

EATON

Detroit Truetrac Limited Slip Differential Front axle installation instructions



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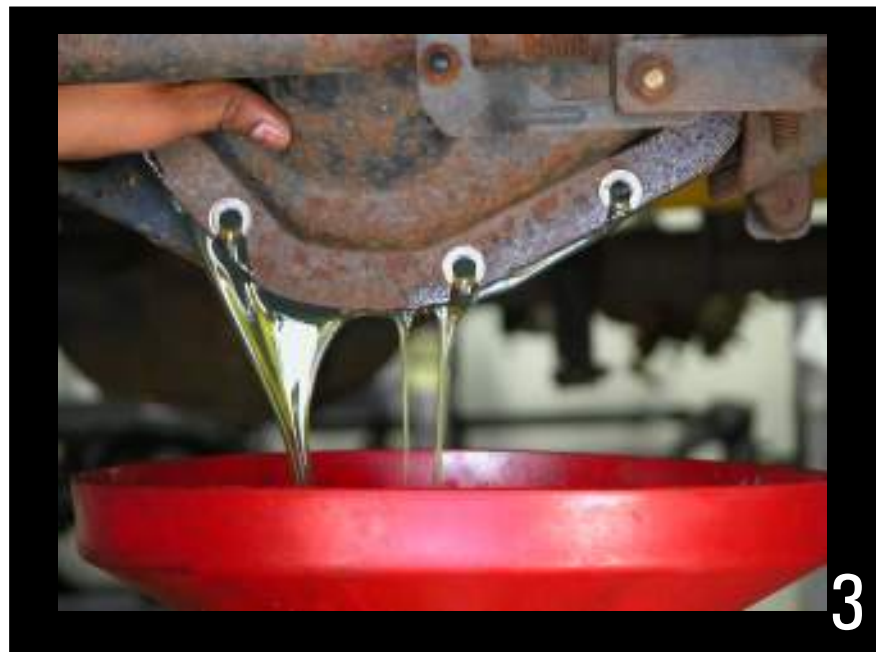
1

Prior to installation, be sure to have all of the proper installation components necessary for the job.



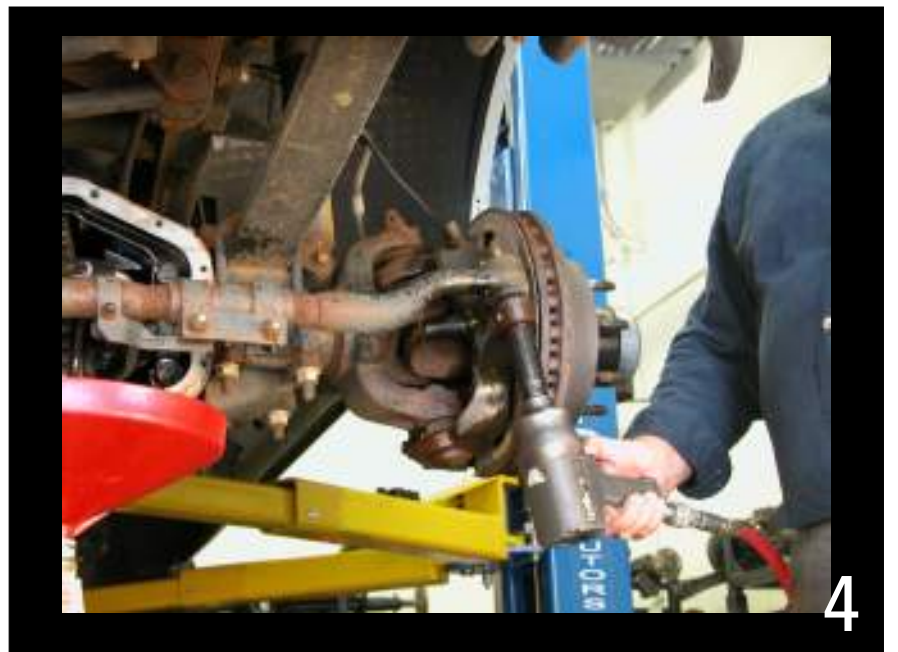
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Remove differential cover. You may need to use an Allen Wrench to remove one of the bolts.



3

Remove cover and drain fluid, leave top bolts in place to prevent splashing.



4

Remove tires. Remove left side tire rod and move stab bar out of the way.



5

Remove brake calipers (secure with wire and position securely out of the way). Remove brake rotors. Remove bearing hub unit mounting bolts (shown in photo).



6

Remove ABS sensors from both sides. Remove Outer Bearing hub and axle shaft for each side. If vehicle is older (rusted) this can be difficult.



7

When reusing the ring and pinon, measure the backlash from the ring gear. Then record measurement.



8

Remove bearing caps on differential - Mark the caps so that you know which side they belong on - and which side is up. Also note the shims installed on each bearing cap.



9

Remove the old differential from housing. Be advised that additional help may be required, some domestic differentials can exceed 40lbs.



10

Clean the differential housing to remove debris and any other contamination.



11

Remove the ring gear bolts.
*Bolts may have left handed threads.



