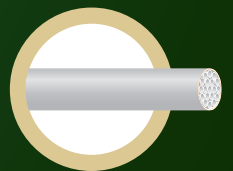
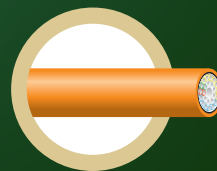
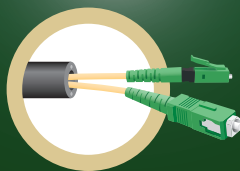
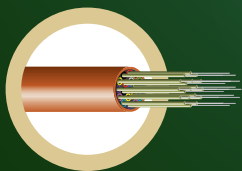
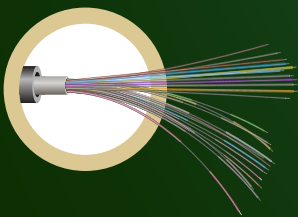




2019 BROCHURE



Fibre solutions for:

Fibre-to-the-Home • Multiple Dwelling Units (MDU) • In-Building • Fibre to the cabinet • Campus/
Business Park • Mobile Telephone Mast Connections • City/Metropolitan • Long-Distance • Telemetry
& Intelligent Transport systems • 5G & Wifi antennas • Wind farms • Overhead • Cable TV • Security

Leading manufacturer of blown fibre and ducted network solutions

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FibreFlow - the optimal FttX blown fibre solution

Easier, quicker, more efficient and extremely flexible

FibreFlow technology is an integral part of FttX solutions. The **FibreFlow** strain-free method of installing fibre optic cables and fibre bundles in microducts rely on the flow of compressed air passing over the entire length of the cable to create a fluid drag, which gently carries the cable down the microduct.

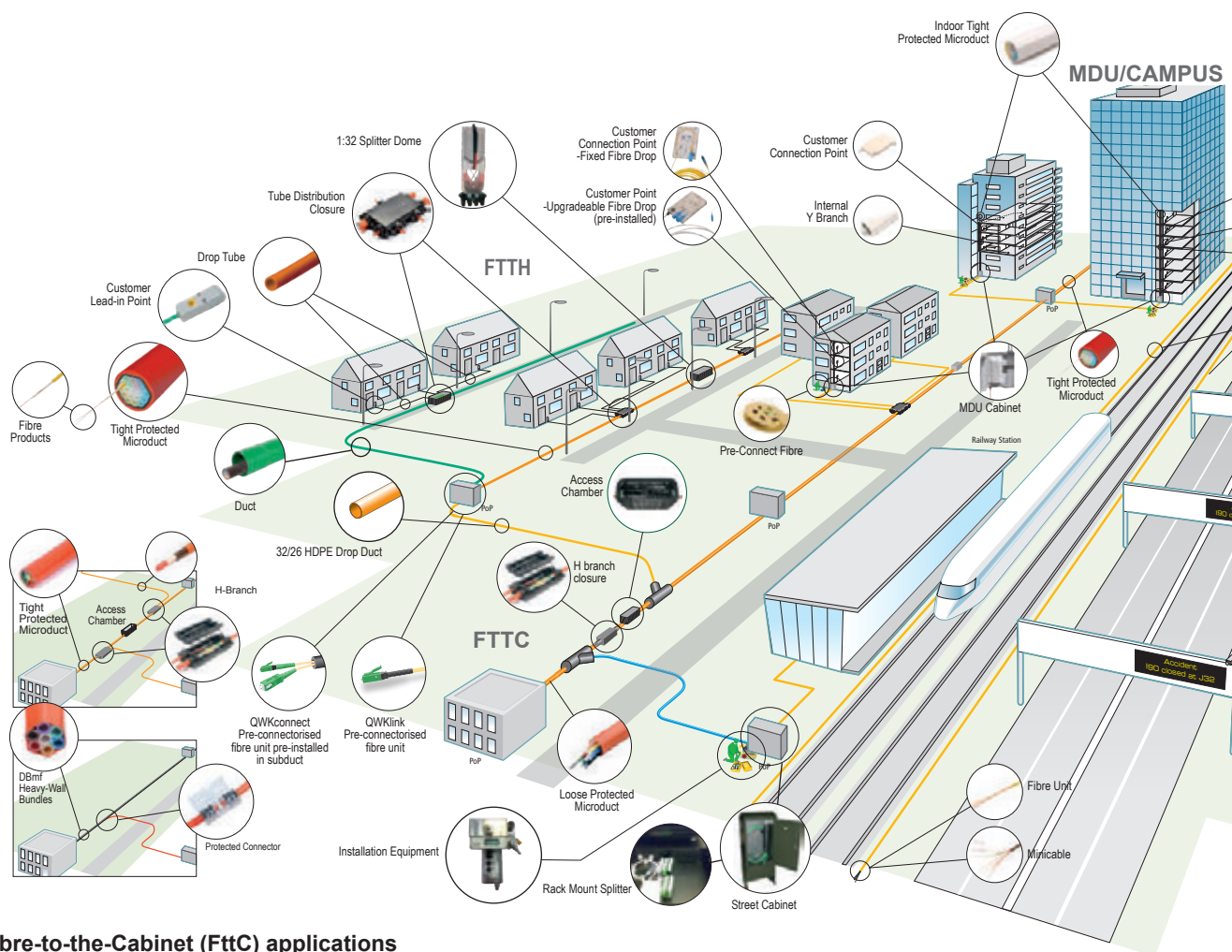
Suitable for numerous applications and customers, **FibreFlow** has become the preferred installation method for those who value reliability, cost-effectiveness and flexibility. The development of **FibreFlow** has revolutionised the design of fibre optic products, resulting in a new generation of minicables that take up less room and need no heavy reinforcement. In addition, these developments have reduced the costs of the fibre products and the microducts into which they are installed.

Emtelle's **FibreFlow** system is suitable for a wide range of applications, including:

- ▶ Fibre-to-the-Home
- ▶ Multiple Dwelling Units (MDU)
- ▶ In-Building
- ▶ Fibre to the cabinet
- ▶ Campus/Business Park
- ▶ Mobile Telephone Mast Connections
- ▶ City/Metropolitan
- ▶ Long-Distance
- ▶ Telemetry and Intelligent Transport systems
 - ▶ Rail
 - ▶ Motorway
- ▶ 5G & Wifi antennas
- ▶ Wind farms
- ▶ Overhead
- ▶ Cable TV
- ▶ Security

Emtelle also have a wide selection of pre-fibred and cable solutions available for the FttX market.

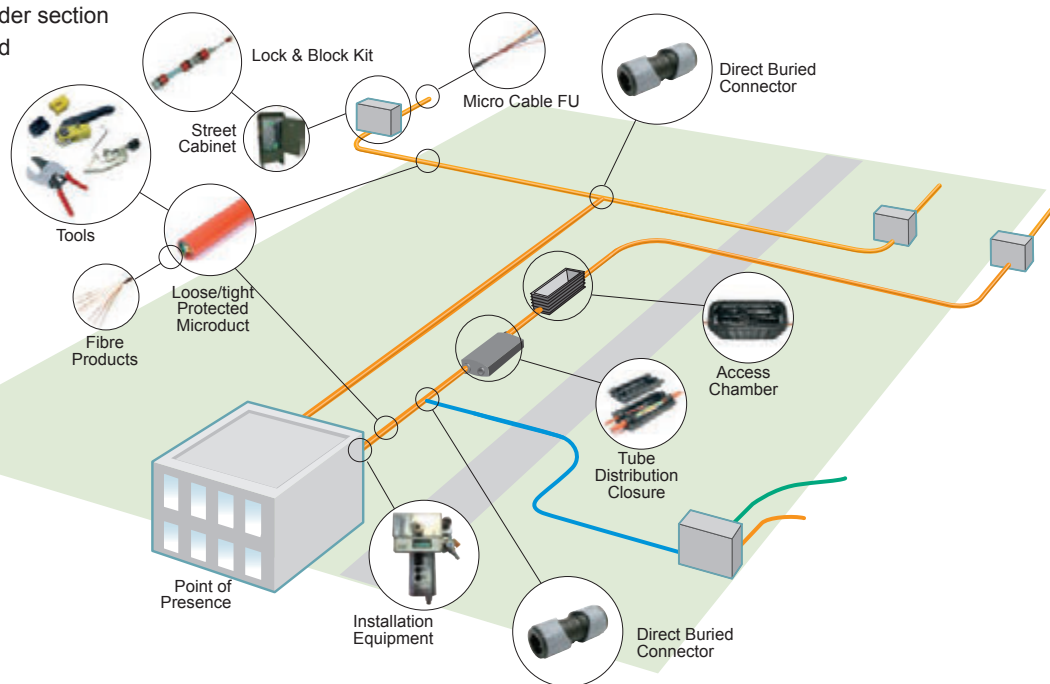
FibreFlow the optimal FttX solution



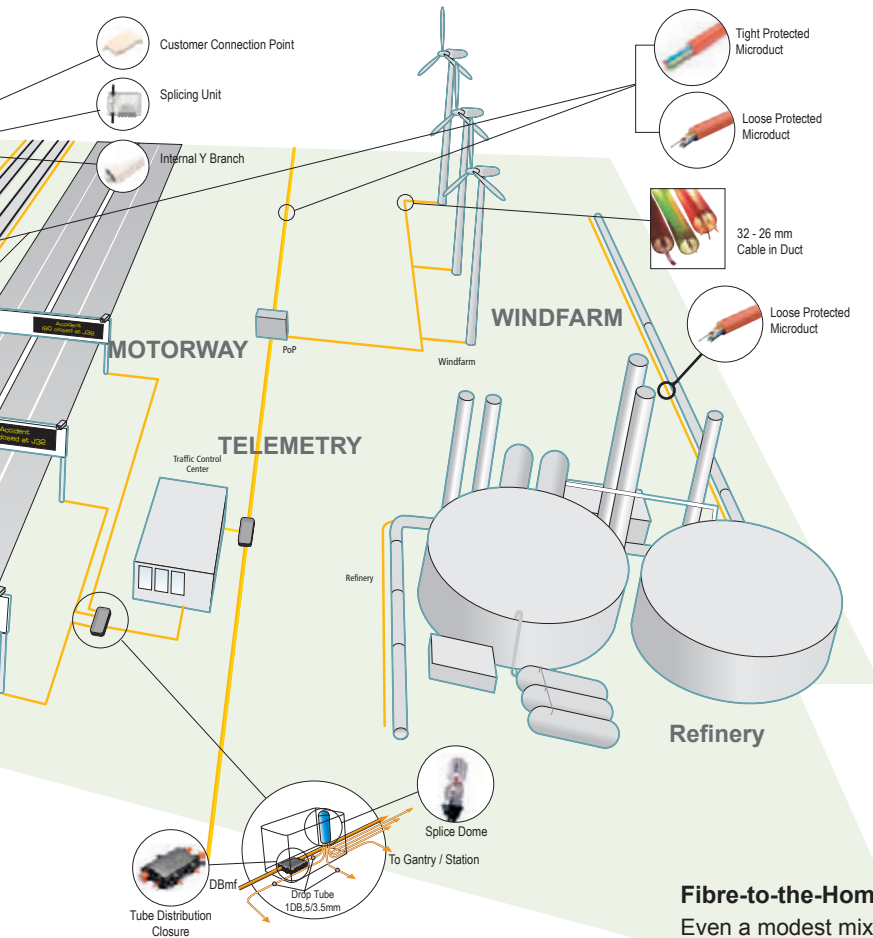
Fibre-to-the-Cabinet (FttC) applications

Emtelle leads the industry in the access part of fibre-based networks with small- and large-diameter FttC solutions that allow the installation of tube bundle networks from the Point of Presence to individual homes, businesses, street cabinets, etc. Emtelle not only lead the industry in providing access network solutions, they are leaders in the delivery of high fibre count mini cables in the feeder section

of the network. Our standard offering is pre-installed loose and tight protected microduct which can be supplied in various duct sizes and microduct configurations. For customers with special requirements i.e. thermal stability or full water blocking capabilities, special fixed protected microduct products can be provided. Greater flexibility means that new customers can be connected quickly, for immediate revenue generation.



Fibre-to-the-X (FttX)



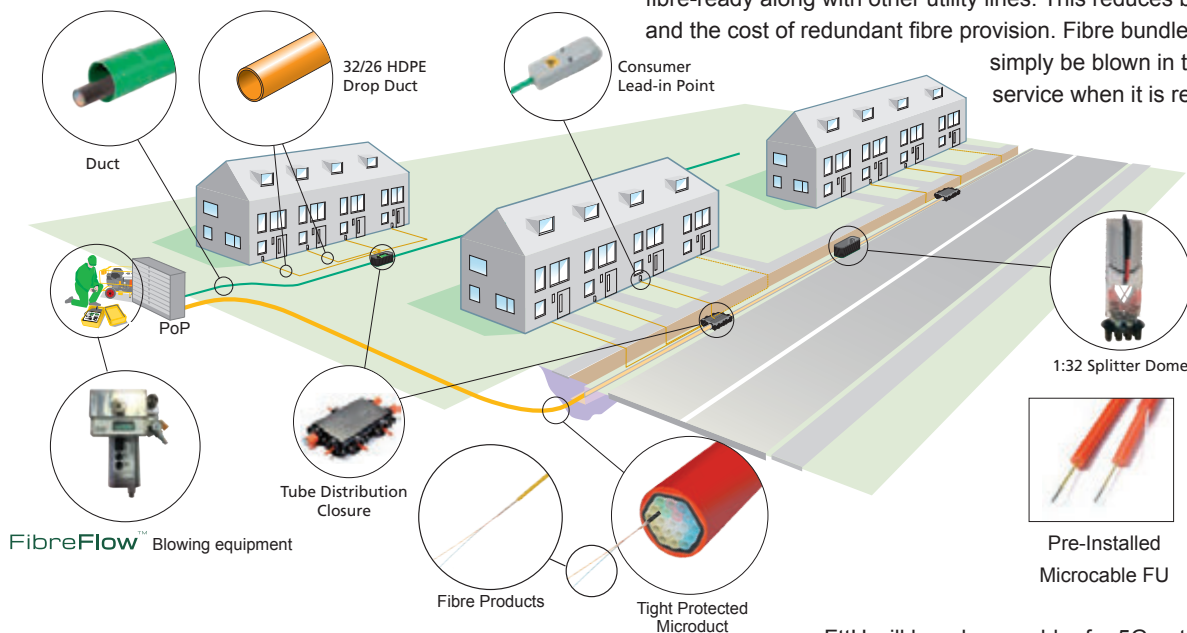
Key benefits of Emtelle's FibreFlow FttX solution

- ▶ Enhanced design flexibility
- ▶ Improved network scalability and reliability
- ▶ Reduced CapEx and OpEx for investor/operator
- ▶ More lucrative return-on-investment potential
- ▶ Range of innovative pre-installed and pre-fitted components
- ▶ Quicker and less intrusive network modification/maintenance

Fibre-to-the-Home (Ftth) applications

Even a modest mix of popular broadband services can involve transfer speeds beyond traditional infrastructures. Optical fibre, however, is up to the task, and when deployed with FibreFlow can be installed easily and cost-effectively. Tubes can be laid fibre-ready along with other utility lines. This reduces build costs and the cost of redundant fibre provision. Fibre bundles can

simply be blown in to supply service when it is required.

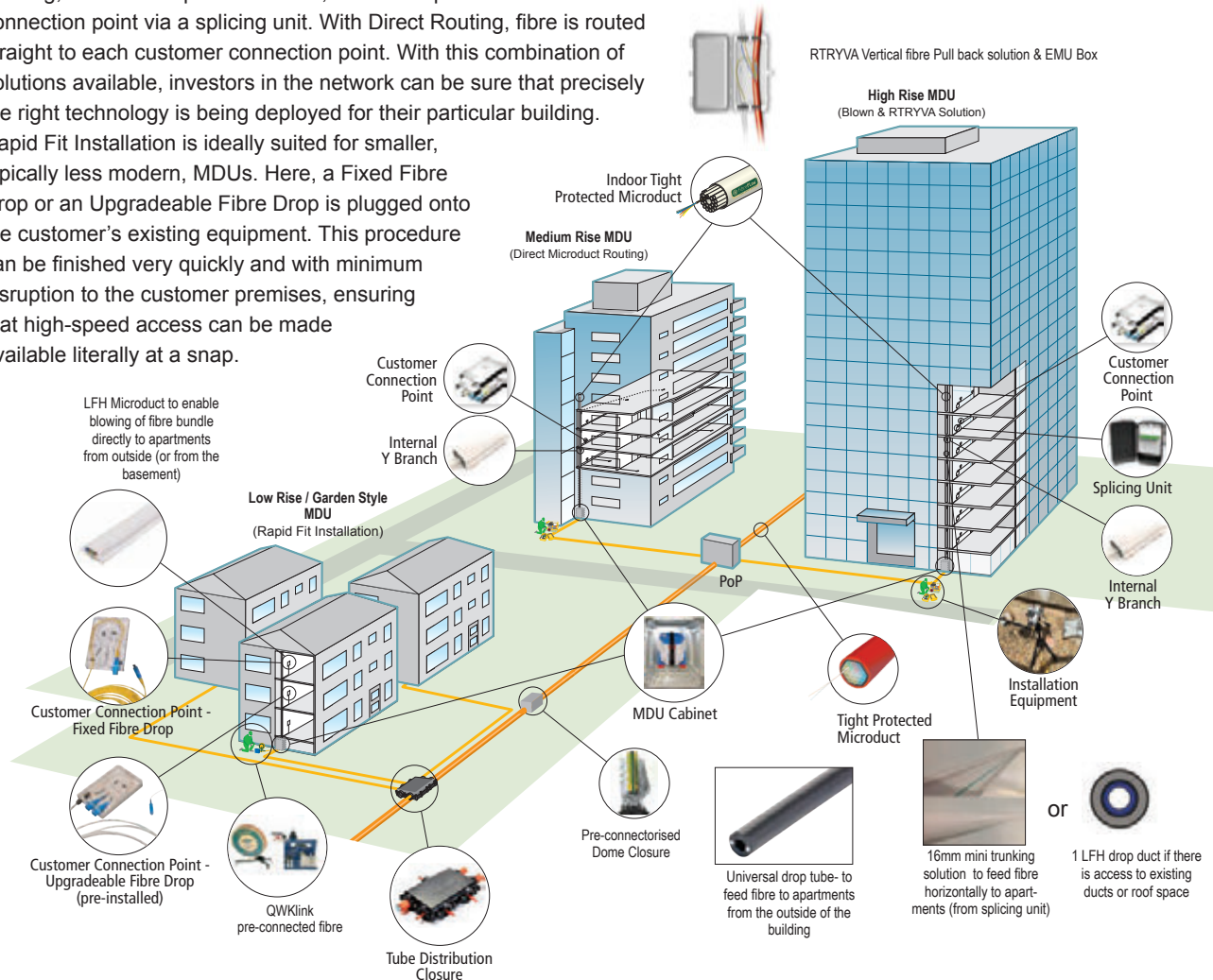


Ftth will be a key enabler for 5G networks. Emtelle's solutions offer capability for future expansion for 5G.

