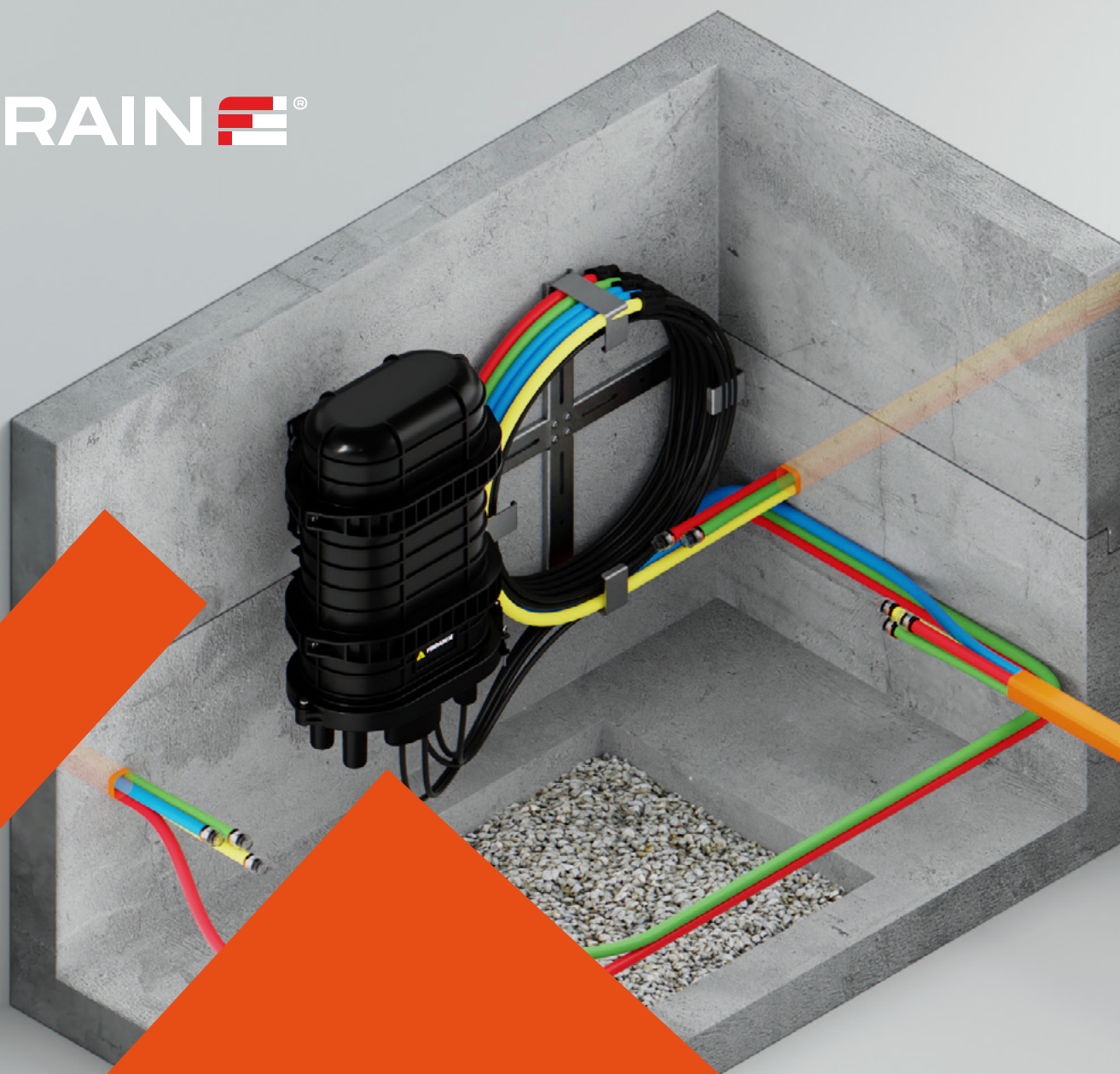


FIBRAIN 



FIBER OPTIC
MICRODUCT SYSTEM

MetroJet



Products presentation

→ www.fibrain.com

