	4 60
626			
640			
Carburetor Air Valve Spring—Renew (After M310) (After Motor No. 250837)	MM344	0 2	1 15
(After Motor No. 173112)	MM344	0 2	1 15
626			
640			
Carburetor Air Valve Stem Spring—Renew (Includes M310)	M344	1 7	4 60
726-740-826-840-901-903			
Carburetor Air Valve Stem Spring—Renew (After M310)	MM344	0 2	1 05
726-740-826-840-901-903			
Carburetor Aspirating Tube—Renew (Includes M310)	M364	1 7	5 20
726-826-901	M364	1 7	5 65
740-840-903			
Carburetor Aspirating Tube—Renew (After M310)	MM364	0 4	1 55
726-826-901	MM364	0 4	2 00
740-840-903			
Carburetor Assembly—Renew (Prior to Motor No. 250837)	M340	2 0	141 34 50
(Prior to Motor No. 173112)	M340	2 0	141 39 60
(After Motor No. 250837)	M340	2 0	141 26 00
(After Motor No. 173112)	M340	2 0	141 33 40
626-726-826-901			
640-740-840-903			
Carburetor Body—Renew (Includes M310) (Prior to Motor No. 250837)	M357	1 7	143 17 65
(Prior to Motor No. 173112)	M357	1 7	143 21 31
626			
640			
Carburetor Body—Renew (After M310) (Prior to Motor No. 250837)	MM357	0 5	14 00
(Prior to Motor No. 173112)	MM357	0 5	17 65
626			
640			
Carburetor Butterfly Valve—Renew (Includes M310) (After Motor No. 250837)	M358	1 7	4 80
(After Motor No. 173112)	M358	1 7	4 80
626-726-826-901			
640-740-840-903			
Carburetor Butterfly Valve—Renew (After M310) (After Motor No. 250837)	MM358	0 4	1 15
(After Motor No. 173112)	MM358	0 4	1 15
626-726-826-901			
640-740-840-903			
Carburetor Choke—Adjust	M33	0 1	138 50
Carburetor Economizer Lever—Renew—Off Car (After Motor No. 250837)	M359	0 6	1 80
(After Motor No. 173112)	M359	0 6	1 81
626			
640			
Carburetor Economizer Tube Assembly—Renew—On Car (After Motor No. 250837)	M343	0 4	1 15
(After Motor No. 173112)	M343	0 4	1 65
626			
640			
Carburetor Float—Renew—On Car (Prior to Motor No. 250837)	M345	0 2	141 1 20
(Prior to Motor No. 173112)	M345	0 2	141 1 20
626			
640			

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<b>CARBURETOR—Cont'd</b>			
Carburetor Float Assembly—Renew (Includes M310) (After Motor No. 249377).....	M315	17	141
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Carburetor Float Assembly—Renew (After M310) (After Motor No. 249377).....	M315	17	141
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Carburetor Float—Renew and Adjust Gas Level (Includes M310) (Prior to Motor No. 249377).....	M352	29	142
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Carburetor Float—Renew and Adjust Gas Level (After M310) (Prior to Motor No. 249377).....	M352	29	142
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Carburetor Float Chamber and Stabilizer Well— Renew—On Car (After Motor No. 249377).....	M345	03	...
(After Motor No. 173117).....	M345	03	...
Carburetor Float Level—Adjust—Remounting Carburetor.....	M313	16	141
Carburetor Filling Adjusting Screw and Choke Assembly—Renew—On Car (After Motor No. 249377).....	M349	05	...
(After Motor No. 173117).....	M349	05	...
Carburetor Inlet Strainer Screen—Renew— Carburetor Off.....	M356	02	...
Carburetor Lower Half Assembly—Renew (Includes M310) (After Motor No. 249377).....	M341	23	...
(After Motor No. 173117).....	M341	23	...
Carburetor Lower Half Assembly—Renew (After M310) (After Motor No. 249377).....	M341	23	...
(After Motor No. 173117).....	M341	23	...
Carburetor Lower Half—Renew (Includes M310) (After Motor No. 249377).....	M341	23	...
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Carburetor Lower Half—Renew (After M310) (After Motor No. 249377).....	M341	23	...
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Carburetor Metering Pin Assembly—Renew (Includes M310).....	M360	17	...
Carburetor Metering Pin Assembly—Renew (After M310).....	M360	17	...
Carburetor Needle Valve and Seat Assembly— Renew (Includes M310) (After Motor No. 249377).....	M353	17	142
(After Motor No. 173117).....	M353	17	142
Carburetor Needle Valve and Seat Assembly— Renew (After M310) (After Motor No. 249377).....	M353	17	142
(After Motor No. 173117).....	M353	17	142
Carburetor Needle Valve and Seat—Renew (Includes M310) (Prior to Motor No. 249377).....	M353	17	142
(Prior to Motor No. 173117).....	M353	17	142
Carburetor Needle Valve and Seat—Renew (Includes M310) (After Motor No. 249377).....	M353	17	142
(After Motor No. 173117).....	M353	17	142
Carburetor Needle Valve and Seat—Renew (After M310) (Prior to Motor No. 249377).....	M353	17	142
(Prior to Motor No. 173117).....	M353	17	142
Carburetor Needle Valve and Seat—Renew (After M310) (After Motor No. 249377).....	M353	17	142
(After Motor No. 173117).....	M353	17	142
Carburetor Spray Needle and Hushing Assembly— Renew—On Car (After Motor No. 249377).....	M318	04	...
(After Motor No. 173117).....	M318	04	...
Carburetor Spray Needle Parking—Renew— On Car (After Motor No. 249377).....	M322	04	...
(After Motor No. 173117).....	M322	04	...
Carburetor Spray Tube—Renew (Includes M310) Prior to Motor No. 249377.....	M354	17	142
Prior to Motor No. 173117.....	M354	17	142
Carburetor Spray Tube—Renew (After M310) (Prior to Motor No. 249377).....	M354	17	142
(Prior to Motor No. 173117).....	M354	17	142
Carburetor Stabilizer Rod Assembly—Renew (Includes M310) (After Motor No. 249377).....	M338	12	...
(After Motor No. 173117).....	M338	12	...
Carburetor Stabilizer Rod Assembly—Renew (After Motor No. 249377).....	M338	12	...
(After Motor No. 173117).....	M338	12	...
Carburetor Strainer Housing Stud—Renew.....	M351	04	...













CYLINDER	Symbol	Page	Zone 1
Cylinders—Change	M608	1.5	\$ 3.35
Cylinder—Bore All Install Piston Assemblies			
Grand Valves and Tune Motor (Includes M512)	M603	26.9	173 104.80
Grand Valves and Tune Motor (Alter Model)	M603	26.9	173 105.15
Cylinders—Bore All Install Piston Assemblies, Grand Valves and Tune Motor (Alter Model)	M3603	20.0	80.20
Cylinder—Bore One and Renew Piston (Piston Out)	M604	1.3	7.95
Cylinders—Bore All and Renew Pistons (Block Off)	M606	9.6	174 65.40
Cylinder—Test Compression	M17	0.5	119 1.05
Cylinder (Reground) with Pistons—(Oil Exchange) Install, Clean Carbon, Grand Valves, Tune Motor	M639	21.0	189 111.75
	M639	21.0	189 119.15
	M66	4.9	170 21.65
	M68	1.1	170 2.65
Cylinder Base Gasket—Renew			
Cylinder Base Nuts—Tighten and Adjust Taps			
Cylinder Block—Remove for Inspection and Replace—Rack Out	M620	2.5	5.50
Cylinder Head—Remove for Inspection, Clean Carbon and Replace	M610	2.0	176 5.40
Cylinder Head—Renew	M61	2.3	169 12.75
	M61	2.3	169 13.75
	M607	0.3	.75
	M67	0.3	170 1.05
Cylinder Head Core Hole Plug—Install			
Cylinder Head Nuts—Tighten			
Cylinder Head Stud—Renew One (Alter M610) (Add 0.2 hour for each additional stud renewed)	M615	0.5	.95
Cylinder Head Thermostat—Remove, Inspect and Replace	M829	1.6	1.60
Cylinder Head Thermostat to Hopping Stud—Drill Out and Renew	M834	1.2	2.75
Cylinder Head Thermostat Syphon—Renew	M814	1.2	4.85
Cylinder Head Thermostat Water Gasket—Renew	M828	0.8	1.85
Cylinder and Piston Assembly (Standard) (No Exchange)—Install (Includes M512) (Starter Motor and Generator Ream fitting and Heater Removal and Replacing Not Included in This Price) (Labor Only)	M635	40.0	182 82.25
Cylinder and Piston Assembly—Install and (No Exchange)—Install (Alter M635) (Labor Only)	M3635	33.5	67.40
Cylinder and Piston Assembly—Supply or Exchange Basis and Install (Includes M512) (Starter Motor and Generator Ream fitting and Heater Removal and Replacing Not Included in This Price) (Labor Only)	M636	40.0	185 82.25
Cylinder and Piston Assembly—Supply or Exchange Basis and Install (Alter M635) (Labor Only)	M3636	33.5	67.40
Cylinder Water Jacket Side Flange—Renew	M64	0.8	2.70
Cylinder Water Jacket Side Plate Gasket—Renew	M65	0.8	1.95





