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Purpose and Scope

This section covers the current products and construction practices for the protection of avian species common to Ameren's service areas in Illinois and Missouri. In addition, the wildlife guards for prevention of animal caused outages are included to improve reliability of distribution facilities.

Ameren's first approach is to maintain minimum horizontal and vertical conductor separation unless economics or existing conditions force the use of other methods. The areas intended for new overhead lines shall be evaluated for risk to the protected birds (resident or migratory). Lines scheduled for repair or replacement shall also be evaluated for this same risk.

Practices and Products

All Divisions must follow Ameren standards for new construction and existing retrofit to provide avian–friendly facilities. Other suggested practices or products are not acceptable unless evaluated and approved by Standards.

Wood or composite poles are preferred because the insulating nature of these materials reduces the clearances required for avian protection to less than those required for metal structures. After completion of construction all leftover scrap or reusable material shall be removed and disposed of in an appropriate manner.

Regulations and Compliance

All legal procedures must be followed by the Ameren Division when there is evidence of an avian injury or fatality in the vicinity of an Ameren overhead line (69 kV and below). In addition, the Division shall be proactive in correcting or modifying existing structures to eliminate the possibility of further injury or fatalities to avian species. This commitment is to meet the regulatory requirements for protecting avian species on new and existing circuits. The laws that are applicable are:

1. The Migratory Bird Treaty Act (MBTA; 16 U.S.C. 703–712).
2. The Endangered Species Act (ESA; 1531–1544).
3. The Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. 668–668d)
4. Ameren Avian Protection Plan

1. General

   The stock number for the critter line guard is 71–25–216. The line guard is used to prevent animals from crossing a section of overhead conductor leading to a substation or other distribution equipment. If the line guard is installed on an energized conductor, proper protective clothing, equipment and procedures must be followed.

2. Principle of Operation

   The line guard includes five (5) rollers, two (2) wheels, two (2) "L" brackets, and six (6) cable ties. When properly installed the five rollers are placed between the two wheels and secured in place with the "L" brackets. When an animal (squirrel) tries to cross over the installed line guard, the rollers will rotate and the animal will be rolled off of the conductor. Line guard can be applied to lines with a voltage level of 69kV or less.

3. Line Guard Placement and Installation

   A. For substation applications, place the line guard at least 5' outside the substation fence.

   B. For other applications, place the line guard at least 2' from the pole or standing structure.

   C. Verify the size (OD) of the conductor that the line guard will be installed on. The line guard rollers are fabricated with a 1" OD hole and two cutouts, one for 2" OD and another for 3" OD. The first groove on each roller represents 2", and the second groove represents 3". The cutouts can be easily removed with a knife.

      Position one of the "L" brackets closest to the point the line guard will be protecting. If this work is being done with the conductor energized the "L" bracket can be replaced with a hot line clamp from the table on Sheet 2 of this standard. The hot line clamp can be installed with a "shotgun" hot stick. If the "L" bracket is used place it on the conductor and secure it into place with two cable ties. The cable ties must be placed through the holes provided and around the conductor. Pull the ties tight to hold the "L" bracket in place.

      NOTE: The stainless steel cable ties will have sharp edges if the ties are cut off. Therefore, the ends of the ties should be bent over to remove any sharp edges.

   D. Position the halves of the rollers around the conductor and snap them together. Each roller will have a series of four snaps. All of the snaps must be fastened.

      NOTE: On conductors larger than 2" OD, the rollers will have only two snaps. If the cutout for a 3" hole is removed, the end snaps will also be removed. This will not affect the integrity or operation of the product.

   E. While assembling the first and last rollers the wheels must be installed. Spread apart a wheel and place it on the end of the roller that faces the "L" bracket. Tightly fasten one cable tie at the base of the wheel (See Figure 1) to secure it to the roller.

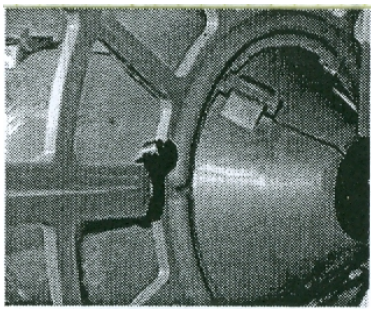


FIGURE 1

   F. After all of the rollers have been snapped around the conductor, push the line guard assembly along the conductor until it is snug against the installed "L" bracket.

G. Position the remaining “L” bracket (or hot line clamp) at the opposite end of the line guard assembly and secure it in place with two cable ties as described in Step #3.C. Remember to bend the ends of the stainless steel ties to eliminate any sharp edges.

