

REAR AXLE

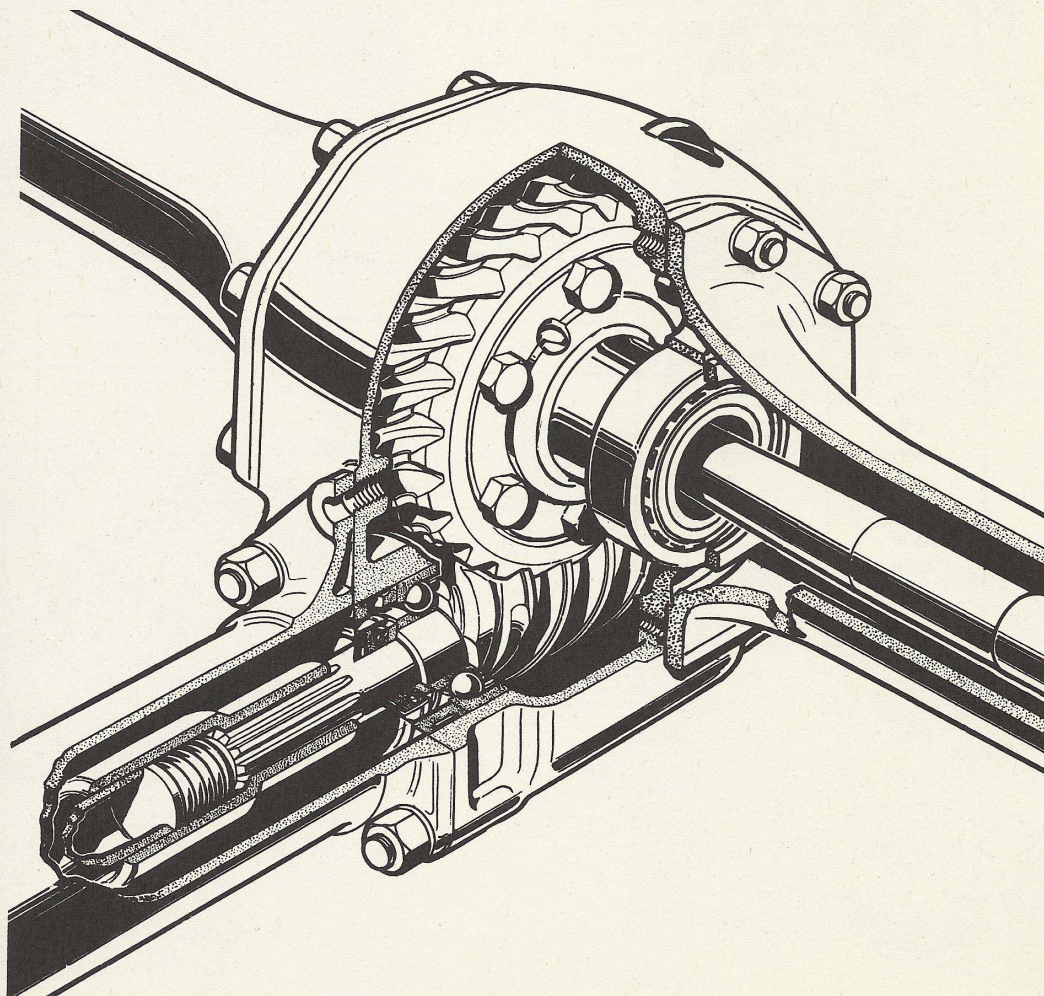
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REAR AXLE

DESCRIPTION

The rear axle housing is made of aluminum alloy and represents three basic parts: the left and right wheel axle housings and the differential case. The axle housings have attachment points for the rear telescopic shock absorbers, the stabilizing bar and the propeller shaft tie rods. They also provide seats for the rear coil springs and the rubber bumper stops. The center casing houses the differential, consisting of a bronze gear and a steel worm driven by the propeller shaft.

This type of rear axle offers the following advantages:

- Lower center of gravity of the vehicle
- Reduced weight
- Low maintenance requirements

The reduction is 5 x 21: 5 threads on the steel worm and 21 teeth on the bronze gear, which gives a reduction ratio of .238 or 4.2; i.e. .238 revolution of the wheel axle shafts for one revolution of the propeller shaft, or inversely, 4.2 revolutions of the propeller shaft for one revolution of the wheel axle shafts.

The overall gear ratios are as follows:

1st Gear	.059	or	16.95:1
2nd Gear	.106	or	9.43:1
3rd Gear	.165	or	6.06:1
4th Gear	.238	or	4.20:1
Reverse Gear	.055	or	18.18:1

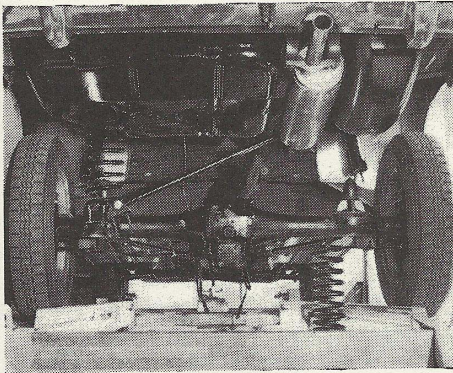
Road speeds in m.p.h. obtained in all four gears at various engine RPM's are: (vehicle equipped with 165 x 380 tires inflated at factory recommended pressure).