Symbol Page Zone I

## DISTRIBUTOR—Cont'd

Distributor Contact Arm Assembly and Adjusting Screws—Renew Both Sets.....	E16	0.4	41	\$ 4.00.....
Distributor Contact Points—Clean and Adjust.....	E18	0.3	43	.90.....
Distributor Contact Points—Synchronize.....	E154	0.4	..	.90.....
Distributor Contact Points—Remove and Face Off.....	E175	0.4	..	.90.....
Distributor Head—Repack.....	19	..	99	..
Distributor Head—Renew.....	E17	0.4	42	5.40.....
Distributor Motor Arm—Renew (Material Only).....	E124	..	..	.75.....
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## DOOR

Door—Upper Half—Metal Work—Renew (Labor Only).....	B678	9.8	..	21.35.....
Door Glass—Rattle in Runway—Eliminate All.....	B679	1.8	..	3.85.....
Door Check Strip—Either Type—Renew One (Labor Only).....	B471	1.1	..	2.45.....
Doors—Line Up One—Renew Bumpers and Strikers (Labor Only).....	B464	1.2	..	2.65.....
Door—Line Up All—Renew Bumpers and Strikers (Labor Only).....	B465	4.0	..	8.75.....
Door Glass—Front or Rear—Renew (Labor Only).....	B43	1.2	37	2.65.....
Door Glass Lower Weatherstrip Rubber—Renew on One Door.....	B611	0.8	..	2.10.....
Door Glass Lower Weatherstrip Rubber—Renew on Two Doors.....	B612	1.6	..	4.20.....
Door Glass Lower Weatherstrip Rubber—Renew on Four Doors.....	B613	3.3	..	8.40.....
Door Handle—Free Up One.....	B676	0.3	..	.55.....
Door Hinge—Renew Three—Closed Body (Labor Only)—Used in Case of Accident Only.....	B655	..	..	..
Door Hinge Pins—Renew Three (Oversize).....	B477	1.6	..	3.85.....
Door Hinge Pin Bushings—Renew on One Door.....	B654	0.8	..	2.00.....
Door Hinge—Renew One Upper or Lower—Open Body (Labor Only).....	B446	0.7	..	1.60.....
Door Hinge—Renew One Upper or Lower (Closed Body) (Labor Only).....	B467	0.7	..	1.60.....
Door Lock Lever Handle—Renew One—Open and Closed Body (Labor Only).....	B468	0.3	..	.90.....
Door Lock Outside Handle—Renew One (Labor Only).....	B469	0.2	..	.55.....
Door Lock—Renew One—Open and Closed Body (Labor Only).....	B674	1.5	..	1.15.....
Door Lock Striker—Renew One.....	B62	0.8	37	2.50.....
Door Moulding—Renew One (Labor Only).....	B472	0.8	..	1.75.....
Door Pull-to Handle—Supply and Attach (Labor Only).....	B476	0.7	..	1.60.....
Door Rattles—Eliminate—One Door.....	B674	0.8	..	1.75.....
Door Rubber Bumpers—Renew One Door (Labor Only).....	B466	0.4	..	.90.....
Door Rubber Bumpers—Renew All Doors (Labor Only).....	B461	1.0	..	2.10.....
Door Rubber Bumpers—Shim Out—One Door (Labor Only).....	B462	0.4	..	.90.....
Door Rubber Bumpers—Shim Out—All Doors (Labor Only).....	B463	1.2	..	2.65.....
Head Lamp Door and Glass Assy.—Renew.....	B49	0.5	..	6.55.....
.....	B49	0.5	..	9.50.....

626-640-645-726-826-901  
740-745-840-845-901-904

























		Symbol	Page	Zone 1
<b>HANGER—See Springs</b>				
<b>HEADS—See Cylinder, Distributor or Speedometer</b>				
<b>HEAD LAMPS</b>				
Head Lamp—Line Up and Focus.....		E43	0 4	8 .50
Head Lamp—Renew One.....	626-726-826-901.....	E44	0 5	53 17.50
	640.....	E44	0 5	53 10.10
	740-840-903.....	E44	0 5	13.40
Head Lamp Bracket Assy.—Renew.....	626-640-726-826-901.....	E44	0 8	8.15
	740-745-845-903-904.....	E46	0 8	10.00
Head Lamp Bulb—Renew One (Material Only).....		E415		
Head Lamp Door and Glass Assy.—Renew.....	626-640-645-726-826-901	E49	0 5	6 35
	740-745-840-845-903-904	E49	0 5	9 30
Head Lamp Door Glass—Renew One.....	626-726-826-901.....	E413	0 3	2 15
	640-645.....	E413	0 3	2 30
	740-745-840-845-903-904.....	E413	0 3	3.05
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<b>HEATER</b>				
Francisco Heater—Remove and Replace.....		M935	0 8	216 1 25
Hot Water Heater Pipes—Remove and Replace (Used in Conjunction with H24)		M870	0 2	35
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<b>HORN</b>				
Horn—Clean, Oil and Adjust.....		E61	0 7	57 1.75
Horn—Remove, Disassemble for Inspection and Replace.....		E610	2 0	4.40
Horn Button—Renew.....		E63	0 2	.85
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<b>HOSE—See Radiator</b>				
<b>HUBS—See Wheels</b>				
<b>HUB CAPS—See Wheels</b>				







	Symbol	Page	Zone 1
KEY—See Also—Rear			
KNUCKLE—See Steering			

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	Symbol	Page	Zone 1
<b>LAMPS—See Head Lamp, Running Board or Tail Lamp</b>			
<b>LEVERS—See Brakes, Door, Hand Brake, Rocker Levers, Steering, Transmission or Valves</b>			
<b>LICENSE PLATES</b>			
License Plates and Brackets—Tighten (Grass) .. . . .	F39		
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<b>LIGHTING CIRCUIT—See Fuses</b>			
<b>LOCKS—See Body, Bonnet, Door, Ignition, Oil or Transmission</b>			
<b>LUBRICATION—See Oil</b>			
<b>LUBRICATOR—See Motor, Oil or Piston</b>			

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	Symbol	Page	Zone I		
<b>MANIFOLD</b> —See Exhaust or Intake					
<b>MATS</b> —See Accessories—Tire Mats					
<b>MOTOR</b>					
Clean Carbon—Grind Valves and Tune Motor—Head Off—Clean Air Cleaner	626-726-826-901 640-740-840-903	M120 M120	4.4 5.0	121 121	\$ 8.60 10.60
Clean Carbon—Grind Valves and Tune Motor—Includes Retiming Ignition and Cleaning Air Cleaner—If new breaker points or spark plugs are required, add the price of breaker points or spark plugs only	626-726-826-901 640-740-840-903	M124 M124	7.0 7.4	124 124	14.00 16.00
Motor—Inspect—Includes Washing Motor		M052	12.8	116	24.50
Motor—Remove and Replace—Includes Washing Motor		M0	16.0	115	35.75
Motor—Remove, Disassemble for Inspection and Reassemble—Includes Washing Motor		M051	28.8	115	65.00
Motor—Retime Valves and Ignition (When Chain Has Jumped)—Without Removing Front Cover—Removing Governor		M124	1.2	...	2.65
Motor—Tune and Combination Lightening—If new breaker points or spark plugs are required, add the price of breaker points or spark plugs only—Clean Air Cleaner		M11	1.2	117	4.80
Motor—Tune (Service Floor Tune Up)—If new breaker points or spark plugs are required, add the price of breaker points or spark plugs only—Clean Air Cleaner		M13 M17	1.4 0.5	118 119	3.15 1.05
Motor Compression—Test		M410	1.6	145	5.40
Motor Front Cover—Remove for Inspection and Replace		M442	0.6	...	16.40
Motor Front Cover—Renew (After M410)		M714	0.4	...	.90
Motor Piston Lubricator—Adjust		M716	1.8	...	1.35
Motor Piston Lubricator—Eliminate Leak at Flood Valve	626-640-726-740	M712	1.6	129	3.90
Motor Piston Lubricator Control Valve—Renew Assembly—Renew		M711	1.7	129	6.70
Motor Support and Motor to Frame Bolts—Tighten		M117	0.5	119	1.25
Motor Tachometer—Instrument Bears—Standard—Renew		E454	0.4	...	7.10
Motor Vacuum Pump Ball Check—Renew (Labor Only)	726-740	M113	0.2	...	.55
Motor Vacuum Pump Connecting Rod—Renew (Labor Only)—Front Cover Is Not Removed	726-740	M112	0.6	...	1.40
Motor Vacuum Pump Cylinder and Piston—Remove, Disassemble for Inspection and Replace—Front Cover Is Not Removed	726-740	M110	0.6	...	1.40
Motor Vacuum Pump Cylinder and Piston Assembly—Renew (Labor Only)—Front Cover Is Not Removed	726-740	M111	0.6	...	1.40
Starter Motor—Inspect (Off Car)		E311	0.4	51	.50
Starter Motor—Recondition—Off Car (Model E-F311) (Labor Only)		E310	2.0	...	4.40
Starter Motor—Recondition—Off Car (After E311) (Labor Only)		EE310	1.6	...	3.50
Starter Motor—Renew (Photo) (Labor Only)	626-726-826-901 640-740-840-903	E32 E32	0.1 0.1	51 51	.55 .55
Starter Motor to Starter Switch Cable Assembly—Renew (Labor Only)		E54	0.4	55	.90
Starter Motor—Remove and Replace		E330	0.2	52	.35
Starter Motor Armature—Renew (Includes E341)	626-726-826-901 640-740-840-903	E320 E320	0.8 0.8	...	19.85 21.85
Starter Motor Armature—Renew (After E331)	626-726-826-901 640-740-840-903	EE320 EE320	0.4 0.4	...	18.95 20.95
Starter Motor Armature Shaft—Straighten (Includes E311)		E321	1.2	...	2.75
Starter Motor Armature Shaft—Straighten (After E311)		EE321	0.8	...	1.85
Starter Motor Armature and Fields—Renew (Includes E311)	626-726-826-901 640-740-840-903	E325 E325	0.8 0.8	...	26.05 29.55
Starter Motor Armature and Fields—Renew (After E311)	626-726-826-901 640-740-840-903	EE325 EE325	0.4 0.4	...	25.15 28.65

