**Changes to the List of Materials**

November 28, 2018

1. y(3) - Conzinal 95% Zinc - 5% Aluminum+ Mischmetal Alloy (AL-ZN-MM) Coated Steel Wire Strands
   1. Added Conex Cable LLC

November 2, 2018

1. y(2) - Zinc - 5% Aluminum - Mischmetal alloy (Zn-5Al-MM) – Coated, Steel Wire Strands
   1. Revised existing listing for Bekaert.
      1. Added additional wire sizes.
         1. (S-M): 1/4", 3/8", & 7/16".
         2. (HS): 9/32”.
         3. (EHS): 9/32”.
      2. Revised Note to “Class A” coating.

October 23, 2018

1. sj(1) – Switches, oil circuit recloser by-pass
   1. Added Hubbell (Chance)
      1. Type: BPF – 15kV, 27kV
2. sb-2 – Switch, disconnect (single-pole, hook operated distribution class)
   1. Added Hubbell (Chance)
      1. Type: M3C – 15kV, 27kV

August 31, 2018

1. cj-1 Pole Ground Wire
   1. Added sizes for Copperweld Bimetallics, LLC
      1. No 4 AWG Stranded (7x0680”), No. 4 AWG, No. 2 AWG Stranded (7x0860”),   
         No. 2 AWG, 7 No. 10 AWG, 2/0 (19x0860” & 7x1379”)
   2. Revised notes referring to Copperweld Bimetallics, LLC
2. sr-1 Steel Conductor for Substation Grounding, Copper-Clad or Galvanized
   1. Moved from Conditonal [sr(1)] to Full listing [sr-1] Copperweld Bimetallics, LLC
      1. 7 no 8 AWG, 2/0 (19x0860” & 7x1379”), 7 no 7 AWG, 7 no 6 AWG, 7 no 5 AWG,   
         7 no 4 AWG, 4/0 (19x1055”), 19 no 9 AWG, 19 no 8 AWG, 19 no 7 AWG,   
         19 no 6 AWG, 19 no 5 AWG
   2. Updated notes referring to Copperweld Bimetallics, LLC.

July 31, 2018

1. af(1) - Cutouts, Distribution, Open with Linkbreak Attachment
   1. Added Hubbell C-Polymer 27kv and 35kV.

July 20, 2018

1. Uhv-1
   1. Removed all listings for Crosslinked Polyethylene (XLP).
      1. Plain XLP is no longer an acceptable insulation per RUS standards, [7 CFR 1728F.204](https://www.ecfr.gov/cgi-bin/text-idx?SID=57f51b11875b43788eb871bee862f9cf&node=pt7.11.1728&rgn=div5#se7.11.1728_1204) (formerly the U-1 spec).

July 18, 2018

1. Uhv(1) Cable, underground
   1. Added General Cable new tree retardant insulation compound LG XL8080TR (VII).
   2. Added LS Cable & Systems (VIII).

June 12, 2018

1. c-1 Machine Bolts; o-1 Oval Eye Bolts
   1. Added Action Manufacturing

May 21, 2018

1. a-2 Insualtors, Pin type, polymber
   1. Added Aluma-Form
      1. Catalog numbers INS‐15‐PC‐1, 55-3; INS‐15‐PF‐1 55‐4; INS‐25‐PJ‐2

May 8, 2018

1. Page rp(1.2) Wildlife Guards
   1. Added Reliaguard

March 20, 2018

1. Page g(1.3) Crossarms, fiberglass
   1. Added new Shakespeare models
      1. Without centermount: MTN, HTN, TTN
      2. With centermount: STB, MTB, HTB, TTB

March 19, 2018

1. Page sd-1 Current Transformers, Outdoor Type
   1. Added new models for Arteche
      1. Catalog numbers for 0.6kV: IRH-1
      2. Catalog numbers for 15kV: ME-015, MK-15, MI-015, KM-15, KCB-17
      3. Catalog numbers for 25kV: ME-025, MK-25, MI-025, KM-25, KCB-24
      4. Catalog numbers for 34.5kV: CRK-36, CE-034, ME-036, MK-36, KM-36
      5. Catalog numbers for 69kV: CRH-72, CRK-72, CE-069
2. Page se-1 Voltage Transformers, Outdoor Type
   1. Added new models for Arteche
      1. Catalog numbers for 15kV: URJ-17, ME-015, MK-15, MI-015, KM-15, KCB-17
      2. Catalog numbers for 25kV: URJ-24, VRJ-24, URN-24, VRN-24, ME-025, MK-25,   
         MI-025, KM-25, KCB-24
      3. Catalog numbers for 34.5kV: ME-036, MK-36, KM-36
      4. Catalog numbers for 69kV: URU-72, VRU-72

March 9, 2018

1. Page al(1) Ground Wire Staples
   1. Added Fasco
      1. Catalog numbers: EF40-315, EF40-315CU

March 8, 2018

1. Page U gu-1.1 Pedestal, Power (Above-Grade)
   1. Added Nordic Fiberglass additional sizes.
      1. Catalog numbers: PSPX-101830-MG, PHH-152315-MG

February 2, 2018

1. Page n-1 – Bolt, double arming
   1. Added Action Manufacturing

December 4, 2017

1. Page z-6 Anchors, Power-Installed Screw, Distribution
   1. Added new units to Hubbell (Chance)
      1. Catalog numbers: C1025006, C1025007, C1025010.

November 17, 2017

1. Page ap-1.1 Clamp, hot line, ACSR with armor rods
   1. Added Aluma-Form
      1. Catalog numbers: AF-BC20, AF-1540, AF-1530

November 2, 2017

1. Page U hv(1) U hv - Cable, Underground, 15 kV and 25 kV Cable
   1. Revised company name “Superior Essex” to “LS Cable & System U.S.A., Inc.”

September 12, 2017

1. Added Page sj(1) Switches, oil circuit recloser by-pass
   1. Added Hubbell (Chance)
      1. Catalog number: BP3 – 600A, 900A

September 8, 2017

1. Page cj-1 Pole Ground Wire
   1. Revised “CommScope BiMetals” to “AFL Copperclad”
      1. Added sizes No. 4 and No. 2
2. Page sr-1 Steel Conductor for Substation Grounding, Copper-Clad or Galvanized
   1. Revised “CommScope BiMetals” to “AFL Copperclad”
      1. Added sizes 19 No. 9 AWG and 19 No. 8 AWG

July 21, 2017

1. Page U he-3.1 Padmounted Switchgear (200 and 600 amp)
   1. Added Elastimold
      1. Type MVS, single-phase and three phase, 200 and 600 amp, 15-38 kV
      2. Type MVI, single-phase and three phase, 200 and 600 amp, 15-38 kV

July 19, 2017

1. Page ah-1 Tie, insulator, formed type
   1. Added “Alloy Side, Spool and Top Ties” to Preformed Line Products
2. Added Page ea-3 Insulators, post type
   1. Added Eprecsa USA, LLC
      1. catalog numbers: 13PD, 22PD, 33PD

July 7, 2017

1. Page ah-1 Tie, insulator, formed type
   1. Added 3 new products to Preformed Line Products
      1. EZST-series, TT-series and UT-series

June 20, 2017

1. Page sd-1 Current Transformers, outdoor type
   1. Revised company name to “Arteche” from “Arteche USA”.
   2. Added CRF-17 and CRH-36, which were omitted from the original listing.
2. Page se-1 Voltage Transformers, outdoor type
   1. Revised company name to “Arteche” from “Arteche USA”.

May 1, 2017

1. Page bx-1.1 Splice, automatic, Distribution
   1. Added 2 new splices to Aluma-Form, Inc. listing.
      1. Cat. #: ASC1020
         1. AAC (1/0 & 2/0), AAAC (1/0 & 2/0), and ACSR (1/0 & 2/0)
      2. Cat. # ASC3040
         1. AAC (3/0 & 4/0), AAAC (3/0 & 4/0), and ACSR (3/0 & 4/0)

April 26, 2017

1. Pages ah-1 and ah(1) Tie, insulator, formed type
   1. Moved Preformed Line Products “EZ-WRAP” ties from Conditional listing on page ah(1) to Full listing on page ah-1.

April 25, 2017

1. Page Uan-1 Transformers, Distribution, Pad-Mounted, Dead-Front
   1. Added Magnetron S.A.S.
      1. Pad mounted 5-167 kVA transformer series.

**LIST OF MATERIALS**

**Acceptable for Use on Systems**

**of USDA Rural Development**

**Electrification Borrowers**

**United States Department of Agriculture**

**Rural Development Utilities Programs**

**Electric Programs**

**Informational Publication 202-1**

**Current as of November 28, 2018**

DISCLAIMER

*Every effort has been made to ensure the accuracy of this document. However, in case of discrepancies, records of Technical Standards Committee “A" are the authoritative source.*

PREFACE

This list supersedes all preceding issues including revisions. Revised sheets reflecting changes in the list will be issued quarterly and should be inserted in order to keep your copy up to date.

The items shown in this publication include material and equipment for transmission and distribution facilities. Items not listed include office equipment, tools and work equipment, items of electric general plant and consumer owned wiring facilities. The listings apply only to new items of material and equipment and not to used items.

In addition to items accepted on a general basis, this list also includes items accepted on a conditional basis. As one of the conditions in the acceptance of an item on a conditional basis, contractors are required to obtain the borrower’s concurrence prior to its use.

The inclusion of an item in this list does not indicate that item’s manufacturer or its principals have not been debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded pursuant to Executive Order 12549, Debarment or Suspension, or any rules or regulations issued thereunder, including 7 CFR Part 3017 (“Debarment Regulations”). Therefore, borrowers must comply with the requirements imposed by the Debarment Regulations before entering into any “covered transaction”, as defined by 7 CFR Part 3017, involving any item on this list.

The acceptance of an additional item or the deletion of an existing item is a function of the Technical Standards Committees. Any manufacturer desiring to have a new item placed on the list, or any user believing an existing item should be removed from the list, is invited to submit the matter to the Committees. Any communication calling attention to an error or omission in the list, such as a wrong catalog number, an obsolete item, etc., will be appreciated. All communications should be addressed to Technical Standards Committee “A” (Electric), USDA Rural Development Utilities Programs, Stop 1569, Washington, D. C. 20250-1569.

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guy bk

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Pole gain bi

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a-1

April 2015

a – Insulator, pin type, porcelain

| ANSI Class | 55-2 | 55-3 | 55-4 |
| --- | --- | --- | --- |
| Application | 5 kV | 12.5/7.2 kV and 13.2/7.62 kV systems | 12.5/7.2 kV and 13.2/7.62 kV systems (where greater insulation is needed) |
| Pinhole diameter | 1 in. | 1 in. | 1 in. |
|  |  |  |  |
| ICB | ICB 552 | ICB 553 | ICB 554 |
| Porcelain Products (Knox) 2 | 253 | 261-S | 366-S |
| Victor Insulators, Inc. | 8 | 5, VI 605R | 6, VI 606R |
| Gamma Insulators Corp. | 6188R-70 | 6184R-70 | 6183R-70 |

| ANSI Class | 56-1 | 56-3 | 56-4 |
| --- | --- | --- | --- |
| Application | 24.9/14.4 kV distribution lines | 33 – 34.5 kV transmission lines | 44 – 46 kV transmission lines |
| Pinhole diameter | 1-3/8 in. | 1-3/8 in. | 1-3/8 in. |
|  | Metal thimble (unless noted) | Metal thimble | Metal thimble |
|  |  |  |  |
| ICB | ICB 561 | - | - |
| Groupo IUSA1 | P-3000 | - | - |
| Porcelain Products (Knox) | - | 2045-S | - |
| Victor Insulators, Inc. | 27-R1, VI 627R | 245-R, VI 645R | 255-R |
| Gamma Insulators Corp. | 8248R-70 | 8190R-70 | - |

1Does not have a metal thimble.

2ANSI class 55-2, 55-3, and 55-4 pin insulators manufactured at both the Knoxville and Macomb plants are acceptable.

a-2

May 2018

a – Insulators, pin type, polymer

|  |  |  |
| --- | --- | --- |
| Manufacturer | Catalog Number | ANSI Class |
|  |  |  |
| Advanced Rubber Products | ARP-SKPI-55-3 | 55-3 |
|  | ARP-SKPI-56-1 | 56-1 |
|  |  |  |
| Aluma-Form | INS-15-PC-1 | 55-3 |
|  | INS-15-PF-1 | 55-4 |
|  | INS-25-PH-2 | 56-1 |
|  |  |  |
| Hendrix | HPI-55-3 | 55-3 |
|  | HPI-55-4 | 55-4 |
|  | HPI-25-J-02 | 56-1 |
|  |  |  |
| Preformed Line Products | IP-15-C | 55-3 |
|  | IP-15-F | 55-4 |
|  | IP-25-J2 | 56-1 |
|  |  |  |
|  |  |  |

b-1

July 2009

b – Pin, pole top, steel

DISTRIBUTION

|  |  |  |
| --- | --- | --- |
|  | 12.5/7.2 or  13.2/7.62 kV | 24.9/14.4 kV |
|  |  |  |
| Pin length, inches: | 20 | 20 |
| Thread diameter, inches: | 1 | 1-3/8 |
| Hole spacing, inches: | 8 | 8 |
| RUS Specification: | D-3 | DT-3 |
|  |  |  |
| Hubbell (Chance) | 2199 | 2195 |
| Joslyn | J740 | J720 |
| Kortick | - | K8086 |
| MacLean (Continental) | U36606F-REA | U36652 |
|  |  |  |

Pins listed below have 4-1/2” offset which eliminates the use of Item cs

|  |  |  |
| --- | --- | --- |
| Hubbell (Chance) |  | C206-0271 |
| Joslyn |  | J25179 |
| MacLean (Continental) |  | U36549 |
|  |  |  |

TRANSMISSION

|  |  |  |
| --- | --- | --- |
| Pin Length, inches: | 24 |  |
| Thread diameter, inches: | 1-3/8 |  |
| Hole spacing, inches: | 8 |  |
| RUS Specification: | DT-3 |  |
|  |  |  |
| Hubbell (Chance) | 2196 |  |
| Kortick | K8087 |  |
| MacLean (Continental) | U36653F |  |
|  |  |  |
|  |  |  |

NOTE

1. Flared type pins may be mounted with either side against the pole.

Conditional List

b(1)

January 2015

b – Pin, pole-top

(Non-lead threads)

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Hubbell Power Systems 2195P (1-3/8” threads) 2199P (1” threads) | To obtain experience. |
|  |  |
| Hughes Brothers 2770-A20-100 (1” threads) 2770-A20-130 (1-3/8” threads) | To obtain experience. |
|  |  |
| Joslyn J740Z (1” threads) J720Z (1-3/8” threads) | To obtain experience. |
|  |  |

b – Pin, Fiber-reinforced plastic pole top

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Joslyn 7581-624NT (1” threads)\* 7581-624XNT (1-3/8” threads)\*  \* Add suffix LT (less tabs) if for steel pole. | To obtain experience. |
|  |  |

c-1

June 2018

c – Bolt, machine

Applicable Specification: ANSI C135.1, “Standards for Galvanized Steel Bolts and Nuts” except that the lengths are in the ranges given below.

Applicable Sizes: ½ inch diameter, 6 through 10 inch length

5/8 inch diameter, 6 through 24 inch length

¾ inch diameter, 6 through 26 inch length

7/8 inch diameter, 6 through 28 inch length

The following manufacturers have shown compliance with the applicable specifications for machine bolts:

|  |  |
| --- | --- |
|  | Action Manufacturing |
|  | Allied Bolt, Inc. |
|  | Hughes Brothers |
| \* | Joslyn Manufacturing Company |
|  | Kortick Manufacturing Company |
|  | MacLean (Continental) |
| \* | Portland Bolt & Manufacturing Company |
|  | The Rockford Bolt & Steel Company |
|  | Steel City Bolt & Screw Co., Inc. |
|  |  |

\*”Static proof” design available.

Conditional List

c(1)

April 2014

c – Bolt, machine

Applicable Specification: ANSI C135.1, “Standards for Galvanized Steel Bolts and Nuts” except that the lengths are in the ranges given below.

Applicable Sizes: ½ inch diameter, 6 through 10 inch length

5/8 inch diameter, 6 through 24 inch length

¾ inch diameter, 6 through 26 inch length

7/8 inch diameter, 6 through 28 inch length

The following manufacturers have shown compliance with the applicable specifications for machine bolts:

|  |  |  |
| --- | --- | --- |
|  | Manufacturer | Condition |
|  |  |  |
|  | Threaded Fasteners, Inc. | To obtain experience. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

d-1

November 2010

d – Washers, Flat

Flat Rolled Steel

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Size, inches: | 2-1/4 x 2-1/4 | 3 x 3 | 4 x 4 | 4 x 4 | 1-3/8 round | 1-3/4  round |
| Thickness, in.: | 3/16 | ¼ | 3/16 | ½ | 12 gauge | 10 gauge |
| Hole Diam., in.: | 13/16 | 13/16 | 13/16 | 13/16 | 9/16 | 11/16 |
|  |  |  |  |  |  |  |
| Allied Bolt, Inc. | 11550 | 11551 | 11557 | - | 104 | 1103 |
| C & C Spacer | 4 | - | - | - | - | - |
| FWC | FW1076 | - | FW1080 | - | FW1086 | FW1088 |
| Hubbell (Chance) | 6814 | 6817 | 6818 | 6819-1/2 | 6803 | 6805 |
| Hughes | SW2-1/4-70-3/16 | SW3-70 | SW4-70 | SW4-70(1/2) | RW1-3/8-50 | - |
| Joslyn | J1076 | J1079 | J1080 | - | J1086 | J1088 |
| Kortick | K1553 | K1555 | K1557 | K1559-1/2 | K1524 | K1525 |
| Line Hardware | SWF-225B | SWF-300B | SWF-400A | - | - | - |
| MacLean (Continental) | U5485 | U5487A | U5488 | U5490A | U5478 | U5479 |
| Wrought Washer | 011206 | - | - | - | - | - |

Flat Cast

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Size, inches: | 3 x 3 |  |  |  |  |  |
| Thickness, in.: | ¼ |  |  |  |  |  |
| Hole Diam., in.: | 13/16 |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Hubbell (Chance) (N) | BB214 |  |  |  |  |  |
| Joslyn (Flagg) (N) | P56A |  |  |  |  |  |
|  |  |  |  |  |  |  |

Spurred – 3” Round, 3/16” Thick, 13/16” Hole

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| MacLean (Continental) | TCSF-30-6 |  |  |  |  |  |
|  |  |  |  |  |  |  |

(A) Aluminum Alloy

(M) Malleable Iron

(N) Nodular Iron

d-2

September 2010

d – Washers, Curved

Curved Cast

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Size, inches: | 2-1/4 x 2-1/4 | 3 x 3 | 3 x 4 | 4 x 4 |
| Thickness, in.: | ¼ | 5/16 | 7/16 | ½ |
| Hole Diam., in.: | 11/16 | 11/16 | 15/16 | 13/16 |
|  |  |  |  |  |
| Hubbell (Chance) (N) | GCW1A | GCW31 | CRW4A | GCW41 |
| Joslyn (Flagg) (M) | P141 | P143 | P120 | P144 |
| Line Hardware (M) | - | CW 33-5 | CW 34-7 | CW 44-6 |
| MacLean (Bethea) | - | WC-33-5 | WC-34-7 | WC-44-6 |
| MacLean (Continental) | - | CW-33-5 | CW-34-7 | CW-44-6 |
| M.D. Henry Company, Inc. (A) | UW-225 | UW-335 | UW-347 | UW-446 |
|  |  |  |  |  |

(A) Aluminum Alloy

(M) Malleable Iron

(N) Nodular Iron

Curved Rolled Steel

|  |  |  |  |
| --- | --- | --- | --- |
| Sizes, inches: | 4 x 4(1) |  |  |
| Thickness, in.: | ¼ |  |  |
| Hole Diam., in.: | 15/16 |  |  |
|  |  |  |  |
| Joslyn (Steel) | J6829 |  |  |
|  |  |  |  |

1. To be used only on transmission systems.

f-1

July 2009

f – Pin, crossarm

(With square washer, nut and MF locknut)

DISTRIBUTION

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| Thread (inches diam.) | 1 | 1-3/8 | 1 | 1-3/8 |
| Length above base (in.) | 5 | 7 | 5 | 7 |
| Length below base (in.) | 5-3/4 | 7 | 1-1/2 | 1-3/4 |
| Shank (inches diam.) | 5/8 | 5/8 | 5/8 | ¾ |
|  |  |  |  |  |
|  | Long Shank | | Short Shank | |
| Hubbell (Chance) | 881 | 4717 | 886 | - |
| Joslyn | J203 | J647 | J221 | J630 |
| Kortick | K7104 | K7611 | K7122 | K7631 |
| MacLean (Continental) | U558 | U3137A | U579 | U3142 |
|  |  |  |  |  |
|  |  |  |  |  |

Clamp Type Pin

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| Thread (inches diam.) | 1 | 1-3/8 |  |  |
| Length above base (in.) | 5-3/4 | 7 |  |  |
|  |  |  |  |  |
| Hubbell (Chance) | 14322 | 14322-1 |  |  |
| Joslyn | J3322 | J3324 |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Washer Plate for Clamp Type Pin

These plates are equipped with lugs to prevent slippage of pin along crossarm. They may be used to replace the bottom plate on pins already installed.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| Hubbell (Chance) | 450091 |  |  |  |
|  |  |  |  |  |

f-2

July 2009

f – Pin, crossarm

(With square washer, nut and locknut)

TRANSMISSION

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Thread (inches diameter) | 1-3/8 | 1-3/8 |
| Length above base (inches) | 10 | 10 |
| Length below base (inches) | 7 | 1-3/4 |
| Shank (inches diameter) | ¾ | ¾ |
|  |  |  |
|  | Long Shank | Short Shank |
|  |  |  |
| Hubbell (Chance) | 4332 | - |
| Joslyn | J610 | J633 |
| Kortick | K7643 | K7635 |
| MacLean (Continental) | U3140 | U3145 |
|  |  |  |

Conditional List

f(1)

July 2009

f – Pin, crossarm

(Non-lead threads)

(With square washer, nut and MF locknut)

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Hubbell 881P – 1” thread, 5 ¾” shank 886P – 1” thread, 1 ½” shank | To obtain experience. |
|  |  |
| Hughes Brothers 2775-A5-3/4, 1” thread, 5-3/4” shank | To obtain experience. |
|  |  |
| Joslyn J203Z, 1” thread, 5-3/4” shank J221Z, 1” thread, 1-1/2” shank J647Z, 1-3/8” thread, 7” shank J630Z, 1-3/8” thread, 1-3/4” shank | To obtain experience. |
|  |  |
|  |  |

Conditional List

g(1)

April 2016

g – Crossarms, fiberglass

|  |  |  |
| --- | --- | --- |
| Manufacturer | Description | Conditions |
|  |  |  |
| Aluma-Form, Inc.**\*** |  |  |
| FTA20-4-96 | 8’ | To obtain experience. |
| FTA20-6-96 | 8’ |  |
| FTA20-6-120 | 10’ |  |
| FTA25-4-96 | 8’ |  |
| FTA25-6-96 | 8’ |  |
| FTA25-6-120 | 10’ |  |
| FTA30-4-96 | 8’ |  |
| FTA30-6-96 | 8’ |  |
| FTA30-6-120 | 10’ |  |
|  |  |  |
|  |  |  |
| Creative Pultrusions, Inc. |  | To obtain experience. |
| Braced Application |  |  |
| MT30962N (with Horizontal Bushing at Center Hole) | 8' Type 3 Drill Pattern |  |
| MT30962N (with Horizontal Bushing at Center Hole) | 8' Type 4 Drill Pattern |  |
| MT31202N (with Horizontal Bushing at Center Hole) | 10' Type 5 Drill Pattern |  |
| HT40962N (with Horizontal Bushing at Center Hole) | 8' Type 3 Drill Pattern |  |
| HT40962N (with Horizontal Bushing at Center Hole) | 8' Type 4 Drill Pattern |  |
| HT41202N (with Horizontal Bushing at Center Hole) | 10' Type 5 Drill Pattern |  |
| HT60962N (with Horizontal Bushing at Center Hole) | 8' Type 3 Drill Pattern |  |
| HT60962N (with Horizontal Bushing at Center Hole) | 8' Type 4 Drill Pattern |  |
| HT61202N (with Horizontal Bushing at Center Hole) | 10' Type 5 Drill Pattern |  |
| HT80962N (with Horizontal Bushing at Center Hole) | 8' Type 3 Drill Pattern |  |
| HT80962N (with Horizontal Bushing at Center Hole) | 8' Type 4 Drill Pattern |  |
| HT81202N (with Horizontal Bushing at Center Hole) | 10' Type 5 Drill Pattern |  |
|  |  |  |
| Braceless (centermount) Application |  |  |
| MT30962I (with Horizontal Bushing at Center Hole) | 8' Type 3 Drill Pattern |  |
| MT30962I (with Horizontal Bushing at Center Hole) | 8' Type 4 Drill Pattern |  |
| MT31202I (with Horizontal Bushing at Center Hole) | 10' Type 5 Drill Pattern |  |
| HT40962D (with Horizontal Bushing at Center Hole) | 8' Type 3 Drill Pattern |  |
| HT40962D (with Horizontal Bushing at Center Hole) | 8' Type 4 Drill Pattern |
| HT41202D (with Horizontal Bushing at Center Hole) | 10' Type 5 Drill Pattern |
| HT60962M (with Horizontal Bushing at Center Hole) | 8' Type 3 Drill Pattern |
| HT60962M (with Horizontal Bushing at Center Hole) | 8' Type 4 Drill Pattern |
| HT61202M (with Horizontal Bushing at Center Hole) | 10' Type 5 Drill Pattern |
| HT80962P (with Horizontal Bushing at Center Hole) | 8' Type 3 Drill Pattern |
| HT80962P (with Horizontal Bushing at Center Hole) | 8' Type 4 Drill Pattern |
| HT81202P (with Horizontal Bushing at Center Hole) | 10' Type 5 Drill Pattern |
|  |  |  |
|  |  |  |

Conditional List

g(1.1)

April 2016

g – Crossarms, fiberglass

|  |  |  |
| --- | --- | --- |
| Manufacturer | Description | Conditions |
|  |  |  |
| Geotek (PUPI) |  |  |
| Braced Application |  |  |
| T220009603X (with horizontal bushing at center hole) | 8’ Type-3 Drill Pattern | To obtain experience. |
| T220009604X (with horizontal bushing at center hole) | 8’ Type-4 Drill Pattern |  |
| T220012005X (with horizontal bushing at center hole) | 10’ Type-5 Drill Pattern |  |
| T200009603X | 8’ Type-3 Drill Pattern |  |
| T200009604X | 8’ Type-4 Drill Pattern |  |
| T200012005X | 10’ Type-5 Drill Pattern |  |
| T300009603X | 8’ Type-3 Drill Pattern |  |
| T250009603X | 8’ Type-3 Drill Pattern |  |
| T250009604X | 8’ Type-4 Drill Pattern |  |
| T250012005X | 10’ Type-5 Drill Pattern |  |
| T300009604X | 8’ Type-4 Drill Pattern |  |
| T300012005X | 10’ Type-5 Drill Pattern |  |
|  |  |  |
| Braceless (Centermount) Application |  |  |
| TZ220209603X | 8’ Type-3 Drill Pattern | To obtain experience. |
| TB220009603X | 8’ Type-3 Drill Pattern | To obtain experience. |
| TB220009604X | 8’ Type-4 Drill Pattern |  |
| TB220012005X | 10’ Type-5 Drill Pattern |  |
| TB200009603X | 8’ Type-3 Drill Pattern |  |
| TB200009604X | 8’ Type-4 Drill Pattern |  |
| TB200012005X | 10’ Type-5 Drill Pattern |  |
| TB300009603X | 8’ Type-3 Drill Pattern |  |
| TB250009603X | 8’ Type-3 Drill Pattern |  |
| TB250009604X | 8’ Type-4 Drill Pattern |  |
| TB250012005X | 10’ Type-5 Drill Pattern |  |
| TB300009604X | 8’ Type-4 Drill Pattern |  |
| TB300012005X | 10’ Type-5 Drill Pattern |  |
| TZ220209604X | 8’ Type-4 Drill Pattern |  |
| TZ220212005X | 10’ Type-5 Drill Pattern |  |

\*May be used in Braceless or Braced Application.

Conditional List

g(1.2)

April 2016

g – Crossarms, fiberglass

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Manufacturer | Description | Conditions |
|  |  |  |
| MacLean Power Systems |  |  |
| Braced Application |  |  |
| PW08REA003 | 8’ Type-3 Drill Pattern | To obtain Experience |
| PW08REA004 | 8’ Type-4 Drill Pattern |  |
| PW08REA005 | 8’ Type-5 Drill Pattern |  |
|  |  |  |
| PX08REA003 | 8’ Type-3 Drill Pattern | To obtain Experience |
| PX08REA004 | 8’ Type-4 Drill Pattern |  |
| PX10REA005 | 10’ Type-5 Drill Pattern |  |
|  |  |  |
| Braceless (Centermount) Application |  |  |
| PW08ST003 | 8’ Type-3 Drill Pattern | To Obtain Experience |
| PW08ST004 | 8’ Type-4 Drill Pattern |  |
| PW10ST005 | 10’ Type-5 Drill Pattern |  |
|  |  |  |
| PX08ST003 | 8’ Type-3 Drill Pattern | To obtain Experience |
| PX08ST004 | 8’ Type-4 Drill Pattern |  |
| PX10ST005 | 10’ Type-5 Drill Pattern |  |
| Powertrusion International, Inc.  Braced Application  PST08001NR03  PST08001NR04  PST10001NR05  PHT08001NR03  PHT08001NR04  PHT10001NR05  Braceless (Centermount) Application  PST08001BR03  PST08001BR04  PST10001BR05  PHT08001BR03  PHT08001BR04  PHT10001BR05 | 8’ Type-3 Drill Pattern  8’ Type-4 Drill Pattern  10’ Type-5 Drill Pattern  8’ Type-3 Drill Pattern  8’ Type-4 Drill Pattern  10’ Type-5 Drill Pattern  8’ Type-3 Drill Pattern  8’ Type-4 Drill Pattern  10’ Type-5 Drill Pattern  8’ Type-3 Drill Pattern  8’ Type-4 Drill Pattern  10’ Type-5 Drill Pattern | To obtain experience.  To obtain experience. |
|  |  |  |
|  |  |  |

\*May be used in Braceless or Braced Application.

Conditional List

g(1.3)

March 2018

g – Crossarms, fiberglass

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Manufacturer | | Description | | Conditions | |
|  | |  | |  | |
|  | |  | |  | |
| Shakespeare |  | |  | |
| without Center Mount |  | | To obtain experience. | |
| STN096N0040(X)\*\* | 8’ Type-3 Drill Pattern | |  | |
| STN096N0060(X)\*\* | 8’ Type-4 Drill Pattern | |  | |
| STN120N0060(X)\*\* | 10’ Type-5 Drill Pattern | |  | |
| MTN096N0040(X)\*\* | 8’ Type-3 Drill Pattern | |  | |
| MTN096N0060(X)\*\* | 8’ Type-4 Drill Pattern | |  | |
| MTN120N0060(X)\*\* | 10’ Type-5 Drill Pattern | |  | |
| HTN096N0040(X)\*\* | 8’ Type-3 Drill Pattern | |  | |
| HTN096N0060(X)\*\* | 8’ Type-4 Drill Pattern | |  | |
| HTN120N0060(X)\*\* | 10’ Type-5 Drill Pattern | |  | |
| TTN096N0040(X)\*\* | 8’ Type-3 Drill Pattern | |  | |
| TTN096N0060(X)\*\* | 8’ Type-4 Drill Pattern | |  | |
| TTN120N0060(X)\*\* | 10’ Type-5 Drill Pattern | |  | |
|  |  | |  | |
| with Center Mount |  | | To obtain experience. | |
| STB096N1240(X)\*\* | 8’ Type-3 Drill Pattern | |  | |
| STB096N1260(X)\*\* | 8’ Type-4 Drill Pattern | |  | |
| STB120N1260(X)\*\* | 10’ Type-5 Drill Pattern | |  | |
| MTB096N1240(X)\*\* | 8’ Type-3 Drill Pattern | |  | |
| MTB096N1260(X)\*\* | 8’ Type-4 Drill Pattern | |  | |
| MTB120N1260(X)\*\* | 10’ Type-5 Drill Pattern | |  | |
| HTB096N1240(X)\*\* | 8’ Type-3 Drill Pattern | |  | |
| HTB096N1260(X)\*\* | 8’ Type-4 Drill Pattern | |  | |
| HTB120N1260(X)\*\* | 10’ Type-5 Drill Pattern | |  | |
| TTB096N1240(X)\*\* | 8’ Type-3 Drill Pattern | |  | |
| TTB096N1260(X)\*\* | 8’ Type-4 Drill Pattern | |  | |
| TTB120N1260(X)\*\* | 10’ Type-5 Drill Pattern | |  | |
|  |  | |  | |
| (\*\*X=2-gray color or 5-dark bronze color) |  | |  | |
|  |  | |  | |
|  | |  | |  | |
| DIS-TRAN Wood Products, LLC | |  | |  | |
| CTLBC Series, CTSBC Series,  CTHBC Series, CTLBB Series,  CTSBB Series, CTHBB Series, | | 8’ Type-3 and Type-4,  10’ Type-5 Drill Pattern | | To obtain experience. | |
|  | |  | |  | |
|  | |  | |  | |

Note: Gripping studs or teeth on clamp type crossarm pins (item f) should not be installed against the surface of the fiberglass crossarms.

Conditional List

g(2)

July 2009

g – Crossarms, composite

|  |  |  |
| --- | --- | --- |
| Manufacturer | Description | Conditions |
|  |  |  |
| Petroflex North America, Inc.  Braced Application  CA-8(X)\*\*  (\*\*X=B for black color X=G for grey color) | 8’ Type-4 Drill Pattern | To obtain experience. |

h-1

September 2015

h – Brace, crossarm, steel

Wherever item “h” is shown on a construction drawing, use a brace from page cu.

i-1

i – Bolt, carriage

Applicable Specification: ANSI C135.1, “Standard for Galvanized Steel Bolts and Nuts.”

Applicable Sizes: 3/8 inch diameter, 3 through 6 inch length

½2 inch diameter, 3 through 6 inch length

The following manufacturers have shown compliance with the applicable specifications for carriage bolts.

|  |
| --- |
| Allied Bolt, Inc. |
| Hubbell (Chance) |
| Hughes Brothers |
| Joslyn Manufacturing Company |
| Kortick Manufacturing Company |
| MacLean (Continental) |
| The Rockford Bolt & Steel Company |
|  |

j-1

November 2010

j – Screw, lag

Applicable Specifications: ANSI C135.3 “Standard for Zinc Coated Ferrous Lag Screws”

Applicable Sizes: 1/2 inch diameter, 4 inch length

1/2 inch diameter, 5 inch length

5/8 inch diameter, 4 inch length

5/8 inch diameter, 5 inch length

The following manufacturers have shown compliance with the applicable specifications for lag screws:

|  |
| --- |
|  |
| Allied Bolt, Inc. |
| Hubbell (Chance) |
| Joslyn Manufacturing Company |
| Kortick Manufacturing Company |
| MacLean (Continental) |
|  |

k-1

June 2012

k – Insulators, suspension

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ANSI Class | 52-9A | 52-1 | 52-4 | 52-3 |
| Type | Clevis | Clevis | Clevis | Ball & Socket |
|  |  |  |  |  |
| Disc Diameter | 4-1/4” | 6” | 9” or 9-1/2” | 9” or 9-1/2” |
| M & E Rating, lbs. | 10,000 | 10,000 | 15,000 | 15,000 |
| Leakage | 6-3/4” | 7” | 11-1/2” | 11-1/2” |
| Flashover, kV: Dry | 60 | 60 | 80 | 80 |
| Flashover,  kV: Wet | 30 | 30 | 50 | 50 |
| NOTES | (3) (4) | (3) (4) | (5) | (2) |
|  |  |  |  |  |
| Manufacturer | Catalog Number | | | |
|  |  |  |  |  |
| ICB | ICB 529-A | ICB 521 | - | - |
| Lapp | - | - | 9100 | 9000 |
| Locke | 16044 | 16583 | 15S410 | 15S409 |
| Gamma Insulators Corp. | 6815-70 | 6605-70 | 8265  8267 | 8255  8256  8257 |
| Sediver | CT-4R2-M | - | - | - |
| Victor Insulators, Inc. | 817 | 804 | - | - |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ANSI Class | 52-3 | 52-4 | 52-5 | 52-6 |
| Type | Ball & Socket | Clevis | Ball & Socket | Clevis |
|  |  |  |  |  |
| Disc Diameter | 10” | 10” | 10” | 10” |
| M & E Rating, lbs. | 15,000 | 15,000 | 25,000 | 25,000 |
| Leakage | 11-1/2” | 11-1/2” | 11” | 11” |
| Flashover; kV: Dry | 80 | 80 | 80 | 80 |
| Flashover, kV: Wet | 50 | 50 | 50 | 50 |
| NOTES | (2) | (1) | (2) | - |
|  |  |  |  |  |
| Manufacturer | Catalog Number | | | |
|  |  |  |  |  |
| GEC Alsthom | - | 105452 | - | - |
| Lapp | 8200 | 8100 | 301425 | 2300 |
| Locke | - | 20S580 | - | 30S257 |
| Gamma Insulators Corp. | - | - | 8258 | - |
| Porcelain Prod. (Knox) | 81022 | 81012 | - | - |
| Sediver | - | CT-8R2 | - | - |
|  |  |  |  |  |

Notes:

1. Use two for 24.9/14.4 kV deadends.
2. To be used only on transmission lines.
3. To be used only on distribution lines.
4. Use two insulators for 12.5/7.2 kV deadends and three for 24.9/14.4 kV deadends.
5. Use two insulators for 24.9/14.4 kV deadends.

Conditional List

k(1)

July 2009

k – Insulator, suspension

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Sediver 10” suspension insulator N-8R2 (ball & socket, 20,000 lbs.) CT-14R2 (clevis, 30,000 lbs.) N-14R2 (ball & socket, 30,000 lbs.) | To obtain experience. |
|  |  |
|  |  |

Conditional List

k(2)

February 2015

|  |  |
| --- | --- |
| k – Insulator, polymer distribution deadend | |
| Manufacturer | Conditions |
|  |  |
| Aluma-Form  DEI-15  DEI-28  DEI-25/35  DEI-35 | 1. To obtain experience. 2. For use as deadends on distribution lines only. 3. Not recommended for use in areas subject to contamination. |
|  |  |
| Advanced Rubber Products\* |  |
| ARP-15EACE-I (EPDM – 15 kV)  ARP-25EACE-I (EPDM – 25 kV  ARP-35EACE-I (EPDM – 35 kV)  ARP-15SKCE-S (Silicone – 15 kV)  ARP-15SKCE-A (Silicone – 15 kV)  ARP-25SKCE-S (Silicone – 25 kV)  ARP-27SKCE-SSI (Silicone – 25 kV)  ARP-35SKCE-S (Silicone – 35 kV) | Same as above. |
| \* A = Aluminum end-fitting, I = Cast iron end-fitting, S = Steel end-fitting | |
|  |  |
| Dulmison H-15 kV-4 H-25 kV-6 | Same as above. |
|  |  |
| GLP DS-15 (15 kV) DS-28 (25 kV) |  |
|  |  |
| Grupo IUSA | Same as above. |
| ASSI-15-70 (15 kV) |  |
| ASSI-25-70 (25 kV) |  |
| ASSI-35-70 (35 kV) |  |
|  |  |
| Hubbell (Ohio Brass) Veri\*Lite PDI 401015-0215 (15 kV) 401025-0215 (25 kV) 401028-0215 (25kV) (DS-28)  401035-0215 (35 kV)  401046-0215 (35 kV) DS-46) | Same as above. |
|  |  |
| K-Line KL-15ASCTM (15 kV line-to-line) KL-28ASCTM (25 kV line-to-line) KL-35SCTM (35 kV line-to-line) | Same as above. |
|  |  |
| MacLean (Reliable) DS-15G (15 kV) DS-15M (15 kV) (metal end fittings) DS-28G (25 kV) DS-28M (25 kV) (metal end fittings) DS-35G (35 kV) DS-35M (35 kV) (metal end fittings) | Same as above. |
|  |  |
| NOTE: When insulators from this page are used, adjust construction drawing material list quantities as necessary. Recommended maximum working load is 5,000 lbs. | |

Conditional List

k(2.1)

November 2015

|  |  |
| --- | --- |
| k – Insulator, polymer distribution deadend | |
| Manufacturer | Conditions |
|  |  |
| Porcelain Products PDEI-15, 15 kV PDEI-25, 25 kV | 1. To obtain experience. 2. For use as deadends on distribution lines only. 3. Not recommended for use in areas subject to contamination. |
|  |  |
| Pyungil Co. Ltd |  |
| DN15SD-CT, 15kV | Same as above. |
| DN28SD-CT, 28kV |
| DN35SD-CT, 35kV |
|  |
|  |  |
| Salisbury 9501U-SI (silicone – 15 kV) 9502U-SI (silicone – ANSI DS-28) 9503U-SI (silicone – 35 kV) 9502L-EP (silicone – 25 kV) | Same as above. |
|  |  |
| Sediver ODI-11-70-15 (15 kV)  ODI-15-70-28 (25 kV)  ODI-17-70-35 (35 kV) | Same as above. |
|  |  |
| Victor Insulators, Inc. 8015 (15kV) 8025 (25kV) 8035 (35kV) 8215 (15kV) 8225 (25kV) 8235 (35kV) | Same as above. |
|  |  |
| Volt Tek 1515-00 (EPDM – 15 kV) 2515-00 (EPDM – 25 kV)  3515-00 (EPDM – 35kV) 1515S-00 (Silicone – 15kV)  2515S-00 (Silicone – 28kV) 3515S-00 (Silicone – 35kV) | Same as above. |
|  |  |
| Electroporcelana Gamma S.A. |  |
| PS015 (15kV) | 1. To obtain experience. 2. For use as deadends on distribution lines only. 3. Not recommended for use in areas subject to contamination. |
| PS025 (25kV) |
| PS035 (35kV) |
|  |  |
| NOTE: When insulators from this page are used, adjust construction drawing material list quantities as necessary. Recommended maximum working load is 5000 lbs. | |

l-1

November 2014

l – Clamp, deadend

DISTRIBUTION

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Copper 2 through 6 | | ACSR (Aluminum Clamps) | | | |
| CWC 4A through 8A | | 4/0 & 3/0 | 2/0 | 1/0 | 2&4 |
|  |  |  |  |  |  |
| - | AFL | 302 | 302 | 302 | 302 |
|  |  |  |  |  |  |
| 80500-2000 | Hubbell (Anderson) | PG-57N | PG46N | PG-46N | PG-46N |
|  |  |  |  |  |  |
| - | C & R | CR-20-90 | CR-10-90 | CR-10-90 | CR-10-90 |
|  |  |  |  |  |  |
| - | Lapp | 306120N | 306118N | 306118N | 306118N |
|  |  |  |  |  |  |
| - | MacLean (Bethea) | DA-20N | DA-15-N | DA-15-N | DA-15-N |
|  |  |  |  |  |  |

l-2

November 2014

l – Deadend for steel strand (overhead ground wire)

TRANSMISSION

For high strength, extra high strength steel strand and aluminum clad steel strand

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | High Strength Steel | | Aluminum-clad steel | | | Extra High Strength | | |
|  |  |  |  |  |  |  |  |  |
| Manufacturer | 3/8” | 7/16” | 7 No. 9 AWG | 7 No. 8 AWG | 7 No. 7 AWG | 5/16” | 3/8” | 7/16” |
|  |  |  |  |  |  |  |  |  |

Compression Type

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| AFL | 4620.12 | 4627.14 |  |  |  |  |  |  |
| Burndy | YTW375E | YTW438E | YTW7M9T | YTW7M8T | YTW7M7T |  |  |  |
| Hubbell (Fargo) | 861255 | 861430 | 861225 | 861227 | 861430 | 861022 | 861225 | 861430 |
|  |  |  |  |  |  |  |  |  |

Formed Type\*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Helical Line Prod. | HG210-3/8 | HG211-7/16 | HG523-12.5M | HG525-16M | HG528-20M | HG209-5/16 | HG210-3/8 | HG211-7/16 |
| Hubbell (Chance) |  |  |  | 16M-AWTLG | 20M-AWTLG |  |  |  |
|  |  |  |  |  |  |  |  |  |

\* Class B galvanizing. When overhead ground wire has Class C galvanizing, formed deadend should also have Class C galvanizing.

Automatic Type

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Hubbell (Fargo) | GDE-302 | GDE-303 | GDE-302 | GDE-302 | GDE-303 | GDE-301 | GDE-302 | GDE-303 |
| MacLean (Reliable) | 5202 | 5203 | 5202 | 5202 | 5203 | 5201 | 5202 | 5203 |
|  |  |  |  |  |  |  |  |  |

Clamp Type

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MacLean (Continental) | FQD-55-3LW | FQD-55-3-LW |  |  |  |  |  |  |
| Hubbell (Anderson) | SWDE-55N | SWDE-55N |  |  |  |  |  |  |
| MacLean (Bethea) | FD-550-N |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

Conditional List

l(1)

December 2015

l – Clamp, deadend

DISTRIBUTION

2-Bolt Straight Line, Aluminum Alloy\*

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Burndy Aluminum alloy deadend Catalog No. CUW26RE-1 (#2-2/0 Str. Aluminum, #4-2/0 ACSR) | 1. To obtain experience.  2. Applications limited to replacements under hot line conditions. |
|  |  |
| C & R Products Catalog No. CRDE-10-180 (#4 – 2/0 ACSR) Catalog No. CRDE-20-180 (3/0 – 4/0 ACSR) | Same as above. |
|  |  |
| Hubbell (Anderson) Aluminum alloy deadend Catalog No. ADSO-88(#2-1/0 ACSR) Catalog No. ADS-48-N (2/0 ACSR) Catalog No. ADS-60-N (3/0 ACSR) | Same as above. |
|  |  |
| Hubbell (Chance) Aluminum alloy deadend Catalog No. SDF10A (4 through 4/0 ACSR) | Same as above. |
|  |  |
| Hubbell (Fargo) Aluminum alloy deadend Catalog No. GD-961A side opening keeper  (No. 4 and No. 2 ACSR) Catalog No. GD-972A (2/0, 3/0, 4/0 ACSR) | Same as above. |
|  |  |
| MacLean (Bethea) Aluminum alloy deadend Catalog No. ASO-684-2 (1/0, 2/0, 3/0 ACSR) Catalog No. ASD-2-N (4-2/0 ACSR) Catalog No. ASD-34-N 3/0, 4/0 ACSR Catalog No. HDSO 57 (with side opening)  (4-4/0 ASCR) | Same as above. |
|  |  |
| Aluma-Form | Same as above. |
| Catalog# DES-ASD-1 8 - 2/0 ACSR  Catalog# DES-ASD-45 4/0 - 477 ACSR  Catalog# DES-ASO-398-1 6 - 2/0 ACSR  Catalog# DES-ASO-684-1 4 - 336.4 ACSR (Side Opening)  Catalog# DES-ASO-858-2 4 - 556.5 ACSR (Side Opening)  Catalog# DES-HDSO-47 8 - 2/0 ACSR (Side Opening)  Catalog# DES-HDSO-57 4 - 4/0 ACSR (Side Opening)  Catalog# DES-HDSO-82 2-477 ACSR (Side Opening)  Catalog# DES-HDSO-88L-6 4-556.5 ACSR (Side Opening) |  |
|  |  |

\*Straight line deadend clamps are applicable for urban construction where tensions are moderate and on lines often worked hot.

Conditional List

l(2)

July 2009

l – Clamp, deadend

DISTRIBUTION

(wedge type)

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Hubbell (Fargo)  GDW-2010A (#4 – 2/0 ACSR) Bare Aluminum jaws  GDW-2010 (#4 – 2/0 Str Cu) Plated Aluminum jaws for use with copper conductor  GDW-2040A (#4 – 4/0 ACSR) Bare Aluminum jaws  GDW-2040 (#4 – 3/0 Str Cu) Plated Aluminum jaws for use with copper conductor  GDW-556 (266.8 – 477 kcmil ACSR) | To obtain experience. |
|  |  |
|  |  |

m-1

November 2014

m – Clamp, suspension

2 BOLT – DISTRIBUTION

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Copper | ACSR with Straight or Formed Armor Rods | | | |
|  | & CWC | 4 | 2 | 1/0 & 2/0 | 3/0 & 4/0 |
|  |  |  |  |  |  |
| ABB | 6240 | 6241 | 6242 | 6243 | 6244 |
|  |  |  |  |  |  |
| AFL | - | - | - | - | HSU\* |
|  |  |  |  |  |  |
| C & R Products | - | - | - | CRSC-1 | CRSC-2 |
|  |  |  |  |  |  |
| Dulmison | - | - | - | - | HSU\* |
|  |  |  |  |  |  |
| Hubbell (Anderson) | MS-46-N | MS-60-N | MS-70-N | HAS-85-N | HAS-104-N |
|  |  |  |  |  |  |
| Hubbell (Chance) | FWG1 | FWG2 | FWG3 | FWG4 | - |
|  |  |  |  |  |  |
| Lapp | 305740N | 306027N | 306028N | 306029N | 306030N |
|  |  |  |  |  |  |
| MacLean (Bethea) | FS-46-N | GW-1-N | LS-0-N | LS-1-N | LS-2-N |
|  |  |  |  |  |  |
| MacLean (Continental) | FSC-46-N | FSC-60-N | SC-70-N | SC-85-N | SC-105-N |
|  |  |  |  |  |  |
| Preformed Line Products | - | - | - | - | AGS\* |

\*Accepted for larger sizes.

m-2

July 2009

m – Clamp, Suspension

|  |  |  |
| --- | --- | --- |
| ANGLE – DISTRIBUTION No. 2 & 4 ACSR Plus Rods |  | 2-BOLT TRANSMISSION For 3/8” Steel Overhead Ground Wire |
|  |  |  |
| 2300 | ABB | 6240 |
|  | MacLean (Continental) | FSC-46N |
| AAC-301 & 302 | Hubbell (Anderson) | MS-46-N |
| - | Hubbell (Chance) | FGW1 |
| GD-907A | Hubbell (Fargo) | - |
| 306092 | Lapp | 305740N |
| AC-60 | Line Hardware | - |
| RALS-1 | MacLean (Bethea) |  |
|  |  |  |
|  |  |  |

Conditional List

m(1)

July 2009

m – Clamp, suspension – cushioned

Condition: To obtain experience

ACSR

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | kcmil | | | | | |
|  | 266.8 | 336.4 | 477 | 556.5 | 795 | 954 |
|  |  |  |  |  |  |  |
| Preformed | CGS-1100 | CGS-1102 | CGS-1105 | CGS-1106 | CGS-1110 | CGS-1112 |
|  |  |  |  |  |  |  |

Conditional List

m(2)

April 2015

m – Clamp, suspension, high temperature

For use with High Temperature Conductors

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Preformed Line Products (PLP)   Suspension System  To be used with CTC Global High Temperature Conductors ACCC (Aluminum Conductor Composite Core) | 1. To obtain experience. 2. Use high temperature accessories approved by the manufacturer and accepted by RUS |
|  |  |

Note: These clamps are acceptable when installed using tools and dies in accordance with the conductor manufacturer’s recommendations.

n-1

February 2018

n – Bolt, double arming

Applicable Specification: ANSI C135.1, “Standard for Galvanized Steel Bolts and Nuts.”

Applicable Sizes: 5/8 inch diameter, 12 inch through 24 inch length

¾ inch diameter, 20 inch through 24 inch length

The following manufacturers have shown compliance with the applicable specifications for double arming bolts:

|  |  |
| --- | --- |
|  | Action Manufacturing |
|  | Allied Bolt, Inc. |
|  | Hubbell (Chance) |
|  | Hughes Brothers |
| \* | Joslyn Manufacturing Company |
|  | Kortick Manufacturing Company |
|  | MacLean (Continental) |
|  | Portland Bolt & Manufacturing Company |
|  | Steel City Bolt & Screw Co., Inc. |
|  |  |
|  |  |

\*”Static proof” designs available.

Conditional List

n(1)

April 2014

n – Bolt, double arming

Applicable Specification: ANSI C135.1, “Standard for Galvanized Steel Bolts and Nuts.”

Applicable Sizes: 5/8 inch diameter, 12 inch through 24 inch length

¾ inch diameter, 20 inch through 24 inch length

The following manufacturers have shown compliance with the applicable specifications for double arming bolts:

|  |  |  |
| --- | --- | --- |
|  | Manufacturer | Condition |
|  |  |  |
|  | Threaded Fasteners, Inc. | To obtain experience. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

o-1

June 2018

o – Bolt, eye, oval

Applicable Specification: ANSI C135.4, “Standards for Galvanized Ferrous Eye Bolts and Nuts for Overhead Line Construction.”

Applicable Sizes: 5/8 inch diameter, 6 through 20 inch length

3/4 inch diameter, 8 through 20 inch length

The following manufacturers have shown compliance with the applicable specifications for oval eye bolts:

|  |  |
| --- | --- |
|  | Action Manufacturing |
|  | Allied Bolt, Inc. |
|  | Berny’s Forging Company |
| \* | Joslyn Manufacturing Company |
|  | Hubbell Power Systems (5/8 inch diameter ONLY) |
|  | Kortick Manufacturing Company |
|  | MacLean (Continental) |
|  |  |

\*”Static proof” designs available.

