

Splice closure system



The product range with practical focus.
Plus accessories

 **R&M**

Convincing cabling solutions

Your decision for the future.

Choosing the right network is one of the most important and far-reaching decisions an IT manager or network specialist will ever have to make. The volume of data traffic rises inexorably, with transmission capacity growing tenfold every two or three years. Technology, as they say, marches on. So finance is not the only factor to be considered in a major network investment: the decision must take account of future requirements and developments.

Nowadays, a top-of-the-range cabling system has to be flexible and modular to keep pace with long-term requirements. If an upgrade becomes necessary in the future – to add bandwidth, for instance – it must be a job that can be carried out quickly and simply, without the need for major investment.

R&M's fiber optic products make high-quality LAN cabling systems that leave room for adaptation and sufficient bandwidth for future expansion. But why not discover the intelligence, versatility and quality of R&M's product range yourself.

Version 3.0
May 2003



ISO 9001 quality standard

This document has been drafted with utmost care and reflects the products engineering level at the time of publication. Amendments or corrections to this document will be included in each new edition. Subject to technical change without notice.

Ordering Information

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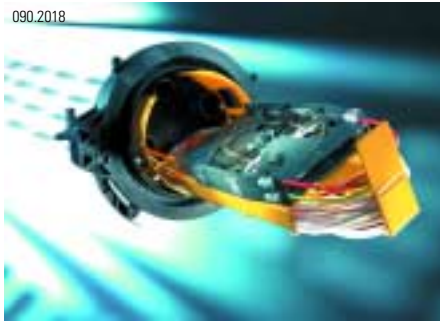


FO Splice Closure Accessories

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FO Splice Closure Versions

Application: R&M's splice closure product range is ideal for telecom and carrier networks, for city networks and the networking in the industrial sector.

Design

The whole R&M splice closure product range has been designed for modularity and flexibility, enabling the closures to accommodate R30 or R40 splice trays, and the end cap entries to accommodate shrink tubes or mechanical cable inserts (cable grip). By using mechanical cable insert (cable grip) a defective cable can now at any time be replaced individually without having to replace the entire installation. The fiber-glass reinforced turnlock fastener allows repeated opening and closing without the need for tools, not even a screwdriver is required. For reasons of security the locking system allows sealing the entire installation or securing it by lock. Finally, with the comprehensive range of accessories all requirements occurring are easily satisfied.

Operating Areas

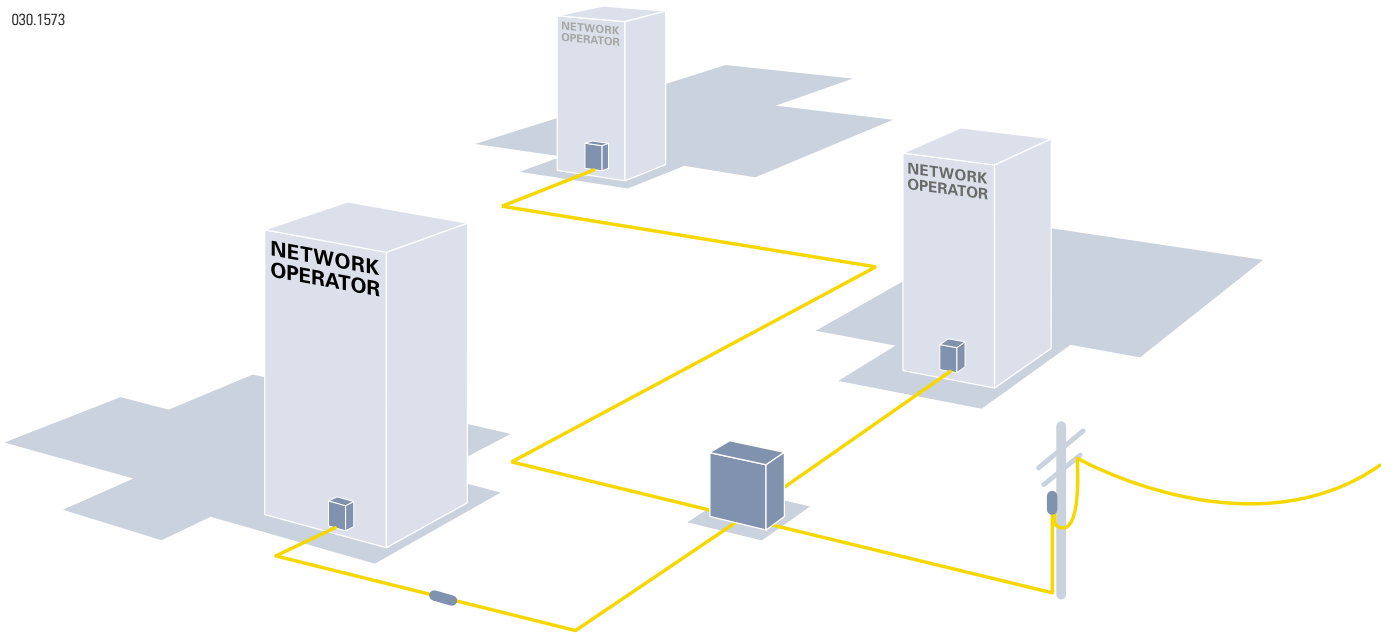
R&M's splice closures are made of the same materials as the cables, meaning wherever a cable is used a splice closure can also be used. The high-end polyethylene is particularly resistant to alkaline earths, salt water, fungal and putrefication bacteria. Thanks to their ingenious design and compact constructions the splice closures are absolutely watertight (IP68). Consequently, they are ideal for direct use in sub-soil, underground or aerial applications.



