1965-74 CHRYSLER CORP. 8¾" RING GEAR

DESCRIPTION

Axle is semi-floating type which may be divided into four sub-assemblies; flanged axle shafts, differential case with hypoid ring gear, carrier with drive pinion, and axle housing. Service of these assemblies, with exception of axle housing, may be performed without removing complete rear axle assembly from vehicle.

AXLE RATIO IDENTIFICATION

Small metal tag attached to rear axle by carrier-to-housing bolt identifies axle ratio by giving number of teeth on drive pinion and ring gear. Ratio is found by dividing larger number by smaller number.

REMOVAL & INSTALLATION

AXLE SHAFTS & INNER SEALS

Removal – Remove wheels and brake drums, then working through access hole in axle flange, remove axle shaft retainer nuts. *NOTE – Right shaft with threaded adjuster in retainer plate will have a lock under one of the studs which should be removed at this time.* Using suitable puller, remove axle shaft, then remove brake assembly and gaskets. Using suitable adapter and slide hammer, remove inner oil seal from bore in axle housing.

Installation – 1) Clean all parts thoroughly, then position new inner oil seal squarely into bore in axle housing. Drive seal into housing until it seats on shoulder. Install new rubber coated steel gasket on axle housing studs, followed by brake support plate assembly on left side of housing.

2) Apply multi-purpose grease to outside diameter of bearing cup. Install foam gaskets on studs of axle housing, slide axle shaft assembly through oil seal and engage splines in differential side gear. Tap end of axle shaft lightly to position bearing in housing bore.

3) Position retainer plate over axle housing studs, then install retainer nuts and tighten to 30-35 ft. lbs. Repeat procedure for right side of axle housing. Back off threaded adjuster of right axle shaft assembly until inner face of adjuster is flush with inner face of retainer plate. Slide axle shaft assembly through oil seal, engage splines in differential side gear, then seat bearing in housing.

CAUTION – When setting end play, both rear wheels must be off the ground, otherwise a false setting will occur.

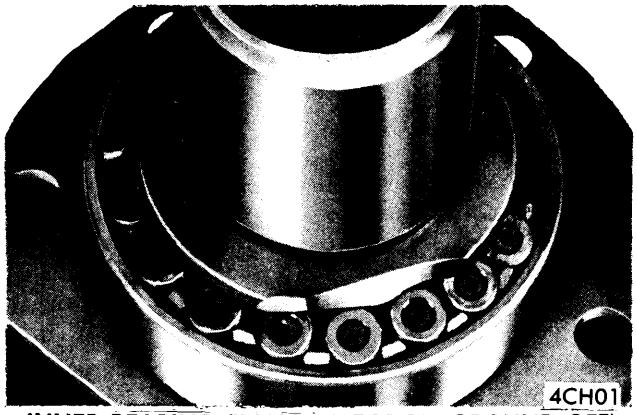
4) Using dial indicator mounted on left brake support, turn right side adjuster clockwise until both wheel bearings are seated and there is zero end play in axle shafts. Back off adjuster counterclockwise approximately four notches to establish correct end play.

5) Tap end of left axle shaft to seat right wheel bearing cup against adjuster. Rotate shaft through several revolutions to be sure of a true reading. Remove one right side retainer plate nut and install adjuster lock. *NOTE – If tab on lock does not mate with notch in adjuster, turn adjuster slightly until it does.* Install nut and tighten to 30-35 ft. lbs.

AXLE BEARINGS & OUTER SEALS

Removal – 1) With axle shaft removed, place axle shaft bearing retainer collar on heavy vise or anvil and chisel deep grooves into retainer collar at 90° intervals. This will enlarge bore of collar and permit easy removal.

2) Remove bearing retainer collar. Remove roller retainer flange by cutting off lower edge with a chisel. Grind section off flange of inner bearing cone and remove bearing rollers. Pull bearing roller retainer down as far as possible, then cut with a pair of side cutters and remove.



INNER BEARING FLANGE (SECTION GROUND OFF)

3) Remove roller bearing cup from shaft. To avoid scuffing seal journal when bearing cone is being removed, journal should be protected by single wrap of .002" shim stock held in place by a rubber band.

4) Using suitable tool (C-3971-A), remove bearing cone. Remove axle shaft retainer plate and pry outer seal from bore in plate. Clean all parts thoroughly.

Installation – Seat new oil seal in shaft retainer plate and position plate on axle shaft. Lubricate axle bearing assembly with multi-purpose grease. Install new axle bearing cup, cone and retaining collar on axle shaft. Press bearing assembly onto shaft until properly seated.