RPM	1st gear	2nd gear	3rd gear	4th gear
1000	4.320	7.950	12.460	17.680
1500	6.470	11.930	18.690	26.520
2000	8.640	15.910	24.920	35.360
2500	10.800	19.890	31.150	44.200
3000	12.950	23.870	37.380	53.040
3500	15.110	27.840	43.610	61.880
4000	17.280	31.800	49.840	70.730
4500	19.430	35.800	56.070	79.560
5000	21.600	39.780	62.300	88.410

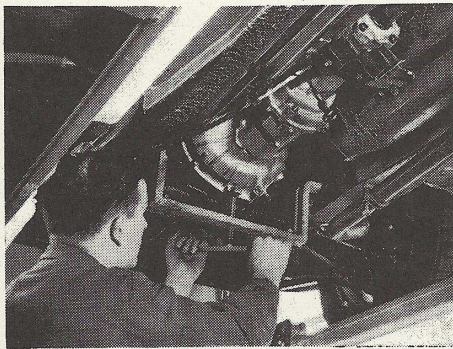
The capacity of the rear axle is 1¾ quarts of 90 E.P. grease.

REMOVAL OF REAR AXLE ASSEMBLY INCLUDING PROPELLER SHAFT AND TUBE

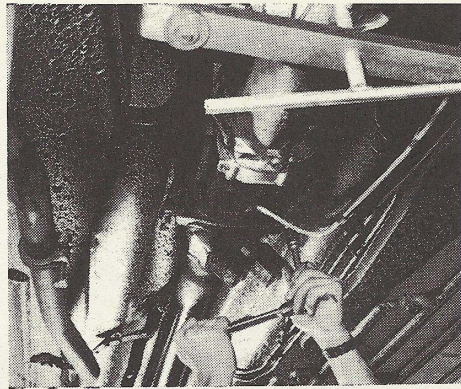
- 1 - Disconnect: Shock absorbers, stabilizing bar, parking brake cables, hydraulic brake hose (plug the end of the brake line)
- 2 - Lift body from the rear in order to remove coil springs.



- 3 - Remove exhaust pipe flange from exhaust manifold, and remove the clamp from the transmission housing.
- 4 - Support the transmission with a jack.



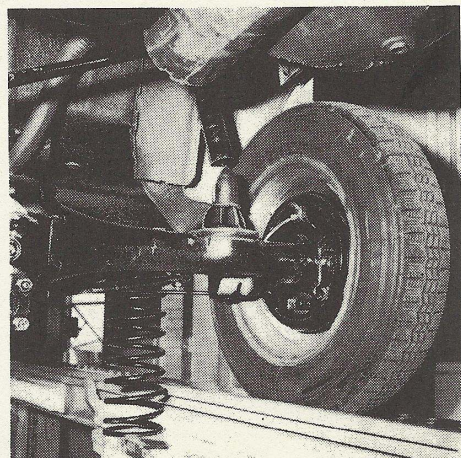
- 5 - Remove the upper bolt and the two lower nuts of the rear engine mount.
- 6 - Lower the transmission a small amount.
IMPORTANT: Do not allow the engine sump to lay on the steering housing.



- 7 - Using Wrench #8.0406, remove propeller tube ball joint cover attachment bolts.
- 8 - Separate the tube from the transmission.



- 9 - Lift the rear of the body enough to allow removal of the rear axle and wheel assembly.



INSTALLATION OF THE REAR AXLE ASSEMBLY

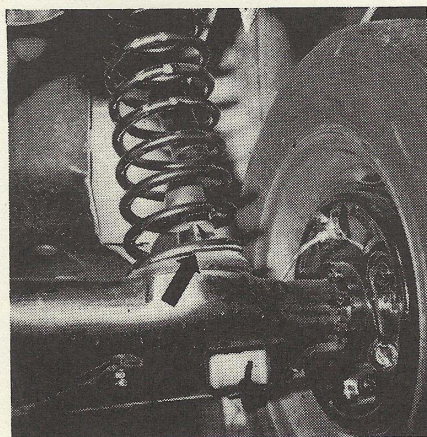
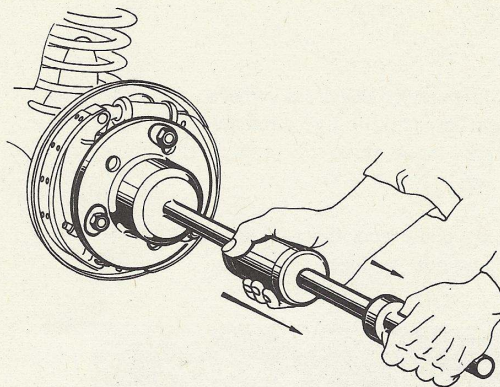
Proceed in the reverse order.

