

Air Blown Total Solution for Fiber Optic

MICRODUCT



flexpad
S.A. de C.V.



About KNET

Since its establishment in 2002, KNET has been constantly contributing to the development of telecommunications technologies in order to create a better life for people. Specializing in piping solution for communication and civil engineering, KNET feels the responsibility for supplying products of the best quality only. Our vision is “to connect the whole world with our product, let people all around the globe experience all the benefits of the future technologies and never let our customers down by constant improvement and innovation.” Our mission is “to satisfy our customers with high quality and longevity of every single product we supply with deep respect to our nature and humans.”

Considering global environmental issues and the problem of scarcity of natural resources, KNET is very concerned about our future and sustainable development. Thus, we choose the best solution to bring happiness to people and at the same time stay environmentally friendly: FTTx solution for fiber optic deployment by air blowing can make it real. KNET is trying to improve and adapt Air-Blown Total Solution pursuing one goal – to build Broadband Network Society of the Future. KNET played an important role in the development of FTTx technologies and contributed a lot to the projects of U-City and Smart Grid in Korea providing Air-Blown Total Solution for fiber optic deployment in microducts. Besides that, KNET has proven itself as a reliable business partner with high quality products in the global arena as well, exporting to Europe, Asia, Middle East, Oceania, Africa, North and South Americas.

KNET can help implement the project from the very first step of network designing to the installation phase, providing all the necessary technical training, service and maintenance. Air-Blown Total Solution with KNET Microducts will guarantee the best performance even in the most severe conditions, and it will significantly reduce CaPEX and OpEX in comparison with conventional fiber optic deployment techniques.

We want to state once again, that KNET does care about our environment, quality of life and people’s happiness and considering this, we will do our best to meet all your needs and wants by continuous innovation and change. With KNET products you will open a better world for yourself and for the future generation.



