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SERIES L: ENVIRONMENT AND ICTS, CLIMATE
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CONSTRUCTION, INSTALLATION AND PROTECTION
OF CABLES AND OTHER ELEMENTS OF OUTSIDE
PLANT

Optical fibre cables – Guidance and installation technique

Air-assisted installation of optical fibre cables

CAUTION !

PREPUBLISHED RECOMMENDATION

This prepublication is an unedited version of a recently approved Recommendation. It will be replaced by the published version after editing. Therefore, there will be differences between this prepublication and the published version.

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Recommendation ITU-T L.156 (ex L.57)

Air-assisted installation of optical fibre cables

Summary

This Recommendation describes air-assisted methods for installation of optical fibre cables in ducts. These methods can be used to install microcables into microducts, or largercables into ducts or conduits. Installing conditions and equipment required should be different in each case.

Keywords

Air-assisted installation, optical fibre cable, microcable, microelement, blown-in element, micro fibre unit, duct, microduct, leakage piston, shuttle, coefficient of friction, compressor, air cooler, crash test, blowing, blown installation, cable insertion

Introduction

Air-assisted installation is based on forcing a continuous high-speed airflow along the cable with an air source. The force of the moving air pushes the cable and makes it advance forward at a typical speed supported by the equipment.

Generally, the tensile load on the cable is an order of magnitude lower than the typical force involved with other installation methods, like pulling techniques, reducing installation hazards. Additionally, with this technique, bends in duct runs have somewhat less effect than in pulling techniques, so that installation speed increases and longer lengths of cable can be installed. Cables are installed virtually without stress, leaving the cable effectively relaxed in the duct upon completion of the installation.

There are several variants of installation: with/without a piston at the front end of the cable, or with a leaking piston. For variants without a piston, there is no pulling force at the front end of the cable: air flow exerts a distributed force along the entire cable. In addition, the connection to a pulling cord is not needed.

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1 Scope

This Recommendation describes air-assisted methods for installation of optical fibre cables in ducts. These methods can be used to install microcables into microducts, or larger cables into ducts or conduits. Installing conditions and equipment required should be different in each case.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [ITU-T L.100/L.10] Recommendation ITU-T L.100/L.10 (2015), *Optical fibre cables for duct and tunnel applications*.
- [ITU-T L.108/L.79] Recommendation ITU-T L.108/L.79 (2018), *Optical fibre cable elements for microduct blowing-installation application*
- [ITU-T L.150/L.35] Recommendation ITU-T L.150/L.35 (2015), *Installation of optical fibre cables in the access network*.
- [ITU-T L.162] Recommendation ITU-T L.162 (2016), *Microduct technology and its applications*
- [ITU-T L.400/L.12] Recommendation ITU-T L.400/L.12 (2008), *Optical fibre joints*.
- [IEC 60794-5] IEC 60794-5 (2014), *Optical fibre cables – Part 5: Sectional specification – Microduct cabling for installation by blowing*
- [IEC 60794-5-10] IEC 60794-5-10 (2014) *Optical fibre cables - Part 5-10: Family specification - Outdoor microduct optical fibre cables, microducts and protected microducts for installation by blowing*
- [IEC 60794-5-20] IEC 60794-5-20, *Optical fibre cables – Part 5-20: Family specification – Outdoor microduct fibre units, microducts and protected microducts for installation by blowing*

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

- 3.1.1 microduct** [ITU-T L.108/L.79]: A microduct is a small, flexible lightweight tube with an outer diameter typically less than 16 mm. Some of the characteristics of this element are described in clause 6.2 of ITU-T L.108/L.79. Plastic microducts are sized to allow the fibre unit to be blown freely into the duct, and the inner surface of the microduct is designed to minimize sliding friction with the blown-in element.