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## REVIEW OF ENGINE OIL RECOMMENDATIONS

Two major factors considered by the Studebaker-Packard Engineering Department when making recommendations for oils to be used in the engines of Studebaker-Packard products are the viscosity to be recommended for anticipated ambient temperatures where the car will be operated and, the service classification of the oil.

While our recommendations are based on the single viscosity oils, (See "Oil Chart") multi-viscosity oils are an acceptable alternate in many parts of the country where temperature conditions vary from day to day, the use of multi-viscosity engine oils, to meet the changing temperatures, is desirable and recommended.

ENGINE OIL CHART

Lowest Temperature Anticipated	Recommended Viscosity	Acceptable Alternate
32° above zero F. (0°C.)	S.A.E. 30	S.A.E. 20W-40 S.A.E. 10W-30
10° above zero F. (12° below zero C.)	S.A.E. 20W	S.A.E. 10W-30
10° below zero F. (23° below zero C.)	S.A.E. 10W	S.A.E. 10W-30
Under 10° below zero F. (23° below zero C.)	S.A.E. 5W	S.A.E. 5W-20

Multi-viscosity oils, as the name implies, are designed to meet a range of viscosity requirements and go a long way in satisfying the needs of the modern automobile engine and the types of service to which it is subjected. In multi-viscosity oils, the lower S.A.E. number, followed by the suffix W certifies that it meets a certain viscosity and pour point specification at zero (0° F.). The higher S.A.E. number certifies that the same oil will meet certain viscosity and film strength specifications at higher temperatures (210° F.). As an example

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10W-30 engine oil will have the viscosity characteristics of 10W to permit a good cold start at zero, yet will maintain the viscosity and load carrying ability of an S.A.E. 30 oil under high operating temperature.

Only engine oils having a service classification "For Service MS" (Severe Service) are recommended and should be used in both 'S' and 'V' model engines. The definition of "Severe Service" includes (1) Start and Stop, short run type of operation so often encountered in urban areas and, (2) High temperature, heavy load or sustained high speed operation.

Start and stop, short run type of operation tends to promote condensation, contamination of the oil through dilution with products of combustion and unburned fuel, corrosive wear of metal parts and formation of emulsion type crankcase sludge. The severity of this type of service increases materially in cold weather or winter season operation.

High temperature, heavy load or high speed operation tend to promote oxidation of the crankcase oil, varnish deposits and lower film strength of the lubricant with the possibility of resultant scuffing of related moving parts.

The "For Service MS" engine oils include in their makeup a variety of additives to combat these conditions.

(a) Detergent and dispersive additives to promote cleanliness and prevent settling out of contaminants in the form of sludge.

(b) Oxidation inhibitors to reduce the tendency of the oil to oxidize as it is mixed with the crankcase air under high temperature and pressure.

(c) Corrosion inhibitors to prevent or control the formation of acids and thus reduce acid etching of polished surfaces.

(d) Extreme pressure additives to maintain a strong oil film between highly loaded parts, prevent metal-to-metal contact and resultant welding action.

(e) Foam inhibitors to prevent oil foaming and a weak emulsified oil film and oil pressure loss.

(f) Viscosity index improvers to reduce the thinning effect of high temperatures on the body or viscosity of the oil.

Today's "MS" or heavy duty oils, as they are sometimes referred to, marketed by reputable oil companies are considered to satisfactorily

meet the above requirements. The effectiveness of the additives is not permanent, however, and the oil in this respect does in time 'wear out'. For this reason observance of the recommended oil change periods is still as important as ever in order to assure maximum protection to the engine.

As compression ratios are increased, engines become more critical or sensitive as regards detonation or 'ping', particularly under heavy acceleration. While this condition is greatly influenced by the octane quality of the fuel employed, it can also be due to or aggravated by certain types of combustion chamber deposits causing what is referred to as surface ignition.

Reputable brands of heavy duty (MS) oils on the market today, whether they are multi-viscosity or single viscosity types will generally hold formation of these undesirable combustion chamber deposits to a minimum. When dealing with this condition as a complaint, the possibility of the oil as a contributing factor should be considered. Obviously, of course, changing to an improved grade oil will not have an immediate effect, as some period of operation will be required to dissipate the already accumulated deposits.

