

## FORD MOTOR CO. - 6 3/4" RING GEAR

Capri  
Fairmont  
Mustang  
Zephyr

### DESCRIPTION

An integral type housing, hypoid design, with centerline of pinion set below centerline of ring gear. Semi-floating axle shafts are retained in housing by ball bearings and a bearing retainer at axle housing outer ends.

### AXLE RATIO & IDENTIFICATION

A metal tag stamped with model designation and gear ratio is secured to one of the rear cover-to-housing bolts.

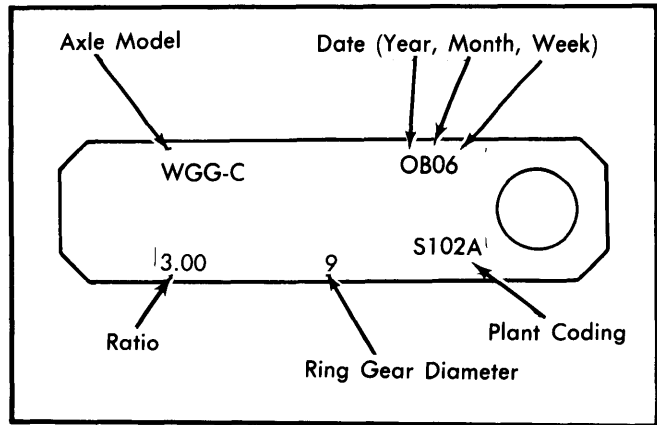


Fig. 1 Ford Motor Co. Rear Axle Identification Tag

### REMOVAL & INSTALLATION

#### AXLE SHAFTS & BEARINGS

**Removal** - 1) Remove wheel assembly from brake drum. Neutralize brake shoe adjustment, remove brake drum-to-axle shaft flange nuts and remove brake drum.

2) Disconnect wheel bearing retainer (work through hole in axle shaft flange), and remove axle shaft from housing with a sliding hammer type puller. Remove backing plate and secure it to frame.

#### Axle Ratio Identification

Code	Axle Ratio	Ring Gear Diameter
WGG-C	2.73:1	6 3/4"
WGG-D	3.08:1	6 3/4"
WGG-E	3.08:1	6 3/4"