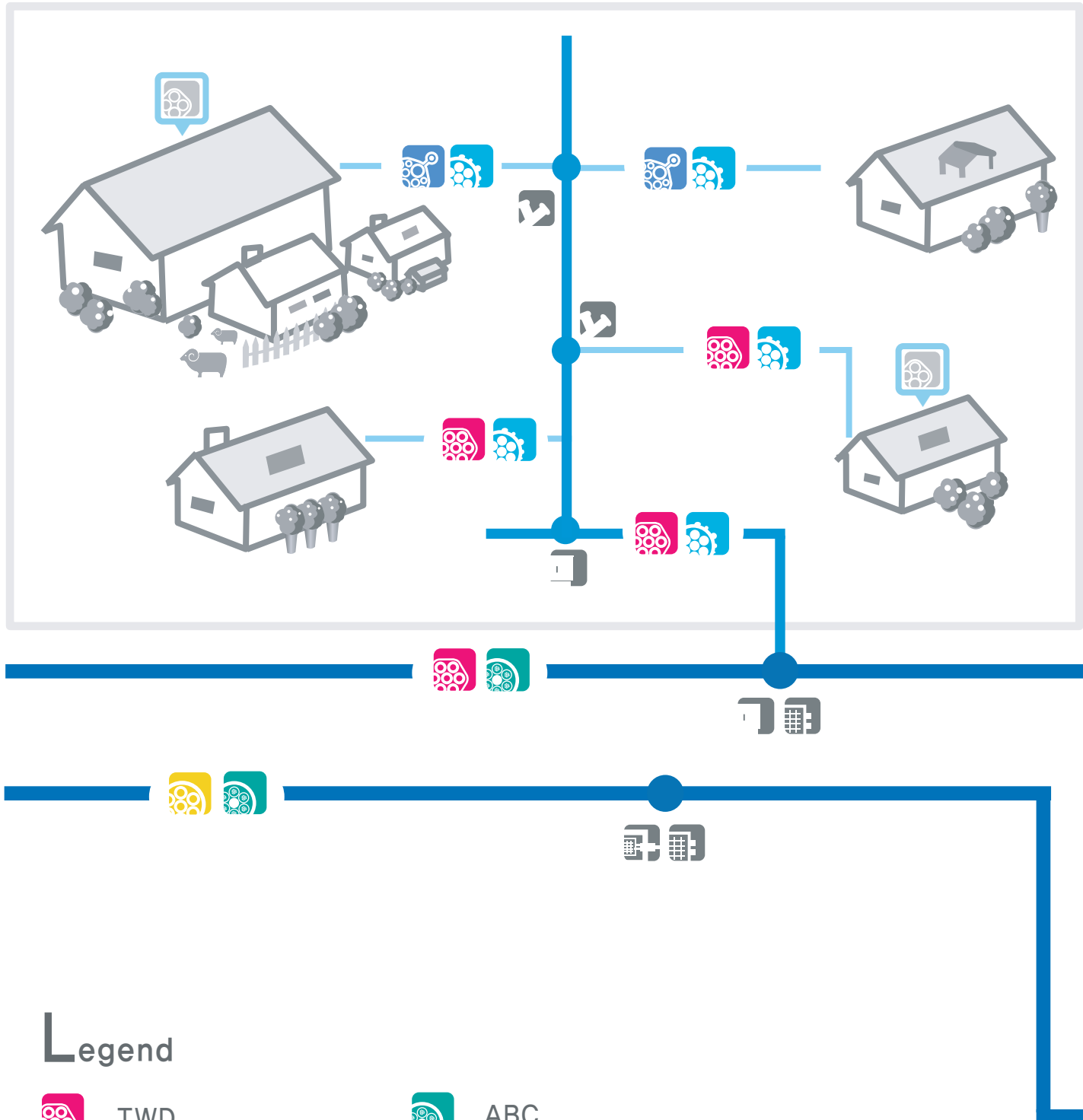


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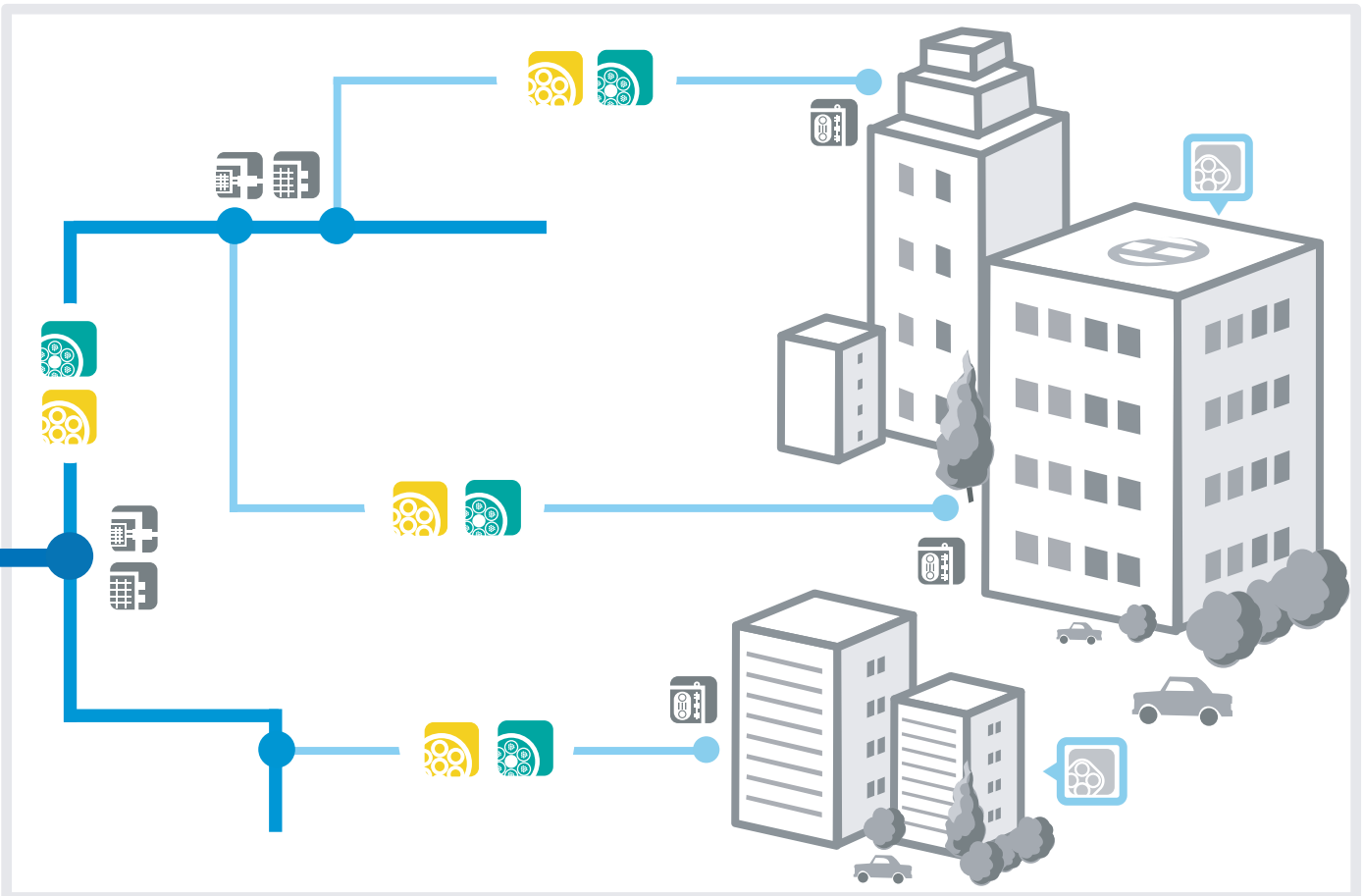
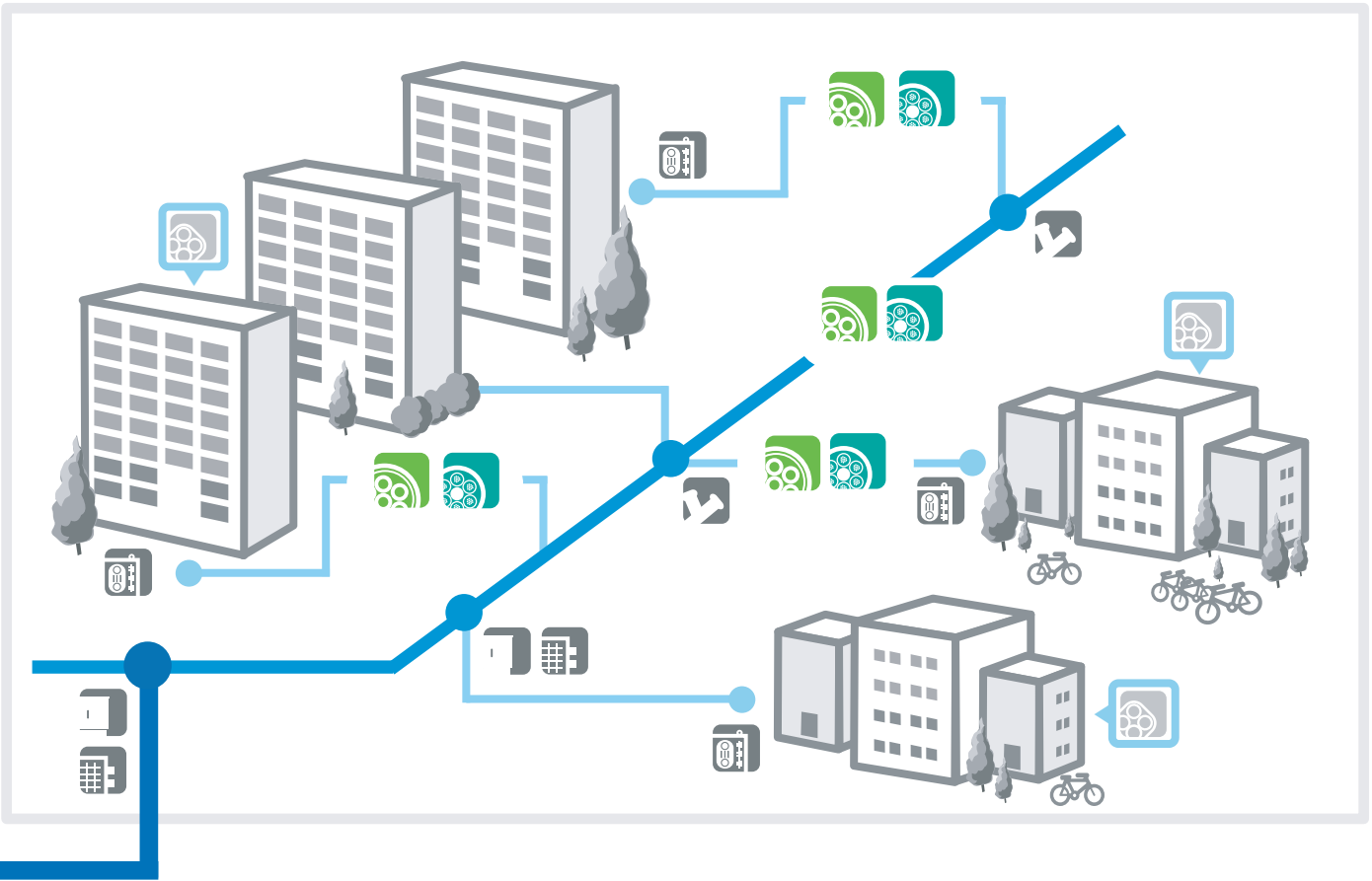


Application Matrix



Legend

	TWD		ABC
	DB		Tube branch
	DI		Cabinet
	LSZH		Handhole
	ABF		Closure
	Aerial		Wall-mount





Thick walled microducts are designed for direct burial and have superior blowing characteristics. Thanks to the sufficient thickness of the wall, it exempts this type of microduct from additional protective ducts. Thick walled microducts can be branched off easily and the primary tube can be directly buried as a single microduct.

Also, this solution makes network distribution possible with a simple connector. Any size and color are available on request.



■ Features

- Robust, highly resistant to crushing
- Simple line of connectivity products
- Designed for slots and micro-trenches
- Nominal sheath thickness is 1.0 mm

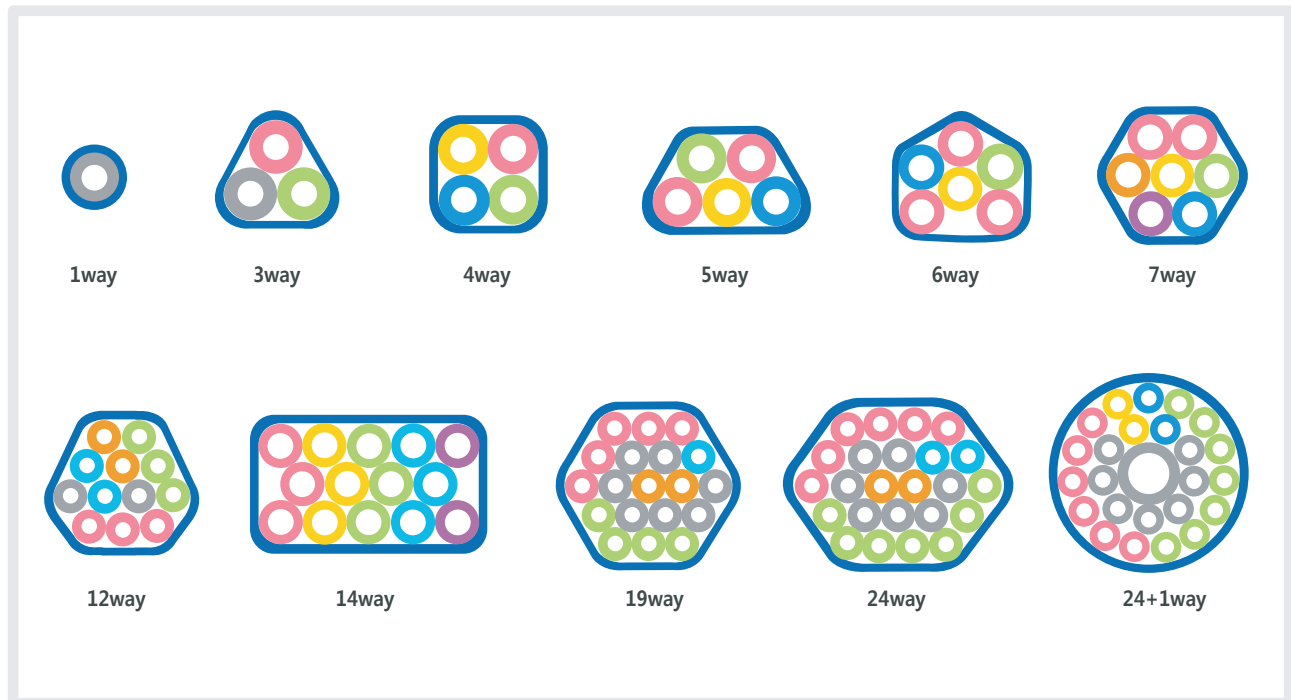
■ Benefits

- Can be used in any environment
- Ducts are future proof
- Requires less technical skills and time in the field to make connections