PINION FLANGE & SEAL

Removal – Raise vehicle and scribe marks on propeller shaft universal joint, drive pinion flange and end of pinion stem for reassembly reference. Disconnect propeller shaft and tie out of way. Remove wheels and brake drums to prevent any drag. Measure and record pinion bearing preload, then remove drive pinion nut, Belleville washer and drive pinion flange. Inspect flange for damage and repair or replace as necessary. Using care not to damage machined surface, pry pinion oil seal from bore in carrier housing.

Installation – 1) Apply a light coat of sealer in bore of carrier housing. Using suitable tool (C-4109 or C-3980) for double lip rubber seal or (C-3656) for single lip leather seal, install drive pinion oil seal. *NOTE – Correct tool must be used to properly position seal at correct depth in housing.*

2) Position flange on pinion stem, being careful to align reassembly marks. Install Belleville washer (convex side up) and pinion nut. Tighten nut to 170 ft. lbs. Rotate pinion through several revolutions to insure proper seating of bearing rollers.

3) Measure pinion bearing preload. Continue tightening pinion nut, checking preload frequently, until bearing preload is equal to that measured before disassembly. Under no circumstances should preload be more than 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.

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DIFFERENTIAL CARRIER

Removal – Remove axle shaft assemblies. Disconnect rear universal joint and tie propeller shaft out of way. Drain lubricant, remove carrier-to-housing bolts and remove carrier assembly from axle housing.

Installation – Clean all gasket surfaces. Using new gaskets, install carrier assembly into axle housing and tighten carrier-to-housing bolts. Install propeller shaft. Install axle shaft assemblies, being sure to adjust axle shaft end play, then bleed and adjust brakes and refill with appropriate lubricant.

OVERHAUL

DISASSEMBLY

NOTE – Side play and runout checks taken during disassembly will be useful during reassembly.

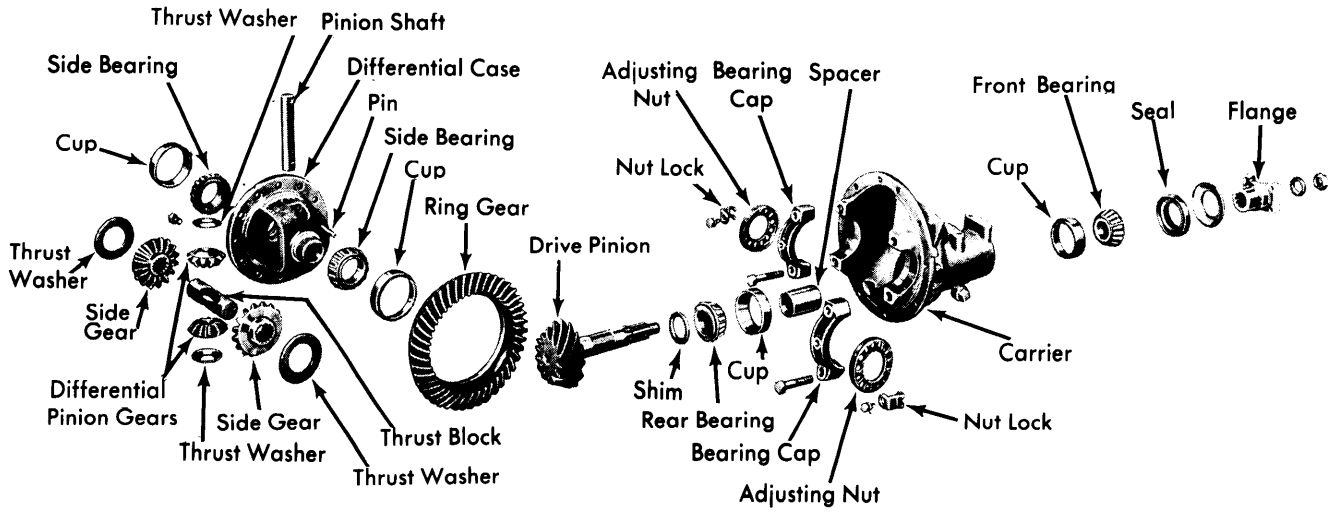
1) Mount carrier in suitable holding device and attach dial indicator to differential carrier so contact tip of indicator bears squarely against back face of ring gear. Position screwdriver between bearing cap and differential case flange. Use prying motion to determine if any side play exists. If side play is present, remove adjuster lock and loosen adjuster slightly. Retighten adjuster until all side play is removed.