4. When the line guard installation is complete, it should appear as shown in Figure 2.

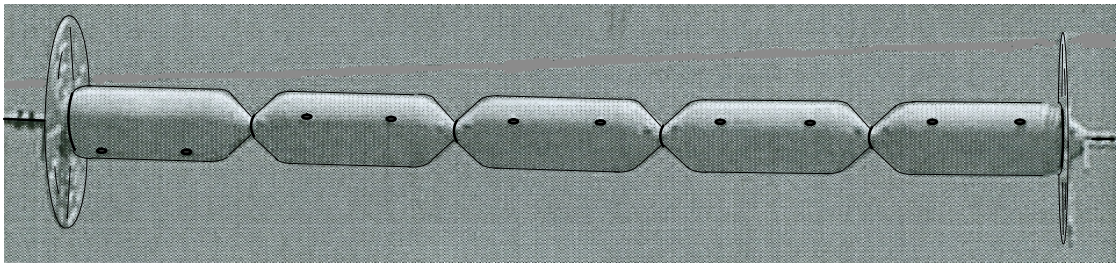


FIGURE 2

Available Hot Line Clamps:

Stock Number	Material	Conductor Range (Inches)	DOJM Code
23 78 394	Copper	0.128 – 0.414	HLC10C
23 78 183	Copper	0.162 – 0.745	HLC350C
17 62 088	Aluminum	0.157 – 0.905	HLC336A
17 62 112	Aluminum	0.502 – 1.031	HLC556A
17 62 143	Aluminum	0.939 – 1.490	HLC954A

1. GENERAL

The lightning arrester mounting bracket guard is used to prevent bird caused outages associated with birds perched on the grounded LA bracket making contact with an energized line lead.

2. PRINCIPLE OF OPERATION

The LA bracket guard covers the grounded metal mounting bracket and arrester mounting bolt on tank mounted arresters. The guards have flexible fingers that securely hold the guards in place. The guard is designed to fit brackets from all common polymer arrester suppliers. The guard has been tested to withstand 21kV to ground without a flashover.

The smooth, rounded profile of the guard acts as a perch deterent. The UV stabilized polypropylene material exhibits excellent durability in all environments. See Figure 1.

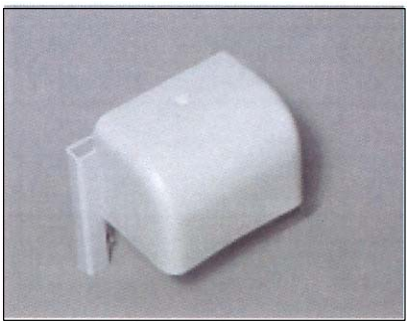


Figure 1

3. INSTALLATION

A. Make sure that the arrester is positioned properly and securely attached to the tank mounting bracket.

B. Place the wildlife guard over the last insulating rib on the polymer arrester mounting bracket and over the tank mounting bracket and bolt.

C. Push down on the wildlife guard until the flexible fingers, at the base of the guard, snap into place and securely hold the guard. No external ties or tape are required to hold the wildlife guard in place. See Figure 2 for an example of an installed cover.

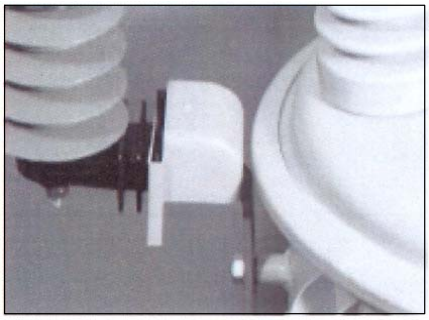
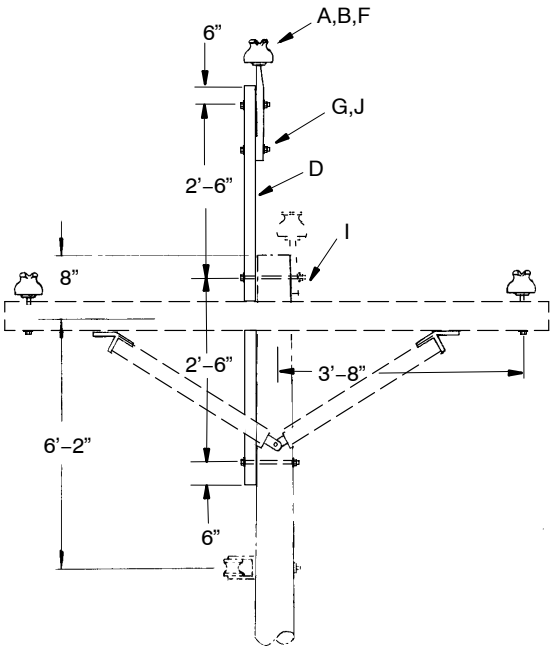