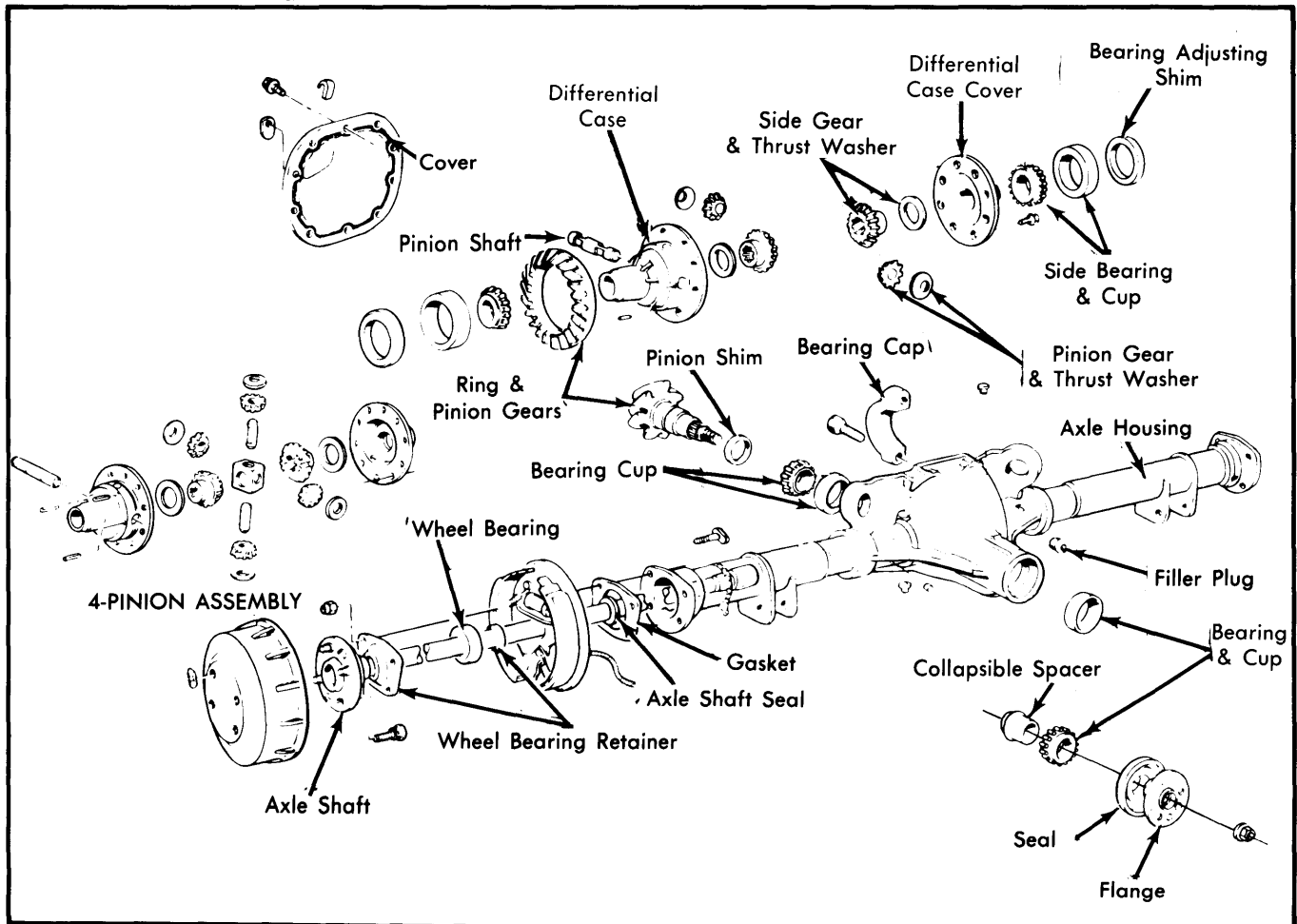


Fig. 2 Exploded View of Ford Motor Co. 6 3/4" Integral Housing Axle Assembly

FORD MOTOR CO. - 6 $\frac{3}{4}$ " RING GEAR (Cont.)

## OVERHAUL

3) Remove seal from axle housing with a suitable puller. To remove bearing from shaft, nick bearing retainer deeply with a chisel, using care not to damage shaft, and remove retainer. Press bearing from shaft using arbor press and suitable tool to hold and support bearing.

**Installation** - 1) Place retainer plate and new bearing onto axle shaft. Press bearing onto shaft with bearing installer until bearing is firmly seated against shaft shoulder. Press bearing inner retainer onto shaft until retainer is firmly seated against bearing.

2) Install new oil seal with installer (T79P-1177-A) into axle housing with sealing lips facing inward. Install gasket and brake backing plate. Carefully slide axle shaft into housing. Install bearing retainer plate on axle housing mounting bolts and tighten nuts. Install drum and wheels. Adjust brakes.

**CAUTION** - Do not try to press bearing and inner retainer on shaft at the same time.

**REAR AXLE ASSEMBLY**

**Removal** - 1) Raise and support vehicle under rear frame crossmember. Loosen axle housing cover and drain lubricant. Remove wheels, brake drums, bearing retainers and axle shafts. Remove brake backing plates and secure backing plates to frame rail. Remove axle shaft seals.

2) Disconnect propeller shaft at companion flange and wire it to underbody. Support axle housing on a jack. Disconnect hydraulic brake lines from axle housing clips. Disconnect axle vent hose from axle housing. Disconnect lower shock absorber studs from axle housing mounting brackets.

