

(R) Dual Dimensioning Engineering Drawings

Foreword—This Document also changed to comply with the new SAE Technical Standards Board format. Scope is Section 1, References, Section 2. All other section numbers have changed accordingly.

1. Scope—This document covers a dual dimensioning practice that provides both U.S. customary inch-pound units and SI metric units for all dimensions on the field of the drawing. The scope does not include the various methods by which computer programs are used for dual dimensioning. In one method that has had some usage, drawings are dimensioned in SI (metric) units, with conversions to U.S. customary inch-pound units provided in a computer-generated chart on the drawing.

1.1 Purpose—The purpose of this document is to provide an authoritative guide for uniform application of dual dimensioning on engineering drawings. SAE recognizes that a decision regarding measurement units is an individual judgment based on needs and circumstances. While providing this information, SAE takes no official position concerning dual dimensioning. Issuance of this publication should not be construed as advocacy.

1.2 General—Introduction—This document establishes a uniform method of combining inch-pound units and metric units of measure on the same engineering drawing. In this document “metric units” means the International System of Units (abbreviated SI) as described in SAE TSB 003. Herein is guidance for converting from one system to the other while maintaining functional interchangeability.

2. References

2.1 Applicable Publications—The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated, the latest revision of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE TSB 003—Rules for SAE Use of SI (Metric) Units

2.1.2 ANSI PUBLICATION—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ANSI Y14.5

IEEE/ASTM SI 10—Standard for Use of the International System of Units (SI): The Modern Metric System

NOTE—This American National Standard is available from ANSI and also from:

IEEE, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331.

ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

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3. Standard Units

3.1 Inch-Pound Units—The inch-pound unit for linear dimensions is the inch with decimal dimensioning preferred. (One inch equals 25.4 mm, exactly.)

3.2 Metric Units—The metric unit, on engineering drawings, for linear dimensions is the millimeter.

3.3 Identification of Units—The inch and millimeter dimensions must be identified, one from the other as follows:

3.3.1 ALTERNATIVE METHODS—It is permissible to use one of the following methods of identification:

- a. Dimensions may be identified by relative position with the millimeter dimension above or to the left of the inch dimensions.

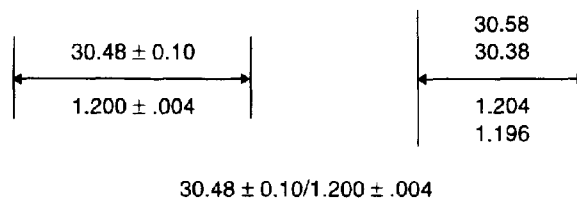


FIGURE 1—ALTERNATIVE METHODS FOR DUAL DIMENSIONING

- b. Position method as in (a) except with inch dimension above or to the left of the millimeter dimension.
- c. Square brackets [] surrounding the millimeter dimensions, placed adjacent to the inch dimensions (position optional).
- d. Square brackets [] surrounding the inch dimensions, placed adjacent to the millimeter dimensions (position optional).

3.3.2 Only one of the previous methods of identification of units shall be used throughout a single drawing. Each drawing shall illustrate how to identify the inch and millimeter dimensions, by a note adjacent to or within the title block, such as:

$$\frac{\text{MILLIMETER}}{\text{INCH}}; \text{MILLIMETER/INCH,}$$

$$\frac{\text{INCH}}{[\text{MILLIMETER}]}; \text{INCH [MILLIMETER], etc.}$$

FIGURE 2—ENGINEERING DRAWING TITLE BLOCK NOTE FOR DUAL DIMENSIONING

or by reference to a drawing interpretation specification.

3.3.3 In converting existing drawings to dual-dimensioning, space limitations may sometimes make it impractical to locate dimensions as required for identification by position. In these cases, it is permissible to show the converted dimension in a nearby associated location identified with the symbol mm or IN.

3.3.4 Units other than linear and all units used for other than normal drawing dimensions (e.g., notes or text) shall be identified with the appropriate symbol.

EXAMPLE—13.6 N·m/10 lbf·ft
OVERHANG LIMITED TO 12.7 mm/.50 in