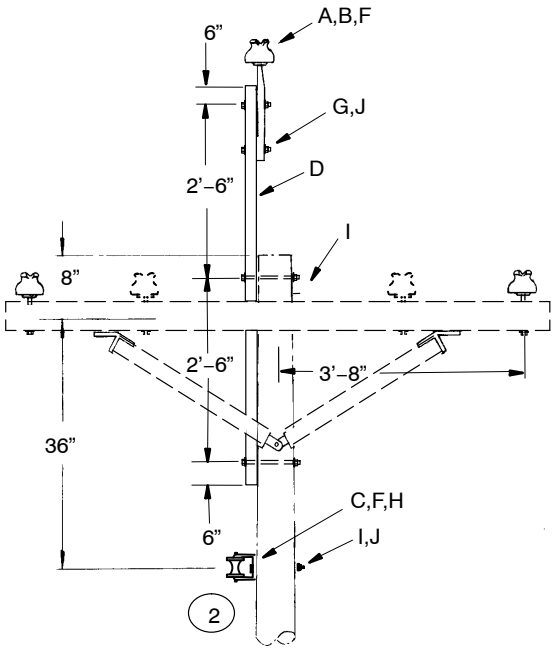
Figure 2

		Stnd. / Stk. No.	Description 05 00 00 05	QTY
	A	69 56 037	Guard, Wildlife, for Covering LA Tank Bracket	1
	B		Wildlife Guards Installation – OP Code 111	1

This standard provides for modification of existing structures to increase spacing between conductors to reduce the likelihood of injury to or death of protected avian species. The 3–wire and 4–wire modification achieves mandated conductor spacing while retaining the eight foot crossarm used in the standard configuration.



3 – Wire Modification
05 11 10 01



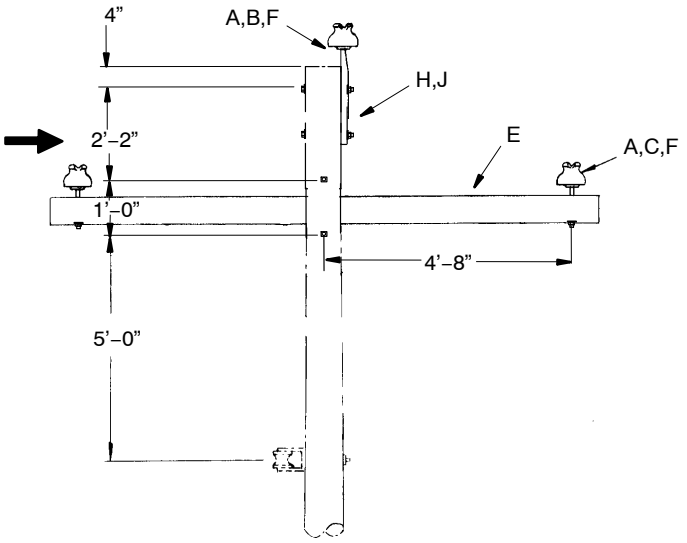
4 – Wire Modification
05 11 10 02

NOTES:

4. See Dist. Std. 06 12 01 for insulator detail and 06 01 01 for secondary clevis detail.
5. See Dist. Std. 29 00 17 02 for neutral ground clearance.

		Stnd. / Stk. No.	Description 05 11 10 **	01	02
	A	25 05 069	Insulator, Pin type	1	1
	B	23 62 156	Pin, Pole Top, 24”	1	1
	C	23 06 040	Clevis, Sec., Insulator		1
	D	41 01 006	Crossarm, Wood Bayonet, 3–1/2” x 4–1/2” x 6’	1	1
@	F	TT*W	Top Tie, See Dist. Std. 07 00 41 00	1	1
		ST*W	Side Tie, See Dist. Std. 07 00 41 00		1
	G	23 52 058	Bolt, Mach., 5/8” x 5”	2	2
	H	25 59 044	Insulator, Spool		1
	I	23 52 063	Bolt, Mach., 5/8” x 10”	2	2
		23 52 065	Bolt, Mach., 5/8” x 12”		1
	J	23 66 027	Washer, Square, 2–1/4”	4	5

Ameren has several overhead flat configurations for use at 25 kV & below. The existing configuration may be on wood, steel or composite poles. Wood and composite poles are considered standard construction in areas with migratory bird population. New construction with crossarm configurations shall provide five feet conductor separation to reduce avian electrocution risk.

