Air Blown Fiber Unit 1/RPM 258+

The Ribbonet® System

Double Pre-terminated Fiber Reels

The Double Pre-terminated concept of Hexatronic secure optical performance of the last mile / fiber drop with its unique factory polished high-end blow-able ferrules. Its unique plug-n-play design ensure easy assembly of the connector components in the field with reliable optical performance based on the factory pre-terminated ferrules in both ends.

In real life installations, the single most time consuming step in the installation of a fiber optic network is the fitting of connectors. The Ribbonet® system offers the unique option of using Air Blown Fiber with pre-terminated connectors. The connectors are mounted on the fiber and tested in a clean-room production environment. This will ensure a quick and trouble free installation since no time consuming fitting of connectors at the end user location is needed during installation.

Features

- 1f Double Pre-terminated ABF reels
  (2f LC solution under development)
- Unique Pre-terminated blow-able SC or LC ferrule designed to install into RIbbonet Duct systems with min inner diameter of 3.5mm.
- Easy field assembly of the factory Pre-terminated blow-able ferrule design ensure optical performance and at the same time minimize the need for high-cost fiber installers
- G657A2 bend resistant fibers
- Extra wide operational temperature range
- Water and Ice tested
- Pre-connected on lightweight reels
- Extra strong and durable design
- Smooth, low-friction HDPE sheath
- State of the art blowing performance
- Adapted for the Ribbonet® blowing tool

Application

Hexatronic's new high performance Air Blown Fiber Unit for the Ribbonet® system will minimize initial investment and at the same time provide a future proof network that is easy to expand, upgrade and maintain. The main application areas are for fiber access networks such as Fiber To The Home (FTTH).

Ribbonet® Air Blown Fiber is optimized for installation into micro/multi-ducts by blowing. For optimum blowing performance, use the Hexatronic installation tool LTT 1792011.

The Doube Pre-terminated Air Blown Fiber is delivered on lightweight Styrofoam reels, pre-terminated with UPC or APC connectors.

Fiber Types

The new Hexatronic Air Blown Fiber is designed with durability and performance in mind. The unique design offers a combination of properties previously not available on the market. A sturdy fiber unit with state of the art fiber blowing performance increases the installation success rate and provides quick and problem free installation. The air blown fiber is available with single mode bend resistant G657A2 fibers. The Air Blown Fiber unit is colored dark blue to ultimate visibility when installed in semi-translucent microducts.

Typical data[1)]

Temperature range
Operation..... –40, to +70ºC
Transport and storage..... –40, to +70ºC
Handling and installation.. –15 to +60ºC

Fiber unit type
Diameter (mm) ..... 1.1 (2-4f) 1.4 (12f)
Weight (g/m)..... 1.0 (2-4f) 1.8 (12f)

Bending radius
Temporarily and under
installation (mm) ..... ≥ 15 (2-4f) 20 (12f)

Permanently (mm) ..... ≥ 20 (2-4f) 25 (12f)

Kink ..... IEC 60794-1-2 method E10
Crush.....IEC 60794-1-2 method E3, 500N
Bend..... IEC 60794-1-2 method E11

Tensile force during installation..... 150N

Water immersion and repeated freeze test
Hexatronic standard test[2)] –25, to +15ºC

Color, sheath
Single mode G657A2..... dark blue

Optical Fiber Cable Color Codes
Hexatronic Standard and S12 (E/S12)
EIA/TIA-598 *"Bellcore"* (TIA-598)

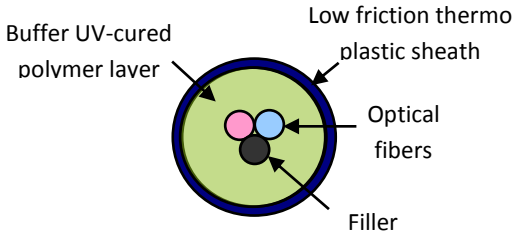
Connector options
Single mode: SC/UPC, SC/APC, LC/UPC or LC/APC