SPECIAL NOTES:

- a) The rear engine mount must be free of grease, oil and paint.
 - Never use trichlorethylene to clean the mount.
 - Coat each side with Permatex No. 3.
- b) When installing coil springs, the first coil should be facing to the rear.

NOTE: Right and left spring are interchangeable.

- c) Bleed brakes after connecting line.



REMOVAL, DISASSEMBLY, REASSEMBLY AND INSTALLATION OF A REAR AXLE SHAFT

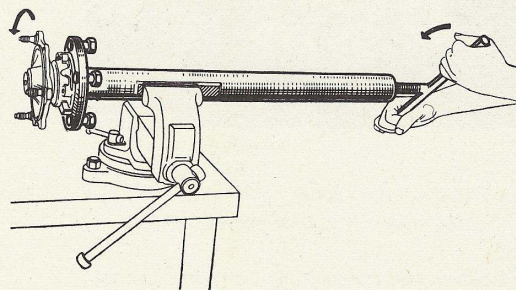
REMOVAL

- 1 - Lift car from the rear and place stands under axle shaft housings.
- 2 - Remove wheel and brake drum.
- 3 - Remove nuts securing flange to axle housing.
- 4 - Attach axle shaft puller #8.0601 with lug nuts.
- 5 - Slide block outward against shoulder of the tool to release axle shaft complete with flange and bearing.

DISASSEMBLY

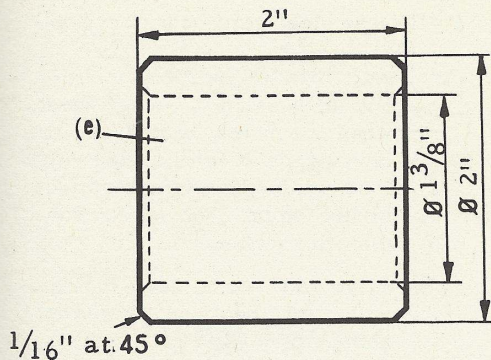
- 1 - In order to ease the removal of the collar, knock gently with a hammer around the outside of the collar.
- 2 - Place the axle shaft in a press, splined end up, and install a press adaptor under flange.
- 3 - By applying pressure to end of axle shaft the collar and the bearing may be pressed off.

NOTE: A special axle shaft bearing Puller #8.0507 may be ordered from the distributor. (See picture below.)



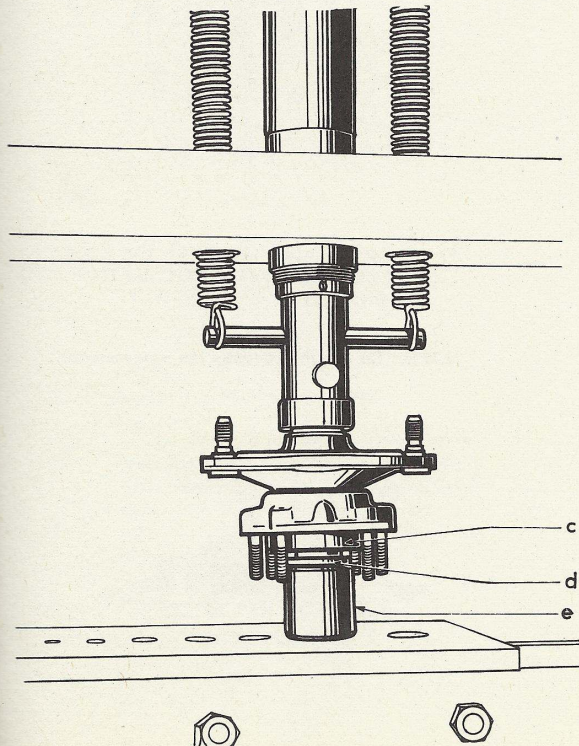
RE-ASSEMBLY

Reverse the above procedure using Bushing (e) first to press on the bearing (c), then the collar (d).



NOTES:

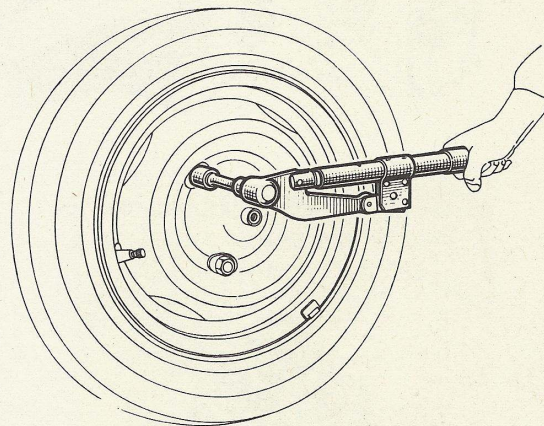
- Always use a new collar.
- The bearing and the new collar must be pressed on separately.
- The pressure necessary to install the collar should be between 13,000 lbs/sq. inch and 16,000 lbs/sq. inch.
- If less than this amount of pressure is required, the collar should not be used.
- Be certain the bearing and its collar are seated securely.