3) Remove upper arm retaining bolts, then disconnect upper arms from axle housing ear brackets. Lower axle housing until coil springs are released, then lift out springs. Remove lower suspension arm-to-axle housing bolts, then disconnect lower arms from axle housing. Lower and remove axle housing.

**Installation** - To install, reverse removal procedure and note the following: Install carrier cover with silicone gasket material applied to housing. Silicone sealant should be applied in a  $\frac{1}{8}$ - $\frac{3}{16}$ " continuous bead around housing lip.

**PINION FLANGE & OIL SEAL**

**Removal** - 1) Raise and support vehicle. Scribe alignment marks on propeller shaft and companion flange. Remove propeller shaft, wheels and brake drums. Install an INCH lb. torque wrench on pinion nut. Measure and record pinion bearing preload through several revolutions of pinion flange. Then using a holding tool, hold pinion flange and remove pinion nut.

2) Mark position of companion flange on pinion shaft, then remove flange. Using a slide hammer and seal remover (1175-AC), remove pinion seal from housing.

**Installation** - Install seal with seal installer (T79P-4676-A). Align companion flange-to-pinion shaft marks and install flange. Install new pinion nut. Hold companion flange, then tighten nut, taking frequent preload readings until preload is at original setting. Install propeller shaft, brake drums and wheels.

**CAUTION** - Under no circumstances should pinion nut be backed off to lessen preload. If this is done, a new pinion bearing spacer must be installed and nut retightened until proper preload is obtained. In addition, companion flange must not be hammered on or installed with power tools.

**DISASSEMBLY**

**NOTE** - Differential case and drive pinion may be serviced with axle housing installed in vehicle. However, underbody should be cleaned to prevent dirt contamination.

1) Raise and support vehicle so axle drops down as far as springs and shocks will permit. Remove axle housing cover and drain lubricant. Mount dial indicator. Measure and record ring gear backlash and runout. Remove wheels, brake drums, wheel bearing retainers, axle shafts, propeller shaft, backing plates and axle seals.

2) Mark 1 bearing cap and differential case for reassembly reference and note position of arrow on bearing caps (if equipped). Loosen bearing cap bolts and bearing caps. Pry differential case, bearing cups and shims out until they are loose in bearing caps. Remove bearing caps, then lift out differential case.

**NOTE** - Bearing caps must be installed with arrows pointing in same direction as before disassembly.

3) Mark companion flange in relation to pinion shaft. Hold companion flange and remove pinion nut and flange. Using a soft-faced hammer, drive pinion shaft out of front bearing and remove shaft from rear of carrier. Remove pinion seal and front pinion bearing. Using bearing remover, press rear bearing off pinion shaft. Remove, measure and record thickness of shim under rear pinion bearing.

**NOTE** - Do not remove pinion bearing cups from carrier housing unless cups are worn or damaged. If cups are replaced, bearings must also be replaced.

4) Remove differential side bearings with a puller. Mark differential case, cover and ring gear for reassembly reference. Remove and discard ring gear mounting bolts. Press or tap off ring gear. Remove left differential case half. Drive out differential pinion shaft lock pin with a drift. Drive out pinion shaft, then remove pinion gears, side gears and thrust washers.

**CLEANING & INSPECTION**

1) Clean all parts thoroughly in cleaning solvent. When replacing ring gear and pinion, note original factory shim thickness to adjust for variations in both carrier casting and original gear set dimension.

2) To select correct shim thickness for new gear set, note following: Using micrometer, measure thickness of original shim removed from axle and use same thickness in reassembly of replacement carrier unit or drive pinion. If further shim change is necessary, it will be noted in a tooth pattern check. If original shim is lost, use a nominal shim and make a tooth pattern check.

**CAUTION** - Ring gear and pinion are installed as a matched set. Be sure same identifying number (painted in white) appears on ring gear and pinion head.

