

Corning Cable Systems Standard Recommended Procedure (SRP) 206-355 Issue 2, March 2005 Page 1 of 20

OptiSheath™ Classic Aerial Terminal



This procedure applies to p/n SCA-9T24-LRS and p/n SCA-9T34-LRS.

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Revision History

Issue	Date	Reason for Change
2	03/2005	Change torque value to be applied to hose clamps, add sheath retention grip to hose clamps, illustrate modified strain-relief bracket, and reference SCA-KT-GND ground kit
1	09/2004	Initial Release

Related Literature

EVO-139-EN	Specifications for Network Access Point Fiber Terminal
SRP 001-284	Instruction, Splice Trays with Heatshrink Splice Protection
SRP 004-014	Instruction, Optical Fiber Access Tool
SRP 206-370	Instruction, SCA-KT-GND Ground Kit

Admonishments

The precautionary terms used by Corning Cable Systems in its standard recommended procedures conform to the guidelines expressed in the American National Standards Institute document (ANSI Z235) for hazard alert messages. Alerts are included in this instruction based on the following:



DANGER indicates an imminently hazardous situation which, if not avoided, <u>will</u> result in death or serious injury.



WARNING indicates a potentially hazardous situation which, if not avoided, <u>could</u> result in death or serious injury.



CAUTION indicates a hazardous situation which, if not avoided, <u>may</u> result in minor or moderate injury.

1. **PRODUCT INFORMATION**

1.1 Features

The OptiSheath Classic Aerial Terminal is designed for the aerial access network. This terminal provides environmental protection and quick incremental connection of subscribers' drop cables to increase deployment velocity.

1.2 Physical Description

This terminal is available in two lengths: 24-inches (SCA-9T24) and 34-inches (SCA-9T34). The terminal is a hinged closure that can be installed on any cable suitable for express cable applications. Terminal components and features are shown in Figure 1 with call-outs to define the Corning Cable Systems' product terminology.

1.3 Specifications and Dimensions

Table 1 provides specifications and dimensions of the OptiSheath Classic Aerial Terminal.

Parameter	Specification	Remarks
Number of Terminations	Two 32mm Distribution Ports in Each End Cap Maximum 8 Drop Ports in Each End Cap	Two drop cable strain-relief kits are provided, order p/n SCA-KT-9CBL-11 for additional kits (25 per kit)
Dimensions (HxWxD)	SCA-9T24: 24.5 x 9 x 6.3 inches (622.3 x 228.6 x 158.8 mm) SCA-9T34: 38.25 x 10.75 x 6.3 inches (971.6 x 273.1 x 158.8 mm)	With Hinged Cover Closed
Weight	SCA-9T24: 13 lb (4.8 kg) SCA-9T34: 15 lb (6.8 kg)	Without Cable Installed
Cable Types Used	72-fiber Standard ALTOS® Cable 216-fiber SST-Ribbon™ Cable SST-Drop™ Cable	Armored cable requires p/n SCA-KT-GND ground kit
Splice Trays Used	SCF-ST-126 (0.4-inch)	24-position splice tray allows 24 single splices or two 12-fiber mass-fusion splices
Environment		
Temperature		
Operating	-40° C to 65° C	
Storage	-40° C to 65° C	
Relative Humidity		
Operating	Up to 95%	No Condensation
Storage	Up to 95%	No Condensation

Table 1 — Specifications and Dimensions

1.4 Carton Contents

• (1) OptiSheathTM Classic Aerial Terminal (SCA-9T34 shown)



LEGEND

- (1) Express Port (One on Each End of Terminal)
- **2** Routing Clips
- (3) Splice Tray Secured to Holder with Hook-and-loop Strap
- **4** Bottom Shell

(5) Cover

• (1) Splice Tray (p/n SCF-ST-126)



- (1) Ribbon Strain-relief Kit containing:
 - (3) Split rubber grommets
 - (3) Cable ties
- (1) Hook-and-loop Strap

Figure 1 — Carton Contents

- (1) Distribution Cable Strain-relief Kit (p/n SCA-KT-9EXP-H) containing:
 - (2) Strain-relief bracket
 - (2) Central member restraint bracket
 - (2)⁷/₁₆-1-inch hose clamp with sheath retention grip
 - (2) #8 washer
 - (2) #8-32 locknut



