FORD MOTOR CO. – 6¾" RING GEAR

Capri
Mustang

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.

Axle Ratio Identification

Code	Axle Ratio	Ring Gear Diameter
WGG-D	3.08:1	6¾"
WGG-E	3.08:1	6¾"

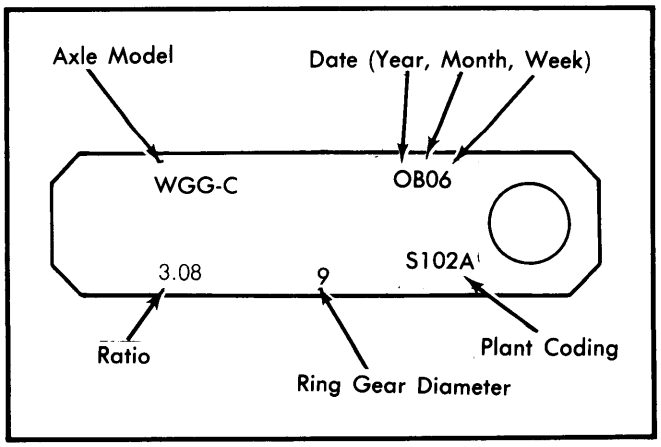

Fig. 1 Ford Motor Co. Rear Axle Identification Tag

REMOVAL & INSTALLATION

AXLE SHAFTS & BEARINGS

NOTE – *When removing axle shafts, make sure that shaft and splines do not scrape or cut axle seal.*

