

FIELD MAINTENANCE MANUAL No. 5

SINGLE-REDUCTION DRIVE UNIT

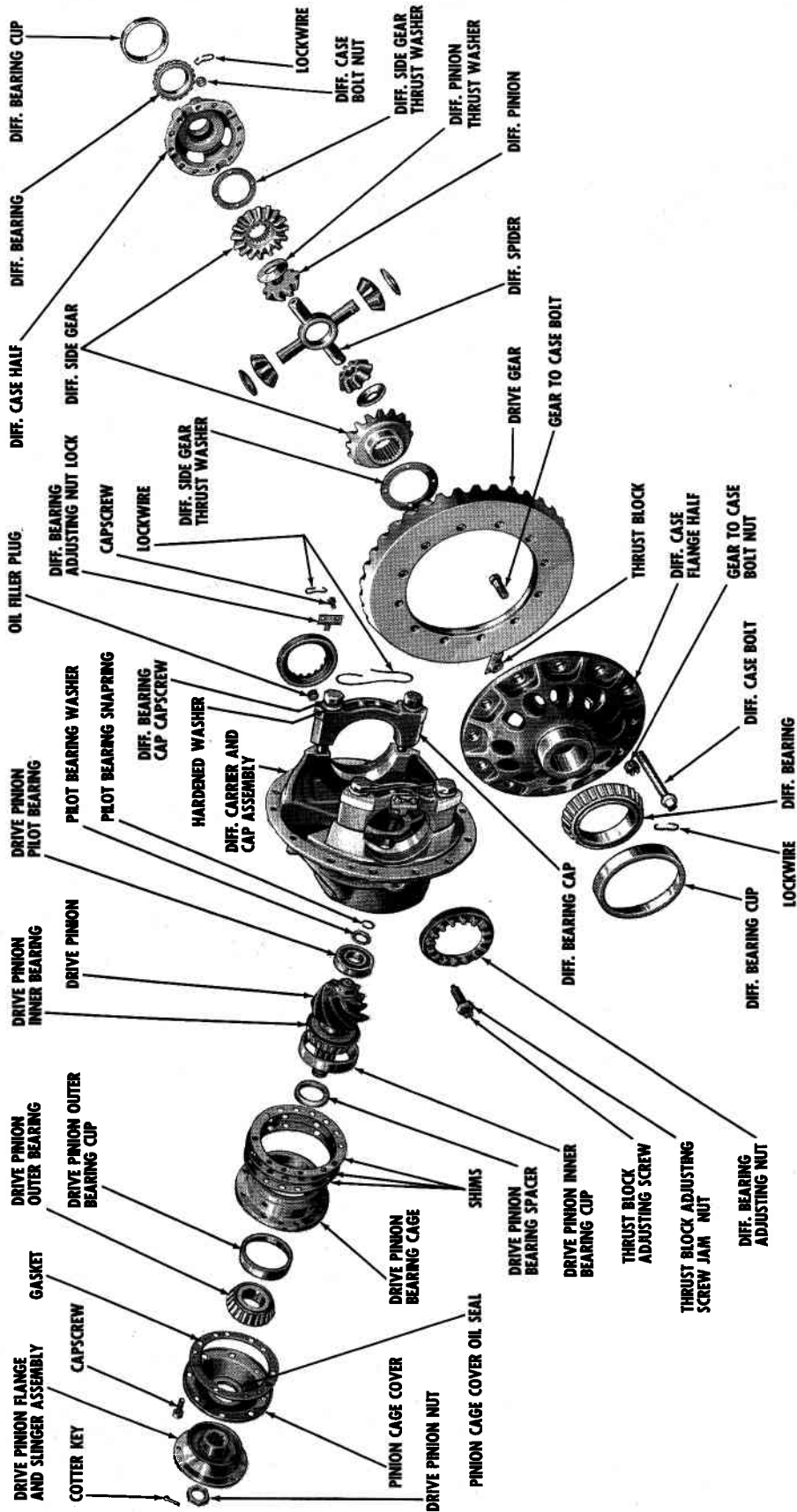
SPIRAL BEVEL AND HYPOID



Use Only Genuine TIMKEN-DETROIT Parts

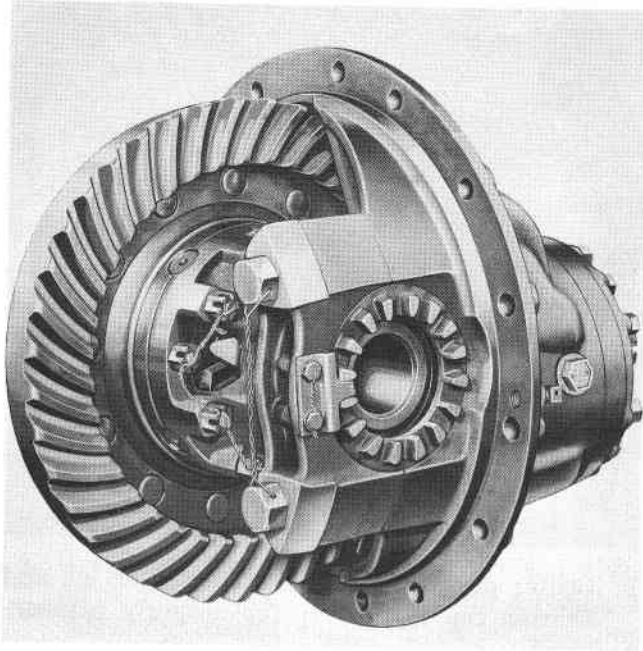
**ROCKWELL-STANDARD CORPORATION
TRANSMISSION AND AXLE DIVISION
DETROIT, MICHIGAN 48232**

EXPLODED VIEW



ROCKWELL-STANDARD SINGLE-REDUCTION DRIVE UNITS

CARE AND MAINTENANCE



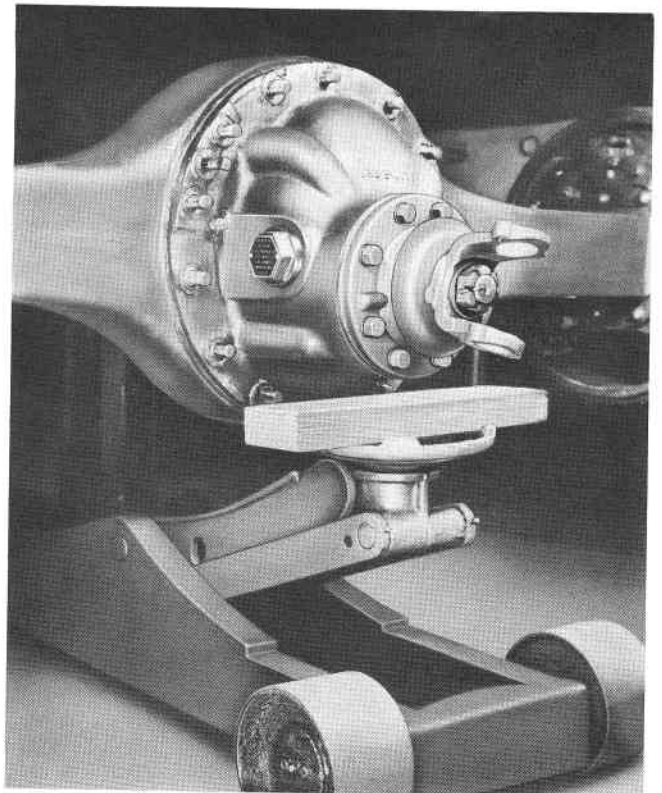
SINGLE-REDUCTION CARRIER

The Rockwell-Standard Single-Reduction Final Drive employs a heavy duty spiral bevel or hypoid pinion and gear. The differential and gear assembly is mounted on tapered roller bearings. The straddle mounted pinion has two tapered roller bearings in front of the pinion teeth which take the forward and reverse thrust and a third bearing behind the pinion teeth to carry the radial load.

Single-Reduction Final Drives are available in a wide range of gear ratios and sizes to cover most operating conditions.

