SAE INTERNATIONAL

AEROSPACE RECOMMENDED PRACTICE

ARP1590 | REV. A

Issued 1999-07
Revised 2009-06
Reaffirmed 2014-10

Superseding ARP1590

Recommended Part Numbering Guidelines for Fluid System Components Inch System of Measurements

RATIONALE

ARP1590A has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE

This SAE Aerospace Recommended Practice (ARP) presents a recommended part numbering scheme for fluid system component parts, which may require complex standard numbers. Standardizing on certain numbering systems provides for numbering simplicity, ease of interchangeability and supersession (when required), standardization and limitation of usable codes.

This ARP is similar to ISO/TC20/SC10 and its usage is recommended for commonality in international standard part numbering practices.

1.1 Purpose

The purpose of this ARP is to consider the part numbering system for hose assemblies, fittings, and clamps. Other components may be added later.

1.1.1 Each component type has established standard codes, which are unique to that type and cannot be interchanged with other component types.

1.1.2 The recommendations shown herein are based on the inch system of measurement. Recommendations based on the metric system of measurement are in coordination in ISO/TC20/SC10.

1.1.3 Use of these codes is expected, but is not obligatory, when defining characteristics of components covered by this practice. Codes other than those specified in this practice, that appear on existing standards may continue to be used and are not necessarily considered to be in contradiction with this practice.

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http://www.sae.org/technical/standards/ARP1590A

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), http://www.sae.org

ARP1785 Standard Codes for Outer Sleeving on Hose Assemblies

ARP5102 Fluid Fittings - Jump Size Limitations

2.2 Definitions

BASIC STANDARD NUMBER: A number that is the drawing specification or standard number for a part or family of parts, sometimes referred to as a “stem number”. For standards that have been adopted by SAE during the ‘Military Standard Reform Exercise’, the prefix of the standard number and the stem number may not coincide.

DASH NUMBER: Each digit of a part number, other than the basic standard number, used to define and differentiate individual part configurations with the standard.

DIGIT: For the purpose of simplicity and clarity in the context of this document, the word “digit” encompasses all numbers, alpha characters (where all letters are capitalized) and symbols that occupy a space within a part number.

NON-SIGNIFICANT DASH NUMBER: A non-significant dash number is a dash number that is numerical, sequential, and contains no coding.

3. CONSTRUCTION OF PART NUMBERS

3.1 Part Number Length

To the maximum extent possible, part numbers should be limited in length to 15 digits. Part numbers up to 19 digits in length are acceptable, if required to fully differentiate part numbers.

3.1.1 Part number construction should be as simple as possible. If part numbers become very complex, separation into more than one standard should be considered.

3.2 Basic Standard Numbers

It is recommended that the basic standard number be a maximum of 7 digits in length even though the part number examples shown herein allow a higher maximum number of digits.

3.3 Dash Numbers

3.3.1 Non-Significant Dash Numbers

If non-significant dash numbers are used, they would be two digits in length unless the scope of the standard requires more than two digits to identify all the variations contained on the standard.

3.3.2 Coded Dash Numbers

Significant coding in part numbers should be avoided. Part numbers without significant coding may be established for any part, even though standardized coding is available herein.

