

Using the Translation Modifier

Prior to the publication of ASME Y14.5-2009, there was some disagreement as to whether angular orientation datum features were to be represented by simulators in gages, fixtures and software as stationary or moveable. A decision was made by the Y14.5 committee to make a new rule that unless otherwise specified, all datum feature simulators were stationary at their basic angle and location to the datum feature simulators that are referenced before them in the feature control frame. This rule had far reaching ramifications and even blurred the meaning of the datum feature sequence. For example, in FIGURE 11-27, if no translation modifier was used after datum feature C, the gage would be the same, whether B was used as secondary before C or tertiary after C.

Also, without the translation modifier after C, if the primary datum feature is a planar surface, as is datum feature A in FIGURE 11-27, and the secondary datum features are holes, like B and C in that figure, let's consider the gage. B and C are simulated in a gage or fixture at a diameter of 8 millimeters and are located a basic 51 millimeters from one another. They are identical. If they are identical, which of them controls location (the traditional job of B in such a control), and which one controls angular orientation/pattern rotation (the traditional job of C)? In fact, in such an instance, there would be no difference in the gage to represent B and C as datum features if, instead of using B and C as secondary and tertiary datum features, B and C were used as a pattern datum (both holes called B and referenced as B[Ⓜ]). Likewise, if the holes were used in compound as B[Ⓜ]-C[Ⓜ], they would be simulated in gages and fixtures the exact same way, with two 8 millimeter gage pins that were 51 millimeters apart.

Since this new rule blurs the importance of datum referencing, a way had to be found to make a distinction between the datum features, when a distinction was desired. So, as FIGURE 11-27 shows, the translation modifier used after datum feature C states that while B is simulated by a stationary pin, C is simulated by a moveable pin. That means that B controls location and C controls rotation of the pattern of 21 holes and the rotation of the profile.