

### 12.4.1.5 High contact

When the contact is too high on the profile of the pinion, as shown in figure 38(G), the pinion is too near the center of the gear. The pinion may have been manufactured or assembled with too small a mounting distance. The correction for this condition is obtained by increasing the pinion mounting distance.

### 12.4.1.6 Lane contact

The contact pattern shown in figure 38(H) is too low on one side of the tooth and too high on the other side of the tooth.

displacement from the specified mounting position which the gears can withstand without causing load concentrations at the ends of the teeth.

Gear axial displacement, G, is generally only used to maintain backlash. In most gear sets it does not significantly affect the tooth contact pattern.

The E and P adjustments have traditionally been referred to as V and H respectively.

The readings for all dials on the testing machine may be considered as zero readings when the gears are mounted in their specified mounting positions. All horizontal and vertical movements are measured from these zero positions. The following rules will determine the correct signs to be used with these movements.

- Increase pinion mounting distance = (+) plus P
- Decrease pinion mounting distance = (-) minus P
- Pinion axis lower with reference to the gear axis = (+) plus E
- Pinion axis raised with reference to the gear axis = (-) minus E. See figure 39.

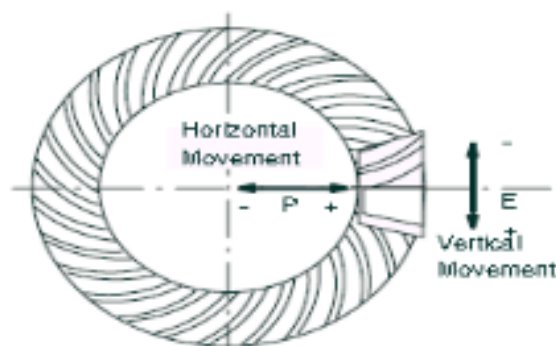


Figure 39 - Explanation of E and P movements

Runout is characterized by the tooth pattern shifting progressively around the gear from heel to toe and toe to heel.

### 12.4.2 The E, P and G check

The E, P and G check is a method for measuring the amount and direction of the vertical, E, and axial, P, displacements of the pinion, from its standard position, to obtain a tooth contact in the middle of the tooth profile, at the extreme toe, and at the extreme heel of the tooth. Interpretation of the data obtained from this check provides an indication of the shape of the actual profiles, and provides a practical way of accurately measuring the amount of relative vertical

In table 16, the columns entitled "Reading at toe", "Reading at heel", and "Total movement toe to heel", constitute the E and P check. See figure 40. It is occasionally very desirable to determine the vertical and horizontal settings necessary to place the tooth contact in the center of the tooth profile at the extreme toe and extreme heel. The total movement between the toe and heel readings is obtained by subtracting the heel reading from the toe readings algebraically. This is illustrated in the following example.

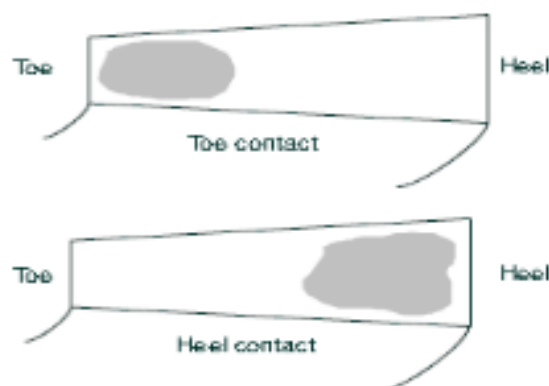


Figure 40 - Toe/heel contact nomenclature

Referring to table 16, the line entitled "Vertical movement" gives the relative displacement from the central position to the toe, (in the example +0.010 in) from the central position to the heel, (in the example -0.018 in) and from the toe to the heel, (in the example 0.028 in). This last value, "Total movement from the toe to heel" is a measure of the bearing length in terms of displacement, and is sometimes referred to as a "\_\_\_ length" (in this example "28 length").

Table 16 - Example of E, P and G values

Movement	Reading at toe	Reading at heel	Total movement toe to heel
Vertical, E	+0.010 in (0.25 mm)	-0.018 in (0.46 mm)	0.028 in (0.71 mm)
Horizontal, P	-0.014 in (0.36 mm)	+0.020 in (0.51 mm)	0.034 in (0.87 mm)
Gear axial, G	0.000 in (mm)	0.000 in (mm)	0.000 in (mm)
Total vertical movement = (+0.010) - (-0.018) = + 0.028 in			
Total horizontal movement = (-0.014) - (+0.020) = - 0.034 in			
The algebraic signs of these totals are ignored since the magnitude of these quantities is the item of interest.			