3.4 Example of a Simple Part Number (see Figure 1)

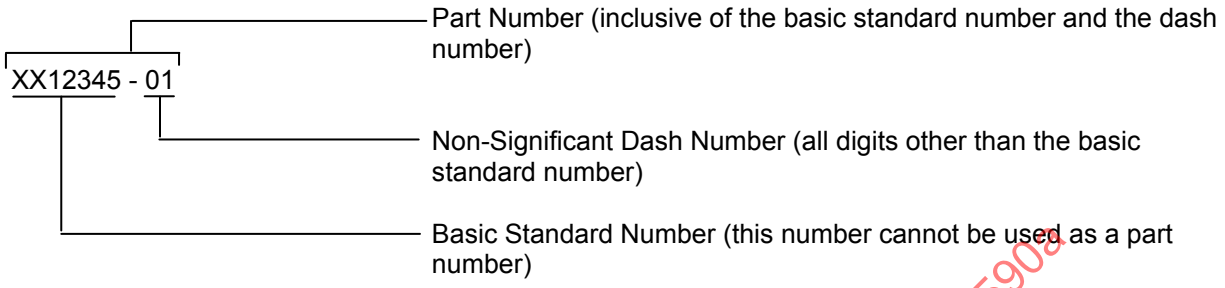

FIGURE 1 - EXAMPLE OF A SIMPLE PART NUMBER

3.5 Example of a Complex Part Number (see Figure 1A)

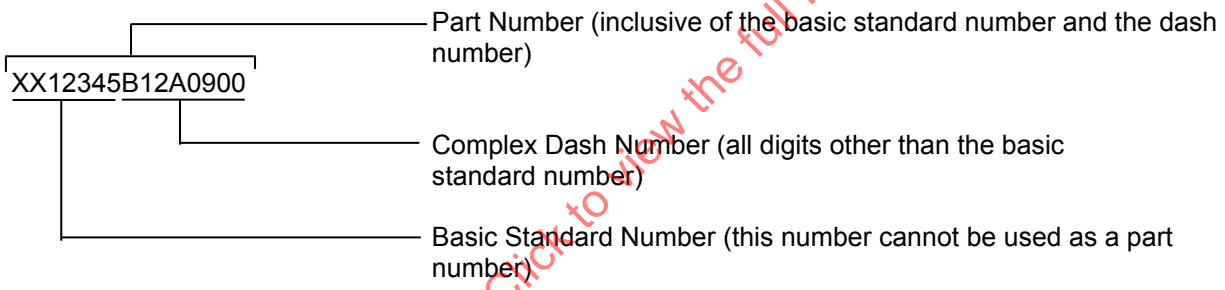

FIGURE 1A - EXAMPLE OF A COMPLEX PART NUMBER

3.6 General Recommendations

3.6.1 Whenever possible, a hyphen (-) should be used to separate numbers from each other (in lieu of a space) but should not be used to separate letter codes from numbers. Running letter codes consecutively or number codes consecutively should be avoided but is not prohibited. A hyphen (-) shall constitute one character.

3.6.2 If consecutive number codes or letter codes are used, no more than four (4) successive number codes or letter codes shall be used, and adjacent codes shall not be ambiguous in meaning.

3.6.3 When establishing a new basic series of numbering, issuance of the short basic standard number series should be limited to those parts requiring long, complex dash numbers and justify their use to stay within the 15 digit limitation. Typical fluid system parts requiring this would be hose assemblies and reducer/expander tee fittings. Short basic standard number may also be needed to stay within the 19-digit limitation, reference para 3.1.

Example: Basic standard numbers AS1 thru AS999 should be reserved for use in this manner. The shorter base document number series is to be requested and used when the completed part number would exceed the 15-character limit.

3.7 Limitations

3.7.1 Letters “I”, “O”, “Q”, “X”, and “Z” shall not be used as code letters.

3.7.2 Numbers shall be Arabic numerals.

3.7.3 Blank spaces are not permitted.

3.7.4 Symbols such as parentheses ( ), asterisk *, degree °, plus + shall not be used, except when referencing the Government or Industry document whose identification contains such a symbol. On new documents, where there are “/” (slash) sheets, the slash shall be dropped and replaced with a dash “-“.

3.7.5 The dash number shall have the same characteristics as the basic standard number and may be composed of numbers, letters, or any combination thereof.

3.7.6 Part standard drawing revision letters (if any) shall not be included in the part number.

4. RECOMMENDATIONS FOR COMPLEX NUMBER REQUIREMENTS

The following paragraphs are part-numbering recommendations for certain types of parts where inconsistencies and problems in development of part numbers are known to exist.

NOTE: For very special parts, consideration should be given to establishing individual drawings for each part number.

4.1 Standard Numbering System for Hose Assemblies

4.1.1 General Codes

The following option codes, sleeving codes, numeric size codes, letter size codes, length codes, and angular orientation codes are established standards for use in construction of significant part numbers.

Usage of these codes is not mandatory if a non-significant part numbering discipline is used.

4.1.1.1 Option Codes

Option code letters to be used in the part number are shown in Table 1:

TABLE 1 - HOSE ASSEMBLY OPTION CODES

Code Letter	Option
A	Oxygen Clean
H	Both safety wiring and solid / dry film lubricated provisions
L	Drilled for safety wiring
N	Solid / Dry Film Lubricated

Note: 1- An option code is not required if the requirement is mandatory as stated within the part standard.

4.1.1.2 Sleeving Codes

Sleeving code letters for each part standard shall be selected from ARP1785.

4.1.1.3 Size Codes

Hose assembly and end fitting size codes shall be numeric or alphabetic. Sizes are codes in 0.0625 in increments. Sizes smaller than 10 (0.6250 in Dia) shall have the numeric code preceded by a zero (0).