Connector performance UPC .... APC (SM)
Insertion loss (dB) ..... < 0.5 .... < 0.5
Return loss (dB) ..... > 50 ..... > 60
[1)] IEC 60794-1-2 F1. Fiber parameters and tests according to the IEC series 60793-2 and 60793-1. [2)]100 cycles

Installation performance verification
IEC 60794-5-20 (500 m reel test)
Hexatronic standard test track (1000 m, 1-2f) [1)]
[1)] Please see details concerning testing and installation in the last page

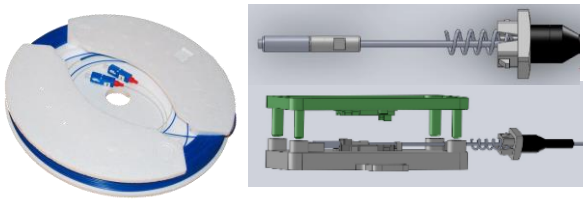
Design
Type: OS2 Air Blown Fiber

(2-fiber unit example)



Ordering Information

Double Pre-terminated **SC**/xxx Air Blown Fiber on reels:

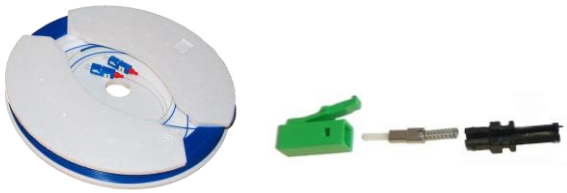


Product Number	Type (B-end Blow-able)	Color Code
1/RPM 258 020/xxx	2-f, 1xSC/UPC - 1xSC/UPC	E/S12
1/RPM 258 028/xxx	2-f, 1xSC/APC - 1xSC/APC	E/S12
1/RPM 258 040/xxx	2-f, 1xSC/UPC - 1xSC/UPC	TIA-598
1/RPM 258 029/xxx	2-f, 1xSC/APC - 1xSC/APC	TIA-598

where:
xxxx = Fiber length (m), standard lengths below:
30, 50, 70, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600 (650, 700, 750, 800, 900, 1000)

Ordering example: 2-fiber unit with, Double Pre-terminated ABF fiber incl one SC/APC connector in each end with TIA-598 Bellcore) fiber colors, 70m fiber length: 1/RPM 258 029/70M

Double Pre-terminated **LC**/xxx Air Blown Fiber on reels:

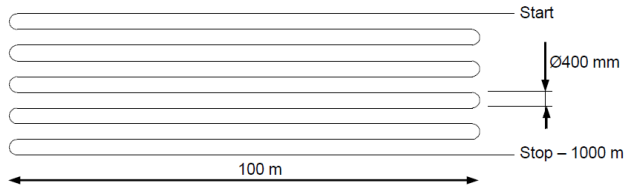


Product Number	Type (B-end Blow-able)	Color Code
2/RPM 258 036/xxx	2-f, 1xLC/UPC - 1xLC/UPC	E/S12
2/RPM 258 037/xxx	2-f, 1xLC/APC - 1xLC/APC	E/S12
2/RPM 258 038/xxx	2-f, 1xLC/UPC - 1xLC/UPC	TIA-598
2/RPM 258 039/xxx	2-f, 1xLC/APC - 1xLC/APC	TIA-598
2/RPM 258 020/xxx	2-f, 1xSC/UPC - 1xLC/UPC	E/S12
2/RPM 258 028/xxx	2-f, 1xSC/APC - 1xLC/APC	E/S12
2/RPM 258 041/xxx	2-f, 1xSC/UPC - 1xLC/UPC	TIA-598
2/RPM 258 029/xxx	2-f, 1xSC/APC - 1xLC/APC	TIA-598

where:
xxxx = Fiber length (m), standard lengths below:
30, 50, 70, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 900, 1000

Ordering example: 2-fiber unit with, Double Pre-terminated ABF fiber incl one LC/APC connector in each end with TIA-598 Bellcore) fiber colors, 70m fiber length: 1/RPM 258 029/70M