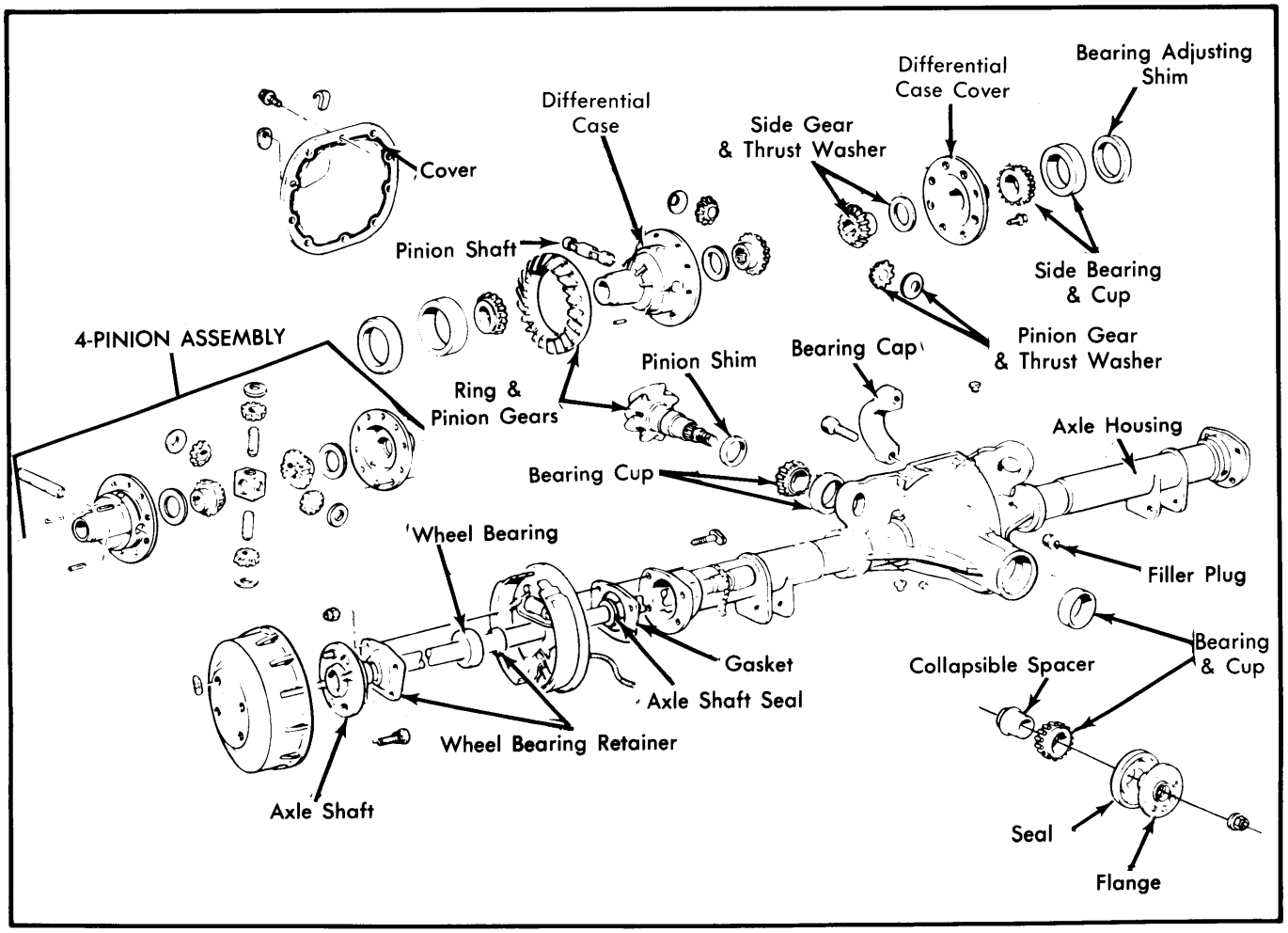

Fig. 2 Exploded View of Ford Motor Co. 6¾" Integral Housing Axle Assembly

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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.

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. Disconnnect 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 ⅛-3/16" continuous bead around housing lip. Refill axle with lubricant.

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.*

OVERHAUL

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

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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.

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 ½" 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.*

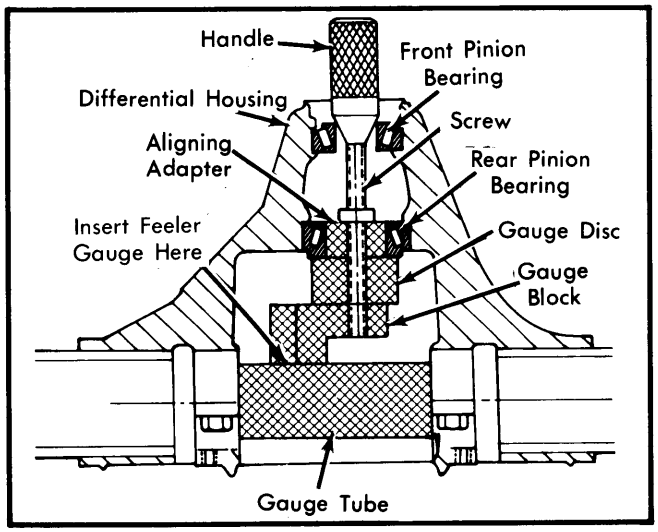

Fig. 3 Sectional View Showing Installation of Pinion Depth Measuring Tools

2) Make sure pinion depth measuring tool is properly installed and tightened. Apply a light film of oil to pinion bearings. Rotate gauge block several times to seat bearings. Rotational torque on gauge block assembly should be 20 INCH Lbs. with new bearings. Final position of gauge block should be 45° above axle shaft centerline.

3) Clean differential bearing bores thoroughly and install gauge tube. Tighten bearing cap bolts. Using flat pinion shims as a gauge for shim selection, hold gauge block in proper position and measure clearance between gauge block and tube. Correct shim selection is accomplished when a slight drag is felt as shim is drawn between gauge block and tube.

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 & Ring Gear Backlash – 1) With pinion depth set and pinion installed, place differential case and gear assembly with bearings and cups into carrier. Install a .265" shim on left (ring gear side) side of differential. Install left bearing cap finger tight.

2) Choose largest shim that will fit with a slight drag and install it on right (pinion gear side) side of differential. Install right bearing cap and tighten all cap bolts to specification. Rotate gear assembly to insure free operation.