Example: 08 = 0.5000 in fitting

4.1.1.3.1 Hose assemblies less than 8000 psi operating pressure shall use size codes as shown in Table 2:

TABLE 2 - HOSE SIZE CODES

Hose or Fitting Size	Numerical Size Code	Alphabetical Size Code
0.1250	02	B
0.1875	03	C
0.2500	04	E
0.3125	05	F
0.3750	06	G
0.5000	08	H
0.6250	10	J
0.7500	12	K
1.0000	16	M
1.2500	20	N
1.5000	24	P
2.0000	32	R

4.1.1.3.2 Hose assemblies with 8000 psi operating pressure shall only use size codes as shown in Table 3:

TABLE 3 - HOSE SIZE CODES FOR 8000 PSI

Hose or Fitting Size	Numerical Size Code	Alphabetical Size Code
0.1875	03	-
0.3125	05	-
0.4375	07	-
0.5625	09	-
0.6875	11	-
0.8125	13	-
0.9375	15	-

Alphabetical size codes for 8000 psi have not been established. They may not be needed and if needed would be unique to the 8000 psi standard.

4.1.1.4 Length Code

Hose assembly lengths shall be coded in inches and in 0.125 in increments.

The length code shall always be four (4) digits long, the first three (3) digits in whole inches, using leading zeros when necessary, and the last digit in 0.125 of an inch, allowing for hose assemblies with lengths less than 1000 in.

4.1.1.5 Angular Orientation Codes

Double elbow hose assemblies or other hose assemblies requiring end fitting orientation shall have a three (3) digit orientation code, coded in whole degrees.

The fitting orientation dash number is a three digit number defining the relative position of the end fittings in 1 degree increments (Example: 090 = 90 degrees). Fitting orientation shall be measured counterclockwise from the nearest end fitting which shall be in the relative 000 degree position (see Figure 2). When end fittings are pointing in the same direction, the dash number shall be “000”.

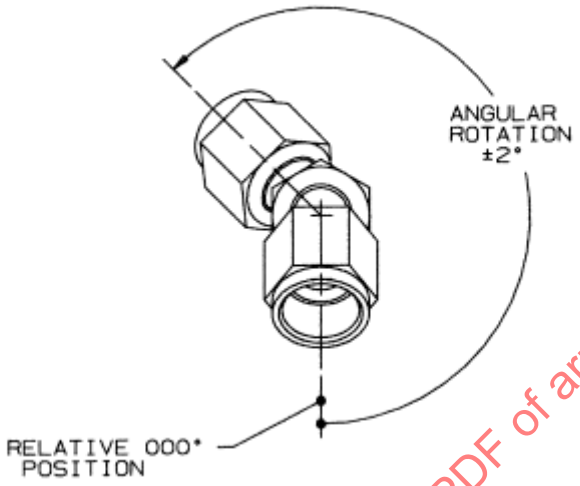

FIGURE 2 – FITTING ANGULAR ORIENTATION /11/

4.1.2 Hose Assemblies Part Number Structure

4.1.2.1 Hose Assemblies With At Least One Straight End Fitting (15 Digits)

XXXXXXX H 08 – 024 4

- Additional length in 0.125 inch Increments (4 = 0.500 inch; use zero [0] if length is in whole inches).
- Length in whole inches (3 digits)
- Sleeving code per ARP1785 (use dash [-] if no sleeving).
- Hose assembly numeric size code in 0.0625 inch increments
- Option code letter (use dash [-] if no option. (See 4.1.1.1)
- Basic hose assembly standard (7 digits maximum)
  Defining:
  a. Type of hose assembly (basic construction, materials, pressure rating, etc.) as covered by the applicable part specification.
  b. Style of hose assembly (end fitting configurations, including sealing technique).

FIGURE 3 - 15 DIGIT PART NUMBER STRUCTURE FOR HOSE ASSEMBLIES WITH ONE STRAIGHT END FITTING

4.1.2.2 Hose Assemblies With Elbow Fittings At Both Ends (15 Digits)

NOTE: Because of part number length limitations, the option code is not available on these hose assemblies.