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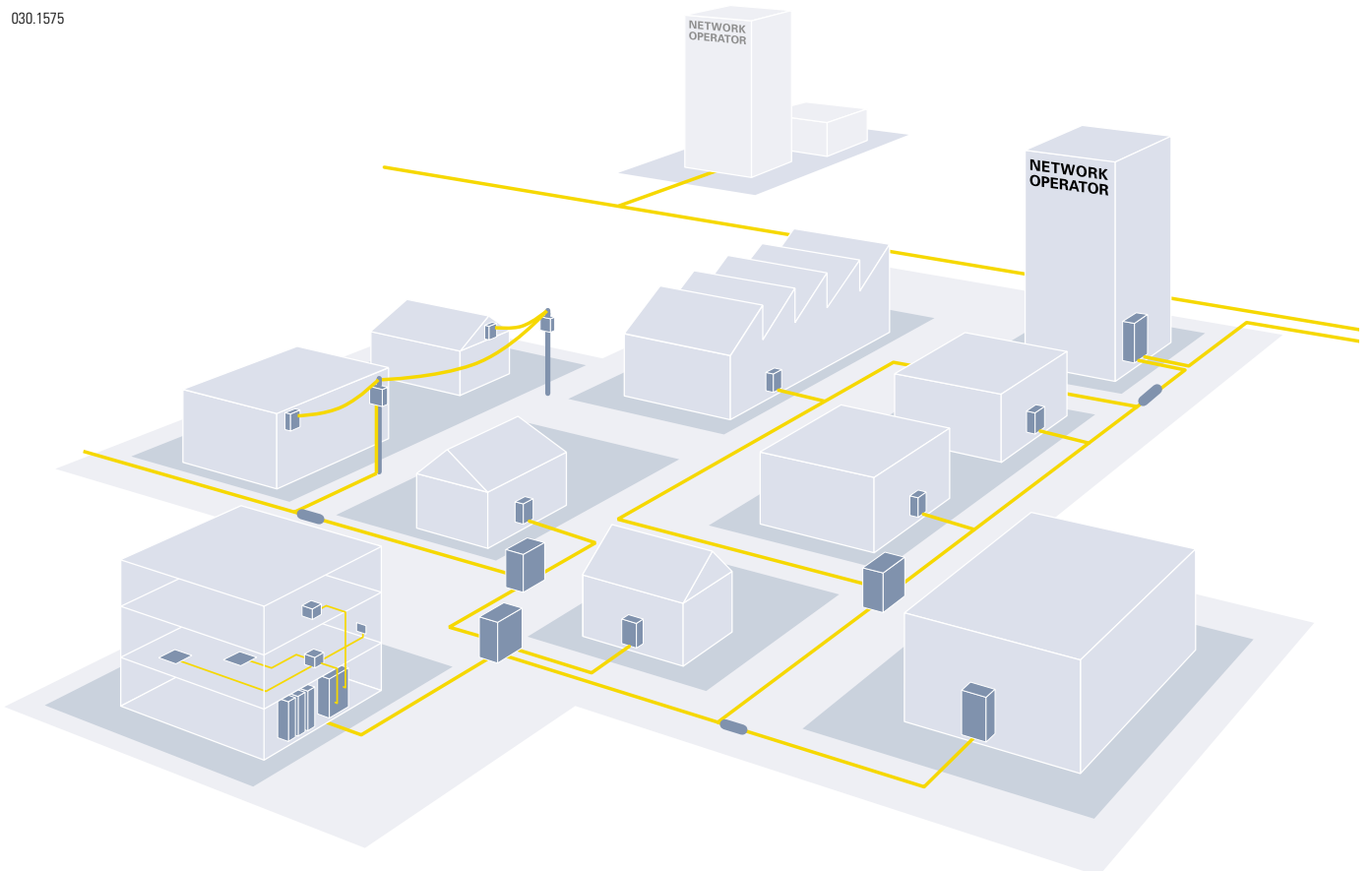
Telecom and carrier networks

030.1573



City networks

030.1575



Introduction
Customer Benefits



Flexibility

Thanks to the use of mechanical cable entries, installing a splice closure is fast, easy and tool-free. And most importantly, it can be reused again and again.