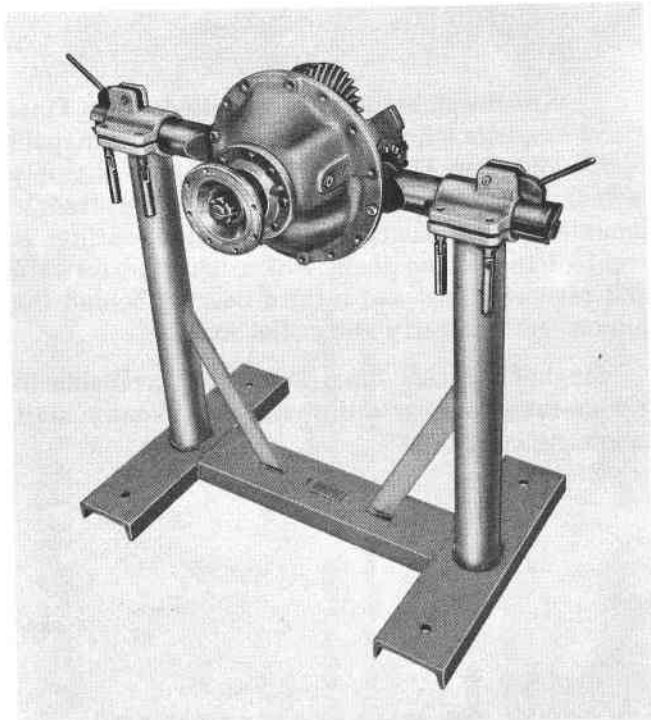
REMOVE DIFFERENTIAL CARRIER FROM HOUSING

- A. Remove plug from bottom of axle housing and drain lubricant.
- B. Remove axle shaft drive stud nuts and lock washers.
- C. Rap axle shafts sharply in center of flange with heavy steel hammer on drift to free dowels. Remove taper dowels and axle shafts.
Prying shafts loose will damage the hubs and oil seals.
- D. Disconnect universal at pinion shaft.
- E. Remove carrier to housing stud nuts and washers. Loosen two top nuts and leave on studs to prevent carrier from falling.
- F. Break carrier loose from axle housing with rawhide mallet.
- G. Remove top nuts and washers and work carrier free using puller screws in holes where provided. A small pinch bar may be used to straighten the carrier in the housing bore. However, the end must be rounded to prevent indenting the carrier flange. A roller jack may be used to facilitate removal of carrier.



DISASSEMBLE CARRIER

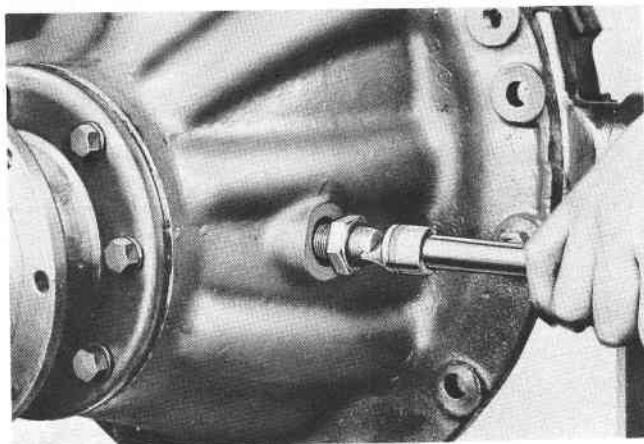
Place carrier in suitable holding fixture as illustrated. Prints of carrier repair stand are available upon request.



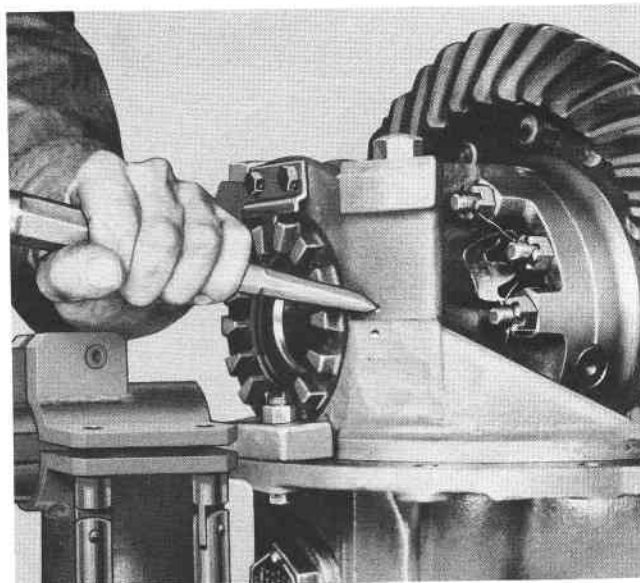
CARRIER IN REPAIR STAND

NOTE: If the initial inspection indicates that the drive gear is not going to be replaced, we suggest the established backlash be measured and noted for reference and used at reassembly.

REMOVE DIFFERENTIAL AND GEAR ASSEMBLY



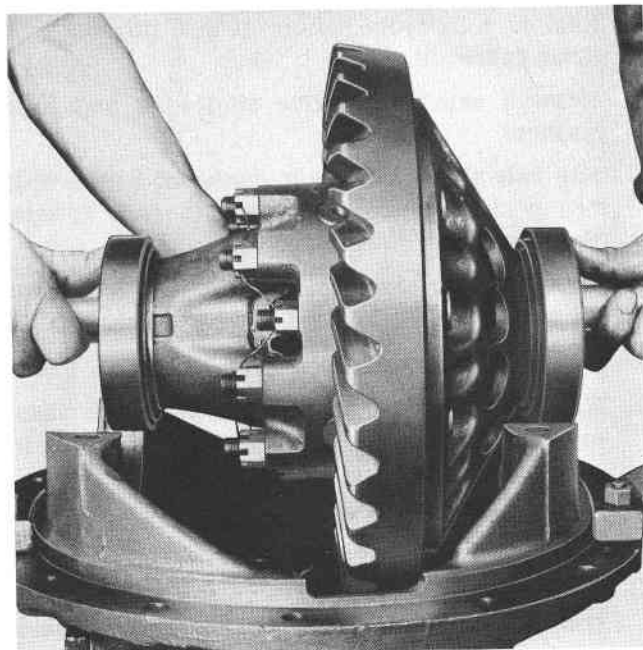
A. Loosen jam nut and back off thrust block adjusting screw.



B. Center punch one differential carrier leg and bearing cap to identify for properly reassembling.

C. Cut lock wire. Remove cap screws and adjusting nut locks.

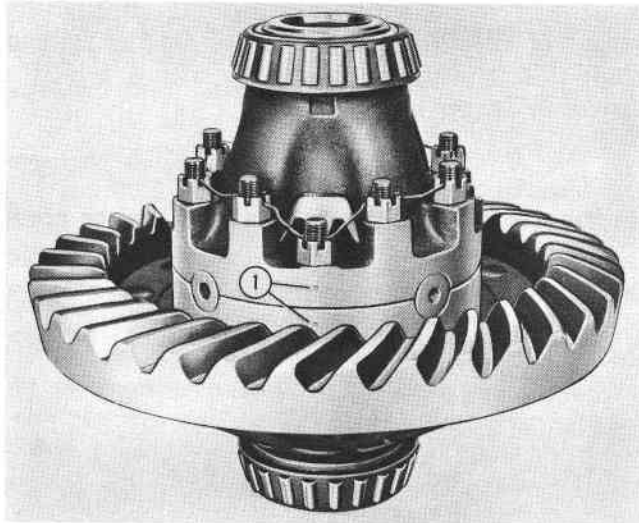
D. Remove bearing cap stud nuts or cap screws, bearing caps and adjusting nuts.



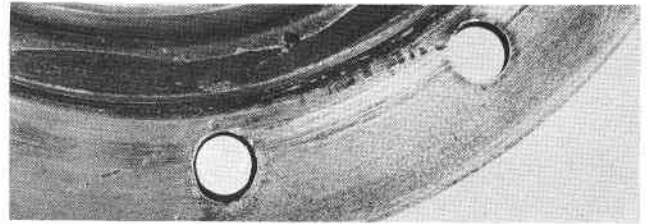
E. Lift out differential and gear assembly.