## FIELD-RETURNED TORQUE CONVERTERS - All Models

Periodically, we receive inspection reports from the Long Manufacturing Division covering internal inspection of field-returned torque converter assemblies prior to rebuilding. Specifically, these reports cover the freewheel assembly, thrust plates, thrust bearings, and the stator-impeller-turbine vanes. In addition to these specific categories, a general summary covers other items such as general overheating, damaged ring gears, leaks, etc.

According to their last report, out of the total of 194 returned torque converters no failure or defect was noted in 93 of them.

The reports also note instances where comments on the claim tag, or based on their inspection, indicate that a converter was replaced due to foreign matter accumulating as a result of a transmission failure. Converters noted in this manner are not included with the group of 93 allegedly non-defective converters. Nevertheless, we feel sure that some of this group may have been replaced because of presence of foreign matter in the system and, as such, would be justifiable.

However, the important point is that even after making some adjustments for dirt accumu-

lation and other matters that may have escaped inspection, it does appear that a quantity of torque converters are being replaced unnecessarily.

Among the reasons for replacement written on the claim tags of this group of questionable replacements are: 1. No Direct Drive, 2. Slips, 3. Sticks, and 4. Noisy.

With reference to Item 1, "No Direct Drive", since the present converter does not incorporate any direct drive feature, we are sure that this reason for replacement is in error.

Items 2 and 3, "Slips and Sticks", are conditions more commonly attributable to transmission malfunctioning. This is particularly significant when, in these instances, Long's inspection report states that the stator free-wheel unit, thrust washers and, thrust bearings were OK.

In items 4, "Noisy", noisy converters are a possibility to some degree. However, disregarding conditions of slipping freewheel units, dropped thrust washers and, loose vanes (which are exclusive of the 93 converters), we are not aware of a noisy converter situation.

Therefore, we ask that you take greater care in your diagnosis and replace the converter only after it is definitely established that the converter is at fault and not on the chance that "it may be in the converter".

**CONVERTER REACTION CLUTCH  
SPRAGS - Ultramatic  
Transmission - 1955-56 Packard,  
56J Golden Hawk And 1954  
Packard Gear Start**

The Parts Depots have reported a considerable number of orders for individual sprags (Part No. 410901) of the Converter Reaction Clutch. This would indicate that apparently in many cases the sprags are being replaced individually rather than in complete sets.

The sprags are made to very close tolerances and if individual replacements are made the new sprags will be subjected to abnormal loading and this could lead to early failure. For this reason we recommend replacement with a complete set of 28 sprags and 2 springs which is listed as the Converter Reaction Clutch Assembly, Part No. 450218.

In instances where a sprag is lost during the course of servicing, a new individual sprag may be installed.



**IMPROVED MAIN SHAFT REAR BEARING  
ASSEMBLY - T96 Standard  
Transmission**

A different ball bearing assembly is now used in production and has been released for service for the T96 standard transmission main shaft under Part No. 1549333. This new bearing entered production at Warner Gear on February 23, 1959. A transmission having the new bearing carries the code marking "B23-9-2" or later on the case. (Code marking signifies date manufactured.)

The new ball bearing has nine balls; whereas the former bearing had eight balls. In the new bearing, the groove in the outer race for the bearing retainer ring has been redesigned with a radius at the bottom of the groove. The new bearing can be identified by the "MRC-206-SG-3" stamped into the race.

Only the new bearing should be used where replacement is necessary. The Parts Depot will substitute the latest bearing, Part No. 1549333, for Part No. 1545176 on all service parts orders.

**IMPROVED SHIFT QUALITIES - 59S  
Model Automatic Transmission**

A new control pressure primary regulator valve spring has been released for use in the automatic transmission of the 59S model (except Y1). This new spring, Part No. 1541000, increases the idle pressure 5 to 10 pounds over the present spring. Due to the increased idle pressure the rear servo and front clutch fill more quickly and spin-up during a closed throttle 2-1 downshift is reduced. Also, use of the new spring tends to minimize the application delay between Park or Neutral and the Drive range. The spring change went into production with Flightomatic transmission Serial No. 28145.

