

1997 Ford Pickup F150

1998 DRIVE AXLES Front Axle - Dana 50 IFS - Pickup F250 Heavy Duty

1998 DRIVE AXLES

Front Axle - Dana 50 IFS - Pickup F250 Heavy Duty

DESCRIPTION & OPERATION

NOTE: On 1998 F250 Heavy Duty 4WD models, front differential may be a Dana 50 differential with Independent Suspension (IFS) or Dana 50/60 with a solid axle housing. If vehicle has a Dana 50 or 60 front differential with a solid axle housing, go to **FRONT & REAR - DANA 50, 60 & 80 DIFFERENTIALS - "F" SUPER DUTY** article. Differential can also be identified by axle code on Safety Certification Label. See **AXLE RATIO & IDENTIFICATION**.

An Independent Front Suspension (IFS) front axle is of integral carrier housing, hypoid gear type. Centerline of drive pinion is mounted above centerline of ring gear. Drive pinion and ring gear bearing adjustments are all accomplished with shims.

Dana 50 IFS axle housing is equipped with front leaf springs and automatic or manual locking hubs. Power is transmitted through transfer case driveshaft to the drive pinion located in the differential carrier housing. See **Fig. 3**. Drive pinion shaft is supported by 2 opposed tapered roller bearings. Power is transmitted from pinion gear through ring gear and differential pinion gears to axle shafts and wheels.

AXLE RATIO & IDENTIFICATION

Axle application can be determined through the axle code on the Safety Certification Label on left door pillar. Additionally, a metal identification tag stamped with gear ratio and diameter is secured to carrier housing.

LUBRICATION

CAPACITY

DIFFERENTIAL LUBRICATION CAPACITY

Application	Pts. (Liters)
Dana 50 IFS	3.8 (1.8)

FLUID TYPE

All models use Hypoid Gear Lubricant (FITZ-19580-A).

TROUBLE SHOOTING

NOTE: See appropriate table in **TROUBLE SHOOTING** article in **GENERAL INFORMATION**.

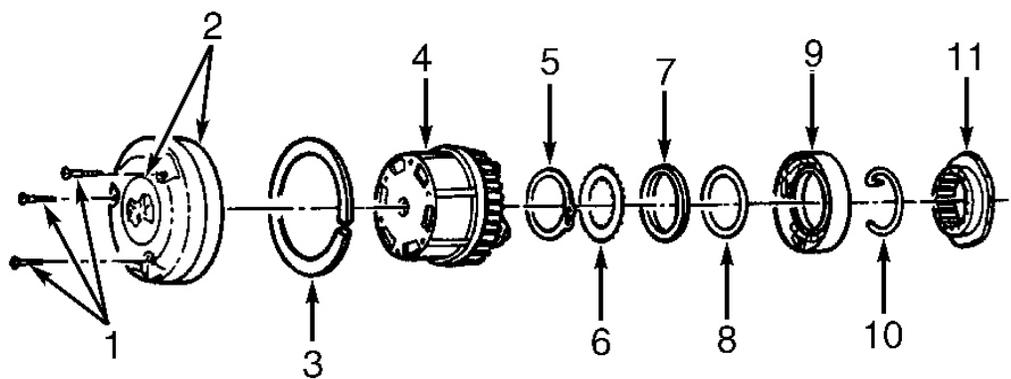
REMOVAL & INSTALLATION

HUBS & BEARINGS

Removal (With Automatic Locking Hubs)

WARNING: Use care in aligning spindle nut lug with center of spindle keyway. Damage to locking key may allow wheel assembly to come off vehicle while in motion.

1. Raise and support front of vehicle. Remove wheels. Using T25 Torx bit, remove locking hub cap assembly screws. Remove cap assembly. Remove lock ring (seated in groove of wheel hub). Remove locking hub assembly from hub and brake rotor assembly. Remove caliper with brake line attached, and wire aside.
2. Remove snap ring. Noting position of thrust washers, remove 3 thrust washers and cam assembly from end of axle shaft (spindle). See **Fig. 1**. Remove wheel bearing retainer key. Using Spanner Lock Nut Wrench (T85T-1197-B), remove wheel bearing retainer nut.
3. Remove hub and brake rotor assembly. Outer bearing will slide off with hub. Remove grease seal and inner bearing. If bearings require replacement, remove races from hub with Internal Puller (T77F-1102-A) and attached slide hammer.



- | | |
|--------------------------|--------------------------------|
| 1. Screws | 7. Plastic Thrust Washer |
| 2. Cap | 8. Steel Thrust Washer |
| 3. Lock Ring | 9. Cam Assembly |
| 4. Locking Hub Assembly | 10. Wheel Bearing Retainer Key |
| 5. Snap Ring | 11. Wheel Bearing Retainer Nut |
| 6. Splined Thrust Washer | |

