

# 2008 PROPOSED GD&T TIPS

## Establishing a Datum Line or Plane that is not Straight or Flat

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When a part's surface is not straight or flat it may wobble when placed against a simulated datum plane. How should this situation be handled? The ASME Y14.5M-1994, proposed ASME Y14.5M-2008 and the ISO 1101 dimensioning and tolerancing standards take different approaches to solve the problem. These three standards address the situation as follows:

**ASME Y14.5M-1994** – If irregularities on the surface of a primary or secondary datum feature are such that the part is unstable (that is, it wobbles) when brought into contact with corresponding surface of a fixture, the part may be adjusted to an optimum position, if necessary, to simulate the datum.

PROBLEM: No guidelines are provided for doing this.

**ASME Y14.5M-2008 (proposed)** – If irregularities on a datum feature are such that the part is unstable (that is, it rocks) when brought into contact with the corresponding True Geometric Counterpart (TGC), the default stabilization procedure is per the candidate datum set as outlined in ASME Y14.5.1. If a different procedure is desired (chebychev polynomials, least squares, translational least squares, etc.), it must be specified.

PROBLEM: A basic layperson will not understand these concepts and how to apply them.

**ISO 1101** – Where a straight line or a plane is specified as a datum, the simulated datum shall be established in such a manner as to make the maximum distance between the datum feature and the simulated datum feature as small as possible. Where the contact of the datum feature is unstable against the simulated datum feature, supports shall be placed at suitable distances to make the gap of contact between the two features stable, and the datum shall be established in this condition. In this case, two supports shall be used for a datum feature consisting of a line, and three supports shall be used for a datum plane. See Figures 1 and 2.

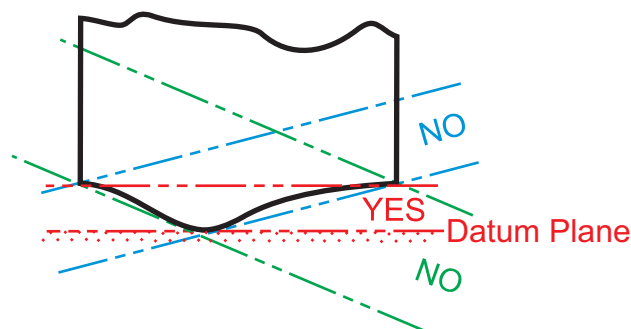


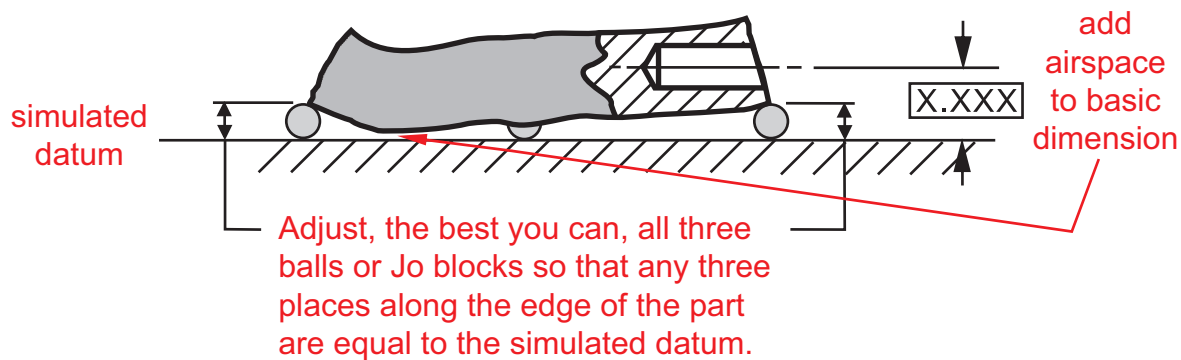
Figure 1

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**Figure 2**

If your engineering drawings are usually in accordance with ASME Y14.5M-1994, then you can follow the ISO 1101 guidelines and be in compliance with ASME Y14.5M-1994. However, if the proposed ASME Y14.5M-2008 is adopted with no changes in this area, then engineers, designers, and drafting professionals will need to learn some very complex concepts in order to follow this new GD&T standard.