Shoulder Eye Bolt

for Transmission Structures

¾4 inch diameter, 8 inch through 20 inch length

|  |  |
| --- | --- |
|  | Catalog Number |
|  |  |
| Joslyn | J9528 to J9540 |
| Kortick | K9558 to K2570 |
|  |  |

p-1

November 2014

p – Connectors, distribution (Parallel Groove)

Applicable Specification: ANSI C119.4

ACSR to ACSR

To same size or smaller

Bare Conductor

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 4/0 – 2/0 | 1/0 | 2 | 4 |
|  |  |  |  |  |
| AFL | - | 396.6 | 490.0 | 490.0 |
|  |  |  |  |  |
| Blackburn | PAE 4141-9 | PAE 2121-9 | PAE 2121-9 | PAE 2121-9 |
|  |  |  |  |  |
| Burndy | KVS28A | UCG25R | UC25R2R | UC25R2R |
|  |  |  |  |  |
| Connector Mfg. | APC-2/0 | APC-2/0 | APC-1/0 | APC-1/0 |
|  |  |  |  |  |
| Hubbell (Anderson) | LC-53A | LC-51C | LC-51A | LC-51A |
|  |  |  |  |  |
| Hubbell (Fargo) | GA-9040L | GA-9020L | GA-9002L | GA-9003L |
|  |  |  |  |  |
| MacLean (Reliable) | APG-3 | APG-2 | APG-1 | APG-1 |
|  |  |  |  |  |
| Penn-Union | PCAA-20BF | PCAA-15BF | PCAA-10BF | PCAA-10BF |
|  |  |  |  |  |
| TE Connectivity – Energy | 1710521-5 | 1710521-3 | 1710521-1 | 1710521-1 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Over Armor Rods

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 3/0 | 2/0 | 1/0 | 2 | 4 |
|  |  |  |  |  |  |
| Blackburn | - | - | PAA10 | PAA10 | PAA10 |
|  |  |  |  |  |  |
| Burndy | - | - | UC32R | UC32R | UC32R |
|  |  |  |  |  |  |
| Hubbell (Anderson) | LC-83A | LC-52C | LC-52C | LC-52C | LC-52C |
|  |  |  |  |  |  |
| Hubbell (Fargo) | GA-9843 | GA-9842 | GA-9041L | GA-9020L | GA-9020L |
|  |  |  |  |  |  |
| MacLean (Reliable) | - | - | 744AL | 600AL | 600AL |
|  |  |  |  |  |  |
| Penn-Union | - | - | ARC-12 | ARC-11 | ARC-14 |
|  |  |  |  |  |  |

p-2

November 2014

p – Connectors, Distribution (Parallel Groove)

Applicable Specification: ANSI C119.4

ACSR to Copper or Copperweld-Copper

ACSR Size (Bare Conductor)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 3/0 | 2/0 | 1/0 | 2 | 4 |
|  |  |  |  |  |  |
| AFL | 197 | R193 | R193 | 195 | 195 |
| Blackburn | PAC7 | PAC7 | PAC345 | 2CA | 4CA |
| Hubbell (Anderson) | LC-811A | LC-811A | LC-522A | LC-511A | LC-511 |
| Hubbell (Fargo) | GA-9040L | GA-9040L | GA-9020L | GA-9002L | GA-9003L |
| MacLean (Reliable) | 600ALC | 555ALC | 438ALC | 438ALC | 438ALC |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

ACSR Size (Over Armor Rods)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 3/0 | 2/0 | 1/0 | 2 | 4 |
|  |  |  |  |  |  |
| AFL | 201 | R197 | R197 | R197 | 199 |
| Blackburn | - | - | PAC7 | PAC7 | PAC7 |
| Hubbell (Anderson) | LC-833 | LC-833 | LC-811A | LC-811A | LC-811 |
| Hubbell (Fargo) | GA-9843C | GA-9842C | GA-9040L | GA-9020L | GA-9020L |
| MacLean (Reliable) | - | - | 744ALC | 600ALC | 600ALC |
|  |  |  |  |  |  |

p-3

June 2010

p – Connector, Distribution

Applicable Specification: ANSI C119.4

Copper Type Conductors

Connections to same size or smaller

Bare Conductor

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  | Copperweld Copper | 2A |  | 4A | 6A | 8A |
|  | Copper | 0x7 | 2x3 |  | 4 | 6 |
|  |  |  |  |  |  |  |
| (s) | Blackburn | 1/0H | 1H | 2H | 4H | 6H |
| (s) | Burndy | KS-25 | KS-23 | KS-23 | KS-20 | KS-17 |
| (s) | Dossert | DS-10-F | DS-6-F | DS-6-F | DS-3-F | DS-2-F |
| (s) | Greaves | - | A-8 | - | A-5 | A-3 |
| (s) | Homac | - | 1F | 2F | 4F | 6F |
|  | Hubbell (Anderson) | DG-1/0 | DG-1 | DG-2 | DG-4 | DG-6 |
|  | Hubbell (Fargo) | GC-5020 | GC-5002S | GC-5002 | GC-5004 | GC-5006 |
| (s) | ILSCO | IK-1/0 | IK-2 | IK-2 | IK-4 | IK-6 |
| (s) | Kearney/Cooper Power  Systems | 118109 | 118109 | 118108 | 118104 | 118102 |
| (s) | Krueger & Hudepohl | UC58C-EV | - | - | - | - |
| (s) | Penn-Union | S1/0 | S2 | S3 | S4 | S6 |
|  | Richards Manufacturing | VC10 | VC10 | VC7 | VC5 | VC3 |
|  | Royal Switchgear | 1739 | 1739 | - | - | - |

Over Armor Rods

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  | Burndy | KVS-31 | KVS-31 | KVS-28 | KVS-26 | KVS-26 |
|  | Hubbell (Anderson) | K-5 | K-4 | K-4 | K-2 | K-2 |
|  | Hubbell (Fargo) | GC-5035 | GC-5035 | GC-5040 | GC-5020S | GC-5020 |
|  | ILSCO | IKB-350 | IKB-350 | IKB-4/0 | - | - |
| (s) | Kearney/Cooper Power Systems | 118112 | 118112 | 118111 | 118110 | 118110 |
|  | Penn-Union | VT-4 | VT-3 | VT-3 | VT-2 | VT-1 |

(s) Designates split bolt connectors

Long Connectors (Split Bolt)

Copper to Copper

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2 | 4 | 6 |
| Blackburn | 2H3 | 4H3 | 6H3 |
| Burndy | KS-22-3 | KS-20-3 | KS-17-3 |
| Dossert | DS5-3 | DS3-3 | DS2-3 |
| Greaves | A-9 | A-6 | A-4 |
| Homac | - | 4F | 6F |
| Hubbell (Anderson) | C-2-L | C-4-L | C-6-L |
| Kearney/Cooper Power Systems | 118107 | 118105 | 118103 |
| Penn-Union | SEL-2 | SEL-4 | SEL-6 |

p-4

November 2014

p – Connectors, Service (Parallel Groove)

Applicable Specification: ANSI C119.4

Aluminum-to-Aluminum

Solid or Stranded

|  |  |  |
| --- | --- | --- |
|  | No. 2 | No. 4 |
|  |  |  |
| AFL | 490.0 | 490.0 |
| Blackburn | PAE 2121-9 | PAE 2121-9 |
| Burndy | UC25R2R | UC25R2R |
| Hubbell (Anderson) | LC-51A | LC-51A |
| Hubbell (Fargo) | GA-9002L | GA-9002L |
| MacLean (Reliable) | APG-1 | APG-1 |
| Penn-Union | PCAA-10BF | PCAA-10BF |
|  |  |  |

p-5

July 2009

p – Connectors, Service (Parallel Groove)

Applicable Specification: ANSI C119.4

Aluminum-to-Copper

Solid or Stranded

|  |  |  |
| --- | --- | --- |
|  | 2 Al to 4 Cu | 4 Al to 6 Cu |
|  |  |  |
| Blackburn | PAC345 | PAC345 |
| Hubbell (Anderson) | LC-511A | LC-511A |
| Hubbell (Fargo) | GA-9002L | GA-9002L |
|  |  |  |

p-6

June 2010

p – Connectors, Service

Applicable Specification: ANSI C119.4

Copper-to-Copper

Solid or Stranded

|  |  |  |
| --- | --- | --- |
| Manufacturer | No. 4 | No. 6 |
|  |  |  |
| Blackburn | 4N | 6N |
| Burndy | KP4C | KP6C |
| Dossert | ES-4 | ES-6 |
| Hubbell (Anderson) | 4E | 6ES |
| Hubbell (Fargo) | GC-5004 | GC-5006 |
| Ilsco | SX-4 | SX-6 |
| Maclean (Reliable) | BVC-4 | BVC-6 |
| Penn-Union | SX-4 | SX-6 |
| Richards Manufacturing | VC5 | VC3 |
| Southport | SE-3 | SE-2 |
|  |  |  |

p-7

November 2014

p – Connectors, Guy Bond (Parallel Groove)

Applicable Specification: ANSI C119.4

ACSR to Guy Strand

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2/0 | 1/0 | 2 & 4 |
|  |  |  |  |
| AFL | 396.6 | 396.6 | 490.0 |
| Blackburn | PAE 2121-9 | PAE 2121-9 | PAE 2121-9 |
| Burndy | UC 28R | UCG25R | UCG25R |
| Dossert | AC103-LW | AC101-LW | AC100-LW |
| Hubbell (Anderson) | LC-52A-GP | LC-51C-GP | LC-51A-GP |
| Hubbell (Fargo) | GA-9040L | GA-9040L | GA-9040L |
| MacLean (Reliable) | 744AL | 555AL | 438AL |
| Penn-Union | ALC-15 | ALC-10 | PCA-010 |
|  |  |  |  |

Copper to Guy Strand

|  |  |
| --- | --- |
| TE Connectivity – Energy | C-LOK Series |
| Blackburn | K-1 2HPW (1/4”) 1/0 HPW (3/8”) |
| Burndy | UC8W26L |
| C & R | CRJC-1 |
| Dossert | UDV 13-1-P |
| Galvan Industries, Inc. | K1 |
| Hubbell (Anderson) | LC-511A |
| Hubbell (Fargo) | GC-8040P |
| ILSCO | SK-3 (1/4”) SK-1/0 (3/8”) |
| Joslyn | J8300 |
| Kearney/Cooper Power Systems | 9968-1 |
| Krueger & Hudepohl | UC58B-EV |
| MacLean (Reliable) | 438ALC |
| Penn-Union | JC-1-AC (1/4”, 3/8” guy strand) (1/0 strand copper max.) |

p-8

July 2009

p – Connectors, Compression

Applicable Specification: ANSI C119.4

DISTRIBUTION

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  | Aluminum to aluminum | Aluminum to copper | Copper to copper | Tap Connections (Al to Al,Al to Cu) |
|  |  |  |  |  |
| Blackburn | Type WR | Type WR | Type CF-1 | Type WR |
|  |  |  |  |  |
| Burndy | “Hycrimp” (Type YH) | “Hycrimp” (Type YH) | “Crimpit” (Type YC-C) | “Cabelok Crimpit” (Type YP-U) |
|  |  |  |  |  |
| Cembre | - | - | C | - |
|  |  |  |  |  |
| Homac | H Tap-OB&DB | H Tap-OB&DB | CC | H Tap-OB&DB |
|  |  |  |  |  |
| Hubbell (Anderson) | AC Series | AC Series | VCUC | VCP |
|  |  |  |  |  |
| Kearney/Cooper  Power Systems | “Squeezeon” (Aluminum) | “Squeezeon” (Aluminum) | “Squeezeon” (Copper) | “Squeezeon” (Aluminum) |
|  |  |  |  |  |
| Penn-Union | “Press-On” (Aluminum) | “Press-On” (Aluminum) | “Press-On” (Copper) | “Penn-L-Tap” |
|  |  |  |  |  |

NOTE: These connectors are acceptable when installed using tools and dies in accordance with the connector manufacturer’s recommendations.

p-9

July 2009

p – Connectors, Compression

Applicable Specification: ANSI C119.4

SERVICE

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | Aluminum-to-Aluminum Aluminum-to-Copper | Copper-to-Copper |
|  |  |  |
| Blackburn | CS, KL ICS-1, IKL (Insulated) | - |
|  |  |  |
| Burndy | “Linkits” (Type YSU, YSD) “Insulink”(ES) | “Hysplice” (Types YDS-C, YDS-W) |
|  |  |  |
| Homac | “Shure Splicers” | - |
|  |  |  |
| Hubbell (Anderson) | VAUS | VHS |
|  |  |  |
| Kearney/Cooper  Power Systems | “Serv-ens” | - |
|  |  |  |
| National Tel. Supply | “Nicopress” | - |
|  |  |  |
| Penn-Union | “Penn Sleeves” | - |
|  |  |  |
|  |  |  |

These connectors are furnished in a variety of sizes to fit all combinations of aluminum and copper service wire.

NOTE: These connectors are acceptable when installed using tools and dies in accordance with the connector manufacturer’s recommendations.

p-10

November 2014

p – Connectors, Transmission

Applicable Specification: ANSI C119.4

BOLTED TYPE

ACSR to ACSR

ACSR to Copper

|  |  |
| --- | --- |
| AFL | 580 Series |
|  |  |
| Burndy (ACSR to ACSR) | UP-A, UP-R |
|  |  |

When ordering these clamps specify size, stranding and material of both conductors.

COMPRESSION TYPE

ACSR to ACSR

Same Size

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Conductor Size | AFL | Blackburn | Burndy | Hubbell (Anderson) | Kearney/Cooper Power Systems |
|  |  |  |  |  |  |
| 1/0 | 5074.438 | RCJ10 | YCS25R | VPUS | OHR-1/0-61AJ |
| 2/0 | 5074.484 | RCJ20 | YCS26R | - | OHR-2/0-61AJ |
| 3/0 | 5075.547 | RCJ30 | YCS27R | Order | OHR-3/0-61AJ |
| 4/0 | 5075.609 | RCJ40 | YCS28R | by | OHR-4/0-61AJ |
| 266.8 kcmil | 5076 Order by | RCJ266M | YCS30R | Conductor | HR-266-267AJ |
| 336.4 kcmil | 5076 stranding | RCJ336M | YCS33R | Size | HR-336-267AJ |
|  |  |  |  |  |  |

ACSR to Copper

|  |  |
| --- | --- |
| AFL | 5070 Series |
| Burndy | YCR-R-CA |
| Hubbell (Anderson) | VPUS |
|  |  |

(Order by conductor sizes)

NOTE: These connectors are acceptable when installed using tools and dies in accordance with the connector manufacturer’s recommendations.

p-11

March 2013

p – Connectors

(wedge type)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Aluminum-to-aluminum | Aluminum-to-copper | Copper-to-copper | Tap Connections (Al to Al ,Al to Cu) |
|  |  |  |  |  |
| TE Connectivity – Energy | AMPACT MINIWEDGE | AMPACT MINIWEDGE | AMPACT C-LOK Series | AMPACT MINIWEDGE |
|  |  |  |  |  |
| Burndy | WEJTAP | WEJTAP | WEJTAP | WEJTAP |
|  |  |  |  |  |
| Connector Products, Inc. | Aluminum Tap Connector | Aluminum Tap Connector | - | Aluminum Tap Connector |
|  |  |  |  |  |
| Homac | Power Tap | Power Tap | - | Power Tap |

Conditional List

p(1)

July 2009

p – Connectors

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Blackburn Bolted, insulated IPC 1102 (#2-1/0 run, #2 tap) IPC 4111 (1/0-4/0 run, #2-1/0 tap) IPC 4141 (1/0-4/0 run, 1/0-4/0 tap) | 1. For use on 600 volt maximum insulated conductors.  2. To be used only for connecting service drop conductors to service entrance conductors.  3. To obtain experience. |
|  |  |
| Homac \*Compression, Insulated “Shure Splicers” Types Q1N and U1N | To obtain experience. |
|  |  |
| Hubbell (Anderson) \*Compression al to al al to cu “Versa-Crimp” L tap.  Parallel groove, aluminum LC-52C (1/0 – 6/1 ACSR over armor rods) LC-51C (1/0 – 6/1 ACSR) | To obtain experience.   To obtain experience. |
|  |  |
| Kupler Bolted, insulated 130001 (#2-1/0 run, #2 tap) 130003 (1/0-4/0 run, #2-1/0 tap) 130004 (1/0-4/0 run, 1/0-4/0 tap) | 1. For use on 600 volt maximum insulated conductors.  2. To be used only for connecting service drop conductors to service entrance conductors.  3. To obtain experience. |
|  |  |
| Penn Union \*Compression, Insulated Type PIK | To obtain experience. |
|  |  |
| Utilco Two bolt style, al to al Type PM | To obtain experience. |
|  |  |

\*NOTE: These connectors are acceptable when installed with tools and dies in accordance with the connector manufacturer’s recommendations.

q-1

November 2011

q – Bolt, double upset

Applicable Specification: “RUS Specifications for Single and Double Upset Spool Bolts,” D-5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Diameter, inches: | 5/8 | 5/8 | 5/8 | 5/8 |
| Length, inches: | 7 | 8 | 9 | 10 |
|  |  |  |  |  |
| Manufacturer |  |  |  |  |
|  |  |  |  |  |
| Allied Bolt, Inc. | - | - | 1716 | 1717 |
| Hubbell (Chance) | - | 7826 | 7828 | 7830 |
| Joslyn | - | J2394 | J2395 | J2396 |
| Kortick | K4760 | K4761 | K4762 | K4763 |
| MacLean (Continental) | U31065 | U31067 | U31069 | U31071 |
|  |  |  |  |  |

s-1

July 2009

s – Clevis, secondary swinging

Applicable Specifications: “RUS Specifications for Secondary Swinging Clevises,” D-6

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Clevis only\* | Clevis with 1-3/4” groove spool | Clevis with 3” groove spool |
|  |  |  |  |
| Hubbell (Chance) | 0352 | 0352-C909-1032 | 0352-C909-1034 |
| Joslyn | J0322 | - | - |
| Kortick | K9259 | K9109 | K9149 |
| MacLean (Continental) | U32043 | U36043 | U32143 |
|  |  |  |  |

\*Catalog Number does not include spool. See page cm for spool type insulators.

u-1

April 2011

u – Deadend for galvanized steel or

aluminum-clad steel guy strand

3-Bolt Guy Clamp

|  |  |  |
| --- | --- | --- |
|  | Light (1/2” bolts) | Heavy (5/8” bolts)\* |
|  |  |  |
| Almat | - | K162-4 |
| Allied Bolt, Inc. | AB5059 | AB5056 |
| Hubbell (Chance) | 6450 | 6461 |
| Joslyn | J930 | J931 |
| Kortick | K4124 | K4005 |
| MacLean (Continental) | U5273 | U5275 |
|  |  |  |

U-Bolt Guy Clamp

|  |  |  |
| --- | --- | --- |
|  | Light (3/8” bolts) | Heavy (1/2” bolts) |
|  |  |  |
| Hubbell (Chance) | GCU38C | - |
| Joslyn (Flagg) | PAX-64C | PAX-67C |
| MacLean (Continental) | GC-64C | GC-67C |
|  |  |  |

Offset Guy Clamp

|  |  |  |
| --- | --- | --- |
|  | Light (1/2” bolts) | Heavy (5/8” bolts) |
|  |  |  |
| Hubbell (Chance) | 6409 | 6410 |
| Joslyn | J926 | J927 |
|  |  |  |

\*For use on transmission.

u-2

August 2014

u – Deadend for galvanized steel guy strand

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Strand Size: | ¼ | 9/32” | 5/16” | 3/8” | 7/16” |
|  |  |  |  |  |  |
|  | Automatic | | | | |
|  |  |  |  |  |  |
| Aluma-Form | AGD-250  AGDU-250 | - | AGD-312  AGDU-312 | AGD-375  AGDU-375 | AGD-437 |
| MacLean (Reliable) Bail for thimble eye Bail for guy insulator | 5100 5150 | 5201 5251 | 5201 5251 | 5102 5152 | 5103 5153 |
|  |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Formed Type | | | | |
|  |  |  |  |  |  |
| AFL For standard guy\* | GYDEGB061 | GYDEGB071 | GYDEGB079 | GYDEGB091 | GYDEGB110 |
|  |  |  |  |  |  |
| Dulmison For standard guy\* | SGG-0610 | SGG-710 | SGG-0790 | SGG-0915 | SGG-1105 |
|  |  |  |  |  |  |
| Florida Wire & Cable For standard guy\* | FLA 1300 | FLA 1400 | FLA 1500 | FLA 1600 | FLA 1700 |
|  |  |  |  |  |  |
| Helical Line Products For standard guy\* | HG-207-1/4” | HG-208-9/32” | HG-209-5/16” | HG-210-3/8” | HG-211-7/16” |
|  |  |  |  |  |  |
| Payer Industries For standard guy\* | 25-GNBS | - | 30-GNBS | 35-GNBS | 38-GNBS |
|  |  |  |  |  |  |
| Preformed Line Products For standard guy\* For wrapped guy | GDE-1104 WGL-2100 | GDE-1105 WGL-2101 | GDE-1106 WGL-2102 | GDE-1107 WGL-2103 | GDE-1108 WGL-2104 |
|  |  |  |  |  |  |

\*Class B galvanizing. When guy wire has Class C galvanizing, formed deadend should also have Class C galvanizing.

u-3

August 2014

u – Deadend for aluminum clad steel guy strand

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Strand Size | 3#10 (4M) | 7#12 (6M) | 7#11 (8M) | 7#10 (10M) | 7X.110” (11.5M) | 7#9 (12.5M) | 7X.121” (14M) | 7#8 (16M) | 7X.148” (20M) |
|  |  |  |  |  |  |  |  |  |  |

Formed Type

Aluminum-Clad Steel Guy Strand

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| AFL  For standard guy | GYDEAW055 | GYDEAW060 | GYDEAW068 | GYDEAW077 | GYDEAW082 | GYDEAW087 | GYDEAW090 | GYDEAW096 | GYDEAW112 |
|  |  |  |  |  |  |  |  |  |  |
| Dulmison For standard guy | AWGG 0555 | AWGG 0600 | AWGG 0685 | AWGG 0770 | AWGG 0825 | AWGG 0870 | AWGG 0905 | AWGG 0965 | AWGG1125 |
|  |  |  |  |  |  |  |  |  |  |
| Helical Line Products For standard guy | - | HG517-6M | HG519-8M | HG521-10M | - | HG523-12.5M | HG524-14M | HG525-16M | HG528-20M |
|  |  |  |  |  |  |  |  |  |  |
| Hubbell (Chance) For standard guy | - | 6M-AWTLG | 8M-AWTLG | 10M-AWTLG | - | 12.5M-AWTLG | - | - | - |
|  |  |  |  |  |  |  |  |  |  |
| Preformed Line Products For standard guy | AWDE-4108 | AWDE-4110 | AWDE-4113 | AWDE-4116 | AWDE-4118 | AWDE-4119 | AWDE-4120 | AWDE-4122 | AWDE-4126 |
| For wrapped guy | - | WGL-4110 | WGL-4113 | WGL-4116 | - | WGL-4120 | - | - | - |

Automatic

Aluminum-Clad Steel Guy Strand

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Hubbell (Fargo) | - | GDE-300 | GDE-301 | GDE-301 | - | GDE-302 | - | - | - |
| MacLean (Reliable) | - | 5200 | 5201 | 5201 | - | 5202 | - | - | - |
|  |  |  |  |  |  |  |  |  |  |

v-1

September 2010

v – Guy Attachment

for 5/8” bolt

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| Type: | Formed Strap | Angle Bolt Eye | Guy Hook | Guy Hook\* |
|  |  |  |  |  |
| Maximum Working Load Rating | 23,130 N  (5200 lbs.) | 23,130 N (5200 lbs.) | 23,130 N (5200 lbs.) | 37,800 N (8500 lbs.) |
|  |  |  |  |  |
| Cooper |  |  |  |  |
|  |  |  |  |  |
| Hubbell (Chance) | 5004 | 0100 | - | GH5 |
| Joslyn | J25164 | J6500 | J6555 J6556 | - |
| Joslyn (Flagg) | - | - | - | P151X |
| Kortick | K4035 K4047 | K3140 | - | - |
| Line Hardware | - | - | - | HGA-58C |
| MacLean (Bethea) | - | - | - | AG-5 |
| MacLean (Continental) | U31030 | U5531 | GAD | GAD-56-4 |
| Power Play Products | - | - | - | B58GH |
| M.D. Henry Company, Inc. | - | - | - | UGA-56C |
|  |  |  |  |  |

\*This hook may be used in place of the wrapped guy arrangement in assemblies E3-2 and E3-3.

v-2

April 2013

Pole Eye Plates

(5/8” Bolt)

|  |  |
| --- | --- |
| Type | Pole Eye Plate |
|  |  |
| Maximum Working Load Rating | 37,800 N. (8500 lbs.) |
|  |  |
| Hubbell (Anderson) | GSP-05 |
| Line Hardware | PGA-548 |
| MacLean (Bethea) | PE5-6A |
| MacLean (Continental) | PEP-66-45 |
|  |  |

Conditional List

v(1)

July 2009

v – Guy attachment

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| MacLean (Continental) Pole Band, UCB-15E | To obtain experience. For distribution lines only and 10,000 lbs maximum loading. |
|  |  |
| Hubbell (Chance) Pole Band, with cone head bolt 6280, and guy clip 456 6276 (for 6” to 10” pole) 6277 (for 8” to 14” pole) | To obtain experience. For distribution lines only and 10,000 lbs maximum loading. |
|  |  |
| Joslyn Pole Band, with cone head bolt J-6281, and guy clip J-6275 J-6280 (for 6” to 10” pole) J-6270 (for 8” to 14” pole) | To obtain experience. For distribution lines only and 10,000 lbs maximum loading. |
|  |  |

w-1

May 2016

w – Insulators, guy strain

(Fiber Reinforced Plastic)

|  |  |  |  |
| --- | --- | --- | --- |
| Ult. Strength, lbs. | 11,000 | 15,000 | 21,000 |
|  |  |  |  |
| Aluma-Form, Inc. | - | FGS 16 Series | FGS 21 Series |
|  |  |  |  |
| Dulmison | II1-1P Series | HSI-2X Series | HSI3-2P Series |
|  |  |  |  |
| GAMMA CORONA | - | GS15 Series | GS21 Series |
|  |  |  |  |
| EPAC | CC Series | CC Series | CC Series |
|  |  |  |  |
| Gamma Insulators Corp. | - | GS15 Series | - |
|  |  |  |  |
| Hubbell (Chance) | - | GS-16 | GS-21 |
|  |  |  |  |
| Hughes Brothers | - | 692 Series | 694 Series |
|  |  |  |  |
| Joslyn (Flagg) | 150 Series | 150 Series | 210 Series |
|  |  |  |  |
| K-Line | - | - | KL Series |
|  |  |  |  |
| MacLean (Continental) | G-11 Series | G-15 Series | G-21 Series |
|  | GAC 11 Series (for 5/16” guy strand) | GAC 15 Series (for 3/8” guy strand) | - |
|  |  |  |  |

x-1

August 2011

x – Rod, anchor

Applicable Specification: ANSI C135.2, “Standards for Galvanized Ferrous Strand Eye Anchor Rods”

Applicable Sizes: Single guy: 5/8 inch diam. 6, 7 and 8 ¾t long  
3/4 inch diam. 8, 9 and 10 feet long  
1 inch diam. 9 and 10 feet long

Double guy: 5/8 inch diam. 7 and 8 f¾ long  
 3/4 inch diam. 8, 9 and 10 feet long  
 1 inch diam. 9 and 10 feet long

Single Guy: Drive: 5/8 inch diam. 7 and 8 ¾t long  
3/4 inch diam. 8, 9 and 10 feet long  
1 inch diam. 9 and 10 feet long

Double Guy: Drive: 5/8 inch diam. 7 and 8 ¾t long  
3/4 inch diam. 8, 9 and 10 feet long  
1 inch diam. 9 and 10 feet long

The following manufacturers have shown compliance with the applicable specifications. Some manufacturers cannot supply all sizes listed above. Check with manufacturer or distributor for availability.

|  |
| --- |
| Allied Bolt, Inc. |
| Dixie |
| Eritech (Carolina Galvanizing/Knight) |
| Grip-Tite |
| Hubbell (Chance) |
| Joslyn |
| Kortick |
| Utilities Service |
|  |

Conditional List

x(1)

July 2009

x – Rod, anchor

Applicable Specification: ANSI C135.2 “Standards for Galvanized Ferrous Strand Eye Anchor Rods” except rods are copper covered. Copper coating thickness is **13 mils minimum** at any point and a 15 mil average. All purchases should specify that a factory certification to the thickness of the copper must accompany the shipment of the rods.

Applicable Sizes: Dou¾ Guy – 3/4 inch diameter, 8 and 9 feet long.

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Joslyn | 1. To obtain experience.  2. For transmission purposes only.  3. For use with log anchors or copper covered plate anchors only.  4. To be used with copper coated hardware or bronze hardware underground. |
|  |  |

Conditional List

x(2)

July 2012

x – Rod, anchor

Applicable Specification: ANSI C135.2 “Standards for Galvanized Ferrous Strand Eye Anchor Rods” except rods are copper covered. Rods meet UL-465 specification for copper coating thickness of **10 mils minimum** at any point. All purchases should specify that a factory certification to the thickness of the copper must accompany the shipment of the rods.

Applicable Sizes: Double Guy – 3/4 inch diameter, 8 and 9 feet long.

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
|  |  |
|  |  |

y-1

December 2015

y – Galvanized Steel Strand

Usage: Guy, Distribution or Transmission Line

Overhead Static Wire

ASTM Specification: A 475 – For Guy Strand

A 363 – For Overhead Static Wire

Following grades/diameters of steel wire strands are preferred sizes:

For Guying

|  |  |  |  |
| --- | --- | --- | --- |
| Siemens-Martin | High Strength | Extra High Strength Grade | |
| Distribution Line | Dist. Or Trans. | Distribution | Transmission |
| ¼” dia. | ¼” dia. | ¼” dia. | ¼” dia. |
| - | 9/32” | 9/32” | 9/32” |
| - | 5/16” | 5/16” | 5/16” |
| 3/8” | 3/8” | 3/8” | 3/8” |
| 7/16” | 7/16” |  | 7/16” |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

For Overhead Static Wire (Groundwire)

|  |  |
| --- | --- |
| High Strength (dia.) | Extra High Strength Grade (dia.) |
| - | 5/16” |
| 3/8” | 3/8” |
| 7/16” | 7/16” |
|  |  |
|  |  |

|  |
| --- |
| Alcan Cable |
| Armco Steel Corporation |
| Bekaert Steel Wire Corporation |
| Cal-Wire |
| Central de Herramientes, S.A. de C.V. |
| Conex Cable, LLC |
| Davis-Walker |
| DeAcero, S.A. de C.V. |
| Emcocables |
| Florida Wire and Cable |
| Guardian Cable Systems, LLC |
| Indiana Steel and Wire |
| Knight Industries |
| Mitchell Industries |
| National Strand Products |
| Paulsen Wire and Rope Corporation |
| Seal Wire Company |
| Southwire |
|  |

Note: The buyer should specify Class A, B, or C coating per ASTM A363 or A475.

y-2

November 2014

y – Steel Strand

Aluminum-Clad

Specifications: ASTM B415 and B416

For overhead groundwire

(Joint and splice requirements for wire and strand to meet ASTM A363)

AWG Sizes: (a) 7 No. 10, (c) 7 No. 9, (d) 7 No. 8, (e) 7 No. 7

|  |  |
| --- | --- |
| Emcocables | (a), (c), (d), (e) |
| Intral and Company, Ltd. | (a), (c), (d), –e) |
| Nehri–g - Conex | (a), (c), (d), (e) |
| AFL | (a), (c), (d), (e) |
|  |  |

For guy strand

(M is rated breaking load in thousand lbs)

M Sizes: 6M (7 No. 12), 8M (7 No. 11), 10M (7 No. 10), 11.5M (7 x .110"), 12.5M (7 No. 9), 14M (7 x .121"),   
16M (7 No. 8), 18M (7 x .139"), 20M (7 x .148")

|  |  |
| --- | --- |
| Alumoclad de Mexico, S.A. de C.V. | 8M, 10M, 16M |
| Emcocables | 6M, 8M,10M, 12.5M, 16M, 18M, 20M |
| Intral and Company, Ltd. | 6M, 8M,10M, 12.5M, 16M, 18M, –0M |
| Nehri–g - Conex | 8M, 10M, 12.5M, 16M, 18M |
| AFL | 6M, 8M, 10M, 12.5M, 14M, 16M, 18M, 20M |
|  |  |

Conditional List

y(1)

July 2009

y – Aluminum Coated Steel Wire

Applicable Specification ASTM A474

|  |  |
| --- | --- |
|  |  |
|  |  |
| National Strand Products, 3/8"  Distribution Guy Strand Siemens-Martin High Strength Extra High Strength  Transmission Guy Strand High Strength Extra High Strength  Overhead Static Wire High Strength Extra High Strength | To obtain experience.     To obtain experience.    1. To obtain experience.  2. Must meet the joint requirements of ASTM A363. |
|  |  |

Conditional List

y(2)

November 2018

y - Zinc - 5% Aluminum - Mischmetal alloy (Zn-5Al-MM) - Coated

Steel Wire Strands

Applicable Specification ASTM A855

**Bekaert Corporation**

Type/Grade: Nominal diameter (7-wire strand) in.

|  |  |
| --- | --- |
| (S-M): | 1/4", 3/8", & 7/16". |
| (HS): | 1/4", 5/16", 3/8", & 7/16", 9/32”. |
| (EHS): | 1/4", 5/16", 3/8", & 7/16", 9/32”. |
|  |  |

|  |  |
| --- | --- |
|  | Conditions |
|  |  |
| Distribution Guy Strand Siemens-Martin (S-M) High Strength (HS) Extra High Strength (EHS)  Transmission Guy Strand High Strength (HS) Extra High Strength (EHS)  Overhead Static Wire High Strength (HS) Extra High Strength (EHS) | To obtain experience.  To obtain experience.  1. To obtain experience.  2. Must meet the joint requirements of ASTM A363. |

NOTE: Only available with Class A coating.

Type/Grade: Nominal diameter (7-wire strand), in.

|  |  |
| --- | --- |
| (S-M): | 1/4", 3/8", & 7/16". |
| (HS): | 1/4", 9/32", 5/16", 3/8", & 7/16". |
| (EHS): | 1/4", 9/32", 5/16", 3/8", & 7/16". |

**Indiana Steel & Wire Co.**

**Guardian Cable Systems, LLC**

|  |  |
| --- | --- |
|  | Conditions |
|  |  |
| Distribution Guy Strand Siemens-Martin (S-M) High Strength (HS) Extra High Strength (EHS)  Transmission Guy Strand High Strength (HS) Extra High Strength (EHS)  Overhead Static Wire High Strength (HS) Extra High Strength (EHS) | To obtain experience.  To obtain experience.  1. To obtain experience.  2. Must meet the joint requirements of ASTM A363. |
|  |  |

NOTE: The buyer should specify Class A, B, or C coating.

Conditional List

y(3)

November 2018

y - Conzinal 95% Zinc - 5% Aluminum+ Mischmetal Alloy (AL-ZN-MM)

Coated Steel Wire Strands

|  |  |
| --- | --- |
| Applicable Specifications: | ASTM A363, A475, A855/A855M, A925 |
|  | ASTM B498, B802/B802M, B803/B803M, B958/B958M |

**Conex Cable LLC**

Type/Grade: Nominal diameter (7-wire strand) in.

|  |  |
| --- | --- |
|  |  |
| (EHS): | 1/4", 5/16", 3/8", & 7/16". |

|  |  |
| --- | --- |
|  | Conditions |
|  |  |
| Distribution Guy Strand Extra High Strength (EHS)  Transmission Guy Strand Extra High Strength (EHS)  Overhead Static Wire Extra High Strength (EHS) | To obtain experience.  To obtain experience.  To obtain experience. |

z-1

March 2013

z - Anchors, Expanding and Plate

DISTRIBUTION

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Designated Maximum holding power-lbs. |  | 6,000 | 8,000 | 10,000 | 12,000 |
| Min. Area (sq. in.) |  | 90 | 100 | 120 | 135 |
| Rod Dia. (inch¾ |  | ¾ | 5/8 | ¾ | ¾ |
| Rod Length (feet) |  | 7 | 7 | 8 | - |
|  |  |  |  |  |  |
|  | Type |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Grip-Tite | 8 way | A322812G | A322812G | A322812G | A322812G |
|  |  |  |  |  |  |
| Hubbell (Chance) | 8 way | 88135 | 88135 | 88135 | 88135 |
|  |  |  |  |  |  |
| MacLean Power Systems | 8 way | - | J8115 | J8135 | J8135 |
|  |  |  |  |  |  |
| Line Hardware | 8 way | 8-100G | 8-115G | 8-135G | 8-135G |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

NOTE: Where galvanized anchors are listed, the same anchors ungalvanized (black asphalt coated) are also acceptable.

z-2

March 2013

z - Anchors, plate

Applicable Speification "RUS Specification for Steel Plate Anchors," T-3

TRANSMISSION

Minimum Area 400 sq. in.

|  |  |
| --- | --- |
|  | ¾” Galv. Rods |
|  |  |
|  |  |
| Grip-Tite | XP24 - 3/4 - G |
| Hubbell (Chance) | X24 - 3/4 |
| MacLean Power Systems | J3524 - 3/4 |
| Line Hardware | CP-24G |
|  |  |

NOTE: Where galvanized anchors are listed, the same anchors ungalvanized (black asphalt coated) are also acceptable.

z-3

December 2015

z - Anchors, Service

Designated Maximum Holding Power in Sand - 2500 lbs.

|  |  |  |
| --- | --- | --- |
|  | Screw | Expanding |
|  |  |  |
| Eritech (Carolina Galvanizing) | 86346606 | - |
| Grip-Tite | - | 322065G |
| Hubbell (Chance) | 6346 | 6870 |
| MacLean Power Systems | J6526W-CA | JO870 |
| Line Hardware | - | 8-70G |
|  |  |  |

z - Anchors, Swamp

DISTRIBUTION

|  |
| --- |
| 10" dia.12" dia.15" dia. |
|  | |  |  |  |
| MacLean Power Systems | | D-6710-S | D-6713-S | D-6715-S |
| Foresight | | - | MR-SR\* | - |
| Hubbell (Chance) | | C1101169 | C1101170 | C1101171 |
|  | |  |  |  |

\*Drive type anchor. Surface area meets or exceeds that of 12" diameter anchors.

NOTE: Where galvanized anchors are listed, the same anchors ungalvanized (black asphalt coated) are also acceptable.

z-4

March 2013

z - Anchors, Rock

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Anchor Size - inches | 1-3/4 | 1-3/4 | 1-3/4 | 1-3/4 |
| Rod Length - inches | 15 | 30 | 53 | 18 | |
| Rod Diameter - inches | 3/4 | 3/4 | 3/4 | 1 | |
|  |  |  |  |  | |
| Almat | K148-15 | K148-30 | K148-53 | - | |
| Hubbell (Chance) | R315 | R330 | R353 | - | |
| MacLean Power Systems | J3436 | J3437 | J3438 | - | |
| Kortick | K5503 | K5504 | K5505 | K2377 | |
|  |  |  |  |  | |

z - Pole keys

|  |  |
| --- | --- |
| Hubbell (Chance) | P-4817 |
| MacLean Power Systems | J-4817 |
|  |  |

z-5

March 2013

z - Anchors, Power-installed screw

Manufacturer: Earth Contact Products

Multi-Helix Screw Anchors

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Working Load Categories | | | |
| Soil Type | 35,600 N | 53,400 N | 71,000 N | 89,000 N |
| (8,000 lb.) | (12,000 lb.) | (16,000 lb.) | (20,000 lb.) |
| A1 (Soil Class 2) | TAF-150-36 |  |  |  |
|  | TAF-150-66 | TAF-150-66 | TAF-150-66 |  |
|  |  |  |  |  |
| A2 (Soil Class 3) | TAF-150-36 |  |  |  |
|  | TAF-150-66 | TAF-150-66 | TAF-150-66 |  |
|  |  |  |  |  |
| B (Soil Classes 4 & 5) | TAF-150-36 |  |  |  |
|  | TAF-150-66 | TAF-150-66 | TAF-150-66 |  |
|  |  |  |  |  |
| C (Soil Classes 6 & 7) | TAF-150-36 |  |  |  |
|  | TAF-150-66 | TAF-150-66 | TAF-150-66 |  |

Manufacturer: MacLean Power Systems

Multi-Helix Screw Anchors

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Working Load Categories | | | |
| Soil Type | 35,600 N | 53,400 N | 71,000 N | 89,000 N |
| (8,000 lb.) | (12,000 lb.) | (16,000 lb.) | (20,000 lb.) |
| A1 (Soil Class 2) | D-6632 | D-6632 | D-6636 | D-6636 |
|  | D-6636 | D-6636 | D-6637 | D-6637 |
|  | D-6637 | D-6637 | D-6638 | D-6638 |
| A2 (Soil Class 3) | D-6632 | D-6632 | D-6636 | D-6637 |
|  | D-6636 | D-6636 | D-6637 | D-6638 |
|  | D-6637 | D-6637 | D-6638 |  |
| B (Soil Classes 4 & 5) | D-6632 | D-6636 | D-6636 | D-6638 |
|  | D-6636 | D-6637 | D-6637 |  |
|  | D-6637 | D-6638 |  |  |
| C (Soil Classes 6 & 7) | D-6636 | D-6637 | D-6638 |  |
|  | D-6637 |  |  |  |

NOTES:

1. See RUS Specification T-10 for definitions and explanations.
2. Anchors in the 53,400 N (12,000 lb.) category or above for use on wood poles must be used with hardware commensurate with the working load. Hardware may provide for either single or multiple guy attachments to anchor.
3. Anchors listed in a specific working load category and/or soil class may generally be used at lower working load categories and/or lower numerical soil classes.

z-5.1

March 2013

z - Anchors, Power-installed screw

Manufacturer: Hubbell (A. B. Chance Company)

“SS” Multi Helix Anchors

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Working Load Categories | | | |
| Soil Type | 35,600 N | 53,400 N | 71,000 N | 89,000 N |
| (8,000 lb.) | (12,000 lb.) | (16,000 lb.) | (20,000 lb.) |
| A1 (Soil Class 2) | 12642-AE | 12642-AE | 12642-AEJ | 12642-AEJ |
|  | 12642-AEJ | 12642-AEJ | 12642-EJN | 12642-EJN |
|  | 12642-EJN | 12642-EJN | 12642-EJNS | 12642-ENJNS |
| A2 (Soil Class 3) | 12642-AE | 12642-AE | 12642-AEJ | 12642-EJN |
|  | 12642-AEJ | 12642-AEJ | 12642-EJN | 12642-EJNS |
|  | 12642-EJN | 12642-EJN | 12642-EJNS |  |
| B (Soil Classes 4 & 5) | 12642-AE | 12642-AEJ | 12642-AEJ | 12642-EJNS |
|  | 12642-AEJ | 12642-EJN | 12642-EJN |  |
|  | 12642-EJN |  | 12642-EJNS |  |
| C (Soil Classes 6 & 7) | 12642-AEJ | 12642-EJN | 12642-EJNS |  |
|  | 12642-EJN |  |  |  |

NOTES:

1. See RUS Specification T-10 for definitions and explanations.
2. Anchors in the 53,400 N (12,000 lb.) category or above for use on wood poles must be used with hardware commensurate with the working load. Hardware may provide for either single or multiple guy attachments to anchor.
3. Anchors listed in a specific working load category and/or soil class may generally be used at lower working load categories and/or lower numerical soil classes.

z-6

December 2017

z - Anchors, Power-Installed Screw, Distribution

|  |  |  |
| --- | --- | --- |
| Manufacturer | Catalog Number | Rating (lbs.) |
|  |  |  |
| Hubbell (Chance) | C1025006 | 10,000 |
|  | C1025007 | 10,000 |
|  | C1025010 | 10,000 |
|  | C1025207 | 8,000 |
|  | C1025210 | 8,000 |

Conditional List

z(5)

December 2015

z – Anchors, screw, power installed

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Bathurst  BMS-003 (6,000 lbs.)  BMS-003R (5/8” rod)  BMS-004 (10,000 lbs.)  BMS-004R (3/4” rod) | To obtain experience. |
|  |  |
| Earth Contact Products  TAPL-625-10-12 (6,000 lb., 5/8” rod)  TAPL-100-10-14 (10,000 lb., 1” rod) |  |
|  |  |
| Foresight  MR-1, MR-2, MR-3, MR-4 | To obtain experience.  Each installation must be proof tested. Maximum rating is test value achieved. |
|  |  |
| Hubbell (Chance)  024462 (6,000 and 8,000 lb.)  12332P (5/8” rod)  12587 (5/8” thimble eye nut)  024484 (10,000 and 12,000 lb.) 12632P (3/4” rod) 6512 (3/4” thimble eye nut) | To obtain experience. |
|  |  |
| MacLean Power Systems  J1lB-CA (6,000 & 8,000 lb., 5/8" rod)  J13C-CA (10,000 & 12,000 lb., ¾” rod) | To obtain experience. |
|  |  |

NOTES:

1. Where galvanized anchors are listed, the same anchors ungalvanized (coated) are also acceptable.
2. Catalog numbers shown for screw anchors are for anchors with 1-3/8" hubs. Equivalent anchors with 1-1/2" hubs are also acceptable. (A special installing wrench is required.)

aa, ab

September 2010

aa – Nut, eye

b - Nut, thimble eye

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | aa | | | ab | |
|  | Oval eye nut 5/8” | Oval eye nut 3/4” | Thimble Eyelet | Thimble eye nut 5/8” | Thimble eye nut 3/4” |
|  |  |  |  |  |  |
| Allied Bolt, Inc. | 5876 | 5877 | 2025 | 505’ | 5051 |
| Berny's Forging Co. | OE1 | - | - | - | - |
| Dixie | - | - | - | D6510 | - |
| Hubbell (Chance) | 6502 | - | B14A | 6510 | - |
| Hughes | EN60 | - | - | - | - |
| Joslyn | J1092 | - | J1126 | J6510 | - |
| Kortick | K4212 | J1093 | K4413 | K3111 | - |
| Line Hardware | OEN-58 | - | BEL-58 | - | - |
| MacLean (Continental) | EN-5 | - | BE-5 | TN-5 | - |
|  |  |  |  |  |  |

ac-1

July 2009

ac - Brace, sidearm diagonal

|  |  |  |
| --- | --- | --- |
|  | 1-1/2 inch angle | 1-3/4 inch angle |
|  | 3/16" x 5' | 3/16" x 7' |
|  |  |  |
| Hubbell (Chance) | - | 6984 |
| Joslyn | - | J1525 |
| Kortick | K1951 | K1954 |
| MacLean (Continental) | U5210 | U5212 |
|  |  |  |

ae-1

October 2015

ae - Surge (lightning) Arrester, Distribution Class

SiC Type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Type | Ratings, kV | Housing | Duty |
|  |  |  |  |  |
| General Electric | Alugard | 9, 10, 18 | Porcelain | Heavy |
|  |  |  |  |  |
|  |  |  |  |  |

MOV Type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Type | Ratings, kV | Housing | Duty |
|  |  |  |  |  |
| Cooper Power Systems | AZL VariSTAR | 9, 10, 18, 27 | Porcelain | Heavy |
| TE Connectivity | HDA Series | 9,10,18,27 | Polymer | Normal |
|  | DAH Series | 9,10,18,27 | Polymer | Heavy |
| Aluma-Form, Inc. | AHD  ARP | 3-27  3-27 | Polymer Polymer | Heavy Riser Pole |

ae-2

July 2009

ae - Surge (Lightning) Arresters, Substation\*

SiC Type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Type | Accepted Ratings - kV | Housing | Manufacturer's Classification |
|  |  |  |  |  |
| General Electric | Alugard | 3, 9, 10, 18 | Porcelain | Distribution |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

MOV Type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Type | Accepted Ratings - kV | Housing | Manufacturer's Classification |
|  |  |  |  |  |
| Hubbell Power Systems (Ohio Brass) | DynaVar |  |  |  |
|  | VLA | 3-27 | Porcelain | Station |
|  | VL | 3-48 | Porcelain | Station |
|  | VN | 54-312 | Porcelain | Station |

\* For instructions concerning application at substations, refer to RUS Bulletin 1724E-300, "Guide for the Design of Substations for Electric Borrowers." In the purchase of arresters, care should be taken to select the type and voltage ratings in accordance with the line voltage and the type of construction (grounded or ungrounded).

Conditional List

ae(1)

March 2013

ae - Surge (Lightning) Arresters, Distribution Class

CONDITION OF ACCEPTANCE: To Obtain Experience

MOV Type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Type | Ratings, kV | Housing | Duty |
|  |  |  |  |  |
| ABB | Polim-D | 9,10,18 | Polymer | Heavy |
|  |  |  |  |  |
| Cooper Power Systems | AZS VariSTAR | 9,10,18,27 | Porcelain | Normal |
|  | UNS Ultra Sil Housed VariSTAR | 9,10,18,27 | Polymer | Normal |
|  | UHS Ultra Sil Housed VariSTAR | 9,10,18,27 | Polymer | Heavy |
|  |  |  |  |  |
| General Electric | Tranquell, 9L23 Series | 9,10,18,27 | Polymer | Heavy |
|  |  |  |  |  |
| Hubbell Power Systems (Ohio Brass) | DynaVar PDV-65 | 9,10,18,27 | Polymer | Normal |
|  | PDV-100 Optima | 9,10,18,27 | Polymer | Heavy |
|  |  |  |  |  |
| Joslyn | ZNP | 9,10,18,27 | Polymer | Normal |
|  | ZHP | 9,10,18,27 | Polymer | Heavy |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

MOV Type (Internally Gapped)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Type | Ratings, kV | Housing | Duty |
|  |  |  |  |  |
| Cooper Power Systems | URT Evolution | 9,10,18,27 | Polymer | Heavy |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Conditional List

ae(2)

March 2016

ae – Surge Arrester, Substation\*

CONDITION OF ACCEPTANCE: To Obtain Experience

MOV Type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Type | Accepted Ratings – kV | Housing | Manufacturer’s Classification |
|  |  |  |  |  |
| ABB | XPI-III | 9, 10, 18, 27 | Polymer | Intermediate |
|  | XPS | 9, 10, 18, 27 | Polymer | Station |
|  | EXLIM-R | 9, 10, 18, 27 | Porcelain | Station |
|  | EXLIM-Q | 9, 10, 18, 27 | Porcelain | Station |
|  |  |  |  |  |
| Cooper Power Systems | VariSTAR | 3-312 | Porcelain | Station |
|  | VariSTAR AZF | 3-120 | Porcelain | Intermediate |
|  | VariSTAR UI | 3-108 | Polymer | Intermediate – 3.9 kJ/kV(1) |
|  | VariSTAR US | 3-108 | Polymer | Station – 3.4 kJ/kV |
|  | VariSTAR US | 3-108 | Polymer | Station – 3.9 kJ/kV(1) |
|  | VariSTAR US | 120-240 | Polymer | Station – 6.2 kJ/kV(1) |
|  | VariSTAR UH | 3-108 | Polymer | Station – 5.6 kJ/kV |
|  | VariSTAR UH | 3-108 | Polymer | Station – 6.2 kJ/kV(1) |
|  | VariSTAR UH | 120-240 | Polymer | Station – 10 kJ/kV(1) |
|  | VariSTAR UX | 3-108 | Polymer | Station – 10 kJ/kV(1) |
|  | VariSTAR UXL | 3-360 kV | Polymer | Station – 15 kJ/kV(2) |
|  |  |  |  |  |
| General Electric | Tranquell | 2.7-612 | Porcelain | Station |
|  | Tranquell | 3-120 | Porcelain | Intermediate |
|  |  |  |  |  |
| Hubbell Power Systems (Ohio Brass) | PVI-LP | 3-72 | Polymer | Intermediate |
|  | PVIA | 3-72 | Polymer | Intermediate |
|  | PVI | 3-144 | Polymer | Intermediate |
|  | EVP | 3-288 | Polymer | Station |
|  | SVN | 54-444 | Polymer | Station |
|  | MVN | 54-444 | Porcelain | Station |
|  |  |  |  |  |
| Joslyn | Type ZS | 3-240 | Porcelain | Station |
|  | Type ZSH | 258-468 | Porcelain | Station |
|  | Type ZIP | 3-120 | Polymer | Intermediate |
|  | Type ZSP | 3-144 | Polymer | Station |
|  |  |  |  |  |
| MagneTek | ZSE-E2A | 3-39 | Porcelain | Station |
|  | ZSE-E3A | 45-312 | Porcelain | Station |
|  |  |  |  |  |
| Siemens Power | 3EQ1 | 36-240 | Polymer | Station |
|  | 3EQ4 | 96-444 | Polymer | Station |
|  | 3EP2 | 12-384 | Porcelain | Station |
|  | 3EP4 | 12-150 | Porcelain | Station |
|  |  |  |  |  |
| TE Connectivity | PBA | 3-192 | Polymer | Intermediate |

\*For instructions concerning application at substations refer to RUS Bulletin 1724E-300, "Design Guide for Rural Substations." In the purchase of arresters, care should be taken to select the type and voltage rating in accordance with the line voltage and the type of construction (grounded or ungrounded).

(1) Energy ratings based on single impulse ratings.

(2) Meets Class H energy levels per IEEE Std C62.11™-2012 standard.

af-1

February 2015

af – Cutouts, Distribution, Open

|  |  |  |
| --- | --- | --- |
| Manufacturer | Type | Voltage Rating |
|  |  |  |
| ABB | ICX | 15, 27 kV |
|  | LBU-II | 15, 27 kV |
|  |  |  |
| Advanced Rubber Products | LCNL-15 – polymer (load break) | 15 kV |
|  | LCNL-27 – polymer (load break) | 27 kV |
|  | LCNL-36 – polymer (load break) | 36 kV |
|  | CSNL-15 – polymer | 15 kV |
|  | CSNL-27 – polymer | 27 kV |
|  | CSNL-36 – polymer | 36 kV |
|  |  |  |
| Aluma-Form, Inc. | CPG-15 (porcelain) | 15 kV |
|  | CPG-27 (porcelain) | 27 kV |
|  | CSG-15 (polymer) | 15 kV |
|  | CSG-27 (polymer) | 27 kV |
|  |  |  |
|  |  |  |
| Cooper Power Systems | S1 | 15, 27 kV |
|  | L (porcelain) | 15, 27 kV |
|  | L (polymer) | 15, 27 kV |
|  |  |  |
| Hubbell (Chance) | C | 15, 27, 35 kV |
|  | C (load break) | 15, 27, 35 kV |
|  | C-Polymer | 15, 27 kV |
|  | C-Polymer (Load break) | 15, 27 kV |
|  |  |  |
| Kearney/Cooper Power Systems | HX | 15, 27 kV |
|  |  |  |
| Power Line Hardware | DHC | 15, 27 kV |
|  | SIL (polymer) | 15, 27 kV |
|  |  |  |
| MacLean Power Systems | XS-Polymer | 15, 27 kV |
|  |  |  |
| Southern States | Series 66 | 15, 27 kV |
|  | Series 70 | 15 kV |
|  |  |  |
| United Copper Industries | APD1516100110 | 15 kV |
|  | APD2712100125 | 27 kV |
|  |  |  |

NOTE: The buyer should specify the load rating, voltage rating, interrupting rating and required accessories. Cutouts used on underground riser poles should be load break type or have hooks for portable load interrupters.

af-1.1

Sep–ember 2012

af - Cutout, open-link fuse support

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Mounting | 12.5/7.2 kV 50 amp. | 24.9/14.4 kV 50 amp. |
|  |  |  |  |
| Cooper Power Systems | Crossarm | FT1A2 | FT1A4 |
|  | Bushing | FT10A3 | - |
|  |  |  |  |
| Kearney/Cooper Power Systems | Crossarm | 6484-55 | - |
|  | Bushing | 6483-59 | - |
|  |  |  |  |

NOTE: The open link fuse supports listed above are fuse supports only and have no inherent interrupting capacity. They should be used with fuse links capable of interrupting at least 1200 amperes and for transformer protection only.

af-2

July 2009

af - Power Fuses, Substation

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Type | Voltage Rating (kV) | |
|  |  |  | |
| Cooper Power Systems | CMU (Boric acid, non-refillable) | 15-34.5 | |
|  |  |  | |
| Eaton (Cutler-Hammer) | | RDB (Boric acid, refillable) | 15-34.5 |
|  | | DBA (Boric acid, non-refillable) | 46-69 |
|  | DBU (Boric acid, non-refillable) | 15-34.5 | |
|  |  |  | |
| Kearney/Cooper Power Systems | HX | 15 | |
|  | HX | 27 | |
|  |  |  | |
|  |  |  | |
| S & C Electric\* | SMD (Boric Acid) | 15-138 | |
|  |  |  | |
|  |  |  | |
| Southern States | Series P | 15-161 | |
|  |  |  | |

\*Available with porcelain insulators. “Available with "Cypoxy" cycloaliphatic epoxy insulators 34.5 kV on request.

NOTE: All fuses listed on this page should be furnished with NEMA standard insulators. The buyer should specify the current rating, voltage rating, interrupting rating and required accessories.

Conditional List

af(1)

July 2018

af - Cutouts, Distribution, Open

with Linkbreak Attachment

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Type | Voltage Rating | Conditions |
|  |  |  |  |
| Hubbell | C | 15, 27 kV | 1. To obtain experience.  2. Limited to 100 amp cutouts.  3. To be used only with Hubbell (Chance), Cooper and Kearney fuses. Will not break S&C and some other fuse types. |
|  |  |  |  |
|  | C-Polymer | 15, 27, 35kV | 1. To obtain experience.  2. Limited to 100 amp cutouts.  3. To be used only with Hubbell (Chance), Cooper and Kearney fuses. Will not break S&C and some other fuse types. |
|  |  |  |  |

Conditional List

ag(1)

July 2009

ag - Fuses, Current Limiting, Backup

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| ABB  15 kV Class Type CLTX, 25K/15T  25 kV Class Type CLTX, 25K/15T | 1. To obtain experience.  2. Must be used in series with external expulsion fuse 25K OR 15T or smaller or with CSP transformers 50 kVA or smaller. |
|  |  |
| Cooper Power Systems  15 kV Class FAH series 25 kV Class FAH series | Same as above. |
|  |  |
| General Electric  15 kV Class 9F59U Series 25 kV Class 9F59U | Same as above. |
|  |  |
| High-Tech Fuses  15 kV Class No. HTDE23 (X)025 25 kV Class No. HTDE24 (X)025 35 kV Class No. HTDE25 (X)025 | Same as above. |
|  |  |
| Hubbell (Chance)  15 kV Class Type K-Mate 25 Catalog No. C70L-31KA  25 kV Class Type K-Mate 25 Catalog No. C70L-32KA | Same as above. |
|  |  |

ah-1  
July 2017

ah - Tie, insulator, formed type

|  |  |
| --- | --- |
|  |  |
| AFL | DTF "Dist. F Neck Tie w/Pad" (Order for specific conductor size and insulator)  DBST "Double Side Tie w/Pad" (Order for specific conductor size and insulator)  SPL “Spool Tie for ACSR\* (Side tie for use on spool insulator with 1-3/4" Neck)  DSTCF “Double support Tie (Order for specific conductor size and insulator)  STF “Side Tie w/pad” (Order for specific conductor size and insulator)  LTF “Longspan Tie w/pad” (Order for specific conductor size and insulator) |
|  |  |
| Dulmison | LT "Longspan" top tie (Order for specific conductor size and insulator)  ST side tie (Order for specific conductor size and insulator) Type SPL\* (Side tie for use on spool insulator with 1-3/4" groove)  DBST double side tie (Order for specific conductor size and insulator)  DST double support tie (Order for specific conductor size and insulator) |
|  |  |
| Helical Line Products | HTT Series (Order for specific conductor size and insulator) |
|  |  |
| Hubbell (Chance) | Super Top-Tie, Type STT for single or double support use, with insulators 2-1/”" through 3-1/2" neck diameter and single support use on spool insulators with 1-3/4" groove diameter (Order for specific conductor size.) |
|  |  |
| Preformed Line Products | Alloy Side, Spool and Top Ties  EZ-WRAP\* spool tie (order for specific conductor size)  EZ-WRAP Side Ties, EZST-series  EZ-WRAP Twin Ties, TT-series  WT "Wraplock" (Order for specific conductor size an“ insulator)  S” "Groove-Formed" side tie (Order for specific conductor size and insulator)  Spool Tie for ACSR, Type SPL\* (Side tie for use on spool insulator with 1-3/4" groove)  DST double support top tie (Order for specific conductor size and insulator)  DBST double side tie (Order for specific conductor size and insulator)  UT-series Distribution Tie |

\*Not for side mounting on pin or post insulators.

Conditional List

ah(1)

April 2017

ah - Tie, insulator, formed type

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Dulmison Type QSPL “Quick Spool” spool tie (Order for specific conductor size) | To obtain experience. |
|  |  |

ai-1

June 2015

ai - Rods, Ground, 13-mil

Applicable Size: The standard length is 8 feet and catalog numbers listed below are for this length. Longer rods may be required for special conditions.

Copper-covered ground rods are listed with a **13-mil minimum** at any point and a 15-mil average covering of copper. All purchases should specify that a factory certification of the thickness of the copper must accompany the shipment of the rods.

Copper-covered

|  |  |  |
| --- | --- | --- |
|  | 5/8" | 3/4" |
| Alumoclad | AL- 588 | - |
| Blackburn | 625813MX | - |
| Boggs | EB-810-13 | - |
| Erico | 615883 | - |
| Galvan Industries, Inc. | 6258G13 | 7508G13 |
| Harger | 588RUS |  |
| Joslyn | J8338-13 | - |
| Korns | KCG588-13 | - |
| Republic Wire | RGC5883 | - |
| South Atlantic, LLC (Southern Grounding) | C58813 | C34813 |
| Wilcor | WA588C | - |

ai-2

June 2015

ai - Rods, Ground

Applicable Size: The standard length is 8 feet and catalog numbers listed below are for this length. Longer rods may be required for special conditions.

Hot Dip Galvanized Steel

|  |  |  |
| --- | --- | --- |
| Manufacturer | 5/8" | 3/4" |
|  |  |  |
| Blackburn | - | GR7508 |
| Boggs | G588 | G348 |
|  | PTG588\*\* | PTG348\*\* |
| Dixie | D8578 | D8618 |
| Erico | 815880 | 813480 |
|  | 815889\*\* | 813489\*\* |
| Galvan Industries, Inc. | GR6258F GR6258FP\*\* | GR7508F GR7508FP\*\* |
| Grip-Tite | GT588 | GT348 |
| Hubbell (Chance) | 8578 | 8618 |
|  | C203-0107\*\* | - |
|  | C203-0377\* | - |
| Joslyn | J5328 | J5338 |
| Korns | KG58 | KG34 |
| Kortick | K4658 | K4678 |
| Line Hardware | GR-588G | GR-348G |
| Lloyd | 6258H | 7508H |
| MacLean (Continental) | U5307 | U6338 |
| Porcelain Products | 7338 | 7348 |
| South Atlantic, LLC (Southern Grounding) | ZZ588 | Z348 |
| Wilcor | WA8580G | WA8340G |
|  |  |  |

Electro-Galvanized Steel

|  |  |  |
| --- | --- | --- |
| Apache | G588 | G348 |
|  | G588PT\*\* | G348PT\*\* |
| Blackburn | GR6258 | - |
| Calpico | G8580 | - |
| LMP | 6258E\*\* | 7508E\*\* |

Stainless Steel

|  |  |  |
| --- | --- | --- |
| Erico | 685880 | 683480 |
| Galvan Industries, Inc. | S6258 | S7508 |
| Harger | 588SS3 | - |
| Wilcor | WA 588-S | WA348-S |

\*Rod furnished with clamp.