MOTOR—Cont'd

	Symbol	Page	Zone I	
Starter Motor Bendix Drive Shaft and Gear Assembly—Renew (Includes E331).....	E312	0.8	\$ 0.60	
Starter Motor Bendix Drive Shaft and Gear Assembly—Renew (After E331).....	BE312	0.4	7.70	
Starter Motor Bendix Spring—Renew.....	E32H	0.5	1.80	
Starter Motor Bendix Support Bushing (Large)—Renew (Includes E331).....	626-726-826-901 640-740-840-903	E326	0.8	2.15
Starter Motor Bendix Support Bushing (Large)—Renew (After E331).....	626-726-826-901 640-740-840-903	BE326	0.4	1.25
Starter Motor Brushes—Renew (Includes E331).....	E332	0.8	2.95	
Starter Motor Brushes—Renew (After E331).....	BE332	0.4	1.05	
Starter Motor Brushes and Brush Springs—Renew (Includes E331).....	E323	0.8	3.15	
Starter Motor Brushes and Brush Springs—Renew (After E331).....	BE323	0.4	2.25	
Starter Motor Center Bearing—Free Up—Off Car (Includes E331).....	E314	0.7	1.75	
Starter Motor Center Bearing—Free Up—Off Car (After E331).....	BE314	0.3	.90	
Starter Motor Clutch—Remove, Inspect and Replace (Includes E330).....	E317	0.6	1.35	
Starter Motor Clutch—Remove, Inspect and Replace (After E330).....	BE317	0.4	1.00	
Starter Motor Commutator—Face Off and Renew Brushes—Off Car (Includes E331).....	E311	1.2	51	1.95
Starter Motor Commutator—Face Off and Renew Brushes—Off Car (After E331).....	BE311	0.8	1.05	
Starter Motor Drive Spring Screws—Renew (Includes E331).....	E327	0.7	52	1.80
Starter Motor Drive Spring Screws—Renew (After E331).....	BE327	0.3	.90	
Starter Motor Fields—Renew (Includes E331).....	626-726-826-901 640-740-840-903	E334	0.8	6.85
Starter Motor Fields—Renew (After E331).....	626-726-826-901 640-740-840-903	BE334	0.8	8.35
Starter Motor Switch—Renew.....	BE329	0.4	5.95	
Starter Motor Switch to Junction Box Cable Assembly—Renew (Labor Only).....	BE324	0.4	7.45	
Wash Motor—Using Power Washer.....	E34	1.5	51	4.30
Wash Motor and Transmission—Using Power Washer.....	E54	0.8	1.75	
.....	C3	0.9	39	1.75
.....	C6	1.3	39	2.45

MOULDINGS—See Door, Enamel or Running Board

MUD GUARD—See Crankcase

MUFFLER

		Symbol	Page	Zone I
Muffler Assembly—Renew	903 904	M971	1.4	213.15
Muffler Brackets—Tighten		M972	1.4	25.15
Muffler Outlet Tube Assembly—Renew	626 726 826	M978	0.4	90
	640 740 840	M977	0.8	7.15
	901-901	M977	0.8	10.20
		M977	0.8	6.15





	Symbol	Page	Zone 1
<b>OIL</b>			
Check Lubrication in Steering Case, Transmission, Differential, Universal Joints, and Front Wheels	L16	...	...
Crankcase Differential and Transmission Oil—Drain and Renew (Using Gear Oil)	626-726-826-901 649-749-849-901	L123 L123	...
(Using Whitmore's Compound in Differential Only)	626-726-826-901 649-749-849-901	L123 L123	...
Crankcase Lower Half—Remove, Make Oil Test, Report Condition of Bearings and Replace Crankcase Oil—Drain and Renew	626-726-826-901 649-749-849-901	M552 L1	4.1 97
Crankcase Oil—Level (Material Only)	L19	...	...
Crankcase Oil Gauge—Drain Oil and Check Gauge for Correct Reading	M557	0.8	1.75
Crankcase Oil Gauge Gasket—Remove, Clean and Replace	M556	0.5	1.25
Crankcase, Transmission and Differential Oil—Bring to Level	L111	...	...
Differential Oil—Drain and Renew (Using Gear Oil)	L3	97	...
(Using Whitmore's Compound)	L3	97	...
Differential Oil—Fill to Level	L19	...	...
Differential Oil—Thin for Winter Use (Using Gear Oil)	L33	103	...
(Using Whitmore's Compound)	L33	101	...
Differential and Transmission Oil—Drain and Renew (Using Gear Oil)	L23	101	...
(Using Whitmore's Compound in Differential Only)	L23	101	...
Differential and Transmission Oil—Test	L231	...	...
Differential and Transmission Oil—Thin for Winter Use (Using Gear Oil)	L32	103	...
(Using Whitmore's Compound in Differential Only)	L32	103	...
Distributor Head—Check	L9	99	...
Generator and Starter Motor—Oil	L15	100	...
Hub Caps—Inspect, Lubricate	L97	109	...
Lubrication Connections—Oil	L4	105	...
Lubrication Oil Tank—Renew	626-726-826-901 649-749-849-901	L43 L44	0.5 0.5
Lubrication Oil Tank—Fill (Material Only)	L43	105	10.25
Lubrication Oil Tank—Renew	L44	...	...
Lubrication Oil Tubes—Resolder at Connections Using Electric Soldering Iron	L47	0.8	1.75
Miscellaneous Oil—Door Hinges, Locks, Spark Covers, Brake K. and L. and Clutch Covers	L14	...	...
*Motor Oil—Fill (Material Only)	L49	...	...
Oiling Operation—500 Miles	L01	87	...
Oiling Operation—1000 Miles	626-726-826-901 649-749-849-901	L02 L02	87 87
Oiling Operation—500 Miles (Using Whitmore's Compound in Differential Only)	626-726-826-901 649-749-849-901	L03 L03	88 88
Oiling Operation—10,000 Miles (Includes Replacing Rear Axle Shaft Bearings and Shock Absorber Oil) (Using Gear Oil—Add 0.3 Hour for Cars Having Wire Wheels. Note: The cooling system should be flushed every 10,000 miles. This operation should be sold with lubrication unless it has recently been flushed)	626-726-826-901 649-749-849-901	L04 L04	89 89
(Using Whitmore's Compound in Differential Only) Add 0.3 Hour for Cars Having Wire Wheels	626-726-826-901 649-749-849-901	L04 L04	89 89
Oiling Operation—10,000 Miles (Less Repacking Rear Axle Shaft Bearings) (Using Gear Oil. Note: The cooling system should be flushed every 10,000 miles. This operation should be sold with lubrication unless it has recently been flushed)	626-726-826-901 649-749-849-901	L012 L012	...
(Using Whitmore's Compound in Differential Only)	626-726-826-901 649-749-849-901	L012 L012	...