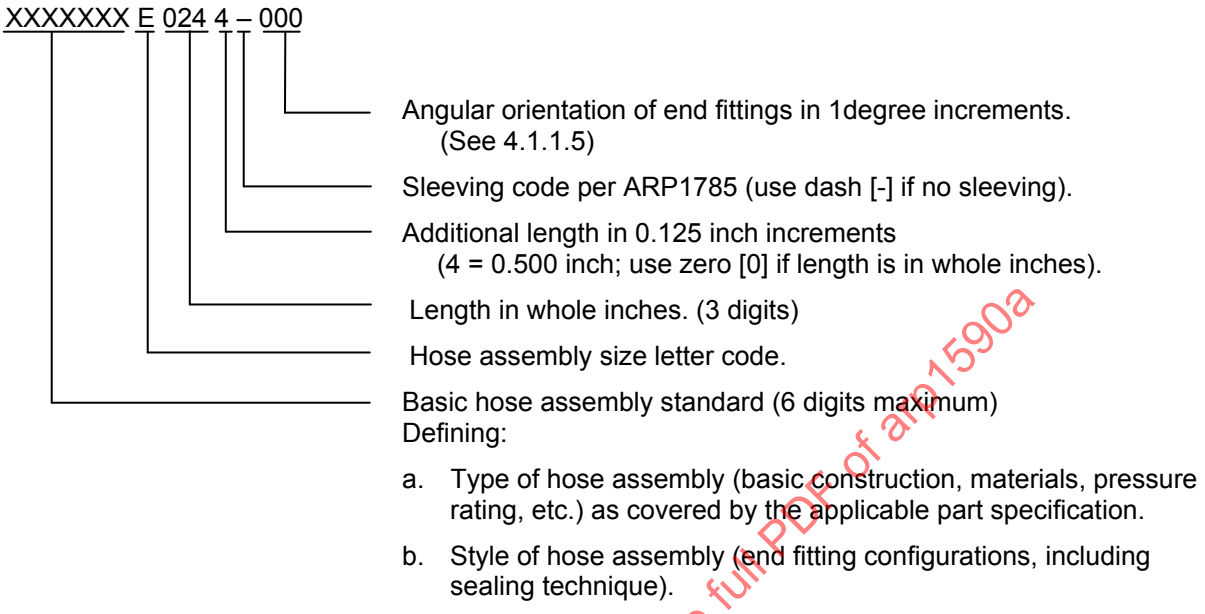

FIGURE 4 - 15 DIGIT PART NUMBER STRUCTURE FOR HOSE ASSEMBLIES WITH ELBOW AT BOTH ENDS

4.1.2.3 Non-Reducing Hose Assemblies (19 Digits)

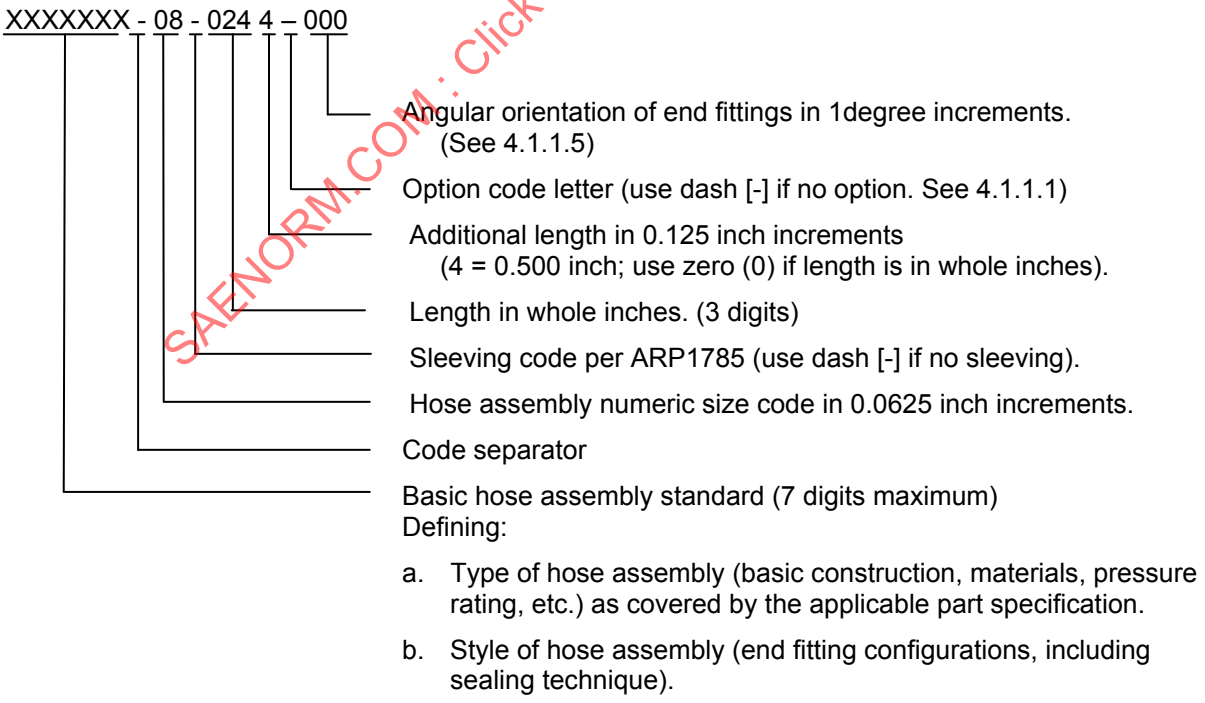

FIGURE 5 - 19 DIGIT PART NUMBER STRUCTURE FOR NON-REDUCING HOSE ASSEMBLIES

4.1.2.4 Hose Assemblies With Reducer/Expander Fittings (19 Digits)

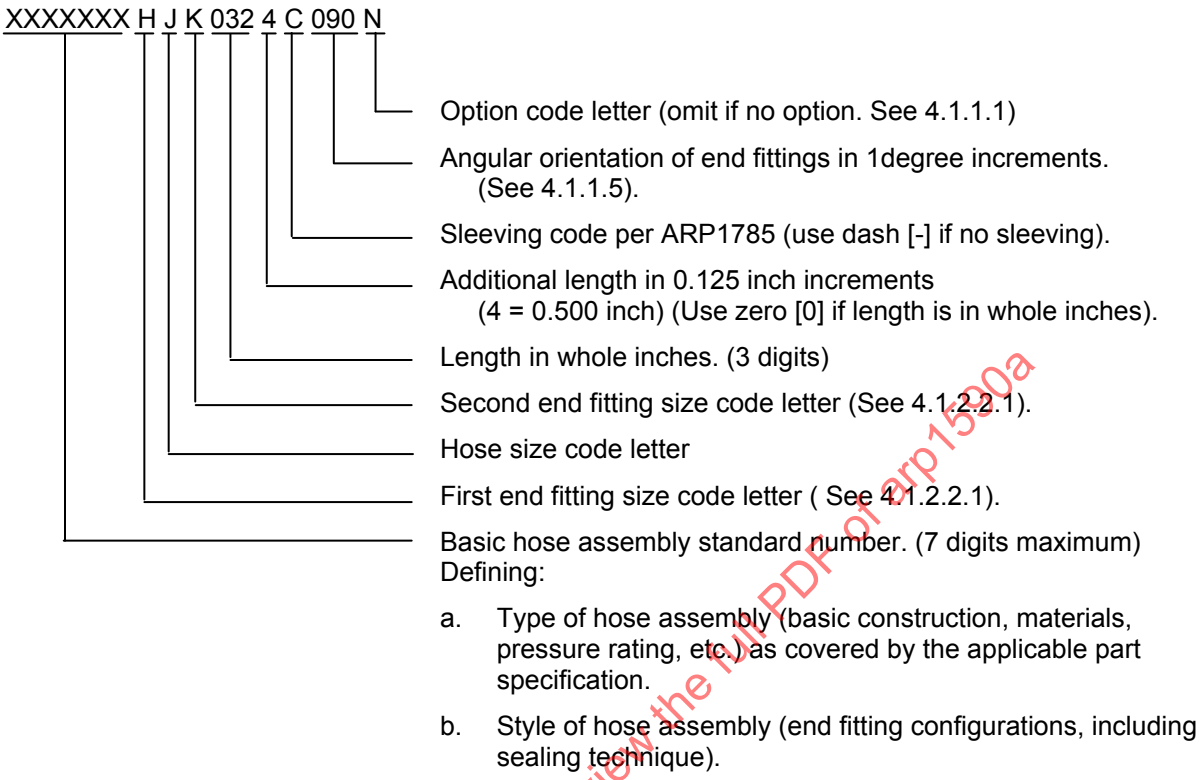

FIGURE 6 - 19 DIGIT PART NUMBER STRUCTURE FOR HOSE ASSEMBLIES WITH REDUCER/EXPANDER FITTINGS

4.1.2.4.1 First End Fitting Definition

The “first end fitting” configuration shall be the straight fitting, if the hose assembly is straight to elbow or the 90 degree elbow fitting, if the hose assembly is 90 degree elbow to 45 degree elbow.

4.2 Standard Numbering System for Fluid Fittings

4.2.1 General Codes

The following material codes, option codes, and size codes are established standards for use in construction of significant part numbers. Usage of these codes is not mandatory if a non-significant part numbering discipline is used.