■ Multi type

7/3.5mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1 way	9.0	500	52	110	1000	2000	450*880	121	104
3way	15.1 X16.0	1,240	127	190	2000	2000	500*1440	359	32
4way	16.0x16.0	1,580	161	200	2000	2000	550*1400	395	33
5way	15.1X23.0	1,910	195	190	2000	2000	720*1400	465	25
6way	19.5X21.1	2,300	228	240	2000	2000	720*1500	540	22
7way	21.1X23.0	2,510	257	260	2000	2000	720*1580	610	22
12way	27.2X30.0	4,050	414	330	2000	2000	1100*1640	935	14
14way	21.1x37.0	4,800	485	250	2000	2000	1100*1670	1120	14
19way	33.2X37.0	6,130	626	400	2000	2000	1100*2050	1460	11
24way	33.2X44.0	7,600	776	400	2000	1000	1100*1660	930	14
24+1way	43.6X43.6	8,440	862	530	2000	1000	1100*1950	1067	12



12/8mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	14.0	970	99	170	2,000	2000	450*1350	270	36
3way	24.4x26.0	2,470	253	300	2,000	2000	650*1850	674	18
4way	26.0x26.0	3,170	324	320	2,000	2000	1100*1580	750	14
5way	24.4x38.0	3,870	395	300	2,000	2000	1100*1800	920	13
6way	32.0x34.8	4,530	463	390	2,000	2000	1100*1950	1080	12



14/10mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	16.0	1,140	117	200	2,000	2000	450*1480	340	32
3way	28.1x30.0	2,940	301	340	2,000	2000	1100*1800	782	12
4way	30.0x30.0	3,780	386	360	2,000	2000	1100*1800	900	13
5way	28.1x44.0	4,610	471	340	2,000	2000	1100*2070	1110	11
6way	37.0x40.2	5,400	552	450	2,000	1000	1100*1730	695	13
7way	40.2x44.0	6,140	627	490	2,000	1000	1100*1830	790	12

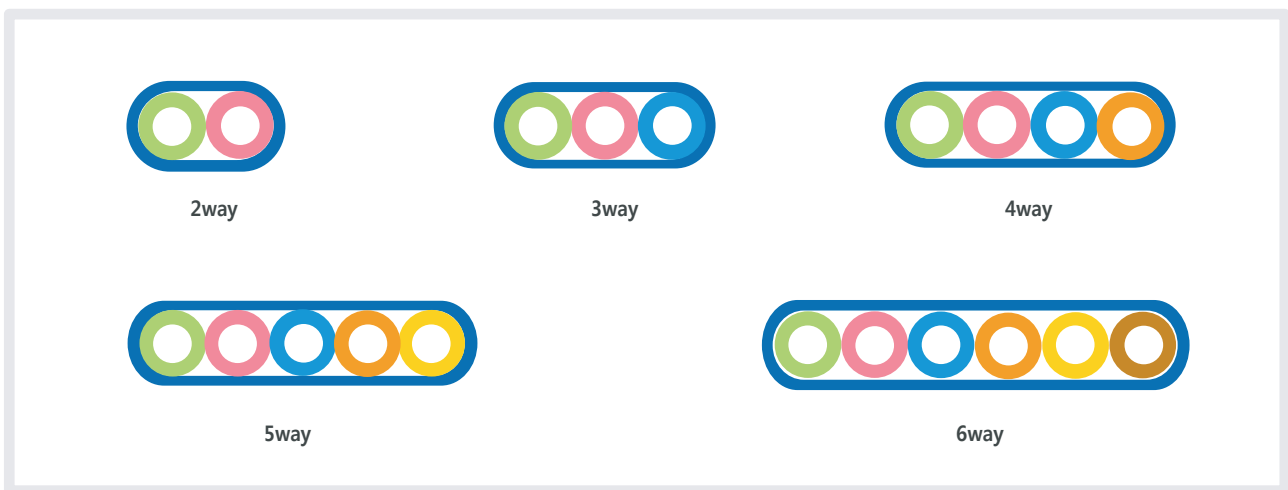
■ Flat type

7/3.5mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
2way	9.0x16.0	910	93	110	2,000	2000	480*1070	192	88
3way	9.0x23.0	1,310	134	110	2,000	2000	550*1220	305	37
4way	9.0x30.0	1,710	175	110	2,000	2000	550*1430	420	32
5way	9.0x37.0	2,110	215	110	2,000	2000	550*1580	520	29
6way	9.0x44.0	2,510	256	110	2,000	2000	720*1480	585	24
7way	9.0x51.0	2,900	297	110	2,000	2000	720*1590	675	22
12way	16.0x44.0	4,200	434	190	2,000	2000	1100*1620	1000	14

12/8mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
2way	14.0x26.0	1,780	182	170	2,000	2000	550*1660	470	28
3way	14.0x38.0	2,590	265	170	2,000	2000	720*1700	635	21
4way	14.0x50.0	3,400	347	170	2,000	2000	1100*1570	785	14
5way	14.0x62.0	4,210	430	170	2,000	2000	1100*1720	960	13
6way	14.0x74.0	5,010	512	170	2,000	2000	1100*1870	1140	12
7way	14.0x86.0	5,830	595	170	2,000	2000	1100*2020	1330	11

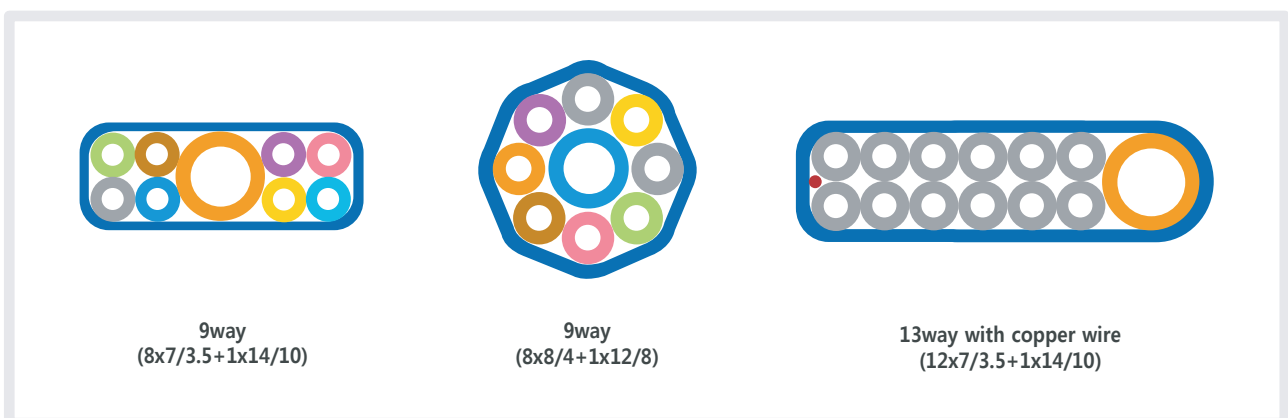
14/10mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
2way	16.0x30.0	2,110	216	200	2,000	2000	720*1640	530	21
3way	16.0x44.0	3,070	314	200	2,000	2000	1100*1570	720	14
4way	16.0x58.0	4,030	412	200	2,000	2000	1100*1790	940	13
5way	16.0x72.0	5,000	511	200	2,000	2000	1100*1980	1160	12
6way	16.0x86.0	5,960	609	200	2,000	1000	720*1950	755	18
7way	16.0x100.0	6,920	707	200	2,000	1000	1100*1690	820	14

16/12mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
2way	18.0x34.0	2,450	250	220	2,000	2000	720*1640	530	21
3way	18.0x50.0	3,550	363	220	2,000	2000	1100*1570	866	12
4way	18.0x66.0	4,670	477	220	2,000	2000	1100*1790	1204	11
5way	18.0x82.0	5,790	591	220	2,000	1000	1100*1980	761	13
6way	18.0x98.0	6,900	705	220	2,000	1000	720*1950	905	16