General information

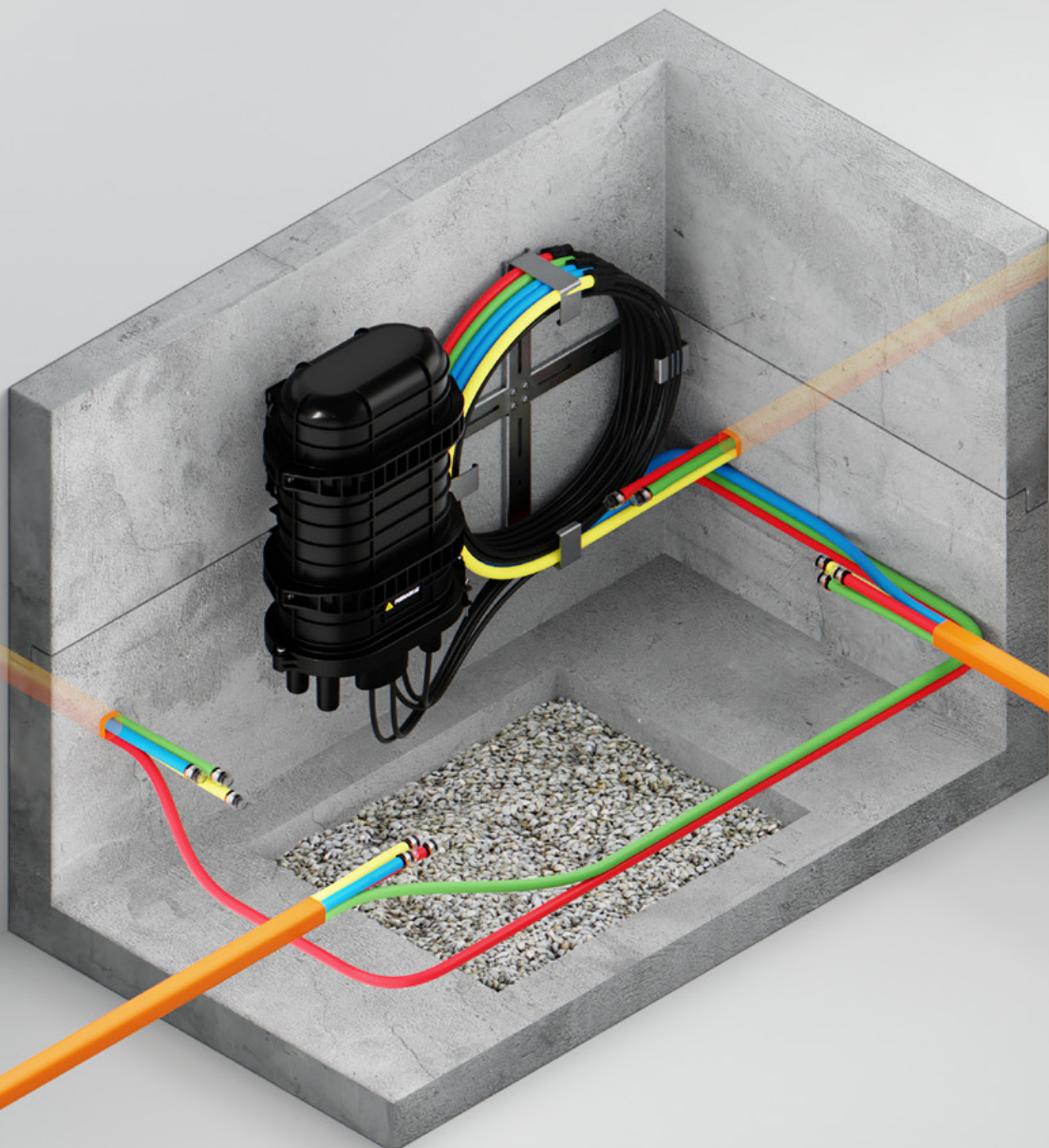
MetroJet microduct system is a multiway ground teletechnical structure.