Resistance to chemicals

As a result of using high-quality polyethylene, the splice closure system is particularly resistant to alkaline earths, salt water, fungal and putrefaction bacteria.



Simple and secure locking system

Repeated opening without having to replace the seal. The locking system offers optional sealing or locking of the splice closure.



Earth connection and leak testing

Continuous earth connection for shielded cables. Valve for leak testing after installation.

010.2198

GET MORE

- Security
- Modularity
- Flexibility
- Re-usability
- Repeatability
- Protection



Environmental factors

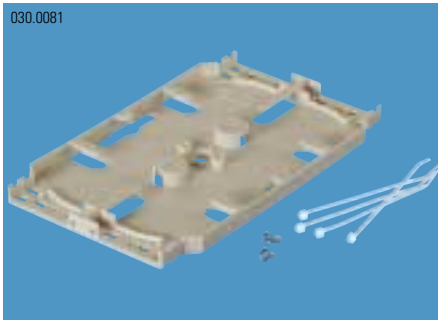
Thanks to the splice closure system's compact design, external influences such as environmental temperatures of between -20° and $+60^{\circ}$ or water depths of up to 6 meters (IP68) pose no more threats.



Strain relief and cable management

The strain relief ring ensures balanced and optimum strain relief, and the cable management protects the cable up to the tray.

Radius 30 mm splice tray



R&M's standard splice tray guarantees a minimum bending radius of the fibers inserted of >30 mm. Ideal for telecom or TV distributive networks.

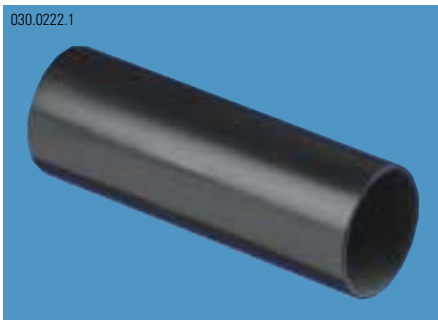
Radius 40 mm multifunction module



The multifunction module's dimensions guarantee a minimum bending radius of >40 mm. Ideal for telecom or TV distributive networks.



With shrink tubes



The shrink tubes take on a perfect fit matching shape and size of the cable.

With cable grip



By using the cable grip a defective cable can be replaced individually and at any time without having to replace the entire installation.



Splice closure, type RM



The RM splice closure allows cable-to-cable splicing with branching of up to 144 fibers.

Splice closure, type FL

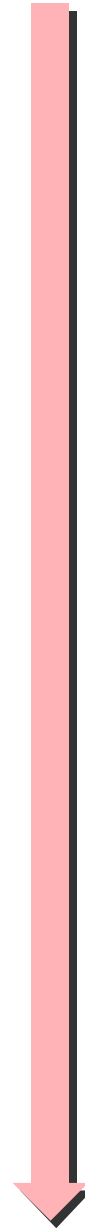


The FL splice closure is ideal for FITL (Fiber in the Loop) applications of up to 144 fibers.

Splice closure, type LC



The LC splice closure allows cable-to-cable splicing with branching of up to 72 fibers. The LC splice closure is only available as a complete set, i.e. with shrink tubes, wall holder, splice trays etc.



FO Splice Closures
FO Splice Closures, Type LC

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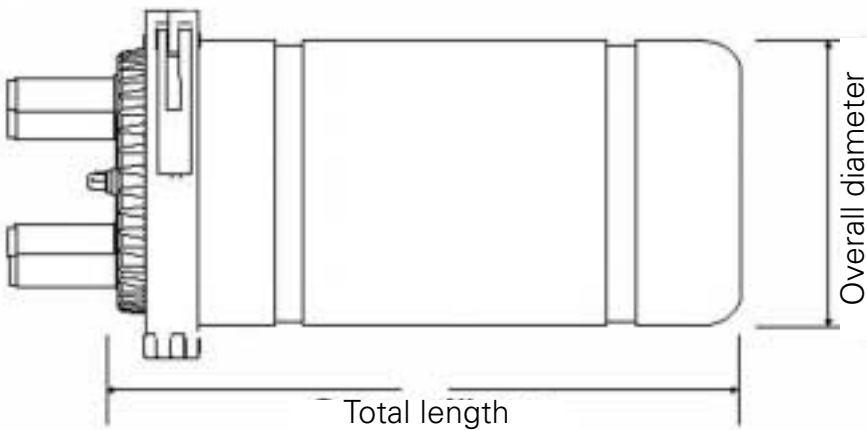