The new control pressure regulator valve spring, Part No. 1541000, may be used as a field correction on previous model 6-cylinder Flightomatic transmission. The control pressure should be adjusted with a pressure gauge to read 80 to 85 psi. at 1000 rpm. in D range. The new spring can be recognized by its black color; the previously used spring was green.

In cases where some closed throttle 2-1 downshift spin-up still exists after the primary regulator valve spring is installed,

further improvement can be made by installing a new rear servo check valve spring. Part No. 1549458. This spring is lighter than the standard production spring which allows the rear servo check valve to bypass the orificed position a little longer thereby filling the rear servo quicker. This spring can be identified by a reddish stain.

The new control pressure regulator valve spring and the new rear servo check valve spring can be ordered from your Parts Depot. The part numbers are:

1541000 - Control Pressure Regulator Valve Spring

1549458 - Rear Servo Check Valve Spring

When present stock permits, the Pressure Regulator Assembly, Part No. 1541701 which contains the old spring, will be substituted by Pressure Regulator Assembly Part No. 1549455 for 59S models except for the Y1 Models.

IMPORTANT

IT MUST BE UNDERSTOOD THAT BEFORE THE ABOVE CORRECTIONS CAN BE EFFECTIVE, ALL OF THE PRESSURE REGULATING AND CONTROL VALVES MUST BE FREE AND OPERATIVE. THE GOVERNOR MUST BE OPERATING CORRECTLY, THE THROTTLE LINKAGE AND BANDS MUST BE ADJUSTED PROPERLY AND THE CONTROL PRESSURE MUST BE ADJUSTED TO SPECIFICATIONS.

DIFFERENTIAL SIDE BEARING REMOVAL - Type 23 Rear Axle

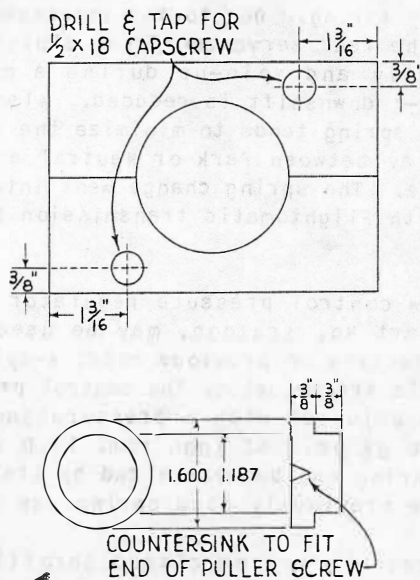


Fig. 1

The Pinion Rear Bearing Remover J-5365 can be modified so that it can be used as a differential side bearing remover.

Drill and tap the Remover tool for a 1/2"-18 thread at the locations shown in Fig. 1.

To remove the side bearing, install the Remover tool on the side bearing. Place a centering or adapter plug in the end opening of the differential. If a suitable adapter plug is not available, one can be made to the dimensions shown in Fig. 1

Apply lubricant to the tapered end of the puller screw and the threads of the screw of Puller J-8111 and install the Puller as shown in Fig. 2. Then, tighten the screw of the puller to remove the bearing from the differential case.

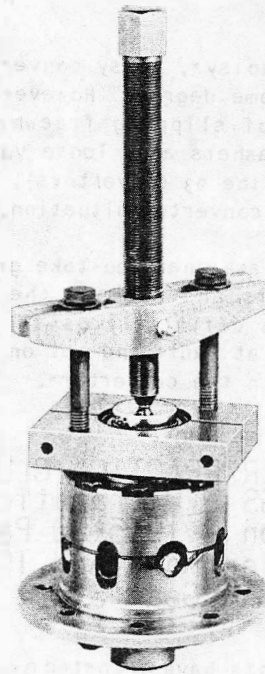


Fig. 2

*N-176*  
*S-19050*

SUMMARY OF CHANGES TO 59S MODEL CARB. (AS-2876-S)

In addition to the modifications that have been made on the 59S (AS-2876-S) carburetor in the field by means of the modification kit, the following changes have also been made in production:

1. Choke control spring and housing assembly -- The original AS type unit, Part No. 1548613, has been replaced by a unit which carries an AN identification. This identification appears on the exterior of the bakelite housing. The AN type, set on index, comes off

*N-175*

in approximately half the time as compared to the AS unit and provides improved operation during the warmup period. Only the new assembly will be carried in service stock under part number 1549226.