F. Remove thrust block from inside of carrier housing.

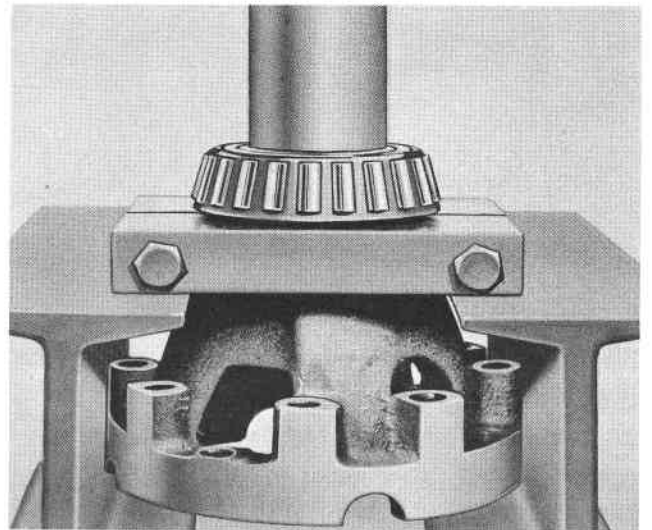
DISASSEMBLE DIFFERENTIAL CASE AND GEAR ASSEMBLY



- A. If original identification marks are not clear, mark differential case halves with a punch or chisel for correct alignment on reassembling.
- B. Cut lock wire, remove bolts and separate case halves.
- C. Remove spider, pinions, side gears and thrust washers.
- D. If necessary, remove rivets and separate gear and case.



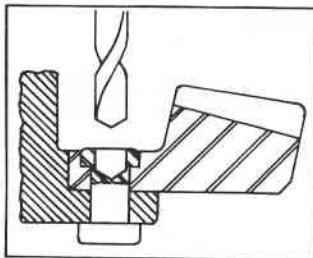
SHOWING HOW HOLES IN FLANGE WERE ELONGATED WHEN RIVETS WERE CHISELED OUT



- E. If necessary to replace differential bearings, remove with a suitable puller.

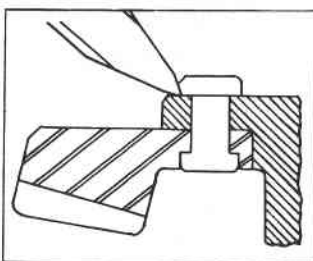
RIGHT

REMOVE GEAR RIVETS

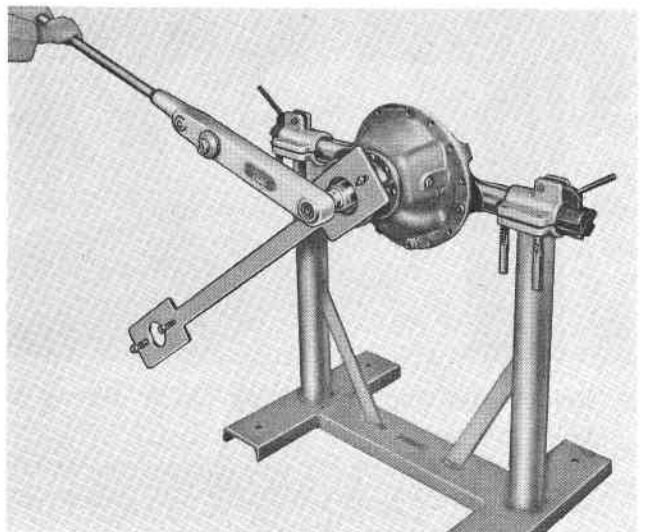


1. Carefully center punch rivets in center of head.
2. Use drill $\frac{1}{32}$ " smaller than body of rivet to drill through head.
3. Press out rivets.

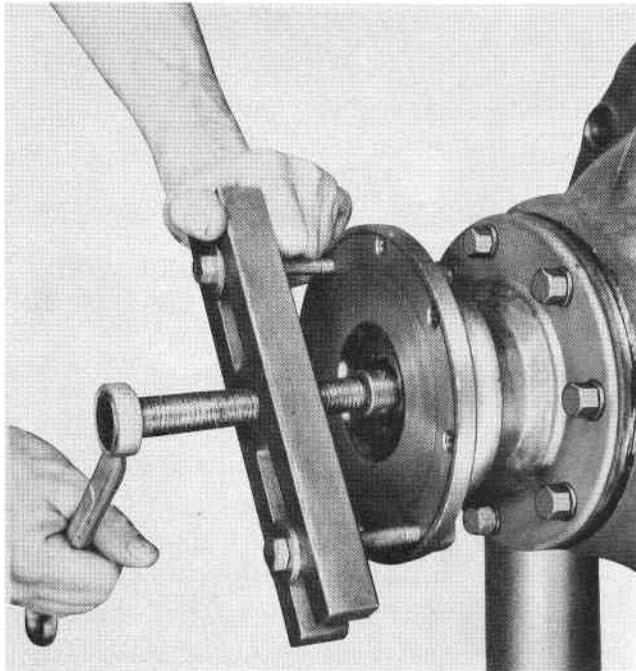
WRONG



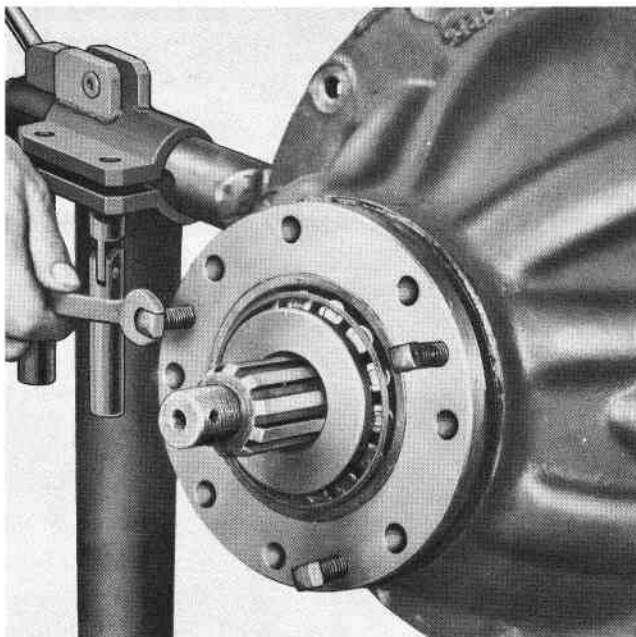
REMOVE PINION AND CAGE ASSEMBLY



- A. Hold flange or yoke with suitable tool and remove pinion shaft nut and washer.



- B. Remove flange or yoke with a suitable puller.
Driving the flange off will cause runout.
- C. Remove pinion cage stud nuts or cap screws.
- D. Remove bearing cover and oil seal assembly.



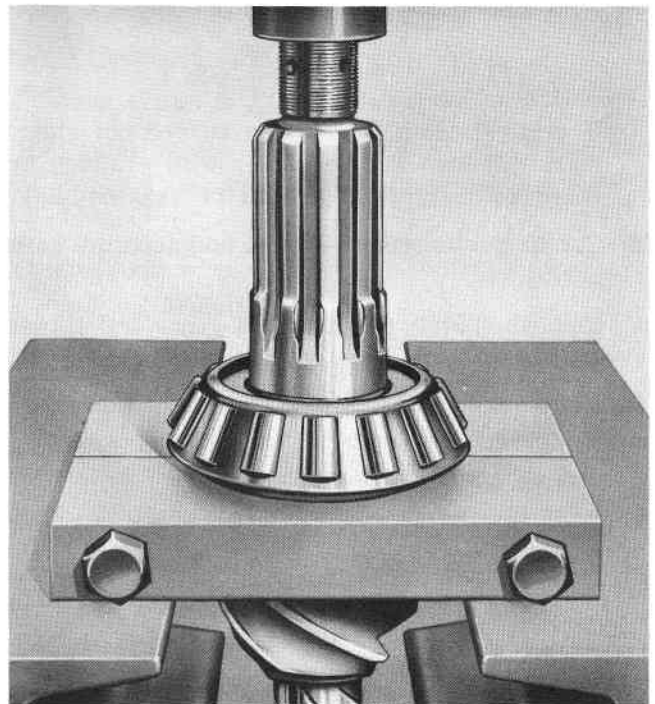
- E. Remove bearing cage using puller screws in holes provided.
The use of a pinch bar will damage the shims. Driving pinion from inner end with a drift will damage the bearing lock ring groove.
- F. Wire shim pack together to facilitate adjustment on reassembling.

