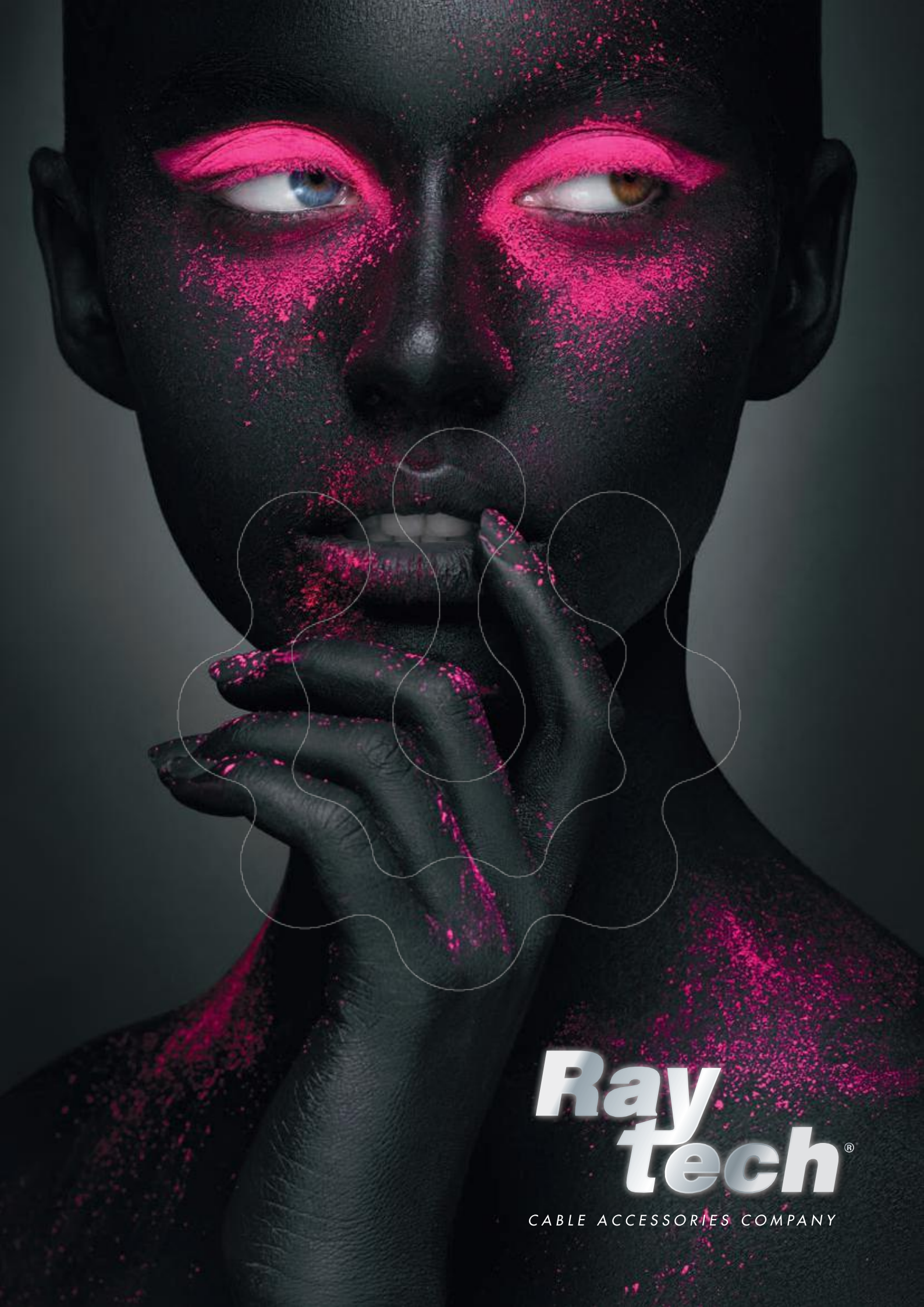
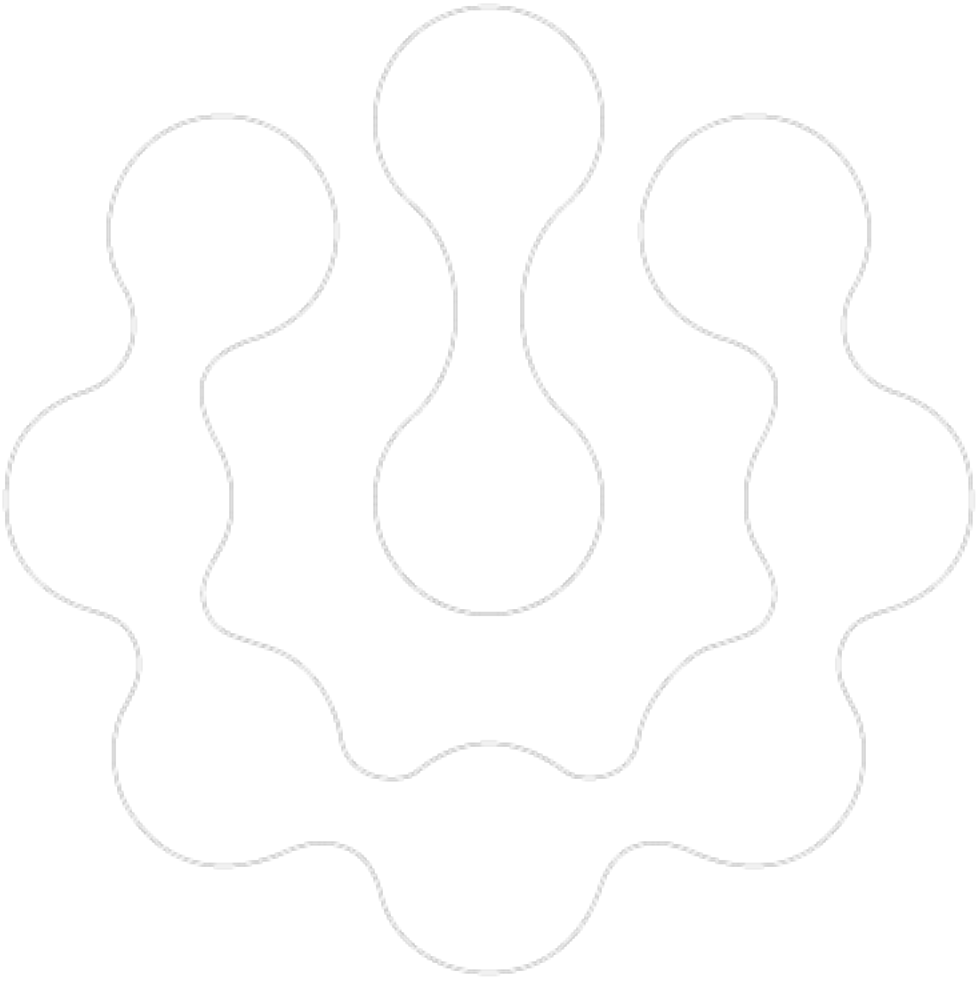

Raytech®
CABLE ACCESSORIES COMPANY



Raytech®

CABLE ACCESSORIES COMPANY

Low Voltage page 4

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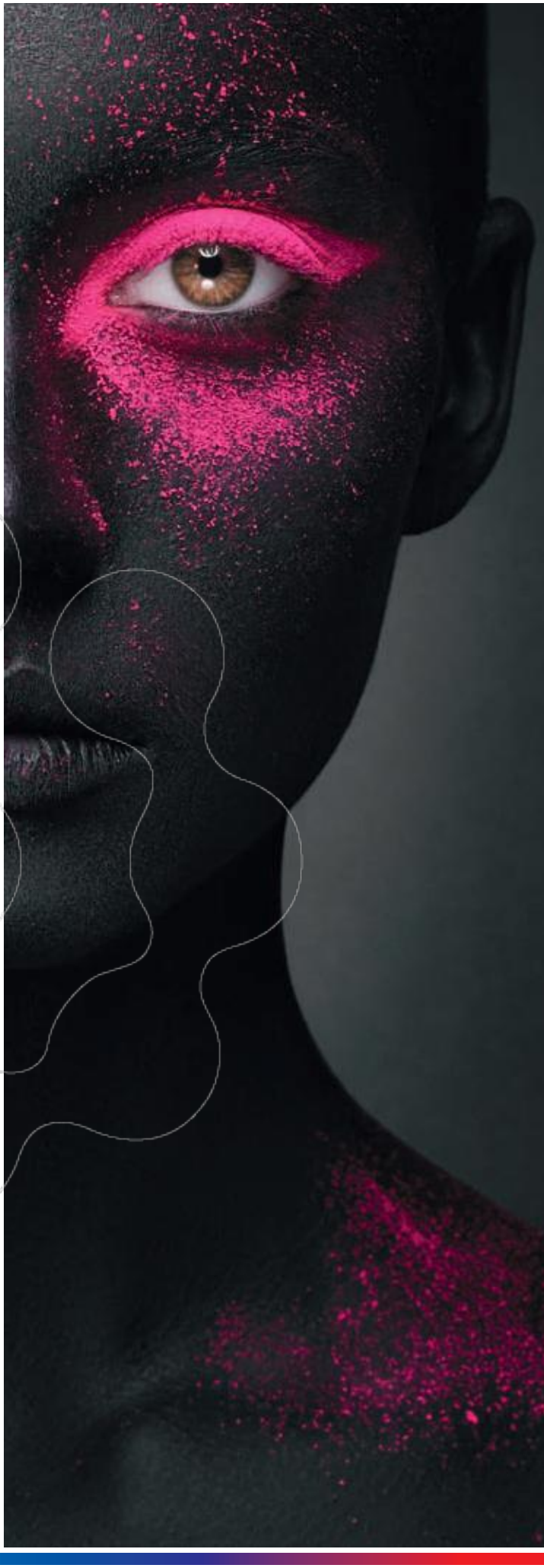
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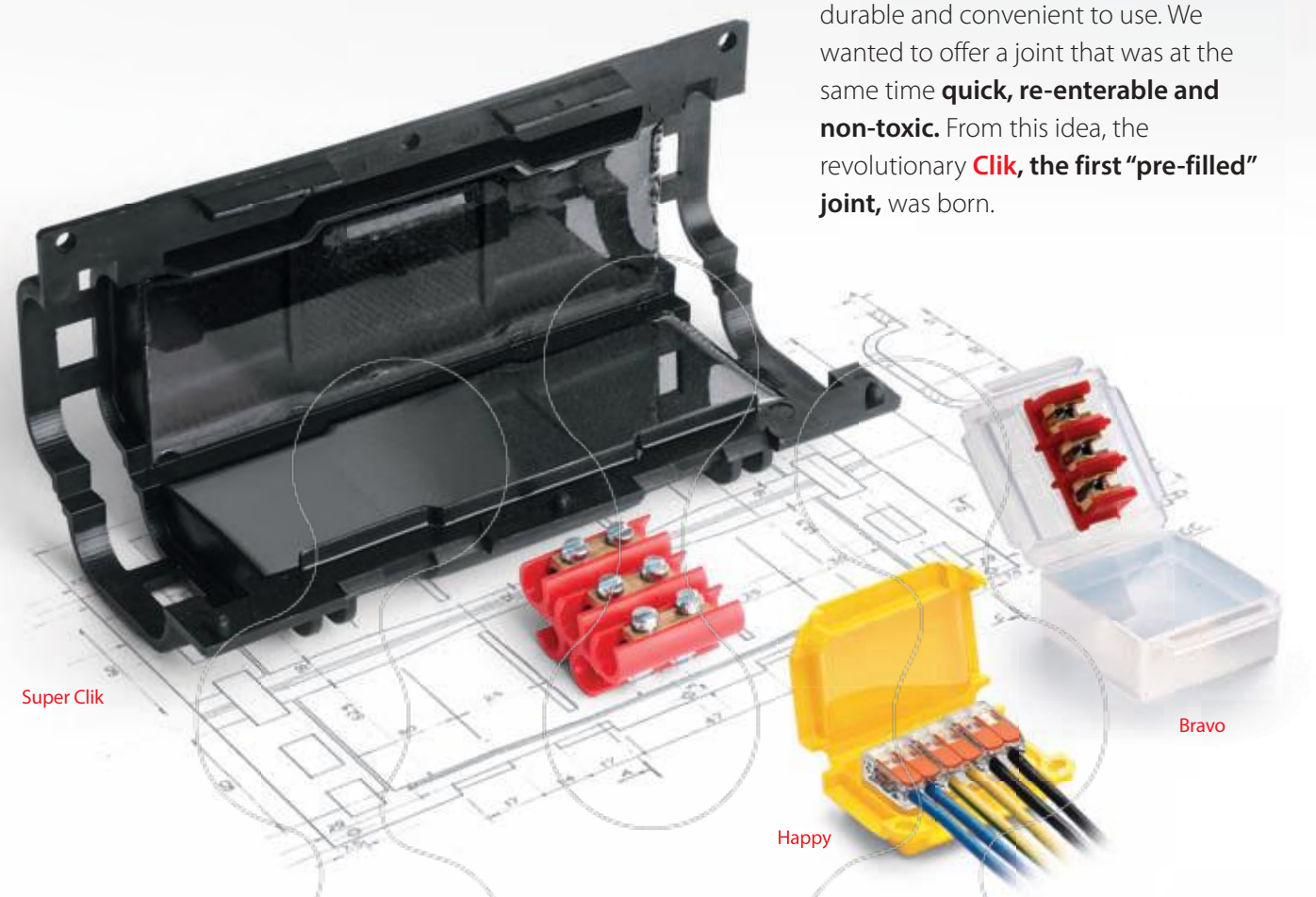
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It all started with a Clik…

It was 1995 when we felt the need to design and construct an electrical cable jointing system that would be more durable and convenient to use. We wanted to offer a joint that was at the same time **quick, re-enterable and non-toxic.** From this idea, the revolutionary **Clik, the first "pre-filled" joint,** was born.



Super Clik

Bravo

Happy









20.000 m^2 total which are home to:

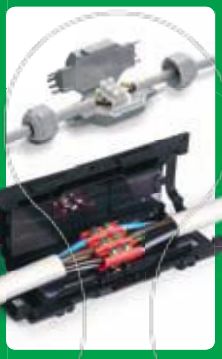
CERTIFIED LABORATORY
equipped for all types of testing with alternating current, direct current, impulse, and load cycle.

PHYSICAL/CHEMICAL LABORATORY
within which stringent technical parameters are established and set to guarantee the highest quality standards.


CelGum
Under Gel
Invisible
Ray Tech
Ray Tech
Ray Tech



JOINTS



GEL CONNECTION
PRE-FILLED
FOR CASTING
INJECTION
SYSTEM PLUS
SYSTEM FAST RP
HEAT-SHRINK

page 6

FILLERS



GEL
GELGUM
RUBBER
RESIN

80

KIT IP68



POWER KIT
GEL LEADER PACK
MAGIC BOX
J-BOX
DIY

100

Low Voltage

HEAT-SHRINK



THIN-WALL
MEDIUM-WALL
HEAVY -WALL
WRAP AROUND
POLE PROTECTION
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INSULATION TAPES



PVC
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CABLE PULLERS and LUBRICANTS



LUBRICANTS
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POLYESTER PULLERS
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ACCESSORIES

130

FIRE STOP BARRIERS



BAGS
PANELS
COLLARS
PUTTY
FOAM
TUBULAR
COMPOUND
COVERINGS

136

SPECIALS



GALACTIC LINE
RUBBER LINE
INDISPENSABLE

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JOINTS

Gel Connection New

PRE-FILLED GEL ACCESSORIES

page 8



IPX8



Happy Line



Gel Box Line



Gel Cover Line



Nano Line



Bravo Line

IP68



Little Joint IP68



Ready Box IP68

Pre-filled

JOINTS FILLED WITH ALREADY CROSS-LINKED GEL

page 30

New



Integrated connection



Super Clik



Rapid Joint IP68



King Joint

Free connection



Rapid Joint



Clik fire



Clik A2A

For casting

WITH CASTING FILLER

page 41



Magic Power Joint



Magic Joint



Magic Joint Fire



Rubber Joint



Raycast

Injection

WITH CARTRIDGE FILLER

page 58



Wonder Joint

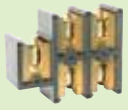
System Plus

JOINTS EQUIPPED WITH COMPLETE CONNECTION SYSTEM

page 60





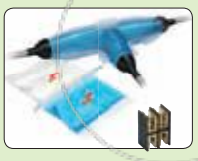




Wonder Joint System Plus



Magic Power Joint System Plus



Magic Joint System Plus



Raycast System Plus

System Fast RP

JOINTS WITH 4 SHEAR BOLT CONNECTORS

page 66





Rapid Joint RIP 68



Magic Power Joint RP



Magic Joint RP



Raycast RP

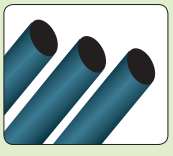


GLV RP

Heat-shrink

HEAT-SHRINK JOINTS

page 70



GLV



Terminals



Terminal blocks

page 78



Ray tech New

Happy

The revolutionary mini accessories with 3 entrances, pre-filled with gel and suitable for submersible installations (IPX8).

Designed in 3 dimensions to rapidly insulate and seal the most commonly used connectors. The 3 entrances not only guarantee the extreme flexibility in the range of these products by making possible triple configurations but also by the housing accepting a wide variety of connectors.

- Extremely versatile - Ready to use - Re-enterable
- For rigid of flexible insulated wires up to 4 mm²
- Pre-filled with gel, non toxic and no shelf life
- Small compact and robust
- Halogen free
- UV resistant

Electrical performance:
CEI EN 50393 as applicable
(testing under water head of the accessory installed in a box)

Gel: UL 94-HB

Operating temperature 90°

Installation temperature: -40°C / +50°C

Fully submersible

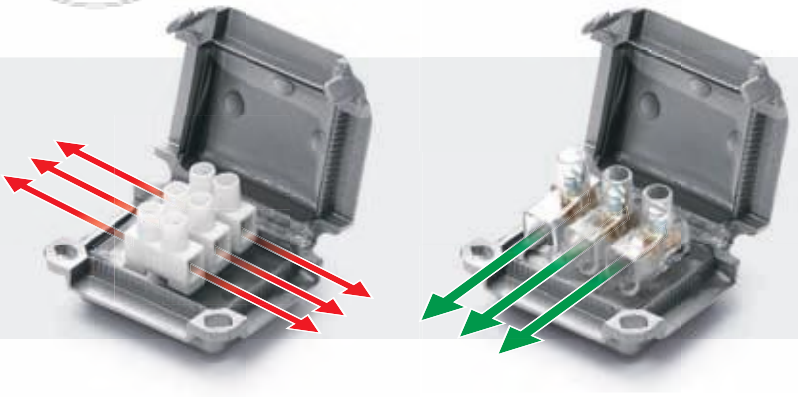
Can be used underground

IPX8 OFFICIALLY TESTED | IMQ



Configuration examples





Happy 0



Product	Pieces	Color	Description	A x B x C (mm)
Happy 0	x 4	●	Blister	41 x 28 x 19
Happy 0 Box12	x 12	○	Box	

IDEAL FOR (or similar):





Happy 1



Product	Pieces	Color	Description	A x B x C (mm)
Happy 1	x 2	●	Blister	45 x 37 x 24
Happy 1 Box10	x 10	○	Box	

IDEAL FOR (or similar):



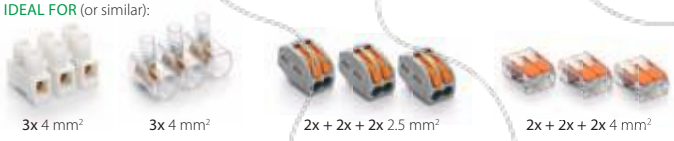


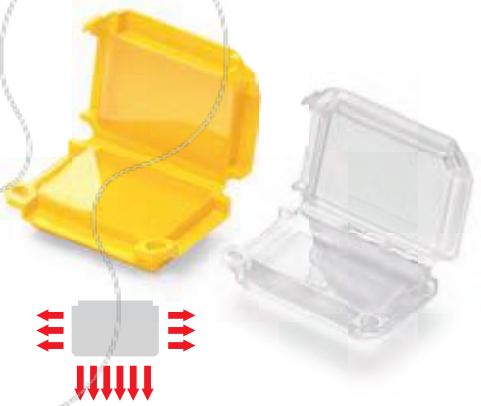
Happy 2

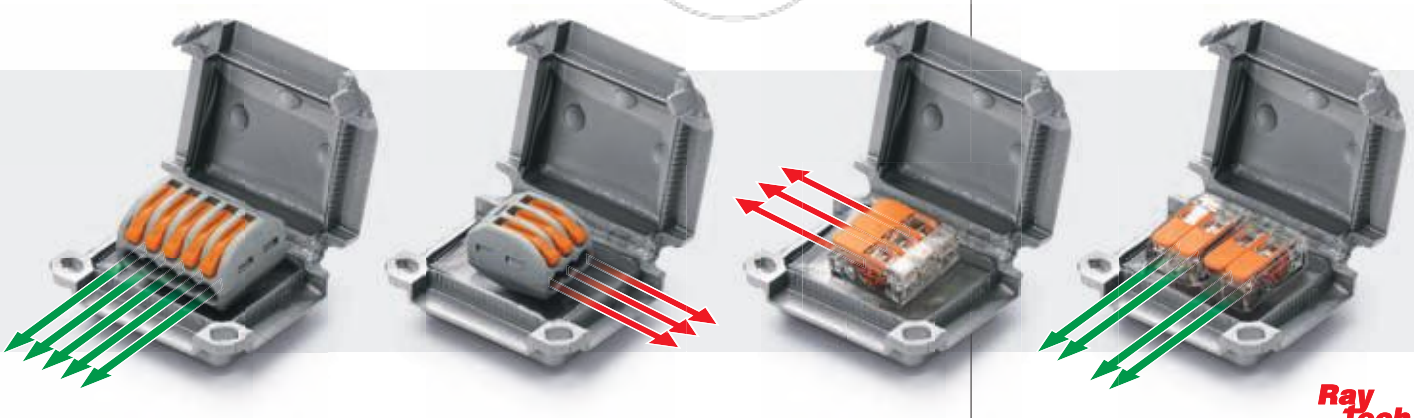


Product	Pieces	Color	Description	A x B x C (mm)
Happy 2	x 1	●	Blister	53 x 39 x 24
Happy 2 Box7	x 7	○	Box	

IDEAL FOR (or similar):







Ray tech

Raytech New

Happy Joint

The revolutionary mini accessories with 3 entrances, pre-filled with gel and suitable for submersible installations (IPX8) complete with connectors.

- Extremely versatile - ready to use - re-enterable
- Small, compact and robust
- No need for tools
- Pre-filled with gel, non toxic and no shelf life
- Can energise immediately
- For straight and branch connections
- For rigid or flexible insulated wires up to 4 mm^2
- Up to 5 conductors on one phase or up to two conductors on two or three phases
- Halogen free
- UV resistant

Electrical performance:
CEI EN 50393 as applicable
(testing under water head of the accessory installed in a box)

Gel: UL 94-HB

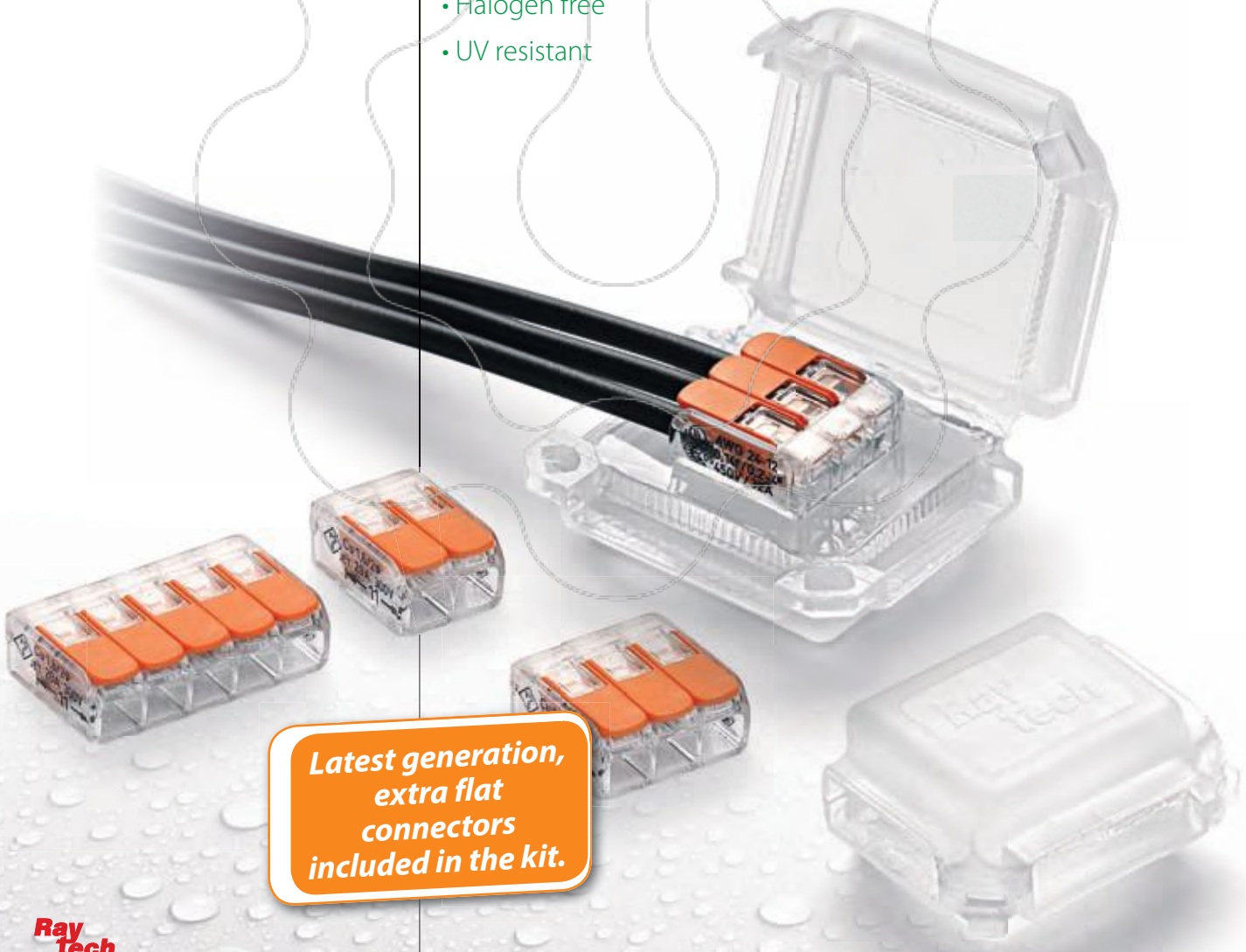
Operating temperature 90°

Installation temperature: -40°C / +50°C

Fully submersible

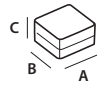
Can be used underground

IPX8 OFFICIALLY TESTED | IMQ



Latest generation, extra flat connectors included in the kit.

Happy Joint 3



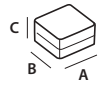
Product	Formation and wires cross section (Max N° x mm²)	Combination	Pieces for package	A x B x C (mm)
Happy Joint 3	3 x 1 - 4	2 through / 1 branch	4 pcs/ Blister	41 x 28 x 19



With one connector included for each Happy



Happy Joint 4



Product	Formation and wires cross section (Max N° x mm²)	Combination	Pieces for package	A x B x C (mm)
Happy Joint 4	4 x 1 - 4	2 through / in/out	2 pcs/ Blister	45 x 37 x 24



With two connectors included for each Happy



Happy Joint 5



Product	Formation and wires cross section (Max N° x mm²)	Combination	Pieces for package	A x B x C (mm)
Happy Joint 5	5 x 1 - 4	2 through / 3 branch	2 pcs/ Blister	45 x 37 x 24



With one connector included for each Happy



Happy Joint 6



Product	Formation and wires cross section (Max N° x mm²)	Combination	Pieces for package	A x B x C (mm)
Happy Joint 6	6 x 1 - 4	3 through / in/out	1 pcs/ Blister	53 x 39 x 24



With three connectors included for each Happy





HAPPY JOINT 3 HAPPY JOINT 4 HAPPY JOINT 5 HAPPY JOINT 6

Gel Box Line



Pre-filled gel accessories for sealing, protecting and making safe electrical connections.

- To put household systems in order
- For civil and industrial connections
- Also for submersible use
- Non-toxic and with no shelf life
- Versatile and ready to use
- Designed with dimensions suitable for the most commonly used connectors
- Halogen free
- UV resistant





Electrical performance:
CEI EN 50393 as applicable
(testing under water head of the accessory installed in a box)

Gel: UL 94-HB

Operating temperature 90°

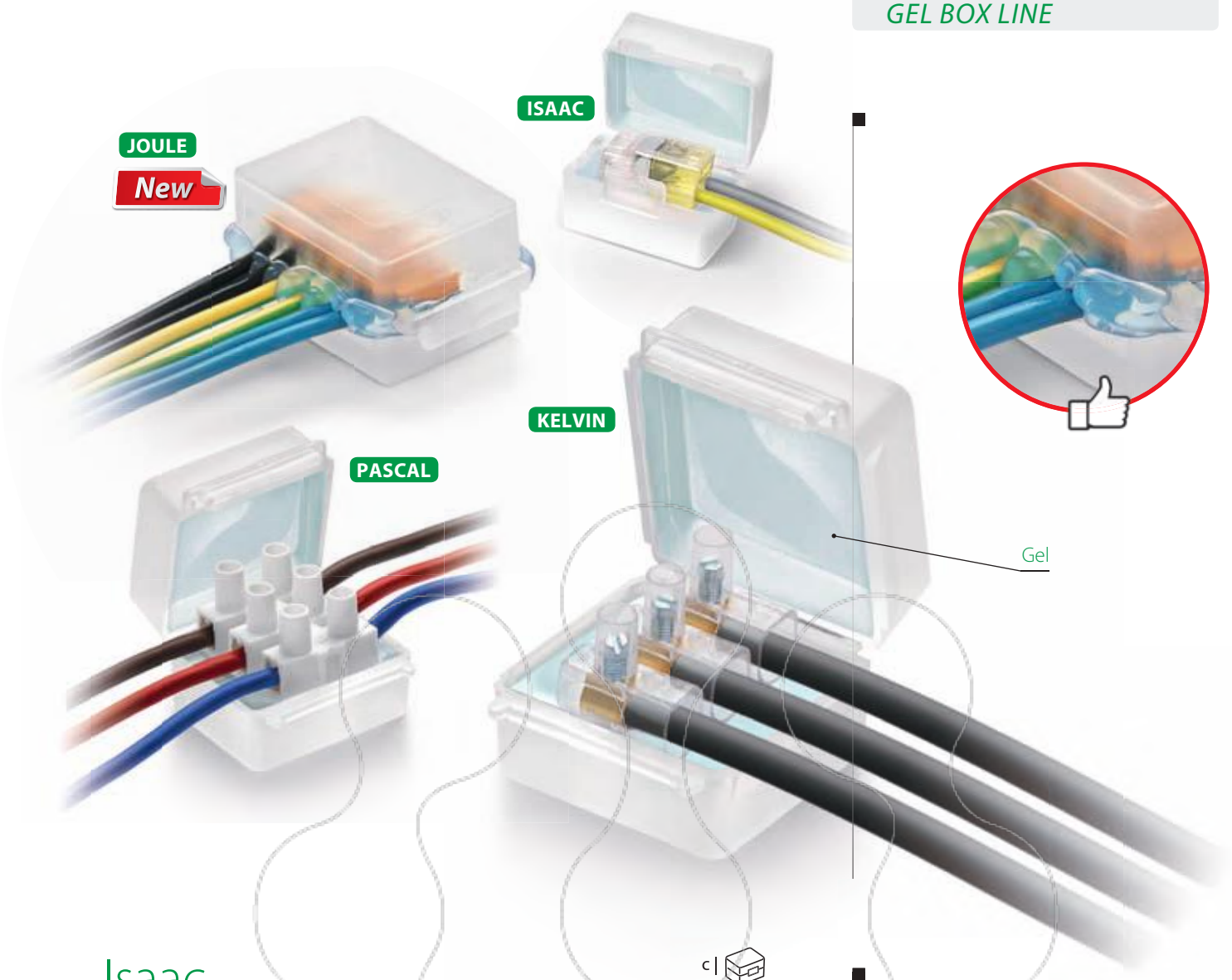
Installation temperature: -40°C / +50°C

Fully submersible

Can be used underground

IPX8 OFFICIALLY TESTED | IMQ





Isaac



Product	Description	Package	A x B x C (mm)
Isaac 4	x 4 pcs	Blister	30 x 27 x 23
Isaac 4 P30	x 30 pcs	Box	
Isaac 4 MP *	x 50 pcs	Multipack	

IDEAL FOR (or similar):





Pascal



Product	Description	Package	A x B x C (mm)
Pascal 6	x 2 pcs	Blister	36 x 37 x 26
Pascal 6 P15	x 15 pcs	Box	
Pascal 6 MP *	x 25 pcs	Multipack	

IDEAL FOR (or similar):





* Also available the flame retardant version in the following colours: yellow, orange, blue or black.



Watt



Product	Description	Package	A x B x C (mm)
Watt	x 2 pcs	Blister	30 x 42 x 26
Watt P15	x 15 pcs	Box	
Watt MP *	x 25 pcs	Multipack	

IDEAL FOR (or similar):



3x 2.5 mm² | **2x + 2x** 2.5 mm² | **5x** 2.5 mm² | **2x + 2x** 4 mm² | **5x** 4 mm²



Joule



Product	Description	Package	A x B x C (mm)
Joule	x 1 pcs	Blister	33 x 52 x 26
Joule MP *	x 20 pcs	Multipack	

IDEAL FOR (or similar):



2x + 2x + 2x 2.5 mm² | **2x + 2x + 2x** 4 mm²



Kelvin



Product	Description	Package	A x B x C (mm)
Kelvin	x 1 pcs	Blister	52 x 53 x 29
Kelvin P9	x 9 pcs	Box	
Kelvin MP *	x 20 pcs	Multipack	

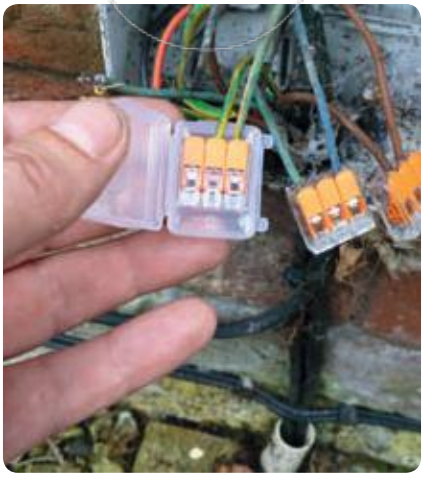
IDEAL FOR (or similar):



3x 6 mm² | **3x** 6 mm²

Also available the flame retardant version in the following colours: yellow, orange, blue or black.







Gel Box Line Kit

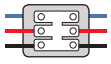
Complete with connectors.



Pascal M2,5



Product	Description	Package	A x B x C (mm)
Pascal M2,5	12 pieces + 36 terminal blocks (2.5 mm²)	Box	36 x 37 x 26



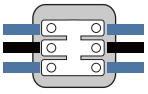
max 3 wires
max 2.5 mm²



Kelvin M4



Product	Description	Package	A x B x C (mm)
Kelvin M4	6 pieces + 24 terminal blocks (4 mm²)	Box	52 x 53 x 29



max 3 wires
max 4 mm²



Watt +



Product	Description	Package	A x B x C (mm)
Watt + 1.5	10 pieces + 30 end connectors/ terminal blocks (1.5 mm²)	Box	30 x 42 x 26
Watt + 2.5	10 pieces + 30 end connectors/ terminal blocks (2.5 mm²)	Box	



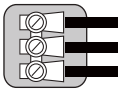
max 3 wires
max 2.5 mm²



Kelvin +



Product	Description	Package	A x B x C (mm)
Kelvin + 4	10 pieces + 30 end connectors/ terminal blocks (4 mm²)	Box	52 x 53 x 29
Kelvin + 6	10 pieces + 30 end connectors/ terminal blocks (6 mm²)	Box	
Kelvin 6+4	6 pieces + 20 end connectors/ terminal blocks (4 mm²)	Box	
Kelvin 6+6	6 pieces + 20 end connectors/ terminal blocks (6 mm²)	Box	



max 3 wires
max 6 mm²



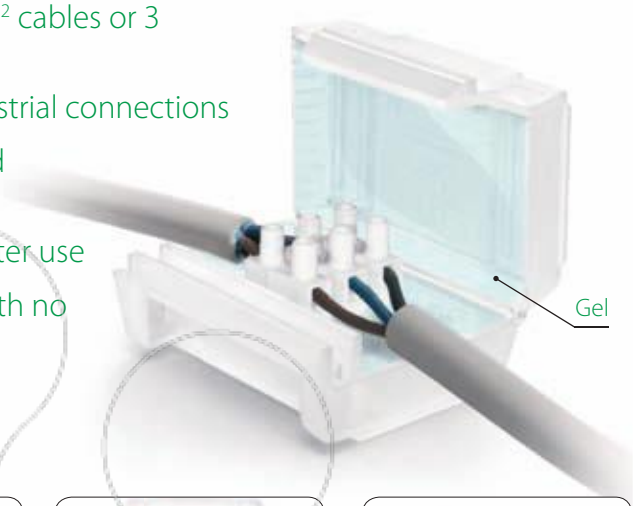
Ray tech

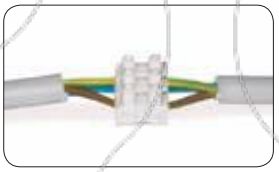


Gel Cover Line

Pre-filled gel accessories for straight connections, for the protection, safety and covering of electrical connections using strip connectors or alternatives.

- For 3 x 1 to 6 mm² cables or 3 insulated wires
- For civil and industrial connections
- To put household systems in order
- Also for underwater use
- Non-toxic and with no shelf life
- Halogen free
- UV resistant









Electrical performance:
CEI EN 50393 with connectors complying with EN 61238-1
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

Gel: UL 94-HB

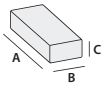
Operating temperature 90°

Installation temperature: -40°C / +50°C

IPX8 OFFICIALLY TESTED | IMQ



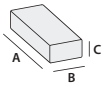
OHM & BAR



Product	Housed connectors type	Pieces for package	Package type	Dimensions A x B x C (mm)
OHM	2 from 4 mm²	1	blister	61 x 35 x 28
OHMp11		11	box	
BAR	3 from 4 mm² / 6 mm²	1	blister	63 x 41 x 28
BARp9		9	box	



Mammut Gel Cover

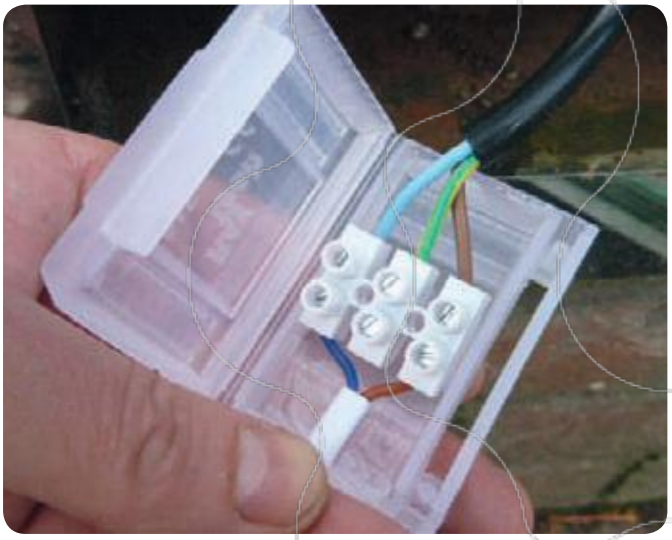
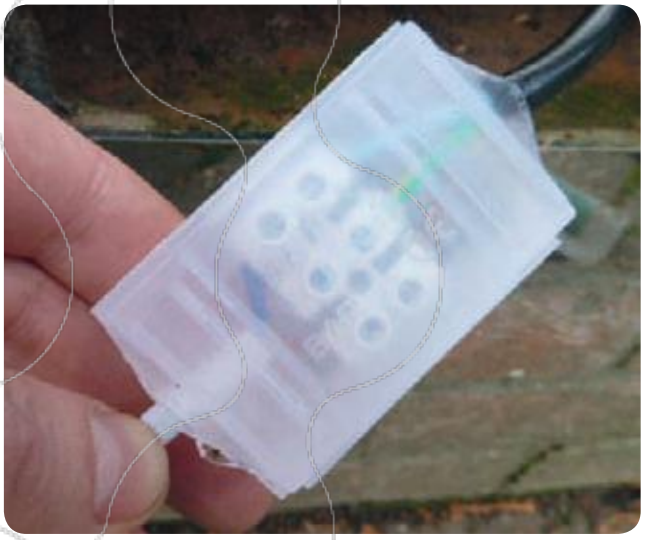


Product	Housed connectors type	Pieces for package	Package type	Dimensions A x B x C (mm)
Gel Cover 4	2 from 4 mm²	1	blister	61 x 35 x 28
Mammut Gel Cover		6	box	
Gel Cover 6	3 from 4 mm² / 6 mm²	1	blister	63 x 41 x 28
Mammut Gel Cover 6		8	box	

No flame propagation. CEI 20-35 • IEC 60332-1 • HD405-1 (as applicable). **Casing mix:** UL 94-V2

Installation examples





Ray tech New

Nano Joint

Pre-filled gel accessories to seal, protect and make safe electrical connections.
Inclusive of connectors

Electrical performance:
CEI EN 50393 as applicable
(testing under water head of the accessory installed in a box)

Gel: UL 94-HB

Operating temperature 90°

Installation temperature: -40°C / +50°C

Fully submersible

Can be used underground

IPX8 OFFICIALLY TESTED | IMQ

- Ready to use, quick, re-enterable!
- No tools required
- Can energise immediately
- For straight & branch connections
- For rigid or flexible insulated wires from 1 a 4 mm^2
- For 1, 2 and 3 cores connections
- Up to 5 conductors on one phase or up to 2 conductors on two or three phase
- Small, compact and resistant
- No shelf life
- Halogen free
- UV resistant



Latest generation, extra flat connectors included in the kit.

Nano 3

Product	Formation and wires cross section (Max N° x mm²)	Combination	Pieces for package	A x B x C (mm)
Nano 3	3 x 1 - 4	2 through / 1 branch	4 pcs Blister	30 x 27 x 23


max 3 wires
max 4 mm²


With one connector included for each Nano Joint



Nano 5

Product	Formation and wires cross section (Max N° x mm²)	Combination	Pieces for package	A x B x C (mm)
Nano 5	5 x 1 - 4	2 through / 3 branch	2 pcs Blister	30 x 42 x 26


max 5 wires
max 4 mm²


With one connector included for each Nano Joint



Nano 6

Product	Formation and wires cross section (Max N° x mm²)	Combination	Pieces for package	A x B x C (mm)
Nano 6	6 x 1 - 4	3 through / In/Out	1 pcs Blister	33 x 52 x 26


max 6 wires
max 4 mm²


With three connectors included for each Nano Joint





Ray tech New

Nano Mam - For

Pre-filled gel accessories to seal, protect and make safe electrical connections. Inclusive of connectors.

Electrical performance:
CEI EN 50393 as applicable
(testing under water head of the accessory installed in a box)

Gel: UL 94-HB

Operating temperature 90°

Installation temperature: -40°C / +50°C

Fully submersible

Can be used underground

IPX8 OFFICIALLY TESTED | IMQ

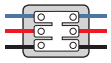
- Ready to use, quick, re-enterable!
- Ideal for outdoor & underground installations, fully submersible
- Immediately energizable
- For rigid or flexible insulated wires from 1 a 4 mm^2
- For 1, 2 or 3 cores connections
- Small, compact and resistant
- No shelf life
- Halogen free
- UV resistant



Nano Mam 2,5



Product	Formation and wires cross section (Max N° x mm²)	Combination	Pieces for package	A x B x C (mm)
Nano Mam 2,5	3 x 1 - 2,5	3 through	2 pcs/ Blister	36 x 37 x 26



max 3 wires
max 2.5 mm²



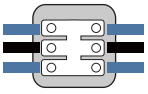
With one connector included for each Nano Mam



Nano Mam 4



Product	Formation and wires cross section (Max N° x mm²)	Combination	Pieces for package	A x B x C (mm)
Nano Mam 4	3 x 1,5 - 4	3 through	1 pcs/ Blister	52 x 53 x 29



max 3 wires
max 4 mm²



With one connector included for each Nano Mam



Nano For 2,5



Product	Formation and wires cross section (Max N° x mm²)	Combination	Pieces for package	A x B x C (mm)
Nano For 2,5	3 x 1 - 2,5	3 connections / In/Out	1 pcs/ Blister	33 x 52 x 26



max 3 wires
max 2.5 mm²



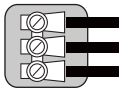
With one connector included for each Nano For



Nano For 4



Product	Formation and wires cross section (Max N° x mm²)	Combination	Pieces for package	A x B x C (mm)
Nano For 4	3 x 1 - 4	3 connections / In/Out	1 pcs/ Blister	52 x 53 x 29



max 3 wires
max 6 mm²



With one connector included for each Nano For

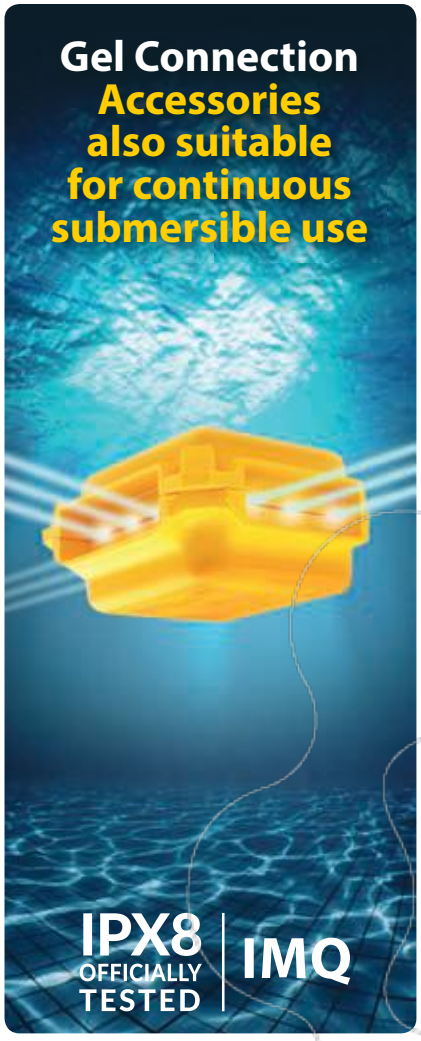








To choose the suitable accessory for your



Gel: UL 94-HB

Operating temperature

Installation temperature: -40°C / +50°C

Fully submersible

Can be used underground

GEL CONNECTION		Terminal blocks (chocolate block type)		End connectors/ terminal blocks
		2x	3x	3x
Revolution	HAPPY 0 41 x 28 x 19 mm	2,5 mm²		
	HAPPY 1 45 x 37 x 24 mm	2,5 mm²	2,5 mm²	2,5 mm²
	HAPPY 2 53 x 39 x 24 mm		4 mm²	4 mm²
Classic Gel Box Line	ISAAC 30 x 27 x 23 mm	2,5 mm²		
	PASCAL 36 x 37 x 26 mm	4 mm²	4 mm²	1,5 mm²
	WATT 30 x 42 x 26 mm			2,5 mm²
	JOULE 33 x 52 x 26 mm			4 mm²
	KELVIN 52 x 53 x 29 mm			

application, begin with your preferred connector.



First generation of lever connectors (e.g. WAGO 222 or similar)			Flat lever connectors (e.g. WAGO 221 type or similar)		
2x	3x	5x	2x	3x	5x

Ray tech New

Bravo

The first "Gel-Box" with integrated connectors!

- Ready to use, quick, re-enterable!
- For rigid or flexible insulated wires from 1 a 6 mm²
- Immediately energizable
- For straight & branch connections
- For 1 or 3 cores connections
- Small, compact and transparent
- No shelf life
- Halogen free and UV resistant

Electrical performance:
CEI EN 50393 as applicable
(testing under water head
of the accessory installed in a box)

Gel: UL 94-HB

Operating voltage: 0,6 / 1kV

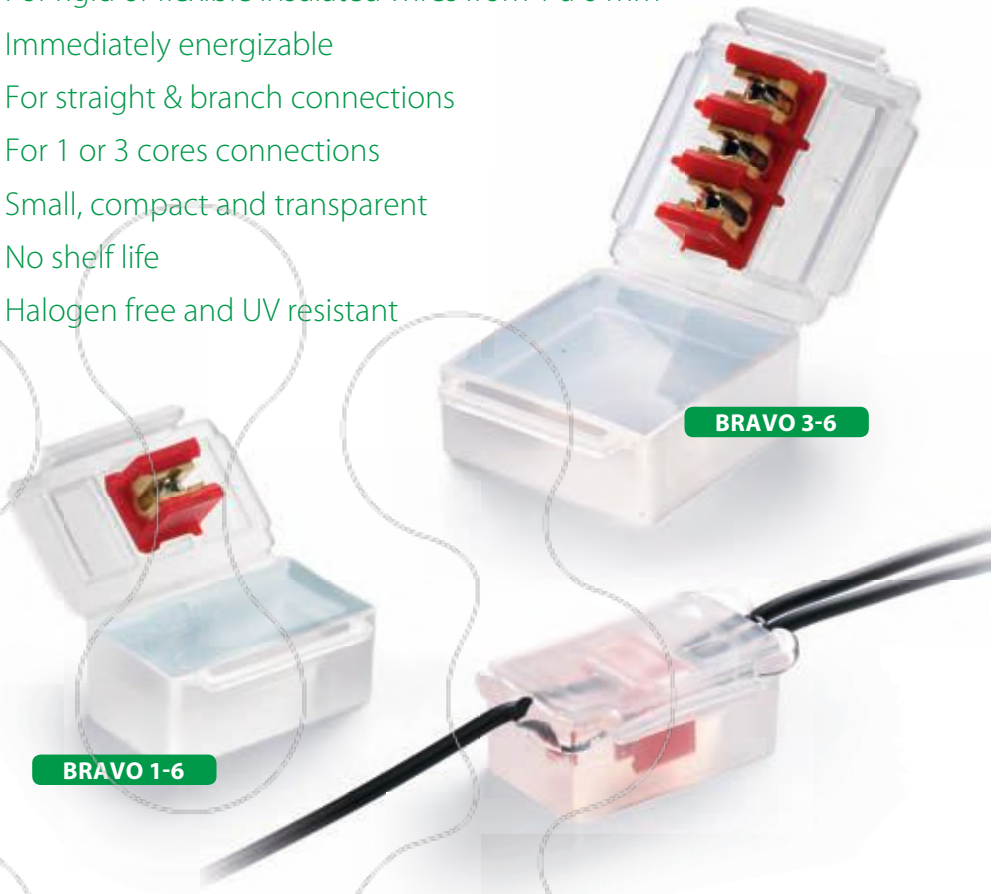
Operating temperature 90°

Installation temperature:
-40°C / +50°C

Fully submersible

Can be used undergroun

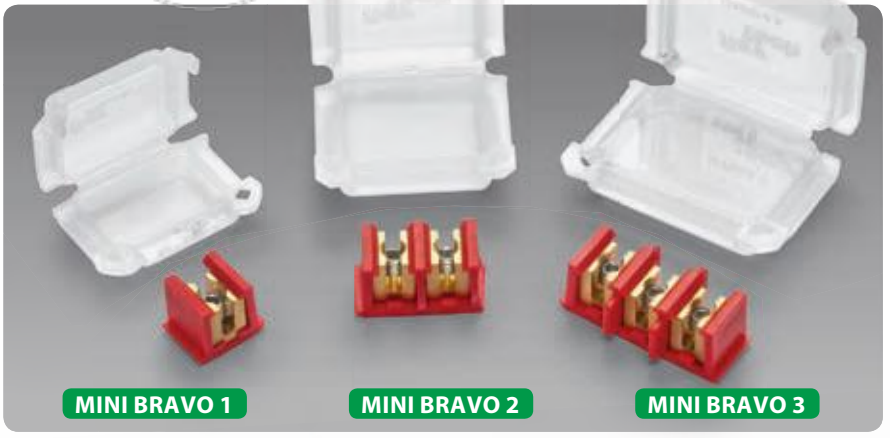
IPX8 OFFICIALLY TESTED | IMQ



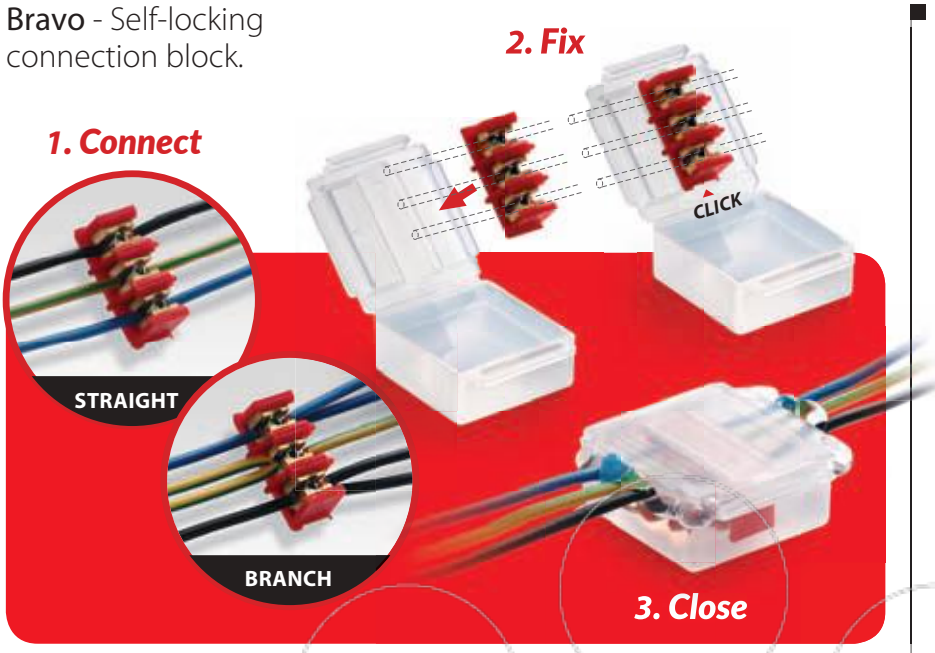
Mini Bravo

Extra-flat mini box
with terminal block.



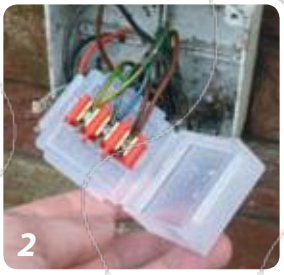


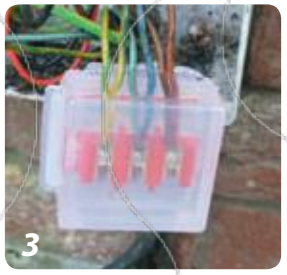
Bravo - Self-locking connection block.













Bravo

Product	Formation and wires cross section Straight or through (N° x mm²)	Branch (N° x mm²)	Pieces for package	A x B x C (mm)
Bravo 1-6	1 x 1 - 6	1 x 1 - 6	1 pcs/ Blister	50 x 29 x 22
Bravo 3-6	2 x 1 - 6 3 x 1 - 6	2 x 1 - 6 3 x 1 - 6	1 pcs/ Blister	53 x 49 x 22



Mini Bravo

Product	Formation and wires cross section Straight or through (N° x mm²)	Branch (N° x mm²)	Pieces for package	A x B x C (mm)
Mini Bravo 1	1 x 1 - 4	1 x 1 - 4	3 pcs/ Blister	41 x 28 x 19
Mini Bravo 2	2 x 1 - 4	2 x 1 - 4	1 pcs/ Blister	45 x 37 x 24
Mini Bravo 3	3 x 1 - 4	3 x 1 - 4	1 pcs/ Blister	53 x 39 x 24



Raytech New

Little Joint

IP68, gel pre-filled micro joint, space-saver complete with connectors and with minimal aesthetic impact.

Electrical performance:
CEI EN 50393
as applicable

Gel: UL 94-HB

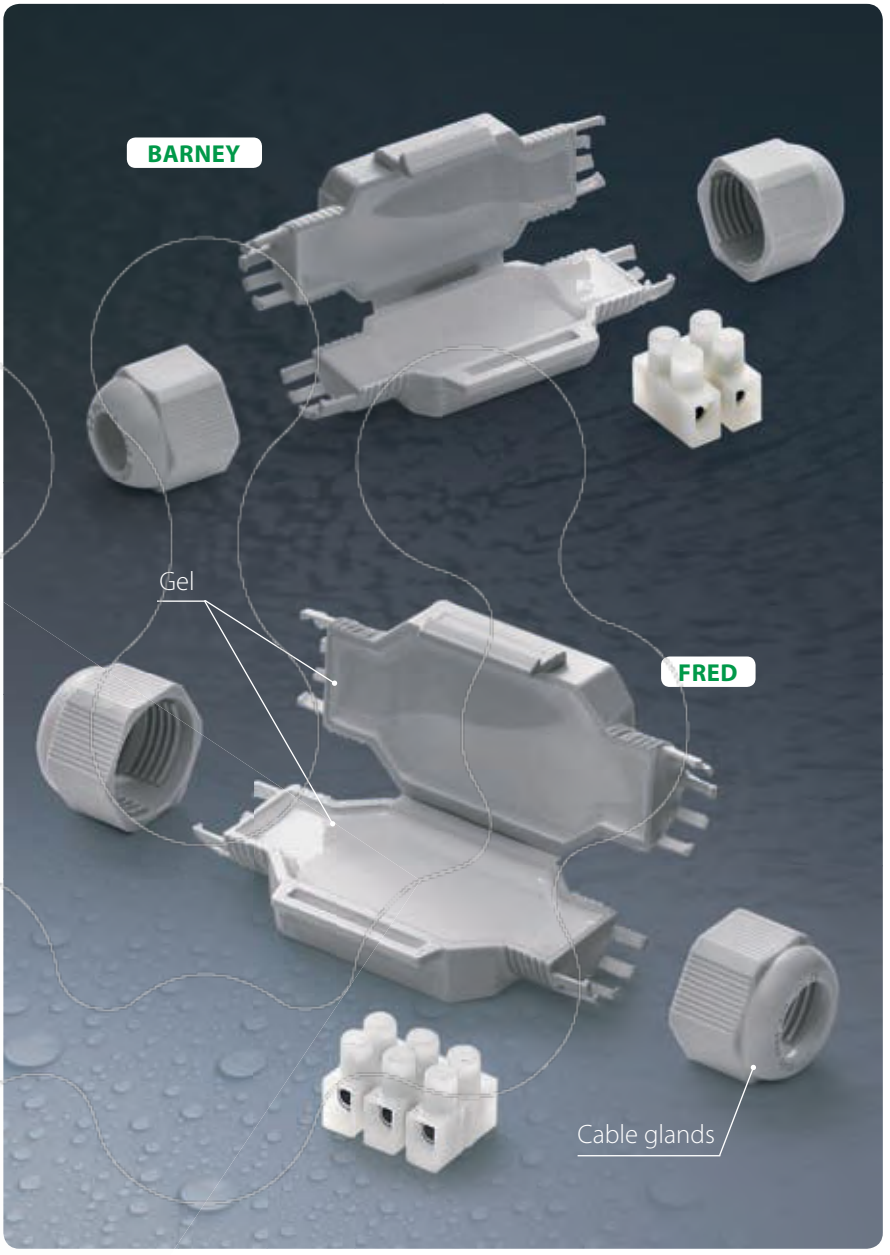
Operating temperature 90°

Installation temperature: -40°C / +50°C

Fully submersible

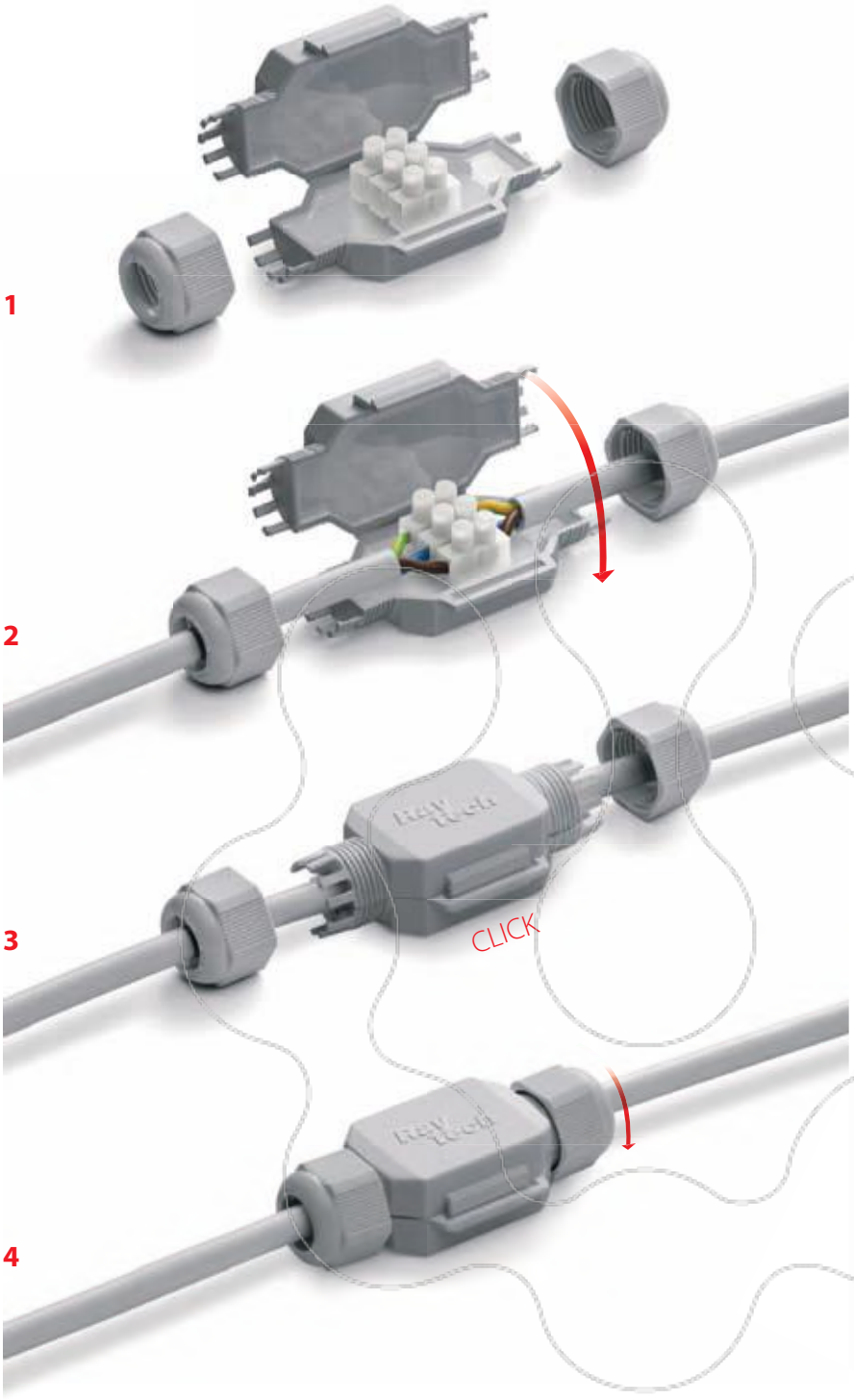
Can be used undergroun

IP68 OFFICIALLY TESTED | IMQ





- Equipped with cable glands to avoid accidental cable traction
- Complete with screw connectors
- Pre-filled with non-toxic, non-classified gel
- Very compact and ready to use
- Always re-enterable
- Halogen free & UV resistant





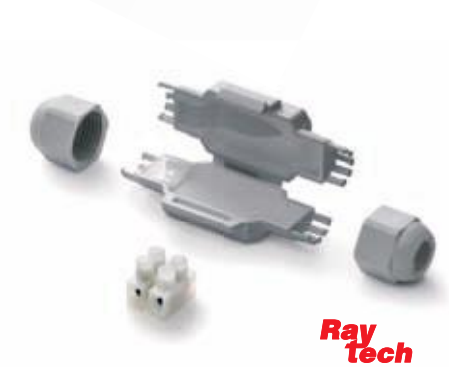




For use in traps, in lampholders for LED spotlights, especially in the presence of water and moisture, thanks to its very small size.