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Installation & Adjustment

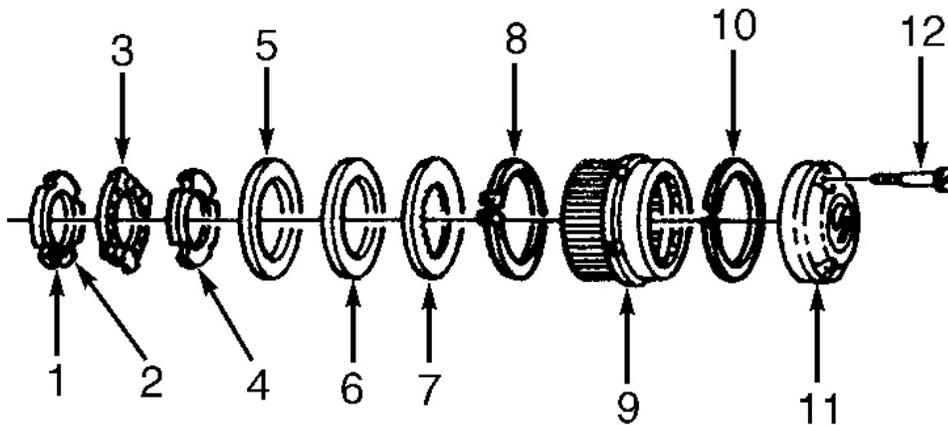
1. If bearings are replaced, drive NEW races into hub. Install inner bearing and seal into hub. Install hub on spindle. Install outer bearing and wheel bearing retainer nut. Using Spanner Lock Nut Wrench (T85T-1197-B), tighten wheel bearing retainer nut to 50 ft. lbs. (68 N.m) while rotating hub.
2. Back off retainer nut about 1/4 turn (90 degrees) and tighten nut to 16 INCH lbs. (1.8 N.m). If necessary, tighten nut to next slot to allow installation of wheel bearing retainer key. Install wheel bearing retainer key by inserting short leg of retainer key into aligned slot of nut. Install cam assembly. Install thrust washers in noted order during removal procedure (metal washer, plastic washer then splined washer). Install lock ring.
3. Align legs of cam assembly for installation of locking hub assembly. Check hub and rotor assembly end play. End play should be 0-.002" (0-.05 mm). Install locking hub assembly. To complete installation, reverse removal procedure.

Removal (With Manual Locking Hubs)

1. Raise and support front of vehicle. Remove front wheels. Remove 3 Torx screws securing locking hub cap assembly. Remove lock ring (seated in groove of wheel hub). Remove locking hub assembly from hub and brake rotor assembly. Remove brake caliper with brake line attached, and wire aside.
2. Remove snap ring. Noting position of thrust washers, remove 3 thrust washers from end of spindle (axle shaft). See **Fig. 2** . Using Spanner Lock Nut Wrench (T85T-1197-A), remove hub bearing outer lock nut, lock washer and inner lock nut. Remove hub and brake rotor assembly. Outer bearing will slide off with hub. Remove grease seal and inner bearing. If bearings require replacement, remove races from hub with Internal Puller (T77F-1102-A) and attached slide hammer.

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- | | |
|--------------------------|--------------------------|
| 1. Pin | 7. Splined Thrust Washer |
| 2. Inner Lock Nut | 8. Snap Ring |
| 3. Lock Washer | 9. Locking Hub Assembly |
| 4. Outer Lock Nut | 10. Lock Ring |
| 5. Steel Thrust Washer | 11. Cap |
| 6. Plastic Thrust Washer | 12. Screws |

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Fig. 2: Identifying Manual Locking Hub Components
Courtesy of FORD MOTOR CO.

Installation & Adjustment

1. If bearings are replaced, drive NEW races into hub. Lubricate bearings with lithium base multipurpose wheel bearing grease. Install inner bearing and seal into hub. Install hub and rotor assemble on spindle.
2. Install inner lock nut. Using torque wrench and Spanner Lock Nut Wrench (T85T-1197-A) tighten inner lock nut to 50 ft. lbs. (68 N.m) while turning hub back and forth. Back off inner lock nut about 1/4 turn (90 degrees).
3. Install lock washer so key is positioned in front spindle groove. Tighten inner lock nut, aligning pin into nearest lock washer hole. Install outer lock nut and tighten to 160-205 ft. lbs. (217-278 N.m). Check hub and rotor assembly end play. End play should be 0-.002" (0-.05 mm). To complete installation, reverse removal procedure.

SPINDLES & AXLE SHAFTS

Removal

1. Raise and support vehicle. Remove locking hub assemblies and hub and rotor. See **HUB BEARINGS**

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under REMOVAL & INSTALLATION. Unbolt spindle from knuckle studs. See **Fig. 3** . It may be necessary to tap spindle with soft mallet to break spindle loose.

2. Remove splash shield. On left side, remove axle shaft and joint assembly by pulling assembly through steering knuckle. On right side, remove keystone clamps holding rubber boot onto right axle shaft and stub shaft. Slide rubber boot onto stub shaft.
3. Pull right axle shaft and joint assembly from splined stub shaft. Clamp spindle in soft-jaw vise on spindle second step. Using slide hammer and seal remover, remove grease seal and needle bearing from spindle. Remove oil seal from axle.

Inspection

Inspect sealing surfaces of spindle for corroded, pitted, worn or galled sealing surfaces. Replace spindle if damaged. Inspect outer shaft of axle for pitted, corroded, worn or galled surfaces in inner oil seal and/or needle bearing areas. Replace outer shaft as necessary.

Installation

1. Clean spindle bearing bores thoroughly. Place bearing into bore with manufacturer's identification facing outward. Drive bearing into spindle using spindle bearing driver and driver handle.
2. Position NEW needle bearing seal with seal lip facing away from spindle. Using driver handle and Seal Replacer (T80T-4000-T), install seal. Coat seal lip and axle shaft splines with multipurpose grease. Install NEW axle shaft oil seal.
3. Slide left axle shaft and joint assembly through knuckle. Ensure shaft splines engage properly inside differential carrier. Install NEW axle shaft seal on right axle if removed.
4. On right stub shaft, install rubber boot with NEW keystone clamps. Install right axle shaft and joint assembly. Ensure wide male spline on axle shaft is aligned with wide tooth space in stub shaft slip yoke. Ensure splines fully engage.
5. Slide rubber boot over assembly junction. Crimp clamps with Keystone Clamp Pliers (T63P-9171-A). Install splash shield and spindle onto knuckle. Tighten spindle retaining nuts to specification. See **TORQUE SPECIFICATIONS** .
6. Pack wheel bearings with lithium base multipurpose wheel bearing grease. Install inner wheel bearing and grease seal into rotor. Position rotor on spindle and install bearing, lock nut, thrust bearing, snap ring and locking hub. Install wheel and tire. Adjust wheel bearings. See **HUBS & BEARINGS** .