Due to its design, it provides the installation of many fiber optic microcables into one bundle of single microducts with diameters in the range from 5 to 16 mm / 0.196 to 0.629 inch. The main advantage of installing foiled bundles is a one-

FIBRAIN in its MetroJet system offers a wide range of products for the construction of new ground fiber optic networks, as well as the modernization of existing ones. All elements of the system, starting from microducts, connectors as well as microcables, fiber optic closures, cable blowing machines and accessories, provide the possibility of creating even the most complex structures, while maintaining simplicity of installation.

-time application of all microducts at the same time, which dramatically speeds up the implementation of projects and creates a coherent and orderly network infrastructure.

At the stage of designing and installing cables in a microduct, the appropriate ratio of microcable filling in the space inside the microduct should be maintained. This is important to achieve the best performance when installing microcables using the pneumatic method (blowing microcables). To facilitate this process, a MetroJet compatibility table has been developed (next page).



Compatibility table MetroJet

CABLE TYPE		CABLE DIAMETER/ INCHES	CABLE TYPE		CABLE DIAMETER/ INCHES
MICRODUCT (OD/ID) 7/3.5 (OD/ID) [INCH] 0.275/0.137					
	MK-AX 1-12F	1.1 mm-1.6 mm 0.043-0.062 inch		MK-LXS7 32-96F	6.2 mm 0.244 inch
	MK-DXS16 2-4F	1.6 mm 0.062 inch		MK-FM7 96F	6.3 mm 0.248 inch
MICRODUCT (OD/ID) 7/4 (OD/ID) [INCH] 0.275/0.157					
	MK-DXS25 2-24F	2.5 mm 0.984 inch		MK-UX6 12-192F	5.2-6.6 mm 0.204-0.259 inch
MICRODUCT (OD/ID) 10/6 (OD/ID) [INCH] 0.393/0.236					
	MK-LX4 4-24F	4.2 mm 0.165 inch		MK-LX7 32-96F	6.7 mm 0.263 inch
	MK-LX45 LSOH 24F	4.5 mm 0.177 inch		MK-UX8 12-288F	6.5 -7.9 mm 0.255-0.311 inch
	MK-LX45 24F	4.5 mm 0.177 inch		MK-LXS8 48-144F	7.8 mm 0.307 inch
MICRODUCT (OD/ID) 12/8 (OD/ID) [INCH] 0.472/0.314					
	MK-UX5 12-144F	4.4-5.9 mm 0.173-0.232 inch		MK-LXS9 168-216F	8.5 mm 0.334 inch
	MK-LX5 4-60F	5.2 mm 0.204 inch		MK-LX8 12-144F	8.6 mm 0.338 inch
	MK-LXS6 2-72F	5.3 mm 0.208 inch		MK-LX9 168-216F	8.9 mm 0.350 inch
	MK-LX6 4-72F	5.6 mm 0.220 inch		MK-LXS10 288F	9.3 mm 0.366 inch
	MK-FM6 12-72F	6.0 mm 0.236 inch	MICRODUCT (OD/ID) 16/12 (OD/ID) [INCH] 0.629/0.472		
MICRODUCT (OD/ID) 18/14 (OD/ID) [INCH] 0.708/0.551					
				MK-LX11 240-288F	10.5 mm 0.413 inch

