



SURFACE VEHICLE RECOMMENDED PRACTICE

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Numbering System for Single Diameter Drills

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

NOTE 1—Caution must be taken when assigning codes for designators to prevent specifying drills 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 **Related Publications**—The following publications are provided for information purposes only and are not a required part of this document.

NOTE—Reference information not specified to be manufacturer's standard practices. Manufacturer to supply information for regrind upon request.

- 2.1.1 **ANSI PUBLICATIONS**—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ANSI B5.10—Machine Tapers

ANSI B94.11—Twist Drills

ANSI B94.11M-1979—Nomenclature, Definitions, Sizes, and tolerances of Twist Drills

- 2.1.2 **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.**

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

Datom Engineering Software, Inc., TMS III-Reamers-Electronic Reference Manual Nomenclature, Definitions, Sizes, and Tolerances of Twist Drills

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

DIN 228 Part 1—Morse Taper Shanks
DIN 332—60 Degree Center Holes
DIN 333—60 Degree Center Drills
DIN 333R—Center Drills with Radius Step Angles
DIN 338—Parallel Shank Twist Drills—Jobbers Series
DIN 339—Parallel Shank Twist Drills for Use in Jig Bushings
DIN 340—Parallel Shank Twist Drills—Long Series
DIN 341—Morse Taper Shank Twist Drills—Long Series
DIN 345—Morse Taper Shank Twist Drills for Use in Jig Bushings
DIN 346—Morse Taper Shank Twist Drill with Oversize Shank
DIN 1412—Twist Drill Definitions
DIN 1414—Twist Drills of High Speed Steel—Technical Conditions of Delivery
DIN 1809—Driving Tenons for Tools with Parallel Shanks
DIN 1861—Twist Drills for Jig Boring Machines
DIN 1869—Extra Length Drills Series 1, 2 and 3
DIN 1870—Extra Length Taper Shank Drills Series 1 & 2
DIN 1897—Stub Length Drills
DIN 1899—Cobalt Micro Precision Drills HSCO Form A
DIN 6539—Continuous Parallel Shank Solid Hard Metal Twist Drills
DIN 7168 Part 1—General Tolerances; Linear and Angular Dimensions
DIN 8037—Twist Drills wWith Parallel Shank with Carbide Tips for Drilling Metal
DIN 8038—Twist Drills with Parallel Shank with Carbide Tips for Drilling Plastics
DIN 8039—Parallel Shank Masonry Drills with Carbide Tips
DIN 8041—Twist Drills with Morse Taper Shanks with Carbide Tips for Drilling Steel
DIN 17350—Tools Steels—Technical Conditions of Delivery

- 2.1.4 ISO PUBLICATIONS—Available from International Organization for Standardization, 1 Rue DeVarembe, Case Postal 56, CH1211 Geneva 20 Switzerland. (The publications are also available through American National Standards Institute.)

ISO 235—Parallel shank jobbers, stub series drills and morse taper shank drills
ISO 286/2—System of limits and fits
ISO 296—Machine tools—Self holding tapers for tool shanks
ISO 494—Parallel shank twist drills—Long series
ISO 866—Centre drills for centre holes without protecting chamfers—Type A
ISO 2306¹—Drills for use prior to tapping screw threads
ISO 2540—Centre drills for centre holes with protecting chamfer—Type B
ISO 2541—Centre drills for centre holes with radius form—Type R
ISO 3291—Extra long morse taper shank twist drills
ISO 3292—Extra long parallel shank twist drills

1. Should not be included in SAE drill document reference at this time.

ISO 3438²—Subland twist drills with morse taper shanks for holes prior to tapping screw threads
 ISO 3432²—Subland twist drills with parallel shank for holes prior to tapping screw threads
 ISO 4203—Parallel shank tools—Driving tenons and sockets
 ISO 5413—Machine tools—Positive drive of morse taper sShanks
 ISO 5419—Twist drills—Terms, definitions, and types
 ISO 7079—Core drills with parallel shanks and with morse taper shanks
 ISO 10898—Spot drills

- 2.1.5 USCTI PUBLICATIONS—Available from United States Cutting Tool Institute, 1300 Summer Avenue, Cleveland, OH 44115.

Standard Drills—Handbook of Specifications
 USCTI—Handbook of Standard Drills

3. Numbering System

- 3.1 **Formats**—The basic numbering system is subdivided into two formats for drills:

- 3.1.1 **FORMAT—17 POSITION**—Drills with flute lengths and overall lengths which comply with the referenced Standards.
- 3.1.2 **FORMAT—27 POSITION**—Drills with flute lengths and/or overall lengths which do not comply with the referenced Standards.

