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UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Utilities Service

BULLETIN 1728F-800

SUBJECT: Assembly Unit Numbers and Standard Format

TO: RUS Electric Borrowers and RUS Electric Staff

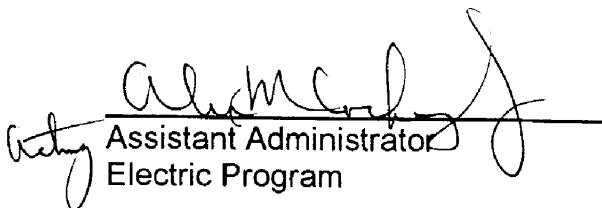
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PURPOSE: This bulletin explains and documents the Rural Utilities Service (RUS) construction assembly unit numbering scheme and a new, updated, numbering format used in RUS Bulletin 1728F-803, "Specifications and Drawings for 24.9/14.4 kV Line Construction." This bulletin further explains the meanings of the characters in the numbers assigned by the RUS to its construction assembly units. Presently, this new numbering format is only used in RUS Bulletin 1728F-803.


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12/16/98
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ABBREVIATIONS

$L_1N_1 - N_2$	A symbolic representation of the REA historic format for numbering assembly units
$L_1N_1 . N_2$	A symbolic representation of the new format used for numbering assembly units in RUS Bulletin 1728F-803
L_1	A symbol (letter) in the identification number of an assembly unit which represents a <u>category</u> of assembly units
N_1	A symbol (number) in the identification number of an assembly unit which represents a <u>subcategory</u> of assembly units
N_2	A symbol (number) in the identification number of an assembly unit which represents the <u>identification number</u> of an assembly unit
REA	Rural Electrification Administration
RUS	Rural Utilities Service

ASSEMBLY UNIT NUMBERS AND STANDARD FORMAT

1. CONSTRUCTION ASSEMBLY UNITS, DRAWINGS, NUMBERS, AND MATERIAL: Early on in the electric program, the Rural Utilities Service, formerly the Rural Electrification Administration (REA), established a universal system of defining and numbering standard construction assembly units for engineering, construction, and accounting purposes. In the electric program, an assembly unit is defined as a group of materials, specifically arranged, that fulfills a specific function in the operation of an electric supply line.

1.1 The RUS maintains sets of drawings in which each drawing is the official graphic representation of a RUS standard construction assembly unit. The drawings show the configuration, dimensions, and materials used in the construction of the various RUS standard assemblies. Some drawings show assembly details and instructional notes.

1.2 Each assembly is given a unique “number” designation, which is a combination of letters and numbers. The assembly unit number is shown in the title block of the drawing of the assembly. If more than one assembly are depicted on a drawing, then each assembly number is usually shown in the drawing title block.

1.3 The drawings list and identify, with a short description and an alphabetical designation, each piece of material required to construct each assembly unit. The alphabetical designations refer to items, with the same alphabetical designation, found in RUS Informational Publication 202-1, “List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers.”

2. CATEGORIES AND SUBCATEGORIES OF ASSEMBLY UNITS: Each construction assembly unit fulfills a specific functional purpose in the construction and operation of an electric supply line. For example, several assembly units are designed to support a single-phase primary conductor and a neutral conductor. These assembly units are grouped together into one *category* and designated as “A” pole-top assembly units. Similarly, all of the assembly units required for guying structures are grouped together into one category and designated as “E” assembly units.

2.1 Table 1 in the Appendix shows and compares the historical REA categories of distribution line assembly units and the new categories created during the recent update of Bulletin 1728F-803. All of the new designated categories are defined with a single, capitalized letter. The older designated categories use a single letter (such as “F”) or the combination of a single letter and a number (such as “M2”) to define a category. In the latter case, two characters are used

to define categories so that several different types (categories) of assemblies are not all grouped together in the “M” (miscellaneous) category.

2.2 Pole-top assemblies are construction assembly units that support primary conductors and their associated neutral conductor. The four categories of pole-top assembly units are: single-phase, two-phase, three-phase, and double-circuit. These categories are defined with the capital letters “A” through “D”, respectively. Each of these categories is divided into *subcategories*. An ordinal number, which follows the category alphabetical character in the assembly number, is used to define each subcategory. Each subcategory number designates the range of line angles for which the group of pole-top assemblies within that subcategory is designed. Each of the four pole-top categories has the same line angle subcategories with the same identifying ordinal number. Table 2 in the Appendix shows the subcategory description (line angles), the historical REA numeral designation for each subcategory, and the new RUS numeral designation for each subcategory of the RUS pole-top assembly units.

2.3 In the revised RUS Bulletin 1728F-803, the number of assembly unit categories, designated by single letters, was increased as shown in Table 1 of the Appendix. Additionally, each new category was assigned new subcategories similar to the existing subcategories of assembly units “A” through “D”. A complete list of these new subcategory assignments, their assigned number designation, and the meaning of the new designations are shown in Table 3 in the Appendix.

