## Original Equipment Gears

Most original equipment gears do not contain pinion depth dimensions, so it must be calculated. This is done by measuring the thickness of the pinion gear, and subtracting it from the mounting distance listed below. The resulting dimension is the pinion depth. If a gear is marked with a plus or minus figure, that dimension, which is thousandths of an inch, must be added to or subtracted from actual pinion depth.

## Mounting Distances

### General Motors

| | |
|---|---|
| Chevy 12-bolt | 4.670" |
| 55-64 10-bolt | 4.125" |
| 8.5" 10-bolt | 4.260" |
| 7.5" 10-bolt | 3.780" |
| 8.2" C 10-bolt | 4.262" |
| 8.2" P 10-bolt | 4.175" |
| 57-64 Olds/Pont | 4.620" |
| Dana 44 | 4.312" |
| Corvette & 4WD Chevy truck 12-bolt | |
| 3.9 & higher | 4.575" |
| 3.7 & lower | 4.565" |

### Ford

| | |
|---|---|
| 9" | 4.375" |
| 8" | 4.000 |
| 8-bolt Pinto | 3.450" |
| 8.8" | 4.420" |
| 7.5" | 4.040" |

### Chrysler

| | |
|---|---|
| 8.75" | |
| 1.750" straight pinion stem | 4.350" |
| 1.875" tapered pinion stem | 4.344" |
| Dana 30 | 3.625" |
| Dana 60 | 5.000" |

### American Motors

| | |
|---|---|
| AMX, Rambler, Javelin | 4.500" |

### Pinion Depths for Dana Rear Axles

| | |
|---|---|
| Dana 27 | 2.094" |
| Dana 40 | 2.625" |
| Dana 53 | 2.500" |
| Dana 70 | 3.500" |

# Universal Pinion Depth Setting Tool Instruction

The Universal Pinion Depth Setting Tool may be used to measure pinion depth of most automotive and truck differentials. Measurements are obtained by attaching the tool to the machined bearing cap mating surface in the housing and checking the distance to the pinion gear. Three dial indicator extensions (2", 3" and 4") are included to accommodate a variety of rear end types.

Since the mating surface is usually not precisely on the carrier bearing centerline, the difference (offset) must be measured and either added to, or subtracted from, the measured distance, to determine actual pinion depth.

To determine the offset, measure the carrier bearing race and divide it in half. Then measure the distance from the bearing cap mating surface to the bottom of the bearing bore. The difference is the offset. If the measured distance is less than half the race diameter, the difference must be added (to the pinion depth measurement) if it's more than half the race diameter, the difference must be subtracted.

As an example, half of the 3.064" diameter race used in a Chevrolet 12-bolt rear axle is 1.532". If the distance from the mating surface to the bottom of the bearing bore is 1.512", the surface is .020" below the bearing centerline, so .020" must be added to the measured pinion depth to determine the distance from the back of the pinion to the carrier bearing centerline (pinion depth).

## Measuring Pinion Depth

**1** - The dimension etched on most replacement pinion gears refers to the distance from the carrier bearing centerline (which is also the centerline of the ring gear) to the rear face of the pinion gear. Record this dimension.
(Note that the number on some gears is the distance to the front face of the pinion.)

**2** - Zero the dial indicator using the supplied calibrating tube and the appropriate extension. With the gauge positioned so the extension is inside the calibrating tube, slide the dial indicator into the collet until the needle reads zero, then tighten the collet.

(Do not over-tighten or indicator damage may result.) If the needle moves slightly when the collet is tightened, rotate the dial indicator face so the needle once again points to zero.

**3** - Attach the fixture to the rear end housing as shown making sure the longer bar is closest to the pinion gear.

**4** - Measure the distance from the machined bearing cap surface to the bottom of the bearing bore. The bore is rounded, so move the dial indicator back and forth to be sure you've found the deepest part of the bore.

**5** - Install the appropriate extension, calibrate the dial indicator to zero, then check to make sure the machined cap surface is square with the pinion. Measure pinion depth with the extension contacting the pinion at a point close to the end of the housing on which the tool is mounted. Reposition the indicator so it contacts the pinion about an inch away from the first contact point. If the two measurements aren't identical, place a shim beneath the tool to square it with the pinion. Note that the indicator reading must be subtracted from calibrated length (2", 3" or 4") to calculate pinion depth. If the indicator is calibrated with a 3" extension, a reading of .352" indicates a pinion depth of 2.648" (3" minus .352" = 2.648"). Record the measurement and add or subtract the offset.

**6** - Once you've verified that the tool is properly squared, measure pinion depth and adjust pinion bearing shim thickness as required to achieve desired pinion depth. If pinion depth is less than the dimension etched on the gear, reduce shim thickness; if it's greater than the etched dimension, increase it.

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