\*\*Rod furnished with 4 ft., No. 6 tinned or galvanized copper pigtail.

NOTE: The diameter of all galvanized ground rods must meet the latest edition of the National Electrical Safety Code (NESC).

ai-3

June 2015

ai - Rods, ground, sectional, 13-mil

Galvanized steel and

Copper-covered steel

Copper-covered ground rods are listed with a **13-mil minimum** at any point and a 15-mil average covering of copper. All purchases should specify that a factory certification of the thickness of the copper must accompany the shipment of the rods. Rods are copper-covered unless marked galvanized steel.

Sectional Ground Rods

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | 8' long | 10' long | Coupling | Driving studs |
|  |  |  |  |  |
| Blackburn | 6258S13MX | 6260S13MX | 60C | 60DS |
|  |  |  | 60CNT2\* | 60DSNT\* |
|  |  |  |  |  |
| Demark | - | - | GRC 58B\* | - |
| Galv. Steel |  |  | GRC 58G\* |  |
|  |  |  |  |  |
| Erico | 635883 | 635803 | CR-58/CC-58\* | DS58 |
|  |  |  |  |  |
| Galvan Industries, Inc. |  |  |  |  |
| Galv. Steel | 6258G13S | 6260G13S | GRC-625G\*\* |  |
|  |  |  | GRC-34G\*\* |  |
| Copper-covered |  |  | 60-C | 60-DS |
|  |  |  | 60-TC\* |  |
|  |  |  |  |  |
| Hubbell (Chance) |  |  |  |  |
| Galv. Steel | C203-0052 | 8512 | 8611 | - |
|  |  |  |  |  |
| Joslyn | - | - | J9182 | J9186 |
| Galv. Steel | - | - | J23282A | - |
|  |  |  |  |  |
| South Atlantic, LLC (Southern Grounding) | CS58813 CS34813 | CS581013 CS341013 | - - | - - |

\* Threadless coupling or drive head

\*\* Threadless coupling for galvanized rod

NOTE: The diameter of all galvanized ground rods must meet the latest edition of the National Electrical Safety Code (NESC).

ai(1)

June 2015

ai - Rods, Ground, 10-mil

These copper-covered ground rods are listed with a **10-mil minimum** at any point. They must also be Underwriters Laboratory (UL) listed. All purchases should verify that rods have official UL mark.

Copper-covered steel

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | 5/8” x 8' | ¾” x 8’ | 5/8” x 10' | ¾” x 10’ |
|  |  |  |  |  |
| Erico | 615880 | 613480 | 615800 | 613400 |
|  |  |  |  |  |
| Galvan Industries, Inc. | 6258 | 7508 |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Southern Grounding Products (South Atlantic, LLC) | C588 | C348 | C5810 | C3410 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

ai(3)

June 2015

ai - Rods, ground, sectional, 10-mil

Galvanized steel and Copper-covered steel

Copper-covered ground rods are listed with a **10-mil minimum** at any point. They must also be Underwriters Laboratory (UL) listed. All purchases should verify that rods have official UL mark. Rods are copper-covered unless marked galvanized steel.

Sectional Ground Rods

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Manufacturer | Rod | | | | Coupling | | Driving studs | |
|  | 5/8” x 8' | ¾” x 8’ | 5/8” x 10' | ¾” x 10’ | 5/8” | ¾” | 5/8” | ¾” |
|  |  |  |  |  |  |  |  |  |
| Erico | 635880 | 633480 | 635800 | 633400 | CR58 | CR34 | DS58 | DS34 |
|  |  |  |  |  |  |  |  |  |
| Galvan Industries, Inc. | 6258S |  | 6260S |  | 60-C |  | 60-DS |  |
|  |  |  |  |  |  |  |  |  |
| Southern Grounding Products (South Atlantic, LLC) | CS588 |  | CS5810 |  | 58C | 34C | DS58 | DS34 |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

NOTE: The diameter of all galvanized ground rods must meet the latest edition of the National Electrical Safety Code (NESC).

aj-1

March 2013

aj - Clamp, Ground Rod

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | For 5/8" Copper-covered Rod | For 3/4" Galv. or Stainless Steel Rod | For 5/8" Galv. or Stainless Steel Rod |
|  |  |  |  |
| TE Connectivity - Energy | C-LOK Series | 81412-1 | 81412-1 |
| Blackburn | G5 | - | - |
| Boggs | G31 | - | - |
| Burndy | GRC58 | - | - |
| C & R Products | CRGC-58 | - | - |
| Connector Castings | G5 | - | - |
| Dossert | GNL62H | - | - |
| \*Erico (Cadweld)   1 ground wire   2 ground wires | GR1-161G GT1-161G | GR1-181G GT1-181G | GR1-161G GT1-161G |
| Erico | EHL58C1T EHL58C1K EHL58C1G | - - - | EHL58G1T EHL58G1K EHL58G1G |
| Eritech (Carolina Galv./Knight) | CP 58 | UCSS | - |
| \*FCI Burndy | Type BCR-1 BS-2012 | Type BCR-1 BS-2017 | Type BCR-1 BS-2012 |
| Galvan Industries, Inc. | G5 | - | - |
|  | SRC | SRC | SRC |
|  | SRC-SS | SRC-SS | SRC-SS |
|  | DGC-5844 | - | - |
|  | DGC-5866 | - | - |
| Greaves/Mercury | G-580 | - | - |
| \*Harger   1 ground wire   2 ground wires | G11-588 G21-588 | G11-348 G21-348 | G11-588 G21-588 |
| Hubbell (Anderson) | GC-5 | - | - |
| Ilsco | GRC-58 | - | - |
| Joslyn | J8392AB | J25985 | J25932 |
| Kortick | K4647 | - | - |
| Lew Electric Fittings | GRC-5/8" | - | - |
| Line Hardware | RC-58CE | - | - |
| Penn-Union | CEB-2 | CEB-3-TN | CEB-2-TN |
| MacLean (Reliable) | E58 | 3459 | 3459 |
| \*Thermoweld | Type CR-1 M-2012 | Type CR-1 M-2017 | Type CR-1 M-2012 |
| Wilcor | HGR5/8 | WAU 5834-B | WAU 5834-B |
|  |  |  |  |
|  |  |  |  |
| \*Includes disposable molds. | | | |
|  |  |  |  |

Conditional List

aj(1)

January 2009

aj - Clamp, ground rod

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Burndy YGHP (for 5/8" copper-covered rods) | To obtain experience. |
|  |  |
| DeMark Copperhead (for 5/8” copper-covered, galvanized, and stainless rods) | To obtain experience. |
|  |  |
| DMC Power \*\* |  |
| GC\*\*\*B\*\*\*-625 (for 5/8” steel rods) | To obtain experience. |
| GC\*\*\*B\*\*\*-662 (for 5/8” copper clad rods) |  |
| GC\*¾\*\*\*-750 (for 3/4” steel rods) |  |
|  |  |
| Line Hardwar” RC-3¾”or 5/8" and 3/4") galvanized or stainless steel ground rods | To obtain experience. |
|  |  |
| Thomas & Betts DGC58-44 (#4 copper ground wire) DGC58-66 (#6 copper ground wire) (for 5/8" copper-covered rods) | To obtain experience. |
|  |  |
|  |  |
|  |  |
| \*\* These clamps require the use of special swage connection tools for installation. Manufacturer’s recommendations should be followed. | |
|  |  |
|  |  |
|  |  |
|  |  |

al-1

February 2014

al - Staples, ground wire

Applicable Specification: “ANSI C135.14, "Standards for Staples with Rolled or Slash Points"

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Length x Spread( i¼es): | ½/2 x 1/4 | 2 x 1/2 | 1-1/2 x 3/8 | 3 x 1-1/16 |
| Diameter: | 9 gauge Galv. Steel | 8 gauge Galv. Steel | 8 gaug¼opper-Coated | 1/4 Molding |
|  |  |  |  |  |
| Apollo | AP52l-S1672G | AP521-S1570 | AP501-S6652 | AP500-S6497 |
| Copperweld Bimetallics, LLC | - | CP52 | - | - |
| FWC | FW1672G | FW157 | FW6652 | FW6497 |
| Hubbell (Chance) | C205-0247 | C205-0216 | 9167 | 9161 |
| Joslyn | J1672G | J157 | J6652 | J6497 |
| Kortick | - | - | K247 | K236 |
| L & J Industrial Staples | C1525148-G | D2050162-G | C1538162-C | D3090250-C |
| Larson | - | 350453 | 750233 | 721312 |
| Lindsey | 10248 | - | - | 10270 |
| Minerallac (Redmore®) | CG1525K | DG2050Q  CG2050Q | CC1538Q | DG3090W |
| MacLean (Continental) | U88 | U86 | U48 | U46 |
|  |  |  |  |  |

Barbed staples, ground wire

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Length x Spread (inches) | 1-1/2 x 3/8 | 2 x 5/8 | 1-1/2 x 3/8 | 3 x 1-1/16 |
| Diameter | .131 Galv. Steel | .165 Galv. Steel | .140 Copper-Coated | 7/32 Galv. Steel |
|  |  |  |  |  |
| Apollo | AP520-57488HTG | AP50l-S66525 | - | - |
| Hubbell Power Systems | C205-0460 | C205-0463 | C205-0464 | C205-0462 |
| Joslyn | J7656 | J7672 | J7682 | J7664 |
| Minerallac (Redmore®) | CG1538M(B) | CG2063T(B) | CC1538P(B) | CG3090N(B) |
|  |  |  |  |  |

Staples, alumoweld

|  |  |  |  |
| --- | --- | --- | --- |
| Length x Spre½(inches) | 2 x 1/2 | 1-1/2 x 3/8 | 3 x1-1/16 |
| Diameter | ¼auge | 8 gauge | 1/4 molding |
|  |  |  |  |
| Apollo | AP531-S6655AL | AP531-S6652AL | AP530-S7493AL |
| Minerallac (Redmore®) | - | - | DA3090W |
|  |  |  |  |

Clip, ground wire

|  |  |
| --- | --- |
|  |  |
| Kearney/Cooper Power Systems | 12326 |
|  |  |

Conditional

al(1)

March 2018

al - Staples, ground wire

Applicable Specification: ANSI C135.14, "Standards for Staples with Rolled or Slash Points"

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Manufacturer | Thickness (gauge) | Conditions |
|  |  |  |
| ITW Paslode |  |  |
| GS-16 (1-1/2” Galvanized) | 16 ga. | To obtain experience. |
|  |  |  |
| Fasco |  |  |
| EF40-315 (1-9/16” Galv. Steel) | 10 ga. | To obtain experience. |
| EF40-315CU (1-9/16” Copper-Clad) | 10 ga. | To obtain experience. |

Note: These staples utilize power tools for installation. Use of a hammer for hand driving of these staples is not recommended.

an-1

September 2013

an - Transformers, distribution, pole type

Primary Voltages 7.2/12.5, 7.62/13.2 and 14.4/24.9 kV

Applicable Specifications: "RUS Specifications for Rural Distribution Transformers," D-10

Listing is by type rather than by catalog number because of the many possible combinations of voltage, kVA and taps and protective equipment.

|  |  |  |  |
| --- | --- | --- | --- |
|  | 7.2/12.5 & |  | Dual |
|  | 7.62/13.2 | 14.4/24.9 | Voltage |
|  |  |  |  |
| Power Partners, Inc. |  |  |  |
| Conventional, single bushing | S-B3 | S-B3 | S-B3 |
| Self-protected, single bushing | CSP-B3 | CSP-B3 | CSP-B3 |
| Conventional, two bushing | S-A | S-A | S-A |
|  |  |  |  |
| Type S-B3 may also be obtained |  |  |  |
| with internal fuse, with internal |  |  |  |
| fuse and double gap, and with |  |  |  |
| lightning arrester and open link |  |  |  |
| cutout (Type PC). |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Arkansas Electric Cooperative |  |  |  |
| Conventional, single bushing | ASE | - | - |
|  |  |  |  |
|  |  |  |  |
| Central Moloney |  |  |  |
| Conventional, single bushing | AOD | AOD | AOD |
| Conventional, two bushing | AOD | AOD | AOD |
| Self-protected, single bushing | DVP | DVP | DVP |
|  |  |  |  |
| The single bushing transformer |  |  |  |
| may also be obtained with bushing |  |  |  |
| mounted cutout and lightning arrester, |  |  |  |
| and with internal fuse and double gap. |  |  |  |
|  |  |  |  |
| Cooper Power Systems1 |  |  |  |
| Conventional, single bushing\* | REA-Conv | REA-Conv | REA-Conv |
| Self-protected, single bushing\* | REA-CSP | REA-CSP | REA-CSP |
| Conventional, two bushing\* | REA-Conv | REA-Conv | REA-Conv |
|  |  |  |  |
| Conventional single bushing type |  |  |  |
| may also be purchased with external |  |  |  |
| overload protection and double gap |  |  |  |
| and with bushing mounted cutout and |  |  |  |
| lightning arrester. |  |  |  |
|  |  |  |  |
| \*Optional EnvirotempTM FR3TM fluid-filled designs are available, including optimized Cooper Power Systems PEAK™ transformer designs which allow reduced transformer size and/or overload capacity while providing for fire safety, environmental safety, and extended insulation life. This natural ester soybean oil based dielectric fluid is an extremely biodegradable, renewable resource that is classified as a less flammable fluid, and is non-toxic. Envirotemp™ and FR3™ are licensed trademarks of Cargill, Incorporated. PEAK™ is a trademark of Cooper Power Systems. | | | |

Note:

1. Available with optional covers insulated for 15 kV dielectric strength at additional cost. (Transformer covers with higher electrical insulation, together with other coordinated electrical insulating protective measures, should help to significantly lessen shock and electrocution hazards to raptors, other birds, and small mammals.)

an-1.1

June 2013

an - Transformers, distribution, pole type

Primary Voltages 7.2/12.5, 7.62/13.2 and 14.4/24.9 kV

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | 7.2/12.5 & |  | | | Dual |
|  | | 7.62/13.2 | 14.4/24.9 | | | Voltage |
|  | |  |  | | |  |
| ERMCO, INC.1 | |  |  | | |  |
| Conventional, single bushing | | CONV | CONV | | | CONV |
| Conventional, two bushing | | CONV | CONV | | | CONV |
| Self-protected, single bushing | | CSP | CSP | | | CSP |
|  | |  |  | | |  |
| The single bushing transformer may also be obtained with double gap and internal fuse (Type DG) or lightning arrester and external cutout (Type COLA).  Dead-front for use in “enclosure: Add “R"”(Radial) or "LF" (Loop feed) to designation | | | | | | |
|  | |  |  | | |  |
|  | |  |  | | |  |
| Howard Industries | |  |  | | |  |
| Conventional, single bushing | | REC-C | REC-C | | | REC-C |
| Conventional, two bushing | | Conv-2B | Conv-2B | | | Conv-2B |
| Self-protected, single bushing | | REC-P | REC-P | | | REC-P |
| Conventional, single bushing, amorphous core | | REC-C-AM | REC-C-AM | | | REC-C-AM |
| Conventional, two bushing, amorphous core | | Conv-2B-AM | Conv-2B-AM | | | Conv-2B-AM |
| Self-protected, single bushing, amorphous core | | REC-P-AM | REC-P-AM | | | REC-P-AM |
|  | |  |  | | |  |
| Kuhlman | |  |  | | |  |
| Conventional, single bushing | | I | I | | | I |
| Conventional, two bushing | | B | B | | | B |
| Self-protected, single bushing | | H | H | | | H |
|  | |  |  | | |  |
| Type I may also be purchased with internal fuse, with internal fuse and double gap (Type G), and with bushing mounted cutout and lightning arrester (Type J). | | | | | | |
|  |  | | |  |  | |
|  |  | | |  |  | |
| Moloney Electric, Inc. |  | | |  |  | |
| Conventional, single bushing | CONV | | | CONV | CONV | |
| Conventional, two bushing | CONV | | | CONV | CONV | |
| Self-protected, single bushing | CSP | | | CSP | CSP | |
|  |  | | |  |  | |
|  |  | | |  |  | |
|  |  | | |  |  | |

Note:

1. Available with optional covers insulated for 15 kV dielectric strength at additional cost. (Transformer covers with higher electrical insulation, together with other coordinated electrical insulating protective measures, should help to significantly lessen shock and electrocution hazards to raptors, other birds, and small mammals.)

an-1.2

February 2017

an - Transformers, distribution, pole type

Primary Voltages 7.2/12.5, 7.62/13.2 and 14.4/24.9 kV

|  |  |  |  |
| --- | --- | --- | --- |
|  | 7.2/12.5 & |  | Dual |
|  | 7.62/13.2 | 14.4/24.9 | Voltage |
|  |  |  |  |
| Magnetic Electric |  |  |  |
| Conventional, single bushing | AOD | AOD | AOD |
| Conventional, two bushing | AOD | AOD | AOD |
| Self-protected, single bushing | AOD | AOD | AOD |
|  |  |  |  |
| Magnetron, S.A. |  |  |  |
| Conventional, single bushing, Single Phase 10–500 kVA | X | X | - |
| Conventional, two bushing, Single Phase 10–500 kVA | X | X | - |
|  |  |  |  |
| Sesco |  |  |  |
| Conventional, single bushing | RU | - | - |
| Self-protected, single bushing | ESP | - | - |
| Conventional, two bushing | CONV | - | - |
|  |  |  |  |

Type RU may also be purchased

with internal fuse and/or

lightning arrester.

|  |  |  |  |
| --- | --- | --- | --- |
| United (Ky. AEC) |  |  |  |
| Conventional, single bushing | SC | SC | DSC |
| Conventional, two bushing | SC | SC | DSC |
| Self-protected, single bushing | SCP | SCP | DSCP |
|  |  |  |  |
|  |  |  |  |
| SC and DSC may be purchased with |  |  |  |
| external fuse and arrester (SP and DSP) |  |  |  |
|  |  |  |  |
|  |  |  |  |
| VanTran |  |  |  |
| Conventional, single bushing | CR | - | - |
| Self-protected, single bushing | CSP-R | - | - |
| Conventional, two bushing | CD | - | - |

an-2

September 2013

an - Transformers, Power

Single-Phase, Step-Down for Distribution Substation Use

|  |  |  |  |
| --- | --- | --- | --- |
|  | Primary | Nominal OA Capacity (kVA) | |
| Manufacturer | Voltage (kV) | 167 - 833 | 1250 - 10,000 |
|  |  |  |  |
| ABB | 34.4 | X | X |
|  | 43.8 | X | X |
|  | 67.0 | X | X |
|  | 115 |  | X |
|  |  |  |  |
| Central Moloney | 34.4 | X |  |
|  |  |  |  |
| Cooper Power Systems\* | 34.4 | X | X |
|  | 43.8 | X | X |
|  |  |  |  |
| \*Optional EnvirotempTM FR3TM fluid-filled designs are available, including optimized Cooper Power Systems PEAK™ transformer designs which allow reduced transformer size and/or overload capacity while providing for fire safety, environmental safety, and extended insulation life. This natural ester soybean oil based dielectric fluid is an extremely biodegradable, renewable resource that is classified as a less flammable fluid, and is non-toxic. Envirotemp™ and FR3™ are licensed trademarks of Cargill, Incorporated. PEAK™ is a trademark of Cooper Power Systems. | | | |
|  |  |  |  |
| Kuhlman | 34.4 | X | X |
|  | 43.8 | X | X |
|  | 67.0 | X | X |
|  | 115 |  | X |
|  |  |  |  |
| Pennsylvania Transformer Technology, Inc. | 34.4 | X | X |
|  | 43.8 | X | X |
|  | 67.0 | X | X |
|  |  |  |  |
| Waukesha Electric Systems | 34.4 | X | X |
|  | 43.8 | X | X |
|  | 67.0 | X | X |
|  | 115 |  | X |
|  |  |  |  |

All acceptances are based on RUS Specification S-3: Specifications for Step-Down Distribution Substation Transformers, and, 15 kV or 25 kV class secondary voltages.

115 kV and 138 kV transformers may have one step reduced BIL.

an-3

September 2013

an - Transformers, Power

Three-Phase, Step-Down for Distribution Substation Use

|  |  |  |  |
| --- | --- | --- | --- |
|  | Primary | Nominal OA Capacity | |
| Manufacturer | Voltage - kV | 750 to 3750 kVA | 5 to 30 MVA |
|  |  |  |  |
| ABB | 34.4 | X | X |
|  | 43.8 | X | X |
|  | 67.0 | X | X |
|  | 115 |  | X |
|  | 138 |  | X |

Transformers 5 MVA and larger also accepted as load tap changing transformers using ABB Types UTS‑A, UTT-B and UVW load tap changers.

|  |  |  |  |
| --- | --- | --- | --- |
| Cooper Power Systems\* | 34.4 | X | X |
|  | 43.8 | X | X |
|  | | | |
|  |  |  |  |

\*Optional EnvirotempTM FR3TM fluid-filled designs are available, including optimized Cooper Power Systems PEAK™ transformer designs which allow reduced transformer size and/or overload capacity while providing for fire safety, environmental safety, and extended insulation life. This natural ester soybean oil based dielectric fluid is an extremely biodegradable, renewable resource that is classified as a less flammable fluid, and is non-toxic. Envirotemp™ and FR3™ are licensed trademarks of Cargill, Incorporated. PEAK™ is a trademark of Cooper Power Systems.

Transformers 5 MVA and larger also accepted as load tap changing transformers using Cooper Types 550, 550B and 550C load tap changers.

|  |  |  |  |
| --- | --- | --- | --- |
| Kuhlman | 34.4 | X | X |
|  | 43.8 | X | X |
|  | 67.0 | X | X |
|  | 115 |  | X |
|  | 138 |  | X |

Transformers 5 MVA and larger also accepted as load tap changing transformers using Siemens-Allis Types TLS and TLH load tap changers

|  |  |  |  |
| --- | --- | --- | --- |
|  | Primary | Nominal OA Capacity | |
| Manufacturer | Voltage - kV | 750 to 3750 kVA | 5 to 30 MVA |
| Pennsylvania Transformer Technology, Inc. | 34.4 | X | X |
|  | 43.8 | X | X |
|  | 67.0 | X | X |
|  | 115 |  | X |
|  | 138 |  | X |
|  |  |  |  |

Transformers 5 MVA and larger also accepted as load tap changing transformers using Cooper Types 550, 550B and 550C load tap changers.

|  |  |  |  |
| --- | --- | --- | --- |
| Waukesha Electric Systems | 34.4 | X | X |
|  | 43.8 | X | X |
|  | 67.0 | X | X |
|  | 115 | X | X |
|  | 138 |  | X |

Transformers 5 MVA and larger also accepted as load tap changing transformers using ABB Type UZE; Reinhausen RMT-1;Reinhausen RMV-2; or Waukesha Electric Systems Type UZD load tap changers.

Notes:

All acceptances are based on RUS Specification S-3: Specifications for Step-Down Distribution Substation Transformers, and, 15 kV or 25 kV class secondary voltages.

115 kV and 138 kV transformers may have one step reduced BIL.

an-4

February 2014

an - Transformers, Step Ratio, Single Phase,

Autotransformers or Two-Winding Transformers

for Use in System Voltage Conversion

|  |  |  |
| --- | --- | --- |
| Manufacturer | Designation | Size |
|  |  |  |
| Howard Industries |  |  |
| 2-WND | STEPS | 167-500 |
| AUTO | STEP-AUTO | 100-1500 |

NOTE: Two-winding transformers are self-protected under external short circuit in accordance with ANSI C57.12.90A. Auto-transformers will withstand 25 times rated current under external short circuit in accordance with ANSI C57.12.90A.

Conditional List

an(1)

September 2013

an - Transformers, Distribution, Pole Type

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Power Partners, Inc. 7.2/12.5, 7.62/13.2 14.4/24.9 kV & Dual Voltage  Single-phase, single bushing, 25 and 50 kVA pole type distribution transformers with amorphous metal cores.  Single-phase, single bushing and two-bushing with internal UMX Under-oil Arrester or with internal "Tranquell" Under-oil Arrester. | To obtain experience.  To obtain experience. |
|  |  |
| Cooper Power Systems1 7.2/12.5, 7.62/13.2, 14.4/24.9 kV and Dual Voltage\*  Single-phase, single bushing, self-protected, with Magnex Interrupter  Above or Conventional, single or two bushing; Type REA Conv. or Self-protected, single bushing Type REA-CSP with Type AZU, MOV, heavy-duty under-oil arrester. | To obtain experience.  To obtain experience. |
|  |  |
| \*Optional EnvirotempTM FR3TM fluid-filled designs are available, including optimized Cooper Power Systems PEAK™ transformer designs which allow reduced transformer size and/or overload capacity while providing for fire safety, environmental safety, and extended insulation life. This natural ester soybean oil based dielectric fluid is an extremely biodegradable, renewable resource that is classified as a less flammable fluid, and is non-toxic. Envirotemp™ and FR3™ are licensed trademarks of Cargill, Incorporated. PEAK™ is a trademark of Cooper Power Systems. | |
|  |  |
| ERMCO, Inc.1 7.2/12.5 and 7.62/13.2 and14.4/24.9 kV  Single-phase, single bushing with internal Tranquell Under-oil Arrester | To obtain experience. |
|  |  |

Note:

1. Available with optional covers insulated for 15 KV dielectric strength at additional cost. (Transformer covers with higher electrical insulation, together with other coordinated electrical insulating protective measures, should help to significantly lessen shock and electrocution hazards to raptors, other birds, and small mammals.)

Conditional List

an(1.1)

June 2013

an - Transformers, Distribution, Pole Type

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| GE-Prolec 12.47/7.2, 13.2/7.62, & 14.4/24.9 kV;  5 through 50 kVA  Single bushing and two bushing  Conventional & self-protected and 12.47/7.2 x 24.9/14.4 dual voltage | To obtain experience. |
|  |  |
| Howard Industries 7.2/12.5, 7.62/13.2, 14.4/24.9 kV and Dual Voltage  Single-phase, single bushing, and two bushing  with internal "AZU" or "Tranquell" under-oil arrester | To obtain experience. |
|  |  |
| Kuhlman 7.2/12.5 kV and 7.62/13.2 kV Toroform design 10, l5, & 25 kVA | To obtain experience. |
|  |  |
| NECO 7.2/12.5 kV and 14.4/24.9 kV Single-phase, two bushing, 10-50 kVA, Conventional | To obtain experience. |
|  |  |
| VanTran 14.4/24.9 kV and Dual Voltage  Conventional, single bushing Type CR  Conventional, two bushing Type CD  Self-protected, single bushing Type CSP-R | To obtain experience.  To obtain experience.  To obtain experience. |

Conditional List

an(1.2)

September 2013

an - Transformers, Distribution, Pole Type

with non-porcelain secondary bushings

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Cooper Power Systems\* Fully or conditionally accepted with Central Moloney polymer secondary bushings | To obtain experience. |
| \*Optional EnvirotempTM FR3TM fluid-filled designs are available, including optimized Cooper Power Systems PEAK™ transformer designs which allow reduced transformer size and/or overload capacity while providing for fire safety, environmental safety, and extended insulation life. This natural ester soybean oil based dielectric fluid is an extremely biodegradable, renewable resource that is classified as a less flammable fluid, and is non-toxic. Envirotemp™ and FR3™ are licensed trademarks of Cargill, Incorporated. PEAK™ is a trademark of Cooper Power Systems. | |
|  |  |
| ERMCO, INC.1 Fully or conditionally accepted with Central Moloney polymer secondary bushings | To obtain experience. |
|  |  |
| Howard Industries  Fully or conditionally accepted with Central Moloney polymer secondary bushings | To obtain experience. |
|  |  |
| Kuhlman Fully or conditionally accepted with Central Moloney polymer secondary bushings | To obtain experience. |
|  |  |
| Magnetic Electric Fully accepted with Central Moloney polymer secondary bushings | To obtain experience. |
|  |  |
| United (Ky. AEC) Fully accepted with Central Moloney polymer secondary bushings | To obtain experience. |
|  |  |
|  |  |
|  | |

Note:

1. Available with optional covers insulated for 15 KV dielectric strength at additional cost. (Transformer covers with higher electrical insulation, together with other coordinated electrical insulating protective measures, should help to significantly lessen shock and electrocution hazards to raptors, other birds, and small mammals.)

Conditional List

an(2)

July 2009

an - Transformers, Power

Single-Phase, Step-Down

for Distribution Substation Use

Conditions for Acceptance: “E” - To obtain experience

“T” - Manufacturer to furnish RUS with satisfactory test results

(Only performance specifications have been submitted)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Primary | Nominal OA Capacity (kVA) | |
| Manufacturer | Voltage - kV– | 167 - 833 | 1250 - 10,000 |
|  |  |  |  |
| Delta-Star | 34.4 | E | E |
|  | 43.8 | E | E |
|  | 67.0 | E | T |
|  | 115 | - | T |
|  |  |  |  |
| ESCO | 34.4 | E | - |
|  |  |  |  |
| Ferranti-Packard | 67.0 | T | E |
|  |  |  |  |
| Industrias IEM, S.A. de C.V. | 67 | - | E |

All acceptances are based on RUS Specification S-3: Specifications for Step-Down Distribution Substation Transformers, and 15 kV or 25 kV class secondary voltages.

115 kV and 138 kV transformers may have one step reduced BIL.

Conditional List

an(3)

June 2011

an - Transformers, Power

Three-Phase, Step-Down

for Distribution Substation Use

Conditions for Acceptance: “E” - To obtain experience

“T” - Manufacturer to furnish RUS with satisfactory test results

(Only performance specifications have been submitted)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Primary | Nominal OA Capacity | |
| Manufacturer | Voltage - kV | 750 to 3750 kVA | 5 to 30 MVA |
|  |  |  |  |
| Delta Star | 34.4 | E | E |
|  | 43.8 | E | E |
|  | 67.0 | E | E |
|  | 115 | - | E |
|  | 138 | - | T |
| Transformers 5 MVA and larger also accepted as load tap changing transformers using Seimens-Allis Types TLS and TLH-21 load tap changers. | | | |
|  |  |  |  |
|  |  |  |  |
| Ferranti-Packard | 34.4 | E | T |
|  | 67.0 | T | E |
|  | 115 | - | E |
|  |  |  |  |
|  |  |  |  |
| GE-Prolec | 67 | - | E |
|  | 115 | - | E |
|  | 138 | - | E |
| Transformers 5 MVA and larger also accepted as load tap changing transformers using Reinhausen type RMV-II, Reinhausen type RMV-A, and ABB type UZE load tap changers. | | | |
|  |  |  |  |
|  |  |  |  |
| Howard Industries | 115 | - | E |
|  | 138 | - | E |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Hyundai Heavy Industries Co., Ltd. | 115 | - | E |
| Transformers 5 MVA and larger also accepted as load tap changing transformers using ABB type UZE and Reinhausen type RMV-II load tap changers. | | | |
|  |  |  |  |
|  |  |  |  |
| Industrias IEM, S.A. de C.V | 115 | - | E |
|  |  |  |  |
|  |  |  |  |
| MGM | 34.4 | E | T |
|  | 43.8 | E | T |
|  | 67.0 | T | E |
| Transformers 5 MVA and larger also accepted as load tap changing transformers using ABB Types UTS‑A and UTT-B load tap changers. | | | |
|  |  |  |  |
|  |  |  |  |
| CG Power Systems USA, Inc. | 34.4 | - | E |
|  | 67.0 | - | E |
|  | 115 | - | E |
| Transformers 5 MVA and larger also accepted as load tap changing transformers using Reinhausen type RMV-II, Reinhausen type RMV-A, and ABB type UZE load tap changers. | | | |
|  |  |  |  |
| Uptegraff | 34.4 | T | E |
|  | 43.8 | T | E |

Conditional List

an(3.1)

May 2016

an - Transformers, Power

Three-Phase, Step-Down

for Distribution Substation Use

Conditions for Acceptance: “E” - To obtain experience

“T” - Manufacturer to furnish RUS with satisfactory test results

(Only performance specifications have been submitted)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Primary | Nominal OA Capacity | |
| Manufacturer | Voltage - kV | 750 to 3750 kVA | 5 to 30 MVA |
|  |  |  |  |
| Georgia Transformer | 138 | - | E |
|  |  |  |  |
| Virginia Transformer | 34.4 | E | E |
|  | 43.8 | - | E |
|  | 67.0 | - | E |
|  | 115 | - | E |
|  | 138 | - | E |
| Transformers 5 MVA and larger also accepted as load tap changing transformers using ABB type UZE and Reinhausen type RMV-2 tap changers. | | | |
|  |  |  |  |
|  |  |  |  |
| WEG | 67.0 | - | E |
|  | 115 | - | E |
|  | 138 | - | E |
| Transformers 5 MVA and larger also accepted as load tap changing transformers using Reinhausen type RMV-II load tap changers. | | | |
|  |  |  |  |
|  |  |  |  |
| Howard Industries | 67.0 | - | E |
|  |  |  |  |
|  | | | |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| All acceptances are based on RUS Specification S-3: Specifications for Step-Down Distribution Substation Transformers, and 15 kV or 25 kV class secondary voltages.  115 kV and 138 kV transformers may have one step reduced BIL. | | | |
|  |  |  |  |

Conditional List

an(4)

February 2014

an - Transformers, Step Ratio, Single Phase,

Autotransformers or Two-Winding Transformers

for Use in System Voltage Conversion

Condition of Acceptance: To obtain experience

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Designation | Size | |
|  |  |  | |
| Power Partners, Inc. |  |  |
| 2-WND | "Jumbo" | 167-500 | |
|  |  |  | |
| Central Moloney |  |  | |
| 2-WND | AOD | 167-500 | |
|  |  |  | |
| Cooper Power Systems\* |  |  | |
| 2-WND | "Round-Coil" | 167-500 | |
| AUTO | MEPS-AUTO | 167-1000 | |
| \*Optional EnvirotempTM FR3TM fluid-filled designs are available, including optimized Cooper Power Systems PEAK™ transformer designs which allow reduced transformer size and/or overload capacity while providing for fire safety, environmental safety, and extended insulation life. This natural ester soybean oil based dielectric fluid is an extremely biodegradable, renewable resource that is classified as a less flammable fluid, and is non-toxic. Envirotemp™ and FR3™ are licensed trademarks of Cargill, Incorporated. PEAK™ is a trademark of Cooper Power Systems. | | | |
|  | | | |
| Delta Star |  |  | |
| 2-WND | LTD | 167-500 | |
| AUTO | LTD-A | 167-1000 | |
|  |  |  | |
| General Electric |  |  | |
| 2-WND | HS STEP | 167-500 | |
| AUTO | HS STEP | 167-1000 | |
|  |  |  | |
|  |  |  | |
|  |  |  | |
|  |  |  | |

NOTE: Two-winding transformers are self-protected under external short circuit in accordance with ANSI C57.12.90A. Auto-transformers will withstand 25 times rated current under external short circuit in accordance with ANSI C57.12.90A.

ao-1

July 2009

ao - Bolt, strand eye, straight (thimble eye)

Applicable Specification: ANSI C135.4, "Standards for Galvanized Ferrous Eye Bolts and Nuts for Overhead Line Construction."

Applicable Sizes: 5/8 inch, 6 through¾ inch length 3/4 inch, 8 through 12 inch length

The following manufacturers have shown compliance with the applicable specification:

|  |
| --- |
|  |
| Hubbell (Chance) |
| Joslyn Manufacturing Company |
| Kortick Manufacturing Company |
| MacLean (Continental) |

ap-1

June 2010

ap – Clamp, hot line

Copper and Copperweld-copper Conductor

(Clamps with internal springs and enclosed threads)

|  |  |
| --- | --- |
| Conductor | Conductor Size |
| Copper: | 6 thru 2/0 |
| Copperweld-copper: | 8A thru 2A |
|  | |
| Manufacturer |  |
|  |  |
| Blackburn | HLC 2108 |
| Connector Products, Inc. | HTC 100  HTC 100-6  HTC 200  HTC 200-4 |
| Electric Motion Company | EM HLC-101 |
| H-J Enterprises | UBBC20-001 |
| Hubbell (Anderson) | BC-2/0 |
| Hubbell (Chance) | S1520CC |
| Hubbell (Fargo) | GH-100S |
|  | GH-201 (For use with CL Fuse) |
| Ideal | 3532 |
| MacLean (Reliable) | C1520 |
| Penn-Union | HLC-020-LS |
| Richards Manufacturing, Sales Inc. | BHLC-100 |

ap-1.1

November 2017

ap - Clamp, hot line

ACSR with armor rods

Clamps listed below have spring action and enclosed thread chambers.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | **Conductor Size** | | | | |
| **Manufacturer** | **Tap Conductor** | **477 & 336.4** | **4/0 & 3/0** | **2/0** | **1/0 & 2** | **4** |
|  |  |  |  |  |  |  |
| Aluma-Form | Aluminum  Copper |  | AF-1540  AF-1540 | AF-BC20  AF-BC20 | AF-1530  AF-1530 | AF-BC20  AF-BC20 |
|  |  |  |  |  |  |  |
| Connector Mfg. | Aluminum |  | HL 4/0 | - | - | - |
|  | Copper |  | - | - | - | - |
|  |  |  |  |  |  |  |
| Connector Products, Inc. | Aluminum | HTC 200  HTC 200-4 HTC 300 | HTC 100  HTC 100-6  HTC 200  HTC 200-4 | HTC 100  HTC 100-6  HTC 200  HTC 200-4 | HTC 100  HTC 100-6 | HTC 100  HTC 100-6 |
|  | Copper | HTC 200  HTC 200-4 HTC 300 | HTC 100  HTC 100-6  HTC 200  HTC 200-4 | HTC 100  HTC 100-6  HTC 200  HTC 200-4 | HTC 100  HTC 100-6 | HTC 100  HTC 100-6 |
|  |  |  |  |  |  |  |
| H-J Enterprises | Aluminum |  | - | UBBC30-001 | UBBC30-001 | UBBC30-001 |
|  | Copper |  | - | UBBC30-001TP | UBBC30-001TP | UBBC30-001TP |
|  |  |  |  |  |  |  |
| Hubbell (Anderson) | Aluminum |  | AC-800 | AH-4 | AH-4 | AH-4 |
|  | Copper |  | AC-800-GP | AH-4-GP | AH-4-GP | AH-4-GP |
|  |  |  |  |  |  |  |
| Hubbell (Chance) | Aluminum |  | S1540-AA | S1540-AA | S1530-AA | S1530-AA |
|  | Copper |  | S1540-AC | S1540-AC | S1530-AC | S1530-AC |
|  |  |  |  |  |  |  |
| Hubbell (Fargo) | Aluminum |  | GH-202AL | GH-202AL | GH-101A | GH-101A |
|  | Copper |  | GH-102AC | GH-102AC | GH-101AC | GH-101AC |
|  |  |  |  |  |  |  |
| MacLean (Reliable) | Aluminum |  | - | - | C1530A | C1530A |
|  | Copper |  | - | - | C1530A | C1530A |
|  |  |  |  |  |  |  |
| Penn Union | Aluminum |  | - | - | HLCA-040 | HLCA-040 |
|  | Copper |  | - | - | HLCA-040 | HLCA-040 |
|  |  |  |  |  |  |  |
| Richards Manufacturing, Sales Inc. | Aluminum |  |  |  | AHLC300-TN | AHLC300-TN |
| Copper |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Utilco | Aluminum |  | - | HLC-397 | - | HLC-40 |
|  | Copper |  | - | - | - | - |

ar-1

July 2009

ar - Wireholder

Applicable specification: "RUS Specification for Service Wireholders," D-15

|  |  |
| --- | --- |
|  | With #22 Wood Screw |
|  |  |
| Blackburn | SW3 |
| Hubbell (Chance) | 3-11-44 |
| Porcelain Products | 1986 |
|  |  |

NOTE: For triplex type service cable see clevis type wireholders on page bt-1.

Conditional List

ar(1)

July 2009

ar - Wireholder

(with #22 wood screw)

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Hubbell Power Systems (Chance) | To obtain experience. |
| C207-0138 (nylon alloy) |  |
|  |  |
| Joslyn | To obtain experience. |
| J089Z (nylon alloy) |  |

as-1

July 2009

as - Clevis, service swinging

Applicable Specifications: "RUS Specifications for Service Swinging Clevises," D-7

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Clevis Only\* | Clevis with Wet Process Spool | Clevis with Dry Process Spool |
|  |  |  |  |
| Hubbell (Chance) | 1948C | 1948C-C909-1031 | 1948C-0606 |
| Joslyn | J1614 | - | - |
| Kortick | K9260 | K9141 | K9142 |
| MacLean (Continental) | U32004 | U31003 | U31004 |
|  |  |  |  |

\*Catalog number does not include spool; for spool insulators see Item cm.

at-1

July 2009

at - Guy Marker, 8 Foot Length

Steel

|  |  |  |
| --- | --- | --- |
| Manufacturer | Full Round | Half Round |
|  |  |  |
| Joslyn | J1618 | J1528 |
| Kortick | K3729 | - |

at-2

March 2016

at - Guy Marker

8 Foot Length

Plastic or Fiberglass

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Auburn Extrusions | TK-808 (Yellow) |
|  | (with bolt type clamp) |
|  |  |
| Charles Industries | 12-08GWMYC-FR |
|  |  |
| Custom Plastics | CPI-100XX-PVC Series |
|  |  |
| Dulmison | HGG-OL8Y-C (Yellow)\* |
|  |  |
| Electrical Materials | 70-7 tie G (Gray)\* |
|  | 70-7 tie Y (Yellow)\* |
|  | 70-7 tie O (Orange)\* |
|  | 70-7 tie YORS (Yellow with Orange Stripes)\* |
|  |  |
| Hubbell (Chance) | 96-PBG-2 (Gray) |
|  | 96-PBG-2Y (Yellow) |
|  | 96-PBG-2ORG (Orange) |
|  | 96-FRPMR-GRY (Gray)\* |
|  | 96-FRPMR-YEL (Yellow)\* |
|  | 96-FRPMR-ORG (Orange)\* |
|  | 96-FRPMR-GRN (Green)\* |
|  |  |
| Jabat, Inc. | BU31020YE (Yellow) |
|  | ILQT2291 (Yellow) |
|  |  |
| Joslyn | J1491Y (Yellow) |
|  | J1491G (Gray) |
|  | J5518 (Yellow)\* |
|  |  |
| Mangrum | R-8-Y |
|  |  |
| Osmose | OZ-25-18R (Yellow) |
|  |  |
| Preformed Line Products | PG-5508 (Gray)\* |
|  | PG-5518 (Yellow)\* |
|  |  |
| Radar | 6032B (Yellow)\* |
|  |  |
| Vaughn | 003-7l40 (Gray)\* |
|  | 004-7l40 (Yellow)\* |
|  | 005-7l40 (White)\* |
|  |  |
| Virginia Plastics | TG-137-8G (Gray)\* |
|  | TG-137-8Y (Yellow)\* |
|  | FG-8G (Gray)\*\* |
|  | FG-8Y (Yellow)\*\* |
|  |  |

\* For use with formed or automatic type deadends for guy strand; will not fit over bolt type guy clamps.

\*\* Available with either 1 or 2 bolt clamps.

at-3

October 2015

at - Guy Marker

(Non-Flame Retardant)

8 Foot Length

Plastic or Fiberglass

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
| Custom Plastics | CPI-100XX-PVC Series |
|  |  |
| Charles Industries | 12-08GWMYC |
|  |  |
| Joslyn | J5718 (Yellow)\* |
|  | J1493Y (Yellow) |
|  |  |
| L. F. Manufacturing | MS-8-Y |
|  |  |
| Petroflex | P100-SDR17 Series |
|  |  |
| Preformed Line Products | PG (Poly) Series |
|  |  |
| R&M Plastics | GGY-TU-8 |
|  | RMY GG-SM-8\* |
|  |  |
| Radar Engineers | 6034 and 6036 |
|  |  |
| Virginia Plastics | TGP-16 PF |
|  |  |

\*For use with formed or automatic type deadends for guy strand; will not fit over bolt type guy clamps.

Conditional List

at(1)

February 2013

at - Reflective Guy Marker, 8-foot length

Plastic or Fiberglass

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
|  |  |
|  |  |

av-1

June 2015

av – Conductor, ACSR

Applicable Specification: ASTM Specification B 232

Preferred Sizes:

|  |  |
| --- | --- |
| Distribution | Transmission |
| 4 – 6/1 | 1/0 – 6/1 |
| 4 – 7/1 | 2/0 – 6/1 |
| 2 – 6/1 | 3/0 – 6/1 |
| 2 – 7/1 | 4/0 – 6/1 |
| 1/0 – 6/1 | 266.8 kcmil – 26/7 |
| 2/0 – 6/1 | 336.4 kcmil – 26/7 |
| 3/0 – 6/1 | 477 kcmil – 26/7 |
| 4/0 – 6/1 | 556.5 kcmil – 26/7 |
| 266.8 kcmil 18/1 | 795 kcmil – 26/7 |
| 336.4 kcmil 18/1 | 954 kcmil – 54/7 |
| 477 kcmil 18/1 |  |

NOTE: Larger sizes may be used where the engineer’s study shows they are required.

The following manufacturers have shown compliance with the applicable specifications:

|  |
| --- |
| Alcan Cable |
| Conductores Monterrey S.A. de C.V. |
| Condumex |
| Encore Wire Corporation |
| General Cable |
| Kobrex S.A. de C.V. |
| Marmon Utility LLC (Hendrix/Kerite) |
| Midal Cables Ltd. |
| Nehring |
| Nexans Canada |
| Nexans Korea |
| Noranda |
| Phelps Dodge |
| Phelps Dodge – Honduras |
| Phelps Dodge – Mexico |
| Procables S.A. |
| Prysmian |
| Southwire |
| Synergy Cables USA, Ltd. |
| Taihan Electric Wire |
|  |

NOTES:

1. Conductors with 18/1 stranding have different sag characteristics than conductors with 6/1 or 26/7 stranding. This difference in sag characteristics must be taken into consideration in the line design.
2. 266.8 kcmil 26/7, 336.4 kcmil 26/7, and 477 kcmil 26/7 may be used for distribution underbuild on transmission lines.

av-2

June 2015

av - Conductor, copper

Applicable Specifications: ASTM Specification B1 for hard-drawn solid

ASTM Specification B8 for hard drawn stranded and soft stranded

ASTM Specification B3 for soft or annealed solid

Preferred Sizes: Hard-drawn solid - 4 and 6

Soft or annealed solid - 4 and 6

Hard-drawn stranded - 2x3, 1/0 x 7, 2/0 x 7

Soft stranded - 4 and 6

The following manufacturers have shown compliance with the applicable specifications:

|  |
| --- |
| Alan Wire Company |
|  |
| Conductores Monterrey S.A. de C.V. |
|  |
| Condumex |
|  |
| Encore Wire Corporation |
|  |
| General Cable |
|  |
| Hickory Wire, Inc. |
|  |
| Nehring |
|  |
| Procables S.A. |
|  |
| Republic Wire |
|  |
| Rome Cable |
|  |
| Seal Wire Company |
|  |
| Service Wire Company |
|  |
| Southwire |
|  |

av-3

September 2010

av - Conductor, Copper and Copper-clad steel

Applicable Specification: ASTM Specification B 229

|  |  |
| --- | --- |
| Preferred Sizes | |
| Distribution | Transmission |
|  |  |
| 8A | 1/0 F |
| 6A | 2/0 F |
| 4A | 3/0 F |
| 2A | 4/0 F |

The following manufacturers have shown compliance with the applicable specification for the sizes indicated:

|  |  |
| --- | --- |
| Copperweld Bimetallics, LLC | (All sizes) |
| Southwire | (2A and smaller) |

av-4

June 2015

av - Conductor, Service

(Single Conductor)

|  |  |  |
| --- | --- | --- |
| Manufacturer | Aluminum | Copper |
| Alcan Cable | x | - |
| Conductores Monterrey | x | - |
| Condumex | x | x |
| Encore Wire Corporation | x | - |
| General Cable | x | x |
| Nehring | x | - |
| Nexans Canada | x | - |
| Prysmian | x | x |
| Rome Cable | x | x |
| Southwire | x | x |
|  |  |  |

Applicable Specification: ICEA S-95-658 / NEMA WC70

Insulation: Cross-linked thermosetting polyethylene or equal.

Conductor: MHD copper or HD (Aluminum 1350) aluminum (Compact or compressed stranded conductor is acceptable.)

Marking: Manufacturer's name and type of insulation shall be clearly shown in durable markings on the surface of the  
 insulation at intervals no greater than 24 inches.

av-5

June 2015

av - Conductor, Service Cable

(Triplex and Quadruplex)

|  |  |  |
| --- | --- | --- |
| Manufacturer | Aluminum | Copper |
|  |  |  |
| Alcan Cable | x | - |
| Conductores Monterrey | x | - |
| Condumex | x | x |
| Encore Wire Corporation | x | - |
| General Cable | x | x |
| Hendrix | x | x |
| Nehring | x | - |
| Nexans Canada | x | - |
| Phelps Dodge | x | x |
| Phelps Dodge (Honduras) | x | - |
| Prysmian | x | x |
| Rome Cable | x | x |
| Service Wire | - | x |
| Southwire | x | x |
|  |  |  |

Applicable Specifications: RUS Specification D-2, Specifications for 600 Volt Neutral-Supported Secondary Service Drop  
 Cables.

av-6

June 2013

av - Conductor, Aluminum Alloy

Applicable Specification: ASTM Specification B399

Preferred Sizes:

|  |  |  |  |
| --- | --- | --- | --- |
| DISTRIBUTION | | TRANSMISSION | |
| 6201 | ACSR Equiv. | 6201 | ACSR Equiv. |
|  |  |  |  |
| 48,690 cmil - 7 str.\* | 4 | 123,300 cmil - 7 str.\*\* | 1/0 |
| 77,470 cmil - 7 str.\* | 2 | 155,400 cmil - 7 str.\*\* | 2/0 |
| 123,300 cmil - 7 str. | 1/0 | 195,700 cmil - 7 str.\*\* | 3/0 |
| 155,400 cmil - 7 str. | 2/0 | 246,900 cmil - 7 str. | 4/0 |
| 195,700 cmil - 7 str. | 3/0 | 312,800 cmil - 19 str. | 266,800 cmil |
| 246,900 cmil - 7 str. | 4/0 | 394,500 cmil - 19 str. | 336,400 cmil |
|  |  | 559,500 cmil - 19 str. | 477,000 cmil |
|  |  | 652,400 cmil - 19 str. | 556,500 cmil |
|  |  | 927,200 cmil - 37 str. | 795,000 cmil |
|  |  |  |  |

\*Not recommended for multiphase lines with span lengths exceeding 300 ft.

\*\*Not recommended for suspension type construction.

The following manufacturers have shown compliance with the applicable specifications:

|  |  |
| --- | --- |
| Manufacturer | Type |
|  |  |
| Alcan | 6201 |
|  |  |
| General Cable | 6201 |
|  |  |
| Midal Cables Ltd. | 6201 |
|  |  |
| Procables S.A. | 6201 |
|  |  |
| Phelps Dodge | 6201 |
|  |  |
| Southwire | 6201 |
|  |  |
| Condctores Monterrey | 6201 |
|  |  |

Conditional List

av(1)

September 2010

av - conductor

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Alcan Cable  Duplex type, with ACSR or AAAC (6201) conductors using preferred conductor sizes. | 1. To obtain experience.  2. Conductor handling and installation shall be in accordance with manufacturer's recommendations. |
|  |  |
| Copperweld Bimetallics, LLC  Alumoweld-aluminum  6/1 ACSR/AW, 2, 1/0, 2/0, 4/0  4/3 AWAC, 4, 2, 1/0 | 1. To obtain experience. |
|  |  |
| General Cable  ACSR/TW, ACSS/TW conductors using preferred conductor sizes. | 1. To obtain experience.  2. Conductor handling and installation shall be in accordance with manufacturer's recommendations.  3. Indicate type of steel core wire and class (if applicable) of coating. |
|  |  |
| Phelps Dodge  ACSR/TW, ACSS/TW conductors using preferred conductor sizes. | 1. To obtain experience.  2. Conductor handling and installation shall be in accordance with manufacturer's recommendations.  3. Indicate type of steel core wire and class (if applicable) of coating. |
|  |  |
| Viakon Conductores Monterrey  ACSR/AW-TP conductors using preferred conductor sizes. | 1. To obtain experience.  2. Conductor handling and installation shall be in accordance with manufacturer's recommendations.  3. Indicate type of steel core wire and class (if applicable) of coating. |

Conditional List

av(2)

July 2009

av – covered tap wire

(for use as primary jumpers)

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | | Conditions | |
|  | |  | |
|  | |  | |
| Hendrix  TW#2, TW#4 | | 1. To obtain experience. | |
|  | |  | |

Conditional List

av(3)

July 2009

av - Conductor, Service

(Single and Multi-Conductor)

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Southwire  SIW (Single input wire) type construction in accordance with ASTM B 901. | 1. To obtain experience. |

Applicable Specification: ICEA S-95-658 / NEMA WC70

Insulation: Cross-linked thermosetting polyethylene or equal.

Conductor: HD (Aluminum 1350) aluminum

Marking: Manufacturer's name and type of insulation shall be clearly shown in durable markings on the surface of the insulation at intervals no greater than 24 inches.

Conditional List

av(4)

April 2015

av – Conductor, High Temperature

Preferred Conductor Sizes(equivalent in diameter to the following ACSR conductors)\*

Transmission Lines

336.4 kcmil - 26/7

477 kcmil - 26/7

556.5 kcmil - 26/7

795 kcmil - 26/7

954 kcmil - 54/7

1272 kcmil - 54/19

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| 3M ACCR – Aluminum Conductor Composite Reinforced | 1. To obtain experience. 2. Conductor handling and installation shall be i accordance with the manufacturer’s recommendations. 3. Use high temperature accessories approved by the manufacturer and accepted by RUS. |
|  |
| CTC Global ACCC – Aluminum conductor Composite Core |
|  |
| General Cable ACSS – Aluminum Conductor Steel Support |
|  |
| Viakon ACSS - Aluminum Conductor Steel Support |
|  |

NOTES:

1. Larger sizes may be used where the engineer's study shows they are required.
2. Conductor diameter should be within 10% of ACSR equivalent diameter size.

Conditional List

av(5)

July 2009

av – Conductor, Twisted Pair (T-2 & VR type)

Preferred Conductor Sizes(equivalent in diameter to the following ACSR conductors)\*

Transmission Lines

336.4 kcmil - 26/7

477 kcmil - 26/7

556.5 kcmil - 26/7

795 kcmil - 26/7

954 kcmil - 54/7

1272 kcmil - 54/19

**T-2 type (ACSR-II)**

Aluminum Conductor Steel Reinforced- Twisted Pair

ACSR or AAAC (6201)

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| General Cable  Nexans Canada | 1. To obtain experience.  2. Conductor handling and installation shall be in accordance with manufacturer's recommendations.  3. Use accessories recommended by the manufacturer and accepted by RUS |
|  |  |

**VR-2 type**

Aluminum Conductor Steel Reinforced- Twisted Pair

ACSR or AAAC (6201)

Vibration Damping

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Southwire | 1. To obtain experience.  2. Conductor handling and installation shall be in accordance with manufacturer's recommendations.  3. Use accessories recommended by the manufacturer and accepted by RUS |
|  |  |

NOTES:

1. Larger sizes may be used where the engineer's study shows they are required.
2. Conductor diameter should be within 10% of ACSR equivalent diameter size.

aw-1

February 2011

aw - Washer, spring

Clip

1/4" x 1-3/4" x 3-1/2"

|  |  |  |  |
| --- | --- | --- | --- |
|  | Bolt Size | | |
| Manufacturer | 5/8" | 3/4" | 7/8" |
|  |  |  |  |
| Allied Bolt, Inc. | 7013 | 7014 | - |
| Hubbell (Chance) | 3540 | 3541 | - |
| Joslyn | J3540 | J3541 | J3542 |
| Kortick | K2909 | - | - |
| Line Hardware | SCW-58 | SCW-34 | SCW-78 |
|  |  |  |  |

Double Coil Lock

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Bolt Size | | | |
| Manufacturer | 5/8" | 3/4" | 7/8" | 1” |
|  |  |  |  |  |
| Electrical Materials Company | #MW 5/8” | #MW 3/4” | #MW 7/8” | #MW 1” |
|  |  | #MW3/4EXT |  |  |
|  |  |  |  |  |
| Allied Bolt, Inc. | 1108 | 1109 | 1120 | 1121 |
|  |  |  |  |  |

ax-1

February 2011

ax - Cutout and Arrester, Combination

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
| Nominal System Voltage | | For 12.5Y/7.2 kV | |  | For 13.2Y/7.6 kV | | For 24.9Y/14.4 kV | |
| Cutout Max. Voltage Rating | | 7.8 kV |  | 15 kV | 15 kV |  | 18 kV | 27 kV |
|  |  |  |  |  |  | 3ø Bank |  | 3ø Bank |
| Application |  |  |  | 3ø Bank |  | 3ø Sect. |  | 3ø Sect. |
|  |  | 1ø Trans. | 1ø Sect. | 3ø Sect. | 1ø Trans. | 1ø Sect. | 1ø Trans. | 1ø Sect. |
| Cutout Current Rating | | 50\* | 100 | 100 | 50\* | 100 | 50\* | 100 |
| Manufacturer | Type Mounting | Catalog Numbers | | | | | | |
|  |  |  |  |  |  |  |  |  |
| ABB | Crossarm |  | 7.8 NCX/9 LVG | 15 NCX/10 LVG |  | 15 NCX/10 LVG |  | 24.9 NCX/18 LVG |
|  | Crossarm (L) |  | 7.8 LBU-II/9 LVG | 15 LBU-II/10 LVG |  | 15 LBU-II/10 LVG |  | 24.9 LBU-II/18 LVG |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Cooper | Crossarm (L) |  | AFZS510B Series | AFZS510C Series |  | AFZS510C Series |  | AFZS518D Series |
|  | Transformer | AFZS110M010 |  |  | AFZS110M010 |  | AFZS110M018 |  |
|  | Crossarm |  | L4B Series | L4B Series |  | L4B Series |  | L9C or L9d series |
|  |  |  | (Porcelain) | (Porcelain) |  | (Porcelain) |  | (Porcelain) |
|  |  |  |  |  |  |  |  |  |
|  |  |  | S4B Series | S4B Series |  | S4B Series |  | S9D Series |
|  |  |  | (Polymer) | (Polymer) |  | (Polymer) |  | (Polymer) |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Hubbell | Crossarm |  | C7 Series | C7 Series |  | C7 Series |  | C7 Series |
|  | Transformer |  |  |  |  |  |  |  |
|  | Crossarm |  |  | CP7 Series (Polymer) |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Kearney/Cooper  Power Systems | Crossarm |  |  | KE3AB110E-110 |  | KE4AB110E-110 |  | KE7BD109E-110 |
|  | Transformer | 294072 |  |  | 294073 |  | 294074 |  |
|  |  |  |  |  |  |  |  |  |

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.

