**4 Wheel Parts Ring and Pinion Break in Information**

# NEW GEAR BREAK-IN

All new gear sets require a break-in period to prevent damage from overheating. After driving for 15 to 20 miles it is best to stop and let the differential cool before proceeding. 4WP’s warranty requires at least 500 miles before towing. 4WP also requires towing for very short distances (less than 15 miles) and letting the differential cool before continuing during the first 45 towing miles. This may seem unnecessary but it is very easy to damage the differential by loading it before the gear set is completely broken in. 4WP recommends changing the oil after the first 500 miles. If 4WP performs this service additional charges will apply.

The greatest damage results when a new ring and pinion has been run for many miles during the first 500 miles and the oil is very hot. Any heavy use or overloading at this time will cause irreparable damage to the gear set that can be determined by inspection of the gear set and will **not** be warranted by 4WP.

ANY OVERLOADING OR OVERHEATING WILL CAUSE THE GEAR OIL TO BREAK DOWN AND THE RING AND PINION WILL FAIL.

**OIL LEVEL**

Most differentials are easy to fill with gear oil. However, some designs can be difficult to fill completely. The location of the fill plug may cause oil to run back out before the differential is completely full. It is important to take your time and be sure that the oil has settled into all of the crevices and recheck the oil level to be certain that it is completely full before driving the vehicle.

# SIGNS OF LUBRICATION FAILURE

When a differential runs low on oil or is contaminated with water, damage is sure to result. The cause of the damage is not always obvious. When a differential runs low on oil or is contaminated with water, the oil volume or consistency may not be sufficient to keep the gear cool. Once the oil breaks down from contact with the hot gear, wear occurs very rapidly. Material will wear off of the drive side of both the ring and pinion teeth and leave a feather like pattern on both surfaces. A gear that wears from friction due to lack of lubrication and excessive heat seldom experiences a color change from heat because any discoloration is worn off of the teeth during each contact.

Ring gears and pinion gears are heat treated separately so that the pinion, whose teeth make contact more often than the ring gear, is designed to be harder. To accomplish this the two gears are heat treated separately and a soft gear will not cause both the ring and pinion to wear.

# POSITRACTIONS

Positraction chatter is normal for limited slip and positraction differentials. Both rear tires must measure the same height from the ground to the top of the wheel in order for the differential to function properly without premature wear. Limited slip additive or friction modifier for limited slip differentials must be used with the oil to reduce positraction chatter in the event that the oil is changed.

# LOCKERS

Mechanical Locking differentials will bang and clunk during normal operation. Both rear tires must measure the same height from the ground to the top of the wheel in order for a locking differential to function properly.

# GEAR NOISE

Most aftermarket (non OEM) gears are designed primarily for strength and may be noisy. This noise is especially inherent in vans, passenger cars, and quiet trucks.