



4859 Convair Drive
Carson City, NV 89706
Phone (775) 884-2292
Fax (775) 884-3363
Web www.tdmach.com

INSTRUCTIONS FOR THE T&D DELUXE PINION DEPTH CHECKER KIT

INTRODUCTION

The T&D Pinion Depth Checker Kit is a very accurate method of setting pinion depth in a large number of automotive differentials. Though it may work on others, this kit is equipped to set-up the following differentials. The recommended target plate and indicator extensions to be used are in parenthesis. Warning: These recommendations are for aftermarket gearsets that come with premeasured thicknesses. Should you be setting up a differential with an OEM gearset, please go to the segment on OEM Gear Applications and follow those instructions before you proceed with calibrations!

- GM 10-Bolt (Long Extension and Magnetic Target Plate)
- GM 12-Bolt (Long Extension and Magnetic Target Plate)
- 1972 and later GM Corporate 10-Bolt (Long Extension and Magnetic Target Plate)
- 1982 to present GM 7.5" 10-Bolt (Intermediate Extension and Magnetic Target Plate)
- Dana 30 (Intermediate Extension and Magnetic Target Plate)
- Dana 35 (Intermediate Extension and Magnetic Target Plate)
- Corvette Dana 44 (Long Extension and Magnetic Target Plate)
- Dana 60 (Long Extension and Magnetic Target Plate)
- Ford 9" (Short Extension and Non-Magnetic Target Plate)
- Ford 8.8" (Long/Intermediate Extension depending on gearset and Magnetic Target Plate)
- 8 3/4" Chrysler (Long Extension and Magnetic Target Plate)
- 57-64 Olds & Pontiac (Long Extension and Magnetic Target Plate)
- AMC 8-Bolt (Long Extension and Magnetic Target Plate)

CALIBRATION

Note: Each of the three included calibration tubes is calibrated and sealed for each application.

1) Important: Before attempting calibration, carefully clean all parts. Any dirt can prevent a correct calibration.

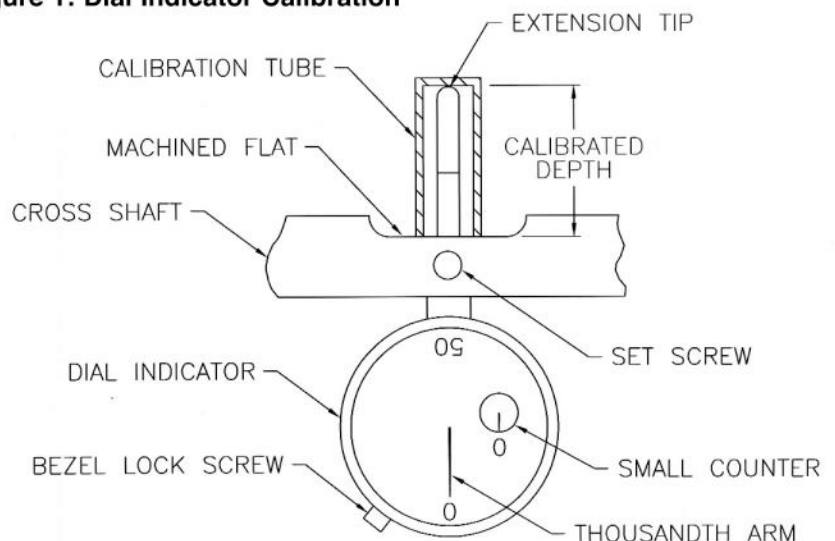
2) Insert the Dial Indicator into the Cross Shaft with the Dial Indicator on the rounded side of the shaft and tip extending thru the flat area on the opposite side. Snug the setscrew making sure not to over-tighten.

3) Remove the Indicator Extension stored inside the appropriate Calibration Tube and screw the extension tip into the Dial Indicator until snug.

4) Hold the Cross Shaft and indicator assembly with the indicator tip pointed up. Slip the calibration tube over the tip and allow the tube to rest on the flat area on the cross shaft.

5) The thousandth (long arm) pointer should rotate clockwise slightly (about 0.020") and be pointed approximately straight down, or in the 6 o'clock position. If the pointer does not point

Figure 1: Dial Indicator Calibration



straight down, loosen the set screw in the cross shaft and raise or lower the indicator until the needle is pointed straight down with the calibration tube in place. Tighten the setscrew until snug (excessive tightening will lock the indicator shaft or permanently bend the housing) and make sure the pointer remains pointing straight down.

NOTE: Be sure that the short pointer (small dial) is in the “zero” position.