Fibre-to-the-X (FttX)

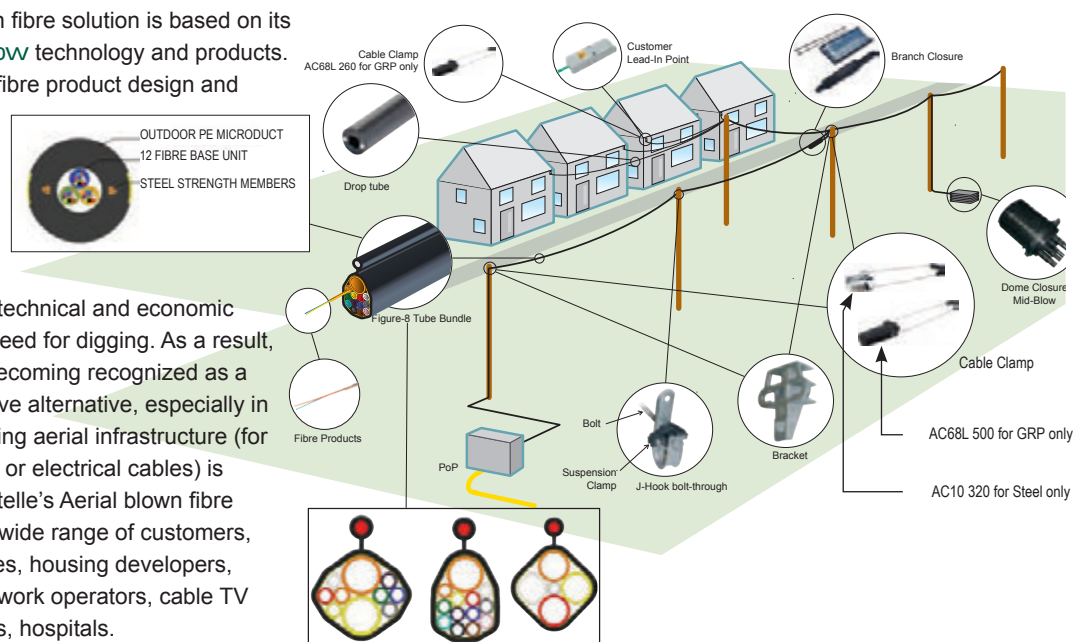
Multiple Dwelling Units (MDU)

To provide for a variety of MDU scenarios, Emteille offers three solutions: Shared Microduct Routing, Direct Microduct Routing and Rapid Fit Installation. The first two solutions are ideal for use in modern high-rise applications. With Shared Routing, fibre is led up to each level, and then split to each customer connection point via a splicing unit. With Direct Routing, fibre is routed straight to each customer connection point. With this combination of solutions available, investors in the network can be sure that precisely the right technology is being deployed for their particular building. Rapid Fit Installation is ideally suited for smaller, typically less modern, MDUs. Here, a Fixed Fibre Drop or an Upgradeable Fibre Drop is plugged onto the customer's existing equipment. This procedure can be finished very quickly and with minimum disruption to the customer premises, ensuring that high-speed access can be made available literally at a snap.



Aerial applications

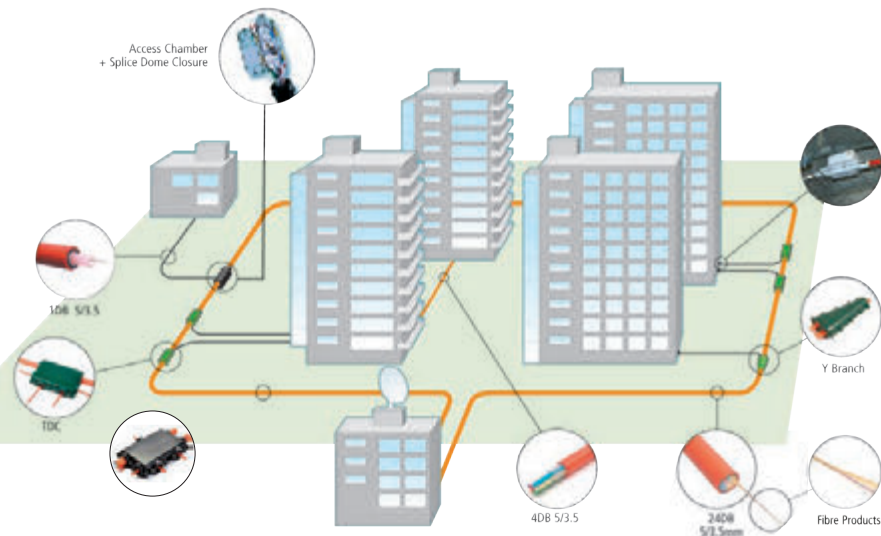
Emteille's Aerial blown fibre solution is based on its renowned FibreFlow technology and products. Modern advances in fibre product design and installation practices have revolutionized blown fibre aerial installation, producing impressive practical, technical and economic benefits without the need for digging. As a result, aerial installation is becoming recognized as a quick and cost-effective alternative, especially in cases where an existing aerial infrastructure (for example, phone lines or electrical cables) is already in place. Emteille's Aerial blown fibre solution is ideal for a wide range of customers, including municipalities, housing developers, utility companies, network operators, cable TV operators, universities, hospitals.



Applications

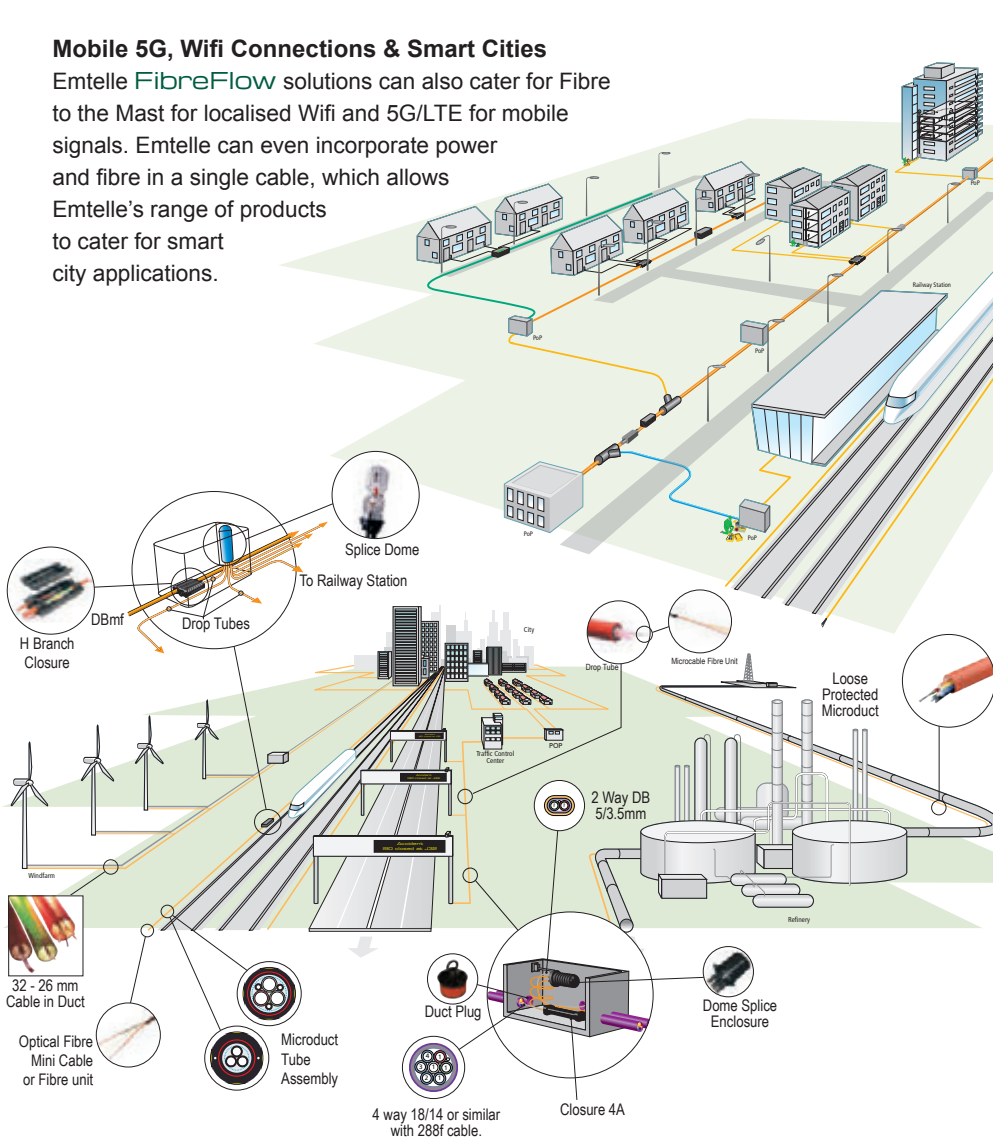
Campus/Business Park applications

The university, the business park, the hospital, the military base – wherever people work together, they need to communicate. To maximise the potential of ever more sophisticated digital technology, high-bandwidth is essential. This requires an adaptable, robust infrastructure – the kind you can easily achieve with **FibreFlow**.



Mobile 5G, Wifi Connections & Smart Cities

Emtelle **FibreFlow** solutions can also cater for Fibre to the Mast for localised Wifi and 5G/LTE for mobile signals. Emtelle can even incorporate power and fibre in a single cable, which allows Emtelle's range of products to cater for smart city applications.



Telemetry

Emtelle's **FibreFlow** solution, can be used in a number of telemetry applications such as:

- ▶ wind farms
- ▶ oil/gas pipelines
- ▶ utilities
- ▶ intelligent transport systems
- ▶ housing projects

FttX Installation Techniques

Direct Burial



A Choice of Installation Techniques

The popularity of FttX means that fibre is being installed in an increasingly wider range of applications. Different scenarios require different approaches, so Emtelle offers a variety of installation techniques. We have considerable experience in all these techniques, and can work with customers both to determine the most appropriate option and to implement it successfully.

Utilisation of Existing Ducts



Mole Ploughing



Inside Sewer



Narrow Trenching



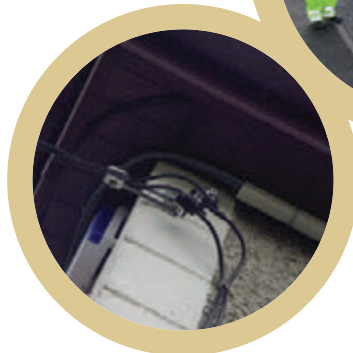
Aerial



Slot Cutting / Microtrenching



Semi Aerial/Façade



FibreFlow FttX Global Projects

Emtele has successfully met the challenges of a wide range of FttX projects. For further information on **FibreFlow** FttX Global Projects, please refer to www.emtele.com.

In Building

- ▶ 2000 Commercial Buildings in Singapore
- ▶ AMP Buildings throughout Australia
- ▶ Canary Wharf, London
- ▶ ABSA Bank, Pretoria, South Africa
- ▶ International Finance Centre, Dubai, UAE
- ▶ Auckland Sky Tower, New Zealand
- ▶ Commercial Buildings, Taiwan
- ▶ Australian Federal Police
- ▶ Fiona Stanley Hospital, Perth
- ▶ High Rise, Doha, Qatar
- ▶ High Rise Commercial and residential Bangkok, Thailand

Campus/Business Park

- ▶ Changi Airport(T3 & T1 upgrade), Singapore
- ▶ Dublin Airport, Ireland
- ▶ Johannesburg International Airport, South Africa
- ▶ Manchester University, UK
- ▶ Balsburg Building Zurich Airport, Switzerland
- ▶ Kuala Lumpur International Airport, Malaysia
- ▶ Medunsa University, South Africa
- ▶ San Antonio, Texas, USA
- ▶ Dunedin University, New Zealand
- ▶ Perwaja Steel Industrial Complex, Malaysia
- ▶ Birmingham University, UK
- ▶ Manchester Airport, UK
- ▶ Curtin University, Australia
- ▶ University of Western Australia
- ▶ Melbourne Airport, Australia
- ▶ Brisbane Airport, Australia
- ▶ Royal Children's Hospital, Melbourne, Australia
- ▶ Royal Bolton Hospital Trust, UK
- ▶ Exxon Refinery, Fawley, UK
- ▶ York University, UK
- ▶ Galway Business Park, Ireland
- ▶ Shetland Council, UK
- ▶ Industrial Estate, Thailand
- ▶ Queens University, Belfast, UK
- ▶ North Staffordshire NHS, UK
- ▶ Salford Royal NHS, UK
- ▶ Leeds Metropolitan University, UK
- ▶ Lancashire Police HQ, UK
- ▶ VA Grand Junction Hospital, CO, USA
- ▶ VA Orange County Hospital, CA, USA
- ▶ Dallas Fort Worth Airport, TX, USA
- ▶ Kansas City Airport, KS, USA
- ▶ Ohio State Prison, OH
- ▶ Ankara, Turkey
- ▶ Eastern Goldfields Prison, Australia
- ▶ Midland Health Campus, WA

Fibre-to-the-Home / MDU

- ▶ Nuenen, Netherlands
- ▶ Binningup, Australia
- ▶ Säfte, Sweden
- ▶ Hillsboro, Oregon, USA
- ▶ Syd Energi, Denmark
- ▶ Tre-for Bredbaand, Denmark
- ▶ Energi Midt, Denmark
- ▶ Gothenburg, Sweden
- ▶ Kalgoorlie, Australia
- ▶ Södertälje, Sweden
- ▶ Eindhoven, Netherlands
- ▶ Örnköldsvik, Sweden
- ▶ Monterrey, Mexico
- ▶ Enschede, Netherlands
- ▶ Delft, Netherlands
- ▶ Squire Creek, USA
- ▶ Leonie Hill, Singapore
- ▶ El Rio, Arizona, USA
- ▶ Lulea, Sweden
- ▶ Chunghwa Telecom, Taiwan
- ▶ Hau Hin, Thailand
- ▶ Maldives
- ▶ High Rise Apartments, Taiwan
- ▶ West Whitlawburn, UK
- ▶ Hilversum, Netherlands
- ▶ Amersfoort, Netherlands
- ▶ Dordrecht, Netherlands
- ▶ Soest, Netherlands
- ▶ Alpen aan de Rijn, Netherlands
- ▶ Skövde, Sweden
- ▶ Ystad, Sweden
- ▶ Rutland, UK
- ▶ Alston Community Broadband, UK
- ▶ Beaverton, OR, USA
- ▶ Homestead, VA, USA
- ▶ Skopje, Macedonia
- ▶ Lodz, Poland
- ▶ Neumünster, Germany
- ▶ Hamburg Eimsbüttel, Germany
- ▶ Cologne, Germany
- ▶ Sasbachwalden, Germany
- ▶ Gemeinde Heinzberg, Germany
- ▶ Montego Bay, Jamaica
- ▶ B4RN, Lancashire, UK
- ▶ Toronto, Canada
- ▶ Oldenzaal, Netherlands
- ▶ Almelo, Netherlands

Ports

- ▶ Long Beach, CA, USA
- ▶ San Diego, CA, USA
- ▶ Port Hueneme, CA, USA
- ▶ Oakland, CA, USA
- ▶ Port Rupert, Canada
- ▶ Fibre-to-the-Curb/(City)
- ▶ Olympic Games, Athens
- ▶ Lenowisco, USA
- ▶ Christchurch City Council, New Zealand
- ▶ Electricity Ashburton, New Zealand
- ▶ North Power Whangarei, New Zealand
- ▶ Grand Junction, CO, USA
- ▶ Starrett City, NY, USA
- ▶ Sunset Communications, VA, USA
- ▶ Marshall City, LA, USA
- ▶ Pax River, VA, USA
- ▶ City of Weston, FL, USA
- ▶ Yangon City Network, Myanmar
- ▶ Micro-trenching Fibre to Mast and building, Kuala Lumpur, Malaysia

Long Distance

- ▶ Janaf, Croatia
- ▶ Mandurah Rail, Australia
- ▶ Gateway Upgrade Project, Brisbane, Australia
- ▶ Perth - Bunbury Highway, Australia
- ▶ Reid Highway, Perth, Australia
- ▶ Southampton City Council, UK
- ▶ Makati to Nasugbu Backbone Link, Philippines
- ▶ Sea cable landing sites, Cyprus
- ▶ Tenerife
- ▶ Don Muang Toll Way, Bangkok, Thailand
- ▶ SA Power Communications, Australia
- ▶ Tollway Projects, Philippines

Military

- ▶ Type 45 Destroyer, Royal Navy
- ▶ Army and Air Force Bases, Australia
- ▶ ADF, Enoggera, Australia
- ▶ RAAF Edinburgh, South Australia
- ▶ RAN Frigates, Australia
- ▶ RAAF Amberly, Australia
- ▶ Dover Air Force Base, USA

Miscellaneous

- ▶ Aerial Projects, Sweden
- ▶ Skellefteå Windfarm, Sweden
- ▶ London 2012 Olympics, UK
- ▶ Manchester Metro, UK
- ▶ Trump International Golf Club, Aberdeenshire, UK
- ▶ Volvo Ocean Race, Galway, Ireland
- ▶ Electranet, Adelaide, Australia
- ▶ Energy Australia, NSW
- ▶ Gotthard Railway Tunnel, Switzerland
- ▶ Fibre backbone, Guam
- ▶ 4.5km bridge, New York State, USA
- ▶ BTS MRT Bangkok, Thailand



Olympics London



Borders Rail



Kuala Lumpur Monorail



Spring Creek, NY



DNU Hospital Denmark



Throgs Neck bridge, NY



Pre-Cabled Solutions

Pre-cabled solutions

Emtelle can manufacture a variety of pre-installed fibre in tube solutions to ensure the installation process is simple, quick and cost effective.

Have the benefits of blown fibre without the blowing or splicing



Pre-connectorised Fibre Microduct System

See page 11

- ▶ Reduced CAPEX on installation equipment
- ▶ Reduced skill set and training required for the install
- ▶ High speed installations
- ▶ Cost and space effective
- ▶ Futureproof
- ▶ Upgradeable



Retractable Fibre Tube Bundle

See page 19



Pre-installed Fibre Unit

See page 18



Retractable Fibre System

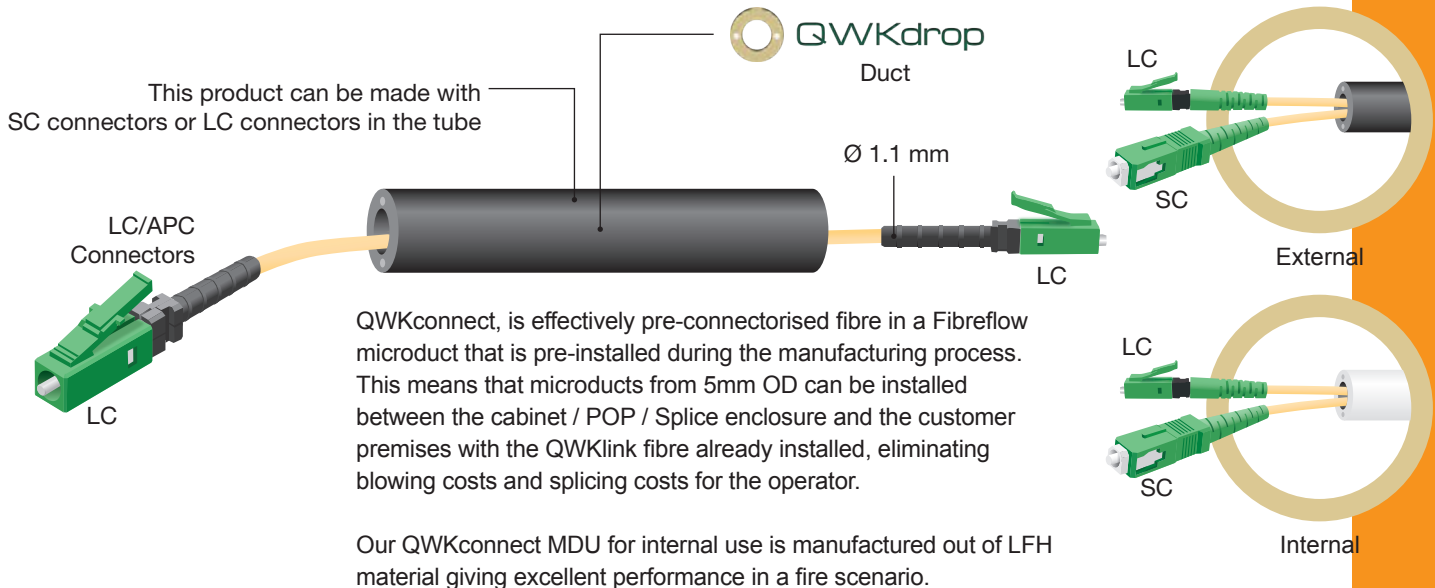
See page 16



Pre-installed cable in ducts & microducts



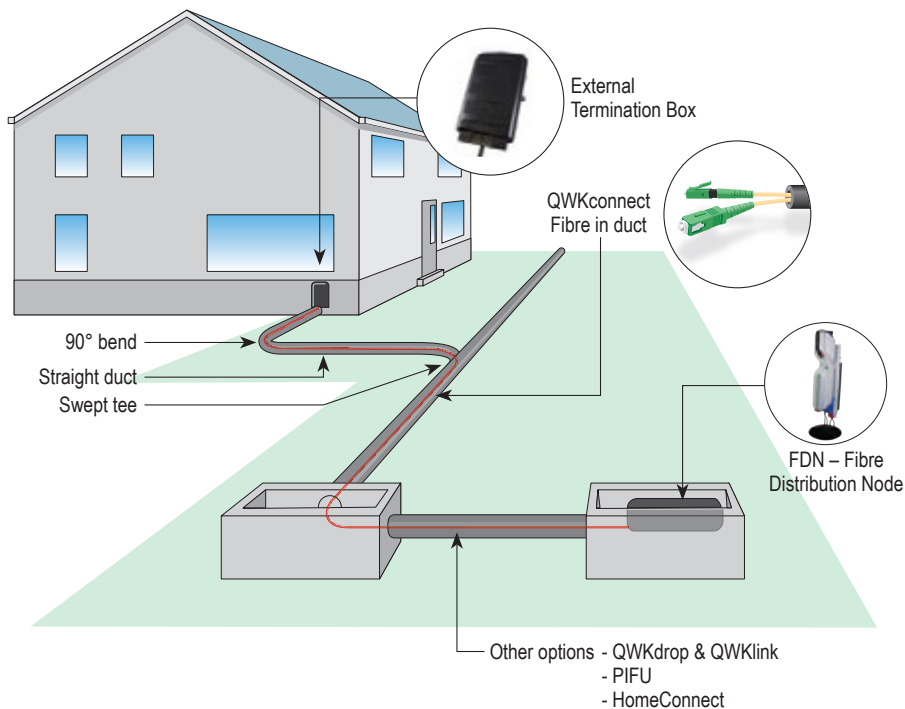
Pre-connectorised fibre unit in microduct



Why use QWKconnect

- ▶ Various options which can be installed underground (direct buried and ducted), along walls, overhead, including wifi antennas, or indoors for MDUs
- ▶ Fibre pre-installed can be connectorised at one end or both ends
- ▶ SC and LC APC connector options available
- ▶ No blowing or fibre splicing required for the customer drop
- ▶ Extremely small storage area for excess fibre
- ▶ Reduced skill set & training required for the install
- ▶ Massively reduced capex for installation equipment
- ▶ Cost (and space) effective compared to similar products in the market

Install scenario



Scan the QR-code with your smartphone and watch the QWKconnect video.



