CORNING OPTICAL COMUNICATIONS GENERIC SPECIFICATION FOR OPTICAL FIBER SPLICE CLOSURES

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PGS044
Revision 4

Corning Optical Communications reserves the right to update this specification without prior notification.

Master Format
27 11 16 Communications Cabinets, Racks, Frames and Enclosures
or
27 13 23 13 Communications Optical Fiber Splicing and Terminations

1.0 General Considerations

1.1 The optical fiber splice closure shall meet all requirements stated in this specification.

2.0 Splice Closure Features and Functions

2.1 The splice closure housing shall be non-metallic. It shall be resistant to solvents, stress cracking, and creep. The housing materials shall also be compatible with chemicals and other materials to which they might be exposed in normal applications.

2.2 The optical fiber closure shall be capable of accepting any optical fiber cable used in interoffice, outside plant, and building entrance facilities.

2.3 The optical fiber closure shall be available in distinct sizes to accommodate a variety of cable entries as specified in the table below:

Table 2-1. Cable Capacity

Cable Capacity	Canister (Butt) Configuration		Branch (In-Line) Configuration	
	Express Entries/ Max. Cable Diameter (mm)	Drop Port Entries/ Max. Cable Diameter (mm)	Express Entries/ Max. Cable Diameter (mm)	Drop Port Entries/ Max. Cable Diameter (mm)
Large	2/32	6/25	4/32	12/25
Medium	2/25	4/18	4/25	8/18
Small	2/20	3/15	4/20	6/15

As an option, the ability to double the cable capacity of an installed canister splice closure by use of a kit shall be available. Such a conversion shall not disturb existing cables or splices.

2.4 Encapsulation shall not be required to resist water penetration.

2.5 The splice closure shall be re–enterable. The closure end cap shall be capable of accepting additional cables without removal of the sheath retention or strength member clamping hardware on previously installed cables or disturbing existing splices. The optical fiber splice closure shall provide a clamping mechanism to prevent pistoning of the central member or strength members and to prevent cable sheath slip or pullout.

2.6 The splice closure shall have appropriate hardware and installation procedures to facilitate the bonding and grounding of metal components in the closure and the armored cable sheath. The cable bonding hardware shall be able to accommodate a copper conductor equal to or larger than a #6 AWG.

2.7 Aerial splice closures shall have available the necessary hardware to attach and secure the closure to an aerial strand.

2.8 The closure shall accommodate splice trays suitable for single fiber, single fiber heat shrink, mechanical, or ribbon heat shrink splices.

2.9 The small splice closure shall accommodate up to 72 single fiber splices or 144 ribbon fiber splices using 12-fiber ribbons. The medium sized closure shall accommodate up to 288 single fiber splices or 432 ribbon fiber splices. The large closure shall accommodate up to 480 single fiber splices or 864 ribbon fiber splices.

2.10 Spliced fibers shall not be subjected to a bend radius smaller than 30 mm (1.2 inches). Buffer tubes shall not be subjected to a bend radius smaller than 38 mm (1.5 inches).

2.11 The installation of the splice closure shall not require specialized tools or equipment, other than those normally carried by installation crews.

3.0 Performance Requirements

NOTE: The test procedures for evaluating these requirements are detailed in GR-771-CORE, Issue 1, July 1994, Section 6.

3.1 A bond clamp shall remain firmly attached to the cable armor sheath while under a tensile load of 9-kg (20 lbf). Following removal of the load, there shall be no evidence of clamp loosening or damage to the cable sheath, armor, or clamp that would reduce its current carrying capacity as required by the AC fault test.

3.2 The electrically conductive path used for continuity and grounding of the splice closure metallic components shall be capable of withstanding an AC current of 1000 Amperes for 20 seconds.

3.3 The cable clamping and sealing hardware used to terminate optical fiber cable shall not cause an attenuation change greater than ± 0.05 dB per fiber, when tested with a source operating at 1550 nm ± 20 nm.

3.4 An axial load of 100 lbf, individually applied to each cable, shall not cause mechanical damage to the cable or clamping hardware. The load to the optical fiber cable shall not cause an attenuation change greater than ± 0.05 dB per fiber, when tested with a source operating at 1550 ± 20 nm.