3. HISTORICAL NUMBERING FORMAT FOR ASSEMBLY UNITS: The historical basic standard format for numbering assembly units is of the form:

$$L_1N_1 - N_2$$

Where:

L_1 = a letter = Category of the assembly, (See Table 1);
 N_1 = a number = Subcategory of the assembly, (See Table 2); and,
 N_2 = a number = Assembly Identification Number

3.1 Only the pole-top assembly units and miscellaneous units (“M”) have subcategory numbers (“ N_1 ”). Each assembly unit is assigned a unique *assembly identification number* (“ N_2 ”) to differentiate it from the other assembly units with the same category letter. If there is only one assembly unit in the series, the dash (“-”) and the subcategory number (“ N_1 ”) are generally not used. This general rule is not always applied consistently.

3.2 Prefix letters and/or suffix letters are added to the basic numbering format when applicable. Each prefix letter denotes a specific meaning and is explained in detail in Section 4.2. Suffixes are explained in Section 4.3.

3.3 In summary, the historical format for numbering assembly units is varied. The format may be as simple as a category number plus an assembly identification number, such as "A2." Conversely, the assembly unit number may contain a category letter, a subcategory number, an assembly unit identification number, a prefix, and a suffix such as shown in the following specific example:

VC4 – 1L

Where:

- V** = Prefix (implies 24.4/14.4 kV construction);
- C** = Category (implies 3-phase primary, pole-top assembly);
- 4** = Subcategory (implies large angle, suspension insulators);
- 1** = Drawing Identification number; and,
- L** = Suffix (implies assembly to be used with large conductors).

Occasionally, the established rules explained above may vary.

4. NUMBERING FORMAT FOR ASSEMBLY UNITS IN BULLETIN 1728F-803, NUMBER PREFIXES, AND NUMBER SUFFIXES: In Bulletin 1728F-803, each assembly unit is also assigned a number using the same basic format as the historical REA numbering system. Symbolically, the newer format is:

L₁N₁ . N₂

Where:

- L₁** = a letter = Category of the assembly, (See Table 1);
- N₁** = a number = Subcategory of the assembly, (See Table 2); and,
- N₂** = a number = Assembly Identification Number

4.1 The categories, subcategories, and assembly identification numbers are similar to those used in the historical numbering system and are explained above and in the tables in the Appendix. Note that the dash ("-") has been replaced with a period ("."). The period is used to distinguish the new numbering scheme from the historical REA numbering system.

4.2 In both the historical and the new numbering systems, the assembly unit number may be preceded by a letter *prefix*. These prefixes denote either the voltage or type of use for which the assembly unit is designed. A complete list of all of the number prefixes used by RUS is shown in Table 4 of the Appendix.

4.3 Likewise, assembly unit numbers may be immediately followed by one or more alphabetic *suffixes*. Each letter suffix denotes a meaning. As a rule, an assembly unit number with a suffix means the assembly unit is a slight variation of the assembly unit with the same number without a suffix. The list of suffixes was expanded and each alphabetic suffix was assigned a specific meaning. Table 5 in the Appendix lists the historical and new suffixes and their denoted meanings.

4.4 Two new special numbering conventions were also established. First, identification numbers (“N₂”) that start with the number zero (“0”) denote that the assembly unit is less than a whole standard RUS assembly unit. Thus, for accounting purposes, an assembly unit whose identification number begins with the number zero is less than a whole retirement unit. Secondly, the identification numbers (“N₂”) for anchors (“F” assembly units) are generally one one-thousandth (1/1,000) of the anchor’s designated maximum holding power. For instance, the expanding anchor numbered “F1.8” has a maximum holding power of 8,000 pounds.

4.5 In summary, the format of all of the assembly unit numbers in RUS Bulletin 1728F-803 are in the same format as shown below. Many of the numbers do not contain a prefix nor a suffix. The standard format shown below has been expanded to show the proper placement of a prefix (“P”) and suffixes (“S₁” and “S₂”). Prefixes and suffixes are only added to assembly unit numbers when applicable as explained above.

PL₁N₁ . N₂S₁S₂

An example of a typical assembly unit number in RUS Bulletin 1728F-803 is: “**VC4.1L**”. This same example is shown above in Section 3.3. The only difference in the newer format is that the dash (“-”) has been replaced with a period (“.”). The meanings of the characters in this particular example are the same.

4.6 All of the numbering rules and conventions, and the meanings of the characters within the assembly unit numbers are documented within this bulletin. RUS endeavors to keep assembly unit numbers short, uniform, understandable, meaningful, and in a standard format. Thus, the identification numbers (“N₂”) should not be more than two digits, and the number of suffixes should not be more than three characters (letters).

