SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE RECOMMENDED PRACTICE

Submitted for recognition as an American National Standard

SAE J2124

Issued 1990-11-09

NUMBERING SYSTEM FOR REAMERS

1. SCOPE:

This SAE Recommended Practice provides a systematic method for the identification of various types of hand, machine, and shell reamers used in industrial applications. When used as recommended in this report, the numbering system will assist in obtaining consistent reamer descriptions in communications. The report was developed in cooperation with the Automotive Industry Action Group (AIAG).

2. REFERENCES:

ANSI B94.2-1983 Nomenclature, definitions, sizes, and tolerances of reamers.

3. NUMBERING SYSTEM:

3.1 Content:

Eighteen positions are used in the numbering system to fully describe the various dimensions, types, materials, and attributes of reamers. The names of these positions and their location in the identification code are illustrated in Figure 1.

Printed in U.S.A.

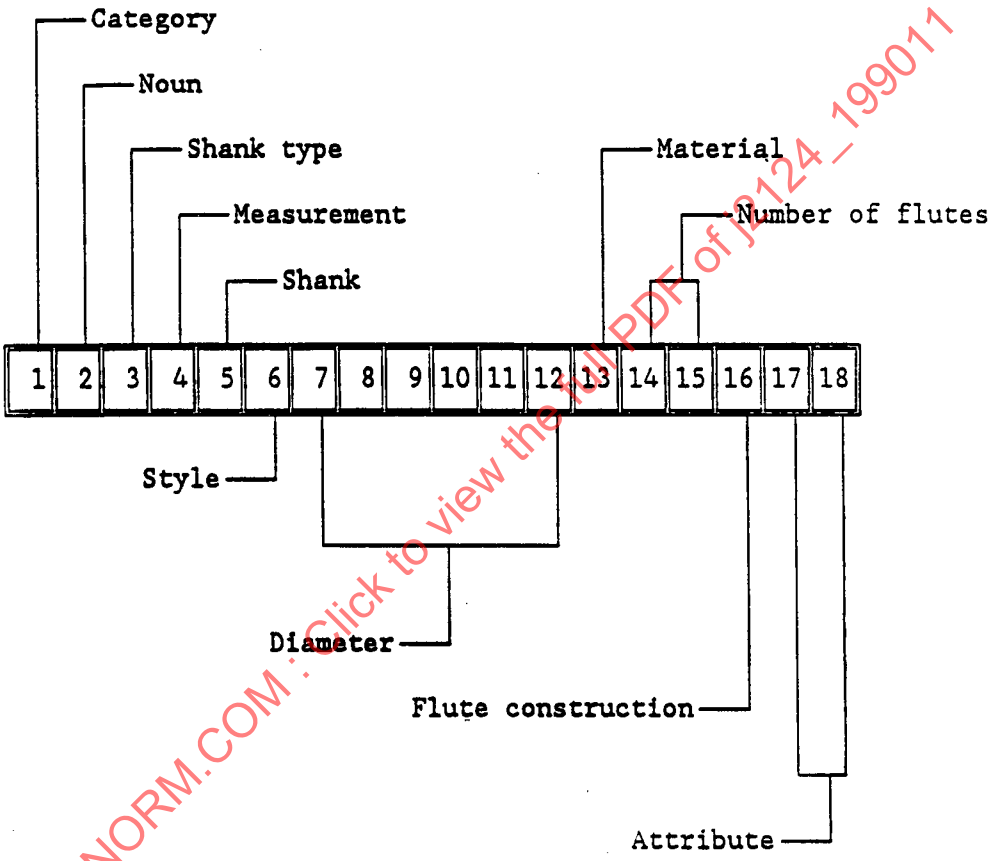

Figure 1 - Numbering System for Reamers

3.2 Positions:

An explanation of each of the eighteen positions is contained in the following sections.

3.2.1 Positions 1 and 2, Category and Noun: Positions 1 and 2 will always be alphabetic. The following designations have been assigned:

Position 1: T - Designates TOOL
Position 2: R - Designates REAMER

3.2.2 Position 3, Shank Type: Position 3 will always be numeric based on the type of shank. The following codes have been assigned:

1 - Straight Shank
2 - Taper Shank (Morse Taper or Brown & Sharpe Taper)
3 - Straight Shank Square Drive (Hand Reamers)
4 - Arbor Type (Shell Reamers)
5 - Floating Holder Shank (Stub Screw Machine Reamers)

3.2.3 Position 4, Measurement Designator: Position 4 will always be alphabetic. The following codes have been assigned:

C - Inch
M - Metric

3.2.4 Position 5, Shank Designator: Position 5 can be alpha or numeric and is used in conjunction with Position 3.

If Position 3 indicates a Taper Shank (#2), Position 5 will designate the Morse Taper number as follows:

0 - No. 0 Morse Taper Shank
1 - No. 1 Morse Taper Shank
2 - No. 2 Morse Taper Shank
3 - No. 3 Morse Taper Shank
4 - No. 4 Morse Taper Shank
5 - No. 5 Morse Taper Shank
6 - No. 6 Morse Taper Shank

If Position 3 indicates a Straight Shank (#1), Straight Shank Square Drive (#3), Arbor Type Shank (#4), or Floating Holder Shank (#5), Position 5 will be "S".

