

**GROUP 3
REAR AXLE
DATA AND SPECIFICATIONS**

MODELS	RC-1, RC-2, RC-3, RY-1
Type	Semi-Floating
Gear Type	Hypoid
Ring Gear Diameter	8.75 inch
Pinion Bearing	Tapered Roller (2)
Drive Pinion Bearing Pre-Load (New Bearings)	20-30 inch-pounds Without Seal
(Bearings in Use)	0-15 inch-pounds Without Seal
Adjustment	Shim Pack
Differential Bearings	Tapered Roller (2)
Differential Bearing Adjustment	Threaded Adjuster
Drive Gear and Pinion	Serviced in Matched Sets Only
Drive Gear Runout005 inch (Maximum)
Drive Gear and Pinion Adjustment	Select Washer
Drive Gear and Pinion Backlash (Point of Minimum Backlash)006 to .009 inch
Differential Side Gear Clearance Models RC-1, RC-2, RC-3, RY-1001 to .012 inch
Differential Lubricant Capacity	3½ pints
Axle Ratio	
(Manual Transmission) RC-1	3.58 to 1
(TorqueFlite Transmission) RC-1, RC-2, RC-3, RY-1	2.93 to 1
Wheel Bearing Type	Tapered Rollers
Wheel Bearing Adjustment	Select Shims
Wheel Bearing Axle Shaft End Play013 to .018 inch

TIGHTENING REFERENCE

	Foot-Pounds
Axle Shaft Nuts	145 (Min.)
Brake Support Plate to Housing Mounting Bolt Nuts	30 - 35
Differential Carrier to Axle Housing Bolt Nuts	45
Rear Axle Drive Gear to Case Bolts	45
Differential Bearing Cap Bolts	90
Rear Axle Drive Pinion Companion Flange Nut	240 (Min.)

**GROUP 3
REAR AXLE**

The Service Procedures for the Rear Axle Group remain the same as outlined in the 1960 Chrysler and Imperial Service Manual, except for the following:

AXLE SHAFT END PLAY

Axle shaft preferred end play is .013 to .018 inch.

However, up to .023" is permissible. The end play is necessary because as much as .012 inch end play may be taken up after operating temperatures are reached during normal operation. The loss of end play occurs because the axle shafts expand (length-wise) more than the axle housing as the tempera-

tures increase. Less than .013 inch end play can result in a preloaded bearing, under these conditions, causing shorter bearing life.

DRIVE GEAR AND PINION BACKLASH

Drive and pinion backlash should be .006 to .009 inch at point of minimum backlash.

REAR AXLE LUBRICANT LEVEL CHECK

When checking the lubricant level in the rear axle on all Chrysler and Imperial models, it is recommended that the hoist used be one that lifts the vehicle by supporting under the wheels or under the rear axle housing and the front suspension lower control arms.

This type of hoist maintains the rear axle housing at normal driving angle, therefore, an accurate check of the lubricant level can be made. The use of any hoist which lifts the frame of the vehicle and allows the wheels and rear axle housing to be unsupported, will change the angle of the rear axle housing, causing an inaccurate check of the lubricant level.

PINION REAR BEARING REMOVAL

The 1961 Chrysler Newport RC-1 rear axle carriers use different adaptors to remove the pinion rear bearing than the carriers on all other 1961 Chrysler and Imperial Models.

When removing the pinion rear bearing on a 1961 Chrysler Newport carrier, use Tool C-293 and four (4) No. 36 adaptors. On all other 1961 Chrysler and Imperial models, use Tool C-293 and four (4) No. 37 adaptors.

Imperial Models should use Tool C-293 and four (4) No. 26 adaptors.

The following procedures should be used when assembling the 1961 Chrysler Newport (RC-1) carrier.

PINION BEARING CUP INSTALLATION

(1) Place the bearing cups squarely in position. Assemble Tool C-758 by placing the spacer (SP-2919) followed by the rear pinion bearing cone over the main screw of the tool and inserting it into the carrier from the gear side.

(2) Place the front pinion bearing over the main screw followed by compression sleeve SP-535, centralizing washer SP-534, and main screw nut SP-533. Hold the compression sleeve with companion flange holding Tool C-3281 and tighten the nut, allowing the tool to rotate as the nut is being tightened in order not to damage the bearings or cups. **Do not remove tool after installing the cups.**

Two types of drive pinions are used. The method of determining pinion depth of mesh and bearing pre-load are the same for both pinions, however, the sequence of making the two adjustments changes. The Chrysler Newport (RC-1) pinions without a bearing spacer requires the depth of mesh adjustment first. The Chrysler Windsor, New Yorker and Imperial models pinions with a separate bearing spacer require bearing pre-load adjustment first.

CHRYSLER NEWPORT — RC-1 — INSTALLATION USING TOOL C-758 (Fig. 1)

Bearing Pre-Load

(1) With tool installed in the carrier, remove the main screw nut, centralizing washer, compression sleeve and the front pinion bearing.

(2) Install the pinion bearing spacer, the larger bore of spacer next to the rear bearing.