Features

- Allows cable-to-cable splicing with fiber branching
- Up to 72 splice connections
- Splice trays and shrink tubes included
- Splice tray with radius R40
- No additional accessories required
- Quick assembly thanks to compact design
- Repeated opening possible without having to replace the seal
- Locking system options sealing or locking
- Continuous earth connection
- Valve for leak testing
- Number and size of entries can be individually adjusted in custom-made versions

Ordering Information

Splice trays with radius R40mm	End cap tube entries in mm	Overall diameter in mm	Total length in mm	Packing unit	Part number
2 ¹⁾	3 x Ø22	Ø110	332	1	R307020
4 ¹⁾	4 x Ø22	Ø125	390	1	R307021
6 ¹⁾	4 x Ø22	Ø140	390	1	R307022



Supplied

- Entire splice closure with R40 splice tray
- Wall and wooden pole holders
- Shrink tubes
- Aluminium foil
- Cleaning tissue
- Sand tape
- Cable ties
- Operating instructions

i ¹⁾ Fully supplied with shown splice trays.

010.2428



Features

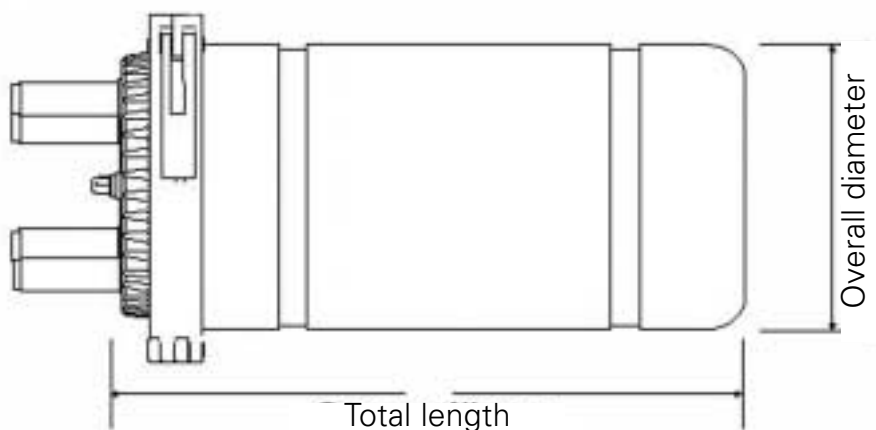
- Allows cable-to-cable splicing with fiber branching
- Up to 144 splice connections
- Optional individual strain relief for every cable
- Optimal and neat cable management
- Splice closure can be reused anytime, thanks to the cable grip
- Quick assembly thanks to compact design
- Repeated opening possible without having to replace the seal
- Locking system options sealing or locking
- Continuous earth connection
- Valve for leak testing
- Comprehensive range of accessories
- Number and size of entries can be individually adjusted in custom-made versions

Ordering Information

Splice trays with radius 30 mm ¹⁾	Splice trays with radius 40 mm ²⁾	End cap tube entries in mm	Overall diameter in mm	Total length in mm	Packing unit	Part number
4	2	4 x Ø20	Ø132	332	1	R307023
6	4	4 x Ø20	Ø150	332	1	R307024
12	6	4 x Ø32 / 2 x Ø20	Ø178	430	1	R307025

¹⁾ For the maximum number of standard splice trays, white, R30, see accessories

²⁾ For the maximum number of multifunction module splice trays, grey, R40, see accessories



i Note: splice closure supplied complete, as shown above, but not including accessories such as splice trays, wall holders, shrink tubes, etc. Please see accessories.

