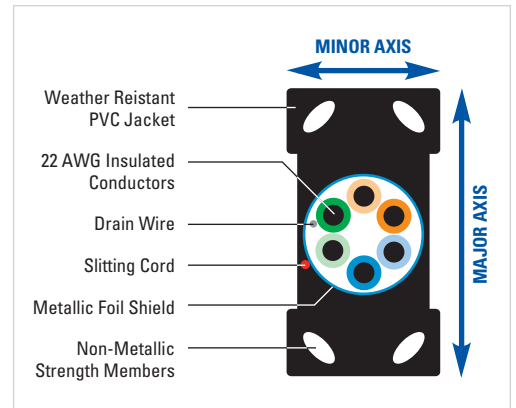


ADP S Application Guide

Superior Essex manufactures a wide variety of designs and configurations of Outside Plant (OSP) Cable and Wire. This document provides installation recommendations for the ADP S (Aerial Shielded) service wire. Installation personnel should be familiar with applicable codes or established practices for their locale.

Product Description

ADP S is a polyvinyl chloride (PVC) jacketed aerial service wire designed for use in extending communications service (voice, data and/or video) to a subscriber's premises from the distribution cable terminal. This product features a metallic foil shield and drain wire, which together provides significantly greater protection from external interference than standard ADP NMS or unshielded service wire. Without proper shielding, Electromagnetic Interference (EMI), aka Radio Frequency Interference (RFI), from common sources such as high voltage AC power lines, motorized machinery, X-ray systems, televisions, and AM radio stations may interfere with communications transmission. Shielding also lessens the possibility that DSL or other high frequency transmission protocols within the cable will interfere with signals on adjacent cables. ADP S aerial service wire is available in 3- and 5-pair, 22 AWG configurations. Insulation on tip conductors is marked with a stripe that corresponds to the mating ring color for easy conductor identification, which reduces possibility of splitting pairs during termination. A black, weather-resistant, PVC jacket is extruded over the fiberglass strength members and ripcord, which protects the core from mechanical damage, sunlight degradation and moisture ingress. The jacket bonds to the fiberglass strength members to provide the required strength characteristics.



Specifications

Characteristic	Description
Conductor	Solid annealed copper
Insulation	Polyolefin
Core Assembly	Balanced twisted pairs
Shield	3 mil metallic foil shield with drain wire
Strength Members	Fiberglass strength members placed in jacket parallel to core assembly
Rip Cord	Placed parallel to the core
Jacket	Weather-resistant PVC
Standards Compliance	Applicable sections of both GR-3163-CORE and ANSI/ICEA S-89-648-2006 UL Listed Subject 523 RoHS-compliant

Electrical Specifications

Number of Pairs	Average Mutual Capacitance @ 1000 Hz nF/mile (nF/km)
Maximum Pair	94 (58)
Maximum Average	90 (56)

Conductor Size AWG (mm)	Minimum Insulation Resistance @ 68°F (20°C) Megohm/mile (Megohm/km)	Maximum Average Attenuation @ 68°F (20°C) dB/kft (dB/km)	Maximum Conductor Resistance @ 68°F (20°C) Ohms/mile (Ohms /km)	DC Resistance Unbalance Maximum % Individual Pair	Conductor to Conductor Dielectric Strength Volts DC 3 secs, no breakdown
22 (0.64)	1,000 (1.600)	5.1 (17)	91 (56.5)	5.0	4,000

Crosstalk Loss	dB/kft (dB/km)	Capacitance Unbalance @ 1000 Hz	pF @ 1kft (pF @ 1km)
Minimum NEXT @ 772 kHz	44 (144)	Maximum Individual Pair	80 (145)

Installation Practices

There are certain limitations to shielded aerial service wire performance that must be respected during installation. In general, the four most critical characteristics are: tensile strength, bend radius, crush resistance, and temperature rating. These characteristics vary among wire types, sizes, and even manufacturers. It is critical for the designer and installer to be familiar with these criteria prior to installation start.

Tensile Strength and Minimum Bend Radius

Pair Count	Maximum Allowable Tension		Minimum Bend Radius in (mm)
	Short Term (Storm Loading) lbs (N)	Long Term lbs (N)	
3-Pair	365 (1624)	80 (356)	3.25 (82.6)
5-Pair	475 (2113)	200 (890)	3.50 (76.2)

Crush Resistance

Crush resistance is an important attribute, which is easily quantifiable in a test laboratory, yet difficult to predict in an installation environment. Crushing a shielded aerial service wire can cause many issues from temporary, intermittent anomalies to permanent failure. The best rule of thumb is to avoid actions, routes, guides, mounting devices, etc., that deform the shape of the jacket.