	Symbol	Page	Zone I
<b>OIL—Cont'd</b>			
Oil Pressure—Adjust—Use Old Oil.....	M75	0.8	8 1.75.....
Oil Pressure Gauge—Renew.....	M72	0.4	197 2.35. . . .
Oil Pump—Recondition (Labor Only) (After M710).....	MM759	0.8	1.75.....
Oil Pump—Remove, Dismantle, Clean and Replace—Not Removing Lower Half.....	626-726-826-901 640-740-840-903	M710 M710	1.2 198 4.70..... 1.2 198 5.20.....
Oil Pump—Remove, Dismantle, Clean and Replace—Lower Half Off.....	M713	0.8	1.75.....
Oil Pump Assembly—Renew—Not Removing Lower Half.....	M754	1.2	14 15.....
Oil Pump Case—Renew (After M710).....	MM755	0.8	4.30.....
Oil Purolator Cartridge—Renew.....	626-726-826-901 640-740-840-903	L46 L46	0.4 106 4.00..... 0.4 106 4.75.....
Oil Test no Bearings—Lower Half Off.....	M74	0.5	198 1.75.....
Rear Axle Shaft Bearings—Repack Box (After A310).....	LT.85	1.0	2.25.....
Shock Absorbers—Level Oil.....	L18		
Shock Absorbers—Level Oil and Adjust All.....	L20		
Shock Absorber—Renew One Felt Washer and Fill With Oil.....	626-726-640-740	F108 L4	0.6 98 2.05.....
Speedometer Shaft—Grease.....	L92		
Steering Gear Housing—Refill to Level (Using Gear Oil).....	L92		
Steering Gear—Adjust to Eliminate Play and Fill with Whitmore's No. 52 Oil.....	8352	1.0	132 2.60.....
Steering Gear Housing—Wash Out and Refill with Whitmore's.....	L93		
Transmission Oil—Drain and Renew (Using Gear Oil).....	L2		97
Transmission—Fill to Level.....	L17		
Transmission Oil—Fill for Winter (Using Gear Oil).....	L22		101
Universal Joints—Refill.....	L8		98
Wheels—Front—Clean Out and Repack with Grease.....	L13	1.2	2.95.....
<b>OIL PUMP</b>			
Oil Pump—Remove, Dismantle, Clean and Replace—Not Removing Lower Half.....	626-726-826-901 640-740-840-903	M710 M710	1.2 198 4.70..... 1.2 198 5.20.....
Oil Pump—Remove, Dismantle, Clean and Replace—Lower Half Off.....	M713	0.8	1.75.....
Oil Pump—Recondition (After M710) (Labor Only).....	MM759	0.8	1.75.....
Oil Pump Assembly—Renew—Not Removing Lower Half.....	M754	1.2	14 15.....
Oil Pump Case—Renew (After M710).....	MM755	0.8	4.30.....



	Symbol	Page	Zone 1	
<b>PAINT WORK</b>				
Body, Hood and Wheels—Change Color—Standard Color—Sand Down to Bare Metal All Places where Paint is Chipped Off—Fill in All Bare Spots with Primer and then Surfacer, Sand Down Entire Body, Mask, Spray with Color, Oil Sand, Polish, Touch Up and Stripe—Closed Cars—Labor Only	P73	54.0	2118.15	
Body, Hood and Wheels—Change Color—Special—Operation Same as P73—Closed Cars—Labor Only	P74	64.0	149.00	
Body and Hood—Restripe—Closed Cars—Labor Only	726-826-901 740-840-901	P88 P122	7.0 4.0	15.25 8.75
Body, Hood and Wheels—Restripe—Labor Only	726-826-901 740-840-901	P81 P71 P73	8.5 4.0 6.0	18.55 8.75 13.15
Chassis—Refinish Black—Labor Only		P84	8.0	17.50
Chassis—Refinish Special Color—Labor Only		P85	6.0	13.15
Cowl—Burn Off, Repaint and Restripe—Operation same as P97—Labor Only		P85	8.0	17.50
Cowl—Refinish and Restripe—Operation same as P73—Labor Only		P86	4.0	8.75
Door—Refinish and Restripe—Lower Panel—Operation same as P73—Labor Only		P91	1.5	3.15
Fender—Spray One in Color—After Wash Out—Labor Only		P91	1.0	2.10
Fender—Spray One in Black—After Wash Out—Use this operation only in cases where not more than 1/2 of a Fender has to be Sprayed—Labor Only		P94	2.4	5.10
Fender—Front—Spray Black—Complete—Operation same as Symbol P73—Labor Only		P96	4.0	8.75
Fender—Front—Spray Any Color—Complete—Operation same as Symbol P73—Labor Only		P95	1.0	6.50
Fender—Rear—Spray Any Color—Complete—Operation same as Symbol P73—Labor Only		P93	2.0	4.40
Fender—Rear—Spray Black—Complete—Operation same as Symbol P73—Labor Only		P107	5.0	10.85
Garnish Mouldings in Color—Operation same as Symbol P73—also use Operation P106, in addition—Labor Only		P99	6.0	13.15
Hood—Complete—Refinish and Restripe—Operation same as Symbol P73—Labor Only		P101	2.0	4.40
Hood—Refinish and Restripe—One Side of Top Only—Operation same as Symbol P73—Labor Only		P102	3.0	6.50
Hood—Refinish and Restripe—One Side Only—Labor Only		P142	2.0	4.40
Hood—Prepare for Paint and Repairs after Paint—Labor Only		P100	1.5	7.70
Hood—Top Only—Refinish and Restripe—Operation same as Symbol P73—Labor Only		P97	8.0	17.50
Hood—Complete—Burn Off, Repaint and Restripe—Burn Off, Sand, Prime, Surfacer, Sand, Spray Color, Oil Sand, Spray Primer, Polish, Touch Up and Stripe—Labor Only		P98	9.0	19.60
Hood—Complete with Louver Doors—Complete—Burn Off, Repaint and Restripe—Operation same as Symbol P97—Labor Only	640-740	P141	4.0	8.75
Interior Mouldings—Wood—Burn Off and Repaint—Burn Off, Sand, Stain, Fill, Shellac, Varnish and Rub to Polish—also use Operation P106—Labor Only		P103	7.0	15.25
Interior Mouldings—Wood—Refinish—Sand, Shellac, Varnish and Rub to Polish—Labor Only		P104	5.0	10.85
Interior Mouldings—Remove and Replace—Labor Only		P105	1.0	4.40
Metal Tire Covers—Lacquer Any Color—Labor Only		P124	1.0	2.10

	Symbol	Page	Zone 1
<b>PAINT WORK (Cont'd)</b>			
Mustang Panel—Change Color—Operation same as Symbol P73—Labor Only	P103	2.0	\$ 4.40
Mouldings—Closed Car Body—Repaint Upper—Labor Only	P82	8.0	17.50
Open Car—Change Color on Body, Bumper and Wheels—Operation same as Symbol P73—Labor Only	P108	54.0	118.15
Open Car—Strip Car for Paint—Operation same as Symbol P76—Labor Only	P109	8.0	17.50
Open Car—Center Panel Between Doors—Refinish and Restripe—Operation same as Symbol P73—Labor Only	P110	1.5	3.25
Open Car Doors—Refinish and Restripe Complete—Operation same as Symbol P73—Labor Only	P111	4.0	8.75
Open Car Golf Compartment Door—Refinish and Restripe—Operation same as Symbol P73—Labor Only	P112	2.0	4.40
Open Car Rear Side Panel—Refinish and Restripe—Operation same as Symbol P73—Labor Only	P113	6.0	13.15
Open Car Rumble Seat Deck—Burn Off, Repair and Restripe—Operation same as Symbol P17—Labor Only	P116	9.0	19.60
Open Car Rumble Seat Deck—Refinish and Restripe—Operation same as Symbol P73—Labor Only	P118	6.0	13.15
Open Car Rumble Seat Deck Door—Burn Off and Repair—Operation same as Symbol P73—Also use Operation P117 in addition—Labor Only	P119	5.5	11.90
Open Car Rumble Seat Deck Door—Refinish—Operation same as Symbol P73—Labor Only	P120	4.0	8.75
Open Car Rumble Seat Deck Door—Remove and Replace—This is for Operation P116	P117	0.8	1.75
Open Car Tonneau—Burn Off, Repair and Restripe—Operation same as Symbol P73—Labor Only	P114	9.0	19.60
Open Car Tonneau—Patch Up, Refinish and Restripe—Operation same as Symbol P73—Labor Only	P115	6.0	13.15
Radiator Core—Spray—Labor Only	P121	0.5	1.25
Rear Panel—Lower—Burn Off or Refinish—Operation same as Symbol P73—Labor Only	P139	9.0	19.60
Rear Panel—Upper—Burn Off or Refinish—Operation same as Symbol P73—Labor Only	P140	11.0	24.00
Standard Enamel Parts—Lacquer Any Color—Operation same as Symbol P71—Labor Only	P88	20.0	41.75
Standard Enamel Parts—Remove and Replace All Front Fenders, Rear Fenders, Side Splashes, Radiator Splash Pan, Hood Ledges and Trunk Platform—Labor Only	P89	17.0	36.75
Standard Enamel Parts—Remove and Replace All—Send out to be Enamelled—Labor Only	P90	17.0	35.00
Steering Wheel—Re-Lacquer Wheel (Removed)—Labor Only	P123	0.8	1.75
Strip Car for Paint and Replace Standard Parts—Rear Fenders, Headlamps and Crossbar, Door Handles, Trunk Rack Straps, Hood Straps, Bumper Straps and on Open Jobs Windshield Frame—Close Cams—Labor Only	P75	7.0	15.25
Strip Car for Paint and Replace De Luxe Equipment—In Addition to Standard Parts, Remove and Replace Trunk Rack, Trunk Rack Straps, Spare Wheel Carriers, Cool Lamps and Baffle, Rear Bumpers—On Coupes, Remove Rear Deck and Golf Compartment Door Hinge, Hood Hinge Where Nicked—Remove Garnish Mouldings on Open Cars—Closed Cars—Labor Only	P76	8.0	17.50
Stripe Around Each Wheel—Labor Only	P127	0.5	1.05
Trunk—Refinish or Lacquer—Labor Only	P125	6.0	13.15
Wheel—Steel—Burn Off, Repair and Restripe One—Burn Off Old Paint, Sand, Prime, Undercoat Sand, Spray Color, Sand, Spray Thinner, Polish and Scrape—Labor Only	P127	2.0	4.40
Wheel Hub Cap Centers—Repair One—Labor Only	P133	0.2	.55
Wheel Rim—Recut One—Labor Only	P134	0.4	.90
Wire Wheel—Repair One—Labor Only	P130	1.5	3.15