3) Check ring and pinion backlash. If backlash is less than specified, add .020" to shim size on right side and subtract .020" from shim size on left side. If backlash is still not within specifications, increase or decrease shim size where necessary to correct reading. *See Fig. 4.* Retorque bearing cap bolts and rotate gear assembly several times. Recheck backlash and correct as necessary.

4) Increase both left and right shim sizes .006" and reinstall for correct preload. Make sure shims are seated and gear assembly turns feely. Using marking compound, check gear tooth contact pattern.

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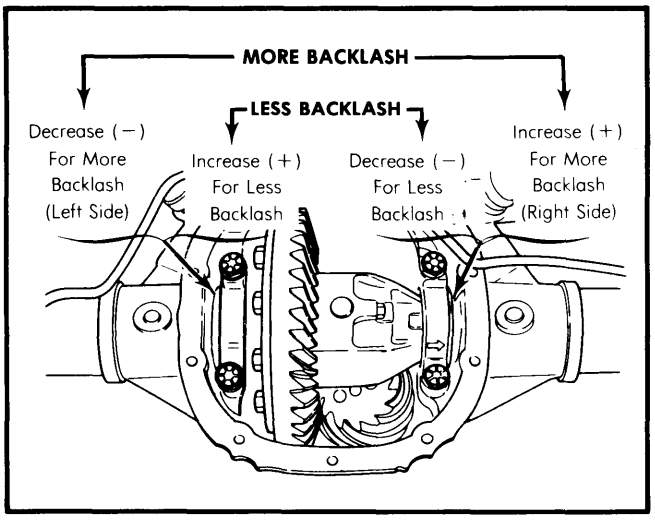

Fig. 4 Backlash Adjustment

Backlash-to-Shim Thickness Conversion

Required Change In Backlash	Change In Shim Thickness
.001"	.002"
.002"	.002"
.003"	.004"
.004"	.006"
.005"	.006"
.006"	.008"
.007"	.010"
.008"	.010"
.009"	.012"
.010"	.014"
.011"	.014"
.012"	.016"
.013"	.018"
.014"	.018"
.015"	.020"

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.

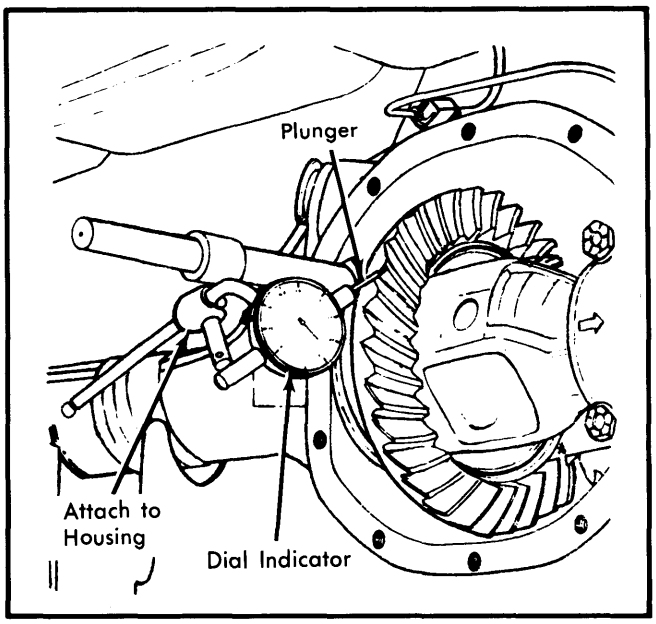

Fig. 5 Measuring Ring Gear Backlash

AXLE ASSEMBLY SPECIFICATIONS

Application	Specification
Capacity	2.5 Pts.
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. (N·m)
Bearing Cap Bolt	70-85 (95-115)
Ring Gear Attaching Bolts	45-60 (60-80)
Pinion Nut	140 (190)
Rear Axle Bearing Retainer	20-40 (27-54)
Rear Cover Bolts	25-35 (34-47)