

### Modifiers Used With Flatness Tolerances

A flatness tolerance has certain requirements that must be followed. The chart in Figure 9-7 shows the requirements of a flatness tolerance application.

Tolerance Modifier	Can Be Applied to	Effect	Functional Application
* $\textcircled{F}$	Feature or feature of size	Release the restraint requirement	Nonrigid parts with restraint notes
* $\textcircled{ST}$	Feature or feature of size	Requires statistical process controls	Statistically derived tolerances or tolerances used in statistical tolerance analyses
$\textcircled{M}$	Feature of size	Permits a bonus tolerance Permits use of a functional gage	Assembly
* $\textcircled{L}$	Feature of size	Permits a bonus tolerance Requires variable gaging	Minimum distance
* These modifiers are only introduced in this textbook.			

FIGURE 9-7 Modifiers Used With Flatness Tolerances

### Determining Whether a Flatness Tolerance Is Applied to a Planar Surface or a Feature of Size

It is important to be able to determine whether a flatness tolerance applies to a surface or to a feature of size dimension, because the interpretation for each is different. Figure 9-8 shows an example of a flatness tolerance applied to a surface and a feature of size.

The location of the flatness tolerance indicates what it is applied to. Where the leader line of a flatness tolerance is directed to a surface, or attached to an extension line from the surface, it indicates that it applies to the feature (surface). Where a flatness tolerance is located beneath or beside a size dimension, it indicates that it applies to the feature of size.

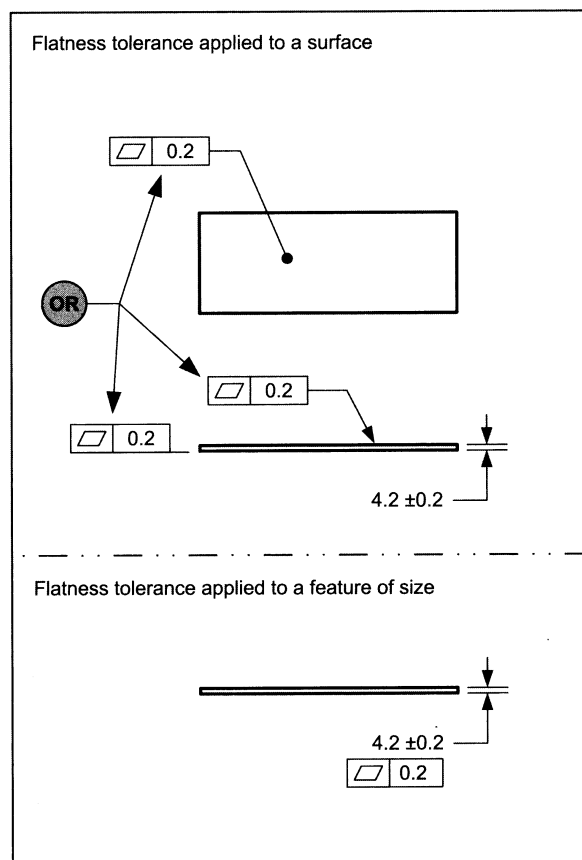


FIGURE 9-8 Flatness Tolerance Applied to a Surface and a Feature of Size

## Evaluate if a Flatness Tolerance Specification Is Standard-Compliant

For a flatness tolerance to be a standard-compliant specification (legal), it must satisfy certain requirements. In order to make it easier to remember what to look for when evaluating the correctness of a geometric tolerance on a drawing, I created a mnemonic. The requirements are divided into four areas represented by the initials "CARE."

CARE stands for:

- C - Check for datums
- A - Assess the application
- R - Review the modifiers
- E - Evaluate the tolerance value

A flowchart that identifies the requirements for a standard-compliant flatness tolerance is shown in Figure 9-9.