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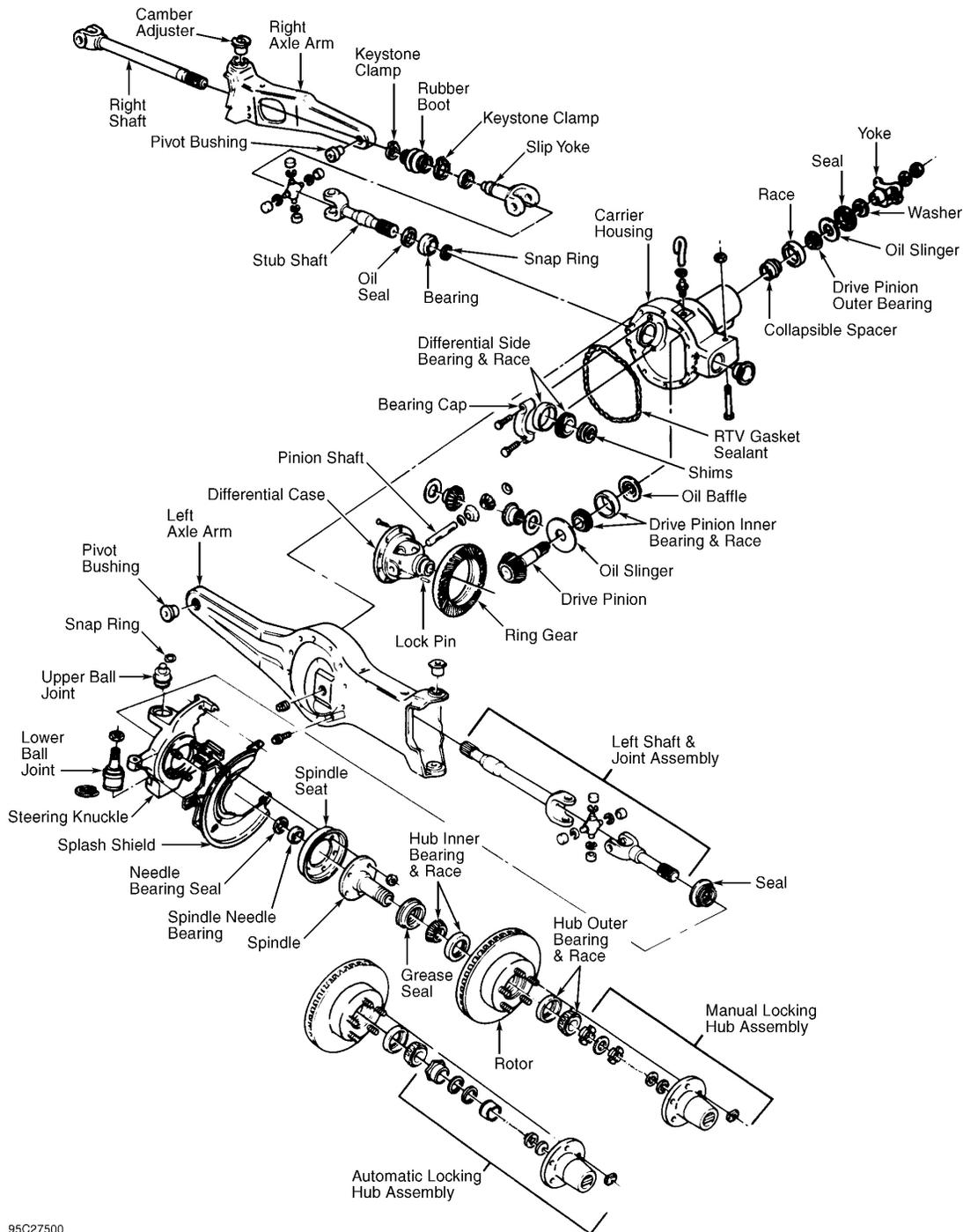


Fig. 3: Exploded View Of Dana IFS Front Drive Axle Assembly
Courtesy of FORD MOTOR CO.

STUB SHAFT & SLIP YOKE, CARRIER & BEARING

Removal

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1. Mark pinion yoke and drive shaft alignment for reassembly reference. Disconnect drive shaft from yoke and wire aside. Remove both spindles and axle shaft assemblies. See **SPINDLES & AXLE SHAFTS** .
2. Support differential carrier and remove bolts holding carrier to support arm. Separate carrier from support arm and drain lubricant. Remove carrier from vehicle. Install carrier into Holding Fixture (T57L-500-B) using Adapter (T90T-4000-A) and Adaptor (T80-4000-B).
3. Rotate slip yoke and stub shaft until open side of snap ring on inner end of stub shaft can be reached. Remove snap ring. Remove stub shaft and slip yoke from carrier assembly. Remove oil seal and caged needle bearings together, using slide hammer and Collet (D80L-100-A).

Installation

1. Ensure bearing bore is clean and has no nicks. Place needle bearing on Needle Bearing Installer (T83T-1244-A). Bearing manufacturer's name and part number should face toward tool when installed into carrier bore.
2. Coat lip of seal with multipurpose grease. Drive seal into carrier. Install slip yoke and stub shaft so that groove on shaft is visible inside differential case.

NOTE: Carrier must be installed on support arm within 5 minutes after applying RTV sealant.

3. Locate screwdriver into snap ring notch and push snap ring into place. DO NOT tap on center of snap ring as ring will be damaged. Clean all sealant, oil and dirt from carrier and support arm. Apply continuous bead of RTV sealant 1/4-3/8" wide on carrier. Bead should not pass over or outside holes.
4. Using jack, install carrier on support arm with guide pins to align carrier. Install and tighten bolts in clockwise pattern to specification. See **TORQUE SPECIFICATIONS** . Install and tighten support arm-to carrier bolts to specification.
5. Install both spindles. Install left and right axle shaft assemblies. See **SPINDLES & AXLE SHAFTS** . Align marks made previously and install drive shaft. Allow RTV sealant to cure for one hour before filling assembly with hypoid gear lubricant.