FO Splice Closures

FO Splice Closures, Type FL



Features

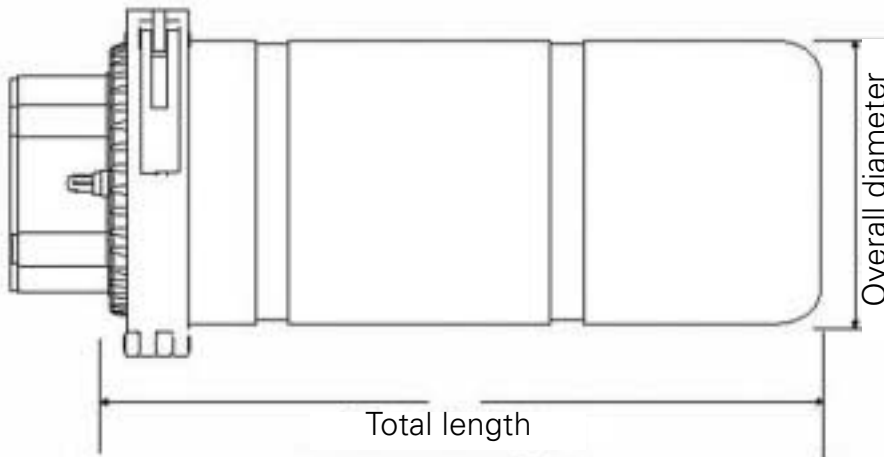
- Ideal for fiber in the loop solutions
- Up to 144 splice connections
- Optional individual strain relief for every cable
- Optimal and neat cable management
- Splice closure can be reused anytime, thanks to the cable grip
- Quick assembly thanks to compact design
- Repeated opening possible without having to replace the seal
- Locking system options sealing or locking
- Continuous earth connection
- Valve for leak testing
- Comprehensive range of accessories
- Number and size of entries can be individually adjusted in custom-made versions

Ordering Information

Splice trays with radius 30 mm ¹⁾	Splice trays with radius 40 mm ²⁾	End cap tube entries in mm	Overall diameter in mm	Total length in mm	Packing unit	Part number
4	2	1 x Oval / 2 x Ø20	Ø132	332	1	R307026
6	4	1 x Oval / 2 x Ø20	Ø150	332	1	R307027
12	6	1 x Oval / 2 x Ø32 2 x Ø20	Ø178	430	1	R307028

¹⁾ For the maximum number of standard splice trays, white, R30, see accessories

²⁾ For the maximum number of multifunction module splice trays, grey, R40, see accessories



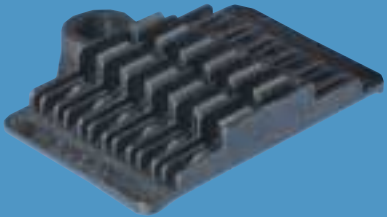
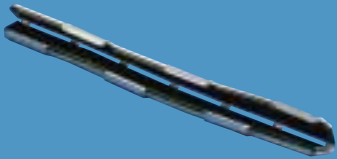

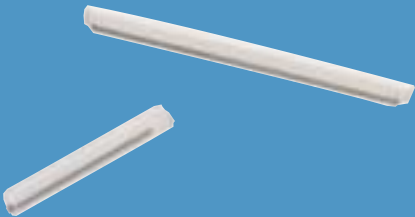
i Note: splice closure supplied complete, as shown above, but not including accessories such as splice trays, wall holders, shrink tubes, etc. Please see accessories.

Ordering Information	Description	Packing Unit	Part Number
<p>010.2424</p> 	<p>Strain Relief Set for Splice Closures For the strain relief of 4 individual cables. Only applicable to the types RM and FL! Supplied: – 4 screws incl. sleeves</p>	1	R307029
<p>010.2426</p> 	<p>Wall and Pole Mounting Set Allows easy mounting of closures to walls or wooden poles Only applicable to the types RM and FL! Supplied: – Complete holder with 2 hose clamps</p>	1 1 1	R307315 R307316 R307317
<p>010.2430</p> 	<p>Transport Set Thanks to these transparent tubes the fibers are protected all the way to the splice tray. And the numbered labels guarantee a neat and clear management. Only applicable to the types RM and FL! Supplied: – Transparent tubes – Tube labels – Cable ties, large and small</p>	1 1 1	R307318 R307319 R307320
<p>030.0235</p> 	<p>Silica Gel Keeps the splice closure dry.</p>	1	R30392

