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Fibre organisers and closures to be used in optical fibre communications systems - Product specifications -- Part 2-9: Non-sealed closures for air blown fibre microduct cable, for category S & A

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English version

Fibre organisers and closures to be used in optical fibre communications systems - Product specifications - Part 2-9: Non-sealed closures for air blown fibre microduct cable, for category S & A

Organiseurs et boîtiers de fibres à utiliser dans les systèmes de communication par fibres optiques - Spécifications de produits - Partie 2-9: Boîtiers non scellés pour fibres / microconduits / câbles installés par soufflage, de catégories S & A

LWL-Spleißkassetten und -Muffen für die Anwendung in LWL-Kommunikationssystemen - Produktnormen - Teil 2-9: Nichtabgedichtete LWL-Muffen für ABF-Mikrorohrkabel für die Kategorien S und A

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 86BXA, Fibre optic interconnect, passive and connectorised components.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50411-2-9 on 2009-10-01.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2010-10-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2012-10-01

Fibre organisers and closures to be used in optical fibre communications systems - Product specifications

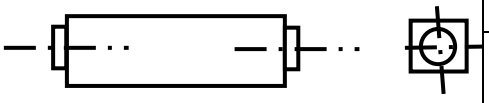
Part 2-9: Non-sealed closures for air blown fibre microduct cable, for category S & A

Description		Performance	
Construction:	Multiple ported closure	Applications:	
Cable management:	Microduct , protected microduct, ducts and/or sub-ducts.	Blown optical fibre cable networks:	EN 61753-1 Category S
Cable seals:	Heat activated and or cold applied	for underground:	EN 61753-1 Category A
		for aerial:	IP40

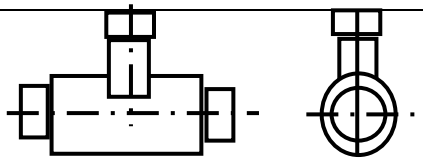
Related documents:

EN 50411-2	Fibre organisers and closures to be used in optical fibre communication systems – Product specifications – Part 2: General and guidance for optical fibre cable joint closures, protected microduct closures, and microduct connectors
EN 50411-2-8	Part 2-8: Microduct connectors, for air blown optical fibres, Type 1
EN 60793-2-50	Optical fibres – Part 2-50: Product specifications – Sectional specification for class B single-mode fibres (IEC 60793-2-50)
EN 60794-5	Optical fibre cables – Part 5: Sectional specification – Microduct cabling for installation by blowing (IEC 60794-5)
EN 61300 series	Fibre optic interconnecting devices and passive components – Basic test and measurement procedures (IEC 61300 series)
EN 61753-1	Fibre optic interconnecting devices and passive components performance standard – Part 1: General and guidance for performance standards (IEC 61753-1)
ETSI EN 300 019 series	Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment

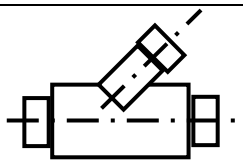
Construction:



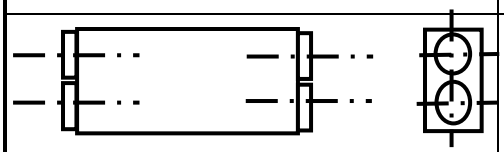
(I) Closures



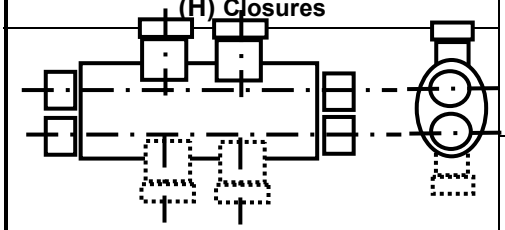
(T) Closures



(Y) Closures



(H) Closures



(U) Closures

Duct and cable port entries and dimensions (all direct burial, jointing pit or aerial mounted)

Closure	Min. number of ports	Maximum sizes of protected microduct cables or ducts (mm)		Maximum physical dimensions (mm) Length L Width W Depth D
		Inline retrofit ports	Range of drop ports	
(I)	2	50	N/A	410 × 120 × 120
(T)	3	50	50	390 × 240 × 100
(Y)	3	50	50	380 × 210 × 100
(H)	4	60	60	830 × 340 × 160
(U)	12	50	50	600 × 470 × 310

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1 Scope

1.1 Product definition

This specification contains the initial, start of life dimensional, mechanical and environmental performance requirements which a fully installed blown fibre protected, non-sealed closure for duct and microduct cable, must meet in order for it to be categorised as an EN standard product.

These products are suitable for installation of and use with microduct fibre units, microduct optical fibre cables, microduct and protected microduct as defined within EN 60794-5.

When the non-sealed closures are installed in subterranean environments it is mandatory to use sealed ABF connectors meeting EN 50411-2-8 in order to guarantee the expected network performance and reliability.

1.2 Operating environment

The tests selected combined with the severities and duration are representative of an outside plant for subterranean and/or aerial environment defined by:

-	ETSI EN 300 019 series:	Class 8.1:	underground locations (without earthquake requirement);
-	EN 61753-1:	Category S:	subterranean environment;
		Category A:	aerial environment.

