CHRYSLER CORP. – 7¼" RING GEAR

Rear Wheel Drive

NOTE – *Some models use other units. See Chrysler Corp. 8¼" & 9¼" Ring Gear, in this section.*

DESCRIPTION

Semi-floating, hypoid gear type with differential carrier integral with rear axle housing. All components can be inspected, removed and serviced without removing complete axle assembly from vehicle. A new modified axle assembly is also being used. It is a 7¼" housing with 8¼" axles and housing tubes pressed into it. The standard ball bearings have been changed to direct-on roller bearings. "C" type lock washers are being used on the inboard ends of each axle.

CAUTION – *Should rear axle become submerged in water, lubricant must be changed immediately to avoid possibility of early axle failure resulting from contamination of lubricant by water drawn into vent hole.*

AXLE RATIO & IDENTIFICATION

The 7¼" drive axle is available in 2 gear ratios. Gear ratio is stamped on a small metal tag attached under one of the cover bolts.

Axle Ratio Identification

Axle Ratio	No. of Teeth Pinion Gear	Ring Gear
2.26:1	19	43
2.76:1	17	47

REMOVAL & INSTALLATION

AXLE SHAFTS & BEARINGS

Removal – 1) Remove wheel and drum. Disconnect brake line at wheel cylinder. Working through axle shaft flange, remove retainer nuts. Using puller tool (SP-3266), remove axle shaft. Remove brake assembly and axle shaft oil seal from housing.

CAUTION – *Do not use heat to remove bearing or collar.*

2) Position axle shaft bearing retaining collar on a heavy vise. Using a chisel, cut deep grooves into retaining collar at 90° intervals. Drive collar off shaft.

Installation – To install, reverse removal procedure.

NOTE – *Any time axle assembly is serviced, and axle shaft is loosened or removed, both brake support plate gaskets and inner axle shaft oil seal must be replaced.*

Removal (Modified Axle Housing) – 1) Raise and support vehicle. Remove wheels and brake drums. Loosen housing cover screws to drain lubricant. Remove housing cover.

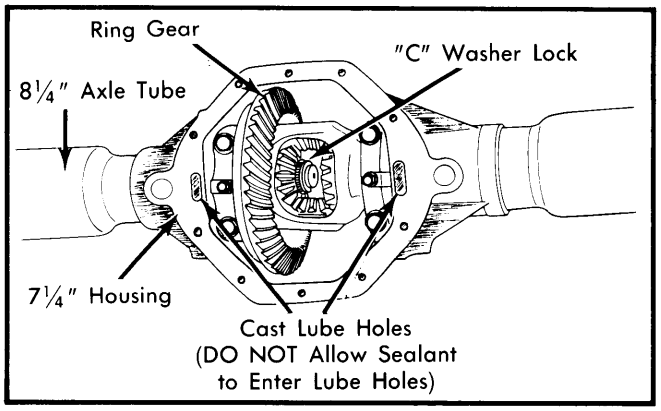

Fig. 2 Modified 7¼" Direct-On Roller Differential Showing Location of "C" Washer and Roller Bearing Lube Holes

2) Turn differential case for access to lock screw. Remove lock screw and pinion shaft. Push axle shafts toward center of vehicle. Remove "C" locks from groove in axle shafts. Remove shafts from housing.