	Symbol	Page	Index
<b>PLATING—Cont'd</b>			
Headlamp— Remove, Dismantle and Replace One —Used When Removing and Replacing Parts to Be Plated . . . . .	P230	0.6	.. K 1.25. . . . .
Headlamps— Remove, Dismantle and Replace Two —Used When Removing and Replacing Parts to Be Plated . . . . .	P240	1.0	.. 2.00 . . . . .
Headlamp Brake Rod— Remove and Replace— Used When Removing and Replacing Parts to Be Plated . . . . .	P250	0.8	.. 1.75. . . . .
Road Lever— Plate One— Chromium or Nickel (Labor Only) . . . . .	P27	0.5	.. 1.05. . . . .
Hubs Flanges— Remove and Replace All— Used When Removing and Replacing Parts to Be Plated . . . . .	P260	0.5	.. 1.25 . . . . .
Hubs Flange— Remove and Replace One— Used When Removing and Replacing Parts to Be Plated . . . . .	P270	0.2	.. .55. . . . .
Motometer— Plate One— Chromium or Nickel (Labor Only) . . . . .	P26	0.4	.. .50 . . . . .
Radiator Cap and Bolt— Plate— Chromium or Nickel (Labor Only) . . . . .	P25	0.1	.. .35. . . . .
Radiator Shell— Plate One— Chromium or Nickel (Labor Only) . . . . .	P29	2.0	.. 4.40 . . . . .
Spotlight Lamps— Plate One— Chromium or Nickel (Labor Only) . . . . .	P24	1.5	.. 3.15 . . . . .
Strip Coat of All Standard Plates— Brass, Steel and to Be Chromium Plated— (Labor Only) . . . . .	P61	7.0	.. 14.70. . . . .
Strip Coat of All Standard Plates— Brass and One to Be Chromium Plated and One to Be Nickel Coated— This Operation With De-Base Equipment Only . . . . .	P62	9.0	.. 18.90 . . . . .
Tail Lamp— Plate One— Chromium or Nickel (Labor Only) . . . . .	P23	0.7	.. 1.60. . . . .
Wheel Rims— Plate All— Chromium or Nickel (Labor Only) . . . . .	P22	1.2	.. 2.65. . . . .

**PUSH RODS**

Valve Push Rods— Face Off Bottom (V Pves Out) Valve Push Rod and Guide— Renew One 625	M222	0.6	.. 1.40 . . . . .
Valve Push Rod and Guide— Renew One 720 829 601 740 840 605 . . . . .	M218	0.5	129 2.80
Valve Push Rods and Guides— Renew All Valves Out . . . . .	M218	0.5	.. 2.80 . . . . .
Valve Push Rods and Guides— Renew All Valves Out . . . . .	M219	3.0	111 31.75 . . . . .
Valve Push Rods and Guides— Renew All Cylinder Block Off . . . . .	M219	3.0	.. 11.75 . . . . .



	Symbol	Page	Zone 1
<b>RADIATOR</b>			
Radiator and Cooling System (Install and Test) Reversing Water Flow .....	M87	0.3	\$ .70 .....
Radiator Tighten to Frame .....	M854	0.3	.90 .....
Radiator Bracket (Edge) (Install) (Labour) .....	M859	0.7	2.15 .....
Radiator Bracket (Edge) (Material) (Install) (Labour) .....	M859	0.5	2.00 .....
Radiator Remove, Dismantle, Reassemble and Replace (Includes Shell, Shutters, Case and Thermostat) .....	M800	1.0	6.15 .....
Radiator—Remove and Replace .....	M810	1.4	2.45 .....
Radiator Case—Renew .....	M883	1.5	51.50 .....
.....	M884	2.5	54.80 .....
.....	M883	2.5	60.50 .....
.....	M880	2.5	109.60 .....
.....	M880	2.5	112.55 .....
.....	M880	2.5	118.40 .....
.....	M880	2.5	115.65 .....
.....	M880	2.5	126.65 .....
.....	M880	2.5	132.15 .....
Radiator Base—Renew All (If Radiator Is Out of Drain) (Change Material Only) .....	M841	0.8	2.20 .....
.....	M841	0.8	2.40 .....
.....	M841	0.8	2.95 .....
.....	M841	0.9	3.20 .....
Radiator Hose and Clamps—Renew All (If Radiator Is Out of Drain) (Change Material Only) .....	M842	0.8	2.50 .....
.....	M842	0.8	2.70 .....
.....	M842	0.8	3.15 .....
.....	M842	0.8	3.45 .....
Radiator Hose Clamp—Renew One .....	M843	0.1	.95 .....
Radiator Hose Clamps—Tighten (or Tighten) .....	M844	...	.....
Radiator Lower Hose—Renew (If Radiator Is Out of Drain) (Change Material Only) .....	M835	0.1	1.20 .....
.....	M835	0.1	1.40 .....
Radiator Lower Hose and Clamps—Renew (If Radiator Is Out of Drain) (Change Material Only) .....	M836	0.3	1.50 .....
.....	M836	0.3	1.50 .....
Radiator Shell (Chromium Plated) (Renew) .....	M885	1.5	15.65 .....
.....	M885	1.5	11.75 .....
.....	M885	1.5	46.65 .....
Radiator Shell—Replate (Chromium or Nickel) (Labour Only) .....	P29	2.0	4.40 .....
Radiator Shell—Remove and Replace .....	M880	1.5	2.65 .....
Radiator Shell—Straighten (Shell) (See note) (Material Only) .....	M862	...	.....
Radiator Shell (Stainless Steel) (Renew) .....	M816	1.5	4.05 .....
Material (Only) .....	M816	...	1.40 .....
Radiator Shell, Shutters, Case and Thermostat—Remove and Replace—Radiator Out of Car .....	M801	1.3	3.50 .....
Radiator Shutter—Free Up (Includes Closing Up Operating Lever Bracket and Thermostat) .....	M867	...	6.15 .....
.....	M865	2.0	12.55 .....
.....	M865	2.0	12.75 .....
.....	M865	2.0	12.90 .....
Radiator Shutter (Adjust) (Labour) .....	M865	2.0	12.75 .....
.....	M865	2.0	12.90 .....
Radiator Shutter Thermostat—Remove, Test and Install New Thermostat .....	M866	1.0	12.80 .....
.....	M866	1.0	12.80 .....
.....	M866	0.6	5.80 .....
Radiator Splasher (Renew) (Material) (Labour) (Time) .....	M846	...	.....
Radiator Splasher—Remove (Labour) (Renew) .....	M845	1.2	7.05 .....
Radiator Thimble Cover Gasket—Renew (Material Only) .....	M86	...	75 .....
.....	M86	...	50 .....
.....	M86	...	40 .....
Radiator Thimble Cover Gasket—Renew (Material Only) .....	M853	...	40 .....
Radiator Upper Hose and Clamps—Renew (If Radiator Is Drained) (Change Material Only) .....	M838	0.1	1.25 .....
.....	M838	0.1	1.85 .....
.....	M838	0.1	2.60 .....













	Symbol	Page	Zone I
<b>SPEEDOMETER</b>			
Speedometer Driving Pinion—Renew	B59	12	7.20
Speedometer Driving Pinion and Shaft Assembly—Renew	B57	12	8.00
Speedometer Driving Pinion—Renew	B51	15	5.10
Speedometer Head—Remove, Seal Out for Repair and Replace (Labor Only)	B56	0.4	.50
Speedometer Head Glass—Remove (Labor Only)	B55	0.3	.90
Speedometer Driven Pinion or I. O. Renew	B58	0.5	5.15
Speedometer Shaft Insulin Cable—Renew (Labor Only)	B53	0.8	1.75
Speedometer Shaft—Lubricate	1.6	62	
<b>SPIDER—See Clutch</b>			
<b>SPLASHER—See Enamel, Fenders, Radiator or Running Board</b>			
<b>SPOTLIGHT</b>			
Spotlight Bulb—Renew (Material Only)	E445		
<b>SPRAY TUBE—See Carburetor</b>			
<b>SPRINGS</b>			
Front Axle Spring—Release One (Mits. 210)	F216	0.2	1.5
Front Axle Spring—Remove One	F21	1.8	11.80
Front Axle Spring and Cover Assembly—Renew One	F21	1.8	11.80
Front Axle Spring—Remove and Repair One	F210	1.8	4.05
Front Axle Spring Center Bolt—Renew One	F224	1.6	4.75
Front Axle Spring Center Bolt—Renew One (Labor Only)	F241	2.0	4.40
Front Axle Spring Front Bolt—Renew One	F211	0.4	1.75
Front Axle Spring Front Bolt and Bushing—Renew One	F214	0.8	3.20
Front Axle Spring Hanger—Front—Rivet One	F198	3.5	10.00
Front Axle Spring Rear Bolt—Renew One	F212	0.7	2.00
Front Axle Spring Rear Bolt and Bushing—Renew One	F214	1.1	4.10
Front Axle Spring Rear Bracket—Right—Renew One	F32	5.5	13.75
Front Axle Spring Rear Bracket—Left or Right—Rivet	F399	5.5	10.00
Front Axle Spring Rear Transm. Bracket—Left—Renew	F232	1.2	3.50
Front Axle Spring Rear Transm. Springs—Left—Renew	F244	1.1	3.00
Front Axle Spring Rear Transm. Bracket—Left—Screw	F47	5.0	15.50
Front and Rear Axle Spring Bolts and Bushings—Renew All	F27	6.2	14.80
Front and Rear Axle Spring Bolts—Shocking Adjust—When the Bracket Allows No Adjustment	F228	1.6	3.60

