



# Spicer® Drive Axles

P/N: SHAIS168B

## Ring and Pinion Tooth Contact Pattern Information

### Affected Models: All Dana Drive Axle Models

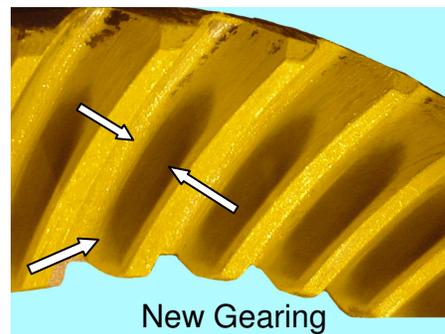
Dana drive axles require adjustment of the ring gear and pinion tooth contact at overhaul or anytime the axle has been disassembled. Most axles require the same distinctive pattern, described in our service publications.

After differential preload and gear backlash adjustments are complete, check the tooth contact pattern and adjust if necessary. Tooth contact patterns are a function of the relative positions of the ring gear and the pinion. An improper pattern will require a relocation of either or both. Always adjust pinion position first, if necessary, then the ring gear position. Always check backlash when done.

### New Gearing

Paint ring gear with marking compound and roll the gear to obtain a contact pattern as shown in the photograph. The length of the pattern in a unloaded condition is approximately one-half to two-thirds of the ring gear tooth in most models and ratios.

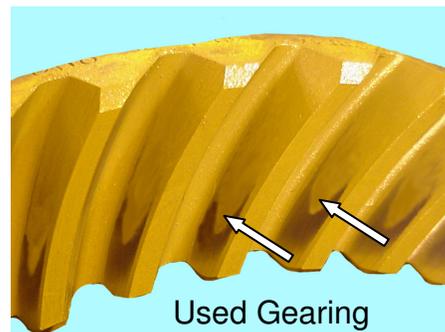
Pattern should range from just clear of the toe end to about 3/8" off the toe end. The pattern should be evenly centered between tooth top land and root.



### Used Gearing

Used gearing may not display the round, even contact pattern found in new gear sets. The gear may have a "pocket" at the heel end of pattern. The more "use" a gear has had, the more dominate characteristic of the pattern.

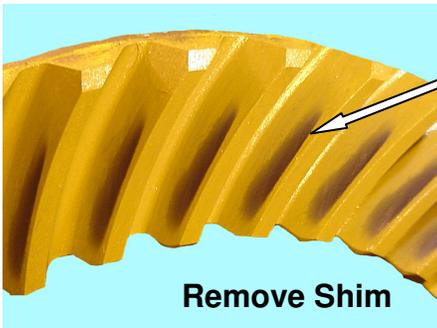
Adjust used gearing so as to display the same contact pattern observed before disassembly. A correct pattern is up slightly off the toe and centers evenly along the face width between the top land and the root. Otherwise, the length and shape of the pattern are highly variable and are considered acceptable as long as there is some pattern on toe end of the tooth.



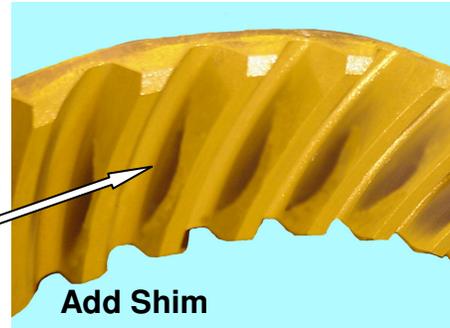
If necessary, adjust the contact pattern by moving the ring gear or drive pinion. Ring gear position controls the backlash. This adjustment moves the pattern along the face width or up and down the gear tooth. Pinion position is determined by the size of the shims behind the pinion bearing cage, and controls tooth depth contact.

These adjustments are interrelated. As a result, they must be considered together even though the pattern is altered by two distinct operations. When making adjustments, first adjust the pinion, then the backlash.

## Incorrect Pattern - Adjust Pinion Position



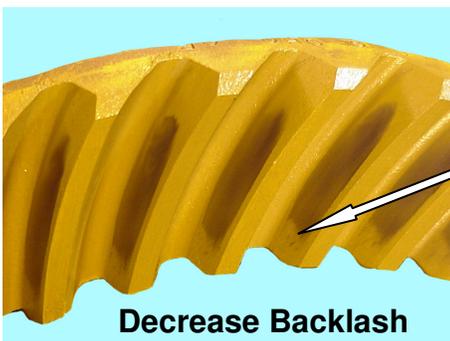
Pattern to close to tooth top land and off center.



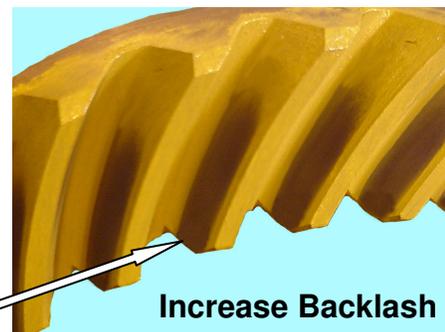
Pattern to close to tooth root.

If the contact pattern shows incorrect tooth depth contact, change drive pinion position by altering the shim pack. Used gearing should achieve proper contact with the same shims removed from the axle at disassembly. Always recheck backlash after shim changes.

## Incorrect Pattern - Adjust Backlash



Pattern is more than 3/8" off the toe of tooth.



Pattern is running off the toe of the tooth.

**Increase backlash** by loosening the bearing adjuster on the tooth side of the ring gear several notches. Loosen the opposite adjuster one notch. Return to adjuster on the tooth side of the ring gear and tighten adjuster until it contacts the bearing cup. Continue tightening the same adjuster 2 or 3 notches. Recheck backlash.

**Decrease Backlash** by loosening the bearing adjuster on the tooth side of the ring gear several notches. Tighten the opposite adjuster one notch. Return the adjuster on the tooth side of the gear and tighten adjuster until it contacts the bearing cup. Continue tightening the same adjuster 2 to 3 notches. Recheck backlash.

Refer to this illustration for proper ring gear nomenclature.