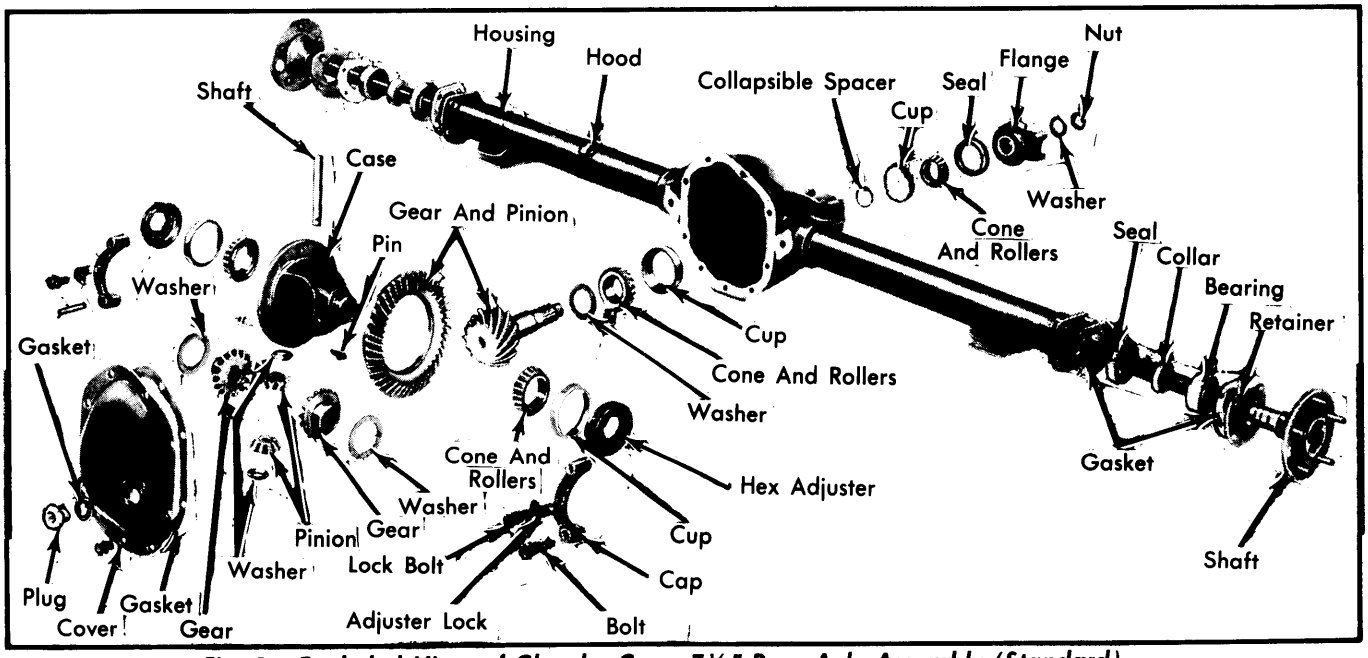

Fig. 1 Exploded View of Chrysler Corp. 7¼" Rear Axle Assembly (Standard)

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3) Do not damage roller bearings which remain in axle housing. Remove shaft seal from housing bore using button end of axle shaft. Dents caused by axle shaft splines should be polished smooth or rubber on outside diameter of seal will be torn and seal leakage will result.

4) To remove bearing, use suitable bearing separator tool (C-4167). If axle shaft and bearing are not damaged, then they may be reused. DO NOT reuse axle shaft seal after removal.

Installation – To install, reverse removal procedure.

REAR AXLE ASSEMBLY

Removal – 1) Raise vehicle and support body at front of rear springs. Block brake pedal in "up" position. Remove wheel and drum assemblies. Remove brake hose and junction block from axle housing. Remove axle shaft and bearing assemblies.

2) Remove brake backing plate retainer nuts. Remove backing plates (with shoes and parking brake cables attached) and wire to frame. Place alignment marks on propeller shaft and companion flange for installation reference. Disconnect and support propeller shaft out of the way. Remove shock absorbers and spring "U" bolts. Remove rear axle assembly from vehicle.

Installation – To install, reverse removal procedure.

PINION FLANGE & OIL SEAL

Removal – 1) Raise and support vehicle. Place alignment marks on propeller shaft, companion flange and end of pinion stem for installation reference. Disconnect propeller shaft and support out of the way. Remove wheels and brake drums to prevent any drag or false preload readings.

2) Measure pinion bearing preload by rotating pinion with an INCH Lb. torque wrench. Rotate pinion through several revolutions and record torque. Using locking tool (C-3281), hold companion flange and remove drive pinion nut and Belleville washer. Remove flange. Lower rear of vehicle to prevent lubricant leakage and remove pinion oil seal.

Installation – 1) Inspect flange for damage and repair if necessary. Using seal installer (C-4002), install new pinion oil seal. Seal is properly installed when seal flange contacts housing flange face. Outside diameter of seal is pre-coated with special sealer so no sealing compound is required.

2) Position flange on pinion stem (aligning scribe marks). Install Belleville washer (convex side of washer out) and pinion nut. Make sure bearing rollers are properly seated. Using a torque wrench, measure pinion bearing preload. Continue tightening pinion nut and checking preload until preload is at original setting. Preload should not exceed 10 INCH Lbs. over original setting.