- (2) Drop Cable Strain-relief Kit:
 - (1) Strain-relief bracket
 - (1) Central member restraint bracket
 - (1) $\frac{1}{4}-\frac{5}{8}$ -inch hose clamp
 - (1) #8 washer
 - (1) #8-32 locknut



- (1) Hanging Bracket Kit:
 - (2) Aerial hanging brackets
 - (2) Messenger wire clamp assemblies
 - (6) Hex nuts
 - (4) Sealing washers
 - (4) Hex bolts



Figure 1 — Carton Contents (continued)

2. USE AND APPLICATION

2.1 Network Planning

The OptiSheath Classic Aerial Terminal allows a provider to bring service from a central office, headend, or remote terminal serving a substantial number of subscribers to an individual subscriber's site, such as a home, apartment, individual business, or business suite.

Installation of the terminal on aerial cable requires engineering the network prior to deployment of the terminals. Engineers should determine the required number and dimension of sheath openings, the distance between the openings, and the number of fibers to be dropped from each opening.

Contact Corning Cable Systems' Engineering Services at 1-800-743-2671 for assistance in making these determinations and placing the order for network deployment products.

2.2 Tools and Equipment Required

The following are required to complete this installation:

- ⁵/₁₆-inch nut driver
- ³/₈-inch nut driver
- ³/₄-inch nut driver
- ⁷/₁₆-inch nut driver
- ¹¹/₃₂-inch nut driver
- Vinyl tape
- Cable knife
- Side cutters
- Can wrench
- Measuring tape
- Cable ties
- Torque wrench
- p/n SCA-KT-GND ground kit if using armored cable

Corning Cable Systems recommends use of the following product-specific tool and equipment:

- Heatshrink Fusion Splice Protectors (p/n 2806032-01, package of 50, 40 mm long)
- Optical Fiber Access Tool (p/n OFT-000) to split midspan buffer tube and access individual fibers in ALTOS[®] cable
- Universal Access Tool (p/n UAT2-000) to split midspan buffer tubes and access individual fibers in SST-Ribbon[™] cables
- Ideal™ Buffer Tube Splitter (p/n 100107-01) to split endspan buffer tubes

3. INSTALLING THE TERMINAL



WARNING: Do not install this unit or work with telephone wiring during a lightning storm. Telephone lines can carry high voltages from lightning causing electrical shock resulting in severe injury or death.

3.1 Prepare the Cable



CAUTION: The wearing of safety glasses to protect the eyes from accidental injury is strongly recommended when handling chemicals and cutting fiber. Pieces of glass fiber are very sharp and can damage the cornea easily.



CAUTION: The wearing of safety gloves to protect hands from accidental injury is strongly recommended when using sharp instruments.

- **NOTE:** Fiber optic cable is sensitive to excessive pulling, bending and crushing forces. Consult the cable specification sheet for the cable you are installing. **Do not bend the cable more sharply than the minimum recommended bend radius. Do not apply more pulling force to the cable than specified. Do not crush the cable or allow it to kink.** Doing so may cause damage that can alter the transmission characteristics of the cable the cable may have to be replaced.
- **IMPORTANT:** Typical lengths are illustrated. Since the actual application may vary, it is recommended to route the buffer tubes as they will lie in the terminal to determine actual strip lengths before cutting fibers. Refer to routing illustrations, if necessary. Do not expose the bare fibers until after the cable has been placed in the terminal end cap.
 - **Step 1** For midspan applications, remove the length of cable sheath and armor (where applicable) as indicated in Figure 2 according to the manufacturer's directions for the cable type being installed.



Figure 2 — Midspan Sheath Removal

For taut sheath applications, remove cable sheath as shown in Figure 3. Taut sheath applications are possible *only* in the SCA-9T34 terminal.



Figure 3 — Sheath Removal for Taut Sheath Application (SCA-9T34 ONLY)

For endspan applications, remove cable sheath as shown in Figure 4.





Figure 4 — Endspan Sheath Removal

- **Step 2** Cut the central strength member of each cable to 16 cm (approximately 6 inches) from the sheath using side cutters.
- **Step 3** Leave 16 cm (approximately 6 inches) of yarn, if present, for additional strain-relieving.
- Step 4 Clean cable per manufacturer's instructions.

3.2 Hang the Terminal on the Messenger Wire

Follow your engineering plan to determine the location where the terminal will be installed.