Product	Mammut	Cable formation max (N° x mm²)	Ø cables min - max (mm)	Pieces / Pack	(mm)
Barney		2 x 2,5	6 - 10	1 pz / Blister	75 x 28 x 19
Barney MP				10 pz / Multipack	
Fred		3 x 2,5	8 - 13	1 pz / Blister	80 x 36 x 23
Fred MP				10 pz / Multipack	



Ray tech New

Ready Box IP68

The 4-entrances, gel pre-filled junction box complete with connection block and glands, for 5 core cables with diameter up to 16 mm.

- Ready to use, it can be installed in all environmental conditions
- Also suitable for wet or flooded environments
- Always re-enterable
- Pre-filled with gel. Non-toxic and non-classified as hazardous under CLP
- Pre-threaded entries for cable gland mounting
- Snap shut closure, does not require screws
- Wall or external ceiling fixing system
- Halogen free & UV resistant
- No shelf life

Electrical performance:
CEI EN 50393 as applicable
(with testing under water head and water between the cable cores)

Gel: UL 94-HB

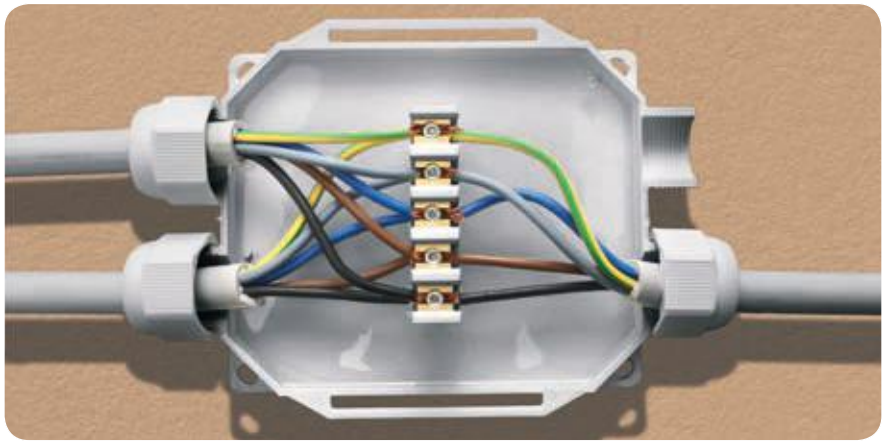
Halogen free:
according to CEI EN 50267 2-2
Self-extinguishing and resistant to abnormal heat and fire:
Glow wire test a +960°C
according to EN 60695-2-11

Operating temperature 90°

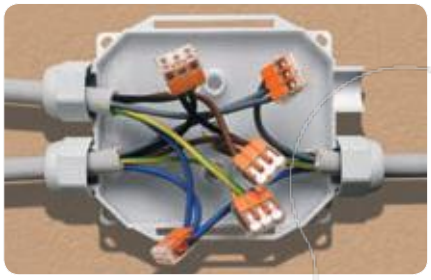
Gel operating temperature:
-60°C / +200°C

IP68 OFFICIALLY TESTED | IMQ

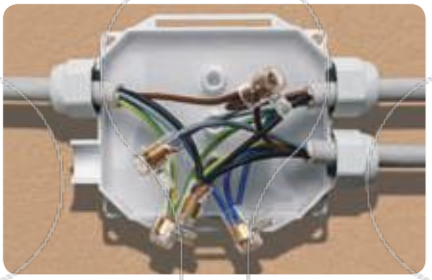




Thanks to its innovative design, unlike a standard box, there is no need to break through the walls of the box to insert the cable.



Also suitable for extra-flat lever connectors.



Also suitable for screw terminals.

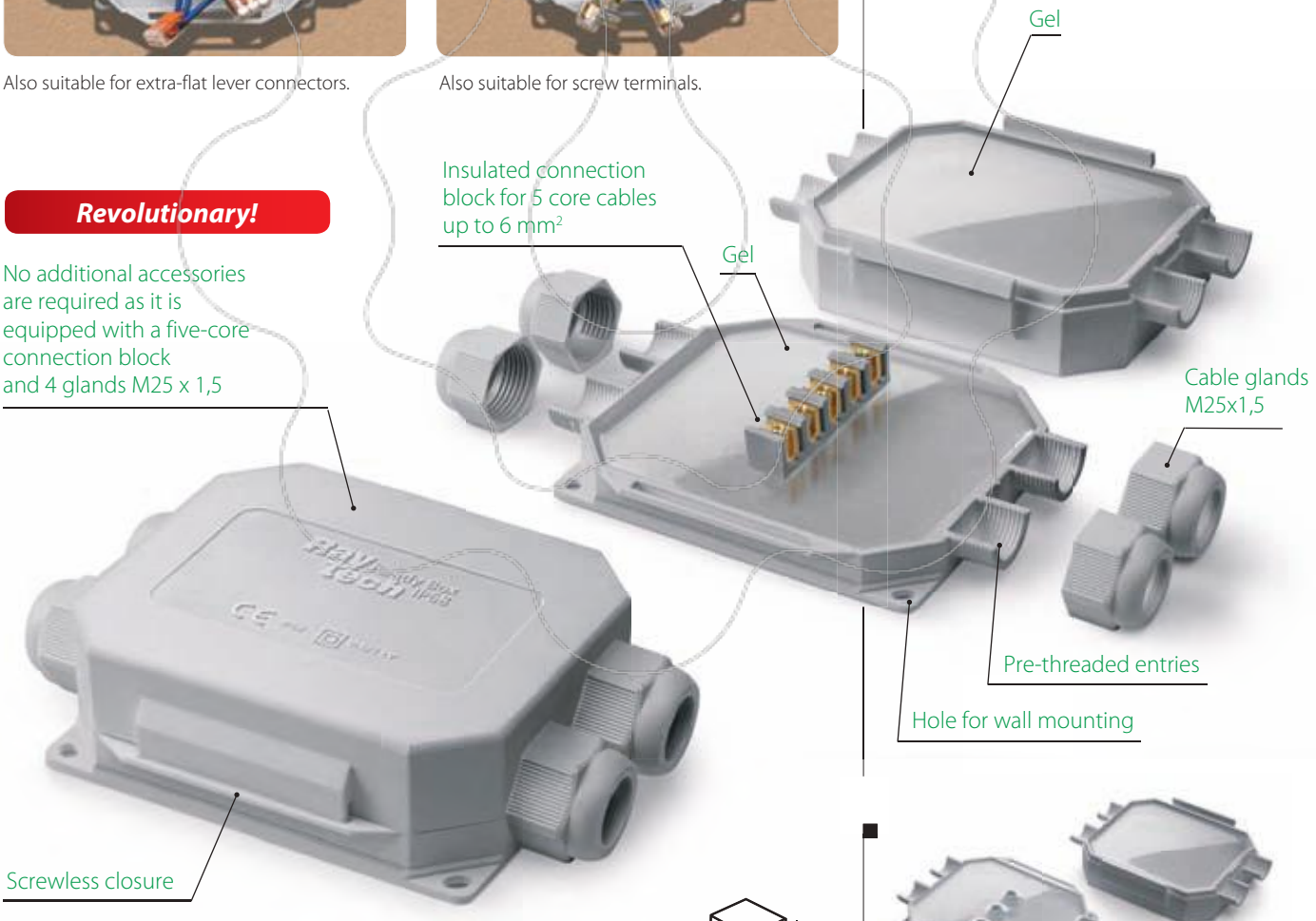




Revolutionary!

No additional accessories are required as it is equipped with a five-core connection block and 4 glands M25 x 1,5

Insulated connection block for 5 core cables up to 6 mm²



Product	n° of entrances	Ø entrances with cable glands min (mm)	Ø entrances with cable glands max (mm)	C (mm)
Ready Box IP68	4	10	16	120 x 100 x 50



Ray tech New

Super Clik

Range of fast gel pre-filled straight or branch type joints for 0.6/1 kV multi core cables of up to 5 conductors.



The combination of the primary insulation in a cross-linked polymer gel and the highly robust insulating plastic case makes this a Class 2 joint defined by CEI 64-8. The joint has been tested in accordance with the main international spécifications, with repeated flexing and torsion tests and immersion in water, it has been declared as conforming to the mechanical, electrical and sealing spécifications required for plastic cable accessories. The joint and its components have an unlimited shelf life, they are chemically inert and therefore completely safe; the connections are re-entrable even after long working periods. Made of self-extinguishing components the joint is flame retardant. For cables at 90°C working temperature.

Electrical performance: CEI EN 50393
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

No flame propagation:
CEI 20-35 • IEC 60332-1 HD405-1
(as applicable)
Low smoke and toxic and corrosive gas emissions

Gel: UL 94-HB
Mescola involucro: UL 94-V2

Operating temperature 90°

Installation temperature: -40°C / +50°C

IPX8 OFFICIALLY TESTED | IMQ

- Complete with isolated terminal blocks
- For straight and branch connections
- For all types of application, including submersible
- Re-accessible and with no shelf life
- Flame retardant
- Non toxic and safe





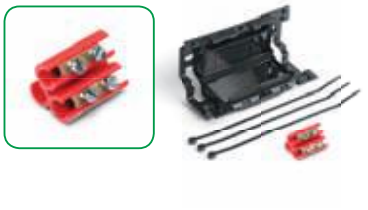


PRE-FILLED WITH GEL

for integrated connections

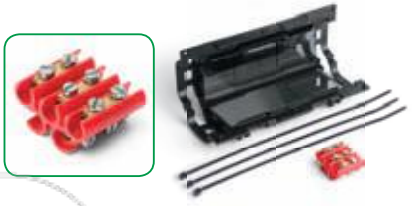
Product	Cable formation and conductor cross sections (n° x mm²) Straight Connections In line	Branch connections T	Branch connections B	∅ max cables (mm)	A x B x C (mm)
Super Clik 0	3 x 1,5 - 6	3 x 1,5 - 4	3 x 1,5 - 2,5	14	95 x 43 x 28

T : Through cable - **B** : Branch cable



Product	Cable formation and conductor cross sections (n° x mm²) Straight Connections In line	Branch connections T	Branch connections B	∅ max cables (mm)	A x B x C (mm)
Super Clik 1	2 x 1,5 - 6	2 x 4	2 x 2,5	20,5	150 x 56 x 30
	3 x 1,5 - 6	3 x 4	3 x 2,5		
	4 x 1,5 - 6	4 x 4	4 x 2,5		
	5 x 1,5 - 6	5 x 4	5 x 2,5		

T : Through cable - **B** : Branch cable



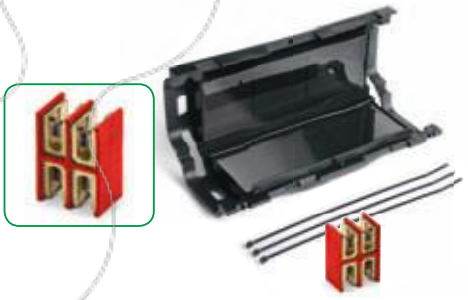
Product	Cable formation and conductor cross sections (n° x mm²) Straight Connections In line	Branch connections T	Branch connections B	∅ max cables (mm)	A x B x C (mm)
Super Clik 2	2 x 4 - 16	2 x 10	2 x 6	30	220 x 85 x 46
	3 x 4 - 16	3 x 10	3 x 6		
	4 x 4 - 16	4 x 10	4 x 6		
	5 x 4 - 16	5 x 10	5 x 6		

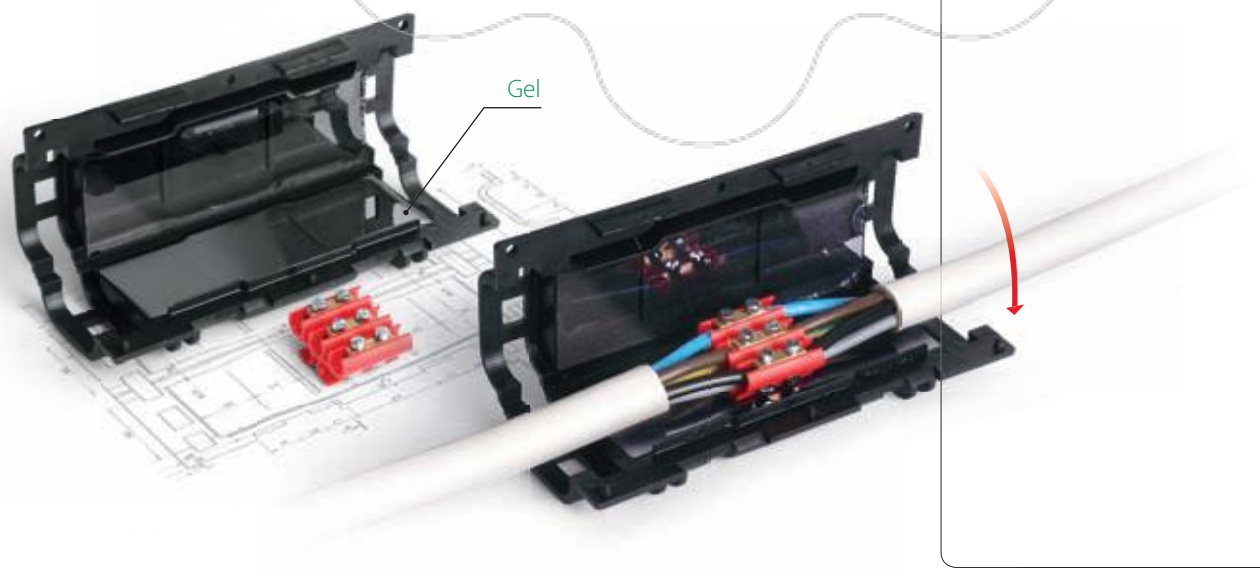
T : Through cable - **B** : Branch cable



Product	Cable formation and conductor cross sections (n° x mm²) Straight Connections In line	Branch connections T	Branch connections B	∅ max cables (mm)	A x B x C (mm)
Super Clik 3	-	2 x 4 - 25	2 x 1,5 - 16	30	220 x 85 x 46
		3 x 4 - 25	3 x 1,5 - 16		
		4 x 4 - 25	4 x 1,5 - 16		

T : Through cable - **B** : Branch cable







Rapid Joint IP68

Radial closing gel pre-filled joint for extruded insulation cables up to 1 kV.

Primary insulation, consisting of a cross-linked polymer gel, and the exceptionally robust insulating plastic casing render Class 2 joints in accordance with the definitions contained in standard CEI 64-8. The joint has been tested in accordance with the main international specifications, with repeated flexing and torsion tests and immersion in water, and has been declared as conforming to the mechanical, electrical and sealing specifications required for plastic cable accessories. The joint and its components have an unlimited shelf life, are chemically inert and therefore completely safe. Conductor connections are re-enterable even after long periods of operation. Packaged with self-extinguishing material, flame retardant, for cables at 90°C working temperature. The radial closing system facilitates joint application, making them re-enterable only by means of a tool.

Electrical performance: CEI EN 50393
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

No flame propagation:
CEI 20-35 • IEC 60332-1 • HD405-1
(as applicable)
Low smoke and toxic and corrosiand corrosive gas emissions

Gel:

Casing mix: UL 94-V2

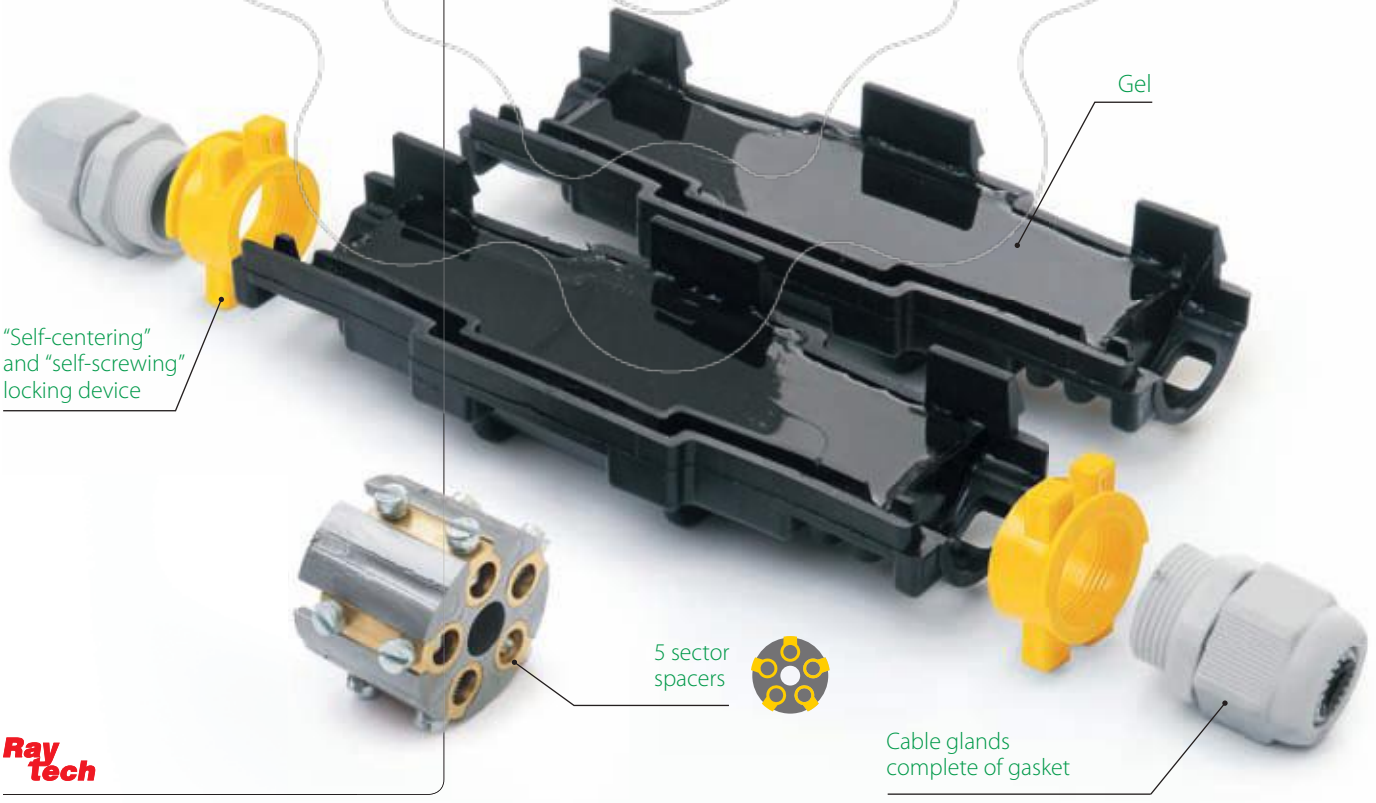
Degree of protection: IP68

Operating temperature 90°

Installation temperature: -40°C / +50°C

IP68 OFFICIALLY TESTED | IMQ

- For straight connections (in line)
- For multi core cables of up to 5 cores
- With suitable spacers
- For all types of application, including submersible
- Wide range of cable formations
- Re-enterable only by means of a tool
- Suitable for 3 core crossing
- Non-toxic, with no expiry date

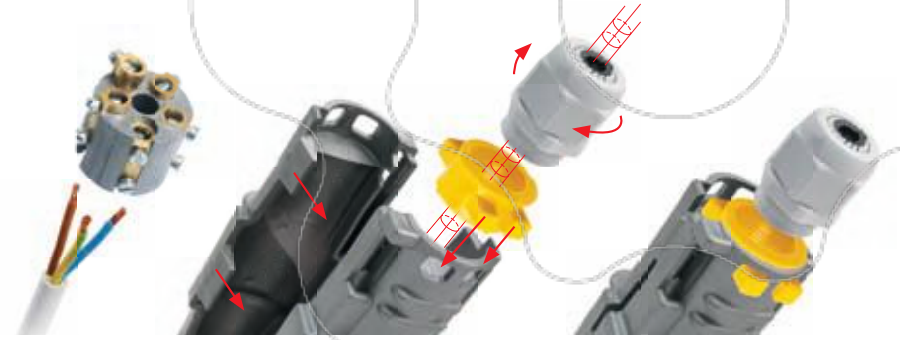


PRE-FILLED WITH GEL

for integrated connections

Product	Formation n°	Configuration IP68 Section (mm²)	Ø cable (mm)	A x B (mm)	Configuration IPX8 Section (mm²)	Ø cable (mm)	A x B (mm)
Rapid Joint L1,5-IP68		4 - 25			1,5 - 50		
		1,5 - 6			1,5 - 6		
		1,5 - 2,5	8 - 13	155 x 55	1,5 - 6	20,5	105 x 55
		1,5			1,5 - 6		
		1,5			1,5 - 6		
Rapid Joint L6-IP68		25 - 70			2,5 - 150		
		1,5 - 10			2,5 - 10		
		1,5 - 6	12 - 18	245 x 60	2,5 - 10	24	180 x 60
		1,5 - 6			2,5 - 10		
		1,5 - 6			2,5 - 10		
Rapid Joint L10-IP68		70 - 95			120 - 240		
		10 - 16			4 - 25		
		6 - 10	16 - 20	275 x 65	4 - 25	31	210 x 65
		4 - 10			4 - 25		
		4 - 10			4 - 25		
Rapid Joint L25-IP68		120 - 240			120 - 240		
		25			10 - 50		
		16 - 25	21 - 28	410 x 100	10 - 50	31	320 x 100
		16 - 25			10 - 50		

For single core cable: do not install the separator with screw connectors and connect with crimp connector.







New terminal for Rapid Joint L-IP68 with shear bolt connectors.



King Joint

Range of fast gel pre-filled straight or branch type joints for 0.6/1 kV multi core cables of up to 5 conductors.

The primary insulation, consisting of a cross-linked polymer gel and extremely strong plastic insulating housing, make the Class 2, in accordance with the definitions contained in CEI Regulation 64-8. The joint, tested in accordance with the most important international specifications with repeated bending and twisting cycles and immersion in water, was found to comply with the mechanical, electrical and sealing requirements necessary for accessories for plastic cables. The joint and its components have no self life, are chemically inert and therefore completely safe; the conductor connections are re-accessible even after long operating periods. Packaged with self-extinguishing material, it is flame retardant. Suitable for cables with a temperature of +90°C.

- For multicore cables of up to 5 cores
- 5 sector spacers for proper centring of five-core connection
- Complete with screw connectors
- For straight and branch connections, including armoured cable
- For all types of application, including submersible
- Re-accessible and with no shelf life
- Flame retardant
- Non toxic and safe

Electrical performance:
CEI EN 50393
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

No flame propagation:
CEI 20-35 • IEC 60332-1 HD405-1
(as applicable)
Low smoke and toxic and corrosive gas emissions

Gel:

Casing mix: UL 94-V2

Degree of protection: IPX8

Operating temperature: 90°

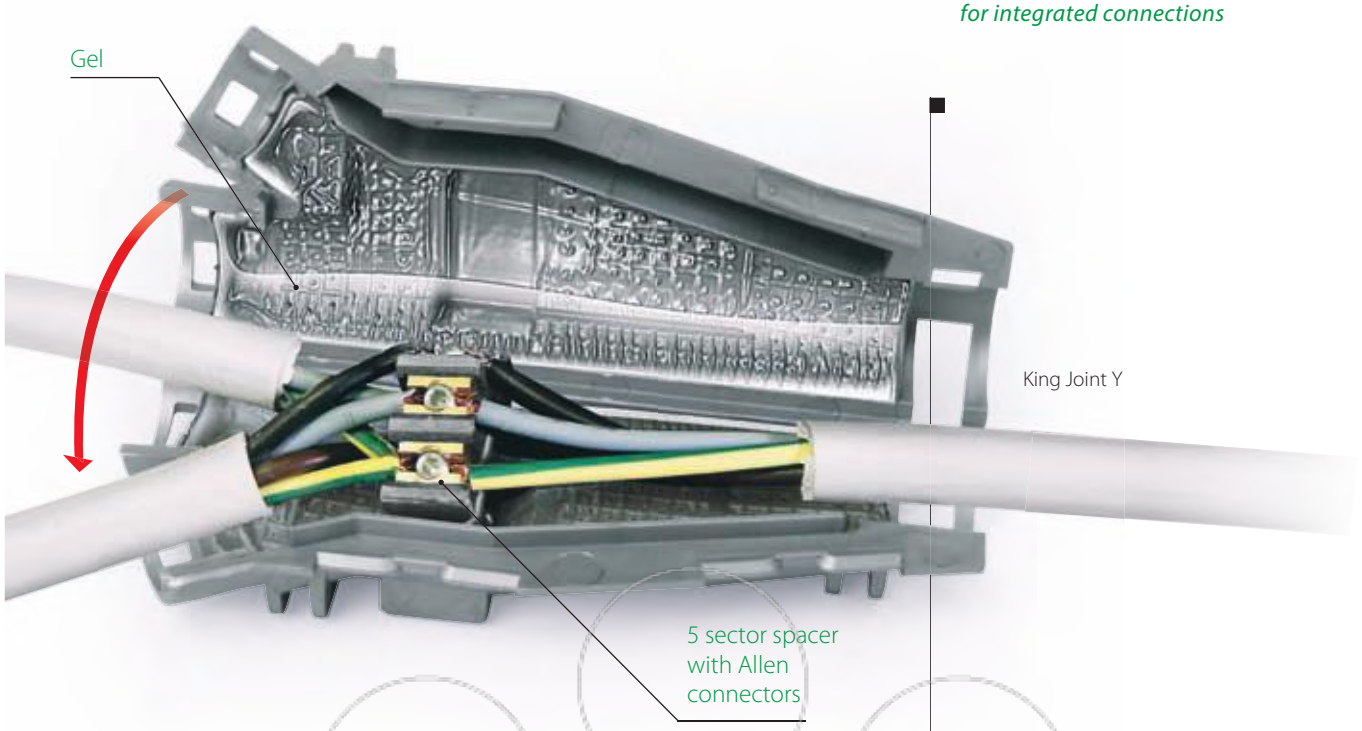
Installation temperature: -40°C / +50°C

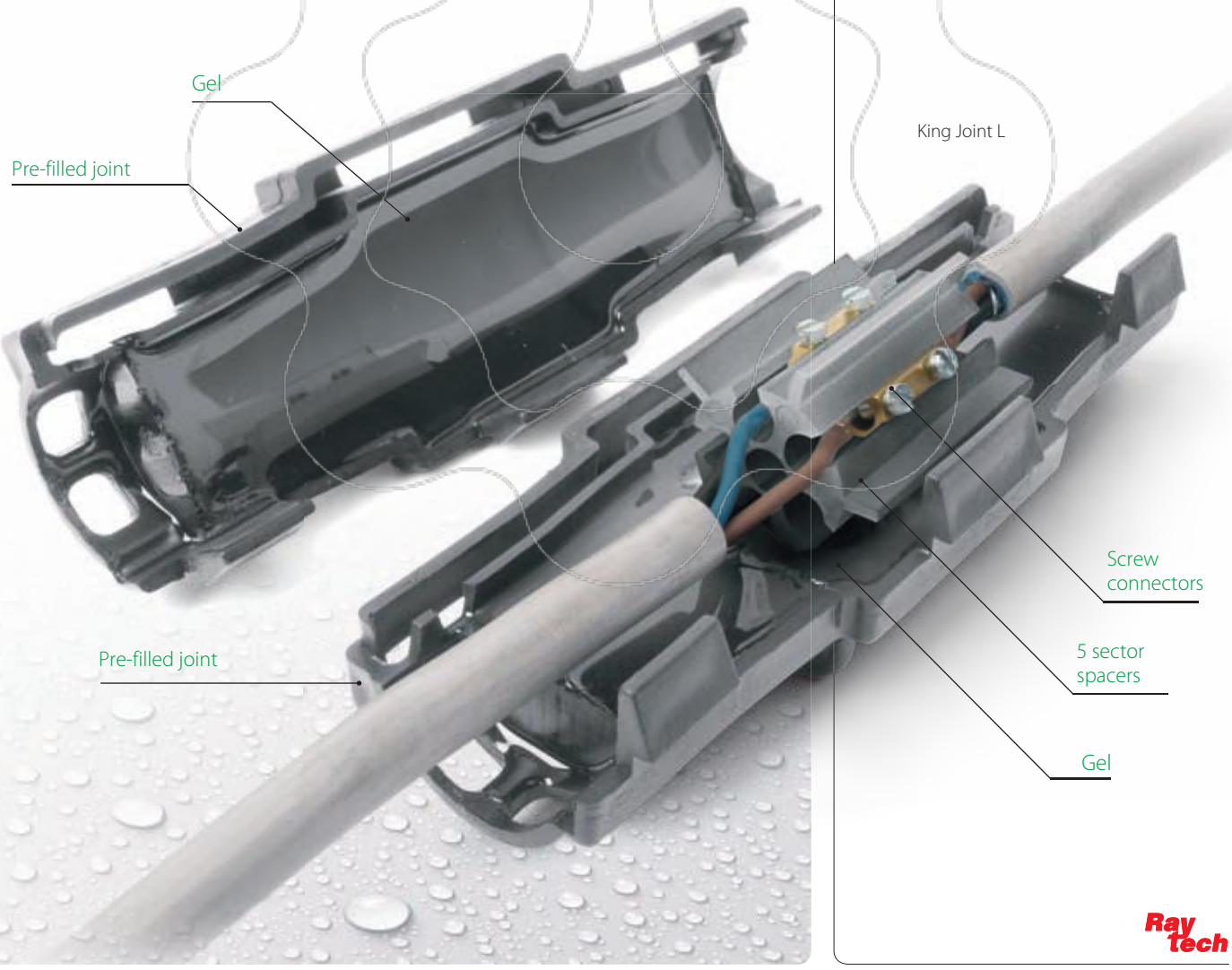
IPX8 OFFICIALLY TESTED | IMQ



PRE-FILLED WITH GEL

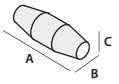
for integrated connections

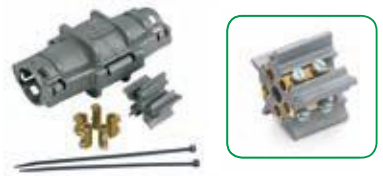




King Joint L

Straight joints, including armoured cable.





Product	LINE CONNECTIONS Cable formation and conductor cross sections (n° x mm²)	∅ max cables (mm)	Dimensions A x B x C (mm)
• King Joint 0 blister	2 x 1,5 - 6 3 x 1,5 - 6 4 x 1,5 - 6 5 x 1,5 - 6	20,5	105 x 55 x 55
• King Joint L6 box	2 x 1,5 - 6 3 x 1,5 - 6 4 x 1,5 - 6 5 x 1,5 - 6	20,5	105 x 55 x 55



Product	STRAIGHT CONNECTIONS Cable formation and conductor cross sections (n° x mm²)	∅ max cables (mm)	Dimensions A x B x C (mm)
• King Joint L10 • King Joint L10 - ARM	2 x 2,5 - 10 3 x 2,5 - 10 4 x 2,5 - 10 5 x 2,5 - 10	24	180 x 60 x 60



Product	STRAIGHT CONNECTIONS Cable formation and conductor cross sections (n° x mm²)	∅ max cables (mm)	Dimensions A x B x C (mm)
• King Joint L25 • King Joint L25 - ARM	2 x 4 - 25 3 x 4 - 25 4 x 4 - 25 5 x 4 - 25	31	210 x 65 x 65

ARM type joints complete with continuity device suitable for connection to **armoured wire or steel tape cables**.

Installation sequence King Joint L

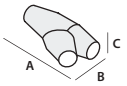






King Joint Y

Branch joints, including armoured cable.



Product	BRANCH CONNECTIONS Cable formation and conductor cross sections (n° x mm²) T	B	∅ max cables (mm) T	B	Dimensions A x B x C (mm)
• King Joint Y6 • King Joint Y6 - ARM	2 x 1,5 - 6 3 x 1,5 - 6 4 x 1,5 - 6 5 x 1,5 - 6	2 x 1,5 - 4 3 x 1,5 - 4 4 x 1,5 - 4 5 x 1,5 - 4	22,5	18,5	138 x 60 x 37

T : Through cable - **B** : Branch cable





Product	BRANCH CONNECTIONS Cable formation and conductor cross sections (n° x mm²) T	B	∅ max cables (mm) T	B	Dimensions A x B x C (mm)
• King Joint Y16 • King Joint Y16 - ARM	2 x 4 - 16 3 x 4 - 16 4 x 4 - 16* 5 x 4 - 16*	2 x 1,5 - 4 3 x 1,5 - 4 4 x 1,5 - 4 5 x 1,5 - 4	26	18,5	194 x 74 x 43

T : Through cable - **B** : Branch cable
* For armoured cables max conductor cross section 10 mm².





Product	BRANCH CONNECTIONS Cable formation and conductor cross sections (n° x mm²) T	B	∅ max cables (mm) T	B	Dimensions A x B x C (mm)
• King Joint Y35 • King Joint Y35 - ARM	2 x 10 - 35 3 x 10 - 35 4 x 10 - 35*	2 x 1,5 - 6 3 x 1,5 - 6 4 x 1,5 - 6	36	26	290 x 105 x 51

T : Through cable - **B** : Branch cable
* For armoured cables max conductor cross section 25 mm².

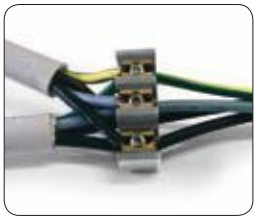




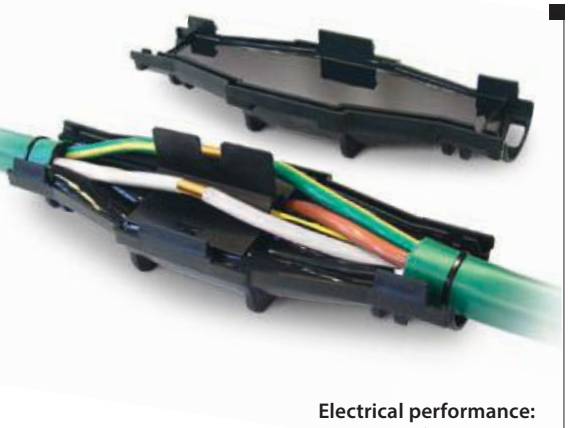
ARM type joints complete with continuity device
suitable for connection to **armoured wire or steel tape cables**.

Installation sequence King Joint Y





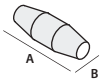




Electrical performance:
CEI EN 50393 with connectors complying with EN 61238-1
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

Rapid Joint

IPX8 straight joints for 0,6/1 kV extruded cable.



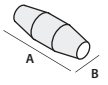
For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)				With optical fibre separator	Dimensions A x B
Product	1x	2x	3x	4x	4x	(mm)
Rapid Joint L6	1,5 - 50	1,5 - 10	1,5 - 10	1,5 - 6	-	105 x 55
Rapid Joint L10	2,5 - 150	2,5 - 25	2,5 - 16	2,5 - 16	-	180 x 60
Rapid Joint L25	120 - 240	6 - 50	6 - 35	4 - 35	-	210 x 65
Rapid Joint L95	185 - 400	35 - 95	25 - 70	25 - 70	16 - 50	320 x 100
For **ALUMINIUM** cables	1x	2x	3x	4x	4x	(mm)
Rapid Joint L 25	120 - 240	16 - 35	10 - 25	10 - 25	-	210 x 65
Rapid Joint L 95	185 - 400	35 - 95	25 - 70	25 - 70	16 - 50	320 x 100

Rapid Joint S/ARM

For screened or tape or wire armoured cables



Joint supplied with armour continuity device

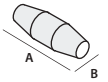


For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)				With optical fibre separator	Dimensions A x B
Product	1x	2x	3x	4x	4x	(mm)
Rapid Joint L6	1,5 - 50	1,5 - 10	1,5 - 10	1,5 - 6	-	105 x 55
Rapid Joint L10	2,5 - 150	2,5 - 25	2,5 - 16	2,5 - 16	-	180 x 60
Rapid Joint L25	120 - 240	6 - 50	6 - 35	4 - 35	-	210 x 65
Rapid Joint L95	185 - 400	35 - 95	25 - 70	25 - 70	16 - 50	320 x 100
For **ALUMINIUM** cables	1x	2x	3x	4x	4x	(mm)
Rapid Joint L 25	120 - 240	16 - 35	10 - 25	10 - 25	-	210 x 65
Rapid Joint L 95	185 - 400	35 - 95	25 - 70	25 - 70	16 - 50	320 x 100

Rapid Joint LS

For signalling and control cables



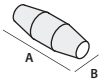


	Conductor sections	Cable formation (n° conductors)									Dimensions A x B
Product	cross (mm²)	5x	7x	10x	12x	16x	19x	24x	40x	75x 100x	(mm)
Rapid Joint-LS1	1,5	•	•	•	•	•	•				180 x 60
	2,5	•	•	•	•						
Rapid Joint-LS2	1,5					•	•	•	•		210 x 65
	2,5			•	•	•	•	•			
Rapid Joint-LS3	1,5						•	•	•	•	320 x 100
	2,5						•	•	•	•	

Rapid Joint T

Straight joints for telephone cables





UNscreened	**SCREENED**	N° pairs for conductor cross sections (n° x mm²)	Dimensions A x B (mm)
Product	**Product**		
Rapid Joint-T26	Rapid Joint-TS26	(1 - 26) x (0,5 - 0,6)	180 x 60
Rapid Joint-T61	Rapid Joint-TS61	(30 + 1 - 64 + 1) x (0,5 - 0,6)	210 x 65
Rapid Joint-T101	Rapid Joint-TS101	(60 + 1 - 100 + 1) x (0,5 - 0,6)	320 x 100

Clik Fire

Straight or branch joint pre-filled with gel, for multi core cables up to 4 cores.



Electrical performance:
CEI EN 50393 with connectors complying with EN 61238-1
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

No flame propagation:
CEI 20-35 • IEC 60332-1 • HD405-1
(as applicable)

Gel: c UL us

Casing mix: UL 94-V2

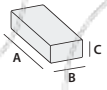
Degree of protection: IPX8

90° Operating temperature

Installation temperature: -40°C / +50°C

RINA

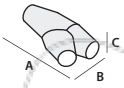
Straight or branch multi core joints for 0.6/1 kV extruded cables.



Product	Cable formation and conductor cross sections (n° x mm²) Through or straight	1 or 2 branch cables	∅ max cables (mm) Through or straight	Branch	Dimensions A x B x C (mm)
CLIK 0 Fire	1 x 2,5 - 50 2 x 2,5 - 6	1 x 1,5 - 10 2 x 1,5	16	10	95 x 43 x 28
CLIK 1 Fire	1 x 6 - 95 2 x 1,5 -1 6 3 x 1,5 - 10 4 x 1,5 - 10	1 x 1,5 - 35 2 x 1,5 - 6 3 x 1,5 - 6 4 x 1,5 - 4	20,5	15	150 x 56 x 30
CLIK 2 Fire	1 x 50 - 185 2 x 10 - 35 3 x 6 - 35 4 x 6 - 35	1 x 16 - 185 2 x 1,5 - 35 3 x 1,5 - 35 4 x 1,5 - 16	30	29	220 x 85 x 46



Branch joints with 30° output for 0.6/1 kV extruded cables.



Product	Through	Branch	Through	Branch	(mm)
CLIK 2000 Fire	1 x 2,5 - 25	1 x 1,5 - 16	14	12,5	75 x 40 x 21
CLIK 2001 Fire	1 x 6 - 95 2 x 1,5 - 16 3 x 2,5 - 16 4 x 2,5 - 10	1 x 1,5 - 70 2 x 1,5 - 10 3 x 1,5 - 10 4 x 1,5 - 6	22,5	18,5	138 x 60 x 37
CLIK 2002 Fire	1 x 50 - 150 2 x 1,5 - 25 3 x 4 - 25 4 x 4 - 16	1 x 1,5 - 70 2 x 1,5 - 10 3 x 1,5 - 10 4 x 1,5 - 6	26	18,5	194 x 74 x 43
CLIK 2003 Fire	1 x 150 - 240 2 x 16 - 50 3 x 16 - 50 4 x 16 - 50	1 x 50 - 120 2 x 10 - 25 3 x 10 - 25 4 x 6 - 16	36	26	290 x 105 x 51



Sections evaluated on the base extruded 0,6 1 kV cable.

Ray tech

Clik Fire - A2A

Main line branch joint for parallel type public lighting systems.

Branch joints from main to main cable, from main to pole rise, from overhead line to pole equipment, from pre-assembled cable to pole equipment, of a type certified by Azienda Elettrica Milanese (A2A, ex AEM). Accessories are complete with mantel-type, pre-insulated Allen screw connectors and, for installations with traps, with the specific protection monitor plate. Joints are non-toxic, with no shelf life and re-enterable.

Approvals

Electrical performance:
CEI EN 50393 • CEI 20-33 • IP 0033 (A2A)

No flame propagation:
CEI 20-35 • IEC 60332-1 HD405-1
A2A certified (as applicable)

Gel: c UL us

Casing mix: UL 94-V2

Degree of protection: IPX8

Operating temperature 90°

Installation temperature:
-40°C / +50°C

Product	Approval code	Branch type	Through cable (n° x mm²)	Branch cable (n° x mm²)
CLIK 2 Fire Dor/Palo	E 27.012	Main / Pole	RG7R 2 x 1 x 16	FG7OR 2 x 2,5
CLIK 1 Fire Dor/Dor	E 27.013	Main / Main	RG7R 4 x 1 x 16	RG7R 4 x 1 x 16
CLIK 1 Fire Aer/Dap	E 27.014	Overhead line / Equipment	UG7R 2 x 1 x 16	FG7R 2 x 1 x 4
CLIK 2 Fire Prec/Dap	E 27.015	Pre-assembled / Equipment	RE4E4X 2 x 1 x 10	FG7OR 2 x 2,5



Clik Fire - A2A (Fuse)

Branch joint from main to pole rise, with protection fuse.

Branch joints from main to pole rise complete with disconnectable fuse holder and fuse with signal indicating intervention. Accessories are complete with mantel-type, pre-insulated Allen screw connectors and, for installations with traps, with the specific protection monitor plate. Joints are non-toxic, with no shelf life and re-enterable and flame retardant.

Approvals

Electrical performance:
CEI EN 50393 • CEI 20-33 • IP 0033 (A2A)

No flame propagation:
CEI 20-35 • IEC 60332-1 HD405-1
A2A certified (as applicable)

Gel: c UL us

Casing mix: UL 94-V2

Degree of protection: IPX8

Operating temperature 90°

Installation temperature:
-40°C / +50°C

Product	Fuse inserted	Branch type	Through cable (n° x mm²)	Branch cable (n° x mm²)
CLIK 2 Fire Dor/Palo Fuse	16 A	Main / Pole	RG7R 4 x 1 x 16	FG7OR 2 x 2,5



Magic Power Joint

Straight or branch joint with Magic Power Gel for extruded insulation cables up to 1 kV.

Joints for extruded cables F(R)G7OR 0.6/1 kV. Easy installation, composed of two anti-fracture plastic shells, to be filled with non-toxic quick cross linking bicomponent insulation such as Magic Power Gel. Suitable for installation in traps, channels or directly underground or under water. Non-toxic, safe, light and re-enterable. Thanks to the softness of the insulation, they are able to absorb external shock without cracking or fracturing. The extreme stickiness of the insulation together with its softness allow it to transmit water pressure for installation even at high depths.



RE-ENTERABLE



REMOVABLE



INSPECTIONABLE



REUSABLE



- Re-enterable and inspectable joint
- Insulated with ***Magic Power Gel***, the innovative self-amalgamating gel
- For installations even in harsh conditions and high depths!
- Extremely adherent and tight sealing
- Non-toxic and safe
- No shelf life

Electrical performance:
CEI EN 50393 with connectors complying with EN 61238-1
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

Gel: UL 94-HB

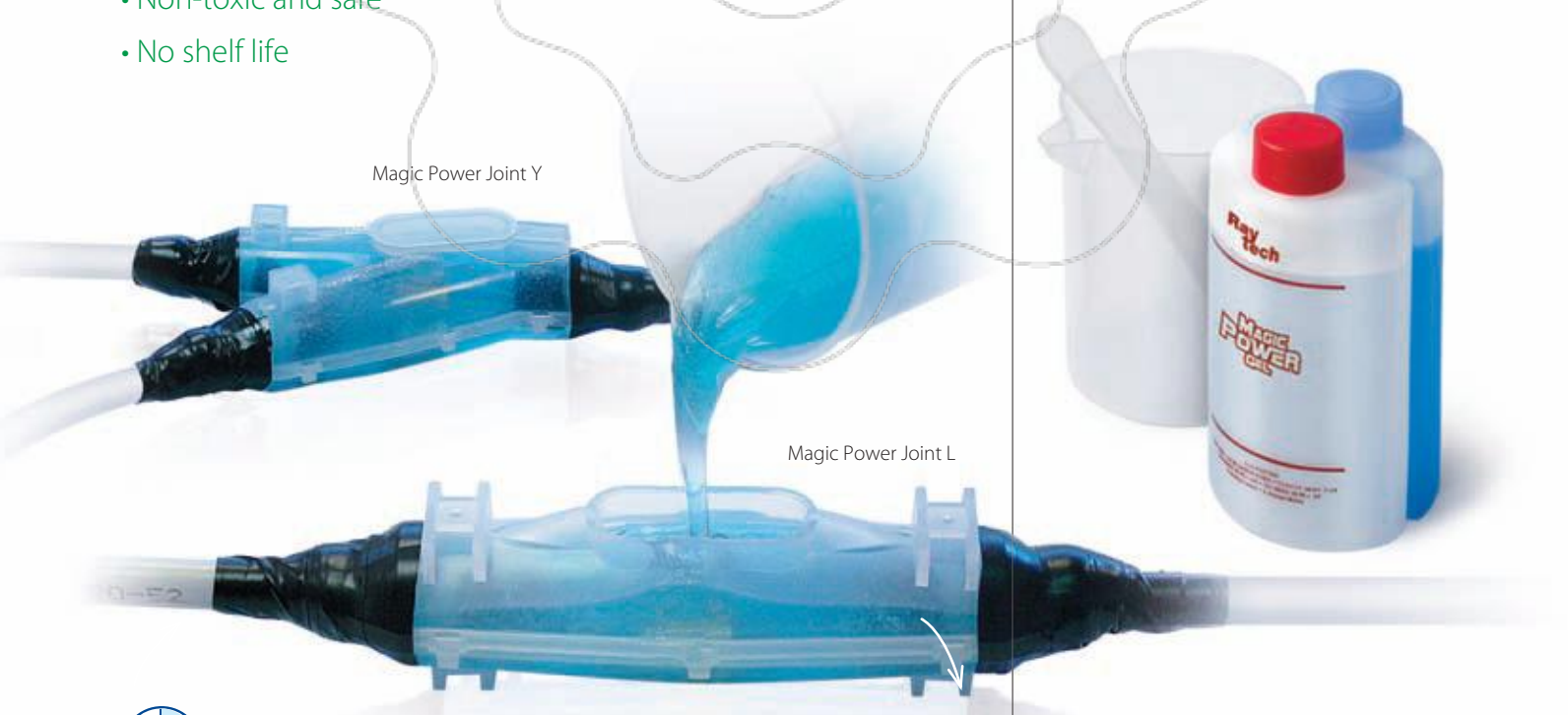
Degree of protection: IP68

90° Operating temperature

Installation temperature: -15°C / +55°C

Magic Power Joint Y

Magic Power Joint L



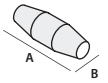
In 15 minutes, the gel is cross-linked and ***Magic Power Joint*** is ready!

Ray tech



Magic Power Joint L

Straight joint for 0.6/1 kV extruded cables.



For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)				Dimensions
Product	1x	2x	3x	4x	A x B (mm)
Magic P Joint L10	2,5 - 50	1,5 - 10	1,5 - 10	1,5 - 10 *	180 x 50
Magic P Joint L25	16 - 150	4 - 25	4 - 25	2,5 - 25	215 x 55
Magic P Joint L35	16 - 185	16 - 35	16 - 35	16 - 35	232 x 70
Magic P Joint L50	50 - 300	16 - 50	16 - 50	16 - 50	266 x 72
Magic P Joint L95	120 - 400	25 - 95	25 - 95	25 - 95	330 x 75
Magic P Joint L120	240 - 500	70 - 120	70 - 120	50 - 120	365 x 95
Magic P Joint L240	400 - 1000	120 - 300	120 - 240	120 - 240	510 x 120
Magic P Joint L300	630 - 2000	240 - 400	240 - 300	240 - 300	760 x 180

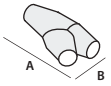
For **ALUMINIUM** cables	1x	2x	3x	4x	(mm)
Magic P Joint L50	16 - 150	16 - 25	16 - 25	16 - 25	266 x72
Magic P Joint L120	185 - 400	25 - 95	25 - 95	25 - 95	365 x 95
Magic P Joint L240	400 - 630	95 - 185	95 - 185	95 - 185	510 x 120
Magic P Joint L300	630 - 2000	185 - 300	185 - 300	185 - 300	760 x 180

* Magic Power Joint 10 suggested for cable diameters smaller than 16 mm.



Magic Power Joint Y

Branch joint for 0.6/1 kV extruded cables.

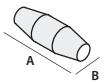


For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)								Dimensions
	1x		2x		3x		4x		A x B
Product	**T**	**B**	**T**	**B**	**T**	**B**	**T**	**B**	(mm)
Magic P Joint Y6	4 - 50	4 - 50	4 - 10	4 - 10	2,5 - 6	2,5 - 6	2,5 - 6	2,5 - 6	180 x 90
Magic P Joint Y25	50 - 150	50 - 150	10 - 25	10 - 25	6 - 25	6 - 16	6 - 25	6 - 10	220 x 105
Magic P Joint Y95	120 - 400	95 - 240	25 - 95	16 - 50	25 - 95	16 - 50	25 - 95	10 - 50	315 x 115
Magic P Joint Y240*	240 - 630	240 - 630	95 - 240	50 - 240	95 - 240	50 - 240	95 - 240	50 - 240	600 x 285

T : Through - **B** : Branch
***** also for aluminium cables.

Magic Power Joint L-S

Straight joint for 0.6/1 kV screened extruded cables.



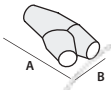


For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)				Dimensions
Product	1x	2x	3x	4x	A x B (mm)
Magic P Joint L10-S	2,5 - 50	1,5 - 10	1,5 - 6	1,5 - 6	180 x 50
Magic P Joint L25-S	16 - 120	4 - 25	4 - 16	2,5- 16	215 x 55
Magic P Joint L35-S	16 - 185	16 - 35	16 - 25	16 - 25	232 x 70
Magic P Joint L50-S	50 - 240	16 - 50	16 - 50	16 - 50	266 x 72
Magic P Joint L120-S	240 - 500	70 - 120	70 - 120	50 - 95	365 x 95
Magic P Joint L240-S	400 - 1000	120 - 300	120 - 185	120 - 185	510 x 120
Magic P Joint L300-S	630 - 2000	240 - 400	240 - 300	240 - 300	760 x 180

For **ALUMINIUM** cables	1x	2x	3x	4x	(mm)
Magic P Joint L50-S	16 - 150	16 - 25	16 - 25	16 - 25	266 x 72
Magic P Joint L120-S	185 - 400	25 - 95	25 - 95	25 - 95	365 x 95
Magic P Joint L240-S	400 - 630	95 - 185	95 - 185	95 - 185	510 x 120
Magic P Joint L300-S	630 - 2000	185 - 300	185 - 300	185 - 300	760 x 180

Magic Power Joint Y-S

Branch joint for 0.6/1 kV screened extruded cables.





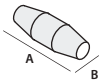
For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)								Dimensions
	1x		2x		3x		4x		A x B
Product	**T**	**B**	**T**	**B**	**T**	**B**	**T**	**B**	(mm)
Magic P Joint Y6-S	4 - 35	4 - 35	4 - 10	4-10	2,5 - 6	2,5 - 6	2,5 - 6	2,5 - 6	180 x 90
Magic P Joint Y25-S	35 - 120	35 - 120	10 - 25	10-25	6 - 16	6 - 16	6 - 16	6 - 10	220 x 105
Magic P Joint Y95-S	95 - 300	70 - 150	25 - 95	16-50	16 - 70	16 - 35	16 - 50	10 - 35	315 x 115
Magic P Joint Y240-S*	240 - 630	150 - 630	95 - 240	50-240	70 - 240	35 - 240	50 - 240	35 - 240	600 x 285

T : Through - **B** : Branch
***** also for aluminium cables.



Magic Power Joint L-ARM

Straight joint for 0,6/1 kV extruded cables with tape, wire or plate armouring.



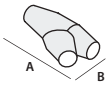
For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)			Dimensions
Product	2x	3x	4x	A x B (mm)
Magic P Joint L10-ARM	1,5 - 10	1,5 - 6	1,5 - 6	180 x 50
Magic P Joint L25-ARM	4 - 25	4 - 16	2,5 - 16	215 x 55
Magic P Joint L35-ARM	16 - 35	16 - 25	16 - 25	232 x 70
Magic P Joint L50-ARM	16 - 50	16 - 50	16 - 50	266 x 72
Magic P Joint L120-ARM	70 - 120	70 - 120	50 - 95	365 x 95
Magic P Joint L240-ARM	120 - 300	120 - 185	120 - 185	510 x 120
Magic P Joint L300-ARM	240 - 400	240 - 300	240 - 300	760 x 180

For **ALUMINIUM** cables	2x	3x	4x	(mm)
Magic P Joint L50-ARM	16 - 25	16 - 25	16 - 25	266 x 72
Magic P Joint L120-ARM	25 - 95	25 - 95	25 - 95	365 x 95
Magic P Joint L240-ARM	95 - 185	95 - 185	95 - 185	510 x 120
Magic P Joint L300-ARM	185 - 300	185 - 300	185 - 300	760 x 180



Magic Power Joint Y-ARM

Branch joint for 0,6/1 kV extruded cables with tape, wire or plate armouring.



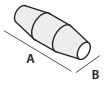
For WIRE armoured **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)						Dimensions
	2x		3x		4x		A x B
Product	**T**	**B**	**T**	**B**	**T**	**B**	(mm)
Magic P Joint Y6-ARM-F	4 - 10	4 - 10	2,5 - 6	2,5 - 6	2,5 - 6	2,5 - 6	180 x 90
Magic P Joint Y25-ARM-F	10 - 25	10 - 25	6 - 16	6 - 16	6 - 16	6 - 10	220 x 105
Magic P Joint Y95-ARM-F	25 - 70	16 - 50	25 - 70	16 - 35	25 - 50	10 - 35	315 x 115
Magic P Joint Y240-ARM-F*	70 - 240	50 - 240	70 - 240	35 - 240	50 - 240	35 - 240	600 x 285

For TAPE, WIRE OR PLATE armoured **COPPER** cables	2x		3x		4x		
	T	**B**	**T**	**B**	**T**	**B**	(mm)
Magic P Joint Y6-ARM	4 - 10	4 - 10	2,5 - 6	2,5 - 6	2,5 - 6	2,5 - 6	180 x 90
Magic P Joint Y25-ARM	10 - 25	10 - 25	6 - 16	6 - 16	6 - 16	6 - 10	220 x 105
Magic P Joint Y95-ARM	25 - 70	16 - 50	25 - 70	16 - 35	25 - 50	10 - 35	315 x 115
Magic P Joint Y240-ARM*	70 - 240	50 - 240	70 - 240	35 - 240	50 - 240	35 - 240	600 x 285

T : Through - **B** : Branch
* also for aluminium cables.

Magic Power Joint-SL

Straight joint for signaling and control multi core extruded 0,6/1 kV cables.

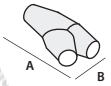


Product	Conductor cross sections (mm²)	Cable formation (n° conductors) 5x	7x	10x	12x	16x	19x	24x	40x	75x	100x	250x	500x	Dimensions A x B (mm)
Magic P Joint SL11	1,5	•	•	•	•	•								180 x 50
	2,5	•	•	•										
Magic P Joint SL12	1,5			•	•	•	•	•						215 x 55
	2,5			•	•	•	•							
Magic P Joint SL13	1,5					•	•	•	•					266 x 72
	2,5					•	•	•						
Magic P Joint SL14	1,5							•	•	•				330 x 75
	2,5							•	•					
Magic P Joint SL15	1,5								•	•	•			365 x 95
	2,5								•	•				
Magic P Joint SL16	1,5									•	•	•		510 x 120
	2,5									•	•	•		
Magic P Joint SL17	1,5										•	•	•	760 x 180
	2,5										•	•	•	



Magic Power Joint-SY

Branch joint for signaling and control multi core extruded 0,6/1 kV cables.

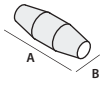


Product	Conductor cross sections (mm²)	Cable formation (n° conductors) 5x	7x	10x	12x	16x	19x	24x	40x	75x	100x	250x	500x	Dimensions A x B (mm)
Magic P Joint SY1	1,5	•	•	•	•	•	•							180 x 90
	2,5	•	•	•	•									
Magic P Joint SY2	1,5					•	•	•						220 x 105
	2,5			•	•	•	•	•						
Magic P Joint SY3	1,5						•	•	•	•				315 x 115
	2,5						•	•	•	•				
Magic P Joint SY4	1,5								•	•	•	•	•	600 x 285
	2,5								•	•	•	•	•	



Magic Power Joint-T e TS

Straight joint for telephone cables.



UNscreened Product	SCREENED Product	N° pairs per conductor cross sections (n° x mm²)	Dimensions A x B (mm)
Magic P Joint T16	Magic P Joint TS16	1 - 16 x 0,5 - 0,6	180 x 50
Magic P Joint T25	Magic P Joint TS25	16 - 25 x 0,5 - 0,6	215 x 55
Magic P Joint T35	Magic P Joint TS35	25 - 35 x 0,5 - 0,6	266 x 72
Magic P Joint T40	Magic P Joint TS40	35 - 40 x 0,5 - 0,6	330 x 75
Magic P Joint T64	Magic P Joint TS64	40 - 64 x 0,5 - 0,6	365 x 95
Magic P Joint T500	Magic P Joint TS500	60 - 500 x 0,5 - 0,6	510 x 120
Magic P Joint T1000	Magic P Joint TS1000	450 - 1000 x 0,5 - 0,6	760 x 180





Magic Joint

Straight or branch joint with Magic Gel filling gel for extruded insulation cables up to 1 kV.

Joints for extruded cables F(R)G7OR 0.6/1 kV. Easy installation, composed of two anti-fracture plastic shells, to be filled with non-toxic quick cross linking bicomponent insulation with no shelf life, Magic Gel type. Suitable for installation in traps, channels or directly underground or under water. Non-toxic, safe, light and re-enterable. Thanks to the softness of the insulation, they are able to absorb external shock without cracking or fracturing. The extreme stickiness of the insulation, together with its softness allow it to transmit water pressure for installation even at high depths. Thanks to the materials used, joints are completely non-toxic, safe, re-enterable even after long periods of operation.

- Quick cross linking gel, (only 10 minutes at 23°C)
- Extremely adherent and tight sealing
- Non-toxic and safe
- No shelf life

Electrical performance:
CEI EN 50393 with connectors complying with EN 61238-1
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

Gel: c RU us

Degree of protection: IP68

Operating temperature 90°

Installation temperature: -15°C / +45°C



Installation sequence



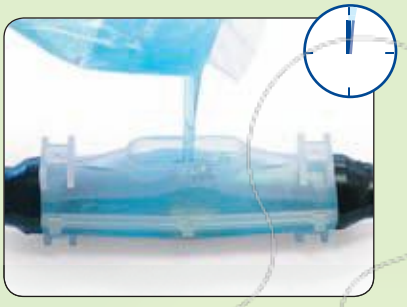
Prepare the joint.