	Symbol	Page	Zone I
<b>SPRINGS—Cont'd</b>			
Front Axle Spring Rubber Bumper—Renew One	A381	9.4	8 1.45
Front or Rear Axle Spring Clips—Renew One	F24	9.7	2.60
Front and Rear Axle Spring Clips—Tighten All	F230	9.8	1.75
Front and Rear Axle Spring Rebound Clip Bolts— Tighten All			
676 640	F276	9.3	.90
Front or Rear Axle Spring Cover—Remove and Replace One			
676 640	F277	9.4	1.75
Front or Rear Axle Spring Rebound Clip Bolt and Nut—Renew One (Spring Off)			
626 640	F275	9.5	.65
Front or Rear Axle Spring Rebound Clips—Renew One (Spring Off)			
626 640	F274	9.4	1.70
Front Axle Spring Shackle Bracket Assembly— Renew One	F31	5.5	15.80
Front Axle Spring Lower Leaf—Renew One (Labor Only)	F242	2.0	4.40
Front Axle Spring Upper Leaf—Renew One (Labor Only)	F240	2.0	4.40
Front or Rear Axle Spring Shackle Links—Renew One Pair	F215	0.7	4.55
Rear Axle Spring—Renew One			
636 640	F22	2.2	15.95
Rear Axle Spring and Cover Assembly—Renew One			
726-826-901 740-840-903	F22	2.2	16.55
Rear Axle Spring—Rebush One (After F220)	FF223	0.2	1.80
Rear Axle Springs—Rebush Both (After F2611)	PF262	0.2	3.25
Rear Axle Spring—Remove and Replace One	F220	1.2	4.90
Rear Axle Spring—Remove and Replace Both	F261	4.0	8.75
Rear Axle Spring Bracket Bushing—Renew One	F39	1.0	1.00
Rear Axle Spring Bolts and Bushings—Renew Both Springs	F261	3.1	16.00
Rear Axle Spring Center Bolt—Renew One	F263	2.1	4.00
Rear Axle Spring Front Bolt—Renew One	F217	0.7	2.00
Rear Axle Spring Front Bolt and Bushing— Renew One			
F218	1.5	72	5.05
Rear Axle Spring Rear Bolt—Renew One	F219	0.5	2.25
Rear Axle Spring Rear Bolt and Bushing— Renew One			
F221	0.8	73	1.80
Rear Axle Spring Rear Bracket—Renew One	F35	0.5	18.15
Rear Axle Spring Front Bracket—Renew One	F33	0.0	20.50
Rear Axle Spring Front Bracket—Re-rivet One	F396	8.0	17.60
Rear Axle Spring Rear Hanger—Re-rivet One	F397	1.5	10.60
Rear Axle Spring Center Leaf—Renew One (Labor Only)	F244	1.2	7.00
Rear Axle Spring Lower Leaf—Renew One (Labor Only)	F245	1.2	7.00
Rear Axle Spring Upper Leaf—Renew One (Labor Only)	F243	1.2	7.00
Spring Bolts—Tighten All	F26	0.8	1.75
Spring Clips, Bolts and Shackles—Tighten All	F25	1.4	5.00
Spring Cover—Metal—Remove and Replace on One Front or Rear Spring			
726-826-901 740-840-901	F230	1.3	2.80
Spring Cover—Metal—Renew on One Front Spring			
726-826-901 740-840-901	F234	1.3	4.95
Spring Cover—Metal—Renew on One Rear Spring			
726-826-901 740-840-901	F231	1.3	5.35

**SPROCKETS**

	Symbol		Page	Zone 1
Countershaft Sprocket—Renew (After M410)	M413	1.2		5 7 70
Front End Sprockets—Renew (Includes M410)	M462	4.2	150	22 05
Front End Sprockets—Renew (After M410)	M4002	1.7		17 25
Front End Sprockets and Chain—Renew (Includes M410)	M483	4.2	150	54 20
Front End Sprockets and Chain—Renew (After M410)	M483	1.7		28 40
Front End Sprockets—Retain (Removing Front Cover) When Chain Has Jumped	M484	1.7	151	6 45
Generator Sprocket Support—Renew (After Oil)	M486	0.8	151	8 50

**STARTER MOTOR**

Starter Motor—Inspect (Off Car)	E331	0.4	52	90
Starter Motor—Recondition—Off Car (Includes E311) (Labor Only)	E310	2.0		4 40
Starter Motor—Recondition—Off Car (After E311) (Labor Only)	EE318	1.6		5 50
Starter Motor—Remove and Replace	E320	0.2	52	35
Starter Motor—Renew (1 1/2 Motor) (Labor Only)	E32	0.3	51	75
(Dynamal Labor Only)	E32	0.3	51	55
Starter Motor and Generator—Oil	E15			
Starter Motor Armature—Renew (Includes E314)	E320	0.8		19 85
626-726-826-901	E320	0.8		21 85
640-740-840-901	EE320	0.4		18 95
626-726-826-901	EE320	0.4		20 95
640-740-840-901				
Starter Motor Armature Shaft—Straighten (Includes E311)	E421	1.2		2 75
Starter Motor Armature Shaft—Straighten (After E311)	EE321	0.8		1 85
Starter Motor Armature and Field—Renew (Includes E311)	E325	0.8		20 05
626-726-826-901	F325	0.8		29 55
640-740-840-901				
Starter Motor Armature and Field—Renew (After E311)	EE325	0.4		19 15
626-726-826-901	EE325	0.4		18 65
640-740-840-901				
Starter Motor Bendix Drive Shaft and Gear Assembly—Renew (Includes E311)	E312	0.4		8 60
Starter Motor Bendix Drive Shaft and Gear Assembly—Renew (After E311)	EE312	0.4		7 70
Starter Motor Bendix Spring—Renew	E328	0.5		1 80
Starter Motor Bendix Support Bushing (Large)—Renew (Includes E311)	E326	0.8		2 15
Starter Motor Bendix Support Bushing (Large)—Renew (After E311)	EE326	0.4		1 25
Starter Motor Brushes—Renew (Includes E311)	E322	0.8		2 95
Starter Motor Brushes—Renew (After E311)	EE322	0.4		2 05
Starter Motor Brushes and Brush Springs—Renew (Includes E311)	E324	0.6		3 15
Starter Motor Brushes and Brush Springs—Renew (After E311)	EE323	0.4		2 25
Starter Motor Clutch—Remove, Inspect and Replace (Includes E310)	E317	0.6		1 35
Starter Motor Clutch—Remove, Inspect and Replace (After E311)	EE317	0.4		1 00
Starter Motor Center Bearing—Free Up—Off Car (Includes E311)	E314	0.7		1 75
Starter Motor Center Bearing—Free Up—Off Car (After E311)	EE314	0.3		.90
Starter Motor Commutator—Face Off and Renew Brushes—Off Car (Includes E311)	E311	1.2	51	3 95
Starter Motor Commutator—Face Off and Renew Brushes—Off Car (After E311)	EE311	0.8		2 05





	Symbol	Page	Zone 1
<b>STEERING—Cont'd</b>			
Steering Gear Housing—Wash Out and Refill with Whitemore's No. 52	S193	109	
Steering Gear Housing—Refill to Level (Using Whitemore's Oil)	S192	109	
Steering Gear Housing—Refill to Level (Using Whitemore's Compound)	S192	109	
Steering Knuckle—Renew Oil	S116	23	\$19.30
Steering Knuckle—Shim Up and Down Play—One Side	S125	24	5.40
Steering Knuckle—Shim Up and Down Play—Both Sides	S126	40	9.60
Steering Knuckles, Steering Gear and Steering Connections—Tighten and Adjust (Includes Trimming Wheels)	S146	60	13.20
Steering Knuckles and Steering Connections—Overhaul and Fixe Up (Labor Only)	S123	64	15.30
Steering Knuckle Bearings—Adjust	S119	26	222 8.30
Steering Knuckle Inboard Bearing Cup, Cone, and Rollers—Renew	S125	12	226 9.60
Steering Knuckle Lever (Right) Straighten	S128	16	3.50
Steering Knuckle Lever (Left) Straighten	S129	20	4.40
Steering Knuckle Lever—Right—Renew	S114	14	219 8.10
Steering Knuckle Lever—Left—Renew	S113	14	219 8.10
Steering Knuckle Outboard Bearing Cup, Cone, and Rollers—Renew	S126	02	226 7.00
Steering Knuckle Pins—Renew Both (Using Pulver S1764) (Axle Nut Remover)	S133	48	18.80
Steering Knuckle Pin Bearing—Lower—Renew	S115	27	219 5.75
Steering Knuckle Pin Bearing—Upper—Renew One	S112	25	218 9.15
Steering Knuckle Pins and Bearings—Renew—One Side	S117	18	15.10
Steering Knuckle Pins and Bearings—Renew—Both Sides	S117	28	17.00
Steering Knuckle Soap Screws—Adjust	S111	55	30.20
Steering Knuckle Stop Screws—Renew One	S120	03	34.00
Steering Lever—Tighten on Shaft	S122	05	.90
Steering Lever—Renew (Spare-Low Not Renewed)	S32	01	1.05
Steering Post Vertical Cover Assembly—Renew	S139	20	229 8.00
Steering Wheel—Renew	S323	20	6.35
Steering Wheel—Line Up	S33	05	225 12.75
Steering Wheel Spark Throat—Free Up and Adjust	S33	20	15.40
Steering Wheel and Section—Renew (Includes S10)	S33	03	1.75
Steering Wheel and Section—Renew (A For S34)	S35	06	1.40
	S35	81	225 28.65
	S35	14	14.40