MetroJet system components



1
Microcables



2
Microducts



3
Foiled bundles



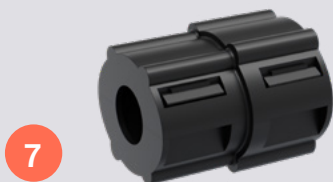
4
HDPE opto pipes



5
Microduct connectors



6
Microduct end caps



7
Microduct sealings



8
**Divisible duct joint
and branch closures**



9

Telecommunication manhole chambers



10

Fiber optic closures



11

Outdoor fiber optic cabinets

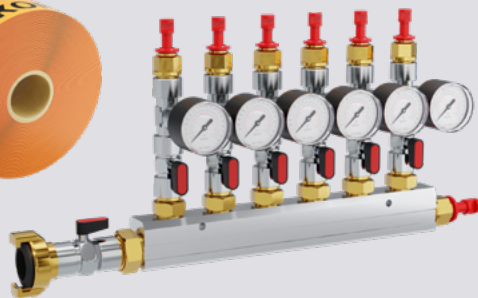


12

Blowing machines



13



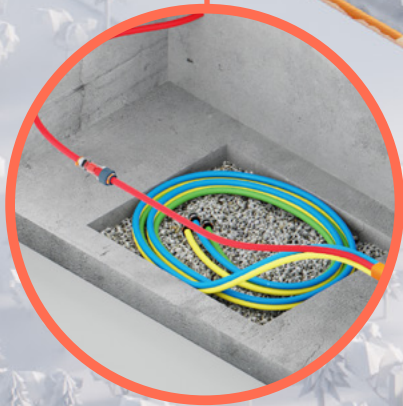
Accessories



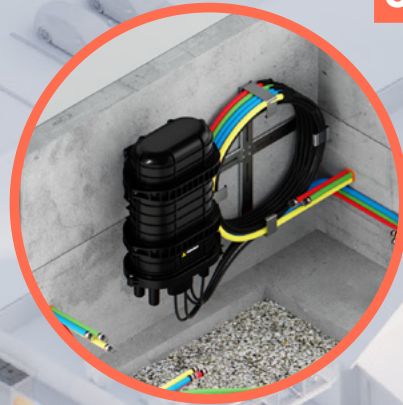
Microcable



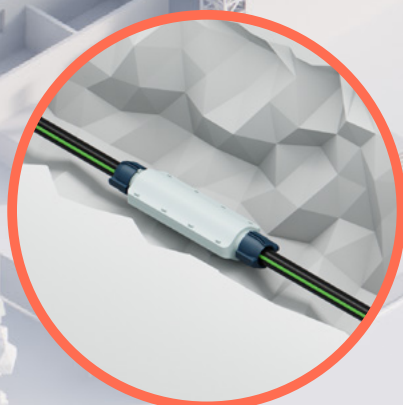
Outdoor fiber optic cabinet