2) Measure and record ring gear runout at several locations around ring gear. Mark ring gear and differential case at point of maximum runout. *NOTE – Runout should not exceed .005".* If excessive runout exists, case may be damaged and a second reading will be required after ring gear has been removed. Remove drive pinion nut, washer and flange. Pry pinion oil seal from bore in carrier housing.

3) Invert carrier; front pinion bearing, shim pack and bearing spacer (where used) will drop from carrier. Mark differential bearing caps, pedestal and adjusting nuts for reassembly reference. Remove adjusting nut locks. loosen one bearing cap bolt on each side and back off adjusting nuts slightly to remove side bearing preload. Remove bearing caps and adjusting nuts. Remove differential assembly with side bearing cups. *NOTE – Differential bearing cups must be kept with respective side bearings.* Remove drive pinion and rear pinion bearing assembly from carrier. Remove drive pinion rear bearing, and using a flat end brass drift, remove front and rear pinion bearing cups.

4) Mount differential assembly in soft jawed vise and remove left hand thread ring gear attaching bolts. With non-metallic hammer, tap ring gear loose from case pilot and remove gear. If ring gear runout was excessive when checked during disassembly, proceed as follows: Install differential case and bearing cups into carrier. Install bearing caps, cap bolts and adjusting nuts in carrier. Tighten adjusting nuts to eliminate case side play and tighten differential cap bolts. Attach dial indicator as before and rotate through several revolutions noting indicator readings. *NOTE – Runout should not exceed .003".* If runout excessive, case must be replaced. *NOTE – Where runout of case is not excessive, it is often possible to reduce total runout by positioning ring gear 180° from point of maximum runout when reassembling ring gear on differential case.*

5) Using flat nose drift, drive differential pinion shaft lock pin out of case from back side of ring gear flange. *NOTE – Hole is reamed only part way through, making it necessary to remove lock pin in one direction only.* Using brass drift and hammer, remove differential pinion shaft and axle shaft thrust block. Rotate side gears until each pinion gear can be removed. Remove pinion gears and thrust washers. Remove side gears and thrust washers.



8¾" RING GEAR DIFFERENTIAL ASSEMBLY

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REASSEMBLY & ADJUSTMENT

NOTE — Lubricate all parts with suitable hypoid gear lubricant prior to assembly.

Case Assembly — 1) Install thrust washers on differential side gears and position gears in case. Place thrust washers on both differential pinions. Through large window in case, insert differential pinion gears 180° apart and in mesh with differential side gears. Rotate side gears until holes in pinion gears and thrust washers align with pinion shaft holes in differential case. From pinion shaft lock pin hole side of case, insert slotted end of pinion shaft into case, conical thrust washer and one differential pinion gear. Install axle shaft thrust block through side gear hub so slot in block is centered between side gears.

2) With all parts in correct alignment, push pinion shaft into case until locking pin hole in pinion shaft is aligned with its repsective hole in case. Install pinion shaft lock pin from pinion shaft side of drive gear flange. *NOTE — Contacting surfaces of drive gear and case flange must be clean and free from burrs.* Using suitable honing stone, relieve sharp edge of chamfer on inside diameter of ring gear. Position ring gear on differential case pilot, aligning threaded holes of ring gear with those in case flange.

3) Insert ring gear attaching bolts through case flange and into ring gear. After all bolts are started, use non-metallic hammer to seat ring gear against case flange. Tighten all attaching bolts alternately and evenly. Place differential side bearings on journals of case and press into position. *CAUTION — Never exert pressure against bearing cage when installing bearings.*

CAUTION — The 8¾" axle incorporates two types of drive pinion gears. Methods for determining pinion depth and bearing preload differ slightly for each type.

Pinion Depth & Bearing Preload (Pinion With Solid Spacer) — 1) With suitable tool (C-785-D5) installed in carrier, remove main screw nut, centralizing washer, compression sleeve and front pinion bearing. Install pinion bearing spacer with larger bore of spacer next to rear bearing. Position suitable sleeve (SP-1730) in front bearing, making sure sleeve is flush with rear of bearing. Position original pinion shims over sleeve and slide sleeve, bearing and shims over main screw of tool until shims rest against spacer.

2) Install suitable compression sleeve (SP-535), centralizing washer (SP-534) and main screw nut (SP-533). Turn carrier in holding device until nut is at top. Tighten nut to 240 ft. lbs. Using INCH lb. torque wrench, measure pinion bearing preload while rotating pinion through several revolutions. *NOTE — Correct bearing preload can only be measured with nose of carrier up.* Change thickness of shims to adjust preload.