3.2.5 Position 6, Style of Reamer - Position 6 will be alpha. The following codes have been assigned:

A - Chucking Standard Length
B - Chucking Jobber Drill Length
C - Dowel Pin Chucking Standard Length
D - Dowel Pin Chucking Jobber Drill Length
E - Rose Chucking Standard Length
F - Expansion Chucking Reamer
G - Hand
H - Hand Expansion
I - (not to be used)

3.2.5 (Continued):

J - Adjustable Hand Expansion (Inserted Blade)
K - Jobbers
L - Bridge
M - Car
N - Jig Bore
O - (not to be used)
P - Stub Screw Machine
Q - Shell
R - Taper Pipe
S - Taper Pin
T - Die-Makers
U - Unassigned
V - Unassigned
W - Morse Taper Socket for Morse Taper Hole
X - Unassigned
Y - Brown & Sharpe Taper Socket for Brown & Sharpe Taper Hole
Z - Center

3.2.6 Positions 7, 8, 9, 10, 11 and 12, Diameter (Inch or Metric):

3.2.6.1 Diameter (Inch): If Position 4 indicates "C", numbers in Positions 7, 9, 10, 11, and 12 will represent the diameter to the ten thousandth of an inch. A decimal point is to be an integral part of the number and is located in Position 8.

NOTE: Use zeros for all open positions.

Examples:

0.1250 (1/8), 0.2010 (#7), 0.2570 (Letter F), 1.0000 (1")

Exceptions, as follows, are for if Position 4 indicates "C" and the code used in Position 6 is J, S, T, P, W, or Y:

If Position 4 indicates "C" and if code used in Positions 6 is J, S, or T, then the diameter will be replaced by the alpha/numeric or alpha size code.

Examples:

0.04/A (4/A), 0.07/0 (7/0), 0.000A (A), 0.0AAA (AAA)

If Position 4 indicates "C" and if code used in Position 6 is P then the Diameter will be specified as follows:

a. Finished Sizes - ten thousandth of an inch.

(1) Examples: 0.1250 (1/8), 0.3750 (3/8).

3.2.6.1 (Continued):

b. Unfinished - lowest ten thousandth of an inch within the diameter range specified by the Series number.

(1) Example: Series No. 00 diameter range .0600 - .066 diameter would be 0.0600.

If Position 4 indicates "C" and if code used in Position 6 is W, then the Diameter will be replaced by the Morse Taper Number.

Examples:

0.0000 (#0 MTS), 0.0001 (#1 MTS), 0.0002 (#2 MTS)

If Position 4 indicates "C" and if code used in Position 6 is Y, then the Diameter will be replaced by the Brown & Sharpe Taper Number.

Examples:

0.0004 (#4 B&ST), 0.0005 (#5 B&ST), 0.0010 (#10 B&ST)

3.2.6.2 Diameter (Millimeters): If Position 4 indicates "M", numbers in Positions 7, 8, 9, 11, and 12 will represent the diameter in millimeters. A decimal point is to be an integral part of the number and is located at Position 10. (Note: Use zeroes for all open positions.)

Examples:

000.90 (.90MM) 015.00 (15.00MM)
003.25 (3.25MM) 175.50 (175.50MM)

3.2.7 Position 13, Material Designator: Position 13 will always be alphabetic. The following codes have assigned:

A - Carbon Steel
H - High Speed Steel
C - Cobalt High Speed Steel
S - Solid Carbide
T - Carbide Tipped

3.2.8 Position 14 and 15, Number of Flutes: Positions 14 and 15 will always be numeric. The following codes have been assigned:

02 - 2 Flute	06 - 6 Flute
03 - 3 Flute	08 - 8 Flute
04 - 4 Flute	10 - 10 Flute
05 - 5 Flute	12 - 12 Flute

3.2.9 Position 16, Flute Construction: Position 16 will use the following alpha designation to identify flute construction, flute direction and direction of cut. The following codes have been assigned:

A - Straight, Right Hand Cut
B - Straight, Left Hand Cut
C - Spiral Right Hand, Right Hand Cut
D - Spiral Right Hand, Left Hand Cut
E - Spiral Left Hand, Right Hand Cut
F - Spiral Left Hand, Left Hand Cut
G - High Helix Right Hand, Right Hand Cut
H - High Helix Right Hand, Left Hand Cut
I - (not to be used)
J - High Helix Left Hand, Right Hand Cut
K - High Helix Left Hand, Left Hand Cut
L - Slow Spiral Right Hand, Right Hand Cut
M - Slow Spiral Right Hand, Left Hand Cut
N - Slow Spiral Left Hand, Right Hand Cut
P - Slow Spiral Left Hand, Left Hand Cut
O - (not to be used)