DISASSEMBLE PINION AND CAGE ASSEMBLY

Both splined and tapered pinion shafts are used in single reduction carriers. Where the tapered shaft is used, the thrust bearings are adjusted by means of adjusting and lock nuts. On the splined shaft this adjustment is secured with a selective spacer or spacer combination.

Splined Shaft

- A. Tap shaft out of cage with soft mallet or press shaft from cage.
- B. Remove outer bearing from cage.
- C. Remove spacer or spacer combination from pinion shaft.



- D. If necessary to replace rear thrust bearing or radial bearing, remove with suitable puller.
- E. Remove oil seal assembly from bearing cover.

Tapered Shaft

- A. Straighten lock washer and remove lock nut, washer, adjusting nut and thrust washer.
- B. Tap pinion out of cage with soft mallet or press shaft from cage.
- C. Remove bearing from cage.
- D. Remove bearings from shaft with suitable puller if necessary.
- E. Remove oil seal assembly from bearing cover.

PREPARE FOR REASSEMBLY CLEAN, INSPECT AND REPAIR

Parts having ground and polished surfaces such as gears, bearings, shafts and collars, should be cleaned in a suitable solvent such as kerosene or diesel fuel oil.

GASOLINE SHOULD BE AVOIDED.

Do NOT clean these parts in a hot solution tank or with water and alkaline solutions such as sodium hydroxide, orthosilicates or phosphates.

We do NOT recommend steam cleaning assembled drive units after they have been removed from the housing. When this method of cleaning is used, water is trapped in the cored passage of the castings and in the close clearances between parts as well as on the parts. This can lead to corrosion (rust) of critical parts of the assembly and the possibility of circulating rust particles in the lubricant. Premature failure of bearings, gears and other parts can be caused by this practice. Assembled drive units cannot be properly cleaned by steam cleaning, dipping or slushing. Complete drive unit disassembly is a necessary requisite to thorough cleaning.

ROUGH PARTS

Rough parts such as differential carrier castings, cast brackets and some brake parts may be cleaned in hot solution tanks with mild alkali solutions providing these parts are not ground or polished. The parts should remain in the tank long enough to be thoroughly cleaned and heated through. This will aid the evaporation of the rinse water. The parts should be thoroughly rinsed after cleaning to remove all traces of alkali.

CAUTION: *Exercise care to avoid skin rashes and inhalation of vapors when using alkali cleaners.*

COMPLETE ASSEMBLIES

Completely assembled axles, torque dividers and transfer cases may be steam cleaned on the outside only, to facilitate initial removal and disassembly, providing all openings are closed. Breathers, vented shift units, and all other openings should be tightly covered or closed to prevent the possibility of water entering the assembly.

DRYING

Parts should be thoroughly dried immediately after cleaning. Use soft, clean, lintless absorbent paper towels or wiping rags free of abrasive material, such as lapping compound, metal filings or contaminated oil. Bearings should never be dried by spinning with compressed air.

CORROSION PREVENTION

Parts that have been cleaned, dried, inspected and are to be immediately reassembled should be coated with light oil to prevent corrosion. If these parts are to be stored for any length of time, they should be treated with a good RUST PREVENTIVE and wrapped in special paper or other material designed to prevent corrosion.

INSPECT

It is impossible to overstress the importance of careful and thorough inspection of drive unit parts prior to reassembly. Thorough visual inspection for indications of wear or stress, and the replacement of such parts as are necessary will eliminate costly and avoidable drive unit failure.

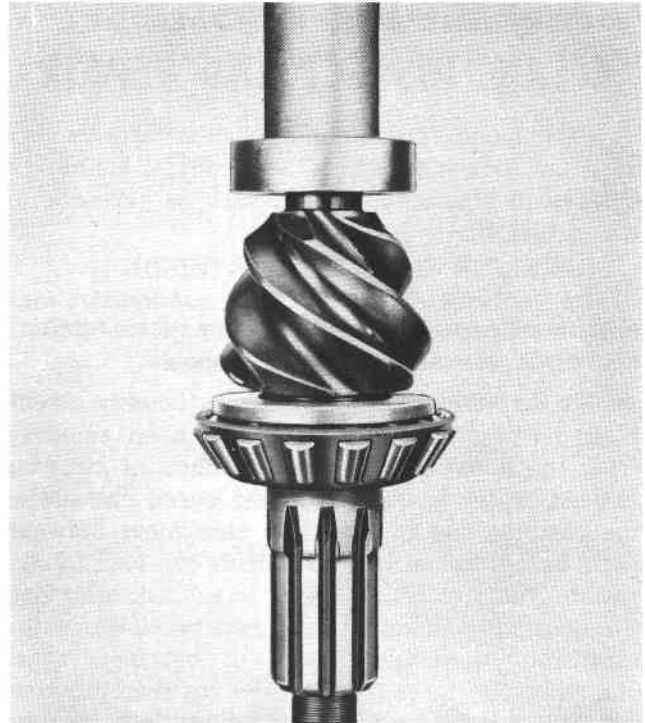
- A. Inspect all bearings, cups and cones, including those not removed from parts of the drive unit, and replace if rollers or cups are worn, pitted or damaged in any way. Remove parts needing replacement with a suitable puller or in a press with sleeves. Avoid the use of drifts and hammers. They may easily mutilate or distort component parts.
- B. Inspect hypoid gears for wear or damage. Gears which are worn, ridged, pitted or scored, should be replaced. When necessary to replace either the pinion or gear of hypoid set, the entire gear set should be replaced.
- C. Inspect the differential assembly for the following:
 1. Pitted, scored or worn thrust surfaces of differential case halves, thrust washers, spider trunnions and differential gears. Thrust washers must be replaced in sets. The use of a combination of old and new washers will result in premature failure.
 2. Wear or damage to the differential pinion and side gear teeth. Always replace differential pinions and side gears in sets.
- D. Inspect axle shafts for signs of torsional fractures or other indication of impending failure.

REPAIR

- A. Replace all worn or damaged parts. Hex nuts with rounded corners, all lock washers, oil seals and gaskets should be replaced at the time of overhaul.

Use only genuine Timken-Detroit replacement parts for satisfactory service. For example, using gaskets of foreign material generally leads to mechanical trouble due to variations in thickness and the inability of certain materials to withstand compression, oil, etc.

- B. Remove nicks, mars and burrs from machined or ground surfaces. Threads must be clean and free to obtain accurate adjustment and correct torque. A fine mill file or India stone is suitable for this purpose. Studs must be tight prior to reassembling the parts.
- C. All Timken-Detroit bronze bushed differential pinions should be ball burnished after bushing installation. Install the bushing with a small stepped drift. The small O.D. should be .010" smaller than the bushing burnished I.D. and 1½ times bushing length. Always install bushings so end is even with the I.D. chamfer or about ¼" below the spherical surface.
- D. When assembling component parts use a press where possible.
- E. Tighten all the nuts to the specified torque. (See torque limits following service instructions.) Use soft iron locking wire to prevent possibility of wire breakage.
- F. The burrs, caused by lock washers, at the spot face of stud holes of cages and covers should be removed to assure easy reassembly of these parts.



- C. Press rear thrust and radial bearings firmly against the pinion shoulders with a suitable sleeve that will bear only on bearing inner race.
- D. Install radial bearing lock ring and squeeze ring into pinion shaft groove with pliers.
- E. Insert pinion and bearing assembly in pinion cage and position spacer or spacer combination over pinion shaft.
- F. Press front bearing firmly against spacer.
- G. Rotate cage several revolutions to assure normal bearing contact.
- H. While in press under pressure, check bearing preload torque. Wrap soft wire around cage and pull on horizontal line with pound scale. If a press is not available, the pinion nut may be tightened to the correct torque and preload checked.

The correct pressures and torque for checking pinion bearing preload are as follows:

PINION SHAFT THREAD SIZE	PRESSURE REQUIRED TO OBTAIN CORRECT PRELOAD	NUT TORQUE REQUIRED TO OBTAIN CORRECT PRELOAD
1" x 20	6 tons	300-400 lb. ft.
1¼" x 18	11 tons	700-900 lb. ft.
1½" x 12	14 tons	800-1100 lb. ft.
1½" x 18	14 tons	800-1100 lb. ft.
1¾" x 12	14 tons	800-1100 lb. ft.