FDN Connectorised Closure

Product Code 73552

The connectorised FDN closure from HellermannTyton has been designed to offer engineers in access networks the benefit of speed and ease when connecting customers to their fibre optic network.

Features:

- ▶ Quick and simple customer connection or disconnection
- ▶ Pre-fitted splitter cassette options
- ▶ Uses HellermannTyton's Cablelok - 100% Mechanical seal
- ▶ Ruggedised closure tested to 6m head of water
- ▶ Maximum 180 fibre splice capacity
- ▶ 58 round ports and 1 oval port
- ▶ Fibre storage basket for loop through applications
- ▶ Hellipse NZDF SE-A trays
- ▶ Suitable for LC Duplex or SC Simplex adaptors
- ▶ Maximum 12 splices per tray without double stacking
- ▶ Splitter accommodation
- ▶ Cablelok compatible for all port sizes
- ▶ Quick release cover
- ▶ Optional flash test valve and/or grounding feed-through

Accessories – Splice Trays Accessories – Adapters

Description	Pro	Description	Product Code
12 x Heatshrink		73559	LC/APC – Duplex
12 x ANT		73558	SC/APC – Simplex

Scan the QR-code with your smartphone and watch the **FDN connectorised closure** video.



FST Connectorised Closure

Product Code 73551

The connectorised FST closure from HellermannTyton has been designed to offer engineers in access networks the benefit of speed and ease when connecting customers to their fibre optic network.

The FST is fitted with a front mounted adaptor plate suitable for 8 x SC simplex or 8 x LC duplex adaptors. The closures single splice tray can accommodate up to 12 splices with the rear of the tray providing suitable storage area for loop through applications. The 13-port base enables feeder cables to be installed as cable end or mid span and has separate R ports for drop cables.

Features:

- ▶ Quick and simple customer connection or disconnection
- ▶ Uses HellermannTyton's Cablelok - 100% Mechanical seal
- ▶ Maximum 12 fibre splice capacity
- ▶ 12 round ports and 1 oval port
- ▶ Suitable for LC Duplex or SC Simplex adaptors
- ▶ Cablelok compatible for all port sizes
- ▶ Quick release cover

Accessories – Adapters

Description	Product Code
73559	LC – Duplex
73558	SC - Simplex

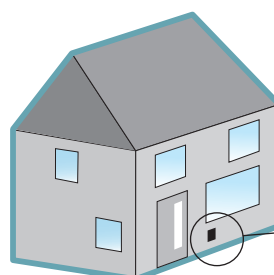
Scan the QR-code with your smartphone and watch the **FST connectorised closure** video.



Façade Closure Fibre Storage

Product Code 73906

The Fibre Façade Enclosure provides a cost effective secure solution for installing pre-terminated drop cables in Fibre to the Home (FTTH) applications. It can be mounted aerially or at ground level to deliver stored fibre to the customer premises.



Accessories

FibreFlow Customer Connection Enclosure (CCE)

Product Code 74433

The Customer Connection Enclosure (CCE) has been designed as a Building Entry Point (BEP) to provide a fibre termination and network demarcation point external to the connected premise in a Fibre to the Home (FTTH) network. In addition to providing an external test point the enclosure will also store up to a maximum of 50m of 1.1mm cable.

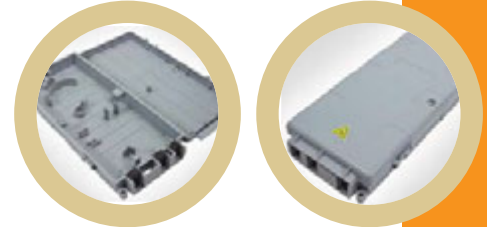
The CCE has an IP54 sealing performance with 6 entry/exit ports at the bottom of the enclosure which is suitable for cables or ducts up to a maximum diameter of 7mm. A loop through facility allows for single fibre elements to be removed and spliced whilst the remaining fibres can be fed on to the next connection point. A single port in the rear of the closure allows for fibre to be passed through the wall into the customer premises. The CCE is the same width as a brick blow-out cover which will mask any unsightly bricks damaged by drilling through the wall from the inside of the house.

Mechanical fixing is provided to secure all incoming/outgoing cables/ blown fibre ducts and to provide strain relief where necessary. Internal positive fibre management and fibre retention clips maintain a minimum 30mm bend radius throughout.

The CCE manages up to 2 SC simplex or LC duplex adaptors and has features to secure a maximum of 4 x 3A splices.

The lid is hinged allowing quick and clear access to the internal fibre for splicing and termination and the lid can be replaced if damaged.

The CCE can be supplied pre-loaded with fibre adaptors and pigtails as required.



- ▶ 2 x SC Simplex or LC Duplex Adaptors
- ▶ Fibre Management for 4 x 3A splices
- ▶ Integral positive fibre management and storage capacity
- ▶ 6 inbound/outbound access points
- ▶ Through the wall capability
- ▶ Loop through facility
- ▶ Tamper-proof fitting - captive screw and nut
- ▶ IP54 Rated

FibreFlow Customer Connection Point

Product Code 74428

Customer Connection Point providing a fibre termination point inside a residential property. The customer connection point comes complete with a pre-installed pigtail, connector and adaptor.

Features

- ▶ Body Manufactured from Self-extinguishing ABS UL-0
- ▶ Can be fitted directly to a wall or a standard UK 1-gang backbox
- ▶ Compact design
- ▶ Available space to accommodate second pigtail with connector and adaptor
- ▶ Room to accommodate 2x Fusion Slices
- ▶ Room for excess fibre storage
- ▶ Company Logo to suit



FibreFlow Cabinets

Emtelle have cabinet solutions that are used by a wide range of national operators, please contact us for more details.





For use within Existing Ducted Networks

Pre-connectorised fibre unit



The little brother of QWKconnect; only the pre-connectorised fibre

Emtelle's pre-connected fibre bundle allows for fibre connectors on both ends, eliminating the need to splice fibres for FTTx drop applications.

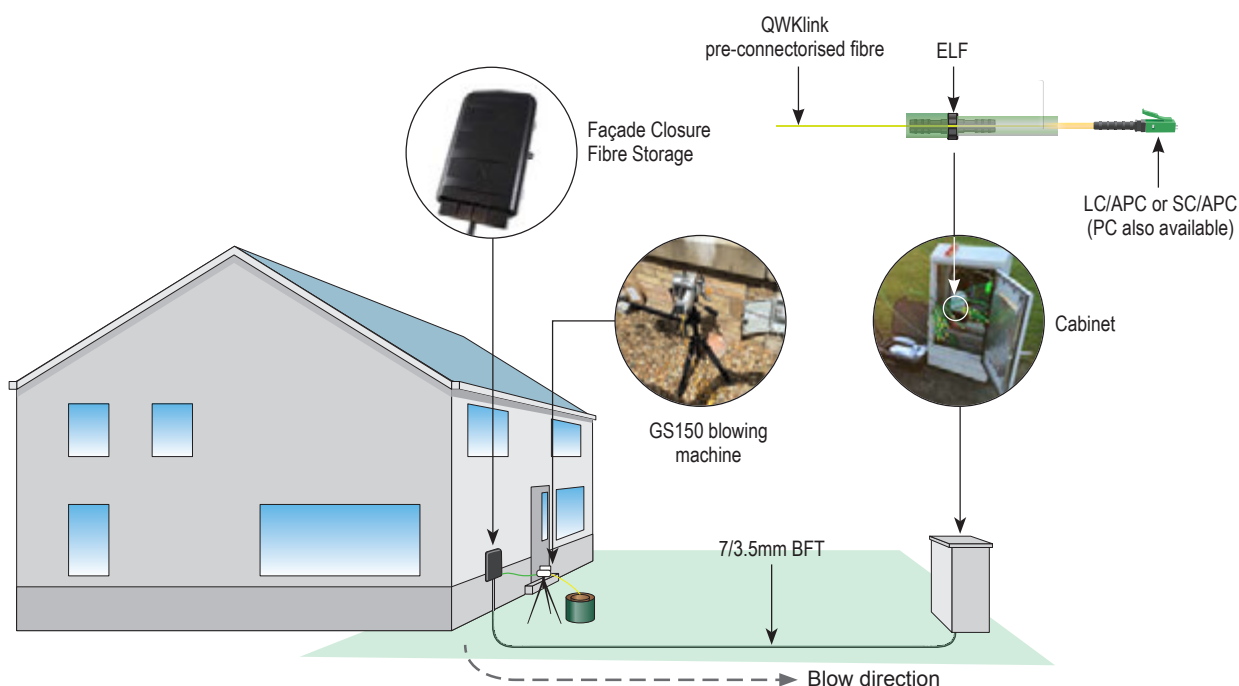
The Emtelle QWKlink range of fibre is supplied with an LC Ferrule which can be blown into microducts with a minimum inner diameter of 3.5mm. The LC/APC connector can be field assembled after installation. The opposite end (house connection) is terminated with an SC-APC connector.

The pre-ferruled fibre can be blown into microducts that have been directly buried, installed into ducts, installed along walls or into overhead Blown Fibre networks. (Please see Emtelle's QWKDrop range of products). These pre-connected fibre bundles can be blown from 25 metres upto over 1000 metres in new and existing Blown Fibre routes.

Why use QWKlink

- ▶ Can be connectorised at one end or both ends
- ▶ SC and LC APC connector options available
- ▶ No fibre splicing required for the customer drop
- ▶ Extremely small storage area for excess fibre
- ▶ Reduced skill set & training required for the install
- ▶ Massively reduced capex for installation equipment
- ▶ Cost (and space) effective compared to similar products in the market

Install scenario



See page 12 & 13 for QWKlink solution accessories

GS150 Blowing Machine

Product Code 72662

The GS150 has a compact battery powered motor to push the fibre unit and micro cable into various sizes of micro duct. When combined with compressed air the GS150 will quickly and efficiently install fibre at speeds of up to 115m/min. The unit's machined aluminium construction provides a lightweight profile with long life and durability. The GS150 comes supplied with a carry case for ease of transportation and storage.

Max Air Pressure 15 Bar

Features

- ▶ 2 x battery operated (2 batteries – one can be used while the other charges)
- ▶ Small and lightweight
- ▶ Compatible with new Emtelle compressor range
- ▶ Less electronics than previous machines – less maintenance
- ▶ LCD screen, featuring speed, distance and machine distance counter
- ▶ Easy to read air pressure gauge
- ▶ Built in clamping system with interchangeable seals
- ▶ Quick release air connections



Material & Technical data

Machined aluminium body
Electronic compact motor for drive wheel (single roller drive)
Duct range: 5-8mm
Fibre range: 1.0-2.5mm
Installation speed: 115m/min
Weight: 2.27kg
Power: rechargeable battery
Push force: 20N
Air pressure: 15bar max
Forward and reverse installation
Torque adjustment

Product overview

Product Models	72662	72663EU
GS150 Blowing Unit	Yes	Yes
120V Version	Yes	No
240V Version	No	Yes
5mm Duct Packs	Yes	Yes
1.25mm & 1.75mm Cable seal packs	Yes	Yes
2 x 12V Batteries (Plus Charger)	Yes	No
2 x10.8V Batteries (Plus Charger)	No	Yes
Hard Shell Carry Case	Yes	Yes
Tripod	Yes	Yes

Accessories

Product Code	Description
--------------	-------------

Blowing Machine

72662	GS150 MICROBLOWER KIT-EMTELLE Microduct Pack Assembly
72786	GS150 Small Hose
72888	5.0mm Duct Pack Assy (includes 10 O-Rings)
72889	6.0mm Duct Pack Assy (includes 10 O-Rings)
72890	7.0mm Duct Pack Assy (includes 10 O-Rings)
72891	8.0mm Duct Pack Assy (includes 10 O-Rings)

Microduct O-rings

72892	KIT,O-RING-5.0MM DUCT (12PC) Additional
72893	KIT,O-RING-6.0MM DUCT (12PC) Additional
72894	KIT,O-RING-7.0MM DUCT (12PC) Additional
72895	KIT,O-RING-8.0MM DUCT (12PC) Additional

Product Code	Description
--------------	-------------

Cable Seals

72896	1.25mm (includes 6 Seals)
72897	1.50mm (includes 6 Seals)
72898	1.75mm (includes 6 Seals)
72899	2.00mm (includes 6 Seals)
72900	2.25mm (includes 6 Seals)
72901	2.50mm (includes 6 Seals)
72902	Blanks (includes 6 seals)

Other Accessories

72903	Tripod with mount
72904	Smooth Belt (Orange)
72905	Belt Small Groove (Orange)
72906	Belt with Large Groove (Green)
72907	AC Inverter Option
72908	DC Battery Option 10.8V - INTL (CE Approved)
72909	DC Accessory Auto Plug Power Cord (10 M)
72910	Flow Regulator Kit
73623	Fibre Guides

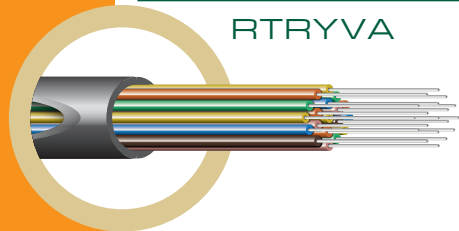
Packaging and Labelling

All products suitably packaged in recyclable materials and clearly labelled with Emtelle Product Code and Description where possible.

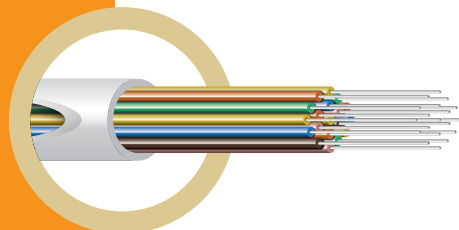


RTRYVA - Retractable Fibre System

RTRYVA



External



Internal

The Emteille **RTRYVA** product range is available for installation in Direct Buried applications and for Indoor applications. These products are small and lightweight and can be supplied with 12, 24 or 48 fibre tubes within the duct. Each fibre tube can have 2 or 4 fibres.

The **RTRYVA** products can be window cut at the customer drop location, a fibre tube retracted, then pushed / pulled into an Emteille drop tube, to the customer's premises.

Our RTRYVA MDU for internal use is manufactured out of LFH material giving excellent performance in a fire scenario.

Please contact us on info@emtelle.com for more information.

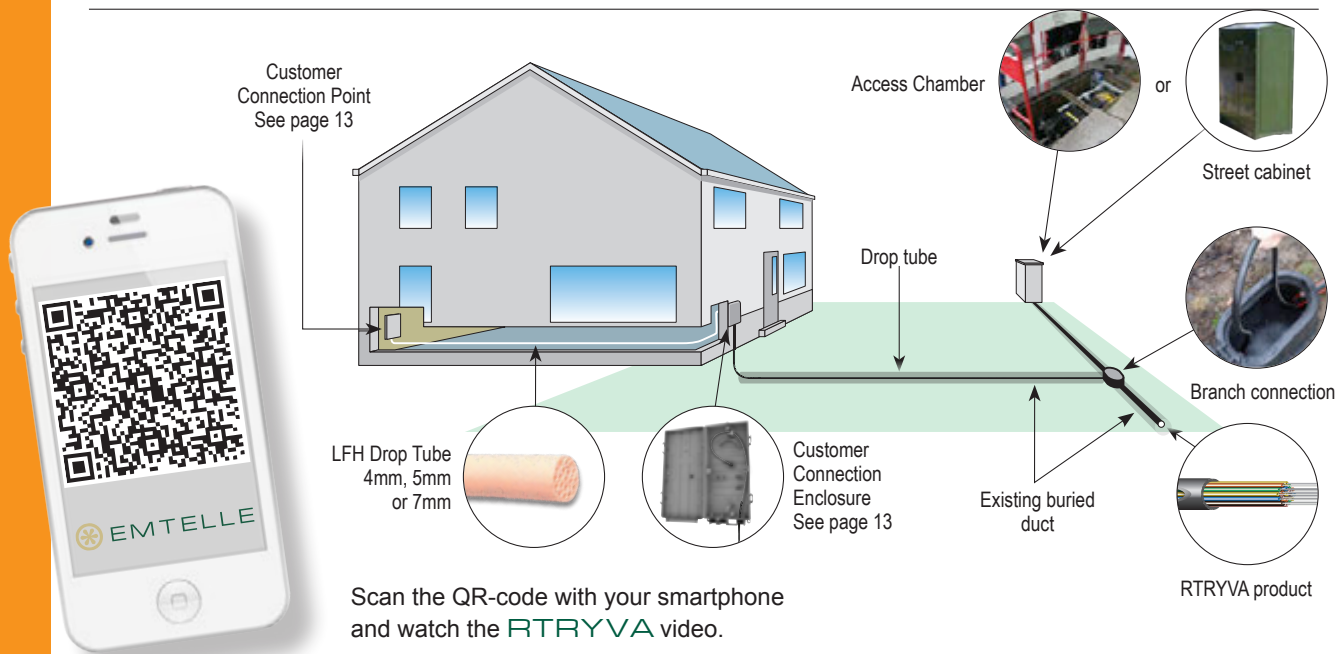


Product Code	Description	Supply Length	Fibre type	No. fibres	Drum Type	Material	Spec Ref.
63129	RTRYVA 15/9mm	2500M	G657A2	12x 2FU	1.4D	HDPE	CP2053
62664	RTRYVA 15/9mm	2500M	G657A2	24x 2FU	1.4D	HDPE	CP1954
63131	RTRYVA 15/9mm	2000M	G657A2	48x 2FU	1.4D	HDPE	CP2509

RTRYVA MDU

63280	RTRYVA 8/5mm	2020M	G657A2	12x 2FU	1.4D	PEFR	CP3157
63281	RTRYVA 15/9mm	2020M	G657A2	24x 2FU	1.4D	PEFR	CP1955
63256	RTRYVA 15/9mm	2020M	G657A2	48x 2FU	1.4D	PEFR	CP1955

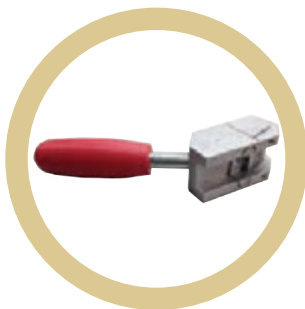
Install scenario



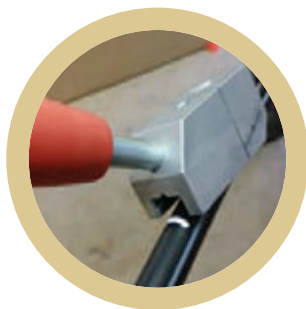
Accessories

RTRYVA Cutting Tool

Product Code	Description	Spec. Ref.
73768	RTRYVA TOOL TO MAKE WINDOW CUT TO 8 & 15MM	UK_DS_73768
71787	RTRYVA TOOL TO MAKE WINDOW CUT 15 & 20MM	UK_DS_71787
73654	RTRYVA EXTRACTION TOOL	UK_DS_73654



73768



73768



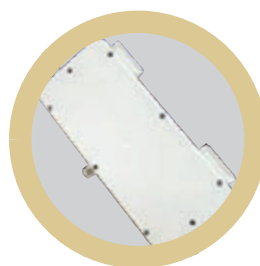
71787

RTRYVA EMU Box

Entelle have designed and constructed the EMU box to suit many requirements for FTTH and FTTP projects. It has been designed for bend insensitive fibre management and is versatile to give many different uses.