3.2.10 Positions 17 and 18, Attribute Designator: Positions 17 and 18 will always be numeric. The codes in Table 1 have been assigned to specify additional item description:

3.3 Examples:

The following are examples of use of the reamer numbering system:

a. TR1CSA0.3125H06A01: This Tool is a 5/16 in (0.3125) Diameter, HSS, 6 Straight Flute, Right Hand Cut, Straight Shank, Chucking Reamer, Standard length, 1-1/2 in Flute Length, 6 in Overall Length, Untreated (Bright).

b. TR1CSB0.3125H06A02: This Tool is a 5/16 in (0.3125) Diameter, HSS, 6 Straight Flute, Right Hand Cut, Straight Shank with Tang, Chucking Reamer, Jobber Drill length, 1-1/2 in Flute Length, 4-1/2 in Overall Length, Untreated (Bright).

c. TR1CSA0.3125T06A01: This Tool is a 5/16 in (0.3125) Diameter, Carbide Tipped, 6 Straight Flute, Right Hand Cut, Straight shank, Chucking Reamer, Standard Length, 1-1/2 in Flute Length, 6 in Overall Length, Untreated (Bright).

d. TR2C1A0.3125H06C01: This Tool is a 5/16 in (0.3125) Diameter, HSS, 6 Right Hand Spiral Flute, Right Hand Cut, #1 Morse Taper Shank, Chucking Reamer, Standard Length, 1-1/2 in Flute Length, 6 in Overall Length, Untreated (Bright).

e. TR3CSS0.07/0H04A01: This Tool is a Size 7/0, HSS, 4 Straight Flute, Right Hand Cut, Straight Shank Square Drive, Taper Pin Reamer, 13/16 in Flute Length 1-13/16 in Overall Length, 0.0497 Diameter Small End., 0.0666 Diameter Large End, Untreated (Bright).

3.3 (Continued):

f. TR3CSH0.2500A06A01 - This Tool is a 1/4 in (0.2500) Diameter, Carbon Steel, 6 Straight Flute, Right Hand Cut, Straight Shank Square Drive, Hand Expansion Reamer, 1-1/2 in Flute Length, 4 in Overall Length, Untreated (Bright).

g. TR2C1W0.0001H08A14 - This Tool is a #1 Morse Taper Socket Machine Finishing Reamer, HSS, 8 Straight Flute, Right Hand Cut, #1 Morse Taper Shank, 3 in Flute Length, 6-5/16 Overall Length, 0.3675 Diameter Small end, 0.5170 diameter Large end, Untreated (Bright).

4. A complete listing of the identification of various types of hand, machine, and shell reamers is contained within HS 2100 available separately from SAE.

TABLE 1 - Attribute Designator Codes

ATTRIBUTE DESCRIPTION	ATTRIBUTE DESIGNATOR
Chrome Treated	30
Chrome Treated - Tanged	31
Nitride Treated	45
Nitride Treated - Tanged	46
Standard Treated	60
Standard Treated - Tanged	61
Titanium Nitride	85
Titanium Nitride - Tanged	86
Untreated (Bright)	01
Untreated (Bright) - Tanged	02
Untreated (Bright) - End Cutting to Flute Depth	03
Untreated (Bright) - End Cutting To Flute Depth - Tanged	04
Untreated (Bright) - End Cutting To Center Hole	05
Untreated (Bright) - End Cutting To Center Hole - Tanged	06
Untreated (Bright) - End Cutting Across Center	07
Untreated (Bright) - End Cutting Across Center - Tanged	08
Untreated (Bright) - Cleared For Brass	09
Untreated (Bright) - Cleared For Brass - Tanged	10
Untreated (Bright) - Cleared For Bronze	11
Untreated (Bright) - Cleared For Bronze - Tanged	12
Untreated (Bright) - Unfinished	13
Untreated (Bright) - Finishing	14
Untreated (Bright) - Roughing	15
Untreated (Bright) - Carbide Full Length of Flute	16
Untreated (Bright) - Carbide Full Length of Flute - Tanged	17
Untreated (Bright) - Solid Carbide Head Steel Shank	18
Untreated (Bright) - 60 Degree Included Angle	19
Untreated (Bright) - 82 Degree Included Angle	20
Untreated (Bright) - 90 Degree Included Angle	21
Untreated (Bright) - 100 Degree Included Angle	22
Untreated (Bright) - 110 Degree Included Angle	23
Untreated (Bright) - 120 Degree Included Angle	24