2. Revised accelerator pump operating link -- A new revised link, Part No. 1549302, replaced the link, Part No. 1548608. Revisions consist of heat treatment or hardening of the lower end to prevent wear in the slotted pivot pin hole and zinc plating and di-chromating the entire link to prevent scuffing and possible sticking in operation. The yellow-green color of the chromate treatment is a means of identification. Only the latest, Part No. 1549302, will be carried in service stock.

3. Changes in idle system -- The changes consist of lengthening the slotted idle port in the carburetor body and increasing the idle air bleed.

Changes #1 #2 and #3 have been incorporated in carburetors identified by a green colored tag.

4. Choke Vacuum Piston -- This change will retard the dechoking action encountered immediately after a cold start and kicking off the high idle. The result prevents initial stalling when pulling into gear and opening the throttle to put the car in motion. The new piston is available under Part No. 1549221 (Carter No. 160-138). It is suggested that, for treatment of specific complaints of the condition described above, the AN type choke spring and housing assembly and the new choke vacuum piston be used in combination. The original vacuum

piston had two equal width grooves in the side of the piston. The new piston has one narrow and one wide groove in the side. Only the latest piston Part No. 1549221, will be carried in service stock when these pistons are available.

### INSTRUMENT BOARD UPPER PANEL BRACE -- Lark Models

To provide increased stability of the instrument board panel, a stiffener brace entered production starting with Serial Nos. 59S-80105 and 59V-30318.

The brace, installed as shown in Fig. 3, may easily be installed in cars before the above serial numbers. The brace will reduce instrument board movement and assist in preventing squeaks, buzzes and rattles caused by excessive instrument board movement.

The parts required for field installation are:

- 1 1332715 Instrument Board Upper Panel Stiffener Brace
- 2 G177999 Screw
- 1 1578X37 Speednut

To install, first remove the glove compartment box. It is not necessary to remove the radio in cars so equipped. Place the flat end of the brace on the upper opening flange for the glove box at the first hole to the left of the door catch and install the Screw, Part No. G177999, and Speednut, Part No. 1578X37. Using the brace as a template or the dimensions given in Fig. 3, mark and drill a 3/16" hole in the cowl top panel brace and install Screw, Part No. G177999. Install the glove compartment box.