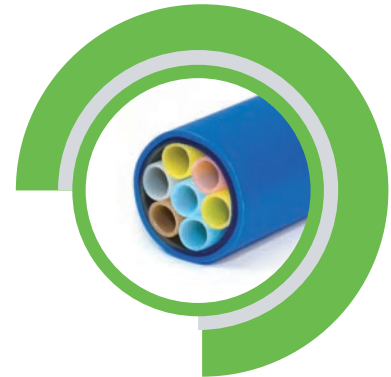
■ Combination type

Size	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
9way 8x7/3.5+1x14/10	42.4x15.6	3,600	373	510x190	2,500	2000	1100*1570	870	14
9way 8x8/4+1x12/8	30.5x28.9	4,100	417	370x350	2,500	2000	1100*1740	995	13
13way 12x7/3.5+1x14/10	57.0x 15.6	5,100	516	680x190	2,500	2000	1100*1800	1200	13

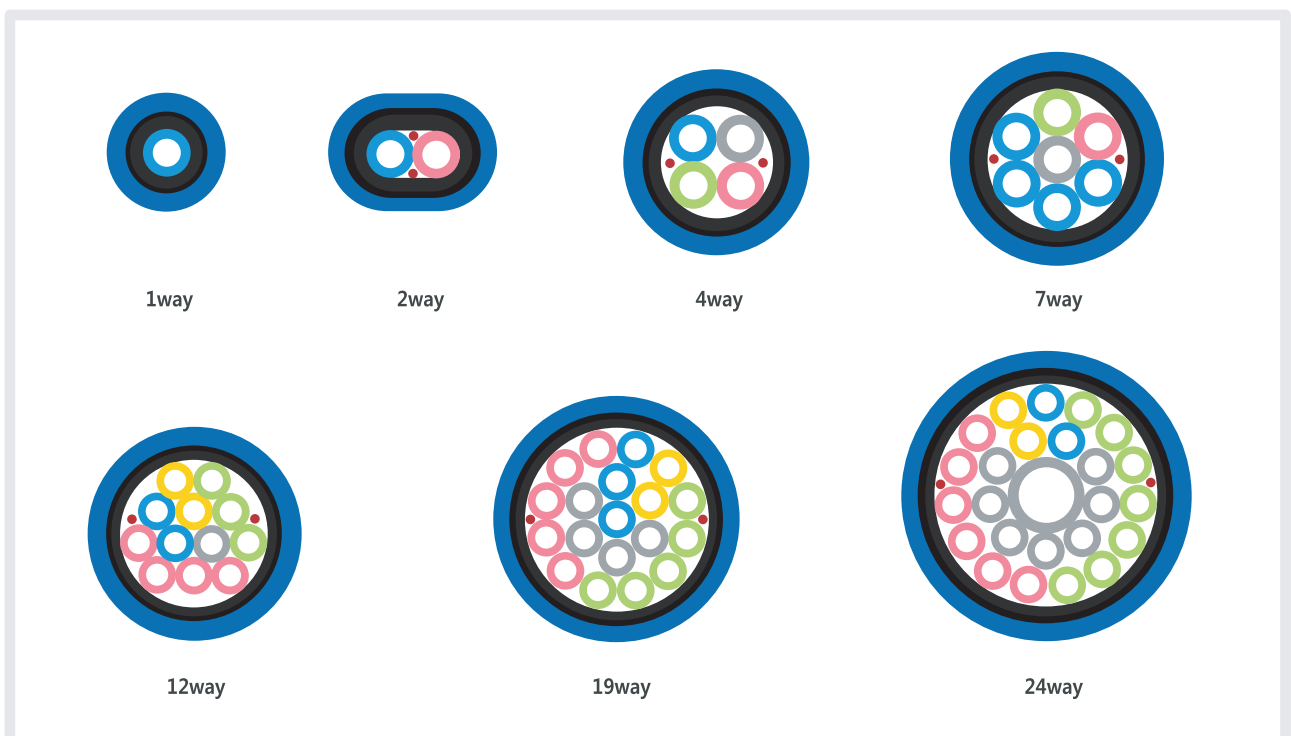




Direct Buried microducts are suitable for fiber blowing with low friction inside the ducts. The microduct is surrounded by a moisture-barrier made of metallic tape and a flexible sheath made of HDPE. The outer sheath is made of rugged PE, providing excellent protection from the outer physical environment. Thanks to its characteristics, potential damages by crushing, external impact, etc. can be prevented.



5/3.5mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	12.4	1,100	112	150	2000	2000	455*1100	250	80
2way	12.4x17.4	1,570	160	150	2000	2000	550*1330	410	34
4way	19.5	2,210	227	230	2000	2000	720*1400	550	25
7way	22.4	2,830	290	270	2000	2000	720*1600	710	21
12way	28.3	4,160	425	340	2000	2000	1100*1650	1000	14
19way	32.3	5,330	543	390	2000	2000	1100*1850	1270	12
24way	37.9	6,760	691	450	2000	2000	1100*2200	1670	10



10/8mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	17.4	1,860	189	210	2000	2000	550*1450	480	32
2way	17.4x27.4	2,870	292	210	2000	2000	720*1680	725	21
4way	32.9	4,960	506	400	2000	2000	1100*1880	1200	12
7way	38.8	6,550	669	470	2000	2000	1100*2220	1630	10

12/10mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	19.4	2,150	218	240	2000	2000	720*1450	550	24
2way	19.4x31.4	3,360	342	240	2000	2000	720*1900	850	18
4way	37.8	5,850	598	460	2000	2000	1100*2170	1470	10
7way	44.8	7,790	795	540	2000	1000	1100*1900	1000	12

■ Hybrid DB

Hybrid DB microducts consist of tube with a smooth or ribbed inner surface that enables an air blown installation of micro cables. The microduct is sheathed with two layers without moisture barrier. It provides excellent protection from the physical environment withstanding significant amount of pressure by pulling, and it is easy to branch off for network expansion.

10/8mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
2way	27.4*17.4	2,700	273	210	2,200	2000	550*1570	400	21
4way	31.6	4,000	410	380	2,200	2000	720*1740	607	12
7way	38.2	5,900	599	460	2,200	2000	1100*1700	892	10

12/10mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
4way	36.4	4,870	490	440	2,200	2000	1100*1610	970	14
7way	44.2	7,000	712	540	2,200	1000	1100*1870	1270	12

DI (Direct Installation) microducts with low friction internal coating are suitable for fiber blowing. The microduct is surrounded by a moisture-barrier layer made of metallic tape and a flexible sheath of black HDPE. DI ducts are designed for installation inside existing pipes or sub-ducts.

