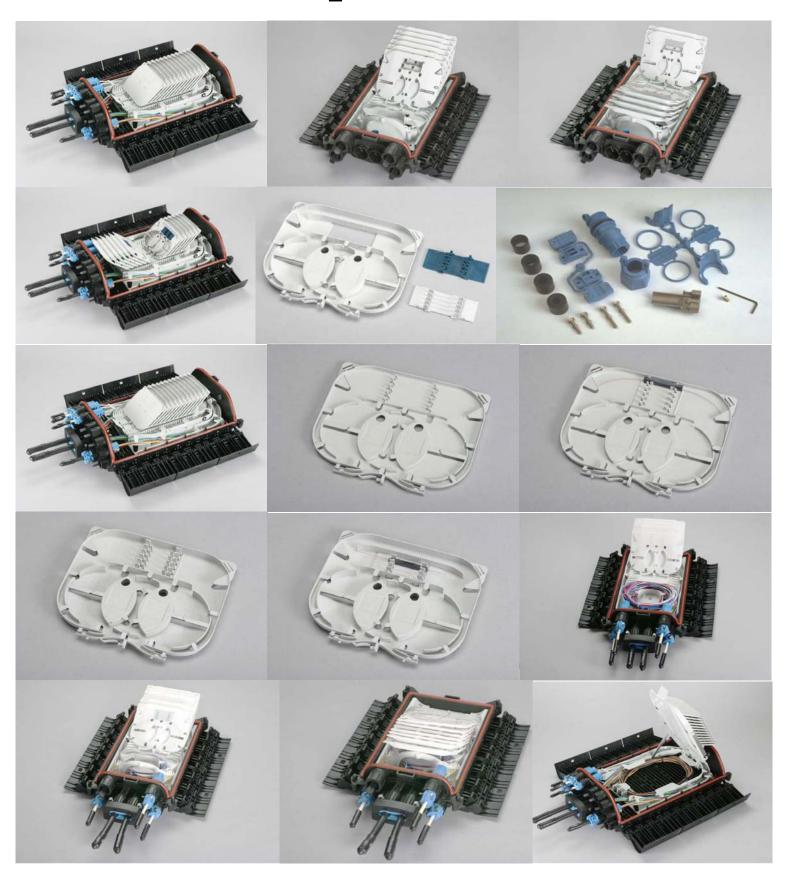# BPEO Fiber Optic Closures

3M™ BPEO Evolution

Waterproof splice protections
BPEO product has evolved in 2 main areas:

Adaptation to the PON and P to P network architectures for FTTH deployment.
In addition to the basic concept of 3 standard bodies with latch closing mechanisms, and the ECAM range of mechanical cable entries, the product now offers additional features:

    Single fiber management
    Splitter integration
    Mechanical fiber splices
    Compatible with Blown Fiber
    Micro cable management

Adaptation for use in high fiber density networks, and installation in the city centre.
In addition to the features already described, the product can now handle:

    Cable with 12 to 1152 fibers
    Full coverage of most applications
with only 3 different closure sizes !

The BPEO Evolution Concept

The concept of the BPEO Evolution product range is similar to the modular approach often used in copper connectivity modules and termination blocks.
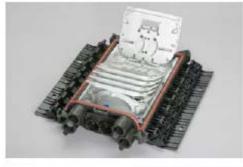
The closures are delivered with a fiber organizer with a capacity of 12, 28, or 48 splice tray slots depending on the size.

The splice trays are a standard size taking up one or two slots (5mm or 10mm spacing). They can be mixed and matched at will, giving the product great flexibility.

Additional wall brackets are available for fixing the closure securely in place.

Finally, the unique mechanical cable sealing ECAM kits are available to enter the cables to the closure and seal it.

Additional splice trays and cable entry kits can be installed whenever new cables are added to the closure.

The new organizers and splice trays.

The new organizers contain all the proven advantages of the early designs with additional features:
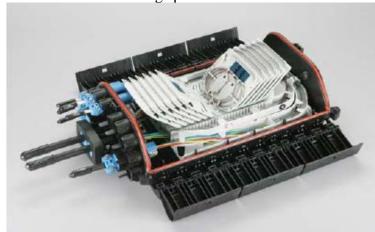
> A larger storage area for tubes, "microstructures" or for by-passing cables (un-cut fibers)
> The splice trays are structured in a tree style, allowing easy access to each splice tray.
> Large cable guide channels on each side of the organizer to allow routing from any tray to any tray.
> Each splice tray is protected by an individual cover.
> The marking of each splice tray is visible in the open or closed position.