- **Step 1** Open the latches on the cover and swing the cover down.
- **Step 2** The cover can be removed, if necessary. Press <u>gently</u> on the plastic release lever as shown in Figure 2 and slide the cover to the right. Insert a hook-and-loop strap or large cable tie through the hanging opening on the cover and hang the cover from the messenger wire.
- Step 3 Align the appropriate holes in the hanging bracket with the holes on the bottom shell to allow the necessary distance between messenger wire and terminal.
- Step 4 Place two nuts into the retainers in the bottom shell. Insert the two supplied bolts through the holes in the hanging bracket and the sealing washers with the gaskets on the washers next to the terminal. Install into the terminal and tighten (Figure 4).
- **Step 5** Install a second nut onto the bottom bolt to allow for internal grounding.
- **Step 6** Assemble the clamps onto the hanging brackets in the orientation shown in Figure 6.
- **Step 7** Position the messenger wire inside the clamp assemblies and tighten the nuts to secure the terminal on the messenger wire.
- **IMPORTANT:** Do not use power tools for installation. Doing so may damage the terminal.



Figure 5 — Release Lever to Remove Cover



Figure 6 — Aerial Bracket Components

3.3 Install Grounding Hardware (Armored Cable Only)

If installing armored distribution or drop cable, it must be grounded to a primary ground. Prepare armored cables as described in the instruction provided with the ground kit (p/n SCA-KT-GND). Contact your customer service representative to purchase the kit if it is not provided with your terminal.

3.4 Install Strain-relief Hardware

Installation of strain-relief brackets prevents pistoning or bowing of central strength members, as well as cable sheath slipping or pullout. You will be required to strain-relieve the cables later in this procedure. When instructed to strain-relieve a cable, refer to this section for the directions on doing so.

3.4.1 Strain-relief Brackets

Install strain-relief bracket(s) onto the opposite side (180 degrees) from the grounding clamp, if applicable:

- Step 1 Place hose clamp over the cable and bracket 18 mm (0.75 inch) below the sheath end (Figure 7). Center the sheath retention grip on the opposite side of the cable from the hose clamp tensioning body.
- IMPORTANT: When using armored cable, install strain-relief bracket(s) onto the opposite side (180 degrees) from the grounding clamp. Install the hose clamp and bracket 25 mm (1.0 inch) from the end of the cable sheath to prevent the retention grip from overlapping the ground hardware.



Step 2 Tighten the hose clamp in the notch on the bracket with the tensioning body on the hose clamp against the bracket (Figure 7). Tighten hose clamp to a torque value of 30 in-lb.

3.4.2 Nonmetallic Strength Members

If strength members are nonmetallic:

- **Step 1** Trim the central strength member(s) flush with the top of the strain-relief bracket (Figure 7).
- Step 2 Insert the restraint cap threaded stud through the hole in the strain-relief bracket, capturing the central strength member between the two (Figure 8).
- **Step 3** Wrap the yarn, if present, twice in a clockwise direction around the threaded stud.
- **Step 4** With the nonmetallic strength member behind the bracket, install a nut on the restraint cap threaded stud.



Figure 8 — Nonmetallic Strength Member

Step 5 Confirm buffer tubes are clear of the strength elements. Tighten nut securely.

Step 6 Repeat for the second cable, when applicable.

NOTE: If the central member is too large for the restraint cap, order p/n SCF-MBR-CMS and follow the instructions provided with that strain-relief kit.

3.4.3 Metallic Strength Members

Secure metallic strength members as described in the instruction provided with the ground kit (p/n SCA-KT-GND).

3.5 Install Express Cable

- **Step 1** Strain-relieve both sides of the sheath opening on the express cable as described in Section 3.4.
- **Step 2** Open the express cable portion of the end caps by loosening the two screws indicated on each end (Figure 9).
- **IMPORTANT:** Remove wax paper from all four end cap seams on the terminal during the initial installation to prevent seepage.



Figure 9 — Open Express Port

- **Step 3** Wrap vinyl tape around the hose clamp and restraint cap to prevent damage to the fibers.
- Step 4 Remove bead from express port cones being used. Install both sides of the cable sheath into the top express ports and slide the strain-relief bracket into the groove on the bottom shell of the terminal (Figure 10).



Figure 10 — Install Express Cable

- **Step 5** Reinstall the end cap half as shown in Figure 11 and hand-tighten the two express port screws on each end cap (23 in-lb recommended).
- **IMPORTANT:** To avoid damage to the screws, do not overtighten.
 - **Step 6** Wrap vinyl tape around the cable and port as shown in Figure 11 inset.