3) Reverse carrier in holder and install suitable gauge block (SP-528) on end of tool with flat portion of gauge block facing differential bearing pedestals. Position suitable gauging arbor (SP-561) in bearing pedestals. Center arbor, position bearing caps on pedestals and insert .002" shim stock between arbor and caps. Install bearing cap bolts and tighten to 10 ft. lbs. Select a rear pinion mounting shim which fits snugly but not too tight between arbor and gauge block. This shim is then used to determine correct thickness of shim needed for installation.

4) To determine correct shim thickness, read markings on end of pinion head. If mark is minus, add that amount to thickness of test shim. If mark is plus, subtract that amount. After selecting proper shim, remove all tools, bearings and shims from carrier.

5) Place selected pinion shim over stem of drive pinion, then press rear pinion bearing into position on stem. *NOTE — Shims are chamfered on one side and must be installed with chamfered side toward pinion head. Pinion bearing must be installed with large side of bearing toward shim.* Place tubular bearing spacer over pinion stem and install previously selected pinion bearing preload shim pack. Position front pinion bearing in its cup in carrier and install pinion oil seal. Insert drive pinion assembly into carrier, install pinion flange, washer and nut. Tighten nut and recheck pinion bearing preload.

Pinion Depth & Bearing Preload (Pinion With Collapsible Spacer) — 1) Assemble suitable spacer (SP-5387) to main stem of adjusting tool, followed by spacer (SP-1730). Install rear pinion bearing over spacer (SP-1730) and against spacer (SP-5387). Insert tool assembly into carrier and install front pinion bearing over tool shaft, in front bearing cup. Install tool spacer, tool thrust washer and tool nut onto shaft. With nose of carrier pointing up, place suitable flange holding tool (C-3281) on compression sleeve. Rotate assembly while tightening nut to 25-50 ft. lbs. Measure bearing preload. Continue tightening nut until correct preload is obtained.

2) With preload set, invert carrier and install suitable gauge block (SP-528) on main screw with flat portion of gauge block facing differential bearing pedestals. Position suitable gauging arbor (SP-561) in bearing pedestals. Center arbor, and place bearing caps in position on pedestals. Insert .002" shim stock between arbor and bearing caps, install bearing cap bolts and tighten bolts to 10 ft. lbs. Select a rear pinion bearing mounting shim which will fit snugly but not too tighly between arbor and gauging block. This shim is then used to determine correct shim thickness for installation.

3) To select proper shim, read markings on end of pinion head. If mark is minus, add that amount of thickness to previously selected shim. If mark is plus, subtract that amount. Remove bearing caps and tool arbor from carrier. Reverse carrier in holder so nut of tool is in upright position. Loosen compression nut and support lower portion of tool with one hand. Remove tool nut, centering washer and compression sleeve, then lower tool out of carrier.

4) Place selected shim over pinion stem. Position rear pinion bearing squarely on stem and press into place against pinion shim. Insert drive pinion assembly up through carrier and install new collapsible spacer, followed by front pinion bearing, on pinion stem.

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5) Apply light coat of sealer in bore of carrier housing and install new pinion oil seal. While supporting pinion assembly in carrier, install pinion flange, Belleville washer and pinion nut. Tighten pinion nut to 170 ft. lbs. and measure pinion bearing preload. *NOTE — Correct preload readings can only be obtained with nose of carrier in upright position.*

CAUTION — During installation of front pinion bearing and pinion flange, use care not to collapse spacer.

6) Continue tightening nut until proper preload is obtained. New collapsible spacer must be installed and preload readjusted if pinion nut torque is below 170 ft. lbs. when correct preload is obtained. *CAUTION — Under no circumstances should pinion nut be backed off to lessen preload. If this is done, a new collapsible spacer MUST be installed and preload readjusted.*

Backlash & Side Bearing Preload — 1) Place differential side bearing cups on side bearings and place differential assembly into carrier. Install bearing caps and cap bolts in position and hand tighten bolts. Install side bearing adjusting nuts and tighten until bearings are seated in cups and all differential end play is removed. Continue to adjust nuts until slight backlash exists with end play removed. Tighten one bearing cap bolt on each cap to 85-90 ft. lbs.