6) Loosen the indicator bezel lock screw and with the calibration tube in place, make the final adjustment by rotating the dial face until the zero aligns with the pointer. Tighten the indicator bezel lock screw. Your Pinion Depth Checker is now set and calibrated for a depth of exactly 3.375” (Or 1.900” for the Ford 9” or 2.500” for the intermediate differentials). This is the CALIBRATED DEPTH.

MEASURING PINION DEPTH

- 1)** Carefully remove any sharp edges or burrs from the carrier bearing housing and caps to avoid any inaccuracy or marring of the hubs.
- 2)** Make note of the pinion depth inscribed on your pinion gear. If your pinion does not have a depth number on it, go to the “OEM GEAR APPLICATIONS” Section to find the pinion depth.
- 3)** Place the pinion in the case with the appropriate bearings and shims.
- 4)** Clean the appropriate Target Plate and the face of the pinion gear and then place the Target Plate on the face on the pinion.
- 5)** Select the appropriate hubs and lightly oil the bores to prevent galling and carefully insert the Cross Shaft into the Hubs. Place this assembly in the case and tighten main cap bolts to 25 ft.-lbs. See Figure 2 for Hub Applications.

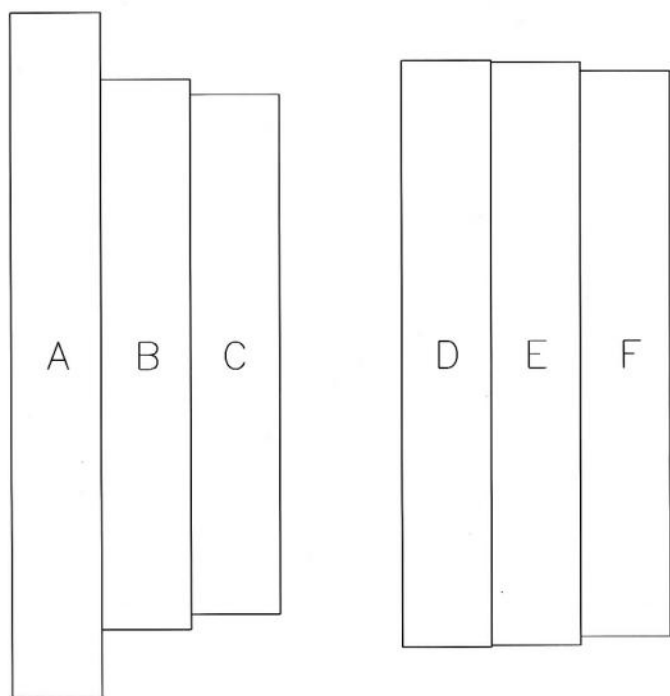


Figure 2: Hub Applications

- A) Dana 60
- B) Chevrolet 12-Bolt/Ford 9” (Large Bearing)
- C) Chevrolet 10-Bolt/Ford 9” (Small Bearing)
- D) 57-64 Olds and Pontiac/ 8 3/4 Chrysler
- E) Ford 9” with 3.250 diameter Bearing
- F) 57-64 Chevrolet

NOTE: The “A” diameter has a machined flat to clear the pinion support in Ford 9” rear ends. Additional relief may be needed for individual applications. When using the “A” diameter in Dana 60s, the machined flat should be positioned at 90 degrees to the cap parting line.

6) Slide the Indicator and Cross Shaft as close as possible to pinion gear, minimizing any overhang of the Target Plate. Be sure to retract the indicator plunger shaft just enough to clear the Target Plate to prevent bending the indicator.

7) Make sure the Indicator shaft end is seated on the target plate and note the reading on the dial. Multiply the small counter number by 0.100" and add the thousandths pointer reading to get your INDICATOR READING. Subtract your INDICATOR READING from the CALIBRATED DEPTH (3.375 for the long calibration tube, 2.500 for the intermediate, and 1.900 for the short) and you will have obtained your MEASURED PINION DEPTH.

Example: If the reading on the indicator were 0.778" (seven complete revolutions plus reading), subtracting from 3.375 would equal 2.597". This is the MEASURED PINION DEPTH.

NOTE: To minimize error, rotate the pinion gear to at least four different positions and average the three most similar readings.

8) Compare the MEASURED PINION DEPTH to the Pinion Depth number inscribed on the pinion gear or obtained from the OEM Gear Section to determine the amount of shims to be added or removed.