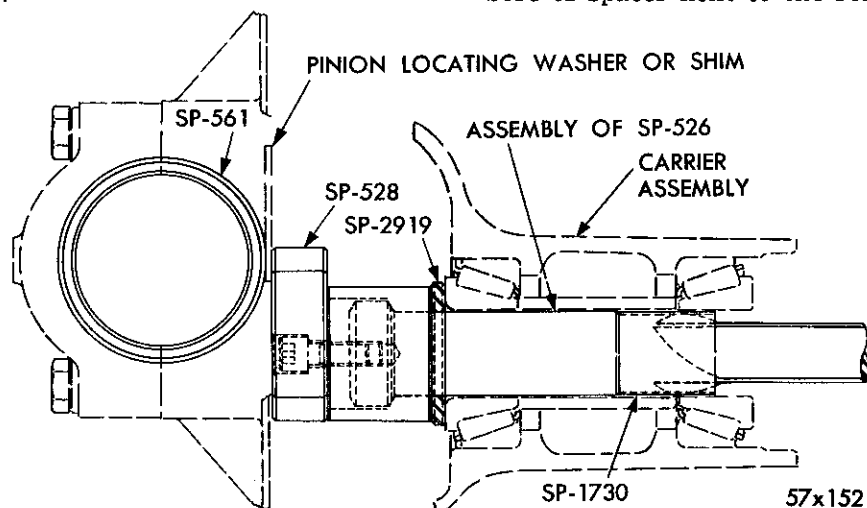


Fig. 1—Setting Pinion Bearing Pre-Load (Newport only)

(3) Position the sleeve (SP-1730) in the front bearing, making sure the sleeve is flush with the rear of the bearing.

(4) Position the original shims, previously removed from the drive pinion shaft, over the sleeve and slide the sleeve bearing and shims over the tool main screw until the shims rest against the spacer.

(5) Install the tool compression sleeve (SP-535) (square end out), centralizing washer (SP-534) and main screw nut (SP-533). Turn the carrier in the stand to bring the nut on top.

(6) Tighten the tool nut to 240 foot-pounds torque, using Holding Tool C-3281 on the compression sleeve to hold the assembly in several positions to make a complete revolution while tightening. Remove the holding tool and rotate the pinion assembly several turns in both directions to align the bearing rollers. Recheck the torque to 240 foot-pounds (torque may have diminished as bearing rollers were aligned by rotating).

(7) Correct bearing pre-load readings can only be obtained with the nose of the carrier up. Use an inch-pound torque wrench C-685. With the handle of the wrench floating, read the torque when the wrench is moving through at least one full rotation. Correct reading is 20 to 30 inch-pounds for new bearings and 0 to 15 inch-pounds for bearings in use and should be uniform during the full rotations. If the bearing pre-load is more than 30 inch-pounds, a thicker shim should be used under the front bearing. If the bearing pre-load is less than 20 inch-pounds, a thinner shim should be used. Shims are available in thickness of .010, .012, .014, .016, and .018 inch. After proper pinion bearing pre-load is established, do not remove the tool.

Depth of Mesh

The position of the drive pinion with respect to the ring gear (depth of mesh) is determined by the location of the bearing cup shoulders in the carrier and by the portion of the pinion back of the rear bearing. The thickness of a pinion spacer washer suitable for the carrier can be determined by using Tool C-758.

(1) Invert the carrier in the stand and install gauge block SP-528 on the end of the tool attaching it to the tool with the Allen screw. The flat portion of the spacer should be facing the differential bearing pedestals and the offset of the spacer (or the large portion) toward the center of the carrier. Tighten the screw with an Allen wrench.

(2) Position the arbor SP-561 (part of Tool C-758)

in the differential bearing pedestals of the carrier. Center the arbor so that an approximate equal distance is maintained at both ends. Position the differential bearing caps and attaching bolts on the carrier pedestals. Between the arbor and each cap, insert a piece of .002 inch feeler stock and tighten cap bolts securely.

(3) Select a washer that will fit between the tool gauge block and arbor. This fit must be snug but not too tight (similar to the pull of a feeler gauge). This washer is selected **for measuring the carrier, but not for installation.**

(4) To select a washer for installation, read the marking on the end of the pinion (—0, —1, +1, +2, etc.). When the marking is minus (—), add that amount to the thickness of the washer selected in (3). When the marking is plus (+) subtract that amount. Example: With the measuring washer .086 inch thick ($.086 + .002 = .088$). With a measuring washer .086 inch thick and a pinion marked +2, install a washer .084 inch thick ($.086 - .002 = .084$) or when a washer .086 inch thick is too loose and .088 inch too tight, use .088 and the pinion marking.

(5) Remove the tool arbor from the carrier.

(6) Remove the tool and bearings out of the carrier.

(7) Remove the shims, spacer, tool sleeve, and rear bearing cone from the tool main screw.

(8) With the shaft end of pinion facing up, install the correct pinion spacer washer on the pinion gear shaft. These washers have a chamfer on one side. **The chamfer must face the pinion gear.**

(9) Position the rear bearing cone on the pinion shaft (small side away from pinion gear). Make certain that the contacting surfaces of the correct washer, pinion gear, and rear bearing cone are perfectly clean and free of any foreign particles.