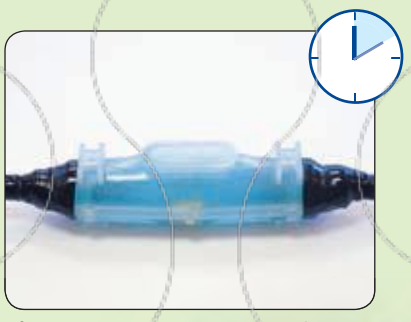
Slip off the separator.



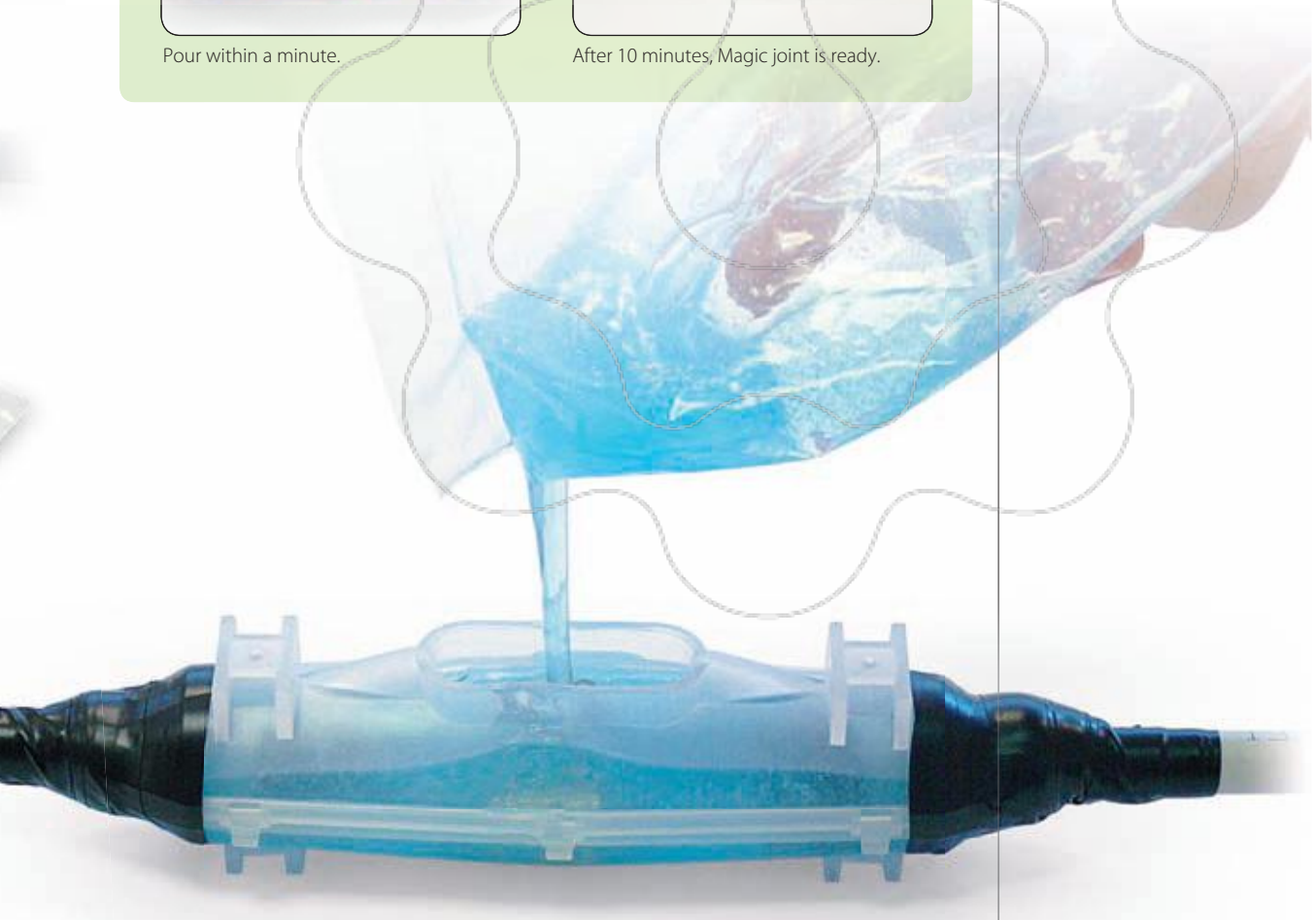
Mix for a minute.



Pour within a minute.



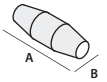
After 10 minutes, Magic joint is ready.





Magic Joint

Straight joint for 0.6/1 kV extruded cables.



For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)				Dimensions
Product	1x	2x	3x	4x	(mm)
Magic Joint 4	1,5 - 25	1,5 - 4	1,5 - 4	1,5 - 4	160 x 45
Magic Joint 10	2,5 - 50	1,5 - 10	1,5 - 10	1,5 - 10 *	180 x 50
Magic Joint 25	16 - 150	4 - 25	4 - 25	2,5 - 25	215 x 55
Magic Joint 35	16 - 185	16 - 35	16 - 35	16 - 35	232 x 70
Magic Joint 50	50 - 300	16 - 50	16 - 50	16 - 50	266 x 72
Magic Joint 95	120 - 400	25 - 95	25 - 95	25 - 95	330 x 75
Magic Joint 120	240 - 500	70 - 120	70 - 120	50 - 120	365 x 95
Magic Joint 240	400 - 1000	120 - 300	120 - 240	120 - 240	510 x 120
Magic Joint 300	630 - 2000	240 - 400	240 - 300	240 - 300	760 x 180

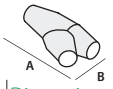
For **ALUMINIUM** cables	1x	2x	3x	4x	(mm)
Magic Joint 50	16 - 150	16 - 25	16 - 25	16 - 25	266 x 72
Magic Joint 120	185 - 400	25 - 95	25 - 95	25 - 95	365 x 95
Magic Joint 240	400 - 630	95 - 185	95 - 185	95 - 185	510 x 120
Magic Joint 300	630 - 2000	185 - 300	185 - 300	185 - 300	760 x 180

* Magic Joint 10 suggested for cable diameters smaller than 16 mm.



Magic Joint Y

Branch joint for 0.6/1 kV extruded cables.



For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)								Dimensions
	1x		2x		3x		4x		A x B
Product	**T**	**B**	**T**	**B**	**T**	**B**	**T**	**B**	(mm)
Magic Joint Y 6	4 - 50	4 - 50	4 - 10	4 - 10	2,5 - 6	2,5 - 6	2,5 - 6	2,5 - 6	180 x 90
Magic Joint Y25	50 - 150	50 - 150	10 - 25	10 - 25	6 - 25	6 - 16	6 - 25	6 - 10	220 x 105
Magic Joint Y95	120 - 400	95 - 240	25 - 95	16 - 50	25 - 95	16 - 50	25 - 95	10 - 50	315 x 115
Magic Joint Y240*	240 - 630	240 - 630	95 - 240	50 - 240	95 - 240	50 - 240	95 - 240	50 - 240	600 x 285

T : Through - **B** : Branch
* also for aluminium cables.

Magic Joint Fire

Straight or branch joint with quick cross linking bi-component cast gel for 0.6/1 kV flame retardant cables.

Magic line joints are now also available in the flame retardant version, MAGIC JOINT-FIRE, particularly suitable for installations in places most at risk of fire: available in straight and branch types, they maintain the electrical and sealing characteristics of the traditional Magic line described above, but add a self-extinguishing property, together with their low smoke and toxic gas development and absence of halogen, as required by main international legislation.

- Flamere tardant
- Quick cross linking gel
- Extremely adherent and tight sealing
- For 0.6/1 kV extruded cables
- Non-toxic and safe
- No shelf life



Electrical performance:
CEI EN 50393 with connectors complying with EN 61238-1
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

No flame propagation:
CEI 20-35 • IEC 60332-1 HD405-1
(as applicable)
Low smoke and toxic and corrosive gas emissions

Gel:

Casing mix: UL 94-V2

Degree of protection: IP68

90° Operating temperature

Installation temperature: -10°C / +45°C

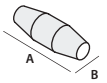
Installation sequence





Magic Joint Fire

Straight joint for 0.6/1 kV extruded cables.



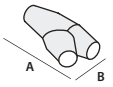
For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)				Dimensions
Product	1x	2x	3x	4x	A x B (mm)
Magic Joint 4-Fire	1,5 - 25	1,5 - 4	1,5 - 4	1,5 - 4	160 x 45
Magic Joint 10-Fire	2,5 - 50	1,5 - 10	1,5 - 10	1,5 - 10 *	180 x 50
Magic Joint 25-Fire	16 - 150	4 - 25	4 - 25	2,5 - 25	215 x 55
Magic Joint 35-Fire	16 - 185	16 - 35	16 - 35	16 - 35	232 x 70
Magic Joint 50-Fire	50 - 300	16 - 50	16 - 50	16 - 50	266 x 72
Magic Joint 95-Fire	120 - 400	25 - 95	25 - 95	25 - 95	330 x 75
Magic Joint 120-Fire	240 - 500	70 - 120	70 - 120	50 - 120	365 x 95
Magic Joint 240-Fire	400 - 1000	120 - 300	120 - 240	120 - 240	510 x 120
Magic Joint 300-Fire	630 - 2000	240 - 400	240 - 300	240 - 300	760 x 180

For **ALUMINIUM** cables	1x	2x	3x	4x	(mm)
Magic Joint 50-Fire	16 - 150	16 - 25	16 - 25	16 - 25	266 x 72
Magic Joint 120-Fire	185 - 400	25 - 95	25 - 95	25 - 95	365 x 95
Magic Joint 240-Fire	400 - 630	95 - 185	95 - 185	95 - 185	510 x 120
Magic Joint 300-Fire	630 - 2000	185 - 300	185 - 300	185 - 300	760 x 180



Magic Joint Y Fire

Branch joint for 0.6/1 kV extruded cables.

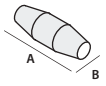


For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)								Dimensions
	1x		2x		3x		4x		
Product	**T**	**B**	**T**	**B**	**T**	**B**	**T**	**B**	A x B (mm)
Magic Joint Y 6-Fire	4 - 50	4 - 50	4 - 10	4 - 10	2,5 - 6	2,5 - 6	2,5 -6	2,5 - 6	180 x 90
Magic Joint Y25-Fire	50 - 150	50 - 150	10 - 25	10 - 25	6 - 25	6 - 16	6 - 25	6 - 10	220 x 105
Magic Joint Y95-Fire	120 - 400	95 - 240	25 - 95	16 - 50	25 - 95	16 - 50	25 - 95	10 - 50	315 x 115

T : Through - **B** : Branch

Magic Joint S Fire

Straight joint for signalling and control.

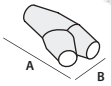




Product	Conductor cross sections (mm²)	Cable formation (n° conductors) 5x	7x	10x	12x	16x	19x	24x	40x	75x	100x	250x	500x	Dimensions A x B (mm)
Magic Joint S11 Fire	1,5	•	•	•	•	•								180 x 50
	2,5	•	•	•										
Magic Joint S12 Fire	1,5			•	•	•	•	•						215 x 55
	2,5			•	•	•	•							
Magic Joint S13 Fire	1,5					•	•	•	•					266 x 72
	2,5					•	•	•						
Magic Joint S14 Fire	1,5							•	•	•				330 x 75
	2,5							•	•					
Magic Joint S15 Fire	1,5								•	•	•			365 x 95
	2,5								•	•				
Magic Joint S16 Fire	1,5									•	•	•		510 x 120
	2,5									•	•	•		
Magic Joint S17 Fire	1,5										•	•	•	760 x 180
	2,5										•	•	•	

Magic Joint SY Fire

Branch joint for signalling and control.

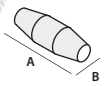




Product	Conductor cross sections (mm²)	Cable formation (n° conductors) 5x	7x	10x	12x	16x	19x	24x	40x	75x	Dimensions A x B (mm)
Magic Joint SY1 Fire	1,5	•	•	•	•	•	•				180 x 90
	2,5	•	•	•	•						
Magic Joint SY2 Fire	1,5					•	•	•			220 x 105
	2,5			•	•	•	•	•			
Magic Joint SY3 Fire	1,5						•	•	•	•	315 x 115
	2,5						•	•	•	•	

Magic Joint T Fire

Straight joint for telephone cable.





UNscreened Product	SCREENED Product	N° pairs per conductor cross sections (n° x mm²)	Dimensions A x B (mm)
Magic Joint T16-Fire	Magic Joint TS16-Fire	1 - 16 x 0,5 - 0,6	180 x 50
Magic Joint T25-Fire	Magic Joint TS25-Fire	16 - 25 x 0,5 - 0,6	215 x 55
Magic Joint T35-Fire	Magic Joint TS35-Fire	25 - 35 x 0,5 - 0,6	266 x 72
Magic Joint T40-Fire	Magic Joint TS40-Fire	35 - 40 x 0,5 - 0,6	330 x 75
Magic Joint T64-Fire	Magic Joint TS64-Fire	40 - 64 x 0,5 - 0,6	365 x 95
Magic Joint T500-Fire	Magic Joint TS500-Fire	60 - 500 x 0,5 - 0,6	510 x 120
Magic Joint T1000-Fire	Magic Joint TS1000-Fire	450 - 1000 x 0,5 - 0,6	760 x 180

Rubber Joint

Straight or branch joint with bicomponent cast quick cross linking rubber insulation for 0.6/1 kW cables.

Electrical performance:
CEI EN 50393 with connectors complying with EN 61238-1
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

Degree of protection: IP68

Operating temperature 90°

Installation temperature: -15°C / +45°C

With new Magic Rubber insulation, designed and developed by Raytech for 0.6/1 kV cables. A new line of accessories with extremely high mechanical characteristics, as well as dielectric and thermal properties. The new line is absolutely non-toxic, is re-enterable even after long periods of operation, is free of exotherm during cross linking, is extremely fast-acting and has no shelf life. Significant also for its very low emission of toxic and corrosive gases and fumes. Thanks to its exceptional mechanical characteristics, these joints are especially suitable for placement in traps or channels where there is the possibility of handling even after the laying of cables or, however, in cases of heavy abrasion, or mechanical stress within the normal parameters of installation and operation.

- Quick cross linking rubber (only 15 minutes)
- Very high mechanical and elastic characteristics
- For 0.6/1 kV extruded cables
- Non-toxic and safe
- No shelf life

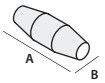


Installation sequence



Rubber Joint

Straight joint for 0.6/1 kV extruded cables.



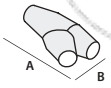


For **COPPER** cables **Product**	Cable formation and conductor cross sections (n° x mm²) 1x	2x	3x	4x	Dimensions A x B (mm)
Rubber Joint 4	1,5 - 25	1,5 - 4	1,5 - 4	1,5 - 4	160 x 45
Rubber Joint 10	2,5 - 50	1,5 - 10	1,5 - 10	1,5 - 10 *	180 x 50
Rubber Joint 25	16 - 150	4 - 25	4 - 25	2,5 - 25	215 x 55
Rubber Joint 35	16 - 185	16 - 35	16 - 35	16 - 35	232 x 70
Rubber Joint 50	50 - 300	16 - 50	16 - 50	16 - 50	266 x 72
Rubber Joint 95	120 - 400	25 - 95	25 - 95	25 - 95	330 x75
Rubber Joint 120	240 - 500	70 - 120	70 - 120	50 - 120	365 x 95
Rubber Joint 240	400 - 1000	120 - 300	120 - 240	120 - 240	510 x 120
Rubber Joint 300	630 - 2000	240 - 400	240 - 300	240 - 300	760 x 180

* Rubber Joint 10 suggerito per diametri di cavo non superiori a 16 mm.

Rubber Joint Y

Branch joint for 0.6/1 kV extruded cables.





For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²) 1x		2x		3x		4x		Dimensions A x B
Product	**T**	**B**	**T**	**B**	**T**	**B**	**T**	**B**	(mm)
Rubber Joint Y6	4 - 50	4 - 50	4 - 10	4 - 10	2,5 - 6	2,5 - 6	2,5 - 6	2,5 - 6	180 x 90
Rubber Joint Y25	50 - 150	50 - 150	10 - 25	10 - 25	6 - 25	6 - 16	6 - 25	6 - 10	220 x 105
Rubber Joint Y95	120 - 400	95 - 240	25 - 95	16 - 50	25 - 95	16 - 50	25 - 95	10 - 50	315 x 115
Rubber Joint Y240*	240 - 630	240 - 630	95 - 240	95 - 240	95 - 240	95 - 240	95 - 240	50 - 240	600 x 285

T : Through - **B** : Branch
***** also for aluminium cables.



Raycast

Electrical performance:
CEI EN 50393 with connectors complying with EN 61238-1
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

Operating temperature 90°

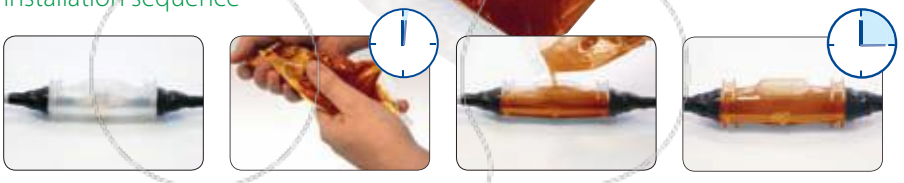
Installation temperature: 0°C / +45°C

Straight or branch joint with bicomponent epoxy resin insulation for 0.6/1 kV cables.

Straight or branch joints for 0.6/1 kV extruded cables: easily installed, composed of two anti-fracture plastic shells, to be filled with bicomponent epoxy resin such as Rayresin. For installation in traps, channels or directly underground.



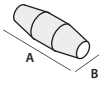
Installation sequence





Raycast L

Straight joint for 0.6/1 kV extruded cables.



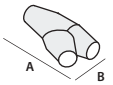
For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)				Dimensions
Product	1x	2x	3x	4x	A x B (mm)
Raycast L10	2,5 - 50	1,5 - 10	1,5 - 10	1,5 - 10 *	180 x 50
Raycast L16/25	16 - 150	4 - 25	4 - 25	2,5 - 25	215 x 55
Raycast L35	16 - 185	16 - 35	16 - 35	16 - 35	232 x 70
Raycast L50	50 - 300	16 - 50	16 - 50	16 - 50	266 x 72
Raycast L95	120 - 400	25 - 95	25 - 95	25 - 95	330 x 75
Raycast L120	240 - 500	70 - 120	70 - 120	50 - 120	365 x 95
Raycast L240	400 - 1000	120 - 300	120 - 240	120 - 240	510 x 120

For **ALUMINIUM** cables	1x	2x	3x	4x	(mm)
Raycast L50	16 - 150	16 - 25	16 - 25	16 - 25	266 x 72
Raycast L120	185 - 400	25 - 95	25 - 95	25 - 95	365 x 95
Raycast L240	400 - 630	95 - 185	95 - 185	95 - 185	510 x 120

* Raycast L10 is suggested for cable diameters not exceeding 16 mm.

Raycast D

Branch joint for 0.6/1 kV extruded cable with 30° output.



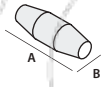


For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²) 1x		2x		3x		4x		Dimensions A x B (mm)
Product	**T**	**B**	**T**	**B**	**T**	**B**	**T**	**B**	
Raycast D6	4 - 50	4 - 50	4 - 10	4 - 10	2,5 - 6	2,5 - 6	2,5 - 6	2,5-6	180 x 90
Raycast D16/D25	50 - 150	50 - 150	10 - 25	10 - 25	6 - 25	6 - 16	6 - 25	6 - 10	220 x 105
Raycast D95	120 - 400	95 - 240	25 - 95	16 - 50	25 - 95	16 - 50	25 - 95	10 - 50	315 x 115

T : Through - **B** : Branch

Raycast L-S

Straight joint for 0.6/1 kV screened extruded cables.



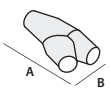


For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²) 1x	2x	3x	4x	Dimensions A x B (mm)
Product					
Raycast L10-S	2,5 - 50	1,5 - 10	1,5 - 6	1,5 - 6	180 x 50
Raycast L25-S	16 - 120	4 - 25	4 - 16	2,5- 16	215 x 55
Raycast L35-S	16 - 185	16 - 35	16 - 25	16 - 25	232 x 70
Raycast L50-S	50 - 240	16 - 50	16 - 50	16 - 50	266 x 72
Raycast L120-S	240 - 500	70 - 120	70 - 120	50 - 95	365 x 95
Raycast L240-S	400 - 1000	120 - 300	120 - 185	120 - 185	510 x 120

For **ALUMINIUM** cables	1x	2x	3x	4x	(mm)
Raycast L50-S	16 - 150	16 - 25	16 - 25	16 - 25	266 x 72
Raycast L120-S	185 - 400	25 - 95	25 - 95	25 - 95	365 x 95
Raycast L240-S	400 - 630	95 - 185	95 - 185	95 - 185	510 x 120

Raycast D-S

Branch joint for 0.6/1 kV screened extruded cables.





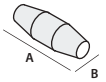
For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²) 1x		2x		3x		4x		Dimensions A x B (mm)
Product	**T**	**B**	**T**	**B**	**T**	**B**	**T**	**B**	
Raycast D6-S	4 - 35	4 - 35	4 - 10	4 - 10	2,5 - 6	1,5 - 6	2,5 - 6	2,5 - 6	180 x 90
Raycast D25-S	35 - 120	35 - 120	10 - 25	10 - 25	6 - 16	6 - 16	6 - 16	6 - 10	220 x 105
Raycast D95-S	95 - 300	70 - 150	25 - 95	16 - 50	16 - 70	16 - 35	16 - 50	10 - 35	315 x 115

T : Through - **B** : Branch



Raycast L-ARM

Straight joint for tape, wire or plate armoured cables.



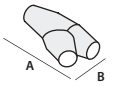
For **COPPER** cables **Product**	Cable formation and conductor cross sections (n° x mm²) 2x	3x	4x	Dimensions A x B (mm)
Raycast L10-ARM	1,5 - 10	1,5 - 6	1,5 - 6	180 x 50
Raycast L25-ARM	4 - 25	4 - 16	2,5 - 16	215 x 55
Raycast L35-ARM	16 - 35	16 - 25	16 - 25	232 x 70
Raycast L50-ARM	16 - 50	16 - 50	16 - 50	266 x 72
Raycast L120-ARM	70 - 120	70 - 120	50 - 95	365 x 95
Raycast L240-ARM	120 - 300	120 - 185	120 - 185	510 x 120

For **ALUMINIUM** cables	2x	3x	4x	(mm)
Raycast L50-ARM	16 - 25	16 - 25	16 - 25	266 x 72
Raycast L120-ARM	25 - 95	25 - 95	25 - 95	365 x 95
Raycast L240-ARM	95 - 185	95 - 185	95 - 185	510 x 120



Raycast D-ARM

Branch joint for tape, wire or plate armoured cable.



For WIRE armoured **COPPER** cables	Cable formation and conductor cross sections (n° x mm²) 2x		3x		4x		Dimensions A x B (mm)
Product	**T**	**B**	**T**	**B**	**T**	**B**	
Raycast D6-ARM-F	4 - 10	4 - 10	2,5 - 6	2,5 - 6	2,5 - 6	2,5 - 6	180 x 90
Raycast D16-ARM-F	10 - 25	10 - 25	6 - 16	6 - 16	6 - 16	6 - 10	220 x 105
Raycast D95-ARM-F	25 - 70	16 - 50	25 - 70	16 - 35	25 - 50	10 - 35	315 x 115

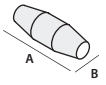
For TAPE OR PLATE armoured **COPPER** cables	2x		3x		4x		A x B (mm)
	T	**B**	**T**	**B**	**T**	**B**	
Raycast D6-ARM	4 - 10	4 - 10	2,5 - 6	2,5 - 6	2,5 - 6	2,5 - 6	180 x 90
Raycast D16-ARM	10 - 25	10 - 25	6 - 16	6 - 16	6 - 16	6 - 10	220 x 105
Raycast D95-ARM	25 - 70	16 - 50	25 - 70	16 - 35	25 - 50	10 - 35	315 x 115

T : Through - **B** : Branch



Raycast LPS

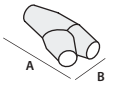
Straight joint for very deep submersible pumps.



For **COPPER** cables **Product**	Cable formation and conductor cross sections (n° x mm²) 1x	2x	3x	4x	Dimensions A x B (mm)
Raycast LPS10	2,5 - 50	1,5 - 10	1,5 - 10	1,5 - 10	180 x 50
Raycast LPS25	16 - 150	4 - 25	4 - 25	2,5 - 25	215 x 55
Raycast LPS95	120 - 400	25 - 95	25 - 95	25 - 95	330 x 75
Raycast LPS240	400 - 1000	120 - 300	120 - 240	120 - 240	510 x 120

Raycast DPS

Branch joint for very deep submersible pumps.



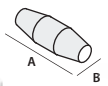


For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²) 1x		2x		3x		4x		Dimensions A x B (mm)
Product	**T**	**B**	**T**	**B**	**T**	**B**	**T**	**B**	
Raycast DPS6	4 - 50	4 - 50	4 - 10	4 - 10	2,5 - 6	2,5 - 6	2,5 - 6	2,5 - 6	180 x 90
Raycast DPS25	50 - 150	50 - 150	10 - 25	10 - 25	6 - 25	6 - 16	6 - 16	6 - 10	220 x 105
Raycast DPS95	120 - 400	95 - 240	25 - 95	16 - 50	25 - 95	16 - 50	25 - 95	10 - 50	315 x 115

T : Through - **B** : Branch

Raycast SL

Straight joint for signalling and control.

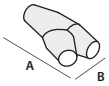




Product	Conductor cross sections (mm²)	Cable formation (n° conductors) 5x	7x	10x	12x	16x	19x	24x	40x	75x	100x	250x	Dimensions A x B (mm)
Raycast SL11	1,5	•	•	•	•	•							180 x 50
	2,5	•	•	•									
Raycast SL12	1,5			•	•	•	•	•					215 x 55
	2,5			•	•	•	•						
Raycast SL13	1,5					•	•	•	•				266 x 72
	2,5					•	•	•					
Raycast SL14	1,5							•	•	•			330 x 75
	2,5							•	•				
Raycast SL15	1,5								•	•	•		365 x 95
	2,5								•	•			
Raycast SL16	1,5									•	•	•	510 x 120
	2,5									•	•	•	

Raycast SD

Branch joint for signalling and control.

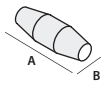




Product	Conductor cross sections (mm²)	Cable formation (n° conductors) 5x	7x	10x	12x	16x	19x	24x	40x	75x	Dimensions A x B (mm)
Raycast SD1	1,5	•	•	•	•	•	•				180 x 90
	2,5	•	•	•	•						
Raycast SD2	1,5					•	•	•			220 x 105
	2,5			•	•	•	•	•			
Raycast SD3	1,5						•	•	•	•	315 x 115
	2,5						•	•	•	•	

Raycast TL e TSL

Straight joint for telephone cable.





UNscreened **Product**	**SCREENED** **Product**	N° pairs per conductor cross sections (n° x mm²)	Dimensions A x B (mm)
Raycast TL16	Raycast TSL16	1 - 16 x 0,5 - 0,6	180 x 50
Raycast TL25	Raycast TSL25	16 - 25 x 0,5 - 0,6	215 x 55
Raycast TL35	Raycast TSL35	25 - 35 x 0,5 - 0,6	266 x 72
Raycast TL40	Raycast TSL40	35 - 40 x 0,5 - 0,6	330 x 75
Raycast TL64	Raycast TSL64	40 - 64 x 0,5 - 0,6	365 x 95
Raycast TL500	Raycast TSL500	60 - 500 x 0,5 - 0,6	510 x 120

Wonder Joint

Straight or branch injectable joint using Wonder Fluid, single component insulating gel. Quick to use and can be installed at any temperature.

Joint equipped with injection valve; insert the cartridge in the gun, connect the nozzle stably on the valve and inject the gel until completely filled. The valve on the container prevents insulation from leaking out, ensuring perfect cleaning and reliability. Can be installed without any special tools: only requires a regular silicone gun.

- Joints insulated with ***Wonder Fluid***, fluid, single-component, gel
- Clean installation, re-enterable and inspectable
- Container provided with no-return valve
- Immediately energizable
- Even suitable for high depths
- Non-toxic, with no expiry date



Electrical performance:
CEI EN 50393 with connectors complying with EN 61238-1
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

Gel: UL 94-HB

Degree of protection: IP68

Operating temperature 90°

Installation temperature: -50°C / +60°C

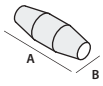
Ray tech

Installation sequence



Wonder Joint L

Straight joint with injected gel insulation
for 0.6/1 kV extruded cables.

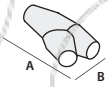


For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)				Dimensions
Product	1x	2x	3x	4x	A x B (mm)
Wonder Joint L4	1,5 - 25	1,5 - 4	1,5 - 4	1,5 - 4	160 x 45
Wonder Joint L10	2,5 - 50	1,5 - 10	1,5 - 10	1,5 - 10	180 x 50
Wonder Joint L25	16 - 150	4 - 25	4 - 25	2,5 - 25	215 x 55



Wonder Joint Y

Branch joint with injected gel insulation
for 0.6/1 kV extruded cables.



For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)								Dimensions
	1x		2x		3x		4x		A x B
Product	**T**	**B**	**T**	**B**	**T**	**B**	**T**	**B**	(mm)
Wonder Joint Y6	4 - 50	4 - 50	4 - 10	4 - 10	2,5 - 6	2,5 - 6	2,5 - 6	2,5 - 6	180 x 90
Wonder Joint Y25	50 - 150	50 - 150	10 - 25	10-25	6 - 25	6 - 16	6 - 25	6 - 10	220 x 105

T : Through - **B** : Branch





SYSTEM PLUS

Range of straight and branch joints with cast or injection filling, equipped with **screw or Allen screw connection system** for extruded insulation cables up to 1 kV.

Five-core separator for linear junction connectors



Wonder Joint System Plus

- Straight or branch joint with valve
- Integrated connection system
- *Wonder Fluid* cartridge



Magic Power Joint System Plus

- Straight or branch "Y" joint or "T" branch joint
- Integrated connection system
- Single bottle of *Magic Power Gel*

With four-core separator for "T" branch joint

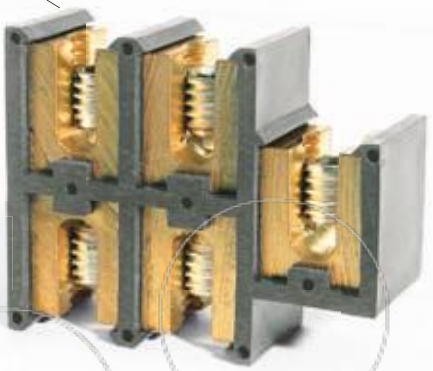




Electrical performance:
CEI EN 50393 • CEI 20-33
(with testing under water head and water between the cable cores)

Degree of protection: IP68

Five-core separator with connectors for "Y" branch joints



Four-core separator with connectors for "T" branch joints



Magic Joint System Plus

- Straight or branch "Y" joint or "T" branch joint
- Integrated connection system
- Single dose bag of *Magic Gel*

With four-core separator for "T" branch joint



Raycast System Plus

- Straight or branch "Y" joint or "T" branch joint
- Integrated connection system
- Single dose bag of *Ray Resin*

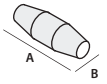
With four-core separator for "T" branch joint





Wonder Joint System Plus L

Straight joint with **injected gel**
Five-core spacer + screw connectors.

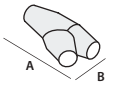


For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)				Dimensions
Product	2x	3x	4x	5x	A x B (mm)
Wonder Joint SP L6	1,5 - 6	1,5 - 6	1,5 - 6	1,5 - 6	180 x 50
Wonder Joint SP L25	4 - 25	4 - 25	4 - 25	4 - 25	215 x 55



Wonder Joint System Plus Y

Branch joint with **injected gel**
Five-core spacer + screw connectors.



For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)								Dimensions
	2x		3x		4x		5x		A x B
Product	**T**	**B**	**T**	**B**	**T**	**B**	**T**	**B**	(mm)
Wonder Joint SP Y6	1,5 - 6	1,5 - 4	1,5 - 6	1,5 - 4	1,5 - 6	1,5 - 4	1,5 - 6	1,5 - 4	180 x 90
Wonder Joint SP Y16	4 - 16	1,5 - 4	4 - 16	1,5 - 4	4 - 16	1,5 - 4	4 - 16	1,5 - 4	220 x 105

T : Through - **B** : Branch

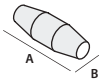
- Joints insulated with ***Wonder Fluid***, single component gel
- Clean installation, re-enterable and inspectable
- Containers provided with no-return valve
- Even suitable for high depths
- Non-toxic and no shelf life
- For 0.6/1 kV extruded cables

Operating temperature 90°

Installation temperature: -50°C / +60°C

Magic Power Joint System Plus L

Straight joint with **cast gel**
Five-core spacer + screw connectors.

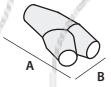


For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)				Dimensions
Product	2x	3x	4x	5x	A x B (mm)
Magic P Joint SP L6	1,5 - 6	1,5 - 6	1,5 - 6	1,5 - 6	180 x 50
Magic P Joint SP L16	4 - 16	4 - 16	4 - 16	4 - 16	215 x 55
Magic P Joint SP L25	4 - 25	4 - 25	4 - 25	4 - 25	215 x 65



Magic Power Joint System Plus Y

Y branch joint with **cast gel**
Five-core spacer + screw connectors.



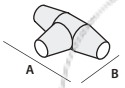
For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)								Dimensions
	2x		3x		4x		5x		A x B
Product	**T**	**B**	**T**	**B**	**T**	**B**	**T**	**B**	(mm)
Magic P Joint SP Y6	1,5 - 6	1,5 - 4	1,5 - 6	1,5 - 4	1,5 - 6	1,5 - 4	1,5 - 6	1,5 - 4	180 x 90
Magic P Joint SP Y16	4 - 16	1,5 - 4	4 - 16	1,5 - 4	4 - 16	1,5 - 4	4 - 16	1,5 - 4	220 x 105

T : Through - **B** : Branch



Magic Power Joint System Plus T

T branch joint with **cast gel**
Four-core spacer + screw connectors.



For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)						Dimensions
	2x		3x		4x		A x B
Product	**T**	**B**	**T**	**B**	**T**	**B**	(mm)
Magic P Joint SP T35	6 - 35	1,5 - 10	6 - 35	1,5 - 10	6 - 35	1,5 - 10	305 x 155

T : Through - **B** : Branch



- Joints insulated with ***Magic Power Gel,*** the only agglomerating gel
- Re-enterable, removable, inspectable
- For installations even in harsh conditions and high depths
- Extremely adherent and tight sealing
- Non-toxic and no shelf life
- For 0.6/1 kV extruded cables

90° Operating temperature

Installation temperature: -15°C / +55°C

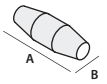
Ray tech



Magic Joint System Plus L

Straight joint with **cast gel**

Five-core spacer + screw connectors.



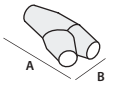
For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)				Dimensions
Product	2x	3x	4x	5x	A x B (mm)
Magic Joint SP L6	1,5 - 6	1,5 - 6	1,5 - 6	1,5 - 6	180 x 50
Magic Joint SP L16	4 - 16	4 - 16	4 - 16	4 - 16	215 x 55
Magic Joint SP L25	4 - 25	4 - 25	4 - 25	4 - 25	215 x 65



Magic Joint System Plus Y

Y branch joint with **cast gel**

Five-core spacer + screw connectors.



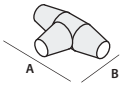
For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)								Dimensions
	2x		3x		4x		5x		A x B
Product	**T**	**B**	**T**	**B**	**T**	**B**	**T**	**B**	(mm)
Magic Joint SP Y6	1,5 - 6	1,5 - 4	1,5 - 6	1,5 - 4	1,5 - 6	1,5 - 4	1,5 - 6	1,5 - 4	180 x 90
Magic Joint SP Y16	4 - 16	1,5 - 4	4 - 16	1,5 - 4	4 - 16	1,5 - 4	4 - 16	1,5 - 4	220 x 105



Magic Joint System Plus T

T branch joint with **cast gel**

Five-core spacer + screw connectors.



For **COPPER** cables	Cable formation and conductor cross sections (n° x mm²)						Dimensions
	2x		3x		4x		A x B
Product	**T**	**B**	**T**	**B**	**T**	**B**	(mm)
Magic Joint SP T35	6 - 35	1,5 - 10	6 - 35	1,5 - 10	6 - 35	1,5 - 10	305 x 155

- Joints insulated with ***Magic Gel***
- Quick cross linking gel (only 10 minutes)
- Extremely adherent and tight sealing
- Non-toxic and no shelf life
- For 0.6/1 kV extruded cables

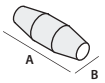
Gel:

Operating temperature 90°

Installation temperature: -10°C / +45°C

Raycast System Plus L

Straight joint with **cast resin**
complete with spacer and screw connectors.

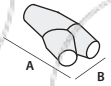


For **COPPER** cables **Product**	Cable formation and conductor cross sections (n° x mm²) 2x	3x	4x	5x	Dimensions A x B (mm)
Raycast SP L6	1,5 - 6	1,5 - 6	1,5 - 6	1,5 - 6	180 x 50
Raycast SP L16	4 - 16	4 - 16	4 - 16	4 - 16	215 x 55
Raycast SP L25	4 - 25	4 - 25	4 - 25	4 - 25	215 x 65



Raycast System Plus Y

Y branch joint with **cast resin**
complete with spacer and screw connectors.



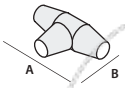
For **COPPER** cables **Product**	Cable formation and conductor cross sections (n° x mm²) 2x **T**	**B**	3x **T**	**B**	4x **T**	**B**	5x **T**	**B**	Dimensions A x B (mm)
Raycast SP D6	1,5 - 6	1,5 - 4	1,5 - 6	1,5 - 4	1,5 - 6	1,5 - 4	1,5 - 6	1,5 - 4	180 x 90
Raycast SP D16	4 - 16	1,5 - 4	4 - 16	1,5 - 4	4 - 16	1,5 - 4	4 - 16	1,5 - 4	220 x 105

T : Through - **B** : Branch



Raycast System Plus T

T branch joint with **cast resin**
complete with spacer and screw connectors.



For **COPPER** cables **Product**	Cable formation and conductor cross sections (n° x mm²) 2x **T**	**B**	3x **T**	**B**	4x **T**	**B**	Dimensions A x B (mm)
Raycast SP T 35	6 - 35	1,5 - 10	6 - 35	1,5 - 10	6 - 35	1,5 - 10	305 x 155

T : Through - **B** : Branch



- Joints insulated with ***Ray Resin*** bicomponent epoxy resin
- For 0.6/1 kV extruded cables

90° Operating temperature

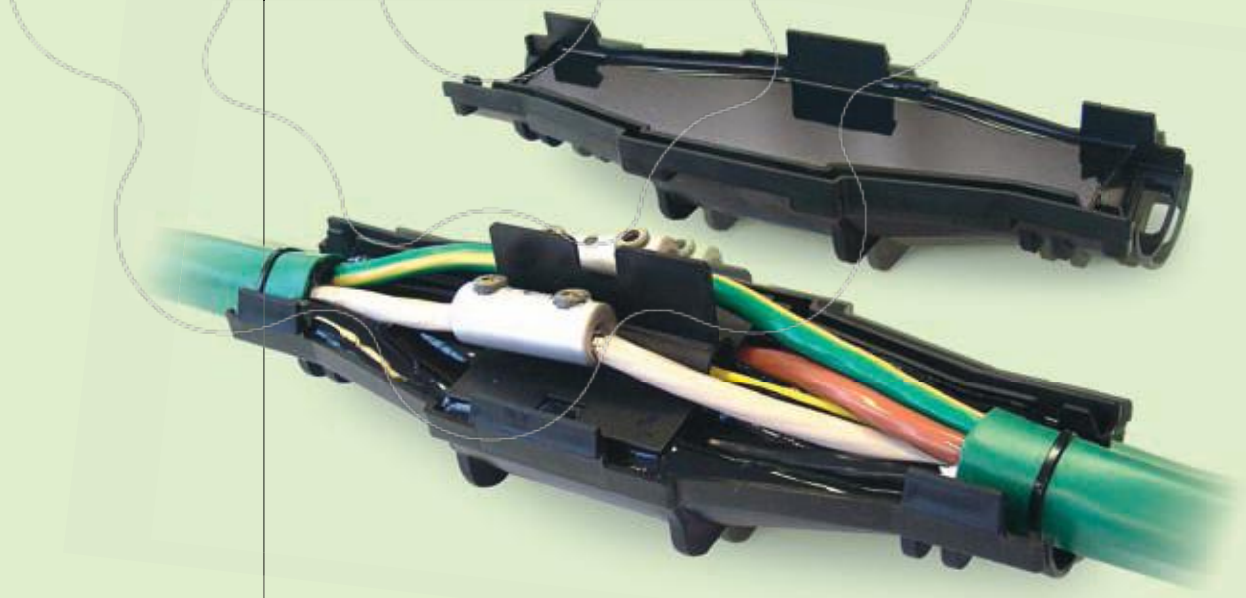
Installation temperature:
-0°C / +45°C

SYSTEM FAST **RP**

Straight joints with four shear bolt connectors.
The reliability of Raytech joints coupled
with convenience and ease of installation.













- No more crimping or single screw connectors
- Screw connections break automatically when correct tightening torque is reached, ensuring perfect connection
- Suitable for copper and aluminium conductors (aluminium conductors with minimum section 10 mm^2)

Electrical performance:
CEI EN 50393 • CEI 20-33
(with testing under water head and water between the cable cores)



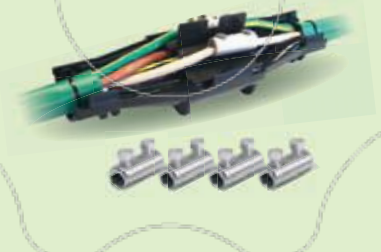


New

Rapid Joint RIP 68



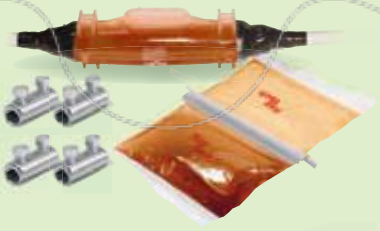
Rapid Joint RP



Magic Power Joint RP



Raycast RP



Magic Joint RP



GVL RP



Rapid Joint IP68 System Fast RP

Straight joint pre-filled with gel.

New



Gel:

Operating temperature: 90°

Installation temperature: -40°C / +50°C

Product	Formation n°	Configuration IP68 Section mm²	Ø cable mm	A x B (mm)	Configuration IPX8 Section mm²	Ø cable mm	A x B (mm)
Rapid Joint L6-RIP68/1	o	25 - 50	12 - 18	245 x 60	25 - 50	24	180 x 60
Rapid Joint L6-RIP68/2	oo	1,5 - 10	12 - 18		1,5 - 10	24	
Rapid Joint L6-RIP68/3	ooo	1,5 - 6	12 - 18		1,5 - 10	24	
Rapid Joint L6-RIP68/4	oooo	1,5 - 6	12 - 18		1,5 - 10	24	
Rapid Joint L10-RIP68/1	o	70 - 95	16 - 20	275 x 65	35 - 150	31	210 x 65
Rapid Joint L10-RIP68/2	oo	10 - 16	16 - 20		10 - 25	31	
Rapid Joint L10-RIP68/3	ooo	10	16 - 20		10 - 25	31	
Rapid Joint L10-RIP68/4	oooo	10	16 - 20		10 - 25	31	

Rapid Joint System Fast RP

Straight joint pre-filled with gel.



Gel:

Installation temperature: -40°C / +50°C

Operating temperature: 90°

Product	Cable formation from 2x a 4x (n° x mm²)	Dimensions A x B (mm)
Rapid Joint L 10 RP	1,5 - 10	180 x 60
Rapid Joint L 25 RP	10 - 25	210 x 65
Rapid Joint L 95 RP	35 - 95	320 x 100

Magic Power Joint System Fast RP

Straight joint with Magic Power Gel.



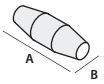
Operating temperature: 90°

Installation temperature: -40°C / +50°C

Product	Cable formation from 2x a 4x (n° x mm²)	Dimensions A x B (mm)
Magic P Joint L 35- RP/16	1,5 - 16	232 x 70
Magic P Joint L 35- RP/35	10 - 35	232 x 70
Magic P Joint L 50- RP/50	25 - 50	266 x 72
Magic P Joint L 120- RP/120	35 - 120	365 x 95
Magic P Joint L 240- RP/150	35 - 150	510 x 120

Magic Joint System Fast RP

Straight joint with Magic Gel.



Product	Cable formation from 2x a 4x (n° x mm²)	Dimensions A x B (mm)
Magic Joint 35- RP/16	1,5 - 16	232 x 70
Magic Joint 35- RP/35	10 - 35	232 x 70
Magic Joint 50- RP/50	25 - 50	266 x 72
Magic Joint 120- RP/120	35 - 120	365 x 95
Magic Joint 240- RP/150	35 - 150	510 x 120



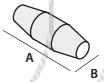
Gel:

90° Operating temperature

Installation temperature: -10°C / +45°C

Raycast System Fast RP

Straight joint with Ray Resin epoxy resin.



Product	Cable formation from 2x a 4x (n° x mm²)	Dimensions A x B (mm)
Raycast L 35- RP/16	1,5 - 16	232 x 70
Raycast L 35- RP/35	10 - 35	232 x 70
Raycast L 50- RP/50	25 - 50	266 x 72
Raycast L 120- RP/120	35 - 120	365 x 95
Raycast L 240- RP/150	35 - 150	510 x 120

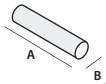


90° Operating temperature

Installation temperature: 0°C / +45°C

GLV System Fast RP

Straight heat-shrink joint.



Product	Cable formation 4x (n° x mm²)	Dimensions A x B (mm)
GLV 0435- RP/16	6 - 16	650 x 50
GLV 0470- RP/35	25 - 35	650 x 70
GLV 0470- RP/50	25 - 50	650 x 75
GLV 4150- RP/150	50 - 150	800 x 80



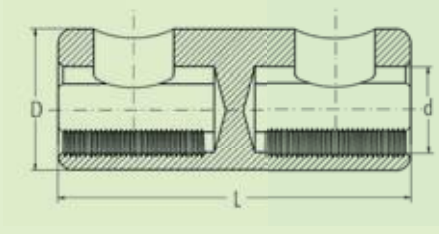
90° Operating temperature

Installation temperature: -15°C / +45°C



Shear bolt connectors

Product	Aluminium cross sections (mm²)	Copper cross sections (mm²)	Breakaway torque (Nm)	Dimensions L (mm)	D (mm)	d (mm)
Ray-TTF 1,5/16	10 -16	1,5 - 16	4	30	12	6,1
Ray-TTF 10/35	10 - 35	10 - 35	10	36	16	9,0
Ray-TTF 25/50	25 - 50	25 - 50	12	36	18	10,0
Ray-TTF 35/150	35 - 150	35 - 150	30	70	28	17,0



Heat-shrink

Straight or branch heat-shrinkable joints for extruded insulation cables up to a 1 kV.

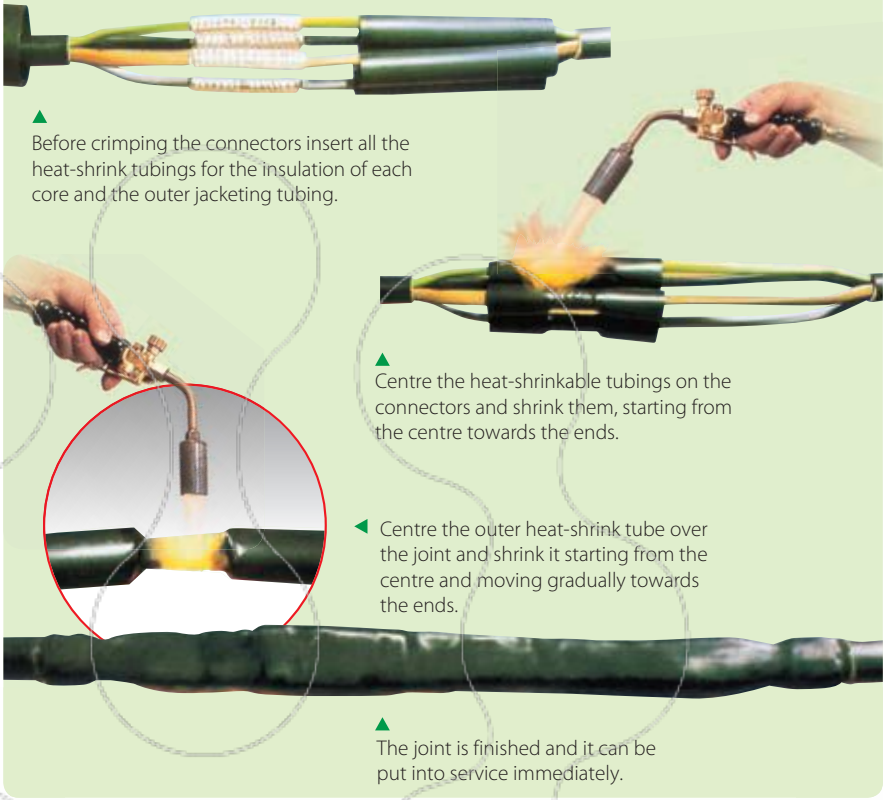
Electrical performance:
CEI EN 50393 with connectors complying with EN 61238-1
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

No flame propagation:
CEI 20-35 • IEC 60332-1 HD405-1
(as applicable)

Operating temperature 90°

Installation temperature: -15°C / +45°C

Installation sequence

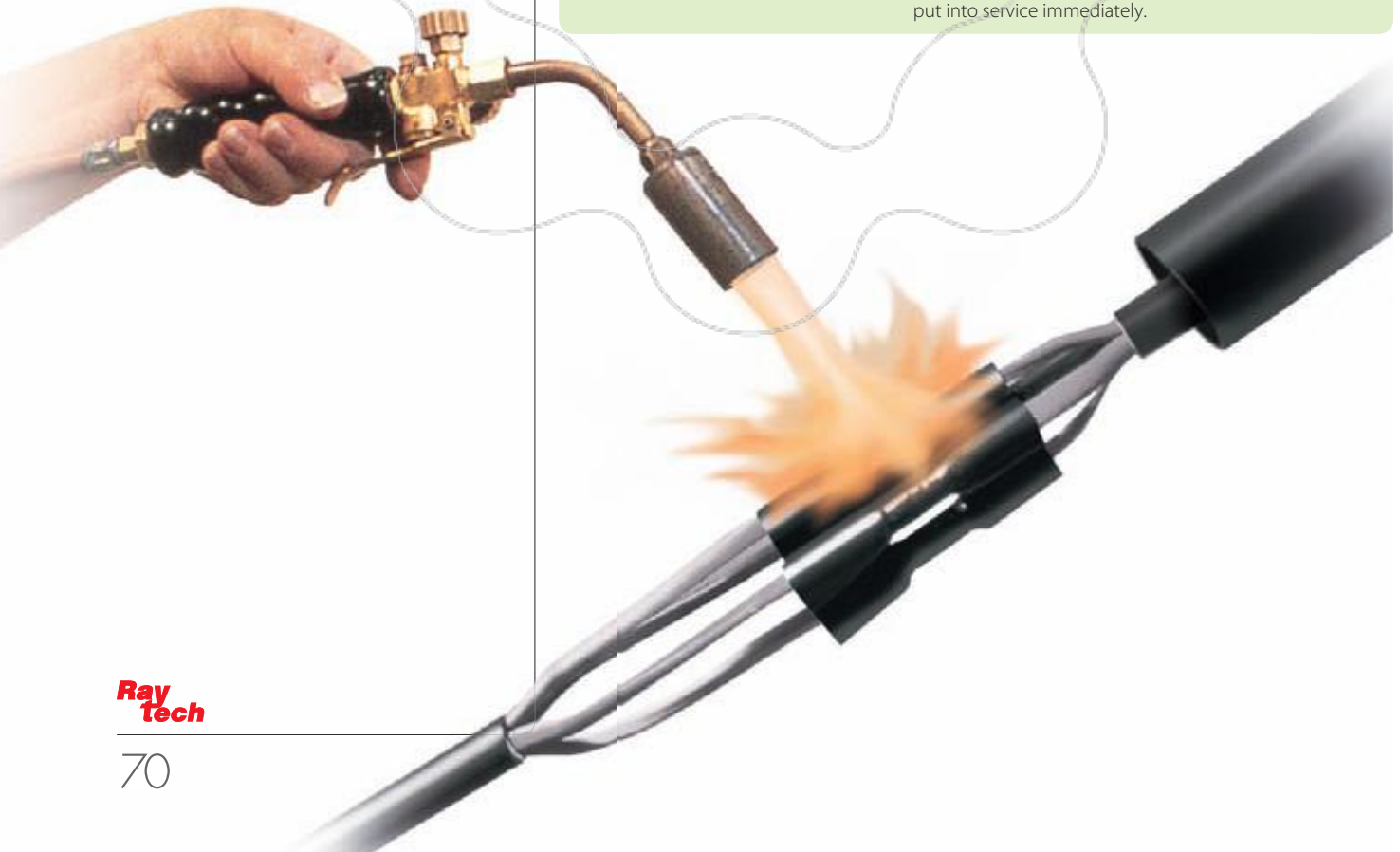


▲ Before crimping the connectors insert all the heat-shrink tubings for the insulation of each core and the outer jacketing tubing.

▲ Centre the heat-shrinkable tubings on the connectors and shrink them, starting from the centre towards the ends.

◀ Centre the outer heat-shrink tube over the joint and shrink it starting from the centre and moving gradually towards the ends.

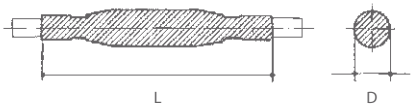
▲ The joint is finished and it can be put into service immediately.



GDL

Joint for single core cables including concentric neutral.

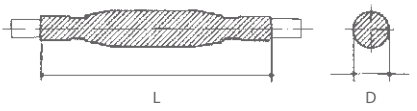
Product	Conductor cross section mm² from	to	Dimensions L (mm)
GDL 92 A1	4	10	300
GDL 92 A2	16	150	300
GDL 92 A3	185	400	300
GDL 92 PA	10	50	300



GLV

Joint for multi core cables (also for submersible pumps).

Product	Conductor cross section mm² from	to	Number of phases	Dimensions L (mm)	D (mm)
GLV 0306	1,5	6	3	250	18
GLV 0316	10	16	3	400	37
GLV 0335	25	35	3	550	43
GLV 0370	50	70	3	650	52
GLV 3150	95	150	3	800	65
GLV 3300	185	300	3	900	82
GLV 0406	1,5	6	4	250	20
GLV 0416	10	16	4	400	40
GLV 0435	25	35	4	650	45
GLV 0470	50	70	4	650	54
GLV 4150	95	150	4	800	67
GLV 4300	185	300	4	900	84
GLV 2,5 - CP	2,5 complete with connectors		4	300	15

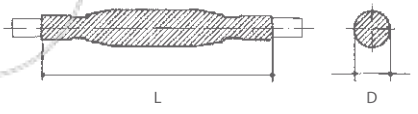


For both copper and aluminium cables. For aerial, underground, submerged installation.

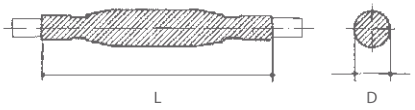
GLV-N

Joint for multi core cables with concentric neutral.

Product	Conductor cross section mm² from	to	Number of phases	Dimensions L (mm)	D (mm)
GLV 0306 - N	1,5	6	3	250	18
GLV 0316 - N	10	16	3	400	37
GLV 0335 - N	25	35	3	550	43
GLV 0370 - N	50	70	3	650	52
GLV 3150 - N	95	150	3	800	65
GLV 3300 - N	185	300	3	900	82
GLV 0406 - N	1,5	6	4	250	20
GLV 0416 - N	10	16	4	400	40
GLV 0435 - N	25	35	4	650	45
GLV 0470 - N	50	70	4	650	54
GLV 4150 - N	95	150	4	800	67
GLV 4300 - N	185	300	4	900	84



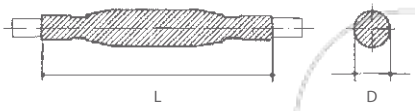
These kits include components for the phase insulation, metallic braiding to replace the neutral and external self-sealing heat-shrinkable tube.



GLV-ARM

Joint for armoured multi core cables.

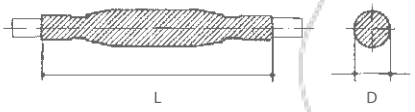
For armoured **tape** cables	Conductor cross section (mm²)		Dimensions	
Product	from	to	L (mm)	D (mm)
GLV 0406-ARM	1,5	6	300	25
GLV 0416-ARM	6	16	400	40
GLV 0450-ARM	25	50	800	60
GLV 4150-ARM	70	150	1000	100
GLV 4300-ARM	185	300	1000	120



BOPA

Joint for MV cables for public lighting.

Product	Operating voltage kV	Number of phases	Section (mm²)	Dimensions L (mm)	Dimensions D (mm)
BOPA 3	3	1	1x10	300	50
BOPA 4	3	2	2x10	450	60
BOPA 5	3	3	3x10	450	70
BOPA 3/2	3,6	1 + concentric neutral	1 x 6 + 6 concentric	700	35
BOPA 4/T transition	3	2	2,5 - 10 paper / 10 - 50 extruded	750	40



DJ

LV branch joint.

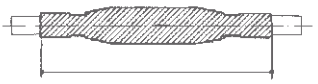
Product	Single core cables cross section (mm²) Through	Single core cables cross section (mm²) Branch	Multi core cables cross section (mm²) Through	Multi core cables cross section (mm²) Branch	Dimensions L (mm)	Dimensions D (mm)
DJ01	1 x 4 - 50	1 x 2,5 - 50	4 x 1,5 - 10	2 x 1,5	200	25
DJ02	1 x 50 - 120	1 x 6 - 120	4 x 16 - 25 2 single core cables 1 x 6 - 50	2x1,5 1 two core cable 2 x 2,5	250	40
DJ03	1 x 150 - 300	1 x 6 - 300	4 x 25 - 3,5 x 50	4 x 2,5 - 25	400	70





GLV F/R - GMP F/R

Joint for fire resistant cables (0,6/1 kV).





Electrical performance:
CEI EN 50393 with connectors complying with EN 61238-1
(with testing under water head and water between the cable cores)
Class 2 in accordance with CEI 64-8.

Flame resistance:
IEC 60331-21 • CEI 20-36/2-1
(as applicable)

Contact Raytech for information regarding other formations and cable sections

FOR NAVAL TYPE POWER CABLES

UNARMOURED Product	Cable formation (n° x mm²)	L (mm)	ARMOURED Product	Cable formation (n° x mm²)	L (mm)
GLV 4004-F/R	4 x 1,5 - 4	300	GLV 4004-ARM-F/R	4 x 1,5 - 4	400
GLV 4016-F/R	4 x 6 - 16	300	GLV 4016-ARM-F/R	4 x 6 - 16	400
GLV 4050-F/R	4 x 25 - 50	400	GLV 4050-ARM-F/R	4 x 25 - 50	500
GLV 4150-F/R	4 x 70 - 150	500	GLV 4150-ARM-F/R	4 x 70 - 150	750

FOR NAVAL TYPE SIGNALLING AND CONTROL CABLES

UNARMOURED Product	Cable formation (n° x mm²)	L (mm)	ARMOURED Product	Cable formation (n° x mm²)	L (mm)
GMP 007-F/R	4 - 7 x 1,5 - 2,5	300	GMP 007-ARM-F/R	4 - 7 x 1,5 - 2,5	400
GMP 014-F/R	10 - 14 x 1,5 - 2,5	300	GMP 014-ARM-F/R	10 - 14 x 1,5 - 2,5	400
GMP 030-F/R	16 - 30 x 1,5 - 2,5	400	GMP 030-ARM-F/R	16 - 30 x 1,5 - 2,5	500

FOR UNDERGROUND POWER CABLES

UNARMOURED Product	Cable formation (n° x mm²)	L (mm)	ARMOURED Product	Cable formation (n° x mm²)	L (mm)
GLV 4006-F/R-G7	4 x 1,5 - 6	300	GLV 4006-ARM-F/R-G7	4 x 1,5 - 6	400
GLV 4016-F/R-G7	4 x 6 - 16	300	GLV 4016-ARM-F/R-G7	4 x 6 - 16	400
GLV 4050-F/R-G7	4 x 25 - 50	400	GLV 4050-ARM-F/R-G7	4 x 25 - 50	500
GLV 4150-F/R-G7	4 x 70 - 150	500	GLV 4150-ARM-F/R-G7	4 x 70 - 150	750

FOR UNDERGROUND SIGNALLING AND CONTROL CABLES

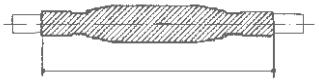
UNARMOURED Product	Cable formation (n° x mm²)	L (mm)	ARMOURED Product	Cable formation (n° x mm²)	L (mm)
GMP 014-F/R-G7	Fino a 14 x 1,5 - 2,5	300	GMP 014-ARM-F/R-G7	Fino a 14 x 1,5 - 2,5	400
GMP 019-F/R-G7	Fino a 19 x 1,5 - 2,5	400	GMP 019-ARM-F/R-G7	Fino a 19 x 1,5 - 2,5	500

DJ F/R

Branch joint for fire resistant cables (0,6/1 kV).

FOR POWER CABLES

UNARMOURED Product	ARMOURED Product	Cable formation (n° x mm²) Through	Cable formation (n° x mm²) Branch	L (mm)
DJ 4016 - F/R	DJ 4016 - ARM-F/R	3 - 4 x 1,5 - 16	3 - 4 x 1,5 - 16	300



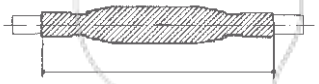


GMP

Joint kits for multi conductor cables for signalling, command and control.