**REASSEMBLY**

1) Lubricate all parts with rear axle lubricant. Place side gears and thrust washers into case. Place pinion gears and thrust washers exactly opposite each other in case openings and in mesh with side gears.

## FORD MOTOR CO. - 6 3/4" RING GEAR (Cont.)

2) Turn pinions and thrust washers until holes in pinion gears align with pinion shaft holes in case. Drive pinion shaft into case, aligning shaft lock pin hole with pin hole in case and install lock pin.

3) Position case halves together with marks aligned. Press halves together and install ring gear. Install new ring gear mounting bolts. If bolts are covered with green coating over 1/2" of threaded area, install and tighten bolts. If new bolts do not have green coating, apply small amount of Loctite to bolt threads and tighten bolts.

**NOTE** - Ring gear bolts should not be reused.

**Pinion Depth** - 1) Assemble depth gauge tool (T79P-4020-A) and install aligning adapter, gauge disc and gauge block to screw. Place rear pinion bearing over aligning disc and into bearing cup of carrier housing. Install front pinion bearing into front bearing cup. Place tool handle onto screw and hand tighten. See Fig. 3.

2) Install a .200" gauge disc spacer on ring gear side (left) of case between bearing cup and case. Install a .300" gauge disc spacer on pinion gear side (right) of case between bearing and case. Install bearing caps in original positions and tighten bolts to 30 INCH lbs.

3) Install adjuster rod (T78P-4136-AB) into ring gear side (left) axle tube and retain in position with existing brake backing plate bolts and nuts. Tighten adjuster rod nut to 40 INCH lbs. to move differential case to right side of housing. Rotate differential case several times to seat bearings and recheck adjuster rod nut torque (maintain 40 INCH lbs.).

4) Using a feeler gauge, select thickest blade that will enter between gauge disc and carrier bore on ring gear side of case. Feeler gauge should fit with slight drag. Remove and record feeler gauge thickness. Add .500" to feeler gauge thickness for total shim thickness. See Fig. 4.

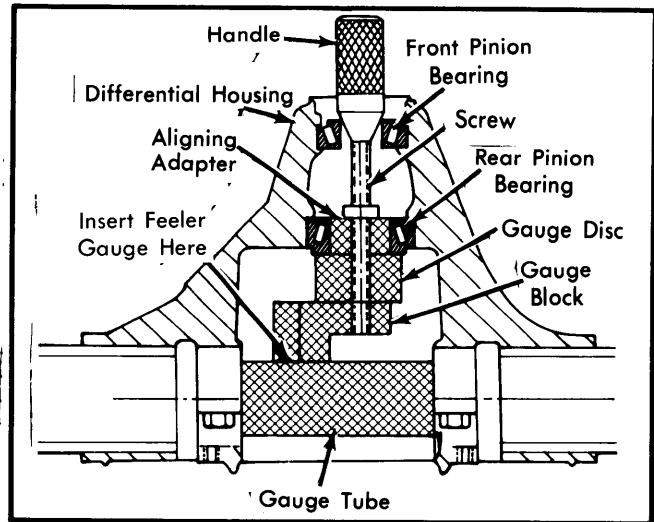
5) Release adjuster rod enough to remove .300" gauge. Remove right bearing cap and .300" gauge. Install bearing preload spacer (T78P-4136-B2) between bearing cup and carrier bore. Reinstall bearing cap and tighten to 30 INCH lbs. Rock ring gear back and forth, while tightening adjuster rod until zero backlash is obtained. Using a feeler gauge, repeat step 4). Add .200" to feeler gauge thickness.

6) Left shim thickness is total shim thickness recorded in step 5) MINUS .008". Right shim thickness is total shim thickness obtained in step 4) MINUS total obtained in step 5) PLUS .016". See *Sample Calculation*.

**NOTE** - Side bearing shims are available in various thicknesses. If shim size required is not available, round DOWN to nearest size available.