3.5 Subjecting the closure/cable interface to 90° flexing for 8 cycles at ambient temperatures of –18 °C ± 2 °C (0 °F ± 3.6 °F) and 40 °C ± 2 °C (104 °F ± 3.6 °F) shall not cause any mechanical damage to the cable or clamping hardware. In addition, flexing of the optical fiber cable shall not cause an attenuation change greater than ± 0.05 dB per fiber, when tested with a source operating at 1550 ± 20 nm.

3.6 Subjecting the closure/cable interface to 10 cycles of torsional loading at ambient temperatures of –18 °C ± 2 °C (0 °F ± 3.6 °F) and 40 °C ± 2 °C (104 °F ± 3.6 °F) shall not cause any mechanical damage to the cable or clamping hardware. In addition, torsional loading of the optical fiber cable shall not exceed allowable attenuation changes.

3.7 The closure shall not exhibit any mechanical damage after being subjected to a vertical drop from a height of 0.75 m (30 inches) at temperatures of –18 °C ± 2 °C (0 °F ± 3.6 °F) and 40 °C ± 2 °C (104 °F ± 3.6 °F).

3.8 The diameter of the optical fiber splice closure shall not permanently deform more than 10%, nor temporarily deform more than 20%, when it is compressed by a uniformly distributed load of 300 lbf. Additionally, the compressive load shall cause no mechanical damage to the closure or its contents.

3.9 The closure shall not exhibit any mechanical damage after being subjected to mechanical impact of 100 lbf (136 Nm) at temperatures of –18 °C ± 2 °C (0 °F ± 3.6 °F) and 40 °C ± 2 °C (104 °F ± 3.6 °F).

3.10 The closure central member clamp shall prevent movement (e.g. bowing, pistoning, or breaking) of the cable central member (CM) when the CM exerts a force of 100 lbf on the clamp.

3.11 Sealing components (gaskets, grommets, O-rings) used in a closure, shall not permit the entry of water into the closure after thermal aging at 90 °C ± 1 °C (194 °F ± 1.8 °F) for 720 hours (30 days).

3.12 The closure shall be capable of safe and proper assembly at temperatures of 0 °C ± 2 °C (32 °F ± 3.6 °F) and 40 °C ± 2 °C (104 °F ± 3.6 °F) using materials and procedures specified by the manufacturer.

3.13 The closure shall not exhibit any mechanical damage or corrosion following 30 days of severe temperature and humidity cycling from 65 °C ± 2 °C (150 °F ± 3.6°F) and 95% relative humidity to –40 °C ± 2 °C (-40 °F ± 3.6 °F) and uncontrolled humidity. Additionally, at the midpoint of the temperature cycle, re-entry and re-assembly of the closure shall be done. If the closure has a hinged cover, it shall be flexed 25 times.

3.14 The closure shall show no evidence of water intrusion into the compartment containing fiber splices after it is immersed in water and subjected to 10 freeze/thaw cycles.

3.15 The splice closure shall show no evidence of water penetration following exposure to a 20-foot waterhead for a period of 7 days.

3.16 A closure shall show no evidence of corrosion following exposure to acidified saltwater for a period of 90 days.

3.17 The closure shall show no change in sealing ability after submersion in a specified chemical test fluid for 7 days. The mechanical integrity of the closure shall be confirmed by performing the compression and impact tests. The closure seal shall also be checked by performing the water immersion test. Additionally, samples of external, nonmetallic closure materials shall neither experience a change in weight greater than 10%, nor experience a reduction in tensile strength or elongation properties greater that 20%, after immersion in the chemical test fluid.

3.18 Samples of external, nonmetallic closure materials shall not have a reduction in tensile strength or elongation properties greater than 20% of their original value, after being exposed to a UV-B type ultraviolet light source with a peak emission at 313 nm for 2,160 hours (90 days).

3.19 Samples of polymeric closure materials shall not support fungus growth when tested per ASTM G 21. A rating of 0 is required.

4.0 Quality Assurance Provisions

4.1 The manufacturer shall be TL 9000 registered

5.0 Miscellaneous

5.1 At the request of the customer, the manufacturer shall provide installation procedures and technical support concerning the items contained in this specification.

Gen Spec PGS044 Revision History

Revision #	Date	Reason for Change
4	10/20/17	Reformatted, added Master Format number and added Quality Assurance Provisions and Miscellaneous sections.