The EMU box is a compact multipurpose closure that can accommodate both patch connections and splices (Fusion and Mechanical).

The EMU boxes are also commonly used to breakout and distribute the fibres from Entelle's Ø15mm RTRYVA solution.



Product Code	Description	IP-Rating	Seals	Colour	Spec Ref.
72792	EMU RTRYVA Closure BLACK 4x 3-8mm Seals	IP-67	4x 3-8mm double seal	Black	UK_DS_72792
72793	EMU RTRYVA Closure BLACK 2x 3-8mm double seals + 2x 15mm single seals	IP-67	2x 3-8mm double seal + 2x 15 single seal	Black	UK_DS_72792
73176	EMU RTRYVA Closure CREAM / LFH 4x 3-8mm Seals	IP-67	4x 3-8mm double seal	Cream	UK_DS_72792
73177	EMU RTRYVA Closure CREAM / LFH 2x 3-8mm double seals + 2x 15mm single seals	IP-67	2x 3-8mm double seal + 2x 15 single seal	Cream	UK_DS_72792
73194	EMU RTRYVA Closure GREY 2x 3-8mm double seals + 2x 15mm single seals	IP-67	2x 3-8mm double seal + 2x 15 single seal	Grey	UK_DS_72792

Other seal sizes may be available on request.

A diagram of a parallel plate capacitor. It consists of two horizontal red rectangular plates. The top plate is connected to a green wire leading to a blue terminal. The bottom plate is connected to a green wire leading to a brown terminal. A yellow dielectric material is placed between the two plates, filling the space between them. The entire capacitor is enclosed within a yellow circular frame.

Product Code	Description	Low friction FU sheath	Type	Colour	Standard Length
60963	8/3.5mm + 2 PIFU MM OM3 x 1000m	yes	MM OM3	blue, orange	1000m
8476	8/3.5mm + 2 PIFU G652d x 1000m	yes	G652d	blue, green	
8497	8/3.5mm + 4 PIFU G652d x 1000m	yes	G652d	blue, green	
60982	8/3.5mm + 2 PIFU G657A1 x 2000m	no	G657A1	blue, green	2000m

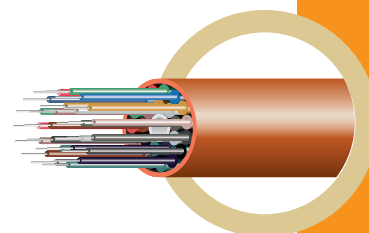
[illegible]

MULTIFU Pre-installed Fibre Tube Bundle

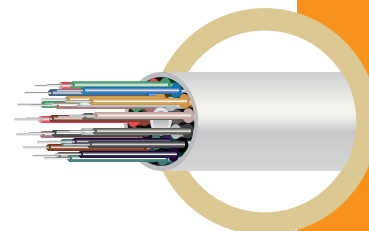
Assembly of PE microducts each containing a fibre unit. The assembly (bundle) is surrounded by an outer sheath that is suitable for direct burial in suitably prepared ground. This product reduces the need to use specialist blowing equipment when connecting customers. MULTIFU products can be partially or fully populated depending on customer uptake.

Why use Multifu?

- ▶ Reduce CAPEX per home passed and home connected on Day 1
- ▶ Easy to install, assemble and use products
- ▶ Reduce the skill requirements
- ▶ Minimise installation time and reduce failure rate
- ▶ Increase roll out speed
- ▶ Lower upgrade and maintenance costs for the life time of the network
- ▶ Adapted for low cost construction techniques
- ▶ Narrow trench
- ▶ Shallow depth burial
- ▶ Available with G652D/G652A1/G652A2 fibres



External

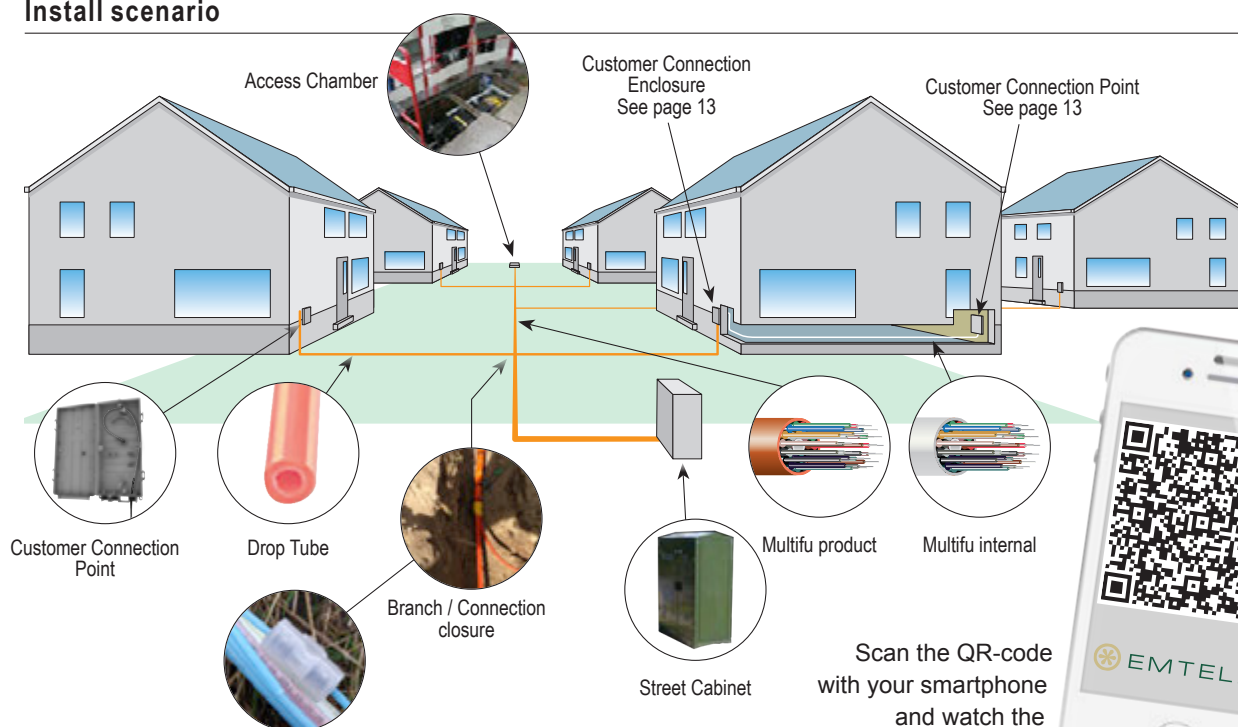


Internal



Product Code	Description	Microduct Size	Supply Length	Drum Type	Product weight per metre gms	Bundle OD mm	Generic Specification
61495	12DBmf MULTIFU 2FU G657A1	4/2.1mm	500	1.4D	151	18.2	CP1531
61613	12DBmf MULTIFU 2FU G657A2	4/2.1mm	500	1.4D	151	18.2	CP1531
62277	12DBmf MULTIFU 4FU G657A1	4/2.1mm	800	1.4D	151	18.2	CP1531
61496	24DBmf MULTIFU 2FU G657A1	4/2.1mm	500	1.4D	323	26.0	CP1532
61614	24DBmf MULTIFU 2FU G657A2	4/2.1mm	500	1.4D	323	26.0	CP1532
62276	24DBmf MULTIFU 4FU G657A1	4/2.1mm	800	1.7D	323	26.0	CP1532

Install scenario





FibreFlow Fibre Products

FibreFlow Microcable Fibre Unit (FU)

If asked to list the most important issues to be considered when choosing a high performance fibre unit, most people would include: performance, ease-of-handling and durability. In all these criteria, Emtelle's microcable FU has been shown to exceed other currently available fibre units.

In contrast with previous generation fibre units (typically known as "EPFU"), Emtelle's fibre unit contains a state-of-the-art, specifically designed polymeric sheath that is optimised for blowing: tests (500 metres at 50 metres per minute) have shown that this sheath, in combination with the fibre unit's single layer resin, improves blowing performance up to 50%.

The fibre unit, which is compatible with industry-standard blowing equipment, is also extremely easy to use and handle. For example, compared to other methods, stripping the fibre can be done simply, quickly

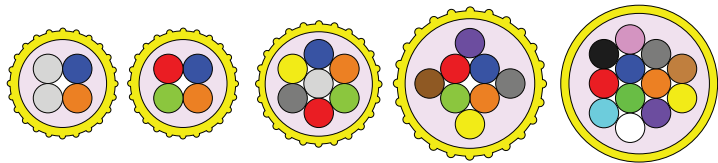
and with greater reliability. This ensures considerable savings on the costs associated with manpower. In terms of durability, the fibre unit again outperforms legacy designs.

- ▶ Ease of handling and durability
- ▶ Compatible with industry-standard blowing equipment
- ▶ Optimised for blowing
- ▶ Proven in many worldwide projects

Standard sheath colour is yellow. Other colours are available on request.



	2 Fibre			4 Fibre		6 Fibre			8 Fibre		12 Fibre	
Diameter	1.1 mm			1.1 mm		1.3 mm			1.5 mm		1.6mm	
Weight (mass)	1.0 g/m			1.0 g/m		1.6 g/m			1.8 g/m		2.2 g/m	
Breakout	typically 2 mins for 3m											
Blowing distance	up to 2000m											
Minimum Bore size	2.1mm			2.1mm		2.5mm			3.5mm		3.5mm	
No.	1	2	3	4	5	6	7	8	9	10	11	12
Colour	Blue	Orange	Green	Red	Grey	Yellow	Brown	Violet	Black	Aqua	Pink	White
Packaging	fibre rosette into pan											
Fibre types	single mode ITU-T G.652d											
	single mode ITU-T G.657A1 G.657A2											
	single mode ITU-T G.655											
	multi mode 62.5/125 OM1											
	multi mode 50/125 OM2, OM3, OM4											



Refer to page 10 for product codes.



Microduct size mm	Microcable FU				
	fibre count				
	2	4	6	8	12
3.0/2.1	✓	✓			
5.0/3.5	✓	✓	✓	✓	✓
8.0/6.0	✓	✓	✓	✓	✓

Combo fibre unit (MHT1204)

Combinations of multi mode fibres, optionally together with single mode fibre types or filling elements specific to customer requirements. Contact your local Emtelle representative for further details.

Patent Emtelle FibreFlow ABF (fibre bundle) products are the subject of United Kingdom patents GB2409908C & GB2409909C, European patents EP1600801B1 & EP3073305B1, European patent application EP3270203A1 and corresponding patents in other countries. All rights reserved.

FibreFlow Microcable Fibre Unit (FU)

FibreFlow Microcable FU product codes

Fibre Count	single mode ITU-T				multi mode			
	G.652d	G.657A1	G.657A2	G.655	62.5/125 OM1	50/125 OM2	50/125 OM3	50/125 OM4
2	9032	9506	90139	90766	9021	7653	9058	9180
4	7590	9507	91033	90159	7578	7577	6669	9181
6	90024	9508	91032	-	90767	90768	90769	90770
8	7589	9509	91034	90160	7580	7583	6668	9182
12	7575	9510	90765	9179	7582	7581	7714	9013
24		91077	91099					
Generic Specification	MHT1201	MHT2185	MHT2185	MHT1202	MHT1203			
Technical Specification	MHT1401	MHT2050	MHT2050					

Order Example 2 fibre G652d = Product Code 9032 and specify standard length required

XC Fibre Bundle (Extreme Condition)

Fibre Unit (FU) with up to twelve fibres set in a layer providing excellent dimensional and thermal stability. An outer thermoplastic layer provides a high level of protection and excellent installation properties. The microcable is designed for blowing and pushing long distances into microducts and tube bundles. The fibres are dry, not coated with gel, thus permitting fast and contamination-free connections.



Fibre Count	Fibre Type	Generic Spec
2	G657A2	MHT2649
4	G657A2	MHT2649
12	G657A2	MHT2649

Pan Weights and Dimensions (ext. height x diameter)

Standard Length	2 fibre	4 fibre	6 fibre	8 fibre	12 fibre
12,000m	16.5 kg Large		–	–	–
6,000m	10 kg Medium		14.0 kg Large	15.0 kg Large	18 kg Large
4,000m	6.5 kg Small		10.2 kg Medium	11.0 kg Medium	13.0 kg Medium
2,000m	4.5 kg Small		5.7 kg Small	6.0 kg Small	7.0 kg Small

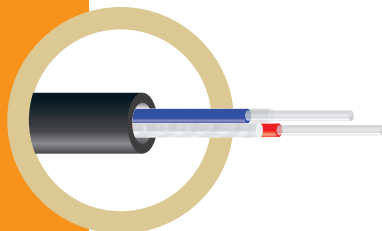
Small: diameter 540mm, height 200mm,
Medium: diameter 540mm, height 300mm,
Large: diameter 540mm, height 400mm

Emtelle can also offer non-standard lengths. These may be subject to longer lead-times than our standard product range. Please call your local Emtelle representative to check for availability.

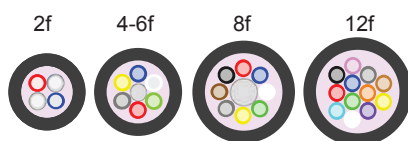
Patent Emtelle FibreFlow ABF (fibre bundle) products are the subject of United Kingdom patents GB2409908C & GB2409909C, European patents EP1600801B1 & EP3073305B1, European patent application EP3270203A1 and corresponding patents in other countries. All rights reserved.



NordicLite Nanocable



Optical fibre microcable with up to twelve fibres set in an encapsulating layer providing excellent dimensional and thermal stability. An outer thermoplastic layer provides a high level of protection and excellent installation properties. The microcable is designed for blowing and pushing long distances into microducts and tube bundles. The strong outer sheath means that additional protection is not required in protected closures or cabinets. The fibres are dry, not coated with gel, thus permitting fast and contamination –free connections.



NordicLite

Fibre count	Product code
2	91051
6	91053
8	91054
12	91055



Operational in
temperature range
-50°C to +70°C*

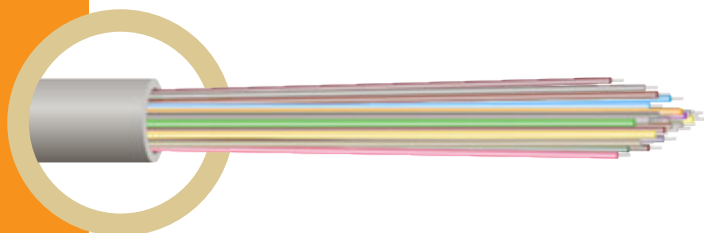
* based on 8f

Key Features:

- ▶ Designed to be installed by blowing, pulling or pushing
- ▶ Low weight
- ▶ Small diameter
- ▶ All dielectric design
- ▶ Ultra low friction sheath
- ▶ Low coil set

Scan the QR-code with your smartphone and watch the **NordicLite** video.

24 Fibre Bundle



Product Code 91077

The new Emtelle 24 Fibre Bundle can be blown into 5/3/5mm tubes or larger. The Fibre Bundle has great mechanical and blowing properties, just like our existing fibre bundle range. Other advantages of product include the easily identifiable colours and has great environmental performance. It's low friction outer jacket gives the ability to blow around bends effectively.

It is estimated that the Fibre Bundle can be blown 600 metres into existing networks of underground tube bundles using Emtelle's GS150 blowing machine. The development of the new 24 Fibre Bundle allows for extra capacity for up to 288 fibres in a 24 way tube bundle, meaning that there will be a lesser requirement for as many feeder cables.



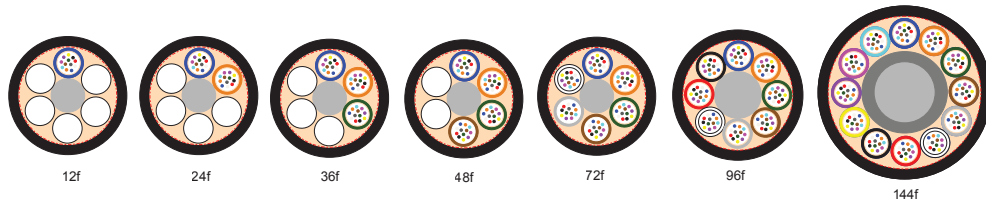
Scan the QR-code with your smartphone and visit the Emtelle YouTube Channel for product & installation videos.

Patent Emtelle FibreFlow ABF (fibre bundle) products are the subject of United Kingdom patents GB2409908C & GB2409909C, European patents EP1600801B1 & EP3073305B1, European patent application EP3270203A1 and corresponding patents in other countries. All rights reserved.

FibreFlow Blown Fibre Micro and Mini Cable

Emtelle offers a range of micro and mini cable products. These products work in conjunction with Emtelle's low-friction tube bundles for optimum blowing performance. For customer applications where a high fibre count is required, Emtelle offers a range of mini cable products that are fully water blocked and contain an FRP central strength member (12f to 216f). Emtelle also offers Microcables which are small fibre bundles (2f to 24f) that are water blocked and often, but not always, contain an additional strength member. Contact your local Emtelle representative for more information.

The figures in the table below are representative only.