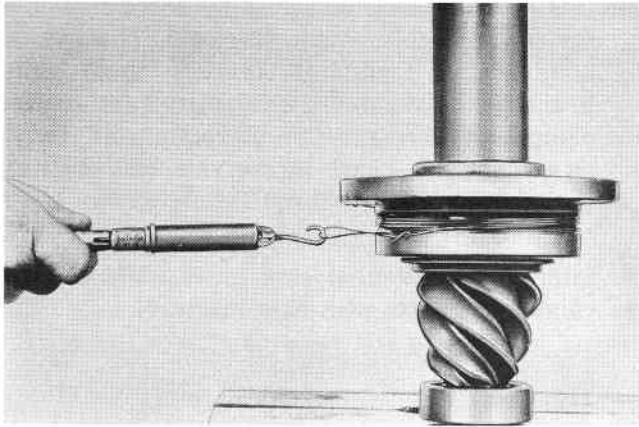
Use rotating torque, not starting torque.

REASSEMBLE CARRIER

REASSEMBLE PINION AND CAGE ASSEMBLY

Splined Shaft

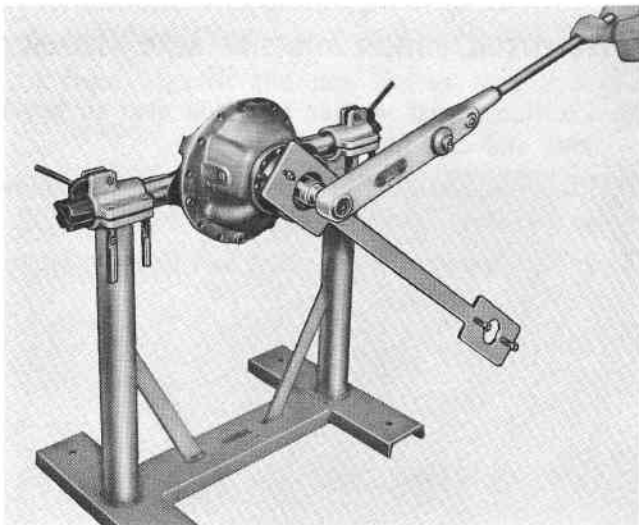
- A. If new cups are to be installed, press firmly against pinion bearing cage shoulders.
- B. Lubricate bearings and cups with light machine oil.



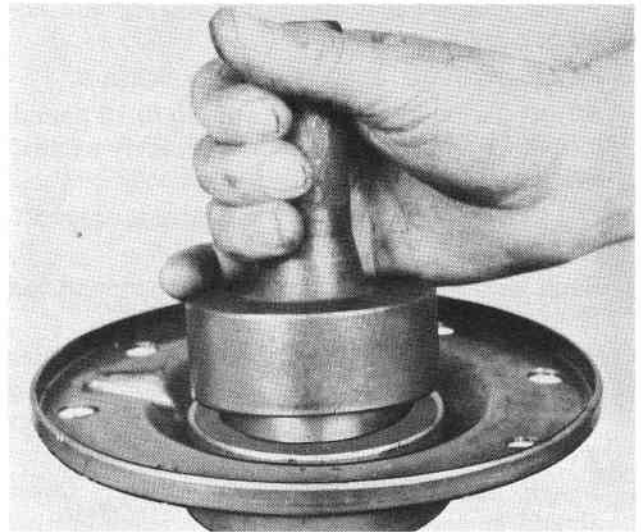
If rotating torque is not within 5 to 15 pound inches, use thinner spacer to increase or thicker spacer to decrease preload.

Example: Assuming pinion cage diameter to be 6 inches, the radius would be 3 inches and with 5 pounds pull would equal 15 pound inches preload torque.

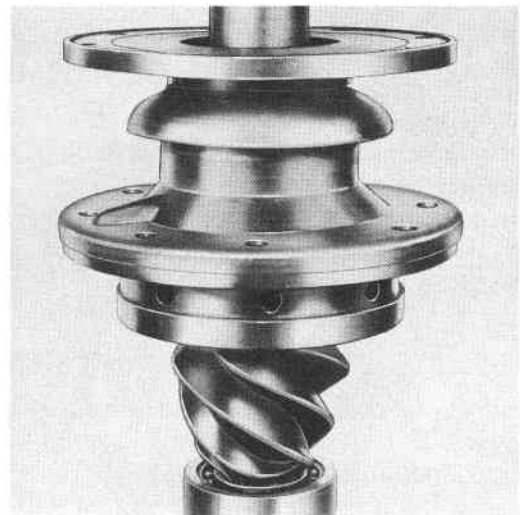
- I. Press flange or yoke against forward bearing and install washer and pinion shaft nut.



- J. Place pinion and cage assembly over carrier studs, hold flange and tighten pinion shaft nut to the correct torque. The flange must be held with a suitable tool or fixture to tighten nut.
- K. Recheck pinion bearing preload torque. If rotating torque is not within 5 to 15 pound inches, repeat the foregoing procedure.
- L. Hold flange and remove pinion shaft nut and flange.



- M. Lubricate pinion shaft oil seal and cover outer edge of seal body with a non-hardening sealing compound. Press seal against cover shoulder with seal driver.
- N. Install new gasket and bearing cover.



- O. Press flange against forward bearing and install washer and pinion shaft nut.
- P. Tighten to the correct torque and install cotter key.
- Do not back off nut to align cotter key holes.*

Tapered Shaft

- A. Press rear thrust and radial bearings firmly against the pinion shaft shoulder.
- B. Install radial bearing lock ring and squeeze ring into pinion shaft groove with pliers.
- C. If new cups are to be installed, press firmly against pinion cage shoulders.
- D. Lubricate bearings and cups with light machine oil.

CARE AND MAINTENANCE

- E. Install forward bearing, thrust washer and adjusting nut.
- F. Install new lock washer and the lock nut.
- G. Adjust pinion bearing preload to 5 to 15 pound inches with lock nut tightened securely against washer.

The lock nut must be tight to secure the correct preload.

- H. Bend lock washer when correct adjustment has been secured.
- I. Lubricate pinion shaft oil seal and cover outer edge of seal body with a non-hardening sealing compound. Press seal against cover shoulder with seal driver.
- J. Install new gasket and bearing cover. Cover should be carefully installed to prevent cutting seal on keyway.
- K. Install key, press flange on taper and install washer and pinion shaft nut.
- L. Tighten to the correct torque and install cotter key.

Do not back off nut to align cotter key holes.

INSTALL PINION AND CAGE ASSEMBLY

- A. Install correct shim pack. *Locate thin shims on both sides for maximum sealing ability.*
- B. Position pinion and cage assembly over studs and tap into position with soft mallet.
- C. Install lock washers and stud nuts or cap screws. Tighten to the correct torque.

ASSEMBLE DIFFERENTIAL AND GEAR

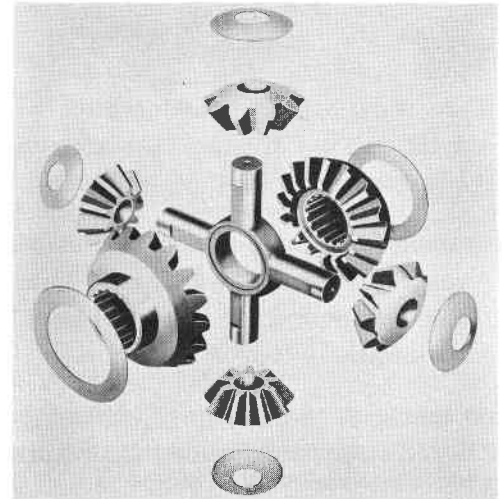
- A. Rivet the hypoid gear to the case half with new Timken-Detroit rivets. Rivets should not be heated, but always upset cold. When the correct rivet is used, the head being formed will be at least $\frac{1}{8}$ " larger in diameter than the rivet hole. The head will then be approximately the same height as the preformed head. Excessive pressure will cause distortion of the case holes and result in gear eccentricity.

