



SURFACE VEHICLE RECOMMENDED PRACTICE

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Numbering Systems for End Mills

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1. **Scope**—This SAE Recommended Practice provides a systematic method for the identification of End Mills. It is intended to assist in the cataloging and supplying of these tools.

NOTE 1—Caution must be taken when assigning codes for designation to prevent specifying cutting tools that cannot be physically or economically manufactured.

NOTE 2—In particular without limitation, SAE disclaims all responsibility for the accuracy or completeness of information contained within this report if the standards of this report are retrieved, combined, or used in connection with any software.

2. References

- 2.1 **Applicable Publications**—The following publications (latest revision) form a part of this specification to the extent specified herein.

NOTE—Reference information not specified to be manufacturer's standard practices. Manufacturers to supply information for re-grind upon request.

- 2.1.1 ANSI PUBLICATIONS—Available from American National Standards Institute, 11 West 42nd Street, New York, NY 10036-8002, tel. (212) 642-4200, fax (212) 398-0023.

ANSI/ASME B94.19-1997—Milling Cutters and End Mills

- 2.1.2 ISO PUBLICATIONS—Available from International Organization for Standardization, 1 Rue DeVarembe, Case Postale 56, CH 1211 Geneva 20 Switzerland, tel. +41-22-749-0111, fax +41-22-733-3430. (The publications are also available through the American National Standards Institute.

ISO 1641-1:1978—End mills and slot drills with parallel shanks

ISO 1641-2:1978—End mills and slot drills with Morse taper shanks

ISO 1641-3:1978—End mills and slot drills with 7/24 taper shanks

ISO 2586:1985—Shell end mills with plain bore and tenon drive

ISO 3338-1:1993—Parallel shanks for milling cutters/Dimensional characteristics of plain parallel shanks

ISO 3338-2:1985—Parallel shanks for milling cutters/Dimensional characteristics of flatted parallel shanks

ISO 3940:1977—Tapered die-sinking cutters with parallel shanks

- 2.1.3 DIN PUBLICATIONS—Available from Beuth Verlag GmbH, Burggrafenstrasse 6, D-1000 Berlin 30 Germany, tel. +49-30-2601-260, fax +49-30-2601-231. (The publications are also available through American National Standards Institute.)

DIN 327-1—Parallel Shank Slot Drills; Dimensions
DIN 327-2—Parallel Shank Slot Drills; Technical Delivery Conditions
DIN 844-1—Parallel Shank End Mills; Dimensions
DIN 844-2—Parallel Shank End Mills; Technical Delivery Conditions
DIN 1880-1—Shell End Mills with Tenon and Key Drive; Dimensions
DIN 1889-1—Cylindrical Die-Sinking Cutters with Parallel Shanks
DIN 1899-3—Tapered Die-Sinking Cutters with Parallel Shanks
DIN 1889-5—Die-Sinking Cutters; Technical Delivery Conditions
DIN 2328-3—End Mills with 7/24 Taper Shank; Technical Delivery Conditions
DIN 6528—Solid Hardmetal End Mills with Continuous Parallel Shanks; Dimensions
DIN 6529—Solid Hardmetal End Mills with Continuous Parallel Shanks; Technical Delivery Conditions
DIN 6535—Parallel Shanks for Hardmetal Twist Drills and End Mills; Dimensions

- 2.1.4 USCTI PUBLICATIONS—Available from United States Cutting Tool Institute, 1300 Sumner Avenue, Cleveland, OH 44115-2851, tel. 216/241-7333, fax 216/241-0105.

Standard End Mills—Handbook of Specifications

- 2.1.5 NUMBERING SYSTEMS SOFTWARE—Software products may exist to assist in the use of the standard. The following software product(s) are listed for information purposes only and do not constitute part of this document. SAE expressly disclaims any responsibility for the operation of any Software used in connection with your use of this report.

- 2.1.5.1 *Datom Engineering Software, Inc. Publication*—Available from Datom Engineering Software, Inc., 561 Somerset, Suite 3, Crystal Lake, IL 60014; tel. (815) 477-3380.

Datom Engineering Software, Inc. TMS iii-End Mills-Electronic Reference Manual Nomenclature, Definitions, Sizes, and Tolerances of End Mills

3. Numbering System

- 3.1 **Format**—The basic numbering system utilizes 21 or 37 positions to fully describe the various dimensions, types, materials, and characteristics of End Mills.

3.1.1 **FORMAT—21 POSITION**—End Mills that comply with the referenced standards.

3.1.2 **FORMAT—37 POSITION**—End Mills that do not comply with the referenced standards.

- 3.2 **Content of Numbering System**—The numbering system utilizes 21 or 37 positions to fully describe the various dimensions, types, and characteristics of End Mills.

Figure 1 illustrates the content and sequence of the 21 positions in the numbering system for End Mills that comply with the referenced Standards.

Figure 2 illustrates the content and sequence of the 37 positions in the numbering system for End Mills that do not comply with the referenced Standards.