	Micro Cable				Mini Cable									
	2	4	12	24	12	24	48	60	72	96	144	192	216	288
Typical Diameter	2.0mm	2.0mm	2.3mm	2.8mm	5.8mm					6.4mm	8.5mm			10.5
Blowing Distance	1200m typical				2000m typical					1000m – 1500m typical				
Available Fibre Types	SM G.652d, G.657A1, G655, G656 (other types available on request)													
Minimum Order Quantity	4000m													

Microproduct size mm	Micro Cable				Mini Cable									
	2	4	12	24	12	24	48	60	72	96	144	192	216	288
5/3.5	✓	✓	✓											
7/5.5	✓	✓	✓	✓										
10/8					✓	✓	✓	✓	✓					
12/10					✓	✓	✓	✓	✓	✓	✓			
16/12					✓	✓	✓	✓	✓	✓	✓	✓	✓	
18/14														✓

Fibre And Tube Identification

Colours to EIA 598 or customer requirement

No.	1	2	3	4	5	6	7	8	9	10	11	12
Colour	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Violet	Pink	Aqua

Sheath Marking

Marked every 1m with standard Emtelle printing or to customer requirement

Emtelle FibreFlow - Year - Fibre Count, G652d - Product Code - Batch ID - Metre Mark

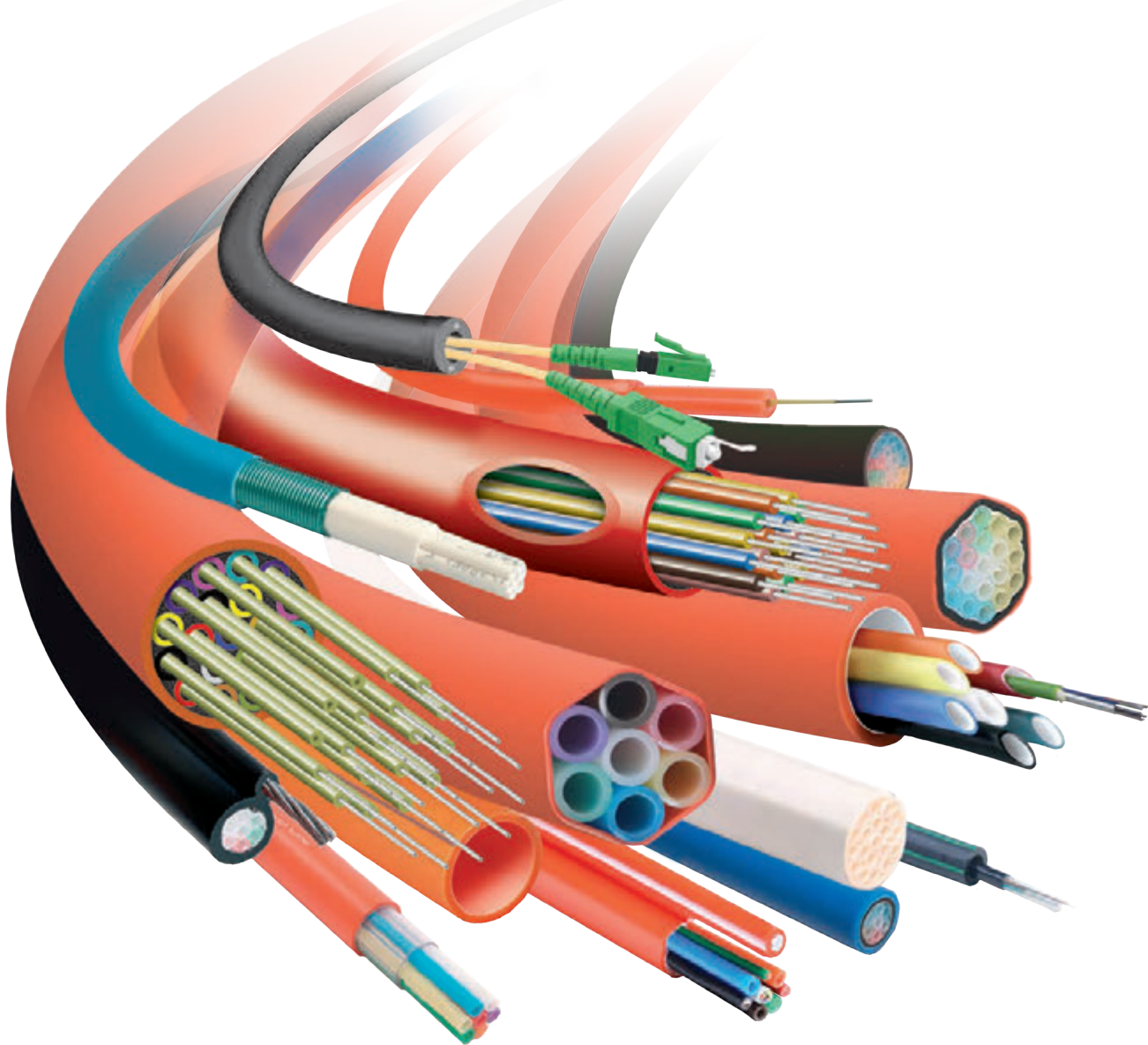
FibreFlow Blown Fibre Micro and Mini Cable

No. fibres	-	12f		24f		48f		72f	
No. Tubes	-	6		6		6		6	
Fibre Type	-	G652D	G657A1	G652D	G657A1	G652D	G657A1	G652D	G657A1
Tube OD/ID Ø	Mm	1.45/1.15		1.45/1.15		1.45/1.15		1.45/1.15	
No. dummy tubes	-	5		4		2		-	
Central Strength Member Ø	Mm	1.65		1.65		1.65		1.65	
Cable mass	Kg/km	24		25		26		27	
Sheath Thickness	Mm	0.5		0.5		0.5		0.5	
Sheath Material	-	HDPE		HDPE		HDPE		HDPE	
Cable outer Ø	Mm	5.8		5.8		5.8		5.8	
Bending radius (installation)	Mm	20x Ø		20x Ø		20x Ø		20x Ø	
Bending radius (service)	Mm	10x Ø		10x Ø		10x Ø		10x Ø	
Max load (fibre strain 0.3% Max)	kN	0.3		0.3		0.3		0.3	
Data-Sheet	-	MHT441		MHT441		MHT441		MHT441	
Supply Length	Km	4,6,8 & 12		4,6,8 & 12		4,6,8 & 12		4,6,8 & 12	
Product Code	-	90175	90692	90134	90693	90135	90409	90136	90408

No. fibres	-	96f			96f		144f		288f
No. Tubes	-	8			8		12		24
Fibre Type	-	G657A1	G652D / G652D		G652D	G657A1	G652D	G657A1	G652D
Tube OD/ID Ø	Mm	1.45/1.15			1.7/1.25		1.45/1.15		1.45/1.15
No. dummy tubes	-	-			-		-		-
Central Strength Member Ø	Mm	2.6			3.0		4.5		2.9
Cable mass	Kg/km	37			48		58		72
Sheath Thickness	Mm	0.5			0.5		0.5		0.5
Sheath Material	-	HDPE	HDPE	PA	HDPE		PA		HDPE
Cable outer Ø	Mm	6.4			7.3		8.5		9.4
Bending radius (installation)	Mm	20x Ø			20x Ø		20x Ø		20x Ø
Bending radius (service)	Mm	10x Ø			10x Ø		10x Ø		12x Ø
Max load (fibre strain 0.3% Max)	kN	0.7			0.7		1.2		1.0
Data-Sheet	-	MHT440			MHT2423		MHT2615		UK_DS_72919 UK_DS_73200
Supply Length	Km	4,6,8 & 12			4,6,8 & 12		4,6,8 & 12		4, 6 & 8
Product Code	-	90314	90315	90124	90130	90407	90317	90081	72919 73200 (eia-598)

For other cables see Fibre Optic Cable catalogue

FibreFlow Tube Bundle



Blown Fibre

Microduct / Primary tube sizes

Microduct	Supply Length	Minimum Order Quantity	Product weight per metre gms	Drum Type
3/2.1mm PE	4000m	4000m	3.4	HH
4/2.1mm PE	4000m	4000m	9	HH
5/2.1mm PE	4000m	4000m	15	HH
5/3.5mm PE	5000m	5000m	9.4	HH
6/2.7mm PE	4000m	4000m	20.9	HH
7/3.5mm PE	4000m	4000m	28	HH
7/4mm PE	4000m	4000m	25	HH
8/3.5mm PE	3000m	3000m	38	HH
8/5mm PE	3000m	3000m	29.2	HH
8/6mm PE	3000m	3000m	21	HH
10/6mm PE	2000m	4000m	48	HH
10/8mm PE	2000m	4000m	27	HH
12/8mm PE	2000m	4000m	60	HH
12/10mm PE	2000m	4000m	33	HH
14/10mm PE	1000m	4000m	72.2	HH
16/10mm PE	1000m	4000m	116.9	HH
16/12mm PE	1000m	4000m	83.9	HH
5/3.5mm LFH	4000m	4000m	15.3	HH
5/3.5mm LFH	500m	4000m	15.3	350Ply
6/2.7mm LFH	4000m	4000m	34.3	HH
7/4mm LFH	4000m	4000m	39.4	HH
12/8mm LFH	2000m	4000m	96	HH
14/10mm LFH	1000m	4000m	115	HH
Subducts				
18/14 PE	2000m	4000m	95.9	B
20/14 PE	2000m	4000m	152.9	1.4D
20/16 PE	2000m	4000m	107.9	1.4D

Available in 12 colours:

No.	1	2	3	4	5	6	7	8	9	10	11	12
Colour	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Violet	Pink	Aqua

For handling guidelines, please visit www.emtelle.com/handling-guidelines

Tube Bundle

Emtelle is experienced enough in air blown fibre installation to understand that no two projects are the same. Factors such as network size, customer requirements, geography, topography, application areas and usage projections (to name but a few) require special considerations in terms of the technology and products used. To ensure that it provides the right solution every time, Emtelle offers an extensive line of high-quality products that can cover the requirements of the vast majority of projects. For easy reference, the following pages provide details of our tube bundle products.

The following pages detail Emtelle's **FibreFlow** microduct bundles. These products are supplied on non-returnable wooden drums or plywood reels.

Each **FibreFlow** product listed in the product table on the following pages will refer to a "drum type", which is the particular drum the product is supplied on.

As there are different size drums, please refer back to the table underneath providing information on the drum dimensions and drum weight for an empty drum.

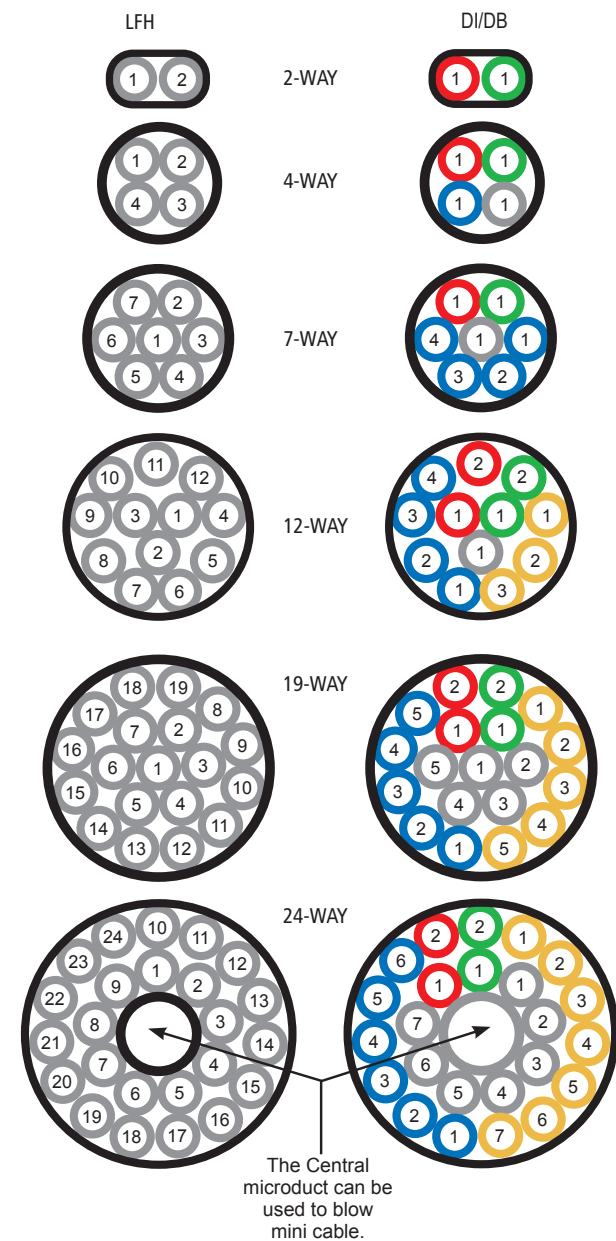
Drum			
Type	Product code	Dimensions (OD x W)mm	Weight kg
coil		600 x 300	0
350 ply	13648	350 x 200	5
450 ply	13646	450 x 250	7
600 ply	13650	600 x 300	8
650 ply	11021	650 x 300	9
700 ply	13651	700 x 350	10
E	12063	800 x 516	27
F	12064	1000 x 646	40
G	12065	1200 x 718	61
HH	13698	1000 x 475	35
MB5		1200 x 1018	65
1.2D	12066	750 x 1018	65
1.4D	12011	1400 x 1100	92
1.7D	13660	1700 x 1140	131
2.0D	13900	2000 x 1140	188
2.2D	13998	2200 x 1165	281.5
2.35D	13875	2350 x 1165	316

FibreFlow Tube Bundles

Tight protected microducts: suitable for the installation of fibre units containing between 1 and 12 fibres as well as minicable (24-144 fibres). In 3mm, 5mm, 7mm and 8mm microduct diameters the bundles can contain up to 24 individual microducts. They are usually deployed in the access part of the network – in FttH and Campus applications, for example.

FibreFlow microducts with diameters ranging from 3 to 16mm are available and can be bundled in configurations of up to 24 tubes dependent on the individual microduct diameter. Bundles are available in several types – for example, direct bury, direct install and low fire hazard – making them ideal for diverse applications such as FttH, In-Building and Campus. They can also be customized to meet specific environmental challenges.

Emtelle Standard Microduct Numbering System



Microduct Sequence (DI/DB)

TUBE SEQUENCE (DI/DB)

1 red 1
2 green 1

1 red 1
2 green 1
3 natural 1
4 blue 1

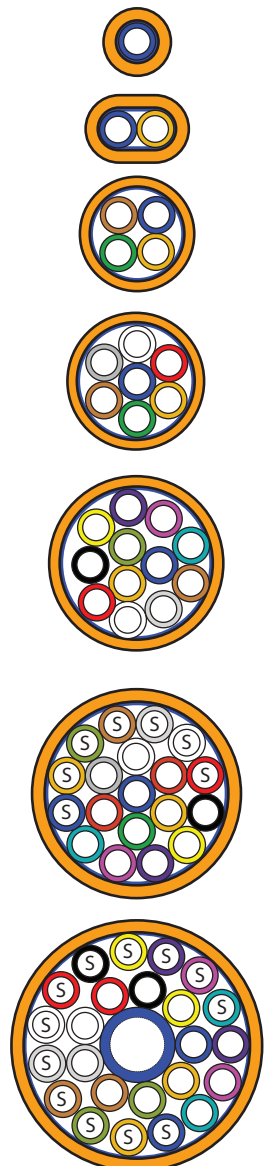
1 natural 1
2 red 1
3 green 1
4 blue 1
5 blue 2
6 blue 3
7 blue 4

1 red 1
2 green 1
3 natural 1
4 red 2
5 green 2
6 yellow 1
7 yellow 2
8 yellow 3
9 blue 1
10 blue 2
11 blue 3
12 blue 4

1 natural 1
2 red 1
3 green 1
4 natural 2
5 natural 3
6 natural 4
7 natural 5
8 red 2
9 green 2
10 yellow 1
11 yellow 2
12 yellow 3
13 yellow 4
14 yellow 5
15 blue 1
16 blue 2
17 blue 3
18 blue 4
19 blue 5

1 red 1
2 green 1
3 natural 1
4 natural 2
5 natural 3
6 natural 4
7 natural 5
8 natural 6
9 natural 7
10 red 2
11 green 2
12 yellow 1
13 yellow 2
14 yellow 3
15 yellow 4
16 yellow 5
17 yellow 6
18 yellow 7
19 blue 1
20 blue 2
21 blue 3
22 blue 4
23 blue 5
24 blue 6

EIA-598

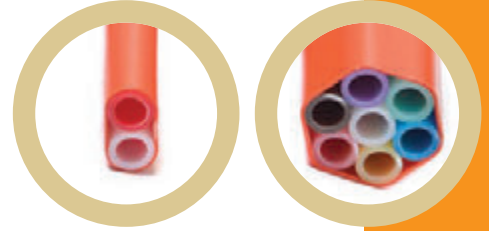


Direct Bury metal free (DBmf) - Thickwall

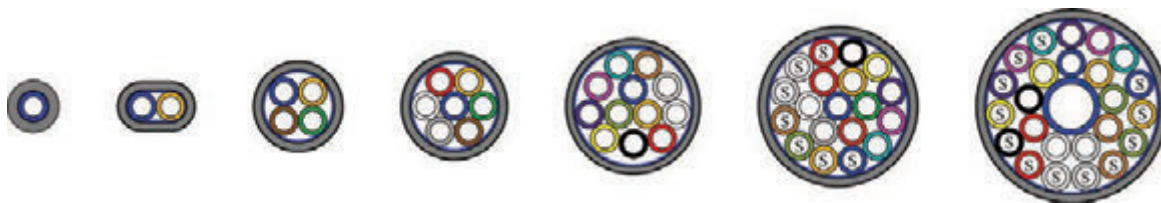
DBmf Heavy-Wall Microduct Bundles

All these bundles have simplicity and strength. They have exceptional toughness and crush resistance and can be directly buried without the need for additional protective closures at branch-off points, or inline connections. The individual microducts are so strong that the outer sheath does not need to be protective in design, but simply holds the bundle together. The individual tubes can be joined by Protected and Directly Buried rated connectors (page 66-68). This solution is easy to use, quick to install and will reduce the Total Cost of Ownership long term.

The 1, 2 and 3 way bundles are also suitable for slot cut installations.



Product Code	Description	Supply Length	Drum Type	Product weight	Bundle OD mm	Generic Specification
5/2.1mm						
63778	1DBmf	500	coil	74	10.0	MHT1281
63779	1DBmf	4000	G	74	10	MHT1281
7/3.5mm						
60171	1 DBmf	4000	HH	28	7.0	MHT2309
63780	2 DBmf	4000	MB5	97	9.2 x 16.4	MHT2309
63783	4 DBmf (Square)	4000	1.7D	170	19.1	MHT2309
63784	4 DBmf (Flat)	4000	1.4D	152	9x30	CP1608
63786	6 DBmf (Flat 2x3)	4000	1.7D	196	15.5x22.5	CP1400
63787	7 DBmf	4000	2.0D	266	23.2	MHT2309
63788	8 DBmf + 1x 12/8	2000	2D	367	28,2	CP2067
63789	9 DBmf + 1x 14/10	3000	2.35D	406	30	CP1501
63790	10 DBmf + 1x 16/12	2000	2.2D	480	32	CP3694
63791	12 DBmf	3000	2.2D	429	30.7	MHT2309
63792	12 DBmf + 1x 14/10	2000	2.35D	501	30x35.9	CP1551
63793	12 DBmf + 1x 16/12	2000	2.35D	529	30x38	CP2990
63798	19 DBmf	2000	2.2D	640	36.2	MHT2309
63800	24 DBMF + 1 x14/10	1000	2.2D	860	44.2	MHT2309
7/4mm						
60178	1 DBmf	4000	HH	25	7.0	MHT2309
63802	2 DBmf	4000	MB5	91	9.2 x 16.4	MHT2309
63803	3 DBmf (Triangular)	4000	1.7D	128	18,5	CP3104
63805	4 DBmf (Square)	4000	1.7D	159	19.1	MHT2309
63806	4 DBmf (Flat)	4000	1.4D	163	9x30	CP2891
63808	6 DBmf (Flat 2x3)	4000	1.7D	196	15.5x22.5	CP3638
63809	7 DBmf	4000	2.0D	247	23.2	MHT2309
63810	9 DBmf + 1x 14/10	3000	2.35D	381	30	CP3637
63812	12 DBmf	3000	2.2D	395	30.7	MHT2309
63813	12 DBmf + 1x 14/10	2000	2.35D	467	30x35.9	CP1550
63814	12 DBmf + 1x 16/12	2000	2.35D	495	30x38	CP3305
63815	12 DBmf + 3x 14/10	1400	2.35	641	43,6	CP2730
63816	13 DBmf + 2x 14/10	2000	2.35	589	30.2x44	CP2432
63817	14 DBmf	2500	2.35D	445	32,8	CP978
63819	19 DBmf	2000	2.2D	587	36.2	MHT2309
63821	24 DBMF + 1 x14/10	1000	2.2D	793	44.2	MHT2309
63822	24 DBMF	1000	2.2D	712	33.4x44	CP1445