AXLE PIVOT BUSHING

Removal

Remove carrier housing assembly. See **CARRIER HOUSING ASSEMBLY** . Install Forcing Screw (T78P-5638-A1), Bushing Remover (T80T-5638-A2) and Receiver Cup (T78P-5638-A3) on pivot bushing. Turn forcing screw to remove pivot bushing.

Installation

Place NEW pivot bushing into carrier housing. Using Receiver Cup (T78P-5638-A2), forcing screw and Bushing Replacer (T80T-6538-A2), install bushing. To complete installation, reverse removal procedure.

CARRIER HOUSING ASSEMBLY

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Removal & Installation

1. Raise and support vehicle. Mark drive shaft position for installation reference. Disconnect drive shaft at pinion yoke, and wire aside. Remove tires and wheels. Remove brake calipers. Wire caliper aside without tension on brake hose. Remove stabilizer front stabilizer bar and links from radius arm bracket. Place jack under right axle arm assembly. Remove 2 "U" bolts holding shock absorber mounting plate and leaf springs to tube and yoke assembly.
2. Disconnect vent tube. Remove vent fitting and install 1/8" pipe plug. Remove pivot bolt holding right axle arm to crossmember. Remove keystone clamps from rubber boot. Move rubber boot off axle shaft assembly onto slip joint. Remove right axle arm assembly.
3. Pull right axle shaft out of slip joint. Place jack under left axle arm assembly. Remove 2 "U" bolts holding shock absorber mounting plate and leaf springs to tube and yoke assembly. Place jack under differential housing. Remove pivot bolt holding left axle arm assembly to crossmember. Remove left axle arm assembly. To install, reverse removal procedure. Check alignment and adjust, if necessary.

OVERHAUL

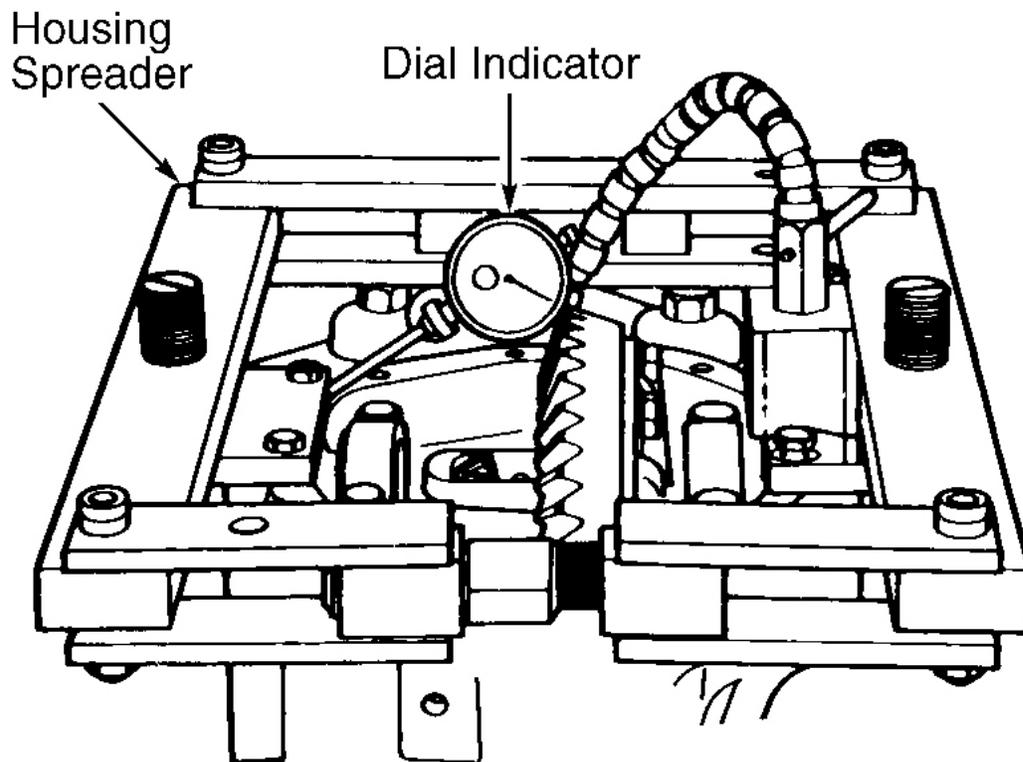
DIFFERENTIAL ASSEMBLY

Disassembly

1. With carrier housing removed from vehicle, remove differential carrier from axle arm. Note matched numbers or letters on differential bearing caps for reassembly reference. Remove bearing caps. Install Housing Spreader (4000-E) and Spreader Adapter (T80T-4000-B). See **Fig. 4**.

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Fig. 4: Spreading Differential Carrier Housing
Courtesy of FORD MOTOR CO.

2. Rotate slip yoke and shaft assembly so open side of snap ring on shaft is exposed. Remove snap ring from shaft. Remove slip yoke and shaft assembly from carrier. Mount dial indicator on carrier housing to measure amount of spread.

CAUTION: DO NOT spread carrier housing more than .010" (.25 mm). Permanent damage to housing could result.

3. Spread carrier housing to a maximum of .010" (.25 mm). Remove dial indicator. Carefully pry differential assembly out of housing. Remove spreader immediately so housing does not distort permanently. Place carrier assembly into holding device. Using Yoke Holder (T78P-4851-A), hold yoke while removing drive pinion nut and washer.

NOTE: Pinion bearing adjusting shims may remain on pinion shaft, stick to bearing or fall loose. Collect shims and save for reassembly.

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4. Using Yoke Remover (T65L-4851-B), remove yoke from drive pinion. If yoke shows wear in seal contact area, replace yoke. Remove drive pinion by tapping with soft-face mallet. Remove and discard drive pinion oil seal. Remove pinion outer bearing and oil slinger. Drive out drive pinion inner bearing race using pinion bearing race remover and driver handle.