The new BPEO also has a fiber guide for 250 micron fibers from the cable entry to the splice trays. This means that each fiber can be individually routed which is essential for FTTH installation or when using splitters.
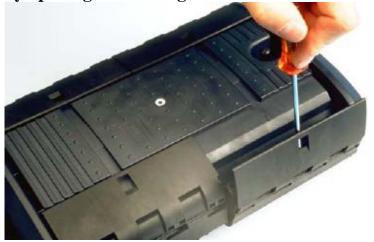

Splice Trays

The different models of splice trays allow 3 type of circuit management:

> Fusion splices in single or double stacking.
> Mechanical Fibrlok splices 2540G in groups of 6 or 12.
> Splitter splice trays with a zone for the splitter and different type of splices.

Each splice tray can also be used for fiber storage in the shape of a figure 8, particularly useful with splitters. Different splice trays can be installed on the same organizer, and all splice trays are delivered with covers.

Easy opening and closing

The mechanical latch closing mechanism is quick and easy to open and close.
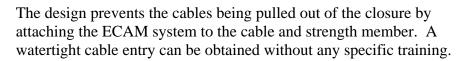
No special tools or adjustments are required.

The seal is always watertight even after frequent use.

Even though the sealing gasket requires no maintenance, it can be changed if damaged.

ECAM cable entry sealing system

The ECAM system is a 100% mechanical system that only requires standard tools (i.e. no heating or electrical power needed)
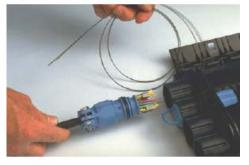
The ECAM system is put in place before the cable is installed in the closure. This feature avoids working on the cable inside the closure close to fibers that are already in use. It is also particularly useful when attaching the cables with strength members.

The design prevents the cables being pulled out of the closure by attaching the ECAM system to the cable and strength member. A watertight cable entry can be obtained without any specific training.

The seal is made with an 'O' ring. The ECAM is held in place with a locking part (fork).

It is always possible to replace or change a cable at any time.

Fixing Supports (accessories)

The 3 BPEO sizes can accommodate different kinds of fixing supports depending to the environment where they will be installed.

Wall mount support; Two metal plates are fixed directly to the closure body. This new wall mount support with a thickness of 5mm will allow gaining space inside the manholes or handholes

Wall/Pole mount support;   Two metal brackets will allow wall or pole mounting. For pole mounting a metal band is necessary in addition to the brackets.

Sewage support;   For horizontal mounting of the closures. Total depth of the mounted closure will be (size 2 and 3 only) less than 150mm

BPEO Size 1

The organizer can be used with up to 12 splice trays for standard micro structures or 8 splice trays if loose tubes are used.

Watertight splice closure for up to 72 mechanical Fibrlok splices or 144 fusion splices.

Contents of the standard product ;
Closure body and cover with pressure test valve and plugs in all of the entry ports included the double cable entry port.
The organizer is fixed in the closure and is supplied without splice trays but with accessories for fixing the tubes and micro-structures, an installation tool and an inter splice tray fiber bridge guide.
The fiber bridge guide is used to route individual fiber from one splice tray to another, particularly useful when using a splitter with separation between active fibers and unused fibers.
100% of the closures are tested to 500mBar flash test pressure.

Parts need to be ordered separately ;
The splice trays, cable entry sealings and closure supports need to be ordered separately.

Specifications of BPEO Size 1 closures;

General
Sealing; 80milibar continuous and 500milibar flash test; IP68
Impact test; 20 joule; IK10
Pull force ; 100 DekaNewton

Dimensions (overall in mm)

	Closure body	With wall support	With Pole/wall support
Length;	382	382	382
Width	204	310	230
Depth	92	97	122

Entry configurations	EOC	CDP	EDP	FDP
Midspan entry	no	yes	yes	yes
Storage (tube/microcable)	yes	yes	yes	yes

Capacity
Capacity depends directly of the volume stored unused fibers/tubes.

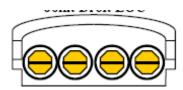|	EOC	CDP	EDP	FDP
	# Tray	Fusion (10mm)	Fusion (5mm)	Fibrlok 2540G(5mm 6 /10mm 12)
Micro structure	12	72	144	72
Loose Tubes	8	48	96	48

Cable Entry Configurations; BPEO Size 1

BPEO Evolution Size 1 is equipped with different types of cable entry depending on the model. The description of the cable entry kits indicated the diameter of the cables which can be used.
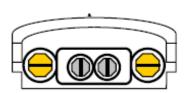ECAM S5-18 entry for one cable, diameter 5-18 millimeter
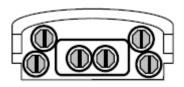ECAM PAS S5-20 double entry for uncut cable 5-20mm
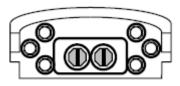Double cable entry seals can be used for uncut cables or two each single cable entries