CAUTION – *Under no circumstances should pinion nut be backed off to lessen preload. If desired preload is exceeded, a new collapsible spacer must be installed and nut retightened until proper preload is obtained. Also, universal joint flange must never be hammered on or installed with power tools.*

OVERHAUL

NOTE – *Overhaul may be accomplished without removing complete axle assembly from vehicle. Axle shafts must be removed as previously outlined.*

DISASSEMBLY

NOTE – *Side play and runout checks should be made during disassembly for use during reassembly.*

1) Drain fluid from housing, then remove cover and clean interior of differential. Position screwdriver between left side of housing and differential case flange. Using a prying motion, determine if side play is present. No side play should be present.

NOTE – *Side play resulting from bearing cones becoming loose on differential case hubs requires replacement of case. Otherwise, tighten threaded adjusting nut to remove side play.*

2) Mount a dial indicator and load indicator stem slightly when plunger is at right angles to back face of ring gear. Measure ring gear runout by turning ring gear several complete revolutions. Mark ring gear and differential case at point of maximum runout. Runout should not exceed .005"

NOTE – *If runout exceeds .005", differential case may be damaged.*

3) Mark axle housing and bearing caps for installation in original positions during reassembly. Remove adjuster lock from each bearing cap. Loosen but DO NOT remove bearing caps. Insert suitable tool (C-4164) through axle tube on each side and loosen hex adjuster. Hold differential in position. Using extreme caution, remove bearing caps and differential assembly.

NOTE – *Bearing caps and cups must be kept with respective bearings. Adjusters will remain in housing.*

4) Mount differential case and ring gear assembly in soft-jawed vise. Remove and discard ring gear bolts. Using a brass drift or plastic mallet, tap ring gear loose from differential case and remove ring gear. If ring gear runout exceeded .005", proceed to step **5)**. If not proceed to step **7)**.

NOTE – *Ring gear bolts have left hand threads.*

5) Install differential case (without ring gear installed) and respective bearing cups in housing. Install bearing caps and tighten bearing cap bolts lightly. Using hex rod tool (C-4164), inserted through axle tubes , tighten hex adjuster to remove all side play.

6) Mount a dial indicator to housing and position plunger so it contacts ring gear side of differential case flange. Rotate differential case several complete revolutions and note total indicator reading. Runout must not exceed .003". If runout exceeds .003", replace differential case. Remove dial indicator, bearing cap bolts, caps and differential.

NOTE – *If runout does not exceed .003", runout may be reduced by positioning ring gear 180° from point of maximum runout during reassembly.*

7) Check side gear axial clearance by using 2 feeler gauges .005" thick. Attempt to insert 1 feeler gauge at top and other feeler gauge at bottom of side gear thrust surfaces. Feeler gauges should not fit.

8) With differential mounted in soft-jawed vise, drive out pinion shaft lock pin with hammer and drift. Using a brass drift, remove pinion shaft. Rotate side gears until pinion gears appear at case window. Remove pinion gears, side gears and

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thrust washers. Using suitable puller and adapter, remove differential side bearings.

9) Using an INCH Lb. torque wrench, measure pinion bearing preload and record reading. Remove pinion nut and washer. Using holding tool (C-3281) and puller (C-452), remove pinion flange. Remove and discard pinion oil seal. Remove pinion and front bearing cup.

NOTE – *To remove drive pinion or front pinion bearing cone, pinion stem must be driven rearward out of bearing. This will damage bearing rollers and cup, so new cone and cup assembly must be installed.*

10) Discard collapsible spacer. Using a brass drift and hammer, remove front and rear bearing cups from housing. Using suitable adapter tools (C-293-P and C-293-40), remove rear pinion bearing from pinion stem. Remove shim from pinion and record thickness.

REASSEMBLY

Differential Case – 1) Lubricate all parts when assembling and adjusting. If .005" feeler gauges could be inserted behind side gears during disassembly, replace thrust washers with thickest pair that will permit assembly. Install thrust washers on differential side gears and position gears in case. Place thrust washers on both differential pinion gears. Mesh pinion gears with side gears, with pinion gears 180° apart.

