

Positive Traction Differentials

FORD TRACTION-LOK

Bronco, E100/150, F100/150, Rear Axle

DESCRIPTION

Traction-Lok positive traction differential uses a multiple disc clutch to control differential action. Side gear mounting shims, friction discs, composite plate, clutch hub and guides are housed in differential cover.

Located in differential case, between side gears, is a 1-piece preload plate, block assembly, and 4 calibrated preload springs which apply an initial force to clutch pack.

Additional clutch capacity is derived from side gear thrust loads. Traction-Lok differential can have either 2 or 4 differential pinion gears.

AXLE RATIO & IDENTIFICATION

To determine the drive axle ratio, refer to *Drive Axle Ratio Identification* in this Section.

LUBRICATION

Check level of lubricant every 5,000 miles or 5 months. Manufacturer recommends no specific drain and refill interval. Use only Ford Hypoid Gear Lubricant.

TESTING ON VEHICLE

Raise 1 wheel, leaving opposite wheel firmly on ground. Install adapter and torque wrench to wheel mounting studs. With transmission in "N", note torque required to keep wheel rotating through several revolu-

tions. Torque should be at least 40 ft. lbs. (54 N.m). Disregard initial starting torque.

REMOVAL & INSTALLATION

REMOVAL

1) Position safety stands under rear frame members, and support housing with either a floor jack or hoist. Disengage brake line from clips retaining it to housing.

2) Disconnect vent tube from housing. Remove brake backing plate assemblies from housing, and support with wire.

3) Do not disconnect brake line. Disconnect each rear shock absorber from mounting bracket stud on housing bracket. Lower axle slightly to reduce spring tension. At each rear spring, remove "U" bolt nuts, "U" bolts, and spring seat caps.

INSTALLATION

Reverse removal procedure, to complete installation.

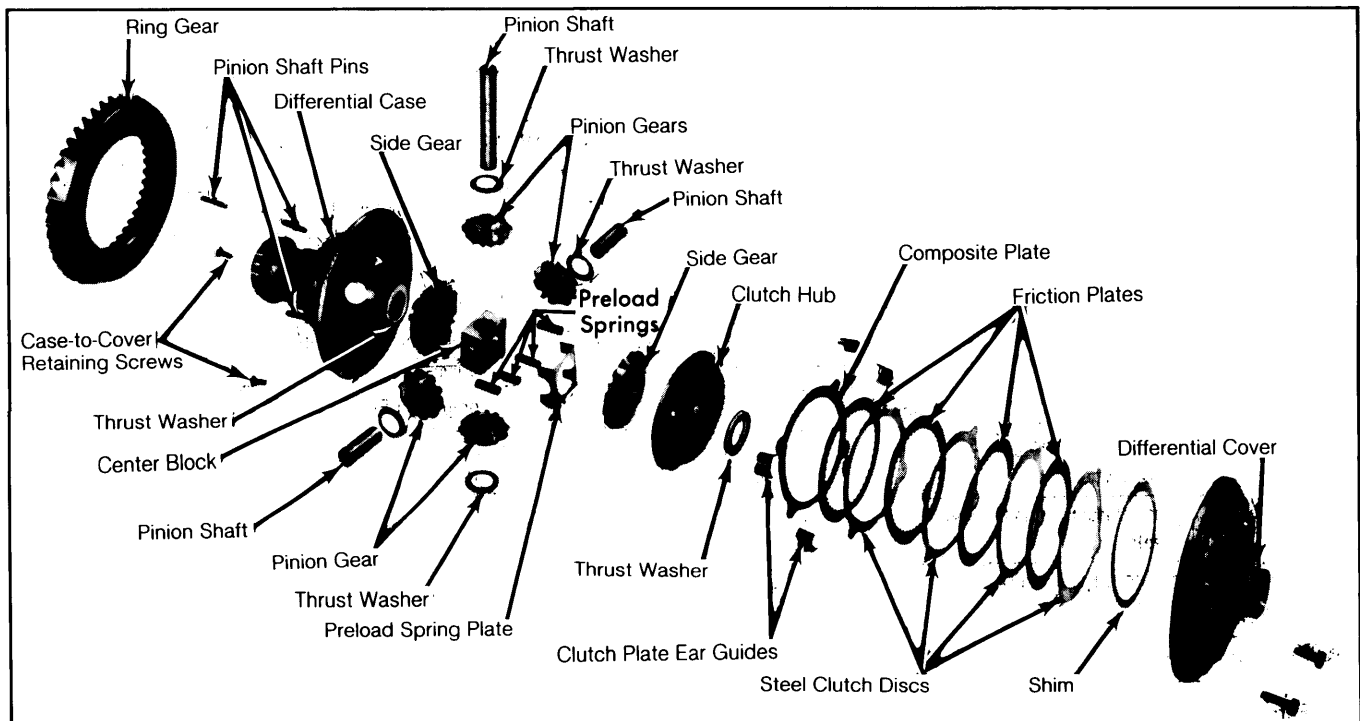
OVERHAUL

DISASSEMBLY

1) Press differential bearings from journals on case. Remove ring gear attaching bolts, and tap gear from case using a soft-faced hammer.

2) Place differential assembly in press to load case halves so preload of springs is overcome, approximately 1000 lbs. (4455 N).

Fig. 1: Exploded View of Typical Ford Traction-Lok Differential Assembly



FORD TRACTION-LOK (Cont.)

3) If press is not available, two $\frac{1}{16}$ " bolts and nuts can be used in ring gear mounting holes (1 on each side) to compress case halves and overcome preload tension.