NOTE: If oil baffle or slinger is damaged during disassembly procedure, measure them and replace with NEW units during reassembly. Baffle and slinger affect pinion depth and preload adjustments and are included in shim pack thickness.

5. Remove shims and oil baffle from bearing bore. Mark and keep shims and baffle together. Turn carrier over and drive out pinion outer bearing race using bearing race remover and driver handle. Place Universal Bearing Remover (D81L-4220-A) in vise to secure tool while removing differential side bearings.
6. Use Step Plate (D80L-630-5) under bearing to protect bearing from puller. Keep bearings, bearing races and shims in sets, marked as to location on carrier. Place differential case in vise with rags underneath to protect ring gear. Remove and discard ring gear bolts.
7. Tap ring gear with soft-faced mallet to remove ring gear from case. Using drift and hammer, drive out pinion shaft lock pin. Remove pinion shaft. Rotate side gears until pinion gears are aligned with case opening. Remove pinion gears and spherical washers. Remove side gears with thrust washers.

Cleaning & Inspection

1. Clean all components in solvent. Allow bearings to air dry. DO NOT spin bearings under air pressure. Damage will occur. Inspect all machined surfaces for smoothness or raised edges. Inspect all gear teeth for wear or chipping and replace as necessary.
2. Check all bearings and races for nicks, roller end wear, grooves or other damage. Replace as needed. Check pinion yoke for wear in seal contact area. Replace as necessary. Check differential pinion shaft, pinion gears, side gears and thrust washers for wear or damage. Replace all defective parts. Pinion gears must be replaced as sets.

Reassembly & Adjustments

1. When reassembling ring and pinion assembly, pinion depth, pinion bearing preload, side bearing preload and backlash between ring and pinion must be adjusted.

NOTE: Old pinion shaft shim pack dimensions MUST be determined accurately to use PINION DEPTH SHIM ADJUSTMENT CHART in illustration. See Fig. 6 . If original shim pack dimension cannot be determined or if the carrier housing is new, see DRIVE PINION DEPTH .

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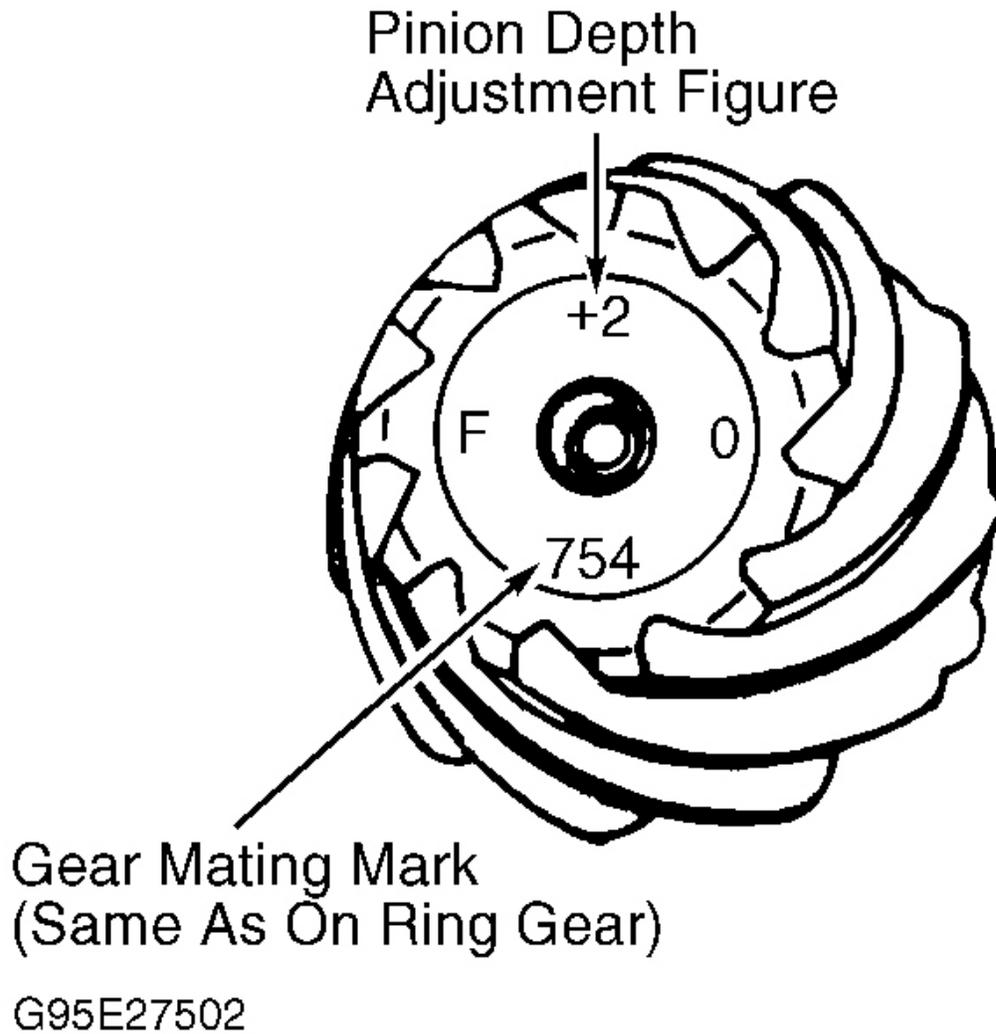


Fig. 5: Locating Pinion Gear Markings
Courtesy of FORD MOTOR CO.