\*These cutouts have open links and must not be used where fault currents are high or for sectionalizing.

(L) Indicates loadbreak type is available.

az-1

July 2009

az - Pole Numbers and Letters, Metal

|  |  |
| --- | --- |
| Manufacturer | Catalog No. |
|  |  |
| Almetek Industries, Inc. | "E-Z Tags" - Order by description |
|  |  |
| Premax Products | 1523 |
|  |  |
| Tech Products | Everlast Tag |
|  |  |
| Electromark | EMB-1.5 |
|  | EMB-3.0 |
|  | HOLD-AL1 |
|  | HOLD-PL1 |
|  | PERMAGRAVE SLIDE-INS #ET1041-KY-1S |
|  | PERMAHOLD-AL1 |
|  | PERMAHOLD-PL1 |
|  | SLIDE-1S |
|  |  |

ba-1

September 2010

ba - Bolt, Angle Eye

Thimble Type

Applicable Specification: ANSI C135.4, "Standards for Galvanized Ferrous Eye Bolts and Nuts for Overhead Line Construction"

Applicable Sizes : 5/8 inch, 6 through 12 inch length

3/4 inch, 8 through 12 inch length

The following manufacturers have shown compliance with the applicable specifications:

|  |
| --- |
| Allied Bolt, Inc. |
| Hubbell (Chance) |
| Joslyn Mfg. and Supply Company |
| Kortick Manufacturing Company |
| MacLean (Continental) |

bb-1

July 2009

bb - Brace, sidearm vertical

|  |  |  |
| --- | --- | --- |
|  | 26" brace 24" bolt-hole spacing | 50" brace 24" bolt-hole spacing |
|  |  |  |
| Dixie | D6986 | D6987 |
|  |  |  |
| Kortick | K1931 | K1932 |
|  |  |  |
| MacLean (Continental) | U5249 | U5250 |
|  |  |  |
|  |  |  |

be-1

July 2009

be - Reclosers, oil and vacuum

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
| Mfr. | Phases | Type | Circuit Voltage | Continuous Rating | Int. Rating | Oil/ Vacuum | Hydraulic/ Electronic |
|  |  |  |  |  |  |  |  |
| Cooper | 1 | H | 12.5/7.2 | 5-50 | 1250 | O | H |
|  | 1 | 4H | 12.5/7.2 | 5-100 | 2000 | O | H |
|  | 1 | L | 12.5/7.2 | 25-100 | 4000 | O | H |
|  | 3 | 6H | 12.5/7.2 | 5-100 | 2000 | O | H |
|  | 3 | W | 12.5/7.2 | 100-560 | 10,000 | O | H |
|  | 3 | WE | 12.5/7.2 | 560 | 10,000 | O | H |
|  | 3 | VSA-12 | 12.5/7.2 | 100-560 | 12,000 | V | E |
|  | 1 | E | 24.9/14.4 | 5-100 | 2500 | O | H |

(Type E available with shunt lockout solenoid for three-phase operation)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 4E | 24.9/14.4 | 50-200 | 4000 | O | H |
|  | 3 | WV | 34.5/19.9 | 560 | 8000 | O | H |
|  | 3 | WVE | 34.5/19.9 | 560 | 8000 | O | E |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Lexington | 1 | A Line | 12.5/7.2 | 5-50 | 1250 | O | H |
| Switch and |  | Model B |  |  |  |  |  |
| Controls | 1 | A Line | 12.5/7.2 | 25-100 | 2000 | O | H |
|  |  | Model D |  |  |  |  |  |
|  | 1 | A Line | 12.5/7.2 | 25-100 | 4000 | O | H |
|  |  | Model K |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and 280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.

2. Reclosers are not acceptable with load current, bushing CT battery chargers.

Conditional List

be(1)

July 2009

be - Recloser, oil circuit

12.5/7.2 kV

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| ABB  Three phase oil circuit recloser (Shunt trip with static or relay type controls)  Type ES-400 (15-400 amperes)  Type ES-560 (15-560 amperes)  Type ESM-560 (100-560 amperes)  Type ES-105 (15-560 amperes) | To obtain experience. |
|  |  |
| Cooper Power Systems  Single phase, Type D rated 100 amperes continuous, 10,000 amperes symmetrical | To obtain experience. |
| Lexington Switch and Controls  Three phase oil circuit recloser, 50,100 and 280 ampere frames.  A Line, Model 3B (5-50 amperes) Model 3D (5-100 amperes) Model 3K (25-280 amperes) | To obtain experience. |
|  |  |

24.9/14.4 kV

|  |  |
| --- | --- |
|  |  |
| Lexington Switch and Controls  Oil circuit recloser,  Single phase-A Line, Model M rated 100 amperes  Three phase-A Line, Model 3M rated 100 amperes | To obtain experience. |
|  |  |

34.5/19.9 kV

|  |  |
| --- | --- |
|  |  |
| Cooper Power Systems  Single phase, Type DV rated 100-280 amperes continuous, 8,000 amperes symmetrical | To obtain experience. |
|  |  |

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and 280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.

2. Reclosers are not acceptable with load current, bushing CT battery chargers.

Conditional List

be(2)

September 2014

be - Reclosers, vacuum interrupter

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| ABB  Three phase Type ESVA rated 560/800 amps continuous, 12,000 amps symmetrical, maximum voltage 15.5 kV for 12.5/7.2 kV  Three phase Type ESMVA rated 560 amps continuous, 16,000 amps symmetrical, maximum voltage 15.5 kV for 12.5/7.2 kV | To obtain experience.  To obtain experience. |
|  |  |
| Cooper Power Systems  Single Phase Type V4E rated 15 to 200  amperes continuous, 6,000 amperes  symmetrical, maximum voltage 27 kV for  24.9/14.4 kV.  Single phase, Type V4H rated 5-100 amperes continuous, 2,000 amperes symmetrical, maximum voltage 15.5 kV for 12.5/7.2 and 13.2/7.62 kV  Single phase, Type V4L rated 50-100 amperes continuous, 6,000 amperes symmetrical, maximum voltage 15.5 kV for 12.5/7.2 and 13.2/7.62 kV  Three phase, Type V6H rated 5-100 amperes continuous, 2,000 amperes symmetrical, maximum voltage 15.5 kV for 12.5/7.2 and 13.2/7.62 kV | To obtain experience.  To obtain experience.  To obtain experience.  To obtain experience. |
|  |  |

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and 280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.

2. Reclosers are not acceptable with load current, bushing CT battery chargers.

Conditional List

be(2.1)

July 2009

be - Recloser vacuum interrupter

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Cooper Power Systems  Three phase, Type VW rated 560 amperes continuous, 2,000 amperes symmetical, maximum voltage 15.5 kV for 12.5/7.2 and 13.2/7.62 kV  Three phase, Type VWE rated 560 amperes continuous, 12,000 amperes symmetrical, maximum voltage 15.5 kV for 12.5/7.2 and 13.2/7.62 kV  Three phase, Type VSA-16 rated 560 amperes continuous, 16,000 amperes symmetrical, maximum voltage 15.5 kV for 12.5/7.2 and 13.2/7.62 kV  Three phase, Type VWV27 rated 560 amperes continuous 12,000 amperes symmetrical, maximum voltage 27 kV for 24.9/14.4 kV  Three phase, Type VWVE27 rated 560 amperes continuous, 12,000 amperes symmetrical, maximum voltage 27 kV for 24.9/14.4 kV  Three phase, Type VWV38 rated 50-560 amperes continuous, 12,000 amperes symmetrical, maximum voltage 38 kV for34.5/19.9 kV | To obtain experience.  To obtain experience.  To obtain experience.  To obtain experience.  To obtain experience.  To obtain experience. |
|  |  |

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and 280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.

2. Reclosers are not acceptable with load current, bushing CT battery chargers.

Conditional List

be(2.2)

July 2009

be - Recloser, vacuum interrupter

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Cooper Power Systems  Three phase, Type VWVE38 rated 560 amperes continuous, 12,000 amperes symmetrical, maximum voltage 38 kV for 34.5/19.9 kV  Three phase, Type VSO-12 rated 560 amperes continuous, 12,000 amperes symmetrical, maximum voltage 38 kV for 34.5/19.9 kV  Three phase, Type VSO-16 rated 560 amperes continuous, 12,000 amperes symmetrical, maximum voltage 38 kV for 34.5/19.9 kV  Single phase, type VXE electronically controlled, vacuum interrupting, rated 10-200 amps continuous, 8000 amperes symmetrical, maximum voltage of 15.5 kV for 12.5/7.2 kV & 27 kV for 24.9/14.4 kV systems | To obtain experience.  To obtain experience.  To obtain experience.  To obtain experience. |
|  |  |
| Engineering & Equipment de Mexico  Three phase, type, EEVW15, rated 25 to 560 amp continuous, 12000 amp interrupting, maximum voltage 15.5 kV for 12.4/7.2 kV. | To obtain experience. |
|  |  |
| Hubbell Power Systems  Single phase, Type VERSA-TECH electronically controlled, vacuum interrupting, rated 400 amperes continuous, 8,000 amperes symmetrical, maximum voltage of 27 kV for 24.9/14.4 kV systems | To obtain experience. |
|  |  |
| Joslyn  Three phase, Type JVR, SF6 insulation, rated 400 amps continuous, 6,000 amperes symmetrical, maximum voltage 15 kV for 12.5/7.2 kV | To obtain experience. |
|  |  |
|  |  |

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and 280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.

2. Reclosers are not acceptable with load current, bushing CT battery chargers.

Conditional List

be(2.3)

May 2016

be - Recloser, vacuum interrupter

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Lexington Switch  Single phase, type EV627 rated 400 amp continuous, 6000 amp interrupting, maximum voltage 27 kV for 24.9/14.4 kV  Single phase, type EV815 rated 400 amp continuous, 8000 amp continuous, maximum voltage 15.5 kV for 12.9/14.4 kV | To obtain experience.  To obtain experience. |
|  |  |
| S&C Electric  Single phase, TripSaver II (cutout mounting), rated 100 amp continuous, 4000 amp and 6300 amp interrupting, maximum voltage 15.5 kV for 12.9/14.4 kV and 27 kV for 24.9/14.4 kV | To obtain experience. |
|  |  |
| Whipp & Bourne  Three-phase, Type GVR, SF6 insulation with vacuum interruption, 560 amps maximum continuous, 12000 amps RMS symmetrical interruption for 15.5 kV and 27 kV, 8000 amps RMS symmetrical for 38 kV. 15.5 kV maximum voltage for 12.5/7.2 kV, 27 kV maximum voltage for 24.9/14.4 kV, 38 kV maximum voltage for 34.5/19.9 kV. | To obtain experience. |
|  |  |

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and 280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.

2. Reclosers are not acceptable with load current, bushing CT battery chargers.

Conditional List

be(3)

July 2009

be - Recloser, SF6 interrupter

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Hawker Siddeley  Type PMR-3/15 rated at 560 amperes continuous,  12,000 amperes symmetrical maximum, 15.5 kV  Type PMR-3/27 rated at 560 amperes continuous,  12,000 amperes symmetrical maximum, 24.9 kV | To obtain experience. |

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and 280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.

2. Reclosers are not acceptable with load current, bushing CT battery chargers.

Conditional List

be(4)

July 2009

be - Recloser, vacuum interruption with solid dielectric

|  |  |
| --- | --- |
| Manufacturer | Conditions |
| ABB  Single phase, Type OVR electronically controlled, vacuum interruption, solid dielectric, 800 amps maximum continuous, 10000 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14.4 kV. | To obtain experience. |
|  |  |
| Three phase, Type OVR electronically controlled, vacuum interruption, solid dielectric, 630 amps maximum continuous, 12500 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14.4 kV.  Three phase, Type OVR electronically controlled, vacuum interruption, solid dielectric, 800 amps maximum continuous, 16000 amps RMS symmetrical interruption, 38 kV maximum for 34.5/19.9 kV. | To obtain experience. |
|  |  |
| Cooper Power Systems  Three phase, Type NOVA electronically controlled, vacuum interruption, solid dielectric, 560 amps maximum continuous, 12000 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14.4 kV. | To obtain experience. |
|  |  |
| Single Phase, Type NOVA electronically controlled, vacuum interruption, solid dielectric, 400 amps maximum continuous, 8000 amps RMS symmetrical interruption, or 800 amps maximum continuous, 12500 amps RMS symmetrical interruption 15.5 kV maximum for 12.5/7.2 kV, 29.2 kV maximum for 24.9/14.4 kV. | To obtain experience. |
|  |  |
| Three phase, Type NOVA-TS Triple-Single electronically controlled, vacuum interruption, solid dielectric, 400 amps maximum continuous, 12500 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 29.2 kV maximum for 24.9/14.4 kV. | To obtain experience. |
|  |  |

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and   
   280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.
2. Reclosers are not acceptable with load current, bushing CT battery chargers.

Conditional List

be(4.1)

September 2013

be - Recloser, vacuum interruption with solid dielectric

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| G & W Electric Company  Three phase, electronic, VIPER Series, vacuum interruption, solid dielectric, 800 amps maximum continuous, 16,000 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14/4 kV. | To obtain experience. |
|  |  |
| Single phase, electronic, Viper SP, vacuum interruption, solid dielectric, 800 amps maximum continuous, 12,500 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14.4 kV. | To obtain experience. |
|  |  |
| Joslyn Hi-Voltage  Three-phase, Type TRIMOD 300 series, vacuum interruption, solid dielectric foam, 560 amps maximum continuous, 12000 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14.4 kV | To obtain experience. |
|  |  |
| Single-phase, Type TRIMOD 100 series, vacuum interruption, solid dielectric foam, 560 amps maximum continuous, 12500 amps RMS symmetrical interruption, 17.1 kV maximum for 12.5/7.2 kV, 29.3 kV maximum for 24.9/14.4 kV | To obtain experience. |
|  |  |
| Schneider Electric USA, Inc.  Three phase, Type U27-12-125-630, solid dielectric insulation, 630 amps maximum continuous, 12500 amps RMS symmetrical interruption, 27 kV maximum for 24.9/14.4 kV - 125 kV BIL. | To obtain experience. |
|  |  |
| Siemens  Three phase, Type SDR Recloser, rated 800A maximum continuous, electronically controlled, vacuum interruption, solid dielectric, 12500 amps RMS symmetrical interruption for 15.5 kV, 16000 amps RMS symmetrical interruption for 27 kV, (15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14.4 kV) | To obtain experience. |
|  |  |
| S&C Electric Company |  |
| Three phase, IntelliRupter PulseCloser with vacuum interrupter, solid dielectric, 630 amps maximum continuous, 12,500 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14.4 kV. | To obtain experience. |
|  |  |

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and   
   280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.
2. Reclosers are not acceptable with load current, bushing CT battery chargers.

Conditional List

be(4.2)

November 2015

be - Recloser, vacuum interruption with solid dielectric

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Thomas & Betts  Three phase, electronic, MVR Series, vacuum  interruption, solid dielectric, 800 amps maximum  continuous, 12,500 amps RMS symmetrical  interruption, 15.5 kV maximum for 12.5/7.2 kV,  27kV maximum for 24.9/14.4 kV, 38 kV maximum  for 34.5 kV/19.9 kV | To obtain experience. |
|  |  |
| Single phase, electronic, MVR Series, vacuum  interruption, solid dielectric, 800 amps maximum  continuous, 12,500 amps RMS symmetrical  interruption, 15.5 kV maximum for 12.5/7.2 kV,  27kV maximum for 24.9/14.4 kV, 38 kV maximum  for 34.5 kV/19.9 kV | To obtain experience. |
|  |  |
| NOJA Power |  |
| Three phase, Type OSM15 electronically controlled, vacuum interrupted, solid dielectric, 800 amps maximum continuous,  12,500 amps RMS symmetrical interruption, 15.5kV maximum for 12.5/7.2kV. | To obtain experience. |
|  |  |
| Three phase, Type OSM27 electronically controlled, vacuum interrupted, solid dielectric, 800 amps maximum continuous,  12,500 amps RMS symmetrical interruption, 27kV maximum for 24.9/14.4kV. | To obtain experience. |
|  |  |
| Three phase, Type OSM38 electronically controlled, vacuum interrupted, solid dielectric, 800 amps maximum continuous,  12,500 amps RMS symmetrical interruption, 38kV maximum for 34.5/19.9kV. | To obtain experience. |
|  |  |
| Single Phase, Type OSM38 Series electronically controlled, vacuum interrupted, solid dielectric, 800 amps maximum continuous, 12,500 amps RMS symmetrical interruption, 38kV maximum for 34.5/19.9kV. | To obtain experience. |
|  |  |
| Schneider Electric  Single phase, Type W27-ACR-Solid-24-6-125, solid dielectric insulation, 400 amps maximum continuous, 6000 amps RMS symmetrical interruption, 24 kV phase to ground - 125 kV BIL.  PN 250010000 | To obtain experience |
|  |  |

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and   
   280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.
2. Reclosers are not acceptable with load current, bushing CT battery chargers.

bh-1

July 2009

bh - Clevis, Service Deadend

Applicable Specification: "RUS Specification for Service Deadend Clevises," D-8

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Clevis Only\* | Clevis with dry process spool | Clevis with wet process spool |
|  |  |  |  |
| Hubbell (Chance) | 0341 | 0341-0606 | 0341-C909-1931 |
| Joslyn | J0313 | - | - |
| Kortick | K9250 | K9100 | K9099 |
| MacLean (Continental) | U32136 | U31136 | U36136 |
|  |  |  |  |
|  |  |  |  |

\*Catalog number does not include spool; for spool see Page cm.

bi-1

January 2015

bi - Gain, Pole

For use with rectangular crossarms

|  |  |
| --- | --- |
| Hubbell (Chance) | 4092 |
| Joslyn (Flagg) | PX252 |
| MacLean (Continental) | CAG-44-5 |

For braceless crossarms (narrow profile construction)

|  |  |
| --- | --- |
| Hubbell (Chance) | PG84XE12 |
| Joslyn (Flagg) | PX182A |
| MacLean (Bethea) | GCAF-6A |
| MacLean (Continental) | DEA-65-10A |

Transmission

Grid Gains

|  |  |  |
| --- | --- | --- |
|  | Sizes in inches | |
|  | 4" x 4" | 4" x 9" |
|  |  |  |
| Hubbell (Chance) | PG44 | PG945 |
| Hughes Brothers | l263 | l260 |
| Joslyn (Flagg) | PX122 | PX260 |
| MacLean (Bethea) | GSF-44-7 | GSFT-95-7 |
| MacLean (Continental) | GGSF-4040-7 | GRF-9045-7 |

bj-1

July 2009

bj - Guy Hook

Applicable Specification: Edison Electric Institute Specification TD-11- 1951, "Specifications for Guy Hooks and Guy Strain Plates."

|  |  |
| --- | --- |
| Hubbell (Chance) | 6584 |
| Joslyn | J1019 |
| Kortick | K4031 |
| MacLean (Continental) | U5310 |

bk-1

July 2009

bk - Guy Plate

Applicable Specifications:

Strain Type: Edison Electric Institute Specification TD-11 1951, "Specifications for Guy Hooks and Guy Strain Plates."

Lift Type: None

|  |  |  |
| --- | --- | --- |
|  | Strain Type 4" x 8" x 14 gage | Lift Type 2-1/2" x 7" x 1/4", 2 hole |
|  |  |  |
| Almat | K45-1 | - |
| Hubbell (Chance) | 6575 | 7898 |
| Joslyn | J1034 | - |
| Kortick | K4015 | K3511 |
| Line Hardware | GSP-1 | - |
| MacLean (Continental) | U5351 | UC434 |
|  |  |  |

bn-1

November 2014

bn - clamp, loop deadend

For ACSR

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 3/0 | 2/0 | 1/0 | 2 | 4 |
|  |  |  |  |  |  |
| AFL | - | 413 | 413 | 412 | 411 |
|  |  |  |  |  |  |
| Blackburn | DLC23 | DLC2106 | DLC2106 | DLC2106 | DLC2106 |
|  |  |  |  |  |  |
| Burndy | - | - | UW25R | UW2R | UW2R |
|  |  |  |  |  |  |
| C & R | - | - | CRLD-10 | CRLD-10 | CRLD-10 |
|  |  |  |  |  |  |
| Hubbell (Anderson) | LC-74B | LC-71B | LC-70B1 | LC-70B | LC-70B |
|  |  |  |  |  |  |
| Hubbell (Fargo) | GA-145 | GA-145 | GA-144 | GA-144 | GA-144 |
|  |  |  |  |  |  |
| MacLean (Bethea) | ALD-7373-U | ALD-34-U | ALD-1313-U | ALD-1313-U | ALD-1313-U |

bo-1

July 2009

bo - Shackle, anchor

Distribution

|  |  |
| --- | --- |
|  |  |
|  | 20,000 lbs. |
|  | 5/8" Pin |
|  |  |
| Hubbell (Anderson) | AS-25 |
| Hubbell (Chance) | 5801 |
| Joslyn | J2742 |
| Kortick | K4481 |
| Lapp | 33852 |
| Lindsey | 3260 |
| Line Hardware | AS-1 |
| MacLean (Bethea) | ASH-45 |
| Sur-Loc, Inc. | 5500 |
|  |  |

Transmission

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | 30,000 lbs. | 50,000 lbs. |
|  | 3/4" bolt | 7/8" bolt |
|  |  |  |
| Joslyn | BT3023BNK | BT3036BNK |
| MacLean (Bethea) | ASH-56-BC | ASH-67-BC |

br-1

September 2015

br – Chain Link (End Link)

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Joslyn | BT-3082 |
|  |  |
| Lapp | 6415-HT |
|  |  |
| Lindsey | 3403 |
|  |  |
| MacLean (Bethea) | CL-5 |
|  |  |
| Preformed Line Products | CL-60 |
|  |  |

bs-1

November 2011

bs - Bolt, single upset

Applicable Specifications: "RUS Specifications for Single and Double Upset Spool Bolts," D-5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Diameter, inches: | 5/8 | 5/8 | 5/8 | 5/8 |
| Length, inches: | 7 | 8 | 9 | 10 |
|  |  |  |  |  |
| Manufacturer |  |  |  |  |
|  |  |  |  |  |
| Allied Bolt, Inc. | - | - | 1712 | 1713 |
| Hubbell (Chance) | - | 7741 | 7741-1/2 | 7742 |
| Joslyn | - | J2342-1/2 | J2343-1/2 | J2344-1/2 |
| Kortick | K4929 | K4950 | K4930 | K4951 |
| MacLean (Continental) | U3105-1/2 | U31053 | U31053A | U31054 |
|  |  |  |  |  |

bt-1

July 2009

bt - Wireholder, clevis type

with No. 24 wood screw

(For use with triplex type service cable, Drawing K10C-A)

|  |  |
| --- | --- |
| Hubbell (Chance) | 0192\* |
| Joslyn | J075\* |
|  |  |
|  |  |

\*Catalog number does not include insulator. Use secondary type spool insulator with 1-3/4 inch groove diameter. See page cm-1.

bu-1

May 2010

bu - Connector, grounding

for transformer or other equipment

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Copper Alloy 1 | Plated Copper Alloy 2 | Aluminum Alloy 3 |
|  |  |  |  |
|  |  |  |  |
| Blackburn | TTC-4 | TTC2P | - |
|  |  |  |  |
| Burndy | EQC632C | EQC632C-TN | - |
|  |  |  |  |
| Dossert | TGCL8-50 | TGCL8-50-SN | - |
|  |  |  |  |
| Hubbell (Anderson) | GTCL-23A | GTCL-23A-TP | - |
|  |  |  |  |
| Hubbell (Fargo) | GC-207 | GC-207P | GA-220 |
|  |  |  |  |
| Line Hardware | TGL-110 | TGL-110P | - |
|  |  |  |  |
| Maclean (Reliable) | BVC-207 | - | - |
|  |  |  |  |
| Penn-Union | GSE-C1 | GSE-C1TN | - |
|  |  |  |  |
| Richards Manufacturing, Sales Inc. (Chin Fong Co., Ltd.) | RTG512 | - | - |
|  |  |  |  |
| Tanner | - | GET-1-TN | - |
|  |  |  |  |

1 - For use with copper type ground wire.

2 - For use with both copper and aluminum type ground wire.

3 - For use with aluminum type ground wire.

bv-1

August 2014

bv - Rods, armor

(Includes standard, double insulator, and tapping rods)

Aluminum or aluminum alloy rods for use on ACSR

|  |  |
| --- | --- |
| Manufacturer | Type |
|  |  |
| AFL | Formed Type |
|  |  |
| Dulmison | Formed Type |
|  |  |
| Florida Wire and Cable | Formed Type |
|  |  |
| Helical Line Products | Formed Type |
|  |  |
| Helix Uniformed Ltd. | Formed Type |
|  |  |
| Preformed Line Products | Formed Type |
|  |  |
|  |  |

Copperweld rods for copper or CWC conductor

|  |  |
| --- | --- |
|  |  |
| Dulmison | Formed Type |
|  |  |
| Helical Line Products | Formed Type |
|  |  |
| Preformed Line Products | Formed Type |

Alumoweld rods for aluminum clad steel (Alumoweld)

Overhead ground wire

|  |  |
| --- | --- |
| Dulmison | Formed Type |
|  |  |
| Helical Line Products | Formed Type |
|  |  |
| Preformed Line Products | Formed Type |

bx-1

July 2009

bx - Splice, automatic

|  |  |  |
| --- | --- | --- |
| Copper | Hubbell (Fargo) | MacLean (Reliable) |
|  |  |  |
| 6 | GL-111 | 61 |
|  |  |  |
| 4 | GL-112 | 41 |
|  |  |  |
| 2 x 3 | GL-115 | - |
|  |  |  |
| 1/10 x 7 | GL-117 | 107 |
|  |  |  |
| 2/0 x 7 | GL-118 | 207 |
|  |  |  |
| 3/0 x 7 | GL-119 | 307 |
|  |  |  |
| 4/0 x 7 | GL-120 | 407 |
|  |  |  |
|  |  |  |
|  |  |  |
| CWC |  |  |
|  |  |  |
| 8A | GL-112 | - |
|  |  |  |
| 6A | GL-113 | 47 |
|  |  |  |
| 4A | GL-115 | 27 |
|  |  |  |
| 2A | GL-117 | - |
|  |  |  |
|  |  |  |
|  |  |  |
| ACSR | GL-400A Series\* | 7650 Series\* |
|  |  |  |
| Aluminum Alloy |  |  |
| (6201 and 5005) | GL-400A Series | AL55 Series |
|  |  |  |

\*For use on conductors 4/0 and smaller only.

bx-1.1

May 2017

bx - Splice, automatic

Distribution

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Catalog # | AAC | AAAC | ACSR |
|  |  |  |  |  |
| Aluma-Form, Inc. | ASC42 | #2 & #4 | #2 & #4 | 6/1 |
|  | ASC1020 | 1/0 & 2/0 | 1/0 & 2/0 | 1/0 & 2/0 |
|  | ASC3040 | 3/0 & 4/0 | 3/0 & 4/0 | 3/0 & 4/0 |

Conditional List

bx(1)

July 2009

bx - Splice, automatic

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |

DISTRIBUTION

|  |  |
| --- | --- |
| Blackburn  #4, #2 ACSR or 6201 (ACSR equiv.) ATS42  1/0, 2/0 ACSR or 6201 (ACSR equiv.) ATS1020  3/0, 4/0 ACSR or 6201 (ACSR equiv.) ATS3040  266.8, 336.4 kcmil ACSR ATS266336  477 kcmil ACSR ATS397477 | 1. To obtain experience.  2. For use on distribution systems only. |
|  |  |
| Connector Products, Inc.  2 ACSR (S1000)  #1 ACSR (S1000)  #2 AAC (S1000)  1/0 AAC (S1000)  2/0 AAC (S1000)  #2 AAAC (S1000)  1/0 AAAC (S1000) | 1. To obtain experience.  2. For use on distribution systems only. |
|  |  |
| Hubbell (Fargo)  AWAC 4 - 4/3 GLA-105  AWAC 2 - 4/3 GLA-110  AWAC 1/0 - 4/3 GLA-115  266.8 kcmil ACSR 18/1 GL-410  336.4 kcmil ACSR 18/1 GL-411  477 kcmil ACSR 18/1 GL-413 | Same as above.  Same as above. |
|  |  |
| MacLean (Reliable)  266.8 kcmil ACSR 18/1 7657  336.4 kcmil ACSR 18/1 7658  477 kcmil ACSR 18/1 7659 | Same as above. |
|  |  |

DISTRIBUTION AND TRANSMISSION

|  |  |
| --- | --- |
| Hubbell (Fargo)  266.8 kcmil ACSR 26/7  336.4 kcmil ACSR 26/7  477 kcmil ACSR 26/7 | To obtain experience. |
|  |  |

by-1

July 2009

by - Deadend, automatic and formed Type

|  |  |  |  |
| --- | --- | --- | --- |
| Conductor Size | |  |  |
|  |  |  |  |
| Cu | CWC | Hubbell (Fargo) | Maclean  (Reliable) |
|  |  |  |  |
| - | 4A | GD-515 | 27-SDS |
| - | 6A | GD-513 | 47-SDS |
| - | 8A | GD-512 | - |
| 2 x 3 | - | GD-515 | 271 |
| 4 | - | GD-512 | 41LD |
| 6 | - | GD-511 | 61LD |
|  |  |  |  |

ACSR

|  |  |
| --- | --- |
| \*Blackburn | ATD Series |
| \*Dulmison | AWDG-0805, 0990, and 1135 |
| \*Hubbell (Fargo) | GD-400 Series |
| \*MacLean (Reliable) | 7650 Series |
| Preformed | DG Series |

\*For use on conductors 4/0 and smaller only.

Aluminum Alloy

(6201 and 5005)

|  |  |
| --- | --- |
| Blackburn | ATD Series |
| Hubbell (Fargo) | GD-A Series |
| MacLean (Reliable) | AL Series |
| Preformed | DG Series |

Conditional List

by(1)

July 2009

by - Deadends, automatic and formed type

FORMED TYPE

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Preformed Line Products  AWAC 4 - 4/3 DG-4560  AWAC 2 - 4/3 DG-4562  AWAC 1/0 - 4/3 DG-4565 | To obtain experience. |
|  |  |

AUTOMATIC TYPE

|  |  |
| --- | --- |
| Hubbell (Fargo)  AWAC 4 - 4/3 GDA-235  AWAC 2 - 4/3 GDA-240  AWAC 1/0 - 4/3 GDA-245  266.8 kcmil ACSR 18/1 GD-53l5A  336.4 kcmil ACSR 18/1 GD-53l5A  477 kcmil ACSR 18/1 GD-5325A | To obtain experience.  1. To obtain experience.  2. For use on distribution lines only. |
|  |  |
| MacLean (Reliable)  AWAC 4 - 4/3 5201  AWAC 2 - 4/3 5202  AWAC 1/0 - 4/3 5204  226.8 kcmil ACSR 18/1 7657 SDS  335.4 kcmil ACSR 18/1 7658 SDS  477 kcmil ACSR 18/1 7659 SDS | To obtain experience.  1. To obtain experience.  2. For use on distribution lines only. |
|  |  |

bz-1

July 2009

bz - Switch, oil

12.5/7.2 kV

|  |  |  |
| --- | --- | --- |
|  | Type | Description |
|  |  |  |
| ABB | CSL\*\* | Single-phase, manual and remote |
|  |  | manual or elec. control, 200 amp. |
|  |  | Three-phase, remote manual or elec. |
|  |  | control, 200 amp. |
|  |  |  |
|  |  |  |
| Cooper Power Systems | NR\* | Single-phase, remote elec. control, |
|  |  | 200 amp. |
|  | VR\* | Three-phase, remote elec. control, |
|  |  | 400 amp. |
|  |  |  |
| General Electric | FKC-2 | Single and three-phase, manual, 200 amp. |
|  | FKC-2\* | Single and three-phase, remote control, |
|  |  | 200 amp. |
|  |  |  |
| Maysteel Trinetics | CSD-95, CSD-125 | Single-phase, manual and remote |
|  |  | manual or elec. control, 200 amp. |
|  |  | Three-phase, remote manual or elec. |
|  |  | control, 200 amp. |
|  |  |  |

\*Control equipment should be selected in accordance with the requirements of individual installations.

\*\*This item is also available in a special design for use in areas where corrosion is a serious problem.

Conditional List

bz(1)

July 2009

bz - Switch, oil

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Cooper Power Systems  Capacitor oil switch Type TSC, 38 kV max. 100 ampere capacitor switch, 300 ampere load switch | 1. To obtain experience. |
| Oil switch with125 kV BIL accessory Type NR, 15 kV, single- phase, remote electric control, 200 amp. at 75 to 100 percent power factor | 1. To obtain experience.  2. For use on single- phase taps of 24.9/14.4 kV multi- grounded wye systems. |
|  |  |
|  |  |
|  |  |

Conditional List

bz(2)

January 2014

bz - Switch, vacuum

(For capacitor switching)

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Cooper Power Systems  Type ECS, cycloaliphatic epoxy solid dielectric, vacuum capacitor switch, rated 200 amps, 95kV, 125kV and 150 bil, for use on 15kV, 25kV and 35kV grounded-wye systems | 1. To obtain experience 2. The 25 kV rated switch with 150 kV external bil and 125 kV internal bil can be used in solidly grounded 35 kV applications. 3. Bil options can accommodate normal or extra creepage needs. Available in 95/95, 95/125, 125/125, and 125/50 combinations (internal bil kV/external bil kV). |
| Joslyn  Capacitor vacuum switch, VerSaVac, 200 Amp, 95 or 125 kV BIL, single-phase or three-phase for use on 15 kV systems | 1. To obtain experience.  2. Single-phase switch rated 125 kV BIL may be used on single- phase taps of 24.9/14.4 kV multi-grounded wye systems.  3. Three-phase switch requires special mounting bracket. |
| Yaskawa  Types LFG-15E-K (15 kV), LFG-25E-K (25 kV), LFG-35E-K (35 kV) 3-phase SF6 capacitor switch, pole mounted type, 200 A (capacitive), 630 A (continuous) | 1. To obtain experience. |
|  |  |

cg-1

September 2014

cg - Switch, air, three-pole, group-operated

NEMA standard switches for station and line structures

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Manufacturer | Acceptable Mounting on Structures | Tilting Ins.  Type kV | Vertical Break  Type kV | Side Break  Type kV | Center Break  Type kV | Double Break  Type kV |
|  |  |  |  |  |  |  |
| ABB | Horizontal |  | TTR6 345 |  |  |  |
|  | Horizontal |  | TTR8 15-230 |  |  |  |
|  |  |  |  |  |  |  |
| G & W Electric Co. | Horizontal |  | MK-40 15-69 | PMB-40A 15-69 | LPC 69-230 |  |
|  |  |  |  |  |  |  |
| Hubbell (Chance) | Horizontal |  | D6(L) 15-34.5 |  |  |  |
|  | Phase over Phase |  | D6(L) 15-34.5 |  |  |  |
|  | Vertical |  | D6(L) 15-34.5 |  |  |  |
|  |  |  |  |  |  |  |
| Johnson | Horizontal |  | VIP 15-230 | LS 15-69 | M 15-230 |  |
|  |  |  |  |  |  |  |
| Joslyn (Hi-Voltage) | Horizontal |  | RF-2(VL) 15-230 | RB-1(VL) 15-25 |  |  |
|  | Horizontal |  |  | RB-1\* 15-115 |  |  |
|  |  |  |  |  |  |  |
| Kearney/Cooper Power  Systems | Horizontal | AR 60-P 15-69 |  |  |  |  |
|  |  |  |  |  |  |  |
| MEMCO | Horizontal | AgF 15-69 | EA 15-345 |  | EE 69-230 |  |
|  | Horizontal | AgC 15-69 |  | Rl4-C l5-46 |  |  |
|  |  |  |  |  |  |  |
| MORPAC (Morgan) | Horizontal |  | VBV (VL) 15-230 |  | CBV 15-230 |  |
|  | Vertical |  | VBV (VL) 15-230 |  | CBV 15-230 |  |
|  | Phase over Phase |  |  |  | CBV 15-25 |  |
|  |  |  |  |  |  |  |
| Royal Switchgear | Horizontal |  | AVT 15-345 | SBF 15-46 | V 15-230  CB 34.5-230 | DEB 34.5-345 |
|  | Phase over Phase |  |  |  |  | DEV 69-345 |
|  | Underhung |  |  |  | CB 34.5-230 |  |
|  | Vertical |  |  |  | CB 34.5-230 |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

\*These switches may be purchased with reduced voltage vacuum interrupters and may be applied for loop sectionalizing duty when peak recovery voltage does not exceed 25 kV

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg-1.1

July 2009

cg - Switch, air, three-pole, group-operated

NEMA standard switches for station and line structures

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | |
| Manufacturer | Acceptable Mounting on Structures | Tilting Ins.  Type kV | Vertical Break  Type kV | Side Break  Type kV | Center Break  Type kV | Double Break  Type kV | |
|  |  |  |  |  |  |  | |
| S & C\*\*\* | Horizontal |  | Alduti(L) 15-34.5 | Alduti(L) 15-25 |  | Alduti(L) 34.5-46 |
|  | Phase over Phase |  | Alduti(L) 15-25 | Alduti(L) 15-25 |  | Alduti(L) 34.5-46 |
|  | Vertical |  | Alduti(L)\* 15-34.5 | Alduti(L) 15-25 |  | Alduti(L)\* 34.5-46 |
|  |  |  |  |  |  |  |
| SEECO | Phase over Phase |  | GOABS(VL) 15-69 |  |  |  |
|  |  |  |  |  |  |  |
| Siemens-Allis | Horizontal |  | AVB(VL)\*\* 115-345 |  | CB 115-230 |  |
|  |  |  |  |  | CBL-2 115-230 |  |
|  |  |  |  |  |  |  |
| Southern States | Horizontal |  | EV 15-230 |  |  |  |
|  |  |  | TA(VL) 15-69 | SSB-T 15-69 | EC 115-230 |  |
| Turner | Phase over Phase |  |  | (1D, 2D, 3D)(VL)  15-161 |  |  |
|  | Horizontal |  |  | 1D(VL) 15-161 |  |  |
|  | Horizontal |  | TH1(VL) 15-161 |  |  |  |
|  |  |  |  |  |  |  |
| USCO | Horizontal |  | AVR(VL)\*\* 15-230 | ASB 35-138 | AGCH \*\* 15-345 |  |
|  | Horizontal |  |  |  | AGCH-V\*\* 34.5-230 |  |
|  | Phase over Phase |  |  | ASB-II 15-25 | GCH 15-23 |  |
|  |  |  |  |  |  |  |

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

\*These switches, except 34.5 kV Alduti vertical break, are available and accepted with the S & C type SMD substation fuse cutouts listed on page af-3.

\*\* Also available in bronze in some ratings.

\*\*\*Available with porcelain insulators. Available with "Cypoxy" cycloaliphatic epoxy insulators through 34.5 kV on request.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg-2

July 2009

cg - Switch, air, three pole, group operated

(Factory Preassembled)

(FOR USE ON STEEL SUBSTATION STRUCTURES)

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Mounting | Vertical Type kV | Side Break Type kV |
|  |  |  |  |
| Hubbell (Chance) | Vertical | - | D7(L) 15-27 |
|  |  |  |  |
|  | Horizontal | - | D7(L) 15-27 |
|  |  |  |  |
| S & C\* | Phase-over-Phase | Alduti(L) 34.5(200 kV BIL) | Alduti(L) 34.5(200 kV BIL) |
|  | Vertical | Alduti (L) 34.5(200 kV BIL) |  |
|  |  |  |  |

(L) Means gas or solid material full-load interrupters are accepted and available.

\*Available with porcelain insulators. Available with "Cypoxy" cycloaliphatic epoxy insulators through 34.5 kV on request.

cg-3

July 2009

cg - Switch, air, three-pole, group operated

(not Suitable for Substation Use)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Acceptable Mounting | Vertical Break  Type kV | Side Break  Type kV | Center Break  Type kV |
|  |  |  |  |  |
| Hubbell (Chance) | Horizontal |  | D6(L) 15-34.5 |  |
|  | Phase over Phase |  | D6(L) 15-34.5 |  |
|  | Vertical | D7(L) 15-34.5 |  |  |
|  |  |  |  |  |
| Cooper Power Systems (Kearney) | Horizontal |  | M-FORCE(L) 15-35 |  |
|  | Phase over Phase |  | M-FORCE(L) 15-35 |  |
|  | Vertical |  | M-FORCE(L) 15-35 |  |
|  |  |  |  |  |
| Royal Switchgear | Horizontal |  |  | V 15-23 |
|  | Phase over Phase |  |  | V 15-23 |
|  |  |  |  |  |

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg-4

July 2009

cg - Switch, three-pole, group-operated

(Factory Preassembled)

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Acceptable Mounting on Structures | Vertical Break Type kV | Side Break Type kV |
|  |  |  |  |
| ABB | Horizontal (A) |  | SLB-3(L) 15-25 |
|  |  |  |  |
| Bridges Electric# | Horizontal (A) |  | Vector(L) 15-27 |
|  | Phase over phase (A) |  | Vector(L) 15-27 |
|  | Vertical (A) |  | Vector(L) 15-27 |
| #Both operating shaft and hookstick versions of switch accepted. | | | |
|  |  |  |  |
| Cooper Power Systems (Kearney) | Horizontal (A) |  | M-FORCE 15-35 |
|  | Phase over phase (A) |  | M-FORCE 15-35 |
|  | Vertical (A) |  | M-FORCE 15-35 |
|  |  |  |  |
| Hubbell (Chance) | Horizontal (A) |  | D7(L) 15-27 |
|  | Phase over phase (A) |  | D7(L) 15-27 |
|  | Vertical (A) |  | D7(L) 15-27 |
|  |  |  |  |
|  | Horizontal (B) |  | D7(L) 34.5 |
|  | Phase over phase (B) |  | D7(L) 34.5 |
|  | Vertical (B) |  | D7(L) 34.5 |
|  |  |  |  |
| Inertia Engineering | Horizontal (A) |  | LBS(L) 15-35 |
|  | Vertical (A) |  | LBS(L) 15-35 |
|  | Phase over phase (A) |  | LBS(L) 15-35 |
|  |  |  |  |
| S&C\* | Horizontal (A) |  | Alduti(L) 15-25 |
|  |  |  | Alduti(L) 34.5 |
|  |  |  | (200 kV BIL) |
|  |  |  |  |
|  | Phase over phase (A) |  | Alduti(L) 25 |
|  |  |  | Alduti(L) 34.5 |
|  |  |  | (200 kV BIL) |
|  |  |  |  |
|  | Vertical (A) |  | Alduti(L) 15-25 |
|  |  |  | Alduti(L) 34.5 |
|  |  |  | (200 kV BIL) |
|  |  |  |  |
|  | Phase over phase (B) | Alduti(L)34.5 | Alduti(L) 34.5 |
|  | Vertical (B) | Alduti(L)34.5 |  |
|  |  |  |  |

(L) Means gas or solid material full-load interrupters are accepted and available.

(A) Not suitable for substation use.

(B) For station and transmission use only. The steel crossarm base must be grounded with an adequate grounding connector. 200 kV BIL only.

NOTE: Switches with factory-assembled crossarm type bases for distribution lines must have non-conducting crossarm type bases, non-conducting braces, and insulated interphase and control rods, except as otherwise noted.

\* Available with porcelain insulators. Available with "Cypoxy" cycloaliphatic epoxy insulators through 34.5 kV on request.

Conditional List

cg(1)

July 2009

cg - Switch, air, three-pole, group operated

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Cleaveland/Price  Type V2-C (15-69 kV) Vertical break, horizontal or vertical mounting  Type RL-C (15-69 kV) Single side break, horizontal or vertical mounting | 1. To obtain experience.  2. Insulated interphase and control rods required on wood distribution structures. |
|  |  |
| G & W Electric Company  Type MK-40A 15 kV through 345 kV(horizontal upright mounting)  Type LPV, 3-pole 72.5-272 kV, 1200 amp., 1600 amp., 2000 amp., center sidebreak for horizontal mounting. | 1. To obtain experience.  2. Insulated interphase and control rods required on 15 kV and 23 kV models used on wood structures.  3. Steel interphase base required when mounted as in RUS Drawing TM-3.  To obtain experience. |
|  |  |
| Hubbell (Chance)  Type AR Side-break, horizontal phase-over-phase, and vertical mounting, with non-conducting crossarm type base and insulated interphase and control rods, 15, 25 and 34.5 kV(grounded wye) | To obtain experience. |
|  |  |

(L) Means full-load interrupter accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

Conditional List

cg(1.1)

July 2009

cg - Switch, air, three-pole, group-operated

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| PASCOR  VBP (15 - 230 kV)  VBS (69 - 230 kV)  Vertical break, vertical or horizontal mounting.  Phase-over-Phase mounting(VBS, 69 - 115 kV only)  SB (15 - 69 kV) Side break, vertical or horizontal mounting.  CB (15 - 115 kV) Center break, vertical or horizontal mounting.  CBSA (69 - 138 kV) Center Break Vee, vertical, horizontal, or phase-over-phase mounting. (Also accepted as a copper switch at 69 - 115 kV.) | 1. To obtain experience.  2. Insulated interphase and control rods required on wood distribution structures.  1. To obtain experience.  2. Insulated interphase and control rods required on wood distribution structures.  1. To obtain experience  2. Insulated interphase and control rods required on wood distribution structures.  To obtain experience. |
|  |  |
| S & C\*  Line-rupter with SF6 interrupter. Horizontal mounted 115-230 kV  Omni-Rupter #(L) Side-break, horizontal phase-over-phase, and vertical mounting, with non-conducting crossarm type base and insulated interphase and control rods, 15 kV and 25 kV | To obtain experience.  To obtain experience. |
| #Both operating shaft and hookstick versions of switch accepted. |  |

(L) Means full-load interrupter accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

\*Available with porcelain insulators. Available with "Cypoxy" cycloaliphatic epoxy insulators through 34.5 kV on request.

Conditional List

cg(1.2)

July 2009

cg - Switch, Air, Three-Pole, Group Operated

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| SEECO  GOABS (VL) Vacuum interrupter type 115-169 kV | To obtain experience. |
|  |  |
| Southern States  "Pole-Pak" 15-23 kV  Type ES; 15, 23 and 34.5 kV (horizontal upright models only)  Type 57L sidebreak, 115-161 kV,600 and 1200 amp., horizontal upright  Type CBL-T, 15-69 kV,1200 amp  (center break, horizontal upright mounting) | To obtain experience.  1. To obtain experience.  2. For 15 kV and 23 kV distribution lines, insulated interphase and control rod spacers required. See RUS Drawings M3-15 and VM3-16.  3. NEMA insulators and steel interphase base required for transmission line structure as in TM‑3.  4. Acceptable on steel substations 15 through 34.5 kV with NEMA insulators and uninsulated interphase rods.  To obtain experience.  1. To obtain experience.  2. Insulated interphase and control rods required on 15 kV and 25 kV models used on wood structures. |
|  |  |
| Travis Switchgear  MA-32512, 25 kV, 150 kV BIL, vertical break | 1. To obtain experience.  2. Insulated interphase and control rods required when used on wood structures. |
|  |  |

(L) Means full-load interrupter accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

ci-1

July 2009

ci - Clevis, thimble

Rated Strength

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | 20,000 lbs. | 40,000 lbs. | 50,000 lbs. |
|  |  |  |  |
| Joslyn (Flagg) | PA271 | PA272B | - |

cj-1

August 2018

cj - Pole Ground Wire

Soft annealed iron, BB Grade, class C galvanizing

(For pole protection only)

Size

1.15 Ohms/1000 ft., max.

|  |  |
| --- | --- |
| Manufacturer |  |
|  |  |
| Florida Wire and Cable | 3-wire, 5/16 inch |
| Indiana Steel and Wire | 3-wire, 5/16 inch |
| National Strand Products | 3-wire, 5/16 inch |
| Southwire | 3-wire, 5/16 inch |
|  |  |

Copper, soft annealed solid

ASTM Specification B3

Manufacturer

(See page av-2)

Aluminum (for above ground use only)

Hard-drawn

Manufacturer

(See page av-1)

Aluminum Alloy (for above ground use only)

|  |  |
| --- | --- |
| Manufacturer | Type |
|  |  |
| Alcan Cable | 6201 |
| American Electrical | 6201 |
| Southwire | 6201 |

Copper-Clad Steel, Annealed 40 percent Conductivity

|  |  |
| --- | --- |
| Manufacturer | Sizes |
|  |  |
| AFL Copperclad | No. 6, No. 4., No. 2 |
|  |  |
| Copperweld Bimetallics, LLC\* | No. 6 AWG  No 4 AWG Stranded (7x0680”)  No. 4 AWG  No. 2 AWG Stranded (7x0860”)  No. 2 AWG  7 No. 10 AWG  2/0 (19x0860” & 7x1379”) |

\* Theft deterrent versions, both poly-jacketed and camouflaged are acceptable.

ck-1

July 2009

ck - clamp, anchor rod bonding

For Standard and Drive Type Rods

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Diam. of Rod | Type of Eye | 5/8" | 3/4" | 1" |
|  |  |  |  |  |
| C & R Products | Single | CRBC-1 | CRBC-1 | CRBC-1 |
|  | Twin | CRBC-2 | CRBC-2 | CRBC-2 |
|  | Triple | - | CRBC-3 | CRBC-3 |
|  |  |  |  |  |
| Hubbell (Chance) | Single | G5060 | G5060 | G5060 |
|  | Twin | G5061 | G5061 | G5061 |
|  | Triple | - | G5063 | G5063 |
|  |  |  |  |  |
| Joslyn | Single | 3230 | 3230 | 3230 |
|  | Twin | 3231 | 3231 | 3231 |
|  | Triple | - | 3233 | 3233 |
|  |  |  |  |  |
| Kortick | Single | K3147 | K3147 | - |
|  | Twin | - | K3148 | K3148 |
|  | Triple | - | K3149 | K3149 |
|  |  |  |  |  |
| Line Hardware | Single | RBC-100 | RBC-100 | RBC-100 |
|  | Twin | RBC-200 | RBC-200 | RBC-200 |
|  | Triple |  | RBC-300 | RBC-300 |
|  |  |  |  |  |
| MacLean (Continental) | Single | UCG5060 | UCG5060 | - |
|  | Twin | - | UCG5061 | UCG5061 |
|  | Triple | - | UCG5063 | UCG5063 |
|  |  |  |  |  |
|  |  |  |  |  |

For Power Installed Screw Anchors

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| C & R Products | Single | CRBC-4 | CRBC-5 | - |
|  |  |  |  |  |
| Hubbell (Chance) | Single | G5067 | G5068 | - |
|  |  |  |  |  |
| Joslyn | Single | J26714 | J26715 | - |
|  |  |  |  |  |
| Line Hardware | Single | RBC-400 | RBC-500 | - |

cm-1

June 2012

cm - Insulator, Spool

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | Service | |
| Type: | Secondary (Wet Process) | | Wet Process | Dry Process |
|  |  |  |  |  |
| Groove Diameter: | 1-3/4" | 3" | 1-3/8" | 1-3/8" |
| ANSI Class | 53-2 | 53-4 | 53-1 | NA |
|  |  |  |  |  |
| Cooper Power Systems | DE4S3 | DE5S3 | DE2S2 | DE2S1 |
|  |  |  |  |  |
| Gamma Insulators Corp. | 8442-70 | 8444-70 | 8441-70 | - |
|  |  |  |  |  |
| Hughes | 2102 | - | - | - |
|  |  |  |  |  |
| ICB | ICB 532 | ICB 534 | ICB 531 | - |
|  |  |  |  |  |
| Joslyn | - | J0101A | J150A | J100A |
|  |  |  |  |  |
| Kortick | K516 | K522 | K513 | K514 |
|  |  |  |  |  |
| MacLean (Continental) | U205 | U31221 | U208 | U207 |
|  |  |  |  |  |
| Porcelain Products (Knox) | 5101 | 5119 | 5107 | 5207 |
|  |  |  |  |  |
| M.D. Henry Company, Inc. | 1082 | - | - | - |
|  |  |  |  |  |
| Victor Insulators, Inc. | 2012, VI 2612 | 2026, VI 2626 | 2011, VI2611 | - |

cm-2

October 2015

cm – Insulators, spool, composite/polymer

|  |  |  |  |
| --- | --- | --- | --- |
|  | ANSI Class | | |
| Manufacturer | 53-1 | 53-2 | 53-4 |
|  |  |  |  |
| Hendrix Wire and Cable | - | HPI-53-2 | - |
|  |  |  |  |
| Hubbell (Chance) | - | C909-1032P | - |
|  |  |  |  |
| Preformed Line Products | - | IP-53-2 | - |
|  |  |  |  |

cp-1

November 2014

cp - Deadend, Compression Type

ACSR

|  |  |  |
| --- | --- | --- |
| Conductor Size | AFL | Burndy |
|  |  |  |
| 1/0 | Order by |  |
| 2/0 | Conductor | Type Y-W |
| 3/0 | Size and | " |
| 4/0 | Stranding | " |
|  |  | " |
|  |  |  |
| 266.8 kcmil 18/1 |  |  |
| 336.4 kcmil 18/1 |  |  |
| 477 kcmil 18/1 |  |  |
|  |  |  |
|  |  |  |
| 266.8 kcmil 26/7 | 2-piece |  |
| 336.4 kcmil 26/7 | alloy | Type Y-W |
| 477 kcmil 26/7 | compression | Type YTW |
| 556.5 kcmil 26/7 | Type VES or | " |
| 795 kcmil 26/7 | HES | " |
| 954 kcmil 54/7 | " | " |
|  |  | " |

|  |  |  |  |
| --- | --- | --- | --- |
| Conductor Size | Hubbell (Anderson) | Hubbell (Fargo) | Kearney/Cooper Power Systems |
|  |  |  |  |
| 1/0 | VCD-50R | SEDA-8129 | 104000 |
| 2/0 | thru | SEDA-7729 | thru |
| 3/0 | VCD-61R | SEDA-7829 | 104000-03 |
| 4/0 | " | SEDA-7929 | " |
|  |  |  |  |
|  |  |  |  |
| 266.8 kcmil 18/1 | VCD-80-R |  |  |
| 336.8 kcmil 18/1 | VCD-80-R |  |  |
| 477 kcmil 18/1 | VCD-812-R |  |  |
|  |  |  |  |
|  |  |  |  |
| 266.8 kcmil 26/7 | VCD-831-1-RM | Uni-Grip | 104000-05 |
| 336.4 kcmil 26/7 | VCD-831-1-RM | one die | thru |
| 477 kcmil 26/7 | VCD-832-2-RM | system | 104000-14 |
| 556.5 kcmil 26/7 | VCD-833-3-RM | Order by | " |
| 795 kcmil 26/7 | VCD-835-4RM | conductor size |  |
| 954 kcmil 54/7 | VCD-835-4RM | and stranding |  |

NOTE: These compression deadends are acceptable when installed using tools and dies in accordance with the deadend manufacturer's recommendations.

cp-1.1

September 2014

cp - Deadend, Compression Type

ACSR

|  |  |  |
| --- | --- | --- |
| Conductor Size | DMC Power |  |
|  |  |  |
| 1/0 | - |  |
| 2/0 | - |  |
| 3/0 | - |  |
| 4/0 | - |  |
|  |  |  |
|  |  |  |
| 266.8 kcmil 18/1 | Order by Conductor Size and Kit Pieces. |  |
| 336.4 kcmil 18/1 |  |
| 477 kcmil 18/1 |  |
|  |  |
|  |  |  |
| 266.8 kcmil 26/7 | One-piece |  |
| 336.4 kcmil 26/7 | Alloy |  |
| 477 kcmil 26/7 | Swage |  |
| 556.5 kcmil 26/7 | Full Tension Compression Type |  |
| 795 kcmil 26/7 |  |
| 954 kcmil 54/7 |  |
|  |  |  |

NOTE: These compression deadends are acceptable when installed using tools and dies in accordance with the deadend manufacturer's recommendations.

cp-2

July 2009

cp - Deadend, Compression Type

ACSR

Adjustable

|  |  |
| --- | --- |
| Hubbell (Fargo) | Order by conductor size and stranding |

Aluminum Alloy

(6201 and 5005)

|  |  |
| --- | --- |
| Conductor Size: | 4 thru 4/0 |
|  |  |
| Hubbell (Anderson) | Type VCD, Order by conductor size |

Copper

|  |  |  |  |
| --- | --- | --- | --- |
| Conductor Size: | 2 x 3 | 4 | 6 |
|  |  |  |  |
| National Tel. Supply | 71-258/3X | 71-204-P | 71-162-J |

Copperweld-Copper

|  |  |  |
| --- | --- | --- |
| Conductor Size: | 6A | 8A |
|  |  |  |
| National Tel. Supply | 71-6A-P | 71-8A-P |

NOTE: These deadends are acceptable when installed with tools and dies in accordance with the deadend manufacturer's recommendations.

Conditional List

cp(1)

July 2009

cp - Deadend, compression type

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Burndy  AWAC 4-4/3 YTW7M10T  AWAC 2-4/3 YTW7M9T  AWAC 1/0-4/3 YTW7M7T | To obtain experience. |
|  |  |

NOTE: These deadends are acceptable when installed with tools and dies in accordance with the deadend manufacturer's recommendations.