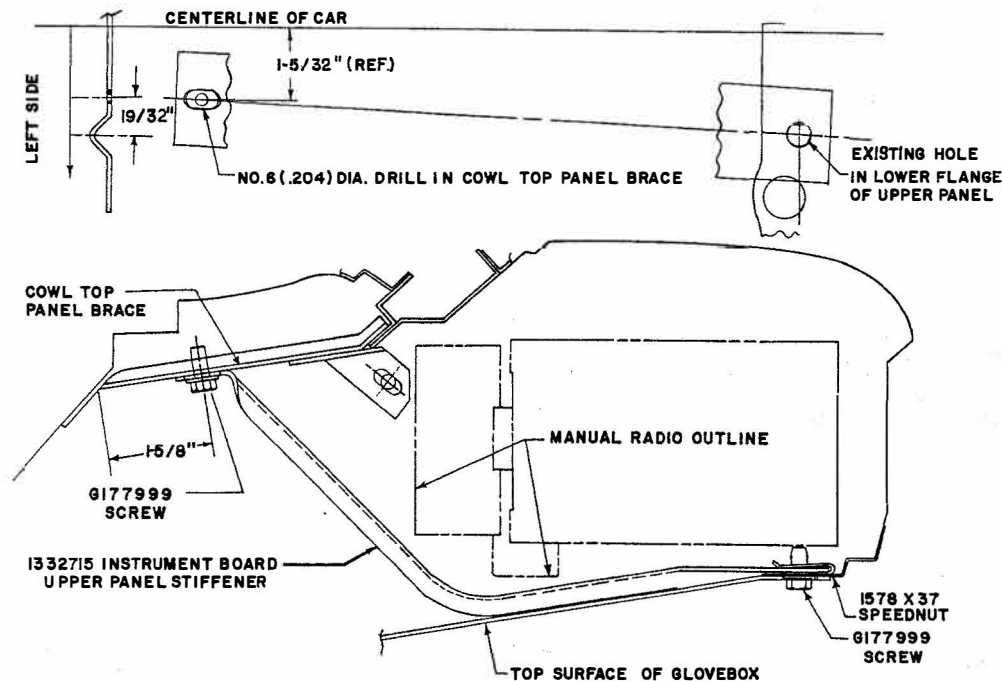


Fig. 3



## OIL LEAKS - ENGINE VALVE LIFTERS OIL HOLES - 59S Models

Aluminum plugs are used in the engine valve lifter oil holes in the cylinder block on the 59S models beginning with Engine No. S-82962. These plugs, installed in the cylinder block, prevent oil leaks and seepage at the lower edge of the engine valve cover plates, providing the gaskets are in good condition and the cover bolts are properly torqued.

These plugs can be installed in 59S model engines produced before the above engine number and in all 170 cu. in. and 185 cu. in. engines of prior models.

Remove the valve cover plates and insert one of the plugs in each of the twelve drilled holes in the cylinder block. Each plug should be tapped with a small blunt punch to make sure the plug is tight in the hole and flush with the block.

The plugs are available from your Parts Depot under Part No. 1549330 and are packaged 12 to a package.

## SWITCH FOR WINDSHIELD WASHER PUMP AND SWITCH ASSEMBLY, PART NO. 1543358 - All Models

Heretofore, a replacement switch has not been listed in the Parts Catalog for the windshield Washer Pump and Switch Assembly. This necessitated replacement of the entire assembly whenever only the switch required replacement.

Investigation shows that the Glove Compartment Light Switch listed under Part No. 304808 is the same type as used in the washer pump and switch assembly. Therefore, it should be used when only the switch portion of the assembly requires replacement.

## EATON AIR CONDITIONER KITS - 1959 Lark Models

It has been brought to our attention that some Eaton evaporators supplied with the air conditioning kit for field installation have an extra wire at the blower motor. This wire is not used in the Lark installation and should not be there.

Therefore, before installing the unit, remove the wire fan guard and cut the wire off close to the motor. Then, be sure to insulate the open end with tape to prevent the possibility of blowing a fuse.

Only the black and orange wires are used; the orange connected to the fan switch and the black to ground.

6

## DECK LID WEATHERSTRIP - Lark Models

To provide and maintain improved sealing between the deck lid and the body a new weatherstrip entered production with Serial Nos. 59S-74105 and 59V-28207.

Although the new weatherstrip will improve the seal and should be used when replacement is necessary or seal difficulties are encountered on models prior to the serial numbers given, it is still imperative that low spots or out-of-line conditions in the body that might affect the weatherstrip sealing properly be corrected before replacement is made.

The new Deck Lid Weatherstrip is available under Part No. 3104X1.

## STARTER CABLE-TO-ACCELERATOR LINKAGE INTERFERENCE - 59V Lark Models

To prevent possible interference between the starter motor cable and the accelerator linkage, the starter switch-to-starter motor cable has been lengthened and rerouted on 59V Lark Models. This change entered production with Serial No. 59V-26047.

The longer cable carries part number 1539935 and is carried in Parts Depot stock. This is the same cable as used on the 59V Hawk model from the start of production.

The improved routing of the cable is shown in Figure 4, 5 and 6.