INSTALLATION

- Coat the flange bearing face and the axle shaft housing face with Permatex No. 3.
- Install the axle shaft and tighten the nuts to 10 ft. lbs.
- Install the drum and wheel.

NOTE: Torque the wheel lug nuts to 45 ft. lbs.

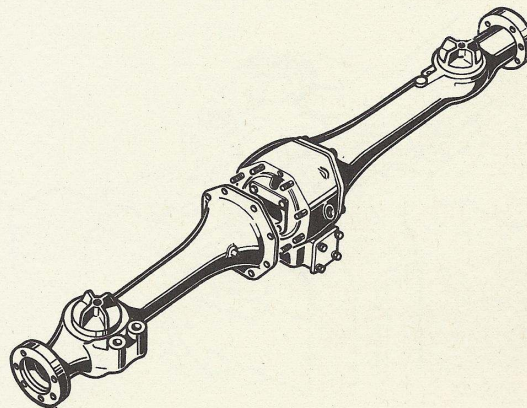


DISASSEMBLY, ADJUSTMENT AND RE-ASSEMBLY OF THE DIFFERENTIAL

DISASSEMBLY

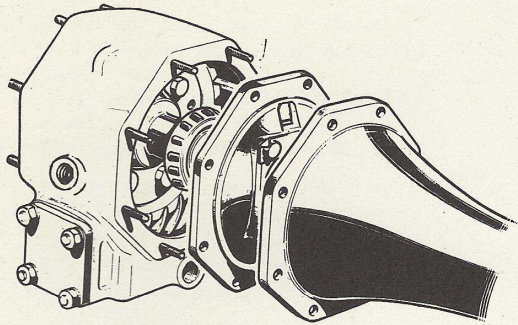
The following sequence is used after having drained the rear axle, removed the propeller shaft tube, the wheel axle shafts and the brake backing plates.

- Unbolt right and left axle housings and remove by gently tapping with a mallet.

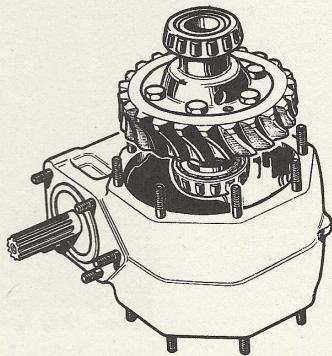


REAR AXLE

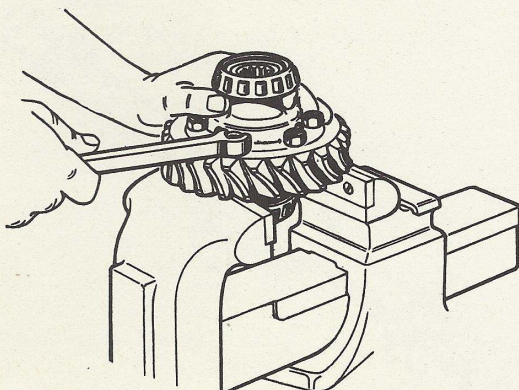
- 2 - Remove differential housing cover.



- 3 - Set housing on its left side and remove differential.



- 4 - Remove differential bolts. No special precaution is required as they are to be discarded and replaced by six new bolts at reassembly.

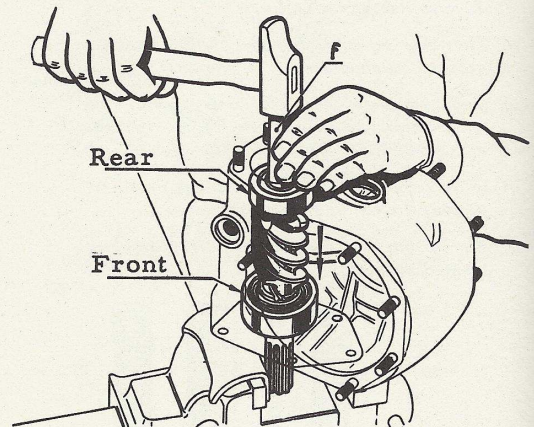


- 5 - Remove the following:

- Front oil seal and spacer.
- Rear cap.

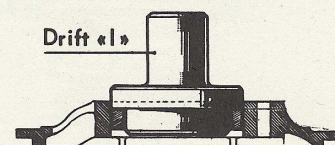
- 6 - Remove steel worm gear from housing:

- Dip the housing in boiling water. When adequately heated, set the housing on a vise fitted with lead jaw faces, with the splines of the worm gear facing down through the vise.
- Drive the worm gear together with its bearings downward, using a drift (f).



- 7 - Remove outer races of the differential bearings, using drift (I) from tool kit #8.0505.