Conditional

cp(2)

April 2015

cp –Dead-end, compression

For use with High Temperature Conductors

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| AFL  Dead-end fitting  To be used with 3M High Temperature Conductors ACCR (Aluminum Conductor Composite Reinforced) | 1. To obtain experience. 2. Use high temperature accessories approved by the manufacturer and accepted by RUS |
|  |  |
| Burndy/Hubbell Dead-end Assembly  To be used with CTC Global High Temperature Conductors ACCC (Aluminum conductor Composite Core) | Same as above. |
|  |  |
| Preformed Line Products (PLP)  Thermolign Suspension  To be used with 3M High Temperature Conductors ACCR (Aluminum Conductor Composite Reinforced) | Same as above. |
|  |  |

NOTE: These compressions are acceptable when installed using tools and dies in accordance with the conductor’s manufacturer's recommendations.

cq-1

July 2009

cq - Deadend, Secondary

(For use on secondary deadends only)

Copper

Offset Compression

|  |  |  |
| --- | --- | --- |
| Conductor Size: | 4 | 6 |
|  |  |  |
| National Telephone Supply | 91-204-P | 91-162-J |

Copperweld-Copper

Offset Compression

|  |  |  |
| --- | --- | --- |
| Conductor Size: | 6A | 8A |
|  |  |  |
| National Telephone Supply | 91-6A-P | 91-8A-P |

Copperweld-Copper

Automatic Deadend

|  |  |  |
| --- | --- | --- |
| Conductor Size: | 6A | 8A |
|  |  |  |
| Hubbell (Fargo) | GD-113 | GD-112 |
|  |  |  |
| MacLean (Reliable) | 47FD | - |

cr-1

July 2009

cr - Bracket, Angle Suspension

Applicable Specifications: "RUS Specification for Angle Suspension Brackets," DT-4

|  |  |  |
| --- | --- | --- |
| Manufacturer. | Distribution 5/8" Diam. | Transmission 3/4" Diam. |
|  |  |  |
| Hubbell (Chance) | - | 5728 |
|  |  |  |
| Joslyn | - | J7936 |
|  |  |  |
| Kortick | K6231 | K6230 |
|  |  |  |
| MacLean (Continental) | U545 | U546 |
|  |  |  |
|  |  |  |

cs-1

July 2009

cs - Bracket, Pole Top Pin

For Transmission and 24.9/14.4 kV Distribution

Applicable Specifications: "RUS Specifications for Pole Top Brackets for Channel Type Pins," D-14

|  |  |
| --- | --- |
|  |  |
| Hubbell (Chance) | 2157 |
| Kortick | K8130 |
| MacLean (Continental) | U36690 |
|  |  |

ct-1

July 2009

ct - Plate, Double Arming

Transmission

|  |  |  |
| --- | --- | --- |
| Manufacturer | 4" x 1/2" x 24" | 4" x 1/4" x 17" |
|  |  |  |
| Hubbell (Chance) | 5844 | 5819 |
|  |  |  |
| Joslyn | J1600 | - |
|  |  |  |
| Kortick | K1454 | K1465 |
|  |  |  |
| Line Hardware | - | DAP-17 |
|  |  |  |
| MacLean (Continental) | U4117 | - |
|  |  |  |
|  |  |  |
|  |  |  |

cu-1

January 2016

cu – 26 inch Brace, crossarm (side-mounted)

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer . | Douglas Fir or Southern Yellow Pine | Apitong | Fiber Reinforced Plastic |
| Aluma-Form2 | - | AF626 | - |
| Barfield Mfg. | BAB-626 | - | - |
| Brooks | 58128 | - | - |
| Dulmison | - | - | CAB-28 |
| Hatheway Patterson | 7026 | - |  |
| Hughes Brothers | 2023 | - | 533 |
| Joslyn | J5526 | - |  |
| MacLean (Continental) | - | - | CRB-28 |
| Geotek (PUPI) | - | - | B3818SM |

Note: Braces listed above have 26-inch hole spacing. They are to be used in place of the flat steel braces previously listed on page h.

cu-2

January 2016

cu – 60 inch Brace, crossarm (underarm)

|  |  |  |
| --- | --- | --- |
| Span, inches: | 60 | 60 |
| Drop, inches: | 18 | 30 |
| Manufacturer . |  | |
| Aluma-Form | 6018 | 6030 |
| Barfield Mfg. | BAR-6018 | BAR-6030 |
| Brooks | 446-60-18 | 446-60-30 |
| Cox Industries | C-6018 | C-6030 |
| Dis-Tran | DT-60R | - |
| Hatheway Patterson | 320-R | 325-R |
| Hughes Brothers | 2045-CC | 2045-D |
| Joslyn | J4760R | J4730RW |
| Pennington | 15018 | 15030 |
| Geotek (PUPI)\* | B6018BM | B6030BM |
| Utilities Structures Eng. Inc. | CU-60-18 | CU-60-30 |

\*Denotes Fiber Reinforced Plastic, all others are wood

cu-3

January 2016

cu – Bracket, Crossarm, center mount

|  |  |
| --- | --- |
| Manufacturer | Catalog # |
|  |  |
| Brooks Manufacturing Co. | REA Type 01 FSNP-BBA  REA Type 02 FSNP-BBA  REA Type 03 FSNP-BBA  REA Type 04 FSNP-BBA  REA Type 05 FSNP-BBA  REA Type 14 FSNP-BBA  REA Type 22 FSNP-BBA |
|  |  |
|  |  |

cx-1

July 2009

cx - Splice, oval tube

Copper

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Conductor Size: | 0 x 7 | 2 x 3 | 4 | 6 |
|  |  |  |  |  |
| National Tel. Supply | 464 | 463 | 459 | 457 |

Copperweld-Copper

|  |  |  |
| --- | --- | --- |
| Conductor Size: | 6A | 8A |
|  |  |  |
| National Tel. Supply | 460 | 459 |
|  |  |  |

cy-1

November 2014

cy - Splice, Compression

ACSR

|  |  |  |  |
| --- | --- | --- | --- |
| Conductor |  |  |  |
| Size | AFL | Blackburn | Burndy |
| 4 6/1 | 2-piece |  | "Unisplice" |
| 4 7/1 | Order | Type RC | (1-piece) |
| 2 6/1 | by | 1-piece | or Y-S |
| 2 7/1 | Conductor | Order | (2-piece) |
| 1/0 | Size | by | Order by |
| 2/0 | and | Conductor | Conductor |
| 3/0 | Stranding | Size | Size and |
| 4/0 | " | and | Stranding |
|  |  | Stranding |  |
| 266.8 kcmil 18/1 |  |  |  |
| 336.4 kcmil 18/1 |  |  |  |
| 477 kcmil 18/1 |  |  |  |
|  |  |  |  |
| 266.8 kcmil 26/7 | 2-piece |  | 2-piece |
| 336.4 kcmil 26/7 | Compression |  | Type YTS |
| 477 kcmil 26/7 | Alloy Type |  | " |
| 556.6 kcmil 26/7 | CJ |  | " |
| 795 kcmil 26/7 |  |  | " |
| 954 kcmil 54/7 |  |  | " |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Conductor |  |  |  |  |
| Size | Hubbell(Anderson) | Hubbell (Fargo) | Kearney/Cooper Power Systems | |
|  | VC-36R |  | 2 pc | 1 pc |
| 4 6/1 | VC-36R | - | - | OH4-61-71AS |
| 4 7/1 | VC-36R | - | - | OH4-61-71AS |
| 2 6/1 | VC-36R | - | - | OH2-61-71AS |
| 2 7/1 | VC-50R | - | - | OH2-61-71AS |
| 1/0 | VC-50R | TJA-8129 | OH1/0-61A | OH1/0-61AS |
| 2/0 | VC-61R | TJA-7729 | OHR2/0-61A | - |
| 3/0 | VC-61R | TJA-7829 | OHR3/0-61A | - |
| 4/0 | - | TJA-7929 | HR4/0-61A | - |
|  | VC-80-R |  |  |  |
| 266.8 kcmil 18/1 | VC-80-R | - | - | - |
| 336.4 kcmil 18/1 | VC-90-R | - | - | - |
| 477 kcmil 18/1 | - | - | - | - |
|  | VC-831-1-RM |  |  |  |
| 266.8 kcmil 26/7 | VC-831-1-RM | Uni-grip | HR-266-267A | - |
| 336.4 kcmil 26/7 | VC-832-2-RM | one die | HR336-267A | - |
| 477 kcmil 26/7 | VC-833-3-RM | system | HR-477-267A | - |
| 556.5 kcmil 26/7 | VC-835-4RM | Order by | HR-556-267A | - |
| 795 kcmil 26.7 | VC-835-4RM | conductor size | - | - |
| 954 kcmil 54/7 | - | and stranding | - | - |
|  |  |  |  |  |

NOTE: These splices are acceptable when installed with tools and dies in accordance with the splice manufacturer's recommendations.

cy-1.1

July 2009

cy - Splice, Compression

ACSR

|  |  |  |  |
| --- | --- | --- | --- |
| Conductor Size | Nat. Tel. Supply | Homac | ESP |
|  |  |  |  |
| 4 6/1 | "Nicopress" | "Tension | FTR-4 |
| 4 7/1 | (1-pc. or 2-pc.) | splicer" | FTR-4 |
| 2 6/1 | Order by Conductor | (1-piece or | FTR-2 |
| 2 7/1 | Size and | 2-piece | FTR-2.5 |
| 1/0 | Stranding | Order by | FTR-1/0 |
| 2/0 | 2-pc. | Conductor | FTR-2/0.5 |
| 3/0 | " | Size and | FTR-3/0 |
| 4/0 | " | Stranding | FTR-4/0 |
|  |  |  |  |
|  |  |  |  |
| 266.8 kcmil 26/7 | " | 2-pc. | - |
| 336.4 kcmil 26/7 | " | " | - |
| 477 kcmil 26/7 | " | " | - |
| 556.5 kcmil 26/7 | " | " | - |
| 795 kcmil 26/7 | - | - | - |
| 954 kcmil 54/7 | - | - | - |
|  |  |  |  |

NOTE: These splices are acceptable when installed with tools and dies in accordance with the splice manufacturer's recommendations.



cy-2

July 2009

Splice, Compression

Copper and Copperweld-Copper

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Conductor Size | Burndy | Homac | Hubbell (Anderson) | Kearney/Cooper Power Systems | National Tel. Supply |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| 6 cu | YDS6W | J2C3 | VCC-28 | OH6C | 1-162/J |
|  |  |  |  |  |  |
| 4 cu | YDS4W | L2C5 | VCC-28 | OH4C | 1-204/P |
|  |  |  |  |  |  |
| 2 x 3 cu | YDS2C-3 | S2C7 | - | OH2-3CX | 1-258/3X |
|  |  |  |  |  |  |
| 0 x 7 cu | YDS25 | U2C9 | - | OH1-7C | 1-325/7F6 |
|  |  |  |  |  |  |
| 8A CWC | YDS8KT | L2E1 | VCC-28 | OHR8ACW | 1-8A-P |
|  |  |  |  |  |  |
| 6A CWC | YDS6KT | L2E3 | VCC-28 | OHR6ACW | 1-6A-P |
|  |  |  |  |  |  |
| 4A CWC | YDS4KT | Q2E5 | VCC-37 | OHR4ACW | 1-4A-X |
|  |  |  |  |  |  |
| 2A CWC | - | U2E7 | VCC-43 | - | - |
|  |  |  |  |  |  |

NOTE: These splices are acceptable when installed with tools and dies in accordance with the splice manufacturer's recommendations.

cy-3

September 2014

cy - Splice, compression

(one-piece)

(For 6201 and 5005 Aluminum Alloy Conductors)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Conductor Size | **Burndy** | **Blackburn** | **Homac** | **Hubbell (Anderson)** |
| #4  thru  4/0 | "Unisplice" | Type RC | "Tension Splicer" | Type VC-R |
| Order by Conductor | Order by Conductor | Order by Conductor | Order by Conductor |
| Size and Stranding | Size and Stranding | Size and Stranding | Size and Stranding |
|  |  |  |  |
| **ESP** |  |  |  |
| Type FTR |  |  |  |
| Order by Conductor |  |  |  |
| Size and Stranding |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| 336.4  thru  2500 Kcmil | **DMC Power** |  |  |  |
| Full Tension Compression One-piece (swage) High Strength Type 6000 Series.  Order by Conductor Size & Kit pieces. |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |

NOTE: These splices are acceptable when installed with tools and dies in accordance with the splice manufacturer's recommendations.

Conditional List

cy(1)

November 2014

cy - Splice, compression

1-piece splice for ACSR

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| \*AFL  "Jiffy Joint" | To obtain experience. |
|  |  |

1-piece splice for AWAC

|  |  |
| --- | --- |
| Burndy  AWAC 4-4/3 YDS7M10T  AWAC 2-4/3 YDS7M9T  AWAC 1/0-4/3 YDS7M7T | To obtain experience. |
|  |  |

\*Satisfactory for use with 6201 and 5005 all aluminum alloy conductor through 4/0 and 19 strand conductors of sizes 266.8 kcmil and 477 kcmil.

NOTE: These splices are acceptable when installed using tools and dies in accordance with the splice manufacturer's recommendations.

Conditional

cy(2)

April 2015

cy -Splice, compression, high temperature

For use with High Temperature Conductors

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| AFL  Fujikura Limited (AFL) Splice, Compression  To be used with 3M High Temperature Conductors ACCR (Aluminum Conductor Composite Reinforced) | 1. To obtain experience. 2. Use high temperature accessories approved by the manufacturer and accepted by RUS |
|  |  |
| Burndy/Hubbell Splice, compression  To be used with CTC Global High Temperature Conductor, ACCC (Aluminum Conductor Composite Core) | Same as above. |
|  |  |
| Preformed Line Products (PLP)  Thermolign Full Tension Splice  To be used with 3M High Temperature Conductors ACCR (Aluminum Conductor Composite Reinforced) | Same as above. |
|  |  |

NOTE: These splices are acceptable when installed using tools and dies in accordance with the conductor’s manufacturer's recommendations.

cz-1

November 2014

cz - Splice for Steel Strand (Overhead Ground Wire)

Compression

Single Sleeve Only

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
|  | High Strength Steel | | Extra High Strength | | | Aluminum Clad Steel | | |
|  | 3/8" | 7/16" | 5/16" | 3/8" | 7/16" | 7 No. 9 AWG | 7 No. 8 AWG | 7 No. 7 AWG |
|  |  |  |  |  |  |  |  |  |
| AFL |  |  |  | 4914.386 | 4916.453 |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Burndy | YTS375E | YTS438E |  |  |  | YDS7M9T | YDS7M8T | YDS7M7T |
|  |  |  |  |  |  |  |  |  |
| Hubbell (Fargo) | 81l425 | 8ll630 | 81l222 | 81l425 | 81l630 | 811425 | 811427 | 811630 |
|  |  |  |  |  |  |  |  |  |
| Kearney | HR-3/8-3-7S |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| National.Tel.Supply | 5-7/12OG92 | 5-7/145J22 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Steel and Aluminum Sleeves |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Homac | 28414 |  |  |  |  |  |  |  |
|  | (Two piece) |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Automatic |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| MacLean (Reliable) | 5002 | 5043 | 5041 | 5042 | 5043 | 5042 | 5042 | 5043 |
|  |  |  |  |  |  |  |  |  |
| Bolted Type |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Electroline | GD-537 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Formed Type |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Helical Line Products | HS-310-3/8" | HS-311-7/16" |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Hubbell (Chance) | 10SS 3/8C | 16SS 7/16C | 6SS 5/16C | 10SS 3/8C | 16SS 7/16C |  |  |  |
|  |  |  |  |  |  |  |  |  |

da-1

July 2009

da - Bracket, insulated

|  |  |  |  |
| --- | --- | --- | --- |
|  | Bracket without Insulator | Bracket with 1-3/4” Spool Insulator | Bracket with 3” Spool Insulator |
|  |  |  |  |
| Hubbell (Chance) | 0327 | 0327-C909-1032 | 0327-C909-1304 |
| Hughes Brothers | 1077LI | 1077SI | 1077I |
| Joslyn | J1300 | - | - |
| Kortick | K9278 | K9081 | K9082 |

dh-1

January 2012

dh - Ground, pole

(For system grounds, see ground rods on page ai)

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Galvanized Steel Plate With Insulated Copper Lead | |
|  |  |
| (For connecting to a copper or aluminum ground wire above ground.) | |
|  |  |
| Line Hardware | PGPS-56CL8 |
|  |  |
| Galvanized Steel Plate with Connector | |
| (For connecting to a galvanized iron ground wire) | |
|  |  |
| Line Hardware | PGPS-56C |
|  |  |
| Copper Plate | |
|  |  |
| Blackburn | GP-100 |
| Drabco | D 101 |
| Eritech | EGP-100 |
| Galvan Industries, Inc. | GP-100 |
| Homac | 5575 |
| Joslyn | J9196 |
| Line Hardware | PGPC-56 |
| Utilco | UGP-72\* |
|  |  |

\* Plate area exposed to the soil is at least 0.046 m2 or 0.5 ft2;

Plate thickness is at least 1.5 mm or 0.06 in.

dl-1

July 2009

dl - Pipe Spacer

3/4" diameter x 1-1/2" length

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Hubbell (Chance) | 2237 |
|  |  |
| Joslyn | J2031 |
|  |  |
| MacLean (Continental) | U36695 |
|  |  |
|  |  |

dm-1

April 2016

dm - Bracket, transformer

(For cluster mounting of two or three transformers on pole)

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Transformer Size, kVA | Band Type | Through Bolt Type |
|  |  |  |  |
| Aluma-Form | 3-50 | 6M3-6 | 3MW-24-M |
|  | 75-100 | 15M3-6 | 11MW-24 |
|  |  |  |  |
| Barfield Manufacturing Co. | 3-50 | BMAC-366 | - |
|  | 75-100 | BMAC-3156 | - |
|  |  |  |  |
| Dixie | 3-25 | - | DW-50 |
|  | 37-1/2-50 | - | DW-50 |
|  | 75-100 | - | DW-167 |
|  |  |  |  |
| Hubbell (Chance) | 3-50 | C6M3-6 | C3MW24M |
|  | 75-100 | C15M3-6 | C11MW24L |
|  |  |  |  |
| Hughes | 3-25 | - | 3021 |
|  | 37-1/2-50 | - | 3020 |
|  | 75-100 | - | 3020 with adapter plates and back plate |
|  |  |  |  |
| Joslyn | 3-25 | - | J6865 |
|  | 37-1/2-50 | - | J6864 |
|  | 75-100 | - | J6866 |
| MacLean Power Systems | 3-50 | - | M3MW-24-M |
|  | 75-100 | M15M3-6 | M11MW-24 |
|  |  |  |  |
|  |  |  |  |
| Turner | 3-25 | - | 305-25 |
|  | 37-1/2-50 | - | 305-100 |
|  | 75-100 | - | 305-100 |
|  |  |  |  |

For mounting of two transformers

|  |  |  |  |
| --- | --- | --- | --- |
| Aluma-Form | 3-100 | - | DM-4M2 |
|  | 3-50 | - | DM-2M2 |
|  |  |  |  |
| Hubbell (Chance) | 3-100 | - | C212-0001 |
|  |  |  |  |
| Hughes | 3-50 | - | 3022 |
|  |  |  |  |
| MacLean Power Systems | 3-50 | - | MDM-2M2 |
|  |  |  |  |
| Turner | 3-50 | - | 205-25 |

dp-1

April 2014

dp - Clamp, ground wire

Transmission

For grounding steel towers and substation structures

Bolt Included

(For use with copper ground wires)

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| TE Connectivity - Energy | 81416-3 |
|  |  |
| Penn-Union | GH-30-C-A1 |
|  |  |
| Royal Switchgear | 12202-T (Type LCS) |
|  |  |
| Hubbell Power Systems | GC143AG2 |
|  |  |

For use in: Pole Grounding Assembly TM-9

Capacitor Assemblies M9-11, M9-12 and M9-13

|  |  |  |
| --- | --- | --- |
| Manufacturer | For 5/8" Bolt | For 3/4" Bolt |
|  |  |  |
| Joslyn | J1163 | J1164 |
|  |  |  |
| MacLean (Continental) | SBL-33 | - |
|  |  |  |

Conditional

dp(1)

January 2010

dp – Clamp, ground wire

Transmission

For grounding steel towers and substation structures

Bolt Included

(For use with copper ground wires)

|  |  |  |
| --- | --- | --- |
| Manufacturer | Catalog Number | Conditions |
|  |  |  |
| DMC Power | GC910B-\*\*\*T  (single hole pad for copper wire) | To obtain experience. |
|  |  |  |
| For use in: Pole Grounding Assembly TM-6, TM-7, TG-15, TG-17, TG-25, TG-27, TG-28, TG-29, TG-35  Capacitor Assemblies Y3.1, Y3.2, Y3.3, Y3.4 | | |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

dq-1

July 2009

dq - Eye Screw, Elliptical

For use in deadending triplex type service cable, Drawing K2.3.

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Joslyn | J8930 |

dr-1

June 2013

dr – Clevis, conduit, insulated

For use in deadending triplex service cable, Drawing K3.2.

Applicable Specifications: “RUS Specifications for Insulated Conduit Clevises and Conduit Wire-holders for Pipe Mast Deadends,” D-16

|  |  |
| --- | --- |
| Manufacturer | Catalog No. |
| Joslyn | J0311\* |
| Hubbell Power Systems, Inc. | DW8M1 |

\*Insulator not included. See page cm for spool insulator.

ds-1

February 2015

ds - Wireholder, conduit

For use in deadending open wire services on pipe masts, Drawing K3.1.

Applicable Specifications: "RUS Specifications for Insulated Conduit Clevises and Conduit Wireholders," D‑16

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Hubbell (Chance) | C207-0075, C2070144 |

Conditional List

ds(1)

July 2009

ds - Wireholder, conduit

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Joslyn J0588Z (nylon alloy) | To obtain experience. |
|  |  |
|  |  |

dt-1

July 2009

dt - Deadend, service

For deadending triplex type service cable, Drawing K2.2.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Catalog Number | |
| Manufacturer | ACSR Size | Wedge Type | Formed Type |
|  |  |  |  |
| Blackburn | 4 | W62-1 | - |
|  |  |  |  |
| Dulmison | 4 | - | SG0570 |
|  | 2 | - | SG0735 |
|  | 1/0 | - | SG0915 |
|  | 2/0 | - | SG1020 |
|  |  |  |  |
| Helical Line Products | 4 | - | HSG-514 |
|  | 2 | - | HSG-518 |
|  | 1/0 | - | HSG-522 |
|  |  |  |  |
| MacLean (Reliable) | 4 | 7195 | - |
|  | 2 | 7187 | - |
|  | 1/0 | 7287 | - |
|  |  |  |  |
| Penn-Union | 4 | WDC-2S | - |
|  |  |  |  |
| Preformed Line Products | 4 | - | SG-4502 |
|  | 2 | - | SG-4504 |
|  | 1/0 | - | SG-4506 |
|  | 2/0 | - | SG-4507 |
|  | 3/0 | - | SG-4508 |
|  | 4/0 | - | SG4509 |

du-1

July 2009

du - Link, Extension

DISTRIBUTION

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Joslyn (Flagg) | PA319 |
| Hubbell (Chance) | C207-0112 |
| MacLean (Bethea) | LCE-14 |
| MacLean (Continental) | CEL-14 |

TRANSMISSION

(25,000 lbs. min. strength)

|  |  |
| --- | --- |
| Joslyn | J26082 |
|  |  |
| MacLean (Bethea) | ASM 7209-l-BC |
|  |  |

Guy Extension Link

(For "H" Structure)

|  |  |  |
| --- | --- | --- |
| Manufacturer | One Guy Attachment | Two Guy Attachment |
|  |  |  |
| Joslyn | J22421 | J26025 |

NOTE: The distribution extension links may be substituted for anchor shackle (Item bo), eye bolt (Item o) and eye nut (Item aa) for both small and large conductor drawings shown in RUS Form 803 and RUS Bulletin 50-3 at the option of the owner.

Conditional List

du(1)

July 2009

du - Connecting Links for Pole Bands

Conditions - To obtain experience.in conjunction with pole bands [Item fv(1)]

For Use With Medium Duty Pole Bands

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Link to Insulators | Size | Minimum Strength Rating |
|  |  |  |  |
| Hughes Bros. | 3176 | 3/8"x3"x9-1/2" | 25,000 lbs. |
| Joslyn | J26034 | 3/8"x3"x9-1/2" | 25,000 lbs. |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Link to Guy |  |  |
|  |  |  |  |
| Hughes Bros. | 3154 | 3/8"x2"x9-1/2" | 36,000 lbs. |
| Joslyn | J26035 | 3/8"x3"x9-1/2" | 36,000 lbs. |
|  |  |  |  |

For Use With Heavy Duty Pole bands

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Link to Insulators | Size | Minimum Strength Rating |
|  |  |  |  |
| Hughes Bros. | 3157 | 3/8"x3"x12" | 36,000 lbs. |
| Joslyn | J26035 - 2 | 3/8"x3"x9-1/2" | 36,000 lbs. |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Link to Guy |  |  |
|  |  |  |  |
| Hughes Bros. | 3157 | 3/8"x3"x12" | 51,000 lbs. |
| Joslyn | J26037 | 1/2"x3"x12" | 51,000 lbs. |
|  |  |  |  |

dy-1

June 2010

dy - Bolt, eye, double arming

Applicable Specification: ANSI C135.4, "Standards for Galvanized Ferrous Eye Bolts and Nuts for Overhead Line Construction."

Applicable Sizes 5/8 inch, 14 through 26 inch length

3/4 inch, 14 through 26 inch length

The following manufacturers have shown compliance with the applicable specifications:

|  |
| --- |
| Allied Bolt, Inc. |
| Hubbell (Chance) |
| Joslyn Manufacturing Company |
| Kortick Manufacturing Company |
| MacLean (Continental) |

dz-1

February 2011

dz - Clip, Guy Wire

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | 5/16" | 3/8" | 7/16" | 1/2" |
|  |  |  |  |  |
| Hubbell (Chance) | 6453 | 6454 | 6455 | 6456 |
| MacLean (Continental) | U4953 | U4954 | U4955 | U4956 |
|  |  |  |  |  |
|  |  |  |  |  |

ea-1

June 2012

|  |  |  |  |
| --- | --- | --- | --- |
| ea - Insulator and stud, post type, vertical | | | |
|  | | | |
| DISTRIBUTION (RUS Minimum Requirements) | | | |
|  |  |  |  |
| System voltage, kV: | 12.5/7.2 | 12.5/7.2 | 24.9/14.4 |
| Leakage, inches: | 7-1/2 | 10 | 15 |
| Cantilever strength (pounds): | 1875 | 1875 | 1875 |
| Flashover, dry, kV: | 65 | 70 | 95 |
| Flashover, wet, kV: | 40 | 50 | 65 |
|  |  |  |  |
| Gamma Insulators Corp. |  |  |  |
| 7" Stud | - | - | - |
| 1-3/4" Stud | 4315PX-70 | 4320PX-70 | 4327PX-70 |
|  |  |  |  |
| Grupo IUSA  No Stud | P-2025 | P-2025 | - |
|  |  |  |  |
| Lapp 7" Stud 1-3/4" Stud | 4415P 4315P | 4420P 4320P | 4427P 4327P |
|  |  |  |  |
| Newell Porcelain 7" Stud 1-3/4" Stud | - - | 43570-7040 43570-7010 | 47101-7040 47101-7010 |
|  |  |  |  |
| Porcelain Products (Knox) 7" Stud 1-3/4" Stud | 5115-6510 5115-6500 | 5120-6510 5120-6500 | 5127-6510 5127-6500 |
|  |  |  |  |
|  |  |  |  |

ea-1.1

June 2012

|  |  |  |  |
| --- | --- | --- | --- |
| ea - Insulator and stud, post type, vertical | | | |
| DISTRIBUTION or TRANSMISSION | | | |
|  |  |  |  |
| System voltage, kV: | 12.5/7.2 | 12.5/7.2 | 24.9/14.4 |
| Leakage, inches: | 7-1/2 | 10 | 15 |
| Cantilever strength (pounds): | 1875 | 1875 | 1875 |
| Flashover, dry, kV: | 65 | 70 | 95 |
| Flashover, wet, kV: | 40 | 50 | 65 |
|  |  |  |  |
|  |  |  |  |
| ANSI Class: | 57-2 | 57-3 | 57-4 |
| System voltage, kV: | 22 | 34.5 | 46 |
|  |  |  |  |
| Gamma Insulators Corp. |  |  |  |
| 7" Stud | - | - | - |
| 1-3/4" Stud | 9335X-70 | 9345X-70 | - |
|  |  |  |  |
| ICB 7" Stud 1-3/4" Stud | -  ICB 57-2 | -  ICB 57-3 | -  - |
|  |  |  |  |
| Lapp 7" Stud 1-3/4" Stud | 9435 9335 | 9445 9345 | 9455 9355 |
|  |  |  |  |
| Newell-PSN 7" Stud 1-3/4" Stud | 37620-7040 37620-7010 | 41640-7040 41640-7010 | 41650-7040 41650-7010 |
|  |  |  |  |
| Porcelain Products (Knox) 7" Stud 1-3/4" Stud | 5135-6512 5135-6502 | 5145-6512 5145-6502 | - - |
|  |  |  |  |

ea-2

July 2009

ea - Insulators, horizontal post type

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | 34.5 kV | 69 kV | 115 kV |
|  |  |  |  |
| Lapp | F-4745 | F-4788 | F-70147 |
|  |  |  |  |
| Locke | - | LS025l3 | LS050l3 |
|  |  |  |  |
| Newell-PSN | 43740-7700 | 43790-7700 47043-7700 | - |
|  |  |  |  |
| Victor Insulators, Inc. | 62356 | 62359 | - |

ea-3

July 2017

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ea - Insulator, post type | | | | |
|  | |  |  |  |  |
| ANSI Class: | | 57-1 | 57-2 | 57-3 | 57-4 |
|  | |  |  |  |  |
|  | |  |  |  |  |
| Eprecsa USA, LLC | | 13PD | 22PD | 33PD | - |
|  | |  |  |  |  |
|  | |  |  |  |  |

Conditional List

ea(1)

July 2009

ea - Insulator, post type

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Victor Insulators, Inc.  2120 (12.5/7.2 kV)  2127 (24.9/14.4 kV)  62055 (22 kV)  62056 (34.5 kV) | To obtain experience. |
|  |  |

Conditional List

ea(2)

December 2016

ea - Insulator, post type

(Composite/Polymer)

|  |  |  |
| --- | --- | --- |
| Manufacturer | ANSI Class | Conditions |
|  |  |  |
| Advanced Rubber Products |  |  |
| Vertical Post |  | To obtain experience. |
| ARP-LPCN-15SK | 51-1C |  |
| ARP-LPFN-15SK | 51-1F |  |
| ARP-LPFN-25SK | 51-2F |  |
| ARP-LPFN-35SK | 51-3F |  |
| ARP-LPFN-46SK | 51-4F |  |
|  |  |  |
| Hendrix Molded Products |  |  |
| Vertical Post |  | To obtain experience. |
| HPI-LP-9C | 51-1C |  |
| HPI-LP-9F | 51-1F |  |
| HPI-LP-11C | 51-2C |  |
| HPI-LP-11F | 51-2F |  |
|  |  |  |
| Hubbell Power Systems |  |  |
| Vertical Post Insulators |  | To obtain experience. |
| 80S0150F09 (15kV, without Stud) |  |  |
| 80S0250F09 (25kV, without Stud) |  |  |
| 80S0280F09 (35kV, without Stud) |  |  |
|  |  |  |
| K‑Line  Vertical Post  KL 15STFL (12.5/7.2 kV, with 7” Stud)  KL 15STFS (12.5/7.2 kV, with 1‑3/4” Stud)  KL 28STFL (24.9/14.4 kV, with 7” Stud)  KL 28STFS (24.9/14.4 kV, with 1‑3/4 Stud)  KL 35STFL (ANSI Class 51‑3F, with 7” Stud)  KL 35STFS (ANSI Class 51‑3F, with 1‑3/4” Stud)  KL 46STFL (ANSI Class 51‑4F, with 7” Stud)  KL 46STFS (ANSI Class 51‑4F, with 1‑3/4” Stud)  Horizontal Post  KL 46SHG (34.5 kV) |  | To obtain experience. |
|  |  |  |
| EMC Pacific PTY LTD |  |  |
| Vertical Post Insulators |  | To obtain experience. |
| LPI36-1100 PHCEP (15kV/ 25 kV/ 35kV, with 7” or 1-3/4” Stud) |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Conditional List

ea(2.1)

December 2016

ea - Insulator, post type

(Composite/Polymer)

|  |  |  |
| --- | --- | --- |
| Manufacturer | ANSI Class | Conditions |
|  |  |  |
| *GAMMA ‐ Corona* |  |  |
| Vertical Post |  | To obtain experience. |
| PL015 | 51-1F |  |
| PL028 | 51-2F |  |
| PL035 | 51-3F |  |
| PL045 | 51-4F |  |
|  |  |  |
|  |  |  |

Conditional List

ea(3)

July 2015

ea - Insulators, polymer horizontal post type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Polymer for Wood and Fiberglass Transmission Poles  (clamp end fittings and rigid curved base or bendable curved base for use for round poles) | | | | |
| **Voltage:** | 34.5 kV | 46 kV | 69 kV |  |
| **ANSI Class:** | 51-34 | 51-35 | 51-36 |  |
| **Rated SCL (lbs.):** | 2400 | 2400 | 2400 |  |
| **Rod diameter (inches):** |  |  |  |  |
|  |  |  |  |  |
| **Manufacturer** |  |  |  | **Conditions** |
|  |  |  |  |  |
| Hubbell | 80S0460100 | - | 80S0690100 | To obtain experience. |
| K-Line Insulators | KL46SHG12 | KL69SHPG12 | KL69SHP1G |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Polymer for Wood and Fiberglass Transmission Poles  (clamp end fittings and rigid curved base or bendable curved base for use for round poles) | | | | |
| **Voltage:** | 115 kV | 138 kV | 138 kV |  |
| **ANSI Class:** | 250-54 | 250-60 | 250-66 |  |
| **Rated SCL (lbs.):** | 2650 | 2300 | 2000 |  |
| **Rod diameter (inches):** | 2-1/2 | 2-1/2 | 2-1/2 |  |
|  |  |  |  |  |
| **Manufacturer** |  |  |  | **Conditions** |
|  |  |  |  | To obtain experience. |
|  |  |  |  |
|  |  |  |  |

Notes:

1. Flat base for use with flat surface poles
2. Universal base for flat as well as curved poles
3. Two hole blade end fitting available.

Conditional List

ea(4)

July 2015

**ea - Insulators, polymer horizontal post type**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Polymer for Steel and Concrete Transmission Poles  (with flat base or curved base for centrifugally spun concrete poles) | | | | | | |
| **Voltage:** | 34.5 kV and 46 kV | 69 kV | 115 kV | 138 kV | 138 kV |  |
| **ANSI Class:** | 51-36 | 250-41 | 250-60 | 250-66 | 250-75 |  |
| **Rated SCL (lbs.):** | 2400 | 3300 | 2650 | 2300 | 2000 |  |
| **Rod diameter (inches):** |  | 2-1/2 | 2-1/2 | 2-1/2 | 2-1/2 |  |
|  |  |  |  |  |  |  |
| **Manufacturer** |  |  |  |  |  | **Conditions** |
|  |  |  |  |  |  | To obtain experience. |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Polymer for Steel and Concrete Transmission Poles  (with flat base or curved base for centrifugally spun concrete poles) | | | | |
| **Voltage:** | 115 kV | 138 kV | 138 kV |  |
| **ANSI Class:** | 250-60 | 250-66 | 250-75 |  |
| **Rated SCL (lbs.):** | 4500 | 3900 | 3500 |  |
| **Rod diameter (inches):** | 3.0 | 3.0 | 3.0 |  |
|  |  |  |  |  |
| **Manufacturer** |  |  |  | **Conditions** |
|  |  |  |  |  |
|  |  |  |  |
|  |  |  |  |

\* Notes:

1. Flat base for use with flat surface poles
2. Universal base for flat as well as curved poles
3. Two hole blade end fitting available.

eb-1

September 2010

eb - Bracket, Pole Top

For Post type Insulators

DISTRIBUTION

|  |  |
| --- | --- |
|  |  |
| Hubbell (Anderson) (14.4 or 7.2 kV) | 84324-2000 |
| Hubbell (Chance) (14.4 or 7.2 kV) | 1B4 |
| Joslyn (Flagg) (14.4 or 7.2 kV) | P526 |
| Lapp (Line Ware) (14.4 or 7.2 kV) | 304043 |
| Line Hardware (l4.4 or 7.2 kV) | PTIB-375A |
| MacLean (Continental) (14.4 or 7.2 kV) | PTB-55-8 |
| M.D. Henry Company, Inc. (14.4 or 7.2 kV) | PT-8R |
|  |  |

TRANSMISSION

|  |  |
| --- | --- |
|  |  |
| Hubbell (Chance) | 1B4 |
| Joslyn (Flagg) | P532 |
| Lapp (Line Ware) | 304044 |
| MacLean (Continental) | PTB-66H |
|  |  |

ec-1

July 2009

ec - Bracket, Offset Neutral

|  |  |
| --- | --- |
|  |  |
| Hubbell (Chance) | C206-0004 |
| Joslyn | J2352 |
|  |  |

ed-1

July 2009

ed - Support, overhead ground wire

Applicable Specifications: "RUS Specifications for Overhead Ground Wire Support Brackets," T-2

|  |  |  |  |
| --- | --- | --- | --- |
| Pole top diameter, inches | 6-8 | 8-10 | 10-12 |
|  |  |  |  |
| Hubbell (Chance) | - | 5432 | 5432 |
|  |  |  |  |
| Hughes Brothers | - | 2859-12 | 2859-14 |
|  |  |  |  |
| Joslyn | - | J6394 | J6395 |
|  |  |  |  |
| Kortick | K3580 | K3581 | K3582 |
|  |  |  |  |
| MacLean (Continental) | UC1238 | UC1239 | UC1240 |

ef-1

July 2009

ef - Bolt, clevis

Applicable Specifications: "RUS Specifications for Clevis Bolts," DT-7

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Dia. (Inches) | 8” | 10” | 12” | 14” |
|  |  |  |  |  |  |
| Hubbell (Chance) | 5/8 | 15808 | 15810 | 15812 | 15814 |
|  | 3/4 | 15828 | 15830 | 15832 | 15834 |
|  |  |  |  |  |  |
| Joslyn | 5/8 | J7808 | J7810 | J7812 | J7814 |
|  |  |  |  |  |  |

eg-1

September 2011

eg - Plate, crossarm reinforcing

TRANSMISSION

For 5-5/8" x 7-3/8" crossarm

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Hubbell (Chance) | 4047 |
|  |  |
| Hughes Brothers | 1113.88 |
|  |  |
| MacLean (Continental) | U3838 |
|  |  |
| Brooks Manufacturing Co. | REA Type 01 NP |
| REA Type 02 NP |
| REA Type 03 NP |
| REA Type 04 NP |
| REA Type 05 NP |
| REA Type 05M NP |
| REA Type 14 NP |
| REA Type 22 NP |
|  |  |
| DIS-TRAN Wood Products, LLC | REA Type 01EP |
|  | REA Type 02EP |
|  | REA Type 03EP |
|  | REA Type 04EP |
|  | REA Type 05EP |
|  | REA Type 05MEP |
|  | REA Type 12EP |
|  | REA Type 14EP |
|  | REA Type 16EP |
|  | REA Type 21EP |
|  | REA Type 22EP |
|  | REA Type 31EP |
|  | REA Type 32EP |
|  | REA Type 41EP |
|  | REA Type 42EP |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

eh-1

July 2009

eh - Hook, ball

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Joslyn (Flagg) | 13400 |
|  |  |
| Hubbell (Anderson) | HB-30 |
|  |  |
| Lapp | 7055 |
|  |  |
| Lindsey | 3310 |
|  |  |
| Line Hardware | BH-30 |
|  |  |
| MacLean (Bethea) | BH-5 |
|  |  |
|  |  |
|  |  |

ei-1

July 2009

ei - Clamps, suspension with socket eye

ACSR with Straight or Formed Armor Rods

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |
|  | AWG | | | kcmil | | | | | |
|  | 1/0 & 2/0 | 3/0 | 4/0 | 266.8 | 336.4 | 477 | 556.5 | 795 | 954 |
|  |  |  |  |  |  |  |  |  |  |
| Iron or Steel Clamps | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| Hubbell (Anderson) | MS-82-S | -- | MS-104-S | MS-104-S | -- | -- | -- | -- | -- |
| Hubbell (Chance) | FGW4S | -- | -- | -- | -- | -- | -- | -- | -- |
| Lapp | 305743S | -- | -- | -- | -- | -- | -- | -- | -- |
| MacLean (Bethea) | FS-83-S | -- | -- | -- | -- | -- | -- | -- | -- |
|  |  |  |  |  |  |  |  |  |  |

ACSR with Straight or Formed Armor Rods

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  | |
|  | AWG | | kcmil | | | | | |
|  | 1/0 & 2/0 | 3/0 & 4/0 | 266.8 | 336.4 | 477 | 556.5 | 795 | 954 | |
|  |  |  |  |  |  |  |  |  | |
| Aluminum Alloy Clamp | | | | | | | | |
|  |  |  |  |  |  |  |  |  | |
| C & R | CRSC-1S | CRSC-2S | CRSC-3S | CRSC-3S | -- | -- | -- | -- | |
| Dulmison | -- | HSU | HSU | HSU | HSU | HSU | HSU | HSU | |
| Hubbell (Anderson) | HAS-85-S | HAS-104-S | HAS-104-S | HAS-118-S | HAS-139-S | HAS-147-S | HAS-182-S | HAS-182-S | |
| Lapp | 306029S | 306030S | 306030S | 306031S | 306032S | -- | -- | -- | |
| \*Preformed | -- | AGS | AGS | AGS | AGS | AGS | AGS | AGS | |
| MacLean (Bethea) | LS-1-S | LS-2-S | LS-2-S | LS-3-S | LS-4-S | LS-6-S | LS-7-S | LS-8-S | |
|  |  |  |  |  |  |  |  |  | |

\*Clevis type available.



Conditional List

ei(1)

July 2009

ei - Clamps, suspension with socket eye - cushioned

Condition: To obtain experience

ACSR with Straight or Formed Armor Rods

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | kcmil | | | | | |
|  | 266.8 | 336.4 | 477 | 556.5 | 795 | 954 |
|  |  |  |  |  |  |  |
| \*Preformed | CGS-1100 | CGS-1102 | CGS-1105 | CGS-1106 | CGS-1110 | CGS-1112 |
|  |  |  |  |  |  |  |

\*Order with socket-eye fitting.

Conditional

ei(2)

July 2009

ei - Clamps, suspension with socket eye - cushioned

For use with **High Temperature Conductors**

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| **Preformed Line Products (PLP)** Thermolign Suspension  To be used with 3M High Temperature Conductors ACCR (Aluminum Conductor Composite Reinforced) | 1. To obtain experience.  2. Use high temperature accessories approved by the manufacturer and accepted by RUS |

NOTE: These clamps are acceptable when installed using tools and dies in accordance with the conductor’s manufacturer's recommendations.

ej-1

July 2009

ej - Clamps, deadend with socket eye

ACSR

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
|  | AWG | kcmil | | | | | |
|  | 2/0 to 4/0 | 266.8 | 336.4 | 477 | 556.5 | 795 | 954 |
|  |  |  |  |  |  |  |  |
| Iron or Steel Clamps (requires armor tape or liner) | | | | | | | |
|  |  |  |  |  |  |  |  |
| Hubbell (Anderson) | - | 80445-2000 | 80445-2000 | - | - | - | - |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Aluminum Alloy Clamps (do not require armor tape or liner) | | | | | | | |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Anderson/Hubbell | SD-57-S | SD-70-S | SD-70-S | SD-86-S | SD-86S | -- | -- |
| C & R | CR-10-60S | CR-20-60S | CR-20-60S | -- | -- | -- | -- |
| Lapp | 305757S | 305758S | 305759S | 305760S | -- | -- | -- |
| MacLean (Bethea) | ADE-21-S | ADE-22-S | ADE-23-S | ADE-24-S | ADE-24-S | ADE-2526-S | ADE-2526-S |
|  |  |  |  |  |  |  |  |

NOTE: When used with clevis-type insulators for large conductors on distribution lines, order clamp with clevis eye.

Conditional

ej(1)

August 2014

ej - Clamps, dead-end with socket eye

For use with **High Temperature Conductors**

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| **Preformed Line Products (PLP)** Thermolign Dead-end  To be used with 3M High Temperature Conductors ACCR (Aluminum Conductor Composite Reinforced)  **AFL**  Compression Dead-end  To be used with 3M High Temperature Conductors ACCR (Aluminum Conductor Composite Reinforced) | 1. To obtain experience.  2. Use high temperature accessories approved by the manufacturer and accepted by RUS  1. To obtain experience.  2. Use high temperature accessories approved by the manufacturer and accepted by RUS |

NOTES:

1. When used with clevis-type insulators for large conductors on distribution lines, order clamp with clevis eye.
2. These clamps are acceptable when installed using tools and dies in accordance with the conductor’s manufacturer's recommendations.

ek-1

September 2010

ek - Locknuts

MF Type

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| For Bolt Diam., in.: | 3/8 | 1/2 | 5/8 | 3/4 | 7/8 |
|  |  |  |  |  |  |
| Allied Bolt, Inc. | 22016 | 22009 | 22012 | 22013 | 22014 |
|  |  |  |  |  |  |
| Hubbell (Chance) | 3510 | 3511 | 3512 | 3513 | 3514 |
|  |  |  |  |  |  |
| Hughes Brothers | MF30 | MF50 | MF60 | MF70 | -- |
|  |  |  |  |  |  |
| Joslyn | J8581 | J8582 | J8583 | J8584 | J8584-1/2 |
|  |  |  |  |  |  |
| Kortick | K1065 | K1066 | K1067 | K1068 | -- |
|  |  |  |  |  |  |
| Line Hardware | SLN38 | SLN50 | SLN58 | SLN34 | SLN78 |
|  |  |  |  |  |  |
| MacLean (Continental) | U4920 | U4921 | U4922 | U4923 | U4924 |
|  |  |  |  |  |  |

el-1

July 2009

el - Sectionalizer

|  |  |
| --- | --- |
| Manufacturer | Type |
|  |  |
| Cooper Power Systems | GH (with crossarm mounting bracket KA27G) |
|  |  |
|  |  |

Conditional List

el(1)

November 2016

el - Sectionalizer

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
|  |  |
| Cooper Power Systems  Sectionalizer, three-phase Type GN3  Sectionalizer with125 kV BIL accessory Type GH, 15 kV, single phase  \*Sectionalizer, three-phase Type GN3E14.4 kV, 200 amp max.  \*Sectionalizer, three-phase Types GV and GVC 14.4 kV, 400 amp. max.  \*Sectionalizer, three-phase Types GW and GWC 34.5 kV, 400 amp. max. | To obtain experience.  1. To obtain experience.  2. For use on single-phase taps of 24.9/14.4 kV multi- grounded wye systems.  To obtain experience.  To obtain experience.  To obtain experience. |
|  |  |
| General Electric  Sectionalizer, single-phase cutout-type - 15 kV and 25 kV Model 9F41F | To obtain experience. |
|  |  |
| Hubbell  Sectionalizer, Single-Phase Type CRS  Single-Phase, Cutout Type  15 kV, 95 kV BIL 200 amp max.  27 kV, 125 kV BIL 200 amp max.  38 kV, 150 kV BIL 200 amp max.  Sectionalizer, Single-Phase Type PRS  Single-phase, Cutout Type with and without  loadbreak accessory  15 kV, 110 kV BIL 300 amp max. cont.  27 kV, 125 kV BIL 300 amp max. cont.  38 kV, 150 kV BIL 300 amp max. cont.  38 kV, 170 kV BIL 300 amp max. cont. | To obtain experience.  To obtain experience. |
|  |  |
| Joslyn  Sectionalizer, three-phase, 15 kV, 400 and 600 amperes 25 kV, 600 amperes Model VBM with VT or RS control | To obtain experience. |
|  |  |

\*NOTE: Ratings greater than 100 ampere for 12.5/7.2 kV application and greater than 200 ampere for 24.9/14.4 kV application are acceptable only with ground trip device.

NOTE: Cutout type sectionalizers may also be used with cutout frames listed on pages af-1 and ax-1. Consult manufacturer for application.

em-1

November 2013

em - Brace, crossarm, special

(angle alley arm)

DISTRIBUTION

15" span, 14" drop; 1-1/2" x 3/16"

|  |  |
| --- | --- |
|  |  |
| Kortick | K1978 |
|  |  |
| MacLean (Continental) | U5514 |
|  |  |

TRANSMISSION

|  |  |  |
| --- | --- | --- |
|  | 30” Span x 20” Drop | 42” Span x 27” Drop |
|  |  |  |
| Hubbell (Chance) | - | 6999 |
|  |  |  |
| Hughes Brothers | AS-2309-B | AS-2309-A |
|  |  |  |
| Kortick | K1975 | K1976 |
|  |  |  |
| MacLean (Continental) | U5509 | U5510 |

Conditional List

eq(1)

July 2009

eq - Narrow Profile Brackets and Special Arm Assemblies

METAL BRACKETS

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Dixie  Deadend bracket assembly D21142 for 12.5/7.2 kV  Deadend bracket assembly D21144 for 24.9/14.4 kV | 1. To obtain experience.  2. For use only in scenic areas and locations where right-of-way is limited.  3. Not to be used where conductor galloping may be expected. |
|  |  |
| Hubbell (Anderson)  Standoff bracket, COB-E-180-TGL | Same as above. |
|  |  |
| Hubbell (Chance)  Single post insulator brackets  C206-0209 for 12.5/7.2 kV construction only  C206-0010 for 24.9/14.4 kV construction  Deadend bracket assembly, C206-0179  Deadend bracket assembly, C206-0211 for 24.9/14.4 kV construction | Same as above. |
|  |  |
| Joslyn (Flagg)  Standoff bracket, PA619B | Same as above. |
|  |  |
| MacLean (Continental)  Standoff bracket IACB-18-5 | Same as above. |
|  |  |

Conditional List

eq(1.1)

September 2010

eq - Narrow Profile Brackets and Special Arm Assemblies

METAL BRACKETS

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Joslyn  Single post insulator brackets 24840.1, for 12.5/7.2 kV construction only 24840.2, for 24.9/14.4 kV construction | 1. To obtain experience.  2. For use only in scenic areas and locations where right-of-way is limited.  3. Not to be used where conductor galloping may be expected. |
|  |  |
| MacLean (Bethea)  Single post insulator bracket, HBF-10-9-GC  Standoff bracket VIB3-18-GC | Same as above. |
|  |  |
| M.D. Henry Company, Inc.  Single post insulator bracket, SAB-3-18-GC | Same as above. |
|  |  |
|  |  |

Conditional List

eq(2)

October 2009

eq - Narrow Profile Brackets and Special Arm Assemblies

FIBERGLASS REINFORCED PLASTIC

For 12.5/7.2 kV

|  |  |  |
| --- | --- | --- |
| Manufacturer | Catalog Number | Conditions |
|  |  |  |
| Aluma-Form |  |  |
| Single Phase | F1CA-MV-x18\* | 1. To obtain experience. 2. For use only in scenic areas and locations where right-of-way is limited. 3. Not to be used where conductor galloping may be expected. 4. Not to be used in contaminated atmospheres. |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |  |
| Hubbell (Chance) |  |  |
| Two-phase pin bracket | 2SBM36VV4 | Same as above. |
| Standoff insulator | 1SBM13H1 |  |
| Deadend arm | DEM36SP |  |
|  |  |  |
| MacLean (Continental) |  |  |
| Two-phase pin bracket | G2MDA x 36DV2 | Same as above. |
| Two-phase angle bracket | G2MDA X 36AX1 |  |
| Standoff insulator | G1MDA x 12AS1 |  |
| Standoff insulator | G1MDA x 18AS1 |  |
| Deadend arm | GDAS-36E |  |
| Suspension bracket | G1MDA x 18AE |  |
|  |  |  |
| MacLean (Joslyn) |  |  |
| Standoff bracket | G1MDA x 18AT | Same as above. |
|  |  |  |
|  |  |  |
|  |  |  |
| \* x = “A” for angled, 15 degrees or “H” for horizontal | | |
|  |  |  |

Conditional List

eq(2.1)

January 2012

eq - Narrow Profile Brackets and Special Arm Assemblies

FIBERGLASS REINFORCED PLASTIC

For 12.5/7.2 kV

|  |  |  |
| --- | --- | --- |
| Manufacturer | Catalog Number | Conditions |
|  |  |  |
| M.D. Henry Company, Inc. | TPIV-1.5-36 | 1. To obtain experience. 2. For use only in scenic areas and locations where right-of-way is limited. 3. Not to be used where conductor galloping may be expected. 4. Not to be used in contaminated atmospheres. |
|  | TPIV-1.5-36-1.375 |
|  | SPSS-1.5-13 |
|  | SPSS-1.5-18 |
|  |  |
|  |  |
|  |  |
|  |  |  |
| Hughes Brothers |  |  |
| Two-phase angle bracket | 761-36-8 | Same as above. |
| Two-phase pin bracket | 813-36 |
| Standoff insulator | 560-13 |
| Standoff insulator | 560-18 |
| Suspension bracket | 615-18 |
| Deadend arm | 540-36 |
| Standoff bracket | 892-18 |
|  |  |  |
|  |  |  |

Conditional List

eq(3)

January 2012

eq - Narrow Profile Brackets and Special Arm Assemblies

FIBERGLASS REINFORCED PLASTIC

For 24.9/14.4 kV

|  |  |  |
| --- | --- | --- |
| Manufacturer | Catalog Number | Conditions |
|  |  |  |
| Aluma-Form |  |  |
| Single Phase | F1CA-MV-x18\* | 1. To obtain experience. 2. For use only in scenic areas and locations where right-of-way is limited. 3. Not to be used where conductor galloping may be expected. 4. Not to be used in contaminated atmospheres. |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |  |
| Hubbell (Chance) |  |  |
| Two-phase pin bracket | 2SBM44VV4 |  |
| Standoff insulator | 1SBM19V4 |  |
| Deadend arm | DEM48SP |  |
|  |  |  |
| MacLean (Continental) |  |  |
| Two-phase pin bracket | G2MDA x 44DV3 | Same as above. |
| Two-phase pin bracket | G2HDA x 48DV3 |  |
| Standoff insulator | G1MDA x 18DV3 |  |
| Standoff insulator | G1MDA x 19DV3 |  |
| Standoff insulator | G1MDA x 20DV3 |  |
| Standoff bracket | G1MDA x 18AT |  |
| Deadend arm | GDAS-48E |  |
|  |  |  |
| M.D. Henry Company, Inc. | TPIV-1.5-44-1.375 | Same as above. |
|  | TPIV-1.5-48-1.375 |  |
|  | TPIV-2-48-1.375 |  |
|  | SPSV-1.5-18-1.375 |  |
|  | SPSV-1.5-19-1.375 |  |
|  | SPSV-1.5-20-1.375 |  |
|  | SPSV-2-20-1.375 |  |
|  | SP3CA-1.5-18 |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| \* x = “A” for angled, 15 degrees or “H” for horizontal | | |
|  |  |  |

Conditional List

eq(3.1)

July 2009

eq - Narrow Profile Brackets and Special Arm Assemblies

FIBERGLASS REINFORCED PLASTIC

For 24.9/14.4 kV

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Hughes Brothers  Deadend arm, 540-48  Standoff insulator, 880-20  Two-phase pin bracket, 883-48  Standoff insulator, 870-19  Two-phase pin bracket, 862-44  Standoff bracket, 892-18 | 1. To obtain experience.  2. For use only in scenic areas and locations where right-of-way is limited.  3. Not to be used where conductor galloping may be expected.  4. Not to be used in contaminated atmospheres. |
|  |  |
|  |  |

Conditional List

eq(4)

July 2009

eq - Narrow Profile Brackets and Special Arm Assemblies

WOOD ARM ASSEMBLIES

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Aluma-Form  Arm assembly, 12.5/7.2 kV XA-3812  Arm assembly, 24.9/14.4 kV XA-4214 | 1. To obtain experience.  2. For use only in scenic areas and locations where right-of-way is limited.  3. Not to be used where conductor galloping may be expected.  4. Not to be used as deadend structures. |
|  |  |
| Hughes Brothers  Deadend arm, 2890-J complete with braces and attaching hardware, fittings and bolts | 1. To obtain experience.  2. For use only in scenic areas and locations right-of-way is limited.  3. Not to be used where conductor galloping may be expected. |
|  |  |

Conditional List

eq(5)

July 2009

eq - Narrow Profile Brackets and Special Arm Assemblies

COMBINATION INSULATORS AND BRACKETS

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Salisbury  Horizontal Post 12.5/7.2 kV, 9561 24.9/14.5 kV, 9562 | 1. To obtain experience.  2. For use only in scenic areas and locations where right-of-way is limited.  3. Not to be used where conductor galloping may be expected.  4. Not to be used in contaminated atmospheres. |
|  |  |

er-1

July 2009

er - Wire Guard, Plastic

See Drawing K4.1G

|  |  |
| --- | --- |
| Manufacturer | Type orCatalog Number |
|  |  |
| Hubbell (Chance) | PFG |
|  |  |
| Hubbell (Fargo) | GM-936 |
|  |  |
| Preformed Line Products (Tree Guard) | PTG |

es-1

March 2013

es - Splice Cover, Plastic

(For use over compression type service connections in place of tape)

|  |  |
| --- | --- |
| Manufacturer | Type |
|  |  |
| Hubbell (Anderson) | Type SEC |
|  |  |
| Kearney/Cooper Power Systems | Type 601 |
|  |  |
| Plastic Engineering & Sales Co. | Wire Splice Cover |
|  |  |
| 3M | PST Series 8420 |
|  |  |
| Virginia Plastics | Type VP |
|  |  |
|  |  |

Splice Cover and Moisture Seal for Secondary Cable Connections   
(See Drawings G312 and UM5)

|  |  |
| --- | --- |
| Manufacturer | Type |
|  |  |
| TE Connectivity - Energy | Sealing & Dielectric Compound |
|  |  |
| Plymouth/Bishop | 10 Plyseal |
|  |  |
| 3M | Scotch Brand #2200 |

Bolted Connector Cover

(For use over bolted type service connections in place of tape)

|  |  |
| --- | --- |
| Manufacturer | Type |
|  |  |
| Hubbell (Anderson) | PTC |
|  |  |
| Hubbell (Fargo) | GA-9000 B Series |

eu-1

July 2009

eu - Extension Link

(Fiberglass)

(Distribution)

|  |  |  |
| --- | --- | --- |
| Manufacturer | Strength | Catalog Number |
|  |  |  |
| Dulmison | 11,000 lbs. | HSB-1-12\* |
|  | 15,000 lbs. | HSB-2X-12 |
|  |  |  |
| Joslyn (Flagg) | 11,000 lbs. | 150-12EE |
|  | 15,000 lbs. | 150-12EE |
|  |  |  |
| Hubbell (Anderson) | 10,000 lbs. | GSB1-9\* |
|  | 15,000 lbs. | GSB2-12 |
|  | 16,000 lbs. | GS16012EE |
|  |  |  |
| K-Line | 15,000 lbs. | KL Series |
|  |  |  |
| MacLean (Continental) | 11,000 lbs. | GEE11-12\* |
|  | 15,000 lbs. | GEE15-12 |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

\*For use with 6" suspension insulators.