FO Splice Closures
Splice Closure Accessories

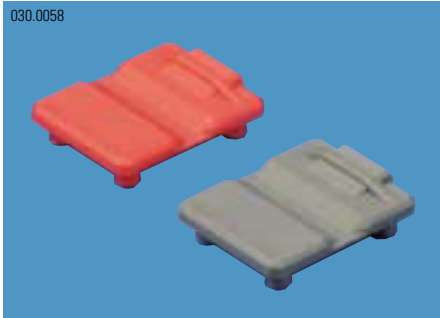
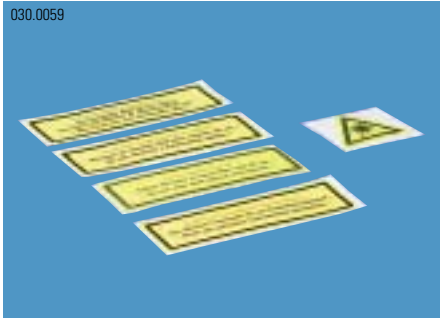
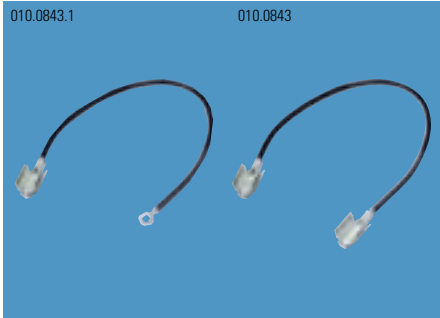
Ordering Information	Description	Packing Unit	Part Number
 <p>010.2431</p>	<p>Shrink Tube Set For connecting individual cables to the splice closure. Only applicable to the types RM and FL! Supplied: – 1 shrink tube – 1 heat protection foil – 1 cleaning tissue – 1 sand tape</p> <p>Shrink Tube Set 28/6x100 Shrink Tube Set 38/10x100</p>	<p>1 1</p>	<p>R307321 R307322</p>
 <p>010.2432</p>	<p>Shrink Tube Set Oval For connecting uncut cables to the splice closure. Only applicable to type FL! Supplied: – 1 shrink tube, oval – 2 heat protection foils – 2 cleaning tissues – 1 sand tape – 1 branch clip</p>	<p>1</p>	<p>R307323</p>
 <p>010.2433</p>	<p>Cable Grip Single Set For the mechanical connecting of individual cables to the splice closure. Only applicable to the types RM and FL! Supplied: – 1 cable grip, S – 1 cleaning tissue – 1 portion of lubricant</p> <p>Cable Grip Single Set for 9.5 – 11.5¹⁾ Cable Grip Single Set for 12 – 14¹⁾ Cable Grip Single Set for 15 – 17²⁾ Cable Grip Single Set for 19 – 21²⁾</p>	<p>1 1 1 1</p>	<p>R307327 R307328 R308082 R307329</p>
 <p>010.2434</p>	<p>Cable Grip Loop Set For the mechanical connecting of uncut cables to the splice closure. Only applicable to the type FL! Supplied: – 1 cable grip, L – 2 cleaning tissues – 1 portion of lubricant – 2 mastic tapes – 2 cable ties, large</p> <p>Cable Grip Loop Set for 9.5 – 11.5 Cable Grip Loop Set for 12 – 14 Cable Grip Loop Set for 15 – 17 Cable Grip Loop Set for 19 – 21</p>	<p>1 1 1 1</p>	<p>R307324 R307325 R308086 R307326</p>

i ¹⁾ Only applicable to end cap tube entry Ø20
²⁾ Only applicable to end cap tube entry Ø32

Ordering Information	Description	Packing Unit	Part Number
<p>010.2197</p> 	<p>FO Splice Holder ANT To hold max. 12 ANT splice protections. Supplied: Splice holder incl. fastening screw M3 plus plastic screw Dimensions: 40 x 33 x 5 mm Material: macrolon, black</p>	1	R30255
<p>030.0094</p> 	<p>FO Splice Protection ANT Crimp splice protection for single fibers. Dimensions: 1.2 x 3.2 x 30 mm Material: sheet plate parts, inside coated with permanently elastic material</p>	30	R30086
<p>030.0096.1</p> 	<p>FO Splice Holder Fujikura To hold max. 6 shrink splice protections. Supplied: Splice holder incl. fastening screw M3 plus plastic screw Dimensions: 27 x 37 x 5 mm Material: POM, black</p>	1	R30039-06
<p>030.0305</p> 	<p>FO Splice Protection Fujikura FP-3M For single fibers. Dimensions: diameter 3 x 65 mm Shrink tube with metal insert. Dimensions: diameter 3 x 35 mm Shrink tube with metal insert.</p>	10	R30087
		10	R30087-35