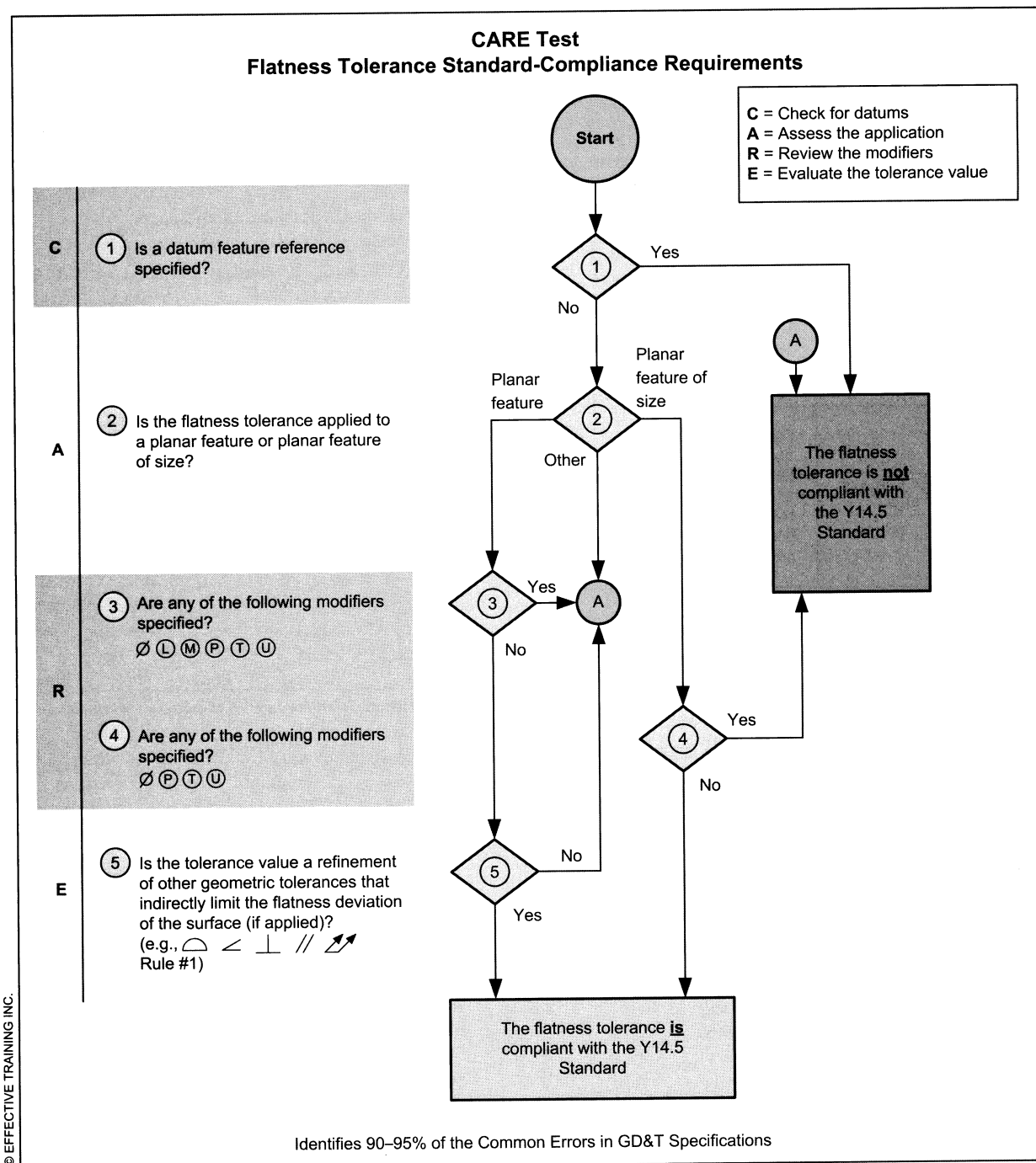


FIGURE 9-9 Test For a Standard-Compliant Flatness Specification