Tonnage required for squeezing cold rivets. These pressures are approximate for annealed steel rivets and pressure can be adjusted to suit individual working conditions.

DIAMETER OF RIVET	TONNAGE REQUIRED
$\frac{7}{16}$ "	22
$\frac{1}{2}$ "	30
$\frac{9}{16}$ "	36
$\frac{5}{8}$ "	45

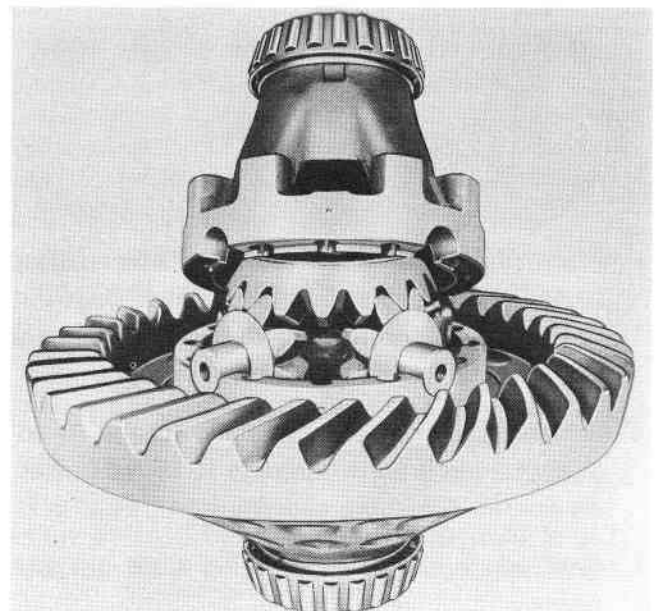
Differential case and gear bolts are available for service replacement of rivets. The use of bolts greatly facilitates servicing these units in the field and eliminates the need for special equipment necessary to correctly cold upset rivets. Consult chart for service bolt instruction shown with the torque chart on last page of manual.

- B. Lubricate differential case inner walls and all component parts with axle lubricant.



DIFFERENTIAL PINION AND SIDE GEAR ASSEMBLY

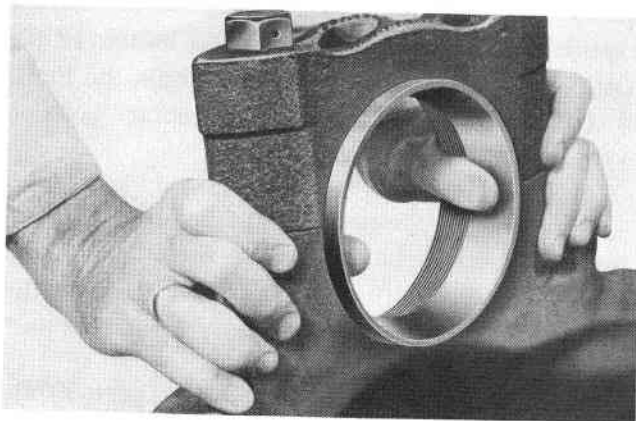
- C. Position thrust washer and side gear in bevel gear and case half assembly.
- D. Place spider with pinions and thrust washers in position.
- E. Install component side gear and thrust washer.



- F. Align mating marks, position component case half and draw assembly together with four bolts or cap screws equally spaced.
- G. Check assembly for free rotation of differential gears and correct if necessary.
- H. Install remaining bolts and cap screws, tighten to the correct torque and lock wire.
- I. If bearings are to be replaced, press squarely and firmly on differential case halves.

INSTALL BEARING CUPS IN CARRIER LEG BORES

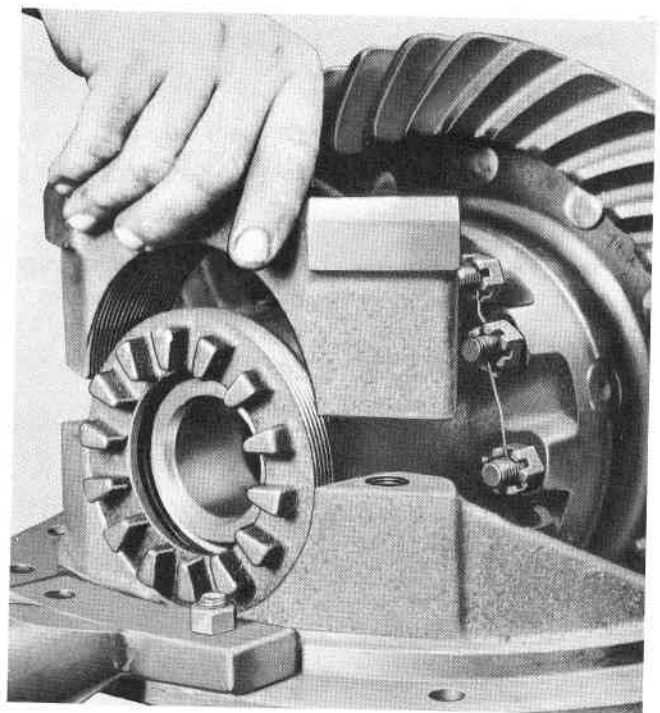
- A. Temporarily install the bearing cups, threaded adjusting rings where employed and bearing caps. Tighten the cap screws to the proper torque.



- B. The bearing cups must be of a hand push fit in the bores, otherwise the bores must be reworked with a scraper or some emery cloth until a hand push fit is obtained. Use a blued bearing cup as a gauge and check the fits as work progresses. Once the cups fit properly, remove the bearing caps.

INSTALL DIFFERENTIAL AND GEAR ASSEMBLY

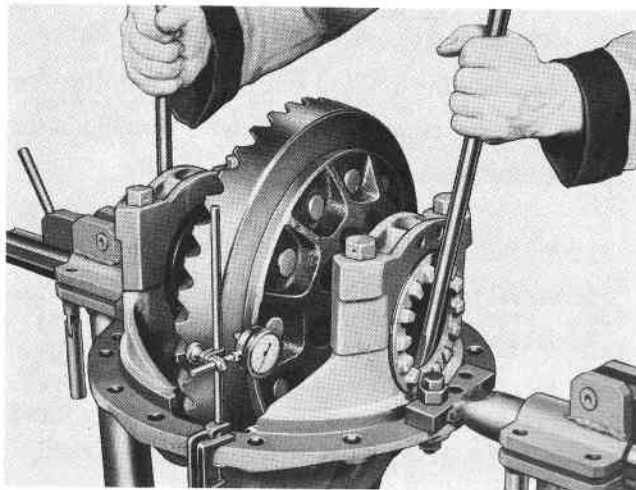
- A. After checking related parts, coat the differential bearing cones and cups with specified rear axle lubricant.
- B. Place the bearing cups over the assembled differential bearing cones, then position the differential assembly in the carrier.
- C. Insert bearing adjusting nuts and turn hand-tight against bearing cups.
- D. Install bearing caps in the correct location as marked and tap lightly into position.



If bearing caps do not position properly, adjusting nuts may be cross threaded. Remove caps and reposition the adjusting nuts. Forcing caps into position will result in irreparable damage to the carrier housing or bearing caps.

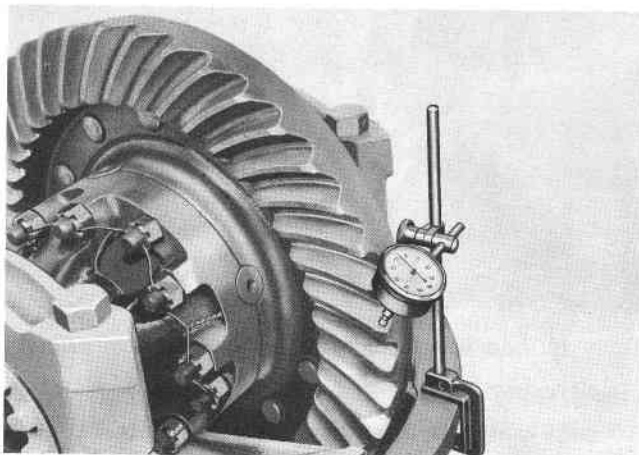
- E. Install flat washers where used and stud nuts or cap screws. Tighten stud nuts or cap screws to correct torque.