Figure 11 — Reinstall Express Endcap

3.6 Route Distribution Buffer Tubes

- **NOTE:** Installation is illustrated with the Central Office (CO) cable on the left side of the terminal and the drop fibers on the right side of the terminal.
 - **Step 1** Determine from which end of the terminal the cable will be dropped.
 - **Step 2** Separate the distribution buffer tube (to be spliced to pigtails) from the other buffer tube(s).
 - **Step 3** Loop unused express buffer tube(s) in the buffer tube slack storage area as shown in Figure 12 and secure in the routing clips.



Splice Tray Holders with Radius Guides

Figure 12 — Secure Cable Slack

NOTE: For taut sheath applications in the SCA-9T34 terminal, cut the distribution buffer tube next to the cable sheath at the end of the terminal where the cable will be dropped. There will be NO slack loop (Figure 13). When CO cable enters the terminal from the left, cut the buffer tube in the location shown to ensure the longest possible length for splicing.



Figure 13 — Taut Sheath Distribution Buffer Tube

3.7 Install Drop Cable

Step 1 Install strain-relief hardware onto the drop cable as described in Section 3.4 (Figure 14). The retention grip is not required on drop cables.

IMPORTANT: Tighten hose clamp on SST-Drop flat cables to a torque value of 20 in-lb.

- **Step 2** Loosen the two screws on the end cap shown in Figure 15 and remove end cap cover.
- **IMPORTANT:** Remove wax paper from all four end cap seams on the terminal during the initial installation.



- Step 3 Determine which side of the drop cable seal should be used for your application. Refer to Table 2 to select the correct cable seals. Remove highlighted sections appropriately.
- **IMPORTANT:** When using smaller diameter cables $(\leq 5 \text{ mm})$, flip the gel seal over to access the appropriate seals.



Table 2 Drop Seals

- **Step 4** Slide the strain-relief bracket assembly into the appropriate grooves in the end cap. Press the bracket in until secure. Attach the cables to the external strain-relief bracket using cable ties (Figure 16).
- **Step 5** Replace end cap (Figure 16) and securely hand-tighten screws (recommended torque value of 23 in-lb).

IMPORTANT: To avoid damage to the screws, do not overtighten.

NOTE: Fiber optic cable is sensitive to excessive pulling, bending and crushing forces. Consult the cable specification sheet for the cable you are installing. **Do not bend the cable more sharply than** the minimum recommended bend radius. **Do not apply more pulling force to the cable** than specified. **Do not crush the cable or allow it to kink.** Doing so may cause damage that can alter the transmission characteristics of the cable—the cable may have to be replaced.





Figure 16 — Strain-relieve Drop Cable

3.8 Install Splice Tray and Route Distribution Buffer Tube

- **Step 1** Remove the cover from the splice tray.
- **Step 2** Loop the distribution buffer tube around the radius guides and beneath the splice tray holder as shown (Figure 17).
- **Step 3** Route two loops of buffer tube around the inside perimeter of the splice tray as described in the instruction provided with the splice tray.
- **Step 4** Mark the buffer tube where it enters and exits the splice tray.
- **Step 5** Split the buffer tube at the marks.
- In **midspan** applications, use the Optical Fiber Access Tool (p/n OFT-000) to split the buffer tube according to the instructions provided with the tool.
- In **endspan** and **taut sheath** applications, use the Ideal Buffer Tube Splitter (p/n 100107-01) to split the buffer tube according to the instructions provided with the tool.
- **Step 6** Remove the cut buffer tube to access the fibers. Clean the fibers per the manufacturer's directions.
- Step 7 Locate distribution fibers to be spliced and cut the fibers at the center of the loop.



Figure 17 — Midspan Distribution Buffer Tube

3.9 Route Drop Cable Buffer Tubes to Splice Tray

- Step 1 Route two loops of buffer tube into slack storage area.
- **Step 2** Continue routing buffer tube to the corner of the splice tray (Figure 18).
- **Step 3** Mark the buffer tube where it enters the splice tray.
- **Step 4** Cut the buffer tube at the mark using the Ideal Buffer Tube Splitter (p/n 100107-01) and remove the buffer tube to access the drop fiber that will be spliced. Clean the fiber per the manufacturer's directions.