12

Remove ring gear with punch and mallet, tapping evenly around diameter to slowly remove it from differential housing.



13

Remove bearings with bearing puller.



14

Make note of the shims by tagging them and keeping together for proper reinstallation. Bearings and shims from flange side shown.



15

Bearings and shims from plain side shown.



16

Wash the differential case, ring gear, ring gear bolts and other parts with nonflammable solvent.



Measure the original differential case from precision (base) plate to ring gear flange. Please note that set up bearings (or equivalent) must be used to obtain an accurate measurement. Then record measurements.



Measure the original differential case from precision (base) plate to top bearing shoulder.



Repeat the process on the new Eaton differential case. Please note that set up bearings (or equivalent) must be used to obtain an accurate measurement. Then record measurement.



Measure the new Eaton differential case from precision (base) plate to top bearing shoulder.



If appropriate measuring tools are not available, use set up bearing to determine the proper shim pack.



Measure shims and insert on proper side. These are marked - P for plain side - F for flange side. The shim pack you ultimately use will vary with each axle housing and carrier assembly.



After proper bearing shim packs have been determined, press bearings on new differential. Note in this application, shims are pressed on underneath the bearing. See arrow.



Press on both bearings.



Install ring gear onto differential using press. Snug into place with two ring gear bolts. (Optional step) Before installing ring gear - heat ring gear in a conventional oven - 250 degrees. This should take about 15 minutes and will make parts easier to reinstall. Let ring gear cool after loosely installing 2 bolts.



Using Loctite, install all the ring gear bolts using a criss-cross method.



Torque ring gear bolts to specifications.



Clean contamination from axle housing. Make sure cover area is smooth so that cover and gasket (RTV) will seat properly.



29

Install outer races on the bearings. Then using a brass hammer install Truetrac differential into place.



30

Insert bearing caps - check your markings to ensure they are installed on the correct side.



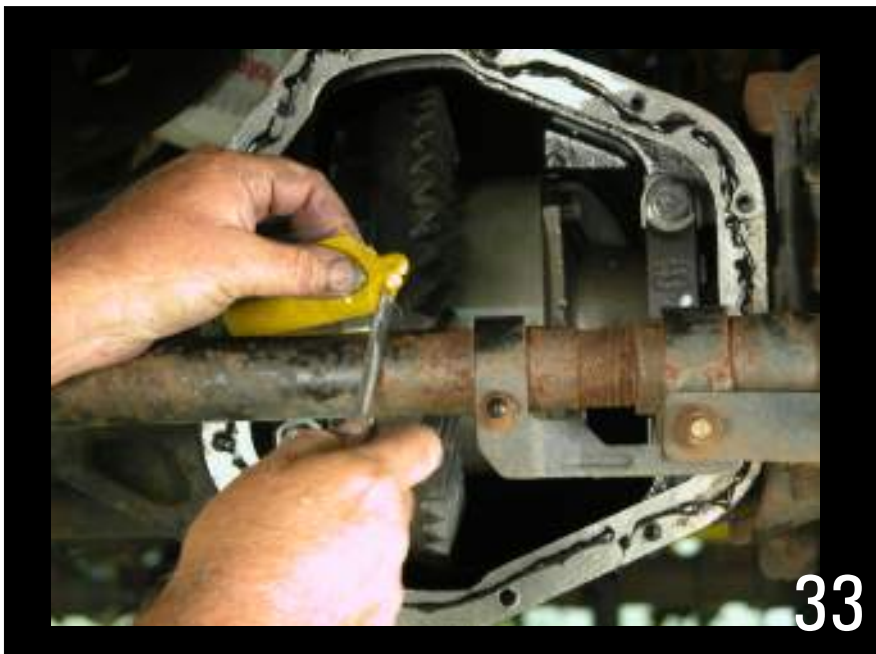
31

Check backlash. If it is different that previously measured (picture 7) differential shims will need to be changed in order to re-establish the original backlash measurement. The differential must fit snug into the housing. A total of .006" (.003" per side) of bearing preload is required for proper bearing seating.



32

Then check the backlash from three equal places around the ring gear. When reusing the old ring and pinon, reset the backlash to reflect the original measurement (additional adjustments may be required). Depending on the brand, new ring and pinon sets have a backlash specification starting anywhere from .005" to .012". *Both situations should not exceed more than .003" variances (around the gear).