ADJUST DIFFERENTIAL BEARING PRELOAD



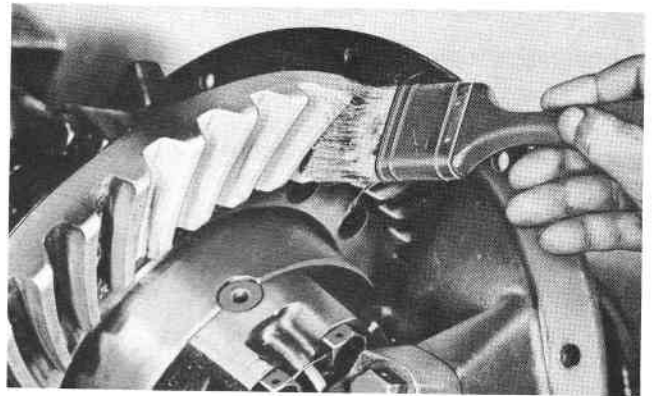
- A. Using dial indicator at backface of gear, loosen the bearing adjusting nut on *the side opposite gear only* sufficient to notice end play on the indicator.
- B. Tighten the same adjusting nut only sufficient to obtain .000 end play.
- C. Check gear for runout. If runout exceeds .008", remove differential and check for cause.
- D. Tighten adjusting nuts *one notch each* from .000 end play to preload differential bearings.

CHECK HYPOID GEAR BACKLASH



If the drive gear is not going to be replaced, we suggest the established backlash recorded before disassembly be used. For new gears the new backlash should be initially set at .010". Adjust backlash by moving the gear only. This is done by backing off one adjusting ring and advancing the opposite ring the same amount.

CHECK TOOTH CONTACT



Apply oiled red lead lightly to the hypoid gear teeth. When the pinion is rotated, the red lead is squeezed away by the contact of the teeth, leaving bare areas the exact size, shape and location of the contacts.

Sharper impressions may be obtained by applying a small amount of resistance to the gear with a flat steel bar and using a wrench to rotate the pinion. When making adjustments, check the drive side of the gear teeth. Coast side should be automatically correct when drive side is correct. As a rule, coating about twelve teeth is sufficient for checking purposes.

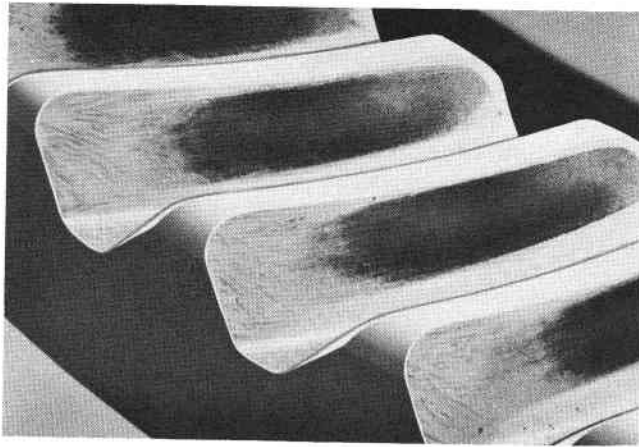
After obtaining a satisfactory tooth contact, especially in relation to the top and bottom of the tooth, the backlash can be altered within the limits of .005"-.015" to obtain a better contact position relative to the length of the tooth.

A high backlash setting can be used to keep the contact from starting too close to the toe, and a low backlash setting can be used to keep the contact from starting too far away from the toe.*

After correct tooth contact has been established, install adjusting nut locks and cap screws. Tighten cap screws and lock wire to bearing cap screws.

*For further detailed information refer to SAE Paper SP-228, Section 2, by W. A. Johnson and R. F. Cornish.

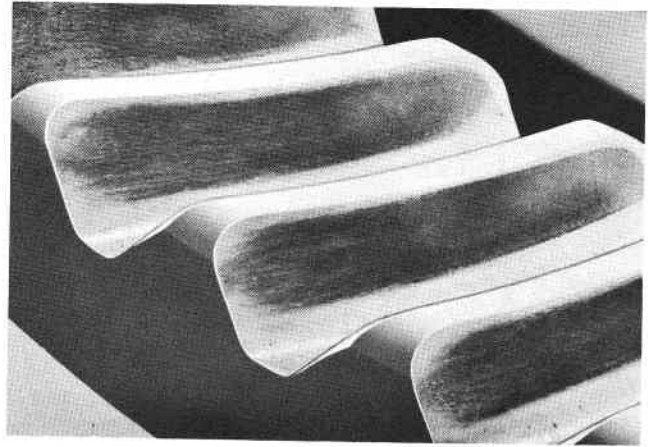
CORRECT TOOTH CONTACT ASSURES LONGER GEAR LIFE



**SATISFACTORY TOOTH CONTACT
(GEARS UNLOADED)**

With adjustments properly made (pinion at correct depth and backlash set at .010") the above contacts will be procured. The area of contact favors the toe and is centered between the top and bottom of the tooth.

The hand rolled pattern shown at left (gears unloaded), will result in a pattern centered in the length of the tooth when the gears are under load shown at right. The loaded pattern will be almost full length and the top of pattern will approach the top of the gear tooth.

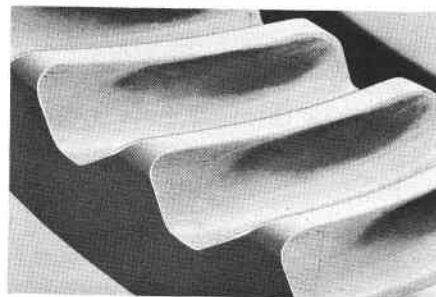


**SATISFACTORY TOOTH CONTACT
(GEARS LOADED)**

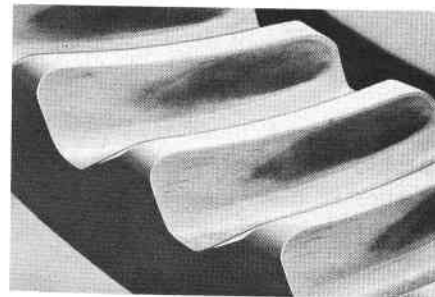
The pattern on the coast side of teeth will appear the same width as the drive side shown above; however, the over-all length will be centered between the toe and heel of gear tooth.

Set used hypoid gear to have the tooth contacts to match wear patterns. Hand rolled patterns of used gears will be smaller in area and should be at the toe end of wear patterns.

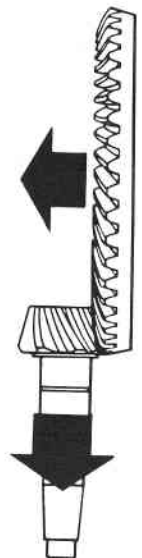
INCORRECT TOOTH CONTACT



A high contact indicates pinion is too far out. Set the pinion to the correct depth by removing shims under the pinion cage. Slight outward movement of hypoid gear may be necessary to maintain correct backlash.

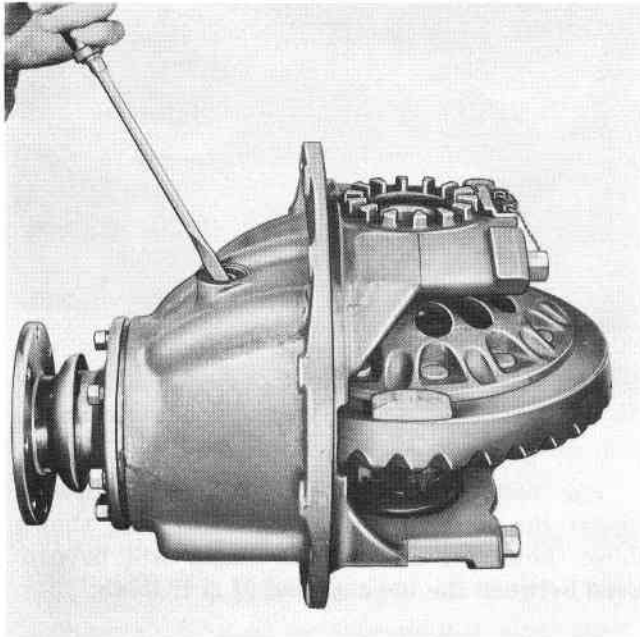


A low contact indicates pinion is too deep. Set the pinion to the correct depth by adding shims under the pinion cage. Slight inward movement of the hypoid gear may be necessary to maintain correct backlash.