NON ARMOURED cable	N° of conductors		Section mm²		External Ø of cable	
Product	from	to	from	to	min (mm)	max (mm)
GMP 007	4	7	1,0	2,5	8	19
GMP 014	8	14	1,0	2,5	12	22
GMP 021	15	21	1,0	2,5	15	27
GMP 040	22	40	1,0	2,5	20	35
GMP 075	41	75	1,0	2,5	26	44
GMP 100	76	100	1,0	2,5	26	60

ARMOURED cable	N° of conductors		Section mm²		External Ø of cable	
Product	from	to	from	to	min (mm)	max (mm)
GMP 007-A	4	7	1,0	2,5	14	23
GMP 014-A	8	14	1,0	2,5	15	26
GMP 021-A	15	21	1,0	2,5	24	35
GMP 040-A	22	40	1,0	2,5	30	45
GMP 075-A	41	75	1,0	2,5	39	55





GMC

Joint kits for multi pair cables for communication, command or control.

NON ARMOURED cable	N° of pairs		Section mm²		External Ø of cable	
Product	from	to	from	to	min (mm)	max (mm)
GMC 010	5	10	2 x 0,6	2 x 1,0	9	14
GMC 020	11	20	2 x 0,6	2 x 1,0	13	20
GMC 030	21	30	2 x 0,6	2 x 1,0	16	24
GMC 050	31	50	2 x 0,6	2 x 1,0	22	29
GMC 100	51	100	2 x 0,6	2 x 1,0	30	40

ARMOURED cable	N° of pairs		Section mm²		External Ø of cable	
Product	from	to	from	to	min (mm)	max (mm)
GMC 004-A	1	4	2 x 0,6	2 x1,0	15	23
GMC 007-A	5	7	2 x 0,6	2 x 1,0	15	26
GMC 019-A	8	19	2 x 0,6	2 x 1,0	24	35
GMC 037-A	20	37	2 x 0,6	2 x 1,0	30	45
GMC 061-A	38	61	2 x 0,6	2 x 1,0	39	55

Terminals heat-shrink



Include sheath to cover phases, sealing of the point of divergence of phases and sealing between phase and cable terminal.

TLV

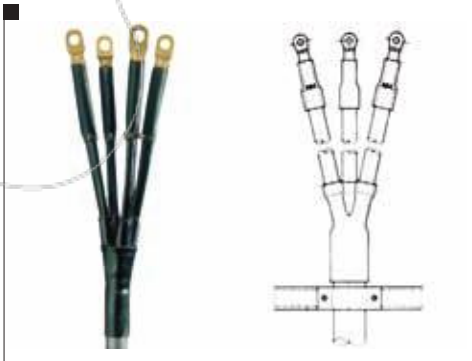
Terminations for armoured and non armoured extruded cables up to 1 kV.

NON ARMOURED extruded cables	Extruded cables with **WIRE ARMOUR**	Section conductor mm²		Number
Product	**Product**	from	to	of phases
TLV 0216	TLV 0216 - AF	4	16	2
TLV 0316	TLV 0316 - AF	4	16	3
TLV 0416	TLV 0416 - AF	4	16	4
TLV 0250	TLV 0250 - AF	25	50	2
TLV 0350	TLV 0350 - AF	25	50	3
TLV 0450	TLV 0450 - AF	25	50	4
TLV 3150	TLV 3150 - AF	70	150	3
TLV 4150	TLV 4150 - AF	70	150	4
TLV 3300	TLV 3300 - AF	185	300	3
TLV 4300	TLV 4300 - AF	185	300	4
	TLV 4500 - AF	500		4

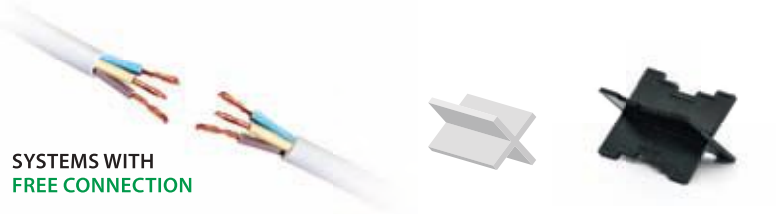
TLV 500

Terminations for concentric neutral extruded cables up to 1 kV.

Product	Section conductor mm² from	to	Number of phases
TLV 0116 - 500	4	16	1
TLV 0216 - 500	4	16	2
TLV 0316 - 500	4	16	3
TLV 0150 - 500	25	50	1
TLV 0250 - 500	25	50	2
TLV 0350 - 500	25	50	3
TLV 2150 - 500	70	150	2
TLV 3150 - 500	70	150	3
TLV 2300 - 500	185	300	2
TLV 3300 - 500	185	300	3



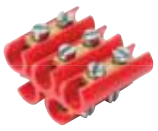
Include sheath to cover the concentric conductor.

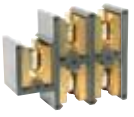


SYSTEMS WITH FREE CONNECTION

TYPE OF JOINT	Magic Power Joint	Magic Joint	Rapid Joint	Clik Joint	Rubber Joint	Raycast	Wonder Joint	GLV
 **PRE-FILLED**			●	●				
 **FOR CASTING**	●	●			●	●		
 **INJECTABLE**							●	
 **HEAT-SHRINK**								●
extra-fast installation			●				●	
fast installation	●	●		●	●	●		
straight	●	●	●	●	●	●	●	●
branch	●	●		●	●	●	●	●
for copper cable	●	●	●	●	●	●	●	●
for aluminium cable	●	●	●		●	●		●
for screened cable	●		●			●		●
for armoured cable	●		●			●		●
for signalling and control	●		●			●		●
for telephone cable	●		●			●		●
1x single core cable	●	●	●	●	●	●	●	
2x two-core cable	●	●	●	●	●	●	●	●
3x three-core cable	●	●	●	●	●	●	●	●
4x four-core cable	●	●	●	●	●	●	●	●
5x five-core cable								
for cables up to 630 mm²	●	●				●		●
flame retardant	●	●	●	●	●		●	●
complete with separator	●	●	●	●	●	●	●	
complete with screw connectors								
for underwater use	●	●	●	●	●	●	●	●
for high depth	●		●				●	●
re-enterable	●	●	●	●	●		●	●
Non-toxic / without shelf life	●	●	●	●	●		●	●

SYSTEMS WITH SEPARATOR AND CONNECTORS






SYSTEMS WITH SHEAR BOLT CONNECTORS



King Joint	Rapid Joint IP68	Super Clik	Magic Power Joint System Plus	Magic Joint System Plus	Raycast System Plus	Wonder Joint System Plus	Magic Power Joint RP	Magic Joint RP	Raycast RP	Rapid Joint RP	GLV RP
●	●	●								●	
			●	●	●		●	●	●		
						●					
											●
●		●				●	●	●	●		
	●		●	●	●					●	
●	●	●	●	●	●	●	●	●	●	●	●
●		●	●	●	●	●					
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	●										●
●		●	●	●		●	●	●			●
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●		●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●
●	●	●	●			●	●			●	●
●	●	●	●	●		●	●	●		●	●
●	●	●	●	●		●	●	●		●	●



Head to head terminal blocks.

Product	Permitted cross sections (mm^2)	Dimensioni esterne (mm) Diameter	Length
Morsettiera L16	Up to 16	31	24
Morsettiera L25	Up to 25	34	39



5-conductor junction terminal blocks.

Product	Permitted cross sections (mm^2) Through	Branch	Outer dimensions (mm) Width	Height	Profondità
Morsettiera Y6	1,5 - 6	1,5 - 4	36	28	13
Morsettiera Y16	4 - 16	1,5 - 4	45	36	16



4-conductor junction terminal blocks.

Product	Permitted cross sections (mm^2) Through	Branch	Outer dimensions (mm) Width	Height	Profondità
Morsettiera T	10 - 35	1,5 - 6	50	36	24



Terminal blocks for 1, 2, 3-conductor head-head joint or junction up to 6 mm^2.

Product	Permitted cross sections (mm^2) Through	Branch	Outer dimensions (mm) Width	Height	Deepness
Morsettiera B1	1 x 1,5 - 6	1 x 1,5 - 6	17	15	14
Morsettiera B2	2 x 1,5 - 6	2 x 1,5 - 6	29	15	14
Morsettiera B3	3 x 1,5 - 6	3 x 1,5 - 6	40	15	22



Terminal blocks for 5-conductor head-head joint or junction (with through conductor cut) terminal blocks.

Product	Permitted cross sections (mm^2) Straight	Through	Branch	Outer dimensions (mm) Width	Height	Deepness
Morsettiera 5-6	1,5 - 6	4	2,5	31	18	25,5
Morsettiera 5-16	4 - 16	10	6	38,5	23	28,5



Terminal block for 3-conductor head-head joint or junction (with through conductor cut) terminal blocks.

Product	Permitted cross sections (mm^2) Straight	Through	Branch	Outer dimensions (mm) Width	Height	Deepness
Morsettiera 3-6	1,5 - 6	4	2,5	20	18	25,5



FILLERS

Insulators and sealing for protecting electrical connections.



Gel

BICOMPONENT CAST

page 82



Magic Power Gel

Self-amalgamating bicomponent gel in single bottles



Magic Gel

Bicomponent gel in bottles



Magic Fluid

Bicomponent gel in single dose bags



Ray Gel

Bicomponent gel in bottles for telephone and intercom systems



Bag Gel

Bicomponent gel in bags for telephone and intercom systems

Rubber

BICOMPONENT PASTE/CAST

page 96



Sky Plast

Mouldable bicomponent rubber



Magic Rubber & Rubber Fluid

Bicomponent rubber in bottles or single dose bags





Gel

SINGLE COMPONENT INJECTABLE

page 88

ITALIAN UTILITY MODEL



Wonder Gel

Single coloured component



Wonder Gel Invisible

Single transparent component



Wonder Fluid

Single fluid component



Monogel

Single coloured component

Gelgum

BICOMPONENT CAST

page 94



TechnoGelGum

Bicomponent in single bottle

Resin

BICOMPONENT CAST

page 99



Ray Resin

Bicomponent epoxy resin in single dose bags



Magic Power Gel

The unique bi-component gel in a single bottle, with superior dielectric, sealing and thermal characteristics, re-enterable and re-usable!

- Very sticky
- Strong self amalgamating characteristics
- Single compact bottle; convenient twin compartment
- Re-usable as well as re-enterable, even after long working periods
- It doesn't give any waste
- Non toxic and safe

INSULATING and SEALING GEL



RE-ENTERABLE



RE-USABLE























Gel: UL 94-HB

Dielectric strength:
>23 kV/mm
Cross linking time:
fast (about 15 min. at 25°C)
Volume resistivity:
$>2 . 10^{15}$ Ω cm
Operating temperature:
-60°C / +200°C
Overload temperature for short periods:
uo to 250°C
Stabilised for:
mould - UV
Degree of protection:
IP68 (in proper casings)

IP68 OFFICIALLY TESTED | IMQ

Stickiness

- Exceptional sealing properties in any condition
- Better resistance to pressure
- Effective even in vertical or ceiling applications

Self-agglomerating

- Once cross linked it perfectly adheres on itself characteristics to get an homogeneous and compact mass
- It can be therefore applied in multiple layers

Zero waste

- Due to the nature of the product waste is eliminated; even residual product can be saved and used for the next application
- Also any left over product maintains it's high performance characteristics

Single bottle

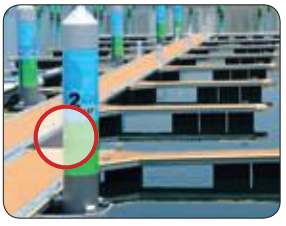
- Highly useful
- The most compact packaging
- Less space occupied in the toolbox
- Both components in the same packaging

Magic Power Gel

Product	Colour	Package type	Quantity
Magic Power Gel	●	1 single, bi-component bottle 1 small basin - 1 mixing spoon	1000 ml
Magic Power Gel 500	●	1 single, bi-component bottle 1 small basin - 1 mixing spoon	500 ml
Magic Power Gel 250	●	1 single, bi-component bottle	250 ml







For all types of connections, even in the toughest conditions, for power, telecom and signalling!





Magic Gel & Magic Fluid

Bicomponent gel with very high dielectric and thermal characteristics, ideal for connection systems (joint shells or enclosures) for power cables.

The insulating and sealing gel, when cast in suitable casings, ensures an IP68 degree of protection and it is able to replace all types of resins. This is a self-polymer insulation in two practical bottles or in a single use bag, with cold cross linking. Once poured, the insulation, characterized by very low viscosity, surrounds and envelopes any type of material, cross linking in less than 10 minutes. Completely non-toxic, cross linking with a very slow isothermal peak that does not thermally stress the materials it comes into contact with.

- For high temperature applications!
- Quick cross linking (only 10 minutes)
- Re-enterable also after long working periods
- Non-toxic and safe with no shelf life
- Low viscosity

Gel:

Dielectric strength:
>23 kV/mm
Cross linking time:
fast (about 10 min. at 23°C)
Volume resistivity:
>2 . 10^{15} Ω cm
Working temperature:
-60°C / +200°C
Overload temperature for short periods:
uo to 250°C
Stabilised for:
mould - UV
Degree of protection:
IP68 (in proper casings)

IP68 OFFICIALLY TESTED | IMQ



Examples of use







Problem ENERGY

What does a gel for this type of system have to give?

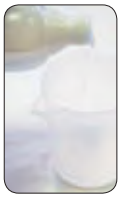
- **INSULATION:** Elevated voltages (1 kV operating, 4 kV testing)
- **THERMAL PERFORMANCE:** Operating temperature 90°C, overload temperature 130°C, short circuit temperature 250°C
- **SEALING:** Installations also possible in humid environments, flooded wells
- **DEGREE OF PROTECTION:** Must also work with water between the cores of the cable
- **CERTIFIED SYSTEMS:** The combination of insulation gel + casing must comply with current standards CEI 20-33 and EN 50393

Solution:* *Magic Gel meets all your Energy system requirements!



Magic Gel

Product	Colour	Package type	Total quantity
Magic Gel 300	●	2 bottles	300 ml
Magic Gel 1000	●	2 bottles - 1 small basin - 1 mixing spoon	1000 ml
Magic Gel 2000	●	2 bottles - 1 small basin - 1 mixing spoon	2000 ml
Magic Gel 10000	●	2 tanks - 1 small basin - 1 mixing spoon	10 lt

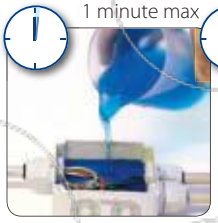




30″ max



1 minute max



<10 minutes



Magic Fluid

Product	Colour	Package type	Total quantity
Magic Fluid 90	●	Bicomponent single dose bags	90 gr
Magic Fluid 110	●	Bicomponent single dose bags	110 gr
Magic Fluid 170	●	Bicomponent single dose bags	170 gr
Magic Fluid 210	●	Bicomponent single dose bags	210 gr
Magic Fluid 420	●	Bicomponent single dose bags	420 gr
Magic Fluid 550	●	Bicomponent single dose bags	550 gr





30″ max



1 minute max





Ray Gel

Insulating, sealing, re-enterable fast cross linking bicomponent silicone gel for telephone and intercom systems and for LED and display protection.

- Quick cross linking
- Antioxidant protection
- Low temperature resistant
- Non-toxic and safe with no shelf life

Gel: UL 94-HB

Dielectric strength:
>23 kV/mm
Cross linking time:
fast (about 3 min. at 30°C)
Volume resistivity:
>1,5 x 10^{15} Ω cm
Operating temperature:
-60°C / +180°C
Thermal conducitivity:
< 0,2 W/m°K
Dielectric constant:
< 7
Degree of protection:
IP68 (in proper casings)

IP68 OFFICIALLY TESTED | IMQ







RED

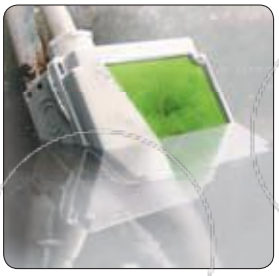
- Specially formulated for UV resistance
- Suitable for "surface" installations
- Ideal for intercom systems





GREEN

- Particularly resistant to fungi and mould
- Suitable also for underground installations
- Ideal for telephone connections





TRANSPARENT

- Excellent transparency
- Does not opacify
- Ideal for protecting printed circuit boards, for sealing displays, for insulating and sealing LEDs



Problem TELECOM

What does a gel for this type of system have to give?

- **SEALING:** Installations also possible in humid environments, flooded wells
- **DEGREE OF PROTECTION:** IP68 in proper casing
- **PREVENTION FROM OXIDATION:** Contacts in Telecom connections shouldn't give attenuations (low signal currents)
- **HIGH INSULATION FLUIDITY:** During casting, the the insulation has to fill all interstitial spaces between the cores of the cable
- **ANTICRACKING:** Insulation in the permanently cold joint should not crack at low temperatures
- **INSULATION:** The filler should be an insulating component

Solution:* *Ray Gel meets all your Telecom system requirements

Ray Gel / Bag Gel

Product	Colour	Package type	Total quantity
Bag Gel 200-T	○	Bicomponent single dose bags	200 gr
Bag Gel 400-T	○		400 gr
Bag Gel 200-V	●		200 gr
Bag Gel 400-V	●		400 gr
Bag Gel 200-R	●		200 gr
Bag Gel 400-R	●		400 gr
Ray Gel 300-T	○	2 bicomponent bottles	300 gr
Ray Gel 1000-T	○		1000 gr
Ray Gel 300-V	●		300 gr
Ray Gel 1000-V	●		1000 gr
Ray Gel 300-R	●		300 gr
Ray Gel 1000-R	●		1000 gr
Ray Gel 10K-T	○	2 bicomponent boxes	10 kg
Ray Gel 20K-T	○		20 kg
Ray Gel 10K-V	●		10 kg
Ray Gel 20K-V	●		20 kg
Ray Gel 10K-R	●		10 kg
Ray Gel 20K-R	●		20 kg







IP68 OFFICIALLY TESTED | IMQ
(in proper casings)

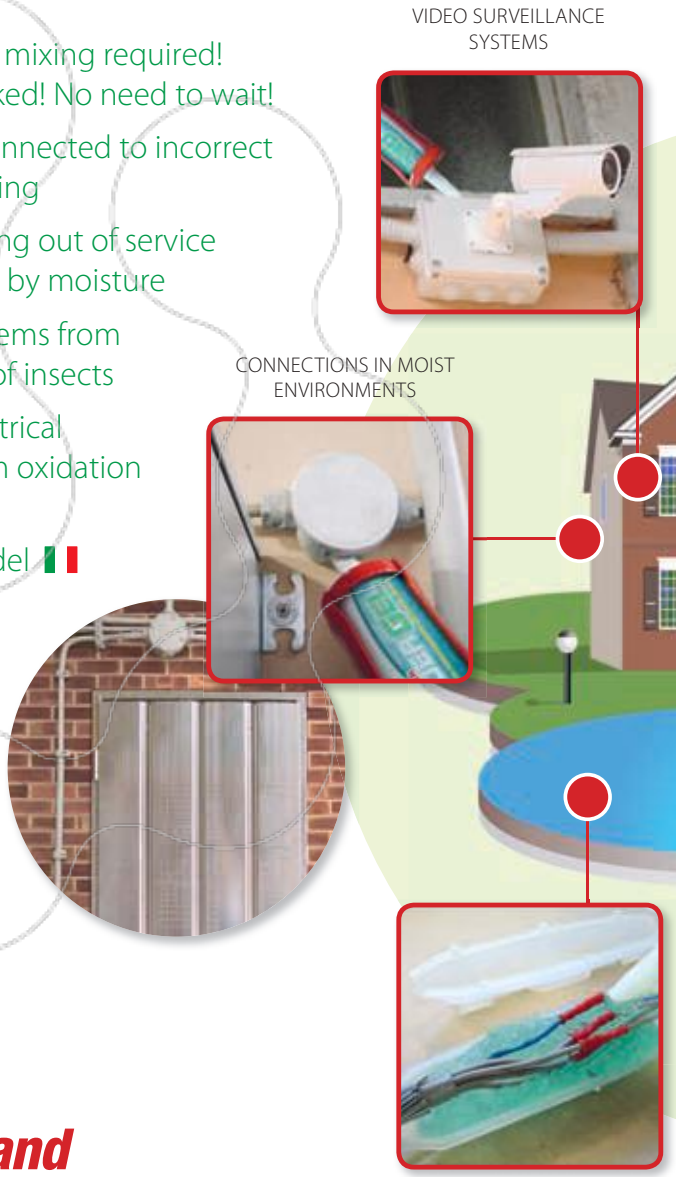
Wonder Gel

Single component insulating gels in cartridge to instantly protect new installations and oversee maintenance of all types of electrical connections.

Installer's best friends. Electrical connections, within empty enclosures, are exposed to the risk of short circuit, oxidation and corrosion, at times, resulting in irreparable damages. Without stress and no waiting around, ***WonderGel*** and ***WonderGel Invisible*** make your job easier, guaranteeing the protection and safety of systems in compliance to best practice rules to provide the highest quality solution, quick and perfect to get the satisfaction of both you and your clients.

- Ready to use! No mixing required! Already cross-linked! No need to wait!
- Resolve issues connected to incorrect insulation or sealing
- Eliminate annoying out of service instances caused by moisture
- Protect your systems from the penetration of insects
- Protect your electrical connections from oxidation and corrosion
- Italian Utility Model





Time and space-saver

EASY TO APPLY EVEN IN AREAS WHICH ARE DIFFICULT TO ACCESS!

GEL



INSPECTABLE

EXTERNAL SYSTEMS

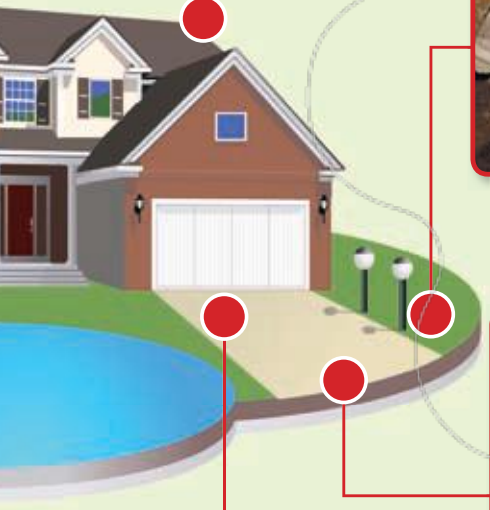




UNDERGROUND CONNECTIONS



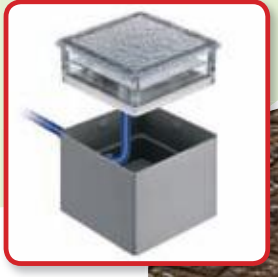




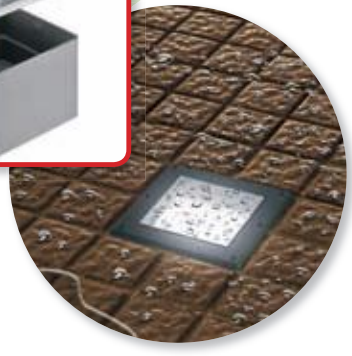
SMALL-SCALE CONNECTIONS







GROUND LUMINAIRES



WHAT IS GEL WONDER?

- A single component gel
- Extremely sticky
- Stays soft with time
- Never dries
- Non-toxic and safe
- No shelf life



WHAT DOES GUARANTEE?

- Maximum insulation and sealing
- Effective and stable adhesion with the passing of time
- High resistance to water pressure
- Degree of protection IP68 when dispensed in suitable casings



WHY IS IT IN A CARTRIDGE?

- Always ready to use and at your fingertips
- Can be used with standard guns
- It is measurable
- No waste
- Complete with nozzle
- Extremely rapid to use even in difficult positions
- Compact





Ray tech



WonderGel & WonderGel Invisible

Characteristics

- Single component gel which comes already cross-linked in a cartridge
- No mixing, no waiting time
- Visco-elastic gel which is extremely fluid
- Self-levelling and self-vulcanizing
- Can be applied using standard silicone ratchets
- Easy to measure
- Does not expire and does not harden
- Easy to apply even to inaccessible areas
- Characteristics do not deteriorate with the passing of time
- Re-enterable
- Non-toxic and safe
- Can be applied in all weather conditions, even when raining or in the heat of the summer sun
- Can be applied to powered appliances
- Dielectric strength > 23 kV/mm
- Volume resistivity > 2. 10^{15} Ω cm
- Operating temperature from –60 / +200°C
- Overload temperature for brief periods: 250°C
- Gel UL 94-HB

* Protection degree IP68 in proper casings





Wonder Gel

Product	Colour	Package type	Total quantity
Wonder Gel	●	Cartridge with measuring nozzle	280 ml
Wonder Gel Invisible	○	Cartridge with measuring nozzle	280 ml

Gel technology comparison

	MAGIC GEL	MAGIC POWER GEL		WONDER GEL
PRODUCT	Bi-component gel in 2 bottles	Bi-component gel in single, 2 compartment bottle		Ready-to-use single component gel in a cartridge
				
				
		❶	❷	
METHOD OF APPLICATION	MIX AND POUR	MIX AND POUR	MIX, WAIT & STICK	INJECT
INSTALLATION TEMPERATURE (°C)	- 5 * -10 ** / +45 -15 ***	-5 * -10 ** / +55 -15 ***	-40 / +60	-40 / +110
OPERATING TEMPERATURE (°C)	-60 / +200	-60 / +200	-60 / +200 Ready to use in 15 min	-60 / +200 Ready to use
CROSS LINKING TIME (minutes at 25°C)	< 10 min.	ca. 15 min.	-	-
PRINCIPAL CHARACTERISTICS	RE-ENTERABLE	RE-ENTERABLE REUSABLE	STICKY RE-ENTERABLE REUSABLE	INJECTABLE RE-ENTERABLE

* Poured at -5°C from bottles stored at >10°C.

** Poured at -10°C from bottles stored at >20°C.

*** Poured at -15°C from bottles stored at -15°C (cross linking within 48 hours).

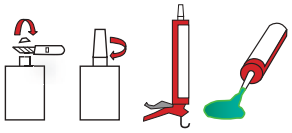
Raytech gels can be used for the filling and sealing of all junction boxes and are ideal to ensure maximum protection if applied in cable jointing systems of our production.

Wonder Fluid

Single component insulation fluid gel cartridge.

Gel: UL 94-HB

Operating temperature:
-60°C / +200°C
Installation temperature:
-40°C / +110°C
Dielectric strength:
> 23 kV/mm
Degree of protection:
IP68 (in proper casings)



- Ready-to-use fluid gel
- Created for filling new Raytech joint shells with no-return valves
- Suitable for filling trays
- Does not solidify when opened
- No waste
- No shelf life







Wonder Fluid

Product	Colour	Package type	Total quantity
Wonder Fluid 210	●	Cartridge with measuring nozzle	210 ml
Wonder Fluid 280	●	Cartridge with measuring nozzle	280 ml

Monogel

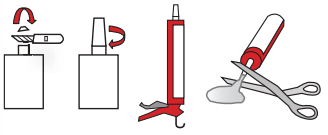
Single component transparent insulation gel for generic use.

- Ready to use
- No shelf life



Gel: UL 94-HB

Operating temperature:
-60°C / +200°C
Installation temperature:
-40°C / +110°C
Dielectric strength:
> 23 kV/mm
Degree of protection:
IP68 (in proper casings)





Monogel

Product	Colour	Package type	Total quantity
Monogel	○	Cartridge with measuring nozzle	300 ml

Techno Gel Gum

Single bottle two-component insulation with very high dielectric, thermal and sealing characteristics. Waterproof and re-enterable!

Dielectric strength:
≥ 21 kV/mm
Cross linking time:
fast (about 10 min. at 25°C)
Volume resistivity:
>2 x 10^{14} Ω cm
Operating temperature:
-60°C / +200°C
Overload temperature for short periods:
up to 250°C
Stabilised for:
mould-UV
Degree of protection:
IP68 (in proper casings)

IP68 OFFICIALLY TESTED | IMQ

TechnoGelGum is a strong hold flexible elastomer whose formula has been optimised for the protection of POWER CABLE, TELECOM CABLE and ELECTRONIC CIRCUIT connections. A new recipe that gives the product a surprising, original texture that combines the characteristics of GEL and RUBBER to emphasise its features. It's elastic and flexible like gel, but also tough and dry like rubber.

- For installations up to 1 kV
- Suitable for high temperatures
- Even suitable for high depths under water
- Waterproof > 1 MPa
- UV resistant
- Removable
- Vibrationr esistant can act as a damper
- Suitable for installation in salt water (sea) and in chlorinated water (pools)
- Non toxic and safe



EXTREMELY FLEXIBLE AND WATER-REPELLENT

NEW EXCEPTIONALLY STRONG CONSISTENCY

TECHNO GELGUM

FLEXIBLE LIKE GEL

STRONG LIKE RUBBER

BORN TO BE UNIQUE

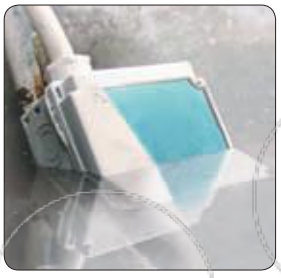
Raytech

Not quite a GEL and not quite RUBBER, BUT HAS THE BEST FEATURES OF BOTH!





SAFE



WATERPROOF



RE-ENTERABLE



Product	Colour	Package type	Quantity
Techno Gel Gum	●	1 single, bi-component bottle 1 small basin - 1 mixing spoon	1 kg
Techno Gel Gum 500	●	1 single, bi-component bottle 1 small basin - 1 mixing spoon	500 gr

Installation sequence



Shake before using.



Pour TechnoGelGum into the provided beaker in a 1:1 ratio.



Mix for 1 min. max.



Pour within 1 min. max.



In just 10 minutes the curing is completed.



Ray tech

Sky Plast

Dielectric strength:
> 23 kV/mm
Degree of protection:
IP68 (in proper casings)

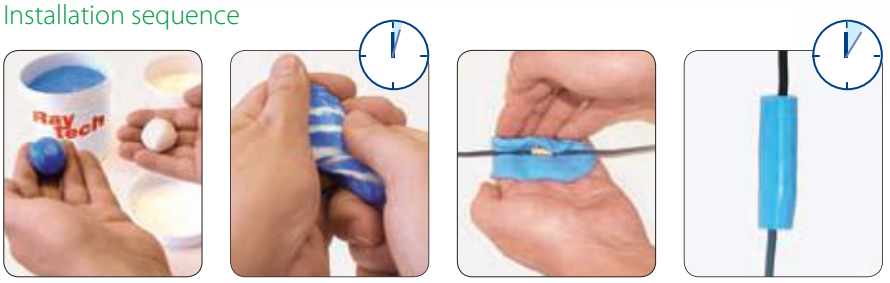
Bicomponent rubber in insulating, mouldable, self-extinguishing paste with high dielectric characteristics.

Thanks to Raytech's constant and careful research and development of new technologies comes Sky Plast, absolute technical innovation for covering, protecting, insulating, finishing and fireproofing any electrical and non-electrical component. Once the 2 components have been blended in a ratio of 1:1 (for max 2 min.) until uniform, it cross links quickly at room temperature in less than 5 minutes. After being wrapped around the component to be protected, Sky Plast quickly transforms into a layer of rubber with high dielectric and self-extinguishing characteristics.

- Mouldable, non-toxic and safe paste
- Low smoke and toxic and corrhosive gases emission
- Able to replace taping, heat-shrinking, resin finishes
- Flexible and elastic
- Quickly ready for use

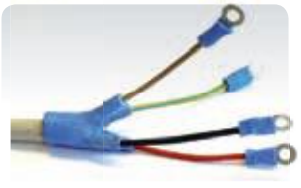


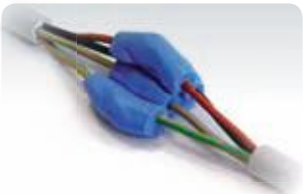
Installation sequence



Installation examples


Cable gland sealing


Creation of LV terminals

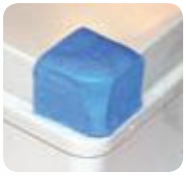

Insulation of multiple connections


Cable head protection

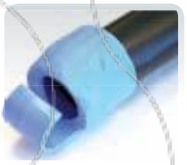

Conduit protection


Drop line, bar, transformer through insulation


Tool insulation


Edge protection


On-site preparation of braces and supports


Preparation of deflectors, nozzles, flow deviators


Preparation on-site of expanders for inserts


Preparation on-site of small moulds for reliefs


Preparation of bars, washers, round wire insulators


Preparation on-site of seals


Electrical application


Hydraulic application


Generic use

Sky Plast

Product	Colour	Package type	Total quantity
Sky Plast	●	2 bicomponent cans	500 gr
Sky Plast 250	●	2 bicomponent cans	250 gr



Magic Rubber

Fast cross linking bicomponent rubber.

Cross linking time:
15 minutes at 23°C
Volume resistivity:
>2 10^{15} Ω cm
Dielectric strength:
> 23 kV/mm
Specific weight:
1,22 approx
Degree of protection:
IP68 (in proper casings)

Bicomponent insulating liquid rubber, extremely conformable and fluid, flexible, elastic and re-enterable In just a few minutes, transforms into a rubber with very high dielectric, thermal, mechanical and elastic characteristics.

- For installation up to 1kV
- Low smoke, toxic and corrosive gas emissions
- Ideal also for casts and moulds
- Non toxic and safe
- No shelf life





Magic Rubber & Rubber Fluid

Product	Colour	Package type	Total quantity
Magic Rubber 500	●	2 bicomponent bottles 1 measuring cup - 1 mixing palette	500 gr
Magic Rubber 10	●	2 bicomponent tanks 1 measuring cup - 1 mixing palette	10 kg
Rubber Fluid 200	●	Bicomponent single dose bags	200 gr
Rubber Fluid 350	●	Bicomponent single dose bags	350 gr



Mix the 2 components in a ratio of 1:1.



Mix for max 30".



Pour the product into the casing to be filled.



In just a few minutes, the product transforms into rubber.

Rayresin

Bicomponent epoxy resin for installations up to 1 kV.

Resin for electrical insulation and for the protection of thermosetting LV and MV accessories. The two components, the base resin and hardener, are mixed in close contact to trigger the cross linking reaction. Excellent bonding to metal, plastic and rubber components.

Cross linking time:
20 minutes at 20°C
Hardness:
70 Shore D
Dielectric strength:
21 kV/mm
Specific weight:
1,07 kg/dm^3
1,7 kg/dm^3 for Rayresin Tan 3,8
Water absorption:
0,8% max



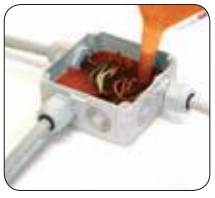


Rayresin

Product	Colour	Package type	Total quantity
Rayresin 170	●	Bicomponent single dose bags	170 gr
Rayresin 210	●	Bicomponent single dose bags	210 gr
Rayresin 420	●	Bicomponent single dose bags	420 gr
Rayresin Tan 3,8	●	Tin with mineral charge	3.8 kg


Remove the separator from the Rayresin bag.


Mix the 2 components (30" max).


Pour Rayresin in the tray (1' max).


Installation completed.

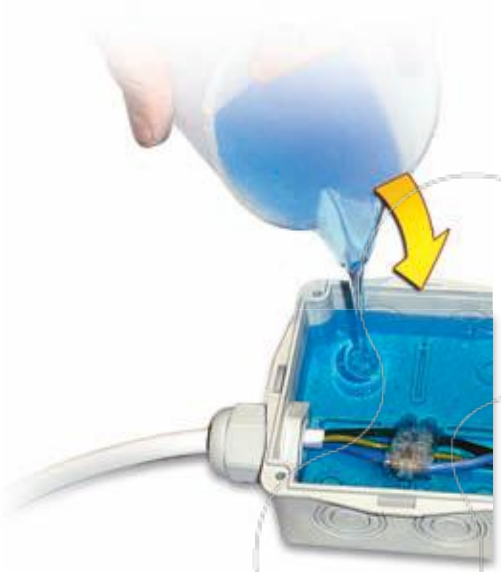
KIT IP68

Universal kits for branch or straight through connections complete with the appropriate amount ofg el.

Power Kit IP68 Solution

CONNECTION KIT WITH POWER GEL

page
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Magic Box

CONNECTION KIT WITH MAGIC FLUID

page
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Gel Leader Pack IP68²

CONNECTION KIT WITH POWER GEL AND WONDER GEL

page
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J-Box

BRANCH KITS
WITH HOOK CLOSING

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109 Accessories

page
110 Fittings

page
111 J-Box - DIY

Power Kit IP68

The only re-enterable and reusable IP68 kit. Can easily be used for ceiling mounted or recessed applications!

The most versatile, safe solution to fully protect connections in boxes with an IP68 degree of protection. Thanks to Magic Power, the newly developed, fast cross-linking, safe and reliable, extremely sticky self-agglomerating gel with very high dielectric, thermal and elastic characteristics, sealing is guaranteed in all type of installation, including submerged. The Power Kit IP68 solution is the only product of its kind! Not only because the insulation can be used in two different ways, both as a traditional "pour" in the box and as a "cross linked and sticky" product (cross linking first), but also because, thanks to its re-enterability and re-usability, it helps you save time and money!

- Kit complete with perfect IP68 connection
- Insulatedw ith ***Magic Power Gel*** the innovative self-amalgamating gel
- Can also be used in severe environmental conditions
- Suitable for very high depths
- No waste
- No shelf life

Electrical Performance: CEI EN 60529

Degree of protection: IP68 Class 2 in accordance with CEI 64-8.

Gel: UL 94-HB

Operating temperature 90°

Operating temperature of the gel -60°C / +200°C

HF Halogen Free in accordance with CEI EN 50267 2-2

IP68 OFFICIALLY TESTED | IMQ





WHERE CAN YOU USE THE **POWER KIT**?

In pools, tanks, submerged pumps, outdoor lighting systems, underground, port piers, marinas, sewer systems, and with temporary connections such as with lights, street vendors, etc.

HOW DO YOU USE THE **POWER KIT**?

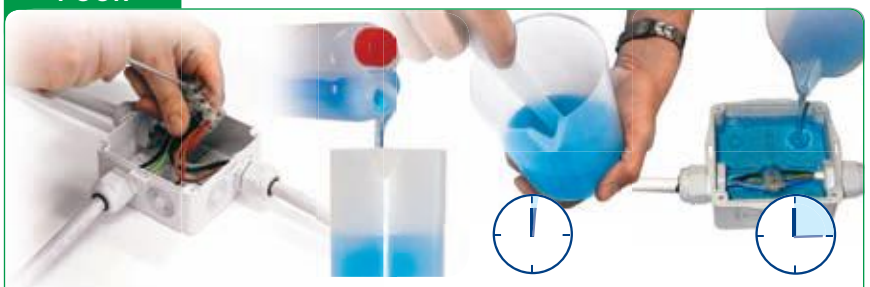
The insulation can be poured into the box (Pour!) or, for special applications, cross linked in the measuring beaker and applied around the connection (Stick!). Mix the Magic Power gel in a 1:1 ratio in the supplied measuring beaker. The gel will cross link in less than 15 minutes.

NO WASTE

The cross linked gel which remains on the bottom after mixing can be easily removed from the beaker and saved for later use.

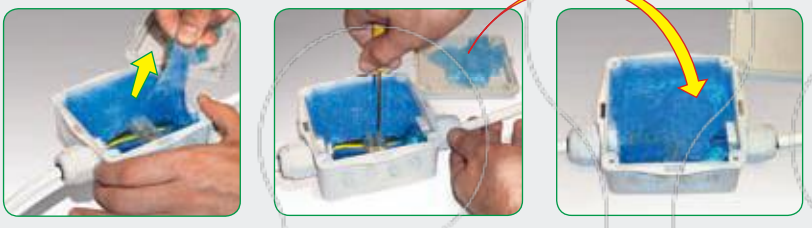
Chose the **POUR** or **STICK** method most suited for your needs

POUR



You can use the Magic Power gel supplied in the bicomponent bottle in a 1:1 ratio by simply pouring it after mixing into the box supplied in the kit, to protect and seal internal connections. The gel cross links in just 15 minutes, but the box can be energised immediately.

RE-ENTER AND RE-USE



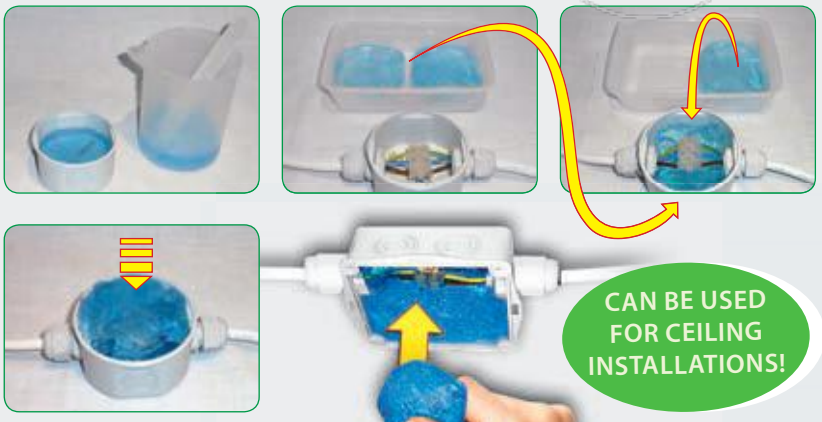
Thanks to Magic Power Gel, the box can be **re-opened, inspected** and **re-insulated** all using the original installed product.

STICK



Pour the components in the measuring beaker, mix and leave to cross link (about 15 minutes). Remove the insulation and position it in small parts around the connection so that it is fully covered. Insulation saved from previous mixes can of course be utilised.

IN A HURRY? ADVERSE WEATHER CONDITIONS? PREPARE YOUR INSULATION BEFORE INSTALLING IT!









WHAT ARE THE ADVANTAGES TO USING THE **POWER KIT**?

- The insulation is extremely sticky and self-amalgamating, with no shelf life, it is non-toxic and it adheres to everything while leaving your hands clean and dry.
- The kit does not cause waste: insulation left over in themeasuring beaker can be saved for later use.
- Re-enterable and reusable, saving time and money.
- The supplied box has pre-marked holes.
- Compatible with Magic Gel.
- A slight exothermic reaction (temperature increase of about 3°C) speeds up cross linking in cold weather conditions.
- Even protects boxes mounted on the ceiling to IP68 if using the "stick" method. Could also use left over product from previous installations.
- Insulation canb e pre-prepared: at home, at work or in your car and then applying it once cross linked, saving time when you're in a hurry or in adverse weather conditions.

SOME LEFT OVER? **SAVE IT**!



Left over gel that has already cross linked can be easily removed from the measuring beaker and saved for later use.





Power Kit

Product	Box	Insulating
Power Kit 65	mm ∅ 65 x h 35 + 2 cable glands PG16 / caps	Single bicomponent bottle 1 small basin - 1 mixing spoon
Power Kit 80	mm ∅ 80 x h 40 + 3 cable glands PG16 / caps	Single bicomponent bottle 1 small basin - 1 mixing spoon
Power Kit 100	mm 100 x 100 x h 50 + 3 cable glands M25 x 1,5 / caps	Single bicomponent bottle 1 small basin - 1 mixing spoon
Power Kit 120	mm 120 x 80 x h 50 + 3 cable glands M25 x 1,5 / caps	Single bicomponent bottle 1 small basin - 1 mixing spoon

Gel Leader Pack IP68²

The two-technology pack that meets every installation requirement.

- Kit for complete IP68 connection
- Choose the insulation most suitable for each installation
- Insulation re-enterable even after long periods of operation
- Non toxic and safe



Electrical Performance:
CEI EN 60529

Degree of protection: IP68
Class 2 in accordance with CEI 64-8.

Gel: UL 94-HB

90° Operating temperature

Operating temperature of the gel
-60°C / +200°C

HF *Halogen Free*
in accordance with
CEI EN 50267 2-2

IP68 OFFICIALLY TESTED | IMQ

Gel Leader Pack IP68²



Magic Power Gel 500
Bi-component gel in a practical and compact mono bottle. Re-enterable and re-usable potting compound. It can also be prepared and applied as a putty. Ideal for new installations.

Wonder Gel
Single component gel in a cartridge dispenser. Ready to use immediately. Nice compact cartridge. An indispensable product for any maintenance.

Box 80
Create your IP68 connection using the supplied 80 mm diameter box and 3 cable glands.



Product	Box	Insulating
Gel-leader	Box mm ∅ 80 x h 40 3 cable glands PG16	• Bicomponent single bottle • Single component cartridge

Ray tech

Magic Box

IP68 Connection kit complete with Magic Fluid insulating gel.

Universal IP68 kit without shelf life, mechanically robust, non-toxic, suitable for installation even in the most extreme conditions, re-enterable, meeting all international standards. Protects from water, moisture, dust and accidental contact caused by small animals.

- Re-enterable even after long periods of operation
- Able to absorb external shock without fracturing
- For installations even at high depths
- Also suitable for vertical filling
- No shelf life
- Non toxic and safe

Electrical Performance: CEI EN 60529

Degree of protection: IP68 Class 2 in accordance with CEI 64-8.

Gel: c UL us

Operating temperature 90°

Operating temperature of the gel -60°C / +200°C

HF Halogen Free in accordance with CEI EN 50267 2-2

IP68 OFFICIALLY TESTED | IMQ



Magic Box is suitable for any kind of installation, even underground or directly submerged!



Magic Box is always re-enterable, even after long working periods!



Kit box installation sequence



Fix the box and cover the screws with the caps.



Knock out the pre prepared holes.



Install the cable glands.



Insert the cables and connect the wires.

Horizontal installation sequence









Vertical installation sequence









Examples of application



PUBLIC LIGHTING



NAVAL SECTOR



OUTDOOR - GARDENS



ELECTRIC GATES

Magic Box

Product	Max external ∅ housed in input cables (mm)	N° and type of cable glands	Internal kit dimensions (mm)	Composition Kit
Magic Box 65	22	3 x PG16	∅ 65 x h 35	Kit complete with cover 3 cable glands Series of closing plugs Insulating gel for complete filling
Magic Box 80	22	3 x PG16	∅ 80 x h 40	
Magic Box 100	20	3 x M25 x 1.5	100 x 100 x h 50	
Magic Box 120	20	3 x M25 x 1.5	120 x 80 x h 50	
Magic Box 150	26	3 x M25 x 1.5	150 x 110 x h 70	
Magic Box 190	26	3 x M25 x 1.5	190 x 140 x h 70	
Magic Box 240	26	3 x M25 x 1.5	240 x 190 x h 90	



J-Box

Snap shut closing enclosures with perforated knockouts.

Electrical Performance:
CEI 23-48, IEC 60670
Degree of protection:
empty IP55
filled with Gel Raytech IP68
Halogen free:
according to CEI EN 50267 2-2
Self-extinguishing and resistant to abnormal heat and fire:
Glow wire test a +960°C
according to EN 60695-2-11

Enclosure with snap shut cover and perforated knockouts for faster mounting of cable glands. Very high mechanical and flame retardant properties. Non-toxic, re-enterable only by means of a tool. The screwless design prevents screws rusting over time due to moisture and always allows for easy re-entry. Screw caps are also supplied for the wall mounting screws along with 3 cable glands and a stopping plug for vertical filling.

- Can be insulated with ***Magic Power Gel, Magic Gel, Wonder Gel*** **(IP68)**
- Re-enterable only with the use of a tool
- Snap-shut closing (without screws)
- Also suitable for vertical filling
- Excellent shock-resistance
- Self-extinguishing
- Halogen Free

Snap-shut closing (without screws)





Pre - drilled walls









J-Box

Enclosures with perforated knockouts.



Product	N° max of cables that can be jointed	∅ max predrilling holes (mm)	∅ max possible drilling (mm)	Max dimension housed cable glands (pass) PG	METRIC	Dimension (mm)
J-BOX 65	4	23	23	16	20	∅ 65 x h 35
J-BOX 80	4	23	23	16	20	∅ 80 x h 40
J-BOX100	8	29	29	21	25	100 x 100 x h 50
J-BOX120	6	25	29	21	25	120 x 80 x h 50
J-BOX150	10	29	37	29	32	150 x 110 x h 70
J-BOX190*	10	37	37	29	32	190 x 140 x h 70
J-BOX240*	12	37	37	29	32	240 x 190 x h 90

* Supplied with extractable hinge for opening book type.
Note: All boxes include 3 cable glands Ray Pass 16.

Accessories

Ray-PRESS

Cable glands.





METRIC pict Product	Metric pict	Assembly hole ∅ (mm)	Cable range ∅ min (mm)	max (mm)	Item packaging
Ray PRESS-16	M16 x 1.5	16	6	10	50
Ray PRESS-20	M20 x 1.5	20	8	13	50
Ray PRESS-25	M25 x 1.5	25	12	18	20
Ray PRESS-32	M32 x 1.5	32	16	20	20

PG pict Product	PG pitch	Assembly hole ∅ (mm)	Cable range ∅ min (mm)	max (mm)	Item packaging
Ray PRESS-PG11	11	19	6	9	50
Ray PRESS-PG13.5	13,5	20	9	12	50
Ray PRESS-PG16	16	23	11	14	50
Ray PRESS-PG21	21	29	14	18	20

Ray-PASS

Rubber flexible grommets.



Product	For pipe maximum external ∅ (mm)	Assembly hole ∅ (mm)	Item packaging
Ray PASS 16	20	23	50
Ray PASS 21	23,5	29	50
Ray PASS 29	32	38	50

Connectors

Temperature of use:
-5°C / +50°C
Insulation resistance:
> 100 MOhm
Reference standards:
CEI EN 50086-2-1

Self-extinguishing rigid PVC accessories
V0 - Standard UL94.



Ray RTC

Tube box connectors IP65 grey RAL 7035.

Product	Tube ∅ (mm)	Item packaging
Ray RTC 16	16	50
Ray RTC 20	20	50
Ray RTC 25	25	50
Ray RTC 32	32	25
Ray RTC 40	40	20
Ray RTC 50	50	10



Ray RGC

Box straight connectors IP65 grey RAL 7035.

Product	Tube ∅ (mm)	Item packaging
Ray RGC 16	16	50
Ray RGC 20	20	50
Ray RGC 25	25	25
Ray RGC 32	32	25
Ray RGC 40	40	20
Ray RGC 50	50	10



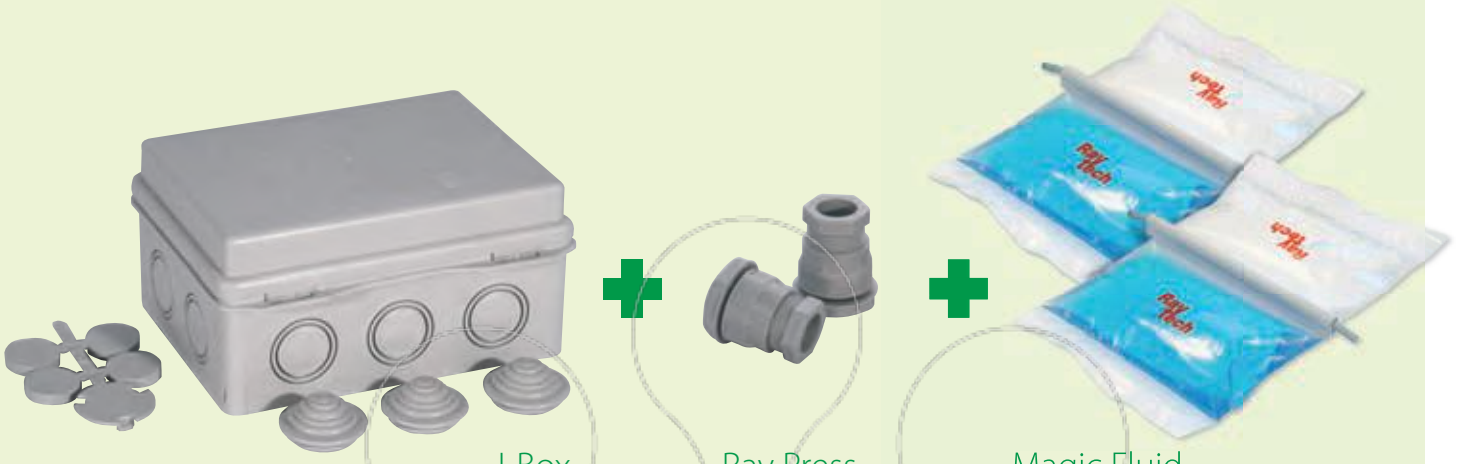
Ray CF

Flexible tube box bend IP65 grey RAL 7035.

Product	Tube ∅ (mm)	Item packaging
Ray CF 16	16	70
Ray CF 20	20	60
Ray CF 25	25	50
Ray CF 32	32	30
Ray CF 40	40	20
Ray CF 50	50	10

J-Box KIT IP68 - Do It Yourself

Choose the box, the cable glands and the filler shown in the selection table. In just 3 steps you have a specific IP68 box just for you!



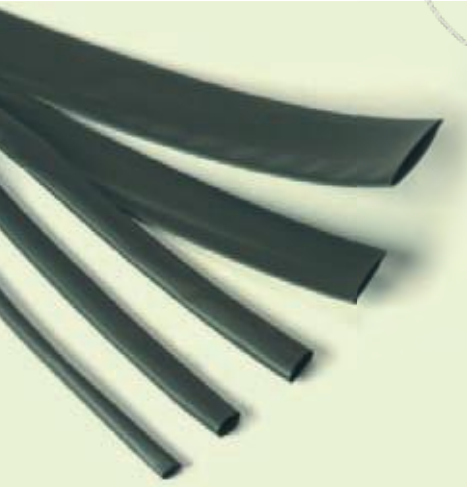
J-Box Ray Press Magic Fluid

Box type	Dimension (mm)	Type of cable glands to be housed PG and metric pitch M	Insulating filler Magic Fluid*
J-Box 65	∅ 65 x 35	PG: 7 - 9 - 11 -13,5 - 16 M: 12 -16 - 20	1 x Magic Fluid 110
J-Box 80	∅ 80 x 40	PG: 7 - 9 - 11 - 13,5 - 16 M: 12 - 16 - 20	1 x Magic Fluid 210
J-Box 100	100 x 100 x h 50	PG: 7 - 9 - 11 - 13,5 - 16 - 21 M: 12 - 16 - 20 - 25	1 x Magic Fluid 420
J-Box 120	120 x 80 x h 50	PG: 7 - 9 - 11 - 13,5 - 16 - 21 M:12 - 16 - 20 - 25	1 x Magic Fluid 420
J-Box 150	150 x 110 x h 70	PG: 13,5 - 16 - 21 - 29 M: 20 - 25 - 32	2 x Magic Fluid 420
J-Box 190	190 x 140 x h 70	PG: 13,5 - 16 - 21 - 29 M: 20 - 25 - 32	2 x Magic Fluid 420 1 x Magic Fluid 550
J-Box 240	240 x 190 x h 90	PG: 13,5 - 16 - 21 - 29 M: 20 - 25 - 32	4 x Magic Fluid 550 + 2 x Magic Fluid 210

*Note: the indicated quantities are for the complete filling of the box.

SHEATHS

Thin, Medium, Heavy-wall heat shrink supplied in dispensers, coils, bars, wrap around and pieces.





Heat-shrink sheaths



Colour table

- Black
- Red
- Blue
- Yellow
- White
- Transparent
- Yellow Green

THIN-WALL

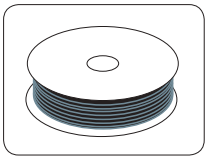
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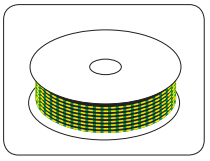
LST-TEC
Sheaths in dispensers for commercial use



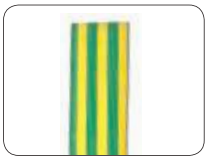
RayRoll / MaxiRoll
Sheaths in dispensers for industrial use



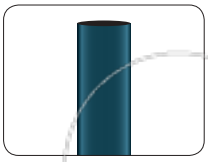
CGP-TEC
Sheaths in coils or commercial use



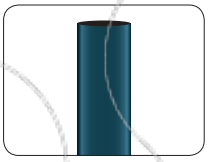
DCP-TEC
Sheaths in coils for grounding cables



RDCT-B
Tubes in bars for general use



RGPO-B
Tubes in bars for general use



Ray-Tum
Semi-flexible sheath in bars



Thermo Mini Mix
Precut sheath kit

MEDIUM WALL

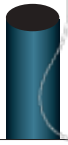
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MTR

HEAVY WALL

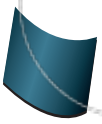
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Ray-CSM

WRAP AROUND

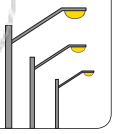
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Ray-RSM
Winding sheath

POLE PROTECTION

page 120



WPC / LTPSM
Sheaths for lighting poles

Moulded parts

CAPS

page 121

Self-sealing cap

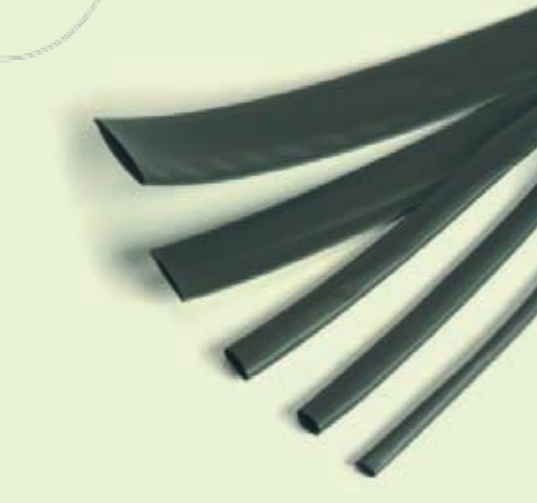


TERMINATIONS

page 121

LV terminations





Thin-wall sheaths

Flexible heat-shrink modified polyolefin sheaths, cross linked by means of radiation. Longitudinal shortening up to 15%. Suitable for insulation and covering of conductors and their connections, bars. etc. Replace self-adhesive, self-amalgamating insulating tapes.

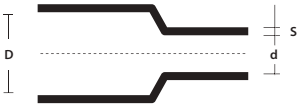
Tensile resistance	14,8 MPa
Elongation	460 %
Tensile resistance after ageing	14,5*
Elongation after ageing	480 %*
Dielectric strength	17 kV/mm*
Flammability	VW1*
Minimum shrinkage temperature	70°C

* (UL 224 test method)



"UL" standard

Operating temperature:
-55°C / +120°C



D = Ø min. before shrinkage

d = Ø max. after free shrinkage

S = min. rated thickness after free shrinkage



LST-TEC

Heat-shrink in dispensers for commercial use.

Product	Colour	D (mm)	d (mm)	S (mm)	Lenght (m)
LST-TEC 1,6	● ●	1,6	0,8	0,50	10
LST-TEC 2,4	● ●	2,4	1,2	0,55	10
LST-TEC 3,2	● ●	3,2	1,6	0,55	10
LST-TEC 4,8	● ●	4,8	2,4	0,55	9
LST-TEC 6,4	● ●	6,4	3,2	0,65	8
LST-TEC 9,5	● ●	9,5	4,8	0,65	6
LST-TEC 12,7	● ●	12,7	6,4	0,65	6
LST-TEC 19,0	● ●	19,0	9,5	0,80	5
LST-TEC 25,4	● ●	25,4	12,7	0,95	3
LST-TEC-GV 3/1,5	●	3	1,5	0,51	7
LST-TEC-GV 4,8/2,4	●	4,8	2,4	0,55	10
LST-TEC-GV 6/3	●	6	3	0,58	5
LST-TEC-GV 10/5	●	10	5	0,64	4
LST-TEC-GV 12/6	●	12	6	0,65	7
LST-TEC-GV 19/9	●	19	9	0,74	3
LST-TEC-GV 26/13	●	26	16	0,89	2,5



Ray Roll

Heat-shrink in dispensers for industrial use.

Product	Colour	D (mm)	d (mm)	S (mm)	Length (m)
Ray Roll 1,6	●	1,6	0,8	0,50	20
Ray Roll 2,4	●	2,4	1,2	0,55	20
Ray Roll 3,2	●	3,2	1,6	0,55	10
Ray Roll 4,8	●	4,8	2,4	0,55	10
Ray Roll 6,4	●	6,4	3,2	0,65	10
Ray Roll 9,5	●	9,5	4,8	0,65	10
Ray Roll 12,7	●	12,7	6,4	0,65	10
Ray Roll 19,0	●	19,0	9,5	0,80	5
Ray Roll 25,4	●	25,4	12,7	0,95	5

Maxi Roll

Heat-shrink in maxi dispensers for industrial use.

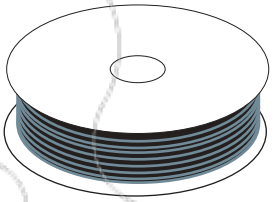
Product	Colour	D (mm)	d (mm)	S (mm)	Lenght (m)
Maxi Roll 1,6	●	1,6	0,8	0,50	300
Maxi Roll 2,4	●	2,4	1,2	0,55	300
Maxi Roll 3,2	●	3,2	1,6	0,55	300
Maxi Roll 4,8	●	4,8	2,4	0,55	150
Maxi Roll 6,4	●	6,4	3,2	0,65	75
Maxi Roll 9,5	●	9,5	4,8	0,65	150
Maxi Roll 12,7	●	12,7	6,4	0,65	150
Maxi Roll 19,0	●	19,0	9,5	0,80	75
Maxi Roll 25,4	●	25,4	12,7	0,95	60



CGP-TEC

Sheath for commercial use.