NOTE: Do not interchange the outer races.

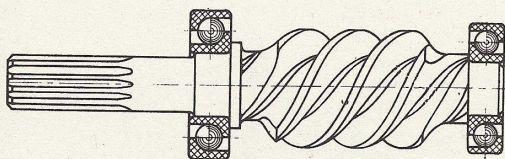


ADJUSTMENT AND REASSEMBLY OF THE DIFFERENTIAL

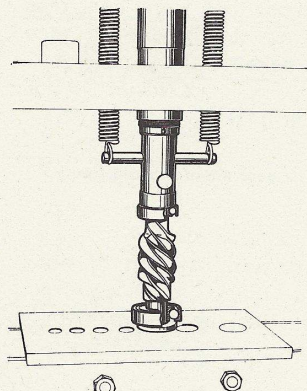
All parts should be perfectly clean and dry. Use tool kit #8.0505.

I Preparation of the Worm Gear

- 1 - Coat the bearing seat with lubricate.
- 2 - Press on the front bearing in the position shown.
- 3 - Press on the rear bearing in the position shown.



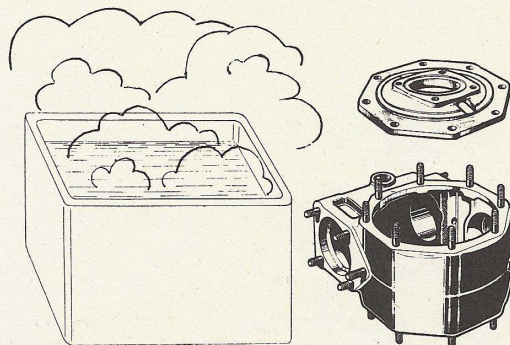
NOTE: Pressure should be applied only to the inner races.



II Preparation of the Housing

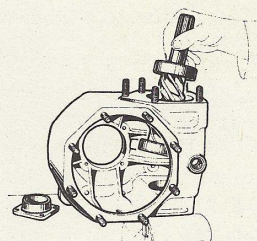
NOTE: If the housing is being replaced, install the studs with the threads coated with Permatex No. 3, 8 studs on each side, with the longer ones on the right side. Of the 5 studs on the front, the longer one goes on top.

Dip the housing and cover in hot water until temperature reaches 190°F.

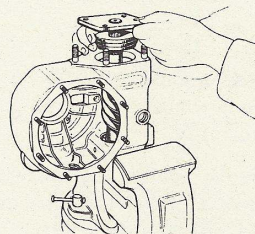


III Installation of the Worm Gear in the Housing

- 1 - Place housing vertically in a vise fitted with lead jaw faces, filling plug facing downward.
- 2 - Place the worm gear into the housing.

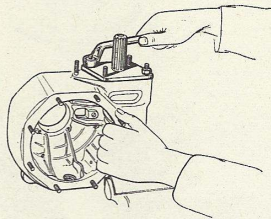


- 3 - While holding the worm gear, install the front spacer without its rubber ring, and hold in place by means of the cast iron plate.

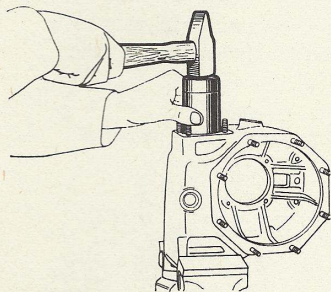


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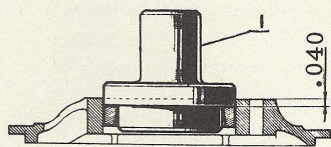
- 4 - Tighten plate by means of two diagonally opposed nuts.



- 5 - Turn housing upside down. Using an appropriate drift, gently tap bearing outer race toward the front to ensure correct positioning.

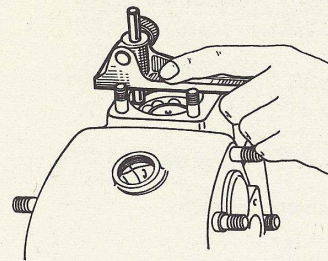


- 6 - Install, each to the side from which it was removed, the outer races of the side bearings, one in the housing and the other in the cover approximately .040 from the outer face. Use drift I from tool kit.

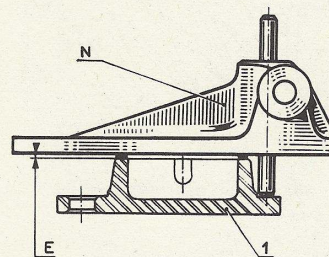


- 7 - Allow housing to cool down and make sure worm gear rotates freely but without play.

Using depth gauge N determine thickness of shims: Place the gauge across the machined surface directly behind the worm gear and push plunger to touch the outer race of the rear bearing. Lock the plunger.