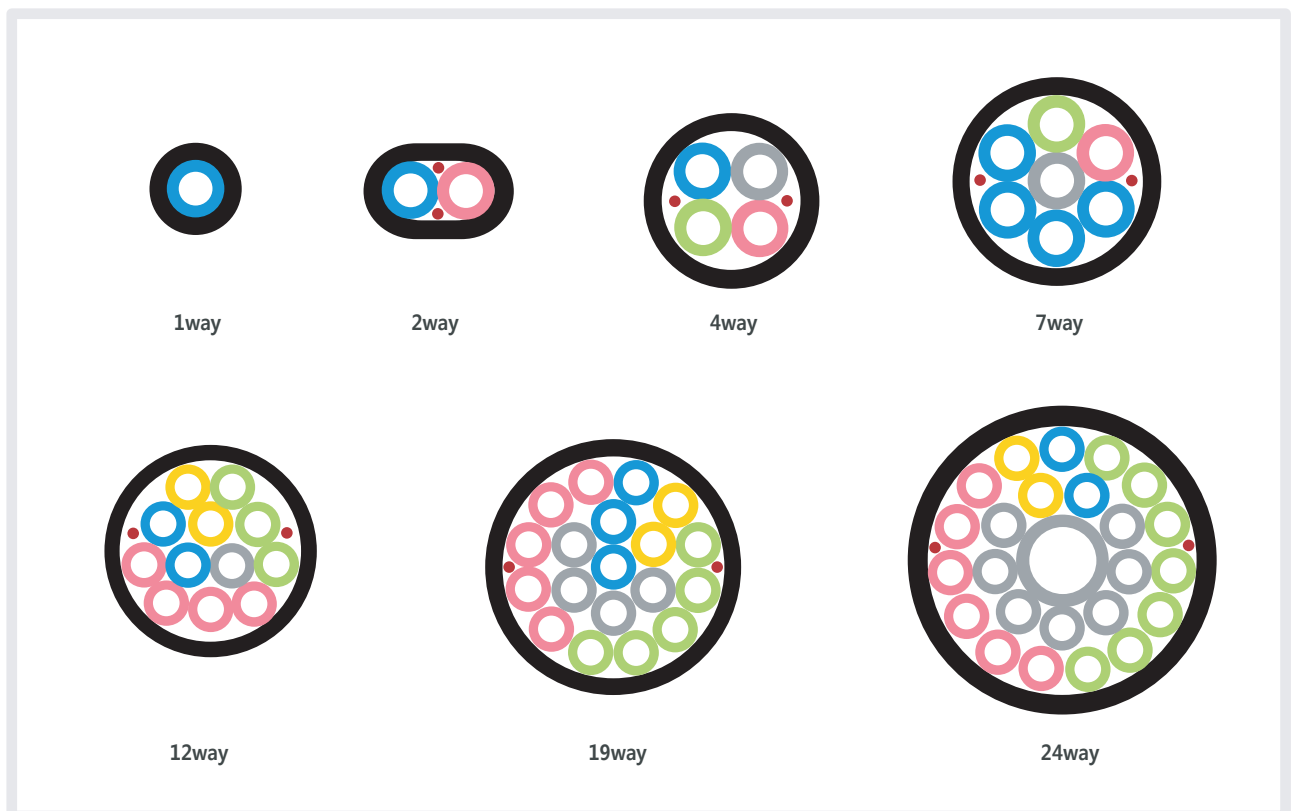


5/3.5mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	8.4	490	51	110	1000	2000	360*900	115	130
2way	8.4 X 13.4	770	79	100	1000	2000	480*1050	180	88
4way	15.5	1,190	122	190	1000	2000	550*1250	305	37
7way	18.4	1,640	168	220	1000	2000	550*1550	440	30
12way	23.7	2,420	247	280	1000	2000	720*1700	630	21
19way	27.7	3,310	338	330	1000	2000	1100*1600	820	14
24way	33.3	4,370	446	400	1000	2000	1100*1910	1100	12

8/6mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	11.4	800	81	140	1000	2000	430*1050	180	88
2way	11.4x19.4	1,300	131	140	1000	2000	550*1290	330	36
4way	23.1	2,200	224	280	1000	2000	720*1650	580	21
7way	27.8	3,100	318	330	1000	2000	1100*1600	780	14
12way	36.2	4,700	477	430	1000	2000	1100*2060	1180	11

10/8mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	13.4	960	98	170	1000	2000	480*1140	220	80
2way	13.4 X 23.4	1,590	163	170	1000	2000	550*1570	440	29
4way	27.9	2,730	279	340	1000	2000	1100*1600	700	14
7way	33.8	3,900	398	410	1000	2000	1100*1920	990	12

12/10mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	15.4	1,130	116	190	1000	2000	550*1250	295	37
2way	15.4 X 27.4	1,900	194	190	1000	2000	720*1560	510	22
4way	32.8	3,270	334	400	1000	2000	1100*1870	850	12
7way	39.8	4,700	480	480	1000	1000	1100*1730	650	13

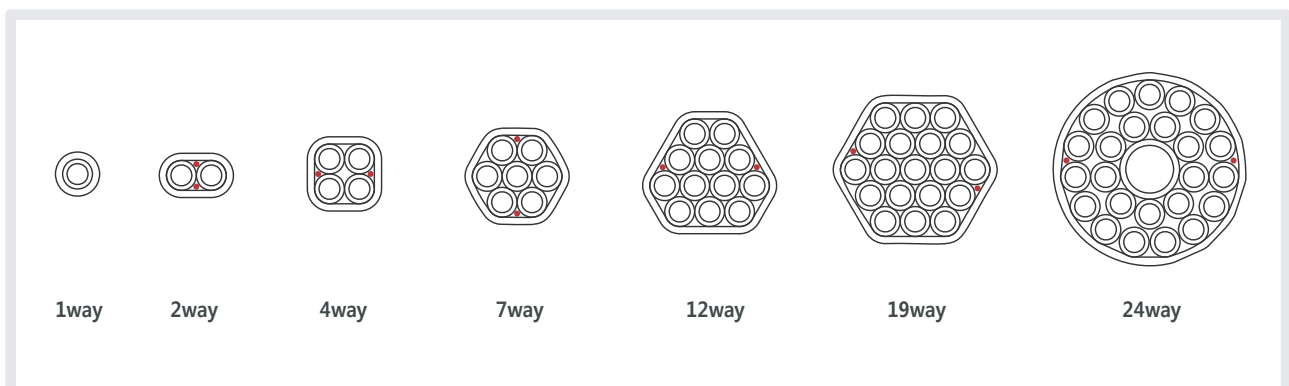


LSZH microducts with low friction performance are suitable for fiber blowing. The LSZH protected microduct consist of tubes surrounded by a sheath made of LSZH material, providing excellent performance when exposed to fire. The light weight, metal free and flexible LSZH sheath makes this microduct perfect for indoor installation.



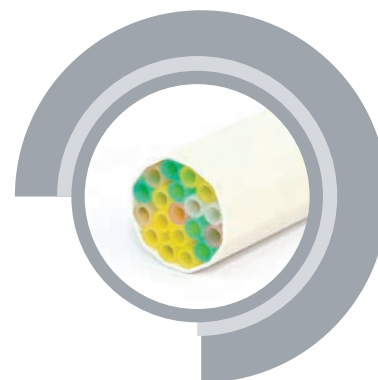
5/3.5mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	7.4	230	48	90	700	2000	450*735	105	192
2way	7.4 x 12.4	390	80	90	700	2000	430*980	175	96
4way	12.4 x 14.5	610	125	150	700	2000	480*1150	275	40
7way	16.1 x 17.4	890	183	190	700	2000	550*1440	465	32
12way	20.4 x 22.4	1,360	277	240	700	2000	720*1570	675	22
19way	26.1 x 26.7	1,950	399	310	700	2000	1100*1540	930	15
24way	32	2,610	533	380	700	2000	1100*1840	1250	12

12/10mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	15.4	590	121	190	700	2000	550*1185	300	40
2way	15.4 x 27.4	1,030	211	190	700	2000	720*1510	535	22
4way	32.8	1,700	348	400	700	2000	1100*1620	840	14
7way	39.8	2,610	533	480	700	1000	1100*1620	680	14



Note: sheath thickness: 1.2mm

The Hybrid LSZH is surrounded with a sheath of a flame retardant, low smoke zero halogen material, providing excellent performance when exposed to fire. The primary tube is made of HDPE and has suitable low friction characteristics on the inside surface.



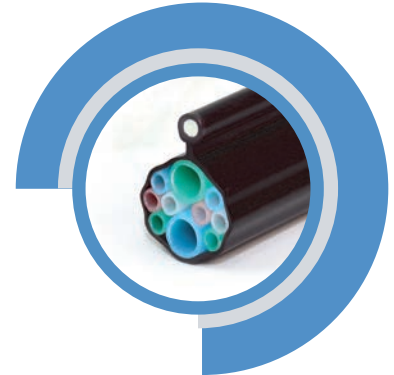
5/3.5mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	7.0	180	37	90	1000	2000	480*720	84	128
2way	12 x 7	300	62	90	1000	2000	480*910	145	104
4way	12 x 12	470	96	150	1000	2000	480*1040	223	88
7way	17 x 15.7	680	139	190	1000	1000	480*1040	160	88
12way	22 x 20	1020	209	240	1000	2000	720*1580	548	22
19way	27 x 24.4	1450	297	300	1000	2000	720*1900	784	18
24+1way	31.8	1940	397	390	1000	2000	1100*1950	994	12

10/8mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	12.4	430	89	150	1000	2000	480*1060	198	88
2way	22 x 12	730	151	150	1000	2000	400*1600	422	28
4way	22 x 22	1170	240	270	1000	2000	600*1650	610	21
7way	32.4 x 29.7	1740	356	360	1000	2000	1000*1850	902	12

12/10mm	OD(mm)	Max. Tensile(N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)	Length/drum (m)	Drum size(mm)	Gross weight(kg)	Number of drums in 40'
1way	14.4	510	106	180	1000	1000	500*920	126	104
2way	26.4 x 14.4	880	181	180	1000	2000	600*1600	492	21
4way	26.4 x 26.4	1410	289	320	1000	2000	1000*1680	734	14
7way	38.4 x 35.2	2100	429	430	1000	2000	1100*2200	1148	10