3.10 Splice Distribution Fibers to Drop Fibers

WARNING: Never look directly into the end of a fiber that may be carrying laser light. Laser light may be invisible and can damage your eyes. Viewing it directly does not cause pain. The iris of the eye will not close involuntarily as when viewing a bright light. Consequently, serious damage to the retina of the eye is possible. Should accidental eye exposure to laser light be suspected, arrange for an eye examination immediately.



WARNING: DO NOT use magnifiers in the presence of laser radiation. Diffused laser light can cause eye damage if focused with optical instruments. Should accidental eye exposure be suspected, arrange for an eye exam immediately.



WARNING: Cleaved glass fibers are very sharp and can pierce the skin easily. Do not let cut pieces of fiber stick to your clothing or drop in the work area where they can cause injury later. Use tweezers to pick up cut or broken pieces of the glass fibers and place them on a loop of tape kept for that purpose alone. **Good housekeeping is very important.**

- **Step 1** Bring cut fibers to the splicing equipment. Slide a heatshrink protection device over the distribution fiber per instructions provided with the splice tray.
- **Step 2** Clean, cleave, and splice fibers per instructions provided with the splicing equipment. Use the splicing equipment to shrink the heatshrink protection device over the splice point.
- **Step 3** Route spliced fibers in the splice tray and secure the splice point in the organizer per the instructions provided with the splice tray.
- **Step 4** Store unused fibers in the splice tray.
- In midspan applications, store the expressed fibers by looping in the tray.
- In endspan and taut sheath applications, store the unused fibers in the tray.
- Step 5 Attach buffer tubes to the tray per the instructions provided with the splice tray.



Figure 18 — Drop Buffer Tube

3.11 Secure Splice Tray

- **Step 1** Secure the cover on the tray.
- **Step 2** Loop the distribution buffer tube around the radius guides beneath the splice tray holder (Figure 19A drop buffer tube not shown for clarity).
- **Step 3** Loop the drop buffer tube through the routing clips (Figure 19B).



Drop Buffer Tube

Figure 19 — Drop Cable Routing





Figure 20 — Secure Splice Tray





Figure 21 — Secure Drop Buffer Tube

4. SECURING THE TERMINAL

- **Step 1** If the cover was removed, slide the cover from left to right onto the hinge pins of the terminal. The release lever (Figure 22) will snap into place when the cover is completely installed.
- **Step 2** Close the cover and secure the latches (Figure 23).
- Step 3 If required, attach a cable tie or tag to the cover's security points at each end.



Testing can verify the performance of the circuit from the terminal back to the central office or to any termination points in between.

Contact Corning Cable Systems' Engineering Services at 1-800-743-2671 for testing procedures.

6. MAINTENANCE AND REPAIR PROCEDURES

6.1 Maintain the Terminal

No routine maintenance of this product is required to keep it in operational order. In the event of loss of service or low performance, reenter the terminal to determine which components are defective.

6.2 Reenter the Terminal

Step 1 Remove cable tie or tag from the terminal's security point, if present.

Step 2 Open the latches to open the cover. Press <u>gently</u> on the plastic release lever and slide the cover to the right to remove the cover, if desired.

6.3 Replace Components

Contact Corning Cable Systems' Engineering Services at 1-800-743-2671 for instructions to repair broken or defective components.

7. GROWTH PROCEDURES

The blank end cap can be replaced with an end cap containing eight drop ports to increase capacity. Refer to instructions in Section 6.2 to reenter the terminal and Sections 3.7 through 3.10 to splice and route additional distribution fibers.

Glossary

Acronyms

ANSI	American National Standards Institute
AWG	American Wire Gauge
CO	Central Office

Terminology

Buffer Tube

Extruded cylindrical tubes within a cable assembly used for protection and segregation of colored optical fibers.

Cable

An assembly of optical fibers and other material providing mechanical and environmental protection.

Central Strength Member

Any component of a communication cable, metallic or optical, the function of which is to protect the transport medium, i.e., conductor or fiber, from excessive tensile and bending stresses during installation and while in service.

Distribution Cables

Originate at the Local Convergence Point and connect many Network Access Points (NAPs).

Drop Cables

Individual cables used to connect each subscriber.

Express Cables

Fibers in a cable or tube that passes through a terminal without being cut for access purposes.

Taut Sheath

Allows cable to pass through the terminal without storing cable slack inside the terminal.

Customer Service and Information

Telephone: -

Customer Service—US or Canada: 1-800-743-2671 International: +1-828-901-5000 Fax: +1-828-325-5060



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Product Information: ----

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