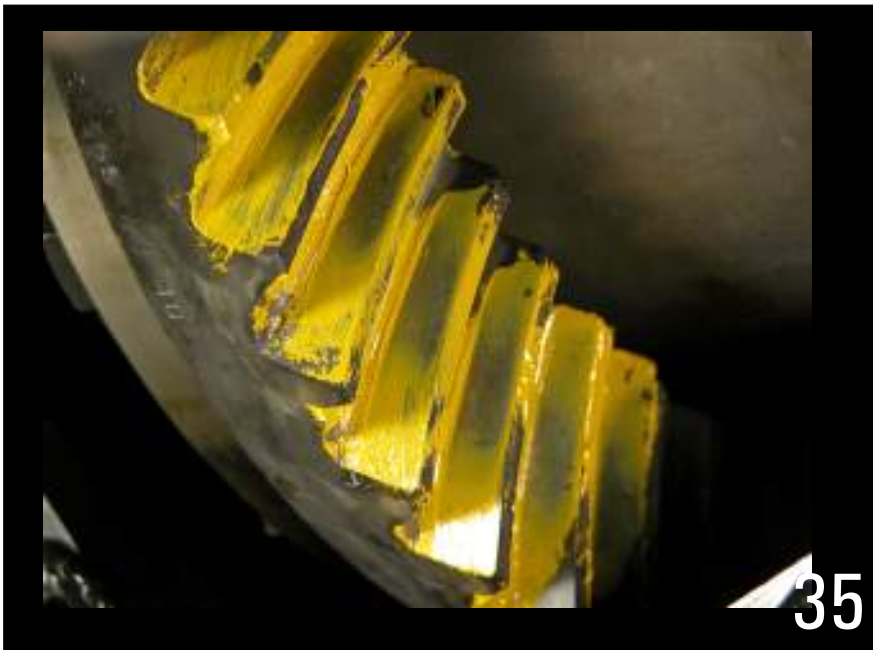
33

For new ring and pinion installation, lightly coat both the front and back of four to six ring gear teeth with gear marking compound.



34

To establish the correct contact pattern, for new ring and pinion sets, rotate the pinion shaft by the drive shaft flange in both forward and reverse.



35

Check contact pattern. Most ring & pinion sets will include a chart that indicates acceptable patterns. See chart on the next page of this document.



36

Remove bearing cap bolts and install with Loctite.



37

Torque bearing cap bolts to specifications.



38

Make a gasket out of RTV gasket material and install the cover.



39

Install differential cover.



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Clean outer hub unit.



41

Clean axle shaft splines.



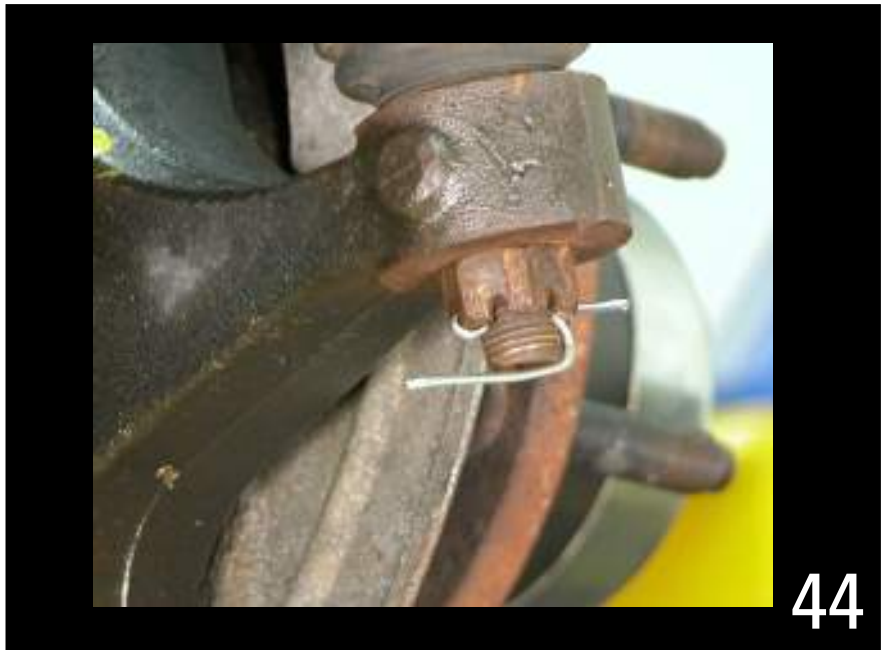
42

Reinstall axle shafts.



43

Reinstall tie rod end and torque to specifications.



44

After you've torqued to specifications - secure tie rod end using a new cotter pin.



45

Reinstall ABS sensors.



46

Reinstall brake rotors and pads - replace parts as necessary.



47







Torque caliper bolts to specifications.



48

Remove filler plug, install lubricant, put fill plug back in place. Road test vehicle.

Tooth contact pattern chart

	IDEAL CONTACT Pattern is spread evenly over tooth's profile with concentration nearer toe than heel.	
	COMPETITION CONTACT Pattern concentrated just up from the toe covering 1/3 to 1/2 of the tooth.	
	HIGH CONTACT Pattern is concentrated at the crown of the drive gear tooth.	Move the pinion deeper in towards the differential carrier (add pinion shim).
	LOW CONTACT Pattern is concentrated in the root of the drive gear tooth.	Move the pinion out away from the differential carrier (subtract pinion shim).
	HEEL CONTACT Pattern is concentrated off the heel end of the drive gear tooth.	Move the ring gear closer to the pinion (decrease backlash) while maintaining minimum backlash.
	TOE CONTACT Pattern is concentrated off the toe end of the drive gear tooth.	Move the ring gear away from the pinion (increase backlash) while maintaining minimum backlash.