TABLE 1

CATEGORIES OF CONSTRUCTION ASSEMBLY UNITS

CATEGORY DESCRIPTION (Function of Assembly Unit)	NEW DESIGNATION (RUS 1728F-803)	HISTORICAL REA DESIGNATION
Single-Phase Primary and Neutral Conductor Support	A	A
Two-Phase Primary and Neutral Conductor Support	B	B
Three-Phase Primary and Neutral Conductor Support	C	C
Double Circuit Primary and Neutral Conductor Support	D	DC
Guys	E	E
Anchors	F	F
Transformers	G	G
Grounds	H	M2
Secondaries	J	J
Services	K	K, M8, M24
Tying Guides	L	M40 – M43
Miscellaneous	M	M, R
Neutrals	N	-
Protection (Line, Pole)	P	M2
Metering	Q	M8
Reclosers	R	M3
Sectionalizing	S	M3, M5
Wood (Poles, Crossarms)	W	M5, M19, M20
Voltage Alterations (Regulators)	Y	M7

TABLE 2**SUBCATEGORIES (TYPES) OF POLE-TOP ASSEMBLY UNITS ***

* (Defined as Categories "A" through "D")

SUBCATEGORY DESCRIPTION (Type or Applicable Angles)	NEW DESIGNATION (RUS 1728F-803)	HISTORICAL REA DESIGNATION
Tangent; Small Angles ** Single Pin or Post-type Insulators	1	1,9
Small Line Angles ** Double Pin or Post-type Insulators	2	1,2,9
Large Line Angles ** Suspension-type Insulators	3	3
Large Line Angles ** Double Deadends Suspension-type Insulators	4	4
Single Deadends (Taps) Suspension-type Insulators	5	5,7
Double Deadends (Tangent) Suspension-type Insulators	6	6,8

** NOTE: Allowable line angles are usually defined and limited as shown on the notes and the design parameters of the drawings of each pole-top assembly unit.

TABLE 3

SUBCATEGORIES (TYPES) OF ASSEMBLY UNITS
(RUS BULLETIN 1728F-803)

CATEGORY (DESCRIPTION)	SUBCATEGORY DESIGNATION	DESIGNATION MEANING
E (Guys)	1	Through Bolt Type
	2	Through Bolt Type – Heavy Duty
	3	Wrapped Type
	4	Pole Band Type
	5	Miscellaneous Unit
F (Anchors)	1	Expanding Type
	2	Screw Type – (Power Installed)
	3	Plate Type
	4	Service Type
	5	Rock Type
	6	Swamp Type – (Power Installed)
G (Transformers)	1	Single-Phase Installation
	2	Two-Phase Installation
	3	Three-Phase Installation
H (Grounds)	1	Ground Rod Type
	2	Trench Type
	3	Ground Rod Type for Switches
	4	Platform Type for Switches
J (Secondaries)	1	Tangent, Small Angle
	2	Large Angle
	3	Deadends
	4	Miscellaneous
K (Services)	1	Pole Mounted
	2	Wall (House) Mounted
	3	Mast Type
	4	Service Drop (Guides)
L (Tying Guides)	1	Primary Conductors
	2	Neutral Conductors
	3	Secondary Conductors
	4	Service Drop Conductors

TABLE 3 (Cont.)

SUBCATEGORIES (TYPES) OF ASSEMBLY UNITS
(RUS BULLETIN 1728F-803)

CATEGORY (DESCRIPTION)	SUBCATEGORY DESIGNATION	DESIGNATION MEANING
M (Miscellaneous)	1	Rights-of-Ways
	2	Trees
N (Neutrals)	1	Tangent, Small Angle
	2	Small Angle
	3	Large Angle
	5	Single Deadend
	6	Double Deadends
P (Protection)	1	Line (Arresters)
	2	Pole
Q (Metering)	1	Single-Phase (Secondary)
	3	Three-Phase (Secondary)
	4	Primary (Three-Phase)
R (Reclosers)	1	One (Single-Phase)
	3	Three (Three-Phase)
S (Sectionalizing)	1	Cutouts
	2	Switches
W (Wood Material)	1	Poles
	2	Crossarms
	3	Braces
Y (Voltage Alteration)	1	Voltage Regulators
	2	Autotransformers
	3	Capacitors

TABLE 4

STANDARD ASSEMBLY UNIT NUMBER "PREFIXES"

PREFIX	DESIGNATED MEANING
T	Transmission Line Construction
U	Underground Distribution (URD)
V	24.9/14.4 kV Line Construction
Z	34.5/19.9 kV Line Construction

NOTE: No prefix implies 12.47/7.2 kV distribution construction.

TABLE 5

STANDARD ASSEMBLY UNIT NUMBER "SUFFIXES"

SUFFIX	NEW DESIGNATED MEANING (RUS 1728F-803)	HISTORICAL REA DESIGNATED MEANING
A	(Not Used)	Slight variation of design or materials
B	(Not Used)	Slight variation of design or materials
C	(Not Used)	Cabled Conductors (Secondary Voltages)
G	Guide Drawing (No Materials)	Guide Drawing (No Materials)
L	Large Conductors (See Note 1)	Large Conductors (See Note 1)
P	Use of post type insulators	Use of post type insulators
E	<i>Extra Large Conductors (Future) (See Note 2)</i>	<i>(Not Used)</i>
N	<i>Narrow Profile Construction (Future)</i>	<i>(Not Used)</i>

Note 1: Large conductors (#2/0 through 336.4 kcmil ACSR) have a breaking strength of 4,500 through 10,000 lbs.

Note 2: Extra large conductors (larger than 336.4 kcmil ACSR) have a breaking strength greater than 10,000 lbs.