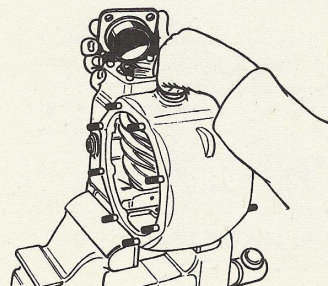
- 8 - Apply gauge N on the rear cap (1) of the worm gear, to determine, with accuracy, the thickness of shims E.



- 9 - Install shims, then worm gear rear cap, setting the groove to face to either side. Coat mating surfaces with Permatex No. 3. Do not use a paper gasket.

NOTE: Worm gear should rotate freely.

- 10 - Remove cast iron plate - Install oil seal at front of worm gear and rubber ring on front spacer, setting the groove to face either side.

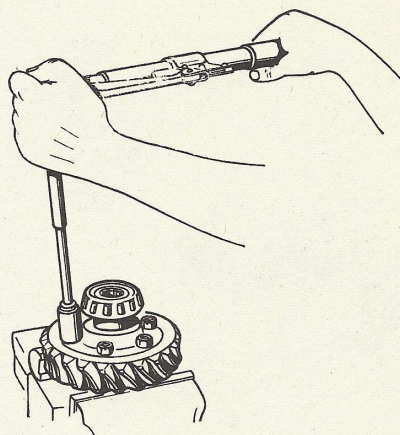
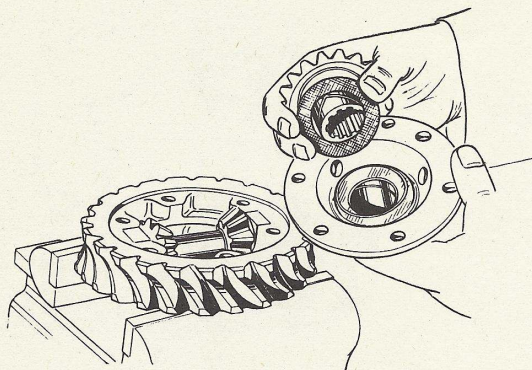


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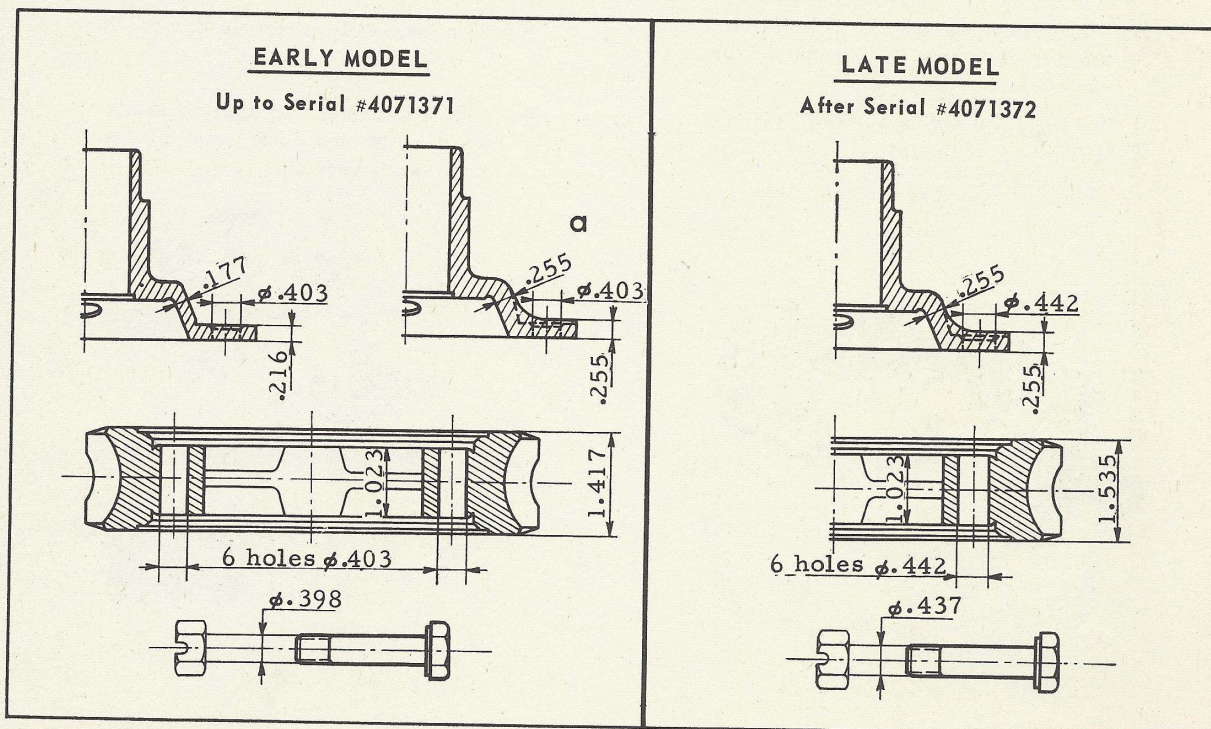
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IV Assembly of Differential

- 1 - Install differential pinion gears with blocks and shaft.
- 2 - Install side gears in differential side plates with new composition thrust washers.
- 3 - Install the side plates onto the bronze gear with the 5/16" holes aligned with the ends of the pinion gear shaft.
- 4 - Secure parts together with six new bolts. The heads of the bolts must be on the same side as the marks on the bronze gear.
- 5 - Torque bolts to 50 ft. lbs. Differential should turn freely.
- 6 - Stake bolts by punching metal into one castellation of each nut.