2) Rotate side gears to align pinion gears and washers with pinion shaft hole in case. Install differential pinion shaft and align lock pin hole in differential case. Install lock pin from ring gear side of case. Recheck side gear clearance. If .005" feeler gauges can be inserted with thickest service thrust washers installed, replace differential assembly.

3) Using suitable stone, relieve sharp edge of chamfer on inside diameter of ring gear. Heat ring gear with heat lamp or by immersing in hot water or oil. Temperature should not exceed 300°F. Using pilot studs to align gear to case, install new ring gear bolts (left hand threads) through case flange and into ring gear.

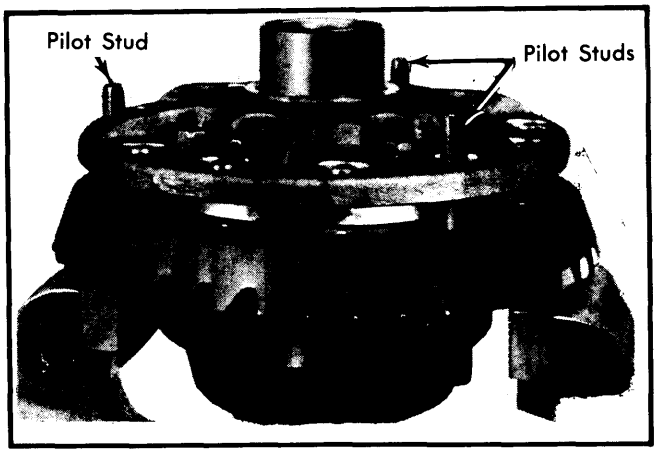

Fig. 3 Using Pilot Studs to Locate Case to Heated Ring Gear

NOTE – *Do not use a torch to heat ring gear.*

4) Place unit on soft jawed vise and alternately tighten bolts. Using arbor press and suitable tools (C-3716-A and handle C-4171), install differential bearing cones.

CAUTION – *Do not exert pressure against bearing cage as damage will result.*

Pinion Bearing Cup Installation – 1) Pinion gauge tool set (C-3715-L) is used to install drive pinion bearing cups as well as to determine pinion depth of mesh. Start both drive pinion bearing cups into axle housing.

2) Place rear spacer (SP-3244) on tool and place front pinion bearing cone on centralizing sleeve. Then place tool sleeve, centralizing washer and nut on tool. Hold compression sleeve from turning and tighten nut. This will draw pinion bearing cups into axle housing cup bores.

3) Permit tool to turn several revolutions during tightening operation, this will permit bearing rollers to align. Leave tool in carrier for determining depth of mesh.

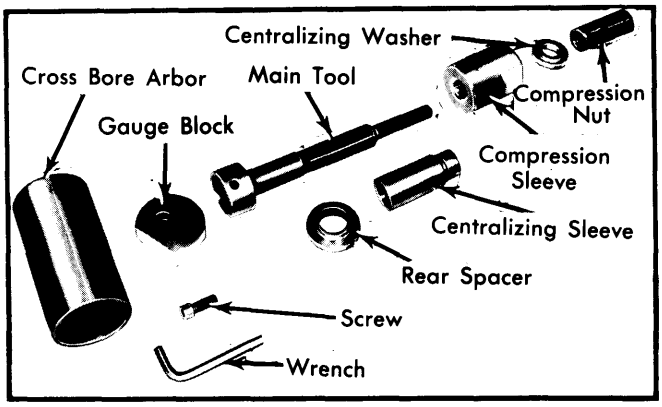

Fig. 4 Chrysler Corp. Pinion Gauge Tool Set C-3715-L

Pinion Setting Kit (C-3715-L) – 1) With main tool left in housing after installing drive pinion bearing cups, loosen tool nut and retighten until 15-25 INCH lbs. of turning torque is reached. Attach gauge block to main tool using Allen screw.

2) Position crossbore arbor (SP-3243) in axle housing differential bearing seat. Center arbor so that equal distance is maintained at both ends. Position bearing caps and attaching bolts on carrier pedestals and insert a piece of .002" shim stock between arbor and each cap. Tighten cap bolts to 10 ft. lbs.

3) Select rear pinion bearing mounting shim which will fit between cross bore arbor and gauge block. Fit must be snug but not tight. If mark on pinion head is plus (+), select a shim that many thousandths thinner for installation.