4) With case under pressure, loosen 2 case-to-cover retaining screws until 1 or 2 threads of each remain engaged. Release pressure, tap on cover to spring it loose. Remove 2 screws.

5) With cover facing down, lift off case. Remove preload spring plate and 4 preload springs. From cover, remove side gear, 4 clutch plate ear guides, clutch hub, friction plates, steel clutch discs and shims.

6) Using a drift, drive out pinion shaft lock pins from case. Drive long pinion shaft from case, working from end opposite lock pin hole. Remove 2 short pinion shafts, working from center outward.

7) Lift out thrust block, remove pinion gears, thrust washers, side gear and side gear thrust washer.

INSPECTION

1) Inspect clutch plates for unevenness or wear. Dog-eared plates must be free of burrs, nicks or scratches. Inspect internally splined clutch plates for condition of bond, bonding material, and wear.

2) Replace bonded plates if thickness is less than .085" (2.16 mm), or if plates are badly worn. Inspect all thrust surfaces and hubs for wear.

REASSEMBLY

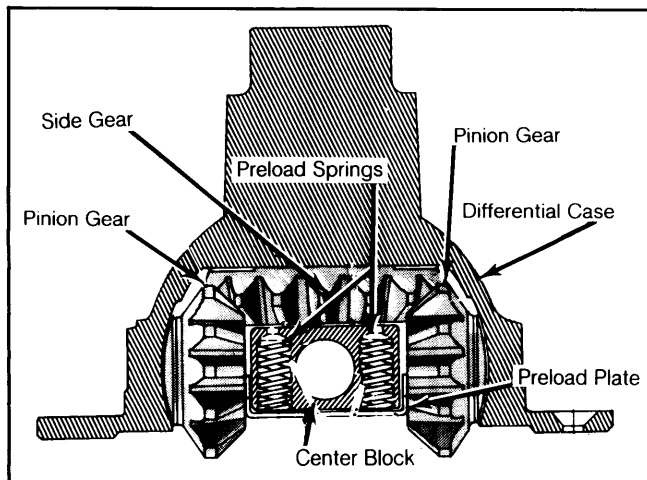
1) Lubricate all parts with hypoid gear lubricant prior to assembly. Mount differential case in soft-jawed vise and place a side gear thrust washer and a side gear into counterbore in case.

2) Install pinion thrust washers, and place pinion gears on side gear, aligning holes in washers and ears with holes in case. Install center block so holes in block are aligned with holes in pinion gears and case.

3) Using a brass drift, drive pinion shafts into position from outside of case, making sure lock pin holes in shafts are aligned with corresponding holes in case.

4) Install shaft lock pins, making sure pinion and side gears move freely. Place 4 preload springs in holes provided in center block. Position preload plate over springs, making sure springs are properly seated.

Fig. 2: Sectional View of Center Block Installation



Center block has 2 machined and 2 rough surfaces.

5) Preload plate straddles center block over its narrower, or machined, width. Center block has 2 machined sides and 2 rough sides. Long shaft is driven through rough side, and short shaft is driven through machined side.

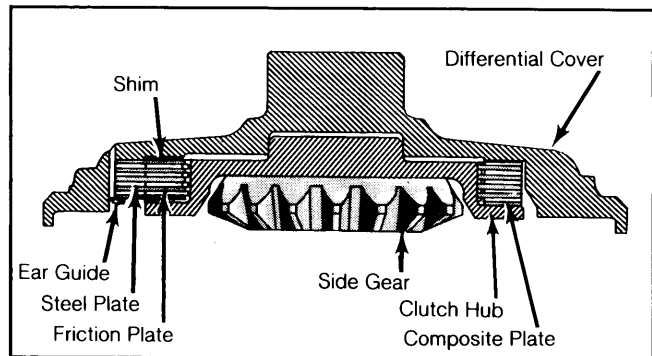
6) Mount differential cover in soft-jawed vise. Insert shim(s) of .050" (1.27 mm) total thickness in cover cavity. Install composite plate on back side of clutch hub, with friction material against hub.

7) Install friction plates and steel discs alternately onto hub, beginning with friction plate and ending with steel disc. When new plates are used, soak in hypoid gear lubricant for 30 minutes before installation.

8) Place clutch hub with clutch plate into clutch gear cavities in differential cover, making sure splines on last friction plate are engaged on hub. Using a $\frac{5}{8}$ x $2\frac{1}{2}$ " bolt, compress clutch pack, and place shim template tool (T68P-4946-A) in clutch hub.

9) Some clearance should be observed between shim tool and cover-to-case mating surface. Using a feeler gauge, measure clearance. Refer to shim pack thickness chart to determine correct amount of shims to subtract from .050" (1.27 mm) shim pack originally installed.

Fig. 3: Sectional View of Clutch Pack Installation



Shown with all clutch plates installed.

SHIM PACK THICKNESS

Gauge Reading	Correction	Total Shims
.001-.002"	None	.050"
.003-.007"	.005"	.045"
.008-.012"	.010"	.040"
.013-.017"	.015"	.035"
.018-.022"	.020"	.030"
.023-.027"	.025"	.025"
.028-.032"	.030"	.020"
.033-.037"	.035"	.015"
.038-.042"	.040"	.010"
.043-.047"	.045"	.005"
.048-.050"	.050"	None

10) Install selected shim in cover cavity, and install internal components as before. In order to correctly select proper shim, template tool must be used. Install 4 steel clutch ear guides and side gear.

11) Place both assemblies in press, force both halves together, and install cover-to-case screws. Install ring gear and ring gear attaching bolts. Tighten to 70-85 ft. lbs. (95-116 N.m).