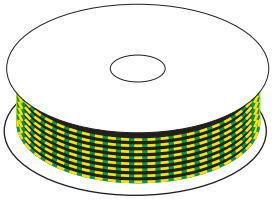
Product	Colour	D (mm)	d (mm)	S (mm)	Spool (m)
CGP-TEC 1,2/0,6	● ● ● ● ○ Ⓣ	1,2	0,6	0,45	600
CGP-TEC 1,6/0,8	● ● ● ● ○ Ⓣ	1,6	0,8	0,45	300
CGP-TEC 2,4/1,2	● ● ● ● ○ Ⓣ	2,4	1,2	0,50	300
CGP-TEC 3,2/1,6	● ● ● ● ○ Ⓣ	3,2	1,6	0,50	300
CGP-TEC 4,8/2,4	● ● ● ● ○ Ⓣ	4,8	2,4	0,50	150
CGP-TEC 6,4/3,2	● ● ● ● ○ Ⓣ	6,4	3,2	0,65	75
CGP-TEC 9,5/4,8	● ● ● ● ○ Ⓣ	9,5	4,8	0,65	150
CGP-TEC 12,7/6,4	● ● ● ● ○ Ⓣ	12,7	6,4	0,65	150
CGP-TEC 19/9,5	● ● ● ● ○ Ⓣ	19,0	9,5	0,75	75
CGP-TEC 25,4/12,7	● ● ● ● ○ Ⓣ	25,4	12,7	0,90	60
CGP-TEC 38/19	● ● ● ● ○ Ⓣ	38,0	19,0	1,00	60
CGP-TEC 51/26	● ● ● ● ○ Ⓣ	51,0	26	1,15	30
CGP-TEC 76/38	● ● ● ● ○ Ⓣ	76,0	38,0	1,27	15
CGP-TEC 102/51	● ● ● ● ○ Ⓣ	102,0	51,0	1,40	15



DCP-TEC

Sheath suitable for coating grounding cables.

Product	Colour	D (mm)	d (mm)	S (mm)	Spool (m)
DCP-TEC 3/1,5	◒	3,0	1,5	0,51	300
DCP-TEC 6/3	◒	6,0	3,0	0,58	75
DCP-TEC 10/5	◒	10,0	5,0	0,64	75
DCP-TEC 12/6	◒	12,0	6,0	0,64	75
DCP-TEC 19/9	◒	19,0	9,0	0,74	75
DCP-TEC 26/13	◒	26,0	13,0	0,89	30
DCP-TEC 38/19	◒	38,0	19,0	1,00	30



Minimum shrinkage temperature 125°

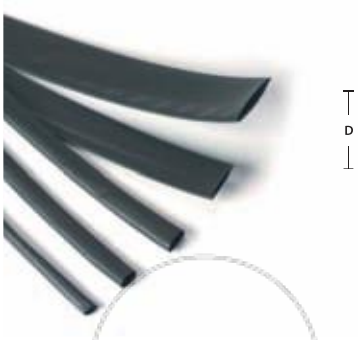
Operating temperature: -55°C / +125°C

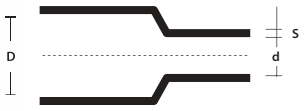
Tensile resistance	14,8 MPa
Elongation	460 %
Tensile resistance after ageing	14,5*
Elongation after ageing	480 %*
Dielectric strength	17 kV/mm*
Flammability	VW1*

* (UL 224 test method)

Sheaths in bars

Flexible heat-shrink modified polyolefin sheaths, cross linked by means of radiation. Longitudinal shortening up to 15%. Suitable for insulation and covering of conductors and their connections, bars. etc. Replace self-adhesive, self-amalgamating insulating tapes.





D = ∅ min. before shrinkage

d = ∅ max. after free shrinkage

S = min. rated thickness after free shrinkage



RDCT-B

Yellow green tube for general use in bars.

Product	Colour	D (mm)	d (mm)	S (mm)	Bars (m)
RDCT-B 3/1,5		3,0	1,5	0,51	1,2
RDCT-B 6/3		6,0	3,0	0,58	1,2
RDCT-B10/5		10,0	5,0	0,64	1,2
RDCT-B 12/6		12,0	6,0	0,64	1,2
RDCT-B 19/9		19,0	9,0	0,74	1,2
RDCT-B 26/13		26,0	13,0	0,89	1,2



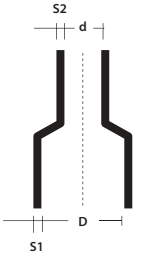
RGPO-B

Tube for general use in bars.

Product	Colour	D (mm)	d (mm)	S (mm)	Bars (m)
RGPO-B 2,4/1,2	● ● ● ○ Ⓣ	2,4	1,2	0,50	1,2
RGPO-B 3,2/1,6	● ● ● ○ Ⓣ	3,2	1,6	0,50	1,2
RGPO-B 4,8/2,4	● ● ● ○ Ⓣ	4,8	2,4	0,50	1,2
RGPO-B 6,4/3,2	● ● ● ○ Ⓣ	6,4	3,2	0,65	1,2
RGPO-B 9,5/4,8	● ● ● ○ Ⓣ	9,5	4,8	0,65	1,2
RGPO-B 12,7/6,4	● ● ● ○ Ⓣ	12,7	6,4	0,65	1,2
RGPO-B 19/9,5	● ● ● ○ Ⓣ	19,0	9,5	0,75	1,2
RGPO-B 25,4/12,7	● ● ● ○ Ⓣ	25,4	12,7	0,90	1,2
RGPO-B 38/19	● ● ● ○ Ⓣ	38,0	19,0	1,00	1,2
RGPO-B 51/26	● ● ● ○ Ⓣ	51,0	26	1,15	1,2

Ray-TUM

Sheaths in bars with adhesive.



D = ∅ min. before shrinkage
d = ∅ max. after free shrinkage
S1 = rated thickness as supplied
S2 = min. rated thickness after free shrinkage

Shrinkage ratio **3:1** Product	Colour	D (mm)	d (mm)	S_2 (mm)	S_1 (mm)	Bars (m)
Ray-TUM-3/1-0	●	3	1	1,00	0,5	1,2
Ray-TUM-6/2-0	●	6	2	1,00	0,5	1,2
Ray-TUM-9/3-0	●	9	3	1,40	0,6	1,2
Ray-TUM-12/4-0	●	12	4	1,75	0,7	1,2
Ray-TUM-19/6-0	●	19	6	2,25	0,8	1,2
Ray-TUM-24/8-0	●	24	8	2,50	1,0	1,2
Ray-TUM-40/13-0	●	40	13	2,50	1,0	1,2

Shrinkage ratio **4:1**	Colour	(mm)	(mm)	(mm)	(mm)	(m)
Ray-TUM-4/1-0	●	4	1	1,00	0,5	1,2
Ray-TUM-8/2-0	●	8	2	1,00	0,5	1,2
Ray-TUM-12/3-0	●	12	3	1,40	0,6	1,2
Ray-TUM-16/4-0	●	16	4	1,75	0,7	1,2
Ray-TUM-24/6-0	●	24	6	2,25	0,8	1,2
Ray-TUM-32/8-0	●	32	8	2,50	1,0	1,2
Ray-TUM-52/13-0	●	52	13	2,50	1,0	1,2



125° Minimum shrinkage temperature

Operating temperature: -55°C / +120°C

Tensile resistance	ISO 37	9 MPa (min)
Elongation	ISO 37	300 % (min)
Internal wall adhesion	-	60 N x 25 mm (min)
Thermal shock	4 h at 225°C	No-drip No breaking
Thermal ageing	168 h at 225°C	No-drip No breaking
Flexibility at low temperature	4 h at -55°C	No breaking
Dielectric strength	IEC 243	12 MV/m (min)
Resistance to fluids (lubricant oil, hydraulic fluid, diesel)	ISO 37 24 h at 23°C	Tensile resistance 7 Mpa (min) Elionagtion: 300% (min) Adhesion to int. walls: 60 N x 25 mm (min)

Thermo Mini Mix

Pre-cut heat-shrink sheaths kit.

Ready-for-installation heat-shrink sheaths in a practical, convenient kit sub-divided by diameter. Indispensable for Electrical systems, as a replacement for taped insulation, wiring of all types, switchboards, Hi-Fi, hobbies, DIY.

- Wide range of diameters and colours
- Always ready, quick application
- Flexible





COLOUR BLACK Product	MIXED COLOURS Product	∅ before and after shrinkage (mm)	Length of sheath (mm)	Pieces in the kit
Thermo Mini Mix-N	Thermo Mini Mix-MC	1,0 / 0,5	97	60
		2,0 / 1,0	97	40
		3,0 / 1,5	97	30
		4,5 / 2,25	97	20
		6,0 / 3,0	97	10
		9,0 / 4,5	97	10

125° Minimum shrinkage temperature

Operating temperature: -55°C / +120°C

Ray tech

Medium-wall sheaths



Heat-shrink modified polyolefin sheaths, cross linked by means of radiation for insulation, sealing and LV component protection. It is in fact used for restoring insulation and for the outer covering of LV cables and wherever optimal mechanical characteristics are required for resistance to impact, abrasion, general weathering including UV radiation, or for use in under water environments. Used for the insulation of bars or naked LV connections with optimal mechanical resistance for sealing, especially if used with hot-melt adhesive, and for anti-corrosion protection. Also replaces self-adhesive and self-amalgamating tapes.

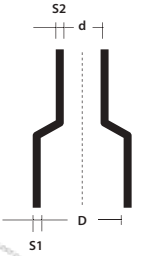
Minimum shrinkage temperature 125°

Operating temperature: -55°C / +125°C

HF Halogen Free

Tensile resistance	14,8 MPa
Elongation	460 %
Tensile resistance after ageing	14,5*
Elongation after ageing	480 %*
Dielectric strength	17 kV/mm*

* (UL 224 test method)



D = Ø min. before shrinkage
d = Ø max. after free shrinkage
S1 = rated thickness as supplied
S2 = min. rated thickness after free shrinkage

MTR

WITH OR WITHOUT ADHESIVE

Product	Applications by diameters from (mm)	to (mm)	D (mm)	d (mm)	S_1 (mm)	S_2 (mm)
MTR 10/3*	3,5	9,0	10	3	0,3	1,0
MTR 16/5*	5,5	14,0	16	5	0,3	1,4
MTR 25/8*	8,5	22,0	25	8	0,4	2,0
MTR 35/12*	13,0	32,0	35	12	0,4	2,0
MTR 50/16*	17,5	45,0	50	16	0,5	2,0
MTR 63/19*	21,0	57,0	63	19	0,6	2,4
MTR 75/22*	24,0	68,0	75	22	0,6	2,7
MTR 85/25*	28,0	77,0	85	25	0,6	2,8
MTR 95/29*	32,0	86,0	95	29	0,7	3,1
MTR 115/34*	37,0	104,0	115	34	0,7	3,1
MTR 140/42*	46,0	126,0	140	42	0,7	3,1
MTR 160/55*	55,0	144,0	160	55	0,7	3,2
MTR 180/60*	66,0	162,0	180	60	0,7	3,2

* Complete the item code adding the length (in mm), adhesive (/172) or without adhesive (/U).

MTN

Suitable for submersible pumps

WITH ADHESIVE

Product	Applications by diameters from (mm)	to (mm)	D (mm)	d (mm)	S_1 (mm)	S_2 (mm)
MTN 10/3*	3,5	9,0	10	3	0,3	1,0
MTN 16/5*	5,5	14,0	16	5	0,3	1,4
MTN 25/8*	8,5	22,0	25	8	0,4	2,0
MTN 35/12*	13,0	32,0	35	12	0,4	2,0
MTN 50/16*	17,5	45,0	50	16	0,5	2,0
MTN 63/19*	21,0	57,0	63	19	0,6	2,4
MTN 75/22*	24,0	68,0	75	22	0,6	2,7
MTN 85/25*	28,0	77,0	85	25	0,6	2,8
MTN 95/29*	32,0	86,0	95	29	0,7	3,1
MTN 115/34*	37,0	104,0	115	34	0,7	3,1

* Complete the item code adding the length (in mm).

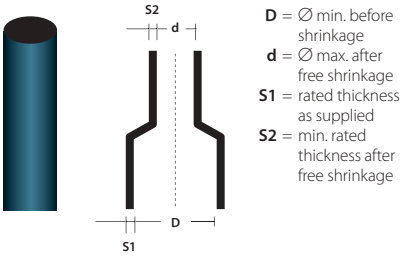
Heavy-wall sheaths

RAY-CSM heat-shrink tubular sheath is very thick and has been designed for uses requiring exceptional mechanical characteristics. Its ideal field of application is in underwater or directly underground environments, or where exceptional resistance to abrasion and impact is required, but also outstanding resistance to weathering, including UV radiation, for sealing, especially if used with hot-melt adhesive, and for anti-corrosion protection.

Ray-CSM

Product	Applications by diameters from (mm)	to (mm)	D (mm)	d (mm)	S_1 (mm)	S_2 (mm)
Ray-CSM 12/3*	3,5	10	12	3	0,8	2,0
Ray-CSM 16/4*	4,5	14	16	4	0,9	2,4
Ray-CSM 24/6*	6,5	22	24	6	1,0	2,7
Ray-CSM 34/8*	9	31	34	8	1,3	4,0
Ray-CSM 48/12*	13	44	48	12	1,5	4,5
Ray-CSM 56/16*	17,5	50	56	16	1,5	4,4
Ray-CSM 70/21*	22	63	70	21	1,4	4,4
Ray-CSM 90/25*	27	81	90	25	1,3	4,3
Ray-CSM 110/30*	33	100	110	30	1,2	4,3
Ray-CSM 130/36*	38	118	130	36	1,2	4,3
Ray-CSM 160/50*	55	144	160	50	1,0	4,3
Ray-CSM 180/50*	55	162	180	50	1,0	4,3

* Complete the item code adding the length (mm), adhesive (/172).



D = ∅ min. before shrinkage
d = ∅ max. after free shrinkage
S1 = rated thickness as supplied
S2 = min. rated thickness after free shrinkage

125° Minimum shrinkage temperature

Operating temperature: -55°C / +120°C

HF *Halogen Free*

Tensile resistance	ISO 37	12 MPa (min)
Elongation	ISO 37	350 % (min)
Thermal duration	IEC 60216	120°C
Dielectric strength	IEC 60243	1 mm wall 180 kV/cm 3.5 mm wall 120 kV/cm

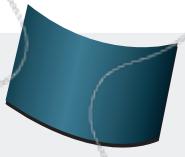
Wrap Around

Winding heat-shrink sheath for repairing plastic or metal cable sheaths. It combines the previously seen mechanical, protective and sealing properties of tubular junctions with easy of application and closing. Indispensable when cable cutting is not possible. Does not require pre-insertion, reducing the space necessary for its application.

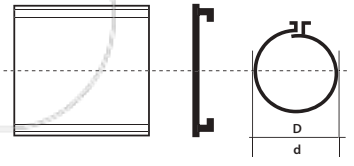
Ray-RSM

Product	∅ cable from (mm)	to (mm)	D (mm)	d (mm)
Ray-RSM 34/10*	12	21	34	10
Ray-RSM 53/13*	15	32	53	13
Ray-RSM 84/20*	23	50	84	20
Ray-RSM 107/29*	34	65	107	29
Ray-RSM 143/36*	42	86	143	36
Ray-RSM 198/55*	62	120	198	55
Ray-RSM 250/98*	111	150	250	98

* Complete the item code adding the length (mm) and adhesive (/232).



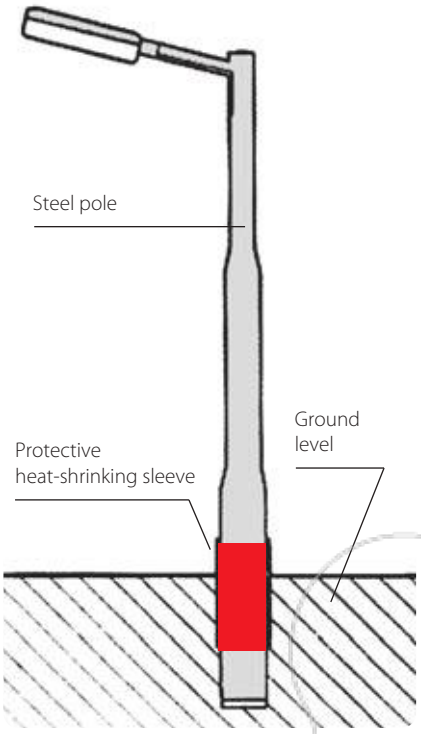
WRAP AROUND



D = ∅ minimum before shrinkage
d = ∅ maximum after free shrinkage

HF *Halogen Free*

Tensile resistance	ISO 37	17 MPa (min)
Elongation	ISO 37	350 % (min)
Density	ISO 1183	1,0-1,2 g/cm³
Hardness	ISO 868	50-70 Shore D
Thermal duration	IEC 60216	120°C
Flexibility at low temperature	4 h at -40°C ASTM D2671	Non-cracking
Dielectric strength	IEC 60243	1 mm wall 180 kV/cm 3.5 mm wall 120 kV/cm



Anti-corrosion pole protection

On installed poles, the most section vulnerable to corrosion is right above and below ground. This section is attacked by corrosive agents that cause a rapid decay of the metal with a significant reduction of the operating life of the pole. Special heat-shrinking sheaths are suitable for the rust protection of public lighting and electric traction poles, traffic lights and traffic signs. They are composed of very thick cross linked polyolefin. The inside of the tubes and the ends are covered in a suitable thermal fuse adhesive that ensures perfect sealing without allowing moisture to enter.

- Ultra adhesive
- Excellent electrical properties
- Good chemical resistance
- Resistant to mould and micro-organisms
- Constant protection against stray electrical currents
- Easy application
- Long-term stability of all properties



WPC

Open ends complete with closing pieces for already installed poles.

Product	End height (mm)	Package roll (m)	Code for closing piece for pole diameter	
			Up to 450 mm	Over 450 mm
WPC 65M17	450	30	WPCP IV 100 x 450	WPCP IV 150 x 450
WPC 65M24	600	30	WPCP IV 100 x 600	WPCP IV 150 x 600



LTPSM

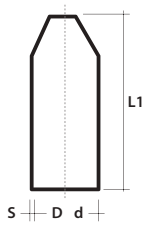
Tubular sleeve for poles for installation.

Product	Sleeve length (mm)
LTPSM 115/80-450/87	450
LTPSM 155/100-450/87	450
LTPSM 190/125-450/87	450
LTPSM 115/80-600/87	600
LTPSM 155/100-600/87	600
LTPSM 190/125-600/87	600

Self-sealing cap

Self-sealing heat-shrink cap with adhesive for sealing cable heads.

Product	Ø cable from (mm)	Ø cable to (mm)	D (mm)	d (mm)	S (±20% mm)	L1 (±10% mm)
RayL011	4	8	12	4,0	2,0	40
RayL022	8	17	20	6	2,3	55
RayL033	17	30	35	16	3,0	83
RayL044	30	45	55	26	3,3	103
RayL048	45	65	75	36	3,3	120
RayL055	65	95	100	52	3,8	140
RayL066	95	115	120	60	3,8	150





D = Ø min. before shrinkage
d = Ø max. after free shrinkage
S-L1 = min. rated size after free shrinkage

HF *Halogen Free*

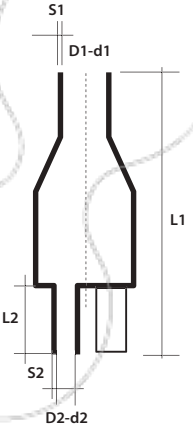
Tensile resistance	ISO 37	12 MPa (min)
Elongation	ISO 37	200 % (min)
Density	ISO 1183	0,9-1,2 g/cm³
Hardness	ISO 868	50-70 Shore D
Accelerated ageing (7 days at 150°C) ISO 188	Tensile resistance ISO 37	12 Mpa (min)
	Ultimate elongation ISO 37	200% (min)
Flexibility at low temperature	4 h at -40°C ASTM D2671	Non-cracking
Water absorption	ISO 62	0,5% max after 24 h at 23°C

Self-sealing termination

Product	LV cable conductor (mm²) from	to	D1 (mm)	d1 (mm)	S1 ±20% (mm)	D2 (mm)	d2 (mm)	S2 ±20% (mm)	L1 ±10% (mm)	L2 ±10% (mm)
RayK333	4	16	22	8	2	9	3,5	2	55	18
RayK224	25	70	40	16	2	15	7,5	2	125	35
RayK466	95	185	60	23	2,5	25	7,5	2,5	155	45

Product	LV cable conductor (mm²) from	to	D1 (mm)	d1 (mm)	S1 ±20% (mm)	D2 (mm)	d2 (mm)	S2 ±20% (mm)	L1 ±10% (mm)	L2 ±10% (mm)
RayW533	4	35	38	17	2,7	14	4,5	2,5	98	23
RayW516	50	150	60	25	3	25	8	2,5	165	50
RayW526	185	300	80	38	3,5	35	11	3,5	185	55
RayW248	185	500	110	50	4,0	46	17,5	3,5	250	65

Product	LV cable conductor (mm²) from	to	D1 (mm)	d1 (mm)	S1 ±20% (mm)	D2 (mm)	d2 (mm)	S2 ±20% (mm)	L1 ±10% (mm)	L2 ±10% (mm)
RayK033	4	35	42	15	2,3	14	3,5	1,9	105	26
RayK046	50	70	55	21	3,1	20	5	2,5	150	40
RayK016	95	150	65	26	3,5	26	7	2,9	175	45
RayK026	185	300	102	47	3,9	38	12	3	198	58





D = Ø min. before shrinkage
d = Ø max. after free shrinkage
S1 / S2 = min. rated size
L1 / L2 after free shrinkage

HF *Halogen Free*

Tensile resistance	ISO 37	10,5 MPa (min)
Elongation	ISO 37	300 % (min)
Density	ISO 1183	10-1,3 g/cm³
Hardness	ISO 868	50-70 Shore D
Accelerated ageing (7 days at 150°C) ISO 188	Tensile resistance ISO 37	8,5 Mpa (min)
	Ultimate elongation ISO 37	100% (min)
Flexibility at low temperature	4 h at -40°C ASTM D2671	Non-cracking
Water absorption	ISO 62	0,5% max after14 days at 23°C

Insulation tapes

SELF-ADHESIVE TAPES IN PVC

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Rayteam
Self-adhesive for general use



Raytech Super 3-3
Self-adhesive for low and high temperatures

Raytech 2-2
Heavy duty self-adhesive

SELF-AMALGAMATING

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Raytech 2.3
Insulation tape EPR



Raytefill
Heavy duty insulation tape



Raytech 7-0
Silicone insulation tape

Raytech 23 BT
LV insulation tape



SPECIAL TAPES

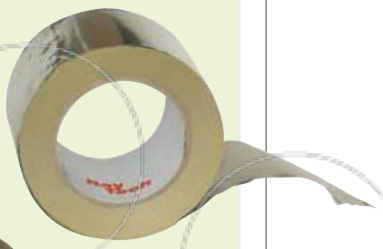
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MCA-FV
Fibreglass self-adhesive tape



Raycopper
Copper braid tape





MCA-ALL
Self-adhesive aluminium tape





Rayteam

Self-adhesive for general use.

PVC adhesive tape for electrical applications and mechanical protection for general use. Recommended for insulating low-voltage joints and for covering cables, accessories and products in general. It is self-extinguishing and does not propagate fire. Excellent resistance to ageing, exposure to weather conditions, hydrocarbons and chemical solvents in general.

Approvals

Complies with standards
UL 510 • CEI 15-15
CEI 60454 (EN60454)

VDE marking

0,13 mm Product	Width	Thickness	Length
Rayteam 1925/13	19 mm	0,13 mm	25 m
Rayteam 1510/13	15 mm	0,13 mm	10 m
0,15 mm			
Rayteam 1925	19 mm	0,15 mm	25 m
Rayteam 1510	15 mm	0,15 mm	10 m
Rayteam 2525*	25 mm	0,15 mm	25 m
Rayteam 1525	15 mm	0,15 mm	25 m



Available colours: black, grey, white, red, blue, brown, yellow/green.
* only black, white and grey. Contact Raytech for other sizes and thicknesses.

Property	Test method	Typical values
Breaking Strength (tensile)	ASTM-D-1000	65N/25 mm width min
Elongation at break	ASTM-D-1000	> 200 %
Adhesion to steel	ASTM-D-1000	6 N/25 mm width
Adhesion to backing	ASTM-D-1000	6 N/25 mm width
Self-extinguishing	ASTM-D-1000	self ext. 4 max
Operating temperature	UL 510	-5°C / 85°C
Electric strength after exposure to damp environment	ASTM-D-1000	40 kV/mm min

Raytech Super 3-3

Self-adhesive for use at low and high temperatures.

PVC adhesive tape with excellent electrical and mechanical properties for a wide range of working temperatures. This tape is particularly suitable for use at low temperatures and in all weather conditions, including the most extreme. The tape is flame retardant and self-extinguishing. It is recommended as the primary insulation for joints up to 0.6/1 kV, and as the outer covering for joints and other products, and for all applications at low temperatures.



Product	Colour	Width	Thickness	Length
Raytech Super 3-3	●	19 mm	0,18 mm	20 m

Property	Test method	Typical values
Breaking Strength (tensile)	ASTM-D-1000	80N/25 mm width min
Elongation at break	ASTM-D-1000	240% min
Adhesion to steel	ASTM-D-1000	>7 N/25 mm width
Adhesion to backing	ASTM-D-1000	>7 N/25 mm width
Adhesion to backing at -7°C	ASTM-D-1000	>18 N/25 mm width
Self-extinguishing	ASTM-D-1000	self ext. 4 max
Operating temperature	CSA-22.2	-18°C / 105°C
Electric Strength after exposure to damp environment	ASTM-D-1000	51 kV/mm min

Approvals

UL 510
CSA 22.2
ASTMD-3005
HH-I-595C
CEI15-15
CEI 60454 (EN60454)

Raytech 2-2

Heavy duty thickness auto-adhesive.

PVC adhesive tape for electrical and mechanical purposes even in the most severe conditions (0.25 mm. thick). Particularly suitable for insulating and protecting cables, accessories and other products against adverse weather conditions and industrial solvents, and as a primary low voltage joint insulation. It is self-extinguishing and non flame-propagating. It has excellent wear resistance, even when it is installed and working under very severe conditions.



Product	Colour	Width	Thickness	Length
Raytech Super 2-2	●	19 mm	0,25 mm	20 m

Property	Test method	Typical values
Breaking Strength (tensile)	ASTM-D-1000	125N/25 mm width min
Elongation at break	ASTM-D-1000	>200 %
Adhesion to steel	ASTM-D-1000	>6 N/25 mm width
Adhesion to backing	ASTM-D-1000	>6 N/25 mm width
Self-extinguishing	ASTM-D-1000	self ext. 4 max
Working temperature maximum	CSA-22.2	105°C
Operating temperature	UL 510	-10°C
Electric strength after exposure to damp environment	ASTM-D-1000	40 kV/mm min

Approvals

UL 510
CSA 22.2
ASTM-D-2301
MIL-I-7798A
CEI 15-15
CEI 60454 (EN60454)



Raytech 2.3

EPR Self-amalgamating low and high voltage tape.

This ethylene-propylene (EPR) self-amalgamating tape is used for insulating and sealing high voltage electrical joints for voltages up to Um 72 kV. It amalgamates rapidly, adapting itself to the product underneath, forming a solid unit without air bubbles. It is particularly resistant to partial discharges (corona), with the characteristics remaining unchanged with time. Joints must be protected with a PVC tape or similar.

Product	Colour	Width	Thickness	Length
Raytech 2.3	●	19 mm	0,76 mm	9 m

Approvals

ASTM-D-4388
HH-I-553C/Grade A
MIL-I-3825 B

Property	Test method	Typical values
Breaking Strength (tensile)	ASTM-D-4325	2.8 MPa min
Elongation at break	ASTM-D-4325	800% min
Amalgamation ability	ASTM-D-4325	2,0 mm
Overload temperature	ASTM-D-4388	130°C
Operating temperature	ASTM-D-4388	90°C
Dielectric strength	ASTM-D-4325	35 kV/mm min
Relative dielectric constant	ASTM-D-4325	2.7
Volume resistivity	ASTM-D-4325	10^{15} Ω cm min
Resistance to ozone	ASTM-D-4325	Positive
Resistance to U.V.	ASTM-D-4325	Positive



Raytech 23 BT

Low voltage Self-amalgamating tape.

This rubber self-amalgamating low voltage tape (0.6/1 kV)is used for insulating and sealing low voltage electrical joints. It amalgamates rapidly, adapting itself to the product underneath, forming a solid unit.The joints must be protected with a PVC tape. The characteristics remain unchanged with time.

Approvals

UL 510

Product	Colour	Width	Thickness	Length
Raytech 23 BT	●	19 mm	0,76 mm	6,7 m

Property	Test method	Typical values
Breaking Strength (tensile)	ASTM-D-4325	1.8 MPa min
Elongation at break	ASTM-D-4325	300 % min
Amalgamation ability	ASTM-D-4325	2,0 mm
Overload temperature	ASTM-D-4388	100°C
Operating temperature	ASTM-D-4388	90°C
Dielectric strength	ASTM-D-4325	20 kV/mm min

Raytefill

Thick low voltage Self-amalgamating tape.

This self-amalgamating thick-wall (3.2mm) has been specially designed for the rapid reconstruction of low-voltage cable insulation, to cover complex shapes (insulating and covering joints between busbars and relative bolts, clamps, etc.) and to seal against possible penetration of humidity. Once applied it becomes a solid, absolutely non-porous mass, with first class electrical qualities and ageing resistance, perfectly suited to the product it is covering.



Product	Colour	Width	Thickness	Length
Raytefill	●	38 mm	3,2 mm	1,5 m

Property	Test method	Typical values
Ultimate elongation	ASTM-D-4325	>1000 %
Amalgamation ability	ASTM-D-4325	2,0 mm
Operating temperature: Continuous	ASTM-D-4388	90°C
Operating temperature: Overload	ASTM-D-4388	95°C
Dielectric strength	ASTM-D-4325	23,0 kV/mm

Approvals

MIL-I-17695 A

Raytech 7-0

Self-amalgamating silicone rubber tape.

This self-amalgamating silicone rubber tape is used for covering medium and high voltage terminations on extruded cables up to Um 72 kV, because of its first-rate performance for electrical installations in damp or polluted environments, against corrosion, corona and against ageing. It is used as an insulation up to 180°C due to its excellent heat properties. It can be perfectly adapted to all the shapes to be covered.

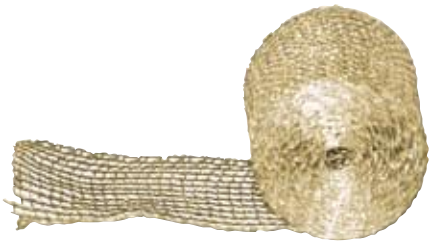


Product	Colour	Width	Thickness	Length
Raytech 7-0	●	25 mm	0,51 mm	9,1 m

Property	Test method	Typical values
Elongation at break	ASTM-D-1000	>500%
Resistance to U.V.	ASTM-D-4325	Positive
Resistance to ozone	ASTM-D-4325	Positive
Working temperature maximum	ASTM-D-4388	180°C
Dielectric strength	ASTM-D-4325	>35 kV/mm

Approvals

ASTM-D-2148
MIL-I-46852A

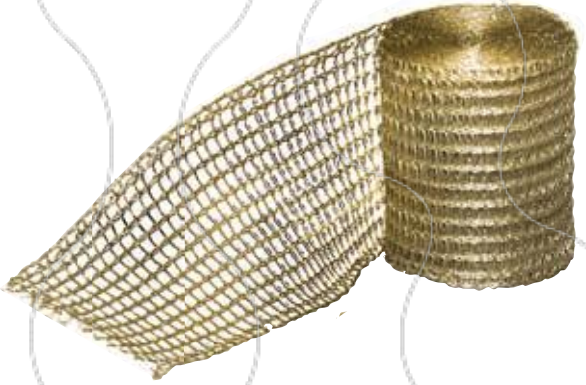


Raycopper

Tinned copper mesh tape for electrical screening.

Product	Colour	Width	Thickness	Length
Raycopper 1000	Silver	60 mm	0,3 mm	1 m
Raycopper 2000	Silver	60 mm	0,3 mm	2 m
Raycopper 3000	Silver	60 mm	0,3 mm	3 m
Raycopper 5000	Silver	60 mm	0,3 mm	5 m
Raycopper 6000	Silver	60 mm	0,3 mm	6 m

Property	Typical values
Material	Tinned copper mesh tape with high flexibility
Elongation at break	70% min
Breaking Strength (tensile)	35 N/10 mm
Volume resistivity	0,3 cm





MCA-FV

Fiberglass adhesive tape.

Self-adhesive mono-directional fibreglass tape with polypropylene support. Suitable for cable fixing on pipes (i.e.: Raytech MCA... cables for electrical tracing), and for any kind of strong fixing. Inextensible, it is suitable for temperatures up to 130°C.

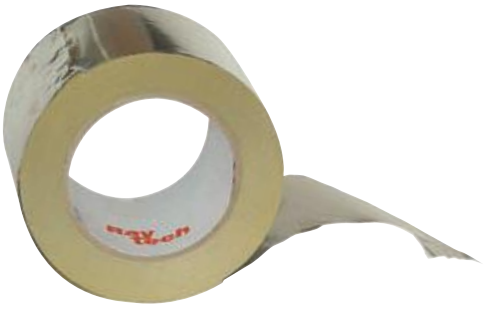
Product	Colour	Width	Thickness	Length
MCA-FV	white	12 mm	0,13 mm	50 m

Property	Test method	Typical values
Breaking Strength (tensile)	AFERA 4004	130 N/cm min
Ultimate elongation	AFERA 4005	5%
Adhesion to steel	AFERA 4001	4 N/cm min
Adhesion to backing	AFERA 4001	3 N/cm min

MCA-ALL

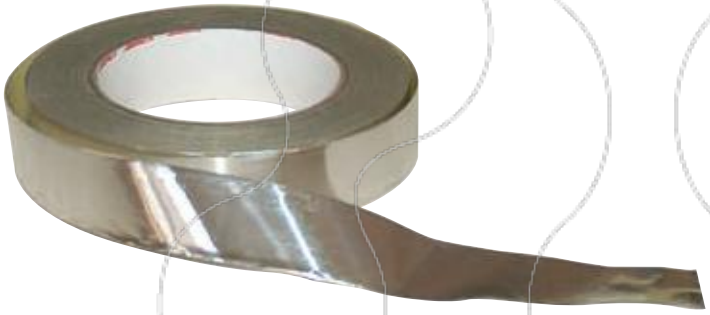
Self-adhesive aluminium tape.

Self-adhesive adhesive aluminium tape suitable for fixing on flat surfaces (i.e.: for heating cable fixing on tanks outer surfaces); used also for holes or abrasion repairs on metallic or plastic surfaces. Strong adhesion.



Product	Colour	Width	Thickness	Length
MCA-ALL 25	Aluminium	25 mm	0,06 mm	50 m
MCA-ALL 75	Aluminium	75 mm	0,06 mm	50 m

Property	Typical values
Breaking Strength (tensile)	1,2 da N/cm min
Elongation at break	5% min
Adhesion to steel	4 N/cm min
Adhesion to backing	4,5 N/cm min
Flame resistance BS476-7	Class 1



CABLE PULLERS and LUBRICANTS

Speedy Line

Raytech, leader in the field of cable accessories, has always based its research and product line on the quality. This is why, also in the field of the pulling tapes and lubricants, it is today offering systems of extremely high reliability and quality, always over the conventional types offered by the market:

- These fixed head, interchangeable nylon fishtapes are constructed with very high mechanical characteristic, long-lasting materials. Speedy Sonda tapes are made of PERLON, a practically non-deformable nylon, protecting the installer from unexpected elongation or breakage of the probe in ducts.
- "Twisted" polyester tapes, self-lubricated, extremely flexible and light, with exceptional mechanical characteristics, able to be inserted into long cable ducts, avoid the need of intermediate cable boxes; allowable bending radius is very small and, once bent, they do not break and released they come back to their original shape.
- Fibreglass tapes, thanks to their "nervous" elasticity together with their strength, are easy to use in any type of conduit.
- Nylon-steel tapes, when an exceptional strength is required.
- The widest range of accessories for all the types.
- Raytech offers the widest range of high sliding, non-toxic lubricants that are easily removable from cables. Choose from lubricant oil, lubricant gel (non-drip, allowing for a savings of up to 3 times compared to conventional types) or lubricant spray (easy application directly into the cable ducts, non-drip and dramatically reducing friction and traction force).



Characteristics

Product	Positioning	Ease of bending	Pulling resistance
Speedy Nylon and Speedy Sonda	Good	Good	Very good
Polyester Speedy Helix	Very good	Very good	Very good
Fibreglass Speedy Glass	Excellent	Good	Good
Nylon-Steel Speedy Steel	Very good	Excellent	Excellent





Speedy Nylon
Fixed head Nylon probes



Speedy Sonda 3
Fixed head or interchangeable Nylon Perlon® Ø 3 mm



Speedy Sonda 4
Fixed head or interchangeable Nylon Perlon® Ø 4 mm



Speedy Helix 5
Polyester Ø 5 mm with eyelet and fixed flexible head

Speedy Wire Oil - Speedy Wire Gel - Speedy Wire Spray



Lubricants for threading any kind of cable, power, telecom and optical fibre in ducts, smooth or corrugated piping, etc. With a very high lubrication power, especially when compared to products for similar uses, these are easily removable from cables, and require very low installation strenght, even in the case of bent conduits.

Speedy Wire Oil is a standard, fluid and low viscosity lubricant.

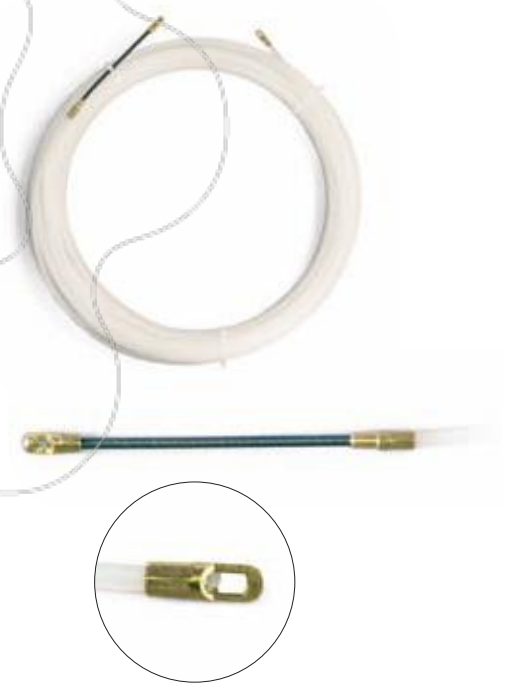
Speedy Wire Gel, thanks to its consistency, allows for savings of up to 3 times the amount used compared to other solutions.

Speedy Wire Spray, thanks to its canister and dispensing nozzle, allows for suitable guiding of the lubricant, including inside piping and ducts, greatly facilitating application.

Product	Package	Wrapping	Appearance	PH	Density
Speedy Wire Oil	1 L bottle	12-piece pack	Transparent gel	6 - 8	About 1
Speedy Wire Gel	1 L bottle	12-piece pack	Milky liquid	6 - 8	About 1
Speedy Wire Spray	400 ml canister	12-piece pack	White foam	8,5 - 9	About 1,04

Speedy Nylon

Fixed head Nylon transparent cable pullers.



Product	Ø (mm)	Length (m)	Package
Speedy Nylon 3/5-F	3	5	50
Speedy Nylon 3/10-F	3	10	40
Speedy Nylon 3/15-F	3	15	30
Speedy Nylon 3/20-F	3	20	20
Speedy Nylon 3/25-F	3	25	15
Speedy Nylon 4/5-F	4	5	50
Speedy Nylon 4/10-F	4	10	25
Speedy Nylon 4/15-F	4	15	20
Speedy Nylon 4/20-F	4	20	15
Speedy Nylon 4/25-F	4	25	12



Speedy Helix 4
Polyester Ø 4 mm with eyelet and fixed flexible head



Speedy Glass
Interchangeable head fibreglass probe Ø 3 mm



Speedy Steel
Nylon-steel probe Ø 6 mm



Accessories





Speedy Sonda 3

Nylon tape PERLON® Ø 3 mm with fixed or interchangeable head*.

Fixed head **Product**	Colour	∅ (mm)	Length (m)	Item packaging
Speedy Sonda 3/5 -F	Transparent	3	5	50
Speedy Sonda 3/10 -F		3	10	40
Speedy Sonda 3/15 -F		3	15	30
Speedy Sonda 3/20 -F		3	20	20
Interc. head				
Speedy Sonda 3/5 -I	Transparent	3	5	50
Speedy Sonda 3/10 -I		3	10	40
Speedy Sonda 3/15 -I		3	15	30
Speedy Sonda 3/20 -I		3	20	20

Other dimensions available on request
* Supplied with flexible head curve guide and pulling eyelet





Speedy Sonda 4

Nylon tape PERLON® Ø 4 mm with fixed or interchangeable head*.

Fixed head **Product**	Colour	∅ (mm)	Length (m)	Item packaging
Speedy Sonda 4/5-F	Transparent	4	5	35
Speedy Sonda 4/10-F		4	10	25
Speedy Sonda 4/15-F		4	15	20
Speedy Sonda 4/20-F	Black **	4	20	18
Speedy Sonda 4/25-F		4	25	15
Interc. head				
Speedy Sonda 4/5-I	Transparent	4	5	35
Speedy Sonda 4/10-I		4	10	25
Speedy Sonda 4/15-I		4	15	20
Speedy Sonda 4/20-I	Black **	4	20	18
Speedy Sonda 4/25-I		4	25	15

Other dimensions available on request
* Supplied with flexible head curve guide and pulling eyelet
** For the colour black **add N** to the code

Speedy Helix 5

Polyester tape Ø 5 mm with fixed eyelet and flexible interchangeable head.

Twisted tapes, very strong, extremely flexible and light. They pass the "4 curves test" on both rigid and corrugated pipes, but they can also avoid to have an intermediate box, and even if bent on themselves they do not break.

Product	Colour	Ø (mm)	Length (m)	Item packaging
Speedy Helix 5/10	Yellow	5	10	1
Speedy Helix 5/15		5	15	1
Speedy Helix 5/20		5	20	1
Speedy Helix 5/25		5	25	1
Speedy Helix 5/30		5	30	1
Speedy Helix 5/50		5	50	1
Speedy Helix 5/60		5	60	1

Other dimensions available on request





Speedy Helix 4

Polyester tape Ø 4 mm with interchangeable eyelet and head*.

Twisted tapes, very strong, extremely flexible and light. They pass the "4 curves test" on both rigid and corrugated pipes, but they can also avoid to have an intermediate box, and even if bent on themselves they do not break.

Product	Colour	Ø (mm)	Length (m)	Item packaging
Speedy Helix 4/10	Orange	4	10	1
Speedy Helix 4/15		4	15	1
Speedy Helix 4/20		4	20	1
Speedy Helix 4/30		4	30	1

Other dimensions available on request
* Supplied with flexible head curve guide and pulling eyelet









The tape is complete of repairing kit

Speedy Glass

Interchangeable head "self-starting" fibreglass Ø 3 mm cable pullers*.

Suitable for light use, even on long lengths, easy to use thanks to their "nervous" elasticity which makes easier their positioning in pipes and conduits.

Interc. head **Product**	Colour	Ø (mm)	Length (m)	Item packaging
Speedy Glass 3/10	Yellow	3	10	10
Speedy Glass 3/15		3	15	10
Speedy Glass 3/20		3	20	10
Speedy Glass 3/25		3	25	10
Speedy Glass 3/30		3	30	10

Other dimensions available on request
* Supplied with flexible head curve guide and pulling eyelet





Speedy Steel

Nylon-steel tape Ø 6 mm complete of all accessories.

Nylon-steel tapes are extremely robust, and are made of an internal core 4 x 1,5 mm steel made, coated with a nylon layer. Particularly suitable for industrial use with heavy duty. Use in installations without voltage.

Product	Colour	Ø (mm)	Length (m)	Item packaging
Speedy Steel 6/20	Green	6	20	1
Speedy Steel 6/25		6	25	1
Speedy Steel 6/30		6	30	1
Speedy Steel 6/40		6	40	1
Speedy Steel 6/50		6	50	1
Speedy Steel 6/60		6	60	1

Other dimensions available on request

Accessories

For Speedy Sonda and Speedy Helix cable pullers.

Product	Description	Item packaging	
Speedy TFG	Flexible head curve guide	3	
Speedy TFC	Flexible head with sheave	3	
Speedy OTL	Long pulling eyelet	3	
Speedy OTC	Short pulling eyelet	3	
Speedy BU	Joint bush for fishtapes	3	
Speedy PN	Pin M4 (for tape Ø 4 mm)	3	
Speedy AT	Pulling slot	3	
Speedy CA	Accessories kit	1	

For Speedy Glass cable pullers.

Product	Description	Item packaging	
Speedy REP	Repairing kit	3	
Speedy TFG	Flexible head curve guide	3	
Speedy TFC	Flexible head with sheave	3	
Speedy OTL	Long pulling eyelet	3	
Speedy OTC	Short pulling eyelet	3	
Speedy BU	Joint bush for fishtapes	3	
Speedy PNG	Pin for Speedy Glass tape	3	
Speedy AT	Pulling slot	3	
Speedy CA	Accessories kit	1	

For Speedy Steel cable pullers.

Product	Description	Item packaging	
Speedy MO	Snap link	3	
Speedy TS	Flexible head curve guide	3	
Speedy OL	Clamping device	3	
Speedy RS	Sliding wheel device	3	

Available upon request.

Product	Description	Item packaging	Image
Speedy AS	Reels with support	1	(see A)
Speedy AF	Reels on frame	1	(see B)
Speedy AFS	Steel reels on frame	1	(see C)
Speedy PR Glass	Repairing pliers for Speedy Glass tapes	1	(see D)


(A)


(B)


(C)


(D)

FIRE STOP BARRIERS





Fire Stop Bag
Fire stop barrier using intumescent bags



Fire Stop Panel
Fire stop barrier panels



Fire Stop Collar
Fire stop pipe transit collar for plastic pipes



New

FSC-TPC
Fire stop barrier for plastic and/or corrugated pipes with cables



FSM
Fire stop barriers using incombustible plaster



FSCP
Fire stop cover for fluorescent fittings



FSCF
Fire stop cover for spot lights





Fire Stop Tape
Fire stop barrier in an intumescent tape for plastic corrugated pipes



Fire Stop Seal
Fire stop barrier with intumescent sealing mastic



Fire Stop Foam
Fire stop barrier expanding foam



FSCI
Fire stop barrier for switchgear covering



FSCC
Fire stop cover for boxes



FSSE
Intumescent fire stop barrier for electrical boxes



FSCO T110
Metal pipe insulating mat protective barrier



Fire Stop Bag

Fire stop barrier in an intumescent bag.

Intumescent incombustible bags which stop the passage of fire through openings in walls. They are available in different sizes and they have to be placed to seal the openings, both in walls and floor slabs. At a temperature of 200°C the material starts to compact sealing the gaps thus avoiding the passage of the flames.

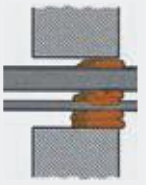
- Made from a fireproof fabric
- Containsi ntumescent putty seal inside

Approval

Class EI 120
Non toxic and asbestos free

In compliance with standard EN 1366-3

Product	Bag dimensions (mm)
FSB-11	250 x 100 x 25
FSB-12	250 x 200 x 35
FSB-13	250 x 300 x 35



INSTALLATION
Finish and opening then lay, the bags as bricks, staggered and overlapped.

For the application on plasterboard walls please contact Raytech.



Fire Stop Panel

Fire stop barriers in panels.

Incombustible panels treated on the surface with putty to stop the passage of fire through openings in walls. This product allows for the sealing of cavities in walls safely and cost effectively.

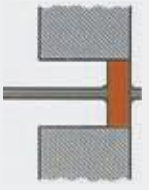
- Manufactured from Rockwool
- Coated with putty
- Resistant to mould and bacteria

Approval

Class EI 120
Non toxic, asbestos and solvent free

In compliance with standard EN 1366-3

Product	Dimension (mm)
FSP-11	600 x 500 x 52



INSTALLATION
Finish and clean the opening edges then cut the panels with a cutters and position them in the opening. The edges and the jointing lines, as well as the interstices among the cables, are sealed and covered with FIRE STOP SEAL FSS sealant..

For the application on plasterboard walls please contact Raytech.

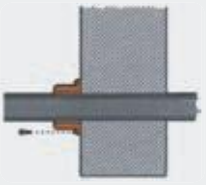
Fire Stop Collar

Fire stop transit collar for plastic pipes.

Fire stop barrier transit collar for plastic pipes (minimum wall thickness 200mm). Available in a wide range of dimensions to surround pipes that pass through walls.

- Stainless steel outer band
- Contains intumescent putty seal inside

Product	Ø (mm)
FSC 11	from 63 to 110
FSC 12	from 110 to 160
FSC 13	200
FSC 14	250



INSTALLATION
No special care is required: the collar, when opened, is positioned around the duct, closed and fastened by means of inserts

For other dimensions and installation please contact Raytech.



Approval

Class EI 120
Non toxic and asbestos free

In compliance with standard EN 1366-3

Fire Stop Tape

Fire stop barrier in an intumescent tape for plastic corrugated pipes.

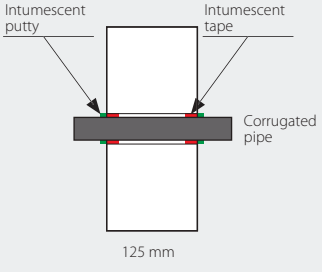
Fire stop barrier in an intumescent tape for the crossing closure of single corrugated pipes. Highly heat-sensitive, intumescent graphite tape with high expansion properties for the protection of corrugated electrical pipes containing cables. Applied on both sides of the pipe crossing through the wall so as to surround the pipe. The heat from a fire causes the tape to expand and fill all possible voids.

Product	Application corrugated pipe diameter range (mm)	Width (mm)	Thickness (mm)	Length (m)
FST-E-25/32	from 25 to 32 *	20	2	10

*containing cables up to 10 mm²

RECOMMENDATION

The solution is 10m long, and it can be cut at the required length, saving the remaining parts for a future application.
Can also be used in conjunction with FSCI, FSSE, FSCC box covering protections.



INSTALLATION
Wrap the tape twice around the corrugation, on both sides of the wall, fitting it in the through hole. Seal with FIRE STOP SEAL (FSS) sealant putty. Let dry.



Approval

Class EI 120
Non toxic and asbestos free

In compliance with standard EN 1366-3



Fire Stop Seal

Fire stop barrier in intumescent sealing mastic.

Intumescent mastic to seal and close small voids in walls, also in addition to other types of barriers. It is applied to seal a void or to provide a barrier in a cable duct.

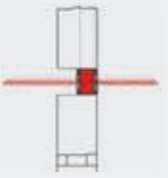
- A polymer compound with fireproof fibres and intumescent in an aqueous solution
- Non-hygroscopic and thixotropic
- Can be applied with a spatula

Approval

Class EI 120
Non toxic and asbestos free
Does not emit toxis gases and dense fumes

In compliance with standard EN 1366-3

Product	Package
FSS 310	0,3 kg cartridge
FSS 10	Spatula type, 10 kg drum



INSTALLATION
Once the edges of the opening have been finished and cleaned, the sealant putty is put in place with a spatula in the case of boxed product, or with a spatula or silicone gun for cartridge product.

For other dimensions or the application on plasterboard walls please contact Raytech.

Intumescent sealant putty for corrugated pipes.

Putty containing highly heat-sensitive graphite, specifically for corrugated electrical pipes containing cables. Crossing can contain up to two 25mm corrugated pipes paired in the same hole with cable with cross-section up to 10mm^2.

Product	Package
FSS-E-300	0,3 lt cartridge

INSTALLATION
The putty must be applied on both sides of the piping crossing through the wall.



Fire Stop Foam

Fire stop barriers in expanding foam.

Single-component expandable sealant foam for filling and fire sealing of small crossing gates on cable duct channels that have been previously compartmented with FSB bags and small gaps. Each canister covers a volume of approximately 20 L.

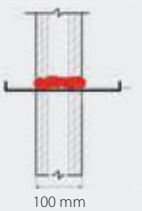
- Made from a fire resistant polyurethane based foam
- Graphite fortified
- Hardens upon contact with air
- Suitable for the protection of plasterboard walls or slabs

Approval

Class EI 120
Non toxic and asbestos free
Does not emit toxis gases and dense fumes

In compliance with standard EN 1366-3

Product	Package
FSF 700	Spray can of 750 ml



INSTALLATION
After the edges of the openings have been cleaned, shake the can for at least 30 seconds, then turn upside down and spray the product.

FSC-TPC

Fire stop barrier for plastic and/or corrugated pipes with cables.

Protection designed to be built into the wall after pipes have been installed. Can be installed in locations where the construction support is damaged and there is an annular space around the services. It is possible to protect mixed corrugated plastic pipes in the same crossing.

- For PE/PP, PVC, Abs pipes containing electrical cables or other services
- Pipes can be grouped and protected in bundles

Product	For pipes with diameter up to mm
FSC-TPC 050	50
FSC-TPC 060	60
FSC-TPC 090	90
FSC-TPC 120	125

INSTALLATION
Clean the pipe. Open the sleeve longitudinally, place it around the pipe and clamp it on it using special metal tabs. Push the collar towards the centre of the wall.

Fix with FSS putty in the event of installation on a special crossover pipe.

Contact Raytech regarding through openings or installation on inclined piping.



Approval

Class EI 120
Non toxic and asbestos free
Does not emit toxis gases and dense fumes

In compliance with standard EN 1366-3

FSM

Fire stop barriers in incombustible plaster.

Protective coating to seal and prevent fire propagation in wall cavities; it can be applied manually or sprayed. It can be easily mixed in big quantities with suitable mixer (e.g. concrete mixer).

- Made from mineral fibres
- Simply mix with water and with or without cement mixes
- For gates on walls or slabs

Product	Package
FSM 20	20 kg bag

INSTALLATION
After the edges of the openings have been finished and cleaned, the incombustible plaster is mixed with water, than applied manually, with a trowel or a pump, and left to dry in air. Water quantity: about 0,85 lt/kg (volume 1 kg = about 2,5 dm^3).

For other applications please contact Raytech.



Approval

Class EI 120
Non toxic and asbestos free
Does not emit toxis gases and dense fumes

In compliance with standard EN 1366-3

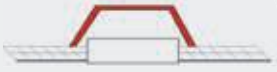
FSCP

Fire stop barriers for ceiling lights.

Fireproof barriers for fluorescent lights in suspended ceilings. Maintains conditions of fire resistance of ceilings and suspended ceilings. Slightly reduces the temperature in the space between the ceiling and the ceiling panel.

- Made from non-toxic mineral fibres
- Prevents propagation
- Flexible, light and self-supporting, easy to install and to remove

Product	Dimension (mm)	Weight (kg)
FSCP 600	720 x 750 x 150	1,7 about
FSCP 1200	1330 x 720 x 140	3,5 about



INSTALLATION
No special care is required. The protection must be placed on the ceiling light grid adhering to the panel.



Approval

Class EI 120
Non toxic and in compliance with standard EN 1365-2 • 1363-1

Ray tech

FSCF

Fire stop hoods for downlighters.

Fireproof dome shaped hood for downlighters in suspended ceilings. Maintains conditions of fire resistance of ceilings and suspended ceilings. Prevents fire propagation and slightly reduces the temperature in the void between the ceiling and the suspended ceiling.



- Made from non-toxic mineral fibres
- Resistant to fire and expandable compounds
- Prevents lamp overheating
- Flexible, light and self-supporting
- Easy to install and to remove



INSTALLATION
No special care is required. The protection must be placed on the spotlight, adhering to the panel.

For other dimensions please contact Raytech.

Approval

Class EI 120
Non toxic
It expands up to 5 times

In compliance with standard
EN 1365-2 • 1363-1

Product	Dimension (mm)	Type
FSCF 250	250 x 280	Cone-shaped
FSCF 350	350 x 230	Dome-shaped

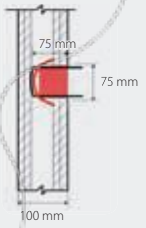
FSCI

Fire stop barrier to cover switchgear.

Intumescent, fireproof barrier to cover switches and to maintain the fire resistance of walls. Compatible with standard enclosures. Reduces the temperature of cavities within plaster-board walls.



- Made with fireproof fibres and intumescent materials
- Protects from fire propagation



INSTALLATION
No special care is required. The protection must be placed on the box, adhering to the wall.

Approval

Class EI 120
Non toxic

In compliance with standard
EN 1364-1

Product	Dimension (mm)
FSCI 150	150 x 150

FSSE

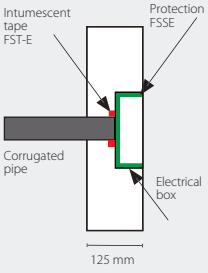
New

Intumescent fire stop barrier for electrical boxes.

Intumescent barrier for the fire protection of electrical system components built into walls.



- Inserted in electrical boxes
- Protection with high expansion properties
- Guarantees wall conditions in the event of a fire



INSTALLATION
The protections are inserted inside the box before the insertion of modules. Protect corrugated pipes crossing walls with FST-E-25/32

Approval

Class EI 120
Non toxic

In compliance with standard
EN 1364-1

Product	For electric boxes
FSSE 01	Up to three modules (type 503)
FSSE 02	Up to six modules (type 506)

FSCC

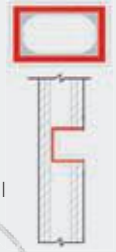
Fire stop barriers for covering enclosures.

Fire protection system for electrical enclosures and junction boxes. These protect plaster-board wall compartments from heat and fire propagation.

- Made from calcium silicate
- Containse nclosure

Product	External dimension (mm)	Internal dimension (mm)
FSCC 150	150 x 120 x 75	110 x 80 x 55

INSTALLATION
After the opening edges have been finished and cleaned, the protection is properly placed and fixed to the wall by means of screws and putty.





Approval

Class EI 120
Non toxic and asbestos free
Does not emit toxis gases and dense fumes

In compliance with standard EN 1364-1

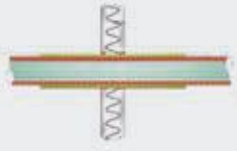
FSCO T110

Metal pipe insulating mat protective barrier.

The FSCO T110 barrier is made up a flexible and easily conformable, highly fire resistant insulating mat. It is clad with an aluminium sheet and protects insulated or non-insulated metal piping in wall crossings. The product is cut and modelled with ease, wrapped in a single layer around the pipe, and then closed with aluminised tape. Protects metal piping crossing walls or slabs, preventing longitudinal transmission of heat and fusion of any insulating material.

- Composed of fibres free of any resins or organic binders
- For wall thicknesses of at least 125 mm

Product	Colour	Width	Thickness	Length
FSCO T110	Aluminium	1 m	20 mm	5 m



Pipe with insulation



Pipe without insulation

INSTALLATION
The product is laid in a single layer around the pipe, matching the edges and fastening them with aluminised tape. The installation is then reinforced with wrapped steel wire pulled with pliers. It is positioned letting at least 430 mm come out from each side.



Approval

Class EI 120
Non toxic and asbestos free

In compliance with standard EN 1366-1 • EN 1366-3 • EN 1366-5

SPECIALS

Galactic Line

KITS FOR THE CONNECTION, MAINTENANCE AND PROTECTION OF ELECTRICAL SYSTEMS

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Galactic Mammut Security

Straight joint pre-filled with gel



Galactic Protection

Bicomponent rubber for printed circuit protection against animal intrusion



Galactic Animal Barrier

Mouldable rubber paste to prevent animal intrusion



Galactic Water Stop

Ready to use single component gel for generic use

Rubber Line

page 154



Ray RTV

Fast cross linking bicomponent silicone rubber



Gasket Kit

Kit for the packaging of rubber profiles











Galactic
Rubber Connection
Connection kit with rubber insulation



Galactic
Gel Connection
Connection kit with gel insulation



Galactic Nano Joint
Straight and derived single pole joint complete with pre-filled gel snap connector



Galactic Separator
Spacer and connector kit



Galactic Cleaner
Professional
Extraordinary detergent for all types of use

Indispensable

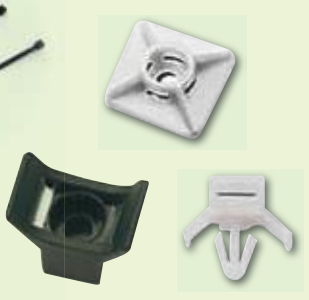
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Shiny Solar
Solution for solar and photovoltaic panel maintenance



Clamps



Clamp accessories

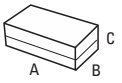
Galactic Mammut Security

Straight joint pre-filled with gel.

Galactic Mammut Security is an extremely compact accessory that is suitable for resolving insulation and sealing problems. Make reliable strip connector connections using the components found within the kit. Supplied with connectors for up to 3 core 4mm cables. Suitable for all types of domestic and industrial uses. Make safe temporary or uninsulated connections already in place. For quick repairs of damaged cable and extension cords. Suitable for outdoor use, in panels, within the kitchen etc. Non-toxic, no shelf life, easily re-enterable. Once closed the internal connectors are immediately protected. Galactic Mammut is essential in any area where water is present.



- No more tangled wires or uncovered connectors!
- A safe, reliable and quick solution

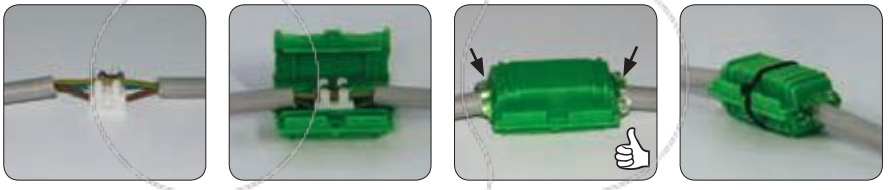


Product	Cable formation	Dimension A x B x C (mm)
Galactic Mammut Security	Cables 3 x 1 to 4 mm² 3 insulated conductors with ground from 1 to 4 mm²	61 x 35 x 28

Gel: c UL us

Package:
3-piece blister pack

Electrical performance:
CEI EN 50393 as applicable
(testing under water head of the accessory installed in a box)



BEFORE



AFTER



Galactic Protection

Bicomponent rubber for printed circuit protection including against animal intrusion.