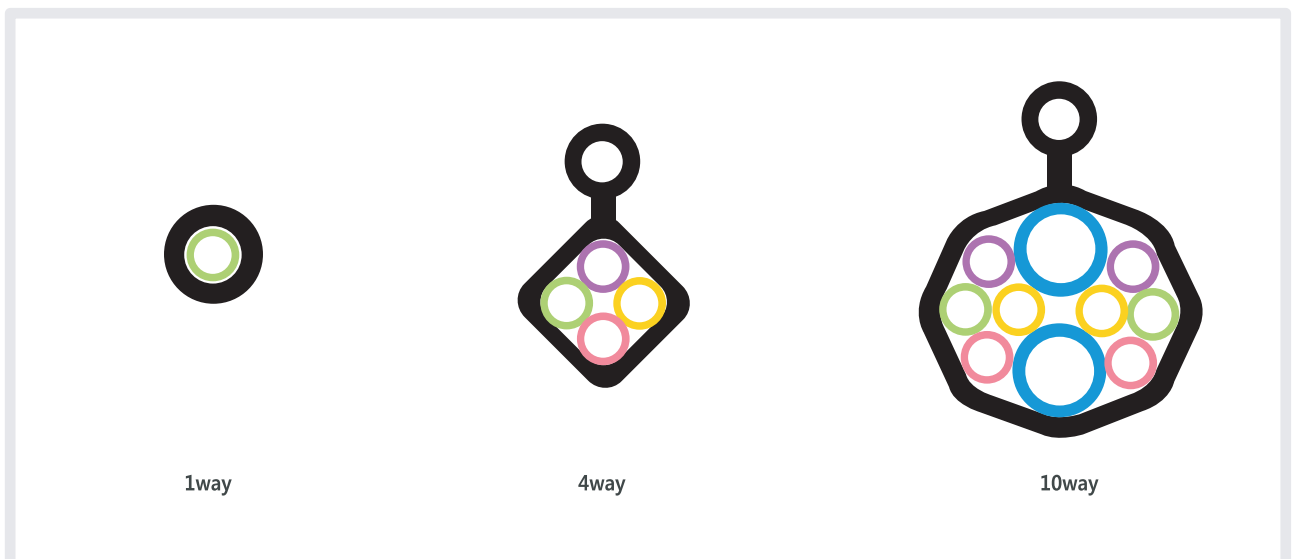


Aerial microducts have been developed to facilitate the use of optical fiber subscriber drop cables. Aerial ducts can withstand their stringing tension before breaking and resist serious overloads due to unfavorable conditions.



- High UV resistance for outdoor use
- Figure-8 design keeps the strength member and tube bundle separate from each other
- Two types of strength members are available: metal and non-metal
- Tube dimension (OD/ID) 5/3.5, 8/6, 10/8, 12/10 mm

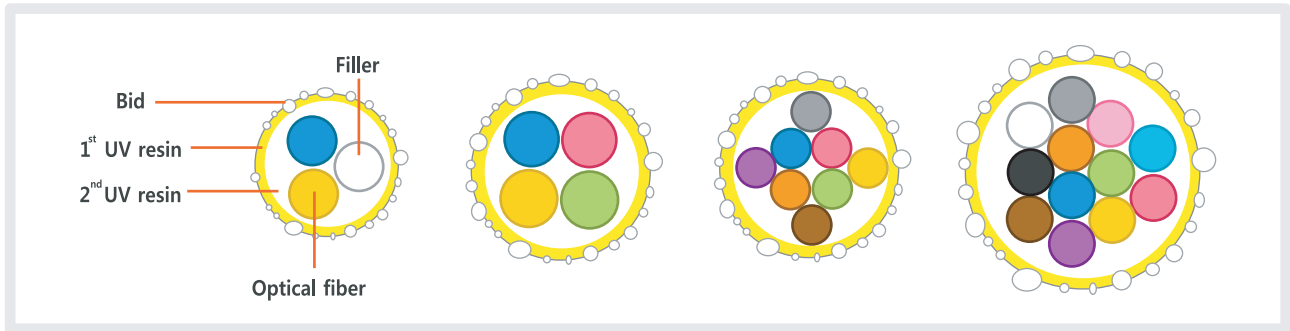
Item	Nominal Outer Diameter (mm)	Nominal Weight (kg/km)
10 Tubes Cable	27 x 36	280
4 Tube Cable	12 x 24	120
1 Tube Cable	8	35





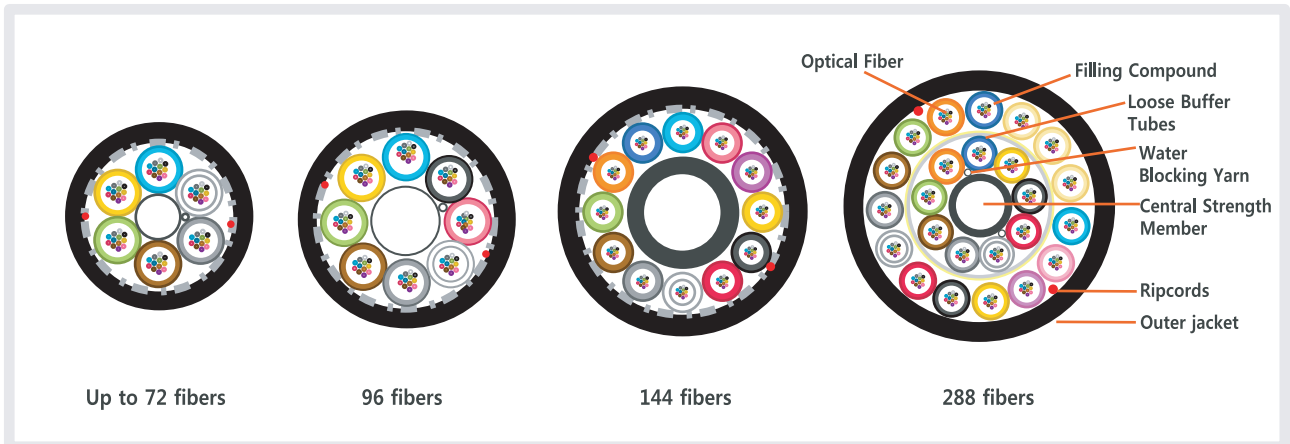
Air Blown Fiber

- Single-mode, Multimode 50/125, Multimode 62.5/125
- Hybrid (SMF + MMF) and special fibers, including fibers with high bending performance
- Other configurations are also available



Units	2 fiber	4 fiber	8 fiber	12 fiber
Diameter	1.02+0.06mm	1.02+0.06mm	1.40+0.05mm	1.60+0.10mm

Air Blown Cable

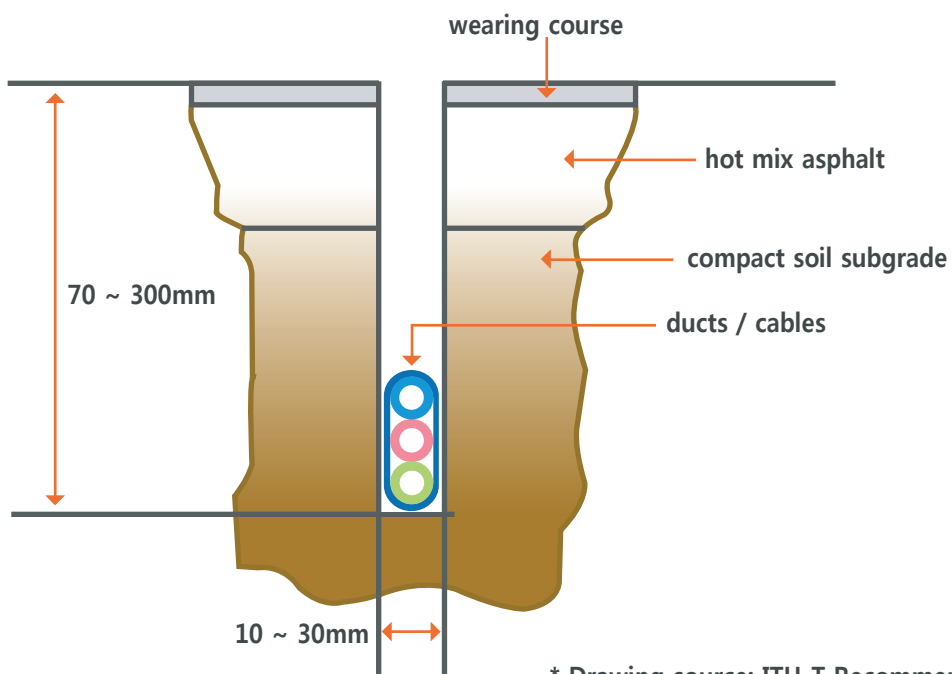
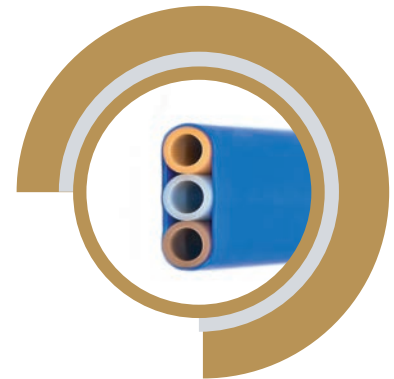