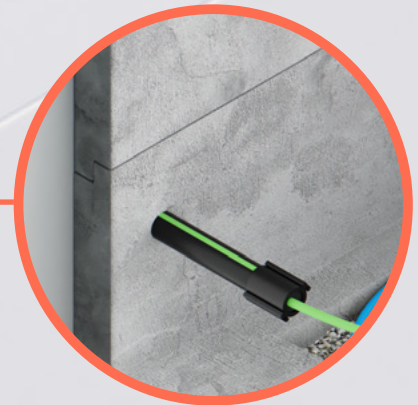
Microducts



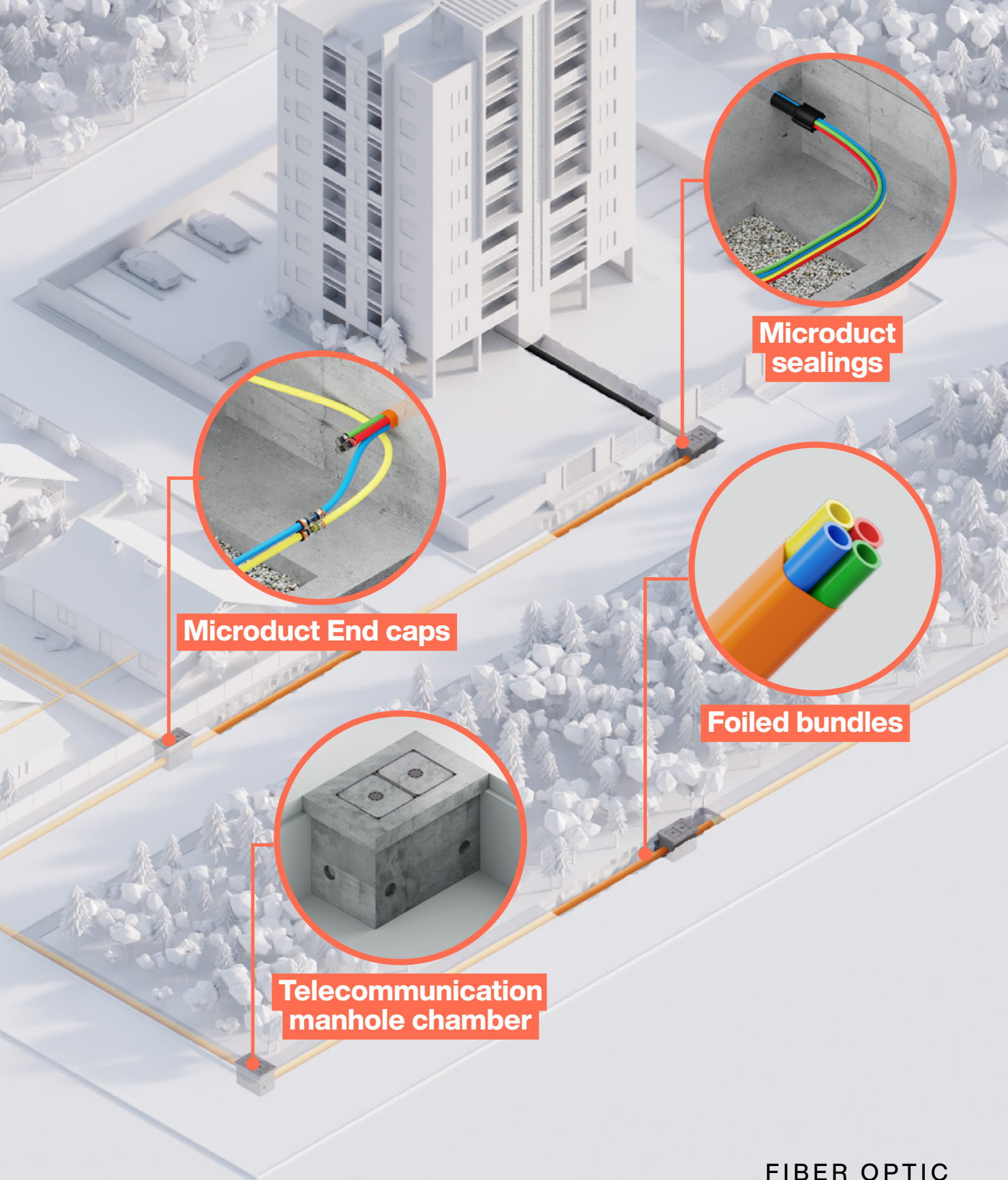
Fiber optic closure



Divisible duct joint and branch closure



HDPE opto pipes



Microduct sealings

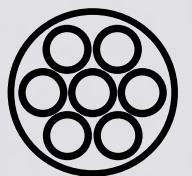
Microduct End caps

Foiled bundles

Telecommunication manhole chamber

FIBER OPTIC
MICRODUCT SYSTEM

MetroJet



Microcables

FIBRAIN MetroJet microcables are specifically adapted to installation inside the teletechnical microduct system. They are characterized by a reduced diameter and load-bearing coating which allow them to be blown over considerable distances by pneumatic method.



