

Vertical Installation of Jelly-Filled Loose Tube Fiber Optic Cables

Installation Procedures

This section contains information on the placement of jelly-filled loose tube optical fiber cables in vertical installations. Both indoor and outdoor environments are described. **In general, it is to say that for indoor vertical installation, dry or so called jelly-free cables should be used.** This of course is the best method to overcome the issue of draining liquid. Anyhow basic guidelines regarding min. bend radius and max. pulling tension are quite similar and it is important to ensure that any load is applied to all the cable components to avoid slippage.

If the optical fiber is being installed in wire ways, racks, ducts, some basic guidelines hold true. Support the cable and avoid crushing, stressing and over-bending it. Every cable will have values attached for minimum bend radius and maximum tensile loading. In addition to monitoring the cable pulling tension, additional efforts to support and protect the cable will greatly lengthen its working life. Cables should never be allowed to hang freely for long distances or be allowed to press against edges in any installation.

Complying with the cable's minimum bend radius cannot be overstressed. Many applications will automatically present conditions wherein the bend radius of the equipment or its configuration will damage the cable if precautions are not taken. In tray and rack installations the minimum cable bend radius must be monitored, as the cable will be routed around corners or through transitions. Where raceway or rack transitions expose the cable, flexible conduit should be used for protection.

Vertical Installation

The same critical observations must be made when installing cable in vertical shafts or risers. Cable bend radii and tensile loading can never be exceeded. Cables in vertical runs should be supported as well as possible, in a reasonable number of locations. Cables should be supported by cable sties, straps or clamps in wiring closets to avoid damage.

Optical fiber cables intended for vertical applications have a calculated maximum vertical rise value assigned to them. The vertical rise is the distance the cable may be pulled (vertically) before being supported. It is determined by the weight of the cable and its ability to resist buckling or kink.

Whenever possible begin the installation from the top, allowing the weight of the cable to help rather than adding more load.

Most optical fiber cables can be installed in vertical situations without any issues arising. In tall buildings with heights of several 100 meters, our experience shows that no filling compound will drip from the cable when the installation guidelines shown below are followed:

- The cable shall be looped with a minimum radius of 50 cm. Every 15 to 20 m, respectively every 4th or 5th floor. These so-called friction loops decouple the vertical drop from the lower termination.
- The cable should be looped minimum 3 times, with a min. bending radius of 50 cm, below the lowest patch panel. The cable should be inserted from the bottom into the panel respectively from the underside in the rack in which the panel is mounted.

Application Note

These guidelines are illustrated in fig. 1:

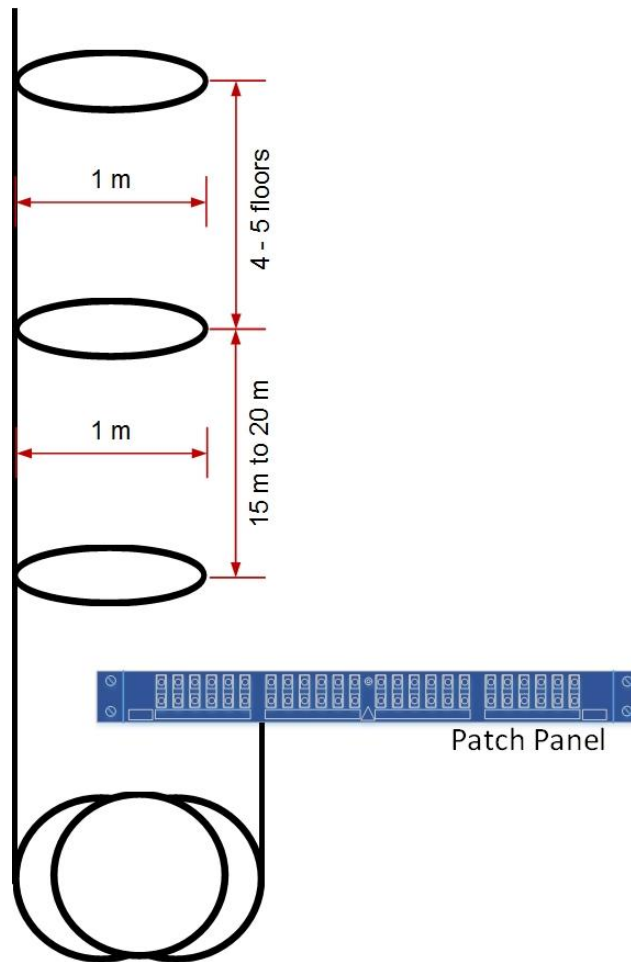


Fig. 1: Vertical installation with repeating friction loops

Outdoor situation

The installation set-up described in Fig. 1 will prevent jelly dripping from the cable. An appropriate termination of the cable is especially required for cables installed in outdoor situations, e.g. down the side of a building and in direct exposure to sunlight. The daily temperature cycle that causes expansion and contraction of the cable produces an efficient pumping mechanism.

Cable Features

The guidelines for vertical installations described above are recommended for both stranded- and central loose tube cable.

Universal-use:

- Universal Central Loose Tube (CLT) cables with UV-resistant halogen-free and flame retardant jacket.
- Universal Stranded Loose Tube (SLT) cables with UV-resistant halogen-free and flame retardant jacket.

Outdoor use:

- Outdoor Central Loose Tube (CLT) cables with UV-resistant PE outer jacket.
- Outdoor Stranded Loose Tube (SLT) cables with UV-resistant PE outer jacket.