Items		Specifications			
Fiber counts		72	96	144	288
Max. Outer diameter (mm)		6.0	6.8	7.9	10.9
Cable weight (kg/km)		30	40	50	90
Min. bending radius	Under load	120	140	160	260
Tensile Loading (N)	Under load	550	750	950	2000
Applicable microduct inner diameter (mm)	Over	8	10	10	13

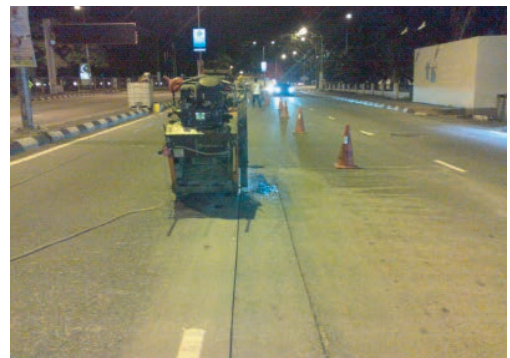
Mini trenching is commonly used way of installing microduct underground. Mechanical trenchers cut slots 150 to 400 mm deep and 70 to 150 mm wide, using a Tungsten Carbide tipped wheel. The mini-trench is backfilled by pouring concrete with suitable foaming additives. The trenching method is fast and inexpensive.



Micro trenching is the most cost effective way to install optic fiber/cable underground. Mechanical trenchers cut small slots 70 to 300 mm deep and 10 to 30 mm wide, either using a Wet Diamond Cutter or Dry Tungsten Carbide Cutter, especially customized for trenching.



* Drawing source: ITU-T Recommendation L.48



Street Cabinet



The outdoor street cabinet is designed to provide a local convergence point in the outside plant environment, housing optical splitters. Intuitive fiber management is a key element of the outdoor street cabinet. Each outdoor street cabinet features a self-locking function, which houses the distribution field and provides management of all jumper cordage installed into the outdoor street cabinet.

■ FEATURES

- Modular distribution platform allows for incremental deployment costs and immediate cost savings
- Small size is unobtrusive in residential deployments
- Enhanced fiber management provides simplified routing and termination
- Dual-door entry allows easy access to distribution and fiber management fields
- Flexible pad and pole mounting options for deployment in convenient locations

Handhole



Handholes allow access to underground cables and telecom facilities and a variety of other functions. Underground PE handholes include a steel cover and locking system.

Dimension: 600 mm x 600 mm

■ FEATURES

- Strong against external shocks – BS EN 124
- Light weight, cost-effective transportation and installation
- Robust, high strength, impact resistance and side-load stability
- Exceptional resistance to weathering, freeze/ thaw cycles and chemicals

Tube Distribution Closure

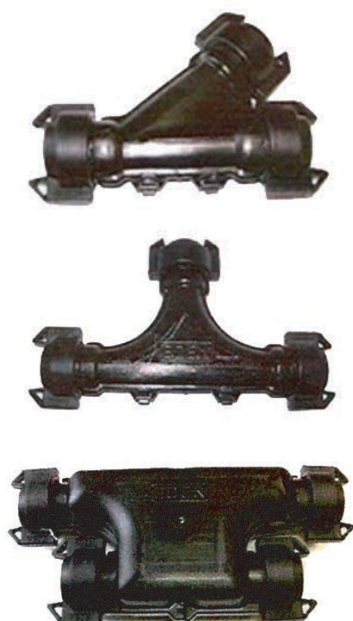


Water proof closures are designed for blown fiber tube cable connection applications. A microduct can be easily connected and distributed from the closure with the use of the connecting side ports. It is a direct bury sealed closure designed for intercepting a microduct assembly to allow multiple spur-offs to smaller blown fiber tube cables or ducts.

■ FEATURES

- Robust IP68 construction ensures suitability for direct bury applications
- Can accommodate an in-line microduct up to 45 mm in outer diameter
- Can be re-entered
- Can be retro-fitted to existing tube bundles/ sub ducts

Branch Unit

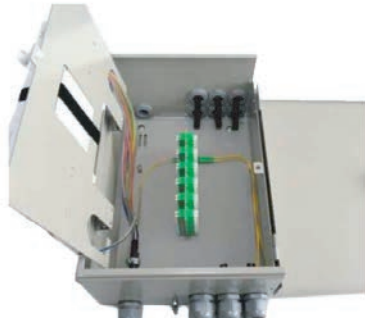


Duct branch closures are intended for fast and easy branching of microduct or air blown cables. The typical application is to branch out ducts to connect each home. Closures minimize installation costs by removing the need for time consuming fiber splicing in various branch points.

Type	Size
In - line	32mm, 40mm, 50mm
T - closure	25mm, 40mm, 50mm
Y - closure	25mm, 40mm, 50mm, 60mm
H - closure	32mm, 40mm, 50mm



Wall Mount



The Wall Mount is designed to terminate, splice and interconnect fiber optic cable in an indoor environment, and it allows the connection of several operators to a shared internal building network. Internal cabling is connected to a customer module (more than one can be used for large buildings) ready for patching across to operator modules (more than one can be located beneath the customer modules).

Parameter		Value				
		12C	24C	36C	48C	96C
General Dimension	Type	Optical Distribution Box				
	LxWxH(mm)	310x200x90		330x210x140		370x260x170
Cable	No.of Input(Top and bottom each)	1		1		1
	No.of Output(Top and bottom each)	2		4		6
Tray	Type	112C per 1 tray		112C per 1 tray		124C per 1 tray
Tray	EA	1	2	3	4	4

Rack Mount



The Rack Mount provides efficient cable connections between outside plant cables, equipment in the building and communication facilities. ODF integrates fiber splicing, storage, and cable connections together in a single unit. The Rack Mount achieves densities of terminations. The wide range of features and options are designed for your networks' growing needs. Frames are equipped with adjustable mounting brackets.

Parameter		Value
General	Dimension (WxDxH)	435 x 310 x 44 mm
	Unit	1 U
Cable	Cable Diameter(mm)	Φ 8-32
Distribution Module	No. of Splice Tray	1
	Module Capacity	12 fibers

Customer Lead-In

The Customer Lead-In Unit is designed for use in residential and small business premises to manage the entry of cables into buildings. There are 3 types of CLI: 1) a single blown fiber tube cable entry; 2) a single optical cable entry up to a diameter of 13 mm; 3) a large blown fiber tube cable entry (up to 24 blown fiber tube cable) which also accommodates optical cables up to a diameter of 32 mm.



Maximum capacity	Small unit	Large unit	
Maximum no. of cables/tubes	1	1	
Maximum cable diameter(mm)	13	32	
Required space envelope(mm)			Packed weight (kg)
Single blown fibre tube cable	Internal unit	(h)65x (w)26 x (d)15	0.5
	External unit	(h)180 x (w)36 x (d)36	
Optical cable (up to 13mm OD)	Internal unit	(h)180 x (w)36 x (d)36	0.5
	External unit	(h)180 x (w)36 x (d)36	
24 way blown fibre tube cable (optical cable up to 32mm OD)	Internal unit	(h)180 x (w)36 x (d)36	0.7
	External unit	(h)180 x (w)36 x (d)36	

Optical Outlet

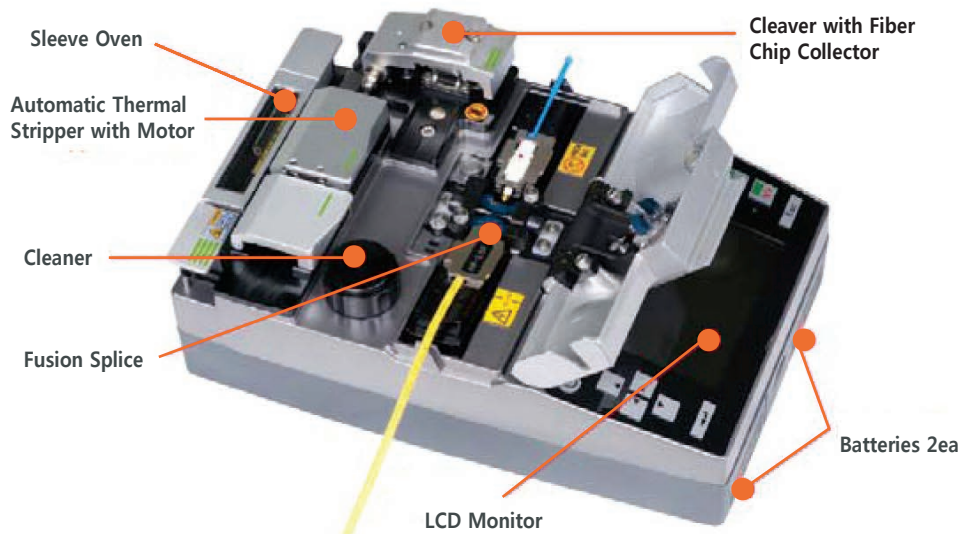
The optical outlet is designed for use in residential and business applications for the termination of up to 2 fibers. The wall box enables the installation of a small cable to be spliced to up to 2 SC pigtails (PC or APC), which connect to shuttered adapters at the base of the unit. The unit can be quickly installed within an office, house, or communication room environment.