GM 10 & 12 Bolt, Dana 60, Chrysler 8 3/4"

Ford 9"

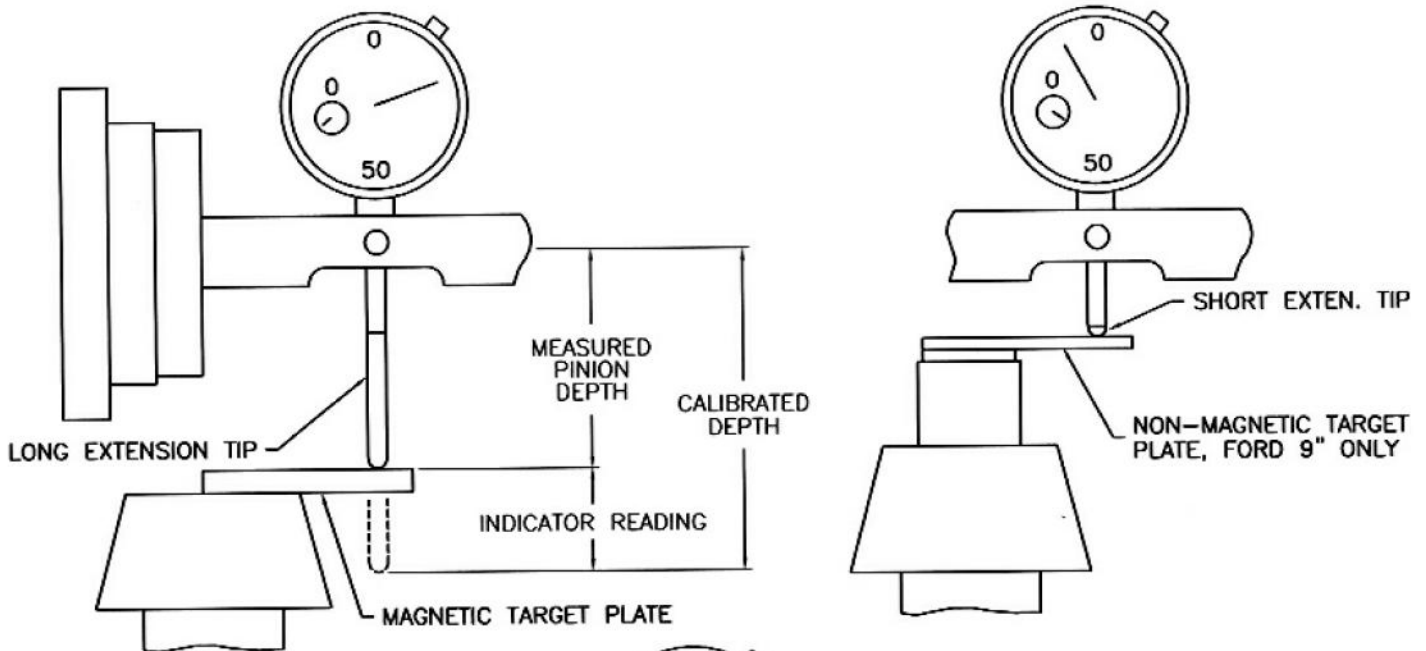
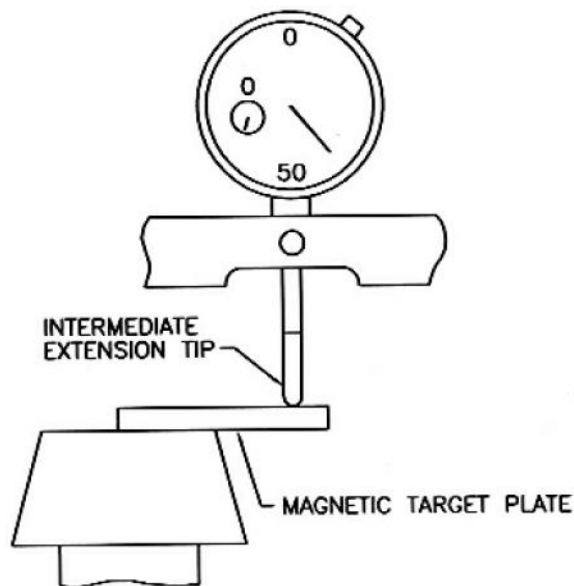


Figure 3: Pinion Checker Set-up



GM 8.2" 10 Bolt, Ford 8.8"