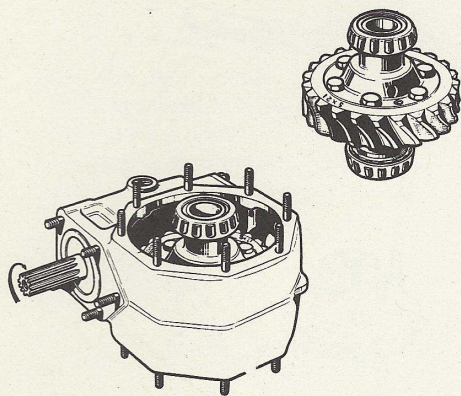
NOTE: Be sure to use the right size of bolts according to model.



REAR AXLE

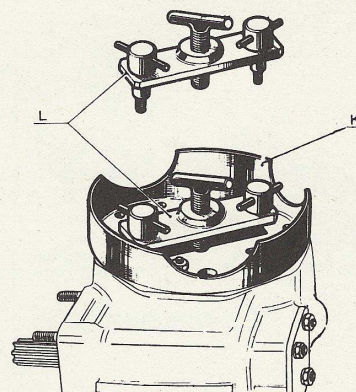
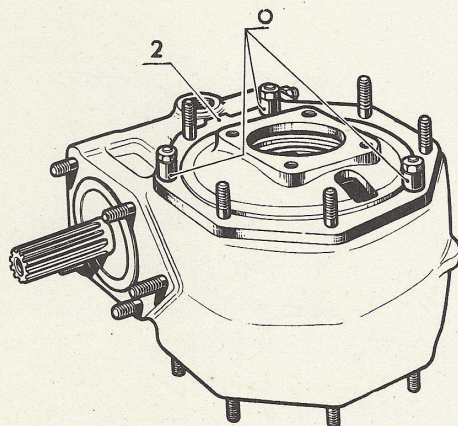
Y Installation and Adjustment of Differential

- 1 - Place differential in housing with marked side of bronze gear facing up.
- 2 - The differential is properly seated on the lower side bearing if it turns freely by rotating the worm gear shaft.
- 3 - Install the cover on the differential housing with a paper gasket coated with Permatex No. 3, making sure the locating boss (2) is next to the drain plug.
- 4 - Turn assembly over to sit on the cover side.
- 5 - Align the two 5/16 holes in the differential side plate with the two holes in the differential housing.
- 6 - Install tool (K) in position with both fingers fitted through 5/16 holes of differential side plate.
- 7 - Secure clamp L as to press tool K correctly on differential housing.

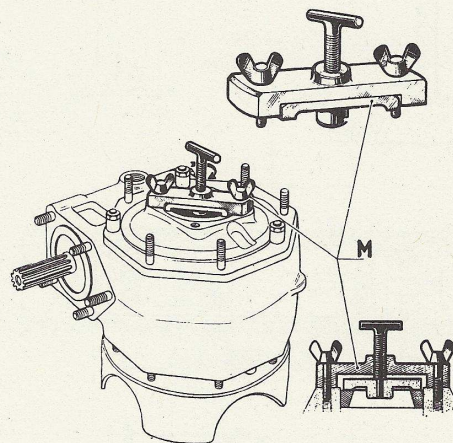


- 3 - Install the cover on the differential housing with a paper gasket coated with Permatex No. 3, making sure the locating boss (2) is next to the drain plug.

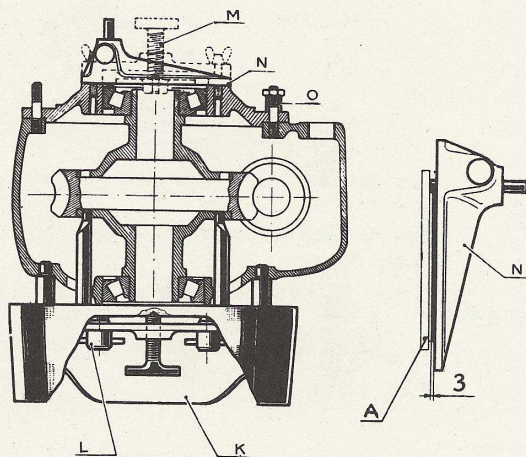
To ensure positive tightening, it is necessary to install spacers (O) as indicated.



