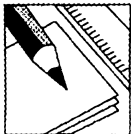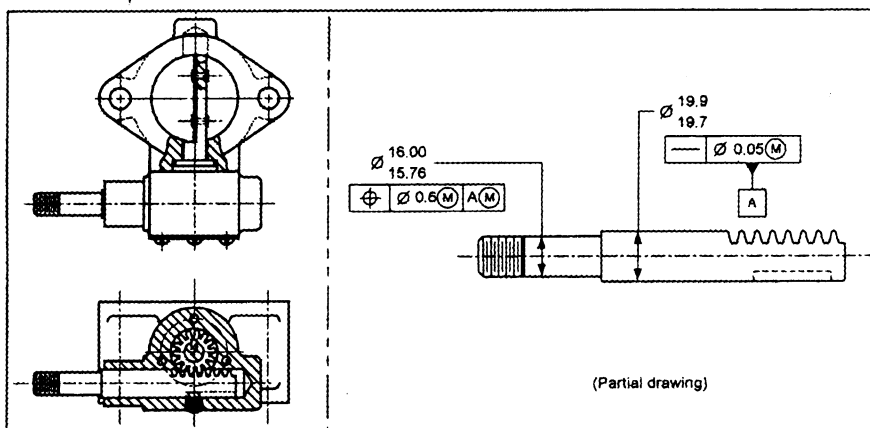## 4. Cylinder as a Datum Feature

Using a cylinder (e.g. a feature of size, like a shaft or a hole) as a datum feature is a familiar practice in industry. It is designated on the drawing by applying a datum identification symbol to the size dimension of the cylinder. An example of specifying a cylinder as a datum feature is shown in Figure 14-8.

When a cylinder (diametrical feature of size) is used as a datum feature, any feature control frames that reference the datum feature must include the material condition (MMC or LMC) under which the datum feature simulator is to be constructed. Two methods for indicating the material condition are by using Rule #2 or by specifying an MMC or LMC modifier in the datum portion of the feature control frame.

14-8 Cylinder as a Datum Feature

When to Use a Cylinder as a Datum Feature

There are three common applications where a cylinder is used as a datum feature:

- When the part is oriented by the cylinder in its assembly
- When the part is located by the cylinder in its assembly
- When describing a functional relationship of a part feature to a datum axis

In Figure 14-8, the cylindrical surface orients and locates the part in the assembly.

The Datum Reference Frame

It is important to be able to visualize the datum feature simulator, datum axis, datum planes, and datum reference frame for inspecting a geometric tolerance. When a cylinder is used as a datum feature, a datum axis is established. A set of perpendicular datum planes originate from the datum axis.

Design Tip

In order to reference a cylindrical datum feature as primary, the datum feature must be long enough to establish the orientation of the datum feature.