Figure 4: OEM Gear Dimensions

OEM GEAR APPLICATIONS

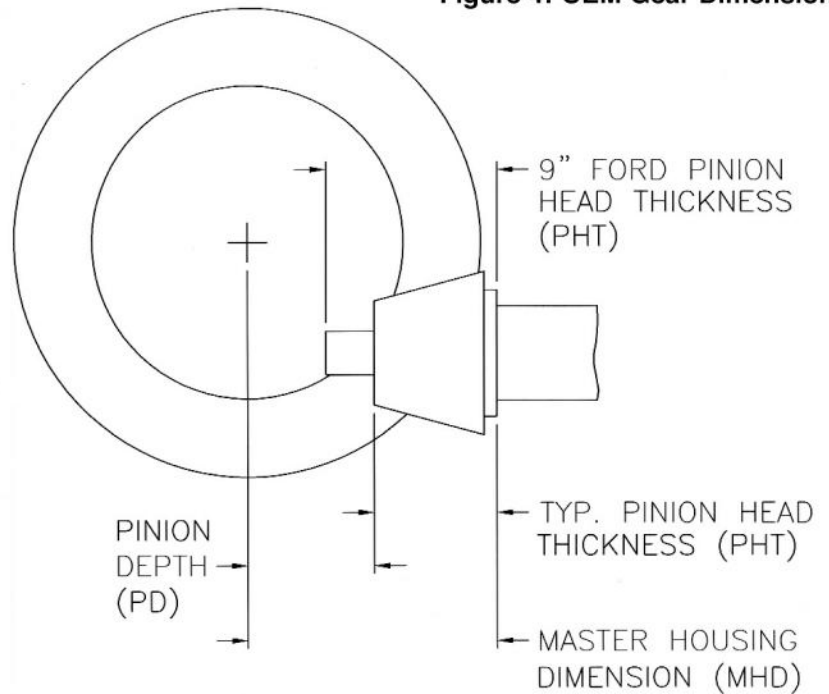
The list provided on this page will extend the capabilities of your PINION DEPTH CHECKER KIT. The method described below will allow you to set up differentials with gears not inscribed with a pinion depth, as is the case with OEM factory gears.

1) Measure the PINION HEAD THICKNESS (PHT) with a micrometer. This thickness is defined as the dimension from the top of the pinion gear to the thrust bearing mounting surface.

2) Find the correct application listed below and note the MASTER HOUSING DIMENSION (MHD).

3) Subtract the (PHT) from the (MHD). The number obtained is the PINION DEPTH (PD).

4) Now, you can set up your differential as described in the section "MEASURING PINION DEPTH".



GENERAL MOTORS

10-Bolt 7.2 (3.693 MHD)
 10-Bolt 7.5 (3.787 MHD)
 10-Bolt 8.2 x 25 Spline Pinion (4.175 MHD)
 10-Bolt 8.2 x 27 Spline Pinion (4.175 MHD)
 10-Bolt 8.2 x Thin 55-64 Vette (4.125 MHD)
 10-Bolt 8.5 x 30 Spline (4.262 MHD)
 10-Bolt 8.5 x 27 Spline (4.262 MHD)
 12-Bolt 8.875 x 1.438 Pinion Dia. (4.556 MHD)
 12-Bolt 8.875 x 1.625 Pinion Dia. (4.670 MHD)
 12-Bolt 9.300 (4.620 MHD)
 14-Bolt 9.500 (4.865 MHD)
 14-Bolt 10.500 (5.400 MHD)

CHRYSLER

10 Bolt 8.250 (4.124 MHD)
 12 Bolt 8.750 x 1.750 Pinion Stem (4.350 MHD)
 12 Bolt 8.750 x 1.875 Pinion Stem (4.344 MHD)
 12 Bolt 9.250 (4.625 MHD)

FORD

6.625 (3.500 MHD)
 7.5 (4.040 MHD)
 8.0 (4.000 MHD)
 8.8 (4.415 MHD)
 9.0 (4.375 MHD)

AMC

8-Bolt 8.875 (4.500 MHD)

DANA

Dana 30 (3.625 MHD)
 Dana 35 (3.813 MHD)
 Dana 44 (4.312 MHD)
 Dana 50 (4.630 MHD)
 Dana 60 (5.000 MHD)
 Dana 70 (5.375 MHD)
 Dana 80 (5.812 MHD)

DISCLAIMER

No warranty, expressed or implied is provided for the actual ring and pinion adjustment or the in-service performance of equipment that has been set with the instructions and parts contained in our kit. Pinion depth settings are the responsibility of the gear manufacturers. The accuracy of the adjustments is the responsibility of the user.

NOTE: All gear sets should be installed per manufacturers instructions or recommendations. We recommend a final double-check of the tooth contact pattern to be sure no mistakes have been made during assembly.

HELP: Should you have difficulty with the **T&D Deluxe Pinion Checker Kit**, do not hesitate to call the technical department at T&D Machine Products (775) 884-2292