NOTE—Note the illustration shows only the additional 16 positions needed, reference Figure 1 for the first 21.

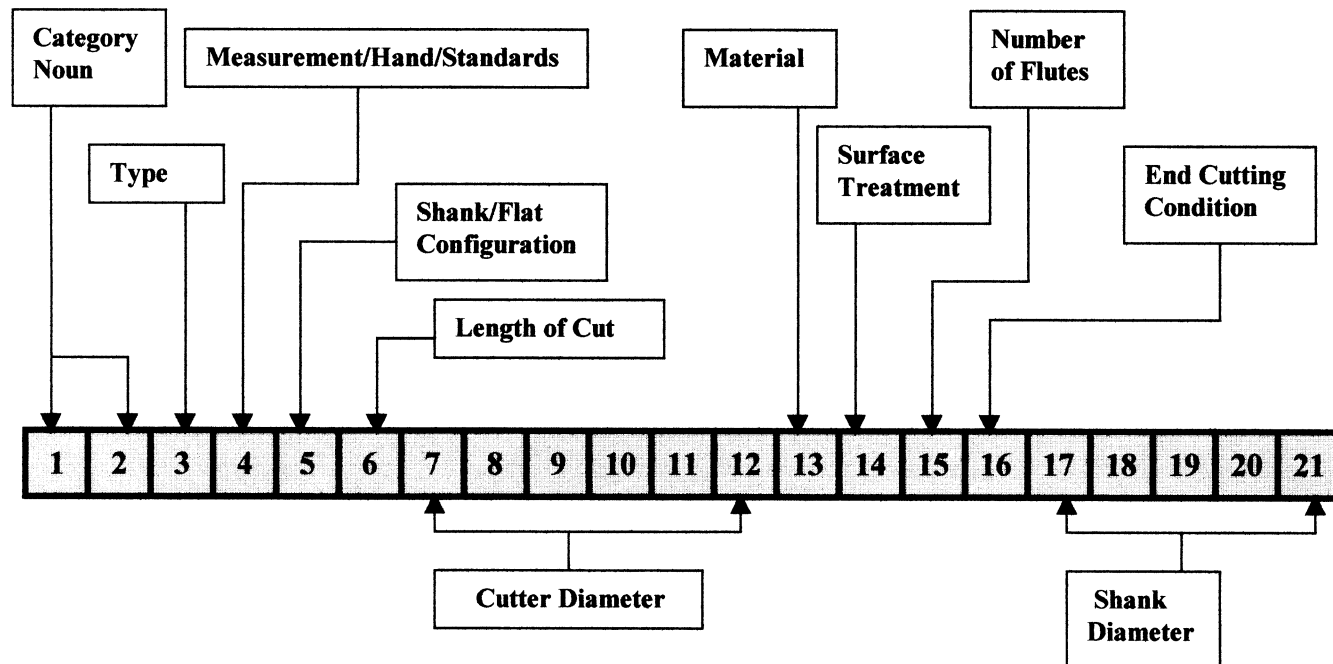


FIGURE 1—21 POSITION END MILLS

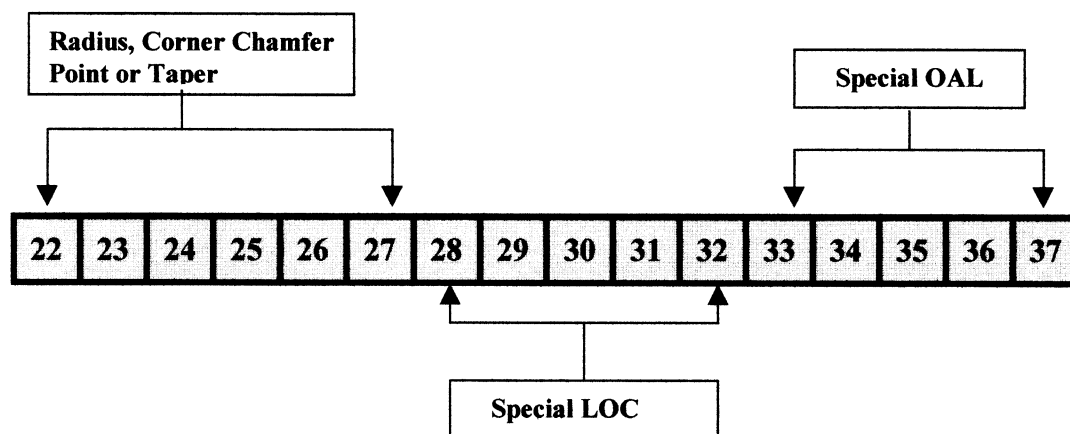


FIGURE 2—37 POSITION END MILLS

3.3 Positions—The content of each position is explained in detail in the following sections:

3.3.1 POSITIONS 1 AND 2—CATEGORY AND NOUN

Position 1: **T** - designates Tool
 Position 2: **E** - designates End Mill