Details - Installation performance verification
EC 60794-5-20 (500 m reel test)
Hexatronic standard test track (1000 m, 1-2f) [1)]
[1)] Please see details concerning testing and installation below



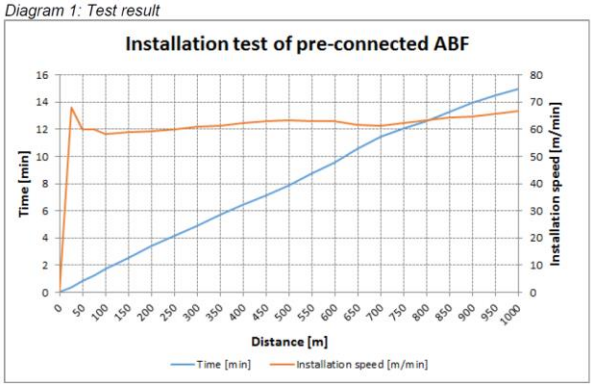
Picture1: Hexatronic test track

The total distance of 1,000m is blown in less than 15 minutes with an average speed of around 65 m/min. The limiting factor for speed was mainly the delivery form i.e. the Styrofoam reel. The length of 1,000m on a spool is rather heavy and as speed increases the rotating mass must be handled carefully. Thus the average installation speed per m increases for shorter lengths of Styrofoam reels.

The installation test started without airflow and the ABF was pushed for approximately 30 meters. After that the airflow was opened slightly and then gradually increased when needed. The test result is presented in diagram 1 below.

NOTE: This test was performed in a controlled environment. In real life situations there may be deviations in duct diameters. A 15% deformation is expected and allowed in assemblies (according to international Standards, IEC), especially when installed and when the assembly is bent.

Diagram 1: Test result



Guidelines & Installation notification:
The “Hexatronic Double Pre-terminated ABF fiber” has been tested and verified according to IEC installation requirements up to a distance of 1,000mts, but should preferably be installed in shorter access drops to maximize the design advantages of the Hexatronic ABF Ribbonet System.

To ensure a successful installation, the duct systems in the X/3.5mm needs to be properly installed and free from installation related errors - *such as crush, duct deformation, not properly mounted duct connectors and/or moisture/water (ice)* - to ensure the installation of the “Double Pre-terminated ABF fiber”. Please always follow the Hexatronic Installation guidelines as per latest issue, and the installation practices as per the Hexatronic Training Academy.

The installation of the “Double Pre-Terminated ABF fiber” is influenced by the number of duct connectors and bends in the Ribbonet duct system. In rare cases there might be a risk that the tolerances - of the various components in a complete installation of the Hexatronic ABF System – influence the required 12-15% air-gap between the ”SC blow-able ferrule” and the duct ID. The nominal filling ratio with a SC blow-able ferrule of 2.5 mm will be almost 85% taking the 15% allowed deformation into account, leaving very small margin for unexpected deviations. The above could result in limitation in installation distance and, in worst case, risk of installation failure. The “LC blow-able ferrule” would not experience the similar risk of installation limitations, and could thus be designed to be installed up to 1,000m in a proper installed Ribbonet Duct System.

The combinations of installation related errors and/or max-min tolerances of the various products in the Hexatronic ABF System could in worst case mean that the “Blow-able ABF ferrule” has to be cut and instead be installed as a standard “Hexatronic Single Pre-Terminated ABF fiber” i.e. with one end spliced to a HTSR39x+ pigtal. The success rate in standard installation environment is estimated to above 98.5% based on over 10,000 successful installations until 2015-Q1.

Hexatronic welcomes customer and installation feed-back, both positive and negative. The verification process and proof of concept is based on over 10,000 successful installations per 2015-Q1, nevertheless please provide reports on issues of installation and the cause of failure to install the “Hexatronic Double Pre-terminated ABF fiber” to technology@hexatronic.com.