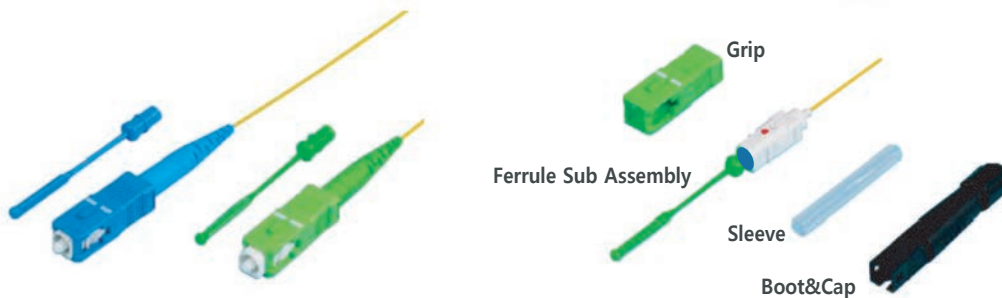
Number of input cable positions	3
Maximum input cable diameter (mm)	6
Maximum capacity	2 fibres
Maximum no. of customer feeds	2 patchcords
Required space envelope (mm)	(l)100 x (w)80 x (d)24
Operating temperature	-40°C to +70°C (5% to 95% RH)
Packing dimension (mm)	(1)100 x (w)90 x (d)35
Weight (kg)	Packed weight: 0.080 Net weight: 0.073

Swift Fusion Splicer

Clad Alignment Fusion Splicer Swift-F1 is the clad alignment multi-tasking fusion splicer which performs 5 major operational functions systematically. The fusion splicer performs at maximum when it is used together with Swift field-installable splice – on connectors.



Swift Connector



■ No need for

- Epoxy, polishing and matching gel in the field
- Preparing optical cable of the length of a pigtail and patch cord for extra optical fiber cables
- Space in contact closure clusters for storing the sleeves
- Knowledge of high fiber optic properties
- Special work skills
- Special equipment (i.e. angle cleaver) for APC connector work

■ Benefits

- Ability to fusion splice Swift connector directly
- Protects fusion splicing point inside of the Swift connector body
- Ability to measure the fiber optic properties from the end of the optical cable in the same fashion as ordinary fusion splicing
- Enables cluster operations to meet the customer's optimal demand
- Saves capital expense and work time
- No need of special FTTx installation training of backbone network
- Ability to implement insertion loss and return loss



Straight Connector



A connector is a clip-in duct connector used for jointing two microducts. The installation is simple and can be carried out in a few seconds. The connector is transparent to allow a visual inspection of a micro cable passing through. To enable cable blowing, the connector is designed to operate at 15 bars without leakage.

- **Size:** 5/3.5mm, 7/3.5mm, 7/5.5mm, 8/6mm, 10/8mm, 12/10mm, 14/10mm, 14/12mm, 16/12mm

Endcap



End caps are used to tighten the ends of unused primary tubes to avoid water and dust from emerging into ducts. They are also used in combination with the valve end stop connector during installation of microducts into existing cable ducts.

- **Size:** 5mm, 7mm, 8mm, 10mm, 12mm, 14mm, 16mm

Reducing Connector



Push-fit reducing connectors make microduct splicing fast and easy. Simply push the microduct into the center of the connector. No tools are required. The reducers can be connected and disconnected 10 times and still maintain the high performance requirements for air blown installation systems.

- **Size:** Outer diameter 5mm ~ 16mm

Gas block



Gas Block Connectors are used when it is necessary to block moisture (avoiding condensation) or to block gas passing freely into different microduct sections. This could be necessary when changing from outdoor to indoor installation, for example. The connector works in a similar way to the standard connector when jointing microducts but has a compressible rubber gasket that is sealed after the cable has been installed.

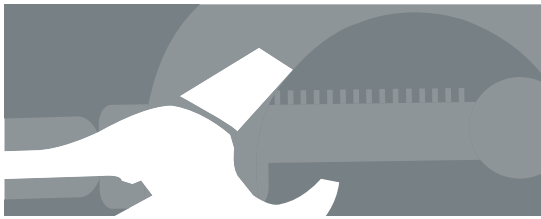
- **Size:** Outer diameter 5mm ~ 16mm

DBL Connector / Endcap



DBL straight connectors are suitable for the jointing of direct buried thick-walled microducts. DBL End caps are designed for sealing the end of direct buried thick-walled microducts. Both items are permanently jointed.

- **Size:** 7/3.5mm, 10/6mm, 12/8mm, 14/10mm



For stripping techniques, KNET advise the use of the following tools. Other tools may not be as effective or cost effective. It is also recommended that a measuring tape and marker pens (black and white) be included, and while these are typically found in most installers' toolboxes they can be purchased from KNET.

Duct cutter

Duct cutter is used when cutting sheathed microduct.



Round cutter

Round cutter is used when penetrating the sheath of microduct while keeping the inner tube safe inside.



Slitter

Slitter is used when peeling off sheath of microduct vertically or horizontally



Tube cutter

Tube cutter is used when making a clean cut on tubes.





MicroJet

The MICROJET® PRM-196 is designed for the installation of fiber units micro/mini cables into ducts, either by the push-pull method, or by pulling with a traction line. Other telecom cables (e.g. copper pairs) can also be installed with MicroJet. The Jetting method consists in simultaneously mechanically pushing the fibre units and micro/mini-cables into a microduct route assisted by a drag force generated to the fibre units and micro/mini-cable by a high velocity air flow through the microduct. The Jetting method allows installation of fibre units and micro/mini-cable into microduct routes over distances ranging from 500 to 2'000 meters. The microjet is mainly used on, campus and distribution network construction sites.



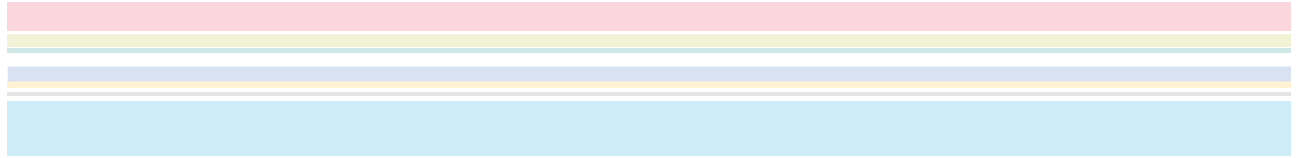
- Size (LxWxH) : 285 x 250 x 335 mm
- Weight : 6.7 kg
- Applicable outer diameter of ABF or ABC : 0.8 ~ 8(mm)
- Applicable outer diameter of duct : 3 ~ 14(mm)

Breeze

The Breeze machine is designed to install small diameter cable into micro-tubes. The machine uses a DC motor and reduction gearing to drive a pair of compliant rollers (both rollers are driven). The rollers are covered with a compliant coating to prevent damage to the cable. A range of different coatings is available depending on the surface texture of the cable being installed. The pressure the rollers apply to the cable may be set between zero and maximum. This machine has the added function of high/low torque selection; this has been developed to give greater sensitivity when operating in the low torque region aiding the installation of small cables.



- Size (LxWxH) : 390mmx270mm x250mm
- Weight : 23kg
- Applicable outer diameter of ABF or ABC : 1.5 ~ 8(mm)
- Applicable outer diameter of duct : 5 ~ 12(mm)



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