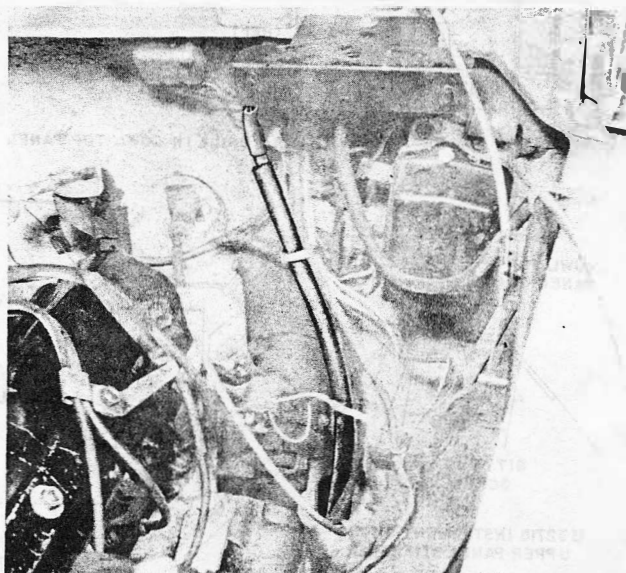


FIG. 4

Note cable routed through  
body hold-down bracket

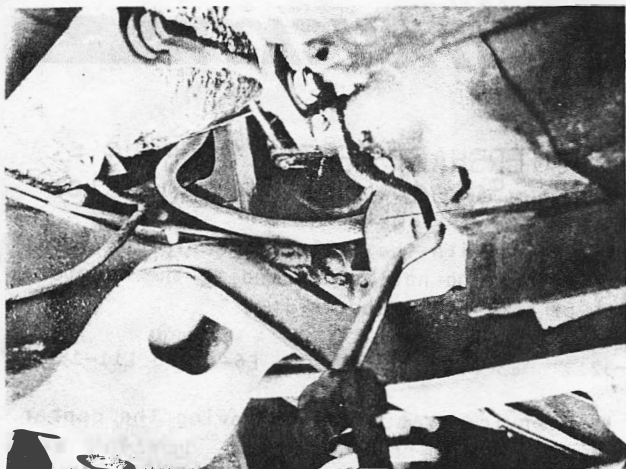


Fig. 5 - Car with OD and Power Steering. Clutch Operating Shaft removed to show cable.

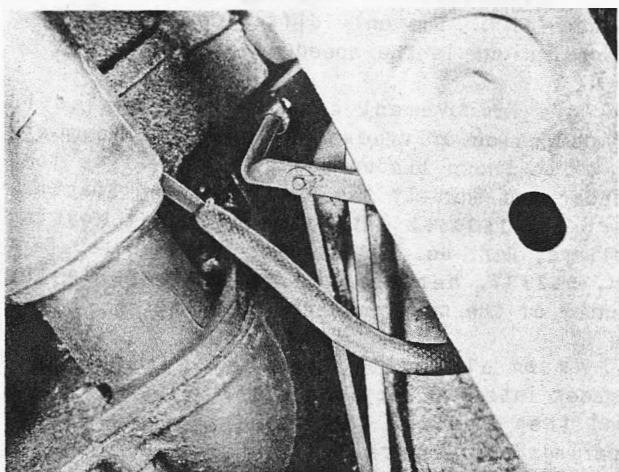


Fig. 6 - Car with Automatic - Note position of Cable in respect to throttle linkage.

**INSTALLATION SEAT BELTS - 1959 Lark With Solid Front Seat Back**

For installation of the front seat belts, Kit Part No. SP-50065, in the 1959 Lark 4-door Sedans with solid front seat backs, the following supplemental instructions will apply:

1. Remove the back panel from the front seat back cushion by removing the ash receiver and pulling the panel down and out to disengage the retainer clips.

2. The lower end of the seat back cushion cover and the back end of the seat cushion cover, where they join, are reinforced with horizontal wires that are clipped together with hog rings. The hog rings are approximately 2½ inches apart. Remove the two center hog rings holding the two covers together, so that the inside ends of the seat belts may be

threaded through the seat between the two horizontal support wires for the ash receiver.

3. Run the cable assembly through the belt ends which have been threaded through the seat, keeping belts and cable assemblies between the two ash receiver vertical support wires.

4. Pass the cable assembly over the bottom seat frame, punch two holes through the fabric material below the bottom piping of the back panel, in line for the belt cable ends to extend to the floor. Thread the cable ends through holes in the back panel fabric so the ends may be inserted through the holes in the floor.

5. Use the instructions included with the Seat Belt Kit to complete the balance of the installation.

**HAZE ON WINDSHIELD - 1959 Passenger Cars**

You may occasionally receive reports of a blue, oily haze on the inside of the windshield 1959 regal models. Laboratory investigation shows the haze to be a result of condensation of vapor from the plasticizer used in the vinyl trim. This vaporization occurs when a car is allowed to set in the sun for a period of time.

When this condition is encountered, the windshield must be cleaned with a good window cleaner Bon Ami, etc., or a good cleaning detergent.