Protection for printed circuits which are especially exposed to dust, animal intrusion (insects, snails, snakes, etc., e.g. in automatic gate trays). Opaque but slightly translucent allows cover forming a protective film. It can be removed (adheres without sticking) even on a small area to access the underlying component. The replaced component is then covered with new filler material which adheres perfectly to the previous material. Composed of non-toxic, safe bicomponent rubber with no shelf life and insulating and resistant to UV rays and ageing.

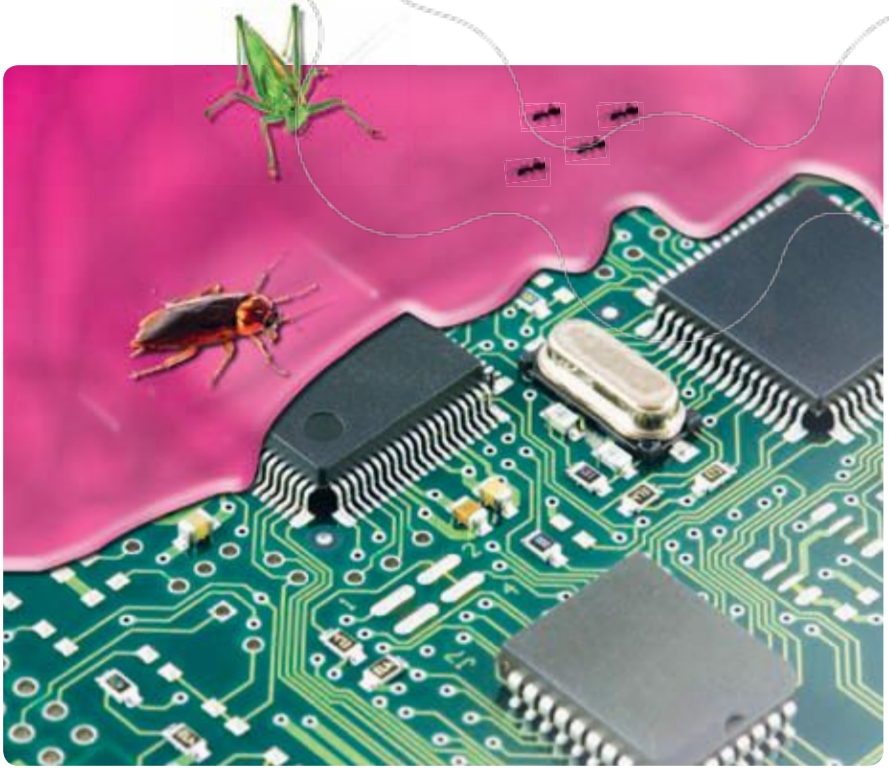
Product	Description	Rubber colour	Total quantity (ml)
Galactic Protection	bicompenent rubber	●	300



Kit composition:
2 vials bicomponent product

Installation sequence





Galactic Animal Barrier

Mouldable bicomponent rubber paste to prevent animal intrusion.

Galactic Animal Barrier is a bicomponent paste with no shelf life that can be easily be moulded before cross linking is complete. It can be applied to entries to protect against intrusion (conduits, cable ducts and pipes etc). It cross links quickly to form an effective barrier against small insects however it is easily removable. Ideal for electric gate type installations.





Kit composition:
2 cans (bicomponent)

Product	Description	Rubber colour	Total quantity (g)
Galactic Animal Barrier	bicompenent rubber	●	250

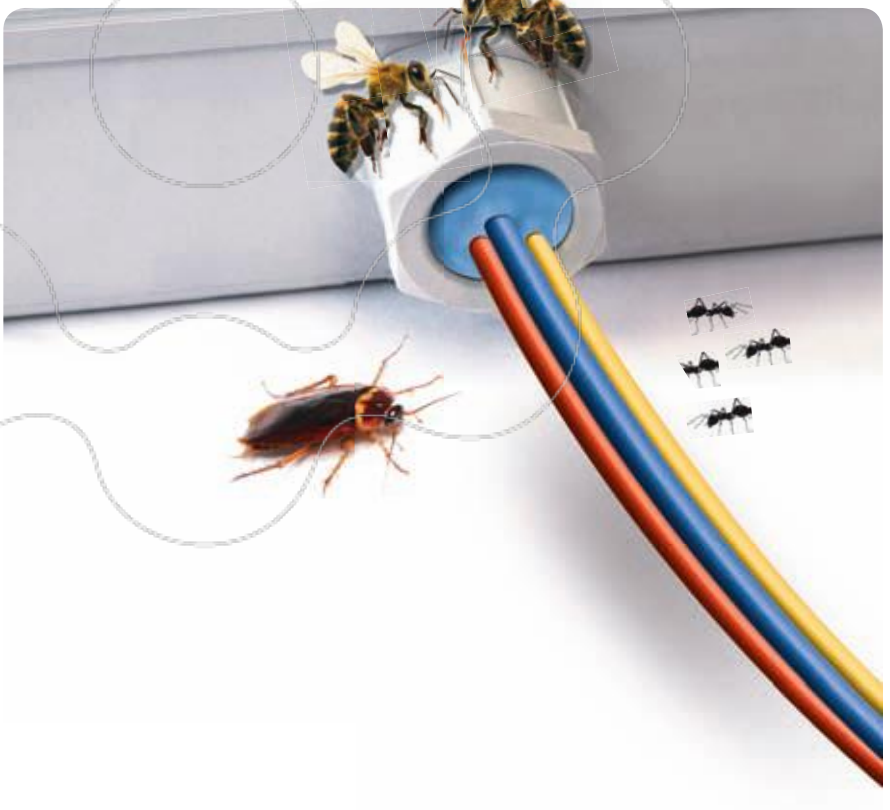
Installation sequence

2 minutes max









Galactic Water Stop

Ready to use single component gel.

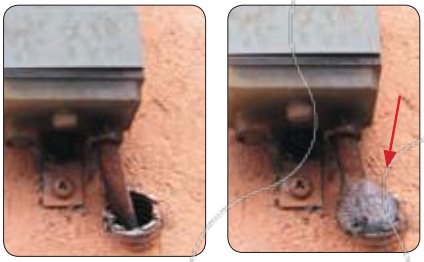
The Galactic Water Stop single component gel is a soft, extremely sticky product supplied in convenient, ready to use packages: just tear open the quantity needed and place it at the entry point to protect from infiltration. Thanks to its stickiness, it provides stable and effective sealing over time. Easily removable and re-enterable, allowing repeated access to the protected component without leaving traces. Non-drip so it can also be installed vertically or on the ceiling. Highly sealant, lends itself to the insulation of small connections, or for the protection of particularly exposed connections (connections to external car battery terminals, etc.). This product can be applied wherever there may be leakages from pipes, corrugated pipes, channels, etc., or where there is a need for rapid and efficient insulation.

Product	Description	Gel colour	Package (g)
Galactic Water Stop	single component gel	transparent	2 x 100

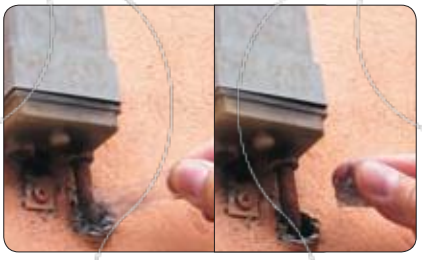


Kit composition:
2 cans, 100 g each

Application example



Corrugated pipe entry protection



Removal









Galactic Rubber Connection

Connection kit with rubber insulation.

Galactic Rubber connection is an accessory for straight through 5 core insulated jointing connections with a bicomponent rubber sealant suitable for filling any type of enclosure. The kit consists of 5 screw connectors, an innovative wrap around insulator for cable separation and a bicomponent rubber compound for increased mechanical resistance. The rubber compound is non-toxic, inert, has no shelf life and quickly cross links with no exothermic reaction.



Product	Maximum conductor cross section (n° x mm²)	Rubber colour	Total quantity (ml)
Galactic Rubber connection 6	5 x 1 a 6	●	300
Galactic Rubber connection 16	5 x 2,5 a 16	●	300

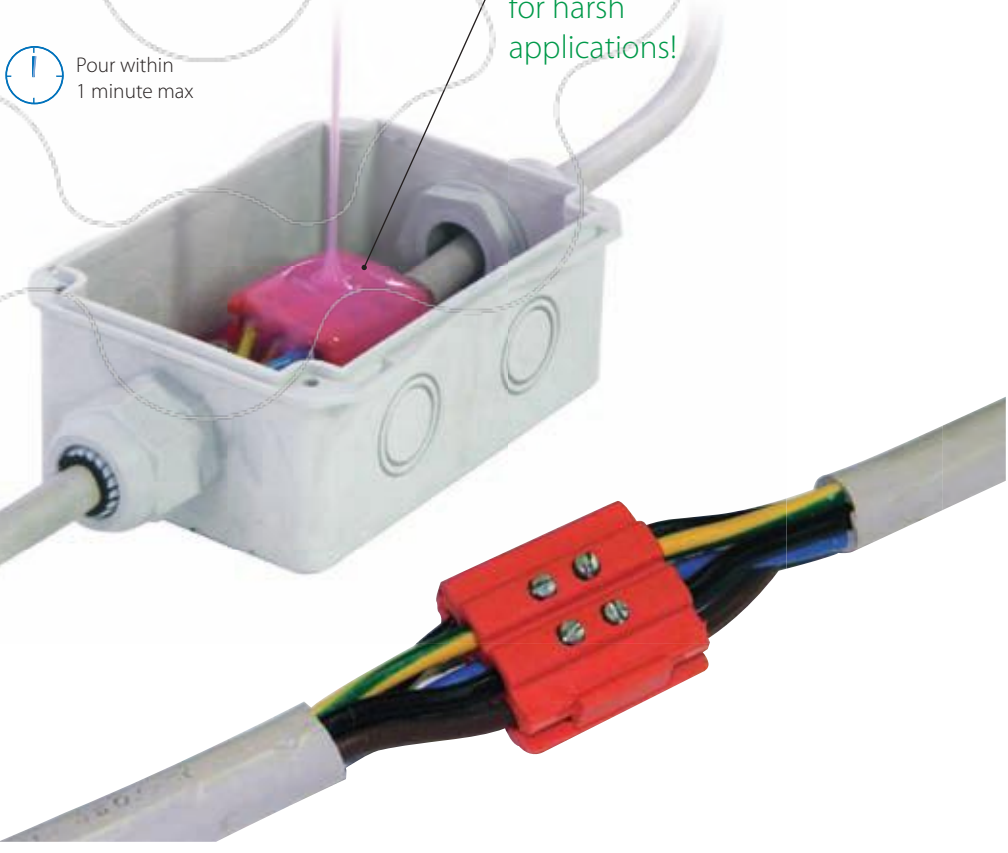
Galactic Rubber connection 6
- 1 wrap-around separator (red) for connections up to 5 conductors
- 5 x 6 mm² screw connectors
- 2 bottles bicomponent rubber

Galactic Rubber connection 16
- 1 wrap-around separator (grey) for connections up to 5 conductors
- 5 x 16 mm² screw connectors
- 2 bottles bicomponent rubber

Installation sequence







Galactic Gel Connection

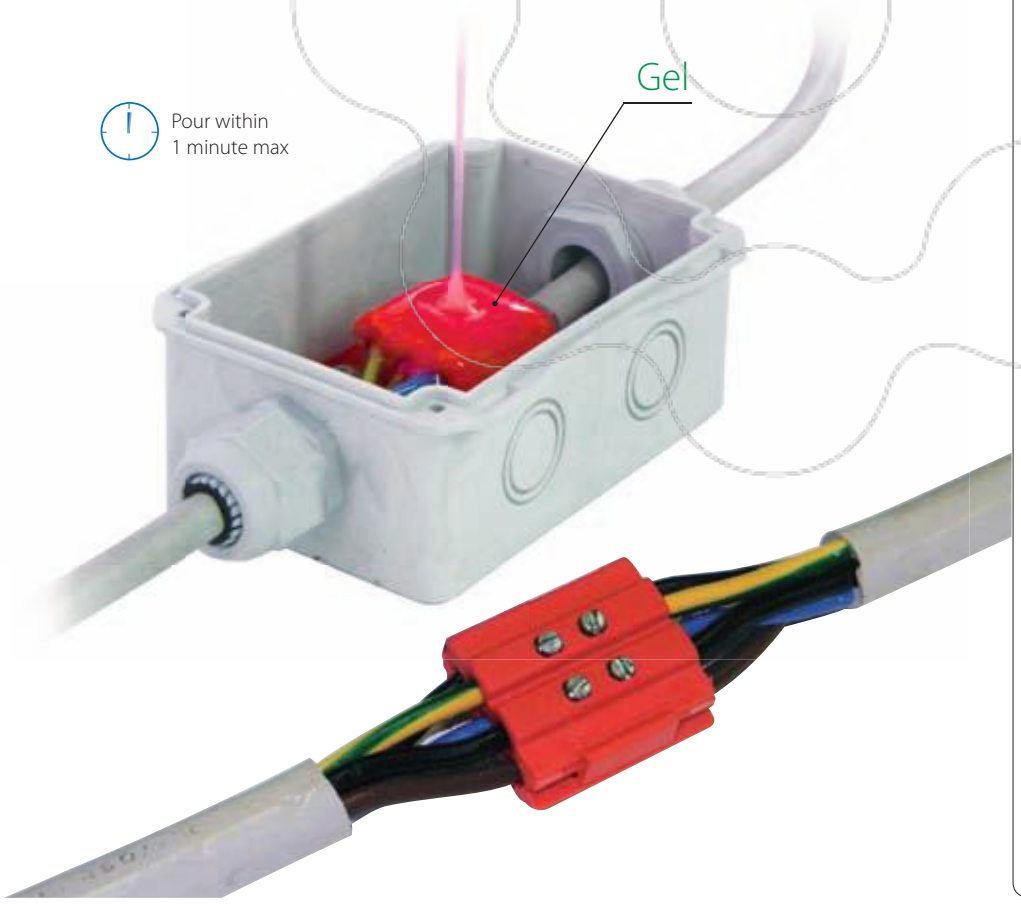
Connection kit with gel insulation.

Galactic Gel connection is an accessory for straight through 5 core insulated jointing connections with a bicomponent gel sealant suitable for filling any type of enclosure. The kit consists of 5 screw connectors, an innovative wrap around insulator for cable separation and a bicomponent gel compound. The gel compound is non-toxic, inert, has no shelf life and quickly cross links with no exothermic reaction.

Product	Maximum conductor cross section (n° x mm²)	Gel colour	Total quantity (ml)
Galactic Gel connection 6	5 x 1 a 6	●	300
Galactic Gel connection 16	5 x 2,5 a 16	●	300

Installation sequence







Galactic Gel connection 6
- 1 wrap-around separator (red) for connections up to 5 conductors
- 5 x 6 mm² screw connectors
- 2 bottles bicomponent gel

Galactic Gel connection 16
- 1 wrap-around separator (grey) for connections up to 5 conductors
- 5 x 16 mm² screw connectors
- 2 bottles bicomponent gel

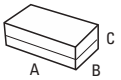


Galactic Nano Joint

Pre-filled straight and branch single pole joint complete with lever arm connector.

Single core gel joint for straight and branch connection for insulated cables and conductors up to 4 mm², complete with snap connector: simply strip the conductor and close the casing.

- Safe, quick, non-toxic, re-enterable
- For submersible use
- Connector with voltage detection window
- Connections without crimping or screws



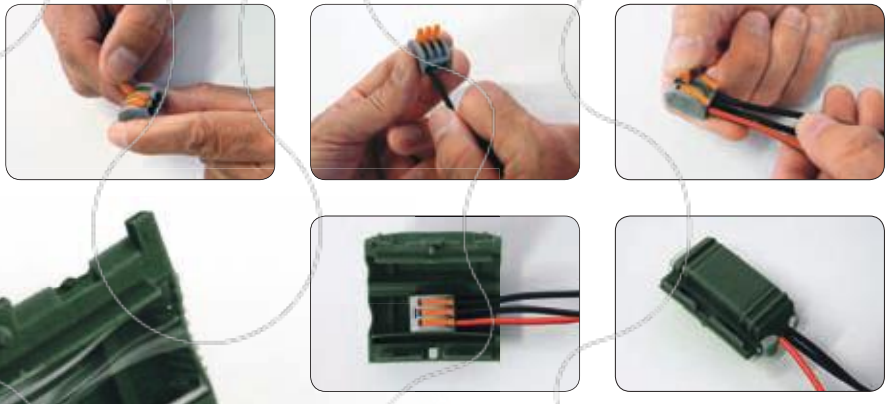
Product	Cable formation (n° x mm²)	Dimension A x B x C (mm)
Galactic Nano Joint 4	1 x 0,08 - 4	61 x 35 x 28

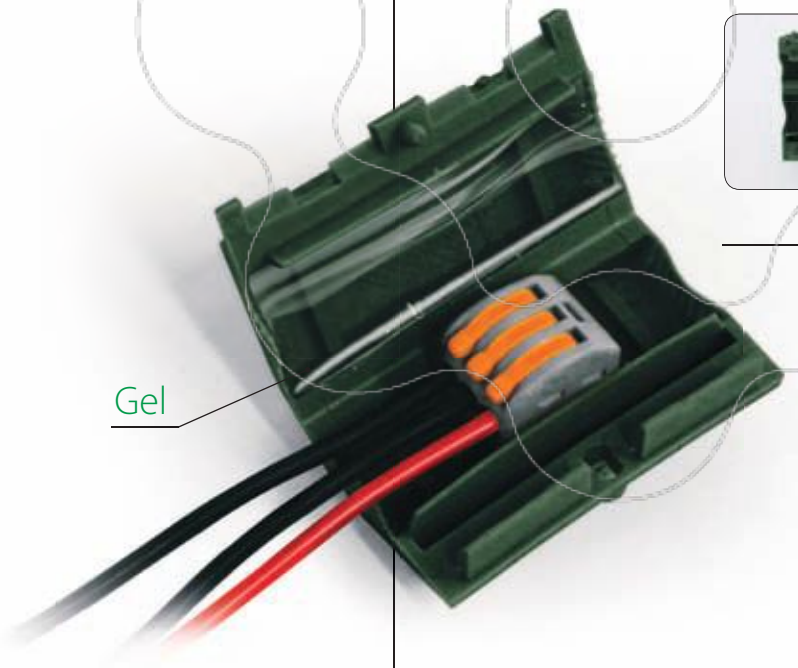
Gel: c UL us

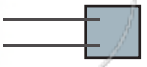
Kit composition:
3 complete Galactic NanoJoint

Electrical performance:
CEI EN 50393 as applicable
(testing under water head of the accessory installed in a box)

Installation sequence







In line connection





Branch connection



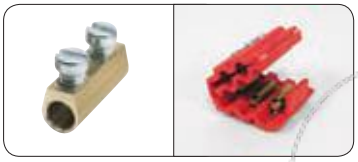
Galactic Separator

Spacer and connector kit.

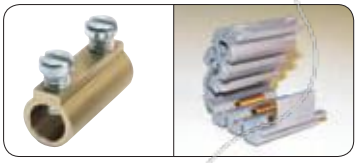
Kit includes 5 pole separators, 5 screw connectors and a roll of insulation tape. Once installed the connectors are separated by the wrap around casing. They can then be used in any enclosure which can be filled with Magic Gel, Ray Gel, Magic Rubber or Ray RTV.

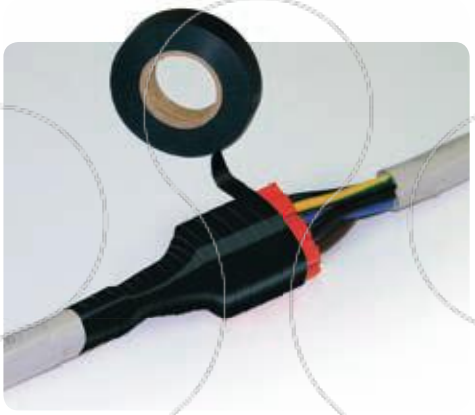
Product	Maximum conductor cross section (n° x mm²)
Galactic Separator 6	5 x 1 a 6
Galactic Separator 16	5 x 2,5 a 16

Galactic Separator 6



Galactic Separator 16









Galactic Separator 6:
- 6 wrap-around separators (red) for connections up to 5 conductors
- 30 x 6 mm² screw connectors
- 1 Rayteam tape

Galactic Separator 16:
- 3 wrap-around separators (grey) for connections up to 5 conductors
- 15 x 16 mm² screw connectors
- 1 Rayteam tape

Galactic Cleaner

Extraordinary detergent for all types of use.

Extremely effective, able to remove grease, encrustations and smog without damaging the surfaces on which it is applied. Wipe glass with a dry cloth. Do not apply to painted sheet metal.

- For many applications, cleans, de-greases, protects
- With excellent results even in impossible conditions

Product	Description	Quantity (ml)
Galactic Cleaner	Spray bottle	750











Mode of use:
spray the product, leave a few minutes, rinse or remove with a cloth.

Ray RTV

Density: about 1.24 gr/cm³ (black)
1.05 gr/cm³ (pink)
Cross linking: (pot life) at + 30°C: <8 minutes
Viscosity: 4000-6000 max MPas
Elongation at break: 350 %
Tensile strength: 2,8 MPa
Operating temperature: -60°C / +200°C
Overload temperature: +250°C
Thermal conductivity: 0,2 W/m°K
Dielectric strength: >21 kV/mm
Volume resistivity: >1,5 x 10 exp 15 Ω cm

Fast cross linking bicomponent silicone rubber with high mechanical, thermal and elastic characteristics.

Ray-RTV cross links quickly at room temperature, transforming into a rubber with high mechanical, thermal and elastic characteristics. Available in single dose bags, bottles, tanks and boxes, in standard 30 Shore A hardness for black and 15 Shore A for pink. Fast cross linking (less than 8 minutes at 30°C) and easily re-enterable

- Highly resistant, non-stick, insulating and sealing
- Non-toxic and no shelf life



Installation sequence



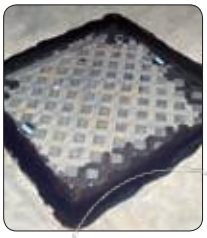

1 minute max



In 15 minutes
Ray RTV
is ready!

Applications Examples


Glass sealing


Pit sealing


Rubber mats


Profile reliefs


Extruded profiles


Rubber gaskets


Anti-corrosion protection


Moulds for making models and for industry

Product	Colour	Weight	Shore A hardness	Package type
Bag-RTV 200-N	●	200 g	30	Single dose bag
Bag-RTV 350-N	●	350 g	30	
Bag-RTV 200-R	●	200 g	15	
Bag-RTV 350-R	●	350 g	15	
Ray-RTV 1000-N	●	1000 g	30	Cans
Ray-RTV 1000-R	●	1000 g	15	
Ray-RTV 10K-N	●	10 kg	30	Boxes
Ray-RTV 20K-N	●	20 kg	30	
Ray-RTV 400K-N	●	400 kg	30	
Ray-RTV 10K-R	●	10 kg	15	
Ray-RTV 20K-R	●	20 kg	15	
Ray-RTV 400K-R	●	400 kg	15	

Other colours, hardness and cross linking times (pot life) are available upon request for tanks of 400 Kg.
Ray-RTV is avaliable in bags up to 600 g.



Gasket Kit

Kit to produce rubber gaskets and profiles.

Kit for the assembly of elastic washers, insulating gaskets and rubber profiles, UV resistant and anti-aging, with working temperature up to 200°C and 30 Shore A hardness, suitable for any electrical, plumbing, or sealing work. The articles produced are suitable for the sealing of outdoor lamps, for the sealing and insulation of screwed and bolted components, for any maintenance, replacement or shimming work. Easy to use, the liquid component is poured and the pieces are ready in minutes, at room temperature and with no exothermic reaction. Easily removed from the mould. Rapid cross-linking at room temperature (<15 min). Elevated dielectric, mechanical, elastic and thermal properties.

- Non toxic and safe, no shelf life, re-enterable
- Low emission of smoke and toxic and corrosive gases
- Flexible and elastic over time

Kit composition

1 mould for
elastic washers,
insulating gaskets
and rubber profiles
2 bottles of two-component
liquid rubber

Advantages

Use directly on site,
usable in all weather
conditions,
easy installation,
easy separation
from the moulds

Note: max thickness: 3 mm

Product	Description	Rubber colour	Package (g)
Gasket Kit	Mould + Bicomponent liquid rubber	●	360

FLAT GASKETS		RODS	PROFILES
∅ External (mm)	∅ Internal (mm)	∅ (mm)	L x L (mm)
30	22	30	130 x 6
25,5	17	25	130 x 5
24	18	20	130 x 4
22	16,5	15	130 x 3
21	15	10	130 x 2
18	12		
14	8		
11	6		
10	7		
8	4		

GASKETS FOR TAPS		ANTISLIP	CORRUGATED
∅ External (mm)	∅ Internal (mm)	L x L (mm)	L x L ∅ - hole (mm)
22	4,5	30 x 30	30 x 30 - ∅ hole 4,5
15,8	4,5	25 x 25	
14	4,5	20 x 20	
		15 x 15	
		10 x 10	

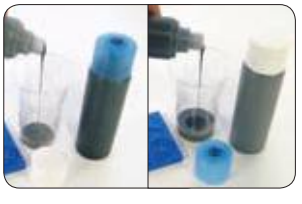


Side A



Side B

Installation sequence



Pour the 2 components in a 1:1 ratio in a beaker and mix.



Pour the product into the desired mould (30 sec max).



Remove the object from the mould.

Shiny Solar

Solution for solar and photovoltaic panel maintenance.

Shiny Solar is a product for photovoltaic and solar module maintenance, for easy removal of grease, limestone and crystallised deposits, dust, smog, excrement, etc. A photovoltaic panel can reduce generated power by up to 15% for non-polluted areas and 25% for highly polluted areas, Regular use of Solar Shiny keeps systems running efficiently. Extremely effective and easy to apply, with no shelf life. To maintain system efficiency, proceed with 2-3 applications/year for medium-polluted areas. The degreasing and anti-static protection contained in the product allows excellent results even with rinsing with hard water (even higher than 30°f). Rapid application: treatment of a 6 kW system (approximately 50 m^2), thanks to the fact that degreasing, cleaning and application of the anti-static protection are all part of one single operation, requires less than 20 minutes. Shiny Solar respects panel components, the aluminium frame, gaskets and protective glass. A single package of Shiny Solar can treat installed photovoltaic panel power from 10 to 15 kW, equal to a surface of about 80-120 m^2. The order data table shows the power and surfaces which can be treated with different packages.

- For easy removal of grease, limestone and crystallised deposits, dust, smog, excrement, etc.
- Contains anti-static protection

Product	Product contents	Efficiency (kW/ surfaces treated per package) Power in kW	Surfaces (m^2)
Shiny Solar	750 ml	10 - 15	80 - 120
Shiny Solar 5	5 lt	70 - 100	530 - 800
Shiny Solar 1000	1000 lt	14.000 - 20.000	106.000 - 160.000
Shiny Brush SB4	brush microfiber		

Application example



Spray the product evenly on the solar or photovoltaic panel or on the surface to be cleaned and protected.



Let stand for a few minutes, depending on the level of dirt to be cleaned, then wipe with a soft, non-abrasive, slightly damp pad or sponge.



Rinse with water or remove product with a paper towel. Repeat for especially dirty surfaces.





Advantages

The 750 ml and 5 lt kits are supplied together with a professional sprayer, with an adjustable spray jet nozzle with a range in the latter case of up to 3 m.

For proper application of the product even in hard to reach areas, a microfiber brush mounted on a telescopic arm which projects up to 4 m is available.



Shiny Brush SB4

Cable ties



Tilted tip for easy insertion into clamping head. Rounded corners for greater safety. Quick sliding thanks to a low material friction coefficient. Good UV resistance thanks to it's black colour.

Essential for:

- Electrical installations
- Industrial applications
- Panels
- Special applications

Self extinguishing according to UL94

Halogen free
Excellent resistance to basis, oils, fats, hydrocarbons, chemicals, chlorinated solvents

Operating temperature: -40°C/ +85°C

Installation temperature: -10°C / +60°C

Colour **White**	Colour **Black**	Width	Length	Appl. diameter		Strength	
Product	**Product**	(mm)	(mm)	min	max	(Kg)	(n)
Ray-fasc B 22/75	Ray-fasc N 22/75	2,2	75	0.75	15	6.12	60
Ray-fasc B 25/98	Ray-fasc N 25/98	2,5	98	1	21	8.16	80
Ray-fasc B 25/135	Ray-fasc N 25/135	2,5	135	1	32	8.16	80
Ray-fasc B 26/160	Ray-fasc N 26/160	2,6	160	1	40	8.16	80
Ray-fasc B 26/200	Ray-fasc N 26/200	2,6	200	2	52	8.16	80
Ray-fasc B 36/140	Ray-fasc N 36/140	3,6	140	2	35	13.26	130
Ray-fasc B 36/200	Ray-fasc N 36/200	3,6	200	2	50	13.26	130
Ray-fasc B 36/290	Ray-fasc N 36/290	3,6	290	2	80	13.26	130
Ray-fasc B 36/370	Ray-fasc N 36/370	3,6	370	2	103	13.26	130
Ray-fasc B 48/178	Ray-fasc N 48/178	4,8	178	2	45	22.44	220
Ray-fasc B 48/200	Ray-fasc N 48/200	4,8	200	3	50	22.44	220
Ray-fasc B 48/250	Ray-fasc N 48/250	4,8	250	3	68	22.44	220
Ray-fasc B 48/290	Ray-fasc N 48/290	4,8	290	3.5	79	22.44	220
Ray-fasc B 48/360	Ray-fasc N 48/360	4,8	360	3.5	103	22.44	220
Ray-fasc B 48/390	Ray-fasc N 48/390	4,8	390	3.5	106	22.44	220
Ray-fasc B 48/430	Ray-fasc N 48/430	4,8	430	3.5	115	22.44	220
Ray-fasc B 78/180	Ray-fasc N 78/180	7,8	180	3.5	45	55.08	540
Ray-fasc B 78/240	Ray-fasc N 78/240	7,8	240	3.5	63	55.08	540
Ray-fasc B 78/300	Ray-fasc N 78/300	7,8	300	4	80	55.08	540
Ray-fasc B 78/365	Ray-fasc N 78/365	7,8	365	8	100	55.08	540
Ray-fasc B 78/450	Ray-fasc N 78/450	7,8	450	35	130	55.08	540
Ray-fasc B 78/540	Ray-fasc N 78/540	7,8	540	35	158	55.08	540
Ray-fasc B 78/750	Ray-fasc N 78/750	7,8	750	35	220	55.08	540

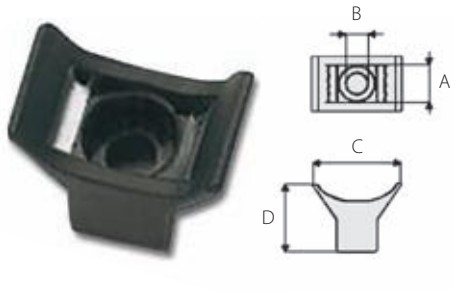
100-piece pack

Cable tie support

Fastening with standard inserts for cable ties with widths up to 9 mm. UV resistant.

Product	Dimension (mm) A	B	C	D
Ray-fasc S	9,4	5	23	17,6

100-piece pack

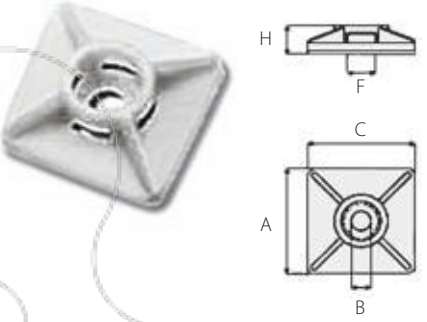


Bi-Directional adhesive fixing device

Self adhesive, can be used on all materials. Suitable for cable ties up to 4.8 mm. Made from ABS with rubber based adhesive foam. UV resistant.

Colour **White** Product	Colour Black Product	Tie width (mm)	Dimension (mm) A	B	C	F	H
Ray-fasc BBA36	Ray-fasc NBA36	3,6	19	4,1	19	4	5
Ray-fasc BBA48	Ray-fasc NBA48	4,8	27	4,8	27	6	6,5

100-piece pack

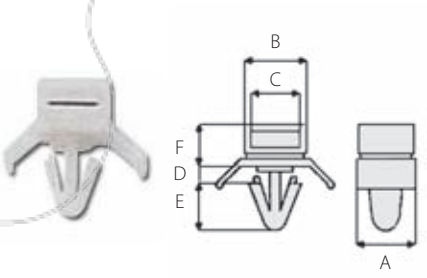


Bayonet-Joint support

Push fit support for cable ties up to 7.8mm. Can be used on sheet surfaces with up to 3.2 mm thick. 6.2mm O/D hole required. Polyamide 6.6.

Product	Dimension (mm) A	B	C	D	E	F	∅ Hole (mm)
Ray-fasc SI	10	10,6	8,1	3,2	8	7,1	6,2

100-piece pack

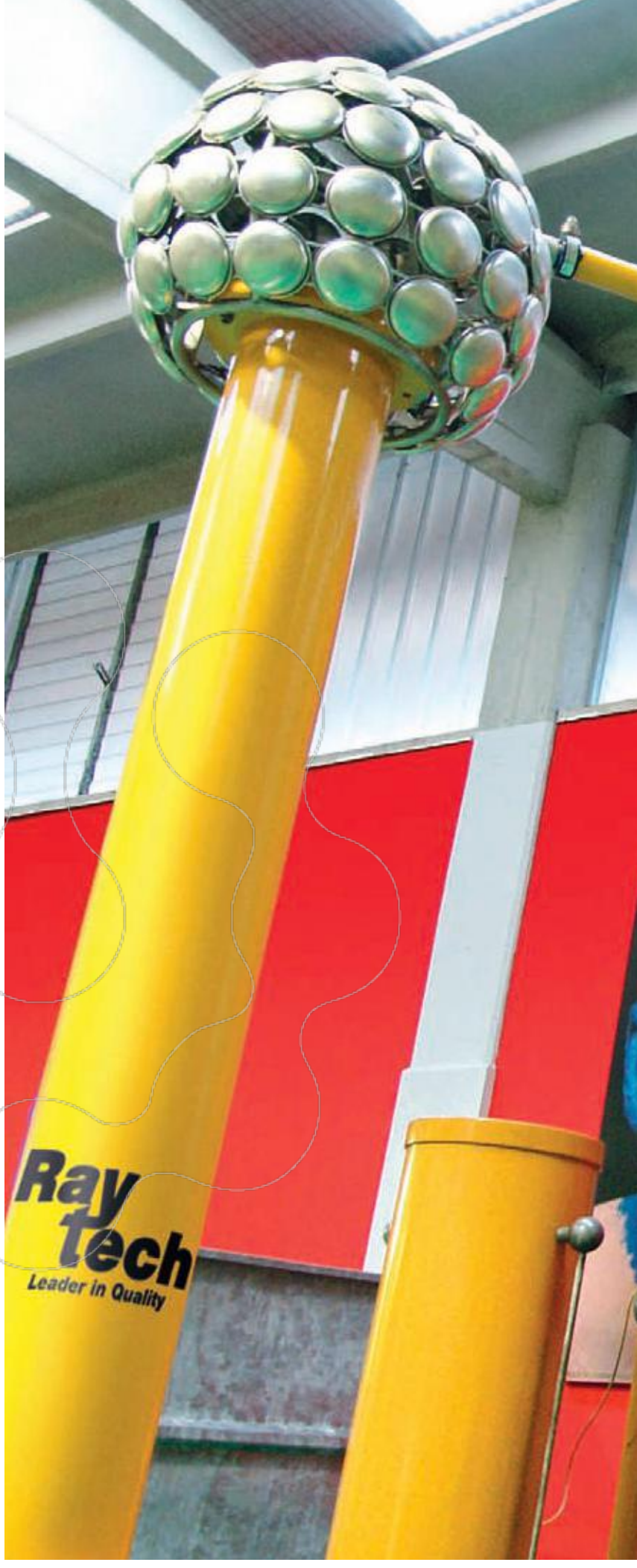











Ray
tech
Leader in Quality

Certified Medium Voltage Laboratory





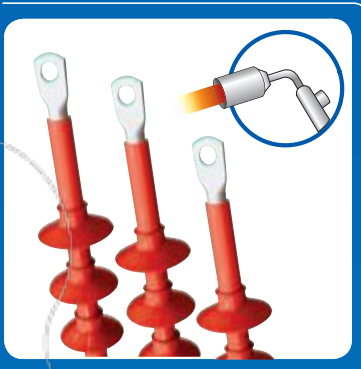
COLD-SHRINK



TERMINATIONS
JOINTS

page 165

HEAT-SHRINK



TERMINATIONS
JOINTS

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Medium **V**oltage

HEAT-SHRINK 72 kV



TERMINATIONS
JOINTS

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SEPARABLE CONNECTORS



PLUG
SCREW

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SHEATHS AND TAPES FOR INSULATION



SHEATHS UP TO 36 kV
TAPES UP TO 36 kV

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COLD-SHRINK

Terminations

COLD-SHRINK FOR INDOOR AND OUTDOOR USE



Terminations for **indoor use**

For extruded cables
up to 2/20 kV (Um 24 kV)



Terminations for **outdoor use**

For extruded cables
up to 12/20 kV (Um 24 kV)



Terminations for **indoor/outdoor use**

For extruded cables
up to 18/30 kV (Um 36 kV)

Joints

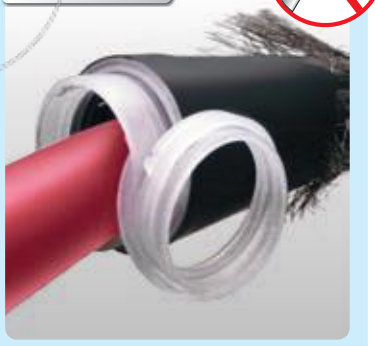
COLD-SHRINK

New



Joints

For extruded cables up to 18/30 kV (Um 36 kV)





Cold-shrink terminations for **indoor use**

Silicone rubber terminations with electric field control. For extruded cables up to **12/20 kV (Um 24 kV)**.

Cold-shrink technology is based on pre-dilated insulating sheaths on a removable spiral support, which is removed without tools during installation to allow for complete covering of the cable insulation. The Raytech silicone sheath, supplied pre-expanded, is flame retardant, is highly anti-tracking, has very high elastic characteristics, is able to maintain pressure on the cable during operation, is water-repellent and is extremely sturdy. Raytech terminations are suitable for indoor, very compact applications, with a smooth structure and complete with all components. Each kit contains 3 single core indoor terminations. The components are cold-installed without tools, unwinding the pigtail wire.

- Rapid installation for lower labour costs
- Highly reliable and safe for operators
- Installing without heating and without tools

For cables (A)RG7H1R insulation thickness **FULL** **Product**	Nominal voltage Umax (kV)	∅ on insulation (mm)	∅ on external sheath (mm)	Conductor cross section (mm²)	Length without cable lug (mm)
AUTO 10 / 120-I	12	15,3 - 20,2	24,6 - 29,6	50 - 120	320
AUTO 10 / 240-I		18,7 - 25,6	28,0 - 35,8	95 - 240	320
AUTO 10 / 630-I		28,2 - 37,8	38,5 - 49,4	300 - 630	320
AUTO 15 / 70-I	17,5	16,3 - 19,2	25,6 - 28,7	35 - 70	320
AUTO 15 / 240-I		19,2 - 27,8	28,7 - 38,1	70 - 240	320
AUTO 15 / 630-I		27,8 - 40,0	38,1 - 52,1	240 - 630	320
AUTO 20 / 50-I	24	17,3 - 19,5	27,8 - 29,0	25 - 50	320
AUTO 20 / 185-I		19,5 - 27,4	29,0 - 37,8	50 - 185	320
AUTO 20 / 630-I		29,8 - 42,0	40,2 - 54,2	240 - 630	320

For cables RG7H1M1 insulation thickness **LOW** **Product**	Nominal voltage Umax (kV)	∅ on insulation (mm)	∅ on external sheath (mm)	Conductor cross section (mm²)	Length without cable lug (mm)
AUTO 20 / 50-I	24	17,0 - 19,0	23,3 - 25,3	25 - 70	320
AUTO 20 / 185-I		21,0 - 28,0	26,7 - 34,5	95 - 240	320
AUTO 20 / 630-I		28,0 - 41,0	34,6 - 48,3	240 - 630	320



Electrical performance:
CEI 20-24 • CEI 20-62/1 • HD 629-1

Ranges of application:
For single core cables type



Extruded wire



Extruded tube AL

For voltages from 6/10 kV (Umax 12 kV) to 12/20 kV (Umax 24 kV)

To select the correct termination:
cable code, section in mm², nominal voltage, for indoor and outdoor installation.

Cold-shrink terminations for **outdoor use**

Silicone rubber outdoor terminations with electric field control and bell-shaped insulators. For extruded cables up to **12/20 kV (Um 24 kV)**.

The Raytech silicone sheath, supplied pre-expanded, is flame retardant, is highly anti-tracking, has very high elastic characteristics, is able to maintain pressure on the cable during operation, is water-repellent and is extremely sturdy. With pre-dilated silicone fins on a spiral support for modular installation of the outdoor accessory for upside-down installation. Raytech terminations are suitable for external, very compact applications, complete with all components. Each kit contains 3 single core outdoor terminations. The components are cold-installed without tools, unwinding the pigtail wire.

- Rapid installation for lower labour costs
- Highly reliable and safe for operators
- Installing without heating and without tools





For cables (A)RG7H1R insulation thickness **FULL** **Product**	Nominal voltage Umax (kV)	∅ on insulation (mm)	∅ on external sheath (mm)	Conductor cross section (mm²)	Length without cable lug (mm)
AUTO 10 / 120-E	12	15,3 - 20,2	24,6 - 29,6	50 - 120	410
AUTO 10 / 240-E		18,7 - 25,6	28,0 - 35,8	95 - 240	410
AUTO 10 / 300-E		28,0 - 29,0	35,5 - 39,0	300	410
AUTO 10 / 630-E		28,3 - 37,8	38,5 - 49,4	300 - 630	420
AUTO 15 / 70-E	17,5	16,3 - 19,2	25,6 - 28,7	35 - 70	410
AUTO 15 / 240-E		19,2 - 27,8	28,7 - 38,1	70 - 240	410
AUTO 15 / 300-E		30,0 - 31,0	38,0 - 41,0	300	410
AUTO 15 / 630-E		30,4 - 40,0	40,2 - 52,1	300 - 630	420
AUTO 20 / 50-E	24	17,3 - 19,5	27,8 - 29,0	25 - 50	410
AUTO 20 / 185-E		19,5 - 27,4	29,0 - 37,8	50 - 185	410
AUTO 20 / 240-E		27,5 - 31,0	35,7 - 41,0	185 - 240	410
AUTO 20 / 630-E		29,8 - 42,0	40,2 - 54,2	240 - 630	420

For cables RG7H1M1 insulation thickness **LOW** **Product**	Nominal voltage Umax (kV)	∅ on insulation (mm)	∅ on external sheath (mm)	Conductor cross section (mm²)	Length without cable lug (mm)
AUTO 20 / 50-E	24	17,0 - 19,0	23,3 - 25,3	25 - 70	410
AUTO 20 / 185-E		21,0 - 28,0	26,7 - 34,5	95 - 240	410
AUTO 20 / 240-E		28,0 - 31,5	34,6 - 42,0	240 - 300	410
AUTO 20 / 630-E		31,0 - 41,0	37,4 - 48,3	300 - 630	420

To select the correct termination:
cable code, section in mm², nominal voltage, for indoor and outdoor installation.

Electrical performance:
CEI 20-24 • CEI 20-62/1 • HD 629-1

Ranges of application:
For single core cables type



Extruded wire



Extruded tube AL

For voltages from 6/10 kV (Umax 12 kV) to 12/20 kV (Umax 24 kV)



Cold-shrink terminations for **indoor/outdoor use**

Silicone rubber terminations with electric field control.
For extruded cables up to **18/30 kV (Um 36 kV)**.

The Raytech silicone sheath, supplied pre-expanded, is flame retardant, is highly anti-tracking, has very high elastic characteristics, is able to maintain pressure on the cable during operation, is water-repellent and is extremely sturdy. With pre-dilated silicone fins on a spiral support for modular installation of the accessory, for upside-down installation. Suitable for outdoor and indoor, very compact applications, complete with all components. Each kit contains 3 single core indoor terminations. The components are cold-installed without tools, unwinding the pigtail wire.

- Rapid installation for lower labour costs
- Highly reliable and safe for operators
- Installing without heating and without tools



Electrical performance:
CEI 20-24 • CEI 20-62/1 • HD 629-1

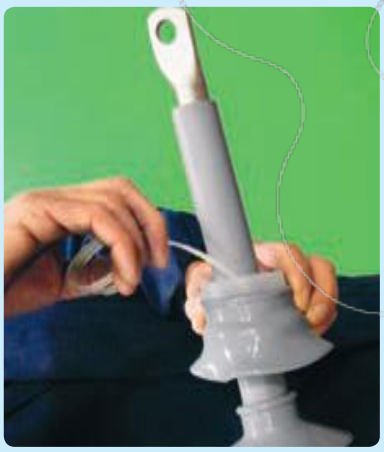
Ranges of application:
For single core cables type



Extruded tube AL

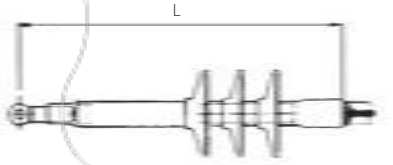


Extruded wire



INSTALLATION TIPS:

- Follow the dimensions stated in the installation instructions.
- Be careful not to cut through the insulation on the primary cable when removing the semi-conductive.
- The semiconductor cable must not have spikes or irregular profiles in the cutting zone.
- Carefully clean cable insulation.
- Install the correct cable terminal.



FOR INDOOR USE

For cables (A)RG7H1R insulation thickness **FULL**	Nominal voltage	∅ on insulation	∅ on external sheath	Conductor cross section	Dimensions
Product	Umax (kV)	(mm)	(mm)	(mm²)	L (mm)
AUTO 30/95-I		22,3 - 27,9	33,5 - 38,5	25 - 95	410
AUTO 30/120-I	36	29,4 - 31,0	37,3 - 41,2	120 - 150	410
AUTO 30/400-I		30,6 - 40,3	39,0 - 51,3	150 - 400	410

For cables RG7H1M1 insulation thickness **LOW**	Nominal voltage	∅ on insulation	∅ on external sheath	Conductor cross section	Dimensions
Product	Umax (kV)	(mm)	(mm)	(mm²)	L (mm)
AUTO 30/95-I		25,0 - 27,0	31,2 - 33,4	50 - 120	410
AUTO 30/120-I	36	28,0 - 29,0	32,3 - 35,0	150 - 185	410
AUTO 30/400-I		28,0 - 40,0	34,6 - 47,9	150 - 500	420

FOR OUTDOOR USE

For cables (A)RG7H1R insulation thickness **FULL**	Nominal voltage	∅ on insulation	∅ on external sheath	Conductor cross section	Dimensions
Product	Umax (kV)	(mm)	(mm)	(mm²)	L (mm)
AUTO 30/95-E		22,3 - 27,9	33,5 - 38,5	25 - 95	680
AUTO 30/120-E	36	29,4 - 31,0	37,3 - 41,2	120 - 150	680
AUTO 30/400-E		30,6 - 40,3	39,0 - 51,3	150 - 400	680

For cables RG7H1M1 insulation thickness **LOW**	Nominal voltage	∅ on insulation	∅ on external sheath	Conductor cross section	Dimensions
Product	Umax (kV)	(mm)	(mm)	(mm²)	L (mm)
AUTO 30/95-E		25,0 - 27,0	31,2 - 33,4	50 - 120	680
AUTO 30/120-E	36	28,0 - 29,0	32,3 - 35,0	150 - 185	680
AUTO 30/400-E		28,0 - 40,0	34,6 - 47,9	150 - 500	680

Three-core cold-shrink terminations for **indoor/outdoor** use

Termations for armoured and non armoured extruded cables up to **36 kV**.

Hybrid technology that provides heat-shrink trifurcation and cold-shrink termination



FOR INDOOR USE

For **NON ARMOURED** cables	For **ARMOURED** cables	Umax 12 kV sez. (mm²)	Umax 17,5 kV sez. (mm²)	Umax 24 kV sez. (mm²)
Product	**Product**			
AUTO 20/50-I-3	AUTO 20/50-I-3ARM	50 - 120	35 - 70	25 - 50
AUTO 20/185-I-3	AUTO 20/185-I-3ARM	95 - 240	70 - 240	50 - 185
AUTO 20/630-I-3	AUTO 20/630-I-3ARM	300 - 500	240 - 400	240 - 300

For **NON ARMOURED** cables	For **ARMOURED** cables	Voltage Umax (kV)	Conductor cross section (mm²)
Product	**Product**		
AUTO 30/95-I-3	AUTO 30/95-I-3ARM	36	25 - 95
AUTO 30/240-I-3	AUTO 30/240-I-3ARM		120 - 240

FOR OUTDOOR USE

For **NON ARMOURED** cables	For **ARMOURED** cables	Umax 12 kV sez. (mm²)	Umax 17,5 kV sez. (mm²)	Umax 24 kV sez. (mm²)
Product	**Product**			
AUTO 20/50-E-3	AUTO 20/50-E-3ARM	50 - 120	35 - 70	25 - 50
AUTO 20/185-E-3	AUTO 20/185-E-3ARM	95 - 240	70 - 240	50 - 185
AUTO 20/630-E-3	AUTO 20/630-E-3ARM	300 - 500	240 - 400	240 - 300

For **NON ARMOURED** cables	For **ARMOURED** cables	Voltage Umax (kV)	Conductor cross section (mm²)
Product	**Product**		
AUTO 30/95-E-3	AUTO 30/95-E-3ARM	36	25 - 95
AUTO 30/240-E-3	AUTO 30/240-E-3ARM		120 - 240



Electrical performance:
CEI 20-24 • HD 629-1

Note: for three-core cables, insulation thickness low, please contact Raytech



Three-core extruded cable, wire screened



Three-core extruded cable, tape screened, armoured



Single core cold-shrink joints

Suitable for outdoor, underground and even underwater applications. Very compact and complete with all components. Each kit contains 1 single core joint. Each joint component is pre-dilated on a spiral support and is extremely easy to remove for fast, safe installation without the use of any tools or heating.



Electrical performance:
CEI 20-24 • CEI 20-62/1 • HD 629-1

Ranges of application
For single core cables type



Extruded wire



Extruded tapes

For voltages from 6/10 kV (Umax 12 kV) to 18/30 kV (Umax 36 kV)

Monoblock joints for extruded cables up to **18/30 kV (Um 36 kV)**.

For cables (A)RG7H1R insulation thickness **FULL**	Nominal voltage	∅ on insulation	∅ on external sheath	Conductor cross section	Length
Product	Umax (kV)	(mm)	(mm)	(mm²)	(mm)
JMAUTO 20 / 95-1	12	17 - 23	26 - 33	70 - 150	550
JMAUTO 20 / 240-1		22 - 32	33 - 42	185 - 400	600
JMAUTO 20 / 400-1		32 - 36	42 - 48	400 - 630	600
JMAUTO 20 / 95-1	17,5	17 - 23	26 - 33	50 - 150	550
JMAUTO 20 / 240-1		22 - 32	33 - 42	150 - 300	600
JMAUTO 20 / 400-1		32 - 36	42 - 48	400 - 500	600
JMAUTO 20 / 95-1	24	17 - 23	26 - 33	25 - 95	550
JMAUTO 20 / 240-1		22 - 32	33 - 42	120 - 240	600
JMAUTO 20 / 400-1		32 - 36	42 - 48	300 - 400	600
JMAUTO 30 / 95-1	36	25 - 29	31,2 - 38,3	50 - 95	750
JMAUTO 30 / 185-1		27 - 31	33,4 - 42	120 - 185	750

For cables RG7H1M1 insulation thickness **LOW**	Nominal voltage	∅ on insulation	∅ on external sheath	Conductor cross section	Length
Product	Umax (kV)	(mm)	(mm)	(mm²)	(mm)
JMAUTO 20 / 95-1	24	17 - 23	26 - 33	25 - 120	550
JMAUTO 20 / 240-1		22 - 32	33 - 42	120 - 300	600
JMAUTO 20 / 400-1		32 - 36	42 - 48	300 - 500	600



Installation sequence













Medium voltage testing details for terminals and joints up to 36 kV.

TEST	TEST METHOD (VOLTAGES IN kV)	MAXIMUM VOLTAGE PER CABLE UM (kV)					RESULTS
		7,2	12	17,5	24	36	
INDUSTRIAL FREQUENCY AC	a) 1 min. (dry)	27	35	45	55	75	Neither perforations nor discharges
	b) 1 min. (in the rain)	27	35	45	55	75	
	c) 4 h.	14	24	36	48	73	
PARTIAL DISCHARGES	PE, XLPE, EPR, PVC (voltages in kV)	4,5	7,5	10,9	15	22,5	< 3 pC
		7,2	12	17,5	24	-	< 20 pC
IMPULSE	a) 10 positive 10 negative 1,2/50 µ s (voltages in kV)	60	75	95	125	170	Neither perforations nor discharges
	b) 10 positive 10 negative 1,2/50 µ s (voltages in kV)	70	95	110	150	200	
THERMAL CYCLES WITH APPLIED VOLTAGE	a) 63 cycles of 5 h. of heating, 3 h. of air cooling	-	-	-	-	-	
	b) 63 cycles of 5 h. of heating, 3 h. of water cooling (1m of water head)	-	-	-	-	-	
	Extruded cable and non-migrant mixture paper cable	9	15	22	30	45	Neither perforations nor discharges
	Migrant mixture paper cable	6,5	11	15	22	32	
THERMAL SHORT-CIRCUIT TEST	a) short-circuit of 1s f/f at maximum temperature specified for the cable	-	-	-	-	-	No visible damage
	b) short-circuit of 1s f/t at maximum temperature specified for the cable	-	-	-	-	-	
DIRECT CURRENT	30 min	28	48	72	96	144	Neither perforations nor discharges
MOISTURE TEST WITH APPLIED VOLTAGE	a) 100 h. in saturated air	4,5	7,5	10,9	15	22,5	Neither perforations nor discharges, nor visible carbonisation nor erosion
	b) 1000 h. in saturated air	4,5	7,5	10,9	15	22,5	
DYNAMIC SHORT-CIRCUIT TEST	63 kA - Standard	-	-	-	-	-	No visible damage
	125 kA - High Current	-	-	-	-	-	
IMPACT	Fall from a height of 2 m at a weight of 4 kg, 6 times (only reinforced joints)	-	-	-	-	-	
SALT SPRAY WITH APPLIED VOLTAGE	1h of sealing salinity 224 kg/m³ (voltages in kV)	4,5	7,5	10,9	15	22,5	No discharge

TESTING SEQUENCE
Indoor terminations 1a,2,3a, 4a,2,5, 4a, 1c, 3a,6,7a, 8
Outdoor terminations 1b, 2, 3b, 4a,2, 5,4a, 2, 1c,3b, 6,7b, 8, 10
Joints 9, 1a,2,3b,4a,2,5, 4b,2,5, 4b,2,1c,3b, 6,8

HEAT-SHRINK



Terminations

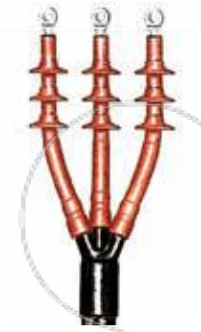
HEAT-SHRINK FOR INDOOR AND OUTDOOR USE



Single core terminations for **indoor use**
For extruded cables up to 36 kV



Single core terminations for **outdoor use**
For extruded cables up to 36 kV



Three-core terminations for **indoor/outdoor use**
For extruded cables up to 36 kV



ENEL **certified** terminations

Joints

HEAT-SHRINK



Single core joints

Three-core joints

Transition joints

ENEL **certified** joints





Three-core extruded cable (A) RG7H10R



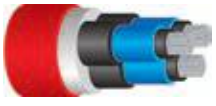
Three-core paper cable (A) RC1HLOR(X)



Single core extruded cable (A) RG7H1R(X)



Single core paper cable (A) RC1HLR(X)



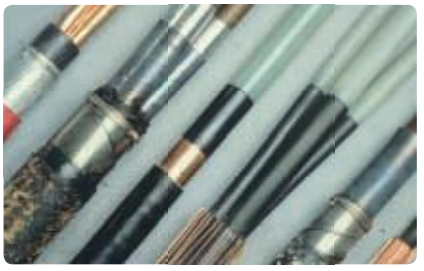




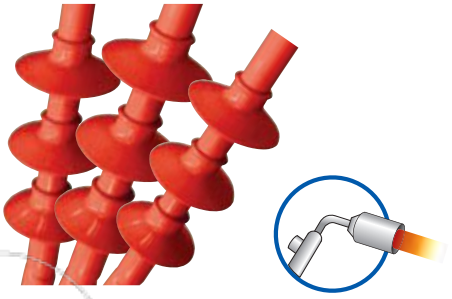


Heat-shrink terminations

Indoor and outdoor use terminations for single core, three-core armoured and non armoured cables.



Heat-shrink terminations are immediately energizable, fast to package and reliable. High shrinkage ratios serve to broaden the ranges of application and reduce the number of kits to be put into stock.
The first problem to solve with medium voltage accessories is avoiding the concentration of voltage on the shield cutting line. The use of polymers charged with metal oxides with in non-linear characteristics has allowed for optimal distribution of the electrical field without enlarging the terminal. The field control element can be a sheath to be applied directly on the cable head or an extruded layer made with external covering sheath.



- Extremely simple
- Do not require special labour
- Can be installed in all conditions
- No shelf life

WITHOUT FIELD CONTROL



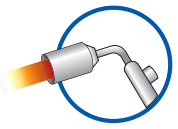
WITH FIELD CONTROL TUBE



MV TERMINATIONS
HOW TO IDENTIFY AND ORDER COMPLEMENTARY ACCESSORIES

Accessory	Abbreviation to add to the product code			Example
Grounding braid for aluminium tube shields	**/H5**			THVE 20/A-RC/H5
Grounding braid with roll spring (only for single core)		For cables (mm²)	Ø on the shield (mm)	
	/24	up to 25	12 - 20	THVE 20/A-RC/24
	/25	from 35 to 95	17 - 28	THVE 20/B-RC/25
	/26	from 120 to 300	25 - 40	THVE 20/C-RC/26
	/27	from 400 to 630	36 - 60	THVE 20/C-RC/27
Copper cable terminal	**-C**	+ Conductor cross section		THVE 20/A-RC-C50
Aluminium cable terminal	**-CA**	+ Conductor cross section		THVE 20/A-RC-CA50
Shear bolt lug	**-CPR**	+ Conductor cross section		THVE 20/A-RC-CPR50
Multiple choice	With cable lug and grounding accessory, add codes			THVE 20/A-RC/24-C50





Heat-shrink terminations for **indoor use**

Terminations for **SINGLE CORE** extruded cables up to **36 kV**.



Electrical performance:
CEI 20-24 • CEI 20-62/1

Kit composition:
Three single core terminations



Single core cable extruded wires



Single core cable extruded tapes

FOR NON ARMOURED CABLES

For cables (A)RG7H1R insulation thickness **FULL**	Voltage Umax (kV)	Conductor cross section (mm^2)	Length without cable lug (mm)
Product			
THVE 6/A-RC	7,2	25 - 120	210
THVE 6/B-RC		150 - 400	210
THVE 6/C-RC		500 - 630	210
THVE 15/A-RC	12	25 - 95	320
THVE 15/B-RC		120 - 300	320
THVE 15/C-RC		400 - 630	320
THVE 15/A-RC	17,5	25 - 50	320
THVE 15/B-RC		70 - 300	320
THVE 15/C-RC		400 - 800	320
THVE 20/A-RC	24	25 - 50	320
THVE 20/B-RC		70 - 240	320
THVE 20/C-RC		240 - 630	320
THVE 30/A-RC	36	35 - 95	430
THVE 30/B-RC		120 - 185	430
THVE 30/C-RC		240 - 500	430

For shielded aluminium tube cables, add terminal abbreviation **H5**

For cables RG7H1M1Afumex insulation thickness **LOW**	Voltage Umax (kV)	Conductor cross section (mm^2)	Length without cable lug (mm)
Product			
THVE 20/A-RC	24	25 - 120	320
THVE 20/B-RC		95 - 300	320
THVE 20/C-RC		240 - 630	320
THVE 30/A-RC	36	50 - 185	430
THVE 30/B-RC		120 - 240	430
THVE 30/C-RC		240 - 630	430

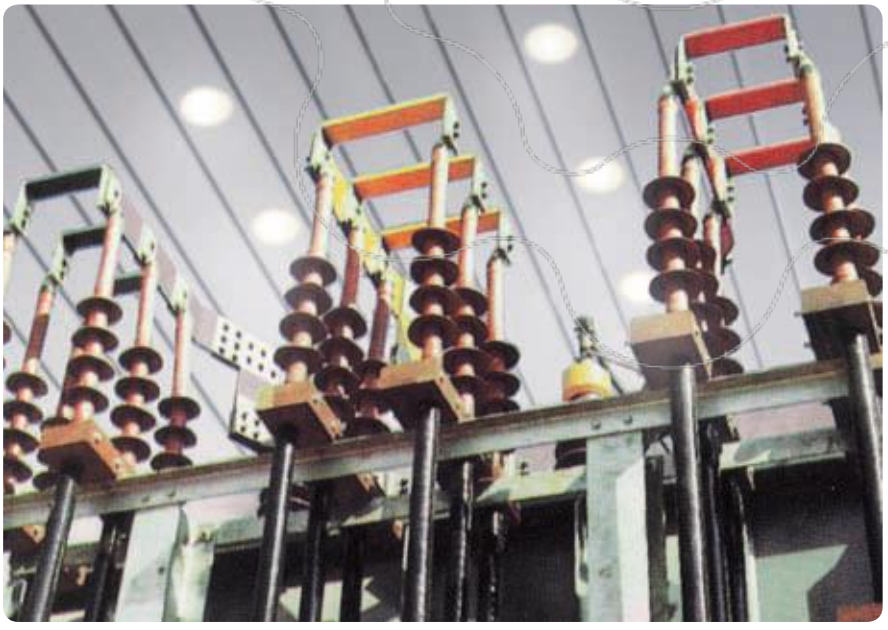
FOR CABLES ARMOURED WITH WIRES OR ALUMINIUM TAPE

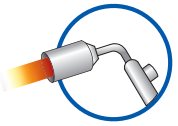
For Umax cables **7,2 kV** Product	Voltage Umax (kV)	Conductor cross section (mm^2)	Length without cable lug (mm)
THVI 6/0-ARM	7,2	25 - 70	460
THVI 6/A-ARM		95 - 120	460
THVI 6/B-ARM		150 - 400	460
THVI 6/C-ARM		500 - 630	460

For Umax cables from **12** to **24 kV** Product	Umax 12 kV sect. (mm^2)	Umax 17,5 kV sect. (mm^2)	Thickness **FULL** Umax 24 kV sect. (mm^2)	Thickness **LOW** Umax 24 kV sect. (mm^2)	Length without cable lug (mm)
THVI 20/A-ARM	25 - 95	25 - 50	25 - 50	25 - 120	600
THVI 20/B-ARM	120 - 300	70 - 300	70 - 240	95 - 300	600
THVI 20/C-ARM	400 - 800	400 - 800	240 - 630	240 - 630	600

For Umax cables **36 kV** Product	Voltage Umax (kV)	Conductor cross section (mm^2)	Length without cable lug (mm)
THVI 30/A-ARM	36	35 - 95	730
THVI 30/B-ARM		120 - 185	730
THVI 30/C-ARM		240 - 500	730

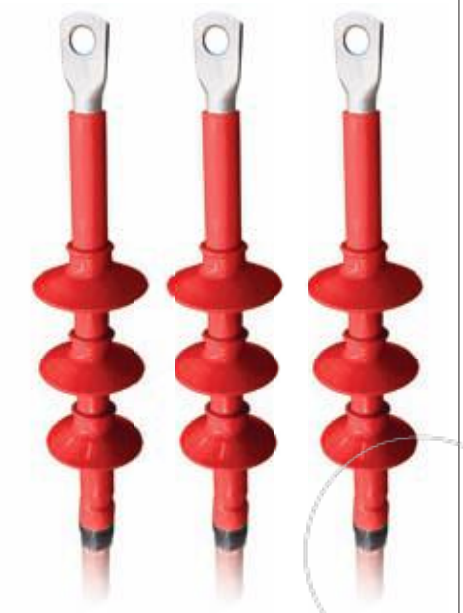






Heat-shrink terminations for **outdoor use**

Terminations for **SINGLE CORE** extruded cables up to **36 kV**.