EOC Strait joint (End Of Cable)
Four single entries ECAM S5-18

CDP (Cable Distribution Point)
Two possible configurations
One double port ECAM PAS S5-20 and two single port ECAM S5-18.
Or two single ECAM S5-18 and two single port ECAM S4-12

EDP (Secondary distribution point)
Two possible configurations;
One double port ECAM PAS D5-20 and four single port ECAM S4-12
Or six single ports ECAM S4-12

FDP (Branching Closure)
Two possible configurations
One double port ECAM D5-20 and six single ECAM S4-8
Or Two single ports ECAM S4-12 and six single ECAM S4-8

S18   single cable seal for diameters between 5mm-18mm

S12   single cable seal for diameters between 4mm-12mm

S08   single cable seal for diameters between 4mm-8mm

D20   double cable seal for diameters between 5-20mm

BPEO Size 2 & 3

Watertight splice closure for up to 168 mechanical Fibrlok splices or 336 fusion splices (BPEO size 2)
Watertight splice closure for up to 288 mechanical Fibrlok splices or 576 fusion splices (BPEO size 3)

The organizer of size 2 can be used with up to 28 splice trays, size 3 accommodates up to 48 trays. Storage area for bare fibers, tubes or microcables is provided below the organizer.

Contents of the standard product ;
Closure body and cover with pressure test valve and dummy plugs in all of the entry ports including the double cable entry port.
The organizer is fixed in the closure and is supplied without splice trays but with accessories for fixing the tubes and micro-structures.
Storage zone at the bottom of the organizer for 250 µm fibers and microcables.
100% of the closures are tested to 500mBar flash test pressure before delivery!

Parts need to be ordered separately ;
The splice trays, cable entry sealings and closure supports need to be ordered separately.

Specifications of the different possible configurations

General
Sealing; 80milibar continuous and 500milibar flash test; IP68
Impact test; 20 joule ; IK10
Pull force; 100 DekaNewton

Dimensions (Overall in mm)	Length	Width	Closure body	With wall support	With pole/wall support	Sewage
Size 2	520	341	149	154	178	149
Size 3	661	341	149	154	178	149

Entry configurations	CDP	EDP	FDP
Midspan entry (uncut)	yes	yes	yes
Storage (tube/microcable)	yes	yes	yes

Capacity of the organizers of the BPEO range

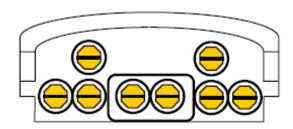| Closure size	Capacity of the organizer (nr of splice trays)	Fusion splices K7-2pas-12fusion	Fusion splices K7-1pas-12fusion	Fibrlok 2540G splices K7-1pas-6 or 2pas 12 Fibrlok
BPEO size 1	12	72	144	72
BPEO size 2	28	168	336	168
BPEO size 3	48	288	576	288

Cable Entry Configurations; BPEO Size 2 & 3

BPEO Evolution Size 2 and 3 are equipped with the same front faces with different cable entry configurations.
The description of the cable entry kits indicated the diameter of the cables which can be used.
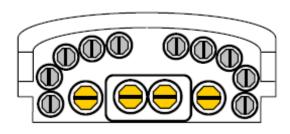   ECAM S5-18 entry seal for one cable, diameter 5-18 millimeter
      ECAM PAS D5-20 double entry seal for uncut cable 5-20mm
      Double cable entries can be used for uncut cables or two each single cable entries

CDP (Cable Distribution Point)   Two possible configurations
One double port ECAM PAS D5-27 and 6 single ports ECAM S5-18.
Or 8 single ports ECAM S5-18

EDP (Secondary distribution point)   Two possible
configurations;
One double port ECAM PAS D5-27, 2ports ECAM S5-18 and 10 ports
ECAM S4-12, or 4 ports ECAM S5-18 and 10 ports for ECAM S4-12

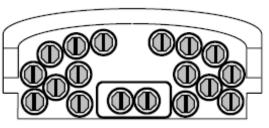**BDP (Distribution point)**   Two possible configurations;
One double port ECAM PAS D5-20 and 16 single ports ECAM S4-12,
or 18 single ports ECAM S4-12

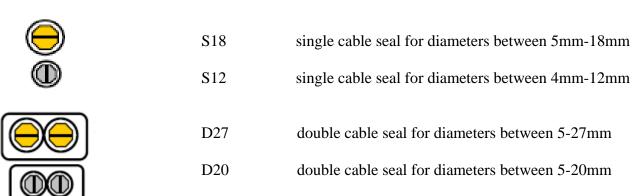S18   single cable seal for diameters between 5mm-18mm

S12   single cable seal for diameters between 4mm-12mm

D27   double cable seal for diameters between 5-27mm

D20   double cable seal for diameters between 5-20mm

Selection Guide for Standard Models;

The closure bodies

Delivery content;
All BPEO closures size 1,2 and 3 have the same content:

- Closure body, cover with valve (for watertigthness test)
- Installed Organizer. Storage zone prepared to store micro-structures
- Dummy plugs on all cable entry ports
- Instructions, Fixing dimensions drawing

! Splice trays, Fixing brackets and ECAM cable entry sealings are to be ordered separately !