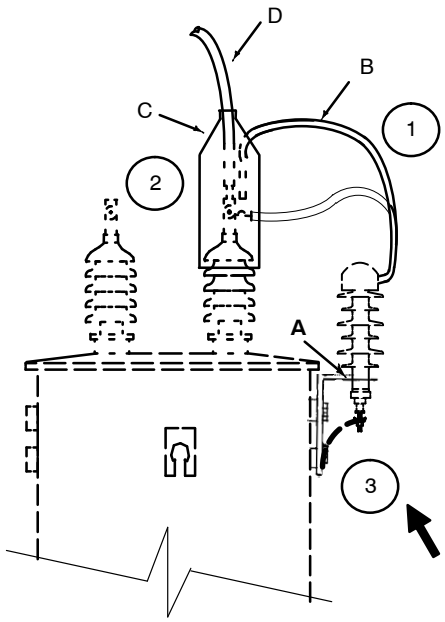


NOTES:

1. See Dist. Std. 06 12 01 for insulator detail.

		Stnd. / Stk. No.	Description 05 11 20 01	
	A	25 05 069	Insulator, Pin type	3
	B	23 62 156	Pin, Pole Top, 24”	1
	C	23 62 028	Pin, Crossarm	2
→	E	41 01 285	Crossarm, Fiberglass, 3–5/8” x 4–5/8” x 10’	1
@	F	TT*W	Top Tie, See Dist. Std. 07 00 41 00	3
	H	23 52 063	Bolt, Mach., 5/8” x 10”	2
→	I	23 52 097	Bolt, Mach., 3/4” x 12”	2
	J	23 66 027	Washer, Square, 2–1/4”	4

The transformer live parts should be covered to prevent circuit outage from wildlife contact. On Delta Primary Systems, wildlife guards must be installed on both HV bushings. When transformers are banked and the clam−shell wildlife guard is used, install the arrester lead in the side of the guard so that the primary leads can be installed in the top holes.

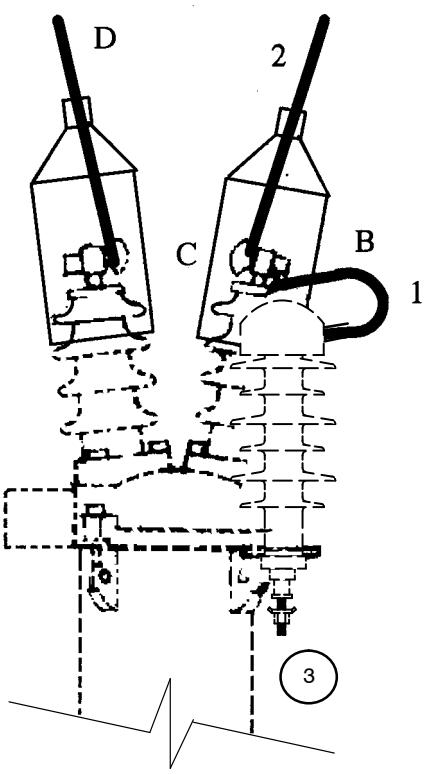


NOTES:

1. Bolt lead to arrester away from the transformer to keep the lead opening in the arrester guard away from animals.
2. Be sure the bushing guard completely covers the terminal and only the top bushing skirt.
3. Refer to DCS Section13 for transformer installation.

		Stnd. / Stk. No.	Description 05 12 10 **	01
	A	69 56 037	Guard, Wildlife, Arrester Bracket	1
	B	69 58 178	Wire, Lead, Arrester w/terms	1
	C	69 58 296	Guard, Clam−Shell, Wildlife	1
	D	18 51 025	Wire, Transformer Riser (ft.)	6
	F	111	Wildlife Guard Installation	1

The recloser live parts should be covered to prevent circuit outage from wildlife contact.