4) If mark on pinion has a minus (–), select a shim that many thousandths thicker for installation. Treat other pinion markings in a similar manner. Spacers are available in .001" increments from .020" to .038".

Pinion Installation & Bearing Preload – 1) Place shim and rear bearing cone on pinion stem and using suitable tool (C-3717), press bearing on pinion. Lubricate bearing cones with rear axle lubricant and insert pinion and bearing assembly up through axle casting. Install new collapsible spacer followed by front bearing onto pinion stem. Using suitable tool (C-3718), install companion flange.

NOTE – *DO NOT collapse spacer during installation.*

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2) Remove tool and flange. Install drive pinion oil seal using seal installer (C-4002) until seal flange contacts housing flange face. Support pinion in carrier and reinstall companion flange.

3) Remove tools and install Belleville washer (convex side up) and pinion nut. Hold companion flange with suitable tool (C-3281) and tighten nut until no end play can be detected. Continue tightening nut and checking preload with an INCH lb. torque wrench until pinion bearing preload is 15-30 INCH lbs. Final nut torque must be above 210 ft. lbs.

NOTE – *If installing NEW front pinion bearing and original rear bearing, correct preload is 10 INCH lbs. greater than tear down reading. Under no circumstances should pinion nut be backed off if desired preload is exceeded. A new spacer will be required and pinion nut tightened until proper preload is reached.*

Differential Bearing Preload & Ring & Pinion Backlash Adjustment – 1) Coat differential bearings, cups and adjusters with axle lubricant. Carefully position differential case (with bearing cups installed) into housing. Install bearing caps in original position. Tighten top bearing cap bolts to 10 ft. lbs. and tighten lower bolts finger tight, until head is just seated on bearing cap.

2) Using hex rod tool (C-4164), turn each hex adjuster in until bearing free play is eliminated with approximately .010" backlash existing between ring gear and pinion. Seat bearings.

NOTE – *Differential bearing cups will not always move directly with adjusters, therefore to insure accurate adjustment changes and to maintain gear mesh index, bearings must be seated by rotating pinion ½ turn in each direction 5-10 times EACH TIME adjusters are moved.*

3) Install dial indicator and position plunger against drive side of a ring gear tooth. Find point of minimum backlash by checking at 4 positions approximately 90° apart around ring gear. Rotate gear to position of least backlash and mark index so all backlash readings will be taken with same teeth in mesh.

4) Loosen right adjuster and tighten left adjuster until backlash is .003-.004", with each adjuster tightened to 10 ft. lbs. Seat bearings and tighten bearing cap screws to 45 ft. lbs. Tighten right adjuster to 70 ft. lbs. and seat bearings at same time until torque remains constant at 70 ft. lbs.

NOTE – *Maintain specified torque to obtain accurate blacklash and preload settings.*

5) Measure backlash. Backlash should be .004-.006". If backlash does not meet specification, increase torque on right adjuster and seat bearings until correct backlash is obtained. Tighten left adjuster to 70 ft. lbs. and seat bearings at same time until torque remains constant.

NOTE – *If all steps were performed correctly, initial reading on left adjuster should be approximately 70 ft. lbs. If it is substantially less, complete procedure must be repeated.*

6) After adjustments are completed, install adjuster locks. Lock teeth must be engaged in adjuster threads. Tighten lock screws to 90 INCH Lbs.

AXLE ASSEMBLY SPECIFICATIONS

Application	Specification
Capacity	2.5 Pts.
Ring Gear & Pinion Backlash	①.004-.006"
Pinion Bearing Preload	②15-30 INCH Lbs.
Ring Gear & Case Runout	.005" (Max.)

① – At point of minimum backlash.
② – Turning torque.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Differential Bearing Bolts	45
Drive Gear-to-Case Bolts	70
Drive Pinion Flange Nut	210 (Min.)
Carrier Cover Bolts	250 INCH lbs.
Axle Shaft Retainer Nuts	35
Propeller Shaft Bolts (Rear)	170-200 INCH lbs.
Spring "U" Bolt Nuts	45 (Max.)
Wheel Stud Nuts	85
Shock Absorber Stud Nuts (Lower)	50