Conditional List

ex(1)

July 2009

ex - Splice, formed type

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Preformed Line Products  Splice for ACSR FTS full tension splice  Splice for AWAC LS-0185 for 4-4/3 LS-0188 for 2-4/3 LS-0191 for 1/0-4/3 | To obtain experience.  For repair only.  To obtain experience.  For repair only where alumoweld strands are not broken. |
|  |  |

fc-1

July 2009

fc - Capacitors, Shunt

12470/7200 Volts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Size | 1 Bushing | 2 Bushing | 3 Bushing |
|  |  |  |  |  |
| ABB | 100 kvar | A10009 | A10010 |  |
|  | 150 kvar | A15009 | A15010 |  |
|  | 200 kvar | A20009 | A20010 |  |
|  | 300 kvar | A30009 | A30010 |  |
|  | 400 kvar | A40009 | A40010 |  |
|  |  |  |  |  |
| Cooper Power | 50 kvar | CEP120B6 | CEP120A6 |  |
| Systems | 100 kvar | CEP131B6 | CEP131A6 |  |
|  | 150 kvar | CEP132B6 | CEP132A6 |  |
|  | 200 kvar | CEP140B6 | CEP140A6 |  |
|  | 300 kvar | CEP160B6 | CEP160A6 |  |
|  | 400 kvar | CEP170B6 | CEP170A6 |  |
|  | 500 kvar | CEP180B6 | CEP180A6 |  |
|  |  |  |  |  |
| General Electric | 25 kvar | 52L226RC | 52L206RC |  |
| Film/Foil Type | 50 kvar | 51L226RC | 51L206RC |  |
|  | 100 kvar | 54L226RC | 54L206RC |  |
|  | 150 kvar | 54L526RC | 54L506RC |  |
|  | 200 kvar | 58L126RC | 58L106RC |  |
|  | 300 kvar | 59L226RC | 59L206RC | 59L611RC |

24900/14400 Volts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Size | 1 Bushing | 2 Bushing | 3 Bushing |
|  |  |  |  |  |
| ABB | 100 kvar | A10031 | A10032 |  |
|  | 150 kvar | A15031 | A15032 |  |
|  | 200 kvar | A20041 | A20042 |  |
|  | 300 kvar | A30031 | A30032 |  |
|  | 400 kvar | A40031 | A40032 |  |
|  |  |  |  |  |
| Cooper Power | 50 kvar | CEP123B9 |  |  |
| Systems | 100 kvar | CEP130B9 |  |  |
|  | 150 kvar | CEP139B9 |  |  |
|  | 200 kvar | CEP143B9 |  |  |
|  | 300 kvar | CEP163B9 |  |  |
|  | 400 kvar | CEP173B9 |  |  |
|  | 500 kvar | CEP183B9 |  |  |
|  |  |  |  |  |
| General Electric | 50 kvar | 51L252RC |  |  |
| Film/Foil Type | 100 kvar | 54L252RC |  |  |
|  | 150 kvar | 54L552RC |  |  |
|  | 200 kvar | 58L154RC |  |  |
|  | 300 kvar | 59L154RC |  |  |
|  | 400 kvar | 98L154RC |  |  |

fd-1

October 2015

fd – Hangers, Capacitor

Crossarm Mounting

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1 unit | 2 units | 3 or 4 units |
|  |  |  |  |
| ABB | 85B397G01 | 791C644G01 | 791C644G02 |
|  |  |  |  |
| Cooper Power Systems | CH1A1 | CH2A2 | CH4A1 |
|  |  |  |  |
| General Electric | 39F41G2 | 39F53 | 39F80G1 |
|  |  |  |  |
|  |  |  |  |

Pole Mounting

|  |  |  |  |
| --- | --- | --- | --- |
|  | Single Phase | Three Phase | |
|  |  | In Line | Cluster |
|  |  |  |  |
| ABB | AL30R (3 units) | (1 Ø units) |  |
|  | AL60R (6 units) | AL30R | (3 units) |
|  |  | AL60R | (6 units) |
|  |  | AL90R | (9 units) |
|  |  | (3 Ø units) |  |
|  |  | AL13W | (1 unit) |
|  |  | AL23W | (2 units) |
|  |  | AL33W | (3 units) |
|  |  | AL43W | (4 units) |
|  |  | AL53W | (5 units) |
|  |  |  |  |
| Aluma-Form | CR-3\* thru CR-6\* | CR-3/4\* | 3-CR-3/4\* |
|  |  |  |  |
| General Electric | 39F41G1 (1 unit) | 39F86G1 |  |
|  | 39F83G1 (3 units) |  |  |
|  |  |  |  |
| Hubbell Power  Systems Inc. | CCR-1\* Thru CCR-6\* | CCR-3/4\* | CCR-9/12\* |
| MacLean Power Systems | - | MCR-3  MCR-3/4  MCR-6 |  |

\* Available with oil switch mounting bracket.

fg-1

July 2009

fg - Crossarm Saddle

(3-3/4" x 4" with 1-1/4" x 1/4" flange)

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Lapp | 10369 |
|  |  |

fi-1

July 2009

fi - Connectors, hot line

Over Armor Rods

|  |  |  |
| --- | --- | --- |
| Manufacturer | Catalog Number or Series (Al to Al) | Catalog Number or Series (Al to Cu) |
|  |  |  |
| Blackburn | PGH | - |
|  |  |  |
| Hubbell (Anderson) | AC Series | AC-GP-Series |
|  |  |  |
| Hubbell (Fargo) | GA-100 Series | GA-100C Series |

fj, fk, fl

October 2015

fj – Bracket, extension

(For use in mounting circuit reclosers or sectionalizers)

See Drawing VM3-10A

|  |  |  |
| --- | --- | --- |
|  | Through Bolt Type | Band Type |
|  |  |  |
| Aluma-Form | TBRSM-1, TB2M1-9\* | RSM-1 |
| Dixie | D-2359-M | - |
| Joslyn | J2357 | - |
| MacLean Power Systems | MTB2M1-9 | - |

\*For mounting double lug reclosers.

fk – Bracket, circuit recloser or sectionalizer

(For cluster mounting of three circuit reclosers on pole)

|  |  |  |
| --- | --- | --- |
|  | Cluster Mount | Rack Mount |
|  |  |  |
| Aluma-Form | RSM-3, 6M3-9\* | 3SPR-66, 3SPR-84 |
| MacLean Power Systems | - | M3SPR-66 |
| Turner | 695-3 | - |

\*Suitable for 14.4 and heavy duty 7.2 kV.

fl – Rack, primary metering

(For cluster mounting of primary metering equipment on pole)

|  |  |
| --- | --- |
| Aluma-Form | PMM Series |
| Barfield Manufacturing Co. | BAPMM6 |
| Turner | 3CT-PT |
| MacLean Power Systems | MPMM-6 |

fm-1

September 2013

fm - Extension Bracket for Mounting Apparatus

(Arrester, Cutouts and Potheads for Distribution Pole Mounting)

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Application Voltage | Single Phase | Three Phase |
|  |  |  |  |
| Aluma-Form, Inc. | 12.5/7.2 kV | 1HCA-18 Series | R3CA-48 |
|  |  | 1HCA-C-18 | F3CA-MV-H3012 series |
|  |  |  | F3CA-MV-A3012 series |
|  |  |  |  |
|  | 24.9/14.4 kV | WBMA-1 | R3CSA-48 |
|  |  |  | F3CA-MV-H4017 series |
|  |  |  | F3CA-MV-A4017 series |
|  |  |  |  |
|  | | | |
| Barfield Mfg. Co. | 12.5/7.2 kV | BAC 1256 | - |
|  | 24.9/14.4 kV | BAC 1710 | - |
|  | 12.5/7.2 kV | BACA 126 (double mounting) | - |
|  | 24.9/14.4 kV | BACA 1710 (double mounting) | - |
|  | | | |
| Dixie | 12.5/7.2 kV | D-1580 | D27211-G |
|  | 24.9/14.4 kV | D-1583 | - |
|  | | | |
| Hubbell (Anderson) | 12.5/7.2 kV | COB-E-120-TGL | - |
|  | 24.9/14.4 kV | ACOB-E-180 | - |
|  |  | COB-E-180-TGL | - |
|  |  |  |  |
| Hubbell (Chance) | 24.9/14.4 kV | C653-1038 | C653-1056 |
|  |  |  |  |
| Hubbell Power Systems, Inc. |  | 1SBMxxTD Series | - |
|  |  | 1SBMxxAM Series | - |
|  |  | 1SBMxxC Series | - |
|  |  | 1SBMxxAMT Series | - |
|  |  | 1SBMxxCT Series | - |
|  |  | 1SBMxxCL Series | - |
|  |  | 1SBMxxSGL Series | - |
|  | 12.5/7.2kV | C1HCAC | - |
|  | 12.5/7.2kV | C1HCA | - |
|  | 24.9/14.4kV | C1HCAC18 | - |
|  | 24.9/14.4kV | C1HCA18 | - |
|  |  |  |  |
|  | | | |
| Hughes Brothers | 12.5/7.2 kV | 892-18 | 670-40 |
|  | 24.9/14.4 kV |  |  |
|  | | | |
| Line Hardware | 12.5/7.2 kV | CA-12-3GL | - |
|  | | | |
| MacLean (Bethea) | 12.5/7.2 kV | VIB3-18-R1-GC-C | - |
|  |  | VIB3-12F-GC | - |
|  | 24.9/14.4 kV | VIB3-18-GC | - |
|  | | | |
|  |  |  |  |

Note: Above brackets are not suitable for supporting or deadending distribution line conductors.  
 (See items “eq” for narrow profile bracket and special arm assemblies)

fm-1.1

October 2015

fm - Extension Bracket for Mounting Apparatus

(Arrester, Cutouts and Potheads for Distribution Pole Mounting)

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Application Voltage | Single Phase | Three Phase |
|  |  |  |  |
| MacLean (Continental) | 12.5/7.2 kV | IACB-12-5LGE | G3MA013012DD |
|  | 24.9/14.4 kV | IACB-18-5LGE | G3MA014017DD |
|  | | | |
| MacLean Power Systems | 12.5/7.2 kV | M1HCA-C-18 | MR3CA-48 |
|  | | | |
| M.D. Henry Company, Inc. | 24.9/14.4 kV | SAB-3-18-GC | - |
|  |  |  |  |
|  |  |  |  |
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|  |  |  |  |
|  |  |  |  |

Note: Above brackets are not suitable for supporting or deadending distribution line conductors.  
 (See items “eq” for narrow profile bracket and special arm assemblies)

fn-1

October 2011

fn - Extension Bracket for Mounting Cutouts

Refer to item fm

fo-1

July 2009

fo - Bracket, Transformer Secondary, Insulated

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Bracket With | Bracket With |
| Manufacturer | Bracket Without | 2-1/4" Diameter | 3-1/8" Diameter |
| Insulator | Insulator | Spool Insulator | Spool |
|  |  |  |  |
| Hubbell (Chance) | - | 9113S | 9114S |
| Joslyn | - | J6765-A | J6765 |
| MacLean (Continental) | U865 | U865/208 | U865/205 |

fp-1

July 2009

fp - Oval Eye Ball

(30,000 lbs; to be used with 52-3 and 52-5 insulators)

|  |  |
| --- | --- |
| Manufacturer | No. |
|  |  |

(No accepted items at this time)

Conditional List

fq(1)

July 2009

fq - Laminated Upswept Arms

Applicable Specification: RUS Specification DT-5B

Applicable Drawing: RUS Drawing TUS-1

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Hughes Brothers  Types: C-4080A (5-1/8" width) C-4080B (5-1/8" width) C-4113A (3-1/8" width) C-4113B (3-1/8" width) | 1. To obtain experience.  2. For use only in scenic and urban areas where right- of-way is limited. |
|  |  |

fs-1

February 2015

fs - Pole Bearing Plate

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Hubbell (Chance) | C1100954 |
|  |  |
|  |  |
|  |  |

Conditional List

fs(1)

July 2009

fs - Pole Bearing Plate

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Joslyn (Flagg)  P325B-122 | Same as above. |
|  |  |
| MacLean (Continental)  PB-80-7 | Same as above. |
|  |  |

ft-1

October 2015

ft - Y-Clevis Ball

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Joslyn | BT 3030 |
| Preformed Line Products | BYC-30 |
|  |  |

fu-1

July 2009

fu - Swinging angle bracket

(TRANSMISSION)

Applicable Specification: T-8

Swinging angle bracket with hardware and fittings

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | 2' - 0" | 3' - 6" | Type #1 | Type #2 |
|  |  |  |  |  |
| Brooks | 64233A | 64233B | X |  |
| Hughes Brothers | 2848 | 2848 | X | X |
|  |  |  |  |  |

fv-1

July 2009

fv - Guying Attachments

Transmission

Pole Eye Plates\*

25,000 lbs. @ 90o/36,000 lbs. @ 45o

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Single Eye | | Double Eye - 7/8" Bolts |
|  | 3/4" Bolts | 7/8" Bolts |  |
|  |  |  |  |
| Joslyn (Flagg) | PX37D | - | PX42 |
|  |  |  |  |
| MacLean (Continental) | EPR-66S-12 | - | - |
|  |  |  |  |

\*Capacity of pole eye plate

Conditional List

fv(1)

July 2009

fv - Guy Attachments, Pole Bands Attachments, Pole Bands

With Through Bolts for Transmission Lines

Medium Duty Pole Bands

25,000 lbs @ 90o/36,000 lbs @ 45o\*

|  |  |  |
| --- | --- | --- |
| Manufacturer | Pole Band and Associated Hardware\*\* | Conditions |
|  |  |  |
| Hughes Bros. | 3108.x-2718.55 | To obtain experience. |
|  |  |  |
| Joslyn | J25968. x GL | To obtain experience. |
|  |  |  |

Heavy Duty Pole Bands

36,000 lbs. @90o /51,000 lbs. @ 45o\*

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Manufacturer | Pole Band and Associated Hardware\*\* | Conditions |
|  |  |  |
| Hughes Bros. | 3107.x-2718.55 | To obtain experience. |
|  |  |  |
|  |  |  |

\* For a guy lead greater than 1/1, capacity of pole band should be derated.

\*\* Associated hardware includes through bolt, band connecting bolts, nuts, grounding clip and lag screws (if any). Connecting links (Item du (1)) of the required strength should be ordered separately from the same manufacturer.

ga-1

July 2009

ga - Watthour and Watthour-Demand Meters

1ø, 2 and 3 wire or 2/3 wire 120/240 volts

(Classes 100, 200, 10, and 20)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Self-Contained Types | |  |  |  |  |
|  |  |  |  |  |  |
| Manufacturer | Type of Base | Watthour Meter Type | Mechanical Demand Watthour Type | Thermal Demand Watthour Type | Number of Terminals |
| 1 | 2 | 3 | 4 | 5 | 6 |
|  |  |  |  |  |  |
| Elster | Bottom Con. | - | - | - | - |
|  | Socket | AB1 | - | - | 4 |
|  |  |  |  |  |  |
| General Electric | Bottom Con. | I50A | IM50A | - | 4 |
|  | Socket | I70S | IM70S | - | 4 |
|  |  |  |  |  |  |
| Landis & Gyr | Bottom Con. | - | - | - | - |
|  | Socket | MS | BMS-2S | TMS | 4 |
|  |  |  |  |  |  |
| Schlumberger | Bottom Con. | J5SA | J5DSA | - | - |
|  | Socket | J5S\* | J5DS | - | 4 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Transformer Rated Types | |  |  |  |  |
|  |  |  |  |  |  |
| Elster | Bottom Con. | - | - | - | - |
|  | Socket | AB1 | - | - | 5 or 6 |
|  |  |  |  |  |  |
| General Electric | Bottom Con. | I50A | IM50A | - | 5 or 6 |
|  | Socket | I70S | IM70S | - | 5 or 6 |
|  |  |  |  |  |  |
| Landis & Gyr | Bottom Con. | - | - | - | - |
|  | Socket | MS | BMS | TMS | 5 or 6 |
|  |  |  |  |  |  |
| Schlumberger | Bottom Con. | J5SA | J5DSA | - | - |
|  | Socket | J5S | J5DS | - | 5 or 6 |
|  |  |  |  |  |  |

\* Type J4ES for Class 320

ga-2

July 2009

ga - Watthour and Watthour-Demand Meters

Polyphase 2 element - 3 wire, 240 volts - Delta and 120/208 Volts Network

(Classes 100, 200, 10, and 20)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Self-Contained Types | |  |  |  |  |
|  |  |  |  |  |  |
| Manufacturer | Type of Base | Watthour Meter Type | Mechanical Demand Watthour Type | Thermal Demand Watthour Type | Number of Terminals |
| 1 | 2 | 3 | 4 | 5 | 6 |
|  |  |  |  |  |  |
| Elster | Bottom Con. | - | - | - | - |
|  | Socket | ABS-5 | - | - | - |
|  |  |  |  |  |  |
| General Electric | Bottom Con. | V62A | VM62A | - | 5 |
|  | Socket | V62S | VM62S | - | - |
|  |  |  |  |  |  |
| Landis & Gyr | Bottom Con. | - | - | - | - |
|  | Socket | MT012S or 13S | BMT-12S or 13S | TMT-12S | 5 or 8 |
|  |  |  |  |  |  |
| Schlumberger | Bottom Con. | SL2A | SL2DA | - | 5 or 8 |
|  | Socket | SL2S | SL2DS | - | - |
|  |  | SL12S | SL12DS |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Transformer Rated Types | |  |  |  |  |
|  |  |  |  |  |  |
| Elster | Bottom Con. | ABA-2 | - | - | - |
|  | Socket | ABS-2 | - | - | 8 |
|  |  |  |  |  |  |
| General Electric | Bottom Con. | V63A | VM63A | - | 8 |
|  | Socket | V63S | VM63S | - | - |
|  |  |  |  |  |  |
| Landis & Gyr | Bottom Con. | MT-5A | BMT-5A | TMT-5A | 8 |
|  | Socket | MT-5S | BMT-5S | TMT-5S | 8 |
|  |  |  |  |  |  |
| Schlumberger | Bottom Con. | SL3A | SL3DA | - | - |
|  | Socket | SL3S | SL4DS | - | 8 |
|  |  |  |  |  |  |

ga-3

July 2009

ga - Watthour and Watthour-Demand Meters

Polyphase 2 element - 4 wire Delta - 120/240 volts

(Classes 100 or 200)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Self-Contained Types | |  |  |  |  |
|  |  |  |  |  |  |
| Manufacturer | Type of Base | Watthour Meter Type | Mechanical Demand Watthour Type | Thermal Demand Watthour Type | Number of Terminals |
| 1 | 2 | 3 | 4 | 5 | 6 |
|  |  |  |  |  |  |
| Elster | Bottom Con. | ABA-7 | - | - | 7 or 8 |
|  | Socket | ABS-7 | - | - | - |
|  |  |  |  |  |  |
| General Electric | Bottom Con. | V66A | VM66A | - | 7 |
|  | Socket | V66S | VM66S | - | - |
|  |  |  |  |  |  |
| Landis & Gyr | Bottom Con. | - | - | - | - |
|  | Socket | MT-15S | BMT-15S | TMT-15S | 7 |
|  |  |  |  |  |  |
| Schlumberger | Bottom Con. | SL6A | SL6DA | - | - |
|  | Socket | SL6S | SL6DS | - | 7 or 8 |
|  |  |  |  |  |  |

ga-4

July 2009

ga - Watthour and Watthour-Demand Meters

Polyphase - 2-1/2 element - 4 wire wye - (120/208) (277/480) volt

(Classes 100, 200, 10, and 20)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Self-Contained Types | |  |  |  |  |
|  |  |  |  |  |  |
| Manufacturer | Type of Base | Watthour Meter Type | Mechanical Demand Watthour Type | Thermal Demand Watthour Type | Number of Terminals |
| 1 | 2 | 3 | 4 | 5 | 6 |
|  |  |  |  |  |  |
| Elster | Bottom Con. | ABA-8 | - | - | - |
|  | Socket | ABS-8 | - | - | - |
|  |  |  |  |  |  |
| General Electric | Bottom Con. | V65A | VM65A | - | 7 |
|  | Socket | V65S | VM65S | - | - |
|  |  |  |  |  |  |
| Landis & Gyr | Bottom Con. | - | - | - | - |
|  | Socket | MT-14S | BMT-14S | TMT-14S | 7 |
|  |  |  |  |  |  |
| Schlumberger | Bottom Con. | SL5A | SL5DA | - | - |
|  | Socket | SL5S | SL5DS | - | 7 or 8 |
|  |  |  |  |  |  |
| Transformer Rated Types |  |  |  |  |  |
|  |  |  |  |  |  |
| Elster | Bottom Con. | ABA-8 | - | - | - |
|  | Socket | ABS-8 | - | - | 13 |
|  |  |  |  |  |  |
| General Electric | Bottom Con. | V65A | VM65A | - | 7 or 13 |
|  | Socket | V65S | VM65S | - | - |
|  |  |  |  |  |  |
| Landis & Gyr | Bottom Con. | MT-6A | BMT-6A | TMT-6A | 10 |
|  | Socket | MT-7S or 6S | BMT-7S or 6S | TMT-7S or 6S | 7 or 13 |
|  |  |  |  |  |  |
| Schlumberger | Bottom Con. | SL5A | SL5DA | - | - |
|  | Socket | SL5S | SL5DS | - | 13 |
|  |  |  |  |  |  |

ga-5

July 2009

ga - Watthour and watthour-Demand Meters

# Polyphase - 3 element - 4 wire wye - (120/208) (277/480) volt

(Classes 100, 200, 10, and 20)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Self-Contained Types | |  |  |  |  |
|  |  |  |  |  |  |
| Manufacturer | Type of Base | Watthour Meter Type | Mechanical Demand Watthour Type | Thermal Demand Watthour Type | Number of Terminals |
| 1 | 2 | 3 | 4 | 5 | 6 |
|  |  |  |  |  |  |
| Elster | Bottom Con. | ABA-3 | - | - | - |
|  | Socket | ABS-3 | - | - | 7 or 8 |
|  |  |  |  |  |  |
| General Electric | Bottom Con. | V64A | VM64A | - | - |
|  | Socket | V64S | VM64S | - | 7 or 8 |
|  |  |  |  |  |  |
| Landis & Gyr | Bottom Con. | - | - | - | - |
|  | Socket | MT-16S | BMT-16S | - | 7 |
|  |  |  |  |  |  |
| Sangamo | Bottom Con. | S4A | S4DA | - | - |
|  | Socket | S4S | S4DS | - | 7 or 8 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Transformer Rated Types |  |  |  |  |  |
|  |  |  |  |  |  |
| Elster | Bottom Con. | ABA-3 | - | - | - |
|  | Socket | ABS-3 | - | - | - |
|  |  |  |  |  |  |
| General Electric | Bottom Con. | V64A | VM64A | - | - |
|  | Socket | V64S | VM64S | - | 13 |
|  |  |  |  |  |  |
| Landis & Gyr | Bottom Con. | MT-9A | BMT-9A | - | 12 |
|  | Socket | MT-9S or 10S | BMT-9S or 10S | - | 13 |
|  |  |  |  |  |  |
| Sangamo | Bottom Con. | SL4A | SL4DA | - | - |
|  | Socket | SL4S | SL4DS | - | 13 |
|  |  |  |  |  |  |

ga-6

July 2009

ga - Meters, Min/Max Indicating

Ammeters Indicating

|  |  |  |
| --- | --- | --- |
| Manufacturer | Type | Description |
|  |  |  |
| Biddle | 50,000 Series | Thermal, Max Pointer |
|  |  |  |
| Demico | AD121R | Digital min/max ampere demand meter |
|  |  |  |
| ED Electric | Max-I-Meter(all models) | Thermal Ammeter |
|  |  |  |
| Schlumberger | ADS | Thermal Ammeter |
|  |  |  |

Voltmeter, Min/Max

|  |  |  |
| --- | --- | --- |
| Manufacturer | Type | Description |
|  |  |  |
| Bitronics | VMAMC1 | Digital Demand |
|  |  | min/max voltmeter |
|  |  |  |
| Demico | AV121R | Digital min/max |
|  |  | voltmeter |
|  |  |  |
| Reid and Rochon Associates | LVM-100 | Digital Demand |
|  |  | min/max voltmeter |

Conditional List

ga(1)

July 2009

ga - Watthour and Watthour-Demand Meters

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Landis & Gyr  Special base, 3 wire, 1 ø watthour meter, Type MS‑K, Class 400 watthour and mechanical demand Type BMS-K watthour and thermal demand Type TMS-2K  Socket base, 3 wire, 1 ø watthour meter, Type MS‑E, Class 300 | 1. To obtain experience.  2. To be used only where Class 400 meters are permitted by local regulatory bodies.  1. To obtain experience.  2. To be used only where Class 300 meters are permitted by local regulatory bodies. |
|  |  |

Conditional List

ga(2)

February 2010

ga - Watthour and Watthour-Demand Meters

Solid State Registers

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Electro Industries/GaugeTech | To obtain experience. |
| NEXUS 1262 |
| Form 9S, Class 20 |
| NEXUS 1272 |
| Form 9S, Class 20 |
|  |  |
|  |  |
| Elster | To obtain experience. |
| Solid State Polyphase Watthour meter, Alpha line, A1, A and S type bases (all forms) Class 20 and 200, 120, 240, 277, and 480 V |
|  |  |
|  |  |
| GE | To obtain experience. |
| kV Vector Meter |
| Form 10A, 36A, 45A, 48A, 3S, 9S, 36S, 45S, 56S; Class 20; 120 V to 480V or 57V to 120V |
| Form 13A, 16A; Class 150; 120V to 480 V |
| Form 2S, 12S, 16S; Class 200 or 320; 120V to 480V |
|  |
|  |
| Sensus |  |
| Socket base, single-phase watthour meters | To obtain experience. |
| Form 1s, 12s, 2s, Class 200 @ 120, and 240 Volts |  |
| Form 2s Class 320 @ 240 Volts |  |
| Form 3s & 4s Class 20 @ 120, and 240 Volts |  |
|  |  |
| Socket base, poly-phase watthour meters | To obtain experience. |
| Form 9s Class 20 @ 120-480 Volts |  |
| Form 16s Class 200 @ 120-480 Volts |  |
|  |  |
|  |  |
| Itron Inc. | To obtain experience. |
| SENTINEL |
| Forms 9S, 10A, 45A, 45S, 46A, 46S, 48A, 66S Class 20 |
| Form 16A Class 150 |
| Forms 2S, 12S, 16S Classes 200 and 320 |
|  |  |
|  |  |

Conditional List

ga(2.1)

July 2009

ga - Watthour and Watthour-Demand Meters

Solid State Registers

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Landis+Gyr  Solid State Watthour Meter Type DDS2, Form 5S, 6S, 8S, 9S, 10S, Class 20.  FOCUS Form 1S, Class 100 Form 25S, Class 200 Form 2S, Class 200TA30 and 200TA50 Form 2SE, Class 320TA30 and 320TA50 Form 2K, Class 4800/600 Form 3S, 4S, Class 10 and 20  Altimus Solid State Meter Form 1S, Class 100 Form 25S, Class 200 Form 2S, Class 200TA30 and 200TA50 Form 2SE, Class 320TA30 and 320TA50 Form 2K, Class 480/600 Form 3S, 4S, Class 10 and 20  S4 Polyphase Solid State Meter Form 5S/45S, 6S/36S, 9S/8S, Class 20 Form 12S, 16S, Class 200 | To obtain experience. |
|  |  |
| Power Measurement  ION 8300 Form 9S, 35S, 36S Class 20  ION 8400 Form 9S, 35S, 36S, 39S, 76S Class 20  ION 8500 Form 9S, 35S, 36S, 39S, 76S Class 20 | To obtain experience.  To obtain experience.  To obtain experience. |
|  |  |
| Schlumberger  CENTRON Form 2S, Class 200. Solid State or Mechanical Register.  FULCRUM SQ400 Form 5A, 6A, 9A, 5S, 6S, 9S, 10S, Class 20  FULCRUM SL300 Series Form 5A, 6A, 8A, 9A, 5S, 6S, 8S, 9S, 10S, 12S, 14S, 15S, 16S, Class 20 and 200.  QUANTUM Q200 Series Form 5A, 6A, 8A, 9A, 5S, 6S, 8S, 9S, 10S, 26S, Class 20 and 200.  QUANTUM Q300 Series Form 6A, 9A, 6S, 9S, 10S, Class 10 and 20.  VECTRON SVX Form 5A, 6A, 8A, 10A(9A), 5S, 6S, 9S(8S), 12S, 16S(14S, 15S), 26S, Class 20 and 200. | To obtain experience.  To obtain experience.  To obtain experience.  To obtain experience.  To obtain experience.  To obtain experience. |

Conditional List

ga(2.2)

July 2009

ga - Watthour and Watthour-Demand Meters

Solid State Registers

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Transdata, Inc.  MARK-V EMS  Form 5S, 5A, 6S, 6A, 8S, 8A, 9S, 9A  Class20 | To obtain experience. |

gb-1

July 2009

gb - Meter Sockets

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Type or Catalog Number | |  |  |
|  |  |  |  |  |
| Manufacturer | Ring | Ringless | No. Jaws | Rating Amps. |
|  |  |  |  |  |
| ABB | #S |  | 4, 5, 6 | 100 |
|  | STS |  | 5, 6 | 200/400\*\* 1ø 3w |
|  | STS-2 |  | 8 | 200/400\*\* 3ø 3w |
|  | STS-3 |  | 13 | 200/400\*\* 3ø 4w Y or Delta |
|  | STS-7 |  | 8 | 200/400\*\* 3ø 4w Delta |
|  | STS-8 |  | 8 or 13 | 200/400\*\* 3ø 4w Y |
|  |  | STA-2 |  | 200/400 3ø 3w |
|  |  | STA-3 |  | 200/400 3ø 4W Y or Delta |
|  |  | STA-7 |  | 200/400 3ø 4w Delta |
|  |  | STA |  | 200/400 1ø 3w |
|  |  |  |  |  |
|  |  |  |  |  |
| # Anchor | 1000 Series (1003-1006) | 1000 Series (1003-1006) | 4, 5 | 100 |
|  | 1100 Series (1100-1109) | 1100 Series (1100-1109) | 4, 5, 7 | 150 |
|  | 1200 Series (1201-1209) | 1200 Series (1201-1209) | 4, 5 | 200 |
|  |  | 1200/1300 Series (1275-1300) | 4, 5, 7 | 200 |
|  | 1600 Series (1600-1661) | 1600 Series (1600-1661) | 4, 5 | 320 |
|  | 1500 Series (1500-1526) | 1500 Series (1500-1526) | 4, 5 | 100/125 per sta. |
|  | 1500 Series (1530-1536) | 1500 Series (1530-1536) | 4, 5 | 150 per sta. |
|  | 1500 Series (1540-1546) | 1500 Series (1540-1546) | 4, 5 | 200 per sta. |
|  | 1400 Series (1405-1473) | 1400 Series (1405-1473) | 4, 5, 6, 7, 8, 13 | 20/100 |
|  |  |  |  |  |
| Murray | SJ Series\* (Single) | RJ Series\* (Single) | 4, 5, 6 | 100 |
|  | SN Series\* (Single) | RN Series\* (Single) | 4, 5, 6 | 100 |
|  | SS Series\* (Single) | RS Series\* (Single) | 4, 5, 6 | 200 |
|  |  | RH Series\* (Single) | 5, 7 | 200 HD |
|  |  |  |  |  |

#Available with UL label

\*UL label

gb-1.1

July 2009

gb - Meter Sockets

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Type or Catalog Number | |  |  |
|  |  |  |  |  |
| Manufacturer | Ring | Ringless | No. Jaws | Rating Amps. |
|  |  |  |  |  |
| Durham | R-RS512 | RS502# | 4 or 5 | 150 |
|  | R-RS502 | RS512# |  |  |
|  |  | H-4300 Series# | 4, 5, 7 | 320 |
|  |  | H-5300 Series# |  |  |
|  |  | H-7300 Series# |  |  |
|  | RS101-RS111# | RS101-RS111# | 4 or 5 | 100 |
|  | 2R1121-6R1131# | 2R1121-6R1131# |  |  |
|  | 2R1421-6R1431# | 2R1421-6R1431# |  |  |
|  | RS202# | RS202# | 4 or 5 | 200 |
|  | RS212, RS213# | RS212, RS213# | 4 or 5 | 200 |
|  | RS220-RS233# | RS220-RS233# |  |  |
|  | 2R2332-6R2392# | 2R2332-6R2392# |  |  |
|  |  |  |  |  |
| Eaton Electrical | R-RS512-CH | RS502-CH # | 4 or 5 | 150 |
|  | R-RS502-CH | RS512-CH# |  |  |
|  |  | H-4300-CH Series# | 4, 5, 7 | 320 |
|  |  | H-5300-CH Series# |  |  |
|  |  | H-7300-CH Series# |  |  |
|  | RS101-RS111-CH # | RS101-RS111-CH # | 4 or 5 | 100 |
|  | 2R1121-6R1131-CH# | 2R1121-6R1131-CH # |  |  |
|  | 2R1421-6R1431-CH # | 2R1421-6R1431-CH # |  |  |
|  | RS202-CH # | RS202-CH # | 4 or 5 | 200 |
|  | RS212-CH, RS213-CH # | RS212-CH, RS213-CH # | 4 or 5 | 200 |
|  | RS220-RS233-CH # | RS220-RS233-CH # |  |  |
|  | 2R2332-6R2392-CH # | 2R2332- 6R2392-CH # |  |  |
|  |  |  |  |  |
| Dyna-Tech | Overhead |  |  |  |
|  | 1100-C - 1107-C | 1000-C - 1007-C | 4 & 5 | 100 |
|  | 1300-C - 1307-C | 1200-C - 1207-C | 4 & 5 | 100 |
|  | 2100-CH-2107-CH | 2000-CH-2007-CH | 4 & 5 | 200 |
|  | 2300-CH-2307-CH | 2200-CH-2207-CH | 4 & 5 | 200 |
|  | Underground |  |  |  |
|  |  | 2590-CHU-2597-CHU | 4 & 5 | 200 |
|  |  | 2790-CHU-2797-CHU | 4 & 5 | 200 |
|  |  | 2090-CHU-2097-CHU | 4 & 5 | 200 |
|  |  | 2290-CHU-2297-CHU | 4 & 5 | 200 |
|  |  |  |  |  |
|  |  |  |  |  |
| General Switch | 42100 Series\* |  | 4, 5, 6 | 100 |
|  |  |  |  |  |

\*UL Label

#Available with UL label

gb-1.2

September 2014

gb - Meter Sockets

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Type or Catalog Number | |  |  |  |  |
|  |  |  |  |  |  |  |
| Manufacturer | Ring | Ringless | No. Jaws | Bypass | Rating Amps. | Main Breaker |
|  |  |  |  |  |  |  |
| **Landis & Gyr** | Overhead |  |  |  |  |  |
|  | AS Series | AS Series | 4, 5, 6 |  | 100-200 |  |
|  |  | A2 thru A6 | 4, 5 |  | 100-200 |  |
|  |  | Series (Multiple Mounting) |  |  |  |  |
|  |  | CQ# | 4, 5, 7 |  | 200 |  |
|  |  | HQ# | 4, 5, 7 |  | 200 HD |  |
|  |  | HQ-T | 6, 7, 8, 13 |  | 20 |  |
|  | Underground |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  | RSU# | 4, 5, 6 |  | 200 |  |
|  |  | CQ-U# | 4, 5, 7 |  | 200 |  |
|  |  | HQ-U# | 4, 5, 7 |  | 200 |  |
|  |  |  |  |  |  |  |
| **Milbank** | Overhead |  |  |  |  |  |
|  |  | S7462, 3,4,5,6 |  |  |  |  |
|  |  | S4950-RL-200 | 4 |  | 200 | 200 |
|  |  | S3950-RL-100 | 4 |  | 100 | 100 |
|  |  | U4216-RXL | 4 | Bypass | 200 |  |
|  |  | U5786-X-K3-K2-BL | 4 or 5 | HD LVR | 320 (400 max) (HD) |  |
|  |  | U7362\*, 3,4,5,6 | 4 or 5 |  | 100 |  |
|  |  | U7487-XL-TG-KK | 4 or 5 | Horn | 125 |  |
|  | S7486 Series | R7486 Series\* | 4 or 5 |  | 100 |  |
|  | S7262 Series | U7262 Series\* | 4 or 5 |  | 150 |  |
|  | S7021 Series | U7021 Series\* | 4 or 5 |  | 200 |  |
|  | S9550 Series | U9550 Series\* | 4 or 5 |  | 200 (HD) |  |
|  | S9700 Series | U9700 Series\* | 7 |  | 200 (HD) |  |
|  |  | U9801-RRL | 4 or 5 | HD LVR | 200 |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | Underground |  |  |  |  |  |
|  |  | U4216-RXL | 4 | Bypass | 200 |  |
|  |  | U7487-XL-TG-KK | 4 or 5 | Horn | 125 |  |
|  |  | U5786-X-K3-K2-BL | 4 or 5 | HD LVR | 320 (400 max) (HD) |  |
|  | S8086-XL | U8086-XL\* | 4 or 5 |  | 100 |  |
|  | S8084-XL | U8084-XL\* | 4 or 5 |  | 150 |  |
|  | S7040-XL | U7040-XL\* | 4 or 5 |  | 200 |  |
|  | S9551-XL | U9551-XL\* | 4 or 5 |  | 200 (HD) |  |
|  | S9701-XL | U9701-XL\* | 7 |  | 200 (HD) |  |
|  |  | U9801-RRL | 4 or 5 | HD LVR | 200 |  |

# Available with UL label

\*UL label

gb-1.3

September 2014

gb - Meter Sockets

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Type or Catalog Number | |  |  |  |  |
|  |  |  |  |  |  |  |
| Manufacturer | Ring | Ringless | No. Jaws | Bypass | Rating Amps. | Main Breaker |
|  |  |  |  |  |  |  |
| **Milbank** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | Underground Pedestal |  |  |  |  |  |
|  | MPAP-200-MB-78 |  | 4 |  | 200 | 200 |
|  | MPAPD-200-MB-78 (double sided) |  | 4 |  | 200 | 200 |
|  |  |  |  |  |  |  |
| **Superior** | Overhead |  |  |  |  |  |
|  |  | 501 | 4, 5 |  | 100 |  |
|  | 314\* | 414\* | 4, 5 |  | 150 |  |
|  | 314\* | 414\* | 4, 5 |  | 200 |  |
|  |  | 452 Series | 4, 5 |  | 150 per sta. |  |
|  | 382 Series | 482 Series\* | 4, 5 |  | 200 per sta. |  |
|  |  | 492 Series | 7 |  | 200 3ø 4w Y or Delta |  |
|  |  |  |  |  | per sta. |  |
|  |  | RLK Series\* | 5, 7 |  | 200 3ø 4W Y or Delta |  |
|  |  |  |  |  | 600 V |  |
|  |  |  |  |  |  |  |
|  | Underground |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Superior** | 314\* | 414\* | 4, 5 |  | 100 |  |
|  |  | 414\* | 4, 5 |  | 150 |  |
|  |  | 414 | 7 |  | 200 3ø 4w Y or Delta |  |
|  |  | "RLPK" Series | 5, 7 |  | 200 3ø 4w Y or Delta |  |
|  |  |  |  |  | 600 V |  |
|  |  | BRL 1915 | 4, 5 |  | 150 per sta. |  |
|  |  |  |  |  |  |  |

#Available with UL label

\* UL label

\*\* Transformer rating in first figure; maximum loading shown by second figure

Conditional List

gb(1)

July 2009

gb - Meter sockets

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Durham  M-400 ampere 4 or 5 jaws for use with Class 10 meters | To obtain experience. |
|  |  |
| Landis & Gyr  Meter mounting device 400 ampere, Type K-4# for use with Type MS-K, 1 ø Duncan meters  Socket type HQ-4S 4 jaws rated for Class 300 service | 1. To obtain experience.  2. To be used only where Class 400 meters are permitted by local regulatory bodies.  1. To obtain experience.  2. To be used only where Class 300 meters are permitted by regulatory bodies. |
|  |  |
| Milbank  Type S1079-F, 4 jaws rated for Class 320 service | To obtain experience. |
|  |  |

#Available with UL label.

gj-1

July 2009

gj - Crossarm Assemblies and Arm Spacers

Distribution

Wood crossarm assembly complete with braces and attaching hardware, fittings and bolts

Crossarm Assembly

|  |  |  |
| --- | --- | --- |
| Manufacturer | Crossarm Size | Catalog No. |
|  |  |  |
| Brooks | 3-1/2” x 4-1/2” x 8'-0" 3-3/4” x 5-3/4” x 8'-0" 3-3/4” x 7-3/4” x 8'-0" 3-3/4” x 7-3/4” x 10'-0" | 3103-A8 3103-C8 3203-A8 3203-A10 |
|  |  |  |
| Hughes Brothers | 3-1/2” x 4-1/2” x 8'-0" 3-3/4” x 5-3/4” x 8'-0" 3-3/4” x 7-3/4” x 8'-0" 3-3/4” x 7-3/4” x 10'-0" | 2890A 2890B 2892-A 2892-B |
|  |  |  |
| Pennington | 3-1/2” x 4-1/2” x 8'-0" 3-3/4” x 5-3/4” x 8'-0" 3-3/4” x 7-3/4” x 8'-0" | C500B C500F C500M |

Twin Arm Spacer\*

To be used with standard hardware, 3-5/8" x 4-5/8" x 8’-0” crossarm, and 28" wood braces

|  |  |
| --- | --- |
| Line Hardware | CAS-455 |

\*Restricted to applications where the conductor's maximum design tension is less than 1250 lbs. and to conductor sizes 1/0 ACSR and below.

Conditional List

gj(1)

June 2011

gj - Crossarm Assemblies

Braceless, wood

|  |  |  |
| --- | --- | --- |
| Manufacturer | Dimensions | Conditions |
|  |  |  |
| Aluma-Form  HD-DEA-86-EB-REA  HD-2-DEA-86-EB-REA  HD-DEA-108-EB-REA  HD-2-DEA-108-EB-REA | 4-1/4” x 5-1/2” x 8’-0”  5-3/8” x 5-1/2” x 8’-0”  4-1/4” x 5-1/2” x 10’-0”  5-3/8” x 5-1/2” x 10’-0” | To obtain experience. |
|  |  |  |
| Hughes Brothers  3377-A7.5  3377-A8.5  3377-A9.5 | 3-1/2” x 7-1/2” x 8’-0”  3-1/2” x 8-1/2” x 8’-0”  3-1/2” x 9-1/2” x 8’-0” | To obtain experience. |
|  |  |  |
|  |  |  |

Conditional List

gj(2)

January 2017

|  |  |  |
| --- | --- | --- |
| gj - Crossarm Assemblies | | |
|  | | |
| Braceless, fiberglass | | |
|  |  |  |
| Aluma-Form |  |  |
| FDA20-96 | 3-5/8” x 4 5/8” x 8’ | To obtain experience. |
| FDA20-120 | 3-5/8” x 4 5/8” x 10’ |  |
| FDA25-96 | 3-5/8” x 4 5/8” x 8’ |  |
| FDA25-120 | 3-5/8” x 4 5/8” x 10’ |  |
| FDA30-96 | 3-5/8” x 4 5/8” x 8’ |  |
| FDA30-9120 | 3-5/8” x 4 5/8” x 10’ |  |
|  |  |  |
| Geotek (PUPI)  DA2000096  DA2000120  DA2500096  DA2500120  DA3000096  DA3000120  DA4000096  DA4000120  DA4400096  DA4400120 | 3-5/8” x 4-5/8” x 8’-0”  3-5/8” x 4-5/8” x 10’-0”  3-5/8” x 4-5/8” x 8’-0”  3-5/8” x 4-5/8” x 10’-0”  3-5/8” x 4-5/8” x 8’-0”  3-5/8” x 4-5/8” x 10’-0  4” x 6” x 8’-0”  4” x 6” x 10’-0”  4” x 6” x 8’-0”  4” X 6” X 10’-0” | To obtain experience. |
|  |  |  |
| MacLean Power Systems  PZ08LD  PZ10LD  PY08SD  PY10SD  PW08LD  PW10LD | 4” x 6” x 8’ – 0”  4” x 6” x 10’ – 0”  4” x 6” x 8’ – 0”  4” x 6” x 10’ – 0”  3-5/8” x 4-5/8” x 8’ – 0”  3-5/8” x 4-5/8” x 10’ – 0” | To obtain experience. |
|  |  |  |
| Powertrusion  PSD082A1FRUS  PSD102A1FRUS  PHD082A1FRUS  PHD102A1FRUS | 4” x 6” x 8’-0”  4” x 6” x 10’-0”  4” x 6” x 8’-0”  4” x 6” x 10’-0” | To obtain experience. |
|  |  |  |
| Shakespeare  IDB096  XDB096  HDB096  IDB120  XDB120 | 4" x 6" x 8'-0"  4" x 7-1/2" x 8'-0"  3-1/2" x 4-1/2" x 8'-0"  4" x 6" x 10'-0"  4" x 7-1/2" x 10'-0" | To obtain experience. |
| TDB096 | 3-1/2” x 4-1/2” x 8’-0” |  |
| HDB120 | 3-1/2” x 4-1/2” x 10’-0” |  |
| TDB120 | 3-1/2” x 4-1/2” x 10’-0” |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Conditional List

gj(2.1)

April 2016

|  |  |  |
| --- | --- | --- |
| gj - Crossarm Assemblies | | |
|  | | |
| Braceless, fiberglass | | |
| Manufacturer | Description | Conditions |
| DIS-TRAN Wood Products, LLC |  |  |
| CDL Series, CDM Series, CDH Series | 8-foot and 10-foot | To Obtain experience. |
|  |  |  |
|  |  |  |
| Creative Pultrusions, Inc. |  | To obtain experience |
| SD409600K | 4"x6"x 8' |  |
| SD401200K | 4"x6"x 10' |  |
| SD609600K | 3-5/8"x4-5/8"x 8' |  |
| SD601200K | 3-5/8"x4-5/8"x 10' |  |
| SD800960K | 3-5/8"x4-5/8"x 8' |  |
| SD801200K | 3-5/8"x4-5/8"x 10' |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

gw-1

March 2012

gw - Crossarm Assembly for H-Frame Construction

Applicable Specification: RUS Specification T-7, Revision dated November 1962

Applicable Drawing: TH-11B Series (161 kV maximum)

No braces (TH-11B)

Two vee braces on outside (TH-11BVO)

Two vee braces on inside (TH-11BVI)

Four vee braces (TH-11BV4)

3-5/8" x 9-3/8" x 33' wood crossarm assembly complete with attaching hardware, fittings, bolts and 3‑3/8" x 5-3/8" braces.

Catalog Nos. or Drawing Nos.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | TH-11B | TH-11BVO | TH-11BVI | TH-11BV4 |
|  |  |  |  |  |
|  | Items | Items | Items | Items |
| (Assemblies) | gw | gw and vo | gw and vi | gw and vv |
|  |  |  |  |  |
| Brooks (1, 2) | 6411 | 6411-1 | 6411-2 | 6411-3 |
| DIS-TRAN Wood Products, LLC (2,3) | D3011 | D3011VO | D3011VI | D3011V4 |
| Hughes Brothers (1, 2) | C3316-B | C3316-B | C3316-B | C3316-B |
| Pennington (1, 2) | CCC11B72 | CCC11B72-VO | CCC11B72-VI | CCC11B72-V4 |
|  |  |  |  |  |

1 - Fixed spacer fitting sizes as required

2 - Adjustable spacers are available

gw-2

March 2012

gw - Crossarm Assembly for H-Frame construction

(Double Arm) 230 kV (Small Angle)

Applicable Specification: RUS Specification T-8, Drawing: TH-231B

Assembly complete with attaching hardware, fittings, bolts and braces.

|  |  |
| --- | --- |
| Crossarm 3-5/8" x 9-3/8" | |
|  |  |
| Manufacturer | Catalog Number |
|  |  |
| Brooks (1, 2) | 64231 |
| DIS-TRAN Wood Products, LLC (2,3) | D3231 |
| Hughes Brothers (1, 2) | C-3338-B |
| Pennington (1, 2) | CCC231B82 |
|  |  |
|  |  |
| Crossarm 5-1/8" x 7-1/2" | |
|  |  |
| Brooks (1, 2) | 64231L |
| Hughes Brothers (1, 2) | C-3338-BL |
| Pennington (1, 2) | CCC231BT |
|  |  |

1 - Fixed spacer fitting sizes as required.

2 - Adjustable spacers are available.

gy-1

March 2012

gy - Crossarm Assembly for H-Frame Construction

(Double Arm)

Applicable Specification: RUS Specification T-7, Revision dated November 29, 1962

Applicable Drawing: TH-10 Series

No braces (TH-10)

Two vee braces on outside (TH-10VO)

Two vee braces on inside (TH-10VI)

Four vee braces (TH-10V4)

3-5/8" x 9-3/8" x 32' wood crossarm assembly complete with attaching hardware, fittings, bolts and 3-3/8" x 5-3/8" braces.

Catalog Nos. or Drawing Nos.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | TH-10 | TH-10VO | TH-10VI | TH-10V4 |
|  |  |  |  |  |
|  | Items | Items | Items | Items |
| (Assemblies) | gy | gy and vo | gy and vi | gy and vv |
|  |  |  |  |  |
| Brooks (1, 2) | 6410 | 6410-1 | 6410-2 | 6410-3 |
| DIS-TRAN Wood Products, LLC (2,3) | D3010 | D3010VO | D3010VI | D3010V4 |
| Hughes Brothers (1, 2) | C-3316-A | C3316-A | C-3316-A | C-3316-A |
| Pennington (1, 2) | CCC1071 | CCC1071-VO | CCC1071-VI | CCC1071-V4 |
| Niedermeyer-Martin (1) | N-6710 | N-6711 | N-6712 | N-6713 |

1 - Fixed spacer fitting sizes as required

2 - Adjustable spacers are available

Conditional

gy(1)

August 2014

gy - Crossarm Assembly for H-Frame Construction

(Double Arm)

Applicable Specification: RUS Specification T-7, Revision dated November 29, 1962

Applicable Drawing: TH-10 Series

No braces (TH-10)

Two vee braces on outside (TH-10VO)

Two vee braces on inside (TH-10VI)

Four vee braces (TH-10V4)

**3-5/8" x 9-3/8" x 32' wood crossarm assembly complete with attaching hardware, fittings, bolts and 3-3/8" x 5-3/8" braces.**

Catalog Nos. or Drawing Nos.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | TH-10 | TH-10VO | TH-10VI | TH-10V4 |
|  |  |  |  |  |
|  | Items | Items | Items | Items |
| (Assemblies): | gy | gy and vo | gy and vi | gy and vv |
|  |  |  |  |  |
| PUPI (1,2) | - | TX3020VO | - | TX3020V4 |
| (conditions): |  | (To obtain experience) |  | (To obtain experience) |

1 - Fixed spacer fitting sizes as required

2 - Adjustable spacers are available

**4” x 6” x 32’ fiberglass crossarm assembly complete with attaching hardware, fittings, bolts and 3-5/8” x 4-5/8” fiberglass braces.**

Catalog Nos. or Drawing Nos.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | TH-10 | TH-10VO | TH-10VI | TH-10V4 |
|  |  |  |  |  |
|  | Items | Items | Items | Items |
| (Assemblies): | gy | gy and vo | gy and vi | gy and vv |
|  |  |  |  |  |
| PUPI (1,2) | TX4020 | TX4020VO | TX4020VI | TX4020V4 |
| (conditions): |  | (To obtain experience) |  | (To obtain experience) |

1 - Fixed spacer fitting sizes as required

2 - Adjustable spacers are available

gy-2

March 2012

gy - Crossarm Assembly for H-Frame Construction

(Double Arm) 230 kV (Tangent)

Applicable Specification: RUS Specification T-8

Applicable Drawing: TH-230

Assembly complete with attaching hardware, fittings, bolts and braces.

Crossarm 3-5/8" x 9-3/8"

|  |  |
| --- | --- |
| Manufacturer | Catalog No. |
|  |  |
| Brooks (1, 2) | 64230 |
| DIS-TRAN Wood Products, LLC (2,3) | D3230 |
| Hughes Brothers (1, 2) | C-3338-A |
| Pennington (1, 2) | CCC23081 |
| Niedermeyer-Martin (1) | N-6720 |
|  |  |

Crossarm 5-1/8" x 7-1/2"

|  |  |
| --- | --- |
| Brooks (1, 2) | 64230L |
| Hughes Brothers (1, 2) | C-3338-AL |
| Pennington (1, 2) | CCC230T |
|  |  |
|  |  |

1 - Fixed spacer fitting sizes as required.

2 - Adjustable spacers are available.

gz-1

July 2009

gz - Crossarm Assembly for Wishbone Construction "Z" Type

(Single Arm)

Applicable Specification: RUS Specification T-5

Applicable Drawings: RUS Drawing TSZ-1

3-5/8' x 5-5/8" wood crossarm assembly complete with brace and attaching hardware, fittings, and bolts

The following manufacturers have shown compliance with the applicable specifications for this assembly:

|  |  |
| --- | --- |
| Manufacturer | Catalog Nos. or Drawing Nos. |
|  |  |
| Brooks | 64Z1 |
| Hughes Brothers | C-3162-A and C-3162.10 |

gz-2

July 2009

gz - Crossarm Assembly for Wishbone Construction, "Z" Type

(Double Arm)

Applicable Specification: RUS Specification T-5

Applicable Drawings: RUS Drawings TSZ-2

3-5/8" x 5-5/8" wood crossarm assembly complete with brace and attaching hardware, fittings and bolts

The following manufacturers have shown compliance with the applicable specifications for this assembly:

|  |  |
| --- | --- |
| Manufacturer | Catalog Nos. or Drawing Nos. |
|  |  |
| Brooks (2) | 64Z2 |
|  |  |
| Hughes Brothers | C-3162-B and C-3162.10 |

(2) Adjustable spacers are available.

Conditional List

rp(1)

May 2018

|  |  |
| --- | --- |
| rp - Wildlife Guards  Bushings and Live Parts Covers | |
|  |  |
| Manufacturer | Conditions |
|  |  |
| Cantega Technologies Inc.  “Greenjacket®” series | To obtain experience. |
|  |  |
| Chris Kaye (Critter Guard)  201 - "L" Bracket  202 – Roller  203 - Wheel | To obtain experience. |
|  |  |
| Hendrix Wire & Cable  BG-9 Bushing Cover | To obtain experience. |
|  |  |
| Hendrix (Eco Electrical Systems, Inc.)  EICG-1 Insulator/Conductor Cover  EICG-1-WLPT Insulator/Conductor Cover  EICG-1-20 Insulator/Conductor Cover  EICG-1-32 Insulator/Conductor Cover | To obtain experience. |
|  |  |
| Kaddas Enterprises Inc.  KE1039\* Short Line Insulator Protector  KE1045A\* Birdguard  KE 1049\* Birdguard  KE1053\* Arrester cap  KE1064\* Bushing cover  KE1066\* Arrester cap  KE1068\* Cutout Switch Cover  KE1077\* Bushing cover  KE1113\* Dead-End Shoe Cover  KE1165\* Low Profile Birdguard | To obtain experience. |
|  |  |
| Power Line Sentry, LLC |  |
| Line Covers (for C or J-neck insulators) | To obtain experience. |
| CCSTT, single top tie conductor cover |  |
| CCDTT, double top tie conductor cover |  |
| CCDST, double side tie conductor cover |  |
|  |  |
| Preformed Line Products  RPC-0800 RAPTOR PROTECTOR™ (black) | To obtain experience. |
| RPC-0801 RAPTOR PROTECTOR™ (grey) |  |
|  |  |
|  |  |
|  |  |
| NOTE: The material composition of these items does not contain a flame-retardant unless   specified by the manufacturer. | |
| \*Specified by manufacturer as being flame-retardant | |

Conditional List

rp(1.1)

May 2018

|  |  |
| --- | --- |
| rp - Wildlife Guards  Bushings and Live Parts Covers | |
|  |  |
| Manufacturer | Conditions |
|  |  |
| Tripp (Eco Electrical Systems, Inc.)  ECC-1 Cutout Cover  ECC-2-27-150BIL-S&C-Version 10 Cutout Cover  ECC-3-27-150BIL-S&C-Version 9 Cutout Cover  ECC-4-27-125BIL-S&C-Kearney HX Cutout Cover  ECC-5-ABB-LBU Cutout Cover | To obtain experience. |
|  |  |
| TE Connectivity - Energy  BCAC Bushing Connection Animal Covers  BCIC Bus Connection Insulating Covers  BISG Bus Insulator Squirrel Guard  MVLC Medium Voltage Line Cover (5-25kV) | To obtain experience. |
|  |  |
| Universal Thermography, Inc.  TGB-50007 Bushing Cover  TGB-65010 Bushing Cover  TGB-82512 Bushing Cover | To obtain experience. |
|  |  |
| W. H. Salisbury & Co.  21116 Bushing Cover  21317 Tri-Port Bushing Cover  BC512 Cone Bushing Cover  38-2SC Stinger Cover 3/8” IDx2’  38-12SC Stinger Cover 3/8” IDx12’  38-18SC Stinger Cover 3/8” IDx18’  38-50SC Stinger Cover 3/8” IDx50’  38-100SC Stinger Cover 3/8” IDx100’  58-12SC Stinger Cover 5/8” IDx12’  58-50SC Stinger Cover 5/8” IDx50’  58-100SC Stinger Cover 5/8” IDx100’  34-12SC Stinger Cover 3/4” IDx12’  34-25SC Stinger Cover 3/4” IDx25’ | To obtain experience. |
|  |  |
| Utility Solutions, Inc. |  |
| USVS Series\* | To obtain experience. |
|  |  |
|  |  |
|  |  |
| NOTES: The material composition of these items does not contain a flame-retardant unless specified by the manufacturer.  \*Denotes flame-retardant material. | |
|  | |

Conditional List

rp(1.2)

May 2018

|  |  |
| --- | --- |
| rp - Wildlife Guards  Bushings and Live Parts Covers | |
|  |  |
| Manufacturer | Conditions |
|  |  |
| Reliaguard\*  C0-10005  LA-13002  TC-14001  Pl-12002  RCK-12001K  RK-11001K  RK-11002K  RK-11021 K  DE-16001  Pl-12001  PD- 04015F  PD-0522F  BC-15001  BC-15002  BB-20045-R  BB-25045-R  BB-40045-R  BB-45045-R  RW-30100  RW-36036  RW-36048  EEL-02503750-50-Y  EEL-03750500-50-Y  EEL-05000750-50-Y  EEL-07501000-50-Y  EEL-10001250-50-Y  EEL-12501500-50-Y  EEL-15001750-25-Y  EEL-17502000-25-Y | To obtain experience. |
|  |  |
|  |  |
| NOTES: The material composition of these items does not contain a flame-retardant unless specified by the manufacturer.  \*Denotes flame-retardant material. | |

Conditional List

rp(2)

July 2009

Anti-Perch Devices

|  |  |
| --- | --- |
| Manufacturer | Conditions |
| Hendrix Wire & Cable  Catalog No. HPP-24 | To obtain experience |

NOTE: The material composition of these items does not contain a flame-retardant unless specified by the manufacturer.

sb-1

March 2015

sb - Switch, disconnect (single-pole, hook operated station class)

NEMA standard switches for station or line structure use where single-pole switching is permissible

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Type | Voltage Ratings | System Voltages  Line to Line |
|  |  |  |  |
| ABB | HPL | 15 thru 69 kV | 12.5 thru 69 kV |
|  |  |  |  |
| Bridges | EH | 15 thru 69 kV | 12.5 thru 69 kV |
|  | EHL(L) | 15 thru 34.5 kV | 12.5 thru 34.5 kV |
|  |  |  |  |
| Cleaveland/Price | LCO-C | 15 thru 69 kV | 12.5 thru 69 kV |
|  |  |  |  |
| Cooper Power Systems | D73P\*\*(PL) | 15.5, 25.8, 38kV | 12.5 thru 35.5kV |
|  |  |  |  |
| G & W Electric | B-2M | 15 thru 69 kV | 12.5 thru 69 kV |
|  | EV(PL) | 15 thru 34.5 kV | 12.5 thru 34.5 kV |
|  |  |  |  |
| Hubbell (Chance) | M3(PL) | 15 thru 27 kV | 12.5 thru 24.9 kV |
|  |  |  |  |
| Johnson | HPT | 15 thru 69 kV | 12.5 thru 69 kV |
|  |  |  |  |
| Joslyn (Hi-Voltage) | HU | 15 thru 34.5 kV | 12.5 thru 34.5 kV |
|  | HI | 15 thru 34.5 kV | 12.5 thru 34.5 kV |
|  |  |  |  |
| Kearney/Cooper Power Systems | M-72(PL) | 15 thru 69 kV | 12.5 thru 69 kV |
|  | H-72 | 15 thru 34.5 kV | 12.5 thru 34.5 kV |
|  |  |  |  |
| MEMCO | STV | 15 thru 69 kV | 12.5 thru 69 kV |
|  | STU | 15 thru 69 kV | 12.5 thru 69 kV |
|  |  |  |  |
| Morgan | DHS(PL) | 15 thru 69 kV | 12.5 thru 69 kV |
|  |  |  |  |
| Royal | BT | 15 thru 69 kV | 12.5 thru 69 kV |
| Switchgear | BLT(PL) | 15 and 23 kV | 12.5 thru 24.9 kV |
|  |  |  |  |
| S & C\* | LBD(PL) | 15 thru 34.5 kV | 12.5 thru 34.5 kV |
|  | Alduti (L) | 15 and 25 kV | 12.5 thru 24.9 kV |

(L) Means solid material load interrupters are available and accepted.