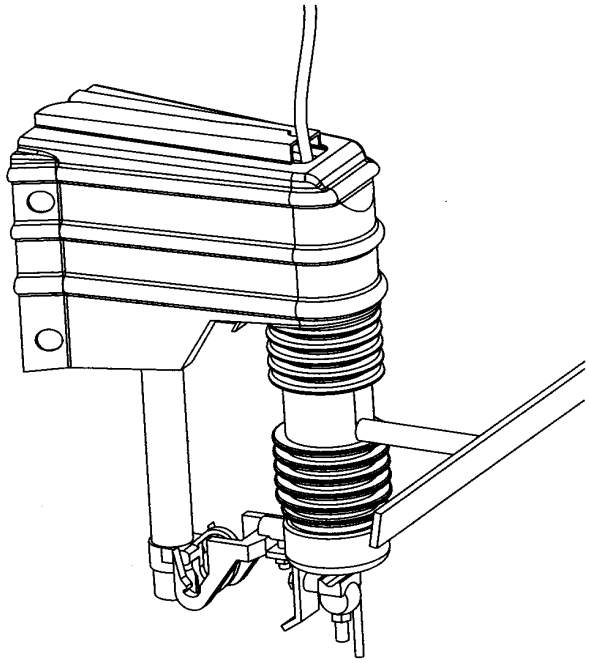


NOTES:

1. Bolt lead to arrester away from the tank to keep the lead opening in the arrester guard away from animals.
2. Be sure the bushing guard completely covers the terminal and only the top bushing skirt.
3. Refer to Dist. Section 10 for recloser and sectionalizer installation.
4. An arrester should be installed if one is not present.

		Stnd. / Stk. No.	**Description** **05 14 10 ****	**01**	**02**	**03**
	A	10 01 145	Arrester 10kV w/o Bracket	1	1	1
	B	69 58 178	Wire–Lead, Arrester w/terms	1	1	1
	C	69 58 296	Guard, Clam–Shell, Wildlife	2	2	2
	D	18 51 025	Wire, SD., #4 Cu., Poly (ft.)	12		
		18 51 042	Wire, SD., #1/0 Cu., Poly (ft.)		12	
		18 51 023	Wire, SD., #4/0 Cu., Poly (ft.)			12
	E	111	Wildlife Guard Installation	1	1	1

The cutout live parts cover shown in this standard shall be used on the Ameren Distribution System to prevent circuit outage from wildlife contact. The cover is not intended for personal protection.



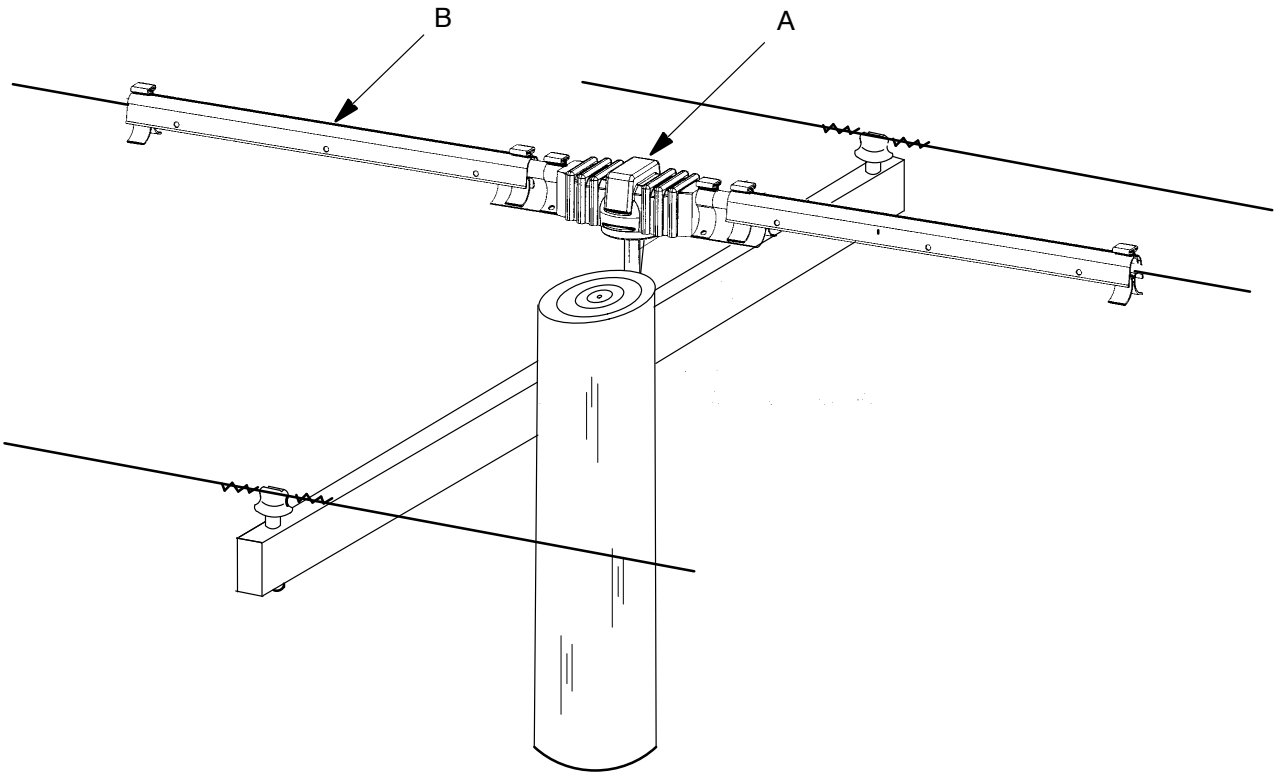
CAUTION: AT TEMPERTURES BELOW 0^{O} F THE CUTOUT COVERS BECOME RIGID AND LOSE THEIR FLEXIBILITY. INSTALLING THE COVERS WITH A HOTSTICK MAY CAUSE THE COVERS TO BREAK.