Electrical performance:
CEI 20-24 • CEI 20-62/1

Kit composition:
Three single core terminations



Single core cable extruded wires



Single core cable extruded tapes

FOR NON ARMOURED CABLES

For cables (A)RG7H1R insulation thickness **FULL**	Voltage Umax (kV)	Conductor cross section (mm^2)	Length without cable lug (mm)
Product			
THVE 6/120-E	7,2	25 - 120	340
THVE 6/400-E		150 - 400	340
THVE 6/630-E		500 - 630	340
THVE 15/50-E	12	25 - 95	450
THVE 15/300-E		120 - 300	450
THVE 15/800-E		400 - 630	450
THVE 15/50-E	17,5	25 - 50	450
THVE 15/300-E		70 - 300	450
THVE 15/800-E		400 - 800	450
THVE 20/25-E	24	25 - 50	520
THVE 20/240-E		70 - 240	520
THVE 20/630-E		240 - 630	520
THVE 30/95-E	36	35 - 95	720
THVE 30/185-E		120 - 185	720
THVE 30/500-E		240 - 500	720

For shielded aluminium tube cables, add terminal abbreviation **H5**

For cables RG7H1M1Afumex insulation thickness **LOW**	Voltage Umax (kV)	Conductor cross section (mm^2)	Length without cable lug (mm)
Product			
THVE 20/25-E	24	25 - 120	520
THVE 20/240-E		95 - 300	520
THVE 20/630-E		240 - 630	520
THVE 30/95-E	36	50 - 185	720
THVE 30/185-E		120 - 240	720
THVE 30/500-E		240 - 630	720

FOR CABLES ARMOURED WITH WIRES OR ALUMINIUM TAPE

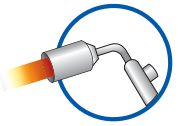
For Umax cables **7,2 kV** Product	Voltage Umax (kV)	Conductor cross section (mm²)	Length without cable lug (mm)
THVO 6/70-ARM	7,2	25 - 70	600
THVO 6/120-ARM		95 - 120	600
THVO 6/400-ARM		150 - 400	600
THVO 6/630-ARM		500 - 630	600

For Umax cables from **12** to **24 kV** Product	Umax 12 kV sect. (mm²)	Umax 17,5 kV sez. (mm²)	Thickness **FULL** Umax 24 kV sect. (mm²)	Thickness **LOW** Umax 24 kV sect. (mm²)	Length without cable lug (mm)
THVO 20/25-ARM	25 - 95	25 - 50	25 - 50	25 - 120	800
THVO 20/240-ARM	120 - 300	70 - 300	70 - 240	95 - 300	800
THVO 20/630-ARM	400 - 800	400 - 800	240 - 630	240 - 630	800

For Umax cables **36 kV** Product	Voltage Umax (kV)	Conductor cross section (mm²)	Length without cable lug (mm)
THVO 30/95-ARM	36	35 - 95	1020
THVO 30/185-ARM		120 - 185	1020
THVO 30/500-ARM		240 - 500	1020

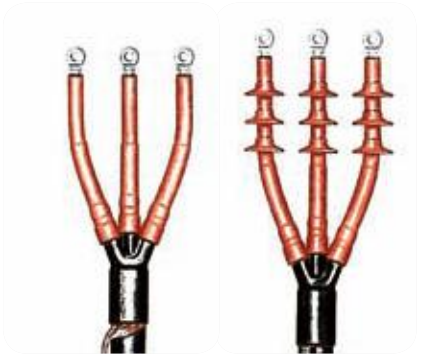






Three-core heat-shrink terminations for **indoor/outdoor use**

Terminations for armoured and non armoured extruded cables up to **36 kV**.



Electrical performance:
CEI 20-24 • HD 629-1

Note: contact Raytech regarding smaller cable insulation thickness



Three-core cable extruded wires



Three-core cable extruded tapes

FOR INDOOR USE

For **NON ARMOURED** cables	For **ARMOURED** cables	Voltage Umax (kV)	Conductor cross section (mm²)
Product	**Product**		
THVI 6/0-3	THVI 6/0-3-ARM	7,2	25 - 35
THVI 6/A-3	THVI 6/A-3-ARM		50 - 120
THVI 6/B-3	THVI 6/B-3-ARM		150 - 400
THVI 6/C-3	THVI 6/C-3-ARM		500

For **NON ARMOURED** cables	For **ARMOURED** cables	Umax 12 kV sez. (mm²)	Umax 17,5 kV sez. (mm²)	Umax 24 kV sez. (mm²)
Product	**Product**			
THVI 20/A-3	THVI 20/A-3-ARM	25 - 95	25 - 50	25 - 50
THVI 20/B-3	THVI 20/B-3-ARM	120 - 300	70 - 300	70 - 240
THVI 20/C-3	THVI 20/C-3-ARM	400 - 500	400	300

For **NON ARMOURED** cables	For **ARMOURED** cables	Voltage Umax (kV)	Conductor cross section (mm²)
Product	**Product**		
THVI 30/A-3	THVI 30/A-3-ARM	36	35 - 95
THVI 30/B-3	THVI 30/B-3-ARM		120 - 185
THVI 30/C-3	THVI 30/C-3-ARM		240

FOR OUTDOOR USE

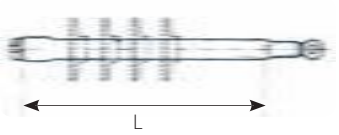
For **NON ARMOURED** cables	For **ARMOURED** cables	Voltage Umax (kV)	Conductor cross section (mm²)
Product	**Product**		
THVO 6/35-3	THVO 6/35-3-ARM	7,2	25 - 35
THVO 6/120-3	THVO 6/120-3-ARM		50 - 120
THVO 6/400-3	THVO 6/400-3-ARM		150 - 400
THVO 6/500-3	THVO 6/500-3-ARM		500

For **NON ARMOURED** cables	For **ARMOURED** cables	Umax 12 kV sez. (mm²)	Umax 17,5 kV sez. (mm²)	Umax 24 kV sez. (mm²)
Product	**Product**			
THVO 20/25-3	THVO 20/25-3-ARM	25 - 95	25 - 50	25 - 50
THVO 20/240-3	THVO 20/240-3-ARM	120 - 300	70 - 300	70 - 240
THVO 20/630-3	THVO 20/630-3-ARM	400 - 500	400	300

For **NON ARMOURED** cables	For **ARMOURED** cables	Voltage Umax (kV)	Conductor cross section (mm²)
Product	**Product**		
THVO 30/95-3	THVO 30/95-3-ARM	36	35 - 95
THVO 30/185-3	THVO 30/185-3-ARM		120 - 185
THVO 30/240-3	THVO 30/240-3-ARM		240

ENEL certified heat-shrink terminations

For single core type indoor and outdoor use.



Elicord type extruded cable (ARG7H5EXY 12/20 kV)

Product	Type	ENEL serial number	Conductor cross section (mm²)	L (mm)
THVE 20/150-I/U	With 2 INTERNAL sheaths	273047	35 ÷150	365
IXSU-F-5131-IT02	Single INTERNAL tube	273047	35 ÷150	365
THVE 20/150-E/U	With 2 EXTERNAL sheaths	273066	35 ÷150	450
OXSU-F-5131-IT02	Single EXTERNAL tube	273066	35 ÷150	450

Electrical performance:
CEI 20-24 • CEI 20-62/1
ENEL tables: DJ 4456/3 • DJ 4476/2
ENEL certification: DJ 4853 • DJ 4854



Single core cable AL extruded tube

Extruded cable for underground installation ([A] RG7H1R 12/20 kV)

Product	Type	ENEL serial number	Conductor cross section (mm²)	L (mm)
IXSU-F-5121-IT01	Single INTERNAL tube	273045	25	360
THVE 20/185-I/U	With 2 INTERNAL sheaths	273046	50 -185	360
IXSU-F-5131-IT01	Single INTERNAL tube	273046	50 -185	360
THVE 20/240-I/U	With 2 INTERNAL sheaths	273048	240	360
IXSU-F-5151-IT01	Single INTERNAL tube	273049	400 - 630	360
THVE 20/185-E/U	With 2 EXTERNAL sheaths	273065	50 -185	450
OXSU-F-5131-IT01	Single EXTERNAL tube	273065	50 -185	450

Electrical performance:
CEI 20-24 • CEI 20-62/1
ENEL tables: DJ 4456
ENEL certification: DJ 4853 • DJ 4854



Single core cable extruded wires

Insulated cable made of paper impregnated with stabilised mixture ([A] RC 1HLRX 12/20 kV)

Product	Type	ENEL serial number	Conductor cross section (mm²)	L (mm)
THVP 20/240-I/U	INTERNAL	273042	50 - 240	370
THVP 20/240-E/U-N1	EXTERNAL	273083	50 - 240	600

Electrical performance:
CEI 20-24 • CEI 20-62/1
ENEL tables: DJ 4453 • DJ 4473
ENEL certification: DJ 4854 • DJ 4851



Single core cable paper lead

Extruded cable for underground installation with aluminium tube shield (ARE4H5EX 12/20 kV)

Product	Type	ENEL serial number	Conductor cross section (mm²)	∅ (mm) insulation min	∅ (mm) insulation max	L (mm)
IXSU-F-5131-IT04	INTERNAL	273040	70 - 185	19	27	350
OXSU-F-5131-IT03	EXTERNAL	273064	70 - 185	19	27	450

Electrical performance:
CEI 20-24 • CEI 20-62/1
ENEL tables: DJ4456/6 • DJ4476/7
ENEL certification: DJ4853



Single core cable AL extruded tube

Identification data of appropriate **termination**



TERMINATION

- ◯ For **indoor use**
- ◯ For **external use**
- ◯ **Single core**
- ◯ **Three-core**
- ◯ **Copper** conductor
- ◯ **Aluminium** conductor

NOMINAL VOLTAGE

- ◯ **6 kV** (Umax 7,2)
- ◯ **10 kV** (Umax 12)
- ◯ **15 kV** (Umax 17)
- ◯ **20 kV** (Umax 24)
- ◯ **30 kV** (Umax 36)

CABLE INSULATION

- ◯ Extruded cable
  - ◯ Full
  - ◯ Low
- ◯ Low insulation thickness
- ◯ Belted cable
- ◯ 3 lead paper
- ◯ 1 lead paper with shielded phases

ARMOUR

- ◯ **Non** armoured
- ◯ Armoured **wire**
- ◯ Armoured **tape**

SHIELD

- ◯ **Copper** wire
- ◯ **Copper** tapes
- ◯ **Aluminium** tube
- ◯ **Lead** sheath

CABLE SECTION

- ◯ **25** mm²
- ◯ **35** mm²
- ◯ **50** mm²
- ◯ **70** mm²
- ◯ **95** mm²
- ◯ **120** mm²
- ◯ **150** mm²
- ◯ **185** mm²
- ◯ **240** mm²
- ◯ **300** mm²
- ◯ **400** mm²
- ◯ **500** mm²
- ◯ **630** mm²

TYPE

- ◯ **Self-shrinking**
- ◯ **Heat-shrink**

INCLUDES GROUNDING BRAID

- ◯ **Yes**
- ◯ **No**



INCLUDES CABLE TERMINAL

- ◯ **Yes**
- ◯ **No**



Raytech
www.raytech.it

Heat-shrink joints

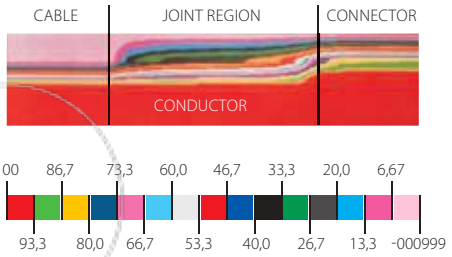
The preparation of cables and the installation techniques for medium voltage joints are identical to those for terminations. Even cable made with paper impregnated with non-migrant mixture up to 36 kV uses the same basic design. In this way, the heat-shrink system sets new standards regarding the effectiveness, reliability and simplicity of cable installation. The performance and ease of installation of heat-shrink materials are not affected by stocking, even if long and in adverse environmental conditions. A low number of "kits" per cable type covers the entire range of sections, allowing use with any type of connector, regardless of the type of conductor (round or sectoral) and different shields.



Electrical field distribution

When the cable shield is cut, the electrical field is controlled by a material that has already been experimented in terminations: the electrical gradient control tube. This tube is made of non-linear impedance insulating material that is able to control the electrical field both at the end of the cable shield and on the metal connector. As with the terminations, thanks to the heat-shrink components, the range of joints includes practically all the configurations of the existing cables, as well as the joints mixed between different types of cable. The kit references that appear on the selection tables are those that are most used by national installers for cable applications up to 36 kV. In the described cases, please contact Raytech regardless of the type of cable.

VOLTAGE DISTRIBUTION (PERCENT)
HEAT-SHRINKABLE JOINT

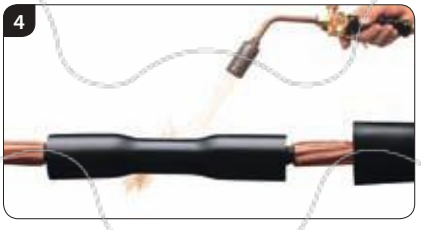


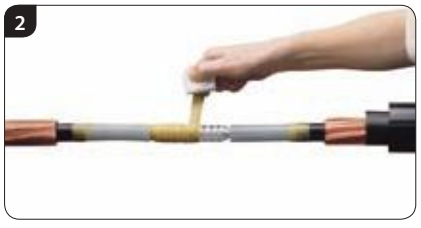
HOW TO IDENTIFY AND ORDER COMPLEMENTARY ACCESSORIES

Accessory	Abbreviation to add to the product code	Example
Copper connectors	**-C** + Conductor cross section	GHVE 20/185-C95
Aluminium connectors	**-CA** + Conductor cross section	GHVE 20/185-CA95
Shear bolt connectors	**-CPR** + conductor cross section	GHVE 20/185-CPR95

Installation sequence



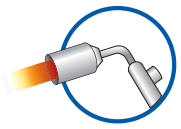






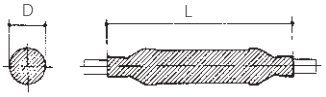






Single core heat-shrink joints

High reliability and superior electrical, mechanical and sealing properties make these joints the ideal solution for all types of cables and installation.



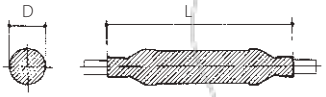
Electrical performance:
CEI 20-24 • HD 629-1



Single core heat-shrink joints for extruded insulation cables with copper wire shield

type (A)RG7H1R(X), (A)RE4H1E(X), (A)RG7H1M1(X)

Product	Voltage Umax (kV)	Conductor cross section from (mm²)	a (mm²)	L max (mm)	D max (mm)
GHVE 15/50-1	7,2 - 17,5	25	50	700	75
GHVE 15/300-1	7,2 - 17,5	70	300	700	80
GHVE 15/630-1	7,2 - 17,5	400	630	1000	100
GHVE 20/240-1	24	25	240	700	80
GHVE 20/630-1	24	240	630	1000	100
GHVE 30/240-1	36	35	240	1000	90
GHVE 30/500-1	36	300	500	1000	100



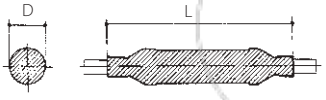
Electrical performance:
CEI 20-24 • HD 629-1



Single core heat-shrink joints for extruded insulation cables with aluminium tube shield

type (A)RG7H5R(X), (A)RE4H5E(X), (A)RG7H5M1(X)

Product	Voltage Umax (kV)	Conductor cross section from (mm²)	a (mm²)	L max (mm)	D max (mm)
GHVE 15/50-1-H5	17,5	25	50	700	75
GHVE 15/300-1-H5	17,5	50	300	700	80
GHVE 15/630-1-H5	17,5	400	630	1000	100
GHVE 20/240-1-H5	24	25	240	700	80
GHVE 20/630-1-H5	24	240	630	1000	100
GHVE 30/240-1-H5	36	35	240	1000	90
GHVE 30/500-1-H5	36	300	500	1000	100

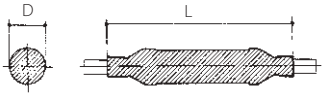




Heat-shrink terminations for single core extruded insulation cables armoured with aluminium wires

type (A)RG7H1RFR(X), (A)RE4H1EFE(X)

Product	Voltage Umax (kV)	Conductor cross section from (mm²)	a (mm²)	L max (mm)	D max (mm)
GHVE 20/240-1-ARM	24	25	240	1700	80
GHVE 20/630-1-ARM	24	240	630	1700	100
GHVE 30/240-1-ARM	36	35	240	1850	100
GHVE 30/500-1-ARM	36	300	500	1850	110



Electrical performance:
CEI 20-24 • HD 629-2



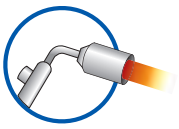
Single core heat-shrink joints for insulated cables made of paper impregnated with mixture **type (A)RC1HLR(X)**

Product	Voltage Umax (kV)	Conductor cross section from (mm²)	a (mm²)	L max (mm)	D max (mm)
GHVP 20/70-1	24	35	70	1000	75
GHVP 20/240-1	24	50	240	1000	75
GHVP 20/400-1	24	300	400	1000	80

Supplies do not include connectors which must be requested separately.

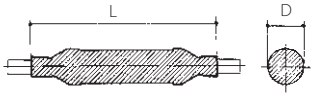
Three core heat-shrink joints

High reliability and superior electrical, mechanical and sealing properties make these joints the ideal solution for all types of cables and installation.



Three core heat-shrink joints for extruded insulation cables **type (A)RG7H1OR, (A)RE4H1OR**

Product	Voltage Umax (kV)	Conductor cross section from (mm²)	a (mm²)	L max (mm)	D max (mm)
GHVE 15/50-3	7,2 - 17,5	25	50	1500	105
GHVE 15/300-3	7,2 - 17,5	70	300	1500	110
GHVE 15/630-3	7,2 - 17,5	400	630	1600	130
GHVE 20/240-3	24	25	240	1500	110
GHVE 20/630-3	24	300	630	1600	140
GHVE 30/240-3	36	50	240	1800	120
GHVE 30/300-3	36	300		1900	150



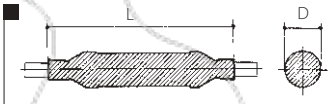
Electrical performance:
CEI 20-24 • HD 629-1



Three core heat-shrink joints for insulated armoured cables with galvanic continuity of armour

Product	Voltage Umax (kV)	Conductor cross section from (mm²)	a (mm²)	L max (mm)	D max (mm)
GHVE 15/50-ARM	7,2 - 17,5	25	50	1500	75
GHVE 15/300-ARM	7,2 - 17,5	70	300	1500	110
GHVE 15/630-ARM	7,2 - 17,5	400	630	1600	130
GHVE 20/240-ARM	24	25	240	1500	110
GHVE 20/630-ARM	24	300	630	1600	140
GHVE 30/240-ARM	36	50	240	1800	120
GHVE 30/300-ARM	36	300		1900	150

Supplies do not include connectors which must be requested separately
Note: contact Raytech for three core armoured cables with low insulation thickness



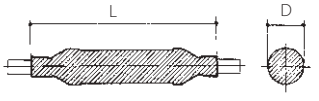
Electrical performance:
CEI 20-24 • HD 629-1



Three core heat-shrink joints for insulated cables made of paper impregnated with mixture **type (A)RC1HLOR (3 lead)**

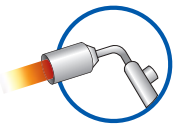
Product	Voltage Umax (kV)	Conductor cross section from (mm²)	a (mm²)	L max (mm)	D max (mm)
GHVP 20/70-3	24	35	70	1600	130
GHVP 20/240-3	24	95	240	1600	140
GHVP 20/400-3	24	300	400	1600	150

Supplies do not include connectors which must be requested separately



Electrical performance:
CEI 20-24 • CEI 20-62/2





Transition joints between single **core cables**

Transition joints between **single core** paper insulated cable and extruded cable

respectively type (A)RG7H1R(X) and single pole cable made of paper impregnated with mixture type (A)RC1HLRX



Electrical performance:
CEI 20-24 • CEI 20-62/2



Product	Voltage Umax (kV)	Conductor cross section (mm²) paper cable	extruded cable	ENEL serial number
GHVE 20/25-1-T	24	25		-
GHVE 20/240-1-T	24	50 - 240	35 - 185	271074
GHVE 20/400-1-T	24	240 - 400		-

Supplies do not include connectors which must be requested separately

Transition joints between **single core** paper insulated cable and extruded cable with aluminium sheet screen

type (A)RC1HLRX and type ARG7H5EXY



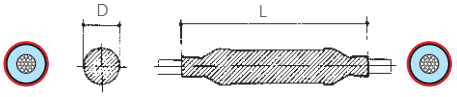
Electrical performance:
CEI 20-24 • CEI 20-62/2



Product	Voltage Umax (kV)	Conductor cross section (mm²) paper cable	extruded cable	ENEL serial number
GHVE 20/240-1-TE	24	50 - 240	35 - 150	270118

Transition joints between **single core** extruded cable with wire screen and extruded cable with aluminium foil screen

type (A)RG/H1R(X) or (A)RG7H1M1 and extruded single core cable type ARG7H5EXY

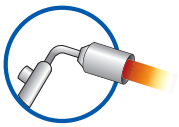


Electrical performance:
CEI 20-24 • HD 629-1



Product	Voltage Umax (kV)	Conductor cross section from (mm²)	to (mm²)	L max (mm)	D max (mm)
GHVE 20/240-1X-TE	24	25	240	1000	75

Transition joints between **multi core** cables

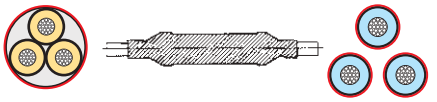


Transition joints between **3-core** paper insulated cable and **3 single core** extruded cables

respectively type (A) RC1HLOR and (A) RG7H1R(X)

Product	Voltage Umax (kV)	Conductor cross section (mm²) paper cable	extruded cable
GHVT 20/25-1X-3H	24	25	25
GHVT 20/240-1X-3H	24	50 - 240	35 - 185
GHVT 20/400-1X-3H	24	300 - 400	240 - 400

Supplies do not include connectors which must be requested separately



Electrical performance:
CEI 20-24 • CEI 20-62/2



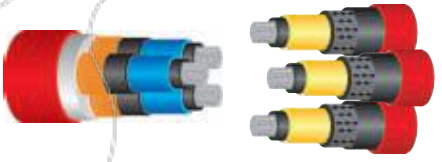
Transition joints between **3-core** extruded cable and **3 single core** paper insulated cables

respectively type (A) RG7H10R and (A) RC1HLRX

Product	Voltage Umax (kV)	Conductor cross section from (mm²)	to (mm²)
GHVT 20/70-3X-1H	24	25	70
GHVT 20/240-3X-1H	24	95	240
GHVT 20/400-3X-1H	24	300	400

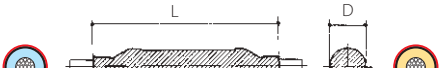


Electrical performance:
CEI 20-24 • CEI 20-62/2



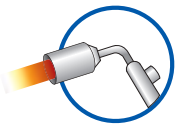
Single core plastic or paper insulated cable joint with screen interruption

Product	Type of cable	Voltage Umax (kV)	Conductor cross section from (mm²)	to (mm²)	L max (mm)	D max (mm)
GHVP 20/240-1-IS	(A)RC4HLR(X)	24	50	240	1000	75
GHVE 20/240-1-IS	(A)GR7H1R(X)	24	50	240	1000	75
GHVE 20/150-1-IS	ARG7H5EXY	24	35	150	1000	75

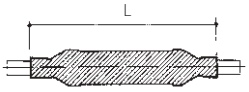


Electrical performance:
CEI 20-24 • HD 629-1





ENEL certified heat-shrink



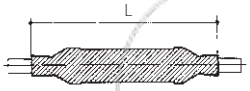
Electrical performance:
CEI 20-24 • CEI 20-62/1
Tabelle Enel: DJ 4376
ENEL certification: DJ 4853 • DJ 4854



Single core joints for extruded insulation cables

Type (A)RG7H1RX 12/20 kV (copper wire shield - external PVC sheath)

Product	Voltage Umax (kV)	Conductor cross section from (mm²)	to (mm²)	L max (mm)	ENEL serial number
GHVE 20/185 - 1/U	24	50	185	700	271071



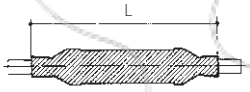
Electrical performance:
CEI 20-24 • CEI 20-62/1
Tabelle Enel: DJ 4376
ENEL certification: DJ 4853 • DJ 4854



Single core joints for wire carrying overhead cables

Type ARG7H5EXY 12/20 kV (aluminium tube shield - external PE sheath)

Product	Voltage Umax (kV)	Conductor cross section from (mm²)	to (mm²)	L max (mm)	ENEL serial number
GHVE 20/150 - 1/U	24	35	150	700	271072



Electrical performance:
CEI 20-24 • CEI 20-62/2
Tabelle Enel: DJ 4373
ENEL certification: DJ 4851 • DJ 4854

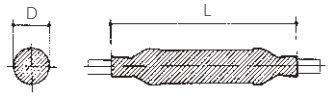


Single core joints for insulated cables with impregnated paper

Type RC4HLRX with copper conductors from 50 to 150 mm²
and ARC4HLRX with aluminium conductors from 95 to 240 mm²

Product	Voltage Umax (kV)	Conductor cross section from (mm²)	to (mm²)	L max (mm)	ENEL serial number
GHVP 20/150 - 1/U	17,5 e 24	50	150	1000	-
GHVP 20/240 - 1/U	17,5 e 24	95	240	1000	271042

Supplies do not include connectors which must be requested separately.



Electrical performance:
CEI 20-24 • CEI 20-62/1
Tabelle Enel: DJ 4387/2
ENEL certification: DJ 4853



Extruded cable for underground installation with aluminium tube shield **(ARE4H5EX 12/20 kV)**

Product	Voltage Umax (kV)	Conductor cross section from (mm²)	to (mm²)	L max (mm)	D insulation Ø (mm)	ENEL serial number
GHVE 20/185-1X-H5	24	70	185	1000	19-30	271021

Supplies do not include connectors which must be requested separately.

Identification data of appropriate **junction**

Raytech
www.raytech.it

CABLE DATA

- ◯ **6 kV** (Umax 7,2)
- ◯ **10 kV** (Umax 12)
- ◯ **15 kV** (Umax 17)
- ◯ **20 kV** (Umax 24)
- ◯ **30 kV** (Umax 36)

CABLE DATA 1

CABLE

- ◯ **Single core**
- ◯ **Three-core**

CONDUCTOR

- ◯ **Copper**
- ◯ **Aluminium**

CABLE INSULATION

- ◯ Extruded cable
- ◯ Belted cable
- ◯ 3 lead paper
- ◯ 1 lead paper with shielded phases

ARMOUR

- ◯ **Non** armoured
- ◯ Armoured **wire**
- ◯ Armoured **tape**

CABLE SECTION

- ◯ **25** mm²
- ◯ **35** mm²
- ◯ **50** mm²
- ◯ **70** mm²
- ◯ **95** mm²
- ◯ **120** mm²
- ◯ **150** mm²
- ◯ **185** mm²
- ◯ **240** mm²
- ◯ **300** mm²
- ◯ **400** mm²
- ◯ **500** mm²
- ◯ **630** mm²

SHIELD

- ◯ **Copper** wire
- ◯ **Copper** tapes
- ◯ **Aluminium** tube
- ◯ **Lead** sheath

INCLUDES CONNECTOR

- ◯ **Yes**
- ◯ **No**

TYPE

- ◯ **Cold-shrink**
- ◯ **Heat-shrink**

CABLE DATA 2

CABLE

- ◯ **Single core**
- ◯ **Three-core**

CONDUCTOR

- ◯ **Copper**
- ◯ **Aluminium**

CABLE INSULATION

- ◯ Extruded cable
- ◯ Belted cable
- ◯ 3 lead paper
- ◯ 1 lead paper with shielded phases

ARMOUR

- ◯ **Non** armoured
- ◯ Armoured **wire**
- ◯ Armoured **tape**

CABLE SECTION

- ◯ **25** mm²
- ◯ **35** mm²
- ◯ **50** mm²
- ◯ **70** mm²
- ◯ **95** mm²
- ◯ **120** mm²
- ◯ **150** mm²
- ◯ **185** mm²
- ◯ **240** mm²
- ◯ **300** mm²
- ◯ **400** mm²
- ◯ **500** mm²
- ◯ **630** mm²

SHIELD

- ◯ **Copper** wire
- ◯ **Copper** tapes
- ◯ **Aluminium** tube
- ◯ **Lead** sheath

INCLUDES CONNECTOR

- ◯ **Yes**
- ◯ **No**

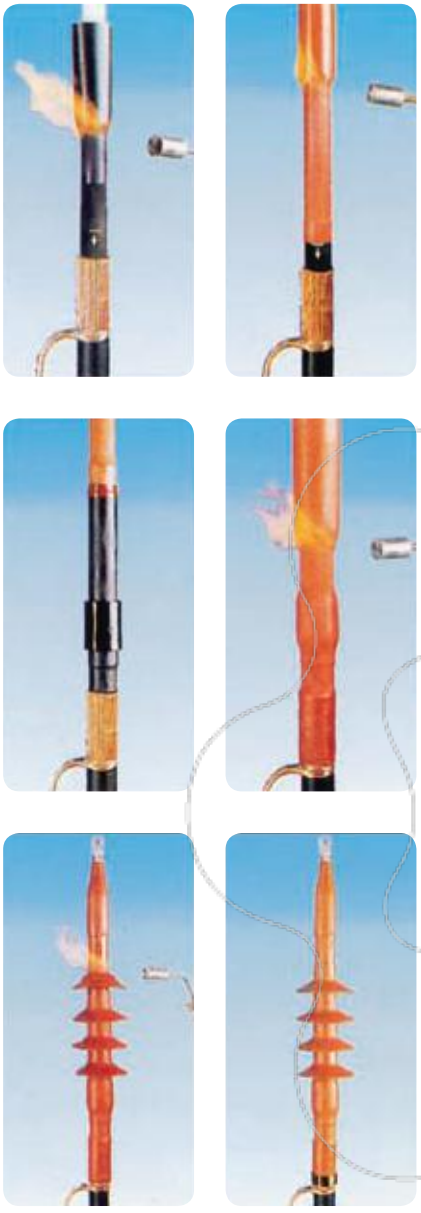
TYPE

- ◯ **Cold-shrink**
- ◯ **Heat-shrink**



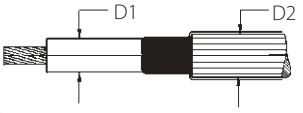


Heat-shrink terminations for **high voltage** up to 72 kV



Kit contains a limited number of components with unlimited shelf life at normal storage conditions. Three basic kits cover all possible cable sections, with the advantage of keeping a reduced and effective stock. The lightness and limited volume of the kits facilitate their handling and transport. No special additional training is required. Simple installation for reliable results. Terminations are in compliance with international specifications (for example IEEE 48, IEC 840, SEN 241434, ESI 09-16, EdF HN-62/5448/2, KEMA S10, CEI 20.24) all included in internal certification testing.

Currently available in 2 classes of HV terminations
- Uo/U=26/45 kV (U max 52 kV)
- Uo/U=36/60 kV (U max 72 kV)



U max 52 kV

FOR INDOOR Product	Voltage Umax (kV)	Ø D1 insulation (mm)	Ø D2 max. external (mm)
THVE 45/A-I	52	30 - 45	60

FOR OUTDOOR Product	Voltage Umax (kV)	Ø D1 insulation (mm)	Ø D2 max. external (mm)
THVE 45/A-E	52	30 - 45	60

U max 72 kV

FOR INDOOR Product	Voltage Umax (kV)	Ø D1 insulation (mm)	Ø D2 max. external (mm)
THVE 60/A-I	72	32 - 40	51
THVE 60/B-I	72	38 - 52	67
THVE 60/C-I	72	50 - 65	82
THVE 60/D-I	72	63 - 77	100

FOR OUTDOOR Product	Voltage Umax (kV)	Ø D1 insulation (mm)	Ø D2 max. external (mm)
THVE 60/A-E	72	32 - 40	51
THVE 60/B-E	72	38 - 52	67
THVE 60/C-E	72	50 - 65	82
THVE 60/D-E	72	63 - 77	100

Add **SF** to code for wire shielded, **SN** for belt shielded or lead sub-sheath.

Contact Raytech to choose the most suitable joint.

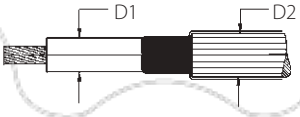
Heat-shrink joints for **high voltage** 72 kV

RELIABILITY
The simplicity and lightness of heat-shrink joints for high voltage make these a highly reliable accessory.

SCREW CONNECTORS
These joints are provided with a special screw connector that allows you to splice large section conductors without special tools and without heat treatment. Screws have a predetermined breakaway head which ensures perfect electrical connection.

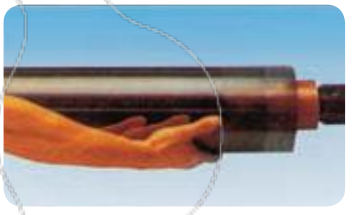
ELECTRICAL FIELD CONTROL
Apply a sheath with electric field control properties of the above the connector and the ends of the cable semiconductor. This heat-shrink tube is rendered conductive at the centre to shield the connector (Faraday system). The field control tube, which covers the cable dielectric, accompanies the expansion due to load cycles.

ADVANCED TECHNOLOGY
Insulation and shielding are obtained with two double wall heat-shrink elastomeric tubes. The internal tube is formed by two walls co-extruded in insulating material (red). The external tube is formed by a co-extruded insulating wall (red) with a black conductor part which acts as the joint shield. The external wall of the co-extruded wall is heat-shrink, while the internal wall is an elastomer maintained in expanded form thanks to close union with the external part. The application of heat to the external part causes this to contract up to a predetermined diameter, at the same time allowing the internal part to perfectly adapt to the underlying layer.



Product	Voltage Umax (kV)	Ø D1 insulation (mm)	Ø D2 max. external (mm)
GEHV 40/A	42	23 - 28	40
GEHV 40/B	42	28 - 40	52
GEHV 40/C	42	38 - 55	68
GEHV 45/A	52	28 - 45	52
GEHV 45/B	52	41 - 61	72
GEHV 45/C	52	53 - 73	83
GEHV 60/A	72	34 - 45	51
GEHV 60/B	72	43 - 60	72
GEHV 60/C	72	52 - 65	77
GEHV 60/D	72	63 - 77	97






Add **SF** to code for wire shielded, **SN** for belt shielded or lead sub-sheath.

Contact Raytech to choose the most suitable joint.





Single core separable connectors

with external cone with contact plug In=250 A

Separable connectors for MV cables with extruded radial field for voltages up to 19/33 (36) kV.

Single core separable connectors with contact plug In=250 A, elbow or straight for extruded cables. External coating in semi-conductive rubber protects personnel from electrocution. Each termination is factory tested before delivery with dielectric strength testing and measurements of partial discharges.

Complies with standards
CEI 20-62/1
Cenelec HD 629.1 S2

Kit composition:
One single core termination



Contact Raytech for aluminium shield cables



Kit available for tape screen. Add "A" to the end of the "Product code"



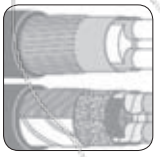
Connection kit for wire shield included



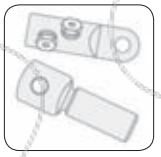
Contact Raytech for information regarding other types of cable



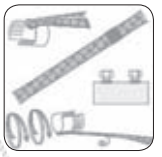
Kit available for three core cables. Order kit "TK.." See table



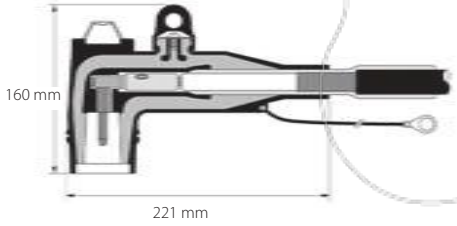
Contact Raytech for different armour grounding systems available



Different types of cable lugs available

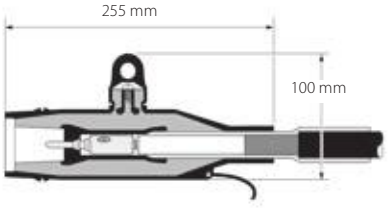


Contact Raytech about different shield grounding systems available



SEPARABLE INTERFACE "A" TERMINATION 24KV - 250 A

ELBOW Product	Voltage Umax (kV)	Cable insulation diameter range (mm)	Copper/aluminium mechanical conductor cross section range (mm²)
250 RTS-20/A	24	14,6 - 18,7	25 - 95
250 RTS-20/B	24	17,5 - 20,2	
250 RTS-20/C	24	18,4 - 21,2	
250 RTS-20/D	24	19,7 - 22,5	
250 RTS-20/E	24	21,0 - 23,8	
250 RTS-20/F	24	23,6 - 26,4	



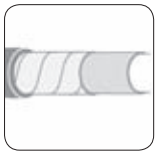
STRAIGHT Product	Voltage Umax (kV)	Cable insulation diameter range (mm)	Copper/aluminium mechanical conductor cross section range (mm²)
250 RTD-20/A	24	14,6 - 18,7	25 - 95
250 RTD-20/B	24	17,5 - 20,2	
250 RTD-20/C	24	18,4 - 21,2	
250 RTD-20/D	24	19,7 - 22,5	
250 RTD-20/E	24	21,0 - 23,8	
250 RTD-20/F	24	23,6 - 26,4	

Single core separable connectors

with external cone with contact screw In=630/800/1250 A

Separable connectors for MV cables with extruded radial field, for voltages up to 19/33 (36) kV.

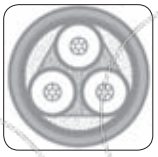
Single core separable connectors with contact screw, for extruded cables. External coating in semi-conductive rubber protects personnel from electrocution. Each termination is factory tested before delivery with dielectric strength testing and measurements of partial discharges.



Kit available for tape screen. Add "A" to the end of the "Product code"



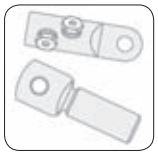
Connection kit for wire shield included



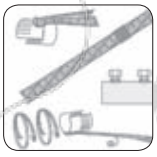
Kit available for three core cables. Order kit "TK.." See table



For use in potentially explosive areas (12kV max.) Order: -/ATEX



Different types of cable lugs available



Contact Raytech for different shield grounding systems available



When installed on the appropriate bushing: 1250A continuous



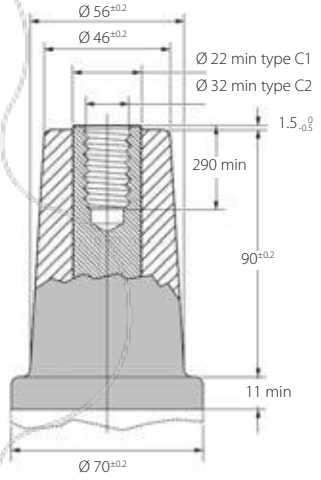
When installed on the appropriate bushing: 800A continuous

SEPARABLE TEE INTERFACE "C" TERMINATION 24/36KV - 630 A

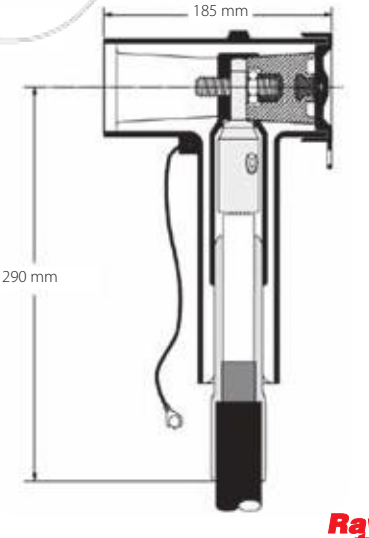
Product	Voltage Umax (kV)	Cable insulation diameter range (mm)	Copper/aluminium mechanical conductor cross section range (mm^2)
630 RTT-20/A-C95	24	16,0 - 22,0	16 - 95
630 RTT-20/B-C150	24	20,0 - 26,5	50 - 150
630 RTT-20/C-C240	24	23,5 - 31,0	95 - 240
630 RTT-20/D-C240	24	26,5 - 32,5	95 - 240
630 RTT-20/E-C300	24	28,5 - 37,5	120 - 300
630 RTT-30/A-C95	36	16,0 - 22,0	16 - 95
630 RTT-30/B-C150	36	20,0 - 26,5	50 - 150
630 RTT-30/C-C240	36	23,5 - 31,0	95 - 240
630 RTT-30/D-C240	36	26,5 - 32,5	95 - 240
630 RTT-30/E-C300	36	28,5 - 37,5	120 - 300
630 RTO-20/A-C400	24	28,5 - 37,5	185 - 400
630 RTO-20/B-C400	24	34,0 - 42,5	185 - 400
630 RTO-20/C-C630	24	39,0 - 48,5	400 - 630
630 RTO-20/D-C630	24	45,5 - 56,0	400 - 630
630 RTO-30/A-C400	36	28,5 - 37,5	185 - 400
630 RTO-30/B-C400	36	34,0 - 42,5	185 - 400
630 RTO-30/C-C630	36	39,0 - 48,5	400 - 630
630 RTO-30/D-C630	36	45,5 - 56,0	400 - 630

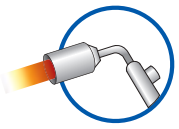


Complies with standards
CEI 20-62/1
Cenelec HD 629 .1 S2



Kit composition:
Three single core terminations





Heat-shrink **sheaths**

Sheaths for insulating bars inside electrical cabinets or outdoors in primary or secondary cabinets.



APPLICATION

Primary (HV-MV) and secondary (MV-LV) electrical up to 36 kV today come in very compact sizes. Bars need to be insulated to prevent surface discharges and accidental short-circuits that are essentially caused by animal intrusion.
Heat-shrink shrink sheaths for MV can be used on round and rectangular copper or aluminium bars. They are flexible and elastic, can be installed on previously bent bars without any risks of tearing or rippling.

DESCRIPTION

Sheaths utilise a special elastomer cross-linked by irradiation, with an exceptional insulating power and excellent seal over time, even in case of continuous use at high temperature. They do not contain halogens and therefore there is no risk of emission of toxic or corrosive substances in case of fire. They are resistant to solvents, UV radiation, exposure to weather, impact and tear, and therefore are fully suitable for use outdoors.

INSTALLATION

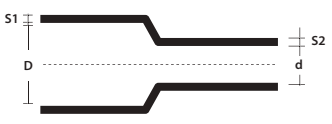
Sheaths for MV can be easily factory installed, when dealing with mass production, using an oven for heat-shrink. In situ, shrinking can be carried out with the aid of a torch or a hot air torch. Heat the sheath to over 120°C and it will shrink on the bar without risk of damage because the material is cross-linked and very resistant to high temperatures. The great elasticity of the sheaths allows, if necessary, for being of the bars during assembly of the electric cabinet with the sheath already installed.



BBT

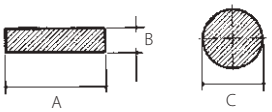
Flexible, **heavy duty** heat-shrink sheath.

Suitable for reducing overhead distances in MV panels up to 36 kV.
Phase-to-phase distance reduced to approximately 1/3



D = Ø minimum before shrinkage
d = Ø maximum after free shrinkage
S1 = nominal thickness as supplied
S2 = minimum nominal thickness after free shrinkage

Product	Size of bus bars (mm) A+B from	A+B to	C from	C to	Heat-shrink sheath (mm) D	d	S_1	S_2
BBT 40/16-A/U	28	45	18	32	40	16	1,6	3,8
BBT 65/25-A/U	44	69	28	47	65	25	1,6	3,9
BBT 100/40-A/U	69	102	44	72	100	40	1,6	4,0
BBT 150/60-A/U	102	148	65	105	150	60	1,6	4,0

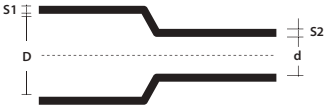


BPM

Flexible, **medium wall** heat-shrink sheath.

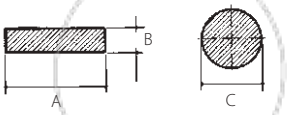
Suitable for optimising space in MV panels and for protection from discharges and accidental contact for systems up to 24 kV. Phase-to-phase distance reduced to approximately 1/2





D = ∅ minimum before shrinkage
d = ∅ maximum after free shrinkage
S1 = nominal thickness as supplied
S2 = minimum nominal thickness after free shrinkage

Product	Size of bus bars (mm) A+B from	A+B to	C from	C to	Heat-shrink sheath (mm) D	d	S_1	S_2
BPM 15/6-A/U	12	20	6,5	12	15	6	1,1	2
BPM 30/12-A/U	20	38	13,5	25	30	12	1,1	2,2
BPM 50/20-A/U	36	65	22	43	50	20	1,1	2,4
BPM 75/30-A/U	55	95	33	63	75	30	1,1	2,4
BPM 120/50-A/U	90	165	55	105	120	50	1,3	2,8

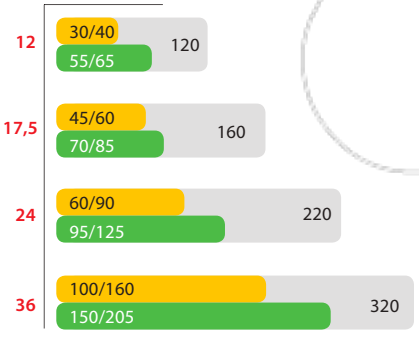


DISTANCES ALLOWED IN BAR SYSTEMS

Phase/phase and phase/bus bars distances recommended with insulated bars with sheaths for MV. Studies and testing carried out on insulated bars have shown that it is possible to significantly reduce space with respect to those used in the case of air insulation. The minimum permitted space is defined by the absence of partial discharges at the time of testing in alternating current and by the seal upon impulse. The values shown can be applied to round or rectangular bars installed inside standard cabinets. Shapes with sharp edges or bar parallels of more than 5 m require larger spaces.

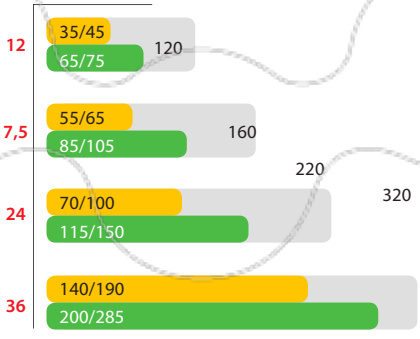
Round bus bars

Voltage Um (kV)



Rectangular bus bars

Voltage Um (kV)



Spacing in air according to IEC 71-2
phase / phase (mm)
phase / bus bars (mm)

Insulation with BBT

Insulation with BPM or HVBT with overlap of 2/3

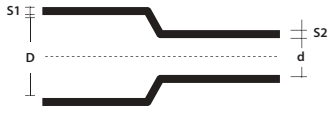
For more information on different possible applications please contact Raytech.

BPTM

Flexible, **medium wall** heat-shrink sheath.

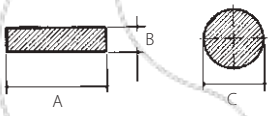


Suitable for optimising space in MV panels and for protection from discharges and accidental contact for systems up to 24 kV. Phase-to-phase distance reduced to approximately 1/2



D = ∅ minimum before shrinkage
d = ∅ maximum after free shrinkage
S1 = nominal thickness as supplied
S2 = minimum nominal thickness after free shrinkage

	Size of bus bars (mm)				Heat-shrink sheath (mm)			
	A+B		C					
Product	from	to	from	to	D	d	S_1	S_2
BPTM 15/6-A/U	12	20	6,5	12	15	6	1,1	1,9
BPTM 30/12-A/U	20	38	13,5	25	30	12	1,1	2,2
BPTM 50/20-A/U	36	65	22	43	50	20	1,1	2,35
BPTM 75/30-A/U	55	95	33	63	75	30	1,1	2,35
BPTM 100/40-A/U	70	130	44	86	100	40	1,1	2,35
BPTM 120/50-A/U	90	165	55	105	120	50	1,3	2,8
BPTM 175/70-A/U	125	235	80	150	175	70	1,3	2,8
BPTM 205/110-A/U	200	276	127	190	205	110	1,3	2,8



BBIT

Flexible, **heavy duty** heat-shrink sheath.

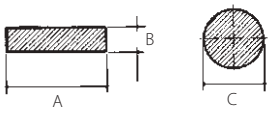


Suitable for reducing overhead distances in MV panels up to 36 kV.
Phase-to-phase distance reduced to approximately 1/3



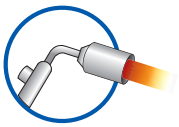
D = ∅ minimum before shrinkage
d = ∅ maximum after free shrinkage
S1 = nominal thickness as supplied
S2 = minimum nominal thickness after free shrinkage

	Size of bus bars (mm)				Heat-shrink sheath (mm)			
	A+B		C					
Product	from	to	from	to	D	d	S_1	S_2
BBIT 25/10-A/U	17	28	11	20	25	10	1,6	3,6
BBIT 40/16-A/U	28	45	18	32	40	16	1,6	3,6
BBIT 65/25-A/U	44	69	28	47	65	25	1,6	3,6
BBIT 100/40-A/U	69	102	44	72	100	40	1,6	3,6
BBIT 150/60-A/U	102	148	65	105	150	60	1,6	3,6
BBIT 175/80-A/U	133	196	85	125	175	80	1,6	3,6



Heat-shrink **tapes**

HVBT heat-shrink tape coated in hot melt adhesive for MV.





APPLICATION

HVBT tape is part of the bar insulation product range. It is a heat-shrink tape coated with a hot melt adhesive on one side.

INSTALLATION

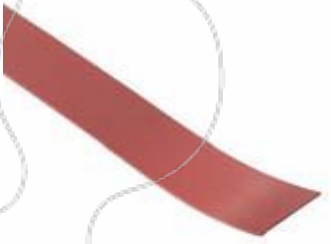
HVBT is installed wrapping it moderately taut on the bar with overlap equal to 2/3. When heated, it shrinks and adheres to the underlying layer. At the same time, the layers of this tape amalgamate to create a continuous insulation sheath.

INSULATION DISTANCE

Refer to the table on page 179 (BPM values) to determine the distances between the bars and toward grounding. HVBT tape is sold in 4 different widths and is coated with adhesive on the outer part. Fibreglass tape used to stop taping is provided with each roll.

HVBT

Self-sealing heat-shrink tape for MV bar insulation.



Product	Width (mm)	Length (m)
HVBT 12-A	25	10
HVBT 14-A	50	10
HVBT 15-A	75	10
HVBT 16-A	100	10







DOMESTIC USE



ANTI-FREEZE FOR PIPING
ANTI-FREEZE FOR RAMPS
ANTI-FREEZE FOR GUTTERS

page 204

Heating Cables

INDUSTRIAL USE



MCA
MCA-I-GF
MCA-I-FF

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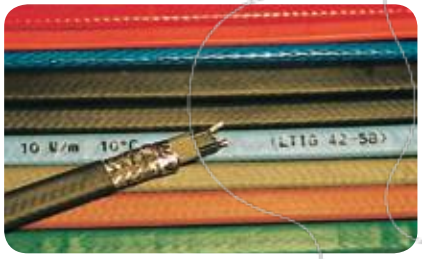
HOME COMFORT USE



FOR FLOORING
REAR-MIRROR
FOR CEILINGS

231





Heating cables

Heating cables are used for frost protection of pipes, tanks, ramps and walkways, gutters, etc., or for maintaining process temperatures, especially in industrial environments.

There are 2 types:

- **CONSTANT POWER CABLES,** in which the heating element is the conductor through which the current passes, and serves as filament.
- **SELF-REGULATING CABLES,** whose heating element is the conductive core, powered by 2 conductors.

CONSTANT POWER CABLES

Raytech cables are composed of 2 conductors that are shielded and in the case of Stop Ice (see pg. 206) are supplied with a suitable thermostat for anti-freeze maintenance.



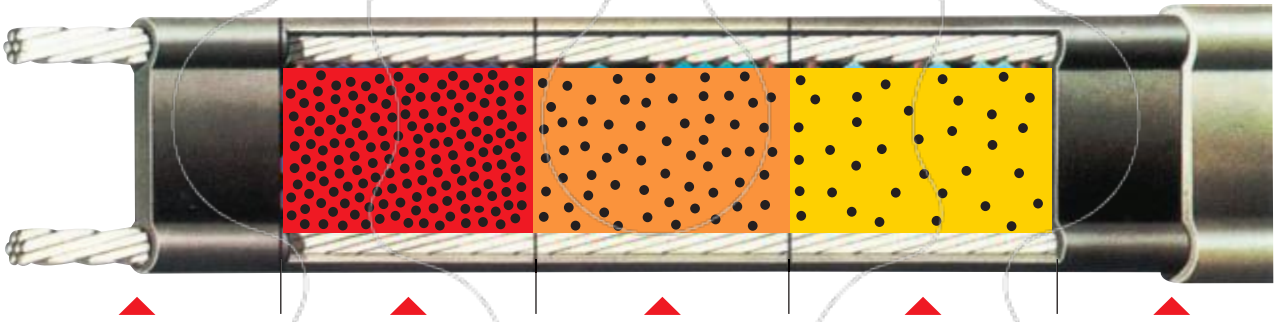
ADVANTAGES
CONSTANT POWER CABLE

- **Ready for use, without requiring the installation of accessories.**
- **Already equipped with a thermostat, in the case of Stop Ice.**
- **Completely reliable.**





SELF-REGULATING HEATING CABLES



The cable will never become overheated and burn, as it is self-protecting. There is also no need for a thermostat.

Almost all the contacts are interrupted by microscopic dilatation of the core at very high temperatures. The electrical resistance becomes very high and energy output is virtually nil.

The core dilates microscopically in the hotter parts, breaking some of the electrical contacts. As the electrical resistance increases energy output is reduced until a thermal balance is reached between heat loss in the pipes and the heat produced by the cable.

The core contracts microscopically when the heating cable is cold and the graphite forms numerous joints between the conductors. The passage of the current generates heat.

The graphite particles form numerous parallel joints between the two copper conductors.

The self-regulation technology and the parallel circuit present the following advantages:

- The heating cables can be cut at the right length, jointed and terminated on site.
- They can be supplied at 230 V without transformers.
- They can be overlapped without over heating risks.
- They reduce automatically their power output as the required temperature is reached.
- They are easy designed and can be easily handled on site.

ADVANTAGES
SELF-REGULATING HEATING CABLES

- **A reduction in overall installation costs**
- **Reduction in operating cost**
- **Very easy to install**
- **Simple design**
- **Uniform temperature**
- **Complete reliability**

DOMESTIC USE

Anti-freeze for Piping

CONSTANT POWER

page 206



Stop Ice
Constant power anti-freeze kit complete with thermostat and plug



Linus
Self-adhesive thermal insulating tape



Stop Ice Plus
Constant power anti-freeze kit complete with thermostat, connection plug and insulation tape

Anti-freeze for Ramps

CONSTANT POWER

page 211



Easy Cable
Constant power heating cable for access ramps to boxes, walkways, etc.



Easy Ramp
Heating mat

SELF-REGULATING



MCA Ramp
Self-regulating heating cable for tracing ramps and stairways



SELF-REGULATING



MCA
Self-regulating cable for anti-freeze use or for maintaining temperatures for general use



MCA Compact
Compact size self-regulating cables for use as anti-freeze or to maintain temperature



Ice Killer
Cut and install self-regulating cable kit, complete with connection side and termination kit

Anti-freeze for Gutters

CONSTANT POWER

page 214



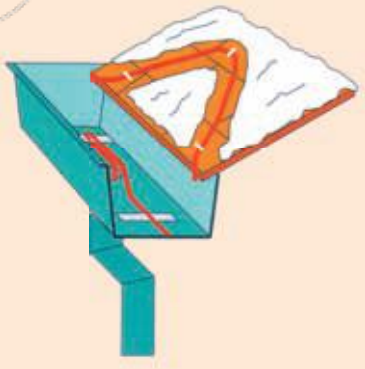






Easy Frost
Constant power heating cable for roofs, gutters and downpipes

SELF-REGULATING



MCA 8
Self-regulating cable for tracking roofs, gutters and/or downpipes

ANTI-FREEZE FOR PIPING

To keep pipes, tanks, basins, valves and taps, meters, etc. from freezing. Available both in the constant power and in the self-regulating versions.



Stop Ice

Constant power anti-freeze kit complete with thermostat and plug.

Raytech Stop Ice is an innovative pre-assembled kit consisting of a constant wattage heating cable of 12 W/m, complete with contact thermostat (installed on the end of the heating cable) and power cable with plug. Stop-Ice is particularly suitable for frost protection, and prevention of possible damages caused by low temperatures on pipes, valves, faucets, water meters, troughs, bowls and small tanks.

- Easy and quick to install
- No need for any external temperature control system, thanks to its built-in thermostat
- Low energy consumption

Power: 12 W/m
Power supply: 230 V – 50 Hz
Cable dimensions: ~ 5x7 mm
Min. installation temperature: +5°C
Max. working temperature: +70°C
Heating cable type:
2 conductors, screened cable
Insulation: XLPE
External sheath: PVC
Min. bending radius: 3,5 D
Protection degree: IP X7
Marking: CE

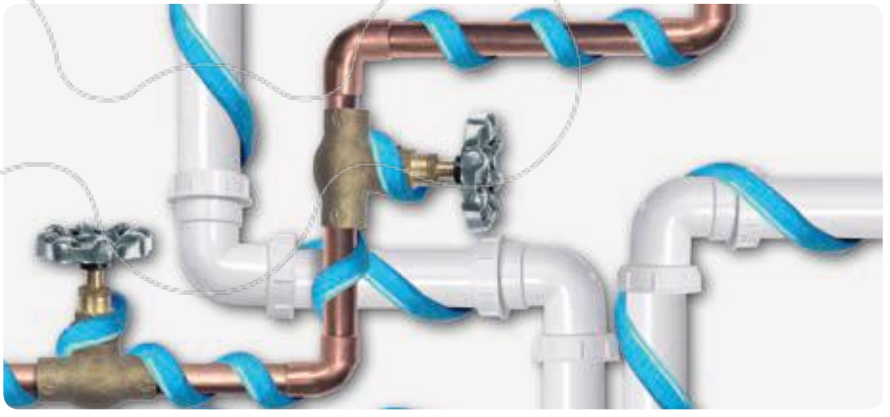
Product	Power (W/kit)	Specific power (W/m)	Length (m)
Stop Ice 2/12	24	12	2
Stop Ice 5/12	60	12	5
Stop Ice 10/12	120	12	10
Stop Ice 18/12	216	12	18



Integrated Bimetal Thermostat
(ON + 3°C - OFF +10°C)



Complete Connections
and power cord
(1,5 m - 3 x 0,75 mm²)









Linus

Self-adhesive thermal insulating tape.

To offer a complete solution in the field of electrical tracking, Raytech has developed a new product, LINUS, an insulation tape to maintain temperature. The product is a closed-cell expanded synthetic rubber, low thermal conductivity and extremely flexible tape. The rubber tape is coupled with an aluminium sheet to protect against tearing, for greater resistance to perforation and higher tensile resistance. It also protects very well against UV radiation. The tape is self-adhesive for easy application on tracked pipes. The closed cells and the special material type give the tape very high insulating properties and optimal behaviour in the presence of condensation.