4.2.1.1 Material Codes

Material codes, when applicable, are established as shown in Table 4:

TABLE 4 - FITTING MATERIAL CODES

Code Letter	Material
Dash (-)	Carbon Steel
A	A286 CRES
B	Copper Base Alloys
D	2014 Alum Alloy Forgings or 2024 Alum Alloy Bar
E	Commercially Pure Titanium
F	41xx Alloy Steel
G	1137 Steel
J	304 CRES
K	316 CRES
N	Nickel Alloy 625
P	17-4PH CRES
R	321 CRES
S	347 CRES
T	6AL-4V Titanium Alloy
V	15-5PH CRES
W	7075 Aluminum Alloy
Y	Nickel Alloy 718

4.2.1.2 Option Codes

Additional option codes are established as shown in Table 5:

TABLE 5 - FITTING OPTION CODES

Code Letter	Options
A	Oxygen Clean
H	Both safety wiring and solid/dry film lubricated provisions
L	Drilled for safety wire
N	Solid / Dry Film Lubricant

Note: 1- An option code is not required if the requirement is mandatory as stated within the part standard.

4.2.1.3 Size Codes

Sizes are coded in 0.0625 in increments. Size codes smaller than 10 (0.6250 in Dia) shall have the number preceded by a zero (0).

Example: 08 = 0.5000 in fitting

4.2.1.4 Finish Codes

Finish codes are established as shown in Table 6 (an option code is not required if the finish requirement is mandatory as stated in the part standard and is not an option for the fittings). A finish code should then follow the size code.

TABLE 6 – FINISH OPTIONS CODES

Code Letter	Options
P	Cadmium Plating
V	Ion Vapor Deposition (IVD)
G	Zinc Plating
U	Zinc Nickel Plating

Note: 1- Part standard that have a body, wire and nut, shall specify what component requires special finishing.

4.2.2 Numbering System for Nominal Size Fittings

Nominal size fittings are fittings (unions, elbows, tees, etc.) that have ports, which are all the same size. See 4.2.2.3 for special cases.

4.2.2.1 Fittings Which Are Not Assemblies or Fitting Assemblies of One Material

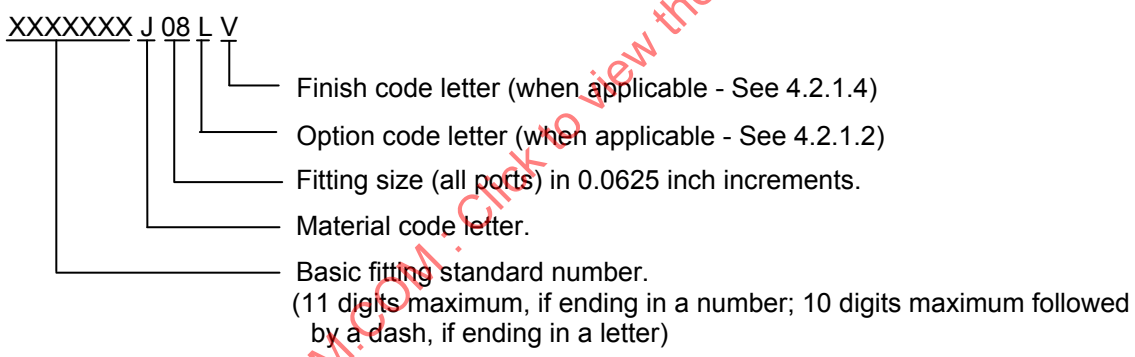

FIGURE 7 - PART NUMBER STRUCTURE FOR NOMINAL SIZE FITTINGS OR FITTING ASSEMBLIES OF ONE MATERIAL

4.2.2.2 Fittings Which Are Assemblies of Different Materials

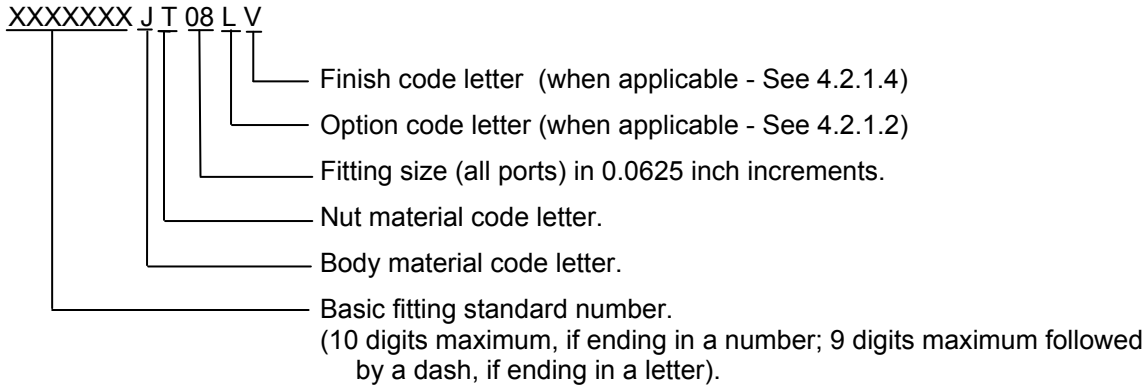

FIGURE 8 - PART NUMBER STRUCTURE FOR NOMINAL SIZE FITTING ASSEMBLIES OF DIFFERENT MATERIALS

4.2.2.3 Nominal Size Fittings on Reducer/Expander Standards

Nominal size fittings which would normally use a simple size designation will use the multiple size designation for reducer/expander fittings, if included on a standard that contains reducer/expander fitting configurations.