(LV) Means vacuum interrupters are available and accepted.

(PL) Means hooks for portable load interrupters are available for voltages 34.5 kV and below. Consult switch manufacturer concerning loop switching applications at higher voltages.

\*Available with porcelain insulators. Available with "Cypoxy" cycloaliphatic epoxy insulators through 34.5 kV on request.

\*\*Insulators are available in Silicone Rubber, Porcelain, and Cycloaliphatic.

sb-1.1

July 2009

sb - Switch, disconnect (single-pole, hook-operated station class)

NEMA standard switches for station or line

structure use where single-pole switching is permissible

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Type | Voltage Ratings | System Voltages Line-to-Line |
|  |  |  |  |
| Seeco | BT | 34.5 thru 69 kV | 34.5 thru 69 kV |
|  |  |  |  |
| Siemens-Allis | HA | 15 thru 69 kV | 12.5 thru 69 kV |
|  | HS(PL) | 15 and 25 kV | 12.5 thru 24.9 kV |
|  |  |  |  |
| Southern States | PBO | 15 thru 69 kV | 12.5 thru 69 kV |
|  | \*PBN | 15 thru 23 kV | 12.5, 13.2, 24.9 kV |
|  |  |  |  |
| USCO | HH(PL) | 15 thru 69 kV | 12.5 thru 69 kV |
|  |  |  |  |

(L) Means solid material load interrupters are available and accepted.

(LV) Means vacuum interrupters are available and accepted.

\* With steel base only.

(PL) Means hooks for portable load interrupters are available for voltages 34.5 kV and below. Consult switch manufacturer concerning loop switching applications at higher voltages.

sb-2

October 2018

sb – Switch, disconnect (single-pole, hook operated distribution class)\*

For distribution line use where power class insulation is not required and single-phase switching is permissible.

(Not suitable for substation use)

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Type | Voltage Rating | System Voltage Line-to-Line |
|  |  |  |  |
| Cooper Power Systems | D73P\*\*\*(PL) | 15.5, 25.8, 38kV | 12.5 thru 35.5kV |
|  |  |  |  |
| G & W Electric Company | EV(PL) | 15 kV | 12.5 kV |
|  |  |  |  |
| Hubbell (Chance) | M3(PL) | 15 and 27 kV | 12.5 thru 24.9 kV |
|  | M3C | 15 and 27 kV | 12.5 thru 24.9 kV |
|  |  |  |  |
| Kearney/Cooper Power  Systems | D-73(PL) | 15 and 25 kV | 12.5, 13.2, 24.9 kV |
|  |  |  |  |
| Morgan | DHS(PL) | 15 and 23 kV | 12.5, 13.2, 24.9 kV |
|  |  |  |  |
| Royal | BLT (PL) | 7.5 thru 34.5 kV | 7.5 thru 34.5 kV |
| Switchgear | BILT (PL) | 7.5 thru 34.5 kV | 7.5 thru 34.5 kV |
|  |  |  |  |
| S & C\*\* | LBD(PL) | 15 and 25 kV | 12.5, 13.2, 24.9 kV |
|  |  |  |  |
| Siemens-Allis | HD(PL) | 15 and 25 kV | 12.5 thru 24.9 kV |
|  |  |  |  |
| Siemens Energy, Inc. | LER (L)(PL) | 15 and 25 kV | 12.5 thru 24.9 kV |
|  | SER (L)(PL) | 15, 25, and 38 kV | 12.5 thru 34.5 kV |
|  |  |  |  |

NOTE: Switches on this page must be furnished with four bolts for double crossarm mounting.

(L) Means solid material load interrupters are available and accepted.

(PL) Means hooks for portable load interrupters are available.

(LV) Means vacuum interrupters are available and accepted.

\*Steel bases only.

\*\*Available with porcelain insulators. Available with "Cypoxy" cycloaliphatic epoxy insulators through 34.5 kV on request.

\*\*\*Insulators are available in Silicone Rubber, Porcelain, and Cycloaliphatic.

Conditional List

sb(1)

April 2014

sb - Switch, hookstick

(line tension switches)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Type | Voltage Ratings | System Voltages  Line to Line | Conditions |
|  |  |  |  |  |
| Aluma-Form, Inc. | HDS-600A | 15 kV thru 34.5 kV | 12.5 kV thru 34.5 kV | To obtain experience. |
|  | HDS-900A | 15 kV thru 34.5 kV | 12.5 kV thru 34.5 kV | To obtain experience. |
|  |  |  |  |  |
| TE Connectivity - Energy | AMPACT (ILD-II) | 15 kV | 12.5/7.2 kV | To obtain experience. |
|  |  |  |  |  |
| Bridges | 127 | 15 kV | 12.5/7.2 kV | To obtain experience. |
|  |  |  |  |  |
| Hubbell (Chance) | ALTD06200R | 15 kV | 12.5/7.2 kV | To obtain experience. |
|  |  |  |  |  |
| Royal Switchgear | IL6B-H  *(available with silicone polymer insulators as catalog number IL6NP)* | 15 kV | 12.5/7.2 kV | To obtain experience. |
|  |  |  |  |  |
| NOTE: All switches listed on this page have hooks for portable load interrupters. | | | | |

sc-1

July 2009

sc - Regulators, Voltage

12.5/7.2 kV

13.2/7.62 kV

Applicable Specification: "RUS Specification for Substation Regulators," S-2

|  |  |  |
| --- | --- | --- |
| Type | Size | Description |
|  |  |  |
| ABB | | |
|  |  |  |
| UTS, UTT | 167-1000 kVA | (S) Three phase step type |
|  |  |  |

Cooper Power Systems

|  |  |  |
| --- | --- | --- |
| VR-32 | 19.1 - 833 kVA | (SL)Single phase - step type |
| AB | 50 amp. | (L) Single-phase - step type |
|  |  | (Auto-Booster) |

General Electric

|  |  |  |
| --- | --- | --- |
| VR-1 | 38.1 - 509 kVA | (SL) Single-phase - step type |
| MLT | 500 - 1000 kVA | (S) Three-phase - step type |
| VML-32 | 500 - 833 kVA | (S) Single-phase - Vacuum step type |
| VMLT-32 | 1200 - 2800 kVA | (S) Three-phase - vacuum step type |

Siemens-Allis

|  |  |  |
| --- | --- | --- |
| JFR | 38.1 - 667 kVA | (SL) Single-phase - step type |

(L) Indicates line use

(S) Indicates substation use

sc-2

July 2009

sc - Regulators, Voltage

24.9/14.4 kV

|  |  |  |
| --- | --- | --- |
| Type | Size | Description |
|  |  |  |
| Cooper Power Systems | | |
|  |  |  |
| VR-32 | 72 - 833 kVA | (SL) Single phase - step type |
| AB. | 50 amp | (L) Single phase - step type |
|  |  | (Auto-Booster) |

General Electric

|  |  |  |
| --- | --- | --- |
| VR-1 | 72 - 576 kVA | (SL) Single phase - step type |
| VML-32 | 500 - 833 kVA | (S) Single phase - vacuum step type |
| VMLT-32 | 1200 - 4666 kVA | (S) Three phase - vacuum step type |

Siemens-Allis

|  |  |  |
| --- | --- | --- |
| JFR | 72 - 833 | (SL) Single phase - step type |

(L) Indicates line use

(S) Indicates substation use

Conditional List

sc(1)

July 2009

sc - Regulators, Voltage

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| General Electric  Three-phase, step-type substation regulator Type TMLT-32 (13.2/7.62 kV) | To obtain experience. |
|  |  |
| Howard Industries, Inc.  Single-phase, 32 step, line/substation, 50, 75, 100, 150, 219, 328, 438, 546, and 656 ampere, 7.62 kV, Type SVR-1  Single-phase, 32 step, line/substation, 50, 100, 150, 200, 231, 300, 400, 463, and 578 ampere, 14.4 kV, Type SVR-1 | To obtain experience. |
|  |  |
| Siemens-Allis  Three-phase, step-type substation regulator Type SFR (13.2/7.62 kV) | To obtain experience. |
|  |  |

sd-1

March 2018

sd - Current Transformers

Outdoor Type

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Manufacturer | .6 kV | 15 kV | 25 kV | 34.5 kV | 69 kV |
|  |  |  |  |  |  |
| ABB | CSF/CMS | KOR-11 | ICT-150 | ICT-200 | ICT-350 |
| CMF | KON-11 | KOR-l5 | KOR-20 | - |
| CLC/CLE | KOT-11 | KOT-l5 | - | - |
|  |  |  |  |  |  |
| Arteche | IRH-1  IRH-5  IRH-7  IRH-10  IRH-12 | CRE-17  CRB-17  ME-015  MK-15  MI-015  KM-15  KCB-17 | CRF-24 CRE-24  ME-025  MK-25  MI-025  KM-25  KCB-24 | CRF-36  CRF-36 (extended range)  CRK-36  CE-034  ME-036  MK-36  KM-36 | CRH-72  CRK-72  CE-069 |
|  |  |  |  |  |  |
| G.E.C. Durham Industries (Astra) | AA&TA |  |  |  |  |
| AB | - | - | - | - |
| AD&AC | - | - | - | - |
|  |  | - | - | - | - |
|  |  |  |  |  |  |
| Electromagnetic Industries  (Square D) |  | CO3-110 | CO3-150 | CO3-200 | lK-350 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| General Electric | JCR-0 | JKW-5 | JKW-6 | JKW-7 | JKW-350 |
| JCW-0 | JCK-5 | JKW-150 | JKW-200 | KG-350 |
| JAK-0 | - | KG-150 | KG-200 |  |
| JAD-0 | - | - | - | - |
|  |  |  |  |  |  |
| Kuhlman Electric |  | BB-15-971 | BB-25-973 | BB-34-975 | COF-350 |
|  | BB-15-972 | BB-25-974 | BB-34-976 | - |
|  |  |  |  |  |  |
| Arteche | - | CRE-17 | CRF-24 | CRF-36 | - |
|  |  | CRB-17 | CRE-24 | CRF-36 (extended range) | - |
|  |  |  |  |  |  |
| Ritz Instrument Transformers, Inc. | DCBW | GIFU 15-01; 0.3 B0.1-1.8 | GIFU 25-01; 0.3 B0.1-0.9 | GIFS 36-55; 0.3 B0.1-0.9 | GIF 72.5-68; 0.3 B0.1-2.0 |
| DCCW | GIFU 15-01; 0.3 B0.1-0.5 | GIFU 25-01; 0.3 B0.1-2.0 | GIF 36-69; 0.3 B0.1-2.0 |  |
| DCAB |  |  |  |  |
|  |  |  |  |  |  |
| Schlumberger | R6S | - | - | - | - |
| R6SA | - | - | - | - |
| R6M | - | - | - | - |
| R6L | - | - | - | - |
|  |  |  |  |  |  |

NOTE: The transformer types listed above are accepted in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.

Conditional List

sd(1)

February 2011

sd - Current Transformers

Outdoor Type

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Electromagnetic Ind. (Square D)  Type UMCT, 0.6 kV  Type UCT, 0.6 kV  Type IK 4-350-69, 69 kV  (cycloaliphatic resin bushings) | To obtain experience. |
|  |  |
|  |  |
|  |  |

se-1

March 2018

se - Voltage Transformers

Outdoor Type

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Manufacturer | .6 kV | 15 kV | 25 kV | 34.5 kV | 69 kV |
|  |  |  |  |  |  |
| ABB | PPM | VOG-ll | LPT-l50 | LPT-200 | LPT-350 |
|  | - | VOY-ll | VOG-l5 | VOG-20 | - |
|  | - | VOZ-ll | VOZ-l5 | VOZ-20 | - |
|  |  |  |  |  |  |
| Arteche |  | VRL-17  URL-17  URJ-17  VRJ-17  ME-015  MK-15  MI-015  KM-15  KCB-17 | URJ-24  VRJ-24  URN-24  VRN-24  ME-025  MK-25  MI-025  KM-25  KCB-24 | VRS-36  URS-36  ME-036  MK-36  KM-36 | URU-72  VRU-72 |
|  |  |  |  |  |  |
| Electromagnetic   Industries (Square D) |  | PO5-110 | PO5-150 | PO5-200 | U3-350-69 |
|  |  |  |  |  |  |
| General Electric | JVA-0 | JVW-5 | JVW-6 | JVW-7 | ET-350 |
|  | JVP-0 | JVW-110 | - | - | JVT-350 |
|  | - | - | JVT-150 | JVT-200 | - |
|  |  |  |  |  |  |
| Kuhlman Electric | - | PTT-110-977 | - | - | POF-350 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Ritz Instrument Transformers, Inc. | DVE-6 | VZF 15-20;  2 Bushing 0.3WXYZ | VZF 25-10;  2 Bushing 0.3WXYZ | VZF 36-10; 2 Bushing 0.3WXY | VEF 72-03;  1 Bushing 0.3WXYZ |
|  | DVF-6 | VZF 15-10;  2 Bushing 0.3WXY | VEF 25-10;  1 Bushing 0.3WXYZ | VEF 36-10;  1 Bushing 0.3WXY |  |
|  |  | VEF 15-10; 1 Bushing 0.3WXY |  |  |  |
|  |  | VEF 15-20; 1 Bushing 0.3WXYZ |  |  |  |
|  |  |  |  |  |  |
| Schlumberger | T5R | - | - | - | - |
|  | T6R | - | - | - | - |
|  | T7R | - | - | - | - |
|  |  |  |  |  |  |

NOTE: The transformer types listed above are acceptable in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.

Conditional List

se(1)

July 2009

se - Voltage Transformers

Outdoor Types

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| G.E.C. Durham Industries (Astra)  Type DB, 0.6 kV  Type DA, 0.6 kV  Type DF, 0.6 kV | To obtain experience. |
|  |  |
| Electromagnetic Industries (Square D)  Type U-450, 0.6 kV  Type U-4-350-69, 69 kV  (cycloaliphatic resin bushings) | To obtain experience. |
|  |  |
|  |  |
|  |  |

sj-1

March 2015

sj - Switches, oil circuit recloser by-pass

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | 15 kV  For use on12.5/7.2 kV systems | 27 kV For use on 24.9/14.4 kV systems | 27 kV\* For use on 34.5/19.9 kV systems | Current Rating Amperes |
|  |  |  |  |  |
| Cooper Power Systems | D73P\*\*-BE\*\*\* | D73P\*\*-BE\*\*\* | D73P\*\*-BE\*\*\* | 600, 900 |
|  |  |  |  |  |
| Hubbell (Chance) | M3-R | M3-R | M3-R | 600 |
|  |  |  |  |  |
| Kearney/Cooper Power Systems | D73RB | D73RB |  | 600 |
|  |  |  |  |  |
| Siemens Industry Inc. | B-2 | B-2 | B-2 | 600 |
|  |  |  |  |  |

\*Not For Use In Substations

\*\*Insulators are available in Silicone Rubber, Porcelain, and Cycloaliphatic.

\*\*\*Option BE means switch is equipped with bypass studs and REA 4 bolt back strap.

Conditional List

sj(1)

October 2018

sj - Switches, oil circuit recloser by-pass

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Manufacturer | 15 kV  For use on12.5/7.2 kV systems | 27 kV For use on 24.9/14.4 kV systems | 27 kV\* For use on 34.5/19.9 kV systems | Current Rating (Amperes) | Conditions |
|  |  |  |  |  |  |
| Hubbell (Chance) | BP3 | BP3 | BP3 | 600, 900 | To obtain experience |
|  | BPF | BPF | BPF | 600 |  |
|  |  |  |  |  |  |

sk-1

March 2015

sk - Switch, regulator by-pass - disconnect

For outdoor use

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  | Current |
|  | 15 kV for use on | 27 kV for use on | Rating |
| Manufacturer | 12.5/7.2 kV Systems | 24.9/14.4 kV Systems | Amperes |
|  |  |  |  |
| Cooper Power Systems | D73P3\*\* | D73P3\*\* | 600, 900 |
|  |  |  |  |
| Hubbell Power Systems, Inc. | BPR | BPR | 600 |
|  |  |  |  |
| Kearney/Cooper Power Systems | HB-65 | HB-65 | 600 |
|  |  |  |  |
| S & C Electric\* | XL | XL | 600 |
|  |  |  |  |
| Siemens-Allis | HR | HR | 600 |
|  |  |  |  |
| Siemens Industry Inc. | B-2 | B-2 | 600 |
|  |  |  |  |
| Southern States | BR | BR | 400,600 |
|  |  |  |  |

NOTE: All switches should be furnished with NEMA standard insulators and with 110 kV BIL rating (15 kV systems) or 150 BIL ratings (25 kV systems) for station use.

\*Available with porcelain insulators. Available with "Cypoxy" cycloaliphatic epoxy insulators through 34.5 kV on request.

\*\*Insulators are available in Silicone Rubber, Porcelain, and Cycloaliphatic.

Conditional List

sk(1)

July 2009

sk - Switch, regulator by-pass - disconnect

For outdoor use

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Cooper Power Systems  Type B, 15 kV, 400 amperes, 110 kV BIL for station use, 95 kV BIL for line use. | To obtain experience. |
|  |  |

NOTE: All switches should be furnished with NEMA standard insulators and with 110 kV BIL rating for station use.

sl-1

July 2009

sl - Switch, Combination Power Fuse and Disconnect

(Used with an additional disconnect switch to by-pass

oil circuit reclosers at substations)

|  |  |  |
| --- | --- | --- |
|  | 15 kV for use on | 27 kV for use on |
| Manufacturer | 12.5/7.2 kV systems | 24.9/14.4 kV systems |
|  |  |  |
| Joslyn (Hi-Voltage) | RFH | - |
|  |  |  |
| Kearney/Cooper Power Systems | MHX | MHX |
|  |  |  |
| S & C Electric\* | SMD/LBD | SMD/LBD |
|  | XS/LBD | - |
|  |  |  |
| Southern States | SF | - |
|  |  |  |

NOTE: All switches and cutouts should be furnished with NEMA standard insulators.

\*Available with porcelain insulators. Available with "Cypoxy" cycloaliphatic epoxy insulators through 34.5 kV on request.

sr-1

August 2018

sr - Steel Conductor for Substation Grounding, Copper-Clad or Galvanized

(See av-2 for copper grounding conductor)

|  |  |  |
| --- | --- | --- |
| Manufacturer | Type | Sizes |
|  |  |  |
| AFL Copperclad | copper-clad steel (dead soft annealed) | 7 No. 6 AWG  7 No. 5 AWG  7 No. 4 AWG  19 No. 9 AWG  19 No. 8 AWG  19 No. 6 AWG  19 No. 5 AWG |
|  |  |  |
| Copperweld Bimetallics, LLC\* | Dead Soft Annealed (DSA) Copperweld Conductors | 7 no 8 AWG  2/0 (19x0860” & 7x1379”)  7 no 7 AWG  7 no 6 AWG  7 no 5 AWG  7 no 4 AWG  4/0 (19x1055”)  19 no 9 AWG  19 no 8 AWG  19 no 7 AWG  19 no 6 AWG  19 no 5 AWG |
|  |  |  |
|  |  |  |
|  |  |  |
| NOTES:  \* Theft deterrent versions, both poly-jacketed and camouflaged are acceptable.   1. Minimum 40% conductivity 2. 7-strand conductors can be supplied in 19-strand configuration and vice-versa. 3. Conductors chosen must be able to carry the required short duration fault current and must be selected based on IEEE Standard 80. 4. When used in soil with resistivity of 25 ohm-meters (2500 ohms per cubic centimeter) or less cathodic protection must be incorporated into the grounding design. | | |
|  | | |
|  | | |

Conditional List

sr(1)

August 2018

sr - Steel Conductor for Substation Grounding, Copper-Clad or Galvanized

(See av-2 for copper grounding conductor)

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Indiana Steel & Wire  Steel Strand, BB Grade, Class C galvanized  5/8" (19 wire)  1/2" (7 wire)  9/16" (7 wire)  7/16" (7 wire) | 1. To obtain experience.  2. When used in soil with resistivity of 25 ohm-meters (2500 ohms per centimeter cube) or less, cathodic protection must be incorporated into the grounding design. |
|  |  |
| NOTES:   1. Minimum 40% conductivity 2. 7-strand conductors can be supplied in 19-strand configuration and vice-versa. 3. Conductors chosen must be able to carry the required short duration fault current and must be selected based on IEEE Standard 80. | |
|  |  |

vx-1

March 2012

vx - Cross Brace assembly, 3-3/8" x 5-3/8"

with hardware and fittings (Dwg. TM-110, RUS Specification T-7)

|  |  |
| --- | --- |
| Manufacturer | Catalog No. |
|  |  |
| Brooks Item 1-vx Item 2-vx | 6685-1 6685-2 |
|  |  |
| DIS-TRAN Wood Products, LLC  Item 1-vx | D2110B |
|  |  |
| Hughes Brothers Item 1-vx Item 2-vx | 1042-1 1042-2 |
|  |  |
| Niedermeyer-Martin Item 1-vx Item 2-vx | N-6714-1 N-6714-2 |
|  |  |
| Pennington Item 1-vx Item 2-vx | CCC-67-1 CCC-67-2 |
|  |  |

Cross Brace assembly, 3-5/8" x 7-1/2" Min.

with hardware and fittings (Dwg. TM-110, RUS Specification T-8)

|  |  |
| --- | --- |
| Manufacturer | Catalog No. |
|  |  |
| Brooks | 6695 |
| DIS-TRAN Wood Products, LLC | D2110C |
| Hughes Brothers | 2061A |
| Niedermeyer-Martin | N6721 |
| Pennington | CCC69 |
|  |  |

Conditional

vx(1)

August 2014

vx - Cross Brace assembly, 3-3/8" x 5-3/8"

with hardware and fittings (Dwg. TM-110, RUS Specification T-7)

|  |  |  |
| --- | --- | --- |
| Manufacturer | Catalog No. | Conditions |
|  |  |  |
| PUPI Item 1-vx Item 2-vx | XBR3020-1 XBR3020-2 | To obtain experience. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Cross Brace assembly, 3-5/8" x 7-1/2" Min.

with hardware and fittings (Dwg. TM-110, RUS Specification T-8)

|  |  |  |
| --- | --- | --- |
| Manufacturer | Catalog No. | Conditions |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

PART II

Underground Distribution Equipment

U ae-1

July 2009

U ae - Surge Arresters, Distribution

for Underground System Pole Risers

(Lightning Arresters)

SiC Type

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Manufacturer | Type | Accepted Ratings - kV | Duty | Manufacturer's Classification | Housing |
|  |  |  |  |  |  |
| ABB | GLV | 9, 10 | Normal | Distribution |  |
|  | LVBB | 18 | Normal | Distribution |  |
|  |  |  |  |  |  |
| General Electric | Alugard | 9, 10, 18 | Heavy | Distribution |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

NOTE: The arresters listed on this page may be used singly or in parallel, but must be applied in accordance with paragraph VI.A., in RUS Bulletin 61-3, "Underground Rural Distribution." Other arresters listed on pages ae-1 and ae-2 may be used for underground systems when applied in accordance with this bulletin.

Conditional List

U ae(1)

January 2015

U ae - Arresters, Surge

(Shielded for Underground System Pad-Mounted Equipment)

CONDITION OF ACCEPTANCE: To Obtain Experience

ELBOW ARRESTERS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Type | Ratings, kV | Type | Interface |
|  |  |  |  |  |
| Cooper Power Systems | M.O.V.E. | 9/10 | MOV | 15 kV |
|  | M.O.V.E. | 18 | MOV | 25 kV |
|  | VariGAP | 9/10 | (1) | 15 kV |
|  | VariGAP | 18 | (1) | 25 kV |
|  | Posi-Break M.O.V.E. | 3-21 | MOV | 25 kV |
|  | VariGAP Posi-Break M.O.V.E. | 9-15 | MOV | 25 kV |
|  |  |  |  |  |
| Elastimold ESNA | 167 ESA-10 | 10 | MOV | 15 kV |
|  | 273 ESA-18 | 18 | MOV | 25 kV |
|  |  |  |  |  |
| Hubbell | 215ELA-10 | 10 | MOV | 15kV |
|  | 225ELA-18 | 18 | MOV | 25kV |
|  |  |  |  |  |
| Joslyn | ZE | 10 | MOV | 15 kV |
|  |  | 18 | MOV | 25 kV |
|  |  |  |  |  |

(1) MOV Type (Internally Gapped)

Conditional List

U ae(1.1)

January 2015

U ae - Arresters, Surge

(Shielded for Underground System Pad-Mounted Equipment)

CONDITION OF ACCEPTANCE: To Obtain Experience

PARKING STAND ARRESTERS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Type | Ratings, kV | Type | Interface |
|  |  |  |  |  |
| Cooper Power Systems | MOV PSA | 9/10 | MOV | 15 kV |
|  | MOV PSA | 18 | MOV | 25 kV |
|  | MOV VariGAP PSA | 9/10 | (1) | 15 kV |
|  | MOV VariGAP PSA | 18 | (1) | 25 kV |
|  |  |  |  |  |
| Elastimold ESNA | 167 PSA-10 | 10 | MOV | 15 kV |
|  | 273 PSA-18 | 18 | MOV | 25 kV |
|  |  |  |  |  |
| Hubbell | 215PLA-10 | 10 | MOV | 15kV |
|  | 225PLA-18 | 18 | MOV | 25kV |
|  |  |  |  |  |

(1) MOV Type (Internally Gapped)

Conditional List

U ae(1.2)

January 2015

U ae - Arresters, Surge

(Shielded for Underground System Pad-Mounted Equipment)

CONDITION OF ACCEPTANCE: To Obtain Experience

BUSHING ARRESTERS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer | Type | Ratings, kV | Type | Interface |
|  |  |  |  |  |
| Elastimold ESNA | 167 BSA-10 | 10 | MOV | 15 kV |
|  | 273 BSA-18 | 18 | MOV | 25 kV |
|  |  |  |  |  |

(1) MOV Type (Internally Gapped)

Conditional List

U ae(2)

July 2009

U ae - Arresters, Surge

(For Underground System Pole Risers)

CONDITION OF ACCEPTANCE: To Obtain Experience

MOV Type

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Manufacturer | Type | Accepted Ratings - kV | Duty | Manufacturer' Classification | Housing |
|  |  |  |  |  |  |
| ABB | HMX | 9,10,18 | Heavy |  |  |
|  | RMX | 9,10,18 |  | Intermediate \* |  |
|  | XPR | 9,10,18,27 | Heavy | Distribution | Polymer |
|  |  |  |  |  |  |
| Cooper | CPS AZR VariSTAR | 9,10,18,27 | Heavy | Distribution | Porcelain |
|  | URS UltraSIL VariSTAR | 9,10,18,27 | Heavy | Distribution | Polymer |
|  |  |  |  |  |  |
| General Electric | Tranquell \*\* U.D. II | 9,10,18,27 | Normal | Distribution | Porcelain |
|  | Tranquell | 9,10,18,27 | Normal | Intermediate | Porcelain |
|  |  |  |  |  |  |
| Hubbell (Ohio Brass) | DynaVar-PVR | 9,10,18,27 | Heavy | Riser Pole | Polymer |
|  |  |  |  |  |  |
| Joslyn | ZRP | 9,10,18,27 | Heavy | Distribution | Polymer |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

\*Has intermediate class arrester characteristics but does not have intermediate class venting capability.

\*\*A non-fragmenting U.D. II Arrester is available for 9 & 10 kV designs at higher cost when specified.

Conditional List

U ae(2.1)

July 2009

U ae - Arresters, Surge

(For Underground System Pole Risers)

CONDITION OF ACCEPTANCE: To Obtain Experience

MOV Type (Internally Gapped)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Manufacturer | Type | Accepted Ratings - kV | Duty | Manufacturer's Classification | Housing |
|  |  |  |  |  |  |
| Cooper Power Systems | URT Evolution | 9,10,18,27 | Heavy | Distribution | Polymer |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

U an-1

April 2017

U an - Transformers, Distribution

Pad-Mounted, Dead-Front

(For underground application)

|  |  |  |
| --- | --- | --- |
| Manufacturer | Single-Phase 5 - 167 kVA | Three-Phase 30 - 2500 kVA |
|  |  |  |
| ABB | "Mini-Pak U-5" | Type MTR (75-1500 kVA) "Plazapad-U5" (2000-2500 kVA) |
|  |  |  |
| Central Moloney | "REA-LP" | “Three Phase Pad Mount REA” |
|  |  |  |
| Cooper Power Systems\* | "REA Shrubline” | "REA Terra-Tran" |
| \*Optional EnvirotempTM FR3TM fluid-filled designs are available, including optimized Cooper Power Systems PEAK™ transformer designs which allow reduced transformer size and/or overload capacity while providing for fire safety, environmental safety, and extended insulation life. This natural ester soybean oil based dielectric fluid is an extremely biodegradable, renewable resource that is classified as a less flammable fluid, and is non-toxic. Envirotemp™ and FR3™ are licensed trademarks of Cargill, Incorporated. PEAK™ is a trademark of Cooper Power Systems. | | |
|  |  |  |
| ERMCO, INC. | "Low-Profile" | “E-PAD” |
|  |  |  |
| General Electric | - | "Compad IV - REA" |
|  |  |  |
| H. K. Porter (Delta-Star) | "Low Profile U 5-R" | "Porter U5-R3" |
|  |  |  |
| Magnetron S.A.S. | Pad Mount 5-167 kVA | - |
|  |  |  |
| Howard | "Hi Pad REA" | "Hi Pad 3 REA" |
|  |  |  |
| Kuhlman | "Lo-Pak ELR" | "K-PAK-3 REA" |
|  |  |  |
| CG Power Systems USA, Inc. | "Turf-Hugger-R" | "Turf-Hugger-R" |
|  |  |  |
| United (KAEC) | "Pad-Mount" 15-100 kVA (1)  “Pad-Mount" 25 & 50 kVA (2) | - |
|  |  |  |
| VanTran | "Mini-Pad U5" (1) | "VanTran III-U5" |

NOTES

All acceptances are based on RUS Specification U-5, “Specifications for Pad-Mounted Transformers (Single and Three Phase).”

All single-phase and three-phase transformers above accepted for the following voltages (kV) unless otherwise noted: 12.47/7.2; 13.2/7.6; 24.9/14.4; and 24.9/14.4 x 12.47/7.2 dual voltage

(1) Accepted for 12.47/7.2 kV and 13.2/ 7.62 kV only.

(2) Accepted for 24.9/14.4 kV only.

The enclosures for these transformers have been certified as meeting the requirements of ANSI C57.12.28. A copy of the certification is available from the manufacturer.

Not all kVA sizes in above kVA ranges are available from all listed manufacturers.

Some of the above single-phase and three-phase transformers are available with internal under oil surge arresters. The availability and type of arresters vary with each manufacturer. The following types of under-oil arresters are acceptable: “UMX”, “Tranquell” and “AZU.”

U an-2

September 2013

U an - Transformers, Distribution

Pad-Mounted, Dead-Front

(For unit residential underground application)

(Single-phase, 7.2 kV and 7.6 kV)

|  |  |
| --- | --- |
| Manufacturer | 5 - 25 kVA Only |
|  |  |
| ABB | "Micro-Pak U-5" |
|  |  |
| Central Moloney | "REA-Mini-LP" |
|  |  |
| Cooper Power Systems\* | "Ranch Runner" |
| \*Optional EnvirotempTM FR3TM fluid-filled designs are available, including optimized Cooper Power Systems PEAK™ transformer designs which allow reduced transformer size and/or overload capacity while providing for fire safety, environmental safety, and extended insulation life. This natural ester soybean oil based dielectric fluid is an extremely biodegradable, renewable resource that is classified as a less flammable fluid, and is non-toxic. Envirotemp™ and FR3™ are licensed trademarks of Cargill, Incorporated. PEAK™ is a trademark of Cooper Power Systems. | |
|  |  |
| ERMCO, INC. | "REA-MicroTrim" |
|  |  |
| Howard | "Spacesaver Pad" |

NOTES

All acceptances are based on RUS Specification U-5, “Specifications for Pad-Mounted Transformers (Single and Three Phase).”

The enclosures for these transformers have been certified as meeting the requirements of ANSI C57.12.28. A copy of the certification is available from the manufacturer.

Conditional List

U an(1)

April 2014

U an - Transformers, Distribution

Pad-Mounted, Dead-Front

(For underground application)

Conditions for Acceptance: To Obtain Experience

|  |  |
| --- | --- |
| Manufacturer | Type |
| ABB | “Mini-Pak U-5” - Single-phase with composite fiberglass enclosure  “Mini Three Phase” (MTP) 30 - 225 kVA |
|  |  |
| Cam Tran | “Cam Tran” - Three-phase, 12.47/7.2  and 13.2/7.6 kV; 30-2500 kVA |
|  |  |
| Carte | Three-phase, 24.9/14.4 kV, 30 - 2,500 kVA |
|  |  |
| Cooper Power Systems\* | Single-phase, self-protected with “Magnex” interrupter  Single-phase, self-protected with “AZU” MOV heavy-duty, under-oil arrester |
| \*Optional EnvirotempTM FR3TM fluid-filled designs are available, including optimized Cooper Power Systems PEAK™ transformer designs which allow reduced transformer size and/or overload capacity while providing for fire safety, environmental safety, and extended insulation life. This natural ester soybean oil based dielectric fluid is an extremely biodegradable, renewable resource that is classified as a less flammable fluid, and is non-toxic. Envirotemp™ and FR3™ are licensed trademarks of Cargill, Incorporated. PEAK™ is a trademark of Cooper Power Systems. | |
|  |  |
|  |  |
| General Electric | “Compad -IV-REA” - Three-phase, 75-750 kVA  All above with amorphous metal cores |
|  |  |
| GE-Prolec | Mini Padmount, Single-phase, 10-167 kVA Three-phase, 12.47/7.2 kV, 45-2,500 kVA  Three-phase, 24.9/14.4 kV, 45-2,500 kVA |
|  |  |
| Square D | Class 7230 REA - Three-phase, 75-2500 kVA  12.47/7.2 kV and 13.2/7.62 kV |
|  |  |
| Van Tran | “Mini-Pad U5” - 5-167 kVA, 24.9/14.4 kV |

NOTES

All acceptances are based on RUS Specification U-5, “Specifications for Pad-Mounted Transformers (Single and Three Phase).”

All single-phase and three-phase transformers above conditionally accepted for the following voltages (kV) unless otherwise noted: 12.47/7.2; 13.2/7.6; 24.9/14.4; and 24.9/14.4 x 12.47/7.2 dual voltage

The enclosures for these transformers have been certified as meeting the requirements of ANSI C57.12.28. A copy of the certification is available from the manufacturer.

Not all kVA sizes are available from all listed manufacturers.

U ax-1

July 2009

U ax - Cutout and Arrester, Combination

for Underground System Pole Risers

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Nominal System Voltage | For 12.5/7.2 kV | | For 13.2/7.6 kV | For 24.9/14.4 kV |
| Cutout Maximum Voltage Rating | 7.8 kV | 15 kV | 15 kV | 27 kV |
| Application | 1ø Risers | 3ø Risers | 1ø and 3ø Risers | 1ø and 3ø Risers |
| Cutout Current Rating | 100 amps | 100 amps | 100 amps | 100 amps |
| Manufacturer | Catalog Numbers | | | |
|  |  |  |  |  |
| ABB | 7.8LBU-II/10 LV | 15LBU-II/10 LV | 15LBU-II/10 LV | 24.9LBU-II/18 LV |
|  |  |  |  |  |
| Cooper | AFS300B Series | AFS300C Series | AFS300C Series | AFS300D Series |
|  |  |  |  |  |
| General Electric | 9F80 | 9F80 | 9F80 | 9F80 |
|  |  |  |  |  |
| Hubbell (Chance) | C7 Series | C7 Series | C7 Series | C7 Series |
|  |  |  |  |  |
| Southern States | CA Series | CA Series | CA Series | CA Series |
|  |  |  |  |  |

NOTE: The units listed on this page may be used with single arresters or arresters in parallel, but must be applied in accordance with paragraph VI.A. in RUS Bulletin 61-3, "Underground Rural Distribution." Other arresters listed on pages ae-1 and ae-2 may be used for underground systems when applied in accordance with this bulletin.

Cutouts used on underground riser poles should be loadbreak type or have hooks for portable load interrupters.

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.

Conditional List

U ax-2

July 2009

U ax - Cutout and Arrester

Combination for Underground System Pole Risers

Metal Oxide Type Arresters

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | |
| Nominal System Voltage | For 12.5Y/7.2 kV | | For 13.2Y/7.6 kV | For 24.9Y/14.4 kV | Conditions | |
|  |  |  |  |  |  |
| Cutout Maximum Voltage Rating | 7.8 kV | 15 kV | 15 kV | 27 kV |  | |
|  |  |  |  |  |  | |
| Application | 1ø Risers | 3ø Risers | 1ø and 3ø Risers | 1ø and 3ø Risers |  | |
|  |  |  |  |  |  | |
| Cutout Current Rating | 100 amps | 100 amps | 100 amps | 100 amps |  | |
|  |  |  |  |  |  | |
|  |  |  |  |  |  | |
| Manufacturer | Catalog Numbers |  |  |  |  | |
|  |  |  |  |  |  | |
| Cooper Power Systems | L4A1P1A00-ECOA(9kV) | L9C1P1A00-ECOA(9kV) | L9C1P1A00-ECOA(9kV) | L9D1P1A00-EGOA | To obtain experience | |
|  | L4A1P1A00-EDOA(10kV) | L9C1P1A00-EDOA(10kV) | L9C1P1A00-EDOA(10kV) | - | To obtain experience. | |

Note 1: Other arresters listed on pages ae-1 and ae-2 may be used for underground systems when applied in accordance with RUS Bulletin 61-3, "Underground Rural Distribution."

Note 2: Cutouts used on underground riser poles should be loadbreak type or have hooks for portable load interrupters.

Conditional List

U be(1)

July 2009

U be - Reclosers, pad-mounted

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Cooper Power Systems  Single phase, vacuum interrupter, Type PV4H Maximum voltage 14.4 kV for 12.5 and 13.2/7.62 kV | To obtain experience. |
|  |  |

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and 280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.

2. Reclosers are not acceptable with load current, bushing CT battery chargers.

U be - Reclosers, vacuum interruption with solid dielectric

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| G & W Electric Company  Three phase, electronic, VIPER Series, vacuum interruption, solid dielectric, 800 amps maximum continuous, 12,500 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14/4 kV. | To obtain experience. |
|  |  |

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and 280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.

2. Reclosers are not acceptable with load current, bushing CT battery chargers.

U cg-1

July 2009

U cg - Switch, air, three-pole, group-operated

for pole-mounted cable risers

(Factory Preassembled)

|  |  |  |  |
| --- | --- | --- | --- |
| Manufacturer | Mounting | Vertical Break Type kV | Side Break Type kV |
|  |  |  |  |
| ABB | Vertical | LB3-VR(L)15 | - |
|  |  |  |  |
| Hubbell (Chance) | Vertical | - | D7(L)15-27 |
|  | Horizontal | - | D7(L)15-27 |
|  |  |  |  |
| Kearney/Cooper  Power Systems | Horizontal | SB\_R(L)15-35 | - |
|  |  |  |  |
|  |  |  |  |
| S & C\* | Vertical | - | Alduti(L)15-25 |
|  | Horizontal | - | Alduti(L)15-25 |

(L) Means gas or solid material full-load interrupters are accepted and available.

\*Available with porcelain insulators. Available with "Cypoxy" cycloaliphatic epoxy insulators through 34.5 kV on request.

NOTE: Switches with factory-assembled crossarm type bases must have nonconducting crossarm type bases, nonconducting braces, and insulated interphase and control rods.

Conditional List

U cg(1)

July 2009

U cg - Switch, Air, Three-Pole, Group Operated

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Hubbell (Chance)  Type AR side-break, horizontal and vertical mounting, with non-conducting crossarm type base and insulated interphase and control rods, 15, 25 , and 34.5 kV (grounded wye) | To obtain experience. |
|  |  |
| S & C\*  Omni-Rupter (L), side break horizontal and vertical mounting with non-conducting crossarm type base and insulated interphase and control rods, 15 kV and 25 kV | To obtain experience. |
|  |  |

(L) Means full-load interrupter accepted and available.

\*Available with porcelain insulators. Available with Cypoxy insulators through 34.5 kV on request.

U fw-1

March 2013

U fw - Secondary Tap Connector

|  |  |
| --- | --- |
| Manufacturer | Type or Catalog No. |
|  |  |
|  |  |
| TE Connectivity - Energy | Compression Connectors |
|  | CRSM-CT-34/10-150 |
|  | CRSM-CT-53/13-200 |
|  | CRSM-CT-84/20-250 |
|  | Standard Split Bolt |
|  | CRSM-CT-53/13-200 |
|  |  |

U fz-1

March 2017

U fz – Transformer Connector Block, Insulated

Multiple Cable Connectors

|  |  |  |
| --- | --- | --- |
| Watertight – For use in all locations | | |
| Manufacturer | Connection Type | Catalog Number |
| Blackburn | Lug | SCU, with lugs and sleeves |
| Burndy | Lug | Stud Mole with sealing sleeve |
| Polaris | Set Screw | IPLWB, SLWB, SSWB, SLOWB |
| Utilco | Set Screw | PTF-SS, Watertight insulated transformer connector block |
|  |  |  |
| Non-Watertight - For use in above grade locations only | | |
|  | | |
| AFL | Lug | Interchange 1 |
|  |  | ABBD Series (Disconnectable) Use with A9 insulating boots |
| Alcon | Set Screw | VBTT Series with double sealing sleeve |
| Blackburn | Set Screw | TSB-J58C (Permanent) |
|  | Set Screw | TSB-D58C (Disconnectable) |
| Burndy | Set Screw | K-D Series (Disconnectable) |
|  |  | K-DF Series (Permanent) |
| Durham Company | Set Screw | UB Series |
|  | Lug | UT Series |
| Connector Mfg. Co. | Set Screw | Uni-Joint Bar Connectors, (Series RLS, NSM-C, NDS-C, NSC, ZS-C, ZSU-C, RLUS) (Permanent) |
|  | Set Screw | Uni-Joint Bar Connectors, |
|  |  | (Series RLSS, NSSM-C, NSSC, ZQC, ZQU‑C, RLUSS) (Disconnectable) |
| ESP | Lug | Types SUR and RDSR(Removable) |
|  |  | (With Types LA and AL-lugs and Sleeve kits) |
|  | Set Screw | Type UPSO-I (Permanent) |
|  |  | Type UPM-I (Disconnectable) |
| Homac | Lug | DF Series |
|  | Lug | FTU 125 Series(Disconnectable) with flood seal sleeve kit |
|  | Set Screw | ABD, ABK, ABS, ABW, CLRTR, CSW, CSS, LRT, RAU, EZC, Z series; ZBK with SB covers; ZVW with boot |
| Hubbell (Fargo) | Bolted | GUC Series |
|  | Set Screw | GUS-460S Series |
| MacLean (Reliable) | Set Screw | 15912-REA (Disconnectable) |
| Penn Union | Lug | Type DBAT (Permanent) |
|  | Lug | Type DBAT-LH (Disconnectable) |
|  |  | Use with Series DBTB, DBTBF and DBTH lug and Sleeves kits |
| Polaris | Set Screw | PLTZ-CC, PSMTLCC, PSMTLSC |
|  | Set Screw | PTLZ-CC, PSMTLCC, PSMTLSC |
|  | Set Screw | IPCTLZ, IPCTLEZ, PSMTLECC |
|  | Set Screw | PSMTLESC, PTLZSC, PTLZCC, IPPT |
| Preformed | Set Screw | SC-C series (Permanent) |
|  | Set Screw | CSC-Q-C Series, SC-Q-C series (Disconnectable) |
| Utilco | Set Screw | PTF-IN (Permanent) |
|  | Set Screw | PTF-CJNU, PSS Series (Disconnectable) |
| Vector Connectors Corp. | Set Screw | TQL Series (Disconnectable) (with insulating boot) |
| Note: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers. | | |

U gc-1

October 2015

U gc - Shield, cable riser

|  |  |  |
| --- | --- | --- |
| Manufacturer | Dia. (Inches) | Length (Feet) |
| Galvanized Steel | | |
|  |  |  |
| Almat Metal Limited | 2 1/4 | 8 |
|  |  |  |
| Electrical Materials | 2 - 3 - 4 - 5\* | 5\* |
|  |  |  |
| Hubbell (Chance) | 2 - 3 - 31/2 | 5 - 9 |
|  |  |  |
| Joslyn | 2 - 3 - 31/2\* | 5 - 8\* |
|  |  |  |
| Midland-Ross | 2 1/2 - 3 1/2 - 5 | 2 1/2 - 5 - 10 |
| (Kindorf Snapduct) | (14 ga. galv. steel) |  |
|  |  |  |

Plastic and Fiberglass

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Applied Extrusion Technologies (plastic) | 2 - 3 - 4 - 5 - 6\* | 5 - 8 - 10\* |
| (Power Mold, I, II, III) |  |  |
|  |  |  |
| Carlon | 2 - 3 - 4 - 5 - 6\* | l0\* |
|  |  |  |
| Charles Industries | 2 – 3 – 4 – 5\*\* | 5 and 10\*\* |
|  |  |  |
| Custom Plastics | 2 - 3 - 4 - 5\* | 5 - 10\* |
|  |  |  |
| Electrical Materials (plastic) | 1 - 2 - 3 - 4 - 5- 6\* | 5 - 8 - 10\* |
|  |  |  |
| Joslyn (plastic) | 2\* | 10\* |
|  |  |  |
|  |  |  |
|  |  |  |

(Order by size and length)

\*All sizes available with back plate.

Full Round\*\*

|  |  |  |
| --- | --- | --- |
| Smith Fiberglass Products | 2 - 3 - 4 - 5 | 30 |
| (standard wall) |  |  |

\*\*Full round riser shield is to be mounted directly to the surface of the pole with no standoffs.

U gk-1

December 2015

U gk - Terminations, Indoor

(When ordering specify conductor size, type, whether

copper or aluminum and insulation diameter)

|  |  |
| --- | --- |
| Manufacturer | Catalog No. |
|  |  |
| PREMOLDED | |
|  |  |
| Cooper Power Systems | Fasterm Stress Cone (15 & 25 kV) |
|  |  |
| Elastimold (ESNA) | Style 35-MSC (15, 25 & 35 kV) |
|  |  |
| Hubbell (Chardon) | Termi-Matic, Type A or G (15, 25 & 35 kV) |
|  |  |
| HEAT SHRINK | |
|  |  |
| DSG-Canusa | CT Series (15kV, 25kV, 35kV) |
|  |  |
| G&W | ESTS15\_PLA (15 kV) |
|  | ESTS25\_PLA (25 kV) |
|  |  |
| Hellermann | MVTS15\_PLA (15 kV) |
|  | MVTS25\_PLA (25 kV) |
|  |  |
| TE Connectivity - Energy | HVT (15, 25 & 35 kV) |
|  |  |
| COLD SHRINK | |
|  |  |
| 3M | QT III Series (15 kV) |
|  | Quick Term II Series (25 & 35 kV) |
|  |  |
| DSG Canusa | TITAN-Z Series (15, 25 kV) |
|  | TITAN Series (35 kV) |
|  |  |
| Joslyn | JIPT Series (15, 25 kV) |
|  | JPT Series (25 kV) |
|  |  |
| TE Connectivity - Energy | TFT Series (15, 25, 35 kV) |
|  |  |
| INSULATED WRAP | |
|  |  |
| Plymouth/Bishop | Stress-Wrap (15, 25 & 35 kV) |
|  |  |

U gk-2

December 2015

U gk - Terminations, outdoor

(with mounting hardware)\*

(When ordering, specify conductor size, type, whether

copper or aluminum, insulation diameter, and type of

mounting desired)

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| POLYMER | |
| PREMOLDED | |
|  |  |
| Cooper Power Systems | Fasterm Series (15 & 25 kV) |
|  |  |
| Elastimold (ESNA) | Style 16-THG (15 and 25 kV) (for bare concentric neutral cable)  Style 35-MT (35 kV) (for bare concentric neutral cable)  Style PCT-1 (15 kV) (for jacketed cable)  Style PCT-2 (25 kV) (for jacketed cable) |
|  |  |
| Hubbell (Chardon) | Termi-Matic, Type G (15, 25 and 35 kV) |
|  | |
| HEAT SHRINK | |
|  |  |
| DSG-Canusa | CT Series (15kV, 25kV, 35kV) |
|  |  |
| G&W | ESTS15\_PLO (15 kV) |
|  | ESTS25\_PLO (25 kV) |
|  |  |
| Hellermann | MVTS15\_PLO (15 kV) |
|  | MVTS25\_PLO (25 kV) |
|  |  |
| Plymouth/Bishop | SWO Kit (15, 25 and 35 kV) |
|  |  |
| TE Connectivity - Energy | HVT (15, 25 and 35 kV) |
|  |  |
| COLD SHRINK | |
|  |  |
| DSG-Canusa | TITAN-Z Series (15, 25 kV) |
|  | TITAN Series (35 kV) |
|  |  |
| Joslyn | JPT Series (15, 25, 35 kV) |
|  |  |
| TE Connectivity - Energy | TFT Series (15, 25, 35 kV) |
|  |  |
| 3M | QT III Series (15, 25, & 35 kV) |
|  |  |
| PORCELAIN | |
|  |  |
| G & W | "Eliminator" 15 kV, E 25 kV, E 35 kV, E |
|  |  |
| Joslyn | "Easy-On II" (15, 25 and 35 kV) |
|  |  |

\*Mounting Hardware is used to attach termination to mounting bracket (U hd or U hj).

NOTE: Some of the above terminators may require ordering the mounting hardware separately.

U gn-1

March 2013

U gn - Enclosures, equipment

Applicable Specifications: "RUS Specifications for Equipment Enclosures," U-4

|  |  |
| --- | --- |
| Manufacturer | Catalog No. |
|  |  |
| Durham | AT-42 Series (dead-front) |
|  | AT-54 Series (dead-front) |
|  |  |
| Elliott | EPM-PTS (dead-front) |
|  |  |
| Hoffman Enclosures, Inc. | UJ Series |
|  |  |
| Hubbell | P134, P234, P358, P378 |
|  |  |
| Malton Electric | ME Series (dead-front) |
|  | MEV Series (dead-front) |
|  |  |
| Maysteel | EL100 (dead-front) |
|  |  |
| Nordic | ND-28 and ND-33 |
|  |  |

NOTE:

1. The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.
2. These enclosures have been certified as meeting the requirements of ANSI C57.12.28. A copy of the certification is available from the manufacturer.

U gn-2

June 2014

U gn - Enclosures, Equipment

Sectionalizing Enclosures

|  |  |
| --- | --- |
| Manufacturer | Catalog No. |
|  |  |
| Brooks Utility Products Group | Single Phase  750-7437-001, 750-7437-002, 750-7437-003,  750-7437-004  Three Phase  750-7438-001, 750-7438-002, 750-7438-003,  750-7438-004, 750-7438-005, 750-7438-006,  750-7438-007 |
|  |  |
| Cooper Power Systems | SecTER Series I and II (Single-Phase and Three-Phase)**\*** |
|  |  |
| Durham | AM Series |
|  |  |
| Highline Products | FSC-29 Single Phase |
|  | FSC-32 Single Phase |
|  | FSC-33 Single Phase |
|  | FSC-55 Three Phase |
|  | FSC-62 Three Phase |
|  | FSC-65 Three Phase |
|  | FSC-69 Three Phase |
|  | FSC-71 Three Phase |
|  | FSC-79 Three Phase |
|  | FSC-85 Three Phase |
|  |  |
| Maysteel | CW200 Series |
|  | CW300 Series |
|  |  |
| Nordic | ND Series |
|  |  |
| Power Design Inc. | Type CJP series, single-phase and |
|  | three-phase, 15 and 25 kV |
|  |  |
| Rough Rider Industries | Series RUF93 |
|  |  |
| Shallbetter | SPMS Series (dead-front) |
|  |  |

NOTE:

1. The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.
2. These enclosures have been certified as meeting the requirements of ANSI C57.12.28. A copy of the certification is available from the manufacturer.

\* Also available as a Cleer SecTER cabinet with the Cleer, 600 amp load break connector   
 assemblies installed for both 15 kV and 25 kV systems.

U go-1

July 2009

U go - Fault Indicator

(For Construction Unit UM 6-4)

|  |  |
| --- | --- |
| Manufacturer | Type |
|  |  |
| Cooper Power Systems | S.T.A.R. CR, DR, ER, MR, TPR |
|  |  |
| Edison Control Corporation | Series EC100 (single phase) |
|  | Series EC300 (three phase) |
|  | (Available with mounting kit KT5002) |
|  |  |
| E. O. Schweitzer | AutoRANGER AR-OH |
|  |  |
| Fisher Pierce | Series 1514 (current reset, |
|  | single-phase |
|  | Series 1515 (current reset, |
|  | three-phase) |
|  | Series 1541 (time reset, |
|  | single-phase |
|  | Series 1543 (time reset, |
|  | three-phase |
|  | Series 1547 (adaptive trip) |
|  |  |
| Horstmann GmbH | FCI-LT Series  Time Reset  29-3014 (.85 to 1.57 inch)  29-3015 (1.57 to 2.37 inch)  Current Reset  29-3114 (.85 to 1.57 inch)  29-3115 (1.57 to 2.37 inch) |

Note: Fault indicators that require the drilling or cutting to the enclosure for mounting are not acceptable.

U gp-1

March 2013

U gp - Connector Blocks and Splices, Secondary

Watertight - For Use In All Locations

|  |  |  |
| --- | --- | --- |
| Manufacturer | Connection Type | Catalog Number |
|  |  |  |
| Alcon | Set Screw | VPB Series |
|  |  |  |
| Blackburn | Lug | Series UP (with lugs and sleeves) |
|  | Set Screw | Series USB (1000 amp bus with sleeves) |
|  |  |  |
| Burndy | Lug | URD Mole |
|  |  |  |
| Connector Mfg. Co. | Compression | Utilug Sure Seal Splice Kits, Series SSK, SSKL |
|  | Set Screw | Uni-Joint Sure Seal Series SSBC |
|  | Set Screw | Secondary Connector ULS2-350 |
|  |  |  |
| ESP | Lug | Type UC (8 AWG - 500 kcmil)  (with LA lug and sleeve) |
|  | Set Screw | Type UPP |
|  |  |  |
| Homac | Connector Blocks: |  |
|  | Lug | FS-95 Series with flood seal sleeve kit  (8AWG - 350 kcmil) |
|  |  |  |
|  | Lug | FS-125 Series with flood seal sleeve kit  (350 - 500 kcmil) |
|  |  |  |
|  | Set Screw | SHC Series |
|  | Set Screw | RAB Series |
|  | Splices: |  |
|  | Compression | RRK Series (#2AWG - 350 kcmil) |
|  | Set Screw | UH11L |
|  | Set Screw | USK Series |
|  | Set Screw | MTB Series |
|  |  |  |
| Hubbell (Fargo) | Set Screw | GU-600 Series |
|  |  |  |
| Kearney/Cooper  Power Systems | Compression | HCR |
|  | Compression | HAR |
|  |  |  |
| MacLean (Reliable) | Set Screw | 15903-15908, 15910 with sleeve kit  (4 AWG - 350 kcmil) |
|  |  | 15911 with sleeve kit (500 - 750 kcmil) |
|  |  |  |
| Penn Union | Lug | DBA Series with DBTB, DBTBF and DBTH Series lug and sleeve kits |
|  |  |  |
| Preformed | Set Screw | HT Kit Series |
|  |  |  |
| TE Connectivity - Energy | Set Screw | GILS-4/0 |
|  |  |  |
| Utilco | Set Screw | Safety Sub Splice - USPA-350SS |
|  | Set Screw | Safety Sub Tap Connector - PED-350SS |

U gp-2

July 2009

U gp - Secondary Connector Blocks and Splices, Insulated

Non-Watertight - For Use In Above-Grade Pedestals Only

|  |  |  |
| --- | --- | --- |
| Manufacturer | Connection Type | Catalog Number |
|  |  |  |
| Blackburn | Set Screw | Type PSB-C |
|  |  |  |
| Connector Mfg. Co. | Set Screw | Uni-Joint Series NCA |
|  |  |  |
| ESP | Set Screw | UPC Series |
|  |  |  |
| Homac | Set Screw | CLR-350 Series |
|  | Set Screw | PVAB Series |
|  |  |  |
| Hubbell (Fargo) | Set Screw | GUS-460 Series |
|  |  |  |
| Polaris | Set Screw | IPLC |
|  |  |  |
| Ilsco (Utilco) | Set Screw | PED-350CP Series  PED-500CP Series |
|  |  |  |
| Vector Connectors Corp. | Set Screw | PC Series |
|  |  |  |

U gq-1

July 2009

U gq - Boot or sleeve, insulated\*

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Blackburn | MPC9 |
|  | MPC15 |
|  |  |
| Electrical Materials | 100-B (For pad-mounted transformer spade terminals) |
|  |  |
|  |  |

\*Use restricted to 120/208 volt 500 kVA transformers and larger not equipped with threaded studs.