Example configuration

Product Code	Description	Supply Length	Drum Type	Product weight	Bundle OD mm	Generic Specification
10/6mm						
60728	1 DBmf	3000	WHH	48	10.0	MHT1563
63823	2 DBmf	3000	1.4D	150	12 x 22	MHT1563
63824	3 DBmf (Flat)	3000	1.7D	218	12 x 32	MHT1563
63825	3 DBmf (Triangular)	3000	2.0D	212	23,8	MHT1563
63826	4 DBmf (Square)	3000	1.7D	266	26.1	MHT1563
63827	4 DBmf (Flat)	3000	1.7D	256	12.2x42.2	CP2892
63828	5 DBmf	3000	2.2D	343	29.2	MHT1563
63830	7 DBmf	3000	2.35D	430	32.0	MHT1563
63831	12 DBmf	1500	2.35D	646	43.0	MHT1563
63833	19 DBmf	1000	2.35D	1051	51,6	CP1624
12/8mm						
60014	1 DBmf	2000	HH	60	12.0	MHT1564
63834	2 DBmf	2000	1.4D	184	14 x 26	MHT1564
63835	3 DBmf (Triangular)	2000	1.4D	267	14 x 38	CP1461
63836	3 DBmf (Flat)	2000	1.2D	267	14x38	MHT1564
63837	4 DBmf (Square)	2000	2.0D	347	31.0	MHT1564
63838	4 DBmf (Flat)	2000	1.7D	325	14x50	CP1516
63839	5 DBmf	2000	2.2D	434	34.4	MHT1564
63840	6 DBmf (Flat 2x3)	2000	2.2D	465	38.0	CP1800
63841	7 DBmf	2000	2.2D	531	38.0	MHT1564
63551	8 DBmf (flat 2x4)	2000	2.25D	621	26.2x50.2	CP3465
62963	8 DBmf + 1x 20/16	1000	1.7D	734	46,2	CP1479
63842	10 DBmf	1000	2.35D	745	35x50.2	CP2224
63843	12 DBmf	1000	2.2D	862	51.0	MHT1564
14/10mm						
8506	1 DBmf	1500	HH	73	14.0	MHT2308
63844	2 DBmf	1500	MB5	215	30 x 16mm	MHT2308
63845	3 DBmf (Triangular)	1500	2.25D	301	30	CP1410
63846	3 DBmf (Flat)	1500	1.4D	314	44 x 16mm	MHT2308
63847	4 DBmf (Square)	1500	2.0D	391	36mm across corners	MHT2308
63848	4 DBmf (Flat)	1000	2.25D	412	16.2x58.2	CP1573
63849	5 DBmf	1500	2.0D	507	40mm across corners	MHT2308
63850	6 DBmf	1500	2.2D	561	44mm across corners	MHT2308
63851	7 DBmf	1500	2.2D	631	44mm across corners	MHT2308
63852	8 DBmf	1000	2.35D - 1400	728	44x53.9	CP3044
63853	8 DBmf + 1x 25/20	750	2.35D - 1500	918	55,2	CP2767
63854	10 DBmf	1000	2.35D - 1400	890	40.5x58.2	CP2214
63855	12 DBmf	500	2.35D - 1500	1047	59	CP2901

Product Code	Description	Supply Length	Drum Type	Product weight	Bundle OD mm	Generic Specification
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16/12mm

60618	1 DBmf	1000	F	84	16.0	MHT2432
63522	2 DBmf	1000	MB5	249	34 x 18	MHT2432
63856	3 DBmf (Flat)	1000	1.4D	363	50 x 18	MHT2432
63857	3 DBmf (Triangular)	1000	2D		34x34	CP3304
63858	4 DBmf (Square)	1000	2.0D	447	41mm across corners	MHT2432
63859	4 DBmf (Flat)	1000	1.7D	478	18.2x66.2	CP1329
63860	5 DBmf	1000	2.0D	580	45.5mm across corners	MHT2432
63861	6 DBmf	1000	2.2D	642	50mm across corners	MHT2432
63862	7 DBmf	1000	2.2D	736	50mm across corners	MHT2432
63863	8 DBmf	500	2.35D	853	60,5	CP2593
63864	12 DBmf	400	2.35D	1214	67	CP1907

18/14mm

62751	1 DBmf	2000	G	96	18	CP1567
63865	2 DBmf	1000	1.4D	315	20x38	CP1567
63867	3 DBmf (Triangular)	1000	2.0D	418	41,2	CP2690
63868	4 DBmf (Square)	1000	2.2D	540	43,5	CP1567
63869	4 DBmf (Flat)	1000	1.7D	550	20x74	CP2556
63870	5 DBmf	1000	2.2D	683	51,2	CP1567
62951	7 DBmf	900	2.35D	880	56,6	CP2346

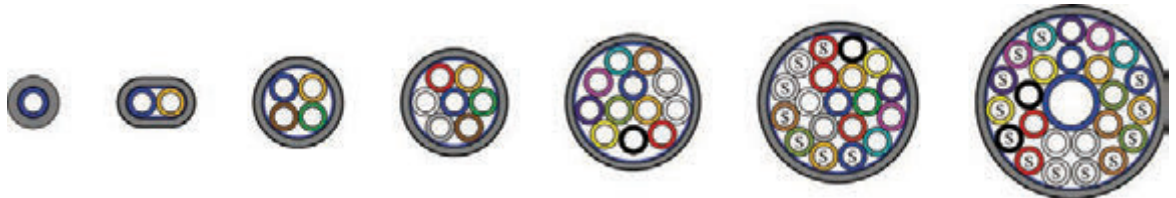
20/15mm

63872	1 DBmf	6000	2.2D	108	20	CP1830
63873	2 DBmf	1000	1.7D	374	22.2x42.2	CP1830
63874	3 DBmf (Triangular)	1000	2.35D	525	45	CP1830
63875	4 DBmf (Square)	1000	2.35D	678	50,5	CP1830
63876	5 DBmf	900	2.35D	901	56	CP1830
63877	7 DBmf	500	2.35D	1113	62,2	CP1830

Direct Bury (DB) - with foil



The assembly is surrounded with a 125µm aluminium layer, bonded inside a sheath of flexible black PE with a heavy duty orange coloured HDPE sheath making the product suitable for direct burial. Rip cords are pre-installed along the entire length, under the sheath, to rip through the aluminium and sheath using correct procedure.



Product Code	Description	Supply Length	Drum Type	Product weight per metre gms	Bundle OD mm	Generic Specification
5/3.5mm						
60869	1DB	4000	MB5	72	10.0	MHT113
63878	2DB	4000	1.4D	159	12.2 x 17.2	MHT113
63879	4DB	4000	1.7D	216	19.3	MHT113
63880	7DB	4000	2.0D	278	22.2	MHT113
63883	12DB	4000	2.35D	411	28.2	MHT113
63885	19DB	3000	2.35D	526	32.2	MHT113
63126	24DB + 1x10/8	2000	2.2D	671	37.8	MHT113
63887	26DB + 1x12/10	2000	2.35D	750	39.9	CP1278
10/8mm						
63888	1DB	2000	MB5	185	17.2	MHT167
63889	2DB	2000	1.4D	285	17.2 x 27.2	MHT167
63890	4DB	2000	2.0D	450	31.9	MHT167
63891	5DB	2000	2.2D	396	32	CP122
63892	7DB	2000	2.2D	606	37.8	MHT167
63893	12DB	1000	2.2D	946	49.5	MHT167
12/10mm						
63894	1DB	2000	MB5	205	19.1	MHT167
63895	2DB	2000	1.7D	331	19.1 x 31.1	MHT167
63896	4DB	2000	2.2D	542	36.8	MHT167
63897	5DB	2000	2.35D	629	40.5	CP410
63898	7DB	1000	2.0D	726	43.8	MHT167

Direct Bury metal free (DBmf) - Traditional

Assemblies of PE microducts, each with low friction performance. Each assembly (tube bundle) is surrounded by a water blocking tape that reacts to block water movement. Over the bundle is one sheath of flexible black PE, and one sheath of tough orange direct burial-grade PE. These strong products are designed for direct burial into suitably prepared ground.



Product Code	Description	Supply length	Drum Type	Product weight per metre gms	Bundle OD mm	Generic Specification
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5/3.5mm

63760	1DBmf - coil	500	coil	62	10.0	MHT2156
63761	1DBmf - drum	4000	MB5	62	10.0	MHT2156
63762	2DBmf	4000	1.4D	145	12.3 x 17.3	MHT2156
63763	4DBmf	4000	1.7D	203	19.4	MHT2156
63764	7DBmf	4000	2.0D	262	22.3	MHT2156
62646	9DBmf + 1x 10/8	2000	2.0D	386	28,5	CP396
63766	12DBmf	4000	2.35D	389	28.1	MHT2156
62971	13DBmf + 1x 16/13	2000	2.25D	501	33,8	CP724
63767	19DBmf	3000	2.35D	500	32.1	MHT2156
63258	22DBmf + 1x 8/6	2000	2.2D	580	35,8	CP2922
63768	24DBmf + 1x10/8	2000	2.2D	637	37.7	MHT2156
63769	26DBmf + 1x12/10	2000	2.35D	675	39,9	CP776

10/8mm

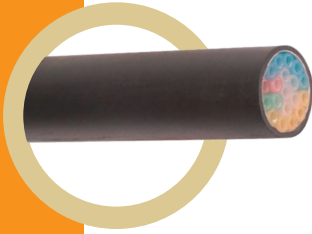
63770	1DBmf	2000	MB5	184	17.7	MHT1743
63771	2DBmf	2000	1.4D	261	17.3 x 27.3	MHT1805
63772	4DBmf	2000	2.0D	480	31.9	MHT1805
63773	5DBmf	2000	2.2D	471	34.4	MHT1805
63774	7DBmf	2000	2.2D	650	37.8	MHT1805
63775	12DBmf	1000	2.2D	820	47,8	CP3277

12/10mm

61888	1DBmf	2000	1.4D	203	19,2	MHT1805
63776	2DBmf	2000	1.7D	309	19.1 x 31.1	MHT1805
62999	4DBmf	2000	2.2D	505	36.8	MHT1805
63777	5DBmf	2000	2.35D	573	39.8	MHT1805
61892	7DBmf	1000	2.0D	684	43.8	MHT1805



Direct Install (DI) - with Foil



The assembly is surrounded with a 125µm aluminium layer, bonded inside a sheath of flexible black PE for direct-in-duct installation. A rip cord is pre-installed along the entire length, under the sheath, to rip through the aluminium and sheath using correct procedure. Also available in 8/6mm.

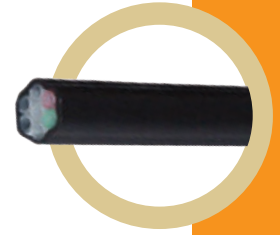


Product Code	Description	Supply Length	Drum Type	Product weight per metre gms	Bundle OD mm	Generic Specification
5/3.5mm						
63906	1DI	4000	G	49	8.4	MHT175
63907	2DI	4000	MB5	77	8.4 x 13.4	MHT175
63908	4DI	4000	1.4D	118	15.5	MHT175
63909	7DI	4000	1.7D	162	18.4	MHT175
63910	9DI + 1x 10/8	3000	2D	241	24	CP3529
63911	10DI + 1x 12/10	2000	2D	250	24,4	CP3195
63912	12DI	4000	2.0D	240	23.8	MHT175
63913	13DI + 1x 16/13	2000	2.2D (1200)	230	29,4	CP2803
63914	19DI	4000	2.35D	329	27,8	MHT175
63916	24DI + 1x 10/8	2000	2.0D	437	33.4	MHT175
10/8mm						
63917	1DI	2000	G	98	13.4	MHT888
63918	2DI	2000	MB5	162	13.4x23.4	MHT888
63919	3DI + 3x 5/3.5	2000	1.7D	258	25,5	MHT1271
63920	4DI	2000	1.7D	262	27.5	MHT888
63921	7DI	2000	2.0D	368	33.4	MHT888
63922	12DI	1000	2.2D (1200)	560	44,6	CP218
63923	19DI	1000	2.25D	793	52,2	CP1735
12/10mm						
63924	1DI	2000	MB5	108	15.3	MHT888
63925	2DI	2000	1.4D	178	15.3x27.3	MHT888
63926	3DI + 3x 5/3.5	2000	2D	265	29,3	CP854
63927	4DI	2000	2.0D	302	32.4	MHT888
63928	7DI	2000	2.35D	413	39.4	MHT888

Direct Install metal free (DImf)

It is essential that users of this product securely anchor the sheath and contents of the tube bundle to a fixed point (eg manhole side or duct mouth) wherever the product emerges from a duct section. These duct sections should not be longer than 500m. Refer to specification MHT1772.

A simple sheathed bundle incorporating no metal, suitable for pulling into duct using moderate force. When using Emtelle Direct Install Metal Free Products adequate provision must be made to take account of all strain which may be caused by installation forces, practices and procedures, thermal changes, heat reversion or any other reasonably foreseeable force applied to the product.



Product Code	Description	Supply Length	Drum Type	Product weight per metre gms	Bundle OD mm	Generic Specification
5/3.5mm						
63929	1DImf	4000	G	47		MHT1772
63930	2DImf	4000	MB5	71		MHT1772
63931	4DImf	4000	1.4D	109		MHT1772
63932	7DImf	4000	1.7D	151		MHT1772
63933	9DI + 1x 10/8	3000	2D	241	24	CP537
63934	10DI +1x 12/10	2000	2D	250	24,4	CP1451
63935	12DImf	4000	2.0D	224		MHT1772
63936	13DImf + 1x 16/13	2000	2.2D (1200)	219	29,4	CP2803
63937	19DImf	4000	2.35D	310		MHT1772
63939	24DImf + 1x 10/8	2000	2.0D	410		MHT1772

Direct Bury Termite Resistant (DBT)

Microducts are oversheathed with a layer of nylon12, which gives mechanical and chemical protection against attack by termites and ants (and their formic acid).



Product Code	Description	Supply Length	Drum Type	Product weight g/m	Bundle OD mm	Generic Specification
5/3.5mm						
63899	1DBT	4000	1.4D	136		MHT1774
63900	2DBT	4000	1.4D	164		MHT1774
63901	4DBT	4000	2.0D	260		MHT1774
63902	7DBT	4000	2.0D	328		MHT1774
63903	12DBT	3000	2.2D	475		MHT1774
63904	19DBT	2000	2.2D	599		MHT1774
63905	24DBT + 1x 10/8	2000	2.2D	730		MHT1774

Aerial Tube Bundle



Figure-8 construction with steel and glass reinforced strength member. All compatible fittings are available.

Emtelle recommends that the customer checks and ensures that the products are suitable to be installed on existing route. In particular, it is essential that the customer verifies that existing or proposed cable supports (towers or poles) are sufficiently robust and suitable to carry the required clamps and cable.

Product Code	Description	Supply Length m	Drum Type	Product weight per metre gms	Data_Sheet ref	Generic Specification
4/2.7						
61166	4F8	1400	1.2D	257	UK_DS_61166	CP1077
60752	7F8	1400	1.2D	317	UK_DS_60752	CP999
60753	12F8	1400	1.4D	383	UK_DS_60753	CP1001
60894	12F8 + 1x 12/10	1400	1.7D	458	UK_DS_60894	CP980
60754	24F8 + 1x 8/6	1400	2.0D	542	UK_DS_60754	CP981
05/3.5						
8194	4F8	1000	700 Ply	42	UK_DS_8194	MHT1470C
60890	7F8	1400	1.4D	313	UK_DS_60890	CP870
8195	9F8 + 1x 10/8	1400	1.4D	367	UK_DS_8195	MHT1411
60891	10F8 + 1x 12/10	1400	1.7D	363	UK_DS_60891	CP1032
61167	12F8	1400	1.7D	456	UK_DS_61167	CP1136
60755	12F8 + 1x 10/8	1400	1.7D	453	UK_DS_60755	CP1030
60892	17F8 + 1x 10/8	1400	1.7D	450	UK_DS_60892	CP1070
60757	19F8	1400	2.0D	463	TBC	CP1033
60756	19F8	1400	2.0D	549	UK_DS_60756	CP1031
10/8.0						
61165	1F8	1400	1.2D	229	UK_DS_61165	CP1203
60893	4F8	1400	1.7D	370	UK_DS_60893	CP915
60758	7F8	1400	2.25D	606	UK_DS_60758	CP952
12/10.0						
61170	4F8	1400	2.25D	401	UK_DS_61170	CP1175
60759	7F8	1400	2.35D	676	UK_DS_60759	CP1069



Aerial Metal Free / GRP

Single drop and Figure 8 construction with GRP strength member. These products have no metallic elements.

Product Code	Description	Supply Length m	Drum Type	Product weight per metre gms	Data_Sheet ref	Generic Specification
5/3.5mm						
61173	4F8MF	2000	1.4D	161	UK_DS_61173	CP902
61174	7F8MF	2000	1.7D	204	UK_DS_61174	CP1124
61178	8F8MF + 2x 12/10	2000	2.2D	451	UK_DS_61178	CP967
61175	9F8MF + 1x 10/8	2000	2.0D	302	UK_DS_61175	CP910
61176	12F8MF + 1x 10/8	1000	1.7D	367	UK_DS_61176	CP1125
12/10mm						
63333	1F8MF	1000	1.2D	179	UK_DS_63333	

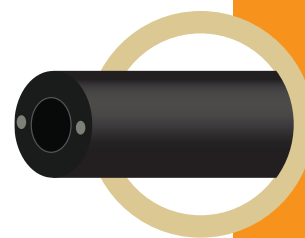


Universal Drop Tube

Emtelle Universal Drop Tube is used as a customer drop tube for a variety of installations – it can be used overhead, in duct, along walls or directly buried.

With GRP strength members in the wall, the Universal Drop Tube is spade resistant and means contractors have the option to bury the product at a shallower depth due to added strength.

All Emtelle 2-12fu can be blown into the Universal Drop Tube including the new 2f Nordic Lite nanocable.



Why use the Universal Drop Tube?

- ▶ The duct is universal
- ▶ Can be installed as direct bury, direct install, aerial & en-façade
- ▶ 2xGRP in wall for added strength
- ▶ Low friction liner for better blowing performance
- ▶ Less thermal expansion and contraction
- ▶ Hi-UV resistant
- ▶ Longer lifetime

Product Code	Description	Supply Length	Drum Type	Product weight g/m	Bundle OD mm	Generic Specification
63940	6/2.7mm	4000	WH	22	6	CP2967
63941	7/3.7mm	4000	WH	31	7	CP1370
63942	8/4mm	4000	WH	37,2	8	CP2424
63943	10/5mm	4000	1.4D	58,1	10	CP3235
63944	15/9mm	4000	1.4D	97	15	CP3038

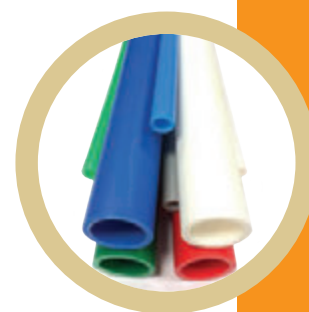
FibreFlow Tube Bundle - Tight Protected Microduct

FibreFlow Invictus

Product code 30720

FibreFlow Invictus can be delivered on a drum, or in a coil allowing for easy delivery to site and quick installation – the product can be laid straight into the trench from the drum or coil trailer. The added strength within the Invictus product allows it to be buried at half the depth, with “as dug” material used as backfill.

When compared to the traditional UK highways method of a 900mm deep trench with virgin backfill material, **FibreFlow Invictus** offers huge cost and time savings from installation perspectives.



In some circumstances, deploying **FibreFlow Invictus** will enable contractors to double the length of installs per day.

Why use **FibreFlow Invictus**:

- ▶ Ideal for city builds/feeder for FTTH
- ▶ Long lengths (300m coils)
- ▶ Cables can be blown/pushed/pulled
- ▶ Traditional sized ducts for easy training
- ▶ Very strong
- ▶ Lays very straight
- ▶ Huge fibre capacity
- ▶ 25, 32, 35, 37 + 40mm duct sizes available



FibreFlow Invictus

Scan the QR-code with your smartphone and watch the **FibreFlow Invictus** video.



Low Fire Hazard (LFH)

No CPR required.

Assembly of LFH microducts, each with low friction performance and suitable for fibre blowing. Each assembly is surrounded with a sheath of LFH material suitable for indoor fire regulation use and giving excellent performance in fire scenario.

Microducts are considered as cable management systems by EN 50174 series standards and are therefore not subject to the CPR system. This has been formally stated by BSI and German national standards bodies.

BS EN 61386-1 Conduit Systems for Cable Management is therefore used by Emtelle to verify our products for internal use. This includes a flame propagation test. Additionally Emtelle have carried out testing to IEC60332-1 and in some cases IEC60332-3.