Symbol Page Zone 1

TRANSMISSION

Crankcase, Differential and Transmission Oil—  
 Drain and Renew (Using Gear Oil).... 636-726-826-901 ..... 1.123 ... 111 ...  
 640-740-840-901 ..... 1.123 ... 111 ...  
 (Using Whitmore's Compound in Differential  
 Only).... 636-726-826-901 ..... 1.123 ... 111 ...  
 640-740-840-901 ..... 1.123 ... 111 ...  
 Crankcase, Differential and Transmission Oil—  
 Bring to Level..... 1.111 ...  
 Differential and Transmission Oil—  
 Level..... 1.281 ...  
 Differential and Transmission Oil—Drain and  
 Renew (Using Gear Oil) ..... 1.23 ... 101 ...  
 (Using Whitmore's Compound in Differential  
 Only)..... 1.23 ... 101 ...  
 Differential and Transmission Oil—  
 Thin for Winter Use (Using Gear Oil)..... 1.32 ... 103 ...  
 (Using Whitmore's Compound in Differential  
 Only)..... 1.32 ... 103 ...  
 Transmission—Fill to Level..... 1.17 ...  
 Transmission—Recondition (Labor Only)..... T328 8.0 248 \$15.75 ...  
 Transmission—Remove Cover, Inspect Gears for  
 Necessary Repairs..... T214 1.2 ... 2.65 ...  
 Transmission—  
 Remove, Dismantle, Inspect and Reassemble... T210 8.0 243 16.75 ...  
 Transmission—Remove, Dismantle, Adjust, Syn-  
 chronize and Replace..... T210 8.0 ... 16.75 ...  
 Transmission Assembly—Remove and Replace... T109 4.2 233 8.75 ...  
 Transmission Case Cover—Renew..... T211 0.7 244 2.90 ...  
 Transmission Case Cover Gasket—Renew..... T25 0.7 241 1.90 ...  
 Transmission Change Speed Lever—Renew..... T21 0.6 241 6.90 ...  
 Transmission Change Speed Lever Ball Sockets—  
 Renew..... T22 1.0 ... 6.40 ...  
 Transmission Change Speed Lever Dust Cover—  
 Renew..... T23 0.8 ... 2.05 ...  
 Transmission Change Speed Lever Guide Washer—  
 Renew..... T24 0.2 ... .70 ...  
 Transmission Direct Drive and Second Speed  
 Gear—Renew (Transmission Off Car)..... 636-640 T28 1.8 247 15.85 ...  
 Transmission Direct Drive and Third Speed Gear  
 —Renew (Transmission Off Car)..... 636-740 T28 2.6 ... 12.35 ...  
 826-840 T28 2.6 ... 13.45 ...  
 901-901 T28 2.6 ... 5.75 ...  
 (Labor Only).....  
 Transmission Drive Shaft and Shifter Fork—  
 Remove and Replace (Transmission Off Car)..... T217 1.1 245 2.65 ...  
 Transmission Gearshifter Fork—Renew One  
 (Transmission Off Car)..... T20 0.4 241 4.30 ...  
 Transmission Gearshifter Fork Shaft—Renew One  
 (Transmission Off Car)..... T216 0.4 245 2.55 ...  
 Transmission Gearshifter Lock Plunger and  
 Spring—Renew One..... T27 1.1 242 2.85 ...  
 Transmission Oil—Drain and Renew (Using Gear  
 Oil)..... 1.2 ... 97 ...  
 Transmission Oil—Thin for Winter (Using Gear  
 Oil)..... 1.22 ... 101 ...  
 Transmission Rear Bearing Dust Washer—Renew  
 to Stop Oil Leak..... T220 2.4 ... 5.45 ...  
 Wash Motor and Transmission Using Power  
 Washer..... C6 1.3 39 2.45 ...  
 Note: If car is equipped with rubber heater, add  
 time for removing and replacing same if nec-  
 essary.

	Symbol	Page	Zone 1
<b>UNIVERSAL JOINT</b>			
Universal Joints—Remove, Inspect, Report and Replace	T322	249	6.65
Universal Joints—Rebuild	T322	249	6.40
Universal Joint—Front or Rear—Recondition (Labor Only)	L8	...	...
Universal Joints—Front, Rear or Center—Recondition (Labor Only)	T37	247	2.65
Universal Joint—Front or Rear—Remove, Inspect, Report and Replace	T37	...	3.15
Universal Joint—Front, Rear or Center—Remove, Inspect, Report and Replace	T323	250	2.90
Universal Joint Bolts and Nuts—Rear or All	T323	...	3.40
Universal Joint Bolts and Nuts—Rear or All	T316	248	1.75
Universal Joint Drive Shaft—Loss Joints—Renew	T317	249	3.20
Universal Joint Drive Shaft—Front—Loss Joints—Renew	626-726-826-901	...	...
Universal Joint Drive Shaft—Front—Loss Joints—Renew	610-740-745-840	...	...
Universal Joint Drive Shaft—Front—Loss Joints—Renew	615	247	14.90
Universal Joint Drive Shaft—Front—Loss Joints—Renew	745-845	247	15.95
Universal Joint Drive Shaft—Front—Loss Joints—Renew	T36	247	17.85
Universal Joint Drive Shaft—Rear—Loss Joints—Renew	T36	...	15.70
Universal Joint Drive Shaft—Intermediate Bearing—Renew	T34	...	10.15
Universal Joint Flange Bolts—Tighten	T32	...	11.55
Universal Joint Flange Bolts—Tighten	T321	249	1.35
Universal Joint Flange Bolts—Tighten	T34	247	.70
<b>UPHOLSTERY</b>			
Remove and Replace Upholstery—Sedan—Rear Seat Back Only	B311	1.8	3.85
Remove and Replace Upholstery—Rear—Sole Panels	B312	7.8	17.50
Remove and Replace Upholstery—Sedan—Upper Panel (Labor Only)	B315	2.2	5.25
Rebind Touring Car Door (Labor Only)	B313	0.8	1.75
Recover Door Pull-to-Handle (Labor Only)	B316	1.6	3.60
Upholster Touring Car Door—Remove and Replace (Labor Only)	B35	1.8	3.50
Upholster Sedan Door—Remove and Replace (Labor Only)	B36	1.8	3.50
Upholstery—Remove and Replace to Repair Door Lock (Labor Only)	B37	0.8	1.75
Upholstery—Remove and Replace to Take Dent Out of Rear Panels—\$7.00 to \$20.00	B38	...	...
Upholstery—Remove and Replace to Take Dent Out of Side Panels—\$5.00 to \$10.00	B39	...	...
Weatherstrips—Bottom of Sedan Door—Renew (Labor Only)	B314	0.8	1.75