Product	Width (mm)	Thickness (mm)	Length (m)
LINUS	50	3	10

	Pipe ∅ ¾" (DN 20)	Pipe ∅ 1" (DN 25)	Pipe ∅ 1 ¼" (DN 32)
LENGHT OF PIPE I can insulate with 1 LINUS tape 50% overlapped	2,2 m	1,9 m	1,6 m



50 mm 3 mm



Density: 0,7
Temperature range: -50°C -105°C
Coefficient of thermal conductivity (λ): 0,039 W/mK a 50°C
Flame resistance: Bs3-dO (DIN EN 13501-1)

Stop Ice Plus

Constant power anti-freeze kit complete with thermostat, connection plug and insulation tape.

Stop Ice Plus is an innovative kit which combines the flexibility and reliability of the constant power Stop Ice heating cable with the practicality of the LINUS insulation tape. The installer can find everything necessary for tracking inside this kit:

- Stop Ice 12 W/m constant power cable, complete with connection plug and thermostat
- 3 mm LINUS insulation tape, for application on already tracked piping with a cable with 50% overlap

As an example, with a 10 m long LINUS tape, about 2.2 m of ¾", traced with the Stop Ice cable, can be insulated.

Product	Power (W/kit)	Cable length (m)
Stop Ice Plus 2	24	2
Stop Ice Plus 5	60	5

HEATING CABLE
Built-in THERMOSTAT
Built-in PLUG

+

TAPE INSULATION
to maintain
temperature







CABLE
Specific power: 12 W/m
Power supply: 230 V- 50Hz
Cold cable: 3 x 0,75 mm² - L = 1,5 m
Temperature control: integrated bimetallic thermostat
ON / OFF: +3°C / +10°C

INSULATION TAPE
Temperature range: -50 / +105°C
Coefficient of thermal conductivity (λ): 0,039 W/mK a 50°C
Dimensions:
50 mm x 3 mm x L10 m



MCA

Self-regulating cable for anti-freeze use or for maintaining temperatures for general use.

For anti-freeze use on pipes or tanks or for maintaining process temperatures under 65°C, even in hazardous areas. Maintenance-free, reliable, easy to install. Suitable even in the presence of mild inorganic solutions.

Product	Power voltage (V)	Minimum installation temperature (°C)	Power at 10°C (W/m)	TEMPERATURE MAX Continuous cable powered (°C)	TEMPERATURE MAX Intermittent cable not powered ≤1000 h cum. (°C)
MCA3	220-240	-30	10	65	85
MCA5	220-240	-30	15	65	85
MCA8	220-240	-30	25	65	85
MCA5-SMALL	220-240	-30	15	65	85

How to Choose MCA Cable for Antifreeze Protection

The table gives the cable quantity for tube lenght unit (1st number) and the MCA cable code number (2nd number) versus tube diameter, thermal insulation thickness (for rockwod) and min outer temperature.
For uses other than anti-freeze, request design from Raytech technical direction.

Anti-freeze for piping

Pipe ∅		Thermal insulation thickness 10		20		30		40		50	
		Outer temperature (°C)									
inch	mm	-10	-20	-10	-20	-10	-20	-10	-20	-10	-20
1/2"	15	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
3/4"	20	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
1"	25	1-3	1-8	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
1¼"	32	1-3	1-8	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
1½"	40	1-3	1-8	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
2"	50	1-8	1-8	1-3	1-8	1-3	1-3	1-3	1-3	1-3	1-3
2½"	65	1-8	1-8	1-3	1-8	1-3	1-3	1-3	1-3	1-3	1-3
3"	80	1-8	2-8	1-3	1-8	1-3	1-5	1-3	1-3	1-3	1-3
4"	100	1-8	2-8	1-5	1-8	1-3	1-5	1-3	1-5	1-3	1-3
6"	150	2-8	2-8	1-8	2-8	1-8	1-8	1-3	1-8	1-3	1-8
8"	200	2-8	-	1-8	2-8	1-8	1-8	1-8	1-8	1-3	1-8
10"	250	2-8	-	2-8	-	1-8	2-8	1-8	1-8	1-8	1-8

ELECTRICAL SIZING

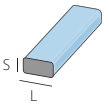
Starting temperature		Maximum length of the circuits in the heating cable (m) MCA3 +10°C	MCA3 -10°C	MCA3 -20°C	MCA5 +10°C	MCA5 -10°C	MCA5 -20°C
Switchgear protection (A), with C curve and 30mA* differential protection	10 A	-	-	-	103	71	62
	16 A	177	144	125	160	114	99
	20 A	-	149	139	-	133	124
	25 A	-	-	-	-	-	-

Starting temperature		MCA8 +10°C	MCA8 -10°C	MCA8 -20°C	MCA5-SMALL +10°C	MCA5-SMALL -15°C	MCA5-SMALL -25°C
Switchgear protection (A), with C curve and 30mA* differential protection	10 A	64	47	37	104	69	59
	16 A	103	75	60	139	89	78
	20 A	126	94	75	-	-	-
	25 A	-	107	94	-	-	-

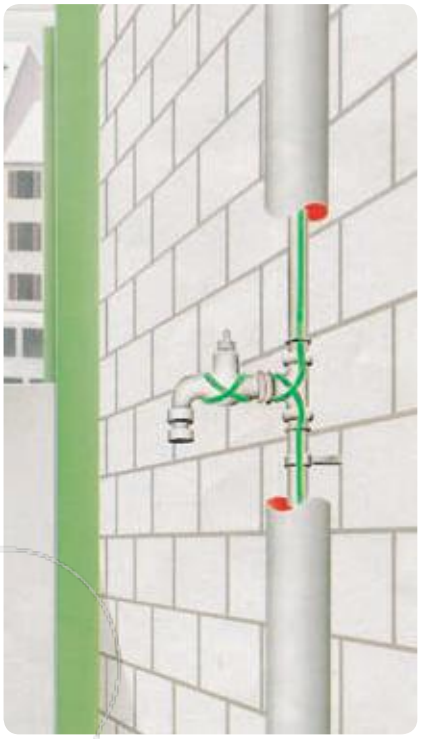
* Suggested where protection of people is requested; installations with no personnel admittance can be performed with 100 to 300 mA.

MCA Compact

Compact size **self-regulating** cables for use as anti-freeze or to maintain temperature.



Product	Power voltage (V)	Minimum installation temperature (°C)	Power at 10°C (W/m)	TEMPERATURE MAX Continuous cable powered (°C)	TEMPERATURE MAX Intermittent cable not powered ≤1000 h cum. (°C)	L cable (mm)	S cable (mm)
MCA2-COMPACT	230	-30	10	65	65	7,7	5,3
MCA6-COMPACT	230	-30	18	65	65	7,7	5,3



ELECTRICAL SIZING		Maximum length of the circuits in the heating cable (m)					
		MCA2-COMPACT			MCA6-COMPACT		
Starting temperature		+10°C	0°C	-20°C	+10°C	0°C	-20°C
Switchgear protection (A), with C curve and 30mA* differential protection	10 A	100	95	77	60	58	41

* Suggested where protection of people is requested; installations with no personnel admittance can be performed with 100 to 300 mA.

MCA and MCA2-COMPACT connection accessories

Connection kit integrated with the terminal box	Termination Kit	Joint Kit	Branch Kit
MCA Universal IP68	MCA Universal IP68	MCA Universal IP68	MCA-Y
Thermal insulation pass-through kit	**Cable gland**		**Warning label**
MCA-AL	MCA-PRESS		MCA-EA
Fixing tape glass	**Fixing tape Aluminum 25mm**		**Fixing tape Aluminum 75mm**
MCA-FV	MCA-ALL25		MCA-ALL75

MCA Universal IP68



See accessory specifications page 222.

Ice Killer



Supply voltage: 230 V
Min installation temperature: -30°C
Cable dimensions: 7,7 x 5,3 mm
Max temperature with powered cable: 65°C
Max exposure temperature with non-powered cable: 65°C

Cut and install **self-regulating** cable kit, complete with connection side and termination kit.

The Ice Killer kit is composed of a 30 m self-regulating cable coil, complete with connection side and termination accessories. The cable can be cut to the desired length, installed on the pipe or tank, connected to the mains and terminated at the opposite end.

The economic and compact Ice Killer kit is sold in an attractive, easy to carry, easy to handle on-site package, is small in size, very flexible and can be easily adapted to bends in piping.

The Ice Killer cable is laid linearly or wound in piping, depending on the specific necessary power. It is then fastened to the same by means of inextensible tape (Raytech MCA-FV or MCA-ALL75 type tapes), terminated with accessories contained in the kit and then clad with the insulation. Operating temperature is reached very quickly and is maintained almost constant even with room temperature variations.



Product	Specific power a 10°C (W/m)	Kit composition
Ice Killer 2	10	30 m cable Connection accessory Termination accessory
Ice Killer 6	18	30 m cable Connection accessory Termination accessory

ELECTRICAL SIZING	Maximum circuit length (m)			
	Ice Killer 2		Ice Killer 6	
Starting temperature	0°C	-20°C	0°C	-20°C
10 A electrical protection, characteristic C switch with differential 30 mA protection	95	77	58	41



Tracking Systems
ANTI-FREEZE FOR GUTTERS AND PIPING

Easy Cable

Constant, versatile power heating cable complete with termination accessory and power cable.

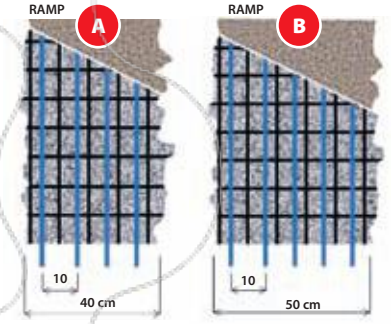
Especially suitable for solving anti-freeze problems: snow or ice accumulation on access ramps, walkways and stairs, or for frost protection of pipes or tanks, under adequate insulation. 3 standard lengths are available, with a specific power of 25 W/m, covering all possible tracking types. Complete with termination accessory and power cable, Easy cable is a shielded heating cable under a protective sheath with two conductors, with extremely simple and quick installation and connection. Please note that the cable should never be cut, spliced or overlapped.



Power supply: 230 V, 50/60 Hz
Cable dimensions: ~ 5x7 mm
Min. installation temperature: +5°C
Max. working temperature: +80°C
Heating cable type:
2 conductors, screened cable
Specific power: 25 W/m
Insulation: XLPE
External sheath: PVC
Marking: CE

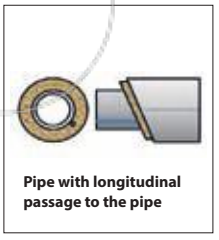
FOR RAMPS - installation depth about 50 mm with respect to the surface.

Product	Specific power (W/m)	Length (m)	Rated power (W)	Maximum length for each individual wheel passage	
				40 cm (**A**) 4 passages	50 cm (**B**) 5 passages
Easy Cable 26/25	25	26,5	655	6 m	5 m
Easy Cable 44/25	25	44	1120	10,5 m	8,5 m
Easy Cable 92/25	25	92	2270	22,5 m	18 m



FOR PIPES - anti-freeze tracking for piping, longitudinal linear installation 1 m cable/m pipe.

Product	Specific power (W/m)	Total rated power (W)	Anti-freeze for pipes up to 2 ½" (Dn 65 mm), for minimum temperatures up to -15°C, with rock wool thickness	Anti-freeze for pipes from 3" (Dn 80) up to 6" (Dn 200 mm), for minimum temperatures up to -15°C, with rock wool thickness
Easy Cable 26/25	25	655	10 mm	20 mm
Easy Cable 44/25	25	1120	10 mm	20 mm
Easy Cable 92/25	25	2270	10 mm	20 mm


Pipe with longitudinal passage to the pipe

Control unit for Easy Cable for ramps.

The C 2000 control unit, to be completed with the C2000-SR temperature, snow and humidity sensor (sensor to be placed flush with the ramp and to be ordered separately from the control unit), activating the power contactor, gives consent to start the system only when low temperature and snow or ice are present simultaneously, optimising energy consumption.

Control unit	Temperature, snow and humidity sensor
C2000	C2000-SR



Tracking systems
ANTI-FREEZE FOR RAMPS, STEPS AND WALKWAYS

To keep garage access ramps, parking areas, outdoor stands and walkways free of snow and ice.

Available in both the **constant power** and in the **self-regulating** versions.



Easy Ramp

Constant wattage heating mat.

Raytech Easy Ramp consists of a constant wattage heating cable assembled with tape to form a heating mat, which is easily and quickly spread on the surfaces to be protected. Easy Ramp is ideal for solving the problems caused by ice formation and the accumulation of snow on the access ramps to garages, pathways, outdoor parking areas, footpaths, etc. It can be installed in concrete, asphalt, and interlocking bricks or under porphyry paving or other paving materials blocked with cement and sand. The standard width of Easy Ramp pads is 60 cm; a sufficient width to free the track of vehicle wheels from ice and snow or to create an extremely safe pedestrian pathway.
The power density developed by Easy Ramp is 300 W/m². The mat is available in various lengths which are easily adaptable to the size of the area to track and where the size of the mat is larger than that of the ramp, the excess part of mat can be easily folded 90 degrees. The mat is supplied completely finished and ready for installation, complete with 4 meters of cold cable (3x1.5 mm² or 3x2.5 mm²) for connection to the power supply. The constant wattage heating cable, which constitutes the mat, is a 2 conductor heating cable, which is shielded; this allows one end only to be powered, making installation even faster and easier.

Mat specific power: 300 W/m²
Power supply: 230 V ~ 50/60 Hz
Mat thickness: 7,5 mm
Min. installation temperature: + 5°C
Max. working temperature: + 80°C
Cold cable (supply):
length 4 meters - 3 x 1,5 mm² or 3x2,5 mm²
Heating cable type:
2 conductors, screened cable
Heating cable dimensions: ~ 5 x 7 mm
Heating cable power: 25 W/m
Insulation: XLPE
External sheath: PVC
Marking: CE

Product	Power (W)	Specific power (W/m²)	Width (m)	Length (m)
Easy Ramp 4/300	670	300	0,6	4
Easy Ramp 7/300	1140	300	0,6	7
Easy Ramp 13/300	2560	300	0,6	13
Easy Ramp 21/300	3730	300	0,6	21



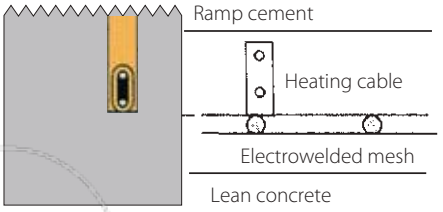


MCA Ramp

Self-regulating heating cable.

The cable is used, buried in concrete, to prevent the accumulation of ice and its formation on access ramps, stairs, sidewalks, parking lots, walkways, etc. Suitable for ramps covered in concrete, interlocking brick or asphalt, both for light and heavy traffic. The cable can be installed on ramps under construction, securing the electrowelded mesh prior to pouring of the concrete, or else on already completed ramps by cutting the concrete surfaces to then fill with plastic cement after installation of the cable, or simply by laying the cable on the surface of the ramp and throwing another layer of cement. Contact Raytech for tracing designs and estimates.





Cable roofing cement or interlocking, asphalt, gneiss, and any other material

Product	Power at 0°C in concrete (W/m)	Max working temperature (°C)	Cable length Switgear*	Cable length Maximum length (m)
MCA 20-I-GF	90	120	40 A	64
MCA 10**	50	65	40 A	90

* Differential protection 30 mA
**For ramps, stairs etc. with ambient temperature not lower than -15°C; for lower temperatures use only MCA 20-I-GF cable. For draining trenches tracing MCA8 cable shall be used. For other information contact Raytech.

Note: to trace drain outlets, use the MCA8 cable installed on the bottom of the outlets under the grate.

MCA Ramp connection accessories

Connection kit integrated with the terminal box	Termination Kit	Joint Kit	Cable gland
MCA Universal IP68	MCA Universal IP68	MCA Universal IP68	MCA-PRESS



Control unit for Easy Ramp and MCA Ramp

The C 2000 control unit, to be completed with the C2000-SR temperature, snow and humidity sensor (sensor to be placed flush with the ramp and to be ordered separately from the control unit), activating the power contactor, gives consent to start the system only when low temperature and snow or ice are present simultaneously, optimising energy consumption.

Control unit	Temperature, snow and humidity sensor
C2000	C2000-SR



For other accessories see page 222.

Tracing systems
ANTI-FREEZE FOR GUTTERS

Contact and self-regulating power cables to prevent the formation of ice and snow accumulation in gutters, downspouts and roof pitches.

Easy Frost

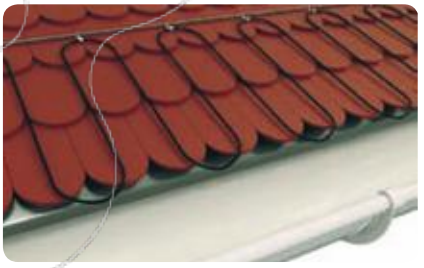
Constant power heating cable for roofs, gutters and downpipes.

Power: 20 W/m
Power supply: 230 V ~ 50/60 Hz
Heating cable dimensions: ~ 5 x 7 mm
Min. installation temperature: + 5°C
Max. working temperature: + 80°C
Cold cable (power supply): length 4 meters - 3 x 1,0 mm² or 3 x 1,5 mm²
Heating cable type: 2 conductors, screened cable
Insulation: XLPE
External sheath: PVC
Min. bending radius: 3,5 D
Marking: CE

Raytech Easy Frost is a 20 W/m constant power cable especially designed for roofs, gutters and downpipe protection from damage due to snow accumulation and ice formation. Easy Frost is supplied terminated and ready for installation, with 4 metres of cold cable (3 x 1,0 mm² o 3 x 1,5 mm²) for supply connection.

Product	Power (W)	Specific power (W/m)	Resistance (Ω)	Length (m)
Easy Frost 50/20	1000	20	52,9	50
Easy Frost 102/20	2040	20	29,9	102







Note: control unit C2000 works only when connected to both the C2000-SUG and C2000-STG sensors.

Control unit for MCA 8 and Easy Frost

ON/OFF type control unit C 2000 to activate the power switch, to be completed with C 2000-STG temperature detection sensor and C 2000-SUG wet surfaces sensor: activates the system only when low temperature and water, ice or snow is present. (C 2000-STG and C 2000-SUG sensors are to be ordered and purchased separately from the control unit).

Control unit	Temperature sensor	Ice and snow sensor
C2000	C2000-STG	C2000-SUG

For other accessories see page 222.

MCA 8

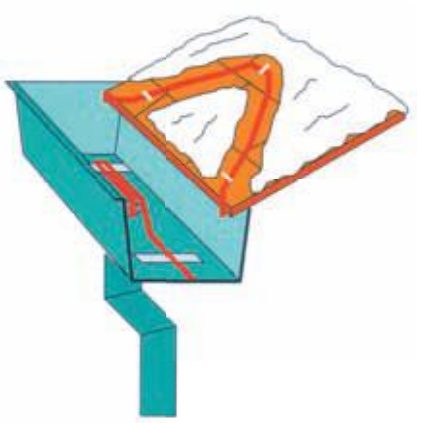
Self-regulating cable for tracing roofs, gutters and/or downpipes.

Prevents

The formation of ice inside gutters and downspouts, snow accumulation and ice on roofs, the development of infiltrations along façades, the development of ice sticks along gutters and roof ends.

Avoiding

Gutter breaking under the weight of snow, bursting and fracturing of drainpipes due to water freezing, damaged caused by a lack of draining caused by drain clogging, damage to persons or property caused by falling ice sticks, damage to persons or property caused by possible snow slides off rooves from roof edges.



The image shows gutter installation, the input of cable in a downpipe and tracking of a roof pitch.

Product	In air 0°C Power (W/m)	In chilly water Power (W/m)	Maximum cable lenght with starting temperature of -10°C through a switchgear (*) of 16 A	20 A	30 A
MCA8	24	40	40 m	50 m	90 m

*Switchgear with "C" characteristic, having a diffferential protection of 30 mA

Note: the gutter cable is suspended along the down side of the drain pipes with accessory MCA-SUP. The cable is self-supporting up to 25 m vertical sections; in addition, an extra MCA-SUP accessory is provided for every 25 m, to which the cable is secured.





MCA 8 connection accessories

Connection kit integrated with the terminal box	Termination Kit	Joint Kit
MCA Universal IP68	MCA Universal IP68	MCA Universal IP68
Branch Kit		**Support device**
MCA Universal		MCA-SUP

For other accessories see page 222.

MCA Universal IP68





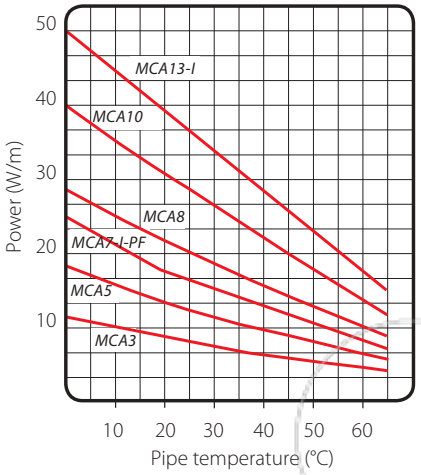
INDUSTRIAL USE

Anti-freeze maintenance and heating **up to 65°C continuous 85°C intermittent**	Anti-freeze maintenance and heating **up to 120°C continuous 120°C intermittent**	Anti-freeze maintenance, heating and washing **up to 120°C continuous 190°C intermittent**
ATEX		**ATEX**
		
MCA3	MCA3-I-GF	MCA3-I-FF
MCA5	MCA5-I-GF	MCA5-I-FF
MCA7-I-PF	MCA8-I-GF	MCA7-I-FF
MCA8	MCA10-I-GF	MCA8-I-FF
MCA10	MCA20-I-GF	MCA10-I-FF
MCA13-I		MCA15-I-FF
		MCA20-I-FF

ATEX

MCA

Self-regulating heating cables for anti-freeze or temperature maintenance use with exposure to **mild inorganic solutions**.



Suitable for anti-freeze and process temperature maintenance use **up to 65°C** on piping and tanks. Cannot be used when washing with steam or continuous exposure to strong corrosive and organic acids.



CONSTITUTION OF THE CABLE

Copper conductors

Self regulating conductive core

Modified polyolefine insulation

Copper screen

Modified polyolefine or fluoropolymer (1-PF) outer sheath

Cables certified for classified zones
Ex II 2G Ex e IIC Gb
Ex II 2D Ex tb IIIC Db
In accordance:
EN 60079-0 :2009
EN 60079-31 :2009
EN 60079-30-1 :2007

Type of surface to be tracked:
Steel - Painted - Stainless Steel - Plastic.
Chemical resistance: Suitable for exposure to mild inorganic solutions.

Product	Power voltage (V)	Power at 10°C (W/m)	Minimum installation temperature (°C)	MAX TEMPERATURE Continuous cable powered (°C)	MAX TEMPERATURE Intermittent cable not powered ≤1000 h cum. (°C)	Bending radius min. (mm)	Temperature classification EN50014
MCA3*	230	10	-45	65	80	25	T6
MCA5*	230	15	-45	65	80	25	T6
MCA7-I-PF	230	20	-45	65	80	25	T6
MCA8*	230	25	-45	65	80	25	T6
MCA10*	230	30	-45	65	80	25	T6
MCA13-I	230	40	-45	65	80	25	T6

Add the abbreviation **I-PF** for external fluoropolymer sheaths

ELECTRICAL SIZING

Maximum length of the circuits in the heating cable (m)

Starting temperature (°C)		MCA3 +10°	MCA3 -10°	MCA3 -20°	MCA5 +10°	MCA5 -10°	MCA5 -20°	MCA7-I-PF +10°	MCA7-I-PF -10°	MCA7-I-PF -20°	MCA8 +10°	MCA8 -10°	MCA8 -20°	MCA10 +10°	MCA10 -10°	MCA10 -20°	MCA13-I +10°	MCA13-I -10°	MCA13-I -20°
Switchgear protection (A), with C curve and 30mA* differential protection*	10 A	-	-	-	103	71	62	-	-	-	64	47	37	49	38	33	-	-	-
	16 A	177	144	125	160	114	99	109	79	70	103	75	60	78	61	53	57	44	40
	20 A	-	149	139	-	133	124	129	99	87	126	94	75	97	76	66	71	55	50
	25 A	-	-	-	-	-	-	-	111	104	-	107	94	112	95	83	89	69	62

* Suggested where protection of people is requested; installations with no personnel admittance can be performed with 100 to 300 mA.

MCA connection accessories

Connection kit integrated with the terminal box	Termination Kit	Joint Kit	Branch Kit	Thermal insulation pass-through kit
MCA Universal IP68	MCA Universal IP68	MCA Universal IP68	MCA-Y	MCA-AL
Cable gland	**Warning label**	**Fixing tape glass**	**Fixing tape Aluminum 25mm**	**Fixing tape Aluminum 75mm**
MCA-PRESS	MCA-EA	MCA-FV	MCA-ALL25	MCA-ALL75

For other accessories see page 222.

MCA-I-GF

Self-regulating heating cables for anti-freeze or temperature maintenance use with exposure to **corrosives and acids**.

Suitable for maintaining process temperatures **up to 120°C** on piping and tanks, even in the presence of acids and corrosives, or for anti-freeze use where acids and corrosives are present, in safe areas. Not suitable for use in the presence of steam washing.

CONSTITUTION OF THE CABLE

Copper conductors

Self regulating conductive core

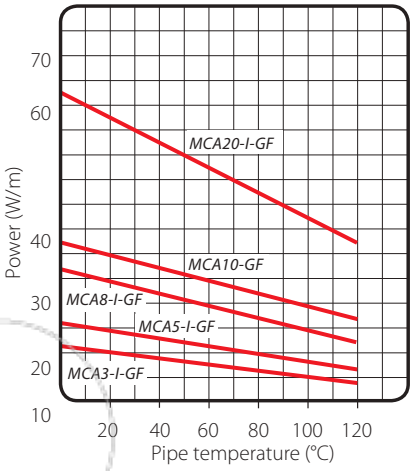
Fluoropolymer insulation

Copper screen

Modified polyolefine outer sheath



Type of surface to be tracked: Steel - Painted - Stainless Steel.
Chemical resistance: Suitable for exposure to corrosive and organic acids.



Product	Power voltage (V)	Power at 10°C (W/m)	Minimum installation temperature (°C)	MAX TEMPERATURE Continuous cable powered (°C)	MAX TEMPERATURE Intermittent cable not powered ≤1000 h cum. (°C)	Bending radius min. (mm)	Temperature classification EN50014
MCA3-I-GF	230	10	-30	120	120	25	T3
MCA5-I-GF	230	15	-30	120	120	25	T3
MCA8-I-GF	230	25	-30	120	120	25	T3
MCA10-I-GF	230	30	-30	120	120	25	T3
MCA20-I-GF	230	60	-30	120	120	25	T3

ELECTRICAL SIZING

Maximum length of the circuits in the heating cable (m)

Starting temperature		MCA3-I-GF			MCA5-I-GF			MCA8-I-GF			MCA10-I-GF			MC20-I-GF		
		+10°C	-15°C	-25°C	+10°C	-15°C	-25°C	+10°C	-15°C	-25°C	+10°C	-15°C	-25°C	+10°C	-15°C	-25°C
Switchgear protection (A), with C curve and 30mA* differential protection	16 A	200	180	175	165	130	117	120	97	88	85	73	69	50	41	38
	20 A	235	235	235	189	162	152	140	125	120	114	98	92	64	55	52
	30 A	-	-	-	-	-	189	-	-	140	-	-	114	-	-	64

*Suggested where protection of people is requested; installations with no personnel admittance can be performed with 100 to 300 mA.

Connection accessories for MCA-I-GF

Connection kit integrated with the terminal box	Termination Kit	Joint Kit	Branch Kit	Thermal insulation pass-through kit
MCA Universal IP68	MCA Universal IP68	MCA Universal IP68	MCA-Y	MCA-AL
Cable gland	**Warning label**	**Fixing tape glass**	**Fixing tape Aluminum 25mm**	**Fixing tape Aluminum 75mm**
MCA-PRESS	MCA-EA	MCA-FV	MCA-ALL25	MCA-ALL75

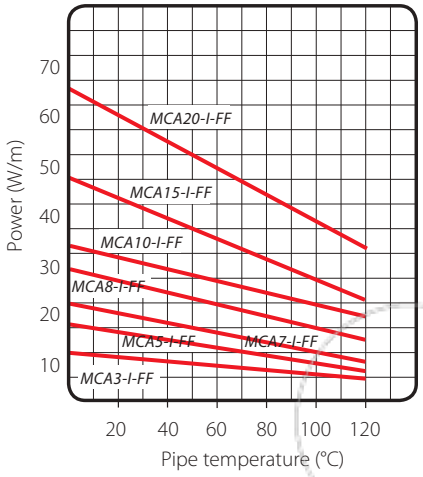
For other accessories see page 222.

ATEX

MCA-I-FF

Self-regulating heating cables for anti-freeze or temperature maintenance use with exposure to **corrosives and acids and high temperatures**.

Suitable for maintaining process temperatures **up to 120°C** on piping and tanks, even in the presence of acids and corrosives, or for anti-freeze use even in the presence of acids and corrosives and where high temperature thermal treatment is foreseen, like steam washing, **up to 190°C.**





CONSTITUTION OF THE CABLE

- Copper conductors
- Self regulating conductive core
- Fluoropolymer insulation
- Copper screen
- Fluoropolymer outer sheath

Cables certified for classified zones
Ex II 2G Ex e IIC Gb
Ex II 2D Ex tb IIIC Db
In accordance:
EN 60079-0 :2009
EN 60079-31 :2009
EN 60079-30-1 :2007

Type of surface to be tracked:
Steel - Painted - Stainless Steel - Plastic.
Chemical resistance: Suitable for exposure to corrosive and organic acids.

Product	Power voltage (V)	Power at 10°C (W/m)	Minimum installation temperature (°C)	TEMPERATURE MAX Continuous cable powered (°C)	TEMPERATURE MAX Intermittente a cavo non alimentato ≤1000 h cum. (°C)	Bending radius min. (mm)	Temperature classification EN50014
MCA3-I-FF	230	10	-30	120	190	25	T3
MCA5 -I-FF	230	15	-30	120	190	25	T3
MCA7-I-FF	230	20	-30	120	190	25	T3
MCA8-I-FF	230	25	-30	120	190	25	T3
MCA10-I-FF	230	30	-30	120	190	25	T3
MCA15-I-FF	230	45	-30	120	190	25	T3
MCA20-I-FF	230	60	-30	120	210	25	T3

ELECTRICAL SIZING

Maximum length of the circuits in the heating cable (m)

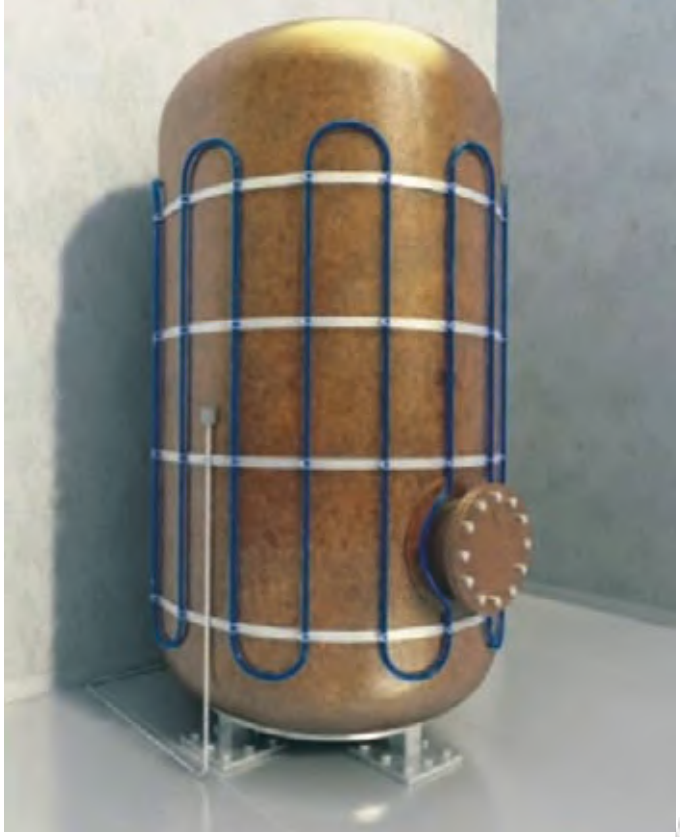
Starting temperature (°C)		MCA3-I-FF +10°	-15°	-25°	MCA5-I-FF +10°	-15°	-25°	MCA7-I-FF +10°	-15°	-25°	MCA8-I-FF +10°	-15°	-25°	MCA10-I-FF +10°	-15°	-25°	MCA15-I-FF +10°	-15°	-25°	MCA20-I-FF +10°	-15°	-25°
Switchgear protection (A), with C curve and 30mA* differential protection	16 A	200	180	175	165	130	117	122	107	102	120	97	88	85	73	69	55	48	36	50	41	38
	20 A	235	235	235	189	162	152	136	127	124	140	125	120	114	98	92	68	60	57	64	55	52
	30 A	-	-	-	-	-	189	-	-	-	-	-	140	-	-	114	91	83	82	-	-	64

* Suggested where protection of people is requested; installations with no personnel admittance can be performed with 100 to 300 mA.

Connection accessories for MCA-I-FF

Connection kit integrated with the terminal box	Termination Kit	Joint Kit	Branch Kit	Thermal insulation pass-through kit
MCA Universal IP68	MCA Universal IP68	MCA Universal IP68	MCA-Y	MCA-AL
Cable gland	**Warning label**	**Fixing tape glass**	**Fixing tape Aluminum 25mm**	**Fixing tape Aluminum75mm**
MCA-PRESS	MCA-EA	MCA-FV	MCA-ALL25	MCA-ALL75

For other accessories see page 222.







Accessories



Electrical:
EN 50393 and CEI 20-33
(Note: with testing under water head and water between the cable cores), in Class 2

Flame non propagation:
IEC 60332-1 and HD 405-1 (as applicable)

MCA Universal IP68 and MCA-Y

Universal accessory for heating cable.

A revolutionary accessory is now available that is suitable for any type of self regulating heating cable either with or without screening. Its versatility provides a reliable unique solution unavailable elsewhere in the market. It has no shelf life and no tools are required during installation (including blow torches).

- Versatile and ready to use
- No need for tools
- Without heating
- Installable at any temperature
- Can be used directly underground
- Very compact
- Re-enterable
- Non toxic and flame retarded
- The connections are automatically blocked when the joint is closed
- Screw connectors available with the kit
- Also for underwater use
- Without shelf life

Product	Kit Composition	Dimension A x B x C (mm)
MCA Universal IP68	3 screw connectors to connect to the power cable or another heating cable	260 x 60 x 60
MCA-Y	3 screw connectors for branch connections between heating cables	150 x 30 x 56



Connection termination to the power cable



Pot end



Straight joint between Heating cables



Branch joint

MCA-PC, MCA-PC-Compact

Connection kit.

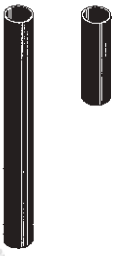
Supply side termination allowing connections to a terminal box. Made of cold-shrink components and also a dedicated cable gland. One for each cable.



MCA-PM, MCA-PM-Compact

Termination kit.

For insulating and matching the cable ends. Made from cold-shrink components. One kit for each termination.



MCA-AL

Thermal insulation pass-through.

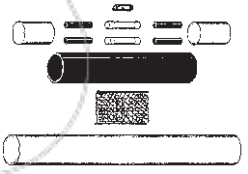
It allows the cable to pass through the metallic covering of the thermal insulation, avoiding abrasions and the moisture or water entry under the covering. It contains cable gland and fixing plate. One kit for each cable.



MCA-GL

Joint kit.

To joint cable ends or to repair damaged cables. It containes all the components required, including connectors. One kit for each cable.

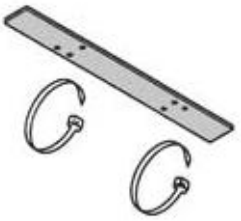


MCA-PRESS

Cable gland.

To allow the cable to enter in boxes, to pass through walls etc. One kit per cable.

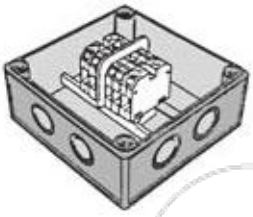




MCA-SUP

Support device for gutters and down pipes.

It supports and fixes the cable in gutters and downpipes. In large gutters, requiring 2 cables laid longitudinally, it maintains the cable at the right distance.



MCA-SG

Box.

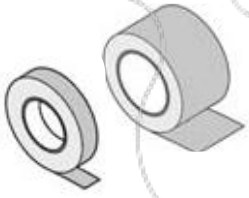
Box with IP55 degree of protection, complete of terminals. It alllows the entry of 1 or more heating cables, or to branch a cable from a main tracing, or to joint cable lengths. Cables inside the box shall be MCA-PC terminated.



MCA-FV

Glass fiber tape.

To fix the cable to the pipe, 3 turns every 0,3 m of pipe. Self adhesive, in 50 m rolls.



MCA-ALL25 - MCA-ALL75

Aluminium self adhesive tape 25 or 75 mm width.

For cable fixing, in 50 m rolls.



GUAT 26

Connection kit for classified area.



MCA-EA

Warning label.

To be applied for warning over traced items.

Control Unit C2000

C 2000 Control unit for temperature and humidity.

The C2000 control unit and relative sensors are suitable for the tracing with both self-regulating cables and constant power cables. The unit allows you to power the system only when low temperatures and humid surfaces (snow - ice, etc.) are present simultaneously.

Segnalling lamps	
ON	(green) voltage
RELAY	(red) cable on power
MOIST	(red) humidity presence
TEMP	(red) the temperature is lower than the fixed

Voltage: 230V c.a. +/- 10% 50/60Hz
Output: N° 1 relays
Switching capacity: 16A (3600 W)
Differential ON/OFF: 0,4°C
Temperature Range: 0-10°C
After run time: 1-6 hours
Protection degree: IP20
Dimensions: 85 x 42 x 48,8 mm
Weight: 252 gr
Room temperature: 0/50°C



C2000 - SR

Humidity and temperature sensor for ramps and stairs.

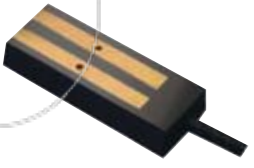
Dimensions: h 32 mm - ∅ 60 mm
Protection degree: IP68
Ambient temperature: -20°C / +70°C
Connecting cable: 6x1,5 mm², lenght. 10 m
(possible increase up to 200 m)



C2000 - SUG

Ice and snow sensor for gutters.

Dimensions: 105 x 30 x 10mm
Protection degree: IP68
Ambient temperature: -20°C / +70°C
Connecting cable: 4x1,5 mm², lenght.10 m
(possible increase up to 200 m)



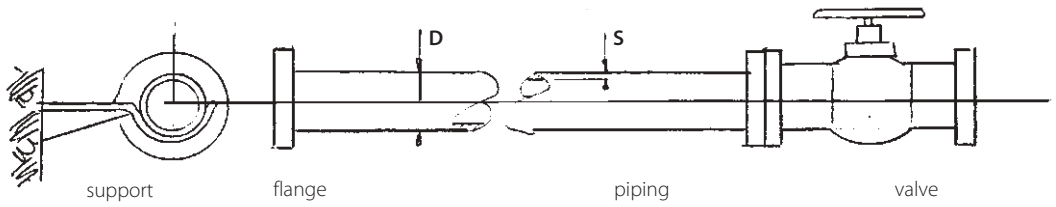
C2000 - STG

Temperature sensor for gutters.

Dimensions: 86 x 45 x 35 mm
Protection degree: IP55
Ambient temperature: -20°C / 70°C
Connecting cable: not included



Piping tracing



PIPING DATA

- External diameter **D** (m, mm or inch) ..... Thickness **S** (mm) .....
- Section length (attach isometric tracing) (m) .....
- Piping material .....

TEMPERATURE DATA

- Maintenance (indicate if for anti-freeze) (°C) ..... • Minimum room temp. (°C) .....
- Maximum exposure temperature:
  - continuous (°C) ..... - intermittent (°C) ..... - for (hours/year) .....
- Outdoor or indoor installation ..... • Temperature classification (T...) .....

INSULATION

- Material used .....
- Thermal conductivity (W/m°C or W/mK) ..... • Thickness (mm) .....

ACIDS OR CORROSIVES

Presence or absence and any type .....

AREA CLASSIFICATION

Indicate if safe or classified, zone 1 or 2, anti-explosion, etc. .....

PRESENCE OF VALVES - FLANGES - SUPPORTS - PUMPS

- VALVES
  - Type (gate, ball, etc.) .....
  - Quantity .....
- SUPPORTS
  - Type .....
  - Quantity .....
- FLANGES
  - Quantity .....
- PUMPS
  - Type .....
  - Quantity .....
  - Dimensions .....

POWER VOLTAGE

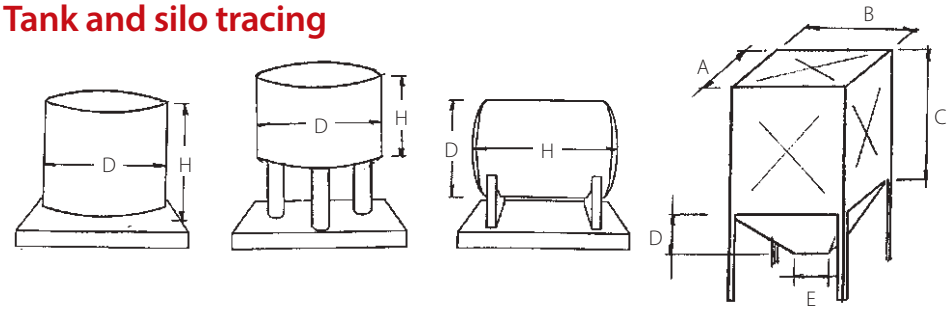
- Voltage (V) .....

ANY USE OF CABLE AS HEATER

Also indicate

- Fluid to be heated .....
  - Type/density (kg/dm^3) ..... Thermal conductivity (W/m °C) .....
  - Specific heat (J/kg °C) ..... Speed in pipe (m/sec) .....
- Time required for heating (h)

Tank and silo tracing



SILO OR TANK DATA

- Cylinder D x H (m) .....
- Flat-face A x B x C x... (m) .....

If necessary, attach a sketch with dimensions

- Material .....

TEMPERATURE DATA

- Maintenance (indicate if for anti-freeze) (°C) .....
- Minimum room temp. (°C) .....
- Maximum exposure temperature:
  - continuous (°C) ..... - intermittent (°C) ..... - for (hours/year) .....
- Outdoor or indoor installation .....
- Temperature classification (T...) .....

INSULATION

- Material used .....
- Thermal conductivity (W/m°C or W/mK) .....
- Thickness (mm) .....

ACIDS OR CORROSIVES

Presence or absence and any type .....

AREA CLASSIFICATION

Indicate if safe or classified, zone 1 or 2, anti-explosion, etc. .....

PRESENCE OF VALVES - FLANGES - SUPPORTS - PUMPS

- VALVES
  - Type (gate, ball, etc.) .....
  - Quantity .....
- FLANGES
  - Quantity .....
- PUMPS
  - Type .....
  - Quantity .....
  - Dimensions .....
- SUPPORTS
  - Type .....
  - Quantity .....

POWER VOLTAGE

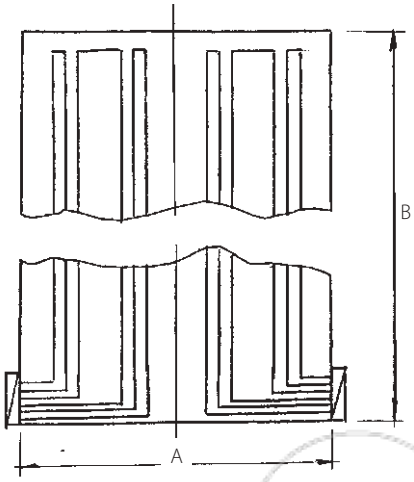
- Voltage (V) .....

ANY USE OF CABLE AS HEATER

Also indicate

- Fluid to be heated .....
  - Type/density (kg/dm^3) .....
  - Thermal conductivity (W/m °C) .....
  - Specific heat (J/kg °C) .....
  - Speed in pipe (m/sec) .....
- Time required for heating (h) .....

Ramp tracing



RAMP DATA

Dimensions A x B (m) .....

If necessary, attach drawing of plan

TYPE OF TRAFFIC:
- ☐ Light (vehicles, vans, etc.)
- ☐ Heavy (trucks, TIR trucks, dumpers, etc.)
- ☐ Other .....

Ramp covering .....

(Concrete, self-locking, porphyry, tiles, asphalt, etc.)

Direction of travel .....

(one way, 2 ways simultaneously, etc.)

☐ Complete tracking ☐ Tracking only on wheel passages

Minimum environmental temperature (°C) .....

CLIMATIC CONDITIONS: ☐ Moderate ☐ Severe

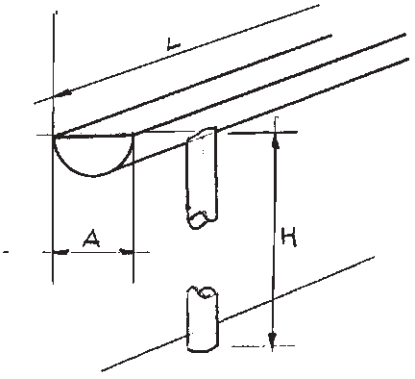
POWER VOLTAGE

Voltage (V) .....

Available power (kW) .....

Any possibility of three-phase power .....

Gutter and downspout tracing



GUTTER AND DOWNSPOUT DATA

DIMENSIONS:

Width A (m) .....

Length L (m) .....

Height H (m) .....

If necessary, attach drawing of plan

TYPE: ☐ copper ☐ steel sheet
☐ concrete ☐ concrete drain outlet
☐ bitumen ☐ other

Minimum environmental temperature (°C) .....

CLIMATIC CONDITIONS: ☐ Moderate ☐ Severe

POWER VOLTAGE

Voltage (V) .....

Available power (kW) .....

Any possibility of three-phase power .....



COMFORT HOUSE

Flooring

PRIMARY, SECONDARY OR FLOORING COMFORT HEATING SYSTEMS

page 232



Easy Floor

For the intelligent tracing of tile, marble, etc. floors



Easy Wood

For the intelligent tracing of wood or laminate flooring



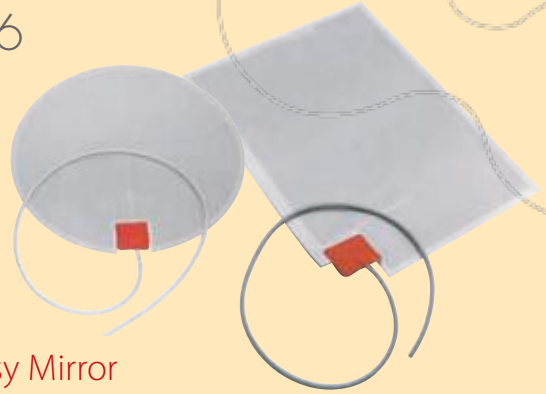
Raytech Intelligent Display

Intelligent room timed thermostat

Mirror

SELF-ADHESIVE HEATING SHEET

page 236



Easy Mirror

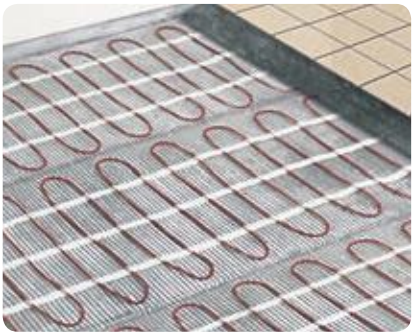
Ceiling

CEILING HEATING PANELS

page 237



Warm Up



Comfort House

Primary, secondary or flooring comfort heating systems.

Heating mats and intelligent timed thermostat: Raytech intelligent systems for primary, secondary and flooring heating comfort for homes, offices, kindergartens, schools and hospitals.

Constant power heating mats for flooring
Combining the total reliability of the Raytech mat system with the RID microprocessor intelligent thermostat, it is possible to autonomously control all space heating parameters, as a primary means in less cold months and as a secondary means together with a more traditional system, and for comfort heating in bathrooms, kitchens, living rooms and children's bedrooms. After the first programming of the RID timed thermostat, you are free to forget about the system, which will run itself, ensuring optimal conditions.



Easy Floor

Heating mat for the intelligent tracing of tile, marble, floors, etc.

The Easy Floor mat is laid directly on a layer of thermal insulation that coats the floor finished with concrete, and then buried in self-levelling concrete and covered with tiles. The flooring tracing mats are supplied in standard widths of 50 cm, power 150 W/m^2.

Product	Width (m)	Length (m)	Power (W)
Easy Floor 2	0,5	2	150
Easy Floor 3	0,5	3	225
Easy Floor 4	0,5	4	300
Easy Floor 2-ST	0,5	2	150
Easy Floor 3-ST	0,5	3	225
Easy Floor 4-ST	0,5	4	300

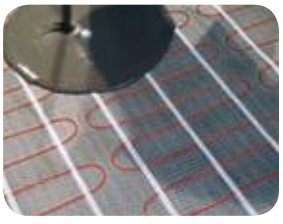
Other sizes available upon request















The kit is composed of:

- Heating mat complete with cold tail
- RID microprocessor intelligent room timed thermostat complete with sensor
- Corrugated pipe for positioning

Note: –ST type kits are supplied without a RID room timed thermostat



Easy Wood

Heating mat for the intelligent tracing of wood or laminate floors.

Easy Wood is a very thin film (only 0.3 mm) controlled by a digital intelligent timed thermostat with RID microprocessor supplied with the kit. It is advisable not to exceed a temperature of 28°C. Suitable for secondary or comfort heating.

Product	Width (m)	Length (m)	Power (W)
Easy Wood 8	0,6	8,4	80
Easy Wood 16	0,6	16,8	80

Other sizes available upon request.

The kit is composed of:

Heating mat complete with connection wires and connectors, tapes and grippers for connection.
RID microprocessor intelligent room timed thermostat complete with sensor.
Corrugated pipe for sensor positioning

Note: provide for thermal insulation of at least 6 mm in thickness (e.g. sheet of polystyrene) under the heating sheet and a barrier against humidity (polythene sheet at least 0.1 mm) above.

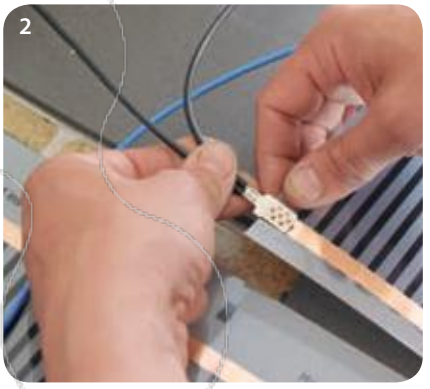
Contact Raytech for any clarifications.

Installation sequence

1



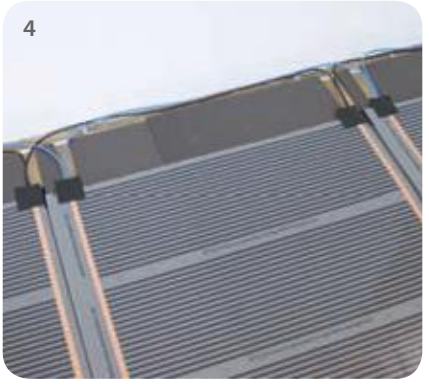
2



3



4



5





Raytech Intelligent Display

Intelligent room timed thermostat.

The RID (Raytech Intelligent Display) microprocessor room timed thermostat is simple to use, thanks to its step-by-step programming guide. The easy to read display supplies a complete explanation of set parameters after 10 seconds.

It includes a wood floor function, which limits the temperature to 28°C for wood flooring.

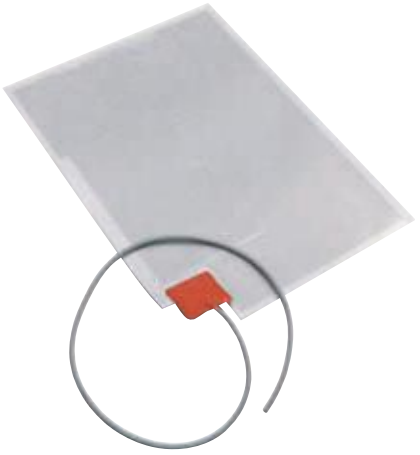
The RID autonomously controls all room functions, with no need for extra operations. Weekly programming makes it possible to to take into account the set temperature to be maintained, the type and thickness of the flooring, temperature limits not to be exceeded, modes for increasing temperature, etc.

This device is equipped with an anti-freeze function when the house is not inhabited, a block for untimely interventions (for example children) and communicates any operating failures to the appropriate alarms.

Product	Dimensions (mm)
RID room thermostat	85 x 85 x 45



Sensor	Included with the kit
Temperature range	+5 / +50°C
Temperature limit	+5 / +55°C
Start Up Programme	Automatic, self learning
Manual	0,1-10°C
Room temperature	0 / +40°C
Differential On/Off	Standard 0,4°C Adjustable 0,1-1°C
Power supply	230 V / 50-60 Hz
Self-consumption	5 W
Max output current	16 A (3400 W/220 V)





Easy Mirror

Self-adhesive heating sheet.

No more fogged mirrors after a shower or bath! Easy Mirror, the self-adhering heating sheet to be applied on the back of the mirror and connected to the mains, eliminates this problem! Powered 230V, double insulated in accordance with safety regulations. Brings the surface of the mirror to 30°C in about 3-5 minutes, removing the film of moisture. Easy Mirror sheets are packaged with a sheet of laminated aluminium on polyester, with double insulation made with 4 more sheets of vulcanised polyester, completely sealed against water.

- Ideal for bathrooms, saunas, kitchens, private homes, Hotels, gyms and sports facilities

Product	Sheet dimensions (cm)	Power (W)
Easy Mirror 35	∅ 35	50
Easy Mirror 36/50	36 x 50	50





Installation Sequence









warm up
Ceiling heating panels

Heat where you want it, when you want it



The ideal solution for all low thermal comfort environments











Warm Up

Ceiling heating panels.

WARM-UP ceiling heating panels by Raytech can be installed invisibly and built into the ceiling of any home, office, showroom, workshop, greenhouse, camper vans etc., maximising space and freeing up wall space. Their positioning does not require any invasive procedures on the walls of the room, and their electrical connection is extremely simple.They can be installed, possibly placing them at the points where maximum thermal efficiency is required, with any mounting system: hung with chains, flush mounted, or recessed in false ceilings, always easily and quickly. The type of heating, based on infrared radiation, which makes it similar to solar radiation, is safe and unharmful, quick, efficient and extremely comfortable.

Why choose the Warm-Up System?

- It is installed without requiring any invasive procedures to be carried out on the structures of the house.
- It is easily unistalled for re-use in another context.
- Its radiated heat is safe, with no air movement, and does not dirty the walls and room.
- It is used for primary heating and for secondary heating as an integrative system, and optimises and reduces heating costs thanks to the RID-WL thermostat.

An ideally integrated invisible system that can also be decorative!



VERANDAS



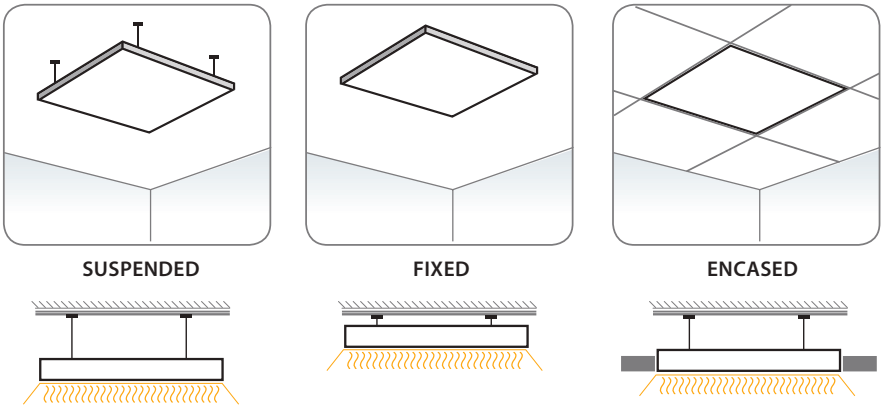
PREFABRICATED BUILDINGS



EXHIBITION SPACES



GAZEBOS





Controlled by a timed thermostat or a power regulator, they reduce consumption to a minimum

Class 2
degree of protection IP44

Power required for comfort heating:
about 60W/m²
(one Warm Up 1 panel every 5m²)
For primary heating with well-insulated walls:
about 120W/m²

What Are the Benefits to the System compared to others?

- Heating is immediate, in just a few minutes.
- It leaves room walls free because it is installed on the ceiling, flush mounted or recessed in false ceilings.
- It does not pollute, as it does not use gas or hydrocarbons.
- It optimises heating and reduces costs.
- Unlike other types of heating systems, it does not require maintenance!
- It uses the energy produced by photovoltaic systems, reducing heating costs.
- It can be coloured, and is therefore easily camouflaged or used as a decorative element.

Product	Color	Power	Dimensions (mm)
Warm Up 1	White, Paintable	300 W	590 x 590 x 40
Warm Up 2		600 W	1190 x 590 x 40


STORES


OFFICES


WAREHOUSES - GARAGES


HOMES

Warm Up accessories



Temperature accuracy: 0,1°C
Field of operation: from 0°C to +40°C
Field of temperature: from 5°C to +35°C
Power supply: 2 AAA 1.5 V batteries
Degree of protection: IP30
Frequency: 868 MHz
Powered receiver: 230 V, 50 Hz
Relay range: 8 A
Range in distance:
100 m outdoors, 30 m indoors

Programmable in 30 minute blocks
9 pre-installed programmes and
4 user-set programmes
"Self-learning" temperature control
Child lock
Low battery alarm
Unlimited programme memory
in the case of discharged batteries



Degree of protection: IP30
Frequency: 868 MHz
Powered receiver:
230 V, 50 Hz
Relay range: 8 A
Range in distance:
100 m outdoors, 30 m indoors

RID-WL

Digital wireless timed thermostat.

Raytech has established the innovative WIRELESS RID-WL TIMED ROOM THERMOSTAT for maximum efficiency and speed and ease of installation. This system combines well-known reliability and control of environmental parameters of the system RID with a wireless connection.

The RID-WL, which operates in radio frequency, allows non-invasive installation in any environment, both for new installations and those related to renovations, or to reinforce an existing primary system.

The RID-WL is coupled with its own receiver, tuned to the frequency of its own thermostat (exclusive signal), which is able to control an ampacity of 8 A.

RID-WL, since it is not wired, it can be moved within the range of use and positioned where controlling the parameters is important.

It is equipped with an easy to read backlit LCD screen and is programmable and provided with a built-in internal sensor, but can be connected to a separate sensor,for example on the floor.

Product	Description
RID-WL	Timed thermostat including receiver

Additional relay device

Additional relay device, with a maximum of 6 devices which can be controlled by the same RID-WL timed thermostat

Product	Description
RID-WL-R	Additional receiver for loads greater than 8 A



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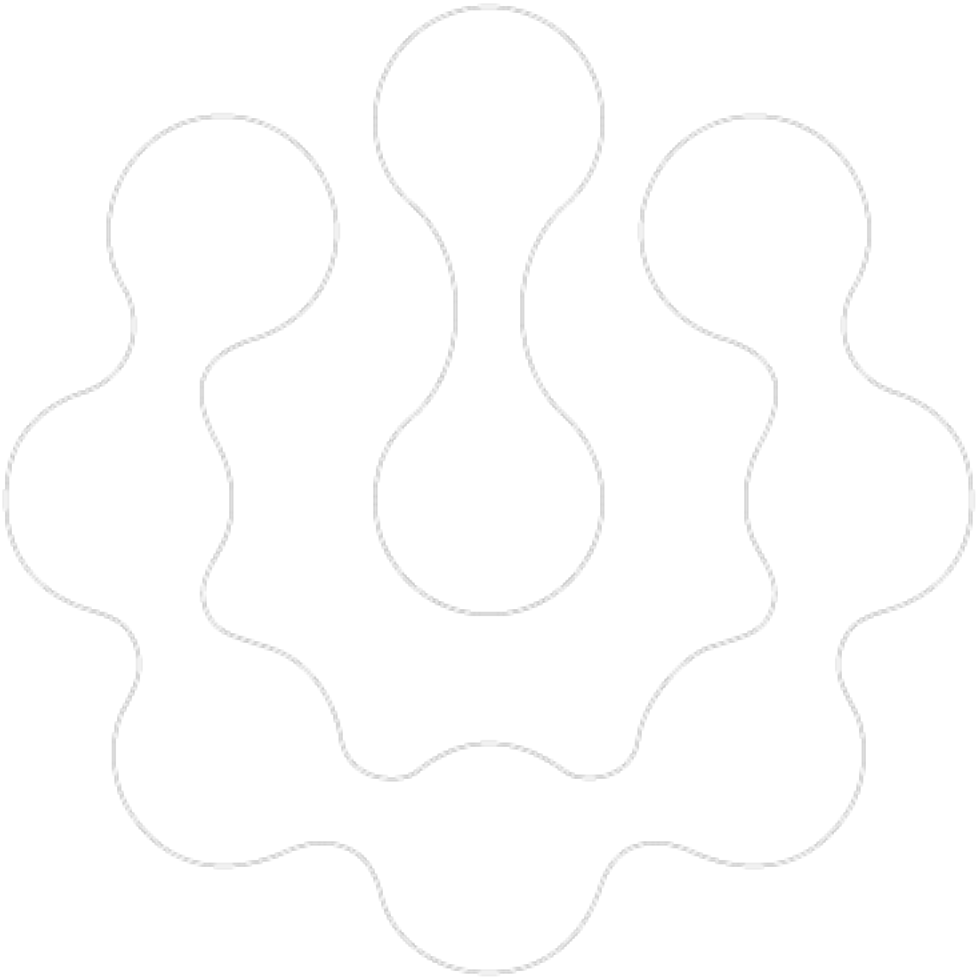
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