### SAMPLE CALCULATION

Feeler Gauge Reading (Step 5)	.....	.086"
PLUS Spacer Thickness	.....	.200"
Total	.....	.286"
MINUS	.....	.008"
EQUALS LEFT Shim Thickness	.....	.278"
Feeler Gauge Reading (Step 4)	.....	.040"
PLUS Spacer Thickness	.....	.500"
Total	.....	.540"
MINUS Total (Step 5)	.....	.286"
EQUALS	.....	.254"
PLUS Preload Constant	.....	.016"
EQUALS RIGHT Shim Thickness	.....	.270"



**Fig. 3 Sectional View Showing Installation of Pinion Depth Measuring Tools**

**Pinion Bearing Preload** - 1) Place pre-selected shim on pinion shaft, then press bearing onto shaft until bearing and shim are firmly seated against shaft shoulder. Install new collapsible spacer on pinion shaft. Lubricate bearings with axle lubricant. Install front pinion bearing in housing, then install new pinion oil seal.

2) Insert companion flange into seal and hold firmly in place. From rear of carrier housing, insert pinion shaft into flange. Start a new pinion nut on pinion shaft and gradually tighten pinion nut (hold flange), checking pinion bearing preload often. As soon as preload is measured, turn pinion shaft in both directions several times to seat bearings.

3) Tighten pinion nut and continue to measure pinion bearing preload until specified pinion torque is obtained. If bearing preload is exceeded before torque specification is reached, replace collapsible spacer, install new pinion nut and repeat procedure. Do not loosen pinion nut to reduce pinion bearing preload.

**Differential Bearing Preload** - 1) Apply thin coating of axle lubricant to bearing bores. Place bearing cups over side bearings and place differential case in housing. If ring and pinion gear set have timing marks, be sure to align timing marks during installation of differential case.

2) Install a .200" gauge disc spacer on ring gear side (left side) of case between bearing cup and case. Install a .300" gauge disc spacer on pinion gear side (right side) of case between bearing and case. Install bearing caps in original positions and tighten bolts to 30 INCH lbs.

3) Install adjuster rod (T78P-4136-AB) into ring gear side (left side) of axle tube and retain in position with existing brake backing plate bolts and nuts. Tighten adjuster rod nut to 40 INCH lbs. to move differential case to right side of housing. Rotate differential case several times to seat bearings and recheck adjuster rod nut torque (maintain 40 INCH lbs.).

4) Using a feeler gauge, select thickest blade that will enter between gauge disc and carrier bore on ring gear side of case. Feeler gauge should fit with slight drag. Remove and record feeler gauge thickness. Add .500" to recorded feeler gauge thickness. See Fig. 4.

## FORD MOTOR CO. — 6¾" RING GEAR (Cont.)

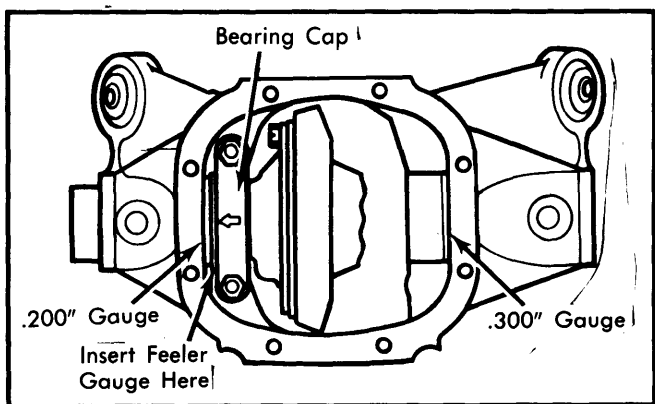
5) Release adjuster rod enough to remove .300" spacer disc. Remove right bearing cap and spacer disc. Install bearing preload spacer (T78P-4136-B2) between bearing cup and carrier bore. Reinstall bearing cap and tighten to 30 INCH lbs. Rock ring gear back and forth while tightening adjuster rod until zero backlash is obtained. Using a feeler gauge, repeat step 4). Add .200" to feeler gauge thickness.