Temperature Ratings

Environment	Temperature Range °F (°C)
Storage	-40 to +176 (-40 to +80)
Install	-30 to +176 (-34.5 to +80)

Recommended Installation Tools

- Diagonal cutters (oblique pliers)
- Splicer's knife or splicer's/electricians snips (5" scissors)
- Needle-nose pliers (optional)

Installation Hardware Options

The design of ADP S aerial service wire requires the larger drop wire clamp to make attachments at poles, buildings or other distribution points, even with the 3-pair version. Listed below are available drop clamps from several vendors that may be used in the installation of ADP S service wire. Drop clamps that include dimpled shims are highly recommended, as they tend to minimize slippage.

Third Party Manufacturer	Description	Part Number
Thomas & Betts (Diamond/Sachs)	Drop Wire Clamp – Aluminum	23-82351
Senior Industries	Drop Wire Clamp – Removable	SI-0966
Allied Bolt, Inc.	6-Pair Drop Wire Clamp Dimpled Shim	960
MacLean Power Systems	6-Pair Drop Wire Clamp	6PRDS

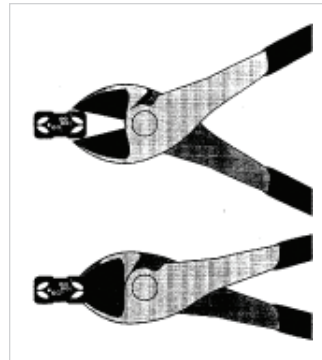
NOTE: Manufacturers' installation recommendations should be followed. This list is believed accurate at time of publication and is provided for convenience purposes only. Always check current compatibility.

Preparation and Termination Procedure

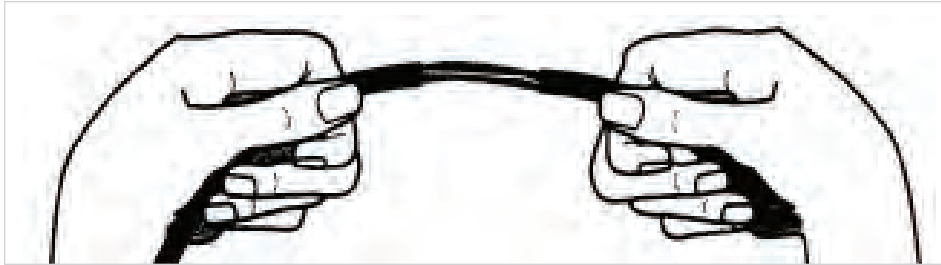
Cable Entry

ADP S aerial service wire is equipped with a ripcord to facilitate separation of the jacket from the insulated conductors. Superior Essex places the ripcord on the opposite side of the indent print.

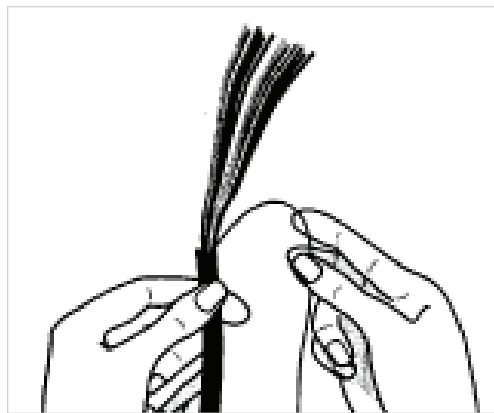
1. Determine the length of jacket to be removed allowing an extra 3 to 4 inches to start the wire insulation removal and mark the wire at that length
2. Using diagonal cutters, cut each side of the aerial service wire (the portion containing the fiberglass strength members). The cut should be 3 to 4 inches from the end to be terminated. Insure that the cut is sufficiently deep to cut through the fiberglass strength members. Do not be concerned if an underlying conductor or the metallic foil shield is nicked because it will be removed prior to final installation (see step 7). Note: 5" snips may also be used.
3. Using the diagonal cutters, cut the jacket on the top and bottom to complete the jacket separation.



