



California Clutch & Gear presents

The Gear Gazette

Welcome to the Gear Gazette

We've had some great responses from our first two issues. In this, the third issue, we're bringing you more gear advice and news.



Differential Identification

Sometimes identifying a differential over the phone can be very frustrating. Here's some information that makes identifying a differential easier and quicker.

- The easiest way to ID a differential is with the factory tag. This is not the tag on the banjo housing, but the tag on the drop-in itself. They normally have the model number and ratio at the very least.

If the tag is missing, try to provide as much of the following information as you can.

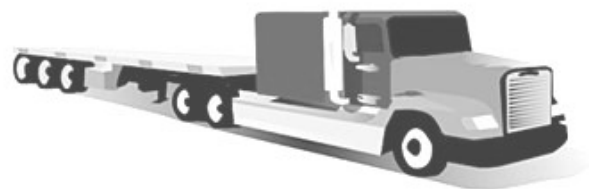
- **Which Axle?** Is this the front (or power divider) differential or the rear driver?
- **Manufacturer.** Many manufacturers cast their logos on the drop-in housings. Knowing if you have a Meritor or Spicer, etc., can be very helpful.
- **Pinion Number.** The factory stamps a part number and sometimes the ratio tooth count on the **threaded end** of the pinion. On a rear differential, this is where the yoke goes on the pinion. On a front differential, it's inside the power divider.
- **Ring gear Number.** If the differential has been removed from the banjo housing, you may be able to find the ring gear number, and sometimes the ratio

tooth count. Sometimes this number is on the outside edge of the ring gear, and sometimes it's inside by the ring gear bolts or rivets.

- **Axle Shaft Spline Count.** Sometimes we'll need an axle spline count, some times we won't. If we do: Pull an axle shaft out and count the splines. Count 'em twice. If you come up with a different number, count 'em again. Axle splines are small and hard to count accurately.

To complicate matters, the factory will often make axle shafts with small differences in spline counts. It's common to have a differential model that uses 41- and 39-spline axle shafts. So miscounting my one or two splines can mean the wrong side gears. And **always** stab an axle shaft through the differential's side gear before installing the rear end.

There are situations where we may need to ask many more questions, and we'll detail some of those situations later.



California Clutch and Gear
Your Heavy-Duty Drivetrain Specialist

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(800) 432-7348 #1
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Ask the Gear Guy

Q. I've been thinking of ways to improve my gas mileage. Someone suggested lowering my axle ratio. What do you think?

A. Yes. Generally speaking, putting faster differentials in your truck will improve your mileage.

Generally speaking. There's an old adage in the gear business, "ratios giveth, and ratios taketh away." A faster ratio will absolutely make your truck go faster when you're in your transmission's top gear.

But there's a downside. Whenever you put faster ratio gears in your axles, you lose *startability*. Startability is the ability to get a truck moving from a stop.

There are various formulas to determine startability and determine how different ratios will affect it.

As a general rule of thumb, if you don't need to use your lowest gear or two to get moving, you'll have some room to play with.

Also remember, there are other contributing factors to your fuel efficiency. Frequent starts and stops, inclines, etc., can greatly affect whether changing ratios will be worth it, or may actually hurt your fuel efficiency.



Q. I got in trouble for pulling out the wrong differential. I pulled out the rear, when the front drive was broken. Is there a reliable way to tell which axle is broken?

A. When diagnosing a drivetrain with tandem axles, drivelines are your friends. When you have a truck that won't move when in gear, the last driveline spinning determines what's broken.

For example. If the drivelines between the transmission and the front drive axle is turning, but the driveline between the two axles isn't turning, then the problem lies in the front differential.

If the last driveline turns, then the rear differential is broken.

If the driveline between the transmission and the front axle *isn't* turning, you've got a transmission or a clutch problem.

Also, if you find that you only have a broken axle shaft, you might consider pulling the differential out anyway. We'll often find a cracked side gear, which will save you from buying *two* axle shafts!



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