High fiber density



Long-range blowing performance



Reduced diameter



Low coefficient of friction

Drop microcables

blowing ranges



MK-AX
1.1-1.6 mm / 0.043-0.062 inch
1-12F



MK-DXS16
1.6 mm / 0.062 inch
2-4F



MK-DXS25
2.5 mm / 0.984 inch
2-24F

Microcables MK-LX

blowing ranges



MK-LX4
4.2 mm / 0.165 inch
4-24F
tube 1.0 mm / 0.039 inch



MK-LX45
4.5 mm / 0.177 inch
4-24F
tube 1.0 mm / 0.039 inch



MK-LX5
5.2 mm / 0.165 inch
4-60F
tube 1.6 mm / 0.062 inch



MK-LX6
5.6 mm / 0.220 inch
4-72F
tube 1.6 mm / 0.062 inch



MK-LX7
6.7 mm / 0.263 inch
32-96F
tube 1.6 mm / 0.062 inch



MK-LX8
8.6 mm / 0.338 inch
12-144F
tube 1.6 mm / 0.062 inch



MK-LX9
8.9 mm / 0.350 inch
168-216F
tube 1.6 mm / 0.062 inch



MK-LX11
10.5 mm / 0.413 inch
240-288F
tube 1.6 mm / 0.062 inch

Microcables

Microcables MK-LXS

blowing ranges



MK-LXS6
5.3 mm / 0.208 inch
2-72F
tube 1.4 mm / 0.055 inch



MK-LXS7
6.2 mm / 0.244 inch
32-96F
tube 1.4 mm / 0.055 inch



MK-LXS8
7.8 mm / 0.307 inch
48-144F
tube 1.4 mm / 0.055 inch



MK-LXS9
8.7 mm / 0.342 inch
166-216F
tube 1.4 mm / 0.055 inch



MK-LXS10
9.3 mm / 0.366 inch
288F
tube 1.4 mm / 0,055 inch

Microcables MK-UX

blowing ranges



MK-UX5
4.4-5.9 mm / 0.173-0.232 inch
12-144F
fiber 200 μm
tube 1.2-1.6 mm / 0.047-0.062 inch



MK-UX6
6.8-7.9 mm / 0.267-0.311 inch
12-288F
fiber 200 μm
tube 1.2-1.6 mm / 0.047-0.062 inch



MK-UX8
6.8-7.9 mm / 0.267-0.311 inch
12-288F
fiber 200 μm
tube 1.2 mm / 0.047 inch

Microcables with ESM micromodules

blowing ranges



MK-FM6
6.0 mm / 0.236 inch
12-72F
micromodule 1.3 mm / 0.051 inch



MK-FM7
6.3 mm / 0.248 inch
96F
micromodule 1.3 mm / 0.051 inch



MK-FM8
7.9 mm / 0.311 inch
144F
micromodule 1.3 mm / 0.051 inch

Indoor Microcables



MK-LX45 LSOH
4.5 mm / 0.177 inch
24F
tube 1.0 mm / 0.039 inch

Microducts

Microducts are main elements of FIBRAIN MetroJet microduct system. They are designed for mechanical and environmental protection of installed microcables. They are also used to multiply already existing secondary pipes of microduct systems.



Compressive strength



Pneumatic resistance



Low coefficient of friction



Microcables damage protection

Direct-buried microducts



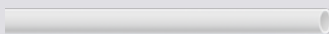
MT-MDB
Direct-buried microducts
5-16 mm / 0.196-0.629 inch

Standard microducts



MT-MDI
Standard microducts
5-16 mm / 0.196-0.629 inch

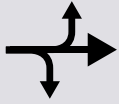
Non-flammable microducts



MT-MLH
Non-flammable microducts
5-14 mm / 0.196-0.551 inch

Foiled microduct bundles

Foiled bundles of the FIBRAIN MetroJet system are microducts covered in polyethylene foil. They give the possibility of placing from a few to several tracks with different configurations of microducts at the same time at one installation cost.



**Easy
branching**



**Direct-buried
applications**



**Various
microduct filling
configurations**



**Time saving
during installation**

Direct-buried foiled bundles of microducts



MT-WDB Foiled bundles
2x5-18 mm
2x0.196-0.314 inch



MT-WDB Foiled bundles
3x5-18 mm
3x0.196-0.314 inch



MT-WDB Foiled bundles
4x5-18 mm
4x0.196-0.314 inch



MT-WDB Foiled bundles
4x5-18 mm
4x0.196-0.314 inch



MT-WDB Foiled bundles
4x5-18 mm
4x0.196-0.314 inch



MT-WDB Foiled bundles
7x5-18 mm
7x0.196-0.314 inch

Flat foiled bundles of microduct



MT-WDBF Flat foiled bundles
4x5-18 mm
4x0.196-0.314 inch

Customized options of foiled bundles available after contact with the Sales Department.

Opto pipes

OPTO pipes of the FIBRAIN MetroJet system are protective pipes used for the construction of secondary sewage system for cable pipelines. They protect fiber optic cables and give the opportunity to multiply them with microducts in case of expansion.