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PINION DEPTH SHIM ADJUSTMENT CHART (INCHES)

Old Pinion Marking	New Pinion Marking								
	-4	-3	-2	-1	0	+1	+2	+3	+4
+4	+0.008	+0.007	+0.006	+0.005	+0.004	+0.003	+0.002	+0.001	0
+3	+0.007	+0.006	+0.005	+0.004	+0.003	+0.002	+0.001	0	-0.001
+2	+0.006	+0.005	+0.004	+0.003	+0.002	+0.001	0	-0.001	-0.002
+1	+0.005	+0.004	+0.003	+0.002	+0.001	0	-0.001	-0.002	-0.003
0	+0.004	+0.003	+0.002	+0.001	0	-0.001	-0.002	-0.003	-0.004
-1	+0.003	+0.002	+0.001	0	-0.001	-0.002	-0.003	-0.004	-0.005
-2	+0.002	+0.001	0	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006
-3	+0.001	0	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.007
-4	0	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.007	-0.008

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Fig. 6: Pinion Depth Shim Adjustment Chart
Courtesy of FORD MOTOR CO.

2. If only pinion shaft and ring gear are to be replaced and carrier housing can be reused, compare pinion depth adjustment numbers etched into faces of old and NEW pinion heads. See **Fig. 5** . Using PINION DEPTH SHIM ADJUSTMENT CHART, select correct shims for new pinion shaft depth adjustment. See **Fig. 6** .
3. Pinion depth adjustment number is determined by manufacturer at time of assembly. Number represents nominal distance that pinion shaft deviates from distance between pinion gear face and centerline of axle. Nominal distance is measured from centerline of ring gear to face of gear on drive pinion shaft.
4. Ring gear and pinion gear are supplied in matched sets only. Matching numbers are etched on ring and pinion gears. If new gear set is being used, verify matching gear set numbers. See **Fig. 5** . Pinion Depth Gauge Set (T80T-4020-A) allows shim pack adjustment without having to remove and replace differential bearings when setting up shim packs. See **Fig. 7** .

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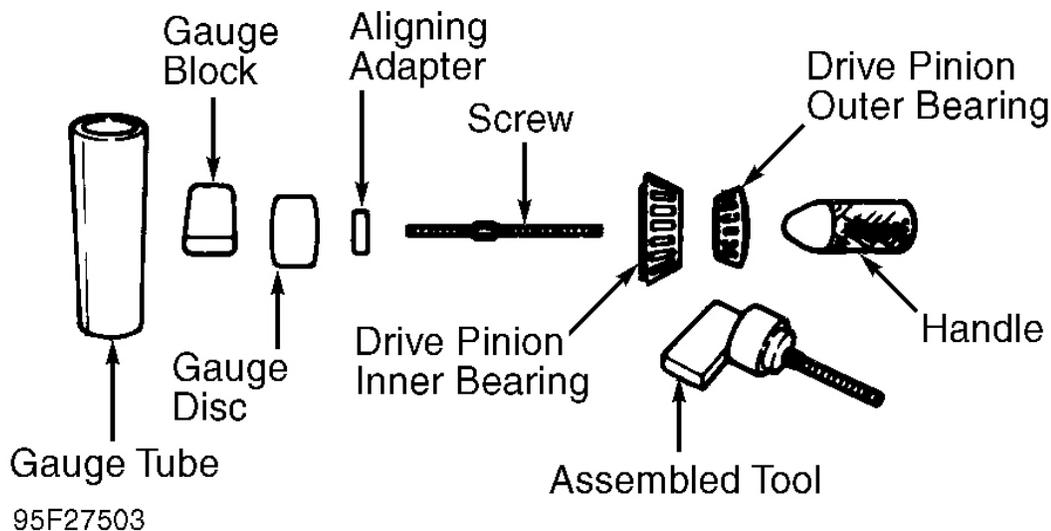


Fig. 7: Identifying Pinion Depth Gauge Set (T80T-4020-A)
Courtesy of FORD MOTOR CO.

DIFFERENTIAL CASE

1. Place differential case into vise. Use multipurpose grease to lubricate side gears, pinion gears and all thrust washers. Install components into differential case. Rotate side gears until holes in pinion gears and washers line up with holes in case.
2. Install differential pinion shaft. Install lock pin. Using a punch and hammer, peen metal of differential case over lock pin at 2 locations, 90 degrees to the left and right of lock pin slot.
3. Install ring gear and tighten **NEW** bolts evenly to specification. See **TORQUE SPECIFICATIONS** . Install Master Differential Bearings (D81T-4222-C) on differential case.
4. Install case (without shims) into carrier housing. Install side bearing caps. Mount dial indicator with indicator tip at 90 degrees to flat surface on head of ring gear bolt or flat machined surface of ring gear. Measure and record amount of end play of differential case by moving case back and forth with screwdriver. See **Fig. 8** .
5. This measurement is total differential case end play and will be used later to determine proper shim pack dimension. Remove case from housing. Leave master bearings on case at this time.

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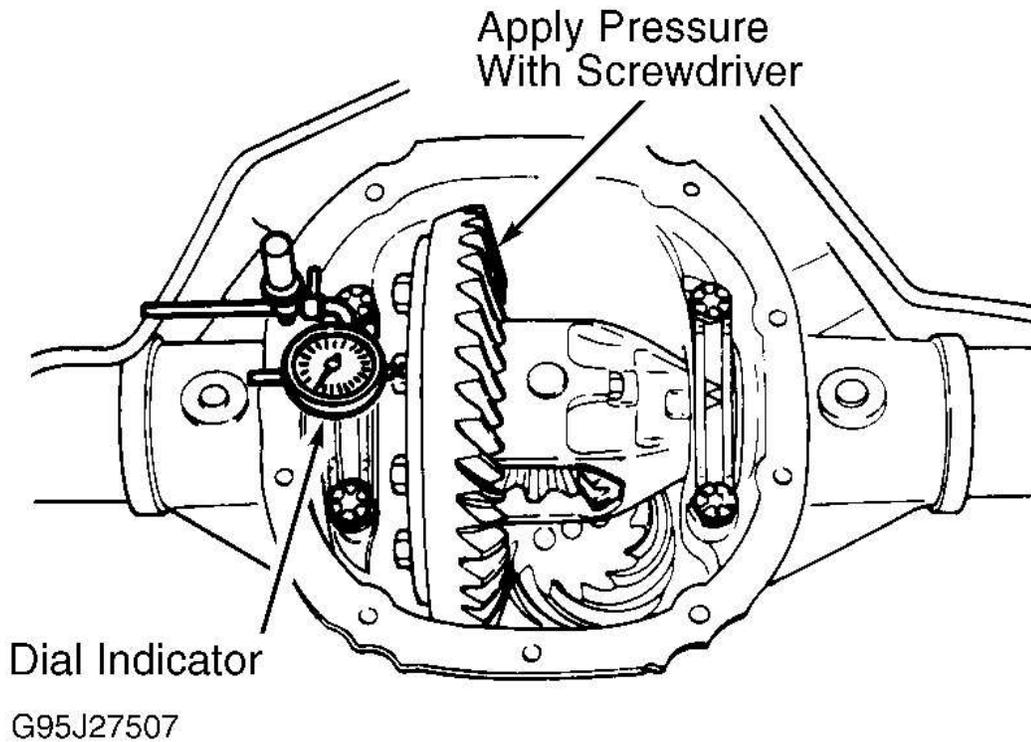


