

Air-blowing optical cable laying



Overview

Cable installation by using high speed air flow combined with additional mechanical pushing force is called as “blowing or jetting”.

Key Takeaways

The air-blowing method installs optical fiber cables into pre-installed ducts using high-speed airflow combined with mechanical pushing, enabling long-distance, efficient, and low-friction cable placement.

Overview

The air-blowing method, also called jetting, is a preferred technique for installing optical fiber cables in pre-installed ducts. It combines compressed air and a mechanical pushing force to move the cable through the duct, reducing friction and allowing installation over long distances, often exceeding 1000 meters depending on duct conditions and cable type. This method is particularly effective in ducts with multiple bends, undulations, or long continuous runs.

Equipment and Setup

Blowing Device: A tractor mechanism with traction rollers pushes the cable into the duct for the initial few hundred meters. **Compressed Air Source:** Air is injected at the duct inlet to create a high-speed airflow that “floats” the cable, minimizing contact with the duct walls. **Blowing Head or Piston:** The cable is attached to a sealed head or piston that ensures air pressure is efficiently transferred along the cable length.

In piston blowing, the air pushes the piston, which pulls the cable through the duct. Lubricants (Optional): Low-friction lubricants can be applied to reduce resistance between the cable and duct, improving blowing efficiency. Installation Procedure Pre-Installation Checks: Inspect ducts for integrity, ensure continuous inner-duct runs, and verify duct joints are sealed to prevent air leakage.

Crash Test: Determine the maximum pushing force by pushing the cable into a short sealed duct section. Gradually increase force until the cable jacket shows signs of stress to avoid damage during full installation. Initial Push: Use the tractor mechanism to push the cable a few hundred meters into the duct.

Air Injection: Introduce compressed air at the duct inlet. The airflow reduces friction by keeping the cable in a floating condition inside the duct. Monitoring: Continuously monitor cable tension, air pressure, and duct conditions to prevent buckling, jacket damage, or excessive sidewall forces.

Completion: Continue the process until the cable reaches the intended endpoint. For very long runs, mid-assist devices can be used to extend the blowing distance.

Key Considerations

Cable Stiffness: Stiffer cables perform better in straight ducts, while flexible cables navigate bends more effectively. Duct Fill Ratio (DFR): Maintain a DFR of 35–65% for optimal performance, calculated as the ratio of cable cross-sectional area to duct inner area. Air Pressure: Use the minimum required air pressure to avoid cable damage.

Excessive pressure can harm the cable jacket. Temperature: Avoid installing cables in extremely cold conditions, as brittle jackets or freezing air can damage the cable. Cable Types: Suitable for uni-tube, multi-tube, armored, unarmored, and microduct cables.

Advantages

Reduced manpower and installation time compared to manual pulling. Ability to install long cable lengths in a single run. Lower friction and reduced risk of cable damage in ducts with multiple bends.

Efficient for both standard and microduct cables. The air-blowing method is widely adopted in modern fiber optic network deployments due to its efficiency, safety, and ability to handle complex duct routes while minimizing cable stress.

Article Content

Installation of Optical Fiber Cable by Blowing/Jetting

Cable installation by using high speed air flow combined with additional mechanical pushing force is called as “blowing or jetting”. Cable blowing is the process of installation of optical fiber cable into a

Air-Assisted Installation Considerations

Placing optical fiber cables in duct systems using air-assisted installation techniques presents different installation requirements than traditional pulling. In return, these techniques enable installation of

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Blown fiber involves inserting fiber optic cables into pre-installed micro ducts using compressed air. This method is highly efficient for covering long

Pulling and blowing a cable in a duct

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A Step-by-Step Guide to Fiber Optic Cable Installation

In our digital age, high-speed internet and reliable communication networks are powered by fiber optic cables, which transmit data as light signals at incredible speeds. However, the

Air-Assisted Installation Considerations

Air-Assisted Cable Installation Techniques AEN 049, Revision: 9 Introduction Placing optical fiber cables in duct systems using air-assisted installation techniques presents different installation requirements

Fiber Blowing Technology Explained

Understanding the Air Blown Fiber Installation Principle Air blown fiber installation uses a combination of pulling force, compressed air propulsion, and the mechanical thrust of the cable

How To Blow Fiber Optic Cable

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Learn the fiber optic cable blowing procedure with our detailed guide, covering essential steps, equipment, and best practices for efficient installation.

Air Blowing Micro fiber Optic Cable

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