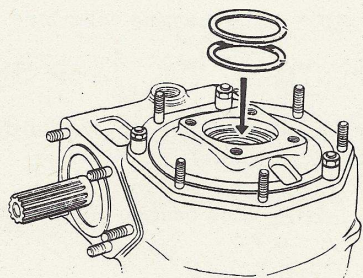
- 8 - Turn assembly over, using tool K as a support.
- 9 - Install clamp M and apply a slight pressure on the outer race of the differential bearing.



10. - Hold depth gauge N against housing side, push the plunger to touch the outer race of the differential bearing. Lock the plunger. Apply gauge N on bearing plate A to determine the thickness of shims (3) necessary.

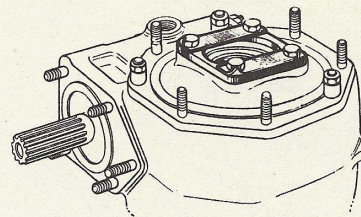


11. - Remove Clamp M and install Shims 3.



12. - Install the bearing plate and both locking strips.

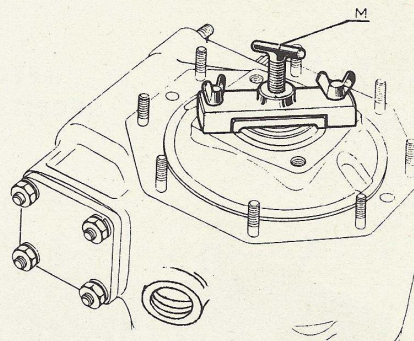
Torque the four bolts to 25 ft. lbs. Lock the bolts by bending up the corners of the strip.



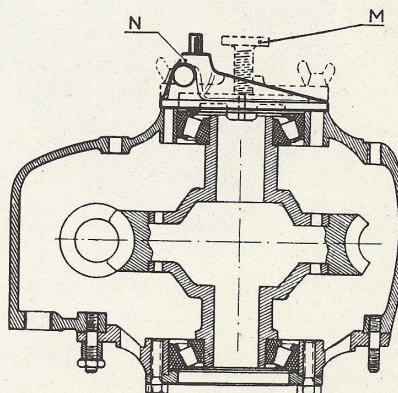
13. - Turn the assembly over so that it sits on the cover.

14. - Remove Clamp L and Tool K.

15. - Install Clamp M and apply slight pressure on differential bearing outer race.

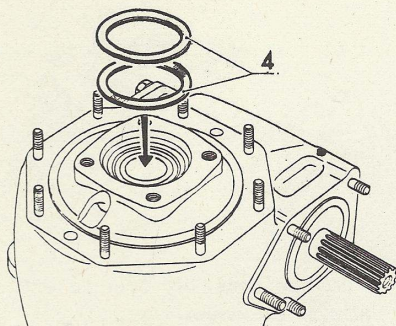


16. - Using depth gauge N, proceed as explained in paragraph #10 to determine thickness of shims necessary.



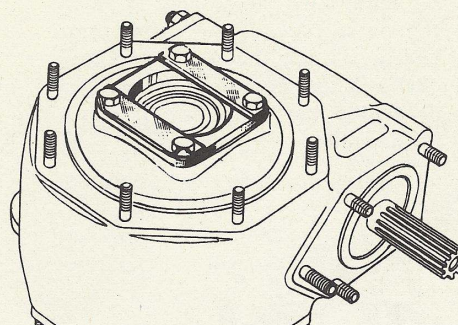
REAR AXLE

- 17 - Remove Clamp M and install Shims (4).



- 18 - Install bearing plate and both locking strips.

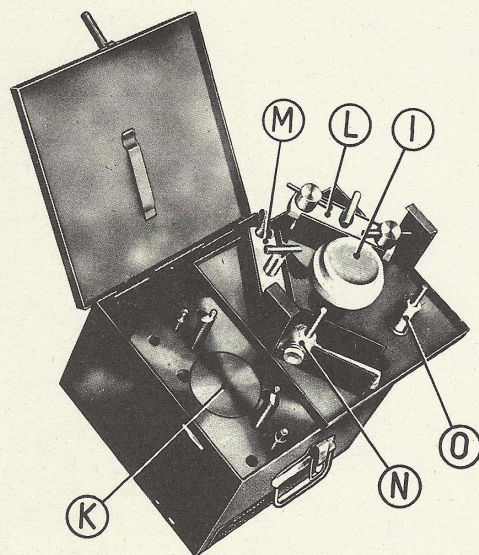
Torque the four bolts to 25 ft. lbs.
Lock bolts by bending up the corners of the strip.



THE REAR AXLE IS NOW CORRECTLY ADJUSTED.

Spacers O will be removed to install R.H. axle housing.

**SPECIAL TOOL KIT #8.0505
NECESSARY TO ADJUST REAR AXLE**



LIST OF TOOLS

- I - DRIFT - Side bearing outer race
- K - CENTERING TOOL - Bronze gear
- L - CLAMP - Securing tool K to differential
- M - CLAMP - Side bearing positioning
- N - DEPTH GAUGE
- O - SPACERS

The Tool Kit # 8-0505 can be ordered
through the Distributor.