

Cable Installation

Only brief installation instructions are given in this publication. Please refer to the Dekoron Cable Installation Guide for detailed installation instructions.

Tensile Strength of Conductors

If a cable contains conductors of different gauge sizes the pulling tension must be calculated for each conductor group size and summed for the total tension. The tensile strength limitation of conductors for pulling cables is determined by the following formula:

$$T_{\max} = K \times N \times CMA$$

T_{\max} – Maximum allowable pulling tension in pounds
 K – Constant for copper, 0.008 (lb/CMA)
 N – Number of conductors*
 CMA – Circular mil area of each size of conductor

Sidewall Pressure

1. Sidewall pressure is the radial force exerted on the cable's sheath, jacket and/or insulation at the radius of a bend in a conduit, duct and/or pulley when the cable is under pulling tension.
2. Sidewall pressure is a major factor in determining the maximum allowable pulling tension that can be applied to a cable without causing cable damage.
3. Maximum sidewall pressure must not exceed 500 pounds per foot of the conduit or duct bend radius.

$$\text{one cable per conduit} \\ P_s = T_{\text{out}} / R$$

$$\text{2, 4 or more cables per conduit} \\ P_s = T_{\text{out}} / (R \times N) \times 1.4$$

T_{out} – Tension coming out of bend
 R – Bend radius in feet
 N – Number of cables
 1.4 – Weight correction factor for 2 or more cables (constant)
 P_s – Sidewall pressure

Pulling Devices

1. Cables may be pulled with a pulling grip attached to the conductors or by a basket grip over the sheathing, jacket and/or insulation.
2. When pulling with a pulling eye attached to the conductors, the maximum allowable pulling tension is determined by the tensile strength of the conductors.
3. When pulling with a basket grip, the maximum allowable pulling tension should not exceed 1,000 lbs and in any case, may not exceed the maximum allowable pulling tension based on the tensile strength of the conductors.

Bending Radius

1. Proper installation of cable requires that consideration is given to the minimum bending radius and training radius of a cable.
2. The minimum bending radius of a cable is the minimum to which a cable should be bent while under pulling tension during installation.
3. The training radius, also known as permanent training, of a cable is the minimum to which a cable should be bent without tension on the cable.
4. During installation, the bending radius should be as large as practicable for the installation conditions.

Low voltage cable – analog, 300 volt and 600 volt

Minimum Bending Radius – 6 x diameter (O.D.) of the cable
Minimum Training Radius – 4 x diameter (O.D.) of the cable

Armored cables – interlocked, served wire or Dekabon

Minimum Bending Radius – 12 x diameter (O.D.) of the cable
Minimum Training Radius – 8 x diameter (O.D.) of the cable

Support Spacing

The maximum recommended support spacing for copper conductors in a vertical position is 100 ft (30m) for conductor sizes 22 to 10 AWG (0.3mm² to 6.0mm²).

Support Devices

Cables should be supported in vertical trays, conduits, ducts and boxes by basket grips, hardwood support blocks, cable clamps, etc., at intervals not to exceed the maximum recommended support spacing. Cables should normally be supported in vertical trays with cable ties by securing the cable to the tray every 5 to 10 feet (1.5 to 3 metres).