- ▶ Low flammability
- ▶ Halogen free
- ▶ Low smoke

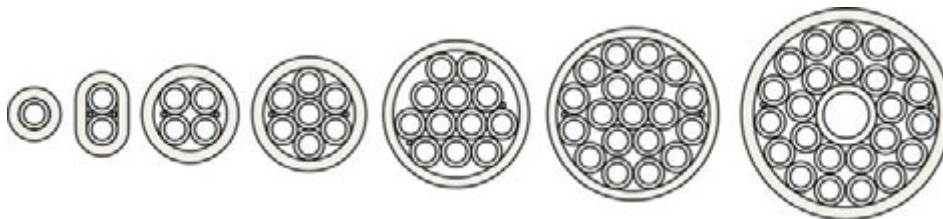
Product Code	Description	Supply Length	Drum Type	Product weight per metre gms	Bundle OD mm	Generic Specification
4/2.5mm						
62401	1LFH	4000m	HH	40.5	6.2	MHT2617
62402	2LFH	4000m	F	65	6.2/10.2	MHT2617
62403	4LFH	4000m	1.2D	104	11.9	MHT2617
62404	7LFH	4000m	1.4D	151	14.2	MHT2617
62405	12LFH	4000m	1.7D	244	18.7	MHT2617
62406	19LFH	4000m	2.0D	344	22.0	MHT2617
62407	24LFH	4000m	2.2D	461	26.6	MHT2617
5/3.5mm						
6318	Primary	500m	350 ply	15.5	-	MHT423
6634	Primary	1000m	450 ply	15.5	5	MHT423
6595	Primary	4000m	HH	15.5	5	MHT423
6772	1LFH	1000m	700 ply	48	7.2	MHT423
6403S	2LFH	500m	600 ply	80	7.2/12.2	MHT423
6502	2LFH	1000m	700 ply	80	7.2/12.2	MHT423
6403	2LFH	4000m	G	80	7.2/12.2	MHT423
6511	4LFH	500m	E	126	12.2/14.3	MHT423
6643	4LFH	1000m	F	126	12.2/14.3	MHT423
6404	4LFH	4000m	1.4D	126	12.2/14.3	MHT423
6515	7LFH	500m	E	190	17.2	MHT423
6610	7LFH	1000m	G	190	17.2	MHT423
6405	7LFH	4000m	1.7D	190	17.2	MHT423
6533S	12LFH	500m	F	310	22.9	MHT423
6533	12LFH	1000m	MB5	310	22.9	MHT423
6533A	12LFH	4000m	2.0D	310	22.9	MHT423
6611S	19LFH	500m	G	438	26.9	MHT423
6611	19LFH	1000m	1.4D	438	26.9	MHT423
6611A	19LFH	4000m	2.2D	438	26.9	MHT423
6513	24LFH	500m	MB5	591	32.5	MHT423
6612	24LFH	1000m	1.7D	591	32.5	MHT423
6612L	24LFH	2000m	2.0D	591	32.5	MHT423

Low Fire Hazard (LFH)

No CPR required.

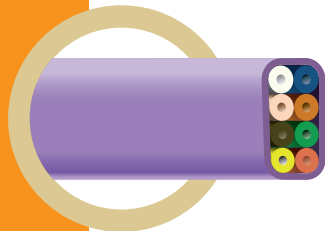
Product Code	Description	Supply Length	Drum Type	Product weight per metre gms	Bundle OD mm	Generic Specification
7/4mm						
62191	Primary	1000m	PIFU	39	7	CP820
61487	Primary	2000m	HH	39	7	CP820
61488	1LFH	2000m	F	84	9.2	CP821
61371	2LFH	2000m	G	148	9.2 x 16.2	CP1229
61372	4LFH	2000m	MB5	266	19.5	CP1230
61933	7LFH	2000m	1.7D	407	21	CP1524
61489	12LFH	2000m	2.0D	665	30.9	CP1411
61373	19LFH	1000m	1.7D	960	36.5	CP1231
61490	24LFH	1000m	2.0D	1371	44.9	CP1412

14/10mm						
60008	Primary	500m	HH	115	14.0	CP772
61156	Primary	1000m	HH	115	14.0	CP772
61157	2LFH	1000m	MB5	377	30.5 x 16.5	CP1112
61158	3LFH	1000m	1.4D	518	32.7	CP897
61159	4LFH	1000m	1.7D	658	34.2	CP1079
61160	6LFH	1000m	2.0D	964	41.4	CP1199
61161	7LFH	1000m	2.0D	1079	44.7	CP 898



Specialist Applications

FibreFlow Vertex



The Entelle Vertex product range of FibreFlow Tube Bundles have been designed for installation into Microtrench and Slot Cut Installations. These products are narrow to enable the trench width to be narrow, which increases Trenching speed and therefore reduces trenching costs. Entelle have been supplying Blown Fibre products for Microtrenching for over 12 years.

Entelle also supply accessories for Microtrenching such as narrow Marker Tapes, Direct Buried Connectors and have Tube Bundles which can accommodate Fibre Cables from 2 fibres up to 288 fibres for Microtrench applications.

Product Code	Description	Supply Length	Drum Type	Product weight per metre gms	Bundle OD mm	Generic Specification
7/3.5mm						
63784	4 DBmf (Flat)	4000	1.4D	152	9x30	CP1608
63786	6 DBmf (Flat 2x3)	4000	1.7D	196	15.5x22.5	CP1400
62346	16 DBMF	2000	2.0D	626	67.0x16.2	CP2015
7/4.0						
63806	4 DBmf (Flat)	4000	1.4D	163	9x30	CP2891
63808	6 DBmf (Flat 2x3)	4000	1.7D	196	15.5x22.5	CP3638
10/6.0						
63824	3 DBmf (Flat)	3000	1.7D	218	12x32	MHT1563
63827	4 DBmf (Flat)	3000	1.7D	256	12.2x42.2	CP2892
12/8.0						
63836	3 DBmf (Flat)	2000	1.2D	267	14x38	MHT1564
63838	4 DBmf (Flat)	2000	1.7D	325	14x50	CP1516
63840	6 DBmf (Flat 2x3)	2000	2.2D	434	34.4	CP1800
62215	6 DBmf (Flat 1x6)	2000	2.0D	515	80.0x14.2	CP1967
63551	8 DBmf (flat 2x4)	2000	2.25D	621	26.2x50.2	CP3465
14/10.0						
63846	3 DBmf (Flat)	1500	1.4D	314	44x16	MHT2308
63848	4 DBmf (Flat)	1000	2.25D	412	16.2x58.2	CP1573
16/12.0						
63856	3 DBmf (Flat)	1000	1.4D	363	50x18	MHT2432
63859	4 DBmf (Flat)	1000	1.7D	478	18.2x66.2	CP1329
18/14.0						
63869	4 DBmf (Flat)	1000	1.7D	550	20x74	CP2556



Scan the QR-code with your smartphone and watch the Vertex video.



Vertex
powered by FibreFlow

Specialist Applications

Emtelle can produce many different solutions depending on the customer's specifications. Some examples of special tube bundle include:-

Mining Applications

What for? Mining

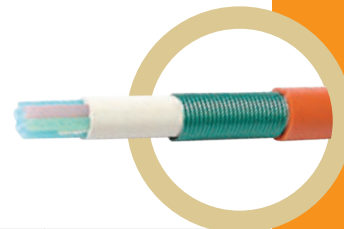
Product Code	Description	Microduct size	Bundle Od mm	Product weight g/m	Specification
8244	7DBSA	5/3.5mm	22.8mm	392	MHT1781
61201	7DBSA-LF	5/3.5mm	26mm	607	CP678
61202	4F8 hybrid with copper cable	5/3.5mm	15.5mm(w) x 28.5mm(h)	358	CP1159
63945	2x2.5mm ² + 12FU	N/A	13-6mm	166	CP2327



Direct Bury Rodent Resistant (Corrugated Steel Tape)

What for? Rodents & strength

Assembly of 7 PE microducts surrounded with a polymer filling layer, a protective layer of corrugated steel (very effective against rodents) and a heavy duty PE outer sheath. DBR metal free rodent resistant products are available, please contact your local Emtelle representative for further information.



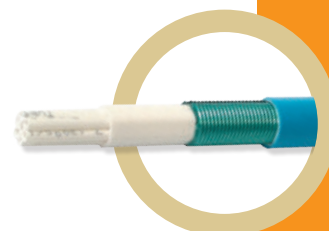
Product Code	Description	Microduct	Bundle Od mm	Product weight g/m	Specification	Supply Length
8244	7DBSA	5/3.5mm	22.8mm	392	MHT1781	1000m
8244B						2000m
63946	12 DBSA	5/3.5mm	30,2	532	CP3198	2000m
63947	24 DBSA	5/3.5mm	39,4	798	CP2847	2000m
63948	4 DBSA	12/10mm	38,4	763	CP1968	2000m

LFH Rodent Proof (corrugated steel tape)

What for? Internal rodents & strength

Assembly of 7LFH microducts surrounded by a sheath of LFH, a protective layer of corrugated steel (very effective against rodents) then a secondary LFH sheath.

Product Code	Description	Microduct size	Bundle Od mm	Product weight g/m	Specification
8483	7LFSA	5/3.5mm	23mm	470	MHT1738
-	4PELFSA	12/9.6mm	38mm	868	CP1930



Other products may be available, please contact info@emtelle.com for further information.



Specialist Applications

LFH 'pinnable'

What for? MDU

LFH microducts surrounded by a profile extrusion in LFH providing a web to allow the product to be pinned or clipped to a wall.

Product Code	Description	Microduct Size	Bundle Od mm	Product weight g/m	Specification
61872	1LFH pinnable	3/2.1mm	6.0x10.0	56.5	CP1239
61873	4LFH pinnable	3/2.1mm	6.0x22.5	118	CP1330

PE-LF

What for? MDU

Emtelle have developed a range of microducts which have an LFH sheath applied over conventional PE microducts (PE-LF) and which offer enhanced fire performance compared with all-PE products. For indoor installations where only moderate LFH performance is required, and where local fire regulations reflect this, then the **FibreFlow** PE-LF microduct range (MHT1757 and MHT2618) may be the solution. These bundles are designed to pass the IEC 60332-1 vertical flame spread test, similar to VW-1. Please contact your local Emtelle representative for further information.

PE-LF 'pinnable'

What for? MDU

PE microducts surrounded by a profile extrusion in LFH providing a web to allow the product to be pinned or clipped to a wall.

Product Code	Description	Microduct Size	Bundle Od mm	Product weight g/m	Specification
61874	4PE-LF pinnable	3/2.1mm	5.4x25.4	110	CP1485
61875	7PE-LF pinnable	3/2.1mm	8.7x14.2	190	CP1418

Direct Bury filled metal free (DBfmf)

What for? Where extra protection is needed

Emtelle was the first to introduce a Metal Free range of Tube Bundles using a filling polymer between the outer sheath and the microducts providing even compression resistance and improved roundness and concentricity of the individual microducts.

Main benefits of the DB(fm) products;

- ▶ Roundness of the Tube Bundle is secured
- ▶ Protection against; Kinking and Crush,
- ▶ Better handling characteristics in the field once HDPE sheath is removed

Product Code	Description	Microduct Size	Supply Length	Drum Type	Product weight per metre gms	Generic Specification
8224	3DBfmf	10/8mm	2000m	1.7D	483	MHT1844
8225	4DBfmf	10/8mm	2000m	2.0D	543	MHT1844
8226	5DBfmf	10/8mm	2000m	2.0D	619	MHT1844
8227	7DBfmf	10/8mm	2000m	2.2D	699	MHT1844
60025	3DBfmf	12/10mm	2000m	2.0D	611	MHT1844
60026	4DBfmf	12/10mm	2000m	2.2D	684	MHT1844
60027	5DBfmf	12/10mm	2000m	2.35D	751	MHT1844
60028	7DBfmf	12/10mm	1000m	2.0D	876	MHT1844

Specialist Applications

Fusion Product

Emtelle FibreFlow Fusion products consist of a combination of (different size) microducts to allow both fibre-unit and fibre mini-cables to be installed into the network using the same microduct bundle. This type of product is ideal for daisy-chaining a number of more remote communities or outlying areas further away from the main network trunking routes.

This type of product can usually be supplied suitable for DI, DB, Indoor or Aerial bundles. Please contact us via info@emtelle.com to discuss your requirements further.

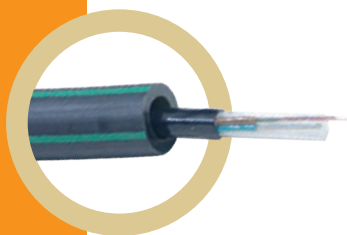
The different DIS products have been designed specifically for installation into existing HDPE ducts or PVC ducts. The outer sheath has been manufactured with a special reduced friction skin to allow for greater installation distances whilst pushing or pulling.



Product Code	Product description	Microduct size	Product Weight (g/m)	Supply Length	Bundle OD (mm)	Data-Sheet
8248	9 WAY DISMF 5/3.5mm + 10/8 COMBO	9x 5/3.5 1x 10/8	218	1500	24.5	MHT989
60387	3 WAY DISMF 10/8mm + 5/3.5 COMBO	3x 10/8 3x 5/3.5	209	2000	24.7	MHT857
61841	12 WAY DBmf 7/4 + 1x 14/10 COMBO	12x 7/4 1x 14/10	467	1500	30.0 x 35.9	CP1550
62955	10 WAY DBmf 8/5 + 1x 18/14 COMBO	10x 8/5 1x 18/14	493	1000	36	CP1385
62709	21 WAY DB 5/3.5 + 3x 10/8 COMBO	21x 5/3.5 3x 10/8	720	1000	38.3	CP2497
62970	13 WAY DImf 5/3.5 + 1x 16/13 COMBO	13x 5/3.5 1x 16/13	319	2000	29.4	CP2803

Pre-cabled ducts and microducts

Pre-cabled Sub Ducts



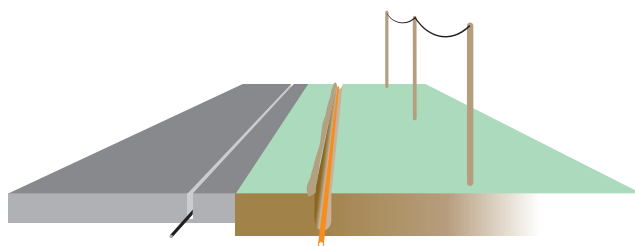
Both traditional fibre optic and fibre mini-cables are available as a pre-installed product. Lengths of up to 10km are available dependent on the cable type and materials. Emtelle can produce various combinations of a single fibre cable in HDPE duct. This cable can be removed at a later date and upgraded as required. This configuration particularly favours fairly long-distance fibre-to-the-home (or building or MDU) deployment where neither the duct nor fibre cable are previously in place, and future installations or extensions may be called for. These product combinations are designed for direct burial in suitably prepared ground.

Common typical features

- ▶ Loose tube metal free constructions
- ▶ Water blocked using gel filled tubes and dry water swellable elements
- ▶ Central strength element
- ▶ Storage and operating temperature: -30°C to +65°C

Specifications (all types)

- ▶ Available fibre types: Singlemode ITU-T G.652d, ITU-T G.655, ITU-T G.657A1, Multimode A1 (IEC 60793-2-10)
- ▶ Fibre and tube colours: normally EIA 598 or EN187105
- ▶ Cable tested to IEC 60794



	Cable Type	Cable Diameter	Micro Trenching	Mole Ploughing	Overhead
			HDPE Duct Size (OD)/(ID)	HDPE Duct Size (OD)	HDPE Duct Size (OD) (Plus web)
Fibre Bundle	2 Fibre Bundle	1.1mm	8/3.5mm	16/10mm	6/2.7mm
	4 Fibre Bundle	1.1mm	8/3.5mm	16/10mm	6/2.7mm
	6 Fibre Bundle	1.3mm	8/3.5mm	16/10mm	6/2.7mm
	8 Fibre Bundle	1.5mm	8/3.5mm	16/10mm	7/3.7mm
	12 Fibre Bundle	1.6mm	8/3.5mm	16/10mm	7/3.7mm
Micro Cable	24 Fibre Micro Cable	2.8mm	10/6mm	25/17mm	8/5mm
Mini Cable	24 - 72 Fibre Mini Cable	6.0mm	16/10mm	25/17mm	10/8mm
	96 Fibre Mini Cable	7.2mm	20/16mm	25/17mm	16/12mm
	144 Fibre Mini Cable (24 Fibres / Tube)	7.9mm	20/16mm	25/17mm	16/12mm
	144 Fibre Mini Cable (12 Fibres / Tube)	9.2mm	20/16mm	25/17mm	18/14mm
	288 Fibre Mini Cable (12 Fibres / Tube)	10.5mm	20/16mm	32/20mm	20/16mm
Conventional Fibre Cable	12-96 fibre cable	10-12mm	31/25mm	31/25mm	25/20mm
	128 Fibre Cable	12-14mm	31/25mm	31/25mm	25/20mm
	144 Fibre Cable	12-14mm	31/25mm	31/25mm	25/20mm
	288 Fibre Cable	14-16mm	37/31mm	37/31mm	32/26mm
	20 pair 0.9 Copper	NA	50/42mm	50/42mm	N/A
	50 pair 0.9 Copper	NA	50/42mm	50/42mm	N/A
	100 pair 0.6 Copper	NA	50/42mm	50/42mm	N/A
	100 pair 0.9 Copper	NA	63/50mm	63/50mm	N/A

Ducts can be strengthened if required. Some large ploughs require larger sub-duct sizes.

Other products are available.

For further information on pre-cabled duct please contact us on info@emtelle.com.

Loose Protected Microduct

Loose protected microducts (see example illustrated below) are suitable for high fibre-count minicables. This tried and tested technology has been deployed over thousands of kilometres, providing excellent installation characteristics for cables from 24 to 144 fibres.

The loose protected microduct solution comprises a range of microduct that are composed of standard, strong HDPE tubing as the outer duct, with a super smooth silicone coating inside. This outer duct provides complete protection of cables before, during and after installation. The smooth silicone coating remains in the duct to facilitate future repairs and/or replacements.

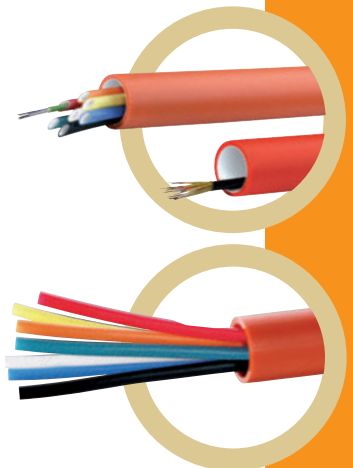
Loose protected microducts offer many advantages, including:

- ▶ Ease of installation
- ▶ Optimum impact resistance for maximum durability and performance
- ▶ Freedom of choice when choosing micro-duct configuration
- ▶ Optimal utilisation of cable networks with minimal expansion costs
- ▶ Option to upgrade networks in step with the development of new fibres
- ▶ Colour coding that facilitates the identification of different routes
- ▶ Customer-specific duct lengths
- ▶ Excellent blowing performance

The subducts can be supplied as:

- ▶ Standard HDPE (smooth exterior and interior)
- ▶ HDPE with smooth interior silicone coating
- ▶ HDPE with ribbed interior
- ▶ HDPE with ribbed interior silicone coating

The illustration shows the difference between the two types of cable installation. The new microduct technology has been applied to the orange duct, with the microducts loosely installed in the HDPE duct. The minicables with the required number of fibres can subsequently be installed individually in the microducts. Traditional technology has been used for the red duct and only a single fibre cable has been installed; installations of this kind often fail to make full use of the duct capacity.



- ▶ Configure the loose protected microduct according to your own wishes.
- ▶ Free combination of microducts 14, 12, 10, 7 and 5mm, fibre cables and copper cables.
- ▶ other configurations can be made upon request.
- ▶ rule of thumb: Filling area above 60% generally reduces fibre blowing lengths.
- ▶ **option:** loose protected microduct can be made with a combination of microducts and fibres.

It is possible to install a number of microducts in a subduct.

The actual number depends on the number and diameters of the microducts. Some examples are listed below.

Examples

Microduct w/silicone + ribs		
32mm	40mm	50mm
3 x 10 mm	5 x 10 mm	10 x 10 mm
4 x 10 mm	6 x 10 mm	7 x 10 mm
2 x 12 mm	4 x 12 mm	7 x 12 mm
	3 x 14 mm	6 x 12 mm
		1 x 12 mm + 9 x 10 mm
		2 x 12 mm + 8 x 10 mm
		3 x 12 mm + 6 x 10 mm
		4 x 12 mm + 5 x 10 mm
		5 x 14 mm
		3 x 16 mm

The availability of a 12mm Lock & Block kit means that Loose Protected Microduct can now successfully be used with Microcable FU. For further details refer to pages 11 and 81.

Storage and Handling

1. FibreFlow TUBE BUNDLES – TEMPERATURE & STORAGE

The tube bundles and packaging materials are resistant to a wide temperature range. Packaging materials are provided to protect products prior to installation. Emtelle stipulate that the packaging supplied should remain in place until the product is installed.