	Symbol	Page	Zone 1	
<b>VALVES—Cont'd</b>				
Valve Inlet—Renew One—Valves Out (Marginal Only).....	M251	132	\$ 1.45 .....	
Valve Cover Plate—Renew.....	M250	0.1	151 3.50 .....	
Valve Cover Plate Gasket—Renew.....	M251	0.4	112 1.50 .....	
Valve Cover Stud—Renew One— Center.....	M233	0.6	... 4.45 .....	
Valve Cover Stud—Renew One— Outside.....	M234	0.5	... .95 .....	
Valve Cover Stud Nut—Renew.....	M232	0.5	... 1.60 .....	
Valve Seats—Reset (Includes M26).....	M228	5.5	128 11.70 .....	
Valve Seats—Reset (After M26).....	MM228	0.9	... 2.10 .....	
Valve Push Rod and Guide—Renew One 626.....	M218	0.5	129 2.80 .....	
640.....	M218	0.5	... 2.80 .....	
Valve Push Rod and Guide—Renew One— Cylinder Block Off.....	726-826-901 740-840-903	M218	0.5	... 2.80 .....
Valve Seat—Renew One (Cast Iron)—Valves Out (Add 0.5 hour for each additional seat renewal)	M258	0.6	... 2.20 .....	
Valve Push Rods and Guides—Renew All— Valves Out.....	626 640	M219	3.0	131 11.75 .....
Valve Push Rods and Guides—Renew All— Cylinder Block Off.....	726-826-901 740-840-903	M219	3.0	... 11.75 .....
Valve Push Rods—Face Off Bottom (Valves Out)	M222	0.6	... 1.40 .....	
Valve Rocker Lever—Renew One (Lever Out) For Each Additional Lever Renewed Add Price of Material Only.....	M270	0.2	... 2.10 .....	
Valve Rocker Levers—Renew All (After M261).....	MM262	0.2	... 28.75 .....	
Valve Rocker Lever Housing—Front—Remove for Inspection and Replace.....	M260	0.6	... 1.55 .....	
Valve Rocker Lever Housing—Rear—Remove for Inspection and Replace.....	M260	1.0	133 2.50 .....	
Valve Rocker Lever Housings— Remove Both for Inspection and Replace.....	M261	1.6	134 3.85 .....	
Valve Rocker Lever Pin—Renew One.....	M264	1.0	134 3.70 .....	
Valve Rocker Lever Pins—Renew All (After M261)	MM265	0.2	... 3.15 .....	
Valve Spring—Renew One—Head On.....	M29	0.5	128 1.65 .....	
Valve Springs—Renew All—Valves Out.....	M256	0.6	113 10.80 .....	
Valve Stem Guide—Renew One—Valves Out.....	M213	0.6	... 2.10 .....	
Valve Stem Guides—Renew All—Block Off.....	M212	1.2	... 13.95 .....	
Valve Tappets—Adjust.....	M216	1.0	129 2.50 .....	
Valve Tappet Adjusting Screw—Renew One.....	M217	0.5	129 1.30 .....	
Valve Tappet Adjusting Screws—Renew All— Valves Out.....	M215	0.6	129 1.80 .....	
Valve Tappet Set Screws—Remove, Reface and Replace—Valves Out.....	M221	0.5	131 1.25 .....	







	Symbol	Page	Zone		
<b>WHEELS</b>					
Wheels—Front—Clean Out and Repack with Grease	L13	1.2	\$ 2.95		
Wheel—Front—True Up One—Steel Wheel	S290	2.6	5.75		
Wheel—Front—Adjust Steps	S295	0.5	1.05		
Wheel—Front or Rear (Hull or Distel)—Renew One (Less Ring)	S228	1.1	21.45		
Wheels—Front—Clean	S222	0.8	1.75		
Wheel—Front—Remove One for Inspection and Replace	S220	0.0	1.90		
Wheels—Front—Remove Both for Inspection and Replace	S291	1.0	3.65		
Wheel—Front or Rear—Less Hub—Remove and Replace One—Remove and Mount Tire (Used When Sending Wheel Out for Repair)	S132	0.5	1.05		
Wheel—Eliminate Squeak—One Wheel	S250	0.8	1.75		
Wheel and Tire—Change One	S131	0.4	.90		
Wheel—Front—Dust Washer and Retainer—Renew (Includes S220)	S227	1.2	3.10		
Wheel—Front—Dust Washer and Retainer—Renew (After S220)	SS227	0.4	1.70		
Wheels—Front—Adjust Bearings	S221	0.5	1.40		
Wheels—Front and Rear—Tighten Clamping Ring Bolts and Retaining Nuts (Distel Wheels)	A39	0.3	.70		
Wheel—Rear—Renew (Wood) (Painted)	A313	1.2	31.00		
Wheel—Rear—Remove One for Inspection and Replace	A340	0.6	1.75		
Wheels—Rear—Remove Both for Inspection and Replace	A310	1.5	3.50		
Wheel—Rear—True Up One—Steel Wheel	A329	2.6	5.75		
Wheel—Rear Axle Shaft Bearing Sleeve—Dust Washer and Retainer—Renew Both (Includes A310)	636-726-826-901 640-740-840-903	A312 A317	2.4 2.4	6.15 7.15	
Wheel—Rear Axle Shaft Bearing Sleeve—Dust Washer and Retainer—Renew Both (After A310)	676-726-826-901 640-740-840-903	AA312 AA317	0.8 0.8	2.65 3.65	
Wheel Brake Drum Assembly—Front—Renew One—Wheels (A (Distel Wheel) For Each Additional Front Brake Drum Renewed Add Operation A111		A301	0.4	10	15.75
Wheel Brake Drum Assembly—Rear—Renew One—Wheel (A (Distel Wheel) For Each Additional Rear Brake Drum Renewed Add Operation A122		A322	0.4		11.15
Wheel Brake Drum—Turn Down One—Wheel (A) For Each Additional Brake Drum Turned Down Add Operation A351		A350	0.2		1.95
Wheel Carrier—Double—Furnish and Install (Labor Only)		A520	2.0		3.50
Wheel Carrier—Double—Furnish and Install (Labor Only) Includes Wheel, Tire and Tube, Tire Cover and Rear Fender Guard (Allow \$5.00 for old bumper if turned in)		A521	5.0		5.25
Wheel Carrier Lock Plate—Renew (Wood or Steel)		A522	0.3		6.40
Wire Wheel	626-640-726-740	A522	0.3		7.05
Wire Wheel	826-840-903-905	A522	0.3		2.55
Wheel Carrier Lock and Key—Renew		A524	0.8		5.15
Wheel Carrier Bracket Brace—Renew One		A525	0.8		2.95
Wheel Carrier Lock Plate, Lock and Key—Renew		A527	0.8		12.75
Wheel Carrier Lock—Remove Broken Key—Supply One New Key		A528	0.8		2.05
Wheel Carriers—Side—Supply and Install Two (Labor Only)		A529	10.6		22.75
Wheel Carrier—Side—Supply and Install One (Labor Only)		A532	5.3		11.40
Wheel Carriers—Side—Right or Left—Renew One (Labor Only)	640-740-840-901	A531	0.5		1.05
Wheel Hub Adapter—Renew One (Disc Wheel)	826-840-901-901	S229	0.3		1.80
Wood Wheel	826-840-901-903	S229	0.3		2.70
Wood Wheel	726-740	S229	0.3		5.10
Wheel Hub Cap—Renew One (Material Only)	626-726-826-901 640-645	S225		224	1.40
	740-745	S225			1.00
	840-845-903-904	S225			2.75
Wheel Hub Caps—Front—Repack	L91		109		
Wheel Hub—Front or Rear—Chase Thread	S257	0.4			.90







	Symbol	Page	Zone I
<b>WINDOWS - Cont'd</b>			
Window Channel - Recover One Large Channel Out (Labor Only) .....	B641	0 8	5 1 75
Window Channel - Recover One Small Channel Out (Labor Only) .....	B645	0 6	1 40
Window Channels - Remove, Re-cover and Replace (Down Windows) (Labor Only) .....	B692	0 8	2 75
(Quarter Windows) (Labor Only) .....	B692	1 2	2 65
Window Channels - Renew Latch (Labor Only) .....	B693	3 2	7 00
Window Regulator - Reset .....	B694	1 5	4 50
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<b>WINDOW GLASS</b>			
Body Rear Panel Glass - Renew - Sedan or Coupe (Labor Only) .....	B64	3 0	4 15
Center Partition Glass - Renew (Labor Only) .....	B67	2 8	5 95
Door Glass - Front or Rear - Coupe or Sedan - Renew (Labor Only) .....	B63	2 0	1 40
Rear Window Glass - Stop Leak (Labor Only) .....	B615	1 2	7 50
Rear Quarter Glass - Renew - Coupe or Sedan (Labor Only) .....	B65	2 5	4 40
Window Glass Lower Weatherstrip - Rubber Renew on One Door .....	B611	0 8	2 25
Window Glass Lower Weatherstrip - Rubber Renew on Two Doors .....	B612	1 4	4 45
Window Glass Lower Weatherstrip - Rubber - Renew on Four Doors .....	B613	3 5	8 90
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<b>WINDSHIELD</b>			
Windshield Cleaner - Visual - Renew, Lubricate and Replace .....	B416	0 5	1 20
Windshield Cleaner - Polishing Film - Renew (Labor Only) .....	B42	0 2	15
Windshield Cleaner - Visual - Renew (Labor Only) .....	B42	0 4	90
Windshield Cleaner - Make Operate (Labor Only) .....	B417	0 2	55
Windshield Glass - Repair One Piece Windshield Open or Closed Body (Labor Only) .....	B47	2 8	6 15
Windshield Glass - Renew One Piece Windshield, Open or Closed Body (Labor Only) .....	B48	2 8	6 15
Windshield Seals - Right or Left - Renew Open Bodies (Labor Only) .....	B49	1 2	2 65
Windshield Regulator - Repair (Labor Only) .....	B412	1 1	3 50
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<b>WINTER ENCLOSURES</b>			
Install Packard Winter Enclosures - New - Made Up (Labor Only) .....	B233	16 0	17 50
Removing Packard Winter Enclosures - Rent Sale Curtains (Labor Only) .....	B231	5 0	10 50
Reinstall Packard Winter Enclosures (Labor Only) .....	B232	2 0	10 50
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<b>WINTER SIDES</b>			
Winter Sides - Renew (Touring Cars Only) .....	B380		
<b>WIRES - See Distributor, Horn, Ignition, Instrument Board, Stop Light or Tail Lamp</b>			
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<b>WORMS - See Steering</b>			

