AccuRibbon® Cable Handling Precautions

Contents **Section**

1.0 General

1.1 This document describes general cable handling precautions for OFS AccuRibbon® cables. Installation guidelines for aerial and underground applications are referenced in section 5.

1.2 OFS AccuRibbon® cables are available in both dry-core and gel-filled designs and are available with several different jacket constructions. Some of the popular designs include AccuRibbon® LXE, AccuRibbon® DC, and AccuRibbon® DuctSaver® cables. Depending on the jacket and core combination, AccuRibbon® cables are available with 12 – 864 fibers.

1.2 AccuRibbon® cables are designed to meet the rigors of aerial, direct buried, and underground conduit installations. However, care must be exercised during installation to ensure that the maximum rated cable load (MRCL) is not exceeded and the minimum cable bend diameter is not violated. The following sections of this document briefly describe these two handling precautions.

2.0 Maximum Rated Cable Load

2.1 The maximum rated cable load (MRCL) for AccuRibbon® cables is 600 pounds. This is the maximum tensile force that may be applied to the cable during short-term installation conditions, e.g., during underground installation in conduit or innerduct. To assure that the MRCL is not exceeded during installation, breakaway pulling swivels and/or tension limited cable winches are recommended. Tension-limiting winches must be routinely calibrated per manufacturer's recommendations. Cable lubricants should be used during underground placing to reduce the coefficient of friction and resultant cable-

installation forces. Refer to the manufacturer's documentation for recommended quantities and application methods.

2.2 For long term conditions the maximum cable load is limited to 30% of the MRCL or 180 lb. An example of this condition is the residual tension that may remain in a cable following an underground installation.

3.0 Minimum Bend Diameter

3.1 Cable minimum bend diameters are defined as a multiple of the cable outside diameter (OD) for both static and dynamic conditions. The static condition applies to cables exposed to low tension, i.e., 30% of the MRCL or a maximum of 180 lb. Examples of this condition are underground cables racked in a manhole or aerial cables stored on a snow shoe. The dynamic condition applies to a cable that may be exposed to the MRCL, e.g., pulling a cable around a sheave or capstan during installation.

3.2 The minimum bending diameters[1] for AccuRibbon® cables containing up to 216 fibers are 20 × OD for static conditions and 40 × OD for dynamic conditions. For cables containing more than 216 fibers, the minimum bending diameters are 30 × OD for static conditions and 40 × OD for dynamic conditions. See Table 1 for a listing of minimum bending dimensions. Note that some of the minimum bending dimensions may require cable sheaves that are larger than the manhole opening. In these cases, multiple-roller fiber-optic quadrant blocks similar to that shown in Figure 1 are recommended for use during cable installation.

Figure 1 – Fiber Optic Quadrant Block
(available from Condux International, Inc.)

[1] Some cable manufacturers specify minimum bend radius rather than minimum bend diameter. Minimum bend diameter can be converted to minimum bend radius by dividing the minimum bend diameter by two. For example, the minimum bend radii for AccuRibbon® cables containing 12 – 216 fibers are 10 × OD and 20 × OD, respectively, for static and dynamic conditions.

4.0 Storage Coils

4.1 For cables containing up to 216 fibers, the minimum recommended coil diameter is 18 inches. For cables containing more than 216 fibers, the minimum recommended coil diameter is 40 × OD. See Table 1 for a listing of minimum recommended coil dimensions. The minimum coil diameters are necessary to accommodate the combined bending and twisting stresses that occur during the coiling operation. Temporary bending of cable coils into smaller diameters may be necessary to pass cable coils into a manhole; however, the cable should not be bent to a diameter less than 20 × OD under any circumstance. After the cable coils are passed through the manhole opening, they should be returned to their recommended minimum coil diameter for long-term storage.

Table 1. Minimum Recommended Bending Diameters for AccuRibbon® Cables

Cable Type	Fiber Count	Cable Diameter	Minimum Bending Diameter		Minimum Storage Coil Diameter
			Static Condition	Dynamic Condition	
AccuRibbon® and AccuRibbon® DC (metallic & dielectric)	12 - 48	0.51”	11”	21”	18”
	60 - 144	0.61"	13"	25"	18"
	156 - 216	0.71"	15"	29"	18"
	240	0.71”	22"	29"	29"
AccuRibbon® DC (dielectric)	264 - 432	0.78”	24”	32”	32”
AccuRibbon® DC (metallic)	264 - 432	0.84”	26"	34"	34"
AccuRibbon® DuctSaver (dielectric)	264 - 576	0.75”	23”	30”	30”
AccuRibbon® DuctSaver (metallic)	264 - 576	0.89”	27”	36”	36”
AccuRibbon® DuctSaver (dielectric)	744 - 864	0.96”	29”	39”	39”
AccuRibbon® DuctSaver+ (metallic)	744 - 864	1.00”	30”	40”	40”

5.0 Applicable Documents

IP-003 Aerial Installation Guidelines, IP-009 Placing Underground Fiber Optic Cable in Underground Plant, IP-051 Cable Termination Recommendations for Aerial Installation of AccuRibbon DC Cable, IP-041 AccuRibbon Cleaning Procedure, IP-057 Splitting 24 Fiber Ribbons, IP-050 Core Tube Blocking Procedure