Chapter 5 Deviation for Gear and its measurement method

5.1 Correlation of deviations

Gear deviations are classified with individual and composite deviations. Shown in Fig. 1, individual deviation is a three-dimensional deviation in the directions as follows

1) Direction of Tooth depth refers to shape of Tooth profile and length of Tooth depth.
2) Direction of Tooth trace refers to inclination and unevenness of Tooth trace.
3) Direction of Tooth thickness refers to thickness of tooth and Tooth space.

These three types of individual deviations are measured by taking apart a three-dimensional deviation into a two-dimensional deviation. However, these individual deviations are correlated and the extent of correlation differs between the methods of production and measurement. Correlations of these individual deviations are shown in Fig. 2. Pay close observation to the strong correlation between Runout and other deviations in Table 2.
Another method to obtain measurements for Total deviation is to simultaneously measure three dimensions.

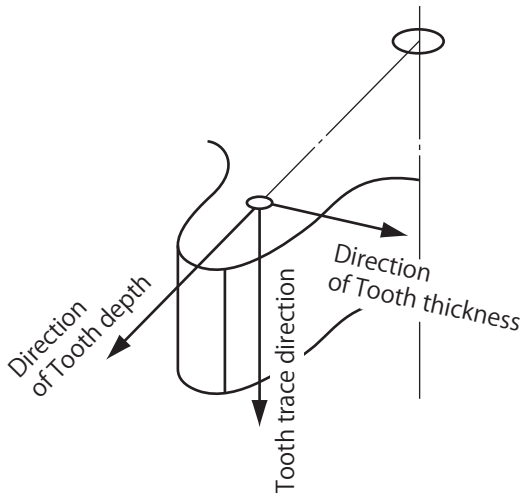

Fig. 1 Theory for three-dimensional deviations

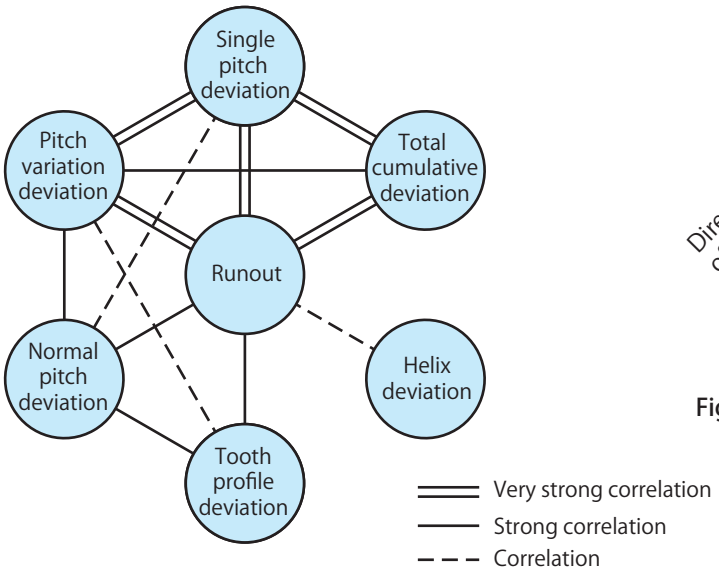

Fig. 2 Correlation with individual deviation (Ground spur gear)