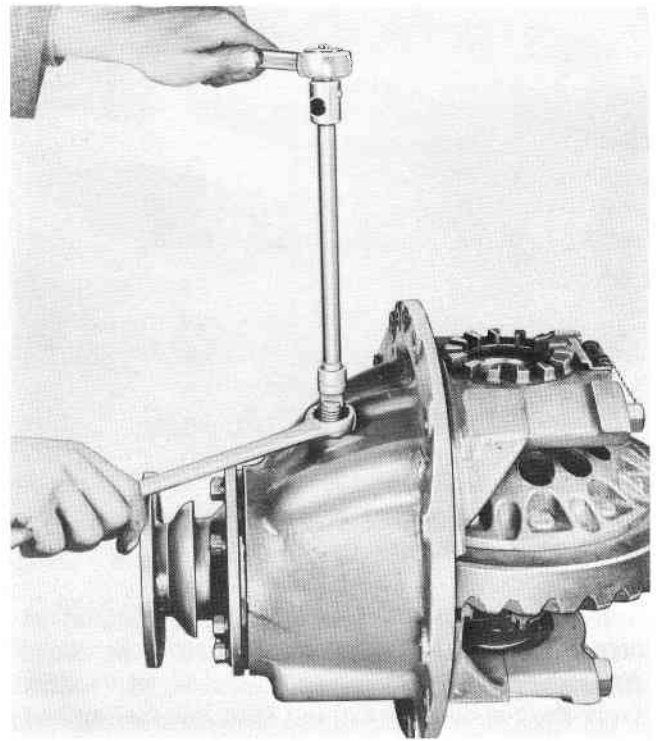
INSTALL THRUST BLOCK

- A. Remove carrier from stand and position with back face of hypoid or spiral bevel gear upward.
- B. Remove adjusting screw and lock nut.



- C. Place thrust block on rear face of hypoid gear and rotate gear until the hole in the thrust block is aligned with the adjusting screw hole.
- D. Install adjusting screw and lock nut and tighten

adjusting screw sufficient to locate thrust block firmly against back face of hypoid gear.



- E. To secure the correct adjustment of .010"-.015" clearance, loosen adjusting screw 1/4 turn and lock securely with nut.
- F. Recheck to assure minimum clearance of .010" during full rotation of bevel gear.

CLEAN AND INSPECT HOUSING, ASSEMBLE DRIVE UNIT

- A. Remove any accumulation of dirt, grit or gum from housing bowl and sleeves. Clean housing thoroughly with solvent and blow dry with compressed air.
- B. Inspect housing for cracks, loose studs, nicks, and burrs at machined surfaces. Remove nicks and burrs with stone or file. Make all necessary repairs or parts replacement before installing drive unit in housing.
- C. Install new drive unit to housing gasket over housing studs.

Roll carrier into position on roller jack. Start carrier into housing with four flat washers and nuts equally spaced.

Do not drive carrier into housing with a hammer at the carrier stud flange. The flange may easily be distorted and cause severe oil leakage.

Install lock washers and stud nuts on any studs under carrier housing offsets. It is impossible to start these nuts after carrier is drawn into housing.

- D. Tighten the four nuts over flat washers alternately to draw carrier squarely into axle housing.
- E. If necessary, remove nuts and flat washers and install taper dowels, lock washers and stud nuts. Tighten to the correct torque.
- F. Connect universal at pinion shaft.
- G. Install axle shafts.

PREPARATION FOR STORAGE

In the event the carrier is a spare and may not be immediately installed, all gears and bearings should be thoroughly oiled and the carrier placed in a dustproof container.

LUBRICATION

Proper lubrication of the drive units is extremely important. Our "Standard" recommended lubricant is Rockwell-Standard Specification O-65, SAE 140 viscosity, multipurpose gear lubricant. Unusual operating conditions such as extremes in climatic temperatures may require lubricants of "Optional" viscosities. Refer to Field Maintenance Manual No. 1, "Lubrication," for detailed information.

Since Rockwell-Standard lubricant specifications are periodically revised, always refer to Field Maintenance Manual No. 1 for current complete lubricant specifications and applications.

- A. Fill axle housing to the correct level with *specified lubricant*.
- B. Lubricate universal joint.
- C. Jack up *both* rear wheels and operate vehicle in *high* transmission gear at approximately 25 to 30 miles per hour for *five minutes* to assure satisfactory lubrication of all parts of the carrier assembly.

Do not operate with one wheel jacked up. Operation in this manner will result in overheating the differential spider with resultant galling or shearing of the spider pins.

Both wheel brakes should be free to allow both wheels to rotate at approximately the same speed.

NEW AND RECONDITIONED AXLE SERVICE

The original rear axle lubricant should be drained at the end of the drive-away or before the maximum of 3,000 miles prior to placing the vehicle in regular service. Drain the lubricant

initially used in the assembly following reconditioning at the same interval. Completely drain the lubricant while the unit is warm.

Fill axle housings to bottom of level hole with specified lubricant with the vehicle level.

REGULAR AXLE SERVICE

Refer to Field Maintenance Manual No. 1, "Lubrication," for recommended service interval.

Completely drain the lubricant while the unit is warm.

Some newer model axles have a smaller tapped and plugged hole located near and below the housing lubricant level hole. This smaller hole has been provided for the use of a lubricant temperature indicator only and should not be used as a fill or level hole.

MAGNETIC DRAIN PLUGS

Magnetic drain plugs perform the vital function of trapping small metallic particles that circulate in the lubricant, through the gears and bearings, causing rapid wear and premature failure. The magnet must be strong enough to firmly hold the particles under service conditions. We recommend plugs with elements having a minimum pick-up capacity of 2 pounds of low carbon steel in plate or flat bar form. See Plug section in Field Maintenance Manual No. 1, page 6.

Spare clean plugs should be kept on hand for replacement at regular intervals. The change schedule can easily be established by periodic plug examination.

TABULATION OF TORQUE LIMITS

CAP SCREWS AND STUD NUTS				
LOCATION	DIAM- ETER	NO. THREADS	TORQUE — LB. FT.	
			MIN.	MAX.
Pinion cage	3/8"	16	26	29
	1/2"	13	82	91
	9/16"	12	116	129
	5/8"	11	160	180
Carrier to housing	7/16"	14	52	58
	1/2"	20	92	102
	5/8"	18	185	205
	3/4"	16	320	360
Differential case bolt	1/2"	20	92	102
	9/16"	18	130	145
	5/8"	18	185	205
	3/4"	16	320	360
Pinion shaft	7/8"	20	175	250
	1"	20	300	400
	1 1/4"	18	700	900
	1 1/2"	18	800	1100
	1 1/2"	12	800	1100
	1 3/4"	12	800	1100
Differential bearing adjusting nut lock	5/16"	18	15	17
	1/2"	13	82	91
DIFFERENTIAL BEARING CAP CAP SCREWS OR STUD NUTS (Earlier Axle Models Without Hardened Washers)				
CAP SCREW OR STUD NUT DIAMETER	CAP SCREW OR COARSE STUD THREAD	STUD NUT OR FINE THREAD	TORQUE — LB. FT.	
			MIN.	MAX.
5/8"	11	18	126	140
3/4"	10	16	225	250
7/8"	9	14	330	370
7/8"	14	14	375	415
1"	14	14	375	415
DIFFERENTIAL BEARING CAP CAP SCREWS OR STUD NUTS (Later Axle Models Employing Hardened Washers)				
CAP SCREW OR STUD NUT DIAMETER	CAP SCREW OR COARSE STUD THREAD	STUD NUT OR FINE THREAD	TORQUE — LB. FT.	
			MIN.	MAX.
5/8"	11	18	160	180
3/4"	10	16	290	320
7/8"	9	14	470	520
7/8"	14	14	510	570
1"	14	14	570	630

Torques given apply to parts coated with machine oil; for dry (or "as received") parts increase torques 10%; for parts coated with multi-purpose gear oil decrease torques 10%. Nuts on studs to use same torque as for driving the stud.