1.3 Test severity

The test severities are based on IP40 (see EN 60529). The test criteria for all mechanical and environmental tests cover visual appearance, and protected microduct retention of the closure.

It is generally accepted practice that liquids will enter the closure through its body or connected ducts.

1.4 Reliability

Whilst the anticipated service life expectancy of the product in this environment is a minimum of 20 years, compliance with this specification does not guarantee the reliability of the product. This should be predicted using a recognised reliability assessment programme.

1.5 Quality assurance

Compliance with this specification does not guarantee the manufacturing consistency of the product. This should be maintained using a recognised quality assurance programme.

1.6 Allowed fibre and cable types

This closure standard covers all IEC/EN standard optical fibre microducts, and protected microducts with their various fibre capacities, types and designs. This includes optical fibre cable standard EN 60794-5.

This product specification has only considered protected microduct cables containing microducts of same outside diameters. There are other hybrid protected microduct cables with microducts of differing OD’s; it may be possible to use these hybrids, however the user must verify suitability in each case.

1.7 Allowed microduct connector types

This closure standard covers all EN standard microduct connectors, including: straight, reducer/enlarger stem, reducer/enlarger, close down, liquid block, liquid block with barb end, and end stop connectors. This includes EN 50411-2-8.

1.8 Microduct storage constraints

Microduct excess storage is not required in all air blown fibre closures. Some closure types do not have sufficient internal space to provide storage. The need for microduct storage is provided inside the closure when opened, typically to ensure that there is enough microduct to fulfil the following functions:

- remove the coiled microduct attached to the ‘closedown’ connectors, to a remote location, close to blowing equipment, in the process uncoiling the microducts to aid blowing;
- provide additional microduct if repeated cut backs for connectors are planned or likely to be fitted throughout the closure life.

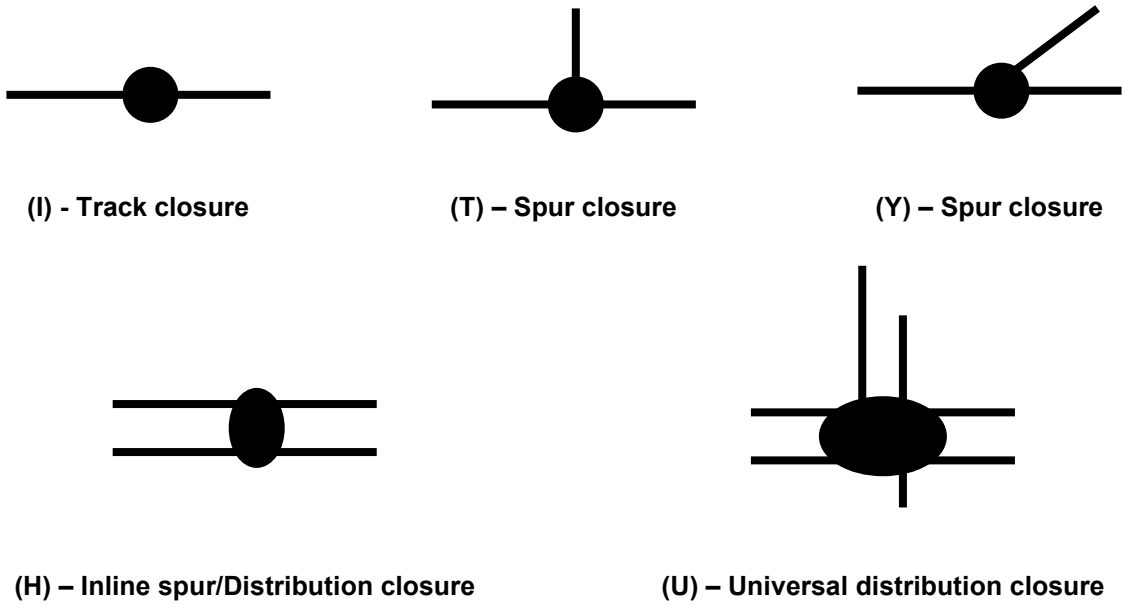
The minimum microduct storage bend radius is based on the outside diameter and material selection, typically based on 12 times the outside diameter (below 8 mm) and 20 times above. During fibre blowing the bend radius is typically 20 times the microduct diameter.

1.9 Essential differences between sealed and non-sealed ABF closures

The non-sealed ABF closures covered in this product specification typically differ from sealed ABF closures in EN 50411-2-5, in the following ways:

- mandatory to use ABF connectors in non-sealed closures meeting EN 50411-2-8 in order to protect the fibre within the microducts;
- typically rotational, compression, thermoformed or injection moulded;
- generally accepted that liquids will enter the closure through its body or connected ducts.

1.10 Closures configurations defined diagrammatically – By shape and application



(I) - Track closure **(T) – Spur closure** **(Y) – Spur closure**

(H) – Inline spur/Distribution closure **(U) – Universal distribution closure**

Figure 1 – Closures configurations

The above diagrams show one protected microduct per port, however, the use of port adaptors, sometimes known as manifolds, can increase this number at any output port.