U gu-1

February 2013

U gu - Pedestal, Power

(Above-Grade)

Refer to Construction Drawing UK5

Applicable Specifications: "RUS Specifications for Secondary Power Pedestals," U-6

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Manufacturer | | Inside Dimensions Inches | | Height Inches | | Catalog No. | |
| API | | 6 x 6 | | 32 | | API 6 x 6 | |
|  | | 9 x 10 | | 25-1/2 | | API 9 x 10 | |
|  | | 10 x 11 | | 34 | | API 10 x 11 | |
|  | | 10 x 11 | | 12-1/4 | | API 10 x FM | |
|  | | 10 x 11 | | 72 | | API 10 x 11XL | |
|  | | 10 x 14 | | 22-1/2 | | API 10 x 14 | |
|  | | 10 x 14 | | 26-1/2 | | API 10 x 14 WB | |
|  | | 16 x 28 | | 38 | | API 16 x28 | |
|  | | 13 Dia. | | 25 | | API 176 | |
| Coil Sales | |  | |  | |  | |
| (Charles Industries) | | 8.25 Dia | | 31-1/2 | | CPLP-8 | |
|  | | 8.25 Dia | | 31-1/2 | | CPLP-8I(Integral Stake) | |
|  | | 10.75 Dia | | 31-1/2 | | CPLP-10 | |
|  | | 10.75 Dia | | 31-1/2 | | CPLP-10I(Integral Stake) | |
|  | |  | |  | |  | |
| Electrimold | | 14.5 x 19.5 | | 31.5 | | EFSO-111630 | |
|  | |  | |  | |  | |
| Highline Products | | 14 X 9 | | 31 | | FSP140931AA | |
|  | | 15.5 X 15.5 | | 30 | | FSP151530AA | |
|  | | 15.5 X 15.5 | | 36 | | FSP151536AA | |
|  | | 14 X 9 | | 36 | | FSP140936AA | |
|  | | 9 X 9 | | 31 | | FSP090931AA | |
|  | |  | |  | |  | |
| Hubbell Power Systems, Inc. | | 10 x 15 | | 30 | | SP101530 | |
|  | | 10 x 15 | | 36 | | SP101536 | |
|  | | 11 x 21 | | 30 | | SP112130 | |
|  | | 11 x 21 | | 36 | | SP112136 | |
|  | |  | |  | |  | |
| MacLean (Reliable) | | 8 x 8 | | 38 | | UP 8HLP | |
|  | | 8 x 8 | | 46 | | UP 8HP | |
|  | | 10-1/2 x 10-1/2 | | 26 | | UP 10HLP | |
|  | | 16-1/2 x 10-1/2 | | 36 | | UP 1016HLP | |
|  | | 10-1/2 x 10-1/2 | | 42 | | UP 10HP | |
|  | |  | |  | |  | |
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U gu-1.1

March 2018

U gu - Pedestal, Power

(Above-Grade)

Refer to Construction Drawing UK5

Applicable Specifications: "RUS Specifications for Secondary Power Pedestals," U-6

| Manufacturer | | Inside Dimensions Inches | Height Inches | Catalog No. | |
| --- | --- | --- | --- | --- | --- |
|  | |  |  |  | |
| Nordic Fiberglass, Inc. | | 15 x 15 | 30 | PSP-151530 | |
|  | | 9 X 13 | 30 | PSP-91330 | |
|  | | 9 x 13 | 36 | PSP-91336 | |
|  | | 10 X 15 | 38 | PSPF-101538 | |
|  | | 15 x 15 | 38 | PSPS-101538-MG-X | |
|  | | 15 x 15 | 44 | PSPS-101544-MG-X | |
|  | 8 x 8 | 44 | | PR-50, PR-55 | |
|  | 9 x 14 | 30 | | PR-149 (stake) | |
|  | 9 x 14 | 30 | | PR-150 (stakeless) | |
|  | 9 x 14 | 30 | | PRMC 150 (low profile) | |
|  | 9 x 14 | 24 | | PRMC-160 | |
|  | 9 x 14 | 30 | | PRMC-170 (high profile) | |
|  | 9 x 14 | 36 | | PRMC-190 | |
|  | 21 x 21 | 15 | | PHH-212115 | |
|  | 16 x 19 | 12 | | PHH-161912 | |
|  | 10 x 18 | 30 | | PSPX-101830-MG | |
|  | 15 x 23 | 15 | | PHH-152315-MG | |
|  |  |  | |  | |
|  | |  |  |  | |
| PenCell Plastics, Inc. | | 10-1/2 X13-1/2 | 24-1/2 | AG-14 (low profile) | |
|  | | 10-1/2 X13-1/2 | 30-1/2 | AG-14 (high profile) | |
|  | | 11X14 | 37 | AG-15 | |
|  | | 13X17.5 | 30.5 | AG-18 | |
|  | | 10-3/4X14-1/4 | 34 | AG-20 | |
|  | | 7-1/2 round | 38 | AG-8820-EWB | |
|  | | 17 x 30 | 34 | AG-1730-EWB | |
|  | |  |  |  | |
| Shallbetter | | 7.5 x 10.25 | 39 | SUTP Series | |
|  | |  |  |  | |
| Utility Fiberglass | | 27 x 16 | 40 | PPFP-2700 | |
|  | |  |  |  | |
| Vertex | | 8 x 14 | 30 | SP 814 | |
|  | |  |  |  | |

\*Furnished with stake.

\*\*Pole mounted

U gu-2

July 2009

U gu - Power Pedestal

(Below-Grade)

Refer to Drawing UK6

Applicable Specifications: "RUS Specifications for Secondary Power Pedestals," U-6

|  |  |
| --- | --- |
| Manufacturer | Catalog No. |
| Armorcast | Polymer concrete frame and cover with fiberglass reinforced polyester skirting 6001 Series. P600XXXXA Rotocast Series, molded polyethylene with penta-head bolt |
|  |  |
| Associated Plastics | Molded polyethylene with galvanized steel or plastic cover  Catalog Nos. 1730-1, 3; 1324-1, 3 |
|  |  |
| Blackburn | Molded polyethylene with galvanized steel cover and ground lug. |
|  | Catalog No. SDR-2PG |
|  |  |
| Burndy | Molded polyethylene with galvanized steel cover. |
|  | Catalog No. URD20G23 |
|  |  |
| Carson | Molded polyethylene with plastic cover |
|  | Catalog No. 1324-12B and 1730-12B |
|  | H910, HLW1212, H1118, H1324, H1730, H1730, H2436, H3048, HH3060 |
|  |  |
| CDR Systems (Homac) | Fiber reinforced polymer concrete - PA Series with penta-head bolts |
|  |  |
| Christy Concrete | Polyester reinforced plastic - Series FL8TRCBOX, FL9TRCBOX, FL30TRCBOX, FL36TRCBOX, SYN1118TBOX, SYN1212TBOX, SYN1324TBOX, SYN1730TBOX, SYN2436TBOX, SYN3048TBOX, and SYN3660TBOX |
|  |  |
| Dexol | HDPE, DX-101, DX-102 |
|  | ABS, DX-101HD, DX-102HD |
|  |  |
| Electrimold | Polymer concrete ring and cover with fiberglass reinforced skirting ECAB series. |
|  |  |
|  | Boxes EPBTH,EPBA series |
|  |  |
| Highline Products | FHH Series, Fiberglass |
|  | CHA Series, Fiberglass polymer concrete hybrid |
|  |  |

U gu-2.1

October 2014

U gu - Power Pedestal

(Below-Grade)

Refer to Drawings UK6

Applicable Specifications: "RUS Specifications for Secondary Power Pedestals," U-6

|  |  |
| --- | --- |
| Manufacturer | Catalog No. |
|  |  |
| Hubbell (Fargo) | HDPE, B-100R Series |
|  | ABS, B-200R Series |
|  | HL51 |
|  |  |
| Malton | Fiberglass secondary |
|  | pedestal FSP31139, FSP301515 |
|  |  |
| Newbasis | Fiber reinforced polymer concrete box, ring and cover – PCA Series |
|  |  |
|  | Fiber reinforced polymer box with polymer concrete ring and cover – FCA Series |
|  |  |
| PenCell | PE Series-High Density Polyethylene (HDPE) base;lid available in HDPE, fiberglass, aluminum, or stainless steel; PEM Series with modular construction, DT Series – heavy duty HDPE for vehicular traffic |
|  |  |
| Quazite | Power Pedestal – PV, Boxes - PX/PE Series, PR/LR Series, PC, PG, LG Series |
|  |  |
| Synertech Moulded Products | S1212, S1118, S1324, S1730, S2436, S3048 and S3660 |
|  |  |
| Thermodynamics | PP91, PP92, PP94, PP96, PP97, PP98, PP03, PPV91, TEVC132415ASY, TEVC121612ASY, and TEVC122016ASY series |
|  |  |
|  |  |

U gv-1

July 2009

U gv - Stake, Power Pedestal

Refer to Construction Drawing UK5

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Catalog No. | |
| Manufacturer | Length Inches | For Power Pedestal Only | For Joint Pedestal |
|  |  |  |  |
| Hubbell (Fargo) | 42-60-72-78 | UP-530S Series | UP-530J Series |
|  |  |  |  |
| MacLean (Reliable) | 72-78-84 | DM Series | DM Series |

U hb-1

September 2015

U hb - Cable Accessories

(When ordering specify conductor size, type whether copper or aluminum and insulation diameter)

(Items on this page are rated for operation on three-phase systems and may be used on single-phase systems.)

200 Ampere Continuous Current Rating

|  |  |
| --- | --- |
| Manufacturer | Catalog No. |
|  |  |
| Cooper Power Systems | 15 kV, used with loadbreak connectors |
|  | LPC 215 protective cap |
|  | LBI215 bushing well insert |
|  | 2637869C01M rotatable two-way bushing well insert |
|  | 2604231B01 bushing well plug |
|  | 25 kV, used with loadbreak connectors |
|  | LPC 225 protective cap |
|  | LB1225 bushing well insert |
|  | LB1225L (long) bushing well insert |
|  | 2637881C01M rotatable two-way bushing well insert |
|  | 2604231B01 bushing well plug |
|  | 35 kV, used with loadbreak connectors |
|  | 2637592B03M protective cap |
|  |  |
| Hubbell | 15 kV, used with loadbreak connectors  215BI bushing well insert  215IC insulating cap  215FTI feed-thru insert |
|  |  |
|  | 25 kV, used with loadbreak connectors  225BI bushing well insert  228IC insulating cap  228FTI feed-thru insert |
|  |  |
|  |  |
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|  |  |
|  |  |
|  |  |
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U hb-1.1

April 2014

U hb - Cable Accessories

(When ordering specify conductor size, type, whether

copper or aluminum and insulation diameter)

(Items on this page are rated for operation on three-phase systems and may be used on single-phase systems.)

200 Ampere Continuous Current Rating

| Manufacturer | Catalog Number |
| --- | --- |
|  |  |
| Elastimold (ESNA) | 15 kV, used with loadbreak connectors |
|  | Style 1601-CL cable lead |
|  | Style 1602A3R feed thru insert |
|  | Style 1601-A3R bushing plug |
|  | Style 160-DR insulating cap |
|  |  |
|  | 25 kV, used with loadbreak connectors |
|  | Style 2701-A2 bushing plug |
|  | Style 270-DR deadend receptacle |
|  |  |
|  | 35 kV, used with loadbreak connectors |
|  | Style 3701A-3 bushing plug\* |
|  | Style 370DR(G) insulating cap |
|  |  |
|  |  |
| TE Connectivity – Energy | 15 kV, used with loadbreak connectors |
|  | ELB-15-210 series without jacket seal |
|  | ELB-15-210-ES series with jacket seal |
|  |  |
|  | 25 kV, used with loadbreak connectors |
|  | ELB-25-210 series without jacket seal |
|  | ELB-25-210-ES series with jacket seal |
|  |  |
|  |  |
|  |  |
|  |  |
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|  |  |
|  |  |
|  |  |

U hb-2

September 2015

U hb - Cable Accessories

(When ordering, specify conductor size, type, whether copper or aluminum and insulation diameter)

600 Ampere Continuous Current Rating

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Hubbell | 15 kV, used with non-loadbreak connectors  615 Series |
|  | 25 kV, used with non-loadbreak connectors  625 Series |
|  |  |
| Cooper Power Systems | 15 kV |
|  | Deadbreak termination connectors |
|  | Bol-T System |
|  | T-OP II System |
|  | Push-OP System |
|  | DBA615 Bushing Adapter |
|  | 25 kV |
|  | Deadbreak termination connectors |
|  | Bol-T System |
|  | T-OP II System |
|  | Push-OP System |
|  | DBA625 Bushing Adapter |
|  | 35 kV |
|  | Deadbreak termination connectors |
|  | Bol-T System |
|  | T-OP II System |
|  | Push-OP System |
|  | Optional 200 A. loadbreak tap |
|  | No. 2637449C |
|  |  |
| Elastimold (ESNA) | 15 kV, used with non-loadbreak connectors |
|  | 600, 650 Series |
|  | 25 kV, used with non-loadbreak connectors |
|  | K600, K650 Series |
|  | 35 kV, used with non-loadbreak connectors |
|  | 750LR Series |
|  |  |
| Richards Manufacturing Co. | 15 kV, used with non-loadbreak connectors |
|  | P615HH |
|  | 15kV, used with loadbreak connectors |
|  | 618 Series, R800 System |
|  | 25 kV, used with non-loadbreak connectors |
|  | P625HH |
|  | 25 kV, used with loadbreak connectors, with or without test point, Style 628 Series, R800 System |
|  |  |
| 3M | 15 kV, Deadbreak termination connectors |
|  | 5815 Series Modular Splicing System |

U hb-2.1

April 2014

U hb - Cable Accessories

(When ordering, specify conductor size, type, whether copper or aluminum and insulation diameter)

600 Ampere Continuous Current Rating

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| TE Connectivity – Energy | 15 kV |
|  | Deadbreak termination connectors |
|  | ELB-15-600without test point |
|  | ELB-15-600 with test point |
|  |  |
|  | 25 kV |
|  | Deadbreak termination connectors |
|  | ELB-28-600without test point |
|  | ELB-28-600 with test point |
|  |  |
|  | 35 kV |
|  | Deadbreak termination connectors |
|  | ELB-35-600without test point |
|  | ELB-35-600 with test point |
|  |  |
|  |  |
|  |  |
|  |  |

Conditional List

U hb(1)

July 2009

U hb - Cable Accessories

(When ordering specify insulation diameter)

Concentric Neutral Clamps (Bonding)

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Harco  URD cable clamp | 1. To obtain experience.  2. Only for bonding of anodes or other metals to the neutrals of existing cable installations.  3. Not to be used to connect neutral to grounding electrodes. |
|  |  |

U hc-1

March 2014

U hc - Cable Supports

15 and 25 kV

| Manufacturer | Catalog Number | Grip Dia. Range (inches) |
| --- | --- | --- |
|  |  |  |
| Aluma-Form | CS-800 Series | 0.75 to 2.0 |
|  |  |  |
| Economy Cable Grip | SPJ087-U | 0.87 to 1.00 |
|  | SPJ100-U | 1.00 to 1.12 |
|  | SPJ113-U | 1.12 to 1.25 |
|  | SPC125-S-U | 1.25 to 1.50 |
|  |  |  |
| Hubbell (Fargo) | GJ-854 | 0.718 to 0.919 |
|  | GJ-855 | 0.920 to 1.12 |
|  | GJ-856 | 1.12 to 1.50 |
|  |  |  |
| Kellums | 022-16-011 | 0.81 to 0.94 |
|  | 022-16-012 | 0.87 to 1.00 |
|  | 022-16-013 | 0.94 to 1.06 |
|  | 022-16-014 | 1.00 to 1.18 |
|  | 022-16-015 | 1.06 to 1.25 |
|  | 022-01-018 | 1.25 to 1.50 |
|  |  |  |
| Lewis | A-U-SW-18 | 0.75 to 1.25 |
|  | U-1.12 | 1.12 to 1.62 |
|  |  |  |
| MacLean Power Systems | MCS-820 | 0.75 to 3.0 |
|  |  |  |
| Slater | FCSD 14 | 0.82 to 0.95 |
|  | FCSD 15 | 0.88 to 1.00 |
|  | FCSD 16 | 0.95 to 1.06 |
|  | FCSD 17 | 1.01 to 1.19 |
|  | FCSD 18 | 1.07 to 1.26 |
|  | FC125-U | 1.25 to 1.50 |
|  |  |  |
| Woodhead | 35032 (SC075-U) | 0.75 to 0.99 |
|  | 35033 (SC100-U | 1.00 to 1.24 |
|  | 35034 (SC125-U) | 1.25 to 1.49 |

U hd-1

October 2015

U hd – Brackets, pothead mounting, and Brackets, combination pothead and arrester mounting

| Manufacturer | Single Phase | Three Phase |
| --- | --- | --- |
|  |  |  |
| Aluma-Form | TB-EMB-1-2PA | TB-EMB-1-6PA |
| MacLean Power Systems | - | MTB-EMB-1-6-PA |

U he-1

July 2009

U he – Padmounted Switchgear

12.5/7.2 kV

| Manufacturer | Catalog Number |
| --- | --- |
|  |  |
| ABB | UTE, PAD-PAK pad-mounted switching device, single and three-phase, 300 amp |
|  |  |
| Durham | AFSP Series, single-and three phase |
|  |  |
| Electrical Equipment | FTDF-P Series, single and three-phase one and two fused taps, pad-mounted |
|  |  |
| Elliott | Type EPMR, single and three-phase, pad-mounted |
|  |  |
| Malton | \*ME Fused Series, single and three-phase pad mounted |
|  |  |
| Shallbetter | SPMD Series, single and three-phase, pad-mounted |
|  | SPMC Series, 200 ampere single-pole switching |
|  |  |

\*Furnished with current limiting fuses.

NOTES:

1. Enclosures on this page must comply with the dead-front requirements of RUS Spec. U-4.

2. These enclosures have been certified as meeting the requirements of ANSI C57.12.28. A copy of the certification is available from the manufacturer.

3. Single-pole switching of three-phase underground circuits may cause ferroresonance.

U he-2

July 2009

U he – Padmounted Switchgear

24.9/14.4 kV

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| ABB | UTE, PAD-PAK pad-mounted switching device, single and three-phase, 200 amp |
|  |  |
| Durham | AFSP Series, single-and three phase |
|  |  |
| Elliott | Type EPMR, single- and three-phase, pad-mounted |
|  |  |
| Malton | ME Fused Series, single and three phase, pad- mounted |
|  |  |
| Shallbetter | SPMD Series, single and three-phase, pad-mounted |
|  |  |

NOTES:

1. Enclosures on this page must comply with the dead-front requirements of RUS Specification U-4.

2. These enclosures have been certified as meeting the requirements of ANSI C57.12.28. A copy of the certification is available from the manufacturer.

3. Single-pole switching of three-phase underground circuits may cause ferroresonance.

U he-3.1

July 2017

U he – Padmounted Switchgear

(200 and 600 amp)

| Manufacturer | Catalog Number |
| --- | --- |
|  |  |
| Cooper Power Systems | Type VFI\*, single-phase and three phase, padmounted fault interrupters, 15-35 kV |
|  | Type R-VAC\*, three-phase vacuum switchgear, 15-25 kV |
|  | |
| \*Cooper Envirotemp FR3 dielectric fluid is available as an option | |
|  |  |
| Elastimold | Type MVS, single-phase and three phase, 200 and 600 amp, 15-38 kV  Type MVI, single-phase and three phase, 200 and 600 amp, 15-38 kV |
|  |  |
| Elliott | Type EPMR, Single and three-phase, pad-mounted, 25 kV |
|  |  |
| ERMCO, INC. | Type FusePad, single-phase, 200 and 600 amp, 15-35 kV |
|  | Type ECO-PAD, three-phase, 200 and 600 amp, 15-35 kV |
|  |  |
| Federal Pacific | Type PSI-PSI/II Series, 15 kV, 25 kV, 600 amp., three-phase switching, and 200 amp., single-phase switching. (When ordering, add suffix B-4) |
|  | Type PSE Series, 15 kV, 25 kV, 600 amp switch, 200 amp fuse |
|  |  |
| G & W Electric Company | Type PVI series, single-phase and three-phase, 200 amp and 600 amp, 15 kV and 25 kV |
|  | Trident type solid dielectric switches, single-phase  and three-phase, 200A, 630A, and 800A, 15 kV  through 35 kV |
|  |  |
| Hubbell (Chance) | Type LVS (pad-mounted) single-phase and three-phase, vacuum switching equipment, fused or unfused, 200 or 600 amp, 15-25 kV |
|  | Type AIS padmounted, air insulated switchgear, fused or unfused, 200 or 600 amp, 15 kV or 25 kV |
|  |  |

Notes:

1. Enclosures on this page must comply with the deadfront requirements of RUS Spec. U-4.
2. These enclosures have been certified as meeting the requirements of ANSI C57.12.28. A copy of the certification is available from the manufacturer.
3. Single-pole switching of three-phase underground circuits may cause ferroresonance.

U he-3.2

July 2009

U he – Padmounted Switchgear

(200 and 600 amp)

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Kearney/Cooper Power Systems | Series VP - submersible, single-phase and three-phase, vacuum switching, 200 or 600 amp, 15 and 25 kV, with or without VACOP remote operator |
|  |  |
| Malton | MES 100 Series, pad-mounted single phase and three phase switching |
|  |  |
| Scott Engineering | Type SPM-REA, 15 kV, 25 kV, 600 amp., three-phase switching, and 200 amp., single-phase switching |
|  |  |
| S & C | Mark III, Model PMH (with option G-7), 15-25 kV, 600 amp., three-phase switching and 200 amp., single-pole switching |
|  | Model PME-15-25 kV, Fully enclosed live parts at all times, three-phase switching and 200 amp single pole switching |
|  |  |
| Trayer | 800 Series, pad mounted three-phase vacuum switching equipment, 200 and 600 amp, 15-25 kV with or without fusing |
|  | 501 submersible vacuum fuse 15-25 kV enclosure, deadfront 200 or 600 amp., 15-25 kV |
|  | Type SSA (submersible, fused and unfused) 200 and 600 amp., 15-25 kV |
|  |  |

Notes:

1. Enclosures on this page must comply with the deadfront requirements of RUS Spec. U-4.

2. The enclosures have been certified as meeting the requirements of ANSI C57.12.28. A copy of the certification is available from the manufacturer.

3. Single-pole switching of three-phase underground circuits may cause ferroresonance.

Conditional List

U hf(1)

March 2013

U hf - Jacketed Cable Restoration Kits

(For resealing concentric neutral wires after installation of splices in jacketed underground cable)

(When ordering, specify diameter of cable over jacket)

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Elastimold  PCS-1 Power Cable Seal | To obtain experience. |
|  |  |
| Homac  CNC Series Concentric Neutral Cover | To obtain experience. |
|  |  |
| Joslyn  Shrinklite JRS Series | To obtain experience |
|  |  |
| TE Connectivity - Energy  WCSM (Tubing Type)  MWTM (Tubing Type)  CRSM (Wraparound Type) | To obtain experience. |
|  |  |
| 3M  HSJ Series (Heat Shrink)  SJ Series (Cold Shrink) | To obtain experience. |
|  |  |

Conditional List

U hf(2)

March 2013

U hf - Terminator Sealing Kits

(For resealing concentric neutral wires after installation of elbows or outdoor terminations on jacketed underground cable.)

(When ordering, specify diameter of cable over jacket.)

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Cooper Power Systems  JS200 Elastic Seal | To obtain experience. |
|  |  |
| Elastimold  200 ECS Elbow Cable Shield, Cold Shrink | To obtain experience. |
|  |  |
| Homac  CNC Series Concentric Neutral Cover | To obtain experience. |
|  |  |
| TE Connectivity - Energy  ESA, Heat Shrink | To obtain experience. |
|  |  |
| 3M  8450 Series, Cold Shrink | To obtain experience. |
|  |  |

Conditional List

U hf(3)

March 2013

U hf - Jacketed Cable Grounding Kits

(For connecting a grounding lead wire to the concentric neutral wires and resealing the jacket)

(When ordering, specify diameter of cable over jacket)

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| CANUSA-EMI Model CFGK-REA Cable Grounding Kit | To obtain experience. |
|  |  |
| TE Connectivity - Energy Model JGK Cable Grounding Kit | To obtain experience. |
|  |  |
| 3M  Model 2252 Cable Grounding Kit | To obtain experience. |

U hj-1

July 2009

U hj - Bracket, combination arrester, cutout and pothead mounting

Applicable Drawing: UA1, UA2, UA3

|  |  |  |
| --- | --- | --- |
| Manufacturer | Single Phase | Three-Phase |
|  |  |  |
| Aluma-Form | 1HCA-18-1PB Series | - |
|  |  |  |

U hp-1

September 2015

U hp - Terminations, Elbow

(rated for switching on three-phase systems)

(When ordering, specify conductor size, type, whether copper or aluminum and insulation diameter)

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Cooper Power Systems | 15 kV, Loadbreak SBT IV |
|  | LE215T Series with test point |
|  | LE215 Series without test point |
|  | LEJ215T Series with integrated jacket seal; with test point |
|  | LEJ215 Series with integrated jacket seal; without test point |
|  | Note: LE215, LE215T manufactured in U.S.A. and Taiwan.  25 kV, Loadbreak SBT |
|  | LE225T Series with test point |
|  | LE225 Series without test point |
|  | LEJ225T Series with integrated jacket seal; with test point |
|  | LEJ225 Series with integrated jacket seal; without test point |
|  |  |
| Thomas & Betts (Elastimold) | 15 kV loadbreak |
|  | Style 161 LR Series, without voltage test point  Style 162 LR Series, with voltage test point  Style 161LRJS Series, without voltage test point, with integral jacket seal  Style 162LRJS Series, with voltage test point, with integral jacket seal |
|  | 25 kV loadbreak |
|  | Style 261 LR Series, without voltage test point  Style 262 LR Series, with voltage test point  Style 261LRJS Series, without voltage test point, with integral jacket seal  Style 262LRJS Series, with voltage test point, with integral jacket seal |
|  | 35 kV loadbreak |
|  | Style 375LR Series, without voltage test point |
|  | Style 376LR Series, with voltage test point |
|  |  |
| Hubbell | 15 kV, Loadbreak  215LE--, without test point  215LE--T, with test point  215LEJ--, integral seal without test point  215LEJ--T, integral seal with test point |
|  | 25 kV, Loadbreak  228LE--, without test point  228LE--T, with test point  228LEJ--, integral seal without test point  228LEJ--T, integral seal with test point |
|  | 35 kV, Loadbreak  236LE--, without test point  236LE--T, with test point |
|  |  |
| Richards Manufacturing Co. | 15 kV, Loadbreak |
|  | Style 21LBN Series, without voltage test point |
|  | Style 21LBT Series, with voltage test point |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

U hq-1

June 2014

U hq - Terminations, Multipoint

(Items on this page are rated for operation on three-phase systems and may be used on single-phase systems)

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Cooper Power Systems | 15 kV  2-way, 3-way, 4-way bushings  Series LJ215C---B (with bracket)  Series LJ215C---U (with U-Straps)  Series LJ215C--- (junction only)  25 kV  2-way, 3-way, 4-way bushings  Series LJ225C---B (with bracket)  Series LJ225C---U (with U-Straps)  Series LJ225C--- (junction only) |
|  |  |
|  |  |
| Elastimold (ESNA) | 15 kV |
|  | 2-way bushing, 163J2 |
|  | 3-way bushing, 163J3 |
|  | 4-way bushing, 163J4 |
|  | 25 kV |
|  | 2-way bushing, 271J2 |
|  | 3-way bushing, 271J3 |
|  | 4-way bushing, 271J4 |
|  | 35 kV |
|  | 2-way bushing, 373J2 |
|  | 3-way bushing, 373J3 |
|  | 4-way bushing, 373J4 |
|  |  |
| G&W Electric | 15kV |
|  | JB xxx 15U |
|  | JB xxx 15P, with parking stands |
|  | 25kV |
|  | JB xxx 25U |
|  | JB xxx 25P, with parking stands |
|  | 35kV |
|  | JB xxx 35U |
|  | JB xxx 35P, with parking stands |
|  |  |
| Hubbell Power Systems | 15 kV |
|  | 2-way bushing 215J2X |
|  | 3-way bushing 215J3X |
|  | 4-way bushing 215J4X |
|  | 25 kV |
|  | 2-way bushing 228J2X |
|  | 3-way bushing 228J3X |
|  | 4-way bushing 228J4X |
|  |  |

U hq-2

September 2015

U hq - Terminations, Feed-Through and Parking Bushings

| Manufacturer | Catalog Number |
| --- | --- |
|  |  |
| Cooper Power Systems | 15 kV Grounded Standoff Bushing, GSB215  Horizontal Portable Feed-through, LPF215H  Vertical Portable Feed-through, LPF215V  Universal Portable Feed-through, LPF215U  25 kV Grounded Standoff Bushing, GSB225  Horizontal Portable Feed-through, LPF225H  Vertical Portable Feed-through, LPF225V  Universal Portable Feed-through, LPF225U |
|  |  |
| Elastimold (ESNA) | 35 kV Feed-thru, 373FT Parking Bushing, 371SOP |
|  |  |
| Hubbell | 15 kV 215FT feed-thru 215SB standoff bushing  25 kV  228FT feed-thru  228SB standoff bushing  228GB grounded bushing |
|  |  |

U hq-3

December 2013

U hq - Terminations, Multipoint

600 Ampere Continuous Current Rating

| Manufacturer | Catalog Number |
| --- | --- |
|  |  |
| Cooper Power Systems | 15 kV, 25 kV |
|  | Cleer load break connector assembly |
|  | Series LCN2DLJ615A, LCN2DLJ625A |
|  | 25 kV |
|  | 2-way, 3-way, and 4-way bushings |
|  | Series DJ625A\_ (with mounting bracket) |
|  | Series DJ625A\_B\_ (without mounting bracket) |
|  | 35 kV  2-way, 3-way, 4-way bushings  Series DJ635---B (with bracket)  Series DJ635---U (with U-Straps)  Series DJ635--- (junction only) |
|  |  |
|  |  |
| Elastimold (ESNA) | 15 kV |
|  | 2-way bushing, 650J2 or 675J2 |
|  | 3-way bushing, 650J3 or 675J3 |
|  | 4-way bushing, 650J4 or 675J4 |
|  | 25 kV |
|  | 2-way bushing, K650J2 or K675J2 |
|  | 3-way bushing, K650J3 or K675J3 |
|  | 4-way bushing, K650J4 or K675J4 |
|  |  |

U hr-1

March 2013

U hr - Secondary tap or splice cover, submersible

|  |  |
| --- | --- |
| Manufacturer | Type or Catalog No. |
|  |  |
| Blackburn | Type WDBS (#2 through #4/0), Type DBS (250 kcmil through 1000 kcmil) |
|  |  |
| Connector Mfg. Co. | Utilug Sure Seal |
|  |  |
| DSG-Canusa | CSS Cold Shrink Splice Kits |
|  |  |
| Elastimold (ESNA) | Style 86 |
|  |  |
| ESP | TSC Series |
|  |  |
| Homac | FSS Series |
|  |  |
| Joslyn | Shrinktite JCLS Series |
|  |  |
| Kearney/Cooper Power Systems | Aqua-Seal Kit |
|  |  |
| Preformed | HT Series |
|  |  |
| Plymouth/Bishop | Splice-Wrap |
|  |  |
| TE Connectivity - Energy | Rayvolve RVS Series |
|  |  |
| 3M | PST Series 8420 |

Heat Shrink Tubing (with sealant throughout)

|  |  |
| --- | --- |
| Manufacturer | Type or Catalog No. |
|  |  |
| TE Connectivity - Energy | Black heat-shrink tubing |
|  | WCSM cable sleeves |
|  |  |
| CANUSA-EMI | CFW |
|  |  |
| ESP | HSH |
|  |  |
| Panduit | Heat shrink insulating cover and tubing |
|  |  |
| Sigmaform Corporation | Sigmaform heat-shrinkable products |
|  |  |
| 3M | ITCSN tubular cable sleeve |

U hv-1

July 2018

U hv - Cable, Underground

15 kV and 25 kV Cable

Applicable Specification: RUS Specification U-1

Conductor (15 kV): Copper or Aluminum - #2 AWG through 1000 kcmil

Conductor (25 kV): Copper or Aluminum - #1 AWG through 1000 kcmil

Insulation: Tree-retardant Crosslinked Polyethylene (XLP-TR)

(1) indicates Union Carbide 4202 XLP-TR

(2) indicates BP H119Y XLP-TR

(3) indicates BP H118Y XLP-TR

(4) indicates LG XL8080 TR

Ethylene Propylene Rubber (EPR)

Neutral: Copper Concentric Neutral

Jacket: High Molecular Weight Polyethylene

|  |  |  |
| --- | --- | --- |
| Manufacturer | Insulation(s) | Flat Strap Neutral Available |
|  |  |  |
| Conductores Monterrey, S.A. de C.V. | XLP-TR (1), EPR | No |
|  |  |  |
| Condumex | XLP-TR (1), EPR | No |
|  |  |  |
| General Cable | XLP-TR (1,3), EPR | Yes |
|  |  |  |
| Gaon Cable Co., Ltd. | EPR, XLP-TR (4) | No |
|  |  |  |
| Marmon Utility LLC (Hendrix) | XLP-TR (1, 2, 3), EPR | No |
|  |  |  |
| Marmon Utility LLC (Kerite) | EPR | Yes |
|  |  |  |
| Nexans Canada | XLP-TR (1), EPR | No |
|  |  |  |
| Nexans Italia | EPR | No |
|  |  |  |
| Okonite | XLP-TR (1), EPR | Yes |
|  |  |  |
| Phelps Dodge | XLP-TR (1,3), EPR | Yes |
|  |  |  |
| Prysmian | XLP-TR (1), EPR | Yes |
|  |  |  |
| Rome | XLP-TR (1), EPR | Yes |
|  |  |  |
| Southwire | XLP-TR (1), EPR | Yes |
|  |  |  |
| Synergy Cables | XLP-TR (1), EPR | No |
|  |  |  |

U hv-2

June 2015

U hv - Cable, Underground

600 Volt Cable

Applicable Specification: RUS Specification U-2

Conductor: Copper, #4 AWG and larger; Aluminum, #2 AWG and larger

Insulation: Cross-Linked polyethylene (XLPE)

| Manufacturer | Type Conductor |
| --- | --- |
|  |  |
| Alcan | Aluminum |
|  |  |
| Conductorres Monterrey, S.A. de C.V. | Copper or Aluminum |
|  |  |
| Condumex | Copper or Aluminum |
|  |  |
| Encore Wire Corporation | Aluminum |
|  |  |
| Essex | Copper |
|  |  |
| General Cable | Copper or Aluminum |
|  |  |
| Nexans Canada | Aluminum |
|  |  |
| Okonite | Copper or Aluminum |
|  |  |
| Phelps Dodge | Copper or Aluminum |
|  |  |
| Prysmian | Copper or Aluminum |
|  |  |
| Rome Cable | Copper or Aluminum |
|  |  |
| Service Wire Company | Copper |
|  |  |
| Southwire | Copper or Aluminum |
|  |  |

NOTE: The manufacturers shown above have indicated that their 600 volt cable is suitable for use on 480 volt corner grounded delta circuits.

The above cable may be supplied with UL label for Type USE.

U hv-3

June 2015

U hv - Cable, Underground

600 Volt Multi-Conductor Cable

Applicable Specification: RUS Specification U-2

Conductor: Copper, #4 AWG and larger; Aluminum, #2 AWG and larger

Insulation: Cross-Linked polyethylene (XLPE)

Cable Configuration: 3 Insulated Conductors Triplexed

| Manufacturer | Type Conductor |
| --- | --- |
|  |  |
| Alcan | Aluminum |
|  |  |
| Conductores Monterrey, S.A. de C.V. | Copper or Aluminum |
|  |  |
| Condumex | Copper or Aluminum |
|  |  |
| Encore Wire Corporation | Aluminum |
|  |  |
| General Cable | Copper or Aluminum |
|  |  |
| Nexans Canada | Aluminum |
|  |  |
| Okonite | Copper or Aluminum |
|  |  |
| Phelps Dodge | Copper or Aluminum |
|  |  |
| Prysmian | Copper or Aluminum |
|  |  |
| Rome Cable | Copper or Aluminum |
|  |  |
| Southwire | Copper or Aluminum |
|  |  |

The above cable may be supplied with UL label for Type USE.

Conditional List

U hv(1)

July 2018

U hv - Cable, Underground

15 kV and 25 kV Cable

(Alternative Insulation Compound)

Applicable Specification: RUS Specification U-1

Conductor (15 kV): Copper or Aluminum - #2 AWG through 1000 kcmil

Conductor (25 kV): Copper or Aluminum - #1 AWG through 1000 kcmil

Insulation: Tree-retardant Crosslinked Polyethylene (XLP-TR)

(I) indicates Pirelli IE.7100 XLP-TR

(II) indicates AT Plastic PowerGuard 320TR

(III) indicates Union Carbide HFDB-4202

(IV) indicates Nova Borealis LE 4212

(V) indicates Dow HFDB 8202

(VI) indicates Dow Endurance™ HFDC 4202 EC

(VII) indicates LG XL 8080TR

(VIII) indicates Hanwha Wire and Cable Compound CLNA TR-8142EC

Ethylene Propylene Rubber

(IX) indicates Electric Cable Compounds (ECC), Inc. ERI-3728-5

Neutral: Copper Concentric Neutral

Jacket: High Molecular Weight Polyethylene

Conditions: To obtain experience

| Manufacturer | Insulation(s) | Flat Strap Neutral Available |
| --- | --- | --- |
|  |  |  |
| General Cable Industries, Inc. | XLP-TR (II, III, IV, V, VI, VII) | Yes |
| Marmon Utility LLC (Hendrix) | XLP-TR (III, IV) | No |
| Nexans Canada | XLP-TR (II, III, IV) | No |
| Phelps Dodge | XLP-TR (II, III, IV, V) | Yes |
| Prysmian | XLP-TR (I, IV) | Yes |
| Southwire | XLP-TR (III, IV, VI) | Yes |
| LS Cable & System U.S.A., Inc. | XLP-TR (IV, VIII)  EPR (IX) | NO  NO |
|  |  |  |

Conditional List

U hv(2)

June 2015

U hv - Cable, Underground

600 Volt Cable

(Alternative Cable Constructions)

Applicable Specification: RUS Specification U-2 (except as indicated below)

NOTE: Manufacturers listed below are conditionally accepted for alternatives A, B, C, D and/or E for the products listed on pages U hv-2 and U hv-3.

Alternative A: 8000 series aluminum alloy in accordance with ASTM B800 or B801.

Alternative B: Stranding in accordance with ASTM B786 for aluminum 1350 conductors or ASTM B787 for copper conductors.

Alternative C: Abuse resistant (ruggedized) (single or two layer) insulation in accordance with ICEA S-81-570.

Alternative D: Self-healing

Alternative E: Stranding in accordance with ASTM B 901 for Compressed Round Stranded Aluminum Conductors Using Single Input Wire Construction

Condition: To obtain experience.

| Manufacturer | Alternative |
| --- | --- |
|  |  |
| Alcan | (A) (C) (E) |
| Conductores Monterrey, S.A. de C.V. | (C) |
| Encore Wire Corporation | (A) (C) |
| General Cable | (A) (C) |
| Phelps Dodge | (A) (C) |
| Prysmian | (A) (C) (D) |
| Nexans | (C) |
| Southwire | (A) (B) (C) (D) (E) |

U hw-1

July 2009

U hw - Safety signs

Applicable Specifications: RUS Drawings ANSI Z535

| Manufacturer | Size (inches) | Danger Sign Catalog No. | Warning Sign Catalog No. | Caution Sign Catalog No. |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| Almetek | 7 x 10 | Trident D-100-0710 | Trident W-100-0710 |  |
|  | 10 x 14 | Trident D-100-1014 | Trident W-100-1014 |  |
|  | 14 x 20 | Trident D-100-1420 | Trident W-100-1420 |  |
|  |  |  |  |  |
| Brady\* | 7 x 10 | 46133 |  | 46043 |
|  | 10 x 14 | 46131 |  | 46041 |
|  |  |  |  |  |
| Eastern Metal\* | 7 x 10 | REA 12-1-710 |  | REA 12-2-710 |
|  | 10 x 14 | REA 12-1-1014 |  | REA 12-2 1014 |
|  | 14 x 20 | REA 12-1-1420 |  | REA 12-2-1420 |
|  | 20 x 28 | REA 12-1-2028 |  | REA 12-2-2028 |
|  |  |  |  |  |
| Electromark\* | 7 x 10 | REA-1-7x10-SV |  | REA-2-7x10-SV |
|  | 7 x 10 | REA-1-7x10-AC |  | REA-2-7x10-AC |
|  | 10 x 14 | REA-1-10x14-SV |  | REA-2-10x14-SV |
|  | 10 x 14 | REA-1-10x14-AC |  | REA-2-10x14-AC |
|  | 14 x 20 | REA-1-14x20-SV |  | REA-2-14x20-SV |
|  | 14 x 20 | REA-1-14x20-AC |  | REA-2-14x20-AC |
|  | 20 x 28 | REA-1-20x28-SV |  | REA-2-20x28-SV |
|  | 20 x 28 | REA-1-20x28-AC |  | REA-2-20x28-AC |
|  |  |  |  |  |
| Lem | 7 x 10 | LSS-1400 |  | LSS-1500 |
|  | 10 x 14 | LSS-1401 |  | LSS-1501 |
|  | 14 x 20 | LSS-1402 |  | LSS-1502 |
|  |  |  |  |  |
| Lyle\* | 7 x 10 | UM12-1-710 |  | UM12-2-710 |
|  | 10 x 14 | UM12-1-1014 |  | UM12-2-1014 |
|  | 14 x 20 | UM12-1-1420 |  | UM12-2-1420 |
|  | 20 x 28 | UM12-1-2028 |  | UM12-2-2028 |
|  |  |  |  |  |
| May Advertising | 7 x 10 | MY710C |  | MY710B |
|  | 10 x 14 | MY1014C |  | MY1014B |
|  | 14 x 20 | MY1420C |  | MY1420B |
|  | 20 x 28 | MY2028C |  | MY2028B |
| For pressure sensitive decal add "D" prefix | | | | |
|  |  |  |  |  |
| Truck Sign Service\* | 7 x 10 | TSD-710 |  | TSC-710 |
|  | 10 x 14 | TSD-1014 |  | TSC-1014 |
|  | 14 x 20 | TSD-1420 |  | TSC-1420 |
|  | 20 x 28 | TSD-2028 |  | TSC-2028 |
|  |  |  |  |  |
|  |  |  |  |  |

\*Reflective signs also available.

The signs listed on this page are to be secured to equipment and transformer enclosures by means of an adhesive or by welding. Screws and rivets are not to be used.

U hx-1

July 2009

U hx - Cable Route Marker

|  |  |  |
| --- | --- | --- |
| Manufacturer |  | Catalog Number |
|  |  |  |
|  | Surface Mounted |  |
|  |  |  |
| Hubbell (Chance) |  | C554-0001 |
|  |  |  |
|  | Above Grade |  |
|  |  |  |
| Carsonite |  | REA-100 |
|  |  |  |
| Electromark |  | REA-3-4x7-SV |
|  |  | REA-3-4x7-AC |
|  |  | REA-3-5x12-SV |
|  |  | REA-3-5x12-AC |
|  |  |  |
| Flexstake |  | 603, 604, 605, 606 |
|  |  |  |
| Greenline |  | FLU-78 (Decal on one side) |
|  |  | DSU-78 (Decal on both sides) |
|  |  |  |
| Hubbell (Chance) |  | C554-0183 |
|  |  |  |
| J Miller Industries |  | JMI-375 |
|  |  |  |
| Lyle |  | UM12-712 |
|  |  |  |
| May Advertising |  | MY45A, MY712A |

(For pressure sensitive decal add "D" prefix to catalog number.)

|  |  |  |
| --- | --- | --- |
| Quantum |  | QM-375 |
|  |  |  |
| Truck Sign Service |  | BCW-712 |
|  |  |  |
| W. H. Brady |  | BL1 (Decal on one side) |
|  |  | BL2 (Decal on both sides) |
|  |  |  |

U hy-1

June 2015

U hy - Splice, Underground, Permanent

(when ordering, specify conductor size, type, whether copper or aluminum and insulation diameter)

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
|  |  |
| Cooper Power Systems | 15 kV and 25 kV |
|  | EZ II straight and transition splice |
|  | #3 through 4/0 |
|  | 35 kV |
|  | 2603934B Series straight splice |
|  |  |
| Elastimold (ESNA) | 15 kv |
|  | Style 1500S, straight splice, through #1/0 |
|  | Style 25-S, straight splice, 2/0 through 4/0 |
|  | Style l5PCJ-1, straight splice, through 4/0 |
|  | Style 25-Y, Y-splice |
|  | 25 kV |
|  | Style K-25-S, straight splice |
|  | Style K-25-Y, Y-splice |
|  | Style 25PCJ-1, straight splice, through 4/0 |
|  | 35 kV |
|  | Style M-250-S, straight splice |
|  |  |
| DSG-Canusa | 15 kV |
|  | CJ 10 Series, heat shrinkable joints |
|  |  |
|  | 25 kV |
|  | CJ 10 Series, heat shrinkable joints |
|  |  |
|  | 35kV |
|  | CJ 10 Series, heat shrinkable joints |
|  |  |
| Hubbell (Chardon) | 15 kV |
|  | Straight Splice through #1/0, Model 9U16A-100 |
|  | "Uni-Matic" Through #2/0, Model 9U06A |
|  | 25 kV |
|  | "Uni-Matic" Through #2/0, Model 9U06A |
|  |  |
| Prysmian | 15 kV and 25 kV |
|  | “Elaspeed” style EPJMe |
|  | straight splice, #2 through 1000 kcmil |
|  |  |
| 3M | (15, 25, 35 kV) |
|  | 5400 Series |
|  | Quick Splice/Quick Splice II/Quick Splice III, 15 kV |
|  | 5411R cable repair splice |
|  | 5411R/HSJ-l cable repair splice (for jacketed cable) |
|  |  |

U hy-1.1

June 2015

U hy - Splice, Underground, Permanent

(When ordering specify conductor size, type, whether copper or aluminum and insulation diameter)

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| TE Connectivity - Energy | 15 kV |
|  | CSJA-1521  CSJA-1522  CSJA-1523  CSJA-1524 |
|  | HVS 1510-R 200 Amp Splice kit |
|  | CAS-15WJ-2, cold-applied splice |
|  |  |
|  | 25 kV |
|  | CSJA-2822  CSJA-2823  CSJA-2824 |
|  | For Bare Concentric Neutral Cable: |
|  | HVS-2510-REAX in-line joint |
|  | HVS-2510E-R-REAX repair joint |
|  | For Jacketed Cable: |
|  | HVS-2510-JCN-REAX in-line joint |
|  | HVS-2510E-RJ-REAX repair joint |
|  | CAS-28WJ-2, cold-applied splice |
|  |  |
|  | 35 kV |
|  | CSJA-3523  CSJA-3524  CSJA-3525 |
|  | For Bare Concentric Neutral Cable: |
|  | HVS-3510E-REAX in-line joint |
|  | For Jacketed Cable: |
|  | HVS-3510E-JCN-REAX in-line joint |
|  | CAS-35M, cold-applied in-line splice |
|  |  |
| Sigmaform | 15 kV |
|  | SSK Series (Heat Shrink) |
|  |  |
|  |  |

U hy-2

July 2009

U hy - Splice, Underground, Separable

(When ordering specify conductor size, type, whether

copper or aluminum and insulation diameter)

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Elastimold (ESNA) | 15 kV |
|  | Style 151-SR, receptacle |
|  | Style 151-SP, plug |
|  | Style 150-DP, deadend plug |
|  | Style 150-DR, deadend receptacle |
|  | Sty1e l50-T, T-tap |
|  |  |
|  | 25 kV |
|  | Style K-151-SR, receptacle |
|  | Style K-151-SP, plug |
|  | Style K-150-DR, deadend receptacle |
|  | Style K-150-T, T-tap |

U hy-3

July 2009

U hy - Splice, Underground, Permanent

(When ordering specify conductor size, type, whether

copper or aluminum and insulation diameter)

600 Ampere Continuous Current Rating

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Cooper Power Systems | 15 kV |
|  | 2604904B Series straight splice (MPS-600) |
|  |  |
|  | 25 kV |
|  | 2604905B Series straight splice (MPS-600) |
|  |  |
|  |  |
| Elastimold (ESNA) | 15 kV |
|  | Style 650-S, straight splice |
|  | Style 15PCJ-2, straight splice, through 1250 kcmil |
|  | Style 650-Y, Y-Splice |
|  |  |
|  | 25 kV |
|  | Style K650-S, straight splice |
|  | Style K650-Y, Y-splice |
|  | Style 25 PCJ-2, straight splice, through 1250 kcmil |
|  |  |
|  | 35 kV |
|  | Style M650S, straight splice |

U ja-1

October 2014

U ja – Equipment Flat Pad\*

|  |  |
| --- | --- |
| Manufacturer | Catalog Number |
|  |  |
| Armorcast | 600 Series, Polymer Concrete P600XXXX Rotocast, LLDPE |
|  |  |
| Associated Plastics | API 4000 Series RPM |
|  |  |
| Carolina Dielectrics | Model 0502-1, Fiberglass, Size:40”x44” |
|  |  |
| CDR Systems (Homac) | PP Series, Fiber reinforced polymer concrete |
|  |  |
| Diversitech | FRC Series – Fiberglass reinforced concrete |
|  |  |
|  |  |
| Electri-Glass | Fiberglass LP-4145, 41" x 45" |
|  |  |
| Electrical Materials | Molded HMW Polyethylene Model 64-3BC, 42" x 41" x 4" Model 65-4BC, 52" x46" |
|  |  |
| Electrimold | EPPT |
|  |  |
| Highline Products | PBP Series, Polymer concrete hybrid  HL-46B, Fiberglass, Size: approx. 42” X 42” |
|  |  |
| Formex | Mode1 TP-REA, Molded polyethylene |
|  |  |
| Heil Rotomold, Inc. | T Series, High density polyethylene |
|  |  |
| Highline | HL-46B, Fiberglass, Size: approx.42"x42" |
|  |  |
| Hubbell (Chance) | C107-0162 Fiberglass, Size: 40" x 44" |
|  |  |
| Major Frame-Crete | ETPP precast, cellular concrete, 42"x42" |
|  |  |
| Newbasis | Polymer pad – PP1P-4242 |
|  |  |
| Nordic | TP Series, Fiberglass |
|  |  |
| Parking Bumper Company – a Division of Hog Slat, Inc. | 7610, 7612, 7613, 7626PE, 7621 |
|  |  |
| PenCell Plastics | TP-4220, TP-4224, TP-4227 |
|  |  |
| Quality Rubber Company | 34242 light-weight concrete |
|  |  |
| Quazite Corp. | Composolite - PH Series |
|  |  |
| RMI-D | Dwg. No. 730126-2, Molded polyethylene Size: 42" x 42" |
|  |  |
| Smith Cattleguard | Easi Set T. Series, Precast Reinforced Concrete |
|  |  |
| Thermodynamics | Poly-Pad, PR Series, Molded polyethylene  YEPR031220, YEPR031226, compression molded polypropylene |

\*Order by catalog number and size.

U ja-2

August 2011

U ja – Equipment Box Pad (Sleeve)\*

| Manufacturer | Catalog Number |
| --- | --- |
|  |  |
| Acura Fiberglass Corp. | Model AG 4532 |
|  |  |
| Associated Plastics | Transformer pad and box assembly, API 4242 RPM Pad and 1730 Box Transformer Pads, API 16 and API 45 |
|  |  |
| Blue Grass Vault Company | BG-PV-T, BG-PV-1, BG-PV-2 |
|  |  |
| Concast | Fibercrete modular bases |
|  |  |
| Custom Composites | R Series Fiberglass |
|  |  |
| DiversiTech | FRC Series – Fiberglass reinforced concrete |
|  |  |
| D & L | Fiberglass |
|  |  |
| Electri-Glass, Inc. | BP-2000 |
|  |  |
| Electrimold | EFBT,EFBS,EFBG Series |
|  |  |
| Fiberglas Fabricators | Transformer pad and sleeve assembly, FFBP series |
|  |  |
| Formex | Transformer pad and box assembly - TP-REA Series Pad, 1730-A Series Box |
|  |  |
| Highline | Box pad HL, FBP, FSG, AND FGS Series |
|  |  |
| Malton | FGS Series Fiberglass ground sleeves and box pads |
|  |  |
| Maysteel | CW-GS-P Series |
|  |  |
| Mor-Tech Fab | Transformer pad ground sleeves |
|  |  |
| Nordic | GS Series Fiberglass (excluding GS-37-43-15-A) CBP-37-43-15-A |
|  |  |
| PenCell | Transformer pad and box assembly- TPS-20-PE Pad, PE-20GS Box |
|  |  |
| ProGlass, Inc. | TX, SR, S, and SG Series (All without optional lids) |
|  |  |
| Quality Fiberglass | QF Series |
|  |  |
| Synertech Moulded Products | S1212, S1118, S1324, S1730, S2436, S3048 and S3660 |
|  |  |
| Thermodynamics | Poly Pad - VC series (VCC-P series covers available) Polyethylene |
|  |  |

\*Order by catalog number and size.

U jb-1

July 2009

U jb - Splice Shield

| Manufacturer | Catalog Number |
| --- | --- |
|  |  |
| Kellems | No. 014-03-1429 |

Conditional List

U sc(1)

July 2009

U sc - Regulators, voltage, pad-mounted

for underground distribution

12.5/7.2 kV

|  |  |
| --- | --- |
| Manufacturer | Conditions |
|  |  |
| Siemens-Allis  Single-phase, step-type pad-mounted regulator Type PFR (76.2, 114.3 & 167 kVA) | To obtain experience. |
|  |  |

U sd-1

July 2009

U sd - Current Transformers

600 Volt

Direct Burial Type

|  |  |
| --- | --- |
| Manufacturer | Type or Catalog No. |
|  |  |
| General Electric | JAL-O |
|  |  |

Indoor Type for Pad-Mounted Transformers

|  |  |
| --- | --- |
| Manufacturer | Type or Catalog No. |
|  |  |
| ABB | CMV |
|  |  |
| G.E.C. Durham Industries (Astra) | AP |
|  |  |
| General Electric | JAB-O |
|  |  |
| Schlumberger | R6P |
|  |  |

U si-1

May 2014

U si - Anodes, Sacrificial

(Drawing M27)

Zinc Anodes\*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Pre-packaged With Connecting Wire | | | Bare Continuous Strip (Ribbon) | |
|  |  |  |  |  |  |
|  | 12 lbs. | 30 lbs. | 60 lbs. | 5/8" x 7/8" | 1/2" x 9/16" |
|  |  |  |  |  |  |
| Anode Systems | S-12  packaged | S-30  packaged | S-60  packaged | - | - |
|  |  |  |  |  |  |
| Cathodic Protection Services | 12HII-4A | 30HII-4A | 60HII-4A |  |  |
|  |  |  |  |  |  |
| Federated Metals | S-12 packaged | S-30 packaged | S-60 packaged | Regular Size Type II | Junior size |
|  |  |  |  |  |  |
| Harco | AZC12GJ | AZC30GJ | AZC60HJ |  |  |
|  |  |  |  |  |  |
| Mesa | S-12 packaged | S-30 packaged | S-60 packaged | Regular Size | Junior size |
|  |  |  |  |  |  |
| Stuart | SZ-12 | SZ-30 | SZ-60 |  |  |
|  | -----VIBROX packaged----- | | |  |  |

\*When ordering, specify zinc anodes that meet ASTM B418-73 Type II Composition and RUS Specification DT-9, "RUS Specification for Zinc Sacrificial Anodes."

U si-2

May 2014

U si - Anodes, Sacrificial

(Drawings UM11-1, UM26, UM27, M2-7, M2-17)

Magnesium Anodes\*\*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Standard Potential | | | | High Potential | | | |
|  |  |  |  |  |  |  |  |  |
|  | 17 lbs | 20 lbs | 32 lbs | 50 lbs | 17 lbs | 20 lbs | 32 lbs | 48 lbs |
|  |  |  |  |  |  |  |  |  |
| Anode Systems | 17  packaged | - | 32  packaged | 50  packaged | 17  packaged | 20  packaged | 32  packaged | 84  packaged |
|  |  |  |  |  |  |  |  |  |
| Cathodic Protection Services | AMH17A packaged | - | AMH32A packaged | AMH50A packaged | 17D3 packaged | 20D2 packaged | 32D5 packaged | 48D5 packaged |
|  |  |  |  |  |  |  |  |  |
| Federated Metals | 17 packaged | - | 32 packaged | 50 packaged | - | - | - | - |
|  |  |  |  |  |  |  |  |  |
| Global Cathodic Protection | - | - | - | - | 17D2 | 20D2 | 32D3 | 48D5 |
|  |  |  |  |  |  |  |  |  |
| Harco | AMC17J | AMC20J | AMC32J | AMC50J | AMC17G | AMC20G | AMC32G | AMC48G |
|  |  |  |  |  |  |  |  |  |
| Kaiser Mag. | 17 Vibra Pak | - | 32 Vibra Pak | 50 Vibra Pak | 17 Electromag Vibra Pak | - | 32 Electromag Vibra Pak | 50 Electromag Vibra Pak |
|  |  |  |  |  |  |  |  |  |
| Mesa | 17 packaged | - | 32 packaged | 50 packaged | 17D Series | 20D2 | 32D Series | 48D5 |
|  |  |  |  |  |  |  |  |  |
| Stuart | SM-17 | - | SM-32 | SM-50 | SM-17H | - | SM-32H | SM-48H |
|  |  |  |  |  |  |  |  |  |

\*\*When ordering, specify magnesium anodes that meet RUS Specification DT-10, "RUS Specification for Magnesium Sacrificial Anodes."