Various pipe diameters

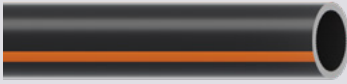


Sliding ribs



Cables/ microduct damage protection

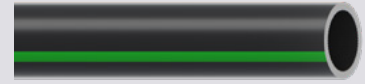
Opto pipes



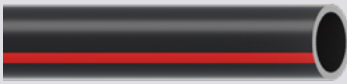
OPTO 20-50 mm / 0.787-1.968 inch pipe orange strip



OPTO 20-50 mm / 0.787-1.968 inch pipe blue strip



OPTO 20-50 mm / 0.787-1.968 inch pipe green strip



OPTO 20-50 mm / 0.787-1.968 inch pipe red strip

Connectors

FIBRAIN MetroJet connectors are elements that guarantee the tightness of connected microducts. They ensure water resistance and create a well fitted connection which facilitates blowing microcables without having to interrupt the process.



Pneumatic resistance



Push-in tool-free installation



Various diameter of microducts



Microduct protection against water, or dust penetration

Straight connectors

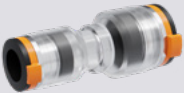


MT-ZDI
Standard straight connector
5-20 mm / 0.196-0.787 inch



MT-ZDB
Direct-buried straight connector 7-20 mm
/ 0.275-0.787 inch

Reduction connector



MT-ZR
Direct-buried reduction connector 5-16 mm
/ 0.196-0.629 inch

Adjustable water-gas connectors



MT-ZG
Water-gas proof connector
5-16 mm / 0.196-0.629 inch

Valve connector



MT-VLE
Connector with pressure valve 10-12 mm / 0.393-0.472 inch

End caps and sealings

FIBRAIN MetroJet end caps and sealings are used to protect the ends of microducts of various sizes against the penetration of water, gases and contaminants from the outside. The patency and cleanliness of the track is extremely important when installing microcables.



Pneumatic resistance



Push-in tool-free installation



Various diameter of microducts



Microduct protection against water or dust penetration

Standard end caps



MT-ZTDI
Microduct end cap 5-20 mm
/ 0.196-0.787 inch

Divisible sealing end caps



MT-ZUD
End cap sealing for microducts 5-10 mm
/ 0.196-0.393 inch

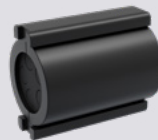


MT-ZUD
End cap sealing for microducts 10-25 mm
/ 0.393-0.984 inch

Pipe sealings



MT-ZTP
PVC end cap 5-16mm
/ 0.196-0.629 inch



MT-UWD
Divisible pipe sealings
25-63 mm / 0.984-2.480 inch
with microducts

FTTH entry 90°



MT-UPS fttth entry 90°
5-12mm / 0.196-0.472 inch

Divisible duct joint and branch closures

FIBRAIN MetroJet divisible closures are designed to protect connectors and the microducts themselves against mechanical and environmental damage. Additionally, they make it possible to upgrade the existing pipelines by dividing routes in different directions.



Protection against mechanical damage



Freedom of installation

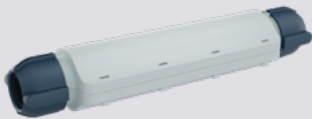


Pipelines extension



Two-part construction

Divisible closures PDC



MT-OPL
Straight closure
40-40mm / 1.574-1.574 inch



MT-OPL
Y closure
40-40-40mm
/ 1.574-1.574-1.574 inch



MT-OPL
Branching closure
40-40-32mm
/ 1.574-1.574-1.259 inch

Telecommunication manhole chambers

Telecommunication manhole chambers of the FIBRAIN MetroJet system are designed to facilitate access to cabling at the connection and distribution point in the ground, while protecting the equipment (fiber optic closures, racks and cables) against mechanical damage.