Example of part number for a tee fitting in this case: ASXXXXXJ080808L

4.2.3 Numbering System for Reducer/Expander Fittings

Reducer/expander size limitation shall be in accordance with ARP5102.

4.2.3.1 Unions, Adapters and Elbow Fittings (2 Port Fittings)

4.2.3.1.1 Both Ports Having the Same Style

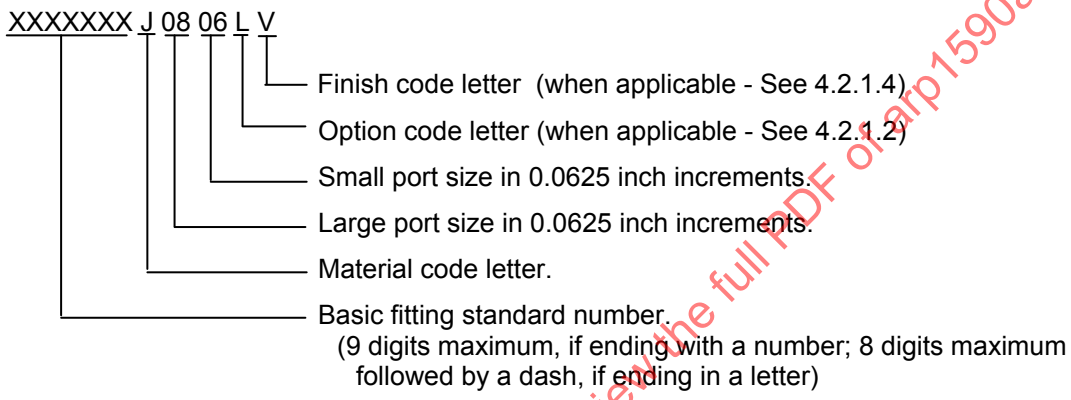

FIGURE 9 - PART NUMBER STRUCTURE FOR 2 PORT REDUCER/EXPANDER FITTINGS WITH BOTH PORTS THE SAME STYLE

4.2.3.1.2 Different Port Styles

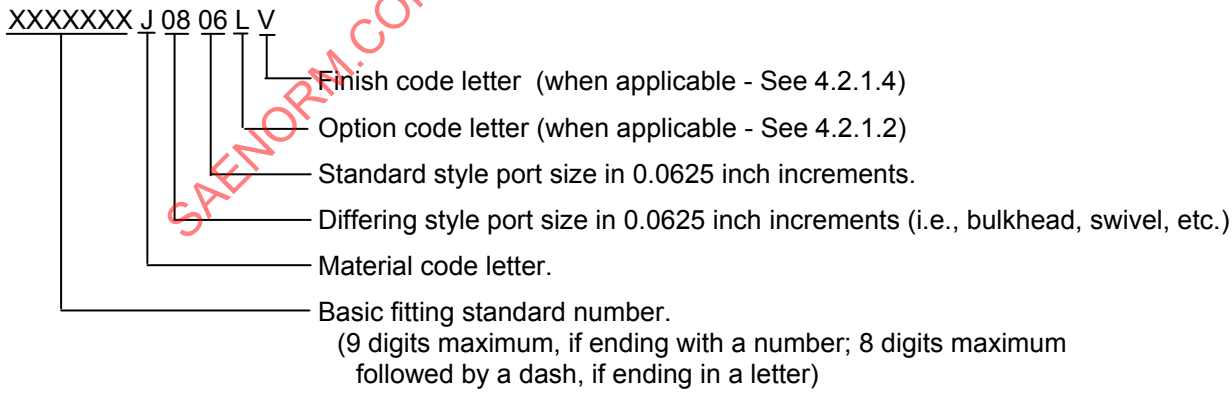

FIGURE 10 - PART NUMBER STRUCTURE FOR 2 PORT REDUCER/EXPANDER FITTINGS WITH DIFFERENT STYLE PORTS