**STEERING CROSS BARS AND SOCKET ASSEMBLIES - Packard Models**

The right and left steering cross bars and socket assemblies listed below may be interchanged.

- 410734 and 410733 Ball and Socket Assy.
- 436404 and 436403 Cross Bar and Socket Assy.
- 436406 and 436405 Cross Bar and Socket Assy.

The only difference in the assemblies is the position or location of the lubrication fitting. When the assembly is installed, it may face toward the front or rear of the car. In either case, the fitting may be reached with conventional lubrication equipment.

**FRONT WHEEL STEERING KNUCKLE BEARING SHIMS - 1948 - 1956 Packard Models**

The steering knuckle bearing shims have been supplied in increments of .001" ranging from .053" to .072" thickness. Production tolerances allowed for these shims indicate that there is an overlap in the actual tolerances. Therefore, service stock will be adjusted to provide these shims in .002" variations which we feel will adequately cover adjustment requirements.

The substitutions listed below will be made as material is exhausted, but, until such time, it may be necessary to reverse these substitutions depending on current stock.

Substitute Part No.		For Part No.	
6302958	(.053")	316978	(.054")
316979	(.055")	302957	(.056")
316980	(.057")	316981	(.058")
6302956	(.059")	316982	(.060")
316983	(.061")	302952	(.062")
316984	(.063")	316985	(.064")
302955	(.065")	316986	(.066")
316987	(.067")	302954	(.068")
316988	(.069")	316989	(.070")
302953	(.071")	316990	(.072")

**EXHAUST MANIFOLD - PACKARD Straight Eight Engine**

When present stock of Exhaust Manifold, Part No. 389655 is exhausted, it will be superseded by Exhaust Manifold, Part No. 433768 and Automatic Choke Heat Tube, Part No. 433769. Whenever 389655 manifold is ordered, the 433768 manifold and 433769 heat tube will be shipped automatically.

This combination will fit all 24th and 25th Series (the 1951 and 1952 models) also the 2301 Eight (a 1950 model) when equipped with the WGD two-barrel carburetor.

Part No. 433768 can also be used on the 22nd Series models but it will be necessary to make an automatic choke heat tube to fit the manifold.



**COUNTERSHAFT CENTER BEARING - T90B 3-Speed Truck Transmission**

Beginning with the following serial numbers, a center bearing has been added to the countershaft of the T90B transmission.

E1-3213 E3-629 E5-126939 E6-17926 E11-13694

New service transmissions having the center bearing will carry Part Nos. 1691711 and 1681708. Transmission, Part No. 1691711 is further identified by a metal tag attached to one of the cover screws bearing the letters 'GG'. Transmission, Part No. 1691708 will be tagged 'FF'. The only difference between the transmissions is the speedometer drive gear.

This improvement can be incorporated in transmission of trucks having serial numbers prior to those listed above. Remove the long spacer and install two short Bearing Spacers, Part No. 1690661 with 22 additional bearing rollers, Part No. 188291, and two washers, Part No. 512927, between the two spacers in the center of the countershaft. See Fig. 7.

As an alternate, you may cut the long spacer into two sections 2.079" (2-5/64") long and then install the necessary additional bearings and washers.

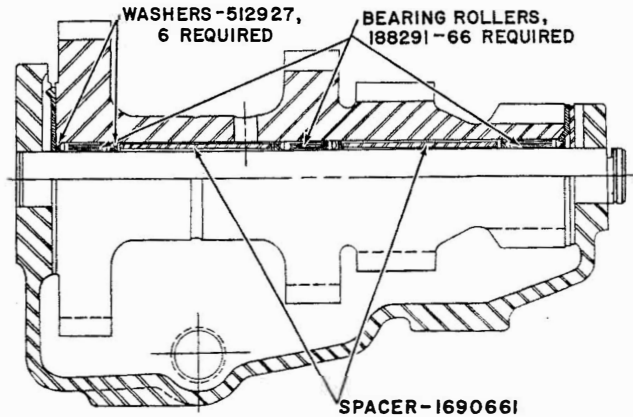


FIG. 7

STUDEBAKER-PACKARD CORPORATION

SOUTH BEND 27, INDIANA