NOTES:

1. Can be installed with live line tools.
2. Refer to Dist. Std. 10 12 01 ** for cutout installation.
3. The cover is intended for wildlife outage only.
4. Install the cutout cover from the front side. Push the cutout cover around the conductors. Pull the cover down until the interior fingers fully engage the sleet hood.

		Stnd. / Stk. No.	**Description** **05 15 10 ****	**01**
	A	23 17 411	Cover, Cutout	1
	B	111	Cutout cover Installation	1

The conductor and insulator cover shown in this standard shall be used on Ameren Distribution System to prevent avian outage from distribution facilities where horizontal conductor spacing is less than five feet. The cover is not intended for personal protection.



01

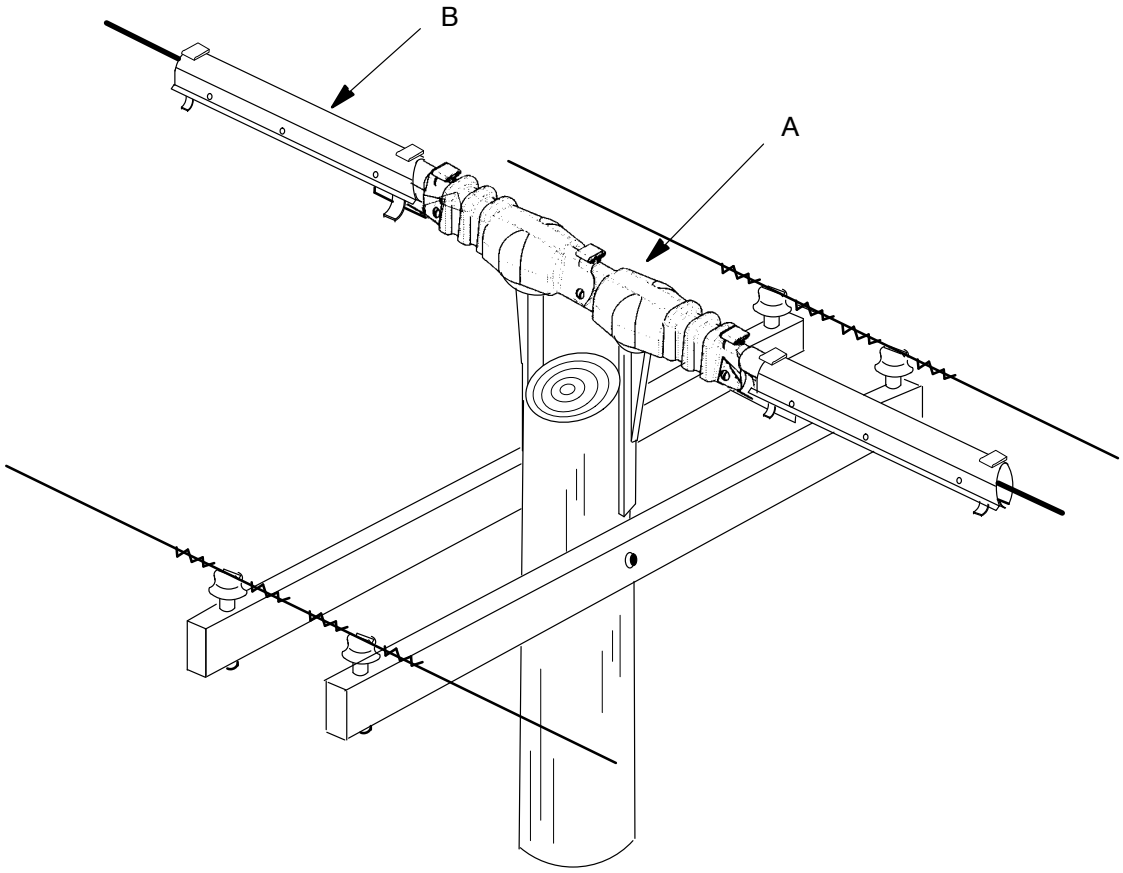
NOTES:

1. The cover is intended for wildlife outage only.
2. The cover can be installed with live line tools.
3. Cover fits #6 to 556 conductor on 55–5 pin, and 56–1 pin.
4. Install two covers on two interior–positions when existing arm has four conductor configuration.

(4)

		Stnd. / Stk. No.	Description 05 16 10 **	01	02
	A	23 17 406	Cover, Single Pin Configuration	1	2
	B	23 17 416	Cover, Extension Arm	2	4
	C	111	Wildlife cover Installation	1	2

The wire and insulator cover shown in this standard shall be used on Ameren Distribution System to prevent avian outage from distribution facilities where horizontal conductor spacing is less than five feet. The cover is not intended for personal protection.



01

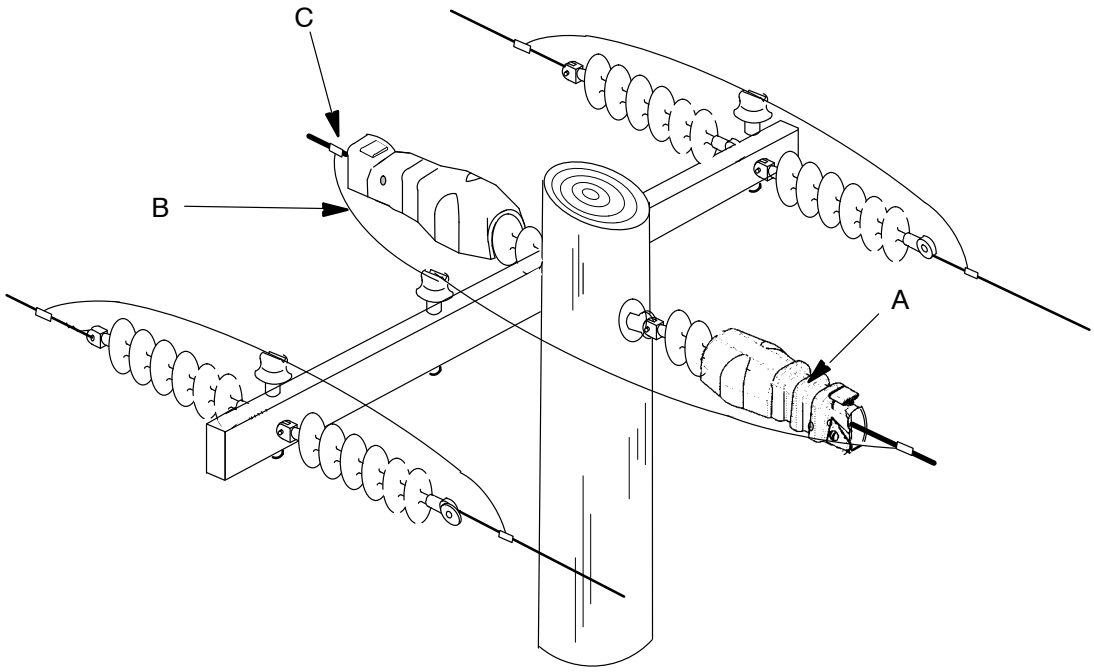
NOTES:

1. The cover is intended for wildlife outage only.
2. The cover can be installed with live line tools.
3. Install two covers on two interior–position when existing arm has four conductor configuration.

3

		Stnd. / Stk. No.	Description 05 16 11 **	01	02
	A	23 17 408	Cover, Double pin configuration	1	2
	B	23 17 416	Cover, Extension arm	1	4
	C	111	Wildlife Cover Installation	1	2