6) Left shim thickness is total recorded reading MINUS .008". Right shim thickness is total feeler gauge thickness recorded in step 4) and step 5) PLUS .200" subtracted from total recorded reading PLUS .016".

**NOTE** — Side bearing shims are available in various thicknesses. If shim size required is not listed, round DOWN to nearest size available.

7) Remove adjuster tool from axle housing. Remove bearing caps, disc spacer and preload spacer from carrier housing. Install carrier spreader and dial indicator. Spread carrier housing .016" (measured at top of housing). Remove dial indicator. Install left shim, push differential case and bearing cap to left and install right shim (tapping with plastic hammer if required). Release spreader and remove from housing.

**NOTE** — Do not exceed differential case spread of .016".



**Fig. 4 View Showing Where to Measure Side Bearing Adjustment Shim Thickness**

**Ring Gear Backlash** — 1) Install bearing caps in original position and tighten to 70-85 ft. lbs. Install dial indicator so plunger contacts ring gear teeth. Measure backlash at 4 locations around ring gear. Backlash should be .008-.015", but readings should not vary more than .004".

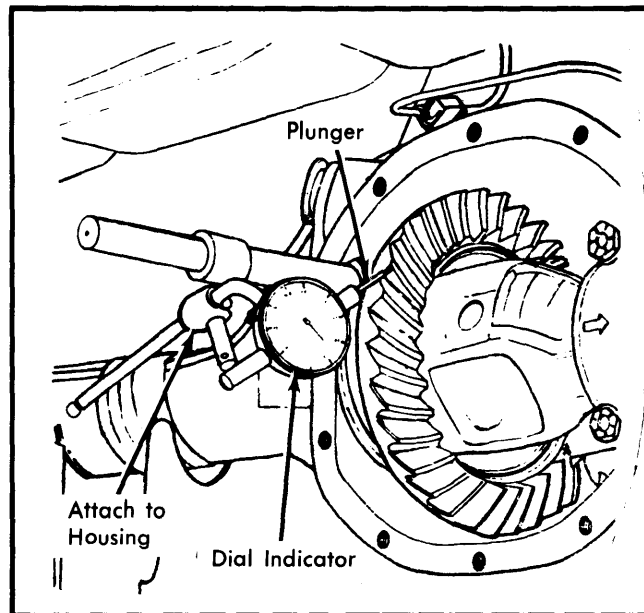
2) To decrease backlash, subtract from right shim thickness and add to left shim thickness. To increase backlash, add to right shim thickness and subtract from left shim thickness. Do not change total shim thickness, simply alter position of shim thicknesses.

### FINAL ASSEMBLY

1) Clean differential case housing lip and apply a continuous bead of silicone sealant. Install cover and tighten bolts. Install

axle shaft seals, backing plates, propeller shaft and axle shafts. Tighten all retaining components.

2) Install wheel bearing retainers, brake drums and wheels. Fill axle with lubricant. Adjust brakes if required.



**Fig. 5 Measuring Ring Gear Backlash**

### AXLE ASSEMBLY SPECIFICATIONS

Application	Specification
Ring Gear Backface Runout .....	.004"
Side Gear Thrust Washer Thickness .....	.030-.032"
Pinion Gear Thrust Washer Thickness .....	.030-.032"
Nominal Pinion Shim Thickness .....	.030"
Ring Gear Backlash .....	.008-.015"
Maximum Backlash Variation Between Teeth .....	.004"
Pinion Bearing Preload	
New Bearings .....	16-29 INCH Lbs.
Used Bearings (Oil Seal Installed) .....	8-14 INCH Lbs.

### TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Bearing Cap Bolt .....	70-85
Ring Gear Attaching Bolts .....	45-60
Pinion Nut .....	140
Rear Axle Bearing Retainer .....	20-40
Rear Cover Bolts .....	25-35