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Applications
Engineering Note

Buffer Tube Minimum Bend Radius

AEN 001, Revision: 10

This Applications Engineering Note (AE Note) addresses buffer tube minimum bend radius for Corning Optical Communications (COC) optical fiber cables.

Terminating optical fiber cables imparts bending and twisting forces on the buffer tube(s), e.g. preparing cable ends to access the optical fibers or ribbons for splicing as well as routing tubes in hardware.

Observing minimum bend radii precludes damage to tubes or the fibers inside from excessively small bends. Potential issues from too small bends include:

(1) Increased fiber attenuation due to macrobending
(2) Fiber breaks or reduced long-term fiber reliability
(3) Buffer tube kinking or plastic deformation

Table 1 details the recommended minimum buffer tube bend radii for several CCS optical fiber cables. Observing these values precludes attenuation increase from macrobending, buffer tube kinking, and long-term degradation in performance. These guidelines are consistent with requirements of common splice closures and termination hardware, as well as with field splicing practices.

Contact Corning Optical Communications' Technical Support with additional questions on this subject.

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Table 1: BUFFER TUBE MINIMUM BEND RADIUS

BUFFER TUBE MINIMUM BEND RADIUS		
CABLE		***BEND RADIUS***
Stranded Loose Tube Cable Designs		
ALTOS®		25 mm
ALTOS/LSZH™		25 mm
FREEDM®		25 mm
FREEDM/LST (14-24 Fibers)		25 mm
SOLO® ADSS		25 mm
ALTOS® Ribbon	up to 432 Fibers	70 mm
	444 to 864 Fibers	100 mm
MiniXtend®		14 mm
MiniXtend® HD	up to 72 Fibers	11 mm
	144 to 288 Fibers	17 mm
	288 to 432 Fibers	20 mm
MiniXtend® XD		14 mm
Central Tube Cable Designs *NOTES (1) & (2)*		
FREEDM/LST (2-12 Fibers)		30 mm
SST-Ribbon™	up to 96 Fibers	125 mm
	108 to 144 Fibers	135 mm
	156 to 216 Fibers	165 mm
FREEDM Ribbon Riser	up to 96 Fibers	125 mm
	108 to 216 Fibers	165 mm
Ribbon Riser	up to 96 Fibers	125 mm
	108 to 216 Fibers	165 mm
Ribbon Plenum	up to 96 Fibers	125 mm
	108 to 216 Fibers	165 mm
SST-UltraRibbon™		220 mm

NOTES:

(1) Minimum bend radius concerns for central tube cables are established primarily to address the handling of the buffer tube during cable splice preparation.

(2) Typical installation practices do not require significant lengths of exposed central tube to be routed in hardware. For ribbon cables, the buffer tube is completely removed starting close to the cable entry point inside the closure. Please refer to the recommended installation procedures for the specific splice closure of interest for details.

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