2) Attach dial indicator to carrier flange so contact tip of indicator bears against drive side of one ring gear tooth. Measure backlash at this point and at three other points equally spaced around ring gear. Set gears at point of least backlash and tighten both adjusting nuts equally in the same direction until backlash in .0005-.0015". *NOTE — Right side adjusting nut should be turned in clockwise direction only.* Install left adjusting nut lock and tighten nut lock screw.

3) Tighten right side adjusting nut until backlash of .006-.008" is obtained. This will preload bearings and establish correct backlash. Tighten remaining bearing cap bolts, install right adjusting nut lock and tighten nut lock screw. As a final check, make a tooth contact pattern test.

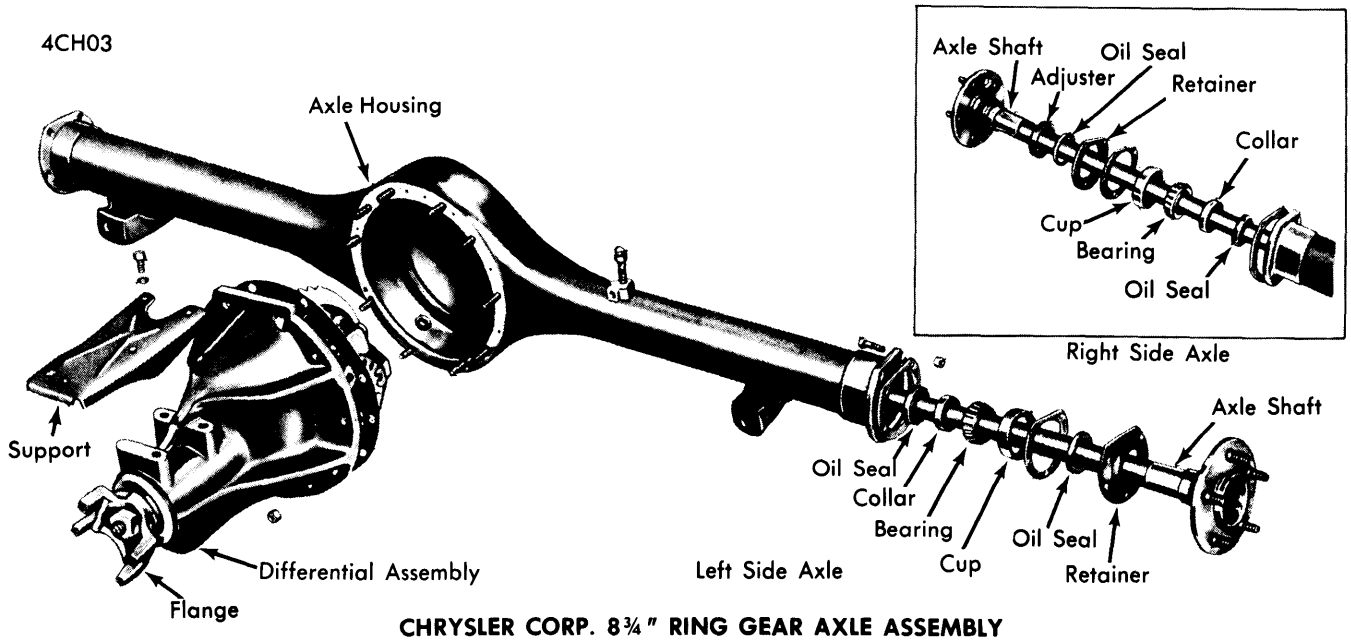
NOTE — Final adjustment on either adjusting nut must be made in a tightening direction. If nut needs to be loosened one notch, loosen two notches, then tighten one notch.

AXLE ASSEMBLY SPECIFICATIONS

Axle Shaft End Play	
1965-69	.013-.023"
1970-74	.008-.018"
Ring Gear Backlash (Minimum)	.006-.008"
Pinion Bearing Preload	
Small Stem Pinion Gear	
New Bearings	20-30 INCH lbs.
Used Bearings	0-15 INCH lbs.
Large Stem Pinion Gear	
New Bearings	20-35 INCH lbs.
Used Bearings	10 INCH lbs.
Differential Assembly Runout (Maximum)	.005"
Differential Case Runout (Maximum)	.003"

TIGHTENING SPECIFICATIONS

Application	Torque (Ft. Lbs.)
Ring Gear Bolts	55
Drive Pinion Nut	
Small Stem Pinion	240
Large Stem Pinion	170
Bearing Cap Bolts	85-90
Carrier-to-Housing Bolts	45
Differential Bearing Adjusting Nut Lock Screws	15-20



CHRYSLER CORP. 8¾" RING GEAR AXLE ASSEMBLY