FO Splice Accessories
FO Splice Trays

Ordering Information	Description	Packing Unit	Part Number
	<p>FO Splice Tray, Basic Set (Standard) To splice and store the first 12 FO terminations. Bending radius >30 mm. Supplied: – 1 splice tray – 1 cover for splice tray – 2 film hinges for cover – 4 cable ties – 2 screws for splice holder Dimensions: 155 x 92 x 8 mm Material: ABS, white</p>	1	R30393
	<p>FO Splice Tray, Additional Set (Standard) For the modular stacking of 12 added FO terminations each. Bending radius >30 mm. Supplied: – 1 splice tray – 2 film hinges, small, for stacking – 4 cable ties – 2 screws for splice holder Dimensions: 155 x 92 x 8 mm Material: ABS, white</p>	1	R30394
	<p>FO Multifunction Module For the splicing and storing of 12 or 24 (ANT) splice connections. Bending radius >40 mm. Supplied: – 1 multifunction module – 1 fastening screw – 4 cable ties Dimensions: 170 x 110 x 14.1 mm Material: polycarbonate, grey</p>	1	R30067
	<p>FO Multifunction Module Cover Snap-on cover to protect the fibers reserves. Dimensions: 170 x 110 x 2 mm Material: macrolon, transparent</p>	1	R30068

Ordering Information	Description	Packing Unit	Part Number
<p>030.0058</p> 	<p>FO Insert Hinges, large For the stacking of multifunction modules. Dimensions: 15 x 18 x 5 mm Material: plastic</p> <p>Red Grey</p>	<p>10 10</p>	<p>R30005-RT R30005-GU</p>
<p>030.0059</p> 	<p>FO Warning Sign Set To stick onto splice tray covers. Supplied: – 1 laser signet – 1 warning sign, German – 1 warning sign, French – 1 warning sign, Italian – 1 warning sign, English Dimensions: 84 x 26 x 0.2 mm Material: plastic, adhesive, yellow/black</p>	<p>1</p>	<p>R30021</p>
<p>010.0843.1 010.0843</p> 	<p>Earthing Kit for Splice Closures For a conductive connection between two metal-shielded cables or conductive central units. Cross section: 2.5 mm²</p> <p>Shield Connection Cable V shape/M6 400 mm For the connection between cable and earthing screw of the splice closure.</p> <p>Shield Connection Cable V shape/V shape, 500mm For the connection between cable and cable (bridge).</p>	<p>10 10</p>	<p>R303002 R303003</p>

Specifications

Splice Closures

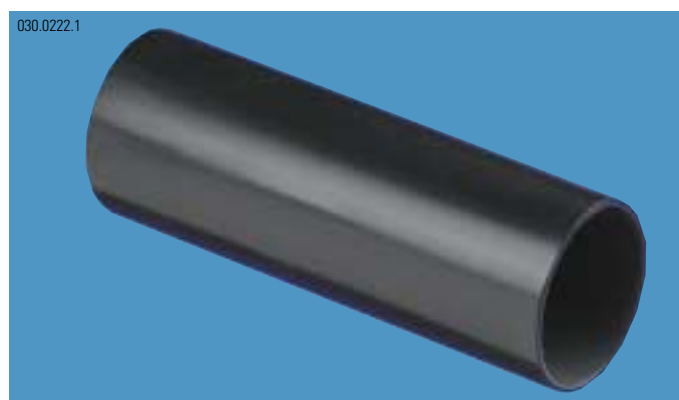
Splice closure material

Outside material	Part	Material	Colour
	End cap	HD-polyethylene	black
	Body	HD-polyethylene	black
	Turnlock fastener	Fiber glass reinforced polyethylene	black
	Wall holder	galvanised steel	
Inside material			
	Strain relief ring	Steel, powder-coated	yellow
	Holder	Steel, powder-coated	yellow



Material of accessories

Part	Material	Colour
Shrink tube	Polyolefin, medium wall thickness	black
Cable grip	Thermoplastic elastomer	black