Fig. 8: Measuring Differential Case End Play
Courtesy of FORD MOTOR CO.

DRIVE PINION BEARING RACE INSTALLATION

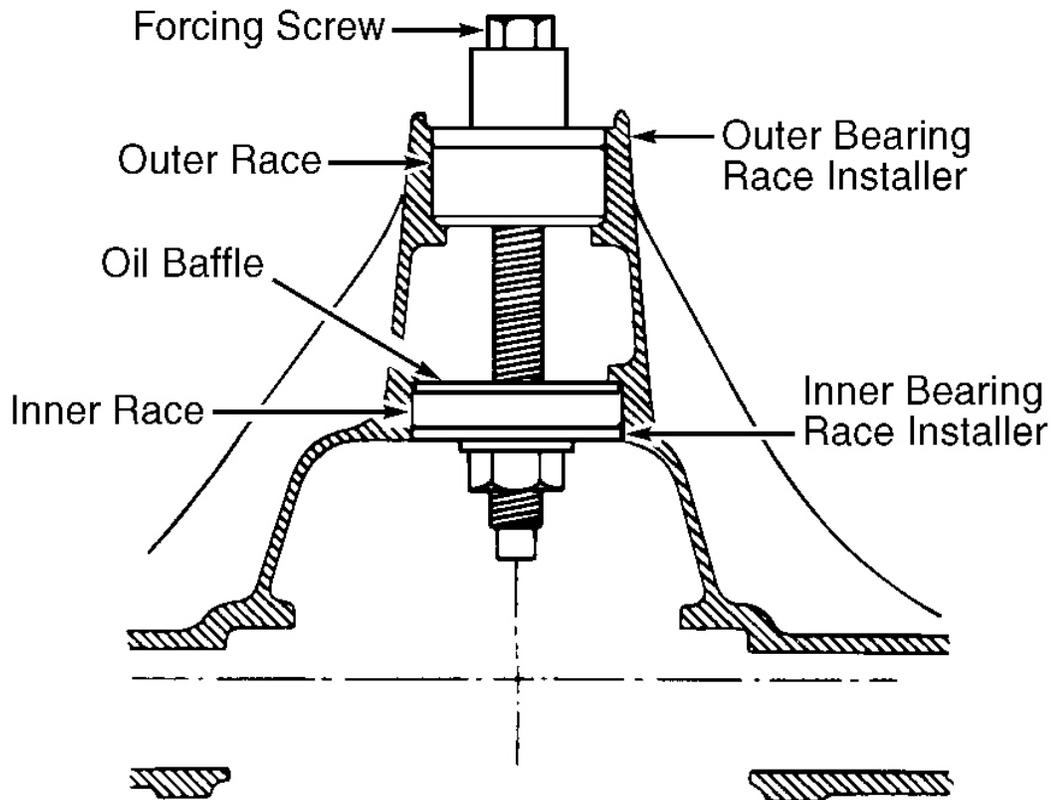
1. Place pinion inner and outer bearing races into bores of carrier. Place inner race installer on inner bearing race. See **Fig. 9** . See **PINION BEARING RACE INSTALLER & FORCING SCREW** table.
2. Place outer race installer on outer bearing race. Install forcing screw through bearings. Tighten screw until both bearing races are seated in carrier bore.

PINION BEARING RACE INSTALLER & FORCING SCREW

Application	Tool Number
Forcing Screw	T75T-1176-A
Pinion Bearing Race Installer	
Inner Bearing Race	T80T-4000-F
Outer Bearing Race	T80T-4000-E

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Fig. 9: Identifying Pinion Bearing Race Installer
Courtesy of FORD MOTOR CO.

DRIVE PINION DEPTH

1. Place NEW drive pinion inner bearing on aligning adapter and assemble using gauge disc. See **Fig. 6**. See **PINION DEPTH GAUGE** table. Place pinion outer bearing (new or good used) into race. Place depth gauge assembly into housing with screw extending through outer bearing.

NOTE: Tools in Pinion Depth Gauge Set (T80T-4020-A) must be checked before each use for nicks or damage. Any high spots on tools must be removed to ensure accurate readings.

PINION DEPTH GAUGE

Application	Tool Number
Aligning Adapter	T75P-4020-A2
Gauge Block	T80T-4020-F42

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Gauge Disc	T80T-4020-F40
Gauge Tube	T80T-4020-F41
Handle	T76P-4020-A11
Screw	T80T-4020-F43

2. Thread handle onto screw finger tight. Using 3/8" drive torque wrench in square drive on handle, tighten handle until preload on bearings is 20-40 INCH lbs. (2.3-4.5 N.m). Center gauge tube in side bearing bore. Install side bearing caps and tighten bolts to specification. See **TORQUE SPECIFICATIONS** .
3. Place gauge block on top face of drive pinion underneath gauge tube. Determine clearance between gauge block and gauge tube using feeler gauge. Correct feeler gauge will give feeling of slight drag as gauge passes between tube and block.