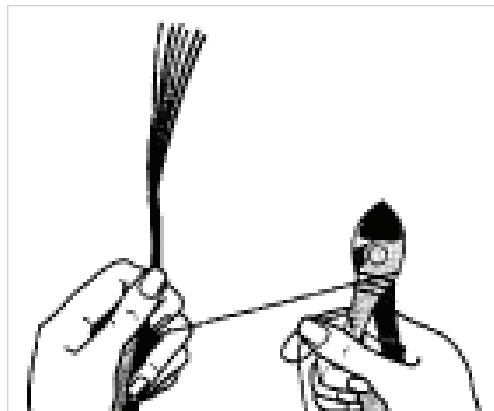
4. Secure the aerial service wire in both hands and remove the severed jacket section by pulling.



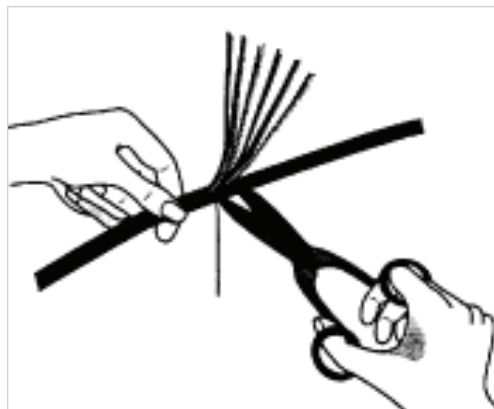
5. Separate the ripcord from the insulated conductors. The ripcord will be on opposite side of indent print. Ensure that the ripcord is not entangled with the insulated conductors.



6. Separate the ripcord from the insulated conductors. Wrap ripcord around the diagonal cutters (or Needle-nose Pliers). Two or three wraps will be sufficient. Pull ripcord to slit desired length of jacket. A small starting notch will make starting the ripcord easier.



7. Remove jacket and cut the insulated conductors to required length for termination, ensuring removal of the first three to four inches (see step 1). The excess core wrap may be removed with snips or diagonal cutters. Retain adequate amount of drain wire and metallic foil shield for bonding and grounding.



Bonding and Grounding

It is recommended that both ends of the ADP S aerial service wire (the distribution terminal end and the premises network interface end) are bonded and grounded using the procedures described below. Bonding and grounding are required to insure any interfering signals or voltages are shunted to ground.

The drain wire may be utilized as a ground medium and is an easier method to bond and ground that will not create a bulky bond/ground point on the wire. This is the recommended method for bonding and grounding the ADP S aerial service wire since it requires no additional materials and takes less time to install.

Recommended Method

1. As the ADP S aerial service wire is prepared and terminated according to standard procedures, the technician need only to prepare enough length of bare drain wire to reach the local grounding point within the distribution terminal or premises network interface.
2. Securely attach drain wire around desired ground point.

Alternate Method

Third party supplied mechanical shield bond connectors are available that do a good job of bonding to the metallic foil shield and then extending a ground lead to the local ground medium at each termination point. Procedural and technical support is readily available from each product's supplier.

- 1A. After the desired lengths of conductors are exposed, take the metallic foil shield and prepare according to manufacturer's guidelines for shield bond connector/clamp installation.
- 2A. Position the metallic foil shield according to the bond connector/clamp manufacturer's recommendation and attach connector/clamp to the metallic foil shield.
- 3A. Run the ground wire to the external MGN or suitable ground point at the terminal and premises network interface.
- 4A. Insure ground point nuts are tight at all connections.

Third Party Manufacturer	Description	Part Number
Electric Motion Company	Shielded Aerial Service Wire Connector	EM 2081
	Shielded Aerial Service Wire Ground Kit	EM 2082
Thomas & Betts	ADSL Aerial Drop Bond Clasp Kit 18"	ADSL 18

NOTE: This list is believed accurate at time of publication and is provided for convenience purposes only. Always check current compatibility. Manufacturers' installation recommendations should be followed.

Wire Termination

Wire termination must accommodate bonding of the metallic foil shield or use of the drain wire.

1. Extend the core wrap beyond the end of the metallic foil shield to provide dielectric protection between the shield and cable pairs. The exact length the core wrap extends beyond the metallic foil shield depends on the desired spacing between the shield connection and terminating point or device for the particular installation.
2. Extend the wire pairs beyond the end of the core wrap to allow for individual pair termination.

The ADP S Aerial Service Wire is ready for final termination.