Reinforced concrete manholes



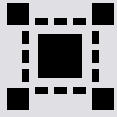
Composite manholes



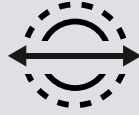
Composite chambers

Fiber optic closures

Fiber optic closures enable easy entrance of microcables and drop cables with the possibility of pre-connectorization, appropriate organization of tubes, splitters, adapter fields and protection of fibers during future operations.



**Max. 288
splices**



**Cable diameter
from 3 to 20 mm
/ 0.118 to 0.787 inch**



**Max. 18 adapter
fields**



**Solid
construction**

Fiber optic closures



FOBP-M1



FOBP-M2



FOBP-T1



FOBP-T2



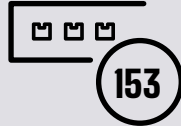
FB-XRA

Outdoor cabinets

Outdoor fiber optics cabinets are designed to connect fiber optic tracts as well as perform branching and connecting end users (customers).



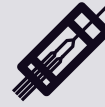
IP54 waterproof protection



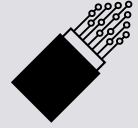
Max. 153 adapters



Lock secure



Possibility of mounting splitters



For main and drop cables

Outdoor cabinets



**FDH-D2
96 splices**



**FDH-E1
13x SC
96 splices**



**FDH-E2
39x SC
120 splices**



**FDH-G1
27x SC
72 splices**



**FDH-G2
48x SC
96 splices**



**FDH-G3
96x SC
96 splices**



**FDH-G4
144x SC
144 splices**

Cable blowing machines

FIBRAIN MetroJet blowing machines are devices aimed at installing a fiber optic microcables/cables over long distances in microducts/HDPE opto pipes via compressed air and drive rollers/belts.



Long-range blowing performance



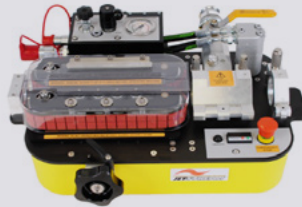
Various types of cable blowing machines



Control of blowing parameters



AirStream
Microcables/cables 2.5-11 mm
/ 0.098-0.433 inch
microducts 5-18 mm
/ 0.196-0.708 inch



JetStream
Microcables/cables 4-20 mm
/ 0.157-0.787 inch
microducts/pipes 12-50 mm
/ 0.472-1.968 inch



Hurricane
Microcables/cables 2.5-16 mm
/ 0.098-0.629 inch
microducts/pipes 5-25 mm
/ 0.196-0.984 inch



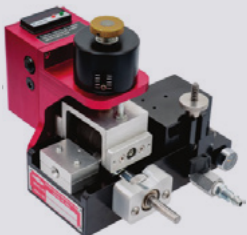
Tornado
Microcables/cables 6-32 mm
/ 0.236-1.259 inch
pipes 25-50 mm
/ 0.984-1.968 inch



AccelAir 2
Microcables/cables 1-3 mm
/ 0.039-0.118 inch
microducts 3-10 mm
/ 0.118-0.393 inch


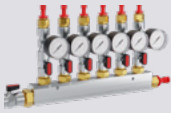









Whisper
Microcables/cables 3-8.5 mm
/ 0.118-0.334 inch
microducts 4-18 mm
/ 0.157-0.708 inch



GentL Air
Microcables/cables 1-3 mm
/ 0.039-0.118 inch
microducts 4-7 mm
/ 0.157-0.275 inch

Accessories

	MT-KAL	Microduct calibrators
	MT-LC-7X10-7X10	Pressurisation kit for microducts 7x10 mm / 7x0.393 inch
	TSO	Warning ground tape
	JT-MS-6	Mid span slitter (1.2-3.3 mm / 0.047-0.129 inch)
	JT-MS-306	Mid Span slit & ring tool (1.2-3.3 mm / 0.047-0.129 inch)
	JT-MS-326	Mid Span slit & ring tool (5-10 mm / 0.196-0.393 inch)
	JT-MS-426	Mid Span slit & ring tool (5.8-12 mm / 0.228-0.472 inch)
	MT-TC	Microduct scoring tool
	MT-TC1	Large fiber duct cutter
	MT-TC3	Ratcheting duct and cable slitter
	MT-LB	Lubricant

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