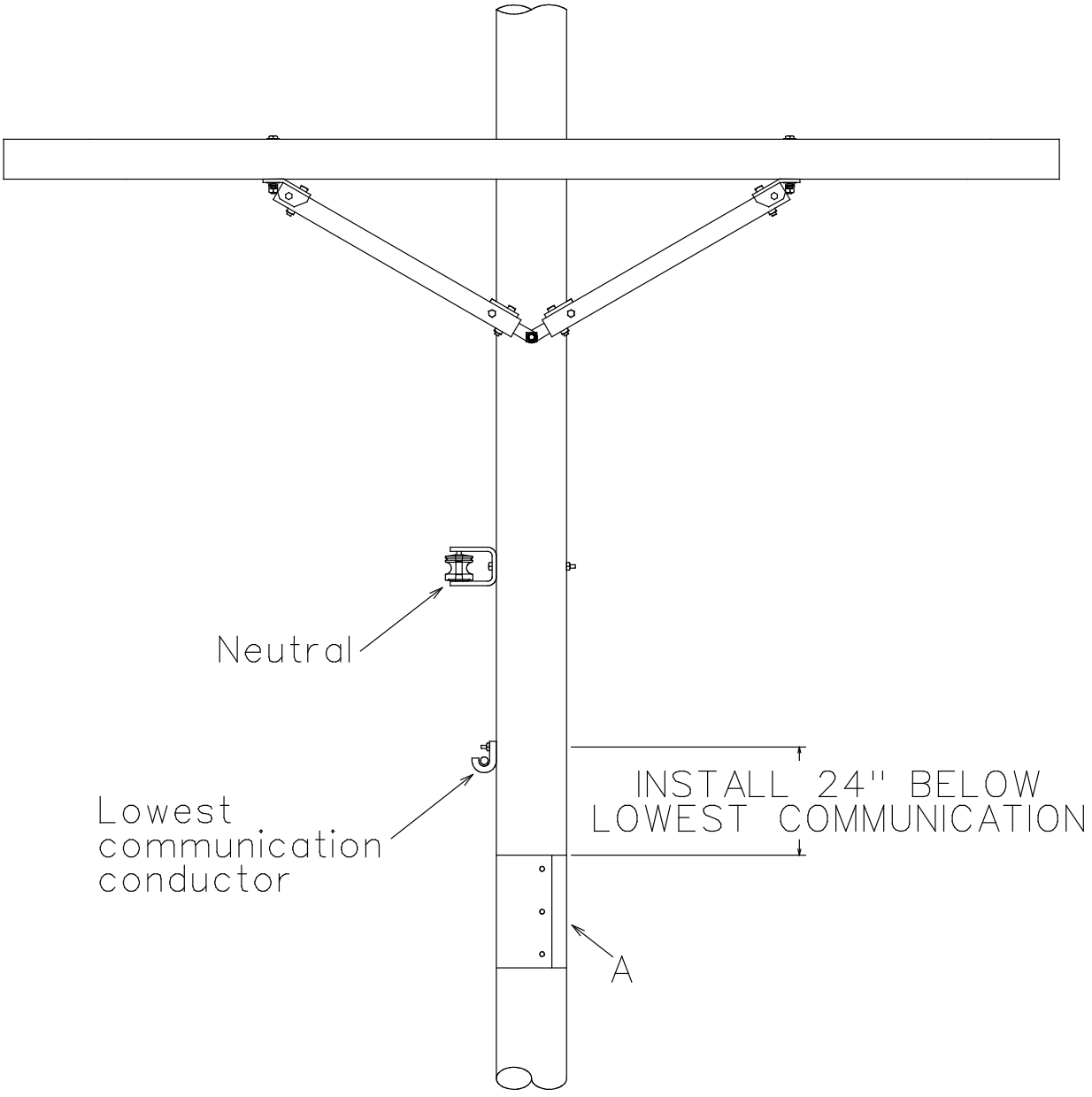
The conductor and insulator covers shown in this standard shall be used on the Ameren Distribution System to prevent wildlife outages on distribution facilities where horizontal conductor spacing is less than five feet. The cover is not intended for personal protection.



01

1. The cover is intended for wildlife protection only.
2. Item A can be installed using live line tools if required.
3. If configuration has four cross arms, use standard 05 16 12 02.
4. Item B is required if the jumper is bare conductor.

		Stnd. / Stk. No.	Description 05 16 12 **	01	02
2	A	23 17 409	Cover, DE	2	4
4@	B	23 17 413	Cover, Loopover, up to 0.5" Cond. Diameter	10	20
		23 17 414	Cover, Loopover, 0.5" to 0.856" Cond. Diameter	10	20
	C	23 17 415	Tape, Insulating	1	1
	D	111	Wildlife cover Installation	1	2



NOTES:

1. Pole wrap may be installed on poles requiring additional animal protection,
2. Pole wrap shall be installed two (2) feet below the lowest communication conductor.

		Stnd. / Stk. No.	Description 05 16 13 **	01
	A	23 17 473	Animal Guard – Pole Wrap	1