Straight joint BPE/O-1 EVOL EOC 12 PAS Size 1, organizer for 12 splice trays (max.)	N501487A	501487
Primary Cable Distribution Point BPE/O 1 EVOL CDP 12 PAS Size 1, organizer for 12 splice trays (max.)	N501488 A	501488
Secondary Distribution Point BPE/O – 1 EVOL EDP 12 PAS Size 1, organiser for 12 splice trays (max.)	N501489A	501489
Branching Point FTTH BPE/O-1 EVOL FDP 12 PAS Size 1, organizer for 12 splice trays (max)	N 501490A	501490
Primary Cable Distribution Point BPE/O – 2 EVOL CDP 28 PAS Size 2, organizer for 28 splice trays (max)	N501491A	501491
Primary Cable Distribution Point BPE/O – 3 EVOL CDP 48 PAS Size 3, organizer for 48 splice trays (max)	N501494A	501494
Primary Cable Distribution Point BPE/O – 2 EVOL CDP 28 PAS Size 2, organizer for 28 splice trays (max)	N501491A	501491
Primary Cable Distribution Point BPE/O – 3 EVOL CDP 48 PAS Size 3, organizer for 48 splice trays (max)	N501494A	501494
Distribution Point FTTH BPE/O – 2 EVOL BDP 28 PAS Size 2, organizer for 28 splice trays (max)	N501493A	501493
Distribution Point FTTH BPE/O – 3 EVOL BDP 48 PAS Size 3, Organiser for 48 splice trays (max)	N501496A	501496

Splice trays

The splice trays are to be selected according to the type of splice (fusion, mechanical, ie), if splitters are used or not and according to the density. (Splice tray 12 fusion splices for only 1 mounting position)

1 PAS means 1 tray slot of 5mm (5mm tick Tray)
2 PAS means 2 tray slots of 5mm (10mm tick tray)
In order to define the appropriate capacity in the closures.

BPE/O K7 -1 -PAS -12 fusion   N541106A   541106
     Compatible with fusion splice protector 45 or 60mm.
     Splice tray is supplied with a cover

BPE/O K7- 2 PAS- 12 fusion and PLC splitter.   N541107A   541107
     10mm tickness.12 fusion splices in 2 layers.
     Compatible with fusion splice protector 45 or 60mm.
     Can accommodate 70x10x6 mm PLC splitters. Splice tray is supplied with a cover

BPE/O-K7 -1 PAS -6 fibrlok 2540G   N541109A   541109
     6 mechanical Fibrlok splices in one layer in 5mm tray.
     Compatible to new 2540G Fibrlok Splice tray is supplied with a cover

BPE/O –K7- 2 PAS-12 fibrlok 2540G.   N541108A   541108
     12 mechanical Fibrlok splices in 2 layers in 10mm tray.
     Compatible to new 2540G Fibrlok. Splice tray is supplied with a cover

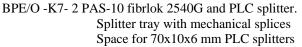BPE/O -K7- 2 PAS-10 fibrlok 2540G and PLC splitter.   N541110A   541110
     Splitter tray with mechanical splices
     Space for 70x10x6 mm PLC splitters
     Support to accommodate 10 mechanical splices Fibrlok 2540G

Fixing supports

Wall support for BPEO size 1	N711540A	711540
Wall support for BPEO size 2&3	N711541A	711541

Pole/wall mount support for BPEO size 1	N711438A	711438
Pole/wall mount support for BPEO size 2&3	N711440A	711440

Support for sewage for BPEO size 2&3   N711546A   711546

Cable Entry Sealing Kits

Mechanical cable entry sealing kits for Single ports or Double ports (for uncut cable).
The kits are supplied complete with fixing wrench. Holders and anchors are on the closure.

Double cable entry sealing for uncut cables

ECAM PAS D5-20   N721077A   721077
Double entry cable sealing for cables from 5 – 20 mm diameter

ECAM PAS DS5-27   N721069A   721069
Double entry cable sealing for cables from 5 – 27 mm diameter

Single cable entry sealing for straight splices or cable distribution

ECAM S4-12   N721079A   721079
Single entry cable sealing for cables from 4 – 12 mm diameter

ECAM S5-18   N721059A   721059
Single entry cable sealing for cables from 5 – 18 mm diameter