NOTE: Pinion inner bearing used during depth measurement procedure must be used for final assembly. Oil slinger and/or baffle (if equipped) are to be measured as part of shim pack.

4. Thickness of correct feeler gauge is thickness of shim pack to be installed under inner bearing race, if drive pinion has zero marking. If drive pinion has plus (+) marking on face, subtract that number from thickness dimension. If drive pinion has minus (-) marking on face, add that number to thickness dimension.
5. Remove pinion inner bearing race and install shim pack with oil baffle (if equipped) into carrier bearing bore. Reinstall inner bearing race into carrier. Press drive pinion inner bearing and oil slinger (if equipped) on drive pinion, using axle bearing/seal plate, appropriate pinion bearing replacer and arbor press.

DRIVE PINION BEARING PRELOAD & FINAL DEPTH CHECK

CAUTION: Always use NEW collapsible spacer when reassembling drive pinion. DO NOT tighten pinion yoke nut more than 350 ft. lbs. (475 N.m), as collapsible spacer will be compressed too far.

1. Measure original preload shim pack and replace with NEW shims of equal thickness. Install drive pinion into carrier. Install NEW preload shim pack on pinion shaft. Install outer bearing and oil slinger. Install drive pinion yoke with washer, deflector, slinger and NEW nut using Yoke Installer (T78T-4851-A).
2. Tighten pinion yoke nut to 180-200 ft. lbs. (244-271 N.m). Using Torque wrench, check rotational torque necessary to turn drive pinion. Torque reading should be 20-40 INCH lbs. (2.3-4.5 N.m) if preload is correct. If preload reading is too low, remove preload shims from drive pinion. If preload reading is too high, add preload shims to drive pinion.
3. Install appropriate gauge tube. Install side bearing caps and tighten bolts to specification. See **TORQUE SPECIFICATIONS** . With drive pinion at correct depth, remove pinion yoke with holder and yoke remover. Coat pinion yoke oil seal with hypoid gear oil. Install seal using Oil Seal Replacer (T80T-4000-C).
4. Ensure spring behind lip of seal does not jump out while seal is being installed. If spring does jump out, remove and replace seal. Install drive pinion yoke and tighten nut.

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RING & PINION GEAR BACKLASH

1. With drive pinion depth and preload adjustments properly made, install differential case into housing. Differential master bearings should still be on case. Ensure differential case is fully seated in carrier bores. Set dial indicator so that tip is against head of ring gear mounting bolt at 90-degree angle to bolt.
2. Rock ring gear so that teeth of ring gear mesh fully with drive pinion gear teeth. Force ring gear teeth against drive pinion gear teeth and zero dial indicator. Force ring gear and case away from drive pinion gear. Note dial indicator reading. Repeat this procedure until same reading is obtained each time.
3. This reading is thickness of shim pack that must go under differential side bearing on ring gear side of case. Remove master bearings. Place shim pack of correct thickness on ring gear hub.
4. Drive side bearing onto case using Side Bearing Installer (T80T-4000-J). Subtract thickness of shim pack installed on ring gear side of case from total differential case end play. Total differential case end play was recorded in step 4 under DIFFERENTIAL CASE.
5. Add .010" (.25 mm) preload to remaining end play figure obtained in previous step. Total is thickness of shim pack that is to be installed on hub of differential case opposite ring gear (drive pinion side of case).
6. Place shim pack on case hub and drive side bearing onto case using side bearing installer. Support case with Step Plate (D80L-630-5) to protect side bearing already installed on ring gear side of case. Install housing spreader and dial indicator on carrier housing. Spread housing maximum of .010" (.25 mm). Remove dial indicator.
7. Place side bearing races on side bearings. Install case into carrier housing. Use soft-face hammer to seat case assembly in carrier bore. If partial and non-hunting/partial ring and pinion gear set is being used, line up mating marks on gears. Remove housing spreader and dial indicator.
8. Install side bearing caps. Ensure letters stamped on caps match letters stamped on housing. Tighten bearing cap bolts to specification. See **TORQUE SPECIFICATIONS** . Check ring and pinion gear backlash in 3 places equally spaced around ring gear. Backlash range is .005-.009" (.13-.23 mm) with maximum variation between 3 measurements of .003" (.08 mm).
9. To change backlash readings, move shims from one side of differential case to other. Total thickness of end play shim packs must not change. When backlash adjustment is completed, check tooth contact pattern. See GEAR TOOTH CONTACT PATTERNS article in GENERAL INFORMATION.
10. When backlash is correct, apply bead of sealant to mating surfaces of carrier mounting face support arm. Bead should be 1/8" to 1/4" high and 1/4" to 1/2" wide. Using 2 guide pins, install carrier on left axle arm assembly.
11. Use NEW carrier bolts with adhesive-treated threads or clean old bolts and apply locking compound. Tighten carrier bolts. Install and tighten support arm tab bolts on side of carrier. Allow one hour curing time for sealant. Fill assembly with hypoid lubricant.

TORQUE SPECIFICATIONS

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Application	Ft. Lbs. (N.m)
Axle Pivot Bolt	120-150 (163-203)
Axle Pivot Bracket-To-Frame Nut	70-92 (95-125)
Differential Carrier-To-Carrier Housing Bolt	30-40 (41-54)

1997 Ford Pickup F150

1998 DRIVE AXLES Front Axle - Dana 50 IFS - Pickup F250 Heavy Duty

Drive Shaft Nut	8-15 (11-20)
Pinion Shaft Yoke Nut	180-200 (244-271)
Ring Gear Bolt	95-105 (129-142)
Side Bearing Cap Bolt	80-90 (108-122)
Spindle-To-Knuckle Nut	60 (81)
Support Arm-To-Carrier Housing Bolt	100 (136)
Tie Rod Nut	50-75 (68-102)
Wheel Lug Nuts	140 (190)