4.2.3.1.3 Fittings Which Are Assemblies (Body and Nut) of Different Materials

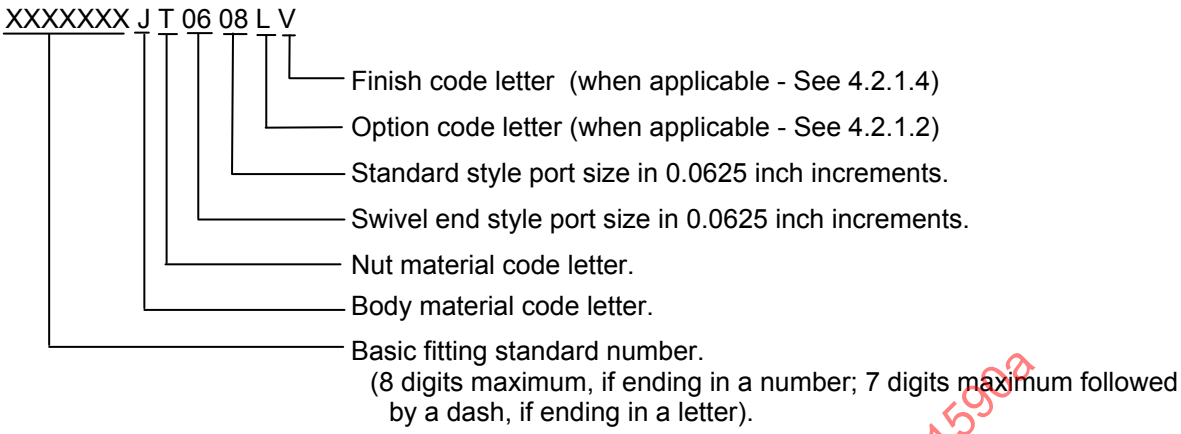

FIGURE 11 - PART NUMBER STRUCTURE FOR 2 PORT REDUCER/EXPANDER FITTING ASSEMBLIES

4.2.3.2 Tees (3 Port Fittings)

The numerical designation of ports shall be in accordance with Figure 12.

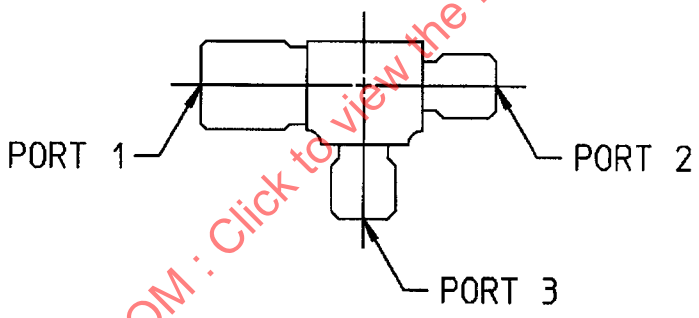

FIGURE 12 - PORT ORIENTATION FOR TEES

4.2.3.2.1 All Three Ports Having the Same Style or When Differing Port Style is the Side Port

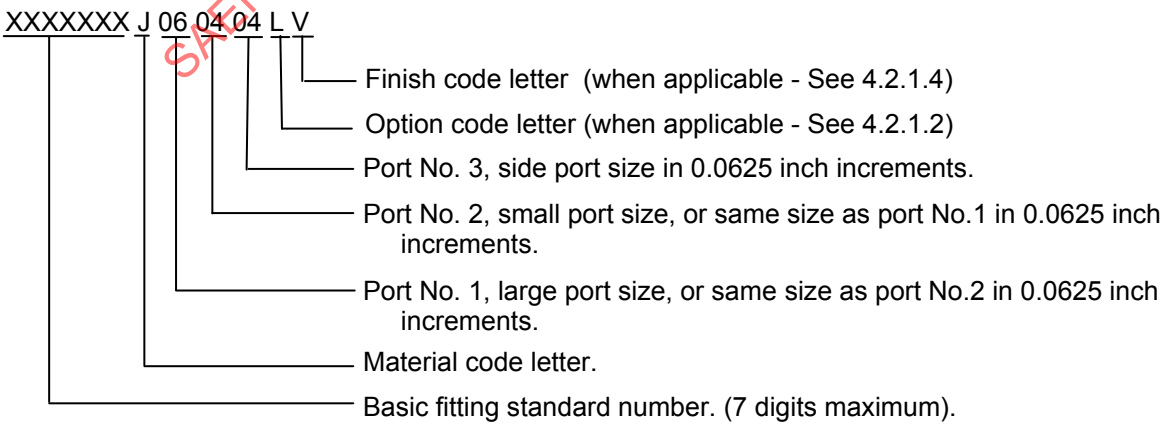

FIGURE 13 - PART NUMBER STRUCTURE FOR TEES WITH THE SAME STYLE PORTS OR WHEN THE DIFFERING PORT STYLE IS PORT NO. 3 STYLE