- 3.2 **Content of Numbering System**—The numbering system utilizes 17 or 27 positions to fully describe the various dimensions, types, materials, and characteristics of drills.

Figure 1 illustrates the content and sequence of the 17 positions in the numbering system for drills whose flute lengths and overall lengths comply with the referenced Standards.

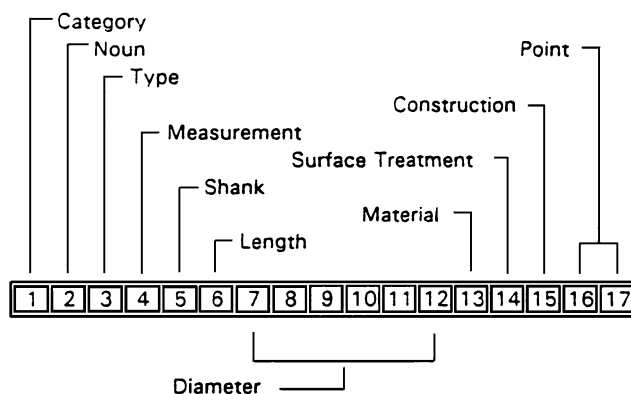


FIGURE 1—FORMAT—17 POSITION

Figure 2 illustrates the content and sequence of the 27 positions in the numbering system for drills whose flute lengths and/or overall lengths do not comply with the referenced Standards.

2. Should not be included in SAE drill document reference at this time.

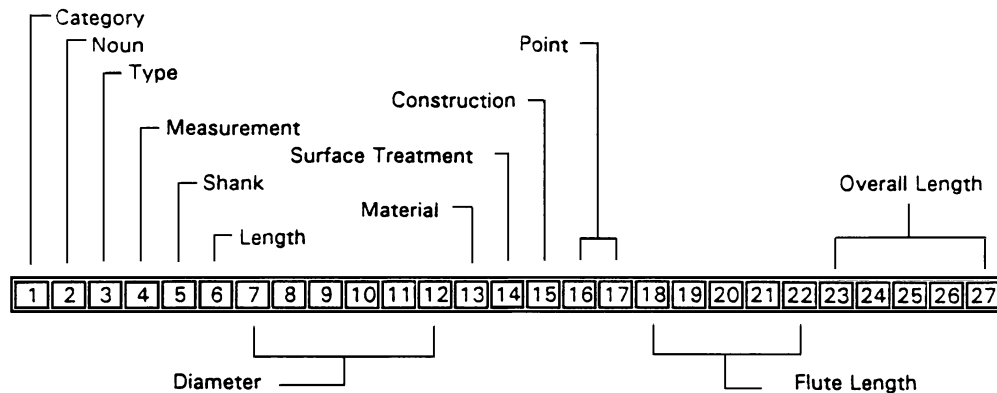


FIGURE 2—FORMAT—27 POSITION

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—Positions 1 and 2 will always be alphabetical. The following designations have been assigned:

Position 1: T—designates TOOL
 Position 2: D—designates DRILL

3.3.2 POSITION 3, TYPE—Position 3 will be numeric based on the type of drill. The following codes have been assigned:

- 3 – Core Drill 3-Flute
- 4 – Core Drill 4-Flute
- 5 – Combined Drill and Countersink
- 6 – Center Drill
- 7 – Straight Flute
- 8 – Twist Drill, 1 Flute
- 9 – Twist Drill, 2 Flute
- 0 – Twist Drill, 3 Flute

3.3.3 POSITION 4, MEASUREMENT SPIRAL—Position 4 will always be alphabetic. The following codes have been assigned:

- C – Inch, Right Hand – ANSI Standards
- D – Inch, No Spiral – ANSI Standards
- L – Inch, Left Hand – ANSI Standards
- M – Metric, Right Hand – ANSI Standards
- N – Metric, Left Hand – ANSI Standards
- P – Metric, No Spiral – ANSI Standards
- R – Metric, No Spiral – DIN Standards
- S – Metric, No Spiral – ISO Standards
- U – Metric, Right Hand – DIN Standards
- V – Metric, Left Hand – DIN Standards
- W – Metric, Right Hand – ISO Standards
- Z – Metric, Left Hand – ISO Standards