If packaging needs to be replaced, please contact Emtelle for details of suitable materials for re-packaging.

Prolonged storage outdoors may reduce the performance of the tube bundles.

If the client requires products to be stored for periods of over 3 months prior to installation, it is a requirement that they inform Emtelle so that product and packaging specifications can be amended to suit.

2. TUBE ASSEMBLY STORAGE AND HANDLING / INSTALLATION

Poly Ethylene (PE) products, e.g. Direct Install (DI), Direct Bury (DB), Direct Bury Reinforced (DBR) are best stored between -40°C and +60°C (Product temperature, not air temperature), and handled between -20°C and +40°C. If stored outdoors, we recommend they are stored out of direct sunlight, and installed within 3 months of delivery.

In some countries storage in direct sunlight, can cause the temperature of the products to increase to over +60°C. This will invalidate the product warranty.

Individual Microducts, both Poly Ethylene (PE) and Low Fire Hazard (LFH) should be stored indoors. These products are wrapped in black film and bubble wrap after manufacture. This protective packaging should remain in place until installation. Individual microducts should not be exposed to direct sunlight.

LFH products can be stored between -20°C and +60°C and handled for installation between 0°C and +40°C. Handling/installation outside this temperature range can result in tube softening, distorting and possibly cracking. Please note that the maximum air pressure used when fibre bundle blowing in LFH products is 10 bar / 150psi with a maximum tube temperature of +40°C.

3. TEMPERATURE VARIATION:

As stated above, Emtelle tube bundles can be stored in a temperature window of -40°C and +60°C. Though the tube bundles can accommodate these temperatures, however in some countries the product temperature between day time and night time can vary by 40°C or more. In these circumstances, the outer coils of the tube bundle on the drum will experience high levels of thermal expansion and contraction. This extreme temperature cycling can cause product failure or deterioration in performance. If this type of temperature cycling cannot be avoided then Emtelle should be informed so that they can provide advice and options for safe storage of the product.

4. TUBE ASSEMBLIES IN OPERATION

Once the tubing assemblies are in their fixed operational location, they can be subject to the 'storage' temperatures quoted above, provided that there is no significant continuous flexing of the tube assemblies. Most installations are laid in underground ducts and so see minimal variation in position or temperature. Minimum temperatures of -40°C are permissible after installation.

Assemblies located in outdoor (e.g. overhead) routes will experience temperature cycling and expand and contract with the weather and there will be considerable continuous flexing of the tube assemblies. Consult Emtelle for advice on the correct product to use in this situation.

Products intended for underground installation e.g. direct burial or direct install products which are installed above ground, (i.e., up walls) should be covered with a suitable UV protective material to eliminate the risk of UV degradation.

5. HANDLING PRODUCT AND OFF-LOADING

Our products are loaded into containers using Rhino horns or forklifts with extendable arms.

A normal forklift or tractor with attachments can be used if care is taken. Please carry out risk assessments and ensure you have effective lifting equipment ready for the unloading of trucks or containers.(as shown below)



Please note the following when offloading:

- ▶ Do not off-load near overhead power lines.
- ▶ Ensure a safe location for off-loading – flat, firm, level ground, free from obstacles and obstructions.
- ▶ Only authorised personnel should be in the vicinity during off-loading operations.
- ▶ It is the responsibility of the driver of the off-loading vehicle to ensure all personnel are kept at a safe distance whilst off-loading.
- ▶ Pallets, drums or loose lengths should not be dropped or thrown from the vehicle.
- ▶ Duct in coil form contains a great deal of stored energy and should be handled with care. Particular care should also be taken to avoid any damage to the restraining straps.
- ▶ In wet and frosty conditions duct and drums can become very slippery; therefore care is required when operating in these conditions.
- ▶ There must be provision made when storing products externally that they are adequately handled with the use of forklifts and drum handling equipment. All drums should be secured in position using adequate fixings. Drums should be stacked no more than 3 metres high.
- ▶ Tube bundles which are being batched down at the customer's premises should be rewound using a power pay-off. All free ends of tube bundles should be sealed using heat shrink end caps. These are available from Emtelle if required.

While every care is taken during loading, Emtelle cannot accept responsibility for the security of the load once it leaves our site. Drivers must secure their loads before leaving the factory, as under the terms of the Road Haulage Association they are responsible for the security of the load.

The drums must be stored on a level, hard surface above flood level and must be secured with chocks to prevent the drums from rolling away. Avoid contact with sharp rocks. Do not lay the drums flat, the drums must be stored as pictured below.



6. UNSPOOLING THE TUBE BUNDLES

The tubes and tube bundles supplied by Emtelle are supplied in coils or on drums. When uncoiling the products, the drums should be slowed to freely rotate (preferably using a drum trailer as shown below), so the products is unwound without any excess coiling. Never lay the drum or coil on its side and pull the tube bundles 'off the top', as this will induce a corkscrew twist (as shown in the photographs below), possible distortion and cause problems during installation and blowing.

Tube bundles should not be uncoiled off the top of the drum



The best practice is to install drums onto drum trailers as pictured:



Connectors



Connectors John Guest®

Straight connectors



Microduct outer diam - mm	Connector through bore diam - mm	Product codes	
		Solid colour	clear
3	2.1		7312
4	2.8	71070	
5	3.5		7223
6	4.8	7310	
6.3	5	7930	
8	6		7222
8	4	72725	
10	7.6	7226	
12	10	7263	9732
16	14	71424	
18	16	70956	

Direct Bury Straight connectors



Microduct size (both ends)		Product codes	
outer diam - mm	inner diam - mm	Solid colour	clear
7	3.5	71108	
7	4.0	71190	
12	10	72738	
14	10	71105	
16	10	71424B	

Reducers



Microduct outer diam - mm	Connector inner diam - mm	Microduct outer diam - mm	Connector inner diam - mm	Product codes	
				Solid colour	clear
4	2.2	3	2.2	70728	
5	2.2	3	2.2		9638
6	2.2	3	2.2	70727	
(1/4")6.3	3.5	5	3.0	9502	
7	3.5	5	3.5		71142
8	6	5	3.5		6085
10	6.3	8	6.3	7280	
12	8	10	8	7279	
12	10	8	6	71277	

End Cap



Size	Product Code	
	Solid colour	clear
3mm	9610	
4mm	70762	
5mm	7221	
6mm	7311	
8mm	6026	
8mm	72726	
10mm	9611	7486
12mm	9612	
16mm	71438	
18mm	72740	

Connectors John Guest®

Direct Bury End Cap



Size	Product Code
7mm	71109
14mm	71106

Closedown



This connector is to protect fibre where a centre blow has taken place. The closedown covers the fibre and both ends of the break in the microduct.

Size	Product Code
3mm	7316
5mm	7249
8mm	7331

Gas Block Connectors



An active gas block (GB) connector has an internal seal that can be 'open' to permit blowing through, or 'closed' so the seal contacts the fibre and prevents the flow of gas.

Microduct size mm	Description	Product Code	Fibre cable size range Approx mm	Gas block seal colour
3mm	3GB long	70730	0.9-1.2	
3mm	3GB short	70731	0.9-1.2	
4mm	4GB	70729	0.9-1.2	
5mm	5GB	6091	FU	
6mm	6GB	71220	FU	
6-3mm reducer	6-3GB	71355	FU	
6-4mm reducer	6-4GB	70875	FU	
7mm	7GB 1.0-1.6	71110	FU	
7mm	7GB 1.8-2.4	71533		Red
7mm	7GB 2.5-3.0	71116	2.5-3.0	Blue
8mm	8GB	6086	FU	
8-5mm	8-5GB	6087	FU	
10mm	10GB 5.5-6.6	71496	5.5-6.6	Green
10mm	10GB 6.5-7.2	71497	6.5-7.2	Red
12mm	12GB 5.5-6.6	71498	5.5-6.6	Green
12mm	12GB 6.5-7.2	71499	6.5-7.2	Red
12mm	12GB 7.2 - 8.2	71534	7.2-8.2	Blue
14mm	14GB 6.5-7.2	71107	6.5-7.2	Red
14mm	14GB 7.6-8.2	71535	7.6-8.2	Blue

Connectors John Guest®

Water-blocking Connector



3mm 7314



5mm 6089

These connectors are used at the end of a fibre unit (fu) length, usually inside the building, to prevent water from travelling along the tube and into the building.

The passive water blocking types have a fixed aperture size in the seal, the fibre unit being pushed through by hand after blowing is complete. For these it is best to select an item with a suitably sized seal, to give a snug fit. We quote the size range of fibre unit or cable that each water blocking connector can accept and properly seal onto.

Tube size one end	Tube size other end	Capacity fu or fc diam	Product code
3mm	3mm	FU	7314
5mm	5mm push-on	FU	6089
6mm	3mm	FU	71441

Slimline Bulkhead



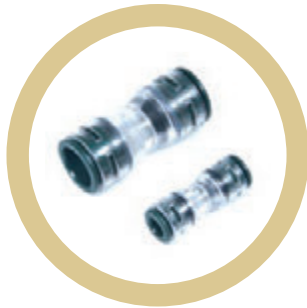
A connector used mainly in rack systems to manage microducts

Size	Product Code
5mm	7248

Microduct Connectors

Emtelle provides an extensive range of standard and direct buried push-fit connectors for the **FibreFlow** system. These connectors are provided with outer shells in either acrylate (clear) or polypropylene (solid colour). The different materials provided are to suit customer's preferences or applications. All connectors supplied by Emtelle conform to our specification MHT860.

Straight connectors



Straight connectors are used to join microducts having the same OD and ID.

Take note of both the outer and inner diameter of the microduct to be connected. eg 8/6 connectors are unsuitable for 8/3.5 microduct. Some connectors are available pre-fitted with clip-on protectors to enable direct burial for FTTH drop zones.

Microduct size (both ends)		Product codes
outer diam - mm	inner diam - mm	
3	2.1	9916
4	2.8	9917
5	3.5	9918
7	5.5	9919
7	3.5	70193
8	6	9920
8	3.5	9772
10	8	9921
12	10	9922
14	12	9821
14	10	9923
16	12	9924

Reducers



These connectors join microducts of different size. Check the microduct OD and ID.

Microduct A		Microduct B		Product codes
Microduct outer diam - mm	Microduct inner diam - mm	Microduct outer diam - mm	Microduct inner diam - mm	
5	3.5	3	2.1	9925
5	2.1	3	2.1	9926
7	5.5	3	2.1	70407
7	5.5	5	3.5	70031
8	3.5	3	2.1	70117
8	6	5	3.5	9927
10	8	8	6	9928
12	10	5	3.5	70034
12	10	7	5.5	9929
12	10	10	8	9930
14	10	10	8	70035
14	10	12	10	9931
16	12	12	10	70036

End Cap

End caps are used to seal an open tube and prevent dirt or water entry.

Size	Product Code
3mm	9932
4mm	9933
5mm	9934
6mm	9975
7mm	9935
8mm	9936
10mm	9937
12mm	9938
14mm	9939
16mm	70153



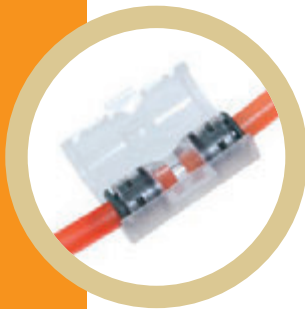
Microduct Connectors

Direct Buried Connectors

There are situations with drops to a building where a joint is required in a rugged microduct. Since such a joint would be in domestic areas rather than industrial sites, a full closure to protect the microduct joint is not always deemed necessary.

For these joints, we offer rugged connectors, and in two styles: ▶ Protected Connector
▶ DB (direct buriable) connector

Protected Connectors



The protected connector is a standard microduct connector pre-fitted with a removable outer shell. The product offers enhanced protection over an uncovered connector. These covers also fit over equivalent sized end-caps.

Product code	Microduct size	Description
70194	7/3.5mm	Protected connector
70169	7/5.5mm	Protected connector
70262	8/3.5mm	Protected connector
70136	8/6mm	Protected connector
70170	10/8mm	Protected connector
70171	12/10mm	Protected connector
70172	14/10mm	Protected connector

Connectors

Fibre and Micro cable seal

Easy to install gas and watertight seal for cables in mini / micro ducts.

- ▶ Gas and Water tight up to 0,25 bar
- ▶ Suitable for retro fitting
- ▶ Easy installation
- ▶ No need to slide the seal over the fibre for installation
- ▶ Slim design



Product Code	Description	Duct OD	Seal	Pack Quantity	Seal Colour	Cable Range
72133	Miniduct seal 4mm/0.9mm	4	0.9	100 Per Bag	Purple	0.9-1.2
73909	Miniduct seal 4mm/1.25mm	4	1.25	100 Per Bag	Red	1.3-1.5
72314	Miniduct seal 4mm/1.6mm	4	1.6	100 Per Bag	Green	1.6-1.8
72315	Miniduct seal 4mm/2.1mm	4	2.1	100 Per Bag	Blue	
71907	Miniduct seal 5mm/0.9mm	5	0.9	100 Per Bag	Purple	0.9-1.2
71720	Miniduct seal 5mm/1.25mm	5	1.25	100 Per Bag	Red	1.3-1.5
73570	Miniduct seal 5mm/1.6mm	5	1.6	100 Per Bag	Green	1.6-1.8
72318	Miniduct seal 5mm/2.1mm	5	2.1	100 Per Bag	Blue	1.9-2.2
73572	Miniduct seal 6mm/0.9mm	6	0.9	100 Per Bag	Purple	0.9-1.1
71739	Miniduct seal 6mm/1.25mm	6	1.25	100 Per Bag	Red	1.2-1.5
73573	Miniduct seal 6mm/1.6mm	6	1.6	100 Per Bag	Green	1.6-1.8
73574	Miniduct seal 6mm/2.1mm	6	2.1	100 Per Bag	Blue	1.9-2.2
73575	Miniduct seal 6mm/2.5mm	6	2.5	100 Per Bag	Yellow	2.3-2.5
71962	Miniduct seal 7mm/0.9mm	7	0.9	100 Per Bag	Purple	0.9-1.1
71175	Miniduct seal 7mm/1.25mm	7	1.25	100 Per Bag	Red	1.2-1.5
72319	Miniduct seal 7mm/1.6mm	7	1.6	100 Per Bag	Green	1.6-1.8
72320	Miniduct seal 7mm/2.1mm	7	2.1	100 Per Bag	Blue	1.9-2.2
71724	Miniduct seal 7mm/2.5mm	7	2.50	100 Per Bag	Yellow	2.3-2.5
73234	Miniduct seal 8mm/0.9mm	8	0.9	100 Per Bag	Purple	0.9-1.1
71740	Miniduct seal 8mm/1.25mm	8	1.25	100 Per Bag	Red	1.2-1.5
73578	Miniduct seal 8mm/1.6mm	8	1.6	100 Per Bag	Green	1.6-1.8
73826	Miniduct seal 8mm/2.1mm	8	2.1	100 Per Bag	Blue	1.9-2.2
71741	Miniduct seal 8mm/2.5mm	8	2.50	100 Per Bag	Yellow	2.3-2.5

Connectors

Duct Sealing

Divisible duct sealing sets developed to provide an effective and simple solution to all gas and watertight duct sealing requirements. The modular system enables installation in new and existing situations. Set contains 2 plastic click shells, plastic cutting block, synthetic rubber plug.



Emtelle Product code	Description	Duct Size (OD)	Cable Diameter	Size A (mm)	Size B (mm)	Supply qty (per box)
73080	MINI DUCT CABLE SEAL 10 (2.5-1.5mm)	10	1.5 - 2.5	32	25	25
71161	MINI DUCT CABLE SEAL 10 (3.5-2.5mm)		2.5 - 3.5			
71162	MINI DUCT CABLE SEAL 10 (5.0-3.5mm)		3.5 - 5.0			
71163	MINI DUCT CABLE SEAL 10 (6.5-5.0mm)		5.0 - 6.5			
71164	MINI DUCT CABLE SEAL 10 (7.5-6.5mm)		6.5 - 7.5			
73561	MINI DUCT CABLE SEAL 12 (2.5-1.5mm)	12	1.5 - 2.5	32	25	25
71165	MINI DUCT CABLE SEAL 12 (3.5-2.5mm)		2.5 - 3.5			
71166	MINI DUCT CABLE SEAL 12 (5.0-3.5mm)		3.5 - 5.0			
71167	MINI DUCT CABLE SEAL 12 (6.5-5.0mm)		5.0 - 6.5			
71168	MINI DUCT CABLE SEAL 12 (8.0-6.5mm)		6.5 - 8.0			
73339	MINI DUCT CABLE SEAL 12 (8.5-7.0mm)		7.0 - 8.5			
18700	MINI DUCT CABLE SEAL 14 (1.5-2.5mm)	14	1.5 - 2.5	34	29	25
18701	MINI DUCT CABLE SEAL 14 (3.5-2.5mm)		2.5 - 3.5			
18702	MINI DUCT CABLE SEAL 14 (5.0-3.5mm)		3.5 - 5.0			
71833	MINI DUCT CABLE SEAL 14 (6.5-5.0mm)		5.0 - 6.5			
71169	MINI DUCT CABLE SEAL 14 (8.0-6.5mm)		6.5 - 8.0			
71170	MINI DUCT CABLE SEAL 14 (10.0-8.0mm)		8.0 - 10.0			
18697	MINI DUCT CABLE SEAL 16 (2.5-1.5mm)	16	1.5 - 2.5	34	29	25
18698	MINI DUCT CABLE SEAL 16 (3.5-2.5mm)		2.5 - 3.5			
72007	MINI DUCT CABLE SEAL 16 (5.0-3.5mm)		3.5 - 5.0			
71978	MINI DUCT CABLE SEAL 16 (6.5-5.0mm)		6.5 - 5.0			
71171	MINI DUCT CABLE SEAL 16 (8.0-6.5mm)		6.5 - 8.0			
71172	MINI DUCT CABLE SEAL 16 (10.0-8.0mm)		8.0 - 10.0			
18703	MINI DUCT CABLE SEAL 18 (5.0-3.5mm)	18	3.5 - 5.0	36	34	25
18704	MINI DUCT CABLE SEAL 18 (6.5-5.0mm)		5.0 - 6.5			
18705	MINI DUCT CABLE SEAL 18 (8.0-6.5mm)		6.5 - 8.0			
72789	MINI DUCT CABLE SEAL 18 (9.5-8.0mm)		8.0 - 9.5			
71173	MINI DUCT CABLE SEAL 18 (12.0-9.4mm)		9.4 - 12.0			
73567	MINI DUCT CABLE SEAL 20 (5.0-3.5mm)	20	3.5 - 5.0	36	34	25
73343	MINI DUCT CABLE SEAL 20 (6.5-5.0mm)		5.0 - 6.5			
73344	MINI DUCT CABLE SEAL 20 (8.0-6.5mm)		6.5 - 8.0			
72145	MINI DUCT CABLE SEAL 20 (10.0-8.0mm)		8.0 - 10.0			
71174	MINI DUCT CABLE SEAL 20 (12.0-9.4mm)		9.4 - 12.0			



EMTELLE

SOLUTIONS TEAM

Entelle now have a brand-new dedicated solutions team. The Entelle Solutions team consists of product and installation specialists with expertise in their assigned field. We encourage our customers to make use of the knowledge and experience within the Solutions Team to help continue developing innovative, reliable & future-proof solutions for our customers adding value to FTTX networks globally.

The Solutions Team's experience is spread over 25 years of global customer, product and project knowledge. The team focuses on developing new solutions that can be brought to market, growing Entelle's portfolio building on the significant benefits our solutions already bring to operators, including reduced total cost of network deployments through easier installation methods, and a reduced need for equipment and specialist skills.

Entelle's aim is to share our experience and knowledge first-hand with our customers, and the new Solutions Team will accelerate this.

Within the team, we have product specialists covering the following areas:

- ▶ Fibre
- ▶ Pre-connected
- ▶ Tube Bundle
- ▶ Connectors
- ▶ Cabinets
- ▶ Closures

And we have installation specialists covering:

- ▶ Moleplough
- ▶ Overhead
- ▶ Microtrench
- ▶ Opentrench
- ▶ MDU
- ▶ PVC
- ▶ Datacentre
- ▶ DPA/PIA
- ▶ 5G, IoT & Smart Cities



Find your Product Specialist now at
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