(10) Install the rear bearing cone onto the pinion shaft with Tool DD-996. An arbor press may be used in conjunction with the tool.

(11) Install the bearing tubular spacer on the pinion shaft (large bore facing rear bearing).

(12) Install the previously selected shim pack.

(13) Lubricate the front and rear pinion shaft bearing cones with a heavy oil.

(14) Install the front bearing in its cup in the carrier.

(15) Install the oil seal in the carrier with driver C-3656, lip of seal must face front bearing. Seal must be driven into the carrier until it bottoms against the shoulder in the carrier bore.

(16) Insert the pinion shaft up through the carrier. While supporting the pinion in the carrier, install the universal joint flange with installing Tool C-496 or DD-999.

(17) Remove the tool and install the plain washer (convex side of washer up) and nut.

(18) Hold the universal joint flange with the holding Tool C-3281. Torque tighten the companion flange nut to 240 foot-pounds. Rotate the assembly several turns in both directions to align the bearing rollers. Recheck the torque tightness to 240 foot-pounds (torque may have diminished as bearing rollers were aligned by rotating).

**PINION BEARING PRE-LOAD AND PINION SETTING
(Without Using Special Tool C-758-D-3)
(CHRYSLER RC-2 and RC-3 MODELS
AND IMPERIAL MODEL RY-1)**

Correct drive gear and pinion adjustment consists of the following: Pinion bearing pre-load, pinion setting, differential bearing pre-load, and backlash between drive gear and pinion.

Pre-loading the pinion and differential bearing is important because it holds the drive pinion and differential in place and prevents back and forth movement which would create incorrect gear pinion tooth contact.

NOTE: If the differential assembly was satisfactorily quiet before being disassembled, the drive pinion may be assembled with the original adjusting washers and shims. If replacement parts are installed, or differential adjustment is necessary, the proper thickness washer must be installed between the pinion and rear bearing. The drive gear and pinion are manufactured and lapped in matched sets. The adjustment position in which the best tooth contact is obtained is etched on end of pinion shaft.

To obtain the proper pinion setting in relation to the drive gear, the correct thickness thrust washer must be selected before the drive pinion is installed in the carrier. Pinion bearing adjusting washers are available from .084 inch to .100 inch in .002 inch steps. To select the proper thickness thrust washer, proceed as follows: It will be noted that the face of the drive pinion is etched with plus (+) or minus (—) sign, followed by a number ranging from 1 to 4, or zero (0) marking.

If old and new pinion have the same marking and if the original bearing is being reused, use a thrust washer of same thickness. But if old pinion is marked zero (0) and new pinion is marked +2, try a .002 **thinner** washer. If new pinion is marked —2, try a .002 inch **thicker** washer.

If the bearing cups are to be replaced, place the bearing cups in position in the carrier and drive the cups in place with suitable drift. After properly positioning of the bearing cups in carrier, assemble the drive pinion thrust washer (chamfered side down toward gear) on the drive pinion stem. Install the rear bearing, spacer (if so equipped) and shims on the pinion stem. Insert the pinion shaft into the carrier. Install the front pinion bearing, universal joint flange, washer and nut. **Do not install the oil seal.** Tighten the drive pinion flange nut to 240 foot-pounds torque. Rotate the drive pinion shaft after tightening the flange nut, to properly seat the bearing rollers in the bearing cups. The pre-load torque required to rotate the pinion shaft with the bearings oiled should be 20 to 30 inch-pounds torque for new bearings and 0 to 15 inch-pounds for bearings in use. Add shims to **decrease** torque or remove shims to **increase** torque. After the correct pinion setting and bearing pre-load has been obtained, remove the drive pinion flange. Install the oil seal. Install the pinion flange, washer and nut. Tighten the nut to proper torque. Install the drive gear and case assembly, and adjust for correct tooth contact and backlash.

**PINION BEARING PRE-LOAD AND PINION SETTING
CHRYSLER RC-2 AND RC-3, AND IMPERIAL RY-1
(Using Tool C-758-D-3) (Fig. 2)**

Inspect the bearing cups and carrier for grit and dirt. Assemble the washer SP-2921 followed by the correct pinion locating washer spacer SP-2920, along with the rear bearing onto the main shaft of Tool C-758-D-3. Insert the tool, bearing and washer assembly in the carrier along with original shims previously removed from drive pinion. Install the front bearing, compression sleeve SP-535, centralizing washer SP-534 and main nut SP-533. Hold the compression sleeve nut with holding Tool C-784 or C-3281 and torque tighten the nut to 240 foot-pounds.

With an inch-pound torque wrench, rotate the nut in a clockwise direction several revolutions to seat the bearings. The correct torque reading should be from 20 to 30 inch-pounds for new bearings and 0 to 15 inch-pounds for bearings in use. If the bearing pre-load is more than 35 inch-pounds, a thicker shim should be used under front bearing inner race. Shims