Shrink tube



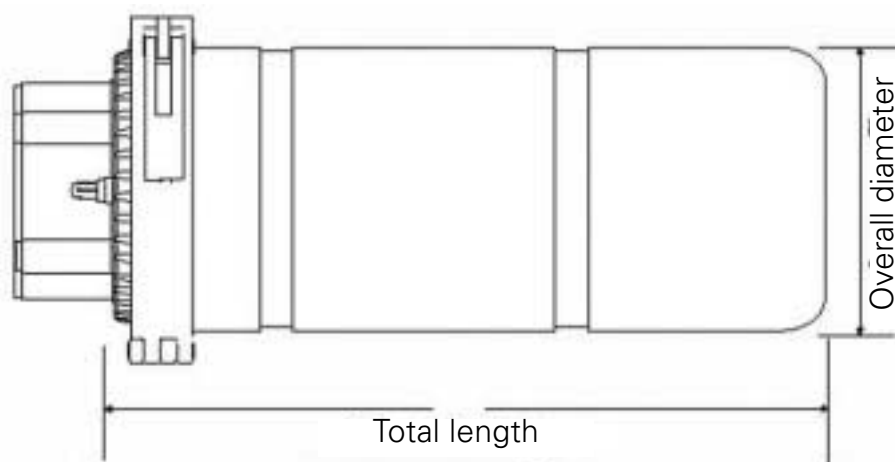
Cable grip

F0 splice closures dimensions

Closure type	Number of splice trays R30	Number of splice trays R40	Cable entry in mm	Outer Ø in mm	Total length in mm
Type LC*	-	2*	3 x Ø 22	Ø 110	332
	-	4*	4 x Ø 22	Ø 125	390
	-	6*	4 x Ø 22	Ø 140	390
Type RM	4	2	4 x Ø 20	Ø 132	332
	6	4	4 x Ø 20	Ø 150	332
	12	6	4 x Ø 32 / 2 x Ø 20	Ø 178	430
Type FL	4	2	1 x oval / 2 x Ø 20	Ø 132	332
	6	4	1 x oval / 2 x Ø 20	Ø 150	332
	12	6	1 x oval / 2 x Ø 32 / 2 x Ø 20	Ø 178	430

* With type LC the splice trays are integrated already!

With the other two types the number indicated is the maximum number of splice trays.



Material specifications of the splice closure bodies

Test criteria	Data/value	Standard
Density	0,953 g/cm ³	ISO 1183/DIN 53 479
Tensile strength	21 N/mm ²	ISO 527/DIN 53 455
Ultimate elongation	800 %	ISO 527/DIN 53 455
Hardness/shore D	60	DIN 53505
Cold brittleness	no breaking	DIN 53 453/ASTM D746
Continuous heat resistance	+ 80°C	DIN 53466
Dielectric strength	35 kV mm	VDE 0303 Part 2
Volume resistivity	1018 Ω/cm	IEC 93/VDE 0303 Part 3
Stress cracking resistance	no cracking	ASTM D 1693
Resistance to fungi and rotting	< rate 1	ASTM D 876
Soot content for UV resistance	> 2 %	VDE 0472 T702
Water density	IP 68	

Material specifications of the heat shrink tubes (without bonding agent)

Test criteria	Data/value	Standard
Tensile strength	≥ 12 N/mm ²	DIN 53 455
Ultimate elongation	≥ 350 %	DIN 53 455
Heat ageing		
– Tensile strength	≥ 12 N/mm ²	DIN 53 455
– Ultimate elongations	≥ 350 %	
Soot content for UV resistance	≥ 2 %	VDE 0472 Part 702
Cold brittleness	no breaking above –30°	ISO 974
Dielectric strength	≥ 12 kV/mm	DIN VDE 0303 T.2
Resistance to chemicals		DIN 53 476
– Tensile strength	≥ 12 N/mm ²	
– Ultimate elongation	≥ 300 %	
Resistance to fungi and rotting	Class 1	DIN 53 739 Tab. 1 Method A

Material specifications of the bonding agent

Test criteria	Data/value	Standard
Softening point	(95 ± 15) °C	DIN 52 011 / STM E 28 / DIN VDE 0472 Part 621
Water absorption	≥ 0,5 % compared to dry state	DIN 53 495 Method IL
Resistance to fungi and rotting	Class 1	DIN 53 739 Method A
Stress cracking resistance	no cracking	ASTM D 1693
Peel strength in a temperature range of (–30 ± 2) °C on PE		-
After storage in up to (60 ± 2) °C	≥ 150 N/25 mm	-
In chemicals in a cycle of 12h, split up in		on Cu; Ms*
- 2h change-over time from – 30 to 60 °C	≥ 100 N/25 mm	
- 4h at 60 °C		
- 2h change-over time from 60 to – 30 °C		
- 4h at – 30 °C		
Corrosivity	not corrosive	ASTMD 2671 § 83 Method B

*) Ms = ^clear brass, silver-, chrome- and nickel-plated

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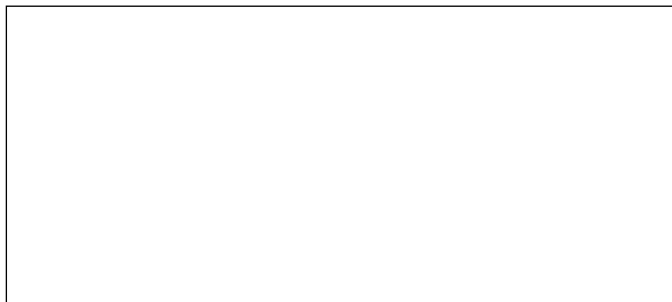
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